ATTACHMENT E4

Appendix F

Noise Assessment Technical Report

NOISE ASSESSMENT TECHNICAL REPORT
for the
740-790 East Green Street Mixed-Use Project
Pasadena, California

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ADT	average daily traffic
CEQA	California Environmental Quality Act
City	City of Pasadena
CNEL	community noise equivalent level
dB	decibel
dBA	A-weighted decibel
FTA	Federal Transit Administration
HVAC	heating, ventilation, and air conditioning
L_{dn}	day–night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
L_{xx}	percentile-exceeded sound levels
N/A	not applicable
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model

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EXECUTIVE SUMMARY

The purpose of this noise assessment technical report is to evaluate the potential noise impacts associated with implementation of the proposed 740-790 East Green Street Mixed-Use Project (proposed Project) in the City of Pasadena (City) in Los Angeles County, California. The proposed Project would include 263 for-rent units (including 41 units designated as affordable housing), 16,234 square feet (sf) of commercial use (e.g., retail, cafe), lobby area, a leasing office, business center, fitness center, and pool lounge, as well as bicycle parking and mechanical equipment areas within the parking garage. The project also would include 27,180 sf of outdoor community open space (i.e. 4,110 sf publicly available pocket park, numerous breezeways, swimming pool courtyard, roof terraces), 600 sf of indoor community open space, and 11,703 sf of private open space (i.e. balconies), for a total of 39,483 sf of community open space. The proposed parking garage would provide 446 vehicle parking spaces and 49 bicycles spaces., and a 4,110-sf publicly accessible pocket park.

Adjacent land uses include single- and multi-family residential and commercial to the west across Oak Knoll Avenue; commercial and parking to the north across Green Street; multi-family residential and parking to the east across Hudson Avenue; and offices and a church immediately to the south, with multi-family and office uses beyond. This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

Operational Noise Impacts

Operation of the proposed Project would generate noise from added traffic generation on vicinity roads and mechanical noise from project-related equipment. Traffic noise levels were calculated based on existing and existing plus project average daily traffic (ADT). Noise levels did not significantly increase because of the project. Existing and existing plus project noise levels in the project vicinity are in the "normally acceptable" range of the Guidelines for Noise Compatible Land Use Table in the City's *Revised Noise Element of the General Plan: Existing and Future Conditions* (Noise Element) (City of Pasadena 2002). Thus, the traffic noise impact is considered less than significant. Mechanical noise from the heating, ventilation, and air conditioning (HVAC) system equipment was determined to be less than significant as well.

Temporary Construction Noise and Vibration Impacts

Construction of the proposed Project would result in the temporary increases in noise in the project vicinity. The City's Noise Ordinance provides a limit on equipment noise emission levels and hours of operation. It states that it is unlawful for construction equipment to emit noise levels exceeding 85

A-weighted decibels (dBA) when measured at 100 feet from the equipment (City of Pasadena 2008). The expected equipment list does not include equipment that would exceed this sound level at 100 feet. Construction hours are expected to be limited to those allowed under the Noise Ordinance. Based on the local regulations, the expected noise impact due to construction activities would be less than significant. An assessment of the construction noise levels based on expected equipment list and schedule was also conducted. Because of the proximity of noise-sensitive receptors to the project site, calculated construction noise levels were shown to be well above ambient noise levels. Based on this result, recommended construction practices are described.

Groundborne vibration levels at the nearest adjacent sensitive receptors were calculated. It was determined that on an operational basis, no vibration impacts would occur; however, groundborne vibration created during construction would cause potentially significant impacts without mitigation. A mitigation measure (MM-VIB-1) is provided which would reduce potential vibration impacts to a less than significant level.

1 INTRODUCTION

1.1 Purpose

This technical report evaluates noise impacts of the 740-790 East Green Street Mixed-Use Project (proposed Project), including construction and operation. Noise sources from future implementation of the Project include traffic, mechanical equipment, and short-term construction operations. The results of this analysis are intended for use in the CEQA environmental review document being prepared by the City.

1.2 Project Location and Description

The proposed Project site is located in the "Central District Transit Oriented Development Area" of the City of Pasadena and within the Playhouse District South/Green Street Precinct. The Project site includes Assessor Parcel Numbers 5734-025-024, -014, -026, -030, -029, and -027, which total 2.33 acres. The Project site is located within the CD-4 (Central District, Pasadena Playhouse) zoning district. The Project site is bounded by East Green Street to the north, South Hudson Avenue to the east, private property to the south, and South Oak Knoll Avenue to the west. Regional access to the Project site is via Interstate 210 (I-210), exiting South Lake Avenue. The nearest light rail stations are the Lake Metro Gold Line Station located at the I-210 approximately 0.5-mile to the north, and the Del Mar Metro Gold Line Station located approximately 0.8-mile to the west near Central Park.

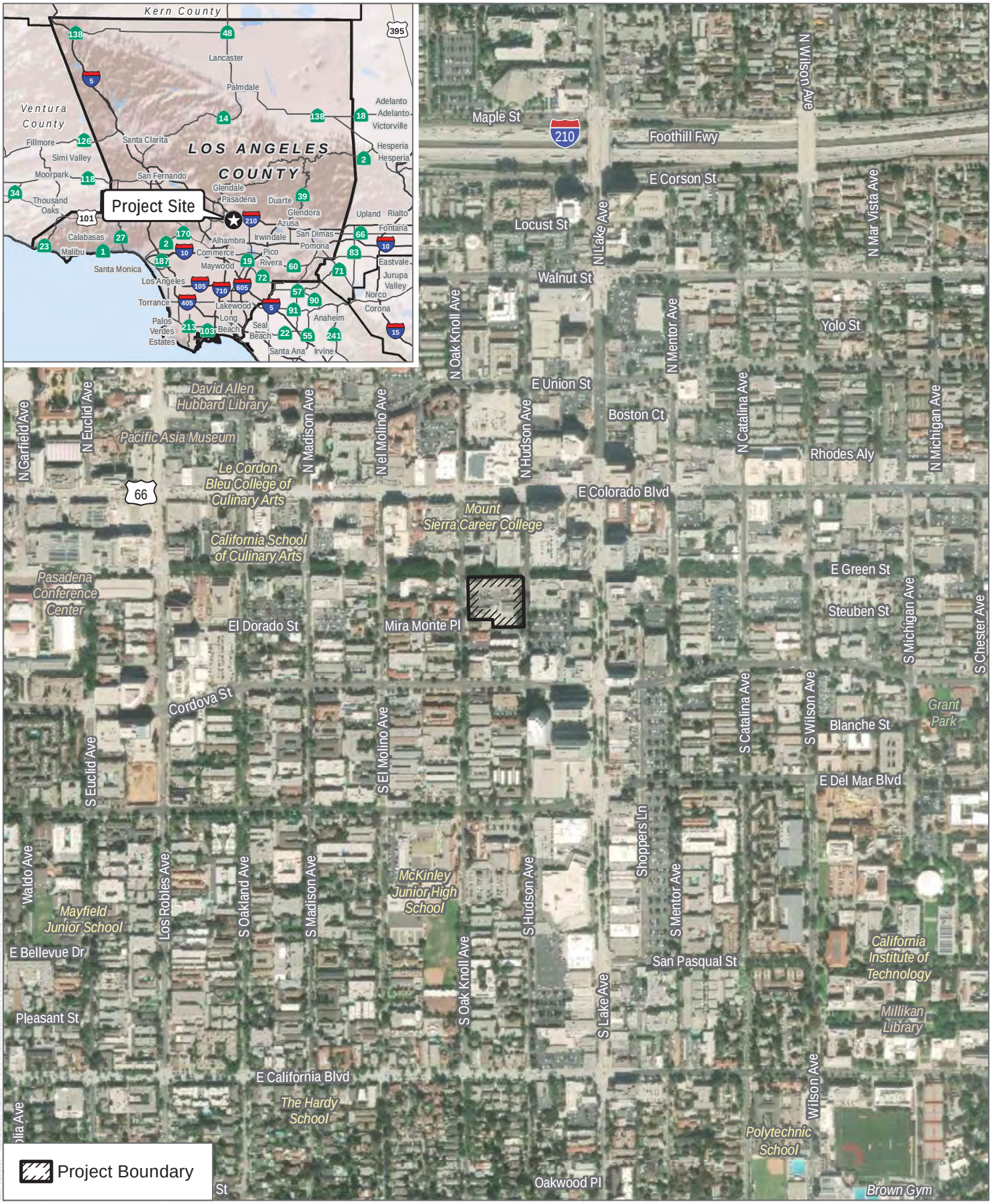
Noise-sensitive (single- and multi-family residential) uses are located to the west of the Project site, across South Oak Knoll Avenue. Multi-family residential uses are also located to the east across Hudson Avenue. A church is located immediately to the south, and multi-family residential uses are located to the south of an office building. Refer to Figure 1, Project Location.

The proposed Project involves the demolition of five commercial buildings in order to accommodate the development of a new 3- to 6-story, mixed-use building. The proposed Project includes 263 for-rent units (including 41 units designated as affordable housing), 16,234 square feet (sf) of commercial use (e.g., retail, cafe), lobby area, a leasing office, business center, fitness center, and pool lounge, as well as bicycle parking and mechanical equipment areas within the parking garage. The project also would include 27,180 sf of outdoor community open space (i.e. 4,110 sf publicly available pocket park, numerous breezeways, swimming pool courtyard, roof terraces), 600 sf of indoor community open space, and 11,703 sf of private open space (i.e. balconies), for a total of 39,483 sf of community open space. The proposed parking garage would provide 446 vehicle parking spaces and 49 bicycles spaces. Refer to Figure 2, Site Plan.

1.3 Noise Background and Terminology

Fundamentals of Environmental Noise

Vibrations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second, or hertz. The normal frequency range of hearing for most people extends from approximately 20 to 20,000 hertz. The human ear is more sensitive to middle and high frequencies, especially when the noise levels are quieter. As noise levels become louder, the human ear starts to hear the frequency spectrum more evenly. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting, called "A" weighting, is typically used for quieter noise levels, which de-emphasizes the low frequency components of the sound in a manner similar to the response of a human ear. This A-weighted sound level is called the "noise level" and is referenced in units of dBA.



SOURCE: Esri and DigitalGlobe, Open Street Map 2019

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0 112.5 225 Meters
1:9,600

FIGURE 1

Project Location

740-790 East Green Street Mixed-Use Project

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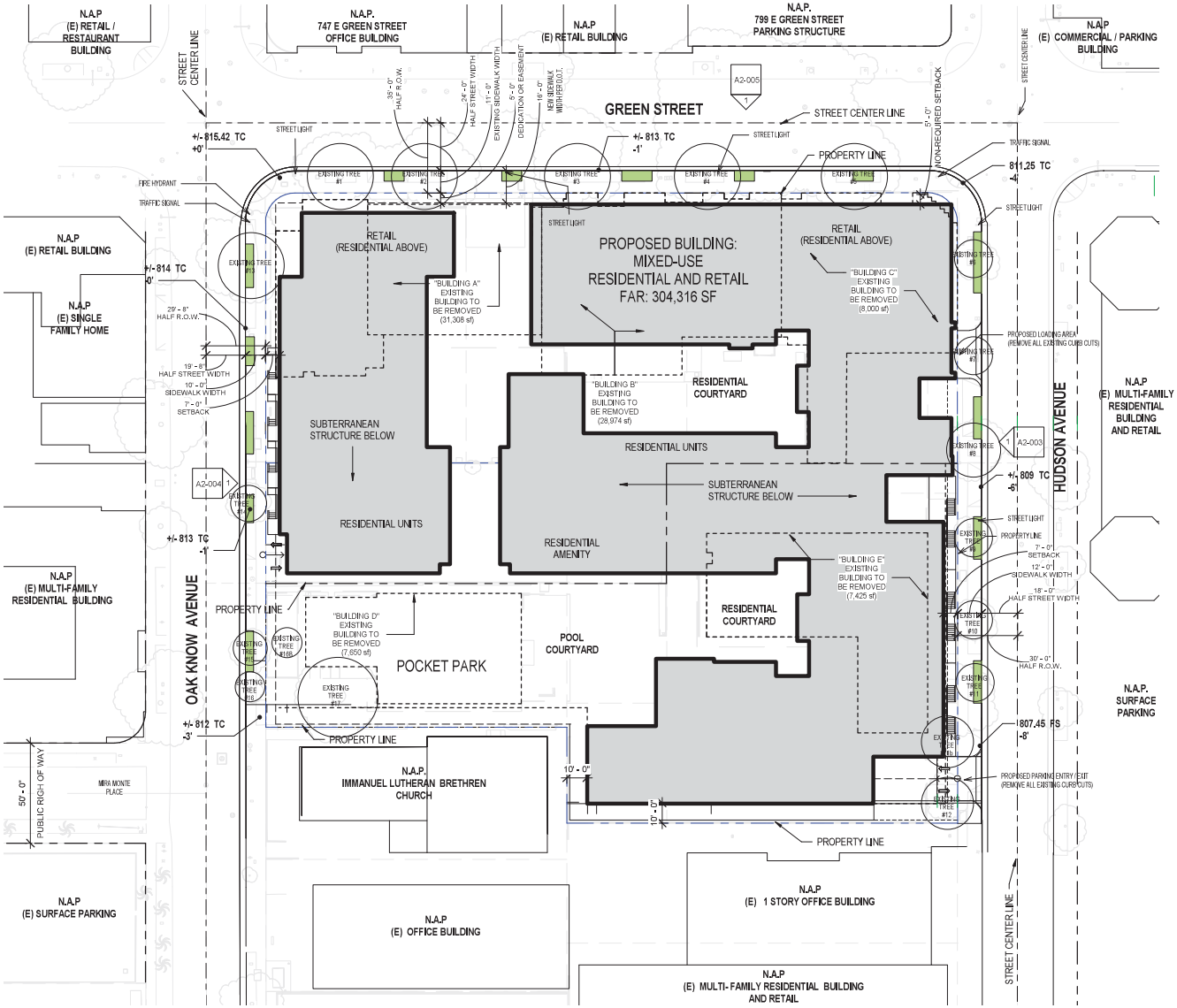

SOURCE: MVE + Partners

FIGURE 2

Project Site Plan

740-790 East Green Street Mixed-Use Project

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According to the California Department of Transportation, "it is generally accepted that the average healthy ear . . . can barely perceive a noise level change of 3 dB" (Caltrans 2013a). A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the average daily numbers of traffic on a road) would result in a barely perceptible change in sound level.

An individual's noise exposure occurs over a period of time. Being the product of many noise sources at various distances, all of which constitute a relatively stable background or ambient noise environment, community noise sources continuously vary. The background, or ambient, noise level gradually changes throughout a typical day, corresponding to distant noise sources, such as traffic, as well as changes in atmospheric conditions.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during nighttime hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. To evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed, wherein noise measurements are weighted, added, and averaged over a 24-hour period to reflect magnitude, duration, frequency, and time of occurrence.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (L_{xx}), the day–night sound level (L_{dn}), and the CNEL. The following are brief definitions of these measurements and other terminology used in this technical report:

- **Decibel (dB).** A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
- **A-weighted decibel (dBA).** An overall frequency-weighted sound level in dB that approximates the frequency response of the human ear.
- **Equivalent sound level (L_{eq}).** The constant level that, over a given time period, transmits the same amount of acoustic energy as the actual time-varying sound. L_{eq} are the basis for the L_{dn} and CNEL scales.
- **Maximum sound level (L_{max}).** The maximum sound level measured during the measurement period.

- **Minimum sound level (L_{min}).** The minimum sound level measured during the measurement period.
- **Percentile-exceeded sound level (L_{xx}).** The sound level exceeded x percent of a specific time period. For example, L_{10} is the sound level exceeded 10% of the time.
- **Day–night average sound level (L_{dn}).** The City has historically described community noise levels in terms of the L_{dn}. The L_{dn} is a 24-hour average A-weighted sound level with a 10 dB penalty added to the nighttime hours from 10:00 p.m. to 7:00 a.m. The 10 dB penalty is applied to account for increased noise sensitivity during the nighttime hours. In the City's Noise Element (City of Pasadena 2002), noise guidelines are described in terms of L_{dn} or CNEL (see definition below); resulting values from application of L_{dn} versus CNEL rarely differ by more than 1 dB; therefore, these two methods of describing average noise levels are often considered interchangeable.
- **Community noise equivalent level (CNEL).** The City's Noise Element (2002) describes community noise levels in terms of the CNEL. The CNEL is the average equivalent A-weighted sound level during a 24-hour day. CNEL accounts for the increased noise sensitivity during the evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) by adding 5 dB to the sound levels in the evening and 10 dB to the sound levels at night. CNEL and L_{dn} are often considered equivalent descriptors.

Exterior Noise Distance Attenuation

Noise sources are generally classified in two forms: (1) point sources, such as stationary equipment or a group of construction vehicles and equipment working within a spatially limited area at a given time; and (2) line sources, such as a roadway with a large number of pass-by sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically "hard" sites and at a rate of 7.5 dBA for each doubling of distance from source to receptor at acoustically "soft" sites. Sound generated by a line source (i.e., a roadway) typically attenuates at a rate of 3 dBA and 4.5 dBA per doubling distance for hard and soft sites, respectively. Sound levels can also be attenuated by constructed or natural barriers. For the purpose of a sound attenuation discussion, a "hard" or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt or concrete ground surfaces, as well as very hard-packed soils. An acoustically "soft" or absorptive site is characteristic of unpaved loose soil or vegetated ground.

Structural Noise Attenuation

When just breaking the line of site between a source and a receiver, approximately 5 dB of attenuation can be expected. Typical California Department of Transportation noise barriers

provide approximately 10 dB of noise reduction. An upper limit for sound reduction due to added wall barriers is typically approximately 20 dB (Caltrans 2009). Structures can also provide noise reduction by insulating interior spaces from outdoor noise. The outside-to-inside noise attenuation provided by typical structures in California ranges between 17 and 30 dBA with open and closed windows, respectively, as shown in Table 1.

Table 1
Outside-to-Inside Noise Attenuation (dBA)

Building Type	Open Windows	Closed Windowsa
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/offices/hotels	17	25
Theaters	17	25

Source: Transportation Research Board 2000.
Notes: dBA = A-weighted decibel
[a] As shown, structures with closed windows can attenuate exterior noise by 25 to 30 dBA.

Fundamentals of Vibration

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration diminishes (or "attenuates") fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily "sandy" soils) do not. Groundborne vibration information related to construction activities has been collected by the California Department of Transportation (Caltrans 2013b). Structural response to vibration is typically evaluated in terms of peak particle velocity (ppv), which is often used since it is related to the stresses that are experienced by the buildings. Information from Caltrans indicates that continuous vibrations with a peak particle velocity of approximately 0.1 inches per second begin to annoy people. Various general standards are contained in the International Standards Organization's Standards 3945, 4866, and 7626-1. Limits set by these standards indicate a low probability of structural damage occurring to common structures at a peak particle velocity of 2.0 inches per second. Older (and non-reinforced) masonry structures would have a limit of 0.75 to 1.0 inch per second (Caltrans 2013b). The Federal Transit Administration identifies a vibration damage threshold criterion of 0.20 inch per second for non-engineered timber and masonry buildings (i.e., fragile buildings), or 0.12 inch per second for buildings extremely susceptible to vibration (i.e., fragile historic buildings) (FTA 2018). For the purposes of this analysis, a damage threshold of 0.20 inches per second PPV is utilized.

1.4 Noise Regulations

1.4.1 Federal

Federal Transit Administration and Federal Railroad Administration Standards

Although the Federal Transit Administration (FTA) standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) are routinely used for projects evaluated by local jurisdictions. The FTA and Federal Railroad Administration have published guidelines for assessing the impacts of groundborne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects.

1.4.2 State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, declares that excessive noise is a serious hazard to the public health and welfare, and exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also identifies a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

Noise Insulation Standards

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for hotels, motels, dormitories, and multifamily residential buildings (24 CCR Part 2). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a multifamily residential building or structure is proposed to be located in an area with CNEL (or L_{dn}) of 60 dBA or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or L_{dn}) of 45 dBA (24 CCR Part 2).

The 2013 California Green Building Standards Code includes Section 5.507.4, Acoustical Control. This section dictates that, within 65 CNEL contours, a prescriptive or performance method of noise control must be used to assure interior levels are acceptable. The prescriptive method requires a composite sound transmission class rating of at least 50 or outside inside transmission class rating

of no less than 40, with exterior windows of a minimum sound transmission class of 40 or outside inside transmission class of 30 when within the 65 CNEL noise contour of a transportation source. When transportation noise contours are not available, if the building would be exposed to an hourly equivalent noise level of 65 dBA in any hour, the building may be presumed to fall within the 65 CNEL contour. The prescriptive or performance method applies to the same noise contour areas. However, the interior noise environment attributable to exterior sources has a higher threshold at 50 dBA 1 hour L_{eq} during any hour of operation (24 CCR Part 11).

The 2013 California Green Building Standards Code also addresses interior sound transmission. It states that "wall and floor-ceiling assemblies separating tenant spaces . . . shall have an STC [sound transmission class] of at least 40" (24 CCR Part 11).

1.4.3 City of Pasadena

The City established guidelines and standards in the City's Noise Element and in the Pasadena Municipal Code.

Pasadena General Plan

The City adopted a revised General Plan Noise Element in December 2002. The Noise Element includes objective, policies, and implementation details. Furthermore, the Noise Element includes Table 2 (City of Pasadena 2002). This table shows acceptable, normally acceptable, conditionally acceptable, and normally unacceptable CNEL ranges for various types of land uses. Refer to Table 2 for this noise compatibility guideline information.

Table 2
Guidelines for Noise Compatible Land Use

Community Noise Exposure L_{dn} or CNEL							
Land Use Category	*0–55*	*56–60*	*61–65*	*66–70*	*71–75*	*75–80*	*81–85*
Residential: low density single family, mobile homes							
Residential: multiple family and mixed commercial/residential use							
Transient lodging: motels, hotels							

Table 2
Guidelines for Noise Compatible Land Use

Community Noise Exposure L_{dn} or CNEL							
Land Use Category	*0–55*	*56–60*	*61–65*	*66–70*	*71–75*	*75–80*	*81–85*
Schools, libraries, churches, hospitals, nursing homes							
Playgrounds, neighborhood parks							
Office buildings, business commercial and professional							
Industrial, manufacturing, utilities, agriculture							

Source: City of Pasadena 2002.
Notes: CNEL = community noise equivalent level; L_{dn} = day–night sound level

Clearly Acceptable. Specified land use is satisfactory, based on the assumption that any buildings involved are of normal, conventional construction, without any special noise insulation requirements.

Normally Acceptable. New construction or development should be undertaken after an analysis of the noise reduction requirements is made, and needed insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Conditionally Acceptable. If new construction or development proceeds, an analysis of the noise reduction requirements should be made and needed noise insulation features included in the design.

Normally Unacceptable. New construction or development should generally not be undertaken, unless it can be demonstrated that an interior level of 45 dBA can be achieved.

The residential uses in the site vicinity are composed of single family and multifamily residential land uses. Based on these uses, the guidelines dictate "clearly acceptable" ranges of up to 60 dBA CNEL and 65 dBA CNEL for single-family uses and multifamily uses, respectively. Single family and multifamily residential levels up to 70 dBA CNEL are "normally acceptable."

Implementation measures are also included in the Noise Element. Relevant implementation measures are listed below (City of Pasadena 2002):

- **Measure 1:** The City will consult the guidelines for noise compatible land use shown on [Table 2 of this technical report] to guide the appropriateness of land uses relative to roadway noise. (Policies 1a, 2a)
- **Measure 2:** An acoustical study showing the ability to meet state noise insulation standards may be required for any development proposed in an area where the noise level . . . exceeds the "clearly acceptable level" as determined by the City and shown [in Table 2 of this technical report]. (Policies 1a, 2a)
- **Measure 3:** The City will enforce the California Noise Insulation Standards (Title 25 California Administration Code for future development and redevelopment) to ensure an acceptable interior noise level of 45 dBA L_{dn} in habitable rooms. (Policies 1a, 2a)

City of Pasadena Noise Ordinance

The Pasadena Municipal Code, Chapter 9.36, includes a series of restrictions relating to noise, based on specific activities, land uses and times of day (commonly referred to as the Noise Ordinance). The Noise Ordinance states that "it is unlawful for any person to create, cause, or make or continue to make or permit to be made or continued any noise or sound which exceeds the ambient noise level at the property line of any property by more than 5 decibels" (City of Pasadena 2008).

Section 9.36.060 addresses multifamily residential property. It is unlawful to produce sounds at a level greater than those shown in Table 3 when measured inside any dwelling unit on the same property or 20 feet from the outside of the source dwelling unit.

Table 3
Interior Noise Standard

Time Interval	Interior Noise Standard (dBA)
7:00 a.m. to 10:00 p.m.	60
10:00 p.m. to 7:00 a.m.	50

Source: City of Pasadena 2008.
Notes: dBA = A-weighted decibel

Noise impacts from construction and stationary sources are regulated through the City's Noise Ordinance. The Pasadena Municipal Code, Section 9.36.070, Construction Projects, limits typical construction hours within a residential district or within 500 feet of a residential district to certain hours depending on the day. On weekdays (Monday through Friday), allowable construction hours

are from 7:00 a.m. to 7:00 p.m. On Saturdays, construction can occur between 8:00 a.m. and 5:00 p.m. On Sundays and holidays, construction is prohibited.

In addition to construction hour restrictions, Pasadena Municipal Code, Section 9.36.080, further limits the noise level of powered construction equipment. It states that it is unlawful for construction equipment to emit noise levels exceeding 85 dBA when measured at 100 feet from the equipment.

The Pasadena Municipal Code also limits "any person to operate any machinery, equipment, pump fan, air condition apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient noise level by more than 5 dB" (City of Pasadena 2008).

2 EXISTING NOISE CONDITIONS

2.1 Surrounding Uses

The Project site is located at 740-790 East Green Street. The Project site is bounded by East Green Street to the north, South Hudson Avenue to the east, private property to the south, and South Oak Knoll Avenue to the west. Single- and multi-family residential uses are located to the west of the Project site, across South Oak Knoll Avenue. Multi-family residential uses are located to the east across Hudson Avenue. A church is located immediately to the south, and multi-family residential uses are located to the south of an office building.

A sound-level survey was conducted on September 17, 2019, to evaluate existing sound levels and assess potential Project noise impacts on the surrounding area. Short-term (1 hour or less) attended sound-level measurements were taken with a SoftdB Piccolo sound-level meter. This instrument is categorized as type 2, general use. The sound-measuring instrument used for the survey was set to the "slow" time response and the A-weighting scale for all noise measurements. To ensure accuracy, the calibration of the instrument was field checked before the measurements using a portable acoustical calibrator. The microphone height was 5 feet above the ground on a tripod, and the microphone was equipped with a windscreen.

Short-term sound levels were measured at four locations in the Project vicinity, as shown on Figure 3, Noise Measurement Locations. During the field measurements, physical observations of the predominant noise sources were noted. The major noise source in the Project area was vehicle traffic. Other secondary noise sounds included distant conversations, birds, distant construction noise, and other community noises. Appendix A includes field data sheets from the measurements conducted in the site vicinity. Table 4 provides the measured noise levels and concurrent traffic volumes for the pertinent roadway facilities. As shown in Table 4, measured noise levels varied from 65 dBA L_{eq} at ST2 to 71 dBA L_{eq} at ST4.

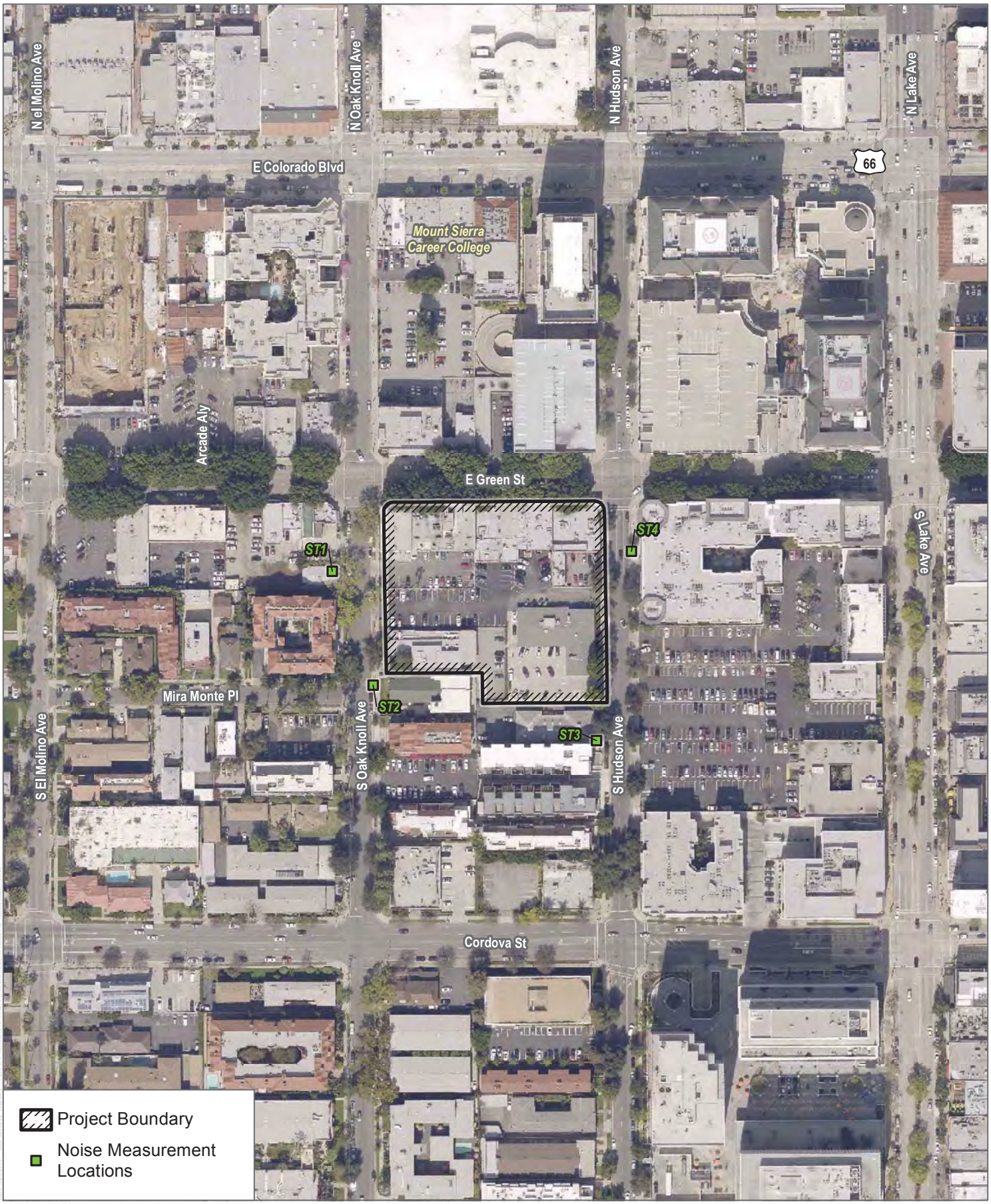
Table 4
Measured Average Traffic Sound Level and Manual Traffic Count Results

Site	Primary Noise Source	Date	Time	L_{eq}	Cars	MT[2]	HT[3]
ST1; 101 South Oak Knoll Avenue	Traffic on South Oak Knoll Avenue	9/17/19	9:49 to 10:04 a.m.	66 dBA	52	1	0
ST2; 128 South Oak Knoll Avenue	Traffic on South Oak Knoll Avenue		10:07 to 10:22 a.m.	65 dBA	44	1	0
ST3; 139-141 South Hudson Avenue	Traffic on South Hudson Avenue		10:32 to 10:47 a.m.	67 dBA	62	1	0

Table 4
Measured Average Traffic Sound Level and Manual Traffic Count Results

Site	Primary Noise Source	Date	Time	L_{eq}	Cars	MT[2]	HT[3]
ST4; 820 East Green Street	Traffic on South Hudson Avenue		10:51 to 11:06 a.m.	71 dBA	61	1	0

Source: Appendix A
Notes:
1 Equivalent Continuous Sound Level (Time-Average Sound Level)
2 Medium Trucks
3 Heavy Trucks
General Notes: Temperature 71 degrees, overcast, calm wind.



SOURCE: LAR-IAC 2014, Open Street Map 2019

DUDEK

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0 25 50 Meters
1:2,400

FIGURE 3

Noise Measurement Locations

740-790 East Green Street Mixed-Use Project

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3 SIGNIFICANCE CRITERIA

Based on the criteria identified in Appendix G of the CEQA Guidelines, the Project would have a significant impact on noise if it would result in:

1. The generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. The generation of excessive groundborne vibration or groundborne noise levels.
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the exposure of people residing or working in the project area to excessive noise levels.

With regards to Significance Criteria 3, the proposed Project site is located approximately 6.9 miles northwest of San Gabriel Airport, and approximately 12.8 miles southeast of Long Beach Airport. The proposed Project site is not located within the Airport Influence Areas of either of these airports, and thus would not expose people residing or working in the Project area to excessive noise levels from the airports. Similarly, no private airstrips exist in the Project vicinity. Therefore, this is considered to be no impact, and is not addressed further. The remaining significance criteria issues are addressed below.

3.1 Evaluation Criteria for Project

Based on the City's Noise Element (City of Pasadena 2002) and Municipal Code (City of Pasadena 2008), the following criteria are used in this assessment to evaluate the Project against the significance thresholds listed above:

- Project operation-generated noise levels causing an increase in ambient noise of greater than 3 dB where existing levels are above 65 dBA CNEL at multi-family residential uses in the Project vicinity is considered significant based on the Guidelines for Noise Compatible Land Use Table (City of Pasadena 2002).
- An increase of 5 dB in ambient noise levels at the property line because of on-site Project operational activities based on the Pasadena Municipal Code (City of Pasadena 2008).
- Operation of individual pieces of construction equipment that would generate noise in excess of 85 dBA at a distance of 100 feet based on the City's Noise Ordinance (City of Pasadena 2008).

- For demolition and construction, groundborne vibration levels greater than the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) construction vibration criterion, which includes 0.2 inch per second PPV for non-engineered timber and masonry buildings.

4 IMPACTS ANALYSIS

4.1 Transportation Noise Exposure

4.1.1 Roadway Noise

Increases in Ambient Noise Levels Due to Traffic

The primary noise-related effect that most non-industrial projects produce is a potential for off-site increases in traffic, which in turn can produce greater traffic noise exposure levels for noise-sensitive land uses located along such roadways. The noise levels associated with roadway traffic were determined based on the Project's Traffic Impact Analysis (City of Pasadena 2020) and using the Federal Highway Administration TNM 2.5 Traffic Noise Model version 2.5 (FHWA 2004). TNM 2.5 was employed to compare the existing traffic noise level to the resulting traffic noise level from the addition of Project generated traffic. Refer to Appendix B for complete traffic modelling inputs and results.

The results of the traffic modeling for the existing and existing plus Project scenarios are summarized in Table 5. As shown, the Project-related traffic would result in a noise level increase of 1 dB CNEL or less along the studied roads in the vicinity of the Project site. Increases would be below the significance threshold of 3 dB. Additionally, the proposed Project would not result in an exceedance of the City's 65 dBA CNEL noise threshold. Therefore, traffic related to the proposed Project would not substantially increase the existing noise levels in the Project vicinity, and operational traffic-related noise impacts would be **less than significant**. No mitigation is required.

Table 5
Traffic Noise (Existing and Existing-with-Project)

Modeled Receptor	Existing Noise Level (dBA CNEL)	Existing plus Project Noise Level (dBA CNEL	Noise Level Increase (dB)
ST1	68	69	1
ST2	68	69	1
ST3	68	69	1
ST4	70	70	0

Source: Appendix B

4.2 Operational Noise Generation

4.2.1 Impact Analysis

The implementation of the Project would result in changes to existing noise levels in the Project vicinity by developing new stationary sources of noise. Operational noise sources for the Project include HVAC equipment.

Mechanical equipment noise was analyzed based on common residential HVAC units and distances to the property lines. Standard acoustic distance calculations were performed to determine the attenuated noise level at the property line location for each cluster of mechanical noise sources.

Based on the most recent plan set provided by the applicant, HVAC equipment (i.e., the condenser units) would be mounted on the rooftops. Exact specifications for the equipment are not yet available, but locations have been specified in the roof plans. General assumptions regarding the HVAC are used to analyze the potential for operational noise impacts from the HVAC equipment. Based on noise emission data from a representative residential condenser model line (Trane 4DCY4024 through 4DCY4060), the sound power levels would range from 68 to 71 dBA (Trane 2013).

Heating, Ventilation, and Air Conditioning Noise

The roof plans indicate that a total of 26 HVAC units would be placed on the roof of the northwestern wing, 19 HVAC units would be placed on the roof of the northern wing, 76 units would be placed on the roof of the central wing, and 19 units would be placed on the roof of the southern wing. The elevations of the rooftop HVAC equipment would range from approximately 30 feet to 70 feet above ground level, and the plans indicate 4-foot high parapets around the roof. The parapets would provide not only visual screening, but would also act as a noise barrier. A spreadsheet is provided in Appendix C with results of calculations for the HVAC noise at the western and eastern property lines, where the closest off-site residences are located. Calculations were also performed at the property lines to the south, adjacent to a church and residences. The worksheet sums the noise contribution from each of the individual HVAC units, then applies attenuation for distance and for the presence of the roof parapets. The results of the HVAC noise calculations are summarized in Table 6. The maximum noise level for all HVAC units in operation, along the northwestern side of the Project boundary, was calculated to be 37 dBA L_{eq}. Along the southern side of the Project site, the noise level was calculated to be 30 dBA $L_{eq.}$ The measured existing ambient levels are approximately 30 dB or more above the calculated noise levels due to

the mechanical equipment. Therefore, operational noise levels from the expected mechanical equipment for the Project would be less than significant.

Table 6
Summary of Mechanical Equipment Operational Noise Results

Equipment	Noise Level at Property Boundary	
	Property Line	*Average Noise Level (dBA L_{eq})*
HVAC	North, West Side	33
HVAC	North, East Side	37
HVAC	South, West Side	30
HVAC	South, East Side	30
HVAC	East, North Side	30
HVAC	East, Mid-Block	35
HVAC	West, North Side	35
HVAC	West, Mid-Block	33

Source: Appendix C

4.3 Construction Noise

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour-to-hour and day-to-day, depending on the equipment in use, the operations being performed, and the distance between the source and receptor.

Construction of the proposed Project would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction, distance between the noise source and receiver, and intervening structures. This section discusses the calculated construction noise levels at nearby sensitive receptors (i.e., residences).

Residences exist to the east and west of the Project site (across Hudson Avenue and Oak Knoll Avenue, respectively); additionally, a church is located immediately south of the Project site, and residences are also located to the south, south of an office building. Despite these noise-sensitive land uses in the immediate proximity of the Project site, it is understood that the City examines construction noise impacts at 100 feet to compare these noise levels to the 85 dBA limitation in the Noise Ordinance exemption.

4.3.1 Construction – Equipment Data and Description

Equipment operates in alternating cycles of full power and low power, producing noise levels less than the maximum level. The typical noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 7.

Table 7
Typical Construction Equipment Noise Emission Levels and Usage Factors

Equipment Description	Impact Device?	Acoustical Use Factor (%)	L_{max} @ 50 Feet (dBA, Slow)
All other equipment > 5 horsepower	No	50	85
Auger drill rig	No	20	85
Backhoe	No	40	80
Bar bender	No	20	80
Compressor (air)	No	40	80
Concrete pump truck	No	20	82
Crane	No	16	85
Dozer	No	40	85
Dump truck	No	40	84
Excavator	No	40	85
Flatbed truck	No	40	84
Front-end loader	No	40	80
Generator	No	50	82
Generator (<25 kilovolt-amps)	No	50	70
Hydra break ram	Yes	10	90
Man lift	No	20	85
Pickup truck	No	40	55
Pneumatic tools	No	50	85
Pumps	No	50	77
Roller	No	20	85
Sand blasting (single nozzle)	No	20	85
Scraper	No	40	85
Tractor	No	40	84
Welder/torch	No	40	73

Source: FHWA 2006.
Notes: dBA = A-weighted decibel; L_{max} = maximum sound level

As shown in Table 7, a backhoe has a maximum sound level of 80 dBA at a distance of 50 feet; with outdoor attenuation rates, this level would be reduced to 74 dBA at 100 feet, and 68 dBA at 200 feet.

Comparing the reported levels in Table 7 with the City's 85 dBA at 100 feet criterion reveals the following equipment with noise levels that could violate the Pasadena Municipal Code: impact pile driver, shears on a backhoe, single nozzle sand blasting, and vibratory pile driver. Because none of these pieces of equipment are expected to be employed for construction of the Project, the Project is anticipated to be compliant with the City's Noise Ordinance.

4.3.2 Construction Noise Assessment – On-Site

A noise analysis of on-site construction noise was performed using the Roadway Construction Noise Model (RCNM), developed by the Federal Highway Administration (FHWA 2008). Input variables for RCNM consist of the receiver/land use types, the equipment type (e.g., backhoe, crane, truck), the number of equipment pieces, the duty cycle for each piece of equipment (i.e., percentage of each hour or reference period that the equipment typically works), and the distance from the equipment to the receiver. Table 8 provides a summary of the assumed construction equipment used for the different phases of construction based on the air quality analysis (Dudek 2020).

Table 8
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Average Daily Haul Truck Trips*[1]	*Equipment Type*	*Quantity*	*Usage Hours*
Demolition	16	0	25	Concrete/Industrial Saws	1	8
				Excavators	3	8
				Rubber Tired Dozers	2	8
Grading	20	0	78	Excavators	2	8
				Graders	1	8
				Rubber Tired Dozers	1	8
				Scrapers	2	8
				Tractors/Loaders/Backhoes	2	8
Trenching	4	0	0	Trenchers	1	8
Building construction	288	68	0	Cranes	1	7
				Forklifts	3	8
				Generator Sets	1	8
				Tractors/Loaders/Backhoes	3	8
				Welders	1	8
Architectural Coating	16	0	0	Air Compressors	1	6
Paving	58	0	0	Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8

Source: Dudek 2020

[1] Average Daily Haul Truck Trips derived by dividing the number of Total Haul Truck Trips (by construction phase) from the Air Quality section by the phase duration/number of working days.

With the construction equipment noise sources identified above, a construction noise assessment was performed using RCNM. Refer to Appendix D for the inputs used in the RCNM, as well as results.

Noise-sensitive land uses exist to the south, east and west of the Project site. The closest noise-sensitive receiver consists of a church that is as near as 10 feet from the Project site, located immediately south of the Project site. Multi-family residences exist to the south, west, and east, approximately 60 feet from the Project site. Additionally, single-family residences exist to the west, approximately 60 feet from the Project site. These nearby land uses (and the nearest source-receiver distances) were used to assess worst-case construction noise levels.

However, the above distance assumptions would not be representative of more typical construction noise, because in general the construction activities would not take place either at the nearest or at the farthest portions of the Project site, but somewhere in between. Thus, in order to provide information on typical construction noise levels, the distance from the nearest receivers to the Project's "acoustic center" was also analyzed. The acoustic center represents the idealized point from which the energy sum of all construction activity noise, near and far, would be centered. The acoustic center is derived by taking the square root of the product of the nearest and the farthest distances. For example, the acoustic center for the nearest noise-sensitive land use (the church to the south) was found to be approximately 60 feet. Given the overall size of the Project site, and the relatively equal distribution of proposed development across the property, noise levels derived from the acoustic center of construction activity would provide a better representation of average noise level exposure across the entire construction process for a given off-site receiver, than using the minimum distance worst-case method.

Finally, the noise ordinance contains a construction noise restriction which pertains specifically to sound levels at 100 feet from the construction noise sources; according to the noise ordinance, construction equipment must not produce noise that exceeds 85 dBA at 100 feet.

The results of the construction noise analysis using RCNM are summarized in Table 9 (Appendix D includes the associated input and output files). As shown, the highest noise levels from construction are predicted to range from approximately 88 dBA L_{eq} (during the architectural coating phase) to 95 dBA L_{eq} (during the demolition phase) at the nearest adjacent noise-sensitive receiver (i.e., church located 10 feet from the closest point of construction). These noise levels would be substantially higher than ambient noise levels in the area, and would be considered annoying or disruptive for daily activities at the closest off-site receptor (i.e., nineteen feet from the northern property line).

At the nearest residences, located approximately 60 feet away, the highest noise levels would range from approximately 72 dBA L_{eq} (during architectural coating) to 83 dBA L_{eq} (during demolition and grading). These noise levels are considered to be a peak exposure, applicable not more than 10-15% of the total construction period, only while the construction activity is taking place at the nearest boundaries of the respective off-site receivers. The typical construction noise levels (for construction taking place at a range of locations on-site and modeled at the acoustical center for analysis purposes) range from approximately 72 dBA L_{eq} (during architectural coating) to approximately 86 dBA L_{eq} (during grading) at the church to the south, and from 64 dBA L_{eq} (during architectural coating) to 78 dBA L_{eq} (during grading) at the residences, and are also shown in Table 9. These typical construction noise levels would still be considerably greater than ambient noise levels in the Project vicinity, likely resulting in annoyance.

Construction noise levels at 100 feet were also evaluated, and are shown in the bottom row of Table 9. These values are compared against the City's 85 dBA at 100 feet criterion for construction equipment noise. As shown in Table 9, the estimated construction noise level would remain below the 85 dBA criterion, resulting in a less than significant construction noise impact.

Table 9
Construction Noise Levels at Noise-Sensitive Uses

Off-site Receptor Location	Noise Sensitive Land Use	Existing Ambient Noise Level	Distance from Construction Activity to Noise Receptor (feet)	Estimated Construction Noise Levels (dBA L_{eq})					
				Demolition	*Grading*	*Building Construction*	*Paving*	*Architectural Coating*	*Trenching*
South of the Project Site	Church	66	Nearest Construction Activity /Receiver Distance (10')	95	94	90	90	88	91
			Typical Construction Activity /Receiver Distance (60')	84	86	83	80	72	76
West of the Project Site	Single-family and multi-family residences	65	Nearest Construction Activity /Receiver Distance (60')	83	83	79	78	72	76
			Typical Construction Activity /Receiver Distance (150')	76	78	75	72	64	68
South of the Project Site	Multi-family residences	67	Nearest Construction Activity /Receiver Distance (60')	83	83	79	78	72	76
			Typical Construction Activity /Receiver Distance (150')	76	78	75	72	64	68
East of the Project Site	Multi-family residences	71	Nearest Construction Activity /Receiver Distance (60')	83	83	79	78	72	76
			Typical Construction Activity /Receiver Distance (150')	76	78	75	72	64	68
100-Foot Reference Distance	N/A	N/A	100'	79	79	76	74	68	71

Source: Appendix D
Note: Noise levels from construction activities do not take into account attenuation provided by intervening structures.
L_{eq} dBA: Energy-averaged noise level

The Project would be required to comply with the City's Noise Ordinance by adhering to the following construction schedule (City of Pasadena 2008):

> Construction activity shall be consistent with City noise ordinance requirements, which limits construction activities to the hours between 7:00 a.m. and 7:00 p.m., on weekdays. Saturday construction can occur between 8:00 a.m. and 5:00 p.m. Construction on Sundays and holidays is prohibited.

Noise from construction activities may be annoying because levels would generally be well above typical existing ambient noise levels. However, construction noise would be temporary, and restricting construction activities to the daytime period will avoid disruption of evening relaxation and overnight sleep periods.

4.3.3 Construction Noise Reduction Techniques

Based on the construction equipment list for the proposed Project, the equipment meets the City's construction noise requirement. With adherence to the limited construction hours, the Project would result in a less-than-significant short-term construction noise impact based on the City's Noise Ordinance. However, due to the close proximity of noise-sensitive receptors, the following recommendations are provided to minimize the potential for noise-related annoyance during construction.

Recommended Construction Techniques to Minimize the Potential for Construction Noise Disruption

- Construction hours, allowable workdays, and the phone number of the job superintendent should be clearly posted at all construction entrances to allow surrounding property owners/users to contact the job superintendent if necessary. In the event the City receives a complaint, appropriate corrective actions should be implemented, and a report of the action should be provided to the reporting party.
- The Project contractor should, to the extent feasible, schedule construction activities to avoid the simultaneous operation of construction equipment to minimize noise levels resulting from operating several pieces of high noise level emitting equipment.
- All construction equipment, fixed or mobile, should be equipped with properly operating and maintained mufflers. Enforcement shall be accomplished by random field inspections by applicant personnel during construction activities to the satisfaction of the City's Building & Safety Division.

- Construction noise reduction methods such as shutting off idling equipment, constructing a temporary noise barrier, maximizing the distance between construction equipment staging areas and residences and the seminary, and using electric air compressors and similar power tools rather than diesel equipment should be used where feasible.
- During construction, stationary construction equipment should be placed so emitted noise is directed away or shielded from noise-sensitive receptors, including residences.
- During construction, stockpiling and vehicle staging areas should be located as far as practical from noise-sensitive receptors, including adjacent residences.
- If equipment that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account) is being used, portable noise barriers should be installed that are demonstrated to be adequate to reduce noise levels at receptor locations below hearing damage thresholds. This may include erection of temporary plywood barriers to create a break in the line of sight or erection of a heavy vinyl tent around the noise source.

Significance After Mitigation

Mitigation is not required because impacts would be less than significant without mitigation, based on the interpretation of the construction noise regulations contained in the municipal code. However, the recommended construction techniques are provided to minimize construction-related noise levels, since noise-sensitive receptors are in proximity of the Project site.

4.3.4 Off-Site Construction Noise Assessment

The proposed Project would result in temporary increases in traffic from worker vehicles and project-related truck trips. The increase in vehicles along local arterials would correspond with an incremental increase in traffic noise. Based on the air quality analysis prepared for the Project (Dudek 2020), the Project would result in as many as 78 daily one-way truck trips (up to 39 round trips) and 288 daily one-way worker trips (144 round trips) during the various construction phases, as shown in Table 8. It should be noted that the highest numbers of truck trips and worker trips would not occur during the same construction phases.

In order to assess potential noise impacts from construction-related traffic, the FHWA's TNM noise model (FHWA 2004) was utilized. Because the nearest City-designated truck routes are Del Mar Boulevard and Lake Avenue, Project-related trucks would likely access the Project site via either (or both) of these streets, then using either Green Street, Oak Knoll Avenue or Hudson Avenue. As a conservative measure, it was assumed that Project-related trips could use all of these streets; For each of the two phases for which haul truck trips and worker trips would be at their

respective peaks (grading and building construction, respectively), Project-related autos and truck trips were added to all of the adjacent modeled roadways. The resulting noise levels and resulting Project-related increases are summarized in Table 10. As shown in Table 10, temporary traffic noise increases would be 2 decibels (dB) or less. Although individual truck pass-bys would be audible, the incremental increase in hourly average (and 24-hour CNEL[1]) vehicle noise would not be an audible (as detailed in Section 1.3, a change in noise level of 3 dB is considered to be barely audible). Therefore, off-site construction noise impacts would be less than significant.

Table 10
Construction-Related Traffic Noise

Modeled Receptor	Existing Noise Level (Peak-Hour L_{eq} dBA)	Existing plus Construction Traffic Noise Level (Peak-Hour L_{eq} dBA)	Noise Level Increase (dB)
	Grading Phase		
ST1	68	69	1
ST2	68	69	1
ST3	68	69	1
ST4	70	70	0
Building Construction Phase			
ST1	68	70	2
ST2	68	70	2
ST3	68	70	2
ST4	70	72	2

Source: Appendix B

4.4 Groundborne Vibration

4.4.1 Impact Analysis

Operation of the Project does not include any heavy rotating equipment. Thus, significant groundborne vibration is not expected during the operational phase of the Project.

Construction activities that might expose persons to excessive ground-borne vibration or ground-borne noise could cause a potentially significant impact. Ground-borne vibration information related to construction activities has been collected by the California Department of Transportation (Caltrans 2013b). Information from Caltrans indicates that continuous vibrations with a peak particle velocity (PPV) of approximately 0.1 inches per second begin to annoy people. The heavier pieces of construction equipment, such as bulldozers, would have peak particle velocities of

[1] The 24-hour CNEL traffic noise levels and the peak-hour L_{eq} traffic noise levels are effectively equivalent to one another.

approximately 0.089 inches per second PPV or less at a distance of 25 feet. Lighter construction equipment, such as a small bulldozer, would have peak particle velocities of approximately 0.003 inches per second PPV (FTA 2018). The construction activity would not include blasting or pile driving, which are the primary sources of high vibration levels associated with construction.

Ground-borne vibration is typically attenuated over short distances. The distance from the nearest vibration-sensitive receivers (the church to the south of the Project site on the Project's west side, and an office building to the south of the Project site on the Project's east side) to where demolition / construction activity would be occurring on the Project site is approximately 10 feet. At a distance of 10 feet, and with the anticipated construction equipment, the peak particle velocity vibration level would be approximately 0.352 inches per second PPV. These vibration levels would exceed the vibration threshold of potential annoyance of 0.1 inches per second PPV at a distance of 10 feet. This is considered to be a potentially significant impact without mitigation. At a distance of 25 feet, the vibration levels would be less than the threshold of potential annoyance of 0.1 inches per second. With mitigation (MM-VIB-1), potential construction vibration impacts would be less than significant.

The major concern with regards to construction vibration is related to building damage, which could occur at vibration levels of 0.2 inches per second or greater for non-engineered timber and masonry buildings. As discussed above, the anticipated vibration levels associated with on-site Project construction using heavy construction equipment would be approximately 0.352 inches per second PPV at the nearest structures, which is above the threshold of 0.2 inches per second for building damage. Therefore, potential vibration impacts would be potentially significant without mitigation. At a distance of 15 feet or more, the anticipated vibration levels would be less than 0.2 inches per second PPV. With mitigation (MM-VIB-1), potential construction vibration impacts would be less than significant.

5 MITIGATION MEASURES

Potential impacts related to Project-related transportation noise, on-site operational noise, on-site construction noise and off-site construction noise were determined to be less than significant, and no mitigation measures would be required. Although Project-related groundborne vibration during operation would be negligible, Project-related groundborne vibration impacts during construction would occur, unless mitigated. The following mitigation measure is intended to mitigate potentially significanct groundborne vibration impacts during to less than significant levels.

5.1 Groundborne Vibration

MM-VIB-1. During Project construction, the use of heavy construction equipment shall be minimized to the extent practicable within 25 feet of the nearest off-site buildings along the south side of the Project site. Within 15 feet of the nearest off-site structures, lighter construction equipment (e.g. small bulldozers rather than large bulldozers) shall be utilized during earthwork activities.

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6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

On-site construction activities would generate groundborne vibration levels in excess of significance thresholds. The implementation of mitigation measure MM-VIB-1 would ensure that the use of construction equipment with the potential to generate higher vibration levels is minimized in proximity to the southerly side of the Project site. Through the use of lighter construction equipment, groundborne vibration would be reduced to a less than significant level.

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7 REFERENCES

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24 CCR Part 2. California Building Code.

24 CCR Part 11. 2013 California Green Building Standards Code (CALGreen). Sacramento, California: California Building Standards Commission. July 2013. ISBN 978-1-60983-462-3. http://codes.iccsafe.org/app/book/toc/2015/CALIFORNIA/2013%20CALIFORNIA%20GREEN%20BUILDING%20STANDARDS,%20SUPPLEMENT%20JULY%202015/index.html.

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APPENDIX A

Field Noise Measurement Data

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT 740-790 GREEN ST. PROJECT # 12101
SITE ID
SITE ADDRESS OBSERVER(S) PETE VITAR
START DATE 9/17/19 END DATE 9/17/19
START TIME END TIME

METEOROLOGICAL CONDITIONS
TEMP 71 F HUMIDITY 55 % R.H. WIND (CALM) LIGHT MODERATE
WINDSPD MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT PICCOLO SLM-3 TYPE 1 2 SERIAL # 14031004
CALIBRATOR BSWA CA 114 SERIAL # 480151
CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

	REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST-1)	47-48	9:49	10:04	66.3	79.4	54.3				

COMMENTS
READING TAKEN IN FRONT OF 101 S. OAK KNOLL AVE. (RESIDENTIAL); PRIMARY NOISE SOURCE IS TRAFFIC ON S. OAK KNOLL AVE; SECONDARY IS TRAFFIC ON GREEN ST. TO THE NORTH

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: AS PKWY DIST. TO RDWY C/L OR (EOP) 12'
TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB
	AUTOS	52			
	MED TRKS	1			
	HVY TRKS	0			
	BUSES	0			
	MOTRCLS	0			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2)	MIN	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 25 MPH

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS / YELLING) DIST. TRAFFIC (1ST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: PASSING CONVERSATIONS;

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 5727; 5728; 5729; 5730; 5731; 5732
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT 740-790 GREEN ST. PROJECT # 12101
SITE ID
SITE ADDRESS OBSERVER(S) PETE VITAR
START DATE 9/17/19 END DATE 9/17/19
START TIME END TIME

METEOROLOGICAL CONDITIONS
TEMP 72 F HUMIDITY 51 % R.H. WIND (CALM) LIGHT MODERATE
WINDSPD MPH DIR. N NE E SE S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT PICCOLO SLM-3 TYPE 1 2 SERIAL # 14031004
CALIBRATOR B&W CA 114 SERIAL # 480151
CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST-2) 49-50	10:07	10:22	64.6	81.3	52.7				

COMMENTS
READING TAKEN IN FRONT OF 128 S. OAK KNOLL AVE (CHURCH); PRIMARY NOISE SOURCE IS TRAFFIC ON S. OAK KNOLL AVE; SECONDARY IS TRAFFIC ON GREEN ST. TO THE NORTH;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR (EOP): 22'
TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
AUTOS	44			
MED TRKS	1			
HVY TRKS	0			
BUSES	0			
MOTRCLS	0			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 25 MPH

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS) / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH
TERRAIN HARD SOFT MIXED FLAT OTHER:
PHOTOS 5734; 5735; 5736; 5737; 5738; 5739
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT 740-790 GREEN ST. PROJECT # 12101
SITE ID
SITE ADDRESS OBSERVER(S) PETE VITAR
START DATE 9/17/19 END DATE 9/17/19
START TIME END TIME

METEOROLOGICAL CONDITIONS
TEMP 72 F HUMIDITY 51 % R.H. WIND (CALM) LIGHT MODERATE
WINDSPD MPH DIR. N NE E SE S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT PICCOLO SLM-3 TYPE 1 2 SERIAL # 14037004
CALIBRATOR BSWA CA 114 SERIAL # 480151
CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

	REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST-3)	51-52	10:32	10:47	66.7	77.6	57.2				

COMMENTS
READING TAKEN IN FRONT OF 139-141 S. HUDSON AVE (RESIDENTIAL);
PRIMARY NOISE SOURCE IS TRAFFIC ON S. HUDSON AVE;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR (EOP): 15'

TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1)

DIRECTION	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB
AUTOS	62			
MED TRKS	1			
HVY TRKS	0			
BUSES	0			
MOTRCLS	0			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2) — MIN

NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: CONSISTANT NOISE FROM WINDOW AIR CONDITIONING UNITS AT 133 S. HUDSON AVE (OFFICES); OCCASIONAL CONSTRUCTION NOISE (JACKHAMMER) ON CORDOVA ST & LAKE AVE (SOUTH EAST OF ME)

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 5741; 5742; 5743; 5744; 5745; 5746
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT 740-790 GREEN ST. PROJECT # 12101
SITE ID
SITE ADDRESS
START DATE 9/17/19 END DATE 9/17/19
START TIME END TIME
OBSERVER(S) PETE VITAR

METEOROLOGICAL CONDITIONS
TEMP 77 F HUMIDITY 42 % R.H. WIND (CALM) LIGHT MODERATE
WINDSPD MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT PICCOLO SLM-3 TYPE 1 2 SERIAL # 14037004
CALIBRATOR B&WA CA 114 SERIAL # 480151
CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

	REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST-4)	53-54	10:51	11:06	71.1	86.6	59.5				

COMMENTS
READING TAKEN [illegible] ON WEST SIDE OF 820 E. GREEN ST. (RESIDENTIAL/COMMERCIAL MIX-USE) ALONG S. HUDSON AVE; PRIMARY NOISE SOURCE IS TRAFFIC ON S. HUDSON AVE; SECONDARY IS TRAFFIC ON E. GREEN ST TO THE NORTH;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR (EOP) 5'
TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
	AUTOS	61			
	MED TRKS	1			
	HVY TRKS	1			
	BUSES	0			
	MOTRCLS	0			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2) ___ MIN

NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: PASSING CONVERSATIONS

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 5748; 5749; 5750; 5751; 5752; 5753;
OTHER COMMENTS / SKETCH

APPENDIX B

Traffic Noise Model (TNM 2.5) Data Sheets

Dudek 1 May 2020
MG TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Existing

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

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
East Green Street w of S Oak Knoll Ave	50.0	point1	1	1,086.0	2,370.6	800.00				Average	
		point2	2	1,592.8	2,365.3	800.00					
Mira Monte Place - w of S. Oak Knoll Av	28.0	point31	31	1,080.8	1,964.4	800.00				Average	
		point7	7	1,596.3	1,967.8	800.00					
Cordova Street - w. of S. Oak Knoll Ave	60.0	point33	33	1,077.3	1,514.8	800.00				Average	
		point9	9	1,601.5	1,520.0	800.00					
South Oak Knoll Ave - s. of Cordova St	38.0	point35	35	1,605.0	1,431.5	800.00				Average	
		point14	14	1,603.0	1,517.3	800.00					
South Hudson Ave - s. of Cordova St	30.0	point37	37	2,045.9	1,435.0	800.00				Average	
		point19	19	2,041.0	1,525.6	800.00					
South Lake Ave - s. of Cordova St	45.0	point39	39	2,528.4	1,436.7	800.00				Average	
		point23	23	2,526.4	1,517.0	800.00					
South Oak Knoll Ave - n. of E. Green St	38.0	point40	40	1,588.0	2,370.5	800.00				Average	
		point17	17	1,589.4	2,776.7	800.00					
South Hudson Ave - n. of E. Green St	30.0	point41	41	2,028.4	2,373.1	800.00				Average	
		point21	21	2,033.7	2,766.3	800.00					
South Lake Ave - n. of E. Green St	45.0	point42	42	2,528.4	2,375.8	800.00				Average	
		point25	25	2,526.7	2,776.7	800.00					
South Oak Knoll Ave - s. of E. Green St	10.0	point43	43	1,602.7	1,522.6	800.00				Average	
		point15	15	1,599.8	1,971.3	800.00				Average	
		point16	16	1,587.6	2,360.1	800.00					
South Hudson Ave - s. of E. Green St	10.0	point44	44	2,040.8	1,529.8	800.00				Average	
		point20	20	2,028.5	2,371.3	800.00					
South Lake Ave - s. of E. Green St	45.0	point45	45	2,526.6	1,519.3	800.00				Average	
		point24	24	2,528.4	2,372.9	800.00					

Cordova St- E of S Lake Ave	60.0	point46	46	2,512.8	1,518.3	800.00				Average	
		point12	12	2,778.4	1,518.3	800.00					
Cordova St- E of S Hudson Ave	60.0	point47	47	2,037.2	1,527.0	800.00				Average	
		point11	11	2,512.8	1,518.3	800.00					
Cordova St - Oak Knoll Ave to Hudson	60.0	point48	48	1,601.5	1,520.0	800.00				Average	
		point10	10	2,037.2	1,527.0	800.00					
East Green St- E of S Lake Ave	50.0	point49	49	2,521.5	2,374.0	800.00				Average	
		point5	5	2,811.4	2,372.3	800.00					
East Green St- E of S Hudson Ave	50.0	point50	50	2,035.4	2,372.3	800.00				Average	
		point4	4	2,521.5	2,374.0	800.00					
East Green St- Oak Knoll Ave to Hudson	50.0	point51	51	1,592.8	2,365.3	800.00				Average	
		point3	3	2,035.4	2,372.3	800.00					

Dudek 1 May 2020
MG TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Existing

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
East Green Street w of S Oak Knoll Ave	point1	1	958	35	20	35	10	35	0	0	0	0
	point2	2										
Mira Monte Place - w of S. Oak Knoll Av	point31	31	82	25	2	25	1	25	0	0	0	0
	point7	7										
Cordova Street - w. of S. Oak Knoll Ave	point33	33	959	35	20	35	10	35	0	0	0	0
	point9	9										
South Oak Knoll Ave - s. of Cordova St	point35	35	309	35	6	35	3	35	0	0	0	0
	point14	14										
South Hudson Ave - s. of Cordova St	point37	37	484	35	10	35	5	35	0	0	0	0
	point19	19										
South Lake Ave - s. of Cordova St	point39	39	2279	35	47	35	23	35	0	0	0	0
	point23	23										
South Oak Knoll Ave - n. of E. Green St	point40	40	409	35	8	35	4	35	0	0	0	0
	point17	17										
South Hudson Ave - n. of E. Green St	point41	41	462	35	10	35	5	35	0	0	0	0
	point21	21										
South Lake Ave - n. of E. Green St	point42	42	2279	35	47	35	23	35	0	0	0	0
	point25	25										
South Oak Knoll Ave - s. of E. Green St	point43	43	309	35	6	35	3	35	0	0	0	0
	point15	15	309	35	6	35	3	35	0	0	0	0
	point16	16										
South Hudson Ave - s. of E. Green St	point44	44	484	35	10	35	5	35	0	0	0	0
	point20	20										

INPUT: TRAFFIC FOR LAeq1h Volumes **12101**

South Lake Ave - s. of E. Green St	point45	45	2279	35	47	35	23	35	0	0	0	0
	point24	24										
Cordova St- E of S Lake Ave	point46	46	959	35	20	35	10	35	0	0	0	0
	point12	12										
Cordova St- E of S Hudson Ave	point47	47	959	35	20	35	10	35	0	0	0	0
	point11	11										
Cordova St - Oak Knoll Ave to Hudson	point48	48	959	35	20	35	10	35	0	0	0	0
	point10	10										
East Green St- E of S Lake Ave	point49	49	2279	35	47	35	23	35	0	0	0	0
	point5	5										
East Green St- E of S Hudson Ave	point50	50	958	35	20	35	10	35	0	0	0	0
	point4	4										
East Green St- Oak Knoll Ave to Hudson	point51	51	958	35	20	35	10	35	0	0	0	0
	point3	3										

Dudek 1 May 2020
MG TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,586.3	2,197.7	800.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	1,605.7	1,986.5	800.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	2,024.9	1,885.4	800.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,037.9	2,324.9	800.00	5.00	0.00	66	10.0	8.0	Y

Dudek 1 May 2020
MG TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Existing

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier2	W	0.00	99.99	0.00				0.00	point3	3	1,629.0	2,218.9	800.00	20.00	0.00	0	0		
									point5	5	1,625.6	2,322.2	800.00	20.00	0.00	0	0		
									point6	6	1,782.6	2,323.1	800.00	20.00	0.00	0	0		
									point7	7	1,784.4	2,231.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point195	195	1,645.3	1,577.4	800.00	20.00	0.00	0	0		
									point138	138	1,638.4	1,771.8	800.00	20.00	0.00	0	0		
									point139	139	1,782.5	1,771.8	800.00	20.00	0.00	0	0		
									point140	140	1,785.9	1,575.7	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point197	197	1,102.0	1,928.0	800.00	20.00	0.00	0	0		
									point114	114	1,421.4	1,935.0	800.00	20.00	0.00	0	0		
									point115	115	1,428.3	1,850.0	800.00	20.00	0.00	0	0		
									point116	116	1,549.9	1,850.0	800.00	20.00	0.00	0	0		
									point117	117	1,536.0	1,728.4	800.00	20.00	0.00	0	0		
									point118	118	1,367.6	1,730.2	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point199	199	1,289.5	2,160.7	800.00	20.00	0.00	0	0		
									point128	128	1,390.2	2,164.1	800.00	20.00	0.00	0	0		
									point129	129	1,397.1	2,011.4	800.00	20.00	0.00	0	0		
									point130	130	1,296.4	2,009.7	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point201	201	1,185.3	2,323.8	800.00	20.00	0.00	0	0		
									point132	132	1,374.5	2,320.3	800.00	20.00	0.00	0	0		
									point133	133	1,379.7	2,252.6	800.00	20.00	0.00	0	0		
									point134	134	1,235.7	2,249.2	800.00	20.00	0.00	0	0		
									point135	135	1,239.2	2,174.5	800.00	20.00	0.00	0	0		
									point136	136	1,178.4	2,172.8	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point203	203	1,848.0	2,647.4	800.00	20.00	0.00	0	0		
									point53	53	1,850.7	2,428.3	800.00	20.00	0.00	0	0		
									point54	54	1,988.5	2,422.8	800.00	20.00	0.00	0	0		
									point55	55	1,994.0	2,652.9	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point205	205	1,424.0	2,324.6	800.00	20.00	0.00	0	0		
									point97	97	1,536.1	2,328.4	800.00	20.00	0.00	0	0		
									point98	98	1,557.4	2,305.5	800.00	20.00	0.00	0	0		
									point99	99	1,558.0	2,215.3	800.00	20.00	0.00	0	0		
									point100	100	1,432.2	2,215.3	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point207	207	1,404.4	2,150.0	800.00	20.00	0.00	0	0		
									point43	43	1,546.3	2,148.7	800.00	20.00	0.00	0	0		

									point44	44	1,550.4	2,010.9	800.00	20.00	0.00	0	0		
									point45	45	1,430.5	2,008.1	800.00	20.00	0.00	0	0		
									point46	46	1,429.2	2,050.8	800.00	20.00	0.00	0	0		
									point47	47	1,500.8	2,050.8	800.00	20.00	0.00	0	0		
									point48	48	1,499.4	2,107.3	800.00	20.00	0.00	0	0		
									point49	49	1,441.6	2,107.3	800.00	20.00	0.00	0	0		
									point50	50	1,442.9	2,055.0	800.00	20.00	0.00	0	0		
									point51	51	1,404.4	2,056.3	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point209	209	1,608.3	2,511.0	800.00	20.00	0.00	0	0		
									point57	57	1,613.8	2,429.7	800.00	20.00	0.00	0	0		
									point58	58	1,732.3	2,431.1	800.00	20.00	0.00	0	0		
									point59	59	1,735.0	2,512.3	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point211	211	2,060.1	2,710.8	800.00	20.00	0.00	0	0		
									point61	61	2,062.9	2,415.9	800.00	20.00	0.00	0	0		
									point62	62	2,275.1	2,415.9	800.00	20.00	0.00	0	0		
									point63	63	2,273.7	2,659.8	800.00	20.00					
Barrier2-2-2-2	W	0.00	99.99	0.00				0.00	point213	213	1,556.8	1,579.2	800.00	20.00	0.00	0	0		
									point122	122	1,115.9	1,568.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point214	214	1,084.7	2,153.7	800.00	20.00	0.00	0	0		
									point124	124	1,272.1	2,148.5	800.00	20.00	0.00	0	0		
									point125	125	1,289.5	1,994.0	800.00	20.00	0.00	0	0		
									point126	126	1,091.6	2,006.2	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point216	216	1,491.4	2,513.6	800.00	20.00	0.00	0	0		
									point106	106	1,491.4	2,421.7	800.00	20.00	0.00	0	0		
									point107	107	1,553.7	2,417.4	800.00	20.00	0.00	0	0		
									point108	108	1,554.8	2,515.8	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point218	218	1,501.6	2,207.1	800.00	20.00	0.00	0	0		
									point102	102	1,549.8	2,207.6	800.00	20.00	0.00	0	0		
									point103	103	1,549.8	2,172.6	800.00	20.00	0.00	0	0		
									point104	104	1,498.4	2,173.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point220	220	1,381.5	2,511.3	800.00	20.00	0.00	0	0		
									point110	110	1,482.2	2,509.6	800.00	20.00	0.00	0	0		
									point111	111	1,485.6	2,408.9	800.00	20.00	0.00	0	0		
									point112	112	1,388.4	2,408.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point222	222	1,789.6	2,214.6	800.00	20.00	0.00	0	0		
									point9	9	1,787.9	2,332.6	800.00	20.00	0.00	0	0		
									point10	10	1,999.6	2,330.9	800.00	20.00	0.00	0	0		
									point11	11	2,000.5	2,231.9	800.00	20.00	0.00	0	0		
									point12	12	1,943.2	2,233.6	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point224	224	2,324.1	2,334.4	800.00	20.00	0.00	0	0		
									point66	66	2,477.2	2,333.3	800.00	20.00	0.00	0	0		
									point67	67	2,477.2	2,248.0	800.00	20.00	0.00	0	0		
									point68	68	2,331.2	2,249.7	800.00	20.00	0.00	0	0		
									point69	69	2,330.7	2,267.7	800.00	20.00	0.00	0	0		
									point70	70	2,306.1	2,267.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point226	226	2,395.8	2,168.4	800.00	20.00	0.00	0	0		
									point76	76	2,398.6	2,040.3	800.00	20.00	0.00	0	0		
									point77	77	2,488.1	2,038.9	800.00	20.00	0.00	0	0		
									point78	78	2,486.8	2,175.3	800.00	20.00					

Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point228	228	2,331.1	2,419.2	800.00	20.00	0.00	0	0		
									point72	72	2,471.6	2,416.4	800.00	20.00	0.00	0	0		
									point73	73	2,477.1	2,704.4	800.00	20.00	0.00	0	0		
									point74	74	2,321.5	2,701.6	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point230	230	1,861.6	2,132.1	800.00	20.00	0.00	0	0		
									point17	17	1,864.2	2,060.1	800.00	20.00	0.00	0	0		
									point18	18	1,938.0	2,058.3	800.00	20.00	0.00	0	0		
									point19	19	1,938.9	2,008.9	800.00	20.00	0.00	0	0		
									point20	20	1,993.6	2,008.0	800.00	20.00	0.00	0	0		
									point21	21	1,987.5	2,133.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point232	232	2,074.3	2,104.3	800.00	20.00	0.00	0	0		
									point14	14	2,070.8	2,326.5	800.00	20.00	0.00	0	0		
									point15	15	2,322.5	2,330.0	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point234	234	1,642.1	2,090.4	800.00	20.00	0.00	0	0		
									point23	23	1,792.2	2,091.3	800.00	20.00	0.00	0	0		
									point24	24	1,793.1	2,021.0	800.00	20.00	0.00	0	0		
									point25	25	1,641.2	2,018.4	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point236	236	2,076.2	1,759.3	800.00	20.00	0.00	0	0		
									point80	80	2,331.0	1,755.2	800.00	20.00	0.00	0	0		
									point81	81	2,477.1	1,755.2	800.00	20.00	0.00	0	0		
									point82	82	2,482.6	1,616.0	800.00	20.00	0.00	0	0		
									point83	83	2,078.9	1,620.1	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point238	238	1,796.5	1,792.4	800.00	20.00	0.00	0	0		
									point93	93	1,993.5	1,792.4	800.00	20.00	0.00	0	0		
									point94	94	1,997.7	1,748.3	800.00	20.00	0.00	0	0		
									point95	95	1,799.2	1,746.9	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point240	240	1,856.4	1,940.3	800.00	20.00	0.00	0	0		
									point35	35	1,986.6	1,940.3	800.00	20.00	0.00	0	0		
									point36	36	1,987.5	1,894.3	800.00	20.00	0.00	0	0		
									point37	37	1,857.3	1,895.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point242	242	1,798.4	1,874.5	800.00	20.00	0.00	0	0		
									point39	39	1,987.1	1,874.5	800.00	20.00	0.00	0	0		
									point40	40	1,992.6	1,807.0	800.00	20.00	0.00	0	0		
									point41	41	1,801.1	1,804.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point244	244	1,643.8	1,995.0	800.00	20.00	0.00	0	0		
									point27	27	1,726.2	1,995.8	800.00	20.00	0.00	0	0		
									point28	28	1,729.7	1,953.3	800.00	20.00	0.00	0	0		
									point29	29	1,643.8	1,954.2	800.00	20.00	0.00	0	0		
									point30	30	1,642.1	1,920.3	800.00	20.00	0.00	0	0		
									point31	31	1,642.9	1,861.3	800.00	20.00	0.00	0	0		
									point32	32	1,781.8	1,857.0	800.00	20.00	0.00	0	0		
									point33	33	1,780.1	1,920.3	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point246	246	2,329.7	1,892.9	800.00	20.00	0.00	0	0		
									point85	85	2,461.9	1,894.3	800.00	20.00	0.00	0	0		
									point86	86	2,467.4	1,759.3	800.00	20.00	0.00	0	0		
									point87	87	2,340.7	1,760.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point248	248	2,347.6	2,033.4	800.00	20.00	0.00	0	0		
									point89	89	2,464.7	2,030.7	800.00	20.00	0.00	0	0		
									point90	90	2,468.8	1,959.0	800.00	20.00	0.00	0	0		

									point91	91	2,357.2	1,959.0	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point250	250	1,367.6	1,697.2	800.00	20.00	0.00	0	0			
									point120	120	1,549.9	1,695.5	800.00	20.00	0.00	0	0			
									point121	121	1,556.8	1,579.2	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point252	252	1,817.2	1,716.3	800.00	20.00	0.00	0	0			
									point142	142	1,989.0	1,714.6	800.00	20.00	0.00	0	0			
									point143	143	1,985.5	1,573.9	800.00	20.00	0.00	0	0			
									point144	144	1,900.5	1,579.2	800.00	20.00	0.00	0	0			
									point145	145	1,905.7	1,667.7	800.00	20.00	0.00	0	0			
									point146	146	1,810.2	1,665.9	800.00	20.00						

Dudek
MG
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	8	-8.0
ST2	2	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
ST3	3	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
ST4	4	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0

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

Dudek					**1 May 2020**						
MG					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**12101**						**a State highway agency substantiates the use**				
RUN:	**740 East Green St_Pasadena_Exist w Prj**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
East Green Street w of S Oak Knoll Ave	50.0	point1	1	1,086.0	2,370.6	800.00				Average	
		point2	2	1,592.8	2,365.3	800.00					
Mira Monte Place - w of S. Oak Knoll Av	28.0	point31	31	1,080.8	1,964.4	800.00				Average	
		point7	7	1,596.3	1,967.8	800.00					
Cordova Street - w. of S. Oak Knoll Ave	60.0	point33	33	1,077.3	1,514.8	800.00				Average	
		point9	9	1,601.5	1,520.0	800.00					
South Oak Knoll Ave - s. of Cordova St	38.0	point35	35	1,605.0	1,431.5	800.00				Average	
		point14	14	1,603.0	1,517.3	800.00					
South Hudson Ave - s. of Cordova St	30.0	point37	37	2,045.9	1,435.0	800.00				Average	
		point19	19	2,041.0	1,525.6	800.00					
South Lake Ave - s. of Cordova St	45.0	point39	39	2,528.4	1,436.7	800.00				Average	
		point23	23	2,526.4	1,517.0	800.00					
South Oak Knoll Ave - n. of E. Green St	38.0	point40	40	1,588.0	2,370.5	800.00				Average	
		point17	17	1,589.4	2,776.7	800.00					
South Hudson Ave - n. of E. Green St	30.0	point41	41	2,028.4	2,373.1	800.00				Average	
		point21	21	2,033.7	2,766.3	800.00					
South Lake Ave - n. of E. Green St	45.0	point42	42	2,528.4	2,375.8	800.00				Average	
		point25	25	2,526.7	2,776.7	800.00					
South Oak Knoll Ave - s. of E. Green St	10.0	point43	43	1,602.7	1,522.6	800.00				Average	
		point15	15	1,599.8	1,971.3	800.00				Average	
		point16	16	1,587.6	2,360.1	800.00					
South Hudson Ave - s. of E. Green St	10.0	point44	44	2,040.8	1,529.8	800.00				Average	
		point20	20	2,028.5	2,371.3	800.00					
South Lake Ave - s. of E. Green St	45.0	point45	45	2,526.6	1,519.3	800.00				Average	
		point24	24	2,528.4	2,372.9	800.00					

Cordova St- E of S Lake Ave	60.0	point46	46	2,512.8	1,518.3	800.00				Average	
		point12	12	2,778.4	1,518.3	800.00					
Cordova St- E of S Hudson Ave	60.0	point47	47	2,037.2	1,527.0	800.00				Average	
		point11	11	2,512.8	1,518.3	800.00					
Cordova St - Oak Knoll Ave to Hudson	60.0	point48	48	1,601.5	1,520.0	800.00				Average	
		point10	10	2,037.2	1,527.0	800.00					
East Green St- E of S Lake Ave	50.0	point49	49	2,521.5	2,374.0	800.00				Average	
		point5	5	2,811.4	2,372.3	800.00					
East Green St- E of S Hudson Ave	50.0	point50	50	2,035.4	2,372.3	800.00				Average	
		point4	4	2,521.5	2,374.0	800.00					
East Green St- Oak Knoll Ave to Hudson	50.0	point51	51	1,592.8	2,365.3	800.00				Average	
		point3	3	2,035.4	2,372.3	800.00					

Dudek				**1 May 2020**								
MG				**TNM 2.5**								
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**12101**											
RUN:	**740 East Green St_Pasadena_Exist w Prj**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
East Green Street w of S Oak Knoll Ave	point1	1	958	35	20	35	10	35	0	0	0	0
	point2	2										
Mira Monte Place - w of S. Oak Knoll Av	point31	31	82	25	2	25	1	25	0	0	0	0
	point7	7										
Cordova Street - w. of S. Oak Knoll Ave	point33	33	959	35	20	35	10	35	0	0	0	0
	point9	9										
South Oak Knoll Ave - s. of Cordova St	point35	35	411	35	9	35	4	35	0	0	0	0
	point14	14										
South Hudson Ave - s. of Cordova St	point37	37	484	35	10	35	5	35	0	0	0	0
	point19	19										
South Lake Ave - s. of Cordova St	point39	39	2279	35	47	35	23	35	0	0	0	0
	point23	23										
South Oak Knoll Ave - n. of E. Green St	point40	40	435	35	9	35	5	35	0	0	0	0
	point17	17										
South Hudson Ave - n. of E. Green St	point41	41	472	35	10	35	5	35	0	0	0	0
	point21	21										
South Lake Ave - n. of E. Green St	point42	42	2279	35	47	35	23	35	0	0	0	0
	point25	25										
South Oak Knoll Ave - s. of E. Green St	point43	43	411	35	9	35	4	35	0	0	0	0
	point15	15	411	35	9	35	4	35	0	0	0	0
	point16	16										
South Hudson Ave - s. of E. Green St	point44	44	585	35	12	35	6	35	0	0	0	0
	point20	20										

South Lake Ave - s. of E. Green St	point45	45	2279	35	47	35	23	35	0	0	0	0
	point24	24										
Cordova St- E of S Lake Ave	point46	46	959	35	20	35	10	35	0	0	0	0
	point12	12										
Cordova St- E of S Hudson Ave	point47	47	959	35	20	35	10	35	0	0	0	0
	point11	11										
Cordova St - Oak Knoll Ave to Hudson	point48	48	959	35	20	35	10	35	0	0	0	0
	point10	10										
East Green St- E of S Lake Ave	point49	49	2279	35	47	35	23	35	0	0	0	0
	point5	5										
East Green St- E of S Hudson Ave	point50	50	958	35	20	35	10	35	0	0	0	0
	point4	4										
East Green St- Oak Knoll Ave to Hudson	point51	51	958	35	20	35	10	35	0	0	0	0
	point3	3										

Dudek						**1 May 2020**					
MG						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**12101**										
RUN:	**740 East Green St_Pasadena_Exist w Prj**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,586.3	2,197.7	800.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	1,605.7	1,986.5	800.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	2,024.9	1,885.4	800.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,037.9	2,324.9	800.00	5.00	0.00	66	10.0	8.0	Y

Dudek 1 May 2020
MG TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Exist w Prj

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier2	W	0.00	99.99	0.00				0.00	point3	3	1,629.0	2,218.9	800.00	20.00	0.00	0	0		
									point5	5	1,625.6	2,322.2	800.00	20.00	0.00	0	0		
									point6	6	1,782.6	2,323.1	800.00	20.00	0.00	0	0		
									point7	7	1,784.4	2,231.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point195	195	1,645.3	1,577.4	800.00	20.00	0.00	0	0		
									point138	138	1,638.4	1,771.8	800.00	20.00	0.00	0	0		
									point139	139	1,782.5	1,771.8	800.00	20.00	0.00	0	0		
									point140	140	1,785.9	1,575.7	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point197	197	1,102.0	1,928.0	800.00	20.00	0.00	0	0		
									point114	114	1,421.4	1,935.0	800.00	20.00	0.00	0	0		
									point115	115	1,428.3	1,850.0	800.00	20.00	0.00	0	0		
									point116	116	1,549.9	1,850.0	800.00	20.00	0.00	0	0		
									point117	117	1,536.0	1,728.4	800.00	20.00	0.00	0	0		
									point118	118	1,367.6	1,730.2	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point199	199	1,289.5	2,160.7	800.00	20.00	0.00	0	0		
									point128	128	1,390.2	2,164.1	800.00	20.00	0.00	0	0		
									point129	129	1,397.1	2,011.4	800.00	20.00	0.00	0	0		
									point130	130	1,296.4	2,009.7	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point201	201	1,185.3	2,323.8	800.00	20.00	0.00	0	0		
									point132	132	1,374.5	2,320.3	800.00	20.00	0.00	0	0		
									point133	133	1,379.7	2,252.6	800.00	20.00	0.00	0	0		
									point134	134	1,235.7	2,249.2	800.00	20.00	0.00	0	0		
									point135	135	1,239.2	2,174.5	800.00	20.00	0.00	0	0		
									point136	136	1,178.4	2,172.8	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point203	203	1,848.0	2,647.4	800.00	20.00	0.00	0	0		
									point53	53	1,850.7	2,428.3	800.00	20.00	0.00	0	0		
									point54	54	1,988.5	2,422.8	800.00	20.00	0.00	0	0		
									point55	55	1,994.0	2,652.9	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point205	205	1,424.0	2,324.6	800.00	20.00	0.00	0	0		
									point97	97	1,536.1	2,328.4	800.00	20.00	0.00	0	0		
									point98	98	1,557.4	2,305.5	800.00	20.00	0.00	0	0		
									point99	99	1,558.0	2,215.3	800.00	20.00	0.00	0	0		
									point100	100	1,432.2	2,215.3	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point207	207	1,404.4	2,150.0	800.00	20.00	0.00	0	0		
									point43	43	1,546.3	2,148.7	800.00	20.00	0.00	0	0		

									point44	44	1,550.4	2,010.9	800.00	20.00	0.00	0	0		
									point45	45	1,430.5	2,008.1	800.00	20.00	0.00	0	0		
									point46	46	1,429.2	2,050.8	800.00	20.00	0.00	0	0		
									point47	47	1,500.8	2,050.8	800.00	20.00	0.00	0	0		
									point48	48	1,499.4	2,107.3	800.00	20.00	0.00	0	0		
									point49	49	1,441.6	2,107.3	800.00	20.00	0.00	0	0		
									point50	50	1,442.9	2,055.0	800.00	20.00	0.00	0	0		
									point51	51	1,404.4	2,056.3	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point209	209	1,608.3	2,511.0	800.00	20.00	0.00	0	0		
									point57	57	1,613.8	2,429.7	800.00	20.00	0.00	0	0		
									point58	58	1,732.3	2,431.1	800.00	20.00	0.00	0	0		
									point59	59	1,735.0	2,512.3	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point211	211	2,060.1	2,710.8	800.00	20.00	0.00	0	0		
									point61	61	2,062.9	2,415.9	800.00	20.00	0.00	0	0		
									point62	62	2,275.1	2,415.9	800.00	20.00	0.00	0	0		
									point63	63	2,273.7	2,659.8	800.00	20.00					
Barrier2-2-2-2	W	0.00	99.99	0.00				0.00	point213	213	1,556.8	1,579.2	800.00	20.00	0.00	0	0		
									point122	122	1,115.9	1,568.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point214	214	1,084.7	2,153.7	800.00	20.00	0.00	0	0		
									point124	124	1,272.1	2,148.5	800.00	20.00	0.00	0	0		
									point125	125	1,289.5	1,994.0	800.00	20.00	0.00	0	0		
									point126	126	1,091.6	2,006.2	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point216	216	1,491.4	2,513.6	800.00	20.00	0.00	0	0		
									point106	106	1,491.4	2,421.7	800.00	20.00	0.00	0	0		
									point107	107	1,553.7	2,417.4	800.00	20.00	0.00	0	0		
									point108	108	1,554.8	2,515.8	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point218	218	1,501.6	2,207.1	800.00	20.00	0.00	0	0		
									point102	102	1,549.8	2,207.6	800.00	20.00	0.00	0	0		
									point103	103	1,549.8	2,172.6	800.00	20.00	0.00	0	0		
									point104	104	1,498.4	2,173.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point220	220	1,381.5	2,511.3	800.00	20.00	0.00	0	0		
									point110	110	1,482.2	2,509.6	800.00	20.00	0.00	0	0		
									point111	111	1,485.6	2,408.9	800.00	20.00	0.00	0	0		
									point112	112	1,388.4	2,408.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point222	222	1,789.6	2,214.6	800.00	20.00	0.00	0	0		
									point9	9	1,787.9	2,332.6	800.00	20.00	0.00	0	0		
									point10	10	1,999.6	2,330.9	800.00	20.00	0.00	0	0		
									point11	11	2,000.5	2,231.9	800.00	20.00	0.00	0	0		
									point12	12	1,943.2	2,233.6	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point224	224	2,324.1	2,334.4	800.00	20.00	0.00	0	0		
									point66	66	2,477.2	2,333.3	800.00	20.00	0.00	0	0		
									point67	67	2,477.2	2,248.0	800.00	20.00	0.00	0	0		
									point68	68	2,331.2	2,249.7	800.00	20.00	0.00	0	0		
									point69	69	2,330.7	2,267.7	800.00	20.00	0.00	0	0		
									point70	70	2,306.1	2,267.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point226	226	2,395.8	2,168.4	800.00	20.00	0.00	0	0		
									point76	76	2,398.6	2,040.3	800.00	20.00	0.00	0	0		
									point77	77	2,488.1	2,038.9	800.00	20.00	0.00	0	0		
									point78	78	2,486.8	2,175.3	800.00	20.00					

Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point228	228	2,331.1	2,419.2	800.00	20.00	0.00	0	0		
									point72	72	2,471.6	2,416.4	800.00	20.00	0.00	0	0		
									point73	73	2,477.1	2,704.4	800.00	20.00	0.00	0	0		
									point74	74	2,321.5	2,701.6	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point230	230	1,861.6	2,132.1	800.00	20.00	0.00	0	0		
									point17	17	1,864.2	2,060.1	800.00	20.00	0.00	0	0		
									point18	18	1,938.0	2,058.3	800.00	20.00	0.00	0	0		
									point19	19	1,938.9	2,008.9	800.00	20.00	0.00	0	0		
									point20	20	1,993.6	2,008.0	800.00	20.00	0.00	0	0		
									point21	21	1,987.5	2,133.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point232	232	2,074.3	2,104.3	800.00	20.00	0.00	0	0		
									point14	14	2,070.8	2,326.5	800.00	20.00	0.00	0	0		
									point15	15	2,322.5	2,330.0	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point234	234	1,642.1	2,090.4	800.00	20.00	0.00	0	0		
									point23	23	1,792.2	2,091.3	800.00	20.00	0.00	0	0		
									point24	24	1,793.1	2,021.0	800.00	20.00	0.00	0	0		
									point25	25	1,641.2	2,018.4	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point236	236	2,076.2	1,759.3	800.00	20.00	0.00	0	0		
									point80	80	2,331.0	1,755.2	800.00	20.00	0.00	0	0		
									point81	81	2,477.1	1,755.2	800.00	20.00	0.00	0	0		
									point82	82	2,482.6	1,616.0	800.00	20.00	0.00	0	0		
									point83	83	2,078.9	1,620.1	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point238	238	1,796.5	1,792.4	800.00	20.00	0.00	0	0		
									point93	93	1,993.5	1,792.4	800.00	20.00	0.00	0	0		
									point94	94	1,997.7	1,748.3	800.00	20.00	0.00	0	0		
									point95	95	1,799.2	1,746.9	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point240	240	1,856.4	1,940.3	800.00	20.00	0.00	0	0		
									point35	35	1,986.6	1,940.3	800.00	20.00	0.00	0	0		
									point36	36	1,987.5	1,894.3	800.00	20.00	0.00	0	0		
									point37	37	1,857.3	1,895.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point242	242	1,798.4	1,874.5	800.00	20.00	0.00	0	0		
									point39	39	1,987.1	1,874.5	800.00	20.00	0.00	0	0		
									point40	40	1,992.6	1,807.0	800.00	20.00	0.00	0	0		
									point41	41	1,801.1	1,804.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point244	244	1,643.8	1,995.0	800.00	20.00	0.00	0	0		
									point27	27	1,726.2	1,995.8	800.00	20.00	0.00	0	0		
									point28	28	1,729.7	1,953.3	800.00	20.00	0.00	0	0		
									point29	29	1,643.8	1,954.2	800.00	20.00	0.00	0	0		
									point30	30	1,642.1	1,920.3	800.00	20.00	0.00	0	0		
									point31	31	1,642.9	1,861.3	800.00	20.00	0.00	0	0		
									point32	32	1,781.8	1,857.0	800.00	20.00	0.00	0	0		
									point33	33	1,780.1	1,920.3	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point246	246	2,329.7	1,892.9	800.00	20.00	0.00	0	0		
									point85	85	2,461.9	1,894.3	800.00	20.00	0.00	0	0		
									point86	86	2,467.4	1,759.3	800.00	20.00	0.00	0	0		
									point87	87	2,340.7	1,760.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point248	248	2,347.6	2,033.4	800.00	20.00	0.00	0	0		
									point89	89	2,464.7	2,030.7	800.00	20.00	0.00	0	0		
									point90	90	2,468.8	1,959.0	800.00	20.00	0.00	0	0		

									point91	91	2,357.2	1,959.0	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point250	250	1,367.6	1,697.2	800.00	20.00	0.00	0	0			
									point120	120	1,549.9	1,695.5	800.00	20.00	0.00	0	0			
									point121	121	1,556.8	1,579.2	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point252	252	1,817.2	1,716.3	800.00	20.00	0.00	0	0			
									point142	142	1,989.0	1,714.6	800.00	20.00	0.00	0	0			
									point143	143	1,985.5	1,573.9	800.00	20.00	0.00	0	0			
									point144	144	1,900.5	1,579.2	800.00	20.00	0.00	0	0			
									point145	145	1,905.7	1,667.7	800.00	20.00	0.00	0	0			
									point146	146	1,810.2	1,665.9	800.00	20.00						

Dudek
MG
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 12101
RUN: 740 East Green St_Pasadena_Exist w Prj
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
ST2	2	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
ST3	3	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0
ST4	4	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0

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

Dudek 1 May 2020
MG TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (bldg cnst)

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

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
East Green Street w of S Oak Knoll Ave	50.0	point1	1	1,086.0	2,370.6	800.00				Average	
		point2	2	1,592.8	2,365.3	800.00					
Mira Monte Place - w of S. Oak Knoll Av	28.0	point31	31	1,080.8	1,964.4	800.00				Average	
		point7	7	1,596.3	1,967.8	800.00					
Cordova Street - w. of S. Oak Knoll Ave	60.0	point33	33	1,077.3	1,514.8	800.00				Average	
		point9	9	1,601.5	1,520.0	800.00					
South Oak Knoll Ave - s. of Cordova St	38.0	point35	35	1,605.0	1,431.5	800.00				Average	
		point14	14	1,603.0	1,517.3	800.00					
South Hudson Ave - s. of Cordova St	30.0	point37	37	2,045.9	1,435.0	800.00				Average	
		point19	19	2,041.0	1,525.6	800.00					
South Lake Ave - s. of Cordova St	45.0	point39	39	2,528.4	1,436.7	800.00				Average	
		point23	23	2,526.4	1,517.0	800.00					
South Oak Knoll Ave - n. of E. Green St	38.0	point40	40	1,588.0	2,370.5	800.00				Average	
		point17	17	1,589.4	2,776.7	800.00					
South Hudson Ave - n. of E. Green St	30.0	point41	41	2,028.4	2,373.1	800.00				Average	
		point21	21	2,033.7	2,766.3	800.00					
South Lake Ave - n. of E. Green St	45.0	point42	42	2,528.4	2,375.8	800.00				Average	
		point25	25	2,526.7	2,776.7	800.00					
South Oak Knoll Ave - s. of E. Green St	10.0	point43	43	1,602.7	1,522.6	800.00				Average	
		point15	15	1,599.8	1,971.3	800.00				Average	
		point16	16	1,587.6	2,360.1	800.00					
South Hudson Ave - s. of E. Green St	10.0	point44	44	2,040.8	1,529.8	800.00				Average	
		point20	20	2,028.5	2,371.3	800.00					
South Lake Ave - s. of E. Green St	45.0	point45	45	2,526.6	1,519.3	800.00				Average	
		point24	24	2,528.4	2,372.9	800.00					

Cordova St- E of S Lake Ave	60.0	point46	46	2,512.8	1,518.3	800.00				Average	
		point12	12	2,778.4	1,518.3	800.00					
Cordova St- E of S Hudson Ave	60.0	point47	47	2,037.2	1,527.0	800.00				Average	
		point11	11	2,512.8	1,518.3	800.00					
Cordova St - Oak Knoll Ave to Hudson	60.0	point48	48	1,601.5	1,520.0	800.00				Average	
		point10	10	2,037.2	1,527.0	800.00					
East Green St- E of S Lake Ave	50.0	point49	49	2,521.5	2,374.0	800.00				Average	
		point5	5	2,811.4	2,372.3	800.00					
East Green St- E of S Hudson Ave	50.0	point50	50	2,035.4	2,372.3	800.00				Average	
		point4	4	2,521.5	2,374.0	800.00					
East Green St- Oak Knoll Ave to Hudson	50.0	point51	51	1,592.8	2,365.3	800.00				Average	
		point3	3	2,035.4	2,372.3	800.00					

Dudek 1 May 2020
MG TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (bldg cnst)

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
East Green Street w of S Oak Knoll Ave	point1	1	1246	35	29	35	10	35	0	0	0	0
	point2	2										
Mira Monte Place - w of S. Oak Knoll Av	point31	31	82	25	2	25	1	25	0	0	0	0
	point7	7										
Cordova Street - w. of S. Oak Knoll Ave	point33	33	959	35	20	35	10	35	0	0	0	0
	point9	9										
South Oak Knoll Ave - s. of Cordova St	point35	35	309	35	6	35	3	35	0	0	0	0
	point14	14										
South Hudson Ave - s. of Cordova St	point37	37	484	35	10	35	5	35	0	0	0	0
	point19	19										
South Lake Ave - s. of Cordova St	point39	39	2279	35	47	35	23	35	0	0	0	0
	point23	23										
South Oak Knoll Ave - n. of E. Green St	point40	40	409	35	8	35	4	35	0	0	0	0
	point17	17										
South Hudson Ave - n. of E. Green St	point41	41	462	35	10	35	5	35	0	0	0	0
	point21	21										
South Lake Ave - n. of E. Green St	point42	42	2279	35	47	35	23	35	0	0	0	0
	point25	25										
South Oak Knoll Ave - s. of E. Green St	point43	43	597	35	15	35	3	35	0	0	0	0
	point15	15	597	35	15	35	3	35	0	0	0	0
	point16	16										
South Hudson Ave - s. of E. Green St	point44	44	772	35	19	35	5	35	0	0	0	0
	point20	20										

INPUT: TRAFFIC FOR LAeq1h Volumes **12101**

South Lake Ave - s. of E. Green St	point45	45	2279	35	47	35	23	35	0	0	0	0
	point24	24										
Cordova St- E of S Lake Ave	point46	46	959	35	20	35	10	35	0	0	0	0
	point12	12										
Cordova St- E of S Hudson Ave	point47	47	959	35	20	35	10	35	0	0	0	0
	point11	11										
Cordova St - Oak Knoll Ave to Hudson	point48	48	959	35	20	35	10	35	0	0	0	0
	point10	10										
East Green St- E of S Lake Ave	point49	49	2279	35	47	35	23	35	0	0	0	0
	point5	5										
East Green St- E of S Hudson Ave	point50	50	1246	35	29	35	10	35	0	0	0	0
	point4	4										
East Green St- Oak Knoll Ave to Hudson	point51	51	1246	35	29	35	10	35	0	0	0	0
	point3	3										

Dudek						**1 May 2020**					
MG						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**12101**										
RUN:	**740 E Green St_Ex plus Const (bldg cnst)**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,586.3	2,197.7	800.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	1,605.7	1,986.5	800.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	2,024.9	1,885.4	800.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,037.9	2,324.9	800.00	5.00	0.00	66	10.0	8.0	Y

Dudek
MG
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (bldg cnst)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	0.0	70.3	66	70.3	10	Snd Lvl	70.3	0.0	8	-8.0
ST2	2	1	0.0	70.3	66	70.3	10	Snd Lvl	70.3	0.0	8	-8.0
ST3	3	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
ST4	4	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0

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

Dudek 1 May 2020
MG TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (Demo)

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

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
East Green Street w of S Oak Knoll Ave	50.0	point1	1	1,086.0	2,370.6	800.00				Average	
		point2	2	1,592.8	2,365.3	800.00					
Mira Monte Place - w of S. Oak Knoll Av	28.0	point31	31	1,080.8	1,964.4	800.00				Average	
		point7	7	1,596.3	1,967.8	800.00					
Cordova Street - w. of S. Oak Knoll Ave	60.0	point33	33	1,077.3	1,514.8	800.00				Average	
		point9	9	1,601.5	1,520.0	800.00					
South Oak Knoll Ave - s. of Cordova St	38.0	point35	35	1,605.0	1,431.5	800.00				Average	
		point14	14	1,603.0	1,517.3	800.00					
South Hudson Ave - s. of Cordova St	30.0	point37	37	2,045.9	1,435.0	800.00				Average	
		point19	19	2,041.0	1,525.6	800.00					
South Lake Ave - s. of Cordova St	45.0	point39	39	2,528.4	1,436.7	800.00				Average	
		point23	23	2,526.4	1,517.0	800.00					
South Oak Knoll Ave - n. of E. Green St	38.0	point40	40	1,588.0	2,370.5	800.00				Average	
		point17	17	1,589.4	2,776.7	800.00					
South Hudson Ave - n. of E. Green St	30.0	point41	41	2,028.4	2,373.1	800.00				Average	
		point21	21	2,033.7	2,766.3	800.00					
South Lake Ave - n. of E. Green St	45.0	point42	42	2,528.4	2,375.8	800.00				Average	
		point25	25	2,526.7	2,776.7	800.00					
South Oak Knoll Ave - s. of E. Green St	10.0	point43	43	1,602.7	1,522.6	800.00				Average	
		point15	15	1,599.8	1,971.3	800.00				Average	
		point16	16	1,587.6	2,360.1	800.00					
South Hudson Ave - s. of E. Green St	10.0	point44	44	2,040.8	1,529.8	800.00				Average	
		point20	20	2,028.5	2,371.3	800.00					
South Lake Ave - s. of E. Green St	45.0	point45	45	2,526.6	1,519.3	800.00				Average	
		point24	24	2,528.4	2,372.9	800.00					

Cordova St- E of S Lake Ave	60.0	point46	46	2,512.8	1,518.3	800.00				Average	
		point12	12	2,778.4	1,518.3	800.00					
Cordova St- E of S Hudson Ave	60.0	point47	47	2,037.2	1,527.0	800.00				Average	
		point11	11	2,512.8	1,518.3	800.00					
Cordova St - Oak Knoll Ave to Hudson	60.0	point48	48	1,601.5	1,520.0	800.00				Average	
		point10	10	2,037.2	1,527.0	800.00					
East Green St- E of S Lake Ave	50.0	point49	49	2,521.5	2,374.0	800.00				Average	
		point5	5	2,811.4	2,372.3	800.00					
East Green St- E of S Hudson Ave	50.0	point50	50	2,035.4	2,372.3	800.00				Average	
		point4	4	2,521.5	2,374.0	800.00					
East Green St- Oak Knoll Ave to Hudson	50.0	point51	51	1,592.8	2,365.3	800.00				Average	
		point3	3	2,035.4	2,372.3	800.00					

Dudek				**1 May 2020**								
MG				**TNM 2.5**								
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**12101**											
RUN:	**740 E Green St_Ex plus Const (Demo)**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
East Green Street w of S Oak Knoll Ave	point1	1	974	35	20	35	13	35	0	0	0	0
	point2	2										
Mira Monte Place - w of S. Oak Knoll Av	point31	31	82	25	2	25	1	25	0	0	0	0
	point7	7										
Cordova Street - w. of S. Oak Knoll Ave	point33	33	959	35	20	35	10	35	0	0	0	0
	point9	9										
South Oak Knoll Ave - s. of Cordova St	point35	35	309	35	6	35	3	35	0	0	0	0
	point14	14										
South Hudson Ave - s. of Cordova St	point37	37	484	35	10	35	5	35	0	0	0	0
	point19	19										
South Lake Ave - s. of Cordova St	point39	39	2279	35	47	35	23	35	0	0	0	0
	point23	23										
South Oak Knoll Ave - n. of E. Green St	point40	40	409	35	8	35	4	35	0	0	0	0
	point17	17										
South Hudson Ave - n. of E. Green St	point41	41	462	35	10	35	5	35	0	0	0	0
	point21	21										
South Lake Ave - n. of E. Green St	point42	42	2279	35	47	35	23	35	0	0	0	0
	point25	25										
South Oak Knoll Ave - s. of E. Green St	point43	43	325	35	6	35	6	35	0	0	0	0
	point15	15	325	35	6	35	6	35	0	0	0	0
	point16	16										
South Hudson Ave - s. of E. Green St	point44	44	496	35	10	35	8	35	0	0	0	0
	point20	20										

INPUT: TRAFFIC FOR LAeq1h Volumes **12101**

South Lake Ave - s. of E. Green St	point45	45	2279	35	47	35	23	35	0	0	0	0
	point24	24										
Cordova St- E of S Lake Ave	point46	46	959	35	20	35	10	35	0	0	0	0
	point12	12										
Cordova St- E of S Hudson Ave	point47	47	959	35	20	35	10	35	0	0	0	0
	point11	11										
Cordova St - Oak Knoll Ave to Hudson	point48	48	959	35	20	35	10	35	0	0	0	0
	point10	10										
East Green St- E of S Lake Ave	point49	49	2279	35	47	35	23	35	0	0	0	0
	point5	5										
East Green St- E of S Hudson Ave	point50	50	974	35	20	35	13	35	0	0	0	0
	point4	4										
East Green St- Oak Knoll Ave to Hudson	point51	51	974	35	20	35	13	35	0	0	0	0
	point3	3										

Dudek 1 May 2020
MG TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (Demo)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,586.3	2,197.7	800.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	1,605.7	1,986.5	800.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	2,024.9	1,885.4	800.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,037.9	2,324.9	800.00	5.00	0.00	66	10.0	8.0	Y

Dudek
MG
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (Demo)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc					
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
ST2	2	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
ST3	3	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
ST4	4	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0

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

Dudek 1 May 2020
MG TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (grading)

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

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
East Green Street w of S Oak Knoll Ave	50.0	point1	1	1,086.0	2,370.6	800.00				Average	
		point2	2	1,592.8	2,365.3	800.00					
Mira Monte Place - w of S. Oak Knoll Av	28.0	point31	31	1,080.8	1,964.4	800.00				Average	
		point7	7	1,596.3	1,967.8	800.00					
Cordova Street - w. of S. Oak Knoll Ave	60.0	point33	33	1,077.3	1,514.8	800.00				Average	
		point9	9	1,601.5	1,520.0	800.00					
South Oak Knoll Ave - s. of Cordova St	38.0	point35	35	1,605.0	1,431.5	800.00				Average	
		point14	14	1,603.0	1,517.3	800.00					
South Hudson Ave - s. of Cordova St	30.0	point37	37	2,045.9	1,435.0	800.00				Average	
		point19	19	2,041.0	1,525.6	800.00					
South Lake Ave - s. of Cordova St	45.0	point39	39	2,528.4	1,436.7	800.00				Average	
		point23	23	2,526.4	1,517.0	800.00					
South Oak Knoll Ave - n. of E. Green St	38.0	point40	40	1,588.0	2,370.5	800.00				Average	
		point17	17	1,589.4	2,776.7	800.00					
South Hudson Ave - n. of E. Green St	30.0	point41	41	2,028.4	2,373.1	800.00				Average	
		point21	21	2,033.7	2,766.3	800.00					
South Lake Ave - n. of E. Green St	45.0	point42	42	2,528.4	2,375.8	800.00				Average	
		point25	25	2,526.7	2,776.7	800.00					
South Oak Knoll Ave - s. of E. Green St	10.0	point43	43	1,602.7	1,522.6	800.00				Average	
		point15	15	1,599.8	1,971.3	800.00				Average	
		point16	16	1,587.6	2,360.1	800.00					
South Hudson Ave - s. of E. Green St	10.0	point44	44	2,040.8	1,529.8	800.00				Average	
		point20	20	2,028.5	2,371.3	800.00					
South Lake Ave - s. of E. Green St	45.0	point45	45	2,526.6	1,519.3	800.00				Average	
		point24	24	2,528.4	2,372.9	800.00					

Cordova St- E of S Lake Ave	60.0	point46	46	2,512.8	1,518.3	800.00				Average	
		point12	12	2,778.4	1,518.3	800.00					
Cordova St- E of S Hudson Ave	60.0	point47	47	2,037.2	1,527.0	800.00				Average	
		point11	11	2,512.8	1,518.3	800.00					
Cordova St - Oak Knoll Ave to Hudson	60.0	point48	48	1,601.5	1,520.0	800.00				Average	
		point10	10	2,037.2	1,527.0	800.00					
East Green St- E of S Lake Ave	50.0	point49	49	2,521.5	2,374.0	800.00				Average	
		point5	5	2,811.4	2,372.3	800.00					
East Green St- E of S Hudson Ave	50.0	point50	50	2,035.4	2,372.3	800.00				Average	
		point4	4	2,521.5	2,374.0	800.00					
East Green St- Oak Knoll Ave to Hudson	50.0	point51	51	1,592.8	2,365.3	800.00				Average	
		point3	3	2,035.4	2,372.3	800.00					

Dudek 1 May 2020
MG TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (grading)

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
East Green Street w of S Oak Knoll Ave	point1	1	978	35	20	35	20	35	0	0	0	0
	point2	2										
Mira Monte Place - w of S. Oak Knoll Av	point31	31	82	25	2	25	1	25	0	0	0	0
	point7	7										
Cordova Street - w. of S. Oak Knoll Ave	point33	33	959	35	20	35	10	35	0	0	0	0
	point9	9										
South Oak Knoll Ave - s. of Cordova St	point35	35	309	35	6	35	3	35	0	0	0	0
	point14	14										
South Hudson Ave - s. of Cordova St	point37	37	484	35	10	35	5	35	0	0	0	0
	point19	19										
South Lake Ave - s. of Cordova St	point39	39	2279	35	47	35	23	35	0	0	0	0
	point23	23										
South Oak Knoll Ave - n. of E. Green St	point40	40	409	35	8	35	4	35	0	0	0	0
	point17	17										
South Hudson Ave - n. of E. Green St	point41	41	462	35	10	35	5	35	0	0	0	0
	point21	21										
South Lake Ave - n. of E. Green St	point42	42	2279	35	47	35	23	35	0	0	0	0
	point25	25										
South Oak Knoll Ave - s. of E. Green St	point43	43	329	35	6	35	13	35	0	0	0	0
	point15	15	329	35	6	35	13	35	0	0	0	0
	point16	16										
South Hudson Ave - s. of E. Green St	point44	44	504	35	10	35	15	35	0	0	0	0
	point20	20										

INPUT: TRAFFIC FOR LAeq1h Volumes **12101**

South Lake Ave - s. of E. Green St	point45	45	2279	35	47	35	23	35	0	0	0	0
	point24	24										
Cordova St- E of S Lake Ave	point46	46	959	35	20	35	10	35	0	0	0	0
	point12	12										
Cordova St- E of S Hudson Ave	point47	47	959	35	20	35	10	35	0	0	0	0
	point11	11										
Cordova St - Oak Knoll Ave to Hudson	point48	48	959	35	20	35	10	35	0	0	0	0
	point10	10										
East Green St- E of S Lake Ave	point49	49	2279	35	47	35	23	35	0	0	0	0
	point5	5										
East Green St- E of S Hudson Ave	point50	50	978	35	20	35	20	35	0	0	0	0
	point4	4										
East Green St- Oak Knoll Ave to Hudson	point51	51	978	35	20	35	20	35	0	0	0	0
	point3	3										

Dudek 1 May 2020
MG TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (grading)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	1,586.3	2,197.7	800.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	1,605.7	1,986.5	800.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	2,024.9	1,885.4	800.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,037.9	2,324.9	800.00	5.00	0.00	66	10.0	8.0	Y

Dudek 1 May 2020
MG TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (grading)

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier2	W	0.00	99.99	0.00				0.00	point3	3	1,629.0	2,218.9	800.00	20.00	0.00	0	0		
									point5	5	1,625.6	2,322.2	800.00	20.00	0.00	0	0		
									point6	6	1,782.6	2,323.1	800.00	20.00	0.00	0	0		
									point7	7	1,784.4	2,231.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point195	195	1,645.3	1,577.4	800.00	20.00	0.00	0	0		
									point138	138	1,638.4	1,771.8	800.00	20.00	0.00	0	0		
									point139	139	1,782.5	1,771.8	800.00	20.00	0.00	0	0		
									point140	140	1,785.9	1,575.7	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point197	197	1,102.0	1,928.0	800.00	20.00	0.00	0	0		
									point114	114	1,421.4	1,935.0	800.00	20.00	0.00	0	0		
									point115	115	1,428.3	1,850.0	800.00	20.00	0.00	0	0		
									point116	116	1,549.9	1,850.0	800.00	20.00	0.00	0	0		
									point117	117	1,536.0	1,728.4	800.00	20.00	0.00	0	0		
									point118	118	1,367.6	1,730.2	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point199	199	1,289.5	2,160.7	800.00	20.00	0.00	0	0		
									point128	128	1,390.2	2,164.1	800.00	20.00	0.00	0	0		
									point129	129	1,397.1	2,011.4	800.00	20.00	0.00	0	0		
									point130	130	1,296.4	2,009.7	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point201	201	1,185.3	2,323.8	800.00	20.00	0.00	0	0		
									point132	132	1,374.5	2,320.3	800.00	20.00	0.00	0	0		
									point133	133	1,379.7	2,252.6	800.00	20.00	0.00	0	0		
									point134	134	1,235.7	2,249.2	800.00	20.00	0.00	0	0		
									point135	135	1,239.2	2,174.5	800.00	20.00	0.00	0	0		
									point136	136	1,178.4	2,172.8	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point203	203	1,848.0	2,647.4	800.00	20.00	0.00	0	0		
									point53	53	1,850.7	2,428.3	800.00	20.00	0.00	0	0		
									point54	54	1,988.5	2,422.8	800.00	20.00	0.00	0	0		
									point55	55	1,994.0	2,652.9	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point205	205	1,424.0	2,324.6	800.00	20.00	0.00	0	0		
									point97	97	1,536.1	2,328.4	800.00	20.00	0.00	0	0		
									point98	98	1,557.4	2,305.5	800.00	20.00	0.00	0	0		
									point99	99	1,558.0	2,215.3	800.00	20.00	0.00	0	0		
									point100	100	1,432.2	2,215.3	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point207	207	1,404.4	2,150.0	800.00	20.00	0.00	0	0		
									point43	43	1,546.3	2,148.7	800.00	20.00	0.00	0	0		

									point44	44	1,550.4	2,010.9	800.00	20.00	0.00	0	0		
									point45	45	1,430.5	2,008.1	800.00	20.00	0.00	0	0		
									point46	46	1,429.2	2,050.8	800.00	20.00	0.00	0	0		
									point47	47	1,500.8	2,050.8	800.00	20.00	0.00	0	0		
									point48	48	1,499.4	2,107.3	800.00	20.00	0.00	0	0		
									point49	49	1,441.6	2,107.3	800.00	20.00	0.00	0	0		
									point50	50	1,442.9	2,055.0	800.00	20.00	0.00	0	0		
									point51	51	1,404.4	2,056.3	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point209	209	1,608.3	2,511.0	800.00	20.00	0.00	0	0		
									point57	57	1,613.8	2,429.7	800.00	20.00	0.00	0	0		
									point58	58	1,732.3	2,431.1	800.00	20.00	0.00	0	0		
									point59	59	1,735.0	2,512.3	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point211	211	2,060.1	2,710.8	800.00	20.00	0.00	0	0		
									point61	61	2,062.9	2,415.9	800.00	20.00	0.00	0	0		
									point62	62	2,275.1	2,415.9	800.00	20.00	0.00	0	0		
									point63	63	2,273.7	2,659.8	800.00	20.00					
Barrier2-2-2-2	W	0.00	99.99	0.00				0.00	point213	213	1,556.8	1,579.2	800.00	20.00	0.00	0	0		
									point122	122	1,115.9	1,568.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point214	214	1,084.7	2,153.7	800.00	20.00	0.00	0	0		
									point124	124	1,272.1	2,148.5	800.00	20.00	0.00	0	0		
									point125	125	1,289.5	1,994.0	800.00	20.00	0.00	0	0		
									point126	126	1,091.6	2,006.2	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point216	216	1,491.4	2,513.6	800.00	20.00	0.00	0	0		
									point106	106	1,491.4	2,421.7	800.00	20.00	0.00	0	0		
									point107	107	1,553.7	2,417.4	800.00	20.00	0.00	0	0		
									point108	108	1,554.8	2,515.8	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point218	218	1,501.6	2,207.1	800.00	20.00	0.00	0	0		
									point102	102	1,549.8	2,207.6	800.00	20.00	0.00	0	0		
									point103	103	1,549.8	2,172.6	800.00	20.00	0.00	0	0		
									point104	104	1,498.4	2,173.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point220	220	1,381.5	2,511.3	800.00	20.00	0.00	0	0		
									point110	110	1,482.2	2,509.6	800.00	20.00	0.00	0	0		
									point111	111	1,485.6	2,408.9	800.00	20.00	0.00	0	0		
									point112	112	1,388.4	2,408.9	800.00	20.00					
Barrier2-2-2	W	0.00	99.99	0.00				0.00	point222	222	1,789.6	2,214.6	800.00	20.00	0.00	0	0		
									point9	9	1,787.9	2,332.6	800.00	20.00	0.00	0	0		
									point10	10	1,999.6	2,330.9	800.00	20.00	0.00	0	0		
									point11	11	2,000.5	2,231.9	800.00	20.00	0.00	0	0		
									point12	12	1,943.2	2,233.6	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point224	224	2,324.1	2,334.4	800.00	20.00	0.00	0	0		
									point66	66	2,477.2	2,333.3	800.00	20.00	0.00	0	0		
									point67	67	2,477.2	2,248.0	800.00	20.00	0.00	0	0		
									point68	68	2,331.2	2,249.7	800.00	20.00	0.00	0	0		
									point69	69	2,330.7	2,267.7	800.00	20.00	0.00	0	0		
									point70	70	2,306.1	2,267.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point226	226	2,395.8	2,168.4	800.00	20.00	0.00	0	0		
									point76	76	2,398.6	2,040.3	800.00	20.00	0.00	0	0		
									point77	77	2,488.1	2,038.9	800.00	20.00	0.00	0	0		
									point78	78	2,486.8	2,175.3	800.00	20.00					

Barrier2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point228	228	2,331.1	2,419.2	800.00	20.00	0.00	0	0		
									point72	72	2,471.6	2,416.4	800.00	20.00	0.00	0	0		
									point73	73	2,477.1	2,704.4	800.00	20.00	0.00	0	0		
									point74	74	2,321.5	2,701.6	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point230	230	1,861.6	2,132.1	800.00	20.00	0.00	0	0		
									point17	17	1,864.2	2,060.1	800.00	20.00	0.00	0	0		
									point18	18	1,938.0	2,058.3	800.00	20.00	0.00	0	0		
									point19	19	1,938.9	2,008.9	800.00	20.00	0.00	0	0		
									point20	20	1,993.6	2,008.0	800.00	20.00	0.00	0	0		
									point21	21	1,987.5	2,133.8	800.00	20.00					
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point232	232	2,074.3	2,104.3	800.00	20.00	0.00	0	0		
									point14	14	2,070.8	2,326.5	800.00	20.00	0.00	0	0		
									point15	15	2,322.5	2,330.0	800.00	20.00					
Barrier2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point234	234	1,642.1	2,090.4	800.00	20.00	0.00	0	0		
									point23	23	1,792.2	2,091.3	800.00	20.00	0.00	0	0		
									point24	24	1,793.1	2,021.0	800.00	20.00	0.00	0	0		
									point25	25	1,641.2	2,018.4	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point236	236	2,076.2	1,759.3	800.00	20.00	0.00	0	0		
									point80	80	2,331.0	1,755.2	800.00	20.00	0.00	0	0		
									point81	81	2,477.1	1,755.2	800.00	20.00	0.00	0	0		
									point82	82	2,482.6	1,616.0	800.00	20.00	0.00	0	0		
									point83	83	2,078.9	1,620.1	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point238	238	1,796.5	1,792.4	800.00	20.00	0.00	0	0		
									point93	93	1,993.5	1,792.4	800.00	20.00	0.00	0	0		
									point94	94	1,997.7	1,748.3	800.00	20.00	0.00	0	0		
									point95	95	1,799.2	1,746.9	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point240	240	1,856.4	1,940.3	800.00	20.00	0.00	0	0		
									point35	35	1,986.6	1,940.3	800.00	20.00	0.00	0	0		
									point36	36	1,987.5	1,894.3	800.00	20.00	0.00	0	0		
									point37	37	1,857.3	1,895.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point242	242	1,798.4	1,874.5	800.00	20.00	0.00	0	0		
									point39	39	1,987.1	1,874.5	800.00	20.00	0.00	0	0		
									point40	40	1,992.6	1,807.0	800.00	20.00	0.00	0	0		
									point41	41	1,801.1	1,804.2	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point244	244	1,643.8	1,995.0	800.00	20.00	0.00	0	0		
									point27	27	1,726.2	1,995.8	800.00	20.00	0.00	0	0		
									point28	28	1,729.7	1,953.3	800.00	20.00	0.00	0	0		
									point29	29	1,643.8	1,954.2	800.00	20.00	0.00	0	0		
									point30	30	1,642.1	1,920.3	800.00	20.00	0.00	0	0		
									point31	31	1,642.9	1,861.3	800.00	20.00	0.00	0	0		
									point32	32	1,781.8	1,857.0	800.00	20.00	0.00	0	0		
									point33	33	1,780.1	1,920.3	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point246	246	2,329.7	1,892.9	800.00	20.00	0.00	0	0		
									point85	85	2,461.9	1,894.3	800.00	20.00	0.00	0	0		
									point86	86	2,467.4	1,759.3	800.00	20.00	0.00	0	0		
									point87	87	2,340.7	1,760.7	800.00	20.00					
Barrier2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	W	0.00	99.99	0.00				0.00	point248	248	2,347.6	2,033.4	800.00	20.00	0.00	0	0		
									point89	89	2,464.7	2,030.7	800.00	20.00	0.00	0	0		
									point90	90	2,468.8	1,959.0	800.00	20.00	0.00	0	0		

									point91	91	2,357.2	1,959.0	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point250	250	1,367.6	1,697.2	800.00	20.00	0.00	0	0			
									point120	120	1,549.9	1,695.5	800.00	20.00	0.00	0	0			
									point121	121	1,556.8	1,579.2	800.00	20.00						
Barrier2-2-2-2-2	W	0.00	99.99	0.00				0.00	point252	252	1,817.2	1,716.3	800.00	20.00	0.00	0	0			
									point142	142	1,989.0	1,714.6	800.00	20.00	0.00	0	0			
									point143	143	1,985.5	1,573.9	800.00	20.00	0.00	0	0			
									point144	144	1,900.5	1,579.2	800.00	20.00	0.00	0	0			
									point145	145	1,905.7	1,667.7	800.00	20.00	0.00	0	0			
									point146	146	1,810.2	1,665.9	800.00	20.00						

Dudek
MG
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 12101
RUN: 740 E Green St_Ex plus Const (grading)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST1	1	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
ST2	2	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
ST3	3	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
ST4	4	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0

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

APPENDIX C

Mechanical Equipment Noise Calculation Worksheet

MECHANICAL EQUIPMENT NOISE LEVEL

Location: North 1, Property Line 177 355 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	177	355	Trane 4DCY4060	52	805	852.0	65	20	45	849	4.0	5.01	20	50	30
2	160	244	849	177	355	Trane 4DCY4060	55	805	852.0	112	5	107	849	24.0	24.00	27	48	28
3	210	196	870	177	355	Trane 4DCY4060	55	805	873.0	162	212	-50	870	4.0	107.98	33	45	25
4	310	196	870	177	355	Trane 4DCY4060	57	805	873.0	207	136	71	870	4.0	15.23	25	45	25
5	380	196	870	177	355	Trane 4DCY4060	57	805	873.0	258	50	208	870	4.0	2.10	17	43	26
6	370	321	839	177	355	Trane 4DCY4060	53	805	842.0	196	88	108	839	4.0	2.71	18	42	24
7	177	290	839	177	355	Trane 4DCY4060	53	805	842.0	65	113	-48	839	4.0	88.78	33	51	31
																TOTAL LEQ:	56	36
																	Without Barrier	With Barrier/ Parapet

Location: North 2, Property Line 370 355 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	370	355	Trane 4DCY4060	52	805	852.0	204	25	179	849	4.0	0.90	13	40	27
2	160	244	849	370	355	Trane 4DCY4060	55	805	852.0	238	50	188	849	24.0	10.33	23	41	21
3	210	196	870	370	355	Trane 4DCY4060	55	805	873.0	226	75	151	870	4.0	4.50	20	42	22
4	310	196	870	370	355	Trane 4DCY4060	57	805	873.0	170	25	145	870	4.0	2.24	17	47	30
5	380	196	870	370	355	Trane 4DCY4060	57	805	873.0	159	50	109	870	4.0	5.41	20	47	27
6	370	321	839	370	355	Trane 4DCY4060	53	805	842.0	34	75	-41	839	4.0	72.02	32	57	37
7	177	290	839	370	355	Trane 4DCY4060	53	805	842.0	204	25	179	839	4.0	0.61	12	41	29
																TOTAL LEQ:	58	39
																	Without Barrier	With Barrier/ Parapet

Equip Site	X	Y	Elev. At Roof or Ground	Source Height	LwA Single Source	Number of Units	Sound Level at 50 feet Total	Equip. Location Site / Number	
1	177	290	849	3	71	20	52	1	Trane 4DCY4060
2	160	244	849	3	71	34	55	2	Trane 4DCY4060
3	210	196	870	3	71	36	55	3	Trane 4DCY4060
4	310	196	870	3	71	64	57	4	Trane 4DCY4060
5	380	196	870	3	71	60	57	5	Trane 4DCY4060
6	370	321	839	3	71	26	53	6	Trane 4DCY4060
7	177	290	839	3	71	26	53	7	Trane 4DCY4060
						266			

Frequency (in Hz) 500

Receivers at P.L.

W1 PL	121	224	800
W2 PL	121	183	800
S1 PL	143	88	800
S2 PL	360	33	800
E1 PL	462	315	800
E2 PL	462	195	800
N1 PL	177	355	800
N2 PL	370	355	800

MECHANICAL EQUIPMENT NOISE LEVEL

Location: South 1, Property Line 143 88 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	143	88	Trane 4DCY4060	52	805	852.0	205	48	10	849	24.0	11.76	24	40	20
2	160	244	849	143	88	Trane 4DCY4060	55	805	852.0	157	30	76	849	4.0	1.70	16	45	29
3	210	196	870	143	88	Trane 4DCY4060	55	805	873.0	127	42	30	870	4.0	6.63	21	47	27
4	310	196	870	143	88	Trane 4DCY4060	57	805	873.0	199	120	30	870	4.0	13.05	24	45	25
5	380	196	870	143	88	Trane 4DCY4060	57	805	873.0	260	210	30	870	4.0	23.48	27	43	23
6	370	321	839	143	88	Trane 4DCY4060	53	805	842.0	325	85	88	839	44.0	17.51	25	37	17
7	177	290	839	143	88	Trane 4DCY4060	53	805	842.0	205	80	35	839	4.0	2.10	17	41	25
																TOTAL LEQ:	52	34
																	Without Barrier	With Barrier/ Parapet

Location: South 2, Property Line 360 33 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	360	33	Trane 4DCY4060	52	805	852.0	315	48	267	849	24.0	8.41	22	36	16
2	160	244	849	360	-25	Trane 4DCY4060	55	805	852.0	335	30	305	849	4.0	0.44	11	38	27
3	210	196	870	360	-25	Trane 4DCY4060	55	805	873.0	267	42	225	870	4.0	1.63	16	40	25
4	310	196	870	360	-25	Trane 4DCY4060	57	805	873.0	227	120	107	870	4.0	9.29	23	44	24
5	380	196	870	360	-25	Trane 4DCY4060	57	805	873.0	222	210	12	870	4.0	42.80	29	44	24
6	370	321	839	360	-25	Trane 4DCY4060	53	805	842.0	346	85	261	839	44.0	16.79	25	37	17
7	177	290	839	360	-25	Trane 4DCY4060	53	805	842.0	364	80	284	839	4.0	0.59	12	36	25
																TOTAL LEQ:	49	32
																	Without Barrier	With Barrier/ Parapet

Equip Site	X	Y	Elev. At Roof or Ground	Source Height	LwA Single Source	Number of Units	Sound Level at 50 feet Total	Equip. Location Site / Number	
1	177	290	849	3	71	20	52	1	Trane 4DCY4060
2	160	244	849	3	71	34	55	2	Trane 4DCY4060
3	210	196	870	3	71	36	55	3	Trane 4DCY4060
4	310	196	870	3	71	64	57	4	Trane 4DCY4060
5	380	196	870	3	71	60	57	5	Trane 4DCY4060
6	370	321	839	3	71	26	53	6	Trane 4DCY4060
7	177	290	839	3	71	26	53	7	Trane 4DCY4060
						266			

Frequency (in Hz) 500

Receivers at P.L.

W1 PL	121	224	800
W2 PL	121	183	800
S1 PL	143	88	800
S2 PL	360	33	800
E1 PL	462	315	800
E2 PL	462	195	800
N1 PL	177	355	800
N2 PL	370	355	800

Receivers at Adjacent NSLUs

W1	71	224	800
W2	71	183	840
S1	143	76	800
S2	360	-25	840
E1	512	315	840
E2	512	195	840

MECHANICAL EQUIPMENT NOISE LEVEL

Location:
East 1, Property Line 462 315 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	462	315	Trane 4DCY4060	52	805	852.0	286	20	266	849	4.0	0.43	11	37	27
2	160	244	849	512	315	Trane 4DCY4060	55	805	852.0	359	5	354	849	24.0	17.85	26	38	18
3	210	196	870	512	315	Trane 4DCY4060	55	805	873.0	325	212	113	870	4.0	11.09	24	39	19
4	310	196	870	512	315	Trane 4DCY4060	57	805	873.0	234	136	98	870	4.0	10.82	23	44	24
5	380	196	870	512	315	Trane 4DCY4060	57	805	873.0	178	50	128	870	4.0	4.37	20	46	27
6	370	321	839	512	315	Trane 4DCY4060	53	805	842.0	142	88	54	839	4.0	6.50	21	44	24
7	177	290	839	512	315	Trane 4DCY4060	53	805	842.0	336	113	223	839	4.0	1.06	14	37	23
																TOTAL LEQ:	51	32
																	Without Barrier	With Barrier/ Parapet

Location:
East 2, Property Line 462 195 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	462	195	Trane 4DCY4060	52	805	852.0	300	25	275	849	4.0	0.46	11	37	26
2	160	244	849	462	195	Trane 4DCY4060	55	805	852.0	306	50	256	849	24.0	8.50	22	39	19
3	210	196	870	462	195	Trane 4DCY4060	55	805	873.0	252	75	177	870	4.0	3.54	19	41	22
4	310	196	870	462	195	Trane 4DCY4060	57	805	873.0	152	25	127	870	4.0	2.71	18	48	30
5	380	196	870	462	195	Trane 4DCY4060	57	805	873.0	82	50	32	870	4.0	17.45	25	53	33
6	370	321	839	462	195	Trane 4DCY4060	53	805	842.0	156	75	81	839	4.0	3.70	19	44	25
7	177	290	839	462	195	Trane 4DCY4060	53	805	842.0	300	25	275	839	4.0	0.32	10	38	28
																TOTAL LEQ:	55	37
																	Without Barrier	With Barrier/ Parapet

Equip Site	X	Y	Elev. At Roof or Ground	Source Height	LwA Single Source	Number of Units	Sound Level at 50 feet Total	Equip. Location Site / Number	
1	177	290	849	3	71	20	52	1	Trane 4DCY4060
2	160	244	849	3	71	34	55	2	Trane 4DCY4060
3	210	196	870	3	71	36	55	3	Trane 4DCY4060
4	310	196	870	3	71	64	57	4	Trane 4DCY4060
5	380	196	870	3	71	60	57	5	Trane 4DCY4060
6	370	321	839	3	71	26	53	6	Trane 4DCY4060
7	177	290	839	3	71	26	53	7	Trane 4DCY4060
						266			

Frequency (in Hz) 500

Receivers at P.L.

W1 PL	121	224	800
W2 PL	121	183	800
S1 PL	143	88	800
S2 PL	360	33	800
E1 PL	462	315	800
E2 PL	462	195	800
N1 PL	177	355	800
N2 PL	370	355	800

MECHANICAL EQUIPMENT NOISE LEVEL

Location: West 1, Property Line — 121 — 224 — 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	121	224	Trane 4DCY4060	52	805	852.0	87	48	39	849	4.0	9.90	23	48	28
2	160	244	849	121	224	Trane 4DCY4060	55	805	852.0	44	30	14	849	4.0	14.02	25	56	36
3	210	196	870	121	224	Trane 4DCY4060	55	805	873.0	93	42	51	870	4.0	11.20	24	49	29
4	310	196	870	121	224	Trane 4DCY4060	57	805	873.0	191	120	71	870	4.0	14.51	25	46	26
5	380	196	870	121	224	Trane 4DCY4060	57	805	873.0	261	210	51	870	4.0	23.46	27	43	23
6	370	321	839	121	224	Trane 4DCY4060	53	805	842.0	267	85	182	839	4.0	1.23	14	39	25
7	177	290	839	121	224	Trane 4DCY4060	53	805	842.0	87	80	7	839	4.0	21.82	26	49	29
																TOTAL LEQ:	58	38

Without Barrier — With Barrier/ Parapet

Location: West 2, Property Line — 121 — 183 — 800

Equip Site	Source Coordinates X	Y	Z	Receiver Coordinates X	Y	Location-Equipment	Leq (h) at 50' (dBA)	Receiver Elevation (feet)	Source Elevation (feet)	Source to Receiver (feet)	Source to Barrier (feet)	Receiver to Barrier (feet)	Barrier (base) (feet)	Barrier Height (feet)	Fresnel No. at 500 Hz	Barrier Attenuation (dBA)	Leq w/o Barrier (dBA)	Leq w/Barrier (dBA)
1	177	290	849	121	183	Trane 4DCY4060	52	805	852.0	121	48	73	849	4.0	4.99	20	45	25
2	160	244	849	121	183	Trane 4DCY4060	55	805	852.0	72	30	42	849	4.0	6.91	22	51	31
3	210	196	870	121	183	Trane 4DCY4060	55	805	873.0	90	42	48	870	4.0	11.85	24	50	30
4	310	196	870	121	183	Trane 4DCY4060	57	805	873.0	189	120	69	870	4.0	14.84	25	46	26
5	380	196	870	121	183	Trane 4DCY4060	57	805	873.0	259	210	49	870	4.0	23.86	27	43	23
6	370	321	839	121	183	Trane 4DCY4060	53	805	842.0	285	85	200	839	4.0	1.07	14	38	24
7	177	290	839	121	183	Trane 4DCY4060	53	805	842.0	121	80	41	839	4.0	8.42	22	46	26
																TOTAL LEQ:	56	36

Without Barrier — With Barrier/ Parapet

Equip Site	X	Y	Elev. At Roof or Ground	Source Height	LwA Single Source	Number of Units	Sound Level at 50 feet Total	Equip. Location Site / Number	
1	177	290	849	3	71	20	52	1	Trane 4DCY4060
2	160	244	849	3	71	34	55	2	Trane 4DCY4060
3	210	196	870	3	71	36	55	3	Trane 4DCY4060
4	310	196	870	3	71	64	57	4	Trane 4DCY4060
5	380	196	870	3	71	60	57	5	Trane 4DCY4060
6	370	321	839	3	71	26	53	6	Trane 4DCY4060
7	177	290	839	3	71	26	53	7	Trane 4DCY4060
						266			

Frequency (in Hz) 500

Receivers at P.L.

W1 PL	121	224	800
W2 PL	121	183	800
S1 PL	143	88	800
S2 PL	360	33	800
E1 PL	462	315	800
E2 PL	462	195	800
N1 PL	177	355	800
N2 PL	370	355	800

APPENDIX D

Roadway Noise Construction Model (RNCM) Data Sheets

Report date: 4/13/2020
Case Description: 740 Green Street - Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest - Church to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	20	0
Excavator	No	40		80.7	10	0
Excavator	No	40		80.7	40	0
Excavator	No	40		80.7	30	0
Dozer	No	40		81.7	50	0
Dozer	No	40		81.7	20	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Concrete Saw	97.5	90.5	N/A	N/A	N/A	N/A
Excavator	94.7	90.7	N/A	N/A	N/A	N/A
Excavator	82.6	78.7	N/A	N/A	N/A	N/A
Excavator	85.1	81.2	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A
Dozer	89.6	85.6	N/A	N/A	N/A	N/A
Total	97.5	94.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	70	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	90	0
Excavator	No	40		80.7	70	0
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	90	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Concrete Saw	86.7	79.7	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A
Excavator	77.8	73.8	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A
Dozer	76.6	72.6	N/A	N/A	N/A	N/A
Total	86.7	82.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	70	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	90	0
Excavator	No	40		80.7	70	0
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	90	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	86.7	79.7	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A
Excavator	77.8	73.8	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A
Dozer	76.6	72.6	N/A	N/A	N/A	N/A
Total	86.7	82.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	70	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	90	0
Excavator	No	40		80.7	70	0
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	90	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	86.7	79.7	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A
Excavator	77.8	73.8	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A
Dozer	76.6	72.6	N/A	N/A	N/A	N/A
Total	86.7	82.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	60	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	60	0
Dozer	No	40		81.7	60	0
Dozer	No	40		81.7	60	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw		80.1	76.1	N/A	N/A	N/A	N/A
Excavator		80.1	76.1	N/A	N/A	N/A	N/A
Excavator		80.1	76.1	N/A	N/A	N/A	N/A
Excavator		76	72	N/A	N/A	N/A	N/A
Dozer		82.4	78.4	N/A	N/A	N/A	N/A
Dozer		77.5	73.5	N/A	N/A	N/A	N/A
	Total	82.4	83.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		68	64	N/A	N/A	N/A	N/A
Dozer		74.5	70.5	N/A	N/A	N/A	N/A
Dozer		69.6	65.6	N/A	N/A	N/A	N/A
	Total	74.5	76	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		72.1	68.1	N/A	N/A	N/A	N/A
Excavator		68	64	N/A	N/A	N/A	N/A
Dozer		74.5	70.5	N/A	N/A	N/A	N/A
Dozer		69.6	65.6	N/A	N/A	N/A	N/A
	Total	74.5	76	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Concrete Saw	72.1	68.1	N/A	N/A	N/A	N/A
Excavator	72.1	68.1	N/A	N/A	N/A	N/A
Excavator	72.1	68.1	N/A	N/A	N/A	N/A
Excavator	68	64	N/A	N/A	N/A	N/A
Dozer	74.5	70.5	N/A	N/A	N/A	N/A
Dozer	69.6	65.6	N/A	N/A	N/A	N/A
Total	74.5	76	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	110	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	110	0
Dozer	No	40		81.7	130	0
Dozer	No	40		81.7	160	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Concrete Saw	82.7	75.7	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Excavator	73.9	69.9	N/A	N/A	N/A	N/A
Dozer	73.4	69.4	N/A	N/A	N/A	N/A
Dozer	71.6	67.6	N/A	N/A	N/A	N/A
Total	82.7	79	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
		Impact	Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator		No	40		80.7	10	0
Excavator		No	40		80.7	20	0
Grader		No	40	85		40	0
Dozer		No	40		81.7	30	0
Scraper		No	40		83.6	50	0
Scraper		No	40		83.6	20	0
Backhoe		No	40		77.6	60	0
Front End Loader		No	40		79.1	30	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		94.7	90.7	N/A	N/A	N/A	N/A
Excavator		88.7	84.7	N/A	N/A	N/A	N/A
Grader		86.9	83	N/A	N/A	N/A	N/A
Dozer		86.1	82.1	N/A	N/A	N/A	N/A
Scraper		83.6	79.6	N/A	N/A	N/A	N/A
Scraper		91.5	87.6	N/A	N/A	N/A	N/A
Backhoe		76	72	N/A	N/A	N/A	N/A
Front End Loader		83.5	79.6	N/A	N/A	N/A	N/A
	Total	94.7	94.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
		Impact	Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator		No	40		80.7	60	0
Excavator		No	40		80.7	80	0
Grader		No	40	85		90	0
Dozer		No	40		81.7	70	0
Scraper		No	40		83.6	100	0
Scraper		No	40		83.6	90	0
Backhoe		No	40		77.6	80	0
Front End Loader		No	40		79.1	90	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		79.1	75.1	N/A	N/A	N/A	N/A
Excavator		76.6	72.6	N/A	N/A	N/A	N/A
Grader		79.9	75.9	N/A	N/A	N/A	N/A
Dozer		78.7	74.8	N/A	N/A	N/A	N/A
Scraper		77.6	73.6	N/A	N/A	N/A	N/A
Scraper		78.5	74.5	N/A	N/A	N/A	N/A
Backhoe		73.5	69.5	N/A	N/A	N/A	N/A
Front End Loader		74	70	N/A	N/A	N/A	N/A
	Total	79.9	82.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	80	0
Grader	No	40	85		90	0
Dozer	No	40		81.7	70	0
Scraper	No	40		83.6	100	0
Scraper	No	40		83.6	90	0
Backhoe	No	40		77.6	80	0
Front End Loader	No	40		79.1	90	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	76.6	72.6	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A
Dozer	78.7	74.8	N/A	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A	N/A
Scraper	78.5	74.5	N/A	N/A	N/A	N/A
Backhoe	73.5	69.5	N/A	N/A	N/A	N/A
Front End Loader	74	70	N/A	N/A	N/A	N/A
Total	79.9	82.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	80	0
Grader	No	40	85		90	0
Dozer	No	40		81.7	70	0
Scraper	No	40		83.6	100	0
Scraper	No	40		83.6	90	0
Backhoe	No	40		77.6	80	0
Front End Loader	No	40		79.1	90	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	76.6	72.6	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A
Dozer	78.7	74.8	N/A	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A	N/A
Scraper	78.5	74.5	N/A	N/A	N/A	N/A
Backhoe	73.5	69.5	N/A	N/A	N/A	N/A
Front End Loader	74	70	N/A	N/A	N/A	N/A
Total	79.9	82.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	60	0
Grader	No	40	85		60	0
Dozer	No	40		81.7	60	0
Scraper	No	40		83.6	60	0
Scraper	No	40		83.6	60	0
Backhoe	No	40		77.6	60	0
Front End Loader	No	40		79.1	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A
Grader	83.4	79.4	N/A	N/A	N/A	N/A
Dozer	80.1	76.1	N/A	N/A	N/A	N/A
Scraper	82	78	N/A	N/A	N/A	N/A
Scraper	82	78	N/A	N/A	N/A	N/A
Backhoe	76	72	N/A	N/A	N/A	N/A
Front End Loader	77.5	73.5	N/A	N/A	N/A	N/A
Total	83.4	85.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	150	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Total	75.5	77.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	150	0

Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Total	75.5	77.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	150	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Total	75.5	77.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	120	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	110	0
Scraper	No	40		83.6	130	0
Scraper	No	40		83.6	160	0
Backhoe	No	40		77.6	140	0
Front End Loader	No	40		79.1	150	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		74.7	70.7	N/A	N/A	N/A	N/A
Excavator		73.1	69.1	N/A	N/A	N/A	N/A
Grader		75.5	71.5	N/A	N/A	N/A	N/A
Dozer		74.8	70.8	N/A	N/A	N/A	N/A
Scraper		75.3	71.3	N/A	N/A	N/A	N/A
Scraper		73.5	69.5	N/A	N/A	N/A	N/A
Backhoe		68.6	64.6	N/A	N/A	N/A	N/A
Front End Loader		69.6	65.6	N/A	N/A	N/A	N/A
	Total	75.5	78.8	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.					

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 4/13/2020
Case Description: 740 Green Street - Building Construction

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	10	0
Man Lift	No	20		74.7	20	0
Man Lift	No	20		74.7	40	0
Man Lift	No	20		74.7	30	0
Generator	No	50		80.6	50	0
Backhoe	No	40		77.6	20	0
Front End Loader	No	40		79.1	60	0
Tractor	No	40	84		30	0
Welder / Torch	No	40		74	40	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		94.5	86.6	N/A	N/A	N/A	N/A
Man Lift		82.7	75.7	N/A	N/A	N/A	N/A
Man Lift		76.6	69.6	N/A	N/A	N/A	N/A
Man Lift		79.1	72.1	N/A	N/A	N/A	N/A
Generator		80.6	77.6	N/A	N/A	N/A	N/A
Backhoe		85.5	81.5	N/A	N/A	N/A	N/A
Front End Loader		77.5	73.5	N/A	N/A	N/A	N/A
Tractor		88.4	84.5	N/A	N/A	N/A	N/A
Welder / Torch		75.9	72	N/A	N/A	N/A	N/A
	Total	94.5	90.1	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.					

		---- Receptor #2 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	60	0
Man Lift	No	20		74.7	80	0

Man Lift	No	20		74.7	90	0
Man Lift	No	20		74.7	70	0
Generator	No	50		80.6	100	0
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	80	0
Tractor	No	40	84		90	0
Welder / Torch	No	40		74	110	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	79	71	N/A	N/A	N/A	N/A
Man Lift	70.6	63.6	N/A	N/A	N/A	N/A
Man Lift	69.6	62.6	N/A	N/A	N/A	N/A
Man Lift	71.8	64.8	N/A	N/A	N/A	N/A
Generator	74.6	71.6	N/A	N/A	N/A	N/A
Backhoe	72.5	68.5	N/A	N/A	N/A	N/A
Front End Loader	75	71	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A
Welder / Torch	67.2	63.2	N/A	N/A	N/A	N/A
Total	79	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	60	0
Man Lift	No	20		74.7	80	0
Man Lift	No	20		74.7	90	0
Man Lift	No	20		74.7	70	0
Generator	No	50		80.6	100	0
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	80	0
Tractor	No	40	84		90	0
Welder / Torch	No	40		74	0	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	79	71	N/A	N/A	N/A	N/A
Man Lift	70.6	63.6	N/A	N/A	N/A	N/A
Man Lift	69.6	62.6	N/A	N/A	N/A	N/A
Man Lift	71.8	64.8	N/A	N/A	N/A	N/A
Generator	74.6	71.6	N/A	N/A	N/A	N/A
Backhoe	72.5	68.5	N/A	N/A	N/A	N/A
Front End Loader	75	71	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A
Welder / Torch		-4	N/A	N/A	N/A	N/A
Total	79	79.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	60	0
Man Lift	No	20		74.7	80	0

Man Lift	No	20		74.7	90	0
Man Lift	No	20		74.7	70	0
Generator	No	50		80.6	100	0
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	80	0
Tractor	No	40	84		90	0
Welder / Torch	No	40		74	110	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	79	71	N/A	N/A	N/A	N/A
Man Lift	70.6	63.6	N/A	N/A	N/A	N/A
Man Lift	69.6	62.6	N/A	N/A	N/A	N/A
Man Lift	71.8	64.8	N/A	N/A	N/A	N/A
Generator	74.6	71.6	N/A	N/A	N/A	N/A
Backhoe	72.5	68.5	N/A	N/A	N/A	N/A
Front End Loader	75	71	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A
Welder / Torch	67.2	63.2	N/A	N/A	N/A	N/A
Total	79	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	60	0
Man Lift	No	20		74.7	60	0
Man Lift	No	20		74.7	60	0
Man Lift	No	20		74.7	60	0
Generator	No	50		80.6	60	0
Backhoe	No	40		77.6	60	0
Front End Loader	No	40		79.1	60	0
Tractor	No	40	84		60	0
Welder / Torch	No	40		74	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	79	71	N/A	N/A	N/A	N/A
Man Lift	73.1	66.1	N/A	N/A	N/A	N/A
Man Lift	73.1	66.1	N/A	N/A	N/A	N/A
Man Lift	73.1	66.1	N/A	N/A	N/A	N/A
Generator	79	76	N/A	N/A	N/A	N/A
Backhoe	76	72	N/A	N/A	N/A	N/A
Front End Loader	77.5	73.5	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A
Welder / Torch	72.4	68.4	N/A	N/A	N/A	N/A
Total	82.4	82.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
Man Lift	No	20		74.7	150	0

Man Lift	No	20		74.7	150	0
Man Lift	No	20		74.7	150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0
Tractor	No	40	84		150	0
Welder / Torch	No	40		74	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	71	63	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Generator	71.1	68.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A
Welder / Torch	64.5	60.5	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
Man Lift	No	20		74.7	150	0
Man Lift	No	20		74.7	150	0
Man Lift	No	20		74.7	150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0
Tractor	No	40	84		150	0
Welder / Torch	No	40		74	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	71	63	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Generator	71.1	68.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A
Welder / Torch	64.5	60.5	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
Man Lift	No	20		74.7	150	0

Man Lift	No	20		74.7	150	0
Man Lift	No	20		74.7	150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0
Tractor	No	40	84		150	0
Welder / Torch	No	40		74	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	71	63	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Generator	71.1	68.1	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A
Welder / Torch	64.5	60.5	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	100	0
Man Lift	No	20		74.7	120	0
Man Lift	No	20		74.7	150	0
Man Lift	No	20		74.7	110	0
Generator	No	50		80.6	130	0
Backhoe	No	40		77.6	160	0
Front End Loader	No	40		79.1	140	0
Tractor	No	40	84		150	0
Welder / Torch	No	40		74	120	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	74.5	66.6	N/A	N/A	N/A	N/A
Man Lift	67.1	60.1	N/A	N/A	N/A	N/A
Man Lift	65.2	58.2	N/A	N/A	N/A	N/A
Man Lift	67.9	60.9	N/A	N/A	N/A	N/A
Generator	72.3	69.3	N/A	N/A	N/A	N/A
Backhoe	67.5	63.5	N/A	N/A	N/A	N/A
Front End Loader	70.2	66.2	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A
Welder / Torch	66.4	62.4	N/A	N/A	N/A	N/A
Total	74.5	75.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Report date: 4/13/2020
Case Description: 740 Green Street - Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night

Nearest - Church to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	10	0
Paver	No	50		77.2	20	0
Concrete Mixer Truck	No	40		78.8	40	0
Concrete Pump Truck	No	20		81.4	30	0
Roller	No	20		80	50	0
Roller	No	20		80	20	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	91.2	88.2	N/A	N/A	N/A	N/A
Paver	85.2	82.2	N/A	N/A	N/A	N/A
Concrete Mixer Truck	80.7	76.8	N/A	N/A	N/A	N/A
Concrete Pump Truck	85.8	78.8	N/A	N/A	N/A	N/A
Roller	80	73	N/A	N/A	N/A	N/A
Roller	88	81	N/A	N/A	N/A	N/A
Total	91.2	90.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	60	0
Paver	No	50		77.2	80	0
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Pump Truck	No	20		81.4	70	0
Roller	No	20		80	100	0
Roller	No	20		80	90	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	75.6	72.6	N/A	N/A	N/A	N/A
Paver	73.1	70.1	N/A	N/A	N/A	N/A
Concrete Mixer Truck	73.7	69.7	N/A	N/A	N/A	N/A
Concrete Pump Truck	78.5	71.5	N/A	N/A	N/A	N/A
Roller	74	67	N/A	N/A	N/A	N/A
Roller	74.9	67.9	N/A	N/A	N/A	N/A
Total	78.5	78	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	60	0
Paver	No	50		77.2	80	0
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Pump Truck	No	20		81.4	70	0
Roller	No	20		80	100	0
Roller	No	20		80	90	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Paver		79.1	75.1	N/A	N/A	N/A	N/A
Paver		76.6	72.6	N/A	N/A	N/A	N/A
Concrete Mixer Truck		79.9	75.9	N/A	N/A	N/A	N/A
Concrete Pump Truck		78.7	74.8	N/A	N/A	N/A	N/A
Roller		77.6	73.6	N/A	N/A	N/A	N/A
Roller		78.5	74.5	N/A	N/A	N/A	N/A
	Total	79.9	82.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	60	0
Paver	No	50		77.2	80	0
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Pump Truck	No	20		81.4	70	0
Roller	No	20		80	100	0
Roller	No	20		80	90	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Paver		79	71	N/A	N/A	N/A	N/A
Paver		70.6	63.6	N/A	N/A	N/A	N/A
Concrete Mixer Truck		69.6	62.6	N/A	N/A	N/A	N/A
Concrete Pump Truck		71.8	64.8	N/A	N/A	N/A	N/A
Roller		74.6	71.6	N/A	N/A	N/A	N/A
Roller		72.5	68.5	N/A	N/A	N/A	N/A
	Total	79	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	60	0
Paver	No	50		77.2	60	0
Concrete Mixer Truck	No	40		78.8	60	0
Concrete Pump Truck	No	20		81.4	60	0
Roller	No	20		80	60	0
Roller	No	20		80	60	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Paver		79	71	N/A	N/A	N/A	N/A
Paver		73.1	66.1	N/A	N/A	N/A	N/A
Concrete Mixer Truck		73.1	66.1	N/A	N/A	N/A	N/A
Concrete Pump Truck		73.1	66.1	N/A	N/A	N/A	N/A
Roller		79	76	N/A	N/A	N/A	N/A
Roller		76	72	N/A	N/A	N/A	N/A
	Total	82.4	82.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0
Paver	No	50		77.2	150	0
Concrete Mixer Truck	No	40		78.8	150	0
Concrete Pump Truck	No	20		81.4	150	0
Roller	No	20		80	150	0
Roller	No	20		80	150	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Paver	71	63	N/A	N/A	N/A	N/A
Paver	65.2	58.2	N/A	N/A	N/A	N/A
Concrete Mixer Truck	65.2	58.2	N/A	N/A	N/A	N/A
Concrete Pump Truck	65.2	58.2	N/A	N/A	N/A	N/A
Roller	71.1	68.1	N/A	N/A	N/A	N/A
Roller	68	64	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0
Paver	No	50		77.2	150	0
Concrete Mixer Truck	No	40		78.8	150	0
Concrete Pump Truck	No	20		81.4	150	0
Roller	No	20		80	150	0
Roller	No	20		80	150	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Paver	67.7	64.7	N/A	N/A	N/A	N/A
Paver	67.7	64.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck	69.3	65.3	N/A	N/A	N/A	N/A
Concrete Pump Truck	71.9	64.9	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A
Total	71.9	72.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0

Paver	No	50	77.2	150	0
Concrete Mixer Truck	No	40	78.8	150	0
Concrete Pump Truck	No	20	81.4	150	0
Roller	No	20	80	150	0
Roller	No	20	80	150	0

		Results				
		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		71	63	N/A	N/A	N/A	N/A
Paver		65.2	58.2	N/A	N/A	N/A	N/A
Concrete Mixer Truck		65.2	58.2	N/A	N/A	N/A	N/A
Concrete Pump Truck		65.2	58.2	N/A	N/A	N/A	N/A
Roller		71.1	68.1	N/A	N/A	N/A	N/A
Roller		68	64	N/A	N/A	N/A	N/A
	Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

		---- Receptor #9 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	100	0
Paver	No	50		77.2	120	0
Concrete Mixer Truck	No	40		78.8	150	0
Concrete Pump Truck	No	20		81.4	110	0
Roller	No	20		80	130	0
Roller	No	20		80	160	0

		Results				
		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		71.2	68.2	N/A	N/A	N/A	N/A
Paver		69.6	66.6	N/A	N/A	N/A	N/A
Concrete Mixer Truck		69.3	65.3	N/A	N/A	N/A	N/A
Concrete Pump Truck		74.6	67.6	N/A	N/A	N/A	N/A
Roller		71.7	64.7	N/A	N/A	N/A	N/A
Roller		69.9	62.9	N/A	N/A	N/A	N/A
	Total	74.6	74	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 4/13/2020
Case Description: 740 Green Street - Architectural Coating

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	10	0

	Results	
	Calculated (dBA)	Noise Limits (dBA)

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq
Compressor (air)		91.6	87.7	N/A	N/A	N/A	N/A
	Total	91.6	87.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	60	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Compressor (air)	76.1	72.1	N/A	N/A	N/A	N/A
Total	76.1	72.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	60	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Compressor (air)	79	71	N/A	N/A	N/A	N/A
Total	79	79.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	60	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Compressor (air)	79	71	N/A	N/A	N/A	N/A
Total	79	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Compressor (air)	No	40		77.7	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	79	71	N/A	N/A	N/A	N/A
Total	82.4	82.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	71	63	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A
Total	68.1	64.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A
Total	68.1	64.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	100	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		71.6	67.7	N/A	N/A	N/A	N/A
	Total	71.6	67.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 4/13/2020
Case Description: 740 Green Street - Trenching

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Slurry Trenching Machine	No	50		80.4	10	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine		94.3	91.3	N/A	N/A	N/A	N/A
	Total	94.3	91.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West	Residential	65	60	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Slurry Trenching Machine	No	50		80.4	60	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine		76.1	72.1	N/A	N/A	N/A	N/A
	Total	76.1	72.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to South	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	79	71	N/A	N/A	N/A	N/A
Total	79	79.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
MF Resi's to East	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	79	71	N/A	N/A	N/A	N/A
Total	79	79.4	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest - Church to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	79	71	N/A	N/A	N/A	N/A
Total	82.4	82.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
SF and MF Resi's to West - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	71	63	N/A	N/A	N/A	N/A
Total	74.5	74.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
MF Resi's to South - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	70.8	67.8	N/A	N/A	N/A	N/A
Total	70.8	67.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
MF Resi's to East - Typical	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	68.1	64.1	N/A	N/A	N/A	N/A
Total	68.1	64.1	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
100 Foot Reference Distance	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Slurry Trenching Machine	No	50		80.4	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Slurry Trenching Machine	71.6	67.7	N/A	N/A	N/A	N/A
Total	71.6	67.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

PASADENA
DEPARTMENT OF TRANSPORTATION

Transportation Impact Analysis

CEQA Evaluation

Category 2

Project Address: 740-790 East Green Street

Project Summary: Demolition of existing commercial office buildings and construct 263 residential units, 16,481 sf commercial space, a pocket park, and subterranean parking

Applicant:
Stanford Pasadena, LLC
Attention: Daniel Taban
888 South Figueroa Street
Suite 1900
Los Angeles, CA 90017

Attention:
Talyn Mirzakhanian, Planning Manager
City Planning Department

April 14, 2020

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I. Study Objective

This report analyzed the impact the development will have on the City transportation system by estimating incremental changes in vehicle miles traveled (VMT) per capita, vehicle trips per capita (VT), the project impact on service population proximity access to transit and bike facilities, and walk accessibility score.

II. Project Description

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of 263 residential units, 16,481 sf commercial space, a pocket park, and subterranean parking. Vehicular site access to the proposed project is planned to be along Oak Knoll Avenue.

Figure 1 depicts the project's ground floor plan.

III. Existing Transportation Network

Street System Classifications

Union Street is a one-way westbound **City Connector** with three travel lanes. Restricted parking and time-limited parking are found along both sides of this roadway from Hill Avenue to St. John Avenue. A future cycle track is proposed along this roadway. Currently, Union Street is not a bike lane or route.

Colorado Boulevard is an east/west **City Connector**. Two through travel lanes are provided in each direction with turn lanes at key intersections. Time limited street parking is provided along both sides of the roadway. Colorado Boulevard has neither a bike lane nor bike route.

Green Street is a one-way eastbound **City Connector** which runs immediately north of the development. Three through lanes are provided within the project study area. Time limited parking may be found along both sides of this tree-lined, predominantly office and commercial land-use street. Green Street is not designated as a bike lane or route.

Cordova Street is a four-lane **Neighborhood Connector** with two lanes in each direction. A future road diet is proposed along this roadway, which will include bike lanes. Currently, the roadway in the vicinity of the project is an enhanced Category 3 bike route.

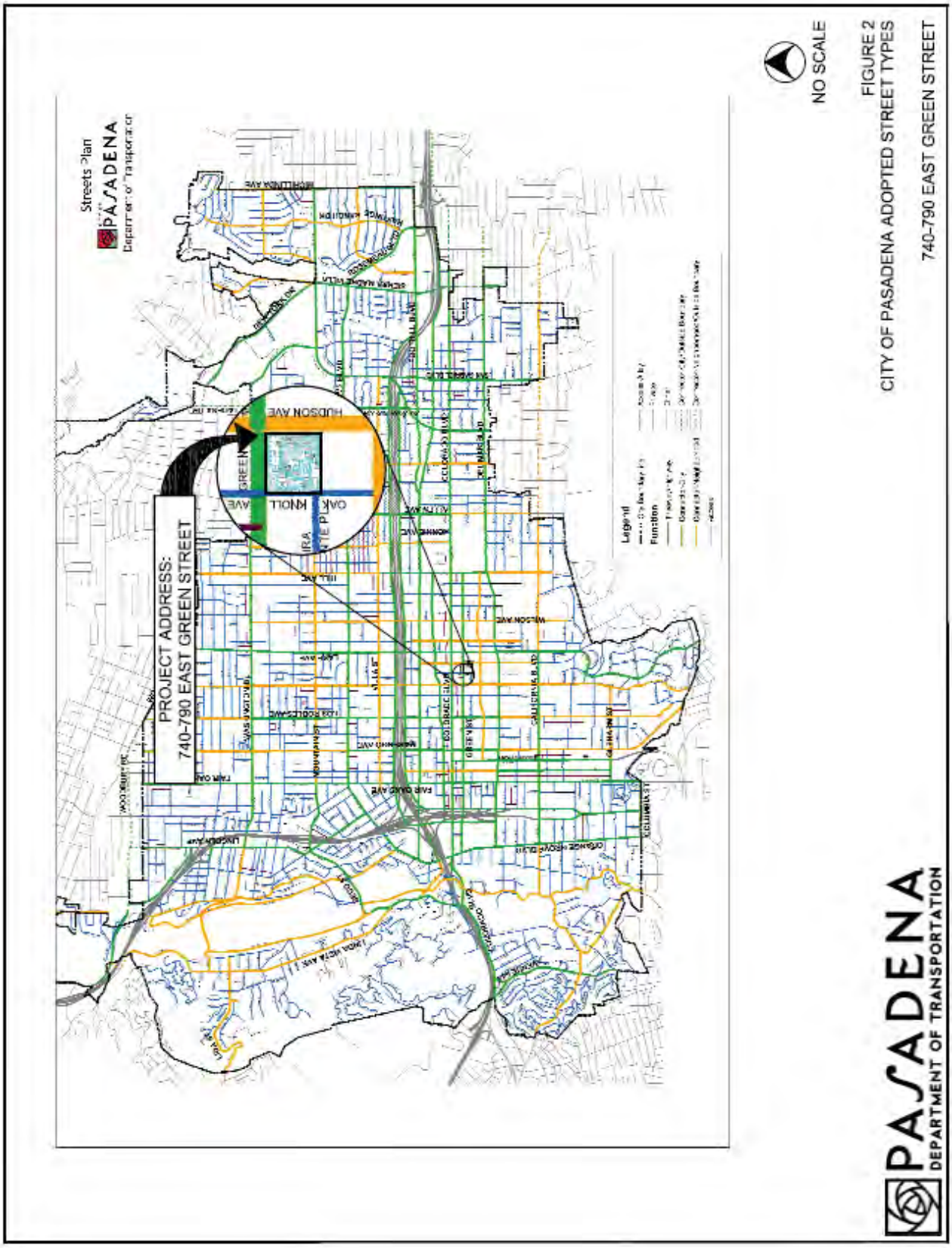
Oak Knoll Avenue is a north/south **Access Road** bordering the project site to the west. One through travel lane is provided in each direction with time limited street parking along both sides of the roadway. Portions of Oak Knoll Avenue is posted with a speed limit of 25 mph.

Hudson Avenue is a two-lane, one-way northbound **Neighborhood Connector** east of the development. No parking is allowed on the west side of the street.

Figure 2 depicts the project in the City of Pasadena's Adopted Street Types map.

Figure 1. Project Ground Floor Plan

Figure 2. City of Pasadena Adopted Street Types Map



Existing Transit Service

Public transit service within the project study area is currently provided by LA Metro, Foothill Transit, LA Department of Transportation (CE), and Pasadena Transit (PT). The locations of public transit stops near the project are summarized as follows:

Location	Route
Madison Ave at Colorado Blvd – Northwest corner – Southeast corner	PT 10; Metro 180, 181, 256, 686
El Molino Ave at Colorado Blvd – Northwest corner – Southeast corner	PT 10; FT 187
Oak Knoll Ave at Colorado Blvd – Northwest corner – Southeast corner	PT 10; Metro 180, 181, 256, 686
Hudson Ave at Colorado Blvd – Northwest corner – Southeast corner	PT 10
Lake Ave at Colorado Blvd – Northeast corner	PT 20; Metro 180, 258; CE 549
Lake Ave at Colorado Blvd – Southwest corner	PT 10, 20; Metro 258; CE 549
Lake Ave at Colorado Blvd – Northwest corner	PT 10; Metro 180, 181, 256, 686, 780; FT 187
Lake Ave at Colorado Blvd – Southeast corner	Metro 181, 256, 686, 780; FT 187
Lake Ave at Green St – Northeast corner	PT 20; Metro 258
Lake Ave at Green St – Southwest corner	PT 10, 20; Metro 258, CE 549
Lake Ave at Cordova St – Northeast corner	PT 10, 20; Metro 258; CE 549
Lake Ave at Cordova St – Southwest corner	PT 10, 20; Metro 258
Metro Gold Line – Lake Avenue at I-210 Fwy	Gold Line

IV. Transportation Analysis Methodology

With the City of Pasadena General Plan, the City's guiding principles cumulatively represent the community's vision for the future:

- Growth will be targeted to serve community needs and enhance quality of life.
- New construction that could affect the integrity of historic resources will be compatible with, and differentiated from, the existing historic resource.
- Economic vitality will be promoted to provide jobs, services, revenues, and opportunities.

- Pasadena will be a socially, economically, and environmentally sustainable community.
- Pasadena will be a city where people can circulate without cars.
- Pasadena will be promoted as a cultural, scientific, corporate, entertainment, and educational center for the region.
- Community participation will be a permanent part of achieving a greater city.
- Pasadena is committed to public education and a diverse educational system responsive to the broad needs of the community.

Understanding the goals and objectives of the General Plan, the Pasadena Department of Transportation sets forth goals and policies to improve overall transportation in Pasadena and create "a community where people can circulate without cars." Inherent in this vision statement is to accommodate different modes of transportation including vehicle, pedestrian, bicycle, and transit. This report will assess accessibility of these different modes of travel and the project's transportation impacts using the City's adopted transportation performance measures.

Analysis Purpose

Pasadena reviews several types and sizes of projects that could be subject to environmental review under the California Environmental Quality Act (CEQA). Transportation impact analyses are an integral part of the environmental review process that is required for all proposed projects not categorically exempt under CEQA.

Analysis Cap Criteria - Transportation Performance Measures

The Pasadena Department of Transportation adopted a set of performance measures and CEQA thresholds that are closely aligned with the Mobility Element objectives and policies. Pasadena Department of Transportation's mobility performance measures assess the quality of walking, biking, transit, and vehicular travel in the City. A combination of vehicular and multimodal performance measures are employed to evaluate system performance in reviewing new development projects. They are:

- Vehicle Miles Traveled per Capita
- Vehicle Trips per Capita
- Proximity and Quality of the Bicycle Network
- Proximity and Quality of the Transit Network
- Pedestrian Accessibility

These performance measures align with the sustainability goals of the General Plan by evaluating the "efficiency" of projects by analyzing the per capita length and number of trips associated with changes in land use. With the expanded emphasis on sustainability and a continued focus on livability, the proposed performance measures will assist in determining how to balance travel modes as well as understand the mobility needs of the community.

Definitions

VMT Per Capita

The Vehicle Miles Traveled (VMT) per Capita measure sums the miles traveled for trips within the City of Pasadena Travel Demand Model (that is based on the SCAG regional model). The VMT total considers 100% of the mileage of trips that begin and end inside Pasadena and 50% of the distance travelled for trips with one end outside of Pasadena. The City's VMT is then divided by the City's total service population, defined as the population plus the number of jobs.

Although VMT itself will likely increase with the addition of new residents, the City can reduce VMT on a per-capita basis with land use policies that help Pasadena residents meet their daily needs within a short distance of home, reducing trip lengths, and by encouraging development in areas with access to various modes of transportation other than auto.

VT Per Capita

Vehicle Trips (VT) per Capita is a measure of motor vehicle trips associated with the City. The measure sums the trips with origins and destination within the City of Pasadena, as generated by the 2013 Trip-based citywide Travel Demand Model. The regional VT is calculated by adding the VT associated with trips generated and attracted within City of Pasadena boundaries, and 50% of the VT associated with trips that either begin or end in the City, but have one trip end outside of the City. The City's VT is then divided by the City's total service population, defined as the population plus the number of jobs.

As with VMT, VT itself will likely increase with the addition of new residents, but the City can reduce VT on a per-capita basis with land use policies that help Pasadena residents meet their daily needs within a short distance of home, reducing trip lengths, and by encouraging development in areas with access to various modes of transportation other than auto.

Proximity and Quality of Bicycle Network

The Proximity and Quality of Bicycle Network provides a measure of the percent of the City's service population (population + jobs) within a quarter mile of bicycle facility types. The facility types are aggregated into three hierarchy levels, obtained from the City's (Draft) Bicycle Transportation Plan categories as shown in the following table:

Table 1. Bicycle Facilities Hierarchy

LEVEL	DESCRIPTION	FACILITIES INCLUDED
1	Advanced Facilities	Bike Paths Multipurpose Paths Cycle Tracks/Protected Bike Lanes

2	Dedicated Facilities	Buffered Bike Lanes Bike Lanes Bike Boulevards
3	Basic Facilities	Bike Routes Enhanced Bike Routes Emphasized Bikeways

For each bike facility level, a quarter-mile network distance buffer is calculated and the total service population (population + jobs) within the buffer is identified.

The City can improve measures of Bike Facility Access by improving and expanding existing bike facilities and by encouraging residential and commercial development in areas with high-quality bike facilities.

Proximity and Quality of Transit Network

The Proximity and Quality of Transit Network provides a measure of the percent of the City's service population (population + jobs) within a quarter mile of each of each of three transit facility types, as defined in the following table:

Table 2. Description of Transit Facilities

TRANSIT FACILITIES HIERARCHY	
LEVEL	FACILITIES INCLUDED
1	Includes all Gold Line stops as well as corridors with transit service, whether it be a single route or multiple routes combined, with headways of five minutes or less during the peak periods.
2	Includes corridors with transit headways of between six and 15 minutes in peak periods.
3	Includes corridors with transit headways of 16 minutes or more at peak periods.

For each facility level, a quarter-mile network distance buffer is calculated and the total service population (population + jobs) within the buffer is identified.

The City can improve the measures of Transit Proximity and Quality by reducing headways on existing transit routes, by expanding transit routes to cover new areas, and by encouraging residential and commercial development to occur in areas with an already high-quality transit service.

Pedestrian Accessibility Score

Proximity and Quality of Pedestrian Environment score provides a measure of the average walkability in the TAZ surrounding Pasadena residents, based on a Pedestrian Accessibility metric. The Pedestrian proximity metric is a simple count of the number of

land use types accessible to a Pasadena resident or employee in a given TAZ within a 5-minute walk.

The ten categories of land uses are:

- Retail
- Personal Services
- Restaurant
- Entertainment
- Office (including private sector and government offices)
- Medical (including medical office and hospital uses)
- Culture (including churches, religious and other cultural uses)
- Park and Open Space
- School (including elementary and high schools)
- College

The following table summarizes the City's Metrics for determining CEQA Caps:

Table 3. City of Pasadena CEQA Thresholds of Significance

METRIC	DESCRIPTION	IMPACT THRESHOLD
1. VMT Per Capita	Vehicle Miles Traveled (VMT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An increase over existing Citywide VMT per Capita of 22.6.
2. VT Per Capita	Vehicle Trips (VT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An increase over existing Citywide VT per Capita of 2.8.
3. Proximity and Quality of Bicycle Network	Percent of service population (population + jobs) within a quarter mile of bicycle facility types	CEQA Threshold: Any decrease in existing citywide 31.7% of service population (population + jobs) within a quarter mile of Level 1 & 2 bike facilities.
4. Proximity and Quality of Transit Network	Percent of service population (population + jobs) located within a quarter mile of transit facility types.	CEQA Threshold: Any decrease in existing citywide 66.6% of service population (population + jobs) within a quarter mile of Level 1 & 2 transit facilities.
5. Pedestrian Accessibility	The Pedestrian Accessibility Score uses the mix of destinations, and a network-based walk shed to evaluate walkability	CEQA Threshold: Any decrease in the Citywide Pedestrian Accessibility Score

V. Project Transportation Impact Analysis

Project analyses are based on the City's Transportation Impact Analysis Guidelines. Proposed projects are analyzed using the City's calibrated travel demand forecasting model (TDF) built on SCAG's regional model.

The City's TDF model uses TransCAD software to simulate traffic levels and travel patterns for the City of Pasadena. The program consists of input files that summarize the City's land uses, street network, travel characteristics, and other key factors. Using this data, the model performs a series of calculations to determine the amount of trips generated, the beginning and ending location of each trip, and the route taken by the trip. To be deemed accurate for project transportation impact on the transportation system, a model must be calibrated to a year in which actual land use data and traffic volumes are available and well documented. The Pasadena TDF has been calibrated to 2013 base year conditions using actual traffic counts, Census data, and land use data compiled by City staff with land uses' associated population and job increase estimates.

Projects with proposed land uses that are consistent with the General Plan and complimentary to their surrounding land uses are expected to reduce the trip length associated with adjacent land uses; and/or increase the service population access to pedestrians, bike, and transit facilities if the project is within a quarter mile of those facilities.

Table 4 summarizes the following analyses of the proposed project's impacts on the transportation system using the calibrated TDF model. The results are based on the project's vehicular and non-vehicular trip making characteristics, trip length, and its interaction with other surrounding/citywide land uses, and the City's transportation network.

Table 4. Transportation Performance Metrics Summary

Transportation Performance Metrics	Significant Impact Cap (existing)	Incremental change (existing + project)	Significant Impact?
VMT per Capita	>22.6	18.5	No
VT per Capita	>2.8	3.8	Yes
Proximity and Quality of Bicycle Network	<31.7%	31.7	No
Proximity and Quality of Transit Network	<66.6%	66.8	No
Pedestrian Accessibility	<3.9	3.9	No

The TDF model calculation results indicated that the incremental VT per capita change is 3.8. This incremental change exceeds the adopted caps of significance under the Vehicle Trips (VT) per capital of 2.8.

VI. Conclusion

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of 263 residential units, 16,481 sf commercial space, a pocket park, and subterranean parking. Vehicular site access to the proposed project is planned to be along Oak Knoll Avenue.

Using the City's Transportation Demand Model, DOT found that the proposed project exceeds the vehicular trips per capita threshold outlined in the City's guidelines.

Mitigation Measures

The Travel Demand Forecasting Model calculation results for this project determined that the project results in a vehicle trips per capita (VT) significant impact. In order to bring the project to a level below significant impact, the applicant shall develop Transportation Demand Management (TDM) Plan strategies that reduce these vehicular trips by a minimum of 27%.

The City's TRO Ordinance supports to the City's measures to reduce the demand for vehicle commute trips by ensuring that the design of major residential and nonresidential development projects accommodates facilities for alternative modes of transportation.

Other programmatic strategies to reduce the VT per capita significant impact shall complement the City's Trip Reduction Ordinance (TRO) minimum requirements. Strategies shall include measures identified in the California Air Pollution Control Officers Association CAPCOA Quantifying Greenhouse Gas Mitigation Measures, August 2010 Report, and include at minimum:

a) Unbundled parking for the residential use;

b) The applicant shall purchase 121 Metro passes and offer them to interested residents at 50% discount for five consecutive years from the issuance of the COO.

c) The applicant shall provide an Annual TDM Survey beginning one year after the issuance of COO to demonstrate at minimum a 27% reduction of project vehicular trips per capita is maintained.

By implementing the above strategies, the project VT impact will be reduced to below levels of significance. The TDM program plan will be required to be reviewed and approved by Pasadena Department of Transportation annually. DOT may substitute alternative measures of equivalent cost and effectiveness at its discretion.

VII. Appendices

Memorandum of Understanding
City's Travel Demand Forecasting Model Output/Results

Appendix:
Memorandum of Understanding

Appendix:
Memorandum of Understanding

Viana, Conrad

From: Driver, Jennifer
Sent: Thursday, March 05, 2020 11:49 AM
To: Viana, Conrad
Cc: Sinclair, David
Subject: Green Street PD
Attachments: 19-1218 770 E GREEN STREET FINAL_email.pdf

Hi Conrad,
Per our conversation, attached are the revised plans for the Green Street PD.

The basic changes are:

	Original	Modified
Floor Area SF	304,307	253,917
Units	273	263
Commercial SF	18,392	16,253

Let me know if you need additional information and what your thoughts are.

Best,
Jennifer

Jennifer Driver
Planner | City of Pasadena
Planning and Community Development
175 N. Garfield Ave – Hale Building
Pasadena, CA, 91101
jdriver@cityofpasadena.net
Phone: 626.744.6756

Appendix:
City's Travel Demand Forecasting Model Output/Results

740-790 East Green Street

VMT/Cap and VT/Cap Calculations Summary

Daily Trips	Internal	External
Internal	351,711	336,095
External	336,095	491,145

Pop	136,475
Emp	111,121
Ext. Factor	50%

FINAL REDUCED DAILY VMT BY SPEED BIN					EMFAC
Speed	Internal	External	Regional	Total	INPUT
5	109	0	1,741	1,850	0%
10	673	135	14,359	15,167	0%
15	4,137	1,355	45,878	51,370	1%
20	16,455	4,421	75,193	96,069	2%
25	97,410	12,684	150,219	260,313	5%
30	491,378	61,455	275,151	827,984	15%
35	822,563	139,312	320,280	1,282,155	23%
40	201,508	55,913	225,502	482,922	9%
45	136,155	104,954	169,414	410,523	7%
50	112,565	2,074	211,768	326,407	6%
55	95,631	7,980	229,337	332,948	6%
60	120,095	15,091	238,178	373,363	7%
65	323,800	20,909	181,094	525,803	9%
70	3,630	0	529,232	532,862	11%
75	0	0	77,304	77,304	
80	0	0	0	0	
85	0	0	0	0	
SUM	**2,426,109**	**426,281**	**2,744,649**	**5,597,039**	**100%**

TOTAL RAW DAILY SUMMARY					
Metric	Internal	External	Regional	Total	Capita
VMT	2,426,109	852,563	5,489,298	8,767,969	35.4
VT	351,711	672,191	-	1,023,902	4.1
Length	6.9	1.3	-	8.6	-

REDUCED DAILY SUMMARY					
Metric	Internal	External	Regional	Total	Capita
VMT	2,426,109	426,281	2,744,649	5,597,039	22.6
VT	351,711	336,095	-	687,806	2.8
Length	6.9	1.3	-	8.1	-

FINAL DAILY SCENARIO SUMMARY					
Pop	Emp	VMT	VT	VMT/Cap	VT/Cap
136,475	111,121	5,597,039	687,806	22.6	2.8

2013 EXISTING SUMMARY					
Pop	Emp	VMT	VT	VMT/Cap	VT/Cap
135,938	111,348	5,591,328	686,619	22.6	2.8

INCREMENTAL SCENARIO RESULTS					
Pop	Emp	VMT	VT	VMT/Cap	VT/Cap
537	-227	5,711	1,187	18.5	3.8
				PASS	FAIL

740-790 East Green Street

Proximity and Quality Metric Calculations Summary

Proximity and Quality of Bicycle Network

Existing

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 2	78,415	0	78,415	31.7%
Level 3	123,670	0	123,670	50.0%
No Facility	45,202	0	45,202	18.3%
Exist City Total	247,286	0	247,286	100.0%

Existing + Project

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 2	78,415	0	78,415	31.7%
Level 3	123,670	309.5308759	123,980	50.1%
No Facility	45,202	0	45,202	18.3%
Exist City Total	247,286	309.5308759	247,596	100.1%

Proximity and Quality Metric Summary - Bicycle

Network	Service Population Adjustment	Significant Impact Threshold	Service Population %	Impact?
Bike	309.5308759	< 31.7%	31.7%	No

Proximity and Quality of Transit Network

Existing

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 1	90,600	0	90,600	36.6%
Level 2	74,298	0	74,298	30.0%
Level 3	50,495	0	50,495	20.4%
No Facility	31,893	0	31,893	12.9%
Exist City Total	247,286	0	247,286	100.0%

Existing + Project

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 1	90,600	309.5308759	90,910	36.8%
Level 2	74,298	0	74,298	30.0%
Level 3	50,495	0	50,495	20.4%
No Facility	31,893	0	31,893	12.9%
Exist City Total	247,286	309.5308759	247,596	100.1%

Proximity and Quality Metric Summary

Network	Service Population Adjustment	Significant Impact Threshold	Service Population %	Impact?
Transit	309.5308759	< 66.6%	66.8%	No

740-790 East Green Street					
Pedestrian Accessibility Summary					
				Weighted Average:	**3.884013343**
PasadenaDTATAZ	Land Use Types	Population_In_TAZ	Employment_In_TAZ	Service_Population	Land Use Types
91	5	1238.82612	734.2118677	1973.037988	5

MEMORANDUM - CITY OF PASADENA
DEPARTMENT OF PUBLIC WORKS

DATE: **August 21, 2018**

TO: **Talyn Mirzakhanian, Zoning Administrator**
Planning and Community Development Department

FROM: **Yannie Wu, Principal Engineer**
Department of Public Works

RE: **Planned Development – PLN2018-00408**
740-790 East Green Street

The Department of Public Works has reviewed the application for Planned Development PLN2018-00408 at 740-790 East Green Street. The applicant is for the demolition of five existing commercial buildings and associated on-grade parking improvements on an approximately 101,430 square feet (2.33 acre) site; and construction of a mixed-use building, subterranean parking, and open space. The proposed building would include a total of 273 for-rent units (including 30 units designated for very low-income households), and 19,660 square feet of commercial use. The buildings would range in height from three to five stories, with a maximum height of 82 feet. Parking would be provided in a two-level subterranean parking garage with 453 parking spaces and 51 bicycle parking stalls would be provided. An earlier version of this project was routed for PPR2017-00017 in November 2017. The approval of this Planned Development should be based upon satisfying all of the following conditions:

1. The Department of Transportation requirements:
    a. Pursuant to the adopted Street Design Guide by the City Council, the applicant shall comply with the following:
        i. Provide a 16’ wide sidewalk with 8’ min clear walk zone by additional right-of-way dedication or sidewalk easement along the project’s frontage on Green Street.
        ii. Maintain a 12’ wide sidewalk with 5’ min clear walk zone free of any obstructions along the project’s frontage on Hudson Avenue.
        iii. Maintain a 10’ wide sidewalk with 5’ min clear walk zone free of any obstructions along the project’s frontage on Oak Knoll Avenue.
    b. The applicant shall be responsible for all the costs required to complete the dedications. The dedication documents and processing fee/deposit shall be submitted to this office, the Department of Public Works, at least three to

four (3-4) months prior to the issuance of any permits. The dedication documents shall be executed and recorded prior to the issuance of a Certificate of Occupancy.

c. A circulation plan for the parking structure must be reviewed and approved by the Department of Transportation. The plan shall be drawn to a 1"=20' or 1"=40' scale. The plan shall include the turning radius of the ramp and proposed striping/configuration of parking spaces to ensure that vehicles can safely enter and exit the parking area.
d. If a gate will be placed at the parking garage entrance, the gate shall be installed at least 20' back from the property line.
e. The ramps shall have a minimum width of 20' along the entire length of the ramps to accommodate 2-way traffic on the ramp. The driveway apron width shall match the ramp width. The plan satisfies the minimum width since both ramps show a 22' ramp width. To improve the safety of pedestrians crossing the driveway, the design plans shall indicate a slope of 2 percent or less from the property line to 20' into the property before the start of the ramp slope to improve vehicular sight distance, or include the installation of an exit arm.
f. Since Hudson Avenue is a one-way northbound street, the driveway would introduce conflicting turning movements into and out of the project site if the driveways are traditionally designed with the entrance to the right of the driveway and the exit to the left of the driveway. Therefore, it is recommended that the method of ingress and egress of vehicles from the Hudson Avenue driveway be reversed, where the inbound vehicles entering to the left of the driveway, and the outbound vehicles exiting to the right of the driveway.

   This driveway configuration has been standard practice for several projects fronting one-way streets in the City of Pasadena. Examples of this configuration can been seen in the Paseo Colorado project, the 35 South Raymond Avenue project, and the Trio Apartments project located at 621 E Colorado Boulevard. Additional measures (i.e. signage, gate arms, median islands, etc.) to alert drivers of the modified configuration are recommended for installation.
g. Driveways shall be located a minimum distance of 50 feet from any intersection and approved by the Department of Transportation prior to the issuance of the first permit for construction (demolition, grading, or building).
h. The proposed drive approaches shall be constructed in accordance with Standard Drawing No. S-403.

2. No private improvements may be placed within the public right-of-way, including, but not limited to, soldier beams, tie-backs, utility conduits, backflow preventers, transformers, fire sprinkler valve, decorative sidewalk and applicable parade post holes on Colorado Boulevard per Standard Drawing S-419. Private improvements may only be placed in the public right-of-way by submitting a license agreement, which must be approved by the City. The license agreement application for any private improvement within the public right-of-way shall be submitted to the Department of Public Works for review and shall be approved by the City before any permits are granted.

   The applicant shall submit the application, plan and processing fee/deposit, associated with processing the license agreement, at least three to four (3-4) months prior to the issuance of any permits. An approved license agreement will allow the applicant to install and maintain the private improvements within the public right-of-way with conditions.

   A license agreement for shoring requires an indemnity bond in order to guarantee that shoring and tie-backs are free from defect due to faulty material, workmanship and failure. Upon review of the license agreement exhibits, an indemnity bond estimate will be prepared and forwarded to the applicant. The estimated amount is equivalent to the cost of reconstructing the public right of way, including all affected utilities, public facilities, and infrastructures, based on the plane of failure at a 45-degree angle from the lowest point of excavation. The indemnity bond shall be submitted to the City prior to the execution of the agreement and the issuance of any building or demolition permits.

   All steel rods in every tie-back unit shall be relieved of all tension and stresses, and any portion of soldier beams and any portion of the tie-backs located be removed entirely from the public right-of-way. A monthly monitoring report stamped and certified by a licensed surveyor shall be submitted to indicate that the deflection from any piles or soldier beams does not exceed one inch. Upon completion of construction, the developer or his contractor shall remove all tie-back rods within the public right-of-way. The removal shall be documented by a report certified by a licensed deputy inspector. The report shall be submitted to the City for review and approval. The applicant will be charged a penalty of $7,000 for each tie-back rod not removed from the public right-of-way. For temporary tie-backs or shoring, the maximum width of the license area fronting the development frontage(s) shall only extend to the centerline of the public right-of-way.

3. The applicant shall clarify, on plan, if the proposed 6,694 sq. ft. park, fronting Oak Knoll Avenue is serving the general public and notes as such. If so, it may affect the Residential Impact Fee calculation. Should the proposed public park is approved by the Department of Public Works, the following and other conditions are required:
    a. Land described as public space should be deeded to the City as a separate parcel or at a minimum, have a permanent open space easement recorded.
    b. The maintenance of the public park shall be provided by the development owners in perpetuity or for a substantial duration.
    c. Any public park space should be designed and constructed to the City's standards.
    d. Should not be subject to closure except as allowed under City policies for park space.
    e. City will determine the public space naming process.

    The applicant shall submit more detailed information on the proposed public park for review including its specific usage, improvements, associated land value, any intention for dedication for public use or if it is just for the intended on-site residents, any request for full or partial waiver (amount or percentage) of Residential Impact Fee (RIF) in the form of a dedicated community park. RIF is due at the time of building permit's issuance; any proposal to dedicate land in lieu of all or a portion of RIF will require prior City Council's approval.

4. In order to provide for an Americans with Disabilities Act (ADA) compliant ramp, the applicant shall reconstruct all corners of the following intersections with ADA compliant directional ramps, if feasible, per Caltrans Standard A88A and City of Pasadena Standard S-414:
    a. Green Street and Oak Knoll Avenue
    b. Green Street and Hudson Avenue

    Additional striping, signal work, and/or poles/utility relocations might be necessary. The curb ramps construction shall be completed prior to the issuance of Certificate of Occupancy. A separate permit from the Department of Public Works is required for all construction in the public right-of-way. Please contact 626-744-4195 for the general process.

5. The applicant shall submit to the City for review any proposed designs that will comply with the ADA requirements. The applicant is responsible for the design, preparation of plans and specifications, and construction of the new curb ramp. Plans for the curb ramp improvements shall be prepared by a civil engineer, registered in the State of California. Upon submittal of improvement plans to the Departments of

Public Works for review, the applicant will be required to place a deposit with the Department of Public Works to cover the cost of plan checking. The amount of deposit will be based on the current City's General Fee Schedule. Note that the building plans approved by the City's Planning (Building) Department do not constitute approvals for work in the public right-of-way. Separate plans shall be submitted to the Department of Public Works – Engineering Division – at 175 North Garfield Avenue Window 6. The applicant shall submit the curb ramp improvement plans and the plan check deposit at least two (2) months prior to the issuance of any building or demolition permits.

6. Upon review of the curb ramp improvement plans, the applicant may need to dedicate to the City for street purposes the land necessary at the property line corner rounding, per City Standard S-423, to provide for the minimum clearance required by the Americans with Disabilities Act standards. If so, the applicant shall remove and reconstruct the sidewalk for the dedicated area, per Standard Plan No. S-421. The applicant shall be responsible for all the cost required to complete the dedication, if it is required. The dedication document and processing fee shall be submitted to this office, at least three to four (3-4) months prior to issuance of any permits. The dedication document shall be executed and recorded prior to the issuance of a Certificate of Occupancy.

7. Green Street and Oak Knoll Avenue Traffic Signal
    a. The intersection at Green Street at Oak Knoll Avenue has existing non-standard concrete traffic signal poles. To bring the intersection up to a standard of safety, all existing concrete traffic signal poles shall be upgraded to a Caltrans Standard metal pole, galvanized, and painted according to the District color; and the vehicle heads and pedestrian heads on all poles will be upgraded to LED equipment.
    b. The existing traffic signal cabinet on Green Street at Oak Knoll Avenue is an old standard 337 cabinet with a 170 controller. Because of this technology, the intersection operation and upgraded traffic signal equipment cannot be utilized. The cabinet and controller will need to be upgraded to a Pasadena Standard 332 cabinet with a 2070 controller. The cabinet shall be primed and painted with the District color. Because of the cabinet upgrade, any conductors that may not reach the new cabinet location and be terminated, will need to be replaced with longer conductors. This upgrade does not limit and conduits and pull boxes that may need to be upgraded as well.

c. All existing 1-A traffic signal poles at Oak Knoll Avenue at Green Street will need a new paint coat. The existing pole will require sanding, priming, and painting with the District's color.

8. Green Street and Hudson Avenue Traffic Signal
    a. The intersection at Green Street at Hudson Avenue has existing non-standard concrete traffic signal poles. To bring the intersection up to a standard of safety, all existing concrete traffic signal poles shall be upgraded to a Caltrans Standard metal pole, galvanized, and painted according to the District color; and the vehicle heads and pedestrian heads on all poles will be upgraded to LED equipment.
    b. The existing traffic signal cabinet on Green Street at Hudson Avenue is an old standard 337 cabinet with a 170 controller. Because of this technology, the intersection operation and upgraded traffic signal equipment cannot be utilized. The cabinet and controller will need to be upgraded to a Pasadena Standard 332 cabinet with a 2070 controller. The cabinet shall be primed and painted with the District color. Because of the cabinet upgrade, any conductors that may not reach the new cabinet location and be terminated, will need to be replaced with longer conductors. This upgrade does not limit and conduits and pull boxes that may need to be upgraded as well.
    c. All existing 1-A traffic signal poles at Hudson Avenue at Green Street will need a new paint coat. The existing pole will require sanding, priming, and painting with the District's color.
    d. All existing signs shall be relocated and remounted with the appropriate mounting strap standards.
    e. All existing striping and pavement markings shall be repainted at each intersection and all lanes between the intersections.
    f. All existing curb painting shall also be repainted throughout each intersection and everywhere between the intersections.

9. The existing street lighting fronting the subject site is substandard. In order to improve pedestrian and traffic safety, the applicant shall replace/renovate the existing street lighting, on or near the frontage of the subject property, with LED lights, per the City requirements and current standards as follow:
    a. Three (3) street lights along Oak Knoll Avenue frontage
    b. Four (4) street lights along Green Street frontage
    c. Four (4) street lights along Hudson Avenue frontage
    d. The applicant shall restore and re-paint all existing metal street light poles, traffic signal poles and traffic signal controller cabinets, along the subject

frontages of the subject property in a manner acceptable to the Department of Public Works. The cost of the street light pole and traffic signal pole/equipment restoration and painting is the applicant's responsibility.

10. The applicant is responsible for the design, preparation of plans and specifications, and the construction of all required street lights and traffic signal modification. Plans for the improvements shall be prepared by a civil engineer, registered in the State of California. Upon submission of improvement plans to the Departments of Public Works for checking, the applicant will be required to place a deposit with the department to cover the cost of plan checking and construction inspection of the improvements. The amount of deposit will be determined when the plans are submitted. In addition, there is possibly considerable lead-time for the materials required for the construction and modification. In order to avoid delays in the development schedule, the applicant shall coordinate with this office at 626-744-4195 regarding this street light/traffic signal condition at least five (5) months in advance of the anticipated issuance of Certificates of Occupancy.

11. Any existing street tree(s) proposed to be removed are subject to the approval of the Urban Forestry Advisory Committee (UFAC).

12. A Tree Protection Zone (TPZ) shall be established for all existing City trees within the scope of a construction project. The TPZ extends from the base of the tree to four (4) radial feet beyond the dripline of a tree and applies to the entirety of the tree – from the roots to the canopy of the tree.

    The applicant is prohibited from the following within a designated TPZ: construction vehicle access, construction vehicle operation, staging of materials, and trenching without the consent of the Department of Public Works.

    The applicant shall at minimum provide the following within a designated TPZ: mulching, irrigation, and protective fencing.

13. Prior to the issuance of any permit, the applicant shall submit a Preliminary Tree Protection Plan (PMC Ch. 8.52 – City Trees and Tree Protection Ordinance), prepared by a Landscape Architect or certified Arborist, showing the TPZ and all structures, footings, and grading that may impact City trees shall be submitted to the Department of Public Works, for review and approval. Given that each construction project poses unique conditions, it is the responsibility of the applicant to develop a Tree Protection Plan based off the TPZ standards to the extent feasible. The Plan shall conform to the

Tree Protection Standards which specifically require showing the locations of all existing trees, their diameters, canopies, whether the tree is a public tree or private tree, as well as any trees to be planted with their canopy at mature size. The final conditions of the Tree Protection Plan shall be approved by the Forestry Superintendent. A non-refundable flat fee, per the current General Fee Schedule, will be required for staff time to review the Tree Protection Ordinance compliance.

14. All new drive approaches shall be at least seven (7) feet clear of the existing street trees measured from the edge of the trunk closest to the drive approach. All public trees shall be protected and fenced with a posting on the fences advising of the tree protection.

15. Prior to issuance of any permit, the applicant shall submit a valuation assessment report of the existing public tree(s) along the boundary of their project. The report shall be prepared by a registered Arborist and submitted to PNR for review and approval. If it is determined that the applicant has failed to care for any City tree within their Tree Protection Plan, and the health of the tree(s) was critically compromised requiring its removal, the applicant shall be liable for the following costs: assessed value of tree determined by a PNR Arborist using a current ISA assessment methodology; the removal cost determined by PNR; and any applicable infraction or administrative fines determined by Code Compliance.

16. Prior to issuance of any permit, a sundry deposit in the amount of the applicant's total liabilities based on the aforementioned approved tree assessment report shall be submitted to the City. The sundry deposit is fully refundable, less administrative fees, upon the satisfaction of Public Works prior to the issuance of a Certificate of Occupancy.

17. The proposed development shall connect to the public sewer with one or more new six-inch diameter house sewer(s) laid at a minimum slope of two percent. In accordance with PMC Chapter 13.24.010, house sewer "means that part of the horizontal piping beginning 24 inches from the exterior wall of the building or structure and extending to its connection with the public sewer." The section of house sewer within the public right-of-way - from the property line to the public sewer, or within easement, shall be vitrified clay or cast iron pipe. The house sewer shall meet City Standards as determined by the Department of Public Works, and a permit issued by the Department of Public Works is required for work within the public right-of-way. The construction of all new house sewers shall be completed prior to the issuance of Certificate of Occupancy.

18. The applicant shall demolish existing and construct all new public improvements along the subject development frontage of Green Street, Oak Knoll Avenue and Hudson Avenue, including concrete drive approach per Standard Plan S-403; concrete sidewalk per Standard Plan S-421; concrete curb and gutter per Standard Plan S-406. All public improvements shall be completed prior to the issuance of Certificate of Occupancy.

19. Green Street and Hudson Avenue restoration, fronting the subject development, including intersection, shall be a full width (from gutter to gutter) cold milling and resurfacing of 1.5 inches depth asphalt concrete roadway, or to the satisfaction of the City Engineer. Restoration of asphalt concrete pavement shall be per Standard Plan S-416 and to the satisfaction of the City Engineer. Traffic channelization shall be restored per the Department of Transportation requirements and approval.

    This reach of Green Street contains asbestos concentration greater than 1% and is considered asbestos containing materials, or ACMs, in accordance with the US EPA definition of ACM. ACMs are required to be abated prior to the demolition or re-surfacing activities that will impact or disturb the ACM resulting in the creation of airborne asbestos fiber. All ACMs shall be abated by a State of California licensed asbestos abatement contractor using 40-hour asbestos trained workers and appropriate wet methods and engineering controls. All asbestos abatement workers must have current asbestos training documentation, current medical exams and releases, and current fit tests for the use of personal protective equipment (PPE). The asbestos abatement contractor shall be responsible for estimating and verifying dimensions and quantities of ACMs to be abated. Asbestos abatement methods must comply with Title 8, Section 1529 of the California Code of Regulations (CCR) and the South Coast Air Quality Management District (SCAQMD) Rule 1403.

20. Oak Knoll Avenue restoration, fronting the subject development, including intersection, shall be a full width (from gutter to gutter) cold milling and resurfacing of 1.5 inches depth **rubberized** asphalt concrete roadway, or to the satisfaction of the City Engineer. Restoration of **rubberized** asphalt concrete pavement shall be per Standard Plan S-416 and to the satisfaction of the City Engineer. Traffic channelization shall be restored per the Department of Transportation requirements and approval.

21. The applicant shall remove the existing culvert at the southwest corner of Green Street and Hudson Avenue and connect to the existing 48”- diameter storm drain system on

Green Street with a new catch basin and connector pipe, and reconstruct all affected sidewalk and curb and gutter.

22. On-site drainage, such as roof drain, area drain and subterranean garage discharge, shall be contained on-site per LA County Regional Water Quality Control Board's current permit.

23. The applicant is responsible for the design, preparation of plans and specifications, and construction of all required public improvements. Plans for the above improvements shall be prepared by a civil engineer, registered in the State of California. Upon submittal of improvement plans to the Departments of Public Works for review, the applicant will be required to place a deposit with the department to cover the cost of plan checking and construction inspection of the improvements. The amount of deposit will be determined when the plans are submitted and will be based upon the estimated cost to the department for the work. Note that building plans approved by the City's Planning (Building) Department do not constitute approvals for work in the public right-of-way. Independent plans shall be submitted to the Department of Public Works – Engineering Division – at 175 North Garfield Avenue. The applicant is encouraged to submit these plans as early as possible to avoid delays in the issuance of Certificates of Occupancy.

24. Past experience has indicated that projects such as this tend to damage the abutting street improvements with the heavy equipment and truck traffic that is necessary during construction. Additionally, the City has had difficulty in requiring developers to maintain a clean and safe site during the construction phase of development. Accordingly, the applicant shall place a $20,000 deposit with the Department of Public Works prior to the issuance of a building or grading permit. This deposit is subject to refund or additional billing, and is a guarantee that the applicant will keep the site clean and safe, and will make permanent repairs to the abutting street improvements that are damaged, including striping, slurry seal/resurfacing, curb, gutter, and sidewalk, either directly or indirectly, by the construction on this site. The deposit may be used for any charges resulting from damage to street trees. A processing fee will be charged against the deposit.

25. Prior to the start of construction or the issuance of any permits, the applicant shall submit a Construction Staging and Traffic Management Plan to the Department of Public Works for review and approval. The template for the Construction Staging and Traffic Management Plan can be obtained from the Department of Public Works webpage at: https://ww5.cityofpasadena.net/public-works/engineering-and-

construction/engineering/forms-and-applications/ . A flat fee, based on the current General Fee Schedule, is required for plan review and on-going monitoring during construction. This plan shall show the impact of the various construction stages on the public right-of-way (and the private street) including all street occupations, lane closures, detours, staging areas, and routes of construction vehicles entering and exiting the construction site. An occupancy permit shall be obtained from the department for the occupation of any traffic lane, parking lane, parkway, or any other public right-of-way. All lane closures shall be done in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and California Supplement. If the public right-of-way occupation requires a diagram that is not a part of the MUTCD or California Supplement, a separate traffic control plan must be submitted as part of the Construction Staging and Traffic Management Plan to the department for review and approval. No construction truck idling or staging, material storage, or construction trailer are allowed in the public right-of-way.

In addition, prior to the start of construction or issuance of any permits, the applicant shall conduct a field meeting with an inspector from the Department of Public Works for review and approval of construction staging, parking, delivery and storage of materials, final sign-off procedure, and any of the specifics that will affect the public right-of-way. An appointment can be arranged by calling 626-744-4195.

26. In preparation for the New Year Rose Parade and Rose Bowl Game, the Department of Public Works will suspend all works within the public right-of-way during the holiday season in accordance to PMC 12.24.100 and City Policy.

    In general, all public streets, sidewalks and parkways shall be free and clear of excavations and other construction related activities during the period of November through January of the following year. Specific dates will vary on an annual basis. Accordingly, contractors will be required to shut down construction operations which would impede traffic and pedestrian movements during these periods unless otherwise authorized by the City Engineer. Any existing excavations shall be backfilled, compacted and temporarily repaved before the beginning of the moratorium period.

    The Holiday Moratorium Map, showing the appropriate shutdown period, and corresponding areas in the City, is available at the Department of Public Works Permit Counter (window #6), 175 N. Garfield Avenue, Pasadena, CA 91109, or at the following link: https://ww5.cityofpasadena.net/public-works/engineering-and-construction/engineering/forms-and-applications/ .

27. All costs associated with these conditions shall be the applicant's responsibility. Unless otherwise noted in this memo, all costs are based on the General Fee Schedule that is in effect at the time these conditions are met. A processing fee will be charged against all deposits. A Public Works permit is required for all construction and occupancies in the public right-of-way. If construction vehicles and equipment are parked off-site in the public right of way, the permit fee for street and sidewalk occupancy will be based on the area and duration corresponding to the current City's General Fee Schedule. For more information, please contact Yannie Wu at 626-744-3762.

In addition to the above conditions, the requirements of the following ordinances will apply to the proposed project:

- Sewer Facility Charge - Chapter 4.53 of the PMC
  The ordinance provides for the sewer facility charge to ensure that new development within the city limits pays its estimated cost for capacity upgrades to the city sewer system, and to ensure financial solvency as the city implements the operational and maintenance practices set forth in the city's master sewer plan generated by additional demand on the system. Based on sewer deficiencies identified in the City's Master Sewer Plan, the applicant may be subject to a Sewer Facility Charge to the City for the project's fair share of the deficiencies. The Sewer Facility Charge is based on the Taxes, Fees and Charges Schedule and will be calculated and collected at the time of Building Permit Issuance.

- Sidewalk Ordinance - Chapter 12.04 of the Pasadena Municipal Code (PMC)
  In accordance with Section 12.04.035, entitled "Abandoned Driveways" of the PMC, the applicant shall close any unused drive approach with standard concrete curb, gutter and sidewalk. In addition, the applicant shall repair any existing or newly damaged curb, gutter and sidewalk along the subject frontage prior to the issuance of a Certificate of Occupancy in accordance with Section 12.04.031, entitled "Inspection required for Permit Clearance" of the PMC.

- City Trees and Tree Protection Ordinance - Chapter 8.52 of the PMC
  The ordinance provides for the protection of specific types of trees on private property as well as all trees on public property. No street trees in the public right-of-way shall be removed without the support of the Urban Forestry Advisory Committee. No trees shall be damaged by the proposed construction, if a City tree is damaged, the applicant may be liable for the assessed value of the tree. Refer to

https://ww5.cityofpasadena.net/public-works/parks-and-natural-resources/urban-forestry/ for guidelines and requirements for tree protection.

- Residential Impact Fee Ordinance - Chapter 4.17 of the PMC
  The ordinance was established to provide funds to mitigate the impact of new residential development on City parks and park and recreational facilities. A copy of the Residential Impact Fee Information Packet is available at the city webpage at: https://ww5.cityofpasadena.net/public-works/engineering-and-construction/engineering/information-and-reports/
  The Residential Impact Fee is based on the current Taxes, Fees and Charges Schedule (https://ww5.cityofpasadena.net/finance/fees-tax-schedules/) and will be calculated and collected at the time of Building Permit Issuance.

  The building plans shall include, preferably on the title sheet, a summary of all living units to capture the number of different units; number of bedrooms in each unit; and types of units (Regular, Workforce housing, Skilled nursing unit, Student housing, Residential care facility for the elderly, Affordable Housing). The definitions on the different types of units are available in the abovementioned Residential Impact Fee Information Packet as well as in the Pasadena Municipal Code.

  The estimated Residential Impact Fee based on the current tax schedule and the submitted information in the application, dated July 20, 2018, for this project is: $3,306,166.06. This amount is a rough estimate and for informational purposes only. The exact amount will be calculated at the time of Building Permit issuance.

- Construction and Demolition Waste Ordinance, Chapter 8.62 of the PMC
  The applicant shall submit the following plan and form which can be obtained from the Permit Center's webpage at https://ww5.cityofpasadena.net/public-works/street-maintenance-waste-management/recycling-resources/construction-and-demolition-debris-recyclers/ and the Recycling Coordinator, (626) 744-7175, for approval prior to the request for a permit:

  a. C & D Recycling & Waste Assessment Plan – Submit plan prior to issuance of the permit. A list of Construction and Demolition Recyclers is included on the waste management application plan form and it can also be obtained from the Recycling Coordinator.

b. Summary Report with documentation must be submitted prior to final inspection.

A security performance deposit of three percent of the total valuation of the project or $30,000, whichever is less, is due prior to permit issuance. For Demolition Only projects, the security deposit is $1 per square foot or $30,000, whichever is less. This deposit is fully refundable upon compliance with Chapter 8.62 of the PMC. A non-refundable Administrative Review fee is also due prior to permit issuance and the amount is based upon the type of project.

If you have questions regarding the above conditions and requirements of the ordinances, please contact me at (626) 744-3762 or email ywu@cityofpasadena.net.

YANNIE WU
Principal Engineer

YW:bs

PASADENA WATER AND POWER

M E M O R A N D U M

August 23, 2018

To: Luis Rocha
Planning Department

From: Sandra Andrade-Hernandez
Water Engineering, Water and Power

Subject: Planned Development, 740-790 E Green Street, 118 S Oak Knoll Avenue, 111 S Hudson Avenue

Enclosed is the check sheet for the above listed per your request dated August 3, 2018.

Case Number: **Planned Development, 740-790 E Green Street, 118 S Oak Knoll Avenue, 111 S Hudson Avenue**

5734-025-024, 5734-025-014, 5734-025-026, 5734-025-030, 5734-025-029, 5734-025-027

WATER & POWER DEPARTMENT - WATER DIVISION

Plan Reviewer: Sandra Andrade-Hernandez
Phone: (626) 744-4189
Email: sandrade-hernandez@cityofpasdena.net
Date Reviewed: August 23, 2018
District Map Sheet: 617

Water Mains:

Pasadena Water and Power (PWP), Water Division can serve water to this project. There are three water mains surrounding this property. There is an 8-inch cast iron water main in Green Street that was installed under Work Order 1220 in 1925. This water main is located approximately 9 feet north of the south property line of Green Street. There is an 8-inch cast iron water main in Hudson Avenue that was installed under Work Order 2832 in 1933. This water main is located approximately 39 feet east of the west property line of Hudson Avenue. There is a 6-inch cast iron water main in Oak Knoll Avenue that was installed under Work Order 783 in 1920. This water main is located approximately 44 feet west of the east property line of Oak Knoll Avenue.

Moratorium:

Verify with Public Works Department regarding any street construction moratorium affecting this project.

Water Pressure:

The approximate water pressure in the area is 50 - 60 psi.

Water Service:

PWP records reflect seven services serving this project. There are three 1-inch domestic services (3479, 3477, and 3468). There are three 1 ½-inch domestic services (44549, 42627, and 24101). There is one 4-inch service (44269). Any change in water service will be reviewed when the building plans are submitted. Any change in service will be installed at actual cost and paid for by the owner/developer. Additionally, if it is determined that a water main must be upgraded due to size, age, pressure deficiencies, and/or the integrity of the existing water main; the upgrade will be paid for by the owner/developer. A deposit will be requested for the water main design and a cost estimate will be provided to the owner/developer for the new water service installations, main design, and main construction. The owner/developer must be aware that the design of a new water main will take 3 to 4 months after the initial deposit is made by the owner/developer. Also, an additional 4 to 6 months will be needed for the construction of the water main after the balance of the estimate is paid in full by the owner/developer. The design and construction estimated time depends on the size and length of the water main and other mains in the queue. For this reason, it is imperative that the initial deposit be submitted promptly.

Water Division Requirements:

- Water lines are not permitted to cross lot lines to serve adjoining lots without a utility easement; the Pasadena Water Division shall approve all proposed easements.
- The Water Division will install the service tap, lateral, water meter and designate the

distribution main and service tap.

- All services not in use must be abandoned at the distribution main at the applicable rate.
- For subdivided lots with one unit behind the existing, show easement documentation and assessor parcel map showing the subdivision.
- Pursuant to the PWP Water Regulation Section XI 'A water service and meter may be evaluated for its continuing integrity. Should PWP find a service, meter, vault or other appurtenance to be substandard and no longer suitable for continued use, replacement and/or construction of new facilities may be required. PWP may require that a portion or all of the costs of such replacement and/or construction be paid or contracted for by the Applicant or Customer prior to construction.' The property owner is responsible for the replacement cost. All service pipes shall be of suitable capacity as determined by applicable plumbing and fire codes. The minimum sized service installed by PWP is 1-inch.

Cross Connection Requirements for Domestic Services:

- All city cross-connection prevention policies must be adhered to. The developer is required to provide back-flow protection at all connections whereby the plan arrangement or configuration could potentially contaminate the domestic water system.
- There shall be no taps between the meter and the backflow assembly.
- The owner/developer shall provide and install an approved double check valve backflow prevention assembly at each water service if more than one water service serves property. The location of the back-flow prevention assembly shall be above ground within 20-feet of the property line.
- The property owner is responsible for the back-flow prevention assembly. The assembly will be registered and require an annual test certification. All manufacturer warranties shall be transferred upon installation and certification to the property owner.
- The owner/developer is responsible for certifying and testing the assembly after installation by a person that possesses a current and valid license, and must be certified by the County of Los Angeles Department of Health Services.
- The owner/developer shall submit the results of the test to the Water Utility Service Section for approval. Upon approval, the City will maintain domestic water to the property and will automatically register the assembly.
- All water services shall be protected from cross connections by means of approved backflow prevention techniques and assemblies.
- An administrative fee of $194.00 will be charged for each backflow prevention assembly installed.

Cross Connection Requirements for Fire Service:

- The fire service requires a detector meter and back-flow prevention assembly.
- The assembly shall be located in a readily accessible location for meter reading, test and maintenance.
- All fire sprinkler systems require installation of an approved double check valve backflow prevention assembly at the sprinkler lateral off the domestic system.
- Contract service other than PWP, providing the backflow prevention assembly shall contact the Water Utility Services Section to verify assembly approval or contact the University of Southern California foundation for Cross Connection Control and Hydraulic Research for an approve list of assemblies.

- All manufacturer warranties shall be transferred upon installation and certification to the property owner. The property owner shall assume ownership of the back-flow prevention assembly. The assembly will be registered and require an annual test certification.
- If PWP is to provide DCDA for fire service, PWP will install Wilkins, model 450 DA.
- Choose from one of the below listed options and incorporate into the fire sprinkler plans.

Option 1:

Detector meter located on double check detector check assembly (DCDA) outside the structure on private property.

- The Water Division will install the service tap, lateral, DCDA (optional Wilkins, models 350 DA or 450 DA) and designate the distribution main and service tap.
- The location of the back-flow prevention assembly shall be a minimum of 12-inches above grade within 10-feet of the property line, on private property. Reference Water Division Plan Check for certification and registration.

Option 2:

Detector meter located in a vault within the public right of way with a double check valve backflow prevention assembly (DCA) provided and installed inside or outside the building by the owner/developer.

- The Water Division will install the service tap, lateral, detector water meter and designate the distribution main and service tap.
- The location of the back-flow prevention assembly shall be a minimum of 12-inches above grade within 20-feet of the property line on private property. Reference Water Division Plan Check for certification and registration.

All Other Cross Connection Requirements:

The owner/developer is also responsible for additional cross connection requirements for irrigation system, swimming pool and/or spa, boiler / chilled water / cooling tower (using chemical additives), domestic water line at makeup to carbonation system, sewage ejector, decorative water fountain, and makeup water to reverse osmosis filtration equipment.

Fire Flow and Fire Hydrants:

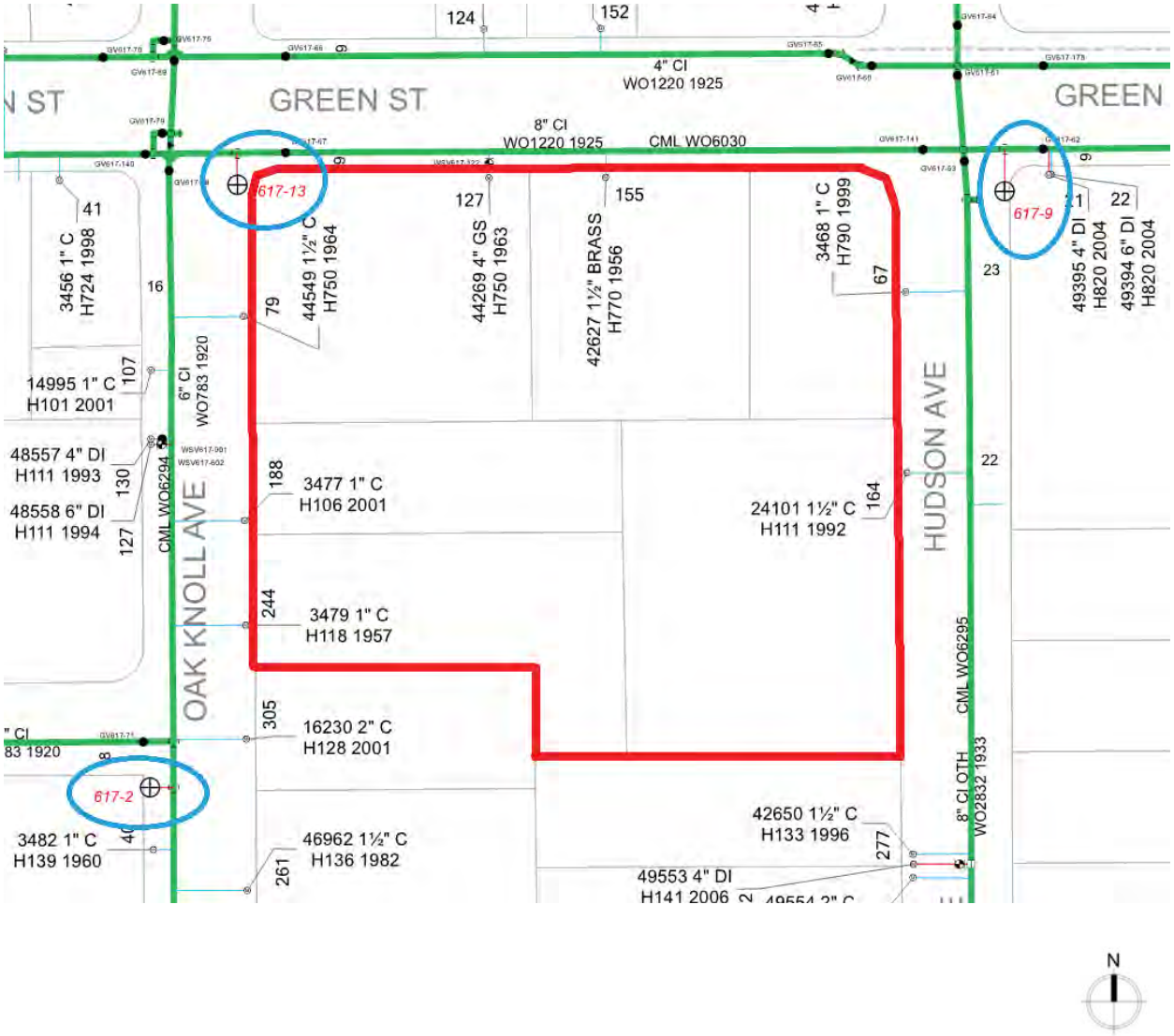
The Pasadena Fire Department (PFD) has jurisdiction and establishes the requirements for fire protection within the City of Pasadena. PFD must be consulted in this regard. Any cost incidental to providing adequate fire protection for the project must be paid for by the owner/developer.

There are three fire hydrants in close proximity to the project site.

- Fire hydrant 617-9 is located on the southeast corner of Green Street and Hudson Avenue.
- Fire hydrant 617-13 is located on the southeast corner of Green Street and Oak Knoll Avenue.
- Fire hydrant 617-2 is located on the southwest corner of the three-way intersection of Mira Monte Place and Oak Knoll Avenue.

There is no current fire flow test information for these three fire hydrants. If you would like to request for a fire flow test, please contact Marco Sustaita at (626) 744-4498.

Fire Hydrants Details:



PASADENA WATER AND POWER

MEMORANDUM

August 21, 2018

To: Luis Rocha
Senior Planner

From: Alex Chen
Sr. Engineering Technician

Enclosed is a copy of comments for Planned Development 740~790 E Green St, 118 S Oak Knoll Ave, 111 S Hudson Ave - requested in your memorandum of Auguest 3, 2018.

Said Bernal
Principal Electrical Engineer
Water & Power Department

/

MEMORANDUM - City of Pasadena Planning Department

DATE: **August 3, 2018**

TO:
Yannie Wu – Department Public Works
Sarkis Nazerian, Building Official – Building Department
Pari Bagayee – Fire Department
Said Bernal – Water and Power – **(Power Division)**
Natalie Ouwersloot, Water and Power **(Water Division)**
Claudia Burciaga-Ramos – Support Staff – Design and Historic Preservation
Jim Wong – Housing Department
Eric Duyshart – Development Department
Carmina Chavez – Health Department

FROM: **Luis Rocha, Senior Planner**

RE: **Planned Development 740-790 E. Green St, 118 S. Oak Knoll Ave, 111 S Hudson Ave**

Attached is the Application (s) for:

Planned Development for the demolition of five existing commercial buildings and associated on-grade parking improvements on an approximately 101,430 square feet (2.33 acre) site; and construction of a mixed-use building, subterranean parking, and open space. The proposed building would include a total of 273, for-rent units (including 30 units designated for Very Low-Income households), 19,660 square feet of commercial use. The buildings would range in height from three to five stories, with a maximum height of 82 feet. Parking would be provided in a two-level subterranean parking garage with 453 parking spaces and 51 bicycle parking stalls would be provided.

An earlier version of this project was routed for PPR (PPR2017-00017) in November 2017.

The Planning Division would like for you to submit your "comments" on this case by **August 21, 2018** so that your department's comments can be attached to the staff report. If comments are not received by the due date they may not be included in the staff report.

The space below has been provided for your comment. If you need additional space, or would prefer to use your letterhead, please attach a memo. If you have "No Comments" on this case, please indicate in the space provided below and return to the Current Planning Department:

Exact location of electrical vault room must be coordinated with PWP Electric Service Planning to ensure all requirements are met. if electrical service is shared between multiple parcels, an easement will be required. Contact PWP electric service planning to coordinate electrical service.

Existing electrical service will need to be demolished prior to construction and will require an outage. Contact PWP Electric Service Planning to coordinate.

Public Works Dept. Please review the attached tree inventory for street trees. If you have any further questions regarding the case or deadline dates, please contact ***Luis Rocha*** at ext. 6747.

Please return the original copy (no comments) **to the Planning Division.**
Thank you.

721 E GREEN ST
735 E GREEN ST
747 E GREEN ST
761 E GREEN ST
767 E GREEN ST 1
790 E COLORADO BLVD
30 S HUDSON AVE
GREEN
OAK KNOLL
HUDSON
724 E GREEN ST
700 E GREEN ST
740 E GREEN ST
770 E GREEN ST
790 E GREEN ST
840 E GREEN ST
106 S OAK KNOLL AVE
118 S OAK KNOLL AVE
128 S OAK KNOLL AVE
111 S HUDSON AVE
124 S HUDSON AVE
133 S HUDSON AVE
134 S HUDSON AVE
MIRA MONTE

V1639
33+57.5

V1660
32+34.23

V1953
37+39

V1482
31+07

EXACT LOCATION OF ELECTRICAL VAULT ROOM MUST BE COORDINATED WITH PWP ELECTRIC SERVICE PLANNING TO ENSURE ALL REQUIREMENTS ARE MET. IF ELECTRICAL SERVICE IS SHARED BETWEEN MULTIPLE PARCELS, AN EASEMENT WILL BE REQUIRED. CONTACT PWP ELECTRIC SERVICE PLANNING TO COORDINATE ELECTRICAL SERVICE.

V8039
K3444-50-AB
K3445-50-AC
K3446-50-BC
K3276-100-AC
K2903-100-AC

V8567
K1456-100-AB
K1449-100-AC
K1454-100-BC

PROPOSED PRIVATE PROPERTY VAULT LOCATION

B12065

13686MP
8168-25-A
8169-25-C

V1112
VS115
V1112
6+50

B12217

K4311-100-BC
K4021-150-ABC

V8514

13685MP
1907-50-B

19133MP

PROPOSED FEED POINT

EXISTING ELECTRICAL SERVICE WILL NEED TO BE DEMOLISHED PRIOR TO CONSTRUCTION AND WILL REQUIRE AN OUTAGE. CONTACT PWP ELECTRIC SERVICE PLANNING TO COORDINATE.

V1582
28+36
K2372-50-BC

13800MP

13733MP

MEMORANDUM

PASADENA DEPARTMENT OF TRANSPORTATION

MOVING PEOPLE TO PLACES, CONNECTIVITY

DATE: **May 23, 2023**

TO: **Stephanie Cisneros, Senior Planner**
Planning and Community Development Department

FROM: **Nader Asmar, T.E.**
Principal Engineer

RE: **Transportation Analysis**

CASE: **740-790 East Green Street**

The City of Pasadena Department of Transportation (DOT) reviewed the potential transportation impacts related to the proposed construction of a 263-residential unit, 16,229 sf office development with subterranean parking. A traffic impact analysis was completed in 2022 and DOT project conditions were submitted. Recently, the project scope has been modified from the original scope used in the traffic impact analysis. The revised project scope includes 263 residential units, 14,346 sf office space with subterranean parking, and a community pocket park.

DOT has reviewed the new project scope and has determined that no additional traffic analysis will be conducted since the revised project description falls within the parameters of the previous study. Additionally, any exterior modifications that have changed since the previous submittal do not affect the analysis since the driveway access points have remained in the same approximate locations. DOT project conditions will remain the same.

PASADENA
DEPARTMENT OF TRANSPORTATION

Transportation Impact Analysis

CEQA Evaluation

Category 2

Project Address: 740-790 East Green Street

Project Summary: Demolition of existing commercial office buildings and construct 263 residential units, 16,229 sf office, and subterranean parking

Applicant:
Stanford Pasadena, LLC
Attention: Daniel Taban
888 South Figueroa Street
Suite 1900
Los Angeles, CA 90017

Attention:
Beilin Yu, Zoning Administrator
City Planning Department

February 24, 2022

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I. Study Objective

This report analyzed the impact the development will have on the City transportation system by estimating incremental changes in vehicle miles traveled (VMT) per capita, vehicle trips per capita (VT), the project impact on service population proximity access to transit and bike facilities, and walk accessibility score.

II. Project Description

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of 263 residential units, 16,229 sf office space, a pocket park, and subterranean parking. Vehicular site access to the proposed project is planned to be along Oak Knoll Avenue.

Figure 1 depicts the project's Level 1 floor plan.

III. Existing Transportation Network

Street System Classifications

Union Street is a one-way westbound **City Connector** with three travel lanes. Restricted parking and time-limited parking are found along both sides of this roadway from Hill Avenue to St. John Avenue. A future cycle track is proposed along this roadway. Currently, Union Street is not a bike lane or route.

Colorado Boulevard is an east/west **City Connector**. Two through travel lanes are provided in each direction with turn lanes at key intersections. Time limited street parking is provided along both sides of the roadway. Colorado Boulevard has neither a bike lane nor bike route.

Green Street is a one-way eastbound **City Connector** which runs immediately north of the development. Three through lanes are provided within the project study area. Time limited parking may be found along both sides of this tree-lined, predominantly office and commercial land-use street. Green Street is not designated as a bike lane or route.

Cordova Street is a four-lane **Neighborhood Connector** with two lanes in each direction. A future road diet is proposed along this roadway, which will include bike lanes. Currently, the roadway in the vicinity of the project is an enhanced Category 3 bike route.

Oak Knoll Avenue is a north/south **Access Road** bordering the project site to the west. One through travel lane is provided in each direction with time limited street parking along both sides of the roadway. Portions of Oak Knoll Avenue is posted with a speed limit of 25 mph.

Hudson Avenue is a two-lane, one-way northbound **Neighborhood Connector** east of the development. No parking is allowed on the west side of the street.

Figure 2 depicts the project in the City of Pasadena's Adopted Street Types map.

Figure 1. Project Level 1 Floor Plan (dated 4/6/2021)

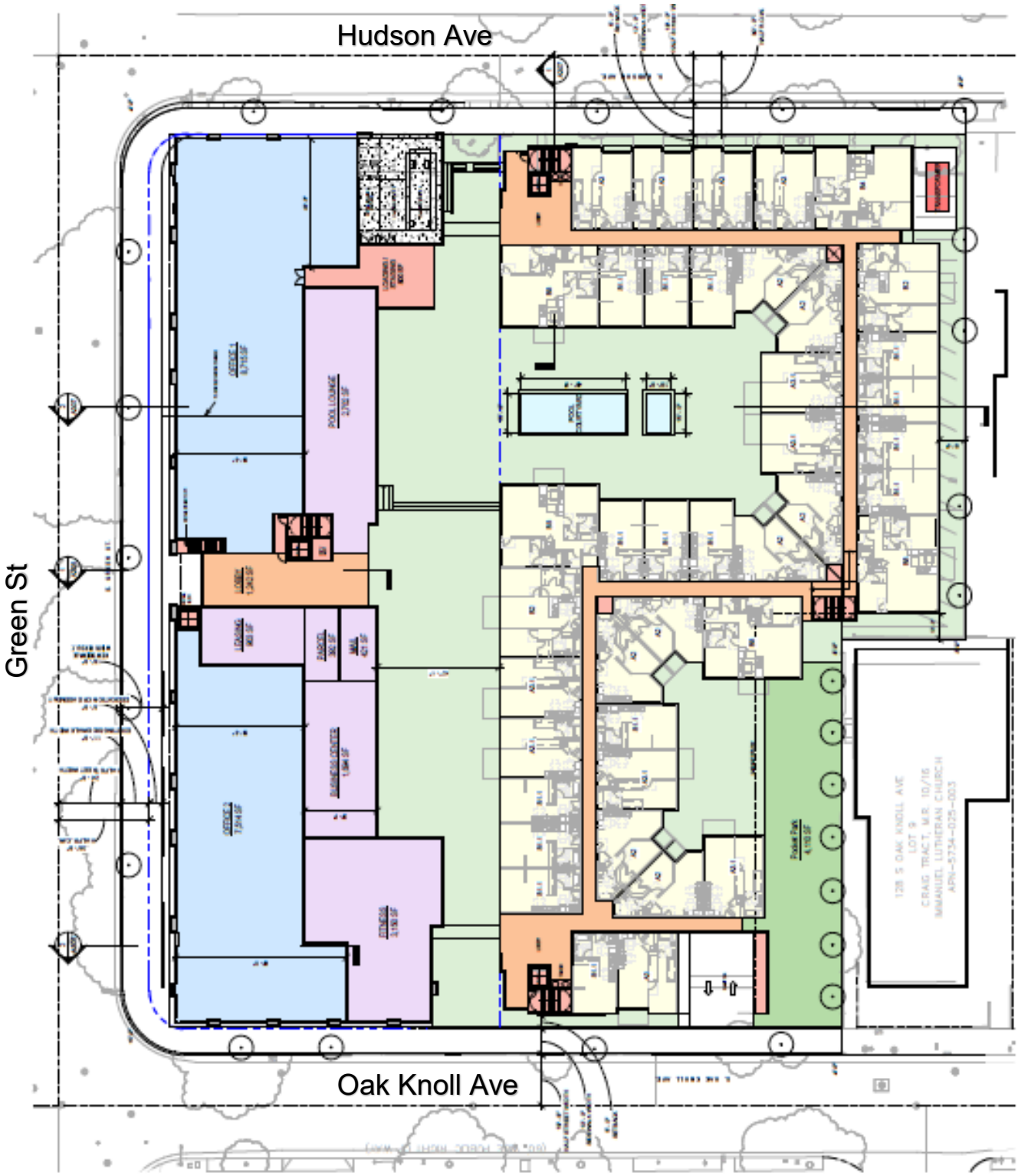
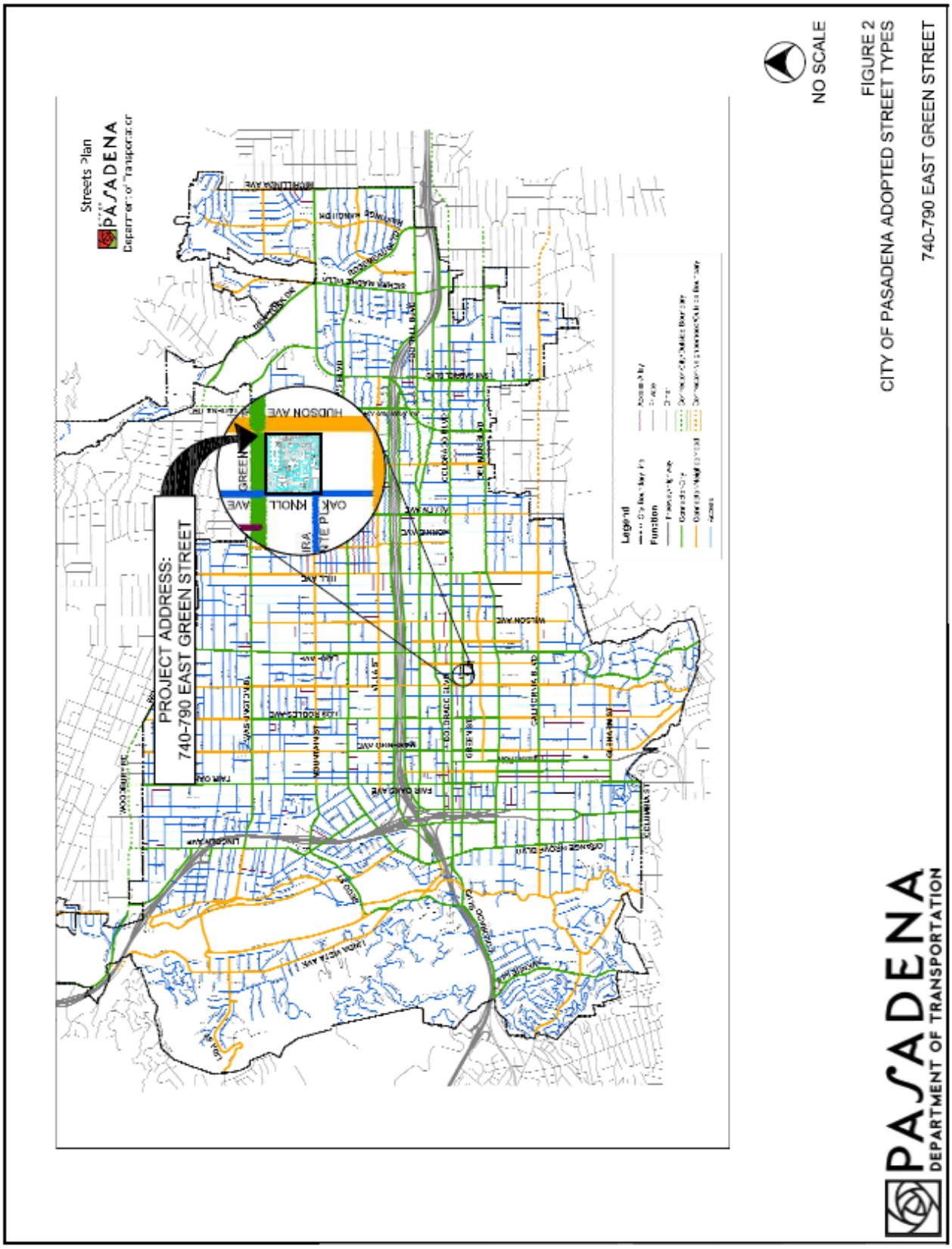


Figure 2. City of Pasadena Adopted Street Types Map



Existing Transit Service

Public transit service within the project study area is currently provided by LA Metro, Foothill Transit, LA Department of Transportation (CE), and Pasadena Transit (PT). The locations of public transit stops near the project are summarized as follows:

Location	Route
Madison Ave at Colorado Blvd – Northwest corner	PT 10; Metro 180, 686; FT 187
Madison Ave at Colorado Blvd – Southeast corner	Metro 180
El Molino Ave at Colorado Blvd – Northwest corner	PT 10
El Molino Ave at Colorado Blvd – Southeast corner	PT 10; FT 187
Oak Knoll Ave at Colorado Blvd – Northwest corner	PT 10; Metro 180, 686
Oak Knoll Ave at Colorado Blvd – Southeast corner	Metro 686
Hudson Ave at Colorado Blvd – Northwest corner – Southeast corner	PT 10
Lake Ave at Colorado Blvd – Northeast corner	CE 549
Lake Ave at Colorado Blvd – Southwest corner	PT 10, 20; Metro 662; CE 549
Lake Ave at Colorado Blvd – Northwest corner	PT 10; Metro 180, 686; FT 187
Lake Ave at Colorado Blvd – Southeast corner	Metro 181, 686; FT 187
Lake Ave at Green St – Northeast corner	PT 20; Metro 662
Lake Ave at Green St – Southwest corner	PT 10, 20; Metro 662, CE 549
Lake Ave at Cordova St – Northeast corner	PT 10, 20; Metro 662; CE 549
Lake Ave at Cordova St – Northwest corner	CE 549
Lake Ave at Cordova St – Southwest corner	PT 10, 20; Metro 662
Metro Gold Line – Lake Avenue at I-210 Fwy	Gold Line

IV. Transportation Analysis Methodology

With the City of Pasadena General Plan, the City's guiding principles cumulatively represent the community's vision for the future:

- Growth will be targeted to serve community needs and enhance quality of life.
- New construction that could affect the integrity of historic resources will be compatible with, and differentiated from, the existing historic resource.
- Economic vitality will be promoted to provide jobs, services, revenues, and opportunities.
- Pasadena will be a socially, economically, and environmentally sustainable community.
- Pasadena will be a city where people can circulate without cars.
- Pasadena will be promoted as a cultural, scientific, corporate, entertainment, and educational center for the region.
- Community participation will be a permanent part of achieving a greater city.
- Pasadena is committed to public education and a diverse educational system responsive to the broad needs of the community.

Understanding the goals and objectives of the General Plan, the Pasadena Department of Transportation sets forth goals and policies to improve overall transportation in Pasadena and create "a community where people can circulate without cars." Inherent in this vision statement is to accommodate different modes of transportation including vehicle, pedestrian, bicycle, and transit. This report will assess accessibility of these different modes of travel and the project's transportation impacts using the City's adopted transportation performance measures.

Analysis Purpose

Pasadena reviews several types and sizes of projects that could be subject to environmental review under the California Environmental Quality Act (CEQA). Transportation impact analyses are an integral part of the environmental review process that is required for all proposed projects not categorically exempt under CEQA.

Analysis Cap Criteria - Transportation Performance Measures

The Pasadena Department of Transportation adopted a set of performance measures and CEQA thresholds that are closely aligned with the Mobility Element objectives and policies. Pasadena Department of Transportation's mobility performance measures assess the quality of walking, biking, transit, and vehicular travel in the City. A combination of vehicular and multimodal performance measures are employed to evaluate system performance in reviewing new development projects. They are:

- Vehicle Miles Traveled per Capita
- Vehicle Trips per Capita
- Proximity and Quality of the Bicycle Network
- Proximity and Quality of the Transit Network
- Pedestrian Accessibility

These performance measures align with the sustainability goals of the General Plan by evaluating the "efficiency" of projects by analyzing the per capita length and number of trips associated with changes in land use. With the expanded emphasis on sustainability and a continued focus on livability, the proposed performance measures will assist in determining how to balance travel modes as well as understand the mobility needs of the community.

Definitions

VMT Per Capita

The Vehicle Miles Traveled (VMT) per Capita measure sums the miles traveled for trips within the City of Pasadena Travel Demand Model (that is based on the SCAG regional model). The VMT total considers 100% of the mileage of trips that begin and end inside Pasadena and 50% of the distance travelled for trips with one end outside of Pasadena. The City's VMT is then divided by the City's total service population, defined as the population plus the number of jobs.

Although VMT itself will likely increase with the addition of new residents, the City can reduce VMT on a per-capita basis with land use policies that help Pasadena residents meet their daily needs within a short distance of home, reducing trip lengths, and by encouraging development in areas with access to various modes of transportation other than auto.

VT Per Capita

Vehicle Trips (VT) per Capita is a measure of motor vehicle trips associated with the City. The measure sums the trips with origins and destination within the City of Pasadena, as generated by the 2013 Trip-based citywide Travel Demand Model. The regional VT is calculated by adding the VT associated with trips generated and attracted within City of Pasadena boundaries, and 50% of the VT associated with trips that either begin or end in the City, but have one trip end outside of the City. The City's VT is then divided by the City's total service population, defined as the population plus the number of jobs.

As with VMT, VT itself will likely increase with the addition of new residents, but the City can reduce VT on a per-capita basis with land use policies that help Pasadena residents meet their daily needs within a short distance of home, reducing trip lengths, and by encouraging development in areas with access to various modes of transportation other than auto.

Proximity and Quality of Bicycle Network

The Proximity and Quality of Bicycle Network provides a measure of the percent of the City's service population (population + jobs) within a quarter mile of bicycle facility types. The facility types are aggregated into three hierarchy levels, obtained from the City's (Draft) Bicycle Transportation Plan categories as shown in the following table:

Table 1. Bicycle Facilities Hierarchy

LEVEL	DESCRIPTION	FACILITIES INCLUDED
1	Advanced Facilities	Bike Paths Multipurpose Paths Cycle Tracks/Protected Bike Lanes

2	Dedicated Facilities	Buffered Bike Lanes Bike Lanes Bike Boulevards
3	Basic Facilities	Bike Routes Enhanced Bike Routes Emphasized Bikeways

For each bike facility level, a quarter-mile network distance buffer is calculated and the total service population (population + jobs) within the buffer is identified.

The City can improve measures of Bike Facility Access by improving and expanding existing bike facilities and by encouraging residential and commercial development in areas with high-quality bike facilities.

Proximity and Quality of Transit Network

The Proximity and Quality of Transit Network provides a measure of the percent of the City's service population (population + jobs) within a quarter mile of each of each of three transit facility types, as defined in the following table:

Table 2. Description of Transit Facilities

TRANSIT FACILITIES HIERARCHY	
LEVEL	FACILITIES INCLUDED
1	Includes all Gold Line stops as well as corridors with transit service, whether it be a single route or multiple routes combined, with headways of five minutes or less during the peak periods.
2	Includes corridors with transit headways of between six and 15 minutes in peak periods.
3	Includes corridors with transit headways of 16 minutes or more at peak periods.

For each facility level, a quarter-mile network distance buffer is calculated and the total service population (population + jobs) within the buffer is identified.

The City can improve the measures of Transit Proximity and Quality by reducing headways on existing transit routes, by expanding transit routes to cover new areas, and by encouraging residential and commercial development to occur in areas with an already high-quality transit service.

Pedestrian Accessibility Score

Proximity and Quality of Pedestrian Environment score provides a measure of the average walkability in the TAZ surrounding Pasadena residents, based on a Pedestrian Accessibility metric. The Pedestrian proximity metric is a simple count of the number of

land use types accessible to a Pasadena resident or employee in a given TAZ within a 5-minute walk.

The ten categories of land uses are:

- Retail
- Personal Services
- Restaurant
- Entertainment
- Office (including private sector and government offices)
- Medical (including medical office and hospital uses)
- Culture (including churches, religious and other cultural uses)
- Park and Open Space
- School (including elementary and high schools)
- College

The following table summarizes the City's Metrics for determining CEQA Caps:

Table 3. City of Pasadena CEQA Thresholds of Significance

METRIC	DESCRIPTION	IMPACT THRESHOLD
1. VMT Per Capita	Vehicle Miles Traveled (VMT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An increase over existing Citywide VMT per Capita of 22.6.
2. VT Per Capita	Vehicle Trips (VT) in the City of Pasadena per service population (population + jobs).	CEQA Threshold: An increase over existing Citywide VT per Capita of 2.8.
3. Proximity and Quality of Bicycle Network	Percent of service population (population + jobs) within a quarter mile of bicycle facility types	CEQA Threshold: Any decrease in existing citywide 31.7% of service population (population + jobs) within a quarter mile of Level 1 & 2 bike facilities.
4. Proximity and Quality of Transit Network	Percent of service population (population + jobs) located within a quarter mile of transit facility types.	CEQA Threshold: Any decrease in existing citywide 66.6% of service population (population + jobs) within a quarter mile of Level 1 & 2 transit facilities.
5. Pedestrian Accessibility	The Pedestrian Accessibility Score uses the mix of destinations, and a network-based walk shed to evaluate walkability	CEQA Threshold: Any decrease in the Citywide Pedestrian Accessibility Score

V. Project Transportation Impact Analysis

Project analyses are based on the City's Transportation Impact Analysis Guidelines. Proposed projects are analyzed using the City's calibrated travel demand forecasting model (TDF) built on SCAG's regional model.

The City's TDF model uses TransCAD software to simulate traffic levels and travel patterns for the City of Pasadena. The program consists of input files that summarize the City's land uses, street network, travel characteristics, and other key factors. Using this data, the model performs a series of calculations to determine the amount of trips generated, the beginning and ending location of each trip, and the route taken by the trip. To be deemed accurate for project transportation impact on the transportation system, a model must be calibrated to a year in which actual land use data and traffic volumes are available and well documented. The Pasadena TDF has been calibrated to 2013 base year conditions using actual traffic counts, Census data, and land use data compiled by City staff with land uses' associated population and job increase estimates.

Projects with proposed land uses that are consistent with the General Plan and complimentary to their surrounding land uses are expected to reduce the trip length associated with adjacent land uses; and/or increase the service population access to pedestrians, bike, and transit facilities if the project is within a quarter mile of those facilities.

Table 4 summarizes the following analyses of the proposed project's impacts on the transportation system using the calibrated TDF model. The results are based on the project's vehicular and non-vehicular trip making characteristics, trip length, and its interaction with other surrounding/citywide land uses, and the City's transportation network.

Table 4. Transportation Performance Metrics Summary

Transportation Performance Metrics	Significant Impact Cap (existing)	Incremental change (existing + project)	Significant Impact?
VMT per Capita	>22.6	10.3	No
VT per Capita	>2.8	2.8	No
Proximity and Quality of Bicycle Network	<31.7%	31.7	No
Proximity and Quality of Transit Network	<66.6%	66.8	No
Pedestrian Accessibility	<3.9	3.9	No

The TDF model calculation results indicated that the project does not exceed any of the adopted CEQA caps of significance.

VI. Conclusion

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of 263 residential units, 16,229 sf office space, and subterranean parking. Vehicular site access to the proposed project is planned to be along Oak Knoll Avenue.

Using the City's Transportation Demand Model, DOT found that the proposed project does not exceed any of the CEQA thresholds outlined in the City's guidelines.

VII. Appendices

Memorandum of Understanding
City's Travel Demand Forecasting Model Output/Results

Appendix:
Memorandum of Understanding

PROJECT INFORMATION

Site Address: 770 E GREEN STREET, PASADENA CA 91101

OWNERSHIP

Stanford Pasadena, LLC
888 South Figueroa, Suite 1900
Los Angeles, CA 90017
Contact: Daniel Taban
T 213.745.5191

LANDSCAPE

EPT Design
844 East Green Street, Suite 201
Pasadena, CA 91101
Contact: Nord Eriksson
T 626.795.2008

ARCHITECT

MVE + Partners
1900 Main St.
Irvine, CA 92614
Contact: Sherwin Pineda
T 949.809.3388

LAND USE COUNSEL

Carlson & Nicholas, LLP
140 South Lake Avenue, Suite No. 251
Pasadena, CA 91101
Contact: Richard McDonald, Esq.
T. 626.356.4801

PROJECT DESCRIPTION

4 -5 Stories of Residential with Ground Level Commercial/Lobby/Leasing over 2 Levels of Underground Parking

LEGAL DESCRIPTION

LEGAL DESCRIPTION LAWYERS TITLE FILE NO. 116090303 (a):

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 13 AND THE WEST 15 FEET OF LOT 14 OF GOODWIN LUKENS TRACT, IN THE CITY OF PASADENA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 16, PAGE 84 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT 14 DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WESTERLY LINE OF HUDSON AVENUE WITH THE NORTHERLY BOUNDARY LINE OF LOT 14, GOODWIN-LUKENS TRACT AFORESAID; SAID WESTERLY LINE OF HUDSON AVENUE BEING DISTANT 15 FEET EASTERLY FROM AND PARALLEL WITH THE WESTERLY BOUNDARY LINE OF SAID LOT 14; THENCE SOUTHERLY ALONG THE SAID WESTERLY LINE OF HUDSON AVENUE 15 FEET TO A POINT; THENCE NORTHWESTERLY ALONG A CURVE CONCAVE TO THE LOT, HAVING A RADIUS OF 15 FEET, A DISTANCE OF 23.56 FEET TO A POINT IN THE NORTHERLY BOUNDARY LINE OF SAID LOT 14 THAT IS DISTANT 15 FEET FROM THE POINT OF BEGINNING; THENCE IN A DIRECT LINE TO THE POINT OF BEGINNING; AS CONDEMNED FOR THE OPENING AND WIDENING OF GREEN STREET, IN THE CITY OF PASADENA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, BY DECREE OF CONDEMNATION RECORDED FEBRUARY 27, 1924 AS RECORDED IN BOOK 2080, PAGE 180, OF OFFICIAL RECORDS, CASE NO. 111845, SUPERIOR COURT.

ASSESSOR'S PARCEL NUMBER: 5734-025-026

PARCEL 2:

LOTS 11 AND 12 OF GOODWIN LUKENS TRACT, IN THE CITY OF PASADENA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 9, PAGE 84 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

ASSESSOR'S PARCEL NUMBER: 5734-025-014

PARCEL 2A:

AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES OVER THE NORTHERLY 15 FEET OF THE

DENSITY

Project Base Density (maximum allowed per PD standards):	87 DU per acre
Lot Area:	2.33 acres
Base Density:	203 Units
Proposed Density (with 30% density bonus):	**263 Units**
Number of Affordable Units	**41 Units**

FLOOR AREA RATIO

Allowed (maximum allowed per PD standards):	254,125 SF (2.5 :1)
Proposed:	253,917 SF

UNIT MATRIX & AREA TABULATIONS

Unit Type	Program	No. of Units		Mix per Product		Net Area (SF)		Parking
S1	STUDIO	4	87	2%	33%	523	558	4
S1.1	STUDIO	83		31%		558		81
S2	STUDIO	2		1%		608		2
A1	1BR 1BA	3	125	1%	47.5%	700	726	5
A2	1BR 1BA	46		17%		708		69
A3	1BR 1BA	21		8%		721		32
A3.1	1BR 1BA	55		21%		745		83
B1	2BR 2BA	3	51	1%	19.4%	1,095	1,159	5
B2	2BR 2BA	17		6%		1,138		26
B3	2BR 2BA	9		3%		1,128		14
B4	2BR 2BA	4		2%		1,193		6
B5	2BR 2BA	18		7%		1,236		27
Total		**263**		**100%**	**Total Area**	**198,393 SF**		**854 Spaces**
					Ave. Unit SF	**754 SF**		
						Total Guest Parking (1 per 10 units)		**26 Spaces**
OFFICE 1	3 SPACES PER 1,000 SF					8,715		26
OFFICE 2	3 SPACES PER 1,000 SF					7,514		23
Total						**16,229 SF**		49 Spaces
						Total after 25% Reduction per TOD		**37 Spaces**
Amenities & Open Space	LOBBY					1,242		N/A
	POOL LOUNGE					2,684		
	LEASING / MAIL					1,716		
	BUSINESS CENTER					1,694		
	FITNESS					3,150		
	POCKET PARK					4,110		
	POOL DECK & COURTYARDS & ROOF TERRACE					21,070		
	Total Area					**37,666 SF**		
	Total Residential & Commercial Parking							**417 Spaces**

UNIT MATRIX & AREA TABULATIONS

Unit Type	Program	No. of Units		Mix per Product		Net Area (SF)		Parking
S1	STUDIO	4	87	2%	33%	523	558	4
S1.1	STUDIO	81		31%		558		81
S2	STUDIO	2		1%		608		2
A1	1BR 1BA	3	125	1%	47.5%	700	726	5
A2	1BR 1BA	46		17%		708		69
A3	1BR 1BA	21		8%		721		32
A3.1	1BR 1BA	55		21%		745		83
B1	2BR 2BA	3	51	1%	19.4%	1,095	1,159	5
B2	2BR 2BA	17		6%		1,118		26
B3	2BR 2BA	9		3%		1,128		14
B4	2BR 2BA	4		2%		1,193		6
B5	2BR 2BA	18		7%		1,216		27
Total		**263**		**100%**	**Total Area**	**198,383 SF**		**354 Spaces**
					Ave. Unit SF	**754 SF**		
							Total Guest Parking (1 per 10 units)	**26 Spaces**

OFFICE 1	3 SPACES PER 1,000 SF	8,715	26
OFFICE 2	3 SPACES PER 1,000 SF	7,514	23
Total		**16,229 SF**	49 Spaces
		Total after 25% Reduction per TOD	**37 Spaces**

Amenities & Open Space	LOBBY	1,242	N/A
	POOL LOUNGE	2,684	
	LEASING / MAIL	1,716	
	BUSINESS CENTER	1,694	
	FITNESS	3,150	
	POCKET PARK	4,110	
	POOL DECK & COURTYARDS & ROOF TERRACE	23,070	
	Total Area	**37,666 SF**	
Total Residential & Commercial Parking			**417 Spaces**

Appendix:
City's Travel Demand Forecasting Model Output/Results

740-790 East Green Street

VMT/Cap and VT/Cap Calculations Summary

Daily Trips	Internal	External
Internal	351,540	335,995
External	335,995	491,168

Pop	136,475
Emp	111,143
Ext. Factor	50%

FINAL REDUCED DAILY VMT BY SPEED BIN					EMFAC
Speed	**Internal**	**External**	**Regional**	**Total**	**INPUT**
5	110	0	1,740	1,850	0%
10	673	135	14,353	15,161	0%
15	4,139	1,354	45,860	51,352	1%
20	16,943	4,473	75,163	96,579	2%
25	97,483	12,495	150,158	260,136	5%
30	489,109	61,019	275,039	825,167	15%
35	823,601	139,849	320,147	1,283,597	23%
40	201,449	55,566	225,414	482,429	9%
45	136,121	105,249	169,350	410,720	7%
50	113,989	2,073	211,686	327,749	6%
55	94,128	7,973	229,250	331,352	6%
60	120,050	15,084	238,083	373,217	7%
65	323,622	20,901	181,022	525,545	9%
70	3,630	0	528,979	532,609	11%
75	0	0	77,285	77,285	
80	0	0	0	0	
85	0	0	0	0	
SUM	**2,425,047**	**426,170**	**2,743,529**	**5,594,746**	**100%**

TOTAL RAW DAILY SUMMARY					
Metric	**Internal**	**External**	**Regional**	**Total**	**Capita**
VMT	2,425,047	852,340	5,487,058	8,764,446	35.4
VT	351,540	671,991	-	1,023,531	4.1
Length	6.9	1.3	-	8.6	-

REDUCED DAILY SUMMARY					
Metric	**Internal**	**External**	**Regional**	**Total**	**Capita**
VMT	2,425,047	426,170	2,743,529	5,594,746	22.6
VT	351,540	335,995	-	687,536	2.8
Length	6.9	1.3	-	8.1	-

FINAL DAILY SCENARIO SUMMARY					
Pop	**Emp**	**VMT**	**VT**	**VMT/Cap**	**VT/Cap**
136,475	111,143	5,594,746	687,536	22.6	2.8

2013 EXISTING SUMMARY					
Pop	**Emp**	**VMT**	**VT**	**VMT/Cap**	**VT/Cap**
135,938	111,348	5,591,328	686,619	22.6	2.8

INCREMENTAL SCENARIO RESULTS					
Pop	**Emp**	**VMT**	**VT**	**VMT/Cap**	**VT/Cap**
537	-205	3,418	917	10.3	2.8
				PASS	PASS

740-790 East Green Street

Proximity and Quality Metric Calculation Summary

Proximity and Quality of Bicycle Network

Existing

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 2	78,415	0	78,415	31.7%
Level 3	123,670	0	123,670	50.0%
No Facility	45,202	0	45,202	18.3%
Exist City Total	247,286	0	247,286	100.0%

Existing + Project

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 2	78,415	0	78,415	31.7%
Level 3	123,670	331.6668687	124,002	50.1%
No Facility	45,202	0	45,202	18.3%
Exist City Total	247,286	331.6668687	247,618	100.1%

Proximity and Quality Metric Summary - Bicycle

Network	Service Population Adjustment	Significant Impact Threshold	Service Population %	Impact?
Bike	331.6668687	< 31.7%	31.7%	No

Proximity and Quality of Transit Network

Existing

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 1	90,600	0	90,600	36.6%
Level 2	74,298	0	74,298	30.0%
Level 3	50,495	0	50,495	20.4%
No Facility	31,893	0	31,893	12.9%
Exist City Total	247,286	0	247,286	100.0%

Existing + Project

Facility Type	Service Population	Service Population Adjustment	Final Service Population	Percent of Service Population
Level 1	90,600	331.6668687	90,932	36.8%
Level 2	74,298	0	74,298	30.0%
Level 3	50,495	0	50,495	20.4%
No Facility	31,893	0	31,893	12.9%
Exist City Total	247,286	331.6668687	247,618	100.1%

Proximity and Quality Metric Summary

Network	Service Population Adjustment	Significant Impact Threshold	Service Population %	Impact?
Transit	331.6668687	< 66.6%	66.8%	No

740-790 East Green Street

Pedestrian Accessibility Summary

					Weighted Average:	**3.884113107**
PasadenaDTATAZ	Land Use Types	Population_In_TAZ	Employment_In_TAZ	Service_Population	Land Use Types	
91	5	1238.82612	756.3478606	1995.173981	5	

Carlberg ASSOCIATES

Horticulturists and
Registered Consulting
ARBORISTS

CITY OF PASADENA PROTECTED TREE REPORT
740-790 EAST GREEN STREET
PASADENA, CALIFORNIA 91101

SUBMITTED TO:

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STANDFORD PASADENA, LLC
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JANUARY 19, 2022
FEBRUARY 4, 2022 (REV.1)

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MAP POCKETS FOR FULL-SIZE PROTECTED TREE LOCATION EXHIBIT AND PROTECTED TREE IMPACT EXHIBIT AND PROTECTION PLAN

Carlberg ASSOCIATES
Horticulturists and
Registered Consulting
ARBORISTS

February 4, 2022

Daniel Taban
Stanford Pasadena, LLC
888 South Figueroa Street, Suite 1900
Los Angeles, CA 90017

Re: 740-790 East Green Street, Pasadena, California – City of Pasadena Protected Tree Report

EXECUTIVE SUMMARY

This report addresses our evaluation of 26 trees located on or adjacent to your project site located at 740-790 East Green Street in Pasadena, California. Of these 26 trees, two are considered a 'protected' private property tree as set forth by the City of Pasadena's Tree Protection Ordinance No. 8.52, 10 are non-protected private property trees, and 14 are public rights-of-way trees. ***If the project proceeds as proposed, two protected trees, 10 non-protected trees, and 4 rights-of-way trees will be removed.*** The rights-of-way trees to remain will experience minor to significant encroachments into their canopies and Root Protection Zones (RPZ). Recommendations for tree preservation during construction are provided at the end of this report.

BACKGROUND AND ASSIGNMENT

You are proposing the development of a three- to five-story, mixed-use project, comprising 263 residential units and 16,229 square feet of ground-level commercial space over two subterranean garage levels. The existing structures will be demolished, and the lot will be redeveloped to accommodate the new project.

The 26 inventoried trees are scattered within, and immediately adjacent to, the property limits. We were retained to visit the property, inventory the trees, evaluate the potential impacts of construction, make recommendations for the protection of trees to remain, prepare value appraisals of the rights-of-way trees in accordance with the protocols set forth in the *Guide for Plant Appraisal* (10th Edition) and prepare a Protected Tree Report for submittal to the City of Pasadena. We used the Trunk Formula Method (*Guide for Plant Appraisal,* 10th Edition) for the appraisals. We used the Site Plan & Project Summary (2021, MVE + Partners), as well as information from EPT Design to determine the impacts to the protected trees. This report is based on our site visit of July 26, 2021.

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OBSERVATIONS AND DISCUSSION

The project site fronts 740-790 East Green Street to the north, Hudson Avenue to the east, Oak Knoll Avenue to the west, and a church and office building to the south. Existing commercial office buildings and their associated 'on grade' parking lots comprise the current land use on the property. Tree trunk locations and canopy spreads (approximate driplines) were recorded in the field, from grade, and plotted using the topographic survey (JRN Civil Engineers, 2021) provided to us. The on-site trees were numbered and tagged with an embossed aluminum tag. The rights-of-way trees were numbered on our exhibits with an 'ST' designation but were not tagged. The locations of the on-site, and right-of-way trees are illustrated on the 'Protected Tree Location Exhibit' and the 'Protected Tree Impact Exhibit and Protection Plan.'

Of the 26 inventoried trees, two are protected/specimen trees based on their species and trunk size and 14 are protected due to their designation as public street trees. Ten trees do not meet the City's protection requirements because of size or species. One right-of-way tree (#ST 5) has been removed since an earlier tree inventory by EPT Design, which indicated that ST5 was in poor condition.

On Oak Knoll Avenue, the existing and proposed sidewalk width is 10 feet wide from the back of the curb. The project includes an additional 5-foot 9-inch-wide setback for the new residential building proposed for the southern half of the property. Two levels of subterranean parking garage are proposed under the new buildings. On the Oak Knoll side, the building foundation and retaining wall for the parking garage will be flush with the new setback. This will allow for less root damage to street tree #ST2. There appears to be no roofline overhang associated with the western sides of the buildings. It is assumed that some level of sidewalk renovation will be included with the redevelopment of the property.

On Green Street, the existing building setback and sidewalk width is 11 feet from the back of the curb. The City is requiring the project to provide an additional 5-foot easement that will increase the sidewalk width to a total of 16 feet. In addition to the 16-foot sidewalk, the proposed project is providing non-required setbacks of 5-feet below grade, a 3-foot setback at the ground level, and a 5-foot setback above grade at Levels 2 and 3, with an architectural overhang of 3 feet. In summary, the total dimensions from the face of the street curb are as follows:

- 21 feet to the face of the below-grade parking retaining walls
- 19 feet to the outermost building face at ground level
- 21 feet to the building face at the upper levels
- 18 feet to the edge of the roof overhang

The setbacks will allow for less root impacts in the lower soil profiles and less canopy pruning that would occur without them. It is assumed that some level of sidewalk renovation will be included with the redevelopment of the property.

On Hudson Avenue, the proposed sidewalk width is 12 feet wide from the back of the curb. The project includes an additional 2-foot-wide setback for the mixed-use building and an additional 5-foot-wide setback for the new residential building proposed for the southern half of the property. On the Hudson Avenue side, the building foundation and retaining wall for the parking garage will be setback approximately 12-15 feet from the street trees. There appears to be a 3–4-foot roofline overhang associated with the eastern side of the mixed-use building, but no overhang with the residential building. It is assumed that some level of sidewalk renovation will be included with the redevelopment of the property.

There are numerous potential consequences related to residential construction that may affect trees during and after a typical construction process. They are as follows and are discussed below:

- EXCAVATION / TRENCHING - ROOT SEVERANCE
- SOIL COMPACTION (DURING AND POST-CONSTRUCTION)
- ALTERATION OF THE WATER TABLE/SITE DRAINAGE
- SUBSTANTIAL TRIMMING OF CANOPY OR ROOTS
- MECHANICAL DAMAGE
- IRRIGATION

A. Excavation/Trenching—Root Severance

Trenching can include excavation for irrigation, utility, or drainage lines. Trenching and excavation can also be required for foundations of structures and free-standing walls. Trenching and excavation removes soil and tree roots. When performed in the critical root zone (approximately 5x the trunk diameter of any tree) or within the dripline (outer edge of the natural canopy), there is the potential to remove large areas of root mass, and to shatter and tear roots that will remain connected to the tree(s). Torn and shattered roots cannot callous over or generate new roots in the manner of cleanly-cut roots. Torn and shattered roots are potentially unstable, are entry points for disease and decay organisms, and eventually die. Significant root loss and/or severance can be critical to the health and structure of trees to remain in a landscape.

B. Soil Compaction

Soil compaction is a complex set of physical, chemical, and biological constraints on tree growth. Principal components leading to limited growth are the loss of aeration and pore space, poor gas exchange with the atmosphere, lack of available water, and mechanical hindrance of root growth. Soil compaction is considered to be the largest single factor responsible for the decline of trees on construction sites.

C. Changes in Grade

Typically, the vast majority of the root mass exists within the top three feet of soil, and most of the fine roots active in water and nutrient absorption are in the top 12 inches. Changes in grade, by the addition or removal of soil (filling or cutting), can be injurious. Lowering the grade around trees can have immediate and long-term effects on trees. The addition of soil and compaction for common engineering practices also results in long-term effects on trees.

D. Alteration of the Water Table/Site Drainage

The water table is the upper surface of the zone in which soil macropores are saturated with water; water tables may vary seasonally. Rather than a flat, static surface, the water moves down a gradient. Its depth varies, depending on the structure of the soil through which it flows. A perched water table may form in soils that have impermeable strata. Swamps are created where the water table intersects level ground.

Structures such as footings, basements, subterranean buildings, and retaining walls may intercept impermeable layers in the soil on which water perches. If adequate drainage is not provided, the water table uphill may gradually rise and interfere with tree roots. This type of damage usually takes a period of time to be recognized and diagnosed.[1]

Some trees are particularly susceptible to root infections, such as Armillaria and Phytophthora. Both of these fungal diseases can progressively weaken a root system, resulting in dead branches in the canopy of the tree,

[1] Nelda Matheny and James R. Clark, Trees and Development: A Technical Guide to Preservation of Trees During Land Development, (Champaign, Illinois: International Society of Arboriculture, 1998), pp. 88-89.

loss of stability of the entire tree because of decaying roots, and premature death of the tree. Trees form roots in accordance with existing soil composition and water availability. Minor drainage changes in the winter and spring months are significant to the health of the trees.

E. Canopy and Root Pruning

Leaves perform vital functions for trees. Through photosynthesis, they manufacture sugars that feed the tree and are used to create the building blocks of wood. Leaves help to move water and nutrients up from the roots and around the tree through their vascular system and cool the tree down through transpiration. They moderate temperatures beneath the tree, lessen the drying action of winds, and intercept rainfall, which reduces erosion. On the ground, they moderate soil temperatures, retain moisture, and as they decompose, return their nutrients back to the soil to be recycled and reused by the tree. A healthy canopy of leaves is essential to ensure an adequate food supply for the roots to perform their important functions.

Typically, root systems extend outward past the dripline, two to four times the diameter of the average tree's crown. Main root functions include water and mineral conduction, food and water storage, and anchorage of the tree to the soil. Root systems consist of short-lived, fine-textured, feeder roots and larger, woody, perennial roots. Feeder roots, while averaging only 1/16 inch in diameter, constitute the major portion of the root system's surface area. Feeder roots act like sponges, growing predominantly outward and upward from the large roots near the soil surface where minerals, water and oxygen are usually abundant. Larger, woody roots and their subordinates tend to annually increase in diameter and grow horizontally. Predominantly located in the top 6 to 24 inches of the soil, these structural and storage roots usually do not grow deeper than three to seven feet. Root growth is generally inhibited by soil compaction and temperature. As the depth increases, soil compaction increases, and the availability of water, minerals, oxygen, and soil temperature all decrease.

Removal of significant amounts of the canopy and/or root system can lead to both immediate and long-term detrimental effects on trees. Effects can be physiological, structural, or both.

F. Protection against Mechanical Damage/Fencing

Fencing is a temporary enclosure erected around a tree to enclose as much of its safety zone as possible. Fences are critical to (1) prevent direct contact and damage to the canopy, branches, and trunk, (2) preserve roots and soil in an intact and non-compacted state, and (3) identify the Tree Protection Zone. Fencing must be in place before demolition or the initiation of construction and remain until adjacent construction activity no longer threatens tree health.

G. Irrigation

Trees that have suffered root loss may not be able to exploit as large a soil volume as before injury. Also, changed patterns of drainage may divert water away from trees. In either case, trees may benefit from supplemental irrigation. The following are general guidelines:

- *The amount of water applied must be appropriate to the species.*
- *Light, infrequent irrigations should be avoided.*
- *Excess irrigation from new landscaping should be avoided. Runoff from plantings should be minimized and/or directed away from trees.*
- *Wetting the trunk should be avoided.*[2]

[2] See Matheny and Clark, p. 125.

For structural safety, arboricultural research discourages root severance within five times a tree's trunk diameter (dbh[3]) on any one side of the tree[4]. While individual tree species, health, and structural conditions may lead to variations in the recommended distance, 5x dbh is likely to be a sustainable distance for many trees. For the purposes of this report, we refer to this area as the 'critical root zone' (CRZ) and include it in our analysis and recommendations.

Demolition of existing structures along with implementation of the proposed mixed-use development will require the removal of four right-of-way trees (#ST3, ST6, ST13, ST16), two protected private property trees (#1 and 19), and 10 non-protected trees (#4, 18, 20-27). Proposed construction will encroach within the canopies and the Root Protection Zones (RPZs) of 10 rights-of-way trees (#ST2, ST7-ST12, ST14-ST15, and ST17). The assembly of scaffolding for construction near those canopies will require additional pruning. Furthermore, construction equipment, foot traffic, materials storage, and overspray from the application of stucco and paint may impact the rights-of-way tree canopies and the RPZs.

Table 1 summarizes the inventoried trees, their protected status, and their proposed dispositions. Table 2 summarizes the estimated encroachments. Captioned photographs and exhibits at the conclusion of this report illustrate site context, tree locations, tree structure, and vigor. Field data is included in Table 2 after the photographs. Full-sized copies of the 'Protected Tree Location Exhibit' and 'Protected Tree Impact Exhibit and Protection Plan' are included in back pockets of this report.

[3] Dbh = diameter at breast height; a forestry term used for standard measurements of tree trunks 4.5 feet from grade.
[4] "Likelihood of Tree Failure from Root & Sapwood Cutting", E. Thomas Smiley, Ph.D., Bartlett Tree Research Laboratories / Clemson University, 2014 Western Tree Management Symposium.

TABLE 1 – PROPOSED DISPOSITIONS OF THE TREES

Tree #	Common Name	Botanical Name	DBH(s) (inches)	Protected Diameter on City Lists or 19" if not on Lists (inches)	Health Grade	Structure Grade	Proposed Disposition	Protected	Reason for Removal
1	Chinese elm	*Ulmus parvifolia*	21.5	20	A	B	Remove	Yes	
ST2	kurrajong	*Brachychiton populneus*	9.4, 8.1, 12.2, 11.9	N/A	B	B	Preserve	ROW	
ST3	kurrajong	*Brachychiton populneus*	17.5	N/A	B	B	Remove	ROW	Demolition & grading for the new driveway
4	carrotwood	*Cupaniopsis anacardioides*	9.1	19	A	B	Remove	No	Demolition & grading for the new driveway
ST5	camphor	*Cinnamomum camphora*	N/A	N/A	N/A	N/A	Tree not present	N/A	
ST6	camphor	*Cinnamomum camphora*	22.5	N/A	D	D	Remove	ROW	Poor health/structure
ST7	Indian laurel fig	*Ficus microcarpa*	33.3	N/A	B-	B	Preserve	ROW	
ST8	Indian laurel fig	*Ficus microcarpa*	34.2	N/A	B-	C	Preserve	ROW	
ST9	Indian laurel fig	*Ficus microcarpa*	25.3	N/A	B-	C	Preserve	ROW	
ST10	Indian laurel fig	*Ficus microcarpa*	26.3	N/A	B-	C	Preserve	ROW	
ST11	Indian laurel fig	*Ficus microcarpa*	32	N/A	B-	C	Preserve	ROW	
ST12	holly oak	*Quercus ilex*	14	N/A	B	B	Preserve	ROW	
ST13	holly oak	*Quercus ilex*	11.5	N/A	C-	D	Remove	ROW	Poor health/structure
ST14	holly oak	*Quercus ilex*	22.5	N/A	B	B	Preserve	ROW	

Tree #	Common Name	Botanical Name	DBH(s) (inches)	Protected Diameter on City Lists or 19" if not on Lists (inches)	Health Grade	Structure Grade	Proposed Disposition	Protected	Reason for Removal
ST15	holly oak	*Quercus ilex*	16.1	N/A	B-	B-	Preserve	ROW	
ST16	holly oak	*Quercus ilex*	20	N/A	B-	C	Remove	ROW	Poor health/structure
ST17	holly oak	*Quercus ilex*	11	N/A	B	C	Preserve	ROW	
18	Indian laurel fig	*Ficus microcarpa*	29.7	30	A	C	Remove	No	Demo/grading & development
19	Indian laurel fig	*Ficus microcarpa*	30.6	30	A	A	Remove	Yes	Demo/grading & development
20	lemon bottlebrush	*Callistemon citrinus*	11.2	20	B	C	Remove	No	Demo/grading & development
21	lemon bottlebrush	*Callistemon citrinus*	8.5	20	B	C	Remove	No	Demo/grading & development
22	lemon bottlebrush	*Callistemon citrinus*	11.3	20	B	C-	Remove	No	Demo/grading & development
23	lemon bottlebrush	*Callistemon citrinus*	7	20	C	C	Remove	No	Demo/grading & development
24	lemon bottlebrush	*Callistemon citrinus*	11.5 @ 4"	20	B	C	Remove	No	Demo/grading & development
25	Mexican fan palm	*Washingtonia robusta*	BT - 25'	N/A	B	B	Remove	No	Demo/grading & development
26	lemon bottlebrush	*Callistemon citrinus*	10.6	20	B	B	Remove	No	Demo/grading & development
27	lemon bottlebrush	*Callistemon citrinus*	8	20	C	C	Remove	No	Demo/grading & development

Notes:
DBH – Diameter at Breast Height – a forestry term referring to a tree's trunk diameter measured at 4.5 feet above natural grade. Often used as a representation of tree size.
Additional definitions for the headings in this table are provided in the field inventory table at the end of this report. Converted trunk diameters are used when a tree has multiple trunks; it provides a more accurate indication of trunk diameter than merely adding multiple trunk diameters.
ROW = Right of Way
BT – Brown Trunk. Because palms do not typically increase in trunk diameter as they age, they are measured in "Brown Trunk Height," the distance between grade and the newest emerging spear.

TABLE 2 – SUMMARY OF ESTIMATED ENCROACHMENTS

Tree #	Common Name	DBH(s) (In.)	Critical Root Zone (Ft.)	Approx. Distance From Trunk to New Bldg. Edge (Ft.)	Approx. Distance to New Parking Garage/Bldg. Foundation (Ft.)	Approx. Square Feet of Canopy Area in Total (Sq. Ft.)	Approx. Canopy Area Impacted (Sq. Ft.) (% of Total Canopy)
ST2	kurrajong	9.4, 8.1, 12.2, 11.9	9	12	12	545	15 (3%)
Encroachment Notes: **Canopy impacts will likely be minimal. Root zone impacts** due to the grading for the building and parking structure construction will **likely be minimal**. Demolition of existing hardscape and the building, plus grading for the pocket park may damage roots. New sidewalk construction may damage the root zone to an unknown degree.							
ST7	Indian laurel fig	33.3	14	13	24	1,941	339 (17%)
Encroachment Notes: **Canopy impacts will likely be minimal-moderate. Root zone impacts** due to the grading for the building and parking structure construction will **likely be moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST8	Indian laurel fig	34.2	14	13	24	3,354	915 (27%)
Encroachment Notes: **Canopy impacts will likely be moderate. Root zone impacts** due to the grading for the building and parking structure construction will **likely be moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST9	Indian laurel fig	25.3	11	14	24	2,977	612 (21%)
Encroachment Notes: **Canopy impacts will likely be moderate. Root zone impacts** due to the grading for the building and parking structure construction will **likely be minimal to moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST10	Indian laurel fig	26.3	11	14	24	2,777	790 (28%)
Encroachment Notes: **Canopy impacts will likely be moderate-significant. Root zone impacts** due to the grading for the building and parking structure construction will **likely be minimal to moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST11	Indian laurel fig	32	13	13	24	3,419	1,076 (31%)
Encroachment Notes: **Canopy impacts will likely be significant. Root zone impacts** due to the grading for the building and parking structure construction will **likely be moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction, may damage the root zone to an unknown degree.							
ST12	holly oak	14	6	10	12	633	88 (14%)
Encroachment Notes: **Canopy impacts will likely be minimal. Root zone impacts** due to the grading for the building and parking structure construction will **likely be minimal**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the protected root zone to an unknown degree.							
ST14	holly oak	22.5	9	9	15	1,955	664 (34%)
Canopy impacts will likely be significant. Root zone impacts due to the grading for the building and parking structure construction will **likely be minimal to moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST15	holly oak	16.1	8	10	15	466	21 (5%)
Canopy impacts will likely be minimal. Root zone impacts due to the grading for the building and parking structure construction will **likely be minimal to moderate**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							
ST17	holly oak	11	5	10	15	536	0 0%
Canopy impacts will likely be minimal – no direct building impacts, but adjacent tree removal may require some reshaping of the crown. **Root zone impacts** due to the grading for the building and parking structure construction will **likely be minimal**. Demolition of existing hardscape and buildings, plus new sidewalk construction may damage the root zone to an unknown degree.							

CONCLUSION AND RECOMMENDATIONS

Carlberg conducted a tree inventory and assessment of potential impacts for the construction of the 740-790 East Green Street project. Of the 26 trees included in the inventory, two are protected Specimen Trees and 14 are protected by virtue of their status as public street trees. Ten do not meet the species or trunk diameter thresholds for protection and are proposed to be removed. If the project proceeds as proposed:

- **Two on-site protected trees (#1 and #19) are proposed to be removed.**
- **Four right-of-way trees (#ST3, ST6, ST13, and ST16) are also proposed for removal.**
- **Ten non-protected trees (#4, 18, and 20-27) are in the construction footprint and are proposed to be removed.**
- **Encroachments into the canopies and RPZ of the following protected trees are proposed: ST2, ST7, ST8, ST9, ST10, ST11, ST12, ST14, ST15, and ST17.**
- **Demolition of existing, and construction of new hardscape in the public rights-of-way may injure, or require removal of, an unknown quantity of street tree roots.**

In my professional opinion, the following recommendations should be included in the project's conditions of approval and implemented:

- Any demolition, digging, excavating, grading, or trenching within the root protection zone of any protected tree to remain is monitored by a qualified arborist.
- Trenching, excavation, and demolition activities that take place in the RPZ of protected trees should be accomplished with hand tools and small, hand-held equipment. Where larger equipment must be used, the equipment should sit outside of the RPZ and reach in with a mechanized arm. Such work should be monitored by a qualified arborist.
- Pulling, tearing, and shattering of roots in the CRZ and the RPZ should be strictly avoided.
- Within the RPZ of protected trees to remain - Exposed roots to remain, if found, should be covered with burlap, carpet remnants or other material that may be kept moist until backfill can be placed.
- Within the RPZ of protected trees to remain - Exposed roots to be pruned, as monitored and instructed by the arborist, should be cut cleanly with sharp, clean, tools, at a 90-degree angle. Pruning tools should be disinfected between each cut.
- This report and the enclosures should be incorporated into the set of plans given to the contractors. The contractors should be familiar with the specific instructions and responsibilities pertaining to protected trees. It is recommended that a consulting arborist be retained and meet with the contractor and his personnel prior to commencement of the project.
- If canopy pruning of protected trees is found to be necessary for building clearance, it should only be performed after review of the circumstances by the project's consulting arborist, performed by a qualified ISA Certified Arborist or ISA Certified Tree Worker, and monitored by the project's consulting arborist.
- Protected trees shall not be removed unless approval is granted by the City of Pasadena.
- Equipment, materials, and vehicles shall not be stored, parked, or operated within the root protection zone of protected trees to remain unless encroachments are approved by the City of Pasadena.
- Equipment with overhead exhaust shall not be placed in such a manner as to scorch overhanging branches or foliage. Smaller equipment shall be used in such areas as deemed necessary by the monitoring arborist.

- Protected trees removed for project development will be replaced as stated in the City's Tree Ordinance and associated mitigation matrix.
- Extra care will need to be taken when erecting the scaffolding for the sections of the buildings adjacent to trees to remain. Tarps or other means of tree canopy protection may be required during construction to avoid damage to branches and over-spray of stucco, paint, etc. on to the branches and leaves.
- **Rights-of-way trees are the property of the City of Pasadena. Canopy and root pruning or any other work required on these trees must be performed by the Urban Forestry Division.**
- **The City of Pasadena will be responsible for the ultimate decisions to retain or remove trees within their right-of-way based on conditions noted in the field during tree canopy and root pruning.**
- **Demolition of existing, and construction of new hardscape in the public rights-of-way may need to be performed by the City.**
- **The City of Pasadena will be responsible to decide on the ultimate amount and configuration of pruning for rights-of-way trees. More or less pruning than indicated in this report may be necessary.**
- Tree Protection Fencing shall be installed as illustrated on the enclosed tree protection plan and a 'Warning' signs prominently displayed at regular intervals around the fencing line (street tree fencing and signage will follow the City's Standard). The sign will be a minimum of 8.5 inches x 11 inches and clearly state the following:

TREE PROTECTION ZONE THIS FENCE SHALL NOT BE REMOVED

- "Carlberg Associates" should be noted the Site Plans, Demolition Plans, Grading Plans, Landscape plans, etc., as the Project Arborist, along with our logo and contact information (www.cycarlberg.com)
- All measures outlined on the Protected Tree Impact Exhibit and Protection Plan shall be implemented.
- Arborist monitoring reports will be submitted to the client, the construction foreman/supervisor, and the City's project planner during construction.
- Demolition of the existing hardscape and structures should be performed in a manner that avoids damaging the tree trunks, roots, and branches.
- No roots over 2" in diameter or clusters of roots shall be cut unless and until authorized by the Project Arborist and the City of Pasadena (for right-of-way trees).
- Keep any exposed roots moist with coverings of wet burlap or carpet remnants.
- Project Arborist and/or City of Pasadena Urban Forestry (for right-of-way trees) will inspect all roots to be cut and will record distances from the tree trunks.
- If Project Arborist or the City of Pasadena Urban Forestry staff determines that the cuts may cause a significant decrease in structural integrity of the tree(s), alternative designs may be required.

I prepared street tree appraisal values (Table 4 on page 52) based on the information gathered during my site visit. In my opinion, the total appraised value of the 14 rights-of-way trees is **$128,410**.

Please feel welcome to contact me at 626.428.5072 if you have any immediate questions or concerns.

Respectfully submitted,

Christy Cuba, Registered Consulting Arborist
Senior Arborist, Carlberg Associates

christy@cycarlberg.com

This report comprises a total of 62 pages and two full-size maps. Unauthorized separation or removal of any portion of this report deems it invalid as a whole. Conditions represented in this report are limited to the inventory date and time. Rating for health and structure do not constitute a health or structural guarantee beyond that date. Risk assessments were not performed for this project.

EXHIBIT A - AERIAL IMAGE OF PROPERTY – 740-790 EAST GREEN STREET, PASADENA
(SOURCE: COUNTY OF LOS ANGELES - GIS)
Boundary lines are not accurate and are for illustrative purposes only.

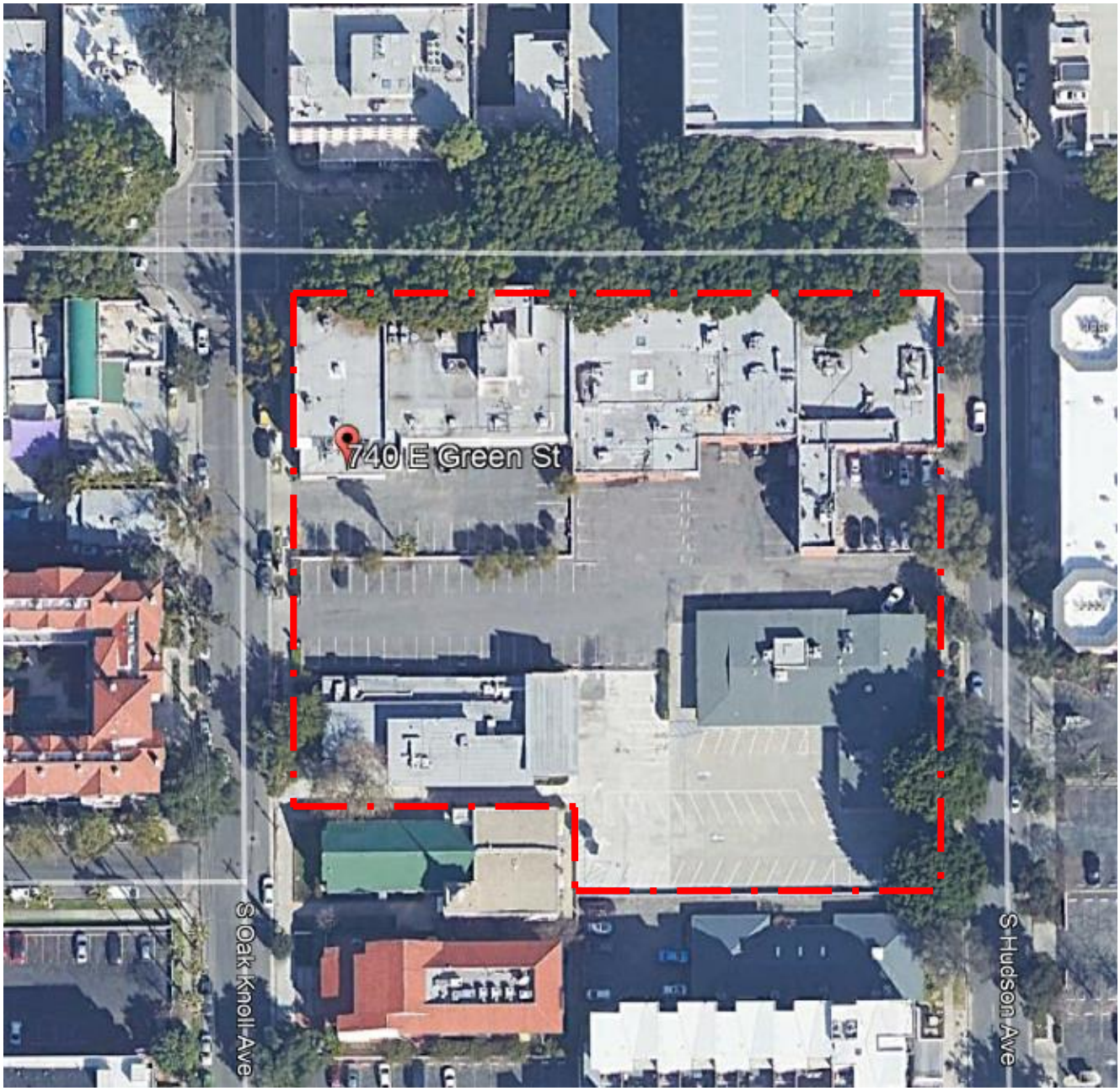


EXHIBIT B – REDUCED COPY OF THE PROTECTED TREE LOCATION EXHIBIT
(not to scale)

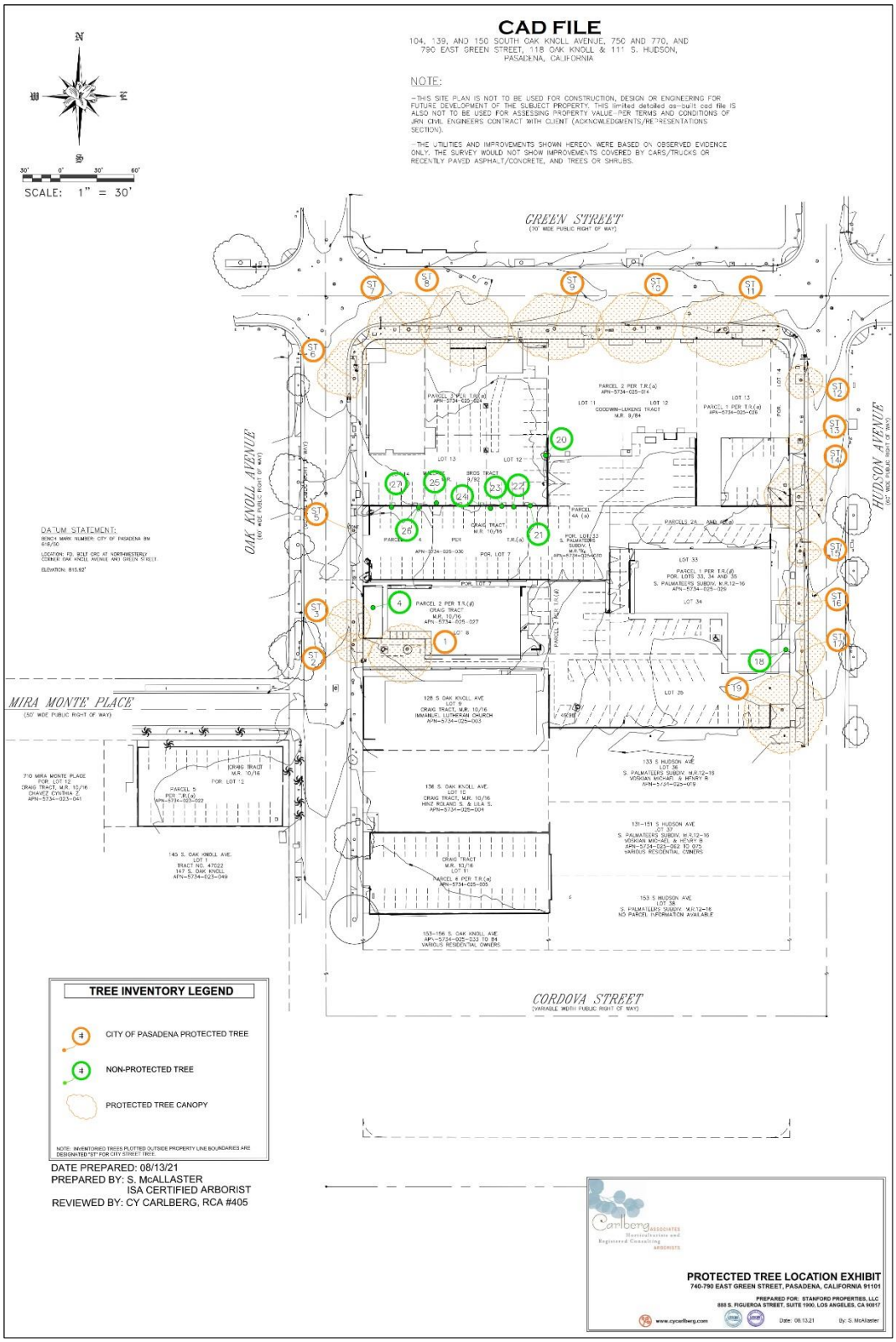
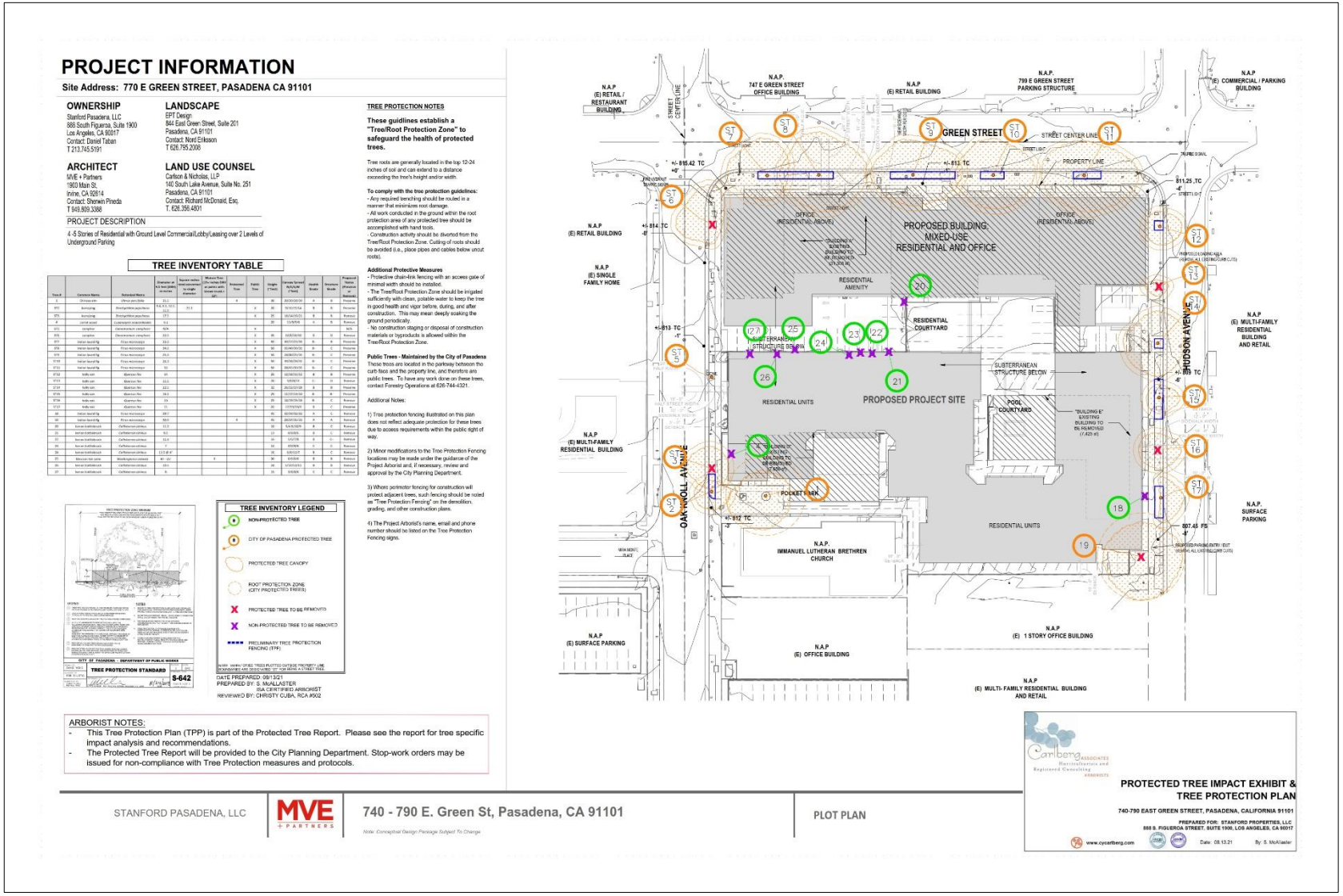


EXHIBIT C – REDUCED COPY OF THE PROTECTED TREE IMPACT EXHIBIT & PROTECTION PLAN
(not to scale)



PROJECT INFORMATION

Site Address: 770 E GREEN STREET, PASADENA CA 91101

OWNERSHIP
Stanford Pasadena, LLC
888 South Figueroa, Suite 1900
Los Angeles, CA 90017
Contact: Daniel Taban
T 213.745.5191

LANDSCAPE
EPT Design
844 East Green Street, Suite 201
Pasadena, CA 91101
Contact: Nord Eriksson
T 626.795.2068

ARCHITECT
MVE + Partners
1920 Main St.
Irvine, CA 92614
Contact: Sherwin Pineda
T 949.809.3388

LAND USE COUNSEL
Carlson & Nicholas, LLP
140 South Lake Avenue, Suite No. 251
Pasadena, CA 91101
Contact: Richard McDonald, Esq.
T. 626.356.4801

PROJECT DESCRIPTION

4 -5 Stories of Residential with Ground Level Commercial/Lobby/Leasing over 2 Levels of Underground Parking

TREE INVENTORY TABLE

TREE PROTECTION NOTES

These guidlines establish a "Tree/Root Protection Zone" to safeguard the health of protected trees.

Tree roots are generally located in the top 12-24 inches of soil and can extend to a distance exceeding the tree's height and/or width.

To comply with the tree protection guidelines:
- Any required trenching should be routed in a manner that minimizes root damage.
- All work conducted in the ground within the root protection area of any protected tree should be accomplished with hand tools.
- Construction activity should be diverted from the Tree/Root Protection Zone. Cutting of roots should be avoided (i.e., place pipes and cables below uncut roots).

Additional Protective Measures
- Protective chain-link fencing with an access gate of minimal width should be installed.
- The Tree/Root Protection Zone should be irrigated sufficiently with clean, potable water to keep the tree in good health and vigor before, during, and after construction. This may mean deeply soaking the ground periodically.
- No construction staging or disposal of construction materials or byproducts is allowed within the Tree/Root Protection Zone.

Public Trees - Maintained by the City of Pasadena
These treas are located in the parkway between the curb face and the property line, and therefore are public trees. To have any work done on these trees, contact Forestry Operations at 626-744-4321.

Additional Notes:

1) Tree protection fencing illustrated on this plan does not reflect adequate protection for these trees due to access requirements within the public right of way.

2) Minor modifications to the Tree Protection Fencing locations may be made under the guidance of the Project Arborist and, if necessary, review and approval by the City Planning Department.

3) Where perimeter fencing for construction will protect adjacent trees, such fencing should be noted as "Tree Protection Fencing" on the demolition, grading, and other construction plans.

4) The Project Arborist's name, email and phone number should be listed on the Tree Protection Fencing signs.

TREE INVENTORY LEGEND
- NON-PROTECTED TREE
- CITY OF PASADENA PROTECTED TREE
- PROTECTED TREE CANOPY
- ROOT PROTECTION ZONE (CITY PROTECTED TREES)
- PROTECTED TREE TO BE REMOVED
- NON-PROTECTED TREE TO BE REMOVED
- PRELIMINARY TREE PROTECTION FENCING (TPF)

DATE PREPARED: 08/13/21
PREPARED BY: S. McALLASTER
ISA CERTIFIED ARBORIST
REVIEWED BY: CHRISTY CUBA, RCA #502

TREE PROTECTION STANDARD S-642

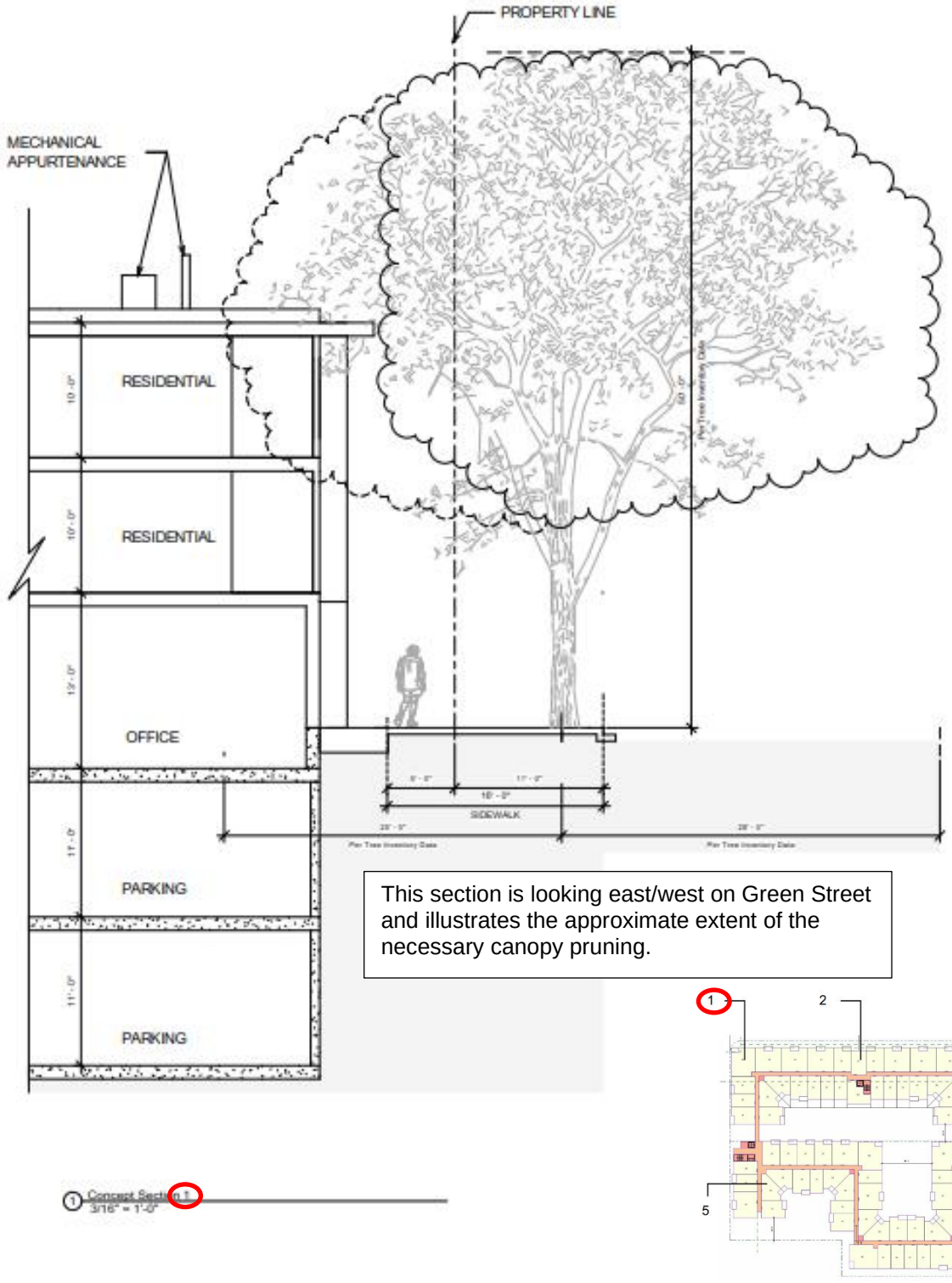
ARBORIST NOTES:
- This Tree Protection Plan (TPP) is part of the Protected Tree Report. Please see the report for tree specific impact analysis and recommendations.
- The Protected Tree Report will be provided to the City Planning Department. Stop-work orders may be issued for non-compliance with Tree Protection measures and protocols.

STANFORD PASADENA, LLC | MVE + PARTNERS | 740 - 790 E. Green St, Pasadena, CA 91101 | PLOT PLAN

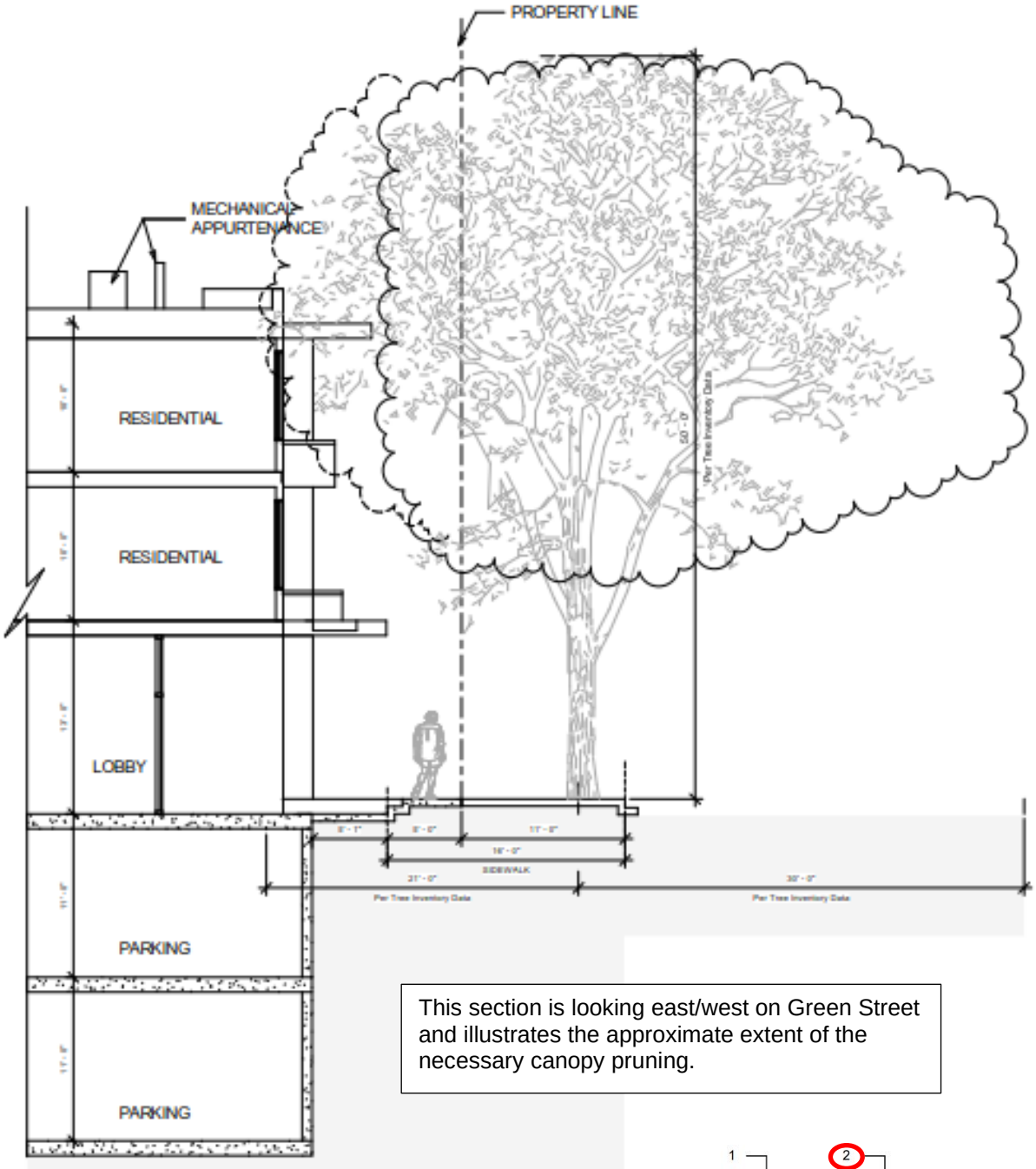
Note: Conceptual Design Package Subject To Change

PROTECTED TREE IMPACT EXHIBIT & TREE PROTECTION PLAN
740-790 EAST GREEN STREET, PASADENA, CALIFORNIA 91101
PREPARED FOR: STANFORD PROPERTIES, LLC
888 S. FIGUEROA STREET, SUITE 1900, LOS ANGELES, CA 90017
www.cycarlberg.com Date: 08.13.21 By: S. McAllaster

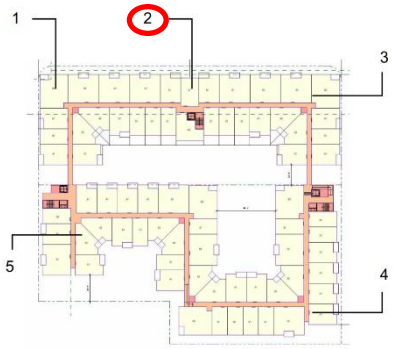
EXHIBIT D – REDUCED COPY OF THE CONCEPT SECTIONS
(not to scale)



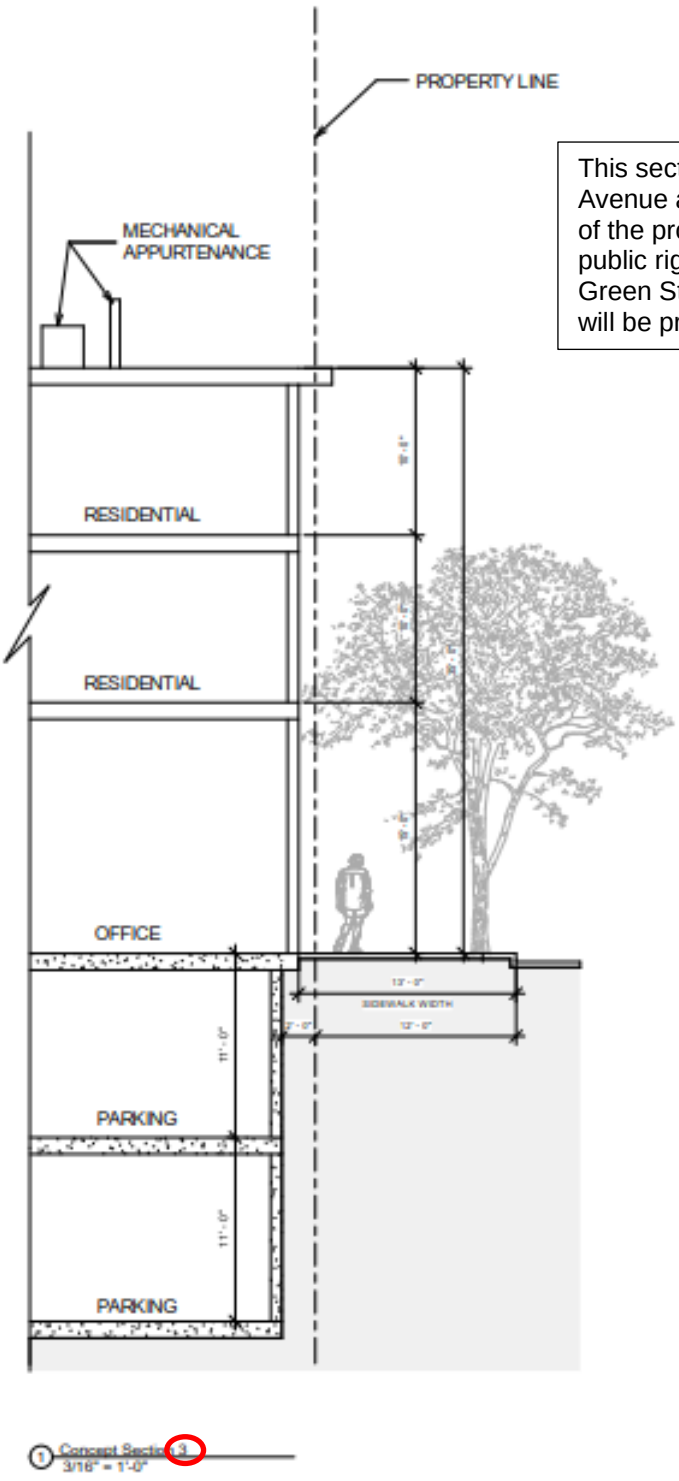
This section is looking east/west on Green Street and illustrates the approximate extent of the necessary canopy pruning.



This section is looking east/west on Green Street and illustrates the approximate extent of the necessary canopy pruning.

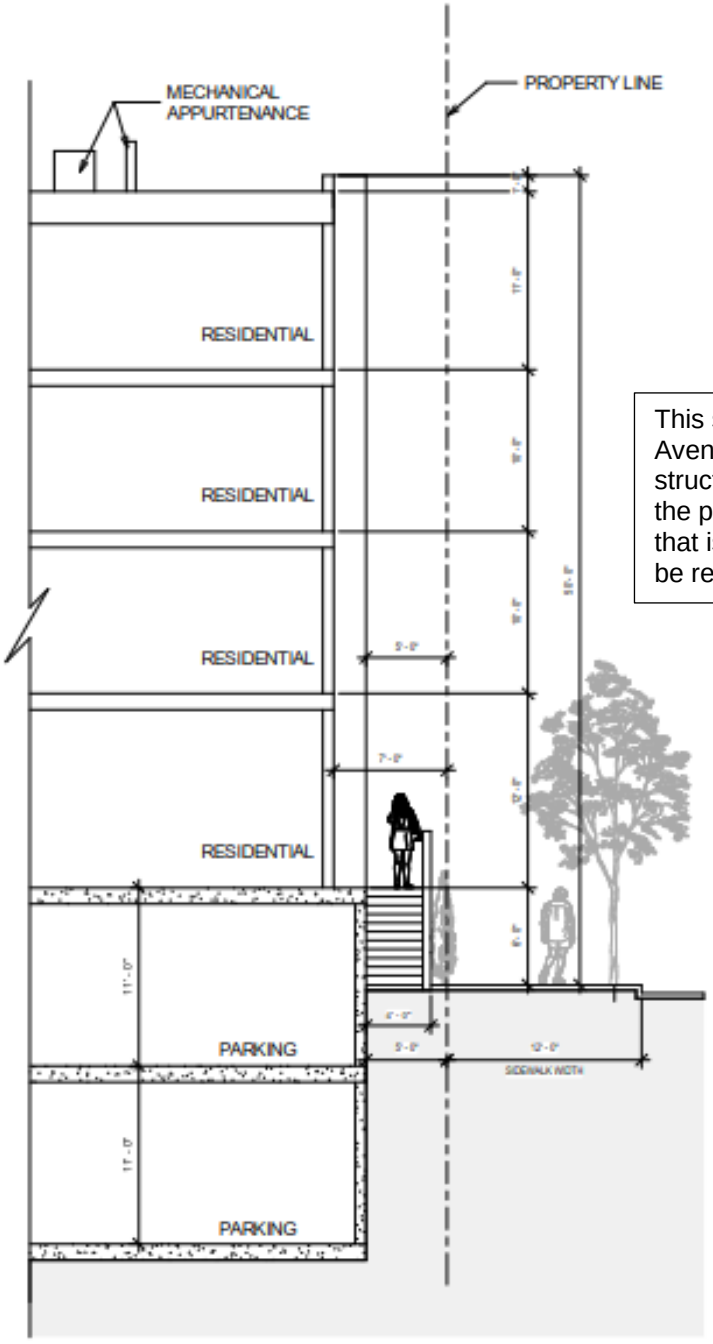


2 Concept Section 2
3/16" = 1'-0"



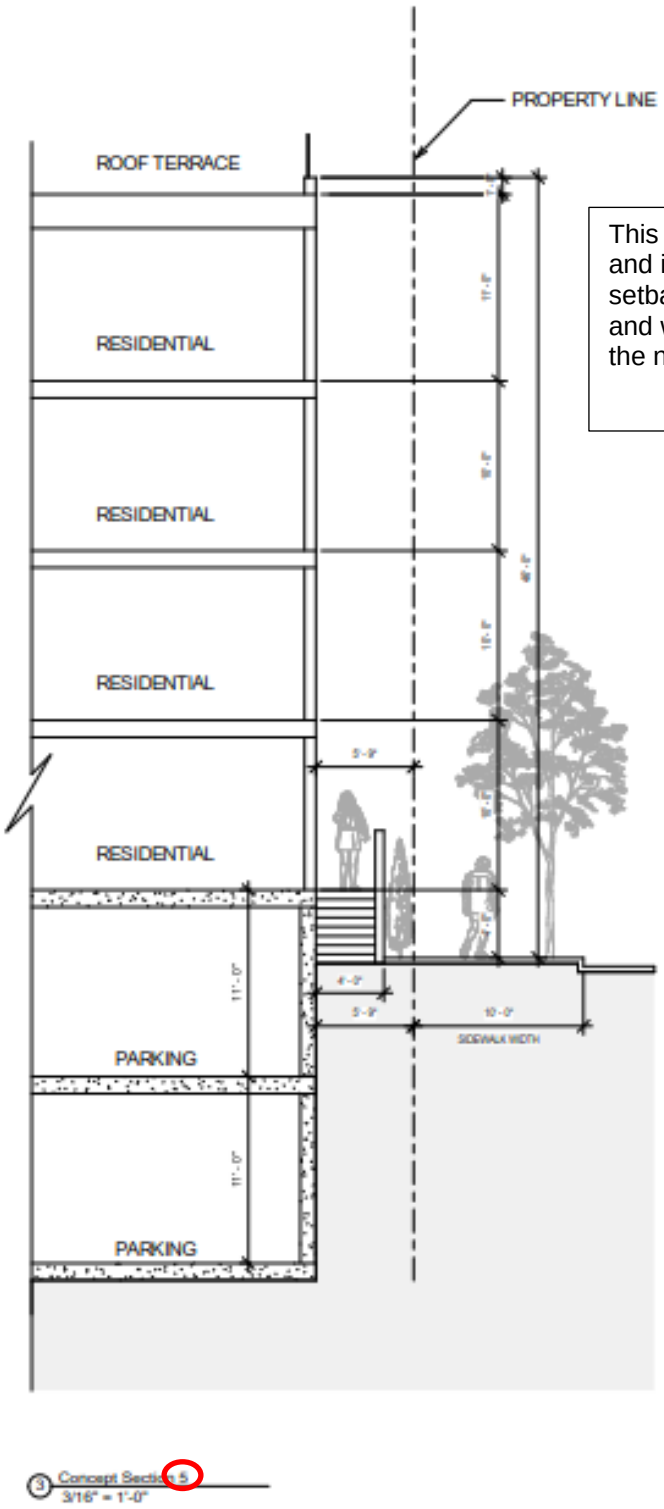
1 Concept Section 3
3/16" = 1'-0"

This section is looking north/south on Hudson Avenue and illustrates the approximate proximity of the proposed buildings and garages to the public right of way along Hudson Avenue near Green Street. St#12 is located near here and will be preserved.



2 Concept Section 4
3/16" = 1'-0"

This section is looking north/south on Hudson Avenue and illustrates the setback of the parking structure and building at the southeast corner of the project. The existing private property tree that is located in this area, Tree #19, will need to be removed.



3 Concept Section 5
3/16" = 1'-0"

This section is looking north/south on Oak Knoll and illustrates the parking garage and building setback. Street Tree #3 is located in this area and will need to be removed for construction of the new driveway.

EXHIBIT E – TREE PHOTOGRAPHS

Tree #1

Tree #ST2

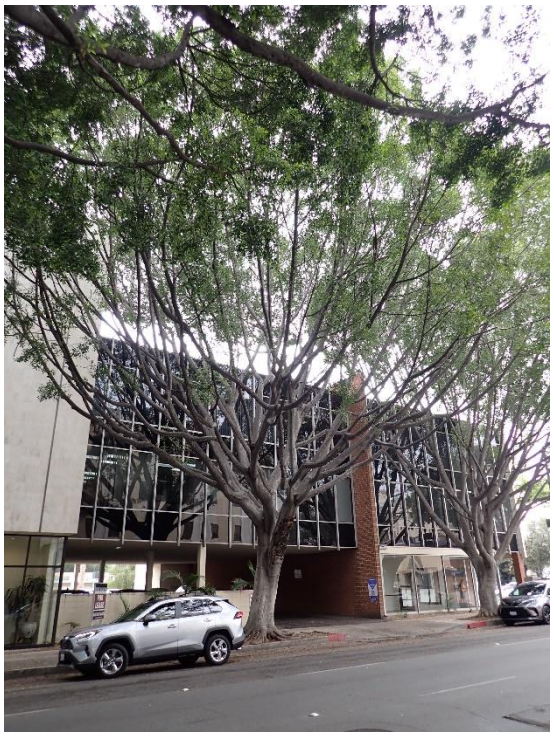
Tree #ST3

Tree #4

Tree #5 – removed since the previous inventory

Tree #ST6

Tree #ST7



Tree #ST8

Tree #ST8

Tree #ST9

Tree #ST10

Tree #ST11

Tree #ST12

Tree #ST13

Tree #ST14

Tree #ST15

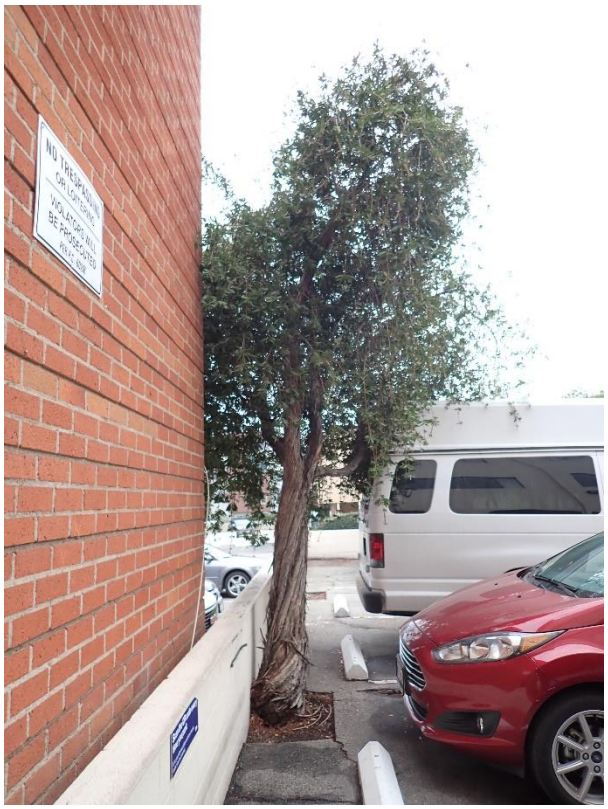
Tree #ST16

Tree #ST17

Tree #18

Tree #19

Tree #19



Tree #20

Tree #21


Scan the QR code every time you park
Scan the QR code every time you park

Tree #22


Scan the QR code every time you park
Scan the QR code every time you park

Tree #23


Scan the QR code every time you park
Reserved For
Mycotoo
Scan the QR co
time you park
Link your license plate to let t
know you're covered.

Tree #24

Tree #25


RESERVED
MYCOTOO
RESERVED
MYCOTOO
RESERVED
MYCOTOO
PARKING
RESERVED
MYCOTOO
MYCOTOO
MYCOTOO

Tree #26

Tree #27

TABLE 3 – TREE FIELD INVENTORY SPREADSHEET

Tree #	Common Name	Botanical Name	Diameter at 4.5 feet (DBH) in inches	Height	Canopy Spread (N / E / S / W)	Condition	Structure	Protected Tree?	Disposition	Comments
1	Chinese elm	*Ulmus parvifolia*	21.5	30	20/20/28/30	A	B	Yes	Preserve	EPT tree #17
ST2	kurrajong	*Brachychiton populneus*	9.4, 8.1, 12.2, 11.9	20	9/16/15/14	B	B	ROW	Preserve	EPT tree #16; powerline; bricks around base
ST3	kurrajong	*Brachychiton populneus*	17.5	25	18/14/16/21	B	B	ROW	Remove	EPT tree #15; powerline; mechanical damage; bricks around base
4	carrot wood	*Cupaniopsis anacardioides*	9.1	20	11/9/9/8	A	B	No	Remove	EPT tree #16B; pruned poorly
ST5	camphor	*Cinnamomum camphora*	N/A	0	0	n/a	n/a	ROW	n/a	Tree was removed prior to our site visit; EPT tree #14
ST6	camphor	*Cinnamomum camphora*	22.5	35	32/8/16/30	D	D	ROW	Remove	EPT tree #13; mechanical damage
ST7	Indian laurel fig	*Ficus microcarpa*	33.3	50	30/17/21/34	B-	B	ROW	Preserve	EPT tree #1; root pruned; thinned
ST8	Indian laurel fig	*Ficus microcarpa*	34.2	50	35/40/30/32	B-	C	ROW	Preserve	EPT tree #2; root pruned; mechanical damage; thinned
ST9	Indian laurel fig	*Ficus microcarpa*	25.3	50	28/40/25/35	B-	C	ROW	Preserve	EPT tree #3; root pruned; mechanical damage; thinned
ST10	Indian laurel fig	*Ficus microcarpa*	26.3	50	30/34/28/32	B-	C	ROW	Preserve	EPT tree #4; root pruned; mechanical damage; thinned
ST11	Indian laurel fig	*Ficus microcarpa*	32	50	28/45/30/35	B-	C	ROW	Preserve	EPT tree #5; root pruned; mechanical damage; thinned

Tree #	Common Name	Botanical Name	Diameter at 4.5 feet (DBH) in inches	Height	Canopy Spread (N / E / S / W)	Condition	Structure	Protected Tree?	Disposition	Comments
ST12	holly oak	*Quercus ilex*	14	25	12/18/15/12	B	B	ROW	Preserve	EPT tree #6; epicormic growth
ST13	holly oak	*Quercus ilex*	11.5	20	5/8/8/11	C-	D	ROW	Remove	EPT tree #7; epicormic growth; cankers
ST14	holly oak	*Quercus ilex*	22.5	32	26/22/27/28	B	B	ROW	Preserve	EPT tree #8
ST15	holly oak	*Quercus ilex*	16.1	25	11/17/13/10	B-	B-	ROW	Preserve	EPT tree #9; epicormic growth; history of breakage
ST16	holly oak	*Quercus ilex*	20	25	14/19/15/16	B-	C	ROW	Remove	EPT tree #10; epicormic growth; powdery mildew
ST17	holly oak	*Quercus ilex*	11	20	17/19/20/0	B	C	ROW	Preserve	EPT tree #11; shaded out
18	Indian laurel fig	*Ficus microcarpa*	29.7	45	32/33/32/32	A	C	No	Remove	EPT tree #11B
19	Indian laurel fig	*Ficus microcarpa*	30.6	45	28/34/35/31	A	A	Yes	Remove	EPT tree #12
20	lemon bottlebrush	*Callistemon citrinus*	11.2	10	5/4.5/10/9	B	C	No	Remove	EPT tree #24; leans S; retaining wall
21	lemon bottlebrush	*Callistemon citrinus*	8.5	13	4/8/8/6	B	C	No	Remove	EPT tree #23; codominant stems with included bark
22	lemon bottlebrush	*Callistemon citrinus*	11.3	16	5/6/7/8	B	C-	No	Remove	EPT tree #22
23	lemon bottlebrush	*Callistemon citrinus*	7	12	4/0/8/6	C	C	No	Remove	EPT tree #21

Tree #	Common Name	Botanical Name	Diameter at 4.5 feet (DBH) in inches	Height	Canopy Spread (N / E / S / W)	Condition	Structure	Protected Tree?	Disposition	Comments
24	lemon bottlebrush	*Callistemon citrinus*	11.5 @ 4"	16	6/8/12/7	B	C	No	Remove	EPT tree #20
25	Mexican fan palm	*Washingtonia robusta*	BT - 25'	30	6/6/6/6	B	B	No	Remove	EPT tree #19B
26	lemon bottlebrush	*Callistemon citrinus*	10.6	18	5/10/11/11	B	B	No	Remove	EPT tree #19
27	lemon bottlebrush	*Callistemon citrinus*	8	15	3/8/8/6	C	C	No	Remove	EPT tree #18; history of breakage

TABLE 4 – STREET TREE APPRAISAL SPREADSHEET

Tree ID No.	Common Name	Botanical Name	Basic Appraised & Replacement Tree Information				Depreciation Factors				Additional Costs						Total Depreciated Appraised Cost (incl. Added Costs)	Rounded Depreciated Cost / Value
			Individual Trunk diameter (In.)(DBH) (1)	Cross-sectional Area in In.² (2)	Replacement Tree Unit Cost /$ In.² (6)	Basic Replacement Tree Cost ($)	Condition Rating % (3)	Functional Limitations Rating % (4)	External Limitations Rating % (5)	Depreciated Cost/Value ($)	Delivery Cost (7)	Permits/Traffic Control Cost (if applicable) (8)	Crane Cost (assumes 1 hour minimum) (9)	Installation Cost (10)	Appraised Tree Clean-Up Costs (11)	Temporary Maintenance Cost (12)		
ST2	kurrajong	*Brachychiton populneus*	21.1	349.67	144.56	$ 50,548.00	0.7	0.5	0.8	$ 14,153.44	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 14,638.44	**$14,600**
ST3	kurrajong	*Brachychiton populneus*	17.5	240.53	145.56	$ 35,011.36	0.7	0.5	0.8	$ 9,803.18	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 10,288.18	**$10,300**
ST6	camphor	*Cinnamomum camphora*	22.5	397.61	146.56	$ 58,273.54	0.2	0.5	0.8	$ 4,661.88	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 5,146.88	**$5,100**
ST7	Indian laurel fig	*Ficus microcarpa*	33.3	870.92	147.56	$128,513.28	0.6	0.25	0.5	$ 9,638.50	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 10,123.50	**$10,100**
ST8	Indian laurel fig	*Ficus microcarpa*	34.2	918.64	148.56	$136,472.45	0.6	0.25	0.5	$ 10,235.43	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 10,720.43	**$10,700**
ST9	Indian laurel fig	*Ficus microcarpa*	25.3	502.73	149.56	$ 75,187.80	0.6	0.25	0.5	$ 5,639.09	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 6,124.09	**$6,100**
ST10	Indian laurel fig	*Ficus microcarpa*	26.3	543.25	150.56	$ 81,792.22	0.6	0.25	0.5	$ 6,134.42	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 6,619.42	**$6,600**
ST11	Indian laurel fig	*Ficus microcarpa*	32	804.25	151.56	$121,892.07	0.6	0.25	0.5	$ 9,141.91	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 9,626.91	**$9,600**
ST12	holly oak	*Quercus ilex*	14	153.94	152.56	$ 23,484.84	0.65	0.5	0.9	$ 6,869.32	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 7,354.32	**$7,400**
ST13	holly oak	*Quercus ilex*	11.5	103.87	153.56	$ 15,950.15	0.25	0.5	0.9	$ 1,794.39	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 2,279.39	**$2,280**
ST14	holly oak	*Quercus ilex*	22.5	397.61	154.56	$ 61,454.41	0.7	0.5	0.9	$ 19,358.14	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 19,843.14	**$19,800**
ST15	holly oak	*Quercus ilex*	16.1	203.58	155.56	$ 31,669.45	0.65	0.5	0.9	$ 9,263.32	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 9,748.32	**$9,700**
ST16	holly oak	*Quercus ilex*	20	314.16	156.56	$ 49,184.89	0.5	0.5	0.9	$ 11,066.60	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 11,551.60	**$11,600**
ST17	holly oak	*Quercus ilex*	11	95.03	157.56	$ 14,973.46	0.6	0.5	0.9	$ 4,042.83	$485.00	$0.00	$0.00	$0.00	$0.00	$0	$ 4,527.83	**$4,530**

$128,410

Appraisal-related notes are located on the next page.

Notes:

Reproduction Method Trunk Formula Technique, Council of Tree & Landscape Appraisers (CTLA). 2019. Guide for Plant Appraisal, 10th Edition. International Society of Arboriculture, Atlanta, GA.

1) DBH = Diameter at breast height (4' 6" from grade); when trees have multiple trunks, this number represents the converted single trunk diameter based on the added trunk areas of the stems.

2) DBH^2 x 0.7854

3) Condition rating = overall assessment of Health, Structure, and Form

4) Functional Limitations (assessment of species-site interaction)

5) External Limitations (assessment of outside factors that influence plant success

6) Unit cost in $\$/in^2$ of the largest commonly available nursery tree (as researched at regional nurseries)
Caliper/Diameter of replacement tree (in.) converted to Cross-sectional area ($in.^2$) / Purchase cost ($) = Unit cost $\$/in.^2$. See below note #12 for details.

7) Delivery cost From Nursery to site (average from regional nurseries)

8) Permits and traffic control are usually needed for trees/palms over approximately 40 feet in length and/or where a crane is needed on the street.

9) Cranes are generally needed for larger palms and container stock over 24-inch box. A 36-inch box may be manually moved off the truck by some nurseries.

10) For street / ROW trees, we assume that the City crew will install the trees; for private installations this is the average cost for a landscape contractor to install (can vary widely).

11) For street trees, we assume that the City will remove the original tree & prepare the replacement site; for private installations this is the average cost for a landscape contractor to perform the work (can vary widely).

12) For street trees, we assume that the City will maintain the replacement trees.

For Street Trees - we used 24-inch box as replacement since it is commonly available, will fit in most existing parkways without major hardscape change, and can be handled without traffic control or a crane.

24-inch Box Tree Costs: (incl. est. 10% tax)

Nursery 1	$184.80	Norman's
Nursery 2	$165	AY
Nursery 3	$412.50	Boething (ret.)

Average:	$254.10	
Caliper:	1.5 inches	
Cross-sectional Area ($in.^2$)	1.77	Caliper ^{2} x 0.7854

Average Cost/In^2 =	$ 143.56

HEALTH AND STRUCTURE GRADE DEFINITIONS

Health and structure ratings of the trees are based on the archetype tree of the same species through a subjective evaluation of its physiological health, aesthetic quality, and structural integrity.

Overall physiological condition (health) and structural condition were rated A-F:

Health

A. **Outstanding** – Exceptional trees of good growth form and vigor for their age class; exhibiting very good to excellent health as evidenced by normal to exceptional shoot growth during current season, good bud development and leaf color, lack of leaf, twig or branch dieback throughout the crown, and the absence of decay, bleeding, or cankers. Common leaf and/or twig pests may be noted at very minor levels.

B. **Above average** – Good to very good trees that exhibit minor necrotic or physiological symptoms of stress and/or disease; shoot growth is less than reasonably expected, leaf color is less than optimal in some areas, the crown may be thinning, minor levels of leaf, twig, and branch dieback may be present, and minor areas of decay, bleeding, or cankers may be manifesting. Minor amounts of epicormic growth may be present. Minor amounts of fire damage or mechanical damage may be present. Still healthy, but with moderately diminished vigor and vitality. No significant decline noted.

C. **Average** – Average, moderately good trees whose growth habit and physiological or fire-induced symptoms indicate an equal chance to either decline or continue with good health into the near future. Most of these trees exhibit moderate to significant small deadwood in outer crown areas, decreased shoot growth and diminished leaf color and mass. Some stem and branch dieback is usually present and epicormic growth may be moderate to extensive. Cavities, pockets of decay, relatively significant fire damage, bark exfoliation, or cracks may be present. Moderate to significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it is expected to negatively impact the lifespan of the tree. Tree may be in early decline.

D. **Below Average/Poor** - trees whose growth habit and physiological or fire-induced symptoms indicate significant, irreversible decline. Most of these trees exhibit significant dieback of wood in the crown, possibly accompanied by significant epicormic sprouting. Shoot growth and leaf color and mass is either significantly diminished or nonexistent throughout the crown. Cavities, pockets of decay, significant fire damage, bark exfoliation, and/or cracks may be present. Significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it has negatively impacted the lifespan of the tree. Tree appears to be in irreversible decline.

F. **Dead or in spiral of decline** – this tree exhibits very little to no signs of life.

Structure

A. **Outstanding** – Trees with outstanding structure for their species exhibit trunk and branch arrangement and orientation that result in a sturdy form or architecture that resists failure under normal circumstances. The spacing, orientation, and size of the branches relative to the trunk are quintessential for the species and free from defects. No outward sign of decay or pathological disease is present. Some trees exhibit naturally inherent branching defects,

like multiple, narrow points of attachment from one point on the trunk, which would preclude them from achieving an “A” grade.

B. **Above average** - Trees with good to very good structure for their species. They exhibit trunk and branch arrangement and orientation that result in a relatively sturdy form or architecture that resists failure under normal circumstances, but may have some mechanical damage, over-pruning, or other minor structural defects. The spacing, orientation, and size of the branches relative to the trunk are still in the normal range for the species, but they exhibit a minor degree of defects. Minor, sub-critical levels of decay or pathological disease may be present, but the degree of damage is not yet structurally significant. Trees that exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, would generally fall into this category. A small percentage of the canopy may be shaded or crowded, but not in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree.

C. **Average** - Trees with moderately good structure for their species, but with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a less than sturdy form or architecture, which reduces their resistance to failure under normal circumstances. Moderate levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of some of the branches relative to the trunk are not in the normal range for the species. Moderate to significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A moderate to significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be moderately elevated.

D. **Well Below Average/Poor** - Trees poor structure for their species and with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a significantly less than sturdy form or architecture, significantly reducing their resistance to failure under normal circumstances. Significant levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of many of the branches relative to the trunk are not in the normal range for the species. Significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be advanced.

F. **Severely Compromised** – trees with very poor structure and numerous or severe defects due to growing conditions, historical or recent pruning, mechanical damage, history of limb or trunk failures, advanced and irreparable decay, disease, or severe fire damage. Trees with this rating are in severe, irreparable decline, or are barely alive. Risk of full or partial failures in the near future may be severe.

CERTIFICATION OF PERFORMANCE

I, Christy Cuba, certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report and have stated my findings accurately. The extent of the evaluation and appraisal (if appropriate) is stated in the attached report and the Terms of Assignment;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions, and conclusions stated herein are my own;
- That my analysis, opinions, and conclusions were developed, and this report has been prepared according to commonly accepted arboricultural practices;
- That no one provided significant professional assistance to the consultant, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I further certify that I am an International Society of Arboriculture Certified Arborist, a Qualified Tree Risk Assessor, and have been involved in the practice of arboriculture and the study of trees for over 25 years.

Signed:

Date: February 4, 2022

Christy Cuba
Certified Arborist, WE-1982A
Qualified Tree Risk Assessor

ARBORIST STATEMENT

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees contribute greatly to our enjoyment and appreciation of life. Nonetheless, they are subject to the laws of gravity and physiological decline. Therefore, neither arborists nor tree owners can be reasonably expected to warrant unfailing predictability or elimination of risk.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Execution of any/all recommendations for cultural care, maintenance, pest, or disease treatment, pruning, tree removal, etc., when made verbally or in writing by the arborist, is/are the sole responsibility of the client or the City/County, depending on if trees are privately or publicly owned.

CHRISTINE CUBA
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Education
B.A., Environmental Analysis & Design, University of California, Irvine, 1993
Graduate, International Society of Arboriculture Certification Study Program, April 1998
Graduate, Consulting Academy, American Society of Consulting Arborists, February 2008

Experience
Director of Environmental Services & Senior Arborist, Land Design Consultants, Inc.
Pasadena, 1994 – 2011
Park Specialist/Naturalist, City of Monrovia, 1988-1996

Certificates
Certified Arborist, WE-1982A, International Society of Arboriculture
Registered Consulting Arborist, #502, American Society of Consulting Arborists
Qualified Tree Risk Assessor, International Society of Arboriculture

AREAS OF EXPERTISE

Ms. Cuba is experienced in the following areas of tree management and preservation:

- Tree health & risk assessments
- Inventories & reports for native and non-native trees
- Master planning
- Evaluation of trees for preservation, encroachment, relocation, restoration, and hazards
- Value assessments (appraisals) for native and non-native trees
- Post-fire inventories, assessments, and valuations for native and non-native trees
- Guidelines for tree preservation, planting, pruning and maintenance specifications
- Pest and disease identification
- Tree and landscape resource mapping – GPS, GIS, and AutoCAD
- Planning Commission, City Council, and community meetings representation
- Review of landscape plans for mitigation compliance & fire fuel modification planning
- Preparation of native habitat and woodland management plans
- Performance of long-term mitigation compliance monitoring & reporting
- Expert testimony

PREVIOUS CONSULTING EXPERIENCE

Ms. Cuba has performed hundreds of tree inventories, health evaluations, impact analyses, hazard, and value assessments for counties, cities, sanitation districts, and water districts, as well as private developers, architects, engineers, and homeowners. She has over 23 of experience in arboriculture and is trained in environmental planning, state and federal regulatory permitting, preparation of CEQA analyses, and habitat mitigation planning and implementation. Representative clients include:

City of Pasadena
City of Monrovia
City of Santa Clarita
City of Glendora
Los Angeles County Fire Department
Los Angeles County Sanitation Districts
Newhall County Water District
Pulte/Centex Homes
Newhall Land and Farming
San Diego Gas & Electric
Quinn, Emanuel, Urquhart and Sullivan (attorneys at law)
Figure 8 Group
City of South Gate
City of Sierra Madre
D2 Development
Burrtec, Inc.
City of West Hollywood
Corky McMillin Companies

AFFILIATIONS

Ms. Cuba serves with the following national and regional professional organizations:

- Member, American Society of Consulting Arborists
- Member, International Society of Arboriculture, Western Chapter
- Member, ASCA Education Task Force
- Member, Los Angeles Oak Woodland Habitat Conservation Strategic Alliance
- Past President, Street Tree Seminar, Inc.

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Education — B.A., Environmental Studies, University of California, Santa Barbara, 2000

Experience — Project Planner & Senior Arborist, Land Design Consultants, Inc.
Pasadena, 1999 – 2014

Certificates — Certified Arborist, WE-7011A, International Society of Arboriculture, 2004
Qualified Tree Risk Assessor, International Society of Arboriculture, 2015

AREAS OF EXPERTISE

Mr. McAllaster is experienced in the following areas of tree management and preservation:

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- Inventories & reports for native and non-native trees
- Master planning
- Evaluation of trees for preservation, encroachment, relocation, restoration, and hazards
- Construction monitoring and reporting
- Value assessments (appraisals) for native and non-native trees
- Post-fire inventories, assessments, and valuations for native and non-native trees
- Guidelines for tree preservation, planting, pruning and maintenance specifications
- Tree and landscape resource mapping – GPS and AutoCAD
- Planning Commission, City Council, and community meetings representation
- Review of landscape plans for mitigation compliance & fire fuel modification planning
- Performance of long-term mitigation compliance monitoring & reporting

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City of Pasadena
City of Santa Clarita
City of Glendora
Los Angeles County Fire Department
Los Angeles County Sanitation Districts
Newhall County Water District
Pulte/Centex Homes
Newhall Land and Farming
E & S Ring, Inc.
Hollywood Forever Cemetery
Archdiocese of Los Angeles
St. John's Hospital, Santa Monica
Kovac Architects
Tim Barber, Ltd., Architects
Ojai Valley Community Hospital
The Kibo Group
El Monte Garden Senior Center
IMT Capital, LLC
San Diego Gas & Electric
Corky McMillin Companies
City of South Gate
City of Arcadia
D2 Development
Burrtec, Inc.
The Claremont Colleges
The New Home Company
William Carey University
Claremont Golf Course
Universal Hilton
Gensler Architects
Marmol Radziner, Architects
NAC Architecture
Aurora/Signature Health Services
Monte Vista Grove Homes
Highpointe Communities
Claremont University Center

AFFILIATIONS

Mr. McAllaster serves with the following national and regional professional organizations:

- Member, International Society of Arboriculture, Western Chapter
- Member, Street Tree Seminar, Inc.

Map Pockets for Full-size sheets:
Protected Tree Location Exhibit
(24” x 36”)

and

Protected Tree Impact Exhibit & Tree Protection Plan
(24” x 36”)