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May 16, 2016

Job #B50405N2

Carrier Johnson + Culture
Attention: Vicki Piazza
1301 Third Avenue
San Diego, California 92101

Subject: Response to Acoustical Cycle Issues for Strauss Fifth Avenue Apartments SDP, City of San Diego Project No. 451832

This letter is in response to the City of San Diego Cycle Issues letter for the residential development known as Strauss Fifth Avenue. Comments are found in the letter dated May 9, 2016, and are located in the LDR-Environmental section. These comments have been addressed in a revised version of the report, dated May 16, 2016, and this letter will reference the location of each comment response or requested changes in the revised report.

Italics are added to indicate City of San Diego staff comments.

LDR-Environmental Comments

Noise

34 EAS received "Acoustical Analysis Report for Strauss Fifth Avenue, 3534 Fifth Avenue, San Diego, California," prepared by Eilar Associates, Inc., dated January 27, 2016.

35 Project Description: Some areas of the report refer to a mixed use development, however please clarify no new mixed use development is proposed, but that the site includes an existing office building which would remain. In addition, the project now proposes 141 units instead of the 113 units as indicated in the report. Please update the project description and ensure the analysis, conclusions, and site plan addresses the currently proposed project.

RESPONSE: Section 2.1 of the report (Project Description) has been updated to state the newly proposed unit count and clarifies that no new mixed use development is proposed. This section also mentions the existing office building proposed to remain on site. All other sections of the report have been updated, as necessary, to reflect this change, and project plans in Appendix A have been replaced with current drawings. The analysis of HVAC noise impacts has also been updated in order to account for the increased number of HVAC units proposed to be located on site due to the increased unit count. Section 5.3, Figure 8, and Appendix H have been updated accordingly.

36 Page 3, Roadway Noise Sources: Please provide a space between the paragraph discussion of the Fourth and Sixth Avenues.

RESPONSE: This minor typographical error has been corrected on Page 3.

Please call if you have any questions or require additional information.

EILAR ASSOCIATES, INC.

Amy Hool, Principal Acoustical Consultant

Jonathan Brothers, Senior Acoustical Consultant

ACOUSTICAL ANALYSIS REPORT

Strauss Fifth Avenue
3534 Fifth Avenue
San Diego, California

City of San Diego Project No. 451832

Prepared For

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May 16, 2016

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1.0 EXECUTIVE SUMMARY

The proposed project, Strauss Fifth Avenue, consists of the construction of a new six-story, 141-unit apartment complex. First floor and below-grade garage parking will also be provided, and an existing office building will remain on site. The project site is located at 3534 Fifth Avenue, in the City of San Diego, California.

The current and future noise environment primarily consists of traffic noise from Fourth Avenue, Fifth Avenue, Sixth Avenue, and State Route 163 (SR-163). Future noise impacts at building facades will range from 49.4 CNEL at the south-facing facade of the second floor to 65.2 CNEL at the east-facing facade of the first floor.

As per City of San Diego requirements, noise levels at residential outdoor use areas of the project site should be 65 CNEL or less. Future traffic noise impacts were calculated for common outdoor use areas for residential use. Future traffic noise impacts were calculated to be lower than 65 CNEL at all common outdoor use areas. No project design features are deemed necessary for attenuating exterior noise impacts.

The City of San Diego and State of California require interior noise levels of 45 CNEL or less in residential units. Exterior noise levels at many proposed building facades are shown to exceed 60 CNEL. Due to high exterior noise levels at building facades, an exterior-to-interior analysis was performed to determine building features necessary to reduce interior noise levels in residential units to 45 CNEL or less, as required by the State of California and the City of San Diego. Calculations show that with the proposed exterior wall assemblies, all windows and glass doors of residential units should have a minimum rating of STC 28, and mechanical ventilation should be provided in residential units. With these project design features in place, interior noise levels are expected to comply with the regulations of the City of San Diego and the State of California.

The proposed common wall assemblies and floor/ceiling assemblies are expected to meet the minimum required ratings dictated by the State of California Building Code for sound transmission class (STC) and impact insulation class (IIC) ratings as currently designed. Refer to Section 5.2.2 for more details.

Calculations show that noise levels generated by anticipated HVAC units are expected to meet the applicable nighttime noise limits at surrounding property lines, without considering potential shielding that could be provided by a parapet wall. No added project design features are deemed necessary for attenuating these mechanical noise impacts.

Noise from temporary construction activities is not expected to exceed the applicable construction noise limits of the City of San Diego at any surrounding residential property line. Construction is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. Standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at furthest locations from noise sensitive receivers, are expected to be sufficient for reducing noise impacts to surrounding receivers.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of San Diego Noise Element to the General Plan. This analysis addresses noise impacts from nearby roadway traffic to determine project features necessary to achieve compliance with the City of San Diego Noise Element to the General Plan. These regulations require exterior noise levels of 65 CNEL or less at outdoor use areas, and interior noise levels of 45 CNEL or less in residential spaces. Common wall and floor/ceiling assemblies were also evaluated to determine compliance with State of California Building Code regulations for Sound Transmission Class (STC) and Impact Insulation Class (IIC) ratings. This analysis will also address the potential permanent and temporary noise impacts caused by the project at surrounding noise-sensitive receivers, and, if needed, recommend mitigation to reduce impacts to be compliant with applicable noise limits.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

Sound pressure is the actual noise experienced by a human or registered by a sound level instrument. When sound pressure is used to describe a noise source it must specify the distance from the noise source to provide complete information. Sound power, on the other hand, is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

2.1 Project Description

The proposed project, Strauss Fifth Avenue, consists of the construction of a new six-story, 141-unit apartment complex. First floor and below-grade parking will also be provided, and an existing office building will remain on site. No new mixed use development is proposed. Outdoor use areas for the project are provided as a common pool area and a common outdoor courtyard. For further details, please refer to the project plans, provided as Appendix A.

2.2 Project Location

The project site is located at 3534 Fifth Avenue, in the City of San Diego, California. The Assessor's Parcel Numbers (APN) for the property are 452-406-14-00, 452-406-15-00, 452-406-16-00, and 452-406-17-00. The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map of this area are also provided as Figures 2 through 4, respectively.

2.3 Applicable Noise Regulations

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of San Diego. The City of San Diego Noise Element to the General Plan requires that at a multi-family

residential land use, indoor noise levels are attenuated to 45 CNEL for residential space, and noise levels at residential outdoor use areas do not exceed 65 CNEL.

Noise sources on the project site must also be evaluated to determine their impact on neighboring receivers. The City of San Diego Municipal Code gives noise limits for residential properties based on density. The municipal code states that high density or mixed use properties have noise limits of 60 dBA between the hours of 7 a.m. and 7 p.m., 55 dBA between the hours of 7 p.m. and 10 p.m., and 50 dBA between the hours of 10 p.m. and 7 a.m. The subject property is considered high-density multi-family residential. Properties to the north, south, east, and west all include similar land uses to that which is proposed at the project site, and therefore, will be evaluated as such.

In addition, Section 59.5.0404 of the City of San Diego Municipal Code states that construction activity is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. During permissible hours of operation, noise levels from construction activity must be limited to a twelve-hour average of no greater than 75 dBA at any property line zoned for residential use.

Please refer to Appendix B for pertinent sections of the San Diego Noise Element to the General Plan and the City of San Diego Municipal Code.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

Exterior noise at the site will consist primarily of traffic noise from surrounding roadways. Noise levels from operations at the San Diego International Airport are expected to be less than significant at the project site, as the site is located well outside of the 60 CNEL noise contour for the airport. For this reason, aircraft noise has not been included in this analysis. No other noise sources are considered to be significant.

3.1.1 Roadway Noise Sources

Current (2008) and future (2035) traffic volumes are given based on information from the San Diego Association of Governments (SanDAG) Series 12 Transportation Forecast Information Center, located on the SanDAG website at http://tfic.sandag.org.

Fifth Avenue is a three-lane, one-way Collector running north to the east of the project site. The posted speed limit is 30 mph. According to SanDAG, Fifth Avenue currently carries an estimated traffic volume of approximately 14,000 Average Daily Trips (ADT) in the vicinity of the project site.

Fourth Avenue is a two-lane, one-way Light Collector running south to the west of the project site. The posted speed limit is 30 mph. According to SanDAG, Fourth Avenue currently carries an estimated traffic volume of approximately 6,600 ADT in the vicinity of the project site.

Sixth Avenue is a four-lane, two-way Major Arterial running north-south to the east of the project site. The posted speed limit is 30 mph. According to SanDAG, Sixth Avenue currently carries an estimated traffic volume of approximately 22,900 ADT in the vicinity of the project site.

State Route 163 (SR-163) is a four-lane, two-way Freeway running north-south to the east of the project site. The posted speed limit is 55 mph. According to SanDAG, SR-163 currently carries an

estimated traffic volume of approximately 49,800 ADT northbound, and approximately 59,200 southbound ADT in the vicinity of the project site.

No current or future truck percentages were available for any of the roadways in the vicinity of the project site other than State Route 163. However, based on neighboring and surrounding land use, roadway classification, our professional experience and on-site observations, a truck percentage mix of 2.0% medium and 1.0% heavy trucks was used for all roadways other than SR-163. According to traffic counts performed by the Caltrans Traffic Data Branch, the 2013 truck percentage mix on SR-163 in the vicinity of the project site is 2.17% medium and 0.83% heavy.

Current and future (See Section 3.2) traffic volumes and vehicle mixes for roadway sections near the project site are shown in Table 1. For more information, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

Table 1. Overall Roadway Traffic Information

Roadway Name	Speed Limit (mph)	Vehicle Mix (%)		Current ADT (2008)	Future ADT (2035)
		Medium Trucks	Heavy Trucks		
Fifth Avenue	30	2.0	1.0	14,000	15,000
Fourth Avenue	30	2.0	1.0	6,600	9,300
Sixth Avenue	30	2.0	1.0	22,900	26,000
SR-163 Northbound	55	2.17	0.83	49,800	54,200
SR-163-Southbound	55	2.17	0.83	59,200	65,200

Current traffic noise contours were calculated approximately at ground level, without existing or proposed project structures, and showed that traffic noise impacts to the entire project site will range from 51.6 CNEL to 64.1 CNEL. For a graphical representation of these contours, please refer to Figure 5: Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location.

3.1.2 Measured Noise Level

An on-site inspection and traffic noise measurement was made on the morning of Tuesday, April 14, 2015. The noise measurement was made using the methodology described in Section 4.1, at approximately 30 feet west of the Fifth Avenue centerline, and 220 feet north of the Walnut Avenue centerline. Traffic volumes were recorded for automobiles, medium-size trucks, and large trucks on Fifth Avenue during the measurement period. After a continuous 10-minute sound level measurement, there was no change in the L_{EQ} and results were then recorded. The measured noise level and related weather conditions are found in Table 2.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	Tuesday, April 14, 2015
Time	11:25 a.m. – 11:35 a.m.
Conditions	Clear skies, 3-5 mph wind, temperature in the high 60s with moderate humidity
Measured Noise Level	59.8 dBA L_{EQ}

3.1.3 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1 for the location, conditions, and traffic volumes counted during the noise measurements. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 59.8 dBA L_{EQ} at approximately 30 feet west of the Fifth Avenue centerline, and 220 feet north of the Walnut Avenue centerline was compared to the calculated (modeled) noise level of 61.6 dBA L_{EQ} for the same conditions and traffic flow. As the measured and the calculated noise levels only differed by 1.8 dB, no adjustment was deemed necessary to model future noise levels for this location. Please refer to Table 3 for further evaluation. Please refer to Appendix C: Traffic Noise Model (TNM) Data and Results for more information.

Table 3. Calculated versus Measured Traffic Noise Data				
Location	**Calculated**	**Measured**	**Difference**	**Correction**
30' W of Fifth Avenue C/L and 220' N of Walnut Avenue C/L	61.6 dBA L_{EQ}	59.8 dBA L_{EQ}	1.8 dB	None Applied

3.2 Future Noise Environment

3.2.1 Transportation Noise Sources

The future on-site noise environment will be the result of the same traffic noise sources. The future (year 2035) traffic volumes for surrounding roadways were provided by SanDAG. The traffic volume of Fifth Avenue is expected to increase to approximately 15,000 ADT by the year 2035. The traffic volume of Fourth Avenue is expected to increase to approximately 9,300 ADT by the year 2035. The traffic volume of Sixth Avenue is expected to increase to approximately 26,000 ADT by the year 2035. In the vicinity of the project site, SR-163 northbound and southbound are expected to increase to 54,200 ADT and 65,200 ADT, respectively, by the year 2035.

The same truck percentages from the current traffic volumes were used for future traffic volume modeling. The roadway alignment and roadbed grade elevations are expected to remain the same for these sections of all roadways. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

Future traffic noise contours were calculated approximately at ground level, without existing or proposed project structures, and showed that traffic noise impacts to the entire project site will range

from 52.1 CNEL to 64.4 CNEL due to the increase in traffic volumes on surrounding roadways. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location.

3.2.2 HVAC Noise Sources

The primary source of noise generated on site is expected to be HVAC operational noise. Residential units and amenity spaces on the project site are expected to be serviced by small air conditioning units. According to mechanical plans, the majority of air conditioning units will be manufactured by Carrier, and will be selected from either the 25HBC or the 25HCD product line. As the sums of octave band noise levels given for some of the Carrier units were found to be slightly less than the given sound rating, the octave band noise levels were increased accordingly such that the total sum was equal to the sound rating. The resultant estimated sound power spectra for all proposed Carrier units are shown below in Table 4. Please refer to Appendix D: Manufacturer Data Sheets for additional information.

Table 4. Sound Power Level of Carrier Air Conditioning Units

Source	Sound Power Level at Octave Band Frequency (dBA)							Total (dBA)
	125	250	500	1K	2K	4K	8K	
Carrier 25HBC518	49.5	60.0	65.0	69.0	65.5	62.0	55.0	73
Carrier 25HBC524	49.5	60.5	62.5	63.5	62.0	60.0	54.5	69
Carrier 25HBC530	53.0	60.5	63.5	67.5	64.5	62.0	55.5	71
Carrier 25HCD436	56.5	59.5	65.5	67.0	64.0	63.0	56.0	72

In addition to the Carrier units proposed to serve residential units, several smaller heat pumps are also proposed at the project site to serve amenity spaces. These pieces of equipment include the Mitsubishi PUY-A12 heat pump, anticipated to generate a noise level of 46 dBA at one meter from the equipment, as well as the Fujitsu 9RLFCD heat pump, anticipated to generate approximately 49 dBA at one meter from the equipment. Although these pieces of equipment will generate less noise than the proposed Carrier units, they have been included in the overall analysis of HVAC noise. Manufacturer information for the Mitsubishi and Fujitsu units is provided in Appendix D.

No other noise sources on site are anticipated to generate a significant amount of noise at neighboring properties.

3.2.3 Temporary Construction Equipment

Construction information was provided by Mike Remensperger of Cannon Constructors South, Inc. Mr. Remensperger provided information on typical construction equipment anticipated to operate on the site during construction activity. Noise levels are shown in Table 5.

Table 5. Typical Construction Equipment Noise Levels		
Equipment Description	**Duty Cycle (%)**	**Noise Level at 50 feet (dBA)**
Excavator	40	74.3
Dump Truck	40	75.3
Drill Rig	20	73.3
Crane	16	66.3
Concrete Mixer Truck	40	76.3
Concrete Pump Truck	20	74.3

These noise levels will be incorporated into the temporary construction noise analysis for the site, provided in Section 5.3.2.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

4.1.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by using the appropriate multiplier. Other field data gathered includes measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This data is checked against the available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model, Version 2.5 program released by the U.S. Department of Transportation is used to calculate the current future daytime average hourly noise level (HNL) contours at the project site, taking into account surrounding buildings, elevation, and additional topography. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the hourly L_{EQ}, and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study. Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required.

In order to determine the estimated traffic volumes of neighboring roadways (other than the section of Fifth Avenue counted) during the traffic noise measurement made on site for model calibration, the

approximate percentage of the Average Daily Trips (ADT) value for the time period in which the measurement is made is incorporated into the traffic model. These percentages have been established in a study performed by Katz-Okitsu and Associates, Traffic Engineers (see reference). For purposes of calibrating the TNM, 6.2% of the ADT values for the current environment were used in calculations (other than the section of Fifth Avenue that was manually counted) to account for traffic between the hours of 11 a.m. and 12 p.m. in the vicinity of the project site. Further explanation can be provided upon request.

4.1.3 Exterior-to-Interior Analysis

The State of California requires buildings to be designed in order to attenuate, control, and maintain average interior noise levels not greater than 45 CNEL in residential space, as formulated in the California Building Code, Section 1207.11.2 and the City of San Diego Noise Element to the General Plan. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened. As a result, exterior noise levels of more than 60 CNEL often result in interior conditions that fail to meet the 45 CNEL requirements for habitable space.

Analysis for the interior noise levels requires consideration of:

- Number of unique assemblies in the wall (doors, window/wall mount air conditioners, sliding glass doors, and windows)
- Size, number of units, and sound transmission data for each assembly type
- Length of sound impacted wall(s)
- Depth of sound impacted room
- Height of exterior wall of sound impacted room
- Exterior noise level at wall assembly or assemblies of sound impacted room

The Composite Sound Transmission data is developed for the exterior wall(s) and the calculated noise exposure is converted to octave band sound pressure levels (SPL) for a typical traffic type noise. The reduction in room noise due to absorption is calculated and subtracted from the interior octave noise levels, and the octave band noise levels are logarithmically summed to yield the overall interior room noise level. When interior noise levels exceed 45 CNEL in residential space, the noise reduction achieved by each element is reviewed to determine which changes will achieve the most cost-effective compliance. Windows are usually the first to be reviewed, followed by exterior doors, and then exterior walls.

4.1.4 Sound Transmission Class (STC) Ratings

Sound Transmission Class (STC) is a single number rating calculated in accordance with ASTM E413, using third-octave values of sound transmission loss. It provides an estimate of the sound performance of a partition, window, or door in sound insulation problems.

Modeling of exterior wall assemblies is accomplished using INSUL Version 8.0, which is a model-based computer program, developed by Marshall Day Acoustics for predicting the sound insulation of walls, floors, ceilings and windows. It is acoustically based on theoretical models that require only minimal material information that can make reasonable estimates of the sound transmission loss (TL), STC and IIC for use in sound insulation calculations; such as the design of common party walls and multiple family floor-ceiling assemblies, etc. INSUL can be used to quickly evaluate new materials or systems or investigate the effects of changes to existing designs. It models individual materials using the simple mass law and coincidence frequency approach and can model more complex assembly partitions, as well. It has evolved over several versions into an easy to use tool and has refined the

theoretical models by continued comparison with laboratory tests to provide acceptable accuracy for a wide range of constructions. INSUL model performance comparisons with laboratory test data show that the model generally predicts the performance of a given assembly within 3 STC points.

4.1.5 Cadna Noise Modeling Software

Modeling of the outdoor noise environment is accomplished using Cadna Version 4.5, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed CAD model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

4.1.6 Acoustical Formulas and Calculations

The following acoustical formulas and calculations have also been used in the preparation of this report.

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_C = 10\log(10^{L1/10} + 10^{L2/10} + \ldots 10^{LN/10})$$

where L_C = the combined noise level (dB), and
L_N = the individual noise sources (dB).

This procedure is also valid when used successively for each added noise source beyond the first two. The reverse procedure can be used to estimate the contribution of one source when the contribution of another concurrent source is known and the combined noise level is known. These methods can be used for L_{EQ} or other metrics (such as L_{DN} or CNEL), as long as the same metric is used for all components.

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

$$SPL_2 = SPL_1 - 20\log(\frac{D_2}{D_1})$$

where SPL_1 = Known sound pressure level at known distance,
SPL_2 = Calculated sound pressure level at distance,
D_1 = Distance from source to location of known sound pressure level, and
D_2 = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EQ} = 10\log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and
L_P = the partial hour noise level (dB).

Sound Power to Sound Pressure

To convert sound power levels to sound pressure levels, the following formula is used:

$$SPL = SWL - 20\log(D) - 0.5$$

where: SPL= Calculated sound pressure level at distance, and
D = Distance from source to location of calculated sound pressure level.

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model LxT Type 1 Integrating Sound Level Meter, Serial #4085
- Larson Davis Model CA250 Type 1 Calibrator, Serial #2106
- Tripod, and windscreen

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 NOISE IMPACTS

5.1 Exterior

5.1.1 Noise Impacts to Outdoor Use Areas

As per the City of San Diego Noise Element to the General Plan, noise impacts at outdoor use areas of multi-family land uses should not exceed 65 CNEL. Future traffic noise impacts have been addressed for determining exterior noise levels in these locations. The common outdoor use areas for residential use consist of a second floor courtyard/barbecue area, and a second floor pool area. These areas were evaluated to determine if noise levels exceed 65 CNEL in the future noise environment. Future noise level impacts at common outdoor use areas are shown in Table 6, and receiver locations are shown in Figure 7.

Table 6. Future Noise Levels at Common Outdoor Use Areas			
Receiver	**Floor**	**Location**	**Exterior Noise Level (CNEL)**
CY-2	2	Courtyard/ BBQ Area	56.7
Pool	2	Pool Area	47.6

As shown above, noise levels at the proposed common outdoor use areas are not expected to exceed 65 CNEL in the future noise environment, as adequate noise shielding is provided by the proposed building structures. These noise levels meet City of San Diego noise regulations as currently designed, and therefore, no additional project design features are deemed necessary to attenuate exterior noise impacts. Receiver locations are shown in Figure 7.

5.1.2 Noise Impacts at Building Facades

Future traffic noise impacts were also calculated at building facades and showed that noise levels will range from 49.4 CNEL at the south-facing facade of the second floor to 65.2 CNEL at the east-facing facade of the first floor. Noise levels are shown in Table 7, and receiver locations are shown in Figure 7.

Table 7. Future Noise Levels at Building Facades							
Receiver	**Floor**	**Facade Location**	**Exterior Noise Level (CNEL)**	**Receiver**	**Floor**	**Facade Location**	**Exterior Noise Level (CNEL)**
F1	1	East	65.2	F29	4	West	53.2
F2	1	East	65.2	F30	4	West	52.7
F3	1	East	65.1	F31	4	West	52.3
F4	1	South	59.7	F32	5	North	55.5
F5	2	North	49.9	F33	5	North	59.9
F6	2	North	57.8	F34	5	East	64.3
F7	2	East	64.7	F35	5	East	64.3
F8	2	East	64.7	F36	5	East	64.2
F9	2	South	59.7	F37	5	South	59.2
F10	2	South	49.4	F38	5	South	54.1
F11	2	West	50.1	F39	5	West	54.7
F12	2	West	49.5	F40	5	West	54.3
F13	2	West	48.8	F41	5	West	53.8
F14	3	North	52.6	F42	6	North	55.9
F15	3	North	60.1	F43	6	North	59.6
F16	3	East	64.4	F44	6	East	64.3
F17	3	East	64.4	F45	6	East	64.4
F18	3	South	59.3	F46	6	East	64.4

Table 7. Future Noise Levels at Building Facades							
Receiver	**Floor**	**Facade Location**	**Exterior Noise Level (CNEL)**	**Receiver**	**Floor**	**Facade Location**	**Exterior Noise Level (CNEL)**
F19	3	South	52.2	F47	6	South	59.8
F20	3	West	52.4	F48	6	South	55.1
F21	3	West	51.8	F49	6	West	55.7
F22	3	West	51.3	F50	6	West	54.7
F23	4	North	54.0	F51	6	West	54.0
F24	4	North	59.8	CY-2	2	Courtyard	56.7
F25	4	East	64.2	CY-3	3	Courtyard	61.6
F26	4	East	64.2	CY-4	4	Courtyard	61.3
F27	4	South	59.1	CY-5	5	Courtyard	56.5
F28	4	South	52.9	CY-6	6	Courtyard	56.8

5.2 Interior

5.2.1 Transportation Noise Sources

The State of California and the City of San Diego require buildings to be designed in order to attenuate, control, and maintain interior noise levels not greater than 45 CNEL in habitable space, as formulated in the City of San Diego Noise Element to the General Plan and the California Building Code, Section 1207.11.2. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened. As a result, exterior noise levels of more than 60 CNEL often result in interior conditions that fail to meet the 45 CNEL requirements for habitable space.

Exterior noise levels at many of the calculated receiver points on the proposed building facades exceed 60 CNEL, as shown in Table 7. Due to the elevated exterior noise levels at these building facades, an exterior-to-interior noise analysis was conducted for each unit type. The proposed exterior wall assembly was evaluated to have an STC rating of 57, and was incorporated into the interior noise analysis as such. More information is provided in Appendix E: Sound Insulation Prediction Results.

Table 8 below shows the results of the exterior-to-interior noise analysis for worst-case units of each type, with acoustical recommendations made therein. For more information, please refer to Appendix F: Exterior-to-Interior Noise Analysis.

Table 8. Future Interior Noise Levels in Worst-Case / Representative Units						
Unit	**Room**	**Maximum Exterior Facade Impact (CNEL)**	**Minimum STC Rating for Windows and Glass Doors**	**Interior CNEL (windows open)**	**Interior CNEL (windows closed)**	**Mechanical Ventilation**
Unit 101	Living/Dining	65.1	28	55.8	35.0	Required
Unit 102	Bedroom	65.1	28	56.4	31.8	Required
	Living/Dining	65.2	28	53.8	35.0	Required
Unit 103	Bedroom	65.2	28	52.9	28.4	Required
	Living/Dining	65.2	28	54.6	34.4	Required
Unit 104	Bedroom	65.2	28	55.2	30.7	Required
	Living/Dining	65.2	28	54.5	35.6	Required
Unit 201	Bedroom	64.7	28	57.2	32.6	Required
	Living/Dining	64.7	28	55.3	36.4	Required
Unit 202	Bedroom 2	64.7	28	56.6	32.0	Required
	Living/Dining	64.7	28	55.3	36.5	Required
Unit 218	Bedroom 2	64.7	28	55.8	31.2	Required
	Living/Dining	64.7	28	55.2	34.7	Required
Unit 219	Bedroom	64.7	28	55.6	31.0	Required
	Living/Dining	64.7	28	55.8	36.9	Required
Unit 302	Bedroom 2	64.4	28	56.8	32.1	Required
	Living/Dining	64.4	28	55.9	36.0	Required
Unit 303	Living/Dining	64.4	28	53.7	34.8	Required
Unit 304	Master Bedroom	64.4	28	56.5	32.0	Required

Representative calculations show that the exterior windows and glass doors of every unit should have the minimum rating of STC 28. As the units evaluated above represent units with the highest noise exposure, all other units are expected to comply with interior noise level requirements with the same configuration recommended above.

Calculations show that units will not comply with the City of San Diego and State of California interior noise regulations with windows and doors open; hence, mechanical ventilation will be required in these units. In units where the noise levels are shown to comply without mechanical ventilation, it is still recommended to install a mechanical ventilation system, for tenant comfort. The mechanical ventilation system shall meet the criteria of the California Mechanical Code, including the capability to provide appropriate ventilation rates. The ventilation system shall not compromise the sound insulation capability of the exterior wall or be dependent on ventilation through windows.

Exterior door installation should include all-around weather-tight door stop seals and an improved threshold closure system. The additional hardware will improve the doors' overall sound reduction properties. The transmission loss (TL) of an exterior door without weather-tight seals is largely a factor of sound leakage, particularly at the bottom of the door if excessive clearance is allowed for air transfer. By equipping exterior doors with all-around weather-tight seals and an airtight threshold closure at the bottom, a loss of up to 10 STC points can be prevented. Manufacturers of these products include such companies as Pemko and Reese. Manufacturer sheets are provided in Appendix G: Recommended Products.

Additionally, it is imperative to seal and caulk between the rough opening and the finished door frame for all doors by applying an acoustically resilient, non-skinning butyl caulking compound. The same recommendation applies to any other penetrations, cracks, or gaps through the assembly. Sealant application should be as generous as needed to ensure effective sound barrier isolation. The OSI Green Series Draft and Acoustical Sound Sealant and the Pecora AC-20 FTR Sealant are products specifically designed for this purpose. Please see Appendix G: Recommended Products.

The proposed residential units were analyzed for future exterior noise impacts from roadway traffic. With the proposed exterior wall assemblies, window/glass door configurations specified above, and mechanical ventilation in units, all interior residential space is expected to comply with City of San Diego and California Building Code noise requirements.

5.2.2 Unit-to-Unit Noise Transmission

Another source of noise that may affect residential units in multi-family buildings is unit-to-unit noise transmission. The California State Building Code requires that the Sound Transmission Class (STC) rating of common wall assemblies separating residential units from one another, or from common space such as corridors, stairways, or other such service spaces, have a minimum laboratory rating of STC 50. The same STC requirement applies for floor/ceiling assemblies, and an added requirement dictates that the Impact Insulation Class (IIC) rating of the floor/ceiling assembly is a minimum laboratory rating of IIC 50. Detailed calculations and laboratory tests for the assemblies evaluated below are provided in Appendix E: Sound Insulation Prediction Results.

Wall Assemblies

Assembly DM-2 – Unit Demising Wall – 1 Hour Rated (Wood Stud)

On the second through sixth floors, where residential units share a common wall, the following assembly is proposed:

- Single layer of 5/8-inch thick Type X gypsum board
- Double row of 2x4 wood studs on separate plates spaced one inch apart, 16 inches o.c.
- Fiberglass insulation in both stud cavities
- Single layer of 5/8-inch thick Type X gypsum board

This assembly was tested at Riverbank Acoustical Laboratories (RAL-TL75-83) and shown to achieve an STC 57. The assembly is listed in the California Office of Noise Control Catalog of STC and IIC Ratings for Wall and Floor/Ceiling Assemblies under the section number 1.2.4.1.5.4. No changes are required to meet the standards of the California Building Code.

Assembly DX-1 – Unit Demising Wall – 1 Hour Rated (Metal Stud)

On the first floor, where residential units share a common wall, the following assembly is proposed:

- Single layer of 5/8-inch thick Type X gypsum board
- Double row of 3-5/8-inch metal studs on separate plates spaced one inch apart, 16 inches o.c.
- Fiberglass insulation in both stud cavities
- Single layer of 5/8-inch thick Type X gypsum board

This assembly is the same as Assembly DM-2, the only difference being the use of metal studs instead of wood studs. This is not expected to affect the overall rating of the assembly, as the type of studs used in double stud walls does not have as great an effect on the rating of the STC rating of the assembly as for single stud wall assemblies. Additionally, as metal studs perform better in single stud wall assemblies, the above assembly may perform slightly better than the same assembly would with wood studs. Using INSUL, the calculated STC rating of the above assembly using either wood or metal studs is STC 58 in both cases. This compares well with the laboratory rating of STC 57 for the wood framed assembly (RAL-TL75-83). No changes are required to meet the standards of the California Building Code.

Assembly FC-1 – Corridor Wall – 1 Hour Rated (Wood Stud)

On the second through sixth floors, where residential units share a wall with an interior corridor, the following assembly is proposed:

- Single layer of 5/8-inch thick Type X gypsum board
- Plywood sheathing
- Single row of 2x4 wood studs, 16 inches o.c.
- Fiberglass insulation in cavity
- Single layer of 5/8-inch thick Type X gypsum board on resilient channels

A similar assembly was tested by the National Research Council of Canada (NRC #66) and shown to achieve an STC rating of 50. The assembly is listed in the California Office of Noise Control Catalog of STC and IIC Ratings for Wall and Floor/Ceiling Assemblies under the section number 1.2.2.5.5.2. Although the tested assembly includes two layers of gypsum board on one side, it does not include any plywood sheathing, which is expected to provide a similar acoustical performance. A calculation of the proposed assembly was performed in INSUL and shown to achieve an STC 53. No changes are required to meet the standards of the California Building Code; however, if there are areas where the layer of plywood will not be incorporated into the wall assembly, the absence of plywood should be compensated for by a layer of 5/8-inch gypsum board to maintain the STC rating.

Assembly DS-1 – Corridor Wall – 1 Hour Rated (Metal Stud)

In some locations where residential units are adjacent to a corridor on the first floor, the following assembly is proposed:

- Double layer of 5/8-inch thick Type X gypsum board
- Single row of 6-inch metal studs, 16 inches o.c.
- Fiberglass insulation in cavity
- Single layer of 5/8-inch thick Type X gypsum board on resilient channels

A similar assembly was tested by the National Research Council of Canada (NRC #TL-94-023) and shown to achieve an STC rating of 54. The tested assembly includes 1/2-inch thick gypsum board versus the 5/8-inch thick gypsum board used in the proposed assembly, which is expected to improve the acoustical performance of the assembly. The tested assembly also includes 3 5/8-inch metal studs, whereas the proposed assembly includes 6-inch metal studs, which is expected to improve the acoustical performance of the proposed assembly. A calculation of the proposed assembly was performed in INSUL and shown to achieve an STC rating of 60. No changes are required to meet the standards of the California Building Code.

Assembly FR-2 – Corridor Wall – 2 Hour Rated (Metal Stud)

In some locations where residential units are adjacent to a corridor on the first floor, the following assembly is proposed:

- Double layer of 5/8-inch thick Type X gypsum board
- Single row of 3-5/8-inch, 25 gauge metal studs, 16 inches o.c.
- Fiberglass insulation in cavity
- Double layer of 5/8-inch thick Type X gypsum board

This assembly was tested by the National Research Council of Canada (NRC #TL-93-332) and shown to achieve an STC rating of 55. No changes are required to meet the standards of the California Building Code.

Assembly FD-1 – Demising Wall – 3 Hour Rated Wall

FD-1 is a three-hour rated demising wall. No specific sound test was available for this exact configuration; however, a sound rating has been estimated based on similar assemblies found within the California Catalog of STC and IIC Ratings. Assembly OC-10FC is constructed as follows:

- Single layer of 5/8-inch thick Type X gypsum board
- Single row of 2-inch by 4-inch wood studs
- 3.5-inch thick insulation in stud cavity
- Single layer of 5/8-inch thick Type X gypsum board
- 1-inch wide air space
- Single layer of 5/8-inch thick Type X gypsum board
- Single row of 2-inch by 4-inch wood studs
- 3.5-inch thick insulation in stud cavity
- Single layer of 5/8-inch thick Type X gypsum board

This assembly was tested and shown to have an STC rating of 44. Assembly OCF W-15-77 is constructed as follows:

- Single layer of 5/8-inch thick Type X gypsum board
- Single row of 2-inch by 4-inch wood studs
- 3.5-inch thick insulation in stud cavity
- Single layer of 5/8-inch thick Type X gypsum board
- 1-inch wide air space
- Single layer of 1/4-inch thick gypsum board
- Single layer of 5/8-inch thick Type X gypsum board
- Single row of 2-inch by 4-inch wood studs
- 3.5-inch thick insulation in stud cavity

- Single layer of 5/8-inch thick Type X gypsum board

This assembly was tested and shown to have an STC rating of 45. Both of the assemblies listed above are similar to FD-1 as they consist of a "quadruple leaf" assembly, with multiple air spaces between layers of material; however, FD-1 contains a row of steel studs within the center cavity (as opposed to the air space found in the assemblies listed above). Unlike the tested assemblies, FD-1 provides a 1/4-inch air space between each row of wood studs and the center steel stud assembly. FD-1 also contains additional layers of gypsum board within the center of the assembly that have an increased thickness from those shown in the assemblies listed above. Assembly OCF W-15-77 and OC-10FC differ only in that the former incorporates an additional layer of 1/4-inch thick gypsum board within the center of the assembly, which results in a 1 point increase in the STC rating. Using this same logic, it can be assumed that the addition of a 3/4-inch layer of gypsum board would increase the overall rating by two points, due to the increased thickness. As FD-1 incorporates four layers of 3/4-inch gypsum board within the center of the cavity, as opposed to two layers of 5/8-inch thick gypsum board in OC-10FC, 4 points will be assumed to be gained from the rating shown Assembly OC-10FC. In addition, double shear paneling is required in nearly every location FD-1 is specified, which means that a layer of plywood will be incorporated on each side of the assembly. The increased mass from each layer of plywood is also likely to add 1 STC point to the assembly, resulting in a total increase of 2 points from the proposed two layers of plywood on the assembly. Although the steel studs within the center cavity eliminate the decoupling shown within the tested assemblies listed above, the air spaces between the wood stud rows and the center assembly are expected to make up for this difference, as they provide decoupling. With this reasoning, the STC rating of FD-1 is anticipated to be approximately STC 50, complying with the California State Building Code requirement.

In the event that shear paneling is not needed on both sides of the assembly, the absence of the plywood layer(s) should be compensated for by either substituting a layer of 5/8-inch gypsum board in place of the plywood, or installing the plywood anyway, regardless of the need for shear. Either of these methods should be sufficient for maintaining the STC 50 rating.

<u>Floor/Ceiling Assemblies</u>

UL Floor-Ceiling 1Hr

Where residential units are share a floor/ceiling assembly, the following assembly is proposed:

- Laminate Flooring
- 1 1/2-inch light weight gypsum topping
- Acoustimat II underlayment
- 3/4-inch plywood sheathing
- 11 7/8-inch wood TJI joists
- Fiberglass insulation in cavity
- Double layer of 5/8-inch thick Type X gypsum board on resilient channels

A similar assembly was tested for airborne sound transmission at Intertek Acoustical Laboratories (Repot No. 100336557CRT-001g), with 1-inch Gypcrete, 2x10 joists, a single layer of gypsum board, and no floor covering. The tested assembly achieved an STC 53. According to a study published by the National Research Council of Canada entitled *"Summary report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission and Impact Insulation Data",* published in January 2005, which examined the acoustical performance of various floor/ceiling types, "No statistically significant dependence on joist type (wood, I-joist, trusses or steel C-joists) was found in the regression analysis." It is therefore concluded that the use of TJI joists as opposed to solid

wood joists will have a minimal effect on the STC or IIC rating. The additional thickness of gypsum topping is expected to have a minimal impact on the STC rating and the additional layer of gypsum board on the ceiling would result in a higher STC rating. For this reason, the STC rating of the assembly is estimated to be greater than STC 53, and therefore, no changes are required to meet the standards of the California Building Code.

A similar assembly was tested for impact sound transmission at Intertek Acoustical Laboratories (100336557CRT-001l), with 1-inch Gypcrete, a single layer of gypsum board, and floating engineered hardwood flooring. The tested assembly achieved an IIC 53. The use of laminate flooring versus the engineered hardwood flooring installed during the test is not anticipated to effect the IIC rating of the assembly, as these materials have similar characteristics, and are both installed as floating floors. The increased thickness of gypsum topping is expected to have a minimal impact on the IIC rating and the additional layer of gypsum board on the ceiling would result in a similar or higher IIC rating. For this reason, the IIC rating of the assembly is estimated to be IIC 53 or greater, and therefore, no changes are required to meet the standards of the California Building Code.

Limitations

Actual STC and IIC ratings achieved are determined by the quality of construction and attention to details in the installation of assemblies. Please be advised that this endorsement is strictly contingent upon observance of proper installation procedures. It is imperative that attention be paid to details such as the proper installation of resilient channels and/or clips and the isolation of the floor/ceiling assembly from the wall to prevent vibration through the structure.

All cracks or gaps must be sealed with an acoustical sealant, such as the OSI Green Series or Pecora sealants (see Appendix G). With these conditions met, the assemblies detailed above should meet minimum building code standards for controlling sound and impact transmission.

5.3 Project-Related Noise Impacts on Surrounding Property Lines

5.3.1 HVAC Noise

Anticipated HVAC noise levels have been calculated using Cadna at surrounding noise-sensitive receivers, considering noise limits detailed in Section 2.3. Calculations take into account the proposed building on which HVAC units will be roof-mounted, as well as the existing commercial building proposed to remain on site. Receivers have been placed at five feet above grade at all surrounding property lines and at 15 feet above grade at the south, east, and west property lines to account for second-story receivers in these locations. There are no noise-sensitive receivers with multi-story buildings at the north property line. Calculations assume that all HVAC units will be operational for 100 percent of the time during all hours of the day, for a worst-case analysis, although actual operation would be expected to be intermittent and less frequent during the more sensitive nighttime hours.

Results of the analysis are shown in Table 9. More information is provided in Appendix H: Cadna Analysis Data and Results, and a graphical representation of evaluated source/receiver locations is shown in Figure 8.

Table 9. Mechanical Equipment Noise Levels at Surrounding Receivers			
Receiver	**Location**	**Noise Limit (dBA)**	**Equipment Noise Level (dBA)**
R-1	North Property Line	50	31.7
R-2	South Property Line (Across Walnut)	50	24.1
R-3	East Property Line (Across 5th)	50	30.2
R-4	West Property Line (Across Alley)	50	32.6
R-5	South Property, 2nd Story	50	28.6
R-6	East Property, 2nd Story	50	31.6
R-7	West Property, 2nd Story	50	33.3

As shown above, noise levels from proposed HVAC equipment on site are expected to meet the applicable nighttime noise limits set by the City of San Diego without the implementation of added project design features. This evaluation is considered to be representative of actual HVAC noise generated on site, although noise levels may be further reduced due to the presence of parapet walls on the building.

5.3.2 Temporary Construction Noise

A schedule of construction activity was evaluated to determine potential temporary noise impacts to the surrounding residentially zoned receivers, per City of San Diego Municipal Code requirements. The nearest residential or mixed use properties are located to the north, east, and west of the project site. Any other potentially noise-sensitive receivers are located at a greater distance from construction activity and therefore, would be exposed to lesser noise impacts due to distance attenuation and shielding provided by intervening structures. This includes any residential or mixed use property to the south of the project site, which will be located at a greater distance from construction activity and will also receive shielding from the existing commercial building to remain in place on the project site.

The anticipated construction schedule was provided by Mike Remensperger of Cannon Constructors South, Inc. According to Mr. Remensperger, the project will be constructed over the course of a 20-month period. A summary of construction activity is shown in Table 10.

Table 10. Anticipated Construction Activity		
Scope of Work	**Duration**	**Anticipated Large Equipment**
Site Mobilization/Demolition	1 month	Excavator, Dump Trucks
Excavation/Shoring	3 months	Excavator, Drill Rig, Dump Trucks
Concrete	4 months	Crane, Concrete Mixer Trucks, Concrete Pump Truck
Framing	7 months	Crane
Interior Finishes	5 months	None (hand tools only)

Noise levels were calculated at the nearest receivers to the north, east, and west. Construction noise sources were placed near the center of the work area (excluding the existing commercial building) to evaluate typical impacts to the surrounding receivers as equipment moves around the property. Noise calculations consider typical duty cycles of equipment, to account for periods of activity and inactivity on the site.

Noise levels for each stage of construction are shown in Table 11. Detailed calculations can be found in Appendix I, and a graphical representation of noise source and receiver locations is provided as Figure 9.

Table 11. Temporary Construction Noise Levels at Nearest Occupied Properties				
Stage	**Equipment Used**	**Receiver**	**Approximate Distance (ft)**	**Average Noise Level of Equipment (dBA)**
Site Mobilization/ Demolition	Excavator, Dump Trucks	North (CR1)	128	67.6
		East (CR2)	142	66.7
		West (CR3)	85	71.2
Excavation/ Shoring	Excavator, Drill Rig, Dump Trucks	North (CR1)	128	68.1
		East (CR2)	142	67.2
		West (CR3)	85	71.6
Concrete	Crane, Concrete Mixer Trucks, Concrete Pump Truck	North (CR1)	128	67.9
		East (CR2)	142	67.0
		West (CR3)	85	71.4
Framing	Crane	North (CR1)	128	50.2
		East (CR2)	142	49.3
		West (CR3)	85	53.7

It is determined that construction noise levels associated with this project will not create a significant impact at any surrounding property line with activity limited to the daytime hours of 7 a.m. to 7 p.m., as noise levels are expected to remain below 75 dBA at all surrounding noise-sensitive property lines.

Although noise levels are shown to be in compliance with the construction noise limit of 75 dBA, the following measures should still be practiced as a courtesy to residential neighbors.

1. Staging areas should be placed as far from occupied receivers as possible on the project site to limit any additional unnecessary noise exposure at sensitive receivers.

2. Place stationary equipment in locations that will have a lesser noise impact on nearby sensitive receivers.

3. Turn off equipment when not in use.

4. Limit the use of enunciators or public address systems, except for emergency notifications.

5. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

6. Schedule work to avoid simultaneous construction activities that both generate high noise levels.

7. Use equipment with effective mufflers.

8. Minimize the use of backup alarms.

With work limited to daytime hours permissible by the City of San Diego and adherence to the general good practice construction noise control techniques, temporary construction noise is expected to remain in compliance with City of San Diego noise limits.

6.0 CONCLUSION

Traffic noise levels at common outdoor use areas are expected to remain below 65 CNEL in the future noise environment and are therefore anticipated to meet City of San Diego noise regulations as currently designed.

Due to high exterior noise levels at building facades, an exterior-to-interior analysis was performed to determine building features necessary to reduce interior noise levels in residential units to 45 CNEL or less, as required by the State of California and the City of San Diego. As shown above, with the proposed exterior wall assemblies, all windows and glass doors on residential units should have a minimum rating of STC 28, and mechanical ventilation should be provided in residential units. With these project design features in place, interior noise levels are expected to comply with City of San Diego noise regulations.

Additionally, the proposed common wall assemblies and floor/ceiling assemblies are expected to meet State of California Building Code requirements for acoustical isolation as designed, provided proper installation procedures are followed.

Calculations show that noise levels generated by anticipated HVAC units are expected to meet the applicable nighttime noise limits at surrounding property lines, without considering potential shielding that could be provided by a parapet wall. No added project design features are deemed necessary for attenuating these mechanical noise impacts.

Noise from temporary construction activities is not expected to exceed the applicable construction noise limits of the City of San Diego at any surrounding residential property line. Construction is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. Standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at furthest locations from noise sensitive receivers, are expected to be sufficient for reducing noise impacts to surrounding receivers.

7.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound and impact transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with Strauss Fifth Avenue, to be located in the City of San Diego, California. This report was prepared by Jonathan Brothers and Amy Hool.

Jonathan Brothers, Senior Acoustical Consultant

Amy Lynn Hool

Amy Hool, Principal Acoustical Consultant

8.0 REFERENCES

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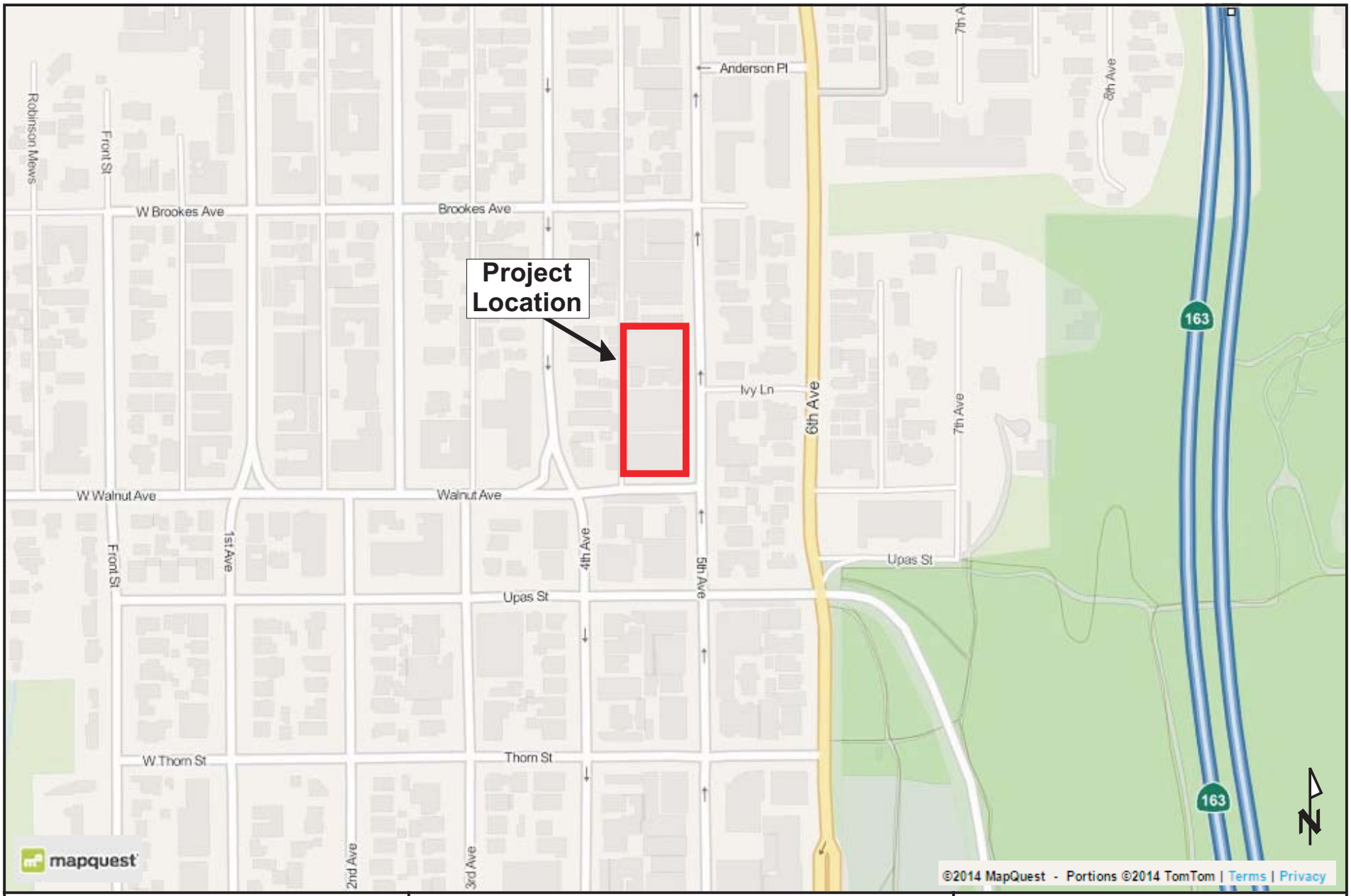
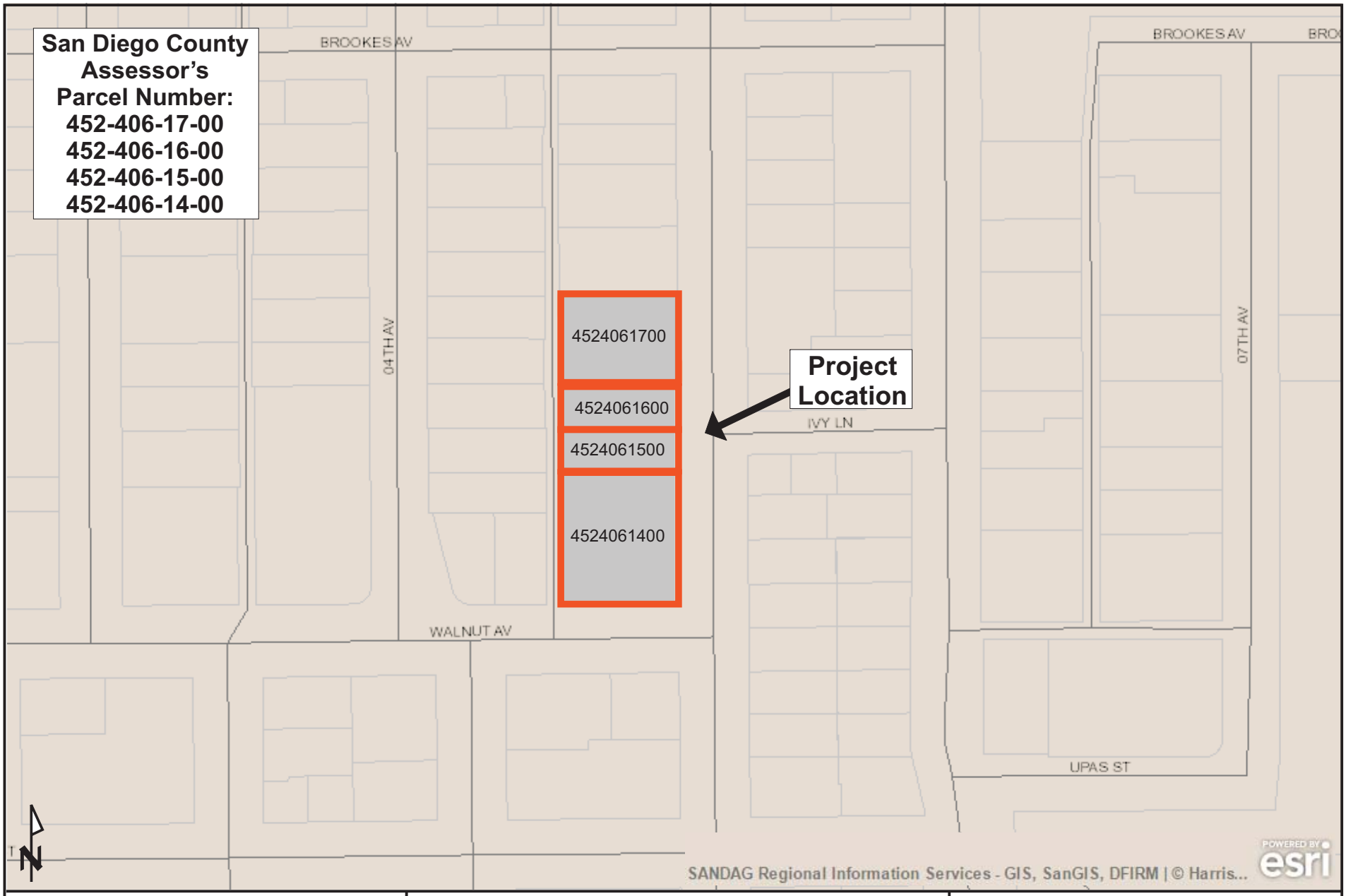
FIGURES

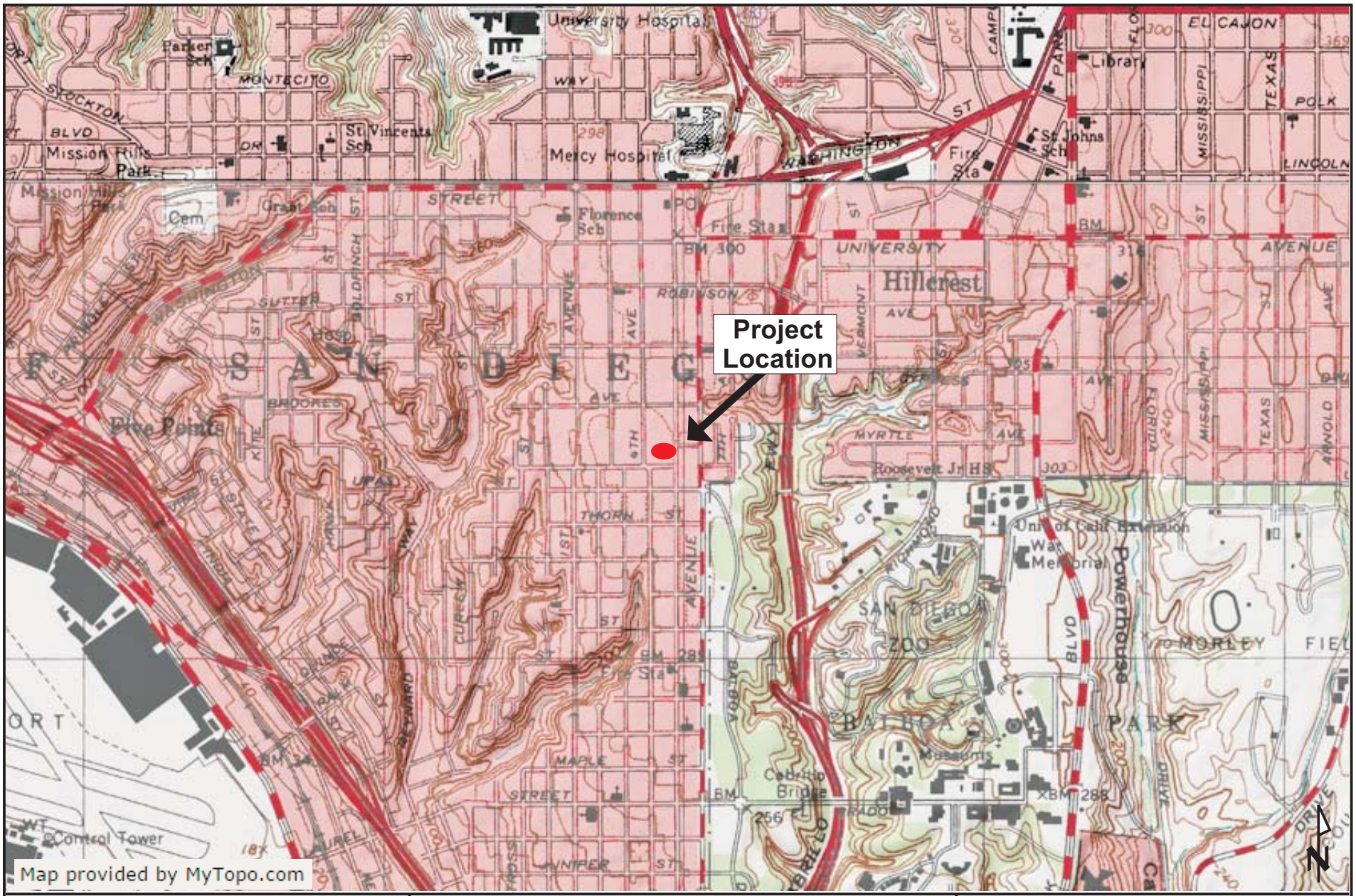


Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Vicinity Map** **Job # B50405N2**	**Figure 1**

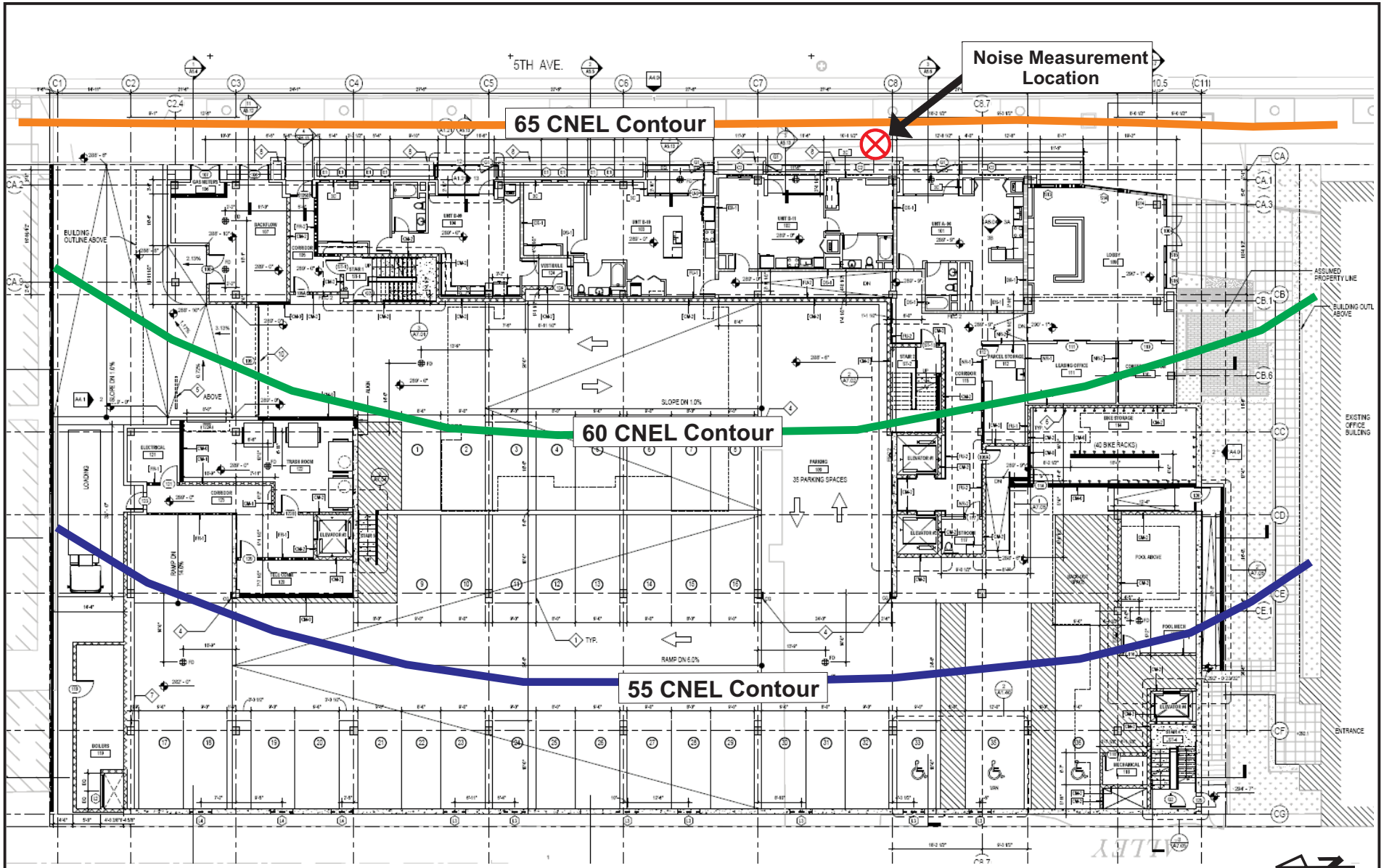


Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Assessor's Parcel Map** **Job # B50405N2**	**Figure 2**

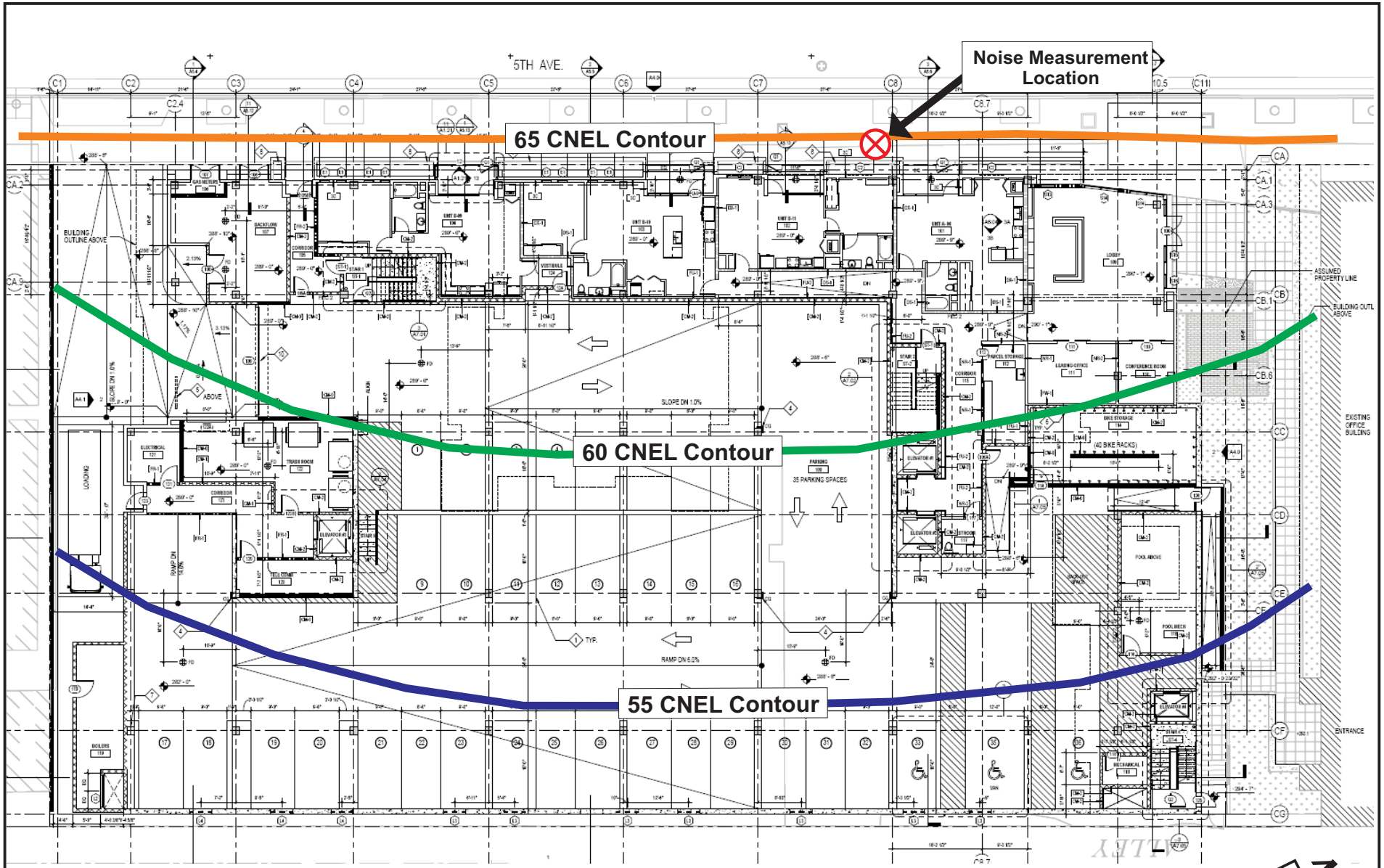
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Satellite Aerial Photograph** **Job # B50405N2**	**Figure 3**



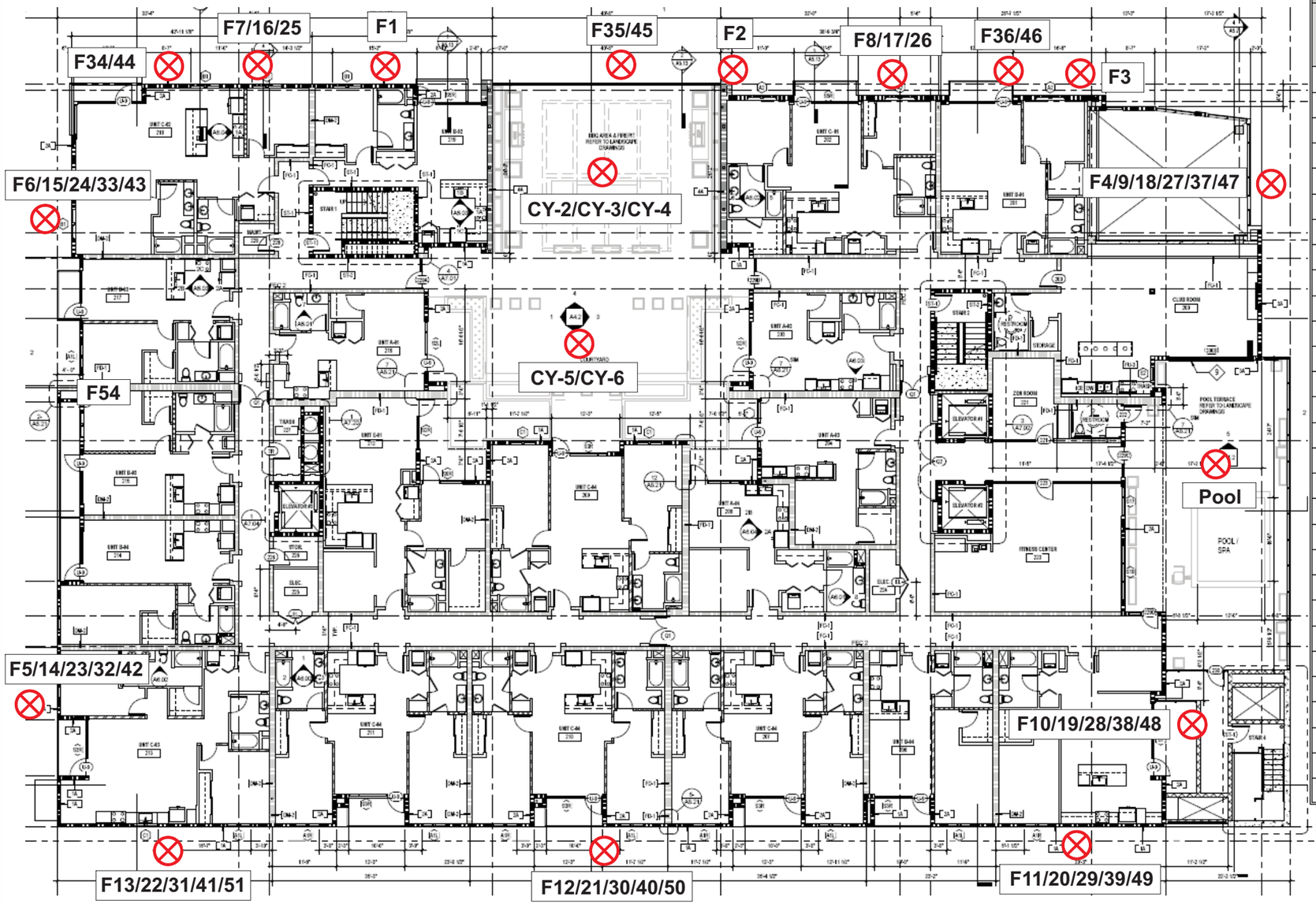
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Topographic Map** **Job # B50405N2**	**Figure 4**



Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location** **Job # B50405N2**	**Figure 5**



Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location** **Job # B50405N2**	**Figure 6**



Future Noise Levels at Building Facades and Outdoor Use Areas							
Receiver	Floor	Facade Location	Exterior Noise Level (CNEL)	Receiver	Floor	Facade Location	Exterior Noise Level (CNEL)
F1	1	East	65.2	F30	4	West	52.7
F2	1	East	65.2	F31	4	West	52.3
F3	1	East	65.1	F32	5	North	55.5
F4	1	South	59.7	F33	5	North	59.9
F5	2	North	49.9	F34	5	East	64.3
F6	2	North	57.8	F35	5	East	64.3
F7	2	East	64.7	F36	5	East	64.2
F8	2	East	64.7	F37	5	South	59.2
F9	2	South	59.7	F38	5	South	54.1
F10	2	South	49.4	F39	5	West	54.7
F11	2	West	50.1	F40	5	West	54.3
F12	2	West	49.5	F41	5	West	53.8
F13	2	West	48.8	F42	6	North	55.9
F14	3	North	52.6	F43	6	North	59.6
F15	3	North	60.1	F44	6	East	64.3
F16	3	East	64.4	F45	6	East	64.4
F17	3	East	64.4	F46	6	East	64.4
F18	3	South	59.3	F47	6	South	59.8
F19	3	South	52.2	F48	6	South	55.1
F20	3	West	52.4	F49	6	West	55.7
F21	3	West	51.8	F50	6	West	54.7
F22	3	West	51.3	F51	6	West	54.0
F23	4	North	54.0	CY-2	2	Courtyard	56.7
F24	4	North	59.8	CY-3	3	Courtyard	61.6
F25	4	East	64.2	CY-4	4	Courtyard	61.3
F26	4	East	64.2	CY-5	5	Courtyard	56.5
F27	4	South	59.1	CY-6	6	Courtyard	56.8
F28	4	South	52.9	Pool	2	Pool Area	47.6
F29	4	West	53.2	--	--	--	--

Eilar Associates, Inc.
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Escondido, California 92025
760-738-5570

Site Plan Showing Building Facade Receiver Locations
Job # B50405N2

Figure 7

Calculated HVAC Noise Impact Levels	
Receiver Number	**Noise Level (dBA)**
R-1	31.7
R-2	24.1
R-3	30.2
R-4	32.6
R-5*	28.6
R-6*	31.6
R-7*	33.3

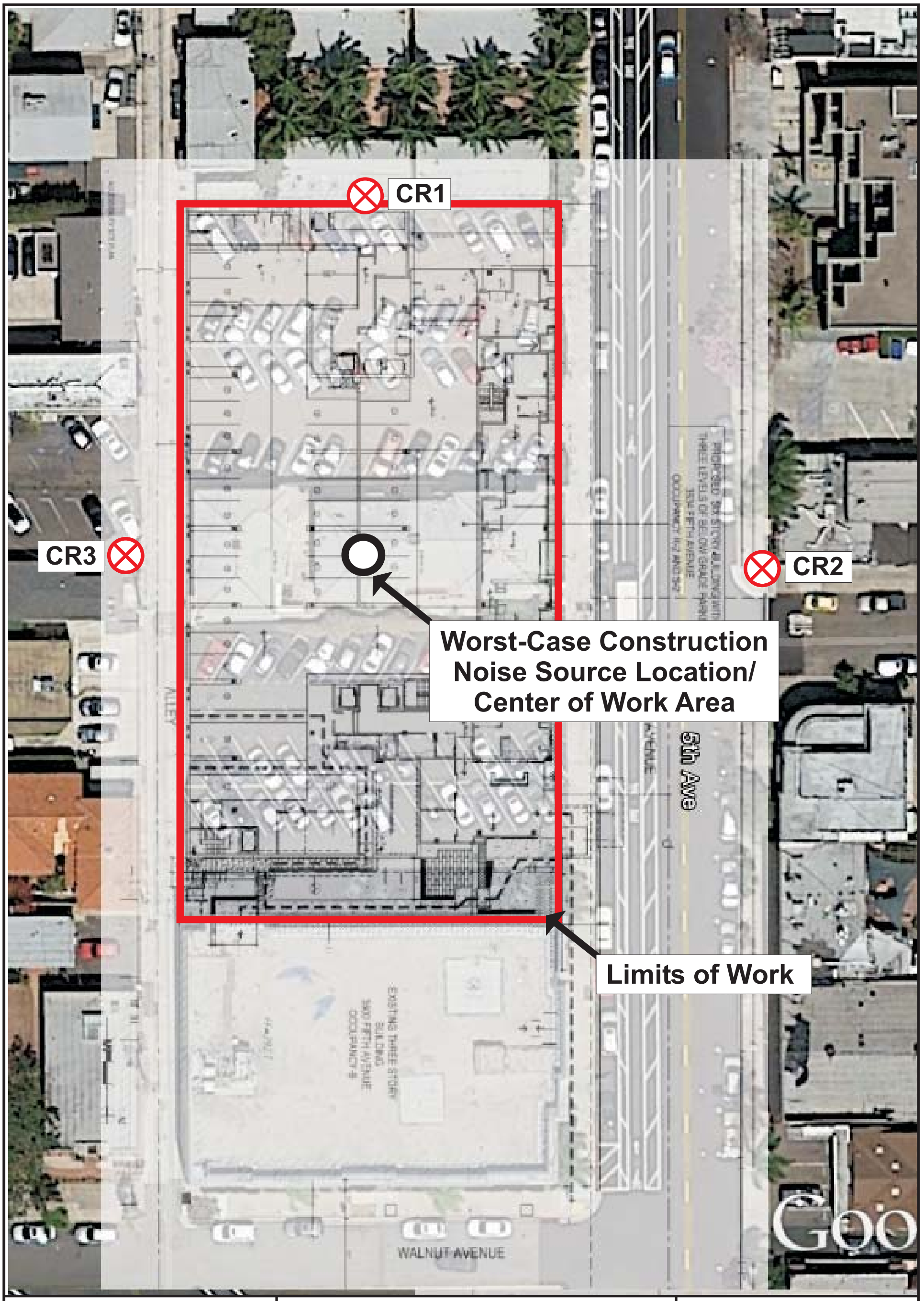
*Denotes 2nd Story receiver.

Legend

- AC Locations
- Receiver Locations
- R# Receiver Number

N

Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Site Plan Showing HVAC Noise Source and Receiver Locations** **Job # B50405N2**	**Figure 8**



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Satellite Aerial Photograph Showing Temporary Construction Noise Source and Receiver Locations Job # B50405N2	Figure 9

APPENDIX A

Project Plans

PROJECT TITLE

STRAUSS FIFTH AVENUE

A PRIVATE HOUSING PROJECT
3534 FIFTH AVENUE
SAN DIEGO, CA 92103

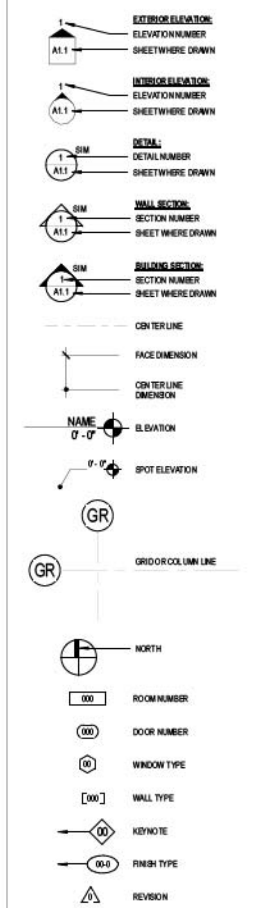
SITE DEVELOPMENT PERMIT

MARCH 28, 2016

ARCHITECTURAL ABBREVIATIONS

A.B.	ANCHOR BOLT	FLR	FLOOR	PL	PROPERTY LINE / PLATE
A.C.	ASPHALTIC CONCRETE /	FLUOR.	FLUORESCENT	P.D.	PLANTER DRAIN
	ACOUSTICAL	F.O.	FACE OF (SPECIFY ITEM)	PERP. (or ⊥)	PERPENDICULAR
ACOUST.	ACOUSTICAL	F.O.C.	FACE OF CONCRETE	P.H.	PANIC HARDWARE
A.D.	ACCESS DOOR / AREA DRAIN	F.O.F.	FACE OF FINISH	PLAM.	PLASTIC LAMINATE
ADJ.	ADJUSTABLE	F.O.M.	FACE OF MASONRY	PLAS.	PLASTER
AESS	ARCHITECTURAL EXPOSED	F.O.P.	FACE OF PANEL	PLYWD.	PLYWOOD
	STRUCTURAL STEEL	F.O.S.	FACE OF STUD	PR.	PAIR
A.F.F.	ABOVE FINISH FLOOR	FT.	FOOT / FEET	P.S.F.	POUNDS PER SQUARE FOOT
ALT.	ALTERNATE	FTG.	FOOTING	P.S.I.	POUNDS PER SQUARE INCH
ALUM.	ALUMINUM	F.S.	FLOOR SINK	P.T.D.F.	PRESSURE TREATED DOUGLAS FIR
&	AND	F.S.R.	FIRE SPRINKLER RISER	PVC.	POLYVINYL CHLORIDE
<	ANGLE				
ANOD.	ANODIZED	GA.	GAUGE	R.	RADIUS / RISER
ARCH.	ARCHITECT(URAL)	GALV.	GALVANIZED	R.C.P.	REFLECTED CEILING PLAN
ASPH.	ASPHALT	G.C.	GENERAL CONTRACTOR	R.D.	ROOF DRAIN
@	AT	G.F.R.C.	GLASS FIBER REINFORCED CONC.	REF.	REFER(ENCE)
		G.I.	GALVANIZED IRON	REINF.	REINFORCING
BD.	BOARD	G.L.B.	GLU LAM BEAM	REQ'D.	REQUIRED
BLDG.	BUILDING	GWB.	GYPSUM BOARD	REQMTS.	REQUIREMENTS
BLKG.	BLOCKING	GYP. BD.	GYPSUM BOARD	RESIL.	RESILIENT
BM.	BEAM			RET.	RETAIN(ING)
B.N.	BOUNDARY NAIL	H.	HEIGHT / HIGH	RM.	ROOM
B.O.	BOTTOM OF	H.B.	HOSE BIB	R.O.	ROUGH OPENING
B.O.F.	BOTTOM OF FOOTING	H.C.	HOLLOW CORE		
BOT.	BOTTOM	HDR.	HEADER	S.	SOUTH
BSMT.	BASEMENT	HDWR.	HARDWARE	S.A.F.M.	SELF-ADHERING FLASHING MEMBRANE
BTWN.	BETWEEN	H.M.	HOLLOW METAL	S.C.	SOLID CORE
B.U.R.	BUILT-UP ROOFING	HORIZ.	HORIZONTAL	SCD	SEE CIVIL DRAWINGS
		H.R.	HOUR	SCHED.	SCHEDULE
C	CHANNEL	HT.	HEIGHT	SED	SEE ELECTRICAL DRAWINGS
C.B.	CATCH BASIN	HVAC.	HEATING, VENTILATING	S.F.	SQUARE FEET
CBC	CALIFORNIA BUILDING CODE		AND AIR CONDITIONING	SHT.	SHEET
CER.	CERAMIC	H.W.	HOT WATER	SIM.	SIMILAR
C.G.	CORNER GUARD			SLD	SEE LANDSCAPE DRAWINGS
C.I.P.	CAST-IN-PLACE	IBC	INTERNATIONAL BUILDING CODE	SMD	SEE MECHANICAL DRAWINGS
C.J.	CONTROL JOINT	I.D.	INSIDE DIAMETER	S.M.S.	SHEETMETAL SCREWS
CL.	CENTERLINE / CLOSET	IN.	INCH	SPD	SEE PLUMBING DRAWINGS
CLG.	CEILING	INCL.	INCLUDED	SPEC.	SPECIFICATION
CLR.	CLEAR(ANCE)	I.E.	INVERT ELEVATION	SQ.	SQUARE
CLOS.	CLOSET	INSUL.	INSULATION	S.S.	STAINLESS STEEL
CMU	CONCRETE MASONRY UNIT	INT.	INTERIOR	SSD	SEE STRUCTURAL DRAWINGS
C.O.	CLEAN OUT	INV.	INVERT	STC.	SOUND TRANSMISSION CLASS
COL.	COLUMN			STD.	STANDARD
CONC.	CONCRETE			STL.	STEEL
CONSTR.	CONSTRUCTION	JAN.	JANITOR	STR.	STRUCTURAL
CONT.	CONTINUOUS	JST.	JOIST	SUSP.	SUSPENDED
COORD.	COORDINATE	JT.	JOINT	SYM.	SYMMETRICAL
CORR.	CORRIDOR				
CSK.	COUNTERSINK	K.B.	KNOX BOX	T.	TEMPERED / TREAD
CTR.	CENTER	KIT.	KITCHEN	T.B.D.	TO BE DETERMINED
		K.J.	KEYED JOINT	TEL(E).	TELEPHONE
d	PENNEY (NAILS)	K.O.	KNOCKOUT	T&G	TONGUE AND GROOVE
D.F.	DRINKING FOUNTAIN/			THK.	THICK(NESS)
	DOUGLAS FIR	L.	LENGTH	T.I.	TENANT IMPROVEMENT
DIA. (or Φ)	DIAMETER	LAM	LAMINATED	T.J.	TOOLED JOINT
DIAG.	DIAGONAL	LAV	LAVATORY	T.O.	TOP OF (SPECIFY ITEM)
DIAPH.	DIAPHRAGM	LB.	POUND	T.O.C.	TOP OF CURB / CONCRETE
DIM	DIMENSION	LL	LIVE LOAD	T.O.P.	TOP OF PARAPET/PAVEMENT
DN.	DOWN	LLH	LONG LEG HORIZONTAL	T.O.S.	TOP OF STEEL
DP.	DAMPPROOFING	LLV	LONG LEG VERTICAL	T.O.W.	TOP OF WALL
D.S.	DOWNSPOUT	L.P.	LOW POINT	T.V.	TELEVISION
DTL.	DETAIL	L.W.C.	LIGHT WEIGHT CONCRETE	TYP.	TYPICAL
DWG.	DRAWING				
DW	DISHWASHER	MAT'L	MATERIAL	U.O.N.	UNLESS NOTED OTHERWISE
		MAX.	MAXIMUM	UL	UNDERWRITERS LABORATORY
(E)	EXISTING	MECH.	MECHANICAL		
E.	EAST	MEMB.	MEMBRANE	V.C.T.	VINYL COMPOSITION TILE
EA	EACH	MFR.	MANUFACTURER	VENT.	VENTILATOR / VENTILATION
E.B.	EXPANSION BOLT	MIN.	MINIMUM	VERT.	VERTICAL
E.J.	EXPANSION JOINT	MISC.	MISCELLANEOUS	VEST.	VESTIBULE
ELEC	ELECTRIC(AL)	M.O.	MASONRY OPENING	V.I.F.	VERIFY IN FIELD
ELEV.	ELEVATION/ELEVATOR	MTD.	MOUNTED	V.R.	VAPOR RETARDER
ENCL.	ENCLOSURE	MTL.	METAL	VTR.	VENT THRU ROOF
EQ.	EQUAL			VWC.	VINYL WALL COVERING
EQUIP.	EQUIPMENT	(N)	NEW		
ETC.	ETCETERA	N.	NORTH	W.	WEST
E.W.	EACH WAY	N.A.	NOT APPLICABLE	W.C.	WATER CLOSET
E.W.C.	ELECTRIC WATER COOLER	N.I.C.	NOT IN CONTRACT	WD.	WOOD
EXP.	EXPANSION	NO.	NUMBER	WDW.	WINDOW
EXT.	EXTERIOR	N.T.S.	NOT TO SCALE	W/	WITH
				W.H.	WATER HEATER
F.D.	FLOOR DRAIN	O.C.	ON CENTER	W.O.	WITHOUT
F.E.	FIRE EXTINGUISHER	O.D.	OUTSIDE DIAMETER	W.P.	WATERPROOF
F.E.C.	FIRE EXTINGUISHER CABINET	O.F.	OVERFLOW/ OUTSIDE FACE	W.P.J.	WEAKENED PLANE JOINT
F.F.	FINISH FLOOR /	O.F.C.I.	OWNER FURNISHED/	W.R.B.	WATER RESISTIVE BARRIER
	FACTORY FINISH		CONTRACTOR INSTALLED	WT.	WEIGHT
F.F.E.	FINISHED FLOOR ELEVATION	O.F.O.I.	OWNER FURNISHED/	W.W.F.	WELDED WIRE FABRIC
F.G.	FINISH GRADE		OWNER INSTALLED	W.W.M.	WELDED WIRE MESH
F.H.	FIRE HYDRANT	O.H.	OPPOSITE HAND / OVERHEAD		
F.H.V.C.	FIRE HOSE VALVE CABINET	OPNG.	OPENING		
FIN.	FINISH	OPP.	OPPOSITE		

ARCHITECTURAL LEGEND



DRAWING INDEX

PLAN CHECK NOTES

Fire Protection - Submittals/Permits

1. DEFERRED APPROVALS: COMPLETE PLANS AND SPECIFICATIONS FOR FIRE ALARM SYSTEMS, FIRE-EXTINGUISHING SYSTEMS, INCLUDING AUTOMATIC SPRINKLERS AND STANDPIPE SYSTEMS AND OTHER SPECIAL FIRE EXTINGUISHING SYSTEMS AND RELATED APPURTENANCES SHALL BE SUBMITTED TO CITY OF SAN DIEGO FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION PER CFC 901.2

2. DEFERRED APPROVALS: PLANS FOR ALL FIXED FIRE PROTECTION EQUIPMENT SHALL BE SUBMITTED BY THE INSTALLING CONTRACTOR. SUCH PLANS SHALL BE APPROVED BY FIRE PLAN CHECK / THE FIRE CODE OFFICIAL PRIOR TO INSTALLATIONS.

3. PERMITS: ALL REQUIRED APPROVALS MUST BE OBTAINED FROM FIRE PLAN CHECK BEFORE THE BUILDING IS OCCUPIED. (FOR STATE PROJECTS ONLY) CONTRACTOR SHALL SECURE APPROVALS REQUIRED BY THE CALIFORNIA STATE FIRE MARSHAL PRIOR TO OCCUPYING THE BUILDING.

4. FIRE SAFETY DURING CONSTRUCTION: BUILDINGS UNDERGOING CONSTRUCTION, ALTERATION OR DEMOLITION SHALL COMPLY WITH IFC 1401.1 AND 1413.

5. EMERGENCY PLANS: SHALL BE SUBMITTED TO THE FIRE CODE OFFICIAL FOR REVIEW AND APPROVAL PRIOR TO OCCUPANCY. COMPLETE PLANS AND SPECIFICATIONS FOR THE OPERATION OF THE ELEVATORS UNDER FIRE OR OTHER EMERGENCY CONDITIONS SHALL BE SUBMITTED TO FIRE CODE OFFICIAL FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

Fire Protection - Fire Department Access

1. ADDRESS: BUILDING NUMBER OR ADDRESS SHALL BE PROVIDED IN A POSITION AS TO BE PLAINLY LEGIBLE AND VISIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. NUMBERS SHALL CONTRAST WITH THEIR BACKGROUND, MINIMUM 12"H BY 1 1/2" STROKE NUMBERS.

2. ACCESS ROADS: APPROVED FIRE DEPARTMENT ACCESS WAYS SHALL BE PROVIDED.

3. FIRE PROTECTION: FIRE PROTECTION, INCLUDING FIRE APPARATUS ACCESS ROADS AND WATER SUPPLIES FOR FIRE PROTECTION, SHALL BE INSTALLED AND MADE SERVICEABLE PRIOR TO AND DURING TIME OF CONSTRUCTION.

4. FIRE HYDRANTS: FIRE HYDRANTS SHALL COMPLY WITH FIRE DEPARTMENT REQUIREMENTS FOR ON-SITE FIRE HYDRANTS.

5. REFLECTIVE MARKERS: FIRE HYDRANT LOCATIONS SHALL BE IDENTIFIED BY THE INSTALLATION OF REFLECTIVE MARKERS.

6. KEY BOX: PROVIDE AN APPROVED KEY (KNOX) BOX IN AN APPROVED LOCATION.

7. IDENTIFICATION: ROOMS CONTAINING SPRINKLER RISERS AND VALVES, OR OTHER FIRE DETECTION, SUPPRESSION OR CONTROL ELEMENTS SHALL BE IDENTIFIED BY APPROVED SIGNS CONSTRUCTED OF DURABLE MATERIALS, PERMANENTLY INSTALLED AND READILY VISIBLE.

Fire Protection - Portable Fire Extinguishers

1. LOCATION AND CLASSIFICATION OF EXTINGUISHERS SHALL BE IN ACCORDANCE WITH CFC 906 AND CALIFORNIA CODE OF REGULATIONS (CCR), TILE 19.

2. 2-A:10-B:C: AT LEAST ONE FIRE EXTINGUISHER WITH A MINIMUM RATING OF 2A-10BC SHALL BE PROVIDED WITHIN 75' MAXIMUM TRAVEL DISTANCE FOR EACH 6000 SQ. FT. OR PORTION THEREOF ON EACH FLOOR.

3. 4-A:60-B:C: AT LEAST ONE FIRE EXTINGUISHER WITH A MINIMUM RATING OF 4A-60BC SHALL BE PROVIDED OUTSIDE EACH MECHANICAL, ELECTRICAL, OR BOILER ROOM.

4. COOKING GREASE FIRES: A PORTABLE FIRE EXTINGUISHER LISTED AND LABELED FOR CLASS K FIRES COMPATIBLE WITH THE AUTOMATIC FIRE EXTINGUISHING SYSTEM AGENT SHALL BE INSTALLED WITHIN 30 FEET OF COMMERCIAL FOOD HEAT PROCESSING EQUIPMENT.

5. DURING CONSTRUCTION: AT LEAST ONE EXTINGUISHER SHALL BE PROVIDED ON EACH FLOOR LEVEL AT EACH STAIRWAY, IN ALL STORAGE AND CONSTRUCTION SHEDS, IN LOCATIONS WHERE FLAMMABLE OR COMBUSTIBLE LIQUIDS ARE STORED OR USED, AND WHERE OTHER SPECIAL HAZARDS ARE PRESENT PER CFC SECTION 3315.

Fire Protection - Fire Alarm Systems

1. INSTALLATION: FIRE ALARM SYSTEMS SHALL BE INSTALLED IN COMPLIANCE WITH CFC 907 AND NFPA 72. VISUAL AND AUDIBLE ALARMS WILL COMPLY WITH THE PROVISIONS OF NFPA-72G.

2. MONITORING: MONITORING OF SPRINKLER SYSTEM SHALL BE PER CFC 903.4.1

3. SUPERVISION: WHEN SERVING MORE THAN 20 SPRINKLER HEADS, AUTOMATIC SPRINKLER SYSTEMS SHALL BE SUPERVISED BY AN APPROVED, CENTRAL, PROPRIETARY OR REMOTE STATION SERVICE, OR SHALL BE PROVIDED WITH A LOCAL ALARM WHICH WILL GIVE AN AUDIBLE SIGNAL AT A CONSTANTLY ATTENDED LOCATION.

4. SMOKE DETECTORS: DWELLING UNITS, CONGREGATE RESIDENCES AND HOTEL OR LODGING HOUSE GUEST ROOMS THAT ARE USED FOR SLEEPING PURPOSES SHALL BE PROVIDED WITH SMOKE DETECTORS.

Fire Protection - Automatic Sprinkler Systems

1. DEFERRED APPROVALS: ALL AREAS OF THE PROPOSED BUILDING AREA TO BE PROTECTED BY AUTOMATIC FIRE SPRINKLERS/ COMBINATION STANDPIPES, PER LOCAL REQUIREMENTS AND APPLICABLE STANDARDS OF NFPA AND CBC. PLANS FOR ALL FIXED FIRE PROTECTION SYSTEMS TO BE REVIEWED AND APPROVED BY THE FIRE CODE OFFICIAL BEFORE INSTALLATION OF ANY SUCH SYSTEM(S).

2. STANDPIPES: STANDPIPE SYSTEM SHALL COMPLY WITH CFC 905 AND NFPA 14. CONNECTIONS FOR STANDPIPE SUPPLY MUST BE AHEAD OF ANY BUILDING CONTROL VALVE. PROVIDE ALL TEST VALVES AND PRESSURE GAUGES AT HIGHEST POINT ON STANDPIPE.

3. INSTALLATION: THE INSTALLATION OF AUTOMATIC FIRE SPRINKLER SYSTEMS SHALL COMPLY WITH CFC 903.3, AND NFPA 13. ALL VALVES CONTROLLING THE WATER SUPPLY FOR AUTOMATIC SPRINKLER SYSTEMS AND WATER FLOW SWITCHES ON ALL SPRINKLER SYSTEMS SHALL BE ELECTRICALLY SUPERVISED WHERE THE NUMBER OF SPRINKLER HEADS IS 20 OR MORE.

4. AUDIBLE ALARM: AN APPROVED AUDIBLE SPRINKLER FLOW ALARM SHALL BE PROVIDED ON THE EXTERIOR OF THE BUILDING IN AN APPROVED LOCATION. AN APPROVED AUDIBLE SPRINKLER FLOW ALARM TO ALERT THE OCCUPANTS SHALL BE PROVIDED IN THE INTERIOR OF THE BUILDING IN A NORMALLY OCCUPIED LOCATION.

5. DURING CONSTRUCTION: IN BUILDINGS THAT REQUIRE STANDPIPES, STANDPIPES SHALL BE PROVIDED DURING CONSTRUCTION WHEN THE HEIGHT REACHES 40' ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS. A FIRE DEPARTMENT CONNECTION SHALL BE NO MORE THAN 100' FROM AVAILABLE FIRE DEPARTMENT VEHICLE ACCESS ROADWAYS PER CFC SECTIONS 3310 & 3313.

Fire Protection - Fire-Resistant Construction

1. DECORATIVE MATERIALS: ALL DECORATIVE MATERIALS SHALL BE MAINTAINED IN A FLAME RETARDANT CONDITION. ANY DECORATION USED IN PUBLIC AREA SHALL BE NON-COMBUSTIBLE OR FLAMEPROOFED IN AN APPROVED MANNER. (EXAMPLE: DRAPES, CURTAINS, SHADES, HANGINGS, ETC.)

2. FINISHES INTERIOR WALL & CEILING FINISH FLAME-SPREAD RATING SHALL BE AS REQUIRED PER: (CBC TABLE 803.9).

CLASS A FLAME-SPREAD INDEX 0-25
CLASS B FLAME-SPREAD INDEX 26-75
CLASS C FLAME-SPREAD INDEX 76-200

3. JOINTS JOINTS INSTALLED IN OR BETWEEN FIRE RESISTIVE WALLS, FIRE-RESISTIVE FLOOR OR FLOOR-CEILING ASSEMBLIES AND FIRE-RESISTIVE ROOF OR ROOF-CEILINGS SHALL BE PROTECTED BY AN APPROVED FIRE-RESISTIVE JOINT SYSTEM.

4. THROUGH PENETRATIONS: THROUGH PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILINGS AND ROOF-CEILINGS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM

5. MEMBRANE PENETRATIONS: MEMBRANE PROTECTION IS NOT REQUIRED AT STEEL ELECTRICAL BOXES WHERE NOT EXCEEDING 16 SQUARE INCHES IN AREA AND IF THE AGGREGATE AREA OF SEVERAL SUCH OPENINGS DOES NOT EXCEED 100 SQUARE INCHES FOR EVERY 100 SQUARE FEET OF WALL OR CEILING AREA, AND WHERE BOXES ARE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES WHEN ON OPPOSITE SIDES OF A WALL. ELECTRICAL PANELS MAY NOT BE PLACED WITHIN A ONE HOUR CORRIDOR. ELECTRICAL PANELS MAY NOT OCCUR WITHIN THE FIRE RESISTIVE ENVELOPE OF STAIR ENCLOSURES.

6. FIRE DAMPERS FIRE DAMPERS OR DOORS SHALL BE PROVIDED AND INSTALLED PER CBC 716 WHERE AIR DUCTS PENETRATE FIRE RATED WALLS OR CEILINGS AT AREA OR OCCUPANCY SEPARATION WALL, HORIZONTAL EXIT WALLS, OR SHAFT ENCLOSURES. FIRE/SMOKE DAMPERS REQUIRED AND TO BE INSTALLED PER CBC 716 AT DUCTED AND UNDUCTED PENETRATIONS INTO FIRE-RATED CORRIDOR WALLS, OCCUPANCY SEPARATION WALLS, AND SHAFT ENCLOSURES. WHERE DUCTS HAVE OPENINGS INTO THE CORRIDOR. ACCESS OPENING ONE OR TWO-HOUR RATED ASSEMBLY TO BE APPROVED BY FIRE CODE OFFICIAL.

7. FIRE DAMPERS FIRE AND / OR SMOKE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION. FIRE DAMPERS SHALL BE APPROVED BY THE FIRE CODE OFFICIAL AND INSTALLED IN COMPLIANCE WITH TITLE 24 CCR AND IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. THE MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON SITE FOR REVIEW BY INSPECTION AUTHORITIES.

8. HAZARDOUS MATERIALS: NO HAZARDOUS MATERIALS TO BE STORED AND/OR USED WITHIN THE BUILDING WHICH EXCEED THE QUANTITIES LISTED IN CBC TABLES 414.2.2 and 414.2.5

Means of Egress

1. SWING: EXIT DOORS SHALL SWING IN THE DIRECTION OF EXIT TRAVEL WHEN SERVING 50 OR MORE PERSONS.

2. LOCKING DEVICES: EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE, WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. ALL LOCKING DEVICES SHALL BE OF AN APPROVED TYPE.

3. PANIC HARDWARE: EXIT AND EXIT-ACCESS DOORS SERVING GROUP A , E OCCUPANCIES HAVING AN OCCUPANT LOAD OF 50 OR MORE AND ANY GROUP H OCCUPANCY SHALL NOT BE PROVIDED WITH A LATCH OR LOCK UNLESS IT IS PANIC HARDWARE.

4. CORRIDOR WIDTH: THE WIDTH OF CORRIDORS SHALL NOT BE LESS THAN 44" WHEN SERVING AN OCCUPANT LOAD OF 50 OR MORE CORRIDORS SERVING AND OCCUPANT LOAD OF LESS THAN 50 SHALL NOT BE LESS THAN 36". THE REQUIRED WIDTH OF CORRIDORS SHALL BE UNOBSTRUCTED.

5. CORRIDOR DOORS: ALL EXIT-ACCESS DOORWAYS AND DOORWAYS FROM UNOCCUPIED AREAS TO A CORRIDOR SHALL BE PROTECTED BY TIGHT-FITTING SMOKE- AND DRAFT-CONTROL ASSEMBLIES HAVING A FIRE-PROTECTION RATING OF NOT LESS THAN 20 MINUTES. THE DOOR AND FRAME SHALL BEAR AN APPROVED LABEL FOLLOWED BY THE LETTER 'S'. DOORS TO BE SELF-CLOSING OR AUTOMATIC CLOSING.

6. EXIT CONTINUITY: EXITS SHALL PROVIDE A CONTINUOUS AND UNOBSTRUCTED MEANS OF EGRESS TO A PUBLIC WAY. THE EGRESS PATH SHALL REMAIN FREE AND CLEAR OF ALL OBSTRUCTIONS AT ALL TIMES. NO STORAGE IS PERMITTED IN ANY EGRESS PATHS.

7. POSTING OF ROOM CAPACITY: ANY ROOM OR SPACE THAT IS AN ASSEMBLY, DINING, DRINKING OCCUPANCY OR SIMILAR WHERE FIXED SEATS ARE NOT INSTALLED SHALL HAVE THE MAXIMUM CAPACITY OF THE ROOM POSTED IN A CONSPICUOUS PLACE ON AN APPROVED SIGN NEAR THE MAIN EXIT OR EXIT-ACCESS DOORWAY FROM THE ROOM.

8. EXIT SIGN LOCATIONS: THE PATH OF EXIT TRAVEL TO AND WITHIN EXITS IN A BUILDING SHALL BE IDENTIFIED BY EXIT SIGNS. EXIT SIGNS SHALL BE READILY VISIBLE FROM ANY DIRECTION OF APPROACH. EXIT SIGNS SHALL BE LOCATED TO CLEARLY INDICATE THE DIRECTION OF EGRESS TRAVEL. NO POINT SHALL BE MORE THAN 100 FEET FROM THE NEAREST VISIBLE SIGN.

9. EXIT SIGN GRAPHICS: EXIT SIGNS SHALL HAVE THE WORD "EXIT" ON THE SIGN IN 6" HIGH BLOCK CAPITAL LETTERS AND 3/4 INCH WIDE ON HIGH CONTRASTING BACKGROUND.

10. EXIT SIGN ILLUMINATION: EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED. WHEN THE FACE IS ILLUMINATED FROM AN EXTERNAL SOURCE, IT SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOTCANDLES FROM EITHER TWO ELECTRIC LAMPS. INTERNALLY ILLUMINATED SIGNS SHALL PROVIDE EQUIVALENT LUMINANCE.

11. EXIT SIGN POWER SOURCE: EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED AT ALL TIMES AND SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM (BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR) THAT WILL AUTOMATICALLY ILLUMINATE THE EXIT SIGNS FOR A DURATION OF NOT LESS THAN 90 MINUTES.

12. MEANS OF EGRESS ILLUMINATION: THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, WILL BE ILLUMINATED TO A LEVEL OF NOT LESS THAN 1 FOOT CANDLE AT THE WALKING SURFACE AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCURED.

13. LOW-LEVEL EXIT SIGNS: APPROVED LOW-LEVEL EXIT SIGNS SHALL BE PROVIDED IN ALL CORRIDORS SERVING GROUP A, E, I, AND R-1 OCCUPANCIES.

APPLICABLE CODES & STANDARDS

APPLICABLE STATE CODES:
1. 2013 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE C.C.R. TITLE 24 PART 1
2. 2013 CALIFORNIA BUILDING CODE (CBC) C.C.R. TITLE 24 PART 2
3. 2013 CALIFORNIA ELECTRICAL CODE (CEC) C.C.R. TITLE 24 PART 3
4. 2013 CALIFORNIA MECHANICAL CODE (CMC) C.C.R. TITLE 24 PART 4
5. 2013 CALIFORNIA PLUMBING CODE (CPC) C.C.R. TITLE 24 PART 5
6. 2013 CALIFORNIA ENERGY CODE C.C.R TITLE 24 PART 6
7. 2013 CALIFORNIA ELEVATOR SAFETY CONSTRUCTION CODE C.C.R. TITLE 24 PART 7
8. 2013 CALIFORNIA FIRE CODE (CFC) C.C.R. TITLE 24 PART 9
9. 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE C.C.R. TITLE 24 PART 11
10. 2013 CALIFORNIA REFERENCED STANDARDS C.C.R. TITLE 24 PART 12
11. 2013 CALIFORNIA STATE FIRE MARSHAL REGULATIONS C.C.R. TITLE 19 PUBLIC SAFETY

PARTIAL LIST OF APPLICABLE STATE STANDARDS:
1. NFPA 13, 2010 AUTOMATIC SPRINKLER SYSTEMS
2. NFPA 14, 2010 STANDPIPE SYSTEMS AND HOSE SYSTEMS
3. NFPA 17, 2009 DRY CHEMICAL EXTINGUISHING SYSTEMS
4. NFPA 20, 2010 STATIONARY PUMPS FOR FIRE PROTECTION
5. NFPA 22, 2008 WATER TANKS FOR PRIVATE FIRE PROTECTION
6. NFPA 24, 2010 PRIVATE FIRE SERVICE MAINS
7. NFPA 72, 2010 NATIONAL FIRE ALARM CODE
8. NFPA 2001, 2008 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS

FEDERAL ACTS:
1. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

DEFERRED SUBMITTALS

1. SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING.

2. DEFERRED SUBMITTAL DOCUMENTS IN ADDITION TO THE SEAL OF THE RESPONSIBLE ENGINEER, SHALL BEAR THE SHOP DRAWING APPROVAL STAMPS OF THE ARCHITECT OF RECORD AND THE GENERAL CONTRACTOR ON ALL SHEETS OF PLANS AND ON COVER OF CALCULATIONS.

3. SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED IN A TIMELY MANNER THAT ALLOWS FOR A MINIMUM OF 30 WORKING DAYS FOR INITIAL PLAN REVIEW TURNAROUND. ALL COMMENTS RELATED TO THE DEFERRED SUBMITTAL MUST BE ADDRESSED TO THE SATISFACTION OF THE BUILDING OFFICIAL PRIOR TO APPROVAL OF THE SUBMITTED ITEMS.

4. DEFERRED SUBMITTAL ITEMS SHALL NOT BE FABRICATED / INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

5. PROVIDE TWO COPIES OF DEFERRED SUBMITTAL DOCUMENTS FOR FINAL APPROVAL.

DEFERRED ITEMS:
1. AUTOMATIC FIRE SPRINKLER SYSTEM
2. FIRE ALARM SYSTEM
3. GLASS AND METAL GUARDRAILING
4. FIREPROOFING
5. EXTERIOR STOREFRONT SYSTEMS
6. WINDOW WASHING EQUIPMENT
7. ELEVATOR GUIDE RAILS AND SUPPORT BRACKETS
8. PUBLIC SWIMMING POOLS, JACUZZI, POOL FENCING
9. SOLAR PV PANELS

DEFERRED APPROVAL DECLARATION

A. TO THE BEST OF MY KNOWLEDGE, C.B.C. ACCESS REGULATIONS HAVE BEEN FULLY MET ON THESE IT IS UNDERSTOOD THAT PLANS FOR THIS PROJECT HAVE, AT THIS TIME, BEEN REVIEWED FOR COMPLIANCE WITH ALL APPLICABLE STATE AND CITY REGULATIONS, AND THAT THE PROJECT AS A WHOLE HAS BEEN APPROVED BY THE CITY, WITH THE EXCEPTION OF THE DEFERRED ITEMS LISTED.

B. I/WE UNDERSTAND THAT I WILL NOT BE AUTHORIZED ANY INSPECTION OF THE DEFERRED ITEMS PROPOSED PRIOR TO THE SUBMITTAL AND APPROVAL OF THE PLANS AND/OR CALCULATIONS FOR THOSE DEFERRED ITEMS.

C. WE THE RESPONSIBLE ARCHITECT/ENGINEER AND CONTRACTOR, ARE AWARE OF CONSTRUCTION PROCEEDING UNDER THE CONDITIONS ABOVE AND AGREE TO SUCH PROCEDURE

OWNER: ______________________

ARCHITECT: ______________________

SPECIAL INSTRUCTIONS

NOTICE TO THE APPLICANT/OWNER/OWNER'S AGENT/ARCHITECT OR ENGINEER OF RECORD: BY USING THIS PERMITTED SET OF DRAWINGS FOR CONSTRUCTION/INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING AND OFF-SITE FABRICATION OF BUILDING COMPONENTS, CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND, AS REQUIRED BY THE CALIFORNIA CONSTRUCTION CODES.

NOTICE TO THE CONTRACTOR/BUILDER/INSTALLER/SUB-CONTRACTOR/OWNER-BUILDER: BY USING THIS PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION/INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU ACKNOWLEDGE AND ARE AWARE OF THE REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING AND OFF-SITE FABRICATION OF BUILDING COMPONENTS, CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND, AS REQUIRED BY THE CALIFORNIA CONSTRUCTION CODES.

MULTI-FAMILY HOUSING REQUIREMENTS

COVERED DWELLING UNITS INCLUDES:		METHOD OF COMPLIANCE	
		ONE BATHROOM	ALL BATHROOMS
UNIT NUMBERS:	141	o	

PRE-CONSTRUCTION MEETING:
A MANDATORY PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH A SENIOR STRUCTURAL INSPECTOR BY CALLING FIELD INSPECTION SERVICES AT (858) 492-5070.

ARCHITECT OF RECORD DECLARATION

A. TO THE BEST OF MY KNOWLEDGE, CBC ACCESS REGULATIONS HAVE BEEN FULLY MET ON THESE DRAWINGS. THE ARCHITECT OF RECORD (OR AUTHORIZED REPRESENTATIVE) WILL PARTICIPATE IN A MANDATORY PRE-CONSTRUCTION MEETING FOCUSING ON ACCESS COMPLIANCE.

B. TO THE BEST OF MY KNOWLEDGE, THE FINAL COPY OF THE PLANS REFLECTS RESOLUTION OF ALL THE PLAN CHECK ISSUES THAT HAVE BEEN PREVIOUSLY EVALUATED AND SIGNED-OFF DURING THE COURSE OF PLAN RECHECK.

SIGNATURE: ______________________
DATE: ______________________

1. AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED IN DWELLING UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES ARE INSTALLED; AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.

2. FOR NEW CONSTRUCTION REQUIRED CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND SHALL BE EQUIPPED WITH A BATTERY BACK-UP. ALARM WIRING SHALL BE DIRECTLY CONNECTED TO PERMANENT BUILDING WIRING WITHOUT A DISCONNECTING SWITCH OTHER THAN AS REQUIRED FOR OVER CORRECT PROTECTION.

3. SINGLE- AND MULTI-STATION CARBON MONOXIDE ALARMS SHALL BE LISTED PER UL 2034. CARBON MONOXIDE DETECTORS SHALL BE LISTED PER UL 2075. CARBON MONOXIDE ALARMS AND CARBON MONOXIDE DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THIS CODE, THE CURRENT EDITION OF NFPA 720 "STANDARD FOR THE INSTALLATION OF CARBON MONOXIDE (CO) DETECTION AND WARNING EQUIPMENT" AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS OTHER CARBON MONOXIDE ALARM AND DETECTION DEVICES AS RECOGNIZED IN NFPA 720 ARE ALSO ACCEPTABLE.

4. WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT OR SLEEPING UNIT IN GROUP R-1, R-2, R-3, R-3.1 OR R-4, THE SMOKE ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. THE ALARM SHALL BE CLEARLY AUDIBLE IN ALL BEDROOMS OVER BACKGROUND NOISE LEVELS WITH ALL INTERVENING DOORS CLOSED.

NOTE TO PLAN CHECKER: REFER TO ELECTRICAL DRAWINGS FOR ALL CARBON MONOXIDE AND SMOKE ALARM DETECTOR LOCATIONS SHOWN ON PLANS.

5. PRIVATELY FUNDED BUILDINGS PROVIDING ASSIGNED DWELLING TENANT PARKING, ON AN ACCESSIBLE ROUTE SHALL BE PROVIDED FOR AT LEAST 2 PERCENT OF THE COVERED DWELLING UNITS, BUT NOT LESS THAN ONE. SIGNAGE IS NOT REQUIRED FOR ASSIGNED PARKING.

6. REFLECTIVE WARNING SIGNS SHALL BE INSTALLED AT TRANSITIONS FROM THE 8'-2" TO LOWER CEILING HEIGHTS IN VEHICULAR PASSAGE WAYS IN THE SAME PARKING LEVEL.

VERY HIGH FIRE SEVERITY ZONE NOTES

1. THE PROPOSED STRUCTURE IS LOCATED ON A LOT THAT IS IN A VERY HIGH FIRE SEVERITY ZONE. THE MATERIALS AND METHODS OF CONSTRUCTION USED FOR THE STRUCTURE, INCLUDING ATTACHED ACCESSORY STRUCTURES SHALL BE IN ACCORDANCE WITH CHAPTER 7A, AS ADOPTED AND AMENDED BY THE CITY OF SAN DIEGO [SDMC 145.0707(B)]

2. ROOF GUTTERS SHALL BE PROVIDED WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS IN THE GUTTER. ALL ROOF GUTTERS AND DOWNSPOUTS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIALS [CBC 705A.4]

3. DRIP EDGE FLASHING USED AT THE FREE EDGES OF ROOFING MATERIALS SHALL BE NON-COMBUSTIBLE [CBC 705A.4.1]

4. VALLEY FLASHING SHALL NOT BE LESS THAN 0.019-INCH (NO. 26 GALVANIZED SHEET GAUGE) CORROSION-RESISTANT METAL INSTALLED OVER A MINIMUM 36-INCH-WIDE UNDERLAYMENT CONSISTING OF ONE LAYER OF NO. 72 ASTM CAP SHEET RUNNING OVER THE FULL LENGTH OF THE VALLEY [CBC 705A.3]

5. GLAZING FRAMED MADE OF VINYLE MATERIALS SHALL HAVE WELDED CORNERS, METAL REINFORCEMENT IN THE INTERLOCK AREA, AND BE CERTIFIED TO THE MOST CURRENT EDITION OF ANSI / AAMA / NWWDA 101/I.S.2 STRUCTURAL REQUIREMENTS [CBC 708A.2.2.1]

PROJECT TEAM

OWNER:
STRAUSS FIFTH AVENUE, L.P.
2055 THIRD AVENUE
SAN DIEGO, CA 92101
TEL: 619-696-9075
CONTACT: DON CLAUSON

STRUCTURAL ENGINEER:
DCI ENGINEERS
101 WEST BROADWAY, SUITE 1260
SAN DIEGO, CA 92101
TEL: 619-234-0501
CONTACT: JUSTIN WEI

CIVIL ENGINEER:
NIETO CONSULTING ENGINEERS
418 THIRD AVENUE, SUITE 206
SAN DIEGO, CA 92101
TEL: 760-535-2772
CONTACT: MANUEL NIETO

CODE CONSULTANT:
CHURCHILL ENGINEERING, INC.
3593 FIFTH AVENUE, SUITE C
SAN DIEGO, CA 92103
TEL: 619-546-6429
CONTACT: JAMES CHURCHILL

ARCHITECT / INTERIORS:
CARRIER JOHNSON
1301 THIRD AVE.
SAN DIEGO, CA, 92101
TEL: (619)239-2353
FAX: (619)239-6227
CONTACT: VICKI PIAZZA

MECH/ELEC/PLUMBING ENGINEER:
SY LEE ASSOCIATES, INC.
216 S JACKSON STREET, SUITE 101
GLENDALE, CA 91205
TEL:(818) 242-2800
CONTACT: SANG Y. LEE

SHORING ENGINEER:
EARTH SUPPORT SYSTEMS, INC.
9665 EXCELENCIA, SUITE 104
SAN DIEGO, CA 92126
TEL: 760-929-2851
CONTACT: RICARDO JORDAN

DRY UTILITY CONSULTANT:
BUTSKO UTILITY DESIGN
8470 REDWOOD CREEK LANE, SUITE 200
SAN DIEGO, CA 92126
TEL: 858-676-9700
CONTACT: JOEL RADOVAN

GEOTECHNICAL ENGINEER:
GEOCON INCORPORATED
6960 FLANDERS DRIVE
SAN DIEGO, CA, 92121
TEL: (858)558-6900
CONTACT: JON HOOBS

ACOUSTICAL ENGINEER:
BILAR AND ASSOCIATES
210 SOUTH JUNIPER STREET
ESCONDIDO, CA 92025
TEL: 760-753-1865
CONTACT: JONATHAN BROTHERS

LANDSCAPE ARCHITECT:
WIMMER YAMADA AND CAUGHEY
3067 FIFTH AVENUE
SAN DIEGO, CA 92103
TEL: 619-232-4004
CONTACT: BRAD HILLIKER

GENERAL CONTRACTOR:
CANNON CONSTRUCTORS SOUTH
13230 EVENING CREEK DRIVE, SUITE 213
SAN DIEGO, CA 921028
TEL: 858-486-7788
CONTACT: TOM REMENSPERGER

VICINITY MAP

PROJECT DATA

PROJECT DESCRIPTION: NEW CONSTRUCTION OF FIVE FLOORS OF APARTMENTS (TYPE III-A CONSTRUCTION) OVER TWO FLOORS OF APARTMENTS AND PARKING AT GRADE (TYPE I-A CONSTRUCTION). EXISTING OFFICE BUILDING AT SOUTH END OF SITE TO REMAIN AND A LANDSCAPED AREA WILL BE CREATED BETWEEN BOTH BUILDINGS. A PRIVATELY FUNDED PROJECT. SIX (6) VERY LOW INCOME UNITS WILL BE PROVIDED WITHIN THE 141 PROPOSED APARTMENT UNITS.

ADDRESS / LOCATION: PROPOSED BUILDING: 3534 FIFTH AVENUE, SAN DIEGO, CA 92103
EXISTING BUILDING: 3500 FIFTH AVENUE, SAN DIEGO, CA 92103

ASSESSOR'S PARCEL NO.: 452-406-1400, 452-406-1500, 452-406-1600 AND 452-406-1700

LEGAL DESCRIPTION: LOTS 11-17 OF LOMA GRANDE, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 692 FILED AT THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, NOVEMBER 23, 1891.

HISTORICAL RESOURCE INFORMATION: PTS NO. 405719- PRELIMINARY REVIEW OF THE EXISTING BUILDING LOCATED AT 3534 DETERMINED THE BUILDING DID NOT MEET HRB DESIGNATION CRITERIA. THE BUILDING WILL BE DEMOLISHED UNDER A SEPARATE DEMOLITION PERMIT.

ADDITIONAL PLAN CHECK NOTES

1. DUMPSTERS AND TRASH CONTAINERS EXCEEDING 1.5 CUBIC YARDS SHALL NOT BE STORED IN BUILDINGS OR PLACED WITHIN 5 FEET OF COMBUSTIBLE WALLS, OPENINGS OR COMBUSTIBLE ROOF EAVE TINES UNLESS PROTECTED BY AN APPROVED SPRINKLER SYSTEM OR LOCATED IN A TYPE I OR IIA STRUCTURE SEPARATED BY 10 FEET FROM OTHER STRUCTS. CONTAINERS LARGER THAN 1 CUBIC YARD SHALL BE OF NON- OR LIMITED-COMBUSTIBLE MATERIALS OR SIMILARLY PROTECTED PR SEPARATED PER CFC 304.3.

2. BUILDINGS UNDERGOING CONSTRUCTION, ALTERATION, OR DEMOLITION SHALL CONFORM TO CFC CHAPTER 33 WELDING, CUTTING AND OTHER HOT WORK.

3. WALL, FLOOR AND CEILING FINISHES AND MATERIALS SHALL NOT EXCEED THE INTERIOR FINISH CLASSIFICATIONS IN CBC TABLE 803.9 AND SHALL MEET THE FLAME PROPAGATION PERFORMANCE CRITERIA OF THE CALIFORNIA CODE OF REGULATIONS, TITLE 19 DIVISION 1. DECORATIVE MATERIALS SHALL BE PROPERLY TREATED BY A PRODUCT OR PROCESS APPROVED BY THE STATE FIRE MARSHAL WITH APPROPRIATE DOCUMENTATION PROVIDED TO THE CITY OF SAN DIEGO.

4. ADDRESS IDENTIFICATION SHALL BE PROVIDED FOR ALL NEW AND EXISTING BUILDINGS IN A LOCATION THAT IS PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. WHERE ACCESS IS BY WAY OF A PRIVATE ROAD AND THE BUILDING ADDRESS CANNOT BE VIEWED FROM THE PUBLIC WAY, AN APPROVED SIGN OR MEANS SHALL BE USED TO IDENTIFY THE STRUCTURE. PREMISES IDENTIFICATION SHALL CONFORM TO CBC SECTION 501.2

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STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

03.28.2016
Site Development
Permit Submittal

ISSUES:

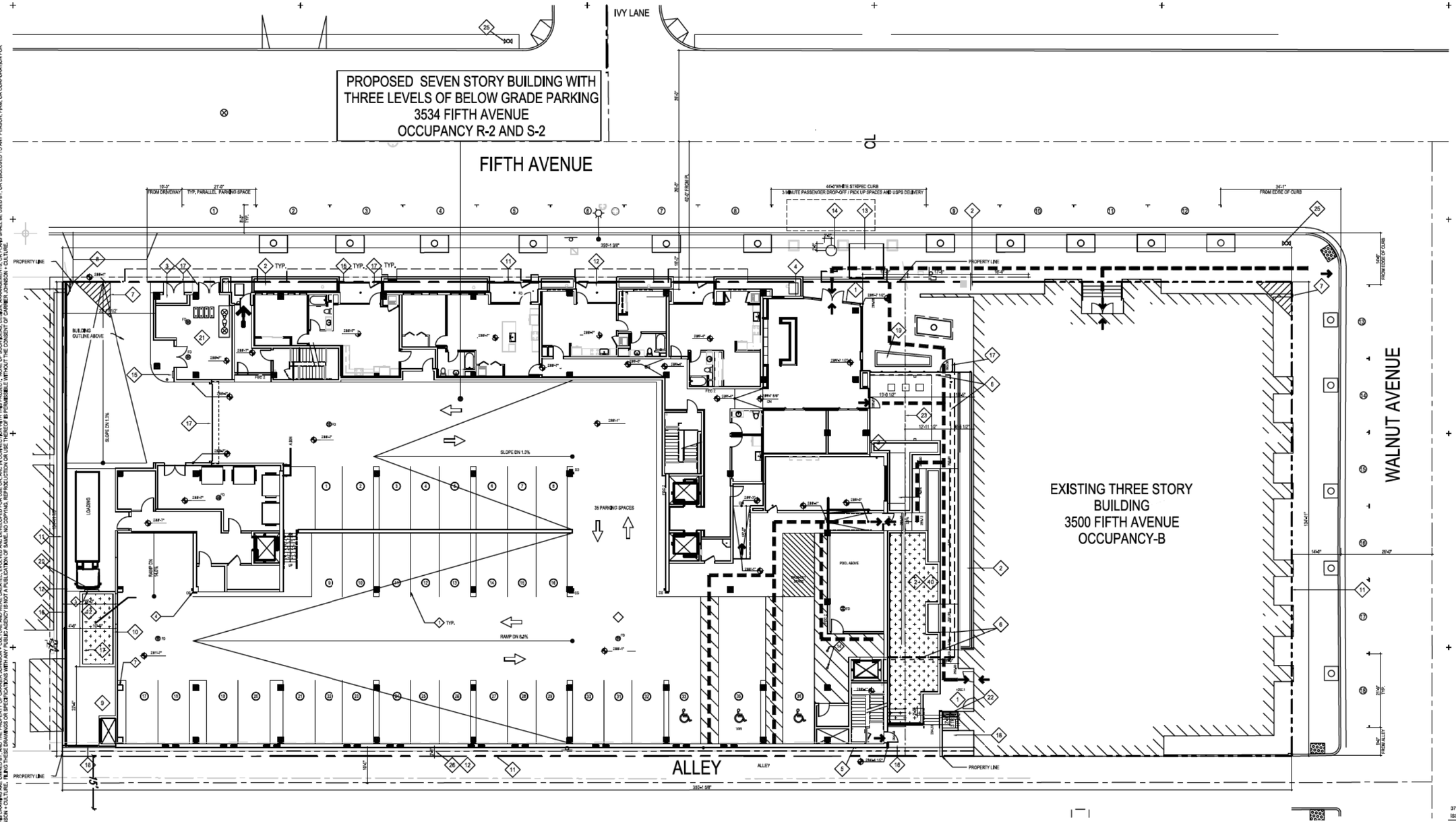
PROJECT NO: 5548.00
FILE NAME: WRITE CENTRAL FILE PATH HERE: (I.E. P:\0000.00\09 BIM\Central File\0000.00 central.rvt)
DRAWN BY: CHECKED BY:
PLOT DATE: 3/26/2016 9:23:51 AM
TITLE:

TITLE SHEET

DRAWING NO:

T0.1

1 OF 38



1 ACCESSIBILITY SITE PLAN
SCALE: 3/32" = 1'-0"

PROJECT NORTH

ACCESSIBILITY LEGEND

ACCESSIBLE PATH OF TRAVEL PER CBC 11B
PATH OF TRAVEL (POT) AS INDICATED IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 50 MAXIMUM SLOPE. EXCEPT THAT VERTICAL CHANGES DO NOT EXCEED 1/4" VERTICAL AND AT LEAST 48" WIDE, SURFACE IS SLIP RESISTANT (MEDIUM BROOM FINISH WITH AMPLITUDE OF 1/16" TO 1/8"), STABLE, FIRM, AND SMOOTH. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS NO MORE THAN 5% UNLESS OTHERWISE INDICATED. POT SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM A WALL AND ABOVE 27" AND LESS THAN 80". CONTRACTOR TO VERIFY THAT THERE ARE NO BARRIERS IN THE POT, AND THE POT COMPLIES WITH CBC 11B-402, 403.

ACCESSIBLE PARKING SPACE PER CBC 11B-502

ACCESSIBLE CURB RAMP W/ 12" GROOVED BORDER AND DETECTABLE WARNING SURFACE PER CBC 11B-406

ACCESSIBLE BUILDING ENTRANCE - PROVIDE INTERNATIONAL SYMBOL OF ACCESSIBILITY ENTRANCE SIGN (9"x9" DECAL MOUNTED BETWEEN 4'-0" TO 5'-0" A.F.F., CENTERED ON SINGLE DOORS, CENTERED ON RIGHT PANEL OF DOUBLE DOORS) PER CBC 11B-404

NOTES

1. SEE SHEET T0.6 FOR OCCUPANCY AND EXITING SUMMARY FOR LEVEL 1.
2. EXISTING WEBSTER BUILDING, 3500 FIFTH AVENUE. TO REMAIN ON SITE. PARKING FOR BUILDING WILL BE PROVIDED IN PROPOSED BUILDING.
3. FOR GRADING, PUBLIC IMPROVEMENT, POST CONSTRUCTION BMP AND CONSTRUCTION BMPE APPROVALS, SEE DRAWING NO. 38764-D, SWMDCMA Approval 1525640 AND SWPPP Filed Under PTS 423650.
4. GRADE PLANE CALCULATION:
   $\frac{288'-1" + 291'-0" + 294'-6" + 287'-7"}{4} = 290'-9\ 1/2"$
5. SUBTERRANEAN GARAGES ENCROACHMENTS SHALL EXTEND 5 FEET BELOW THE TOP OF THE SIDEWALK AND SHALL NOT BE LOCATED WITHIN 5 FEET FROM THE CURB FACE, EXCEPT TO ACCOMMODATE ACCESS HATCHES TO UNDERGROUND VAULTS. SUCH HATCHES SHALL BE LOCATED TO NOT INTERFERE WITH STREET TREE PLANTING.
6. NO ACCESS GATE SHALL SWING OPEN INTO THE PUBLIC RIGHT OF WAY.

LEGAL DESCRIPTION

LOTS 11-17 OF LOMA GRANDE, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 692 FILED AT THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, NOVEMBER 23, 1891.

SITE PLAN KEYNOTES

1	INTERNATIONAL SIGN OF ACCESSIBILITY SEE DETAIL 1SA/A5.71	12	REQUIRED SETBACK	23	ASSUMED PROPERTY LINE
2	PLANTER- PER LANDSCAPE DRAWINGS	13	SDGE VAULT COVER	24	CMU WALL
3	GAS METERS	14	SDGE MANHOLE, SEE 2/A1.21	25	FIRE HYDRANT
4	KNOX BOX AT 7'-0" ABOVE ADJACENT GRADE	15	ADA ENTRY SIGN, SEE 2E/A1.40	26	DEDICATED TO CITY FOR ALLEY INCREASE IN WIDTH
5	FIRE SPRINKLER RISER LOCATION	16	PLANK FENCING -6'-0" TALL		
6	LINE OF BELOW GRADE GARAGE	17	GATE		
7	10' X 10' VISIBILITY TRIANGLE	18	EXISTING TRASH ENCLOSURE AREA		
8	INSTALL 30" CONVEX TRAFFIC MIRROR-POST MOUNTED FOR VISIBILITY TO THE SOUTH	19	PLANTER WALL OR BENCH PER LANDSCAPE DWGS		
9	BOILER AND EQUIPMENT YARD	20	WHEEL STOP, SEE DETAIL 4/A1.40		
10	STORM WATER FILTER PER CIVIL DRAWINGS	21	SEE MEP DRAWINGS FOR EQUIPMENT		
11	PROPERTY LINE OR RIGHT OF WAY	22	CONCRETE SITE STAIR & HAND RAIL-SEE 1/A1.21		

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STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

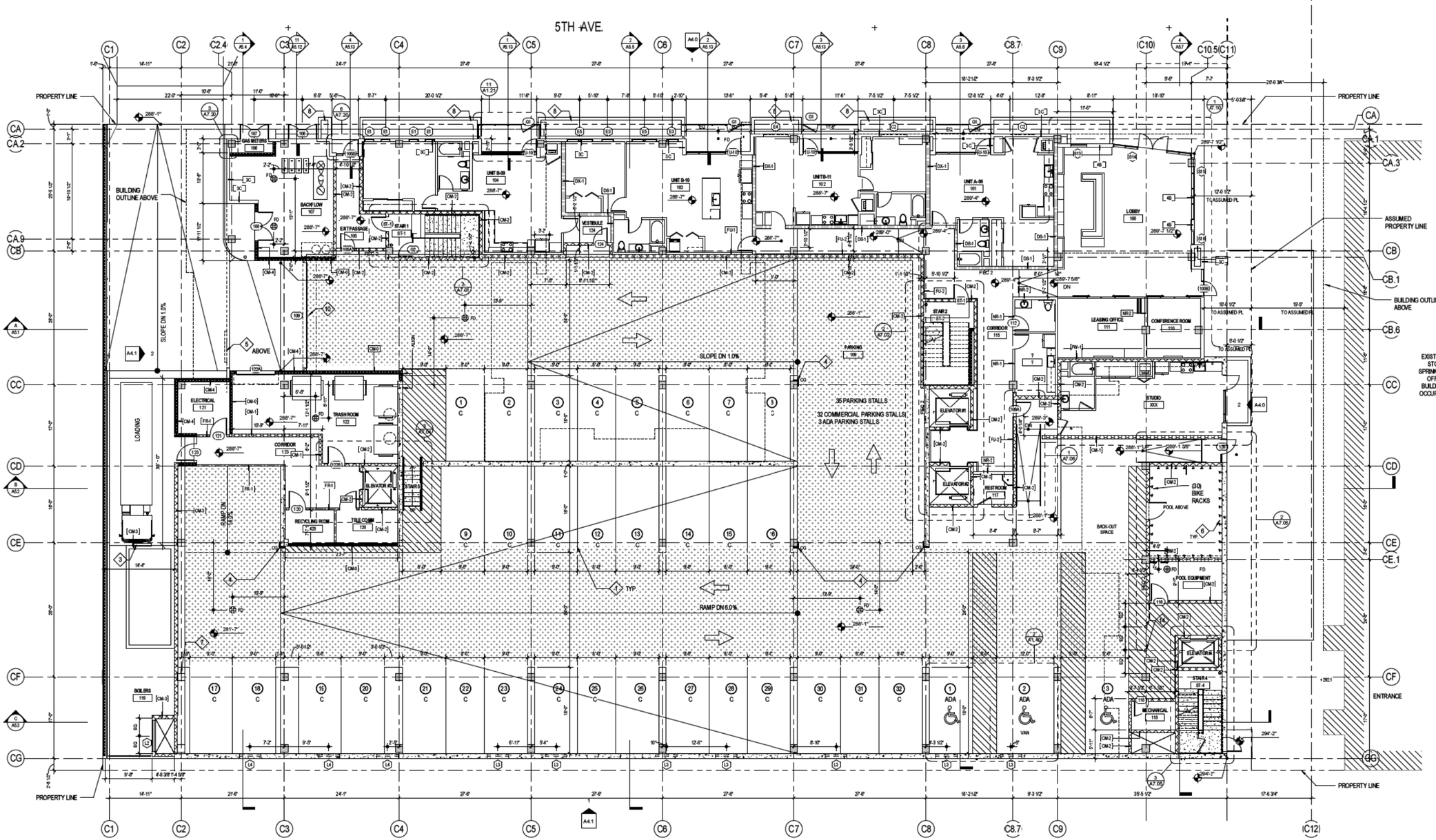
07.31.2015 PLAN CHECK SUBMITTAL
ISSUES:

PROJECT NO: 5548.03
FILE NAME: P:\5548\PC PLANS.pln
DRAWN BY: VJP
CHECKED BY: VJP
PLOT DATE: 7/9/2016 8:38:02 PM
TITLE:

ARCHITECTURAL AND ACCESSIBILITY SITE PLAN

DRAWING NO:

A1.1



1 LEVEL 1
SCALE: 1/8" = 1'-0"

0 2 4 8 16' 24' N

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. ALL "HOLD" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
2. DOOR LOCATION: ALL DOORS, HINGE SIDE, SHALL BE LOCATED 4" FROM ADJACENT PERPENDICULAR WALL, U.O.N.
3. ALIGNMENT: WHERE NEW PARTITIONS ARE TO ALIGN WITH EXISTING PARTITIONS, REMOVE EXISTING CORNER BEAD(S), ALIGN, TAPE, AND SPACKLE WITH NEW PARTITION.
4. PENETRATIONS: PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILINGS, AND ROOF-CEILINGS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263 AND SHALL HAVE AN F RATING (AND A T RATING AT FLOORS ONLY) OF NOT LESS THAN THE REQUIRED RATING OF THE WALL OR FLOOR PENETRATED. PENETRATIONS OF ACOUSTICAL WALLS FOR PIPES, DUCTS, AND OUTLETS SHALL BE SEALED WITH AN ACOUSTICAL SEALANT.
5. WALL BACKING: BLOCKING OR BACKING SHALL BE PROVIDED IN PARTITIONS AS REQUIRED FOR WALL ATTACHED ITEMS. PROVIDE 6" HIGH, 18 GA. BACKING FOR CABINETRY, SHELVING, MARKER BOARDS, CHAIR RAILS, GRAB BARS, SHOWER SEATS, HANDRAILS, FIXTURES, EQUIPMENT, FURNISHINGS AND OTHER ITEMS AS REQUIRED. ALL WOOD BLOCKING, GROUNDS, ROUGH BUCKS AND MISCELLANEOUS BLOCKING SHALL BE FIRE RETARDANT TREATED IN ACCORDANCE WITH FIRE CODES.
6. WALL ACCESS PANELS: PROVIDE ACCESS PANELS AS REQUIRED PER APPLICABLE CODES FOR MAINTENANCE ACCESS TO INSTALLED MEP EQUIPMENT. PROVIDE STAINLESS STEEL AT CERAMIC TILE LOCATIONS. COORDINATE TYPES AND LOCATIONS OF WALL ACCESS PANELS WITH CJ PRIOR TO INSTALLATION.
7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILING AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRE/SMOKE DAMPERS AT ALL RR RATED WALLS

FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	TYPICAL STALL STRIPING; 2 COATS, 4" WIDE WHITE TRAFFIC PAINT	-	-
2	SEMI-RECESSED FIRE EXTINGUISHER CABINET	-	10 44 16
3	PRECAST CONCRETE WHEELSTOP	4/ A1.40	-
4	CORNER GUARD TYPICAL AT ALL COLUMN CORNERS EXPOSED TO TRAFFIC	3/ A1.40	05 50 00
5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
6	BIKE STORAGE RACKS	-	12 93 00
7	TRAFFIC MIRROR, MOUNTED AT 9'-0" A.F.F.	9/ A1.40	11 12 00
8	CMU PLANTERS W/ THIN SET CERAMIC TILE CLADDING		
9	CONTINUOUS LINEAR TRENCH DRAIN AT THRESHOLD	13/ A8.81	
10	OVERHEAD COILING SECURITY GRILLE		
11	PREFINISHED STEEL GUARDRAIL CAP	17/ A8.14 16/ A8.14	
12	SCUPPER AT BALCONY WALL BASE	18/ A8.14	
13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
14	PIPE BOLLARD	10/ A1.40	
15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
(000)	DOOR NUMBER	
(01)	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC #1 = 3A:10BC, SEMI-RECESSED FEC #2 = 3A:10BC, SEMI-RECESSED, FIRE-RATED FEC #3 = 4A:60BC, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
FD	FLOOR DRAIN	SEE PLUMBING DWGS.
FSR	FIRE SPRINKLER RISER LOCATION	SEE PLUMBING DWGS.
DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-2" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE REFER TO WALL TAGS FOR SPECIFIC WALL TYPE SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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architecture + environments + brand strategy + graphics
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phone 619.239.2353 | fax 619.239.8227

STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

03.28.2016
Site Development
Permit Submittal

ISSUES:

PROJECT NO: 5548.00
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FLOOR PLAN LEVEL 1

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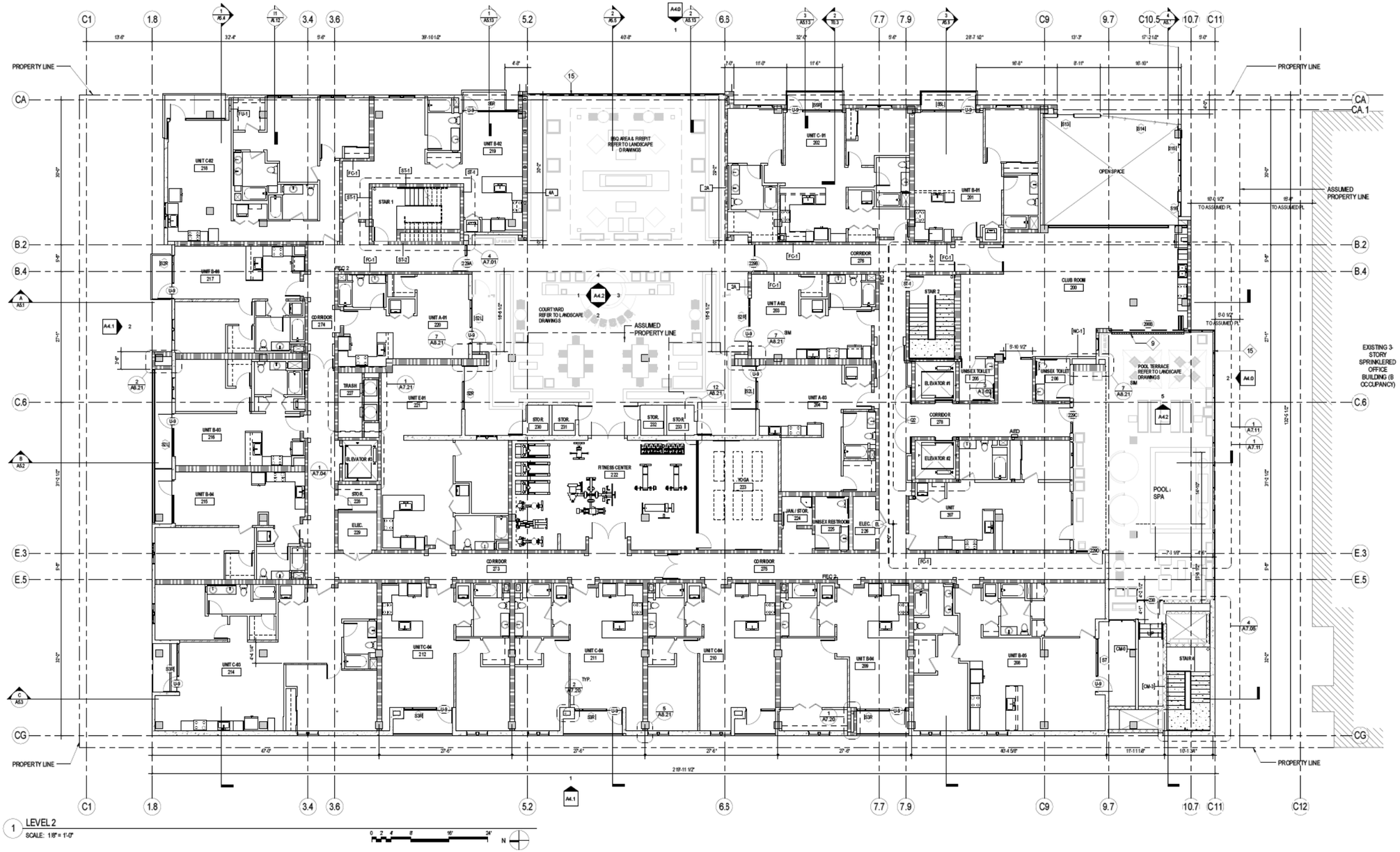

1 LEVEL 2
SCALE: 1/8" = 1'-0"

0 2 4 8 16' 34' N

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. ALL "HOLD" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
2. DOOR LOCATION: ALL DOORS, HINGE SIDE, SHALL BE LOCATED 4" FROM ADJACENT PERPENDICULAR WALL U.O.N.
3. ALIGNMENT: WHERE NEW PARTITIONS ARE TO ALIGN WITH EXISTING PARTITIONS, REMOVE EXISTING CORNER BEAD(S), ALIGN, TAPE, AND SPACKLE WITH NEW PARTITION.
4. PENETRATIONS: PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILINGS, AND ROOF-CEILINGS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263 AND SHALL HAVE AN F RATING AND A T RATING AT FLOORS ONLY) OF NOT LESS THAN THE REQUIRED RATINGS OF THE WALL OR FLOOR PENETRATED. PENETRATIONS OF ACOUSTICAL WALLS FOR PIPES, DUCTS, AND OUTLETS SHALL BE SEALED WITH AN ACOUSTICAL SEALANT.
5. WALL BACKING: BLOCKING OR BACKING SHALL BE PROVIDED IN PARTITIONS AS REQUIRED FOR WALL ATTACHED ITEMS. PROVIDE 6" HIGH, 18 GA. BACKING FOR CABINETRY, SHELVING, MARKER BOARDS, CHAIR RAILS, GRAB BARS, SHOWER SEATS, HANDRAILS, FIXTURES, EQUIPMENT, FURNISHINGS AND OTHER ITEMS AS REQUIRED. ALL WOOD BLOCKING, GROUNDS, ROUGH BUCKS AND MISCELLANEOUS BLOCKING SHALL BE FIRE RETARDANT TREATED IN ACCORDANCE WITH FIRE CODES.
6. WALL ACCESS PANELS: PROVIDE ACCESS PANELS AS REQUIRED PER APPLICABLE CODES FOR MAINTENANCE ACCESS TO INSTALLED MEP EQUIPMENT. PROVIDE STAINLESS STEEL AT CERAMIC TILE LOCATIONS. COORDINATE TYPES AND LOCATIONS OF WALL ACCESS PANELS WITH CJ PRIOR TO INSTALLATION.
7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILINGS AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRE/SMOKE DAMPERS AT ALL FIRE-RATED WALLS.
8. ALL ABOVE GRADE BALCONY ENCROACHMENTS INTO FIFTH AVENUE RIGHT OF WAY SHALL BE NO GREATER THAN A FOUR FOOT HORIZONTAL ENCROACHMENT. NO ABOVE GRADE ENCROACHMENTS WILL BE HABITAL LIVING SPACE.
9. NO ACCESS GATE SHALL SWING OPEN INTO THE PUBLIC RIGHT OF WAY.

FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	TYPICAL STALL STRIPING; 2 COATS, 4" WIDE WHITE TRAFFIC PAINT	-	-
2	SEMI-RECESSED FIRE EXTINGUISHER CABINET	-	10 44 16
3	PRECAST CONCRETE WHEELSTOP	4/ A1.40	-
4	CORNER GUARD TYPICAL AT ALL COLUMN CORNERS EXPOSED TO TRAFFIC	3/ A1.40	05 50 00
5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
6	BIKE STORAGE RACKS	-	12 93 00
7	TRAFFIC MIRROR, MOUNTED AT 9'-0" A.F.F.	9/ A1.40	11 12 00
8	CMU PLANTERS W/ THIN SET CERAMIC TILE CLADDING		
9	CONTINUOUS LINEAR TRENCH DRAIN AT THRESHOLD	13/ A8.81	
10	OVERHEAD COILING SECURITY GRILLE		
11	PREFINISHED STEEL GUARDRAIL CAP	17/ A8.14 19/ A8.14	
12	SCUPPER AT BALCONY WALL BASE	18/ A8.14	
13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
14	PIPE BOLLARD	10/ A1.40	
15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
000	DOOR NUMBER	
(00)	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC #1 = 2A:10B:C, SEMI-RECESSED FEC #2 = 2A:10B:C, SEMI-RECESSED, FIRE-RATED FEC #3 = 4A:60B:C, SEMI-RECESSED, OUTSIDE MECH., ELEC. BOILER RMS
FD	FLOOR DRAIN	SEE PLUMBING DWGS.
FSR	FIRE SPRINKLER RISER LOCATION	SEE PLUMBING DWGS.
DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-0" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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03.28.2016
Site Development
Permit Submittal

ISSUES:

PROJECT NO: 5548.00
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FLOOR PLAN LEVEL 2

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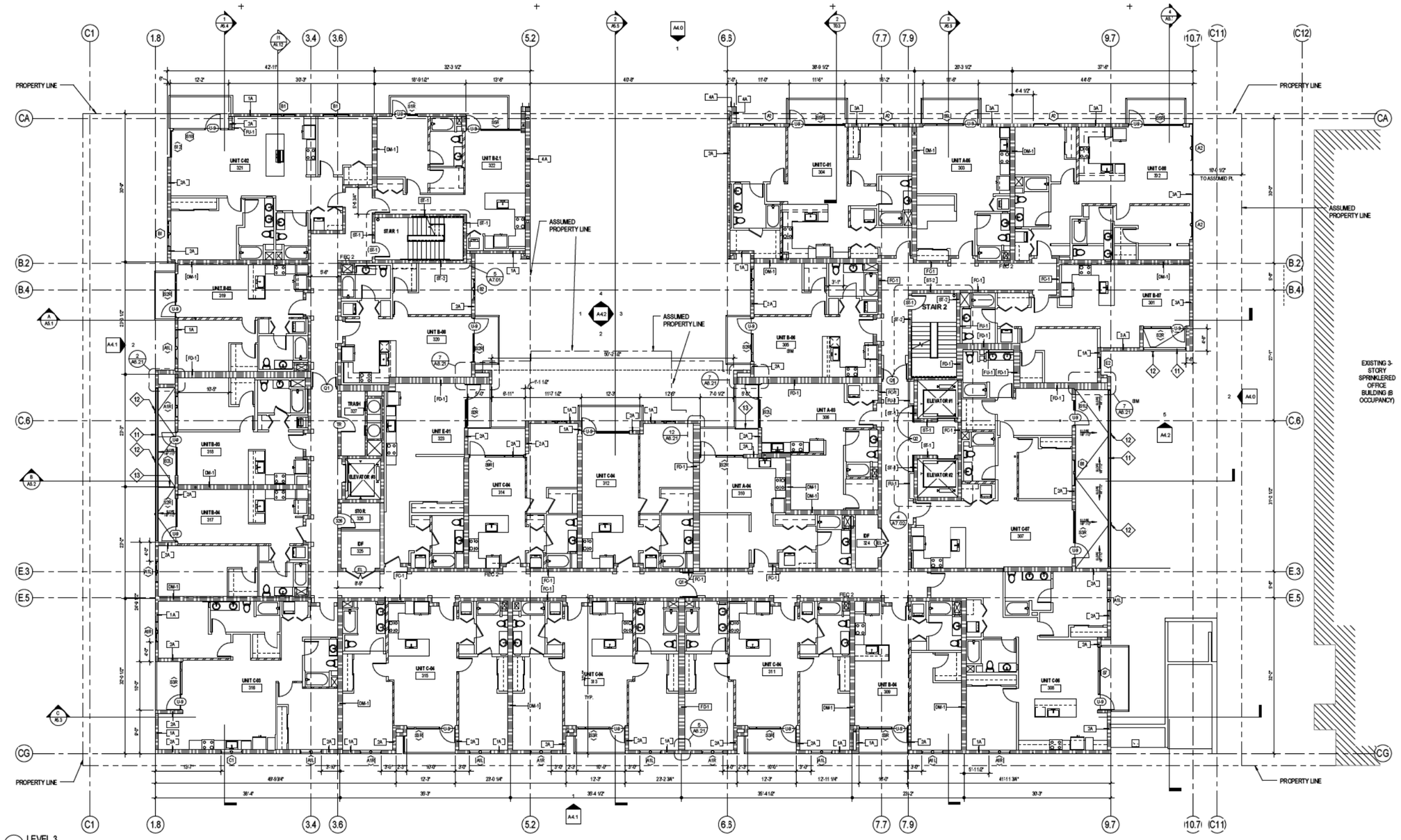

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7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILING AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRE/SMOKE DAMPERS AT ALL FIRE-RATED WALLS.
8. ALL ABOVE GRADE BALCONY ENCROACHMENTS INTO FIFTH AVENUE RIGHT OF WAY SHALL BE NO GREATER THAN A FOUR FOOT HORIZONTAL ENCROACHMENT. NO ABOVE GRADE ENCROACHMENTS WILL BE HABITABLE LIVING SPACE.
9. NO ACCESS GATE SHALL SWING OPEN INTO THE PUBLIC RIGHT OF WAY.

FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	TYPICAL STALL STRIPING; 2 COATS, 4" WIDE WHITE TRAFFIC PAINT	-	-
2	SEMI-RECESSED FIRE EXTINGUISHER CABINET	-	10 44 16
3	PRECAST CONCRETE WHEELSTOP	4/ A1.40	-
4	CORNER GUARD TYPICAL AT ALL COLUMN CORNERS EXPOSED TO TRAFFIC	3/ A1.40	05 50 00
5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
6	BIKE STORAGE RACKS	-	12 93 00
7	TRAFFIC MIRROR, MOUNTED AT 9'-0" A.F.F.	9/ A1.40	11 12 00
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11	PREFINISHED STEEL GUARDRAIL CAP	17/ A8.14 16/ A8.14	
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13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
14	PIPE BOLLARD	10/ A1.40	
15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
(00)	DOOR NUMBER	
(0)	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC #1 = 2A:10B:C, SEMI-RECESSED FEC #2 = 2A:10B:C, SEMI-RECESSED, FIRE-RATED FEC #3 = 4A:60B:C, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
FD	FLOOR DRAIN	SEE PLUMBING DWGS.
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DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 6'-2" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

03.28.2016 Site Development Permit Submittal

ISSUES:

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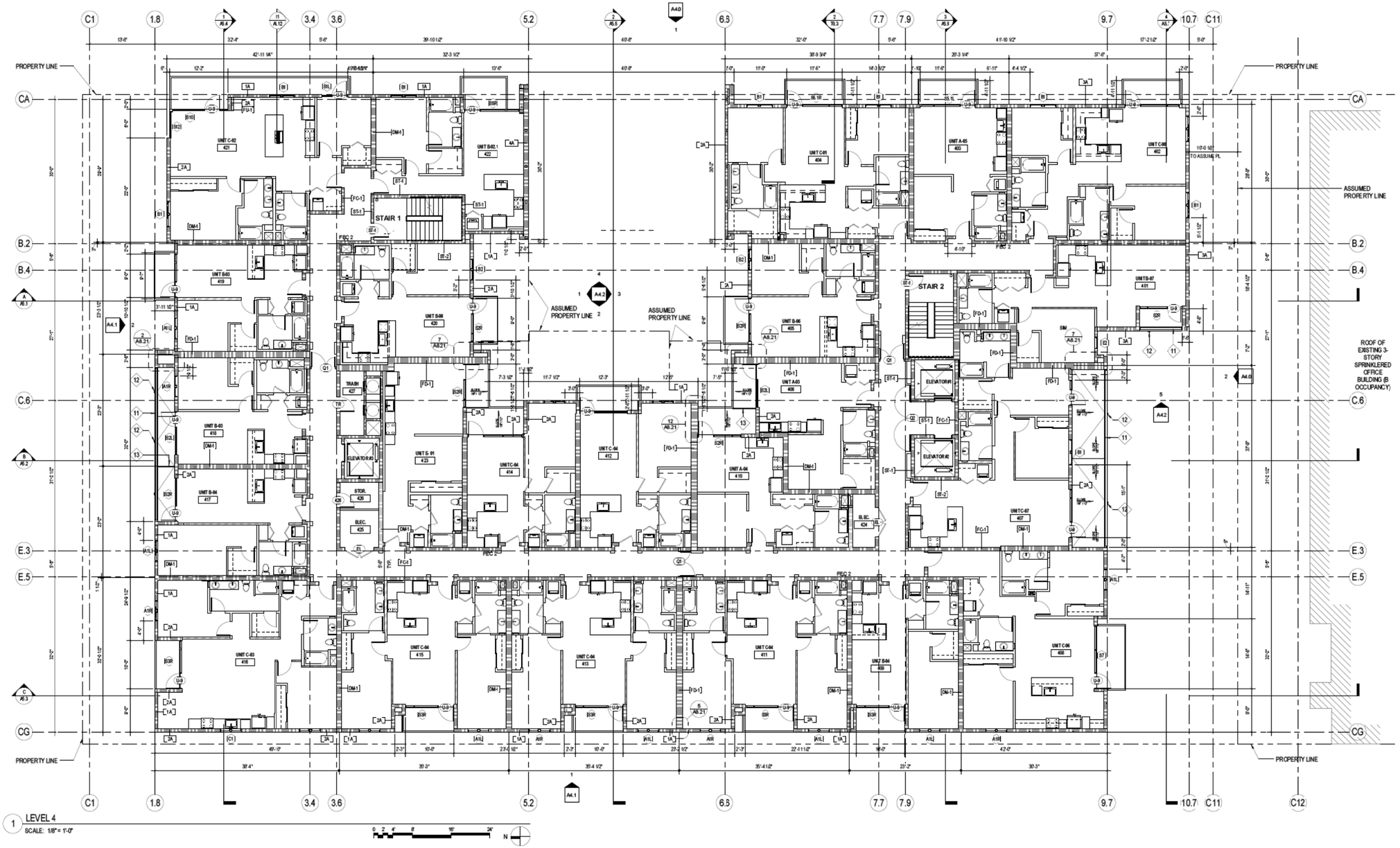

1 LEVEL 4
SCALE: 1/8" = 1'-0"

0 2 4' 8' 16' 24'

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. ALL "HOLD" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
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7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILINGS AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRE/SMOKE DAMPERS AT ALL FIRE-RATED WALLS.
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FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	TYPICAL STALL STRIPING; 2 COATS, 4" WIDE WHITE TRAFFIC PAINT	-	-
2	SEMI-RECESSED FIRE EXTINGUISHER CABINET	-	10 44 16
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5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
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13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
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15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
(000)	DOOR NUMBER	
(00)	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC#1 = 2A:10B:C, SEMI-RECESSED FEC#2 = 3A:10B:C, SEMI-RECESSED, FIRE-RATED FEC#3 = 4A:60B:C, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
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AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-2" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

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	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
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	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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SAN DIEGO CA 92103

03.28.2016
Site Development
Permit Submittal

ISSUES:

PROJECT NO:
5548.03
FILE NAME:
DRAWN BY: CHECKED BY:
PLOT DATE:
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FLOOR PLAN
LEVEL 4

DRAWING NO:
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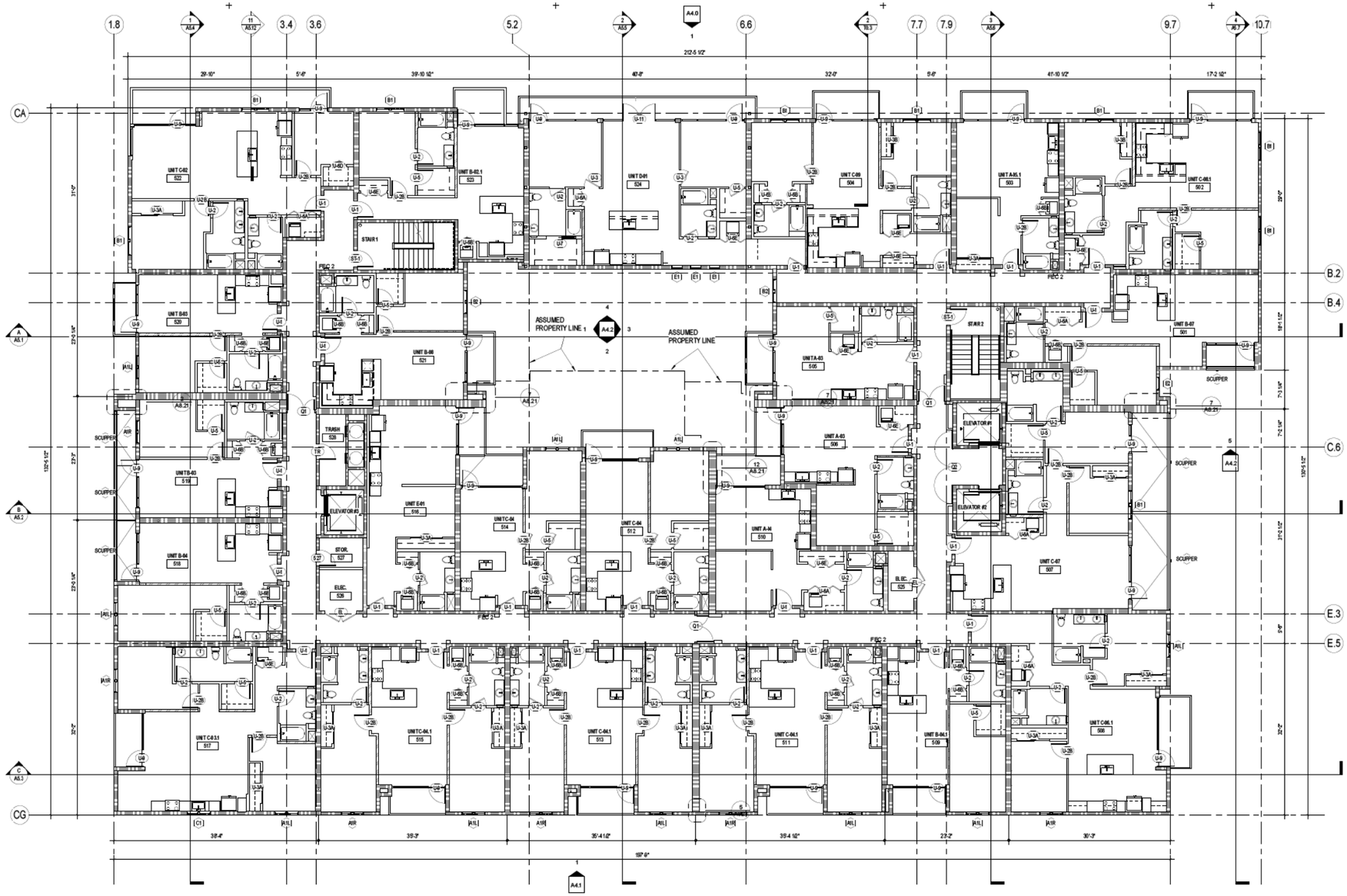
22 OF 38



1 LEVEL 5
SCALE: 1/8" = 1'-0"

0 2' 4' 8' 16' 24' N

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. ALL "HOLD" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
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FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
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4	CORNER GUARD TYPICAL AT ALL COLUMN CORNERS EXPOSED TO TRAFFIC	3/ A1.40	05 50 00
5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
6	BIKE STORAGE RACKS	-	12 93 00
7	TRAFFIC MIRROR, MOUNTED AT 9'-0" A.F.F.	9/ A1.40	11 12 00
8	CMU PLANTERS W/ THIN SET CERAMIC TILE CLADDING		
9	CONTINUOUS LINEAR TRENCH DRAIN AT THRESHOLD	13/ A8.81	
10	OVERHEAD COILING SECURITY GRILLE		
11	PREFINISHED STEEL GUARDRAIL CAP	17/ A8.14 16/ A8.14	
12	SCUPPER AT BALCONY WALL BASE	18/ A8.14	
13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
14	PIPE BOLLARD	10/ A1.40	
15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
000	DOOR NUMBER	
(00)	WINDOW NUMBER	
FEC #	FIRE EXTINGUISHERS:	FEC #1 = 2A:10B:C, SEMI-RECESSED FEC #2= 2A:10B:C, SEMI-RECESSED, FIRE-RATED FEC #3= 4A:60B:C, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
FD	FLOOR DRAIN	SEE PLUMBING DWGS.
FSR	FIRE SPRINKLER RISER LOCATION	SEE PLUMBING DWGS.
DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-2" MIN. HEADROOM AT CROSS HATCHED AREAS.- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

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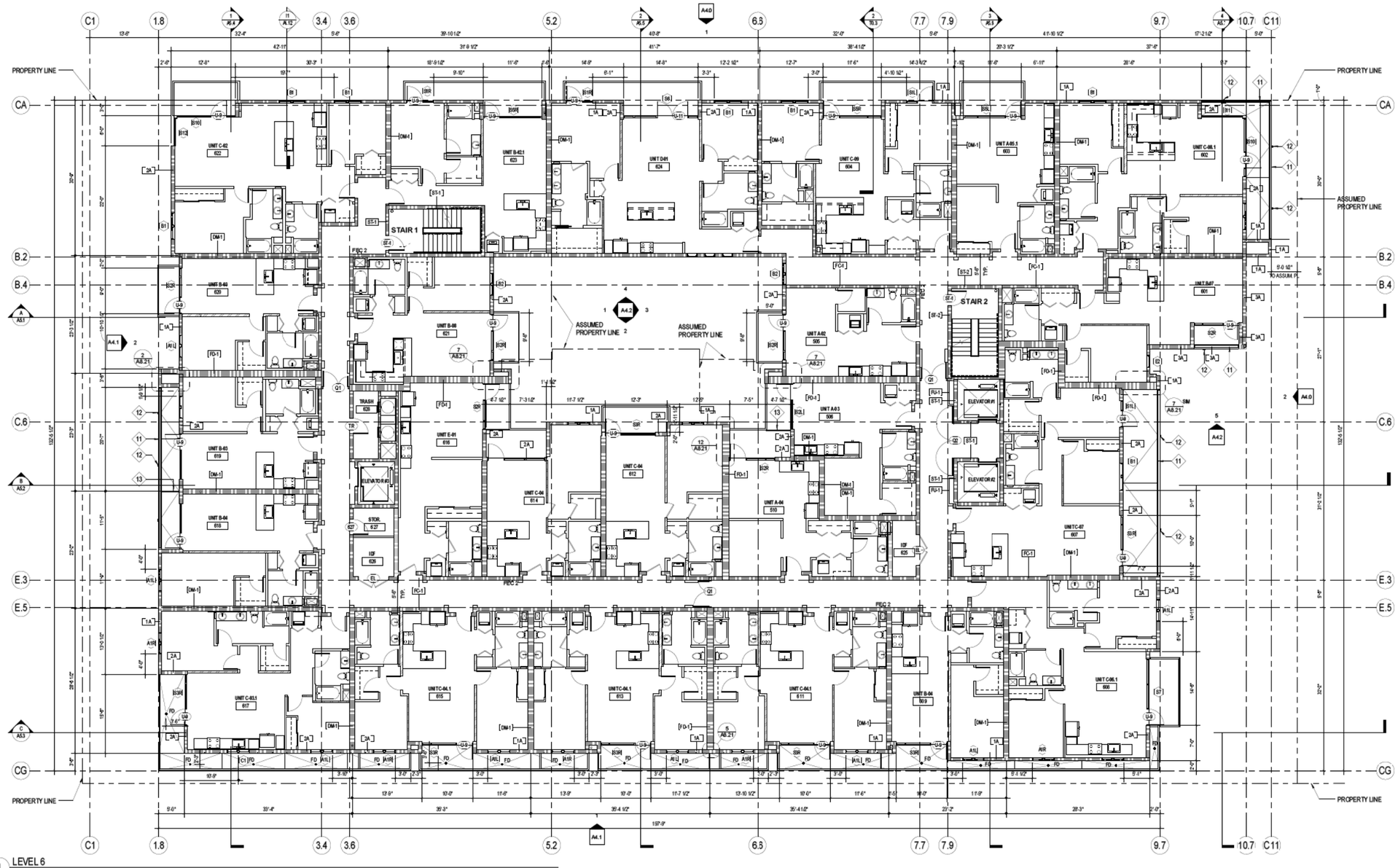
ISSUES:

PROJECT NO:
5548.03
FILE NAME:
DRAWN BY: CHECKED BY:
PLOT DATE:
25/03/2016 06:52:54 p.m.
TITLE:
LEVEL 5
DRAWING NO:
A2.5
23 OF 38



1 LEVEL 6
SCALE: 1/8" = 1'-0"

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. A.L.T. "HOLD" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
2. DOOR LOCATION: ALL DOORS, HINGE SIDE, SHALL BE LOCATED 4" FROM ADJACENT PERPENDICULAR WALL, U.O.N.
3. ALIGNMENT: WHERE NEW PARTITIONS ARE TO ALIGN WITH EXISTING PARTITIONS, REMOVE EXISTING CORNER BEADS, ALIGN, TAPE, AND BRACE WITH NEW PARTITION.
4. PENETRATIONS: PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILINGS, AND ROOF-CEILINGS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263 AND SHALL HAVE AN F RATING AND A T RATING AT FLOORS ONLY OF NOT LESS THAN THE REQUIRED RATING OF THE WALL OR FLOOR PENETRATED. PENETRATIONS OF ACOUSTICAL WALLS FOR PIPES, DUCTS, AND OUTLETS SHALL BE SEALED WITH AN ACOUSTICAL SEALANT.
5. WALL BACKING: BLOCKING OR BACKING SHALL BE PROVIDED IN PARTITIONS AS REQUIRED FOR WALL ATTACHED ITEMS. PROVIDE 6" HIGH, 18 GA. BACKING FOR CABINETRY, SHELVING, MARKER BOARDS, CHAIR RAILS, GRAB BARS, SHOWER SEATS & HANDRAILS. FIXTURES, EQUIPMENT, FURNISHINGS AND OTHER ITEMS AS REQUIRED. ALL WOOD BLOCKING, GROUNDS, ROUGH BUCKS AND MISCELLANEOUS BLOCKING SHALL BE FIRE RETARDANT TREATED IN ACCORDANCE WITH FIRE CODES.
6. WALL ACCESS PANELS: PROVIDE ACCESS PANELS AS REQUIRED PER APPLICABLE CODES FOR MAINTENANCE ACCESS TO INSTALLED MEP EQUIPMENT. PROVIDE STAINLESS STEEL AT CERAMIC TILE LOCATIONS. COORDINATE TYPES AND LOCATIONS OF WALL ACCESS PANELS WITH GC PRIOR TO INSTALLATION.
7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILINGS AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRE/SMOKE DAMPERS AT ALL FIRE-RATED WALLS.
8. ALL ABOVE GRADE BALCONY ENCROACHMENTS INTO FIFTH AVENUE RIGHT OF WAY SHALL BE NO GREATER THAN A FOUR FOOT HORIZONTAL ENCROACHMENT. NO ABOVE GRADE ENCROACHMENTS WILL BE HABITAL LIVING SPACE.
9. NO ACCESS GATE SHALL SWING OPEN INTO THE PUBLIC RIGHT OF WAY.

FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	TYPICAL STALL STRIPING; 2 COATS, 4" WIDE WHITE TRAFFIC PAINT	-	-
2	SEMI-RECESSED FIRE EXTINGUISHER CABINET	-	10 44 16
3	PRECAST CONCRETE WHEELSTOP	4/ A1.40	-
4	CORNER GUARD TYPICAL AT ALL COLUMN CORNERS EXPOSED TO TRAFFIC	3/ A1.40	05 50 00
5	GARAGE CLEARANCE WARNING BAR	8/ A1.40	-
6	BIKE STORAGE RACKS	-	12 93 00
7	TRAFFIC MIRROR, MOUNTED AT 9'-0" A.F.F.	9/ A1.40	11 12 00
8	CMU PLANTERS W/ THIN SET CERAMIC TILE CLADDING		
9	CONTINUOUS LINEAR TRENCH DRAIN AT THRESHOLD	13/ A8.81	
10	OVERHEAD COILING SECURITY GRILLE		
11	PREFINISHED STEEL GUARDRAIL CAP	17/ A8.14 16/ A8.14	
12	SCUPPER AT BALCONY WALL BASE	18/ A8.14	
13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
14	PIPE BOLLARD	10/ A1.40	
15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
(00)	DOOR NUMBER	
(00)	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC#1 = 2A:10B:C, SEMI-RECESSED FEC#2 = 2A:10B:C, SEMI-RECESSED, FIRE-RATED FEC#3 = 4A:60B:C, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
FD	FLOOR DRAIN	SEE PLUMBING DWGS.
FSR	FIRE SPRINKLER RISER LOCATION	SEE PLUMBING DWGS.
DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-2" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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SAN DIEGO CA 92103

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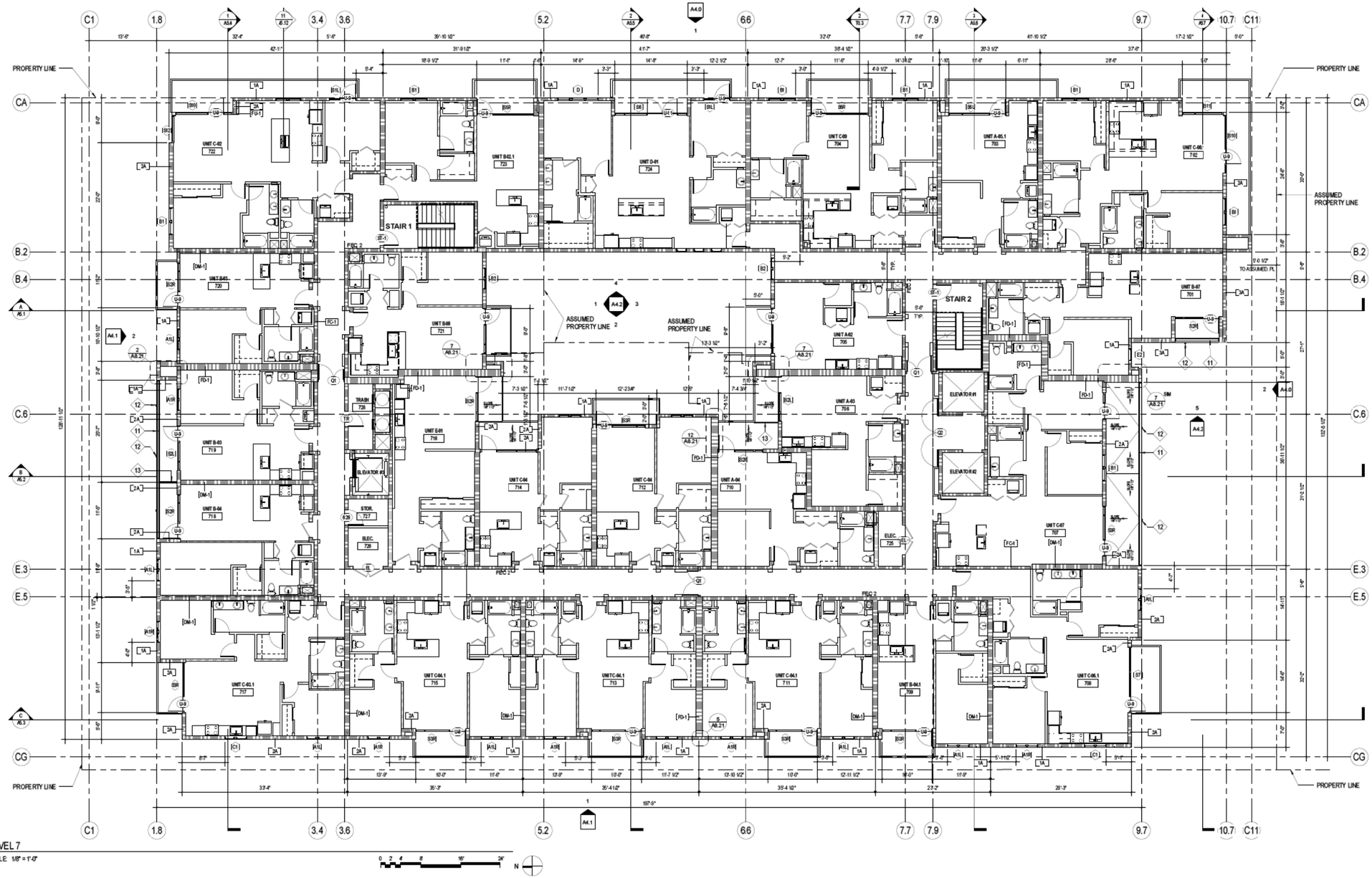
ISSUES:

PROJECT NO:
6548.03
FILE NAME:
DRAWN BY: CHECKED BY:
PLOT DATE:
25/03/2016 06:38:46 p.m.
TITLE:
FLOOR PLAN
LEVEL 6
DRAWING NO:
A2.6
24 OF 38



1 LEVEL 7
SCALE: 1/8" = 1'-0"

0 2 4 8 16 24' N

FLOOR PLAN GENERAL NOTES

1. DIMENSIONS: ALL DIMENSIONS ARE TO FINISH FACE, CENTER OF WALL, COLUMN GRID LINES, OR FACE OF CONCRETE AND CMU WALLS (NOMINAL) U.O.N. WINDOW AND DOOR LOCATIONS ARE DIMENSIONED TO ROUGH OPENING. A "CLR" OR "CLR" DIMENSIONS MUST BE MAINTAINED.
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7. RETURN AIR WALL OPENINGS: PROVIDE RETURN AIR WALL OPENINGS ABOVE CEILINGS AS PER MECHANICAL DRAWINGS. REFER TO MECHANICAL DRAWINGS FOR SOUND BOOTS AT ACOUSTICAL WALL LOCATIONS AND FIRESMOKE DAMPERS AT ALL FIRE-RATED WALLS.
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FLOOR PLAN KEYNOTES

		DETAIL	SPEC SECTION
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8	CMU PLANTERS W/ THIN SET CERAMIC TILE CLADDING		
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10	OVERHEAD COILING SECURITY GRILLE		
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12	SCUPPER AT BALCONY WALL BASE	18/ A8.14	
13	PRIVACY SCREEN	21/ A8.14 23/ A8.14	
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15	GLASS GUARDRAIL	20/ A8.14	

FLOOR PLAN LEGEND

000	ROOM NUMBER	
000	DOOR NUMBER	
00	WINDOW NUMBER	
FEC#	FIRE EXTINGUISHERS:	FEC #1 = 2A10BC, SEMI-RECESSED FEC #2 = 2A10BC, SEMI-RECESSED, FIRE-RATED FEC #3 = 4A60BC, SEMI-RECESSED, OUTSIDE MECH., ELEC, BOILER RMS
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FSR	FIRE SPRINKLER RISER LOCATION	SEE PLUMBING DWGS.
DF	DRINKING FOUNTAIN	SEE PLUMBING DWGS.
AED	SEMI RECESSED AED CABINET	
	MAINTAIN 8'-2" MIN. HEADROOM AT CROSS HATCHED AREAS- AT ALL OTHER PARKING LOCATIONS MAINTAIN 7'-0" MIN. HEADROOM. ALSO SEE SHEET A1.1	

WALL LEGEND

SYMBOL	DESCRIPTION	DETAIL
	NON-RATED STUD WALL	REFER TO WALL TAGS & SHEETS A8.10, A8.11 & A8.12
	1 HOUR FIRE-RATED INTERIOR WALL	
	1 HOUR FIRE-RATED WALL	
	2 HOUR FIRE-RATED WALL	
	3 HOUR FIRE-RATED WALL	
	2 HOUR CMU WALL (CM-2)	CM/A8.12
	1 HOUR CMU WALL (CM-1)	CM/A8.12
	NON RATED CMU WALL (CM-0)	CM/A8.12
	CONCRETE WALL PER STRUCTURAL	

NOTE: REFER TO WALL TAGS FOR SPECIFIC WALL TYPE. SEE SHEETS A8.10, A8.11 AND A8.12 WALL TYPE DETAILS

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STRAUSS FIFTH AVENUE
3534 FIFTH AVENUE
SAN DIEGO CA 92103

03.28.2016
Site Development
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ISSUES:

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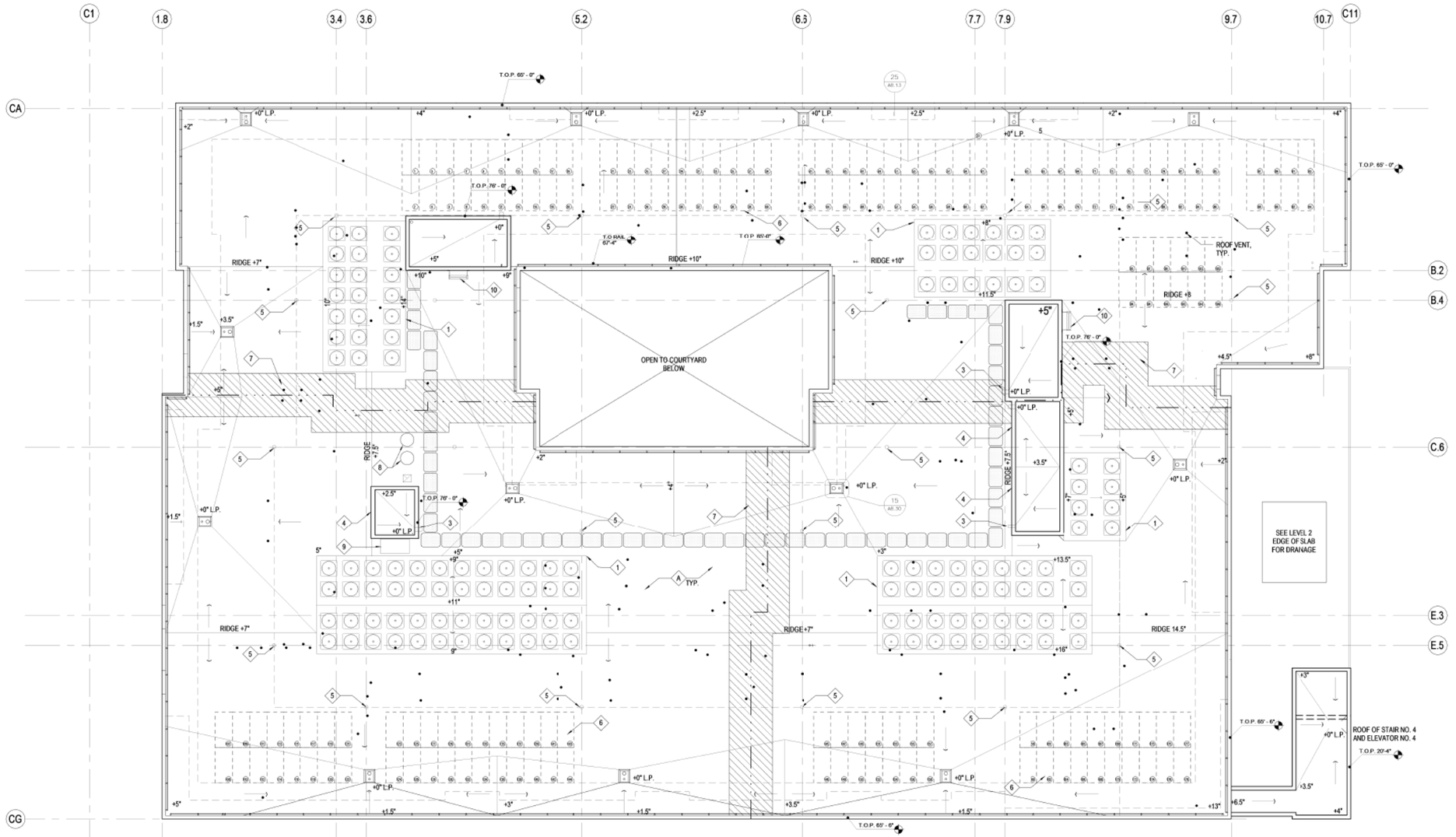
DRAWING NO: A2.7
25 OF 38



1 ROOF PLAN
SCALE: 1/8" = 1'-0"

0 2' 4' 8' 16' 24' N

ROOF PLAN GENERAL NOTES

FIRE CLASSIFICATION:
CLASS A LISTED AND IDENTIFIED BY AN APPROVED TESTING AGENCY (CBC 1505)

ROOF INSULATION:
R-30 BATT INSULATION BELOW ROOF PLYWOOD SHEATHING. SEE 12/A8.02 FOR ROOF ASSEMBLY

ROOF SLOPE:
TYPICAL ROOF SLOPE IS 1/4"/FT MINIMUM, 1/8"/FT AT CRICKETS.

TOP OF PARAPET:
TYPICAL TOP OF PARAPET HEIGHT IS +65'-0" U.O.N.

FLASHING LOCATIONS:
AT THE JUNCTURE OF THE ROOF AND VERTICAL SURFACES, PARAPETS, ROOF EDGES, ROOF PENETRATIONS, ETC., FLASHING AND COUNTERFLASHING SHALL BE PROVIDED PER THE ROOF MANUFACTURER'S RECOMMENDATIONS AND, WHEN OF METAL, SHALL NOT BE LESS THAN NO. 26 GALVANIZED SHEET GAGE CORROSION-RESISTANT METAL (CBC 1503.) ALL ROOF FLASHINGS SHALL CONFORM TO SMACNA AND NRCA STANDARDS. FLASHING AND COUNTERFLASHING SHALL BE PAINTED U.O.N.

OVERFLOW DRAINS AND SCUPPERS:
WHERE ROOF DRAINS ARE REQUIRED, OVERFLOW DRAINS HAVING THE SAME SIZE AS THE ROOF DRAINS SHALL BE INSTALLED WITH THE WATER INLET FLOW LINE LOCATED 2 INCHES ABOVE THE LOW POINT OF THE ROOF. OR OVERFLOW SCUPPERS HAVING THREE TIMES THE SIZE OF THE ROOF DRAINS AND HAVING A MINIMUM OPENING HEIGHT OF 4 INCHES MAY BE INSTALLED IN THE ADJACENT PARAPET WALLS WITH THE INLET FLOW LINE LOCATED 2 INCHES ABOVE THE LOW POINT OF THE ADJACENT ROOF. OVERFLOW DRAINS SHALL DISCHARGE TO AN APPROVED LOCATION AND SHALL NOT BE CONNECTED TO ROOF DRAIN LINES

OVER PUBLIC PROPERTY:
ROOF DRAINAGE WATER FROM A BUILDING SHALL NOT BE PERMITTED TO FLOW OVER PUBLIC PROPERTY

MAINTENANCE ACCESS:
ACCESS SHALL BE PROVIDED TO ALL MECHANICAL EQUIPMENT LOCATED ON THE ROOF AS REQUIRED BY THE MECHANICAL CODE

COORDINATION:
CONTRACTOR SHALL VERIFY LOCATIONS AND COORDINATE SIZES FOR ALL ROOF OPENINGS, CURBS, CONCRETE PADS, AND ATTACHMENT REQUIREMENTS W/ MANUFACTURER FOR ACTUAL MECHANICAL EQUIPMENT SUBMITTED

ROOF ASSEMBLY TYPES

		DETAIL	SPEC SECTION
A	SINGLE PLY ROOFING OVER PLYWOOD SHEATHING ON TJI WITH (R-30 MINIMUM) BATT INSULATION BELOW SHEATHING. SEE SPECIFICATIONS.	12/A8.02	DIV.07

SOLAR READY AREA CALCULATION

UNOCCUPIED ROOF AREA: 26,535 SF
MINIMUM SOLAR ZONE- 15% OF ROOF AREA: 3,980 SF
APPROXIMATE PANEL SIZE: 20.7 SF
MINIMUM PANELS REQUIRED 178

ROOF PLAN KEYNOTES

		DETAIL	SPEC SECTION
1	CURB-MOUNTED MECHANICAL UNIT	2/A8.30	DIV.23
2	MAINTENANCE GUARDRAIL	2/A8.13 2/5/A8.13	05 50 00
3	SCUPPER	5/A8.30 2 1/A8.30	07 62 00
4	ELEVATOR HOISTWAY VENT	2 3/A8.30	08 90 00
5	ROOF MOUNTED TIE-BACK ANCHOR	2 5/A8.30	11 24 00
6	FUTURE PV ARRAY- DESIGN & INSTALLATION BY PV SUBCONTRACTOR. NO THROUGH-ROOF PLUMBING VENTS IN THESE LOCATIONS.		
7	3-HR FIRE WALL TERMINATION AREA AT UNDERSIDE OF NONCOMBUSTIBLE ROOF SHEATHING. NO PENETRATIONS ALLOWED WITHIN 4' OF FIRE WALL (HATCHED REGION).	8/ A8.21	
8	TRASH CHUTE VENT	-	-
9	FUTURE WALL MOUNTED SOLAR INVERTOR	22/A8.30	-
10	ROOF LADDER	2 5/ A8.50	

ROOF PLAN LEGEND

	DETAIL	SPEC SECTION
ROOF DRAIN / OVERFLOW DRAIN	15/ A8.30	DIV.22
TRAFFIC WALK PAD	12/ A8.30	07 54 19
TAPERED RIGID INSULATION (FOR SLOPE ONLY)	-	07 54 19
EXHAUST FAN	12/ A8.30 25/A8.30	DIV.23
PLUMBING VENT THROUGH ROOF (VTR)	9/ A8.30 14/ A8.30	DIV.22
HVAC DUCT THROUGH ROOF	18/ A8.30	DIV.23
WINDOW WASHING FIXED DAVIT BASE W/ PEDESTAL	-/A8.30	11 24 00
WINDOW WASHING FLUSH DAVIT BASE W/ PEDESTAL	-/A8.30	11 24 00
FUTURE SOLAR PV PANEL 20.7 SF		

	DETAIL	SPEC SECTION
CLASS 1 STANDPIPE HOSE CONNECTION	-	DIV 21
HIGH POINT ELEVATION		
0' - 0" L.P. LOW POINT ELEVATION		
0' - 0" T.O.P. TOP OF PARAPET ELEVATION		

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ISSUES:

PROJECT NO:
8648.00
FILE NAME:
DRAWN BY: CHECKED BY:
PLOT DATE:
3/25/2016 6:25:10 PM
TITLE:

ROOF PLAN

DRAWING NO:

A2.8

FAN COIL UNIT SCHEDULE

MARK (FCU-X) UNIT NO.	MAKE/MODEL	AREA SERVED	NOMINAL CAPACITY			BLOWER		ELECTRICAL DATA				SHIP. WT LB.	OSA CFM (%)	QTY.	REMARKS
			COOLING BTUH		HEATING	CFM	EXT. S.P. (IN.WC)	HP	VOLT	PH	FUSE				
			TOTAL	SENSIBLE	BTUH										
FC-1	FUJITSU 9RLFCD	UNIT TYPE A	9000	6300	9000	400	0.36	2x0.109	208	1	15	50	7.06	12	1 2 3 4 5 6
FC-2	FIRST CO. 20HXXC	UNITS - 1A/1B/1C/1D	18000	12600	18000	600	0.10	0.20	208	1	15	90	13.5	41	1 2 3 4 5 6
FC-3	FIRST CO. 26HXXC	UNITS - 1A/1B/1C/1D	24000	16800	24000	800	0.10	0.20	208	1	15	90	13.5	17	1 2 3 4 5 6
FC-4	FIRST CO. 31HXXC	UNITS - 2A/2C/2D/GYM	28200	19740	28200	1000	0.10	0.32	208	1	15	90	19.4	45	1 2 3 4 5 6
FC-5	FIRST CO. 37HXXC	UNIT - 2B	33600	23520	34000	1200	0.10	0.43	208	1	15	100	17.1	5	1 2 3 4 5 6

REMARKS:
1. PROVIDE FILTER & ACCESS PANEL.
2. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.
3. SEE PLUMBING DRAWINGS FOR CONDENSATE PIPING.
4. UNIT SHALL BE CEILING MOUNTED.
5. PROVIDE MERV 8 FILTER MINIMUM & PRESSURE DROP SHALL NOT EXCEED 0.1" W.C.
6. PROVIDE TITLE 24 COMPLIANT PROGRAMMABLE THERMOSTAT.

FAN COIL UNIT SCHEDULE

MARK (FCU-X) UNIT NO.	MAKE/MODEL	AREA SERVED	NOMINAL CAPACITY		BLOWER		ELECTRICAL DATA				WT LB.	REMARKS
			SENSIBLE BTUH	TOTAL BTUH	CFM	HP	VOLT	PH	MCA	FUSE		
FC-6	MITSUBISHI PKA-A12HA	ELEV	9720	12000	400	0.04	208/230	1	1	15	29	1 2 3 4 5

REMARKS:
1. PROVIDE FILTER & TIMECLOCK/TSTAT.
2. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.
3. SEE PLUMBING DRAWINGS FOR CONDENSATE PIPING.
4. PROVIDE FACTORY INSTALLED CONDENSATE PUMP.
5. MOUNT AS HIGH AS POSSIBLE.

FAN SCHEDULE

MARK (EF No.)	MAKE	MODEL	FAN TYPE	TOTAL CFM	ESP (IN)	MAX. RPM	MOTOR DATA					OPER. WT. LBS.	SERVICE	REMARKS
							HP	W	MCA	V	PH			
EF-1	PANASONIC	FV08KVM3	DIRECT DRIVE	80/60	0.10	-	-	8.2	-	120	1	12	BATHROOM	1 2 9 10
EF-2	LOREN COOK	330CADWDI	BELT DRIVE	22,000	1.5	701	10	-	-	208/230	3	2500	GARAGE EXHAUST	1 4 7
EF-3	LOREN COOK	330CADWDI	BELT DRIVE	22,000	1.5	701	10	-	-	208/230	3	2500	GARAGE EXHAUST	1 4 7
EF-4	LOREN COOK	445CADWDI	BELT DRIVE	34,175	1.5	507	15	-	-	208/230	3	3570	GARAGE EXHAUST	1 4 7
EF-5	LOREN COOK	90QMX	BELT DRIVE	600	0.75	1818	0.5	-	-	120	1	200	TRANSFORMER EXHAUST	1 4 8
EF-6	LOREN COOK	GC740	DIRECT DRIVE	550	0.75	1625	0.5	-	-	120	1	50	TRASH ROOM EXHAUST	1 4 8
EF-7	LOREN COOK	24XLP	DIRECT DRIVE	2,625	0.5	615	.25	-	-	120	1	210		1 6 8
KEF-1	GE	JVM3160RFSS BROAN 42000	DIRECT DRIVE	100/300	-	-	-	-	-	120	1	75	KITCHEN EXHAUST	1 3 4 5

REMARKS:
1. ALL FANS TO HAVE DISCONNECT SWITCHES (BY ELECTRICAL CONTRACTOR).
2. ENERGY STAR RATED TWO-SPEED FAN, WITH OCCUPANCY SENSOR, LOW CFM PRE-SET AND TIMER.
3. ENERGY STAR RATED RANGE HOOD.
4. DUCTED TYPE. CONFIRM FINISH COLOR WITH ARCHITECT.
5. PROVIDE TWO-SPEED FAN.
6. PROVIDE INLET AND OUTLET GRILLES C/W BIRD AND INSECT SCREEN
7. PROVIDE VULCAIN CO CONTROL SYSTEM WITH VFD.
8. PROVIDE LINE VOLTAGE THERMOSTAT.
9. WHOLE HOUSE VENTILATION FAN RATED FOR SOUND AT MAXIMUM OF 1 SONE.
10. PROVIDE SIGN UNDER SWITCH STATING "FAN IS TO BE LEFT ON TO ENSURE INDOOR AIR QUALITY."

HEAT PUMP CONDENSING UNIT SCHEDULE

MARK (HP-X) UNIT NO.	MAKE	MODEL	AREA SERVED	CAPACITIES (BTUH)		COMPRESSOR		CONDENSER FAN		ELECTRICAL DATA					SEER/ EER	HSPF	OPER. WT. (LBS)	QTY.	REMARKS
				COOLING	HEATING	NO.	LRA/RLA	NO.	HP/FLA	V	PH	HZ	MCA	FUSE (A)					
HP-1	FUJITSU	9RLFCD	A-1	9000	12000	1	-	1	(1/4)/0.32	208/230	1	60	13.4	15	21.5/14.5	12.2	100	12	1 2 3 4 5 6
HP-2	CARRIER	25HBC518A30	UNITS - 1A/1B/1C/1D	12600	18000	1	48.0/9.0	1	(1/12)/0.5	208/230	1	60	11.8	20	15.25/ 12.5	8.6	200	41	1 2 3 4 5 6
HP-3	CARRIER	25HBC524A30	UNITS - 1A/1B/1C/1D	24000	24000	1	58.3/12.8	1	(1/12)/0.5	208/230	1	60	16.5	25	15.25/ 12.5	8.7	200	17	1 2 3 4 5 6
HP-4	CARRIER	25HBC530A30	UNITS - 2A/2C/2D/GYM	28200	28200	1	73.0/14.1	1	(1/12)/0.5	208/230	1	60	18.1	30	14.5/ 12.0	8.2	196	45	1 2 3 4 5 6
HP-5	CARRIER	25HCD436A31	UNIT - 2B	33600	34000	1	70.0/15.3	1	(1/4)/1.1	208/230	1	60	20.4	35	14.0/ 11.7	8.2	189	5	1 2 3 4 5 6

REMARKS:
1. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.
2. THERMAL EXPANSION VALVE REQUIRED TO OBTAIN SYSTEM RATING.
3. TIME DELAY RELAY REQUIRED TO OBTAIN SYSTEM RATING.
4. SYSTEM REFRIGERANT CHARGE IS R-410A.
5. SEER RATINGS ARE BASED ON THE LATEST ARI COMBINED RATINGS AT TIME OF DESIGN. PROVIDE LATEST EQUIVALENT MODELS IF SPECIFIED MODELS ARE OBSOLETE.
6. PROVIDE ACCESSORIES FOR LONG LINE APPLICATIONS.

CONDENSING UNIT SCHEDULE

MARK (CU-X) UNIT NO.	MAKE/MODEL	AREA SERVED	COOLING CAPACITY (BTUH)	COMPRESSOR		CONDENSER FAN		ELECTRICAL DATA					SEER	OPER. WT. (LBS)	REMARKS
				NO.	RLA/LRA	NO.	HP/FLA	V	PH	HZ	MCA	FUSE (A)			
CU-6	MITSUBISHI PUY-A12NHA	ELEV	12000	1	12/14	1	0.05/0.35	208	1	60	13	20	15.2	90	1 2 3 4 5 6 7 8 9

REMARKS:
1. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.
2. THERMAL EXPANSION VALVE REQUIRED TO OBTAIN SYSTEM RATING.
3. TIME DELAY RELAY REQUIRED TO OBTAIN SYSTEM RATING.
4. SYSTEM REFRIGERANT CHARGE IS R-410A.
5. IF SPECIFIED MODEL IS OBSOLETE, USE LATEST EQUIVALENT MODEL
6. PROVIDE ACCESSORIES FOR LONG LINE APPLICATIONS.
7. PROVIDE FACTORY INSTALLED FILTER DRIER
8. PROVIDE FACTORY INSTALLED HI/LOW PRESSURE SWITCH FOR INTERNAL PROTECTION.
9. PROVIDE LOW AMBIENT TEMPERATURE KIT.

AIR DISTRIBUTION SCHEDULE

TYPE		MAKE	MODEL	CFM RANGE	USE	SIZE (IN)	MAX PD (IN)	MAX NC	REMARKS
RESIDENTIAL SIDEWALL REGISTER	S-1	TRUAIRE	210VO	0-100	SA	8 x 6	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-2	TRUAIRE	210VO	101-200	SA	12 x 6	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-3	TRUAIRE	210VO	201-350	SA	16 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-4	TRUAIRE	210VO	351-500	SA	20 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
RESIDENTIAL CEILING DIFFUSER	S-5	TRUAIRE	404M	0-100	SA	8 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-6	TRUAIRE	404M	101-200	SA	10 x 10	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-7	TRUAIRE	404M	201-350	SA	12 x 12	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-8	TRUAIRE	404M	351-450	SA	14 x 14	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
NON-RESIDENTIAL CEILING DIFFUSER	S-9	TRUAIRE	304M	0-100	SA	8 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-10	TRUAIRE	304M	101-200	SA	10 x 10	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-11	TRUAIRE	304M	201-350	SA	12 x 12	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-12	TRUAIRE	304M	351-450	SA	14 x 14	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-13	TRUAIRE	304M	451-600	SA	16 x 16	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
NON-RESIDENTIAL SIDEWALL REGISTER	S-14	TRUAIRE	301M	0-100	SA	8 x 6	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-15	TRUAIRE	301M	101-200	SA	12 x 6	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-16	TRUAIRE	301M	201-350	SA	16 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER
	S-17	TRUAIRE	301M	351-500	SA	20 x 8	0.05	30	WITH O.B.D. AND ROUND TO SQUARE ADAPTER

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07.31.2015 PLAN CHECK SUBMITTAL
ISSUES:

REGISTERED PROFESSIONAL ENGINEER
WING T. LEE
M030612
EXP. 9-30-15
MECHANICAL
STATE OF CALIFORNIA

PROJECT NO:
8186
FILE NAME:
DRAWN BY: CAD
CHECKED BY: SR
PLOT DATE:
7/24/2015
TITLE:

MECHANICAL EQUIPMENT SCHEDULES

DRAWING NO:

M0.2

APPENDIX B

Pertinent Sections of the City of San Diego Noise Element to the General Plan and Municipal Code

Noise Element

NE-A.2. Assure the appropriateness of proposed developments relative to existing and future noise levels by consulting the guidelines for noise-compatible land use (shown on Table NE-3) to minimize the effects on noise-sensitive land uses.

NE-A.3. Limit future residential and other noise-sensitive land uses in areas exposed to high levels of noise.

NE-A.4. Require an acoustical study consistent with Acoustical Study Guidelines (Table NE-4) for proposed developments in areas where the existing or future noise level exceeds or would exceed the "compatible" noise level thresholds as indicated on the Land Use - Noise Compatibility Guidelines (Table NE-3), so that noise mitigation measures can be included in the project design to meet the noise guidelines.

NE-A.5. Prepare noise studies to address existing and future noise levels from noise sources that are specific to a community when updating community plans.

TABLE NE-3 Land Use - Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	65	70	75	
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising & Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					
Single Dwelling Units; Mobile Homes		45			
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	

Land Use Category	Exterior Noise Exposure (dBA CNEL) 60	65	70	75	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support			**50**	**50**	
Visitor Accommodations		**45**	**45**	**45**	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			**50**	**50**	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				**50**	

	Compatible	**Indoor Uses**	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	**Conditionally Compatible**	**Indoor Uses**	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated t make the outdoor activities acceptable. Refer to Section I.
	Incompatible	**Indoor Uses**	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

TABLE NE-4 Acoustical Study Guidelines

An acoustical study should include, but is not limited to the following analysis:
Provide noise level measurements to describe existing local conditions and the predominant noise sources.
Measure existing single event noise levels (SENEL, SEL, or Time Above) within airport influence areas.
Estimate existing and projected noise levels (CNEL) and compare them to levels on Table NE-3. For parks, may consider motor vehicle traffic noise measurements during the one-hour period where the worst-case traffic noise levels are expected to occur from dawn to dusk at a park.
Recommend appropriate mitigation measures to achieve acceptable noise levels on Table NE-3.
Estimate noise exposure levels with recommended mitigation measures.
Describe a post-project assessment to evaluate the effectiveness of the proposed mitigation measures.

B. Motor Vehicle Traffic Noise

Goal

- Minimal excessive motor vehicle traffic noise on residential and other noise-sensitive land uses.

Discussion

Motor vehicle traffic noise is a major contributor of noise within the City. Excessive noise levels along arterial roads, interstate freeways, and state highways affect much of the urban environment. Traffic noise level is dependent upon traffic volume, speed, flow, vehicle mix, pavement type and condition, the use of barriers, as well as distance to the receptor.

Local roadway design features and traffic management and calming techniques can minimize noise from traffic speed and frequent vehicle acceleration and deceleration, and innovative roadway paving material can further reduce traffic noise. Vehicles equipped with a properly functioning muffler system help to limit excessive exhaust noise. Future use of hybrid transit buses could help to reduce noise along mixed-use transit corridors.

At higher speeds, typically on freeways, highways and primary arterials, the noise from tire/pavement interaction can be greater than from vehicle exhaust and engine noise. The use of lower noise paving surfaces can reduce tire/pavement interaction noise. For noise-sensitive land uses adjacent to freeways and highways, these uses should be buffered from excessive noise levels by intervening, less sensitive, industrial-commercial uses or shielded by sound walls or landscaped berms. The City can, however, influence daily traffic volumes and reduce peak-hour

Article 9.5: Noise Abatement and Control

Division 4: Limits

("Noise Level Limits, Standards and Control"
added 9–18–1973 by O–11122 N.S.)
(Retitled to "Limits" on 9–22–1976 by O–11916 N.S.)

§59.5.0401 Sound Level Limits

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one–hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

TABLE OF APPLICABLE LIMITS

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

(c) Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(d) This section does not apply to firework displays authorized by permit from the Fire Department.

(e) This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit, nor to any roller coaster operated on City–owned parkland.

(Amended 9–11–1989 by O–17337 N.S.)
(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)

§59.5.0402 Motor Vehicles

(a) Off–Highway

(1) Except as otherwise provided for in this article, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on– highway motor vehicles as specified in the table for "45 mile– per–hour or less speed limits" contained in Section 23130 of the California Vehicle Code, and as corrected for distances set forth in subsection A.2. below.

(2) Corrections

The maximum noise level as the off–highway vehicle passes may be measured at a distance of other than fifty (50) feet from the center line of travel, provided the measurement is further adjusted by adding algebraically the applicable correction as follows:

Distance (Feet)	Correction (decibels)
25	-6
28	-5
32	-4
35	-3
40	-2
45	-1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5
100	+6

(3) A measured noise level thus corrected shall be deemed in violation of this section if it exceeds the applicable noise–level limit as specified above.

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

("Motor Vehicles" renumbered from Sec. 59.5.0403 on 9–22–1976 by O–11916 N.S.)

§59.5.0403 Watercraft

Violations for excessive noise of watercraft operating in waters under the jurisdiction of The City of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. Permits issued by The City of San Diego for the operation of watercraft not in compliance with noise criteria of the Harbors and Navigation Code shall be reviewed and approved by the Administrator prior to issuance.

("Watercraft" renumbered from Sec. 59.5.0407 and amended 9–22–1976 by O–11916 N.S.)

§59.5.0404 Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1–3–1984 by O–16100 N.S.)

§59.5.0406 Refuse Vehicles and Parking Lot Sweepers

No person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle between the hours of 7:00 p.m. to 6:00 a.m. or a parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the Administrator.

("Refuse Vehicles" added 9–18–1973 by O–11122 N.S.; amended 9–22–1976 by O–11916 N.S.)

(Amended 6-9-2010 by O-19960 N.S.; effective 7-9-2010.)

APPENDIX C

Traffic Noise Model (TNM) Data and Results

Eilar Associates, Inc. 28 July 2015
JB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: B50405N1
RUN: Calibration

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

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
5th Avenue	24.0	point1	1	124.9	-350.3	294.00				Average	
		point2	2	119.1	428.7	288.00					
4th Avenue	24.0	point3	3	-246.8	321.7	294.00				Average	
		point4	4	-246.8	-19.7	297.00				Average	
		point5	5	-239.9	-62.1	296.00				Average	
		point6	6	-213.6	-148.0	296.00				Average	
		point7	7	-170.1	-235.1	296.00				Average	
		point8	8	-163.2	-255.7	295.00				Average	
		point9	9	-158.6	-432.1	293.00					
6th Ave SB	24.0	point12	12	372.3	374.1	283.00				Average	
		point13	13	378.5	-352.6	297.00					
6th Ave NB	24.0	point16	16	402.5	-309.2	294.00				Average	
		point17	17	393.0	364.0	284.00					
CA 163 NB	24.0	point18	18	1,367.9	-769.3	188.00				Average	
		point19	19	1,348.7	-630.0	190.00				Average	
		point20	20	1,334.8	-468.9	193.00				Average	
		point21	21	1,326.1	-287.3	196.00				Average	
		point22	22	1,327.4	-155.2	199.00				Average	
		point23	23	1,330.7	-27.9	201.00				Average	
		point24	24	1,367.3	385.3	212.00				Average	
		point25	25	1,378.5	511.2	216.00				Average	
		point26	26	1,377.2	665.7	222.00				Average	
		point27	27	1,362.6	848.6	228.00				Average	
		point28	28	1,359.4	912.1	231.00					
CA 163 SB	24.0	point29	29	1,317.7	899.5	229.00				Average	

		point30	30	1,322.3	820.7	226.00				Average	
		point31	31	1,321.0	715.2	222.00				Average	
		point32	32	1,305.1	542.2	216.00				Average	
		point33	33	1,293.6	407.6	212.00				Average	
		point34	34	1,273.2	210.9	206.00				Average	
		point35	35	1,260.5	67.8	205.00				Average	
		point36	36	1,253.2	-61.8	202.00				Average	
		point37	37	1,251.2	-292.5	198.00				Average	
		point38	38	1,259.8	-486.8	194.00				Average	
		point39	39	1,290.6	-767.9	189.00					

Eilar Associates, Inc. **28 July 2015**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B50405N1**
RUN: **Calibration**

Roadway	Points		Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
Name	Name	No.	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
5th Avenue	point1	1	642	30	6	30	12	30	0	0	0	0
	point2	2										
4th Avenue	point3	3	397	30	8	30	4	30	0	0	0	0
	point4	4	397	30	8	30	4	30	0	0	0	0
	point5	5	397	30	8	30	4	30	0	0	0	0
	point6	6	397	30	8	30	4	30	0	0	0	0
	point7	7	397	30	8	30	4	30	0	0	0	0
	point8	8	397	30	8	30	4	30	0	0	0	0
	point9	9										
6th Ave SB	point12	12	689	30	14	30	7	30	0	0	0	0
	point13	13										
6th Ave NB	point16	16	689	30	14	30	7	30	0	0	0	0
	point17	17										
CA 163 NB	point18	18	2994	55	67	55	26	55	0	0	0	0
	point19	19	2994	55	67	55	26	55	0	0	0	0
	point20	20	2994	55	67	55	26	55	0	0	0	0
	point21	21	2994	55	67	55	26	55	0	0	0	0
	point22	22	2994	55	67	55	26	55	0	0	0	0
	point23	23	2994	55	67	55	26	55	0	0	0	0
	point24	24	2994	55	67	55	26	55	0	0	0	0
	point25	25	2994	55	67	55	26	55	0	0	0	0
	point26	26	2994	55	67	55	26	55	0	0	0	0
	point27	27	2994	55	67	55	26	55	0	0	0	0

	point28	28										
CA 163 SB	point29	29	3560	55	80	55	30	55	0	0	0	0
	point30	30	3560	55	80	55	30	55	0	0	0	0
	point31	31	3560	55	80	55	30	55	0	0	0	0
	point32	32	3560	55	80	55	30	55	0	0	0	0
	point33	33	3560	55	80	55	30	55	0	0	0	0
	point34	34	3560	55	80	55	30	55	0	0	0	0
	point35	35	3560	55	80	55	30	55	0	0	0	0
	point36	36	3560	55	80	55	30	55	0	0	0	0
	point37	37	3560	55	80	55	30	55	0	0	0	0
	point38	38	3560	55	80	55	30	55	0	0	0	0
	point39	39										

Eilar Associates, Inc.
JB
28 July 2015
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B50405N1
RUN: Calibration

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	
Calibration	1	1	77.0	45.0	291.00	5.00	0.00	66	10.0	8.0	Y

Eilar Associates, Inc. 28 July 2015
JB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: B50405N1
RUN: Calibration

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht Perturbs			On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
3580 5th	W	0.00	99.99	0.00				0.00	point86	86	-60.6	351.4	291.00	20.00	0.00	0	0		
									point87	87	73.4	349.8	291.00	20.00	0.00	0	0		
									point88	88	74.0	289.4	291.00	20.00	0.00	0	0		
									point89	89	-58.4	289.4	291.00	20.00	0.00	0	0		
									point90	90	-60.6	351.4	291.00	20.00					
3558 5th -1	W	0.00	99.99	0.00				0.00	point91	91	25.7	284.0	292.00	12.00	0.00	0	0		
									point92	92	68.3	283.3	292.00	12.00	0.00	0	0		
									point93	93	73.7	262.2	292.00	12.00	0.00	0	0		
									point94	94	23.5	260.3	292.00	12.00	0.00	0	0		
									point95	95	25.7	284.0	292.00	12.00					
3558 5th-2	W	0.00	99.99	0.00				0.00	point96	96	-24.8	261.0	292.00	12.00	0.00	0	0		
									point97	97	-25.4	284.0	292.00	12.00	0.00	0	0		
									point98	98	21.3	284.0	292.00	12.00	0.00	0	0		
									point99	99	20.6	261.9	292.00	12.00	0.00	0	0		
									point100	100	-24.8	261.0	292.00	12.00					
3558 5th-3	W	0.00	99.99	0.00				0.00	point101	101	-25.1	236.0	292.00	12.00	0.00	0	0		
									point102	102	25.7	236.0	292.00	12.00	0.00	0	0		
									point103	103	23.2	215.6	292.00	12.00	0.00	0	0		
									point104	104	-23.5	215.2	292.00	12.00	0.00	0	0		
									point105	105	-25.1	236.0	292.00	12.00					
3558 5th-4	W	0.00	99.99	0.00				0.00	point106	106	25.7	236.0	292.00	12.00	0.00	0	0		
									point107	107	74.7	234.4	292.00	12.00	0.00	0	0		
									point108	108	73.4	211.7	292.00	12.00	0.00	0	0		
									point109	109	27.7	212.7	292.00	12.00	0.00	0	0		
									point110	110	25.7	236.0	292.00	12.00					
3558 5th-5	W	0.00	99.99	0.00				0.00	point111	111	-58.4	272.8	292.00	12.00	0.00	0	0		
									point112	112	-33.1	271.8	292.00	12.00	0.00	0	0		
									point113	113	-34.1	224.5	292.00	12.00	0.00	0	0		
									point114	114	-59.6	226.7	292.00	12.00	0.00	0	0		
									point115	115	-58.4	272.8	292.00	12.00					
Webster Building	W	0.00	99.99	0.00				0.00	point116	116	-58.1	-52.6	294.00	36.00	0.00	0	0		
									point117	117	72.8	-53.3	294.00	36.00	0.00	0	0		
									point118	118	73.5	-73.8	294.00	36.00	0.00	0	0		
									point119	119	76.2	-74.4	294.00	36.00	0.00	0	0		
									point120	120	77.3	-99.7	294.00	36.00	0.00	0	0		

									point121	121	74.1	-100.1	294.00	36.00	0.00	0	0		
									point122	122	74.4	-114.0	294.00	36.00	0.00	0	0		
									point123	123	70.2	-114.2	294.00	36.00	0.00	0	0		
									point124	124	71.0	-138.5	294.00	36.00	0.00	0	0		
									point125	125	51.7	-138.5	294.00	36.00	0.00	0	0		
									point126	126	51.7	-140.5	294.00	36.00	0.00	0	0		
									point127	127	20.6	-140.8	294.00	36.00	0.00	0	0		
									point128	128	19.8	-138.5	294.00	36.00	0.00	0	0		
									point129	129	-56.7	-140.4	294.00	36.00	0.00	0	0		
									point130	130	-58.1	-52.6	294.00	36.00					

Eilar Associates, Inc. 28 July 2015
JB TNM 2.5

INPUT: BUILDING ROWS
PROJECT/CONTRACT: B50405N1
RUN: Calibration

Building Row Name	Average Height	Building Percent	Points No.	Coordinates (ground) X	Y	Z
	ft	%		ft	ft	ft
Building1	15.00	80	1	148.6	352.1	288.00
			2	334.0	352.9	284.00
			3	348.3	80.0	294.00
			4	151.8	83.2	291.00
			5	148.6	352.0	288.00
Building2	15.00	80	6	164.6	25.2	291.00
			7	342.0	24.4	295.00
			8	347.5	-344.7	298.00
			9	162.5	-344.7	294.00
			10	164.6	25.1	291.00
Building3	15.00	80	11	-207.0	356.1	294.00
			12	-86.0	353.7	292.00
			13	-76.5	-135.6	296.00
			14	-172.0	-137.1	296.00
			15	-208.6	-25.0	297.00
			16	-207.0	356.0	294.00

Eilar Associates, Inc.			**28 July 2015**	
JB			**TNM 2.5**	
INPUT: TERRAIN LINES				
PROJECT/CONTRACT:	**B50405N1**			
RUN:	**Calibration**			
Terrain Line	**Points**			
Name	**No.**	**Coordinates (ground)**		
		X	**Y**	**Z**
		ft	ft	ft
Terrain Line1	1	1,265.7	-763.1	187.00
	2	1,234.6	-494.2	194.00
	3	1,227.5	-168.0	201.00
	4	1,242.9	130.2	209.00
	5	1,268.2	411.2	213.00
	6	1,288.3	634.5	220.00
	7	1,294.5	863.7	230.00
Terrain Line2	8	1,215.6	-766.0	190.00
	9	1,187.5	-465.7	212.00
	10	1,180.9	-243.0	207.00
	11	1,205.7	136.4	237.00
	12	1,234.3	444.6	222.00
	13	1,262.0	696.0	240.00
	14	1,262.0	901.9	243.00
Terrain Line3	15	768.1	-768.6	288.00
	16	782.3	-369.5	289.00
	17	790.9	180.7	282.00
	18	788.0	403.0	280.00
	19	443.1	408.7	280.00
	20	428.9	565.5	281.00
	21	930.6	568.3	280.00
	22	967.6	853.4	280.00

Eilar Associates, Inc.
JB
28 July 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B50405N1
RUN: Calibration
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	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Calibration	1	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates, Inc. **28 July 2015**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B50405N1**
RUN: **Current**

Roadway Name	Points Name	No.	Segment Autos V veh/hr	Autos S mph	MTrucks V veh/hr	MTrucks S mph	HTrucks V veh/hr	HTrucks S mph	Buses V veh/hr	Buses S mph	Motorcycles V veh/hr	Motorcycles S mph
5th Avenue	point1	1	788	30	16	30	8	30	0	0	0	0
	point2	2										
4th Avenue	point3	3	371	30	8	30	4	30	0	0	0	0
	point4	4	371	30	8	30	4	30	0	0	0	0
	point5	5	371	30	8	30	4	30	0	0	0	0
	point6	6	371	30	8	30	4	30	0	0	0	0
	point7	7	371	30	8	30	4	30	0	0	0	0
	point8	8	371	30	8	30	4	30	0	0	0	0
	point9	9										
6th Ave SB	point12	12	644	30	13	30	7	30	0	0	0	0
	point13	13										
6th Ave NB	point16	16	644	30	13	30	7	30	0	0	0	0
	point17	17										
CA 163 NB	point18	18	2801	55	63	55	24	55	0	0	0	0
	point19	19	2801	55	63	55	24	55	0	0	0	0
	point20	20	2801	55	63	55	24	55	0	0	0	0
	point21	21	2801	55	63	55	24	55	0	0	0	0
	point22	22	2801	55	63	55	24	55	0	0	0	0
	point23	23	2801	55	63	55	24	55	0	0	0	0
	point24	24	2801	55	63	55	24	55	0	0	0	0
	point25	25	2801	55	63	55	24	55	0	0	0	0
	point26	26	2801	55	63	55	24	55	0	0	0	0
	point27	27	2801	55	63	55	24	55	0	0	0	0

	point28	28										
CA 163 SB	point29	29	3330	55	75	55	29	55	0	0	0	0
	point30	30	3330	55	75	55	29	55	0	0	0	0
	point31	31	3330	55	75	55	29	55	0	0	0	0
	point32	32	3330	55	75	55	29	55	0	0	0	0
	point33	33	3330	55	75	55	29	55	0	0	0	0
	point34	34	3330	55	75	55	29	55	0	0	0	0
	point35	35	3330	55	75	55	29	55	0	0	0	0
	point36	36	3330	55	75	55	29	55	0	0	0	0
	point37	37	3330	55	75	55	29	55	0	0	0	0
	point38	38	3330	55	75	55	29	55	0	0	0	0
	point39	39										

Eilar Associates, Inc. 28 July 2015
JB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B50405N1
RUN: Current

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	
R1	1	1	75.0	210.0	291.00	5.00	0.00	66	10.0	8.0	Y
R2	3	1	75.0	195.0	291.00	5.00	0.00	66	10.0	8.0	Y
R3	4	1	75.0	180.0	291.00	5.00	0.00	66	10.0	8.0	Y
R4	5	1	75.0	165.0	291.00	5.00	0.00	66	10.0	8.0	Y
R5	6	1	75.0	150.0	291.00	5.00	0.00	66	10.0	8.0	Y
R6	7	1	75.0	135.0	291.00	5.00	0.00	66	10.0	8.0	Y
R7	8	1	75.0	120.0	291.00	5.00	0.00	66	10.0	8.0	Y
R8	9	1	75.0	105.0	291.00	5.00	0.00	66	10.0	8.0	Y
R9	10	1	75.0	90.0	291.00	5.00	0.00	66	10.0	8.0	Y
R10	11	1	75.0	75.0	291.00	5.00	0.00	66	10.0	8.0	Y
R11	12	1	75.0	60.0	291.00	5.00	0.00	66	10.0	8.0	Y
R12	13	1	75.0	45.0	291.00	5.00	0.00	66	10.0	8.0	Y
R13	14	1	75.0	30.0	291.00	5.00	0.00	66	10.0	8.0	Y
R14	15	1	75.0	15.0	291.00	5.00	0.00	66	10.0	8.0	Y
R15	16	1	75.0	0.0	291.00	5.00	0.00	66	10.0	8.0	Y
R16	17	1	75.0	-15.0	291.00	5.00	0.00	66	10.0	8.0	Y
R17	18	1	75.0	-30.0	291.00	5.00	0.00	66	10.0	8.0	Y
R18	19	1	75.0	-45.0	291.00	5.00	0.00	66	10.0	8.0	Y
R19	21	1	60.0	210.0	291.00	5.00	0.00	66	10.0	8.0	Y
R20	22	1	60.0	195.0	291.00	5.00	0.00	66	10.0	8.0	Y
R21	23	1	60.0	180.0	291.00	5.00	0.00	66	10.0	8.0	Y
R22	24	1	60.0	165.0	291.00	5.00	0.00	66	10.0	8.0	Y

R23	25	1	60.0	150.0	291.00	5.00	0.00	66	10.0	8.0	Y
R24	26	1	60.0	135.0	291.00	5.00	0.00	66	10.0	8.0	Y
R25	27	1	60.0	120.0	291.00	5.00	0.00	66	10.0	8.0	Y
R26	28	1	60.0	105.0	291.00	5.00	0.00	66	10.0	8.0	Y
R27	29	1	60.0	90.0	291.00	5.00	0.00	66	10.0	8.0	Y
R28	30	1	60.0	75.0	291.00	5.00	0.00	66	10.0	8.0	Y
R29	31	1	60.0	60.0	291.00	5.00	0.00	66	10.0	8.0	Y
R30	32	1	60.0	45.0	291.00	5.00	0.00	66	10.0	8.0	Y
R31	33	1	60.0	30.0	291.00	5.00	0.00	66	10.0	8.0	Y
R32	34	1	60.0	15.0	291.00	5.00	0.00	66	10.0	8.0	Y
R33	35	1	60.0	0.0	291.00	5.00	0.00	66	10.0	8.0	Y
R34	36	1	60.0	-15.0	291.00	5.00	0.00	66	10.0	8.0	Y
R35	37	1	60.0	-30.0	291.00	5.00	0.00	66	10.0	8.0	Y
R36	38	1	60.0	-45.0	291.00	5.00	0.00	66	10.0	8.0	Y
R37	39	1	45.0	210.0	292.00	5.00	0.00	66	10.0	8.0	Y
R38	40	1	45.0	195.0	292.00	5.00	0.00	66	10.0	8.0	Y
R39	41	1	45.0	180.0	292.00	5.00	0.00	66	10.0	8.0	Y
R40	42	1	45.0	165.0	292.00	5.00	0.00	66	10.0	8.0	Y
R41	43	1	45.0	150.0	292.00	5.00	0.00	66	10.0	8.0	Y
R42	44	1	45.0	135.0	292.00	5.00	0.00	66	10.0	8.0	Y
R43	45	1	45.0	120.0	292.00	5.00	0.00	66	10.0	8.0	Y
R44	46	1	45.0	105.0	292.00	5.00	0.00	66	10.0	8.0	Y
R45	47	1	45.0	90.0	292.00	5.00	0.00	66	10.0	8.0	Y
R46	48	1	45.0	75.0	292.00	5.00	0.00	66	10.0	8.0	Y
R47	49	1	45.0	60.0	292.00	5.00	0.00	66	10.0	8.0	Y
R48	50	1	45.0	45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R49	51	1	45.0	30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R50	52	1	45.0	15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R51	53	1	45.0	0.0	292.00	5.00	0.00	66	10.0	8.0	Y
R52	54	1	45.0	-15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R53	55	1	45.0	-30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R54	56	1	45.0	-45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R55	57	1	30.0	210.0	292.00	5.00	0.00	66	10.0	8.0	Y
R56	58	1	30.0	195.0	292.00	5.00	0.00	66	10.0	8.0	Y
R57	59	1	30.0	180.0	292.00	5.00	0.00	66	10.0	8.0	Y
R58	60	1	30.0	165.0	292.00	5.00	0.00	66	10.0	8.0	Y

R59	61	1	30.0	150.0	292.00	5.00	0.00	66	10.0	8.0	Y
R60	62	1	30.0	135.0	292.00	5.00	0.00	66	10.0	8.0	Y
R61	63	1	30.0	120.0	292.00	5.00	0.00	66	10.0	8.0	Y
R62	64	1	30.0	105.0	292.00	5.00	0.00	66	10.0	8.0	Y
R63	65	1	30.0	90.0	292.00	5.00	0.00	66	10.0	8.0	Y
R64	66	1	30.0	75.0	292.00	5.00	0.00	66	10.0	8.0	Y
R65	67	1	30.0	60.0	292.00	5.00	0.00	66	10.0	8.0	Y
R66	68	1	30.0	45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R67	69	1	30.0	30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R68	70	1	30.0	15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R69	71	1	30.0	0.0	292.00	5.00	0.00	66	10.0	8.0	Y
R70	72	1	30.0	-15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R71	73	1	30.0	-30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R72	74	1	30.0	-45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R73	75	1	15.0	210.0	292.00	5.00	0.00	66	10.0	8.0	Y
R74	76	1	15.0	195.0	292.00	5.00	0.00	66	10.0	8.0	Y
R75	77	1	15.0	180.0	292.00	5.00	0.00	66	10.0	8.0	Y
R76	78	1	15.0	165.0	292.00	5.00	0.00	66	10.0	8.0	Y
R77	79	1	15.0	150.0	292.00	5.00	0.00	66	10.0	8.0	Y
R78	80	1	15.0	135.0	292.00	5.00	0.00	66	10.0	8.0	Y
R79	81	1	15.0	120.0	292.00	5.00	0.00	66	10.0	8.0	Y
R80	82	1	15.0	105.0	292.00	5.00	0.00	66	10.0	8.0	Y
R81	83	1	15.0	90.0	292.00	5.00	0.00	66	10.0	8.0	Y
R82	84	1	15.0	75.0	292.00	5.00	0.00	66	10.0	8.0	Y
R83	85	1	15.0	60.0	292.00	5.00	0.00	66	10.0	8.0	Y
R84	86	1	15.0	45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R85	87	1	15.0	30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R86	88	1	15.0	15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R87	89	1	15.0	0.0	292.00	5.00	0.00	66	10.0	8.0	Y
R88	90	1	15.0	-15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R89	91	1	15.0	-30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R90	92	1	15.0	-45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R91	93	1	0.0	210.0	292.00	5.00	0.00	66	10.0	8.0	Y
R92	94	1	0.0	195.0	292.00	5.00	0.00	66	10.0	8.0	Y
R93	95	1	0.0	180.0	292.00	5.00	0.00	66	10.0	8.0	Y
R94	96	1	0.0	165.0	292.00	5.00	0.00	66	10.0	8.0	Y

R95	97	1	0.0	150.0	292.00	5.00	0.00	66	10.0	8.0	Y
R96	98	1	0.0	135.0	292.00	5.00	0.00	66	10.0	8.0	Y
R97	99	1	0.0	120.0	292.00	5.00	0.00	66	10.0	8.0	Y
R98	100	1	0.0	105.0	292.00	5.00	0.00	66	10.0	8.0	Y
R99	101	1	0.0	90.0	292.00	5.00	0.00	66	10.0	8.0	Y
R100	102	1	0.0	75.0	292.00	5.00	0.00	66	10.0	8.0	Y
R101	103	1	0.0	60.0	292.00	5.00	0.00	66	10.0	8.0	Y
R102	104	1	0.0	45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R103	105	1	0.0	30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R104	106	1	0.0	15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R105	107	1	0.0	0.0	292.00	5.00	0.00	66	10.0	8.0	Y
R106	108	1	0.0	-15.0	292.00	5.00	0.00	66	10.0	8.0	Y
R107	109	1	0.0	-30.0	292.00	5.00	0.00	66	10.0	8.0	Y
R108	110	1	0.0	-45.0	292.00	5.00	0.00	66	10.0	8.0	Y
R109	111	1	-15.0	210.0	292.50	5.00	0.00	66	10.0	8.0	Y
R110	112	1	-15.0	195.0	292.50	5.00	0.00	66	10.0	8.0	Y
R111	113	1	-15.0	180.0	292.50	5.00	0.00	66	10.0	8.0	Y
R112	114	1	-15.0	165.0	292.50	5.00	0.00	66	10.0	8.0	Y
R113	115	1	-15.0	150.0	292.50	5.00	0.00	66	10.0	8.0	Y
R114	116	1	-15.0	135.0	292.50	5.00	0.00	66	10.0	8.0	Y
R115	117	1	-15.0	120.0	292.50	5.00	0.00	66	10.0	8.0	Y
R116	118	1	-15.0	105.0	292.50	5.00	0.00	66	10.0	8.0	Y
R117	119	1	-15.0	90.0	292.50	5.00	0.00	66	10.0	8.0	Y
R118	120	1	-15.0	75.0	292.50	5.00	0.00	66	10.0	8.0	Y
R119	121	1	-15.0	60.0	292.50	5.00	0.00	66	10.0	8.0	Y
R120	122	1	-15.0	45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R121	123	1	-15.0	30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R122	124	1	-15.0	15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R123	125	1	-15.0	0.0	292.50	5.00	0.00	66	10.0	8.0	Y
R124	126	1	-15.0	-15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R125	127	1	-15.0	-30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R126	128	1	-15.0	-45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R127	129	1	-30.0	210.0	292.50	5.00	0.00	66	10.0	8.0	Y
R128	130	1	-30.0	195.0	292.50	5.00	0.00	66	10.0	8.0	Y
R129	131	1	-30.0	180.0	292.50	5.00	0.00	66	10.0	8.0	Y
R130	132	1	-30.0	165.0	292.50	5.00	0.00	66	10.0	8.0	Y

R131	133	1	-30.0	150.0	292.50	5.00	0.00	66	10.0	8.0	Y
R132	134	1	-30.0	135.0	292.50	5.00	0.00	66	10.0	8.0	Y
R133	135	1	-30.0	120.0	292.50	5.00	0.00	66	10.0	8.0	Y
R134	136	1	-30.0	105.0	292.50	5.00	0.00	66	10.0	8.0	Y
R135	137	1	-30.0	90.0	292.50	5.00	0.00	66	10.0	8.0	Y
R136	138	1	-30.0	75.0	292.50	5.00	0.00	66	10.0	8.0	Y
R137	139	1	-30.0	60.0	292.50	5.00	0.00	66	10.0	8.0	Y
R138	140	1	-30.0	45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R139	141	1	-30.0	30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R140	142	1	-30.0	15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R141	143	1	-30.0	0.0	292.50	5.00	0.00	66	10.0	8.0	Y
R142	144	1	-30.0	-15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R143	145	1	-30.0	-30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R144	146	1	-30.0	-45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R145	147	1	-45.0	210.0	292.50	5.00	0.00	66	10.0	8.0	Y
R146	148	1	-45.0	195.0	292.50	5.00	0.00	66	10.0	8.0	Y
R147	149	1	-45.0	180.0	292.50	5.00	0.00	66	10.0	8.0	Y
R148	150	1	-45.0	165.0	292.50	5.00	0.00	66	10.0	8.0	Y
R149	151	1	-45.0	150.0	292.50	5.00	0.00	66	10.0	8.0	Y
R150	152	1	-45.0	135.0	292.50	5.00	0.00	66	10.0	8.0	Y
R151	153	1	-45.0	120.0	292.50	5.00	0.00	66	10.0	8.0	Y
R152	154	1	-45.0	105.0	292.50	5.00	0.00	66	10.0	8.0	Y
R153	155	1	-45.0	90.0	292.50	5.00	0.00	66	10.0	8.0	Y
R154	156	1	-45.0	75.0	292.50	5.00	0.00	66	10.0	8.0	Y
R155	157	1	-45.0	60.0	292.50	5.00	0.00	66	10.0	8.0	Y
R156	158	1	-45.0	45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R157	159	1	-45.0	30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R158	160	1	-45.0	15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R159	161	1	-45.0	0.0	292.50	5.00	0.00	66	10.0	8.0	Y
R160	162	1	-45.0	-15.0	292.50	5.00	0.00	66	10.0	8.0	Y
R161	163	1	-45.0	-30.0	292.50	5.00	0.00	66	10.0	8.0	Y
R162	164	1	-45.0	-45.0	292.50	5.00	0.00	66	10.0	8.0	Y
R163	165	1	-60.0	210.0	293.00	5.00	0.00	66	10.0	8.0	Y
R164	166	1	-60.0	195.0	293.00	5.00	0.00	66	10.0	8.0	Y
R165	167	1	-60.0	180.0	293.00	5.00	0.00	66	10.0	8.0	Y
R166	168	1	-60.0	165.0	293.00	5.00	0.00	66	10.0	8.0	Y

R167	169	1	-60.0	150.0	293.00	5.00	0.00	66	10.0	8.0	Y
R168	170	1	-60.0	135.0	293.00	5.00	0.00	66	10.0	8.0	Y
R169	171	1	-60.0	120.0	293.00	5.00	0.00	66	10.0	8.0	Y
R170	172	1	-60.0	105.0	293.00	5.00	0.00	66	10.0	8.0	Y
R171	173	1	-60.0	90.0	293.00	5.00	0.00	66	10.0	8.0	Y
R172	174	1	-60.0	75.0	293.00	5.00	0.00	66	10.0	8.0	Y
R173	175	1	-60.0	60.0	293.00	5.00	0.00	66	10.0	8.0	Y
R174	176	1	-60.0	45.0	293.00	5.00	0.00	66	10.0	8.0	Y
R175	177	1	-60.0	30.0	293.00	5.00	0.00	66	10.0	8.0	Y
R176	178	1	-60.0	15.0	293.00	5.00	0.00	66	10.0	8.0	Y
R177	179	1	-60.0	0.0	293.00	5.00	0.00	66	10.0	8.0	Y
R178	180	1	-60.0	-15.0	293.00	5.00	0.00	66	10.0	8.0	Y
R179	181	1	-60.0	-30.0	293.00	5.00	0.00	66	10.0	8.0	Y
R180	182	1	-60.0	-45.0	293.00	5.00	0.00	66	10.0	8.0	Y

Eilar Associates, Inc.
JB
28 July 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B50405N1
RUN: Current
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
R1	1	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R2	3	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R3	4	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R4	5	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R5	6	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R6	7	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R7	8	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R8	9	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R9	10	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R10	11	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R11	12	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R12	13	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R13	14	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R14	15	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R15	16	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R16	17	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R17	18	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R18	19	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R19	21	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R20	22	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
R21	23	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R22	24	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R23	25	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R24	26	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0

R25	27	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R26	28	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R27	29	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R28	30	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R29	31	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R30	32	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R31	33	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R32	34	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R33	35	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
R34	36	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R35	37	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
R36	38	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R37	39	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R38	40	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R39	41	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
R40	42	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R41	43	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R42	44	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R43	45	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R44	46	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R45	47	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R46	48	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R47	49	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R48	50	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R49	51	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R50	52	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R51	53	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R52	54	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
R53	55	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R54	56	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
R55	57	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R56	58	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R57	59	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R58	60	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R59	61	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
R60	62	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R61	63	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
R62	64	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R63	65	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R64	66	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R65	67	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0

R66	68	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
R67	69	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R68	70	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
R69	71	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R70	72	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
R71	73	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
R72	74	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R73	75	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
R74	76	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R75	77	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R76	78	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R77	79	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R78	80	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R79	81	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R80	82	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R81	83	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R82	84	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R83	85	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R84	86	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R85	87	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R86	88	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R87	89	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R88	90	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R89	91	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R90	92	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
R91	93	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R92	94	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R93	95	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
R94	96	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
R95	97	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
R96	98	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R97	99	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
R98	100	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R99	101	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R100	102	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R101	103	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R102	104	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
R103	105	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R104	106	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
R105	107	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
R106	108	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0

R107	109	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R108	110	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R109	111	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R110	112	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R111	113	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R112	114	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
R113	115	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R114	116	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R115	117	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R116	118	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R117	119	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R118	120	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R119	121	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R120	122	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R121	123	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
R122	124	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
R123	125	1	0.0	53.4	66	53.4	10	----	53.4	0.0	8	-8.0
R124	126	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R125	127	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
R126	128	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R127	129	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R128	130	1	0.0	51.6	66	51.6	10	----	51.6	0.0	8	-8.0
R129	131	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R130	132	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R131	133	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R132	134	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R133	135	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R134	136	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R135	137	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R136	138	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R137	139	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R138	140	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
R139	141	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R140	142	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R141	143	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R142	144	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R143	145	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R144	146	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R145	147	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
R146	148	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
R147	149	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0

R148	150	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R149	151	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R150	152	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R151	153	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R152	154	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R153	155	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R154	156	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R155	157	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R156	158	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R157	159	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R158	160	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R159	161	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R160	162	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R161	163	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
R162	164	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
R163	165	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0
R164	166	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
R165	167	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
R166	168	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R167	169	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
R168	170	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
R169	171	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R170	172	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R171	173	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R172	174	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R173	175	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R174	176	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R175	177	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
R176	178	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
R177	179	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
R178	180	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
R179	181	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
R180	182	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	180	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates, Inc. **28 July 2015**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B50405N1**
RUN: **Future**

Roadway Name	Points Name	No.	Segment Autos V veh/hr	Autos S mph	MTrucks V veh/hr	MTrucks S mph	HTrucks V veh/hr	HTrucks S mph	Buses V veh/hr	Buses S mph	Motorcycles V veh/hr	Motorcycles S mph
5th Avenue	point1	1	844	30	17	30	9	30	0	0	0	0
	point2	2										
4th Avenue	point3	3	523	30	11	30	5	30	0	0	0	0
	point4	4	523	30	11	30	5	30	0	0	0	0
	point5	5	523	30	11	30	5	30	0	0	0	0
	point6	6	523	30	11	30	5	30	0	0	0	0
	point7	7	523	30	11	30	5	30	0	0	0	0
	point8	8	523	30	11	30	5	30	0	0	0	0
	point9	9										
6th Ave SB	point12	12	731	30	15	30	8	30	0	0	0	0
	point13	13										
6th Ave NB	point16	16	731	30	15	30	8	30	0	0	0	0
	point17	17										
CA 163 NB	point18	18	3050	55	68	55	26	55	0	0	0	0
	point19	19	3050	55	68	55	26	55	0	0	0	0
	point20	20	3050	55	68	55	26	55	0	0	0	0
	point21	21	3050	55	68	55	26	55	0	0	0	0
	point22	22	3050	55	68	55	26	55	0	0	0	0
	point23	23	3050	55	68	55	26	55	0	0	0	0
	point24	24	3050	55	68	55	26	55	0	0	0	0
	point25	25	3050	55	68	55	26	55	0	0	0	0
	point26	26	3050	55	68	55	26	55	0	0	0	0
	point27	27	3050	55	68	55	26	55	0	0	0	0

	point28	28										
CA 163 SB	point29	29	3685	55	82	55	32	55	0	0	0	0
	point30	30	3685	55	82	55	32	55	0	0	0	0
	point31	31	3685	55	82	55	32	55	0	0	0	0
	point32	32	3685	55	82	55	32	55	0	0	0	0
	point33	33	3685	55	82	55	32	55	0	0	0	0
	point34	34	3685	55	82	55	32	55	0	0	0	0
	point35	35	3685	55	82	55	32	55	0	0	0	0
	point36	36	3685	55	82	55	32	55	0	0	0	0
	point37	37	3685	55	82	55	32	55	0	0	0	0
	point38	38	3685	55	82	55	32	55	0	0	0	0
	point39	39										

Eilar Associates, Inc.
JB
28 July 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B50405N1
RUN: Future
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	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R2	3	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R3	4	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R4	5	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R5	6	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R6	7	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R7	8	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R8	9	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R9	10	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
R10	11	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R11	12	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R12	13	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R13	14	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R14	15	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R15	16	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R16	17	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R17	18	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R18	19	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R19	21	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R20	22	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R21	23	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R22	24	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
R23	25	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R24	26	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0

R25	27	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R26	28	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R27	29	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R28	30	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R29	31	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R30	32	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R31	33	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
R32	34	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
R33	35	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
R34	36	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R35	37	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R36	38	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R37	39	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R38	40	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R39	41	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R40	42	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R41	43	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R42	44	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
R43	45	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R44	46	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R45	47	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
R46	48	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R47	49	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R48	50	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R49	51	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
R50	52	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R51	53	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R52	54	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
R53	55	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R54	56	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R55	57	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R56	58	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R57	59	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R58	60	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R59	61	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R60	62	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R61	63	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R62	64	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R63	65	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R64	66	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R65	67	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0

R66	68	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R67	69	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R68	70	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R69	71	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
R70	72	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R71	73	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
R72	74	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R73	75	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
R74	76	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R75	77	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
R76	78	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R77	79	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R78	80	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
R79	81	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
R80	82	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R81	83	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R82	84	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R83	85	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
R84	86	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
R85	87	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
R86	88	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
R87	89	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R88	90	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R89	91	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R90	92	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
R91	93	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R92	94	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R93	95	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
R94	96	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R95	97	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R96	98	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R97	99	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R98	100	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R99	101	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R100	102	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R101	103	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R102	104	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
R103	105	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R104	106	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
R105	107	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
R106	108	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0

R107	109	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R108	110	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R109	111	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R110	112	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R111	113	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
R112	114	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R113	115	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R114	116	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
R115	117	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
R116	118	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
R117	119	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
R118	120	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
R119	121	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
R120	122	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
R121	123	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
R122	124	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R123	125	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
R124	126	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
R125	127	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R126	128	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R127	129	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R128	130	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R129	131	1	0.0	52.4	66	52.4	10	----	52.4	0.0	8	-8.0
R130	132	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R131	133	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
R132	134	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R133	135	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R134	136	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R135	137	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R136	138	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R137	139	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
R138	140	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R139	141	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
R140	142	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
R141	143	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
R142	144	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R143	145	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
R144	146	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R145	147	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
R146	148	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R147	149	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0

R148	150	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
R149	151	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R150	152	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R151	153	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R152	154	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R153	155	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R154	156	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R155	157	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
R156	158	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
R157	159	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R158	160	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
R159	161	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
R160	162	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R161	163	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R162	164	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R163	165	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
R164	166	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
R165	167	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
R166	168	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
R167	169	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
R168	170	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R169	171	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R170	172	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R171	173	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R172	174	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0
R173	175	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R174	176	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R175	177	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
R176	178	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0
R177	179	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
R178	180	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
R179	181	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R180	182	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	180	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

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INPUT: RECEIVERS
PROJECT/CONTRACT: B50405N1
RUN: Future Facades

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	
F1	1	1	78.0	138.0	288.50	5.00	0.00	66	10.0	8.0	Y
F2	3	1	78.0	72.0	288.50	5.00	0.00	66	10.0	8.0	Y
F3	4	1	78.0	5.0	288.50	5.00	0.00	66	10.0	8.0	Y
F4	5	1	55.0	-24.0	288.50	5.00	0.00	66	10.0	8.0	Y
F5	7	1	-30.0	198.0	288.50	16.33	0.00	66	10.0	8.0	Y
F6	8	1	50.0	198.0	288.50	16.33	0.00	66	10.0	8.0	Y
F7	9	1	78.0	160.0	288.50	16.33	0.00	66	10.0	8.0	Y
F8	10	1	78.0	24.0	288.50	16.33	0.00	66	10.0	8.0	Y
F9	11	1	55.0	-24.0	288.50	16.33	0.00	66	10.0	8.0	Y
F10	12	1	-44.0	-5.0	288.50	16.33	0.00	66	10.0	8.0	Y
F11	13	1	-60.0	12.0	288.50	16.33	0.00	66	10.0	8.0	Y
F12	14	1	-60.0	90.0	288.50	16.33	0.00	66	10.0	8.0	Y
F13	15	1	-60.0	168.0	288.50	16.33	0.00	66	10.0	8.0	Y
F14	16	1	-30.0	198.0	288.50	26.67	0.00	66	10.0	8.0	Y
F15	17	1	50.0	198.0	288.50	26.67	0.00	66	10.0	8.0	Y
F16	18	1	78.0	160.0	288.50	26.67	0.00	66	10.0	8.0	Y
F17	19	1	78.0	24.0	288.50	26.67	0.00	66	10.0	8.0	Y
F18	20	1	55.0	-24.0	288.50	26.67	0.00	66	10.0	8.0	Y
F19	21	1	-44.0	-5.0	288.50	26.67	0.00	66	10.0	8.0	Y
F20	22	1	-60.0	12.0	288.50	26.67	0.00	66	10.0	8.0	Y
F21	23	1	-60.0	90.0	288.50	26.67	0.00	66	10.0	8.0	Y
F22	24	1	-60.0	168.0	288.50	26.67	0.00	66	10.0	8.0	Y

F23	25	1	-30.0	198.0	288.50	37.00	0.00	66	10.0	8.0	Y
F24	26	1	50.0	198.0	288.50	37.00	0.00	66	10.0	8.0	Y
F25	27	1	78.0	160.0	288.50	37.00	0.00	66	10.0	8.0	Y
F26	28	1	78.0	24.0	288.50	37.00	0.00	66	10.0	8.0	Y
F27	29	1	55.0	-24.0	288.50	37.00	0.00	66	10.0	8.0	Y
F28	30	1	-44.0	-5.0	288.50	37.00	0.00	66	10.0	8.0	Y
F29	31	1	-60.0	12.0	288.50	37.00	0.00	66	10.0	8.0	Y
F30	32	1	-60.0	90.0	288.50	37.00	0.00	66	10.0	8.0	Y
F31	33	1	-60.0	168.0	288.50	37.00	0.00	66	10.0	8.0	Y
F32	34	1	-30.0	198.0	288.50	47.33	0.00	66	10.0	8.0	Y
F33	35	1	50.0	198.0	288.50	47.33	0.00	66	10.0	8.0	Y
F34	36	1	78.0	168.0	288.50	47.33	0.00	66	10.0	8.0	Y
F35	37	1	78.0	90.0	288.50	47.33	0.00	66	10.0	8.0	Y
F36	38	1	78.0	12.0	288.50	47.33	0.00	66	10.0	8.0	Y
F37	39	1	55.0	-24.0	288.50	47.33	0.00	66	10.0	8.0	Y
F38	40	1	-44.0	-5.0	288.50	47.33	0.00	66	10.0	8.0	Y
F39	41	1	-56.0	12.0	288.50	47.33	0.00	66	10.0	8.0	Y
F40	42	1	-56.0	90.0	288.50	47.33	0.00	66	10.0	8.0	Y
F41	43	1	-56.0	168.0	288.50	47.33	0.00	66	10.0	8.0	Y
F42	44	1	-30.0	198.0	288.50	57.67	0.00	66	10.0	8.0	Y
F43	45	1	50.0	198.0	288.50	57.67	0.00	66	10.0	8.0	Y
F44	46	1	78.0	168.0	288.50	57.67	0.00	66	10.0	8.0	Y
F45	47	1	78.0	90.0	288.50	57.67	0.00	66	10.0	8.0	Y
F46	48	1	78.0	12.0	288.50	57.67	0.00	66	10.0	8.0	Y
F47	49	1	55.0	-24.0	288.50	57.67	0.00	66	10.0	8.0	Y
F48	50	1	-44.0	-5.0	288.50	57.67	0.00	66	10.0	8.0	Y
F49	51	1	-56.0	12.0	288.50	57.67	0.00	66	10.0	8.0	Y
F50	52	1	-56.0	90.0	288.50	57.67	0.00	66	10.0	8.0	Y
F51	53	1	-56.0	168.0	288.50	57.67	0.00	66	10.0	8.0	Y
CY-2	54	1	60.0	98.0	288.50	16.33	0.00	66	10.0	8.0	Y
CY-3	55	1	60.0	98.0	288.50	26.67	0.00	66	10.0	8.0	Y
CY-4	56	1	60.0	98.0	288.50	37.00	0.00	66	10.0	8.0	Y
CY-5	57	1	28.0	98.0	288.50	47.33	0.00	66	10.0	8.0	Y
CY-6	58	1	28.0	98.0	288.50	57.67	0.00	66	10.0	8.0	Y
Pool	59	1	-5.0	-12.0	288.50	16.33	0.00	66	10.0	8.0	Y

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INPUT: BARRIERS
PROJECT/CONTRACT: B50405N1
RUN: Future Facades

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht Perturbs			On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Pool Area	W	0.00	99.99	0.00				0.00	point1	1	-57.3	-2.6	288.50	14.83	0.00	0	0		
									point2	2	-57.3	-24.9	288.50	14.83	0.00	0	0		
									point3	3	26.3	-24.5	288.50	14.83	0.00	0	0		
									point4	4	26.3	-19.6	288.50	14.83					
Barrier2	W	0.00	99.99	0.00				0.00	point5	5	73.0	-19.6	288.50	63.00	0.00	0	0		
									point6	6	73.2	26.0	288.50	63.00	0.00	0	0		
									point7	7	71.2	25.9	288.50	63.00	0.00	0	0		
									point8	8	71.7	64.7	288.50	63.00	0.00	0	0		
									point9	9	73.2	76.9	288.50	63.00	0.00	0	0		
									point10	10	45.1	76.5	288.50	63.00	0.00	0	0		
									point11	11	45.3	71.9	288.50	63.00	0.00	0	0		
									point12	12	21.6	71.7	288.50	63.00	0.00	0	0		
									point13	13	21.6	75.3	288.50	63.00	0.00	0	0		
									point14	14	18.8	75.6	288.50	63.00	0.00	0	0		
									point15	15	19.1	70.1	288.50	63.00	0.00	0	0		
									point16	16	3.8	70.2	288.50	63.00	0.00	0	0		
									point17	17	3.8	83.4	288.50	63.00	0.00	0	0		
									point18	18	10.7	83.4	288.50	63.00	0.00	0	0		
									point19	19	11.0	94.4	288.50	63.00	0.00	0	0		
									point20	20	8.7	94.4	288.50	63.00	0.00	0	0		
									point21	21	8.7	107.2	288.50	63.00	0.00	0	0		
									point22	22	11.0	107.5	288.50	63.00	0.00	0	0		
									point23	23	10.9	118.4	288.50	63.00	0.00	0	0		
									point24	24	4.1	118.5	288.50	63.00	0.00	0	0		
									point25	25	4.0	131.1	288.50	63.00	0.00	0	0		
									point26	26	19.5	131.0	288.50	63.00	0.00	0	0		
									point27	27	19.5	126.1	288.50	63.00	0.00	0	0		
									point28	28	21.7	126.0	288.50	63.00	0.00	0	0		
									point29	29	21.5	129.6	288.50	63.00	0.00	0	0		
									point30	30	46.0	129.6	288.50	63.00	0.00	0	0		
									point31	31	46.1	118.3	288.50	63.00	0.00	0	0		
									point32	32	75.4	118.3	288.50	63.00	0.00	0	0		
									point33	33	75.8	119.6	288.50	63.00	0.00	0	0		
									point34	34	71.3	119.6	288.50	63.00	0.00	0	0		
									point35	35	71.7	131.6	288.50	63.00	0.00	0	0		

									point36	36	74.5	131.4	288.50	63.00	0.00	0	0		
									point37	37	74.8	179.7	288.50	63.00	0.00	0	0		
									point38	38	71.7	179.9	288.50	63.00	0.00	0	0		
									point39	39	71.7	193.1	288.50	63.00	0.00	0	0		
									point40	40	44.4	192.5	288.50	63.00	0.00	0	0		
									point41	41	44.2	190.7	288.50	63.00	0.00	0	0		
									point42	42	20.6	191.1	288.50	63.00	0.00	0	0		
									point43	43	20.7	195.2	288.50	63.00	0.00	0	0		
									point44	44	18.4	195.5	288.50	63.00	0.00	0	0		
									point45	45	18.8	190.7	288.50	63.00	0.00	0	0		
									point46	46	-14.7	191.1	288.50	63.00	0.00	0	0		
									point47	47	-14.6	195.2	288.50	63.00	0.00	0	0		
									point48	48	-38.3	195.1	288.50	63.00	0.00	0	0		
									point49	49	-38.1	189.8	288.50	63.00	0.00	0	0		
									point50	50	-48.9	190.0	288.50	63.00	0.00	0	0		
									point51	51	-48.8	195.0	288.50	63.00	0.00	0	0		
									point52	52	-53.8	195.0	288.50	63.00	0.00	0	0		
									point53	53	-52.5	146.3	288.50	63.00	0.00	0	0		
									point54	54	-52.2	38.8	288.50	63.00	0.00	0	0		
									point55	55	-55.0	39.0	288.50	63.00	0.00	0	0		
									point56	56	-54.8	0.3	288.50	63.00	0.00	0	0		
									point57	57	-33.8	-0.1	288.50	63.00	0.00	0	0		
									point58	58	-33.9	-2.2	288.50	63.00	0.00	0	0		
									point59	59	-19.2	-2.4	288.50	63.00	0.00	0	0		
									point60	60	-19.3	5.4	288.50	63.00	0.00	0	0		
									point61	61	17.9	5.0	288.50	63.00	0.00	0	0		
									point62	62	18.1	-2.0	288.50	63.00	0.00	0	0		
									point63	63	25.9	-2.2	288.50	63.00	0.00	0	0		
									point64	64	26.3	-19.5	288.50	63.00	0.00	0	0		
									point65	65	73.0	-19.6	288.50	63.00					
BBQ Area	W	0.00	99.99	0.00				0.00	point66	66	73.2	75.2	288.50	14.83	0.00	0	0		
									point67	67	75.9	75.2	288.50	14.83	0.00	0	0		
									point68	68	75.4	117.8	288.50	14.83					
Barrier4	W	0.00	99.99	0.00				0.00	point69	69	-52.2	38.8	288.50	45.83	0.00	0	0		
									point70	70	-52.5	49.5	288.50	45.83	0.00	0	0		
									point71	71	-57.5	49.9	288.50	45.83	0.00	0	0		
									point72	72	-57.3	61.9	288.50	45.83	0.00	0	0		
									point73	73	-52.7	62.1	288.50	45.83	0.00	0	0		
									point74	74	-52.7	72.5	288.50	45.83	0.00	0	0		
									point75	75	-57.6	72.8	288.50	45.83	0.00	0	0		
									point76	76	-57.1	97.5	288.50	45.83	0.00	0	0		
									point77	77	-52.6	97.3	288.50	45.83	0.00	0	0		
									point78	78	-52.8	110.7	288.50	45.83	0.00	0	0		
									point79	79	-57.3	110.9	288.50	45.83	0.00	0	0		
									point80	80	-57.1	132.7	288.50	45.83	0.00	0	0		
									point81	81	-52.8	132.7	288.50	45.83	0.00	0	0		
									point82	82	-52.5	146.3	288.50	45.83	0.00	0	0		
									point83	83	-57.3	145.9	288.50	45.83	0.00	0	0		
									point84	84	-57.3	195.0	288.50	45.83	0.00	0	0		

									point85	85	-53.8	195.0	288.50	45.83						
3580 5th	W	0.00	99.99	0.00				0.00	point86	86	-60.6	351.4	291.00	20.00	0.00	0	0		
									point87	87	73.4	349.8	291.00	20.00	0.00	0	0		
									point88	88	74.0	289.4	291.00	20.00	0.00	0	0		
									point89	89	-58.4	289.4	291.00	20.00	0.00	0	0		
									point90	90	-60.6	351.4	291.00	20.00					
3558 5th -1	W	0.00	99.99	0.00				0.00	point91	91	25.7	284.0	292.00	12.00	0.00	0	0		
									point92	92	68.3	283.3	292.00	12.00	0.00	0	0		
									point93	93	73.7	262.2	292.00	12.00	0.00	0	0		
									point94	94	23.5	260.3	292.00	12.00	0.00	0	0		
									point95	95	25.7	284.0	292.00	12.00					
3558 5th-2	W	0.00	99.99	0.00				0.00	point96	96	-24.8	261.0	292.00	12.00	0.00	0	0		
									point97	97	-25.4	284.0	292.00	12.00	0.00	0	0		
									point98	98	21.3	284.0	292.00	12.00	0.00	0	0		
									point99	99	20.6	261.9	292.00	12.00	0.00	0	0		
									point100	100	-24.8	261.0	292.00	12.00					
3558 5th-3	W	0.00	99.99	0.00				0.00	point101	101	-25.1	236.0	292.00	12.00	0.00	0	0		
									point102	102	25.7	236.0	292.00	12.00	0.00	0	0		
									point103	103	23.2	215.6	292.00	12.00	0.00	0	0		
									point104	104	-23.5	215.2	292.00	12.00	0.00	0	0		
									point105	105	-25.1	236.0	292.00	12.00					
3558 5th-4	W	0.00	99.99	0.00				0.00	point106	106	25.7	236.0	292.00	12.00	0.00	0	0		
									point107	107	74.7	234.4	292.00	12.00	0.00	0	0		
									point108	108	73.4	211.7	292.00	12.00	0.00	0	0		
									point109	109	27.7	212.7	292.00	12.00	0.00	0	0		
									point110	110	25.7	236.0	292.00	12.00					
3558 5th-5	W	0.00	99.99	0.00				0.00	point111	111	-58.4	272.8	292.00	12.00	0.00	0	0		
									point112	112	-33.1	271.8	292.00	12.00	0.00	0	0		
									point113	113	-34.1	224.5	292.00	12.00	0.00	0	0		
									point114	114	-59.6	226.7	292.00	12.00	0.00	0	0		
									point115	115	-58.4	272.8	292.00	12.00					
Webster Building	W	0.00	99.99	0.00				0.00	point116	116	-58.1	-52.6	294.00	36.00	0.00	0	0		
									point117	117	72.8	-53.3	294.00	36.00	0.00	0	0		
									point118	118	73.5	-73.8	294.00	36.00	0.00	0	0		
									point119	119	76.2	-74.4	294.00	36.00	0.00	0	0		
									point120	120	77.3	-99.7	294.00	36.00	0.00	0	0		
									point121	121	74.1	-100.1	294.00	36.00	0.00	0	0		
									point122	122	74.4	-114.0	294.00	36.00	0.00	0	0		
									point123	123	70.2	-114.2	294.00	36.00	0.00	0	0		
									point124	124	71.0	-138.5	294.00	36.00	0.00	0	0		
									point125	125	51.7	-138.5	294.00	36.00	0.00	0	0		
									point126	126	51.7	-140.5	294.00	36.00	0.00	0	0		
									point127	127	20.6	-140.8	294.00	36.00	0.00	0	0		
									point128	128	19.8	-138.5	294.00	36.00	0.00	0	0		
									point129	129	-56.7	-140.4	294.00	36.00	0.00	0	0		
									point130	130	-58.1	-52.6	294.00	36.00					
Barrier12	W	0.00	99.99	0.00				0.00	point131	131	-54.7	39.0	288.50	45.83	0.00	0	0		
									point132	132	-57.0	39.2	288.50	45.83	0.00	0	0		
									point133	133	-57.3	-1.8	288.50	45.83	0.00	0	0		

									point134	134	-48.2	-1.7	288.50	45.83	0.00	0	0		
									point135	135	-48.2	0.1	288.50	45.83					

Eilar Associates, Inc.
JB
28 July 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B50405N1
RUN: Future Facades
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
F1	1	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
F2	3	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
F3	4	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
F4	5	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F5	7	1	0.0	47.9	66	47.9	10	----	47.9	0.0	8	-8.0
F6	8	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
F7	9	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
F8	10	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
F9	11	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F10	12	1	0.0	47.4	66	47.4	10	----	47.4	0.0	8	-8.0
F11	13	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
F12	14	1	0.0	47.5	66	47.5	10	----	47.5	0.0	8	-8.0
F13	15	1	0.0	46.8	66	46.8	10	----	46.8	0.0	8	-8.0
F14	16	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
F15	17	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
F16	18	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F17	19	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F18	20	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
F19	21	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
F20	22	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
F21	23	1	0.0	49.8	66	49.8	10	----	49.8	0.0	8	-8.0
F22	24	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0
F23	25	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
F24	26	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0

F25	27	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
F26	28	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
F27	29	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
F28	30	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
F29	31	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
F30	32	1	0.0	50.7	66	50.7	10	----	50.7	0.0	8	-8.0
F31	33	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
F32	34	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
F33	35	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
F34	36	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
F35	37	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
F36	38	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
F37	39	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
F38	40	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
F39	41	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
F40	42	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
F41	43	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
F42	44	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
F43	45	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
F44	46	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
F45	47	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F46	48	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F47	49	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
F48	50	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
F49	51	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
F50	52	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
F51	53	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
CY-2	54	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
CY-3	55	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
CY-4	56	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
CY-5	57	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
CY-6	58	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
Pool	59	1	0.0	45.6	66	45.6	10	----	45.6	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	57	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX D

Manufacturer Data Sheets

25HBC5
Comfort 15 Heat Pump with Puron® Refrigerant 1–1/2 to 5 Nominal Tons

Carrier
turn to the experts

Product Data

Puron™
the environmentally sound refrigerant

Carrier heat pumps with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 25HBC has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows consumers to make a responsible decision in the protection of the earth's ozone layer.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 15 SEER/ 12.5 EER / 8.0 – 9.0 HSPF
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 69 dBA
- Sound levels as low as 68 dBA with accessory sound blanket

Comfort

- System supports Edge® Thermidistat™ or standard thermostat controls

Reliability

- Puron® refrigerant – environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, durable sheet metal construction
- Dense wire coil guard standard
- Baked-on powder paint

Applications

- Long-line – up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient cooling (down to -20°F/-28.9°C) with accessory kit

ELECTRICAL DATA

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE†		MAX LENGTH ft (m))‡		MAX FUSE** or BRK AMPS
		MAX	MIN	LRA	RLA	FLA		60° C	75° C	60° C	75° C	
18–30	208/230/1	253	197	48.0	9.0	0.5	11.8	14	14	67 (20.4)	63 (19.2)	20
24–30				58.3	12.8	0.5	16.5	14	14	48 (14.6)	45 (13.7)	25
30–30				73.0	14.1	0.5	18.1	14	14	44 (13.4)	41 (12.5)	30
36–30				79.0	16.7	1.2	22.1	12	12	57 (17.4)	54 (16.5)	35
42–30				109.0	21.1	1.2	27.6	10	10	72 (21.9)	69 (21.0)	40
48–30				117.0	21.8	1.2	28.5	10	10	70 (21.3)	67 (20.4)	40
60–30				134.0	26.4	1.2	34.2	8	10	91 (27.7)	56 (17.1)	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30°C, consult table 310–16 of the NEC (NFPA 70). The ampacity of non–metallic–sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (NFPA 70) Article 336–26. If other than uncoated (no–plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for voltage drop not to exceed 2%.

** Time–Delay fuse.

FLA – Full Load Amps

LRA – Locked Rotor Amps

MCA – Minimum Circuit Amps

RLA – Rated Load Amps

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Complies with 2007 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER (dBA)

UNIT SIZE	STANDARD RATING dBA	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–30	73	49.5	60.0	65.0	69.0	65.5	62.0	55.0
24–30	69	48.5	59.5	61.5	62.5	61.0	59.0	53.5
30–30	71	51.0	58.5	61.5	65.5	62.5	60.0	53.5
36–30	72	55.5	59.5	63.5	66.5	64.5	61.5	55.5
42–30	74	56.5	64.0	67.0	68.5	65.0	62.0	57.5
48–30	74	55.5	62.0	66.0	69.0	65.0	62.0	56.0
60–30	74	59.0	62.0	65.0	68.0	65.0	62.5	62.0

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

A-WEIGHTED SOUND POWER (dBA) WITH SOUND SHIELD

UNIT SIZE	STANDARD RATING dBA	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–30	72	50.5	60.0	65.0	67.5	64.5	61.5	53.5
24–30	68	49.5	58.5	61.5	62.0	61.0	58.5	51.5
30–30	69	50.5	58.5	61.5	64.0	61.5	58.5	51.5
36–30	70	54.5	57.5	63.0	66.0	64.0	61.0	54.0
42–30	72	56.5	64.5	66.5	66.5	64.5	61.0	54.5
48–30	72	55.5	62.5	66.0	68.0	64.0	60.0	53.0
60–30	73	58.5	62.5	65.0	67.0	64.0	61.0	56.5

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–SERIES	REQUIRED SUBCOOLING °F (°C)
18–30	12 (6.7)
24–30	14 (7.8)
30–30	10 (5.6)
36–30	8 (4.4)
42–30	10 (5.6)
48–30	11 (6.1)
60–30	10 (5.6)

25HCD4
Comfort™ 14 Heat Pump with Puron® Refrigerant 1–1/2 to 5 Nominal Tons

Carrier
turn to the experts

Advance Product Data

Puron
the environmentally sound refrigerant

Comfort SERIES

Carrier heat pumps with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 25HCD4 has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows consumers to make a responsible decision in the protection of the earth's ozone layer.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 14 SEER
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 69 dBA
- Sound levels as low as 68 dBA with accessory sound blanket

Comfort

- System supports Edge® Thermidistat™ or standard thermostat controls

Reliability

- Puron® refrigerant – environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, durable sheet metal construction
- Dense wire coil guard available
- Baked-on powder paint

Applications

- Long-line – up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

ELECTRICAL DATA

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE†	MIN WIRE SIZE†	MAX LENGTH ft (m)‡	MAX LENGTH ft (m)‡	MAX FUSE** or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		60° C	75° C	60° C	75° C	
18	208/230/1	253	197	48.0	9.0	0.50	11.8	14	14	67	64	20
24				58.3	13.5	0.75	17.7	14	14	45	42	25
30				77.0	16.0	0.75	20.8	12	12	60	57	30
36				70.0	15.4	1.10	20.4	12	12	61	58	35
42				109.0	19.9	0.75	25.7	10	10	78	74	40
48												
60				134.0	26.3	1.20	34.1	8	10	91	56	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30°C, consult table 310–16 of the NEC (NFPA 70). The ampacity of non–metallic–sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (NFPA 70) Article 336–26. If other than uncoated (no–plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for voltage drop not to exceed 2%.

** Time–Delay fuse.

FLA – Full Load Amps
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Complies with 2007 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	69	45.0	48.0	56.0	62.0	54.5	52.5	47.0
24	76	51.5	57.0	63.0	69.5	63.0	59.5	53.5
30	78	45.0	55.0	61.5	70.5	62.0	58.5	52.5
36	72	52.5	55.5	61.5	63.0	60.0	59.0	52.0
42	78	61.0	67.5	72.5	73.5	71.0	67.5	62.0
48								
60	77	55.0	63.0	67.5	71.5	68.0	64.0	60.5

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

A-WEIGHTED SOUND POWER WITH SOUND HOOD

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	68	46.5	48.0	56.0	60.5	54.5	51.5	45.5
24	76	52.0	57.5	63.0	68.0	62.5	58.5	52.5
30	76	45.5	54.5	61.0	68.5	60.5	57.5	52.0
36	72	52.5	54.0	61.5	62.0	59.0	57.5	51.5
42	78	60.5	68.0	72.5	73.0	71.0	67.5	61.5
48								
60	74	55.0	63.5	67.0	69.0	66.5	62.0	57.0

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–SERIES	REQUIRED SUBCOOLING °F (°C)
18	11 (6.1)
24	11 (6.1)
30	10 (5.6)
36	10 (5.6)
42	11 (6.1)
48	
60	15 (8.3)

MITSUBISHI ELECTRIC
HVAC Advanced Products Division

Mr.SLIM®
Split-ductless A/C and Heat Pumps

SUBMITTAL DATA: PLA-A12AA & PUY-A12NHA

12,000 Btu/h CEILING CASSETTE AIR-CONDITIONING SYSTEM

Job Name: Location: Date:

Purchaser: Engineer:

Submitted to: For ☐ Reference ☐ Approval ☐ Construction

Unit Designation: Schedule No.:

GENERAL FEATURES

- Limited Warranty – One year on parts and defects, six years on compressor
- Compact, side discharge outdoor unit
- Quiet operation – indoor and outdoor units
- Auto-restart following a power outage
- Self-check function – onboard diagnostics
- Advanced microprocessor control
- Built-in drain lift mechanism for condensate removal
- Zone control
- Hard-wired, wall-mounted, remote controller (PAR-21MAA)
- 2, 3, or 4 way air flow selection / 6" round or 4 X 14" rectangular branch duct connection
- 4" ventilation air inlet
- Washable filter

OPTIONAL FEATURES

- Multi-function casement
- High efficiency filter element
- Air outlet shutter plate(s)
- Wireless Remote Controller kit
- M-Net adapter
- Wind Baffle
- Air outlet guide

COOLING

Rated capacity . . . . . 12,000 Btu/h
Minimum capacity . . . . . .6,000 Btu/h
SEER . . . . . .13.0 Btu/h/W
Total input. . . . . .1260 W
Power supply . . . . . .208 / 230V, 1 Phase, 60 Hz
Breaker size . . . . . 15 A

VOLTAGE

Indoor - Outdoor S1-S2 . . . . . .AC 208/230V
Indoor - Outdoor S2-S3 . . . . . .DC 24V
Indoor - Remote Controller . . . . . .DC

NOTES:

*1. Rating conditions (cooling)-indoor : D.B. 80°F, W.B. 67°F outdoor : D.B. 95°F, W.B. 75°F.

OPERATING RANGE

		Indoor intake air temp.	Outdoor intake air temp.
Cooling	Max	D.B. 95°F, W.B. 71°F	D.B. 115°F
	Min	D.B. 67°F, W.B. 57°F	D.B. 0°F *

* With wind baffle installed. If not installed, the minimum temperature will be 23°FDB.

Notes:

Indoor Unit: PLA-A12AA

Remote Controller: PAR-21MAA

Outdoor Unit: PUY-A12NHA

INDOOR UNIT

MCA . . . . . .1 A
Fan motor . . . . . 0.79 F.L.A.
Fan motor output . . . . . .70 W
Airflow (Lo-M1-M2-Hi) . . . . . 390-420-460-490 Dry CFM
350-380-420-450 Wet CFM
Sound level (Lo-M1-M2-Hi) . . . . . 27-28-29-31 dB(A)

DIMENSIONS		UNIT	PANEL
inches	W	33-1/16	37-3/8
	D	33-1/16	37-3/8
	H	10-3/16	1-3/16
mm	W	840	950
	D	840	950
	H	258	30

WEIGHT (unit/panel)

Pounds . . . . . .49 / 11
Kg . . . . . .22 / 5
Field drain pipe size I.D. (inches/mm) . . . . . .1 / 25.4
Wall-mounted remote controller PAR-21MAA
(see data submittal sheet)

OUTDOOR UNIT

Compressor . . . . . DC inverter/twin rotary
MCA 13
Fan motor . . . . . 0.35 F.L.A.
Sound level. . . . . .46 dB(A)

DIMENSIONS		INCHES	MM
	W	31-1/2	800
	D	13 + 7/8	330 + 23
	H	23-5/8	600

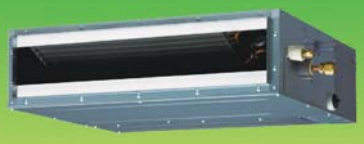
Weight (lbs/Kg) . . . . . .90 / 41
Refrigerant type R410A
Refrigerant pipe size O.D. (inches/mm)
gas side . . . . . .1/2 / 12.7
liquid side . . . . . 1/4 / 6.35
Max. refrigerant pipe length (ft/m) . . . . . 100 / 30
Max. refrigerant pipe height difference (ft/m) . . . . . .100 / 30
Connection method . . . . . flared

R410A

INVERTER

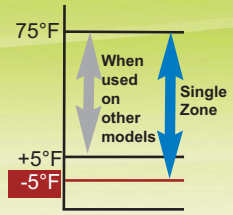
Compact Ducts

SYSTEMS 9RLFCD, 12RLFCD, 18RLFCD



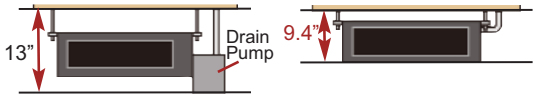
High Performance Heating

Heating capacity at low outdoor temperatures is achieved by adopting a large heat exchanger and a high capacity compressor. Systems operate down to -5°F.



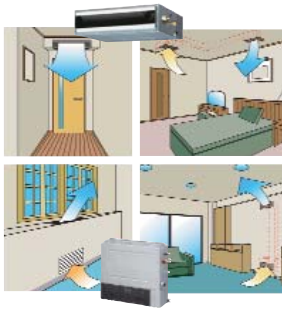
Compact Duct

Built-in drain pump allows for installation of compact duct unit in smaller spaces than traditional units.



Flexible Installation

Horizontal or vertical*.



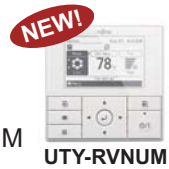
*Internal drain pump will not operate when the unit is mounted in a vertical configuration.

Standard Features

- Wired Remote Control
- Dry Mode
- Weekly Timer
- Auto Mode
- Quiet Mode
- Auto Restart/Reset
- Built In Condensate Pump
- Fresh Air Intake

Optional Accessories

- Backlit Wired Remote Control UTY-RVNUM
- Wireless Remote and Receiver Unit UTY-LRHUM



UTY-RVNUM

Halcyon HFI Hybrid Flex Inverter

	9RLFCD Heat Pump	12RLFCD Heat Pump	18RLFCD Heat Pump
Nominal Cooling *BTU/h*	9,000	12,000	18,000
Min~Max Cooling *BTU/h*	3,100~12,000	3,100~13,600	3,100~20,100
Nominal Heating *BTU/h*	12,000	16,000	21,600
Min~Max Heating *BTU/h*	3,100~18,000	3,100~19,400	3,100~25,600
HSPF	12.2	11.5	11.3
SEER	21.5	20.0	19.7
EER *Clg/Htg*	14.5/14.1	12.8/12.3	12.0/12.9
Cooling Operating Range °F(°C)	14~115 (-10~46)	14~115 (-10~46)	14~115 (-10~46)
Heating Operating Range °F(°C)	-5~75 (-21~24)	-5~75 (-21~24)	-5~75 (-21~24)
Moisture Removal *Pt./h(l/h)*	1.5 (0.7)	2.7 (1.3)	4.2 (2.0)
Voltage/Frequency/Phase	208-230/60/1	208-230/60/1	208-230/60/1
Recommended Fuse Size *(A)*	15	15	20
Static Pressure *In. W. C.*	0 ~ 0.36	0 ~ 0.36	0 ~ 0.36
Air Circ. *C.F.M. (m³/h) Clg/Htg*: Hi	353 (600)	383 (650)	554 (940)
Medium	324 (550)	353 (600)	518 (880)
Low	294 (500)	324 (550)	483 (820)
Quiet	265 (450)	283 (480)	442 (750)
Noise Level *dB(A)* (Clg/Htg): Hi	28/28	29/29	32/32
Medium	27/26	28/28	30/30
Low	26/25	27/27	29/29
Quiet	25/24	26/24	27/27
Outdoor Fan Speed *RPM Clg/Htg*	590/720	870/780	870/1,000
Outdoor Noise Level *Clg/Htg*	48/49	49/50	54/55
Running Current *Rated (A)Clg/Htg*	3.0/3.9	4.4/6.0	6.6/7.3
Power Use *Rated/Max (kW)*: Cooling	0.62/1.40	0.94/1.45	1.50/2.15
Heating	0.85/1.80	1.30/2.00	1.67/2.60
Fan Speeds *Stage*	4 + Auto	4 + Auto	4 + Auto
Air Filter	Washable	Washable	Washable
Connection Method	Flare	Flare	Flare
Combined Max. Length *Ft (m)*	66 (20)	66 (20)	66 (20)
Max. Vertical Diff. *Ft (m)*	49 (15)	49 (15)	49 (15)
Conn. Pipe Diameter *Inch*	suc 3/8 dis 1/4	suc 3/8 dis 1/4	suc 1/2 dis 1/4
Indoor Unit Net Weight *lbs. (kg)*	41 (19)	41 (19)	50 (23)
Outdoor Unit Net Weight *lbs. (kg)*	84 (38)	84 (38)	86 (39)
Indoor Unit Dimensions: Height *Inch (mm)*	7-25/32 (198)	7-25/32 (198)	7-25/32 (198)
Width *Inch (mm)*	27-9/16 (700)	27-9/16 (700)	35-7/16 (900)
Depth *Inch (mm)*	24-13/32 (620)	24-13/32 (620)	24-13/32 (620)
Supply Duct Flange Dimensions: Height *Inch (mm)*	5-15/16 (151)	5-15/16 (151)	5-15/16 (151)
Width *Inch (mm)*	25-19/32 (650)	25-19/32 (650)	33-15/32 (850)
Depth *Inch (mm)*	3/4 (19)	3/4 (19)	3/4 (19)
Return Duct Flange Dimensions: Height *Inch (mm)*	6-27/32 (174)	6-27/32 (174)	6-27/32 (174)
Width *Inch (mm)*	22-19/32 (574)	22-19/32 (574)	30-15/32 (774)
Depth *Inch (mm)*	3/4 (19) (Flat)	3/4 (19) (Flat)	3/4 (19) (Flat)
Outdoor Unit Dimensions: Height *Inch (mm)*	24-1/2 (620)	24-1/2 (620)	24-1/2 (620)
Width *Inch (mm)*	31-3/32 (790)	31-3/32 (790)	31-3/32 (790)
Depth *Inch (mm)*	11-11/32 (290)	11-11/32 (290)	11-11/32 (290)
Refrigerant	R410A	R410A	R410A

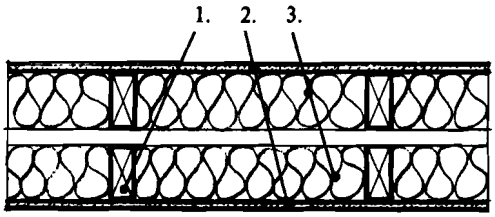
Field Supplied Filters

Filters are sized to keep velocities and static pressure loss low. This will insure sufficient static pressure is available for ductwork, fittings and supply and return grilles. Alternative filter sizes with equivalent face areas can be used.

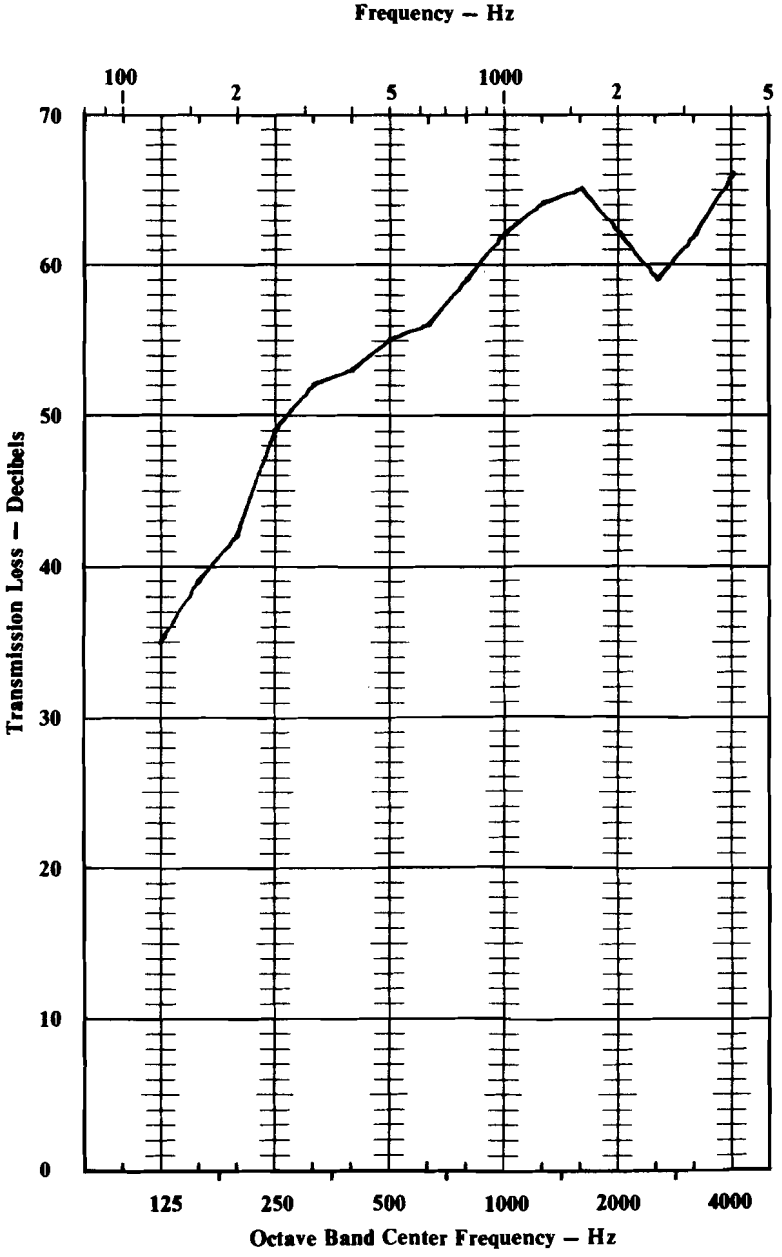
	ARU 9RLF	ARU 12RLF	ARU 18RLF
CFM	353	353	547
Typical Filter Size	12 x 20	12 x 20	14 x 25
Velocity, FPM	212	212	225
Unit External SP, in. W.C.	0.36	0.36	0.36
1" Fiberglass Filter			
SP Loss, in. W.C.	0.04	0.04	0.04
Available Static Pressure	0.32	0.32	0.32
1" MERV 8 Pleated Filter			
SP Loss, in. W.C.	0.12	0.12	0.14
Available Static Pressure	0.24	0.24	0.22
2" MERV 8 Pleated Filter			
SP Loss, in. W.C.	0.07	0.07	0.08
Available Static Pressure	0.29	0.29	0.28

APPENDIX E

Sound Insulation Prediction Results

Sketch	Brief Description	D_n	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. double row of 2x4 studs 16"o.c. on separate plates spaced 1" apart. 2. 5/8" type X gypsum board attached with screws 16"o.c. 3. 3 1/2" thick sound attenuation blankets in both stud cavities.	*54*	Riverbank Acoustical Labs. TL75-83 1975 16f U.S. Dept. of Agriculture	57	1.2.4.1.5.4

125 HZ	35
160 HZ	39
200 HZ	42
250 HZ	49
315 HZ	52
400 HZ	53
500 HZ	55
630 HZ	56
800 HZ	59
1000 HZ	62
1250 HZ	64
1600 HZ	65
2000 HZ	62
2500 HZ	59
3150 HZ	62
4000 HZ	66



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Avenue

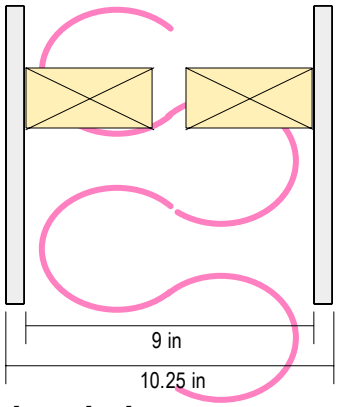
Job No.:B50405N Page No.:

Date: 24 Jul 15 Initials:jbrothers

File Name: Wall Type DM-2.ixl

Notes:

Wall Type DM-2



STC 58

OITC 39

System description

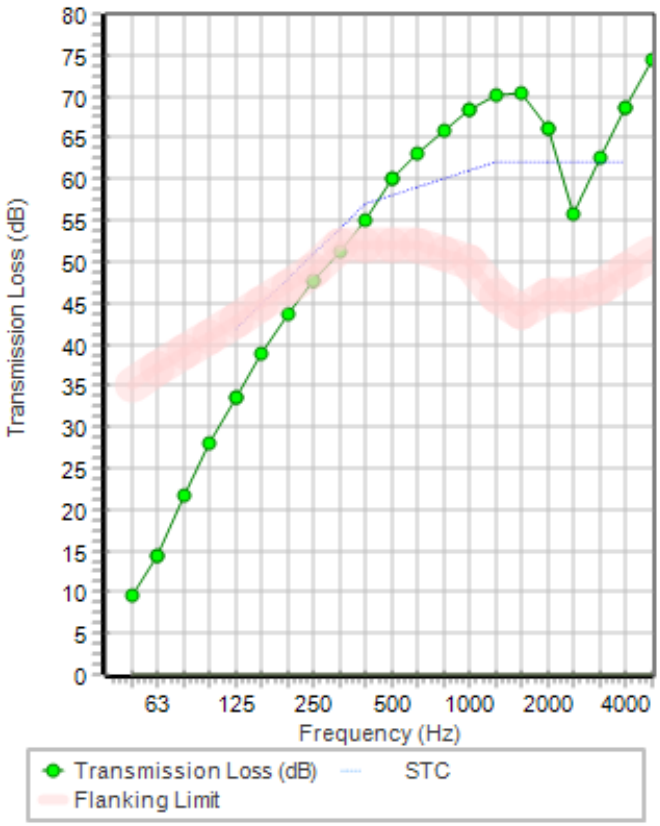
Panel 1 : 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Cavity: Double timber stud: Stud spacing 16 in , Infill fiberglass (0.6 lb/ft3) Thickness 8 in (ρ:10 lbs/ft3, Rf:3500 Pa.s/m2)
Panel 2 + 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =47 Hz

frequency (Hz)	TL(dB)	TL(dB)
50	10	
63	14	13
80	22	
100	28	
125	34	31
160	39	
200	44	
250	48	46
315	51	
400	55	
500	60	58
630	63	
800	66	
1000	68	68
1250	70	
1600	70	
2000	66	60
2500	56	
3150	63	
4000	69	66
5000	75	

Panel Size 8.9x13 ft; Mass 4.9 lb/ft2



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Avenue

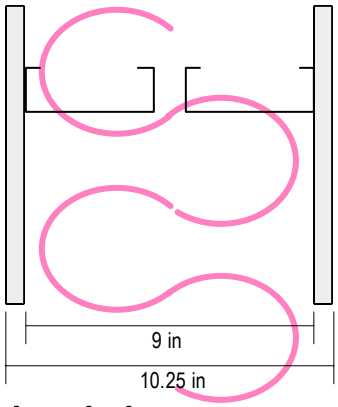
Job No.:B50405N Page No.:

Date: 24 Jul 15 Initials:jbrothers

File Name: Wall Type DX-1.ixl

Notes:

Wall Type DX-1



STC 58

OITC 39

System description

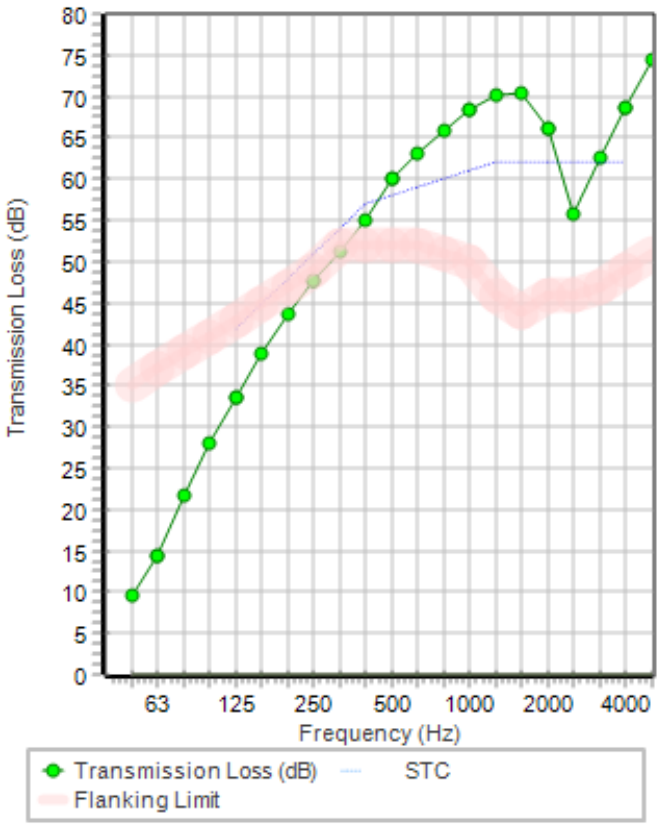
Panel 1 : 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

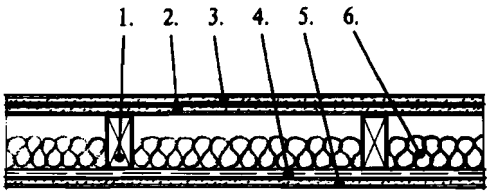
Cavity: Double steel stud: Stud spacing 16 in , Infill fiberglass (0.6 lb/ft3) Thickness 8 in (ρ:10 lbs/ft3, Rf:3500 Pa.s/m2)
Panel 2 + 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =47 Hz

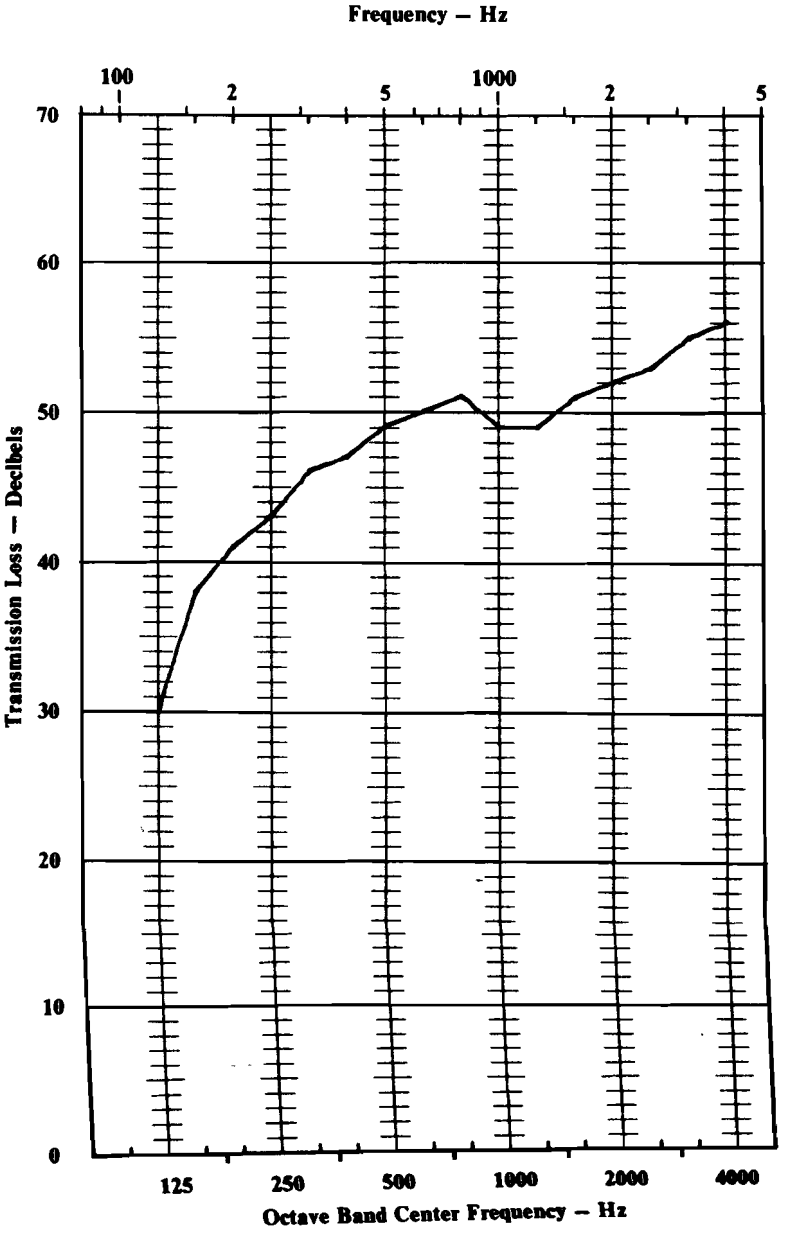
frequency (Hz)	TL(dB)	TL(dB)
50	10	
63	14	13
80	22	
100	28	
125	34	31
160	39	
200	44	
250	48	46
315	51	
400	55	
500	60	58
630	63	
800	66	
1000	68	68
1250	70	
1600	70	
2000	66	60
2500	56	
3150	63	
4000	69	66
5000	75	

Panel Size 8.9x13 ft; Mass 4.9 lb/ft2



Sketch	Brief Description	D_n	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. 2x4 studs, 16"o.c. 2. 5/8" gypsum board screwed to studs. 3. 5/8" gypsum board laminated to base layer with gypsum joint compound. 4. resilient channels, 24"o.c. 5. 5/8" gypsum board screwed to channels. 6. 2" thick sound attenuation blanket.	*48*	National Research Council of Canada NRC #66 1968 16f National Research Council of Canada	50	1.2.2.5.5.2

125 HZ	30
160 HZ	38
200 HZ	41
250 HZ	43
315 HZ	46
400 HZ	47
500 HZ	49
630 HZ	50
800 HZ	51
1000 HZ	49
1250 HZ	49
1600 HZ	51
2000 HZ	52
2500 HZ	53
3150 HZ	55
4000 HZ	56



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Avenue

Job No.:B50405N

Page No.:

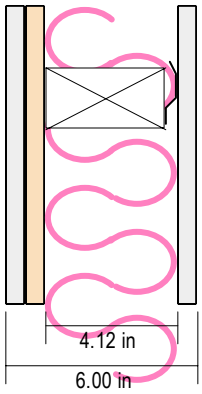
Date: 24 Jul 15

Initials:jbrothers

File Name: Wall Type FC-1.ixl

Notes:

Wall Type FC-1



STC 53

OITC 36

System description

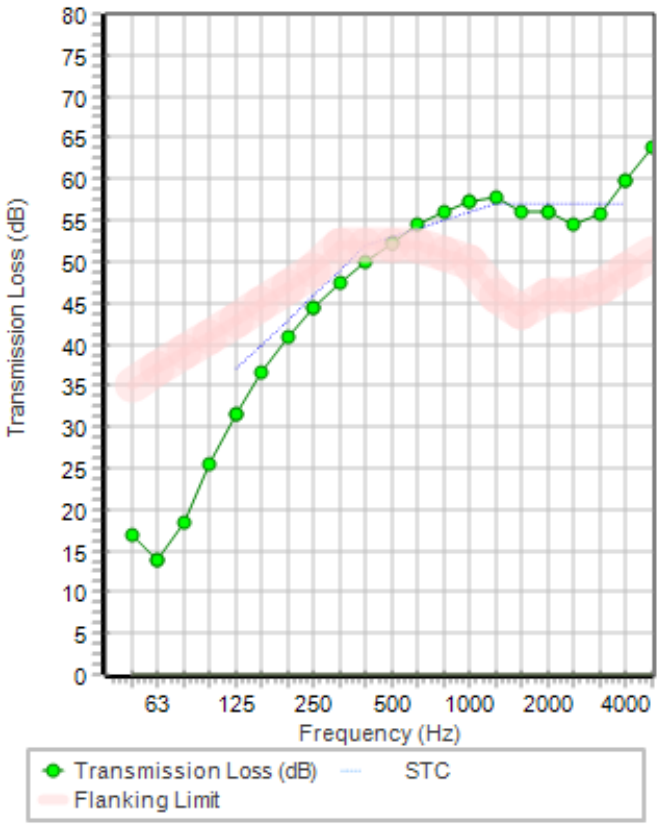
Panel 1 : 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01) + 1 x 0.63 in Plywood (ρ:34.96 lbs/ft3,E:0.63psi*10^6,η:0.01)

Cavity: Timber stud + resil. rail/bar: Stud spacing 16 in , Infill fiberglass (1.4 lb/ft3) Thickness 4 in (ρ:22 lbs/ft3, Rf:8610 Pa.s/m2)
Panel 2 + 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =60 Hz

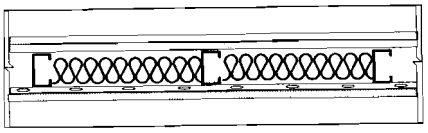
frequency (Hz)	TL(dB)	TL(dB)
50	17	
63	14	16
80	18	
100	25	
125	31	29
160	37	
200	41	
250	45	43
315	48	
400	50	
500	52	52
630	54	
800	56	
1000	57	57
1250	58	
1600	56	
2000	56	56
2500	55	
3150	56	
4000	60	59
5000	64	

Panel Size 8.9x13 ft; Mass 6.8 lb/ft2



NRC-CNRC National Research Council Canada

2G13_SS90(406)_MFB90_RC13(610)_G13

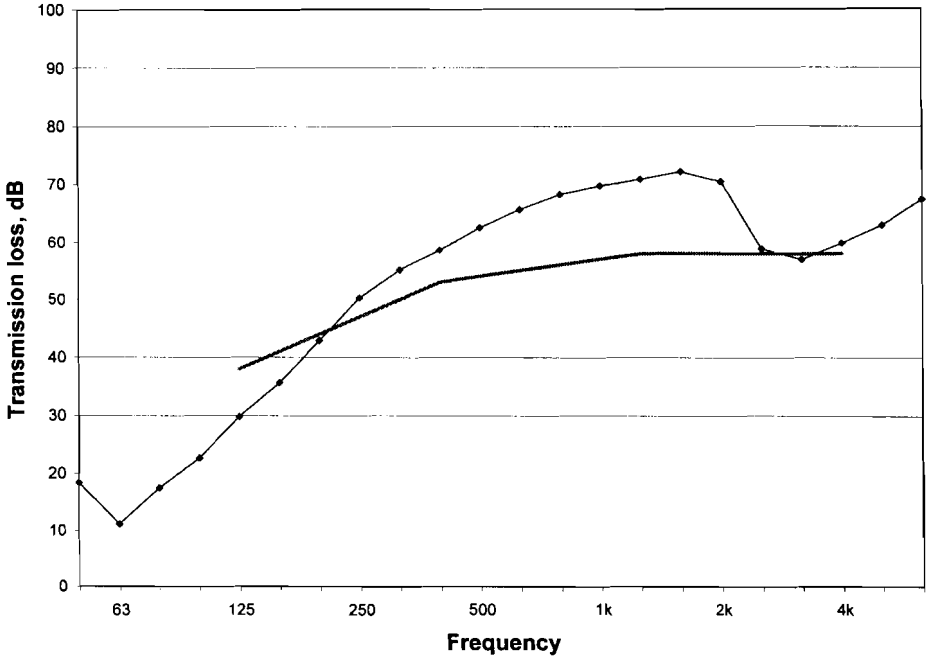


Element	Description:
1	single layer of 13 mm type X gypsum board
2	single layer of 13 mm type X gypsum board
3	90 mm steel studs at 406 mm on centre
4	90 mm of mineral fibre insulation in cavity
5	resilient channels at 610 mm on centre
6	single layer of 13 mm type X gypsum board

TestID	TL-94-023
STC	54
50 Hz	18.5
63 Hz	11.2
80 Hz	17.5
100 Hz	22.6
125 Hz	29.8
160 Hz	35.7
200 Hz	42.9
250 Hz	50.3
315 Hz	55.1
400 Hz	58.6
500 Hz	62.6
630 Hz	65.6
800 Hz	68.2
1000 Hz	69.7
1250 Hz	70.9
1600 Hz	72.3
2000 Hz	70.4
2500 Hz	58.8
3150 Hz	57.0
4000 Hz	59.9
5000 Hz	62.9
6300 Hz	67.4

TL-94-023	element 1	element 2	element 3	element 4	element 5	element 6
type	gypsum board	gypsum board	stud	insulation	resilient	gypsum board
material	AX	AX	steel	M1	G.P.	AX
thickness mm	13	13	90	90	13	13
gauge			20			
spacing mm			406		610	
surface density kg/m^2	10.1	10.0		2.9		10.1
linear density kg/m			1.3			
total weight kg	75.0	74.6	36.4	21.7	4.0	75.2
fastener spacing - edge mm	305	305				305
fastener spacing - field mm	305	610				305
fastener top track pattern	a	a				
fastener base track pattern	a	a				
stud attached to top track			yes			
double header						
orientation	vertical	vertical			horizontal	horizontal

TL-94-023
STC 54



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Ave

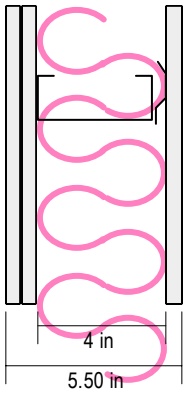
Job No.:B50405N Page No.:

Date: 28 Jul 15 Initials:jbrothers

File Name: Wall Type DS-1 per Canada test.ixl

Notes:

Wall Type DS-1 - National Research Council Tested Assembly



STC 52

OITC 33

System description

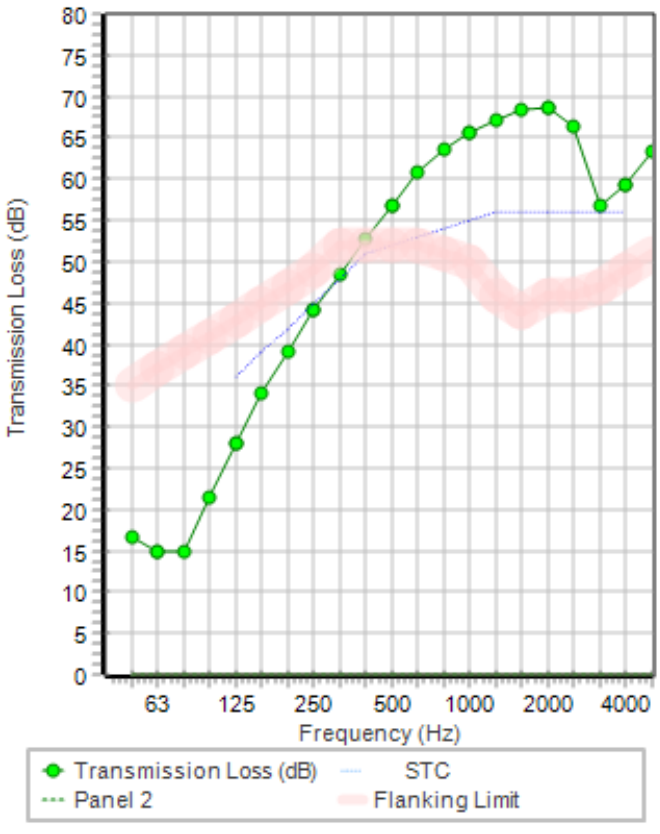
Panel 1 : 2 x 0.50 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Cavity: Steel stud + resil. rail: Stud spacing 16 in , Infill fiberglass (1.4 lb/ft3) Thickness 4 in (ρ:22 lbs/ft3, Rf:8610 Pa.s/m2)
Panel 2 + 1 x 0.50 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =67 Hz

frequency (Hz)	TL(dB)	TL(dB)
50	17	
63	15	15
80	15	
100	22	
125	28	25
160	34	
200	39	
250	44	42
315	49	
400	53	
500	57	56
630	61	
800	64	
1000	66	65
1250	67	
1600	68	
2000	69	68
2500	66	
3150	57	
4000	59	59
5000	63	

Panel Size 8.9x13 ft; Mass 5.8 lb/ft2



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Ave

Job No.:B50405N

Page No.:

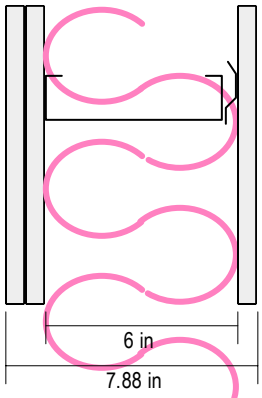
Date: 27 Jul 15

Initials:jbrothers

File Name: Wall Type DS-1.ixl

Notes:

Wall Type DS-1



STC 60

OITC 42

System description

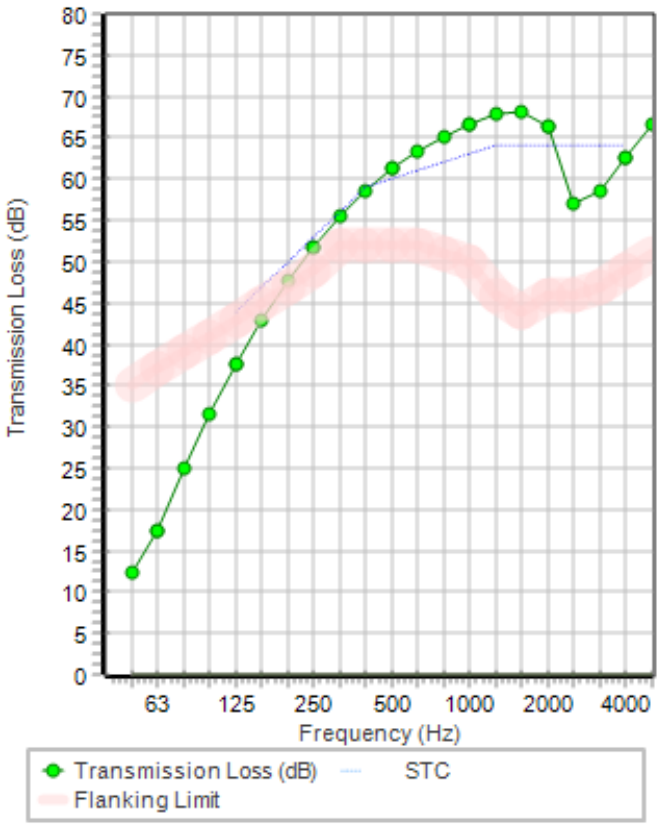
Panel 1 : 2 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Cavity: Steel stud + resil. rail: Stud spacing 16 in , Infill fiberglass (1.4 lb/ft3) Thickness 6 in (ρ:22 lbs/ft3, Rf:8610 Pa.s/m2)
Panel 2 + 1 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =48 Hz

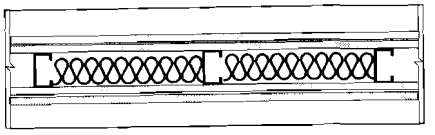
frequency (Hz)	TL(dB)	TL(dB)
50	12	
63	17	16
80	25	
100	32	
125	38	35
160	43	
200	48	
250	52	51
315	55	
400	59	
500	61	61
630	63	
800	65	
1000	67	66
1250	68	
1600	68	
2000	66	61
2500	57	
3150	59	
4000	63	61
5000	67	

Panel Size 8.9x13 ft; Mass 7.4 lb/ft2



NRC-CNRC National Research Council Canada

2G16_SS90(406)_MFB90_2G16

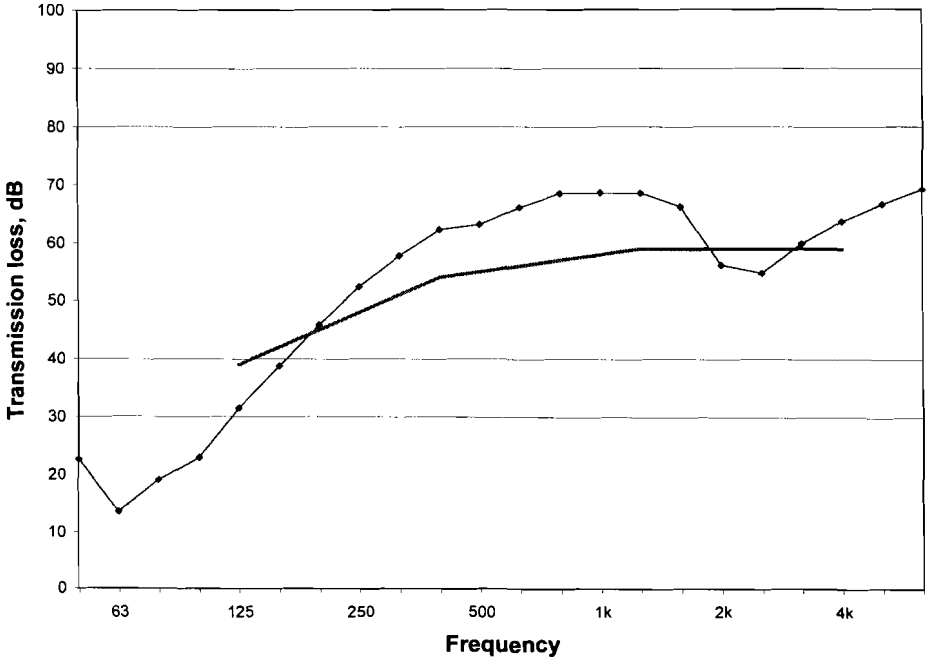


Element	Description:
1	single layer of 16 mm type X gypsum board
2	single layer of 16 mm type X gypsum board
3	90 mm steel studs at 406 mm on centre
4	90 mm of mineral fibre insulation in cavity
5	single layer of 16 mm type X gypsum board
6	single layer of 16 mm type X gypsum board

TestID	TL-93-332
STC	55
50 Hz	22.7
63 Hz	13.7
80 Hz	19.1
100 Hz	23.0
125 Hz	31.5
160 Hz	38.8
200 Hz	45.8
250 Hz	52.4
315 Hz	57.7
400 Hz	62.3
500 Hz	63.3
630 Hz	66.1
800 Hz	68.5
1000 Hz	68.7
1250 Hz	68.6
1600 Hz	66.3
2000 Hz	56.2
2500 Hz	54.8
3150 Hz	59.9
4000 Hz	63.8
5000 Hz	66.7
6300 Hz	69.3

TL-93-332	element 1	element 2	element 3	element 4	element 5	element 6
type	gypsum board	gypsum board	stud	insulation	gypsum board	gypsum board
material	CX	CX	steel	M1	CX	CX
thickness mm	16	16	90	90	16	16
gauge			25			
spacing mm			406			
surface density kg/m^2	11.5	11.5		3.2	11.4	11.3
linear density kg/m			0.6			
total weight kg	85.6	65.4	18.2	22.7	84.8	84.2
fastener spacing - edge mm	305	305			305	305
fastener spacing - field mm	305	610			610	305
fastener top track pattern	d	d			d	d
fastener base track pattern	a	a			a	a
stud attached to top track						
double header						
orientation	vertical	vertical			vertical	vertical

TL-93-332
STC 55



Sound Insulation Prediction (v8.0.7)

Microsoft - Key No. 1866

Margin of error is generally within STC +/- 3 dB

Job Name:Strauss 5th Ave

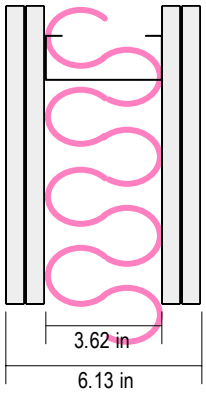
Job No.:B50405N Page No.:

Date: 27 Jul 15 Initials:jbrothers

File Name: Wall Type FR-2 25 gauge.ixl

Notes:

Wall Type FR-2 - 25 gauge



STC 56

OITC 33

System description

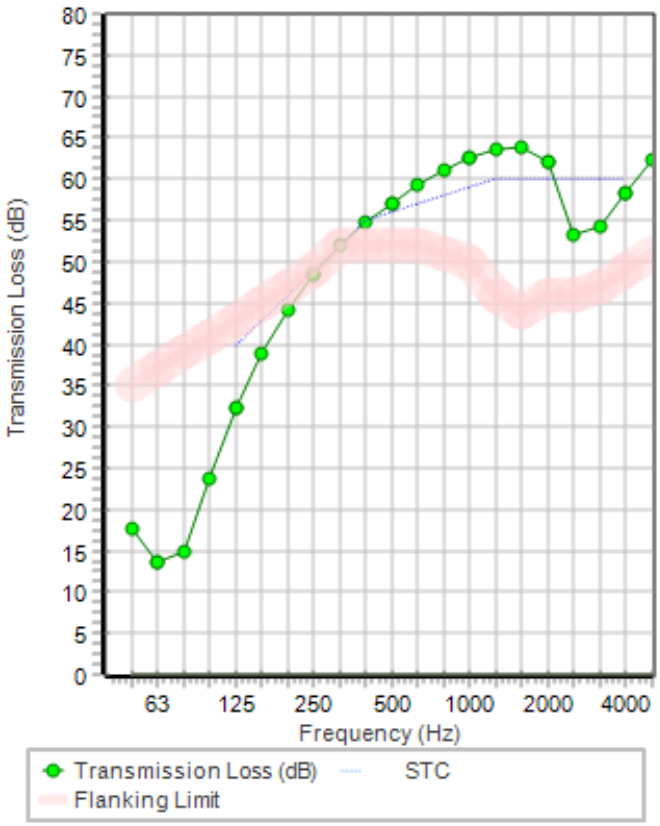
Panel 1 : 2 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

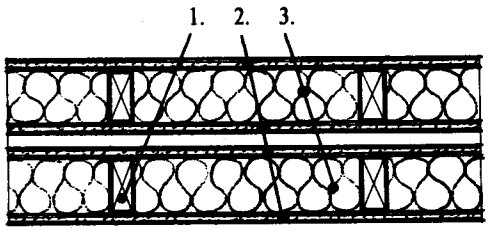
Cavity: Steel stud (25g): Stud spacing 16 in , Infill fiberglass (1.4 lb/ft3) Thickness 4 in (ρ:22 lbs/ft3, Rf:8610 Pa.s/m2)
Panel 2 + 2 x 0.63 in Type X Gypsum Board (ρ:43.08 lbs/ft3,E:0.27psi*10^6,η:0.01)

Mass-air-mass resonant frequency =51 Hz

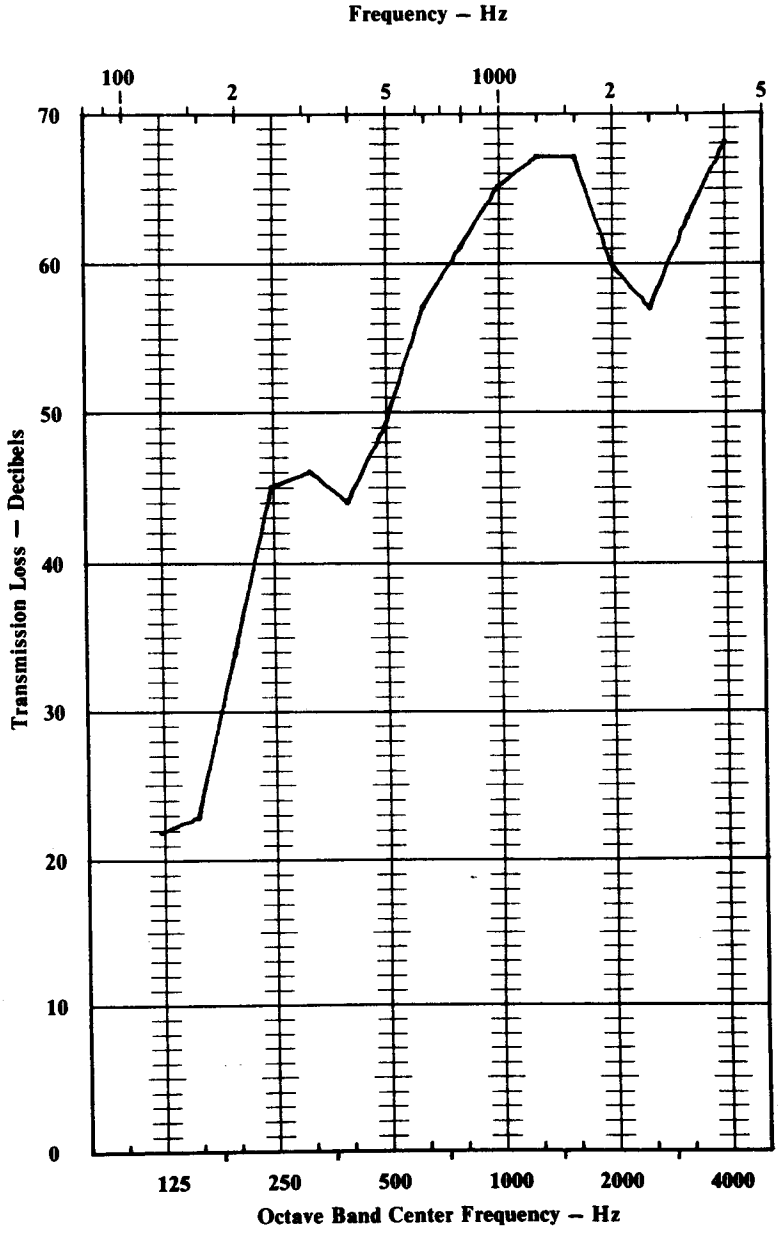
frequency (Hz)	TL(dB)	TL(dB)
50	18	
63	14	15
80	15	
100	24	
125	32	28
160	39	
200	44	
250	48	47
315	52	
400	55	
500	57	57
630	59	
800	61	
1000	62	62
1250	64	
1600	64	
2000	62	57
2500	53	
3150	54	
4000	58	57
5000	62	

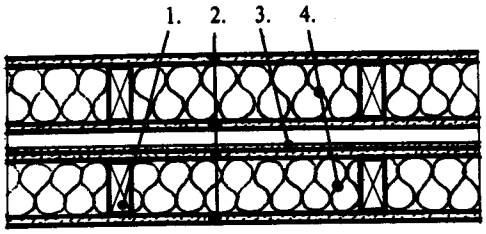
Panel Size 8.9x13 ft; Mass 9.4 lb/ft2



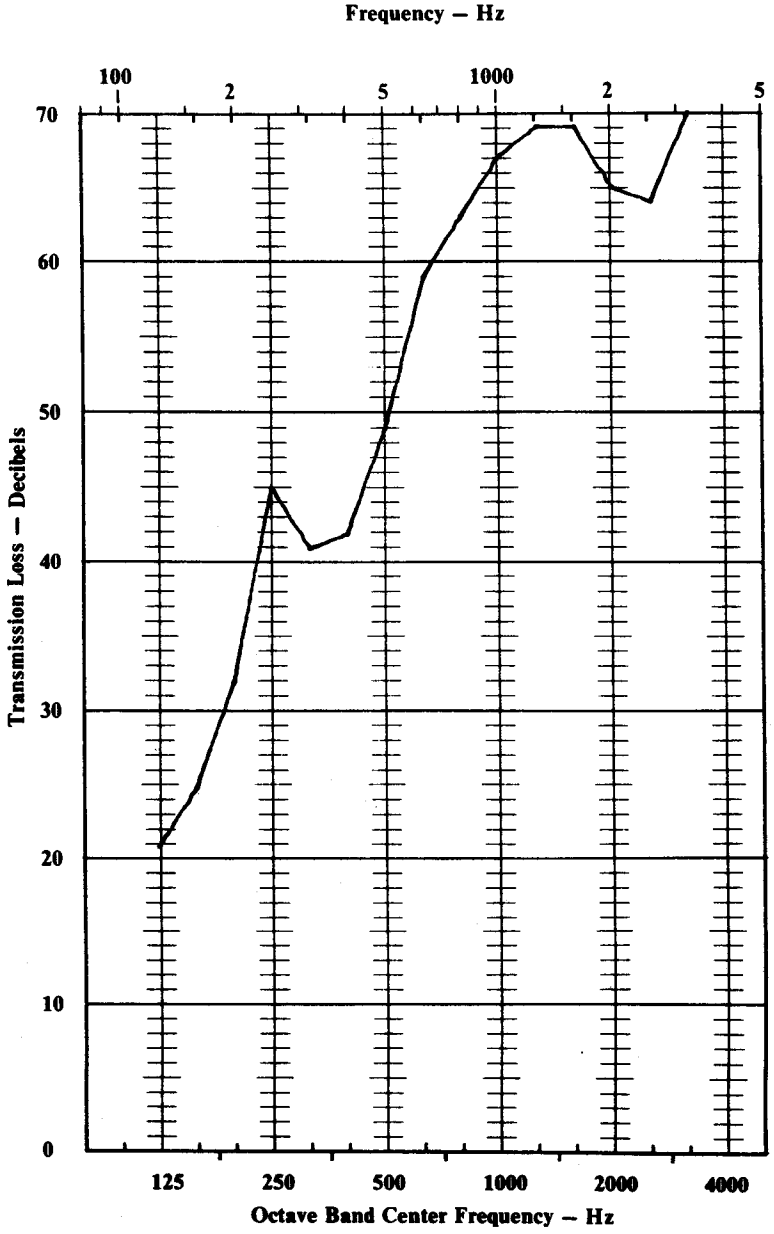
Sketch	Brief Description	D_n	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. double row of 2x4 studs 16"o.c. on separate plates spaced 2 1/4" apart. 2. 5/8" type X gypsum board screwed 12"o.c. 3. 3 1/2" thick sound attenuation blankets in both stud cavities.	*43*	Geiger and Hamme OC-10FC 1972 16f Owens/Corning Fiberglas	44	1.2.4.1.5.17

125 HZ	22
160 HZ	23
200 HZ	34
250 HZ	45
315 HZ	46
400 HZ	44
500 HZ	49
630 HZ	57
800 HZ	61
1000 HZ	65
1250 HZ	67
1600 HZ	67
2000 HZ	60
2500 HZ	57
3150 HZ	63
4000 HZ	68



Sketch	Brief Description	D_n	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. double row of 2x4 studs 16"o.c. on separate plates spaced 2 1/2" apart. 2. 5/8" type X gypsum board screwed 12"o.c. 3. 1/4" gypsum board screwed to studs. 4. 3 1/2" thick sound attenuation blankets in both stud cavities.	*43*	Owens/Corning Fiberglas OCF W-15-77 1977 16f Owens/Corning Fiberglas	45	1.2.4.1.5.18

125 HZ	21
160 HZ	25
200 HZ	32
250 HZ	45
315 HZ	41
400 HZ	42
500 HZ	49
630 HZ	53
800 HZ	63
1000 HZ	67
1250 HZ	68
1600 HZ	69
2000 HZ	65
2500 HZ	64
3150 HZ	70
4000 HZ	74



REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 100336557 Date: June 24, 2011

REPORT NO. 100336557CRT-001g

**SOUND TRANSMISSION LOSS TEST
AND CLASSIFICATION OF MAXXON GYPSUM UNDERLAYMENT
OVER A SOUND CONTROL MAT
ON A WOOD JOIST FLOOR/CEILING ASSEMBLY**

**MAXXON CORPORATION
920 HAMEL ROAD, P. O. BOX 253
HAMEL, MN 55340-9610**

INTRODUCTION

This report gives the results of a Sound Transmission Loss Test and Classification of Maxxon Gypsum Underlayment over a Sound Control Mat on a wood joist floor/ceiling assembly. The floor/ceiling assembly was supplied and installed by Intertek. The gypsum topping and the acoustical mat underlayment were supplied and installed by a representative of Maxxon Corporation. The sample appeared to be in a new, unused condition.

AUTHORIZATION

Signed Quote No. 500285443.

TEST METHOD

The specimen was tested in general accordance with the American Society for Testing and Materials designation ASTM E90-09, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements", and classified in accordance with the American Society for Testing and Materials designation ASTM E413-04, “Classification for Rating Sound Insulation". The size of the source room for the measurements is smaller than the minimum recommended of 125m^3. This leads to slightly elevated uncertainties in the measurement data at low frequencies and does not allow microphones to be placed in full accordance with section A.2.

GENERAL

The sound-insulating property of a partition element is expressed in terms of the sound transmission loss. The procedure for determining this quantity is to mount (and perimeter seal) the test specimen as a partition between two reverberation rooms. Sound is introduced in one of the rooms (the source room) and measurements are made of the noise reduction between source room and receiving room. The rooms are so arranged and constructed that the only significant sound transmission between them is through the test specimen.

The purpose of the Sound Transmission Class (STC) is to provide a single figure rating that can be used for comparing the sound-insulating properties of partition elements used for general building design purposes. The higher the rating (STC) the greater the sound insulating properties of the partition.

DESCRIPTION OF THE FLOOR/CEILING ASSEMBLY

The test floor is a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The materials used in the assembly from top to bottom are:

- Nominal 1 inch thick Maxxon Gypsum Underlayment (poured March 10, 2011)
- Acousti-Mat II Sound Control Mat
- 5/8 inch thick T & G OSB nailed 6 inches on perimeter and 12 inches in field and glued to the joists using OSI PL400 adhesive
- 10 inch high nominal 2 X 10 lumber joists spaced 16 inches on center.
- R-11 unfaced batt insulation installed in the top of the cavities
- Dietrich RC Deluxe (dog bone) resilient channels spaced 24 inches on center
- One layer of 5/8 inch thick Type “X” gypsum board fastened to the channels with 1 inch screws 12 inches on center. Joint compound was applied at screw holes and joints.

RESULTS OF MEASUREMENTS

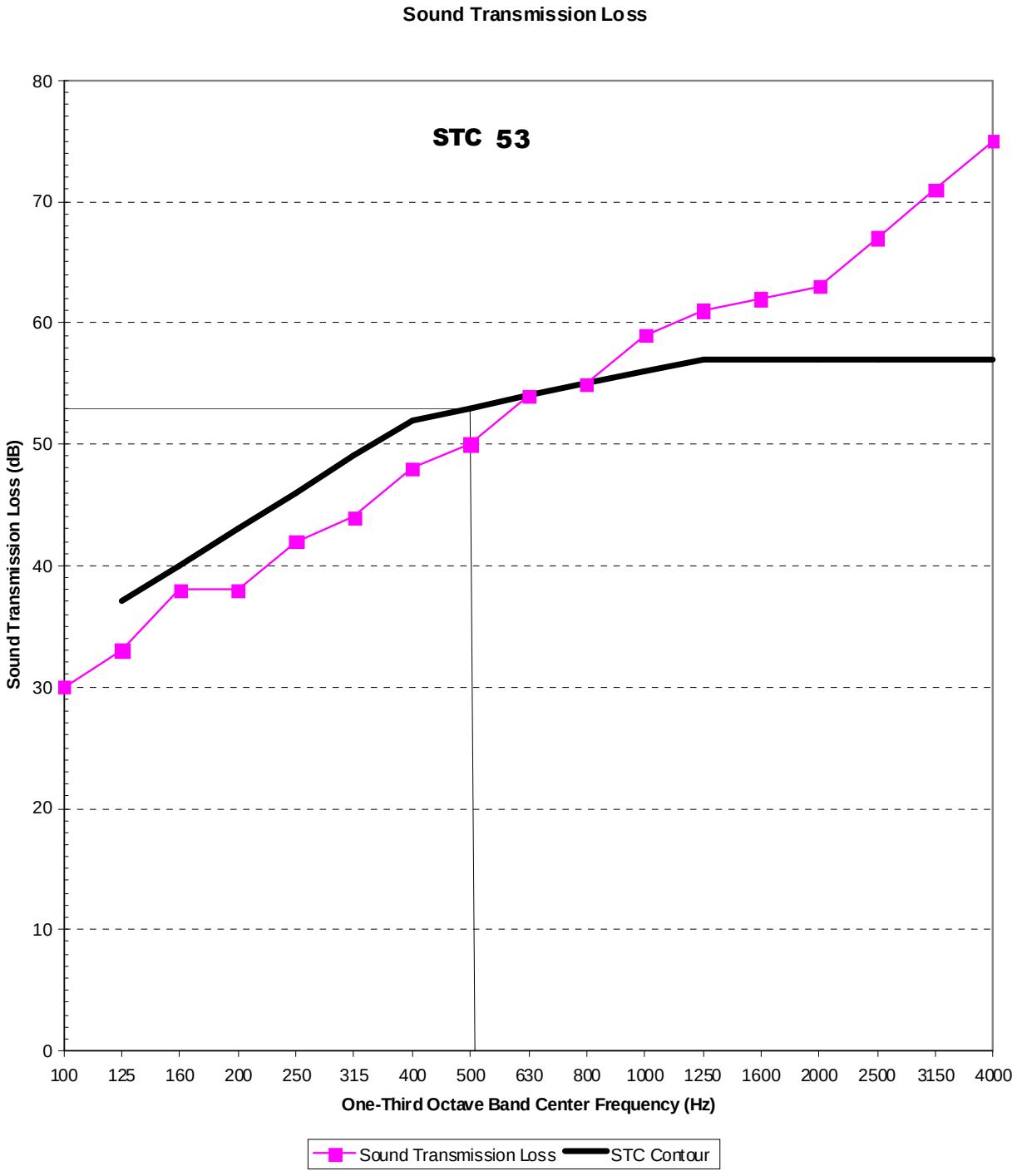
1/3 Octave Band Center Frequency Hz	Sound Transmission Loss in dB Test #1
80	24
100	30
125	33
160	38
200	38
250	42
315	44
400	48
500	50
630	54
800	55
1000	59
1250	61
1600	62
2000	63
2500	67
3150	71
4000	75
5000	77
Sound Transmission Class	53

PRECISION

For the Intertek flooring test facility, the 95% confidence interval ΔTL, is as follows:

Range of One-Third Octave Bands	Transmission Loss 95% Confidence Uncertainty, dB
125 and 200	<4
250 and 315	<2
400 - 4000	<1.5

Test #1



MAXXON CORPORATION

REMARKS

1. Ambient Temperature: 70℉
2. Relative Humidity: 23%

CONCLUSION

The test method employed for this test has no pass-fail criteria, therefore, the evaluation of the test results is left to the discretion of the client.

Date of Test: March 22, 2011

Report Approved by:

Brian Cyr
Engineer
Acoustical Testing

Report Reviewed By:

James R. Kline
Engineer/Quality Supervisor
Acoustical Testing

Attachments: None

FOR THE SCOPE OF ACCREDITATION
UNDER NVLAP LAB CODE 100402-0.

REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 100336557 June 24, 2011

REPORT NO. 100336557CRT-001I

IMPACT SOUND TRANSMISSION TEST AND CLASSIFICATION OF ENGINEERED HARDWOOD OVER MAXXON GYPSUM UNDERLAYMENT OVER A SOUND CONTROL MAT ON A WOOD JOIST FLOOR/CEILING ASSEMBLY

RENDERED TO

MAXXON CORPORATION
920 HAMEL ROAD, P. O. BOX 253
HAMEL, MN 55340-9610

INTRODUCTION

This report gives the results of an Impact Sound Transmission Loss Test and Classification of Engineered Hardwood over Maxxon Gypsum Underlayment over a Sound Control Mat on a wood joist floor/ceiling assembly. The floor/ceiling assembly was supplied and installed by Intertek. The gypsum topping and the acoustical mat underlayment were supplied and installed by a representative of Maxxon Corporation. The sample appeared to be in a new, unused condition.

AUTHORIZATION

Signed Quote No. 500285443.

TEST METHOD

The specimen was tested in accordance with the American Society for Testing and Materials designation ASTM E492-09, “Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine”. It was classified in accordance with ASTM E989-2006, entitled, “Standard Classification for Determination of Impact Insulation Class (IIC)”.

GENERAL

The method is designed to measure the impact sound transmission performance of a floor-ceiling assembly, in a controlled laboratory environment. A standard tapping machine (Bruel & Kjaer Type 3207) was placed at four positions on a test floor that forms the horizontal separation between two rooms, one directly above the other. The data obtained was normalized to a reference room absorption of 10 square meters in accordance with the test method.

The standard also prescribes a single-figure classification rating called “Impact Insulation Class, IIC” which can be used by architects, builders and code authorities for acoustical design purposes in building construction.

The IIC is obtained by matching a standard reference contour to the plotted normalized one-third octave band sound pressure levels at each test frequency. The greater the IIC rating, the lower the impact sound transmission through the floor-ceiling assembly

DESCRIPTION OF THE FLOOR/CEILING ASSEMBLY

The test floor is a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The materials used in the assembly from top to bottom are:

- Nominal 1 inch thick Maxxon Gypsum Underlayment (poured March 10, 2011)
- Acousti-Mat II Sound Control Mat
- 5/8 inch thick T & G OSB nailed 6 inches on perimeter and 12 inches in field and glued to the joists using OSI PL400 adhesive
- 10 inch high nominal 2 X 10 lumber joists spaced 16 inches on center.
- R-11 unfaced batt insulation installed in the top of the cavities
- Dietrich RC Deluxe (dog bone) resilient channels spaced 24 inches on center
- One layer of 5/8 inch thick Type “X” gypsum board fastened to the channels with 1 inch screws 12 inches on center. Joint compound was applied at screw holes and joints.

Test #1 – Mannington Engineered Hardwood (1/2 inch thick, 5 inch wide random length planks) over 2 mm thick foam underlayment

RESULTS OF TEST

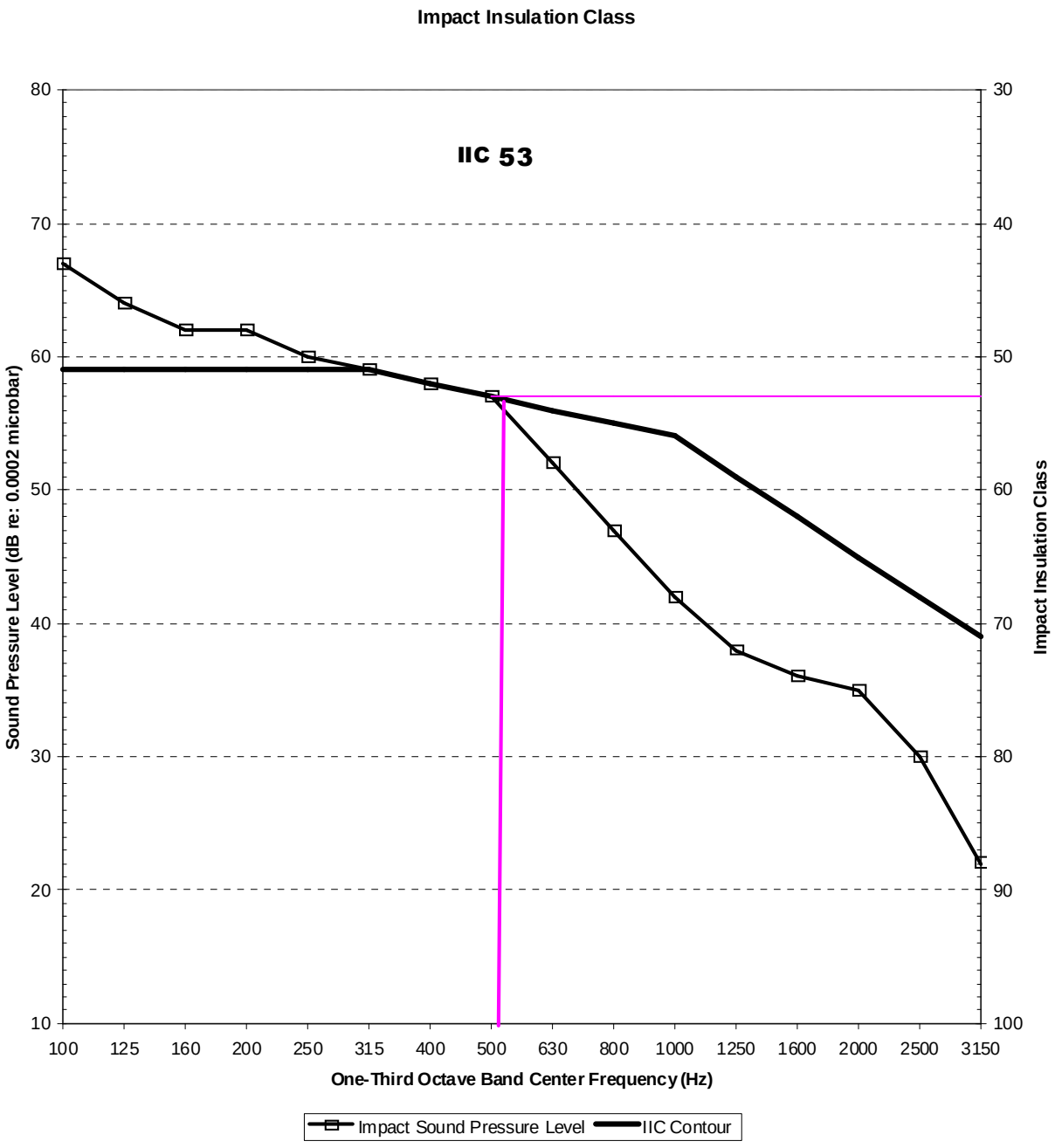
The data obtained in the room below the panel normalized to A_o = 10 square meters, is as follows:

1/3 Octave Band Center Frequency Hz	1/3 Octave Band Sound Pressure Level dB re 0.0002 Microbar
	Test #1
100	67
125	64
160	62
200	62
250	60
315	59
400	58
500	57
630	52
800	47
1000	42
1250	38
1600	36
2000	35
2500	30
3150	22
Impact Insulation Class (IIC)	53

The 95% uncertainty level for each tapping machine location is less than 3 dB for the 1/3 octave bands centered in the range from 100 to 400 Hz and less than 2.5 dB for the bands centered in the range from 500 to 3150 Hz.

For the floor/ceiling construction, the 95% uncertainty limits (ΔL_n) for the normalized sound pressure levels were determined to be less than 2 dB for the 1/3 octave bands centered in the range from 100 to 3500.

TEST #1



MAXXON CORPORATION

FOR THE SCOPE OF
ACCREDITATION UNDER NVLAP
LAB CODE 100402-0.

REMARKS

1. Ambient Temperature: 69 ℉
2. Relative Humidity: 41%

CONCLUSION

The test method employed for this test has no pass-fail criteria, therefore, the evaluation of the test results is left to the discretion of the client.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test: March 31, 2011

Report Approved by:

Brian Cyr
Engineer
Acoustical Testing

Report Reviewed By:

James R. Kline
Engineer/Quality Supervisor
Acoustical Testing

Attachments: None

APPENDIX F

Exterior-to-Interior Noise Analysis

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 101 Living/Dining Room

Wall 1 of 1

Room Type :	**Medium Soft**						
	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	212	212	212	212	265	265	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.1**	**CNEL**	48.4	53.9	56.4	60.4	60.4	54.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.1**	**CNEL**	48.4	53.9	56.4	60.4	60.4	54.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	22.5	9.25	1	77.1	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	5.5	2	27.5	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **17** ft

Overall Area: **208.125** ft²
Volume: **3538** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**55.8**	**CNEL**
Windows Closed		
Interior Noise Level:	**35.0**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.4	53.9	56.4	60.4	60.4	54.4	: Exterior Wall Noise Exposure
8.7	8.7	8.7	8.8	8.8	8.8	: Transmission Loss
23.2	23.2	23.2	23.2	23.2	23.2	: Wall Surface Area Factor
23.3	23.3	23.3	23.3	24.2	24.2	: Absorption
39.6	45.1	47.6	51.5	50.5	44.5	: Noise Level
55.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.4	53.9	56.4	60.4	60.4	54.4	: Exterior Wall Noise Exposure
24.6	24.9	24.1	34.3	44.6	39.3	: Transmission Loss
23.2	23.2	23.2	23.2	23.2	23.2	: Wall Surface Area Factor
23.3	23.3	23.3	23.3	24.2	24.2	: Absorption
23.7	28.9	32.2	26.0	14.8	14.0	: Noise Level
35.0	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 102 Bedroom

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	96	96	96	96	115	115	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.1**	**CNEL**	48.4	53.9	56.4	60.4	60.4	54.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.1**	**CNEL**	48.4	53.9	56.4	60.4	60.4	54.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11	9.25	1	74.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	5.5	2	27.5	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **11.5** ft

Overall Area: **101.75** ft²
Volume: **1170** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**56.4**	**CNEL**
Windows Closed		
Interior Noise Level:	**31.8**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.4	53.9	56.4	60.4	60.4	54.4	: Exterior Wall Noise Exposure
8.7	8.7	8.7	8.7	8.7	8.7	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
19.8	19.8	19.8	19.8	20.6	20.6	: Absorption
40.0	45.5	48.0	52.0	51.2	45.2	: Noise Level

56.4 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.4	53.9	56.4	60.4	60.4	54.4	: Exterior Wall Noise Exposure
27.3	28.5	27.8	38.0	48.1	43.0	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
19.8	19.8	19.8	19.8	20.6	20.6	: Absorption
21.4	25.7	28.9	22.7	11.7	10.9	: Noise Level

31.8 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 102 Living/Dining Room

Wall 1 of 1

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	171	171	171	171	214	214	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	22	9.25	1	100.0	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft

Overall Area: **203.5** ft²
Volume: **2849** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**53.8**	**CNEL**
Windows Closed		
Interior Noise Level:	**35.0**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
11.6	11.6	11.6	11.8	11.8	11.8	: Transmission Loss
23.1	23.1	23.1	23.1	23.1	23.1	: Wall Surface Area Factor
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
37.6	43.1	45.7	49.5	48.5	42.5	: Noise Level
53.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
25.3	25.8	25.0	35.3	45.5	40.3	: Transmission Loss
23.1	23.1	23.1	23.1	23.1	23.1	: Wall Surface Area Factor
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
23.9	29.0	32.2	26.0	14.8	14.0	: Noise Level
35.0	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 103 Bedroom

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	127	127	127	127	152	152	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	12	9.25	1	95.0	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2	4	2	16.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft

Overall Area: **111** ft²

Volume: **1554** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: 52.9 CNEL

Windows Closed
Interior Noise Level: 28.4 CNEL

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
11.4	11.4	11.4	11.4	11.4	11.4	: Transmission Loss
20.5	20.5	20.5	20.5	20.5	20.5	: Wall Surface Area Factor
21.0	21.0	21.0	21.0	21.8	21.8	: Absorption
36.6	42.0	44.5	48.5	47.7	41.7	: Noise Level

52.9 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
28.9	31.2	30.5	40.7	50.7	45.7	: Transmission Loss
20.5	20.5	20.5	20.5	20.5	20.5	: Wall Surface Area Factor
21.0	21.0	21.0	21.0	21.8	21.8	: Absorption
19.0	22.2	25.5	19.2	8.4	7.5	: Noise Level

28.4 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 103 Living/Dining Room

Wall 1 of 1

Room Type : **Medium Soft**	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	226	226	226	226	283	283	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	25.5	9.25	1	116.4	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2	4	2	16.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **16** ft

Overall Area: **235.875** ft²
Volume: **3774** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**54.6**	**CNEL**
Windows Closed		
Interior Noise Level:	**34.4**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
10.3	10.3	10.3	10.4	10.4	10.4	: Transmission Loss
23.7	23.7	23.7	23.7	23.7	23.7	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
38.4	43.9	46.4	50.3	49.3	43.3	: Noise Level
54.6	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
25.3	25.8	25.0	35.3	45.5	40.3	: Transmission Loss
23.7	23.7	23.7	23.7	23.7	23.7	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
23.3	28.4	31.7	25.4	14.2	13.4	: Noise Level
34.4	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 104 Bedroom

Wall 1 of 1

Room Type : **Soft**	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	147	147	147	147	177	177	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	15	9.25	1	106.8	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2	4	4	32.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **13** ft **Overall Area:** **138.75** ft²
Volume: **1804** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **55.2** **CNEL**

Windows Closed
Interior Noise Level: **30.7** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
9.3	9.4	9.4	9.4	9.4	9.4	: Transmission Loss
21.4	21.4	21.4	21.4	21.4	21.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.5	22.5	: Absorption
38.9	44.4	46.9	50.9	50.1	44.1	: Noise Level
55.2	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
27.8	29.2	28.4	38.7	48.8	43.7	: Transmission Loss
21.4	21.4	21.4	21.4	21.4	21.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.5	22.5	: Absorption
20.5	24.5	27.8	21.6	10.6	9.8	: Noise Level
30.7	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 104 Living/Dining Room

Wall 1 of 1

Room Type : **Medium Soft**	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	148	148	148	148	185	185	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**65.2**	**CNEL**	48.5	54.0	56.5	60.5	60.5	54.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	19	9.25	1	72.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft **Overall Area:** **175.75** ft²
Volume: **2461** ft³
Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **54.5** **CNEL**

Windows Closed
Interior Noise Level: **35.6** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
11.0	11.0	11.0	11.1	11.1	11.1	: Transmission Loss
22.4	22.4	22.4	22.4	22.4	22.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
38.3	43.8	46.3	50.1	49.2	43.2	: Noise Level

54.5 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.5	54.0	56.5	60.5	60.5	54.5	: Exterior Wall Noise Exposure
24.8	25.2	24.4	34.6	44.9	39.6	: Transmission Loss
22.4	22.4	22.4	22.4	22.4	22.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
24.4	29.6	32.9	26.6	15.4	14.7	: Noise Level

35.6 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 201 Bedroom

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	91	91	91	91	110	110	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11	9.25	1	66.8	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	7	2	35.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **11** ft

Overall Area: **101.75** ft²

Volume: **1119** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **57.2** **CNEL**

Windows Closed
Interior Noise Level: **32.6** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
7.6	7.6	7.6	7.6	7.6	7.6	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
19.6	19.6	19.6	19.6	20.4	20.4	: Absorption
40.9	46.4	48.9	52.8	52.0	46.0	: Noise Level

57.2 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
26.6	27.5	26.7	36.9	47.1	41.9	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
19.6	19.6	19.6	19.6	20.4	20.4	: Absorption
21.9	26.5	29.8	23.5	12.5	11.7	: Noise Level

32.6 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 201 Living/Dining Room

Wall 1 of 1

Room Type :	**Medium Soft**						
	125 Hz	**250 Hz**	**500 Hz**	**1KHz**	**2KHz**	**4KHz**	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	109	109	109	109	136	136	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	14	9.25	1	26.0	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft

Overall Area: **129.5** ft²
Volume: **1813** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **55.3** **CNEL**

Windows Closed
Interior Noise Level: **36.4** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
9.7	9.7	9.6	9.8	9.8	9.8	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
39.1	44.6	47.1	51.0	50.0	44.0	: Noise Level
55.3	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
23.7	23.8	23.1	33.3	43.6	38.3	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
20.4	20.4	20.4	20.4	21.3	21.3	: Absorption
25.0	30.4	33.7	27.5	16.2	15.5	: Noise Level
36.4	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 202 Bedroom 2

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	104	104	104	104	125	125	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	12.5	9.25	1	80.6	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	7	2	35.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **11** ft

Overall Area: **115.625** ft²
Volume: **1272** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **56.6** **CNEL**

Windows Closed
Interior Noise Level: **32.0** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
8.2	8.2	8.2	8.2	8.2	8.2	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
20.2	20.2	20.2	20.2	21.0	21.0	: Absorption
40.3	45.8	48.3	52.3	51.5	45.5	: Noise Level

56.6 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
27.0	28.0	27.3	37.5	47.7	42.5	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
20.2	20.2	20.2	20.2	21.0	21.0	: Absorption
21.5	25.9	29.2	23.0	12.0	11.2	: Noise Level

32.0 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 202 Living/Dining Room

Wall 1 of 1

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	108	108	108	108	135	135	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	13	9.25	1	16.8	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **15** ft
Overall Area: **120.25** ft²
Volume: **1804** ft³
Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **55.3** **CNEL**

Windows Closed
Interior Noise Level: **36.5** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
9.3	9.4	9.3	9.5	9.5	9.5	: Transmission Loss
20.8	20.8	20.8	20.8	20.8	20.8	: Wall Surface Area Factor
20.3	20.3	20.3	20.3	21.3	21.3	: Absorption
39.1	44.6	47.1	51.0	50.0	44.0	: Noise Level

55.3 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
23.4	23.5	22.7	33.0	43.2	38.0	: Transmission Loss
20.8	20.8	20.8	20.8	20.8	20.8	: Wall Surface Area Factor
20.3	20.3	20.3	20.3	21.3	21.3	: Absorption
25.0	30.4	33.7	27.5	16.3	15.5	: Noise Level

36.5 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 218 Bedroom 2

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	100	100	100	100	120	120	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11	9.25	1	74.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	5.5	2	27.5	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **12** ft

Overall Area: **101.75** ft²
Volume: **1221** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **55.8** **CNEL**

Windows Closed
Interior Noise Level: **31.2** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
8.7	8.7	8.7	8.7	8.7	8.7	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
39.4	44.9	47.4	51.4	50.6	44.6	: Noise Level

55.8 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
27.3	28.5	27.8	38.0	48.1	43.0	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
20.8	25.1	28.3	22.1	11.2	10.3	: Noise Level

31.2 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 218 Living/Dining Room

Wall 1 of 2

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	225	225	225	225	281	281	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	27	9.25	1	118.8	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	5.5	2	27.5	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **15** ft

Overall Area: **249.75** ft²
Volume: **3746** ft³

Number of Impacted Walls: **2**

Windows Open
Interior Noise Level: **55.2** **CNEL**

Windows Closed
Interior Noise Level: **34.7** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
9.5	9.5	9.5	9.6	9.6	9.6	: Transmission Loss
24.0	24.0	24.0	24.0	24.0	24.0	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
38.9	44.4	46.9	50.9	49.9	43.9	: Noise Level
55.2	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
25.2	25.7	24.9	35.1	45.4	40.1	: Transmission Loss
24.0	24.0	24.0	24.0	24.0	24.0	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
23.2	28.3	31.6	25.3	14.1	13.4	: Noise Level
34.3	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 218 Living/Dining Room

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**57.8**	**CNEL**	41.1	46.6	49.1	53.1	53.1	47.1	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**57.8**	**CNEL**	41.1	46.6	49.1	53.1	53.1	47.1	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	13	9.25	1	66.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	N	6	9	1	54.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **120.25** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
41.1	46.6	49.1	53.1	53.1	47.1	: Exterior Wall Noise Exposure
25.7	26.3	25.6	35.8	46.0	40.8	: Transmission Loss
20.8	20.8	20.8	20.8	20.8	20.8	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
12.6	17.6	20.8	14.6	3.4	2.6	: Noise Level

23.6 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
41.1	46.6	49.1	53.1	53.1	47.1	: Exterior Wall Noise Exposure
25.7	26.3	25.6	35.8	46.0	40.8	: Transmission Loss
20.8	20.8	20.8	20.8	20.8	20.8	: Wall Surface Area Factor
23.5	23.5	23.5	23.5	24.5	24.5	: Absorption
12.6	17.6	20.8	14.6	3.4	2.6	: Noise Level

23.6 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 219 Bedroom

Wall 1 of 1

Room Type :	**Soft**						
	125 Hz	**250 Hz**	**500 Hz**	**1KHz**	**2KHz**	**4KHz**	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	104	104	104	104	125	125	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11	9.25	1	74.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	5.5	2	27.5	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **12.5** ft

Overall Area: **101.75** ft²
Volume: **1272** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**55.6**	**CNEL**
Windows Closed		
Interior Noise Level:	**31.0**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
8.7	8.7	8.7	8.7	8.7	8.7	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
20.2	20.2	20.2	20.2	21.0	21.0	: Absorption
39.3	44.7	47.3	51.2	50.4	44.4	: Noise Level
55.6	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
27.3	28.5	27.8	38.0	48.1	43.0	: Transmission Loss
20.1	20.1	20.1	20.1	20.1	20.1	: Wall Surface Area Factor
20.2	20.2	20.2	20.2	21.0	21.0	: Absorption
20.6	24.9	28.2	21.9	11.0	10.1	: Noise Level
31.0	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 219 Living/Dining Room

Wall 1 of 2

Room Type :	**Medium Soft**						
	125 Hz	**250 Hz**	**500 Hz**	**1KHz**	**2KHz**	**4KHz**	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	97	97	97	97	121	121	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	12.5	9.25	1	12.1	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft

Overall Area: **115.625** ft²
Volume: **1619** ft³

Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**55.8**	**CNEL**
Windows Closed		
Interior Noise Level:	**36.9**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
9.2	9.2	9.2	9.3	9.3	9.3	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
19.9	19.9	19.9	19.9	20.8	20.8	: Absorption
39.6	45.1	47.6	51.5	50.5	44.5	: Noise Level
55.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
23.3	23.4	22.6	32.8	43.1	37.8	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
19.9	19.9	19.9	19.9	20.8	20.8	: Absorption
25.5	30.9	34.2	27.9	16.7	16.0	: Noise Level
36.9	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue **Wall 2 of 2**
Project # : B50405N1
Room Name: Unit 219 Living/Dining Room

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**56.7**	**CNEL**	40.0	45.5	48.0	52.0	52.0	46.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**56.7**	**CNEL**	40.0	45.5	48.0	52.0	52.0	46.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	14	9.25	1	129.5	32	48	53	58	62	64
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **129.5** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
40.0	45.5	48.0	52.0	52.0	46.0	: Exterior Wall Noise Exposure
32.0	48.0	53.0	58.0	62.0	64.0	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
19.9	19.9	19.9	19.9	20.8	20.8	: Absorption
9.3	-1.2	-3.7	-4.7	-9.7	-17.7	: Noise Level

10.0 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
40.0	45.5	48.0	52.0	52.0	46.0	: Exterior Wall Noise Exposure
32.0	48.0	53.0	58.0	62.0	64.0	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
19.9	19.9	19.9	19.9	20.8	20.8	: Absorption
9.3	-1.2	-3.7	-4.7	-9.7	-17.7	: Noise Level

10.0 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 302 Bedroom 2

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	94	94	94	94	113	113	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	12.5	9.25	1	80.6	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	7	2	35.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **10** ft

Overall Area: **115.625** ft²
Volume: **1156** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **56.8** **CNEL**

Windows Closed
Interior Noise Level: **32.1** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
8.2	8.2	8.2	8.2	8.2	8.2	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
19.8	19.8	19.8	19.8	20.5	20.5	: Absorption
40.4	45.9	48.4	52.4	51.6	45.6	: Noise Level

56.8 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
27.0	28.0	27.3	37.5	47.7	42.5	: Transmission Loss
20.6	20.6	20.6	20.6	20.6	20.6	: Wall Surface Area Factor
19.8	19.8	19.8	19.8	20.5	20.5	: Absorption
21.6	26.1	29.3	23.1	12.1	11.3	: Noise Level

32.1 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 302 Living/Dining Room

Wall 1 of 2

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	124	124	124	124	155	155	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	14	9.25	1	26.0	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **16** ft **Overall Area:** **129.5** ft²
Volume: **2072** ft³

Number of Impacted Walls: **2**

Windows Open
Interior Noise Level: **55.9** **CNEL**

Windows Closed
Interior Noise Level: **36.0** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
9.7	9.7	9.6	9.8	9.8	9.8	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
20.9	20.9	20.9	20.9	21.9	21.9	: Absorption
38.2	43.7	46.2	50.1	49.1	43.1	: Noise Level

54.4 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
23.7	23.8	23.1	33.3	43.6	38.3	: Transmission Loss
21.1	21.1	21.1	21.1	21.1	21.1	: Wall Surface Area Factor
20.9	20.9	20.9	20.9	21.9	21.9	: Absorption
24.2	29.5	32.8	26.6	15.4	14.6	: Noise Level

35.6 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue **Wall 2 of 2**
Project # : B50405N1
Room Name: Unit 302 Living/Dining Room

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**59.3**	**CNEL**	42.6	48.1	50.6	54.6	54.6	48.6	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**59.3**	**CNEL**	42.6	48.1	50.6	54.6	54.6	48.6	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	16	9.25	1	113.0	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	7	2	35.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **148** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
42.6	48.1	50.6	54.6	54.6	48.6	: Exterior Wall Noise Exposure
9.2	9.2	9.2	9.3	9.3	9.3	: Transmission Loss
21.7	21.7	21.7	21.7	21.7	21.7	: Wall Surface Area Factor
20.9	20.9	20.9	20.9	21.9	21.9	: Absorption
34.1	39.6	42.1	46.1	45.1	39.1	: Noise Level
50.4	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
42.6	48.1	50.6	54.6	54.6	48.6	: Exterior Wall Noise Exposure
27.7	29.1	28.3	38.6	48.7	43.6	: Transmission Loss
21.7	21.7	21.7	21.7	21.7	21.7	: Wall Surface Area Factor
20.9	20.9	20.9	20.9	21.9	21.9	: Absorption
15.7	19.8	23.0	16.8	5.7	4.8	: Noise Level
25.9	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 303 Living/Dining Room

Wall 1 of 1

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	148	148	148	148	185	185	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	19	9.25	1	72.3	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	3	2	1	6.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	N	8.5	9	1	76.5	23	23	22	32	43	37
STC 28 French Door with seals	Y	3	7	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14** ft

Overall Area: **175.75** ft²
Volume: **2461** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**53.7**	**CNEL**
Windows Closed		
Interior Noise Level:	**34.8**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
11.0	11.0	11.0	11.1	11.1	11.1	: Transmission Loss
22.4	22.4	22.4	22.4	22.4	22.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
37.5	43.0	45.5	49.3	48.4	42.4	: Noise Level
53.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
24.8	25.2	24.4	34.6	44.9	39.6	: Transmission Loss
22.4	22.4	22.4	22.4	22.4	22.4	: Wall Surface Area Factor
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
23.6	28.8	32.1	25.8	14.6	13.9	: Noise Level
34.8	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 304 Master Bedroom

Wall 1 of 2

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.6	0.6	0.6	0.6	0.5	0.5	: Highly Absorptive Room
Room Absorption (Sabins) :	100	100	100	100	120	120	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.4**	**CNEL**	47.7	53.2	55.7	59.7	59.7	53.7	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11.5	9.25	1	71.4	32	48	53	58	62	64
STC 28 1/2-inch Dual Insulating Window	Y	2.5	7	2	35.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **11.5** ft

Overall Area: **106.375** ft²
Volume: **1223** ft³

Number of Impacted Walls: **2**

Windows Open
Interior Noise Level: **56.5** **CNEL**

Windows Closed
Interior Noise Level: **32.0** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
7.8	7.8	7.8	7.8	7.8	7.8	: Transmission Loss
20.3	20.3	20.3	20.3	20.3	20.3	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
40.2	45.7	48.2	52.1	51.4	45.4	: Noise Level

56.5 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.7	53.2	55.7	59.7	59.7	53.7	: Exterior Wall Noise Exposure
26.7	27.7	26.9	37.1	47.3	42.1	: Transmission Loss
20.3	20.3	20.3	20.3	20.3	20.3	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
21.2	25.8	29.1	22.8	11.9	11.1	: Noise Level

31.9 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Strauss 5th Avenue
Project # : B50405N1
Room Name: Unit 304 Master Bedroom

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**61.6**	**CNEL**	44.9	50.4	52.9	56.9	56.9	50.9	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**61.6**	**CNEL**	44.9	50.4	52.9	56.9	56.9	50.9	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 57 Exterior Wall	N	11.5	9.25	1	106.4	32	48	53	58	62	64
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: 106.375 ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.9	50.4	52.9	56.9	56.9	50.9	: Exterior Wall Noise Exposure
32.0	48.0	53.0	58.0	62.0	64.0	: Transmission Loss
20.3	20.3	20.3	20.3	20.3	20.3	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
13.2	2.7	0.2	-0.8	-5.6	-13.6	: Noise Level

14.0 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.9	50.4	52.9	56.9	56.9	50.9	: Exterior Wall Noise Exposure
32.0	48.0	53.0	58.0	62.0	64.0	: Transmission Loss
20.3	20.3	20.3	20.3	20.3	20.3	: Wall Surface Area Factor
20.0	20.0	20.0	20.0	20.8	20.8	: Absorption
13.2	2.7	0.2	-0.8	-5.6	-13.6	: Noise Level

14.0 **CNEL** WINDOWS CLOSED

APPENDIX G

Recommended Products

PEMKO
ASSA ABLOY

ASSA ABLOY, the global leader in door opening solutions

PEMKO Acoustic Seal Sets:

Making a Sound Difference

Indoor environments like conference rooms, auditoriums and classrooms benefit from a reduction in noise infiltrating from adjacent spaces. Acoustic products such as doors, frames and gasketing reduce the amount of noise traveling between spaces and can help meet specific STC requirements.

PEMKO Acoustic Seal Sets help create quieter environments by sealing the space between door and frame. PEMKO's acoustic gasketing, door bottoms and thresholds make it easy to meet the STC rating required of any opening. Each set has been tested together to determine its sound reduction when used with an STC rated door, taking the guesswork out of selecting products.

In addition, PEMKO acoustic gasketing and inserts have achieved GREENGUARD Gold certification for low chemical emissions.

Features	Benefits
Lab-tested sealing solutions	Superior acoustic performance
Complete solution in a kit	Easy to select and order correct product
Meets ANSI Standard S12.60-2002	Contributes to LEED® credits
Use with any STC Rated Doors	Helps meet the rating requirement for the opening
PEMKO gasketing & inserts have achieved GREENGUARD Gold Certification	Low chemical emissions into indoor air

Applications

- Education
- Healthcare
- Hospitality

PEMKO Acoustic Seal Sets

PEMKO makes ordering the appropriate acoustic components easier by supplying them in sets. These product combinations are lab tested and have known decibel drops when used with Sound Transmission Class (STC) doors.

To determine the appropriate Acoustic Seal Set for your opening, locate the column in the chart which includes the sealed-in-place rating of the STC rated door being used. Next review the decibel drop numbers to find the seal set(s) that will result in the desired operable STC rating.

Each PEMKO Acoustic Seal Set includes gasketing, a door bottom or threshold and a complete set of installation instructions. The instructions show the proper installation location for each component for the best acoustic performance.

Item Number	Sealed-In-Place Door STC rating				
	58 to 54	53 to 49	48 to 46	45 to 43	<42
PEMKOSTCSET-1A Alternate Kits: 1B, 1C, 1D, 1E		-2	-2	-1	0
PEMKOSTCSET-2C	-3	-2	-2	-1	0
PEMKOSTCSET-2D Alternate Kits 2A, 2B	-3	-2	-1	-1	0
PEMKOSTCSET-2E	-2	-2	-1	-1	0
PEMKOSTCSET-3A		-2	-1		0
PEMKOSTCSET-3D		-2	-1		0
PEMKOSTCSET-3E	-2		-1		-1

Note: A seal set cannot increase the sealed-in-place rating; a zero drop is the best performance any seal set can provide.

Item Number	Gasketing	Door Bottom	Threshold	Corner Pad
PEMKOSTCSET-1A	S773BL (Single Row) and S44BL (Single Row)	PDB411AE		ACP112
PEMKOSTCSET-1B	S44BL (Two Rows)	PDB411AE		ACP112
PEMKOSTCSET-1C	S442BL (Single Row) and S44BL (Single Row)	PDB411AE		ACP112
PEMKOSTCSET-1D	303AS and S44BL (Single Row)	PDB411AE		ACP112
PEMKOSTCSET-1E	312CR and S44BL (Single Row)	PDB411AE		ACP112
PEMKOSTCSET-2A	S773BL (Single Row) and S44BL (Single Row)		2008STCxQ380A	
PEMKOSTCSET-2B	S44BL (Two Rows)		2008STCxQ380A	
PEMKOSTCSET-2C	S442BL (Single Row) and S44BL (Single Row)		2008STCxQ380A	
PEMKOSTCSET-2D	303AS and S44BL (Single Row)		2008STCxQ380A	
PEMKOSTCSET-2E	312CR and S44BL (Single Row)		2008STCxQ380A	
PEMKOSTCSET-3A	S773BL (Single Row) and S44BL (Single Row)	3692APK773BL		
PEMKOSTCSET-3D	303AS and S44BL (Single Row)	3692APK773BL		
PEMKOSTCSET-3E	312CR and S44BL (Single Row)	3692APK773BL		

BHMA CERTIFIED

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Need STC Rated Doors?

PEMKO Acoustic Seal Sets are an important part of an overall acoustic solution. ASSA ABLOY Group brands can provide the other elements of the solution including STC Rated Doors, STC Rated Frames, and complete STC Rated Assemblies.

For more information please see: CECO DOORS: www.cecodoor.com
CURRIES: www.curries.com | GRAHAM: www.grahamdoors.com
MAIMAN: www.maiman.com | SMP SPECIALTY DOORS: www.secmet.com

ASSA ABLOY is the global leader in door opening solutions, dedicated to satisfying end-user needs for security, safety and convenience

PEMKO
ASSA ABLOY

Ventura, CA USA
P: 800.283.9988
F: 800.283.4050

Memphis, TN USA
P: 800.824.3018
F: 800.243.3656

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Toronto, ON CA
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F: 877.535.7444

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80059 12/13

TECHNICAL DATA

DRAFT & ACOUSTICAL
SOUND SEALANT

OSI® Greenseries™ Draft & Acoustical Sound Sealant is a non-flammable, latex-based sealant specially designed to reduce sound transmissions and drafts in all types of wall systems where a sound-rated assembly is required. Its primary function is to achieve and maintain the specific STC (Sound Transmission Class) value of the system designed.

The paintable sealant remains flexible and adheres firmly to wood, metal studs, concrete, gypsum board and most other building materials. The easy-to-use sealant cleans up easily with soap and water.

FEATURES
- Permanently flexible
- Easy application and cleanup
- UL Classification – R9732; UL 723
- Easy water cleanup
- Low VOC, compliant formula
- Will not harden, crack or separate
- Non-staining & non-migrating
- High degree of adhesive and cohesive strength.

USES
Greenseries™ Draft & Acoustical was developed primarily for commercial construction utilizing light weight cavity walls and floor systems. Draft & Acoustical Sealant is used successfully in office buildings, hotels, apartment complexes, and other types of commercial & residential construction.

PHYSICAL PROPERTIES

Type	Synthetic Latex Rubber
Color	White
Solids by weight	75%
Toxicity	Toxic only if swallowed. Refer to MSDS.
Flammability	Nonflammable
Flash Point	200°F. TCC (minimum amount of solvent present)
Tooling/Open Time	15 minutes
Tack Free Time	30 minutes
Cure Time	2-7 days
Application Temperature	40°F minimum
Service Temperature	-5°F - 170°F
Freeze-Thaw Stability	3 cycles. Unaffected by freezing after curing
Shelf Life	1 year from date made at 75°F
Sag or Slump	Nil (ASTM D2202)
VOC Level	22g/l or <1% by wt.
Shore "A" Hardness	45 +/-5 (Cured 30 days @ room temp.)
Clean-up	Water and soap before curing
Accelerated Weathering	No cracks, discoloration or chalking: 1000 hrs. in Xenon Arc Weatherometer

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The sealant is used for exposed and unexposed applications at perimeter joints, floor and ceiling runners, cut outs in gypsum board, veneer plaster systems and other areas where a sound rated assembly is required. The sealant can also be applied or buttered around all electrical boxes and outlets, cold air returns, heating and air conditioning ducts, and other utility equipment penetrating wall surfaces for increased acoustical performance. Also works well for sealing sill and and base plates in residential construction.

SPECIFICATIONS
- UL Classified – 48S9 (R9732). Tested in accordance with and conforms to UL 723: U.B.C. Standard No. 42-1 Class I.
- ASTM E84: Surface Burning Characteristics of Building Materials.
- ASTM E90-85: Laboratory Measurement of Airborne-Sound Transmission Loss of Building Materials.
- ASTM D217: Testing Standard for Consistency.
- ASTM C919-79: Standard Practice for Use of Sealants in Acoustical Applications.
- SCAQMD Rule 1168 V.O.C.; CARB; and BAAQMD compliant
- GREENGUARD Certified
- Meets LEEDS requirements

LIMITATIONS
- Keep from freezing
- Do not use below 40°F. (5°C.).
- Not recommended for use on mirrors or underwater applications.
- Not recommended for exterior use.

PACKAGING
28 oz. cartridges – 12 per case (Item No. GS79928)

STORAGE
Store at 70°F. +/- 5° (21°C) for long shelf life and easy application. Do not store below 40°F. (5°C.).

COVERAGE
3/8" round bead size: approx. 40 lin. ft. per 28 oz. cartridge.
¼" round bead size: Approx. 89 lin. ft. / 28oz cartridge.

PERFORMANCE CHARACTERISTICS

1. Underwriters Laboratories Inc. Classified 48S9 (R9732) UL 723: Sealant tested for surface burning characteristics

	Applied to organic Reinforced Cement Board*
Flame Spread	5
Smoke Development	5

*Tested as applied in two 1/2in. beads, 8in. on center. The sealant covered 5.6 percent of the exposed sample area.

2. ASTM E90-85: STC Value – Effect of sealing the opening on a test wall partition.

APPLICATION PROCEEDURES

All surfaces must be clean and free of dust, dirt, oil, moisture and other foreign substances which could interfere with the bond of the sealant.

DIRECTIONS

1. Cut spout on tube to desired bead size (3/8" round bead recommended) and puncture seal inside spout.
2. Sealant should be applied as specified in the sound-rated system being installed (either wood or metal studs)

A. Bottom & Top Runners: Apply a continuous 3/8" round bead of sealant on runners before setting gypsum board. Gypsum board shall be set into sealant to form complete contact with adjacent materials. Fill joint on top runners to complete seal. Repeat procedure for double layer applications.

B. Cut-Outs and Perimeter Joints. Backs of electrical boxes, pipes, duct systems and other types of utility equipment penetrating wall surfaces shall be buttered with sealant. Seal all joints at perimeter edges including abutting surfaces and corner joints.

3. Maximum joint size should not exceed ⅝" x ½".
4. Clean tools and excess sealant immediately after application with soap and water.
5. If necessary, sealant can be painted as applicable to meet project requirements after 24 hours.

CAUTION! CONTAINS ETHYLENE GLYCOL , MINERAL SPIRITS and crystalline silica. Avoid eye contact. Do not take internally. If swallowed, may cause abdominal discomfort. Use with adequate ventilation. Refer to MSDS.

WARNING: This product contains a chemical known to the State of California to cause cancer.

KEEP OUT OF REACH OF CHILDREN

FIRST AID

Eye Contact: In case of eye contact, flush with clean water for at least 15 minutes. Skin Contact: Wash skin thoroughly with soap and water. Ingestion: DO NOT induce vomiting. Seek medical attention. If dizziness occurs, remove to fresh air.

NOTICE TO PURCHASER

Henkel Corporation warrants this product when used according to directions. If not satisfied with the product's performance when used as directed, return sales receipt and used container to Henkel Corporation, 32150 Just Imagine Drive, Avon OH, 44011 for product replacement or refund. User shall determine suitability of product for use and assumes all risk.

QUESTIONS?

For commercial use or other questions pertaining to this product, call Henkel Technical Service at 800-321-0253 M-F, 9am – 4pm. or visit our website at www.greenseries.com.

Test partition consisted of metal studs 24" O.C. with double layer gypsum board, Fire code "C" and attached with screws on both sides. Inside of partition was filled with sound insulation. Partition system was erected and shimmed out 4.75 mm (0.1875in.) at top, bottom and edges.

Results: Sound Transmission Class Value

1. Un-sealed partition – Arrows show sound travel around or through partitions.
   a. STC=15
2. Single bead of sealant used at top and bottom runners only – both sides of partition system.
   a. STC=24

Metal Stud Partition Door/Window frame in a hollow partition

3. Single bead of sealant used at top, bottom and perimeter joints – both sides of system.
   a. STC=45
4. Double bead of sealant used at top, bottom and perimeter joints – both sides of system.
   a. STC=55

OSI® GreenSeries™ Draft & Acoustical Sound Sealant is currently under going tested by GREENGUARD.
The GREENGUARD INDOOR AIR QUALITY CERTIFIED Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute.

Henkel Consumer Adhesives
Professional Adhesives & Sealants
32150 Just Imagine Drive
Avon, OH 44011
U.S.A.

Phone: (440) 937-7000
Fax: (440) 937-7092

AC-20 FTR®

(Fire & Temperature Rated) Acoustical & Insulation Sealant

Specification Data Sheet

PECORA CORPORATION

BASIC USES

• AC-20 FTR® fire-rated systems are suitable for applications in schools, hospitals, churches, high-rise office buildings and hotels, prisons, sports arenas, and other public-use buildings to ensure a safe and orderly evacuation in the event of a fire.

2. MANUFACTURER

Pecora Corporation
165 Wambold Road
Harleysville, PA 19438

Phone: 215-723-6051
800-523-6688
Fax: 215-721-0286
Website: www.pecora.com

3. PRODUCT DESCRIPTION

AC-20 FTR® is a unique acrylic latex sealant that is UL® Classified in firestopping systems for expansion joints and through penetrations. When properly installed, these systems effectively contain fire, smoke, toxic fumes, and water within a given area surrounded by firewalls for a two, three, or four hour period, depending on the design specifications.

Other Uses: Excellent adhesive, flexibility and durability qualities make AC-20 FTR® ideal for insulating and weatherproofing around windows, doors, panels, siding, duct work, base plates, etc. It is compatible with all common building materials including specialties such as polystyrene, polyurethane, cork, vinyl, foamed and fibrous glass.

Used as an acoustical sealant, AC-20 FTR® reduces sound transmission in partition systems to achieve specific STC values by sealing spaces around cut-outs and at perimeters of partitions. The sealant cures to a tough rubber to form a long-lasting acoustical seal.

PACKAGING

• 30 fl. oz. (.887 liter) fiber cartridges
• 5-gallon (18.9 liter) pails

COLOR

• White, Beige-Gray
Special colors available in 250-gallon (946 liter) batches.

4. TECHNICAL DATA

Applicable Standards: ASTM C-834-86 specification for latex sealing compounds.

Fire Rated System: Two-hour Fire and Temperature Rated wall and floor joint systems up to 7" (178mm) wide and four-hour systems up to 4" wide can be designed with AC-20 FTR® in conjunction with Ultra Block fire blocking material in fire-rated walls and floors. Reference: ANSI/UL 263, ASTM E-119, NFPA No. 251.

UL CLASSIFIED

UNDERWRITERS LABORATORIES INC.® CLASSIFIED JOINT TREATMENT MATERIALS FIRE RESISTANCE CLASSIFICATION

DESIGNS J900H (FFS 0006) &U900 "O" (WWS 0010), J900Z (FFS 2002), U900Z-009 (WWS 2008), J900Z-007 (FFS 1010), U900Z-015 (WWS 1012)

AC-20 FTR® in conjunction with Ultra Block® achieves a 2-hour fire rating when sealing around steel or copper pipe and electrical metallic tubing or steel conduit in through penetration systems. Reference: ANSI/UL 1479, ASTM E-814.

FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES INC. FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEM NO. CAJ 1093

In addition to its fire-blocking value, Ultra Block® is very efficient acoustically, having a noise reduction coefficient of .75 and sound transmission coefficient of .5 (Ultra Block® is a registered trademark of Backer Rod Mfg. and Supply Co., Denver, CO, USA.)

5. INSTALLATION

Surface Preparation: Surfaces must be free of all contamination. Sealant may be applied to damp, porous surfaces. No priming is required.

Application: Refer to Pecora Firestopping Manual 07270 and UL Fire Resistance Directory for installation details on fire-rated joint and through penetration systems. For insulating and weatherproofing purposes, fill all window, door, and panel perimeter joints using a resilient backer rod to control sealant depth to 1/2" (13mm) maximum. For best results, protect sealant from excessive low temperatures and apply above 40°F (4°C). For acoustical purposes, apply continuous

TYPICAL PHYSICAL PROPERTIES

Test Property	Value	Procedure
Modulus @ 100% (psi)	15-20	ASTM D412
Ultimate Tensile (psi)	30-40	ASTM D412
Ultimate Elongation (%)	400-500	ASTM D412
Movement Capability (%)	±7 1/2	ASTM D412
VOC Content	31 g/L	

beads of sealant to seal perimeters of all sound-rated partitions. Apply sealant in the angles formed by metal components or base-layer panels and abutting surfaces. Apply sealant around all openings formed for outlets; electrical, telephone, light fixtures, etc.

Tooling: Tool material flush with surfaces to allow for expected shrinkage and insure good contact and adhesion to the substrate.

Cleaning: Remove excess material with water or a damp cloth before it cures. Sealant may be painted within 30 minutes after application with a good grade of latex paint.

Shelf Life: AC-20 FTR® has a shelf life well in excess of one year when stored in unopened containers below 80° F (27°C).

Precautions: AC-20 FTR® is non-flammable, non-toxic, non-irritating and environmentally safe. However, do not take internally. Refer to Material Safety Data Sheet for additional information.

Ultra Block® is a non-carcinogenic processed continuous filament textile glass fiber that may cause skin, eye and respiratory irritation. When applying, wear long sleeves, gloves, cap, goggles or safety glasses and NIOSH/MSHA-approved dust respirator. After use bathe with soap and warm water. Wash clothes separately and rinse after use. Refer to Material Safety Data Sheet for additional information.

FOR PROFESSIONAL USE ONLY.
KEEP OUT OF THE REACH OF CHILDREN.

6. AVAILABILITY AND COST

Pecora products are available from our stocking distributors in all major cities. For the name and telephone number of your nearest representative call one of our locations listed below or visit our website at www.pecora.com.

7. WARRANTY

Pecora Corporation warrants its products to be free of defects. Under this warranty, we will provide, at no charge, replacement materials for, or refund the purchase price of, any product proven to be defective when installed in accordance with our published recommendations and in applications considered by us as suitable from this product. This warranty in lieu of any and all other warranties expressed or implied, and in no case will Pecora be liable for incidental or consequential damages.

8. MAINTENANCE

If the sealant is damaged and the bond is intact, cut out the damaged area and recaulk. No primer is required. If the bond has been affected, remove the sealant, clean and prepare the joint in accordance with instructions under "Installation".

9. TECHNICAL SERVICES

Pecora representatives are available to assist you in selecting an appropriate product and to provide on-site application instructions or to conduct jobsite inspections. For further assistance call our Technical Service Department at 800-523-6688.

ISO 9001:2000
KEMA CERTIFICATE
Accredited by ANSI-RAB NAP

PECORA CORPORATION
www.pecora.com
PEOPLE • PRODUCTS • PERFORMANCE

HARLEYSVILLE, PA
165 Wambold Road, Harleysville, PA 19438
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DALLAS, TX
11501 Hillguard Road, Dallas, TX 75243
Phone: 800-233-9754 • 214-348-5313 • FAX: 214-348-5421

APPENDIX H

Cadna Analysis Data and Results

Cadna Noise Model - Sound Levels														
Name	**ID**	**Type**	**Oktave Spectrum (dB)**											**Source**
			Weight	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A**	**lin**	
Carrier 25HBC518	L1	Lw	A		49.5	60.0	65.0	69.0	65.5	62.0	55.0	72.5	74.7	Mfr
Carrier 25HBC524	L2	Lw	A		49.5	60.5	62.5	63.5	62	60	54.5	69.1	73	Mfr
Carrier 25HBC530	L3	Lw	A		53	60.5	63.5	67.5	64.5	62	55.5	71.4	74.8	Mfr
Carrier 25HCD436	L4	Lw	A		56.5	59.5	65.5	67	64	63	56	71.7	76.1	Mfr
Mitsubishi PUY-A12	L5	Lw (c)	A				57					57	60.2	Mfr
Fujitsu 9RLFCD	L6	Lw (c)	A				60					60	63.2	Mfr

Cadna Noise Model - Point Sources (1 of 4)								
Name	**ID**	**Result. PWL**	**Lw / Li**		**Height**	**Coordinates**		
		Day	**Type**	**Value**		**X**	**Y**	**Z**
		(dBA)			**(m)**	**(m)**	**(m)**	**(m)**
AC 1	1	69.1	Lw	L2	19.51	149.79	132.46	19.51
AC 2	2	69.1	Lw	L2	19.51	148.70	132.41	19.51
AC 3	3	69.1	Lw	L2	19.51	147.47	132.34	19.51
AC 4	4	69.1	Lw	L2	19.51	146.38	132.37	19.51
AC 5	5	69.1	Lw	L2	19.51	149.95	131.22	19.51
AC 6	6	69.1	Lw	L2	19.51	148.66	131.22	19.51
AC 7	7	69.1	Lw	L2	19.51	147.44	131.22	19.51
AC 8	8	69.1	Lw	L2	19.51	146.38	131.15	19.51
AC 9	9	69.1	Lw	L2	19.51	145.22	131.15	19.51
AC 10	10	69.1	Lw	L2	19.51	144.03	131.12	19.51
AC 11	11	69.1	Lw	L2	19.51	142.98	131.12	19.51
AC 12	12	69.1	Lw	L2	19.51	149.79	129.33	19.51
AC 13	13	69.1	Lw	L2	19.51	148.7	129.33	19.51
AC 14	14	69.1	Lw	L2	19.51	147.44	129.33	19.51
AC 15	15	69.1	Lw	L2	19.51	146.25	129.3	19.51
AC 16	16	69.1	Lw	L2	19.51	145.26	129.33	19.51
AC 17	17	69.1	Lw	L2	19.51	143.93	129.36	19.51
AC 18	18	69.1	Lw	L2	19.51	142.81	129.23	19.51
AC 19	19	72.5	Lw	L1	19.51	130.96	132.62	19.51
AC 20	20	72.5	Lw	L1	19.51	130.88	131.37	19.51
AC 21	21	72.5	Lw	L1	19.51	130.88	130.12	19.51
AC 22	22	72.5	Lw	L1	19.51	130.84	128.83	19.51
AC 23	23	72.5	Lw	L1	19.51	131.01	127.58	19.51
AC 24	24	72.5	Lw	L1	19.51	130.88	126.25	19.51
AC 25	25	72.5	Lw	L1	19.51	130.88	125.24	19.51
AC 26	26	72.5	Lw	L1	19.51	130.88	124.04	19.51
AC 27	27	72.5	Lw	L1	19.51	131.01	122.7	19.51
AC 28	28	72.5	Lw	L1	19.51	130.88	121.33	19.51
AC 29	29	72.5	Lw	L1	19.51	130.8	120.24	19.51
AC 30	30	72.5	Lw	L1	19.51	130.96	118.95	19.51
AC 31	31	72.5	Lw	L1	19.51	129.71	132.66	19.51
AC 32	32	72.5	Lw	L1	19.51	129.67	131.25	19.51
AC 33	33	72.5	Lw	L1	19.51	129.59	130.12	19.51
AC 34	34	72.5	Lw	L1	19.51	129.67	128.91	19.51
AC 35	35	72.5	Lw	L1	19.51	129.71	127.62	19.51
AC 36	36	72.5	Lw	L1	19.51	129.88	126.41	19.51
AC 37	37	72.5	Lw	L1	19.51	129.88	125.12	19.51
AC 38	38	72.5	Lw	L1	19.51	129.67	123.83	19.51
AC 39	39	72.5	Lw	L1	19.51	129.63	122.7	19.51
AC 40	40	72.5	Lw	L1	19.51	129.63	121.45	19.51
AC 41	41	72.5	Lw	L1	19.51	129.63	120.16	19.51
AC 42	42	72.5	Lw	L1	19.51	129.76	118.95	19.51

Cadna Noise Model - Point Sources (2 of 4)								
Name	**ID**	**Result. PWL**	**Lw / Li**		**Height**	**Coordinates**		
		Day	**Type**	**Value**		**X**	**Y**	**Z**
		(dBA)			**(m)**	**(m)**	**(m)**	**(m)**
AC 43	43	72.5	Lw	L1	19.51	127.88	132.50	19.51
AC 44	44	72.5	Lw	L1	19.51	127.75	131.41	19.51
AC 45	45	72.5	Lw	L1	19.51	127.8	130.08	19.51
AC 46	46	72.5	Lw	L1	19.51	127.8	128.62	19.51
AC 47	47	72.5	Lw	L1	19.51	127.92	127.62	19.51
AC 48	48	72.5	Lw	L1	19.51	127.88	126.41	19.51
AC 49	49	72.5	Lw	L1	19.51	128.09	125.04	19.51
AC 50	50	72.5	Lw	L1	19.51	126.75	132.58	19.51
AC 51	51	72.5	Lw	L1	19.51	126.75	131.5	19.51
AC 52	52	72.5	Lw	L1	19.51	126.71	130.12	19.51
AC 53	53	72.5	Lw	L1	19.51	126.84	128.75	19.51
AC 54	54	72.5	Lw	L1	19.51	126.71	127.79	19.51
AC 55	55	72.5	Lw	L1	19.51	126.71	126.62	19.51
AC 56	56	72.5	Lw	L1	19.51	126.88	125.2	19.51
AC 57	57	72.5	Lw	L1	19.51	126.63	123.95	19.51
AC 58	58	72.5	Lw	L1	19.51	126.75	122.66	19.51
AC 59	59	72.5	Lw	L1	19.51	126.84	121.66	19.51
AC 60	60	72.5	Lw	L1	19.51	126.71	120.2	19.51
AC 61	61	72.5	Lw	L1	19.51	126.67	119.04	19.51
AC 62	62	71.7	Lw	L4	19.51	127.88	123.99	19.51
AC 63	63	71.7	Lw	L4	19.51	127.88	122.7	19.51
AC 64	64	71.7	Lw	L4	19.51	128	121.37	19.51
AC 65	65	71.7	Lw	L4	19.51	128.05	120.24	19.51
AC 66	66	71.7	Lw	L4	19.51	128	118.95	19.51
AC 67	67	71.4	Lw	L3	19.51	126.75	99.04	19.51
AC 68	68	71.4	Lw	L3	19.51	126.78	97.85	19.51
AC 69	69	71.4	Lw	L3	19.51	126.75	96.6	19.51
AC 70	70	71.4	Lw	L3	19.51	126.88	95.37	19.51
AC 71	71	71.4	Lw	L3	19.51	126.75	94.12	19.51
AC 72	72	71.4	Lw	L3	19.51	126.81	92.99	19.51
AC 73	73	71.4	Lw	L3	19.51	126.71	91.7	19.51
AC 74	74	71.4	Lw	L3	19.51	126.78	90.41	19.51
AC 75	75	71.4	Lw	L3	19.51	126.75	88.56	19.51
AC 76	76	71.4	Lw	L3	19.51	127.91	99.11	19.51
AC 77	77	71.4	Lw	L3	19.51	127.91	97.72	19.51
AC 78	78	71.4	Lw	L3	19.51	127.97	96.53	19.51
AC 79	79	71.4	Lw	L3	19.51	127.97	95.37	19.51
AC 80	80	71.4	Lw	L3	19.51	127.91	94.05	19.51
AC 81	81	71.4	Lw	L3	19.51	127.84	92.83	19.51
AC 82	82	71.4	Lw	L3	19.51	127.81	91.67	19.51
AC 83	83	71.4	Lw	L3	19.51	127.91	90.31	19.51
AC 84	84	71.4	Lw	L3	19.51	127.91	88.53	19.51

Cadna Noise Model - Point Sources (3 of 4)								
Name	**ID**	**Result. PWL**	**Lw / Li**		**Height**	**Coordinates**		
		Day	**Type**	**Value**		**X**	**Y**	**Z**
		(dBA)			**(m)**	**(m)**	**(m)**	**(m)**
AC 85	85	71.4	Lw	L3	19.51	129.56	99.14	19.51
AC 86	86	71.4	Lw	L3	19.51	129.69	97.99	19.51
AC 87	87	71.4	Lw	L3	19.51	129.72	96.56	19.51
AC 88	88	71.4	Lw	L3	19.51	129.72	95.37	19.51
AC 89	89	71.4	Lw	L3	19.51	129.76	94.12	19.51
AC 90	90	71.4	Lw	L3	19.51	129.72	92.89	19.51
AC 91	91	71.4	Lw	L3	19.51	129.72	91.73	19.51
AC 92	92	71.4	Lw	L3	19.51	129.63	90.34	19.51
AC 93	93	71.4	Lw	L3	19.51	129.76	88.46	19.51
AC 94	94	71.4	Lw	L3	19.51	130.95	99.04	19.51
AC 95	95	71.4	Lw	L3	19.51	130.88	97.79	19.51
AC 96	96	71.4	Lw	L3	19.51	130.88	96.46	19.51
AC 97	97	71.4	Lw	L3	19.51	130.82	95.31	19.51
AC 98	98	71.4	Lw	L3	19.51	130.82	93.98	19.51
AC 99	99	71.4	Lw	L3	19.51	130.82	92.96	19.51
AC 100	100	71.4	Lw	L3	19.51	130.82	91.57	19.51
AC 101	101	71.4	Lw	L3	19.51	130.92	90.34	19.51
AC 102	102	71.4	Lw	L3	19.51	130.88	88.43	19.51
AC 103	103	71.4	Lw	L3	19.51	132.7	90.34	19.51
AC 104	104	71.4	Lw	L3	19.51	133.79	90.28	19.51
AC 105	105	71.4	Lw	L3	19.51	134.92	90.34	19.51
AC 106	106	71.4	Lw	L3	19.51	136.17	90.25	19.51
AC 107	107	71.4	Lw	L3	19.51	132.57	88.53	19.51
AC 108	108	71.4	Lw	L3	19.51	133.66	88.53	19.51
AC 109	109	71.4	Lw	L3	19.51	134.98	88.46	19.51
AC 110	110	71.4	Lw	L3	19.51	136.21	88.46	19.51
AC 111	111	71.4	Lw	L3	19.51	148.61	96.53	19.51
AC 112	112	69.1	Lw	L2	19.51	148.68	94.12	19.51
AC 113	113	69.1	Lw	L2	19.51	149.77	94.12	19.51
AC 114	114	57.0	Lw	L5	19.51	145.23	132.4	19.51
AC 115	115	57	Lw	L5	19.51	144	132.4	19.51
AC 116	116	57	Lw	L5	19.51	142.82	132.47	19.51
AC 117	117	60	Lw	L6	19.51	149.8	99.08	19.51
AC 118	118	60	Lw	L6	19.51	149.77	97.92	19.51
AC 119	119	60	Lw	L6	19.51	149.82	96.64	19.51
AC 120	120	60	Lw	L6	19.51	149.82	95.33	19.51
AC 121	121	60	Lw	L6	19.51	148.7	99	19.51
AC 122	122	60	Lw	L6	19.51	148.72	97.87	19.51
AC 123	123	60	Lw	L6	19.51	148.7	95.25	19.51
AC 124	124	60	Lw	L6	19.51	146.91	99.05	19.51
AC 125	125	60	Lw	L6	19.51	146.96	97.69	19.51
AC 126	126	60	Lw	L6	19.51	146.83	96.53	19.51

Cadna Noise Model - Point Sources (4 of 4)								
Name	**ID**	**Result. PWL**	**Lw / Li**		**Height**	**Coordinates**		
		Day	**Type**	**Value**		**X**	**Y**	**Z**
		(dBA)			**(m)**	**(m)**	**(m)**	**(m)**
AC 127	127	72.5	Lw	L1	19.51	126.72	99.75	19.51
AC 128	128	72.5	Lw	L1	19.51	127.93	99.78	19.51
AC 129	129	72.5	Lw	L1	19.51	126.75	100.96	19.51
AC 130	130	72.5	Lw	L1	19.51	127.91	100.98	19.51
AC 131	131	72.5	Lw	L1	19.51	129.75	100.94	19.51
AC 132	132	72.5	Lw	L1	19.51	130.93	100.96	19.51
AC 133	133	72.5	Lw	L1	19.51	129.66	99.67	19.51
AC 134	134	72.5	Lw	L1	19.51	130.87	99.63	19.51
AC 135	135	72.5	Lw	L1	19.51	146.88	95.27	19.51
AC 136	136	72.5	Lw	L1	19.51	146.95	93.93	19.51
AC 137	137	72.5	Lw	L1	19.51	146.85	92.87	19.51
AC 138	138	72.5	Lw	L1	19.51	148.68	92.77	19.51
AC 139	139	72.5	Lw	L1	19.51	149.89	92.77	19.51
AC 140	140	72.5	Lw	L1	19.51	137.76	90.4	19.51
AC 141	141	72.5	Lw	L1	19.51	137.76	88.52	19.51
AC 142	142	72.5	Lw	L1	19.51	146.85	99.94	19.51
AC 143	143	72.5	Lw	L1	19.51	148.64	99.94	19.51
AC 144	144	72.5	Lw	L1	19.51	149.76	99.94	19.51
AC 145	145	72.5	Lw	L1	19.51	150.71	132.32	19.51
AC 146	146	72.5	Lw	L1	19.51	150.73	131.09	19.51
AC 147	147	72.5	Lw	L1	19.51	150.7	129.07	19.51
AC 148	148	72.5	Lw	L1	19.51	126.81	133.51	19.51
AC 149	149	72.5	Lw	L1	19.51	127.86	133.48	19.51
AC 150	150	72.5	Lw	L1	19.51	129.7	133.4	19.51
AC 151	151	72.5	Lw	L1	19.51	130.88	133.43	19.51
AC 152	152	72.5	Lw	L1	19.51	146.77	100.78	19.51
AC 153	153	72.5	Lw	L1	19.51	148.4	101.04	19.51
AC 154	154	72.5	Lw	L1	19.51	149.76	100.88	19.51

Cadna Noise Model - Buildings					
Name	ID	Coordinates			Absorption
		X	Y	Z	
		(m)	(m)	(m)	
Proposed Bldg	BL_1	116.72	142.14	18.6	0.37
		140.75	142.14	18.6	
		140.75	140.79	18.6	
		147.85	140.79	18.6	
		147.85	141.26	18.6	
		156.94	141.26	18.6	
		156.94	75.14	18.6	
		147.73	75.14	18.6	
		147.73	76.86	18.6	
		142.11	76.86	18.6	
		142.11	81.82	18.6	
		116.71	81.82	18.6	
Existing Bldg	BL_2	116.47	67.15	10.67	0.37
		116.47	39.16	10.67	
		157.61	39.16	10.67	
		157.61	67.15	10.67	

Cadna Noise Model - Noise Levels at Receivers						
Name	**ID**	**Level Lr**	**Height**	**Coordinates**		
		Day		**X**	**Y**	**Z**
		(dBA)	**(m)**	**(m)**	**(m)**	**(m)**
North	R_1	31.7	1.52	131.45	147.20	1.52
South	R_2	24.1	1.52	122.54	15.42	1.52
East	R_3	30.2	1.52	181.39	112.79	1.52
West	R_4	32.6	1.52	111.88	125.18	1.52
South-2nd	R_5	28.6	4.57	122.54	15.42	4.57
East-2nd	R_6	31.6	4.57	181.39	112.79	4.57
West-2nd	R_7	33.3	4.57	111.88	125.18	4.57

APPENDIX I

Temporary Construction Noise Calculations

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: North (CR1)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 128 feet

Path Calculation

Source to Receiver Direct Path Distance: **128** feet

Sound Pressure Level **66.1** at 128 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **62.2**

Summation

Number of Sources: 2

Level during 8 hour day: **67.6**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: North (CR1)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	128	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**128**	feet

Sound Pressure Level	**70.1**	at	128	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**66.2**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: East (CR2)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 142 feet

Path Calculation

Source to Receiver Direct Path Distance: **142** feet

Sound Pressure Level **65.2** at 142 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **61.3**

Summation

Number of Sources: 2

Level during 8 hour day: **66.7**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: East (CR2)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**142**	feet

Sound Pressure Level	**69.2**	at	142	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**65.3**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: West (CR3)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 85 feet

Path Calculation

Source to Receiver Direct Path Distance: **85** feet

Sound Pressure Level **69.7** at 85 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **65.7**

Summation

Number of Sources: 2

Level during 8 hour day: **71.2**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: West (CR3)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	85	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**85**	feet

Sound Pressure Level	**73.7**	at	85	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**69.7**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: North (CR1)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 128 feet

Path Calculation

Source to Receiver Direct Path Distance: **128** feet

Sound Pressure Level **66.1** at 128 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **62.2**

Summation

Number of Sources: 3

Level during 8 hour day: **68.1**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Drill Rig
Receiver: North (CR1)

Noise Source

Noise Level (dBA)	73.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	128	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**128**	feet

Sound Pressure Level	**65.1**	at	128	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**58.1**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: North (CR1)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	128	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**128**	feet

Sound Pressure Level	**70.1**	at	128	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**66.2**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: East (CR2)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 142 feet

Path Calculation

Source to Receiver Direct Path Distance: **142** feet

Sound Pressure Level **65.2** at 142 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **61.3**

Summation

Number of Sources: 3

Level during 8 hour day: **67.2**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Drill Rig
Receiver: East (CR2)

Noise Source

Noise Level (dBA)	73.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**142**	feet

Sound Pressure Level	**64.2**	at	142	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**57.2**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: East (CR2)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**142**	feet

Sound Pressure Level	**69.2**	at	142	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**65.3**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Excavator
Receiver: West (CR3)

Noise Source

Noise Level (dBA) 74.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 85 feet

Path Calculation

Source to Receiver Direct Path Distance: **85** feet

Sound Pressure Level **69.7** at 85 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **65.7**

Summation

Number of Sources: 3

Level during 8 hour day: **71.6**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Drill Rig
Receiver: West (CR3)

Noise Source

Noise Level (dBA)	73.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	85	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**85**	feet

Sound Pressure Level	**68.7**	at	85	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**61.7**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Dump Truck (x 2)
Receiver: West (CR3)

Noise Source

Noise Level (dBA)	78.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	85	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**85**	feet

Sound Pressure Level	**73.7**	at	85	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**69.7**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Mixer Truck (x2)
Receiver: North (CR1)

Noise Source

Noise Level (dBA) 79.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 128 feet

Path Calculation

Source to Receiver Direct Path Distance: **128** feet

Sound Pressure Level **71.1** at 128 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **67.2**

Summation

Number of Sources: 3

Level during 8 hour day: **67.9**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Pump Truck
Receiver: North (CR1)

Noise Source

Noise Level (dBA)	74.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	128	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**128**	feet

Sound Pressure Level	**66.1**	at	128	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**59.1**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: North (CR1)

Noise Source

Noise Level (dBA)	66.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	128	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**128**	feet

Sound Pressure Level	**58.1**	at	128	feet
Hours of Use:	**8**			
Duty Cycle (%):	**16**			
Level During 8 Hour day:	**50.2**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Mixer Truck (x2)
Receiver: East (CR2)

Noise Source

Noise Level (dBA) 79.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 142 feet

Path Calculation

Source to Receiver Direct Path Distance: **142** feet

Sound Pressure Level **70.2** at 142 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **66.3**

Summation

Number of Sources: 3

Level during 8 hour day: **67.0**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Pump Truck
Receiver: East (CR2)

Noise Source

Noise Level (dBA)	74.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**142**	feet

Sound Pressure Level	**65.2**	at	142	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**58.2**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: East (CR2)

Noise Source

Noise Level (dBA)	66.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	142	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**142**	feet

Sound Pressure Level	**57.2**	at	142	feet
Hours of Use:	**8**			
Duty Cycle (%):	**16**			
Level During 8 Hour day:	**49.3**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Mixer Truck (x2)
Receiver: West (CR3)

Noise Source

Noise Level (dBA) 79.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 85 feet

Path Calculation

Source to Receiver Direct Path Distance: **85** feet

Sound Pressure Level **74.7** at 85 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **70.7**

Summation

Number of Sources: 3

Level during 8 hour day: **71.4**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Concrete Pump Truck
Receiver: West (CR3)

Noise Source

Noise Level (dBA)	74.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	85	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**85**	feet

Sound Pressure Level	**69.7**	at	85	feet
Hours of Use:	**8**			
Duty Cycle (%):	**20**			
Level During 8 Hour day:	**62.7**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: West (CR3)

Noise Source

Noise Level (dBA)	66.3	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	85	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**85**	feet

Sound Pressure Level	**61.7**	at	85	feet
Hours of Use:	**8**			
Duty Cycle (%):	**16**			
Level During 8 Hour day:	**53.7**			

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: North (CR1)

Noise Source

Noise Level (dBA) 66.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 128 feet

Path Calculation

Source to Receiver Direct Path Distance: **128** feet

Sound Pressure Level **58.1** at 128 feet
Hours of Use: **8**
Duty Cycle (%): **16**
Level During 8 Hour day: **50.2**

Summation

Number of Sources: 1

Level during 8 hour day: **50.2**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: East (CR2)

Noise Source

Noise Level (dBA) 66.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 142 feet

Path Calculation

Source to Receiver Direct Path Distance: **142** feet

Sound Pressure Level **57.2** at 142 feet
Hours of Use: **8**
Duty Cycle (%): **16**
Level During 8 Hour day: **49.3**

Summation

Number of Sources: 1

Level during 8 hour day: **49.3**

Noise Attenuation by Distance Calculation

Job: Strauss 5th Ave
Job #: B50405N2
Date: 1/27/2016
Source: Crane
Receiver: West (CR3)

Noise Source

Noise Level (dBA) 66.3 at 50 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 85 feet

Path Calculation

Source to Receiver Direct Path Distance: **85** feet

Sound Pressure Level **61.7** at 85 feet
Hours of Use: **8**
Duty Cycle (%): **16**
Level During 8 Hour day: **53.7**

Summation

Number of Sources: 1

Level during 8 hour day: **53.7**