SAN RAFAEL
THE CITY WITH A MISSION

Community Development Department – Planning Division

INTER-DEPARTMENTAL MEMORANDUM

Date: May 8, 2025

To: Project File

From: Kristina Estudillo, Principal Planner

Subject: **CEQA Infill Exemption Memorandum for a proposed 210-unit residential development at 914 Irwin Street, and 545 and 523 4th Street; APNs 014-123-21, -27, and -28; City Case Numbers PLAN24-098 (ED24-22-033 and LLA24-02)**

Summary

The proposed project is an infill residential development on three assessor's parcels (Assessor's Parcel Numbers 014-123-27, 014-123-28 and 014-123-21) totaling 40,200 square feet (0.92 acre) located on the southeast corner of the intersection of Irwin Street and 4th Street in San Rafael. The three parcels are developed with surface parking and one building on each parcel. The project would involve demolition of the three existing buildings and pavement on the project site and construction of a new eight-story residential building with 210 dwelling units; ground level lobby, common areas and amenities; and integrated above-ground, four-level parking garage, applying State of California density bonus waivers for building height, setbacks, and civic areas. The project is subject to approval of an Environmental and Design Review permit by the City of San Rafael Planning Commission and is a project subject to the California Environmental Quality Act (CEQA).

A Class 32 Exemption Report, which serves as the technical documentation for the environmental analysis of the project, was solicited by the City of San Rafael and prepared by Rincon Consultants, Inc., and therefore represents an independent third-party analysis of the project. The report evaluated the project's potential impacts to biological resources, traffic, air quality, noise, and water quality as well as statutory exceptions set forth in Section 15300.2(a-f) that would make the project ineligible for the exemption. The report concluded that the project is eligible for a Class 32 Categorical Exemption with implementation of standard conditions of approval that will be verified through the building permit process (see Attachment 1).

The CEQA Process

CEQA establishes a three-tier environmental review process. The first step is jurisdictional and requires a public agency to determine whether a proposed activity is a "project" as defined in Section 21065 of the CEQA Guidelines. As provided therein, under CEQA a "project" means an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is any of the following:

a. An activity directly undertaken by any public agency.
b. An activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
c. An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

If an activity is defined as a "project, the agency must decide whether the project is exempt from CEQA review under either a statutory or categorical exemption, Articles 18 and 19, respectively. If a project is categorically exempt, it is not subject to CEQA and is processed without an initial study or further CEQA review. (*Holden v. City of San Diego* (2019) 43 Cal.App.5th 404, 409.)

CEQA provides several "categorical exemptions" that are applicable to categories of projects that the Legislature has determined do not pose a risk of significant impacts on the environment. Here, the Project qualifies for the infill exemption pursuant to Title 14 of the California Code of Regulations Section 15332 ("CEQA Guidelines 15332").

The CEQA Infill Exemption

CEQA Guidelines 15332 states that infill development is exempt from CEQA review if it meets the following criteria:

> 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 5 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."

As discussed below, the Project meets each of these criteria and is therefore categorically exempt from CEQA. Furthermore, there are no applicable exceptions to the exemption. As stated above, the below analysis is based on the Class 32 Categorical Exemption Report prepared for the project by Rincon Consultants, Inc and can be found in its entirety in Attachment 1.

> **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 regulation.**

The project site is designated as Downtown Mixed Use by the City of San Rafael General Plan 2040, which allows for residential and commercial uses. This designation includes the highest development intensities in San Rafael and contains a mix of housing, office, retail, service, and public land uses. The project site is also listed in Appendix B: Housing Site Inventory of the San Rafael Housing Element and was identified for future residential development. The proposed project would introduce housing into Downtown San Rafael and includes a mix of housing choices based on affordability, unit type, and size, which will support Downtown's continued growth as a mixed-use neighborhood and quality residential environment. The project includes 192 market rate and 18 deed-restricted affordable housing. The

proposed residential development is consistent with the General Plan designation and with applicable goals, policies and programs of the General Plan, specifically with design-related policies of the Neighborhoods Element and Community Design and Preservation Element as detailed in the General Plan Consistency Table, see Exhibit 4 of the staff report.

The project is a multi-family residential use which is permissible in the T5N 50/70 and the T4N 40/50 zoning districts. The project is consistent with zoning ordinance as detailed in the Zoning Ordinance Consistency Table (Exhibit 3 of the staff report) and Downtown Precise Plan (Exhibit 2 of the staff report). The Project does not seek a height bonus as allowed by the Downtown Precise Plan but does request waivers from the following development standards in order to physically accommodate the density of the Project, including:

- Waiver of 50' height limit in T5N 50/70 and 40' limit in T4N 40/50
- Waiver of 7' front and side street setback at the T4N 40/50 portion of site
- Waiver of 5' side yard setback at the T4N 40/50 portion of site
- Waiver of 15' rear yard setback at the T4N 40/50 portion of site
- Waiver of front and side stepbacks above 35'
- Waiver of civic area

The project does not request any concessions. Overall, therefore, the project is consistent with the applicable general plan designation, general plan policies, and applicable zoning designation and regulations and conditions of project approval would ensure compliance with applicable standards.

While the Project does seek waivers pursuant to the State Density Bonus Law, the use of waivers does not render the infill exemption inapplicable. This issue was squarely addressed and resolved in *Wollmer v. City of Berkeley* (2011) 193 Cal. App. 4th 1329. In *Wollmer*, an opponent of a Berkeley mixed use density bonus project challenged the City's use of the 15332 urban infill exemption on the grounds that the City's modifications and waivers of development standards, as required under the Density Bonus Law, meant that the project was not consistent with existing zoning.

The court rejected the argument, finding that the modifications authorized by the Density Bonus Law did not disqualify the project from claiming the exemption. The court concluded the infill exemption was still appropriate and that environmental review was not required. Waived development standards and regulations are not "applicable" to a qualifying density bonus project.

b) The proposed development occurs within city limits on a project site of no more than 5 acres substantially surrounded by urban uses.

The project site is located on a 0.92-acre parcel within the limits of the city of San Rafael and is surrounded on all sides by urban uses, primarily commercial and mixed-use development. As 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 meets this criterion for a Class 32 exemption.

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

The project site has no value as habitat for endangered, rare, or threatened species. Listed species are defined as species categorized as endangered, rare, or threatened (or as candidates for such designations) under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA). A project site has no value as habitat for listed species if the site lacks suitable habitat and/or

appropriate habitat and micro-habitat constituents for listed species, or if suitable habitat within the project site is outside of the listed species known range.

Due to the developed and disturbed nature of the project site and surroundings, as well as the absence of vegetation or water features on or near the site, the site does not support listed species or their habitat. There is no critical habitat on or adjacent to the site (USFWS 2025a), and the nearest wetland (San Rafael Creek) is approximately 600 feet south of the site (USFWS 2025b). Thus, 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.

The Class 32 Report for the proposed project includes a thorough analysis of analysis of the project's potential effects with respect to traffic, noise, air quality, and water quality. Below is a summary of the report's findings.

Traffic

The Class 32 Report evaluated traffic impacts related to trip generation, Vehicle Miles Traveled (VMT), pedestrian, bicycle and transit facilities, and site access. The valuation was based primarily on a Transportation Impact Study prepared for the project by W-Trans (dated May 2025).

Trip Generation

W-Trans used standard rates published by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021, to estimate the trip generation for the project's proposed uses. Traffic counts were obtained on September 4, September 5, and September 10, 2024 and indicated that the approximately 10,021 square feet of existing office space generated an average of nine trips during the morning peak hour and 15 during the evening peak hour, which translates to rates of 0.90 trips per 1,000 square feet of space for the morning peak hour and 1.50 trips for the evening peak hour. These rates were used to determine the net reduction in trips associated with the elimination of the office space based on an assumption of full project occupancy. The proposed project is estimated to generate an average of 479 trips per day, including 58 a.m. peak hour trips and 57 trips during the p.m. peak hour. After deducting the trips associated with the existing office use, the project is estimated to generate an average of 297 net new trips per day, with 47 more trips during the morning peak hour and an increase of 39 trips during the p.m. peak hour.

Vehicle Miles Traveled

Pursuant to Senate Bill 743, transportation and traffic impacts should be measured using VMT instead of the previously used Level of Service (California Office of Planning and Research [OPR] 2013). Reducing VMT is an effective climate strategy and is intended to decrease greenhouse gas emissions associated with the transportation sector while increasing benefits to human health.

The 2022 City of San Rafael Transportation Analysis Guidelines ("guidelines") include a list of VMT screening thresholds and indicate that projects meeting at least one of the thresholds would be presumed to not require CEQA VMT analysis. Figure 2 in the guidelines provides a map based on outputs from the Transportation Authority of Marin Demand Model that identifies low-VMT areas for residential development in the City of San Rafael. The project location is shown on the map as being in a low-VMT area, indicating that the VMT per capita is at least 15 percent below the average of the nine-county Bay

Area. Therefore, the impact is presumed to be less than significant and does not require a quantitative VMT analysis.

In addition, the project site is located within 0.5-mile of the San Rafael Transit Center and San Rafael Downtown SMART station. Projects in proximity to major transit stops are presumed to have a less-than-significant impact under the VMT standards applied by the State of California and most local lead agencies. Due to the proximity of these transit opportunities as well as a range of transit services in Downtown San Rafael, it can be assumed that many project-generated trips would be made using non-vehicle modes of transportation, which supports the finding from the model data that the site is in a low-VMT area. Because the project is located in a low-VMT area and meets at least one screening threshold, the project's VMT impact is less than significant and no additional VMT analysis is required.

Pedestrian, Bicycle and Transit Facilities

As discussed in the Transportation Impact Study, sidewalks exist along the proposed project frontage on Fourth Street and Irwin Street. The proposed location of the driveway on Fourth Street, rather than its existing location on Irwin Street, which would be eliminated, would result in a beneficial impact in terms of eliminating a potential conflict with pedestrians crossing on the west side of the intersection at Irwin Street/ Fourth Street. Existing bicycle facilities, including a bike route on Fourth Street along the project frontage and separated bike lanes on Grand Avenue, together with shared use of minor streets, provide adequate access for bicyclists, and project would provide adequate bicycle parking. As discussed above, SMART service and numerous bus routes are available within a short walking distance of the project site and provide service to a wide variety of destinations, and existing transit routes are adequate to accommodate project-generated transit trips. Impacts related to pedestrian, bicycle and transit facilities would be less than significant.

Site Circulation and Access

The project would not result in changes to the physical or operational conditions of the roadway that would introduce hazards, and the project impact with regard to these factors would be less than significant. Site access and pick-up/drop-off areas would be appropriately located on Fourth Street to avoid conflicts with vehicle and other traffic on Irwin Street, and driveway design and sight distances would be adequate. Impacts related to emergency access and response times would also be less than significant.

Conclusion

Impacts related to VMT and site circulation and access would be less than significant. The project would meet the requirements for Traffic under criterion (d).

Noise

The project site is in the City of San Rafael, Marin County, in a characteristically urban area subject to noise from nearby Highway 101, local traffic on public streets (4th Street and Irwin Avenue), buses, trains, light rail (Pacific Avenue), construction, and small power equipment (e.g., lawn mowers, edger, etc.). Construction of the project would generate temporary noise that would be audible at nearby single-family residences to the south and east of the project site. Noise associated with construction is a function of the type of construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the construction activities. Based on construction details provided by the applicant, it is estimated that the construction period for all phases would be approximately 27 months.

Construction noise would generate noise levels of up to 104 dBA Lmax at the nearby mixed-use residential property line; however, pursuant to General Plan Program N-1.9B, implementation of the COA

above would be required, ensuring that construction noise would not exceed 89 dBA L_{max} (Harris 1991; Bies, Hansen, Howard 2018) to 89 dBA Lmax. This would be below the construction noise threshold of 90 dBA Lmax. In addition, construction would be limited to hours allowed by the City's Municipal Code Section 8.13.050(A). Impacts would be less than significant.

The project would introduce sources of operational noise to the site, including HVAC. The nearest mixed-use residential building to the south of the project would be exposed to a noise level of 38 dBA from HVAC equipment which would not exceed the nighttime exterior noise standard of 45 dBA Lmax for residential uses. Therefore, impacts would be less than significant.

Traffic noise levels generated along Irwin Street and 4th Street would cause an increase of up to 0.1 dBA Ldn. This would be below the most stringent threshold of 3 dBA Ldn increase from traffic noise. Therefore, impacts would be less than significant.

Operation of the project would not include any substantial vibration sources. Groundborne vibration from construction activities could generate levels of up to 0.830 in/sec PPV at the nearby mixed-use residential building to the south and commercial buildings to the south and east, pursuant to General Plan Program N-1.11A, implementation of the COA above would be required and would decrease to below 0.2 in/sec PPV threshold for structural damage to nearby residential structures and the 0.3 in/sec PPV threshold for structural damage to nearby commercial buildings. Therefore, impacts would be less than significant.

There are no airports within two miles of the project site and there would be no impact.

Conclusion

Impacts related to noise would be less than significant with implementation of conditions of approval and the project would meet the requirements for Noise under criterion (d).

Air Quality

Construction Emissions

Construction activities associated with development of the project would temporarily generate emissions associated with diesel-powered construction equipment and fugitive dust. Construction emissions modeled include emissions generated by construction equipment used on the site and emissions generated by vehicle trips associated with construction, such as worker, hauling, and vendor trips. Table 8 summarizes the estimated maximum daily average emissions of ROG, NO_X, CO, PM_{10} exhaust, $PM_{2.5}$ exhaust, and sulfur oxide (SO_x) during project construction. As shown in Table 8, project construction emissions for criteria pollutants would be below the BAAQMD average daily thresholds and therefore would be less than significant.

Operational Emissions

Operation of the project would generate criteria air pollutant emissions associated with area sources (e.g., architectural coatings, consumer products, and landscaping equipment) and mobile sources (i.e., vehicle trips to and from the project site). Long-term emissions associated with project operation are shown in Table 9. Emissions would not exceed BAAQMD daily or annual thresholds for any criteria pollutant. Since project emissions would not exceed BAAQMD thresholds for construction or operation, the project would not violate an air quality standard or result in a cumulatively considerable net increase in criteria pollutants and impacts would be less than significant. Overall, the proposed project would not result in significant air quality impacts.

Conclusion

Impacts related to air quality would be less than significant with implementation of conditions of approval and the project would meet the requirements for Air under criterion (d).

Table 1 Project Construction Emissions

	Average Daily Emissions (lbs/day)					
Construction Year	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (exhaust)**	**$PM_{2.5}$ (exhaust)**
2025	1	1	3	<1	<1	<1
2026	1	6	14	<1	<1	<1
2027	9	7	16	<1	<1	<1
2028	<1	<1	<1	<1	<1	<1
Maximum Average Daily Emissions	9	7	16	<1	<1	<1
BAAQMD Thresholds (average daily emissions)	54	54	N/A	N/A	82	54
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**

N/A = not applicable (no BAAQMD threshold for CO or SO_X)

Source: Rincon Consultants, Inc 2025.

Table 2 Project Operational Emissions

	Average Daily Emissions (lbs/day)					
Sources	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Mobile	2	1	10	<1	2	1
Area	7	<1	16	<1	<1	<1
Energy	<1	1	<1	<1	<1	<1
Maximum Average Daily Emissions	9	2	26	<1	2	1
BAAQMD Thresholds (average daily emissions)	54	54	N/A	N/A	82	54
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**
Maximum Annual Emissions	1	<1	3	<1	<1	<1
BAAQMD Thresholds (maximum annual emissions)	10	10	N/A	N/A	15	10
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**

N/A = not applicable (no BAAQMD threshold for CO or SO_X)

Source: Rincon Consultants, Inc 2025.

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

The project site is located within the City of San Rafael and would continue to be adequately served by City and regional services. The Property is currently being served and water service would continue to be provided by the Marin Municipal Water District (MMWD), though the purchase of additional water allotment will be required. The proposed project is consistent with the expected growth in the Downtown Precise Plan and the EIR prepared for the 2040 General Plan and Downtown Precise Plan concluded that MMWD will have sufficient water supply to meet the demand for buildout of the San Rafael Downtown Precise Plan pursuant to the MMWD Water Resources Plan 2040 (March 2017) and would neither exceed planned levels of supply nor require building new water treatment facilities or expanding existing facilities beyond what is currently planned. Therefore, the proposed project would not have a significant effect on electricity or water utility services.

Wastewater service would be provided by the San Rafael Sanitation District. The EIR for the General Plan and Downtown Precise Plan concluded that the expected increase in downtown population as a result of the plans would not exceed the permitted capacity of the Central Marin Sanitation Agency's wastewater treatment plant or have other significant impacts to wastewater. The proposed project is consistent with the proposed Downtown Precise Plan and, therefore, the proposed project would not have a significant effect on wastewater. As the proposed project is within the planned development of the area and can be served by all utilities and would exceed the capacity of or require the construction or expansion of new utility services, it can be concluded that the project can be adequately served by all required utilities and public services.

Conclusion

Impacts related to utilities and public services would be less than significant with implementation of conditions of approval and the project would meet the requirements for Utilities and Public Services under criterion (d).

No Exceptions to the Exemption Apply

If a project qualifies for use of a categorical exemption, then the lead agency must determine whether the categorical exemption is unavailable because the project is subject to an exception to the categorical exemptions. (CEQA Guidelines § 15300.2.) A project will not qualify as exempt if it is subject to one of the six exceptions provided below:

> **(a) Location.** Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located.
>
> **(b) Cumulative Impact.** All exemptions are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.
>
> **(c) Significant Effect.** 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.
>
> **(d) Scenic Highways**. A categorical exemption shall not be used for a project which may result in damage to scenic resources within a highway officially designated as a state scenic highway.
>
> **(e) 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.

(f) 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.

As described below, none of the exceptions to the exemption apply.

a. Location. Section 15300.2(a) does not apply to a Class 32 infill exemption.

b. Cumulative Impact. The Class 32 Report prepared for the project evaluated cumulative impacts related to successive projects of the same type in the same place. The project would not affect sensitive biological resources and therefore would not result in a cumulative impact related to biological resources. As noted in the report, VMT and air quality analyses already take into account cumulative impacts and these impacts were found to be less than significant. The proposed project would not contribute pollutants such that water quality would be impacted and would be served by available utilities and public services. The project would not result in a cumulatively considerable contribution to potential cumulative impacts.

The project would involve temporary noise and vibration during construction; however, these effects are localized and would cease upon cessation of construction activities. Construction noise impacts would not perceptibly overlap for the proposed project and the projects listed above, given their distance from the site; the other projects are over 0.25-miles from the project site. Noise attenuates over distance and as a result of intervening buildings and topography, and construction noise from other projects would not be substantially perceptible at the project site. Overall, the project would not result in a significant contribution to potential cumulative impacts. Therefore, this exception does not apply to the proposed project.

c. Significant Effect and Unusual Circumstances. CEQA Guidelines Section 15300.2 states that "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 site is a level, paved and developed site in an urbanized area surrounded by other development. Neither the site, its surroundings, or the proposed project itself (a residential project on a level site in an urban area) are unusual in terms of existing conditions, land uses or proposed features. The potential presence of cultural resources is not uncommon or unusual in urban neighborhoods in the Bay Area, and as discussed further below, impacts related to cultural resources would be less than significant with implementation of existing City regulations. The project site does not possess characteristics which would qualify as unusual circumstances under CEQA Guidelines Section 15300.2. There are no known unusual circumstances at the project site or related to project operations that would result in a reasonable possibility of significant effects on the environment. Therefore, this exception to a Categorical Exemption does not apply to the proposed project.

d. Scenic Highways. Section 15300.2(d) does not apply because the project site is not in proximity or visible to any designated scenic highway or highway eligible for designation based on the State of California's Scenic Highway program.

e. Hazardous Waste Sites. The site is not a hazardous waste site and is not included on a list compiled pursuant to Section 65962.5 of the Government Code (DTSC 2024, SWRCB 2024). This exception is not applicable to the proposed project.

f. Historical resources.

CEQA Guidelines Section 15300.2(f) states that a categorical exemption “shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.” Rincon Consultants prepared a Cultural Resources Assessment for the project site in March of 2025. The assessment included background and archival research, a California Historical Resources Information System (CHRIS) records search, a Sacred Lands File (SLF) search, field survey, and two California Register of Historical Resources (CRHR) and City of San Rafael Landmark evaluations to identify historical resources, as defined by CEQA Section 15064.5(a), within the project site.

Rincon determined that the existing buildings on the site are ineligible for listing in the CRHR or as City of San Rafael Landmarks due to lack of historical and architectural significance and are therefore not historical resources as defined by CEQA. The project site, as discussed in the Cultural Resources Assessment, is sensitive for archaeological resources based on findings of the CHRIS records search; grading and inadvertent discovery of archaeological resources is a possibility whenever earthwork is involved.

The City has adopted a number of policies and regulations to protect cultural and historical resources, including

- San Rafael General Plan 2040 Policy CDP-5.13
- Resolution No. 10980.
- San Rafael Code of Ordinances Chapter 2.19 - Archeological Resources Protection

With application of existing City regulations and standard conditions of approval to ensure consistency with these policies and regulations, the proposed project would not result in an adverse change to the significance of a historical resource and this exception is not applicable to the proposed project.

Conclusion

Based on this analysis, the proposed 930 Irwin Street Residential Project meets the criteria for a Class 32 Categorical Exemption pursuant to Section 15332 of the State CEQA Guidelines and is exempt from CEQA pursuant to CEQA Guidelines Article 19.

Attachments:

1. Class 32 Categorical Exemption Report, dated May 2025, prepared by Rincon Consultants, Inc

930 Irwin Street Residential Project

Class 32 Categorical Exemption Report

prepared for

City of San Rafael
Community and Economic Development Department
1400 5th Avenue
San Rafael, California 94901
Contact: Kristina Estudillo, AICP, Principal Planner

prepared with the assistance of

Rincon Consultants, Inc.
66 Franklin Street, Suite 300
Oakland, California 94607

May 2025

RINCON CONSULTANTS, INC. SINCE 1994

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1 Introduction

This report serves as the technical documentation of an environmental analysis performed by Rincon Consultants, Inc. for the proposed 930 Irwin Street Residential Project in San Rafael, California. The intent of the analysis is to document whether the project is eligible for a Class 32 Categorical Exemption (CE) pursuant to *CEQA Guidelines* Section 15332. The report provides an introduction, project description, and evaluation of the project's consistency with the requirements for a Class 32 exemption. This includes an analysis of the project's potential impacts in the areas of biological resources, traffic, air quality, noise, water quality, and historic resources. The report concludes that the project is eligible for a Class 32 CE.

The *CEQA Guidelines* in Section 15332 states that a CE is allowed when:

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.

Additionally, *CEQA Guidelines* Section 15300.2 outlines exceptions to the applicability of a CE, including cumulative impacts, significant effects due to unusual circumstances, scenic highways, hazardous waste sites, and impacts to historical resources. A full listing of these exceptions and an assessment of their applicability to the proposed project is provided in this report.

Rincon Consultants, Inc. evaluated the project's consistency with the above requirements, including its potential impacts in the areas of biological resources, traffic, noise, air quality, and water quality as well as the applicability of the exceptions to use of a Class 32 CE, to confirm the project's eligibility for a Class 32 CE.

2 Project Location and Description

2.1 Project Location and Existing Conditions

The project site encompasses three assessor's parcels (Assessor's Parcel Numbers 014-123-27, 014-123-28 and 014-123-21) totaling 40,200 square feet (0.92 acres) located on the southeast corner of the intersection of Irwin Street and Fourth Street in San Rafael. The site is one block east of U.S. 101, which is elevated above the surface streets in this part of the city. The San Rafael bus transit center and the San Rafael Sonoma-Marin Area Rail Transit (SMART) station are approximately two blocks west of the project site on the far side of U.S. 101.

The three parcels are currently developed with surface parking and one building on each parcel:

- 523 Fourth Street – two-story, 6,088 square-foot commercial building. This parcel has frontage on Fourth Street.
- 535-545 Fourth Street – two-story, 3,682 square-foot commercial building. This parcel is on a corner and has frontage on Fourth Street and Irwin Street.
- 910 Irwin Street – two-story, 4,348 square-foot commercial building. This parcel has frontage on Irwin Street.

The project site is generally level, and landscaping consists mainly of planter strips and several trees in the surface parking areas. Photographs of the project site are included in Appendix E to this report, in Attachment 4 to the Cultural Resources Letter Report.

The entire project site has a City of San Rafael General Plan land use designation of Downtown Mixed Use.

The two parcels with frontage on Irwin Street (the corner parcel, at 535-545 Fourth Street, and the parcel at 910 Irwin Street) are zoned T5N 50/70. The parcel with frontage only on Fourth Street (523 Fourth Street) is zoned T4N 40/50. As described in the Downtown San Rafael Precise Plan, the T4 district is intended to be "A walkable neighborhood environment of small-to-medium footprint, moderate-intensity mixed-use buildings and housing choices, supporting and within short walking distance of neighborhood-serving retail and services. This zone provides a transition in scale between the Downtown and adjacent residential neighborhoods." The T5 district is intended to be "A walkable neighborhood environment of large footprint, high-intensity mixed-use buildings, supporting and within short walking distance of neighborhood shopping, services, and transit."

Figure 1 shows the project site in a regional context and Figure 2 shows an aerial view of the project site at a local scale.

Figure 1 Regional Project Location

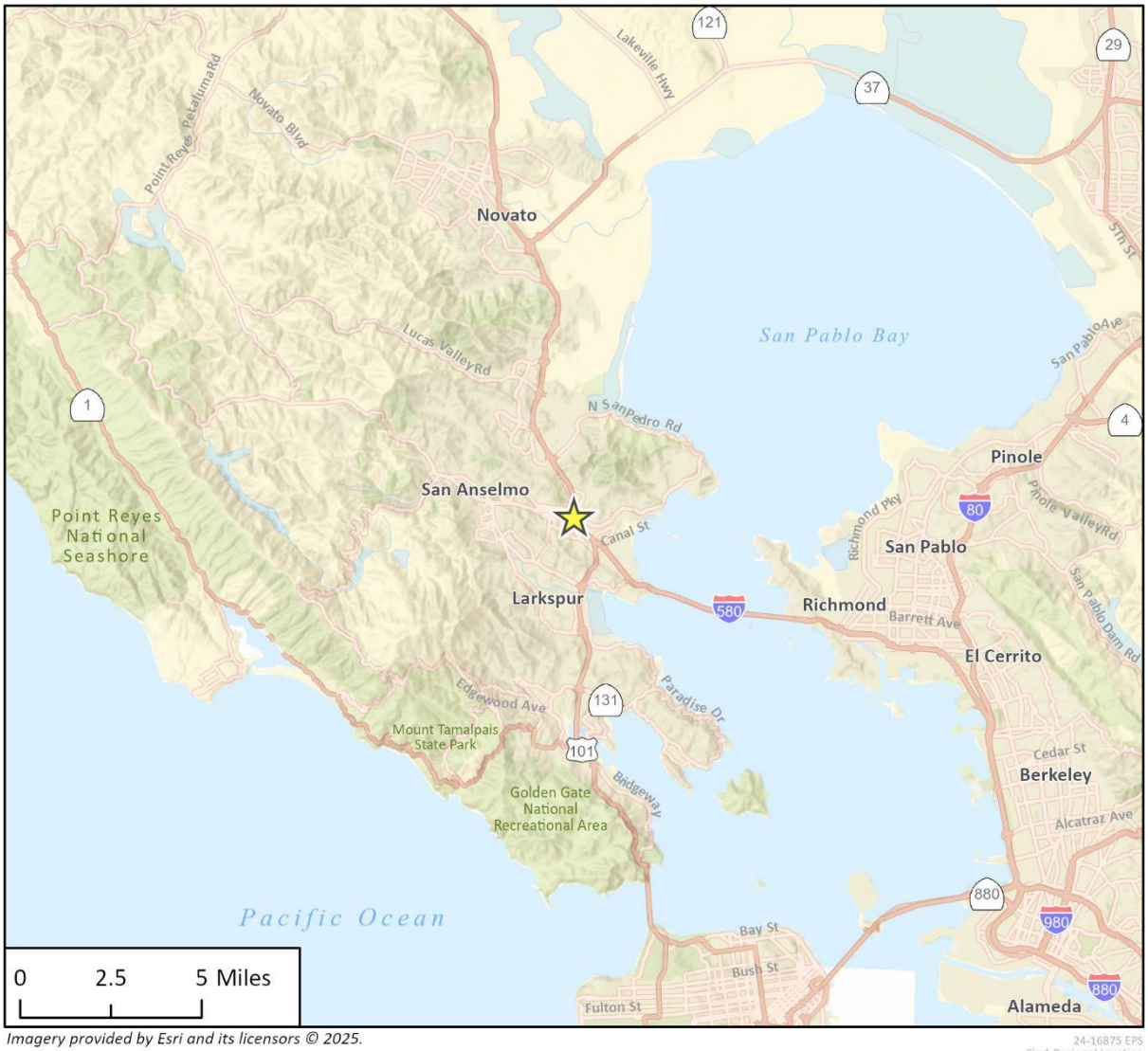


Figure 2 Project Site Location

Imagery provided by Microsoft Bing and its licensors © 2025.

24-16875 EPS
Fig 2 Project Location

2.2 Project Description

The project would involve demolition of the three existing buildings and pavement on the project site and construction of a new eight-story residential building with 210 dwelling units; ground level lobby, common areas and amenities; and integrated above-ground, four-level parking garage, and requesting State of California density bonus waivers for building height, stepbacks, required civic space, and setbacks.

Table 1 shows the characteristics of the proposed project and Figure 3 shows the proposed site plan.

Table 1 Project Characteristics

Characteristic	Project Details
Assessor's Parcel Numbers	014-123-27, 014-123-28 and 014-123-21
Lot Size	40,200 SF
Height	86 feet
Residential Units	210 units, mix of studio, 1-bedroom, 2-bedroom and 3-bedroom
Total Floor Area	288,318 SF
Parking	Vehicles: 222 spaces on four above-ground levels Bicycles: 342 spaces at ground level

SF = square feet

Source: Trachtenberg Architects December 2024

Site Access, Parking, and Circulation

Vehicular access to the site would be taken via an approximately 27.5-foot-wide driveway into the parking garage from Fourth Street near the northeast corner of the site. The primary pedestrian access would be via doors from Fourth Street to a lobby located near the corner of Fourth and Irwin streets.

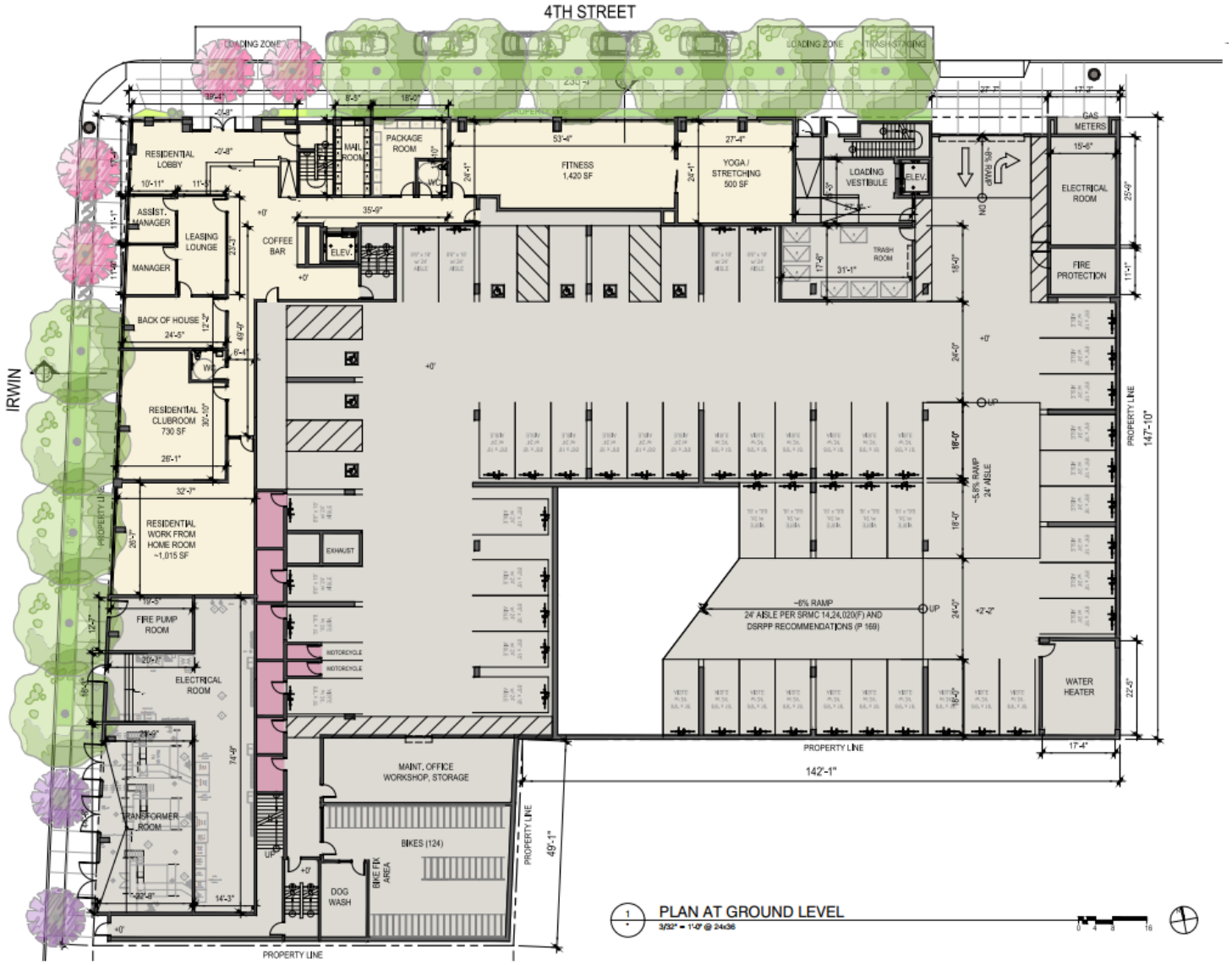
Common Areas and Amenities

The ground floor would include amenity spaces accommodating uses such as fitness areas, a club/common room and a work-from-home area, along with leasing and management offices, a mail room, and a lobby with a coffee bar. A swimming pool and common patio/garden area would be located on the Fourth Level.

Utilities and Stormwater Management

The project would connect to existing utility services. The Marin Municipal Water District provides water services within the city and the San Rafael Sanitation District provides wastewater collection at the site. Electricity is supplied by Marin Clean Energy via Pacific Gas and Electric infrastructure. Impervious coverage and stormwater runoff under the proposed project would be generally the same as under current conditions. Stormwater would be directed to proposed planters with discharges to storm drains or would run off to City stormwater facilities.

Figure 3 Proposed Site Plan



Construction

Project construction would occur over approximately 27 months. The project would involve site grading and preparation and the construction of the proposed building. The proposed project would require demolition of the existing buildings on site, totaling 40,690 square feet, and excavation and export of approximately 3,375 cubic yards of soil. Pile driving would not be employed during construction. Construction fleet over 50 horsepower would be rated US EPA Tier 4 for emissions. Construction staging would occur onsite and construction worker parking would occur nearby on public streets. Construction would occur Monday through Friday from 7:00 a.m. to 5:00 p.m. with occasional Saturday construction as approved by the City.

3 Consistency Analysis

3.1 Criterion (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.

According to the City of San Rafael's San Rafael General Plan 2040, the project site has a land use designation of Downtown Mixed use, which allows for residential-only projects. There are no limits on residential density in this designation. A maximum allowable floor-to-area ratio applies, but the maximum excludes space allowed through State density bonus and density bonus waivers such as those included in the project. The proposed project would thus be consistent with the allowable uses of and density for the project site under the General Plan.

The project site is in the Montecito Commercial sub-area of the Downtown San Rafael Precise Plan. The two parcels with frontage on Irwin Street (the corner parcel, at 535-545 Fourth Street, and the parcel at 910 Irwin Street) are zoned T5N 50/70. The parcel with frontage only on Fourth Street (523 Fourth Street) is zoned T4N 40/50. The requirements for these districts are set forth in the Downtown San Rafael Precise Plan and its associated form-based code. Both districts allow residential uses, and the project meets the requirements of these districts through requested density bonus waivers. The proposed project would thus be consistent with the allowable uses of and density for the project site under the General Plan Downtown San Rafael Precise Plan and zoning.

3.2 Criterion (b)

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 on a 0.92-acre parcel within the limits of the city of San Rafael. It is surrounded on all sides by urban uses comprising primarily commercial and mixed-use development, as shown on Figure 2.

3.3 Criterion (c)

The project site has no value as habitat for endangered, rare, or threatened species.

Listed species are defined as species categorized as endangered, rare, or threatened (or as candidates for such designations) under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA). A project site has no value as habitat for listed species if the site lacks suitable habitat and/or appropriate habitat and micro-habitat constituents for listed species, or if suitable habitat within the project site is outside of the listed species known range.

Due to the developed and disturbed nature of the project site and surroundings, as well as the absence of vegetation or water features on or near the site, the site does not support listed species or their habitat. There is no critical habitat on or adjacent to the site (USFWS 2025a), and the nearest wetland (San Rafael Creek) is approximately 600 feet south of the site (USFWS 2025b). Thus, the project site has no value as habitat for endangered, rare, or threatened species.

3.4 Criterion (d)

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

The following discussion provides an analysis of the project's potential effects with respect to traffic, noise, air quality, and water quality.

A. Traffic

The section is based primarily on a Transportation Impact Study prepared for the project by W-Trans in May of 2025 (Appendix A).

Trip Generation

W-Trans used standard rates published by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021, to estimate the trip generation for the project's proposed uses. Rates for Multifamily Housing (Mid-Rise) Close to Transit (LU #221) in a dense, urban setting and Affordable Housing (General urban/suburban area) (LU #223) rates were applied to the housing units.

Because the existing office space on the site is currently operational, traffic counts were obtained on both driveways during the a.m. and p.m. peak periods on three weekdays: September 4, September 5, and September 10, 2024. The counts indicated that the approximately 10,021 square feet of existing office space that was occupied generated an average of nine trips during the morning peak hour and 15 during the evening peak hour, which translates to rates of 0.90 trips per 1,000 square feet of space for the morning peak hour and 1.50 trips for the evening peak hour. These derived rates were used to determine the net reduction in trips associated with the elimination of the office space based on an assumption of full project occupancy.

Based on the application of ITE trip generation rates, the proposed project is estimated to generate an average of 479 trips per day, including 58 a.m. peak hour trips and 57 trips during the p.m. peak hour.[1] After deducting the trips associated with the existing office use, the project is estimated to generate an average of 297 net new trips per day, with 47 more trips during the morning peak hour and an increase of 39 trips during the p.m. peak hour. This information is included here for informational purposes and because trip generation data is used to inform the noise analysis in Section 3.4.1 if this report. Please see Appendix A for trip generation calculations.

Vehicle Miles Traveled

Pursuant to Senate Bill 743, transportation and traffic impacts should be measured using vehicle miles traveled (VMT) instead of the previously used Level of Service (California Office of Planning and Research [OPR] 2013). Reducing VMT is an effective climate strategy and is intended to decrease greenhouse gas emissions associated with the transportation sector while increasing benefits to human health.

[1] It should be noted that these estimates are conservative, as the Transportation Impact Study assumed 213 units would be constructed, which was subsequently reduced to 210.

The 2022 *City of San Rafael Transportation Analysis Guidelines* ("guidelines") include a list of VMT screening thresholds and indicate that projects meeting at least one of the thresholds would be presumed to not require CEQA VMT analysis. Figure 2 in the guidelines provides a map based on outputs from the Transportation Authority of Marin Demand Model that identifies low-VMT areas for residential development in the City of San Rafael. The project location is shown on the map as being in a low-VMT area, indicating that the VMT per capita is at least 15 percent below the average of the nine-county Bay Area. Because the guidelines state that projects in a low-VMT area are below the City's screening thresholds for VMT impacts, and the project site is in a low-VMT area pursuant to the County's Demand Model, the impact is presumed to be less than significant and does not require a quantitative VMT analysis.

In addition, the project site is located within 0.5-miles of the San Rafael Transit Center and San Rafael Downtown SMART station. Projects in proximity to major transit stops are presumed to have a less-than-significant impact under the VMT standards applied by the State of California and most local lead agencies. Due to the proximity of these transit opportunities as well as a range of transit services in Downtown San Rafael, it can be assumed that many project-generated trips would be made using non-vehicle modes of transportation, which supports the finding from the model data that the site is in a low-VMT area. Because the project is located in a low-VMT area and meets at least one screening threshold, the project's VMT impact is less than significant and no additional VMT analysis is required.

Pedestrian, Bicycle and Transit Facilities

As discussed in the Transportation Impact Study, sidewalks exist along the proposed project frontage on Fourth Street and Irwin Street. The proposed location of the driveway on Fourth Street, rather than its existing location on Irwin Street, which would be eliminated, would result in a beneficial impact in terms of eliminating a potential conflict with pedestrians crossing on the west side of the intersection at Irwin Street/ Fourth Street. Existing bicycle facilities, including a bike route on Fourth Street along the project frontage and separated bike lanes on Grand Avenue, together with shared use of minor streets, provide adequate access for bicyclists, and project would provide adequate bicycle parking. As discussed above, SMART service and numerous bus routes are available within a short walking distance of the project site and provide service to a wide variety of destinations, and existing transit routes are adequate to accommodate project-generated transit trips. Impacts related to pedestrian, bicycle and transit facilities would be less than significant (Appendix A).

Site Circulation and Access

As discussed in the Transportation Impact Study (Appendix A), the project would not result in changes to the physical or operational conditions of the roadway that would introduce hazards, and the project impact with regard to these factors would be less than significant. Site access and pick-up/drop-off areas would be appropriately located on Fourth Street to avoid conflicts with vehicle and other traffic on Irwin Street, and driveway design and sight distances would be adequate. As further discussed in Appendix A, impacts related to emergency access and response times would also be less than significant.

Conclusion

Impacts related to trip generation, VMT, pedestrian access and site circulation and access would be less than significant. The project would meet the requirements for Traffic under *criterion (d)*.

3.4.1 Noise

Noise Fundamentals

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz (Kinsler, et. al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease (Crocker 2007).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (half) as loud as what is readily perceptible (Crocker 2007).

Sound changes occur in both level and frequency spectrum as it travels from the source to the receptor. The most obvious change is the decrease in level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (California Department of Transportation [Caltrans] 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels.

The impact of noise is not a function of loudness alone. The time of day when noise occurs, and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed by academics and industry professionals. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is often measured using Day-Night Average Level (L_{dn} or DNL), which is a 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours (Caltrans 2013).

Noise Standards

San Rafael General Plan

The San Rafael General Plan Noise Element noise compatibility guidelines illustrate the State guidelines established by the State Department of Health Services for acceptable noise levels for each county and city. These standards and criteria are incorporated into the land use planning process to reduce future noise and land use incompatibilities. This table is the primary tool that allows the city to ensure integrated planning for compatibility between land uses and outdoor noise. As shown in Table 2, for residential land uses, noise levels of up to 60 dBA are considered "Normally Acceptable" and noise levels of 60 to 70 dBA are considered "Conditionally Acceptable".

Table 2 Noise Compatibility Guidelines for San Rafael

	Exterior Noise Levels - Community Noise Equivalent Level (CNEL)			
Land Use Categories	**Normally Acceptable[1]**	**Conditionally Acceptable[2]**	**Normally Unacceptable[3]**	**Clearly Unacceptable[4]**
Residential (Low-Density, Single-Family, Duplex, Mobile Homes)	50-60	60-70	70-75	75-85
Residential (Multiple-Family)	50-65	65-70	70-75	70-85
Transient Lodging, Motels, Hotels	50-65	65-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-65	65-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	N/A	50-70	N/A	70-85
Sports Arenas, Outdoor Spectator Sports	N/A	50-75	N/A	75-85
Playgrounds, Neighborhood Parks	50-70	70-75	75-85	N/A
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	70-80	80-85	N/A
Office Buildings, Business Commercial and Professional	50-70	70-75	75-85	N/A
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-80	80-85	N/A

[1] Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.

[2] Conditionally Acceptable: New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design

[3] Normally Unacceptable: New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.

[4] Clearly Unacceptable: New construction or development should not be undertaken

Source: San Rafael 2021

The following goals and policies from the Noise Element are relevant to the proposed project.

Policy N-1.2: *Maintaining Acceptable Noise Levels*. Minimize noise conflicts resulting from everyday activities such as construction, sirens, yard equipment, business operations, night-time sporting events, and domestic activities.

(a) New development shall not increase noise levels by more than 3 dB L_{dn} in a residential area, or by more than 5 dB L_{dn} in a non-residential area.

Policy N-1.9: *Maintaining Peace and Quiet*. Minimize noise conflicts resulting from everyday activities such as construction, sirens, yard equipment, business operations, night-time sporting events, and domestic activities.

Program N-1.9B: *Construction Noise*. Establish a list of construction best management practices (BMPs) for future projects and incorporate the list into San Rafael Municipal Code Chapter 8.13 (Noise) The City Building Division shall verify that appropriate BMPs are included on demolition, grading, and construction plans prior to the issuance of associated permits

Policy N-1.11: *Vibration*. Minimize noise conflicts resulting from everyday activities such as construction, sirens, yard equipment, business operations, night-time sporting events, and domestic activities.

Program N-1.11A: *Vibration-Related Conditions of Approval*. Adopt Standard conditions of approval in San Rafael Municipal Code Chapter 8.13 (Noise) that apply Federal Transit Administration (FTA) criteria for acceptable levels of groundborne vibration for various building types. These conditions should:

(a) reduce the potential for vibration-related construction impacts for development projects near sensitive uses such as housing, schools, and historically significant buildings

(b) reduce the potential for operational impacts on existing or potential future sensitive uses such as uses with vibration-sensitive equipment (e.g., microscopes in hospitals and research facilities) or residences.

Vibration impacts shall be considered as part of project level environment al evaluation and approval for individual future projects. If vibration levels exceed FTA limits, conditions of approval shall identify construction and operational alternatives that mitigate impacts.

City of San Rafael Municipal Code

To implement the City's noise policies, the City adopted Chapter 8.13 Noise (Noise Ordinance) in the San Rafael Municipal Code (MHMC). Section 8.13.040 of the City of San Rafael Code of Ordinances states that the general noise limits contained in Table 3 shall apply subject to the exceptions and exemptions set forth in the chapter. Where two or more noise limits may apply, the more restrictive noise limit shall govern. For purposes of determining sound levels from any source of sound, a sound level measurement shall be made at any point on any receiving private or public property. In multifamily structures, the microphone shall be placed no closer than 3.5 feet from a wall through which the source of sound at issue is transmitting and shall also be placed five feet above the floor regardless of whether the source of sound at issue transmits through the floor, ceiling or wall. Sound level measurements shall be made with a sound level meter (Type 1 or 2) set to A-weighting, and "fast" response for intermittent sound. Slow or fast response may be used for constant noise sources. For intermittent sound, the one second rms maximum level (L_{max}) shall be used. For constant sound, the average level (L_{eq}) shall be used.

Table 3 San Rafael General Noise Limits

	Noise Level (dBA)			
	Daytime[1]		Nighttime[1]	
Land Use	Intermittent	Constant	Intermittent	Constant
Residential	60	50	50	40
Mixed-Use	65	55	55	45
Multifamily Residential	40	35	35	30
Commercial	65	55	65	55
Industrial	70	60	70	60

[1] Daytime = 7am-9pm (Sun-Thu); 7am-10pm (Fri-Sat); Nighttime = 9pm-7am (Sun-Thu); 10pm-7am (Fri-Sat)

Source: City of San Rafael Ordinance, Chapter 8.13

Section 8.13.050(A), Standard exceptions to general noise limits – Construction, states that on any construction project on property within the city, construction, alteration, demolition, maintenance of construction equipment, deliveries of materials or equipment, or repair activities otherwise allowed under applicable law shall be allowed between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday, and 9:00 a.m. and 6:00 p.m. on Saturdays, provided that the noise level at any point outside of the property plane of the project shall not exceed 90 dBA. All such activities shall be precluded on Sundays and holidays.

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the types of population groups or activities involved. Sensitive population groups include children and the elderly. Sensitive land uses generally include residential areas, hospitals, schools, childcare facilities, senior facilities, libraries, churches, and parks. The nearest sensitive receptor is an adjacent mixed-use residence at the southern project boundary of the project site.

Existing Noise Environment

The project site is in the City of San Rafael, Marin County, in a characteristically urban area subject to noise from nearby Highway 101, local traffic on public streets (4th Street and Irwin Avenue), buses, trains, light rail (Pacific Avenue), construction, and small power equipment (e.g., lawn mowers, edger, etc.). The San Rafael General Plan Appendix I maps out noise contours, indicating that the area of the Project has expected daytime ambient noise from known sources at about 70 dBA at the nearest sensitive receptor to the proposed project.

Construction Noise

Construction of the project would generate temporary noise that would be audible at nearby single-family residences to the south and east of the project site. Noise associated with construction is a function of the type of construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the construction activities. Based on construction details provided by the applicant, it is estimated that the construction period for all phases would be approximately 27 months.

While all phases of construction would generate noise, the demolition, grading and building construction phases would represent the loudest periods of noise-generating activity. The greatest anticipated sources of construction noise would be generated by large earthmoving equipment such

as large bulldozers and industrial concrete saws. Construction noise was estimated using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) (FHWA 2006), as shown in Table 4.

Table 4 Project Construction Noise Levels

Construction Activity Phase	Approximate Noise Level (dBA L_{max})		
	RCNM Reference Noise Level (50 feet)	Residence to the South (10 feet)	Single-Family Residence to the East (95 feet)
Distance (feet)	**50**	**10**	**95**
Demolition	90	104	84
Site Preparation	81	95	75
Grading	85	99	79
Building Construction	90	104	86
Architectural Coating	81	95	75
Distance (feet)	**50**	**80**	**85**
Paving	90	86	85

Notes: Calculations performed with the FHWA's RCNM software are included in Appendix B

dBA = A-weighted decibels, L_{max} = maximum noise level

As shown in Table 4, expected noise levels generated during the building construction phase of construction at the nearest residential property lines approximately 10 feet to the south from the edge of the construction activity would be up to 104 dBA $L_{max.}$ Therefore, without implementation of the COA, construction noise could exceed the City of San Rafael's construction standard of 90 dBA L_{max}.

The City applies conditions of approval (COA) to implement and ensure project consistency with *Program N-1.9B: Construction Noise* of the 2040 General Plan EIR. The following standard condition of approval would be applied to the project.

- **COA-Construction Noise.** During construction, the project shall:
  1. Properly muffle and maintain all construction equipment powered by internal combustion engines.
  2. Prohibit unnecessary idling of combustion engines.
  3. Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing nearby residences and other noise-sensitive land uses. Such equipment shall also be acoustically shielded.
  4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
  5. Residences adjacent to project sites shall be notified in advance by writing of the proposed construction schedule before construction activities commence.
  6. The project applicant shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.

7. Erect temporary noise barriers to limit construction noise to no more than 90 dBA L_{max} at residences. Temporary noise barriers shall be constructed with solid materials (e.g., wood) with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the barrier at a minimum height of 12 feet along the southern and eastern project boundaries. If a sound blanket is used, barriers shall be constructed with solid material with a density of at least one pound per square foot with no gaps from the ground to the top of the barrier and be lined on the construction side with acoustical blanket, curtain or equivalent absorptive material rated sound transmission class (STC) 32 or higher.

Additionally, project construction activity specified by the applicant (scheduled for Mondays through Fridays between 7:00 a.m. and 6:00 p.m. and Saturdays between 9:00 a.m. and 6:00 p.m.) would occur within the allowable construction day and time limits defined in the City of San Rafael Code of Ordinances: between 7:00 a.m. and 8:00 p.m. Monday through Friday and between 9:00 a.m. and 6:00 p.m. on Saturday.

Implementation of the COA above would be required and would decrease construction noise by at least 15 dBA (Harris 1991; Bies, Hansen, Howard 2018) to 89 dBA L_{max}. This would be below the construction noise threshold of 90 dBA L_{max} and impacts would be less than significant.

Construction Vibration

The project does not include any substantial vibration sources associated with operation. Therefore, construction activities have the greatest potential to generate groundborne vibration affecting nearby receptors, especially during grading of the project site. When accounting for equipment setbacks, construction equipment may be used within approximately 10 feet from mixed-use residential buildings to the south. Table 5 identifies vibration velocity levels at the nearby sensitive receptors from a vibratory roller and large bulldozer equipment (representative of equipment 100 horsepower [hp] or greater), as well as smaller equipment such as a small bulldozer (under 100 hp).

Table 5 Construction Vibration Levels

	in/sec PPV		
Equipment	**Reference Level (25 feet)**	**Residential Building to the South (10 feet)**	**Commercial Buildings to the South and East (10 feet)**
Distance (feet)	**25**	**10**	**10**
Large Bulldozer	0.089	0.352	0.352
Loaded Trucks	0.076	0.300	0.300
Small Bulldozer	0.003	0.012	0.012
Distance (feet)	**25**	**95**	**110**
Vibratory Roller	0.210	0.028	0.023
FTA Threshold for Building Damage	–	0.2	0.3
Thresholds Exceeded?	–	**Yes**	**Yes**

in/sec PPV = inches per second peak particle velocity

Note: Vibration analysis worksheets are included in Appendix B

Source: FTA 2018

The City has not adopted specific standards for vibration impacts during construction. Therefore, the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) is used to evaluate construction vibration impacts related to potential building damage. Based on the FTA criteria, construction vibration impacts would be significant if vibration levels exceed 0.2 in/sec PPV at residential structures and 0.3 in/sec PPV at commercial structures, which is the limit for potential building damage at these structures. Based on the information presented in Table 5, vibration levels could be up to approximately 0.352 in/sec PPV at the mixed-use residential building to the south and the commercial buildings to the south and east of the project site when a large bulldozer is used. Vibration levels may also exceed the residential standards with use of a loaded truck and may exceed the residential standard with loaded trucks. Therefore, without implementation of the COA, construction vibration could exceed the 0.2 in/sec PPV threshold for structural damage to nearby residential structures and the 0.3 in/sec PPV threshold for structural damage to nearby commercial buildings. Vibration noise levels would not exceed the standards when using a small bulldozer or other equipment under 100 hp.

The City applies conditions of approval to implement *Program N-1.11A: Vibration,* of the 2040 General Plan EIR. The following condition of approval (COA) would be required

- **COA-Construction Vibration**. During construction, the project shall:
    1. Avoid the use of large earthmoving equipment (greater than 100 hp) within 15 feet of residential buildings and within 12 feet of commercial buildings, as this is the distance where these buildings are susceptible to damage from vibration from this equipment.
    2. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that the Federal Transit Administration identifies as sensitive to daytime vibration (FTA 2006).
    3. Notify neighbors of scheduled construction activities that would generate vibration.
    4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
    5. Residences adjacent to the project site shall be notified in advance by writing of the proposed construction schedule before construction activities commence.
    6. The project applicant shall designate a “noise disturbance coordinator” responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.

Implementation of the COA above would be required and would decrease to below 0.2 in/sec PPV threshold for structural damage to nearby residential structures and the 0.3 in/sec PPV threshold for structural damage to nearby commercial buildings and impacts would be less than significant.

Operational Noise

HVAC Noise

According to the site plans provided by Trachtenberg Architects (I & A 2023), the primary on-site operational noise source from the project would be two clusters of 92 rooftop-mounted HVAC units, for the residential buildings within the project site. Specific mechanical specifications for the proposed HVAC system is not available at this stage of project design. Therefore, this analysis

assumes the use of a typical 2.5-ton Carrier 24ABA4030 air conditioner with Puron refrigerant that has a sound power level of 76 dBA (see Appendix C), equivalent to a sound pressure level (SPL) of 68 dBA at 3 feet. To provide a reasonable worst-case analysis, 92 HVAC units operating simultaneously were modeled at the same location on the roof closest to the adjacent sensitive receptor in order to calculate noise levels at the residential property lines to the south. The 92 HVAC units modeled in the middle of the proposed multi-family building roof would be approximately 65 feet from the nearest off-site sensitive residential property line to the south.

Accounting for the 65-foot distance between the proposed HVAC units, the residential property line to the south and the proposed 85-foot height of the proposed building, including a 4-foot parapet wall on the roof's edge (which would provide at least an estimated noise reduction of 26 dBA) (see Appendix C for barrier calculations), noise generated by the project's HVAC equipment would attenuate to approximately 38 dBA at the adjacent residential property line to the south. Therefore, as stated in the City's Municipal Code Section 8.13.040 (SRMC 2023), noise generated by the project's HVAC equipment would not exceed the City's residential nighttime noise limit of 45 dBA at a receiving residential property line, and impacts would be less than significant.

Future Residents

In addition to mechanical equipment, the project would generate noise from people gathering at the project site. The main noise source associated with future residents would be speech from conversations. Typically, a conversation between two people using a normal voice (not raised) at a distance of three feet is 60 dBA (Engineering ToolBox 2005). No amplified sound is proposed at any gathering location, and speech from conversations would quickly dissipate and would not interfere with surrounding outdoor activities and noise-sensitive uses. Furthermore, pursuant to Assembly Bill 1307 (2023), the effect of noise generated by residential project occupants and their guests is not a significant effect on the environment. This impact would be less than significant.

Off-Site Traffic Noise

Using information provided by W-Trans (Appendix A to this report), the proposed project would generate up to 297 new daily vehicle trips that would increase noise levels on nearby roadways. The proposed project would not make substantial alterations to roadway alignments or substantially change the vehicle classifications mix on local roadways. Therefore, the primary factor affecting off-site noise levels would be increased traffic volumes. The project's increase in traffic noise was estimated by adding the project daily trip generation to the existing average daily traffic (ADT) volume on the surrounding roadways analyzed in the City of San Rafael General Plan 2040 & Downtown Precise Plan Draft EIR (City of San Rafael 2021b), as shown in Table 6.

Table 6 Off-site Project Traffic Noise Increases (dBA L_{dn})

Roadway/Segment	Existing ADT[1]	Existing + Project ADT	Increase[2] (dBA L_{dn})
4th Street, between Marquard Avenue and Grand Avenue	9,180	9,477	0.1
Irwin Street, between Mission Avenue and 2nd Street	16,455	16,752	<0.1

ADT = average daily trips

[1] Based on data provided in City of San Rafael General Plan 2040 & Downtown Precise Plan Draft EIR (City of San Rafael 2021).

[2] Based on the formula 10 x LOG (future traffic volume/existing traffic volume)

The existing ADT on 4th Street, between Marquard Avenue to Grand Avenue, is 9,180. As shown in Table 6, this addition of 297 daily vehicle trips would result in an increase in traffic noise that would be approximately 0.1 dBA L_{dn}. As stated in the City of San Rafael 2040 General Plan (City of San Rafael 2021a), a significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA L_{dn} or more for residential neighborhoods. All other roadway segments would have a lower increase in traffic noise. As the project would result in a traffic noise increase 0.1 dBA, the project's traffic noise increase would not exceed 3 dBA L_{dn} or more, and impacts would be less than significant.

Airport Noise

The San Rafael Airport is located approximately 2.9 miles to the north and is not located within the 65 dBA CNEL noise contour of this airport (San Rafael 2021a). There is no other public or private use airport within two miles of the project site. Therefore, there would be no impact

Conclusion

Construction noise would generate noise levels of up to 104 dBA L_{max} at the nearby mixed-use residential property line; however, pursuant to General Plan Program N-1.9B, implementation of the COA above would be required, ensuring that construction noise would not exceed 89 dBA L_{max}. (Harris 1991; Bies, Hansen, Howard 2018). This would be below the construction noise significance threshold of 90 dBA L_{max}. In addition, construction would be limited to hours allowed by the City's Municipal Code Section 8.13.050(A). Impacts would be less than significant.

The project would introduce sources of operational noise to the site, including HVAC. The nearest mixed-use residential building to the south of the project would be exposed to a noise level of 38 dBA from HVAC equipment which would not exceed the nighttime exterior noise standard of 45 dBA L_{max} for residential uses. Therefore, impacts would be less than significant.

Traffic noise levels generated along Irwin Street and 4th Street would cause an increase of up to 0.1 dBA Ldn. This would be below the most stringent threshold of 3 dBA Ldn increase from traffic noise. Therefore, impacts would be less than significant.

Operation of the project would not include any substantial vibration sources. Groundborne vibration from construction activities could generate levels of up to 0.830 in/sec PPV at the nearby mixed-use residential building to the south and commercial buildings to the south and east, pursuant to General Plan Program N-1.11A, implementation of the COA above would be required and would decrease to below 0.2 in/sec PPV threshold for structural damage to nearby residential structures and the 0.3 in/sec PPV threshold for structural damage to nearby commercial buildings. Therefore, impacts would be less than significant.

There are no airports within two miles of the project site and there would be no impact.

C. Air Quality

The federal and State Clean Air Acts mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards and the California Ambient Air Quality Standards for criteria pollutants and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive

organic gases (ROG),[2] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog).

A significant adverse air quality impact may occur when a project conflicts with or obstructs implementation of the applicable air quality plan; results 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; exposes sensitive receptors to substantial pollutant concentrations; or results in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Thresholds of Significance and Screening Criteria

The project site is located within the San Francisco Bay Area Basin and falls under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). This air quality analysis conforms to the methodologies recommended by *BAAQMD's 2022 CEQA Guidelines* (BAAQMD 2023). Table 7 shows the significance thresholds for construction and operational-related criteria air pollutant and precursor emissions being used for the purposes of this analysis. These thresholds represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction or operational emissions would exceed thresholds as shown in Table 7.

Table 7 Air Quality Thresholds of Significance

	Construction-Related Thresholds	Operation-Related Thresholds	
Pollutant/ Precursor	Average Daily Emissions (pounds per day)	Maximum Annual Emissions (tpy)	Average Daily Emissions (lbs/day)
ROG	54	10	54
NO_X	54	10	54
PM_{10}	82 (exhaust)	15	82
$PM_{2.5}$	54 (exhaust)	10	54

Notes: tpy = tons per year; lbs/day = pounds per day; NOX = oxides of nitrogen; PM2.5 = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM10 = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases; tpy = tons per year.

Source: BAAQMD 2022, Table 3-1

According to Chapter 4 of *BAAQMD's 2022 CEQA Guidelines,* which includes BAAQMD's screening criteria, construction of a project would result in less than significant impacts related to criteria air pollutants if:

- The project size is at or below the applicable screening level size shown in Table 4-1.
- All best management practices (see Table 5-2 in Chapter 5, "Project-Level Air Quality Impacts" of the guidelines) are included in the project design and implemented during construction.

[2] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this report.

- Construction-related activities would not overlap with operational activities.
- Construction-related activities would not include:
  - Demolition,
  - Simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously),
  - Extensive site preparation (e.g., grading, cut and fill, or earth movement),
  - Extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity), or
  - Stationary sources (e.g., backup generators) subject to Air District rules and regulations.

If a project fails to meet any of the screening criteria above, then the lead agency would need to perform a detailed assessment of the project's criteria air pollutant and precursor emissions. Given that construction of the proposed project would include demolition, the project would fail to meet the first criterion. Therefore, a detailed assessment of the project's construction emissions is provided and compared to BAAQMD thresholds shown in Table 7.

Additionally, operation of a project would result in less than significant impacts related to criteria air pollutants if:

- The project size is at or below the applicable operational screening level size shown in Table 4-1 of the guidelines.
- Operational activities would not include stationary engines (e.g., backup generators) and industrial sources subject to Air District rules and regulations.
- Operational activities would not overlap with construction-related activities.

The project would include 210 residential units, which would not exceed the screening level size of 638 dwelling units for apartments shown in Table 4-1 of the guidelines. Furthermore, the project would not include stationary or industrial sources, and operational activities would not overlap with construction related activities. Therefore, the project would meet all three operational criteria. Nonetheless, a detailed assessment of the project's operational emissions are provided and compared to BAAQMD thresholds shown in Table 7.

Consistency with Applicable Air Quality Plan

The California Clean Air Act requires that air districts create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. The most recently adopted air quality plan is the 2017 Bay Area Clean Air Plan (2017 Plan) (BAAQMD 2017a). The 2017 Plan focuses on two paramount goals, both consistent with the mission of BAAQMD:

- Protect air quality and health at the regional and local scale by attaining all national and state air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the air quality plan
- Includes applicable control measures from the air quality plan
- Does not disrupt or hinder implementation of any air quality plan control measures

A project that would not support the 2017 Plan's goals would not be considered consistent with the 2017 Plan. On an individual project basis, consistency with BAAQMD quantitative thresholds is interpreted as demonstrating support with the 2017 Plan's goals. As shown in Table 8 and Table 9 below, the project would not result in exceedances of BAAQMD thresholds for criteria air pollutants and thus would not conflict with the 2017 Plan's goal to attain air quality standards.

The 2017 Plan includes goals and measures to promote building decarbonization, conservation of water, use of on-site renewable energy, and energy efficiency. The project would be supplied electricity by PG&E, which is required to procure 100 percent of its energy supply from renewable sources by 2045. The project would comply with applicable California Green Building Standards, including installation of energy-efficient equipment and lighting. Therefore, the project would not conflict with or obstruct the implementation of an applicable air quality plan, and impacts would be less than significant impact.

Criteria Pollutant Emissions

Methodology

Air pollutant emissions generated by project construction and operation were thus estimated using the California Emissions Estimator Model (CalEEMod), version 2022.1.0. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses (e.g., residential, commercial, parking), and location, to model a project's construction and operational emissions. The analysis reflects the construction and operation of the project as described under Section 2.2, *Project Description*.

The following subsections discuss emissions associated with construction and operation of the proposed project.

Construction Emissions

Construction activities associated with development of the project would temporarily generate emissions associated with diesel-powered construction equipment and fugitive dust. Construction emissions modeled include emissions generated by construction equipment used on the site and emissions generated by vehicle trips associated with demolition and construction, such as worker, hauling, and vendor trips. Table 8 summarizes the estimated maximum daily average emissions of ROG, NO_X, CO, PM_{10} exhaust, $PM_{2.5}$ exhaust, and sulfur oxide (SO_x) during project construction. As shown in Table 8, project construction emissions for criteria pollutants would be below the BAAQMD average daily thresholds and therefore would be less than significant.

Table 8 Project Construction Emissions

	Average Daily Emissions (lbs/day)					
Construction Year	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10} (exhaust)**	**$PM_{2.5}$ (exhaust)**
2025	1	1	3	<1	<1	<1
2026	1	6	14	<1	<1	<1
2027	9	7	16	<1	<1	<1
2028	<1	<1	<1	<1	<1	<1
Maximum Average Daily Emissions	9	7	16	<1	<1	<1
BAAQMD Thresholds (average daily emissions)	54	54	N/A	N/A	82	54
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**

N/A = not applicable (no BAAQMD threshold for CO or SO_X)

Source: See CalEEMod worksheets in Appendix D. Numbers may not add up due to rounding.

Operational Emissions

Operation of the project would generate criteria air pollutant emissions associated with area sources (e.g., architectural coatings, consumer products, and landscaping equipment) and mobile sources (i.e., vehicle trips to and from the project site). Long-term emissions associated with project operation are shown in Table 9. Emissions would not exceed BAAQMD daily or annual thresholds for any criteria pollutant. Since project emissions would not exceed BAAQMD thresholds for construction or operation, the project would not violate an air quality standard or result in a cumulatively considerable net increase in criteria pollutants and impacts would be less than significant.

Table 9 Project Operational Emissions

	Average Daily Emissions (lbs/day)					
Sources	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Mobile	2	1	10	<1	2	1
Area	7	<1	16	<1	<1	<1
Energy	<1	1	<1	<1	<1	<1
Maximum Average Daily Emissions	9	2	26	<1	2	1
BAAQMD Thresholds (average daily emissions)	54	54	N/A	N/A	82	54
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**
Maximum Annual Emissions	1	<1	3	<1	<1	<1
BAAQMD Thresholds (maximum annual emissions)	10	10	N/A	N/A	15	10
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**No**	**No**

N/A = not applicable (no BAAQMD threshold for CO or SO_X)

Source: See CalEEMod worksheets in Appendix D. Numbers may not add up due to rounding.

Exposure of Sensitive Receptors

Certain population groups, such as children, the elderly, and people with health problems, are particularly sensitive to air pollution. Therefore, the majority of sensitive receptor locations are schools, hospitals, and residences. The closest sensitive receptors to the project site are the multi-family residences located approximately 65 feet to the east of the project site boundary. Localized air quality impacts to sensitive receptors typically result from CO hotspots and TACs, which are discussed in the following subsections.

Carbon Monoxide Hotspots

According to BAAQMD Chapter 4, *Screening for Criteria Air Pollutants and Precursors*, a project would have less than significant CO impacts if:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans;
- Project-generated traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- Project-generated traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

As discussed in the project-specific Transportation Impact Study prepared by W-Trans (see Appendix A), the project would not conflict with plans or policies for designated roads or highways or the regional transportation plan. Therefore, the project is presumed to be consistent with applicable congestion management programs established at the County and local level. There are no intersections in the project vicinity with volumes of more than 44,000 vehicles per hour, nor are there intersections with volumes of more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (i.e., the U.S. 101 underpass west of the project site); for example, the Transportation Impact Study (see Appendix A) conducted a traffic count for Irwin Street showing 12,500 average daily trips near the project site, which is substantially lower than the 44,000 vehicle per hour threshold and 24,000 vehicle per hour threshold for intersections with limited vertical and/or horizontal mixing. Additionally, the San Francisco Bay Area Air Basin has been designated attainment for both federal and State standards for CO since 1998 (BAAQMD 2017b). Impacts related to CO emissions would be less than significant.

Toxic Air Contaminants

The following subsections discuss the project's potential to result in impacts related to TAC emissions during construction and operation.

CONSTRUCTION

Construction-related activities would result in temporary project-generated emissions of diesel particulate matter (DPM) exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, demolition, grading, building construction, and other construction activities. DPM was identified as a TAC by CARB in 1998 (CARB 2024).

Generation of DPM from construction projects typically occurs in a single area for a short period. Construction of the proposed project using heavy construction equipment would occur over approximately 27 months. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the California Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of proposed construction activities (i.e., 27 months) is approximately eight percent of the total exposure period used for 30-year health risk calculations. Current models and methodologies for conducting health-risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities, resulting in difficulties in producing accurate estimates of health risk (BAAQMD 2023).

The maximum PM_{10} and $PM_{2.5}$ emissions would occur during demolition and grading activities. These activities would last for approximately five weeks. PM emissions would decrease for the remaining construction period because construction activities such as building construction and paving would require less intensive construction equipment. While the maximum DPM emissions associated with site preparation and grading activities would only occur for a portion of the overall construction period, these activities represent the worst-case condition for the total construction period. This would represent less than one percent of the total 30-year exposure period for health risk calculation. In addition, the construction equipment used would have US EPA Tier 4 engines, which greatly reduces DPM emissions compared to older engines. Given the aforementioned, DPM generated by project construction would not create conditions where the probability is greater than one in one million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of non-carcinogenic TACs that exceed a Hazard Index greater than one for the Maximally Exposed Individual. Therefore, project construction would not expose sensitive receptors to substantial TAC concentrations, and impacts would be less than significant.

OPERATION

Sources of operational TACs include, but are not limited to, land uses such as freeways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities. The project does not include construction of new gas stations, dry cleaners, highways, roadways, or other sources that could be considered new permitted or non-permitted sources of TAC or $PM_{2.5}$ in proximity to sensitive receptors. In addition, mobile emissions generated from the project would be minimal and spread over a broad geographical area. Project operation would not expose sensitive receptors to substantial TAC concentrations, and impacts would be less than significant.

Odors

BAAQMD's 2022 CEQA Air Quality Guidelines identifies land uses that have the potential to generate substantial odor complaints. The uses listed in the Air Quality Guidelines include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants (BAAQMD 2023). Odors are

typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills.

The project does not involve and would not locate new sensitive receptors in proximity to odor-emitting uses as identified in BAAQMD's 2022 CEQA Air Quality Guidelines. The proposed uses would not generate objectionable odors that would affect a substantial number of people. Furthermore, the project would be subject to BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. The project would not substantially cause new sources of odors and would not significantly expose sensitive receptors to existing or new odors, and impacts would be less than significant.

Conclusion

The proposed project would not result in significant air quality impacts.

D. Water Quality

The project site is currently developed with existing structures and surface parking, and there are no wetlands on or adjacent to the project site (USFWS 2025b).

The site is comprised almost entirely of impervious surfaces under existing conditions, and this condition would not substantially change with the proposed project. Water quality of runoff from the site would be incrementally improved due to the elimination of surface parking on the site, which is a common source of pollutants in stormwater from oil and grease that contains potentially harmful hydrocarbon compounds. In addition, the City of San Rafael's Urban Runoff Pollution Prevention ordinance (Code of Ordinances Chapter 9.30) includes provisions to comply with federal requirements for the control of urban pollutants in storm water runoff during construction and operation. The ordinances requires construction projects to implement best management practices (BMPs) during construction to prevent discharge of construction contaminants including erosion and sediment controls and pollution prevention practices, and to implement an Erosion and Sediment Control Plan if subject to a grading or building permit. Impacts would be less than significant.

Conclusion

Because the project would not substantially increase stormwater runoff and would be required to comply with City requirements to control and filter runoff, development of the proposed project would not degrade the quality of stormwater runoff from the site. Impacts would be less than significant, and the project would meet the requirements for water quality under *criterion (d)*.

3.5 Criterion (e)

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

The project would be located in an urban area served by existing public utilities and services; the site itself, which is currently developed with commercial buildings and uses, is currently served by such public utilities and services. As discussed in the General Plan 2040 EIR (City of San Rafael 2021), there are adequate public utilities and services to serve development in the Downtown Precise Plan area. As the project is generally consistent with the Precise Plan, there are adequate public utilities and services to serve the proposed project.

Conclusion

The proposed project involves infill development on a project site in an urban area that is already served by existing utilities and public services. As discussed under criterion (a), the project is generally within the allowed density for the site and is consistent with the General Plan land use designation for the site. The project would not increase the intensity of use such that existing utility and public service providers would not be able to serve the project site. Therefore, the project would meet the requirements for Utilities and Service Systems under *criterion (e)*.

4 Exceptions to the Exemption

CEQA Guidelines Section 15300.2 outlines exceptions to the applicability of a Categorical Exemption, including cumulative impacts, significant effects due to unusual circumstances, scenic highways, hazardous waste sites, and historical resources. These exceptions are discussed below. As shown, none of the exceptions would apply.

4.1 Cumulative Impacts

CEQA Guidelines Section 15300.2 states that "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." Table 10 includes a list of relevant projects within one mile of the project site; none of these projects are close enough to be considered "in the same place" as the project site.

Table 10 Cumulative Projects List

Number	Project Location	Project Components	Status	Distance to Project Site (approximate, in miles)
1	1030 3rd Street	8-story mixed-use project with 131 residential units	Planning	0.5
2	1230 Fifth Avenue	Multi-family housing development with 187 residential units with ground-level lobbies, amenity spaces, and 157 parking spaces	Planning	0.6
3	800 Mission Avenue (Aegis, formerly 1203 Lincoln)	New assisted living facility with 103 suites	Under Construction	0.25
4	1515 4th Street	Residential care facility with 155 senior independent and assisted living units, and 28 secured memory care units	Approved	0.75
5	Intersection of Magnolia Avenue and Deer Park Avenue	Subdivision and residential development of a 21 acre site at the intersection of Magnolia Avenue and Deer Park Avenue	Planning	0.8

Source: City of San Rafael 2025

As discussed in Section 3.3, Criterion (c) above, the project would not affect sensitive biological resources and therefore would not result in a cumulative impact related to biological resources. As discussed in sections 3.4, Criterion (d), subsections A and C above, VMT and air quality analyses already take into account cumulative impacts and these impacts were found to be less than significant. As discussed in Section 3.4, Criterion (d), subsection D and Section 3.5, Criterion (e), the proposed project would not contribute pollutants such that water quality would be impacted and would be served by available utilities and public services. The project would not result in a cumulatively considerable contribution to potential cumulative impacts.

The project would involve temporary noise and vibration during construction; however, these effects are localized and would cease upon cessation of construction activities. Construction noise impacts would not perceptibly overlap for the proposed project and the projects listed above, given their distance from the site; the other projects are over 0.25-miles from the project site. Noise attenuates over distance and as a result of intervening buildings and topography, and construction noise from other projects would not be substantially perceptible at the project site. Overall, the project would not result in a significant contribution to potential cumulative impacts. Therefore, this exception does not apply to the proposed project.

4.2 Significant Effect due to Unusual Circumstances

CEQA Guidelines Section 15300.2 states that "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."

As discussed under Section 2.1, *Project Location and Existing Conditions*, the project site is a level, paved and developed site in an urbanized area surrounded by other development. Neither the site, its surroundings, or the proposed project itself (a residential project on a level site in an urban area) are unusual in terms of existing conditions, land uses or proposed features. The potential presence of cultural resources is not uncommon or unusual in urban neighborhoods in the Bay Area, and as discussed further below, impacts related to cultural resources would be less than significant with implementation of existing City regulations. The project site does not possess characteristics which would qualify as unusual circumstances under *CEQA Guidelines* Section 15300.2. There are no known unusual circumstances at the project site or related to project operations that would result in a reasonable possibility of significant effects on the environment. Therefore, this exception to a CE does not apply to the proposed project.

4.3 Scenic Highways

CEQA Guidelines Section 15300.2 states that a CE "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 vicinity of the project site. The closest scenic highway is State Route 1 through the Tamalpais Valley over four miles south of Downtown San Rafael. Due to distance and intervening topography, the project site is not visible from State Route 1. The project would not damage scenic resources within a highway officially designated or eligible for designation as a state scenic highway. This exception would not apply to the project.

4.4 Hazardous Waste Sites

CEQA Guidelines Section 15300.2 states that 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."

The site is not a hazardous waste site and is not included on a list compiled pursuant to Section 65962.5 of the Government Code (DTSC 2024, SWRCB 2024). This exception is not applicable to the proposed project.

4.5 Historical Resources

CEQA Guidelines Section 15300.2(f) states that a categorical exemption "shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource."

Rincon Consultants prepared a Cultural Resources Assessment for the project site in March of 2025. The assessment included background and archival research, a California Historical Resources Information System (CHRIS) records search, a Sacred Lands File (SLF) search, field survey, and two California Register of Historical Resources (CRHR) and City of San Rafael Landmark evaluations to identify historical resources, as defined by CEQA Section 15064.5(a), within the project site. The Cultural Resources Assessment is included in Appendix E.

Rincon determined that the existing buildings on the site are ineligible for listing in the CRHR or as City of San Rafael Landmarks due to lack of historical and architectural significance and are therefore not historical resources as defined by CEQA. The project site, as discussed in the Cultural Resources Assessment, is sensitive for archaeological resources based on findings of the CHRIS records search that identified a previously mapped archaeological resource extending onto a portion of the site; grading and site preparation for the proposed project therefore has the potential to encounter archaeological resources.

The City has adopted policies and regulations to protect cultural and historical resources. These include the following:

- **San Rafael General Plan 2040 Policy CDP-5.13**: **Protection of Archaeological Resources.** Protect significant archaeological resources by: a) Consulting the City's archaeological resource data base prior to issuing demolition or construction permits in known sensitive areas. b) Providing information and direction to property owners to make them aware of these resources and the procedures to be followed if they are discovered on-site. c) Identifying, when possible, archaeological resources and potential impacts on such resources. d) Implementing measures to preserve and protect archaeological resources, including fines and penalties for violations.
- **Resolution No. 10980.** Resolution of the San Rafael City Council Rescinding Resolution No. 10933 and Approving Revised Procedures and Regulations for Archaeological Resources Protection in the City of San Rafael. Among a number of relevant provisions in this resolution is the direction that "If it is determined that there is an archaeological resource present, the Community Development Department may require that approval of the permit be issued with conditions" to ensure protection of cultural resources.
- **San Rafael Code of Ordinances Chapter 2.19 - Archeological Resources Protection.** This section of the City's code includes this provision, among others: "…Implement measures that would preserve and protect valuable archeological resources, when there is a potential for encountering such resources."

Accordingly, the City, as a standard regulatory practice, includes conditions of approval (COAs) for projects on sites with the potential to contain cultural resources, as required by these City policies and regulations – in particular, its Archaeological Resources Protection ordinance. The COAs reflect the requirements of Resolution No. 10980, Policy CDP-5.13 and City Code Chapter 2.19 that cultural resources, including paleontological resources and human remains, if inadvertently discovered, would require work to be halted until appropriate avoidance and/or protection measures can be undertaken to the extent feasible. The COAs would ensure this through measures including but not limited to preparation and implementation of a Data Recovery and Treatment Plan or equivalent

prior to ground disturbance that delineates the extent of archaeological resources, including consultation with native American representatives; oversight of ground disturbance by a qualified archaeologist; recordation and proper treatment of any encountered cultural resources; and avoidance and preservation in place of inadvertently discovered resources wherever possible.

With application of existing City policies and regulations through such COAs, the City has determined that the project would not result in an adverse change to the significance of a historical resource and this exception is not applicable to the proposed project.

5 Summary

Based on this analysis, the proposed 930 Irwin Street Residential Project meets the criteria for a Class 32 Categorical Exemption pursuant to Section 15332 of the State CEQA Guidelines and is exempt from CEQA pursuant to CEQA Guidelines Article 19.

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Appendix A

Transportation Impact Study

Transportation Impact Study for the Modera San Rafael Project

Prepared for the City of San Rafael

Submitted by
W-Trans

May 6, 2025

TRAFFIC ENGINEERING
TRANSPORTATION PLANNING
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Executive Summary

The proposed project includes a 213-unit apartment building to be located at 930 Irwin Street/523 Fourth Street in the City of San Rafael. The project site is currently occupied by a 12,175 square foot office building, which would be demolished to make way for construction of the proposed project. After accounting for the trips generated by existing use, the project is expected to result in 297 net new daily trips on average, including 47 trips during the a.m. peak hour and 39 trips during the p.m. peak hour.

With respect to multimodal circulation, the site is located near the San Rafael Transit Center and SMART station, where services can be accessed to provide access to destinations throughout San Rafael, Marin County, and the Bay Area. There is a complete sidewalk network along the project frontages and throughout the downtown area. Existing facilities for bicyclists, including use of the street network, provide adequate bicycle access in the vicinity of the site. As proposed, the project would be accessed via a driveway from Fourth Street. While the existing uses area accessed by driveways on both Fourth Street and Irwin Street, it was determined that retaining access via Irwin Street would result in potential pedestrian safety concerns. Therefore, the proposed driveway location on Fourth Street is recommended as the sole access point. The project does not conflict with City policies and therefore would have a less-than significant impact with respect to multimodal circulation.

Under Existing Conditions, all ten study intersections operate acceptably based on City standards, which exempt intersections within the *Downtown San Rafael Precise Plan* boundary from LOS requirements. Therefore, while the Grand Avenue/Fourth Street intersection operates at LOS E during both peak hours and the Irwin Street/Fourth Street intersection currently operates at LOS E during the p.m. peak hour, this is considered acceptable. All study intersections would continue to operate at the same service levels with the addition of project-generated trips.

The project would meet City requirements for provision of on-site parking spaces, although it is noted that state law prohibits jurisdictions from imposing minimum parking requirements for locations near major transit stops. The project also meets requirements for bicycle parking.

The project would have a less-than-significant impact on vehicle miles traveled. The site has been identified as a location that would generate low rates of vehicle miles traveled (VMT) for residential projects, so the project's VMT impact would be less than significant.

Sight lines at the location of the proposed Fourth Street driveway were evaluated and determined to be adequate, and it was also determined that the project would have a less-than-significant impact with respect to introducing a hazardous condition.

Drive aisles are narrower than current City requirements, but consistent with the *Downtown San Rafael Precise Plan* recommendation for reduced aisle widths. As the parking area is located within the building footprint, fire trucks would serve the site by parking on Irwin Street or Fourth Street. Therefore, the proposed drive aisle widths would be adequate and would have a less-than-significant impact on emergency vehicle access.

Introduction

This report presents an analysis of the potential traffic impacts and operational effects that would be associated with development of a proposed residential project to be located at 930 Irwin Street/523 Fourth Street in the City of San Rafael. The traffic study was completed in accordance with the criteria established by the City of San Rafael and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential transportation impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to an acceptable level under CEQA, the City's General Plan, or other policies. This report provides an analysis of those items that are identified as areas of environmental concern under the California Environmental Quality Act (CEQA) and that, if significant, require an EIR. Impacts associated with access for pedestrians, bicyclists, and to transit; the vehicle miles traveled (VMT) generated by the project; potential safety concerns such as adequacy of sight distance, need for turn lanes, and need for additional right-of-way controls; and emergency access are addressed in the context of the CEQA criteria. While no longer a part of the CEQA review process, vehicular traffic service levels at key intersections were evaluated for consistency with General Plan policies by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on anticipated travel patterns specific to the proposed project, then analyzing the effect the new traffic would be expected to have on the study intersections and need for improvements to maintain acceptable operation. Adequacy of parking is also addressed as a policy issue.

Applied Standards and Criteria

The report is organized to provide background data that supports the various aspects of the analysis, followed by the assessment of CEQA issues and then evaluation of policy-related issues. The CEQA criteria evaluated are as follows.

Would the project:

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
d. Result in inadequate emergency access?

The project was also assessed against the City's policies. The City of San Rafael's *General Plan 2040* contains the following policies that are relevant to the study.

Policy M-2.2: Safety

Design a transportation system that is safe and serves people using all modes of travel. Higher levels of congestion may be accepted at particular intersections if necessary to ensure the safety of all travelers, including pedestrians, bicycles, motorists, and transit users.

Policy M-3.1: VMT Reduction

Achieve State-mandated reductions in Vehicle Miles Traveled by requiring development and transportation projects to meet specific VMT metrics and implement VMT reduction measures.

Policy M-3.2: Using VMT in Environmental Review

Require an analysis of projected Vehicle Miles Traveled (VMT) as part of the environmental review process for projects with the potential to significantly increase VMT. As appropriate, this shall include transportation projects and land use/policy plans as well as proposed development projects.

Policy M-3.7: Design Features that Support Transit

For projects located in or near transit hubs such as Downtown San Rafael, incorporate design features that facilitate walking, cycling, and easy access to transit.

Policy M-3.8: Land Use and VMT

Encourage higher-density employment and residential uses near major transit hubs such as Downtown San Rafael, recognizing the potential for VMT reduction in areas where there are attractive alternatives to driving, concentrations of complementary activities, and opportunities for shorter trips between different uses.

Policy M-6.1: Encouraging Walking and Cycling

Wherever feasible, encourage walking and cycling as the travel mode of choice for short trips, such as trips to school, parks, transit stops, and neighborhood services. Safe, walkable neighborhoods with pleasant, attractive streets, bike lanes, public stairways, paths, and sidewalks should be part of San Rafael's identity.

Project Profile

The proposed project is the redevelopment of the sites at 930 Irwin Street/523 Fourth Street by removing an existing 12,175 square foot office building and constructing an eight-story building with 213 apartment units, 18 of which would be affordable. As proposed, the site would be accessed via a driveway on Fourth Street leading to 232 parking spaces located on the ground floor as well as the second and third floors. The location of the project site is shown in Figure 1.

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Transportation Impact Study for the Modera San Rafael Project

Figure 1 – Study Area and Existing Lane Configurations

W-Trans

Transportation Setting

Study Area and Periods

The study area varies depending on the topic. For pedestrian trips it consists of all streets within a half mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby attractors such as the nearby SMART rail station. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety and operational analyses, it consists of the project frontage and the following intersections:

1. Hetherton Street/Mission Avenue
2. Irwin Street/Mission Avenue
3. Hetherton Street/Fourth Street
4. Irwin Street/ Fourth Street
5. Grand Avenue/ Fourth Street
6. Hetherton Street/Third Street
7. Irwin Street/Third Street
8. Grand Avenue/ Third Street
9. Hetherton Street/Second Street
10. Irwin Street/Second Street

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute. Counts were obtained at the study intersections on Wednesday, September 4, 2024.

Study Intersections

Hetherton Street/Mission Avenue is a four-legged signalized intersection with pedestrian phasing and marked crosswalks on all legs except the east. Hetherton Street is one-way southbound and the north leg is the southbound off-ramp from US-101.

Irwin Street/Mission Avenue is a four-legged signalized intersection with the north leg splitting off into the US-101 North on-ramps to the left and Irwin Street to the right. Irwin Street is one-way northbound. The eastbound left-turn phase is protected. The intersection has pedestrian phasing and marked crosswalks on all legs except the north.

Hetherton Street/Fourth Street is a signalized intersection with four legs. Marked crosswalks and pedestrian phasing exist on all legs of the intersection. Hetherton Street is one-way southbound.

Irwin Street/Fourth Street is a signalized, four-legged intersection with marked crosswalks and pedestrian phasing on all four legs. Irwin Street is one-way northbound.

Grand Avenue/Fourth Street is a four-legged signalized intersection with marked crosswalks on all four legs, and pedestrian phasing at the north and west legs.

Hetherton Street/Third Street is a signalized, four-legged intersection with marked crosswalks and pedestrian phasing on all legs except the south. Third Street is one-way westbound and Hetherton Street is one-way southbound.

Irwin Street/Third Street is a four-legged signalized intersection with pedestrian phasing and marked high-visibility crosswalks on all legs except the west leg. Third Street is westbound only, while Irwin Street is northbound only.

Grand Avenue/Third Street is a signalized four-legged intersection with pedestrian phasing and marked high-visibility crosswalks on all four legs of the intersection. Third Street is one-way westbound only.

Hetherton Street/Second Street is a signalized, four-legged intersection with the south leg being the US-101 South on-ramp. The north leg is southbound only and has a marked crosswalk with pedestrian phasing. Second Street is eastbound only and the west leg consists of a "Keep Clear" zone as the SMART tracks pass through.

Irwin Street/Second Street is a four-legged, signalized intersection with the south leg being the US-101 North off-ramp. Marked high-visibility crosswalks with pedestrian phasing exist on the west and south legs of the intersection. Irwin Street is northbound only, while Second Street is eastbound only.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadways

Irwin Street is a one-way, northbound only street with four lanes between Second Street and Fourth Street and three lanes with a parking lane on the west side of the street between Fifth Street and Mission Avenue. North of Mission Avenue, Irwin Street has one lane with parking on both sides of the street and is classified as a local street. Irwin Street has a speed limit of 25 mph and carries approximately 12,500 vehicles per day between Third Street and Fourth Street as approximated from p.m. peak hour turning movement counts.

Fourth Street is a two-lane east-west street that is classified as a minor arterial to the west of Irwin Street, a major collector between Irwin Street and Grand Avenue, and a local street between Grand Avenue and Union Street. Parking is available on both sides of the street. Fourth Street has a speed limit of 25 mph, and traffic counts collected on September 4, 2024, indicate that the roadway carries approximately 5,200 vehicles per day between Irwin Street and Grand Avenue.

Pedestrian Facilities

Existing and Planned Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site.

- **Fourth Street** – Continuous sidewalk coverage is provided on both sides of Fourth Street between West End Avenue-Second Street and Union Street. Curb ramps and crosswalks are provided at side street approaches. Lighting is provided by overhead streetlights.

- **Irwin Street** – Continuous sidewalks are provided on both sides of Irwin Street between Second Street and Mission Avenue. Curb ramps and crosswalks at side street approaches are provided and lighting is provided by overhead streetlights. Irwin Street provides access to and from northbound US-101.

The *San Rafael Bicycle & Pedestrian Master Plan Update*, 2018, describes several conceptual projects to address the concerns regarding pedestrian safety in the downtown area. This includes enhanced pedestrian crossings along West Tamalpais Avenue between Second Street and Mission Avenue; pedestrian crossings, intersection reconfiguration, and sidewalk improvements on Second Street between Lincoln Avenue and Grand Avenue; treatment studies for intersections on Hetherton Street between Third Street and Mission Avenue; and other individual projects around downtown.

Pedestrian Safety

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. SWITRS records were reviewed for the intersection of Irwin Street/Fourth Street from October 1, 2018, through September 30, 2023, during which time there were four pedestrian-involved injury crashes, all of which had a primary collision factor (PCF) of pedestrian right-of-way violation. Based on a review of the collision records, it appears that at least two of the collisions involved northbound vehicles on Irwin Street turning left onto Fourth Street.

Bicycle Facilities

Existing and Planned Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2020, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

Table 1summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *San Rafael Bicycle & Pedestrian Master Plan Update,* 2018. It is noted that several planned bicycle facilities are components of routes that would form longer corridors for travel to, from, and within central San Rafael (referenced in the Plan as North/South Greenway, Commercial Corridor, Cross Marin Bikeway+, and Bridge Connector). These projects are referenced in Table 1 – Bicycle Facility Summary.

Table 1 – Bicycle Facility Summary

Status Location	Class	Length (miles)	Begin Point	End Point
Existing				
Mahon Creek Path	I	0.20	Anderson Dr	Francisco Blvd W
SMART Trail	I	1.50	Fourth St	Merrydale Rd
Lincoln Ave-Irwin St	III	1.00	Second St	Bret Harte Park
Third St	III	0.50	Union St	53 Pt San Pedro Rd
Fourth St	III	1.01	Second St	Tamalpais Ave
Fourth St	III	0.25	Irwin St	Union St
Grand Ave	III	0.72	Fifth St	Belle Ave-Newhall Dr
Francisco Blvd W	IV	0.32	Second St	Rice Dr
Grand Ave	IV	0.23	Second St	Fourth St
Planned				
Tamalpais Dr	IV	0.30	Second St	Mission Ave
Fourth St (Commercial Corridor)	TBD	1.39	Second St	Union St
Fourth St	TBD	0.04	Union St	San Rafael High School Playing Field

Sources: *San Rafael Bicycle & Pedestrian Master Plan Update*, Alta Planning + Design, 2018; W-Trans 2024

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes. During the five-year study period between October 1, 2018, through September 30, 2023, there was one reported injury collision involving a bicyclist at the Fourth Street/Irwin Street intersection. The collision was determined to result from the bicyclist failing to yield the right-of-way to a motorist.

Transit Facilities

Existing Transit Facilities

Several transit providers provide fixed route bus and other services in San Rafael.

Marin Transit and Golden Gate Transit provide fixed route bus service in San Rafael, with the closest stops located at the San Rafael Transit Center, approximately 0.12 miles southwest of the proposed project site. Sonoma-Marin Area Rail Transit (SMART) provides fixed route train service in San Rafael and is located approximately 0.12 miles west of the proposed project site. Alternative accessibility modes also operate under Marin Access.

All Marin Transit vehicles are equipped with bike racks that can accommodate at least two bicycles. Golden Gate Transit buses can accommodate up to three bicycles on front-mounted racks or underbelly bike racks. Each two-car SMART train can accommodate up to 24 bicycles. Bike storage on buses and trains is available on a first-come, first-served basis. Bike racks are also available at the San Rafael Downtown SMART station.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Marin Access is designed to serve the needs of individuals with disabilities within San Rafael and throughout Marin County.

Existing transit routes and their operation are summarized in Table 2.

Table 2 – Transit Routes					
Transit Agency Route	**Distance to Stop (mi)[1]**	**Service**			**Connection**
		Days of Operation	**Time**	**Frequency**	
Marin Transit					
Route #17	0.12	Weekdays Sat/Sun	5:30 AM-9:30 PM 6:30 AM-7:30 PM	30-60 min 60 min	Sausalito – Downtown San Rafael
Route #22	0.12	Weekdays Sat/Sun	6:00 AM-8:00 PM 7:00 AM-6:00 PM	30 min-60 min 60 min	Downtown San Rafael – Marin City Hub
Route #23	0.12	Weekdays Sat/Sun	6:43 AM-9:23 PM 7:23 AM-8:23 PM	20-60 min 60 min	Fairfax – Canal
Route #29	0.12	Weekdays	7:00 AM-3:45 PM	6 Buses per day	Downtown San Rafael – E. Corte Madera
Route #35	0.12	Weekdays Sat/Sun	7:00 AM-10:30 PM 7:30 AM-2:00 AM	15-30 min 30 min	Terra Linda – Kerner Blvd/Larkspur St
Route #36	0.12	Weekdays Sat/Sun	6:15 AM-7:45 PM 7:45 AM-6:15 PM	30 min 60 min	Marin City – Kerner Blvd/Larkspur St
Route #49	0.12	Weekdays Sat/Sun	6:15 AM-8:15 PM 7:15 AM – 9:15 PM	30-60 min 60 min	Downtown San Rafael – Downtown Novato
Route #57	0.12	Weekdays	7:15 AM-8:30PM	15-60 min	Downtown San Rafael – Downtown Novato
Route #68	0.12	Weekdays Sat/Sun	6:45 AM-8:45 PM 7:30 AM-10:30PM	60-120 min 60-120 min	Downtown San Rafael - Inverness
Route #71	0.12	Daily	6:00 AM-12:30 AM	30-60 min	Marin City – Novato
Route #228	0.12	Weekdays Sat/Sun	6:30 AM-7:30 PM 7:30 AM-6:30 PM	60 min 60 min	Downtown San Rafael – Fairfax Manor
Route #233	0.12	Weekdays Sat/Sun	7:00 AM-7:00 PM 8:00 AM -5:00 PM	60 min 60 min	Downtown San Rafael – Santa Venetia
Route #245	0.12	Daily	7:00 AM-6:00 PM	60 min	Downtown San Rafael – Smith Ranch Road
Golden Gate Transit					
Route #101	0.12	Daily	5:10AM-12:30AM	30-60 min	Santa Rosa – San Francisco
Route #130	0.12	All Days	6:20AM-12:40 AM	60 min	San Rafael – San Francisco
Route #132	0.12	Weekdays	5:08AM-8:33AM (SB) 3:20PM-5:50 PM(NB)	8 Buses 6 Buses	San Anselmo – San Francisco
Route #150	0.12	Weekdays Weekends	5:45 AM-8:45 PM 7:45 AM-5:45 PM	60 min 60 min	Downtown San Rafael – San Francisco
Route #580/580X	0.12	Weekdays Weekends	6:31 AM -9:45 PM 7:45 AM-9:45 PM	26-60 min 60 min	Downtown San Rafael – El Cerrito Del Norte BART
SMART					
SMART	0.12	Weekdays, Weekends	5:15 AM-8:57 PM 8:28 AM-8:57PM	23-64 min 1-2 hr	Sonoma County Airport – Larkspur

Note: [1] Defined as the shortest walking distance between the project site and the nearest bus stop
Source: sonomamarintrain.org, goldengatetransit.org, marintransit.org

Project Data

The project consists of 213 apartment units, 18 of which would be affordable. The eight-story residential building would replace 12,175 square feet of office space. Access to the site would occur via a single driveway on Fourth Street. The proposed project site plan is shown in Figure 2.

Trip Generation

The anticipated trip generation was used to inform the level of analysis required under the City's guidelines. Standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, were used to estimate the trip generation for the proposed uses. Rates for Multifamily Housing (Mid-Rise) Close to Transit (LU #221) in a dense, urban setting and Affordable Housing (General urban/suburban area) (LU #223) rates were applied to the housing units.

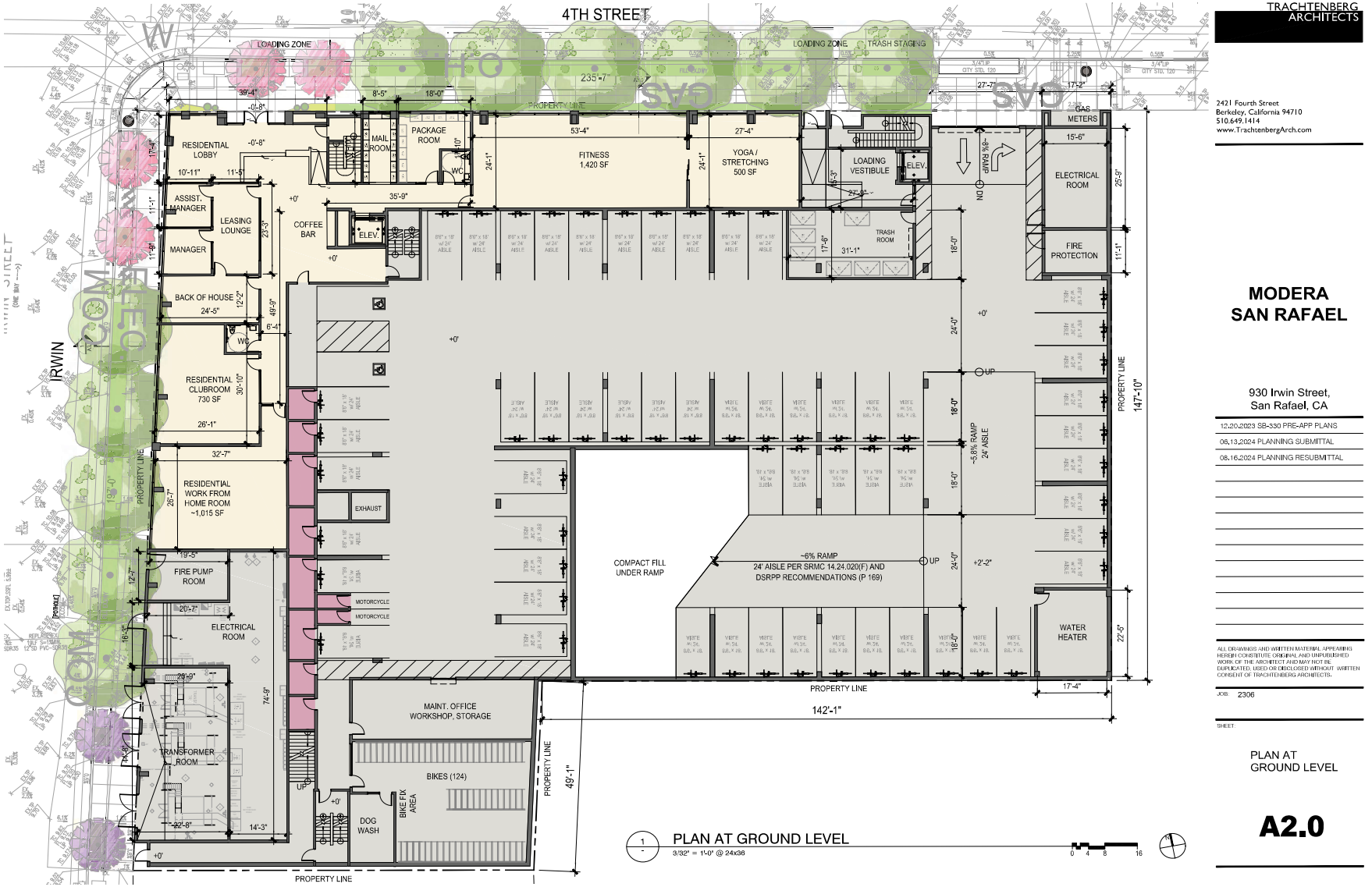
Because the existing office space is operational, traffic counts were obtained on both driveways during the a.m. and p.m. peak periods on three dates, September 4, September 5, and September 10, 2024. These were taken on a Wednesday, Thursday, and Tuesday, respectively. It is understood that 2,154 square feet of space was vacant at the time of the counts. These counts indicate that the 10,021 square feet of existing office space that was occupied generated an average of nine trips during the morning peak hour and 15 during the evening peak hour, which translates to rates of 0.90 trips per 1,000 square feet (ksf) for the morning peak hour and 1.50 trips per ksf for the evening peak hour. These derived rates were used to determine the net reduction in trips associated with the elimination of the office space based on an assumption of full occupancy.

Based on the application of these rates, the proposed project is expected to generate an average of 479 trips per day, including 58 a.m. peak hour trips and 57 trips during the p.m. peak hour. After deducting the trips associated with the existing office use, the project would be expected to generate an average of 297 net new trips per day, with 47 more trips during the morning peak hour and an increase of 39 trips during the p.m. peak hour. These results are summarized in Table 3.

Table 3 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
General Office	-12.175 ksf	14.97	-182*	0.90	-11	-7	-4	1.50	-18	-5	-13
Proposed											
MF (Mid-Rise)	195 du	2.01	392	0.25	49	7	42	0.25	49	36	13
Affordable Housing	18 du	4.81	87	0.50	9	3	6	0.46	8	5	3
Sub-Total (Proposed)			479		58	10	48		57	41	16
Total			297		47	3	44		39	36	3

Note: ksf = 1,000 square feet; du = dwelling unit; *p.m. peak hour trip rate was multiplied by 10 to get daily trip rate



PLAN AT GROUND LEVEL
3/32" = 1'-0" @ 24x36

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MODERA SAN RAFAEL

930 Irwin Street,
San Rafael, CA

12.20.2023 SB-330 PRE-APP PLANS
06.13.2024 PLANNING SUBMITTAL
08.16.2024 PLANNING RESUBMITTAL

JOB: 2306

SHEET:

PLAN AT GROUND LEVEL

A2.0

Source: Trachtenburg Architects 10/15

sra156-1.ai 10/24

Transportation Impact Study for the Modera San Rafael Project

Figure 2 – Site Plan

Trip Distribution

The pattern used to allocate new project trips to the street network was determined by reviewing employment patterns for residents of San Rafael as indicated by Census data. It is noted that trips within San Rafael to destinations such as the Northgate Mall or Civic Center were assumed to be via US 101. The assumptions shown in Table 4 were applied.

Table 4 – Trip Distribution Assumptions

Route	Percent
To/from the South and East via US 101 and I-580	45%
To/from the North via US 101	25%
To/from the West via Second/Third St couplet	10%
To/from the West via Fourth St	10%
To/from the West via Mission Ave	5%
To/from the East via Fourth St	5%
TOTAL	100%

Circulation System

This section addresses the first transportation bullet point on the CEQA checklist, which relates to the potential for a project to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Pedestrian Facilities

Project Impacts on Pedestrian Facilities

Given the proximity of the project to numerous commercial sites, downtown San Rafael, the Transit Center, and the SMART station, it is reasonable to assume that some project residents will want to walk to travel to or from the project site.

Project Site – Sidewalks exist along the proposed project frontage on Fourth Street and Irwin Street. The Plan identifies Fourth Street as part of the pedestrian and bicycle priority networks, while Irwin Street is identified as part of the vehicle and transit priority networks. The project could potentially impact conditions for pedestrians and bicyclists due to the increased number of vehicles entering and exiting the project parking lot by crossing the sidewalk on Fourth Street. Consideration was therefore given to recent collisions to determine any existing safety concerns that could be impacted by the project.

The potential for site-generated traffic to conflict with pedestrians crossing at Irwin Street/Fourth Street was considered in light of the emphasis on pedestrian travel along Fourth Street. As noted above, it appears that at least five of the eleven pedestrian-involved collisions reported at Irwin Street/Fourth Street involved northbound vehicles on Irwin Street turning left onto Fourth Street. As currently proposed, the existing Irwin Street driveway at the site would be closed and the site would be accessed from Fourth Street. Based on area traffic patterns, most drivers exiting the site would be expected to turn west on Fourth Street. It is anticipated that if the project driveway were to be located on Irwin Street, most drivers exiting the site at this location may be distracted by the complex traffic pattern, resulting in potential conflicts with pedestrians. As a result, removal of the existing driveway and establishing the site's access on Fourth Street would provide a benefit in terms of eliminating a potential conflict with pedestrians crossing on the west side of the intersection at Irwin Street/ Fourth Street.

Finding – The project would not conflict with any policies related to pedestrian facilities.

Bicycle Facilities

Bicycle Storage

The *Downtown San Rafael Precise Plan* (DSRPP) requires residential buildings to provide one bicycle parking space for each studio or one-bedroom unit, two spaces for each two-bedroom unit, and three spaces for each three-bedroom unit. The project as proposed includes 45 studios, 69 one-bedroom units, 69 two-bedroom units, and 30 three-bedroom units, resulting in a requirement of 342 bicycle parking spaces. As indicated on the site plan 342 bicycle parking spaces are proposed, which meets the DSRPP requirement.

The DSRPP also references Section 14.18.090 of the San Rafael Municipal Code, which requires short-term bicycle parking to be provided at a rate of five percent of the automobile parking requirement, with a minimum of one two-bike capacity rack. It is noted AB 2097 prohibits a minimum requirement of vehicle parking spaces for development projects within one-half mile of a major transit stop; this applies to the project based on its proximity to the SMART station. However, for the purpose of assessing the project's bicycle parking, it was assumed that bicycle storage would be required based on the City's Municipal Code Requirements. With the incorporation of

the *Downtown San Rafael Precise Plan* requirements into the Code, the project would require a total of 200 vehicular parking spaces, resulting in 10 bicycle parking spaces being required. Racks providing ten short-term bicycle parking spaces will be provided on the sidewalk adjacent to the site, meeting the DSRPP requirement.

Project Impacts on Bicycle Facilities

Existing bicycle facilities, including a bike route on Fourth Street along the project frontage and separated bike lanes on Grand Avenue, together with shared use of minor streets, provide adequate access for bicyclists. The project would not result in the modification of lane configuration on Fourth Street and would therefore not impact the City's plans for future enhanced bicycle facilities along this segment. The project proposes to include 342 long-term bicycle parking spaces and 10 short-term spaces, meeting DSRPP requirements.

Finding – The project would not conflict with applicable policies regarding bicycle circulation.

Impact on Transit Facilities

As noted, SMART service and numerous bus routes are available within an acceptable walking distance of the project and provide service to a wide variety of destinations. Existing transit routes are adequate to accommodate project-generated transit trips.

Finding – The project would be consistent with policies related to transit facilities.

Significance Finding – The proposed project would not conflict with any plans or policies for transportation facilities. It would therefore have a less-than-significant impact on these facilities.

Vehicle Miles Traveled (VMT)

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based the project's anticipated Vehicle Miles Traveled (VMT).

The Vehicle Miles Traveled (VMT) associated with a project is the basis for determining traffic impacts under CEQA. The *City of San Rafael Transportation Analysis Guidelines*, 2021, includes VMT screening thresholds and indicates that projects meeting at least one of these thresholds would be presumed to not require CEQA VMT analysis. Figure 2 in the guidelines provides a map based on outputs from the Transportation Authority of Marin Demand Model (TAMDM) that identifies low-VMT areas for residential development in the City of San Rafael. The project location is shown on the map as being in a low-VMT area, indicating that the VMT per capita is at least 15 percent below the average of the nine-county Bay Area. Therefore, the impact is presumed to be less than significant and does not require a VMT analysis.

In addition, it is noted that the project is located within walking distance of a variety of commercial uses, the San Rafael Transit Center, San Rafael Downtown SMART station, and downtown San Rafael. are screened out as being presumed to have a less-than-significant impact under the VMT standards applied by many agencies. It is expected that due to the proximity of these destinations to the project site that some project-generated trips would be made using non-vehicle modes of transportation, which supports the finding from the model data that the site is in a low-VMT area.

Significance Finding – The project would screen out from quantitative analysis based on the City's adopted guidelines; therefore, the project's VMT impact would be presumed to be less than significant.

Safety Issues

The potential for the project to impact safety was evaluated in terms of the adequacy of sight distance. This section addresses the third transportation bullet on the CEQA checklist which is whether or not the project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Site Access

The proposed project would be accessible via a driveway on Fourth Street with drivers able to enter from and exit to both directions.

Sight Distance

The proposed project driveway would be located approximately 200 feet east of the Fourth Street/Irwin Street intersection and 60 feet east of the existing driveway on Fourth Street. The existing driveway provides full site access, and relocating the driveway farther from the intersection would provide additional sight distance for drivers exiting the project driveway. Sight distance at the proposed driveway location was evaluated in the field and using Google Earth. Although sight distance requirements are not applicable to urban driveways, the stopping sight distance criterion was applied for evaluation purposes. Based on the speed limit of 25 mph, the minimum stopping sight distance needed is 150 feet.

The site plan indicates that parking would be prohibited immediately west of the proposed driveway to establish a trash receptacle staging area and loading zone. The eastbound travel lane along the project frontage is approximately 22 feet wide, enabling drivers exiting the driveway to edge forward into the roadway without entering the flow of traffic. Drivers exiting the driveway would therefore be able to see the Fourth Street/Irwin Street intersection, approximately 200 feet away; sight lines would also extend over 150 feet to the east, enabling drivers to see oncoming westbound traffic. Further, it is noted that there are numerous driveways throughout the block on which the project site is located, with no apparent operational concerns.

Nearby driveways were also evaluated for potential impacts from the proposed driveway location. There is an existing driveway on the City-owned parcel east of the project site that is planned for redevelopment, so the driveway to access that parcel may not remain in the long term; however, as the building faces along the south side of Fourth Street are set back 13 feet from the curb, drivers entering or exiting driveways will be able to see one another and avoid conflict. As a result, the proposed project driveway would not result in safety concerns due to proximity of the driveway to the intersection or other driveways.

Assessment of Potential Irwin Street Driveway

While not proposed as part of the project, as part of the site access assessment, the potential for driveway access from Irwin Street was also evaluated.

Irwin Street is one of the highest volume streets in San Rafael as it brings traffic from northbound US 101 into the downtown area and carries vehicles from downtown to the northbound US 101 on-ramp. Since Irwin Street is one-way, vehicles exiting the site onto Irwin Street would be required to turn right. For the estimated 60 percent of project traffic heading to southbound US 101, eastbound I-580, or downtown San Rafael via Fourth Street, turning left at Fourth Street would offer the most direct route to their destination. It is expected that during much of the day it would be challenging for drivers exiting onto Irwin Street to find a gap in traffic on Irwin Street to be able to exit the site and many would then attempt to weave across three lanes to turn left onto Fourth Street. This maneuver poses a safety concern. Irwin Street was identified in the Downtown Precise Plan as a vehicle priority

street; therefore, the elimination of the existing driveway on Irwin Street should provide a safety benefit and would support the intent of the Plan.

It is further noted that drivers leaving the site and attempting to travel west on Fourth Street would typically be so focused on vehicular traffic that they would be less likely to observe pedestrians crossing on the west side of Irwin Street. This maneuver would therefore present a safety concern for pedestrians too.

The project would generate right turns from Irwin Street to Fourth Street and vice versa together with westbound through movements. Care should be taken in designing landscaping and signing for the corner to ensure that drivers would have a clear view of pedestrians entering either crosswalk from the project corner.

Limitation to Right Turns Only

Staff indicated that access should be limited to right turns in and out to reduce the potential for conflicts with pedestrians. However, it is noted that left turns are common at driveways in the vicinity of the project site and due to the one-way orientation of Irwin Street and 3rd Street, forcing all traffic to enter and exit via right turns would create circuitous travel paths for some trips. The City has also indicated that auditory and visual warning signals as well as convex mirrors should be placed at the garage exit driveway. With these measures implemented it is anticipated that pedestrian conflicts would be minimized, thereby offsetting the need to restrict movements.

Pick-up and Drop-off Activities

The potential for conflicts associated with pick-up and drop-off activities at the site were evaluated. As noted above, Irwin Street is one of the highest volume streets in San Rafael. Additionally, there is no space to pull over on Irwin Street. Therefore, any pick-ups or drop-offs, including those for ridesharing or ride-hailing, should occur on Fourth Street to avoid conflicts with other vehicles.

Finding – Sight distance would be adequate at the proposed driveway on Fourth Street.

Recommendation – To preserve existing sight lines, any new signage, monuments, or other structures to be placed near the project entrances should be positioned outside of the vision triangles of a driver waiting on the driveway approaches. Landscaping should be planned or trimmed to be lower than three feet in height or above seven feet. Pick-ups and drop-offs at the proposed project site should occur on Fourth Street rather than Irwin Street. Visual and auditory warning signals should be installed at the garage exit driveway along with convex mirrors.

Significance Finding – The project would not result in any changes to the physical or operational conditions of the roadway that would introduce any hazards, and the project impact with regard to these factors would be less than significant with the recommendations noted above incorporated.

Emergency Access

The final transportation bullet on the CEQA checklist requires an evaluation as to whether the project would result in inadequate emergency access or not.

Adequacy of Site Access

The proposed use of 24-foot drive aisles was investigated with respect to City policies. The *San Rafael Municipal Code* Section 14.18.130 outlines parking facility dimension requirements. For facilities with 90-degree parking, 26-foot drive aisles are required. While the proposed 24-foot aisles are narrower than what the City requires, the *Downtown Precise Plan* recommends reduction of parking facility drive aisle width requirements throughout the City. The project's parking would be located in the basement and on the first three floors of the proposed building; therefore, fire trucks would not enter the parking area. Emergency vehicles would access the site from Fourth Street and Irwin Street, where fire hydrants could be accessed.

Adequacy of the 24-foot drive aisles was therefore assessed based on the dimensions and turning radii of a large personal vehicle. It was determined that a Suburban could navigate the site. A turning template indicating how a large SUV would navigate the drive aisles is provided in Appendix A. It is noted that only a right turn into and out of the driveway was assessed since, though proposed, left turns have a larger radius and can therefore be accommodated more easily than right turns.

Effect on Emergency Response Times

As detailed in the following section, the addition of project-generated traffic would have a limited effect on traffic operation and would therefore potentially result in only a nominal increase in response times. However, as all traffic is required by law to pull to the side to allow emergency responders traveling with their lights and sirens operating to pass, response times would not be expected to change as a result of the project.

Finding – Traffic from the project would not be expected to increase emergency response times.

Significance Finding – The project would be expected to have a less-than-significant impact on emergency response times.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using the signalized methodology published in the *Highway Capacity Manual* (HCM), 6th Edition, Transportation Research Board, 2016. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. The signalized methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using signal timing obtained from the City of San Rafael.

The ranges of delay associated with the various levels of service are indicated in Table 5.

Table 5 – Signalized Intersection Level of Service Criteria	
LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 6th Edition

Traffic Operation Standards

The project was also evaluated against the City of San Rafael's policies, which provide guidance relative to traffic impacts for CEQA issues as well as the effects caused by traffic associated with new development. The *Transportation Impact Analysis Guidelines*, City of San Rafael, 2021, detail mobility deficiency criteria for development projects. For intersection traffic control, the Guidelines refer to the Level of Service (LOS) standard published in the *San Rafael General Plan 2040*, City of San Rafael, 2021. General Plan Policy M-2.5 outlines a general citywide standard of LOS D operation, with exemptions for intersections in the *Downtown San Rafael Precise Plan* boundary and signalized freeway ramp intersections.

The City notes that intersections within the *Downtown San Rafael Precise Plan,* 2021, are not subject to LOS standards. Rather, "proactive measures shall be taken to address and manage downtown congestion, evaluate and reduce the impacts of new development on the transportation network, and ensure the long-term functionality of streets and intersections". All ten study intersections are located within the *Precise Plan* boundaries.

The Guidelines state that an adverse effect would occur if the addition of project traffic would cause a deficient level of delay at an intersection, or if the delay at an intersection operating deficiently without project traffic would increase by five seconds or more with the addition of project traffic.

Intersection Levels of Service

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on Wednesday, September 4, 2024, while local schools were in session.

Under existing conditions, all study intersections are operating acceptably according to the *Downtown San Rafael Precise Plan*. The existing traffic volumes are shown in Figure 3. A summary of the intersection Level of Service calculations is contained in Table 6, and copies of the calculations are provided in Appendix B.

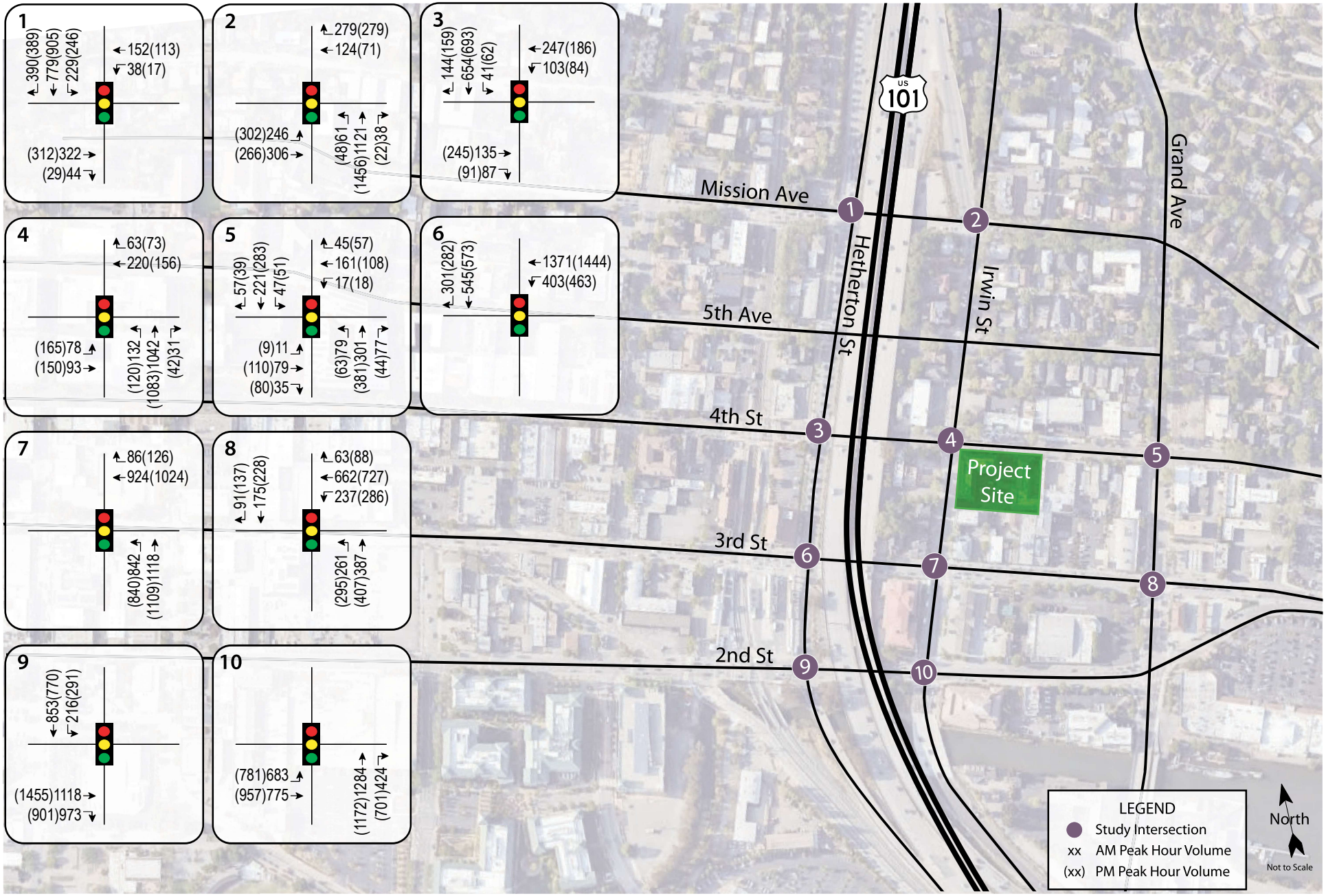
Table 6 – Existing Peak Hour Intersection Levels of Service

Study Intersection	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Hetherton St/Mission Ave	15.7	B	14.0	B
2. Irwin St/Mission Ave	41.8	D	54.5	D
3. Hetherton St/Fourth St	20.1	C	20.0	C
4. Irwin St/Fourth St	25.6	C	73.9	E
5. Grand Ave/Fourth St	61.7	E	58.8	E
6. Hetherton St/Third St	28.5	C	28.1	C
7. Irwin St/Third St	19.4	B	20.5	C
8. Grand Ave/Third St	34.5	C	30.8	C
9. Hetherton St/Second St	24.3	C	22.9	C
10. Irwin St/Second St	22.7	C	25.5	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Existing plus Project Conditions

Upon the addition of project-related traffic to the existing volumes, the study intersections are expected to continue operating at the same Levels of Service as without it. These results are summarized in Table 7. Project traffic volumes are shown in Figure 4 and Existing plus Project volumes are shown in Figure 5. It is noted that for a conservative analysis, the reduction in trips associated with the existing office space was based on the existing occupied space rather than full occupancy.



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Transportation Impact Study for the Modera San Rafael Project

Figure 3 – Existing Traffic Volumes

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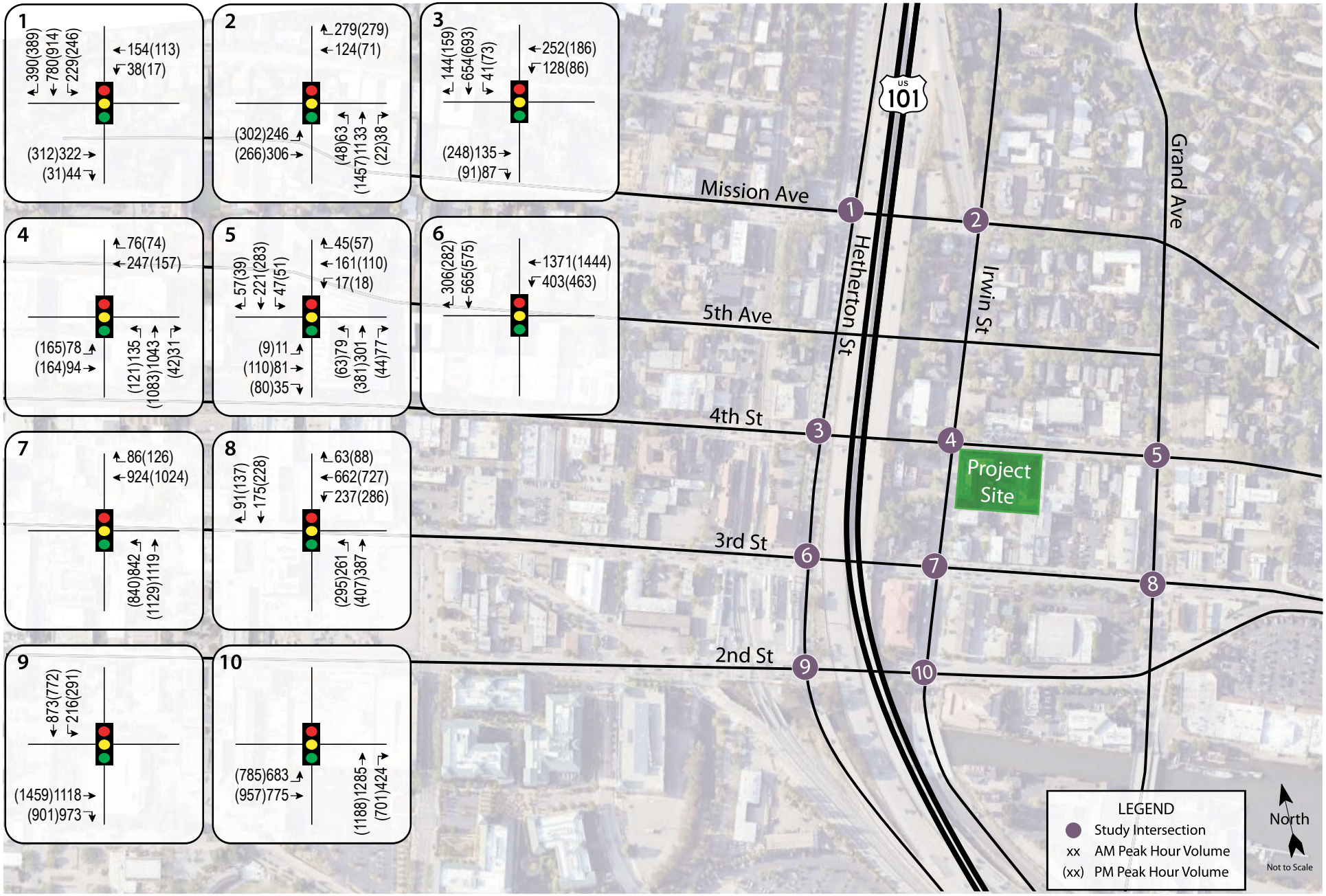
Transportation Impact Study for the Modera San Rafael Project

Figure 4 – Project Traffic Volumes



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Transportation Impact Study for the Modera San Rafael Project

Figure 5 – Existing plus Project Traffic Volumes

Table 7 – Existing and Existing plus Project Peak Hour Intersection Levels of Service								
Study Intersection	**Existing Conditions**				**Existing plus Project**			
	AM Peak		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. Hetherton St/Mission Ave	15.7	B	14.0	B	15.7	B	14.0	B
2. Irwin St/Mission Ave	41.8	D	54.5	D	41.8	D	54.4	D
3. Hetherton St/Fourth St	20.1	C	20.0	C	20.0	B	20.1	C
4. Irwin St/Fourth St	25.6	C	73.9	E	26.6	C	73.4	E
5. Grand Ave/Fourth St	61.7	E	58.8	E	61.8	E	58.8	E
6. Hetherton St/Third St	28.5	C	28.1	C	28.6	C	28.1	C
7. Irwin St/Third St	19.4	B	20.5	C	19.4	B	20.4	C
8. Grand Ave/Third St	34.5	C	30.8	C	34.5	C	30.8	C
9. Hetherton St/Second St	24.3	C	22.9	C	24.4	C	22.9	C
10. Irwin St/Second St	22.7	C	25.5	C	22.7	C	25.6	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

It should be noted that with the addition of project-related traffic volumes, average delay at the intersections of Hetherton Street/Fourth Street decreases during the a.m. peak hour and at Irwin Street/Mission Avenue and Irwin Street/Fourth Street it decreases during the p.m. peak hour. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. The project adds traffic predominantly to the movements which have average delays that are lower than the average for the intersection as a whole, resulting in a slight reduction in the overall average delay. The conclusion could incorrectly be drawn that the project actually improves operation based on this data alone; however, it is more appropriate to conclude that the project trips are expected to make use of excess capacity, so drivers will experience little, if any, change in conditions as a result of the project.

Finding – The study intersections are expected to continue operating at the same Levels of Service upon the addition of project-generated traffic as without it.

Parking

The project was analyzed to determine whether the proposed parking supply would be sufficient. The project site as proposed would provide a total of 222 parking spaces.

According to California Assembly Bill (AB) 2097, public agencies are prohibited from enforcing any minimum automobile parking requirements on residential and commercial developments located within one-half mile of a major transit stop. As the proposed project is located within one-half mile of the San Rafael SMART station, parking is not required to be provided as part of the proposed project. However, parking requirements as stated in the *Downtown San Rafael Precise Plan* are noted.

The proposed parking supply and DSRPP and Municipal Code requirements are shown in Table 8.

Table 8 – Parking Analysis Summary

Land Use	**Units**	**DSRPP Requirements**	
		Rate	**Spaces Required**
Studio	45 du	0.75 per unit	34
1-bedroom	69 du	0.75 per unit	52
2-bedroom	69 du	1 per unit	69
3-bedroom	30 du	1.5 per unit	45
Total			200
Proposed Parking		Unbundled	222

Finding – The proposed parking supply would meet the requirements listed in the *Downtown San Rafael Precise Plan*. However, minimum parking requirements would not be applicable as the project site is located within one-half mile of the San Rafael SMART station.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 479 daily trips, including 58 a.m. peak hour trips and 57 p.m. peak hour trips. After deducting trips associated with the existing office use, the project would be expected to generate a net average of 297 new trips per day, including an increase of 47 trips during the a.m. peak hour and 39 trips during the p.m. peak hour.
- The proposed project would not conflict with any plans or policies regarding circulation of vehicles, pedestrians, bicyclists, or transit and would therefore have a less-than-significant impact on these facilities.
- The project would be expected to screen out from quantitative analysis and have a less-than-significant impact on VMT.
- Sight distance requirements were applied to assess access at the proposed Fourth Street driveway and were determined to be adequate.
- The project would not result in any changes to the physical or operational conditions of the roadway that would introduce any hazards and would therefore have a less-than-significant impact with regard to these factors.
- The proposed site access is expected to function acceptably and the project would be expected to have a less-than-significant impact on emergency response times.
- The study intersections are operating acceptably under existing volumes and are expected to continue operating acceptably with the addition of project-generated trips.
- The proposed parking supply would meet the requirements listed in the *Downtown San Rafael Precise Plan*. However, minimum parking requirements would not be applicable to the project under AB 2097 since it is located within one-half mile of the San Rafael SMART station. The project also meets the bicycle parking requirements.

Recommendations

- Pick-ups and drop-offs at the proposed project site should occur on Fourth Street rather than Irwin Street.
- To preserve existing sight lines, any new signage, monuments, or other structures to be placed near the project entrances should be positioned outside of the vision triangles of a driver waiting on the driveway approaches. Landscaping should be planned or trimmed to be lower than three feet in height or above seven feet.
- Visual and auditory warning devices along with convex mirrors should be placed at the exit driveway.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE (Civil, Traffic), PTOE
Transportation Planner	Barry Bergman, AICP
Traffic Engineer	Kevin Carstens, PE (Civil, Traffic)
Assistant Engineer	Valerie Haines, EIT, Gabriel Ramos, EIT
Graphics	Jessica Bender
Editing/Formatting	Rebecca Mansour, Erika Totanes
Quality Control	Dalene J. Whitlock, PE (Civil, Traffic), PTOE

References

City of San Rafael Transportation Analysis Guidelines, City of San Rafael, 2021
City of San Rafael Transportation Impact Analysis Guidelines, City of San Rafael, 2021
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Golden Gate Bridge Highway and Transportation District, https://www.goldengate.org
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San Rafael Bicycle & Pedestrian Master Plan, Alta Planning + Design, 2018, W-Trans, 2024
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Appendix A

Turning Template

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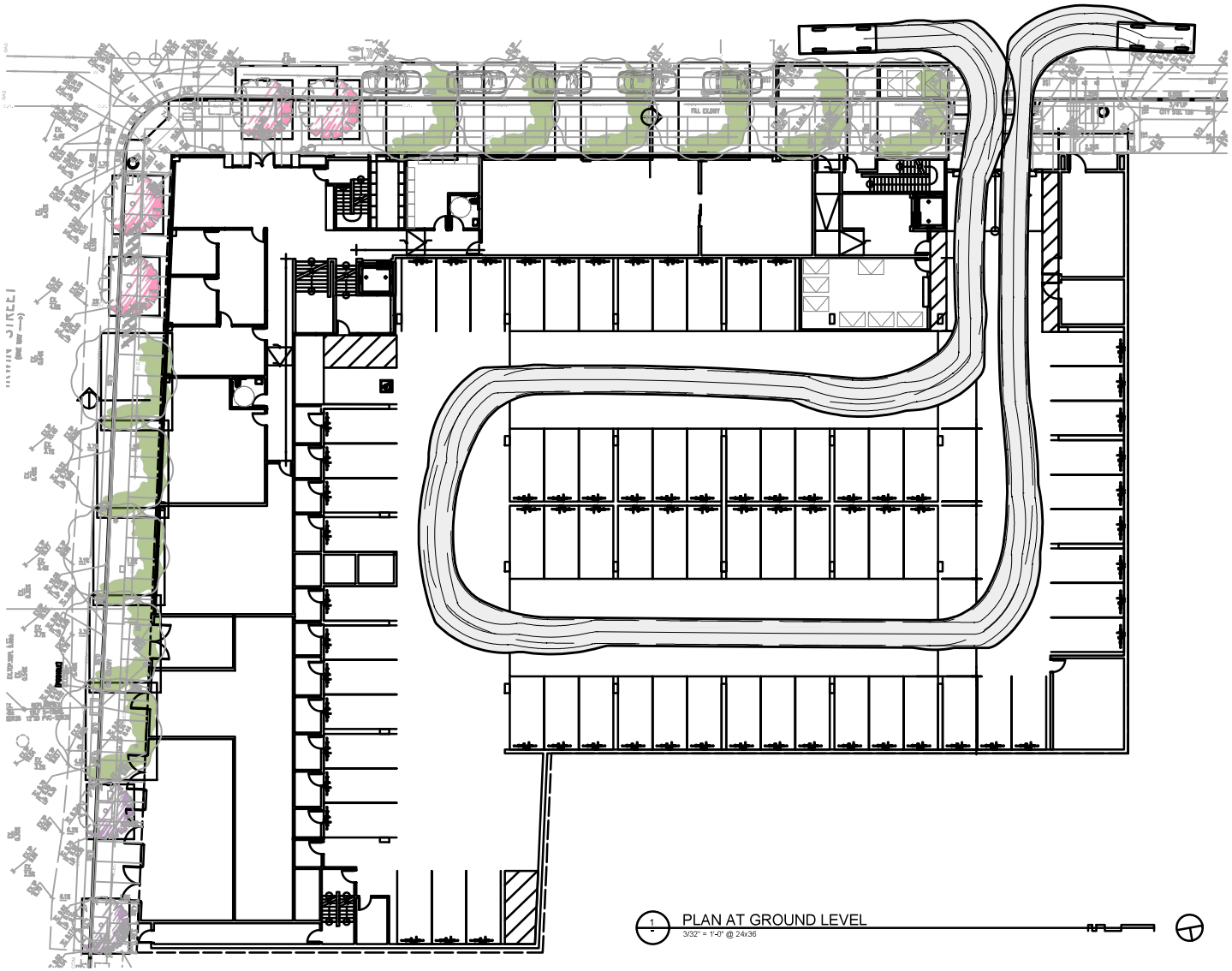

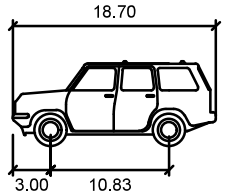

2015-Suburban

	feet
Width	: 6.71
Track	: 5.72
Lock to Lock Time	: 3.4
Steering Angle	: 34.6

W-Trans

0 40’ 80’

SCALE: 1”=40’

SRA156–1: TURNING TEMPLATE FOR MODERA SAN RAFAEL – SUBURBAN VEHICLE

OCTOBER 2024

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Appendix B

Intersection Level of Service Calculations

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HCM 6th Signalized Intersection Summary
1: Hetherton St/US 101 S Off-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	322	44	38	152	0	0	0	0	229	779	390
Future Volume (veh/h)	0	322	44	38	152	0	0	0	0	229	779	390
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	339	41	40	160	0				241	820	348
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	598	72	77	222	0				546	1976	1092
Arrive On Green	0.00	0.19	0.19	0.06	0.06	0.00				0.70	0.70	0.70
Sat Flow, veh/h	0	3277	381	153	1181	0				782	2826	1562
Grp Volume(v), veh/h	0	188	192	200	0	0				565	496	348
Grp Sat Flow(s),veh/h/ln	0	1777	1788	1334	0	0				1831	1777	1562
Q Serve(g_s), s	0.0	8.6	8.8	5.1	0.0	0.0				12.1	10.5	7.8
Cycle Q Clear(g_c), s	0.0	8.6	8.8	13.9	0.0	0.0				12.1	10.5	7.8
Prop In Lane	0.00		0.21	0.20		0.00				0.43		1.00
Lane Grp Cap(c), veh/h	0	334	336	298	0	0				1280	1242	1092
V/C Ratio(X)	0.00	0.56	0.57	0.67	0.00	0.00				0.44	0.40	0.32
Avail Cap(c_a), veh/h	0	650	654	582	0	0				1280	1242	1092
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.96	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	33.2	33.3	40.5	0.0	0.0				5.9	5.7	5.2
Incr Delay (d2), s/veh	0.0	1.5	1.5	2.5	0.0	0.0				1.1	1.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	3.9	5.0	0.0	0.0				3.3	2.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	34.7	34.8	43.0	0.0	0.0				7.0	6.6	6.0
LnGrp LOS	A	C	C	D	A	A				A	A	A
Approach Vol, veh/h		380			200						1409	
Approach Delay, s/veh		34.7			43.0						6.6	
Approach LOS		C			D						A	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		68.0		22.0				22.0				
Change Period (Y+Rc), s		5.1		5.1				5.1				
Max Green Setting (Gmax), s		46.9		32.9				32.9				
Max Q Clear Time (g_c+I1), s		14.1		10.8				15.9				
Green Ext Time (p_c), s		8.4		2.3				1.1				

Intersection Summary												
HCM 6th Ctrl Delay			15.7									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
2: Irwin St/US 101 N On-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	306	0	0	124	279	61	1121	38	0	0	0
Future Volume (veh/h)	246	306	0	0	124	279	61	1121	38	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	267	333	0	0	135	290	66	1218	32			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	247	771	0	0	397	328	118	2320	63			
Arrive On Green	0.14	0.41	0.00	0.00	0.21	0.21	0.15	0.15	0.15			
Sat Flow, veh/h	1781	1870	0	0	1870	1545	255	5010	136			
Grp Volume(v), veh/h	267	333	0	0	135	290	481	401	434			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1545	1858	1702	1841			
Q Serve(g_s), s	12.5	11.5	0.0	0.0	5.5	16.4	21.6	19.5	19.5			
Cycle Q Clear(g_c), s	12.5	11.5	0.0	0.0	5.5	16.4	21.6	19.5	19.5			
Prop In Lane	1.00		0.00	0.00		1.00	0.14		0.07			
Lane Grp Cap(c), veh/h	247	771	0	0	397	328	860	788	853			
V/C Ratio(X)	1.08	0.43	0.00	0.00	0.34	0.88	0.56	0.51	0.51			
Avail Cap(c_a), veh/h	247	840	0	0	466	385	860	788	853			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	1.00	0.86	0.86	0.86			
Uniform Delay (d), s/veh	38.8	18.9	0.0	0.0	30.1	34.4	29.6	28.7	28.7			
Incr Delay (d2), s/veh	77.6	0.4	0.0	0.0	0.5	18.8	2.3	2.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.7	4.9	0.0	0.0	2.5	7.8	11.2	9.3	10.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	116.3	19.3	0.0	0.0	30.6	53.2	31.9	30.7	30.6			
LnGrp LOS	F	B	A	A	C	D	C	C	C			
Approach Vol, veh/h		600			425			1316				
Approach Delay, s/veh		62.4			46.0			31.1				
Approach LOS		E			D			C				

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		42.7		47.3	18.0	24.7						
Change Period (Y+Rc), s		5.6		5.6	5.5	5.6						
Max Green Setting (Gmax), s		40.4		38.4	12.5	22.4						
Max Q Clear Time (g_c+I1), s		13.5		23.6	14.5	18.4						
Green Ext Time (p_c), s		2.2		7.7	0.0	0.7						

Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary
3: Hetherton St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	135	87	103	247	0	0	0	0	41	654	144
Future Volume (veh/h)	0	135	87	103	247	0	0	0	0	41	654	144
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	0.96		1.00				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	144	84	110	263	0				44	696	124
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	403	308	246	403	0				201	3388	1048
Arrive On Green	0.00	0.22	0.22	0.43	0.43	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	1870	1430	1103	1870	0				294	4965	1535
Grp Volume(v), veh/h	0	144	84	110	263	0				277	463	124
Grp Sat Flow(s),veh/h/ln	0	1870	1430	1103	1870	0				1856	1702	1535
Q Serve(g_s), s	0.0	5.9	4.4	7.8	10.0	0.0				11.0	9.9	5.8
Cycle Q Clear(g_c), s	0.0	5.9	4.4	13.7	10.0	0.0				11.0	9.9	5.8
Prop In Lane	0.00		1.00	1.00		0.00				0.16		1.00
Lane Grp Cap(c), veh/h	0	403	308	246	403	0				1266	2322	1048
V/C Ratio(X)	0.00	0.36	0.27	0.45	0.65	0.00				0.22	0.20	0.12
Avail Cap(c_a), veh/h	0	736	562	442	736	0				1266	2322	1048
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.87	0.87	0.00				0.86	0.86	0.86
Uniform Delay (d), s/veh	0.0	30.0	29.4	26.6	22.9	0.0				15.3	14.9	13.3
Incr Delay (d2), s/veh	0.0	0.5	0.5	1.1	1.6	0.0				0.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	1.6	1.7	3.8	0.0				5.5	4.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	30.5	29.9	27.7	24.5	0.0				15.7	15.1	13.5
LnGrp LOS	A	C	C	C	C	A				B	B	B
Approach Vol, veh/h		228			373						864	
Approach Delay, s/veh		30.3			25.4						15.1	
Approach LOS		C			C						B	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		66.0		24.0				24.0				
Change Period (Y+Rc), s		4.6		4.6				4.6				
Max Green Setting (Gmax), s		45.4		35.4				35.4				
Max Q Clear Time (g_c+I1), s		13.0		7.9				15.7				
Green Ext Time (p_c), s		3.9		1.2				2.0				

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
4: Irwin St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	93	0	0	220	63	132	1042	31	0	0	0
Future Volume (veh/h)	78	93	0	0	220	63	132	1042	31	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	1	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.94	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	83	99	0	0	234	62	140	1109	31			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	189	492	0	0	369	98	1131	2241	63			
Arrive On Green	0.53	0.53	0.00	0.00	0.09	0.09	0.21	0.21	0.21			
Sat Flow, veh/h	1070	1870	0	0	1403	372	1781	3530	99			
Grp Volume(v), veh/h	83	99	0	0	0	296	140	558	582			
Grp Sat Flow(s),veh/h/ln	1070	1870	0	0	0	1774	1781	1777	1852			
Q Serve(g_s), s	6.6	2.5	0.0	0.0	0.0	14.5	5.7	24.9	24.9			
Cycle Q Clear(g_c), s	21.1	2.5	0.0	0.0	0.0	14.5	5.7	24.9	24.9			
Prop In Lane	1.00		0.00	0.00		0.21	1.00		0.05			
Lane Grp Cap(c), veh/h	189	492	0	0	0	466	1131	1128	1176			
V/C Ratio(X)	0.44	0.20	0.00	0.00	0.00	0.63	0.12	0.49	0.49			
Avail Cap(c_a), veh/h	388	840	0	0	0	796	1131	1128	1176			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.00	0.98	0.81	0.81	0.81			
Uniform Delay (d), s/veh	27.6	16.3	0.0	0.0	0.0	36.9	15.3	22.8	22.8			
Incr Delay (d2), s/veh	1.6	0.2	0.0	0.0	0.0	1.4	0.2	1.3	1.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.5	1.1	0.0	0.0	0.0	7.1	2.5	12.2	12.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.1	16.5	0.0	0.0	0.0	38.3	15.5	24.1	24.1			
LnGrp LOS	C	B	A	A	A	D	B	C	C			
Approach Vol, veh/h		182			296			1280				
Approach Delay, s/veh		22.3			38.3			23.1				
Approach LOS		C			D			C				

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		28.3		61.7		28.3						
Change Period (Y+Rc), s		4.6		4.6		4.6						
Max Green Setting (Gmax), s		40.4		40.4		40.4						
Max Q Clear Time (g_c+I1), s		23.1		26.9		16.5						
Green Ext Time (p_c), s		0.8		4.9		1.9						

Intersection Summary	
HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
5: Grand Ave & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	79	35	17	161	45	79	301	77	47	221	57
Future Volume (veh/h)	11	79	35	17	161	45	79	301	77	47	221	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.98		0.95	0.99		0.93	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	88	39	19	179	50	88	334	86	52	246	63
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	995	927	93	808	217	103	282	69	86	306	73
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.09	0.09	0.09	0.28	0.28	0.28
Sat Flow, veh/h	155	1616	1506	81	1312	352	199	1000	244	141	1085	259
Grp Volume(v), veh/h	100	0	39	248	0	0	508	0	0	361	0	0
Grp Sat Flow(s),veh/h/ln	1770	0	1506	1745	0	0	1443	0	0	1485	0	0
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.9	5.6	0.0	0.0	25.4	0.0	0.0	20.2	0.0	0.0
Prop In Lane	0.12		1.00	0.08		0.20	0.17		0.17	0.14		0.17
Lane Grp Cap(c), veh/h	1135	0	927	1117	0	0	454	0	0	465	0	0
V/C Ratio(X)	0.09	0.00	0.04	0.22	0.00	0.00	1.12	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1135	0	927	1117	0	0	454	0	0	465	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.99	1.00	0.00	0.00	0.95	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	6.8	7.7	0.0	0.0	42.0	0.0	0.0	29.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.5	0.0	0.0	77.7	0.0	0.0	8.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.3	2.1	0.0	0.0	20.8	0.0	0.0	8.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	6.9	8.2	0.0	0.0	119.7	0.0	0.0	37.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	D	A	A
Approach Vol, veh/h		139			248			508			361	
Approach Delay, s/veh		7.1			8.2			119.7			37.9	
Approach LOS		A			A			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		25.4		55.4		25.4		55.4				
Max Q Clear Time (g_c+I1), s		22.2		7.6		27.4		4.0				
Green Ext Time (p_c), s		0.7		1.1		0.0		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			61.7									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
6: Hetherton St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	403	1371	0	0	0	0	0	545	301
Future Volume (veh/h)	0	0	0	403	1371	0	0	0	0	0	545	301
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.85
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				453	1540	0				0	612	271
Peak Hour Factor				0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				1038	3018	0				0	1838	487
Arrive On Green				0.18	0.18	0.00				0.00	0.12	0.12
Sat Flow, veh/h				1781	5611	0				0	5274	1353
Grp Volume(v), veh/h				453	1540	0				0	612	271
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1702	1353
Q Serve(g_s), s				20.6	22.3	0.0				0.0	9.9	17.0
Cycle Q Clear(g_c), s				20.6	22.3	0.0				0.0	9.9	17.0
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				1038	3018	0				0	1838	487
V/C Ratio(X)				0.44	0.51	0.00				0.00	0.33	0.56
Avail Cap(c_a), veh/h				1038	3018	0				0	1838	487
HCM Platoon Ratio				0.33	0.33	1.00				1.00	0.33	0.33
Upstream Filter(I)				0.77	0.77	0.00				0.00	0.98	0.98
Uniform Delay (d), s/veh				25.6	26.3	0.0				0.0	29.7	32.9
Incr Delay (d2), s/veh				1.0	0.5	0.0				0.0	0.5	4.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.0	11.2	0.0				0.0	4.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				26.6	26.8	0.0				0.0	30.2	37.3
LnGrp LOS				C	C	A				A	C	D
Approach Vol, veh/h					1993						883	
Approach Delay, s/veh					26.7						32.4	
Approach LOS					C						C	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						53.0		37.0				
Change Period (Y+Rc), s						4.6		4.6				
Max Green Setting (Gmax), s						48.4		32.4				
Max Q Clear Time (g_c+I1), s						24.3		19.0				
Green Ext Time (p_c), s						2.7		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			28.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
7: Irwin St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	924	86	842	1118	0	0	0	0
Future Volume (veh/h)	0	0	0	0	924	86	842	1118	0	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.89	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	0			
Adj Flow Rate, veh/h				0	983	72	911	1167	0			
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1448	398	2309	2256	0			
Arrive On Green				0.00	0.09	0.09	0.60	0.60	0.00			
Sat Flow, veh/h				0	5274	1403	3563	3741	0			
Grp Volume(v), veh/h				0	983	72	911	1167	0			
Grp Sat Flow(s),veh/h/ln				0	1702	1403	1781	1870	0			
Q Serve(g_s), s				0.0	16.8	4.3	12.3	16.2	0.0			
Cycle Q Clear(g_c), s				0.0	16.8	4.3	12.3	16.2	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1448	398	2309	2256	0			
V/C Ratio(X)				0.00	0.68	0.18	0.39	0.52	0.00			
Avail Cap(c_a), veh/h				0	1952	536	2309	2256	0			
HCM Platoon Ratio				1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.86	0.86	0.82	0.82	0.00			
Uniform Delay (d), s/veh				0.0	36.8	31.2	9.5	10.3	0.0			
Incr Delay (d2), s/veh				0.0	0.5	0.2	0.4	0.7	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	7.7	1.5	4.6	6.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	37.3	31.3	9.9	11.0	0.0			
LnGrp LOS				A	D	C	A	B	A			
Approach Vol, veh/h					1055			2078				
Approach Delay, s/veh					36.9			10.5				
Approach LOS					D			B				
Timer - Assigned Phs				4		6						
Phs Duration (G+Y+Rc), s				58.9		31.1						
Change Period (Y+Rc), s				4.6		5.6						
Max Green Setting (Gmax), s				45.4		34.4						
Max Q Clear Time (g_c+I1), s				18.2		18.8						
Green Ext Time (p_c), s				9.9		6.8						

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
8: Grand Ave & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	237	662	63	261	387	0	0	175	91
Future Volume (veh/h)	0	0	0	237	662	63	261	387	0	0	175	91
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.63	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				244	682	65	269	399	0	0	180	69
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				440	878	247	556	512	0	0	512	417
Arrive On Green				0.25	0.25	0.25	0.27	0.27	0.00	0.00	0.09	0.09
Sat Flow, veh/h				1781	3554	998	2162	1870	0	0	1870	1524
Grp Volume(v), veh/h				244	682	65	269	399	0	0	180	69
Grp Sat Flow(s),veh/h/ln				1781	1777	998	1081	1870	0	0	1870	1524
Q Serve(g_s), s				10.8	16.1	4.7	10.4	17.7	0.0	0.0	8.1	3.8
Cycle Q Clear(g_c), s				10.8	16.1	4.7	18.6	17.7	0.0	0.0	8.1	3.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				440	878	247	556	512	0	0	512	417
V/C Ratio(X)				0.55	0.78	0.26	0.48	0.78	0.00	0.00	0.35	0.17
Avail Cap(c_a), veh/h				839	1674	470	875	788	0	0	788	642
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.43	0.43
Uniform Delay (d), s/veh				29.6	31.6	27.3	34.3	30.2	0.0	0.0	33.4	31.4
Incr Delay (d2), s/veh				0.4	0.6	0.2	3.0	11.2	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	6.9	1.1	3.0	9.4	0.0	0.0	4.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				30.0	32.2	27.5	37.3	41.3	0.0	0.0	33.6	31.5
LnGrp LOS				C	C	C	D	D	A	A	C	C
Approach Vol, veh/h					991			668			249	
Approach Delay, s/veh					31.3			39.7			33.0	
Approach LOS					C			D			C	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		29.7		26.8		29.7						
Change Period (Y+Rc), s		5.1		4.6		5.1						
Max Green Setting (Gmax), s		37.9		42.4		37.9						
Max Q Clear Time (g_c+I1), s		10.1		18.1		20.6						
Green Ext Time (p_c), s		1.3		4.1		3.8						

Intersection Summary	
HCM 6th Ctrl Delay	34.5
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
9: US 101 S On-Ramps/Hetherton St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1118	973	0	0	0	0	0	0	216	853	0
Future Volume (veh/h)	0	1118	973	0	0	0	0	0	0	216	853	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	1256	1046							243	958	0
Peak Hour Factor	0.89	0.89	0.89							0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	2743	1516							724	1353	0
Arrive On Green	0.00	0.49	0.49							0.12	0.12	0.00
Sat Flow, veh/h	0	5611	3102							1781	3741	0
Grp Volume(v), veh/h	0	1256	1046							243	958	0
Grp Sat Flow(s),veh/h/ln	0	1870	1551							1781	1870	0
Q Serve(g_s), s	0.0	13.3	23.4							11.3	22.2	0.0
Cycle Q Clear(g_c), s	0.0	13.3	23.4							11.3	22.2	0.0
Prop In Lane	0.00		1.00							1.00		0.00
Lane Grp Cap(c), veh/h	0	2743	1516							724	1353	0
V/C Ratio(X)	0.00	0.46	0.69							0.34	0.71	0.00
Avail Cap(c_a), veh/h	0	2743	1516							787	1484	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.92	0.92	0.00
Uniform Delay (d), s/veh	0.0	15.1	17.7							30.3	35.1	0.0
Incr Delay (d2), s/veh	0.0	0.6	2.6							1.1	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.6	8.5							5.6	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.7	20.3							31.4	38.0	0.0
LnGrp LOS	A	B	C							C	D	A
Approach Vol, veh/h		2302									1201	
Approach Delay, s/veh		17.8									36.6	
Approach LOS		B									D	

Timer - Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		49.0						37.9				
Change Period (Y+Rc), s		* 5						5.3				
Max Green Setting (Gmax), s		* 44						35.7				
Max Q Clear Time (g_c+I1), s		25.4						24.2				
Green Ext Time (p_c), s		17.2						8.4				

Intersection Summary			
HCM 6th Ctrl Delay			24.3
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
10: US 101 N Off-Ramps/Irwin St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	683	775	0	0	0	0	0	1284	424	0	0	0
Future Volume (veh/h)	683	775	0	0	0	0	0	1284	424	0	0	0
Initial Q (Qb), veh	3	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	0				0	1870	1870			
Adj Flow Rate, veh/h	734	833	0				0	1467	360			
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0				0	2	2			
Cap, veh/h	1372	1272	0				0	4089	866			
Arrive On Green	0.11	0.11	0.00				0.00	0.55	0.55			
Sat Flow, veh/h	3563	3741	0				0	7481	1585			
Grp Volume(v), veh/h	734	833	0				0	1467	360			
Grp Sat Flow(s),veh/h/ln	1781	1870	0				0	1870	1585			
Q Serve(g_s), s	17.7	19.2	0.0				0.0	9.9	12.0			
Cycle Q Clear(g_c), s	17.7	19.2	0.0				0.0	9.9	12.0			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	1372	1272	0				0	4089	866			
V/C Ratio(X)	0.54	0.65	0.00				0.00	0.36	0.42			
Avail Cap(c_a), veh/h	1799	1721	0				0	4099	868			
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	34.3	34.9	0.0				0.0	11.5	12.0			
Incr Delay (d2), s/veh	0.2	0.4	0.0				0.0	0.2	1.5			
Initial Q Delay(d3),s/veh	0.1	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.6	9.7	0.0				0.0	3.4	3.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	35.3	0.0				0.0	11.8	13.5			
LnGrp LOS	C	D	A				A	B	B			
Approach Vol, veh/h		1567						1827				
Approach Delay, s/veh		35.0						12.1				
Approach LOS		D						B				

Timer - Assigned Phs		2		4								
Phs Duration (G+Y+Rc), s		35.1		54.9								
Change Period (Y+Rc), s		4.6		5.6								
Max Green Setting (Gmax), s		41.4		38.4								
Max Q Clear Time (g_c+I1), s		21.2		14.0								
Green Ext Time (p_c), s		9.3		12.0								

Intersection Summary			
HCM 6th Ctrl Delay			22.7
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Hetherton St/US 101 S Off-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	312	29	17	113	0	0	0	0	246	905	389
Future Volume (veh/h)	0	312	29	17	113	0	0	0	0	246	905	389
Initial Q (Qb), veh	0	1	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	343	24	19	124	0				270	995	374
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	487	33	56	183	0				544	2135	1154
Arrive On Green	0.00	0.14	0.14	0.05	0.05	0.00				0.74	0.74	0.74
Sat Flow, veh/h	0	3453	234	71	1267	0				733	2877	1555
Grp Volume(v), veh/h	0	180	187	143	0	0				675	590	374
Grp Sat Flow(s),veh/h/ln	0	1777	1817	1339	0	0				1834	1777	1555
Q Serve(g_s), s	0.0	8.7	8.8	1.4	0.0	0.0				13.5	11.5	7.3
Cycle Q Clear(g_c), s	0.0	8.7	8.8	10.2	0.0	0.0				13.5	11.5	7.3
Prop In Lane	0.00		0.13	0.13		0.00				0.40		1.00
Lane Grp Cap(c), veh/h	0	257	263	238	0	0				1361	1318	1154
V/C Ratio(X)	0.00	0.70	0.71	0.60	0.00	0.00				0.50	0.45	0.32
Avail Cap(c_a), veh/h	0	590	604	555	0	0				1362	1320	1155
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.99	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	36.7	36.7	40.4	0.0	0.0				4.8	4.5	4.0
Incr Delay (d2), s/veh	0.0	3.5	3.5	2.4	0.0	0.0				1.3	1.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.1	0.1	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	4.2	3.6	0.0	0.0				3.1	2.6	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	40.2	40.3	42.8	0.0	0.0				6.1	5.6	4.7
LnGrp LOS	A	D	D	D	A	A				A	A	A
Approach Vol, veh/h		367			143						1639	
Approach Delay, s/veh		40.3			42.8						5.6	
Approach LOS		D			D						A	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		72.0		18.0				18.0				
Change Period (Y+Rc), s		5.1		5.1				5.1				
Max Green Setting (Gmax), s		49.9		29.9				29.9				
Max Q Clear Time (g_c+I1), s		15.5		10.8				12.2				
Green Ext Time (p_c), s		11.0		2.1				0.7				
Intersection Summary												
HCM 6th Ctrl Delay			14.0									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
2: Irwin St/US 101 N On-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	266	0	0	71	279	48	1456	22	0	0	0
Future Volume (veh/h)	302	266	0	0	71	279	48	1456	22	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	311	274	0	0	73	254	49	1501	22			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	247	715	0	0	341	280	78	2556	39			
Arrive On Green	0.05	0.13	0.00	0.00	0.18	0.18	0.16	0.16	0.16			
Sat Flow, veh/h	1781	1870	0	0	1870	1537	159	5182	78			
Grp Volume(v), veh/h	311	274	0	0	73	254	574	477	520			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1537	1862	1702	1855			
Q Serve(g_s), s	12.5	12.1	0.0	0.0	3.0	14.6	25.9	23.3	23.3			
Cycle Q Clear(g_c), s	12.5	12.1	0.0	0.0	3.0	14.6	25.9	23.3	23.3			
Prop In Lane	1.00		0.00	0.00		1.00	0.09		0.04			
Lane Grp Cap(c), veh/h	247	715	0	0	341	280	919	840	915			
V/C Ratio(X)	1.26	0.38	0.00	0.00	0.21	0.91	0.62	0.57	0.57			
Avail Cap(c_a), veh/h	247	715	0	0	341	280	919	840	915			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.93	0.93	0.00	0.00	1.00	1.00	0.92	0.92	0.92			
Uniform Delay (d), s/veh	42.9	29.6	0.0	0.0	31.3	36.1	29.9	28.8	28.8			
Incr Delay (d2), s/veh	142.5	0.3	0.0	0.0	0.3	30.8	3.0	2.6	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.8	6.1	0.0	0.0	1.4	7.8	13.6	11.1	12.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.5	29.9	0.0	0.0	31.6	66.8	32.9	31.4	31.2			
LnGrp LOS	F	C	A	A	C	E	C	C	C			
Approach Vol, veh/h		585			327			1572				
Approach Delay, s/veh		112.6			59.0			31.9				
Approach LOS		F			E			C				
Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		40.0		50.0	18.0	22.0						
Change Period (Y+Rc), s		5.6		5.6	5.5	5.6						
Max Green Setting (Gmax), s		34.4		44.4	12.5	16.4						
Max Q Clear Time (g_c+I1), s		14.1		27.9	14.5	16.6						
Green Ext Time (p_c), s		1.6		9.9	0.0	0.0						
Intersection Summary												
HCM 6th Ctrl Delay			54.5									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary
3: Hetherton St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	245	91	84	186	0	0	0	0	62	693	159
Future Volume (veh/h)	0	245	91	84	186	0	0	0	0	62	693	159
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	0.99		1.00				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	255	93	88	194	0				65	722	149
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	736	589	384	736	0				206	2444	773
Arrive On Green	0.00	0.39	0.39	0.79	0.79	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	1870	1496	1022	1870	0				408	4846	1533
Grp Volume(v), veh/h	0	255	93	88	194	0				295	492	149
Grp Sat Flow(s),veh/h/ln	0	1870	1496	1022	1870	0				1850	1702	1533
Q Serve(g_s), s	0.0	8.6	3.6	3.8	2.5	0.0				12.6	11.4	7.5
Cycle Q Clear(g_c), s	0.0	8.6	3.6	12.4	2.5	0.0				12.6	11.4	7.5
Prop In Lane	0.00		1.00	1.00		0.00				0.22		1.00
Lane Grp Cap(c), veh/h	0	736	589	384	736	0				933	1717	773
V/C Ratio(X)	0.00	0.35	0.16	0.23	0.26	0.00				0.32	0.29	0.19
Avail Cap(c_a), veh/h	0	736	589	384	736	0				933	1717	773
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.94	0.94	0.00				0.78	0.78	0.78
Uniform Delay (d), s/veh	0.0	19.2	17.7	9.3	6.1	0.0				23.8	23.3	21.7
Incr Delay (d2), s/veh	0.0	1.3	0.6	1.3	0.8	0.0				0.7	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.0	1.3	0.7	1.1	0.0				6.4	5.2	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.5	18.2	10.6	6.9	0.0				24.5	23.7	22.2
LnGrp LOS	A	C	B	B	A	A				C	C	C
Approach Vol, veh/h		348			282						936	
Approach Delay, s/veh		19.9			8.1						23.7	
Approach LOS		B			A						C	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		50.0		40.0				40.0				
Change Period (Y+Rc), s		4.6		4.6				4.6				
Max Green Setting (Gmax), s		45.4		35.4				35.4				
Max Q Clear Time (g_c+I1), s		14.6		10.6				14.4				
Green Ext Time (p_c), s		4.2		1.9				1.5				
Intersection Summary												
HCM 6th Ctrl Delay			20.0									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
4: Irwin St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	150	0	0	156	73	120	1083	42	0	0	0
Future Volume (veh/h)	165	150	0	0	156	73	120	1083	42	0	0	0
Initial Q (Qb), veh	0	0	0	0	1	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.95	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	170	155	0	0	161	64	124	1116	31			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	80	699	0	0	590	147	933	2675	74			
Arrive On Green	0.50	0.50	0.00	0.00	0.10	0.10	0.20	0.20	0.20			
Sat Flow, veh/h	1145	1870	0	0	1251	497	1781	5106	142			
Grp Volume(v), veh/h	170	155	0	0	0	225	124	744	403			
Grp Sat Flow(s),veh/h/ln	1145	1870	0	0	0	1748	1781	1702	1844			
Q Serve(g_s), s	12.5	4.4	0.0	0.0	0.0	10.9	5.1	17.0	17.0			
Cycle Q Clear(g_c), s	23.4	4.4	0.0	0.0	0.0	10.9	5.1	17.0	17.0			
Prop In Lane	1.00		0.00	0.00		0.28	1.00		0.08			
Lane Grp Cap(c), veh/h	80	699	0	0	0	523	933	1784	966			
V/C Ratio(X)	2.12	0.22	0.00	0.00	0.00	0.43	0.13	0.42	0.42			
Avail Cap(c_a), veh/h	455	840	0	0	0	785	1069	2043	1106			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	0.33	0.33	0.33	0.33	0.33			
Upstream Filter(I)	0.99	0.99	0.00	0.00	0.00	0.99	0.83	0.83	0.83			
Uniform Delay (d), s/veh	31.5	11.7	0.0	0.0	0.0	33.4	20.0	25.1	25.1			
Incr Delay (d2), s/veh	515.2	0.2	0.0	0.0	0.0	0.6	0.2	0.6	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.1	1.3	0.0	0.0	0.0	5.3	2.3	8.1	8.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	546.6	11.9	0.0	0.0	0.0	34.0	20.2	25.7	26.2			
LnGrp LOS	F	B	A	A	A	C	C	C	C			
Approach Vol, veh/h		325			225			1271				
Approach Delay, s/veh		291.6			34.0			25.3				
Approach LOS		F			C			C				
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		31.4		58.6		31.4						
Change Period (Y+Rc), s		4.6		4.6		4.6						
Max Green Setting (Gmax), s		40.4		40.4		40.4						
Max Q Clear Time (g_c+I1), s		25.4		19.0		12.9						
Green Ext Time (p_c), s		1.4		6.0		1.5						
Intersection Summary												
HCM 6th Ctrl Delay			73.9									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
5: Grand Ave & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	110	80	18	108	57	63	381	44	51	283	39
Future Volume (veh/h)	9	110	80	18	108	57	63	381	44	51	283	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	1.00		0.93	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	118	72	19	116	50	68	410	46	55	304	34
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	1069	938	118	688	282	85	346	37	84	339	36
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.38	0.38	0.38	0.28	0.28	0.28
Sat Flow, veh/h	87	1736	1523	120	1118	459	142	1225	131	135	1200	126
Grp Volume(v), veh/h	128	0	72	185	0	0	524	0	0	393	0	0
Grp Sat Flow(s),veh/h/ln	1823	0	1523	1697	0	0	1498	0	0	1462	0	0
Q Serve(g_s), s	0.0	0.0	1.7	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	1.7	4.1	0.0	0.0	25.4	0.0	0.0	23.5	0.0	0.0
Prop In Lane	0.08		1.00	0.10		0.27	0.13		0.09	0.14		0.09
Lane Grp Cap(c), veh/h	1165	0	938	1089	0	0	468	0	0	458	0	0
V/C Ratio(X)	0.11	0.00	0.08	0.17	0.00	0.00	1.12	0.00	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	1165	0	938	1089	0	0	468	0	0	458	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	1.00	0.00	0.00	0.94	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	7.0	7.4	0.0	0.0	28.9	0.0	0.0	30.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.3	0.0	0.0	77.5	0.0	0.0	14.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.6	1.5	0.0	0.0	19.8	0.0	0.0	10.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	7.1	7.8	0.0	0.0	106.4	0.0	0.0	45.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	D	A	A
Approach Vol, veh/h		200			185			524			393	
Approach Delay, s/veh		7.3			7.8			106.4			45.7	
Approach LOS		A			A			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		25.4		55.4		25.4		55.4				
Max Q Clear Time (g_c+I1), s		25.5		6.1		27.4		4.5				
Green Ext Time (p_c), s		0.0		0.8		0.0		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			58.8									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
6: Hetherton St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	463	1444	0	0	0	0	0	573	282
Future Volume (veh/h)	0	0	0	463	1444	0	0	0	0	0	573	282
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.88
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				482	1504	0				0	597	250
Peak Hour Factor				0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				1038	3018	0				0	1838	502
Arrive On Green				0.18	0.18	0.00				0.00	0.12	0.12
Sat Flow, veh/h				1781	5611	0				0	5274	1394
Grp Volume(v), veh/h				482	1504	0				0	597	250
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1702	1394
Q Serve(g_s), s				22.0	21.8	0.0				0.0	9.6	15.1
Cycle Q Clear(g_c), s				22.0	21.8	0.0				0.0	9.6	15.1
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				1038	3018	0				0	1838	502
V/C Ratio(X)				0.46	0.50	0.00				0.00	0.32	0.50
Avail Cap(c_a), veh/h				1038	3018	0				0	1838	502
HCM Platoon Ratio				0.33	0.33	1.00				1.00	0.33	0.33
Upstream Filter(I)				0.74	0.74	0.00				0.00	0.82	0.82
Uniform Delay (d), s/veh				26.2	26.1	0.0				0.0	29.6	32.0
Incr Delay (d2), s/veh				1.1	0.4	0.0				0.0	0.4	2.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.7	10.9	0.0				0.0	4.4	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				27.3	26.5	0.0				0.0	30.0	34.9
LnGrp LOS				C	C	A				A	C	C
Approach Vol, veh/h					1986						847	
Approach Delay, s/veh					26.7						31.5	
Approach LOS					C						C	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						53.0		37.0				
Change Period (Y+Rc), s						4.6		4.6				
Max Green Setting (Gmax), s						48.4		32.4				
Max Q Clear Time (g_c+I1), s						24.0		17.1				
Green Ext Time (p_c), s						21.0		7.7				
Intersection Summary												
HCM 6th Ctrl Delay			28.1									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
7: Irwin St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	1024	126	840	1109	0	0	0	0
Future Volume (veh/h)	0	0	0	0	1024	126	840	1109	0	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.88	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	0			
Adj Flow Rate, veh/h				0	1056	105	878	1126	0			
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1437	395	2316	2264	0			
Arrive On Green				0.00	0.09	0.09	0.61	0.61	0.00			
Sat Flow, veh/h				0	5274	1402	3563	3741	0			
Grp Volume(v), veh/h				0	1056	105	878	1126	0			
Grp Sat Flow(s),veh/h/ln				0	1702	1402	1781	1870	0			
Q Serve(g_s), s				0.0	18.1	6.3	11.6	15.3	0.0			
Cycle Q Clear(g_c), s				0.0	18.1	6.3	11.6	15.3	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1437	395	2316	2264	0			
V/C Ratio(X)				0.00	0.73	0.27	0.38	0.50	0.00			
Avail Cap(c_a), veh/h				0	1668	458	2316	2264	0			
HCM Platoon Ratio				1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.85	0.85	0.69	0.69	0.00			
Uniform Delay (d), s/veh				0.0	37.6	32.2	9.3	10.0	0.0			
Incr Delay (d2), s/veh				0.0	1.2	0.3	0.3	0.5	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	8.4	2.3	4.3	6.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	38.8	32.5	9.6	10.6	0.0			
LnGrp LOS				A	D	C	A	B	A			
Approach Vol, veh/h					1161			2004				
Approach Delay, s/veh					38.2			10.2				
Approach LOS					D			B				
Timer - Assigned Phs				4		6						
Phs Duration (G+Y+Rc), s				59.1		30.9						
Change Period (Y+Rc), s				4.6		5.6						
Max Green Setting (Gmax), s				50.4		29.4						
Max Q Clear Time (g_c+I1), s				17.3		20.1						
Green Ext Time (p_c), s				9.9		5.2						

Intersection Summary		
HCM 6th Ctrl Delay		20.5
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
8: Grand Ave & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	286	727	88	295	407	0	0	228	137
Future Volume (veh/h)	0	0	0	286	727	88	295	407	0	0	228	137
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				295	749	77	304	420	0	0	235	115
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				477	951	400	577	531	0	0	531	432
Arrive On Green				0.27	0.27	0.27	0.28	0.28	0.00	0.00	0.57	0.57
Sat Flow, veh/h				1781	3554	1493	1974	1870	0	0	1870	1521
Grp Volume(v), veh/h				295	749	77	304	420	0	0	235	115
Grp Sat Flow(s),veh/h/ln				1781	1777	1493	987	1870	0	0	1870	1521
Q Serve(g_s), s				13.1	17.6	3.6	12.9	18.7	0.0	0.0	6.5	3.5
Cycle Q Clear(g_c), s				13.1	17.6	3.6	19.4	18.7	0.0	0.0	6.5	3.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				477	951	400	577	531	0	0	531	432
V/C Ratio(X)				0.62	0.79	0.19	0.53	0.79	0.00	0.00	0.44	0.27
Avail Cap(c_a), veh/h				859	1714	720	826	767	0	0	767	624
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.34	0.34
Uniform Delay (d), s/veh				28.9	30.6	25.4	33.1	29.8	0.0	0.0	15.3	14.7
Incr Delay (d2), s/veh				0.5	0.6	0.1	3.4	11.4	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.6	7.5	1.3	3.3	9.9	0.0	0.0	2.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.4	31.1	25.5	36.5	41.2	0.0	0.0	15.5	14.8
LnGrp LOS				C	C	C	D	D	A	A	B	B
Approach Vol, veh/h					1121			724			350	
Approach Delay, s/veh					30.3			39.2			15.3	
Approach LOS					C			D			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.7		28.7		30.7						
Change Period (Y+Rc), s		5.1		4.6		5.1						
Max Green Setting (Gmax), s		36.9		43.4		36.9						
Max Q Clear Time (g_c+I1), s		8.5		19.6		21.4						
Green Ext Time (p_c), s		1.9		4.5		4.1						

Intersection Summary		
HCM 6th Ctrl Delay		30.8
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
9: US 101 S On-Ramps/Hetherton St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1455	901	0	0	0	0	0	0	291	770	0
Future Volume (veh/h)	0	1455	901	0	0	0	0	0	0	291	770	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	1635	1001							327	865	0
Peak Hour Factor	0.89	0.89	0.89							0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	2930	1606							668	1235	0
Arrive On Green	0.00	0.52	0.52							0.11	0.11	0.00
Sat Flow, veh/h	0	5611	3075							1781	3741	0
Grp Volume(v), veh/h	0	1635	1001							327	865	0
Grp Sat Flow(s),veh/h/ln	0	1870	1538							1781	1870	0
Q Serve(g_s), s	0.0	17.7	20.8							15.7	20.1	0.0
Cycle Q Clear(g_c), s	0.0	17.7	20.8							15.7	20.1	0.0
Prop In Lane	0.00		1.00							1.00		0.00
Lane Grp Cap(c), veh/h	0	2930	1606							668	1235	0
V/C Ratio(X)	0.00	0.56	0.62							0.49	0.70	0.00
Avail Cap(c_a), veh/h	0	2930	1606							727	1359	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.92	0.92	0.00
Uniform Delay (d), s/veh	0.0	14.5	15.2							33.8	35.8	0.0
Incr Delay (d2), s/veh	0.0	0.8	1.8							2.4	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	7.3							7.9	10.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.3	17.1							36.2	38.9	0.0
LnGrp LOS	A	B	B							D	D	A
Approach Vol, veh/h		2636									1192	
Approach Delay, s/veh		16.0									38.1	
Approach LOS		B									D	
Timer - Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		52.0						35.0				
Change Period (Y+Rc), s		* 5						5.3				
Max Green Setting (Gmax), s		* 47						32.7				
Max Q Clear Time (g_c+I1), s		22.8						22.1				
Green Ext Time (p_c), s		23.1						7.6				
Intersection Summary												
HCM 6th Ctrl Delay			22.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
10: US 101 N Off-Ramps/Irwin St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	781	957	0	0	0	0	0	1172	701	0	0	0
Future Volume (veh/h)	781	957	0	0	0	0	0	1172	701	0	0	0
Initial Q (Qb), veh	0	2	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	0				0	1870	1870			
Adj Flow Rate, veh/h	840	1029	0				0	1260	734			
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0				0	2	2			
Cap, veh/h	1878	1804	0				0	2269	1282			
Arrive On Green	0.16	0.16	0.00				0.00	0.40	0.40			
Sat Flow, veh/h	3563	3741	0				0	5611	3170			
Grp Volume(v), veh/h	840	1029	0				0	1260	734			
Grp Sat Flow(s),veh/h/ln	1781	1870	0				0	1870	1585			
Q Serve(g_s), s	19.3	22.9	0.0				0.0	15.5	16.1			
Cycle Q Clear(g_c), s	19.3	22.9	0.0				0.0	15.5	16.1			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	1878	1804	0				0	2269	1282			
V/C Ratio(X)	0.45	0.57	0.00				0.00	0.56	0.57			
Avail Cap(c_a), veh/h	1878	1804	0				0	2269	1282			
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.68	0.68	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	27.7	29.3	0.0				0.0	20.6	20.8			
Incr Delay (d2), s/veh	0.5	0.9	0.0				0.0	1.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.3	11.7	0.0				0.0	6.1	5.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	30.2	0.0				0.0	21.6	22.6			
LnGrp LOS	C	C	A				A	C	C			
Approach Vol, veh/h		1869						1994				
Approach Delay, s/veh		29.3						22.0				
Approach LOS		C						C				
Timer - Assigned Phs		2		4								
Phs Duration (G+Y+Rc), s		48.0		42.0								
Change Period (Y+Rc), s		4.6		5.6								
Max Green Setting (Gmax), s		43.4		36.4								
Max Q Clear Time (g_c+I1), s		24.9		18.1								
Green Ext Time (p_c), s		10.8		10.6								
Intersection Summary												
HCM 6th Ctrl Delay			25.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Hetherton St/US 101 S Off-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	322	44	38	154	0	0	0	0	229	780	390
Future Volume (veh/h)	0	322	44	38	154	0	0	0	0	229	780	390
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	339	41	40	162	0				241	821	348
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	600	72	77	224	0				545	1974	1091
Arrive On Green	0.00	0.19	0.19	0.06	0.06	0.00				0.70	0.70	0.70
Sat Flow, veh/h	0	3277	381	152	1188	0				781	2827	1562
Grp Volume(v), veh/h	0	188	192	202	0	0				565	497	348
Grp Sat Flow(s),veh/h/ln	0	1777	1788	1340	0	0				1831	1777	1562
Q Serve(g_s), s	0.0	8.6	8.8	5.2	0.0	0.0				12.1	10.5	7.8
Cycle Q Clear(g_c), s	0.0	8.6	8.8	14.0	0.0	0.0				12.1	10.5	7.8
Prop In Lane	0.00		0.21	0.20		0.00				0.43		1.00
Lane Grp Cap(c), veh/h	0	335	337	301	0	0				1278	1240	1091
V/C Ratio(X)	0.00	0.56	0.57	0.67	0.00	0.00				0.44	0.40	0.32
Avail Cap(c_a), veh/h	0	650	654	583	0	0				1278	1240	1091
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.96	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	33.1	33.2	40.5	0.0	0.0				5.9	5.7	5.3
Incr Delay (d2), s/veh	0.0	1.5	1.5	2.5	0.0	0.0				1.1	1.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	3.9	5.0	0.0	0.0				3.3	2.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	34.6	34.7	43.0	0.0	0.0				7.0	6.7	6.0
LnGrp LOS	A	C	C	D	A	A				A	A	A
Approach Vol, veh/h		380			202						1410	
Approach Delay, s/veh		34.7			43.0						6.7	
Approach LOS		C			D						A	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		67.9		22.1				22.1				
Change Period (Y+Rc), s		5.1		5.1				5.1				
Max Green Setting (Gmax), s		46.9		32.9				32.9				
Max Q Clear Time (g_c+I1), s		14.1		10.8				16.0				
Green Ext Time (p_c), s		8.5		2.3				1.1				

Intersection Summary												
HCM 6th Ctrl Delay			15.7									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
2: Irwin St/US 101 N On-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	306	0	0	124	279	63	1133	38	0	0	0
Future Volume (veh/h)	246	306	0	0	124	279	63	1133	38	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	267	333	0	0	135	290	68	1232	32			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	247	771	0	0	397	328	120	2319	62			
Arrive On Green	0.14	0.41	0.00	0.00	0.21	0.21	0.15	0.15	0.15			
Sat Flow, veh/h	1781	1870	0	0	1870	1545	259	5007	134			
Grp Volume(v), veh/h	267	333	0	0	135	290	487	406	439			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1545	1857	1702	1841			
Q Serve(g_s), s	12.5	11.5	0.0	0.0	5.5	16.4	21.9	19.7	19.7			
Cycle Q Clear(g_c), s	12.5	11.5	0.0	0.0	5.5	16.4	21.9	19.7	19.7			
Prop In Lane	1.00		0.00	0.00		1.00	0.14		0.07			
Lane Grp Cap(c), veh/h	247	771	0	0	397	328	860	788	853			
V/C Ratio(X)	1.08	0.43	0.00	0.00	0.34	0.88	0.57	0.51	0.52			
Avail Cap(c_a), veh/h	247	840	0	0	466	385	860	788	853			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	1.00	0.84	0.84	0.84			
Uniform Delay (d), s/veh	38.8	18.9	0.0	0.0	30.1	34.4	29.7	28.8	28.8			
Incr Delay (d2), s/veh	77.6	0.4	0.0	0.0	0.5	18.8	2.3	2.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.7	4.9	0.0	0.0	2.5	7.8	11.4	9.4	10.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	116.3	19.3	0.0	0.0	30.6	53.2	32.0	30.8	30.7			
LnGrp LOS	F	B	A	A	C	D	C	C	C			
Approach Vol, veh/h		600			425			1332				
Approach Delay, s/veh		62.4			46.0			31.2				
Approach LOS		E			D			C				

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		42.7		47.3	18.0	24.7						
Change Period (Y+Rc), s		5.6		5.6	5.5	5.6						
Max Green Setting (Gmax), s		40.4		38.4	12.5	22.4						
Max Q Clear Time (g_c+I1), s		13.5		23.9	14.5	18.4						
Green Ext Time (p_c), s		2.2		7.7	0.0	0.7						

Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary
3: Hetherton St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	135	87	128	252	0	0	0	0	41	654	144
Future Volume (veh/h)	0	135	87	128	252	0	0	0	0	41	654	144
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	0.96		1.00				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	144	84	136	268	0				44	696	124
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	431	331	264	431	0				196	3315	1025
Arrive On Green	0.00	0.23	0.23	0.46	0.46	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	1870	1438	1106	1870	0				294	4965	1535
Grp Volume(v), veh/h	0	144	84	136	268	0				277	463	124
Grp Sat Flow(s),veh/h/ln	0	1870	1438	1106	1870	0				1856	1702	1535
Q Serve(g_s), s	0.0	5.8	4.3	9.8	9.8	0.0				11.0	10.0	5.8
Cycle Q Clear(g_c), s	0.0	5.8	4.3	15.6	9.8	0.0				11.0	10.0	5.8
Prop In Lane	0.00		1.00	1.00		0.00				0.16		1.00
Lane Grp Cap(c), veh/h	0	431	331	264	431	0				1239	2272	1025
V/C Ratio(X)	0.00	0.33	0.25	0.52	0.62	0.00				0.22	0.20	0.12
Avail Cap(c_a), veh/h	0	736	566	444	736	0				1239	2272	1025
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.83	0.83	0.00				0.86	0.86	0.86
Uniform Delay (d), s/veh	0.0	28.9	28.3	25.5	21.3	0.0				16.0	15.6	13.9
Incr Delay (d2), s/veh	0.0	0.5	0.4	1.3	1.2	0.0				0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	1.5	2.1	3.6	0.0				5.6	4.6	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.3	28.7	26.8	22.5	0.0				16.3	15.7	14.1
LnGrp LOS	A	C	C	C	C	A				B	B	B
Approach Vol, veh/h		228			404						864	
Approach Delay, s/veh		29.1			24.0						15.7	
Approach LOS		C			C						B	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		64.7		25.3				25.3				
Change Period (Y+Rc), s		4.6		4.6				4.6				
Max Green Setting (Gmax), s		45.4		35.4				35.4				
Max Q Clear Time (g_c+I1), s		13.0		7.8				17.6				
Green Ext Time (p_c), s		3.9		1.2				2.1				
Intersection Summary												
HCM 6th Ctrl Delay			20.0									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
4: Irwin St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	94	0	0	247	76	135	1043	31	0	0	0
Future Volume (veh/h)	78	94	0	0	247	76	135	1043	31	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	1	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.94	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	83	100	0	0	263	76	144	1110	31			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	187	540	0	0	396	115	1085	2150	60			
Arrive On Green	0.58	0.58	0.00	0.00	0.10	0.10	0.20	0.20	0.20			
Sat Flow, veh/h	1034	1870	0	0	1373	397	1781	3530	99			
Grp Volume(v), veh/h	83	100	0	0	0	339	144	559	582			
Grp Sat Flow(s),veh/h/ln	1034	1870	0	0	0	1770	1781	1777	1852			
Q Serve(g_s), s	6.8	2.3	0.0	0.0	0.0	16.6	6.0	25.2	25.2			
Cycle Q Clear(g_c), s	23.5	2.3	0.0	0.0	0.0	16.6	6.0	25.2	25.2			
Prop In Lane	1.00		0.00	0.00		0.22	1.00		0.05			
Lane Grp Cap(c), veh/h	187	540	0	0	0	511	1085	1082	1128			
V/C Ratio(X)	0.44	0.19	0.00	0.00	0.00	0.66	0.13	0.52	0.52			
Avail Cap(c_a), veh/h	353	840	0	0	0	794	1085	1082	1128			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33			
Upstream Filter(I)	0.97	0.97	0.00	0.00	0.00	0.98	0.81	0.81	0.81			
Uniform Delay (d), s/veh	26.3	14.0	0.0	0.0	0.0	36.5	16.5	24.1	24.1			
Incr Delay (d2), s/veh	1.6	0.2	0.0	0.0	0.0	1.5	0.2	1.4	1.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.5	1.0	0.0	0.0	0.0	8.1	2.7	12.3	12.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	14.2	0.0	0.0	0.0	37.9	16.7	25.6	25.5			
LnGrp LOS	C	B	A	A	A	D	B	C	C			
Approach Vol, veh/h		183			339			1285				
Approach Delay, s/veh		20.4			37.9			24.5				
Approach LOS		C			D			C				
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.6		59.4		30.6						
Change Period (Y+Rc), s		4.6		4.6		4.6						
Max Green Setting (Gmax), s		40.4		40.4		40.4						
Max Q Clear Time (g_c+I1), s		25.5		27.2		18.6						
Green Ext Time (p_c), s		0.7		4.8		2.2						
Intersection Summary												
HCM 6th Ctrl Delay			26.6									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
5: Grand Ave & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	81	35	17	161	45	79	301	77	47	221	57
Future Volume (veh/h)	11	81	35	17	161	45	79	301	77	47	221	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.98		0.95	0.99		0.93	0.99		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	90	22	19	179	46	88	334	86	52	246	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	999	927	94	823	203	103	283	69	86	308	70
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.09	0.09	0.09	0.28	0.28	0.28
Sat Flow, veh/h	151	1623	1506	83	1337	330	200	1004	245	141	1090	248
Grp Volume(v), veh/h	102	0	22	244	0	0	508	0	0	358	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1506	1750	0	0	1450	0	0	1479	0	0
Q Serve(g_s), s	0.0	0.0	0.5	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.5	5.5	0.0	0.0	25.4	0.0	0.0	20.0	0.0	0.0
Prop In Lane	0.12		1.00	0.08		0.19	0.17		0.17	0.15		0.17
Lane Grp Cap(c), veh/h	1136	0	927	1121	0	0	456	0	0	463	0	0
V/C Ratio(X)	0.09	0.00	0.02	0.22	0.00	0.00	1.11	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	1136	0	927	1121	0	0	456	0	0	463	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.99	1.00	0.00	0.00	0.95	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	6.7	7.7	0.0	0.0	42.0	0.0	0.0	29.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.4	0.0	0.0	76.0	0.0	0.0	7.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.2	2.1	0.0	0.0	20.6	0.0	0.0	8.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	6.8	8.1	0.0	0.0	117.9	0.0	0.0	37.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	D	A	A
Approach Vol, veh/h		124			244			508			358	
Approach Delay, s/veh		7.1			8.1			117.9			37.6	
Approach LOS		A			A			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		25.4		55.4		25.4		55.4				
Max Q Clear Time (g_c+I1), s		22.0		7.5		27.4		4.0				
Green Ext Time (p_c), s		0.7		1.1		0.0		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			61.8									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
6: Hetherton St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	403	1371	0	0	0	0	0	565	306
Future Volume (veh/h)	0	0	0	403	1371	0	0	0	0	0	565	306
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.85
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				453	1540	0				0	635	277
Peak Hour Factor				0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				1038	3018	0				0	1838	487
Arrive On Green				0.18	0.18	0.00				0.00	0.12	0.12
Sat Flow, veh/h				1781	5611	0				0	5274	1353
Grp Volume(v), veh/h				453	1540	0				0	635	277
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1702	1353
Q Serve(g_s), s				20.6	22.3	0.0				0.0	10.3	17.4
Cycle Q Clear(g_c), s				20.6	22.3	0.0				0.0	10.3	17.4
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				1038	3018	0				0	1838	487
V/C Ratio(X)				0.44	0.51	0.00				0.00	0.35	0.57
Avail Cap(c_a), veh/h				1038	3018	0				0	1838	487
HCM Platoon Ratio				0.33	0.33	1.00				1.00	0.33	0.33
Upstream Filter(I)				0.77	0.77	0.00				0.00	0.98	0.98
Uniform Delay (d), s/veh				25.6	26.3	0.0				0.0	29.9	33.0
Incr Delay (d2), s/veh				1.0	0.5	0.0				0.0	0.5	4.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.0	11.2	0.0				0.0	4.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				26.6	26.8	0.0				0.0	30.4	37.7
LnGrp LOS				C	C	A				A	C	D
Approach Vol, veh/h					1993						912	
Approach Delay, s/veh					26.7						32.6	
Approach LOS					C						C	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						53.0		37.0				
Change Period (Y+Rc), s						4.6		4.6				
Max Green Setting (Gmax), s						48.4		32.4				
Max Q Clear Time (g_c+I1), s						24.3		19.4				
Green Ext Time (p_c), s						2.7		1.1				
Intersection Summary												
HCM 6th Ctrl Delay			28.6									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
7: Irwin St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	924	86	842	1119	0	0	0	0
Future Volume (veh/h)	0	0	0	0	924	86	842	1119	0	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.89	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	0			
Adj Flow Rate, veh/h				0	983	72	912	1168	0			
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1448	398	2309	2256	0			
Arrive On Green				0.00	0.09	0.09	0.60	0.60	0.00			
Sat Flow, veh/h				0	5274	1403	3563	3741	0			
Grp Volume(v), veh/h				0	983	72	912	1168	0			
Grp Sat Flow(s),veh/h/ln				0	1702	1403	1781	1870	0			
Q Serve(g_s), s				0.0	16.8	4.3	12.3	16.2	0.0			
Cycle Q Clear(g_c), s				0.0	16.8	4.3	12.3	16.2	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1448	398	2309	2256	0			
V/C Ratio(X)				0.00	0.68	0.18	0.40	0.52	0.00			
Avail Cap(c_a), veh/h				0	1952	536	2309	2256	0			
HCM Platoon Ratio				1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.86	0.86	0.82	0.82	0.00			
Uniform Delay (d), s/veh				0.0	36.8	31.2	9.5	10.3	0.0			
Incr Delay (d2), s/veh				0.0	0.5	0.2	0.4	0.7	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	7.7	1.5	4.6	6.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	37.3	31.3	9.9	11.0	0.0			
LnGrp LOS				A	D	C	A	B	A			
Approach Vol, veh/h					1055			2080				
Approach Delay, s/veh					36.9			10.5				
Approach LOS					D			B				
Timer - Assigned Phs				4		6						
Phs Duration (G+Y+Rc), s				58.9		31.1						
Change Period (Y+Rc), s				4.6		5.6						
Max Green Setting (Gmax), s				45.4		34.4						
Max Q Clear Time (g_c+I1), s				18.2		18.8						
Green Ext Time (p_c), s				9.9		6.8						

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
8: Grand Ave & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	237	662	63	261	387	0	0	175	91
Future Volume (veh/h)	0	0	0	237	662	63	261	387	0	0	175	91
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.63	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				244	682	60	269	399	0	0	180	69
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				440	877	246	556	512	0	0	512	417
Arrive On Green				0.25	0.25	0.25	0.27	0.27	0.00	0.00	0.09	0.09
Sat Flow, veh/h				1781	3554	998	2162	1870	0	0	1870	1524
Grp Volume(v), veh/h				244	682	60	269	399	0	0	180	69
Grp Sat Flow(s),veh/h/ln				1781	1777	998	1081	1870	0	0	1870	1524
Q Serve(g_s), s				10.8	16.1	4.3	10.4	17.7	0.0	0.0	8.1	3.8
Cycle Q Clear(g_c), s				10.8	16.1	4.3	18.6	17.7	0.0	0.0	8.1	3.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				440	877	246	556	512	0	0	512	417
V/C Ratio(X)				0.56	0.78	0.24	0.48	0.78	0.00	0.00	0.35	0.17
Avail Cap(c_a), veh/h				839	1674	470	875	788	0	0	788	642
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.43	0.43
Uniform Delay (d), s/veh				29.6	31.6	27.2	34.3	30.2	0.0	0.0	33.4	31.4
Incr Delay (d2), s/veh				0.4	0.6	0.2	3.0	11.2	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	6.9	1.0	3.0	9.4	0.0	0.0	4.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				30.0	32.2	27.4	37.3	41.3	0.0	0.0	33.6	31.5
LnGrp LOS				C	C	C	D	D	A	A	C	C
Approach Vol, veh/h					986			668			249	
Approach Delay, s/veh					31.3			39.7			33.0	
Approach LOS					C			D			C	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		29.7		26.8		29.7						
Change Period (Y+Rc), s		5.1		4.6		5.1						
Max Green Setting (Gmax), s		37.9		42.4		37.9						
Max Q Clear Time (g_c+I1), s		10.1		18.1		20.6						
Green Ext Time (p_c), s		1.3		4.1		3.8						

Intersection Summary	
HCM 6th Ctrl Delay	34.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
9: US 101 S On-Ramps/Hetherton St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1118	973	0	0	0	0	0	0	216	873	0
Future Volume (veh/h)	0	1118	973	0	0	0	0	0	0	216	873	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	1256	1046							243	981	0
Peak Hour Factor	0.89	0.89	0.89							0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	2743	1516							731	1367	0
Arrive On Green	0.00	0.49	0.49							0.12	0.12	0.00
Sat Flow, veh/h	0	5611	3102							1781	3741	0
Grp Volume(v), veh/h	0	1256	1046							243	981	0
Grp Sat Flow(s),veh/h/ln	0	1870	1551							1781	1870	0
Q Serve(g_s), s	0.0	13.3	23.4							11.3	22.7	0.0
Cycle Q Clear(g_c), s	0.0	13.3	23.4							11.3	22.7	0.0
Prop In Lane	0.00		1.00							1.00		0.00
Lane Grp Cap(c), veh/h	0	2743	1516							731	1367	0
V/C Ratio(X)	0.00	0.46	0.69							0.33	0.72	0.00
Avail Cap(c_a), veh/h	0	2743	1516							787	1484	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.92	0.92	0.00
Uniform Delay (d), s/veh	0.0	15.1	17.7							30.1	35.1	0.0
Incr Delay (d2), s/veh	0.0	0.6	2.6							1.1	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.6	8.5							5.6	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.7	20.3							31.2	38.1	0.0
LnGrp LOS	A	B	C							C	D	A
Approach Vol, veh/h		2302									1224	
Approach Delay, s/veh		17.8									36.7	
Approach LOS		B									D	
Timer - Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		49.0						38.2				
Change Period (Y+Rc), s		* 5						5.3				
Max Green Setting (Gmax), s		* 44						35.7				
Max Q Clear Time (g_c+I1), s		25.4						24.7				
Green Ext Time (p_c), s		17.2						8.2				
Intersection Summary												
HCM 6th Ctrl Delay			24.4									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
10: US 101 N Off-Ramps/Irwin St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	683	775	0	0	0	0	0	1285	424	0	0	0
Future Volume (veh/h)	683	775	0	0	0	0	0	1285	424	0	0	0
Initial Q (Qb), veh	3	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	0				0	1870	1870			
Adj Flow Rate, veh/h	734	833	0				0	1468	360			
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0				0	2	2			
Cap, veh/h	1372	1272	0				0	4089	866			
Arrive On Green	0.11	0.11	0.00				0.00	0.55	0.55			
Sat Flow, veh/h	3563	3741	0				0	7481	1585			
Grp Volume(v), veh/h	734	833	0				0	1468	360			
Grp Sat Flow(s),veh/h/ln	1781	1870	0				0	1870	1585			
Q Serve(g_s), s	17.7	19.2	0.0				0.0	9.9	12.0			
Cycle Q Clear(g_c), s	17.7	19.2	0.0				0.0	9.9	12.0			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	1372	1272	0				0	4089	866			
V/C Ratio(X)	0.54	0.65	0.00				0.00	0.36	0.42			
Avail Cap(c_a), veh/h	1799	1721	0				0	4099	868			
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	34.3	34.9	0.0				0.0	11.5	12.0			
Incr Delay (d2), s/veh	0.2	0.4	0.0				0.0	0.2	1.5			
Initial Q Delay(d3),s/veh	0.1	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.6	9.7	0.0				0.0	3.4	3.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	35.3	0.0				0.0	11.8	13.5			
LnGrp LOS	C	D	A				A	B	B			
Approach Vol, veh/h		1567						1828				
Approach Delay, s/veh		35.0						12.1				
Approach LOS		D						B				
Timer - Assigned Phs		2		4								
Phs Duration (G+Y+Rc), s		35.1		54.9								
Change Period (Y+Rc), s		4.6		5.6								
Max Green Setting (Gmax), s		41.4		38.4								
Max Q Clear Time (g_c+I1), s		21.2		14.0								
Green Ext Time (p_c), s		9.3		12.0								
Intersection Summary												
HCM 6th Ctrl Delay			22.7									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Hetherton St/US 101 S Off-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	312	31	17	113	0	0	0	0	246	914	389
Future Volume (veh/h)	0	312	31	17	113	0	0	0	0	246	914	389
Initial Q (Qb), veh	0	1	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	343	26	19	124	0				270	1004	374
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	486	36	56	184	0				540	2136	1153
Arrive On Green	0.00	0.14	0.14	0.05	0.05	0.00				0.74	0.74	0.74
Sat Flow, veh/h	0	3432	251	71	1268	0				728	2883	1555
Grp Volume(v), veh/h	0	182	187	143	0	0				680	594	374
Grp Sat Flow(s),veh/h/ln	0	1777	1813	1339	0	0				1834	1777	1555
Q Serve(g_s), s	0.0	8.8	8.9	1.4	0.0	0.0				13.7	11.7	7.4
Cycle Q Clear(g_c), s	0.0	8.8	8.9	10.2	0.0	0.0				13.7	11.7	7.4
Prop In Lane	0.00		0.14	0.13		0.00				0.40		1.00
Lane Grp Cap(c), veh/h	0	259	264	239	0	0				1359	1317	1153
V/C Ratio(X)	0.00	0.70	0.71	0.60	0.00	0.00				0.50	0.45	0.32
Avail Cap(c_a), veh/h	0	590	602	554	0	0				1361	1319	1154
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.99	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	36.6	36.7	40.4	0.0	0.0				4.8	4.5	4.0
Incr Delay (d2), s/veh	0.0	3.5	3.5	2.4	0.0	0.0				1.3	1.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.1	0.1	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	4.2	3.6	0.0	0.0				3.2	2.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	40.2	40.3	42.7	0.0	0.0				6.1	5.7	4.7
LnGrp LOS	A	D	D	D	A	A				A	A	A
Approach Vol, veh/h		369			143						1648	
Approach Delay, s/veh		40.2			42.7						5.6	
Approach LOS		D			D						A	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		71.9		18.1				18.1				
Change Period (Y+Rc), s		5.1		5.1				5.1				
Max Green Setting (Gmax), s		49.9		29.9				29.9				
Max Q Clear Time (g_c+I1), s		15.7		10.9				12.2				
Green Ext Time (p_c), s		11.1		2.1				0.7				

Intersection Summary												
HCM 6th Ctrl Delay			14.0									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
2: Irwin St/US 101 N On-Ramps & Mission Ave

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	266	0	0	71	279	48	1457	22	0	0	0
Future Volume (veh/h)	302	266	0	0	71	279	48	1457	22	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	311	274	0	0	73	254	49	1502	22			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	247	715	0	0	341	280	78	2556	39			
Arrive On Green	0.05	0.13	0.00	0.00	0.18	0.18	0.16	0.16	0.16			
Sat Flow, veh/h	1781	1870	0	0	1870	1537	159	5182	78			
Grp Volume(v), veh/h	311	274	0	0	73	254	575	478	521			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1537	1862	1702	1855			
Q Serve(g_s), s	12.5	12.1	0.0	0.0	3.0	14.6	25.9	23.3	23.3			
Cycle Q Clear(g_c), s	12.5	12.1	0.0	0.0	3.0	14.6	25.9	23.3	23.3			
Prop In Lane	1.00		0.00	0.00		1.00	0.09		0.04			
Lane Grp Cap(c), veh/h	247	715	0	0	341	280	919	840	915			
V/C Ratio(X)	1.26	0.38	0.00	0.00	0.21	0.91	0.63	0.57	0.57			
Avail Cap(c_a), veh/h	247	715	0	0	341	280	919	840	915			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	0.93	0.93	0.00	0.00	1.00	1.00	0.92	0.92	0.92			
Uniform Delay (d), s/veh	42.9	29.6	0.0	0.0	31.3	36.1	29.9	28.8	28.8			
Incr Delay (d2), s/veh	142.5	0.3	0.0	0.0	0.3	30.8	3.0	2.6	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.8	6.1	0.0	0.0	1.4	7.8	13.6	11.2	12.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.5	29.9	0.0	0.0	31.6	66.8	32.9	31.4	31.2			
LnGrp LOS	F	C	A	A	C	E	C	C	C			
Approach Vol, veh/h		585			327			1573				
Approach Delay, s/veh		112.6			59.0			31.9				
Approach LOS		F			E			C				

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		40.0		50.0	18.0	22.0						
Change Period (Y+Rc), s		5.6		5.6	5.5	5.6						
Max Green Setting (Gmax), s		34.4		44.4	12.5	16.4						
Max Q Clear Time (g_c+I1), s		14.1		27.9	14.5	16.6						
Green Ext Time (p_c), s		1.6		9.9	0.0	0.0						

Intersection Summary												
HCM 6th Ctrl Delay			54.4									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary
3: Hetherton St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	248	91	86	186	0	0	0	0	73	693	159
Future Volume (veh/h)	0	248	91	86	186	0	0	0	0	73	693	159
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	0.99		1.00				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	258	93	90	194	0				76	722	149
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	736	589	382	736	0				237	2411	773
Arrive On Green	0.00	0.39	0.39	0.79	0.79	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	1870	1496	1019	1870	0				470	4780	1533
Grp Volume(v), veh/h	0	258	93	90	194	0				298	500	149
Grp Sat Flow(s),veh/h/ln	0	1870	1496	1019	1870	0				1847	1702	1533
Q Serve(g_s), s	0.0	8.7	3.6	3.9	2.5	0.0				12.8	11.6	7.5
Cycle Q Clear(g_c), s	0.0	8.7	3.6	12.7	2.5	0.0				12.8	11.6	7.5
Prop In Lane	0.00		1.00	1.00		0.00				0.25		1.00
Lane Grp Cap(c), veh/h	0	736	589	382	736	0				932	1717	773
V/C Ratio(X)	0.00	0.35	0.16	0.24	0.26	0.00				0.32	0.29	0.19
Avail Cap(c_a), veh/h	0	736	589	382	736	0				932	1717	773
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.94	0.94	0.00				0.77	0.77	0.77
Uniform Delay (d), s/veh	0.0	19.2	17.7	9.3	6.1	0.0				23.9	23.4	21.7
Incr Delay (d2), s/veh	0.0	1.3	0.6	1.4	0.8	0.0				0.7	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.0	1.3	0.7	1.1	0.0				6.5	5.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.5	18.2	10.7	6.9	0.0				24.6	23.7	22.2
LnGrp LOS	A	C	B	B	A	A				C	C	C
Approach Vol, veh/h		351			284						947	
Approach Delay, s/veh		19.9			8.1						23.8	
Approach LOS		B			A						C	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		50.0		40.0				40.0				
Change Period (Y+Rc), s		4.6		4.6				4.6				
Max Green Setting (Gmax), s		45.4		35.4				35.4				
Max Q Clear Time (g_c+I1), s		14.8		10.7				14.7				
Green Ext Time (p_c), s		4.3		1.9				1.5				
Intersection Summary												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
4: Irwin St & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	164	0	0	157	74	121	1083	42	0	0	0
Future Volume (veh/h)	165	164	0	0	157	74	121	1083	42	0	0	0
Initial Q (Qb), veh	0	0	0	0	1	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.95	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	170	169	0	0	162	65	125	1116	31			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	80	701	0	0	590	149	932	2670	74			
Arrive On Green	0.50	0.50	0.00	0.00	0.10	0.10	0.20	0.20	0.20			
Sat Flow, veh/h	1143	1870	0	0	1247	500	1781	5106	142			
Grp Volume(v), veh/h	170	169	0	0	0	227	125	744	403			
Grp Sat Flow(s),veh/h/ln	1143	1870	0	0	0	1748	1781	1702	1844			
Q Serve(g_s), s	12.5	4.8	0.0	0.0	0.0	11.0	5.2	17.0	17.0			
Cycle Q Clear(g_c), s	23.5	4.8	0.0	0.0	0.0	11.0	5.2	17.0	17.0			
Prop In Lane	1.00		0.00	0.00		0.29	1.00		0.08			
Lane Grp Cap(c), veh/h	80	701	0	0	0	526	932	1780	964			
V/C Ratio(X)	2.12	0.24	0.00	0.00	0.00	0.43	0.13	0.42	0.42			
Avail Cap(c_a), veh/h	453	840	0	0	0	785	1065	2036	1103			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	0.33	0.33	0.33	0.33	0.33			
Upstream Filter(I)	0.99	0.99	0.00	0.00	0.00	0.99	0.83	0.83	0.83			
Uniform Delay (d), s/veh	31.5	11.7	0.0	0.0	0.0	33.4	20.1	25.1	25.1			
Incr Delay (d2), s/veh	515.2	0.2	0.0	0.0	0.0	0.6	0.2	0.6	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.1	1.4	0.0	0.0	0.0	5.3	2.3	8.1	8.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	546.6	11.9	0.0	0.0	0.0	34.0	20.3	25.7	26.2			
LnGrp LOS	F	B	A	A	A	C	C	C	C			
Approach Vol, veh/h		339			227			1272				
Approach Delay, s/veh		280.0			34.0			25.3				
Approach LOS		F			C			C				
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		31.6		58.4		31.6						
Change Period (Y+Rc), s		4.6		4.6		4.6						
Max Green Setting (Gmax), s		40.4		40.4		40.4						
Max Q Clear Time (g_c+I1), s		25.5		19.0		13.0						
Green Ext Time (p_c), s		1.4		6.0		1.5						
Intersection Summary												
HCM 6th Ctrl Delay			73.4									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
5: Grand Ave & 4th St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	110	80	18	110	57	63	381	44	51	283	39
Future Volume (veh/h)	9	110	80	18	110	57	63	381	44	51	283	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	1.00		0.93	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	118	72	19	118	50	68	410	46	55	304	34
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	1069	938	117	693	280	85	346	37	84	339	36
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.38	0.38	0.38	0.28	0.28	0.28
Sat Flow, veh/h	87	1736	1523	118	1126	454	142	1225	131	135	1200	126
Grp Volume(v), veh/h	128	0	72	187	0	0	524	0	0	393	0	0
Grp Sat Flow(s),veh/h/ln	1823	0	1523	1699	0	0	1498	0	0	1462	0	0
Q Serve(g_s), s	0.0	0.0	1.7	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	1.7	4.1	0.0	0.0	25.4	0.0	0.0	23.5	0.0	0.0
Prop In Lane	0.08		1.00	0.10		0.27	0.13		0.09	0.14		0.09
Lane Grp Cap(c), veh/h	1165	0	938	1090	0	0	468	0	0	458	0	0
V/C Ratio(X)	0.11	0.00	0.08	0.17	0.00	0.00	1.12	0.00	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	1165	0	938	1090	0	0	468	0	0	458	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	0.00	0.94	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	7.0	7.4	0.0	0.0	28.9	0.0	0.0	30.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.3	0.0	0.0	77.5	0.0	0.0	14.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.6	1.6	0.0	0.0	19.8	0.0	0.0	10.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	7.1	7.8	0.0	0.0	106.4	0.0	0.0	45.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	D	A	A
Approach Vol, veh/h		200			187			524			393	
Approach Delay, s/veh		7.3			7.8			106.4			45.7	
Approach LOS		A			A			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		60.0		30.0		60.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		25.4		55.4		25.4		55.4				
Max Q Clear Time (g_c+I1), s		25.5		6.1		27.4		4.5				
Green Ext Time (p_c), s		0.0		0.8		0.0		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			58.8									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary
6: Hetherton St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	463	1444	0	0	0	0	0	575	282
Future Volume (veh/h)	0	0	0	463	1444	0	0	0	0	0	575	282
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.88
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				482	1504	0				0	599	250
Peak Hour Factor				0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				1038	3018	0				0	1838	502
Arrive On Green				0.18	0.18	0.00				0.00	0.12	0.12
Sat Flow, veh/h				1781	5611	0				0	5274	1394
Grp Volume(v), veh/h				482	1504	0				0	599	250
Grp Sat Flow(s),veh/h/ln				1781	1870	0				0	1702	1394
Q Serve(g_s), s				22.0	21.8	0.0				0.0	9.7	15.1
Cycle Q Clear(g_c), s				22.0	21.8	0.0				0.0	9.7	15.1
Prop In Lane				1.00		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				1038	3018	0				0	1838	502
V/C Ratio(X)				0.46	0.50	0.00				0.00	0.33	0.50
Avail Cap(c_a), veh/h				1038	3018	0				0	1838	502
HCM Platoon Ratio				0.33	0.33	1.00				1.00	0.33	0.33
Upstream Filter(I)				0.73	0.73	0.00				0.00	0.82	0.82
Uniform Delay (d), s/veh				26.2	26.1	0.0				0.0	29.6	32.0
Incr Delay (d2), s/veh				1.1	0.4	0.0				0.0	0.4	2.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.7	10.9	0.0				0.0	4.4	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				27.2	26.5	0.0				0.0	30.0	34.9
LnGrp LOS				C	C	A				A	C	C
Approach Vol, veh/h					1986						849	
Approach Delay, s/veh					26.7						31.5	
Approach LOS					C						C	
Timer - Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						53.0		37.0				
Change Period (Y+Rc), s						4.6		4.6				
Max Green Setting (Gmax), s						48.4		32.4				
Max Q Clear Time (g_c+I1), s						24.0		17.1				
Green Ext Time (p_c), s						21.0		7.8				
Intersection Summary												
HCM 6th Ctrl Delay			28.1									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
7: Irwin St & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	1024	126	840	1129	0	0	0	0
Future Volume (veh/h)	0	0	0	0	1024	126	840	1129	0	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.88	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	0			
Adj Flow Rate, veh/h				0	1056	105	887	1134	0			
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1437	395	2316	2264	0			
Arrive On Green				0.00	0.09	0.09	0.61	0.61	0.00			
Sat Flow, veh/h				0	5274	1402	3563	3741	0			
Grp Volume(v), veh/h				0	1056	105	887	1134	0			
Grp Sat Flow(s),veh/h/ln				0	1702	1402	1781	1870	0			
Q Serve(g_s), s				0.0	18.1	6.3	11.8	15.5	0.0			
Cycle Q Clear(g_c), s				0.0	18.1	6.3	11.8	15.5	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1437	395	2316	2264	0			
V/C Ratio(X)				0.00	0.73	0.27	0.38	0.50	0.00			
Avail Cap(c_a), veh/h				0	1668	458	2316	2264	0			
HCM Platoon Ratio				1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.85	0.85	0.68	0.68	0.00			
Uniform Delay (d), s/veh				0.0	37.6	32.2	9.3	10.1	0.0			
Incr Delay (d2), s/veh				0.0	1.2	0.3	0.3	0.5	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	8.4	2.3	4.4	6.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	38.8	32.5	9.7	10.6	0.0			
LnGrp LOS				A	D	C	A	B	A			
Approach Vol, veh/h					1161			2021				
Approach Delay, s/veh					38.2			10.2				
Approach LOS					D			B				
Timer - Assigned Phs				4		6						
Phs Duration (G+Y+Rc), s				59.1		30.9						
Change Period (Y+Rc), s				4.6		5.6						
Max Green Setting (Gmax), s				50.4		29.4						
Max Q Clear Time (g_c+I1), s				17.5		20.1						
Green Ext Time (p_c), s				10.0		5.2						

Intersection Summary		
HCM 6th Ctrl Delay		20.4
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
8: Grand Ave & 3rd St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	286	727	88	295	407	0	0	228	137
Future Volume (veh/h)	0	0	0	286	727	88	295	407	0	0	228	137
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				295	749	77	304	420	0	0	235	115
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				477	951	400	577	531	0	0	531	432
Arrive On Green				0.27	0.27	0.27	0.28	0.28	0.00	0.00	0.57	0.57
Sat Flow, veh/h				1781	3554	1493	1974	1870	0	0	1870	1521
Grp Volume(v), veh/h				295	749	77	304	420	0	0	235	115
Grp Sat Flow(s),veh/h/ln				1781	1777	1493	987	1870	0	0	1870	1521
Q Serve(g_s), s				13.1	17.6	3.6	12.9	18.7	0.0	0.0	6.5	3.5
Cycle Q Clear(g_c), s				13.1	17.6	3.6	19.4	18.7	0.0	0.0	6.5	3.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				477	951	400	577	531	0	0	531	432
V/C Ratio(X)				0.62	0.79	0.19	0.53	0.79	0.00	0.00	0.44	0.27
Avail Cap(c_a), veh/h				859	1714	720	826	767	0	0	767	624
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.34	0.34
Uniform Delay (d), s/veh				28.9	30.6	25.4	33.1	29.8	0.0	0.0	15.3	14.7
Incr Delay (d2), s/veh				0.5	0.6	0.1	3.4	11.4	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.6	7.5	1.3	3.3	9.9	0.0	0.0	2.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.4	31.1	25.5	36.5	41.2	0.0	0.0	15.5	14.8
LnGrp LOS				C	C	C	D	D	A	A	B	B
Approach Vol, veh/h					1121			724			350	
Approach Delay, s/veh					30.3			39.2			15.3	
Approach LOS					C			D			B	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.7		28.7		30.7						
Change Period (Y+Rc), s		5.1		4.6		5.1						
Max Green Setting (Gmax), s		36.9		43.4		36.9						
Max Q Clear Time (g_c+I1), s		8.5		19.6		21.4						
Green Ext Time (p_c), s		1.9		4.5		4.1						

Intersection Summary		
HCM 6th Ctrl Delay		30.8
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
9: US 101 S On-Ramps/Hetherton St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1459	901	0	0	0	0	0	0	291	772	0
Future Volume (veh/h)	0	1459	901	0	0	0	0	0	0	291	772	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	1639	1001							327	867	0
Peak Hour Factor	0.89	0.89	0.89							0.89	0.89	0.89
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	2930	1606							669	1236	0
Arrive On Green	0.00	0.52	0.52							0.11	0.11	0.00
Sat Flow, veh/h	0	5611	3075							1781	3741	0
Grp Volume(v), veh/h	0	1639	1001							327	867	0
Grp Sat Flow(s),veh/h/ln	0	1870	1538							1781	1870	0
Q Serve(g_s), s	0.0	17.7	20.8							15.7	20.1	0.0
Cycle Q Clear(g_c), s	0.0	17.7	20.8							15.7	20.1	0.0
Prop In Lane	0.00		1.00							1.00		0.00
Lane Grp Cap(c), veh/h	0	2930	1606							669	1236	0
V/C Ratio(X)	0.00	0.56	0.62							0.49	0.70	0.00
Avail Cap(c_a), veh/h	0	2930	1606							727	1359	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.92	0.92	0.00
Uniform Delay (d), s/veh	0.0	14.5	15.2							33.8	35.8	0.0
Incr Delay (d2), s/veh	0.0	0.8	1.8							2.3	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.4	7.3							7.9	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.3	17.1							36.2	38.9	0.0
LnGrp LOS	A	B	B							D	D	A
Approach Vol, veh/h		2640									1194	
Approach Delay, s/veh		16.0									38.1	
Approach LOS		B									D	
Timer - Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		52.0						35.0				
Change Period (Y+Rc), s		* 5						5.3				
Max Green Setting (Gmax), s		* 47						32.7				
Max Q Clear Time (g_c+I1), s		22.8						22.1				
Green Ext Time (p_c), s		23.1						7.6				
Intersection Summary												
HCM 6th Ctrl Delay			22.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
10: US 101 N Off-Ramps/Irwin St & Second St

10/14/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	785	957	0	0	0	0	0	1188	701	0	0	0
Future Volume (veh/h)	785	957	0	0	0	0	0	1188	701	0	0	0
Initial Q (Qb), veh	0	2	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	0				0	1870	1870			
Adj Flow Rate, veh/h	844	1029	0				0	1277	734			
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0				0	2	2			
Cap, veh/h	1878	1804	0				0	2269	1282			
Arrive On Green	0.16	0.16	0.00				0.00	0.40	0.40			
Sat Flow, veh/h	3563	3741	0				0	5611	3170			
Grp Volume(v), veh/h	844	1029	0				0	1277	734			
Grp Sat Flow(s),veh/h/ln	1781	1870	0				0	1870	1585			
Q Serve(g_s), s	19.4	22.9	0.0				0.0	15.8	16.1			
Cycle Q Clear(g_c), s	19.4	22.9	0.0				0.0	15.8	16.1			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	1878	1804	0				0	2269	1282			
V/C Ratio(X)	0.45	0.57	0.00				0.00	0.56	0.57			
Avail Cap(c_a), veh/h	1878	1804	0				0	2269	1282			
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.68	0.68	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	27.8	29.3	0.0				0.0	20.7	20.8			
Incr Delay (d2), s/veh	0.5	0.9	0.0				0.0	1.0	1.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.4	11.7	0.0				0.0	6.2	5.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	30.2	0.0				0.0	21.7	22.6			
LnGrp LOS	C	C	A				A	C	C			
Approach Vol, veh/h		1873						2011				
Approach Delay, s/veh		29.4						22.0				
Approach LOS		C						C				
Timer - Assigned Phs		2		4								
Phs Duration (G+Y+Rc), s		48.0		42.0								
Change Period (Y+Rc), s		4.6		5.6								
Max Green Setting (Gmax), s		43.4		36.4								
Max Q Clear Time (g_c+I1), s		24.9		18.1								
Green Ext Time (p_c), s		10.9		10.7								
Intersection Summary												
HCM 6th Ctrl Delay			25.6									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Appendix B

Roadway Construction Noise Model Results

Construction Noise

Lmax	Noise Level @ 50 ft	Single Family Res to the S	Single Family Res to the E
Distance		10	95
Demolition	90	103.979	84.425
Site Preparation	81	94.979	75.425
Grading	85	98.979	79.425
Building Construction	90	103.979	85.980
Paving	90	103.979	84.425
Architectural Coating	81	94.979	75.425

Lmax	Noise Level @ 50 ft	Single Family Res to the S	Single Family Res to the E
Distance		80	85
Paving	90	85.918	85.391

Construction Vibration

	Vibration @ 25 ft	Res to the S	Commercial to East and South
Distance		10	10
Vibratory Roller	0.21	0.830	0.830
Large Bulldozer	0.089	0.352	0.352
Loaded Trucks	0.076	0.300	0.300
Small Bulldozer	0.003	0.012	0.012

	Vibration @ 25 ft	Res to the S	Commercial to East and South
Distance		95	110
Vibratory Roller	0.21	0.028	0.023

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Demolition

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Demolition	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Site Preparation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Site Preparation	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	80.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Grading

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Grader	No	40	85.0		50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Building Construction

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building Construction	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Man Lift	No	20		74.7	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Leq	Day Lmax	Evening Leq	Evening Lmax	Night Leq	Night Lmax	Day Leq	Day Lmax	Evening Leq	Evening Lmax	Night Leq	Night Lmax
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Paving

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Paving	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Paver	No	50		77.2	50.0	0.0
Concrete Saw	No	20		89.6	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/21/2025
Case Description: Architectural Coating

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Drum Mixer	No	50		80.0	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.6	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

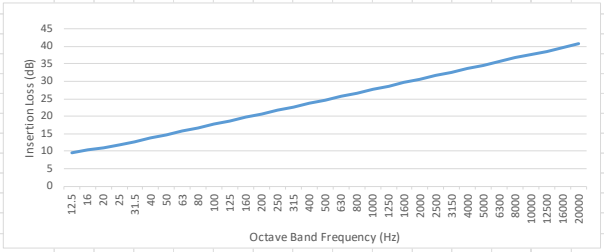
Appendix C

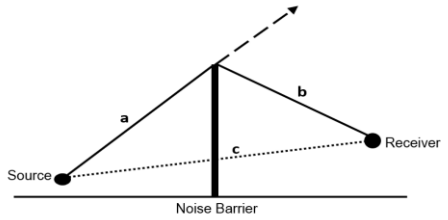
Barrier Calculation and Operational Equipment Specifications

Barrier Calculation

Barrier Insertion Loss Calculator

Distances	Inputs
From source to barrier	50
From reciever to barrier	11.0
Barrier Height	85.0
Source Height	81.0
Reciever Height	5.0
a	50.2
b	80.8
c	97.5
Path Length Δ = a+b-c	33.5
Speed of Sound (fps)	1140.0





Octave Band (Hz)		16			31.5			63				125		250			500			1k			2k			4k			8k			16k		
1/3 Octave Band (Hz)		12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
Fresnel Number= N		0.3668849	0.47	0.587	0.734	0.925	1.174	1.468	1.849	2.348	2.935	3.669	4.696	5.87	7.338	9.245	11.74	14.68	18.49	23.48	29.35	36.69	46.96	58.7	73.38	92.45	117.4	146.8	184.9099803	234.8	293.5	366.9	469.6	587
Insertion Loss (IL) [dB]		**9.4615612**	**10.26**	**11.04**	**11.87**	**12.78**	**13.75**	**14.69**	**15.67**	**16.7**	**17.66**	**18.63**	**19.7**	**20.67**	**21.64**	**22.64**	**23.68**	**24.65**	**25.65**	**26.69**	**27.66**	**28.63**	**29.7**	**30.67**	**31.64**	**32.64**	**33.68**	**34.65**	**35.65140199**	**36.69**	**37.66**	**38.63**	**39.7**	**40.67**
IL= 20 dB if N>12.5	*A-weighting Corrections*											*-16.1*	*-13.4*	*-10.9*	*-8.6*	*-6.6*	*-4.8*	*-3.2*	*-1.9*	*-0.8*	*0*	*0.6*	*1*	*1.2*	*1.3*	*1.2*	*1*	**Flat**	**A-Wght**					
											Generic Engine Spectra	65.6	60.2	59	55.4	53	54.1	55	55	57	57.1	56	53.8	52	48.5	46	42.1	**69**	**64.4**					
											Normalized Spectra	89.2	83.8	82.8	79.0	76.9	77.7	78.5	78.6	81.0	80.7	79.2	77.4	75.1	72.1	70.0	65.7	**93**	**88.0**					
Unmitigated Noise Level	88																																	
											Attenuated Spectra	70.5	64.1	62.1	57.3	54.2	54.0	53.8	52.9	54.3	53.0	50.5	47.7	44.4	40.4	37.3	32.0	**72**	**62.2**					
Mitigated Noise Level	**62.2**																																	

Formulas and methods from Utexas Design Guide for Highway Noise Barriers

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Designed To Fit Your Home – And Your Budget

Turn to the experts at Carrier for real solutions for your home cooling needs. Our comprehensive selection of air conditioners have been designed to fit virtually any home and a variety of budgets. From our innovative and intelligent Infinity® System line with variable-speed, two-stage, and single-stage options...to Performance™ Series deluxe two-stage and single-stage choices...and the value-driven Comfort™ Series single-stage models, our air conditioners offer summertime comfort you can depend on.

Air Conditioner Options+	Infinity® System					
	24VNA6	24VNA9	24ANB1	24ANB7	24ANB7**C (Coastal)	24ANB6
Efficiency						
Cooling SEER (up to)	26.0	19.0		17.0		16.0
Compressor Type	Fully variable-speed with capacity range from 25-100%	Five-stage variable-speed with capacity range from 25-100%	Two-stage with high-stage at 100% capacity and low-stage at 75% capacity			Single-stage at 100% capacity at all times
ENERGY STAR®	•	•	•	•	•	•
Comfort Features						
Sound level (as low as)	51 dBA	60 dBA	71 dBA	72 dBA	72 dBA	66 dBA
Humidity Control	Ideal Humidity System™ Technology offers excellent humidity control and is capable of removing up to 400% more moisture than standard systems.**		Enhanced			Standard
Durability						
Cabinet Protection	WeatherArmor™ Ultra provides durability with a galvanized steel cabinet, louvered coil guard and baked-on powder paint to protect against dings, dents and weather-based threats.					
Recommended Thermostat						
Infinity® System Control	•	•	•	•	•	•
ecobee, Powered by Carrier	-	-	-	-	-	-
Peace of Mind						
Limited Parts Warranty*	10-Year					
Replacement Limited Warranty*	10-Year	-	-	-	-	-

* Upon timely registration, the warranty period is five years if not registered within 90 days of installation except in jurisdictions where warranty benefits cannot be conditioned upon registration.

\+ Air conditioner models may not be sold in every region.

** Based on Carrier testing, all data was run with the systems cycling once they met the assumed home load. The assumed load at AHAM conditions (80/70, 80) is the capacity of the variable-speed running continuously in dehumidification mode. The difficult conditions load was determined by a Wrightsoft® load calculation for a home in Florida at 69 OD 72/63 ID. This condition was provided by a customer in Florida as “worst case”.

Designed with Your Comfort in Mind

Carrier air conditioners represent years of design, development and testing with one goal in mind – maximizing your family’s comfort. Along the way, we have created new technologies that deliver the outstanding quality and energy efficiency you demand while staying ahead of industry trends and global initiatives. Check out the side-by-side comparison below to see which model is right for you.

Performance™ Series				Comfort™ Series				
24ACB7	24APB6	24ACC6	24ACB3	24ABC6	24AAA5	24ACC4	24ACA4**C (Coastal)	24ABB3
Efficiency								
17.0		16.5	13.0	16.5	17.0	14.0		13.0
Two-stage with high-stage at 100% capacity and low-stage at 75% capacity	Single-stage at 100% capacity at all times			Single-stage at 100% capacity at all times				
•	•	•	-	•	-	-	-	-
Comfort Features								
72 dBA	68 dBA	73 dBA	70 dBA	76 dBA	75 dBA	75 dBA	73 dBA	73 dBA
Enhanced	Standard			Standard				
Durability								
WeatherArmor Ultra				WeatherArmor provides durability with a galvanized steel cabinet, wire coil guard and baked-on powder paint to protect against dings, dents and weather-based threats.				
Recommended Thermostat								
-	-	-	-	-	-	-	-	-
•	•	•	•	•	•	•	•	•
Peace of Mind								
10-Year				10-Year				
-	-	-	-	-	-	-	-	-

MORE THAN A CENTURY OF COOL

In 1902, a determined engineer answered one of mankind's most nagging questions: How do we make hot, sticky, indoor air go away? In creating the world's first modern air conditioning system, Willis Carrier forever changed indoor life, and, more than a century later, the corporation that bears his name takes inspiration from his example.

Carrier strives to improve on our founder's breakthroughs, introducing new technologies that make life at home even cooler. Today, a nationwide network of experts continues to advance Willis Carrier's lifework. Your expert Carrier dealer is equipped to evaluate your home and create a customized system designed around your lifestyle.

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07/2021

Appendix D

Air Quality Modeling Results

930 Irwin St Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	930 Irwin St
Construction Start Date	10/30/2025
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60
Precipitation (days)	5.60
Location	37.97194786541314, -122.52058118793056
County	Marin
City	San Rafael
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	919
EDFZ	2
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	210	Dwelling Unit	0.92	203,233	2,800	—	504	—

Enclosed Parking with Elevator	85.1	1000sqft	0.00	85,085	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	93.9	93.7	11.5	24.6	0.03	0.17	2.12	2.29	0.16	0.51	0.67	—	5,241	5,241	0.22	0.23	8.63	5,324
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	35.6	35.2	18.2	69.6	0.08	0.86	3.18	3.46	0.69	1.43	1.67	—	9,661	9,661	0.41	0.28	0.23	9,753
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	8.76	8.62	7.00	15.5	0.02	0.09	1.32	1.41	0.08	0.32	0.40	—	3,379	3,379	0.15	0.16	2.38	3,432

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	1.60	1.57	1.28	2.83	< 0.005	0.02	0.24	0.26	0.02	0.06	0.07	—	559	559	0.02	0.03	0.39	568
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.27	1.12	9.13	21.5	0.03	0.11	1.81	1.92	0.10	0.43	0.54	—	4,599	4,599	0.19	0.22	8.35	4,677
2027	93.9	93.7	11.5	24.6	0.03	0.17	2.12	2.29	0.16	0.51	0.67	—	5,241	5,241	0.22	0.23	8.63	5,324

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	35.6	35.2	14.7	69.6	0.04	0.86	2.61	3.46	0.69	0.44	1.14	—	3,837	3,837	0.20	0.10	0.07	3,870
2026	1.31	1.15	9.33	25.3	0.04	0.25	3.18	3.42	0.23	1.43	1.67	—	4,493	4,493	0.20	0.22	0.22	4,565
2027	2.31	2.02	18.2	49.7	0.08	0.31	2.14	2.45	0.29	0.51	0.81	—	9,661	9,661	0.41	0.28	0.23	9,753
2028	1.18	0.99	9.10	20.0	0.03	0.11	1.81	1.91	0.10	0.43	0.53	—	4,394	4,394	0.19	0.21	0.18	4,462
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.28	1.27	0.68	3.03	< 0.005	0.03	0.10	0.13	0.03	0.02	0.04	—	224	224	0.01	0.01	0.06	226
2026	0.79	0.67	5.95	13.5	0.02	0.07	1.18	1.26	0.07	0.30	0.37	—	2,904	2,904	0.13	0.14	2.20	2,951
2027	8.76	8.62	7.00	15.5	0.02	0.09	1.32	1.41	0.08	0.32	0.40	—	3,379	3,379	0.15	0.16	2.38	3,432
2028	0.04	0.03	0.30	0.66	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.02	—	146	146	0.01	0.01	0.10	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.23	0.23	0.12	0.55	< 0.005	0.01	0.02	0.02	< 0.005	< 0.005	0.01	—	37.1	37.1	< 0.005	< 0.005	0.01	37.4
2026	0.14	0.12	1.09	2.47	< 0.005	0.01	0.22	0.23	0.01	0.06	0.07	—	481	481	0.02	0.02	0.36	488
2027	1.60	1.57	1.28	2.83	< 0.005	0.02	0.24	0.26	0.02	0.06	0.07	—	559	559	0.02	0.03	0.39	568
2028	0.01	0.01	0.05	0.12	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	24.2	24.2	< 0.005	< 0.005	0.02	24.6

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	1.59	1.49	0.83	9.54	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,284	2,284	0.11	0.09	6.70	2,320
Area	6.89	6.78	0.14	15.6	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	47.1	47.1	< 0.005	< 0.005	—	47.2
Energy	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,306	1,306	0.16	0.01	—	1,314
Water	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Waste	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Total	8.55	8.31	1.57	25.4	0.03	0.07	2.16	2.24	0.07	0.55	0.62	95.9	3,660	3,756	9.88	0.13	8.16	4,050
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.54	1.44	0.98	9.55	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,161	2,161	0.12	0.10	0.17	2,193
Area	5.13	5.13	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,306	1,306	0.16	0.01	—	1,314
Water	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Waste	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Total	6.75	6.61	1.57	9.80	0.03	0.06	2.16	2.22	0.06	0.55	0.61	95.9	3,490	3,586	9.89	0.14	1.63	3,877
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.52	1.42	0.92	9.11	0.02	0.01	2.15	2.17	0.01	0.55	0.56	—	2,168	2,168	0.12	0.09	2.89	2,202
Area	6.00	5.95	0.07	7.71	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	0.00	23.2	23.2	< 0.005	< 0.005	—	23.3
Energy	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,306	1,306	0.16	0.01	—	1,314
Water	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Waste	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Total	7.59	7.40	1.59	17.1	0.03	0.07	2.15	2.22	0.07	0.55	0.61	95.9	3,520	3,616	9.89	0.14	4.35	3,908
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.28	0.26	0.17	1.66	< 0.005	< 0.005	0.39	0.40	< 0.005	0.10	0.10	—	359	359	0.02	0.02	0.48	364
Area	1.09	1.08	0.01	1.41	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	3.84	3.84	< 0.005	< 0.005	—	3.86

Energy	0.01	0.01	0.11	0.05	< 0.005	0.01	—	0.01	0.01	—	0.01	—	216	216	0.03	< 0.005	—	217
Water	—	—	—	—	—	—	—	—	—	—	—	2.01	3.82	5.83	0.21	< 0.005	—	12.5
Waste	—	—	—	—	—	—	—	—	—	—	—	13.9	0.00	13.9	1.38	0.00	—	48.5
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	1.38	1.35	0.29	3.12	< 0.005	0.01	0.39	0.41	0.01	0.10	0.11	15.9	583	599	1.64	0.02	0.72	647

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.2. Demolition (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	35.3	35.0	13.6	67.0	0.03	0.85	—	0.85	0.69	—	0.69	—	3,053	3,053	0.12	0.02	—	3,064
Demolition	—	—	—	—	—	—	2.06	2.06	—	0.31	0.31	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	1.25	0.48	2.39	< 0.005	0.03	—	0.03	0.02	—	0.02	—	109	109	< 0.005	< 0.005	—	109
Demolition	—	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.23	0.09	0.44	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	18.0	18.0	< 0.005	< 0.005	—	18.1
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.20	0.18	2.02	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	462	462	0.01	0.02	0.05	469
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.09	0.02	0.91	0.57	< 0.005	0.01	0.07	0.07	< 0.005	0.02	0.02	—	321	321	0.06	0.05	0.01	338
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.5	16.5	< 0.005	< 0.005	0.03	16.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.01	12.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.74	2.74	< 0.005	< 0.005	0.01	2.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.89	1.89	< 0.005	< 0.005	< 0.005	1.99

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.4. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.10	1.61	6.03	0.01	0.02	—	0.02	0.02	—	0.02	—	864	864	0.04	0.01	—	867
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.14	0.52	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	74.4	74.4	< 0.005	< 0.005	—	74.7
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.3	12.3	< 0.005	< 0.005	—	12.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.35	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	80.4	80.4	< 0.005	< 0.005	0.01	81.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.19	0.12	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	67.2	67.2	0.01	0.01	< 0.005	70.8
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.95	6.95	< 0.005	< 0.005	0.01	7.06

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.79	5.79	< 0.005	< 0.005	< 0.005	6.10
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.15	1.15	< 0.005	< 0.005	< 0.005	1.17
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.96	0.96	< 0.005	< 0.005	< 0.005	1.01

3.5. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.6. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.10	1.61	6.03	0.01	0.02	—	0.02	0.02	—	0.02	—	864	864	0.04	0.01	—	867
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	57.5	57.5	< 0.005	< 0.005	—	57.7
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.02	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.52	9.52	< 0.005	< 0.005	—	9.55
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.33	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	78.9	78.9	< 0.005	< 0.005	0.01	80.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.19	0.12	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	65.9	65.9	0.01	0.01	< 0.005	69.4
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.27	5.27	< 0.005	< 0.005	0.01	5.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.38	4.38	< 0.005	< 0.005	< 0.005	4.62
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.87	0.87	< 0.005	< 0.005	< 0.005	0.89
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.76

3.7. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.8. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	1.14	1.00	9.10	23.7	0.04	0.25	—	0.25	0.23	—	0.23	—	4,062	4,062	0.16	0.03	—	4,076
Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.27	0.71	< 0.005	0.01	—	0.01	0.01	—	0.01	—	122	122	< 0.005	< 0.005	—	123
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.3	20.3	< 0.005	< 0.005	—	20.3
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	0.14	1.63	0.00	0.00	0.41	0.41	0.00	0.10	0.10	—	395	395	0.01	0.02	0.04	400
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.98	1.98	< 0.005	< 0.005	< 0.005	2.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.43	7.35	13.9	0.02	0.09	—	0.09	0.09	—	0.09	—	2,013	2,013	0.08	0.02	—	2,019
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.43	7.35	13.9	0.02	0.09	—	0.09	0.09	—	0.09	—	2,013	2,013	0.08	0.02	—	2,019
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.28	0.26	4.41	8.33	0.01	0.06	—	0.06	0.05	—	0.05	—	1,209	1,209	0.05	0.01	—	1,213
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.81	1.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	200	200	0.01	< 0.005	—	201
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.66	0.65	0.40	6.82	0.00	0.00	1.55	1.55	0.00	0.36	0.36	—	1,582	1,582	0.03	0.06	5.96	1,606
Vendor	0.13	0.04	1.38	0.80	0.01	0.01	0.26	0.28	0.01	0.07	0.08	—	1,005	1,005	0.08	0.14	2.39	1,052
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.64	0.57	0.53	6.10	0.00	0.00	1.55	1.55	0.00	0.36	0.36	—	1,475	1,475	0.04	0.06	0.15	1,495
Vendor	0.13	0.04	1.45	0.82	0.01	0.01	0.26	0.28	0.01	0.07	0.08	—	1,005	1,005	0.08	0.14	0.06	1,050
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.38	0.34	0.28	3.54	0.00	0.00	0.93	0.93	0.00	0.22	0.22	—	890	890	0.02	0.04	1.55	904
Vendor	0.08	0.02	0.85	0.49	< 0.005	0.01	0.16	0.17	0.01	0.04	0.05	—	604	604	0.05	0.08	0.62	631
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.05	0.65	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	147	147	< 0.005	0.01	0.26	150
Vendor	0.01	< 0.005	0.16	0.09	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	100.0	100.0	0.01	0.01	0.10	104

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.12. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.43	7.34	13.9	0.02	0.09	—	0.09	0.09	—	0.09	—	2,013	2,013	0.08	0.02	—	2,020
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.43	7.34	13.9	0.02	0.09	—	0.09	0.09	—	0.09	—	2,013	2,013	0.08	0.02	—	2,020
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	0.31	5.24	9.90	0.02	0.07	—	0.07	0.06	—	0.06	—	1,438	1,438	0.06	0.01	—	1,443
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.06	0.96	1.81	< 0.005	0.01	—	0.01	0.01	—	0.01	—	238	238	0.01	< 0.005	—	239
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.64	0.57	0.40	6.36	0.00	0.00	1.55	1.55	0.00	0.36	0.36	—	1,553	1,553	0.03	0.06	5.41	1,577
Vendor	0.12	0.04	1.30	0.77	0.01	0.01	0.26	0.28	0.01	0.07	0.08	—	984	984	0.08	0.14	2.14	1,030
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.62	0.55	0.47	5.69	0.00	0.00	1.55	1.55	0.00	0.36	0.36	—	1,448	1,448	0.04	0.06	0.14	1,469
Vendor	0.12	0.04	1.38	0.79	0.01	0.01	0.26	0.28	0.01	0.07	0.08	—	984	984	0.08	0.14	0.06	1,028
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.39	0.33	3.96	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,039	1,039	0.02	0.04	1.67	1,054
Vendor	0.09	0.03	0.96	0.56	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	703	703	0.06	0.10	0.66	735
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.06	0.72	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	172	172	< 0.005	0.01	0.28	174
Vendor	0.02	< 0.005	0.18	0.10	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	116	116	0.01	0.02	0.11	122
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.14. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.43	7.34	13.9	0.02	0.09	—	0.09	0.09	—	0.09	—	2,013	2,013	0.08	0.02	—	2,020
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.24	0.46	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	67.0	67.0	< 0.005	< 0.005	—	67.2

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.1	11.1	< 0.005	< 0.005	—	11.1
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.60	0.53	0.47	5.38	0.00	0.00	1.55	1.55	0.00	0.36	0.36	—	1,423	1,423	0.03	0.06	0.13	1,442
Vendor	0.11	0.03	1.29	0.76	0.01	0.01	0.26	0.28	0.01	0.07	0.08	—	959	959	0.08	0.13	0.05	1,001
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.17	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	47.5	47.5	< 0.005	< 0.005	0.07	48.2
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.9	31.9	< 0.005	< 0.005	0.03	33.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.87	7.87	< 0.005	< 0.005	0.01	7.98
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.28	5.28	< 0.005	< 0.005	< 0.005	5.52
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.16. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.97	0.88	8.90	28.1	0.05	0.20	—	0.20	0.19	—	0.19	—	4,906	4,906	0.20	0.04	—	4,923
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.24	0.77	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	135
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.3	22.3	< 0.005	< 0.005	—	22.3
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.10	1.22	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	310	310	0.01	0.01	0.03	314
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.53	8.53	< 0.005	< 0.005	0.01	8.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.41	1.41	< 0.005	< 0.005	< 0.005	1.43
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.18. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.26	0.22	2.38	2.37	0.01	0.06	—	0.06	0.06	—	0.06	—	381	381	0.02	< 0.005	—	382
Architectural Coatings	92.3	92.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.20	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	32.4	32.4	< 0.005	< 0.005	—	32.5
Architectural Coatings	7.84	7.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.36	5.36	< 0.005	< 0.005	—	5.38
Architectural Coatings	1.43	1.43	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.11	0.08	1.27	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	311	311	0.01	0.01	1.08	315
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.7	24.7	< 0.005	< 0.005	0.04	25.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.09	4.09	< 0.005	< 0.005	0.01	4.15
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	1.59	1.49	0.83	9.54	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,284	2,284	0.11	0.09	6.70	2,320
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.59	1.49	0.83	9.54	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,284	2,284	0.11	0.09	6.70	2,320
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	1.54	1.44	0.98	9.55	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,161	2,161	0.12	0.10	0.17	2,193
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.54	1.44	0.98	9.55	0.02	0.01	2.16	2.18	0.01	0.55	0.56	—	2,161	2,161	0.12	0.10	0.17	2,193
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.28	0.26	0.17	1.66	< 0.005	< 0.005	0.39	0.40	< 0.005	0.10	0.10	—	359	359	0.02	0.02	0.48	364
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.28	0.26	0.17	1.66	< 0.005	< 0.005	0.39	0.40	< 0.005	0.10	0.10	—	359	359	0.02	0.02	0.48	364

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	375	375	0.06	0.01	—	378
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	—	176	176	0.03	< 0.005	—	177
Total	—	—	—	—	—	—	—	—	—	—	—	—	550	550	0.09	0.01	—	556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	375	375	0.06	0.01	—	378
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	—	176	176	0.03	< 0.005	—	177
Total	—	—	—	—	—	—	—	—	—	—	—	—	550	550	0.09	0.01	—	556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	62.0	62.0	0.01	< 0.005	—	62.7

Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	—	29.1	29.1	< 0.005	< 0.005	—	29.3
Total	—	—	—	—	—	—	—	—	—	—	—	—	91.1	91.1	0.01	< 0.005	—	92.0

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	756	756	0.07	< 0.005	—	758

Enclosed	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	756	756	0.07	< 0.005	—	758
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	756	756	0.07	< 0.005	—	758
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	756	756	0.07	< 0.005	—	758
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.01	0.01	0.11	0.05	< 0.005	0.01	—	0.01	0.01	—	0.01	—	125	125	0.01	< 0.005	—	125
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.01	0.11	0.05	< 0.005	0.01	—	0.01	0.01	—	0.01	—	125	125	0.01	< 0.005	—	125

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	4.35	4.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.78	0.78	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.76	1.65	0.14	15.6	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.1	47.1	< 0.005	< 0.005	—	47.2
Total	6.89	6.78	0.14	15.6	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	47.1	47.1	< 0.005	< 0.005	—	47.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	4.35	4.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	0.78	0.78	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	5.13	5.13	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	0.79	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.14	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.16	0.15	0.01	1.41	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.84	3.84	< 0.005	< 0.005	—	3.86
Total	1.09	1.08	0.01	1.41	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	3.84	3.84	< 0.005	< 0.005	—	3.86

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	12.2	23.0	35.2	1.25	0.03	—	75.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	2.01	3.82	5.83	0.21	< 0.005	—	12.5

Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	2.01	3.82	5.83	0.21	< 0.005	—	12.5

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	83.7	0.00	83.7	8.36	0.00	—	293
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	13.9	0.00	13.9	1.38	0.00	—	48.5
Enclosed Parking with Elevator	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	13.9	0.00	13.9	1.38	0.00	—	48.5

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.46	1.46
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	10/30/2025	11/17/2025	5.00	13.0	—
Site Preparation	Site Preparation	11/18/2025	2/3/2026	5.00	56.0	—

Grading	Grading	2/4/2026	2/18/2026	5.00	11.0	—
Building Construction	Building Construction	2/28/2026	1/17/2028	5.00	491	—
Paving	Paving	10/4/2027	10/15/2027	5.00	10.0	—
Architectural Coating	Architectural Coating	6/28/2027	8/9/2027	5.00	31.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Demolition	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Demolition	Crushing/Proc. Equipment	Gasoline	Average	1.00	8.00	12.0	0.85
Demolition	Dumpers/Tenders	Diesel	Average	10.0	8.00	16.0	0.38
Demolition	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Demolition	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Demolition	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Demolition	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Demolition	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43

Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Dumpers/Tenders	Diesel	Average	10.0	8.00	16.0	0.38
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Building Construction	Aerial Lifts	Diesel	Average	1.00	8.00	46.0	0.31
Building Construction	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Building Construction	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Building Construction	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Building Construction	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Building Construction	Forklifts	Diesel	Average	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30
Building Construction	Sweepers/Scrubbers	Diesel	Average	1.00	8.00	36.0	0.46
Building Construction	Trenchers	Diesel	Average	1.00	8.00	40.0	0.50
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Paving	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Paving	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Paving	Dumpers/Tenders	Diesel	Average	5.00	8.00	16.0	0.38
Paving	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Paving	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36

Paving	Skid Steer Loaders	Diesel	Average	1.00	8.00	71.0	0.37
Paving	Surfacing Equipment	Diesel	Average	1.00	8.00	399	0.30
Architectural Coating	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Architectural Coating	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Architectural Coating	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00	8.00	84.0	0.37
Demolition	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Demolition	Concrete/Industrial Saws	Diesel	Tier 4 Final	1.00	8.00	33.0	0.73
Demolition	Air Compressors	Diesel	Tier 4 Final	1.00	8.00	37.0	0.48
Demolition	Crushing/Proc. Equipment	Gasoline	Average	1.00	8.00	12.0	0.85
Demolition	Dumpers/Tenders	Diesel	Average	10.0	8.00	16.0	0.38
Demolition	Excavators	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Demolition	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Demolition	Skid Steer Loaders	Diesel	Tier 4 Final	1.00	8.00	71.0	0.37
Demolition	Sweepers/Scrubbers	Diesel	Tier 4 Final	1.00	8.00	36.0	0.46
Demolition	Welders	Diesel	Tier 4 Final	1.00	8.00	46.0	0.45
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	8.00	84.0	0.37
Site Preparation	Excavators	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00	8.00	84.0	0.37
Grading	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43

Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Grading	Dumpers/Tenders	Diesel	Average	10.0	8.00	16.0	0.38
Grading	Excavators	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Tier 4 Final	1.00	8.00	148	0.41
Grading	Rollers	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Grading	Sweepers/Scrubbers	Diesel	Tier 4 Final	1.00	8.00	36.0	0.46
Building Construction	Aerial Lifts	Diesel	Tier 4 Final	1.00	8.00	46.0	0.31
Building Construction	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Building Construction	Concrete/Industrial Saws	Diesel	Tier 4 Final	1.00	8.00	33.0	0.73
Building Construction	Air Compressors	Diesel	Tier 4 Final	1.00	8.00	37.0	0.48
Building Construction	Crawler Tractors	Diesel	Tier 4 Final	1.00	8.00	87.0	0.43
Building Construction	Forklifts	Diesel	Tier 4 Final	2.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30
Building Construction	Sweepers/Scrubbers	Diesel	Tier 4 Final	1.00	8.00	36.0	0.46
Building Construction	Trenchers	Diesel	Tier 4 Final	1.00	8.00	40.0	0.50
Building Construction	Welders	Diesel	Tier 4 Final	1.00	8.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	8.00	84.0	0.37
Paving	Concrete/Industrial Saws	Diesel	Tier 4 Final	1.00	8.00	33.0	0.73
Paving	Air Compressors	Diesel	Tier 4 Final	1.00	8.00	37.0	0.48
Paving	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Paving	Dumpers/Tenders	Diesel	Average	5.00	8.00	16.0	0.38
Paving	Excavators	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Paving	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Paving	Pavers	Diesel	Tier 4 Final	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 4 Final	1.00	8.00	89.0	0.36

Paving	Skid Steer Loaders	Diesel	Tier 4 Final	1.00	8.00	71.0	0.37
Paving	Surfacing Equipment	Diesel	Tier 4 Final	1.00	8.00	399	0.30
Architectural Coating	Cement and Mortar Mixers	Diesel	Average	1.00	8.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Tier 4 Final	1.00	8.00	37.0	0.48
Architectural Coating	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Architectural Coating	Pressure Washers	Diesel	Average	1.00	8.00	14.0	0.30

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	57.5	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	36.0	2.00	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	7.54	2.00	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	50.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	187	11.7	LDA,LDT1,LDT2

Building Construction	Vendor	36.4	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	40.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	37.4	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	57.5	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	36.0	2.00	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	10.0	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	7.54	2.00	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	50.0	11.7	LDA,LDT1,LDT2

Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	187	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	36.4	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	40.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	37.4	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	411,547	137,182	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	40,690	—
Site Preparation	—	3,375	0.00	0.00	—
Grading	—	—	11.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Enclosed Parking with Elevator	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	479	479	479	174,835	3,074	3,074	3,074	1,122,089
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	479	479	479	174,835	3,074	3,074	3,074	1,122,089
Enclosed Parking with Elevator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	103
Conventional Wood Stoves	0

Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	103
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
411546.82499999995	137,182	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	670,489	204	0.0330	0.0040	2,358,529
Enclosed Parking with Elevator	314,085	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	670,489	204	0.0330	0.0040	2,358,529
Enclosed Parking with Elevator	314,085	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	6,346,620	28,175
Enclosed Parking with Elevator	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	6,346,620	28,175
Enclosed Parking with Elevator	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	155	—
Enclosed Parking with Elevator	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	155	—
Enclosed Parking with Elevator	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.12	annual days of extreme heat
Extreme Precipitation	15.8	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	7.96	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	1	1	4
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	7.52

AQ-PM	19.8
AQ-DPM	39.9
Drinking Water	7.43
Lead Risk Housing	64.2
Pesticides	0.00
Toxic Releases	44.1
Traffic	89.1
Effect Indicators	—
CleanUp Sites	65.3
Groundwater	74.8
Haz Waste Facilities/Generators	90.7
Impaired Water Bodies	87.0
Solid Waste	11.6
Sensitive Population	—
Asthma	21.9
Cardio-vascular	23.3
Low Birth Weights	43.2
Socioeconomic Factor Indicators	—
Education	50.5
Housing	60.9
Linguistic	45.4
Poverty	47.3
Unemployment	28.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	79.30193764
Employed	75.70896959
Median HI	87.60426023
Education	—
Bachelor's or higher	82.80508148
High school enrollment	100
Preschool enrollment	83.20287437
Transportation	—
Auto Access	27.10124471
Active commuting	91.83882972
Social	—
2-parent households	59.10432439
Voting	98.42166046
Neighborhood	—
Alcohol availability	67.7659438
Park access	55.15205954
Retail density	78.31387142
Supermarket access	50.19889645
Tree canopy	97.17695368
Housing	—
Homeownership	60.78532016
Housing habitability	60.60567176
Low-inc homeowner severe housing cost burden	70.47350186
Low-inc renter severe housing cost burden	53.0347748
Uncrowded housing	70.98678301
Health Outcomes	—
Insured adults	96.11189529
Arthritis	0.0

Asthma ER Admissions	66.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	83.6
Cognitively Disabled	18.3
Physically Disabled	34.8
Heart Attack ER Admissions	78.5
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	65.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	29.8
Children	72.4
Elderly	10.4
English Speaking	55.3
Foreign-born	28.7

Outdoor Workers	90.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	80.8
Traffic Density	79.9
Traffic Access	61.1
Other Indices	—
Hardship	5.5
Other Decision Support	—
2016 Voting	98.4

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	41.0
Healthy Places Index Score for Project Location (b)	95.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Per applicant provided architectural plans/drawings
Construction: Construction Phases	Per applicant provided construction schedule.
Construction: Off-Road Equipment	Per applicant provided construction equipment list.
Construction: Trips and VMT	Haul destination is 2 miles one-way or 4 mi roundtrip per applicant provided data request.
Operations: Vehicle Data	Net increase of 297 trips per day considering proposed use minus existing uses.
Operations: Hearths	No gas fireplaces per applicant provided data request

Appendix E

Cultural Resources Letter Report

Rincon Consultants, Inc.
66 Franklin Street, Suite 300
Oakland, California 95607
510-834-4455

March 14, 2025
Project No: 24-16875

Kristina Estudillo, AICP
Principal Planner, City of San Rafael Community Development Department
1400 5th Avenue
San Rafael, California 94901
Via email: Kristina.Estudillo@cityofsanrafael.org

Subject: Cultural Resources Assessment for the 930 Irwin Street Residential Project 523 and 543 4th Street and 914 Irwin Street, San Rafael, California, 94901

Dear Ms. Estudillo:

This letter report presents the findings of a cultural resources assessment completed in support of the 930 Irwin Street Residential Project (hereafter, project) on APNs 014-123-21, 014-123-27, and 014-123-28 (914 Irwin Street, 535-543 4th Street/930 Irwin Street, 523 4th Street, respectively) in San Rafael. The City of San Rafael retained Rincon Consultants, Inc. (Rincon) to support the project's compliance with the California Environmental Quality Act (CEQA). This letter report documents the methods and results of a cultural resources records search, archival and background research, Sacred Lands File search, field survey, and California Register of Historical Resources (CRHR) and City of San Rafael Landmark evaluations. The intent of the study is to identify historical resources, as defined by CEQA Section 15064.5(a), within the project site.

Project Site and Description

The project site is comprised of three parcels located at the southeast corner of 4th and Irwin streets (Figure 1). Specifically, the project encompasses portions of Section 33 of Township 02N, Range 06W on the *San Rafael, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangle.

The project would require demolition of the three existing commercial buildings to accommodate the construction of an 8-story residential building with 213 dwelling units, ground level lobbies, and a parking garage with three level of underground parking (Figure 2).

Methods

This section describes the methodology of the background and archival research, cultural resources records search, Sacred Lands File search, field survey, and CRHR and City Landmark evaluations conducted to identify historical resources within the project site.

Background and Archival Research

Rincon completed background and archival research in support of this assessment in January 2025. A variety of primary and secondary source materials were consulted. Sources included, but were not limited to, historical maps, aerial photographs, and written histories of the area. The following sources were utilized to develop an understanding of the project site and its context:

- Marin County Assessor's Office property data accessed via ParcelQuest

- Historical aerial photographs accessed via NETR Online
- Historical aerial photographs accessed via University of California, Santa Barbara Library FrameFinder (UCSB)
- Sanborn Fire Insurance Company Maps held by the Library of Congress, accessed through the San Francisco Public Library's Proquest and Fire Insurance Maps Online databases
- Historical United States Geological Survey (USGS) topographic maps accessed online, via USGS topoView
- City of San Rafael Building Permits accessed via the City's Online Record Search
- Historical newspaper clippings obtained from Newspapers.com and the California Digital Newspaper Collection
- Various historical records via Ancestry.com

California Historical Resources Information System Records Search

Rincon completed a California Historical Resources Information System (CHRIS) records search (24-0954) through the Northwest Information Center (NWIC) at Sonoma State University. The NWIC is the official state repository for cultural resources records and reports for the county in which the project falls. The purpose of the records search was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the project site and a 0.25-mile radius. Rincon also reviewed the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Historical Landmarks list, Built Environment Resources Directory (BERD), and the Archaeological Determination of Eligibility (ADOE) list.

Sacred Lands File Search

Rincon contacted the Native American Heritage Commission (NAHC) on December 31, 2024 to request a search of the Sacred Lands File (SLF), as well as a contact list of Native Americans culturally affiliated with the project site vicinity.

Field Survey

Rincon Archaeologist Elaine Foster, MA, RPA, with support of Architectural Historian Josh Bevan, conducted an archaeological and built environment survey of the project site on February 7, 2025. Site characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained digitally by Rincon.

Historical Evaluation

Pursuant to OHP Guidelines (California OHP 1995: 2), properties over 45 years of age were evaluated for inclusion in the CRHR and local listing and recorded on California Department of Parks (DPR) 523 series forms.

California Register of Historical Resources

The CRHR was established in 1992 and codified by PRC Sections 5024.1 and Title 14 Section 4852. The CRHR is an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (PRC 5024.1[a]). The criteria for eligibility for the CRHR are consistent with the NRHP criteria but have been

modified for state use in order to include a range of historical resources that better reflect the history of California (PRC 5024.1[b]). Unlike the NRHP however, the CRHR does not have a defined age threshold for eligibility; rather, a resource may be eligible for the CRHR if it can be demonstrated sufficient time has passed to understand its historical or architectural significance (California Office of Historic Preservation [OHP] 2011). Furthermore, resources may still be eligible for listing in the CRHR even if they do not retain sufficient integrity for NRHP eligibility (OHP 2011). Generally, the OHP recommends resources over 45 years of age be recorded and evaluated for historical resources eligibility (OHP 1995: 2).

A property is eligible for listing in the CRHR if it meets one of more of the following criteria:

Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

Criterion 2: Is associated with the lives of persons important to our past.

Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history.

City San Rafael Landmarks

Chapter 2.18 Historic Preservation of the City of San Rafael Code of Ordinances (San Rafael, City of 2024) lists criteria for the designation of buildings, places, and areas in the City of San Rafael as historic landmarks or historic districts as follows:

(a) Historical, Cultural Importance.

(1) Has significant character, interest, or value as part of the development, heritage or cultural characteristics of the city, state or nation; or is associated with the life of a person significant in the past;

(2) Is the site of a historic event with a significant effect upon society; or

(3) Exemplifies the cultural, political, economic, social or historic heritage of the community.

(b) Architectural, Engineering Importance.

(1) Portrays the environment in the era of history characterized by a distinctive architectural style;

(2) Embodies those distinguishing characteristics of an architectural type or engineering specimen;

(3) Is the work of a designer whose individual work has significantly influenced the development of San Rafael or its environs;

(4) Contains elements of design, detail, materials or craftsmanship which represent a significant innovation; or

(5) The work of a designer and/or architect of merit.

(c) Geographic Importance.

(1) By being part of or related to a square, park or other distinctive area, should be developed or preserved according to a plan based on a historic, cultural or architectural motif; or

(2) Owing to its unique location or singular physical characteristic, represents an established and familiar visual feature of the neighborhood, community or city.

(d) Archaeological Importance. Has yielded information important in prehistory or history.

Findings

This section describes the findings of the background and archival research, cultural resources records search, Sacred Lands File search, field survey, and CRHR and City Landmark evaluations conducted to identify cultural resources within the project site.

California Historical Resources Information System Records Search

Rincon received records search results from the NWIC on January 28, 2025.

Known Cultural Resources Studies

The CHRIS records search and background research identified three studies within the project site and 26 within the 0.25-mile search radius (Attachment 1). Approximately 100 percent of the project site has been studied and surveyed in the last 10 years. An additional study was identified during research and is summarized below.

Additional Study

The *Downtown San Rafael Precise Plan Historic Resources Inventory Summary Report (Historic Resources Inventory Summary Report)* (Revised and Re-Released May 2021), available on the City's website, summarizes findings of an inventory of historical resources completed for the San Rafael Downtown Plan. Field surveys and research were conducted in 2019 and 2020 and built upon previous inventory information from 1976 to 1977. The *Historic Resources Inventory Summary Report* found that 914 Irwin Street was surveyed ca. 2019-2020 and appeared to lack significance necessary for listing on local, state, or national registers, with impaired integrity noted in the report as well (San Rafael, City of 2021). The report did not include a full evaluation or additional historical documentation relating to any of the subject properties (San Rafael, City of 2021).

Known Cultural Resources

The CHRIS records search and background research identified 15 cultural resources within the 0.25-mile search radius. Resources within the search radius include prehistoric and historic-period archaeological sites, buildings, railroads, water conveyance features, and bridges.

Sacred Lands File Search

The NAHC responded to Rincon's request for an SLF search on December 31, 2024 and indicated results of the search were negative. See Attachment 3 for the NAHC response, including Tribal contacts list(s). No outreach was completed in support of this study.

Aerial Imagery and Historical Map Review

Rincon completed a review of historical maps and aerial imagery to ascertain the development history of the project site.

An 1873 map of Marin County depicted the project site as undeveloped land east to the east of the Town of San Rafael, immediately north of the of San Rafael Slough. The San Quentin & San Rafael

Railroad trended northwest-southeast to the west-southwest of the project site. A road that paralleled the railroad's alignment to the north was present along the existing route of U.S. Highway 101 to the west of the Project site (Austin 1873).

An 1892 map depicted the Project site within the eastern edge of the City of San Rafael. By this year, development in San Rafael expanded eastward, to areas north of the project site. San Rafael Canal was depicted within the area previously identified as San Rafael Slough (Dodge 1892). A Sanborn map from 1894 depicted the project site within undeveloped "low lands" to the east of Irwin Street and south of 4th Street. Residences stood on the opposite side of Irwin Street and opposite 4th Street, with urban development concentrated further westward (Sanborn Map Company 1894). A topographic map from 1897 depicted similar conditions in the vicinity of the project site. San Rafael Creek was depicted to the south of the Project site (rather than San Rafael Slough or San Rafael Canal). Additionally, tributaries of the creek were depicted to the immediate west and north of the Project site, including one tributary that ran along the alignment of the existing U.S. Highway 101 to the west of the Project site (USGS 1897).

Sanborn's 1907 map of San Rafael depicted the Project site within a "ball park." One structure, a grand stand, was depicted within the Project site, roughly within the property currently addressed 543 4th Street (Sanborn Map Company 1907). Sanborn's 1924 map depicted the Project site as vacant, with no buildings or structures present in the block containing the Project site. Development along the opposite sides of 4th and Irwin streets consisted of detached residences (Sanborn Map Company 1924).

By 1950, extensive development occurred in the block containing the Project site, with a mix of residential and commercial-industrial uses. The Project site was depicted as approximately six properties: four were detached residences (including 914 Irwin Street and 523 4th Street), as well as one property with a store with a residential rear addition and a gas station (both within 543 4th Street (Sanborn Map Company 1950).

Topographic maps published between 1941 and 1954, and aerial photography from 1953 and 1965 depicted the extension of highways through San Rafael and alteration of the natural flow of creeks and tributaries in the vicinity of the Project site (USGS 1941, 1950, 1954; UCSB 1953, 1965). Additionally, urban development occurred to the south and east of the Project site in what is currently the eastern edge of the City of San Rafael. Much development immediately south and southeast east of the Project site occurred on reclaimed marshlands. Redevelopment of the lands within the Project site began ca. 1953 and continued into the mid-1960s (UCSB 1953, 1965). More recent aerial photography and topographic maps depicted similar conditions to the Project site's current conditions beginning ca. 1982 (USGS 1993, NETR 2024).

Field Survey

The following section summarizes survey results.

Archaeological Survey

Most ground surface within the Project site was hardscaped and developed with a parking lot and buildings. Visible ground surface was inspected within planter boxes within the parking lot and lining the outer parts of the buildings. Ground visibility in planter boxes was poor (0-20 percent) due to coverage from vegetation, wood chips, and other landscaping elements. Due to recent rains, visibility of soils in some areas was obstructed. Visible soils consisted largely of loam or sandy loam with modern trash scattered throughout. No archaeological resources were observed in the project site.

Built Environment Survey

The field work resulted in the identification of three historic-age buildings within the project site: 523 and 543 4th Street (also encompasses addresses 535 4th Street and 930 Irwin Street) and 914 Irwin Street (also known as 910 Irwin Street) (Figure 2 and Table 2). 523-543 4th Street were developed concurrently and have been recorded as a single commercial complex, while 914 Irwin Street was recorded as a separate individual resource.

DPR 523 Series Forms providing architectural descriptions are provided in Attachment 4.

Table 1 Built Environment Resources

Address	APN	Description
523 4th Street and 535, 543 4th Street/930 Irwin Street	014-123-27 014-123-28	Commercial property comprising two parcels and containing a one-story commercial building constructed in 1963 at 523 4th Street, with 1979-1980 addition, and a related commercial building at 543 4th Street built 1979-1980.
914 Irwin Street	014-123-21	Commercial property containing a two-story building constructed in 1952, with a second story addition in 1957, and recent alterations in 2019-2020.

Historical Evaluation

As a result of background research and field survey for this study, Rincon recommends the following properties ineligible for listing in the CRHR due to a lack of historical and architectural significance. These properties are also recommended ineligible for listing as City of San Rafael Landmarks due to a lack of historical, cultural, architectural, engineering, and geographic importance. Please refer to Attachment 4 for DPR 523 Series Forms providing architectural descriptions, historical context, and full evaluations for each building.

Resource Name	CRHR Eligible	City Landmark Eligible	CEQA-defined Historical Resource
523 4th Street and 535, 543 4th Street/930 Irwin Street	No	No	No
914 Irwin Street	No	No	No

Conclusion

As a result of background research, CHRIS records search, SLF search, field survey, aerial and map review, cultural resources were identified within the project site. The CRHR and City of San Rafael Landmarks evaluations determined two properties ineligible due to lack of significance. Additionally, the project site was found to have archeological sensitivity based on the CHRIS records search results. Therefore, the City of San Rafael's standard Conditions of Approval relating to procedures and regulations for archeological resource protection would be required and the City would apply them to the project if approved (San Rafael, City of 2001).

Resource Name	CRHR Eligible	City Landmark Eligible	CEQA-defined Historical Resource
523 4th Street and 535, 543 4th Street/930 Irwin Street	No	No	No
914 Irwin Street	No	No	No

Should you have any questions concerning this study, please do not hesitate to contact the undersigned at jbevan@rinconconsultants.com.

Sincerely,
Rincon Consultants, Inc.

Josh Bevan AICP, MSHP
Architectural Historian

Margo Nayyar, MA
Cultural Resources Principal

Attachments

Attachment 1 Figures

Attachment 2 Northwest Information Center CHRIS Search Results

Attachment 3 Native American Heritage Commission Sacred Lands File Search Results

Attachment 4 DPR 523 Series Forms

References

Austin, H.

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Baker, Susan and Daniel Shoup

2014 Site record for P-21-000113/CA-MRN-000084. On file at Northwest Information Center, Sonoma State University.

2015 Study S-046535. *Extended Phase I Study Proposal, Regional Transportation System Enhancements Project, City of San Rafael, Marin County, California, Caltrans District 04, Federal Project No. CML 5043(036)*. On file at Northwest Information Center, Sonoma State University.

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1995 *Instructions for Recording Historical Resources.* Department of Parks and Recreation, Sacramento, California.

2011 "California Register and National Register: A Comparison (for purposes of determining eligibility for the California Register)," *California Office of Historic Preservation Technical Assistance Series #6.* Department of Parks and Recreation, Sacramento, California.

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Dodge, George M.

1892 *Official Map of Marin County*. San Francisco, CA: Schmidt Label & Lith. Co. Via Library of Congress, online. https://www.loc.gov/item/2012592098/ (accessed January 2025).

Nelson, N.C.

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NETR Online (NETR)

2024 "Historic Aerials." [digital photograph database]. Images of the Project Area from 1982, 1993, 2009, 2022, online. https://www.historicaerials.com/viewer (accessed December 2024).

Sanborn Map Company

1894 Fire Insurance Survey Map of San Rafael, California. Sheet 13. Accessed via San Francisco Public Library's Fire Insurance Maps Online database. https://login.ezproxy.sfpl.org/login?url=https://fims.historicalinfo.com/fims.aspx (accessed December 2024).

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San Rafael, City of

2001 Resolution No. 10980. Resolution of the San Rafael City Council Rescinding Resolution No. 10933 and Approving Revised Procedures and Regulations for Archaeological Resource Protection in the City of San Rafael.

2021 *Downtown San Rafael Precise Plan Historic Resources Inventory Summary Report*. Originally Published December 2020, Revised and Re-Released May 2021. Online: https://storage.googleapis.com/proudcity/sanrafaelca/uploads/2021/05/PreservationSummaryReport-May2021.pdf (accessed December 2024).

2024 Code of Ordinances, Title 2. Administration, Chapter 2.18. Historic Preservation. Online: http://sanrafael-ca.elaws.us/code/coor_title2_ch2.18 (accessed December 2024).

Shoup, Daniel David

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University of California, Santa Barbara Library Special Collections (UCSB)

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1897 *Tamalpais, California Quadrangle*. 1:62,500. Accessed via topoView, online. https://ngmdb.usgs.gov/topoview/viewer/# (accessed December 2024).

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1950 *Mt. Tamalpais, California Quadrangle*. 1:62,500. Accessed via topoView, online. https://ngmdb.usgs.gov/topoview/viewer/# (accessed December 2024).

1954 *San Rafael, California Quadrangle*. 1:24,000. Accessed via topoView, online. https://ngmdb.usgs.gov/topoview/viewer/# (accessed December 2024).

1993 *San Rafael, California Quadrangle*. 1:24,000. Accessed via topoView, online. https://ngmdb.usgs.gov/topoview/viewer/# (accessed December 2024).

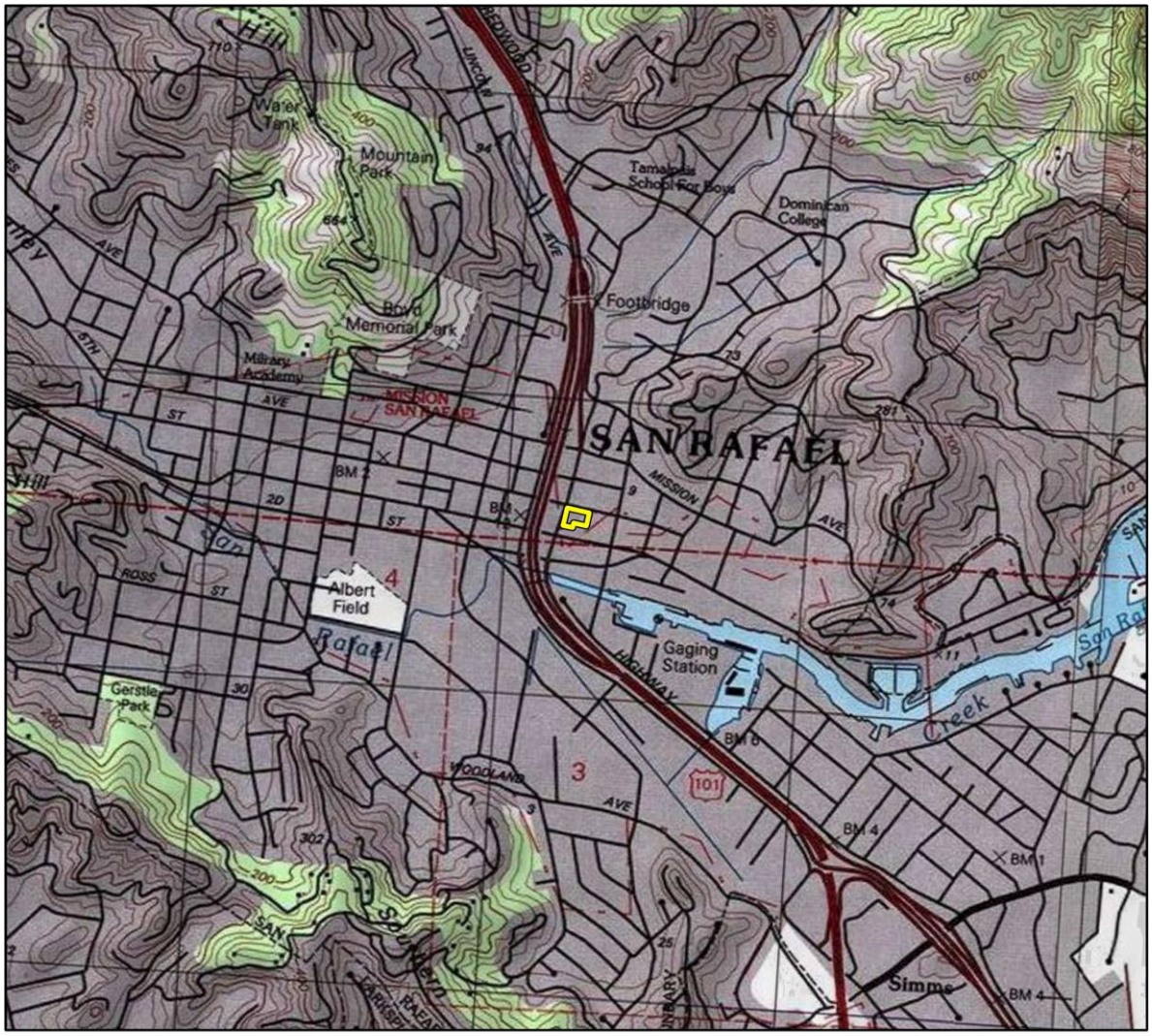
Wick, Emily

2007 Study S-34125. *A Cultural Resources Evaluation of 522 Third Street, San Rafael, Marin County, California.* On file at the Northwest Information Center, Sonoma State University.

Attachment 1

Figures

Figure 1 Regional Location Map



Basemap provided by National Geographic Society, Esri and their licensors © 2024. San Rafael Quadrangle. T02N R06W S34. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

24-16875 CR
CRFig 1 Proj Locn Map

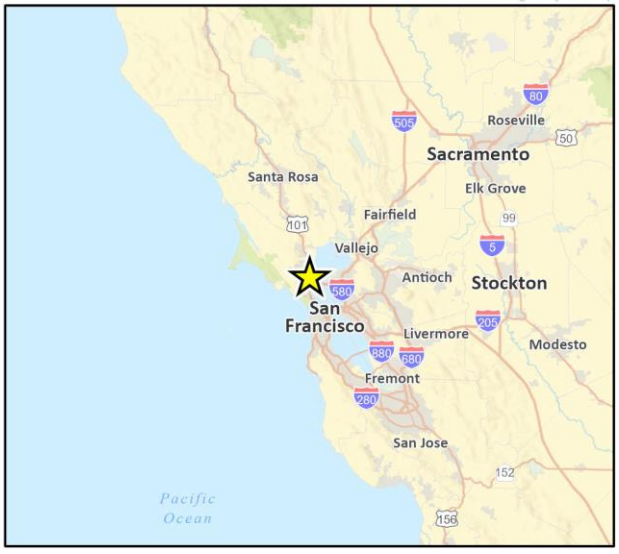


Figure 2 Project Location Map

Imagery provided by Microsoft Bing and its licensors © 2024.

24-16875 CR
CRFig 2 Project Site

Attachment 2

Northwest Information Center CHRIS Search Results

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://nwic.sonoma.edu

1/28/2025 NWIC File No.: 24-0954

Josh Bevans
Rincon Consultants, Inc.
449 15th St. Suite 303
Oakland, CA 94612

Re: 930 Irwin Street Residential Project

The Northwest Information Center received your record search request for the project area referenced above, located on the Marin USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a 0.25 mi. radius:

[redacted]

Resource Database Printout (list):		☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):		☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:		☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (list):		☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):		☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:		☒ enclosed	☐ not requested	☐ nothing listed
Resource Record Copies:		☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	[within]	☒ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:		☐ enclosed	☒ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:		☒ enclosed	☐ not requested	☐ nothing listed
CA Inventory of Historic Resources (1976):		☒ enclosed	☐ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:		☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:		☐ enclosed	☒ not requested	☐ nothing listed

Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

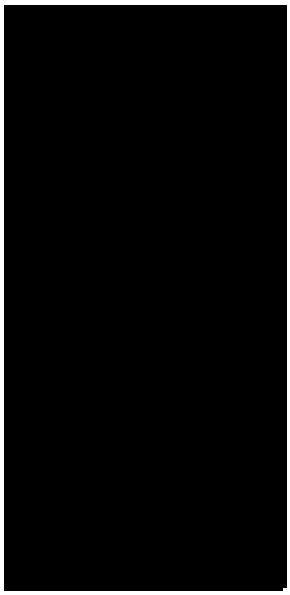
Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Annette Neal

Researcher



Reports in 0.25 mi. Buffer

DocCo	DocNo
S-	002147
S-	006424
S-	009125
S-	010760
S-	013217
S-	013846
S-	016949
S-	020872
S-	027664
S-	031163
S-	031707
S-	031737
S-	036941
S-	038714
S-	044351
S-	046485
S-	046530
S-	048525
S-	048626
S-	048728
S-	050125
S-	053937
S-	055741
S-	057428
S-	057429
S-	057548

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-002147		1980	Stephen A. Brandt	Cultural Resources Investigation of Operating Projects, San Rafael Creek	U.S. Army Corps of Engineers	
S-006424	Other - EPA Project No. C-06-2467-21	1984	Cindy Desgrandchamp and David Chavez	Archaeological Resources Evaluation for the Central Marin Sanitation Wastewater Transportation Facilities Improvement Project - Phase II, Marin County, California (EPA Project No. C-06-2467-21)		
S-009125		1987	Allan G. Bramlette	Preliminary Cultural Resources Assessment for Planned Modification and Maintenance of San Rafael Creek in the Town of San Rafael, Marin County, California		
S-010760	Caltrans - 04232-115750; OHP PRN - FHWA990311B; Voided - S-35514	1989	Terry Jones, Robert Gross, and Denise O'Connor	Historic Properties Survey Report for Construction of High Occupancy Vehicle Lanes on Route 101 from Lucky Drive to San Pedro Road and Modifications of Routes 101/580 Interchange, in Cities of San Rafael and Larkspur, Marin County, 4-MRN-101, P.M. 8.4/12.7 04232-115750	Caltrans, District 4	21-000109, 21-000114, 21-000675, 21-000681, 21-002505, 21-002506, 21-002507, 21-002508, 21-002509, 21-002510, 21-002511, 21-002512, 21-002513
S-010760a		1989	Terry Jones	Archaeological Survey Report for the Marin HOV Gap Closure, City of San Rafael, Marin County, California 4-MRN-101, P.M. 8.4/12.7 04232-115750	California Department of Transportation, District 04	
S-010760b		1988	Denise O'Connor	Historic Architectural Survey Report for Construction of High Occupancy Vehicle Lanes on Route 101 from Lucky Drive to San Pedro Road and the Upgrading of the Route 101/580 Interchange 4-MRN-101, P.M. 8.4/12.7 04232-115750	California Department of Transportation, District 04	
S-010760c		1989	Stephen D. Mikesell	Historical Resources Evaluation Report, Northwestern Pacific Railroad Tracks Within Project APE, 4-MRN-101, P.M. 8.4/12.7 04232-115750	California Department of Transportation, District 04	
S-010760d		1999		Historic Property Survey Report for the Marin HOV Gap Closure, City of San Rafael, Marin County, California, 04-MRN-101, PM 8.4/12.7, 04-115750	California Department of Transportation, District 4	
S-010760e		1999	Katherine M. Dowdall and Nelson B. Thompson	First Addendum Positive Archaeological Survey Report for the Marin HOV Gap Closure, City of San Rafael, Marin County, California 04-MRN-101, PM 8.4/12.7 EA 4232-115750	California Department of Transportation; Sonoma State University	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-010760f		1999	Jeffrey A. Lindley and Daniel Abeyta	FHWA990311B: Historic Property Survey Report; 04-MRN-101, PM 8.4/12.7. HOV Gap Closure, State Route 101, City of San Rafael, Marin County, California	U.S. Department of Transportation; California Office of Historic Preservation	
S-010760g		1999	Andrew Hope	Addendum Historic Property Survey Report, for the Marin-101 HOV Gap Closure Project, in the City of San Rafael, Marin County, 04-Mrn-101, P.M. 8.2/12.7, EA 4232-115750	California Department of Transportation, District 4	
S-013217	Voided - S-13399; Voided - S-13400; Voided - S-13401	1990	Thomas M. Origer	An Archaeological Survey for the AT&T Fiber Optics Cable, San Francisco to Point Arena, California		21-000042, 21-000043, 21-000347, 21-000527, 21-000528, 21-002694, 38-001336, 49-002834
S-013217a		1990	Thomas M. Origer	Archaeological findings regarding a selection of a route through Novato for the AT&T Fiber Optics Cable (letter report)		
S-013217b		1991	Thomas M. Origer	An archaeological study of revised portions of the AT&T route near Santa Rosa and Sausalito (letter report)		
S-013217c		1991	Thomas M. Origer	Archaeological study of AT&T revised fiber cable routes (letter report)		
S-013217d		1992	Thomas M. Origer	Archaeological survey of alternative fiber optics cable routes, Point Arena (letter report)	Tom Origer & Associates	
S-013846		1990	Vicki R. Beard	Historic Properties Research, San Rafael Canal, Marin County, California	Anthropological Studies Center, Sonoma State University	
S-016949	Submitter - A.R.S. Project 91-14	1991	William Roop	A Cultural Resources Evaluation of a Proposed Reclaimed Water Pipeline in the San Quentin Point, Corte Madera, Larkspur, Kentfield and San Rafael Areas	Archaeological Resource Service	21-000095, 21-000114, 21-000541, 21-000544
S-020872	OHP PRN - FHWA990210A; Voided - S-26409	1998		Historic Property Survey Report, Heatherton Park and Ride Replacement Parking Area, PM 11.2 (KP 18.1), San Rafael, California, EA 255300	Caltrans	21-000675
S-020872a		1998	Katherine M. Dowdall and Elaine-Maryse Solari	Historical Study Report for the Heatherton Park and Ride Replacement Parking Area, San Rafael, California, 4-MRN-01, KP 18.1 (PM 11.2), EA 255300	Caltrans	
S-020872b		1998	Nelson B. Thompson	Positive Archaeological Survey and Extended Survey Report for the Hetherton Park and Ride Replacement Parking Area KP 18.1 (PM 11.2), San Rafael, California, EA 255300	Anthropological Studies Center, Sonoma State University	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-020872c		1999	Suzanne B. Stewart	Archaeological Test Excavations at CA-MRN-644/H, San Rafael, Marin County, California, Hetherton Park and Ride Replacement Parking Lot, Highway 101 KP 18.1 (PM 11.2)	Anthropological Studies Center, Sonoma State University	
S-020872d		1999	Jeffrey A. Lindley and Daniel Abeyta	FHWA990210A: 04-MRN-101, KP 18.1 (PM 11.2), Hetherton Park & Ride Replacement Parking Area, San Rafael, Marin County, California	U.S. Department of Transportation; Office of Historic Preservation	
S-020872e		1998	Suzanne B. Stewart	Archaeological Test Excavations at CA-MRN-644/H San Rafael, Marin County, California, Hetherton Park and Ride Replacement Parking Project, Highway 101 KP 18.1 (PM 11.2), Preliminary Report	Sonoma State University	
S-027664		2003	Cassandra Chattan	Historic Structures Evaluation of 1103 Lincoln Ave., San Rafael (letter report)	Archaeological Resource Service	21-002560
S-031163		2006	Kate Shantry	An Archaeological and Paleontological Resources Study for the Lincoln and Mission Residential Condominium Project, San Rafael, Marin County, California	LSA Associates, Inc.	
S-031707	Caltrans - EA 226141	2006	Brian F. Byrd	Historic Property Survey Report for Two Bioswale Areas, Marin Highway 101 HOV Lane Gap Closure Project, Marin County, California, 04-MRN-101, KP 18.0/PM 11.2 and KP 21.1/PM 13.1, EA 226141	Far Western Anthropological Research Group, Inc.	21-000113, 21-000114, 21-000115, 21-000153, 21-000154, 21-000675
S-031707a		2006	Brian F. Byrd and Michael Darcangelo	Archaeological Survey Report for Two Bioswale Areas, Marin Highway 101 HOV Lane Gap Closure Project, Marin County, California, 04-MRN-101, KP 18.0/PM 11.2 and KP 21.1/PM 13.1, EA 226141	Far Western Anthropological Research Group, Inc.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-031737	Voided - S-31738	2004	Carole Denardo and Daniel Hart	Archaeological Resources Technical Report for the Sonoma Marin Rail Transit (SMART) Project, Sonoma and Marin Counties, California	Garcia and Associates	21-000113, 21-000114, 21-000193, 21-000194, 21-000551, 21-000560, 21-000675, 21-000681, 21-000685, 21-002540, 21-002571, 21-002611, 21-002612, 49-000788, 49-000790, 49-000900, 49-000901, 49-000902, 49-001014, 49-001196, 49-001198, 49-001262, 49-001263, 49-001352, 49-001468, 49-001517, 49-001583, 49-001798, 49-002134, 49-002255, 49-002273, 49-002274, 49-002275, 49-002301, 49-002304, 49-002319, 49-002536, 49-002539, 49-002695, 49-002697, 49-002819, 49-002820, 49-002823, 49-002824, 49-002825, 49-002826, 49-002827, 49-002833, 49-002834, 49-003014, 49-003022, 49-003135, 49-003250, 49-003334, 49-003352, 49-003353, 49-003374, 49-003376, 49-003377, 49-003379, 49-003380, 49-004755
S-031737a		2004		Historic Architectural Resources Technical Report for the Sonoma Marin Area Rail Transit (SMART) Project	Garcia and Associates	
S-034125	Submitter - ARS Project 07-046	2007	Emily Wick	A Cultural Resources Evaluation of 522 Third Street, San Rafael, Marin County, California	Archaeological Resource Service	
S-036941		2010	Alex DeGeorgey	Negative Archaeological Survey Report of the Puerto Suello to Transit Center Connection Project (04-MRN-0-SRF), City of San Rafael, Marin County, California	North Coast Resource Management	21-002618
S-038714	Other - Federal-Aid Proj. No. NMTPL-5043 (023)	2012	Neal Kaptain	Historic Property Survey Report for the Puerto Suello Hill Path to Transit Center Connector Project, Caltrans District 04, San Rafael, Marin County, California, Federal-Aid Proj. No.: NMTPL-5043 (023)	LSA Associates, Inc.	21-000113, 21-000114, 21-000675
S-038714a		2012	Neal Kaptain	Archaeological Survey Report for the Puerto Suello Hill Path to Transit Center Connector Project, Caltrans District 04, City of San Rafael, Marin County, California, Federal ID No.: NMTPL-5043 (023)	LSA Associates, Inc.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-038714b		2012	Neal Kaptain and E. Timothy Jones	Extended Phase I Report for the Puerto Suello Hill Path to Transit Center Connector Project, Caltrans District 04, City of San Rafael, Marin County, California, Federal ID No.: NMTPL-5043 (023)	LSA Associates, Inc.	
S-044351	Caltrans - EA 151600	2014	Emily Darko	Archaeological Survey Report for the Proposed Freeway Performance Initiative Project, Marin County, California, 04-MRN-101, PM 0.0/27.6, 04-MRN-580, PM 2.4/4.5, EA 151600	California Department of Transportation, District 04	21-000035, 21-000182
S-044351a		2013	Emily Darko	Extended Phase I Archaeological Testing at CA-MRN-157 (P-21-000182) and CA-MRN-4 (P-21-000035) for the Proposed Freeway Performance Initiative Project, Hwy 101 and 580, Marin County, 04-MRN-101, PM 0.0/27.6, 04-MRN-580, PM 2.4/4.5, EA 151600	Caltrans, District 04 California Department of Transportation	
S-046485	Caltrans - 04-MRN HPSL 5043 (037); Voided - S-46558	2015	Daniel Shoup	Historical Property Survey Report, Grand Avenue and Second Street Intersection Modification Project, San Rafael, Marin County, District 04, HPSL 5043 (037)	Archaeological/Historical Consultants	
S-046485a		2015	Daniel David Shoup	Archaeological Survey Report, South Grand Avenue - West Second Street Intersection Modification Project, City of San Rafael, Marin County, California; Caltrans District 04, Federal Project No. HSIPL 5043 (037)	Archaeological/Historical Consultants	
S-046530	Submitter - NMTPL-5043 (027)	2014	Natalie Lawson	Historic Property Survey Report, NMTPL-5043 (027), Francisco Boulevard East, City of San Rafael, California	CH2M HILL	
S-046530a		2014	Natalie Lawson	Archaeological Survey Report, Francisco Boulevard East Improvements, NMPTL 5043 (027), Marin County, California	CH2M HILL	
S-046535	Caltrans - 04-MRN CML 5043(036); Voided - S-47537	2015	Daniel David Shoup	Historic Property Survey Report for San Rafael Regional Transportation System Enhancements Project, Marin County, 04-MRN CML 5043(036)	Archaeological/Historical Consultants	21-000113, 21-000114, 21-000675, 21-002833
S-046535a		2014	Daniel David Shoup	Archaeological Survey Report, San Rafael Transportation System Enhancements, City of San Rafael, Marin County, California, Caltrans District 04, Federal Project No. CML 5043(036)	Archaeological/Historical Consultants	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-046535b		2014	Daniel David Shoup	Extended Phase I Archaeological Survey Report, San Rafael Regional Transportation System Enhancement, City of San Rafael, Marin County, California, 04-MRN CML 5043(036)	Archaeological/Historical Consultants	
S-046535c		2015	Daniel David Shoup	Finding of No Adverse Effect for San Rafael Regional Transportation System Enhancements, Marin County, 04-MRN-CML 5043(036)	Archaeological/Historical Consultants	
S-046535d		2014	Daniel David Shoup and Suzanne Baker	Extended Phase I Study Proposal, Regional Transportation System Enhancements Project, City of San Rafael, Marin County, California, Caltrans District 04, Federal Project No. CML 5043(036)	Archaeological/Historical Consultants	
S-046535e		2015	Danel David Shoup	Environmentally Sensitive Areas Action Plan, San Rafael Regional Transportation System Enhancements, Marin County, 04-MRN-CML 5043(036)	Archaeological/Historical Consultants	
S-046535f		2015	Daniel David Shoup	Archaeological Discovery Plan, San Rafael Regional Transportation System Enhancements, City of San Rafael, Marin County, California, Caltrans District 04, Federal Project No. CML 5043(036)	Archaeological/Historical Consultants	
S-046535g		2016	Daniel Shoup	Archaeological Monitoring Report, Regional Transportation System Enhancements Project, San Rafael, CA	Archaeological/Historical Consultants	
S-048525	OHP PRN - FTA_2013_0418_001	2014	Madeline Bowen	Historic Architectural Survey Report for the Sonoma-Marin Area Rail Transit (SMART) Rail Corridor, San Rafael to Larkspur Project, Marin County, California	AECOM	21-001015, 21-002618, 21-002910
S-048626	OTIS Report Number - COE_2013_0628_001; Submitter - ICF 00707.12	2013	Meg Scantlebury, Tait Elder, Melissa Cascella, Monte Kim, Aisha Rahimi-Fike, Lily Henry Roberts, and Patrick Maley	Cultural Resources Inventory & Evaluation Report for Sonoma-Marin Area Rail Transit (SMART): Downtown San Rafael, Marin County to Petaluma, Sonoma County (MP17-MP 37.02)	ICF International	21-001015, 21-002586, 21-002611, 49-001368, 49-001583, 49-002834
S-048626a		2014		Archaeological Monitoring Plan For Sonoma-Marin Area Rail Transit (SMART): Downtown San Rafael, Marin County To Petaluma, Sonoma County (MP 17-MP 37.02)	ICF International	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-048626b		2014	Julianne Polanco and Jane M. Hicks	COE_2013_0628_001, Section 106 Consultation for the Sonoma Marin Area Rail Transit (SMART) Railroad Initial Operating Segment-1 South Project	Office of Historic Preservation, U.S. Army Corps of Engineers	
S-048728	Caltrans - CML 5043(039); Submitter - RGH Project # 2887.01.04.1; Voided - S-49119	2016	Daniel Shoup	Historic Property Survey Report, proposed free-standing truss pedestrian and bicycle bridge across the San Rafael Canal at Grand Avenue, City of San Rafael, Marin County	Archaeological/Historical Consultants	
S-048728a		2016	Daniel David Shoup	Archaeological Survey Report, Grand Avenue Bicycle and Pedestrian Improvements Project, City of San Rafael, Marin County, California, Caltrans District 04, Federal Project No. 5043(039)	Archaeological/Historical Consultants	
S-048728b		2012	Jared Pratt and Eric Chase	Geotechnical Study Report, Grand Avenue Pathway Connector, Grand Avenue, San Rafael, California	RGH Consultants	
S-050125		2016	Alex DeGeorgey	Subsurface Archaeological Exploration for the Carriage Houses Project Located at 524 Mission Avenue, City of San Rafael, California	ALTA Archaeological Consulting	21-002643
S-053937	Agency Nbr - EA 04-0K510; Agency Nbr - E-FIS 0416000096	2018	Jennifer Blake and Charles Palmer	Historic Property Survey Report, Irwin Creek Rehabilitation Project, San Rafael, Marin County, 04-MRN-101, Post Miles 11.2/11.5, EA 04-0K510, E-FIS Project Number 0416000096	California Department of Transportation	
S-053937a		2018	Kyle Rabellino	Archaeological Survey Report for the Irwin Creek Rehabilitation Project, San Rafael, Marin County, MRN-101-PM11.2/11.5, EA 04-0K510/EFIS 0415000096	California Department of Transportation	
S-055740	OTIS Report Number - FHWA_2019_0917_001	2021	Daniel David Shoup	Archaeological Survey Report, 3rd Street Safety Improvements Project, San Rafael, Marin County 04-MRN-HSIPL 5043(043)	Archaeological/Historical Consultants	21-000113, 21-002618, 21-002833
S-055740a		2019	Julianne Polanco	FHWA_2019_0917_001, Determination of Eligibility for the Proposed Third Street at Hetherton Street Improvements Project, San Rafael, Marin County, CA	Office of Historic Preservation	
S-055741		2020	Daniel Shoup	Archaeological Monitoring for Francisco Boulevard West Multi-Use Path Phase II (letter report)	Archaeological/Historical Consultants	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-057428		2022	Sally Evans	Archaeological Study for the Proposed Project at 420 and 450 4th Street and 1010 Grand Avenue, San Rafael, Marin County, California	Evans & De Shazo, Inc.	
S-057429		2023	Sally Evans	Results of Archaeological Monitoring of the Demolition of Four Buildings, and a Summary of the Results of the Ground-Penetrating Radar (GPR) and Historical Human Remains Detection Canine (HHRDC) Surveys within the Properties at 420 and 450 4th Street and 1010 Grand Avenue in San Rafael, Marin County, California	Evans & De Shazo, Inc.	21-003171
S-057548		2023	Christina Dikas, Catherine Rogg, Barret Reiter, and Samantha Purnell	Aldersly Retirement Community HABS-Style Report, San Rafael, California	Page&Turnbull	

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-21-000113	CA-MRN-000084	Resource Name - Nelson No. 84	Site	Prehistoric	AP04; AP15	1907 (N.C. Nelson, [none]); 2014 (Suzanne Baker, Daniel Shoup, Archaeological/Historical Consultants)	S-031707, S-031737, S-038714, S-046535, S-047537, S-055740
P-21-000114	CA-MRN-000085	Resource Name - Nelson No. 85	Site	Prehistoric	AP02; AP09; AP15	1907 (N.C. Nelson, [none]); 1989 (Terry Jones, John Hayes, Caltrans); 2014 (Daniel Shoup, Suzanne Baker, Archaeological/Historical Consultants)	S-010760, S-016949, S-031707, S-031737, S-035514, S-038714, S-046535, S-047537
P-21-000675	CA-MRN-000644/H	Resource Name - Mission Avenue Midden; Other - Mission Avenue Midden and Irwin House	Site	Prehistoric, Historic	AH02; AP09; AP15	1998 (Nelson Thompson, ASC/SSU); 1998 (Nelson Thompson, ASC/SSU); 2001 (David Bieling, Caltrans); 2014 (Suzanne Baker, Daniel Shoup, Archaeological/Historical Consultants)	S-010760, S-020872, S-026409, S-031707, S-031737, S-035514, S-038714, S-046535, S-049780
P-21-000871		Resource Name - 1304 Grand Avenue; Other - Donohoe, Denis Jr. and Marie P., House; OTIS Resource Number - 403793; OHP Property Number - 000736; OHP PRN - 4902-0140-0000; Voided - P-21-002684	Building	Historic	HP02; HP04	1978 (Niki Simons, City of San Rafael); 2009 (Diana J. Painter, Painter Preservation & Planning)	
P-21-000906		Resource Name - 1232 Irwin; OHP Property Number - 000771; OTIS Resource Number - 403828; OHP PRN - 4902-0175-0000	Building	Historic	HP02	1977 (Niki Simons, City of San Rafael)	
P-21-001015		Other - NWPRR Depot; Other - 930 Tamalpais Ave, San Rafael; Resource Name - Whistlestop; Other - Northwest Pacific Railroad Depot; OHP PRN - 4902-0284-0000; OHP Property Number - 000880; Other - San Rafael Passenger Depot	Building, Element of district	Historic	HP17	1978 (Niki Simons, City of San Rafael); 2013 (Monte Kim, ICF International); 2014 (Patricia Ambacher, AECOM)	S-048525, S-048626

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-21-002506		Resource Name - San Rafael Harbor Bridge; Other - Bridge #27-0033S; OHP Property Number - 124543; OTIS Resource Number - 574415; OHP PRN - DOE-21-99-0017-0000; OHP PRN - FHWA990311B	Structure	Historic	HP19	1999 (Andrew Hope, Caltrans, District 4)	S-010760
P-21-002513		Resource Name - San Rafael Viaduct; Other - Bridge #27-0035R; OHP Property Number - 124550; OTIS Resource Number - 574422; OHP PRN - DOE-21-99-0024-0000; OHP PRN - FHWA990311B	Structure	Historic	HP19	1999 (Andrew Hope, Caltrans, District 4)	S-010760
P-21-002560		Resource Name - Lincoln Apartments; ARS 03-085-01	Building	Historic	HP03	2003 (Cassandra Chattan, Archaeological Resource Service)	S-027664
P-21-002612		Resource Name - 939 Tamalpais Avenue; Other - 703-705 4th Street	Building	Historic	HP06	2004 ([none], Garcia and	S-031737

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-21-002618	CA-MRN-000699H	Resource Name - Northwestern Pacific Railroad; Other - California Park Hill Tunnel; Other - Footing 13; Footing 14; Footing 1; Footing 3 & 4; Other - Auburn Street Trestle; Other - Footing 5 & 6; Footing 7 & 8; Footing 9; Footing 10, 11, 12; Other - Trestle over Corte Madera Creek; Other - Sonoma Valley Branch; Other - San Francisco & Northern Pacific Railroad; OTIS Resource Number - 513207; OTIS Resource Number - 513208; OTIS Resource Number - 513210	Structure, Object, Site, Element of district	Historic	AH02; AH07; AH15; HP11	2003 (Daniel Hart, GANDA); 2003 (Daniel Hart, GANDA); 2003 (Rand Herbert, JRP Historical Consulting); 2004 (Rand Herbert/Cindy Toffelmier, JRP Historical Consulting); 2004 (Rand Herbert, Cindy Toffelmier, JRP Historical Consulting); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, GANDA); 2004 (Daniel Hart, Garcia & Assoc); 2004 (Andrew Hope, Caltrans); 2006 (Melissa Gallagher, ASC, SSU); 2008 (B.Harris, PAR Environmental); 2009 (Toni Webb, JRP); 2010 (A. DeGeorgey, NCRM); 2011 (Erica Schultz, GANDA); 2014 (Patricia Ambacher, AECOM); 2014 (Patricia Ambacher, AECOM); 2014 (Patricia Ambacher, AECOM); 2018 ([none], Tom Origer & Assoc.)	S-036941, S-037827, S-039171, S-039520, S-040317, S-040318, S-040319, S-043710, S-044440, S-047399, S-047935, S-048525, S-049166, S-051136, S-053102, S-054951, S-055740
P-21-002643		Resource Name - Esther Schwartz Bungalows	Building	Historic	HP03; HP04; HP30	2006 (Susan M. Clark, Holly L. Hoods, Clark Historic Resource Consultants)	S-050125
P-21-002833	CA-MRN-000711/H	Resource Name - Hetherton Street Prehistoric Deposit	Site	Prehistoric, Historic	AH01; AP02; AP15	2014 (Daniel Shoup, Suzanne Baker, Archaeological/Historical Consultants)	S-046535, S-047537, S-055740
P-21-002910		Resource Name - Marin County Roofing	Building	Historic	HP06	2014 (Patricia Ambacher, AECOM)	S-048525
P-21-003171		Resource Name - 4th & Grand Shell Midden	Site, Other	Prehistoric, Historic	AH06; AP15	2023 (Sally Evans, Evans & De Shazo, Inc.)	S-057429

Attachment 3

Native American Heritage Commission Sacred Lands File Search Results

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

December 31, 2024

Josh Bevan
Rincon Consultants

Via Email to: jbevan@rinconconsultants.com

Re: 930 Irwin Street Residential Project, Marin County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Mathew.Lin@nahc.ca.gov

Sincerely,

Mathew Lin

Mathew Lin
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Marin County
12/31/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Marin	Federated Indians of Graton Rancheria	F	Greg Sarris, Chairperson	6400 Redwood Drive, Ste 300 Rohnert Park, CA, 94928	(707) 566-2288	(707) 566-2291	gbuvelot@gratonrancheria.com	Coast Miwok Pomo	Marin,Sonoma	11/1/2023
	Federated Indians of Graton Rancheria	F	Gene Buvelot,	6400 Redwood Drive, Suite 300 Rohnert Park, CA, 94928	(707) 566-2288	(415) 279-4844	gbuvelot@gratonrancheria.com	Coast Miwok Pomo	Marin,Sonoma	11/1/2023
	Guidiville Rancheria of California	F	Bunny Tarin, Tribal Administrator	PO Box 339 Talmage, CA, 95481	(707) 462-3682		admin@guidiville.net	Pomo	Alameda,Contra Costa,Lake,Marin,Mendocino,Napa,Sacramento,San Joaquin,Solano,Sonoma	6/21/2023
	Guidiville Rancheria of California	F	Michael Derry, Historian	PO Box 339 Talmage, CA, 95481	(707) 391-1665		historian@guidiville.net	Pomo	Alameda,Contra Costa,Lake,Marin,Mendocino,Napa,Sacramento,San Joaquin,Solano,Sonoma	6/21/2023
	Muwekma Ohlone Tribe of the SF Bay Area	N	Charlene Nijmeh, Chairperson	1169 S. Main Street, Ste. 336 Manteca, CA, 95377	(408) 464-2892		cnijmeh@muwekma.org	Costanoan	Alameda,Contra Costa,Marin,Merced,Napa,Sacramento,San Francisco,San Joaquin,San Mateo,Santa	3/28/2024
	Muwekma Ohlone Tribe of the SF Bay Area	N	Richard Massiatt, Councilmember/MLD Tribal Rep.	1169 S. Main Street, Ste. 336 Manteca, CA, 95377	(209) 321-0372		rmassiatt@muwekma.org	Costanoan	Alameda,Contra Costa,Marin,Merced,Napa,Sacramento,San Francisco,San Joaquin,San Mateo,Santa	3/28/2024

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 930 Irwin Street Residential Project, Marin County.

Record: PROJ-2024-006734
Report Type: List of Tribes
Counties: Marin
NAHC Group: All

Attachment 4

DPR 523 Series Forms

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** 523 4th Street and 535, 543 4th Street/930 Irwin Street

P1. Other Identifier: N/A
***P2. Location:** ☒ **Unrestricted**
***a. County** Marin **and**
***b. USGS 7.5' Quad** *San Rafael, Calif.* **Date** 2024 **T** 07N; **R** 09W; SE ¼ **of** SE ¼ **of Sec** 6 **M.D.B.M**
c. Address: 523 4th Street and 535, 543 4th Street/930 Irwin Street City San Rafael Zip 94901
d. UTM: Zone 10S, 542159.87 mE/ 4202803.93 mN (Building at 523 4th Street);
Zone 10S, 542114.52 mE/ 4202812.14 mN (Building at 535, 543 4th Street/930 Irwin Street)
e. Other Locational Data: 523 4th Street (APN 014-123-28) and 535, 543 4th Street/930 Irwin Street (APN 014-123-27)

***P3a. Description:** The buildings at 523 4th Street and 535, 543 4th Street/930 Irwin Street are recorded as a single resource as they share a historical and functional relationship as commercial-office buildings. This property is contained within two rectangular parcels totaling approximately 0.8 acres, located on the southeast corner of 4th and Irwin Streets in downtown San Rafael.

523 4th Street
523 4th Street is a two-story building with a concrete foundation built with concrete tilt-up construction (P5a. Photograph 1). The building's existing form is the result of the expansion of a 1963 building that had been known as the Hellman Building with a major 1979 addition. The remaining portions of the Hellman Building appear to be a masonry property wall on the east property line, while the 1963 building was otherwise subsumed into the 1979 addition (Photograph 2). The building's footprint irregular and composed of two, two-story front wings separated by an entrance courtyard, and a perpendicular rear two-story section (Photograph 3). The exterior walls are finished with stucco and fenestration consists of metal-framed, two-lite windows that are arranged in horizontal pairs or banks of two to five windows (Photograph 4). Some windows feature stuccoed mullions that divided each sash, as well as molded stucco detailing around the windows. Windows within the east front window appear to be more recently installed replacements typical of storefront window construction. The roof reads as a hip roof with tiled eaves, but features flat central sections with parapets that obscure roof-mounted mechanical equipment. The roof eaves overhang the exterior walls, with stuccoed soffits and wood modillions that decorate the soffit above windows. The rear section of the building features surface parking that extends beneath the second story (Photograph 5). (Continued on Page 4)
***P3b. Resource Attributes:** HP6. 1-3 Story Commercial Building
***P4. Resources Present:** ☒Building

P5a. Photograph 1

P5b. Description of Photograph 1: 523 4th Street, viewed from 4th Street, facing southeast. February 7, 2025.
P6. Date Constructed/Age and Source: ☒Historic
1963 and 1979-1980 (San Rafael, City of 2024a, 2024b)
***P7. Owner and Address:**
Seagull Prime Real Estate Fund
930 Irwin Street, San Rafael, CA 94901
***P8. Recorded by:**
Elaine Foster, MA RPA
Rincon Consultants, Inc.
66 Franklin Street, Suite 300
Oakland, CA 94607
***P9. Date Recorded:** February 7, 2025
***P10. Survey Type:** Intensive Pedestrian

***P11. Report Citation**: Rincon Consultants, Inc. 2025. *Cultural Resources Assessment for the 930 Irwin Street Residential Project 523 and 543 4th Street and 914 Irwin Street, San Rafael, California, 94901.* On file at Northwest Information Center.
***Attachments:** ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record

B1. Historic Name: Hellman Building (523 4th Street 1963-1978)
B2. Common Name: None
B3. Original Use: Commercial
B4. Present Use: Commercial
***B5. Architectural Style:** Commercial, regional vernacular
***B6. Construction History:** The following construction information is provided in building permit documentation for the subject property, and is on file with the City of San Rafael Building Division and accessed through the City's Online Record Search (San Rafael, City of 2024a, 2024b).

1963: Permit 749, March 18, 1963. Construction of one-story concrete block commercial building at 523 4th Street.
1979: Permits 11697 and 11698, March 18, 1979. Construction of commercial expansion project with addition to 523 4th Street and new building at 535, 543 4th Street/930 Irwin Street.
1998: Permit 41790, June 28, 1998. Build two new walls with two windows and one door at 545 4th Street.
2002: Permit B0203-083. Construct elevator shaft at 523 4th Street.

***B7. Moved?** ☒**No**
***B8. Related Features:** None.

B9a. Architect: Carl Gremme and R. Prestley (original 1963 building); Harold S. Lezzeni Associates (1979-1980 expansion project)
b. Builder: Nicolaisen Bros. (original 1963 commercial building); Joseph Di Giorgio & Sons (1979-1980 expansion)
***B10. Significance:** **Theme** Community Planning and Development; Architecture **Area:** San Rafael
Period of Significance 1963-1980 **Property Type** Commercial **Applicable Criteria** None

Continued on Page 4

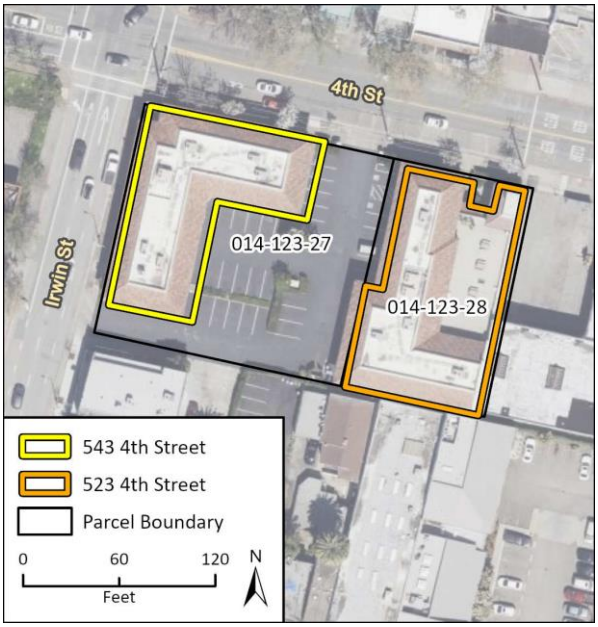
B11. Additional Resource Attributes: None.

***B12. References:** See Continuation Sheets.

B13. Remarks: None.

***B14. Evaluator:** Josh Bevan, AICP, MSHP – Rincon Consultants, Inc.

***Date of Evaluation:** March 6, 2025



(This space reserved for official comments.)

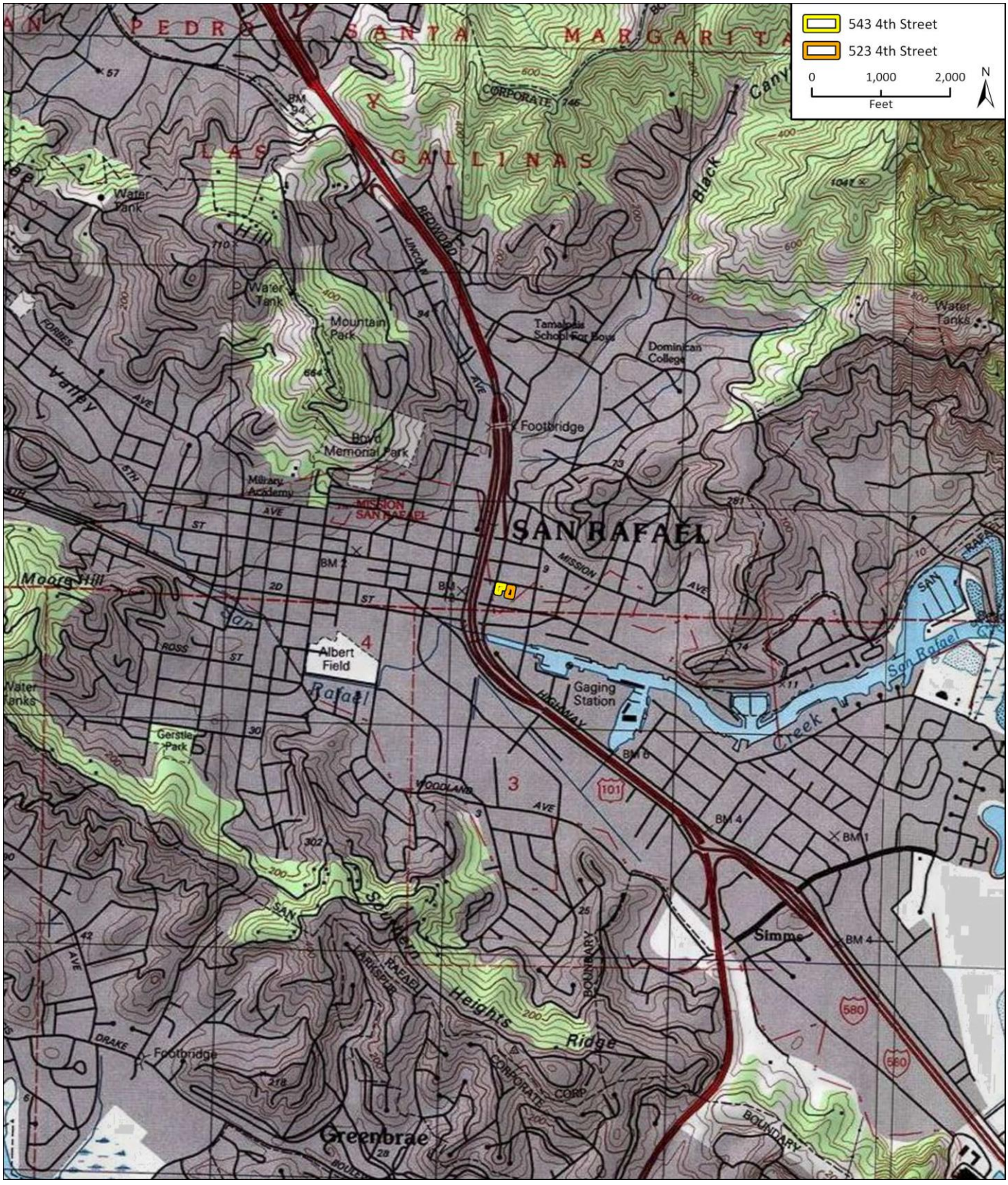
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

***Resource Name or #** 523 4th Street and 535, 543 4th Street/930 Irwin Street

***Map Name:** *San Rafael, Calif.* ***Scale:** 1:24,000 ***Date of map:** 2024



*** Required information**

P4a. Description (Continued from Page 1):

523 4th Street (Continued)

Photograph 2. Concrete block wall property wall that appears to be remant of original 1963 Hellman Building, view facing southwest.

Photograph 3. Entrance to 523 4th Street, view facing south.

Photograph 4. Driveway and parking areas between 523 4th Street and 535, 543 4th Street/930 Irwin Street, view facing south.

Photograph 5. West exterior and surface parking at 523 4th Street, view facing northeast.

535, 543 4th Street/930 Irwin Street

The building at 535, 543 4th Street/930 Irwin Street occupies the southeast corner of 4th and Irwin Streets and features similar architectural aesthetic as 523 4th Street (Photograph 6). This building's footprint is L-shaped, with an east-west oriented wing along 4th Street and a north-south wing along Irwin Street. Entrances are located in the 4th Street wing as well as at the recessed northwest corner. The exterior finishes, fenestration, soffit detailing, roof form and tiles are of similar design to 523 4th Street. This building also features surface parking beneath its second story at the southern half the Irwin Street wing (Photograph 7 and Photograph 8). The building differs from 523 4th Street in that arched columns support the overhanging second story above the recessed parking area, versus square columns. This building also features integrated concrete planting beds along its north and west perimeter.

To the rear of the two buildings, a surface parking lot paved mostly with asphalt and some concrete occupies much of the rear of the lot. It is accessed from entrances on the south side of 4th Street and the east side of Irwin Street. Additional planting beds are used to frame the areas within the parking lot; the beds are located near the center of the parking lot as well as along a portion of the southern property perimeter.

Photograph 6. 535, 543 4th Street/930 Irwin Street viewed from intersection of 4th and Irwin streets, facing south.

Photograph 7. South exterior with surface parking below second story, view facing northeast.

Photograph 8. East (left) and south (right-background) exteriors that face the properties parking lot, view facing northwest.

B10. Significance (Continued from Page 2):

Property Development History

Historical Sanborn maps depict the land within present-day 523 and 543 4th Street as undeveloped "low lands" along the eastern edge of San Rafael as of 1894 (Sanborn Map Company [Sanborn] 1894). Four residences along the opposite face of Irwin Street were present by 1894; these residences have since been identified as contributing buildings to the locally designated French Quarter historic district (San Rafael, City of 2021). Just west of Irwin Street, a creek bisected the opposite city block along the existing alignment of U.S. Highway 101. Further westward tracks of the San Francisco and North Pacific Railroad ran north-south along Tamalpais Avenue (Sanborn 1894). By 1907, land within present-day 523 and 543 4th Street was located within a "ball park" that occupied the block bound by Irwin Street, 4th Street, 3rd Street, and Grand Avenue. The 1907 Sanborn map recorded a grandstand structure within the southwestern perimeter of the site occupied by the existing building at 543 4th Street (Figure 1, Sanborn 1907). Additional residential development occurred on the opposite side of Irwin Street by 1907, with similar conditions further westward.

Between the mid-1920s and 1931, extensive development occurred within the block containing the subject property (Sanborn 1924, 1950; University of California, Santa Barbara [UCSB] 1931). As of 1931, the land within present-day 523 and 545 4th Street was occupied by three residences along 4th Street and a gas station at the corner of 4th and Irwin streets. By 1950, a store with a residential rear addition was built on a property addressed 535 4th Street (Sanborn 1950). These developments occurred during a roughly two-decade period between the end of World War II and start of World War II that included the opening of U.S. 101 through San Rafael in the late 1920s and the Golden Gate Bridge in 1937. As a result of greater regional connection, and eventually the onset of World War II, San Rafael's downtown grew, with development further northward and eastward from its earlier core, with 4th Street remaining a primary commercial corridor (San Rafael, City of 2021).

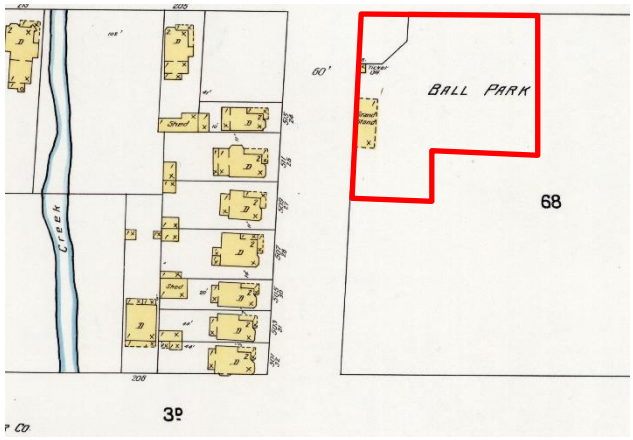


Figure 1. Sanborn map, 1907, depicting ballpark and grandstand structure within the 930 Irwin Street Residential Project site (boundary approximated with red line) (Sanborn 1907).

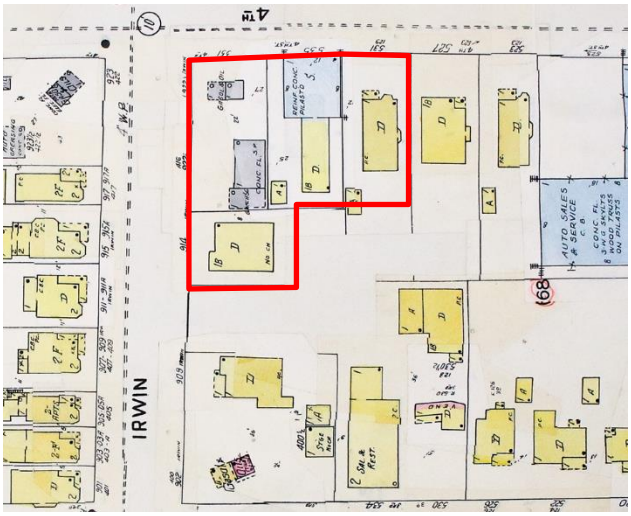
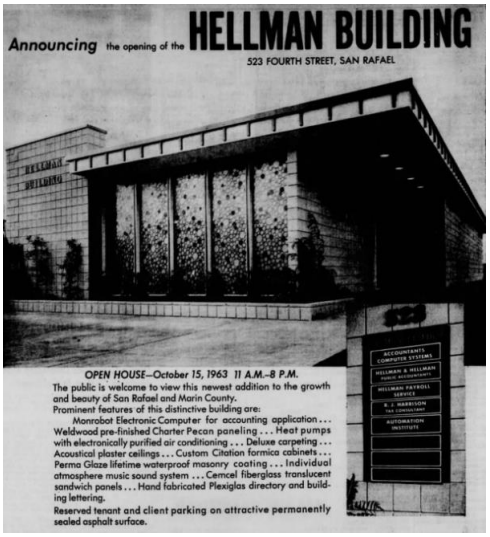


Figure 2. Sanborn map, revised to 1950, depicting residential and commercial development within the subject properties A red line approximates the 930 Irwin Street Residential Project site boundary(Sanborn 1950).

As post-war commercial development continued, redevelopment of several residential properties along the south face of 4th Street, containing the subject property, occurred ca. 1963. The existing building at 523 4th Street was originally constructed in 1963 as the Hellman Building, named for Hellman and Hellman Accountants, the buildings primary occupant. The Hellman Building was built as a one-story, concrete block office building with a rectangular footprint. The 1963 permit application listed Roland Hellman as the owner, Carl Gremme and R. Prestley of Gremme & Priestly as architect, and Nicolaisen Bros. as contractor. Both the architect and contractor were San Rafael-based companies (San Rafael, City of 2024a). The Hellman Building opened in October 1963 and contained offices for Accountants Computer Systems, Hellman & Hellman Public Accountants, Hellman Payroll Services, R.J. Harrison Tax Consultant, and Automation Institute. The building was designed with mid-twentieth century Modern styling, featuring a concrete panel with a tile grid and building signage, a five-panel mosaic, and a flat roof that doubled as an entrance canopy. Additional features included a low planting bed with similar tiled detail near the entrance and concrete block walls along the building's west side. In addition to showcasing the building's design, local newspapers highlighted the opportunity for the public to tour the building and the Monrobot Electronic Computer, which the husband-and-wife accounts Roland and Jorna Hellman, and their associate Ralph Larsen, used for electronic accounting (*Daily Independent Journal* 1963a, 1963b).


Announcing the opening of the **HELLMAN BUILDING**
523 FOURTH STREET, SAN RAFAEL

OPEN HOUSE—October 15, 1963 11 A.M.–8 P.M.
The public is welcome to view this newest addition to the growth and beauty of San Rafael and Marin County.
Prominent features of this distinctive building are:
Monrobot Electronic Computer for accounting application... Weldwood pre-finished Charter Pecan paneling... Heat pumps with electronically purified air conditioning... Deluxe carpeting... Acoustical plaster ceilings... Custom Citation formica cabinets... Perma Glaze lifetime waterproof masonry coating... Individual atmosphere music sound system... Cemcel fiberglass translucent sandwich panels... Hand fabricated Plexiglas directory and building lettering.
Reserved tenant and client parking on attractive permanently sealed asphalt surface.

Figure 3. Advertisement for the Hellman Building at 523 4th Street (*Daily Independent Journal* 1963b).

A 1965 aerial photograph indicates the corner gas station property present on the 1950 Sanborn was demolished by that year, as well as the residence that had been located at 531 4th Street (UCSB 1965). Historical aerial photographs depicted similar conditions into the late 1960s (NETR Online 2024).

In 1979, the properties at present-day 523 and 545 4th Street were under the ownership of HUT Properties, a company that appears to have been affiliated with Roland Hellman. In that year, HUT Properties began a project that expanded the preexisting, one-story Hellman Building at 523 4th Street to its current irregular footprint and two story height, and constructed a related commercial building with an L-shaped footprint at the southeast corner of Irwin and 4th streets (535, 543 4th Street and 930 Irwin Street). Local firm Harold S. Lezzeni Associates was listed as the preparer of building plans and Joseph Di Giorgio & Sons as contractor; both firms were based in San Rafael (San Rafael, City of Building Division 2024a). Available permit records indicate construction was completed in 1980. The site plan below, prepared in 1979, shows the original footprint of the 1963 Hellman Building building at 523 4th Street (shaded gray), and the commercial construction that occurred between 1979 and 1980 (Earth Science Consultants 1979, Figure 4). No architectural plans providing further detail on the 1979 to 1980 constructed were found through research of available city building records or online architectural repositories (San Rafael, City of 2024a, US Modernist 2024, Avery Index 2024, Newspapers.com 2024, California Digital Newspapers Collection 2024).

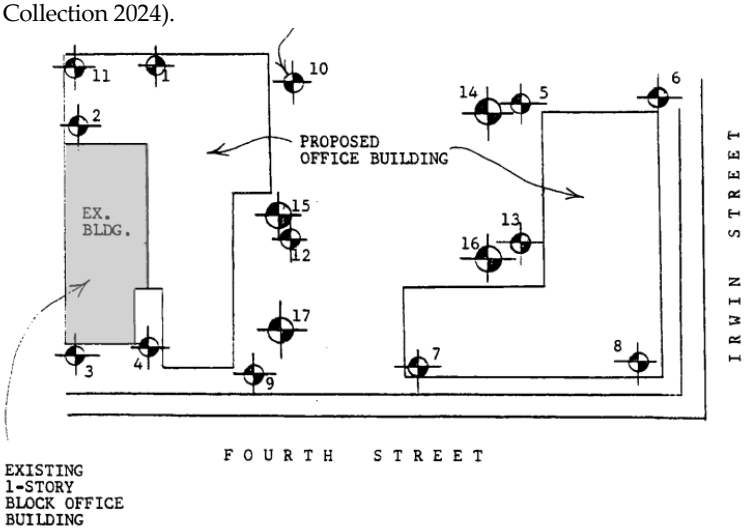


Figure 4. Site plan of present-day 523 and 543 4th Street showing 1963 Hellman Building (shading added by Rincon for emphasis) and proposed construction (unshaded) in 1979 (Earth Science Associates 1979).

The 1979-1980 project brought the neighboring parcels comprising 523 4th Street and 535, 545 4th Street/930 Irwin Street into a functional relationship as a commercial complex. In terms of architectural style, the original design of the Hellman Building was replaced as the building was remodeled and incorporated into new construction that was designed with regionally common materials, including stucco, red roof tiles, and wide eaves with exposed rafter detailing beneath. As of this evaluation, it appears that only a concrete block perimeter wall, located along the eastern boundary of the property at 523 4th Street, remains of the former Hellman Building.

By 1993, the property owner was The Alto Valley Association according building permit records (San Rafael, City of, 2024a). Since the late 1970s, the existing conditions within the related commercial properties at 523 and 543 4th Street have remained similar, with a parking lot and driveway separating each building, and no apparent alterations to either building's footprint, massing, or exterior materials (NETR Online 2024).

Roland and Jorna Hellman

The subject property was originally developed in 1963 by owners Roland (1920-1980) and Jorna Hellman (1911-2005) with the construction of the Hellman Building. The Hellmans married in 1942 and settled in San Rafael in 1946. They began an accounting business around 1951 in San Francisco, and established a San Rafael location in 1951 (*Marin Independent Journal* 2005, *Daily Independent Journal* 1953). The Hellman Building was the third San Rafael location of their firm, Hellman & Hellman Public Accountants and the related Hellman Payroll Services, and appears to have succeeded 819 A Street (extant) and a building at 916

Irwin Street (potentially present-day 914 Irwin Street) (*Daily Independent Journal* 1963b). The Hellmans based their accounting work from 523 4th Street until at least ca. 1978 when the Hellman Building was replaced with a larger building at 523 4th Street; no additional occupancy information was found to confirm an end date of the Hellman's occupancy of the subject property. It does appear that the Hellman's were associated with H.U.T. Properties, the developer of the 1979-1980 commercial project (San Rafael, City of 2024a). Jorna's obituary notes that she served as a president of the North Bay Chapter of the Society of California Accountants and maintained her certified public account (CPA) license until her death in 2005 (*Marin Independent Journal* 2005).

Monrobot XI

In 1963, a local newspaper featured the Hellmans use of a computer they referred to as the "Hellbot" for computerized accounting. The Hellbot was formally known as the Monrobot XI, a computer introduced in 1960 and developed by the Monroe Calculating Machine Division of Litton Industries (*Computers and Automation* 1960). The Hellmans hired Los Angeles-based accountant Ralph Larsen, who collaborated on the design of the Monrobot XI, to program the machine for their business. The Hellman's Monrobot XI was reportedly the first example of its kind used for public accounting in Northern California and the third in the United States (*Daily Independent Journal* 1963b). Beyond reporting on the establishment of the Hellman Building in 1963, and mention of Monrobot XI's related use, no additional substantial documentation was found relating to the Hellmans accounting practice.

In addition the businesses owned and operated by the Hellmans, research of Accountants Computers Systems, R.J. Harrison Tax Consultant, the Automation Institute, and H.U.T. Properties found no information suggesting any of these entities made significant contributions to history that are associated with the subject property. Research of historical newspapers and city directories, as well as review of the *Downtown San Rafael Precise Plan Historic Resources Inventory Summary Report* did not provide additional documentation on H.U.T. Properties (San Rafael, City of 2022, Newspapers.com 2024, California Digital Newspaper Collection 2024). Available documentation on R.J. Harrison indicates he occupied an office in the Hellman Building but has not been demonstrated to have made significant contributions to history. The Automation Institute was advertised in a local newspaper as the "nation's leading automation training organization" with headquarters in San Francisco and locations in over 50 cities as of 1964 (*Daily Independent Journal* 1964). The company located in the Hellman Building in 1963 to support the training for use of the Monrobot XI accounting computer, and later in the same year transitioned to occupying an office in the building for use by the institute's registrar. Although the Hellman Building was occupied by the institute, its role the history of high technology was not directly associated with any known significant innovations in computer technology. As explained above, the Monrobot XI was invented elsewhere, and similarly, the Hellman Building was not the headquarters of the institute; rather, it was one of several branch offices (*Daily Independent Journal* 1963b).

Property Type

The subject property is an example of late 1970s commercial complex. The property incorporates a preexisting 1963 building that was constructed of concrete block and designed in a mid-twentieth century Modern style, but was heavily altered to the degree that its original design is largely lost. The existing architecture utilizes tilt-up construction, which had been used in San Rafael in the 1950s and became a common commercial construction technique in the 1950s and 1960s. The buildings incorporate precast concrete panels and feature similar fenestration throughout, which supported efficient construction. The building's incorporated common regional styling, with stucco, low-wide roof profiles, and roof tiles that drawn on influence from Spanish Colonial Revival and Mission Revival styling that emerged earlier in the twentieth century, and adapt some of those stylistic features to contemporary construction (Brown 2011).

Design Professionals

Harold S. Lezzeni & Associates led the design of the existing commercial complex in 1979-1980. Harold S. Lezzeni (1924-2019) was a lifelong Fairfax resident, who served in the military during World War II and returned to Marin County where he pursued a career as a building designer (*Marin Independent Journal* 2020). Although his obituary states Lezzeni was an "architect," research did not find documentation of Lezzeni's professional training, and he appears to have considered himself a building designer without a formal architectural education or degree, based on city directory listings and newspaper articles documenting his work (R.L. Polk & Co. 1966, *Daily Independent Journal* 1964). Lezzeni established his local practice and was known as an adopter of tilt-up construction design by 1965. In that year he collaborated with the McDevitt Building Co. and civil engineer Robert W. Copple on construction of a concrete tilt-up commercial building at 29 Mary Street in San Rafael, located roughly one-block east of the

subject properties (Google 2022a, Figure 5). Lezzeni's designer was part of the project's use of a novel tilt-up construction technique, while tilt-up construction in general was first used in San Rafael in the 1950s (*Daily Independent Journal* 1964). Lezzeni also served on the Fairfax Planning Commission during a brief period of his career. In 1974, his firm designed a commercial building located in San Rafael's canal neighborhood. Located at 125 Larkspur Street, the building housed Lezzeni & Associates office among other tenants (Google 2022b, Figure 6). Like the project at 4th and Mary streets, the building used tilt-up construction. Additionally, it featured a recessed based with arcaded ground floor walls like the subject buildings, along with similar low-wide massing. The 125 Larkspur Street project differed from the subject buildings as it did not appear to originally feature roof tiles and incorporated a greater balance of stone veneer on some portions of the building, versus primarily stucco finishes (*Daily Independent Journal* 1974).

Figure 5. Building at 29 Mary Street, San Rafael (Google 2022a)

Figure 6. 125 Larkspur Street, San Rafael (Google 2022b)

Historical Evaluation

The properties at 523 4th Street and 535, 543 4th Street/930 Irwin Street, evaluated as a single resource, are recommended ineligible for listing in the CRHR and as a City of San Rafael Landmark, due to a lack of historical and architectural significance.

California Register of Historical Resources

Criterion 1 (Events)

The property at 523 4th Street and 535, 543 4th Street/930 Irwin Street is associated with commercial development in San Rafael between 1963 and 1980. During that period, San Rafael's downtown expanded eastward and northward, as post-World War II settlement continued. Commercial and residential development had already occurred in the immediate vicinity of the property by 1963, and the development of the Hellman Building in 1963, as well as the existing buildings within the property represented continued iterations of the downtown's expansion. Review of available property documentation produced no evidence indicating that the subject property was individually significant in the context of San Rafael's post-World War II development; nor was the property the location of any singular events of historical importance. Although noted in a newspaper as a location where an automatic accounting computer, Monrobot VI was used in Northern California, research found that this technology was not invented or used for the first time on the subject property. Additionally, no evidence was found to suggest that Monrobot IV was a significant technological achievement in its own right, relative to the earlier advent of computing technology, or for significantly influencing high-technology otherwise. Therefore, the property is recommended ineligible under Criterion 1.

Criterion 2 (Persons)

Research of available property ownership and occupancy data indicates the subject property is historically associated with former owners and accountants Roland and Jorna Hellman, who were responsible for the property's development in 1963, appear to have been linked to redevelopment of the property in 1979 (in affiliation with H.U.T. Properties), and occupied the property ca. 1963 to ca. 1978 as an accounting business location. Although the Hellmans were San Rafael-based accountants for several decades beginning in the 1950s, their professional achievements as accountants and role as a property owner-developer of the subject property do not appear to rise to individual significance. Available documentation of their careers is limited, and did not provide information that would support a finding that their contributions to history were demonstrably significant. No other individuals who occupied the property historically were found to have made notable contributions to history. Therefore, the property is recommended ineligible under Criterion 2.

Criterion 3 (Architecture)
The subject property incorporates construction from 1963 and 1979-1980, with the latter construction phase defining the architectural character, type, and construction method of the existing property, given that much of the 1963 construction (the Hellman Building) has been heavily altered. The existing commercial complex was designed by Harold S. Lezzeni & Associates, a local building designer who worked on several commercial "tilt-up" projects in San Rafael between the mid-1950s and late 1970s. Lezzeni's design incorporated similar massing, fenestration, and arcaded ground floor openings as his design for 125 Larkspur Street in San Rafael, completed in 1974. The subject property's two buildings feature stucco exteriors, wide hip roofs with overhanging eaves and exposed rafter details, as well as roof tiles that lend the buildings common regional styling drawn from much earlier Spanish Colonial and Mission Revival styling. Such architecture was adopted in communities across the Bay Area region during post-war years, as well as in Southern California. Although the 1979-1980 design is largely intact, it does not appear to provide an individually distinctive example of tilt-up construction, or the use of regional vernacular styling. Tilt-up construction was utilized in decades before the subject buildings were built, including for earlier work in San Rafael in the 1950s and 1960s. Although Lezzeni's career spanned several decades from his start in the late 1940s, his contribution and influence to the field of architecture does not appear elevate him to the level of master architect. The buildings on the property are average example of construction of their period and do not possess high artistic values. Therefore, the subject property is recommended ineligible under Criterion 3.

Criterion 4 (Information Potential)
The built environment of the subject property is not likely to yield valuable information which will contribute to our understanding of human history because the property is not and never was the principal source of important information pertaining to significant events, people, architectural style, tilt-up construction, or commercial development. Therefore, the subject property is recommended ineligible under Criterion 4.

City of San Rafael Landmarks
(a) Historical, Cultural Importance
The subject property is recommended ineligible under Landmark criterion (a). The property is not identified as having significant character, interest, or value to the heritage or cultural characteristics of San Rafael, the state, or nation as it is not associated with a significant trend or patterns of events in history. Additionally, the building has not been identified as having an association with the life of a historically significant person, or as the location of a significant historic event.

(b) Architectural, Engineering Importance
The subject property is recommended ineligible under Landmark criterion (b). Consisting of two buildings constructed between 1963 and 1980, with the existing architectural character largely representing construction in 1979-1980, the complex's contemporary, regional vernacular architecture is not individually distinctive. The building's construction incorporates what was by 1979-1980 common tilt-up construction methods and related materials and craftsmanship. The building's designer, Harold S. Lezzeni & Associates, was responsible for designing at least three commercial projects in San Rafael between the mid-1950s and 1980, including the two buildings on the subject property. Each known project involved tilt-up construction. Nonetheless, the subject property was not unique within Lezzeni's body of work or in the region, in terms of its method of construction or type, and did not incorporate innovative or influential architectural approaches. Additionally, the building is not identified as the work of a designer or architect of merit.

(c) Geographic Importance
The subject property is recommended ineligible under Landmark criterion (c). The property has not been identified as part of a historical development that is the present day is embodied within a square, park, or distinctive area within the City. As demonstrated in the property development history of this study, development in the vicinity of 4th and Irwin Streets saw several iterations of residential and commercial development between the late nineteenth and mid-twentieth centuries, including multiple rounds of development on the land that comprises the subject property. Overall, the subject property is located in an area that lacks strong cohesion in terms of representing a specific pattern of historical development and architectural character.

(d) Archaeological Importance
The built environment of the subject property is recommended ineligible under Landmark criterion (d). The buildings and landscape features on the property do not possess archeological importance as they have not yielded information important to history or prehistory, as explained under CRHR Criterion 4 (Information Potential) above.

***B12. References (Continued from Page 2):**

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State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** 914 Irwin Street

P1. Other Identifier: 910 Irwin Street/912 Irwin Street (additional business addresses)

***P2. Location:** ☒ **Unrestricted**

***a. County** Marin **and**

***b. USGS 7.5' Quad** *San Rafael, Calif.* **Date** 2024 **T** 02N; **R** 06W **of Sec** 33 **M.D.B.M**

c. Address: 914 Irwin Street City San Rafael Zip 94901

d. UTM: Zone 10S, 542104.89 mE/ 4202774.36 mN e. Other Locational Data: APN 014-123-21

***P3a. Description:** 914 Irwin Street is an approximately 0.11-acre property contained within a rectangular parcel on the east side of Irwin Street, between 4th Street (north) and 3rd Street (south) in San the City of San Rafael (P5a. Photograph 1). The property contains a two-story commercial building with a rectangular footprint, concrete foundation, wood frame, and stucco exterior that is situated along the front (west) property line, with the remainder of the property's ground paved. The building was originally constructed in 1952 as one story and was expanded in 1958 to its current two-story height. The building was remodeled in 2019-2020 to achieve its current exterior appearance. The building's façade is oriented parallel to Irwin Street and is symmetrical (Photograph 2). The first story features mirrored storefronts, separated by a central column and framed with outer columns. Each column is clad with painted Roman brick. Each storefront contains replacement single entry doors toward the outer walls and a replacement, two-lite display window set on a concrete block bulkhead toward the center of the building. A boxed canopy spans across the façade above the storefronts. The second story is a false-front without windows; it has a grid of angled, metal panels, mounted between vertical columns. The north exterior is oriented to a driveway and features a staircase with cantilevered concrete steps and a metal railing that leads from grade to a second story balcony (Photograph 3). The staircase is enclosed with a two-story, semitransparent metal screen. Two single lite windows are located to the rear of the staircase in the first story, while the second-story balcony features a railing of similar design to the stair enclosure, as well as a bank of replacement two-lite fixed windows. The rear (east) exterior features several replacement rectangular windows and a replacement glazed door and the south exterior features a second story balcony with additional replacement windows (Photograph 4). (Continued on Page 4)

***P3b. Resource Attributes:** HP6. 1-3 Story Commercial Building

***P4. Resources Present:** ☒Building

P5a. Photograph 1

P5b. Description of Photograph 1: Commercial building at 914 Irwin Street, viewed from Irwin Street, facing northeast.

P6. Date Constructed/Age and Source: ☒Historic 1952, 1958 second-story addition (San Rafael, City 2024a, 2024b)

***P7. Owner and Address:**
910 Irwin Street LLC
910 Irwin Street, San Rafael, CA 94901

***P8. Recorded by:**
Elaine Foster, RPA
Rincon Consultants, Inc.
66 Franklin Street, Suite 300
Oakland, CA 94607

***P9. Date Recorded:** February 7, 2025

***P10. Survey Type:** Intensive Pedestrian

***P11. Report Citation**:

***Attachments:** ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z
***Resource Name or #** 914 Irwin Street

B1. Historic Name: United Ambulance Company
B2. Common Name: None
B3. Original Use: Mixed-Use (Commercial and Residential)
B4. Present Use: Commercial-Office
***B5. Architectural Style:** Mid-twentieth century Modern (Altered)
***B6. Construction History:** The following construction information is provided in building permit documentation for the subject property, on file with the City of San Rafael Building Division and accessed through the City's Online Record Search (San Rafael, City of 2024a, 2024b).
1947: Permit 6028, June 23, 1947: Alteration to residence (nonextant) for garage and storage room.
1952: Permit 8857, October 23, 1952: Construction of first story of existing, main building.
1955: Permit 1139, December 8, 1955: Construction of warehouse (non-extant) to rear of main building.
1958: Permit 2603, March 24, 1958: Second story with apartment added to main building.
1959: Permit 3166, March 5, 1959: Rear porch repair for apartment.
1961: Permit # illegible, November 3, 1961: Partial demolition of storage building built in 1955.
1980: Permit 14237, October 10, 1980: Roofing replacement; building not identified.
1991: Permit 34131, August 30, 1991: Roofing replacement; building not identified.
2019: Permit B1910-060, October 8, 2019: Alteration of existing building (repainting, fenestration alteration, false-front recladding; balcony railing alteration).
***B7. Moved?** ☒**No**
***B8. Related Features:** None

B9a. Architect: None
b. Builder: D.B. Ferraro, Builder-Contractor (1952 original construction); Wilson & Wedekind, Contractor (1958 addition)
***B10. Significance:** **Theme** Community Planning and Development; Architecture **Area:** City of San Rafael
Period of Significance 1952-1958 **Property Type** Mixed Use **Applicable Criteria** None

Continued on Page 4

B11. Additional Resource Attributes: None.

***B12. References:** See Page 9

B13. Remarks: Surveyed and identified as 914 Irwin Street during an update to the Downtown San Rafael Precise Plan, and included in *Downtown San Rafael Precise Plan Historic Resources Inventory Summary* Report, Revised and Re-released in May 2021. This property was categorized as ineligible based on a reconnaissance level survey of the property in approximately 2019-2020 (City of San Rafael 2021). The property's integrity was described as impaired, and it appeared to be "not significant at any level."

***B14. Evaluator:** Josh Bevan, AICP, MSHP – Rincon Consultants, Inc.
***Date of Evaluation:** March 6, 2025

(This space reserved for official comments.)

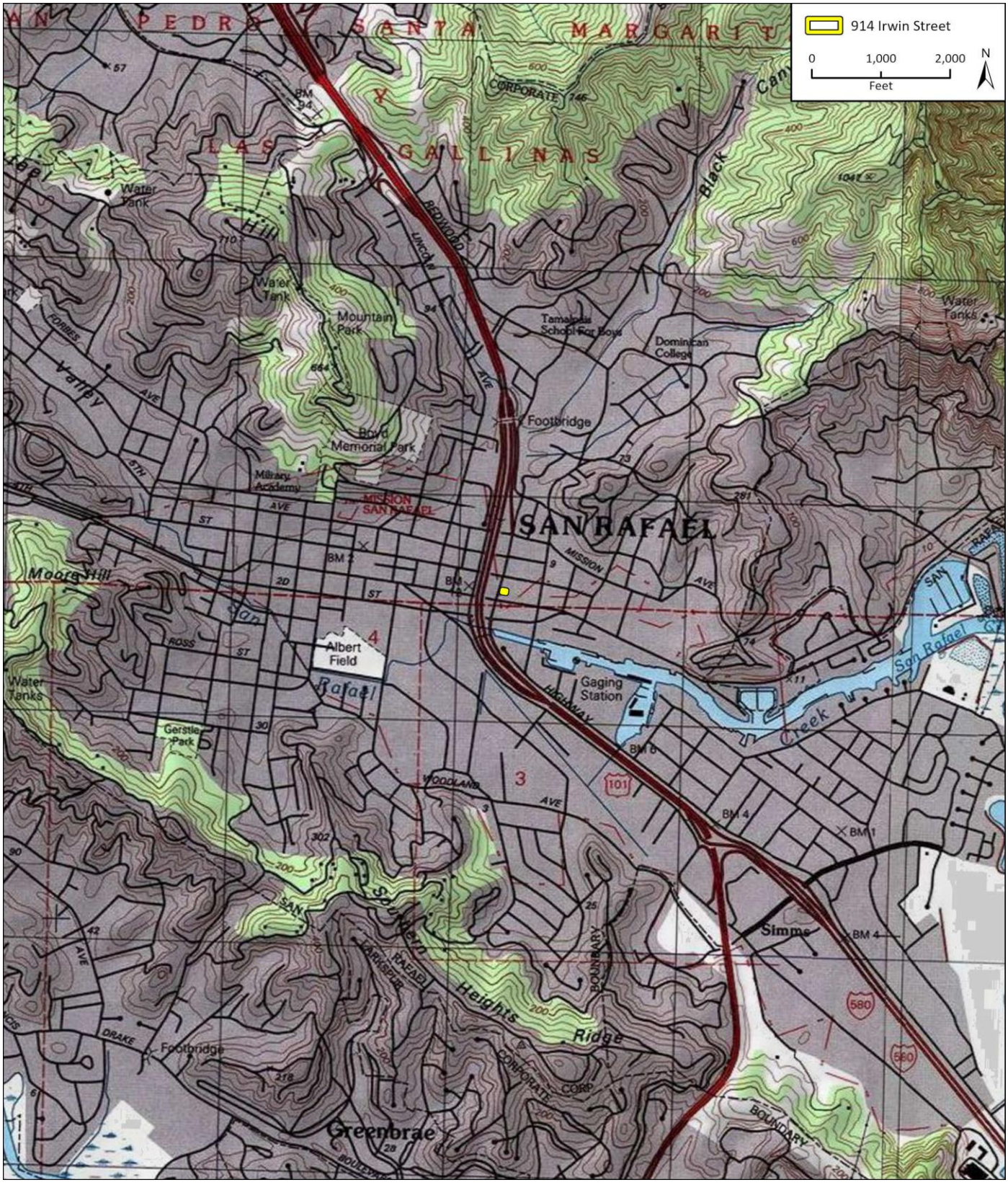
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

***Resource Name or #** 914 Irwin Street

***Map Name:** *San Rafael, Calif.* ***Scale:** 1:24,000 ***Date of map:** 2024



* Required information

P4a. Description (Continued from Page 1):

Photograph 2. Façade viewed from Irwin Street, facing east.

Photograph 3. North exterior, view facing southeast.

Photograph 4. East exterior, view facing southwest.

B10. Significance (Continued from Page 2):

Property Development History

The following section provides documentation of 914 Irwin Street's developmental history, within the context of San Rafael's historical development, as provided in the *Downtown San Rafael Precise Plan Historic Resources Inventory Summary Report* (San Rafael, City of 2021), and as interpreted from available historical maps, aerial photographs, and building permit records.

Historical Sanborn maps depict the land within present-day 914 Irwin Street as undeveloped "low lands" along the eastern edge of San Rafael as of 1894 (Sanborn Map Company [Sanborn] 1894). Four residences along the opposite face of Irwin Street were present by 1894; these residences have since been identified as contributing buildings to the locally designated French Quarter historic district (San Rafael, City of 2021). Just west of Irwin Street, a creek bisected the opposite city block along the existing alignment of U.S. Highway 101. Further westward tracks of the San Francisco and North Pacific Railroad ran north-south along Tamalpais Avenue (Sanborn 1894). By 1907, the site of 910 Irwin Street was located within a "ball park" that occupied the block bound by Irwin Street, 4th Street, 3rd Street, and Grand Avenue. The 1907 Sanborn map recorded a grandstand structure to the immediate north of the existing building's location (Figure 1, Sanborn 1907). Additional residential development occurred on the opposite face of Irwin Street by 1907, with similar conditions further westward, while the site of the subject property appears to have reverted to vacant undeveloped land between ca. 1924 and ca. 1930s, based upon available Sanborn maps and aerial photography (Sanborn 1924, UCSB 1931).

In the late 1930s, San Rafael's downtown, then centered several blocks west of area containing the subject property, experienced growth following the opening of the Golden Gate Bridge in 1937, which increased connectivity between Marin County and San Francisco (San Rafael, City of 2021). World War II brought industry and increased settlement to Marin County, and San Rafael's downtown expanded to the north and east with additional housing and subdivisions (San Rafael, City of 2021). It was during this period that the subject property appears to have first been developed with a residence. Review of City building records found no documentation relating that residence's original construction; however, building records include a 1947 permit application to add a storeroom and garage to what was a preexisting building at 914 Irwin Street (San Rafael, City of 2024a). The permit listed Angelo Turrini (1914-1989) as the property owner, and D.B. Ferrero as contractor. A Sanborn map revised to 1950 depicted a one-story-over-basement, wood-frame residence at 914 Irwin Street (Figure 2, Sanborn 1950). The 1950 Census recorded private ambulance company owner Angelo Turrini, his wife Freda (ca. 1916 – unknown), son Stephen (born 1947), and tenant Bernard Zanoni (1918-2002) as occupants of 914 Irwin Street. Zanoni's occupation was listed as an ambulance driver for Turrini's company (National Archives and Records Administration [NARA] 1950).

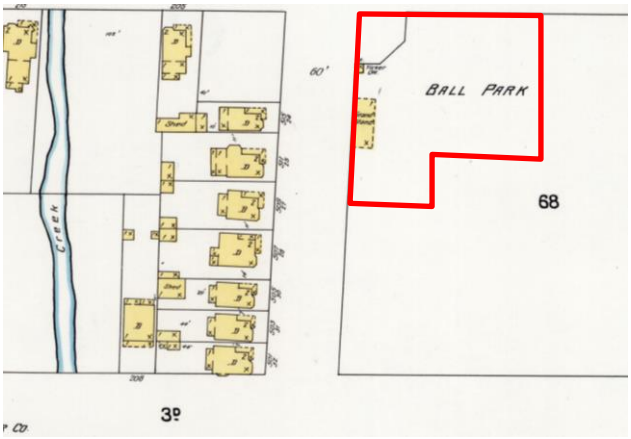


Figure 1. Sanborn map, 1907, depicting ballpark and grandstand structure within the 930 Irwin Street Residential Project site boundary (approximated with red line)(Sanborn 1907).

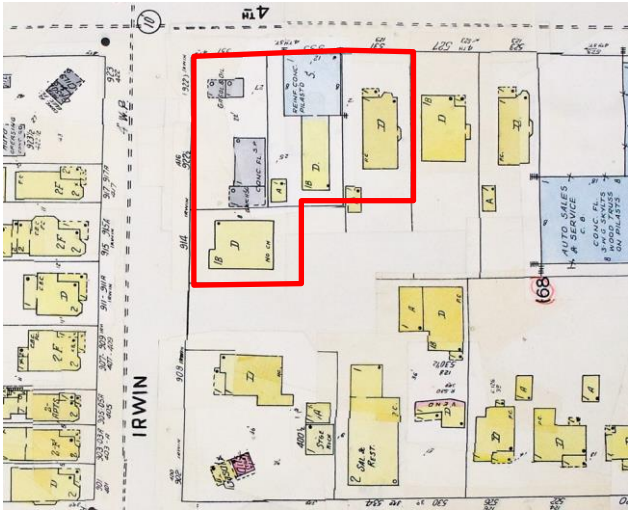


Figure 2. Sanborn map, revised to 1950, depicting residence at 914 Irwin Street. A red line approximates the 930 Irwin Street Residential Project site boundary (Sanborn 1950).

In 1952, Turrini applied for a permit, with Ferrero as contractor, to construct the existing building for use as a store, with additional parking on the property for his United Ambulance Company (San Rafael, City of 2024a). The original permit noted a wood frame, stucco exterior, tar-and-gravel roof, and one-story height. In 1955, Turrini was permitted to build a storage warehouse on the property; this building is nonextant and was located to the rear of the existing building (UCSB 1952; San Rafael, City of 2024a).

In 1958, Turrini's United Ambulance and contractor Wilson & Wedekind were listed on a permit to construct a second story addition to the commercial building Turrini had built in 1952. The work included the introduction of an apartment within the building (San Rafael, City of 2024a). In 1959 A.W. Wait applied for a permit to repair a rear porch serving the apartment in the building (San Rafael, City of 2024a). Wait was listed as owner, however, additional information on his role as a property owner, or in relation to United Ambulance was not found; it is possible that Wait was an associate of Turrini, or a contractor misidentified as owner. In 1961, Turrini and United Ambulance contracted with L.F. d'Artenay to complete partial demolition (roughly 15 feet from one end) of the ca. 1955 storage building that stood on the property (San Rafael, City of 2024a). The building was situated on land that appears to be located within present-day 538 3rd Street, rather than in the subject parcel. A 1965 aerial photograph captured the subject property, showing the existing building at the front of the property, and the nonextant storage building to its rear (UCSB 1965, Figure 3).

Figure 3. Aerial view of 914 Irwin Street in 1965 (estimated property boundary in 1965 shown with red line) (UCSB 1965)

Turrini again appeared as owner on a 1980 building permit relating to roofing replacement (San Rafael, City of 2024a). By 1991, two years after Angelo Turrini's death in 1989, the property was listed under Farhad "Fred" Taleghani's ownership on a 1991 permit for another round of roofing replacement (San Rafael, City of 2024a). Taleghani also appeared on a permit from 2007 (San Rafael, City of 2024b).

In 2019, a permit for alteration of the commercial building was issued to owner Irwin LLC and the building has since been remodeled (San Rafael, City of 2024b). Alterations to the building were completed by December 2020 and included repainting of the exterior, replacement of storefront glazing and entrance doors at the primary (west) façade, infilling or covering of breeze block details at façade's second story false-front, and alteration to the fenestration and second story balcony on the north exterior (Figure 4 through Figure 7).

Figure 4. 910 Irwin Street, June 2019 (Google 2019)

Figure 5. 910 Irwin Street, June 2019 (Google 2019)

Figure 6. 910 Irwin Street, December 2020 (Google 2020)

Figure 7. 910 Irwin Street, December 2020 (Google 2020)

Angelo Turrini

Angelo Turrini was born in Novato, Marin County in 1914, to parents Peter Turrini and Marina Zanoni, who immigrated from Italy. Angelo was one of 10 children and attended San Rafael High School. He established the United Ambulance Service in his early 20s (approximately 1934). His obituary notes that he parked his ambulance in livery stables located at Third and Lincoln streets in San Rafael, where he also established the United Telephone Answering Service (*Novato Advance* 1989); the obituary did not provide information linking his business's establishment or operations to 914 Irwin Street. As of 1940, he and his wife Freda, resided at 801 3rd Street, near the location of the livery stables. By 1950, Turrini and his immediate family moved to 914 Irwin Street. In 1952, Turrini was elected for a two-year term as Marin County's representative for the Hanna Center for Boys in San Francisco, a center that provided care for homeless boys (*Daily Independent Journal* 1952). As of 1956, he continued to manage the ambulance business with Bernard Zanoni, an employee and potentially a relative who resided with the Turrini's in 1950. Thereafter, it the ambulance business appears to have been co-owned, or at least co-managed, by several individuals (*Daily Republic* 1956). By 1966, Turrini's primary business endeavor appears to have been the telephone service, as he was listed as president of that company in the 1966 *San Rafael City* Directory (R.L. Polk & Co. 1966). Although Turrini appeared on a building permit as owner of the subject property in 1980, it appears his role with United Ambulance Service, and that entities historical association with the subject property (for parking purposes), may have ceased ca. 1971, by which time United Ambulance Service was under the operation of Dale Danner, and operated from stations in Novato and San Rafael (*Novato Advance* 1971).

Property Type

The building at 914 Irwin Street was constructed in two phases between 1952 and 1958 and contained commercial and residential uses historically. During that time frame the building took on a mid-twentieth century Modern aesthetic at its façade, with two storefronts featuring rectangular display windows on bulkheads, adjacent entrances, and wood canopy, and a second-story false front that appears to have been made of concrete or finished with plaster. Stylistic details along the exterior were limited to the façade, with square-patterned concrete and inset breeze block at the false front, and Roman brick cladding along the storefront bulkheads and columns that vertically divided the façade. The remainder of the building was unadorned with smooth stucco finishes. Overall, the building was designed in a modest interpretation of Modern commercial architecture and was representative of regional vernacular architecture.

Design Professionals

The building at 914 Irwin Street's construction is the result of a first story built by contractor D.B. Ferraro in 1952 and a second story addition designed and built by contractor Wilson & Wedekind 1958. The 1958 design of the building appears to have remained largely intact until ca. 2019-2020, when recent alteration of the building occurred. As of this evaluation, the building appears to retain similar massing and form to its design ca. 1958, but with replacement of historic fenestration and finishes, particularly at the façade. Research for this study identified Dominic Bernard Ferraro (1891-1987) as a San Anselmo-based building contractor. Research of historical newspapers and genealogical databases failed to produce additional information on Ferraro's body of work. He appears to have been a San Anselmo resident by 1929 and immigrated to the United States from Italy

(Ancestry 2024, Newspapers.com 2024, California Digital Newspaper Collection 2024, *San Anselmo Herald* 1929). By 1966, his contracting firm was known as Dominic Ferraro & Son (R.L. Polk 1966). Research of Wilson & Wedekind found the firm was active in San Rafael with commercial and residential projects in the 1950s. In 1957, the firm designed and built a building for Major Drive-In Cleaners in San Rafael (*Daily Independent Journal 1957*a). They also designed two model homes for a San Rafael development known as Harbor Estates in the same year (*Daily Independent Journal 1957*b). In 1958, the firm established an office in Lake Tahoe (*Daily Independent Journal* 1958).

Historical Evaluation

The property at 914 Irwin Street is recommended ineligible for listing in the CRHR and as a City of San Rafael Landmark, due to a lack of historical and architectural significance.

California Register of Historical Resources

Criterion 1 (Events)

The property at 914 Irwin Street is historically associated with development in downtown San Rafael between the late 1930s and 1950s, which was encouraged by the opening of the Golden Gate Bridge and increases in industry and settlement brought on by World War II. The existing building was built in two phases between 1952 and 1958 as an earlier residence that stood on the property by 1950, either entirely replaced or extensively modified for owner Angelo Turrini. Turrini and his family resided at the property in 1950, and thereafter, the property provided a commercial use for United Ambulance Service, as well as a second-story apartment. Research did not find documentation that indicates this property was demonstrably significant to San Rafael's historical development during the interwar years of the twentieth century. Although the property was part of a pattern of increased commercial development after World War II, the property is not known to have started or influenced downtown development in an individually significant way. Furthermore, no singular historical events of importance are known to have occurred at this property. Therefore, the property is recommended ineligible under Criterion 1.

Criterion 2 (Persons)

Research of available property ownership and occupancy data indicates the subject property was primarily associated with Angelo Turrini, a locally prominent business owner. Turrini established the United Ambulance Service and the United Telephone Answering Service in San Rafael ca. 1934 when he was in his early 20s. By 1950, he resided at 914 Irwin Street with his immediate family. Between 1952 and 1958, Turrini received permits to build the subject building, which was first built for commercial use and expanded with a second story that housed an apartment. Available building permit documentation indicates Turrini used 914 Irwin Street as a parking location for ambulances. Although Turrini was born and educated in San Rafael and went on to establish locally known ambulance and telephone answering businesses, with the former appearing better known, he does not appear to be a historically significant individual. Turrini appears to have been a successful entrepreneur in the region of San Rafael and Novato, but the impact of his commercial enterprise on local history has not been demonstrated to have had significant influence on a particular trend in history or field of endeavor. Therefore, the property is recommended ineligible under Criterion 2.

Criterion 3 (Architecture)

As documented herein, the existing building at 914 Irwin Street was built in 1952 and expanded in 1958 to reach its current height and massing. Building permit records indicate contractor D.B. Ferrero was responsible for the 1952 construction and builder Wilson & Wedekind was responsible for expansion of the 1952 one-story building to its two-story form that supported ground-floor commercial and second-story residential use. The building does not appear to have undergone major alteration between 1958 and ca. 2019. During that period, the building featured elements of mid-twentieth century Modern architecture, but was essentially a vernacular commercial building. The building's 1958 design appears to have consisted of two storefronts with a canopy, a false front with inset breeze block above, and a modest exterior of stucco and common wood structure elements. This design was not apparently significant or individually distinctive as an example of a type, period, or method of construction. Additionally, the design and construction professionals associated with the building's origination do not appear to rise to the level of masters. Recent ca. 2019-2020 alteration lends the building a modern (as is current) commercial aesthetic, while maintaining a similar footprint, massing, and primary façade composition of two storefronts with a canopy and false front above. Nonetheless, the building at 914 Irwin Street does not appear to rise to individual significance. Therefore, the property is recommended ineligible under Criterion 3.

Criterion 4 (Information Potential)
The built environment of the subject property is not likely to yield valuable information which will contribute to our understanding of human history because the property is not and never was the principal source of important information pertaining to significant events, people, architectural style, commercial or residential development. Therefore, 914 Irwin Street is recommended ineligible under Criterion 4.

City of San Rafael Landmarks
(a) Historical, Cultural Importance
The subject property is recommended ineligible under Landmark criterion (a). The property is not identified as having significant character, interest, or value to the heritage or cultural characteristics of San Rafael, the state, or nation as it is not associated with a significant trend or patterns of events in history. Additionally, the building has not been identified as having an association with the life of a historically significant person, or as the location of a significant historic event.

(b) Architectural, Engineering Importance
The subject property is recommended ineligible under Landmark criterion (b). Consisting of one building constructed in two phases between 1952 and 1958, with recent alterations in 2019 to 2020, the property has not identified architectural or engineering importance. Additionally, the building is not identified as the work of a designer or architect of merit.

(c) Geographic Importance
The subject property is recommended ineligible under Landmark criterion (c). The property has not been identified as part of a historical development that in the present day is embodied within a square, park, or distinctive area within the City. As demonstrated in the property development history of this study, development in the vicinity of 4th and Irwin Streets saw several iterations of residential and commercial development between the late nineteenth and mid-twentieth centuries, including multiple rounds of development on the land that comprises the subject property. Overall, the subject property is located in an area that lacks strong cohesion in terms of representing a specific pattern of historical development and architectural character.

(d) Archaeological Importance
The built environment of the subject property is recommended ineligible under Landmark criterion (d). The buildings and landscape features on the property do not possess archeological importance as they have not yielded information important to history or prehistory, as explained under CRHR Criterion 4 (Information Potential) above.

***B12. References (Continued from Page 2)**

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