CITY OF ONTARIO
DEVELOPMENT ADVISORY BOARD

AGENDA

October 2, 2023

- **All documents for public review are on file in the Planning Department located in City Hall at 303 East "B" St., Ontario, CA 91764 and on the city's website at ontarioca.gov/Agendas/DAB**

MEETING WILL BE HELD AT 1:30 PM IN ONTARIO CITY COUNCIL CHAMBERS LOCATED AT 303 East "B" St.

Scott Ochoa, City Manager
Scott Murphy, Executive Director, Community Development Agency
Jennifer McLain Hiramoto, Economic Development Director
James Caro, Building Official
Rudy Zeledon, Planning Director
Khoi Do, City Engineer
Chief Michael Lorenz, Police Department
Fire Marshal Paul Ehrman, Fire Department
Scott Burton, Utilities General Manager
Angela Magana, Community Improvement Manager

PUBLIC COMMENTS

Citizens wishing to address the Development Advisory Board on any matter that is not on the agenda may do so at this time. Please state your name and address clearly for the record and limit your remarks to five minutes.

Please note that while the Development Advisory Board values your comments, the members cannot respond nor take action until such time as the matter may appear on the forthcoming agenda.

AGENDA ITEMS

For each of the items listed below the public will be provided an opportunity to speak. After a staff report is provided, the chairperson will open the public hearing. At that time the applicant will be allowed five (5) minutes to make a presentation on the case. Members of the public will then be allowed five (5) minutes each to speak. The Development Advisory Board may ask the speakers questions relative to the case and the testimony provided. The question period will not count against your time limit. After all persons have spoken, the applicant will be allowed three minutes to summarize or rebut any public testimony. The chairperson will then close the public hearing portion of the hearing and deliberate the matter.

CONSENT CALENDAR ITEMS

A. MINUTES APPROVAL

Development Advisory Board Minutes of September 18, 2023, approved as written.

PUBLIC HEARING ITEMS

B. ENVIRONMENTAL ASSESSMENT AND DEVELOPMNET PLAN REVIEW FOR FILE NO. PDEV22-043: A hearing to consider a Development Plan to construct a 6-level parking structure with a total of approximately 821 parking spaces on approximately 2.0-acres of land generally located at C Street and Sultana Avenue within the OL (Low Intensity Office) and CIV (Civic) zoning districts. The project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15332 (Class 32, In-fill Development Projects) of the CEQA Guidelines. The proposed project is located within the Airport Influence Area of Ontario International Airport and was evaluated and found to be consistent with the policies and criteria of the Ontario International Airport Land Use Compatibility Plan; (APNs: 1048-545-15 and 1048-545-16); **submitted by the City of Ontario.**

1. **CEQA Determination**

   No action necessary – Exempt: CEQA Guidelines Section § 15332

2. **File No. PDEV22-043** Development Plan

   Motion to Approve / Deny

If you wish to appeal a decision of the **Development Advisory Board**, you must do so within ten (10) days of the **Development Advisory Board** action. Please contact the **Planning Department** for information regarding the appeal process.

If you challenge any action of the **Development Advisory Board** in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the **Development Advisory Board** at, or prior to, the public hearing.

The next **Development Advisory Board** meets on **October 16, 2023**.

I, Gwen Berendsen, Administrative Assistant of the City of Ontario, or my designee, hereby certify that a true, accurate copy of the foregoing agenda was posted on or before **September 28, 2023**, at least 72 hours prior to the meeting per Government Code Section 54954.2 at 303 East "B" Street, Ontario.

Gwen Berendsen

Administrative Assistant

CITY OF ONTARIO

Development Advisory Board

Minutes

September 18, 2023

BOARD MEMBERS PRESENT

Kim Ruddins, Planning Department
James Caro, Building Department
Miquel Jimenez, Community Improvement
Khoi Do, Chairman, Engineering Department
Paul Ehrman, Fire Department
Christy Stevens, Municipal Utilities Company
Heather Lugo, Police Department

BOARD MEMBERS ABSENT

Charity Hernandez, Economic Development Agency

STAFF MEMBERS PRESENT

Angela Truong, Engineering Department
Gwen Berendsen, Planning Department
Lorena Mejia, Planning Department
Alexis Vaughn, Planning Department
Diana Prado, Planning Department
Edmelynne Hutter, Planning Department
Raymond Lee, Engineering Department
Jeff Tang, Engineering Department

PUBLIC COMMENTS

No person from the public wished to speak.

CONSENT CALENDAR ITEMS

A. **APPROVAL OF MINUTES:** Motion to approve the minutes of the August 7, 2023 meeting of the Development Advisory Board was made by Mr. Ehrman; seconded by Ms. Ruddins; and approved unanimously by those present (7-0).

PUBLIC HEARING ITEMS

B. **ENVIRONMENTAL ASSESSMENT, TENTATIVE PARCEL MAP, AND DEVELOPMENT PLAN REVIEW FOR FILE NOS. PMTT22-025 AND PDEV22-034:** A public hearing to consider a Tentative Parcel Map 20559 (File No. PMTT22-025) to consolidate two existing parcels on site into one parcel and vacate a portion of Woodruff way to facilitate a Development Plan (File No. PDEV22-034) to raze approximately 161,320 square feet of commercial buildings and construct one 344,110 square-foot industrial building, on 16.65 acres of land generally located at the southeast corner of Rockefeller Avenue and Wanamaker Avenue, within the proposed Light Industrial Land Use Designation of the California Commerce Center Specific Plan. An Addendum to The Ontario Plan 2050 Supplemental Environmental Impact

Report (State Clearinghouse No. 2021070364, which was certified by the City Council on August 16, 2022), was prepared. This application introduces no new significant environmental impacts. The proposed project is located within the Airport Influence Area of Ontario International Airport and was evaluated and found to be consistent with the policies and criteria of the Ontario International Airport Land Use Compatibility Plan; (APNs: 0238-201-41 and 0238-221-22) **submitted by Link Logistics Real Estate Management LLC. Planning Commission action is required.**

Mr. Do opened the public hearing.

Tom Cruikshank was present.

Mr. Do asked if he had reviewed all the Conditions of Approval and if he had any questions.

Mr. Cruikshank stated he had reviewed and was good with the Conditions of Approval as stated.

As there was no one wishing to speak on this item, Mr. Do closed the public hearing.

Motion to recommend approval of an Addendum and **File Nos. PMTT22-025 and PDEV22-034,** subject to the revised conditions, was made by Mr. Caro; seconded by Ms. Stevens; and approved unanimously by those present (7-0).

C. **ENVIRONMENTAL ASSESSMENT AND DEVELOPMENT PLAN REVIEW FOR FILE NO. PDEV23-007:** A hearing to consider a Development Plan to construct 144 multiple-family residential units on 9.18 gross acres of land located on the east side of Twinkle Avenue approximately 500 feet north of Moonlight Street, within Planning Area 3B (Medium Density Residential) of the Rich Haven Specific Plan. The environmental impacts of this project were previously reviewed in conjunction with the Rich Haven Specific Plan Amendment (File No. PSPA22-001), for which an Environmental Impact Report (State Clearinghouse No. 2022100425) was certified by the City Council on June 20, 2023. This application introduces no new significant environmental impacts. The proposed project is located within the Airport Influence Area of Ontario International Airport and was evaluated and found to be consistent with the policies and criteria of the Ontario International Airport Land Use Compatibility Plan; (APNs: 0218-016-06, 0218-016-07, 0218-016-18, 0218-203-08, 0218-203-01, 0218-203-02, 0218-203-03, 0218-203-04, 0218-203-07, 0218-203-06, and 0218-203-05) **submitted by Landsea Homes. Planning Commission action is required.**

Mr. Do opened the public hearing.

Sam Grable with Landsea Homes was present.

Mr. Do asked if he had reviewed all the Conditions of Approval and if he had any questions.

Mr. Grable stated he had reviewed and had a question regarding the conflict between the Planning and Engineering conditions regarding the perimeter wall height.

Senior Planner Mejia stated she would work with Engineering regarding this condition.

Mr. Do stated Engineering would issue revised conditions prior to Planning Commission.

As there was no one wishing to speak on this item, Mr. Do closed the public hearing.

Motion to recommend approval of **File No. PDEV23-007,** subject to the revised conditions, was made by Mr. Ehrman; seconded by Mr. Jimenez; and approved unanimously by those present (7-0).

There being no further business, the meeting was adjourned to the next meeting on October 3, 2023.

Respectfully submitted,

Gwen Berendsen

Gwen Berendsen
Recording Secretary

CITY OF ONTARIO
PLANNING DEPARTMENT

DEVELOPMENT ADVISORY BOARD DECISION

October 2, 2023

303 East B Street, Ontario, California 91764 Phone: 909.395.2036 / Fax: 909.395.2420

DECISION NO.: [insert #]

FILE NO.: PDEV22-043

DESCRIPTION: A Development Plan to construct a 6-level parking structure with a total of 821 parking spaces on approximately 2.0-acres of land generally located west of Sultana Avenue at C Street within the OL (Low Intensity Office) and CIV (Civic) zoning districts. APNs: 1048-545-15 and 1048-545-16; **submitted by City of Ontario.**

PART 1: BACKGROUND & ANALYSIS

CITY OF ONTARIO, (herein after referred to as "Applicant") has filed an application requesting approval of a Development Plan, File No. PDEV22-043, as described in the subject of this Decision (herein after referred to as "Application" or "Project").

PROJECT SETTING: The Project site is comprised of approximately 2.0 acres of land generally located west of Sultana Avenue at C Street, within the Civic Center district, and is depicted in Exhibit A: Project Location Map, attached. The Civic Center district is bound by D Street to the north, Holt Boulevard to the south, Sultana Avenue to the east, and Lemon Avenue to the west. The area was established several decades ago with a fire station, police station, public library, senior center, and City Hall serving as the primary services. Other developments within the district include the University of La Verne campus and an age restricted multiple-family development. The Civic Center features many common areas and prominent pedestrian walkways connecting the Civic Center retail core of the downtown to the surrounding neighborhoods. Existing land uses, General Plan, and zoning designations on and surrounding the Project site are as follows:

	Existing Land Use	***Policy Plan Land Use Designation***	***Zoning Designation***	***Specific Plan Land Use Designation***
Site:	Public parking lot	Mixed Use Downtown and Public Facilities	OL (Office Low Intensity) and CIV (Civic)	Public parking lot
North:	Parking lot	Mixed Use Downtown	OL (Office Low Intensity)	Parking lot
South:	City Hall Annex, fire station, and parking lot	Public Facilities	CIV (Civic)	City Hall Annex, fire station, and parking lot
East:	City Hall and the University of La Verne	Mixed Use Downtown and Public Facilities	OL (Office Low Intensity) and CIV (Civic)	City Hall and the University of La Verne

	Existing Land Use	*Policy Plan Land Use Designation*	*Zoning Designation*	*Specific Plan Land Use Designation*
West:	Single-family residential	Low Density Residential	LDR-5 (Low Density Residential)	Single-family residential

(1) Background —Located entirely within the central core of the Downtown, the Ontario Civic Center is considered an integral element of the urban revitalization of high-density attached housing units, restaurants, retail shops, commercial services, public commons, offices, and civic facilities. The Civic Center district's purpose is to fulfill the Vision of The Ontario Plan's Downtown District of creating a place-based, people-focused commercial and cultural "heart" of the City. The Civic Center district's proximity to the Euclid Avenue Entertainment District will contribute to the community character and commercial vitality of Ontario's historic downtown area. People in need of City services at City Hall, the Public Library, or the Community Center, are potential shoppers and diners at downtown stores and restaurants. Furthermore, the Civic Center's significant outdoor spaces provide a link to downtown shopping, dining, streetscapes, and friendly pedestrian experiences.

On April 19, 2022, the City Council approved a Real Property Exchange Agreement with the University of La Verne ("ULV") for the mutual benefit of expanding the Ontario Civic Center campus to include the future Ontario-Montclair School District headquarters, centralize City Hall services with a new City Annex office building, a modernized fire station replacing the existing Fire Station No. 1, an 800- space parking structure, and a ULV College of Health. ULV exchanged approximately 2.4-acres of land, which currently serves as a parking lot, located at the southwest corner of Sultana Avenue and D Street, for 0.5-acre of land located at the northwest corner of Sultana Avenue and B Street, which is the current location of Fire Station No. 1. The terms of the agreement require the City deliver the "shovel ready" property to ULV, after demolition of Fire Station No. 1.

On December 5, 2022, the Development Advisory Board "DAB" approved the following City initiated applications:

(a) A Development Plan, File No. PDEV22-051, to establish a master conceptual site plan comprised of a 27,835-square-foot, 2-story fire station, a 60,000-square-foot, 4-story office building, and a 6-level parking structure on 4.83-acres of land located at the southwest corner of East D Street and North Sultana Avenue, and north of the City Hall Annex building and Fire Station No. 1 on East B Street, within the Project site, and depicted in Exhibit B— Civic Center Conceptual Master Plan; and

(b) A Development Plan, File No. PDEV22-013, to construct a 23,928-square-foot, 2-story fire station, on approximately 1.20-acres of land located at the southwest corner of D Street and Sultana Avenue, within the Project site. The new fire station will replace existing Fire Station No. 1 and is currently under construction.

On March 28, 2023, the Planning Commission approved a Tentative Parcel Map, File No. PMTT22-028, subdividing the 9.11-acre Project site into 4 lots to facilitate the development of the master conceptual site plan pursuant to the terms of the property exchange agreement.

On April 4, 2023, the City Council approved a Design and Build Agreement with McCarthy Building Companies, for which a Development Plan, File No. PDEV22-043, has been submitted for review and approval by the DAB.

(2) Site Design/Building Layout —The City of Ontario proposes to construct an at grade, stand-alone parking structure generally located west of Sultana Avenue at C Street, as depicted in Exhibit C—Site Plan, attached. The parking structure, which is rectangular in shape, stands approximately 60 feet in height, with 2 elevator and staircase towers projecting to a height of approximately 78 feet and carports supporting solar photovoltaic panels on the roof deck projecting to a height of 66 feet in height. The parking structure will contain 6-levels of parking and provide +/- 821 parking spaces, including standard, vanpool, clean air vehicles, electric vehicle charging stations with spaces to accommodate the future installation of bicycle parking. The parking structure is situated on the site 20-feet from the east property line (Sultana Avenue), 12-feet from the future 30-foot wide landscaped pedestrian pathway to the south, 19-feet from the primary drive aisle to the west and the stair and elevator towers are setback 12-feet and zero feet. The Project proposes to share a north wall with the new Fire Station No. 1. The parking structure will be for public and City use.

(3) Site Access/Circulation —The portion of Cherry Avenue that currently circulates south to north through the Project site will be vacated and replaced with a 2-way drive aisle with access from B Street, extending along the western portion through the site and connecting to D Street to the north. The portion of C Street that extends east from Cherry Avenue to Sultana Avenue will also be vacated to facilitate the construction of the parking structure. Vehicular access to the parking structure is from the north-south drive aisle across from the University of La Verne and City Hall, and from Sultana Avenue. Access to upper levels is from an internal ramping system. Parking spaces will be configured in three 90-degree, double-loaded parking bays. Each bay features standard size 9’x18’ stalls with a 24’ two-way drive aisle and is depicted in Exhibit D—Floor Plans, attached. Each vehicle entry/exit includes a concrete island with infrastructure to add gate arms and parking controls in the future. Each entry/exit location also includes coiling grills to allow closure to vehicular traffic when desired. A Parking Guidance System is provided throughout the facility notifying users of stall availability per level. This system also includes red/green indicator lights over each parking stall indicating availability. The inclusion of this system will reduce search and vehicle idle time substantially, minimizing fuel usage and vehicle emissions.

There are at-grade pedestrian access points at three corners of the structure and at mid-block on the south side of the structure. Pedestrian pathways will connect the structure’s access points directly from Sultana Avenue and the ULV campus, City Hall, and City Hall Annex. Stair towers are located at the northeast and southeast corners and mid-block on the west side of the structure adjacent to the elevator tower.

(4) Architecture —The proposed parking structure is a steel moment framed, cast-in-place concrete and masonry block structure. The architectural styling is inspired by nearby civic center properties, including the Ovitt Family Community Library, City Hall and the new Fire Station No. 1. The simplistic utilitarian structure is adorned with a variety of decorative materials, such as variegated concrete masonry, metal screens, perforated panels, cornice, and storefront glazing systems, and is depicted in Exhibit E—Elevations, attached.

The parking structure will incorporate building facades, articulated corner elements, and high-quality materials and finishes. The main body of the structure is a combination of clean and simple grids of concrete that create 18-foot wide and two 24-foot wide bays. Vehicular and pedestrian entry points are accentuated with architectural metal awnings and the upper sections are framed with precast panels with openings designed to simulate large bay windows. The upper edges extend beyond the top concrete beam to break the upper horizon line, add relief to the building’s profile, and enhance the appearance of these features as independent elements of the building’s exterior.

Oriented towards City Hall and ULV, the dominant feature on the west elevation are the elevator and stair towers. The vertical height of the elevator tower is accentuated with glass and is topped with a stepped parapet roof in the Art Deco style. All the stair towers are covered in perforated metal panels topped with a decorative metal cornice. A series of large perforated metal screens are evenly placed on the bays and are surrounded with brick veneer every 45-feet to articulate modulation and minimize horizontal building massing. Variegated concrete masonry, such as smooth concrete, precision block, and shot blast block in neutral toned colors add texture that is aesthetically pleasing.

(5) Landscaping —The landscape design will complement the adjacent Civic Center and surrounding buildings in terms of plant materials and accent pavement, and will further enhance the architectural facade treatment while conforming to City of Ontario landscape standards, depicted in Exhibit F— Conceptual Landscape Plan, attached. On-site landscaping opportunities are located within the street, drive aisle, and pedestrian paseo setback areas. The pedestrian paseo is located to the south and will be fully developed with later phase construction of a new City Hall annex building. The interim landscape will include installation of the pedestrian pathway and planter.

(6) Signage — The Project proposes projecting wall signs at the vehicular entries located on the west and east elevations. All Project signage is required to comply with sign regulations provided in Ontario Development Code Division 8.1. Prior to the issuance of a Building Permit for the installation of any new on-site signage, the Project representative is required to submit Sign Plans for Planning Department review and approval.

(7) Utilities (drainage, sewer) — Public utilities (water) are available to serve the Project. Furthermore, the Applicant has submitted a Preliminary Water Quality Management Plan ("PWQMP"), which establishes the Project's compliance with storm water discharge/water quality requirements. The PWQMP includes site design measures

that capture runoff and pollutant transport by minimizing impervious surfaces and maximizes low impact development ("LID") best management practices ("BMPs"), such as retention and infiltration, biotreatment, and evapotranspiration. The PWQMP proposes the use of stormwater drywells with primary chamber for pre-treatment and an aqua-swirl hydrodynamic separator to remove sediments and oils/grease. Any overflow drainage will be conveyed to the public street by way of parkway drains and culverts.

PUBLIC NOTIFICATION: The subject application was advertised as a hearing in at least one newspaper of general circulation in the City of Ontario (the Inland Valley Daily Bulletin newspaper).

CORRESPONDENCE: As of the preparation of this Decision, Planning Department staff has not received any written or verbal communications from the owners of properties surrounding the Project site or from the public in general, regarding the subject application.

AGENCY/DEPARTMENT REVIEWS: Each City agency/department has been provided the opportunity to review and comment on the subject application and recommend conditions of approval to be imposed upon the application. At the time of the Decision preparation, recommended conditions of approval were provided and are included with this Decision.

AIRPORT LAND USE COMPATIBILITY PLAN (ALUCP) COMPLIANCE: The California State Aeronautics Act (Public Utilities Code Section 21670 et seq.) requires that an Airport Land Use Compatibility Plan be prepared for all public use airports in the State; and requires that local land use plans and individual development proposals must be consistent with the policies set forth in the adopted Airport Land Use Compatibility Plan.

On April 19, 2011, the City Council of the City of Ontario approved and adopted the ONT ALUCP, establishing the Airport Influence Area for Ontario International Airport, which encompasses lands within parts of San Bernardino, Riverside, and Los Angeles Counties, and limits future land uses and development within the Airport Influence Area, as they relate to noise, safety, airspace protection, and overflight impacts of current and future airport activity. As the decision-making body for the Project, the Development Advisory Board has reviewed and considered the facts and information contained in the Application and supporting documentation against the ONT ALUCP compatibility factors, including [1] Safety Criteria (ONT ALUCP Table 2-2) and Safety Zones (ONT ALUCP Map 2-2), [2] Noise Criteria (ONT ALUCP Table 2-3) and Noise Impact Zones (ONT ALUCP Map 2-3), [3] Airspace protection Zones (ONT ALUCP Map 2-4), and [4] Overflight Notification Zones (ONT ALUCP Map 2-5). As a result, the Development Advisory Board, therefore, finds and determines that the Project, when implemented in conjunction with the conditions of approval, will be consistent with the policies and criteria set forth within the ONT ALUCP.

COMPLIANCE WITH THE ONTARIO PLAN: The proposed Project is consistent with the principles, goals and policies contained within the Vision, Governance, Policy Plan (general plan), and City Council Priorities components of The Ontario Plan ("TOP"). More specifically, the goals and policies of TOP that are furthered by the proposed Project are as follows:

(1) City Council Goals.

- Invest in the Growth and Evolution of the City's Economy
- Maintain the Current High Level of Public Safety
- Operate in a Businesslike Manner
- Focus Resources in Ontario's Commercial and Residential Neighborhoods
- Invest in the City's Infrastructure (Water, Streets, Sewers, Parks, Storm Drains and Public Facilities)

(2) Vision.

Distinctive Development:

- Commercial and Residential Development

➢ Development quality that is broadly recognized as distinctive and not exclusively tied to the general suburban character typical of much of Southern California.

(3) Governance.

Decision Making:

- Goal G1: Sustained decision-making that consistently moves Ontario towards its Vision by using The Ontario Plan as a framework for assessing choices.

➢ G 1-2. Long-term Benefit. We require decisions to demonstrate and document how they add value to the community and support the Ontario Vision.

(4) Policy Plan (General Plan)

Land Use Element:

- Goal LU-2 Compatibility: Compatibility between a wide range of uses and a resultant urban patterns and forms.

➢ LU-2.6 Infrastructure Compatibility. We require infrastructure to be aesthetically pleasing and in context with the community character.

Community Economics Element:

- Goal CE-2 Placemaking: A City of distinctive neighborhoods, districts, corridors, and centers where people choose to be.

- CE-2.1 Development Projects. We require new development and redevelopment to create unique, high-quality places that add value to the community.

- CE-2.2 Development Review. We require those proposing new development and redevelopment to demonstrate how their projects will create appropriately unique, functional, and sustainable places that will compete well with their competition within the region.

- CE-2.4 Protection of Investment. We require that new development and redevelopment protect existing investment by providing architecture and urban design of equal or greater quality.

Safety Element:

- Goal S-1 Seismic & Geologic Hazards: Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by earthquake-induced and other geologic hazards.

- S-1.1 Implementation of Regulations and Standards. We require that all new habitable structures be designed in accordance with the most recent California Building Code adopted by the City, including provisions regarding lateral forces and grading.

Community Design Element:

- Goal CD-1 Image & Identity: A dynamic, progressive city containing distinct and complete places that foster a positive sense of identity and belonging among residents, visitors, and businesses.

- CD-1.1 City Identity. We take actions that are consistent with the City being a leading urban center in Southern California while recognizing, enhancing, and preserving the character of our existing viable neighborhoods.

- CD-1.2 Place Types. We establish Place Types in urban, mixed use, and transit-oriented areas to foster the City's identity as a premier community and require new development within each Place Type to incorporate prescribed urban patterns, forms, and placemaking priorities.

- CD-1.3 Existing Neighborhoods. We require the existing character of viable residential and non-residential neighborhoods be preserved, protected, and enhanced.

- Goal CD-2 Design Quality: A high level of design quality resulting in neighborhoods, public spaces, parks, and streetscapes that are attractive, safe, functional, human-scale, and distinct.

- CD-2.1 Quality Building Design and Architecture. We encourage all development projects to convey visual interest and character through:

- Building volume, massing, and height to provide context-appropriate scale and proportion;
- A true architectural style which is carried out in plan, section, and elevation through all aspects of the building and site design and appropriate for its setting; and
- Exterior building materials that are articulated, high quality, durable, and appropriate for the architectural style.

➢ CD-2.7 Sustainability. We collaborate with the development community to design and build neighborhoods, streetscapes, sites, outdoor spaces, landscaping, and buildings to reduce energy demand through solar orientation, maximum use of natural daylight, passive solar and natural ventilation, building form, mechanical and structural systems, building materials, and construction techniques.

➢ CD-2.8 Safe Design. We incorporate defensible space design into new and existing developments to ensure the maximum safe travel and visibility on pathways, corridors, and open space and at building entrances and parking areas by avoiding physically and visually isolated spaces, maintaining visibility and accessibility, and using lighting.

➢ CD-2.9 Landscape Design. We encourage durable, sustainable, and drought-tolerant landscaping materials and designs that enhance the aesthetics of structures, create and define public and private spaces, and provide shade and environmental benefits.

➢ CD-2.10 Parking Areas. We require all development, including single-family residential, to minimize the visual impact of surface, structured, and garage parking areas visible from the public realm in an aesthetically pleasing, safe and environmentally sensitive manner. Examples include:

- Surface parking: Shade trees, pervious surfaces, urban run-off capture and infiltration, and pedestrian paths to guide users through the parking field;
- Structured parking: facade articulation, screening, appropriate lighting, and landscaping; and
- Garage parking: providing access to single-family residential garages through alley access, recessing garages from the frontage to emphasize front doors or active living spaces.

➢ CD-2.12 Site and Building Signage. We encourage the use of sign programs that utilize complementary materials, colors, and themes. Project signage should be designed to effectively communicate and direct users to various aspects of the development and complement the character of the structures.

➢ CD-2.13 Entitlement Process. We work collaboratively with all stakeholders to ensure a high degree of certainty in the efficient review and timely processing of all development plans and permits.

- Goal CD-3 Urban, Mixed Use, and Transit-Oriented Place Types: Vibrant urban environments that are organized around intense buildings, pedestrian and transit areas, public plazas, and linkages between and within developments that are conveniently located, visually appealing and safe during all hours.

  - CD-3.2 Comfortable, Human-Scale Public Realm. We require that public spaces, including streets, parks, and plazas on both public and private property be designed to maximize safety, comfort and aesthetics and connect to the citywide pedestrian, vehicular, and bicycle networks.

  - *CD-3.3* Complete and Connected Network. We require that pedestrian, vehicular, and bicycle circulation on both public and private property be coordinated to provide connections internally and externally to adjacent neighborhoods and properties (existing and planned) through a system of local roads and trails that promote walking and biking to nearby destinations (including existing and planned parks, commercial areas, and transit stops) and are designed to maximize safety, comfort, and aesthetics.

  - CD-3.4 Context-Aware and Appropriate Design. We require appropriate building and site design that complements existing development, respects the intent and identity of the Place Type, and provides appropriate transitions and connections between adjacent uses to ensure compatibility of scale, maintain an appropriate level of privacy for each use, and minimize potential conflicts.

- Goal CD-5 Protection of Investment: A sustained level of maintenance and improvement of properties, buildings, and infrastructure that protects the property values and encourages additional public and private investments.

  - CD-5.1 Maintenance of Buildings and Property. We require all public and privately-owned buildings and property (including trails and easements) to be properly and consistently maintained.

  - CD-5.2 Maintenance of Infrastructure. We require the continual maintenance of infrastructure.

HOUSING ELEMENT COMPLIANCE: The Project is consistent with the Housing Element of the Policy Plan (general plan) component of The Ontario Plan, as the project site is not one of the properties in the Housing Element Sites contained in Tables B-1 and B-2 (Housing Element Sites Inventory) of the Housing Element Technical Report.

PART 2: RECITALS

WHEREAS, the Application is a project pursuant to the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) ("CEQA") and an initial study has been prepared to determine possible environmental impacts; and

WHEREAS, the Project is exempt from CEQA pursuant to a categorical exemption (listed in CEQA Guidelines Article 19, commencing with Section 15300) and the application of that categorical exemption is not barred by one of the exceptions set forth in CEQA Guidelines Section 15300.2; and

WHEREAS, Ontario Development Code Table 2.02-1 (Review Matrix) grants the Development Advisory Board (hereinafter referred to as "DAB") the responsibility and authority to review and act on the subject Application; and

WHEREAS, all members of the DAB of the City of Ontario were provided the opportunity to review and comment on the Application, and no comments were received opposing the proposed development; and

WHEREAS, the Project has been reviewed for consistency with the Housing Element of the Policy Plan component of The Ontario Plan, as State Housing Element law (as prescribed in Government Code Sections 65580 through 65589.8) requires that development projects must be consistent with the Housing Element, if upon consideration of all its aspects, it is found to further the purposes, principals, goals, and policies of the Housing Element; and

WHEREAS, the Project is located within the Airport Influence Area of Ontario International Airport, which encompasses lands within parts of San Bernardino, Riverside, and Los Angeles Counties, and is subject to, and must be consistent with, the policies and criteria set forth in the Ontario International Airport Land Use Compatibility Plan (hereinafter referred to as "ONT ALUCP"), which applies only to jurisdictions within San Bernardino County, and addresses the noise, safety, airspace protection, and overflight impacts of current and future airport activity; and

WHEREAS, City of Ontario Development Code Division 2.03 (Public Hearings) prescribes the manner in which public notification shall be provided and hearing procedures to be followed, and all such notifications and procedures have been completed; and

WHEREAS, on October 2, 2023 the DAB of the City of Ontario conducted a hearing on the Application and concluded said hearing on that date; and

WHEREAS, all legal prerequisites to the adoption of this Decision have occurred.

PART 3: THE DECISION

NOW, THEREFORE, IT IS HEREBY FOUND, DETERMINED AND DECIDED by the Development Advisory Board of the City of Ontario as follows:

SECTION 1: Environmental Determination and Findings. As the decision-making body for the Project, the DAB has reviewed and considered the information contained in the administrative record for the Project, including all written and oral evidence provided during the comment period. Based upon the facts and information contained in the administrative record, including all written and oral evidence presented to the DAB, the DAB finds as follows:

(1) The Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15332 (Class 32- In-fill Exemption) of the CEQA Guidelines, and meets all the following conditions;

(a) *The Project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.* The proposed Project is located within the PF (Public Facility) land use district of the Policy Plan (general plan) Land Use Map, and the OL (Low Intensity Office) zoning district. The proposed Project is consistent with all applicable policies of the Policy Plan and meets or exceeds the minimum requirements of the OL (Low Intensity Office) zoning designation and all other applicable Development Code regulations.

(b) *The proposed development occurs within city limits on a Project site of no more than five acres and is substantially surrounded by urban uses.* The Project is proposed within the established boundaries of the City of Ontario, on approximately 2.0 acres of land, which is surrounded by residential land uses to the north and east, and Civic Center facilities to the south and west.

(c) *The Project site has no value as habitat for endangered, rare, or threatened species.* The subject site is currently improved with a parking lot serving the University of La Verne, City Hall, is devoid of any flora or fauna, is regularly used for passenger vehicle parking by neighboring residents, and as such not suitable habitat for any endangered, rare, or threatened species.

(d) *Approval of the Project would not result in any significant effects relating to traffic, noise, air quality, or water quality.* The proposed parking structure is similar to, and of no greater impact than other allowed uses and development projects within the OL CIV (Civic) and (Low Intensity Office) zoning districts. The Project would not result in any significant impacts through implementation of required state, regional, and local development and performance standards, and as demonstrated in the Categorical Exemption Justification Memorandum prepared for the Project in Attachment A.

(e) *The site can be adequately served by all required utilities and public services*. All necessary wet and dry utilities are available to the Project site; and

(2) The application of the categorical exemption is not barred by one of the exceptions set forth in CEQA Guidelines Section 15300.2; and

(3) The determination of CEQA exemption reflects the independent judgment of the DAB.

SECTION 2: Housing Element Compliance. Pursuant to the requirements of California Government Code Chapter 3, Article 10.6, commencing with Section 65580, as the decision-making body for the Project, the DAB finds that based on the facts and information contained in the Application and supporting documentation, at the time of Project implementation, the Project is consistent with the Housing Element of the Policy Plan (General Plan) component of The Ontario Plan, as the Project site is not one of the properties in the Housing Element Sites contained in Tables B-1 and B-2 (Housing Element Sites Inventory) of the Housing Element Technical Report.

SECTION 3: Concluding Facts and Reasons. Based upon the substantial evidence presented to the DAB during the above-referenced hearing and upon the facts and information set forth in Parts I (Background and Analysis) and II (Recitals), above, and the determinations set forth in Sections 1 and 2, above, the DAB hereby concludes as follows:

(1) *The proposed development at the proposed location is consistent with the goals, policies, plans and exhibits of the Vision, Policy Plan (General Plan), and City Council Priorities components* of The Ontario Plan. The proposed Project is located within the Mixed Use Downtown and Public Facilities land use district of the Policy Plan Land Use Map, and the OL (Office Low Intensity) and CIV (Civic) zoning district. The development standards and conditions under which the proposed Project will be constructed and maintained, is consistent with the goals, policies, plans, and exhibits of the Vision, Policy Plan (General Plan), and City Council Priorities components of The Ontario Plan; and

(2) *The proposed development is compatible with those on adjoining sites in relation to location of buildings, with particular attention to privacy, views, any physical constraint identified on the site and the characteristics of the area in which the site is located.* The Project has been designed consistent with the requirements of the City of Ontario Development Code and the OL (Office Low Intensity) and CIV (Civic) zoning district, including standards relative to the particular land use proposed (parking structure), as-well-as building intensity, building and parking setbacks, building height, number of off-street parking and loading spaces, on-site and off-site landscaping, and fences, walls and obstructions; and

(3) *The proposed development will complement and/or improve upon the quality of existing development in the vicinity of the Project and the minimum safeguards necessary to protect the public health, safety and general welfare have been required of the proposed Project.* The Development Advisory Board has required certain safeguards, and impose certain conditions of approval, which have been established to ensure that: [i] the purposes of the Development Code are maintained; [ii] the Project will not endanger the public health, safety or general welfare; [iii] the Project will not result in any significant environmental impacts; [iv] the Project will be in harmony with the area in which it is located; and [v] the Project will be in full conformity with the Vision, City Council Priorities and Policy Plan components of The Ontario Plan; and

(4) *The proposed development is consistent with the development standards and design guidelines set forth in the Development Code, or applicable specific plan or planned unit development*. The proposed Project has been reviewed for consistency with the general development standards and guidelines of the Development Code that are applicable to the proposed Project, including building intensity, building and parking setbacks, building height, amount of off-street parking and loading spaces, parking lot dimensions, design and landscaping, bicycle parking, on-site landscaping, and fences and walls, as-well-as those development standards and guidelines specifically related to the particular land use being proposed (parking structure). As a result of this review, the Development Advisory Board has determined that the Project, when implemented in conjunction with the conditions of approval, will be consistent with the development standards and guidelines described in the Development Code.

SECTION 4: Development Advisory Board Action. Based on the findings and conclusions set forth in Sections 1 through 3, above, the DAB hereby APPROVES the Application subject to each and every condition set forth in the Conditions of Approval included as Attachment B of this Decision, and incorporated herein by this reference.

SECTION 5: Indemnification. The Applicant shall agree to defend, indemnify, and hold harmless, the City of Ontario or its agents, officers, and employees from any claim, action or proceeding against the City of Ontario or its agents, officers or employees to attack, set aside, void or annul this approval. The City of Ontario shall promptly notify the applicant of any such claim, action or proceeding, and the City of Ontario shall cooperate fully in the defense.

SECTION 6: Custodian of Records. The documents and materials that constitute the record of proceedings on which these findings have been based are located at the City of Ontario City Hall, 303 East "B" Street, Ontario, California 91764. The custodian for these records is the City Clerk of the City of Ontario. The records are available for inspection by any interested person, upon request.

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APPROVED AND ADOPTED this 2nd day of October 2023.

Development Advisory Board Chairman

<u>Exhibit A: PROJECT LOCATION MAP</u>

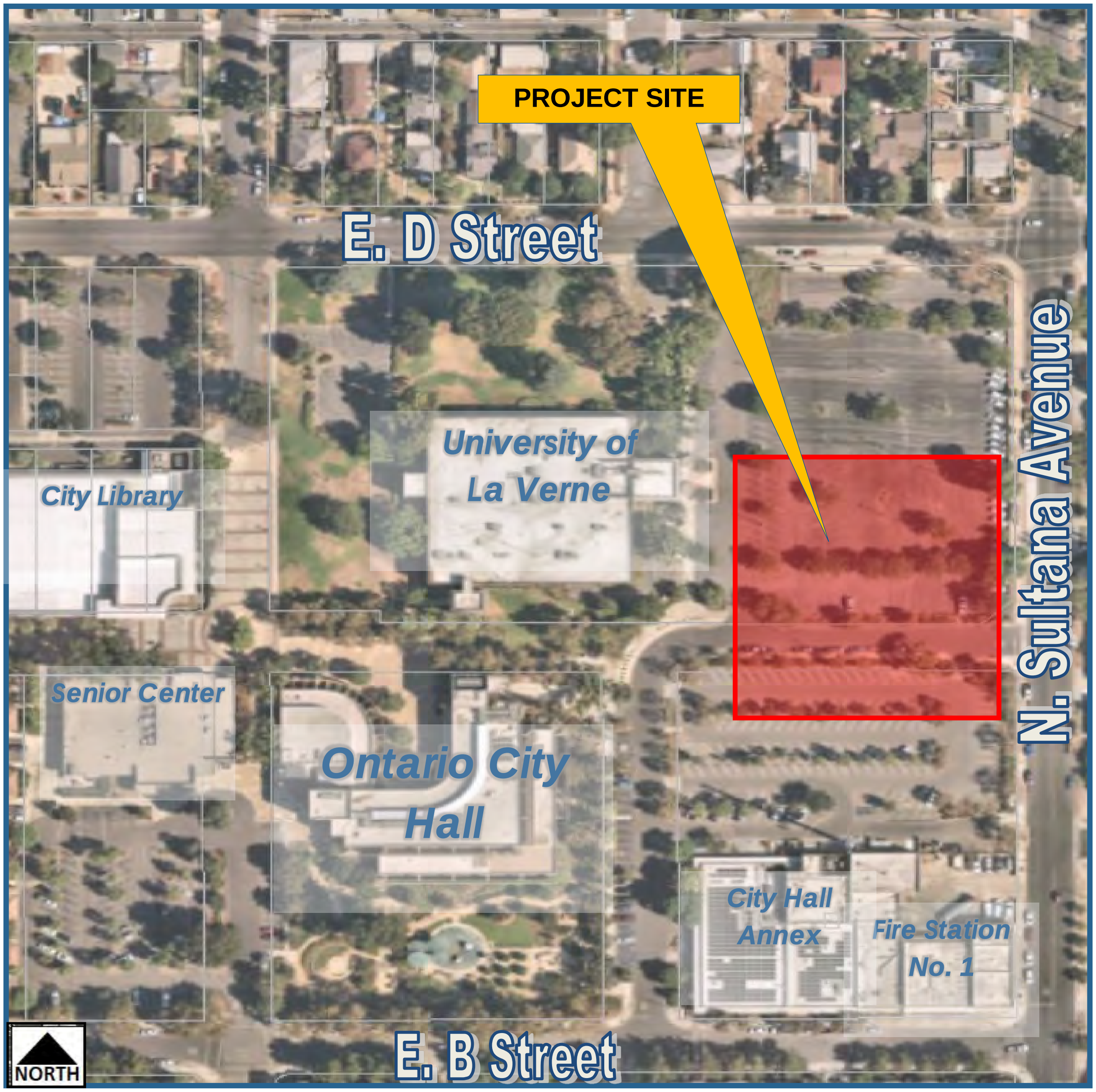


Exhibit B: CIVIC CENTER CONCETUAL MASTER PLAN

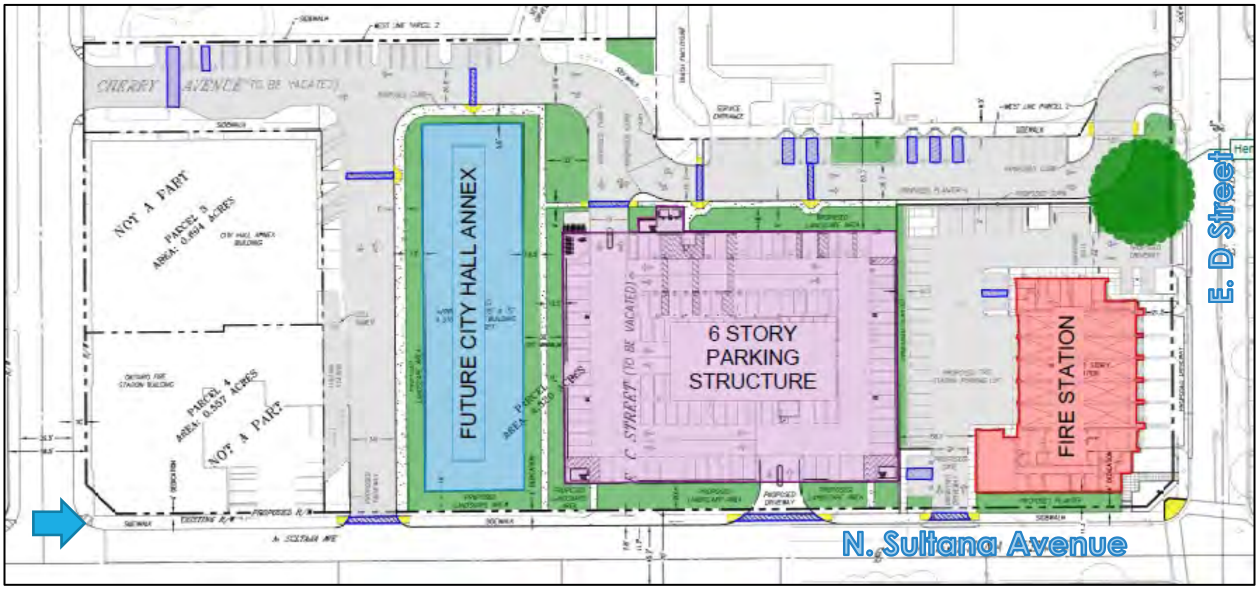


Exhibit C: SITE PLAN

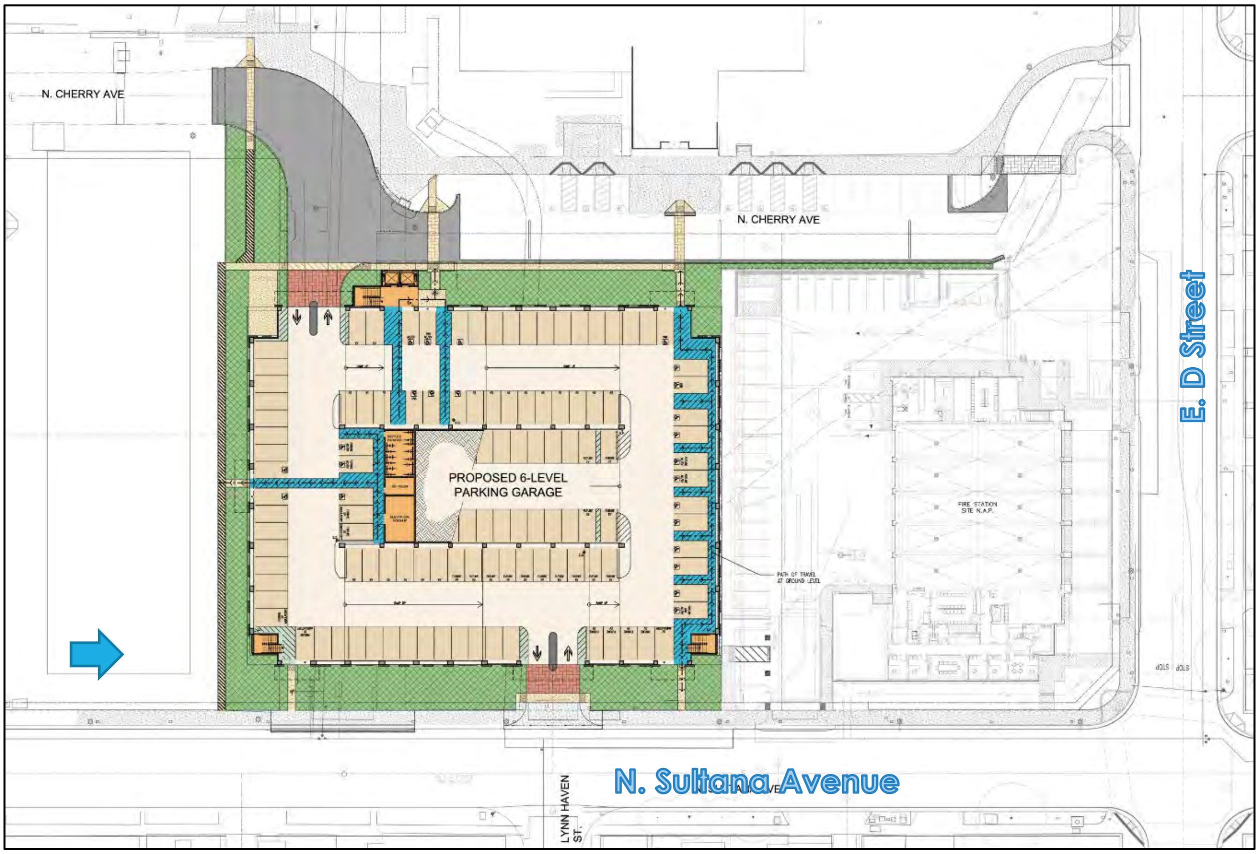
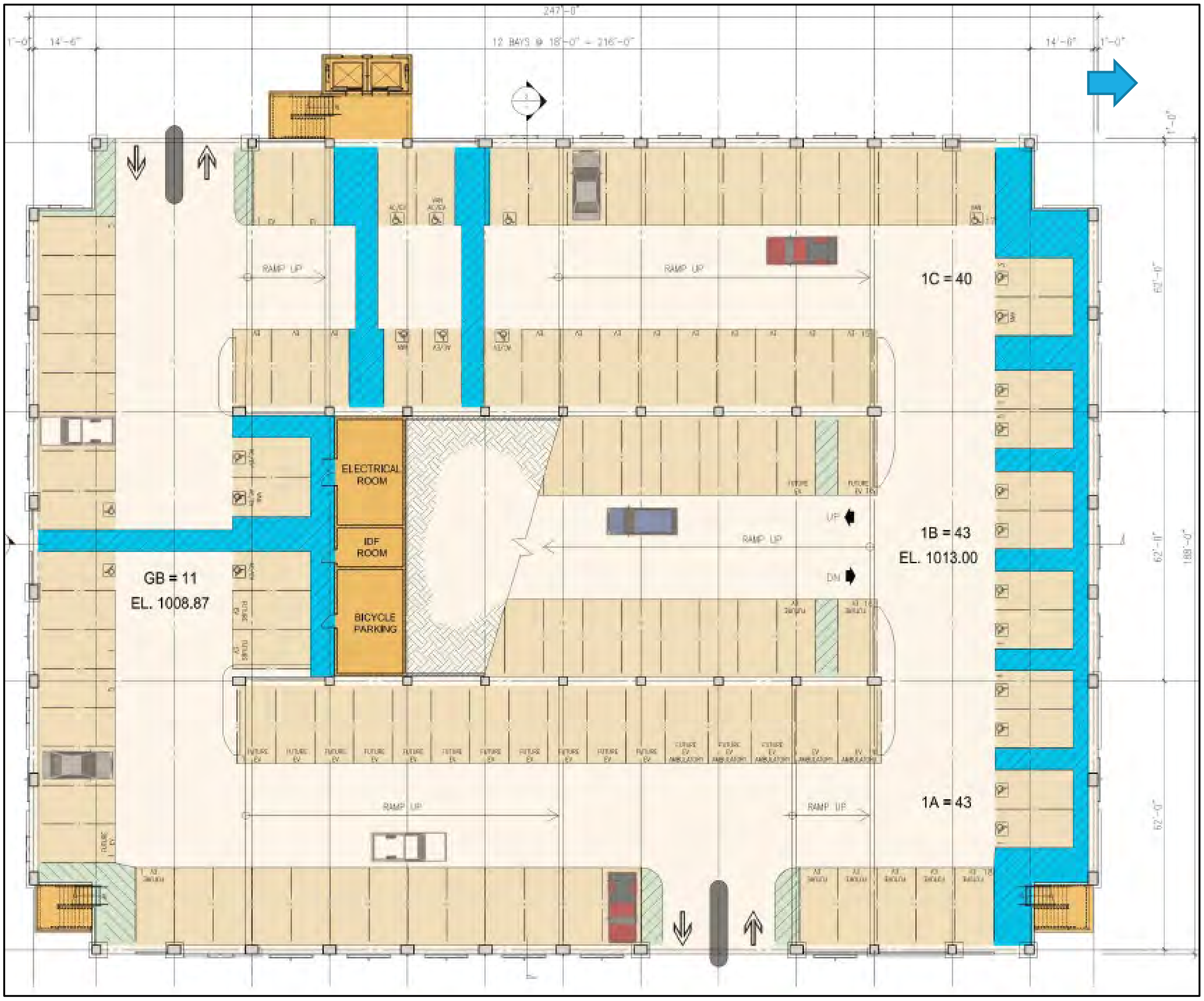


Exhibit D: FLOOR PLAN

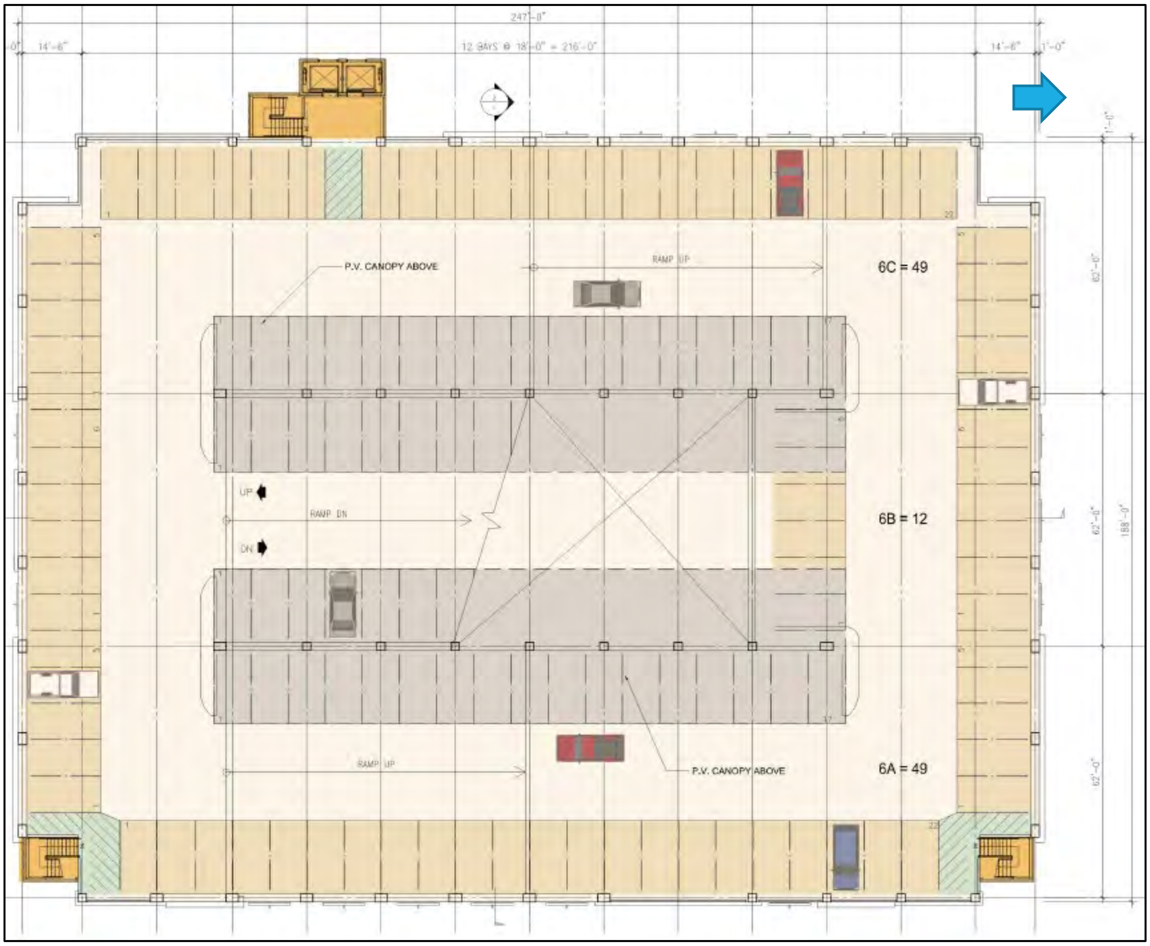


Ground Level

Exhibit D: FLOOR PLAN (Continued)

2nd- 5th Levels

Exhibit D: FLOOR PLAN (Continued)



Roof Deck- 6th Level

Exhibit E: ELEVATIONS

NORTH ELEVATION ②

SCALE: 3/32" = 1'-0"

WEST ELEVATION ①

SCALE: 3/32" = 1'-0"

Exhibit E: ELEVATIONS (Continued)

SOUTH ELEVATION 2

SCALE: 3/32" = 1'-0"

EAST ELEVATION 1

SCALE: 3/32" = 1'-0"

Exhibit F: CONCEPTUAL LANDSCAPE PLAN

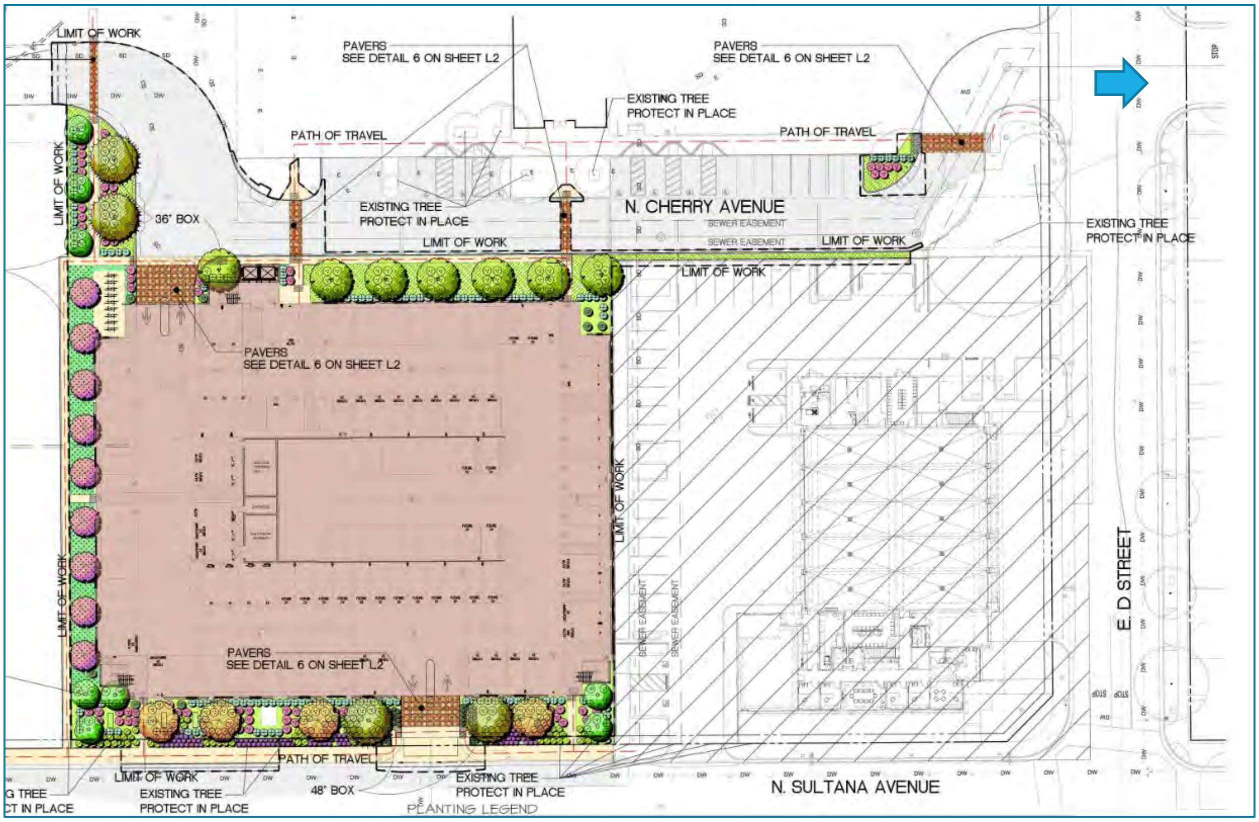


Exhibit G: CONCEPTUAL RENDERINGS

Southwest View

Southeast View

Attachment A:
Categorical Exemption Justification Memorandum

(Studies follow this page)

MEMORANDUM

To:	City of Ontario
From:	Carey Fernandes, Dudek
Subject:	Categorical Exemption Justification Memorandum for the Ontario City Hall Annex
Date:	September 27, 2023
Attachments:	A - Noise Technical Memorandum B - Air Quality Technical Memorandum C - Transportation Assessment

Executive Summary

This memorandum describes the proposed Ontario City Hall Annex Project (project) and provides justification that the Project is eligible for a Class 32 Exemption for Infill Development pursuant to CEQA Guideline Section 15332.a.

The Class 32 (Infill Development) categorical exemption requires projects to be consistent with applicable general plans and zoning designations, located within a city's limits on a site five acres or less, bordered by urban uses, and without significant impacts to traffic, noise, air quality, or water quality (CEQA Section 15332). The site must also be devoid of sensitive habitat and adequately served by public utilities. As detailed in this memorandum, the project qualifies for a Class 32 categorical exemption because it is consistent with the City's applicable land use regulations, proposed on an infill site that is less than 5 acres in size, and not anticipated to result in any significant environmental impacts. Further, the project does not meet any of the exceptions to categorical exemptions under CEQA Section 15300.2 (Exceptions).

The project is categorically exempt from CEQA because it meets the following requirements of CEQA Section 15332 (Infill Development):

> Class 32 consists of projects characterized as in-fill development meeting the conditions described in this section.
>
> a) The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
> b) The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.
> c) The project site has no value as habitat for endangered, rare or threatened species.
> d) Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.
> e) The site can be adequately served by all required utilities and public services.

Introduction

The proposed project would consist of a new three-story civic office building of approximately 60,000 sf, with the potential of a fourth level future expansion. The building would provide office and support spaces for seven existing city departments currently housed in various locations around the existing Civic Center and neighboring buildings. The project would also include site improvements of roughly 28,500 square feet including hardscape and landscape areas, as well as a service access driveway.

The ground floor of the City Hall Annex building would consist of the Police Department, Broadband, and Community Life and Culture departments. The second floor would consist of the Information Technology and Community Improvement departments. The third floor would consist of the Finance and Human Resources departments.

Parking for the project would be provided in a new six-story, approximately 268,730 sf parking structure located just north of the City Hall Annex project site. The parking structure would contain 821 parking stalls and would be configured in three 90-degree, double-loaded parking bays. Each bay provides comfortable 9'x18' stalls with a 24' two-way drive aisle. Code-compliant EV charging and infrastructure will be provided throughout the building. The parking structure would include ingress/ egress locations to provide direct access to interior drive aisles with clear circulation to the ramping system within the parking structure. Each vehicle entry/exit would include a concrete island with infrastructure to add gate arms and parking controls in the future. Each entry/exit location would also include coiling grills to allow closure to vehicular traffic when desired. A Parking Guidance System would be provided throughout the facility notifying users of stall availability per level. This system would also include red/green indicator lights over each parking stall indicating availability. Covered and enclosed long-term bicycle parking would be provided within the parking structure on the ground level. Rooftop photovoltaic canopies over the parking stalls would generate clean energy and provide protection from the elements for parking stalls on the roof.

The site is located in the City of Ontario (City), comprised of approximately 4 acres of land located on the east edge of the existing Ontario City Hall Civic Center property, just east of Sultana Avenue and north of the existing Fire Department and City Office building to the south.

CEQA Determination – Class 32 Categorical Exemption Applies

The project qualifies for a Class 32 categorical exemption under the California Environmental Quality Act (CEQA). Pursuant to CEQA Guidelines Section 15332, Class 32 categorical exemptions can be used for projects characterized as in-fill development meeting the following conditions: (1) general plan and zoning consistency; (2) project is within city limits on a site of no more than 5 acres and is surrounded by urban uses; (3) project site has no value as habitat for endangered, rare, or threatened species; (4) project would not result in significant effects to traffic, noise, air quality, or water quality; and (5) the site can be adequately served by all required utilities and public services. Additionally, in order to qualify for a categorical exemption, a project cannot meet any of the "exceptions to exemptions" enumerated in CEQA Guidelines Section 15300.2.

Land Use Consistency: The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with the applicable zoning designation and regulations.

Land Use and Zoning Designations

The project site is located on two parcels (Assessor's Parcel Numbers 104-854-516 and 104-854-115) and is designated as Public Facility (PV) and Mixed Use (MU) in the City's General Plan and has a zoning designation of Civic (CIV) and Low Intensity Office (OL) in the City of Ontario.

City of Ontario General Plan

The City of Ontario General Plan ("The Ontario Plan" or "TOP" sets forth long-term goals, principles, and policies that guide growth and development in the City. The General Plan is comprised of a range of State-mandated elements, including, but not limited to, Land Use, Community Design, and Mobility.

Land Use Element

The Land Use Element establishes general policies and the vision for the future of the City. The City of Ontario consists of distinct neighborhoods and activity centers, corridors, and districts; diversity of residential, employment, retail, entertainment, community, and recreational services; and a world-class airport which are connected through *a unified mobility system. The Land Use Element Sections include Balance, Compatibility, Flexibility, Phased Growth,* and Airport Planning. The project is consistent with the relevant Land Use Element's goals and policies.

LU-2 Compatibility Between a wide range of uses and resultant urban patterns and forms.

> LU-2.1 Land Use Decisions. We minimize adverse impacts on adjacent properties when considering land use and zoning requests.
>
> LU-2.6 Infrastructure Compatibility. We require infrastructure to be aesthetically pleasing and in context with the community character.

LU-3 Staff, regulations and processes that support and allow flexible response to conditions and circumstances in order to achieve the Vision.

> LU-3.1 Development Standards. We maintain clear development standards which allow flexibility to achieve our Vision and provide objective standards that ensure predictability and deliver the intended physical outcomes.

The project would be consistent with the land use designations of Public Facility and Mixed Use for the City Hall Annex and parking structure. The Public Facilities designation allows for civic centers, governmental institutions, police and fire stations, transportation facilities, museums, and public libraries. The Mixed-Use designation allows for a horizontal and/or vertical mixture of retail, service, office, restaurant, entertainment, cultural, and residential uses. The project includes a City Hall public facility building and parking structure to service the employees of the City Hall facilities, consistent with the designated uses.

Community Design Element

The Community Design Element establishes design qualities to help achieve the Vision of Ontario in the areas of economic development, land use, housing, community health, infrastructure, and transportation. The Community Design Element focuses on: Image & Identity; Design Quality; Urban, Mixed Use, and Transit-Oriented Place Types; Historic Preservation; and Protection of Investment. The project is consent with the following relevant goals and policies in the Community Design Element:

CD-1 A dynamic, progressive city containing distinct and complete places that foster a positive sense of identity and belonging among residents, visitors, and businesses.

CD-1.1 City Identity. We take actions that are consistent with the City being a leading urban center in Southern California while recognizing, enhancing, and preserving the character of our existing viable neighborhoods.

CD-1.2 Place Types. We establish Place Types in urban, mixed use, and transit-oriented areas to foster the City's identity as a premier community and require new development within each Place Type to incorporate prescribed urban patterns, forms, and placemaking priorities.

CD-1.3 Existing Neighborhoods. We require the existing character of viable residential and non-residential neighborhoods be preserved, protected, and enhanced.

CD-2 A high level of design quality resulting in neighborhoods, commercial areas, public spaces, parks, and streetscapes that are attractive, safe, functional, human- scale, and distinct.

CD-2.1 Quality Building Design and Architecture. We encourage all development projects to convey visual interest and character through:

1. Building volume, massing, and height to provide context-appropriate scale and proportion;
2. A true architectural style which is carried out in plan, section, and elevation through all aspects of the building and site design and appropriate for its setting; and
3. Exterior building materials that are articulated, high quality, durable, and appropriate for the architectural style.

CD-2.4 Urban, Mixed Use, and Transit-oriented Areas. We establish Place Types to require mixed use, urban, and transit-oriented areas to be designed and developed as pedestrian oriented areas that are integrated with adjacent neighborhoods and promote a vibrant, comfortable, and functional environment, as defined for each Place Type.

CD-2.7 Sustainability. We collaborate with the development community to design and build neighborhoods, streetscapes, sites, outdoor spaces, landscaping, and buildings to reduce energy demand through solar orientation, maximum use of natural daylight, passive solar and natural ventilation, building form, mechanical and structural systems, building materials, and construction techniques.

CD-2.8 Safe Design. We incorporate defensible space design into new and existing developments to ensure the maximum safe travel and visibility on pathways, corridors, and open space and at building entrances and parking areas by avoiding physically and visually isolated spaces, maintaining visibility and accessibility, and using lighting.

CD-2.9 Landscape Design. We encourage durable, sustainable, and drought-tolerant landscaping materials and designs that enhance the aesthetics of structures, create and define public and private spaces, and provide shade and environmental benefits.

CD-2.10 Parking Areas. We require all development, including single-family residential, to minimize the visual impact of surface, structured, and garage parking areas visible from the public realm in an aesthetically pleasing, safe and environmentally sensitive manner. Examples include:

1. Surface parking: Shade trees, pervious surfaces, urban run-off capture and infiltration, and pedestrian paths to guide users through the parking field.
2. Structured parking: facade articulation, screening, appropriate lighting, and landscaping.
3. Garage parking: providing access to single-family residential garages through alley access, recessing garages from the frontage to emphasize front doors or active living spaces.

CD-2.12 Site and Building Signage. We encourage the use of sign programs that utilize complementary materials, colors, and themes. Project signage should be designed to effectively communicate and direct users to various aspects of the development and complement the character of the structures.

CD-3 Vibrant urban environments that are organized around intense buildings, pedestrian and transit areas, public plazas, and linkages between and within developments that are conveniently located, visually appealing and safe during all hours.

CD-3.1 Unique Identity. We promote development that heightens the unique character and identity of each Place Type by requiring compatible land uses and land planning, site design, and building design that promotes an active public realm.

CD-3.2 Comfortable, Human-Scale Public Realm. We require that public spaces, including streets, parks, and plazas on both public and private property be designed to maximize safety, comfort and aesthetics and connect to the citywide pedestrian, vehicular, and bicycle networks.

CD-3.3 Complete and Connected Network. We require that pedestrian, vehicular, and bicycle circulation on both public and private property be coordinated to provide connections internally and externally to adjacent neighborhoods and properties (existing and planned) through a system of local roads and trails that promote walking and biking to nearby destinations (including existing and planned parks, commercial areas, and transit stops) and are designed to maximize safety, comfort, and aesthetics.

CD-3.4 Context-Aware and Appropriate Design. We require appropriate building and site design that complements existing development, respects the intent and identity of the Place Type, and provides appropriate transitions and connections between adjacent uses to ensure compatibility of scale, maintain an appropriate level of privacy for each use, and minimize potential conflicts.

CD-3.5 Active Frontages. We create lively pedestrian streetscapes by requiring primary building, business, and residential entrances, outdoor dining, and storefronts be located on ground floors adjacent to sidewalks or public spaces and designed to maximize safety, comfort, aesthetics, and the intended functionality (as defined by the Place Type).

CD-3.6 Managed Infrastructure. We collaborate with developers and property owners to facilitate development that realizes the envisioned character and functionality of the Place Type through the use of green and shared infrastructure within each Place Type.[1]

The project would be located among a mixed use of building types and within a varied context of architectural precedent. The Civic Center campus to the south consists of multiple buildings such as the main City Hall building, Senior Center, and Fire Department buildings which rely heavily on concrete and CMU construction systems and finishes, while neighboring residential areas to the east and west of the project site vary from single family bungalows dating back to the early 20th century, to 3-level apartment buildings and condominiums built in the early 21st century featuring row style construction with plaster and brick finishes. To the north of the City Hall Annex project site, two new city projects represent an approach that references elements of the surrounding contextual architecture in material selections and form, while also reflecting the nature of each program and function.

The parking structure would utilize a “Pavilions in the Park” concept that creates visual diversity of forms, scale, and materiality to integrate with the local context and connect with people on a pedestrian level. The first component, called “pavilions,” would take smaller architectural components within the structure, such as the staircases, elevator towers, and pedestrian entries, and articulates them as independent forms within the design. The second component, called “parks,” would treat the areas between the “pavilions” with an abstract screening element to represent green space.

The City Hall Annex project would provide approximately 28,500 square feet of landscaping including the addition of shrubs, groundcover, trees, and palms. Pedestrian paving would include entry plaza paving and concrete sidewalk paving. The parking structure landscape would include a drought-tolerant, low maintenance planting pallet to match the adjacent Civic Center and surrounding buildings, along with a new irrigation system design employing the latest in drip irrigation technology for better distribution to high density decorative plantings and vines to connect the façade to natural landscapes.

Additionally, all project signage is required to comply with sign regulations provided in Ontario Development Code Division 8.1, and the project would comply to the City’s development standards.

As discussed above, the project would be developed consistent with the City’s General Plan and Public Facility (PF) and Mixed Use (MU) designations in the General Plan. Therefore, the proposed project would meet this criterion.

Site Size and Location/Surrounding Land Uses: The proposed development occurs within City limits on a Project site of no more than five acres substantially surrounded by urban uses.

The Project site is located entirely within the City of Ontario, on a site that is approximately 4 acres and is surrounded by established low density residential, mixed use, and public facility urban uses. The project area is served by the

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[1] City of Ontario. 2022. The Ontario Plan. Approved August 16, 2022. Accessed June 6, 2023. https://www.ontarioca.gov/OntarioPlan

Omnitrans bus service; the nearest bust stop to the Project site is the Holt/Plum Eastbound (Eb) Far side (Fs), located approximately 0.1 miles to the south of the project site along E Holt Blvd which serves route 61 and 87. Further, the Project is located approximately 0.25 miles of the West Valley Connector Bus Rapid Transit.

Land uses and zoning surrounding the Project site are described as follows:

North

The project site is bordered directly to the north by an existing parking lot. Further to the north will be a future fire station. To the north of the project site is designated as Mixed Use (MU) and zoned as Low Intensity Office (OL).

East

The project site is bordered directly to the east by Sultana Avenue. Further to the east is Single Family Residential Development. To the east of the project site is designated as Low Density Residential (LDR) and zoned as Low Density Residential (LDR-5).

South

The project site is bordered directly to the south by the City HR & Finance Building and existing Fire Station. To the south of the project site is designated as Public Facility (PF) and zoned as Civic (CIV).

West

The project site is bordered to the west by the University of La Verne and Ontario City Hall. To the west of the project site is designated as Public Facility (PF) and Mixed Use (MU) and zoned as Civic (CIV) and Low Intensity Office (OL).

As demonstrated, the Project site is substantially surrounded by urban uses and therefore meets the criteria for site size and location.

Habitat: The Project site has no value as habitat for endangered, rare or threatened species.

The project site and adjacent properties are highly developed and surrounding land uses include a mix of public facility, mixed use, and residential uses. The site is almost completely covered with existing pavement; it is developed with two surface parking lots. Vegetation on the site is limited to decorative trees scattered throughout the project site that are not known to support any candidate, sensitive, or special-status species. No native habitat is located on the project site or on adjacent properties. Based on the urbanized nature of the project site and adjacent properties, in conjunction with a lack of suitable habitat for special-status species, the project site has no value as habitat for endangered, rare, or threatened species and thus meets the Class 32 categorical exemption criteria for lack of habitat.

Traffic, Noise, Air Quality, and Water Quality: Approval of the Project would not result in any significant effects relating to traffic, noise, air quality, or water quality.

Traffic

A transportation technical memorandum has been prepared by Dudek (Attachment C) assessing the potential transportation related impacts of the project. The transportation assessment was prepared consistent with the City of Ontario Traffic and Transportation Guidelines[2] and the City's Resolution No. 2020-071 adopting Vehicle Miles Traveled Thresholds for Determining Significance of Transportation Impacts Through CEQA in Conformance with SB 743[3]. The memo documents existing roadway, transit, pedestrian, and bicycle conditions, including intersection levels of service (LOS) at eight study intersections; estimates the project trip generation and distribution; analyzes the potential traffic impacts that would occur under the existing and Opening Year (2027) conditions with the project-added traffic; provides a vehicle miles traveled (VMT) screening analysis; and evaluates the proposed project site access.

Based on the intersection LOS analysis, all of the study intersections are currently and forecast to operate at satisfactory levels of service under Existing and Opening Year conditions, with and without the project-added traffic. There would be no project-related LOS impacts on the study intersections. The roadway segment LOS analysis also concluded that there would be no project-related impacts on the study roadway segments. All of the study area roadway segments are currently and forecast to operate at acceptable conditions under Existing and Opening Year conditions, with and without the project-added traffic.

Per the City's VMT screening criteria, the project would screen-out of a project-specific VMT analysis because it is within a Transit Priority Area (TPA) and also qualifies as a "Community Institution" (i.e., local government facility). Therefore, a comprehensive VMT analysis is not required and impacts to VMT can be presumed to be less than significant.

The design of the proposed project, including all egress/ingress and driveways would be designed according to all relevant City guidelines and would be reviewed by the City's Engineering Department. All driveways would be required to have adequate queue storage areas, would be perpendicular to existing roads, and would not cause hazards due to a geometric design feature.

Sidewalks are located on all streets within the project vicinity and the closest bicycle facility is a Class III bike route on G Street approximately 0.35 miles north of the site. The nearest transit route is provided along Holt Avenue, with bus stops provided near the intersection of Holt Boulevard and Plum Avenue, approximately one and half blocks southwest of the site as well as the West Valley Connector.. The Project would not interfere with existing public transit, bicycle, or pedestrian facilities, or impede the construction of new or the expansion of such facilities in the future. There would be no impacts to transit, pedestrian or bicycles access or facilities.

Therefore, based on the findings above, the transportation report concludes that project-related impacts on transportation would be less than significant.

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[2] City of Ontario. 2013. City of Ontario Traffic and Transportation Guidelines. August.

[3] City of Ontario. 2020. Resolution No. 2020-071 adopting Vehicle Miles Traveled Thresholds for Determining Significance of Transportation Impacts Through CEQA in Conformance with SB 743. June.

Noise

A noise technical memorandum (report) has been prepared by Dudek (Attachment A). The report assesses potential noise impacts that could occur under the project. The report included the following components: documentation of existing noise conditions, discussion of noise modeling methodology and procedure, analysis of short-term noise generated by project construction, analysis of long-term noise generated by project operation, analysis of construction vibrations, and analysis of aviation noise exposure.

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type, the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 1), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical features were assumed in the modeling. The RCNM has default duty-cycle values (i.e., acoustical usage factor [AUF]) for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Attachment B, Construction Noise Prediction Model Worksheets, and produce the predicted results displayed in Table 1 for the studied scenario.

Table 1. Predicted Construction Noise Levels per Activity Phase

Construction Phase	8-Hour L_{eq} (dBA) at Nearest Residential Receptor (homes East of Sultana Ave.)	8-Hour L_{eq} (dBA) at University of La Verne Library Exterior	8-Hour L_{eq} (dBA) at Existing City of Ontario Fire Station
Demolition	79.4	80.4	77.8
Site Preparation	76.7	77.7	75.1
Grading	78.6	79.5	77.1
Building Construction	73.9	67.5	72.5
Paving	78.0	79.0	76.3
Architectural Coating	66.6	59.8	65.1

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 1, estimated construction noise levels are not predicted to exceed 80 dBA L_{eq} over an 8-hour period for any of the listed activity phases at the façades of the nearest existing residential noise-sensitive receptors; hence, construction of the proposed Project would meet the FTA's 80 dBA 8-hour L_{eq} construction noise threshold. Additionally, construction noise levels would be compliant with similar FTA guidance, at 85 dBA 8-hour L_{eq}, for the exteriors of the nearest offsite non-residential (University of La Verne) and mixed-use municipal fire station land uses. Thus, potential noise impacts attributed to proposed Project construction activities would be considered less than significant.

An operational daytime scenario of the proposed Project was modeled that assumes all the HVAC equipment is operating simultaneously for a minimum period of one hour and the parking garage is active at the peak AM hour. Figure 2 of Attachment A displays the predicted noise contours associated with aggregate sound propagation from operating HVAC sound sources and the parking garage. An operational nighttime scenario was not modeled because it is assumed that the parking garage would not be active during nighttime hours in addition to reduced HVAC operations for the new Annex building, thus resulting in an expected nighttime operational level that would be compliant with City exterior noise requirements at the nearest noise-sensitive receptors.

The main concern associated with ground-borne vibration is annoyance; however, in extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Some common sources of ground-borne vibration are trains and construction activities such as blasting, pile-driving, and heavy earth-moving equipment. The primary source of ground-borne vibration occurring as part of the Project is construction activity.

According to Caltrans, D-8 and D-9 Caterpillars, earthmovers, and trucks have not exceeded 0.10 inches/second PPV at 10 feet (Caltrans 2020). Since the closest off-site residence is located approximately 70 feet away from likely heavy construction equipment, vibration from construction activities at the closest sensitive receiver would not exceed the significance threshold of 0.20 ips PPV. The existing University of La Verne Office of Law building is closer but is still at least 65 feet from the proposed Project boundary. At such distances, predicted ground-borne vibration from the same types of earthmovers would be less than 0.012 ips PPV and thus below this annoyance-based threshold. With the building damage risk threshold of 0.5 ips PPV for new homes and modern commercial buildings that is higher than the annoyance limit, potential façade or other damage to existing nearby structures during construction of the proposed Project is not expected. Vibration-sensitive instruments and operations (such as laboratories, magnetic resonance imaging [MRI] facilities, microelectronics manufacturing) would likely require lower vibration thresholds and special consideration during construction, but no such facilities or land uses are currently apparent in the vicinity surrounding the proposed Project or at distances where such vibration effects on interior building processes might be adverse. Therefore, on these bases, proposed Project construction would not result in a significant impact associated with ground-borne vibration.

Additionally, the project site is not located within 2 miles of any airport. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels associated with aircraft.

For these reasons, the report concludes that noise impacts related to project construction and operation would be less than significant.

Air Quality

An air quality technical memorandum has been prepared by Dudek (Attachment B). The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.13 was used to estimate emissions from construction of the Project. CalEEMod input parameters, including the land use type used to represent the Project and its size, construction schedule, and anticipated use of construction equipment, were based on information provided by the applicant or default model assumptions when Project specifics were unavailable. CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. In addition, a health risk assessment (HRA) was performed to evaluate potential health risk associated with construction and operation of the Project.

Several Project Design Features (PDFs) were accounted for in the Project modeling and analysis:

PDF-AQ-1 Prior to the commencement of construction activities for the Project, the grading and construction plan notes shall specify that all diesel-powered equipment is powered with California Air Resources Board (CARB)-certified Tier 4 Interim engines or better.

An exemption from this requirement may be granted if (1) the applicant documents equipment with Tier 4 Interim engines or better are not reasonably available, and (2) the required corresponding reductions in diesel particulate matter (DPM) emissions can be achieved for the Project from other combinations of construction equipment. Before an exemption may be granted, the applicant's construction contractor shall: (1) demonstrate that at least two construction fleet owners/operators in San Bernardino County were contacted and that those owners/operators confirmed Tier 4 Interim equipment or better could not be located within San Bernardino County during the desired construction schedule; and (2) the proposed replacement equipment has been evaluated using California Emissions Estimator Model (CalEEMod) or other industry standard emission estimation method and documentation provided to the City of Ontario to confirm that Project-generated construction emissions do not exceed the applicable South Coast Air Quality Management District (SCAQMD) cancer and non-cancer risk thresholds.

PDF-AQ-2 Prior to the commencement of construction activities at the Ontario City Hall Annex, the City shall require its construction contractor to water any exposed soils and/or soil stockpiles at least three times daily and water all demolished area at least two times per day or utilize another SCAQMD-approved dust control non-toxic agent in accordance with the manufacturer's specifications, to minimize fugitive dust during construction.

Table 2 presents the estimated maximum daily construction emissions generated during construction of the Project, which includes implementation of PDF-AQ-1 and PDF-AQ-2.

Table 2. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Year	pounds per day					
Summer						
2024	1.01	10.9	23.6	0.03	1.73	0.50
Winter						
2024	0.96	20.6	29.3	0.08	7.97	4.09
2025	34.8	10.9	21.2	0.03	1.73	0.50
Maximum	**34.8**	**20.6**	**29.3**	**0.08**	**7.97**	**4.09**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.
See Attachment B for complete results.

As shown in Table 2, the Project construction would not exceed SCAQMD's daily thresholds. Therefore, construction impacts associated with criteria air pollutant emissions would be less than significant.

Table 3 presents the Project-related emissions during operation.

Table 3. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Emissions Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	▪ Pounds per Day					
Summer						
Area	3.84	0.12	14.3	<0.005	0.02	0.03
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	6.37	6.34	60.4	0.15	12.6	3.27
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**11.9**	**14.5**	**79.4**	**0.16**	**12.9**	**3.58**
Winter						
Area	1.50	–	–	–	–	–
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	5.91	6.82	50.2	0.14	12.6	3.27
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**9.13**	**14.9**	**54.9**	**0.15**	**12.9**	**3.56**
Maximum	**11.9**	**14.9**	**79.4**	**0.16**	**12.9**	**3.58**
▪ *SCAQMD Threshold*	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Attachment B for complete results. Columns may not add due to rounding.

As shown in Table 3, the Project would not exceed SCAQMD's significance thresholds during operations. Therefore, operational impacts associated with criteria air pollutant emissions would be less than significant.

The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 33 are presented in Table 4 and compared to the maximum daily on-site construction emissions.

Table 4. Localized Significance Thresholds Analysis for Project Construction - Unmitigated

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
2024	14.8	28.3	5.38	2.73
2025	9.30	14.7	0.10	0.09
Maximum	**14.8**	**28.3**	**5.38**	**2.73**
SCAQMD LST	*144*	*1,047.5*	*5.5*	*4.5*
LST Exceeded?	**No**	**No**	**No**	**No**

Source: SCAQMD 2009.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
Localized significance thresholds are shown for a 1.5-acre Project site corresponding to a distance to a sensitive receptor of 25 meters.
Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.

As shown in Table 4, the Project LST would not exceed the established significance thresholds, and thus would result in a less than significant impact to sensitive receptors during construction.

Results of the construction HRA are presented in Table 5. As there is no reference exposure level for acute health impacts from DPM, acute risk was not evaluated in the construction HRA.

Table 5. Summary of Maximum Cancer and Chronic Health Risks - Construction

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	8.28	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0077	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment
Emissions include quantification of PDF-AQ-1.

As shown in Table 5, Project construction activities would result in a Residential Maximum Individual Cancer Risk of 8.28 in 1 million, which is less than the significance threshold of 10 in 1 million. Project construction would result in a Residential Chronic Hazard Index of 0.0077, which is below the 1.0 significance threshold. Impacts would be less than significant.

Results of the operational HRA are presented in Table 6.

Table 6. Summary of Maximum Cancer and Chronic Health Risks - Operations

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	3.09	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0008	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment

As shown in Table 6, Project operational activities would result in a Residential Maximum Individual Cancer Risk of 3.09 in 1 million, which is less than the significance threshold of 10 in 1 million. Project operations would result in a Residential Chronic Hazard Index of 0.0008, which is below the 1.0 significance threshold. Impacts would be less than significant.

In summary, the Project would not result in any potentially significant contribution to local or regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Impacts would be less than significant.

Criteria air pollutant emissions generated during construction and operation of the Project would not exceed SCAQMD's significance thresholds or result in a cumulatively considerable net increase in emissions. Similarly, the emissions would also not exceed the LST significance thresholds for sensitive receptors during construction or operations or create a CO hotspot. Construction and operational health risk levels would also be below the applicable SCAQMD thresholds. Overall, the Project would result in less than significant air quality impacts.

Water Quality

The Project is not anticipated to have a substantial adverse effect on water quality. CEQA threshold questions pertaining to water quality (from Appendix G of the CEQA Guidelines) are addressed below.

Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

Potential short-term, construction-related stormwater pollution associated with the Project may include (1) the handling, storage, and disposal of construction materials containing pollutants; (2) the maintenance and operation of construction equipment; and (3) earthmoving activities that, when not controlled, may generate soil erosion via stormwater runoff or operation of mechanical equipment.

The Project site is located within a developed urbanized area and does not contain any streams, rivers, or waterbodies. Construction activities associated with the Project are subject to implementation of stormwater BMPs. Water quality impacts could occur during construction if activities resulted in spilled or leaked petroleum products and/or entrainment of sediment, debris, or other construction-related materials into stormwater runoff. To avoid adverse impacts on water quality, the applicant and their construction contractors would be required to conduct construction activities in accordance with the statewide Construction General Permit (Order No. 2009-0009-DWQ/CAS000002, as amended). This would include compliance with the Phase I Regional Municipal Separate Storm Sewer System (MS4) Permit (National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0109266), which requires regulation of surface water quality. Under the NPDES MS4 Permit, the development of an acre or more of land must file a notice of intent with the State Water Resources Control Board (SWRCB) to comply with the state NPDES Construction General Permit. Implementation of this permit would require the development of a site-specific stormwater pollution prevention plan (SWPPP) for construction activities. The SWPPP is required to identify BMPs that protect stormwater runoff and ensure avoidance of substantial degradation of water quality. Typical BMPs that could be incorporated into the SWPPP to protect water quality include the following:

- Diverting off-site runoff away from the construction site;
- Vegetating landscaped/vegetated swale areas as soon as feasible following grading activities;
- Placing perimeter straw wattles to prevent off-site transport of sediment;
- Using drop inlet protection (filters and sand bags or straw wattles), with sandbag check dams within paved areas;
- Regular watering of exposed soils to control dust during demolition and construction;
- Implementing specifications for demolition/construction waste handling and disposal;
- Using contained equipment wash-out and vehicle maintenance areas;
- Maintaining erosion and sedimentation control measures throughout the construction period;
- Stabilizing construction entrances to avoid trucks from imprinting soil and debris onto adjoining roadways; and,
- Training, including for subcontractors, on general site housekeeping.

The SWPPP would be subject to review and approval by the City. In addition, pursuant to the City's Municipal Code Chapter 6.6 Article 5[4], a Stormwater Quality Management Plan (SWQMP) must be submitted and approved by the City prior to the issuance of any grading or building permit. The SWQMP shall identify all BMPs that will be incorporated into the project to control stormwater and non-stormwater pollutants during and after construction. Implementation of BMPs to minimize erosion and sedimentation would ensure that Project construction would not substantially degrade surface or groundwater quality.

Operation

Project operations would not introduce any significant industrial discharges, and therefore, would not violate any water quality standards or waste discharge requirements related to non-stormwater discharges. The existing Project site is developed as paved parking lots. The site is primarily impervious, and the existing drainage is a sheet flow from the parking lot (impervious area). The primary stormwater pollutants that may occur at the project site are spilled or leaked petroleum products from parked vehicles on the site, household hazardous materials used for maintenance and cleaning at the proposed building, and sediments from landscaping planters.

During redevelopment of the Project site, modern stormwater runoff design requirements and operational practices would be required pursuant to City regulatory requirements. Compliance with such requirements may reduce the volume of stormwater runoff from the site and would likely improve the quality of such runoff. The SWQMP shall accompany all development permit applications. Prior to obtaining any City-issued grading and/or construction permits the developer/owner shall provide evidence of compliance with the General Construction Permit by providing a copy of the Waste Discharger's Identification Number (WDID) to the City's Engineering Department[4]. Therefore, the Project would capture and convey stormwater consistent with applicable regulations and would not substantially degrade surface or groundwater quality.

Upon Project implementation, the site would be covered with a new three-story civic office, a new six-story parking structure, and landscaped areas. Some surface flow is expected to drain towards the paved driveways, which would then also drain into the City's stormwater system. Stormwater collected on the rooftop of the proposed commercial buildings would be directed to landscaped areas for disbursement and would comply with the City's stormwater regulations. The project site would also implement source control and site design BMPs as listed in the SWQMP or the "California Stormwater Best Management Practice Handbook."

Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site or 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?

A significant impact may occur if the Project were to substantially alter drainage patterns, resulting in adverse effects. The existing development of paved surface will be removed and replaced with a new building and parking structure. The proposed parking structure requires surface reprofiling and a modification of drainage system. The

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[4] City of Ontario. 2022. City of Ontario, California Municipal Code. December 20, 2022. Accessed August 2023. https://codelibrary.amlegal.com/codes/ontarioca/latest/ontario_ca/0-0-0-35678

storm drain catch basins, currently receiving flows from the subject site, are being reconstructed at this location. With the realignment of the drainage in this area, drainage from this location is extended into the structure.

The Project site does not contain any streams, rivers, or waterbodies. Upon compliance with the regulatory requirements described above, the proposed Project is not anticipated to result in substantial erosion of siltation, to increase the rate or amount of surface runoff from the site or create runoff that would exceed the capacity of the stormwater drainage system. Due to the developed nature of the Project site and required compliance with existing regulations, any alterations to the existing drainage pattern on the Project site would not result in significant, adverse impacts.

Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

In 2014, California enacted the Sustainable Groundwater Management Act (SGMA) to bring the state's groundwater basins into a more sustainable regime of pumping and recharge. The legislation provides for the sustainable management of groundwater through the formation of local groundwater sustainability agencies and the development and implementation of Groundwater Sustainability Plans (GSPs). The project site is within the Upper Santa Ana Valley – Chino Basin which is designated as very low priority and not required to develop GSPs[5].

As noted above, the Project is not expected to violate any water quality standards, and measures would be taken both during construction and throughout operation to prevent potential contaminants from leaving the site by runoff. Although unlikely, during construction, dewatering may occur if groundwater is encountered within the proposed excavations. However, dewatering would be temporary, limited to the construction period, and would not occur in quantities that could substantially deplete groundwater supplies. Through compliance with Regional Water Quality Control Board requirements and implementation of a SWPPP (construction phase), the Project would not conflict with or obstruct implementation of the Sustainable Groundwater Management Act. Thus, the proposed Project would not result in substantial conflict nor obstruction of the implementation of a water quality control plan or sustainable groundwater management plan. Additionally, the Project site is primarily impervious under existing conditions and is not considered a significant groundwater recharge area. Therefore, no significant, adverse impacts would be caused due to conflict with a water quality control plan or sustainable groundwater management plan.

Summary

In conclusion, development of the proposed Project has been evaluated for its potential to result in significant effects relating to traffic, noise, air quality, and water quality. No significant effects were identified, as described above and further substantiated in Attachments A, B, and C to this memorandum. As such, the Project meets the Class 32 categorical exemption criteria for not having significant impacts to traffic, air quality, noise, or water quality.

Utilities and Public Services: The Project site can be adequately served by all required utilities and public services.

The project is located in an existing highly urban area served by existing public utilities and services. A considerable increase in demand for services or utilities would not be anticipated with the implementation of

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[5] Department of Water Resources (DWR). 2023. SGMA Basin Prioritization Dashboard. Accessed August 2023. https://gis.water.ca.gov/app/bp-dashboard/final/

the proposed project since it is located on an existing urban infill location previously developed with parking lots and surrounded by urban development.

Public utilities are available to serve the project, provided by the Ontario Municipal Utilities Company. The City Hall Annex project would require plumbing, heating, ventilation, air conditioning, fire protection, and electrical utilities. The proposed City Hall Annex building would provide trash location for the new and existing City Hall Annex. The proposed parking structure would require domestic water and fire water. The domestic water and fire connection points are proposed along the southern portion of the site, minimizing trenching required to service the parking structure. The sewer service is designed for a short run connecting to the line to the existing sewer main in Cherry Avenue.

The Project site will be adequately served by all public utilities and services given that the construction of a Public Facility building and parking structure will be on a site which has been previously developed and is consistent with the General Plan. Therefore, there project meets this requirement.

CEQA Section 15300.2: Exceptions to the Use of Categorical Exemptions

There are five exceptions that must be considered in order to find a project exempt under Class 32:

A. **Cumulative Impacts.** All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.

   There is no evidence to conclude that significant impacts will occur based on past project approvals or that the proposed project's impacts are cumulatively considerable when evaluating any cumulative impacts associated with construction air quality, noise, transportation or water quality in the area surrounding the proposed project.

   The project, and all future projects, will be required to comply with all applicable local, regional, and state laws, regulations, and guidelines, and as described above, any potential impact cause by the project’s construction and operation would continue to be less than significant and would not contribute significantly to regional cumulative impact in the broader project region. Therefore, this exception does not apply.

B. **Significant Effect Due to Unusual Circumstances.** A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.

   The project proposes a new three-story City Hall Annex building and a new six-story parking in an area zoned and designated for such development. The surrounding area is developed with a mixture of surrounding land uses include a mix of public facility, mixed use, and residential uses; as such, the proposed project is not unusual in character for the area. The project site is approximately 4 acres and almost entirely covered by impervious surface. As described above, the proposed Project has been studied for its potential to cause environmental impacts in a variety of categories, including air quality, noise, traffic, and water quality. No significant effects were identified in those categories.

   As indicated above, the project would not result in impacts to biological resources as none exist on the project site or surrounding area. Also, the project site not located in or near a state responsibility area or lands classified as very high fire hazard severity zones by CALFIRE[6]. The project is located with a X Flood Zone as designated by the Federal Emergency Management Agency[7]. This designation indicates that the project area is subject to inundation by a 0.2-percent-annual-chance flood event; and the area is subject to 1-percent-annual-chance of flood with average depth less than one foot or with drainage areas of less than one square mile. This zone designation, and its implications, does not represent an unusual circumstance.

There is no substantial evidence that this project will cause a significant impact. Thus, there are no unusual circumstances which may lead to a significant effect on the environment, and this exception does not apply.

C. **Scenic Highways.** A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway.

There are no designated State Scenic Highways in the City of Ontario. No highways are eligible for State Scenic Highway designation within the City. Therefore, the Project would not create any impacts within a designated state scenic highway, and this exception does not apply.[8]

D. **Hazardous Waste Sites.** A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.

According to EnviroStor, the State of California's database of Hazardous Waste Sites, the project site is not identified as a hazardous waste site; the nearest Cleanup Site is a closed, non-operating, corrective action site, General Electric Company, located approximately 0.30 miles south of the project site.[9] The City of Ontario Fire Department, located adjacent to the project site to the south, has a closed Cleanup Program Site. Additionally, one closed State Water Board Leaking Underground Storage Tank (LUST) Cleanup Site, Ontario Police Department, is located adjacent to the project site to the south.[10] However, prior soil and groundwater contamination from these sites has been appropriately treated and did not induce significant impact to the subsurface environment of the project site.

There are no active LUST cleanup sites or other sites identified with potential environmental concern within the immediate vicinity of the project site. Therefore, the project site is not identified as a hazardous waste site and is not in the vicinity of a hazardous waste site, and this exception does not apply.

E. **Historical Resources.** A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.

The project property is currently occupied by a city parking lot which will be demolished to support the proposed City Hall Annex building and six-level parking structure. The site is an existing urban infill location on previously

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[6] CALFIRE (California Department of Forestry and Fire Protection). 2022. San Diego County – State Responsibility Area Fire Hazard Severity Zones. November 21, 2022. https://osfm.fire.ca.gov/media/vcym3avh/fhsz_county_sra_11x17_2022_sanbernardino_ada.pdf

[7] FEMA (Federal Emergency Management Agency). 2021. FEMA's National Flood Hazard Layer (NFHL) Viewer. December 2021. https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

[8] Caltrans. 2018. California State Scenic Highway System Map. Accessed June 5, 2023.

[9] California Department of Toxic Substances Control. 2023. EnviroStor. Web Mapping Application. Accessed June 6, 2023. https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=425+E+B+St+Ontario%2C+CA+91764

[10] State Water Resources Control Board. 2023. GeoTracker. Accessed June 6, 2023. https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=320+E+D+St

disturbed land. The project site is a parking lot which serves city employees and is not likely to acquire historic significance. Additionally, the City of Ontario does not designate any historic landmarks on the project site[11]. As such, development of the Project would not cause a substantial adverse change in the significance of a historical resource, and this exception does not apply.

Conclusion

For the reasons described above, the Project meets all of the criteria for a Class 32 Categorical Exemption

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[11] City of Ontario. 2012. City of Ontario Historic Landmarks. July 2012. https://www.ontarioca.gov/sites/default/files/Ontario-Files/Planning/Historic_Preservation/designated_landmarks.pdf

MEMORANDUM

To:	City of Ontario
From:	Cole Martin, INCE & Jim Cowan, INCE Bd. Cert., Dudek
Subject:	Ontario City Hall Annex Noise Technical Memorandum
Date:	May 31, 2023
cc:	Mark Storm, INCE Bd. Cert., Dudek
Attachment(s):	Attachment A – Field Noise Measurement Data Attachment B – Construction Noise Prediction Model Worksheets Attachment C – Traffic Noise Model Input/Output Attachment D - Stationary Source Operation Noise Modeling Reference Material

1 Introduction and Purpose

The purpose of this memorandum is to present predicted noise levels from construction and operation of the Ontario City Hall Annex Project (Project) located in the City of Ontario, California (City), and evaluate potential noise impacts resulting from Project implementation under the California Environmental Quality Act (CEQA).

This memorandum is intended to support a Class 32 CEQA exemption for the Project. The Class 32 CEQA exemption consists of Projects characterized as in-fill development meeting the following conditions (***emphasis*** added):

a) The Project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.

b) The proposed development occurs within city limits on a Project site of no more than five acres substantially surrounded by urban uses.

c) The Project site has no value as habitat for endangered, rare or threatened species.

d) Approval of the Project would not result in any significant effects relating to traffic, ***noise***, air quality, or water quality.

e) The site can be adequately served by all required utilities and public services.

The Class 32 exemption may be used where above-noted conditions (a) through (e) are fulfilled, where it can be seen with certainty that the proposed Project could not have a significant effect on the environment.

The contents and organization of this memorandum are as follows: (1) project description; (2) background; (3) environmental setting; (4) regulatory setting; (5) assessment methodology and results; and (6) references cited.

2 Project Description

The Project site is located west of N. Sultana Avenue near its intersections with E. Nocta Street and Lynn Haven Street. The Project would consist of a new three-story civic office building of approximately 60,000 sf, with the potential for a fourth level future expansion. The Project would also include site improvements of roughly 28,500 square feet including hardscape and landscape areas, as well as a six-story parking structure totaling approximately 268,730 square feet.

3 Environmental Setting

Due to the technical nature of noise and vibration impact assessment, a brief overview of basic noise and vibration principles and descriptors is provided below, as well as a summary of the existing noise environment.

3.1 Noise and Vibration Basics

3.1.1 Sound

Noise is defined as unwanted sound. Sound may be described in terms of level or amplitude (measured in decibels [dB]), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the amplitude of sound is the decibel. Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The dBA scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear at moderate sound levels. Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise, on a community. These descriptors include the equivalent noise level over a given period (L_{eq}), the statistical sound level, the day–night average noise level (L_{dn}), and the Community Noise Equivalent Level (CNEL). Each of these descriptors uses units of dBA. Table 1 provides examples of A-weighted noise levels from common sounds. In general, human sound perception is such that a change in sound level of 3 dBA is barely noticeable, a change of 5 dBA is clearly noticeable, and a change of 10 dBA is perceived as doubling or halving the sound level.

Table 1. Typical Exterior and Interior Sound Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)

Table 1. Typical Exterior and Interior Sound Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013.

Note: dBA = A-weighted decibel.

The L_{eq} value is a sound level energy-averaged over a specified period (typically no less than 15 minutes for environmental studies). It is a single numerical value that, if constant over time, represents the same amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors.

Unlike the L_{eq} metric, L_{dn} and CNEL descriptors always represent 24-hour periods, often on an annualized basis. L_{dn} and CNEL also differ from L_{eq} because they apply a time-weighted dB adjustment designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). “Time weighted” refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m.–7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m.–10:00 p.m.) is penalized by adding 5 dB, while nighttime (10:00 p.m.–7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is defined as 7:00 a.m.–10:00 p.m., thus eliminating the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 dB to 1 dB and, as such, are often treated as equivalent to one another.

3.1.2 Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earthmoving equipment.

Several different methods are used to quantify vibration. Peak particle velocity (PPV), expressed in inches per second (ips), is defined as the maximum instantaneous peak of the vibration signal and is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body and is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to describe this RMS magnitude with respect to a reference value, which acts to compress the range of numbers required to discuss vibration in the context of impact assessment.

The calculation to determine PPV at a given distance is as follows:

$$PPV_{rcvr} = PPV_{ref}*(25/D)^{n}$$

Where:

PPV_{rcvr} = the peak particle velocity in inches per second of the equipment adjusted for distance (i.e., at the receiver)

PPV_{ref} = the reference peak particle velocity in inches per second at 25 feet

D = the distance from the equipment to the receiver

n = an exponent, for which a value of 1.1 would be consistent with Caltrans suggestion for class III “hard soils” composed of dense compacted sand or dry consolidated clay.

The above PPV_{rcvr} value can be converted to an RMS vibration velocity level as follows, where the crest factor (CF) is assumed to be a value of 4 per FTA guidance (FTA 2018):

$$VdB_{rcvr} = 20*LOG(PPV_{rcvr}/(CF*0.000001))$$

3.1.3 Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Sensitive receptors in the vicinity of the Project site consist of residential uses located to the east, south, and north of the Project site, a fire station to the south of the Project site, the University of La Verne College of Law to the west of the Project site, and Conversation Park to the southwest of the Project site. These sensitive receptors represent the nearest sensitive land uses with the potential to be impacted by construction and/or operation of the Project.

3.2 Existing Noise Conditions

Sound pressure level measurements were conducted at six (6) representative positions in the vicinity of the Project site on May 22, 2023, to characterize and quantify samples of the existing outdoor ambient noise environment. The noise measurement locations are shown in Figure 1. Table 2 provides a summary of the noise measurement results as well as the locations, site description, noted noise sources, and times the noise level measurements were conducted. As shown in Table 2, short-term (10 to 15 minutes duration) noise levels ranged from approximately 53 dBA L_{eq} (at location ST5) to 65 dBA L_{eq} (at locations ST3 and ST6). The measurements were conducted by an attending Dudek investigator with a Rion NL-52 model sound level meter equipped with a windscreen-protected, 0.5-inch diameter pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute (ANSI) standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Table 2. Measured Outdoor Ambient Noise Levels

Survey Location	Description (Noted Noise Sources)	Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
ST1	Eastern side of the Ontario City Hal (distant aircraft, distant landscaping, distant industrial, distant traffic, rustling leaves)	14:17 – 14:31	60.1	84.9	47.2
ST2	Adjacent to the residence at 364 E. B St. (birds, distant aircraft, distant dog barking, distant industrial, distant traffic, rustling leaves)	14:33 – 14:48	57.7	76.7	46.7
ST3	Southeast corner of Sultana Ave. and Nocta St. (distant aircraft, distant conversations/yelling, distant traffic, rustling leaves)	15:05 – 15:18	65.1	80.1	47.4
ST4	Adjacent to the residence at 500 Lynn Haven St. (birds, distant aircraft, distant dog barking, distant landscaping, distant industrial, distant traffic, rustling leaves)	14:53 – 15:03	59.4	65.3	59.4
ST5	Southwest corner of the University of La Verne College of Law (birds, distant conversation/yelling, distant industrial, rusting leaves)	14:00 – 14:15	48.153.1	67.6	46.9
ST6	Adjacent to the residence at 405 E. D St. (distant conversations/yelling, distant dog barking, distant traffic, rustling leaves)	15:24 – 15:39	65.2	82.9	47.0

Note: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels; L_{max} = maximum sound level during the measurement interval; L_{min} = minimum sound level during the measurement interval

SOURCE: Google 2023; Dudek 2023

DUDEK

0 133.5 267 Feet

FIGURE 1

Project Site and Noise Measurement Locations

Ontario City Annex Project

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Attachment A provides sample digital photographs of the field noise level survey locations, measurement data, and Dudek field investigator notes.

4 Regulatory Setting

The following subsections summarize relevant laws, ordinances, regulations, policies, standards, and guidance that establish noise and vibration impact significance assessment criteria for the proposed Project.

4.1 Federal

There are no federal noise standards that would directly regulate environmental noise during construction and operation of the Project. The following is provided because guidance summarized herein is used or pertains to the analysis.

4.1.1 Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2018) when "detailed" construction noise assessments are performed to evaluate potential impacts to community residences surrounding a Project. For a commercial use, the limit would be an 85 dBA 8-hour L_{eq} value. Although these FTA guidance thresholds are not regulations in the context of this Project, they can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

4.1.2 Federal Interagency Committee on Noise

Some guidance regarding the determination of a substantial permanent increase in ambient noise levels in the Project vicinity above existing levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON 1992), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON recommendations are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a qualitative measure of the adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment.

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn}. The changes in noise exposure that are shown below are expected to result in equal changes in annoyance at sensitive land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are used in this analysis to define a substantial increase in community noise levels related to all transportation noise sources and permanent non-transportation noise sources.

- Outdoor ambient sound level without the Project is less than 60 dBA L_{dn}, then a Project-attributed increase of 5 dBA or more would be considered significant;
- Outdoor ambient sound level without the Project is between 60 and 65 dBA L_{dn}, Project-attributed increase of 3 dBA or more would be considered significant; and

- Outdoor ambient sound level without the Project is greater than 65 dBA L_{dn}, then Project-attributed increase of 2 dBA or more would be considered significant.

4.2 State of California

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of “normally acceptable”, “conditionally acceptable”, “normally unacceptable”, and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 dBA CNEL and “conditionally acceptable” up to 70 dBA CNEL. Multiple-family residential uses are “normally acceptable” up to 65 dBA CNEL and “conditionally acceptable” up to 70 dBA CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 dBA CNEL, as are office buildings and business, commercial, and professional uses.

4.3 Local

With the proposed Project sited within the City of Ontario, its relevant municipal code requirements and general plan policies and goals represent the primary source of impact assessment standards.

4.3.1 City of Ontario Municipal Code

4.3.1.1 Noise

Operational noise impacts for projects are governed by the City of Ontario Municipal Code, Section 5-29.04 (Noise, Exterior Noise Standards). Table 3 contains the City’s exterior property line noise limits.

Table 3. City of Ontario Exterior Noise Standards

Allowable Exterior Noise Level		Allowed Equivalent Noise Level, L_{eq}.	
Noise Zone	Type of Land Use	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Single-Family Residential	65 dBA	45 dBA
II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
III	Commercial Property	65 dBA	60 dBA
IV	Residential Portion of Mixed Use	70 dBA	70 dBA
V	Manufacturing and Industrial, Other Uses	70 dBA	70 dBA

The City’s standard goes on to state that the ambient noise level shall be the standard if the measured level exceeds those shown in Table 3.

Section 5-29.04(b) of the City's Municipal Code states that it is unlawful for any person at any location within the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

1. The noise standard for the applicable zone for any 15-minute period; and
2. A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus 20 dBA for any period of time (measured using A-weighted slow response).

Section 5-29.04(c) of the City's Municipal Code states that in the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

Section 5-29.06(d), Exemptions, states that construction noise sources are exempt. The City regulates noise from construction activities by regulating the hours during which construction is conducted. Section 5.29.09, Construction activity noise regulations, limits construction noise on weekdays to between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.

4.3.1.2 Vibration

The City's General Plan notes that the City has not established thresholds for vibration perception and damage.

5 Assessment Methodology and Results

Predicted proposed Project compliance assessment and evaluation of its potential noise and vibration adverse effects to the surrounding community are studied in the following subsections, per criteria summarized in the preceding Section 4. Where applicable, these assessments are also consistent with addressing potential proposed Project noise and vibration impacts per the following CEQA Appendix G impact significance questions for noise:

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standard of other agencies?

b) Would the Project result in generation of excessive ground-borne vibration or ground-borne noise levels?

c) For a Project located within the vicinity of a private airstrip or 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?

5.1 Short-Term Construction Noise

5.1.1 Methodology

Airborne construction noise and ground-borne construction vibration are temporary phenomena, with emission levels varying from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, man-lifts, excavators, backhoes, graders, loaders, cranes, flat-bed trucks, welders, pavers, rollers, and air compressors. The typical maximum noise levels at a distance of 50 feet from these various pieces of construction equipment and activities anticipated for use on the proposed Project site are presented in Table 4. Note that the equipment noise levels presented in Table 4 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 4. Typical Construction Equipment Maximum Noise Levels

Equipment Type(s)	Maximum Noise Level (L_{max}, dBA at 50 Feet)
Grader	85
Crane; Concrete Pump Truck; Excavator	81
Roller	80
Front End Loader	79
Backhoe; Compressor (air)	78
Paver	77
Man Lift	75
Flat Bed Truck	74
Welder / Torch	73

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed Project construction activities, broken down by sequential phase, was predicted for three nearest types of sample receptors as follows:

- The single-family residences east of Sultana Avenue, (approximately 70 feet from the eastern side of the Annex Project site);
- A bench on the northeast corner of the University of La Verne College of Law building (approximately 65 feet from the western side of the future 6-level parking garage); and
- The northern façade of the fire station on the corner of Sultana Avenue and B Street (approximately 80 feet from the southern side of the Annex Project site).

For purposes of this study, and in a manner resembling the "general assessment" methodology per FTA guidance, this analysis assumes that only the loudest piece of equipment per phase would be involved in the construction activity for up to an 8-hour evaluation period at the indicated nearest possible distance shown in Table 5. This analysis further assumes that the remainder of onsite active equipment for a given construction phase would be, on average over the course of a typical work day (i.e., since their minute-to-minute positions would be uncertain), at various distances further from a given noise-sensitive receptor than those appearing in Table 5. The nearest commercial receptor, a barber shop, would be approximately 550 feet from the proposed Project site's geographic centroid.

Table 5. Estimated Distances between Construction Activities and the Noise-sensitive Receptor Positions

Construction Phase	Equipment Type(s) Involved	Distance to Fixed Receptor Position from Construction Phase(Feet)		
		Single-family homes east of Sultana Ave.	University of La Verne College of Law	Fire Station
Demolition	Concrete Saw, Excavator, Dozer	75	70	85
Site Preparation	Dozer, Tractor	75	70	85
Grading	Excavator, Grader, Dozer, Tractor	75	70	85
Building Construction	Crane, Man Lift, Generator, Tractor, Welder/Torch	85	150	95
Paving	Paver, Misc. Equipment > 5 HP, Roller	75	70	85
Architectural Coating	Air Compressor	75	150	85

5.1.2 Prediction Results

5.1.2.1 Offsite Receptors

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type, the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 4), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical features were assumed in the modeling. The RCNM has default duty-cycle values (i.e., acoustical usage factor [AUF]) for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Attachment B, Construction Noise Prediction Model Worksheets, and produce the predicted results displayed in Table 6 for the studied scenario.

Table 6. Predicted Construction Noise Levels per Activity Phase

Construction Phase	8-Hour L_{eq} (dBA) at Nearest Residential Receptor (homes East of Sultana Ave.)	8-Hour L_{eq} (dBA) at University of La Verne Library Exterior	8-Hour L_{eq} (dBA) at Existing City of Ontario Fire Station
Demolition	79.4	80.4	77.8
Site Preparation	76.7	77.7	75.1
Grading	78.6	79.5	77.1
Building Construction	73.9	67.5	72.5
Paving	78.0	79.0	76.3
Architectural Coating	66.6	59.8	65.1

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 6, estimated construction noise levels are not predicted to exceed 80 dBA L_{eq} over an 8-hour period for any of the listed activity phases at the façades of the nearest existing residential noise-sensitive receptors; hence, construction of the proposed Project would meet the FTA's 80 dBA 8-hour L_{eq} construction noise threshold. Additionally, construction noise levels would be compliant with similar FTA guidance, at 85 dBA 8-hour L_{eq}, for the exteriors of the nearest offsite non-residential (University of La Verne) and mixed-use municipal fire station land uses. Thus, potential noise impacts attributed to proposed Project construction activities would be considered less than significant.

5.2 Long-Term Operational Noise

5.2.1 Off-Site Traffic Noise Exposure

The proposed Project is expected to generate an additional 1,527 average daily trips to the roadway system. Utilizing this information as well as additional traffic data provided in Attachment C, the FHWA's Highway Traffic Noise Model version 2.5 (TNM 2.5) was used to predict potential noise impacts at noise-sensitive uses adjacent to roadway segments expected to experience added traffic volumes attributed to the proposed Project. Information used in the model included Average Daily Traffic (ADT; City of Ontario 2019), posted traffic speeds, truck mix percentage, and trip distribution.

The modeled traffic speed was assumed to be the anticipated speed limit for the studied roads, which is 25 miles per hour (mph) for B Street and 35 mph for D Street and Sultana Avenue. The truck percentages used in the noise model for the near-term (2026) plus Project scenario were 2.0% medium trucks and 1.0% heavy trucks. This truck mix is based on vehicle surveys conducted for a number of similar roads in California that allow truck traffic. The k-factor used to convert the ADT volumes to peak hour volumes was 10%. Trip distribution was assumed to be 25% of the total new trips for B Street, 25% for D Street, and 50% for Sultana Avenue south of B Street. All other modeled roadways were conservatively assumed to be at 100% of Project trip distribution in order to predict a worst-case noise level at nearby noise-sensitive receptors.

The change in roadway noise levels was predicted for two conditions: existing (2019) and existing (2019) plus Project.

Table 7. TNM Predicted Noise Levels

Modeled Receiver	Description	Existing (2019) Noise Level (dBA)	Existing (2019) Plus Project Noise Level (dBA)	Project-Related Noise Level Increase (dBA)
R01	Northeast corner of the University of La Verne College of Law	54.1	54.6	0.5
R02	Eastern entrance of the University of La Verne College of Law	48.9	49.7	0.8
R03	Southeast corner of the University of La Verne College of Law	39.0	40.0	1.0
R04	Conservation Park	53.0	53.6	0.6
R05	360 E. B St.	56.7	57.4	0.7
R06	408 E. B St.	57.7	58.4	0.7
R07	464 E. B St.	66.5	67.8	1.3
R08	503 E. Sierra Ct.	68.9	70.5	1.6
R09	500 Lynn Haven St.	63.3	65.2	1.9
R10	504 E. D St.	66.4	68.0	1.6
R11	427 E. D St.	70.4	71.2	0.8

Source: Appendix C.

As shown in Table 7, and based upon the FICON thresholds presented in Section 4.1.2, an increase of less than 5 dBA when the ambient sound level is less than 60 dBA L_{dn}/CNEL, less than 3 dBA when the ambient sound level is between 60 and 65 dBA L_{dn}/CNEL, or less than 2 dBA when the ambient sound level is greater than 65 dBA L_{dn}/CNEL would not be substantial. Therefore, potential impacts at existing off-site noise-sensitive land uses along roadway segments identified in Table 7 and with respect to Project-generated changes to existing (2019) traffic noise would be less than significant.

5.2.2 Stationary Noise Source Emission

5.2.2.1 Methodology

The completion of the buildings on the proposed Project site will add a variety of noise-producing mechanical equipment that include those presented and discussed in the following paragraphs. Most of these noise-producing equipment or sound sources would be considered stationary or limited in mobility to a defined area.

Prediction Method and Parameters

The aggregate noise emission from these outdoor-exposed sound sources has been predicted with the Datakustik CadnaA sound propagation program. CadnaA is a commercially available software program for the calculation, presentation, assessment, and prediction of environmental noise based on algorithms and reference data per

International Organization of Standardization (ISO) Standard 9613-2, "Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation" (ISO 1996). The CadnaA computer software allows one to position sources of sound emission in a simulated three-dimensional (3-D) space having heights and footprints consistent with Project architectural plans and elevations. In addition to the above-mentioned sound source inputs and building-block structures that define the three-dimensional sound propagation model space, the following assumptions and parameters are included in this CadnaA-supported stationary noise source assessment:

- Ground effect acoustical absorption coefficient equal to 0.5, which intends to represent an average or blending of ground covers that are characterized largely by hard reflective pavements and existing building surfaces across the Project site and the surroundings;
- Reflection order of 1, which allows for a single reflection of sound paths on encountered structural surfaces such as the modeled building masses;
- Calm meteorological conditions (i.e., no wind) with 68 degrees Fahrenheit and 50% relative humidity; and
- All of the modeled noise sources are operating concurrently and continuously for a minimum period of 1 hour.

Project Sound Sources

Outdoor HVAC

Based on the available plans and other design information, it is assumed herein that the proposed Project buildings would be served by roof-mounted air-conditioning equipment that includes outdoor-exposed packaged air-handling units and air-cooled condensers (ACC) that provide the expected cooling demand (expressed as refrigeration "tonnage") for a building. The following are descriptions of modeled sound sources, with Table 8 exhibiting total modeled sound power level (PWL) data at octave-band center frequency (OBCF) resolution for each type of listed equipment source. Detailed information supporting these summary descriptions and quantities appear in Attachment D, Stationary Source Operation Noise Modeling Reference Material.

Table 8. Modeled Sound Power Levels (PWL) for Stationary Sources (HVAC)

Building	Sound Source	Overall L_{eq} (dBA)	A-Weighted dB at Octave Band Center Frequency (OBCF, Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
Annex	Air Handling Unit (AHU) return fans	82.8	64.0	64.0	76.0	77.0	78.0	75.0	68.0	62.0	57.0
	Air-cooled Condensers (ACC)	91.6	52	65	75	81	88	84	83	82	76

The HVAC reference sound levels were calculated for use in the CadnaA model from a combination of inputs that include square footage values for the proposed Project's proposed office spaces, Project applicant response to data requests, and sample manufacturer sound power level data.

Other Stationary Noise Sources

The proposed Project buildings may feature other noise emitters, but their contributions would tend to be sporadic or otherwise occur infrequently and thus be expected to have no greater acoustic contribution to an hourly L_{eq} than the continuous-type HVAC noise studied herein.

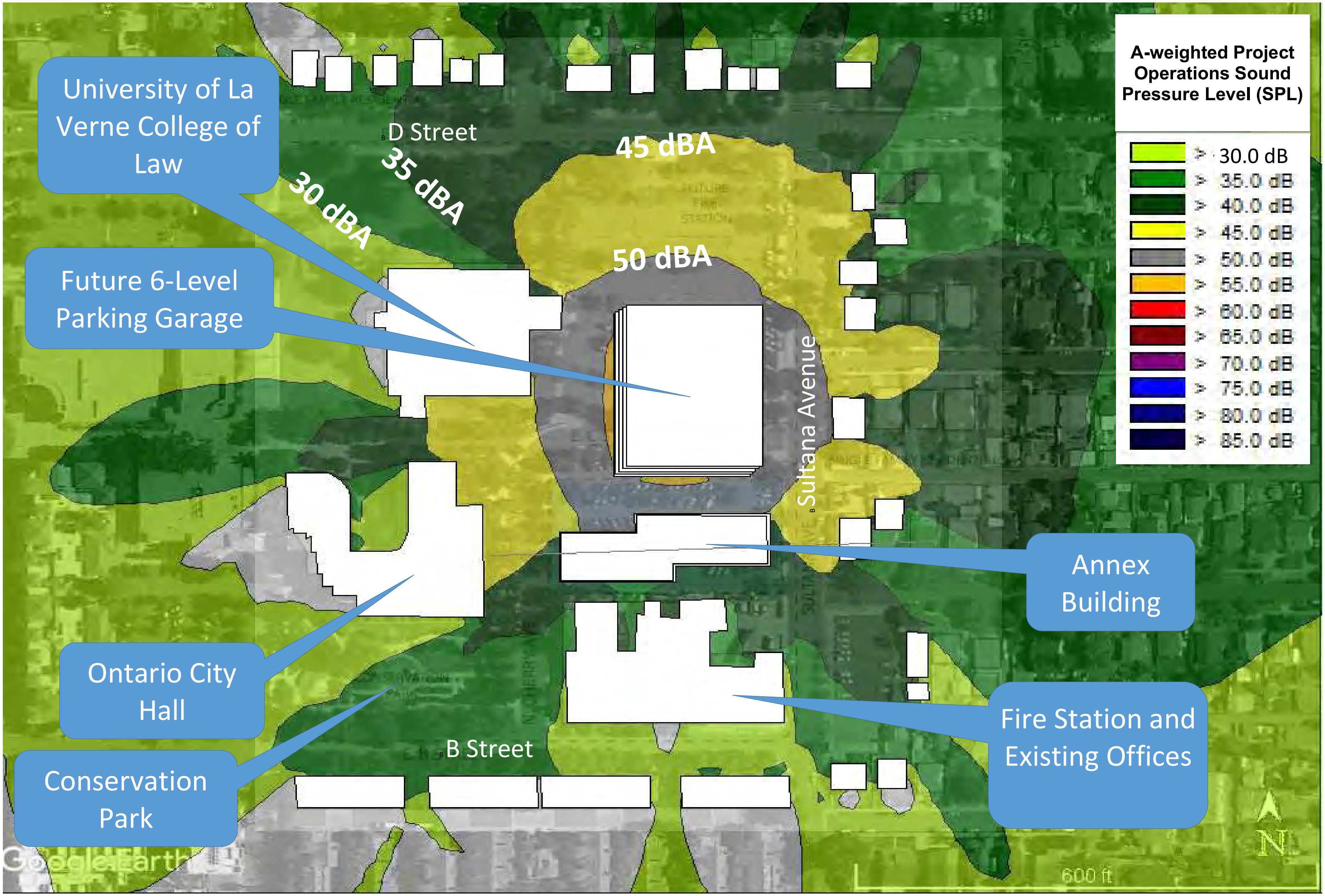
Additionally, transportation noise sources may on occasion become “stationary”, such as an idling delivery truck temporarily on the Project site. While an idling truck may exhibit a sound level magnitude of 70 dBA at 25 feet (Charles Salter 2014), its idling duration would be limited to no more than five minutes per hour (consistent with state regulations) and therefore demonstrate a corresponding hourly L_{eq} value that is eleven decibels less (i.e., a temporal adjustment that dilutes the acoustic energy over the hour per acoustic principles): 59 dBA at this distance.

Parking Garage Noise

The proposed Project features a six-level parking garage to the north of the Annex Project site. Parking lot noise reference sound levels were calculated from a combination of inputs that include the sound power level (PWL) for one movement, the surface of the roadway, passing traffic contributions, the area of the parking garage, and the number of peak-hour Project trips (Nicol and Johnson 2011). The resulting PWL was entered into the CadnaA model for each of the six levels.

5.2.2.2 Prediction Results

An operational daytime scenario of the proposed Project was modeled that assumes all the HVAC equipment is operating simultaneously for a minimum period of one hour and the parking garage is active at the peak AM hour. Figure 2 displays the predicted noise contours associated with aggregate sound propagation from operating HVAC sound sources and the parking garage. An operational nighttime scenario was not modeled because it is assumed that the parking garage would not be active during nighttime hours in addition to reduced HVAC operations for the new Annex building, thus resulting in an expected nighttime operational level that would be compliant with City exterior noise requirements at the nearest noise-sensitive receptors.



SOURCE: Google 2023, Dudek 2023

DUDEK

0 94.5 189 Feet

FIGURE 2

Studied Noise Receptor Locations and Predicted Noise Contours

Ontario City Annex Project

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Figure 2 illustrates predicted aggregate SPL propagation solely from operation of the proposed Project sound sources as described herein. The color-coded annular bands of SPL are calculated across a field parallel with and five (5) feet above local grade.

Based on the noise level contours appearing in Figure 2, predicted operation noise from the proposed Project is expected to be far less than and thus comply with the City's property line daytime noise threshold of 65 dBA hourly L_{eq} for Type I (residential) and Type III (commercial) land uses and 70 dBA L_{eq} for Type IV (residential portion of mixed-use) land uses.

5.3 Construction Vibration

5.3.1 Methodology

Section 3.1.2 provides the groundborne vibration propagation expression for estimating vibration velocity (in inches per second [ips] PPV) at a receiving offsite structure. Although ignored for purposes of conservatism in this analysis, FTA guidance information suggests that coupling losses between the vibrating soil mass and that of a receiving building foundation (e.g., the apparent 1-story wood-framed residence to the south) might provide further attenuation to this estimated PPV value by an amount of -3 VdB (FTA 2018).

5.3.2 Prediction Results

The main concern associated with ground-borne vibration is annoyance; however, in extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Some common sources of ground-borne vibration are trains and construction activities such as blasting, pile-driving, and heavy earth-moving equipment. The primary source of ground-borne vibration occurring as part of the Project is construction activity.

According to Caltrans, D-8 and D-9 Caterpillars, earthmovers, and trucks have not exceeded 0.10 inches/second PPV at 10 feet (Caltrans 2020). Since the closest off-site residence is located approximately 70 feet away from likely heavy construction equipment, vibration from construction activities at the closest sensitive receiver would not exceed the significance threshold of 0.20 ips PPV. The existing University of La Verne Office of Law building is closer but is still at least 65 feet from the proposed Project boundary. At such distances, predicted ground-borne vibration from the same types of earthmovers would be less than 0.012 ips PPV and thus below this annoyance-based threshold. With the building damage risk threshold of 0.5 ips PPV for new homes and modern commercial buildings that is higher than the annoyance limit, potential façade or other damage to existing nearby structures during construction of the proposed Project is not expected. Vibration-sensitive instruments and operations (such as laboratories, magnetic resonance imaging [MRI] facilities, microelectronics manufacturing) would likely require lower vibration thresholds and special consideration during construction, but no such facilities or land uses are currently apparent in the vicinity surrounding the proposed Project or at distances where such vibration effects on interior building processes might be adverse. Therefore, on these bases, proposed Project construction would not result in a significant impact associated with ground-borne vibration.

5.4 Aviation Noise Exposure

The Project site is not located within 2 miles of any airport. Therefore, the proposed Project would not expose people residing or working in the Project area to excessive noise levels associated with aircraft. Impacts would therefore be less than significant.

8 References Cited

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MEMORANDUM

To:	City of Ontario
From:	Cole Martin, INCE & Jim Cowan, INCE Bd. Cert., Dudek
Subject:	Ontario City Hall Annex Noise Technical Memorandum
Date:	May 31, 2023
cc:	Mark Storm, INCE Bd. Cert., Dudek
Attachment(s):	Attachment A – Field Noise Measurement Data Attachment B – Construction Noise Prediction Model Worksheets Attachment C – Traffic Noise Model Input/Output Attachment D - Stationary Source Operation Noise Modeling Reference Material

1 Introduction and Purpose

The purpose of this memorandum is to present predicted noise levels from construction and operation of the Ontario City Hall Annex Project (Project) located in the City of Ontario, California (City), and evaluate potential noise impacts resulting from Project implementation under the California Environmental Quality Act (CEQA).

This memorandum is intended to support a Class 32 CEQA exemption for the Project. The Class 32 CEQA exemption consists of Projects characterized as in-fill development meeting the following conditions (***emphasis*** added):

a) The Project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
b) The proposed development occurs within city limits on a Project site of no more than five acres substantially surrounded by urban uses.
c) The Project site has no value as habitat for endangered, rare or threatened species.
d) Approval of the Project would not result in any significant effects relating to traffic, ***noise***, air quality, or water quality.
e) The site can be adequately served by all required utilities and public services.

The Class 32 exemption may be used where above-noted conditions (a) through (e) are fulfilled, where it can be seen with certainty that the proposed Project could not have a significant effect on the environment.

The contents and organization of this memorandum are as follows: (1) project description; (2) background; (3) environmental setting; (4) regulatory setting; (5) assessment methodology and results; and (6) references cited.

2 Project Description

The Project site is located west of N. Sultana Avenue near its intersections with E. Nocta Street and Lynn Haven Street. The Project would consist of a new three-story civic office building of approximately 60,000 sf, with the potential for a fourth level future expansion. The Project would also include site improvements of roughly 28,500 square feet including hardscape and landscape areas, as well as a six-story parking structure totaling approximately 268,730 square feet.

3 Environmental Setting

Due to the technical nature of noise and vibration impact assessment, a brief overview of basic noise and vibration principles and descriptors is provided below, as well as a summary of the existing noise environment.

3.1 Noise and Vibration Basics

3.1.1 Sound

Noise is defined as unwanted sound. Sound may be described in terms of level or amplitude (measured in decibels [dB]), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the amplitude of sound is the decibel. Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The dBA scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear at moderate sound levels. Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise, on a community. These descriptors include the equivalent noise level over a given period (L_{eq}), the statistical sound level, the day–night average noise level (L_{dn}), and the Community Noise Equivalent Level (CNEL). Each of these descriptors uses units of dBA. Table 1 provides examples of A-weighted noise levels from common sounds. In general, human sound perception is such that a change in sound level of 3 dBA is barely noticeable, a change of 5 dBA is clearly noticeable, and a change of 10 dBA is perceived as doubling or halving the sound level.

Table 1. Typical Exterior and Interior Sound Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)

Table 1. Typical Exterior and Interior Sound Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013.

Note: dBA = A-weighted decibel.

The L_{eq} value is a sound level energy-averaged over a specified period (typically no less than 15 minutes for environmental studies). It is a single numerical value that, if constant over time, represents the same amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors.

Unlike the L_{eq} metric, L_{dn} and CNEL descriptors always represent 24-hour periods, often on an annualized basis. L_{dn} and CNEL also differ from L_{eq} because they apply a time-weighted dB adjustment designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). “Time weighted” refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m.–7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m.–10:00 p.m.) is penalized by adding 5 dB, while nighttime (10:00 p.m.–7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is defined as 7:00 a.m.–10:00 p.m., thus eliminating the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 dB to 1 dB and, as such, are often treated as equivalent to one another.

3.1.2 Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earthmoving equipment.

Several different methods are used to quantify vibration. Peak particle velocity (PPV), expressed in inches per second (ips), is defined as the maximum instantaneous peak of the vibration signal and is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body and is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to describe this RMS magnitude with respect to a reference value, which acts to compress the range of numbers required to discuss vibration in the context of impact assessment.

The calculation to determine PPV at a given distance is as follows:

$$PPV_{rcvr} = PPV_{ref}*(25/D)^{n}$$

Where:

PPV_{rcvr} = the peak particle velocity in inches per second of the equipment adjusted for distance (i.e., at the receiver)

PPV_{ref} = the reference peak particle velocity in inches per second at 25 feet

D = the distance from the equipment to the receiver

n = an exponent, for which a value of 1.1 would be consistent with Caltrans suggestion for class III "hard soils" composed of dense compacted sand or dry consolidated clay.

The above PPV_{rcvr} value can be converted to an RMS vibration velocity level as follows, where the crest factor (CF) is assumed to be a value of 4 per FTA guidance (FTA 2018):

$$VdB_{rcvr} = 20*LOG(PPV_{rcvr}/(CF*0.000001))$$

3.1.3 Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Sensitive receptors in the vicinity of the Project site consist of residential uses located to the east, south, and north of the Project site, a fire station to the south of the Project site, the University of La Verne College of Law to the west of the Project site, and Conversation Park to the southwest of the Project site. These sensitive receptors represent the nearest sensitive land uses with the potential to be impacted by construction and/or operation of the Project.

3.2 Existing Noise Conditions

Sound pressure level measurements were conducted at six (6) representative positions in the vicinity of the Project site on May 22, 2023, to characterize and quantify samples of the existing outdoor ambient noise environment. The noise measurement locations are shown in Figure 1. Table 2 provides a summary of the noise measurement results as well as the locations, site description, noted noise sources, and times the noise level measurements were conducted. As shown in Table 2, short-term (10 to 15 minutes duration) noise levels ranged from approximately 53 dBA L_{eq} (at location ST5) to 65 dBA L_{eq} (at locations ST3 and ST6). The measurements were conducted by an attending Dudek investigator with a Rion NL-52 model sound level meter equipped with a windscreen-protected, 0.5-inch diameter pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute (ANSI) standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Table 2. Measured Outdoor Ambient Noise Levels

Survey Location	Description (Noted Noise Sources)	Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
ST1	Eastern side of the Ontario City Hal (distant aircraft, distant landscaping, distant industrial, distant traffic, rustling leaves)	14:17 – 14:31	60.1	84.9	47.2
ST2	Adjacent to the residence at 364 E. B St. (birds, distant aircraft, distant dog barking, distant industrial, distant traffic, rustling leaves)	14:33 – 14:48	57.7	76.7	46.7
ST3	Southeast corner of Sultana Ave. and Nocta St. (distant aircraft, distant conversations/yelling, distant traffic, rustling leaves)	15:05 – 15:18	65.1	80.1	47.4
ST4	Adjacent to the residence at 500 Lynn Haven St. (birds, distant aircraft, distant dog barking, distant landscaping, distant industrial, distant traffic, rustling leaves)	14:53 – 15:03	59.4	65.3	59.4
ST5	Southwest corner of the University of La Verne College of Law (birds, distant conversation/yelling, distant industrial, rusting leaves)	14:00 – 14:15	48.153.1	67.6	46.9
ST6	Adjacent to the residence at 405 E. D St. (distant conversations/yelling, distant dog barking, distant traffic, rustling leaves)	15:24 – 15:39	65.2	82.9	47.0

Note: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels; L_{max} = maximum sound level during the measurement interval; L_{min} = minimum sound level during the measurement interval

SOURCE: Google 2023; Dudek 2023

0 133.5 267 Feet

FIGURE 1

Project Site and Noise Measurement Locations

Ontario City Annex Project

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Attachment A provides sample digital photographs of the field noise level survey locations, measurement data, and Dudek field investigator notes.

4 Regulatory Setting

The following subsections summarize relevant laws, ordinances, regulations, policies, standards, and guidance that establish noise and vibration impact significance assessment criteria for the proposed Project.

4.1 Federal

There are no federal noise standards that would directly regulate environmental noise during construction and operation of the Project. The following is provided because guidance summarized herein is used or pertains to the analysis.

4.1.1 Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an 8-hour period (FTA 2018) when "detailed" construction noise assessments are performed to evaluate potential impacts to community residences surrounding a Project. For a commercial use, the limit would be an 85 dBA 8-hour L_{eq} value. Although these FTA guidance thresholds are not regulations in the context of this Project, they can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

4.1.2 Federal Interagency Committee on Noise

Some guidance regarding the determination of a substantial permanent increase in ambient noise levels in the Project vicinity above existing levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON 1992), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON recommendations are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a qualitative measure of the adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment.

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn}. The changes in noise exposure that are shown below are expected to result in equal changes in annoyance at sensitive land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are used in this analysis to define a substantial increase in community noise levels related to all transportation noise sources and permanent non-transportation noise sources.

- Outdoor ambient sound level without the Project is less than 60 dBA L_{dn}, then a Project-attributed increase of 5 dBA or more would be considered significant;

- Outdoor ambient sound level without the Project is between 60 and 65 dBA L_{dn}, Project-attributed increase of 3 dBA or more would be considered significant; and

- Outdoor ambient sound level without the Project is greater than 65 dBA L_{dn}, then Project-attributed increase of 2 dBA or more would be considered significant.

4.2 State of California

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of “normally acceptable”, “conditionally acceptable”, “normally unacceptable”, and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 dBA CNEL and “conditionally acceptable” up to 70 dBA CNEL. Multiple-family residential uses are “normally acceptable” up to 65 dBA CNEL and “conditionally acceptable” up to 70 dBA CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 dBA CNEL, as are office buildings and business, commercial, and professional uses.

4.3 Local

With the proposed Project sited within the City of Ontario, its relevant municipal code requirements and general plan policies and goals represent the primary source of impact assessment standards.

4.3.1 City of Ontario Municipal Code

4.3.1.1 Noise

Operational noise impacts for projects are governed by the City of Ontario Municipal Code, Section 5-29.04 (Noise, Exterior Noise Standards). Table 3 contains the City’s exterior property line noise limits.

Table 3. City of Ontario Exterior Noise Standards

Allowable Exterior Noise Level		Allowed Equivalent Noise Level, L_{eq}.	
Noise Zone	Type of Land Use	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Single-Family Residential	65 dBA	45 dBA
II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
III	Commercial Property	65 dBA	60 dBA
IV	Residential Portion of Mixed Use	70 dBA	70 dBA
V	Manufacturing and Industrial, Other Uses	70 dBA	70 dBA

The City’s standard goes on to state that the ambient noise level shall be the standard if the measured level exceeds those shown in Table 3.

Section 5-29.04(b) of the City's Municipal Code states that it is unlawful for any person at any location within the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

1. The noise standard for the applicable zone for any 15-minute period; and
2. A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus 20 dBA for any period of time (measured using A-weighted slow response).

Section 5-29.04(c) of the City's Municipal Code states that in the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

Section 5-29.06(d), Exemptions, states that construction noise sources are exempt. The City regulates noise from construction activities by regulating the hours during which construction is conducted. Section 5.29.09, Construction activity noise regulations, limits construction noise on weekdays to between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.

4.3.1.2 Vibration

The City's General Plan notes that the City has not established thresholds for vibration perception and damage.

5 Assessment Methodology and Results

Predicted proposed Project compliance assessment and evaluation of its potential noise and vibration adverse effects to the surrounding community are studied in the following subsections, per criteria summarized in the preceding Section 4. Where applicable, these assessments are also consistent with addressing potential proposed Project noise and vibration impacts per the following CEQA Appendix G impact significance questions for noise:

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standard of other agencies?

b) Would the Project result in generation of excessive ground-borne vibration or ground-borne noise levels?

c) For a Project located within the vicinity of a private airstrip or 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?

5.1 Short-Term Construction Noise

5.1.1 Methodology

Airborne construction noise and ground-borne construction vibration are temporary phenomena, with emission levels varying from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, man-lifts, excavators, backhoes, graders, loaders, cranes, flat-bed trucks, welders, pavers, rollers, and air compressors. The typical maximum noise levels at a distance of 50 feet from these various pieces of construction equipment and activities anticipated for use on the proposed Project site are presented in Table 4. Note that the equipment noise levels presented in Table 4 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 4. Typical Construction Equipment Maximum Noise Levels

Equipment Type(s)	Maximum Noise Level (L_{max}, dBA at 50 Feet)
Grader	85
Crane; Concrete Pump Truck; Excavator	81
Roller	80
Front End Loader	79
Backhoe; Compressor (air)	78
Paver	77
Man Lift	75
Flat Bed Truck	74
Welder / Torch	73

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed Project construction activities, broken down by sequential phase, was predicted for three nearest types of sample receptors as follows:

- The single-family residences east of Sultana Avenue, (approximately 70 feet from the eastern side of the Annex Project site);
- A bench on the northeast corner of the University of La Verne College of Law building (approximately 65 feet from the western side of the future 6-level parking garage); and
- The northern façade of the fire station on the corner of Sultana Avenue and B Street (approximately 80 feet from the southern side of the Annex Project site).

For purposes of this study, and in a manner resembling the “general assessment” methodology per FTA guidance, this analysis assumes that only the loudest piece of equipment per phase would be involved in the construction activity for up to an 8-hour evaluation period at the indicated nearest possible distance shown in Table 5. This analysis further assumes that the remainder of onsite active equipment for a given construction phase would be, on average over the course of a typical work day (i.e., since their minute-to-minute positions would be uncertain), at various distances further from a given noise-sensitive receptor than those appearing in Table 5. The nearest commercial receptor, a barber shop, would be approximately 550 feet from the proposed Project site's geographic centroid.

Table 5. Estimated Distances between Construction Activities and the Noise-sensitive Receptor Positions

Construction Phase	Equipment Type(s) Involved	Distance to Fixed Receptor Position from Construction Phase(Feet)		
		Single-family homes east of Sultana Ave.	University of La Verne College of Law	Fire Station
Demolition	Concrete Saw, Excavator, Dozer	75	70	85
Site Preparation	Dozer, Tractor	75	70	85
Grading	Excavator, Grader, Dozer, Tractor	75	70	85
Building Construction	Crane, Man Lift, Generator, Tractor, Welder/Torch	85	150	95
Paving	Paver, Misc. Equipment > 5 HP, Roller	75	70	85
Architectural Coating	Air Compressor	75	150	85

5.1.2 Prediction Results

5.1.2.1 Offsite Receptors

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type, the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 4), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical features were assumed in the modeling. The RCNM has default duty-cycle values (i.e., acoustical usage factor [AUF]) for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Attachment B, Construction Noise Prediction Model Worksheets, and produce the predicted results displayed in Table 6 for the studied scenario.

Table 6. Predicted Construction Noise Levels per Activity Phase

Construction Phase	8-Hour L_{eq} (dBA) at Nearest Residential Receptor (homes East of Sultana Ave.)	8-Hour L_{eq} (dBA) at University of La Verne Library Exterior	8-Hour L_{eq} (dBA) at Existing City of Ontario Fire Station
Demolition	79.4	80.4	77.8
Site Preparation	76.7	77.7	75.1
Grading	78.6	79.5	77.1
Building Construction	73.9	67.5	72.5
Paving	78.0	79.0	76.3
Architectural Coating	66.6	59.8	65.1

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 6, estimated construction noise levels are not predicted to exceed 80 dBA L_{eq} over an 8-hour period for any of the listed activity phases at the façades of the nearest existing residential noise-sensitive receptors; hence, construction of the proposed Project would meet the FTA's 80 dBA 8-hour L_{eq} construction noise threshold. Additionally, construction noise levels would be compliant with similar FTA guidance, at 85 dBA 8-hour L_{eq}, for the exteriors of the nearest offsite non-residential (University of La Verne) and mixed-use municipal fire station land uses. Thus, potential noise impacts attributed to proposed Project construction activities would be considered less than significant.

5.2 Long-Term Operational Noise

5.2.1 Off-Site Traffic Noise Exposure

The proposed Project is expected to generate an additional 1,527 average daily trips to the roadway system. Utilizing this information as well as additional traffic data provided in Attachment C, the FHWA's Highway Traffic Noise Model version 2.5 (TNM 2.5) was used to predict potential noise impacts at noise-sensitive uses adjacent to roadway segments expected to experience added traffic volumes attributed to the proposed Project. Information used in the model included Average Daily Traffic (ADT; City of Ontario 2019), posted traffic speeds, truck mix percentage, and trip distribution.

The modeled traffic speed was assumed to be the anticipated speed limit for the studied roads, which is 25 miles per hour (mph) for B Street and 35 mph for D Street and Sultana Avenue. The truck percentages used in the noise model for the near-term (2026) plus Project scenario were 2.0% medium trucks and 1.0% heavy trucks. This truck mix is based on vehicle surveys conducted for a number of similar roads in California that allow truck traffic. The k-factor used to convert the ADT volumes to peak hour volumes was 10%. Trip distribution was assumed to be 25% of the total new trips for B Street, 25% for D Street, and 50% for Sultana Avenue south of B Street. All other modeled roadways were conservatively assumed to be at 100% of Project trip distribution in order to predict a worst-case noise level at nearby noise-sensitive receptors.

The change in roadway noise levels was predicted for two conditions: existing (2019) and existing (2019) plus Project.

Table 7. TNM Predicted Noise Levels

Modeled Receiver	Description	Existing (2019) Noise Level (dBA)	Existing (2019) Plus Project Noise Level (dBA)	Project-Related Noise Level Increase (dBA)
R01	Northeast corner of the University of La Verne College of Law	54.1	54.6	0.5
R02	Eastern entrance of the University of La Verne College of Law	48.9	49.7	0.8
R03	Southeast corner of the University of La Verne College of Law	39.0	40.0	1.0
R04	Conservation Park	53.0	53.6	0.6
R05	360 E. B St.	56.7	57.4	0.7
R06	408 E. B St.	57.7	58.4	0.7
R07	464 E. B St.	66.5	67.8	1.3
R08	503 E. Sierra Ct.	68.9	70.5	1.6
R09	500 Lynn Haven St.	63.3	65.2	1.9
R10	504 E. D St.	66.4	68.0	1.6
R11	427 E. D St.	70.4	71.2	0.8

Source: Appendix C.

As shown in Table 7, and based upon the FICON thresholds presented in Section 4.1.2, an increase of less than 5 dBA when the ambient sound level is less than 60 dBA L_{dn}/CNEL, less than 3 dBA when the ambient sound level is between 60 and 65 dBA L_{dn}/CNEL, or less than 2 dBA when the ambient sound level is greater than 65 dBA L_{dn}/CNEL would not be substantial. Therefore, potential impacts at existing off-site noise-sensitive land uses along roadway segments identified in Table 7 and with respect to Project-generated changes to existing (2019) traffic noise would be less than significant.

5.2.2 Stationary Noise Source Emission

5.2.2.1 Methodology

The completion of the buildings on the proposed Project site will add a variety of noise-producing mechanical equipment that include those presented and discussed in the following paragraphs. Most of these noise-producing equipment or sound sources would be considered stationary or limited in mobility to a defined area.

Prediction Method and Parameters

The aggregate noise emission from these outdoor-exposed sound sources has been predicted with the Datakustik CadnaA sound propagation program. CadnaA is a commercially available software program for the calculation, presentation, assessment, and prediction of environmental noise based on algorithms and reference data per

International Organization of Standardization (ISO) Standard 9613-2, "Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation" (ISO 1996). The CadnaA computer software allows one to position sources of sound emission in a simulated three-dimensional (3-D) space having heights and footprints consistent with Project architectural plans and elevations. In addition to the above-mentioned sound source inputs and building-block structures that define the three-dimensional sound propagation model space, the following assumptions and parameters are included in this CadnaA-supported stationary noise source assessment:

- Ground effect acoustical absorption coefficient equal to 0.5, which intends to represent an average or blending of ground covers that are characterized largely by hard reflective pavements and existing building surfaces across the Project site and the surroundings;
- Reflection order of 1, which allows for a single reflection of sound paths on encountered structural surfaces such as the modeled building masses;
- Calm meteorological conditions (i.e., no wind) with 68 degrees Fahrenheit and 50% relative humidity; and
- All of the modeled noise sources are operating concurrently and continuously for a minimum period of 1 hour.

Project Sound Sources

Outdoor HVAC

Based on the available plans and other design information, it is assumed herein that the proposed Project buildings would be served by roof-mounted air-conditioning equipment that includes outdoor-exposed packaged air-handling units and air-cooled condensers (ACC) that provide the expected cooling demand (expressed as refrigeration "tonnage") for a building. The following are descriptions of modeled sound sources, with Table 8 exhibiting total modeled sound power level (PWL) data at octave-band center frequency (OBCF) resolution for each type of listed equipment source. Detailed information supporting these summary descriptions and quantities appear in Attachment D, Stationary Source Operation Noise Modeling Reference Material.

Table 8. Modeled Sound Power Levels (PWL) for Stationary Sources (HVAC)

Building	Sound Source	Overall L_{eq} (dBA)	A-Weighted dB at Octave Band Center Frequency (OBCF, Hz)								
			31.5	63	125	250	500	1000	2000	4000	8000
Annex	Air Handling Unit (AHU) return fans	82.8	64.0	64.0	76.0	77.0	78.0	75.0	68.0	62.0	57.0
	Air-cooled Condensers (ACC)	91.6	52	65	75	81	88	84	83	82	76

The HVAC reference sound levels were calculated for use in the CadnaA model from a combination of inputs that include square footage values for the proposed Project's proposed office spaces, Project applicant response to data requests, and sample manufacturer sound power level data.

Other Stationary Noise Sources

The proposed Project buildings may feature other noise emitters, but their contributions would tend to be sporadic or otherwise occur infrequently and thus be expected to have no greater acoustic contribution to an hourly L_{eq} than the continuous-type HVAC noise studied herein.

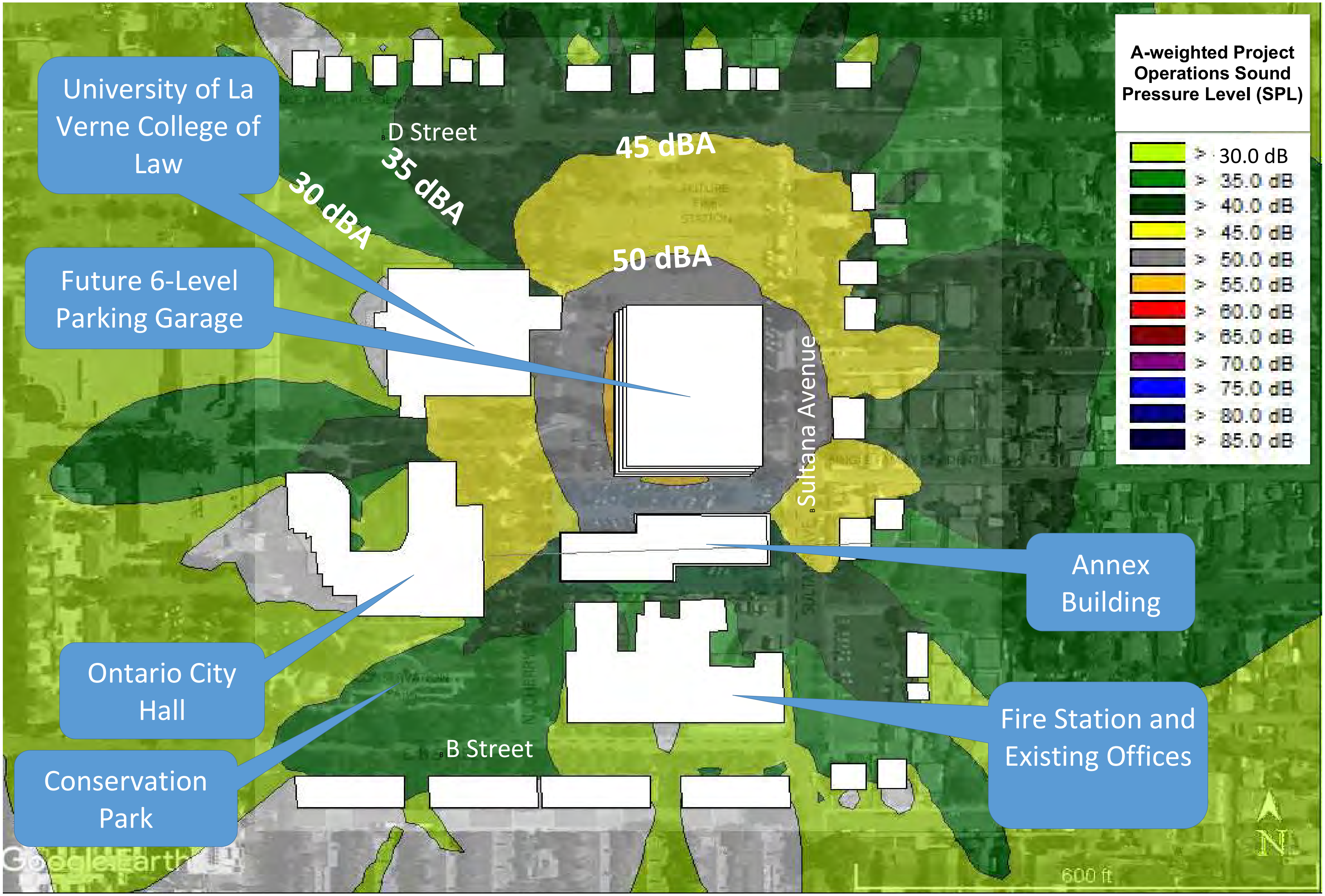
Additionally, transportation noise sources may on occasion become “stationary”, such as an idling delivery truck temporarily on the Project site. While an idling truck may exhibit a sound level magnitude of 70 dBA at 25 feet (Charles Salter 2014), its idling duration would be limited to no more than five minutes per hour (consistent with state regulations) and therefore demonstrate a corresponding hourly L_{eq} value that is eleven decibels less (i.e., a temporal adjustment that dilutes the acoustic energy over the hour per acoustic principles): 59 dBA at this distance.

Parking Garage Noise

The proposed Project features a six-level parking garage to the north of the Annex Project site. Parking lot noise reference sound levels were calculated from a combination of inputs that include the sound power level (PWL) for one movement, the surface of the roadway, passing traffic contributions, the area of the parking garage, and the number of peak-hour Project trips (Nicol and Johnson 2011). The resulting PWL was entered into the CadnaA model for each of the six levels.

5.2.2.2 Prediction Results

An operational daytime scenario of the proposed Project was modeled that assumes all the HVAC equipment is operating simultaneously for a minimum period of one hour and the parking garage is active at the peak AM hour. Figure 2 displays the predicted noise contours associated with aggregate sound propagation from operating HVAC sound sources and the parking garage. An operational nighttime scenario was not modeled because it is assumed that the parking garage would not be active during nighttime hours in addition to reduced HVAC operations for the new Annex building, thus resulting in an expected nighttime operational level that would be compliant with City exterior noise requirements at the nearest noise-sensitive receptors.



SOURCE: Google 2023, Dudek 2023

DUDEK

0 94.5 189 Feet

FIGURE 2

Studied Noise Receptor Locations and Predicted Noise Contours

Ontario City Annex Project

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Figure 2 illustrates predicted aggregate SPL propagation solely from operation of the proposed Project sound sources as described herein. The color-coded annular bands of SPL are calculated across a field parallel with and five (5) feet above local grade.

Based on the noise level contours appearing in Figure 2, predicted operation noise from the proposed Project is expected to be far less than and thus comply with the City's property line daytime noise threshold of 65 dBA hourly L_{eq} for Type I (residential) and Type III (commercial) land uses and 70 dBA L_{eq} for Type IV (residential portion of mixed-use) land uses.

5.3 Construction Vibration

5.3.1 Methodology

Section 3.1.2 provides the groundborne vibration propagation expression for estimating vibration velocity (in inches per second [ips] PPV) at a receiving offsite structure. Although ignored for purposes of conservatism in this analysis, FTA guidance information suggests that coupling losses between the vibrating soil mass and that of a receiving building foundation (e.g., the apparent 1-story wood-framed residence to the south) might provide further attenuation to this estimated PPV value by an amount of -3 VdB (FTA 2018).

5.3.2 Prediction Results

The main concern associated with ground-borne vibration is annoyance; however, in extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Some common sources of ground-borne vibration are trains and construction activities such as blasting, pile-driving, and heavy earth-moving equipment. The primary source of ground-borne vibration occurring as part of the Project is construction activity.

According to Caltrans, D-8 and D-9 Caterpillars, earthmovers, and trucks have not exceeded 0.10 inches/second PPV at 10 feet (Caltrans 2020). Since the closest off-site residence is located approximately 70 feet away from likely heavy construction equipment, vibration from construction activities at the closest sensitive receiver would not exceed the significance threshold of 0.20 ips PPV. The existing University of La Verne Office of Law building is closer but is still at least 65 feet from the proposed Project boundary. At such distances, predicted ground-borne vibration from the same types of earthmovers would be less than 0.012 ips PPV and thus below this annoyance-based threshold. With the building damage risk threshold of 0.5 ips PPV for new homes and modern commercial buildings that is higher than the annoyance limit, potential façade or other damage to existing nearby structures during construction of the proposed Project is not expected. Vibration-sensitive instruments and operations (such as laboratories, magnetic resonance imaging [MRI] facilities, microelectronics manufacturing) would likely require lower vibration thresholds and special consideration during construction, but no such facilities or land uses are currently apparent in the vicinity surrounding the proposed Project or at distances where such vibration effects on interior building processes might be adverse. Therefore, on these bases, proposed Project construction would not result in a significant impact associated with ground-borne vibration.

5.4 Aviation Noise Exposure

The Project site is not located within 2 miles of any airport. Therefore, the proposed Project would not expose people residing or working in the Project area to excessive noise levels associated with aircraft. Impacts would therefore be less than significant.

8 References Cited

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FICON. 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. Federal Interagency Committee on Noise. August 1992.

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Nicol, Laurence and Johnson, Paul. 2011. Prediction of parking area noise in Australian conditions. Proceedings of Acoustics 2011.

Attachment A

Field Noise Measurement Data

From: no-reply-dudek-forms@iformbuilder.com
Sent: Tuesday, May 23, 2023 11:10 AM
To: Carson Wong
Subject: New Record - Field Noise Measurement Data

DUDEK FORMS FIELD DATA REPORT

Field Noise Measurement Data

ID	**1649**
Project Name	Ontario
Observer(s)	
Date	2023-05-22
Comments	0930

Meteorological Conditions

ID	**S1649**
Temp (F)	76
Humidity % (R.H.)	55
Wind	Light
Wind Speed (MPH)	9
Wind Direction	North East
Sky	Clear

Instrument and Calibrator Information

ID	**S1649**
Instrument Name List	(ENC) Rion NL-52

Instrument and Calibrator Information

ID	S1649
Instrument Name	(ENC) Rion NL-52
Instrument Name Lookup Key	(ENC) Rion NL-52
Manufacturer	Rion
Model	NL-52
Serial Number	553896
Calibrator Name	(ENC) LD CAL150
Calibrator Name	(ENC) LD CAL150
Calibrator Name Lookup Key	(ENC) LD CAL150
Calibrator Manufacturer	Larson Davis
Calibrator Model	LD CAL150
Calibrator Serial #	5152
Pre-Test (dBA SPL)	94
Weighting?	A-WTD
Slow/Fast?	Slow

Monitoring

ID	S1649
Record #	6
Site ID	St 6

Monitoring

ID	**S1649**
Site Location Lat/Long	34.067142, -117.647064
Begin (Time)	15:24:00
End (Time)	15:39:00
Leq	65.2
Lmax	82.9
Lmin	47
Other Lx?	L90, L50, L10
L90	50.6
L50	61.1
L10	68.6
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Distant Conversations / Yelling, Distant Dog Barking, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	**S6707**

Site Photos

ID	**S5033**
Photo	
Comments / Description	Facing east
ID	**S5033**
Photo	
Comments / Description	Facing west

Monitoring

ID	S1649
Record #	5
Site ID	St 3
Site Location Lat/Long	34.065129, -117.645992
Begin (Time)	15:05:00
End (Time)	15:18:00
Leq	65.1
Lmax	80.1
Lmin	47.4
Other Lx?	L90, L50, L10
L90	51.4
L50	61
L10	68
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Distant Aircraft, Distant Conversations / Yelling, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	**S6704**

Site Photos

ID	**S5030**
Photo	
Comments / Description	Facing south
ID	**S5030**
Photo	

ID	S5030
Comments / Description	Facing north

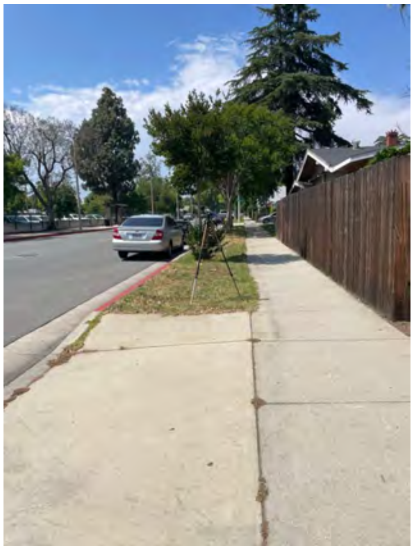
Monitoring

ID	S1649
Record #	4
Site ID	St 4
Site Location Lat/Long	34.065825, -117.646029
Begin (Time)	14:53:00
End (Time)	15:03:00
Leq	59.4
Lmax	65.3
Lmin	59.4
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Aircraft, Distant Dog Barking, Distant Gardener / Landscape Noise, Distant Industrial, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	S6701

Site Photos

ID	S5027
Photo	
Comments / Description	Facing north
ID	**S5027**
Photo	
Comments / Description	Facing south

Monitoring

ID	S1649
Record #	3
Site ID	ST 2
Site Location Lat/Long	34.064618, -117.647308
Begin (Time)	14:33:00
End (Time)	14:48:00
Leq	57.7
Lmax	76.7
Lmin	46.7
Other Lx?	L90, L50, L10
L90	48.3
L50	52.2
L10	60.9
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Aircraft, Distant Dog Barking, Distant Industrial, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	**S6698**

Site Photos

ID	**S5024**
Photo	
Comments / Description	Facing north
ID	**S5024**
Photo	

ID	**S5024**
Comments / Description	Facing east

ID	**S5024**
Photo	
Comments / Description	Facing west

Monitoring

ID	**S1649**
Record #	2
Site ID	St 1
Site Location Lat/Long	34.065317, -117.647414
Begin (Time)	14:17:00
End (Time)	14:31:00
Leq	60.1
Lmax	84.9

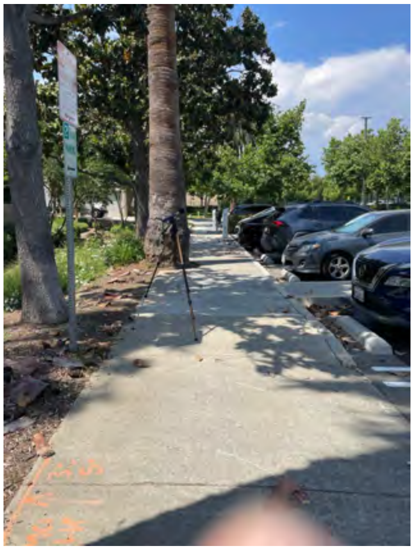
Monitoring

ID	S1649
Lmin	47.2
Other Lx?	L90, L50, L10
L90	48.1
L50	49.8
L10	56.3
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Distant Aircraft, Distant Gardener / Landscape Noise, Distant Industrial, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	S6695

Site Photos

ID	**S5021**
Photo	
Comments / Description	Facing north
ID	**S5021**
Photo	
Comments / Description	Facing south

Monitoring

ID	S1649
Record #	1
Site ID	St 5
Site Location Lat/Long	34.065940, -117.647251
Begin (Time)	14:00:00
End (Time)	14:15:00
Leq	53.1
Lmax	67.6
Lmin	46.9
Other Lx?	L90, L50, L10
L90	48.1
L50	49.3
L10	54.6
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Conversations / Yelling, Distant Industrial, Rustling Leaves
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

ID	**S6692**

Site Photos

ID	**S5018**
Photo	
Comments / Description	Facing west
ID	**S5018**
Photo	

ID	**S5018**
Comments / Description	Facing east
ID	**S5018**
Photo	
Comments / Description	Facing south

Email Report

To Unsubscribe: Email your request to dudekforms@dudek.com with **Unsubscribe** in the subject line or call your account administrator.

Attachment B

Construction Noise Prediction Model Worksheets

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at residential land use, per FTA guidance = 80

allowable hours over which Leq is to be averaged = 8

🟨 = temporary barrier (TB) of input height inserted between source and receptor

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete saw	1	20	90	Concrete/Industrial Saws	75	0.1		85.6	8	480	79
	Excavator	1	40	81	Excavators	115	0.1		71.0	8	480	67
	Dozer	1	40	82	Rubber Tired Dozers	95	0.1		74.3	8	480	70
									Total for Demolition Phase:			**79.4**
Site Preparation	Dozer	1	40	82	Rubber Tired Dozers	95	0.1		74.3	8	480	70
	Tractor	1	40	84	Tractors/Loaders/Backhoes	75	0.1		79.6	8	480	76
									Total for Site Preparation Phase:			**76.7**
Grading	Excavator	1	40	81	Exacators	135	0.1		69.2	8	480	65
	Grader	1	40	85	Graders	75	0.1		80.6	8	480	77
	Dozer	1	40	82	Rubber Tired Dozers	115	0.1		72.0	8	480	68
	Tractor	1	40	84	Tractors/Loaders/Backhoes	95	0.1		76.3	8	480	72
									Total for Grading Phase:			**78.6**
Building Construction	Crane	1	16	81	Cranes	105	0.1		72.1	7	420	64
	Man Lift	1	20	75	Forklifts	125	0.1		64.0	8	480	57
	Generator	1	50	72	Generator Sets	165	0.1		58.0	8	480	55
	Tractor	1	40	84	Tractors/Loaders/Backhoes	85	0.1		77.8	7	420	73
	Welder / Torch	1	40	73	Welders	145	0.1		60.4	8	480	56
									Total for Building Construction Phase:			**73.9**
Paving	Paver	1	50	77	Pavers	115	0.1		67.0	8	480	64
	All Other Equipment > 5 hp	1	50	85	Paving Equipment	75	0.1		80.6	8	480	78
	Roller	1	20	80	Rollers	95	0.1		72.3	8	480	65
									Total for Paving Phase:			**78.0**
Architectural Coating	Compressor (Air)	1	40	78	Air Compressors	85	0.1		71.8	6	360	67
									Total for Architectural Coating Phase:			**66.6**

Construction Activity	Equipment	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
Demolition	Concrete saw	5	5	0	5	70	75	7.1	70.2	75.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Excavator	5	5	0	45	70	115	45.3	70.2	115.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	25	70	95	25.5	70.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Site Preparation	Dozer	5	5	0	25	70	95	25.5	70.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	5	70	75	7.1	70.2	75.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Grading	Excavator	5	5	0	65	70	135	65.2	70.2	135.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Grader	5	5	0	5	70	75	7.1	70.2	75.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	45	70	115	45.3	70.2	115.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	25	70	95	25.5	70.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Building Construction	Crane	5	5	0	35	70	105	35.4	70.2	105.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Man Lift	5	5	0	55	70	125	55.2	70.2	125.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Generator	5	5	0	95	70	165	95.1	70.2	165.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	15	70	85	15.8	70.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Welder / Torch	5	5	0	75	70	145	75.2	70.2	145.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Paving	Paver	5	5	0	45	70	115	45.3	70.2	115.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	All Other Equipment > 5 hp	5	5	0	5	70	75	7.1	70.2	75.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Roller	5	5	0	25	70	95	25.5	70.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Architectural Coating	Compressor (Air)	5	5	0	15	70	85	15.8	70.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
					p												

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at residential land use, per FTA guidance = 85

allowable hours over which Leq is to be averaged = 8

🟨 = temporary barrier (TB) of input height inserted between source and receptor

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete saw	1	20	90	Concrete/Industrial Saws	70	0.1		86.6	8	480	80
	Excavator	1	40	81	Excavators	110	0.1		71.5	8	480	68
	Dozer	1	40	82	Rubber Tired Dozers	90	0.1		75.0	8	480	71
									Total for Demolition Phase:			**80.4**
Site Preparation	Dozer	1	40	82	Rubber Tired Dozers	90	0.1		75.0	8	480	71
	Tractor	1	40	84	Tractors/Loaders/Backhoes	70	0.1		80.6	8	480	77
									Total for Site Preparation Phase:			**77.7**
Grading	Excavator	1	40	81	Exacators	130	0.1		69.6	8	480	66
	Grader	1	40	85	Graders	70	0.1		81.6	8	480	78
	Dozer	1	40	82	Rubber Tired Dozers	110	0.1		72.5	8	480	69
	Tractor	1	40	84	Tractors/Loaders/Backhoes	90	0.1		77.0	8	480	73
									Total for Grading Phase:			**79.5**
Building Construction	Crane	1	16	81	Cranes	170	0.1		66.7	7	420	58
	Man Lift	1	20	75	Forklifts	190	0.1		59.5	8	480	53
	Generator	1	50	72	Generator Sets	230	0.1		54.6	8	480	52
	Tractor	1	40	84	Tractors/Loaders/Backhoes	150	0.1		71.0	7	420	66
	Welder / Torch	1	40	73	Welders	210	0.1		56.5	8	480	53
									Total for Building Construction Phase:			**67.5**
Paving	Paver	1	50	77	Pavers	110	0.1		67.5	8	480	65
	All Other Equipment > 5 hp	1	50	85	Paving Equipment	70	0.1		81.6	8	480	79
	Roller	1	20	80	Rollers	90	0.1		73.0	8	480	66
									Total for Paving Phase:			**79.0**
Architectural Coating	Compressor (Air)	1	40	78	Air Compressors	150	0.1		65.0	6	360	60
									Total for Architectural Coating Phase:			**59.8**

Construction Activity	Equipment	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
Demolition	Concrete saw	5	5	0	5	65	70	7.1	65.2	70.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Excavator	5	5	0	45	65	110	45.3	65.2	110.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	25	65	90	25.5	65.2	90.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Site Preparation	Dozer	5	5	0	25	65	90	25.5	65.2	90.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	5	65	70	7.1	65.2	70.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Grading	Excavator	5	5	0	65	65	130	65.2	65.2	130.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Grader	5	5	0	5	65	70	7.1	65.2	70.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	45	65	110	45.3	65.2	110.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	25	65	90	25.5	65.2	90.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Building Construction	Crane	5	5	0	105	65	170	105.1	65.2	170.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Man Lift	5	5	0	125	65	190	125.1	65.2	190.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Generator	5	5	0	165	65	230	165.1	65.2	230.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	85	65	150	85.1	65.2	150.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Welder / Torch	5	5	0	145	65	210	145.1	65.2	210.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Paving	Paver	5	5	0	45	65	110	45.3	65.2	110.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	All Other Equipment > 5 hp	5	5	0	5	65	70	7.1	65.2	70.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Roller	5	5	0	25	65	90	25.5	65.2	90.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Architectural Coating	Compressor (Air)	5	5	0	85	65	150	85.1	65.2	150.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
					p												

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at residential land use, per FTA guidance = 85

allowable hours over which Leq is to be averaged = 8

= temporary barrier (TB) of input height inserted between source and receptor

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete saw	1	20	90	Concrete/Industrial Saws	85	0.1		83.8	8	480	77
	Excavator	1	40	81	Excavators	125	0.1		70.0	8	480	66
	Dozer	1	40	82	Rubber Tired Dozers	105	0.1		73.1	8	480	69
									Total for Demolition Phase:			**77.8**
Site Preparation	Dozer	1	40	82	Rubber Tired Dozers	105	0.1		73.1	8	480	69
	Tractor	1	40	84	Tractors/Loaders/Backhoes	85	0.1		77.8	8	480	74
									Total for Site Preparation Phase:			**75.1**
Grading	Excavator	1	40	81	Exacators	145	0.1		68.4	8	480	64
	Grader	1	40	85	Graders	85	0.1		78.8	8	480	75
	Dozer	1	40	82	Rubber Tired Dozers	125	0.1		71.0	8	480	67
	Tractor	1	40	84	Tractors/Loaders/Backhoes	105	0.1		75.1	8	480	71
									Total for Grading Phase:			**77.1**
Building Construction	Crane	1	16	81	Cranes	115	0.1		71.0	7	420	62
	Man Lift	1	20	75	Forklifts	135	0.1		63.2	8	480	56
	Generator	1	50	72	Generator Sets	175	0.1		57.4	8	480	54
	Tractor	1	40	84	Tractors/Loaders/Backhoes	95	0.1		76.3	7	420	72
	Welder / Torch	1	40	73	Welders	155	0.1		59.7	8	480	56
									Total for Building Construction Phase:			**72.5**
Paving	Paver	1	50	77	Pavers	125	0.1		66.0	8	480	63
	All Other Equipment > 5 hp	1	50	85	Paving Equipment	85	0.1		78.8	8	480	76
	Roller	1	20	80	Rollers	105	0.1		71.1	8	480	64
									Total for Paving Phase:			**76.3**
Architectural Coating	Compressor (Air)	1	40	78	Air Compressors	95	0.1		70.3	6	360	65
									Total for Architectural Coating Phase:			**65.1**

Construction Activity	Equipment	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
Demolition	Concrete saw	5	5	0	5	80	85	7.1	80.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Excavator	5	5	0	45	80	125	45.3	80.2	125.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	25	80	105	25.5	80.2	105.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Site Preparation	Dozer	5	5	0	25	80	105	25.5	80.2	105.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	5	80	85	7.1	80.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Grading	Excavator	5	5	0	65	80	145	65.2	80.2	145.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Grader	5	5	0	5	80	85	7.1	80.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Dozer	5	5	0	45	80	125	45.3	80.2	125.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	25	80	105	25.5	80.2	105.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Building Construction	Crane	5	5	0	35	80	115	35.4	80.2	115.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Man Lift	5	5	0	55	80	135	55.2	80.2	135.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Generator	5	5	0	95	80	175	95.1	80.2	175.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Tractor	5	5	0	15	80	95	15.8	80.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Welder / Torch	5	5	0	75	80	155	75.2	80.2	155.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Paving	Paver	5	5	0	45	80	125	45.3	80.2	125.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	All Other Equipment > 5 hp	5	5	0	5	80	85	7.1	80.2	85.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	Roller	5	5	0	25	80	105	25.5	80.2	105.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Architectural Coating	Compressor (Air)	5	5	0	15	80	95	15.8	80.2	95.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
					p												

Attachment C

Traffic Noise Model Input/Output

Dudek **30 May 2023**
CM **TNM 2.5**

INPUT: ROADWAYS
PROJECT/CONTRACT: **15305**
RUN: **Ontario City Annex Existing Condition**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
B EB	20.0	point1	1	6,138,152.0	2,333,850.0	0.00				Average	
		point2	2	6,138,252.0	2,333,849.2	0.00				Average	
		point3	3	6,138,352.0	2,333,848.5	0.00				Average	
		point4	4	6,138,452.0	2,333,848.0	0.00				Average	
		point5	5	6,138,552.0	2,333,847.5	0.00				Average	
		point6	6	6,138,652.0	2,333,847.0	0.00				Average	
		point7	7	6,138,752.0	2,333,846.5	0.00				Average	
		point8	8	6,138,816.0	2,333,845.2	0.00					
B WB	20.0	point16	16	6,138,816.5	2,333,858.2	0.00	Stop	5.00	100	Average	
		point15	15	6,138,752.5	2,333,859.5	0.00				Average	
		point14	14	6,138,652.5	2,333,860.0	0.00				Average	
		point13	13	6,138,552.5	2,333,860.2	0.00				Average	
		point12	12	6,138,452.5	2,333,860.8	0.00				Average	
		point11	11	6,138,352.5	2,333,861.2	0.00				Average	
		point10	10	6,138,252.5	2,333,862.0	0.00				Average	
		point9	9	6,138,152.5	2,333,863.0	0.00					
Sultana NB | S of B	20.0	point17	17	6,138,834.5	2,333,353.0	0.00	Signal	0.00	50	Average	
		point18	18	6,138,842.5	2,333,452.8	0.00				Average	
		point19	19	6,138,842.5	2,333,552.8	0.00				Average	
		point20	20	6,138,839.0	2,333,652.8	0.00				Average	
		point21	21	6,138,841.0	2,333,752.8	0.00				Average	
		point22	22	6,138,841.0	2,333,809.8	0.00					
Sultana SB | S of B	20.0	point23	23	6,138,826.5	2,333,895.2	0.00	Stop	0.00	100	Average	
		point24	24	6,138,826.5	2,333,809.8	0.00				Average	
		point25	25	6,138,825.0	2,333,753.0	0.00				Average	

		point26	26	6,138,824.0	2,333,653.5	0.00				Average	
		point88	88	6,138,823.0	2,333,507.8	0.00				Average	
		point27	27	6,138,820.5	2,333,362.0	0.00					
Sultana NB | B-D	20.0	point28	28	6,138,841.0	2,333,809.8	0.00	Stop	0.00	100	Average	
		point29	29	6,138,842.0	2,333,909.8	0.00				Average	
		point30	30	6,138,843.5	2,334,009.8	0.00				Average	
		point31	31	6,138,843.5	2,334,109.8	0.00				Average	
		point32	32	6,138,843.5	2,334,209.8	0.00				Average	
		point33	33	6,138,843.5	2,334,309.8	0.00				Average	
		point34	34	6,138,845.5	2,334,409.8	0.00				Average	
		point35	35	6,138,846.5	2,334,509.8	0.00				Average	
		point36	36	6,138,846.5	2,334,609.8	0.00				Average	
		point37	37	6,138,847.0	2,334,712.0	0.00					
Sultana SB | D-B	20.0	point38	38	6,138,833.5	2,334,716.8	0.00	Stop	0.00	100	Average	
		point39	39	6,138,833.0	2,334,690.5	0.00				Average	
		point40	40	6,138,833.0	2,334,609.2	0.00				Average	
		point41	41	6,138,831.0	2,334,509.8	0.00				Average	
		point42	42	6,138,832.5	2,334,410.2	0.00				Average	
		point43	43	6,138,828.0	2,334,309.8	0.00				Average	
		point44	44	6,138,828.0	2,334,209.8	0.00				Average	
		point45	45	6,138,829.0	2,334,109.8	0.00				Average	
		point46	46	6,138,826.5	2,334,009.8	0.00				Average	
		point47	47	6,138,826.5	2,333,909.8	0.00				Average	
		point48	48	6,138,826.5	2,333,895.2	0.00					
D EB | E of Sultana	20.0	point49	49	6,138,801.5	2,334,725.5	0.00	Stop	0.00	100	Average	
		point50	50	6,138,880.0	2,334,719.2	0.00				Average	
		point51	51	6,138,995.0	2,334,723.2	0.00				Average	
		point52	52	6,139,047.5	2,334,723.2	0.00				Average	
		point53	53	6,139,146.5	2,334,722.5	0.00				Average	
		point54	54	6,139,253.0	2,334,722.0	0.00					
D EB | W of Sultana	20.0	point68	68	6,138,011.0	2,334,730.0	0.00				Average	
		point69	69	6,138,111.0	2,334,730.0	0.00				Average	
		point70	70	6,138,211.0	2,334,730.0	0.00				Average	
		point71	71	6,138,307.5	2,334,728.0	0.00				Average	
		point72	72	6,138,406.5	2,334,726.2	0.00				Average	
		point73	73	6,138,505.5	2,334,724.2	0.00				Average	
		point74	74	6,138,605.5	2,334,722.2	0.00				Average	
		point75	75	6,138,705.5	2,334,725.0	0.00				Average	
		point76	76	6,138,801.5	2,334,725.5	0.00					

Sultana NB | N of D	20.0	point82	82	6,138,848.5	2,334,743.5	0.00	Stop	0.00	100	Average	
		point83	83	6,138,849.5	2,334,792.0	0.00				Average	
		point84	84	6,138,849.5	2,335,063.5	0.00					
Sultana SB | N of D	20.0	point85	85	6,138,839.0	2,335,060.5	0.00				Average	
		point86	86	6,138,837.0	2,334,792.5	0.00				Average	
		point87	87	6,138,836.0	2,334,744.5	0.00					
D WB | E of Sultana	20.0	point55	55	6,139,252.0	2,334,734.2	0.00				Average	
		point56	56	6,139,147.5	2,334,734.5	0.00				Average	
		point57	57	6,139,046.0	2,334,736.0	0.00				Average	
		point59	59	6,138,994.5	2,334,737.2	0.00				Average	
		point60	60	6,138,894.5	2,334,735.8	0.00				Average	
		point61	61	6,138,879.5	2,334,735.8	0.00					
D WB | W of Sultana	20.0	point62	62	6,138,879.5	2,334,735.8	0.00	Stop	0.00	100	Average	
		point63	63	6,138,804.5	2,334,743.2	0.00				Average	
		point64	64	6,138,704.5	2,334,743.2	0.00				Average	
		point65	65	6,138,604.5	2,334,740.5	0.00				Average	
		point66	66	6,138,504.5	2,334,740.5	0.00				Average	
		point77	77	6,138,404.5	2,334,741.8	0.00				Average	
		point78	78	6,138,308.0	2,334,744.0	0.00				Average	
		point79	79	6,138,210.5	2,334,744.0	0.00				Average	
		point80	80	6,138,110.5	2,334,744.0	0.00				Average	
		point81	81	6,138,010.5	2,334,744.0	0.00					

Dudek **30 May 2023**
CM **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **15305**
RUN: **Ontario City Annex Existing Condition**

Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
R01	1	1	6,138,478.5	2,334,564.0	0.00	4.92	0.00	66	10.0	8.0	Y
R02	2	1	6,138,517.5	2,334,442.0	0.00	4.92	0.00	66	10.0	8.0	Y
R03	3	1	6,138,449.0	2,334,327.2	0.00	4.92	0.00	66	10.0	8.0	Y
R04	4	1	6,138,411.0	2,333,917.8	0.00	4.92	0.00	66	10.0	8.0	Y
R05	5	1	6,138,409.0	2,333,823.2	0.00	4.92	0.00	66	10.0	8.0	Y
R06	6	1	6,138,552.5	2,333,823.2	0.00	4.92	0.00	66	10.0	8.0	Y
R07	7	1	6,138,791.5	2,333,819.2	0.00	4.92	0.00	66	10.0	8.0	Y
R08	8	1	6,138,865.0	2,333,829.0	0.00	4.92	0.00	66	10.0	8.0	Y
R09	10	1	6,138,874.0	2,334,290.5	0.00	4.92	0.00	66	10.0	8.0	Y
R10	12	1	6,138,874.0	2,334,624.2	0.00	4.92	0.00	66	10.0	8.0	Y
R11	13	1	6,138,793.5	2,334,764.5	0.00	4.92	0.00	66	10.0	8.0	Y

Dudek **30 May 2023**
CM **TNM 2.5**

INPUT: BARRIERS
PROJECT/CONTRACT: **15305**
RUN: **Ontario City Annex Existing Condition**

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Perturbs Incre- ment	#Up	#Dn	On Struct?	Important Reflec- tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier2	W	0.00	99.99	0.00				0.00	point1	1	6,138,296.0	2,334,359.0	0.00	35.00	0.00	0	0		
									point2	2	6,138,296.0	2,334,533.8	0.00	35.00	0.00	0	0		
									point3	3	6,138,473.5	2,334,533.5	0.00	35.00	0.00	0	0		
									point4	4	6,138,473.5	2,334,487.5	0.00	35.00	0.00	0	0		
									point5	5	6,138,514.0	2,334,487.5	0.00	35.00	0.00	0	0		
									point6	6	6,138,514.0	2,334,445.5	0.00	35.00	0.00	0	0		
									point7	7	6,138,473.5	2,334,445.5	0.00	35.00	0.00	0	0		
									point8	8	6,138,473.5	2,334,357.5	0.00	35.00	0.00	0	0		
									point9	9	6,138,296.0	2,334,359.0	0.00	35.00					
Barrier3	W	0.00	99.99	0.00				0.00	point10	10	6,138,804.5	2,333,979.5	0.00	25.00	0.00	0	0		
									point11	11	6,138,804.5	2,333,885.8	0.00	25.00	0.00	0	0		
									point12	12	6,138,520.0	2,333,889.0	0.00	25.00	0.00	0	0		
									point13	13	6,138,520.0	2,334,056.0	0.00	25.00	0.00	0	0		
									point14	14	6,138,721.5	2,334,058.0	0.00	25.00	0.00	0	0		
									point15	15	6,138,721.5	2,334,014.5	0.00	25.00	0.00	0	0		
									point16	16	6,138,701.5	2,334,014.5	0.00	25.00	0.00	0	0		
									point17	17	6,138,701.5	2,333,985.0	0.00	25.00	0.00	0	0		
									point18	18	6,138,706.0	2,333,984.5	0.00	25.00	0.00	0	0		
									point19	19	6,138,706.0	2,333,968.5	0.00	25.00	0.00	0	0		
									point20	20	6,138,766.5	2,333,968.5	0.00	25.00	0.00	0	0		
									point21	21	6,138,766.5	2,333,980.0	0.00	25.00	0.00	0	0		
									point22	22	6,138,804.5	2,333,979.5	0.00	25.00					
Barrier4	W	0.00	99.99	0.00				0.00	point23	23	6,138,591.5	2,334,486.0	0.00	52.00	0.00	0	0		
									point24	24	6,138,789.0	2,334,486.0	0.00	52.00	0.00	0	0		
									point25	25	6,138,789.0	2,334,260.2	0.00	52.00	0.00	0	0		
									point26	26	6,138,591.5	2,334,260.2	0.00	52.00					
Barrier5	W	0.00	99.99	0.00				0.00	point27	27	6,138,509.0	2,334,253.2	0.00	48.00	0.00	0	0		
									point28	28	6,138,801.0	2,334,253.2	0.00	48.00	0.00	0	0		
									point29	29	6,138,801.0	2,334,080.8	0.00	48.00	0.00	0	0		
									point30	30	6,138,509.0	2,334,080.8	0.00	48.00					
Barrier6	W	0.00	99.99	0.00				0.00	point31	31	6,138,630.0	2,333,768.5	0.00	30.00	0.00	0	0		
									point32	32	6,138,630.0	2,333,811.5	0.00	30.00	0.00	0	0		
									point33	33	6,138,351.0	2,333,811.5	0.00	30.00	0.00	0	0		
									point34	34	6,138,351.0	2,333,768.5	0.00	30.00					
Barrier7	W	0.00	99.99	0.00				0.00	point35	35	6,138,801.5	2,333,759.5	0.00	30.00	0.00	0	0		

									point36	36	6,138,801.5	2,333,810.5	0.00	30.00	0.00	0	0		
									point37	37	6,138,666.0	2,333,810.5	0.00	30.00	0.00	0	0		
									point38	38	6,138,666.0	2,333,763.5	0.00	30.00					
Barrier8	W	0.00	99.99	0.00				0.00	point39	39	6,138,739.5	2,333,467.2	0.00	30.00	0.00	0	0		
									point40	40	6,138,784.5	2,333,467.2	0.00	30.00	0.00	0	0		
									point41	41	6,138,784.5	2,333,735.5	0.00	30.00	0.00	0	0		
									point42	42	6,138,738.0	2,333,735.5	0.00	30.00					

Dudek **30 May 2023**

CM **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes

PROJECT/CONTRACT: **15305**

RUN: **Ontario City Annex Existing Condition**

Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
B EB	point1	1	74	25	2	25	1	25	0	0	0	0
	point2	2	74	25	2	25	1	25	0	0	0	0
	point3	3	74	25	2	25	1	25	0	0	0	0
	point4	4	74	25	2	25	1	25	0	0	0	0
	point5	5	74	25	2	25	1	25	0	0	0	0
	point6	6	74	25	2	25	1	25	0	0	0	0
	point7	7	74	25	2	25	1	25	0	0	0	0
	point8	8										
B WB	point16	16	74	25	2	25	1	25	0	0	0	0
	point15	15	74	25	2	25	1	25	0	0	0	0
	point14	14	74	25	2	25	1	25	0	0	0	0
	point13	13	74	25	2	25	1	25	0	0	0	0
	point12	12	74	25	2	25	1	25	0	0	0	0
	point11	11	74	25	2	25	1	25	0	0	0	0
	point10	10	74	25	2	25	1	25	0	0	0	0
	point9	9										
Sultana NB | S of B	point17	17	178	35	4	35	2	35	0	0	0	0
	point18	18	178	35	4	35	2	35	0	0	0	0
	point19	19	178	35	4	35	2	35	0	0	0	0
	point20	20	178	35	4	35	2	35	0	0	0	0
	point21	21	178	35	4	35	2	35	0	0	0	0
	point22	22										
Sultana SB | S of B	point23	23	178	35	4	35	2	35	0	0	0	0

		point24	24	178	35	4	35	2	35	0	0	0	0
		point25	25	178	35	4	35	2	35	0	0	0	0
		point26	26	178	35	4	35	2	35	0	0	0	0
		point88	88	178	35	4	35	2	35	0	0	0	0
		point27	27										
Sultana NB | B-D		point28	28	178	35	4	35	2	35	0	0	0	0
		point29	29	178	35	4	35	2	35	0	0	0	0
		point30	30	178	35	4	35	2	35	0	0	0	0
		point31	31	178	35	4	35	2	35	0	0	0	0
		point32	32	178	35	4	35	2	35	0	0	0	0
		point33	33	178	35	4	35	2	35	0	0	0	0
		point34	34	178	35	4	35	2	35	0	0	0	0
		point35	35	178	35	4	35	2	35	0	0	0	0
		point36	36	178	35	4	35	2	35	0	0	0	0
		point37	37										
Sultana SB | D-B		point38	38	178	35	4	35	2	35	0	0	0	0
		point39	39	178	35	4	35	2	35	0	0	0	0
		point40	40	178	35	4	35	2	35	0	0	0	0
		point41	41	178	35	4	35	2	35	0	0	0	0
		point42	42	178	35	4	35	2	35	0	0	0	0
		point43	43	178	35	4	35	2	35	0	0	0	0
		point44	44	178	35	4	35	2	35	0	0	0	0
		point45	45	178	35	4	35	2	35	0	0	0	0
		point46	46	178	35	4	35	2	35	0	0	0	0
		point47	47	178	35	4	35	2	35	0	0	0	0
		point48	48										
D EB | E of Sultana		point49	49	271	35	6	35	3	35	0	0	0	0
		point50	50	271	35	6	35	3	35	0	0	0	0
		point51	51	271	35	6	35	3	35	0	0	0	0
		point52	52	271	35	6	35	3	35	0	0	0	0
		point53	53	271	35	6	35	3	35	0	0	0	0
		point54	54										
D EB | W of Sultana		point68	68	271	35	6	35	3	35	0	0	0	0
		point69	69	271	35	6	35	3	35	0	0	0	0
		point70	70	271	35	6	35	3	35	0	0	0	0
		point71	71	271	35	6	35	3	35	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes **15305**

	point72	72	271	35	6	35	3	35	0	0	0	0
	point73	73	271	35	6	35	3	35	0	0	0	0
	point74	74	271	35	6	35	3	35	0	0	0	0
	point75	75	271	35	6	35	3	35	0	0	0	0
	point76	76										
Sultana NB | N of D	point82	82	178	35	4	35	2	35	0	0	0	0
	point83	83	178	35	4	35	2	35	0	0	0	0
	point84	84										
Sultana SB | N of D	point85	85	178	35	4	35	2	35	0	0	0	0
	point86	86	178	35	4	35	2	35	0	0	0	0
	point87	87										
D WB | E of Sultana	point55	55	271	35	6	35	3	35	0	0	0	0
	point56	56	271	35	6	35	3	35	0	0	0	0
	point57	57	271	35	6	35	3	35	0	0	0	0
	point59	59	271	35	6	35	3	35	0	0	0	0
	point60	60	271	35	6	35	3	35	0	0	0	0
	point61	61										
D WB | W of Sultana	point62	62	271	35	6	35	3	35	0	0	0	0
	point63	63	271	35	6	35	3	35	0	0	0	0
	point64	64	271	35	6	35	3	35	0	0	0	0
	point65	65	271	35	6	35	3	35	0	0	0	0
	point66	66	271	35	6	35	3	35	0	0	0	0
	point77	77	271	35	6	35	3	35	0	0	0	0
	point78	78	271	35	6	35	3	35	0	0	0	0
	point79	79	271	35	6	35	3	35	0	0	0	0
	point80	80	271	35	6	35	3	35	0	0	0	0
	point81	81										

Dudek **30 May 2023**
CM **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: **15305**
RUN: **Ontario City Annex Existing Condition**
BARRIER DESIGN: **INPUT HEIGHTS**
ATMOSPHERICS: **68 deg F, 50% RH**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type**	**Calculated**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n Sub'l Inc**	**Impact**	**LAeq1h**	**Calculated**	**Goal**	**Calculated minus Goal**
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R02	2	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0
R03	3	1	0.0	39.0	66	39.0	10	----	39.0	0.0	8	-8.0
R04	4	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R05	5	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R06	6	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R07	7	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
R08	8	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
R09	10	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
R10	12	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
R11	13	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	11	0.0	0.0	0.0
All Impacted	4	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek **30 May 2023**
CM **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **15305**
RUN: **Ontario City Annex Ex+Prj Condition**

Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
B EB	point1	1	103	25	2	25	1	25	0	0	0	0
	point2	2	103	25	2	25	1	25	0	0	0	0
	point3	3	103	25	2	25	1	25	0	0	0	0
	point4	4	103	25	2	25	1	25	0	0	0	0
	point5	5	103	25	2	25	1	25	0	0	0	0
	point6	6	103	25	2	25	1	25	0	0	0	0
	point7	7	103	25	2	25	1	25	0	0	0	0
	point8	8										
B WB	point16	16	103	25	2	25	1	25	0	0	0	0
	point15	15	103	25	2	25	1	25	0	0	0	0
	point14	14	103	25	2	25	1	25	0	0	0	0
	point13	13	103	25	2	25	1	25	0	0	0	0
	point12	12	103	25	2	25	1	25	0	0	0	0
	point11	11	103	25	2	25	1	25	0	0	0	0
	point10	10	103	25	2	25	1	25	0	0	0	0
	point9	9										
Sultana NB | S of B	point17	17	233	35	5	35	2	35	0	0	0	0
	point18	18	233	35	5	35	2	35	0	0	0	0
	point19	19	233	35	5	35	2	35	0	0	0	0
	point20	20	233	35	5	35	2	35	0	0	0	0
	point21	21	233	35	5	35	2	35	0	0	0	0
	point22	22										
Sultana SB | S of B	point23	23	233	35	5	35	2	35	0	0	0	0

	point24	24	233	35	5	35	2	35	0	0	0	0
	point25	25	233	35	5	35	2	35	0	0	0	0
	point26	26	233	35	5	35	2	35	0	0	0	0
	point88	88	233	35	5	35	2	35	0	0	0	0
	point27	27										
Sultana NB | B-D	point28	28	287	35	6	35	3	35	0	0	0	0
	point29	29	287	35	6	35	3	35	0	0	0	0
	point30	30	287	35	6	35	3	35	0	0	0	0
	point31	31	287	35	6	35	3	35	0	0	0	0
	point32	32	287	35	6	35	3	35	0	0	0	0
	point33	33	287	35	6	35	3	35	0	0	0	0
	point34	34	287	35	6	35	3	35	0	0	0	0
	point35	35	287	35	6	35	3	35	0	0	0	0
	point36	36	287	35	6	35	3	35	0	0	0	0
	point37	37										
Sultana SB | D-B	point38	38	287	35	6	35	3	35	0	0	0	0
	point39	39	287	35	6	35	3	35	0	0	0	0
	point40	40	287	35	6	35	3	35	0	0	0	0
	point41	41	287	35	6	35	3	35	0	0	0	0
	point42	42	287	35	6	35	3	35	0	0	0	0
	point43	43	287	35	6	35	3	35	0	0	0	0
	point44	44	287	35	6	35	3	35	0	0	0	0
	point45	45	287	35	6	35	3	35	0	0	0	0
	point46	46	287	35	6	35	3	35	0	0	0	0
	point47	47	287	35	6	35	3	35	0	0	0	0
	point48	48										
D EB | E of Sultana	point49	49	298	35	6	35	3	35	0	0	0	0
	point50	50	298	35	6	35	3	35	0	0	0	0
	point51	51	298	35	6	35	3	35	0	0	0	0
	point52	52	298	35	6	35	3	35	0	0	0	0
	point53	53	298	35	6	35	3	35	0	0	0	0
	point54	54										
D EB | W of Sultana	point68	68	298	35	6	35	3	35	0	0	0	0
	point69	69	298	35	6	35	3	35	0	0	0	0
	point70	70	298	35	6	35	3	35	0	0	0	0
	point71	71	298	35	6	35	3	35	0	0	0	0

	point72	72	298	35	6	35	3	35	0	0	0	0
	point73	73	298	35	6	35	3	35	0	0	0	0
	point74	74	298	35	6	35	3	35	0	0	0	0
	point75	75	298	35	6	35	3	35	0	0	0	0
	point76	76										
Sultana NB | N of D	point82	82	287	35	6	35	3	35	0	0	0	0
	point83	83	287	35	6	35	3	35	0	0	0	0
	point84	84										
Sultana SB | N of D	point85	85	287	35	6	35	3	35	0	0	0	0
	point86	86	287	35	6	35	3	35	0	0	0	0
	point87	87										
D WB | E of Sultana	point55	55	298	35	6	35	3	35	0	0	0	0
	point56	56	298	35	6	35	3	35	0	0	0	0
	point57	57	298	35	6	35	3	35	0	0	0	0
	point59	59	298	35	6	35	3	35	0	0	0	0
	point60	60	298	35	6	35	3	35	0	0	0	0
	point61	61										
D WB | W of Sultana	point62	62	298	35	6	35	3	35	0	0	0	0
	point63	63	298	35	6	35	3	35	0	0	0	0
	point64	64	298	35	6	35	3	35	0	0	0	0
	point65	65	298	35	6	35	3	35	0	0	0	0
	point66	66	298	35	6	35	3	35	0	0	0	0
	point77	77	298	35	6	35	3	35	0	0	0	0
	point78	78	298	35	6	35	3	35	0	0	0	0
	point79	79	298	35	6	35	3	35	0	0	0	0
	point80	80	298	35	6	35	3	35	0	0	0	0
	point81	81										

Dudek		**30 May 2023**	
CM		**TNM 2.5**	
		Calculated with TNM 2.5	
RESULTS: SOUND LEVELS			
PROJECT/CONTRACT:	**15305**		
RUN:	**Ontario City Annex Ex+Prj Condition**		
BARRIER DESIGN:	**INPUT HEIGHTS**		**Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.**
ATMOSPHERICS:	**68 deg F, 50% RH**		

Receiver												
Name	**No.**	**#DUs**	**Existing**	**No Barrier**					**With Barrier**			
			LAeq1h	**LAeq1h**		**Increase over existing**		**Type Impact**	**Calculated LAeq1h**	**Noise Reduction**		
				Calculated	**Crit'n**	**Calculated**	**Crit'n Sub'l Inc**			**Calculated**	**Goal**	**Calculated minus Goal**
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R01	1	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R02	2	1	0.0	49.7	66	49.7	10	----	49.7	0.0	8	-8.0
R03	3	1	0.0	40.0	66	40.0	10	----	40.0	0.0	8	-8.0
R04	4	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
R05	5	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
R06	6	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R07	7	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
R08	8	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
R09	10	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
R10	12	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
R11	13	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	11	0.0	0.0	0.0
All Impacted	4	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Attachment D

Stationary Source Operation Noise Modeling Reference Material

AHUs (plenum-type return fan only, no condenser units [see separate worksheet]):

Building Minimum Ventilation

A-weighting adjustments		26	13	9	3	0	-1	-1	1
average of values for the two fan diameter ranges, per Guyer (Table 12)	plug	40	40	38	34	29	23	19	16
average of values for the two fan diameter ranges, per Guyer (Table 12)	tube	47	44	46	47	44	45	38	35
per Guyer (Table 12, presumed based on Bies & Hansen ENC)	prop	46	48	55	53	52	48	43	38

percent GSF actually occupied (and need ventilation): 83

														A-weighted PWL (for CadnaA inputs)								
Tag	Building	GSF	Avail. SF	Height (ft)	Avg. minutes to change air*	Volume (ft3)	CFM	m^2	comparable facility function	Pressure (iwg)	Pressure (Pa)	Q (m^3/s)	fantype = plug, tube, or prop	63	125	250	500	1000	2000	4000	8000	OA dB
return air fans in building rooftop AHUs:																						
	City Hall Annex	65131	54059	10	6.5	540587	83167.2769	5025	retail stores	2	500	39	plug	64	76	77	78	75	68	62	57	**82.8**
fan or AHU cabinet liner/interior attenuation (excludes inlet/outlet PWL split, already in calcs above:														2	3	4	5	6	8	10	10	

*average from 3-10 minute range for "retail stores" per Loren Cook's "Engineering Cookbook", 1999 edition, p. 41

ACCs (air-cooled chillers on rooftops):

Building Interior Comfort

with or without sound insulation? (enter Y/N): y

unweighted PWL (dB) per OCBF (Hz) at full load (100%)

	tons	LWA	63	125	250	500	1000	2000	4000	8000
Bryant BH16-018 (no sound blanket)	1.5	67	66.2	66.2	63.9	63.8	62.3	58.4	56.4	50.3
Bryant BH16-024 (no sound blanket)	2	71	65	65	63.7	63.4	68.5	64.7	58.7	52.8
Bryant BH16-036 (no sound blanket)	3	71	68.2	68.2	66.4	67.5	68.4	59.6	58.2	52.4
Bryant BH16-048 (no sound blanket)	4	71	68.4	68.4	67.7	69.7	67.6	59.4	56.4	50
Bryant BH16-060 (no sound blanket)	5	69	63.7	63.7	65.4	67.3	64.9	58.3	56.2	51.9
Daikin AGZ-E 30 (w/out sound insulation)	30	85	84	84	83	84	77	75	74	70
Daikin AGZ-E 40 (w/out sound insulation)	40	85	84	84	83	84	77	75	74	70
Daikin AGZ-E 50 (w/out sound insulation)	50	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 60 (w/out sound insulation)	60	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 70 (w/out sound insulation)	70	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 80 (w/out sound insulation)	80	88	88	85	87	86	81	81	77	71
Daikin AGZ-E 90 (w/out sound insulation)	90	88	88	87	87	86	83	80	77	71
Daikin AGZ-E 120 (w/out sound insulation)	120	89	91	85	88	86	82	81	79	72
Daikin AGZ-E 240 (w/out sound insulation)	241	94	94	88	91	90	91	84	82	75

data for models "without sound insulation" or no "sound blankets"

	LWA	63	125	250	500	1000	2000	4000	8000
Bryant BH16-018 (no sound blanket)	68	*66.2*	66.2	63.8	64.1	64.6	59.9	57.7	53.6
Bryant BH16-024 (no sound blanket)	72	*63.4*	63.4	63.3	63.3	70.4	64.5	59.3	55.5
Bryant BH16-036 (no sound blanket)	72	*67.7*	67.7	66.8	68.1	69.9	62.8	60.3	55.2
Bryant BH16-048 (no sound blanket)	73	*67.5*	67.5	67.8	70.1	70.6	63.1	58.5	53.3
Bryant BH16-060 (no sound blanket)	70	*61.7*	61.7	65.6	68.1	65.8	59.8	58.4	56.1
Daikin AGZ-E 30 (w/out sound insulation)	88	92	91	88	87	83	78	73	68
Daikin AGZ-E 40 (w/out sound insulation)	89	92	91	90	88	84	79	74	69
Daikin AGZ-E 50 (w/out sound insulation)	90	93	93	91	89	85	79	74	69
Daikin AGZ-E 60 (w/out sound insulation)	91	94	93	94	89	86	81	76	71
Daikin AGZ-E 70 (w/out sound insulation)	92	95	95	94	89	87	81	76	71
Daikin AGZ-E 80 (w/out sound insulation)	92	95	95	95	89	87	81	76	71
Daikin AGZ-E 90 (w/out sound insulation)	93	94	95	92	91	89	83	81	81
Daikin AGZ-E 120 (w/out sound insulation)	95	93	96	92	92	90	84	84	82
Daikin AGZ-E 240 (w/out sound insulation)	100	98	98	98	95	96	90	90	86

data for models "with sound insulation" or "sound blankets"

	LWA	63	125	250	500	1000	2000	4000	8000
Bryant BH16-018 (no sound blanket)	67	*66.2*	66.2	63.9	63.8	62.3	58.4	56.4	50.3
Bryant BH16-024 (no sound blanket)	71	*65*	65	63.7	63.4	68.5	64.7	58.7	52.8
Bryant BH16-036 (no sound blanket)	71	*68.2*	68.2	66.4	67.5	68.4	59.6	58.2	52.4
Bryant BH16-048 (no sound blanket)	71	*68.4*	68.4	67.7	69.7	67.6	59.4	56.4	50
Bryant BH16-060 (no sound blanket)	69	*63.7*	63.7	65.4	67.3	64.9	58.3	56.2	51.9
Daikin AGZ-E 30 (w/out sound insulation)	85	84	84	83	84	77	75	74	70
Daikin AGZ-E 40 (w/out sound insulation)	85	84	84	83	84	77	75	74	70
Daikin AGZ-E 50 (w/out sound insulation)	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 60 (w/out sound insulation)	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 70 (w/out sound insulation)	87	85	85	85	86	80	77	75	70
Daikin AGZ-E 80 (w/out sound insulation)	88	88	85	87	86	81	81	77	71
Daikin AGZ-E 90 (w/out sound insulation)	88	88	87	87	86	83	80	77	71
Daikin AGZ-E 120 (w/out sound insulation)	89	91	85	88	86	82	81	79	72
Daikin AGZ-E 240 (w/out sound insulation)	94	94	88	91	90	91	84	82	75

actual percent of GSF occupied: 83

Phase	Building Tag	GSF	Avail. SF	comparable facility function	Avg. GSF per ton*	tons of refrig.	Approx. Qty. of ACCs	tons per ACC	Approx. Total PWL (dBA)
	City Hall Annex	65131	54059	Office Buildings	360	150.2	5	30	**92**

unweighted PWL (dB) per OCBF (Hz) at full load (100%)

	63	125	250	500	1000	2000	4000	8000	Overall
	91	91	90	91	84	82	81	77	
A-weighting adjustments	26	13	9	3	0	-1	-1	1	
A-weighted levels	65	78	81	88	84	83	82	76	91.66914

*based upon "lo" value per Loren Cook's "Engineering Cookbook", 1999 edition, pp. 59-60

MEMORANDUM

To:	City of Ontario
From:	Shane Russett, Air Quality Specialist, Dudek
Subject:	Ontario City Hall Annex Air Quality Technical Memorandum
Date:	September 28, 2023
cc:	Jennifer Reed, Dudek
Attachment(s):	Attachment A – CalEEMod Emissions Outputs Attachment B – Construction and Operational Health Risk Assessments

1 Introduction and Purpose

The purpose of this memorandum is to estimate criteria air pollutant emissions from construction and operation of the Ontario City Hall Annex Project (Project) located in the City of Ontario, California (City), and evaluate potential air quality impacts resulting from Project implementation under the California Environmental Quality Act (CEQA).

This memorandum is intended to support a Class 32 CEQA exemption for the Project. The Class 32 CEQA exemption consists of Projects characterized as in-fill development meeting the following conditions (***emphasis*** added):

a) The Project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
b) The proposed development occurs within city limits on a Project site of no more than five acres substantially surrounded by urban uses.
c) The Project site has no value as habitat for endangered, rare or threatened species.
d) Approval of the Project would not result in any significant effects relating to traffic, noise, ***air quality***, or water quality.
e) The site can be adequately served by all required utilities and public services.

The Class 32 exemption may be used where above-noted conditions (a) through (e) are fulfilled, where it can be seen with certainty that the proposed Project could not have a significant effect on the environment. Of relevance, the focus is on air quality impacts and greenhouse gas (GHG) emissions are therefore not evaluated herein.

The contents and organization of this memorandum are as follows: (2) project description; (3) background; (4) thresholds of significance; (5) approach and methodology; (6) impact analysis; (7) conclusions; and (8) references cited.

2 Project Description

The vacant 5.38-acre (4.83 acres net) Project site is located at the intersection between 4th Street and Hermosa Avenue. The Project would consist of a new three-story civic office building of approximately 60,000 sf, with the potential for a fourth level future expansion. The Project would also include site improvements of roughly 28,500 square feet including hardscape and landscape areas, as well as a six-story parking structure totaling approximately 268,730 square feet.

Several Project Design Features (PDFs) were accounted for in the Project modeling and analysis:

PDF-AQ-1 Prior to the commencement of construction activities for the Project, the grading and construction plan notes shall specify that all diesel-powered equipment is powered with California Air Resources Board (CARB)-certified Tier 4 Interim engines or better.

An exemption from this requirement may be granted if (1) the applicant documents equipment with Tier 4 Interim engines or better are not reasonably available, and (2) the required corresponding reductions in diesel particulate matter (DPM) emissions can be achieved for the Project from other combinations of construction equipment. Before an exemption may be granted, the applicant's construction contractor shall: (1) demonstrate that at least two construction fleet owners/operators in San Bernardino County were contacted and that those owners/operators confirmed Tier 4 Interim equipment or better could not be located within San Bernardino County during the desired construction schedule; and (2) the proposed replacement equipment has been evaluated using California Emissions Estimator Model (CalEEMod) or other industry standard emission estimation method and documentation provided to the City of Ontario to confirm that Project-generated construction emissions do not exceed the applicable South Coast Air Quality Management District (SCAQMD) cancer and non-cancer risk thresholds.

PDF-AQ-2 Prior to the commencement of construction activities at the Ontario City Hall Annex, the City shall require its construction contractor to water any exposed soils and/or soil stockpiles at least three times daily and water all demolished area at least two times per day or utilize another SCAQMD-approved dust control non-toxic agent in accordance with the manufacturer's specifications, to minimize fugitive dust during construction.

3 Background

The Project site is located within the South Coast Air Basin (SCAB) and is within the jurisdictional boundaries of the SCAQMD, which has jurisdiction over the City of Ontario, where the Project is located.

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants that are evaluated include volatile organic compounds (VOCs; also referred to as reactive organic gases [ROGs]), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (coarse particulate matter, or PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size (fine particulate matter, or $PM_{2.5}$). VOCs and NO_x are important because they are precursors to ozone (O_3).

Regarding National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) attainment status,[1] the SCAB is designated as a nonattainment area for federal and state O_3 standards, and federal

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[1] An area is designated as in attainment when it is in compliance with the NAAQS and/or the CAAQS. These standards are set by the Environmental Protection Agency (EPA) and California Air Resources Board (CARB), respectively, for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. Attainment

and state $PM_{2.5}$ standards (CARB 2020; EPA 2022). The SCAB is designated as a nonattainment area for state PM_{10} standards; however, it is designated as an attainment area for federal PM_{10} standards. The SCAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and state SO_2 standards. Although the SCAB has been designated as nonattainment for the federal rolling 3-month average lead standard, it is designated attainment for the state lead standard.

4 Thresholds of Significance

The significance criteria used to evaluate the Project impacts to air quality is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the Project would (14 CCR 15000 et seq.):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. 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.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the Project would have a significant impact on air quality.

SCAQMD has established air quality significance thresholds, as revised in April 2019, that set forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality (SCAQMD 2019). The project's "regional" emission refers to emissions that will be evaluated based on regional significance thresholds established by SCAQMD, also known as the criteria pollutant mass daily thresholds. The SCAQMD air quality significance thresholds also provide toxic air contaminant (TAC) thresholds and ambient air quality standards for criteria pollutants that are to be utilized for localized significance determination. The quantitative air quality analysis provided herein applies the SCAQMD thresholds identified in Table 1 to determine the potential for the Project to result in a significant impact under CEQA.

Table 1. SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	**Construction (Pounds per Day)**	**Operation (Pounds per Day)**
VOCs	75	55
NO_x	100	55
CO	550	550
SO_x	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Lead[a]	3	3

= meets the standards; attainment/maintenance = achieve the standards after a nonattainment designation; nonattainment = does not meet the standards.

Table 1. SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	**Construction (Pounds per Day)**	**Operation (Pounds per Day)**
TACs and Odor Thresholds		
TACs[b]	Maximum incremental cancer risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and acute hazard index ≥ 1.0 (Project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants[c]		
NO_2 1-hour average NO_2 annual arithmetic mean	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.030 ppm (state) and 0.0534 ppm (federal)	
CO 1-hour average CO 8-hour average	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state /federal)	
PM_{10} 24-hour average PM_{10} annual average	$10.4\ \mu g/m^3$ (construction)[d] $2.5\ \mu g/m^3$ (operation) $1.0\ \mu g/m^3$	
$PM_{2.5}$ 24-hour average	$10.4\ \mu g/m^3$ (construction)[d] $2.5\ \mu g/m^3$ (operation)	

Source: SCAQMD 2019.

Notes: SCAQMD = South Coast Air Quality Management District; VOCs = volatile organic compounds; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; TAC = toxic air contaminant; NO_2 = nitrogen dioxide; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

GHG emissions thresholds for industrial proposed Projects, as added in the March 2015 revision to the SCAQMD Air Quality Significance Thresholds, were not include included in Table 1 as they will be addressed within the GHG emissions analysis and not the air quality study.

[a] The phaseout of leaded gasoline started in 1976. Since gasoline no longer contains lead, the Project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.

[b] TACs include carcinogens and non-carcinogens.

[c] Ambient air quality standards for criteria pollutants are based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.

[d] Ambient air quality threshold are based on SCAQMD Rule 403.

The phasing out of leaded gasoline started in 1976. As gasoline no longer contains lead, the proposed Project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.

In addition to the emission-based thresholds listed in Table 1, SCAQMD also recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the Project as a result of construction activities. Such an evaluation is referred to as a localized significance threshold (LST) analysis. To account for truck activity, it was assumed that each truck would travel 1,000 feet on-site. For Project sites of 5 acres or less, the SCAQMD LST Methodology includes lookup tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing Project-specific dispersion modeling (SCAQMD 2009). The Project would disturb less than 5 acres per day, so it is appropriate to use the lookup tables for the LST evaluation.

The LST significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a Project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The LST significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. The allowable emission rates depend on the following parameters:

- Source-receptor area (SRA) in which the Project is located
- Size of the Project site
- Distance between the Project site and the nearest sensitive receptor (e.g., residences, schools, hospitals)

The Project site is located in SRA 33 (Southwest San Bernardino Valley). LST pollutant screening level concentration data is currently published for 1-, 2-, and 5-acre sites for varying distances. In accordance with the SCAQMD *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, the Project would disturb a maximum of 1.5-acres per day during the grading phase. The nearest sensitive-receptor land use are residences located approximately 50 feet north and west of the Project site boundary. As such, the LST receptor distance was assumed to be 25 meters, the most conservative distance option. The LST values from the SCAQMD lookup tables for SRA 33 (Southwest San Bernardino Valley) for a 1.5-acre Project site and a receptor distance of 25 meters are shown in Table 2.

Table 2. Localized Significance Thresholds for Source-Receptor Area 33 (Southwest San Bernardino Valley)

Pollutant	Threshold (pounds/day)
Construction	
NO_2	144
CO	1,047.5
PM_{10}	5.5
$PM_{2.5}$	4.5
Operation	
NO_2	144
CO	1,048
PM_{10}	2
$PM_{2.5}$	2

Source: SCAQMD 2009.

Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

Localized significance thresholds were determined based on the values for a 1.5-acre site at a distance of 25 meters from the nearest sensitive receptor.

5 Approach and Methodology

5.1 Construction

The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.13 was used to estimate emissions from construction of the Project (CAPCOA 2022). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with construction activities and operation of a variety of land use Projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the land use type used to represent the Project and its size, construction schedule, and anticipated use of construction equipment, were based on information provided by the applicant or default model assumptions when Project specifics were unavailable. Construction was assumed to commence in January 2024 and last approximately 15 months. The first year of operation was assumed to be 2025.

The analysis contained herein is based on the following schedule assumptions (duration of phases is approximate):

- Demolition: January 2024 (20 days)
- Site Preparation: January 2024 – February 2024 (10 days)
- Grading: February 2024 – March 2024 (20 days)
- Building Construction: March 2024 – January 2025 (230 days)
- Paving: January 2025 – February 2025 (20 days)
- Architectural Coating: March 2025 (20 days)

For the analysis, it was assumed that heavy construction equipment would be operating at the site for up to 8 hours per day (depending on phase), 5 days per week (22 days per month), during the duration of Project construction. In addition to construction equipment operation, emissions from worker trips and vendor trucks (i.e., delivery trucks) were estimated based on CalEEMod defaults. During the demolition phase, approximately 160,700 square feet of existing parking lot is expected to be demolished. The Project is expected to have a net export of approximately 13,850 cubic yards of material during the grading phase.

The construction equipment mix and estimated hours of equipment operation per day used for the air emissions modeling of the Project are based on CalEEMod defaults and are shown in Table 3. Additional details regarding construction assumptions are provided in the modeling output, Attachment A.

Table 3. Construction Scenario Assumptions

			One-Way Vehicle Trips			Equipment		
Construction Phase	Start Date	Finish Date	Average Daily Workers	Average Daily Vendor Trucks	Average Daily Haul Trucks	Type	Quantity	Usage Hours
Demolition	1/1/2024	1/29/2024	16	4	94	Concrete/Industrial Saws	1	8
						Excavators	3	8
						Rubber Tired Dozers	2	8
Site Preparation	1/30/2024	2/13/2024	18	4	0	Rubber Tired Dozers	3	8
						Tractors/Loaders/ Backhoes	4	8
Grading	2/14/2024	3/13/2024	16	4	88	Excavators	1	8
						Graders	1	8
						Rubber Tired Dozers	1	8
						Tractors/Loaders/ Backhoes	3	8

Table 3. Construction Scenario Assumptions

			One-Way Vehicle Trips			Equipment		
Construction Phase	Start Date	Finish Date	Average Daily Workers	Average Daily Vendor Trucks	Average Daily Haul Trucks	Type	Quantity	Usage Hours
Building Construction	3/14/2024	1/30/2025	132	54	0	Cranes	1	7
						Forklifts	3	8
						Generator Sets	1	8
						Tractors/Loaders/ Backhoes	3	7
						Welders	1	8
Paving	1/31/2025	2/28/2025	16	4	0	Pavers	2	8
						Paving Equipment	2	8
						Rollers	2	8
Architectural Coating	3/1/2025	3/29/2025	26	4	0	Air Compressors	1	6

Notes: See Attachment A for details.

5.2 Operations

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating and water heating are calculated in the building energy use module of CalEEMod, as described in the following text.

Consumer products are chemically formulated products used by institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product VOC emissions were estimated in CalEEMod based on the floor area of buildings and default factor of pounds of VOC per building square foot per day. The CalEEMod default values for consumer products were assumed.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of surface coatings based on the VOC emission factor, building square footage, assumed fraction of surface area, and reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SCAQMD's Rule 1113 (Architectural Coatings) governs the VOC content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults for non-residential uses, it is assumed that the surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating (CAPCOA 2022). The CalEEMod defaults of 100 g/L were assumed for non-residential interior, exterior, and parking area coatings.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chainsaws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days.

Energy Sources

CalEEMod default values for energy consumption for each land use were applied for the Project analysis. The energy use from non-residential land uses is calculated in CalEEMod based on the California Commercial End-Use Survey database. Energy use in buildings (both natural gas and electricity) is divided by the program into end-use categories subject to Title 24 requirements (end uses associated with the building envelope, such as the heating, ventilation, and air conditioning (HVAC) system, water heating system, and integrated lighting) and those not subject to Title 24 requirements (such as appliances, electronics, and miscellaneous "plug-in" uses).

Mobile Sources

Following the completion of construction activities, the Project would generate criteria pollutant emissions from mobile sources (vehicular traffic) as a result of employees and visitors of the Project. Based on the Dudek Trip Generation, the Project would generate 2,555 employee trips per day; however, 138 of the 343 Project employees would be relocated from an existing annex, creating a net total increase of 1,527 daily trips (Dudek 2023). CalEEMod was used to estimate emissions from proposed vehicular sources (refer to Attachment A). CalEEMod default data, including temperature, trip characteristics, variable start information, and emissions factors, were conservatively used for the model inputs. The fleet mix and trip lengths for Project vehicles were assumed consistent with CalEEMod default values.

Stationary Sources (Emergency Generators)

The Project would potentially operate one diesel-fueled 755-horsepower (hp) generator. This generator was assumed to operate one-hour a day for up to 50-hours a year for routine testing and maintenance.

5.3 Health Risk Assessments

A health risk assessment (HRA) was performed to evaluate potential health risk associated with construction and operation of the Project. The following discussion summarizes the dispersion modeling and HRA methodology; supporting HRA documentation, including detailed assumptions, is presented in Attachment B.

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute (immediate) and/or chronic (cumulative) non-cancer health effects. A toxic substance released into the air is considered a TAC. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere.

The most recent guidance from the Office of Environmental Health Hazard Assessment (OEHHA) is the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). Cancer risk parameters, such as age-sensitivity factors, daily breathing rates, exposure period, fraction of time at home, and cancer potency factors were based on the values and data recommended by OEHHA as implemented in Hotspots Analysis and Reporting Program Version 2 (HARP2). SCAQMD's Modeling Guidance for American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) (SCAQMD 2022a) and Risk Assessment Procedures for Rules 1401, 1401.1, and 212 (SCAQMD 2017) provide guidance to perform dispersion modeling for use in HRAs within the SCAB.

Construction Health Risk Assessment

The dispersion modeling for the construction HRA was performed using AERMOD (Version 22112), which is the model SCAQMD requires for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain.

Dispersion of DPM emissions was modeled using AERMOD, then cancer risk and noncancer health impacts were subsequently modeled using CARB's HARP2. A unit emission rate (1 gram per second) was input for the AERMOD run to obtain the "X/Q" values. X/Q is a dispersion factor that is the average effluent concentration normalized by source strength and is used as a way to simplify the representation of emissions from construction. The maximum concentrations were determined for the 1-hour and Period averaging periods.

For construction, the Project's potential health impacts were evaluated assuming an exposure duration of approximately 1.2 years and starting at the third trimester of pregnancy. The LST CalEEMod run was also used for the construction HRA to estimate onsite emissions of exhaust PM_{10}, which was used as a surrogate for DPM. The predominant source of construction exhaust PM_{10} is operation of offroad diesel construction equipment. However, it was conservatively assumed that heavy-duty haul and vendor trucks would travel about 1,000-feet onsite to represent emissions from potential onsite travel and nearby local offsite travel. Consistent with SCAQMD guidance, the Risk Management Policy using the Derived Method was used to estimate cancer risk and the OEHHA Derived Method was used to estimate chronic noncancer risk (SCAQMD 2017). The cancer and noncancer risk results were then compared to SCAQMD thresholds to assess the Project impact significance. Principal parameters of the construction HRA modeling are presented in Table 4.

Table 4. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Meteorological Data	AERMOD-specific meteorological data for the Ontario International Airport monitoring station (KONT) was used for the dispersion modeling.
Urban versus Rural Option	Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight—and thus more heat—relative to rural areas. According to SCAQMD guidelines, the urban dispersion option was selected.
Terrain Characteristics	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View in the U.S. Geological Survey's National Elevation Dataset format with a resolution of 1 arc-second resolution.

Table 4. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Source Release Characterizations	The following modeling parameters were based on the best information available at the time of analysis for construction sources. ▪ Off-road equipment and on-site trucks were modeled as a line of adjacent volume sources across the Project site with a release height of 5 meters, a plume height of 10 meters, and plume width of 10 meters.
Receptors	To ensure receptors in the nearby revised Project area were adequately captured, a fine uniform Cartesian grid of receptors spaced 20 meters apart, 1-kilometer by 1-kilometer, was included in the AERMOD run.

Notes: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model.
See Attachment B.

Operational Health Risk Assessment

As with the construction assessment, the operational HRA included dispersion modeling using AERMOD and then cancer risk and noncancer risk using CARB's HARP2. A unit emission rate (1 gram per second) was input for the AERMOD run to obtain the "X/Q" values. The maximum concentrations were determined for the 1-hour and Period averaging periods.

For operations, the Project's potential health impacts were evaluated assuming an exposure duration of 30 years and starting in the third trimester of pregnancy. The 755-horsepower diesel emergency generator would result in DPM and was assumed to operate up to 50 hours per year for routine testing and maintenance. Building heights were input into AERMOD to account for building downwash for the emergency generator point source. Consistent with SCAQMD guidance, the Risk Management Policy using the Derived Method was used to estimate cancer risk and the OEHHA Derived Method was used to estimate chronic noncancer risk (SCAQMD 2017). The cancer and noncancer risk results were then compared to SCAQMD thresholds to assess the Project impact significance. Principal parameters of the operational HRA modeling are presented in Table 5.

Table 5. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Meteorological Data	AERMOD-specific meteorological data for the Ontario International Airport monitoring station (KONT) was used for the dispersion modeling.
Urban versus Rural Option	Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight—and thus more heat—relative to rural areas. According to SCAQMD guidelines, the urban dispersion option was selected.
Terrain Characteristics	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View in the U.S. Geological Survey's National Elevation Dataset format with a resolution of 1 arc-second resolution.
Source Release Characterizations	The following modeling parameters were based on the best information available at the time of analysis. ▪ The 755-horsepower emergency generator was modeled as a point source and was assumed to have a vertical stack with a height of 3.1 meters, inside stack diameter of 0.19 meters, gas exhaust temperature of 747.6 degrees Kelvin, and gas exhaust velocity of 1.7 cubic meters per second.

Table 5. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Receptors	To ensure receptors in the nearby revised Project area were adequately captured, a fine uniform Cartesian grid of receptors spaced 20 meters apart, 1-kilometer by 1-kilometer, was included in the AERMOD run.

Notes: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model.
See Attachment B.

6 Impact Analysis

6.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

As previously discussed, the Project is located within the SCAB under the jurisdiction of the SCAQMD, which is the local agency responsible for administration and enforcement of air quality regulations for the area. The SCAQMD has established criteria for determining consistency with the Air Quality Management Plan (AQMP), currently the 2022 AQMP, in Chapter 12, Sections 12.2 and 12.3, of the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993). The criteria are as follows (SCAQMD 1993):

- **Consistency Criterion No. 1:** The project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2:** The project will not exceed the assumptions in the AQMP, or increments based on the year of project buildout and phase.

To address the first criterion, Project-generated criteria air pollutant emissions have been estimated and analyzed for significance and are addressed under Section 6.2. Detailed results of this analysis are included in Attachment A, CalEEMod Emissions Outputs. As presented in Section 6.2, construction and operation of the Project would not generate criteria air pollutant emissions that exceed SCAQMD's thresholds.

The second criterion regarding the Project's potential to exceed the assumptions in the AQMP or increments based on the year of Project buildout and phase is primarily assessed by determining consistency between the Project's land use designations and its potential to generate population growth. Projects are considered consistent with, and would not conflict with or obstruct implementation of, the 2022 AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP (per Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook).

The SCAQMD primarily uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAG for its RTP/SCS (SCAG 2020), which is based on general plans for cities and counties in the SCAB, for the development of the AQMP emissions inventory (SCAQMD 2022b).[2]

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[2] Information necessary to produce the emission inventory for the SCAB is obtained from the SCAQMD and other governmental agencies, including CARB, the California Department of Transportation, and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socioeconomic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. SCAG incorporates these data into their Travel Demand Model for

The SCAG 2020 RTP/SCS, and associated Regional Growth Forecast, are generally consistent with the local plans; therefore, the 2022 AQMP is generally consistent with local government plans.

The relevant local plan for the proposed Project is the City of Ontario General Plan, the most recent iteration of which was adopted in 2020. The City's General Plan designates the land use of the Project site as Public Facility (PV) and Mixed Use (MU) (City of Ontario 2023). The Project site has a zoning designation of Civic (CIV) and Low Intensity Office (OL) (City of Ontario 2022). The project would be consistent with the land use designations of Public Facility and Mixed Use for the City Hall Annex and parking structure. The Public Facilities designation allows for civic centers, governmental institutions, police and fire stations, transportation facilities, museums, and public libraries. The Mixed Use designation allows for a horizontal and/or vertical mixture of retail, service, office, restaurant, entertainment, cultural, and residential uses. The Project is consistent with the existing land use designation and zoning. In addition, the implementation of the Project would not generate an increase in growth demographics that would conflict with existing projections within the region. Accordingly, the Project is consistent with the SCAG RTP/SCS forecasts used in the SCAQMD AQMP development.

In summary, based on the considerations presented for the two criteria, impacts relating to the Project's potential to conflict with or obstruct implementation of the applicable AQMP would be less than significant.

6.2 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard?

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, Project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a Project's individual emissions would have a cumulatively significant impact on air quality. If a Project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution. Conversely, Projects that do not exceed the Project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003).

A quantitative analysis was conducted to determine whether the proposed Project might result in emissions of criteria air pollutants that may cause exceedances of the NAAQS or CAAQS, or cumulatively contribute to existing nonattainment of ambient air quality standards. Details of the methods used to estimate emissions are discussed above in Section 5, Approach and Methodology. The following discussion summarizes the quantitative Project-generated construction emissions and impacts that would result from implementation of the proposed Project. Detailed assumptions and results of this analysis are provided in Attachment A, CalEEMod Output Files.

Construction Emissions

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road trucks and worker vehicle trips). Construction emissions can vary substantially from day to day,

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estimating/projecting vehicle miles traveled and driving speeds. SCAG's socioeconomic and transportation activities projections in their 2020 RTP/SCS are integrated in the 2022 AQMP (SCAQMD 2022b).

depending on the level of activity; the specific type of operation; and, for particulate matter, the prevailing weather conditions.

As discussed previously, CalEEMod was used to estimate emissions from construction of the Project. Internal combustion engines used by construction equipment, trucks, and worker vehicles would result in emissions of VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions would also be generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil. The Project would comply with PDF-AQ-2 to control dust emissions generated during any dust-generating activities. The CalEEMod default assumptions were used for estimating fugitive dust emissions from grading on site. The Project would involve application of architectural coating (e.g., paint and other finishes) for painting the interior and exterior of the building as well as parking lot striping. The contractor is required to procure architectural coatings from a supplier that complies with the requirements of SCAQMD's Rule 1113 (Architectural Coatings). Table 6 presents the estimated maximum daily construction emissions generated during construction of the Project, which includes implementation of PDF-AQ-1 and PDF-AQ-2. Details of the emission calculations are provided in Attachment A.

Table 6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds per day					
Summer						
2024	1.01	10.9	23.6	0.03	1.73	0.50
Winter						
2024	0.96	20.6	29.3	0.08	7.97	4.09
2025	34.8	10.9	21.2	0.03	1.73	0.50
Maximum	**34.8**	**20.6**	**29.3**	**0.08**	**7.97**	**4.09**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.
See Attachment A for complete results.

As shown in Table 6, the Project construction would not exceed SCAQMD's daily thresholds. Therefore, construction impacts associated with criteria air pollutant emissions would be less than significant.

Operational Emissions

Operational year 2025 was assumed as it would be the first year following completion of construction. Table 7 presents the Project-related emissions during operation.

Table 7. Estimated Maximum Daily Operation Criteria Air Pollutant Emissions

Emissions Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Summer						
Area	3.84	0.12	14.3	<0.005	0.02	0.03
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	6.37	6.34	60.4	0.15	12.6	3.27

Table 7. Estimated Maximum Daily Operation Criteria Air Pollutant Emissions

Emissions Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**11.9**	**14.5**	**79.4**	**0.16**	**12.9**	**3.58**
Winter						
Area	1.50	--	--	--	--	--
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	5.91	6.82	50.2	0.14	12.6	3.27
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**9.13**	**14.9**	**54.9**	**0.15**	**12.9**	**3.56**
Maximum	**11.9**	**14.9**	**79.4**	**0.16**	**12.9**	**3.58**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Attachment A for complete results. Columns may not add due to rounding.

As shown in Table 7, the Project would not exceed SCAQMD's significance thresholds during operations. Therefore, operational impacts associated with criteria air pollutant emissions would be less than significant.

Based on the previous considerations, the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants, and cumulative impacts would be less than significant.

6.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

Localized Significance Thresholds

Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). The nearest sensitive-receptor land use are residences located approximately 50 feet north and west of the Project site boundary.

Construction activities associated with the Project would result in temporary sources of on-site fugitive dust, construction equipment emissions, and on-site mobile source emissions. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 33 are presented in Tables 8 and compared to the maximum daily on-site construction emissions.

Table 8. Localized Significance Thresholds Analysis for Project Construction - Unmitigated

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
2024	14.8	28.3	5.38	2.73

2025	9.30	14.7	0.10	0.09
Maximum	**14.8**	**28.3**	**5.38**	**2.73**
SCAQMD LST	*144*	*1,047.5*	*5.5*	*4.5*
LST Exceeded?	**No**	**No**	**No**	**No**

Source: SCAQMD 2009.

Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.

Localized significance thresholds are shown for a 1.5-acre Project site corresponding to a distance to a sensitive receptor of 25 meters. Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.

As shown in Table 8, the Project LST would not exceed the established significance thresholds, and thus would result in a less than significant impact to sensitive receptors during construction.

CO Hotspots

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed "CO hotspots." The transport of CO is extremely limited, as it disperses rapidly with distance from the source. However, under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors. Typically, high CO concentrations are associated with severely congested intersections operating at an unacceptable level of service (LOS) (LOS E or worse is unacceptable). Projects contributing to adverse traffic impacts may result in the formation of a CO hotspot. Additional analysis of CO hotspot impacts would be conducted if a Project would result in a significant impact or contribute to an adverse traffic impact at a signalized intersection that would potentially subject sensitive receptors to CO hotspots.

At the time that the SCAQMD Handbook (1993) was published, the SCAB was designated nonattainment under the CAAQS and NAAQS for CO. In 2007, the SCAQMD was designated in attainment for CO under both the CAAQS and NAAQS as a result of the steady decline in CO concentrations in the SCAB due to turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities. The SCAQMD conducted CO modeling for the 2003 AQMP[3] (SCAQMD 2003) for the four worst-case intersections in the SCAB: (1) Wilshire Boulevard and Veteran Avenue, (2) Sunset Boulevard and Highland Avenue, (3) La Cienega Boulevard and Century Boulevard, and (4) Long Beach Boulevard and Imperial Highway. At the time the 2003 AQMP was prepared, the intersection of Wilshire Boulevard and Veteran Avenue was the most congested intersection in Los Angeles County, with an average daily traffic volume of about 100,000 vehicles per day. The 2003 AQMP also projected 8-hour CO concentrations at these four intersections for 1997 and from 2002 through 2005. From years 2002 through 2005, the maximum 8-hour CO concentration was 3.8 ppm at the Sunset Boulevard and Highland Avenue intersection in 2002; the maximum 8-hour CO concentration was 3.4 ppm at the Wilshire Boulevard and Veteran Avenue in 2002. Accordingly, CO concentrations at congested intersections would not exceed the 1-hour or 8-hour CO CAAQS unless projected daily traffic would be at least over 100,000 vehicles per day. The Project's anticipated net total average daily trips (ADT) of 1,527 is minimal and is not of a magnitude expected to raise the traffic volumes at intersections within proximity of the proposed Project to the 100,000 vehicles per day that could result in a CO hotspot.

Additionally, ambient CO levels are monitored at the 1350 San Bernardino Rd., Upland air quality monitoring station, which is approximately 2.7 miles northwest of the Project site and represents ambient air quality in the Project area. Ambient CO levels monitored at this representative monitoring station indicate that the highest recorded 1-hour concentration of CO is 1.5 ppm (the State standard is 20 ppm) and highest 8-hour concentration is 1.1 ppm (the

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[3] SCAQMD's CO hotspot modeling guidance has not changed since 2003.

State standard is 9 ppm) during the past 3 years of available data (EPA 2022a). As discussed above, the highest CO concentrations typically occur during peak traffic hours, so CO impacts calculated under peak traffic conditions represent a worst-case analysis. Given the considerably low level of CO concentrations in the Project area, and the minimal increase in daily trips, Project-related mobile emissions are not expected to contribute significantly to CO concentrations, and a CO hotspot is not anticipated to occur. In addition, due to continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SCAB is steadily decreasing. Based on these considerations, the proposed Project would result in a less-than-significant impact to air quality with regard to potential CO hotspots.

Toxic Air Contaminants

Construction Health Risk

As discussed previously, a construction HRA was performed to estimate the potential health risk at proximate residential receptors associated with short-term construction of the Project. Notably, as there is no reference exposure level for acute health impacts from DPM, acute risk was not evaluated in the construction HRA. Results of the construction HRA are presented in Table 9.

Table 9. Summary of Maximum Cancer and Chronic Health Risks - Construction

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	8.28	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0077	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment
Emissions include quantification of PDF-AQ-1.

As shown in Table 9, Project construction activities would result in a Residential Maximum Individual Cancer Risk of 8.28 in 1 million, which is less than the significance threshold of 10 in 1 million. Project construction would result in a Residential Chronic Hazard Index of 0.0077, which is below the 1.0 significance threshold. Impacts would be less than significant.

Operational Health Risk

As discussed previously, an operational HRA was also performed to estimate the potential health risk at proximate residential receptors associated with long-term operations of the Project, specifically, the routine testing and maintenance of the diesel emergency generator. Results of the operational HRA are presented in Table 10.

Table 10. Summary of Maximum Cancer and Chronic Health Risks - Operations

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	3.09	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0008	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment

As shown in Table 10, Project operational activities would result in a Residential Maximum Individual Cancer Risk of 3.09 in 1 million, which is less than the significance threshold of 10 in 1 million. Project operations would result in a Residential Chronic Hazard Index of 0.0008, which is below the 1.0 significance threshold. Impacts would be less than significant.

Health Effects of Criteria Air Pollutants

Construction and operation of the Project would generate criteria air pollutant emissions; however, the Project would not exceed the SCAQMD mass-emission thresholds.

The SCAB is designated as nonattainment for O_3 for the NAAQS and CAAQS. Thus, existing O_3 levels in the SCAB are at unhealthy levels during certain periods. The health effects associated with O_3 generally relate to reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (VOC or NO_x) that would exceed the SCAQMD thresholds, the Project is not anticipated to substantially contribute to regional O_3 concentrations and associated health impacts. Similar to construction, no SCAQMD threshold would be exceeded during operation.

In addition to O_3, NO_x emissions contribute to potential exceedances of the NAAQS and CAAQS for NO_2 (since NO_2 is a constituent of NO_x). Exposure to NO_2 can cause lung irritation, bronchitis, and pneumonia, and lower resistance to respiratory infections. As shown in Table 8, Project construction and operation would not exceed the SCAQMD localized thresholds for NO_2. Thus, construction and operation of the Project are not expected to exceed the NO_2 standards or contribute to associated health effects.

CO tends to be a localized impact associated with congested intersections. CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. CO hotspots were discussed previously as a less than significant impact. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

The SCAB is designated as nonattainment for PM_{10} under the CAAQS and nonattainment for $PM_{2.5}$ under the NAAQS and CAAQS. Particulate matter contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing (EPA 2016). As with O_3 and NO_x, the Project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed SCAQMD's LSTs. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the Project would not result in any potentially significant contribution to local or regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Impacts would be less than significant.

6.4 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the Project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and asphalt pavement application. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding facilities (SCAQMD 1993). The Project would not result in these land uses. Impacts would be less than significant.

7 Conclusions

Criteria air pollutant emissions generated during construction and operation of the Project would not exceed SCAQMD's significance thresholds or result in a cumulatively considerable net increase in emissions. Similarly, the emissions would also not exceed the LST significance thresholds for sensitive receptors during construction or operations or create a CO hotspot. Construction and operational health risk levels would also be below the applicable SCAQMD thresholds. Overall, the Project would result in less than significant air quality impacts.

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Attachment A

CalEEMod Emissions Output

MEMORANDUM

To:	City of Ontario
From:	Shane Russett, Air Quality Specialist, Dudek
Subject:	Ontario City Hall Annex Air Quality Technical Memorandum
Date:	September 28, 2023
cc:	Jennifer Reed, Dudek
Attachment(s):	Attachment A – CalEEMod Emissions Outputs Attachment B – Construction and Operational Health Risk Assessments

1 Introduction and Purpose

The purpose of this memorandum is to estimate criteria air pollutant emissions from construction and operation of the Ontario City Hall Annex Project (Project) located in the City of Ontario, California (City), and evaluate potential air quality impacts resulting from Project implementation under the California Environmental Quality Act (CEQA).

This memorandum is intended to support a Class 32 CEQA exemption for the Project. The Class 32 CEQA exemption consists of Projects characterized as in-fill development meeting the following conditions (***emphasis*** added):

a) The Project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.

b) The proposed development occurs within city limits on a Project site of no more than five acres substantially surrounded by urban uses.

c) The Project site has no value as habitat for endangered, rare or threatened species.

d) Approval of the Project would not result in any significant effects relating to traffic, noise, ***air quality***, or water quality.

e) The site can be adequately served by all required utilities and public services.

The Class 32 exemption may be used where above-noted conditions (a) through (e) are fulfilled, where it can be seen with certainty that the proposed Project could not have a significant effect on the environment. Of relevance, the focus is on air quality impacts and greenhouse gas (GHG) emissions are therefore not evaluated herein.

The contents and organization of this memorandum are as follows: (2) project description; (3) background; (4) thresholds of significance; (5) approach and methodology; (6) impact analysis; (7) conclusions; and (8) references cited.

2 Project Description

The vacant 5.38-acre (4.83 acres net) Project site is located at the intersection between 4th Street and Hermosa Avenue. The Project would consist of a new three-story civic office building of approximately 60,000 sf, with the potential for a fourth level future expansion. The Project would also include site improvements of roughly 28,500 square feet including hardscape and landscape areas, as well as a six-story parking structure totaling approximately 268,730 square feet.

Several Project Design Features (PDFs) were accounted for in the Project modeling and analysis:

PDF-AQ-1 Prior to the commencement of construction activities for the Project, the grading and construction plan notes shall specify that all diesel-powered equipment is powered with California Air Resources Board (CARB)-certified Tier 4 Interim engines or better.

An exemption from this requirement may be granted if (1) the applicant documents equipment with Tier 4 Interim engines or better are not reasonably available, and (2) the required corresponding reductions in diesel particulate matter (DPM) emissions can be achieved for the Project from other combinations of construction equipment. Before an exemption may be granted, the applicant's construction contractor shall: (1) demonstrate that at least two construction fleet owners/operators in San Bernardino County were contacted and that those owners/operators confirmed Tier 4 Interim equipment or better could not be located within San Bernardino County during the desired construction schedule; and (2) the proposed replacement equipment has been evaluated using California Emissions Estimator Model (CalEEMod) or other industry standard emission estimation method and documentation provided to the City of Ontario to confirm that Project-generated construction emissions do not exceed the applicable South Coast Air Quality Management District (SCAQMD) cancer and non-cancer risk thresholds.

PDF-AQ-2 Prior to the commencement of construction activities at the Ontario City Hall Annex, the City shall require its construction contractor to water any exposed soils and/or soil stockpiles at least three times daily and water all demolished area at least two times per day or utilize another SCAQMD-approved dust control non-toxic agent in accordance with the manufacturer's specifications, to minimize fugitive dust during construction.

3 Background

The Project site is located within the South Coast Air Basin (SCAB) and is within the jurisdictional boundaries of the SCAQMD, which has jurisdiction over the City of Ontario, where the Project is located.

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants that are evaluated include volatile organic compounds (VOCs; also referred to as reactive organic gases [ROGs]), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (coarse particulate matter, or PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size (fine particulate matter, or $PM_{2.5}$). VOCs and NO_x are important because they are precursors to ozone (O_3).

Regarding National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) attainment status,[1] the SCAB is designated as a nonattainment area for federal and state O_3 standards, and federal

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[1] An area is designated as in attainment when it is in compliance with the NAAQS and/or the CAAQS. These standards are set by the Environmental Protection Agency (EPA) and California Air Resources Board (CARB), respectively, for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. Attainment

and state $PM_{2.5}$ standards (CARB 2020; EPA 2022). The SCAB is designated as a nonattainment area for state PM_{10} standards; however, it is designated as an attainment area for federal PM_{10} standards. The SCAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and state SO_2 standards. Although the SCAB has been designated as nonattainment for the federal rolling 3-month average lead standard, it is designated attainment for the state lead standard.

4 Thresholds of Significance

The significance criteria used to evaluate the Project impacts to air quality is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the Project would (14 CCR 15000 et seq.):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. 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.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the Project would have a significant impact on air quality.

SCAQMD has established air quality significance thresholds, as revised in April 2019, that set forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality (SCAQMD 2019). The project's "regional" emission refers to emissions that will be evaluated based on regional significance thresholds established by SCAQMD, also known as the criteria pollutant mass daily thresholds. The SCAQMD air quality significance thresholds also provide toxic air contaminant (TAC) thresholds and ambient air quality standards for criteria pollutants that are to be utilized for localized significance determination. The quantitative air quality analysis provided herein applies the SCAQMD thresholds identified in Table 1 to determine the potential for the Project to result in a significant impact under CEQA.

Table 1. SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	Construction (Pounds per Day)	Operation (Pounds per Day)
VOCs	75	55
NO_x	100	55
CO	550	550
SO_x	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Lead[a]	3	3

= meets the standards; attainment/maintenance = achieve the standards after a nonattainment designation; nonattainment = does not meet the standards.

Table 1. SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	Construction (Pounds per Day)	Operation (Pounds per Day)
TACs and Odor Thresholds		
TACs[b]	Maximum incremental cancer risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and acute hazard index ≥ 1.0 (Project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants[c]		
NO_2 1-hour average NO_2 annual arithmetic mean	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.030 ppm (state) and 0.0534 ppm (federal)	
CO 1-hour average CO 8-hour average	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state /federal)	
PM_{10} 24-hour average PM_{10} annual average	10.4 $\mu g/m^3$ (construction)[d] 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction)[d] 2.5 $\mu g/m^3$ (operation)	

Source: SCAQMD 2019.

Notes: SCAQMD = South Coast Air Quality Management District; VOCs = volatile organic compounds; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; TAC = toxic air contaminant; NO_2 = nitrogen dioxide; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

GHG emissions thresholds for industrial proposed Projects, as added in the March 2015 revision to the SCAQMD Air Quality Significance Thresholds, were not include included in Table 1 as they will be addressed within the GHG emissions analysis and not the air quality study.

[a] The phaseout of leaded gasoline started in 1976. Since gasoline no longer contains lead, the Project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.

[b] TACs include carcinogens and non-carcinogens.

[c] Ambient air quality standards for criteria pollutants are based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.

[d] Ambient air quality threshold are based on SCAQMD Rule 403.

The phasing out of leaded gasoline started in 1976. As gasoline no longer contains lead, the proposed Project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.

In addition to the emission-based thresholds listed in Table 1, SCAQMD also recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the Project as a result of construction activities. Such an evaluation is referred to as a localized significance threshold (LST) analysis. To account for truck activity, it was assumed that each truck would travel 1,000 feet on-site. For Project sites of 5 acres or less, the SCAQMD LST Methodology includes lookup tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing Project-specific dispersion modeling (SCAQMD 2009). The Project would disturb less than 5 acres per day, so it is appropriate to use the lookup tables for the LST evaluation.

The LST significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a Project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The LST significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. The allowable emission rates depend on the following parameters:

- Source-receptor area (SRA) in which the Project is located
- Size of the Project site
- Distance between the Project site and the nearest sensitive receptor (e.g., residences, schools, hospitals)

The Project site is located in SRA 33 (Southwest San Bernardino Valley). LST pollutant screening level concentration data is currently published for 1-, 2-, and 5-acre sites for varying distances. In accordance with the SCAQMD *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, the Project would disturb a maximum of 1.5-acres per day during the grading phase. The nearest sensitive-receptor land use are residences located approximately 50 feet north and west of the Project site boundary. As such, the LST receptor distance was assumed to be 25 meters, the most conservative distance option. The LST values from the SCAQMD lookup tables for SRA 33 (Southwest San Bernardino Valley) for a 1.5-acre Project site and a receptor distance of 25 meters are shown in Table 2.

Table 2. Localized Significance Thresholds for Source-Receptor Area 33 (Southwest San Bernardino Valley)

Pollutant	Threshold (pounds/day)
Construction	
NO_2	144
CO	1,047.5
PM_{10}	5.5
$PM_{2.5}$	4.5
Operation	
NO_2	144
CO	1,048
PM_{10}	2
$PM_{2.5}$	2

Source: SCAQMD 2009.

Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

Localized significance thresholds were determined based on the values for a 1.5-acre site at a distance of 25 meters from the nearest sensitive receptor.

5 Approach and Methodology

5.1 Construction

The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.13 was used to estimate emissions from construction of the Project (CAPCOA 2022). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with construction activities and operation of a variety of land use Projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the land use type used to represent the Project and its size, construction schedule, and anticipated use of construction equipment, were based on information provided by the applicant or default model assumptions when Project specifics were unavailable. Construction was assumed to commence in January 2024 and last approximately 15 months. The first year of operation was assumed to be 2025.

The analysis contained herein is based on the following schedule assumptions (duration of phases is approximate):

- Demolition: January 2024 (20 days)
- Site Preparation: January 2024 – February 2024 (10 days)
- Grading: February 2024 – March 2024 (20 days)
- Building Construction: March 2024 – January 2025 (230 days)
- Paving: January 2025 – February 2025 (20 days)
- Architectural Coating: March 2025 (20 days)

For the analysis, it was assumed that heavy construction equipment would be operating at the site for up to 8 hours per day (depending on phase), 5 days per week (22 days per month), during the duration of Project construction. In addition to construction equipment operation, emissions from worker trips and vendor trucks (i.e., delivery trucks) were estimated based on CalEEMod defaults. During the demolition phase, approximately 160,700 square feet of existing parking lot is expected to be demolished. The Project is expected to have a net export of approximately 13,850 cubic yards of material during the grading phase.

The construction equipment mix and estimated hours of equipment operation per day used for the air emissions modeling of the Project are based on CalEEMod defaults and are shown in Table 3. Additional details regarding construction assumptions are provided in the modeling output, Attachment A.

Table 3. Construction Scenario Assumptions

Construction Phase	Start Date	Finish Date	One-Way Vehicle Trips			Equipment		
			Average Daily Workers	Average Daily Vendor Trucks	Average Daily Haul Trucks	Type	Quantity	Usage Hours
Demolition	1/1/2024	1/29/2024	16	4	94	Concrete/Industrial Saws	1	8
						Excavators	3	8
						Rubber Tired Dozers	2	8
Site Preparation	1/30/2024	2/13/2024	18	4	0	Rubber Tired Dozers	3	8
						Tractors/Loaders/ Backhoes	4	8
Grading	2/14/2024	3/13/2024	16	4	88	Excavators	1	8
						Graders	1	8
						Rubber Tired Dozers	1	8
						Tractors/Loaders/ Backhoes	3	8

Table 3. Construction Scenario Assumptions

Construction Phase	Start Date	Finish Date	One-Way Vehicle Trips			Equipment		
			Average Daily Workers	Average Daily Vendor Trucks	Average Daily Haul Trucks	Type	Quantity	Usage Hours
Building Construction	3/14/2024	1/30/2025	132	54	0	Cranes	1	7
						Forklifts	3	8
						Generator Sets	1	8
						Tractors/Loaders/ Backhoes	3	7
						Welders	1	8
Paving	1/31/2025	2/28/2025	16	4	0	Pavers	2	8
						Paving Equipment	2	8
						Rollers	2	8
Architectural Coating	3/1/2025	3/29/2025	26	4	0	Air Compressors	1	6

Notes: See Attachment A for details.

5.2 Operations

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating and water heating are calculated in the building energy use module of CalEEMod, as described in the following text.

Consumer products are chemically formulated products used by institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product VOC emissions were estimated in CalEEMod based on the floor area of buildings and default factor of pounds of VOC per building square foot per day. The CalEEMod default values for consumer products were assumed.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of surface coatings based on the VOC emission factor, building square footage, assumed fraction of surface area, and reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SCAQMD's Rule 1113 (Architectural Coatings) governs the VOC content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults for non-residential uses, it is assumed that the surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating (CAPCOA 2022). The CalEEMod defaults of 100 g/L were assumed for non-residential interior, exterior, and parking area coatings.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chainsaws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days.

Energy Sources

CalEEMod default values for energy consumption for each land use were applied for the Project analysis. The energy use from non-residential land uses is calculated in CalEEMod based on the California Commercial End-Use Survey database. Energy use in buildings (both natural gas and electricity) is divided by the program into end-use categories subject to Title 24 requirements (end uses associated with the building envelope, such as the heating, ventilation, and air conditioning (HVAC) system, water heating system, and integrated lighting) and those not subject to Title 24 requirements (such as appliances, electronics, and miscellaneous “plug-in” uses).

Mobile Sources

Following the completion of construction activities, the Project would generate criteria pollutant emissions from mobile sources (vehicular traffic) as a result of employees and visitors of the Project. Based on the Dudek Trip Generation, the Project would generate 2,555 employee trips per day; however, 138 of the 343 Project employees would be relocated from an existing annex, creating a net total increase of 1,527 daily trips (Dudek 2023). CalEEMod was used to estimate emissions from proposed vehicular sources (refer to Attachment A). CalEEMod default data, including temperature, trip characteristics, variable start information, and emissions factors, were conservatively used for the model inputs. The fleet mix and trip lengths for Project vehicles were assumed consistent with CalEEMod default values.

Stationary Sources (Emergency Generators)

The Project would potentially operate one diesel-fueled 755-horsepower (hp) generator. This generator was assumed to operate one-hour a day for up to 50-hours a year for routine testing and maintenance.

5.3 Health Risk Assessments

A health risk assessment (HRA) was performed to evaluate potential health risk associated with construction and operation of the Project. The following discussion summarizes the dispersion modeling and HRA methodology; supporting HRA documentation, including detailed assumptions, is presented in Attachment B.

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute (immediate) and/or chronic (cumulative) non-cancer health effects. A toxic substance released into the air is considered a TAC. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics “Hot Spots” Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere.

The most recent guidance from the Office of Environmental Health Hazard Assessment (OEHHA) is the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). Cancer risk parameters, such as age-sensitivity factors, daily breathing rates, exposure period, fraction of time at home, and cancer potency factors were based on the values and data recommended by OEHHA as implemented in Hotspots Analysis and Reporting Program Version 2 (HARP2). SCAQMD's Modeling Guidance for American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) (SCAQMD 2022a) and Risk Assessment Procedures for Rules 1401, 1401.1, and 212 (SCAQMD 2017) provide guidance to perform dispersion modeling for use in HRAs within the SCAB.

Construction Health Risk Assessment

The dispersion modeling for the construction HRA was performed using AERMOD (Version 22112), which is the model SCAQMD requires for atmospheric dispersion of emissions. AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of surface and elevated sources, building downwash, and simple and complex terrain.

Dispersion of DPM emissions was modeled using AERMOD, then cancer risk and noncancer health impacts were subsequently modeled using CARB's HARP2. A unit emission rate (1 gram per second) was input for the AERMOD run to obtain the "X/Q" values. X/Q is a dispersion factor that is the average effluent concentration normalized by source strength and is used as a way to simplify the representation of emissions from construction. The maximum concentrations were determined for the 1-hour and Period averaging periods.

For construction, the Project's potential health impacts were evaluated assuming an exposure duration of approximately 1.2 years and starting at the third trimester of pregnancy. The LST CalEEMod run was also used for the construction HRA to estimate onsite emissions of exhaust PM_{10}, which was used as a surrogate for DPM. The predominant source of construction exhaust PM_{10} is operation of offroad diesel construction equipment. However, it was conservatively assumed that heavy-duty haul and vendor trucks would travel about 1,000-feet onsite to represent emissions from potential onsite travel and nearby local offsite travel. Consistent with SCAQMD guidance, the Risk Management Policy using the Derived Method was used to estimate cancer risk and the OEHHA Derived Method was used to estimate chronic noncancer risk (SCAQMD 2017). The cancer and noncancer risk results were then compared to SCAQMD thresholds to assess the Project impact significance. Principal parameters of the construction HRA modeling are presented in Table 4.

Table 4. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Meteorological Data	AERMOD-specific meteorological data for the Ontario International Airport monitoring station (KONT) was used for the dispersion modeling.
Urban versus Rural Option	Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight—and thus more heat—relative to rural areas. According to SCAQMD guidelines, the urban dispersion option was selected.
Terrain Characteristics	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View in the U.S. Geological Survey's National Elevation Dataset format with a resolution of 1 arc-second resolution.

Table 4. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Source Release Characterizations	The following modeling parameters were based on the best information available at the time of analysis for construction sources. ▪ Off-road equipment and on-site trucks were modeled as a line of adjacent volume sources across the Project site with a release height of 5 meters, a plume height of 10 meters, and plume width of 10 meters.
Receptors	To ensure receptors in the nearby revised Project area were adequately captured, a fine uniform Cartesian grid of receptors spaced 20 meters apart, 1-kilometer by 1-kilometer, was included in the AERMOD run.

Notes: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model.
See Attachment B.

Operational Health Risk Assessment

As with the construction assessment, the operational HRA included dispersion modeling using AERMOD and then cancer risk and noncancer risk using CARB's HARP2. A unit emission rate (1 gram per second) was input for the AERMOD run to obtain the "X/Q" values. The maximum concentrations were determined for the 1-hour and Period averaging periods.

For operations, the Project's potential health impacts were evaluated assuming an exposure duration of 30 years and starting in the third trimester of pregnancy. The 755-horsepower diesel emergency generator would result in DPM and was assumed to operate up to 50 hours per year for routine testing and maintenance. Building heights were input into AERMOD to account for building downwash for the emergency generator point source. Consistent with SCAQMD guidance, the Risk Management Policy using the Derived Method was used to estimate cancer risk and the OEHHA Derived Method was used to estimate chronic noncancer risk (SCAQMD 2017). The cancer and noncancer risk results were then compared to SCAQMD thresholds to assess the Project impact significance. Principal parameters of the operational HRA modeling are presented in Table 5.

Table 5. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Meteorological Data	AERMOD-specific meteorological data for the Ontario International Airport monitoring station (KONT) was used for the dispersion modeling.
Urban versus Rural Option	Urban areas typically have more surface roughness as well as structures and low-albedo surfaces that absorb more sunlight—and thus more heat—relative to rural areas. According to SCAQMD guidelines, the urban dispersion option was selected.
Terrain Characteristics	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View in the U.S. Geological Survey's National Elevation Dataset format with a resolution of 1 arc-second resolution.
Source Release Characterizations	The following modeling parameters were based on the best information available at the time of analysis. ▪ The 755-horsepower emergency generator was modeled as a point source and was assumed to have a vertical stack with a height of 3.1 meters, inside stack diameter of 0.19 meters, gas exhaust temperature of 747.6 degrees Kelvin, and gas exhaust velocity of 1.7 cubic meters per second.

Table 5. American Meteorological Society/Environmental Protection Agency Regulatory Model Principal Parameters

Parameter	Details
Receptors	To ensure receptors in the nearby revised Project area were adequately captured, a fine uniform Cartesian grid of receptors spaced 20 meters apart, 1-kilometer by 1-kilometer, was included in the AERMOD run.

Notes: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model.
See Attachment B.

6 Impact Analysis

6.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

As previously discussed, the Project is located within the SCAB under the jurisdiction of the SCAQMD, which is the local agency responsible for administration and enforcement of air quality regulations for the area. The SCAQMD has established criteria for determining consistency with the Air Quality Management Plan (AQMP), currently the 2022 AQMP, in Chapter 12, Sections 12.2 and 12.3, of the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993). The criteria are as follows (SCAQMD 1993):

- **Consistency Criterion No. 1:** The project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2:** The project will not exceed the assumptions in the AQMP, or increments based on the year of project buildout and phase.

To address the first criterion, Project-generated criteria air pollutant emissions have been estimated and analyzed for significance and are addressed under Section 6.2. Detailed results of this analysis are included in Attachment A, CalEEMod Emissions Outputs. As presented in Section 6.2, construction and operation of the Project would not generate criteria air pollutant emissions that exceed SCAQMD's thresholds.

The second criterion regarding the Project's potential to exceed the assumptions in the AQMP or increments based on the year of Project buildout and phase is primarily assessed by determining consistency between the Project's land use designations and its potential to generate population growth. Projects are considered consistent with, and would not conflict with or obstruct implementation of, the 2022 AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP (per Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook).

The SCAQMD primarily uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAG for its RTP/SCS (SCAG 2020), which is based on general plans for cities and counties in the SCAB, for the development of the AQMP emissions inventory (SCAQMD 2022b).[2]

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[2] Information necessary to produce the emission inventory for the SCAB is obtained from the SCAQMD and other governmental agencies, including CARB, the California Department of Transportation, and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socioeconomic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. SCAG incorporates these data into their Travel Demand Model for

The SCAG 2020 RTP/SCS, and associated Regional Growth Forecast, are generally consistent with the local plans; therefore, the 2022 AQMP is generally consistent with local government plans.

The relevant local plan for the proposed Project is the City of Ontario General Plan, the most recent iteration of which was adopted in 2020. The City's General Plan designates the land use of the Project site as Public Facility (PV) and Mixed Use (MU) (City of Ontario 2023). The Project site has a zoning designation of Civic (CIV) and Low Intensity Office (OL) (City of Ontario 2022). The project would be consistent with the land use designations of Public Facility and Mixed Use for the City Hall Annex and parking structure. The Public Facilities designation allows for civic centers, governmental institutions, police and fire stations, transportation facilities, museums, and public libraries. The Mixed Use designation allows for a horizontal and/or vertical mixture of retail, service, office, restaurant, entertainment, cultural, and residential uses. The Project is consistent with the existing land use designation and zoning. In addition, the implementation of the Project would not generate an increase in growth demographics that would conflict with existing projections within the region. Accordingly, the Project is consistent with the SCAG RTP/SCS forecasts used in the SCAQMD AQMP development.

In summary, based on the considerations presented for the two criteria, impacts relating to the Project's potential to conflict with or obstruct implementation of the applicable AQMP would be less than significant.

6.2 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard?

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, Project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a Project's individual emissions would have a cumulatively significant impact on air quality. If a Project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution. Conversely, Projects that do not exceed the Project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003).

A quantitative analysis was conducted to determine whether the proposed Project might result in emissions of criteria air pollutants that may cause exceedances of the NAAQS or CAAQS, or cumulatively contribute to existing nonattainment of ambient air quality standards. Details of the methods used to estimate emissions are discussed above in Section 5, Approach and Methodology. The following discussion summarizes the quantitative Project-generated construction emissions and impacts that would result from implementation of the proposed Project. Detailed assumptions and results of this analysis are provided in Attachment A, CalEEMod Output Files.

Construction Emissions

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road trucks and worker vehicle trips). Construction emissions can vary substantially from day to day,

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estimating/projecting vehicle miles traveled and driving speeds. SCAG's socioeconomic and transportation activities projections in their 2020 RTP/SCS are integrated in the 2022 AQMP (SCAQMD 2022b).

depending on the level of activity; the specific type of operation; and, for particulate matter, the prevailing weather conditions.

As discussed previously, CalEEMod was used to estimate emissions from construction of the Project. Internal combustion engines used by construction equipment, trucks, and worker vehicles would result in emissions of VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions would also be generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil. The Project would comply with PDF-AQ-2 to control dust emissions generated during any dust-generating activities. The CalEEMod default assumptions were used for estimating fugitive dust emissions from grading on site. The Project would involve application of architectural coating (e.g., paint and other finishes) for painting the interior and exterior of the building as well as parking lot striping. The contractor is required to procure architectural coatings from a supplier that complies with the requirements of SCAQMD's Rule 1113 (Architectural Coatings). Table 6 presents the estimated maximum daily construction emissions generated during construction of the Project, which includes implementation of PDF-AQ-1 and PDF-AQ-2. Details of the emission calculations are provided in Attachment A.

Table 6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds per day					
Summer						
2024	1.01	10.9	23.6	0.03	1.73	0.50
Winter						
2024	0.96	20.6	29.3	0.08	7.97	4.09
2025	34.8	10.9	21.2	0.03	1.73	0.50
Maximum	**34.8**	**20.6**	**29.3**	**0.08**	**7.97**	**4.09**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.
See Attachment A for complete results.

As shown in Table 6, the Project construction would not exceed SCAQMD's daily thresholds. Therefore, construction impacts associated with criteria air pollutant emissions would be less than significant.

Operational Emissions

Operational year 2025 was assumed as it would be the first year following completion of construction. Table 7 presents the Project-related emissions during operation.

Table 7. Estimated Maximum Daily Operation Criteria Air Pollutant Emissions

Emissions Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Summer						
Area	3.84	0.12	14.3	<0.005	0.02	0.03
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	6.37	6.34	60.4	0.15	12.6	3.27

Table 7. Estimated Maximum Daily Operation Criteria Air Pollutant Emissions

Emissions Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**11.9**	**14.5**	**79.4**	**0.16**	**12.9**	**3.58**
Winter						
Area	1.50	--	--	--	--	--
Energy	0.02	0.44	0.37	<0.005	0.03	0.03
Mobile	5.91	6.82	50.2	0.14	12.6	3.27
Stationary	1.70	7.59	4.33	0.01	0.25	0.25
Subtotal	**9.13**	**14.9**	**54.9**	**0.15**	**12.9**	**3.56**
Maximum	**11.9**	**14.9**	**79.4**	**0.16**	**12.9**	**3.58**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Attachment A for complete results. Columns may not add due to rounding.

As shown in Table 7, the Project would not exceed SCAQMD's significance thresholds during operations. Therefore, operational impacts associated with criteria air pollutant emissions would be less than significant.

Based on the previous considerations, the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants, and cumulative impacts would be less than significant.

6.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

Localized Significance Thresholds

Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). The nearest sensitive-receptor land use are residences located approximately 50 feet north and west of the Project site boundary.

Construction activities associated with the Project would result in temporary sources of on-site fugitive dust, construction equipment emissions, and on-site mobile source emissions. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 33 are presented in Tables 8 and compared to the maximum daily on-site construction emissions.

Table 8. Localized Significance Thresholds Analysis for Project Construction - Unmitigated

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
2024	14.8	28.3	5.38	2.73

2025	9.30	14.7	0.10	0.09
Maximum	**14.8**	**28.3**	**5.38**	**2.73**
SCAQMD LST	*144*	*1,047.5*	*5.5*	*4.5*
LST Exceeded?	**No**	**No**	**No**	**No**

Source: SCAQMD 2009.

Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.

Localized significance thresholds are shown for a 1.5-acre Project site corresponding to a distance to a sensitive receptor of 25 meters. Emissions include quantification of PDF-AQ-1 and PDF-AQ-2.

As shown in Table 8, the Project LST would not exceed the established significance thresholds, and thus would result in a less than significant impact to sensitive receptors during construction.

CO Hotspots

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed “CO hotspots.” The transport of CO is extremely limited, as it disperses rapidly with distance from the source. However, under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors. Typically, high CO concentrations are associated with severely congested intersections operating at an unacceptable level of service (LOS) (LOS E or worse is unacceptable). Projects contributing to adverse traffic impacts may result in the formation of a CO hotspot. Additional analysis of CO hotspot impacts would be conducted if a Project would result in a significant impact or contribute to an adverse traffic impact at a signalized intersection that would potentially subject sensitive receptors to CO hotspots.

At the time that the SCAQMD Handbook (1993) was published, the SCAB was designated nonattainment under the CAAQS and NAAQS for CO. In 2007, the SCAQMD was designated in attainment for CO under both the CAAQS and NAAQS as a result of the steady decline in CO concentrations in the SCAB due to turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities. The SCAQMD conducted CO modeling for the 2003 AQMP[3] (SCAQMD 2003) for the four worst-case intersections in the SCAB: (1) Wilshire Boulevard and Veteran Avenue, (2) Sunset Boulevard and Highland Avenue, (3) La Cienega Boulevard and Century Boulevard, and (4) Long Beach Boulevard and Imperial Highway. At the time the 2003 AQMP was prepared, the intersection of Wilshire Boulevard and Veteran Avenue was the most congested intersection in Los Angeles County, with an average daily traffic volume of about 100,000 vehicles per day. The 2003 AQMP also projected 8-hour CO concentrations at these four intersections for 1997 and from 2002 through 2005. From years 2002 through 2005, the maximum 8-hour CO concentration was 3.8 ppm at the Sunset Boulevard and Highland Avenue intersection in 2002; the maximum 8-hour CO concentration was 3.4 ppm at the Wilshire Boulevard and Veteran Avenue in 2002. Accordingly, CO concentrations at congested intersections would not exceed the 1-hour or 8-hour CO CAAQS unless projected daily traffic would be at least over 100,000 vehicles per day. The Project’s anticipated net total average daily trips (ADT) of 1,527 is minimal and is not of a magnitude expected to raise the traffic volumes at intersections within proximity of the proposed Project to the 100,000 vehicles per day that could result in a CO hotspot.

Additionally, ambient CO levels are monitored at the 1350 San Bernardino Rd., Upland air quality monitoring station, which is approximately 2.7 miles northwest of the Project site and represents ambient air quality in the Project area. Ambient CO levels monitored at this representative monitoring station indicate that the highest recorded 1-hour concentration of CO is 1.5 ppm (the State standard is 20 ppm) and highest 8-hour concentration is 1.1 ppm (the

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[3] SCAQMD’s CO hotspot modeling guidance has not changed since 2003.

State standard is 9 ppm) during the past 3 years of available data (EPA 2022a). As discussed above, the highest CO concentrations typically occur during peak traffic hours, so CO impacts calculated under peak traffic conditions represent a worst-case analysis. Given the considerably low level of CO concentrations in the Project area, and the minimal increase in daily trips, Project-related mobile emissions are not expected to contribute significantly to CO concentrations, and a CO hotspot is not anticipated to occur. In addition, due to continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SCAB is steadily decreasing. Based on these considerations, the proposed Project would result in a less-than-significant impact to air quality with regard to potential CO hotspots.

Toxic Air Contaminants

Construction Health Risk

As discussed previously, a construction HRA was performed to estimate the potential health risk at proximate residential receptors associated with short-term construction of the Project. Notably, as there is no reference exposure level for acute health impacts from DPM, acute risk was not evaluated in the construction HRA. Results of the construction HRA are presented in Table 9.

Table 9. Summary of Maximum Cancer and Chronic Health Risks - Construction

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	8.28	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0077	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment
Emissions include quantification of PDF-AQ-1.

As shown in Table 9, Project construction activities would result in a Residential Maximum Individual Cancer Risk of 8.28 in 1 million, which is less than the significance threshold of 10 in 1 million. Project construction would result in a Residential Chronic Hazard Index of 0.0077, which is below the 1.0 significance threshold. Impacts would be less than significant.

Operational Health Risk

As discussed previously, an operational HRA was also performed to estimate the potential health risk at proximate residential receptors associated with long-term operations of the Project, specifically, the routine testing and maintenance of the diesel emergency generator. Results of the operational HRA are presented in Table 10.

Table 10. Summary of Maximum Cancer and Chronic Health Risks - Operations

Impact Analysis	Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximally Exposed Individual Resident	Cancer Risk	Per Million	3.09	10	Less than Significant
	Chronic Hazard Index	Index Value	0.0008	1.0	Less than Significant

Source: See Attachment B for complete results.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment

As shown in Table 10, Project operational activities would result in a Residential Maximum Individual Cancer Risk of 3.09 in 1 million, which is less than the significance threshold of 10 in 1 million. Project operations would result in a Residential Chronic Hazard Index of 0.0008, which is below the 1.0 significance threshold. Impacts would be less than significant.

Health Effects of Criteria Air Pollutants

Construction and operation of the Project would generate criteria air pollutant emissions; however, the Project would not exceed the SCAQMD mass-emission thresholds.

The SCAB is designated as nonattainment for O_3 for the NAAQS and CAAQS. Thus, existing O_3 levels in the SCAB are at unhealthy levels during certain periods. The health effects associated with O_3 generally relate to reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (VOC or NO_x) that would exceed the SCAQMD thresholds, the Project is not anticipated to substantially contribute to regional O_3 concentrations and associated health impacts. Similar to construction, no SCAQMD threshold would be exceeded during operation.

In addition to O_3, NO_x emissions contribute to potential exceedances of the NAAQS and CAAQS for NO_2 (since NO_2 is a constituent of NO_x). Exposure to NO_2 can cause lung irritation, bronchitis, and pneumonia, and lower resistance to respiratory infections. As shown in Table 8, Project construction and operation would not exceed the SCAQMD localized thresholds for NO_2. Thus, construction and operation of the Project are not expected to exceed the NO_2 standards or contribute to associated health effects.

CO tends to be a localized impact associated with congested intersections. CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. CO hotspots were discussed previously as a less than significant impact. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

The SCAB is designated as nonattainment for PM_{10} under the CAAQS and nonattainment for $PM_{2.5}$ under the NAAQS and CAAQS. Particulate matter contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing (EPA 2016). As with O_3 and NO_x, the Project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed SCAQMD's LSTs. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the Project would not result in any potentially significant contribution to local or regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Impacts would be less than significant.

6.4 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the Project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and asphalt pavement application. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding facilities (SCAQMD 1993). The Project would not result in these land uses. Impacts would be less than significant.

7 Conclusions

Criteria air pollutant emissions generated during construction and operation of the Project would not exceed SCAQMD's significance thresholds or result in a cumulatively considerable net increase in emissions. Similarly, the emissions would also not exceed the LST significance thresholds for sensitive receptors during construction or operations or create a CO hotspot. Construction and operational health risk levels would also be below the applicable SCAQMD thresholds. Overall, the Project would result in less than significant air quality impacts.

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Attachment A

CalEEMod Emissions Output

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MEMORANDUM

To:	City of Ontario Planning Department
From:	Lisa Valdez, Senior Transportation Planner; Jeanney Keo, Transportation Planner
Subject:	City of Ontario City Hall Annex Transportation Assessment
Date:	September 2023
cc:	Carey Fernandes, Project Manager, Dudek
Attachments:	A – Raw Traffic Count Data B – Level of Service Worksheets C – VMT Screening Evaluation Map

Dudek has prepared the following transportation assessment for the proposed Ontario City Hall Annex Extension (Project) within the City of Ontario, California. The transportation assessment has been prepared consistent with the City of Ontario Traffic and Transportation Guidelines[1] and the City's Resolution No. 2020-071 adopting Vehicle Miles Traveled Thresholds for Determining Significance of Transportation Impacts Through CEQA in Conformance with SB 743[2]. The City requires CEQA transportation analysis and impacts to be assessed based on vehicle miles traveled (VMT); and, non-CEQA analysis and improvements to be based on the City's General Plan Mobility Element which contains local level of service (LOS) and other transportation-related policies.

The following Memo documents existing roadway, pedestrian, bicycle, and transit conditions, including intersection levels of service at eight study intersections; estimates the project trip generation and distribution; analyzes the potential traffic impacts that would occur under the Opening Year (2027) conditions with the project-added traffic; provides a VMT screening analysis; and evaluates the proposed project site access.

1.0 Project Description

The Project location and study area are shown as Figure 1 and the Project site plan is shown as Figure 2. The project site is comprised of approximately four acres of land located on the east edge of the existing Ontario City Hall Civic Center property, just east of Sultana Avenue and north of the existing Fire Department and City Office building. The project site is currently occupied by a city parking lot which will be demolished to support the proposed City Hall Annex building and a future six-level parking structure, to be located directly north of the Annex project site.

The proposed project would consist of a new three-story civic office building of approximately 60,000 square feet (SF), with the potential of a fourth level future expansion. The building would provide office and support spaces for seven existing city departments currently housed in various locations around the existing Civic Center and

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[1] City of Ontario. 2013. City of Ontario Traffic and Transportation Guidelines. August.

[2] City of Ontario. 2020. Resolution No. 2020-071 adopting Vehicle Miles Traveled Thresholds for Determining Significance of Transportation Impacts Through CEQA in Conformance with SB 743. June.

neighboring buildings. The project would also include site improvements of roughly 28,500 SF including hardscape and landscape areas, as well as a service access driveway.

Parking

Parking for the project would be provided in a new six-story, approximately 268,730 SF parking structure located just north of the City Hall Annex project site. The parking structure would contain 835 parking stalls and would be configured in three 90-degree, double-loaded parking bays.

Site Access/Circulation

The entry to parking structure will be from Sultana Avenue (near Lynn Haven Street) and Cherry Avenue. East C Street would be vacated with the construction of the parking garage. Cherry Avenue will also be vacated and used as a two-way drive aisle that will be accessible from B Street, circulate north through the site and exit through D Street. The parking structure will have a west entrance that will be accessed from the drive aisle on Cherry Avenue. Building entry would be from a main entrance on the northern side of the proposed annex building. The existing one-way drive aisle located north of the existing Fire Station and City Hall would be widened to a two-way drive aisle and would be accessible from Sultana Avenue. Additionally, an existing cell tower located at the south edge of the project site will remain and require intermittent vehicular service access.

SOURCE: Bing Maps; HMC Architects 2023

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Figure 1

Project Location and Study Area

City of Ontario City Hall Annex

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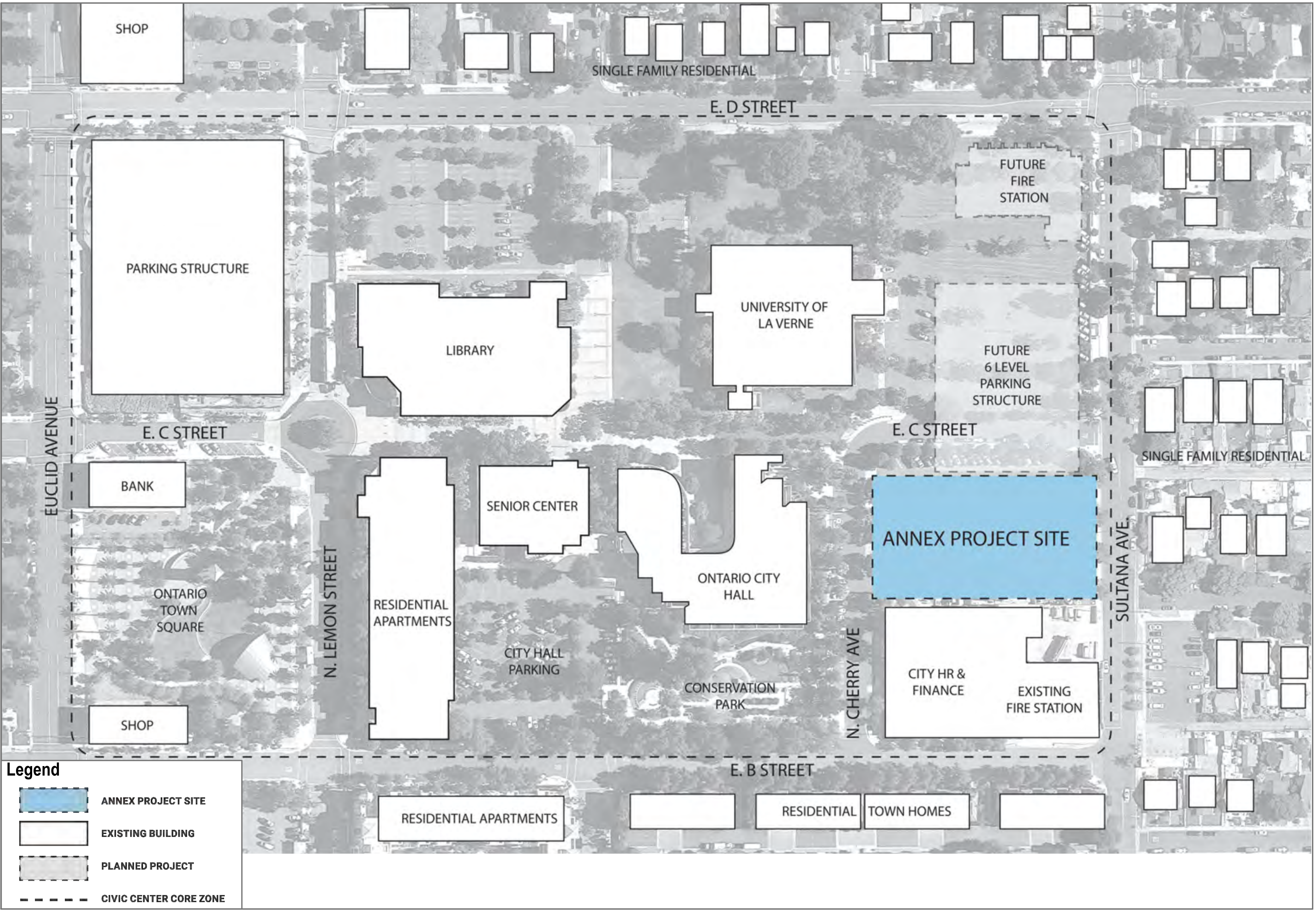

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SOURCE: HMC Architects 2023

Figure 2

Site Plan

City of Ontario City Hall Annex

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2.0 Existing Transportation Network

The Project site is surrounded by residential, educational, and office and commercial uses on all sides (see Figure 1). A description of the nearby roads serving the site is provided below.

2.1 Roadway Network

Figure 1 provides a regional location map and the study area. Regional access to the project is provided by Interstate 10-(I-10) approximately 1 ½ miles north of the site. The local road network near the site includes Euclid Avenue, Sultana Avenue, B Street, C Street, D Street, Lynn Haven Street, Nocta Street, and Cherry Avenue. Characteristics of the main roadways in the study area are described below.

- **Euclid Avenue – State Route 83** is a north-south divided four-lane principal arterial connecting to I-10 to the north and SR-60 to the south. Sidewalks are provided on both sides of the street.
- **Sultana Avenue** is a north-south two-lane collector. Sidewalks are provided on both sides of the street. Access to the parking structure would be provided from a new driveway on Sultana Avenue.
- **B Street** is an east-west two-lane local road located between Vine Avenue on the west and Sultana Avenue on the east. B Street borders the existing City Hall offices and existing City Fire station. Sidewalks are provided on both sides of the street.
- **C Street** is an east-west two-lane local road located between Vine Avenue on the west and Lemon Avenue on the east, where is terminates at an existing pedestrian corridor. Sidewalks are provided on both sides of the street. There is an existing short segment of C Street between Cherry Avenue and Sultana Avenue that would be vacated with the construction of the parking garage.
- **D Street** is an east-west two-lane collector located between Benson Avenue and the City limits on the west and Vineyard Avenue on the east. Sidewalks are provided on both sides of the street.
- **Lynn Haven Street** is a one-block long two-lane local street between Sultana Avenue on the west and Monterey Avenue on the east. Sidewalks are provided on both sides of the street.
- **Nocta Street** is an east-west two-lane local road located between Sultana Avenue on the west and Lassen Place on the east. Sidewalks are provided on both sides of the street.
- **Cherry Avenue** is a north-south two-lane local road located between El Morado Court on the north and East D Street on the south. Sidewalks are provided on both sides of the street. There is an existing short segment of Cherry Avenue between C Street and B Street that would be vacated with the construction of the parking garage. Access to the parking garage would be provided from a new driveway on Cherry Avenue.

2.2 Rail and Transit

The City of Ontario is served by bus services provided by OmniTrans, which provides regional and local services throughout San Bernardino Valley. Regionally, the City is served by passenger rail services offered by the National Railroad Passenger Corporation (Amtrak), and commuter rail service provided by Metrolink. The rail and transit providers are described below.

Omnitrans provides service on five routes within the City, with three routes operating near the project site[3]. The existing transit routes are shown on Figure 3 and described below.

- **Route 61** connects Fontana, Ontario Mills, the Ontario International Airport, and Pomona. Near the project site, Route 61 serves Holt Boulevard, one block south of the project site. The nearest bust stop is located near the intersection of Holt Boulevard and Plum Avenue, approximately one and half blocks southwest of the site. Route 61 provides service Monday through Friday at 20-minute intervals from 4:00 am to 11:59 am, and 30-minute intervals from 5:25 am to 9:14 pm on the weekends.
- **Route 83** connects Upland, Ontario, and Chino, via Euclid Avenue. Near the project site, Route 83 serves Euclid Avenue, two blocks west of the project site. The nearest bus stop is located near the intersection of Euclid Avenue and Holt Boulevard. Route 83 provides service Monday through Sunday at 60-minute intervals from 6:00 am to 8:14 pm.
- **Route 87** connects Rancho Cucamonga, Ontario, and Eastvale. Near the project site, Route 87 serves Holt Boulevard, one block south of the project site and Campus Avenue, four blocks east of the site. The nearest bus stop is located near the intersection of Holt Boulevard and Plum Avenue. Route 87 provides service Monday through Saturday at 60-minute intervals from 4:35 am to 8:39 pm.

Amtrak is a national rail operator, with 21,000 route miles in 46 states, the District of Columbia, and three Canadian Provinces. Amtrak operates more than 300 trains each day to more than 500 destinations. The Amtrak station is located at 198 E Emporia Street, approximately 0.3 miles southwest of the project site.

Metrolink is a commuter rail system in southern California that connects Ontario to the greater southern California region via the Riverside Line. The Ontario East station is located approximately five and half miles southeast of the site at 3330 E. Francis Street.

2.3 Pedestrian and Bicycle Facilities

The project site is located in the City's downtown core and is well served by pedestrian facilities, with sidewalks provided along most streets and crosswalks provided at all major intersections. Within the vicinity of the site, there is an existing Class III bike route (on-street signed bike route) on G Street, between N. Benson Avenue to the west and N. Vineyard Avenue to the east. Figure M-03: Public Transit of the General Plan recommends numerous bicycle facilities near the project site, including Bike Boulevards (low traffic volume shared roadway bicycle facility) and Class III bike routes. Figure 4 presents the existing and proposed bicycle facilities in the project area.

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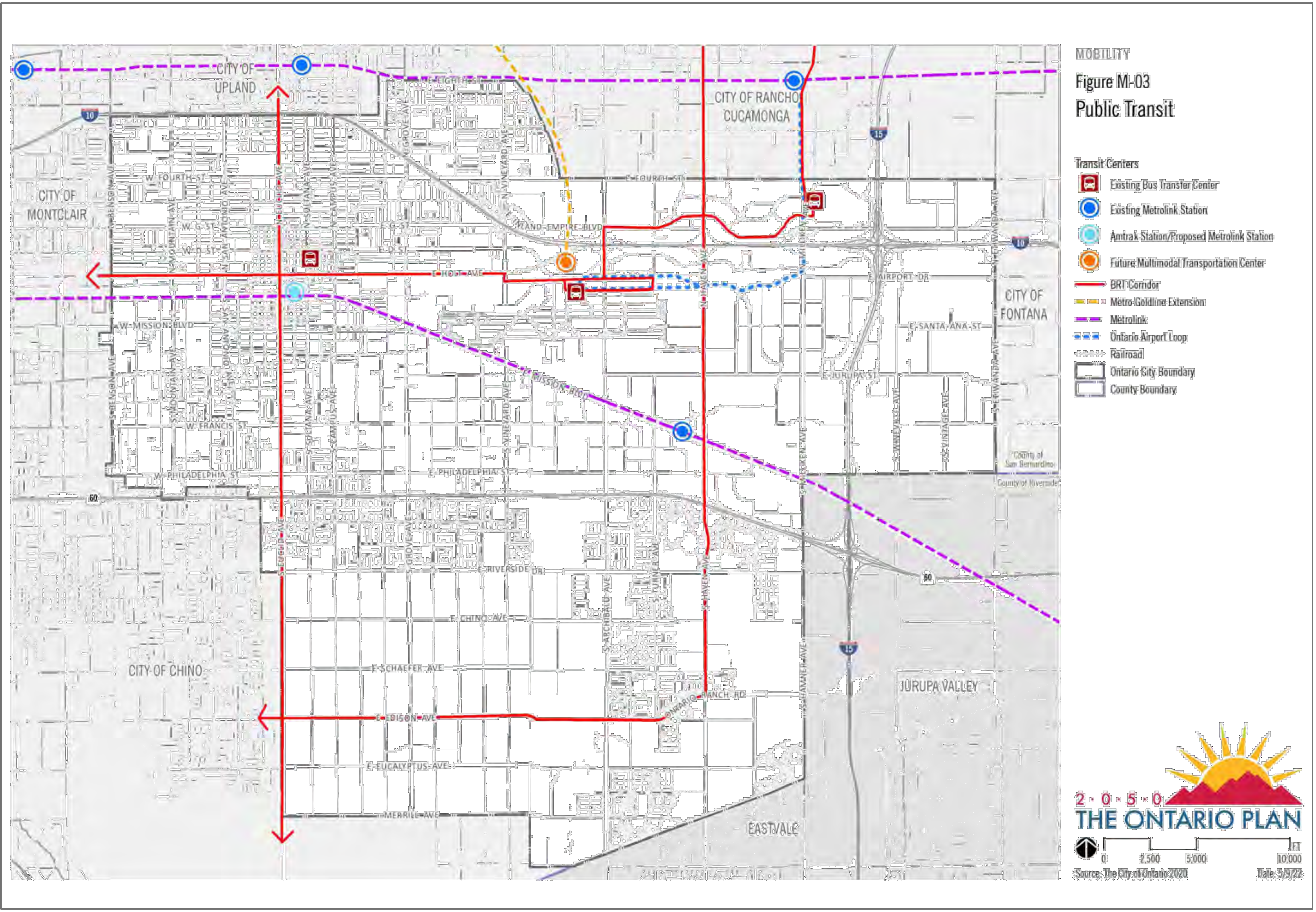
[3] Omnitrans. 2023. View Omnitrans Bus Routes, Maps, and Schedules



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SOURCE: City of Ontario 2022

Figure 3

Transit Routes

City of Ontario City Hall Annex

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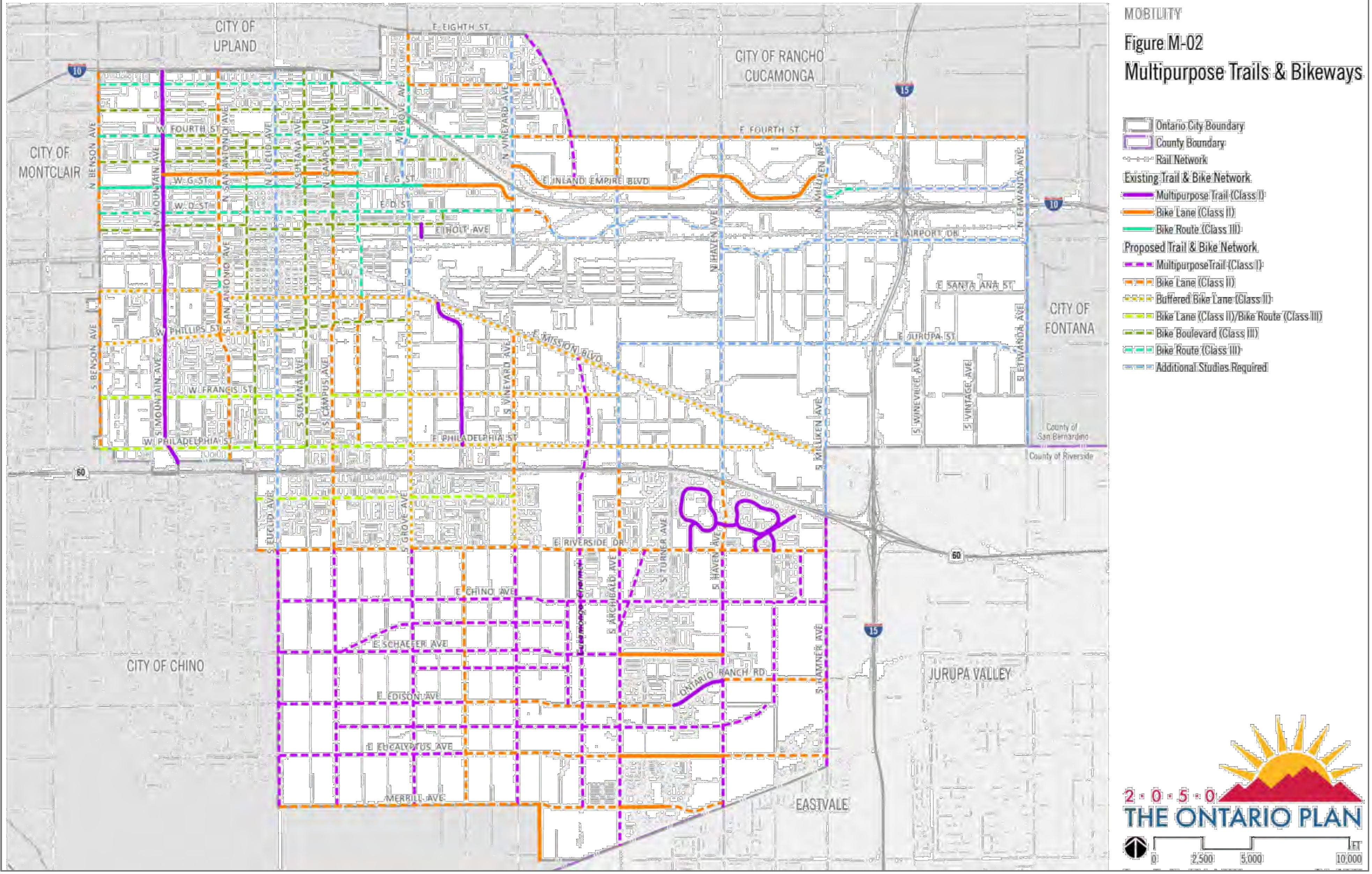

SOURCE: City of Ontario 2022

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Figure 4

Bicycle Facilities

City of Ontario City Hall Annex

3.0 Project Trip Generation and Distribution

Trip generation estimates for the proposed project are based on daily and AM and PM peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Handbook, 11th Edition* (2021). As shown in Table 1 below, the proposed project would generate 1,527 daily trips, 225 AM peak hour trips and 146 PM peak hour trips.

Table 1. Project Trip Generation

Land Use	ITE Code	Size	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Government Office Building	730	per employee	7.45	0.83	0.28	1.10	0.14	0.57	0.71
Trip Generation									
New Annex Building	730	343 employees[2]	2,555	282	94	377	49	195	244
Reductions									
Employees relocated from existing Annex		-138 employees	-1,028	-114	-38	-152	-20	-78	-98
NET Total		**205 employees**	**1,527**	**169**	**56**	**225**	**29**	**117**	**146**

Notes: TSF = thousand square feet

[1] Trip rates from Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021.

[2] Employee estimates obtained from the City Hall Annex Programming Study (April 11, 2023)

Project trip distribution percentages are based on logical travel paths to and from the project site and consideration of the traffic distribution patterns in the area. Figure 5 illustrates the project trip distribution percentages and peak hour project-added trips through the study intersections.

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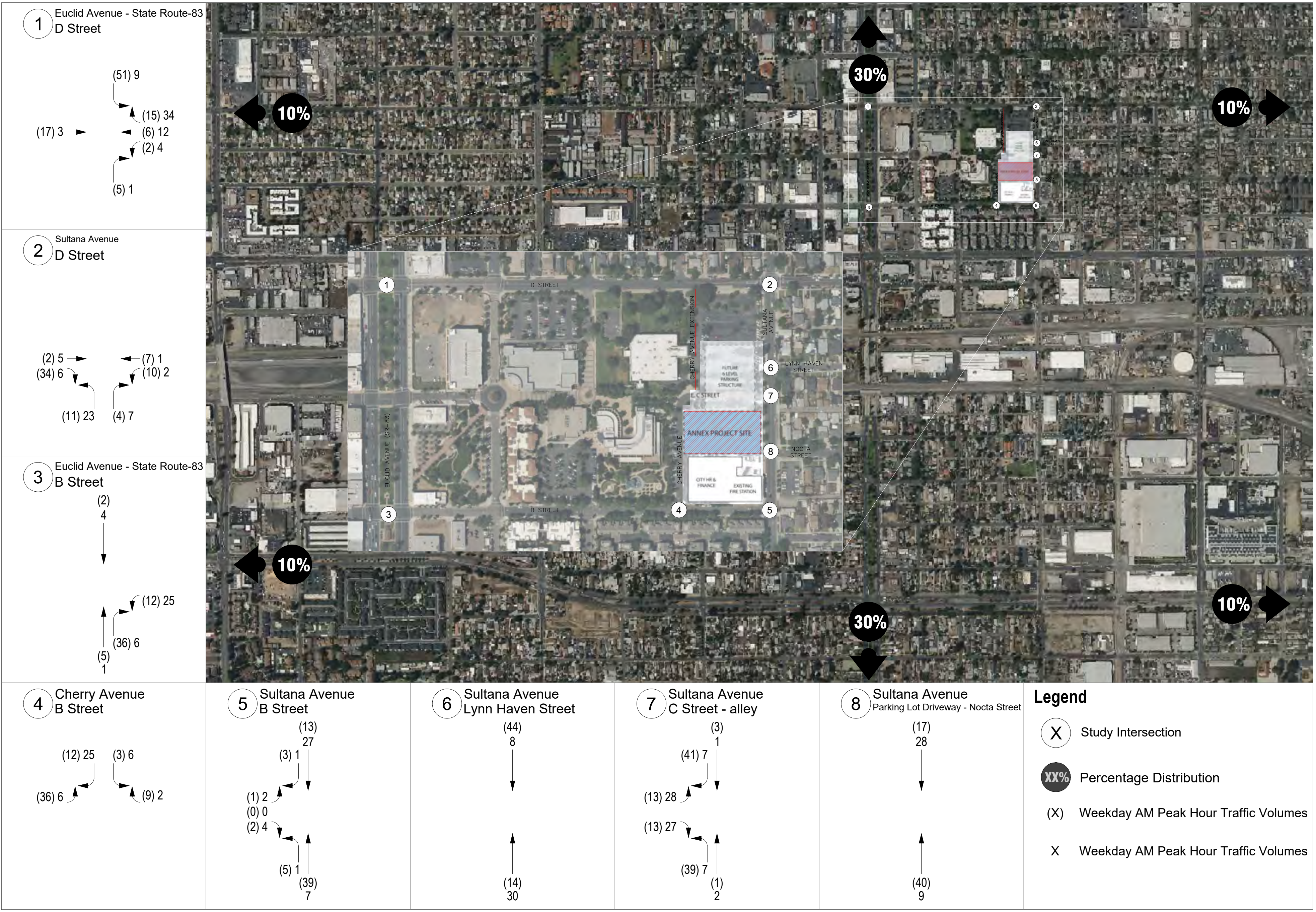

SOURCE: Bing Maps; HMC Architects 2023

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Figure 5

Project Trip Distribution and Volumes

City of Ontario City Hall Annex

4.0 Level of Service (LOS) Methodology and Thresholds

The City has vehicle LOS policies to ensure that proposed developments are consistent with the City's General Plan. Therefore, an LOS analysis has been prepared to evaluate the Project's consistency with the City's policies. The study intersections and roadway segments, analysis scenarios, traffic volumes, and LOS methodology and impact criteria are presented in the following section.

4.1 Study Intersections and Roadway Segments

The following intersections were selected for analysis:

1. Euclid Avenue/SR-38/D street
2. Sultana Avenue/D Street
3. Euclid Avenue/SR-38/B Street
4. Cherry Avenue/B Street
5. Sultana Avenue/B Street
6. Sultana Avenue/Lynn Haven Street
7. Sultana Avenue/C Street
8. Sultana Avenue/Nocta Street

In addition, the following road segments were selected for analysis:

1. Sultana Avenue, between D Street and Lynn Haven Street
2. Sultana Avenue, between B Street and Nocta Street

4.2 Study Scenarios

Intersection LOS analyses were prepared for the weekday AM and PM peak hours at the study intersection for the following analysis scenarios:

- Existing (2023) Conditions
- Existing (2023) Conditions Plus Project
- Project Opening Year (2027)
- Project Opening Year (2027) Plus Project

Daily, AM and PM peak hour turning movements counts were collected at the study intersection on May 16, 2023. Existing peak hour traffic volumes are shown in Figure 7. The raw traffic data is provided as Attachment A.

The 2027 Opening Year condition represents a short-term horizon period (less than 5 years) where the proposed Project is constructed and fully occupied. The peak hour traffic forecasts for the Year 2027 have been projected by increasing the traffic volumes by an annual growth rate of 2 percent, and adding traffic volumes generated by pending cumulative projects. These approved or pending projects are developments in the review process, but not fully approved; or, projects that have been approved, but not fully constructed or occupied. A list of cumulative projects was provided by the City in July 2023, and further discussed in Section 5.2.1.

4.3 Analysis Methodology

LOS is commonly used as a qualitative description of intersection operations and roadway segments and is based on the design capacity of the intersection configuration and roadway facility, compared to the volume of traffic using the facility. The City's intersection evaluation methodology to assess transportation impacts and traffic operating conditions for intersections is based on the latest version of the Highway Capacity Manual (HCM) methodology.

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle based on the worst turning movement for unsignalized intersections.

Synchro version 11 software was used to determine intersection LOS (for all scenarios), consistent with HCM 6 methodologies. Detailed LOS calculation worksheets (for all scenarios) are included in Attachment B. Table 2 shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 2. Levels of Service for Intersections using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds per vehicle)	Signalized Intersections Control Delay (in seconds per vehicle)
A	≤ 10.0	≤ 10.0
B	> 10.0 to < 15.0	> 10.0 to < 20.0
C	> 15.0 to < 25.0	> 20.0 to < 35.0
D	> 25.0 to < 35.0	> 35.0 to < 55.0
E	> 35.0 to < 50.0	> 55.0 to < 80.0
F	> 50.0	> 80.0

Source: HCM 6 (Transportation Research Board 2016).

Table 3 presents the daily roadway capacity values for use in the roadway segment LOS analysis. The roadway capacities are based on the values presented in the traffic analysis prepared for the Ontario Plan 2050 Draft Supplemental Environmental Impact Report[4].

Table 3. Average Daily Roadway Capacity Values

Roadway Classification	Number of Lanes	Capacity
Principal Arterial	6	56,000
Principal Arterial	4	37,400
Minor Arterial	6	43,300
Minor Arterial	4	28,900

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[4] Fehr and Peers. 2022. The Ontario Plan Transportation Impact Assessment for the Ontario Plan 2050 Draft Supplemental Environmental Impact Report. March 2.

Table 3. Average Daily Roadway Capacity Values

Roadway Classification	Number of Lanes	Capacity
Collector	2	17,400
Local	2	12,500

Source: Ontario Plan 2050 Draft Supplemental Environmental Impact Report

4.4 General Plan Consistency Requirement

The City's Mobility Element has adopted LOS E as the minimum acceptable operating standard for intersections and LOS D for arterial streets in the City[5]. Consistent with recent traffic studies conducted in the area, to determine whether the addition of project traffic at a study intersection would result in a traffic deficiency, the following will be utilized:

- When the Without Project condition is at or better than LOS E (i.e., acceptable LOS), and project-generated traffic causes deterioration below LOS E (i.e., unacceptable LOS), a deficiency is deemed to occur.

When the Without Project condition is already below LOS E (i.e., unacceptable LOS), the Project will be responsible for improving its deficiency to acceptable levels of service. Thus, for intersections operating at unacceptable LOS during either the AM and/or PM peak hour, improvements have been identified to improve the deficiencies of the Project to an intersection LOS that is equal to or better than Without Project conditions. The Project's contribution to a deficiency can be reduced if the Project is required to implement or fund its fair share of improvements designed to alleviate its contribution to the deficient condition.

5 Level of Service Analysis

This section presents the LOS analysis for the Existing and Opening Year conditions, with and without the project-added traffic.

5.1 Existing (2023) Conditions Analysis

This section details the existing intersection and roadway segment operations within the study area, with and without the project-added traffic. Existing peak hour traffic volumes are shown in Figure 6. The Existing plus project traffic volumes are shown on Figure 7.

Table 4 summarizes the results of the intersection analysis for the AM and PM peak hours for Existing conditions. As shown in the table, all of the study intersections are currently operating at satisfactory levels of service (LOS E or better) under Existing conditions and will continue to operate at satisfactory LOS with the project-added traffic.

Table 5 shows the results of the roadway segment LOS analysis. As shown below, the study area roadway segments are operating at acceptable ADT volume-to-capacity conditions under Existing conditions, with and without the project-added traffic.

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[5] City of Ontario. 2022. The Ontario Plan Mobility Element. Mobility | City of Ontario, California (ontarioca.gov)

Table 4. Existing Weekday Peak Hour Intersection LOS (with and without Project)

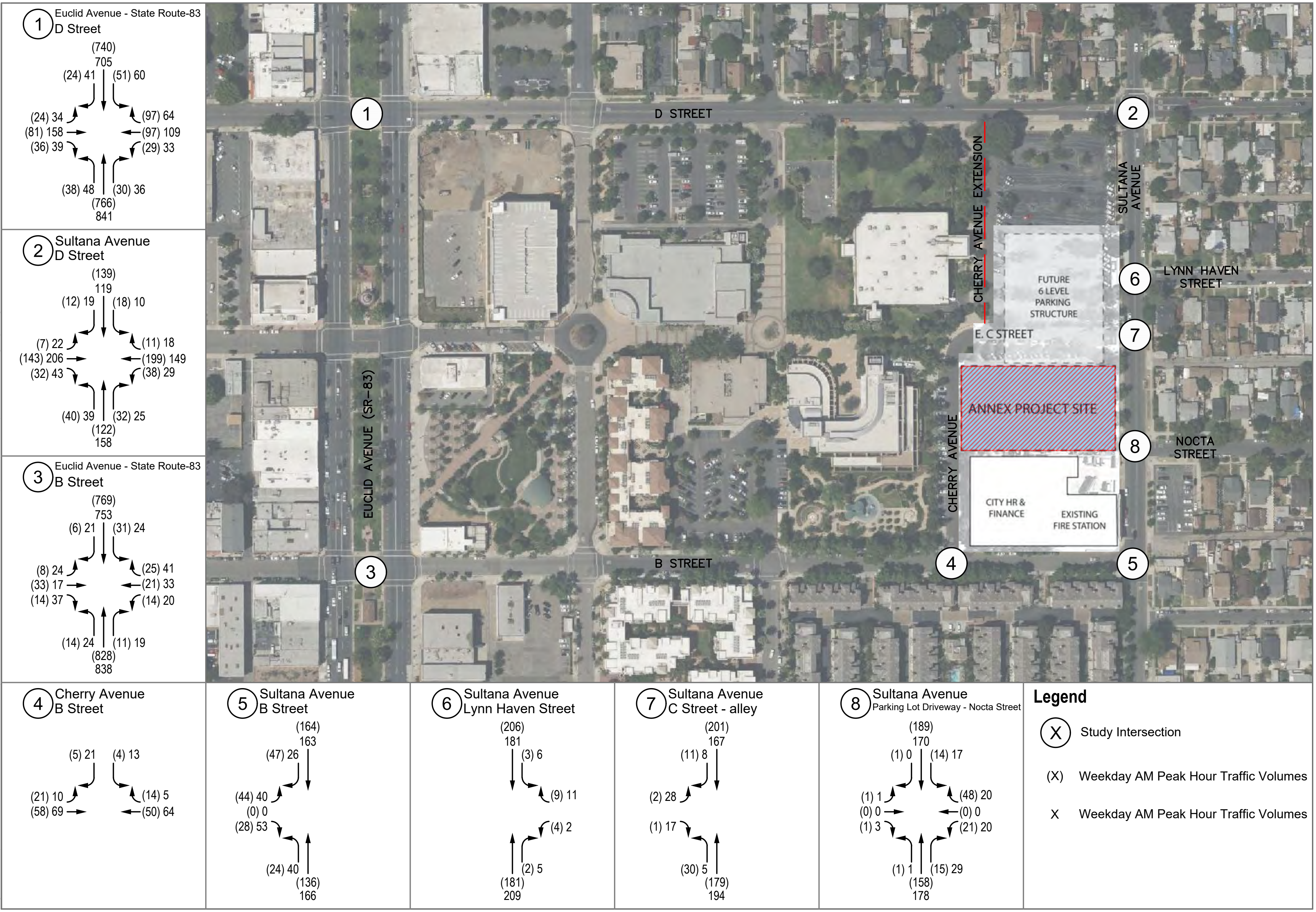
No.	Intersection	Traffic Control	Existing				Existing plus Project				Change in Avg. Delay		Inconsistent w/City Standards?	
			AM Peak		PM Peak		AM Peak		PM Peak					
			Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	AM	PM	AM	PM
1	Euclid Ave. - SR-83/D St.[2]	Signal[2]	11.3	B	15.0	B	12.0	B	17.3	B	0.7	2.3	No	No
2	Sultana Ave./D St.	AWSC	12.5	B	11.8	B	13.8	B	12.5	B	1.3	0.7	No	No
3	Euclid Ave. - SR-83/B St.	Signal	5.3	A	6.7	A	5.7	A	7.6	A	0.4	0.9	No	No
4	Cherry Ave./B St.	TWSC	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	No	No
5	Sultana Ave./B St.	AWSC	8.7	A	8.8	A	9.1	A	9.0	A	0.4	0.2	No	No
6	Sultana Ave./Lynn Haven St.	TWSC	10.4	B	9.9	A	10.7	B	10.1	B	0.3	0.2	No	No
7	Sultana Ave./C St. - Alley	TWSC	11.7	B	11.0	B	13.0	B	11.7	B	1.3	0.7	No	No
8	Sultana Ave./Parking Lot Driveway - Nocta St.	TWSC	11.4	B	11.2	B	11.9	B	11.5	B	0.5	0.3	No	No

Source: Attachment B
Notes: AWSC = all-way stop control; TWSC = two-way stop control; LOS = Level of Service
[1] Delay in seconds per vehicle; highest movement delay is reported for TWSC intersections

Table 5. Existing ADT Roadway Segment Level of Service

Roadway Segment		Classification	No. of Lanes	Capacity[1]	Existing			Existing Plus Project			Exceeds Threshold?
					ADT[2]	V/C	LOS	ADT[2]	V/C	LOS	
Sultana Ave.											
1	Between D St. and Lynn Haven S	Collector	2U	17,400	4501	0.26	A	4899	0.28	A	No
2	Between B St. and Nocta St.	Collector	2U	17,400	4469	0.26	A	4865	0.28	A	No

Notes: XU = # of lanes Undivided; XD = # of lanes Divided
[1] Capacity determined from Table 3 in Section 4.3, Analysis Methodology.
[2] Volume provided from average daily traffic (ADT) counts conducted on May 16, 2023



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SOURCE: Bing Maps; HMC Architects 2023

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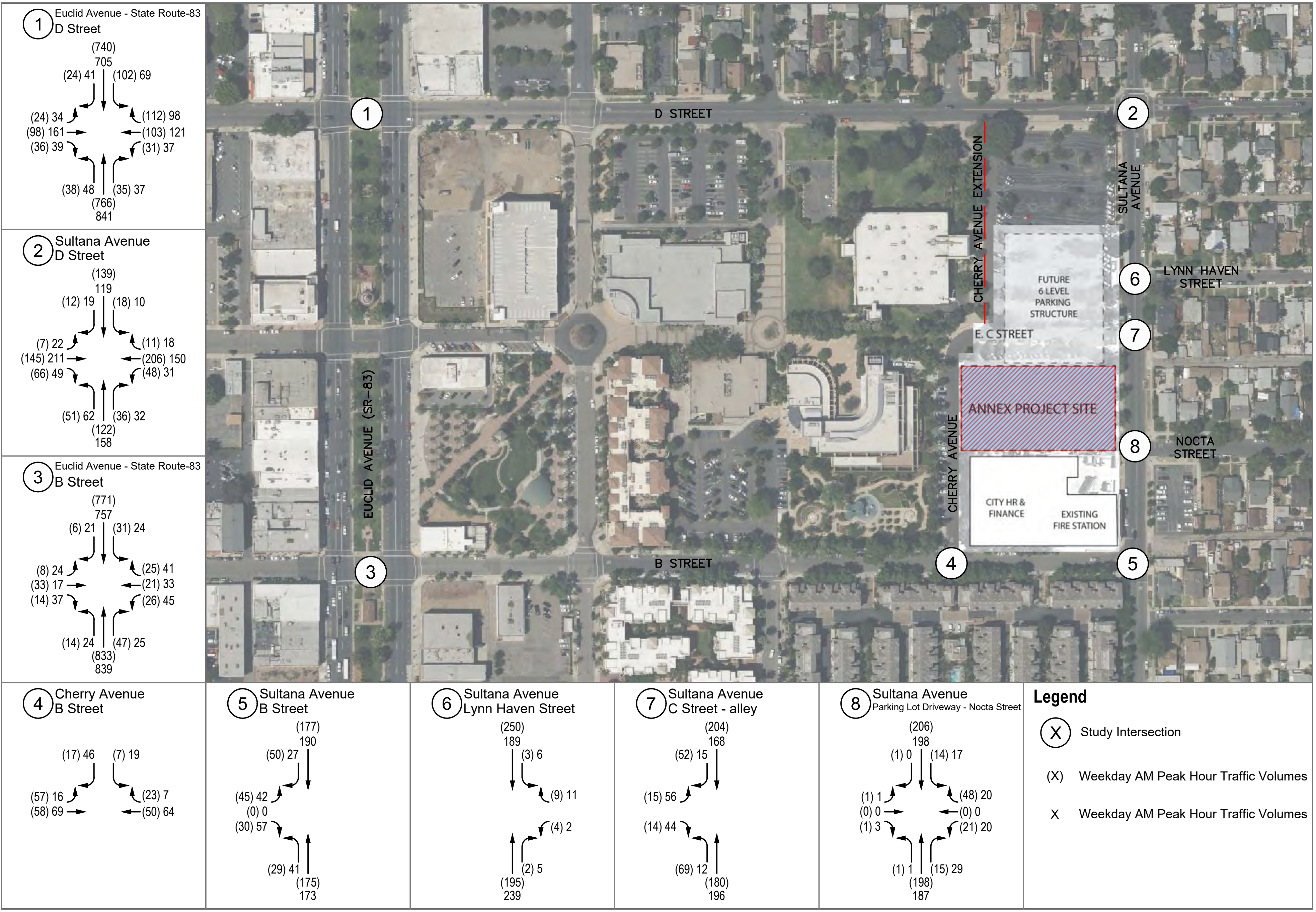
Figure 6

Existing Intersection Volumes

City of Ontario City Hall Annex



SOURCE: Bing Maps; HMC Architects 2023

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Figure 7

Existing + Project Intersection Volumes

City of Ontario City Hall Annex

5.2 Opening Year (2027) Analysis

This section presents the results of a cumulative condition analysis that was conducted for a short-term horizon year (Year 2027) assuming the proposed Project is constructed and fully occupied.

5.2.1 Cumulative Projects

Cumulative projects are projects that are proposed and in the development review process, but not yet fully approved; or projects that have been approved, but not fully constructed or occupied. The projects listed in Table 6 were provided per communication with City staff and are included in the Opening Year analysis.

Table 6. Cumulative Projects

No	Name	Location	Description
1	PDEV21-009	221 North Mountain Avenue	Multi-family Residential
2	PDEV21-008	SWC of Emporia and Palm Avenue	Multi-family Residential
3	PDEV20-020	NEC of C Street and Euclid Avenue	Mixed-use
4	PDEV22-031	NEC of D Street and Euclid Avenue	Mixed-use
5	PDEV22-023	NEC of Laurel Avenue and D Street	Multi-family Residential
6	PDEV23-001	SWC of D Street and Sultana Avenue	Fire-station
7	PDEV20-009	549 West Holt Boulevard	Mixed-use
8	PDEV19-002	1055 West Mission Boulevard	Multi-family Residential
9	PDEV19-027	SWC of State Street and San Antonio Avenue	Warehousing
10	PDEV21-003	1486 East Holt Boulevard	Brewery/Tap Room
11	PDEV21-026	1030 and 1042 East Holt Boulevard	General Light Industrial
12	PDEV22-009	SEC of Sultana Avenue and Mission Boulevard	General Light Industrial
13	PDEV21-035	SEC of Sultana Avenue and Belmont Street	General Light Industrial
14	PDEV21-037	1516 South Bon View Avenue	Warehousing
15	PDEV21-034	621 South Mountain Avenue	General Light Industrial

Source: Email correspondence with the City of Ontario, July 2023

Project trip generation estimates for the cumulative projects were derived using ITE *Trip Generation, 11th Edition* (2021) trip rates. As shown in Table 7, the cumulative projects are forecast to generate approximately 6,333 daily trips, 422 AM peak hour trips, and 700 PM peak hour trips. The trips generated by the cumulative projects were distributed through the study area network, and were based on logical commute corridors. Figure 8 shows the location of the cumulative projects.

Table 7. Cumulative Trip Generation

Land Use	ITE Code	Size	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
General Light Industrial	110	per TSF	4.87	0.65	0.09	0.74	0.09	0.56	0.65
Warehousing	150	per TSF	1.71	0.13	0.04	0.17	0.05	0.13	0.18
Multifamily Housing (Low-Rise)	220	per DU	6.74	0.1	0.3	0.4	0.32	0.19	0.51

Table 7. Cumulative Trip Generation

Land Use	ITE Code	Size	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)	221	per DU	4.54	0.09	0.28	0.37	0.24	0.15	0.39
Multifamily Housing (High-Rise)	222	per DU	4.45	0.09	0.18	0.27	0.18	0.14	0.32
Fire and Rescue Station	575	per TSF	—	—	—	—	0	0.48	0.48
Brewery Tap Room	971	per TSF	61.69	0.6	0.08	0.68	5.8	4.03	9.83
Trip Generation[2]									
1 Multifamily Housing - High-rise	222	39 DU	263	4	12	16	13	7	20
2 Multifamily Housing - Mid-rise	221	50 DU	337	5	15	20	16	9	25
3 Multifamily Housing - Mid-rise	221	144 DU	971	14	44	58	46	27	73
4 Multifamily Housing - Mid-rise	221	109 DU	735	10	33	43	35	21	56
5 Multifamily Housing - Low-rise	220	28 DU	189	3	9	12	9	5	14
6 Fire Station[3]	575	18.000 TSF	—	—	—	0	0	9	9
7 Multifamily Housing - Low-rise	220	59 DU	398	6	18	24	19	11	30
8 Multifamily Housing - Mid-rise	221	68 DU	309	6	19	25	16	10	26
9 Warehousing	150	104.078 TSF	178	14	4	18	5	14	19
10 Beer Room	971	26.000 TSF	1604	16	2	18	151	105	256
11 General Light Industrial	110	44.885 TSF	219	29	4	33	4	25	29
12 General Light Industrial	110	79.323 TSF	386	52	7	59	7	44	52
13 General Light Industrial	110	59.984 TSF	292	39	5	44	5	34	39
14 Warehousing[4]	150	167.600 TSF	290	20	7	27	11	20	31
15 General Light Industrial	110	33.363 TSF	162	22	3	25	3	19	22
Total Cumulative Project Trip Generation			**6,333**	**239**	**182**	**422**	**341**	**359**	**700**

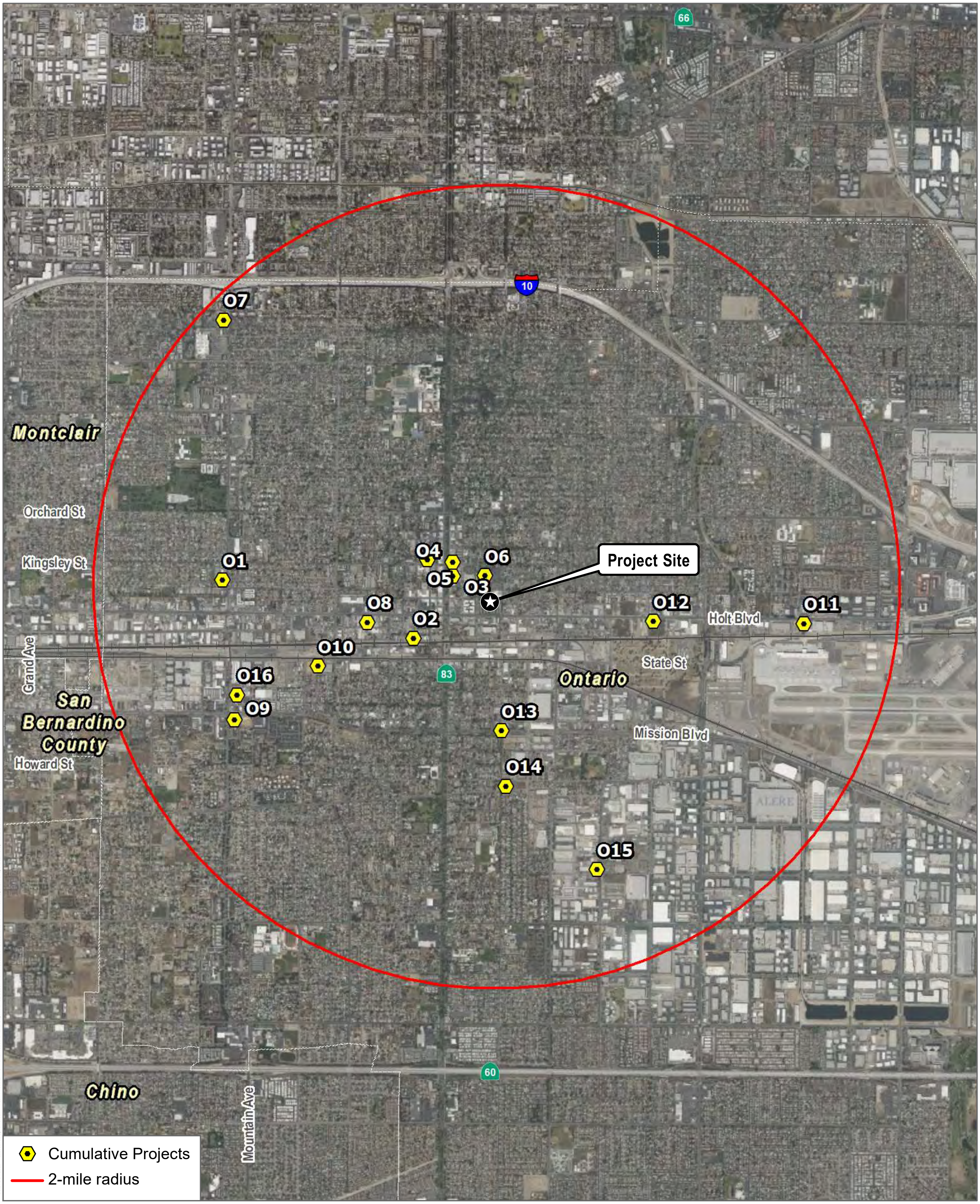
Notes: TSF = thousand square feet; DU = dwelling unit

[1] Trip rates from Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021.

[2] Cumulative projects provided by email correspondence and public records request with the City of Ontario, 2023.

[3] Trip rates provided by email correspondence with the City of Ontario, Planning Department, 2023.

[4] Trip rates from Urban Crossroads, ISMND Report, 2022.



SOURCE: Bing Maps

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0 1,650 3,300 Feet

Figure 8

Cumulative Project Locations

City of Ontario City Hall Annex

5.2.2 Intersection and Roadway Operations

The existing intersection configurations have been assumed to be preserved under the Opening Year (2027) conditions. Figure 9 illustrates the Opening Year (2027) (no project) traffic volumes for the peak hour conditions and Figure 10 illustrates the Opening Year (2027) (with project) traffic volumes for the peak hour conditions.

Table 8 summarizes the results of the Opening Year (2027) intersection analysis for the AM and PM peak hours, with and without the project. As shown in the table, all study area intersections are forecast to operate at satisfactory levels of service (LOS E or better) under Opening Year (2027) conditions with and without the project-added traffic.

Table 9 shows the results of the roadway segment LOS analysis. As shown below, the study area roadway segments are forecast to operate at acceptable conditions under Opening Year (2027) conditions, with and without the project traffic.

Table 8. Opening Year Weekday Peak Hour Intersection LOS (with and without Project)

No.	Intersection	Traffic Control	Opening Year (2027)				Opening Year (2027) Plus Proj				Change in Avg. Delay		Inconsistent w/City Standards?	
			AM Peak		PM Peak		AM Peak		PM Peak					
			Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	AM	PM	AM	PM
1	Euclid Ave. - SR-83/D St.[2]	Signal	15.2	B	18.7	B	16.8	B	21.2	C	1.7	2.5	No	No
2	Sultana Ave./D St.	AWSC	14.7	B	13.4	B	16.5	C	14.6	C	1.8	1.2	No	No
3	Euclid Ave. - SR-83/B St.	Signal	5.5	A	7.0	A	5.6	A	7.4	A	0.1	0.4	No	No
4	Cherry Ave./B St.	TWSC	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	No	No
5	Sultana Ave./B St.	AWSC	9.1	A	9.1	A	9.4	A	9.4	A	0.3	0.3	No	No
6	Sultana Ave./Lynn Haven St.	TWSC	10.6	B	10.1	B	11.0	B	10.3	B	0.4	0.2	No	No
7	Sultana Ave./C St. - Alley	TWSC	12.4	B	11.5	B	13.8	B	12.3	B	1.4	0.8	No	No
8	Sultana Ave./Parking Lot Driveway - Nocta St.	TWSC	12.0	B	11.7	B	12.6	B	12.0	B	0.6	0.3	No	No

Source: Attachment B

Notes: AWSC = all-way stop control; TWSC = two-way stop control; LOS = Level of Service

[1] Delay in seconds per vehicle; highest movement delay is reported for TWSC intersections

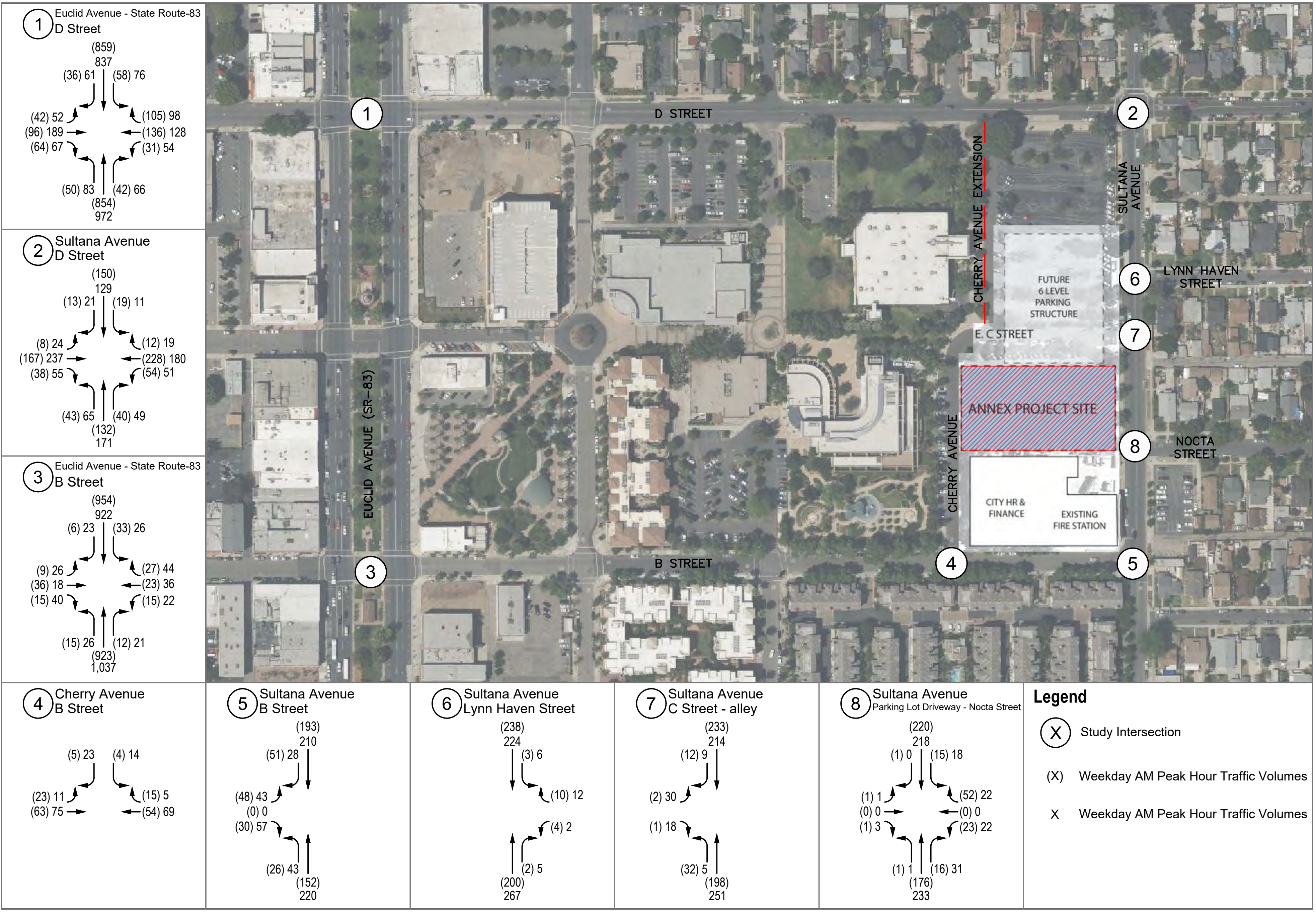
Table 9. Opening Year (2027) ADT Roadway Segment Level of Service

Roadway Segment		Classification	No. of Lanes	Capacity[1]	Opening Year (2027)			Opening Year (2027) Plus Project			Exceeds Threshold?
					ADT[2]	V/C	LOS	ADT[2]	V/C	LOS	
Sultana Ave.											
1	Between D St. and Lynn Haven St.	Collector	2U	17,400	5432	0.31	A	5830	0.34	A	No
2	Between B St. and Nocta St.	Collector	2U	17,400	5374	0.31	A	5770	0.33	A	No

Notes: XU = # of lanes Undivided; XD = # of lanes Divided

[1] Capacity determined from Table 3 in Section 4.3, Analysis Methodology.

[2] Volume provided from average daily traffic (ADT) counts conducted on May 16, 2023



SOURCE: Bing Maps; HMC Architects 2023

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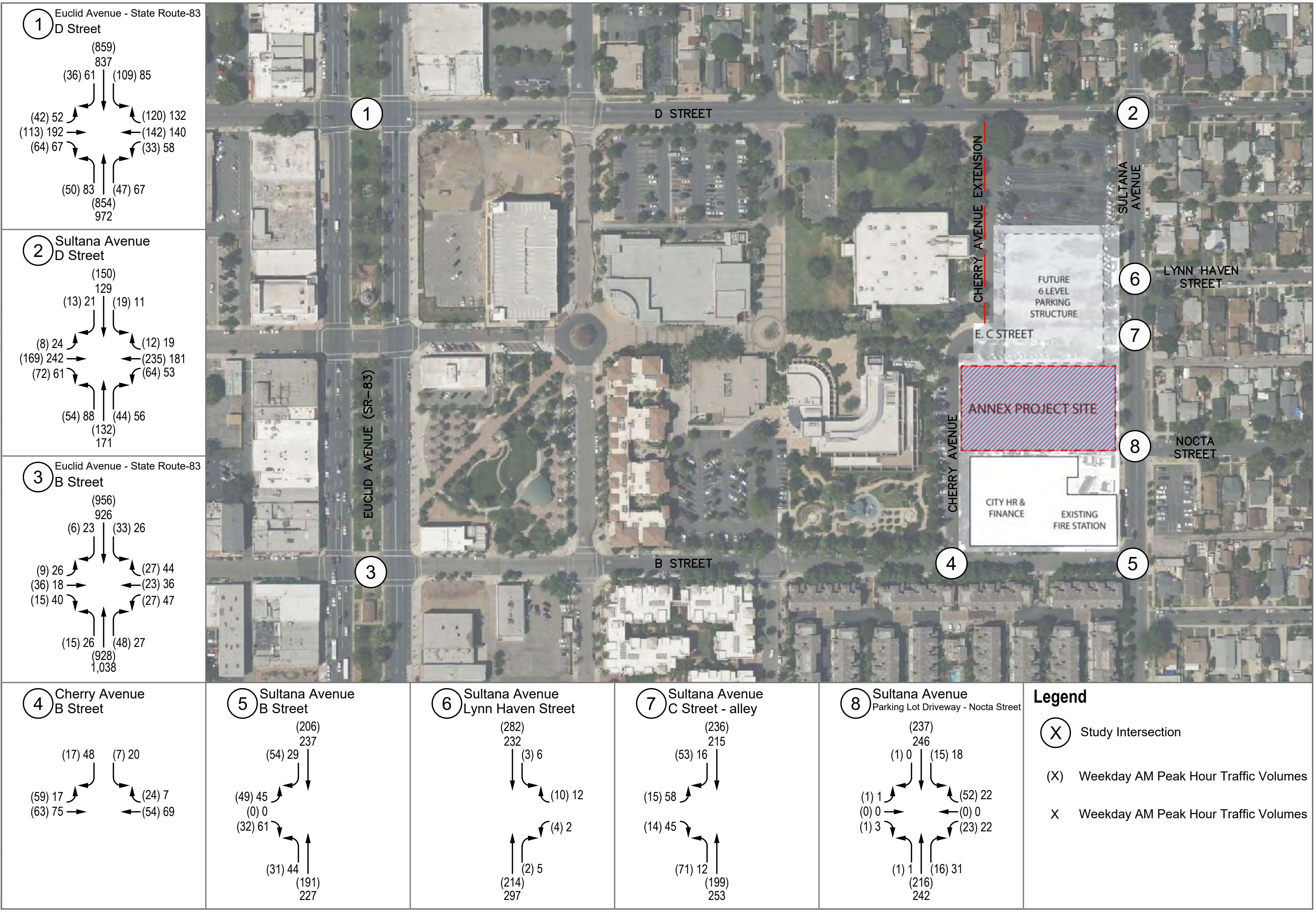
Figure 9

Opening Year (2027) Intersection Volumes

City of Ontario City Hall Annex



SOURCE: Bing Maps; HMC Architects 2023

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Figure 10

Opening Year + Project Intersection Volumes

City of Ontario City Hall Annex

6.0 Site Access

The site of the new City Hall Annex would serve as both a destination as well as a pathway, with vehicular traffic running adjacent to the east and west boundaries of the site along Sultana Avenue and Cherry Avenue. Cherry Avenue will be utilized as a two-way drive aisle that will be accessible from B Street, circulate north through the site and exit through D Street. Vehicular access to the new parking garage would be provided from driveway on both Cherry Avenue and Sultana Avenue.

Building entry would be from a main entrance on the northern side of the proposed Annex building. Enhanced pedestrian circulation would be provided along Cherry Avenue and between the proposed parking structure and the new Annex building. Pedestrian pathways would also connect to existing sidewalks north of City Hall and on Sultana Avenue. Covered and enclosed long-term bicycle parking would be provided within the parking structure on the ground level.

The design of the proposed project, including all egress/ingress and driveways would be designed according to all relevant City guidelines and would be reviewed by the City's Public Works/Engineering Department. All driveways would be required to have adequate queue storage areas, would be perpendicular to existing roads, and would not cause hazards due to a geometric design feature.

Sidewalks are located on all streets within the project vicinity and the closest bicycle facility is a Class III bike route on G Street approximately 0.35 miles north of the site. The nearest transit route is provided along Holt Avenue, with bus stops provided near the intersection of Holt Boulevard and Plum Avenue, approximately one and half blocks southwest of the site. The Project would not interfere with existing public transit, bicycle, or pedestrian facilities, or impede the construction of new or the expansion of such facilities in the future. There would be no impacts to transit, pedestrian or bicycles access or facilities.

7.0 Vehicle Miles Traveled Analysis Screening Analysis

On September 27, 2013, Governor Brown signed SB 743, with the purpose of streamlining the California Environmental Quality Act (CEQA) review process for several categories of development projects. A key element of SB 743, is the elimination of automobile delay and level of service (LOS) as the sole basis of determining CEQA impacts. The most recent CEQA guidelines, released in December 2018, recommend VMT as the most appropriate measure of project transportation impacts. In accordance with SB 743, the City of Ontario has adopted guidelines, impact thresholds, and mitigation requirements for evaluating VMT.

Based on the City's VMT Thresholds[6], a project may be screened from conducting a detailed project-level VMT assessment if it meets the screening criteria identified below.

- **Transit Priority Area Screening:** Projects located within a ½ mile of an existing "major transit stop" or an "existing stop along a high-quality transit corridor may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition to its proximity to transit, the project must also

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[6] City of Ontario. 2020. Resolution No. 2020-071 adopting Vehicle Miles Traveled Thresholds for Determining Significance of Transportation Impacts Through CEQA in Conformance with SB 743. June.

have a minimum Floor Area Ratio of 0.75; provide no more parking than City Development code mandates; and be consistent with the applicable Sustainable Communities Strategy; and not replace affordable housing units with a smaller number of moderate or high-income residential units. If the project meets these additional considerations, further analysis is not required, and a less than significant determination can be made. Based on the San Bernardino County Transportation Authority (SBCTA) Transportation Analysis Model (SBTAM) VMT evaluation tool (Attachment C), the project is located within a TPA and meets this screening criterion.

- **Low VMT Area Screening:** Presumed less than significant VMT for projects located in low VMT-generating model traffic analysis zones (TAZs). These TAZs generate total daily VMT per Service Population that is 15% less than the baseline level for the County. Based on the evaluation tool, the project is not in a low VMT generating area and would not meet this screening criterion.
- **Low Trip Generating Uses:** Projects below 110 Average Daily Trips (ADT) are presumed to be less than significant, such as:
  - 11 single family homes
  - 16 multi-family, condominiums or townhouse housing units;
  - 10,000 SF of office;
  - 15,000 SF of light industrial;
  - 63,000 SF of warehousing; and 79,000 SF of high-cube transload and short-term storage warehouse

The proposed project is anticipated to generate more than 110 ADT and therefore would not meet this screening criterion.

- **Project Type Screening:** Projects that meet the criteria described below can be screened from further VMT review and are presumed to have a less than significant impact:
  - Residential, office, retail or a mix of these land uses within ½ mile of an existing major transit stop;
  - Local-serving retail uses not greater than 50,000 square feet in size; Projects with a Neighborhood Commercial TOP Land Use designation;
  - Certain Transportation projects that do not add vehicle capacity;
  - Local-serving K-12 Public Schools;
  - Local/Neighborhood parks;
  - Daycare/Childcare/Pre-Kindergarten;
  - Affordable or supportive housing;
  - Student housing projects on or adjacent to a college campus;
  - Community institutions (public libraries, fire stations, local government facilities);
  - Senior housing (as defined by HUD) or Assisted living facilities;
  - Redevelopment of a site to a residential or office that would generate fewer VMT than the existing use; and
  - Non-destination small hotels (with 150 or fewer rooms and no Banquet facilities)

The proposed project would consist of a new three-story civic office building to house seven existing city departments and therefore meets the Community Institution land use.

Based on the City's VMT screening criteria above, the project would screen-out of a project-specific VMT analysis because it is within a TPA and also qualifies as a "Community Institution" (i.e., local government facility). Therefore, a comprehensive VMT analysis is not required and impacts to VMT can be presumed to be less than significant.

8.0 Summary

The key findings of the transportation analysis in this memo are summarized below:

- The proposed project would generate 1,527 daily trips, 225 AM peak hour trips and 146 PM peak hour trips.
- Based on the intersection LOS analysis, all of the study intersections are currently and forecast to operate at satisfactory levels of service (LOS E or better) under Existing and Opening Year (2027) conditions with and without the project-added traffic. There would be no project-related LOS impacts on the study intersections.
- Based on the roadway segment LOS analysis, the study area roadway segments are currently and forecast to operate at acceptable ADT volume-to-capacity conditions under Existing and Opening Year (2027) conditions, with and without the project-added traffic. There would be no project-related LOS impacts on the study road segments.
- The Project would have no impact on the transit, pedestrian and bicycle facilities in the area.
- Per the City's VMT screening criteria, the project would screen-out of project-specific VMT analysis because it is within a TPA and also qualifies as a "Community Institution" (i.e., local government facility). Therefore, a comprehensive VMT analysis is not required and impacts to VMT can be presumed to be less than significant.

Attachment A

Raw Traffic Count Data

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:			
Tue, May 16, 23	LOCATION: Ontario	PROJECT #: SC4033	
	NORTH & SOUTH: Euclid	LOCATION #: 1	
	EAST & WEST: D	CONTROL: SIGNAL	

NOTES:

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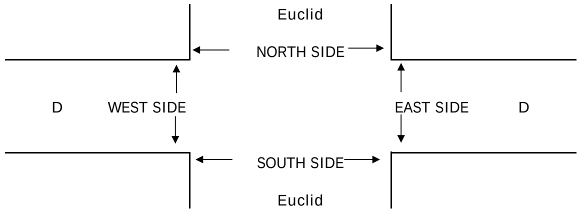
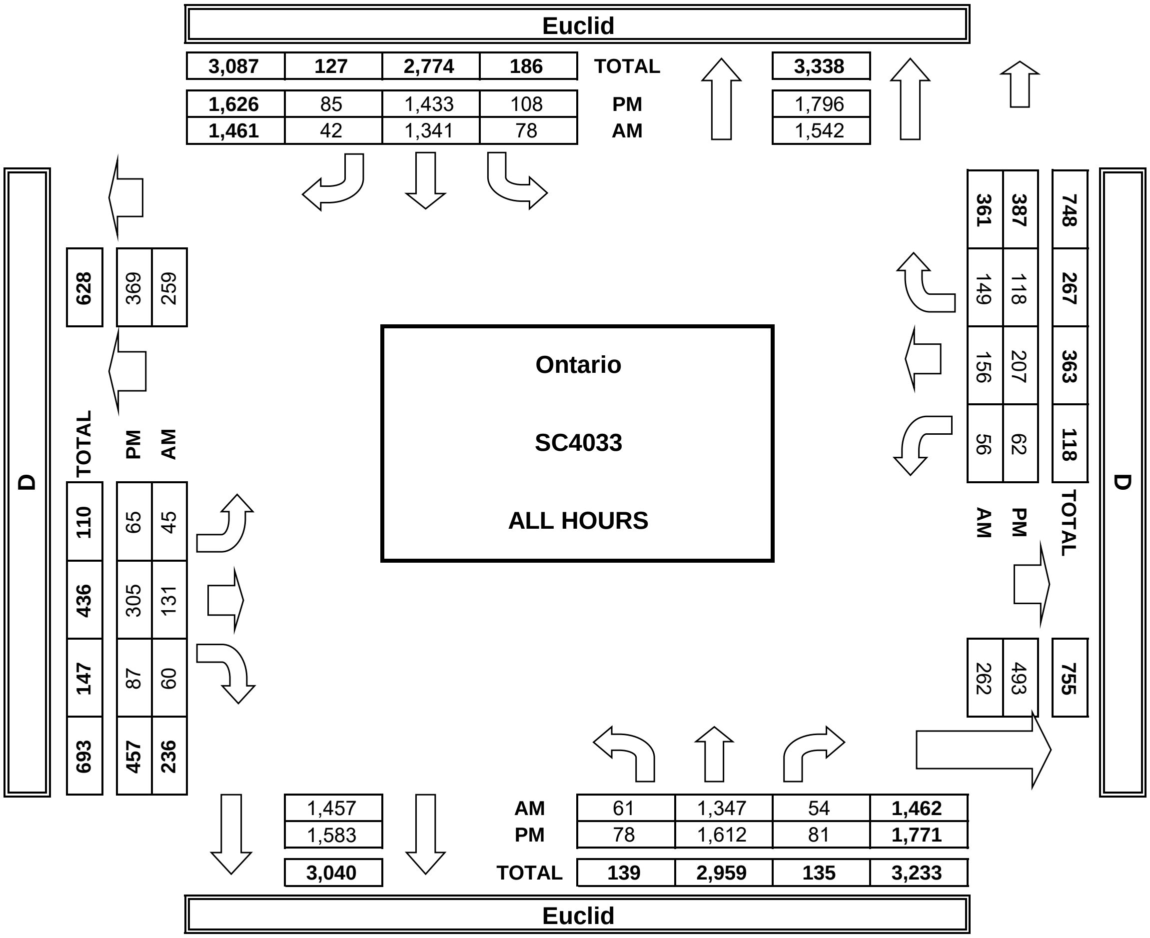
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
			Euclid			Euclid			D			D							
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	3	0	0	3	0	0	1	0	0	1	0		0	0	0	0	
AM	7:00 AM	5	148	5	7	149	1	3	10	6	5	15	13	367	0	1	0	0	1
	7:15 AM	11	139	5	4	168	4	7	16	6	7	14	15	396	0	0	0	0	0
	7:30 AM	16	206	6	12	157	6	10	13	5	10	18	16	475	0	0	0	0	0
	7:45 AM	11	232	15	12	205	9	9	24	21	5	37	25	605	0	0	0	0	0
	8:00 AM	9	175	5	11	193	3	3	24	5	10	21	26	485	0	0	0	0	0
	8:15 AM	2	153	4	16	185	6	2	20	5	4	21	30	448	0	0	0	0	0
	8:30 AM	2	146	5	8	150	5	7	14	7	9	18	15	386	0	0	0	0	0
	8:45 AM	5	148	9	8	134	8	4	10	5	6	12	9	358	0	0	0	0	0
	VOLUMES	61	1,347	54	78	1,341	42	45	131	60	56	156	149	3,520	0	1	0	0	1
	APPROACH %	4%	92%	4%	5%	92%	3%	19%	56%	25%	16%	43%	41%						
	APP/DEPART	1,462	/	1,542	1,461	/	1,457	236	/	262	361	/	259	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	38	766	30	51	740	24	24	81	36	29	97	97	2,013					
	APPROACH %	5%	92%	4%	6%	91%	3%	17%	57%	26%	13%	43%	43%						
	PEAK HR FACTOR		0.808			0.902			0.653			0.832		0.832					
	APP/DEPART	834	/	887	815	/	805	141	/	162	223	/	159	0					
PM	4:00 PM	11	198	14	16	194	10	10	29	14	4	21	16	537	0	0	0	0	0
	4:15 PM	5	177	14	8	191	11	6	32	7	6	28	10	495	0	1	0	0	1
	4:30 PM	10	225	10	12	171	6	5	46	16	10	24	14	549	0	0	0	0	0
	4:45 PM	4	171	7	12	172	17	10	40	11	9	25	14	492	0	0	0	0	0
	5:00 PM	10	234	8	21	192	9	5	36	5	9	32	20	581	0	0	0	0	0
	5:15 PM	7	200	9	12	173	8	11	51	18	8	31	16	544	0	0	0	0	0
	5:30 PM	17	203	9	14	182	12	7	47	7	10	18	13	539	0	0	0	0	0
	5:45 PM	14	204	10	13	158	12	11	24	9	6	28	15	504	1	0	0	0	1
	VOLUMES	78	1,612	81	108	1,433	85	65	305	87	62	207	118	4,241	1	1	0	0	2
	APPROACH %	4%	91%	5%	7%	88%	5%	14%	67%	19%	16%	53%	30%						
	APP/DEPART	1,771	/	1,796	1,626	/	1,583	457	/	493	387	/	369	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	48	841	36	60	705	41	34	158	39	33	109	64	2,168					
	APPROACH %	5%	91%	4%	7%	87%	5%	15%	68%	17%	16%	53%	31%						
	PEAK HR FACTOR		0.918			0.908			0.722			0.844		0.933					
	APP/DEPART	925	/	939	806	/	778	231	/	254	206	/	197	0					

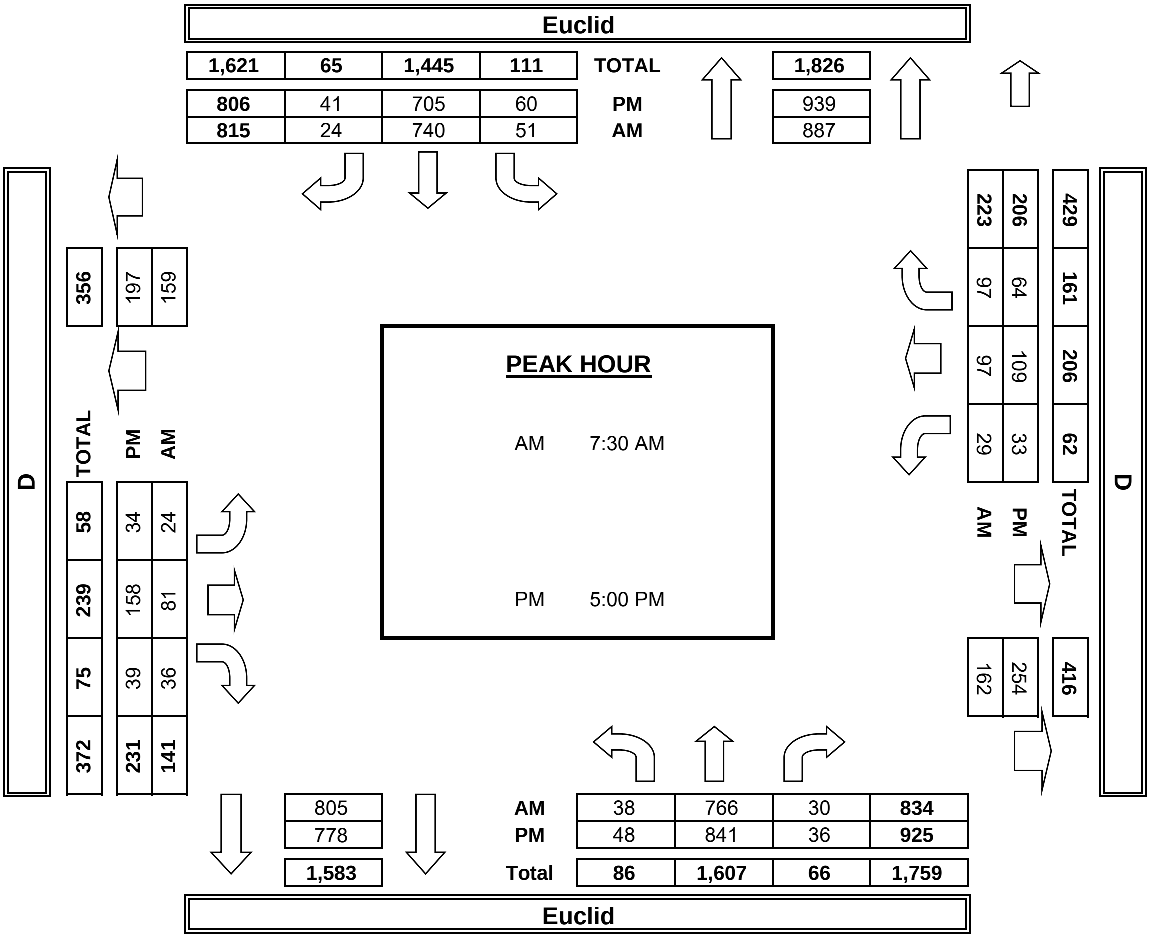


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	3	0	3	0	0	2	0	2	0	0	1	0	1
	7:15 AM	0	0	1	2	3	0	0	1	2	3	0	0	0	0	0
	7:30 AM	2	2	0	0	4	2	2	0	0	4	0	0	0	0	0
	7:45 AM	1	1	1	4	7	1	1	0	4	6	0	0	1	0	1
	8:00 AM	0	2	1	4	7	0	2	1	4	7	0	0	0	0	0
	8:15 AM	1	3	2	1	7	1	2	2	1	6	0	1	0	0	1
	8:30 AM	0	0	6	5	11	0	0	6	5	11	0	0	0	0	0
	8:45 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	TOTAL	4	8	15	16	43	4	7	13	16	40	0	1	2	0	3
	AM BEGIN PEAK HR			7:30 AM			4	7	3	9	23					
PM	4:00 PM	2	2	1	3	8	2	1	1	2	6	0	1	0	1	2
	4:15 PM	12	3	8	9	32	12	2	7	6	27	0	1	1	3	5
	4:30 PM	1	1	1	0	3	1	0	0	0	1	0	1	1	0	2
	4:45 PM	4	1	2	2	9	4	1	2	2	9	0	0	0	0	0
	5:00 PM	4	3	4	2	13	4	1	3	2	10	0	2	1	0	3
	5:15 PM	0	2	1	3	6	0	1	0	2	3	0	1	1	1	3
	5:30 PM	0	0	3	1	4	0	0	3	1	4	0	0	0	0	0
	5:45 PM	0	3	0	4	7	0	3	0	3	6	0	0	0	1	1
	TOTAL	23	15	20	24	82	23	9	16	18	66	0	6	4	6	16
	PM BEGIN PEAK HR			5:00 PM			4	5	6	8	23					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Ontario	PROJECT #:	SC4033
Tue, May 16, 23	NORTH & SOUTH:	Sultana	LOCATION #:	2
	EAST & WEST:	D	CONTROL:	STOP ALL

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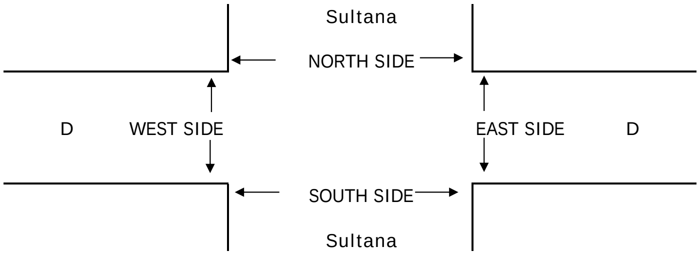
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		Sultana			Sultana			D			D			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	0	1	0	1	1	0	1	1	0	
AM	7:00 AM	6	18	3	1	16	2	0	19	2	6	30	0	103
	7:15 AM	5	25	3	1	22	1	0	30	4	9	34	0	134
	7:30 AM	5	27	4	1	28	1	1	25	6	12	43	0	153
	7:45 AM	13	50	9	5	41	4	3	38	15	7	52	4	241
	8:00 AM	10	19	9	6	42	6	2	40	6	12	52	2	206
	8:15 AM	12	26	10	6	28	1	1	40	5	7	52	5	193
	8:30 AM	7	16	5	4	17	3	5	20	6	6	34	1	124
	8:45 AM	9	15	2	0	20	2	2	14	5	7	21	1	98
	VOLUMES	67	196	45	24	214	20	14	226	49	66	318	13	1,252
	APPROACH %	22%	64%	15%	9%	83%	8%	5%	78%	17%	17%	80%	3%	
	APP/DEPART	308	/	223	258	/	330	289	/	295	397	/	404	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	40	122	32	18	139	12	7	143	32	38	199	11	793
	APPROACH %	21%	63%	16%	11%	82%	7%	4%	79%	18%	15%	80%	4%	
	PEAK HR FACTOR		0.674			0.782			0.813			0.939		0.823
	APP/DEPART	194	/	140	169	/	209	182	/	193	248	/	251	0
PM	4:00 PM	8	32	7	4	25	4	2	56	12	3	33	5	191
	4:15 PM	8	36	3	4	20	1	3	48	13	5	42	0	183
	4:30 PM	10	48	7	3	36	8	3	58	9	5	33	6	226
	4:45 PM	8	41	7	0	34	5	7	36	7	6	33	3	187
	5:00 PM	9	35	7	4	28	4	5	51	16	9	50	3	221
	5:15 PM	12	34	4	3	21	2	7	61	11	9	33	6	203
	5:30 PM	10	43	11	2	30	4	6	58	13	4	27	2	210
	5:45 PM	9	38	7	3	20	3	5	37	10	6	44	1	183
	VOLUMES	74	307	53	23	214	31	38	405	91	47	295	26	1,604
	APPROACH %	17%	71%	12%	9%	80%	12%	7%	76%	17%	13%	80%	7%	
	APP/DEPART	434	/	371	268	/	353	534	/	481	368	/	399	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	39	158	25	10	119	19	22	206	43	29	149	18	837
	APPROACH %	18%	71%	11%	7%	80%	13%	8%	76%	16%	15%	76%	9%	
	PEAK HR FACTOR		0.854			0.787			0.858			0.790		0.926
	APP/DEPART	222	/	198	148	/	191	271	/	241	196	/	207	0

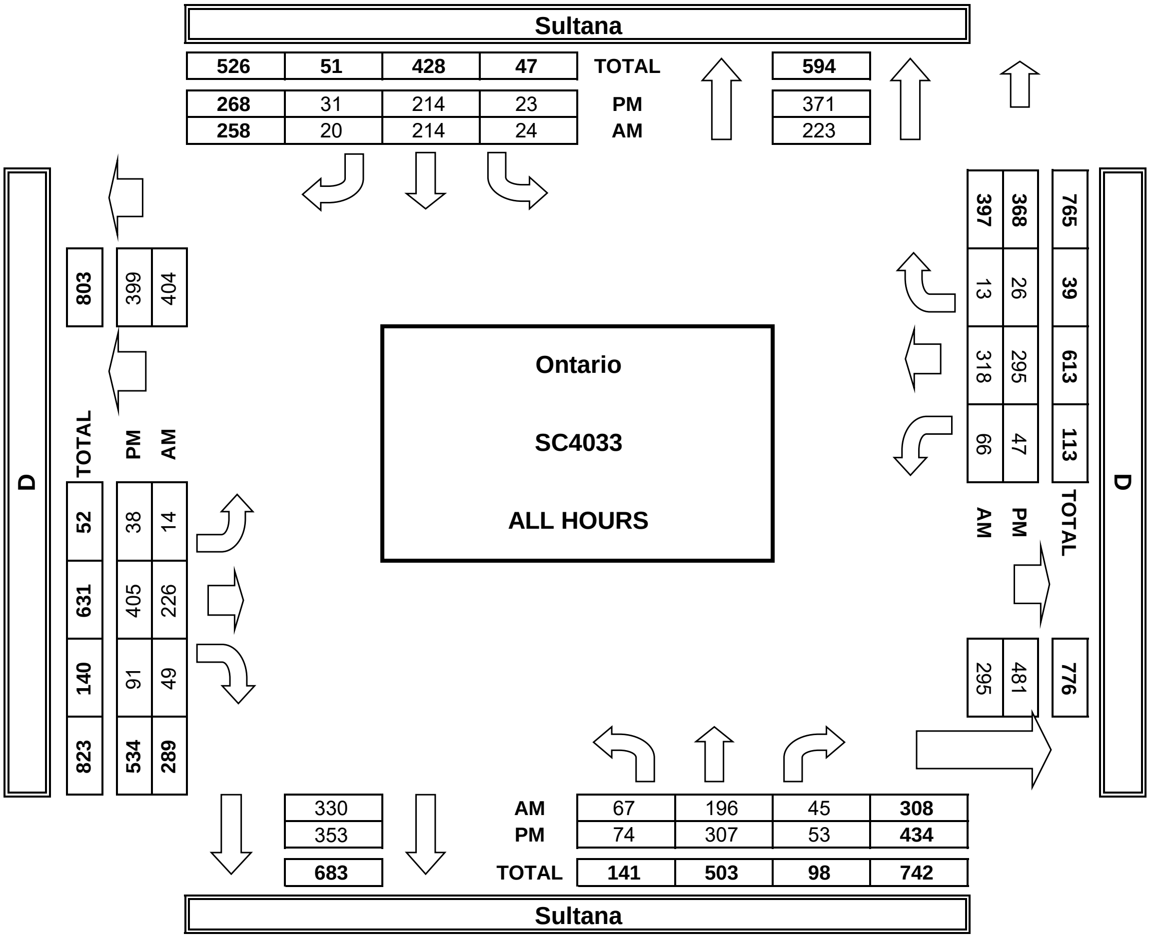
U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
1	0	0	0	1
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1

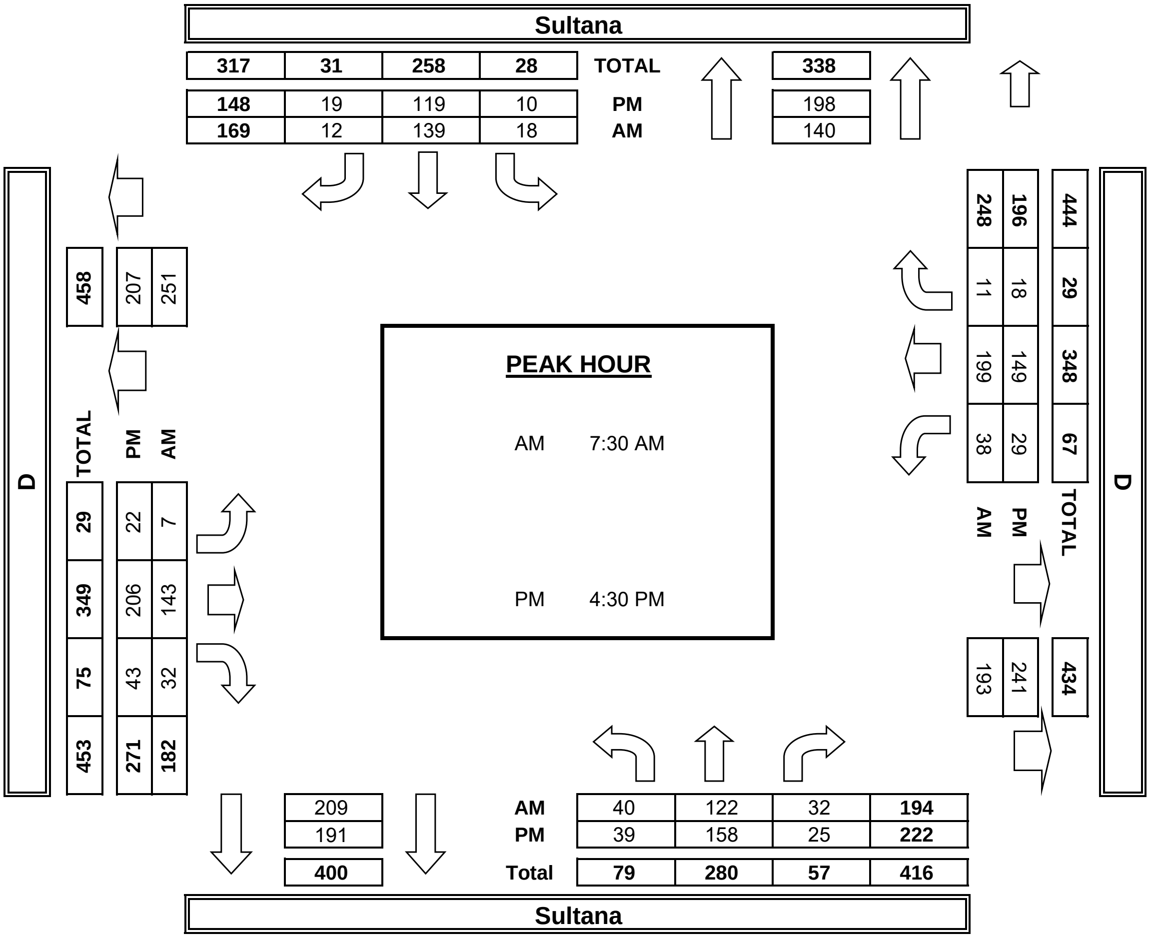


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	0	0	2	3	1	0	0	2	3	0	0	0	0	0
	7:15 AM	0	2	1	0	3	0	2	1	0	3	0	0	0	0	0
	7:30 AM	4	0	6	0	10	4	0	6	0	10	0	0	0	0	0
	7:45 AM	2	1	2	1	6	2	1	2	0	5	0	0	0	1	1
	8:00 AM	3	1	3	2	9	3	1	2	2	8	0	0	1	0	1
	8:15 AM	1	1	0	2	4	1	1	0	2	4	0	0	0	0	0
	8:30 AM	3	0	3	1	7	2	0	3	0	5	1	0	0	1	2
	8:45 AM	1	1	0	1	3	0	1	0	1	2	1	0	0	0	1
	TOTAL	15	6	15	9	45	13	6	14	7	40	2	0	1	2	5
AM BEGIN PEAK HR				7:30 AM			10	3	10	4	27					
PM	4:00 PM	2	1	1	0	4	2	1	1	0	4	0	0	0	0	0
	4:15 PM	3	4	1	1	9	3	3	1	1	8	0	1	0	0	1
	4:30 PM	3	0	1	1	5	3	0	1	0	4	0	0	0	1	1
	4:45 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	5:00 PM	0	3	3	2	8	0	3	3	2	8	0	0	0	0	0
	5:15 PM	0	2	5	3	10	0	2	4	0	6	0	0	1	3	4
	5:30 PM	2	1	0	1	4	2	1	0	1	4	0	0	0	0	0
	5:45 PM	0	3	3	0	6	0	2	1	0	3	0	1	2	0	3
	TOTAL	10	15	14	8	47	10	13	11	4	38	0	2	3	4	9
PM BEGIN PEAK HR				4:30 PM			3	6	8	2	19					

AimTD LLC

TURNING MOVEMENT COUNTS



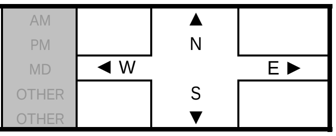


INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 16, 23	LOCATION: Ontario	PROJECT #:	SC4033
	NORTH & SOUTH: Euclid	LOCATION #:	3
	EAST & WEST: SR-83	CONTROL:	SIGNAL

NOTES:



		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
		Euclid			Euclid			SR-83			SR-83			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	3	0	0	3	0	0	1	0	0	1	0	
AM	7:00 AM	0	169	2	4	166	1	0	1	0	2	0	3	348
	7:15 AM	1	171	1	7	167	2	1	2	4	2	2	6	366
	7:30 AM	3	223	6	4	167	2	4	8	4	4	6	8	439
	7:45 AM	5	250	4	11	218	2	2	14	1	5	9	5	526
	8:00 AM	5	184	0	9	217	0	1	9	5	3	4	6	443
	8:15 AM	6	135	2	7	169	4	4	9	3	2	4	5	350
	8:30 AM	2	165	2	2	148	3	1	7	2	5	5	6	348
	8:45 AM	13	173	7	6	131	3	2	7	1	4	3	3	353
	VOLUMES	35	1,470	24	50	1,383	17	15	57	20	27	33	42	3,173
	APPROACH %	2%	96%	2%	3%	95%	1%	16%	62%	22%	26%	32%	41%	
	APP/DEPART	1,529	/	1,528	1,450	/	1,431	92	/	130	102	/	84	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	14	828	11	31	769	6	8	33	14	14	21	25	1,774
	APPROACH %	2%	97%	1%	4%	95%	1%	15%	60%	25%	23%	35%	42%	
	PEAK HR FACTOR		0.823			0.872			0.809			0.789		0.843
	APP/DEPART	853	/	861	806	/	798	55	/	75	60	/	40	0
PM	4:00 PM	3	221	2	5	126	0	10	14	9	2	3	9	404
	4:15 PM	3	185	5	2	205	5	5	8	12	3	5	5	443
	4:30 PM	2	214	3	4	193	3	7	9	4	4	6	8	457
	4:45 PM	9	200	1	7	181	3	6	11	6	6	4	8	442
	5:00 PM	3	208	1	7	203	1	6	15	10	6	10	13	483
	5:15 PM	6	225	3	1	208	5	8	4	12	4	7	7	490
	5:30 PM	8	181	9	10	182	6	5	14	7	8	10	12	452
	5:45 PM	7	224	6	6	160	9	5	8	8	2	6	9	450
	VOLUMES	41	1,658	30	42	1,458	32	52	83	68	35	51	71	3,621
	APPROACH %	2%	96%	2%	3%	95%	2%	26%	41%	33%	22%	32%	45%	
	APP/DEPART	1,729	/	1,782	1,532	/	1,561	203	/	154	157	/	124	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	24	838	19	24	753	21	24	41	37	20	33	41	1,875
	APPROACH %	3%	95%	2%	3%	94%	3%	24%	40%	36%	21%	35%	44%	
	PEAK HR FACTOR		0.929			0.932			0.823			0.783		0.957
	APP/DEPART	881	/	903	798	/	810	102	/	84	94	/	78	0

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	1	0	0	2
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
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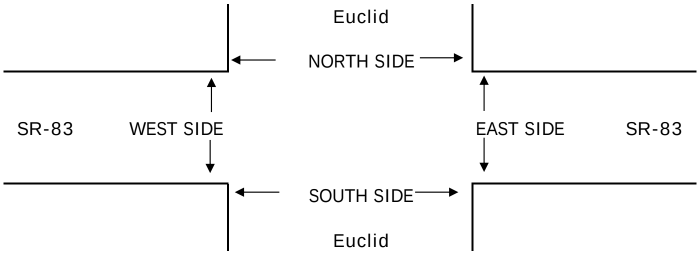
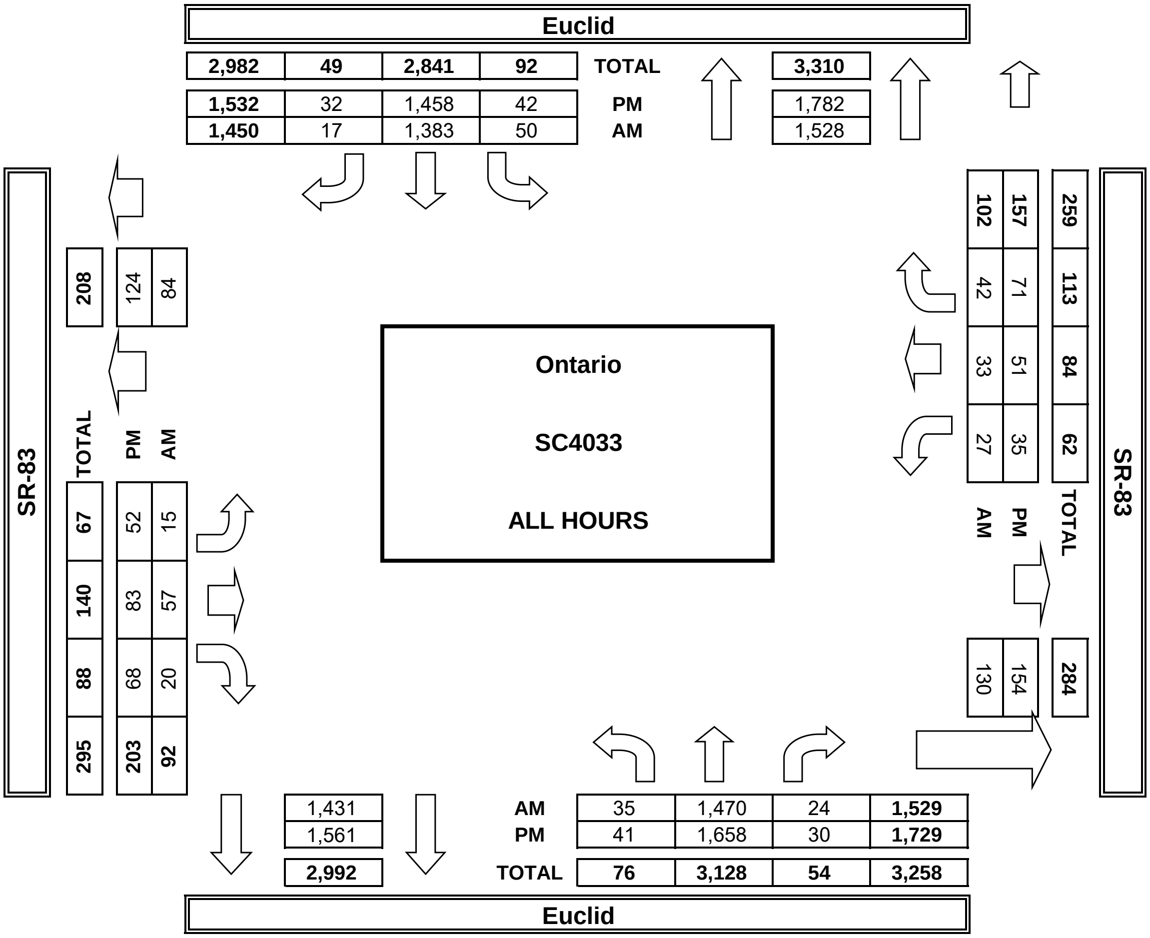
0	1	0	0	1



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	2	0	2	0	0	1	0	1	0	0	1	0	1
	7:15 AM	2	0	2	5	9	2	0	2	5	9	0	0	0	0	0
	7:30 AM	1	4	4	1	10	1	4	4	1	10	0	0	0	0	0
	7:45 AM	0	0	0	4	4	0	0	0	4	4	0	0	0	0	0
	8:00 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:15 AM	1	0	2	0	3	1	0	2	0	3	0	0	0	0	0
	8:30 AM	4	1	6	5	16	4	1	6	5	16	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	8	5	17	15	45	8	5	16	15	44	0	0	1	0	1
AM BEGIN PEAK HR				7:15 AM			3	4	7	10	24					
PM	4:00 PM	0	1	5	3	9	0	0	4	3	7	0	1	1	0	2
	4:15 PM	1	0	2	1	4	1	0	1	0	2	0	0	1	1	2
	4:30 PM	1	0	1	3	5	1	0	1	3	5	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	2	2	1	5	0	1	2	1	4	0	1	0	0	1
	5:15 PM	2	0	1	3	6	2	0	0	1	3	0	0	1	2	3
	5:30 PM	3	3	2	1	9	3	2	2	0	7	0	1	0	1	2
	5:45 PM	0	1	1	4	6	0	0	1	3	4	0	1	0	1	2
	TOTAL	7	7	14	16	44	7	3	11	11	32	0	4	3	5	12
PM BEGIN PEAK HR				5:00 PM			5	3	5	5	18					

AimTD LLC

TURNING MOVEMENT COUNTS



Euclid

2,982	49	2,841	92	TOTAL	3,310
1,532	32	1,458	42	PM	1,782
1,450	17	1,383	50	AM	1,528

SR-83 (west)

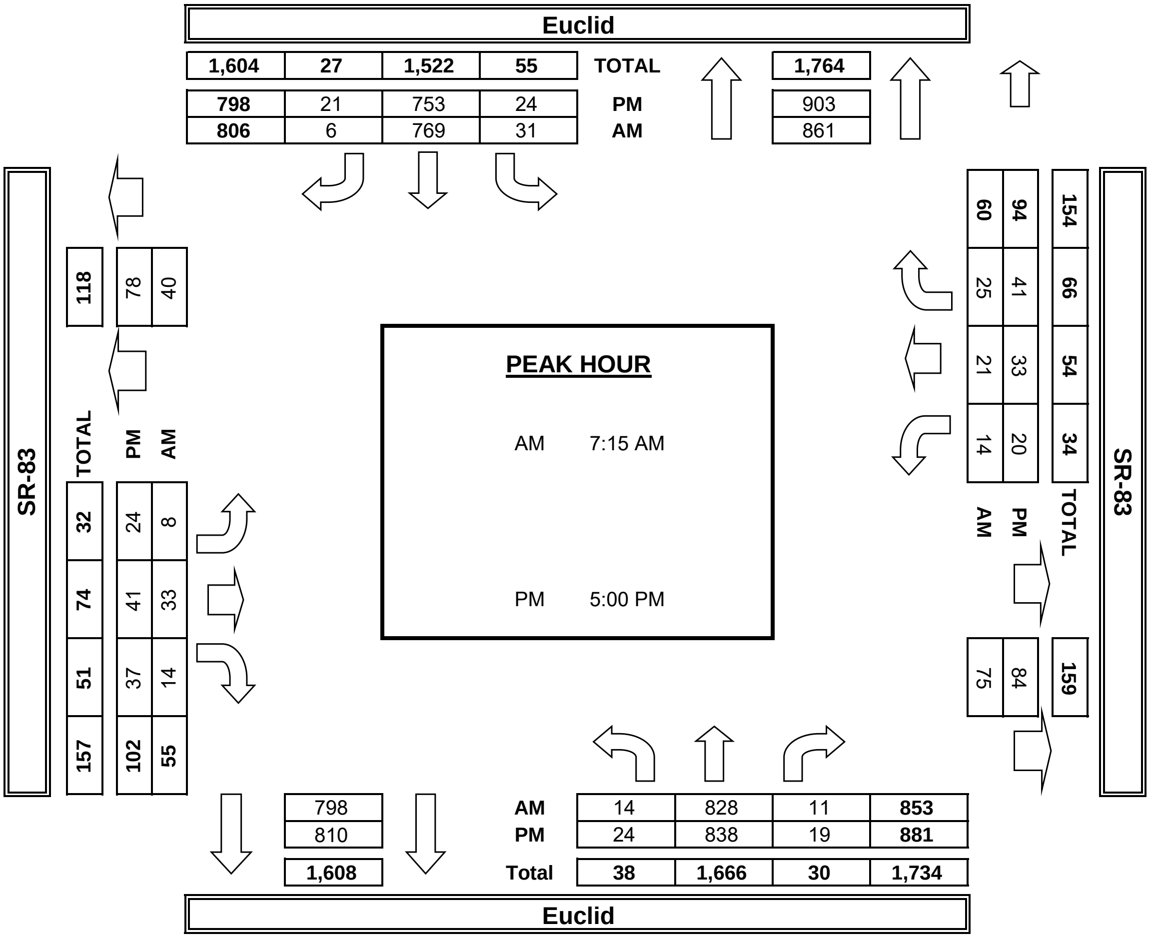
TOTAL	208	67	140	88	295
PM	124	52	83	68	203
AM	84	15	57	20	92

SR-83 (east)

AM	102	42	33	27	130
PM	157	71	51	35	154
TOTAL	259	113	84	62	284

Euclid

1,431	AM	35	1,470	24	1,529
1,561	PM	41	1,658	30	1,729
2,992	TOTAL	76	3,128	54	3,258



PEAK HOUR

AM 7:15 AM

PM 5:00 PM

Euclid

1,604	27	1,522	55	TOTAL	1,764
798	21	753	24	PM	903
806	6	769	31	AM	861

SR-83 (west)

TOTAL	118	32	74	51	157
PM	78	24	41	37	102
AM	40	8	33	14	55

SR-83 (east)

AM	60	25	21	14	75
PM	94	41	33	20	84
TOTAL	154	66	54	34	159

Euclid

798	AM	14	828	11	853
810	PM	24	838	19	881
1,608	Total	38	1,666	30	1,734

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 16, 23	LOCATION:	Ontario	PROJECT #:	SC4033
	NORTH & SOUTH:	Cherry	LOCATION #:	4
	EAST & WEST:	B	CONTROL:	STOP S

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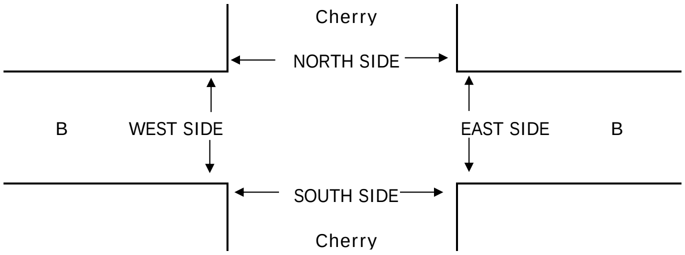
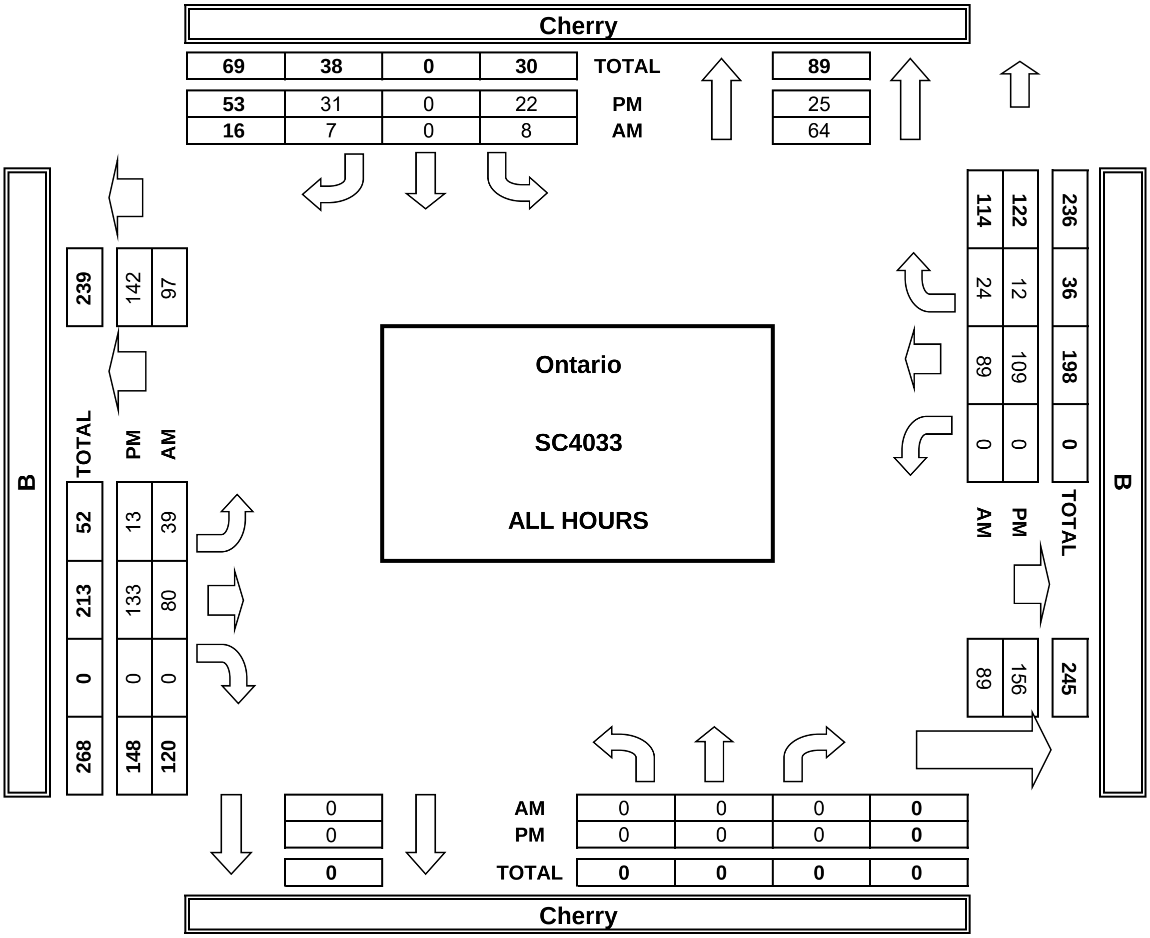
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
			Cherry			Cherry			B			B							
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	X	X	X	0	X	0	0	1	X	X	1	0		0	0	0	0	
AM	7:00 AM	0	0	0	1	0	0	3	5	0	0	6	5	20	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	11	6	0	0	12	2	31	0	0	0	0	0
	7:30 AM	0	0	0	1	0	2	11	19	0	0	11	6	50	0	0	0	0	0
	7:45 AM	0	0	0	1	0	0	6	16	0	0	12	2	37	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	3	11	0	0	12	0	26	0	0	0	0	0
	8:15 AM	0	0	0	2	0	3	1	12	0	0	15	6	39	0	0	1	0	1
	8:30 AM	0	0	0	1	0	0	0	6	0	0	12	0	19	0	0	0	1	1
	8:45 AM	0	0	0	2	0	2	4	5	0	0	9	3	25	0	1	0	0	1
	VOLUMES	0	0	0	8	0	7	39	80	0	0	89	24	250	0	1	1	1	3
	APPROACH %	0%	0%	0%	50%	0%	44%	33%	67%	0%	0%	78%	21%						
	APP/DEPART	0	/	64	16	/	0	120	/	89	114	/	97	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	0	0	4	0	5	21	58	0	0	50	14	153					
	APPROACH %	0%	0%	0%	44%	0%	56%	26%	73%	0%	0%	78%	22%						
	PEAK HR FACTOR		0.000			0.450			0.667			0.762		0.765					
	APP/DEPART	0	/	35	9	/	0	80	/	62	64	/	56	0					
PM	4:00 PM	0	0	0	3	0	1	0	10	0	0	11	3	28	0	0	1	0	1
	4:15 PM	0	0	0	2	0	4	2	11	0	0	9	1	29	0	0	0	0	0
	4:30 PM	0	0	0	2	0	1	1	29	0	0	12	1	46	0	0	0	1	1
	4:45 PM	0	0	0	2	0	4	0	14	0	0	13	2	35	0	0	0	0	0
	5:00 PM	0	0	0	3	0	6	3	18	0	0	20	2	52	0	0	1	0	1
	5:15 PM	0	0	0	2	0	5	2	18	0	0	19	1	47	0	0	0	0	0
	5:30 PM	0	0	0	5	0	6	1	16	0	0	16	2	46	0	0	0	0	0
	5:45 PM	0	0	0	3	0	4	4	17	0	0	9	0	37	0	0	0	0	0
	VOLUMES	0	0	0	22	0	31	13	133	0	0	109	12	323	0	0	2	1	3
	APPROACH %	0%	0%	0%	42%	0%	58%	9%	90%	0%	0%	89%	10%						
	APP/DEPART	0	/	25	53	/	0	148	/	156	122	/	142	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	0	0	13	0	21	10	69	0	0	64	5	183					
	APPROACH %	0%	0%	0%	38%	0%	62%	13%	86%	0%	0%	93%	7%						
	PEAK HR FACTOR		0.000			0.773			0.909			0.784		0.863					
	APP/DEPART	0	/	15	34	/	0	80	/	82	69	/	86	0					

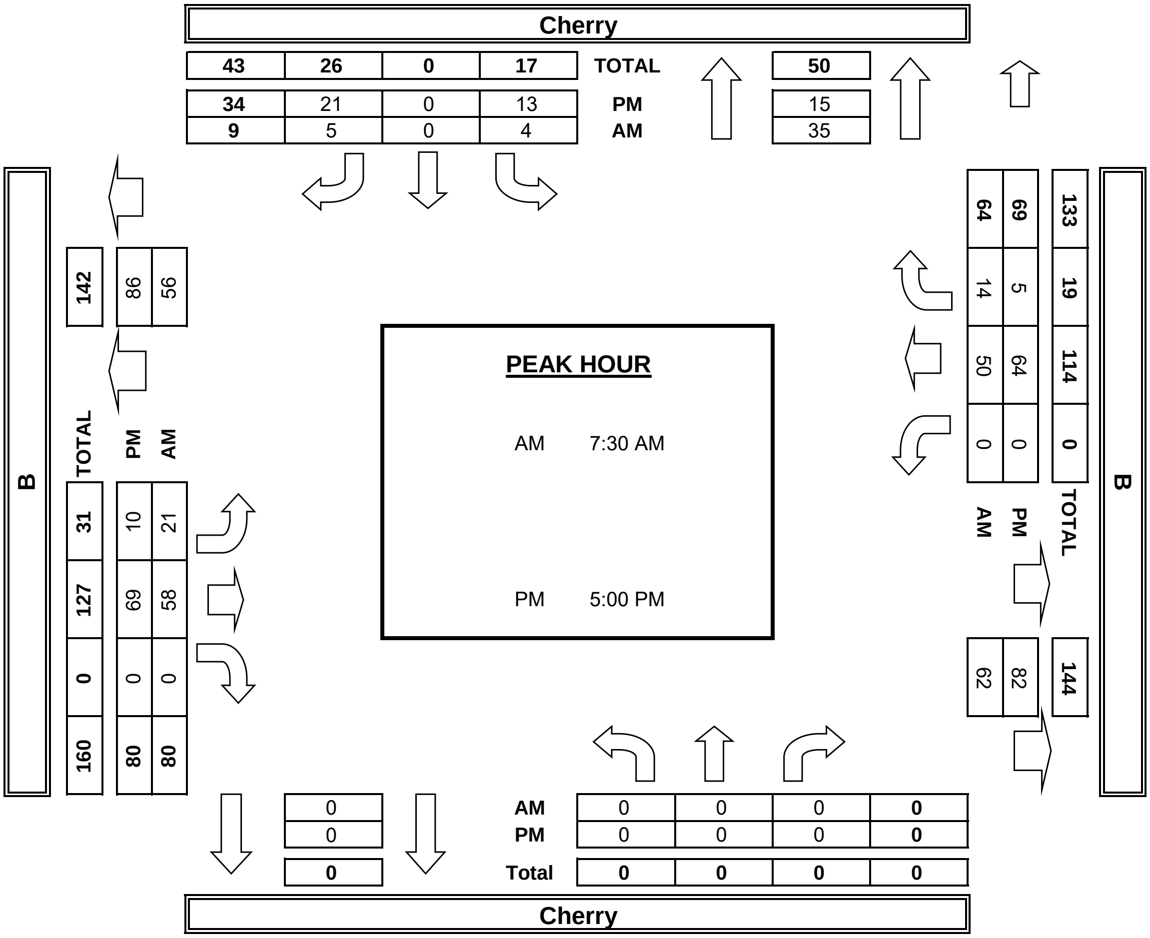


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	1	1	3	1	0	1	1	3	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	8:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:45 AM	7	0	0	1	8	6	0	0	1	7	1	0	0	0	1
	TOTAL	10	0	1	4	15	9	0	1	4	14	1	0	0	0	1
AM BEGIN PEAK HR				7:30 AM			1	0	1	2	4					
PM	4:00 PM	0	0	0	4	4	0	0	0	4	4	0	0	0	0	0
	4:15 PM	5	0	0	0	5	5	0	0	0	5	0	0	0	0	0
	4:30 PM	0	0	2	1	3	0	0	2	1	3	0	0	0	0	0
	4:45 PM	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
	5:00 PM	2	0	1	0	3	2	0	1	0	3	0	0	0	0	0
	5:15 PM	2	0	0	2	4	1	0	0	1	2	1	0	0	1	2
	5:30 PM	5	0	5	0	10	3	0	5	0	8	2	0	0	0	2
	5:45 PM	4	0	2	0	6	3	0	1	0	4	1	0	1	0	2
	TOTAL	18	0	12	7	37	14	0	11	6	31	4	0	1	1	6
PM BEGIN PEAK HR				5:00 PM			9	0	7	1	17					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:
Tue, May 16, 23

LOCATION:	Ontario	PROJECT #:	SC4033
NORTH & SOUTH:	Sultana	LOCATION #:	5
EAST & WEST:	B	CONTROL:	STOP ALL

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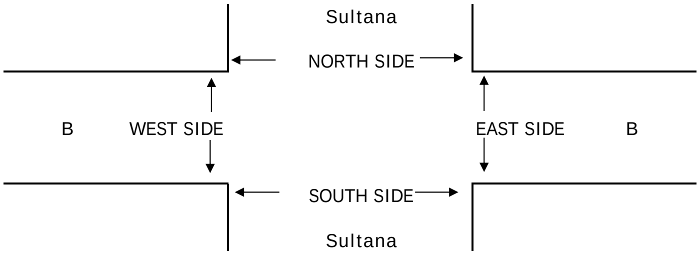
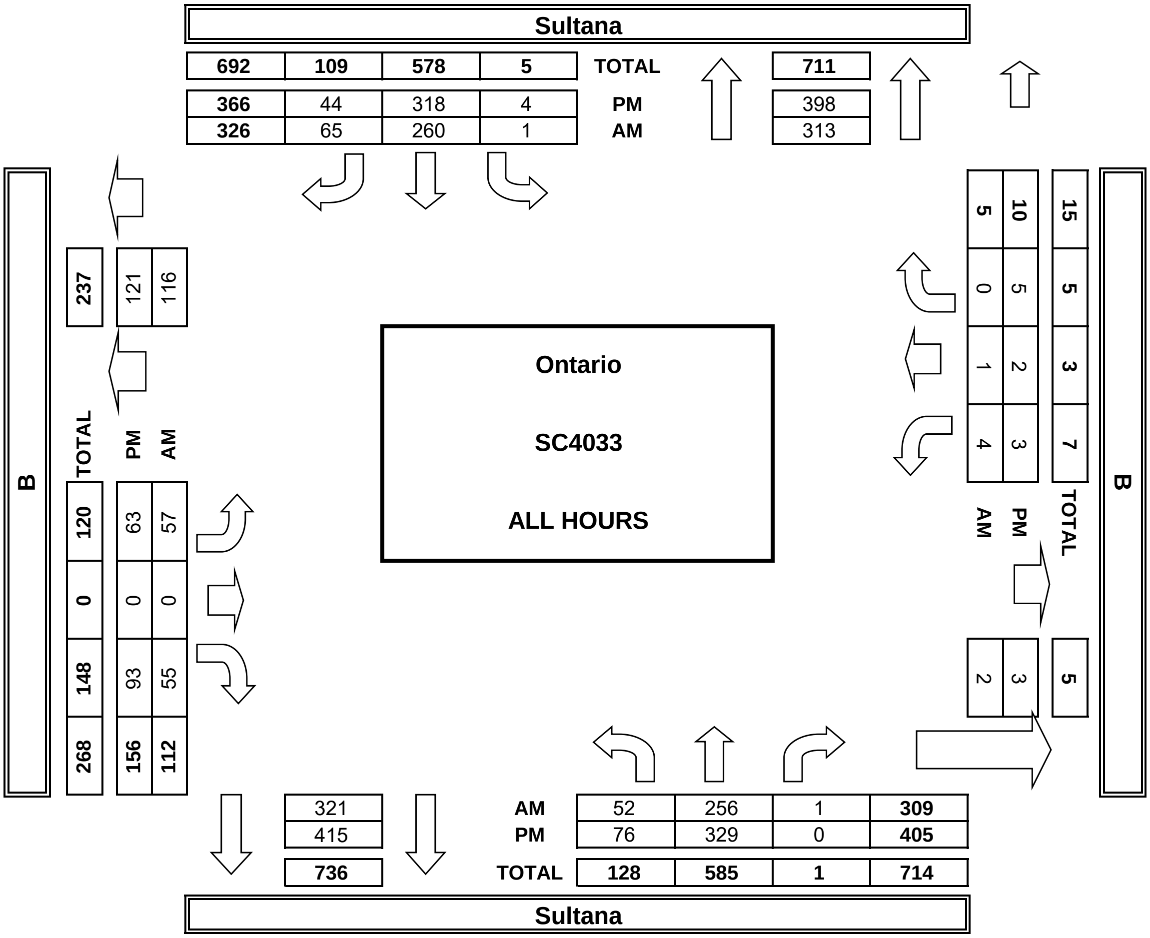
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		Sultana			Sultana			B			B								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	0	0	1	0	0	1	0	0	1	0		0	0	0	0	
AM	7:00 AM	7	34	0	0	22	3	4	0	6	1	0	0	77	0	0	0	0	0
	7:15 AM	6	37	0	0	23	2	3	0	6	0	0	0	77	0	0	0	0	0
	7:30 AM	6	31	0	0	39	12	7	0	9	2	0	0	106	0	0	0	0	0
	7:45 AM	4	43	0	0	39	12	22	0	5	0	1	0	126	0	0	0	0	0
	8:00 AM	4	30	0	0	59	11	6	0	3	1	0	0	114	0	0	0	0	0
	8:15 AM	10	32	1	1	27	12	9	0	11	0	0	0	103	1	0	0	0	1
	8:30 AM	10	21	0	0	26	8	2	0	8	0	0	0	75	0	0	0	0	0
	8:45 AM	5	28	0	0	25	5	4	0	7	0	0	0	74	1	0	0	0	1
	VOLUMES	52	256	1	1	260	65	57	0	55	4	1	0	752	2	0	0	0	2
	APPROACH %	17%	83%	0%	0%	80%	20%	51%	0%	49%	80%	20%	0%						
	APP/DEPART	309	/	313	326	/	321	112	/	2	5	/	116	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	24	136	1	1	164	47	44	0	28	3	1	0	449					
	APPROACH %	15%	84%	1%	0%	77%	22%	61%	0%	39%	75%	25%	0%						
	PEAK HR FACTOR		0.856			0.757			0.667			0.500		0.891					
	APP/DEPART	161	/	180	212	/	196	72	/	2	4	/	71	0					
PM	4:00 PM	5	42	0	2	41	2	5	0	11	1	0	0	109	0	0	0	0	0
	4:15 PM	13	36	0	0	32	4	5	0	8	0	1	0	99	1	0	0	0	1
	4:30 PM	9	42	0	1	40	5	9	0	11	0	0	1	118	0	1	0	0	1
	4:45 PM	7	45	0	0	39	5	14	0	13	0	0	0	123	0	0	0	0	0
	5:00 PM	9	37	0	0	42	9	9	0	7	0	0	1	114	0	0	0	0	0
	5:15 PM	17	43	0	0	39	6	7	0	12	0	1	1	126	0	0	0	0	0
	5:30 PM	7	41	0	1	43	6	10	0	21	0	0	1	130	0	0	0	0	0
	5:45 PM	9	43	0	0	42	7	4	0	10	2	0	1	118	0	0	0	0	0
	VOLUMES	76	329	0	4	318	44	63	0	93	3	2	5	937	1	1	0	0	2
	APPROACH %	19%	81%	0%	1%	87%	12%	40%	0%	60%	30%	20%	50%						
	APP/DEPART	405	/	398	366	/	415	156	/	3	10	/	121	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	40	166	0	1	163	26	40	0	53	0	1	3	493					
	APPROACH %	19%	81%	0%	1%	86%	14%	43%	0%	57%	0%	25%	75%						
	PEAK HR FACTOR		0.858			0.931			0.750			0.500		0.948					
	APP/DEPART	206	/	209	190	/	216	93	/	1	4	/	67	0					

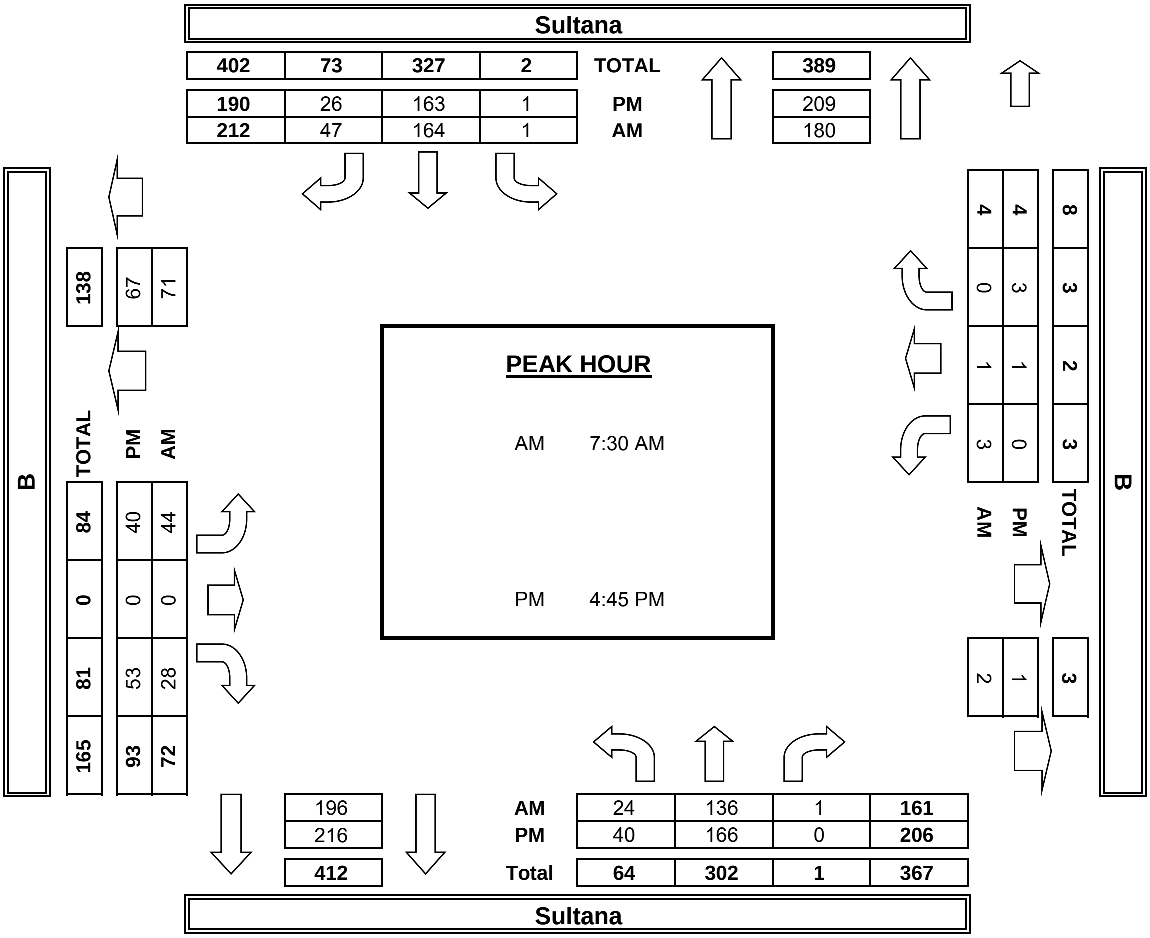


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	2	1	0	3	0	1	1	0	2	0	1	0	0	1
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	7:45 AM	0	1	0	2	3	0	1	0	1	2	0	0	0	1	1
	8:00 AM	1	0	4	2	7	1	0	3	2	6	0	0	1	0	1
	8:15 AM	0	0	1	1	2	0	0	0	1	1	0	0	1	0	1
	8:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:45 AM	1	1	1	2	5	1	1	1	0	3	0	0	0	2	2
	TOTAL	3	5	7	7	22	3	4	5	4	16	0	1	2	3	6
AM BEGIN PEAK HR				7:30 AM			1	2	3	4	10					
PM	4:00 PM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	1	2	4	7	0	1	2	3	6	0	0	0	1	1
	4:45 PM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	5:00 PM	1	0	0	1	2	0	0	0	0	0	1	0	0	1	2
	5:15 PM	0	1	1	0	2	0	1	0	0	1	0	0	1	0	1
	5:30 PM	0	2	1	0	3	0	2	0	0	2	0	0	1	0	1
	5:45 PM	0	0	2	1	3	0	0	2	0	2	0	0	0	1	1
	TOTAL	3	5	6	7	21	2	5	4	4	15	1	0	2	3	6
PM BEGIN PEAK HR				4:45 PM			1	4	0	0	5					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Tue, May 16, 23	LOCATION:	Ontario	PROJECT #:	SC4033
	NORTH & SOUTH:	Sultana	LOCATION #:	6
	EAST & WEST:	Lynn Haven	CONTROL:	STOP W

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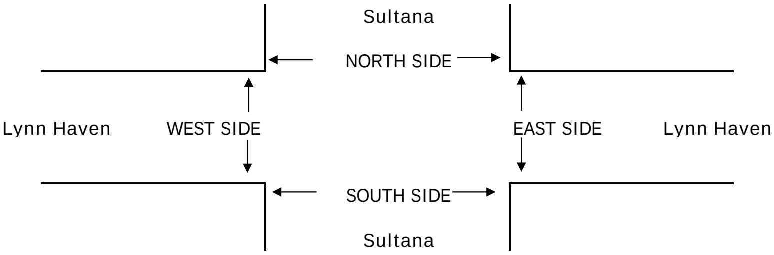
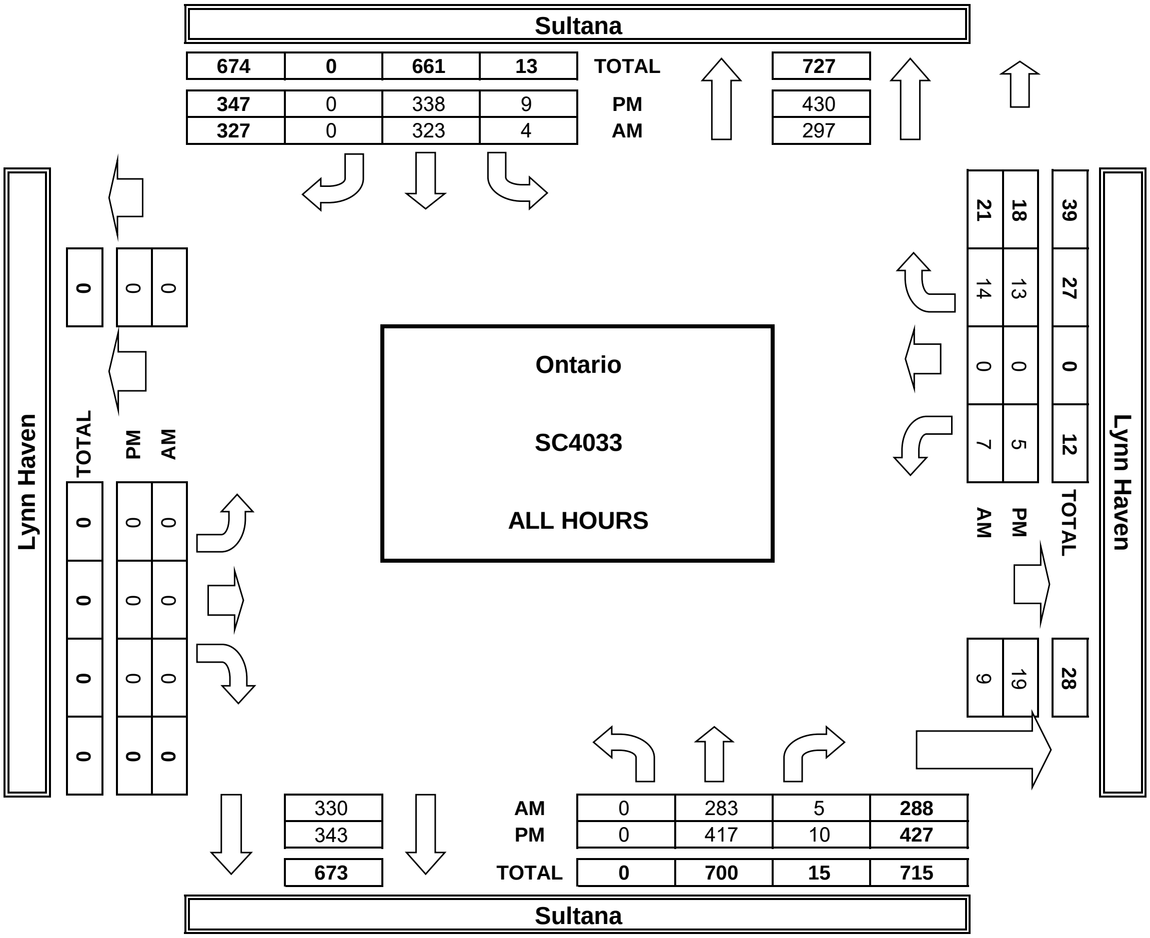
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		Sultana			Sultana			Lynn Haven			Lynn Haven								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	X	1	0	0	1	X	X	X	X	0	X	0		0	0	0	0	
AM	7:00 AM	0	24	0	0	24	0	0	0	0	0	0	0	48	0	0	0	0	0
	7:15 AM	0	29	0	0	35	0	0	0	0	1	0	2	67	0	0	0	0	0
	7:30 AM	0	36	1	1	45	0	0	0	0	0	0	2	85	0	0	0	0	0
	7:45 AM	0	65	0	1	62	0	0	0	0	1	0	2	131	0	0	0	0	0
	8:00 AM	0	34	1	0	58	0	0	0	0	2	0	3	98	0	0	0	0	0
	8:15 AM	0	46	0	1	41	0	0	0	0	1	0	2	91	0	0	0	0	0
	8:30 AM	0	26	0	1	27	0	0	0	0	1	0	1	56	0	0	0	0	0
	8:45 AM	0	23	3	0	31	0	0	0	0	1	0	2	60	0	0	0	0	0
	VOLUMES	0	283	5	4	323	0	0	0	0	7	0	14	636	0	0	0	0	0
	APPROACH %	0%	98%	2%	1%	99%	0%	0%	0%	0%	33%	0%	67%						
	APP/DEPART	288	/	297	327	/	330	0	/	9	21	/	0	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	181	2	3	206	0	0	0	0	4	0	9	405					
	APPROACH %	0%	99%	1%	1%	99%	0%	0%	0%	0%	31%	0%	69%						
	PEAK HR FACTOR		0.704			0.829			0.000			0.650		0.773					
	APP/DEPART	183	/	190	209	/	210	0	/	5	13	/	0	0					
PM	4:00 PM	0	49	1	1	39	0	0	0	0	2	0	0	92	0	0	0	0	0
	4:15 PM	0	44	2	2	38	0	0	0	0	0	0	1	87	0	0	0	0	0
	4:30 PM	0	61	2	2	46	0	0	0	0	1	0	4	116	0	0	0	0	0
	4:45 PM	0	53	2	0	46	0	0	0	0	0	0	3	104	0	0	0	0	0
	5:00 PM	0	49	1	4	49	0	0	0	0	0	0	2	105	0	0	0	0	0
	5:15 PM	0	46	0	0	40	0	0	0	0	1	0	2	89	0	0	0	0	0
	5:30 PM	0	63	2	0	46	0	0	0	0	0	0	0	111	0	0	0	0	0
	5:45 PM	0	52	0	0	34	0	0	0	0	1	0	1	88	0	0	0	0	0
	VOLUMES	0	417	10	9	338	0	0	0	0	5	0	13	792	0	0	0	0	0
	APPROACH %	0%	98%	2%	3%	97%	0%	0%	0%	0%	28%	0%	72%						
	APP/DEPART	427	/	430	347	/	343	0	/	19	18	/	0	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	0	209	5	6	181	0	0	0	0	2	0	11	414					
	APPROACH %	0%	98%	2%	3%	97%	0%	0%	0%	0%	15%	0%	85%						
	PEAK HR FACTOR		0.849			0.882			0.000			0.650		0.892					
	APP/DEPART	214	/	220	187	/	183	0	/	11	13	/	0	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	5	0	5	0	0	5	0	5	0	0	0	0	0
	7:45 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:00 AM	0	0	2	0	2	0	0	1	0	1	0	0	1	0	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	2	1	3	0	0	2	0	2	0	0	0	1	1
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	10	1	11	0	0	9	0	9	0	0	1	1	2
AM BEGIN PEAK HR				7:30 AM			0	0	7	0	7					
PM	4:00 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	1	1	2	0	0	1	0	1	0	0	0	1	1
	5:15 PM	0	2	5	1	8	0	2	4	0	6	0	0	1	1	2
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	3	0	3	0	0	1	0	1	0	0	2	0	2
	TOTAL	0	2	10	3	15	0	2	7	0	9	0	0	3	3	6
PM BEGIN PEAK HR				4:30 PM			0	2	5	0	7					

AimTD LLC

TURNING MOVEMENT COUNTS



Ontario

SC4033

ALL HOURS

Sultana

674	**0**	**661**	**13**	**TOTAL**
347	0	338	9	**PM**
327	0	323	4	**AM**

727	**TOTAL**
430	**PM**
297	**AM**

Lynn Haven

TOTAL	**PM**	**AM**
0	0	0

TOTAL	**PM**	**AM**
0	0	0
0	0	0
0	0	0
0	**0**	**0**

Lynn Haven

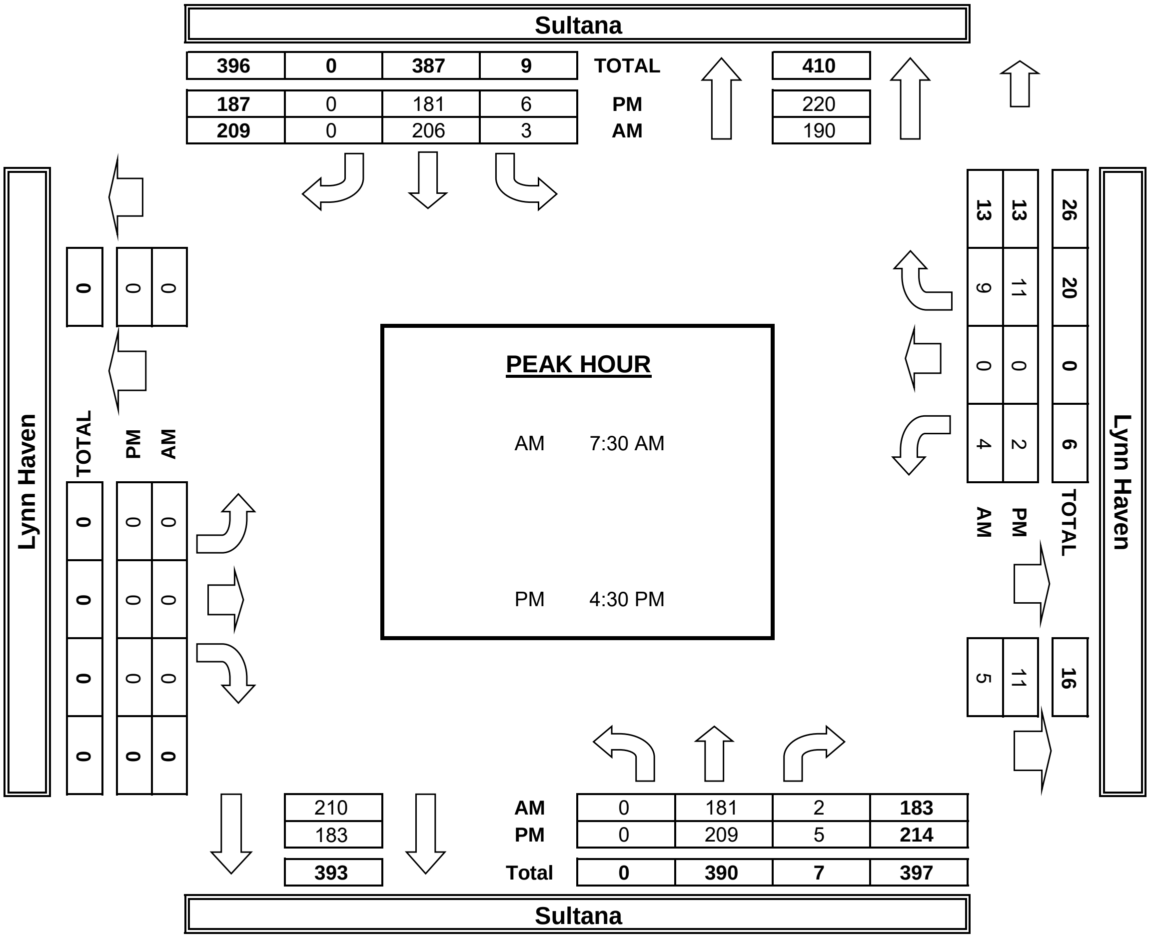
AM	**PM**	**TOTAL**
21	**18**	**39**
14	13	**27**
0	0	**0**
7	5	**12**

AM	**PM**	**TOTAL**
9	19	**28**

AM	330
PM	343
TOTAL	**673**

AM	0	283	5	**288**
PM	0	417	10	**427**
TOTAL	**0**	**700**	**15**	**715**

Sultana



PEAK HOUR

AM 7:30 AM

PM 4:30 PM

Sultana

396	**0**	**387**	**9**	**TOTAL**
187	0	181	6	**PM**
209	0	206	3	**AM**

410	**TOTAL**
220	**PM**
190	**AM**

Lynn Haven

TOTAL	**PM**	**AM**
0	0	0

TOTAL	**PM**	**AM**
0	0	0
0	0	0
0	0	0
0	**0**	**0**

Lynn Haven

AM	**PM**	**TOTAL**
13	**13**	**26**
9	11	**20**
0	0	**0**
4	2	**6**

AM	**PM**	**TOTAL**
5	11	**16**

AM	210
PM	183
Total	**393**

AM	0	181	2	**183**
PM	0	209	5	**214**
Total	**0**	**390**	**7**	**397**

Sultana

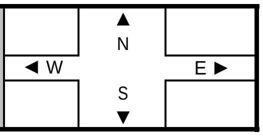
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Ontario	PROJECT #:	SC4033
Tue, May 16, 23	NORTH & SOUTH:	Sultana	LOCATION #:	7
	EAST & WEST:	C	CONTROL:	STOP E

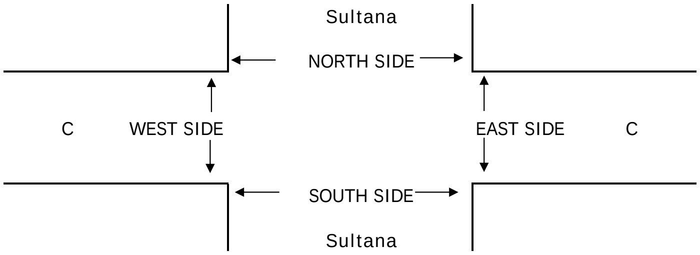
NOTES:

AM
PM
MD
OTHER
OTHER



		NORTHBOUND Sultana			SOUTHBOUND Sultana			EASTBOUND C			WESTBOUND C			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	X	X	1	0	0	X	0	X	X	X	
AM	7:00 AM	8	26	0	0	19	4	1	0	0	0	0	0	58
	7:15 AM	17	26	0	0	27	10	0	0	0	0	0	0	80
	7:30 AM	14	30	0	0	39	5	2	0	0	0	0	0	90
	7:45 AM	9	67	0	0	54	5	0	0	1	0	0	0	136
	8:00 AM	6	39	0	0	67	0	0	0	0	0	0	0	112
	8:15 AM	1	43	0	0	41	1	0	0	0	0	0	0	86
	8:30 AM	2	25	0	0	27	0	1	0	3	0	0	0	58
	8:45 AM	2	27	0	0	29	1	1	0	3	0	0	0	63
	VOLUMES	59	283	0	0	303	26	5	0	7	0	0	0	683
	APPROACH %	17%	83%	0%	0%	92%	8%	42%	0%	58%	0%	0%	0%	
	APP/DEPART	342	/	288	329	/	310	12	/	0	0	/	85	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	30	179	0	0	201	11	2	0	1	0	0	0	424
	APPROACH %	14%	86%	0%	0%	95%	5%	67%	0%	33%	0%	0%	0%	
	PEAK HR FACTOR		0.688			0.791			0.375			0.000		0.779
	APP/DEPART	209	/	181	212	/	202	3	/	0	0	/	41	0
PM	4:00 PM	4	45	0	0	42	0	1	0	1	0	0	0	93
	4:15 PM	0	45	0	0	34	2	4	0	3	0	0	0	88
	4:30 PM	0	51	0	0	46	4	7	0	2	0	0	0	110
	4:45 PM	3	54	0	0	45	1	3	0	0	0	0	0	106
	5:00 PM	0	45	0	0	43	5	6	0	2	0	0	0	101
	5:15 PM	0	42	0	0	41	2	4	0	3	0	0	0	92
	5:30 PM	2	53	0	0	38	0	15	0	12	0	0	0	120
	5:45 PM	0	45	0	0	38	2	6	0	5	0	0	0	96
	VOLUMES	9	380	0	0	327	16	46	0	28	0	0	0	806
	APPROACH %	2%	98%	0%	0%	95%	5%	62%	0%	38%	0%	0%	0%	
	APP/DEPART	389	/	426	343	/	357	74	/	0	0	/	23	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	5	194	0	0	167	8	28	0	17	0	0	0	419
	APPROACH %	3%	97%	0%	0%	95%	5%	62%	0%	38%	0%	0%	0%	
	PEAK HR FACTOR		0.873			0.911			0.417			0.000		0.873
	APP/DEPART	199	/	222	175	/	186	45	/	0	0	/	11	0

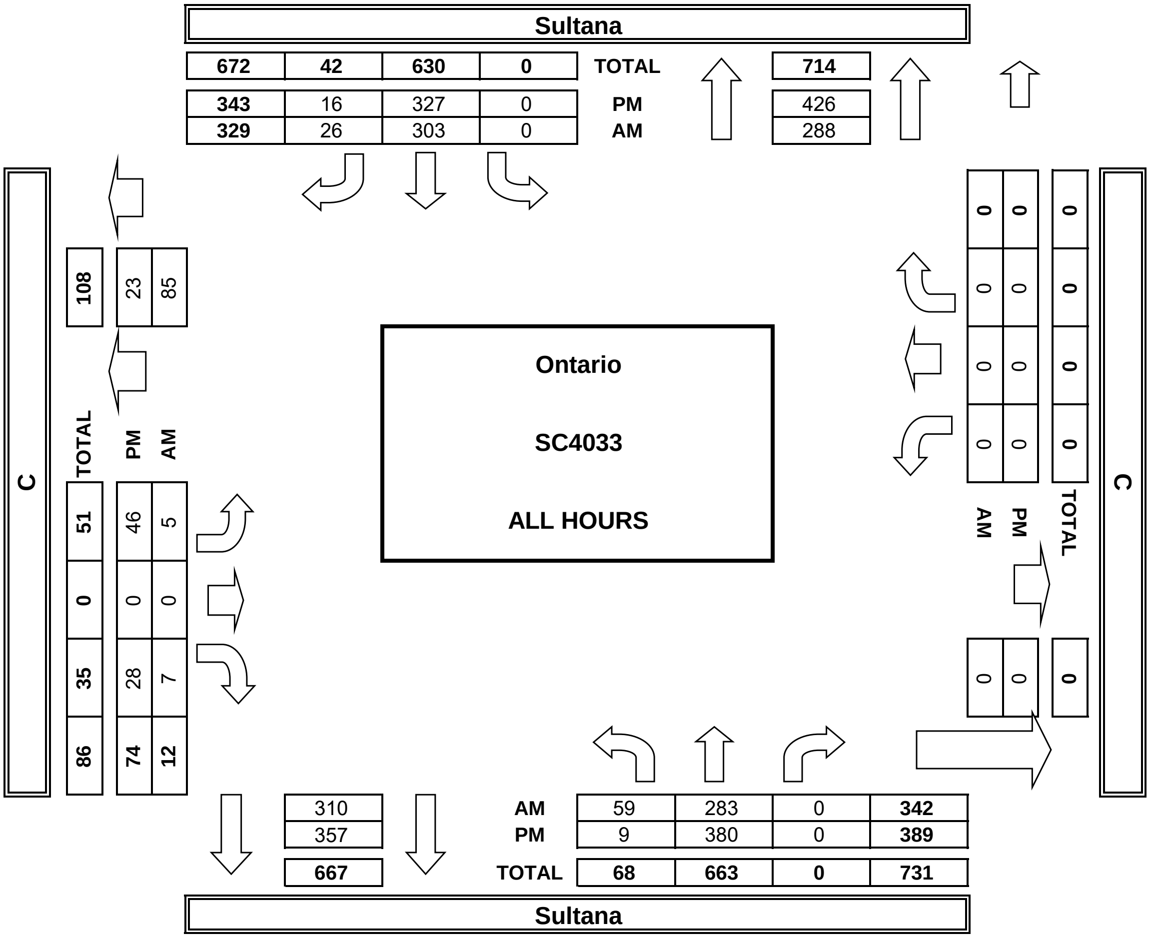
U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2	0	0	0	2
0	0	0	0	0
2	0	0	0	2



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	1	0	1	3	1	1	0	1	3	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	8:00 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	8:15 AM	0	0	1	2	3	0	0	0	1	1	0	0	1	1	2
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	TOTAL	1	1	1	10	13	1	1	0	6	8	0	0	1	4	5
	AM BEGIN PEAK HR			7:30 AM			0	0	0	3	3					
PM	4:00 PM	0	1	0	2	3	0	1	0	2	3	0	0	0	0	0
	4:15 PM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	4:30 PM	0	2	0	5	7	0	2	0	1	3	0	0	0	4	4
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	5:15 PM	2	0	1	3	6	2	0	0	1	3	0	0	1	2	3
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	2	2	4	0	0	0	2	2	0	0	2	0	2
	TOTAL	2	3	3	15	23	2	3	0	8	13	0	0	3	7	10
	PM BEGIN PEAK HR			4:45 PM			2	0	0	1	3					

AimTD LLC

TURNING MOVEMENT COUNTS



Sultana

672	42	630	0	TOTAL	714
343	16	327	0	PM	426
329	26	303	0	AM	288

C

TOTAL	108	51	0	35	86
PM	23	46	0	28	74
AM	85	5	0	7	12

Ontario

SC4033

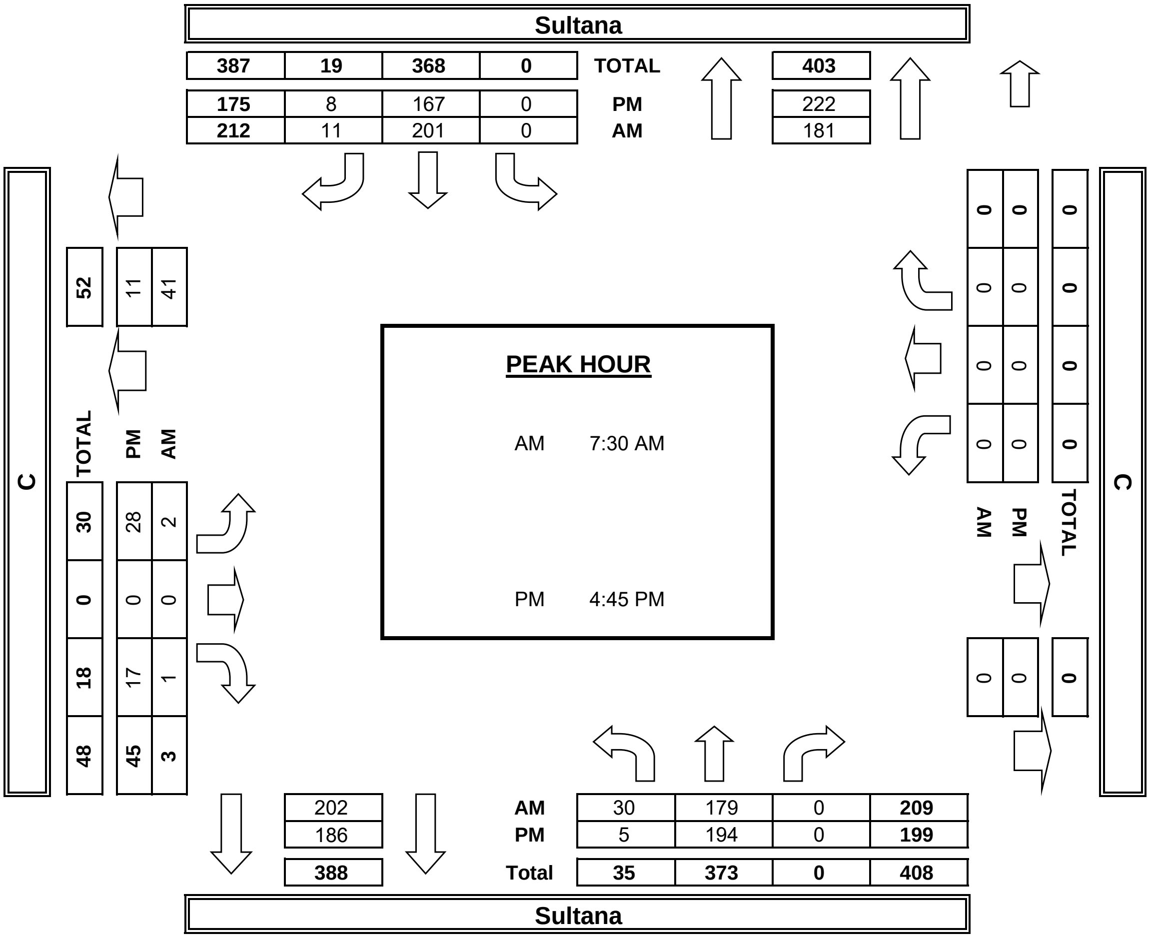
ALL HOURS

C

AM	0	0	0	0	0
PM	0	0	0	0	0
TOTAL	0	0	0	0	0

310	AM	59	283	0	342
357	PM	9	380	0	389
667	TOTAL	68	663	0	731

Sultana



Sultana

387	19	368	0	TOTAL	403
175	8	167	0	PM	222
212	11	201	0	AM	181

C

TOTAL	52	30	0	18	48
PM	11	28	0	17	45
AM	41	2	0	1	3

PEAK HOUR

AM 7:30 AM

PM 4:45 PM

C

AM	0	0	0	0	0
PM	0	0	0	0	0
TOTAL	0	0	0	0	0

202	AM	30	179	0	209
186	PM	5	194	0	199
388	Total	35	373	0	408

Sultana

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Ontario	PROJECT #:	SC4033
Tue, May 16, 23	NORTH & SOUTH:	Sultana	LOCATION #:	8
	EAST & WEST:	Nocta	CONTROL:	STOP W

NOTES:

AM
PM
MD
OTHER
OTHER

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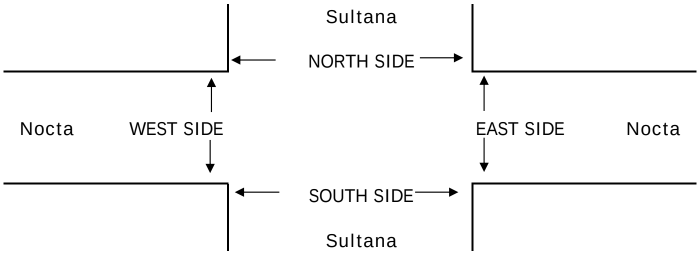
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
			Sultana			Sultana			Nocta			Nocta		
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
AM	7:00 AM	1	28	4	3	18	0	1	0	0	7	0	3	65
	7:15 AM	0	41	2	0	27	0	0	0	1	1	0	4	76
	7:30 AM	0	33	3	2	39	0	0	0	0	12	0	11	100
	7:45 AM	0	59	4	6	50	0	0	0	1	0	0	19	139
	8:00 AM	1	33	2	3	64	0	1	0	0	6	0	8	118
	8:15 AM	0	33	6	3	36	1	0	0	0	3	0	10	92
	8:30 AM	0	24	4	3	24	0	1	0	0	8	0	4	68
	8:45 AM	0	27	2	2	30	0	0	0	0	0	0	2	63
	VOLUMES	2	278	27	22	288	1	3	0	2	37	0	61	721
	APPROACH %	1%	91%	9%	7%	93%	0%	60%	0%	40%	38%	0%	62%	
	APP/DEPART	307	/	342	311	/	327	5	/	49	98	/	3	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	1	158	15	14	189	1	1	0	1	21	0	48	449
	APPROACH %	1%	91%	9%	7%	93%	0%	50%	0%	50%	30%	0%	70%	
	PEAK HR FACTOR		0.690			0.761			0.500			0.750		0.808
	APP/DEPART	174	/	207	204	/	211	2	/	29	69	/	2	0
PM	4:00 PM	0	34	5	4	31	0	1	0	1	5	0	3	84
	4:15 PM	1	40	3	7	31	0	0	0	0	7	0	7	96
	4:30 PM	0	51	4	4	42	0	0	0	0	4	0	4	109
	4:45 PM	0	50	5	4	41	0	0	0	1	2	0	6	109
	5:00 PM	0	40	8	4	42	0	0	0	2	7	0	5	108
	5:15 PM	1	39	8	3	40	0	0	0	0	4	0	3	98
	5:30 PM	0	49	8	6	47	0	1	0	0	7	0	6	124
	5:45 PM	1	43	6	7	35	0	0	0	5	6	0	5	108
	VOLUMES	3	346	47	39	309	0	2	0	9	42	0	39	836
	APPROACH %	1%	87%	12%	11%	89%	0%	18%	0%	82%	52%	0%	48%	
	APP/DEPART	396	/	387	348	/	361	11	/	86	81	/	2	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	1	178	29	17	170	0	1	0	3	20	0	20	439
	APPROACH %	0%	86%	14%	9%	91%	0%	25%	0%	75%	50%	0%	50%	
	PEAK HR FACTOR		0.912			0.882			0.500			0.769		0.885
	APP/DEPART	208	/	199	187	/	194	4	/	46	40	/	0	0

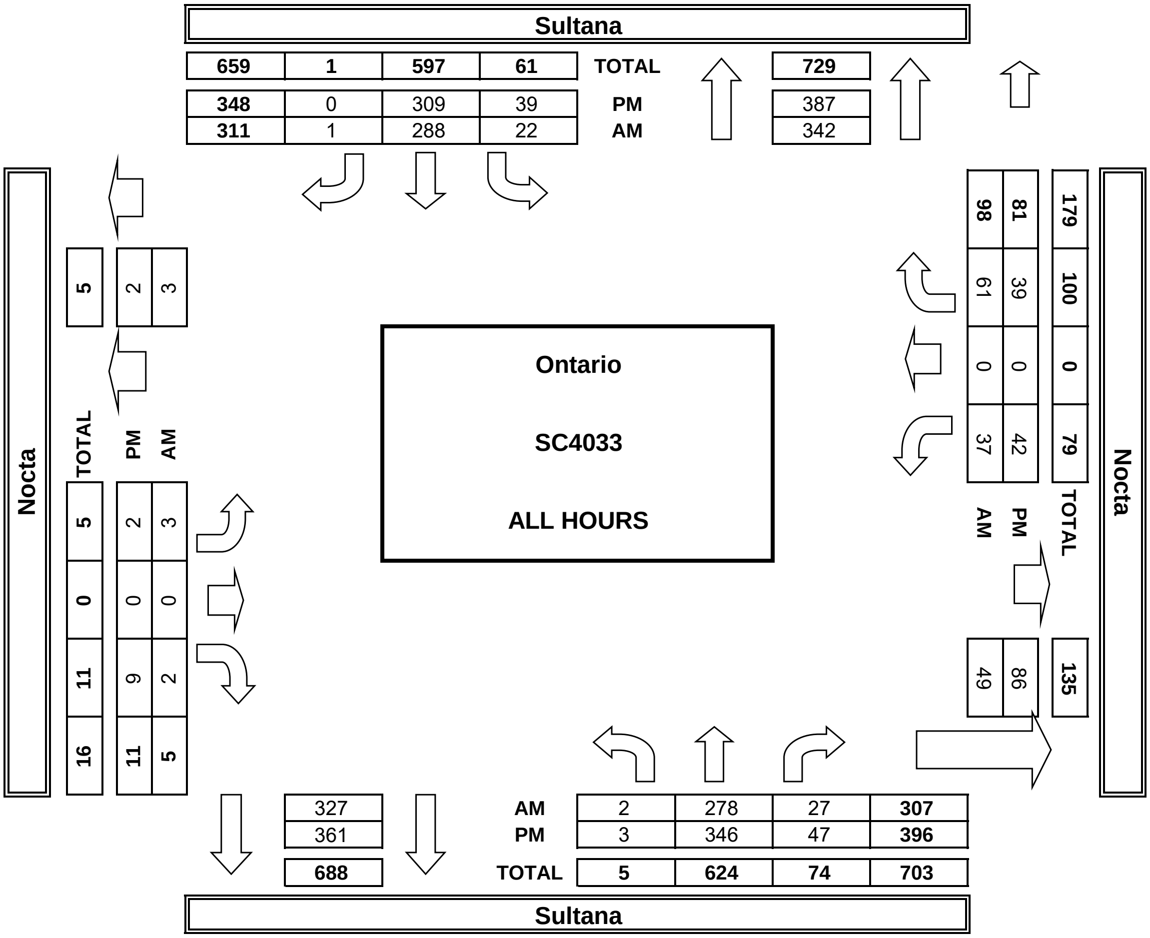
U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0
	7:15 AM	1	2	0	1	4	1	2	0	1	4	0	0	0	0	0
	7:30 AM	0	5	3	4	12	0	5	3	4	12	0	0	0	0	0
	7:45 AM	0	3	0	4	7	0	3	0	4	7	0	0	0	0	0
	8:00 AM	1	3	3	5	12	0	3	2	5	10	1	0	1	0	2
	8:15 AM	1	2	0	4	7	0	2	0	4	6	1	0	0	0	1
	8:30 AM	1	1	1	0	3	1	1	1	0	3	0	0	0	0	0
	8:45 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	TOTAL	4	19	7	21	51	2	19	6	20	47	2	0	1	1	4
	AM BEGIN PEAK HR			7:30 AM			0	13	5	17	35					
PM	4:00 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	4:15 PM	0	1	0	3	4	0	1	0	3	4	0	0	0	0	0
	4:30 PM	2	0	9	2	13	2	0	8	1	11	0	0	1	1	2
	4:45 PM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	5:15 PM	0	0	3	3	6	0	0	2	3	5	0	0	1	0	1
	5:30 PM	1	2	0	1	4	0	1	0	1	2	1	1	0	0	2
	5:45 PM	0	0	1	2	3	0	0	1	2	3	0	0	0	0	0
	TOTAL	3	3	14	14	34	2	2	12	12	28	1	1	2	2	6
	PM BEGIN PEAK HR			4:45 PM			0	1	2	6	9					

AimTD LLC

TURNING MOVEMENT COUNTS



659	**1**	**597**	**61**	**TOTAL**
348	0	309	39	**PM**
311	1	288	22	**AM**

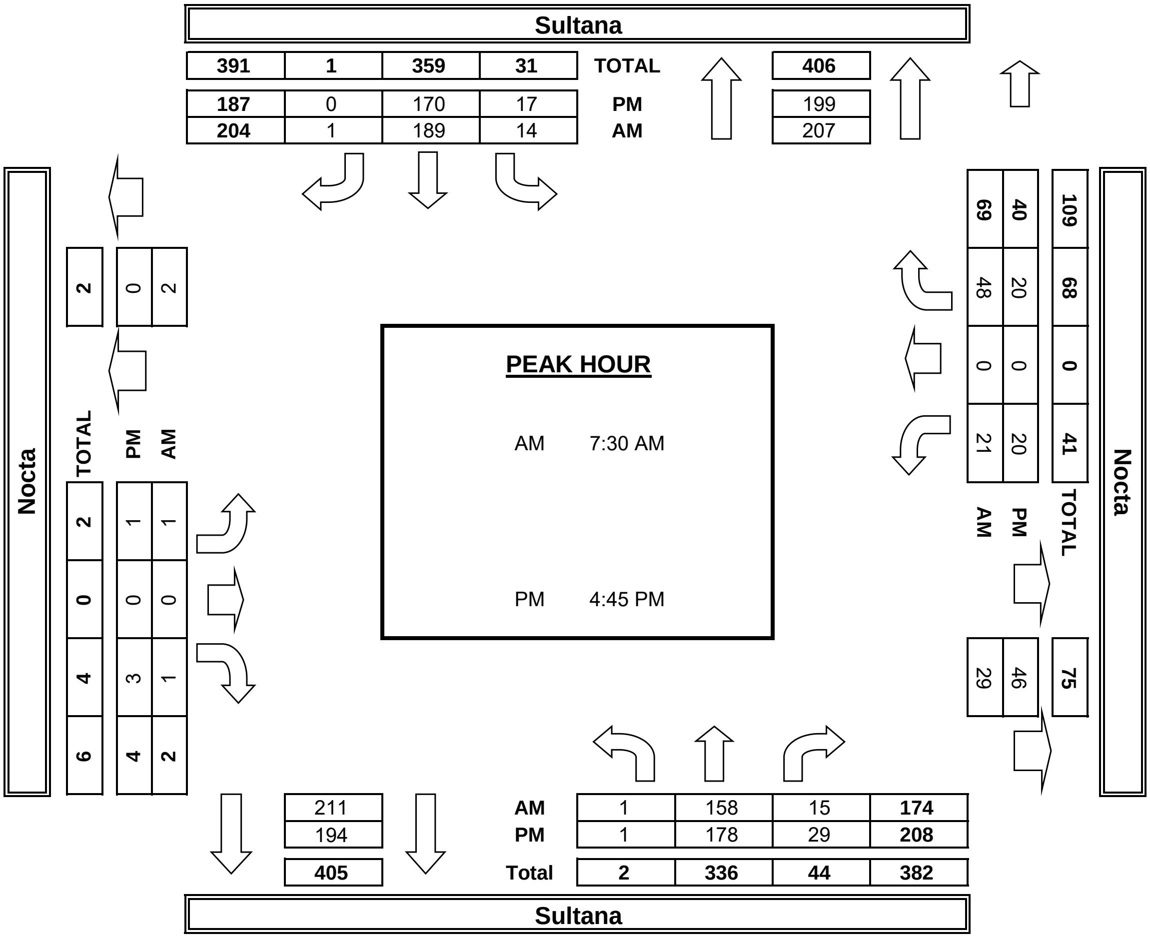
729	
387	PM
342	AM

AM	**98**	61	0	37
PM	**81**	39	0	42
TOTAL	**179**	**100**	**0**	**79**

AM	49
PM	86
TOTAL	**135**

TOTAL	**5**	**5**	**0**	**11**	**16**
PM	2	2	0	9	**11**
AM	3	3	0	2	**5**

327	**AM**	2	278	27	**307**
361	**PM**	3	346	47	**396**
688	**TOTAL**	**5**	**624**	**74**	**703**



391	**1**	**359**	**31**	**TOTAL**
187	0	170	17	**PM**
204	1	189	14	**AM**

406	
199	PM
207	AM

AM	**69**	48	0	21
PM	**40**	20	0	20
TOTAL	**109**	**68**	**0**	**41**

AM	29
PM	46
TOTAL	**75**

TOTAL	**2**	**2**	**0**	**4**	**6**
PM	0	1	0	3	**4**
AM	2	1	0	1	**2**

211	**AM**	1	158	15	**174**
194	**PM**	1	178	29	**208**
405	**Total**	**2**	**336**	**44**	**382**

Attachment B

Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	105	36	29	97	0	0	0	0	51	740	24
Future Volume (vph)	0	105	36	29	97	0	0	0	0	51	740	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1799			1842						5047	
Flt Permitted		1.00			0.81						1.00	
Satd. Flow (perm)		1799			1506						5047	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	127	43	35	117	0	0	0	0	61	892	29
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	151	0	0	152	0	0	0	0	0	979	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		12.5			12.5						57.5	
Effective Green, g (s)		12.5			12.5						57.5	
Actuated g/C Ratio		0.16			0.16						0.72	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		281			235						3627	
v/s Ratio Prot		0.08										
v/s Ratio Perm					c0.10						0.19	
v/c Ratio		0.54			0.65						0.27	
Uniform Delay, d1		31.1			31.7						3.9	
Progression Factor		1.00			0.51						1.00	
Incremental Delay, d2		7.2			11.3						0.2	
Delay (s)		38.3			27.3						4.1	
Level of Service		D			C						A	
Approach Delay (s)		38.3			27.3			0.0			4.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	7	143	32	38	199	11	40	122	32	18	139	12
Future Vol, veh/h	7	143	32	38	199	11	40	122	32	18	139	12
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	174	39	46	243	13	49	149	39	22	170	15
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	12.4	13.1	12.4	11.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	21%	100%	0%	100%	0%	11%
Vol Thru, %	63%	0%	82%	0%	95%	82%
Vol Right, %	16%	0%	18%	0%	5%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	194	7	175	38	210	169
LT Vol	40	7	0	38	0	18
Through Vol	122	0	143	0	199	139
RT Vol	32	0	32	0	11	12
Lane Flow Rate	237	9	213	46	256	206
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.38	0.016	0.366	0.086	0.437	0.336
Departure Headway (Hd)	5.777	6.818	6.178	6.686	6.14	5.872
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	620	523	578	534	584	608
Service Time	3.848	4.591	3.951	4.453	3.907	3.947
HCM Lane V/C Ratio	0.382	0.017	0.369	0.086	0.438	0.339
HCM Control Delay	12.4	9.7	12.5	10.1	13.6	11.9
HCM Lane LOS	B	A	B	B	B	B
HCM 95th-tile Q	1.8	0	1.7	0.3	2.2	1.5

3: SR-83/Euclid Avenue & B Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↱			↰↑						↰↑↑↱	
Traffic Volume (vph)	0	41	14	14	21	0	0	0	0	31	769	6
Future Volume (vph)	0	41	14	14	21	0	0	0	0	31	769	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1798			1826						5070	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1798			1562						5070	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	49	17	17	25	0	0	0	0	37	915	7
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	51	0	0	42	0	0	0	0	0	959	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		7.8			7.8						62.2	
Effective Green, g (s)		7.8			7.8						62.2	
Actuated g/C Ratio		0.10			0.10						0.78	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		175			152						3941	
v/s Ratio Prot		c0.03										
v/s Ratio Perm					0.03						0.19	
v/c Ratio		0.29			0.28						0.24	
Uniform Delay, d1		33.5			33.5						2.4	
Progression Factor		1.00			0.61						0.85	
Incremental Delay, d2		4.1			4.4						0.1	
Delay (s)		37.7			25.0						2.2	
Level of Service		D			C						A	
Approach Delay (s)		37.7			25.0			0.0			2.2	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		⅄	
Traffic Vol, veh/h	21	58	50	14	4	5
Future Vol, veh/h	21	58	50	14	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	75	65	18	5	6

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	129	0
Stage 1	-	-	0	-
Stage 2	-	-	129	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	762	-
Stage 1	-	-	-	-
Stage 2	-	-	789	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB		WB
HCM Control Delay, s			
HCM LOS			-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

5: Sultana Avenue & B Street

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	44	28	24	136	164	47
Future Vol, veh/h	44	28	24	136	164	47
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	31	27	153	184	53
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.3	8.7	8.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	15%	61%	0%
Vol Thru, %	85%	0%	78%
Vol Right, %	0%	39%	22%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	160	72	211
LT Vol	24	44	0
Through Vol	136	0	164
RT Vol	0	28	47
Lane Flow Rate	180	81	237
Geometry Grp	1	1	1
Degree of Util (X)	0.22	0.106	0.276
Departure Headway (Hd)	4.401	4.726	4.189
Convergence, Y/N	Yes	Yes	Yes
Cap	818	759	861
Service Time	2.416	2.75	2.202
HCM Lane V/C Ratio	0.22	0.107	0.275
HCM Control Delay	8.7	8.3	8.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.8	0.4	1.1

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	4	9	181	2	3	206
Future Vol, veh/h	4	9	181	2	3	206
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	235	3	4	268

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	513	237	0	0	238	0
Stage 1	237	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	521	802	-	-	1329	-
Stage 1	802	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	519	802	-	-	1329	-
Mov Cap-2 Maneuver	519	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	687	1329	-
HCM Lane V/C Ratio	-	-	0.025	0.003	-
HCM Control Delay (s)	-	-	10.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	2	1	30	179	201	11
Future Vol, veh/h	2	1	30	179	201	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	1	38	229	258	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	570	265	272	0	-	0
Stage 1	265	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	483	774	1291	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	467	774	1291	-	-	-
Mov Cap-2 Maneuver	467	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1291	-	538	-	-
HCM Lane V/C Ratio	0.03	-	0.007	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✢			✢			✢			✢	
Traffic Vol, veh/h	1	0	1	21	0	48	1	158	15	14	189	1
Future Vol, veh/h	1	0	1	21	0	48	1	158	15	14	189	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	26	0	59	1	195	19	17	233	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	504	484	234	475	475	205	234	0	0	214	0	0
Stage 1	268	268	-	207	207	-	-	-	-	-	-	-
Stage 2	236	216	-	268	268	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	478	483	805	500	488	836	1333	-	-	1356	-	-
Stage 1	738	687	-	795	731	-	-	-	-	-	-	-
Stage 2	767	724	-	738	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	439	476	805	494	481	836	1333	-	-	1356	-	-
Mov Cap-2 Maneuver	439	476	-	494	481	-	-	-	-	-	-	-
Stage 1	737	677	-	794	730	-	-	-	-	-	-	-
Stage 2	712	723	-	727	677	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	10.9	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1333	-	-	568	691	1356	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.123	0.013	-	-
HCM Control Delay (s)	7.7	0	-	11.4	10.9	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

HCM Signalized Intersection Capacity Analysis
101: D Street

Existing Scenario
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	81	0	0	126	97	38	766	30	0	0	0
Future Volume (vph)	24	81	0	0	126	97	38	766	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1842			1753			5046				
Flt Permitted		0.67			1.00			1.00				
Satd. Flow (perm)		1246			1753			5046				
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	29	98	0	0	152	117	46	923	36	0	0	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	127	0	0	232	0	0	1001	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		15.0			15.0			55.0				
Effective Green, g (s)		15.0			15.0			55.0				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		233			328			3469				
v/s Ratio Prot					c0.13							
v/s Ratio Perm		0.10						0.20				
v/c Ratio		0.55			0.71			0.29				
Uniform Delay, d1		29.4			30.5			4.9				
Progression Factor		0.56			1.00			0.77				
Incremental Delay, d2		8.6			12.2			0.2				
Delay (s)		25.2			42.7			4.0				
Level of Service		C			D			A				
Approach Delay (s)		25.2			42.7			4.0			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
103: B Street

Existing Scenario
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	8	33	0	0	35	25	14	828	11	0	0	0
Future Volume (vph)	8	33	0	0	35	25	14	828	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1844			1758			5071				
Flt Permitted		0.92			1.00			1.00				
Satd. Flow (perm)		1708			1758			5071				
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	10	39	0	0	42	30	17	986	13	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	49	0	0	45	0	0	1015	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		7.8			7.8			62.2				
Effective Green, g (s)		7.8			7.8			62.2				
Actuated g/C Ratio		0.10			0.10			0.78				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		166			171			3942				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.03						0.20				
v/c Ratio		0.30			0.26			0.26				
Uniform Delay, d1		33.5			33.4			2.5				
Progression Factor		0.64			1.00			1.00				
Incremental Delay, d2		4.4			3.7			0.2				
Delay (s)		25.8			37.1			2.6				
Level of Service		C			D			A				
Approach Delay (s)		25.8			37.1			2.6			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

1: SR-83/Euclid Avenue & D Street

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	192	39	33	109	0	0	0	0	60	705	41
Future Volume (vph)	0	192	39	33	109	0	0	0	0	60	705	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1820			1842						5028	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		1820			1270						5028	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	206	42	35	117	0	0	0	0	65	758	44
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	239	0	0	152	0	0	0	0	0	861	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		16.0			16.0						59.0	
Effective Green, g (s)		16.0			16.0						59.0	
Actuated g/C Ratio		0.19			0.19						0.69	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		342			239						3490	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.12						0.17	
v/c Ratio		0.70			0.64						0.25	
Uniform Delay, d1		32.2			31.8						4.8	
Progression Factor		1.00			0.45						1.00	
Incremental Delay, d2		11.3			11.1						0.2	
Delay (s)		43.5			25.4						5.0	
Level of Service		D			C						A	
Approach Delay (s)		43.5			25.4			0.0			5.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	22	206	43	29	149	18	39	158	25	10	119	19
Future Vol, veh/h	22	206	43	29	149	18	39	158	25	10	119	19
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	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	222	46	31	160	19	42	170	27	11	128	20
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	12.8	11.2	11.9	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	100%	0%	100%	0%	7%
Vol Thru, %	71%	0%	83%	0%	89%	80%
Vol Right, %	11%	0%	17%	0%	11%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	222	22	249	29	167	148
LT Vol	39	22	0	29	0	10
Through Vol	158	0	206	0	149	119
RT Vol	25	0	43	0	18	19
Lane Flow Rate	239	24	268	31	180	159
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.371	0.043	0.436	0.057	0.3	0.252
Departure Headway (Hd)	5.589	6.487	5.857	6.604	6.019	5.711
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	642	551	613	541	596	625
Service Time	3.641	4.234	3.603	4.357	3.772	3.771
HCM Lane V/C Ratio	0.372	0.044	0.437	0.057	0.302	0.254
HCM Control Delay	11.9	9.5	13.1	9.8	11.4	10.7
HCM Lane LOS	B	A	B	A	B	B
HCM 95th-tile Q	1.7	0.1	2.2	0.2	1.3	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	41	37	20	33	0	0	0	0	24	753	21
Future Volume (vph)	0	41	37	20	33	0	0	0	0	24	753	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5						4.5	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1743			1828						5057	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1743			1573						5057	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	43	39	21	34	0	0	0	0	25	784	22
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	47	0	0	55	0	0	0	0	0	829	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		8.3			8.3						67.7	
Effective Green, g (s)		8.3			8.3						67.7	
Actuated g/C Ratio		0.10			0.10						0.80	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		170			153						4027	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.03						0.16	
v/c Ratio		0.28			0.36						0.21	
Uniform Delay, d1		35.6			35.9						2.1	
Progression Factor		1.00			0.66						0.85	
Incremental Delay, d2		4.0			6.4						0.1	
Delay (s)		39.5			29.9						1.9	
Level of Service		D			C						A	
Approach Delay (s)		39.5			29.9			0.0			1.9	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		⅄	
Traffic Vol, veh/h	10	69	64	5	13	21
Future Vol, veh/h	10	69	64	5	13	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	80	74	6	15	24

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	104	0
Stage 1	-	-	0	-
Stage 2	-	-	104	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	786	-
Stage 1	-	-	-	-
Stage 2	-	-	809	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	40	53	40	166	163	26
Future Vol, veh/h	40	53	40	166	163	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	56	42	175	172	27
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.3	9	8.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	19%	43%	0%
Vol Thru, %	81%	0%	86%
Vol Right, %	0%	57%	14%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	93	189
LT Vol	40	40	0
Through Vol	166	0	163
RT Vol	0	53	26
Lane Flow Rate	217	98	199
Geometry Grp	1	1	1
Degree of Util (X)	0.266	0.125	0.238
Departure Headway (Hd)	4.413	4.594	4.315
Convergence, Y/N	Yes	Yes	Yes
Cap	815	781	834
Service Time	2.43	2.617	2.333
HCM Lane V/C Ratio	0.266	0.125	0.239
HCM Control Delay	9	8.3	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.4	0.9

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	2	11	209	5	6	181
Future Vol, veh/h	2	11	209	5	6	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	12	235	6	7	203

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	455	238	0	0	241	0
Stage 1	238	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	563	801	-	-	1326	-
Stage 1	802	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	560	801	-	-	1326	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	814	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	751	1326	-
HCM Lane V/C Ratio	-	-	0.019	0.005	-
HCM Control Delay (s)	-	-	9.9	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	28	17	5	194	167	8
Future Vol, veh/h	28	17	5	194	167	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	20	6	223	192	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	432	197	201	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	581	844	1371	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	578	844	1371	-	-	-
Mov Cap-2 Maneuver	578	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1371	-	656	-	-
HCM Lane V/C Ratio	0.004	-	0.079	-	-
HCM Control Delay (s)	7.6	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	3	20	0	20	1	178	29	17	170	0
Future Vol, veh/h	1	0	3	20	0	20	1	178	29	17	170	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	22	0	22	1	200	33	19	191	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	459	464	191	450	448	217	191	0	0	233	0	0
Stage 1	229	229	-	219	219	-	-	-	-	-	-	-
Stage 2	230	235	-	231	229	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	512	495	851	519	506	823	1383	-	-	1335	-	-
Stage 1	774	715	-	783	722	-	-	-	-	-	-	-
Stage 2	773	710	-	772	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	492	487	851	510	497	823	1383	-	-	1335	-	-
Mov Cap-2 Maneuver	492	487	-	510	497	-	-	-	-	-	-	-
Stage 1	773	704	-	782	721	-	-	-	-	-	-	-
Stage 2	751	709	-	757	704	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	11.2	0	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1383	-	-	720	630	1335	-	-
HCM Lane V/C Ratio	0.001	-	-	0.006	0.071	0.014	-	-
HCM Control Delay (s)	7.6	0	-	10	11.2	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	34	158	0	0	142	64	48	841	36	0	0	0
Future Volume (vph)	34	158	0	0	142	64	48	841	36	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1846			1785			5042				
Flt Permitted		0.73			1.00			1.00				
Satd. Flow (perm)		1366			1785			5042				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	170	0	0	153	69	52	904	39	0	0	0
RTOR Reduction (vph)	0	0	0	0	21	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	207	0	0	202	0	0	991	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		15.3			15.3			59.7				
Effective Green, g (s)		15.3			15.3			59.7				
Actuated g/C Ratio		0.18			0.18			0.70				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		245			321			3541				
v/s Ratio Prot					0.11							
v/s Ratio Perm		c0.15						0.20				
v/c Ratio		0.84			0.63			0.28				
Uniform Delay, d1		33.7			32.2			4.7				
Progression Factor		0.41			1.00			0.81				
Incremental Delay, d2		26.1			9.0			0.2				
Delay (s)		39.9			41.2			4.0				
Level of Service		D			D			A				
Approach Delay (s)		39.9			41.2			4.0			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
103: B Street

Existing Scenario
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	24	41	0	0	53	41	24	838	19	0	0	0
Future Volume (vph)	24	41	0	0	53	41	24	838	19	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1829			1752			5062				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1569			1752			5062				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	43	0	0	55	43	25	873	20	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	68	0	0	59	0	0	916	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		8.8			8.8			67.2				
Effective Green, g (s)		8.8			8.8			67.2				
Actuated g/C Ratio		0.10			0.10			0.79				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		162			181			4001				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.04						0.18				
v/c Ratio		0.42			0.33			0.23				
Uniform Delay, d1		35.7			35.4			2.3				
Progression Factor		0.69			1.00			1.00				
Incremental Delay, d2		7.8			4.8			0.1				
Delay (s)		32.3			40.1			2.4				
Level of Service		C			D			A				
Approach Delay (s)		32.3			40.1			2.4			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	122	36	31	103	0	0	0	0	102	740	24
Future Volume (vph)	0	122	36	31	103	0	0	0	0	102	740	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		1806			1842						5034	
Flt Permitted		1.00			0.75						0.99	
Satd. Flow (perm)		1806			1405						5034	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	147	43	37	124	0	0	0	0	123	892	29
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	174	0	0	161	0	0	0	0	0	1041	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		13.0			13.0						57.0	
Effective Green, g (s)		13.0			13.0						57.0	
Actuated g/C Ratio		0.16			0.16						0.71	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		293			228						3586	
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.11						0.21	
v/c Ratio		0.59			0.71						0.29	
Uniform Delay, d1		31.1			31.7						4.2	
Progression Factor		1.00			0.52						1.00	
Incremental Delay, d2		8.6			14.1						0.2	
Delay (s)		39.6			30.6						4.4	
Level of Service		D			C						A	
Approach Delay (s)		39.6			30.6			0.0			4.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	7	145	66	48	206	11	51	122	36	18	139	12
Future Vol, veh/h	7	145	66	48	206	11	51	122	36	18	139	12
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	177	80	59	251	13	62	149	44	22	170	15
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	14.2	14	13.8	12.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	100%	0%	100%	0%	11%
Vol Thru, %	58%	0%	69%	0%	95%	82%
Vol Right, %	17%	0%	31%	0%	5%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	209	7	211	48	217	169
LT Vol	51	7	0	48	0	18
Through Vol	122	0	145	0	206	139
RT Vol	36	0	66	0	11	12
Lane Flow Rate	255	9	257	59	265	206
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.433	0.017	0.454	0.114	0.473	0.358
Departure Headway (Hd)	6.117	7.087	6.352	6.983	6.436	6.253
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	589	506	569	515	561	575
Service Time	4.145	4.813	4.078	4.708	4.161	4.293
HCM Lane V/C Ratio	0.433	0.018	0.452	0.115	0.472	0.358
HCM Control Delay	13.8	9.9	14.3	10.6	14.8	12.8
HCM Lane LOS	B	A	B	B	B	B
HCM 95th-tile Q	2.2	0.1	2.4	0.4	2.5	1.6

HCM Signalized Intersection Capacity Analysis
3: SR-83/Euclid Avenue & B Street

Existing Conditions plus Project
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	41	14	26	21	0	0	0	0	31	771	6
Future Volume (vph)	0	41	14	26	21	0	0	0	0	31	771	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1798			1813						5070	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1798			1474						5070	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	49	17	31	25	0	0	0	0	37	918	7
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	51	0	0	56	0	0	0	0	0	962	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		8.3			8.3						61.7	
Effective Green, g (s)		8.3			8.3						61.7	
Actuated g/C Ratio		0.10			0.10						0.77	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		186			152						3910	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.04						0.19	
v/c Ratio		0.27			0.37						0.25	
Uniform Delay, d1		33.1			33.4						2.6	
Progression Factor		1.00			0.61						0.84	
Incremental Delay, d2		3.6			6.7						0.1	
Delay (s)		36.7			27.2						2.3	
Level of Service		D			C						A	
Approach Delay (s)		36.7			27.2			0.0			2.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰↱	
Traffic Vol, veh/h	57	58	50	23	7	17
Future Vol, veh/h	57	58	50	23	7	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	75	65	30	9	22

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	223	0
Stage 1	-	-	0	-
Stage 2	-	-	223	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	676	-
Stage 1	-	-	-	-
Stage 2	-	-	719	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	45	30	29	175	177	50
Future Vol, veh/h	45	30	29	175	177	50
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	34	33	197	199	56
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.5	9.2	9.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	14%	60%	0%
Vol Thru, %	86%	0%	78%
Vol Right, %	0%	40%	22%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	204	75	227
LT Vol	29	45	0
Through Vol	175	0	177
RT Vol	0	30	50
Lane Flow Rate	229	84	255
Geometry Grp	1	1	1
Degree of Util (X)	0.282	0.114	0.301
Departure Headway (Hd)	4.432	4.864	4.255
Convergence, Y/N	Yes	Yes	Yes
Cap	811	737	847
Service Time	2.453	2.894	2.275
HCM Lane V/C Ratio	0.282	0.114	0.301
HCM Control Delay	9.2	8.5	9.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.2	0.4	1.3

6: Sultana Avenue & Lynn Haven Street

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	4	9	195	2	3	250
Future Vol, veh/h	4	9	195	2	3	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	253	3	4	325

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	588	255	0	0	256	0
Stage 1	255	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	471	784	-	-	1309	-
Stage 1	788	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	469	784	-	-	1309	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	723	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	650	1309	-
HCM Lane V/C Ratio	-	-	0.026	0.003	-
HCM Control Delay (s)	-	-	10.7	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

7: Sultana Avenue & C Street Alley

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	15	14	69	180	204	52
Future Vol, veh/h	15	14	69	180	204	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	18	88	231	262	67

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	703	296	329	0	-	0
Stage 1	296	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	404	743	1231	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	371	743	1231	-	-	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	672	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1231	-	489	-	-
HCM Lane V/C Ratio	0.072	-	0.076	-	-
HCM Control Delay (s)	8.2	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	1	21	0	48	1	198	15	14	206	1
Future Vol, veh/h	1	0	1	21	0	48	1	198	15	14	206	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	26	0	59	1	244	19	17	254	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	574	554	255	545	545	254	255	0	0	263	0	0
Stage 1	289	289	-	256	256	-	-	-	-	-	-	-
Stage 2	285	265	-	289	289	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	430	440	784	449	446	785	1310	-	-	1301	-	-
Stage 1	719	673	-	749	696	-	-	-	-	-	-	-
Stage 2	722	689	-	719	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	393	433	784	443	439	785	1310	-	-	1301	-	-
Mov Cap-2 Maneuver	393	433	-	443	439	-	-	-	-	-	-	-
Stage 1	718	663	-	748	695	-	-	-	-	-	-	-
Stage 2	667	688	-	707	663	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	11.5	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	524	636	1301	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.134	0.013	-	-
HCM Control Delay (s)	7.8	0	-	11.9	11.5	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM Signalized Intersection Capacity Analysis
101: D Street

Existing Conditions plus Project
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	24	98	0	0	134	112	38	766	35	0	0	0
Future Volume (vph)	24	98	0	0	134	112	38	766	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1845			1748			5042				
Flt Permitted		0.64			1.00			1.00				
Satd. Flow (perm)		1191			1748			5042				
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	29	118	0	0	161	135	46	923	42	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	147	0	0	257	0	0	1006	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		15.7			15.7			54.3				
Effective Green, g (s)		15.7			15.7			54.3				
Actuated g/C Ratio		0.20			0.20			0.68				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		233			343			3422				
v/s Ratio Prot					c0.15							
v/s Ratio Perm		0.12						0.20				
v/c Ratio		0.63			0.75			0.29				
Uniform Delay, d1		29.5			30.3			5.2				
Progression Factor		0.75			1.00			0.77				
Incremental Delay, d2		11.9			13.9			0.2				
Delay (s)		33.9			44.2			4.2				
Level of Service		C			D			A				
Approach Delay (s)		33.9			44.2			4.2			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	8	33	0	0	35	25	14	833	47	0	0	0
Future Volume (vph)	8	33	0	0	35	25	14	833	47	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1844			1758			5041				
Flt Permitted		0.92			1.00			1.00				
Satd. Flow (perm)		1708			1758			5041				
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	10	39	0	0	42	30	17	992	56	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	49	0	0	45	0	0	1060	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		7.8			7.8			62.2				
Effective Green, g (s)		7.8			7.8			62.2				
Actuated g/C Ratio		0.10			0.10			0.78				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		166			171			3919				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.03						0.21				
v/c Ratio		0.30			0.26			0.27				
Uniform Delay, d1		33.5			33.4			2.5				
Progression Factor		0.64			1.00			1.00				
Incremental Delay, d2		4.4			3.7			0.2				
Delay (s)		25.9			37.1			2.7				
Level of Service		C			D			A				
Approach Delay (s)		25.9			37.1			2.7			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR-83/Euclid Avenue & D Street

Existing Conditions plus Project
Timing Plan: PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	195	39	37	121	0	0	0	0	69	705	41
Future Volume (vph)	0	195	39	37	121	0	0	0	0	69	705	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1821			1841						5026	
Flt Permitted		1.00			0.65						1.00	
Satd. Flow (perm)		1821			1207						5026	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	210	42	40	130	0	0	0	0	74	758	44
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	243	0	0	170	0	0	0	0	0	870	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		16.2			16.2						58.8	
Effective Green, g (s)		16.2			16.2						58.8	
Actuated g/C Ratio		0.19			0.19						0.69	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		347			230						3476	
v/s Ratio Prot		0.13										
v/s Ratio Perm					c0.14						0.17	
v/c Ratio		0.70			0.74						0.25	
Uniform Delay, d1		32.1			32.4						4.9	
Progression Factor		1.00			0.44						1.00	
Incremental Delay, d2		11.2			16.2						0.2	
Delay (s)		43.3			30.5						5.1	
Level of Service		D			C						A	
Approach Delay (s)		43.3			30.5			0.0			5.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	22	211	49	31	150	18	62	158	32	10	119	19
Future Vol, veh/h	22	211	49	31	150	18	62	158	32	10	119	19
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	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	227	53	33	161	19	67	170	34	11	128	20
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	13.6	11.4	12.9	11
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	100%	0%	100%	0%	7%
Vol Thru, %	63%	0%	81%	0%	89%	80%
Vol Right, %	13%	0%	19%	0%	11%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	252	22	260	31	168	148
LT Vol	62	22	0	31	0	10
Through Vol	158	0	211	0	150	119
RT Vol	32	0	49	0	18	19
Lane Flow Rate	271	24	280	33	181	159
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.427	0.044	0.464	0.063	0.31	0.259
Departure Headway (Hd)	5.67	6.62	5.977	6.757	6.171	5.855
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	631	539	601	528	580	610
Service Time	3.734	4.38	3.737	4.524	3.937	3.929
HCM Lane V/C Ratio	0.429	0.045	0.466	0.063	0.312	0.261
HCM Control Delay	12.9	9.7	13.9	10	11.7	11
HCM Lane LOS	B	A	B	A	B	B
HCM 95th-tile Q	2.1	0.1	2.4	0.2	1.3	1

HCM Signalized Intersection Capacity Analysis
3: SR-83/Euclid Avenue & B Street

Existing Conditions plus Project
Timing Plan: PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	41	37	45	33	0	0	0	0	24	757	21
Future Volume (vph)	0	41	37	45	33	0	0	0	0	24	757	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5						4.5	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1743			1810						5058	
Flt Permitted		1.00			0.77						1.00	
Satd. Flow (perm)		1743			1443						5058	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	43	39	47	34	0	0	0	0	25	789	22
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	47	0	0	81	0	0	0	0	0	834	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		9.8			9.8						66.2	
Effective Green, g (s)		9.8			9.8						66.2	
Actuated g/C Ratio		0.12			0.12						0.78	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		200			166						3939	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.06						0.16	
v/c Ratio		0.24			0.49						0.21	
Uniform Delay, d1		34.2			35.2						2.5	
Progression Factor		1.00			0.68						0.81	
Incremental Delay, d2		2.8			9.8						0.1	
Delay (s)		37.0			33.7						2.1	
Level of Service		D			C						A	
Approach Delay (s)		37.0			33.7			0.0			2.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	16	69	64	7	19	46
Future Vol, veh/h	16	69	64	7	19	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	80	74	8	22	53

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	118	0
Stage 1	-	-	0	-
Stage 2	-	-	118	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	772	-
Stage 1	-	-	-	-
Stage 2	-	-	798	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB		WB
HCM Control Delay, s			
HCM LOS			-

Minor Lane/Major Mvmt		EBL	EBT	WBLn1
Capacity (veh/h)		-	-	-
HCM Lane V/C Ratio		-	-	-
HCM Control Delay (s)		-	-	-
HCM Lane LOS		-	-	-
HCM 95th %tile Q(veh)		-	-	-

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	42	57	41	173	190	27
Future Vol, veh/h	42	57	41	173	190	27
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	60	43	182	200	28
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.4	9.2	9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	19%	42%	0%
Vol Thru, %	81%	0%	88%
Vol Right, %	0%	58%	12%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	214	99	217
LT Vol	41	42	0
Through Vol	173	0	190
RT Vol	0	57	27
Lane Flow Rate	225	104	228
Geometry Grp	1	1	1
Degree of Util (X)	0.279	0.135	0.276
Departure Headway (Hd)	4.463	4.675	4.352
Convergence, Y/N	Yes	Yes	Yes
Cap	806	767	827
Service Time	2.485	2.703	2.374
HCM Lane V/C Ratio	0.279	0.136	0.276
HCM Control Delay	9.2	8.4	9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.5	1.1

6: Sultana Avenue & Lynn Haven Street

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	2	11	239	5	6	189
Future Vol, veh/h	2	11	239	5	6	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	12	269	6	7	212

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	498	272	0	0	275	0
Stage 1	272	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	532	767	-	-	1288	-
Stage 1	774	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	529	767	-	-	1288	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	10.1		0		0.2	
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	717	1288	-
HCM Lane V/C Ratio	-	-	0.02	0.005	-
HCM Control Delay (s)	-	-	10.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	56	44	12	196	168	15
Future Vol, veh/h	56	44	12	196	168	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	51	14	225	193	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	455	202	210	0	-	0
Stage 1	202	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	563	839	1361	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	556	839	1361	-	-	-
Mov Cap-2 Maneuver	556	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1361	-	653	-	-
HCM Lane V/C Ratio	0.01	-	0.176	-	-
HCM Control Delay (s)	7.7	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	3	20	0	20	1	187	29	17	198	0
Future Vol, veh/h	1	0	3	20	0	20	1	187	29	17	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	22	0	22	1	210	33	19	222	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	500	505	222	491	489	227	222	0	0	243	0	0
Stage 1	260	260	-	229	229	-	-	-	-	-	-	-
Stage 2	240	245	-	262	260	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	481	470	818	488	480	812	1347	-	-	1323	-	-
Stage 1	745	693	-	774	715	-	-	-	-	-	-	-
Stage 2	763	703	-	743	693	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	462	462	818	480	472	812	1347	-	-	1323	-	-
Mov Cap-2 Maneuver	462	462	-	480	472	-	-	-	-	-	-	-
Stage 1	744	682	-	773	714	-	-	-	-	-	-	-
Stage 2	741	702	-	728	682	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	11.5	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1347	-	-	686	603	1323	-	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.075	0.014	-	-
HCM Control Delay (s)	7.7	0	-	10.3	11.5	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

101: D Street

Timing Plan: PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	34	161	0	0	158	98	48	841	37	0	0	0
Future Volume (vph)	34	161	0	0	158	98	48	841	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1846			1767			5041				
Flt Permitted		0.63			1.00			1.00				
Satd. Flow (perm)		1181			1767			5041				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	173	0	0	170	105	52	904	40	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	210	0	0	248	0	0	991	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		16.5			16.5			58.5				
Effective Green, g (s)		16.5			16.5			58.5				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		229			343			3469				
v/s Ratio Prot					0.14							
v/s Ratio Perm		c0.18						0.20				
v/c Ratio		0.92			0.72			0.29				
Uniform Delay, d1		33.6			32.1			5.1				
Progression Factor		0.44			1.00			0.80				
Incremental Delay, d2		38.4			12.4			0.2				
Delay (s)		53.2			44.5			4.3				
Level of Service		D			D			A				
Approach Delay (s)		53.2			44.5			4.3			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
103: B Street

Existing Conditions plus Project
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	24	41	0	0	53	41	24	839	25	0	0	0
Future Volume (vph)	24	41	0	0	53	41	24	839	25	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1829			1752			5057				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1569			1752			5057				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	43	0	0	55	43	25	874	26	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	68	0	0	59	0	0	923	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		8.8			8.8			67.2				
Effective Green, g (s)		8.8			8.8			67.2				
Actuated g/C Ratio		0.10			0.10			0.79				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		162			181			3998				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.04						0.18				
v/c Ratio		0.42			0.33			0.23				
Uniform Delay, d1		35.7			35.4			2.3				
Progression Factor		0.71			1.00			1.00				
Incremental Delay, d2		7.8			4.8			0.1				
Delay (s)		32.9			40.1			2.4				
Level of Service		C			D			A				
Approach Delay (s)		32.9			40.1			2.4			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR-83/Euclid Avenue & D Street

Opening Year (2027)
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	138	64	31	136	11	0	0	0	58	859	36
Future Volume (vph)	0	138	64	31	136	11	0	0	0	58	859	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.96			0.99						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1783			1832						5041	
Flt Permitted		1.00			0.72						1.00	
Satd. Flow (perm)		1783			1337						5041	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	166	77	37	164	13	0	0	0	70	1035	43
RTOR Reduction (vph)	0	24	0	0	3	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	219	0	0	211	0	0	0	0	0	1144	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		15.2			15.2						54.8	
Effective Green, g (s)		15.2			15.2						54.8	
Actuated g/C Ratio		0.19			0.19						0.68	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		338			254						3453	
v/s Ratio Prot		0.12										
v/s Ratio Perm					c0.16						0.23	
v/c Ratio		0.65			0.83						0.33	
Uniform Delay, d1		29.9			31.2						5.1	
Progression Factor		1.00			0.48						1.00	
Incremental Delay, d2		9.2			20.5						0.3	
Delay (s)		39.1			35.5						5.4	
Level of Service		D			D						A	
Approach Delay (s)		39.1			35.5			0.0			5.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

2: Sultana Avenue & D Street/E D Street

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	8	167	38	54	228	12	43	132	40	19	150	13
Future Vol, veh/h	8	167	38	54	228	12	43	132	40	19	150	13
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	204	46	66	278	15	52	161	49	23	183	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	14.8	15.6	14.5	13.6
HCM LOS	B	C	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	20%	100%	0%	100%	0%	10%
Vol Thru, %	61%	0%	81%	0%	95%	82%
Vol Right, %	19%	0%	19%	0%	5%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	215	8	205	54	240	182
LT Vol	43	8	0	54	0	19
Through Vol	132	0	167	0	228	150
RT Vol	40	0	38	0	12	13
Lane Flow Rate	262	10	250	66	293	222
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.457	0.02	0.461	0.13	0.533	0.396
Departure Headway (Hd)	6.276	7.278	6.634	7.104	6.557	6.423
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	574	492	543	504	550	559
Service Time	4.322	5.024	4.379	4.848	4.301	4.47
HCM Lane V/C Ratio	0.456	0.02	0.46	0.131	0.533	0.397
HCM Control Delay	14.5	10.2	15	10.9	16.6	13.6
HCM Lane LOS	B	B	B	B	C	B
HCM 95th-tile Q	2.4	0.1	2.4	0.4	3.1	1.9

HCM Signalized Intersection Capacity Analysis
3: SR-83/Euclid Avenue & B Street

Opening Year (2027)

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	44	15	15	23	0	0	0	0	33	954	6
Future Volume (vph)	0	44	15	15	23	0	0	0	0	33	954	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1798			1826						5072	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1798			1562						5072	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	52	18	18	27	0	0	0	0	39	1136	7
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	45	0	0	0	0	0	1182	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		7.9			7.9						62.1	
Effective Green, g (s)		7.9			7.9						62.1	
Actuated g/C Ratio		0.10			0.10						0.78	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		177			154						3937	
v/s Ratio Prot		c0.03										
v/s Ratio Perm					0.03						0.23	
v/c Ratio		0.30			0.29						0.30	
Uniform Delay, d1		33.5			33.5						2.6	
Progression Factor		1.00			0.62						0.82	
Incremental Delay, d2		4.4			4.7						0.2	
Delay (s)		37.9			25.3						2.3	
Level of Service		D			C						A	
Approach Delay (s)		37.9			25.3			0.0			2.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	23	63	54	15	4	5
Future Vol, veh/h	23	63	54	15	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	82	70	19	5	6

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	142	0
Stage 1	-	-	0	-
Stage 2	-	-	142	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	749	-
Stage 1	-	-	-	-
Stage 2	-	-	779	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	48	30	26	152	193	51
Future Vol, veh/h	48	30	26	152	193	51
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	34	29	171	217	57
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.5	9	9.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	15%	62%	0%
Vol Thru, %	85%	0%	79%
Vol Right, %	0%	38%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	178	78	244
LT Vol	26	48	0
Through Vol	152	0	193
RT Vol	0	30	51
Lane Flow Rate	200	88	274
Geometry Grp	1	1	1
Degree of Util (X)	0.248	0.118	0.323
Departure Headway (Hd)	4.46	4.854	4.24
Convergence, Y/N	Yes	Yes	Yes
Cap	806	738	850
Service Time	2.481	2.886	2.26
HCM Lane V/C Ratio	0.248	0.119	0.322
HCM Control Delay	9	8.5	9.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1	0.4	1.4

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	4	10	200	2	3	238
Future Vol, veh/h	4	10	200	2	3	238
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	260	3	4	309

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	579	262	0	0	263	0
Stage 1	262	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	477	777	-	-	1301	-
Stage 1	782	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	475	777	-	-	1301	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	658	1301	-
HCM Lane V/C Ratio	-	-	0.028	0.003	-
HCM Control Delay (s)	-	-	10.6	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	2	1	32	198	233	12
Future Vol, veh/h	2	1	32	198	233	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	1	41	254	299	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	643	307	314	0	-	0
Stage 1	307	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	438	733	1246	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	421	733	1246	-	-	-
Mov Cap-2 Maneuver	421	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	724	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1246	-	491	-	-
HCM Lane V/C Ratio	0.033	-	0.008	-	-
HCM Control Delay (s)	8	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

8: Sultana Avenue & Parking Lot Driveway/Nocta Street

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	1	23	0	52	1	176	16	15	220	1
Future Vol, veh/h	1	0	1	23	0	52	1	176	16	15	220	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	28	0	64	1	217	20	19	272	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	572	550	273	540	540	227	273	0	0	237	0	0
Stage 1	311	311	-	229	229	-	-	-	-	-	-	-
Stage 2	261	239	-	311	311	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	431	443	766	453	449	812	1290	-	-	1330	-	-
Stage 1	699	658	-	774	715	-	-	-	-	-	-	-
Stage 2	744	708	-	699	658	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	391	435	766	446	441	812	1290	-	-	1330	-	-
Mov Cap-2 Maneuver	391	435	-	446	441	-	-	-	-	-	-	-
Stage 1	698	647	-	773	714	-	-	-	-	-	-	-
Stage 2	684	707	-	686	647	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	11.5	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1290	-	-	518	649	1330	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.143	0.014	-	-
HCM Control Delay (s)	7.8	0	-	12	11.5	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM Signalized Intersection Capacity Analysis
Opening Year (2027)
101: D Street
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	42	96	0	23	144	105	50	854	42	0	0	0
Future Volume (vph)	42	96	0	23	144	105	50	854	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			0.99				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1835			1758			5038				
Flt Permitted		0.62			0.97			1.00				
Satd. Flow (perm)		1162			1706			5038				
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	51	116	0	28	173	127	60	1029	51	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	167	0	0	299	0	0	1134	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1			1			2					
Actuated Green, G (s)		17.2			17.2			52.8				
Effective Green, g (s)		17.2			17.2			52.8				
Actuated g/C Ratio		0.21			0.21			0.66				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		249			366			3325				
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.18			0.23				
v/c Ratio		0.67			0.82			0.34				
Uniform Delay, d1		28.8			29.9			6.0				
Progression Factor		0.55			1.00			0.73				
Incremental Delay, d2		12.6			18.0			0.3				
Delay (s)		28.5			47.9			4.7				
Level of Service		C			D			A				
Approach Delay (s)		28.5			47.9			4.7			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	9	36	0	0	38	27	15	923	12	0	0	0
Future Volume (vph)	9	36	0	0	38	27	15	923	12	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1844			1758			5072				
Flt Permitted		0.92			1.00			1.00				
Satd. Flow (perm)		1706			1758			5072				
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	11	43	0	0	45	32	18	1099	14	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	48	0	0	1130	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		8.0			8.0			62.0				
Effective Green, g (s)		8.0			8.0			62.0				
Actuated g/C Ratio		0.10			0.10			0.78				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		170			175			3930				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.03						0.22				
v/c Ratio		0.32			0.28			0.29				
Uniform Delay, d1		33.5			33.3			2.6				
Progression Factor		0.62			1.00			1.00				
Incremental Delay, d2		4.8			3.9			0.2				
Delay (s)		25.6			37.2			2.8				
Level of Service		C			D			A				
Approach Delay (s)		25.6			37.2			2.8			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR-83/Euclid Avenue & D Street

Opening Year (2027)
Timing Plan: PM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	232	67	36	149	11	0	0	0	68	821	54
Future Volume (vph)	0	232	67	36	149	11	0	0	0	68	821	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			0.99						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1806			1832						5024	
Flt Permitted		1.00			0.58						1.00	
Satd. Flow (perm)		1806			1073						5024	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	249	72	39	160	12	0	0	0	73	883	58
RTOR Reduction (vph)	0	13	0	0	2	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	308	0	0	209	0	0	0	0	0	1007	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		18.3			18.3						56.7	
Effective Green, g (s)		18.3			18.3						56.7	
Actuated g/C Ratio		0.22			0.22						0.67	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		388			231						3351	
v/s Ratio Prot		0.17										
v/s Ratio Perm					c0.19						0.20	
v/c Ratio		0.79			0.90						0.30	
Uniform Delay, d1		31.6			32.5						5.9	
Progression Factor		1.00			0.47						1.00	
Incremental Delay, d2		15.4			33.3						0.2	
Delay (s)		47.0			48.7						6.1	
Level of Service		D			D						A	
Approach Delay (s)		47.0			48.7			0.0			6.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	24	235	49	44	174	19	42	171	32	11	129	21
Future Vol, veh/h	24	235	49	44	174	19	42	171	32	11	129	21
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	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	26	253	53	47	187	20	45	184	34	12	139	23
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	15	12.3	13.5	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	17%	100%	0%	100%	0%	7%
Vol Thru, %	70%	0%	83%	0%	90%	80%
Vol Right, %	13%	0%	17%	0%	10%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	245	24	284	44	193	161
LT Vol	42	24	0	44	0	11
Through Vol	171	0	235	0	174	129
RT Vol	32	0	49	0	19	21
Lane Flow Rate	263	26	305	47	208	173
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.433	0.048	0.52	0.09	0.364	0.293
Departure Headway (Hd)	5.913	6.763	6.131	6.886	6.306	6.089
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	603	526	583	517	567	585
Service Time	3.997	4.542	3.909	4.671	4.09	4.185
HCM Lane V/C Ratio	0.436	0.049	0.523	0.091	0.367	0.296
HCM Control Delay	13.5	9.9	15.4	10.4	12.7	11.7
HCM Lane LOS	B	A	C	B	B	B
HCM 95th-tile Q	2.2	0.2	3	0.3	1.7	1.2

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	44	40	22	36	0	0	0	0	26	936	23
Future Volume (vph)	0	44	40	22	36	0	0	0	0	26	936	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5						4.5	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1743			1828						5061	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1743			1570						5061	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	46	42	23	38	0	0	0	0	27	975	24
RTOR Reduction (vph)	0	38	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	50	0	0	61	0	0	0	0	0	1025	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		8.5			8.5						67.5	
Effective Green, g (s)		8.5			8.5						67.5	
Actuated g/C Ratio		0.10			0.10						0.79	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		174			157						4019	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.04						0.20	
v/c Ratio		0.29			0.39						0.25	
Uniform Delay, d1		35.4			35.8						2.3	
Progression Factor		1.00			0.65						0.81	
Incremental Delay, d2		4.1			7.0						0.1	
Delay (s)		39.6			30.3						2.0	
Level of Service		D			C						A	
Approach Delay (s)		39.6			30.3			0.0			2.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	11	75	69	5	14	23
Future Vol, veh/h	11	75	69	5	14	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	87	80	6	16	27

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	113	0
Stage 1	-	-	0	-
Stage 2	-	-	113	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	777	-
Stage 1	-	-	-	-
Stage 2	-	-	802	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB		WB
HCM Control Delay, s			
HCM LOS			-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

HCM 6th AWSC
5: Sultana Avenue & B Street

Opening Year (2027)
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰↑	↑↱	
Traffic Vol, veh/h	43	57	43	184	192	28
Future Vol, veh/h	43	57	43	184	192	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	60	45	194	202	29
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.5	9.4	9.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	19%	43%	0%
Vol Thru, %	81%	0%	87%
Vol Right, %	0%	57%	13%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	227	100	220
LT Vol	43	43	0
Through Vol	184	0	192
RT Vol	0	57	28
Lane Flow Rate	239	105	232
Geometry Grp	1	1	1
Degree of Util (X)	0.297	0.138	0.281
Departure Headway (Hd)	4.47	4.716	4.37
Convergence, Y/N	Yes	Yes	Yes
Cap	805	760	822
Service Time	2.495	2.748	2.394
HCM Lane V/C Ratio	0.297	0.138	0.282
HCM Control Delay	9.4	8.5	9.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.2	0.5	1.2

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	2	12	231	5	6	211
Future Vol, veh/h	2	12	231	5	6	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	13	260	6	7	237

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	514	263	0	0	266	0
Stage 1	263	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	521	776	-	-	1298	-
Stage 1	781	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	518	776	-	-	1298	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	724	1298	-
HCM Lane V/C Ratio	-	-	0.022	0.005	-
HCM Control Delay (s)	-	-	10.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

HCM 6th TWSC
7: Sultana Avenue & C Street Alley

Opening Year (2027)
Timing Plan: PM Peak Hour

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰↑	↑↱	
Traffic Vol, veh/h	30	18	5	215	196	9
Future Vol, veh/h	30	18	5	215	196	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	21	6	247	225	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	489	230	235	0	-	0
Stage 1	230	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	538	809	1332	-	-	-
Stage 1	808	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	535	809	1332	-	-	-
Mov Cap-2 Maneuver	535	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1332	-	613	-	-
HCM Lane V/C Ratio	0.004	-	0.09	-	-
HCM Control Delay (s)	7.7	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

8: Sultana Avenue & Parking Lot Driveway/Nocta Street

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	1	0	3	22	0	22	1	197	31	18	200	0
Future Vol, veh/h	1	0	3	22	0	22	1	197	31	18	200	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	25	0	25	1	221	35	20	225	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	518	523	225	508	506	239	225	0	0	256	0	0
Stage 1	265	265	-	241	241	-	-	-	-	-	-	-
Stage 2	253	258	-	267	265	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	468	459	814	475	469	800	1344	-	-	1309	-	-
Stage 1	740	689	-	762	706	-	-	-	-	-	-	-
Stage 2	751	694	-	738	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	447	451	814	466	461	800	1344	-	-	1309	-	-
Mov Cap-2 Maneuver	447	451	-	466	461	-	-	-	-	-	-	-
Stage 1	739	677	-	761	705	-	-	-	-	-	-	-
Stage 2	727	693	-	722	677	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11.7	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1344	-	-	675	589	1309	-	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.084	0.015	-	-
HCM Control Delay (s)	7.7	0	-	10.4	11.7	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	53	180	0	23	161	69	61	935	49	0	0	0
Future Volume (vph)	53	180	0	23	161	69	61	935	49	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1842			1786			5035				
Flt Permitted		0.72			0.94			1.00				
Satd. Flow (perm)		1340			1688			5035				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	57	194	0	25	173	74	66	1005	53	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	251	0	0	256	0	0	1118	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1			1			2					
Actuated Green, G (s)		17.8			17.8			57.2				
Effective Green, g (s)		17.8			17.8			57.2				
Actuated g/C Ratio		0.21			0.21			0.67				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		280			353			3388				
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.15			0.22				
v/c Ratio		0.90			0.73			0.33				
Uniform Delay, d1		32.7			31.3			5.8				
Progression Factor		0.46			1.00			0.78				
Incremental Delay, d2		27.7			12.3			0.3				
Delay (s)		42.8			43.6			4.8				
Level of Service		D			D			A				
Approach Delay (s)		42.8			43.6			4.8			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑			↑↱			↰↑↑↱				
Traffic Volume (vph)	26	44	0	0	57	44	26	934	21	0	0	0
Future Volume (vph)	26	44	0	0	57	44	26	934	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1829			1753			5062				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1562			1753			5062				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	46	0	0	59	46	27	973	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	73	0	0	66	0	0	1020	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		9.1			9.1			66.9				
Effective Green, g (s)		9.1			9.1			66.9				
Actuated g/C Ratio		0.11			0.11			0.79				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		167			187			3984				
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.05						0.20				
v/c Ratio		0.44			0.35			0.26				
Uniform Delay, d1		35.6			35.2			2.4				
Progression Factor		0.69			1.00			1.00				
Incremental Delay, d2		8.0			5.1			0.2				
Delay (s)		32.6			40.3			2.6				
Level of Service		C			D			A				
Approach Delay (s)		32.6			40.3			2.6			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR-83/Euclid Avenue & D Street

Opening Year (2027) plus Project
Timing Plan: AM Peak Hour

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	155	64	33	142	11	0	0	0	109	859	36
Future Volume (vph)	0	155	64	33	142	11	0	0	0	109	859	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.96			0.99						0.99	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		1789			1832						5031	
Flt Permitted		1.00			0.68						0.99	
Satd. Flow (perm)		1789			1263						5031	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	187	77	40	171	13	0	0	0	131	1035	43
RTOR Reduction (vph)	0	21	0	0	3	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	243	0	0	221	0	0	0	0	0	1205	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		16.0			16.0						54.0	
Effective Green, g (s)		16.0			16.0						54.0	
Actuated g/C Ratio		0.20			0.20						0.68	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		357			252						3395	
v/s Ratio Prot		0.14										
v/s Ratio Perm					c0.17						0.24	
v/c Ratio		0.68			0.88						0.36	
Uniform Delay, d1		29.6			31.0						5.6	
Progression Factor		1.00			0.49						1.00	
Incremental Delay, d2		10.1			24.6						0.3	
Delay (s)		39.7			39.7						5.8	
Level of Service		D			D						A	
Approach Delay (s)		39.7			39.7			0.0			5.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	16.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	8	169	72	64	235	12	54	132	44	19	150	13
Future Vol, veh/h	8	169	72	64	235	12	54	132	44	19	150	13
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	206	88	78	287	15	66	161	54	23	183	16
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	17.4	16.9	16.3	14.6
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	100%	0%	100%	0%	10%
Vol Thru, %	57%	0%	70%	0%	95%	82%
Vol Right, %	19%	0%	30%	0%	5%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	230	8	241	64	247	182
LT Vol	54	8	0	64	0	19
Through Vol	132	0	169	0	235	150
RT Vol	44	0	72	0	12	13
Lane Flow Rate	280	10	294	78	301	222
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.511	0.02	0.552	0.159	0.57	0.417
Departure Headway (Hd)	6.561	7.488	6.76	7.356	6.808	6.765
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	477	532	486	527	530
Service Time	4.624	5.251	4.523	5.118	4.57	4.833
HCM Lane V/C Ratio	0.512	0.021	0.553	0.16	0.571	0.419
HCM Control Delay	16.3	10.4	17.6	11.5	18.3	14.6
HCM Lane LOS	C	B	C	B	C	B
HCM 95th-tile Q	2.9	0.1	3.3	0.6	3.5	2

HCM Signalized Intersection Capacity Analysis
3: SR-83/Euclid Avenue & B Street

Opening Year (2027) plus Project
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	44	15	27	23	0	0	0	0	33	956	6
Future Volume (vph)	0	44	15	27	23	0	0	0	0	33	956	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1798			1814						5072	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1798			1477						5072	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	52	18	32	27	0	0	0	0	39	1138	7
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	59	0	0	0	0	0	1184	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		8.4			8.4						61.6	
Effective Green, g (s)		8.4			8.4						61.6	
Actuated g/C Ratio		0.11			0.11						0.77	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			155						3905	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.04						0.23	
v/c Ratio		0.29			0.38						0.30	
Uniform Delay, d1		33.0			33.4						2.8	
Progression Factor		1.00			0.61						0.80	
Incremental Delay, d2		3.8			6.9						0.2	
Delay (s)		36.8			27.4						2.4	
Level of Service		D			C						A	
Approach Delay (s)		36.8			27.4			0.0			2.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	59	63	54	24	7	17
Future Vol, veh/h	59	63	54	24	7	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	82	70	31	9	22

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	236	0
Stage 1	-	-	0	-
Stage 2	-	-	236	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	665	-
Stage 1	-	-	-	-
Stage 2	-	-	710	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB		WB
HCM Control Delay, s			
HCM LOS			-

Minor Lane/Major Mvmt		EBL	EBT	WBLn1
Capacity (veh/h)		-	-	-
HCM Lane V/C Ratio		-	-	-
HCM Control Delay (s)		-	-	-
HCM Lane LOS		-	-	-
HCM 95th %tile Q(veh)		-	-	-

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰	↱	
Traffic Vol, veh/h	49	32	31	191	206	54
Future Vol, veh/h	49	32	31	191	206	54
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	36	35	215	231	61
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.8	9.5	9.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	14%	60%	0%
Vol Thru, %	86%	0%	79%
Vol Right, %	0%	40%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	222	81	260
LT Vol	31	49	0
Through Vol	191	0	206
RT Vol	0	32	54
Lane Flow Rate	249	91	292
Geometry Grp	1	1	1
Degree of Util (X)	0.311	0.126	0.35
Departure Headway (Hd)	4.495	4.996	4.309
Convergence, Y/N	Yes	Yes	Yes
Cap	801	716	836
Service Time	2.521	3.034	2.333
HCM Lane V/C Ratio	0.311	0.127	0.349
HCM Control Delay	9.5	8.8	9.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.3	0.4	1.6

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	4	10	214	2	3	282
Future Vol, veh/h	4	10	214	2	3	282
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	278	3	4	366

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	280	0	0	281	0
Stage 1	280	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	431	759	-	-	1282	-
Stage 1	767	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	429	759	-	-	1282	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	693	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	11		0		0.1
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	622	1282	-
HCM Lane V/C Ratio	-	-	0.029	0.003	-
HCM Control Delay (s)	-	-	11	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	15	14	71	199	236	53
Future Vol, veh/h	15	14	71	199	236	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	18	91	255	303	68

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	774	337	371	0	-	0
Stage 1	337	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	367	705	1188	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	334	705	1188	-	-	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	13.8		2.2		0	
HCM LOS	B					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1188	-	448	-	-
HCM Lane V/C Ratio	0.077	-	0.083	-	-
HCM Control Delay (s)	8.3	0	13.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	1	23	0	52	1	216	16	15	237	1
Future Vol, veh/h	1	0	1	23	0	52	1	216	16	15	237	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	1	28	0	64	1	267	20	19	293	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	643	621	294	611	611	277	294	0	0	287	0	0
Stage 1	332	332	-	279	279	-	-	-	-	-	-	-
Stage 2	311	289	-	332	332	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	386	403	745	406	409	762	1268	-	-	1275	-	-
Stage 1	681	644	-	728	680	-	-	-	-	-	-	-
Stage 2	699	673	-	681	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	348	395	745	400	401	762	1268	-	-	1275	-	-
Mov Cap-2 Maneuver	348	395	-	400	401	-	-	-	-	-	-	-
Stage 1	680	632	-	727	679	-	-	-	-	-	-	-
Stage 2	639	672	-	668	632	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	12.1	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1268	-	-	474	596	1275	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.155	0.015	-	-
HCM Control Delay (s)	7.8	0	-	12.6	12.1	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	42	113	0	23	152	120	50	854	47	0	0	0
Future Volume (vph)	42	113	0	23	152	120	50	854	47	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1838			1753			5034				
Flt Permitted		0.63			0.97			1.00				
Satd. Flow (perm)		1169			1704			5034				
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	51	136	0	28	183	145	60	1029	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	32	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	187	0	0	324	0	0	1139	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1			1			2					
Actuated Green, G (s)		17.8			17.8			52.2				
Effective Green, g (s)		17.8			17.8			52.2				
Actuated g/C Ratio		0.22			0.22			0.65				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		260			379			3284				
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.19			0.23				
v/c Ratio		0.72			0.86			0.35				
Uniform Delay, d1		28.8			29.9			6.2				
Progression Factor		0.70			1.00			0.73				
Incremental Delay, d2		14.6			21.2			0.3				
Delay (s)		34.7			51.0			4.8				
Level of Service		C			D			A				
Approach Delay (s)		34.7			51.0			4.8			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
103: B Street

Opening Year (2027) plus Project
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	9	36	0	0	38	27	15	928	48	0	0	0
Future Volume (vph)	9	36	0	0	38	27	15	928	48	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1844			1758			5045				
Flt Permitted		0.92			1.00			1.00				
Satd. Flow (perm)		1706			1758			5045				
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	11	43	0	0	45	32	18	1105	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	48	0	0	1176	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		8.0			8.0			62.0				
Effective Green, g (s)		8.0			8.0			62.0				
Actuated g/C Ratio		0.10			0.10			0.78				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		170			175			3909				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.03						0.23				
v/c Ratio		0.32			0.28			0.30				
Uniform Delay, d1		33.5			33.3			2.6				
Progression Factor		0.62			1.00			1.00				
Incremental Delay, d2		4.8			3.9			0.2				
Delay (s)		25.5			37.2			2.8				
Level of Service		C			D			A				
Approach Delay (s)		25.5			37.2			2.8			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR-83/Euclid Avenue & D Street

Opening Year (2027) plus Project
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	235	67	40	161	11	0	0	0	77	821	54
Future Volume (vph)	0	235	67	40	161	11	0	0	0	77	821	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			0.99						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1807			1832						5022	
Flt Permitted		1.00			0.57						1.00	
Satd. Flow (perm)		1807			1055						5022	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	253	72	43	173	12	0	0	0	83	883	58
RTOR Reduction (vph)	0	12	0	0	2	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	313	0	0	226	0	0	0	0	0	1017	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		18.8			18.8						56.2	
Effective Green, g (s)		18.8			18.8						56.2	
Actuated g/C Ratio		0.22			0.22						0.66	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		399			233						3320	
v/s Ratio Prot		0.17										
v/s Ratio Perm					c0.21						0.20	
v/c Ratio		0.78			0.97						0.31	
Uniform Delay, d1		31.2			32.8						6.1	
Progression Factor		1.00			0.45						1.00	
Incremental Delay, d2		14.2			42.4						0.2	
Delay (s)		45.4			57.3						6.4	
Level of Service		D			E						A	
Approach Delay (s)		45.4			57.3			0.0			6.4	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	14.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	24	240	55	46	175	19	65	171	39	11	129	21
Future Vol, veh/h	24	240	55	46	175	19	65	171	39	11	129	21
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	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	26	258	59	49	188	20	70	184	42	12	139	23
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	16.5	12.8	15.2	12.2
HCM LOS	C	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	100%	0%	100%	0%	7%
Vol Thru, %	62%	0%	81%	0%	90%	80%
Vol Right, %	14%	0%	19%	0%	10%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	275	24	295	46	194	161
LT Vol	65	24	0	46	0	11
Through Vol	171	0	240	0	175	129
RT Vol	39	0	55	0	19	21
Lane Flow Rate	296	26	317	49	209	173
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.502	0.05	0.561	0.098	0.382	0.306
Departure Headway (Hd)	6.11	7.013	6.369	7.158	6.587	6.369
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	591	512	568	501	547	564
Service Time	4.139	4.74	4.096	4.899	4.317	4.415
HCM Lane V/C Ratio	0.501	0.051	0.558	0.098	0.382	0.307
HCM Control Delay	15.2	10.1	17	10.7	13.3	12.2
HCM Lane LOS	C	B	C	B	B	B
HCM 95th-tile Q	2.8	0.2	3.4	0.3	1.8	1.3

3: SR-83/Euclid Avenue & B Street

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰						↰↑↱	
Traffic Volume (vph)	0	44	40	47	36	0	0	0	0	26	940	23
Future Volume (vph)	0	44	40	47	36	0	0	0	0	26	940	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5						4.5	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1743			1812						5061	
Flt Permitted		1.00			0.78						1.00	
Satd. Flow (perm)		1743			1447						5061	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	46	42	49	38	0	0	0	0	27	979	24
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	51	0	0	87	0	0	0	0	0	1028	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		5			5						6	
Permitted Phases				5						6		
Actuated Green, G (s)		10.2			10.2						65.8	
Effective Green, g (s)		10.2			10.2						65.8	
Actuated g/C Ratio		0.12			0.12						0.77	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		209			173						3917	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.06						0.20	
v/c Ratio		0.24			0.50						0.26	
Uniform Delay, d1		33.9			35.0						2.7	
Progression Factor		1.00			0.67						0.77	
Incremental Delay, d2		2.8			9.9						0.2	
Delay (s)		36.7			33.5						2.3	
Level of Service		D			C						A	
Approach Delay (s)		36.7			33.5			0.0			2.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Traffic Vol, veh/h	17	75	69	7	20	48
Future Vol, veh/h	17	75	69	7	20	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	87	80	8	23	56

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	127	0
Stage 1	-	-	0	-
Stage 2	-	-	127	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	764	-
Stage 1	-	-	-	-
Stage 2	-	-	791	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰↑	↑↱	
Traffic Vol, veh/h	45	61	44	191	219	29
Future Vol, veh/h	45	61	44	191	219	29
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	64	46	201	231	31
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.7	9.6	9.5
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	19%	42%	0%
Vol Thru, %	81%	0%	88%
Vol Right, %	0%	58%	12%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	235	106	248
LT Vol	44	45	0
Through Vol	191	0	219
RT Vol	0	61	29
Lane Flow Rate	247	112	261
Geometry Grp	1	1	1
Degree of Util (X)	0.311	0.149	0.32
Departure Headway (Hd)	4.523	4.796	4.407
Convergence, Y/N	Yes	Yes	Yes
Cap	794	746	814
Service Time	2.552	2.836	2.436
HCM Lane V/C Ratio	0.311	0.15	0.321
HCM Control Delay	9.6	8.7	9.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.3	0.5	1.4

Opening Year (2027) plus Project
Timing Plan: PM Peak Hour

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	2	12	261	5	6	219
Future Vol, veh/h	2	12	261	5	6	219
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	13	293	6	7	246

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	556	296	0	0	299	0
Stage 1	296	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	492	743	-	-	1262	-
Stage 1	755	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	489	743	-	-	1262	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	692	1262	-
HCM Lane V/C Ratio	-	-	0.023	0.005	-
HCM Control Delay (s)	-	-	10.3	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰↑	↑↱	
Traffic Vol, veh/h	58	45	12	217	197	16
Future Vol, veh/h	58	45	12	217	197	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	52	14	249	226	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	512	235	244	0	-	0
Stage 1	235	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	522	804	1322	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	516	804	1322	-	-	-
Mov Cap-2 Maneuver	516	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1322	-	612	-	-
HCM Lane V/C Ratio	0.01	-	0.193	-	-
HCM Control Delay (s)	7.8	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	0	3	22	0	22	1	206	31	18	228	0
Future Vol, veh/h	1	0	3	22	0	22	1	206	31	18	228	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	25	0	25	1	231	35	20	256	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	559	564	256	549	547	249	256	0	0	266	0	0
Stage 1	296	296	-	251	251	-	-	-	-	-	-	-
Stage 2	263	268	-	298	296	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	440	435	783	446	445	790	1309	-	-	1298	-	-
Stage 1	712	668	-	753	699	-	-	-	-	-	-	-
Stage 2	742	687	-	711	668	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	420	427	783	438	437	790	1309	-	-	1298	-	-
Mov Cap-2 Maneuver	420	427	-	438	437	-	-	-	-	-	-	-
Stage 1	711	656	-	752	698	-	-	-	-	-	-	-
Stage 2	718	686	-	695	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	12	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1309	-	-	644	564	1298	-	-
HCM Lane V/C Ratio	0.001	-	-	0.007	0.088	0.016	-	-
HCM Control Delay (s)	7.8	0	-	10.6	12	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

HCM Signalized Intersection Capacity Analysis

Opening Year (2027) plus Project

101: D Street

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	53	183	0	23	177	103	61	935	50	0	0	0
Future Volume (vph)	53	183	0	23	177	103	61	935	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1842			1770			5034				
Flt Permitted		0.67			0.95			1.00				
Satd. Flow (perm)		1242			1695			5034				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	57	197	0	25	190	111	66	1005	54	0	0	0
RTOR Reduction (vph)	0	0	0	0	22	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	254	0	0	304	0	0	1119	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1			1			2					
Actuated Green, G (s)		18.6			18.6			56.4				
Effective Green, g (s)		18.6			18.6			56.4				
Actuated g/C Ratio		0.22			0.22			0.66				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		271			370			3340				
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.18			0.22				
v/c Ratio		0.94			0.82			0.33				
Uniform Delay, d1		32.6			31.6			6.2				
Progression Factor		0.50			1.00			0.77				
Incremental Delay, d2		35.1			18.3			0.3				
Delay (s)		51.3			49.9			5.0				
Level of Service		D			D			A				
Approach Delay (s)		51.3			49.9			5.0			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
103: B Street

Opening Year (2027) plus Project
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↰↑↱				
Traffic Volume (vph)	26	44	0	0	57	44	26	935	27	0	0	0
Future Volume (vph)	26	44	0	0	57	44	26	935	27	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.94			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1829			1753			5058				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1562			1753			5058				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	46	0	0	59	46	27	974	28	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	73	0	0	66	0	0	1027	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		1			1			2				
Permitted Phases	1						2					
Actuated Green, G (s)		9.1			9.1			66.9				
Effective Green, g (s)		9.1			9.1			66.9				
Actuated g/C Ratio		0.11			0.11			0.79				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		167			187			3980				
v/s Ratio Prot					0.04							
v/s Ratio Perm		c0.05						0.20				
v/c Ratio		0.44			0.35			0.26				
Uniform Delay, d1		35.6			35.2			2.4				
Progression Factor		0.71			1.00			1.00				
Incremental Delay, d2		8.0			5.1			0.2				
Delay (s)		33.2			40.3			2.6				
Level of Service		C			D			A				
Approach Delay (s)		33.2			40.3			2.6			0.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

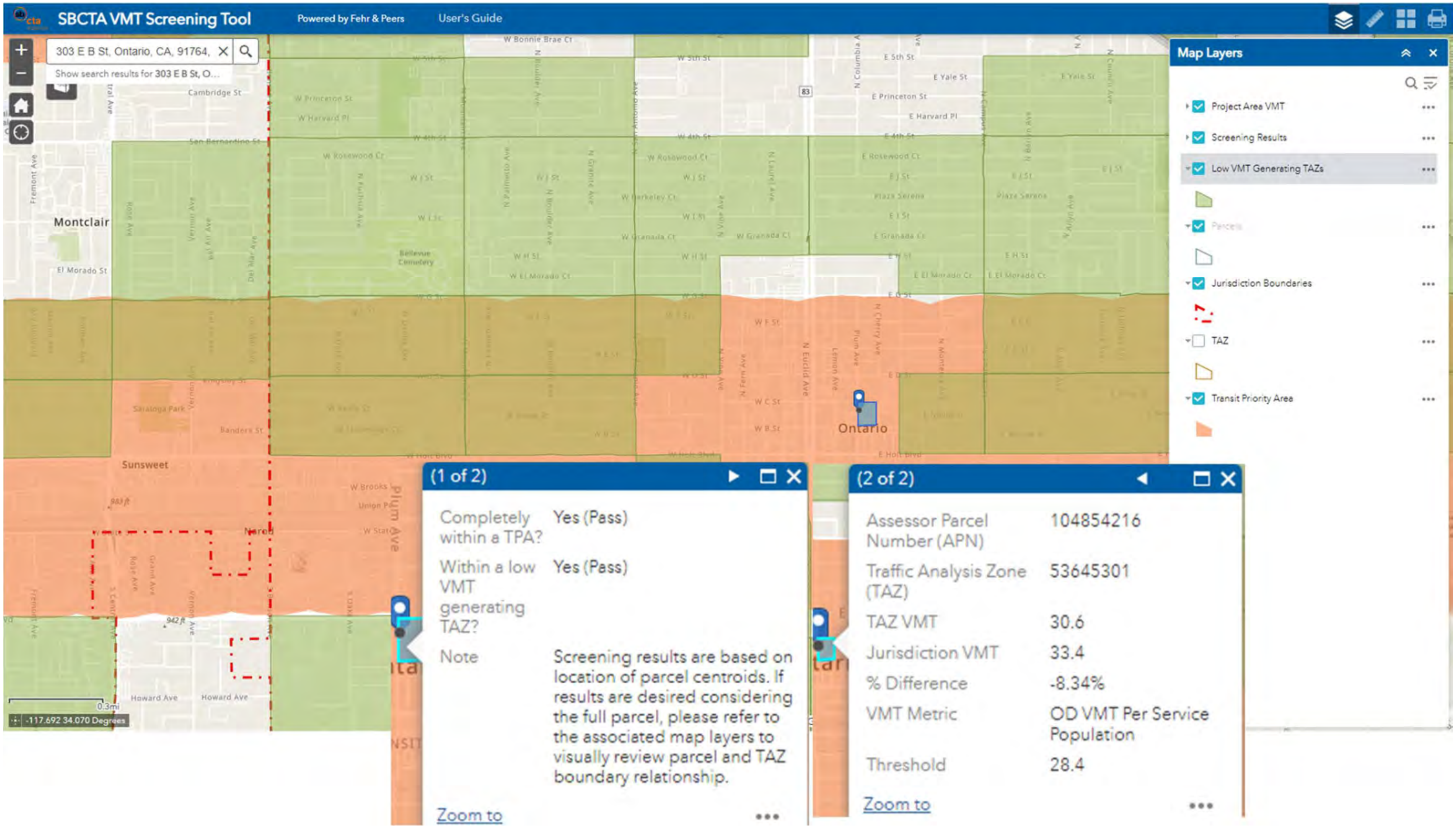
c Critical Lane Group

Attachment C

VMT Screening Evaluation Map

ATTACHMENT A

Ontario City Hall Annex Vehicle Miles Traveled Assessment, SBTAM VMT Screening Results



303 E B St, Ontario, CA, 91764,

Show search results for 303 E B St, O...

Map Layers

- ☑ Project Area VMT
- ☑ Screening Results
- ☑ Low VMT Generating TAZs
- ☑ Parcels
- ☑ Jurisdiction Boundaries
- ☐ TAZ
- ☑ Transit Priority Area

(1 of 2)

Completely within a TPA?	Yes (Pass)
Within a low VMT generating TAZ?	Yes (Pass)
Note	Screening results are based on location of parcel centroids. If results are desired considering the full parcel, please refer to the associated map layers to visually review parcel and TAZ boundary relationship.

Zoom to

(2 of 2)

Assessor Parcel Number (APN)	104854216
Traffic Analysis Zone (TAZ)	53645301
TAZ VMT	30.6
Jurisdiction VMT	33.4
% Difference	-8.34%
VMT Metric	OD VMT Per Service Population
Threshold	28.4

Zoom to

* Although the screening tool states in box (1 of 2) that the project is located in a low VMT generating TAZ, the results shown in box (2 of 2) show that the TAZ VMT is not 15% below the threshold. Therefore, for the purposes of this screening analysis, it is assumed that the project is not located in a low VMT generating TAZ. This is also consistent with the shading shown on the map.

Attachment B:
Conditions of Approval

(Conditions of Approval follow this page)

CITY OF
ONTARIO
PLANNING DEPARTMENT

LAND DEVELOPMENT DIVISION CONDITIONS OF APPROVAL

303 East B Street, Ontario, California 91764 Phone: 909.395.2036 / Fax: 909.395.2420

Date Prepared: 9/20/2023

File No: PDEV22-043

Related Files: PDEV22-051

Project Description: A Development Plan to construct a 6-level parking structure with a total of 821 parking spaces on approximately 2.0-acres of land generally located west of Sultana Avenue at C Street within the OL (Low Intensity Office) and CIV (Civic) zoning districts. APNs: 1048-545-15 and 1048-545-16; **submitted by City initiated.**

Prepared By: Diane Ayala, Senior Planner
Phone: 909.395.2428 (direct)
Email: dayala@ontarioca.gov

The Planning Department, Land Development Section, conditions of approval applicable to the above-described Project, are listed below. The Project shall comply with each condition of approval listed below:

1.0 Standard Conditions of Approval. The project shall comply with the *Standard Conditions for New Development*, adopted by City Council Resolution No. 2017-027 on April 18, 2017. A copy of the *Standard Conditions for New Development* may be obtained from the Planning Department or City Clerk/Records Management Department.

2.0 Special Conditions of Approval. In addition to the *Standard Conditions for New Development* identified in condition no. 1.0, above, the project shall comply with the following special conditions of approval:

2.1 Time Limits.

(a) Development Plan approval shall become null and void 2 years following the effective date of application approval, unless a building permit is issued and construction is commenced, and diligently pursued toward completion, or a time extension has been approved by the Planning Director. This condition does not supersede any individual time limits specified herein, or any other departmental conditions of approval applicable to the Project, for the performance of specific conditions or improvements.

2.2 General Requirements. The Project shall comply with the following general requirements:

(a) All construction documentation shall be coordinated for consistency, including, but not limited to, architectural, structural, mechanical, electrical, plumbing, landscape and irrigation, grading, utility and street improvement plans. All such plans shall be consistent with the approved entitlement plans on file with the Planning Department.

(b) The project site shall be developed in conformance with the approved plans on file with the City. Any variation from the approved plans must be reviewed and approved by the Planning Department prior to building permit issuance.

(c) The herein-listed conditions of approval from all City departments shall be included in the construction plan set for project, which shall be maintained on site during project construction.

2.3 Landscaping.

(a) The Project shall provide and continuously maintain landscaping and irrigation systems in compliance with the provisions of Ontario Development Code Division 6.05 (Landscaping).

(b) Comply with the conditions of approval of the Planning Department; Landscape Planning Division.

(c) Landscaping shall not be installed until the Landscape and Irrigation Construction Documentation Plans required by Ontario Development Code Division 6.05 (Landscaping) have been approved by the Landscape Planning Division.

(d) Changes to approved Landscape and Irrigation Construction Documentation Plans, which affect the character or quantity of the plant material or irrigation system design, shall be resubmitted for approval of the revision by the Landscape Planning Division, prior to the commencement of the changes.

2.4 Parking, Circulation and Access.

(a) The Project shall comply with the applicable off-street parking, loading and lighting requirements of City of Ontario Development Code Division 6.03 (Off-Street Parking and Loading).

(b) All drive approaches shall be provided with an enhanced pavement treatment. The enhanced paving shall extend from the back of the approach apron, into the site, to the first intersecting drive aisle or parking space.

(c) The parking facility, including off-street parking and loading spaces, access drives, and maneuvering areas, shall not be used for the outdoor storage of materials and equipment, nor shall it be used for any other purpose than parking.

(d) Parking spaces specifically designated and conveniently located for use by the physically disabled shall be provided pursuant to current accessibility regulations contained in State law (CCR Title 24, Part 2, Chapters 2B71, and CVC Section 22507.8).

(e) Bicycle parking facilities, including bicycle racks, lockers, and other secure facilities, shall be provided in conjunction with development projects pursuant to current regulations contained in CALGreen (CAC Title 24, Part 11). Final design and placement of bicycle parking facilities shall be subject to Planning Department review and approval.

2.5 Site Lighting.

(a) All off-street parking facilities shall be provided with nighttime security lighting pursuant to Ontario Municipal Code Section 4-11.08 (Special Residential Building Provisions) and Section 4-11.09 (Special Commercial/Industrial Building Provisions), designed to confine emitted light to the parking areas. Parking facilities shall be lighted from sunset until sunrise, daily, and shall be operated by a photocell switch.

(b) Unless intended as part of a master lighting program, no operation, activity, or lighting fixture shall create illumination on any adjacent property.

(c) All light fixtures require Planning Department approval prior to installation.

(d) Up-lighting of the structure and lighting of landscape planters are encouraged.

2.6 Mechanical and Rooftop Equipment.

(a) All exterior roof-mounted mechanical, heating and air conditioning equipment, and all appurtenances thereto, shall be completely screened from public view by parapet walls or roof screens that are architecturally treated so as to be consistent with the building architecture.

(b) All ground-mounted utility equipment and structures, such as fire risers, conduit, tanks, transformers, HVAC equipment, and backflow prevention devices, shall be located out of view from a public street, or adequately screened through the use of landscaping and/or decorative low garden walls.

2.7 Security Standards. The Project shall comply with all applicable requirements of Ontario Municipal Code Title 4 (Public Safety), Chapter 11 (Security Standards for Buildings).

2.8 Signs. All Project signage shall comply with the requirements of Ontario Development Code Division 8.1 (Sign Regulations). A sign application shall be completed and submitted to the Planning for review and approval for all exterior signs.

2.9 Sound Attenuation. The Project shall be constructed and operated in a manner so as not to exceed the maximum interior and exterior noise levels set forth in Ontario Municipal Code Title 5 (Public Welfare, Morals, and Conduct), Chapter 29 (Noise).

2.10 Environmental Requirements.

(a) If human remains are found during project grading/excavation/construction activities, the area shall not be disturbed until any required investigation is completed by the County Coroner and Native American consultation has been completed (if deemed applicable).

(b) If any archeological or paleontological resources are found during project grading/excavation/construction, the area shall not be disturbed until the significance of the resource is determined. If determined to be significant, the resource shall be recovered by a qualified archeologist or paleontologist consistent with current standards and guidelines, or other appropriate measures implemented.

2.11 Indemnification. The applicant shall agree to defend, indemnify and hold harmless, the City of Ontario or its agents, officers, and employees from any claim, action or proceeding against the City of Ontario or its agents, officers or employees to attack, set aside, void or annul any approval of the City of Ontario, whether by its City Council, Planning Commission or other authorized board or officer. The City of Ontario shall promptly notify the applicant of any such claim, action or proceeding, and the City of Ontario shall cooperate fully in the defense.

2.12 Additional Fees.

(a) Within 5 days following final application approval, the Notice of Determination ("NOD") filing fee shall be provided to the Planning Department. The fee shall be paid by check, made payable to the "Clerk of the Board of Supervisors", which shall be forwarded to the San Bernardino County Clerk of the Board of Supervisors, along with all applicable environmental forms/notices, pursuant to the requirements of the California Environmental Quality Act ("CEQA"). Failure to provide said fee within the time specified will result in the extension of the statute of limitations for the filing of a CEQA lawsuit from 30 days to 180 days.

(b) Within 5 days following final application approval, the Notice of Exemption ("NOE") filing fee shall be provided to the Planning Department. The fee shall be paid by check, made payable to the "Clerk of the Board of Supervisors", which shall be forwarded to the San Bernardino County Clerk of the Board of Supervisors, along with all applicable environmental forms/notices, pursuant to the requirements of the California Environmental Quality Act ("CEQA"). The filing of a NOE is voluntary; however, failure to provide said fee within the time specified will result in the extension of the statute of limitations for the filing of a CEQA lawsuit from 30 days to 180 days.

2.13 Final Occupancy. The Project Architect of record will certify that construction of each building site and the exterior elevations of each structure shall be completed in compliance with the approved plans. Any deviation to approved plans shall require a resubmittal to the Planning Department for review and approval prior to construction. The Occupancy Release Request Form/Architect Certificate of Compliance shall be provided prior to final occupancy. After the receipt of this Certification, the Planning Department will conduct a final site and exterior elevations inspection. The Owner's Representative and Contractor shall be present.

CITY OF ONTARIO
LANDSCAPE PLANNING DIVISION
303 East "B" Street, Ontario, CA 91764

CONDITIONS OF APPROVAL

Sign Off

	08/16/23
Jamie Richardson, Sr. Landscape Architect	Date

Reviewer's Name: **Jamie Richardson, Sr. Landscape Architect**	Phone: **(909) 395-2615**

D.A.B. File No.: PDEV22-043	Case Planner: Diane Ayala

Project Name and Location:

City Hall Campus – Parking Structure
West of Sultana between D Street and B Street

Applicant/Representative:

City of Ontario – Dan Beers, Principal Project Manager
303 E B Street
Ontario, CA 91764

☒	**Preliminary Plans (dated 7/28/23) meet the Standard Conditions for New Development and have been approved considering that the following conditions below be met upon submittal of the landscape construction documents.**
☐	**Preliminary Plans () have not been approved. Corrections noted below are required before Preliminary Landscape Plan approval.**

A RESPONSE SHEET IS REQUIRED WITH RESUBMITTAL OR PLANS WILL BE RETURNED AS INCOMPLETE.
Landscape construction plans with plan check number may be emailed to:
landscapeplancheck@ontarioca.gov

Civil/ Site Plans

1. Before permit issuance, stormwater infiltration devices located in landscape areas shall be reviewed and plans approved by the Landscape Planning Division. Any stormwater devices in parkway areas shall not displace street trees.
2. The pedestrian circulation between the civic center plaza on the west will be thoughtfully designed to continue the connection from the west to the east side (Euclid Ave to Sultana Ave). Show the crosswalk and show the pathway to the east. Adjust any trees out of the walkway. Consider showing ground cover only in this area since it will be disturbed during the construction of the new Annex building. The final design will be part of the City Hall Annex building design and construction.
3. Show transformers set back 5' from paving all sides. Coordinate with landscape plans.
4. Show backflow devices set back a minimum of 3' from paving on all sides. Locate on level grade.
5. Locate utilities, including light standards, fire hydrants, water, drain, and sewer lines to not conflict with required tree locations—coordinate civil plans with landscape plans.
6. Provide a utility clear space 8' wide in parkways and 30' apart for street trees. Move water meters, drain lines, and light standards to the utility minimum spacing and show utility lines at the edges of the parkway, toward the driveway apron, to allow space for street trees.
7. Note for compaction to be no greater than 85% in landscape areas. All finished grades at 1 ½" below finished surfaces. Slopes to be maximum 3:1.

Landscape Plans

8. See #2 for the design of the pedestrian circulation between the civic center and the future use.
9. Show larger accent trees along the eastern elevation; consider tall vertical trees such as

Quercus muehlenbergii or Quercus virginiana.

10. The plant palette shall provide a consistent theme with the adjacent Fire Station; see redlines for the planting plan and palette.
11. Show backflow devices with 36” high strappy leaf shrub screening, trash enclosures, transformers, and a 4’-5’ high evergreen hedge screening. Do not encircle utility; show as masses and duplicate masses in other locations at regular intervals.
12. Locate light standards, fire hydrants, water, and sewer lines to not conflict with required tree locations. Coordinate civil plans with landscape plans.
13. Show all utilities on the landscape plans. Coordinate so utilities are clear of tree locations.
14. Show all easements and identify them.
15. Note on landscape plans: Compaction to be no greater than 85% in landscape areas. All finished grades at 1 ½” below finished surfaces. Slopes to be maximum 3:1.
16. Dimension all planters to have a minimum 5’ wide inside dimension with 6” curbs and 12” wide curbs where parking spaces are adjacent to planters.
17. Show a 6’ diameter of mulch only at new trees; 8’ around existing/protected trees—detail irrigation dripline outside of mulched root zone.
18. Limit use of Carex (difficult to maintain in masses). Coordinate during plan check with the planting palette for the Fire Station #1.
19. Call out the type of proposed irrigation system (dripline and pop-up stream spray tree bubblers with PCS). Include preliminary MAWA calcs. Proposed water use must meet the water budget.
20. Show landscape hydrozones on plan or legend with plants per WUCOLS. Moderate water plants may be used for part shade north and east-facing locations, low water plants everywhere else.
21. Overhead spray systems shall be designed for plant material less than the height of the spray head.
22. Provide agronomical soil testing and include a report on landscape construction plans.
23. Construction plans shall be designed and signed by a licensed landscape architect.
24. Show minimum on-site tree sizes per the Landscape Development standards; see the Landscape Planning website. 5% 48” box, 10% 36 box, 30% 24” box, 55% 15 gallon.
25. Show 25% of trees as California native (Platanus racemosa, Quercus agrifolia, Quercus wislizenii, Quercus douglasii, Cercis occidentalis, etc.) in appropriate locations.
26. Landscape construction plans shall meet the requirements of the Landscape Development Guidelines. See http://www.ontarioca.gov/landscape-planning/standards

CITY OF ONTARIO
MEMORANDUM

TO: **Diane Ayala, Senior Planner**
Planning Department

FROM: **Paul Ehrman, Sr. Deputy Fire Chief/Fire Marshal**
Fire Department

DATE: **July 6, 2023**

SUBJECT: **PDEV22-043 - A Development Plan to construct a 276,420 square foot 6 level parking structure on approximately 1.07 acres land, within the Light Office and Civic zoning districts, located on the west side of Sultana Avenue near C Street. APN:1048-541-15.**

☒ The plan **<u>does</u>** adequately address Fire Department requirements at this time.

- ☒ Standard Conditions of Approval apply, as stated below.

<u>SITE AND BUILDING FEATURES:</u>

A. 2019 CBC Type of Construction: Not Listed

B. Type of Roof Materials: Concrete

C. Ground Floor Area(s): Not Listed

D. Number of Stories: 6

E. Total Square Footage: 276,420 Sq. Ft.

F. 2019 CBC Occupancy Classification(s): S2

CONDITIONS OF APPROVAL:

1.0 GENERAL

☒ 1.1 The following are the Ontario Fire Department (“Fire Department”) requirements for this development project, based on the current edition of the California Fire Code (CFC), and the current versions of the Fire Prevention Standards (“Standards.”) It is recommended that the applicant or developer transmit a copy of these requirements to the on-site contractor(s) and that all questions or concerns be directed to the Bureau of Fire Prevention, at (909) 395-2029. For copies of Ontario Fire Department Standards please access the City of Ontario web site at www.ontarioca.gov/Fire/Prevention.

☒ 1.2 These Fire Department conditions of approval are to be included on any and all construction drawings.

2.0 FIRE DEPARTMENT ACCESS

☒ 2.1 Fire Department vehicle access roadways shall be provided to within 150 ft. of all portions of the exterior walls of the first story of any building, unless specifically approved. Roadways shall be paved with an all-weather surface and shall be a minimum of twenty-four (24) ft. wide. See Standard #B-004.

☒ 2.2 In order to allow for adequate turning radius for emergency fire apparatus, all turns shall be designed to meet the minimum twenty five feet (25’) inside and forty-five feet (45’) outside turning radius per Standard #B-005.

☒ 2.3 Fire Department access roadways that exceed one hundred and fifty feet (150’) in length shall have an approved turn-around per Standard #B-002.

☒ 2.4 Access drive aisles which cross property lines shall be provided with CC&Rs, access easements, or reciprocating agreements, and shall be recorded on the titles of affected properties, and copies of same shall be provided at the time of building plan check.

☒ 2.5 "No Parking-Fire Lane" signs and /or red painted curbs with lettering are required to be installed in interior access roadways, in locations where vehicle parking would obstruct the minimum clear width requirement. Installation shall be per Standard #B-001.

☒ 2.6 Security gates or other barriers on fire access roadways shall be provided with a Knox brand key switch or padlock to allow Fire Department access. See Standards #B-003, B-004 and H-001.

☒ 2.7 Any time PRIOR to on-site combustible construction and/or storage, a minimum twenty-four (24) ft. wide circulating all weather access roads shall be provided to within 150 ft. of all portions of the exterior walls of the first story of any building, unless specifically approved by fire department and other emergency services.

3.0 WATER SUPPLY

☒ 3.1 The required fire flow per Fire Department standards, based on the 2019 California Fire Code, Appendix B, is 4000 gallons per minute (g.p.m.) for 4 hours at a minimum of 20 pounds per square inch (p.s.i.) residual operating pressure.

☒ 3.2 Off-site (public) fire hydrants are required to be installed on all frontage streets, at a minimum spacing of three hundred foot (300') apart, per Engineering Department specifications.

☒ 3.3 Buildings that exceed 100,000 square feet in floor area shall provide an onsite looped fire protection water line around the building(s.) The loops shall be required to have two or more points of connection from a public circulating water main.

☒ 3.4 The water supply, including water mains and fire hydrants, shall be tested and approved by the Engineering Department and Fire Department prior to combustible construction to assure availability and reliability for firefighting purposes.

4.0 FIRE PROTECTION SYSTEMS

☒ 4.2 Underground fire mains which cross property lines shall be provided with CC & R, easements, or reciprocating agreements, and shall be recorded on the titles of affected properties, and copies of same shall be provided at the time of fire department plan check. The shared use of private fire mains or fire pumps is allowable only between immediately adjacent properties and shall not cross any public street.

☒ 4.3 An automatic fire sprinkler system is required. The system design shall be in accordance with National Fire Protection Association (NFPA) Standard 13. All new fire sprinkler systems, except those in single family dwellings, which contain twenty (20) sprinkler heads or more shall be monitored by an approved listed supervising station. An application along with detailed plans shall be submitted, and a construction permit shall be issued by the Fire Department, prior to any work being done.

☒ 4.5 Fire Department Connections (FDC) shall be located on the address side of the building within one hundred fifty feet (150') of a public fire hydrant on the same side of the street. Provide identification for all fire sprinkler control valves and fire department connections per <u>Standard #D-007.</u> Raised curbs adjacent to Fire Department connection(s) shall be painted red, five feet either side, per City standards.

☒ 4.7 Portable fire extinguishers are required to be installed prior to occupancy per <u>Standard #C-001.</u> Please contact the Fire Prevention Bureau to determine the exact number, type and placement required.

5.0 BUILDING CONSTRUCTION FEATURES

☒ 5.1 The developer/general contractor is to be responsible for reasonable periodic cleanup of the development during construction to avoid hazardous accumulations of combustible trash and debris both on and off the site.

☒ 5.2 Approved numbers or addresses shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Multi-tenant or building projects shall have addresses and/or suite numbers provided on the rear of the building. Address numbers shall contrast with their background. See Section 9-1 6.06 of the Ontario Municipal Code and <u>Standards #H-003 and #H-002</u>.

☒ 5.6 Knox ® brand key-box(es) shall be installed in location(s) acceptable to the Fire Department. All Knox boxes shall be monitored for tamper by the building fire alarm system. See <u>Standard #H-001</u> for specific requirements.

CITY OF ONTARIO

MEMORANDUM

TO: **Diane Ayala, Senior Planner**

FROM: **Heather Lugo, MA, PD CET**

DATE: **June 1, 2023**

SUBJECT: **PDEV22-043 - A preliminary Development Plan, for purpose of going out to bid in October 2022, to construct a 276,420 square foot 6 level parking structure on approximately 1.07 acres land, within the Light Office zoning district, located at the northwest corner of Sultana Avenue and C Street. APN:1048-541-15.**

The "Standard Conditions of Approval" contained in Resolution No. 2017-027 apply. The applicant shall read and be thoroughly familiar with these conditions, including but not limited to, the requirements listed below.

- Required lighting for all walkways, driveways, doorways, parking areas, and other areas used by the public shall be provided and operate on photosensor at the prescribed foot-candle levels. This includes but is not limited to areas such as parks, community centers, recreation centers/play areas and paseos. LED lighting will be required for all lighting fixtures. Optimal lighting for visibility and video color rendering is approximately 3000 degrees Kelvin. The lighting shall be as close to 3000 degrees Kelvin as possible. Photometrics shall be provided to the Police Department. Photometrics shall include the types of fixtures proposed and demonstrate that such fixtures meet the vandal-resistant requirement. Planned landscaping shall not obstruct lighting.
- Stairwells shall be constructed to either allow for visibility through the stairwell risers or to prohibit public access to the areas behind stairwells.
- Parking garages, stairwells, blind spots and any hidden areas shall have Convex mirrors to allow for visibility to the areas.
- The Applicant shall install a video surveillance system on the site. Cameras shall cover at a minimum all entry/exits, including pedestrian entries/exits, and the main driveway aisle of each floor. Cameras shall also be placed to cover all stairwells, elevators, and the bicycle storage area. Cameras shall be positioned to maximize the coverage of patrons and vehicles in these areas. Cameras shall record at least 15 frames per second and at a minimum of 720P resolution. Recordings shall be stored for a minimum of 30 days and made available upon request to any member of the Ontario Police Department.

- The Applicant shall comply with all construction site security requirements as stated in the Standard Conditions. This includes the provisions for perimeter lighting, site lighting, fencing and/or uniformed security.

- It is recommended for the Applicant to install “Flock Safety” ALPR (Automated License Plate Recognition) cameras at both vehicle entries/exits. These cameras will be monitored by the Ontario Police Department via the Flock Safety ALPR system.

- Request a “Bicycle Storage Area” for Police Bike Patrol. The storage area shall remain locked and only be accessible using a key, key fob, or entry code and shall not be open for public use. The bicycle storage area shall have 24-hour lighting, which should be maintained and in proper working order. This bicycle storage area shall also have a convex mirror or similar installed to allow for visibility inside the room around any lockers and stored bicycles.

The Applicant is invited to contact Heather Lugo at (909) 408-1074 with any questions or concerns regarding these conditions.

AIRPORT LAND USE COMPATIBILITY PLANNING

CONSISTENCY DETERMINATION REPORT

ONTARIO AIRPORT PLANNING

Project File No.: PDEV22-043
Address: NWC Sultana Avenue & C Street
APN: 1048-541-15
Existing Land Use: Parking Lot and Office
Proposed Land Use: Development Plan to construct a 276,420 SF 6 level Parking Structure
Site Acreage: 1.07
Proposed Structure Height: 60 FT
ONT-IAC Project Review: n/a
Airport Influence Area: ONT

Reviewed By: Lorena Mejia
Contact Info: 909-395-2276
Project Planner: Diane Ayala
Date: 3/27/2023
CD No.: 2022-070
PALU No.: n/a

The project is impacted by the following ONT ALUCP Compatibility Zones:

Safety	Noise Impact	Airspace Protection	Overflight Notification
○ Zone 1	○ 75+ dB CNEL	☐ High Terrain Zone	☐ Avigation Easement Dedication
○ Zone 1A	○ 70 - 75 dB CNEL	☑ FAA Notification Surfaces	☑ Recorded Overflight Notification
○ Zone 2	☐ 65 - 70 dB CNEL	☑ Airspace Obstruction Surfaces	☐ Real Estate Transaction Disclosure
☐ Zone 3	☑ 60 - 65 dB CNEL	☐ Airspace Avigation Easement Area	
○ Zone 4		Allowable Height: 75 - 85 FT	
○ Zone 5			

The project is impacted by the following Chino ALUCP Safety Zones:

☐ Zone 1 ☐ Zone 2 ☐ Zone 3 ☐ Zone 4 ○ Zone 5 ☐ Zone 6

Allowable Height:

CONSISTENCY DETERMINATION

This proposed Project is: ○ Exempt from the ALUCP ○ Consistent ● Consistent with Conditions ○ Inconsistent

The proposed project is located within the Airport Influence Area of Ontario International Airport (ONT) and was evaluated and found to be consistent with the policies and criteria of the Airport Land Use Compatibility Plan (ALUCP) for ONT.

The applicant has been required to file for an Obstruction Evaluation with the FAA and receive a Determination of No Hazard for any cranes or construction equipment that may exceed 75 FT in height.

Airport Planner Signature: Lorena Mejia

CITY OF ONTARIO

ENGINEERING DEPARTMENT CONDITIONS OF APPROVAL

(Land Development Division, Environmental Section, Traffic & Transportation Division, Ontario Municipal Utilities Company, and Broadband Operations & Investment and Revenue Resources Department Conditions incorporated)

☒ **DEVELOPMENT PLAN** ☐ OTHER	☐ PARCEL MAP ☐ FOR CONDOMINIUM PURPOSES	☐ TRACT MAP

PROJECT FILE NO. PDEV22-043

RELATED FILE NO(S). ______

☒ ORIGINAL ☐ REVISED: __/__/__

CITY PROJECT ENGINEER & PHONE NO:	**Jeffrey Tang, P.E. (909) 395-2128**
CITY PROJECT PLANNER & PHONE NO:	**Diane Ayala (909) 395-2428**
DAB MEETING DATE:	**October 2, 2023**
PROJECT DESCRIPTION:	**A Development Plan to construct a 276,640 square foot 6 level parking structure on approximately 1.07 acres of land, within the Light Office and Civic zoning districts, located on the west side of Sultana near C Street.**
LOCATION:	**Northwest corner of Sultana Avenue and C Street**
APPLICANT:	**City of Ontario**
REVIEWED BY:	Raymond Lee 9/28/23 **Raymond Lee, P.E.** **Assistant City Engineer** **Date**
APPROVED BY:	9-28-23 **Khoi Do, P.E.** **City Engineer** **Date**

Last Revised: 9/27/2023

THIS PROJECT SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE GENERAL STANDARD CONDITIONS OF APPROVAL ADOPTED BY THE CITY COUNCIL (RESOLUTION NO. 2017-027) AND THE PROJECT SPECIFIC CONDITIONS OF APPROVAL SPECIFIED HEREIN. ONLY APPLICABLE CONDITIONS OF APPROVAL ARE CHECKED. THE APPLICANT SHALL BE RESPONSIBLE FOR THE COMPLETION OF ALL APPLICABLE CONDITIONS OF APPROVAL PRIOR TO PARCEL MAP APPROVAL, ISSUANCE OF PERMITS AND/OR OCCUPANCY CLEARANCE, AS SPECIFIED IN THIS REPORT.

1. PRIOR TO PARCEL MAP APPROVAL, APPLICANT SHALL:

Check When Complete

☐ 1.01 Dedicate to the City of Ontario, the right-of-way, described below: ☐

Property line corner 'cut-back' required at the intersection of:

☐ 1.02 Dedicate to the City of Ontario, the following easement(s): ☐

☐ 1.03 Restrict vehicular access to the site as follows: ☐

☐ 1.04 Vacate the following street(s) and/or easement(s): ☐

☐ 1.05 Submit a copy of a recorded private reciprocal use agreement or easement. The agreement or easement shall ensure, at a minimum, common ingress and egress and joint maintenance of all common access areas and drive aisles. ☐

☐ 1.06 Provide (original document) Covenants, Conditions and Restrictions (CC&Rs) as applicable to the project and as approved by the City Attorney and the Engineering and Planning Departments, ready for recordation with the County of San Bernardino. The CC&Rs shall provide for, but not be limited to, common ingress and egress, joint maintenance responsibility for all common access improvements, common facilities, parking areas, utilities, median and landscaping improvements and drive approaches, in addition to maintenance requirements established in the Water Quality Management Plan (WQMP), as applicable to the project. The CC&Rs shall also address the maintenance and repair responsibility for public improvements/utilities (sewer, water, storm drain, recycled water, etc.) located within open space/easements. In the event of any maintenance or repair of these facilities, the City shall only restore disturbed areas to current City Standards. ☐

☐ 1.07 For all development occurring south of the Pomona Freeway (60-Freeway) and within the specified boundary limits (per Boundary Map found at *http://tceplumecleanup.com/*), the property developer/owner is made aware of the South Archibald Trichloroethylene (TCE) Plume "Disclosure Letter". Property owner may wish to provide this Letter as part of the Real Estate Transfer Disclosure requirements under California Civil Code Section 1102 et seq. This may include notifications in the Covenants, Conditions and Restrictions (CC&Rs) or other documents related to property transfer and disclosures. Additional information on the plume is available from the Santa Ana Regional Water Quality Control Board at *http://geotracker.waterboards.ca.gov/profile_report?global_id=T10000004658.* ☐

☐ 1.08 File an application for Reapportionment of Assessment, together with payment of a reapportionment processing fee, for each existing assessment district listed below. Contact the Financial Services Department at (909) 395-2124 regarding this requirement. ☐

(1) ______________________________

(2) ______________________________

☐ 1.09 Prepare a fully executed Subdivision Agreement (on City approved format and forms) with accompanying security as required, or complete all public improvements. ☐

☐ 1.10 Provide a monument bond (i.e. cash deposit) in an amount calculated by the City's approved cost estimate spreadsheet (available for download on the City's website: www.ontarioca.gov) or as specified in writing by the applicant's Registered Engineer or Licensed Land Surveyor of Record and approved by the City Engineer, whichever is greater. ☐

☐ 1.11 Provide a preliminary title report current to within 30 days. ☐

☐ 1.12 File an application, together with an initial deposit (if required), to establish a Community Facilities District (CFD) pursuant to the Mello-Roos Community Facilities District Act of 1982. The application and fee shall be submitted a minimum of four (4) months prior to final subdivision map approval, and the CFD shall be established prior to final subdivision map approval or issuance of building permits, whichever occurs first. The CFD shall be established upon the subject property to provide funding for various City services. An annual special tax shall be levied upon each parcel or lot in an amount to be determined. The special tax will be collected along with annual property taxes. The City shall be the sole lead agency in the formation of any CFD. Contact Investment and Revenue Resources at (909) 395-2341 to initiate the CFD application process. ☐

☐ 1.13 Ontario Ranch Developments: ☐

☐ 1) Provide evidence of final cancellation of Williamson Act contracts associated with this tract, prior to approval of any final subdivision map. Cancellation of contracts shall have been approved by the City Council.

☐ 2) Provide evidence of sufficient storm water capacity availability equivalents (Certificate of Storm Water Treatment Equivalents).

☐ 3) Provide evidence of sufficient water availability equivalents (Certificate of Net MDD Availability).

☐ 1.14 Other conditions: ☐

2. PRIOR TO ISSUANCE OF ANY PERMITS, APPLICANT SHALL:

A. GENERAL
(Permits includes Grading, Building, Demolition and Encroachment)

☒ **2.01 Record Parcel Map No. 20683 pursuant to the Subdivision Map Act and in accordance with the City of Ontario Municipal Code.** ☐

☒ **2.02 Submit a PDF of the recorded map to the City Engineer's office.** ☐

☐ 2.03 Note that the subject parcel is a recognized parcel in the City of Ontario per ____________________ ☐

☐ 2.04 Note that the subject parcel is an 'unrecognized' parcel in the City of Ontario and shall require a Certificate of Compliance to be processed unless a deed is provided confirming the existence of the parcel prior to the date of March 4, 1972. ☐

☐ 2.05 Apply for a: ☐

☐ Certificate of Compliance with a Record of Survey;

☐ Lot Line Adjustment (Record a Conforming Deed with the County of San Bernardino within six months of the recordation of the Lot Line Adjustment to conform the new LLA legal description. Submit a copy of the recorded Conforming Deed to the Engineering Department.);

☐ Make a Dedication of Easement.

☐ 2.06 Provide (original document) Covenants, Conditions and Restrictions (CC&R's), as applicable to the project, and as approved by the City Attorney and the Engineering and Planning Departments, ready for recordation with the County of San Bernardino. The CC&R's shall provide for, but not be limited to, common ingress and egress, joint maintenance of all common access improvements, common facilities, parking areas, utilities and drive approaches in addition to maintenance requirements established in the Water Quality Management Plan (WQMP), as applicable to the project. ☐

☐ 2.07 For all development occurring south of the Pomona Freeway (60-Freeway) and within the specified boundary limits (per Boundary Map found at *http://tceplumecleanup.com/*), the property developer/owner is made aware of the South Archibald Trichloroethylene (TCE) Plume "Disclosure Letter". Property owner may wish to provide this Letter as part of the Real Estate Transfer Disclosure requirements under California Civil Code Section 1102 et seq. This may include notifications in the Covenants, Conditions ☐

and Restrictions (CC&Rs) or other documents related to property transfer and disclosures. Additional information on the plume is available from the Santa Ana Regional Water Quality Control Board at *http://geotracker.waterboards.ca.gov/profile_report?global_id=T10000004658*.

☒ **2.08** **Submit a soils/geology report.** ☐

☐ 2.09 Other Agency Permit/Approval: Submit a copy of the approved permit and/or other form of approval of the project from the following agency or agencies: ☐

- ☐ State of California Department of Transportation (Caltrans)
- ☐ San Bernardino County Road Department (SBCRD)
- ☐ San Bernardino County Flood Control District (SBCFCD)
- ☐ Federal Emergency Management Agency (FEMA)
- ☐ Cucamonga Valley Water District (CVWD) for sewer/water service
- ☐ United States Army Corps of Engineers (USACE)
- ☐ California Department of Fish & Game
- ☐ Inland Empire Utilities Agency (IEUA)
- ☐ Other: ________

☐ 2.10 Dedicate to the City of Ontario the right-of-way described below: ☐

☐ 2.11 Dedicate to the City of Ontario the following easement(s): ☐

☐ 2.12 Vacate the following street(s) and/or easement(s): ☐

☐ 2.13 Ontario Ranch Developments: ☐

☐ 1) Submit a copy of the permit from the San Bernardino County Health Department to the Engineering Department and the Ontario Municipal Utilities Company (OMUC) for the destruction/abandonment of the on-site water well. The well shall be destroyed/abandoned in accordance with the San Bernardino County Health Department guidelines.

☐ 2) Make a formal request to the City of Ontario Engineering Department for the proposed temporary use of an existing agricultural water well for purposes other than agriculture, such as grading, dust control, etc. Upon approval, the Applicant shall enter into an agreement with the City of Ontario and pay any applicable fees as set forth by said agreement.

☐ 3) Design proposed retaining walls to retain up to a maximum of three (3) feet of earth. In no case shall a wall exceed an overall height of nine (9) feet (i.e. maximum 6-foot high wall on top of a maximum 3-foot high retaining wall.

☐ 2.14 Submit a security deposit to the Engineering Department to guarantee construction of the public improvements required herein valued at _____% of the approved construction cost estimate. Security deposit shall be in accordance with the City of Ontario Municipal Code. Security deposit will be eligible for release, in accordance with City procedure, upon completion and acceptance of said public improvements. ☐

☐ 2.15 The applicant/developer shall submit all necessary survey documents prepared by a Licensed Surveyor registered in the State of California detailing all existing survey monuments in and around the project site. These documents are to be reviewed and approved by the City Survey Office. ☐

☐ 2.16 Pay all Development Impact Fees (DIF) to the Building Department. Storm Drain Development Impact Fee, approximately __________, shall be paid to the Building Department. Final fee shall be determined based on the approved site plan and the DIF rate at the time of payment. ☐

☐ 2.17 Other conditions: ☐

B. PUBLIC IMPROVEMENTS
(See attached Exhibit 'A' for plan check submittal requirements.)

☒ **2.18** **Design and construct full public improvements in accordance with the City of Ontario Municipal Code, current City standards and specifications, master plans and the adopted specific plan for the area, if any. These public improvements shall include, but not be limited to, the following (checked boxes):** ☐

Improvement	Sultana Ave	Cherry Ave/ Drive Aisle (Private)		
Curb and Gutter	☐ New; ___ ft. from C/L ☐ Replace damaged ☐ Remove and replace	☒ **New; Varies. from C/L[1]** ☐ Replace damaged ☐ Remove and replace	☐ New; ___ft. from C/L ☐ Replace damaged ☐ Remove and replace	☐ New; ___ ft. from C/L ☐ Replace damaged ☐ Remove and replace
AC Pavement	☐ Replacement ☐ Widen ____ additional feet along frontage, including pavm't transitions	☒ **Replacement[2]** ☐ Widen ____ additional feet along frontage, including pavm't transitions	☐ Replacement ☐ Widen ____ additional feet along frontage, including pavm't transitions	☐ Replacement ☐ Widen ____ additional feet along frontage, including pavm't transitions
PCC Pavement (Truck Route Only)	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing
Drive Approach	☒ **New** ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace
Sidewalk	☒ **New** ☐ Remove and replace	☒ **New[1]** ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace
ADA Access Ramp	☒ **New** ☐ Remove and replace	☒ **New** ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace
Parkway	☒ **Trees** ☒ **Landscaping (w/irrigation)**	☒ **Trees[3]** ☒ **Landscaping[3] (w/irrigation)**	☐ Trees ☐ Landscaping (w/irrigation)	☐ Trees ☐ Landscaping (w/irrigation)
Raised Landscaped Median	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace	☐ New ☐ Remove and replace
Fire Hydrant	☒ **New / Upgrade** ☐ Relocation	☒ **New / Upgrade** ☐ Relocation	☐ New / Upgrade ☐ Relocation	☐ New / Upgrade ☐ Relocation

Sewer (see Sec. 2.C)	☐ Main ☐ Lateral	☐ Main ☐ Lateral	☐ Main ☐ Lateral	☐ Main ☐ Lateral
Water (see Sec. 2.D)	☐ Main ☒ **Service**	☒ **Main** ☐ Service	☐ Main ☐ Service	☐ Main ☐ Service
Recycled Water (see Sec. 2.E)	☐ Main ☐ Service	☐ Main ☐ Service	☐ Main ☐ Service	☐ Main ☐ Service
Traffic Signal System (see Sec. 2.F)	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing
Traffic Signing and Striping (see Sec. 2.F)	☒ **New** ☐ Modify existing	☒ **New**[4] ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing
Street Light (see Sec. 2.F)	☐ New / Upgrade ☐ Relocation	☐ New / Upgrade ☐ Relocation	☐ New / Upgrade ☐ Relocation	☐ New / Upgrade ☐ Relocation
Bus Stop Pad or Turn-out (see Sec. 2.F)	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing	☐ New ☐ Modify existing
Storm Drain (see Sec. 2G)	☐ Main ☐ Lateral	☐ Main ☒ **Lateral**[4]	☐ Main ☐ Lateral	☐ Main ☐ Lateral
Fiber Optics (see Sec. 2K)	☒ **Conduit / Appurtenances**	☐ Conduit / Appurtenances	☐ Conduit / Appurtenances	☐ Conduit / Appurtenances
Overhead Utilities	☐ Underground ☐ Relocate	☐ Underground ☐ Relocate	☐ Underground ☐ Relocate	☐ Underground ☐ Relocate
Removal of Improvements				
Other Improvements				

Specific notes for improvements listed in item no. 2.18, above:

1. **Along Cherry Avenue from driveway at B street to the intersection of Cherry Ave and the parking structure entrance.**
2. **AC Replacement at intersection of Cherry Avenue and the parking structure entrance**
3. **Along Cherry Avenue at building frontage.**
4. **At the intersection of Cherry Ave and the parking structure entrance.**

☐ 2.19 Construct a 2" asphalt concrete (AC) grind and overlay on the following street(s): ☐

☐ 2.20 Reconstruction of the full pavement structural section, per City of Ontario Standard Drawing number 1011, may be required based on the existing pavement condition and final street design. Minimum limits of reconstruction shall be along property frontage, from street centerline to curb/gutter. ☐

☐ 2.21 Make arrangements with the Cucamonga Valley Water District (CVWD) to provide
☐ water service to the site. ☐ sewer service to the site.
This property is within the area served by the CVWD and Applicant shall provide documentation to the City verifying that all required CVWD fees have been paid. ☐

☐ 2.22 Overhead utilities shall be under-grounded, in accordance with Title 7 of the City's Municipal Code (Ordinance No. 2804 and 2892). Developer may pay in-lieu fee, approximately __________, for undergrounding of utilities in accordance with Section 7-7.302.e of the City's Municipal Code. ☐

☐ 2.23 Other conditions: ☐

C. SEWER

☐ 2.24 An 8-inch sewer main is available for connection by this project in Cherry Ave.
(Ref: Sewer facility id number: ____________) ☐

☐ 2.25 Design and construct a sewer main extension. A sewer main is not available for direct connection. The closest main is approximately _____ feet away. ☐

☐ 2.26 Submit documentation that shows expected peak loading values for modeling the impact of the subject project to the existing sewer system. The project site is within a deficient public sewer system area. Applicant shall be responsible for all costs associated with the preparation of the model. Based on the results of the analysis, Applicant may be required to mitigate the project impact to the deficient public sewer system, including, but not limited to, upgrading of existing sewer main(s), construction of new sewer main(s) or diversion of sewer discharge to another sewer. ☐

☐ 2.27 Other conditions: ☐

D. WATER

☐ 2.28 An 8-inch water main is available for connection by this project in Sultana Ave.
(Ref: Water facility id number: ____________) ☐

☐ 2.29 Design and construct a water main extension. A water main is not available for direct connection. The closest main is approximately _____ feet away. ☐

☒ 2.30 **Other conditions:** ☐
1. **See attached OMUC Utilities Engineering Division Conditions of Approval**

E. RECYCLED WATER

☐ 2.31 A ______-inch recycled water main is available for connection by this project in __________.
(Ref: Recycled Water plan bar code:_______________) ☐

☐ 2.32 Design and construct an on-site recycled water system for this project. A recycled water main does exist in the vicinity of this project. ☐

☐ 2.33 Design and construct an on-site recycled water ready system for this project. A recycled water main does not currently exist in the vicinity of this project, but is planned for the near future in Sultana Avenue. If Applicant would like to connect to this recycled water main when it becomes available, the cost for the connection shall be borne solely by the Applicant. ☐

☐ 2.34 Submit one (1) electronic copy, in PDF format, of the Engineering Report (ER), for the use of recycled water, to OMUC's Water Quality Programs at OMUCWQPlanCheck@ontarioca.gov for review and subsequent submittal to the California State Water Board (Division of Drinking Water) for final approval. ☐

Note: Review and approval process may take up to three (3) months. Contact the OMUC's Water Quality Programs at (909) 395-2678 or email OMUCWQPlanCheck@ontarioca.gov regarding this requirement.

☐ 2.35 Submit one (1) electronic copy, in PDF format, of the Landscape Plans (on-site & off-site) to OMUC's Water Quality Programs at (OMUCWQPlanCheck@ontarioca.gov for review and approval.

☐ 2.36 Other conditions: ☐

F. TRAFFIC / TRANSPORTATION

☐ 2.37 Submit a focused traffic impact study, prepared and signed by a Traffic/Civil Engineer registered in the State of California. The study shall address, but not be limited to, the following issues as required by the City Engineer: ☐

1. On-site and off-site circulation
2. Traffic level of service (LOS) at 'build-out' and future years
3. Impact at specific intersections as selected by the City Engineer

☐ 2.38 New traffic signal installations shall be added to Southern California Edison (SCE) customer account number # 2-20-044-3877. ☐

☒ **2.39 Other conditions:** ☐

1. **See attached Transportation Division Conditions of Approval**

G. DRAINAGE / HYDROLOGY

☒ **2.40 An 18-inch storm drain main is available to accept flows from this project in Cherry Ave.** ☐

☒ **2.40 Submit a hydrology study and drainage analysis, prepared and signed by a Civil Engineer registered in the State of California. The study shall be prepared in accordance with the San Bernardino County Hydrology Manual and City of Ontario standards and guidelines. Additional drainage facilities, including, but not limited to, improvements beyond the project frontage, may be required to be designed and constructed, by Applicant, as a result of the findings of this study.** ☐

☐ 2.41 An adequate drainage facility to accept additional runoff from the site does not currently exist downstream of the project. Design and construct a storm water detention facility on the project site. 100 year post-development peak flow shall be attenuated such that it does not exceed 80% of pre-development peak flows, in accordance with the approved hydrology study and improvement plans. ☐

☐ 2.42 Submit a copy of a recorded private drainage easement or drainage acceptance agreement to the Engineering Department for the acceptance of any increase to volume and/or concentration of historical drainage flows onto adjacent property, prior to approval of the grading plan for the project. ☐

☐ 2.43 Comply with the City of Ontario Flood Damage Prevention Ordinance (Ordinance No. 2409). The project site or a portion of the project site is within the Special Flood Hazard Area (SFHA) as indicated on the Flood Insurance Rate Map (FIRM) and is subject to flooding during a 100 year frequency storm. The site plan shall be subject to the provisions of the National Flood Insurance Program. ☐

☐ 2.44 Other conditions: ☐

H. STORM WATER QUALITY / NATIONAL POLLUTANT DISCHARGE AND ELIMINATION SYSTEM (NPDES)

☐ 2.46 401 Water Quality Certification/404 Permit – Submit a copy of any applicable 401 Certification or 404 Permit for the subject project to the City project engineer. Development that will affect any body of surface water (i.e. lake, creek, open drainage channel, etc.) may require a 401 Water Quality Certification from the California Regional Water Quality Control Board, Santa Ana Region (RWQCB) and a 404 Permit from the United States Army Corps of Engineers (USACE). The groups of water bodies classified in these requirements are perennial (flow year round) and ephemeral (flow during rain conditions, only) and include, but are not limited to, direct connections into San Bernardino County Flood Control District (SBCFCD) channels. ☐

If a 401 Certification and/or a 404 Permit are not required, a letter confirming this from Applicant's engineer shall be submitted.

Contact information: USACE (Los Angeles District) (213) 452-3414; RWQCB (951) 782-4130.

☒ **2.47 Submit a Water Quality Management Plan (WQMP). This plan shall be approved by the Engineering Department prior to approval of any grading plan. The WQMP shall be submitted, utilizing the current San Bernardino County Stormwater Program template, available at: http://www.sbcounty.gov/dpw/land/npdes.asp.** ☐

☒ **2.48 Design and construct a Connector Pipe Trash Screen or equivalent Trash Treatment Control Device, per catch basin located within or accepting flows tributary of a Priority Land Use (PLU)** ☐

area that meets the Full Capture System definition and specifications, and is on the Certified List of the State Water Resources Control Board. The device shall be adequately sized per catch basin and include a deflector screen with vector control access for abatement application, vertical support bars, and removable component to facilitate maintenance and cleaning.

☒ **2.49 Other conditions:**

A. Activities resulting in land disturbance of one care of more is required to obtain coverage under the Construction General Permit (CGP). The owner is the legally responsible person (LRP) of the site and shall have a Stormwater Pollution Prevention Plan (SWPPP) developed and submitted through the SMARTS website at, https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml

J. SPECIAL DISTRICTS

☐ 2.50 File an application, together with an initial deposit (if required), to establish a Community Facilities District (CFD) pursuant to the Mello-Roos Community Facilities District Act of 1982. The application and fee shall be submitted a minimum of four (4) months prior to final subdivision map approval, and the CFD shall be established prior to final subdivision map approval or issuance of building permits, whichever occurs first. The CFD shall be established upon the subject property to provide funding for various City services. An annual special tax shall be levied upon each parcel or lot in an amount to be determined. The special tax will be collected along with annual property taxes. The City shall be the sole lead agency in the formation of any CFD. Contact Investment and Revenue Resources at (909) 395-2341 to initiate the CFD application process. ☐

☐ 2.51 Other conditions: ☐

K. FIBER OPTIC

☐ 2.52 A ______ fiber optic line is available for connection by this project in D Street and Sultana Avenue. (Ref: Fiber Optic facility id: ______________) ☐

☒ **2.53 Design and construct fiber optic system to provide access to the City's conduit and fiber optic system per the City's Fiber Optic Master Plan. Building entrance conduits shall start from the closest OntarioNet hand hole constructed along the project frontage in the ROW and shall terminate in the main telecommunications room for each building. Conduit infrastructure shall interconnect with the primary and/or secondary backbone fiber optic conduit system at the nearest OntarioNet hand hole.** ☐

☐ 2.53 Refer to the City's Fiber Optic Master Plan for design and layout guidelines. Contact the Broadband Operations Department at (909) 395-2000, regarding this requirement. ☐

☐ 2.54 Other conditions: ☐

3. PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY, APPLICANT SHALL:

☐ 3.01 Set new monuments in place of any monuments that have been damaged or destroyed as a result of construction of the subject project. Monuments shall be set in accordance with City of Ontario standards and to the satisfaction of the City Engineer. ☐

☒ **3.02 Complete all requirements for recycled water usage.** ☐

☐ 1) Procure from the OMUC a copy of the letter of confirmation from the California Department of Public Health (CDPH) that the Engineering Report (ER) has been reviewed and the subject site is approved for the use of recycled water.

☒ **2) Obtain clearance from the OMUC confirming completion of recycled water improvements and passing of shutdown tests and cross connection inspection, upon availability/usage of recycled water.**

☒ **3) Complete education training of on-site personnel in the use of recycled water, in accordance with the ER, upon availability/usage of recycled water.**

☐ 3.03 The applicant/developer shall submit all final survey documents prepared by a Licensed Surveyor registered in the State of California detailing all survey monuments that have been preserved, revised, adjusted or set along with any maps, corner records or Records of Survey needed to comply with these Conditions of Approvals and the latest edition of the California Professional Land Survey Act. These documents are to be reviewed and approved by the City Survey Office. ☐

☐ 3.04 Ontario Ranch Projects: For developments located at an intersection of any two collector or arterial streets, the applicant/developer shall set a monument if one does not already exist at that intersection. Contact the City Survey office for information on reference benchmarks, acceptable methodology and required submittals. ☐

☐ 3.05 Confirm payment of all Development Impact Fees (DIF) to the Building Department. ☐

☒ **3.06 Submit electronic copies (PDF and Auto CAD format) of all approved improvement plans, studies and reports (i.e. hydrology, traffic, WQMP, etc.).** ☐

4. PRIOR TO FINAL ACCEPTANCE, APPLICANT SHALL:

☒ **4.01 Complete all Conditions of Approval listed under Sections 1-3 above.** ☐

☐ 4.02 Pay all outstanding fees pursuant to the City of Ontario Municipal Code, including but not limited to, plan check fees, inspection fees and Development Impact Fees. ☐

☒ **4.03 The applicant/developer shall submit a written request for the City's final acceptance of the project addressed to the City Project Engineer. The request shall include a completed Acceptance and Bond Release Checklist, state that all Conditions of Approval have been completed and shall be signed by the applicant/developer. Upon receipt of the request, review of the request shall be a minimum of 10 business days. Conditions of Approval that are deemed incomplete by the City will cause delays in the acceptance process.** ☐

☒ **4.04 Submit record drawings (PDF) for all public improvements identified within Section 2 of these Conditions of Approval.** ☐

EXHIBIT 'A'

ENGINEERING DEPARTMENT
First Plan Check Submittal Checklist

Project Number: PDEV22-043

The following items are required to be included with the first plan check submittal:

1. ☒ **A copy of this check list**
2. ☐ Payment of fee for Plan Checking
3. ☐ Digital copy of Engineering Cost Estimate (on City form) with engineer's wet signature and stamp.
4. ☒ **Digital copy of project Conditions of Approval**
5. ☒ **Include a PDF (electronic submittal) of each required improvement plan at every submittal.**
6. ☐ Digital copy of Potable and Recycled Water demand calculations (include water demand calculations showing low, average and peak water demand in GPM for the proposed development and proposed water meter size).
7. ☐ Digital copy of Public Street improvement plan with street cross-sections
8. ☐ Digital copy of Public Water improvement plan (include water demand calculations showing low, average and peak water demand in GPM for the proposed development and proposed water meter size)
9. ☐ Digital copy of Recycled Water improvement plan (include recycled water demand calculations showing low, average and peak water demand in GPM for the proposed development and proposed water meter size and an exhibit showing the limits of areas being irrigated by each recycled water meter)
10. ☐ Digital copy of Public Sewer improvement plan
11. ☐ Digital copy of Public Storm Drain improvement plan
12. ☐ Digital copy of Public Street Light improvement plan
13. ☐ Digital copy of Signing and Striping improvement plan
14. ☒ **Digital copy of Fiber Optic plan (include Auto CAD electronic submittal)**
15. ☐ Digital copy of HOA Landscape improvement plans. Show corner sight line distance per engineering standard drawing 1309.
16. ☐ Digital copy of CFD Landscape improvement plans. Show corner sight line distance per engineering standard drawing 1309.
17. ☐ Digital copy of Dry Utility plans within public right-of-way (at a minimum the plans must show existing and ultimate right-of-way, curb and gutter, proposed utility location including centerline dimensions, wall to wall clearances between proposed utility and adjacent public line, street work repaired per Standard Drawing No. 1306. Include Auto CAD electronic submittal)
18. ☐ Digital copy of Traffic Signal improvement plan and One (1) copy of Traffic Signal Specifications with modified Special Provisions. Please contact the Traffic Division at (909) 395-2154 to obtain Traffic Signal Specifications.
19. ☒ **Digital copy of Water Quality Management Plan (WQMP)**
20. ☒ **Digital copy of Hydrology/Drainage study**

21. ☒ **Digital copy of Soils/Geology report**

22. ☐ Payment for Final Map/Parcel Map processing fee

23. ☒ **Digital copy of Recorded Parcel Map 20683**

24. ☐ Digital copy of approved Tentative Map

25. ☐ Digital copy of Preliminary Title Report (current within 30 days)

26. ☐ Digital copy of Traverse Closure Calculations

27. ☐ Digital copy of supporting documents and maps (legible copies): referenced improvement plans (full size), referenced record final maps/parcel maps (full size, 18"x26"), Assessor's Parcel map (full size, 11"x17"), recorded documents such as deeds, lot line adjustments, easements, etc.

28. ☒ **Digital copy of Engineering Report and an electronic file (include PDF format electronic submittal) for recycled water use**

29. ☒ **Digital copy of Precise Grading Plan including public street and public utility improvements**

CITY OF ONTARIO
MEMORANDUM

Development Plan Review
Engineering Department:
Transportation Section

Project: PDEV22-043 (Related File: PMTT22-028) Date: September 28, 2023

Location: Southwest corner of Sultana Ave and D Street (City Hall Parking Structure Project)

By: Jaime Maciel-Carrera
Nathan Kuan
Diego Tapia

The Transportation Division recommends the following to be incorporated into the Project's Conditions-of-Approval:

Conditions:

1. The Applicant/Developer shall install all-way stop at the intersection of Sultana Avenue and Lynn Haven Street.

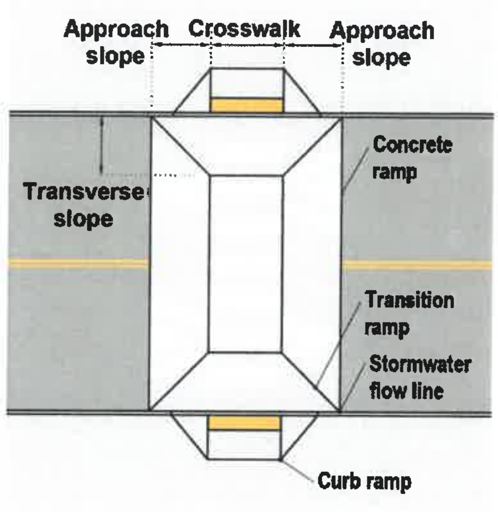
2. The Applicant/Developer shall install all-way stop at the intersection of B Street and Cherry Avenue.

3. The Applicant/Developer shall install stop sign and pavement markings for northbound direction on drive aisle at D Street.

4. The Applicant/Developer shall install all-way stop at the intersection of Cherry Avenue/drive aisle and the parking structure entrance/exit.

5. The Applicant/Developer shall install raised crosswalks at the all-way stop at the intersection of Cherry Avenue/drive aisle and the parking structure entrance/exit.

   a. Utilizing a sloping raised crosswalk, as depicted below, would provide proper drainage. The height of the raised crosswalk should not surpass the curb height to effectively manage surface runoff. See example below form the City of Los Angeles Supplemental Street Design Guidelines. Raised crosswalk shall be designed by the applicant's design engineer.



6. The Applicant/Developer shall install speed bumps along Cherry Avenue/drive aisle between B Street and D Street.

7. The Applicant/Developer shall install speed bumps along east/west drive aisle between Sultana Avenue and Cherry Avenue, south of the future Annex Building.

8. The Applicant/Developer shall install ADA ramps for pedestrian crossing across the drive aisle on D Street at Cherry Avenue.

9. The Applicant/Developer shall install ADA ramps for pedestrian crossings at the intersection of Cherry Avenue/drive aisle and the parking structure entrance/exit.

10. The Applicant/Developer shall install ADA ramps for pedestrian crossings at the intersection of the proposed parking structure driveway and Sultana Avenue. Standard ADA ramps must be installed at the parking structure driveway to accommodate future pedestrian crossings across Sultana Avenue. Modifications may be required to accommodate both ADA ramps and commercial driveway.

11. The Contractor shall be responsible to remove and salvage back to the City the existing decorative bus stop shelter and benches currently on the westside of Sultana Avenue, south of D Street. The Contractor shall also be responsible to abandon and remove bus stop shelter lighting conduit/wiring.

12. The Applicant/Developer shall be responsible to design and construct street improvements along property frontage streets of Sultana Avenue and D Street in accordance with conditions issued by City's Land Development Division. These, and all other street improvements required herein, shall include, but not be limited to, concrete curb and gutter, sidewalk, LED street lights, signing and striping, and parkway landscaping.

13. The Applicant/Developer shall be responsible to relocate any existing public street lights along its project frontage on Sultana Avenue and D Street conflicting with proposed project driveways. Street light relocations shall be done per City of Ontario Standard Drawing No. 5104.

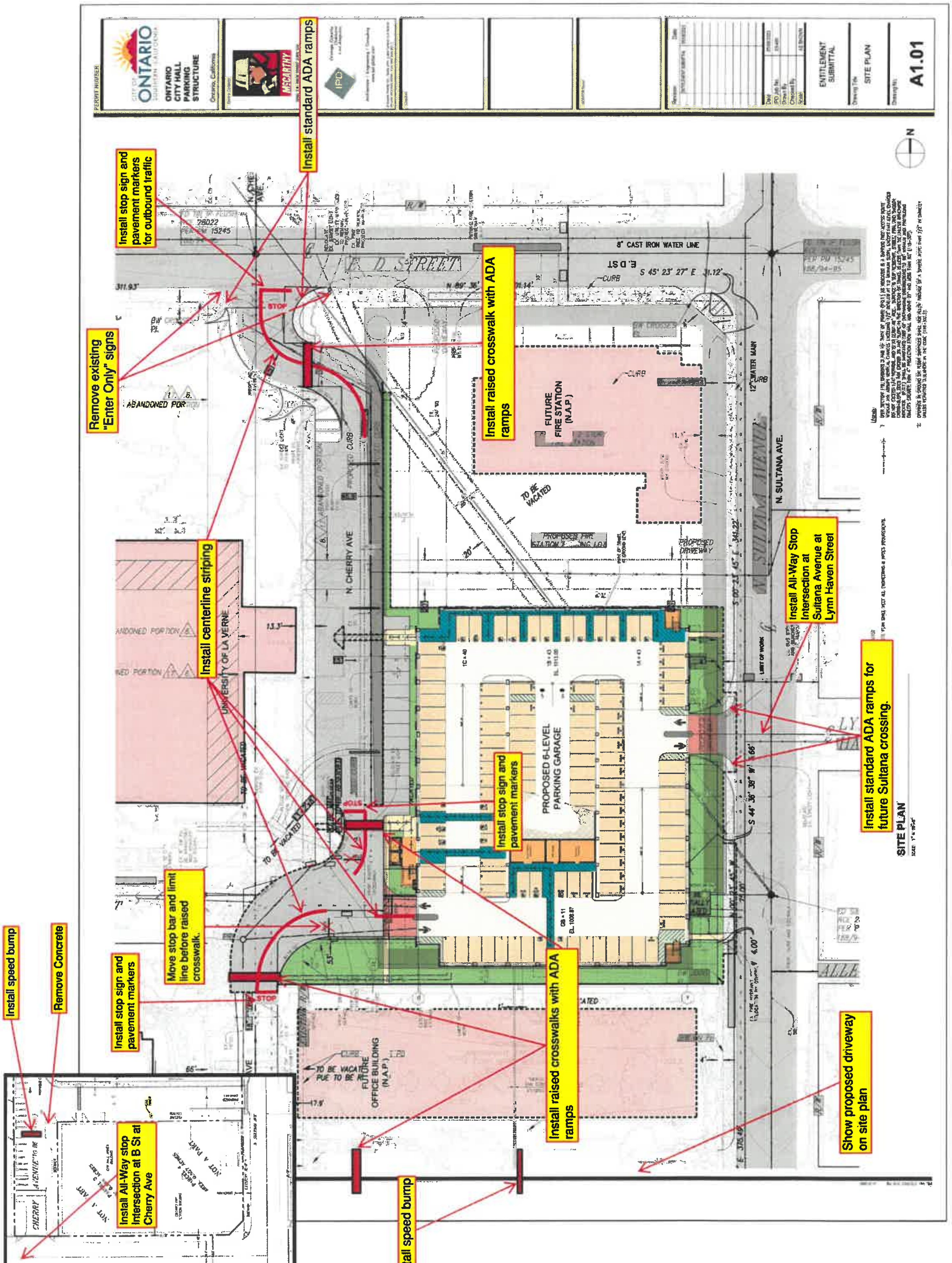
14. Design and construct all proposed driveways in accordance with City of Ontario Standard Drawing No. 1204 for Commercial Driveways.

15. Parking shall be restricted with red curb for a length of 40-feet on both sides of the proposed project driveway onto Sultana Avenue and D Street.

16. All landscaping, block walls, and other obstructions shall be compatible with the stopping sight distance requirements per City of Ontario Standard Drawing No. 1309.

17. The Applicant/Developer's engineer-of-record shall meet with City Engineering staff prior to designing and submitting for plan check the street lighting and signing/ striping design plans to define limits of improvements.

jmc, nk, dt;


CITY OF ONTARIO SOUTHERN CALIFORNIA
ONTARIO CITY HALL PARKING STRUCTURE
Ontario, California
MCCARTHY
IPD
ENTITLEMENT SUBMITTAL
SITE PLAN
A1.01
N
Install standard ADA ramps
Install stop sign and pavement markers for outbound traffic
Remove existing "Enter Only" signs
Install raised crosswalk with ADA ramps
Install centerline striping
Install stop sign and pavement markers
Install All-Way Stop Intersection at Sultana Avenue at Lynn Haven Street
Install standard ADA ramps for future Sultana crossing.
Move stop bar and limit line before raised crosswalk.
Install stop sign and pavement markers
Install raised crosswalks with ADA ramps
Show proposed driveway on site plan
Install speed bump
Remove Concrete
Install speed bump
Install All-Way stop intersection at B St at Cherry Ave
E. D STREET
8" CAST IRON WATER LINE
S 45° 23' 27" E 31.12'
FUTURE FIRE STATION (N.A.P.)
TO BE VACATED
PROPOSED DRIVEWAY
N. CHERRY AVE
N. SULTANA AVE.
12" WATER MAIN
UNIVERSITY OF LA VERNE
ABANDONED PORTION
PROPOSED 6-LEVEL PARKING GARAGE
STOP
FUTURE OFFICE BUILDING (N.A.P.)
TO BE VACATED
CHERRY AVENUE
NOT A PART
SITE PLAN

CITY OF ONTARIO
MEMORANDUM

ONTARIO
MUNICIPAL
UTILITIES
COMPANY

DATE: September 28, 2023
TO: Jeffrey Tang, Engineering Department
CC: Diane Ayala, Planning Department
FROM: Eric Woosley, Utilities Engineering

SUBJECT: DPR#4- Utilities Engineering Condtions of Approval (**#9557**)
PROJECT NO.: PDEV22-043 (City Hall Parking Structure)

BRIEF DESCRIPTION

A Development Plan to construct a 276,420 Square foot 6 level parking structure on approximately 1.07 acres of land, within the Light Office and Civic zoning districts, located at the west side of Sultana Avenue near C Street. APN:1048-541-15).

OMUC UTILITIES ENGINEERING DIVISION CONDITIONS OF APPROVAL

CONDITIONS OF APPROVAL: *The* ***Ontario Municipal Utilities Company (OMUC) Utilities Engineering Division*** *recommends this application for approval subject to the Conditions of Approval outlined below and compliance with the City's Design Development Guidelines, Specifications Design Criteria, and City Standards. The Applicant shall be responsible for the compliance with and the completion of all the following applicable Conditions of Approval prior to the following milestones and subject to compliance with City's Design Development Guidelines, Specifications Design Criteria, and City Standards:*

1. Standard Conditions of Approval: Project shall comply with the requirements as set forth in the Amendment to the Standard Conditions of Approval for New Development Projects adopted by the City Council (Resolution No. 2017-027) on April 18, 2017, or as amended or superseded by Council Resolution; as well as the project-specific conditions/requirements as outlined below.

Prior to Final Map or Parcel Map Approval, the Applicant shall:

Section 1.02: The Applicant shall comply with the following:

2. Dedicate to the City of Ontario, the following easement(s): A Public Utility Easement (PUE) for water and sewer purposes and incidental purposes in Cherry Avenue, from B Street to C Street, and continuing north for sewer purposes to connect to the existing PUE dedicated and recorded as instrument No. 15-547532 of official records. See Section 2.A for PUE requirements and restrictions.

Prior to Issuance of Any Permits (Grading, Building, Demolition and Encroachment), unless other timeline milestones are specified by individual conditions below, the Applicant Shall:

General Conditions (Section 2.A, Other conditions): The Applicant shall comply with the following:

3. Final Utilities Systems Map (USM): Submit a Final Utilities Systems Map (USM) as part of the precise grading plan submittal that meets all the City's USM requirements. These requirements include to show and label all existing and proposed utilities (including all appurtenances such as backflow devices, DCDAs, etc.), sizes, points of connection, and any easements. The final utility design shall comply with all Division of Drinking Water (CCR §64572) Separation Requirements. See *Utility Systems Map (USM) Requirements document* for details.
    a. The proposed utilities, utility alignments, and Public Rights-of-Way (ROW)/Public Utility Easements (PUE) shown on the Conceptual Utilities Systems Map (CUSM) and other Entitlement documents are not considered final and shall be revised during Final Design to meet all City Design Guidelines, Standards, City Requirements, and all the Conditions of Approval contained in this document.

4. Note the following definitions and concepts for Public Utility Improvements and Private Utility Improvements: Public Improvements shall be designed per City Public Design Guidelines and City Standards and constructed through a City Encroachment Permit; and Private Onsite Improvements shall be designed per Building Code and Plumbing Code and constructed through a City Building Permit.
    a. Public Utility Improvements include the following: water main pipelines and sewer main pipelines; sewer laterals connecting to a Public Sewer Main up to the Cleanout (or Manhole) at PL/ROW; water services and connected appurtenances (Meters/Meter Boxes, Fire Hydrants, Airvacs, Blowoffs, etc.) connecting to a Public Water Main per City Standards; and Fire Services connecting to a Public Water Main from the Main up to the DCDA. Public Water Improvements and Public Sewer Improvements are required to be designed and constructed through Public Improvement Plans with Plan View and Profile View per City Standards, Guidelines, and Requirements.
    b. Private Utility Improvements include the following: onsite water plumbing lines after a Public Meter, or after the Fire DCDA and including the DCDA; Backflow Devices and other Cross-Connection Prevention; onsite sewer upstream of the Public Sewer Lateral, including the Cleanout (or Manhole) at PL/ROW/PUE Edge; Monitoring Manholes and other Wastewater Pretreatment Facilities. Private Onsite Utility Improvements are required to be designed and constructed per Building and Plumbing Plans with: the Backflows, DCDAs, Cleanout (or Manhole) at PL/ROW/PUE Edge, and Monitoring Manholes being designed and constructed through a Precise Grading Plan; and, the other Pretreatment Devices (Grease Interceptor, Sand, Oil Interceptors, etc.) and the connections to the buildings and structures through a building Plumbing Plan.
5. Public Utility Easements: Any City of Ontario Public Utilities that will not be installed within the public Right-of-Way (ROW), shall be installed within a Public Utility Easement (PUE) and shall comply with the following requirements (as applicable, these requirements also apply to utilities in Public ROW and Public ROW/PUE combinations):
    a. The PUE shall be a minimum of 20 feet wide, centered on the utility main contained within it with 10 feet of PUE on each side of each main;
    b. The PUE shall be a minimum of 10 feet wide, centered on the utility services/laterals contained within it with 5 feet of PUE on each side of each service/lateral;
    c. The PUE shall be a minimum of 5 feet behind and 5 feet on each side of a water meter box, and 5 feet on each side of water apparatuses (fire hydrants, blowoffs, airvacs, etc.);
    d. The PUE shall not contain any storm water improvements (infiltration, detention, retention, bioswale, etc.), landscaping with thick or intrusive root structures, or any permanent structures or overhangs of permanent structures;
    e. The PUE surface shall be designed to allow vehicle access over and along the full length and width of the utility main by any City maintenance vehicle.

Sewer Conditions (Section 2.C): The Applicant shall comply with the following:

6. N/A

Potable Water Conditions (Section 2.D): The Applicant shall comply with the following:

7. Cherry Avenue Replacement Potable Water Main: Install a new 12-inch minimum water main (1212 PZ) in Cherry Avenue connecting to the existing 12-inch water main in B Street and extending in Cherry Avenue north to the intersection of Cherry Avenue and C Street, and due west connecting to the existing 8-inch water main.
8. Water Main Abandonment in C Street: The existing 8-inch water main in C Street, between Sultana Avenue and Cherry Avenue, shall be slurry filled and abandoned in place, or removed following the construction, activation, and operation of the new water main in Cherry Avenue. Shut down of the existing water main shall be limited to a maximum daily duration of 4 hours, during non-peak hour and non-peak season. Existing services connected to the water main in C Street, which require remaining in service shall be abandoned back to the main, and new connections shall be established to the new water main in Cherry Avenue. Existing services and appurtenances (fire hydrants, blowoffs, airvacs, fire services, and meter/meter-box, etc.) connected to the existing water main cannot be reused for the new replacement main; services and appurtenances connecting to the main in Cherry Avenue must be installed new per the corresponding City Standard.
9. Water Service with Meter and Backflow Prevention Assembly Reduced Pressure Device: Install a water service and meter connected to the existing 12-inch potable water main in Sultana Avenue per City of Ontario Standards. The water service shall be equipped with a backflow prevention device. The water meter shall be located within the ROW. The water service shall provide irrigation services as well as non-sewer return domestic services.

10. Fire Hydrants: There are two (2) existing fire hydrants connected to the existing 8-inch water main in C Street.
    a. The fire hydrant located at the southwest corner of C Street and Sultana Avenue shall be abandoned to the main and a new fire hydrant shall be installed connected to the existing 12-inch water main in Sultana Avenue in accordance with City of Ontario Standard Drawing No.4101.
    b. The riser of the fire hydrant located at the northwest corner of C Street and Cherry Avenue shall be upgraded in accordance with City of Ontario Standard Drawing No.4101.
11. Fire Service with Fire System Double Check Detector Assembly (DCDA): Install a fire service equipped with a DCDA connected to the existing 12-inch water main in Sultana Avenue per City Standard No. 4208.

Recycled Water Conditions (Section 2.E): The Applicant shall comply with the following:

12. N/A

UTILITIES SYSTEMS MAP (USM) REQUIREMENTS:

The USM shall meet, at a minimum, the following requirements:

1. USM Content and Format: The Utilities Systems Maps shall show all existing and proposed Utilities (Potable Water, Recycled Water, Sewer, Storm Drain, and other utilities) including each of the City's public utilities' points of connection to the existing systems. This plan should include::

    a. Format: The Utilities Systems plan at a minimum 1:100 scale (or large engineering scale as appropriate to show needed details) that clearly shows each existing and proposed utility and its relative location. This includes property lines, right-of-way, public utility easements, but should not include underlying existing topography, just proposed general grades. Use appropriate colors for each Utility type: blue for Potable Water; purple for Recycled Water; green for Sanitary Sewer; yellow-brown for storm Drain.

    b. Services and Laterals: All Proposed Utility Service laterals for each parcel (potable water domestic, recycled water irrigation, potable/recycled water for process water, and sewer) and any associated appurtenances.

        i. Meter and Backflow Device Locations: Show all proposed meters and required backflow devices located per City Standards (Water Services and Meters; Backflow Devices). Meters should be located in public rights-of-way or PUEs; either at the R/W (or PUE) line for curb adjacent sidewalks or at back of curb for all other cases. All water connections that serve more than one residential unit are required to have a backflow device installed behind the meter.

    c. Cross Sections **(if applicable, for project construction new public mains)**: Scaled cross sections showing the utility layout on the Utility Systems Map (Utility Plan) for each public street, private street and Public Utility Easement (PUE). The cross sections shall show the location and size of each utility and annotate the property/ROW lines, the type of finished surface material, the distance of each utility from centerline, the depth from finished surface to top of pipe, and the distance between utilities (outside wall to outside wall).

    d. Points of Connections: The locations of the points of connections to the existing utility systems, which can include breaks between the map area and the connection points with descriptions of the pipe size, type, use (pressure zone for water), and distance. An inset map can be used in addition to this to help provide clarity.

    e. Water Demand Table **(if applicable, for projects within Ontario Ranch/NMC)**: Add a Water Demand Table to the Utility Systems Map (Utility Plan) that calculates the project's domestic water use based on land use category (residential, commercial, and OS-R/Parks) and the number of units. The table shall state demand in terms of Average Daily Demand (ADD from Table 4-8 of the Water Master Plan) and Water Demand Equivalents (WDE / Net MDD from Exhibit C-2R of the NMC Construction Agreement; WDEs only if NMC). It should also identify the quantity of units in each category and the specific lots that are included in that category. Please Note that master planned lines are designed using gross acreage densities for all projected water use from residential categories.

        i. See Attached Sheet for WDT Example.

    f. Phasing Plan ***(if applicable)***: As separate exhibits, provide a proposed phasing plan showing the phasing of the infrastructure and the number and type (TOP land use category) of units in each phase.

        i. All phases must have: a connection to public sewer; a two separate looped connections to the potable water system, where no one closing of a main segment results in any part of any of any phase being without potable water.

ii. For public water mains in all phases, dead-end water lines (temporary or permanent) are limited to serving 28 dwelling units or a maximum of 600 linear feet, whichever comes first. Otherwise a looped water system with at least two (2) points of connection to the primary public system is required.

g. Private Onsite Systems versus Public Systems within PUEs for Residential Tract Map Project(***if applicable***): the following requirements apply when to delineating between Private and Public Systems:

i. Current Standard Drawing No. 1304 remains applicable and minimum health separation must be met.

ii. Public water mains will be accepted in longer alleys when it serves more than 6 meters.

iii. Public sewer mains will be accepted in alleys where the water is public.

iv. Public dead-end water mains will require a blow-off at the end and the alley should be designed to accommodate runoff from required water main flushing operations.

v. Public sewer mains in alleys will require a manhole at both ends of the main.

vi. Public meters serving more than one single family residential unit are considered as multifamily service with master meter and require: a backflow device after the meter, private HOA sub-metering for each unit, and a separate Fire Service with DCDA to provide private onsite fire service.