NOISE ASSESSMENT

Carefield Solana Assisted Care Facility Development
PDS2018-MPA-18-019
County of San Diego, CA

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January 28, 2020

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GLOSSARY OF COMMON TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for night time noise. Typically, LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed project. The project known as "Carefield Solana Assisted Care Facility" proposes the development of an assisted living and memory care facility with an outdoor recreational area. The project is generally located northwest of State Route 76 (SR-76) along Thoroughbred Lane in the Bonsall community of in San Diego County, CA.

Project design features (PDFs) have been included in this Project. The applicant has agreed to implement all PDFs and will be included as part of the Project's Conditions of Approval. The following PDFs applied in this analysis with the purpose of reducing noise include:

1. Installation of a six-foot high solid perimeter fencing at the outdoor recreational area.
2. Provide a noise protection easement over the entire site to require the implementation of building design and construction measures to ensure that interior noise levels do not exceed 45 CNEL.

- On-Site Noise Analysis

  The project is proposing a 6-foot high privacy fence along the perimeter of the outdoor recreation area. It was determined from the detailed analysis that the proposed outdoor NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard with the 6-foot high privacy fence.

  Additionally, all building facades with direct line of sight to the State Route 76 were found to be above the General Plan Noise Element Standard of 60 dBA CNEL. Therefore, per the General Plan Noise Element a noise easement is required for the entire site and an interior noise study is required for all units, to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

  The Project does not create a direct or cumulative impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed Project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

  The grading activities will consist of the preparation of the proposed internal roadways, the

finished pads, and graded slopes. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 200-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 100-feet from the property lines. At average distances over 100-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures. No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

- Operational Noise Analysis

  Based on noise levels, the distances to the property lines and the proposed fencing the proposed operations are anticipated to be below the County's Property Lines standards. No impacts are anticipated and no mitigation is required.

1.0 INTRODUCTION

1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed Carefield Solana Assisted Living Facility Development. The project is located at 33° 17′ 30″ N and 117° 13′ 31″ W, northwest of State Route 76 along Thoroughbred Lane in the Bonsall community of San Diego County CA (APN 126-230-55-00). The general location of the project is shown on the Vicinity Map, Figure 1-A.

The proposed project seeks the development of an assisted living and memory care facility with an outdoor recreational area. The existing County of San Diego General Plan land use designation is C30 (Commercial). A site development plan is shown in Figure 1-B of this report. The Project envisions providing a 74,000 square foot (SF) facility and provide for 86 beds in 56 assisted living units, and 24 memory care units for a total of 80 units with 6 of the units having 2 beds. with an outdoor recreational area. The project site is 4.6 acres and is currently vacant.

1.2 Environmental Settings & Existing Conditions

a) Settings & Locations

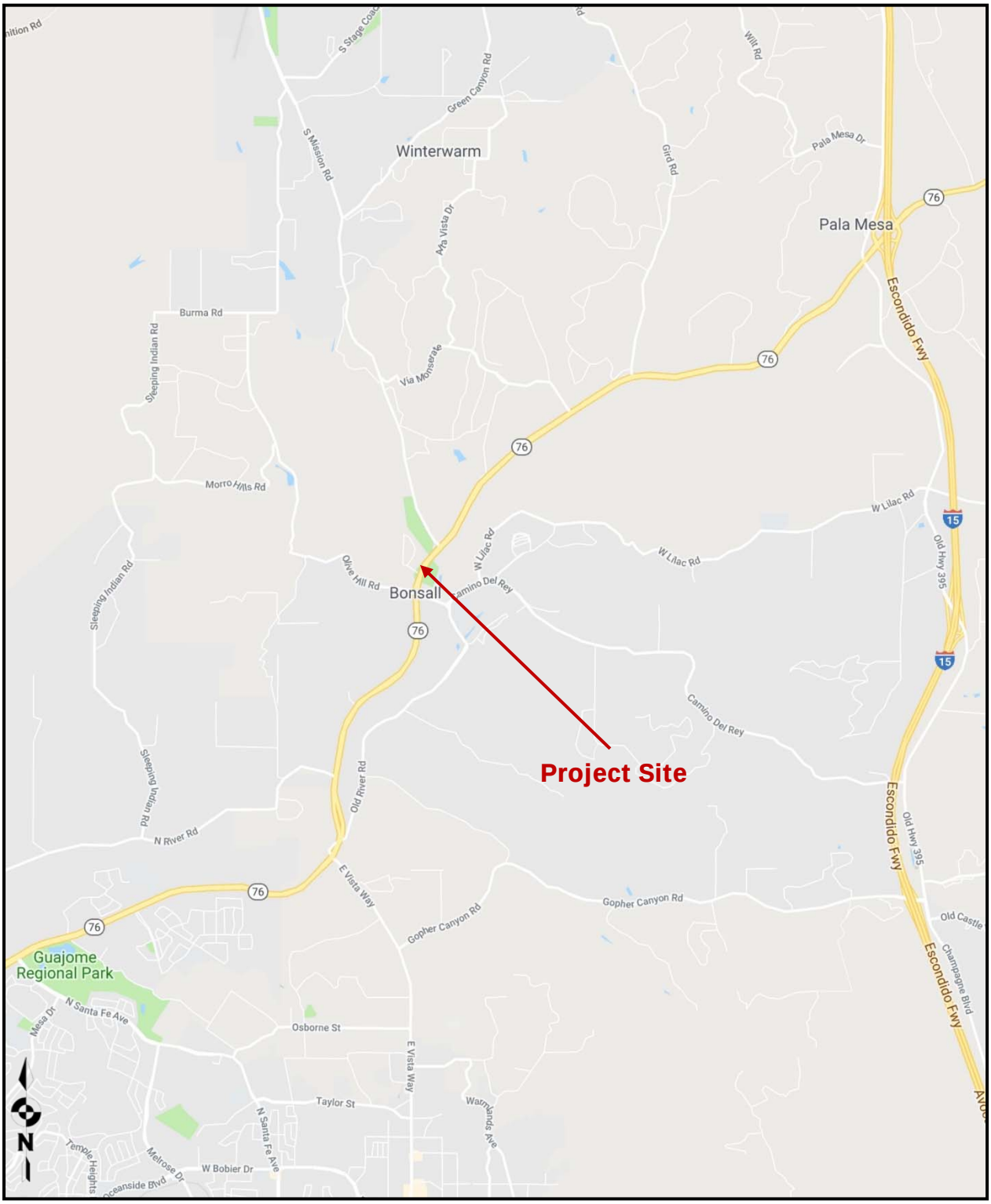
The project is located northwest of SR-76 along Thoroughbred Lane in the Bonsall community of in San Diego County. SR-76 is a major arterial that connects the project to other arterials.

The existing site is zoned C30 (Office Professional). Land uses surrounding the Project mostly include single family residential which are adjacent to the project site to the north and multi-family residential roughly 145 feet to the south and nearly 900 feet to the north. Commercial uses exist to the west and east of the site. Finally, Bonsall Elementary School is over 2,000 feet to the southeast. Elevations at the southwestern boundary is approximately 175 feet above mean sea level (MSL) to approximately 210 feet above MSL on the northeast are of the project.

b) Existing Noise Conditions

SR-76 has a roadway classification of 6 lane expressway in the County of San Diego's Circulation Element with a design speed limit of 55 miles per hour (MPH). Existing noise occurs mainly from traffic traveling along SR-76.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 2019

Figure 1-B: Proposed Project Site Layout

Source: Jones Ballard Architects, 2018

1.3 Methodology and Equipment

a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, measurements were taken at the center of the project having a relatively flat terrain and no obstruction from trees or rock outcroppings. This was done to determine the worst case conditions at the nearest proposed NSLU. The noise measurements were recorded on December 15, 2018 by Ldn Consulting between approximately 4:00 p.m. and 4:30 p.m.

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

The noise measurement location was determined based on site access and noise impact potential to the proposed sensitive uses. Monitoring location 1 (M1) was located approximately 300-feet from the centerline of State Route 76 near the entrance of the project site. The noise monitoring locations are provided graphically in Figure 1-C on the following page.

The results of the noise level measurement are presented in Table 1-1. The noise measurement was monitored for a time period of 15 minutes. The ambient Leq noise levels measured in the area of the project during the morning hour was found to be 60.8 dBA. The existing noise levels in the project area consisted primarily of vehicular noise from SR-76.

Table 1-1: Existing Noise Levels

Location	Time	One Hour Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	4:00–4:15 p.m.	60.8	52.3	70.7	64.8	59.2	54.7
Source: Ldn Consulting, Inc. December 15, 2018							

Figure 1-C: Noise Measurement Locations

b) Noise Modeling Software

The expected roadway noise levels from nearby State Route 76 was projected using Caltrans Sound32 Traffic Noise Prediction Model. Sound32 is a peak hour based traffic noise prediction model. The results of this analysis are based on the California Vehicle Noise Emission Levels (CALVENO). The Sound 32 model was calibrated in accordance with the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) and in accordance with Caltrans Technical Noise Supplement (TeNS) section N-5400. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volume.

The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes. The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the preliminary site plans provided by Farrington Engineering Consultants, Inc., 2019. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the NSLU areas. Traffic was consolidated into a single lane located along the centerline of each roadway. Longer roadway segments were subdivided into a series of adjoining segments for analysis. For this analysis, the roadway segments were extended a minimum of 300 feet beyond the observer locations. No grade correction or calibration factor (according to Caltrans Policy TAN-02-01 dated January 17, 2002) was included as part of the Sound32 traffic noise prediction model analysis.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in NSLU areas and placed five feet above the pad elevation and near the center of the rear yard a minimum of ten feet from the top/bottom of slope. All second floor observers were located fifteen feet above the proposed pad elevation at the anticipated building facades.

c) Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the

human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore, the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as sound travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.0 NOISE SENSITIVE LAND USES (NSLU)

2.1 Guidelines for the Determination of Significance

The County's General Plan Chapter 8 Noise Element uses the Noise Compatibility Guidelines listed in Table N-1 of the General Plan Noise Element (provided below) to determine the compatibility of land use when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

TABLE N-1: NOISE COMPATIBILITY GUIDELINES (CNEL)

Table N-1 Noise Compatibility Guidelines

Land Use Category		Exterior Noise Level (CNEL)						
		55	60	65	70	75	80	
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 of the General Plan Noise Element (provided below). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

TABLE N-2: NOISE STANDARDS

Table N-2 Noise Standards[Note]
1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: *(i)* for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, *(ii)* for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; *(iii)* for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

2.2 Potential Onsite Noise Impacts

It is expected that the primary source of potential noise impacts to the project site will occur from traffic noise along State Route 76.

a) Potential Build Out Noise Conditions

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by the County's General Plan Update for 2030. The future traffic along State Route 76 is estimated to be 56,000 ADT in the year 2030. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-1. Based on the County of San Diego Department of Public Works Public Road Standards, State Route 76 is considered a 6-lane expressway with a designed traffic speed of 55 MPH. To assess the peak hour traffic noise conditions, 10% of the ADT was utilized and a conservative vehicle mix was also utilized to predict the worst case noise levels.

Table 2-1: Buildout 2030 Traffic Parameters

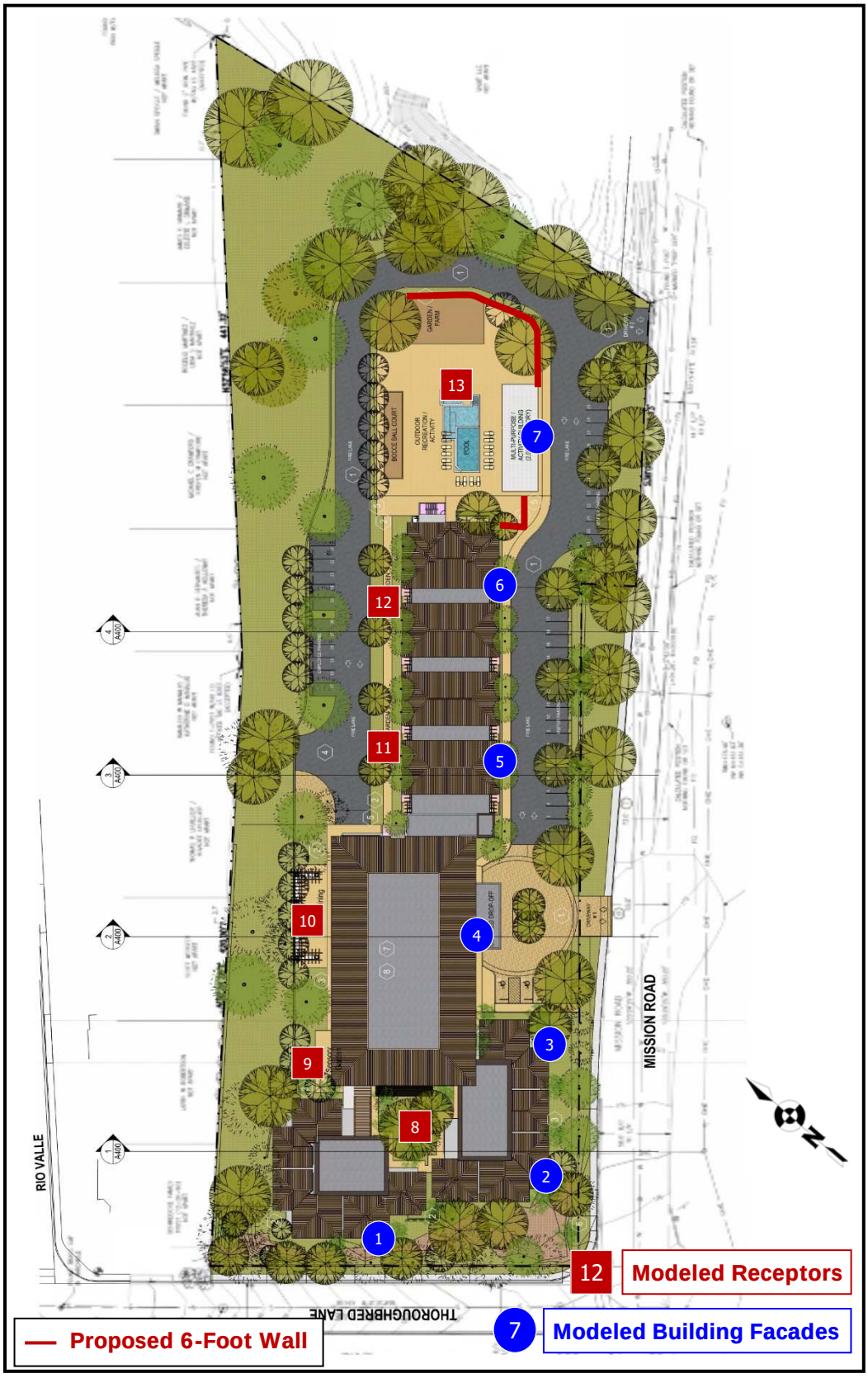
Roadway	Average Daily Traffic (ADT)	Peak Hour Volume[1]	Modeled Speeds (MPH)	Vehicle Mix %[2]		
				Auto	Medium Trucks	Heavy Trucks
State Route 76	56,000	5,600	55	95	3	2

[1] 10% of the ADT.
[2] Conservative vehicle mix.

b) Detailed Analysis and Mitigation Measures

The Buildout analysis was modeled assuming future year traffic parameters as shown previously in Table 2-1. The project is proposing a 6-foot high privacy fence along the perimeter of the outdoor recreation area. The solid fencing will be vinyl, ¾-inch or thicker consisting of solid panels on minimum 4x4-inch posts with no cracks or gaps through or below and all seams or cracks will be filled or caulked. The privacy fence was modeled as a design feature to determine if any additional mitigation would be required. It was determined from the detailed analysis that all outdoor group usable space will comply with the County of San Diego 60 dBA CNEL exterior noise standard without additional mitigation measures. Modeled observer locations of the potentially affected NSLU's as well as the location of the proposed privacy fence are presented in Figure 2-B.

Figure 2-A: Modeled NSLU Receptor Locations



The results of the specific noise modeling for the site are provided in Table 2-2 below. The S32 models input and output files for the future conditions are provided in ***Attachment A.***

Table 2-2: Future Exterior Noise Levels

Modeled Receptor Number	Receptor Type or Use [1]	Unmitigated Outdoor Noise Level (dBA CNEL)[3]	Second Level Façade Noise Level (dBA CNEL)[3]
1	Building Façade	63	-
2	Building Façade	68	-
3	Building Façade	69	-
4	Building Façade	68	68
5	Building Façade	69	69
6	Building Façade	69	69
7	Building Façade	69	-
8	Courtyard	60	-
9	Sensory Garden	59	-
10	Outdoor Dining	59	-
11	Linear Garden	60	-
12	Linear Garden	60	-
13	Recreational Area / Pool	60	-

[1] Receptor Elevation is 5-feet above the Pad Elevation for ground level and 15-feet above pad for second floor.

It was determined from the detailed analysis that the proposed outdoor NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard with the proposed solid perimeter fencing, six (6) feet in height, located at the perimeter of the outdoor recreation area and no additional mitigation measures are needed. The proposed 6 foot perimeter fencing will be included as part of the Project's Conditions of Approval. Additionally, all building facades with direct line of sight to the State Route 76 were found to be above the General Plan Noise Element Standard of 60 dBA CNEL. Therefore, per the General Plan Noise Element a noise protection easement is required for the entire site and an interior noise study is required for all units, to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

2.3 Off-site Noise Impacts

To determine if direct or cumulative off-site noise level increases associated with the

development of the proposed project would create noise impacts. The traffic volumes for the existing conditions were compared with the traffic volume increase of existing plus the proposed project. The project's traffic assessment states that the proposed project site only generates 238 average daily trips (ADT) (Source: Traffic Analysis for the Carefield Solana Assisted Care Facility – Darnell and Associates, 2019). The existing ADT volumes are over 40,000 on State Route 76. Thoroughbred Lane is a private roadway with an existing traffic volume of 593 daily trips and Old Mission Road is a turnaround that has an existing traffic volume of 28 daily trips per the traffic study. Typically, it requires a project to double (or add 100%) to the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. Based on the project traffic distribution, all of the project traffic would travel south to State Route 76 and not pass any existing residential uses. The project will add less than a 1% increase to the exiting State Route 76 volumes and no direct impacts are anticipated. Cumulatively the traffic volumes along the State Route 76 are expected to increase but the project related increase would be even less and therefore no impacts are anticipated.

2.4 Conclusions

The project is proposing a 6-foot high privacy fence along the perimeter of the outdoor recreation area. It was determined from the detailed analysis that the proposed outdoor NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard with the 6-foot high privacy fence. Additionally, all building facades with direct line of sight to the State Route 76 were found to be above the General Plan Noise Element Standard of 60 dBA CNEL. Therefore, per the General Plan Noise Element a noise easement is required for the entire site and an interior noise study is required for all units, to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

The Project does not create a direct or cumulative impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed Project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

3.0 CONSTRUCTION ACTIVITIES

3.1 Guidelines for the Determination of Significance

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Sections as follows.

SEC. 36.408: HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

a. Between 7 p.m. and 7 a.m.

b. On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

SEC. 36.409: SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

SEC. 36.410: SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410A (provided below), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410A are as described in the County Zoning Ordinance.

TABLE 36.410A: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410B, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410B are as described in the County Zoning Ordinance.

TABLE 36.410B: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA) FOR PUBLIC ROAD PROJECTS

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

3.2 Potential Property Line Noise Impacts

a) Potential Build Out Noise Conditions

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise

generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

b) Potential Noise Impact Identification

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers.

Based empirical data and the amount of equipment needed, worst case noise impacts from this construction equipment would occur during the grading operations. In order to determine the worst case scenario for the grading activities all the equipment was place in a common location, which is not physically possible. As can be seen in Table 3-1, even if all the equipment were placed together the cumulative grading activities noise levels would be 81.1 dBA and would attenuate 6.0 dBA at a distance of 100-feet from the point source noise and would be at or below the 75 dBA threshold.

Table 3-1: Construction Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)[1]	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Feet (dBA)
Dozer - D8	1	74	8	74.0
Tractor/Backhoe	1	72	8	72.0
Loader/Grader	1	73	8	73.0
Water Trucks	1	70	8	70.0
Paver/Blade	1	75	8	75.0
Roller/Compactor	1	74	8	74.0
			Cumulative Levels @ 50 Feet	81.1
			Distance to Property Line (Feet)	100
			Noise Reduction Due to Distance	-6.0
			NEAREST PROPERTY LINE NOISE LEVEL	**75.0**

[1] Source: U.S. Environmental Protection Agency (U.S. EPA) and Empirical Data

The grading equipment will be spread out over the project site from distances near the occupied property to distances of over 200-feet away. Based upon the proposed site plan the majority of

the grading operations will occur more than 100-feet from the property lines. At average distances over 100-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures. This means that most of the time the average distance from the equipment to the occupied properties is more than 100-feet and in that situation no impacts are anticipated.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project is anticipated to comply with Section 36.410 of the County Noise Ordinance and no further analysis is required.

3.3 Conclusions

The grading activities will consist of the preparation of the proposed internal roadways, the finished pads, and the water quality detention basins. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 200-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 100-feet from the property lines. At average distances over 100-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

4.0 OPERATIONAL ACTIVITIES

4.1 Guidelines for the Determination of Significance

Section 36.404 of the County of San Diego noise ordinance provides performance standards and noise control guidelines for determining and mitigating non-transportation, or stationary, noise source impacts to adjacent properties. The purpose of the noise ordinance is to protect, create and maintain an environment free from noise and vibration that may jeopardize the health or welfare, or degrade the quality of life. The sound level limits in Table 36.404 of the County's Noise Ordinance are provided below in Table 4-1.

Table 4-1: Property Line Sound Level Limits in Decibels (dBA)

Zone	Time	One-Hour Average Sound Level Limits (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, RV, and RU with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
(2) RRO, RC, RM, S86, V5, RV and RU with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S94, V4, and all commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) V1, V2	7 a.m. to 7 p.m.	60
V1, V2	7 p.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M50, M52, and M54	Anytime	70
(6) S82, M56, and M58.	Anytime	75
(7) S88 (see subsection (c) below)		

Source: County of San Diego Noise Ordinance Section 36.404

a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.

According to the stationary source exterior noise standards, no person shall operate any source of sound at any location within the County or allow the creation of any noise on a property which causes the noise levels to exceed the exterior noise limits at the property boundary. Additionally, Section 36.404(e) states that the sound level limits at a location on a boundary between two zones are the arithmetic mean of the respective limits for the two zones.

4.2 Potential Noise Impacts

This section examines the potential stationary noise source impacts associated with the development and operation of the proposed project. The Project proposes a zone change to medical center (C46) with residential to the northwest zoned RS, and northeast and southwest zoned commercial C30. Section 36.404 of the Noise Ordinance states that the sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. Section 36.404 sets an operational exterior noise limit of 60 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 55 dBA Leq during the nighttime hours of 10 p.m. to 7 a.m. for the C46 property and a 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the nighttime hours of 10 p.m. to 7 a.m. for the residential noise sensitive land uses as shown in Table 4-1 above.

To be conservative, the most restrictive evening noise thresholds were applied. The evening property line standards arithmetic mean per Section 36.404 (e) for the adjacent use is provided below in Table 4-2.

Table 4-2: Property Line Sound Level Limits in Decibels (dBA)

Property Line	Adjacent Land Use Zone	Adjacent Property Line Standard	Project's Property Line Standard	Section 36.404(e) Standard (Arithmetic Mean)*
		10 p.m. to 7 a.m.	10 p.m. to 7 a.m.	
Northwest	RS	45	55	**50.0**
Northeast	C30	55	55	55.0
Southwest	C30	55	55	55.0
* Most restrictive property line standards applied in this analysis.				

To predict the worst-case future noise environment, continuous reference noise levels were used to represent the mechanical ventilation system. Even though the mechanical ventilation system will cycle on and off throughout the day, this approach presents the worst-case noise condition. In addition, these units have been designed to provide cooling during the peak summer daytime periods, and it is unlikely that all the units will be operating continuously throughout the noise sensitive nighttime periods. To assess the mechanical equipment noise impacts the worst-case nighttime standard of 50 dBA was utilized.

Sound from a small localized source (a "point" source) radiates uniformly outward as it travels away from the source. The sound level attenuates or drops-off at a rate of 6 dBA for each doubling of distance. A drop-off rate of 6 dBA per doubling of distance was used for this piece of equipment.

4.3 Reference Noise Levels

The analysis of similar medical care facilities determined that 8 Ton and 10 Ton Samsung Heat Pump condensers or similar could be used. The noise ratings for these units were found to be 58 dBA and 60 dBA, respectively. The manufacture's specifications are provided as an Attachment to this letter. Based on square footage, the Assisted Living building may need up to 16 of the 10 Ton units rated at 60 dBA each. Each of the Memory Care buildings may need up to 8 of the 8 Ton units (rated at 58 dBA). It was determined based on the site configuration and equipment locations that the worst case noise exposure would occur at the northwestern property line.

Utilizing a 6 dBA decrease per doubling of distance, noise levels at the edge of the nearest property line to the northwest at the distances shown above were calculated for all the mechanical units. No reductions from the existing topography located between the equipment and property lines were taken to determine the worst-case noise levels. The units would be separated along the length of the buildings and would not cumulatively increase the noise levels but were combined to show the worst case scenario. As can been seen in Table 4-3, the unshielded noise level would be 42.0 dBA. Additionally, the mechanical units will be shielded by the mechanical wells and portions of the building and the combined noise level would be reduced by at least 5 decibels at the property line.

Table 4-3: Unshielded Noise Level Reductions due to Distance

Building	Noise Level @ 3-feet (dBA)[1]	Quantity	Combined Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Reduction from Distance (dBA)	Resultant Noise Level (dBA)
Assisted Living	60	16	72.0	130	-32.7	39.3
Memory Care	58	8	67.0	85	-29.0	38.0
Memory Care	58	8	67.0	195	-36.3	30.8
					Unshielded Cumulative Noise Level (dBA)	**42.0**

[1] Reference Noise Level provided in Attachments

4.4 Conclusions

Based upon the property line noise levels determined above none of the proposed noise sources directly or cumulatively exceeds the most restrictive nighttime property line standards at the shared property lines. Therefore, the proposed developments related operational noise levels comply with the noise standards at the property lines. No Impacts are anticipated and no mitigation is required.

5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

Project design features (PDFs) have been included in this Project. The applicant has agreed to implement all PDFs and will be included as part of the Project's Conditions of Approval. The following PDFs applied in this analysis with the purpose of reducing noise include:

1. Installation of a six-foot high solid perimeter fencing at the outdoor recreational area.
2. Provide a noise protection easement over the entire site to require the implementation of building design and construction measures to ensure that interior noise levels do not exceed 45 CNEL.

- On-Site Noise Analysis

The project is proposing a 6-foot high privacy fence along the perimeter of the outdoor recreation area. It was determined from the detailed analysis that the proposed outdoor NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard with the 6-foot high privacy fence. Additionally, all building facades with direct line of sight to the State Route 76 were found to be above the General Plan Noise Element Standard of 60 dBA CNEL. Therefore, per the General Plan Noise Element a noise protection easement is required for the entire site and an interior noise study is required for all units, to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

The Project does not create a direct or cumulative impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed Project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

The grading activities will consist of the preparation of the proposed internal roadways, the finished pads, and the water quality detention basins. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 200-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 100-feet from the property lines. At average distances over 100-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no

impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

- Operational Noise Analysis

  Based on noise levels, the distances to the property lines and the proposed fencing the proposed operations are anticipated to be below the County's Property Lines standards. No impacts are anticipated and no mitigation is required.

6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the proposed development. This report was prepared utilizing the latest guidelines and reduction methodologies. This report was prepared by Jeremy Louden; a County approved CEQA Consultant for Acoustics.

Jeremy Louden, Principal
Ldn Consulting, Inc.
760-473-1253
jlouden@ldnconsulting.net

Date January 28, 2020

ATTACHMENT A

S32 NOISE MODEL OUTPUT

Carefield Solana - Ground Level Unmitigated
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 2660 , 55 , 84 , 55 , 56 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2660 , 55 , 84 , 55 , 56 , 55
L-HWY 76 WB, 1
N,-44,-3,171,
N,187,78,174,
N,334,113,176,
N,490,137,177,
N,663,153,177,
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N,1000,151,175,
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L-HWY 76 EB, 2
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N,892,98,176,
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N,1269,72,172,
B-Median, 1 , 2 , 0 ,0
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196,49,175,178,
340,83,177,180,
494,107,178,181,
665,123,178,181,
893,128,177,180,
998,121,176,179,
1271,102,173,176,
B-Building-1, 2 , 2 , 0 ,0
262,463,180,190,
262,441,180,190,
271,425,180,190,
271,365,180,190,
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393,365,180,190,
393,407,180,190,
532,407,180,190,
532,387,180,190,
B-Building-2, 3 , 2 , 0 ,0
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748,445,180,190,
B-Multipurpose, 4 , 2 , 0 ,0
772,391,180,190,
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B-Fence-2, 6 , 2 , 0 ,0
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892,372,180,186,
903,401,180,186,
904,404,180,186,
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R, 1 , 65 ,10
250,465,185.,Facade
R, 2 , 65 ,10
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R, 3 , 65 ,10
375,350,185.,Facade
R, 4 , 65 ,10
463,405,185.,Facade
R, 5 , 65 ,10
571,385,185.,Facade
R, 6 , 65 ,10
702,385,185.,Facade
R, 7 , 65 ,10
809,365,185.,Facade
R, 8 , 65 ,10
325,444,185.,Court
R, 9 , 65 ,10
367,502,185.,Garden
R, 10 , 65 ,10
466,516,185.,Dining
R, 11 , 65 ,10
574,462,185.,Garden
R, 12 , 65 ,10
700,462,185.,Garden
R, 13 , 65 ,10
825,408,185.,Pool
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Carefield Solana - Ground Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Facade	65.	10.	62.5
2	Facade	65.	10.	68.2
3	Facade	65.	10.	68.7
4	Facade	65.	10.	67.8
5	Facade	65.	10.	68.6
6	Facade	65.	10.	68.8
7	Facade	65.	10.	69.2
8	Court	65.	10.	59.6
9	Garden	65.	10.	59.2
10	Dining	65.	10.	59.3
11	Garden	65.	10.	60.0
12	Garden	65.	10.	60.1
13	Pool	65.	10.	60.4

Carefield Solana - Second Level Facade
T-PEAK HOUR TRAFFIC CONDITIONS, 1
 2660 , 55 , 84 , 55 , 56 , 55
T-PEAK HOUR TRAFFIC CONDITIONS, 2
 2660 , 55 , 84 , 55 , 56 , 55
L-HWY 76 WB, 1
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N,334,113,176,
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L-HWY 76 EB, 2
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-31,-31,172,175,
196,49,175,178,
340,83,177,180,
494,107,178,181,
665,123,178,181,
893,128,177,180,
998,121,176,179,
1271,102,173,176,
B-Building-1, 2 , 2 , 0 ,0
262,463,180,190,
262,441,180,190,
271,425,180,190,
271,365,180,190,
290,352,180,190,
374,352,180,190,
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748,445,180,190,
B-Multipurpose, 4 , 2 , 0 ,0
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847,366,180,190,
847,391,180,190,
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772,387,180,186,

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B-Fence-2, 6 , 2 , 0 ,0
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892,372,180,186,
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904,447,180,186,
R, 1 , 65 ,10
463,405,195.,Facade
R, 2 , 65 ,10
571,385,195.,Facade
R, 3 , 65 ,10
702,385,195.,Facade
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE:
Carefield Solana - Second Level Facade

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	Facade4	65.	10.	67.7
2	Facade5	65.	10.	68.6
3	Facade6	65.	10.	68.8

ATTACHMENT B

HVAC NOISE LEVELS AND SPECIFICATIONS

SAMSUNG

SUBMITTAL RVXVHT100FE

DVM Plus III Heat Pump Condenser

Job Name	Location
Purchaser	Engineer
Submitted to	Reference ☐ Approval ☐ Construction ☐
Unit Designation	Schedule#

Specifications

Performance	US Ton/HP		8.0/10.0
	Nominal Capacity*	Cooling (Btu/h)	96,000
		Heating (Btu/h)	108,000
	System Modulation (%)		10-100
Power	Voltage (ø/V/Hz)		3/208 - 230/60
	Nominal Running Current (A)	Cooling	28.9
		Heating	24.9
	Max. Circuit Breaker (MCCB/ELB/ELCB)		70 A
	Minimum Circuit Ampacity		53.8 A
Fan	Type/Control		Propeller/BLDC
	Motor	Qty.	1
		Output (W)	630
		FLA (A)	7.0
Airflow	Airflow Rate (CFM)		6000
	Max External Static Pressure ("WC)		0.315
Compressor	Model		ZPJ72KCE-TF5 / ZPI61KCE-TF5
	Type		DVI Scroll / FVI Scroll
	Number		1 / 1
	Piston Displacement (in³/Rev)		4.095 / 3.545
	Output (kW)		6.94 / 5.83
	RLA (A)		21.8 / 19.6
	Lubricant	Type	3MAF POE
		Charging (fl. Oz)	57 / 57
Refrigerant	Type		R410A
	Factory Charge (lbs.)		16.53
Piping Connections (inches)	Liquid		3/8
	Gas		7/8
	Oil (flare)		1/4
	Installation Limitation	Max. Length (Feet)	656
		Max. Height (Feet)	164
Dimensions	Width (inches)		34 5/8
	Height (inches)		67 7/8
	Depth (inches)		30 1/8
	Weight (lbs.)		529
Sound Level	dB		58
Operating Temperature	Cooling (°F)		23 - 115
	Heating (°F)		-4 - 75
Control	Communication Cable (AWG #)		Shielded AWG 16
Protection Devices	Mechanical Type		High pressure switch
			Compressor/accumulator crank case heater
			PCB fuse
	Electronic Type		Over-voltage protection
			Current transformer
			Fan motor voltage protection
Indoor Units	Total Capacity (%)		50 - 130% of outdoor capacity
	Max. Indoor Unit Quantity		64
Safety Certifications			ETL & ETLc

Construction
The unit shall be galvanized steel with a baked on powder coated finish

Heat Exchanger
The heat exchanger shall be mechanically bonded fin to copper tube

Controls
The unit shall be operated via a DDC type signal

Controls shall integrate with a BMS system

Control wiring shall be 16AWG shielded wire

Refrigerant System
The refrigerant shall be R410A

The compressors shall be hermetically sealed Digital Vapor Injection Scroll and Fixed Vapor Injection Scroll

Refrigerant flow shall be controlled by EEV (electronic expansion valve)

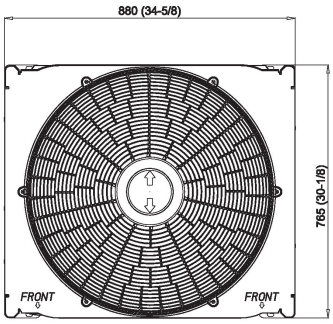
*Nominal cooling capacities are based on: Indoor temperature: 80°F DB, 67°F WB. Outdoor temperature: 95°F DB, 75°F WB.
*Nominal heating capacities are based on: Indoor temperature: 70°F DB, 60°F WB. Outdoor temperature: 47°F DB, 43°F WB.
Quietside maintains a policy of ongoing development, specifications are subject to change without notice.

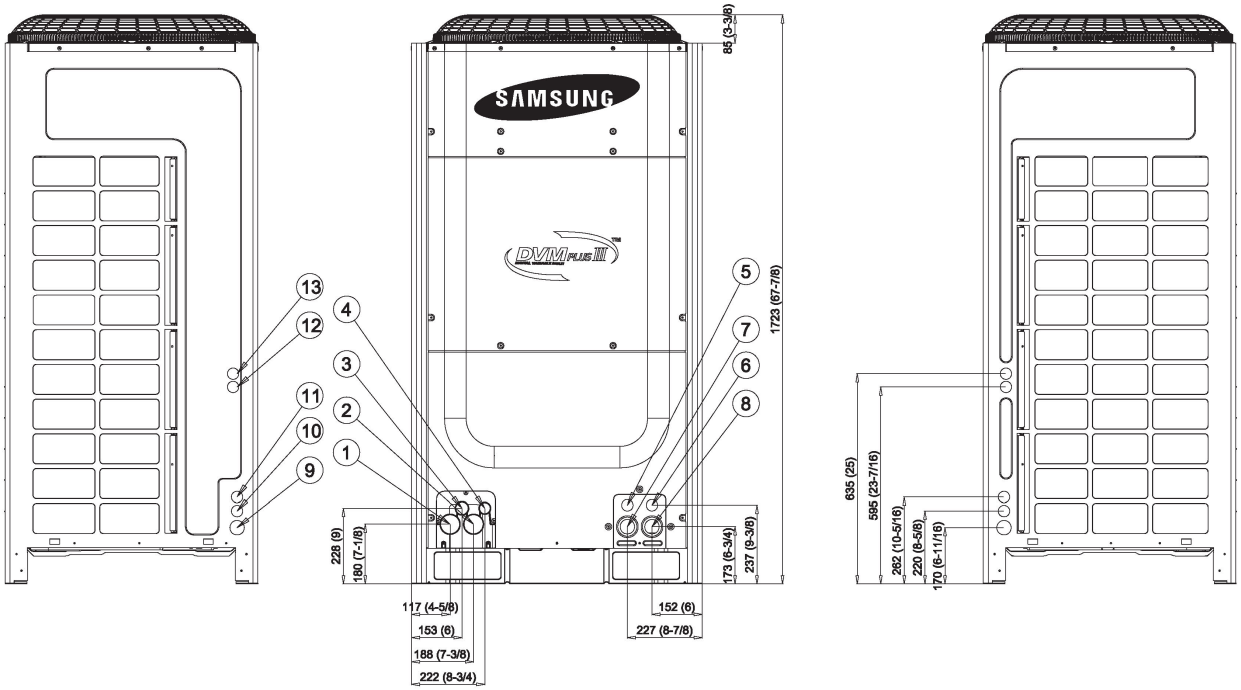
Quietside West : 8750 Pioneer Blvd, Santa Fe Springs, CA 90670 • Phone : 888-699-6067 • Fax : 562-699-4351
Quietside Central : 3001 Northern Cross Blvd. Suite 361, Fort Worth, TX 76137 • Phone : 817-838-6066 • Fax : 817-838-8670
Quietside East : 6 Pine Hill Drive, Carlisle, PA 17013 • Phone : 1-877-262-4731 • Fax : 717-243-7917
www.SamsungSystemAC.com

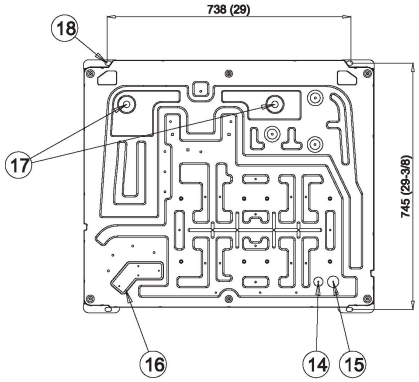
SUBMITTAL RVXVHT100FE

DVM Plus III Heat Pump Condenser

Unit: mm (inch)







No.	Name	Description	No.	Name	Description
①	Gas pipe connection	Ø57.10, knock-out hole	⑩	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
②	High pressure gas pipe connection	Ø57.10, knock-out hole	⑪	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
③	Liquid pipe connection	Ø37.10, knock-out hole	⑫	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
④	Oil balance pipe connection between units	Ø32.10, knock-out hole	⑬	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
⑤	Power & communication wiring conduit	Ø34.50, knock-out hole hole-front	⑭	Power & communication wiring conduit	Ø27.80, knock-out hole hole-side
⑥	Power & communication wiring conduit	Ø34.50, knock-out hole hole-front	⑮	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
⑦	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑯	Pipe connection through base	Pipes connection opening with cover
⑧	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑰	Condensate drain holes	Ø20mm-2 holes
⑨	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑱	Foundation bolts positions	4-12 x 20 slit-hole

SAMSUNG

SUBMITTAL RVXVHT125FE

DVM Plus III Heat Pump Condenser

Job Name	Location
Purchaser	Engineer
Submitted to	Reference ☐ Approval ☐ Construction ☐
Unit Designation	Schedule#

Specifications

Performance	US Ton/HP		10 / 12.5
	Nominal Capacity*	Cooling (Btu/h)	120,000
		Heating (Btu/h)	135,000
	System Modulation (%)		10-100
Power	Voltage (ø/V/Hz)		3/208 - 230/60
	Nominal Running Current (A)	Cooling	36.8
		Heating	33
	Max. Circuit Breaker (MCCB/ELB/ELCB)		80 A
	Minimum Circuit Ampacity		61.1 A
Fan	Type/Control		Propeller/BLDC
	Motor	Qty.	1
		Output (W)	630
		FLA (A)	7.0
Airflow	Airflow Rate (CFM)		6350
	Max External Static Pressure ("WC)		0.315
Compressor	Model		ZPJ83KCE-TF7 / ZPI83KCE-TF7
	Type		DVI Scroll / FVI Scroll
	Number		1 / 1
	Piston Displacement (in³/Rev)		4.711 / 4.711
	Output (kW)		7.91 / 7.91
	RLA (A)		24.6 / 23.4
	Lubricant	Type	3MAF POE
		Charging (fl. Oz)	57 / 57
Refrigerant	Type		R410A
	Factory Charge (lbs.)		19.84
Piping Connections (inches)	Liquid		1/2
	Gas		1 1/8
	Oil (flare)		1/4
	Installation Limitation	Max. Length (Feet)	656
		Max. Height (Feet)	164
Dimensions	Width (inches)		47 1/4
	Height (inches)		67 7/8
	Depth (inches)		30 1/8
	Weight (lbs.)		617
Sound Level	dB		60
Operating Temperature	Cooling (°F)		23 - 115
	Heating (°F)		-4 - 75
Control	Communication Cable (AWG #)		Shielded AWG 16
Protection Devices	Mechanical Type		High pressure switch
			Compressor/accumulator crank case heater
			PCB fuse
	Electronic Type		Over-voltage protection
			Current transformer
			Fan motor voltage protection
Indoor Units	Total Capacity (%)		50 - 130% of outdoor capacity
	Max. Indoor Unit Quantity		64
Safety Certifications			ETL & ETLc

Construction
The unit shall be galvanized steel with a baked on powder coated finish

Heat Exchanger
The heat exchanger shall be mechanically bonded fin to copper tube

Controls
The unit shall be operated via a DDC type signal

Controls shall integrate with a BMS system

Control wiring shall be 16AWG shielded wire

Refrigerant System
The refrigerant shall be R410A

The compressors shall be hermetically sealed Digital Vapor Injection Scroll and Fixed Vapor Injection Scroll

Refrigerant flow shall be controlled by EEV (electronic expansion valve)

*Nominal cooling capacities are based on: Indoor temperature: 80°F DB, 67°F WB. Outdoor temperature: 95°F DB, 75°F WB.
*Nominal heating capacities are based on: Indoor temperature: 70°F DB, 60°F WB. Outdoor temperature: 47°F DB, 43°F WB.
Quietside maintains a policy of ongoing development, specifications are subject to change without notice.

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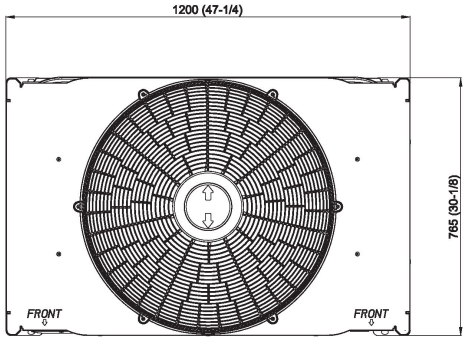
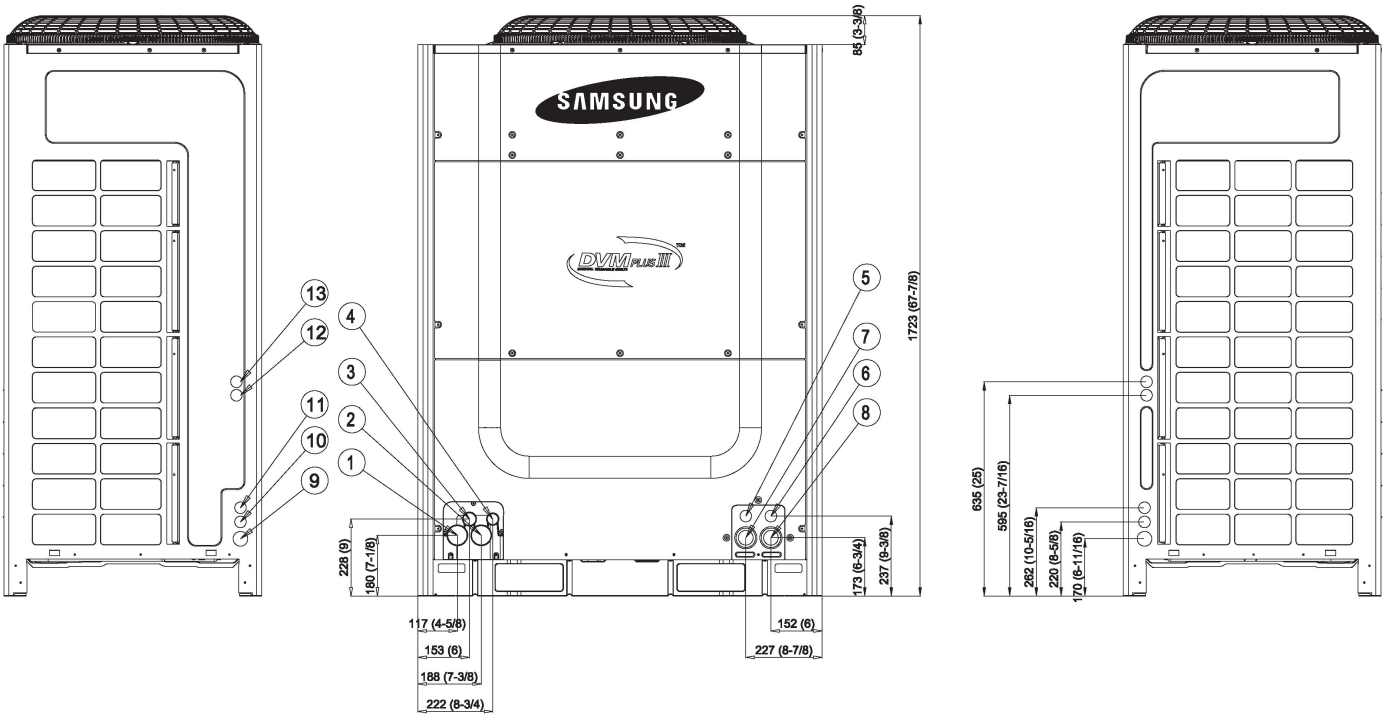
Quietside Central : 3001 Northern Cross Blvd. Suite 361, Fort Worth, TX 76137 • Phone : 817-838-6066 • Fax : 817-838-8670
Quietside East : 6 Pine Hill Drive, Carlisle, PA 17013 • Phone : 1-877-262-4731 • Fax : 717-243-7917
www.SamsungSystemAC.com

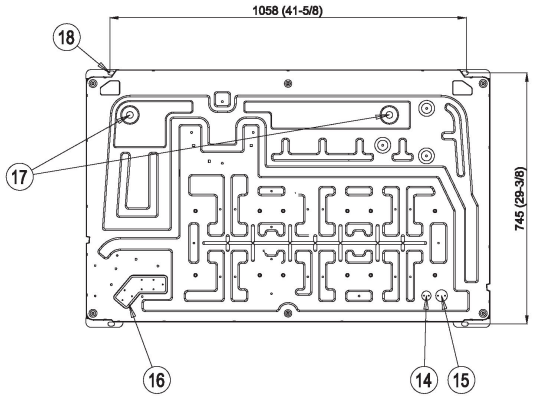
SUBMITTAL RVXVHT125FE

DVM Plus III Heat Pump Condenser

Unit: mm (inch)







No.	Name	Description	No.	Name	Description
①	Gas pipe connection	Ø57.10, knock-out hole	⑩	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
②	High pressure gas pipe connection	Ø57.10, knock-out hole	⑪	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
③	Liquid pipe connection	Ø37.10, knock-out hole	⑫	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
④	Oil balance pipe connection between units	Ø32.10, knock-out hole	⑬	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
⑤	Power & communication wiring conduit	Ø34.50, knock-out hole hole-front	⑭	Power & communication wiring conduit	Ø27.80, knock-out hole hole-side
⑥	Power & communication wiring conduit	Ø34.50, knock-out hole hole-front	⑮	Power & communication wiring conduit	Ø34.50, knock-out hole hole-side
⑦	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑯	Pipe connection through base	Pipes connection opening with cover
⑧	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑰	Condensate drain holes	Ø20mm-2 holes
⑨	Power & communication wiring conduit	Ø43.70, knock-out hole hole-front	⑱	Foundation bolts positions	4-12 x 20 slit-hole