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October 14, 2025

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San Diego, CA 92131

Reference: Noise Analysis for the Pasqual Heights Project (Project Number PDS2024-TM-5657; RECON Number 10597) PDS2025-DB-25-00

Dear Mr. Garza:

This report analyzes the noise impacts associated with the Pasqual Heights Project (project). As a part of this assessment, noise levels due to vehicle traffic were calculated and evaluated against County of San Diego (County) noise and land use compatibility guidelines. In addition to compatibility, the potential for noise to impact adjacent receivers from construction and operation was assessed. This report was prepared in accordance with the County's Guidelines for Determining Significance and Report Format and Content Requirements, Noise (County's Noise Guidelines, County of San Diego 2009).

1.0 Introduction

1.1 Project Description

The project site is located at 830 Idaho Avenue within unincorporated San Diego County (assessor parcel number 234-160-25). The 10.39-acre project site is largely undeveloped with the exception of a single-family residence. The project site is bordered by San Pasqual Valley Road to the northeast and Idaho Avenue to the southeast. The project site is surrounded by single-family residential uses to the north, south, and west, a church to the southeast, and a garden center to the east. The project site and surrounding properties are designated as Village Residential (VR-2) in the County's General Plan and are zoned A70 (Limited Agricultural). Figure 1 shows the regional location of the project. Figure 2 shows an aerial photograph of the project site and vicinity.

The project proposes the demolition of the existing single-family residence and construction of 42 single-family residential lots on the 10.39-acre site. Figure 3 shows the proposed site plan. The project would not require a zone change or general plan amendment. The current land use designation of Village Residential (VR-2) allows two dwelling units per acre for a total of 21 lots. The project would utilize the Density Bonus Law as updated by Assembly Bill (AB) 1287 to increase the density to 42 lots by reserving 29 percent (7 lots) of the base density units for Very Low and Moderate Income Households, as follows: 15 percent of the base density (4 lots) reserved for Very Low Income Households plus an additional 14 percent of the base density (3 lots) reserved for Moderate Income Households. The project would also include a sewer lift station and a bio-filtration basin in the southeast portion of the project site and a water pressure reducing station in the eastern portion of the project site. Project construction is anticipated to begin in August 2026 and last for approximately two years. Grading would include 74,791 cubic yards of cut and 74,893 cubic yards of fill for a total soil import quantity of 102 cubic yards.

1.2 Environmental Settings and Existing Condition

1.2.1 Noise Terminology

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A). The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the one-hour equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the day night equivalent level (L_{dn}). The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and an additional 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night. Similar to the CNEL, the L_{dn} is a 24-hour equivalent level that applies an additional 10 dB(A) penalty to noise occurring during the night.

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013).

1.2.2 Settings and Location

The 10.39-acre project site is subject to the General Plan Regional Category Village, Land Use Designation Village Residential (VR-2). Zoning for the site is A70 (Limited Agricultural). The surrounding properties are also zoned A70 (Limited Agricultural).

1.2.3 Existing Noise Conditions

Existing noise levels on and in the vicinity of the project site were measured on October 11, 2024, using one Larson-Davis Model LxT, Type 1 Integrating Sound Level Meter, serial number 3829. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Interval Period	1 minute
Time History Period:	5 seconds

The meter was calibrated before measurements. The meter was set five feet above the ground level for each measurement. The weather was warm and sunny with a slight breeze during the measurement period.

Measurement 1 was located at the northeastern project boundary, approximately 50 feet from San Pasqual Valley Road. The main source of noise was vehicle traffic on San Pasqual Valley Road, and secondary sources included a firetruck and ambulance pass-by. Traffic on San Pasqual Valley Road was counted during the 15-minute measurement period. The average measured noise level was 64.4 dB(A) L_{eq}.

Measurement 2 was located at the southeastern project boundary, approximately 50 feet from Idaho Avenue. The main source of noise was vehicle traffic on Idaho Avenue and San Pasqual Valley Road. Traffic on Idaho Avenue was counted during the 15-minute measurement period. The average measured noise level was 60.5 dB(A) L_{eq}.

Noise measurement results are summarized in Table 1, and traffic counts are summarized in Table 2. The measurement locations are shown on Figure 4, and noise measurement data is provided in Attachment 1.

Table 1
Noise Measurement Summary

Measurement	Location	Time	Measured Noise Level [dB(A) L_{eq}]	Main Noise Source
1	50 feet from San Pasqual Valley Road	9:37 a.m. – 9:52 a.m.	64.4	Vehicle traffic on San Pasqual Valley Road
2	50 feet from Idaho Avenue	10:04 a.m. – 10:19 a.m.	60.5	Vehicle traffic on Idaho Avenue and San Pasqual Valley Road

dB(A) L_{eq} = A-weighted decibels one-hour equivalent noise level

Table 2
15-minute Traffic Counts

Measurement	Roadway	Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
1	San Pasqual Valley Road	Northbound	80	1	4	0	0
		Southbound	125	5	4	0	1
2	Idaho Avenue	Westbound	53	1	0	0	0
		Eastbound	28	0	0	0	0

1.3 Methodology

Noise level predictions and contour mapping for construction and on-site noise sources were developed using noise modeling software, SoundPLAN Essential, version 4.1 (Navcon Engineering 2018). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear.

1.3.1 Vehicle Traffic Noise

The SoundPLAN program uses the Federal Highway Administration (FHWA) Traffic Noise Model algorithms and reference levels to calculate traffic noise levels at selected receiver locations. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model also takes into account ground conditions such as pavement, field grass, vegetation, etc. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates.

The main source of traffic noise at the project site is vehicle traffic on San Pasqual Valley Road and Idaho Avenue. Existing and opening year peak hour traffic volumes without and with the project on Idaho Avenue were obtained from the Transportation LMA prepared for the project (C2 Consulting Collective 2025), and future year 2050 traffic volumes on Idaho Avenue and San Pasqual Valley Road were obtained from the San Diego Association of Governments (SANDAG) Transportation Forecast Information Center (SANDAG 2024). The existing and opening year peak hour traffic volumes were used to determine if the project would result in a significant increase in traffic noise levels due to project-generated traffic, and the future year 2050 traffic volumes were used to calculate future on-site vehicle traffic noise levels and determine compatibility with the County's compatibility standards. It should be noted that the year 2050 forecast volume for Idaho Avenue is greater than the opening year plus project traffic volume modeled in the Transportation Local Mobility Analysis (LMA) prepared for the project (C2 Consulting Collective 2025) and is therefore conservative. Based on the SANDAG Transportation Forecast Information Center, the speed for San Pasqual Valley Road is 45 miles per hour (mph) through forecast year 2035 and 50 mph in forecast year 2050. The LMA reports posted speed limits of 45 to 50 mph. The SANGAG speed for Idaho Avenue is 40 mph, and the LMA reports posted speed limits of 25 to 35 mph. As a conservative analysis, speeds of 50 mph and 40 mph were modeled for San Pasqual Valley Road and Idaho Avenue, respectively. The vehicle classification mix was obtained from Caltrans truck counts conducted on San Pasqual Valley Road (Caltrans 2022). Caltrans does not count motorcycles or buses; thus, one percent of the automobiles were modeled as motorcycles and one percent of the automobiles were modeled as buses. Table 3 summarizes the modeled vehicle traffic parameters used to calculate the project-related increase in traffic noise and Table 4 summarizes the modeled vehicle traffic parameters used in the compatibility analysis.

Table 3
Modeled Vehicle Traffic Parameters – Project-Related Traffic Noise Increase

Roadway	ADT[1]				Vehicle Classification (percent)[3]					Speed (mph)[2]
	Existing without Project	Existing with Project	Opening Year without Project	Opening Year without Project	Automobiles	Medium Trucks	Heavy Trucks	Buses	Motorcycles	
Idaho Avenue										
Project Driveway to San Pasqual Valley Road	8,000	8,238	8,151	8,389	90.9	5.4	1.7	1.0	1.0	40

SOURCE:
[1]C2 Consulting Collective 2025
[2]SANDAG 2024
[3]Caltrans 2022
ADT = average daily traffic; mph = miles per hour

Table 4
Modeled Vehicle Traffic Parameters – Noise Compatibility

Roadway	Year 2050 ADT[1]	Vehicle Classification (percent)[2]					Speed (mph)[1]
		Automobiles	Medium Trucks	Heavy Trucks	Buses	Motorcycles	
San Pasqual Valley Road							
North of Idaho Avenue	22,800	90.9	5.4	1.7	1.0	1.0	50
South of Idaho Avenue	16,100	90.9	5.4	1.7	1.0	1.0	50
Idaho Avenue							
West of San Pasqual Valley Road	8,900	90.9	5.4	1.7	1.0	1.0	40
East of San Pasqual Valley Road	5,000	90.9	5.4	1.7	1.0	1.0	40

SOURCE:
[1]SANDAG 2024
[2]Caltrans 2022
ADT = average daily traffic; mph = miles per hour

1.3.2 Operational Noise

The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any single-family residential neighborhood, such as vehicles arriving and leaving, children at play, and landscape maintenance machinery. None of these noise sources associated with residential uses are anticipated to violate the County's Noise Ordinance or result in a substantial permanent increase in existing noise levels. The project would include heating, ventilation, and air conditioning (HVAC) units. It is not known at this time which manufacturer, brand, or model of unit or units would be selected for use in the project nor the exact location of each unit. HVAC equipment associated with single-family residential uses is often ground mounted in the rear or side yard. Based on the project location climate zone, a typical 2,500- to 3,000-square-foot residence typically requires 5 tons of HVAC per unit. For the purposes of this analysis, to determine what general noise levels the HVAC units would generate, it was assumed that the HVAC units would be similar to a Trane unit with a sound power level of 72 dB(A) which is equivalent to a sound pressure level of approximately 40 dB(A) L_{eq} at 50 feet. Stationary noise is considered a "point source" and attenuates over distance at a rate of 6 dB(A) for each doubling of distance.

The project would also include the construction of a sewer lift station at the southern portion of the site between Idaho Avenue and Lot 42. It would be a pre-packaged lift station manufactured by Pacific Southwest Industries and would consist of an in-ground fiberglass pump well with submersible pumps. The noise sources associated with the sewer lift station would include a blower fan and emergency generator. Because the pumps would be submerged and within a fiberglass pump well, they are not anticipated to generate audible noise levels at the adjacent properties. The lift station would be surrounded by a six-foot concrete masonry unit (CMU) wall. Noise levels associated with the lift station were modeled using SoundPLAN.

The lift station would be equipped with an odor control system (The General 55P air pollution control barrier) with a blower fan. Based on manufacturer specifications, the blower fan generates a noise level of 85 dB(A) at five feet. Based on communications with a manufacturer representative, the fan operates on a programmable timer that cycles on for 15 minutes and off for 10 minutes to optimize air exchanges. With incorporation of these operational characteristics, the fan would generate an average hourly sound power level of 90.8 dB(A) L_{pw}. The fan can also be equipped with an enclosure mounted to the concrete pad. Noise levels due to the fan were modeled during the daytime and nighttime hours with installation of an enclosure. It was assumed that the enclosure would achieve at least a 5 dB reduction in noise. Fan specifications are included in Attachment 2.

The lift station would also include a Generac natural gas emergency generator. Based on manufacturer specifications, it produces a noise level of 64 dB(A) at 23 feet. The standby generator would only be used in emergencies when power is cut from the sewer lift station. However, generator maintenance would include periodic testing. It was assumed that the generator would run for 30 minutes during daytime hours only for testing purposes. A testing average hourly sound power level of 85.9 dB(A) L_{pw} was modeled. Generator specifications are provided in Attachment 2.

1.3.3 Construction Noise

Project construction noise would be generated by diesel engine-driven construction equipment used for demolition of the existing single-family residence, site preparation and grading, building construction, loading, unloading, and placing materials and paving. Construction equipment with a diesel engine typically generates maximum noise levels from 70 to 95 dB(A) L_{eq} at a distance of 50 feet (FHWA 2006 and 2008; Federal Transit Authority [FTA] 2018). During construction, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Table 5 summarizes typical construction equipment noise levels and duty cycles.

Table 5 Typical Construction Equipment Noise Levels			
Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle	Sound Power Level [dB(A) L_{pw}]
Auger Drill Rig	85	20%	108.7
Backhoe	80	40%	107.7
Blasting	94	1%	105.6
Chain Saw	85	20%	109.7
Clam Shovel	93	20%	117.7
Compactor (ground)	80	20%	104.7
Compressor (air)	80	40%	107.7
Concrete Mixer Truck	85	40%	112.7
Concrete Pump	82	20%	106.7
Concrete Saw	90	20%	114.7
Crane (mobile or stationary)	85	20%	104.7
Dozer	85	40%	112.7
Dump Truck	84	40%	111.7
Excavator	85	40%	112.7
Front End Loader	80	40%	107.7
Generator (25 kilovolt amps or less)	70	50%	98.6
Generator (more than 25 kilovolt amps)	82	50%	110.6
Grader	85	40%	112.7
Hydra Break Ram	90	10%	111.6
Impact Pile Driver (diesel or drop)	95	20%	119.7
In situ Soil Sampling Rig	84	20%	108.7
Jackhammer	85	20%	109.7
Mounted Impact Hammer (hoe ram)	90	20%	114.7
Paver	85	50%	113.6
Pneumatic Tools	85	50%	113.6
Pumps	77	50%	105.6
Rock Drill	85	20%	109.7
Roller	74	40%	101.7
Scraper	85	40%	112.7
Tractor	84	40%	111.7
Vacuum Excavator (vac-truck)	85	40%	112.7
Vibratory Concrete Mixer	80	20%	104.7
Vibratory Pile Driver	95	20%	119.7
SOURCE: Federal Highway Administration 2006 and 2008; Federal Transit Authority 2018. dB(A) L_{eq} = A-weighted decibels average noise level			

During excavation, grading, and paving operations, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Although maximum noise levels may be 70 to 95 dB(A) at a distance of 50 feet during most construction activities, hourly average noise levels would be less. Construction noise levels were modeled assuming the simultaneous use of an excavator, a loader, and a grader which would be the three loudest and most commonly used pieces of construction equipment. Together this equipment generates a noise level of 84.7 dB(A) L_{eq} at 50 feet, which is equivalent to a sound power level of 116.3 dB(A) L_{pw}. Noise levels were modeled as an area source over the entire footprint of the project site. Note that the three loudest pieces of construction equipment likely to be used for demolition activities include an excavator, a loader, and a dump truck. Together this equipment generates a noise level of 84.3 dB(A) L_{eq} at 50 feet, which is equivalent to a sound power level of 115.9 dB(A) L_{pw}. This is slightly quieter

than the equipment used for grading; therefore, this analysis of grading noise levels accounts for all construction phases.

Additionally, blasting or rock breaking with the use of a rock drill or hammer may be required during construction activities due to the presence of marginally rippable granite rock beneath the soil. The drilling/hammering and blasting activities would occur in one area then the grading equipment would relocate or remove the debris. The loudest equipment used during this process would be the excavator with a mounted pneumatic hammer, which is louder than a rock drill. Drilling/hammering would be followed by a blast. Together, an excavator with pneumatic hammer generates a noise level of 84.5 dB(A) L_{eq} at 50 feet which is equivalent to a sound power level of 116.2 dB(A) L_{pw}. The blast itself generates a noise level of 74.0 dB(A) L_{eq} at 50 feet which is equivalent to a sound power level of 105.6 dB(A) L_{pw}. Noise levels due to hammering and blasting were calculated at the closest occupied receiver using a noise attenuation rate of 6 dB(A) per doubling of distance.

2.0 Noise Sensitive Land Uses Affected by Airborne Noise

2.1 Guidelines for Determination of Significance

A project would result in a significant impact if the implementation would result in the exposure of any on-site or off-site existing or reasonably foreseeable future noise sensitive land uses (NSLUs) to exterior or interior noise (including noise generated from a project, together with noise from roads, railroads, airports, heliports, and all other noise sources) in excess of any of the following:

A. Exterior Locations:

   i. 60 dB (CNEL); or
   ii. An increase of 10 dB CNEL over preexisting noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area that adjoins and is on the same lot as the dwelling, and that contains at least the following minimum area:

   (1) Net lot area up to 4,000 square feet: 400 square feet
   (2) Net lot area 4,000 square feet to 10 acres: 10% of net lot area
   (3) Net lot area over 10 acres: 1 acre

For all projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

   i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior 1 hour average sound level due to noise outside should not exceed 50 decibels (A).
   ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

2.2 Potential Noise Impacts

2.2.1 Potential Buildout Noise Conditions and Impacts

The project site is exposed to vehicle traffic noise from San Pasqual Valley Road and Idaho Avenue. As discussed in Section 1.3.1, future year 2050 traffic volumes were used to calculate future on-site vehicle traffic noise levels and determine compatibility with the County's compatibility standards. For single family residential uses, the exterior noise level standard is 60 CNEL and the interior noise level standard is 45 CNEL. Vehicle traffic noise level contours across the project site and noise levels at specific receiver locations were calculated using SoundPLAN. Contours do not take into account any shielding provided by existing or proposed buildings and are therefore conservative. Noise contours are shown in Figure 5, and modeled noise levels are summarized in Table 6. SoundPLAN data is provided in Attachment 3.

Table 6
On-Site Vehicle Traffic Noise Levels

Receiver	Without Barriers		With Barriers	
	1st Floor	2nd Floor	1st Floor	2nd Floor
1 – Lot 3	**65**	66	58	66
2 – Lot 2	**65**	66	58	66
3 – Lot 1	**65**	66	58	66
4 – Lot 42*	**62**	63	56	63
5 – Lot 41	59	60	57	59
6 – Lot 40	60	61	57	60
7 – Lot 39	60	61	54	61
8 – Lot 38	**61**	62	55	61
9 – Lot 37	**62**	63	55	62
10 – Lot 36	**63**	65	56	64
11 – Lot 35	**65**	68	58	66
12 – Lot 35	**67**	69	58	69
13 – Lot 34	**69**	70	60	70
14 – Lot 33	**65**	68	57	63
15 – Lot 22	**65**	67	57	62
16 – Lot 21	**69**	70	60	70
17 – Lot 21	**70**	71	60	71
18 – Lot 20	**70**	72	60	72
19 – Lot 20	**68**	71	60	71
20 – Lot 19	**65**	68	60	66

CNEL = community noise equivalent level
Bold = Backyard exceeds 60 CNEL.
*Note that a five-foot barrier would be sufficient to reduce exterior noise levels to less than 65 CNEL; however, a six-foot barrier is required due to noise generated by the adjacent sewer lift station. Noise levels shown here conservatively represent noise reduction due to a five-foot barrier.

As shown, exterior noise levels would exceed 60 CNEL at the lots closest to Idaho Avenue (Lots 1 through 3, Lots 35 through 38, and Lot 42) and San Pasqual Valley Road (Lots 19 through 22 and Lots 33 through 35). To reduce noise levels at these lots to 60 CNEL or less, five-foot barriers along Idaho Avenue and six- to eight-foot barriers along San Pasqual Valley Road were modeled. As shown in Table 6, with incorporation of these barriers, exterior noise levels in future backyards would be reduced to 60 CNEL or less. The modeled barriers and vehicle traffic noise contours with incorporation of these barriers are shown in Figure 6.

Interior noise levels can be reduced through standard construction techniques. When windows are closed, standard construction techniques provide various exterior-to-interior noise level reductions depending on the type of structure and window. According to the FHWA's Highway Traffic Noise Analysis and Abatement Guidance, buildings with masonry façades and double-glazed windows can be estimated to provide a noise level reduction of 35 dB, while light-frame structures with double glazed windows may provide noise level reductions of 20 to 25 dB (FHWA 2011).

The interior noise level standard for residential uses is 45 CNEL. Standard light-frame construction would reduce exterior to interior noise levels by at least 20 dB. As shown in Table 6, noise levels would be as high as 72 CNEL at the second floor of the lots located closest to San Pasqual Valley Road and Idaho Avenue. While the proposed barriers would reduce noise levels to 60 CNEL or less at first-floor receivers, second-floor receivers would not get the same noise attenuation, and the evaluation of specific building components is required. The sound transmission class (STC) rating of windows, walls, and roofs is an integer value that rates how well a building component attenuates noise. The STC rating generally reflects the decibel reduction that a building component can achieve. Standard walls and roofs typically have STC ratings greater than 40, while window components have lower ratings; thus, this analysis focuses on the minimum required window STC ratings. Because a noise reduction of up to 27 dB(A) is required to achieve interior noise levels of 45 CNEL or less, window components with an STC rating of 27 or higher are required for the lots closest to Idaho Avenue (Lots 1 through 3, Lots 35 through 38, and Lot 42) and San Pasqual Valley Road (Lots 19 through 22 and Lots 33 through 35). With the installation of windows with an STC rating of 27 or higher, interior noise levels within the residences on these lots would be reduced to 45 CNEL and interior noise levels would be less than significant. Interior noise levels at all other lots would be 45 CNEL with standard light frame construction and without consideration of specific building components.

2.2.2 Design Considerations and Mitigation Measures

MM-N-1: **On-site Noise Barriers.** Exterior noise levels at Lots 1 through 3, 19 through 22, 33 through 38, and 42 shall be reduced to the County Noise Element threshold of 60 CNEL Noise reduction for exterior traffic noise impacts can be accomplished through an on-site noise barrier. Five-foot to eight-foot noise barriers as identified on Figure 6 shall be constructed. The sound attenuation wall must be solid and free of cracks or holes. It can be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

Timeframe: Prior to the issuance of building permits.

Monitoring, Enforcement, and Reporting Responsibility: County of San Diego.

MM-N-2: **Interior Noise.** Interior noise levels shall be reduced to the County threshold of 45 CNEL or less in all habitable rooms for the residences constructed on Lots 1 through 3, 19 through 22, and 33 through 42. Window and door components shall have a STC rating of 27 or greater. Appropriate means of air circulation and provision of fresh air shall be provided to allow windows to remain closed for extended intervals of time so that acceptable interior noise levels can be maintained. The County shall verify that these features will be installed as part of the building permit plan check process.

Timeframe: Prior to the issuance of building permits.

Monitoring, Enforcement, and Reporting Responsibility: County of San Diego.

2.3 Off-site Direct and Cumulative Noise Impacts

The project would increase traffic volumes on local roadways. Noise level increases would be greatest nearest the project site, which would represent the greatest concentration of project-related traffic. Traffic noise is primarily a function of volume, vehicle mix, speed, and proximity. For purposes of this evaluation, the vehicle mix, speed, and proximity are assumed to remain constant in the future. Thus, the primary factor affecting noise levels would be increased traffic volumes. The existing and opening year peak hour traffic volumes without and with the project were used to determine if the project would result in a significant increase in traffic noise levels due to project-generated traffic.

Direct impacts were determined by comparing existing traffic volumes and noise levels with the existing condition plus the project at full buildout. Cumulative impacts were determined by comparing the future with project and no project conditions and determining the project's contribution to the future cumulative noise levels.

2.3.1 Direct Noise Impacts

Existing and opening year traffic volumes without and with the project were modeled for Idaho Avenue as a part of the Transportation LMA prepared for the project (C2 Consulting Collective 2025). The LMA did not calculate model daily traffic volumes on San Pasqual Valley Road and Idaho Avenue; thus, the increase in traffic noise for both roadways is based on the peak hour turning volumes which were used to derive the peak hour roadway segment volumes. Note that peak hour noise levels are generally equivalent to the daily CNEL. Noise levels were calculated using FHWA Traffic Noise Model algorithms. The results are summarized in Table 7 and calculations are provided in Attachment 4.

Table 7
Off-Site Vehicle Traffic Noise Levels (CNEL)

Roadway Segment	Existing	Existing + Project	Increase over Existing	Opening Year	Opening Year + Project	Increase over Existing
Idaho Avenue						
Project Driveway to San Pasqual Valley Road	67.7	67.9	0.2	67.8	67.9	0.2

A substantial noise increase is defined as an increase of 10 CNEL above existing conditions as stated in the County of San Diego Noise Report Guidelines Section 4.1-A (ii). However, the Report Format and Content Requirements include a statement that a "doubling of sound energy" is considered a significant impact at a "documented noisy site." A doubling of sound energy is equivalent to a 3 dB increase. A documented noisy site is to be a location with NSLU that currently exceeds 60 CNEL. Thus, a substantial increase is defined as a 10 dB increase, or greater over existing noise levels when existing and future noise levels are below the County's 60 dB CNEL standard, or a 3 dB increase when existing or future noise levels equal or exceed the County's 60 CNEL standard.

As shown, when comparing existing noise levels to existing plus project noise levels, the direct increase in noise levels would be 0.2 dB. This is not an audible increase in noise levels, and direct off-site impacts would be less than significant.

2.3.2 Cumulatively Significant Noise Impacts

Similar to direct traffic noise impacts, a cumulative traffic noise impact occurs when the noise level would exceed the applicable standard and a substantial noise level increase over existing noise occurs. The difference between direct and cumulative traffic noise impacts is that the cumulative impacts are caused by project traffic in combination with traffic from other closely related past, present, and reasonably foreseeable future projects rather than only traffic. The project's contribution to the future noise level is determined by comparing the opening year with project condition to the existing (no project) condition, and a determination made whether the project's contribution is "cumulatively considerable."

As shown in Table 7, when comparing existing noise levels to opening year plus project noise levels, the cumulative increase in noise levels would be 0.2 dB. This is not an audible increase in noise levels, and cumulative off-site impacts would be less than significant.

2.3.3 Design Considerations and Mitigation Measures

Direct and cumulative off-site noise impacts would less than significant; therefore, no mitigation would be required.

3.0 Project-Generated Airborne Noise

3.1 Guidelines for Determination of Significance

3.1.1 Operation

The County Noise Ordinance, Section 36.404, sets limits on the noise levels generated from one property to another, such as from mechanical equipment. It is unlawful for a person to cause or allow noise generated on a particular property to exceed the 1-hour average sound level, at any point on or beyond the boundaries of the property, as shown in Table 8.

Table 8 County of San Diego Noise Ordinance Sound Level Limits		
Zone	Applicable Hours	Sound Level Limit dB(A) L_{eq}
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5, RV and RU with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S-94, V4 and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1 V2 V1 V2 V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 55 50 70 65
(5) M-50, M-52, and M-54	Anytime	70
(6) S82, M56 and M58	Anytime	75
(7) S88 (see subsection (c) below)		

SOURCE: County Noise Ordinance, Section 36.404.
dB(A) L_{eq} = A-weighted decibels average noise level
Notes:
(a) Except as provided in section 36.409, 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 for different uses. The sound level limits in this table that apply in an S88 zone depend on the use being made of the property. The limits in this table, 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 6 feet from the boundary of the easement upon which the facility is located.

The project site and surrounding properties are zoned A70 (Limited Agricultural). Therefore, the applicable limits between the project site and the adjacent uses are 50 dB(A) L_{eq} during the daytime hours and 45 dB(A) L_{eq} during the nighttime hours.

3.1.2 Construction

Section 36.409 states:

> Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause the construction equipment to be operated, exceeding an average sound level of 75 dB(A) for an 8-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.

Section 36.410 states:

> 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 9, 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 9 are as described in the County Zoning Ordinance.

Table 9
[County Noise Ordinance Table 3.6410A]
Maximum Sound Level (Impulsive) Measured at Occupied Properties

Occupied Property Use	Noise Level [dB(A)]
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85
dB(A) L_{eq} = A-weighted decibels	

3.2 Potential Operational Noise Impacts (Non-Construction Noise)

3.2.1 Potential Buildout Noise Conditions without Mitigation

As discussed in Section 1.3.2, each residential unit would include an HVAC unit. At this time, no plans are available that show the location of the proposed structures or HVAC locations in relation to property lines. However, noise generated by HVAC units is anticipated to be similar to any other single-family residential use and is not anticipated to exceed the County's Noise Ordinance limits. Additionally, each residential lot would include 5.5-foot vinyl fencing between each lot that would shield noise from the HVAC units to the adjacent lot. Therefore, impacts would be less than significant.

As discussed, the project would also include the construction of a sewer lift station. Noise levels were modeled using the parameters discussed in Section 1.3.2. Modeled noise levels include noise reduction due to the six-foot CMU wall located around the sewer lift station as well as the barriers identified in Figure 6 and required by mitigation measure MM-N-1. Daytime noise levels were modeled assuming the operation of both the blower fan and emergency generator testing. Nighttime noise levels were modeled assuming only the operation of the blower fan since emergency generator testing would not occur at night. The results are summarized in Table 10. Modeled receiver locations and noise contours generated by both the blower fan and the emergency generator testing are shown on Figure 7a. Noise contours for the blower fan only are shown on Figure 7b. SoundPLAN data is provided in Attachment 5.

Table 10 Sewer Lift Station Noise Levels				
Receiver	Land Use	Applicable Noise Level Limits Daytime/Nighttime	Blower Fan and Emergency Generator Testing Noise Level (Daytime)	Blower Fan Only Noise Level (Nighttime)
1	Single Family Residential – Lot 1	50/45	35	33
2	Single Family Residential – Lot 42	50/45	46	44
3	Single Family Residential – Lot 41	50/45	37	34
4	Single Family Residential – Lot 40	50/45	37	35
5	Single Family Residential – Lot 39	50/45	33	31
6	Church	50/45	40	38
dB(A) L_{eq} = A-weighted decibels equivalent noise level				

As shown, noise levels generated at the sewer lift station are not anticipated to exceed the applicable Noise Ordinance limits. Since barriers and a blower fan enclosure are required to achieve the noise levels summarized in Table 10, these measures would be required as noise mitigation. With implementation of mitigation measure MM-N-3, operation of the lift station is not anticipated to exceed the County's Noise Ordinance limits, and impacts would be reduced to less than significant.

3.2.2 Design Considerations and Mitigation Measures

MM-N-3: **Sewer Lift Station.** Noise levels generated by the sewer lift station shall be reduced to the noise level limits specified in the County's Municipal Code [50 dB(A) L_{eq} between 7:00 a.m. and 10:00 p.m. and 45 dB(A) L_{eq} between 10:00 p.m. and 7:00 a.m.] through implementation of the following measures:

a. The design of the sewer lift station shall include a six-foot-tall perimeter wall. In addition, the barriers identified on Figure 6 shall be constructed. The sound attenuation walls must be solid and free of cracks or holes. It can be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

b. The sewer lift station blower fan shall be equipped with an enclosure. The enclosure shall achieve a minimum 5 dB(A) reduction in fan noise levels.

c. The emergency generator shall be tested during the daytime hours (7:00 a.m. to 10:00 p.m.) only.

Timeframe: Prior to the issuance of building permits.

Monitoring, Enforcement, and Reporting Responsibility: County of San Diego.

3.3 Potential General Construction Noise Impacts

3.3.1 Potential Temporary Construction Noise Impacts without Mitigation

3.3.1.1 Construction/Grading

Noise associated with project construction would potentially result in short-term impacts to surrounding properties. Noise levels were modeled at a series of 15 receivers located at the adjacent properties. The results are summarized in Table 11. Modeled receiver locations and construction noise contours are shown on Figure 8. SoundPLAN data is contained in Attachment 6.

Table 11
Construction Noise Levels

Receiver	Land Use	Construction Noise Level [dB(A) L_{eq}]
1	Single-Family Residential	68
2	Single-Family Residential	68
3	Single-Family Residential	68
4	Single-Family Residential	69
5	Single-Family Residential	69
6	Single-Family Residential	69
7	Single-Family Residential	69
8	Single-Family Residential	62
9	Single-Family Residential	64
10	Church	65
11	Church	65
12	Garden Center	64
13	Garden Center	66
14	Single-Family Residential	65
15	Single-Family Residential	63
dB(A) L_{eq} = A-weighted decibels equivalent noise level		

As shown, construction noise levels would range from 62 to 69 dB(A) L_{eq} at the adjacent properties. Construction noise levels are not anticipated to exceed 75 dB(A) L_{eq}. Although the existing adjacent residents would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. As construction activities associated with the project would comply with noise level limits from the County's Noise Ordinance, temporary increases in noise levels from construction activities would be less than significant.

3.3.1.2 Drilling/Blasting

As discussed, there is marginally rippable granite rock located beneath the soil that may require drilling and blasting. The need for these activities as well as exact location of these activities are not known at this time. Single-family residential uses are located in the vicinity of the project site as close as 30 feet from the project boundary. Based on the Geotechnical Investigation (Christian Wheeler Engineering 2024), marginally rippable granite may be encountered in the northwest portion of the project site within proposed Lots 11 and 12. Existing residential receptors are located 180 feet or more from this location. As discussed in Section 2.1, an excavator with pneumatic hammer generates a noise level of 84.5 dB(A) L_{eq} at 50 feet and the blast itself generates a noise level of 74.0 dB(A) L_{eq} at 50 feet. These noise levels would attenuate to the County's noise level limit of 75 dB(A) L_{eq} at approximately 150 feet. Thus, noise levels due to drilling and blasting activities at Lots 11 and 12 are not anticipated to exceed 75 dB(A) L_{eq}. However, the Geotechnical Investigation also indicates that hardrock "floaters" may be encountered within the rippable material

locations, thus, the exact location of necessary drilling and blasting locations cannot be determined at this time. Should these activities occur within 150 feet of residential receivers, noise impacts would be potentially significant.

Additionally, as shown in Table 9, the County's noise level limit for maximum impulsive noise is 82 dB(A) at residential receivers. 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. An excavator with a pneumatic hammer generates a maximum noise level of 88 dB(A) L_{max} at 50 feet. This noise level would attenuate to 82 dB(A) L_{eq} at approximately 100 feet. Thus, if drilling/blasting activities are required within 100 feet of a residential receiver and are anticipated to occur more than 15 minutes in a given hour, impulsive noise impacts would be potentially significant.

It should be notes that all blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures.

3.3.2 Design Considerations and Temporary Mitigation Measures

3.3.2.1 Construction/Grading

General grading and construction activities from the loudest activities are not predicted to exceed County construction noise level limits at any property line or any property with an occupied structure; thus, impacts would be less than significant and no mitigation measures are required.

3.3.2.2 Drilling/Blasting

Rock drilling and blasting activities, if required, have the potential to exceed the County's construction noise level limits and impulsive noise level limits should these operations occur within 100 feet of a residential receiver. Therefore, the following mitigation measure would be required.

MM-N-4: **Blasting Operations (if required).** In order to comply with the applicable sections of the County of San Diego Noise Ordinance, the contractor shall comply with the following requirements during blasting operations. Blasting shall only occur during grading activities and conclude prior to rough grading completion:

If blasting is deemed necessary during grading operations, the project applicant, or its designee, shall direct the designated contractor to obtain a Blasting Permit approved by the County of San Diego Sheriff's Department prior to the first blast, and comply with all County requirements. Where potential exceedance of the County of San Diego Noise Ordinance is expected, the blast drilling and monitoring plan shall identify mitigation measures shown to effectively reduce noise and vibration levels (e.g., altering orientation of blast progression, increased delay between charge detonations, presplitting) to be implemented to comply with the noise level limits of the County's Noise Ordinance, Sections 36.409 and 36.410, the vibration-level limits of 1 inch per second peak particle velocity. Such measures shall be implemented by the proposed project applicant, or its designee, prior to the issuance of the Blasting Permit. Additionally, all proposed project phases involving blasting shall conform to the following requirements:

a. All blasts shall be performed by a blast contactor and blasting personnel licensed to operate in the County.

b. Each blast shall be monitored and recorded with an air-blast overpressure monitor and groundborne vibration accelerometer that is located outside the closest residence to the blast and is

approved by the County Blasting shall not exceed 0.1 inch per second peak particle velocity at the nearest occupied residence, in accordance with County of San Diego's Noise Guidelines, Section 4.3.

Timeframe: Prior to the issuance of blasting permits.

Monitoring, Enforcement, and Reporting Responsibility: County of San Diego.

4.0 Groundborne Vibration and Noise Impacts

4.1 Guidelines for Determination of Significance

Table 12 summarizes the County's guidelines for determining the significance of groundborne vibration.

Table 12
Guidelines for Determining the Significance of Groundborne Vibration and Noise Impacts

Land Use Category	Groundborne Vibration Impact Levels (inches/sec RMS)		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations (research & manufacturing facilities with special vibration constraints)[6]	0.0018[3]	0.0018[3]	Not applicable[4,5]	Not applicable[4,5]
Category 2: Residences and buildings where people normally sleep (hotels, hospitals, residences, & other sleeping facilities)[6]	0.0040	0.010	35 dB(A)	43 dB(A)
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, & quiet offices)[6]	0.0056	0.014	40 dB(A)	48 dB(A)

SOURCE: Federal Transit Authority 2018.
RMS = root mean square; re = relative

[1] "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[2] "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

[3] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[4] Vibration-sensitive equipment is not sensitive to groundborne noise.

[5] There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 5 [of the County's Significance Guidelines] gives criteria for acceptable levels of groundborne vibration and noise for these various types of special uses.

[6] For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds 1 inch per second. Nontransportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in the County of San Diego.

4.2 Potential and Mitigated Impacts

Human reaction to vibration is dependent on the environment the receiver is in, as well as individual sensitivity. For example, outdoor vibration is rarely noticeable and generally not considered annoying. Typically, humans must be inside a structure for vibrations to become noticeable and/or annoying (FTA 2018). Based on several federal studies, the threshold of perception is 0.035 inch per second (in/sec) peak particle velocity (PPV), with 0.24 in/sec PPV being distinctly perceptible (Caltrans 2013). Based on best available data, impacts for hydraulic breakers, or hammers, and other non-transient sources such as those associated with project construction shall be considered significant if the PPV exceeds 0.1 in/sec (see Table 12 footnote 6). Vibration perception would occur at structures, as people do not perceive vibrations without vibrating structures.

Construction activities produce varying degrees of ground vibration, depending on the equipment and methods employed. While ground vibrations from typical construction activities rarely reach levels high enough to cause damage to structures, special consideration must be made when sensitive or historic land uses are near the construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving. As discussed, blasting may be required during construction activities. When a blast is detonated, only a portion of the energy is consumed in breaking up and moving the rock. The remaining energy is dissipated in the form of seismic waves expanding rapidly outward from the blast, either through the ground (as vibration) or through the air (as air overpressure or airblast). Groundborne vibration would also be generated during the hammering or drilling activities required prior to the blast.

Vibration levels associated with the use of mounted impact hammers or drills are 0.089 in/sec PPV at 25 feet (FTA 2018). This vibration level would exceed the significance criteria of 0.1 in/sec PPV at distances of 23 feet or closest. There are no structures within 23 feet of the project site. Therefore, groundborne vibration impacts due to hammering or drilling would be less than significant.

Vibration levels associated with blasting are site-specific and are dependent on the amount of explosive used, soil conditions between the blast site and the receptor, and the elevation where blasting would take place (specifically, how far below surface elevation where bedrock would be encountered). At the current stage of project design, specifics, such as the explosive, blasting quantities, and exact locations, have not been identified. However, blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures. Additionally, implementation of mitigation measure MM-N-1 would reduce potential significant impacts.

For all other construction activities, the equipment with the greatest potential to generate vibration would be a large bulldozer. According to the FTA, large bulldozers generate vibration levels of 0.089 in/sec PPV at 25 feet. Unlike blasting, which has the potential to occur only in specific locations on the project site, vibration levels due to all other equipment was assessed over the entire project site. The nearest structure is located as close as 30 feet from the project boundary. A vibration level of 0.089 in/sec PPV at 25 feet would attenuate to 0.073 in/sec PPV at 30 feet. While it may be barely perceptible, it would be less than 0.1 in/sec PPV. Furthermore, large construction equipment would work immediately adjacent to the property lines only for short periods of time and would be operating at greater distances from the adjacent structures as construction occurs throughout the entire project site. Therefore, aside from blasting activities, project construction would not generate excessive groundborne vibration or groundborne noise levels, and impacts would be less than significant.

Operation of the project would not generate groundborne noise or vibration. No impact would occur.

5.0 Conclusion

The proceeding analysis provides an evaluation of noise impacts to on-site receivers from vehicle traffic noise and to the adjacent properties due to construction and operation of the project. With incorporation of five-foot to eight-foot barriers as identified in Figure 6 (MM-N-1), exterior noise levels would be reduced to less than 60 CNEL. Further, with installation of window and door components that have an STC rating of 27 or greater for Lots 1 through 3, 19 through 22, and 33 through 42 (MM-N-2), interior noise levels would be reduced to 45 CNEL or less. Interior noise levels at all other lots would be 45 CNEL with standard light frame construction and without consideration of specific building components.

Operational sources of noise would include HVAC units. However, noise generated by HVAC units is anticipated to be similar to any other single-family residential use and is not anticipated to exceed the County's Noise Ordinance limits. Additionally, each residential lot would include 5.5-foot vinyl fencing between each lot that would shield noise from the HVAC units to the adjacent lot. Additionally, noise generated at the sewer lift station is not anticipated to exceed the County's Noise Ordinance limits. Therefore, operational noise impacts would be less than significant.

Construction noise levels are not anticipated to exceed 75 dB(A) L_{eq} at the adjacent properties. As construction activities associated with the project would comply with noise level limits from the County's Noise Ordinance, temporary increases in noise levels from construction activities would be less than significant at the adjacent uses.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333 extension 177.

Sincerely,

Jessica Fleming

Jessica Fleming
Noise Specialist

JLF:jg:sh

6.0 Certification

The following is a list of preparers, persons, and organizations involved with the noise assessment.

RECON Environmental, Inc.
- Jessica Fleming, County-approved Air Quality Consultant
- Morgan Weintraub, Associate Project Manager
- Frank McDermott, GIS/UAV Manager
- Stacey Higgins, Senior Production Specialist

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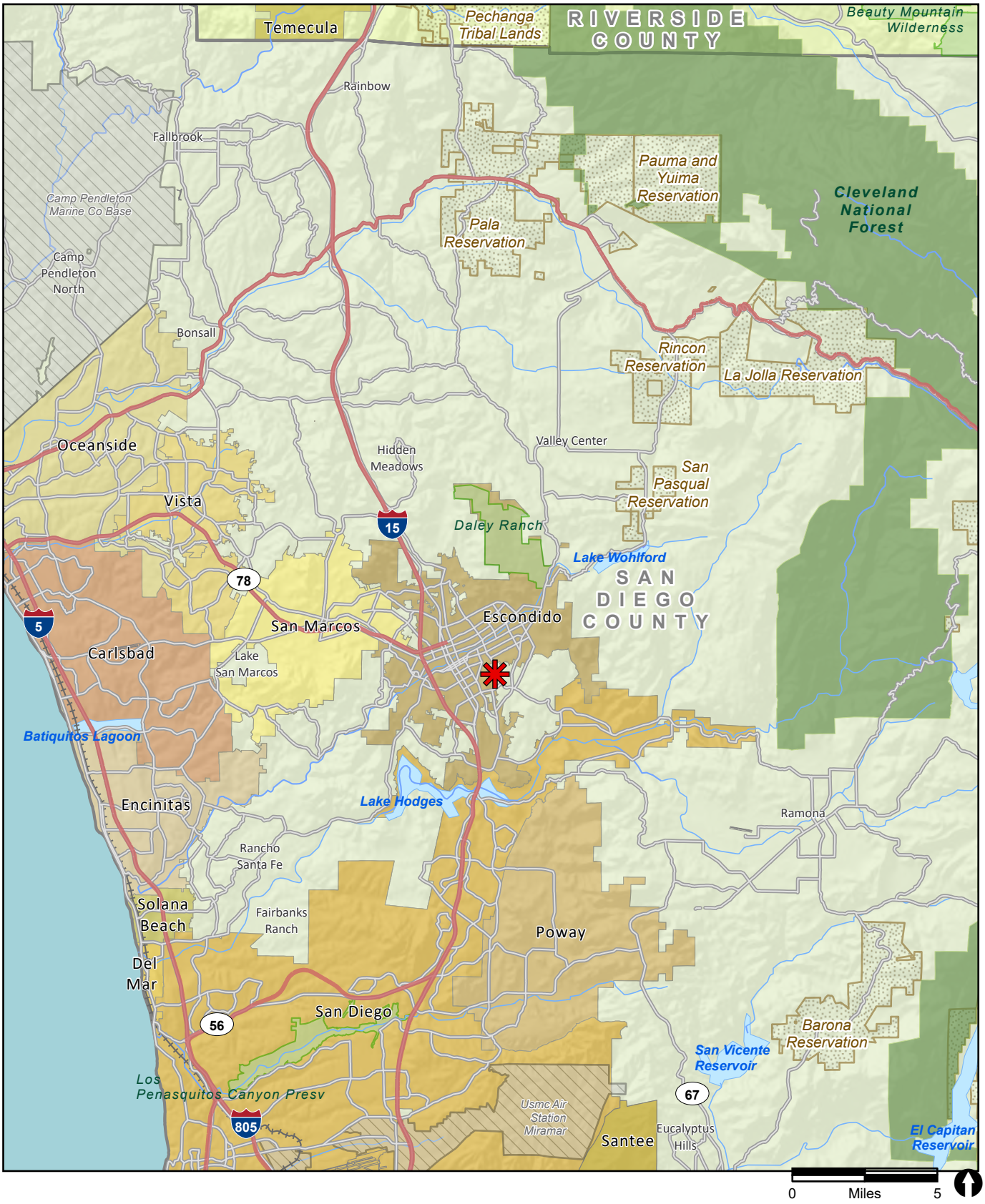

Project Location

RECON

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FIGURE 1
Regional Location

Image Source: Nearmap (flown April 2025)

Project Boundary

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FIGURE 2
Project Location on Aerial Photograph

Map Source: Touchstone Development

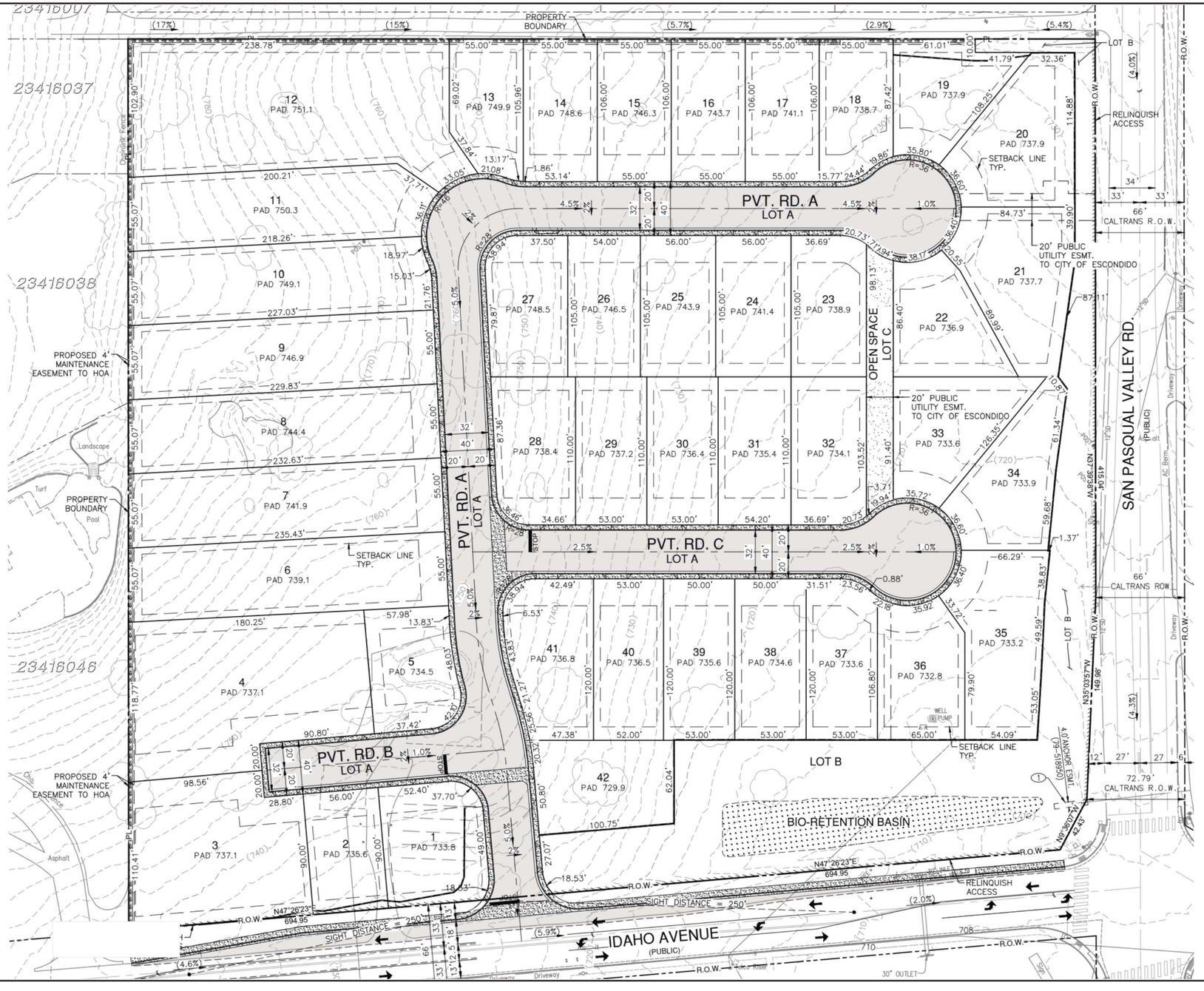

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FIGURE 3
Site Plan

Image Source: Nearmap (flown April 2025)

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FIGURE 4
Noise Measurement Locations

Image Source: Nearmap (flown April 2025)

Project Boundary

On-site Receivers

Vehicle Traffic Noise

- 50 CNEL
- 55 CNEL
- 60 CNEL
- 65 CNEL
- 70 CNEL

0 Feet 150

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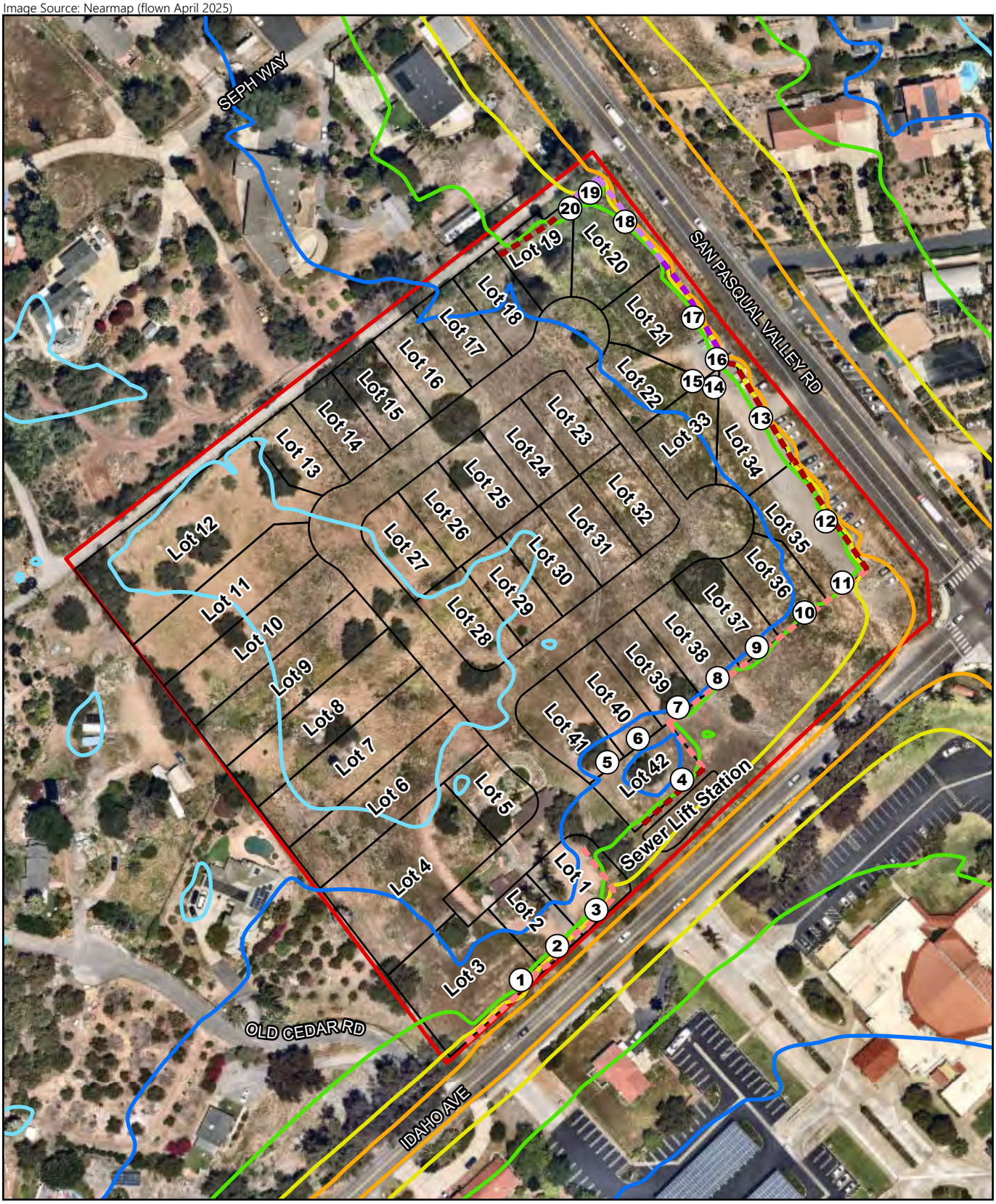
FIGURE 5
Vehicle Traffic Noise Contours

Image Source: Nearmap (flown April 2025)



Project Boundary
5-foot Barrier
6-foot Barrier
7-foot Barrier
8-foot Barrier
On-site Receivers

Vehicle Traffic Noise
50 CNEL
55 CNEL
60 CNEL
65 CNEL
70 CNEL

0 Feet 150

RECON

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FIGURE 6
Vehicle Traffic Noise Contours with Barriers

Image Source: Nearmap (flown April 2025)

Project Boundary
Receivers
Blower Fan
Generator
5-foot Barrier
6-foot Barrier

Sewer Lift Station Noise

30 dB(A) L_{eq}
35 dB(A) L_{eq}
40 dB(A) L_{eq}
45 dB(A) L_{eq}
50 dB(A) L_{eq}
55 dB(A) L_{eq}
60 dB(A) L_{eq}

0 Feet 50

RECON

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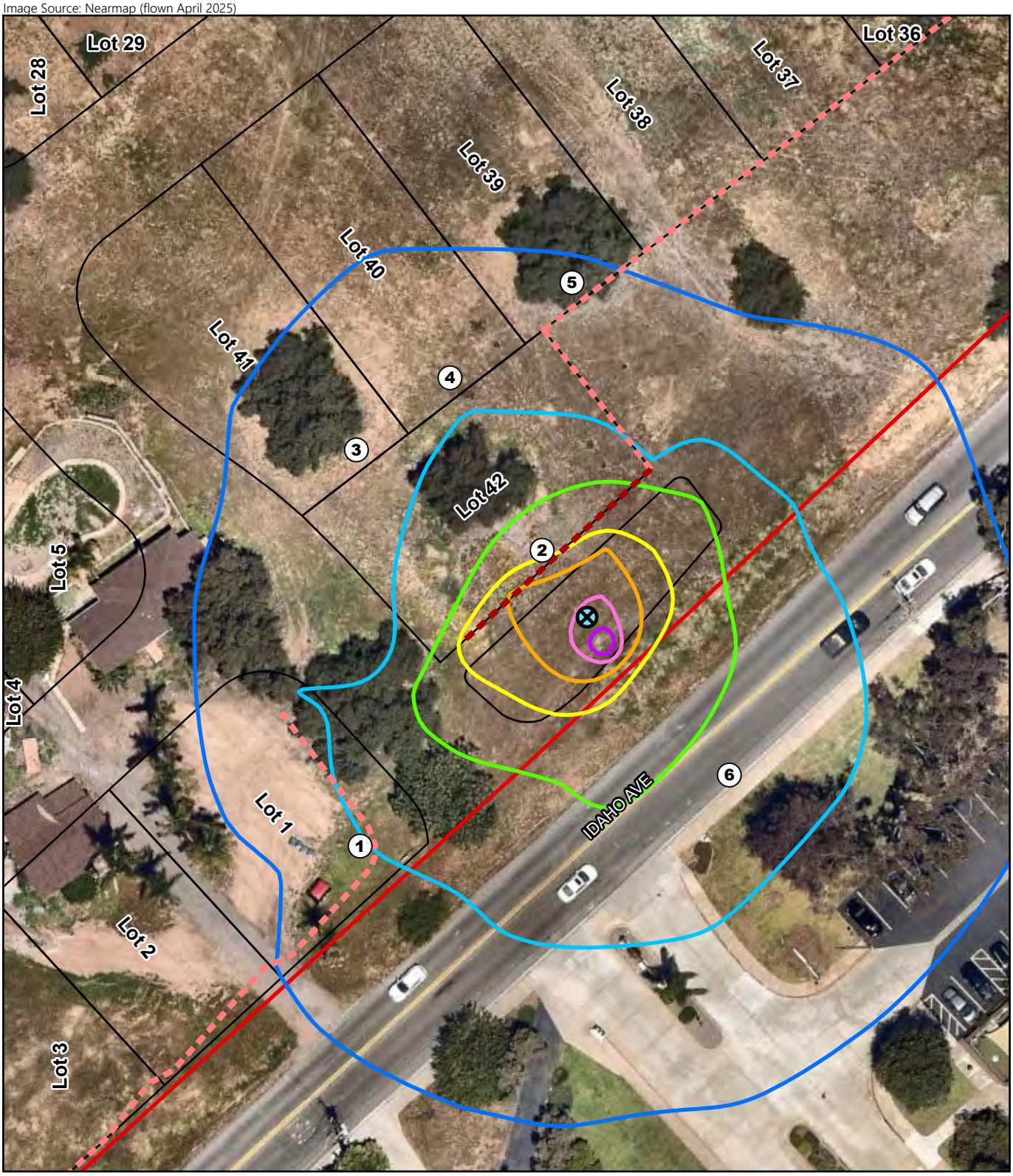
FIGURE 7a
Sewer Lift Station Noise Contours –
Blower Fan and Emergency Generator Testing

Image Source: Nearmap (flown April 2025)



Project Boundary
Receivers
Blower Fan
5-foot Barrier
6-foot Barrier

Sewer Lift Station Noise

30 dB(A) L_{eq}
35 dB(A) L_{eq}
40 dB(A) L_{eq}
45 dB(A) L_{eq}
50 dB(A) L_{eq}
55 dB(A) L_{eq}
60 dB(A) L_{eq}

0 Feet 50

RECON

M:\JOBS6\10597\common_gis\PRO\Nos.aprx 07/15/2025 bma

FIGURE 7b
Sewer Lift Station Noise Contours – Blower Fan Only

Image Source: Nearmap (flown April 2025)

Project Boundary

Construction Noise

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}

0 Feet 300

RECON

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FIGURE 8

Construction Noise Contours

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

10597 Pasqual Heights
Noise Measurement Data

Summary

File Name on Meter	LxT_Data.025.s
File Name on PC	LxTse_0003829-20241011 093724-LxT_Data.025.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2024-10-11 09:37:24
Stop	2024-10-11 09:51:49
Duration	00:14:25.3
Run Time	00:14:25.3
Pause	00:00:00.0
Pre-Calibration	2024-10-11 09:33:54
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.5 dB

	A	C	Z
Under Range Peak	**78.8**	75.8	80.8 dB
Under Range Limit	**26.4**	25.4	32.4 dB
Noise Floor	16.4	16.3	22.3 dB

	First	Second	Third
Instrument Identification			

Results

LAeq	64.4 dB	
LAE	93.8 dB	
EA	264.804 µPa²h	
LApk (max)	2024-10-11 09:41:09	94.7 dB
LASmax	2024-10-11 09:42:12	84.9 dB
LASmin	2024-10-11 09:39:42	38.3 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 60.0 dB	16	187.4 s
LAS > 70.0 dB	5	25.7 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	64.4	64.4	-99.9	64.4	64.4	-99.9	-99.9	dB

LCeq	70.4 dB
LAeq	64.4 dB
LCeq - LAeq	6.0 dB
LAleq	66.9 dB
LAeq	64.4 dB
LAleq - LAeq	2.5 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	64.4		70.4			
LS(max)	84.9	2024/10/11 9:42:12				
LS(min)	38.3	2024/10/11 9:39:42				
Lpk(max)	94.7	2024/10/11 9:41:09				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles

LA 5.00	67.1 dB
LA 10.00	63.7 dB
LA 33.30	56.9 dB
LA 50.00	54.4 dB
LA 66.60	52.3 dB
LA 90.00	46.2 dB

Summary

File Name on Meter	LxT_Data.027.s
File Name on PC	LxTse_0003829-20241011 100415-LxT_Data.027.ldbin
Serial Number	0003829
Model	SoundExpert® LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2024-10-11 10:04:15
Stop	2024-10-11 10:19:27
Duration	00:15:12.6
Run Time	00:15:12.6
Pause	00:00:00.0
Pre-Calibration	2024-10-11 09:33:54
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.5 dB

	A	C	Z
Under Range Peak	**78.8**	75.8	80.8 dB
Under Range Limit	**26.4**	25.4	32.4 dB
Noise Floor	16.4	16.3	22.3 dB

	First	Second	Third
Instrument Identification			

Results

LAeq	60.5 dB	
LAE	90.1 dB	
EA	113.773 µPa²h	
LApk (max)	2024-10-11 10:15:21	94.3 dB
LASmax	2024-10-11 10:05:30	76.2 dB
LASmin	2024-10-11 10:06:59	42.6 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 60.0 dB	38	291.1 s
LAS > 70.0 dB	6	19.6 s
LApk > 135.0 dB	0	0.0 s
LApk > 137.0 dB	0	0.0 s
LApk > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	60.5	60.5	-99.9	60.5	60.5	-99.9	-99.9	dB

LCeq	69.7 dB
LAeq	60.5 dB
LCeq - LAeq	9.2 dB
LAleq	62.4 dB
LAeq	60.5 dB
LAleq - LAeq	1.9 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	60.5		69.7			
LS(max)	76.2	2024/10/11 10:05:30				
LS(min)	42.6	2024/10/11 10:06:59				
Lpk(max)	94.3	2024/10/11 10:15:21				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles

LA 5.00	66.5 dB
LA 10.00	64.8 dB
LA 33.30	58.1 dB
LA 50.00	53.7 dB
LA 66.60	51.0 dB
LA 90.00	47.7 dB

ATTACHMENT 2

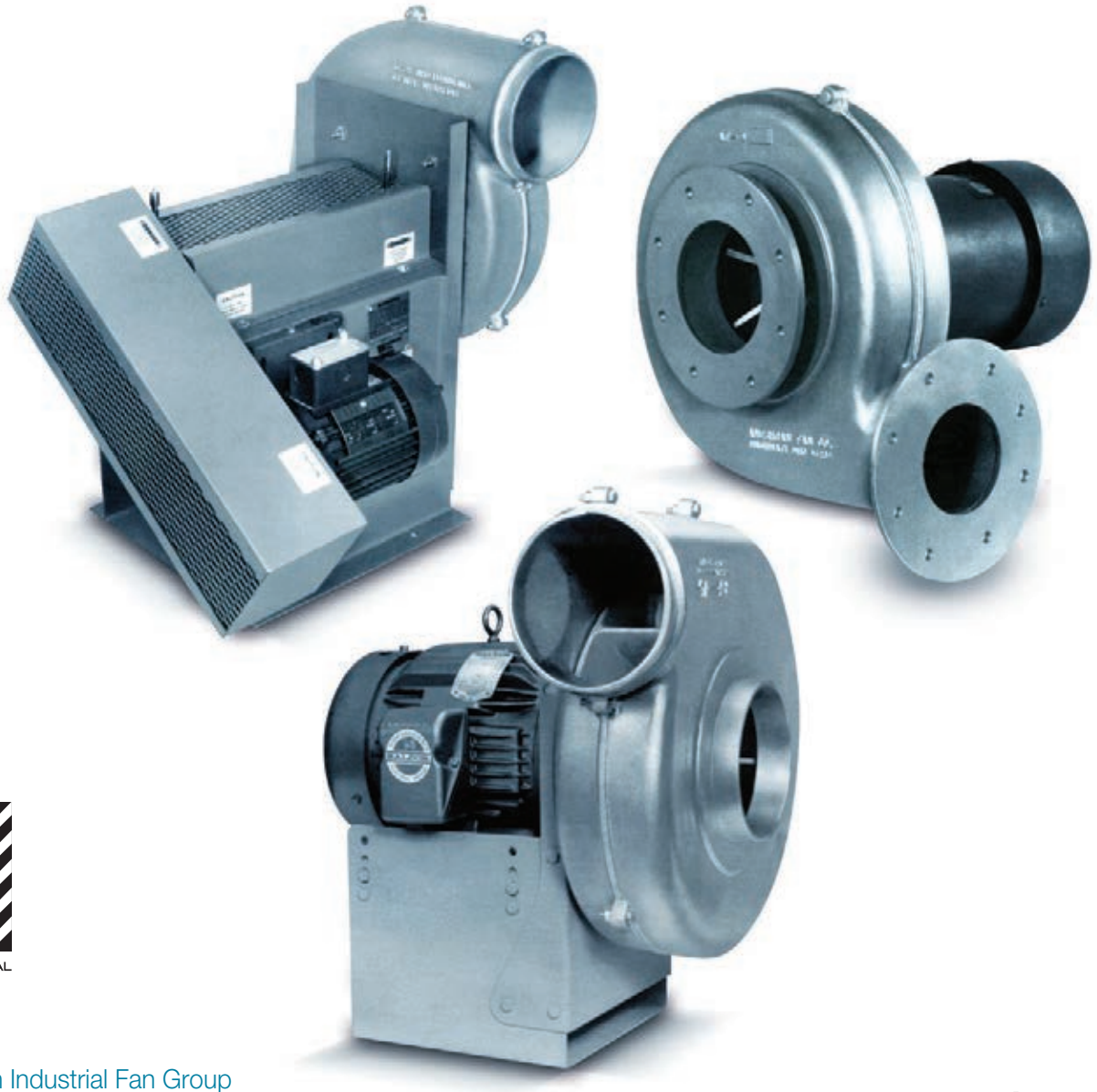
Blower Fan and Generator Specifications

www.americanfan.com
Bulletin AF-0302-H

Howden

AF Cast Aluminum Pressure Blowers

For industrial, process, marine and HVAC applications



Certified System™
SAI GLOBAL
ISO 9001
Quality

Howden Industrial Fan Group
American Fan / Joy Fan / Garden City Fan

Revolving Around You™

Wheel Types

Radial Wheel (Code R)

Cast aluminum radial open design for air and light material applications.

Also available in welded steel construction.

Backward Curve Wheel (Code B)

Cast aluminum backward curve blade tip design for clean air applications where lower noise level is a consideration.

Forward Curve Wheel (Code F)

Fabricated aluminum forward curve with cast iron hub design for clean air applications.

Has highest performance at a given speed making it ideal for 50 Hz applications where space is a problem.

CONTENTS

Fan Codes

AF-12-R13446-7

- **12** — Fan Size
- **R** — Wheel Type (R = Radial, B = Backward Curve, F = Forward Curve)
- **13446** — Wheel Size Code
- **7** — Inlet Diameter

Testing

All fan/wheel/inlet combinations shown in this catalog have each been thoroughly air and sound performance tested at the American Fan Company Test Laboratory.

Air testing was performed per AMCA 210-85 figure 7, installation type B (free inlet, ducted outlet). Sound testing was performed per AMCA 300-85, installation type B. Fans in this catalog are not licensed to bear the AMCA certified ratings seal.

Motor Speeds

USED FOR DIRECT DRIVE SELECTIONS

BHP Range	60 Hz RPM	50 Hz RPM
up to 2.00	3450	2875
2.01-5.00	3500	2875
5.01 & higher	3515	2900

Features

Model AF features a rugged, lightweight and rustproof cast aluminum housing making it ideal for demanding industrial applications. Model AF is available in direct or belt drive with a variety of accessories to meet your requirements.

Capacity selections are available up to 4000 CFM and pressure selections up to 20" SP w.g.

- Split housing for maintenance ease
- Even O.D. pipe sizes on inlet and outlet
- Non-sparking cast aluminum housing
- Assortment of wheel sizes to pin-point your performance requirement
- Reliability
- Wheel both statically and dynamically balanced
- Rustproof
- Low initial cost
- Available in arrangements 1,2,4,8 and 9

Applications

- Rubber processing
- Food processing
- Chemical processing
- Fume control
- Dust control
- Combustion air for incinerators, ovens, furnaces, kilns and dryers
- Cooling electronic equipment, motors, generators and transformers
- Paper and printing machinery
- Textile machinery
- Light materials conveying
- Woodworking machinery
- Forced drying

Options

- Inlet flange
- Outlet flange
- Housing drain
- Cast Iron housing
- Fabricated steel wheel
- Shaft seal
- Sound attenuator
- Inlet filter
- Corrosive resistant coatings
- Inlet and/or outlet guard
- Fabricated stainless wheel and housing
- Full or half cut-off
- Heat slinger
- Drive guard system

shown with inlet guard

Inlet Venturi

Spun steel venturi provides efficient smooth airflow into fan inlet on non inlet-ducted applications.

shown welded to inlet venturi

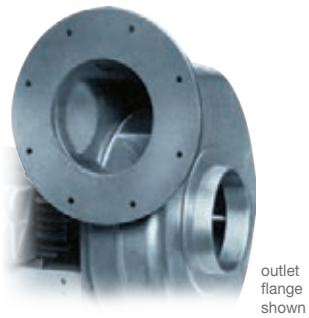
Inlet Guard

1″ square wire cloth is welded to large end of inlet venturi providing OSHA type guarding with minimal airflow restriction.

Inlet Filter

Oil wetted, crimped steel wire mesh media provides 94% filtration efficiency of particulate of 10 micron or larger.

Filters are cleanable and reusable.



outlet flange shown

Flanges

Cast aluminum flange matches ANSI flange bolt patterns.

Available with either ANSI mounting hole diameters or 7⁄16″ diameter (standard).

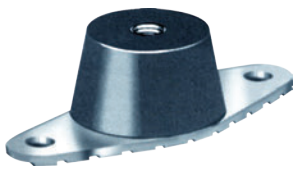
shown mounted to fan inlet

Full Cut-off Damper

Cast aluminum housing with steel gate allows manual adjustment of CFM.

Thumbscrew locks gate in place.

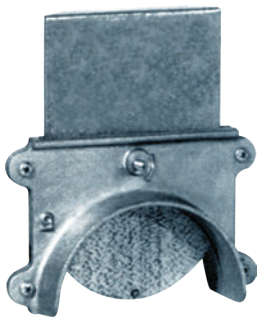
Can be mounted on inlet or outlet.



Vibration Isolators

Neoprene isolators with molded-in steel mounting plate and threaded top mounting hole.

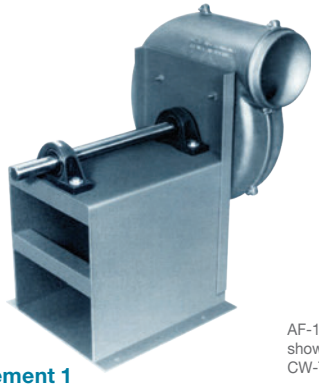
Provides ¼″ static deflection.



Half Cut-Off Dampers

Similar to full cut-offs except half cut-offs are saddle mounted to ductwork on inlet or outlet.

Arrangements



AF-12 shown CW-TH

Arrangement 1

The fan wheel is overhung with both bearings mounted on a common pedestal.

ARRT. 1 is suitable for high temperature (250°F max.) and/or corrosive environment.

Fan can be belt driven or directly coupled to drive motor mounted on a separate base.

AF-12 shown CCW-BH

Arrangement 2

The fan wheel is overhung with both bearings mounted in a cast iron housing supported by the fan housing and a cast aluminum base.

Unit can be either belt driven or direct coupled to an independently supported motor.

AF-9 shown CW-TH with cast aluminum base

Arrangement 4

AF-15 shown CW-TH with steel base

Arrangement 4

Direct drive fan with wheel mounted directly on motor shaft.

Unit is designed for standard temperature applications only.

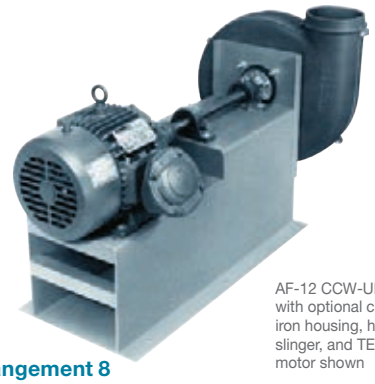
With no belt losses, the direct drive fan operates at a higher efficiency.

Flange Mount AF-9 shown CW-FM

Arrangement 4

Direct drive fan with wheel mounted directly on motor shaft.

Unit is designed to be supported by the outlet flange.



AF-12 CCW-UB with optional cast iron housing, heat slinger, and TEXP motor shown

Arrangement 8

Direct drive fan thru shaft and bearings. Efficiency of ARRT. 4 is maintained.

However AART. 8 may be used for high temperature (250°F max.) and/or corrosive applications which require the motor shaft to be outside of airstream.

AF-12 shown CW-TH with OSHA type belt and shaft guards

Arrangement 9

The fan wheel is overhung with both bearings mounted on a common pedestal.

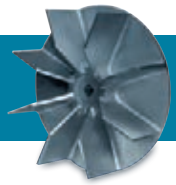
Fan is driven with drive motor mounted on bearing pedestal for a more compact unit suitable for high temperature (250°F max.) and/or corrosive environment.

Radial Wheels 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP							
209	.196	8-R07025-3	83	1	28	3	4
248	.246	8-R08113-3	84	3	24	3	4
251	.265	8-R08125-3	83	5	21	3	4
271	.220	8-R07025-4	83	2	31	4	4
320	.292	8-R08113-4	83	4	25	4	4
369	.338	8-R08125-4	84	6	23	4	4
1.5" SP							
186	.192	8-R07025-3	83	1	43	3	4
229	.238	8-R08113-3	84	3	35	3	4
234	.261	8-R08125-3	83	5	32	3	4
241	.206	8-R07025-4	83	2	46	4	4
294	.280	8-R08113-4	83	4	37	4	4
342	.330	8-R08125-4	84	6	35	4	4
424	.506	9-R09026-4	85	7	27	4	4
465	.517	9-R09026-5	88	8	28	5	4
477	.706	9-R10413-4	86	11	22	4	4
488	.691	9-R09626-4	88	9	23	4	4
529	.760	9-R10413-5	88	12	23	5	4
541	.758	9-R09626-5	90	10	24	5	4
570	.876	9-R10527-4	91	13	20	4	4
626	.952	9-R10527-5	92	14	20	5	4
795	1.337	10-R10527-6	92	15	20	6	5
2.0" SP							
161	.185	8-R07025-3	83	1	57	3	4
206	.190	8-R07025-4	83	2	61	4	4
218	.255	8-R08125-3	83	5	43	3	4
265	.264	8-R08113-4	83	4	50	4	4
309	.319	8-R08125-4	84	6	46	4	4
402	.482	9-R09026-4	85	7	36	4	4
433	.663	9-R10413-4	86	11	29	4	4
439	.492	9-R09026-5	86	8	37	5	4
467	.669	9-R09626-4	88	9	30	4	4
507	.741	9-R10413-5	88	12	30	5	4
517	.728	9-R09626-5	89	10	32	5	4
549	.848	9-R10527-4	91	13	26	4	4
606	.926	9-R10527-5	90	14	26	5	4
761	1.300	10-R10527-6	89	15	27	6	5
793	1.464	10-R11027-6	90	16	25	6	5
797	1.801	10-R12213-6	91	18	21	6	5
877	1.781	10-R11527-6	90	17	22	6	5
1219	2.536	12-R11527-7	92	20	21	7	6
2.5" SP							
125	.169	8-R07025-3	83	1	71	3	4
158	.169	8-R07025-4	83	2	76	4	4
174	.209	8-R08113-3	82	3	59	3	4
201	.249	8-R08125-3	83	5	53	3	4
231	.246	8-R08113-4	82	4	62	4	4
275	.302	8-R08125-4	84	6	58	4	4
378	.454	9-R09026-4	85	7	45	4	4
412	.468	9-R09026-5	86	8	46	5	4
443	.644	9-R09626-4	86	9	38	4	4
482	.715	9-R10413-5	86	12	38	5	4
492	.699	9-R09626-5	89	10	40	5	4
527	.820	9-R10527-4	90	13	33	4	4
583	.897	9-R10527-5	89	14	32	5	4
723	1.267	10-R10527-6	89	15	33	6	5
764	1.404	10-R11027-6	90	16	31	6	5
771	1.759	10-R12213-6	90	18	26	6	5
849	1.735	10-R11527-6	90	17	27	6	5
946	2.264	10-R12227-6	94	19	23	6	5
1173	2.456	12-R11527-7	91	20	26	7	6
1309	3.101	12-R12327-7	91	21	23	7	6
1444	3.715	12-R13032-7	96	22	21	7	6
3.0" SP							
78	.145	8-R07025-3	82	1	85	3	4
90	.143	8-R07025-4	83	2	92	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
3.0" SP *(continued)*							
138	.189	8-R08113-3	82	3	71	3	4
179	.241	8-R08125-3	83	5	64	3	4
183	.215	8-R08113-4	84	4	74	4	4
238	.279	8-R08125-4	84	6	69	4	4
354	.427	9-R09026-4	85	7	54	4	4
385	.446	9-R09026-5	87	8	55	5	4
421	.620	9-R09626-4	86	9	45	4	4
454	.685	9-R10413-5	86	12	46	5	4
465	.668	9-R09626-5	87	10	47	5	4
508	.793	9-R10527-4	89	13	39	4	4
558	.864	9-R10527-5	89	14	39	5	4
685	1.223	10-R10527-6	89	15	40	6	5
735	1.342	10-R11027-6	89	16	37	6	5
823	1.677	10-R11527-6	90	17	32	6	5
922	2.225	10-R12227-6	94	19	28	6	5
1128	2.372	12-R11527-7	91	20	31	7	6
1270	3.010	12-R12327-7	93	21	28	7	6
1405	3.618	12-R13032-7	95	22	25	7	6
1465	3.833	12-R14016-7	93	24	23	7	6
1578	4.137	12-R13722-7	95	23	23	7	6
1638	4.754	12-R14032-7	102	25	21	7	6
3.5" SP							
92	.164	8-R08113-3	82	3	82	3	4
114	.176	8-R08113-4	84	4	87	4	4
147	.226	8-R08125-3	83	5	75	3	4
195	.250	8-R08125-4	84	6	81	4	4
330	.400	9-R09026-4	85	7	63	4	4
359	.424	9-R09026-5	87	8	65	5	4
401	.599	9-R09626-4	86	9	53	4	4
423	.654	9-R10413-4	86	12	53	4	4
435	.637	9-R09626-5	87	10	55	5	4
487	.766	9-R10527-4	89	13	46	4	4
533	.830	9-R10527-5	89	14	45	5	4
647	1.169	10-R10527-6	89	15	47	6	5
705	1.283	10-R11027-6	89	16	43	6	5
797	1.610	10-R11527-6	90	17	38	6	5
900	2.175	10-R12227-6	93	19	32	6	5
1082	2.288	12-R11527-7	90	20	37	7	6
1232	2.920	12-R12327-7	92	21	33	7	6
1367	3.518	12-R13032-7	94	22	30	7	6
1437	3.756	12-R14016-7	93	24	27	7	6
1542	4.045	12-R13722-7	94	23	27	7	6
1600	4.659	12-R14032-7	102	25	25	7	6
4.0" SP							
89	.192	8-R08125-3	84	5	85	3	4
133	.207	8-R08125-4	83	6	92	4	4
302	.371	9-R09026-4	83	7	72	4	4
327	.399	9-R09026-5	87	8	74	5	4
348	.593	9-R10413-4	86	11	58	4	4
381	.578	9-R09626-4	86	9	61	4	4
405	.604	9-R09626-5	87	10	63	5	4
463	.736	9-R10527-4	88	13	52	4	4
508	.797	9-R10527-5	88	14	52	5	4
609	1.104	10-R10527-6	88	15	53	6	5
675	1.228	10-R11027-6	88	16	50	6	5
771	1.548	10-R11527-6	89	17	43	6	5
879	2.122	10-R12227-6	93	19	37	6	5
1032	2.206	12-R11527-7	90	20	42	7	6
1192	2.830	12-R12327-7	91	21	37	7	6
1327	3.417	12-R13032-7	93	22	34	7	6
1407	3.677	12-R14016-7	93	24	31	7	6
1504	3.949	12-R13722-7	94	23	31	7	6
1566	4.575	12-R14032-7	101	25	28	7	6
4.5" SP							
34	.155	8-R08125-3	83	5	96	3	4
268	.339	9-R09026-4	83	7	81	4	4
283	.359	9-R09026-5	87	8	83	5	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
4.5" SP *(continued)*							
317	.563	9-R10413-4	85	11	65	4	4
344	.592	9-R10413-5	86	12	69	5	4
358	.553	9-R09626-4	86	9	68	4	4
377	.574	9-R09626-5	87	10	71	5	4
436	.704	9-R10527-4	87	13	59	4	4
483	.763	9-R10527-5	88	14	58	5	4
570	1.011	10-R10527-6	88	15	60	6	5
643	1.176	10-R11027-6	88	16	56	6	5
743	1.489	10-R11527-6	89	17	49	6	5
857	2.069	10-R12227-6	92	19	41	6	5
982	2.125	12-R11527-7	89	20	47	7	6
1149	2.739	12-R12327-7	91	21	42	7	6
1288	3.315	12-R13032-7	93	22	38	7	6
1376	3.597	12-R14016-7	92	24	35	7	6
1465	3.833	12-R13722-7	93	23	35	7	6
1537	4.502	12-R14032-7	101	25	32	7	6
5.0" SP							
204	.293	9-R09026-4	83	7	91	4	4
222	.307	9-R09026-5	86	8	92	5	4
277	.529	9-R10413-4	85	11	72	4	4
292	.552	9-R10413-5	86	12	76	5	4
325	.515	9-R09626-4	86	9	76	4	4
344	.539	9-R09626-5	87	10	79	5	4
410	.673	9-R10527-4	87	13	65	4	4
457	.728	9-R10527-5	86	14	65	5	4
534	.940	10-R10527-6	88	15	67	6	5
611	1.128	10-R11027-6	88	16	62	6	5
715	1.435	10-R11527-6	88	17	54	6	5
834	2.014	10-R12227-6	92	19	46	6	5
934	2.043	12-R11527-7	89	20	52	7	6
1100	2.648	12-R12327-7	90	21	47	7	6
1247	3.211	12-R13032-7	92	22	42	7	6
1341	3.509	12-R14016-7	92	24	39	7	6
1425	3.712	12-R13722-7	93	23	39	7	6
1506	4.426	12-R14032-7	100	25	35	7	6
5.5" SP							
217	.489	9-R10413-4	85	11	79	4	4
280	.468	9-R09626-4	86	9	83	4	4
294	.488	9-R09626-5	87	10	87	5	4
387	.646	9-R10527-4	87	13	72	4	4
430	.694	9-R10527-5	86	14	71	5	4
507	.926	10-R10527-6	88	15	73	6	5
579	1.090	10-R11027-6	87	16	68	6	5
686	1.386	10-R11527-6	88	17	60	6	5
809	1.959	10-R12227-6	92	19	50	6	5
891	1.966	12-R11527-7	88	20	58	7	6
1052	2.555	12-R12327-7	89	21	51	7	6
1205	3.106	12-R13032-7	92	22	47	7	6
1303	3.416	12-R14016-7	92	24	43	7	6
1383	3.592	12-R13722-7	91	23	43	7	6
1475	4.346	12-R14032-7	100	25	39	7	6
6.0" SP							
147	.435	9-R10413-4	85	11	87	4	4
154	.440	9-R10413-5	86	12	91	5	4
201	.391	9-R09626-4	86	9	91	4	4
221	.412	9-R09626-5	86	10	95	5	4
360	.616	9-R10527-4	87	13	78	4	4
399	.656	9-R10527-5	86	14	78	5	4
476	.897	10-R10527-6	88	15	80	6	5
545	1.054	10-R11027-6	87	16	74	6	5
563	1.355	10-R12213-6	88	18	63	6	5
655	1.342	10-R11527-6	88	17	65	6	5
784	1.902	10-R12227-6	91	19	55	6	5
846	1.886	12-R11527-7	88	20	63	7	6
1005	2.461	12-R12327-7	89	21	56	7	6
1163	3.001	12-R13032-7	90	22	51	7	6
1264	3.321	12-R14016-7	91	24	47	7	6



Radial Wheels 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
6.0" SP *(continued)*							
1339	3.474	12-R13722-7	92	23	46	7	6
1442	4.262	12-R14032-7	99	25	42	7	6
6.5" SP							
147	.435	9-R10413-4	85	11	94	4	4
323	.575	9-R10527-4	86	13	85	4	4
357	.608	9-R10527-5	86	14	84	5	4
430	.810	10-R10527-6	88	15	87	6	5
510	.998	10-R11027-6	87	16	81	6	5
511	1.219	10-R12213-6	88	18	68	6	5
624	1.318	10-R11527-6	88	17	70	6	5
756	1.844	10-R12227-6	91	19	60	6	5
798	1.803	12-R11527-7	88	20	68	7	6
964	2.365	12-R12327-7	88	21	60	7	6
1119	2.894	12-R13032-7	90	22	55	7	6
1222	3.224	12-R14016-7	91	24	51	7	6
1293	3.357	12-R13722-7	92	23	50	7	6
1408	4.174	12-R14032-7	98	25	46	7	6
1782	5.014	15-R13446-7	91	26	48	7	8
1863	5.339	15-R13446-8	91	27	50	8	8
1999	5.572	15-R13446-10	91	28	50	10	8
7.0" SP							
263	.511	9-R10527-4	86	13	91	4	4
297	.545	9-R10527-5	86	14	91	5	4
356	.657	10-R10527-6	88	15	93	6	5
469	.924	10-R11027-6	87	16	87	6	5
591	1.286	10-R11527-6	87	17	76	6	5
727	1.784	10-R12227-6	91	19	64	6	5
748	1.718	12-R11527-7	88	20	73	7	6
922	2.268	12-R12327-7	88	21	65	7	6
1073	2.784	12-R13032-7	90	22	59	7	6
1177	3.123	12-R14016-7	91	24	55	7	6
1244	3.243	12-R13722-7	91	23	54	7	6
1373	4.080	12-R14032-7	98	25	49	7	6
1711	4.833	15-R13446-7	90	26	51	7	8
1798	5.147	15-R13446-8	91	27	53	8	8
1812	5.224	15-R14133-7	91	29	50	7	8
1923	5.356	15-R13446-10	90	28	54	10	8
1963	5.723	15-R14133-8	91	30	51	8	8
2034	5.960	15-R14133-10	91	31	53	10	8
7.5" SP							
182	.430	9-R10527-4	86	13	98	4	4
217	.465	9-R10527-5	86	14	97	5	4
404	.820	10-R11027-6	87	16	93	6	5
554	1.234	10-R11527-6	87	17	81	6	5
694	1.721	10-R12227-6	90	19	69	6	5
695	1.631	12-R11527-7	88	20	79	7	6
878	2.170	12-R12327-7	88	21	70	7	6
1024	2.672	12-R13032-7	90	22	64	7	6
1129	3.019	12-R14016-7	90	24	59	7	6
1193	3.131	12-R13722-7	91	23	58	7	6
1335	3.981	12-R14032-7	98	25	53	7	6
1639	4.642	15-R13446-7	90	26	55	7	8
1736	4.946	15-R13446-8	90	27	57	8	8
1755	5.036	15-R14133-7	91	29	53	7	8
1848	5.140	15-R13446-10	90	28	58	10	8
1893	5.497	15-R14133-8	91	30	55	8	8
1946	5.646	15-R14133-10	91	31	57	10	8
8.0" SP							
273	.865	10-R12213-6	88	18	84	6	5
512	1.160	10-R11527-6	87	17	87	6	5
634	1.533	12-R11527-7	88	20	84	7	6
658	1.655	10-R12227-6	89	19	73	6	5
830	2.070	12-R12327-7	88	21	74	7	6
978	2.562	12-R13032-7	89	22	68	7	6
1076	2.911	12-R14016-7	90	24	63	7	6
1138	3.030	12-R13722-7	90	23	62	7	6
1295	3.874	12-R14032-7	98	25	57	7	6
1575	4.432	15-R13446-7	90	26	59	7	8
1675	4.737	15-R13446-8	90	27	61	8	8
1696	4.845	15-R14133-7	91	29	57	7	8
1769	4.914	15-R13446-10	90	28	62	10	8
1820	5.266	15-R14133-8	91	30	59	8	8
1858	5.340	15-R14133-10	91	31	61	10	8
1921	6.959	15-R15234-7	93	32	47	7	8
2166	7.969	15-R15234-8	94	33	48	8	8
2285	8.181	15-R15234-10	94	34	51	10	8
8.5" SP							
207	.753	10-R12213-6	88	18	89	6	5
450	1.032	10-R11527-6	87	17	92	6	5
563	1.419	12-R11527-7	87	20	78	7	6
622	1.593	10-R12227-6	89	19	78	6	5
778	1.982	12-R12327-7	88	21	79	7	6
940	2.456	12-R13032-7	89	22	72	7	6
1071	2.801	12-R14016-7	90	24	66	7	6
1078	2.932	12-R13722-7	90	23	66	7	6
1253	3.760	12-R14032-7	97	25	60	7	6
1508	4.216	15-R13446-7	91	26	62	7	8
1610	4.522	15-R13446-8	90	27	65	8	8
1635	4.650	15-R14133-7	92	29	60	7	8
1686	4.677	15-R13446-10	90	28	66	10	8
1743	5.030	15-R14133-8	91	30	62	8	8
1768	5.042	15-R14133-10	91	31	65	10	8
1858	6.694	15-R15234-7	93	32	49	7	8
2013	7.771	15-R16422-7	93	38	49	7	8
2092	7.675	15-R15234-8	94	33	51	8	8
2164	8.423	15-R16422-8	94	39	51	8	8
2209	7.865	15-R15234-10	93	34	54	10	8
2274	8.594	15-R16422-10	94	40	51	10	8
9.0" SP							
151	.679	10-R12213-6	88	18	95	6	5
351	.826	10-R11527-6	86	17	97	6	5
470	1.269	12-R11527-7	87	20	94	7	6
589	1.544	10-R12227-6	88	19	83	6	5
721	1.887	12-R12327-7	88	21	84	7	6
906	2.354	12-R13032-7	88	22	76	7	6
952	2.676	12-R14016-7	89	24	70	7	6
1078	2.932	12-R13722-7	90	23	70	7	6
1203	3.623	12-R14032-7	96	25	64	7	6
1437	3.995	15-R13446-7	92	26	66	7	8
1540	4.299	15-R13446-8	91	27	69	8	8
1570	4.450	15-R14133-7	92	29	64	7	8
1598	4.427	15-R13446-10	90	28	70	10	8
1663	4.787	15-R14133-8	91	30	66	8	8
1677	4.753	15-R14133-10	91	31	68	10	8
1796	6.421	15-R15234-7	93	32	52	7	8
1960	7.565	15-R16422-7	93	38	52	7	8
2021	7.335	15-R15234-8	93	33	54	8	8
2084	7.922	15-R15550-7	93	35	50	7	8
2122	8.204	15-R16422-8	94	39	54	8	8
2137	7.548	15-R15234-10	93	34	57	10	8
2227	8.386	15-R16422-10	94	40	54	10	8
2324	8.893	15-R15550-8	96	36	52	8	8
2516	8.911	15-R15550-10	96	37	52	10	8
9.5" SP							
549	1.476	10-R12227-6	88	19	87	6	5
655	1.777	12-R12327-7	88	21	88	7	6
868	2.248	12-R13032-7	88	22	81	7	6
878	2.516	12-R14016-7	89	24	74	7	6
955	2.648	12-R13722-7	89	23	74	7	6
1149	3.471	12-R14032-7	95	25	67	7	6
1359	3.769	15-R13446-7	93	26	70	7	8
1462	4.065	15-R13446-8	91	27	73	8	8
1500	4.245	15-R14133-7	93	29	68	7	8
1502	4.137	15-R13446-10	90	28	74	10	8
1577	4.535	15-R14133-8	91	30	70	8	8
1594	4.490	15-R14133-10	91	31	73	10	8
1733	6.148	15-R15234-7	93	32	55	7	8
1905	7.352	15-R16422-7	92	38	55	7	8
1950	6.982	15-R15234-8	93	33	57	8	8
2037	7.704	15-R15550-7	93	35	52	7	8
2062	7.226	15-R15234-10	94	34	61	10	8
2078	7.980	15-R16422-8	93	39	56	8	8
2176	8.167	15-R16422-10	94	40	57	10	8
2271	8.622	15-R15550-8	96	36	55	8	8
2447	8.702	15-R15550-10	96	37	55	10	8
10.0" SP							
488	1.316	10-R12227-6	88	19	92	6	5
575	1.640	12-R12327-7	87	21	93	7	6
795	2.335	12-R14016-7	89	24	78	7	6
824	2.138	12-R13032-7	88	22	85	7	6
887	2.483	12-R13722-7	88	23	77	7	6
1098	3.329	12-R14032-7	94	25	71	7	6
1265	3.540	15-R13446-7	94	26	73	7	8
1357	3.806	15-R13446-8	91	27	76	8	8
1397	3.831	15-R13446-10	90	28	78	10	8
1424	4.046	15-R14133-7	93	29	71	7	8
1485	4.274	15-R14133-8	91	30	73	8	8
1508	4.231	15-R14133-10	91	31	76	10	8
1667	5.874	15-R15234-7	93	32	58	7	8
1849	7.130	15-R16422-7	92	38	58	7	8
1875	6.630	15-R15234-8	93	33	60	8	8
1983	6.899	15-R15234-10	94	34	64	10	8
1989	7.484	15-R15550-7	93	35	55	7	8
2030	7.748	15-R16422-8	93	39	59	8	8
2119	7.932	15-R16422-10	93	40	60	10	8
2216	8.347	15-R15550-8	95	36	58	8	8
2276	9.279	15-R16550-7	95	41	50	7	8
2377	8.484	15-R15550-10	95	37	58	10	8
2572	10.454	15-R16550-8	96	42	50	8	8
2800	10.845	15-R16550-10	98	43	50	10	8
11.0" SP							
679	1.885	12-R13032-7	87	22	93	7	6
718	2.143	12-R13722-7	88	23	85	7	6
1015	3.089	12-R14032-7	92	25	78	7	6
1041	3.036	15-R13446-7	96	26	81	7	8
1110	3.206	15-R13446-8	92	27	84	8	8
1148	3.189	15-R13446-10	90	28	85	10	8
1248	3.608	15-R14133-7	95	29	78	7	8
1282	3.719	15-R14133-8	91	30	80	8	8
1315	3.713	15-R14133-10	91	31	84	10	8
1533	5.343	15-R15234-7	93	32	64	7	8
1714	5.930	15-R15234-8	93	33	66	8	8
1736	6.663	15-R16422-7	92	38	64	7	8
1809	6.222	15-R15234-10	94	34	70	10	8
1886	7.043	15-R15550-7	92	35	61	7	8
1905	7.243	15-R16422-8	94	39	65	8	8
1918	7.218	15-R16422-10	93	40	66	10	8
2096	7.781	15-R15550-8	95	36	63	8	8
2203	8.988	15-R16550-7	94	41	55	7	8
2226	8.016	15-R15550-10	94	37	63	10	8
2483	9.918	15-R16550-8	96	42	56	8	8
2656	10.312	15-R16550-10	98	43	55	10	8
12.0" SP							
371	1.495	12-R14016-7	88	24	94	7	6
531	1.731	12-R13722-7	88	23	93	7	6
785	2.434	15-R13446-7	93	26	88	7	8
787	2.474	15-R13446-10	88	28	93	10	8
821	2.459	15-R13446-8	89	27	92	8	8
919	2.832	12-R14032-7	90	25	85	7	6
1025	3.052	15-R14133-7	96	29	85	7	8

Radial Wheels 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
12.0" SP *(continued)*							
1051	3.133	15-R14133-8	90	30	88	8	8
1084	3.246	15-R14133-10	92	31	91	10	8
1398	4.844	15-R15234-7	94	32	70	7	8
1531	5.280	15-R15234-8	93	33	72	8	8
1584	5.440	15-R15234-10	95	34	77	10	8
1605	6.145	15-R16422-7	92	38	70	7	8
1704	6.467	15-R16422-10	93	40	72	10	8
1759	6.680	15-R16422-8	95	39	71	8	8
1771	6.603	15-R15550-7	92	35	66	7	8
1945	7.164	15-R15550-8	95	36	69	8	8
2057	7.471	15-R15550-10	95	37	69	10	8
2123	8.735	15-R16550-7	94	41	60	7	8
2321	9.413	15-R16550-8	95	42	61	8	8
2506	9.861	15-R16550-10	97	43	60	10	8
13.0" SP							
615	2.042	15-R14133-7	91	29	92	7	8
688	2.268	15-R14133-8	89	30	95	8	8
779	2.520	12-R14032-7	90	25	92	7	6
1236	4.293	15-R15234-7	94	32	76	7	8
1318	4.586	15-R15234-8	93	33	78	8	8
1339	4.677	15-R15234-10	95	34	83	10	8
1426	5.464	15-R16422-7	92	38	76	7	8
1487	5.698	15-R16422-10	93	40	78	10	8
1545	5.917	15-R16422-8	96	39	77	8	8
1771	6.603	15-R15550-7	92	35	72	7	8
1779	6.524	15-R15550-8	95	36	75	8	8
1873	6.883	15-R15550-10	96	37	75	10	8
2035	8.445	15-R16550-7	94	41	65	7	8
2173	8.927	15-R16550-8	94	42	66	8	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
13.0" SP *(continued)*							
2360	9.419	15-R16550-10	96	43	66	10	8
14.0" SP							
541	1.905	12-R14032-7	92	25	99	7	6
984	3.556	15-R15234-7	93	32	82	7	8
1040	3.777	15-R15234-8	92	33	84	8	8
1089	4.003	15-R15234-10	93	34	89	10	8
1178	4.602	15-R16422-7	92	38	81	7	8
1225	4.842	15-R16422-10	94	40	84	10	8
1233	4.909	15-R16422-8	97	39	83	8	8
1473	5.608	15-R15550-7	91	35	77	7	8
1586	5.859	15-R15550-8	95	36	81	8	8
1678	6.255	15-R15550-10	96	37	81	10	8
1934	8.093	15-R16550-7	93	41	70	7	8
2060	8.503	15-R16550-8	93	42	71	8	8
2223	9.009	15-R16550-10	94	43	71	10	8
15.0" SP							
676	2.814	15-R15234-8	90	33	90	8	8
687	2.750	15-R15234-7	91	32	87	7	8
731	3.169	15-R15234-10	90	34	96	10	8
817	3.583	15-R16422-7	91	38	87	7	8
836	3.773	15-R16422-8	94	39	89	8	8
855	3.770	15-R16422-10	91	40	90	10	8
1257	5.608	15-R15550-7	91	35	83	7	8
1364	5.136	15-R15550-8	96	36	87	8	8
1457	5.547	15-R15550-10	97	37	86	10	8
1808	7.605	15-R16550-7	93	41	75	7	8
1936	8.050	15-R16550-8	92	42	76	8	8
2074	8.547	15-R16550-10	93	43	76	10	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
16.0" SP							
319	2.035	15-R15234-8	88	33	96	8	8
421	2.106	15-R15234-7	88	32	93	7	8
462	2.500	15-R16422-7	89	38	93	7	8
523	2.791	15-R16422-8	90	39	95	8	8
526	3.114	15-R16422-10	89	40	96	10	8
1029	4.273	15-R15550-7	90	35	88	7	8
1122	4.352	15-R15550-8	94	36	92	8	8
1187	4.667	15-R15550-10	97	37	92	10	8
1666	7.077	15-R165550-7	93	41	80	7	8
1796	7.549	15-R165550-8	92	42	81	8	8
1909	8.005	15-R165550-10	93	43	81	10	8
17.0" SP							
148	1.658	15-R15234-7	87	32	99	7	8
154	1.737	15-R16422-7	88	38	99	7	8
807	3.613	15-R15550-10	95	37	98	10	8
1504	6.526	15-R16550-7	91	41	85	7	8
1612	6.957	15-R16550-8	92	42	86	8	8
1719	7.338	15-R16550-10	92	43	86	10	8
18.0" SP							
1307	5.868	15-R16550-7	96	41	90	7	8
1396	6.232	15-R16550-8	96	42	91	8	8
1497	6.566	15-R16550-10	92	43	91	10	8
19.0" SP							
1029	4.869	15-R16550-7	100	41	95	7	8
1132	5.266	15-R16550-8	100	42	96	8	8
1219	5.601	15-R16550-10	92	43	96	10	8

Backward Curve 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP							
184	.174	8-B07025-3	85	72	30	3	4
219	.226	8-B08125-3	86	74	22	3	4
225	.170	8-B07025-4	84	73	33	4	4
289	.285	8-B08125-4	84	75	24	4	4
1.5" SP							
161	.167	8-B07025-3	85	72	45	3	4
198	.163	8-B07025-4	84	73	49	4	4
202	.221	8-B08125-3	86	74	33	3	4
264	.273	8-B08125-4	84	75	36	4	4
368	.311	9-B08725-4	85	76	28	4	4
383	.319	9-B08725-5	85	77	29	5	4
449	.487	9-B10127-4	86	78	22	4	4
494	.517	9-B10127-5	86	79	23	5	4
571	.836	10-B10127-6	87	80	24	6	5
687	1.151	10-B10727-6	89	81	20	6	5
2.0" SP							
130	.158	8-B07025-3	84	72	60	3	4
161	.150	8-B07025-4	84	73	65	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
2.0" SP *(continued)*							
187	.216	8-B08125-3	86	74	44	3	4
238	.258	8-B08125-4	84	75	48	4	4
344	.299	9-B08725-4	85	76	37	4	4
358	.305	9-B08725-5	85	77	39	5	4
425	.468	9-B10127-4	86	78	29	4	4
469	.500	9-B10127-5	86	79	31	5	4
542	.809	10-B10127-6	86	80	32	6	5
659	1.116	10-B10727-6	88	81	27	6	5
2.5" SP							
97	.145	8-B07025-3	85	72	75	3	4
112	.134	8-B07025-4	84	73	81	4	4
163	.207	8-B08125-3	86	74	55	3	4
209	.242	8-B08125-4	84	75	61	4	4
319	.285	9-B08725-4	85	76	46	4	4
333	.290	9-B08725-5	85	77	49	5	4
400	.447	9-B10127-4	86	78	36	4	4
444	.484	9-B10127-5	86	79	39	5	4
514	.799	10-B10127-6	86	80	41	6	5
632	1.092	10-B10727-6	88	81	34	6	5

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
2.5" SP *(continued)*							
1085	2.190	12-B13031-7	91	82	24	7	6
3.0" SP							
36	.114	8-B07025-4	84	73	98	4	4
46	.120	8-B07025-3	85	72	90	3	4
133	.194	8-B08125-3	85	74	66	3	4
171	.220	8-B08125-4	84	75	73	4	4
293	.269	9-B08725-4	85	76	56	4	4
306	.273	9-B08725-5	85	77	59	5	4
373	.425	9-B10127-4	86	78	44	4	4
417	.466	9-B10127-5	86	79	46	5	4
484	.782	10-B10127-6	86	80	49	6	5
605	1.067	10-B10727-6	88	81	41	6	5
1050	2.136	12-B13031-7	91	82	28	7	6
1262	2.962	12-B14132-7	94	83	23	7	6
3.5" SP							
99	.180	8-B08125-3	85	74	77	3	4
120	.193	8-B08125-4	84	75	85	4	4
266	.251	9-B08725-4	85	76	65	4	4

Backward Curve 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
3.5″ SP *(continued)*							
277	.256	9-B08725-5	85	77	68	5	4
345	.401	9-B10127-4	86	78	51	4	4
382	.440	9-B10127-5	86	79	54	5	4
449	.754	10-B10127-6	86	80	57	6	5
576	1.038	10-B10727-6	87	81	47	6	5
1014	2.081	12-B13031-7	90	82	33	7	6
1231	2.901	12-B14132-7	94	83	27	7	6
4.0″ SP							
42	.160	8-B08125-4	83	75	97	4	4
52	.158	8-B08125-3	85	74	88	3	4
232	.229	9-B08725-4	85	76	74	4	4
238	.233	9-B08725-5	85	77	78	5	4
318	.379	9-B10127-4	86	78	58	4	4
351	.411	9-B10127-5	86	79	62	5	4
402	.698	10-B10127-6	86	80	65	6	5
545	1.004	10-B10727-6	87	81	54	6	5
979	2.027	12-B13031-7	90	82	38	7	6
1201	2.851	12-B14132-7	93	83	31	7	6
4.5″ SP							
164	.189	9-B08725-4	85	76	84	4	4
174	.193	9-B08725-5	85	77	88	5	4
292	.356	9-B10127-4	86	78	65	4	4
326	.380	9-B10127-5	86	79	70	5	4
362	.643	10-B10127-6	83	80	73	6	5
511	.964	10-B10727-6	86	81	61	6	5
945	1.974	12-B13031-7	90	82	42	7	6
1171	2.805	12-B14132-7	93	83	35	7	6
5.0″ SP							
85	.147	9-B08725-5	86	77	98	5	4
89	.150	9-B08725-4	85	76	93	4	4
254	.322	9-B10127-4	86	78	73	4	4
294	.348	9-B10127-5	86	79	77	5	4
326	.596	10-B10127-6	84	80	81	6	5
471	.912	10-B10727-6	84	81	68	6	5
912	1.921	12-B13031-7	89	82	47	7	6
1140	2.756	12-B14132-7	92	83	39	7	6
5.5″ SP							
203	.279	9-B10127-4	86	78	80	4	4
226	.314	9-B10127-5	86	79	85	5	4
271	.530	10-B10127-6	83	80	89	6	5
437	.872	10-B10727-6	84	81	74	6	5
879	1.869	12-B13031-7	89	82	52	7	6
1110	2.706	12-B14132-7	92	83	43	7	6
6.0″ SP							
155	.247	9-B10127-4	86	78	87	4	4
168	.274	9-B10127-4	86	79	93	4	4
172	.435	10-B10127-6	83	80	97	6	5
403	.836	10-B10727-6	84	81	81	6	5
847	1.817	12-B13031-7	88	82	57	7	6
1079	2.653	12-B14132-7	91	83	47	7	6
6.5″ SP							
63	.204	9-B10127-4	86	78	95	4	4
352	.747	10-B10727-6	84	81	88	6	5
817	1.769	12-B13031-7	88	82	61	7	6
1047	2.597	12-B14132-7	91	83	50	7	6
1394	3.023	15-B14132-10	86	86	53	10	8
7.0″ SP							
270	.633	10-B10727-6	84	81	95	6	5
789	1.722	12-B13031-7	88	82	66	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
7.0″ SP *(continued)*							
1015	2.539	12-B14132-7	90	83	54	7	6
1308	2.850	15-B14132-7	87	84	51	7	8
1320	2.915	15-B14132-10	86	86	57	10	8
1338	2.900	15-B14132-8	86	85	53	8	8
7.5″ SP							
757	1.670	12-B13031-7	88	82	71	7	6
983	2.479	12-B14132-7	90	83	58	7	6
1247	2.812	15-B14132-10	85	86	61	10	8
1253	2.763	15-B14132-7	87	84	54	7	8
1272	2.790	15-B14132-8	85	85	57	8	8
1831	4.992	15-B15247-10	91	89	52	10	8
8.0″ SP							
720	1.612	12-B13031-7	88	82	76	7	6
950	2.416	12-B14132-7	90	83	62	7	6
1186	2.726	15-B14132-10	87	86	65	10	8
1195	2.671	15-B14132-7	87	84	58	7	8
1204	2.683	15-B14132-8	85	85	61	8	8
1598	4.480	15-B15247-7	90	87	50	7	8
1674	4.795	15-B15247-8	91	88	52	8	8
1761	4.844	15-B15247-10	91	89	55	10	8
8.5″ SP							
673	1.542	12-B13031-7	88	82	80	7	6
919	2.356	12-B14132-7	90	83	66	7	6
1128	2.644	15-B14132-10	87	86	69	10	8
1134	2.574	15-B14132-7	87	84	62	7	8
1138	2.610	15-B14132-8	85	85	64	8	8
1550	4.347	15-B15247-7	89	87	54	7	8
1620	4.632	15-B15247-8	90	88	56	8	8
1699	4.705	15-B15247-10	90	89	58	10	8
9.0″ SP							
617	1.457	12-B13031-7	88	82	85	7	6
886	2.290	12-B14132-7	89	83	70	7	6
1064	2.558	15-B14132-10	87	86	73	10	8
1067	2.466	15-B14132-7	84	84	65	7	8
1069	2.526	15-B14132-8	85	85	68	8	8
1499	4.202	15-B15247-7	89	87	57	7	8
1569	4.453	15-B15247-8	90	88	59	8	8
1634	4.557	15-B15247-10	90	89	62	10	8
9.5″ SP							
536	1.330	12-B13031-7	88	82	90	7	6
850	2.213	12-B14132-7	89	83	73	7	6
994	2.467	15-B14132-10	87	86	77	10	8
995	2.351	15-B14132-7	84	84	69	7	8
995	2.428	15-B14132-8	84	85	72	8	8
1439	4.013	15-B15247-7	89	87	60	7	8
1515	4.269	15-B15247-8	89	88	62	8	8
1566	4.397	15-B15247-10	89	89	65	10	8
2244	7.781	15-B16550-10	94	95	51	10	8
10.0″ SP							
437	1.189	12-B13031-7	88	82	94	7	6
810	2.109	12-B14132-7	89	83	78	7	6
913	2.367	15-B14132-10	87	86	81	10	8
916	2.315	15-B14132-8	84	85	76	8	8
917	2.226	15-B14132-7	84	84	72	7	8
1374	3.810	15-B15247-7	88	87	63	7	8
1457	4.081	15-B15247-8	89	88	65	8	8
1493	4.224	15-B15247-10	89	89	69	10	8
1896	6.861	15-B16550-7	95	93	51	7	8
2094	7.476	15-B16550-8	94	94	52	8	8
2193	7.620	15-B16550-10	93	95	54	10	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
11.0″ SP							
674	2.106	15-B14132-10	86	86	90	10	8
713	1.871	12-B14132-7	89	83	85	7	6
726	1.925	15-B14132-7	84	84	80	7	8
741	2.011	15-B14132-8	84	85	83	8	8
1229	3.398	15-B15247-7	88	87	69	7	8
1320	3.678	15-B15247-8	88	88	72	8	8
1324	3.769	15-B15247-10	88	89	76	10	8
1821	6.603	15-B16550-7	96	93	56	7	8
1992	7.169	15-B16550-8	93	94	57	8	8
2086	7.303	15-B16550-10	93	95	59	10	8
12.0″ SP							
293	1.649	15-B14132-10	86	86	98	10	8
483	1.503	15-B14132-7	84	84	87	7	8
484	1.554	15-B14132-8	84	85	91	8	8
561	1.609	12-B14132-7	89	83	93	7	6
1045	2.969	15-B15247-7	87	87	76	7	8
1112	3.185	15-B15247-8	87	88	79	8	8
1119	3.248	15-B15247-10	87	89	83	10	8
1738	6.303	15-B16550-7	97	93	61	7	8
1890	6.819	15-B16550-8	93	94	62	8	8
1973	6.992	15-B16550-10	92	95	64	10	8
13.0″ SP							
165	1.100	15-B14132-8	84	85	98	8	8
251	1.139	15-B14132-7	84	84	94	7	8
828	2.504	15-B15247-7	87	87	82	7	8
829	2.610	15-B15247-10	87	89	89	10	8
863	2.647	15-B15247-8	87	88	85	8	8
1641	5.934	15-B16550-7	97	93	66	7	8
1779	6.439	15-B16550-8	92	94	68	8	8
1850	6.647	15-B16550-10	91	95	70	10	8
14.0″ SP							
509	2.157	15-B15247-10	87	89	96	10	8
568	1.975	15-B15247-7	87	87	88	7	8
570	2.036	15-B15247-8	87	88	92	8	8
1532	5.543	15-B16550-7	98	93	71	7	8
1655	6.025	15-B16550-8	92	94	73	8	8
1710	6.251	15-B16550-10	91	95	75	10	8
15.0″ SP							
225	1.353	15-B15247-8	87	88	98	8	8
306	1.440	15-B15247-7	87	87	94	7	8
1396	5.114	15-B16550-7	98	93	76	7	8
1490	5.503	15-B16550-8	90	94	78	8	8
1537	5.755	15-B16550-10	90	95	81	10	8
16.0″ SP							
1213	4.608	15-B16550-7	95	93	81	7	8
1296	4.910	15-B16550-8	92	94	83	8	8
1341	5.189	15-B16550-10	90	95	86	10	8
17.0″ SP							
1003	4.026	15-B16550-7	95	93	86	7	8
1071	4.267	15-B16550-8	95	94	88	8	8
1111	4.506	15-B16550-10	89	95	91	10	8
18.0″ SP							
751	3.321	15-B16550-7	93	93	91	7	8
789	3.489	15-B16550-8	97	94	93	8	8
801	3.631	15-B16550-10	89	95	97	10	8
19.0″ SP							
312	2.170	15-B16550-8	88	94	99	8	8
409	2.388	15-B16550-7	94	93	96	7	8

Forward Curve 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP							
376	.417	8-F07620-3	83	47	20	3	4
592	.884	8-F07620-4	83	48	20	4	4
1.5" SP							
359	.408	8-F07620-3	83	47	30	3	4
565	.846	8-F07620-4	83	48	30	4	4
2.0" SP							
339	.397	8-F07620-3	82	47	40	3	4
537	.803	8-F07620-4	82	48	40	4	4
762	1.873	9-F10020-4	88	49	23	4	4
894	2.293	9-F10020-5	86	50	23	5	4
2.5" SP							
315	.382	8-F07620-3	82	47	50	3	4
503	.746	8-F07620-4	82	48	50	4	4
743	1.809	9-F10020-4	87	49	29	4	4
872	2.231	9-F10020-5	85	50	29	5	4
1253	4.281	10-F10020-6	90	51	27	6	5
1299	4.659	10-F10520-6	90	52	24	6	5
3.0" SP							
288	.363	8-F07620-3	84	47	60	3	4
468	.686	8-F07620-4	82	48	60	4	4
722	1.747	9-F10020-4	87	49	35	4	4
849	2.165	9-F10020-5	85	50	35	5	4
1225	4.145	10-F10020-6	90	51	32	6	5
1273	4.555	10-F10520-6	90	52	29	6	5
3.5" SP							
255	.336	8-F07620-3	83	47	70	3	4
428	.623	8-F07620-4	82	48	70	4	4
699	1.687	9-F10020-4	87	49	41	4	4
826	2.091	9-F10020-5	85	50	41	5	4
1197	4.006	10-F10020-6	90	51	37	6	5
1247	4.446	10-F10520-6	90	52	34	6	5
2240	10.199	12-F12220-7	93	53	25	7	6
2372	10.814	12-F12224-7	95	54	23	7	6
4.0" SP							
216	.297	8-F07620-3	83	47	80	3	4
384	.554	8-F07620-4	82	48	80	4	4
674	1.628	9-F10020-4	86	49	47	4	4
802	2.015	9-F10020-5	85	50	46	5	4
1167	3.863	10-F10020-6	89	51	43	6	5
1220	4.332	10-F10520-6	90	52	38	6	5
2205	10.043	12-F12220-7	93	53	28	7	6
2342	10.653	12-F12224-7	95	54	26	7	6
2413	12.256	12-F13420-7	96	55	24	7	6
4.5" SP							
343	.486	8-F07620-4	83	48	90	4	4
648	1.570	9-F10020-4	86	49	53	4	4
776	1.937	9-F10020-5	85	50	52	5	4
1139	3.711	10-F10020-6	89	51	48	6	5
1195	4.210	10-F10520-6	90	52	43	6	5
2169	9.880	12-F12220-7	93	53	32	7	6
2312	10.489	12-F12224-7	94	54	30	7	6
2385	12.116	12-F13420-7	95	55	27	7	6
2505	12.802	12-F13430-7	97	56	26	7	6
5.0" SP							
619	1.521	9-F10020-4	86	49	61	4	4
749	1.857	9-F10020-5	86	50	58	5	4
1113	3.547	10-F10020-6	89	51	53	6	5
1174	4.078	10-F10520-6	89	52	48	6	5
2132	9.712	12-F12220-7	92	53	35	7	6
2280	10.321	12-F12224-7	94	54	33	7	6
2357	11.975	12-F13420-7	95	55	30	7	6
2468	12.588	12-F13430-7	96	56	28	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
5.5" SP							
589	1.465	9-F10020-4	85	49	64	4	4
719	1.774	9-F10020-5	85	50	64	5	4
1087	3.381	10-F10020-6	89	51	59	6	5
1152	3.944	10-F10520-6	89	52	53	6	5
2095	9.538	12-F12220-7	93	53	39	7	6
2248	10.149	12-F12224-7	94	54	36	7	6
2328	11.832	12-F13420-7	95	55	33	7	6
2432	12.376	12-F13430-7	96	56	31	7	6
6.0" SP							
557	1.394	9-F10020-4	85	49	70	4	4
687	1.687	9-F10020-5	85	50	70	5	4
1058	3.214	10-F10020-6	88	51	64	6	5
1129	3.806	10-F10520-6	89	52	58	6	5
2058	9.352	12-F12220-7	92	53	42	7	6
2215	9.973	12-F12224-7	94	54	40	7	6
2299	11.687	12-F13420-7	95	55	36	7	6
2398	12.177	12-F13430-7	96	56	34	7	6
6.5" SP							
528	1.291	9-F10020-4	85	49	76	4	4
655	1.595	9-F10020-5	84	50	75	5	4
1027	3.045	10-F10020-6	88	51	70	6	5
1105	3.665	10-F10520-6	89	52	63	6	5
2021	9.155	12-F12220-7	92	53	46	7	6
2181	9.792	12-F12224-7	93	54	43	7	6
2270	11.540	12-F13420-7	95	55	39	7	6
2370	12.016	12-F13430-7	96	56	37	7	6
7.0" SP							
494	1.178	9-F10020-4	84	49	82	4	4
622	1.503	9-F10020-5	84	50	81	5	4
993	2.874	10-F10020-6	88	51	75	6	5
1078	3.520	10-F10520-6	88	52	67	6	5
1983	8.954	12-F12220-7	92	53	49	7	6
2146	9.599	12-F12224-7	93	54	46	7	6
2241	11.391	12-F13420-7	95	55	42	7	6
2341	11.852	12-F13430-7	95	56	40	7	6
7.5" SP							
452	1.054	9-F10020-4	84	49	88	4	4
585	1.397	9-F10020-5	84	50	87	5	4
956	2.700	10-F10020-6	87	51	80	6	5
1049	3.370	10-F10520-6	88	52	72	6	5
1944	8.747	12-F12220-7	92	53	53	7	6
2110	9.397	12-F12224-7	93	54	50	7	6
2211	11.242	12-F13420-7	95	55	45	7	6
2312	11.683	12-F13430-7	95	56	43	7	6
8.0" SP							
374	.891	9-F10020-4	84	49	93	4	4
537	1.269	9-F10020-5	86	50	93	5	4
914	2.521	10-F10020-6	87	51	86	6	5
1018	3.213	10-F10520-6	88	52	77	6	5
1904	8.534	12-F12220-7	91	53	56	7	6
2072	9.190	12-F12224-7	93	54	53	7	6
2187	11.133	12-F13420-7	95	55	47	7	6
2282	11.510	12-F13430-7	95	56	45	7	6
8.5" SP							
460	1.076	9-F10020-5	86	50	99	5	4
864	2.351	10-F10020-6	87	51	91	6	5
982	3.046	10-F10520-6	88	52	82	6	5
1863	8.316	12-F12220-7	91	53	60	7	6
2033	8.977	12-F12224-7	93	54	56	7	6
2162	11.018	12-F13420-7	95	55	50	7	6
2252	11.333	12-F13430-7	95	56	48	7	6
9.0" SP							
796	2.144	10-F10020-6	86	51	96	6	5

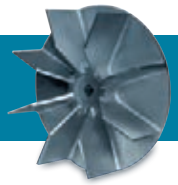
CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
9.0" SP *(continued)*							
940	2.865	10-F10520-6	87	52	87	6	5
1821	8.092	12-F12220-7	91	53	63	7	6
1993	8.759	12-F12224-7	92	54	59	7	6
2136	10.899	12-F13420-7	95	55	53	7	6
2220	11.151	12-F13430-7	94	56	51	7	6
3517	19.938	15-F15020-10	95	59	50	10	8
3592	23.717	15-F15020-7	98	57	49	7	8
3996	25.498	15-F15020-8	98	58	48	8	8
9.5" SP							
883	2.640	10-F10520-6	86	52	91	6	5
1778	7.860	12-F12220-7	91	53	67	7	6
1951	8.534	12-F12224-7	92	54	63	7	6
2110	10.773	12-F13420-7	94	55	56	7	6
2188	10.963	12-F13430-7	94	56	54	7	6
3471	19.745	15-F15020-10	95	59	53	10	8
3549	23.389	15-F15020-7	98	57	51	7	8
3948	25.168	15-F15020-8	98	58	51	8	8
10.0" SP							
804	2.398	10-F10520-6	86	52	96	6	5
1734	7.621	12-F12220-7	91	53	70	7	6
1907	8.301	12-F12224-7	92	54	66	7	6
2082	10.641	12-F13420-7	94	55	59	7	6
2155	10.770	12-F13430-7	94	56	57	7	6
3424	19.544	15-F15020-10	95	59	56	10	8
3504	23.064	15-F15020-7	98	57	54	7	8
3892	24.813	15-F15020-8	98	58	54	8	8
11.0" SP							
1642	7.118	12-F12220-7	90	53	77	7	6
1814	7.809	12-F12224-7	91	54	73	7	6
2023	10.353	12-F13420-7	94	55	65	7	6
2085	10.364	12-F13430-7	94	56	62	7	6
3321	19.113	15-F15020-10	95	59	61	10	8
3411	22.404	15-F15020-7	98	57	60	7	8
3557	26.860	15-F16420-7	100	66	54	7	8
3762	23.272	15-F15030-7	99	60	53	7	8
3777	24.083	15-F15020-8	97	58	59	8	8
3934	27.232	15-F16420-10	97	68	52	10	8
4153	26.809	15-F15030-10	97	62	52	10	8
4386	29.113	15-F15030-8	99	61	51	8	8
12.0" SP							
1550	6.593	12-F12220-7	87	53	84	7	6
1709	7.271	12-F12224-7	90	54	79	7	6
2010	9.926	12-F13430-7	93	56	68	7	6
3188	18.612	15-F15020-10	95	59	67	10	8
3311	21.704	15-F15020-7	97	57	65	7	8
3467	26.239	15-F16420-7	100	66	59	7	8
3654	23.321	15-F15020-8	97	58	64	8	8
3654	22.457	15-F15030-7	98	60	58	7	8
3844	26.768	15-F16420-10	97	68	56	10	8
4028	29.673	15-F16420-8	99	67	57	8	8
4071	26.097	15-F15030-10	96	62	56	10	8
4264	28.246	15-F15030-8	99	61	55	8	8
13.0" SP							
1438	5.989	12-F12220-7	87	53	91	7	6
1588	6.670	12-F12224-7	89	54	86	7	6
1886	9.646	12-F13420-7	93	55	77	7	6
1928	9.449	12-F13430-7	93	56	74	7	6
3042	18.023	15-F15020-10	95	59	72	10	8
3204	20.953	15-F15020-7	97	57	70	7	8
3372	25.587	15-F16420-7	99	66	64	7	8
3524	22.532	15-F15020-8	97	58	70	8	8
3538	21.612	15-F15030-7	98	60	63	7	8
3738	26.257	15-F16420-10	97	68	61	10	8
3932	29.004	15-F16420-8	98	67	62	8	8

Forward Curve 3600 RPM 60 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
13.0" SP *(continued)*							
3980	25.373	15-F15030-10	96	62	61	10	8
4135	27.309	15-F15030-8	99	61	60	8	8
14.0" SP							
1220	5.022	12-F12220-7	87	53	98	7	6
1437	5.909	12-F12224-7	89	54	93	7	6
1801	9.186	12-F13420-7	93	55	83	7	6
1838	8.902	12-F13430-7	92	56	79	7	6
2882	17.322	15-F15020-10	95	59	78	10	8
3088	20.130	15-F15020-7	97	57	76	7	8
3271	24.897	15-F16420-7	99	66	68	7	8
3384	21.719	15-F15020-8	96	58	75	8	8
3409	20.719	15-F15030-7	97	60	68	7	8
3601	25.657	15-F16420-10	97	68	66	10	8
3814	28.277	15-F16420-8	98	67	67	8	8
3846	24.721	15-F15030-10	96	62	66	10	8
4000	26.272	15-F15030-8	98	61	64	8	8
15.0" SP							
1735	8.290	12-F13430-7	92	56	85	7	6
2711	16.475	15-F15020-10	94	59	84	10	8
2960	19.226	15-F15020-7	96	57	81	7	8
3163	24.163	15-F16420-7	99	66	73	7	8
3231	20.809	15-F15020-8	96	58	80	8	8
3271	19.794	15-F15030-7	97	60	73	7	8
3456	24.984	15-F16420-10	97	68	70	10	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
15.0" SP *(continued)*							
3688	27.506	15-F16420-8	98	67	71	8	8
3698	23.979	15-F15030-10	95	62	70	10	8
3855	25.183	15-F15030-8	98	61	69	8	8
16.0" SP							
1525	7.560	12-F13420-7	88	55	95	7	6
1612	7.660	12-F13430-7	88	56	91	7	6
2507	15.418	15-F15020-10	90	59	89	10	8
2813	18.216	15-F15020-7	89	57	87	7	8
3045	23.370	15-F16420-7	99	66	78	7	8
3060	19.764	15-F15020-8	90	58	86	8	8
3122	18.828	15-F15030-7	96	60	78	7	8
3302	24.223	15-F16420-10	97	68	75	10	8
3545	23.103	15-F15030-10	95	62	75	10	8
3551	26.697	15-F16420-8	98	67	76	8	8
3697	24.028	15-F15030-8	97	61	74	8	8
17.0" SP							
1448	6.909	12-F13430-7	89	56	96	7	6
2240	13.987	15-F15020-10	90	59	95	10	8
2638	17.077	15-F15020-7	89	57	92	7	8
2862	18.511	15-F15020-8	90	58	91	8	8
2960	17.885	15-F15030-7	95	60	83	7	8
3394	22.053	15-F15030-10	94	62	80	10	8
3518	22.805	15-F15030-8	97	61	78	8	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
18.0" SP							
2405	15.557	15-F15020-7	90	57	98	7	8
2619	16.959	15-F15020-8	91	58	97	8	8
2776	16.825	15-F15030-7	95	60	87	7	8
2967	22.395	15-F16420-10	97	68	85	10	8
3232	24.825	15-F16420-8	97	67	86	8	8
3248	20.840	15-F15030-10	94	62	84	10	8
3315	21.452	15-F15030-8	96	61	83	8	8
19.0" SP							
2551	15.529	15-F15030-7	89	60	92	7	8
2594	20.544	15-F16420-7	97	66	93	7	8
2763	21.197	15-F16420-10	97	68	89	10	8
3078	19.480	15-F15030-10	91	62	89	10	8
3086	19.887	15-F15030-8	90	61	87	8	8
20.0" SP							
2235	13.682	15-F15030-7	90	60	97	7	8
2358	18.928	15-F16420-7	92	66	98	7	8
2507	19.736	15-F16420-10	94	68	94	10	8
2817	17.791	15-F15030-8	90	61	92	8	8
2866	17.864	15-F15030-10	91	62	94	10	8
21.0" SP							
2476	15.149	15-F15030-8	91	61	96	8	8
2547	20.277	15-F16420-8	94	67	100	8	8
2550	15.596	15-F15030-10	92	62	99	10	8



Radial Wheels 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
.5" SP							
183	.114	8-R07025-3	78	96	20	3	4
239	.131	8-R07025-4	78	97	22	4	4
1.0" SP							
157	.111	8-R07025-3	78	96	41	3	4
193	.138	8-R08013-3	79	98	34	3	4
197	.151	8-R08025-3	78	100	31	3	4
204	.120	8-R07025-4	78	97	44	4	4
248	.163	8-R08013-4	80	99	36	4	4
288	.192	8-R08025-4	79	101	33	4	4
356	.294	9-R09026-4	80	102	26	4	4
390	.301	9-R09026-5	81	103	27	5	4
1.5" SP							
126	.105	8-R07025-3	78	96	61	3	4
160	.107	8-R07025-4	78	97	66	4	4
165	.129	8-R08013-3	79	98	51	3	4
177	.147	8-R08025-3	78	100	46	3	4
212	.150	8-R08013-4	79	99	54	4	4
249	.182	8-R08025-4	79	101	50	4	4
328	.274	9-R09026-4	80	102	39	4	4
359	.280	9-R09026-5	81	103	40	5	4
375	.393	9-R10413-4	81	106	31	4	4
383	.383	9-R09626-4	81	104	33	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.5" SP *(continued)*							
424	.416	9-R09626-5	82	105	34	5	4
451	.486	9-R10527-4	84	108	28	4	4
499	.531	9-R10527-5	83	109	28	5	4
624	.747	10-R10527-6	84	110	29	6	5
653	.836	10-R11026-6	86	111	27	6	5
2.0" SP							
81	.089	8-R07025-3	78	96	82	3	4
91	.086	8-R07025-4	78	97	88	4	4
122	.112	8-R08013-3	79	98	68	3	4
154	.141	8-R08025-3	78	100	78	3	4
164	.130	8-R08013-4	79	99	71	4	4
206	.165	8-R08025-4	79	101	66	4	4
300	.251	9-R09026-4	80	102	52	4	4
326	.261	9-R09026-5	81	103	53	5	4
355	.362	9-R09626-4	80	104	44	4	4
384	.400	9-R10413-5	81	107	44	5	4
393	.391	9-R09626-5	82	105	46	5	4
427	.463	9-R10527-4	83	108	38	4	4
470	.505	9-R10527-5	83	109	37	5	4
578	.714	10-R10527-6	84	110	38	6	5
618	.785	10-R11026-6	85	111	36	6	5
691	.980	10-R11426-6	86	112	31	6	5
759	1.235	10-R12227-6	90	114	27	6	5

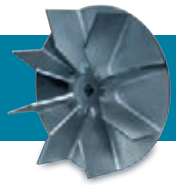
CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
2.0" SP *(continued)*							
930	1.318	12-R11426-7	85	115	31	7	6
1045	1.672	12-R12227-7	89	116	28	7	6
1157	2.009	12-R13032-7	90	117	25	7	6
2.5" SP							
67	.092	8-R08013-3	79	98	85	3	4
80	.097	8-R08013-4	79	99	89	4	4
114	.127	8-R08025-3	78	100	77	3	4
154	.141	8-R08025-4	79	101	83	4	4
270	.228	9-R09026-4	80	102	65	4	4
294	.243	9-R09026-5	82	103	67	5	4
331	.345	9-R09626-4	80	104	54	4	4
347	.375	9-R10413-5	81	107	55	5	4
357	.365	9-R09626-5	82	105	57	5	4
402	.440	9-R10527-4	81	108	47	4	4
440	.477	9-R10527-5	81	109	47	5	4
533	.669	10-R10527-6	83	110	48	6	5
582	.736	10-R11026-6	83	111	45	6	5
597	.982	10-R12213-6	84	113	38	6	5
660	.924	10-R11426-6	85	112	39	6	5
732	1.194	10-R12227-6	89	114	34	6	5
873	1.249	12-R11426-7	84	115	39	7	6
999	1.598	12-R12227-7	85	116	34	7	6
1109	1.927	12-R13032-7	88	117	31	7	6

Radial Wheels 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
2.5" SP (continued)							
1170	2.064	12-R14016-7	87	119	29	7	6
1254	2.220	12-R13722-7	88	118	29	7	6
1301	2.561	12-R14032-7	97	120	26	7	6
3.0" SP							
45	.098	8-R08025-3	79	100	92	3	4
234	.203	9-R09026-4	80	102	78	4	4
251	.217	9-R09026-5	82	103	80	5	4
274	.332	9-R10413-4	80	106	62	4	4
301	.349	9-R10413-5	81	107	66	5	4
305	.325	9-R09626-4	80	104	65	4	4
323	.339	9-R09626-5	82	105	68	5	4
371	.414	9-R10527-4	82	108	56	4	4
410	.449	9-R10527-5	81	109	56	5	4
487	.604	10-R10527-6	83	110	58	6	5
546	.691	10-R11026-6	83	111	54	6	5
566	.951	10-R11213-6	84	113	45	6	5
628	.874	10-R11426-6	83	112	47	6	5
706	1.150	10-R12227-6	88	114	41	6	5
811	1.182	12-R11426-7	83	115	47	7	6
948	1.523	12-R12227-7	85	116	41	7	6
1061	1.843	12-R13032-7	87	117	38	7	6
1133	1.998	12-R14016-7	86	119	35	7	6
1207	2.132	12-R13722-7	87	118	34	7	6
1265	2.500	12-R14032-7	96	120	31	7	6
3.5" SP							
164	.166	9-R09026-4	81	102	91	4	4
179	.175	9-R09026-5	81	103	93	5	4
227	.305	9-R10413-4	80	106	73	4	4
239	.317	9-R10413-5	81	107	77	5	4
268	.296	9-R09626-4	80	104	76	4	4
284	.310	9-R09626-5	81	105	80	5	4
340	.388	9-R10527-4	82	108	66	4	4
379	.420	9-R10527-5	81	109	65	5	4
443	.544	10-R10527-6	83	110	67	6	5
507	.651	10-R11026-6	82	111	63	6	5
529	.904	10-R12213-6	83	113	53	6	5
594	.828	10-R11426-6	83	112	55	6	5
678	1.105	10-R12227-6	88	114	48	6	5
753	1.116	12-R11426-7	83	115	54	7	6
889	1.448	12-R12227-7	84	116	48	7	6
1011	1.758	12-R13032-7	86	117	44	7	6
1090	1.926	12-R14016-7	86	119	41	7	6
1158	2.032	12-R13722-7	87	118	40	7	6
1228	2.437	12-R14032-7	96	120	37	7	6
4.0" SP							
152	.267	9-R10413-4	80	106	83	4	4
161	.272	9-R10413-5	81	107	88	5	4
205	.251	9-R09626-4	80	104	87	4	6
216	.262	9-R09626-5	81	105	91	5	4
311	.365	9-R10527-4	82	108	75	4	4
345	.391	9-R10527-5	81	109	75	5	4
409	.529	10-R10527-6	83	110	77	6	5
468	.621	10-R11026-6	82	111	71	6	5
486	.830	10-R12213-6	83	113	61	6	5
558	.788	10-R11426-6	82	112	62	6	5
647	1.059	10-R12227-6	87	114	54	6	5
700	1.052	12-R11426-7	82	115	62	7	6
831	1.371	12-R12227-7	83	116	55	7	6
960	1.672	12-R13032-7	85	117	50	7	6
1043	1.848	12-R14016-7	85	119	46	7	6
1105	1.935	12-R13722-7	86	118	46	7	6
1189	2.369	12-R14032-7	95	120	42	7	6
4.5" SP							
26	.216	9-R10413-5	81	107	99	5	4
47	.223	9-R10413-4	80	106	94	4	4
271	.334	9-R10527-4	81	108	85	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
4.5" SP (continued)							
299	.353	9-R10527-5	84	109	81	5	4
361	.473	10-R10527-6	83	110	87	6	5
426	.579	10-R11026-6	82	111	80	6	5
428	.707	10-R12213-6	80	113	68	6	5
521	.763	10-R11426-6	82	112	70	6	5
613	1.011	10-R12227-6	84	114	61	6	5
642	.983	12-R11426-7	82	115	70	7	6
781	1.293	12-R12227-7	83	116	62	7	6
907	1.584	12-R13032-7	84	117	57	7	6
991	1.768	12-R14016-7	85	119	52	7	6
1049	1.839	12-R13722-7	82	118	52	7	6
1147	2.296	12-R14032-7	94	120	47	7	6
1444	2.746	15-R13446-7	85	121	47	7	8
1512	2.924	15-R13446-8	85	122	51	8	8
1531	2.965	15-R14032-7	85	124	47	7	8
1621	3.048	15-R13446-10	85	123	52	10	8
1655	3.255	15-R14032-8	86	125	49	8	8
1717	3.399	15-R14032-10	86	126	51	10	8
5.0" SP							
195	.279	9-R10527-4	81	108	94	4	4
224	.299	9-R10527-5	81	109	93	5	4
262	.365	10-R10527-6	81	110	96	6	5
339	.643	10-R12213-6	80	113	76	6	5
374	.515	10-R11026-6	82	111	89	6	5
480	.734	10-R11426-6	82	112	78	6	5
575	.960	10-R12227-6	84	114	68	6	5
579	.913	12-R11426-7	82	115	78	7	6
728	1.212	12-R12227-7	82	116	69	7	6
848	1.492	12-R13032-7	84	117	63	7	6
935	1.684	12-R14016-7	84	119	52	7	6
988	1.746	12-R13722-7	85	118	57	7	6
1102	2.217	12-R14032-7	91	120	58	7	6
1357	2.592	15-R13446-7	84	121	54	7	8
1434	2.762	15-R13446-8	85	122	57	8	8
1450	2.810	15-R14032-7	85	124	53	7	8
1529	2.871	15-R13446-10	85	123	58	10	8
1566	3.069	15-R14032-8	85	125	54	8	8
1612	3.161	15-R14032-10	85	126	56	10	8
5.5" SP							
231	.371	10-R11026-6	79	111	98	6	5
239	.516	10-R12213-6	82	113	83	6	5
433	.679	10-R11426-6	82	112	86	6	5
505	.832	12-R11426-7	82	115	86	7	6
531	.907	10-R12227-6	84	114	75	6	5
669	1.131	12-R12227-7	82	116	76	7	6
793	1.401	12-R13032-7	83	117	69	7	6
870	1.594	12-R14016-7	84	119	64	7	6
920	1.664	12-R13722-7	84	118	63	7	6
1054	2.129	12-R14032-7	91	120	58	7	6
1277	2.421	15-R13446-7	85	121	60	7	8
1360	2.590	15-R13446-8	84	122	62	8	8
1378	2.653	15-R14032-7	85	124	58	7	8
1433	2.685	15-R13446-10	85	123	63	10	8
1476	2.879	15-R14032-8	85	125	60	8	8
1504	2.909	15-R14032-10	85	126	62	10	8
1656	3.654	15-R15247-4-7	89	139	49	7	8
1761	3.762	15-R15247-4-8	91	140	51	8	8
1862	3.923	15-R15247-4-10	90	141	51	10	8
6.0" SP							
356	.568	10-R11426-6	81	112	94	6	5
405	.724	12-R11426-7	82	115	93	7	6
490	.862	10-R12227-6	81	114	82	6	5
603	1.058	12-R12227-7	82	116	83	7	6
750	1.317	12-R13032-7	83	117	75	7	6
794	1.499	12-R14016-7	84	119	69	7	6
846	1.574	12-R13722-7	84	118	69	7	6
998	2.027	12-R14032-7	90	120	63	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
6.0" SP (continued)							
1193	2.241	15-R13446-7	85	121	65	7	8
1278	2.410	15-R13446-8	85	122	68	8	8
1301	2.491	15-R14032-7	86	124	63	7	8
1328	2.484	15-R13446-10	84	123	69	10	8
1380	2.683	15-R14032-8	85	125	65	8	8
1394	2.668	15-R14032-10	85	126	68	10	8
1486	3.591	15-R15134-7	87	127	52	7	8
1633	4.292	15-R16322-7	88	133	51	7	8
1704	4.277	15-R15134-8	88	128	52	8	8
1733	4.494	15-R15450-7	88	130	49	7	8
1764	4.653	15-R16322-8	88	134	52	8	8
1802	4.388	15-R15134-10	88	129	56	10	8
1852	4.754	15-R16322-10	89	135	53	10	8
1933	5.050	15-R15450-8	90	131	51	8	8
2096	5.046	15-R15450-10	91	132	51	10	8
6.5" SP							
441	.805	10-R12227-6	80	114	88	6	5
522	.966	12-R12227-7	82	116	90	7	6
704	1.230	12-R13032-7	82	117	82	7	6
704	1.369	12-R14016-7	83	119	75	7	6
770	1.443	12-R13722-7	83	118	75	7	6
932	1.902	12-R14032-7	88	120	68	7	6
1098	2.055	15-R13446-7	86	121	71	7	8
1183	2.217	15-R13446-8	85	122	74	8	8
1211	2.248	15-R13446-10	84	123	75	10	8
1217	2.322	15-R14032-7	87	124	69	7	8
1276	2.475	15-R14032-8	85	125	70	8	8
1291	2.450	15-R14032-10	85	126	73	10	8
1409	3.367	15-R15134-7	87	127	56	7	8
1567	4.117	15-R16322-7	87	133	56	7	8
1619	3.985	15-R15134-8	88	128	57	8	8
1677	4.314	15-R15450-7	88	130	53	7	8
1710	4.469	15-R16322-8	88	134	57	8	8
1712	4.123	15-R15134-10	88	129	60	10	8
1791	4.574	15-R16322-10	88	135	58	10	8
1870	4.827	15-R15450-8	90	031	55	8	8
2014	4.875	15-R15450-10	90	132	55	10	8
7.0" SP							
348	.647	10-R12227-6	83	114	95	6	5
405	.830	12-R12227-7	82	116	96	7	6
639	1.139	12-R13032-7	82	117	88	7	6
680	1.309	12-R13722-7	83	118	80	7	6
875	1.794	12-R14032-7	86	120	73	7	6
973	1.863	15-R13446-7	87	121	76	7	8
1042	1.992	15-R13446-8	85	122	79	8	8
1077	1.993	15-R13446-10	84	123	81	10	8
1160	2.257	15-R14032-8	85	125	76	8	8
1182	2.237	15-R14032-10	85	126	79	10	8
1188	2.157	15-R14032-7	87	124	74	7	8
1328	3.143	15-R15134-7	87	127	60	7	8
1500	3.932	15-R16322-7	86	133	60	7	8
1528	3.693	15-R15134-8	88	128	61	8	8
1616	3.850	15-R15134-10	88	129	65	10	8
1618	4.133	15-R15450-7	87	130	57	7	8
1647	4.274	15-R16322-8	87	134	61	8	8
1705	4.347	15-R16322-10	88	135	62	10	8
1802	4.599	15-R15450-8	90	131	59	8	8
1861	5.149	15-R16550-7	89	136	52	7	8
1927	4.693	15-R15450-10	89	132	59	10	8
2104	5.785	15-R16550-8	90	137	52	8	8
2278	5.989	15-R16550-10	92	138	52	10	8
7.5" SP							
465	1.028	12-R14016-7	83	119	87	7	6
539	1.023	12-R13032-7	82	117	94	7	6
572	1.164	12-R13722-7	82	118	86	7	6
825	1.697	12-R14032-7	85	120	79	7	6
832	1.647	15-R13446-7	88	121	82	7	8



Radial Wheels 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
7.5" SP *(continued)*							
886	1.735	15-R13446-8	85	122	85	8	8
915	1.725	15-R13446-10	84	123	86	10	8
1006	1.969	15-R14032-7	88	124	79	7	8
1032	2.024	15-R14032-8	85	125	81	8	8
1060	2.025	15-R14032-10	85	126	84	10	8
1247	2.930	15-R15134-7	87	127	65	7	8
1430	3.737	15-R16322-7	86	133	64	7	8
1431	3.403	15-R15134-8	87	128	65	8	8
1511	3.569	15-R15134-10	88	129	70	10	8
1554	3.951	15-R15450-7	87	130	61	7	8
1570	4.062	15-R16322-8	88	134	65	8	8
1579	4.046	15-R16322-10	88	135	66	10	8
1727	4.363	15-R15450-8	89	131	64	8	8
1816	5.045	15-R16550-7	89	136	55	7	8
1834	4.496	15-R15450-10	89	132	63	10	8
2046	5.565	15-R16550-8	90	137	56	8	8
2189	5.787	15-R16550-10	92	138	56	10	8
8.0" SP							
331	.849	12-R14016-7	82	119	93	7	6
462	.997	12-R13722-7	82	118	92	7	6
678	1.403	15-R13446-7	86	121	87	7	8
694	1.427	15-R13446-10	84	123	92	10	8
713	1.428	15-R13446-8	83	122	91	8	8
768	1.591	12-R14032-7	84	120	84	7	6
872	1.744	15-R14032-7	89	124	84	7	8
892	1.784	15-R14032-8	84	125	87	8	8
920	1.833	15-R14032-10	85	126	90	10	8
1165	2.726	15-R15134-7	87	127	69	7	8
1323	3.133	15-R15134-8	87	128	70	8	8
1353	3.526	15-R16322-7	87	133	68	7	8
1379	3.249	15-R15134-10	88	129	74	10	8
1449	3.736	15-R16322-10	87	135	71	10	8
1483	3.834	15-R16322-8	89	134	70	8	8
1486	3.770	15-R15450-7	86	130	65	7	8
1637	4.110	15-R15450-8	89	131	68	8	8
1732	4.274	15-R15450-10	89	132	68	10	8
1768	4.942	15-R16550-7	89	136	59	7	8
1946	5.355	15-R16550-8	89	137	59	8	8
2098	5.600	15-R16550-10	91	138	59	10	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
8.5" SP							
210	.673	12-R13722-7	82	118	98	7	6
390	1.079	15-R13446-10	81	123	98	10	8
444	1.025	15-R13446-7	83	121	92	7	8
474	1.063	15-R13446-8	82	122	96	8	8
691	1.474	12-R14032-7	85	120	89	7	6
692	1.438	15-R14032-7	86	124	90	7	8
722	1.508	15-R14032-8	82	125	92	8	8
742	1.631	15-R14032-10	85	126	96	10	8
1072	2.507	15-R15134-7	87	127	73	7	8
1204	2.857	15-R15134-8	87	128	74	8	8
1237	2.928	15-R15134-10	88	129	79	10	8
1264	3.293	15-R16322-7	86	133	73	7	8
1322	3.426	15-R16322-10	87	135	75	10	8
1383	3.579	15-R16322-8	89	134	74	8	8
1411	3.582	15-R15450-7	86	130	69	7	8
1540	3.850	15-R15450-8	89	131	72	8	8
1625	4.038	15-R15450-10	89	132	72	10	8
1717	4.829	15-R16550-7	88	136	63	7	8
1854	5.152	15-R16550-8	89	137	63	8	8
2008	5.414	15-R16550-10	90	138	63	10	8
9.0" SP							
962	2.266	15-R15134-7	87	127	78	7	8
1070	2.563	15-R15134-8	86	128	78	8	8
1087	2.614	15-R15134-10	88	129	84	10	8
1135	2.965	15-R16322-7	86	133	77	7	8
1183	3.099	15-R16322-10	87	135	80	10	8
1221	3.201	15-R16322-8	90	134	79	8	8
1328	3.383	15-R15450-7	86	130	73	7	8
1435	3.582	15-R15450-8	89	131	76	8	8
1510	3.789	15-R15450-10	89	132	76	10	8
1662	4.703	15-R16550-7	88	136	66	7	8
1772	4.960	15-R16550-8	88	137	67	8	8
1923	5.241	15-R16550-10	90	138	67	10	8
9.5" SP							
787	1.932	15-R15134-7	86	127	82	7	8
903	2.228	15-R15134-8	86	128	83	8	8
938	2.340	15-R15134-10	87	129	88	10	8
982	2.606	15-R16322-7	86	133	81	7	8
1021	2.742	15-R16322-10	87	135	84	10	8
1030	2.782	15-R16322-8	91	134	83	8	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
9.5" SP *(continued)*							
1222	3.168	15-R15450-7	86	130	77	7	8
1316	3.307	15-R15450-8	89	131	81	8	8
1392	3.529	15-R15450-10	90	132	80	10	8
1600	4.557	15-R16550-7	88	136	70	7	8
1704	4.786	15-R16550-8	88	137	70	8	8
1839	5.070	15-R16550-10	89	138	70	10	8
10.0" SP							
603	1.599	15-R15134-7	85	127	86	7	8
707	1.865	15-R15134-8	85	128	87	8	8
759	2.035	15-R15134-10	85	129	93	10	8
771	2.196	15-R16322-7	86	133	85	7	8
788	2.311	15-R16322-8	89	134	87	8	8
799	2.288	15-R16322-10	86	135	89	10	8
1094	2.913	15-R15450-7	85	130	81	7	8
1185	3.014	15-R15450-8	89	131	87	8	8
1261	3.244	15-R15450-10	90	132	85	10	8
1525	4.357	15-R16550-7	88	136	74	7	8
1630	4.602	15-R16550-8	87	137	74	8	8
1750	4.884	15-R16550-10	88	138	74	10	8
11.0" SP							
259	1.150	15-R15134-8	82	128	96	8	8
279	1.080	15-R15134-7	83	127	95	7	8
338	1.324	15-R16322-7	84	133	94	7	8
376	1.641	15-R16322-10	83	135	97	10	8
379	1.476	15-R16322-8	84	134	96	8	8
818	2.331	15-R15450-7	84	130	89	7	8
892	2.370	15-R15450-8	87	131	93	8	8
938	2.528	15-R15450-10	89	132	93	10	8
1355	3.925	15-R16550-7	87	136	81	7	8
1461	4.191	15-R16550-8	86	137	82	8	8
1551	4.438	15-R16550-10	87	138	81	10	8
12.0" SP							
1143	3.445	15-R16550-7	87	136	88	7	8
1221	3.662	15-R16550-8	90	137	89	8	8
1307	3.857	15-R16550-10	87	138	89	10	8
13.0" SP							
818	2.656	15-R16550-7	91	136	96	7	8
909	2.893	15-R16550-8	91	137	96	8	8
979	3.082	15-R16550-10	87	138	96	10	8

Backward Curve 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
.5" SP							
162	.102	8-B07025-3	80	167	21	3	4
190	.132	8-B08125-3	80	169	16	3	4
198	.101	8-B07025-4	79	168	23	4	4
251	.168	8-B08125-4	79	170	17	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP							
137	.097	8-B07025-3	80	167	43	3	4
168	.095	8-B07025-4	79	168	47	4	4
170	.129	8-B08125-3	80	169	32	3	4
223	.159	8-B08125-4	79	170	35	4	4

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP *(continued)*							
309	.181	9-B08725-4	80	171	27	4	4
321	.185	9-B08725-5	80	172	28	5	4
376	.283	9-B10127-4	81	173	21	4	4
414	.300	9-B10127-5	81	174	22	5	4

Backward Curve 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
1.0" SP *(continued)*							
479	.486	10-B10127-6	79	175	23	6	5
1.5" SP							
100	.089	8-B07025-3	79	167	64	3	4
122	.084	8-B07025-4	79	168	70	4	4
151	.124	8-B08125-3	80	169	48	3	4
191	.146	8-B08125-4	79	170	52	4	4
280	.170	9-B08725-4	80	171	40	4	4
292	.174	9-B08725-5	80	172	42	5	4
347	.267	9-B10127-4	82	173	31	4	4
384	.286	9-B10127-5	81	174	33	5	4
444	.467	10-B10127-6	79	175	35	6	5
541	.641	10-B10727-6	81	176	29	6	5
924	1.289	12-B13031-7	86	177	20	7	6
2.0" SP							
49	.073	8-B07025-3	80	167	86	3	4
49	.069	8-B07025-4	79	168	94	4	4
116	.114	8-B08125-3	80	169	64	3	4
152	.131	8-B08125-4	79	170	70	4	4
250	.158	9-B08725-4	80	171	53	4	4
261	.160	9-B08725-5	80	172	56	5	4
317	.249	9-B10127-4	81	173	42	4	4
353	.272	9-B10127-5	81	174	45	5	4
410	.456	10-B10127-6	79	175	47	6	5
510	.621	10-B10727-6	80	176	39	6	5
882	1.244	12-B13031-7	86	177	27	7	6
2.5" SP							
74	.101	8-B08125-3	80	169	80	3	4
91	.109	8-B08125-4	79	170	87	4	4
216	.143	9-B08725-4	80	171	67	4	4
225	.146	9-B08725-5	80	172	70	5	4
282	.229	9-B10127-4	81	173	52	4	4
312	.252	9-B10127-5	81	174	56	5	4
368	.432	10-B10127-6	78	175	58	6	5
475	.597	10-B10727-6	80	176	49	6	5
839	1.198	12-B13031-7	85	177	34	7	6
1001	1.595	12-B14132-7	88	178	29	7	6
3.0" SP							
20	.087	8-B08125-3	80	169	96	3	4
157	.117	8-B08725-4	80	171	80	4	4
165	.120	9-B08725-5	80	172	84	5	4
252	.211	9-B10127-4	81	173	63	4	4
279	.226	9-B10127-5	81	174	67	5	4
311	.381	10-B10127-6	79	175	70	6	5
436	.567	10-B10727-6	79	176	58	6	5
798	1.153	12-B13031-7	84	177	41	7	6
964	1.557	12-B14132-7	87	178	34	7	6
3.5" SP							
57	.081	9-B08725-5	81	172	98	5	4
157	.117	9-B08725-4	80	171	94	4	4
209	.184	9-B10127-4	81	173	73	4	4
242	.200	9-B10127-5	81	174	78	5	4
269	.343	10-B10127-6	79	175	82	6	5
390	.526	10-B10727-6	79	176	68	6	5
758	1.109	12-B13031-7	84	177	48	7	6
927	1.517	12-B14132-7	86	178	40	7	6
4.0" SP							
149	.151	9-B10127-4	81	173	84	4	4
163	.170	9-B10127-5	81	174	89	5	4
192	.282	10-B10127-6	79	175	93	6	5
350	.495	10-B10727-6	79	176	78	6	5
719	1.066	12-B13031-7	83	177	54	7	6
890	1.475	12-B14132-7	85	178	46	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
4.5" SP							
56	.119	9-B10127-4	81	173	94	4	4
296	.435	10-B10727-6	79	176	88	6	5
682	1.025	12-B13031-7	83	177	61	7	6
851	1.429	12-B14132-7	85	178	52	7	6
1103	1.610	15-B14132-7	82	179	48	7	8
1124	1.655	15-B14132-10	83	181	54	10	8
1134	1.648	15-B14132-8	83	180	50	8	8
5.0" SP							
181	.343	10-B10727-6	79	176	97	6	5
647	.985	12-B13031-7	83	177	68	7	6
812	1.380	12-B14132-7	84	178	57	7	6
1035	1.568	15-B14132-10	83	181	60	10	8
1037	1.540	15-B14132-7	82	179	54	7	8
1055	1.557	15-B14132-8	82	180	56	8	8
1356	2.563	15-B15247-7	85	182	47	7	8
1429	2.755	15-B15247-8	86	183	48	8	8
1515	2.782	15-B15247-10	86	184	51	10	8
5.5" SP							
647	.985	12-B13031-7	83	177	75	7	6
812	1.380	12-B14132-7	84	178	63	7	6
960	1.497	15-B14132-10	82	181	66	10	8
967	1.465	15-B14132-7	81	179	59	7	8
973	1.475	15-B14132-8	82	180	62	8	8
1301	2.461	15-B15247-7	84	182	51	7	8
1361	2.632	15-B15247-8	85	183	53	8	8
1431	2.662	15-B15247-10	85	184	56	10	8
6.0" SP							
549	.879	12-B13031-7	83	177	82	7	6
734	1.277	12-B14132-7	84	178	69	7	6
886	1.429	15-B14132-10	81	181	72	10	8
888	1.380	15-B14132-7	81	179	64	7	8
890	1.411	15-B14132-8	81	180	67	8	8
1241	2.347	15-B15247-7	84	182	56	7	8
1298	2.489	15-B15247-8	84	183	58	8	8
1354	2.544	15-B15247-10	84	184	61	10	8
6.5" SP							
466	.791	12-B13031-7	88	177	88	7	6
690	1.214	12-B14132-7	83	178	75	7	6
799	1.353	15-B14132-10	81	181	78	10	8
801	1.285	15-B14132-7	81	179	70	7	8
801	1.330	15-B14132-8	81	180	73	8	8
1166	2.194	15-B15247-7	83	182	61	7	8
1232	2.339	15-B15247-8	83	183	63	8	8
1271	2.412	15-B15247-10	84	184	66	10	8
1590	3.914	15-B16550-7	89	188	48	7	8
1764	4.271	15-B16550-8	89	189	50	8	8
1847	4.361	15-B16550-10	88	190	51	10	8
7.0" SP							
349	.674	12-B13031-7	83	177	95	7	6
638	1.120	12-B14132-7	83	178	80	7	6
687	1.264	15-B14132-10	81	181	84	10	8
701	1.178	15-B14132-7	81	179	75	7	8
701	1.228	15-B14132-8	81	180	79	8	8
1086	2.027	15-B15247-7	83	182	65	7	8
1158	2.181	15-B15247-8	83	183	68	8	8
1178	2.259	15-B15247-10	83	184	71	10	8
1547	3.813	15-B16550-7	89	188	52	7	8
1704	4.151	15-B16550-8	88	189	53	8	8
1784	4.228	15-B16550-10	88	190	55	10	8
7.5" SP							
526	1.147	15-B14132-10	80	181	90	10	8
575	1.022	12-B14132-7	83	178	86	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
7.5" SP *(continued)*							
575	1.044	15-B14132-7	81	179	80	7	8
590	1.092	15-B14132-8	80	180	84	8	8
994	1.856	15-B15247-7	82	182	70	7	8
1066	2.008	15-B15247-8	82	183	73	8	8
1070	2.057	15-B15247-10	82	184	76	10	8
1502	3.705	15-B16550-7	89	188	56	7	8
1642	4.023	15-B16550-8	88	189	57	8	8
1720	4.098	15-B16550-10	87	190	59	10	8
8.0" SP							
300	.973	15-B14132-10	80	181	96	10	8
429	.875	15-B14132-7	81	179	86	7	8
436	.906	15-B14132-8	80	180	90	8	8
483	.916	12-B14132-7	83	178	92	7	6
882	1.681	15-B15247-7	82	182	75	7	8
940	1.806	15-B15247-8	82	183	78	8	8
946	1.846	15-B15247-10	82	184	82	10	8
1452	3.588	15-B16550-7	90	188	59	7	8
1580	3.880	15-B16550-8	88	189	61	8	8
1652	3.971	15-B16550-10	87	190	63	10	8
8.5" SP							
240	.699	15-B14132-8	80	180	95	8	8
277	.697	15-B14132-7	80	179	91	7	8
346	.763	12-B14132-7	83	178	98	7	6
757	1.495	15-B15247-7	82	182	79	7	8
788	1.596	15-B15247-10	82	184	87	10	8
799	1.592	15-B15247-8	82	183	82	8	8
1396	3.440	15-B16550-7	90	188	63	7	8
1516	3.728	15-B16550-8	87	189	65	8	8
1580	3.835	15-B16550-10	86	190	67	10	8
9.0" SP							
152	.587	15-B14132-7	80	179	97	7	8
588	1.332	15-B15247-10	81	184	92	10	8
610	1.293	15-B15247-7	82	182	84	7	8
629	1.357	15-B15247-8	81	183	87	8	8
1335	3.285	15-B16550-7	90	188	67	7	8
1446	3.567	15-B16550-8	87	189	69	8	8
1502	3.687	15-B16550-10	86	190	71	10	8
9.5" SP							
392	1.170	15-B15247-10	81	184	97	10	8
448	1.099	15-B15247-8	81	183	92	8	8
449	1.067	15-B15247-7	82	182	89	7	8
1268	3.123	15-B16550-7	91	188	71	7	8
1370	3.394	15-B16550-8	86	189	72	8	8
1416	3.522	15-B16550-10	85	190	75	10	8
10.0" SP							
243	.821	15-B15247-8	81	183	97	8	8
288	.845	15-B15247-7	82	182	93	7	8
1193	2.952	15-B16550-7	91	188	74	7	8
1275	3.188	15-B16550-8	86	189	76	8	8
1314	3.321	15-B16550-10	85	190	79	10	8
11.0" SP							
975	2.539	15-B16550-7	88	188	82	7	8
1041	2.701	15-B16550-8	88	189	84	8	8
1078	2.858	15-B16550-10	84	190	87	10	8
12.0" SP							
702	2.021	15-B16550-7	88	188	89	7	8
746	2.139	15-B16550-8	87	189	92	8	8
770	2.240	15-B16550-10	84	190	95	10	8
13.0" SP							
199	1.129	15-B16550-8	84	189	99	8	8
307	1.290	15-B16550-7	87	188	96	7	8

Forward Curve 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
.5" SP							
321	.244	8-F07620-3	78	142	14	3	4
504	.522	8-F07620-4	79	143	14	4	4
1.0" SP							
301	.237	8-F07620-3	78	142	29	3	4
474	.493	8-F07620-4	78	143	29	4	4
651	1.125	9-F10020-4	83	144	17	4	4
766	1.365	9-F10020-5	83	145	17	5	4
1.5" SP							
276	.227	8-F07620-3	77	142	43	3	4
439	.454	8-F07620-4	77	143	43	4	4
630	1.072	9-F10020-4	83	144	25	4	4
739	1.316	9-F10020-5	83	145	25	5	4
1042	2.413	10-F10020-6	85	146	24	6	5
1078	2.613	10-F10520-6	86	147	21	6	5
2.0" SP							
246	.213	8-F07620-3	79	142	58	3	4
397	.406	8-F07620-4	77	143	58	4	4
606	1.020	9-F10020-4	82	144	34	4	4
712	1.262	9-F10020-5	82	145	33	5	4
1008	2.303	10-F10020-6	85	146	32	6	5
1047	2.529	10-F10520-6	85	147	29	6	5
1880	5.823	12-F12220-7	89	148	21	7	6
2.5" SP							
207	.191	8-F07620-3	78	142	72	3	4
350	.353	8-F07620-4	77	143	72	4	4
579	.970	9-F10020-4	82	144	42	4	4
684	1.201	9-F10020-5	82	145	42	5	4
973	2.188	10-F10020-6	85	146	40	6	5
1015	2.439	10-F10520-6	85	147	36	6	5
1838	5.698	12-F12220-7	89	148	26	7	6
1949	6.042	12-F12224-7	90	149	24	7	6
2006	6.934	12-F13420-7	91	150	22	7	6
2117	7.390	12-F13430-7	92	151	21	7	6
3.0" SP							
146	.148	8-F07620-3	79	142	87	3	4
299	.296	8-F07620-4	79	143	87	4	4
548	.921	9-F10020-4	81	144	50	4	4
655	1.137	9-F10020-5	82	145	50	5	4
938	2.067	10-F10020-6	84	146	48	6	5
984	2.341	10-F10520-6	85	147	43	6	5
1795	5.566	12-F12220-7	88	148	31	7	6
1912	5.908	12-F12224-7	90	149	29	7	6
1972	6.819	12-F13420-7	91	150	26	7	6
2072	7.212	12-F13430-7	92	151	25	7	6
3.5" SP							
514	.878	9-F10020-4	81	144	59	4	4
622	1.071	9-F10020-5	82	145	58	5	4
907	1.931	10-F10020-6	84	146	55	6	5
958	2.233	10-F10520-6	85	147	50	6	5
1751	5.427	12-F12220-7	88	148	36	7	6
1874	5.769	12-F12224-7	90	149	34	7	6
1938	6.702	12-F13420-7	91	150	31	7	6
2028	7.035	12-F13430-7	92	151	29	7	6
4.0" SP							
477	.828	9-F10020-4	80	144	67	4	4
586	1.001	9-F10020-5	82	145	67	5	4
872	1.795	10-F10020-6	83	146	63	6	5
930	2.121	10-F10520-6	84	147	57	6	5
1706	5.279	12-F12220-7	87	148	41	7	6
1834	5.625	12-F12224-7	89	149	39	7	6
1903	6.583	12-F13420-7	90	150	35	7	6
1984	6.861	12-F13430-7	91	151	33	7	6
4.5" SP							
441	.750	9-F10020-4	80	144	76	4	4
4.5" SP *(continued)*							
547	.925	9-F10020-5	82	145	75	5	4
835	1.656	10-F10020-6	83	146	71	6	5
900	2.005	10-F10520-6	84	147	64	6	5
1660	5.117	12-F12220-7	87	148	46	7	6
1793	5.476	12-F12224-7	89	149	44	7	6
1868	6.462	12-F13420-7	90	150	39	7	6
1950	6.728	12-F13430-7	91	151	38	7	6
5.0" SP							
399	.654	9-F10020-4	81	144	84	4	4
507	.846	9-F10020-5	81	145	84	5	4
791	1.514	10-F10020-6	83	146	79	6	5
866	1.883	10-F10520-6	84	147	71	6	5
1614	4.948	12-F12220-7	87	148	52	7	6
1750	5.312	12-F12224-7	88	149	49	7	6
1832	6.339	12-F13420-7	90	150	44	7	6
1915	6.591	12-F13430-7	91	151	42	7	6
5.5" SP							
117	.194	9-F10020-5	81	145	92	5	4
324	.535	9-F10020-4	81	144	93	4	4
739	1.367	10-F10020-6	82	146	87	6	5
828	1.753	10-F10520-6	83	147	78	6	5
1565	4.773	12-F12220-7	87	148	57	7	6
1704	5.142	12-F12224-7	88	149	53	7	6
1801	6.242	12-F13420-7	90	150	48	7	6
1879	6.448	12-F13430-7	91	151	46	7	6
6.0" SP							
668	1.218	10-F10020-6	82	146	95	6	5
780	1.610	10-F10520-6	83	147	86	6	5
1515	4.591	12-F12220-7	86	148	62	7	6
1657	4.965	12-F12224-7	87	149	58	7	6
1770	6.146	12-F13420-7	90	150	52	7	6
1842	6.300	12-F13430-7	90	151	50	7	6
6.5" SP							
710	1.427	10-F10520-6	81	147	93	6	5
1463	4.401	12-F12220-7	86	148	67	7	6
1606	4.780	12-F12224-7	87	149	63	7	6
1738	6.043	12-F13420-7	90	150	57	7	6
1802	6.146	12-F13430-7	90	151	54	7	6
2924	13.117	15-F15020-7	93	152	52	7	8
3253	14.114	15-F15020-8	93	153	51	8	8
7.0" SP							
566	1.164	10-F10520-6	82	147	100	6	5
1409	4.202	12-F12220-7	86	148	72	7	6
1553	4.586	12-F12224-7	86	149	68	7	6
1704	5.932	12-F13420-7	89	150	61	7	6
1762	5.985	12-F13430-7	90	151	58	7	6
2802	10.910	15-F15020-10	90	154	57	10	8
2870	12.850	15-F15020-7	93	152	56	7	8
2984	15.323	15-F16420-7	95	161	50	7	8
3185	13.820	15-F15020-8	93	153	55	8	8
3229	13.701	15-F15040-7	99	158	51	7	8
7.5" SP							
1353	3.992	12-F12220-7	85	148	77	7	6
1495	4.380	12-F12224-7	86	149	73	7	6
1668	5.811	12-F13420-7	89	150	65	7	6
1719	5.816	12-F13430-7	89	151	63	7	6
2738	10.729	15-F15020-10	90	154	61	10	8
2813	12.575	15-F15020-7	93	152	60	7	8
3102	13.061	15-F15030-7	94	155	53	7	8
3114	13.517	15-F15020-8	92	153	59	8	8
3160	13.380	15-F15040-7	99	158	55	7	8
3245	15.289	15-F16420-10	92	163	52	10	8
3376	17.001	15-F16420-8	94	162	52	8	8
3425	15.049	15-F15030-10	92	157	52	10	8
3617	16.341	15-F15030-8	94	156	51	8	8
7.5" SP *(continued)*							
3754	16.956	15-F15040-8	100	159	51	8	8
8.0" SP							
1298	3.777	12-F12220-7	82	148	83	7	6
1432	4.161	12-F12224-7	86	149	78	7	6
1674	5.637	12-F13430-7	89	151	67	7	6
2659	10.526	15-F15020-10	90	154	65	10	8
2753	12.288	15-F15020-7	92	152	64	7	8
2879	14.823	15-F16420-7	95	161	58	7	8
3037	12.726	15-F15030-7	93	155	57	7	8
3040	13.205	15-F15020-8	92	153	63	8	8
3087	13.058	15-F15040-7	99	158	59	7	8
3151	15.922	15-F16440-7	98	164	51	7	8
3191	15.099	15-F16420-10	92	163	55	10	8
3337	16.750	15-F16420-8	93	162	56	8	8
3376	14.755	15-F15030-10	91	157	55	10	8
3543	15.986	15-F15030-8	94	156	54	8	8
3667	16.483	15-F15040-8	100	159	54	8	8
4045	19.143	15-F15040-10	98	160	51	10	8
8.5" SP							
1238	3.546	12-F12220-7	82	148	88	7	6
1363	3.925	12-F12224-7	81	149	78	7	6
1588	5.531	12-F13420-7	89	150	74	7	6
1626	5.447	12-F13430-7	89	151	71	7	6
2573	10.298	15-F15020-10	90	154	70	10	8
2690	11.987	15-F15020-7	92	152	68	7	8
2823	14.559	15-F16420-7	94	161	61	7	8
2963	12.881	15-F15020-8	92	153	67	8	8
2969	12.383	15-F15030-7	93	155	61	7	8
3011	12.729	15-F15040-7	98	158	62	7	8
3086	15.607	15-F16440-7	98	164	54	7	8
3132	14.898	15-F16420-10	92	163	59	10	8
3292	16.490	15-F16420-8	93	162	59	8	8
3323	14.458	15-F15030-10	91	157	59	10	8
3466	15.613	15-F15030-8	94	156	57	8	8
3578	16.006	15-F15040-8	100	159	57	8	8
3592	18.448	15-F16440-8	100	165	51	8	8
3963	18.646	15-F16040-10	98	160	55	10	8
9.0" SP							
1160	3.282	12-F12220-7	83	148	93	7	6
1363	3.925	12-F12224-7	81	149	87	7	6
1541	5.365	12-F13420-7	89	150	78	7	6
1575	5.243	12-F13430-7	88	151	75	7	6
2481	10.040	15-F15020-10	89	154	74	10	8
2623	11.669	15-F15020-7	92	152	72	7	8
2764	14.285	15-F16420-7	94	161	65	7	8
2883	12.556	15-F15020-8	92	153	71	8	8
2896	12.027	15-F15030-7	93	155	64	7	8
2929	12.392	15-F15040-7	98	158	66	7	8
3020	15.341	15-F16440-7	98	164	57	7	8
3059	14.674	15-F16420-10	92	163	62	10	8
3223	16.200	15-F16420-8	93	162	63	8	8
3265	14.160	15-F15030-10	91	157	62	10	8
3387	15.209	15-F15030-8	94	156	61	8	8
3489	15.544	15-F15040-8	99	159	61	8	8
3530	18.163	15-F16440-8	100	165	54	8	8
3879	18.143	15-F15040-10	98	160	58	10	8
4028	21.215	15-F16440-10	99	166	50	10	8
9.5" SP							
1024	2.874	12-F12220-7	83	148	98	7	6
1192	3.340	12-F12224-7	82	149	92	7	6
1489	5.171	12-F13420-7	89	150	83	7	6
1519	5.014	12-F13430-7	88	151	79	7	6
2384	9.747	15-F15020-10	89	154	78	10	8
2552	11.326	15-F15020-7	92	152	76	7	8
2702	13.999	15-F16420-7	94	161	68	7	8
2797	12.218	15-F15020-8	91	153	75	8	8
2817	11.648	15-F15030-7	92	155	68	7	8

Forward Curve 3000 RPM 50 Hz

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
9.5" SP *(continued)*							
2838	12.055	15-F15040-7	96	158	70	7	8
2953	15.111	15-F16440-7	98	164	61	7	8
2976	14.424	15-F16420-10	92	163	66	10	8
3151	15.898	15-F16420-8	93	162	66	8	8
3178	13.900	15-F15030-10	91	157	65	10	8
3305	14.780	15-F15030-8	93	156	67	8	8
3397	15.073	15-F15040-8	99	159	64	8	8
3465	17.868	15-F16440-8	100	165	57	8	8
3793	17.634	15-F15040-10	98	160	61	10	8
3949	20.773	15-F16440-10	99	166	53	10	8
10.0" SP							
1070	2.934	12-F12224-7	82	149	97	7	6
1459	4.764	12-F13430-7	88	151	83	7	6
2282	9.409	15-F15020-10	89	154	82	10	8
2476	10.959	15-F15020-7	91	152	80	7	8
2638	13.700	15-F16420-7	94	161	72	7	8
2706	11.851	15-F15020-8	91	153	79	8	8
2735	11.279	15-F15030-7	92	155	71	7	8
2737	11.710	15-F15040-7	96	158	73	7	8
2883	14.857	15-F16440-7	97	164	64	7	8
2889	14.152	15-F16420-10	92	163	69	10	8
3076	15.584	15-F16420-8	93	162	70	8	8
3089	13.603	15-F15030-10	90	157	69	10	8
3218	14.335	15-F15030-8	93	156	67	8	8
3301	14.586	15-F15040-8	97	159	67	8	8
3399	17.560	15-F16440-8	99	165	60	8	8
3706	17.119	15-F15040-10	97	160	64	10	8
3867	20.326	15-F16440-10	98	166	56	10	8
11.0" SP							
1229	4.129	12-F13420-7	83	150	96	7	6
1311	4.244	12-F13430-7	83	151	92	7	6

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
11.0" SP *(continued)*							
2038	8.547	15-F15020-10	86	154	90	10	8
2300	10.131	15-F15020-7	85	152	80	7	8
2496	13.049	15-F16420-7	93	161	79	7	8
2500	10.994	15-F15020-8	86	153	87	8	8
2527	10.928	15-F15040-7	96	158	81	7	8
2555	10.484	15-F15030-7	91	155	78	7	8
2703	13.530	15-F16420-10	91	163	76	10	8
2735	14.264	15-F16440-7	97	164	70	7	8
2904	12.888	15-F15030-10	90	157	76	10	8
3028	13.386	15-F15030-8	92	156	74	8	8
3091	13.553	15-F15040-8	96	159	74	8	8
3258	16.902	15-F16440-8	97	165	66	8	8
3528	16.075	15-F15040-10	97	160	71	10	8
3695	19.388	15-F16440-10	98	166	62	10	8
12.0" SP							
2064	9.096	15-F15020-7	86	152	96	7	8
2241	9.875	15-F15020-8	87	153	95	8	8
2307	9.934	15-F15040-7	95	158	88	7	8
2330	12.297	15-F16420-7	92	161	86	7	8
2350	9.681	15-F15030-7	90	155	86	7	8
2578	13.485	15-F16440-7	97	164	77	7	8
2703	12.793	15-F16420-10	91	163	83	10	8
2720	14.159	15-F16420-8	92	162	84	8	8
2726	11.964	15-F15030-10	89	157	83	10	8
2799	12.340	15-F15030-8	91	156	81	8	8
2844	12.404	15-F15040-8	96	159	81	8	8
3106	16.176	15-F16440-8	97	165	72	8	8
3363	15.066	15-F15040-10	96	160	77	10	8
3513	18.440	15-F16440-10	98	166	67	10	8
13.0" SP							
2084	8.638	15-F15030-7	86	155	93	7	8
2124	11.467	15-F16420-7	92	161	93	7	8

CFM	BHP	MODEL	DBA @ 5'	CURVE NO.	% OF PEAK SP	INLET DIA.	OUTLET DIA.
13.0" SP *(continued)*							
2261	11.829	15-F16420-10	94	163	90	10	8
2403	12.530	15-F16440-7	96	164	83	7	8
2495	13.243	15-F16420-8	91	162	91	8	8
2524	10.858	15-F15030-10	85	157	90	10	8
2526	11.074	15-F15030-8	88	156	88	8	8
2558	11.086	15-F15040-8	95	159	88	8	8
2940	15.365	15-F16440-8	96	165	78	8	8
3173	13.975	15-F15040-10	96	160	84	10	8
3323	17.511	15-F16440-10	98	166	73	10	8
14.0" SP							
1540	6.487	15-F15030-7	86	155	100	7	8
1912	10.420	15-F16420-10	88	163	97	10	8
2175	9.178	15-F15030-8	86	156	94	8	8
2192	11.425	15-F16440-7	92	164	89	7	8
2200	9.447	15-F15040-8	94	159	94	8	8
2209	11.946	15-F16420-8	88	162	98	8	8
2236	9.392	15-F15030-10	86	157	97	10	8
2751	14.427	15-F16440-8	96	165	84	8	8
2941	12.747	15-F15040-10	93	160	90	10	8
3125	3.647	15-F16440-10	97	166	78	10	8
15.0" SP							
1906	10.043	15-F16440-7	92	164	96	7	8
2523	13.277	15-F16440-8	95	165	90	8	8
2608	11.489	15-F15040-10	94	160	97	10	8
2917	15.905	15-F16440-10	93	166	84	10	8
16.0" SP							
2214	11.657	15-F16440-8	96	165	96	8	8
2696	14.892	15-F16440-10	94	166	90	10	8
17.0" SP							
2461	13.435	15-F16440-10	94	166	95	10	8

Spark Resistant Construction

Type A

All parts of the fan in contact with the air or gas being handled shall be made of non-ferrous material.

Type B

Fan shall have entirely non-ferrous wheel and a non-ferrous ring about the opening through which the shaft passes.

Type C

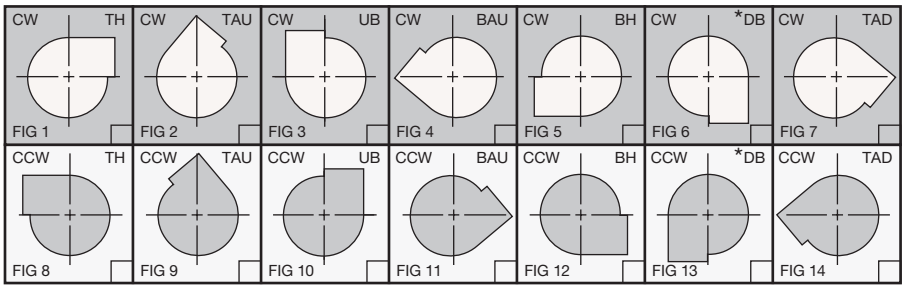
Fan shall be so constructed that a shift of the wheel or shaft will not permit two ferrous parts of the fan to rub or strike.

Model AF meets the requirements of Type A Spark Resistant Construction (with the exception of the shaft) since they have aluminum wheels and housings.

Hi-Temp Construction

All AF arrangements with cast aluminum radial or backward curve wheels can be operated with airstream temperatures up to 200°F. Blowers with aluminum forward curve wheels can be operated with airstream temperatures up to 150°F. Higher temperature construction up to 700°F is available with welded steel construction (radial wheels only) and welded steel housings in arrangements 1, 8, and 9.

Discharge Positions

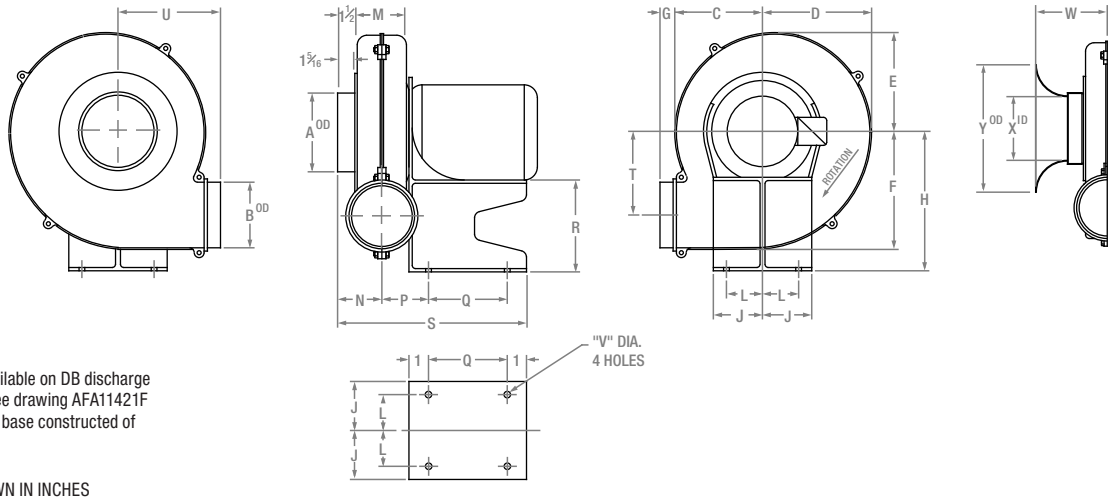


NOTE: Rotation is viewed from driven side.
NOTE: Downblast discharge not available with outlet flange.

Conversion Factors

Volume: cubic meters/sec. x 2119 = cubic feet/min. (CFM)
Pressure: Pascals (N/m²) x 0.004 = inches water
Power: kilowatts (Kw) x 1.341 = horsepower
Length: centimeters (cm) x 0.3937 = inches
Temperature: (°C x 1.8) + 32 = °F

Arrangement 4 Cast Aluminum Base



NOTES:
① Outlet flange not available on DB discharge
② For flange details, see drawing AFA11421F
③ Housing, wheel, and base constructed of cast aluminum

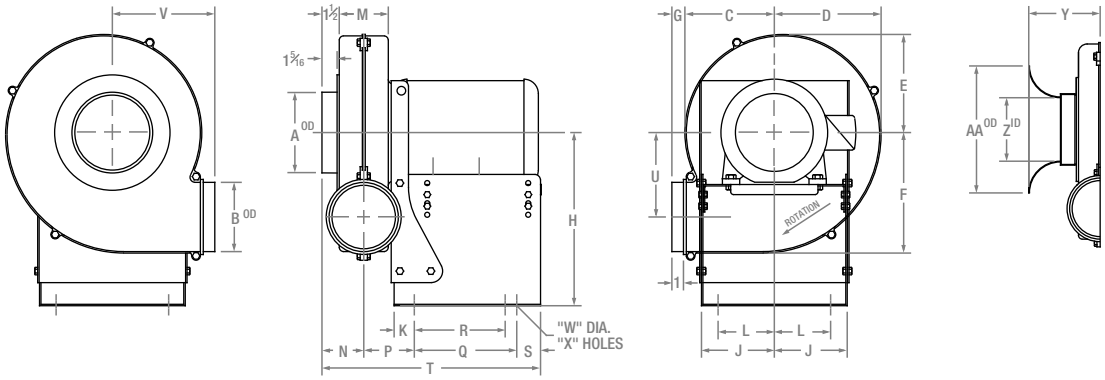
ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	NET WTS. NO MOTOR LBS.
AF-8	56-C, 143-TC, 145-TC	3 4	4	4 5/16	5 13/16	5 3/32	6 1/16	1⅜	8½	3¾	1⅛	2¾	3½	2⅞	2⅞	5	5	11¾	4 9/16	6 5/16	7/16	25
AF-9	56-C, 143-TC, 145-TC	4 5	4	6	7¼	6 17/32	7¾	1 3/16	10½	3¾	1 3/16	2¾	3¾	3 1/16	3 1/16	6	7	13⅛	5⅝	7 3/16	7/16	33
AF-10	56-C, 143-T, 145-TC	6	5	6 1/16	8 5/16	7 15/32	9	1⅛	10½	3¾	1½	2¾	3¾	3⅜	3 1/16	6	7	14 7/16	6⅜	7 13/16	7/16	39

MOTORS FRAME SIZE	WT. LBS.
56-C	24
143-TC	33
145-TC	45

FAN SIZE	INLET DIA.	INLET BELL W	X	Y
AF-8	3	4¼	2⅝	5¼
AF-8	4	4¾	3⅝	7¼
AF-9	4	4 15/16		
AF-9	5	5 7/16	4⅝	9¼
AF-10	6	6 3/16	5½	11

Arrangement 4 Steel Base



NOTES:
① AF-15 with 182T/184T frame motor is not available in DB discharge
② AF-15, Add ⅞" to dimensions "P" & "T" for DB discharge (213T, 215T, 254T, 284TS, 286TS only)
③ AF-15 not available with 56 or 56C frame motors
④ For flange details, see drawing AFA11421F
⑤ Motor base is field adjustable to accept motor frames as shown
⑥ All sizes "DB" discharge only available less outlet flange

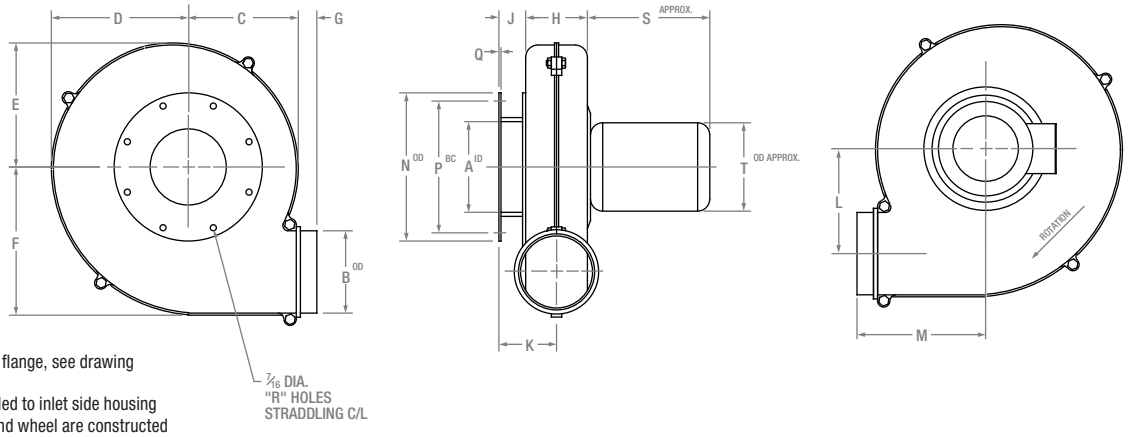
MOTORS FRAME SIZE	WT. LBS.
56C	24
143T	32
145T	40
182T	58
184T	70
213T	100
215T	130
254T	240
256T	300
284TS	403
286TS	420

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	NET WTS. NO MOTOR LBS.
AF-10	56, 143T, 145T, 56C, 143TC, 145TC, 182T	6	5	6 1/16	8 5/16	7 15/32	9	1⅛	11½	5	1 1/16	4	3¾	3⅜	3⅛	8	7	13/16	15 5/16	6⅜	7 13/16	½	6	39
AF-12	56, 143T, 145T, 56C, 143TC, 145TC, 182T, 184T	7	6	7¾	9¼	8½	10 7/16	1⅛	11½	5	1 1/16	4	4¼	3⅝	3⅜	8	7	13/16	15 13/16	7 5/16	8⅞	½	6	46
AF-12	213T, 215T	7	6	7¾	9¼	8½	10 7/16	1⅛	11½	6 5/16	1 1/16	4⅞	4¼	3⅝	4 1/16	8⅞	–	2 1/16	18⅝	7 5/16	8⅞	9/16	4	46
AF-15	143T, 145T, 182T, 184T, 213T, 215T	7 8 10	8	9⅜	11	10	12	1 9/16	15	6 5/16	1¾	4⅞	5⅞	4 7/16	② 5⅛	8⅞	–	2 1/16	② 20½	7⅞	10 15/16	9/16	4	79
AF-15	254T, 256T, 284TS, 286TS	7 8 10	8	9⅜	11	10	12	1 9/16	15	7	1¾	4⅞	5⅞	4 7/16	② 5⅛	16¼	–	2	② 27 13/16	7⅞	10 15/16	1 1/16	4	121

FAN SIZE	INLET DIA.	INLET BELL Y	Z	AA
AF-10	6	6 3/16	5½	11
AF-12	7	6 15/16	6½	13
AF-15	7	7¾		
AF-15	8	8¼	7½	15
AF-15	10	9¼	9½	19

Arrangement 4 Inlet Flange Mount



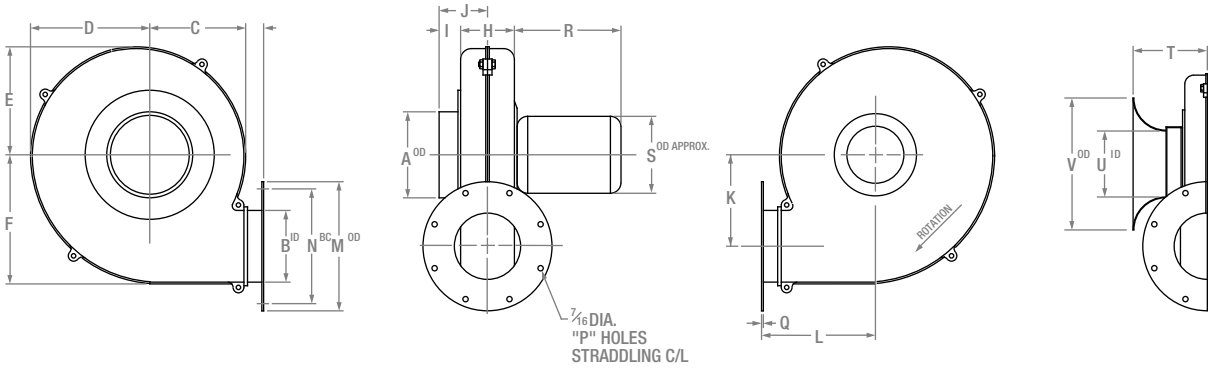
NOTES:
① For optional outlet flange, see drawing AFA11421F
② Inlet flange is welded to inlet side housing
③ Housing, flange, and wheel are constructed of cast aluminum

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	NET WTS. NO MOTOR LBS.
AF-8	56-C, 143-TC, 145-TC	2 9/16	4	4 15/16	5 13/16	5 3/32	6 11/16	1 3/8	3 1/2	1 3/8	3 1/8	4 9/16	6 5/16	7 1/2	6	1/4	4	14
		3 9/16												9	7 1/2		8	
AF-9	56-C, 143-TC, 145-TC	3 9/16	4	6	7 1/4	6 17/32	7 3/4	1 3/16	3 3/4	1 7/16	3 5/16	5 5/8	7 3/16	9	7 1/2	1/4	8	20
		4 9/16												10	8 1/2			
AF-10	56-C, 143-TC, 145-TC	5 1/2	5	6 11/16	8 5/16	7 15/32	9	1 1/8	3 3/4	1 13/16	3 11/16	6 3/8	7 13/16	11	9 1/2	1/4	8	35
AF-12	56-C, 143-TC, 145-TC, 182-TC, 184-TC	6 1/4	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	4 1/4	1 13/16	3 15/16	7 5/16	8 7/8	11	9 1/2	15/16	8	40
AF-15	143-TC, 145-TC, 182-TC, 184-TC, 213-TC, 215-TC	6 1/4	8	9 3/8	11	10	12	1 9/16	5 7/8	2	4 15/16	7 7/8	10 15/16	11	9 1/2	1/2	8	56
		7 1/2												13 1/2	11 3/4		8	
		9 11/16												16	14 1/4		12	

MOTORS			
FRAME SIZE	WT. LBS.	S	T
56-C	25	11 1/2	6 1/4
143-TC	33	11 1/2	7
145-TC	45	11 1/2	7
182-TC	60	14 1/2	9
184-TC	70	14 1/2	9
213-TC	120	16	10 1/2
215-TC	140	16	10 1/2

Arrangement 4 Outlet Flange Mount



NOTES:
① For optional inlet flange, see drawing AFA11421F
② Inlet flange is welded to motor side housing and bolted to inlet side housing
③ Housing, flange, and wheel are constructed of cast aluminum

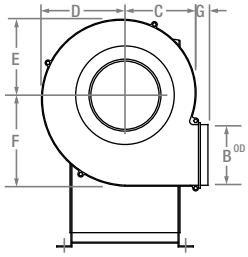
ALL DIMENSIONS SHOWN IN INCHES

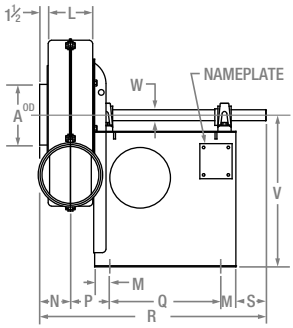
FAN SIZE	MOTOR FRAME SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	NET WTS. NO MOTOR LBS.
AF-8	56-C, 143-TC, 145-TC	3	3 9/16	4 15/16	5 13/16	5 3/32	6 11/16	1 5/8	3 1/2	1 1/8	2 7/8	4 9/16	6 9/16	9	7 1/2	8	1/4	14
		4																
AF-9	56-C, 143-TC, 145-TC	4	3 9/16	6	7 1/4	6 17/32	7 3/4	1 7/16	3 3/4	1 3/16	3 1/16	5 5/8	7 7/16	9	7 1/2	8	1/4	20
		5																
AF-10	56-C, 143-TC, 145-TC	6	4 9/16	6 11/16	8 5/16	7 15/16	9	1 3/8	3 3/4	1 1/2	3 3/8	6 3/8	8 1/16	10	8 1/2	8	5/16	35
AF-12	56-1C8, 143-TC, 145-TC, 182-TC, 184-TC	7	5 1/2	7 3/4	9 1/4	8 1/2	10 7/16	1 7/16	4 1/4	1 1/2	3 5/8	7 5/16	9 9/16	11	9 1/2	8	5/16	40
AF-15	143-TC, 145-TC, 182-TC, 213-TC, 215-TC	7	7 1/2	9 3/8	11	10	12	2 1/16	5 7/8	1 1/2	4 7/16	7 7/8	11 7/16	13 1/2	11 3/4	8	5/16	56
		8															1/2	
		10															1/2	

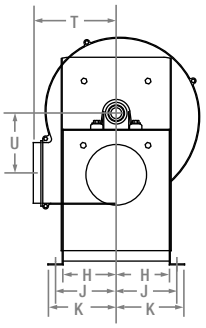
MOTORS			
FRAME SIZE	WT. LBS.	S	T
56-C	25	11 1/2	6 1/4
143-TC	33	11 1/2	7
145-TC	45	11 1/2	7
182-TC	60	14 1/2	9
184-TC	70	14 1/2	9
213-TC	120	16	10 1/2
215-TC	140	16	10 1/2

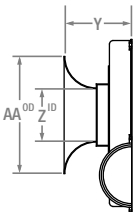
FAN SIZE	INLET DIA.	INLET BELL		
		T	U	V
AF-8	3	4 1/4	2 5/8	5 1/4
AF-8	4	4 3/4	3 5/8	7 1/4
AF-9	4	4 15/16		
AF-9	5	5 7/16	4 5/8	9 1/4
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

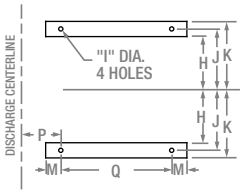
Arrangement 1











CW - BH UNIT SHOWN

NOTES:
① For DB discharge, add 7/8" to "P" and "R" dimensions
② Outlet flange not available on DB discharge
③ Housing and wheel constructed of cast aluminum, base is steel
④ For flange details, see drawing AFA11421F

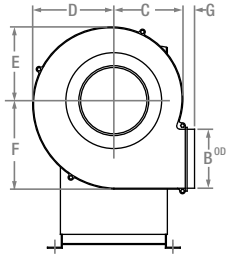
BEARING PEDESTAL IS PREPUNCHED FOR FOLLOWING MOTOR SLIDE BASES	
AF-8 AF-9 AF-10 AF-12	56, 143-T, 145-T, 182-T, 184-T
AF-15	56, 143-T, 145-T, 182-T, 184-T, 213-T, 215-T

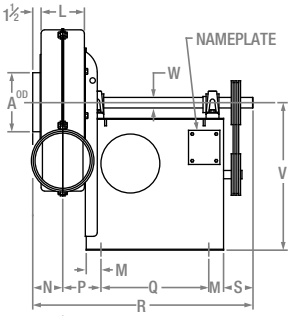
ALL DIMENSIONS SHOWN IN INCHES

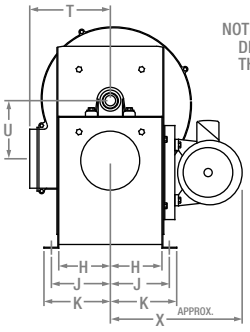
FAN SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	I	J	K	L	M	N	① P	Q	① R	S	T	U	V	STANDARD DUTY W	STANDARD DUTY KEY-WAY	STANDARD DUTY WEIGHTS LBS.	HEAVY DUTY W	HEAVY DUTY KEY-WAY	HEAVY DUTY WEIGHTS LBS.
AF-8	3	4	4 15/16	5 13/16	5 3/32	6 11/16	1 3/8	4	7/16	5	6	3 1/2	1	2 7/8	3	12	21 7/8	3	6 5/16	4	15	3/4	1/4 x 1/8	36	1	1/4 x 1/8	41
	4																										
AF-9	4	4	6	7 1/4	6 17/32	7 3/4	1 3/8	4	7/16	5	6	3 3/4	1	3 1/16	3 1/8	12	22 3/16	3	7 3/16	5 5/8	15	3/4	1/4 x 1/8	39	1	1/4 x 1/8	45
	5																										
AF-10	6	5	6 11/16	8 5/16	7 15/32	9	1 1/8	5	9/16	6	7	3 3/4	1	3 3/8	3 1/8	12	22 1/2	3	7 13/16	6 3/8	15	1	1/4 x 1/8	49	1 3/16	1/4 x 1/8	58
AF-12	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	5	9/16	6	7	4 1/4	1	3 3/8	3 3/8	12	23	3	8 7/8	7 5/16	15	1	1/4 x 1/8	52	1 3/16	1/4 x 1/8	63
	7																										
AF-15	8	8	9 3/8	11	10	12	1 9/16	7	9/16	8	9	5 7/8	2	4 7/16	5 3/16	14 5/8	30 1/4	4	10 15/16	7 7/8	20	1 7/16	3/8 x 3/16	94	1 11/16	3/8 x 3/16	118
	10																										

FAN SIZE	INLET DIA.	INLET BELL Y	INLET BELL Z	INLET BELL AA
AF-8	3	4 1/4	2 5/8	5 1/4
AF-8	4	4 3/4	3 5/8	7 1/4
AF-9	4	4 15/16		
AF-9	5	5 7/16	4 5/8	9 1/4
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

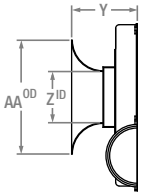
Arrangement 9

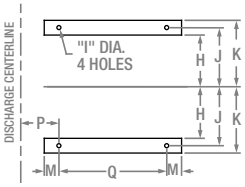






NOTE:
DRIVES REMOVED
THIS VIEW





MOTORS FRAME SIZE	WT. LBS.	AF-8, AF-9 BELT CO	AF-8, AF-9 X	AF-10, AF-12 BELT CO	AF-10, AF-12 X	AF-15 BELT CO	AF-15 X
56	45						
143T	50	11.9	12 5/8	12.8	13 3/8	15.3	15 5/8
145T	58						
182T	94	12.9	14 3/4	13.9	15 3/4	16.4	17 3/4
184T	110						
213T	164	N/A		N/A		17.2	19 5/8
215T	186						

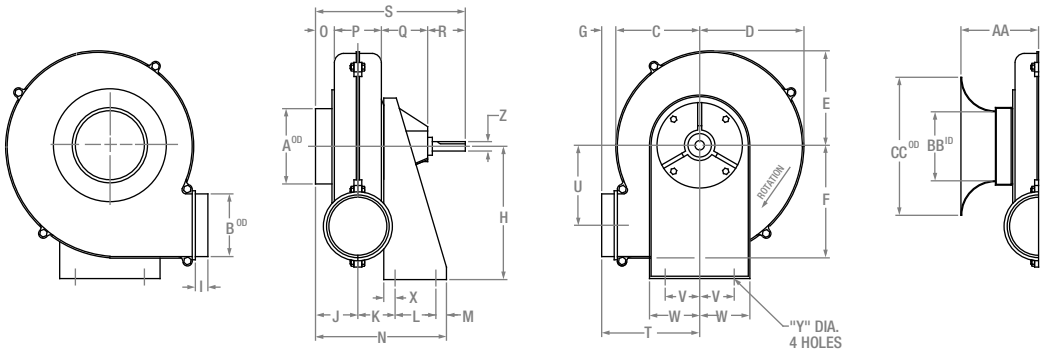
NOTES:
① For DB discharge, add 7/8" to "P" and "R" dimensions
② Outlet flange not available on DB discharge
③ Housing and wheel constructed of cast aluminum, base is steel
④ For flange details, see drawing AFA11421F

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	I	J	K	L	M	N	① P	Q	① R	S	T	U	V	STANDARD DUTY W	STANDARD DUTY KEY-WAY	STANDARD DUTY WEIGHTS LBS.	HEAVY DUTY W	HEAVY DUTY KEY-WAY	HEAVY DUTY WEIGHTS LBS.
AF-8	3	4	4 15/16	5 13/16	5 3/32	6 11/16	1 3/8	4	7/16	5	6	3 1/2	1	2 7/8	3	12	21 7/8	3	6 5/16	4	15	3/4	1/4 x 1/8	36	1	1/4 x 1/8	41
	4																										
AF-9	4	4	6	7 1/4	6 17/32	7 3/4	1 3/8	4	7/16	5	6	3 3/4	1	3 1/16	3 1/8	12	22 3/16	3	7 3/16	5 5/8	15	3/4	1/4 x 1/8	39	1	1/4 x 1/8	45
	5																										
AF-10	6	5	6 11/16	8 5/16	7 15/32	9	1 1/8	5	9/16	6	7	3 3/4	1	3 3/8	3 1/8	12	22 1/2	3	7 13/16	6 3/8	15	1	1/4 x 1/8	49	1 3/16	1/4 x 1/8	58
AF-12	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	5	9/16	6	7	4 1/4	1	3 3/8	3 3/8	12	23	3	8 7/8	7 5/16	15	1	1/4 x 1/8	52	1 3/16	1/4 x 1/8	63
	7																										
AF-15	8	8	9 3/8	11	10	12	1 9/16	7	9/16	8	9	5 7/8	2	4 7/16	5 3/16	14 5/8	30 1/4	4	10 15/16	7 7/8	20	1 7/16	3/8 x 3/16	94	1 11/16	3/8 x 3/16	118
	10																										

FAN SIZE	INLET DIA.	INLET BELL Y	INLET BELL Z	INLET BELL AA
AF-8	3	4 1/4	2 5/8	5 1/4
AF-8	4	4 3/4	3 5/8	7 1/4
AF-9	4	4 15/16		
AF-9	5	5 7/16	4 5/8	9 1/4
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

Arrangement 2



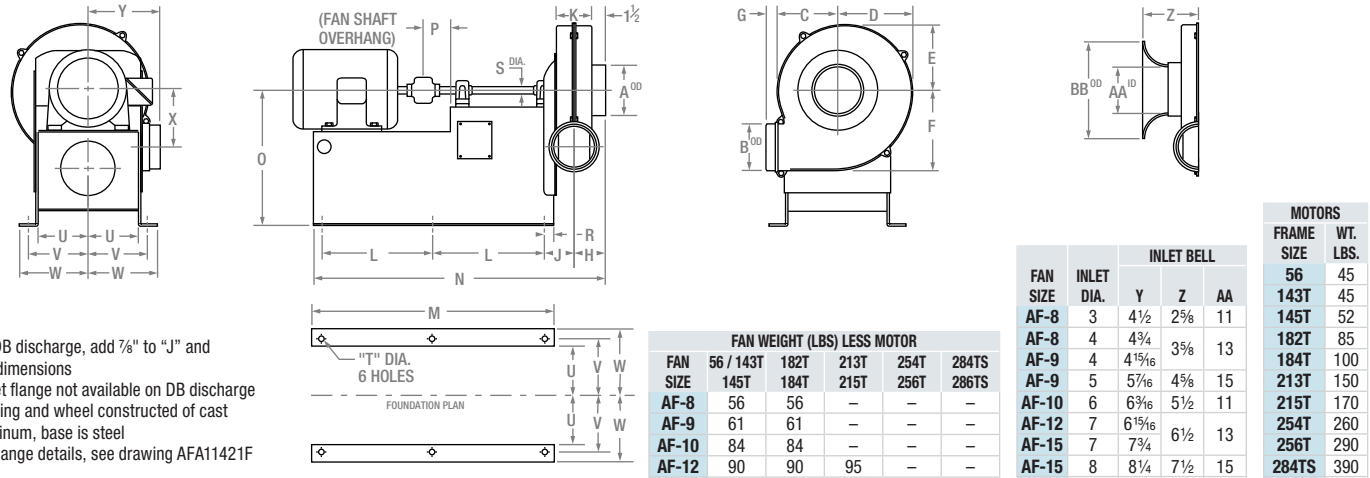
NOTES:
① Outlet flange not available on DB discharge
② For flange details, see drawing AFA11421F
③ Housing, wheel and base constructed of cast aluminum, bearing housing constructed of cast iron

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	SHAFT DIA. Z	KEY-WAY	NET WTS. NO MOTOR LBS.
AF-8	3	4	4 15/16	5 13/16	5 3/32	6 1/16	1 3/8	10	2 7/8	2 7/8	3 1/4	3/4	9 3/4	1 1/8	3 1/2	3 11/16	3	11 15/16	6 5/16	4 9/16	2 7/8	4	1	7/16	3/4	1/4 x 1/8	27
	4																										
AF-9	4	4	6	7 1/4	6 17/32	7 3/4	1 3/16	10	3 1/16	2 31/32	3 1/4	3/4	10 1/32	1 3/16	3 3/4	3 11/16	3	11 5/8	7 3/16	5 5/8	2 7/8	4	1	7/16	3/4	1/4 x 1/8	33
	5																										
AF-10	6	5	6 1/16	8 5/16	7 15/32	9	1 1/8	10	3 3/8	2 31/32	3 1/4	3/4	10 11/32	1 1/2	3 3/4	3 11/16	3	11 15/16	7 13/16	6 3/8	2 7/8	4	1	7/16	3/4	1/4 x 1/8	47
AF-12	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	11 1/2	3 5/8	3 13/16	4 1/2	1 1/4	12 25/32	1 1/2	4 1/4	5 9/16	4	15 5/16	8 7/8	7 5/16	3 1/8	4 1/2	1 1/4	3/4	1	1/4 x 1/8	70
	7																										
AF-15	8	8	9 3/8	11	10	12	1 9/16	15	4 7/16	4 3/8	4 1/2	1 1/4	14 9/16	1 1/2	5 7/8	5 9/16	4	16 15/16	10 15/16	7 7/8	3 3/4	5	1 1/4	3/4	1 7/16	3/8 x 3/16	93
	10																										

FAN SIZE	INLET DIA.	INLET BELL AA	INLET BELL BB	INLET BELL CC
AF-8	3	4 1/4	2 5/8	5 1/4
AF-8	4	4 3/4	3 5/8	7 1/4
AF-9	4	4 15/16		
AF-9	5	5 7/16	4 5/8	9 1/4
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

Arrangement 8



NOTES:
① For DB discharge, add 7/8" to "J" and "N" dimensions
② Outlet flange not available on DB discharge
③ Housing and wheel constructed of cast aluminum, base is steel
④ For flange details, see drawing AFA11421F

FAN SIZE	56 / 143T 145T	182T 184T	213T 215T	254T 256T	284TS 286TS
AF-8	56	56	–	–	–
AF-9	61	61	–	–	–
AF-10	84	84	–	–	–
AF-12	90	90	95	–	–
AF-15	152	152	156	156	168

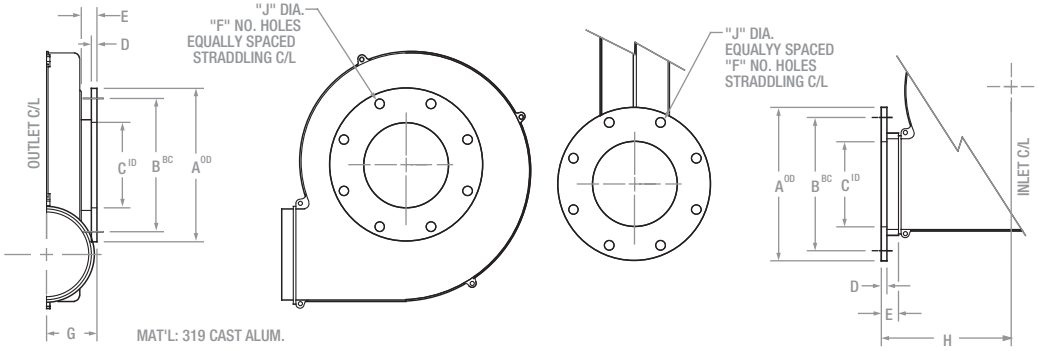
FAN SIZE	INLET DIA.	INLET BELL Y	INLET BELL Z	INLET BELL AA
AF-8	3	4 1/2	2 5/8	11
AF-8	4	4 3/4	3 5/8	13
AF-9	4	4 15/16		
AF-9	5	5 7/16	4 5/8	15
AF-10	6	6 3/16	5 1/2	11
AF-12	7	6 15/16	6 1/2	13
AF-15	7	7 3/4		
AF-15	8	8 1/4	7 1/2	15
AF-15	10	9 1/4	9 1/2	19

MOTORS FRAME SIZE	MOTORS WT. LBS.
56	45
143T	45
145T	52
182T	85
184T	100
213T	150
215T	170
254T	260
256T	290
284TS	390
286TS	440

ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	INLET DIA. A	OUTLET DIA. B	C	D	E	F	G	H	① J	K	56 / 143T / 145T L	M	① N	182T / 184T L	M	① N	213T / 215T L	M	① N	254T / 256T L	M	① N	284TS / 286TS L	M	① N	P	Q	R	STANDARD DUTY S	KEY-WAY	HEAVY DUTY S	KEY-WAY	T	U	V	W	X	Y
AF-8	3	4	4 15/16	5 13/16	5 3/32	6 1/16	1 3/8	2 7/8	3	3 1/2	11 3/16	24 3/8	29 1/4	11 15/16	25 7/8	30 3/4	–	–	–	–	–	–	–	–	–	3	15	1	3/4	3/16 x 3/32	1	1/4 x 1/8	7/16	4 1/2	5 1/2	6 1/2	4 9/16	6 5/16
	4																																					
AF-9	4	4	6	7 1/4	6 17/32	7 3/4	1 3/16	3 1/16	3 1/8	3 3/4	11 3/16	24 3/8	29 9/16	11 15/16	25 7/8	31 1/16	–	–	–	–	–	–	–	–	–	3	15	1	3/4	3/16 x 3/32	1	1/4 x 1/8	7/16	4 1/2	5 1/2	6 1/2	5 5/8	7 3/16
	5																																					
AF-10	6	5	6 1/16	8 5/16	7 15/32	9	1 1/8	3 3/8	3 1/8	3 3/4	11 1/2	25	30 1/2	12 1/4	26 1/2	32	–	–	–	–	–	–	–	–	–	3	15	1	1	1/4 x 1/8	13/16	1/4 x 1/8	9/16	4 1/2	5 1/2	6 1/2	6 3/8	7 13/16
AF-12	7	6	7 3/4	9 1/4	8 1/2	10 7/16	1 1/8	3 5/8	3 3/8	4 1/4	11 1/2	25	31	12 1/4	26 1/2	32 1/2	15 5/16	32 5/8	38 5/8	–	–	–	–	–	–	3	15	1	1	1/4 x 1/8	13/16	1/4 x 1/8	9/16	5 1/2	6 1/2	7 1/2	7 5/16	8 7/8
	7																																					
AF-15	8	8	9 3/8	11	10	12	1 9/16	4 7/16	5 3/16	5 7/8	12 3/8	28 3/8	36 3/8	13 3/8	30 3/4	38 3/8	14 13/16	33 5/8	41 1/4	17 7/8	39 3/4	47 3/8	18 3/8	40 3/4	48 3/8	4	20	2	1 7/16	3/8 x 3/16	1 11/16	3/8 x 3/16	9/16	7	8	9	7 7/8	10 15/16
	10																																					

Flanges

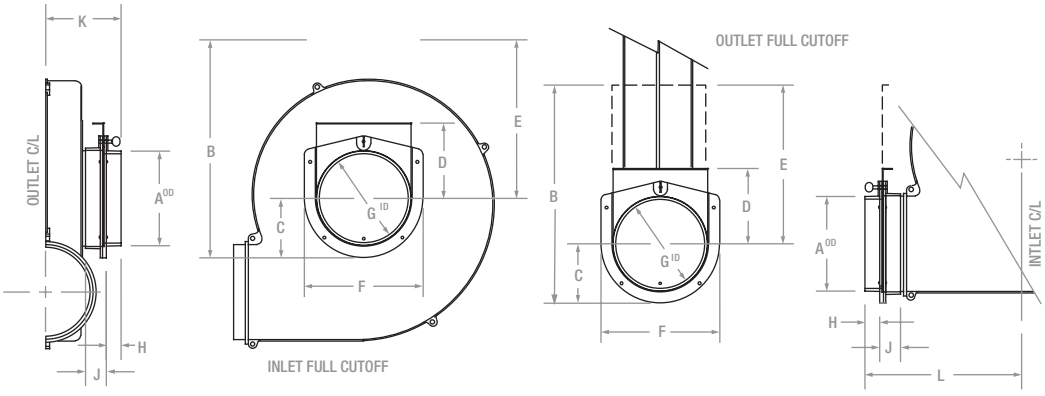


ALL DIMENSIONS SHOWN IN INCHES

FAN SIZE	INLET	OUTLET	A	B	C	D	E	F	G	H	MATCHES 125 / 150 LB. ANSI FLANGE BOLT PATTERN		MATCHES 125 / 150 LB. ANSI FLANGE BOLT PATTERN EXCEPT HOLE DIA. = 7/16 (AFC STANDARD)	
											J	PART NUMBER	J	PART NUMBER
AF-8	3	X	7½	6	2 9/16	¼	1¼	4	3⅛	–	¾	24149F	7/16	24149F-7/16
	4	4	9	7½	3 9/16	¼	1¼	8	3⅛	6 9/16	¾	24101F	7/16	24101F-7/16
AF-9	4	4	9	7½	3 9/16	¼	1¼	8	3 5/16	7 7/16	¾	24101F	7/16	24101F-7/16
	5	X	10	8½	4 9/16	¼	1¼	8	3 5/16	–	¾	24103F	7/16	24103F-7/16
AF-10	X	5	10	8½	4 9/16	¼	1¼	8	–	8⅛	¾	24103F	7/16	24103F-7/16
	6	X	11	9½	5½	5/16	1¼	8	3⅝	–	⅞	24106F	7/16	24106F-7/16
AF-12	X	6	11	9½	5½	5/16	1¼	8	–	9 3/16	⅞	24106F	7/16	24106F-7/16
	7*	X	11	9½	6¼	5/16	1¼	8	3 5/16	–	⅞	24129F	7/16	24129F-7/16
AF-15	7*	X	11	9½	6¼	5/16	1¼	8	4¾	–	⅞	24129F	7/16	24129F-7/16
	8	8	13½	11¾	7½	½	1¼	8	4 5/16	11 7/16	⅞	24044F	7/16	24044F-7/16
	10	X	16	14¼	9 1/16	½	1½	12	4 5/16	–	1	24130F	7/16	24130F-7/16

*O.D. and B.C. match 6" ANSI flange

Full Cut-Off Dampers



ALL DIMENSIONS SHOWN IN INCHES

INLET	OUTLET	SIZE	PART NO.	A	B	C	D	E	F	G	H	J	K	L
AF-8	–	3"	63649	2 15/16	7⅜	2 3/16	3	5 3/16	4	2½	1¼	1 7/16	5½	8⅛
AF-8	AF-8	4"	63650	3 15/16	9⅞	2¾	3¾	7⅛	5	3½	1¼	1 7/16	5½	8⅛
AF-9	AF-9												5⅝	8 15/16
AF-9	AF-10	5"	63651	4 15/16	12⅝	3⅝	4⅞	9	6¾	4½	1¼	1 7/16	5⅝	9 9/16
AF-10	AF-12	6"	63652	5 15/16	13⅝	3¾	4¾	9⅞	7½	5½	1¼	1 7/16	5⅝	10⅝
AF-12	–	7"	63653	6 15/16	15⅝	4¼	5¼	11⅝	8½	6½	1¼	1 7/16	5⅞	10⅝
AF-15													6 11/16	12 11/16
AF-15	AF-15	8"	63654	7 15/16	18 5/16	5	6 5/16	13 5/16	10	7½	1¼	1 7/16	6 11/16	12 11/16
AF-15	–	10"	63655	9 15/16	22 5/16	6	7 5/16	16 5/16	12	9½	1¾	1 15/16	6 11/16	12 11/16

Howden Industrial Fan Group
American Fan / Joy Fan / Garden City Fan

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Fairfield, Ohio 45014-2099

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Fax: 1-513-870-6249
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AUTOMATIC STANDBY GASEOUS GENERATOR

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More protection.

Thousands of homeowners and business owners trust their Protector Series automatic backup generator to preserve their entire home and/or business during a power outage. A Protector Series generator senses a power outage, turns on automatically, and delivers power to your entire home, including all large appliances and sensitize electronics with a quieter output of sound with no change in level or tone. This allows you to continue living life comfortability and keep business operating without interruption.

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Quiet-Test™ Self-Test Mode

Runs at a lower, quieter RPM for a five minute test, to ensure the system is running properly while consuming less fuel. Quiet-Test Self-Test Mode can be programmed to run weekly, bi-weekly, or monthly.

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Fuel type selection using only the controller simplifies generator installation.

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Generac generators and engines are engineered and built in the USA*

**Assembled in the USA using domestic and foreign parts.*

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Designed to start and power large electrical loads for homes and businesses.

Generac Designed & Built Engine

Purpose-built exclusively for generator use. Utilizes the first in class, dual-valve ultra-low pressure fuel delivery system and intelligent proprietary engine controls that manage over 100 performance functions to ensure peak efficiency in all temperature ranges and elevations.

Cellular Connectivity

Reliable, constant connection enables the Generator Owner to monitor function through Mobile Link and the supporting Dealer through Fleet.

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Aluminum enclosure, zinc plated fasteners, and electro-galvanized frame rails with powder coat provide years of corrosion protection in extreme environments.

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For more features and benefits, visit **www.Generac.com**.

Monitor the status of your generator from anywhere in the world with Mobile Link™ Connectivity – from any device at any time. With standard cellular connectivity on all 32 and 40 kW Protector Series models, Mobile Link seamlessly connects to your homes' system, allowing you to easily receive information, such as current operating status and maintenance alerts, using your smartphone, tablet, or PC. All of these features, backed by a standard 5 Year/2,000 hour Limited Warranty, make a Protector Series generator the right backup power solution for your home or business.

Ideal Industries/Applications:

- Convenience Stores & Gas Stations
- Small Outpatient & Dental Clinics
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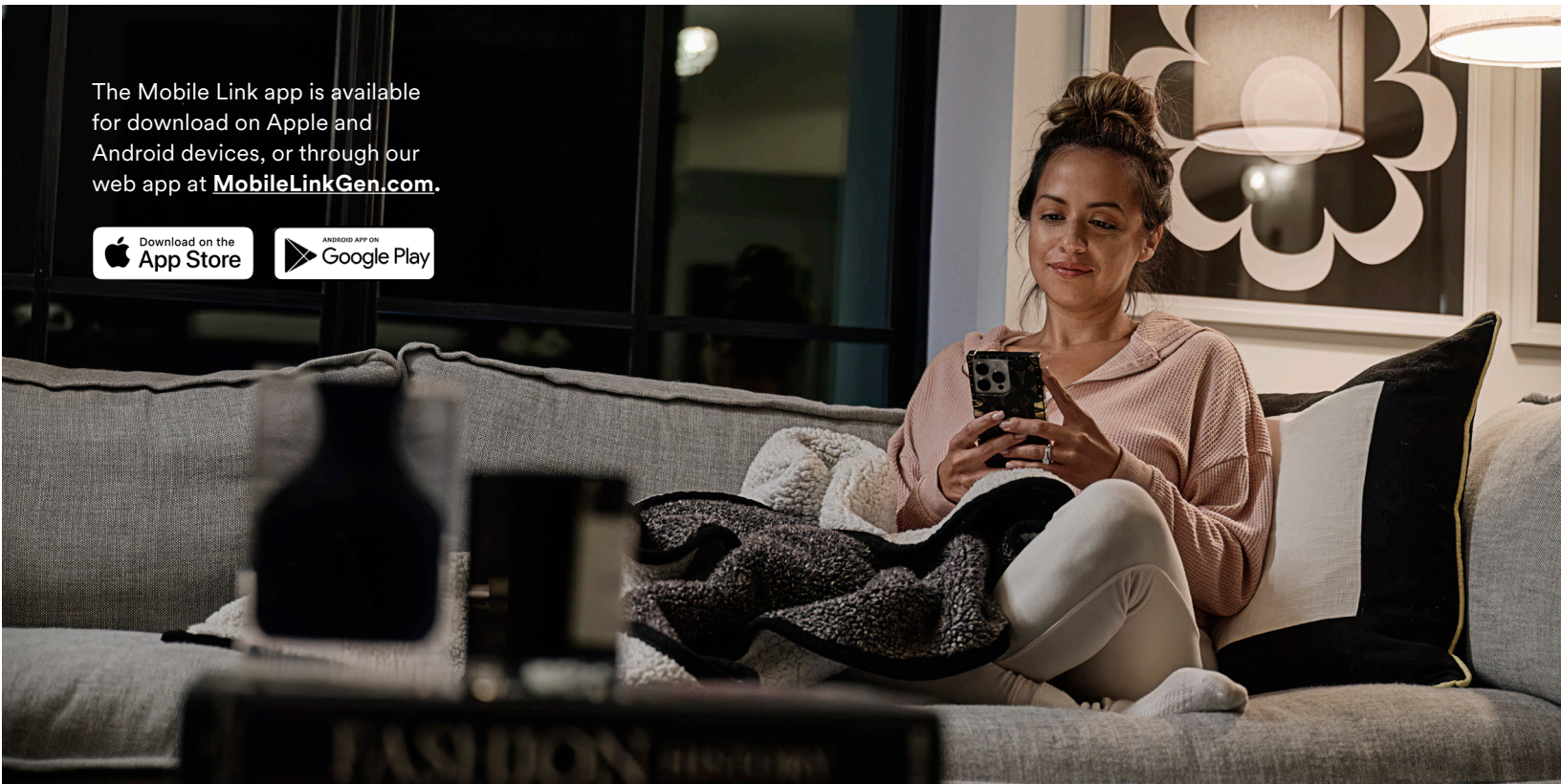
- Banks & Financial Institutions
- Manufacturing Industry & Distribution
- Restaurants & Bars
- Offices with Small Server Rooms
- Larger Homes or Homes with Guest Houses
- Green Houses



32-40 kW Protector® Series | Automatic Standby Gaseous Generator

Specifications (LP/NG)	32 kW	40 kW
Model Number	XG03245	XG04045
Output Amperage LP/NG 120/240 V 1-Phase, 1.0 PF	133/133	167/167
Output Amperage LP/NG 208/120 V 3-Phase, 0.8 PF	111/111	139/139
Output Amperage LP/NG 240/120 V 3-Phase, 0.8 PF	96/96	120/120
Output Amperage LP/NG 480/277 V 3-Phase, 0.8 PF	48/48	60/60
Engine/Alternator RPM	1800	
Engine	4.5 L NA, Inline 4-Cylinder	4.5 L NA, Inline 4-Cylinder
Fuel Consumption @ Full Load - LP US gph	4.9	5.7
Fuel Consumption @ Full Load - NG CFH	406	494
60 Hz Emergency Standby Power Generator	Yes	
Quiet-Test Mode	Yes	
db(A) at Exercise	58	
db(A) Normal Operating Load	64	64
Dimensions (L" x W" x H")	83.4 x 34 x 45.2	83.4 x 34 x 45.2
Generator Weight (lbs.)	1780	1780
Mobile Link and Fleet Standard via Cellular Connectivity	Yes	
SCAQMD Model	No	Yes

Nationwide Service Network

Generac's commitment to service includes scheduled maintenance programs, warranty assistance and emergency service to ensure that Generac customers are never left powerless. The largest nationwide service network has factory-trained technicians on staff and maintains large inventories of Generac parts, components and accessories. Find a service provider near you at Generac.com.

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201909403 REV 11/23

ATTACHMENT 3

SoundPLAN – Vehicle Traffic Noise

Station km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
San Pasqual Valley Road		Traffic direction:	In entry direction									
0+000	22797	Total	-	1463	760	329	-	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Automobiles	-	1330	691	299	80	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Medium trucks	-	79	41	18	80	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Heavy trucks	-	25	13	6	80	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Buses	-	15	8	3	80	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Motorcycles	-	15	8	3	80	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+000	22797	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	3.0 / 4.7
0+433	-	-	-	-	-	-						
Idaho Avenue		Traffic direction:	In entry direction									
0+000	8904	Total	-	571	297	129	-	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Automobiles	-	519	270	117	64	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Medium trucks	-	31	16	7	64	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Heavy trucks	-	10	5	2	64	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Buses	-	6	3	1	64	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Motorcycles	-	6	3	1	64	none	-	-	Average (of DGAC and PCC)	-4.22222
0+000	8904	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-4.22222
0+527	-	-	-	-	-	-						

10597 Pasqual Heights
SoundPLAN Data - Traffic

	Coordinates				Noise Level without Barriers				Noise Level with Barriers				Difference			
No.	X	Y	Floor	Height	Day	Evening	Night	Lden	Day	Evening	Night	Lden	Day	Evening	Night	Lden
	(meters)			(meters)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB	dB(A)	dB(A)	dB(A)
1	494355.29	3664004.16	1.Fl	226.17	62.7	59.9	56.3	64.7	56.3	53.5	49.8	58.2	-6.5	-6.5	-6.5	-6.5
1	494355.29	3664004.16	2.Fl	228.97	63.7	60.8	57.2	65.6	63.6	60.7	57.1	65.5	-0.1	-0.1	-0.1	-0.1
2	494367.14	3664015.36	1.Fl	225.71	62.8	60.0	56.3	64.7	56.2	53.4	49.7	58.1	-6.6	-6.6	-6.6	-6.6
2	494367.14	3664015.36	2.Fl	228.51	63.7	60.8	57.2	65.6	63.7	60.8	57.2	65.6	0.0	0.0	0.0	0.0
3	494379.86	3664027.31	1.Fl	225.16	63.0	60.2	56.6	64.9	56.1	53.3	49.6	58.0	-6.9	-6.9	-6.9	-6.9
3	494379.86	3664027.31	2.Fl	227.96	63.7	60.9	57.3	65.6	63.7	60.8	57.2	65.6	0.0	0.0	0.0	0.0
4	494407.68	3664070.24	1.Fl	223.97	60.2	57.3	53.7	62.1	54.1	51.2	47.6	56.0	-6.1	-6.1	-6.1	-6.1
4	494407.68	3664070.24	2.Fl	226.77	60.8	57.9	54.3	62.7	61.2	58.3	54.7	63.1	0.4	0.4	0.4	0.4
5	494383.12	3664075.79	1.Fl	226.08	57.1	54.3	50.7	59.0	54.7	51.8	48.2	56.6	-2.5	-2.5	-2.5	-2.5
5	494383.12	3664075.79	2.Fl	228.88	58.3	55.4	51.8	60.2	57.3	54.4	50.8	59.2	-1.0	-1.0	-1.0	-1.0
6	494393.11	3664083.61	1.Fl	225.99	57.7	54.8	51.2	59.6	54.8	51.9	48.3	56.7	-2.9	-2.9	-2.9	-2.9
6	494393.11	3664083.61	2.Fl	228.79	58.7	55.8	52.2	60.6	58.1	55.3	51.6	60.0	-0.6	-0.6	-0.6	-0.6
7	494406.16	3664093.93	1.Fl	225.71	58.2	55.4	51.8	60.1	51.9	49.1	45.5	53.9	-6.3	-6.3	-6.3	-6.3
7	494406.16	3664093.93	2.Fl	228.51	59.2	56.3	52.7	61.1	58.7	55.9	52.3	60.6	-0.4	-0.4	-0.4	-0.4
8	494419.09	3664103.61	1.Fl	225.41	58.9	56.0	52.4	60.8	52.8	50.0	46.3	54.7	-6.1	-6.1	-6.1	-6.1
8	494419.09	3664103.61	2.Fl	228.21	59.9	57.0	53.4	61.8	59.4	56.5	52.9	61.3	-0.5	-0.5	-0.5	-0.5
9	494431.91	3664113.82	1.Fl	225.10	59.6	56.7	53.1	61.5	53.3	50.5	46.8	55.2	-6.2	-6.2	-6.2	-6.2
9	494431.91	3664113.82	2.Fl	227.90	60.8	58.0	54.4	62.7	60.2	57.4	53.8	62.1	-0.6	-0.6	-0.6	-0.6
10	494447.46	3664125.34	1.Fl	224.86	60.8	58.0	54.3	62.7	54.5	51.6	48.0	56.4	-6.3	-6.3	-6.4	-6.3
10	494447.46	3664125.34	2.Fl	227.66	62.9	60.1	56.5	64.8	61.7	58.8	55.2	63.6	-1.3	-1.3	-1.3	-1.3
11	494459.74	3664135.23	1.Fl	224.98	63.4	60.6	57.0	65.3	56.3	53.5	49.8	58.2	-7.1	-7.1	-7.1	-7.1
11	494459.74	3664135.23	2.Fl	227.78	65.8	63.0	59.3	67.7	64.1	61.3	57.6	66.0	-1.7	-1.7	-1.7	-1.7
12	494454.19	3664155.34	1.Fl	224.98	65.3	62.5	58.8	67.2	56.3	53.5	49.8	58.2	-9.0	-9.0	-9.0	-9.0
12	494454.19	3664155.34	2.Fl	227.78	67.2	64.3	60.7	69.1	66.9	64.1	60.5	68.8	-0.2	-0.2	-0.2	-0.2
13	494432.67	3664189.03	1.Fl	225.19	66.8	64.0	60.3	68.7	58.3	55.5	51.8	60.2	-8.5	-8.5	-8.5	-8.5
13	494432.67	3664189.03	2.Fl	227.99	67.8	65.0	61.4	69.7	67.8	64.9	61.3	69.7	-0.1	-0.1	-0.1	-0.1
14	494417.24	3664199.03	1.Fl	225.10	63.3	60.5	56.9	65.2	55.1	52.3	48.6	57.0	-8.2	-8.2	-8.2	-8.2
14	494417.24	3664199.03	2.Fl	227.90	66.0	63.2	59.6	67.9	61.2	58.4	54.8	63.1	-4.8	-4.8	-4.8	-4.8
15	494410.18	3664200.99	1.Fl	226.11	62.6	59.8	56.2	64.5	55.4	52.6	48.9	57.3	-7.2	-7.2	-7.2	-7.2
15	494410.18	3664200.99	2.Fl	228.91	65.3	62.5	58.8	67.2	60.3	57.4	53.8	62.2	-5.0	-5.0	-5.0	-5.0
16	494418.11	3664208.21	1.Fl	226.35	67.0	64.1	60.5	68.9	57.9	55.1	51.5	59.8	-9.0	-9.0	-9.0	-9.0
16	494418.11	3664208.21	2.Fl	229.15	68.3	65.4	61.8	70.2	68.2	65.3	61.7	70.1	-0.1	-0.1	-0.1	-0.1
17	494410.18	3664221.80	1.Fl	226.35	68.0	65.2	61.5	69.9	57.7	54.8	51.2	59.6	-10.3	-10.3	-10.3	-10.3
17	494410.18	3664221.80	2.Fl	229.15	69.3	66.5	62.8	71.2	69.3	66.4	62.8	71.2	-0.1	-0.1	-0.1	-0.1
18	494387.68	3664253.10	1.Fl	226.41	68.4	65.6	61.9	70.3	57.6	54.8	51.1	59.5	-10.8	-10.8	-10.8	-10.8
18	494387.68	3664253.10	2.Fl	229.21	70.2	67.4	63.7	72.1	70.2	67.3	63.7	72.1	-0.1	-0.1	-0.1	-0.1
19	494376.16	3664262.55	1.Fl	226.41	66.5	63.7	60.1	68.4	58.5	55.6	52.0	60.4	-8.1	-8.1	-8.1	-8.1
19	494376.16	3664262.55	2.Fl	229.21	69.1	66.3	62.6	71.0	68.6	65.7	62.1	70.5	-0.5	-0.5	-0.5	-0.5
20	494369.64	3664257.34	1.Fl	226.41	63.5	60.6	57.0	65.4	57.8	55.0	51.3	59.7	-5.7	-5.7	-5.7	-5.7
20	494369.64	3664257.34	2.Fl	229.21	66.5	63.6	60.0	68.4	64.4	61.5	57.9	66.3	-2.1	-2.1	-2.1	-2.1

Receivers

10597 Pasqual Heights
SoundPLAN Data - Traffic

Source name									Noise Level without Barriers				Noise Level with Barriers			
									Day	Evening	Night	Lden	Day	Evening	Night	Lden
									dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	1.Fl	62.7	59.9	56.3	64.7	56.3	53.5	49.8	58.2							
Idaho Avenue										62.6	59.8	56.2	64.6	56.1	53.3	49.6	58.0
San Pasqual Valley Road										46.7	43.9	40.3	48.6	42.9	40.1	36.4	44.8
1	2.Fl	63.7	60.8	57.2	65.6	63.6	60.7	57.1	65.5							
Idaho Avenue										63.5	60.6	57.0	65.4	63.4	60.6	57.0	65.4
San Pasqual Valley Road										49.3	46.5	42.8	51.2	48.3	45.4	41.8	50.2
2	1.Fl	62.8	60.0	56.3	64.7	56.2	53.4	49.7	58.1							
Idaho Avenue										62.6	59.8	56.2	64.6	55.9	53.1	49.5	57.9
San Pasqual Valley Road										48.1	45.3	41.7	50.0	43.8	41.0	37.4	45.7
2	2.Fl	63.7	60.8	57.2	65.6	63.7	60.8	57.2	65.6							
Idaho Avenue										63.5	60.6	57.0	65.4	63.5	60.6	57.0	65.4
San Pasqual Valley Road										50.3	47.5	43.9	52.2	49.8	47.0	43.3	51.7
3	1.Fl	63.0	60.2	56.6	64.9	56.1	53.3	49.6	58.0							
Idaho Avenue										62.8	60.0	56.4	64.7	55.9	53.0	49.4	57.8
San Pasqual Valley Road										49.2	46.4	42.8	51.1	43.4	40.5	36.9	45.3
3	2.Fl	63.7	60.9	57.3	65.6	63.7	60.8	57.2	65.6							
Idaho Avenue										63.5	60.6	57.0	65.4	63.4	60.6	57.0	65.4
San Pasqual Valley Road										51.3	48.4	44.8	53.2	51.0	48.1	44.5	52.9
4	1.Fl	60.2	57.3	53.7	62.1	54.1	51.2	47.6	56.0							
Idaho Avenue										59.5	56.6	53.0	61.4	53.3	50.5	46.9	55.3
San Pasqual Valley Road										51.8	48.9	45.3	53.7	45.9	43.1	39.5	47.8
4	2.Fl	60.8	57.9	54.3	62.7	61.2	58.3	54.7	63.1							
Idaho Avenue										59.7	56.9	53.3	61.6	60.1	57.2	53.6	62.0
San Pasqual Valley Road										54.0	51.1	47.5	55.9	54.7	51.9	48.2	56.6
5	1.Fl	57.1	54.3	50.7	59.0	54.7	51.8	48.2	56.6							
Idaho Avenue										56.0	53.1	49.5	57.9	53.6	50.8	47.2	55.5
San Pasqual Valley Road										50.8	47.9	44.3	52.7	48.0	45.1	41.5	49.9
5	2.Fl	58.3	55.4	51.8	60.2	57.3	54.4	50.8	59.2							
Idaho Avenue										56.7	53.8	50.2	58.6	55.7	52.9	49.3	57.6
San Pasqual Valley Road										53.2	50.3	46.7	55.1	52.1	49.3	45.6	54.0
6	1.Fl	57.7	54.8	51.2	59.6	54.8	51.9	48.3	56.7							
Idaho Avenue										56.3	53.5	49.9	58.3	53.3	50.4	46.8	55.2
San Pasqual Valley Road										51.8	49.0	45.3	53.7	49.5	46.7	43.0	51.4
6	2.Fl	58.7	55.8	52.2	60.6	58.1	55.3	51.6	60.0							
Idaho Avenue										56.8	54.0	50.4	58.7	56.4	53.6	50.0	58.4
San Pasqual Valley Road										54.0	51.2	47.5	55.9	53.1	50.2	46.6	55.0
7	1.Fl	58.2	55.4	51.8	60.1	51.9	49.1	45.5	53.9							
Idaho Avenue										56.6	53.7	50.1	58.5	49.3	46.4	42.8	51.2
San Pasqual Valley Road										53.2	50.3	46.7	55.1	48.6	45.7	42.1	50.5
7	2.Fl	59.2	56.3	52.7	61.1	58.7	55.9	52.3	60.6							
Idaho Avenue										56.9	54.1	50.4	58.8	56.8	54.0	50.3	58.7
San Pasqual Valley Road										55.3	52.4	48.8	57.2	54.3	51.4	47.8	56.2

Contributions

8	1.Fl	58.9	56.0	52.4	60.8	52.8	50.0	46.3	54.7
Idaho Avenue									
San Pasqual Valley Road									
8	2.Fl	59.9	57.0	53.4	61.8	59.4	56.5	52.9	61.3
Idaho Avenue									
San Pasqual Valley Road									
9	1.Fl	59.6	56.7	53.1	61.5	53.3	50.5	46.8	55.2
Idaho Avenue									
San Pasqual Valley Road									
9	2.Fl	60.8	58.0	54.4	62.7	60.2	57.4	53.8	62.1
Idaho Avenue									
San Pasqual Valley Road									
10	1.Fl	60.8	58.0	54.3	62.7	54.5	51.6	48.0	56.4
Idaho Avenue									
San Pasqual Valley Road									
10	2.Fl	62.9	60.1	56.5	64.8	61.7	58.8	55.2	63.6
Idaho Avenue									
San Pasqual Valley Road									
11	1.Fl	63.4	60.6	57.0	65.3	56.3	53.5	49.8	58.2
Idaho Avenue									
San Pasqual Valley Road									
11	2.Fl	65.8	63.0	59.3	67.7	64.1	61.3	57.6	66.0
Idaho Avenue									
San Pasqual Valley Road									
12	1.Fl	65.3	62.5	58.8	67.2	56.3	53.5	49.8	58.2
Idaho Avenue									
San Pasqual Valley Road									
12	2.Fl	67.2	64.3	60.7	69.1	66.9	64.1	60.5	68.8
Idaho Avenue									
San Pasqual Valley Road									
13	1.Fl	66.8	64.0	60.3	68.7	58.3	55.5	51.8	60.2
Idaho Avenue									
San Pasqual Valley Road									
13	2.Fl	67.8	65.0	61.4	69.7	67.8	64.9	61.3	69.7
Idaho Avenue									
San Pasqual Valley Road									
14	1.Fl	63.3	60.5	56.9	65.2	55.1	52.3	48.6	57.0
Idaho Avenue									
San Pasqual Valley Road									
14	2.Fl	66.0	63.2	59.6	67.9	61.2	58.4	54.8	63.1
Idaho Avenue									
San Pasqual Valley Road									
15	1.Fl	62.6	59.8	56.2	64.5	55.4	52.6	48.9	57.3
Idaho Avenue									
San Pasqual Valley Road									
15	2.Fl	65.3	62.5	58.8	67.2	60.3	57.4	53.8	62.2
Idaho Avenue									
San Pasqual Valley Road									

56.9	54.1	50.5	58.8	49.7	46.9	43.3	51.6
54.5	51.7	48.0	56.4	49.9	47.1	43.4	51.8
57.0	54.2	50.6	58.9	57.1	54.2	50.6	59.0
56.7	53.8	50.2	58.6	55.5	52.7	49.0	57.4
57.0	54.2	50.6	58.9	49.6	46.8	43.2	51.5
56.0	53.1	49.5	57.9	50.9	48.0	44.4	52.8
57.3	54.4	50.8	59.2	57.4	54.5	50.9	59.3
58.3	55.5	51.8	60.2	57.1	54.2	50.6	59.0
57.2	54.4	50.7	59.1	49.9	47.1	43.5	51.9
58.3	55.5	51.8	60.2	52.6	49.7	46.1	54.5
57.7	54.9	51.2	59.6	57.8	54.9	51.3	59.7
61.4	58.6	54.9	63.3	59.4	56.6	52.9	61.3
57.2	54.3	50.7	59.1	50.4	47.6	43.9	52.3
62.3	59.4	55.8	64.2	55.0	52.2	48.5	56.9
58.1	55.2	51.6	60.0	58.1	55.2	51.6	60.0
65.0	62.2	58.5	66.9	62.9	60.0	56.4	64.8
52.3	49.5	45.8	54.2	46.7	43.9	40.3	48.7
65.1	62.3	58.6	67.0	55.8	53.0	49.3	57.7
55.2	52.4	48.7	57.1	52.8	50.0	46.4	54.8
66.9	64.0	60.4	68.8	66.8	63.9	60.3	68.7
47.5	44.7	41.0	49.4	44.0	41.2	37.5	45.9
66.7	63.9	60.3	68.6	58.2	55.3	51.7	60.1
50.0	47.1	43.5	51.9	48.5	45.7	42.1	50.5
67.8	64.9	61.3	69.7	67.7	64.9	61.2	69.6
44.7	41.9	38.2	46.6	42.6	39.8	36.2	44.6
63.3	60.4	56.8	65.2	54.8	52.0	48.4	56.7
47.9	45.1	41.4	49.8	45.8	43.0	39.3	47.7
66.0	63.1	59.5	67.9	61.1	58.3	54.6	63.0
44.9	42.0	38.4	46.8	42.4	39.5	35.9	44.3
62.6	59.7	56.1	64.5	55.2	52.3	48.7	57.1
48.0	45.1	41.5	49.9	46.0	43.1	39.5	47.9
65.2	62.4	58.7	67.1	60.1	57.3	53.6	62.0

16	1.Fl	67.0	64.1	60.5	68.9	57.9	55.1	51.5	59.8
Idaho Avenue									45.9 43.1 39.5 47.8 43.5 40.7 37.1 45.4
San Pasqual Valley Road									66.9 64.1 60.5 68.8 57.8 54.9 51.3 59.7
16	2.Fl	68.3	65.4	61.8	70.2	68.2	65.3	61.7	70.1
Idaho Avenue									48.5 45.6 42.0 50.4 47.3 44.5 40.9 49.2
San Pasqual Valley Road									68.2 65.4 61.7 70.1 68.1 65.3 61.7 70.0
17	1.Fl	68.0	65.2	61.5	69.9	57.7	54.8	51.2	59.6
Idaho Avenue									44.4 41.5 37.9 46.3 42.3 39.5 35.9 44.3
San Pasqual Valley Road									68.0 65.2 61.5 69.9 57.6 54.7 51.1 59.5
17	2.Fl	69.3	66.5	62.8	71.2	69.3	66.4	62.8	71.2
Idaho Avenue									47.0 44.2 40.5 48.9 46.2 43.4 39.8 48.2
San Pasqual Valley Road									69.3 66.5 62.8 71.2 69.2 66.4 62.8 71.1
18	1.Fl	68.4	65.6	61.9	70.3	57.6	54.8	51.1	59.5
Idaho Avenue									40.5 37.7 34.1 42.5 39.1 36.3 32.6 41.0
San Pasqual Valley Road									68.4 65.6 61.9 70.3 57.6 54.7 51.1 59.5
18	2.Fl	70.2	67.4	63.7	72.1	70.2	67.3	63.7	72.1
Idaho Avenue									44.0 41.1 37.5 45.9 43.0 40.2 36.6 44.9
San Pasqual Valley Road									70.2 67.4 63.7 72.1 70.1 67.3 63.7 72.0
19	1.Fl	66.5	63.7	60.1	68.4	58.5	55.6	52.0	60.4
Idaho Avenue									39.1 36.3 32.7 41.0 38.9 36.0 32.4 40.8
San Pasqual Valley Road									66.5 63.7 60.1 68.4 58.4 55.6 51.9 60.3
19	2.Fl	69.1	66.3	62.6	71.0	68.6	65.7	62.1	70.5
Idaho Avenue									42.4 39.5 35.9 44.3 40.6 37.7 34.1 42.5
San Pasqual Valley Road									69.1 66.2 62.6 71.0 68.6 65.7 62.1 70.5
20	1.Fl	63.5	60.6	57.0	65.4	57.8	55.0	51.3	59.7
Idaho Avenue									37.6 34.7 31.1 39.5 39.0 36.1 32.5 40.9
San Pasqual Valley Road									63.5 60.6 57.0 65.4 57.8 54.9 51.3 59.7
20	2.Fl	66.5	63.6	60.0	68.4	64.4	61.5	57.9	66.3
Idaho Avenue									42.0 39.2 35.6 44.0 39.8 37.0 33.3 41.7
San Pasqual Valley Road									66.5 63.6 60.0 68.4 64.3 61.5 57.9 66.2

ATTACHMENT 4

Off-Site Traffic Noise Calculations

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Pasqual Heights
Project Number : 10597
Modeled Condition : Existing, Existing + Project, Opening Year, Opening Year + Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : CNEL

Segment		Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Existing	8,000	40	50	92.90	5.40	1.70	77.00	10.00	13.00	
2	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Existing + Project	8,238	40	50	92.90	5.40	1.70	77.00	10.00	13.00	
3	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Opening Year	8,151	40	50	92.90	5.40	1.70	77.00	10.00	13.00	
4	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Opening Year + Project	8,389	40	50	92.90	5.40	1.70	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Pasqual Heights
Project Number : 10597
Modeled Condition : Existing, Existing + Project, Opening Year, Opening Year + Project
Assessment Metric: Hard

Segment		Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
		Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Existing	65.0	61.5	61.3	67.7	9	29	93	294	931	2,944
2	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Existing + Project	65.1	61.7	61.5	67.9	10	31	97	308	975	3,083
3	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Opening Year	65.1	61.6	61.4	67.8	10	30	95	301	953	3,013
4	Idaho Avenue - Project Driveway to San Pasqual Valley Road - Opening Year + Project	65.2	61.7	61.5	67.9	10	31	97	308	975	3,083

ATTACHMENT 5

SoundPLAN – Sewer Lift Station Noise

10597 Pasqual Heights
SoundPLAN Data - Sewer Lift Station

Source name	Reference	Level		Frequency spectrum [dB(A)]								Corrections		
				63	125	250	500	1	2	4	8	Cwall	CI	CT
			dB(A)	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB(A)	dB(A)	dB(A)
Blower Fan without Enclosure	Lw/unit	Blower Fan Only	90.8	52.8	63.9	82.4	87.8	83	82.2	77	70.9	-	-	-
Blower Fan without Enclosure	Lw/unit	Generator Only	-	-	-	-	-	-	-	-	-	-	-	-
Blower Fan without Enclosure	Lw/unit	Blower Fan and Generator	90.8	52.8	63.9	82.4	87.8	83	82.2	77	70.9	-	-	-
Blower Fan with Enclosure	Lw/unit	Blower Fan Only	85.8	47.8	58.9	77.4	82.8	78	77.2	72	65.9	-	-	-
Blower Fan with Enclosure	Lw/unit	Generator Only	-	-	-	-	-	-	-	-	-	-	-	-
Blower Fan with Enclosure	Lw/unit	Blower Fan and Generator	85.8	47.8	58.9	77.4	82.8	78	77.2	72	65.9	-	-	-
Generator	Lw/unit	Blower Fan Only	-	-	-	-	-	-	-	-	-	-	-	-
Generator	Lw/unit	Generator Only	85.9	52.7	62.8	70.3	75.7	78.9	80.1	79.9	77.8	-	-	-
Generator	Lw/unit	Blower Fan and Generator	85.9	52.7	62.8	70.3	75.7	78.9	80.1	79.9	77.8	-	-	-

10597 Pasqual Heights
SoundPLAN Data - Sewer Lift Station

No.	Coordinates X (meters)	Coordinates Y (meters)	Height (meters)	Noise Level - No Barriers, No Fan Enclosure: Blower Fan dB(A)	Noise Level - No Barriers, No Fan Enclosure: Generator dB(A)	Noise Level - No Barriers, No Fan Enclosure: Blower Fan and Generator dB(A)	Noise Level - With Barriers, No Fan Enclosure: Blower Fan dB(A)	Noise Level - With Barriers, No Fan Enclosure: Generator dB(A)	Noise Level - With Barriers, No Fan Enclosure: Blower Fan and Generator dB(A)
1	494383.82	3664033.21	225.16	44.4	42.3	46.5	37.6	31.4	38.6
2	494403.15	3664065.14	223.97	59.0	55.1	60.5	49.2	41.7	49.9
3	494383.12	3664075.79	226.08	44.1	41.3	45.9	39.3	33.7	40.3
4	494393.11	3664083.61	225.99	44.6	41.8	46.4	39.7	34.1	40.7
5	494406.16	3664093.93	225.71	42.1	39.2	43.9	35.6	28.8	36.4
6	494423.44	3664041.13	221.30	48.9	46.1	50.7	43.4	35.3	44.0

No.	Coordinates X (meters)	Coordinates Y (meters)	Height (meters)	Noise Level - No Barriers, With Fan Enclosure: Blower Fan dB(A)	Noise Level - No Barriers, With Fan Enclosure: Generator dB(A)	Noise Level - No Barriers, With Fan Enclosure: Blower Fan and Generator dB(A)	Noise Level - With Barriers, With Fan Enclosure: Blower Fan dB(A)	Noise Level - With Barriers, With Fan Enclosure: Generator dB(A)	Noise Level - With Barriers, With Fan Enclosure: Blower Fan and Generator dB(A)
1	494383.82	3664033.21	225.16	39.4	42.3	44.1	32.6	31.4	35.1
2	494403.15	3664065.14	223.97	54.0	55.1	57.6	44.2	41.7	46.2
3	494383.12	3664075.79	226.08	39.1	41.3	43.3	34.3	33.7	37.0
4	494393.11	3664083.61	225.99	39.6	41.8	43.9	34.7	34.1	37.4
5	494406.16	3664093.93	225.71	37.1	39.2	41.3	30.6	28.8	32.8
6	494423.44	3664041.13	221.30	43.9	46.1	48.1	38.4	35.3	40.1

Receivers

10597 Pasqual Heights
SoundPLAN Data - Sewer Lift Station

Source name										Noise Level - No Barriers, No Fan Enclosure			Noise Level - With Barriers, No Fan Enclosure		
										Blower Fan dB(A)	Generator dB(A)	Blower Fan and Generator dB(A)	Blower Fan dB(A)	Generator dB(A)	Blower Fan and Generator dB(A)
1	1.Fl	44.4	42.3	46.5	0.0	37.6	31.4	38.6	0.0						
Blower Fan										44.4	-	44.4	37.6	-	37.6
Generator										-	42.3	42.3	-	31.4	31.4
2	1.Fl	59.0	55.1	60.5	0.0	49.2	41.7	49.9	0.0						
Blower Fan										59.0	-	59.0	49.2	-	49.2
Generator										-	55.1	55.1	-	41.7	41.7
3	1.Fl	44.1	41.3	45.9	0.0	39.3	33.7	40.3	0.0						
Blower Fan										44.1	-	44.1	39.3	-	39.3
Generator										-	41.3	41.3	-	33.7	33.7
4	1.Fl	44.6	41.8	46.4	0.0	39.7	34.1	40.7	0.0						
Blower Fan										44.6	-	44.6	39.7	-	39.7
Generator										-	41.8	41.8	-	34.1	34.1
5	1.Fl	42.1	39.2	43.9	0.0	35.6	28.8	36.4	0.0						
Blower Fan										42.1	-	42.1	35.6	-	35.6
Generator										-	39.2	39.2	-	28.8	28.8
6	1.Fl	48.9	46.1	50.7	0.0	43.4	35.3	44.0	0.0						
Blower Fan										48.9	-	48.9	43.4	-	43.4
Generator										-	46.1	46.1	-	35.3	35.3

Source name										Noise Level - No Barriers, With Fan Enclosure			Noise Level - With Barriers, With Fan Enclosure		
										Blower Fan dB(A)	Generator dB(A)	Blower Fan and Generator dB(A)	Blower Fan dB(A)	Generator dB(A)	Blower Fan and Generator dB(A)
1	1.Fl	39.4	42.3	44.1	0.0	32.6	31.4	35.1	0.0						
Blower Fan										39.4	-	39.4	32.6	-	32.6
Generator										-	42.3	42.3	-	31.4	31.4
2	1.Fl	54.0	55.1	57.6	0.0	44.2	41.7	46.2	0.0						
Blower Fan										54.0	-	54.0	44.2	-	44.2
Generator										-	55.1	55.1	-	41.7	41.7
3	1.Fl	39.1	41.3	43.3	0.0	34.3	33.7	37.0	0.0						
Blower Fan										39.1	-	39.1	34.3	-	34.3
Generator										-	41.3	41.3	-	33.7	33.7
4	1.Fl	39.6	41.8	43.9	0.0	34.7	34.1	37.4	0.0						
Blower Fan										39.6	-	39.6	34.7	-	34.7
Generator										-	41.8	41.8	-	34.1	34.1
5	1.Fl	37.1	39.2	41.3	0.0	30.6	28.8	32.8	0.0						
Blower Fan										37.1	-	37.1	30.6	-	30.6
Generator										-	39.2	39.2	-	28.8	28.8
6	1.Fl	43.9	46.1	48.1	0.0	38.4	35.3	40.1	0.0						
Blower Fan										43.9	-	43.9	38.4	-	38.4
Generator										-	46.1	46.1	-	35.3	35.3

ATTACHMENT 6

SoundPLAN – Construction Noise

10597 Pasqual Heights
SoundPLAN Data - Construction

Source name	Reference	Noise Level			Corrections		
		On-Site Only	Pipeline Only	Combined	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Construction	Lw/unit	116.3	-	116.3	-	-	-
Construction - Sewer Pipeline	Lw/unit	-	113.9	113.9	-	-	-

10597 Pasqual Heights
SoundPLAN Data - Construction

No.	Coordinates X (meters)	Y (meters)	Height (meters)	Noise Level On-Site Only dB(A)	Pipeline Only dB(A)	Combined dB(A)
1	494348.41	3664263.25	226.45	68.2	50.5	68.2
2	494304.86	3664229.58	227.82	68.4	50.4	68.5
3	494245.21	3664184.56	234.08	67.5	49.4	67.6
4	494214.10	3664124.18	244.32	68.8	49.4	68.9
5	494240.45	3664090.51	243.27	68.7	50.8	68.8
6	494272.65	3664049.89	241.11	69.4	52.3	69.5
7	494306.91	3664002.47	232.23	68.7	53.4	68.9
8	494341.04	3663957.03	226.28	61.5	53.7	62.2
9	494378.34	3663990.37	224.12	64.0	57.0	64.8
10	494443.83	3664050.69	219.65	65.2	70.3	71.4
11	494479.15	3664083.24	217.44	64.7	70.8	71.7
12	494496.61	3664165.99	219.94	64.0	59.0	65.2
13	494458.51	3664208.85	223.27	65.6	55.1	66.0
14	494411.68	3664267.59	228.07	65.4	51.7	65.6
15	494389.46	3664295.17	229.49	63.1	50.4	63.3