

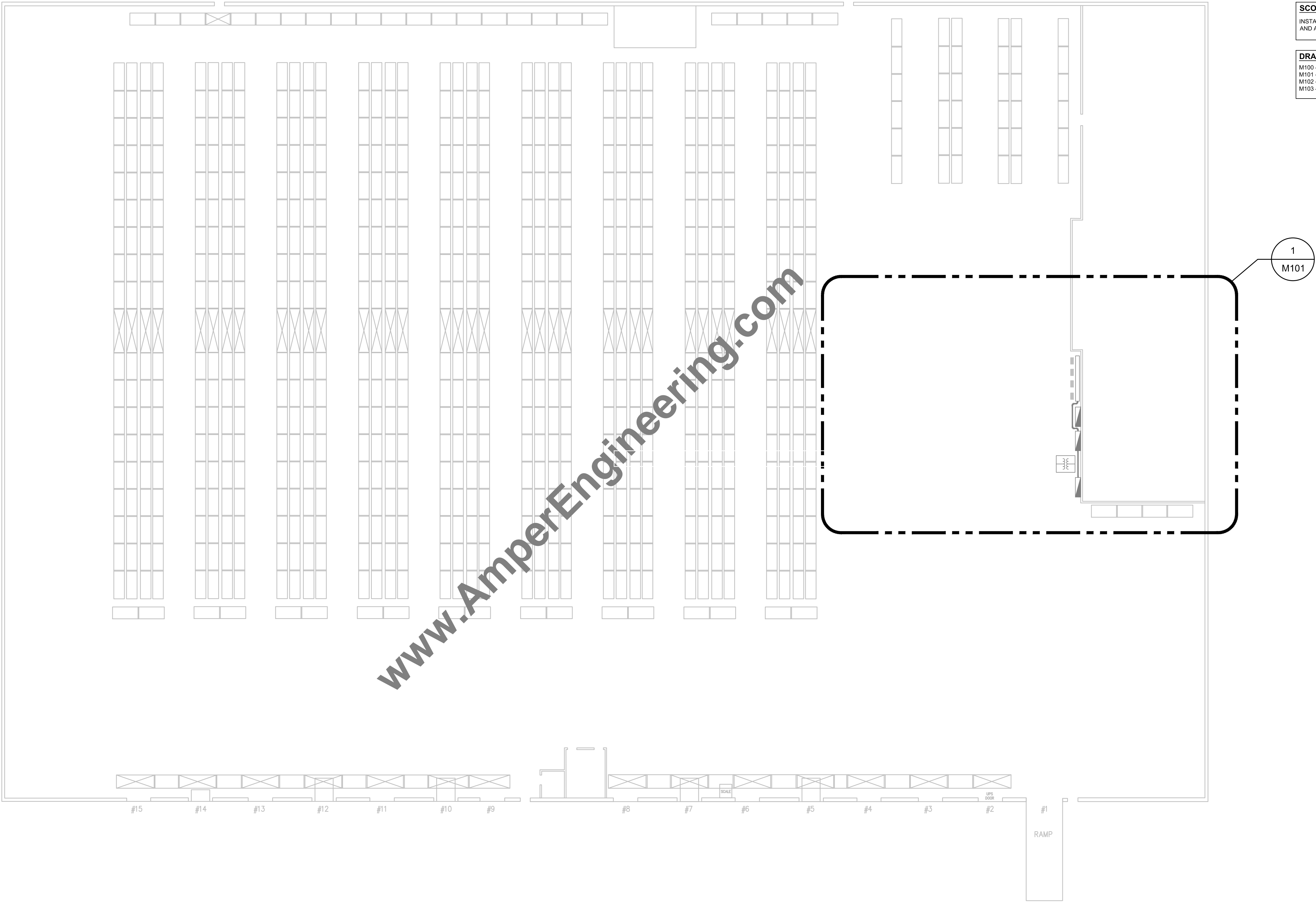
FAN SCHEDULE						
SYMBOL	MANUFACTURER	MODEL	SERVICE LOCATION	CFM	RPM	ELECTRICAL
						POWER (WATT) VOLT-PHASE
EF-1	EAGLE EYE	VS-12	BATTERY RECHARGE AREA	850	900	80 120-1
NOTE: 1. FAN SHALL BE TYPE B SPARK RESISTANT CONSTRUCTION. 2. PROVIDE FIXED EXTERNAL RAIN LOUVER AND MOTOR DRIVEN INTERNAL DAMPER. 3. VS-12 CALCULATED CFM IS 600 AS PER THE STATIC PRESSURE OF 0.2 INCH H2O.						

VENTILATION SYMBOL LIST	
NOT ALL SYMBOLS MAY APPLY.	
SYMBOL:	DESCRIPTION:
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
AFF	ABOVE FINISH FLOOR
CFM	CUBIC FOOT PER MINUTE
DN	DOWN
EA	EXHAUST AIR
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE

MECHANICAL GENERAL NOTES:
1. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND PROVIDE PROPER ACCESS AND CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE
2. SEAL ALL FLOOR, WALL PENETRATIONS AIRTIGHT WHERE DUCT PENETRATE.
3. MANUFACTURER SHOWN IN SCHEDULE IS BASIS OF DESIGN.
4. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
5. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
6. ALL DUCTWORK SHOWN ARE SCHEMATICALLY, PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS ETC TO ALLOW SMOOTH FLOWS.

SCOPE OF WORK:
INSTALLATION OF EXHAUST FAN, HYDROGEN SENSOR AND ASSOCIATED MECHANICAL EQUIPMENT.

DRAWING INDEX:
M100 - MECHANICAL FLOOR PLAN, SCHEDULE AND NOTES.
M101 - MECHANICAL FLOOR PLAN, DETAILS.
M102 - EQUIPMENT CUT SHEETS.
M103 - STRUCTURAL SUPPORT FOR HOOD DETAIL.



www.AmperEngineering.com

1 MECHANICAL FLOOR PLAN  
SCALE: 1/16" = 1'-0"

PROFESSIONAL ENGINEERING:  
  
ENGINEERING | CONSULTING | ESTIMATING  
201-920-2899 info@AmperEngineering.com

SEAL & SIGNATURE:  
12/01/2020  
  
Durak Evrim Ercan

NO ALTERATION PERMITTED  
EXCEPT AS PROVIDED UNDER  
DIRECTION OF A LICENSED  
PROFESSIONAL ENGINEER.

Digitally signed by  
Durak Evrim Ercan  
DN: c=US, st=New  
Jersey, I=Montclair,  
o=Durak Evrim Ercan,  
cn=Durak Evrim Ercan,  
email=info@AmperEng  
ineering.com  
Date: 2020.12.01  
20:06:41 -05'00'

0	12/01/2020	ISSUED FOR PERMIT APPLICATION
REV.	DATE	DESCRIPTION

CLIENT:

PROJECT:

BATTERY FAN

ADDRESS:

CINNAMINSON  
NJ 08077

ISSUE DATE:

12/01/2020

PROJECT NUMBER:

AE# 1239

SCALE:

NONE

DRAWN BY:

CDS

DESIGNED BY:

AC

CHECKED BY:

DEE

DRAWING TITLE:

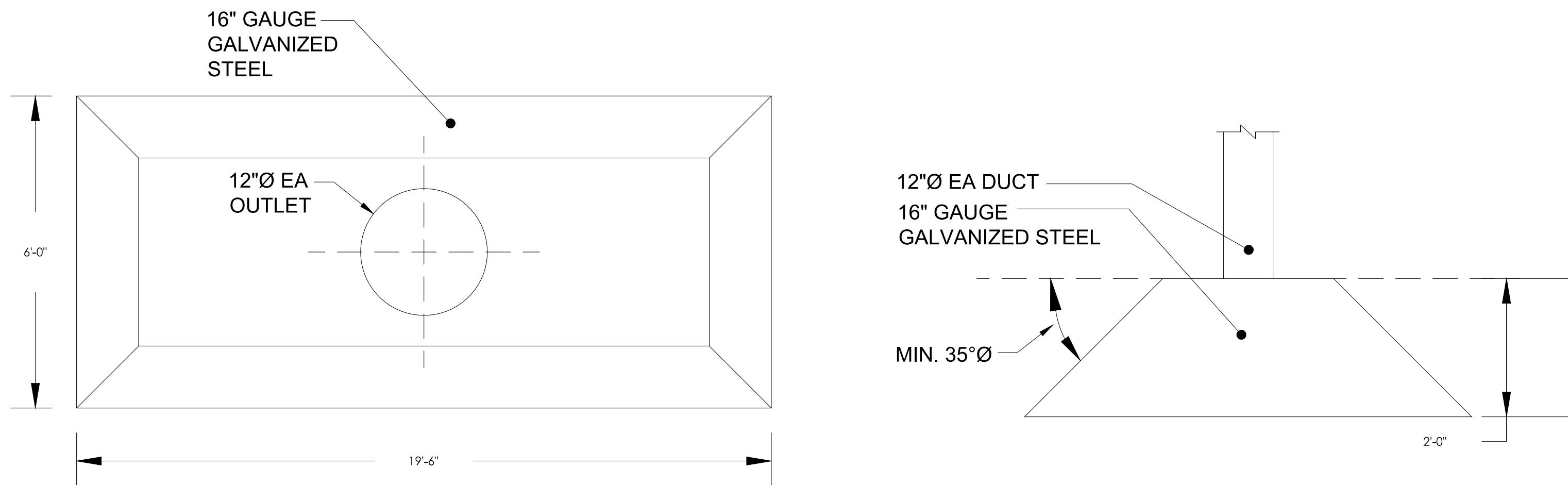
MECHANICAL FLOOR PLAN,  
SCHEDULE AND NOTES

DRAWING NO:

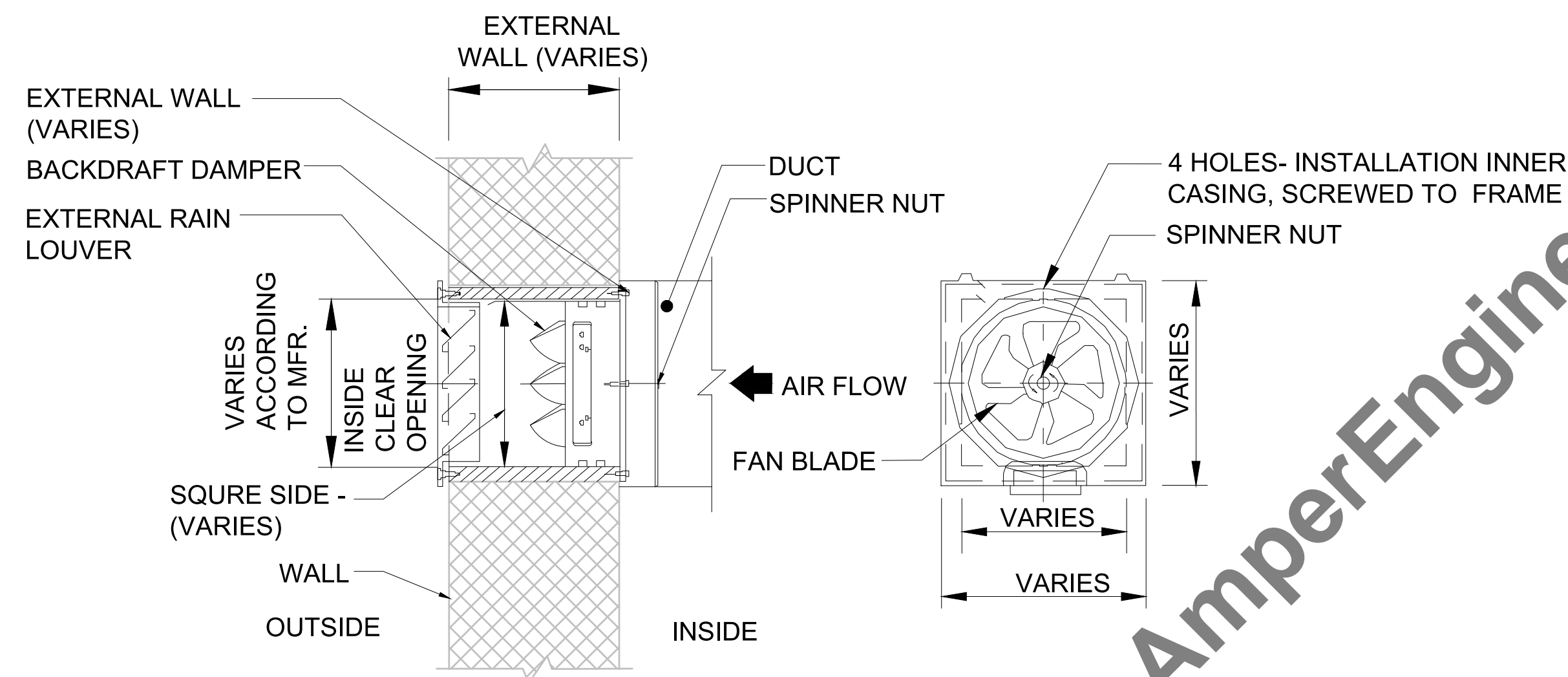
M100

REVISION:

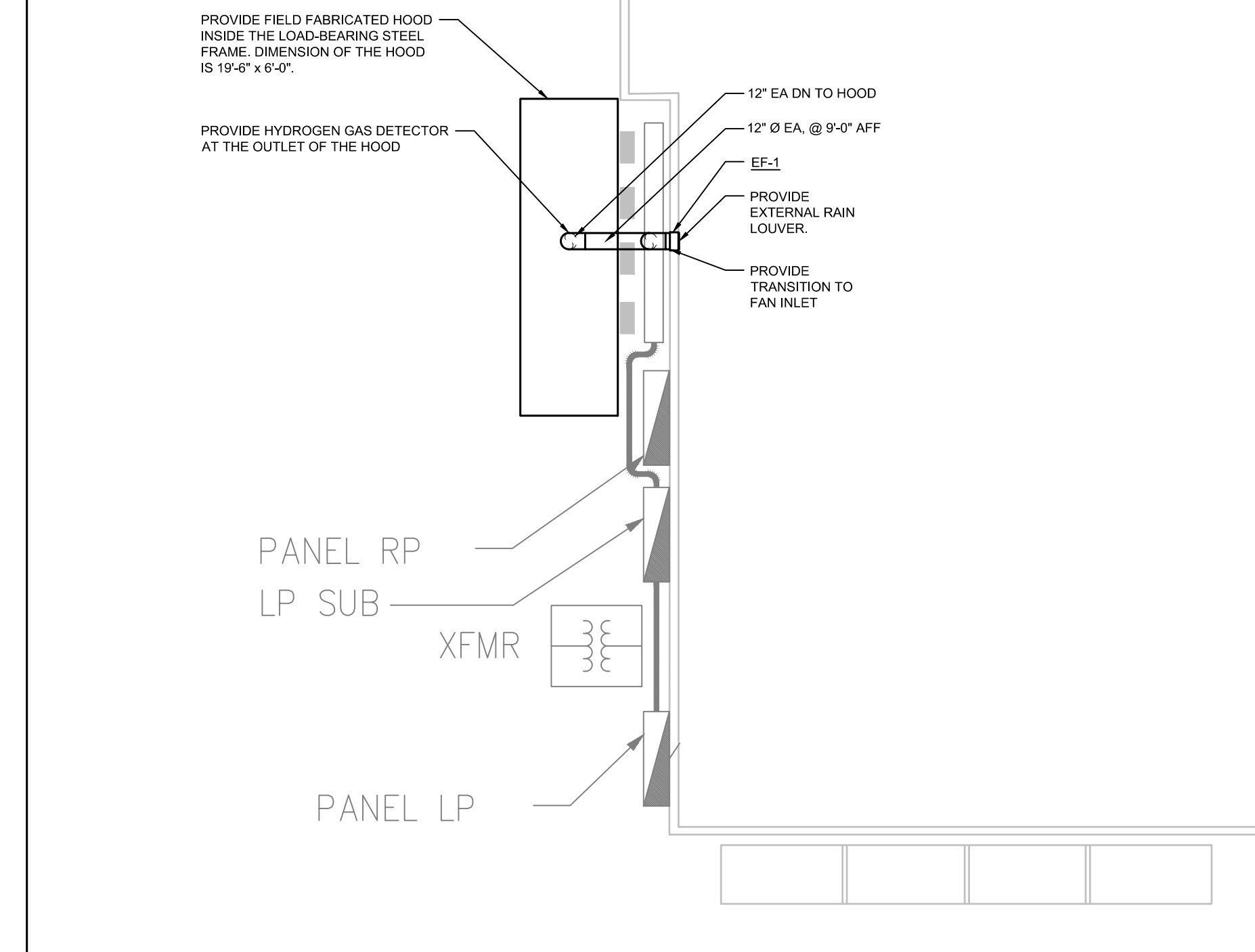
0



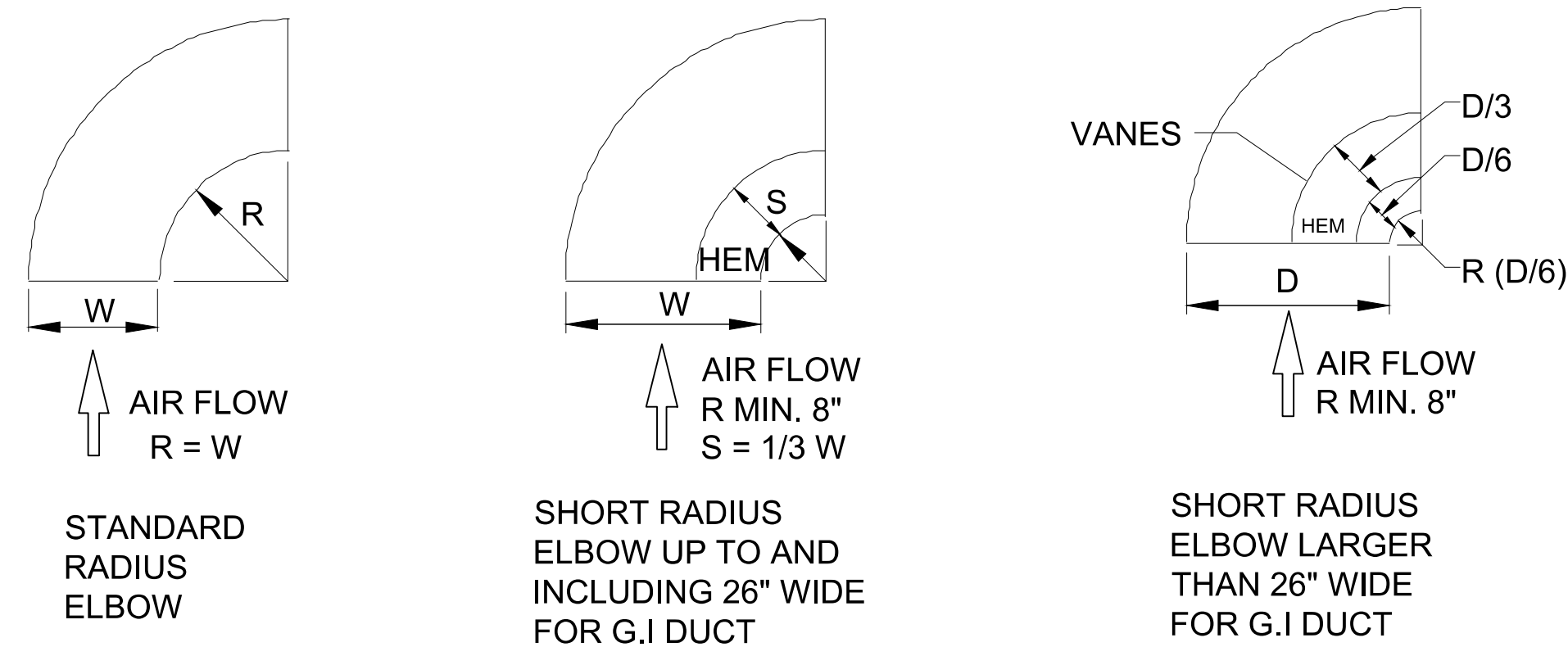
2 HOOD DETAIL  
SCALE: N.T.S.



3 EXHAUST FAN DETAIL  
SCALE: N.T.S.



1 ENLARGED FLOOR PLAN  
SCALE: 1/8" = 1'-0"



4 ELBOW CONSTRUCTION DETAIL  
SCALE: N.T.S.

SEAL & SIGNATURE:

12/01/2020



NO ALTERATION PERMITTED  
EXCEPT AS PROVIDED UNDER  
DIRECTION OF A LICENSED  
PROFESSIONAL ENGINEER.

0	12/01/2020	ISSUED FOR PERMIT APPLICATION
REV.	DATE	DESCRIPTION

CLIENT:

PROJECT:

BATTERY FAN

ADDRESS:

CINNAMINSON  
NJ 08077

ISSUE DATE:

12/01/2020

PROJECT NUMBER:

AE# 1239

SCALE:

NONE

DRAWN BY:

CDS

DESIGNED BY:

AC

CHECKED BY:

DEE

DRAWING TITLE:

MECHANICAL FLOOR  
PLAN, DETAILS

DRAWING NO:

M101

REVISION:

0



HGD Specifications

1. Summary

This document describes the requirements for a hydrogen gas detection system (HGD). Standard functions and features should include:

- Unattended gas detection
- External fan activation
- Remote alarming
- Audible alarming
- LED lit alarming
- Optional: Smoke detection
- Optional: Temperature activated external fan
- Optional: Loss of power alarm
- Optional: Silent intrusion alarm
- Optional: Hydrogen gas ventilation system
- Optional: Control or breakout box

2. Hydrogen Gas Detector Capabilities

The hydrogen gas detector should have the following capabilities:

- 2.1 User specified AC or DC power options with standard ranges of 85 – 265 VAC 50/60Hz or 17 – 60 VDC.
- 2.2 10A relay for activation of external fan ventilations system at 1% LEL.
- 2.3 1A relay for remote alarm activation at 2% LEL
- 2.4 Operating temperature of -10 – 40 °C (14 – 104 °F)
- 2.5 5-year lifespan replaceable hydrogen sensor

3. System Compliance

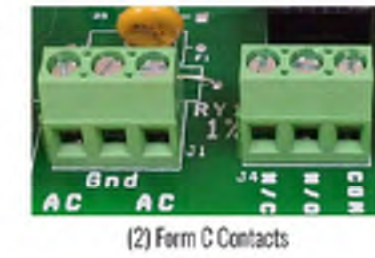
The hydrogen gas detection system should comply to the following standards:

- IEEE Standard 450
- National Fire Protection Agency (NFPA) Article 64; NFPA 2
- Hydrogen Technologies Code
- Uniform Building Code (UBC) Section 6400
- National Electric Code (NEC) Section 480.9 (A)
- National Electric Code (NEC) Section 501.125 (B)
- National Electric Code (NEC) Section 501.105 (1)-3 – use in Class 1 Division 2 Group B

HGD-2000 Hydrogen Gas Detectors



HGD-2000



(2) Form C Contacts



Control Box

Product Overview

The HGD-2000 Hydrogen Gas Detector allows the user to monitor hydrogen gas buildup in storage rooms and facilities that house batteries. The HGD-2000 is easy-to-use and easy-to-install. The detector has a terminal block for connection to single phase AC power source and two internal relays. The relays can be used to switch a remote exhaust fan and/or alarm on and off. If the concentration of hydrogen gas in the air surrounding the sensor reaches 1% by volume, the yellow LED will light and the 1% internal relay will close. A four second delay prevents false activation. If the concentration reaches 2%, the red LED will flash, the internal 80 db warning alarm will sound, and the 2% internal relay will close.

Features

- Automatic Operation and Continuous 24/7 Monitoring
- Long Lifespan for Reliable Monitoring
- High Sensitivity and Stability
- Inexpensive protection for equipment and personnel
- Save insurance costs - reduce insurance premiums when placed in battery charging rooms

Applications

- Utilities and Power Plants
- UPS Power Systems
- Fuel Cell Test Stations
- Nuclear Waste Reforming
- Hydrogen Refueling Stations
- Fire Department
- Battery Suppliers
- Battery Charging Rooms
- Mobile Power
- Golf Cart

Kit Includes

- HGD-2000
- User Manual
- Optional: Control Box and cable for remote alarm control and display
- Optional: Junction Box
- Calibration Certificate available

Ordering Information

Model No.	Description
HGD-2000	Hydrogen Gas Detector (Dual-Relay)
Control Box	Remote control box with connection cable

VS-12 Hydrogen Gas Exhaust Fan

Model # VS-12



VS-12 Louvers and Sliding Collar

Features

- 850 CFM wall mounted fan
- Compliant with NEC 501, Class I Division II Group B
- Powered dampers
- Designed for use with explosive or toxic gas detectors, including the Eagle Eye HGD-Series
- LED status display
- Motorized dampers locked when open or closed
- Simple installation with sliding collar to fit different wall thicknesses
- Long operating life
- Available in 120 VAC and 24 or 48 VDC versions
- Insurance premium reduction may be realized



VS-12 Fan

Technical Specifications	
Mounting Requirements	Opening: 311 x 311 mm (12.25 x 12.25 in.) Wall thickness: 38 to 203 mm (1.5 to 8 in.)
Dimensions	L x W x H: 241 x 305 x 305 mm (9.5 x 12 x 12 in.)
Power Requirements	110 AC, 67A (80W) 24 VDC, 3.5A 48 VDC, 1.7A
Airflow	850 CFM
Optional	Reversed fan for use as forced air

Ordering Information

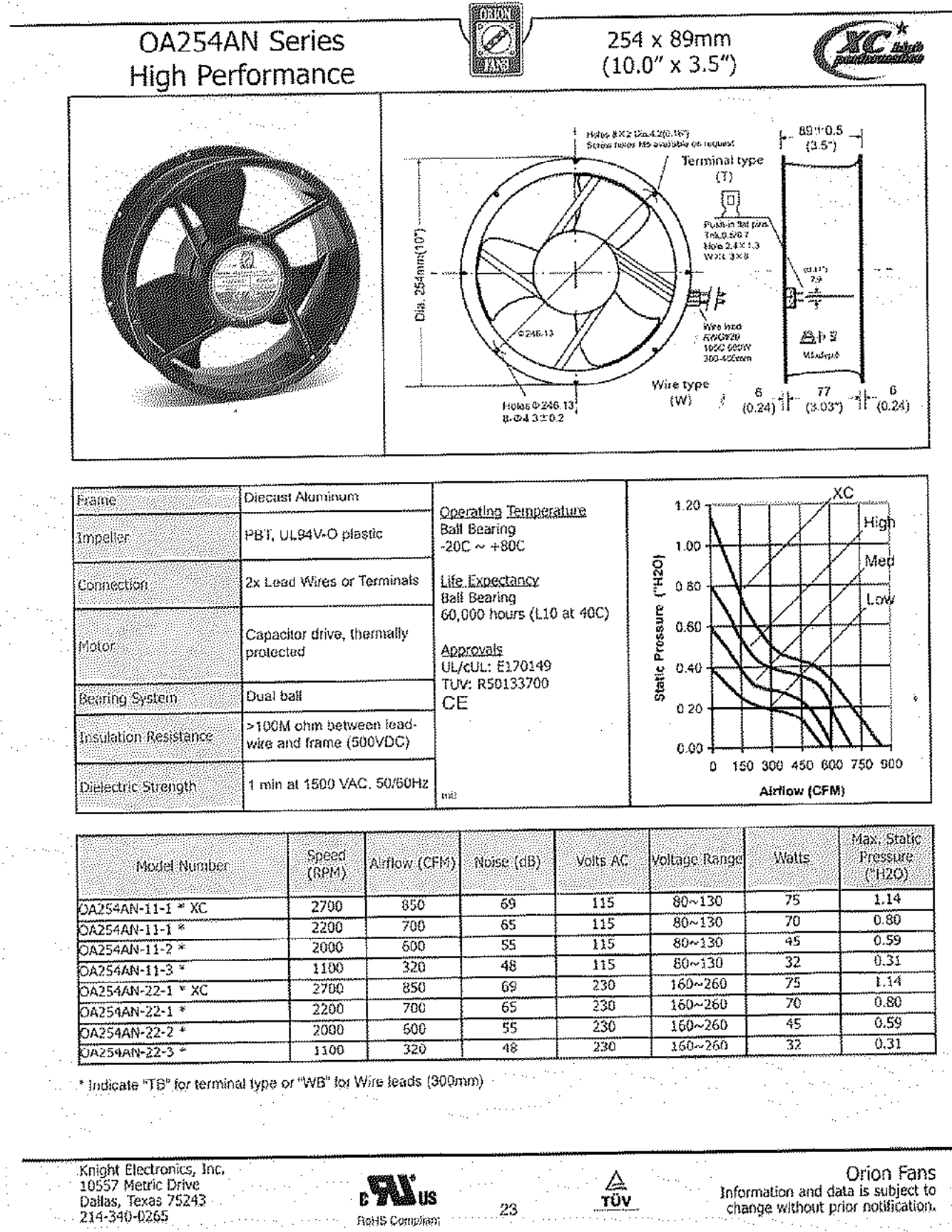
Model No.	Description
VS-12-110AC	Hydrogen Gas Exhaust Fan, 110 VAC Input
VS-12-24DC	Hydrogen Gas Exhaust Fan, 24 VDC Input
VS-12-48DC	Hydrogen Gas Exhaust Fan, 48 VDC Input
HGD-Series	Hydrogen Gas, Smoke, and Intrusion Detectors

1 HYDROGEN GAS DETECTOR SPECIFICATION

2 HYDROGEN GAS DETECTOR

3 EXHAUST FAN SPECIFICATION

4 EXHAUST FAN PERFORMANCE CURVE



SEAL & SIGNATURE:

12/01/2020



NO ALTERATION PERMITTED  
EXCEPT AS PROVIDED UNDER  
DIRECTION OF A LICENSED  
PROFESSIONAL ENGINEER.

0	12/01/2020	ISSUED FOR PERMIT APPLICATION
REV.	DATE	DESCRIPTION

CLIENT:

PROJECT:

BATTERY FAN

ADDRESS:

CINNAMINSON  
NJ 08077

ISSUE DATE:

12/01/2020

PROJECT NUMBER:

AE# 1239

SCALE:

NONE

DESIGNED BY:

AC

DRAWN BY:

CDS

CHECKED BY:

DEE

DRAWING TITLE:

EQUIPMENT CUT SHEETS

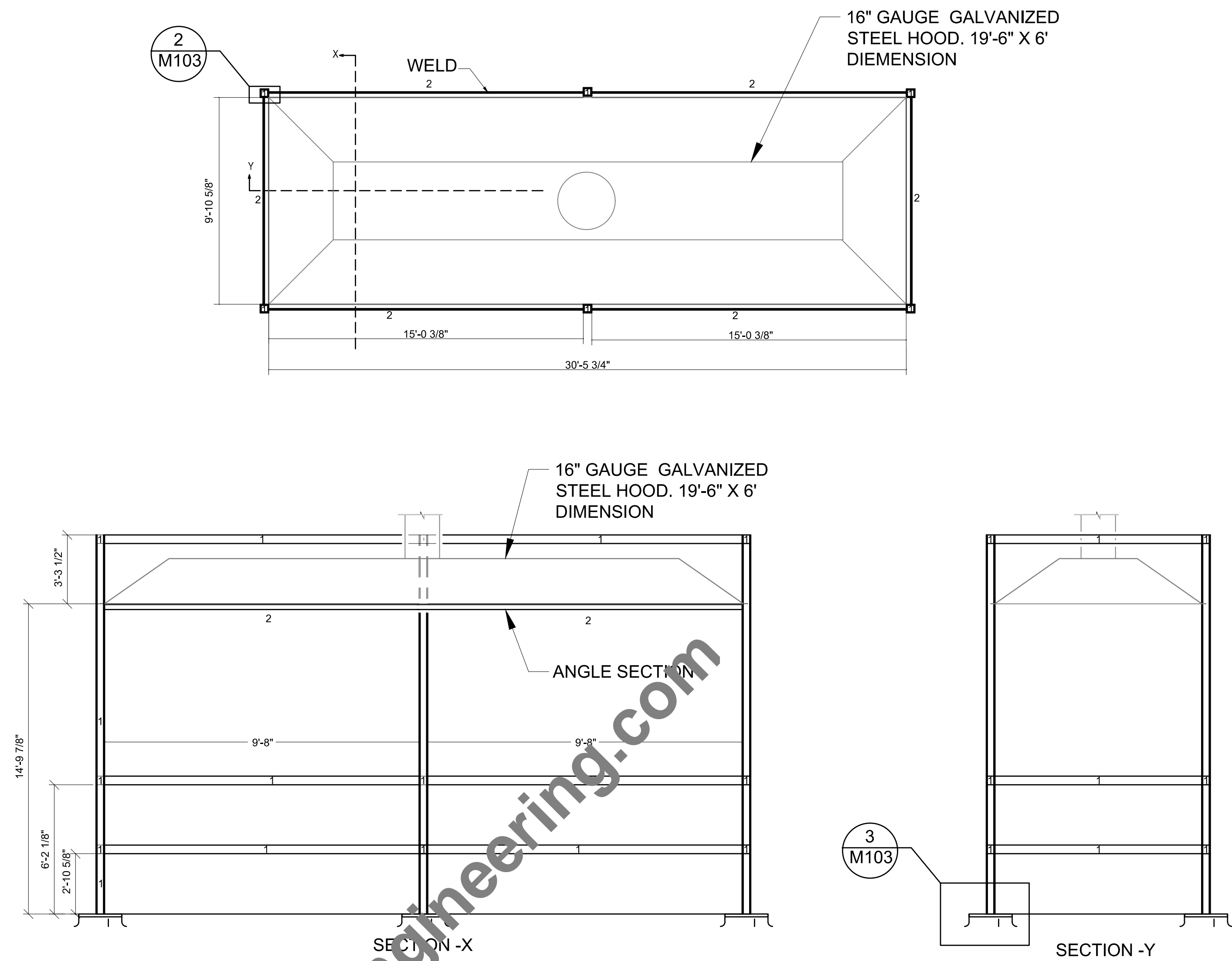
DRAWING NO:

M102

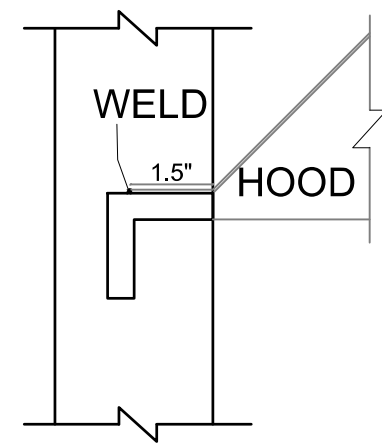
REVISION:

0

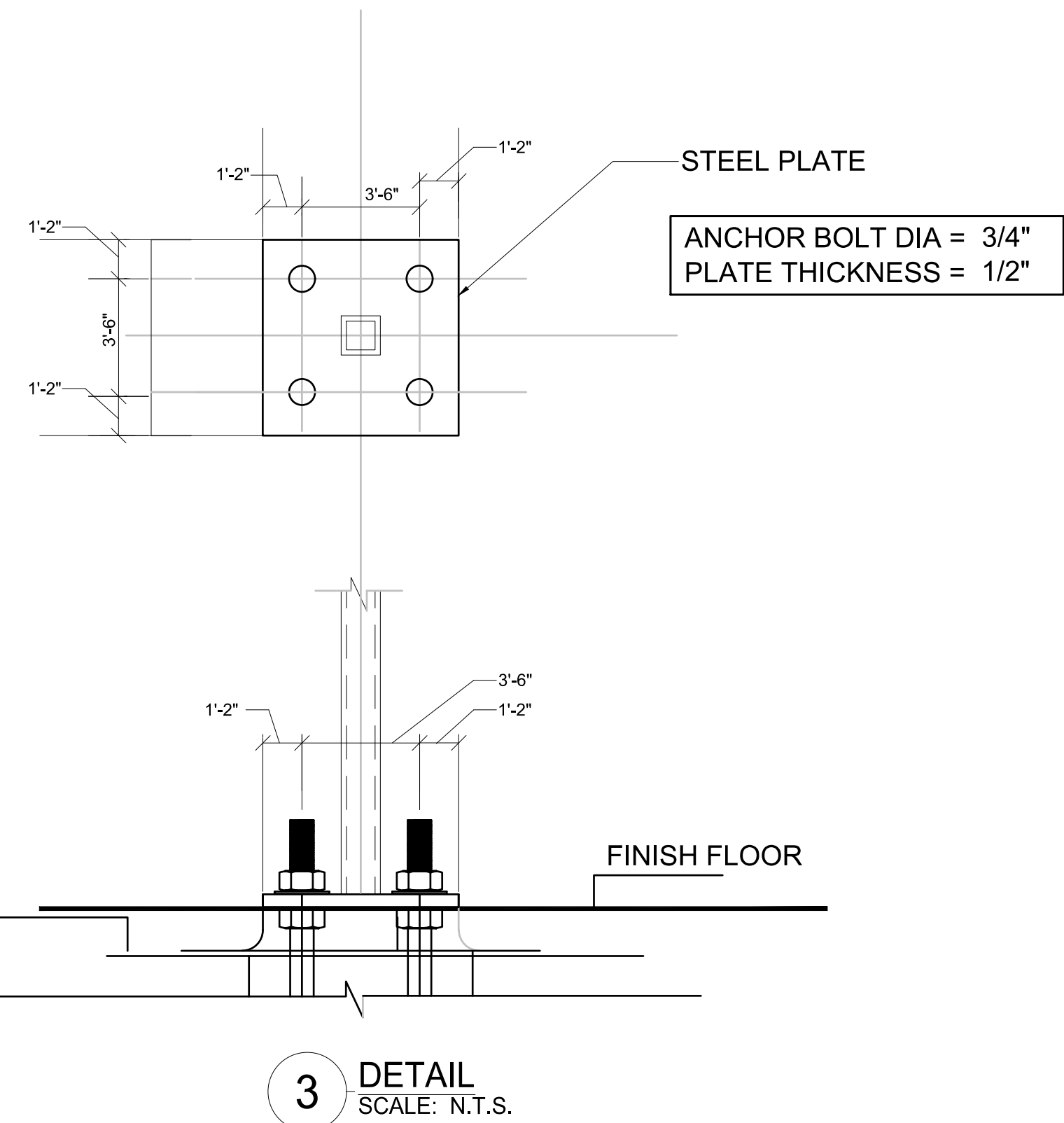




1 HOOD STRUCTURAL SUPPORT DETAIL  
SCALE: N.T.S.



2 DETAIL  
SCALE: N.T.S.



3 DETAIL  
SCALE: N.T.S.

LEGEND :-				
No.	MKD.	MEMBER		
1	1	HSS 3"x3"x3/4"		
2	2	L 3"x3"x1/4"		

SEAL & SIGNATURE:

12/01/2020



NO ALTERATION PERMITTED  
EXCEPT AS PROVIDED UNDER  
DIRECTION OF A LICENSED  
PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION
0	12/01/2020	ISSUED FOR PERMIT APPLICATION

CLIENT:

PROJECT:

**BATTERY FAN**

ADDRESS:

**CINNAMINSON  
NJ 08077**

ISSUE DATE:

**12/01/2020**

PROJECT NUMBER:

**AE# 1239**

SCALE:

**NONE**

DRAWN BY:

**CDS**

DESIGNED BY:

**AC**

CHECKED BY:

**DEE**

DRAWING TITLE:

**STRUCTURAL SUPPORT  
FOR HOOD DETAIL**

DRAWING NO:

**M103**

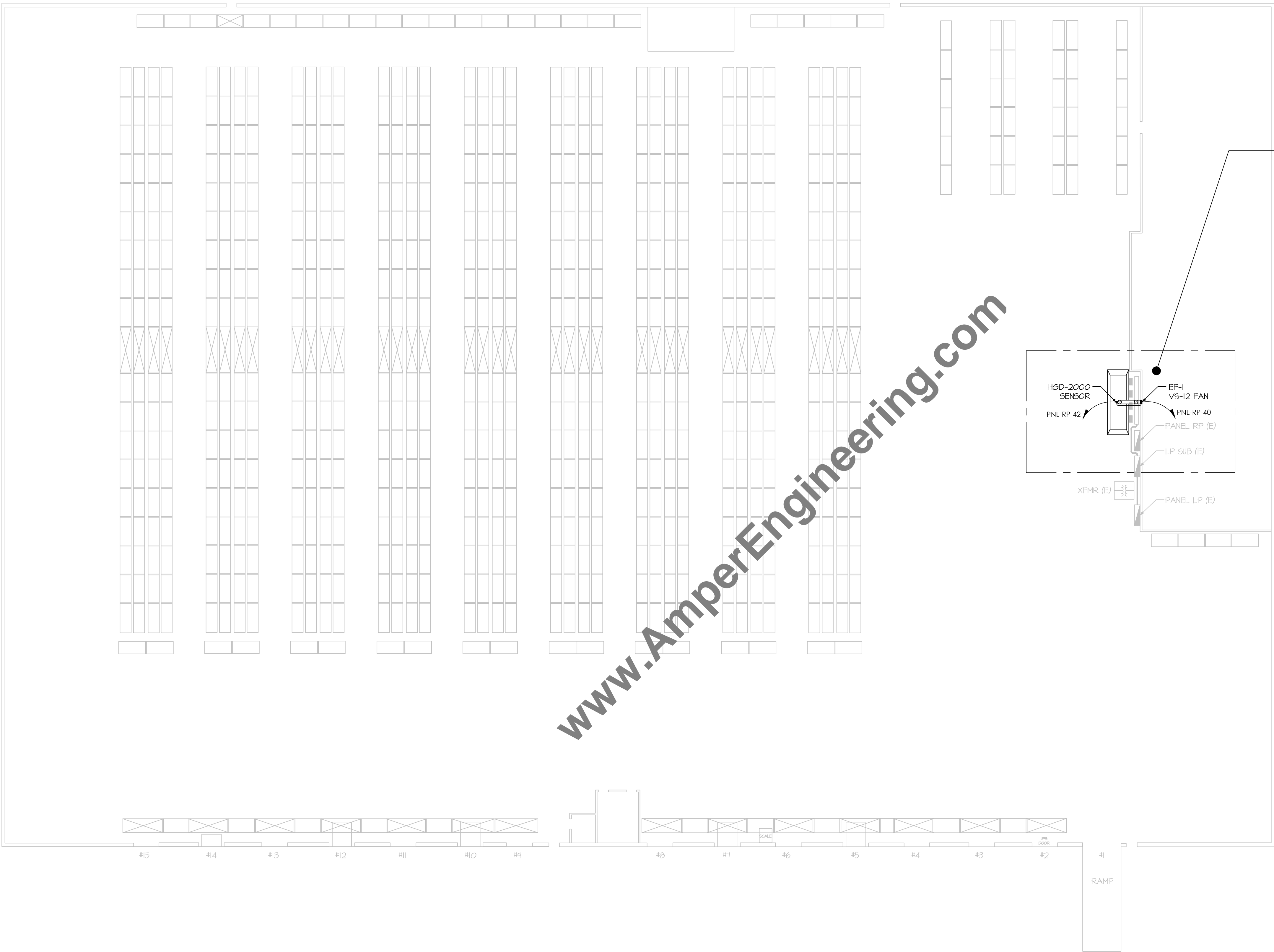
REVISION:

**0**



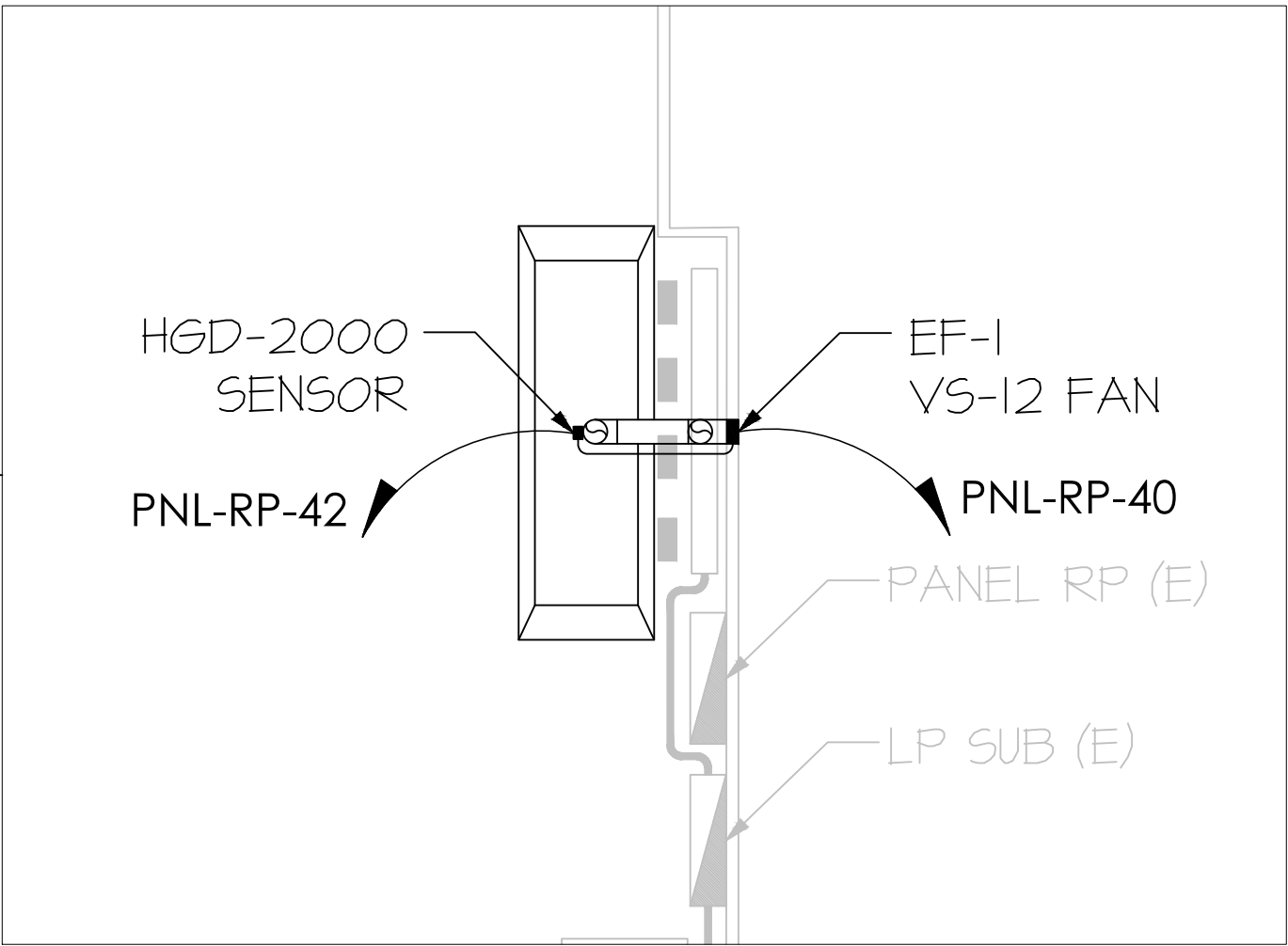






WAREHOUSE POWER PLAN  
SCALE: 1/16" = 1' -0"

- NOTES:
1. NEW EXHAUST FAN VS-12 AND HYDROGEN GAS DETECTOR WIRING TO ROUTE THROUGH EXISTING PANEL-RP.
  2. NEW EXHAUST FAN VS-12 TO BE 120 VAC AND COMPLIANT WITH NEC 501, CLASS I, DIVISION II GROUP B.
  3. SEE DRAWING E200 FOR HYDROGEN GAS DETECTOR WIRING DIAGRAM.
  4. SEE DRAWING M101 & M103 FOR DETAILS.
  5. SEE DRAWING M102 FOR EQUIPMENT CUT SHEET.



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

SEAL & SIGNATURE:

12/01/2020



NO ALTERATION PERMITTED  
EXCEPT AS PROVIDED UNDER  
DIRECTION OF A LICENSED  
PROFESSIONAL ENGINEER.

REV	DATE	DESCRIPTION
0	12/04/2020	ISSUED FOR PERMIT APPLICATION

CLIENT:

PROJECT:  
**BATTERY FAN**  
  
ADDRESS:  
**CINNAMINSON  
NJ 08077**

ISSUE DATE: 12/04/2020	
PROJECT NUMBER: AE# 1239	
SCALE: NONE	DRAWN BY: DEE
DESIGNED BY: DEE	CHECKED BY: DEE

DRAWING TITLE:  
**WAREHOUSE  
POWER PLAN**

DRAWING NO: <b>E101</b>	REVISION: <b>0</b>
----------------------------	-----------------------

