ATTACHMENT D

MITIGATED NEGATIVE DECLARATION

APPENDIX J

NOISE REPORT

Ldn Consulting, Inc.
23811 Washington Ave, C110-333, Murrieta CA 92562 phone 760-473-1253

December 11, 2024

Sophia Habl Mitchell
Sophia Mitchell & Associates
P.O. Box 1700
Gualala, CA 95445

Subject: Noise Assessment for the Water Mill Development Lift Station in the City of San Marcos (TSM21-0004)

Ldn Consulting (Ldn) has analyzed the noise levels from the lift station at the proposed Water Mill Development. The purpose of this analysis is to identify the anticipated noise levels at all property lines adjacent to and near the Project's proposed lift station and compare them with the City of San Marcos Noise Standards.

Project Location/Description

The lift station is to be located along the southern property line of the Water Mill residential development, in the City of San Marcos, CA. The Water Mill residential development is generally located north of State Route 78 (SR-78) and east of Twin Oaks Valley Road at the southwest corner of Cox Road and Mulberry Drive. The focus of this letter is the proposed lift station operational noise levels.

According to the project site plan, the lift station will be submersible and contain two pumps. Pump stations typically contain transformers and emergency generators, which could generate potential noise levels that exceed the property line standards and therefore shielding or mitigation may be required. The lift station configuration is provided in Figure 1.

The proposed sewer pump/lift station includes a lift station wet well for influent sewage and two submersible pumping units. A number of pump station elements would be located below grade including the pump station wet well. Above-grade facilities would include an emergency generator which would be located at the southeast corner of the project site adjacent to Mulberry Drive. The site has existing single-family residential uses to the north across Cox Road, to the east across Mulberry Drive, and adjacent to the site to the west and south.

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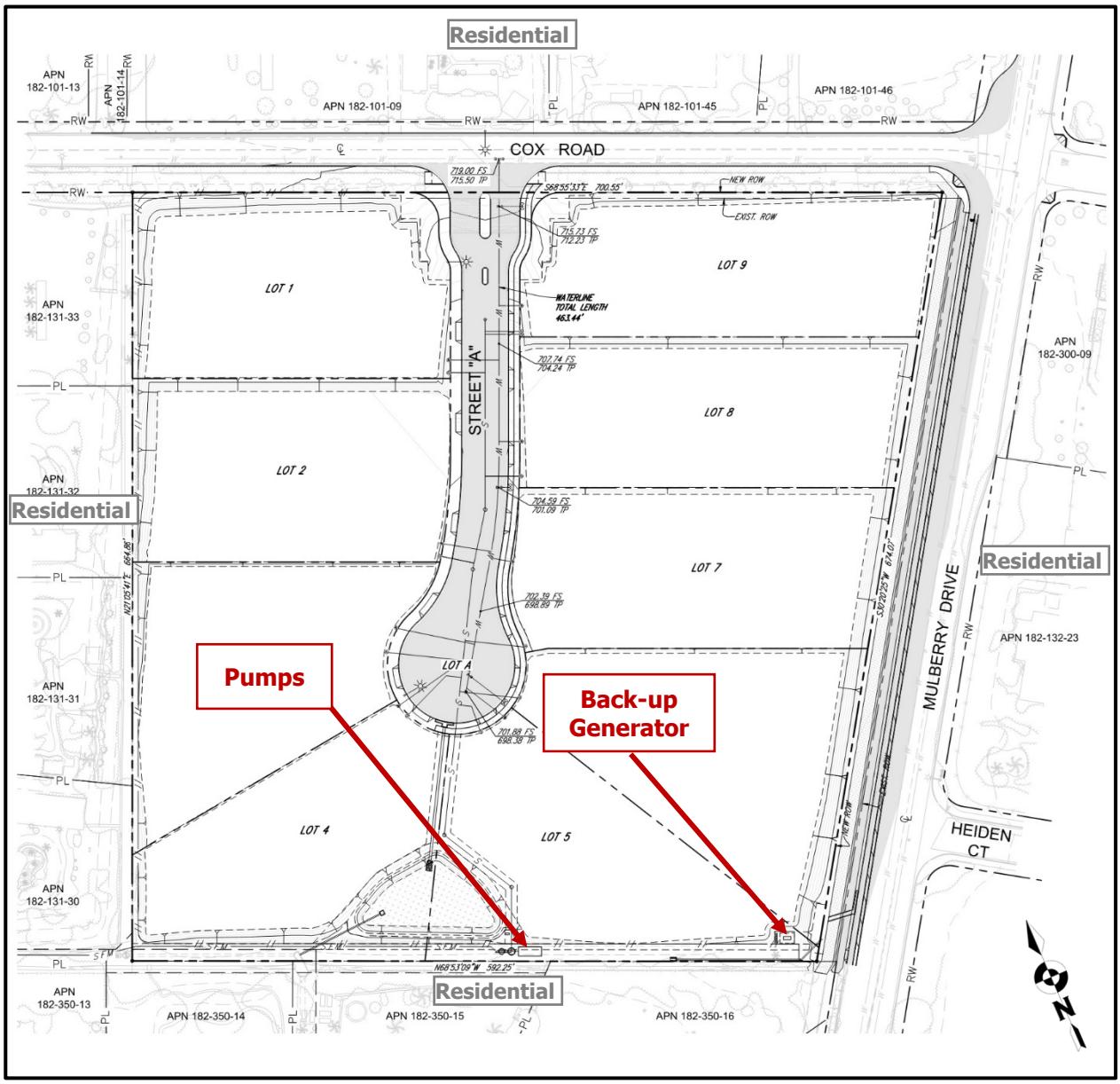
Figure 1: Proposed Sewer Pump/Lift Station Site Plan



Source: Excel Engineering, 2024

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Operational Noise Standards

The City noise regulations that apply to the Project are found in Chapter 20.300 Site Planning and General Development Standards of the City Municipal Code. These regulations aim to prohibit unnecessary, excessive, and annoying noises from all sources, as certain noise levels are detrimental to the health and welfare of individuals. The standards of this section and of Chapter 10.24 Noise of the Municipal Code apply to all land uses in all Zones unless otherwise specified. No person shall create or allow the creation of exterior noise that causes the noise level to exceed the noise standards established by Table 20.300-4 (provided below in Table 1).

Table 1: Sound Level Limits

Zone	Allowable Noise Level (dBA Leq) Measured from the Property Line
Single-Family Residential (A, R-1, R-2) [1, 2]	
7 a.m. to 10 p.m. (daytime)	60
10 p.m. to 7 a.m. (overnight)	50
Multifamily Residential (R-3) [1, 2]	
7 a.m. to 10 p.m. (daytime)	65
10 p.m. to 7 a.m. (overnight)	55
Commercial (C, O-P, SR) [3]	
7 a.m. to 10 p.m. (daytime)	65
10 p.m. to 7 a.m. (overnight)	55
Industrial	
7 a.m. to 10 p.m. (daytime)	65
10 p.m. to 7 a.m. (overnight)	60

1. For single-family detached dwelling units, the "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
2. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
3. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.

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The City Ordinance limits noise generation in single-family zones to 60 dB Leq (one-hour average) between the hours of 7 a.m. and 10 p.m. and 50 dB Leq between the hours of 10 p.m. and 7 a.m. as measured at the project property line as shown above in Table 1. Per the City of San Marcos General Plan Noise Element (GPNE), noise standards for commercial, multi-family, and mixed-use land uses are the same, and are higher than single-family residential areas because they reflect a more urban environment (GPNE, pg. 7-10). Higher thresholds are permitted due to the integrated mix of residential and commercial activity and their usual location near major arterials (GPNE, pg. 7-9). The surrounding land uses are designated single-family, therefore a 60 dBA hourly noise standard during the daytime hours between 7 a.m. and 10 p.m., a 50 dBA standard during the overnight hours between 10 p.m. and 7 a.m. would apply. The pump station is expected to run through all hours of the day, therefore, the 50 dBA hourly noise level standard would apply.

Operational Noise Levels

Sound from a localized source (a point-source) radiates uniformly outward as it travels away from the source. The sound level attenuates or drops-off at a rate of 6 dBA for each doubling of distance. A drop-off rate of 6 dBA per doubling of distance was used for the proposed equipment to the property lines using a point-source noise modeling program. The equipment noise levels were modeled to the nearest existing residences to the south and east and to the nearest proposed residences to the north and west. The existing residences to the north and west are located further away and will be shielded by the existing homes and perimeter fencing. The following equipment consist of the potential noise sources at the proposed sewer lift station:

- Pumps – The pumps will have 7.5 HP motors, but they are submerged and 19 feet below grade in a vault.
- Generator – The generator will be a 25 kilowatt (kW) unit fitting within a sound reducing enclosure.

<u>Pumps</u>

It was determined that the pumps needed for the sewer pump/lift station operations are to be submerged below ground in a wet well. Based on a similar underground pump station, the pumps would generate a noise level of 45 dBA at a distance of 15 feet from the access hatch with the hatch open (Harmony Grove Village – Pacific Noise Control, dated 7/24/06). With the hatch closed, noise levels would be reduced a minimum of 10 dBA. At a minimum distance of 20 feet to the nearest residential property line to the west (future Lot 5), the pump noise levels would be reduced to below 35 dBA.

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Generator

The project will contain an emergency generator fitted in a sound reducing enclosure, which would be located at the southeast corner of the project site. The generator could generate unshielded noise levels that exceed the property line standards during normal maintenance and therefore shielding or mitigation may be required. The 25 kW generator is needed to power the pumps if the main power supply is lost at the pump station. To assess the generator noise levels, tested outdoor sound levels were provided by the manufacturer/supplier. The noise ratings provided indicate the generator will produce noise levels of 60 dBA during weekly engine exercise and during normal operation when measured at a distance of 23 feet in all directions when equipped with the Level 1 Acoustic Enclosure. The manufacturer specifications are provided in ***Attachment A*** to this report. At a distance of 14 feet from the nearest property line to the north (future Lots 5 and 6), the generator noise levels would be increased from 60 dBA to approximately 64 dBA.

Cumulative Noise Levels

The noise levels for each of the sources were combined to determine the cumulative noise levels at the surrounding residential property lines. The projection includes the pumps and generator operating at the same time. Additionally, the pumps and generator will be separated by over 200 feet and noise levels would not add cumulatively. As indicated above, distance alone would not be adequate to reduce noise levels from the emergency generator to below the City's nighttime threshold of 50 dBA.

Fresnel Barrier Reduction Calculations were used to determine the noise level reductions from barriers based on distance, source height, receiver elevation and the top of barrier. The calculations are provided in ***Attachment B*** to this report. It was determined that a minimum 6-foot noise barrier would be required around the generator to reduce noise levels below the City's nighttime threshold of 50 dBA. The cumulative noise levels are listed in Table 1 for the northern property line, Table 2 for the western property line, Table 3 for the southern property line, and Table 4 for the eastern property line. Figure 2 shows the location of the required 6-foot noise barrier and the resultant noise contours. The barrier can consist of a solid gate if access is required. Although, due to the distance from the homes to the east across Mulberry Drive, no barrier is required, it is recommended that a 6-foot barrier be installed to help the overall noise reductions to the southern and northern property lines. The project design includes construction of a 6-foot barrier around the generator, which meets these recommendations.

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Table 1: Property Line Noise Levels (Northern Property Line)

Source	Distance from Source to Measurement Location (Feet)	Measured Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction from barrier (dBA)	Resultant Noise Level @ Property Line (dBA)
Pumps	15	35	20	-2.5	-	33
Generator	23	60	14	+4	-14	50
Cumulative Noise Level @ Property Line (dBA)						**50**

Table 2: Property Line Noise Levels (Western Property Line)

Source	Distance from Source to Measurement Location (Feet)	Measured Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction from barrier (dBA)	Resultant Noise Level @ Property Line (dBA)
Pumps	15	35	16	-1	-	34
Generator	23	60	20	+1.2	-14	47
Cumulative Noise Level @ Property Line (dBA)						**47**

Table 3: Property Line Noise Levels (Southern Property Line)

Source	Distance from Source to Measurement Location (Feet)	Measured Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction from barrier (dBA)	Resultant Noise Level @ Property Line (dBA)
Pumps	15	35	42	-9	-	26
Generator	23	60	24	-0	-11	49
Cumulative Noise Level @ Property Line (dBA)						**49**

Table 4: Property Line Noise Levels (Eastern Property Line)

Source	Distance from Source to Measurement Location (Feet)	Measured Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction from barrier (dBA)	Resultant Noise Level @ Property Line (dBA)
Pumps	15	35	350	-27	-	8
Generator	23	60	114	-14	-14	32
Cumulative Noise Level @ Property Line (dBA)						**32**

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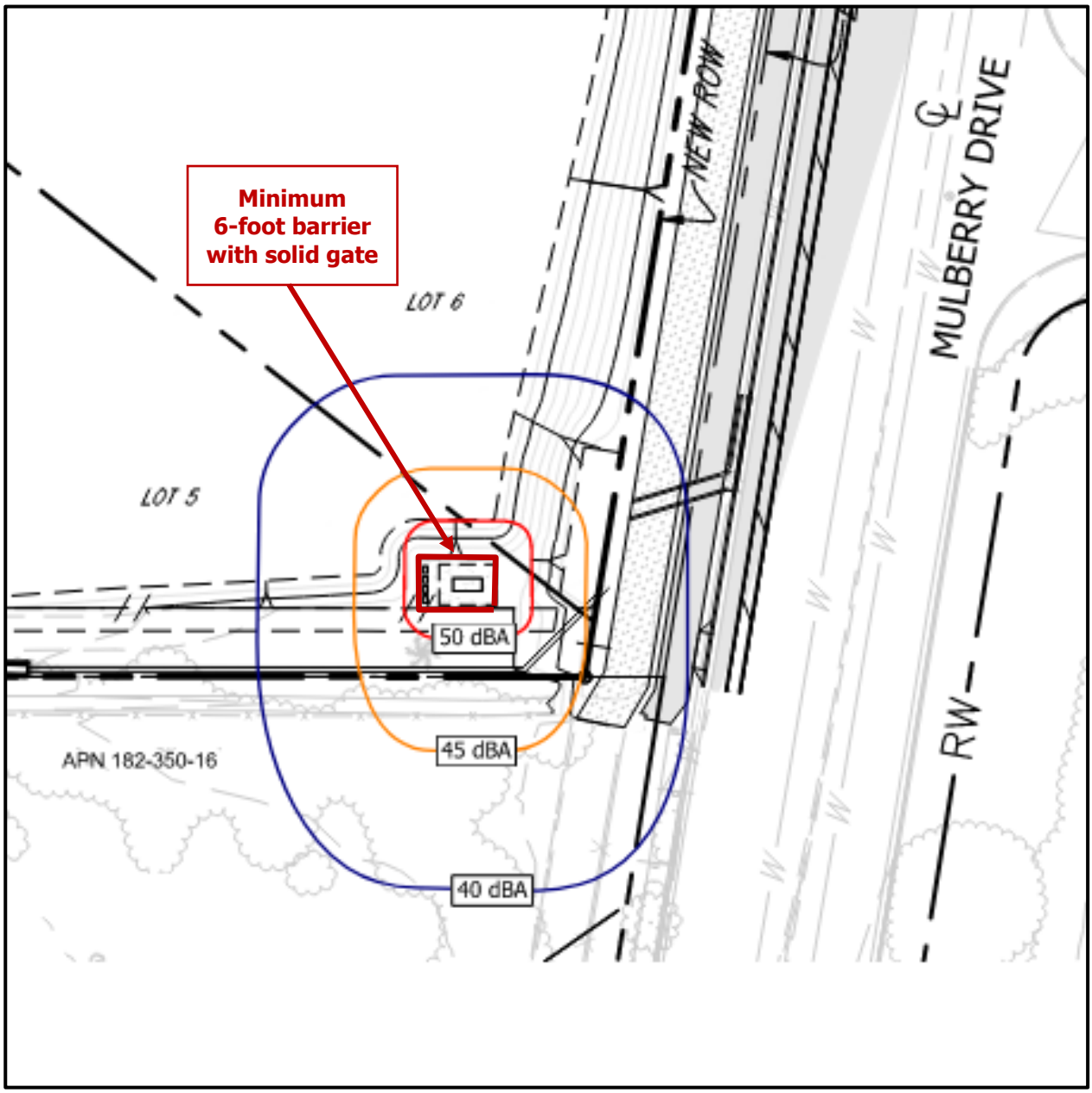
Figure 2: Noise Barrier Locations and Contours



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Conclusions

It should be noted, the emergency generator would only be operational during the evening hours during an emergency. The standby generator would only be tested during daytime hours (7:00 a.m. to 10:00 p.m.).

Based on the findings, the proposed lift station operations are anticipated to comply with the City's noise requirements with a minimum 6-foot barrier surrounding the emergency generator on all sides and the generator being equipped with the manufacturer's Level 1 Acoustic Enclosure . If you have any questions, please contact me directly at (760) 473-1253.

Sincerely, Ldn Consulting

Jeremy Louden, Principal

Attachment: **A:** Generator Specifications
B: Fresnel Barrier Calculations

GENERAC® | INDUSTRIAL POWER

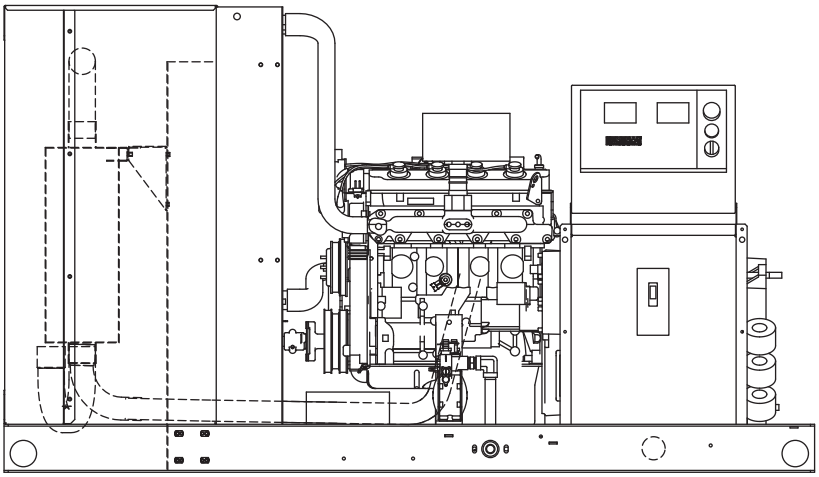
QT025A

Industrial Gaseous Generator Set

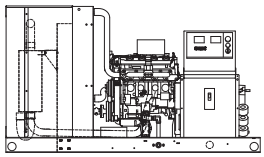
EPA Certified Stationary Emergency

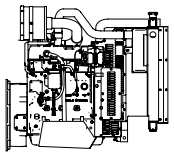
Standby Power Rating

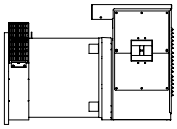
31kVA 25kW 60Hz

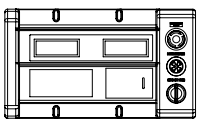


Generator image used for illustration purposes only









features benefits

Generator Set

PROTOTYPE & TORSIONALLY TESTED	PROVIDES A PROVEN UNIT
UL2200 TESTED	ENSURES A QUALITY PRODUCT
RHINOCOAT PAINT SYSTEM	IMPROVES RESISTANCE TO ELEMENTS

Engine

EPA COMPLIANT	ENVIRONMENTALLY FRIENDLY
INDUSTRIAL TESTED, GENERAC APPROVED	ENSURES INDUSTRIAL STANDARDS
POWER-MATCHED OUTPUT	ENGINEERED FOR PERFORMANCE
INDUSTRIAL GRADE	IMPROVES LONGEVITY AND RELIABILITY

Alternator

TWO-THIRDS PITCH	ELIMINATES HARMFUL 3RD HARMONIC
LAYER WOUND ROTOR & STATOR	IMPROVES COOLING
CLASS H MATERIALS	HEAT TOLERANT DESIGN
DIGITAL 3-PHASE VOLTAGE CONTROL	FAST AND ACCURATE RESPONSE

Controls

ENCAPSULATED BOARD W/ SEALED HARNESS	EASY, AFFORDABLE REPLACEMENT
4-20mA VOLTAGE-TO-CURRENT SENSORS	NOISE RESISTANT 24/7 MONITORING
SURFACE-MOUNT TECHNOLOGY	PROVIDES VIBRATION RESISTANCE
ADVANCED DIAGNOSTICS & COMMUNICATIONS	HARDENED RELIABILITY

primary codes and standards

NEMA · cULus LISTED · NFPA · ASTM INTERNATIONAL · ISO · ICC

GENERAC | INDUSTRIAL POWER

QT025A application and engineering data

ENGINE SPECIFICATIONS

General

Make	Generac
EPA Emissions Compliance	Stationary Emergency
EPA Emissions Engine Reference	See Emissions Data Sheet
Cylinder #	4
Type	In-line
Displacement - L	2.4
Bore - mm (in.)	86.61 (3.41)
Stroke - mm (in.)	100.08 (3.94)
Compression Ratio	9.5:1
Intake Air Method	Naturally Aspirated
Number of Main Bearings	5
Connecting Rods	Forged
Cylinder Head	Aluminum
Cylinder Liners	No
Ignition	High Energy
Pistons	Aluminum Alloy
Crankshaft	Cast
Lifter Type	Overhead Cam
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Hardened Steel
Hardened Valve Seats	Yes

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-flow spin-on cartridge
Crankcase Capacity - L (qts)	3.8 (4)

Cooling System

Cooling System Type	Pressurized Closed
Water Pump Flow	11 gal/min
Fan Type	Pusher
Fan Speed (rpm)	2150
Fan Diameter mm (in.)	457 (18)
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120VAC

Fuel System

Fuel Type	Natural Gas, Propane Vapor
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure	5" - 14" H2O*

*Fuel pressure must remain within specified range and not drop more than 1 in. w.c. from static (no-load) to full load.

Engine Electrical System

System Voltage	12VDC
Battery Charging Alternator (Amps)	30
Battery Size (at 0ºC)	525CCA
Battery Group	26
Battery Voltage	12VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390mm
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Brush Type
Bearings	Sealed Ball
Coupling	Flexibile Disc
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes

Voltage Regulator Type	Full Digital
Number of Sensed Phases	3
Regulation Accuracy (Steady State)	+/- 0.25%

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	+/- 0.25%

CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99
NFPA 110
ISO 8528-5
ISO 1708A.5
ISO 3046
BS5514
SAE J1349
DIN6271
IEEE C62.41 TESTING
NEMA ICS 1
UL2200

Rating Definitions:
Standby – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability. (Max. load factor = 70%)

QT025A operating data (60Hz)

POWER RATINGS (kW)

	Natural Gas		Propane Vapor	
Single-Phase 120/240VAC @1.0pf	25	Amps: 104	25	Amps: 104
Three-Phase 120/208VAC @0.8pf	25	Amps: 87	25	Amps: 87
Three-Phase 120/240VAC @0.8pf	25	Amps: 75	25	Amps: 75
Three-Phase 277/480VAC @0.8pf	25	Amps: 38	25	Amps: 38

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

		480VAC						208/240VAC					
Alternator	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	25	16	25	33	41	49	57	12	19	25	31	37	43

FUEL

Fuel Consumption Rates*

Natural Gas			Propane Vapor		
Percent Load	ft³/hr	m³/hr	Percent Load	ft³/hr	m³/hr
25%	140	3.9	25%	56	1.6
50%	220	6.2	50%	87	2.5
75%	300	8.5	75%	119	3.4
100%	380	10.8	100%	151	4.3
* Refer to "Emissions Data Sheet" for maximum fuel flow for EPA and SCAQMD permitting purposes.					

COOLING

		STANDBY
Air Flow (inlet air combustion and radiator)	ft³/min (m³/min)	1500 (42.48)
System Coolant Capacity	Gal (Liters)	2.5 (9.46)
Heat Rejection to Coolant	BTU/hr	95,000
Max. Operating Air Temp on Radiator	°F (°C)	122 (50)
Max. Ambient Temperature	°F (°C)	104 (40)
Maximum Radiator Backpressure	in H_2O	1.5

COMBUSTION AIR REQUIREMENTS

		STANDBY
Flow at Rated Power	cfm	70

ENGINE

		STANDBY
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	40
Piston Speed	ft/min	1182
BMEP	psi	120

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		STANDBY
Exhaust Flow (Rated Output)	cfm (m³/min)	220 (6.2)
Maximum Recommended Back Pressure	inHg	1.5
Exhaust Temp (Rated Output)	°F (°C)	975 (524)
Exhaust Outlet Size	in	2.5

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

GENERAC | INDUSTRIAL POWER

QT025A

standard features and options

GENERATOR SET

●	Genset Vibration Isolation	Std
○	Extended warranty	Opt
○	Gen-Link™ Communications Software	Opt
○	Steel Enclosure	Opt
○	Aluminum Enclosure	Opt

ENGINE SYSTEM

	General	
●	Oil Drain Extension	Std
●	Critical Exhaust Silencer	Std
●	Air cleaner	Std
●	Fan guard	Std
●	Radiator duct adapter	Std

	Fuel System	
●	Fuel lockoff solenoid	Std
●	Secondary Fuel Regulator	Std
●	Flexible fuel lines	Std

	Cooling System	
●	120VAC Coolant Heater	Std
●	Closed Coolant Recovery System	Std
●	UV/Ozone resistant hoses	Std
●	Factory-Installed Radiator	Std
●	Radiator Drain Extension	Std

	Engine Electrical System	
●	Battery charging alternator	Std
●	Battery cables	Std
●	Battery tray	Std
●	Solenoid activated starter motor	Std
●	10A UL float/equalize battery charger	Std
●	Rubber-booted engine electrical connections	Std

ALTERNATOR SYSTEM

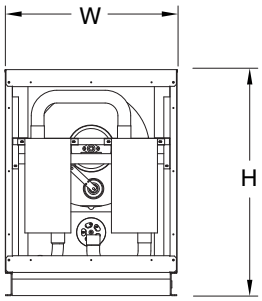
●	UL2200 GENprotect™	Std
●	Main Line Circuit Breaker	Std

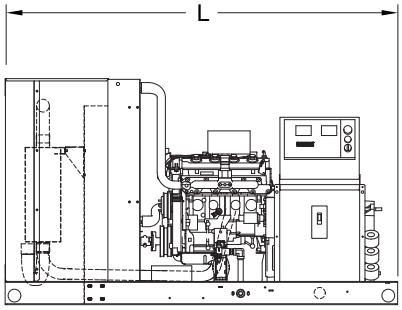
CONTROL SYSTEM

	Control Panel	
●	Digital H Control Panel - Dual 4x20 Display	Std
●	Programmable Crank Limiter	Std
○	21-Light Remote Annunciator	Opt
○	Remote Relay Panel (8 or 16)	Opt
●	7-Day Programmable Exerciser	Std
●	Special Applications Programmable PLC	Std
●	RS-232 Communications	Std
●	RS-485 Communications	Std
●	All-Phase Sensing DVR	Std
●	Full System Status	Std
●	Utility Monitoring (Req. H-Transfer Switch)	Std
●	2-Wire Start Compatible	Std
●	Power Output (kW)	Std
●	Power Factor	Std
●	Reactive Power	Std
●	All phase AC Voltage	Std
●	All phase Currents	Std
●	Oil Pressure	Std
●	Coolant Temperature	Std
●	Coolant Level	Std
●	Fuel Pressure	Std
●	Engine Speed	Std
●	Battery Voltage	Std
●	Frequency	Std
●	Isochronous Governor Control	Std
●	-40deg C - 70deg C Operation	Std
●	Waterproof Plug-In Connectors	Std
●	Audible Alarms and Shutdowns	Std
●	Not in Auto (Flashing Light)	Std
●	Auto/Off/Manual Switch	Std
●	E-Stop (Red Mushroom-Type)	Std
●	NFPA 110 Level I and II (Programmable)	Std
●	Remote Communication - RS232	Std

	Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns)	
●	Low Fuel Pressure	Std
●	Oil Pressure (Pre-programmed Low Pressure Shutdown)	Std
●	Coolant Temperature (Pre-programmed High Temp Shutdown)	Std
●	Coolant Level (Pre-programmed Low Level Shutdown)	Std
●	Engine Speed (Pre-programmed Overspeed Shutdown)	Std
●	Voltage (Pre-programmed Overvoltage Shutdown)	Std
●	Battery Voltage	Std

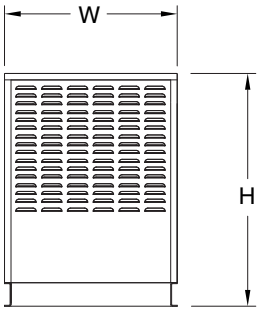
QT025A dimensions, weights and sound levels

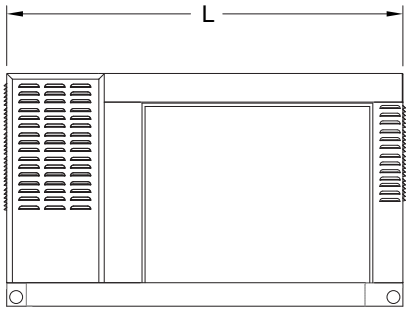




OPEN SET

L	W	H	WT	dBA*
77	34	43	1163	83





LEVEL 1 ACOUSTIC ENCLOSURE

L	W	H	WT	dBA*
77	34	46	1414	60

*All measurements are approximate and *All measurements are approximate and for estimation purposes only. Sound levels measured at 23ft (7m) under normal operation and do not account for ambient site conditions. estimation purposes only. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

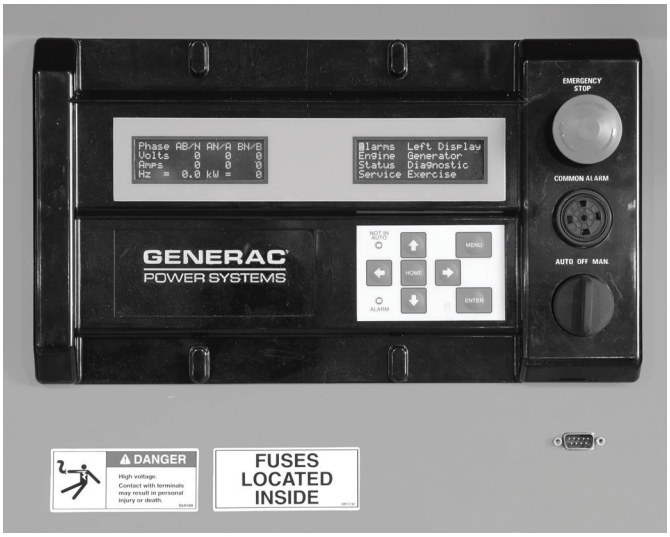
YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

H-100 Control Panel

GENERAC® | INDUSTRIAL POWER

Controls



DESCRIPTION

- Digital controls for all safety shutdowns
- Isochronous governor control
- Digital 3ø sensing voltage regulator
- Sealed Digital Circuit Board
- 2 Amp static battery charger
- Mates with HTS transfer switch and any 2-wire start ATS
- Alarm and event logging
- Built-in diagnostics
- Internal PLC
- Optional modem with dialout

STANDARD FEATURES

The Quiet-Test™ H-100 Control Panel is a digital microprocessor electronic controller that integrates all engine and transfer switch functions into a single control system.

- Two 4 line x 20 displays
- Full system status
- 3 phase sensing digital voltage regulator
- Remote ports
  - RS232
  - RS485
  - Canbus
- Water proof connections
- All engine sensors are 4-20 ma for minimal interference
- Built in PLC

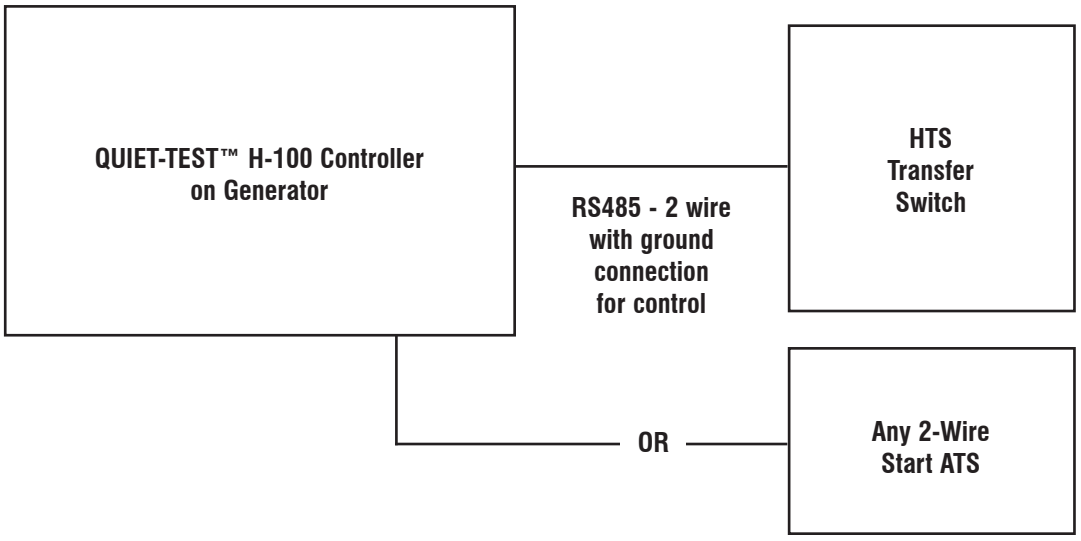
In addition, the generator set parameters can be manipulated and monitored without standing in front of the control panel with GenLink® software. The Generac H-100 control also monitors and controls transfer switch functions when used with the HTS Transfer Switch.

- Monitors utility voltage
- Monitors generator voltage
- Timer for line interrupt delay
- Timer for engine warmup
- Timer for minimum engine run time
- Timer for return to utility position
- Timer for engine cooldown
- Built in exerciser timer (7 day)
- Additional 2 wire start controls for any 2 wire transfer switch.

H-100 Control Panel

- Full range stand-by operation
- Full system status
  - 3 phase AC volts
  - 3 phase amps
  - kW
  - Power factor
  - Reactive power
  - Oil pressure
  - Water temperature
  - Water level
  - Oil temperature (optional)
  - Fuel pressure
  - Engine speed
  - Battery voltage
  - Alternator frequency
  - Time
  - Date
  - Transfer switch status
  - Run hours
  - Service reminders
  - Trending
  - Fault history (alarm log)
  - I^2t function for full generator protection
  - Built in PLC for special applications
- Shutdowns
  - Overvoltage
  - Overspeed
  - Low oil pressure
  - High coolant temperature
  - Low coolant level
- Remote communication
  - RS232
  - Optional modem
  - Canbus
- Configurable to NFPA 110, level 1 or 2
- Programmable auto crank
- Emergency Stop
- On Off Manual Switch
- Not in Auto flashing light
- Audible alarm for fault condition
- Transfer switch logic communicates with HTS transfer switch
- Weekly exerciser (programmable)
- Selectable Low speed exercise
- Digital voltage regulator with 3 phase sensing (3 phase units)
- Isochronous governor
- Waterproof electrical connectors
- Temperature Range -40° to 70° C

TYPICAL CONTROL CONNECTION



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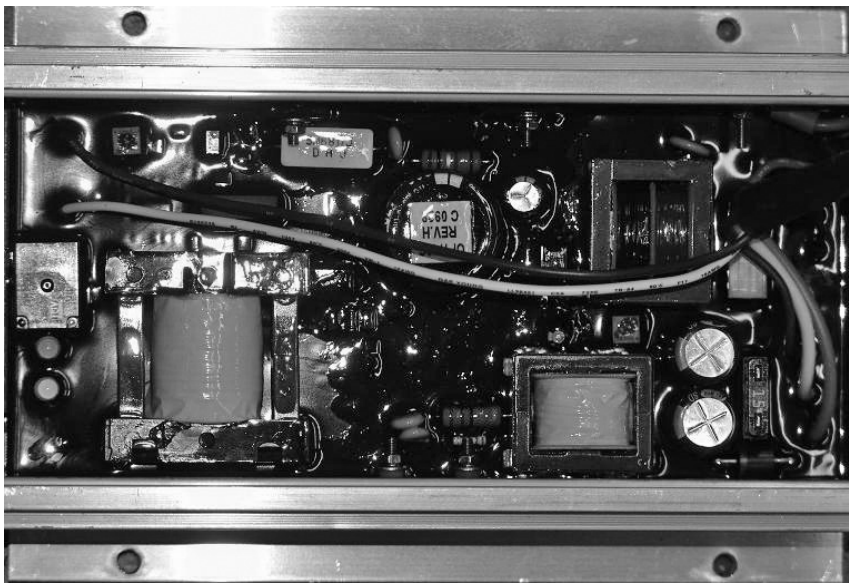
2.5A & 10A Battery Chargers H-Panel & PM-DCP Panels

GENERAC® | INDUSTRIAL POWER

Accessories



Battery Charger shown from inside of Control Panel Enclosure. Connections are made via an attached harness.

Specifications	2.5 Amp	10 Amp
Nominal Input	120 VAC	120 VAC
Operating AC Line Voltage Range	108 to 132 Volts AC	108 to 132 Volts AC
Input AC Line Frequency	50/60 Hz	50/60 Hz
Battery Fuse	N/A	15 Amps
Nominal Charge Rate	2.5 Amps	10 Amps
Equalize Voltage		13.8/27.6 Volts
Float Voltage	13.4	13.0/26.0
Current @ Equalize to Float Transition		5 Amps
Battery Under-voltage shutdown	N/A	11/22 Volts
LED Indicators		
AC Line Voltage	N/A	Green LED
Battery Connected and Charging	N/A	Yellow LED
Battery Current Drain	30 milliamp	30 milliamp
AC Line Connection	Connector Plug	Connector Plug
Battery Connection	Connector Plug	Connector Plug
Control Connection		AC Power Fail Relay Form C 2 Amp Rating
CUL Recognized	Yes	Yes
NFPA110 Compliant	No	Yes

The Generac 2.5A 12 volt and 10A 12/24 volt battery chargers are designed to work with the H and PM-DCP control panels to provide the ultimate in automatic battery voltage maintenance.

The 2.5 amp charger is self-regulating and produces instantaneous output current adjustments to keep the battery charged to an optimum level. Battery voltage is read on the control panel digital display.

The 10 amp charger has automatic float and equalize control. It precisely monitors the battery's voltage and automatically activates the correct charging mode. The charge rate is limited and controlled to efficiently and safely maintain ideal battery levels under varying conditions.

The equalize system uses a control circuit to limit charging current to 10 amps. When battery voltage drops below a preset level, charging current increases to 5 amps and then to the 10 amp charge rate if needed. When the battery reaches maximum charge, the charger switches to float mode to supply just enough current to maintain the battery at or above 13/26 volts. Battery voltage and charging current are read at the control panel digital display.

Generator Northern PL
Source to Receiver Horizontal Distance (ft) =   14.00
Source to Barrier Horizontal Distance (ft) =   6.00
Barrier to Receiver Horizontal Distance (ft) =   8.00
Source Height (ft)   = 711.00
Receiver Height (ft) = 708.00
Barrier Height (ft) = 713.00
Distance Source to Receptor (ft)   d =   14.32
Distance Source to Barrier top (ft)   d1 =   6.32
Distance Barrier top to Receiver (ft) d2 =   9.43

Frequency (Hz) = 8000 Attenuation (db) = 20.0   Fresnel N = 20.454
Frequency (Hz) = 4000 Attenuation (db) = 20.0   Fresnel N = 10.227
Frequency (Hz) = 2000 Attenuation (db) = 20.0   Fresnel N = 5.113
Frequency (Hz) = 1000 Attenuation (db) = 17.0   Fresnel N = 2.557
Frequency (Hz) = 500 Attenuation (db) = 14.2   Fresnel N = 1.278
Frequency (Hz) = 250 Attenuation (db) = 11.9   Fresnel N = 0.639
Frequency (Hz) = 125 Attenuation (db) = 10.0   Fresnel N = 0.320
Frequency (Hz) =   63 Attenuation (db) =   8.5   Fresnel N = 0.160

Generator Western PL
Source to Receiver Horizontal Distance (ft) =   20.00
Source to Barrier Horizontal Distance (ft) =   12.00
Barrier to Receiver Horizontal Distance (ft) =   8.00
Source Height (ft)   = 711.00
Receiver Height (ft) = 708.00
Barrier Height (ft) = 713.00
Distance Source to Receptor (ft)   d =   20.22
Distance Source to Barrier top (ft)   d1 =   12.17
Distance Barrier top to Receiver (ft) d2 =   9.43

Frequency (Hz) = 8000 Attenuation (db) = 20.0   Fresnel N = 19.532
Frequency (Hz) = 4000 Attenuation (db) = 20.0   Fresnel N = 9.766
Frequency (Hz) = 2000 Attenuation (db) = 19.8   Fresnel N = 4.883
Frequency (Hz) = 1000 Attenuation (db) = 16.8   Fresnel N = 2.441
Frequency (Hz) = 500 Attenuation (db) = 14.1   Fresnel N = 1.221
Frequency (Hz) = 250 Attenuation (db) = 11.7   Fresnel N = 0.610
Frequency (Hz) = 125 Attenuation (db) =   9.9   Fresnel N = 0.305
Frequency (Hz) =   63 Attenuation (db) =   8.4   Fresnel N = 0.153

Generator Southern PL
Source to Receiver Horizontal Distance (ft) =   24.00
Source to Barrier Horizontal Distance (ft) =   5.00
Barrier to Receiver Horizontal Distance (ft) =   19.00
Source Height (ft)   = 711.00
Receiver Height (ft) = 711.00
Barrier Height (ft) = 713.00
Distance Source to Receptor (ft)   d =   24.00
Distance Source to Barrier top (ft)   d1 =   5.39
Distance Barrier top to Receiver (ft) d2 =   19.10

```
Frequency (Hz) = 8000  Attenuation (db) =  20.0   Fresnel N =  6.958
Frequency (Hz) = 4000  Attenuation (db) =  18.3   Fresnel N =  3.479
Frequency (Hz) = 2000  Attenuation (db) =  15.4   Fresnel N =  1.740
Frequency (Hz) = 1000  Attenuation (db) =  12.9   Fresnel N =  0.870
Frequency (Hz) =  500  Attenuation (db) =  10.8   Fresnel N =  0.435
Frequency (Hz) =  250  Attenuation (db) =   9.1   Fresnel N =  0.217
Frequency (Hz) =  125  Attenuation (db) =   7.8   Fresnel N =  0.109
Frequency (Hz) =   63  Attenuation (db) =   6.7   Fresnel N =  0.054
```