

FOR QUESTIONS, CALL THE  
Michigan Office  
REGION 77  
PHONE: (616) 942 - 9881  
EMAIL: reg77@ktechhoods.com

**PATENT NUMBERS**

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.  
AC-PSP WALL (CANADA) - CA PATENT 2820509.  
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.  
EXHAUST HOODS ND-2/BD-2/SND-2 (CANADA) - CA PATENT 2520435 C.

**SPECIFICATION: CAPTRATE® GREASE-STOP® SOLID FILTER**

THE CAPTRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

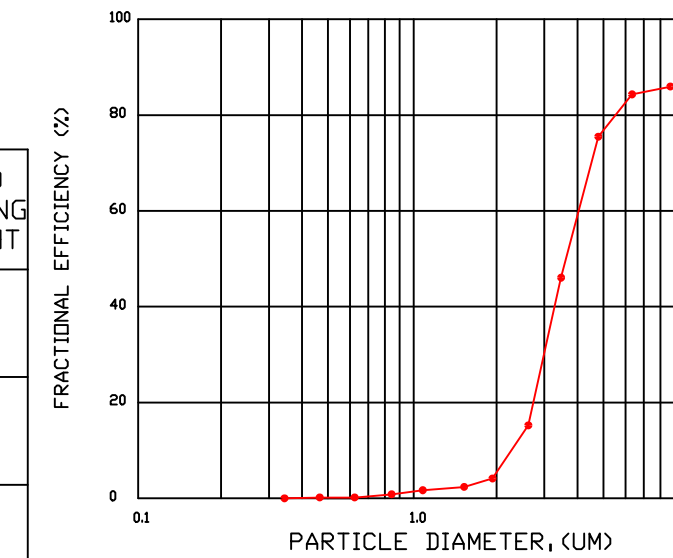
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

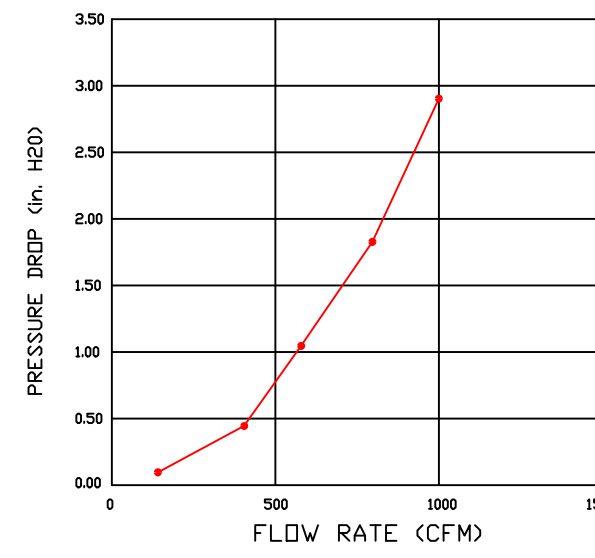
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05, MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:

- NFPA #96.
- NSF STANDARD #2.
- UL STANDARD #1046.
- INT. MECH. CODE (IMC).
- ULC-S649.



**HOOD INFORMATION - JOB#6259823**

| HOOD NO | TAG | MODEL              | MANUFACTURER | LENGTH | MAX COOKING TEMP | TYPE | APPLIANCE DUTY | DESIGN CFM/FT | TOTAL EXH CFM | EXHAUST PLENUM RISER(S) |      |        |     | TOTAL SUPPLY CFM | HOOD CONSTRUCTION | HOOD CONFIG |      |               |            |       |
|---------|-----|--------------------|--------------|--------|------------------|------|----------------|---------------|---------------|-------------------------|------|--------|-----|------------------|-------------------|-------------|------|---------------|------------|-------|
|         |     |                    |              |        |                  |      |                |               |               | WIDTH                   | LENG | HEIGHT | DIA |                  |                   | CFM         | VEL  | SP            | END TO END | ROW   |
| 1       | 18  | 4224 VHB-G         | K-TECH       | 5' 0"  | 700 DEG          | II   | N/A            | 120           | 600           |                         |      | 4'     | 10" | 600              | 1100              | -0.073'     | 0    | 430 SS 100%   | ALONE      | ALONE |
| 2       | 28  | 7224 PK-ND-2 Q     | K-TECH       | 8' 0"  | 600 DEG          | I    | HEAVY          | 225           | 1800          |                         |      | 4'     | 14" | 1800             | 1684              | -0.698'     | 0    | 430 SS 100%   | ALONE      | ALONE |
| 3       | 35  | 5412 PK-SND-2-SB-F | K-TECH       | 14' 0" | 600 DEG          | I    | HEAVY          | 294           | 4116          |                         |      | 4'     | 16" | 2058             | 1474              | -0.777'     | 2230 | 430 SS        | ALONE      | ALONE |
|         |     |                    |              |        |                  |      |                |               |               |                         |      | 4'     | 16" | 2058             | 1474              | -0.777'     |      | WHERE EXPOSED |            |       |

**HOOD INFORMATION**

| HOOD NO | TAG | FILTER(S)             |     |        |        | LIGHT(S)               |     |                | UTILITY CABINET(S) |          |      |                  | FIRE SYSTEM PIPING | HOOD HANGING WEIGHT |      |                    |
|---------|-----|-----------------------|-----|--------|--------|------------------------|-----|----------------|--------------------|----------|------|------------------|--------------------|---------------------|------|--------------------|
|         |     | TYPE                  | QTY | HEIGHT | LENGTH | EFFICIENCY @ 7 MICRONS | QTY | TYPE           | WIRE GUARD         | LOCATION | SIZE | FIRE SYSTEM TYPE |                    |                     | SIZE | ELECTRICAL MODEL # |
| 1       | 18  |                       |     |        |        |                        |     |                |                    |          |      |                  |                    |                     | NO   | 189 LBS            |
| 2       | 28  | CAPTRATE SOLID FILTER | 5   | 20"    | 16"    | 85% SEE FILTER SPEC    | 3   | RECESSED ROUND | NO                 |          |      |                  |                    |                     | YES  | 425 LBS            |
| 3       | 35  | CAPTRATE SOLID FILTER | 10  | 20"    | 16"    | 85% SEE FILTER SPEC    | 5   | RECESSED ROUND | NO                 |          |      |                  |                    |                     | YES  | 804 LBS            |

**HOOD OPTIONS**

| HOOD NO | TAG | OPTION   |
|---------|-----|--|
| 1       | 18  | FIELD WRAPPER 18.00' HIGH FRONT, LEFT, RIGHT.  |
| 2       | 28  | FIELD WRAPPER 18.00' HIGH FRONT, LEFT, RIGHT.<br>BACKSPLASH 80.00' HIGH X 96.00' LONG 430 SS VERTICAL.   |
| 3       | 35  | FIELD WRAPPER 18.00' HIGH FRONT, LEFT, RIGHT.<br>BACKSPLASH 68.00' HIGH X 168.00' LONG 430 SS VERTICAL.<br>BALANCE DAMPERS.<br>RIGHT VERTICAL END PANEL 27' TOP WIDTH, 21' BOTTOM WIDTH, 68' HIGH INSULATED 430 SS.<br>LEFT VERTICAL END PANEL 27' TOP WIDTH, 21' BOTTOM WIDTH, 68' HIGH INSULATED 430 SS. |

**PERFORATED SUPPLY PLENUM(S)**

| HOOD NO | TAG | POS   | LENGTH | WIDTH | HEIGHT | TYPE | RISER(S) |      |     |     |        |
|---------|-----|-------|--------|-------|--------|------|----------|------|-----|-----|--------|
|         |     |       |        |       |        |      | WIDTH    | LENG | DIA | CFM | SP     |
| 3       | 35  | Front | 168'   | 20'   | 6'     | MUA  | 12"      | 28"  |     | 743 | 0.179' |
|         |     |       |        |       |        | MUA  | 12"      | 28"  |     | 743 | 0.179' |
|         |     |       |        |       |        | MUA  | 12"      | 28"  |     | 743 | 0.179' |

**WALL-MOUNT UTILITY CABINET**

| HOOD NO | LOCATION | SIZE        | UTILITY CABINET(S) |             |                    |                   | WEIGHT     |
|---------|----------|-------------|--------------------|-------------|--------------------|-------------------|------------|
|         |          |             | FIRE SYSTEM TYPE   | SIZE        | ELECTRICAL MODEL # | SWITCHES QUANTITY |            |
| 2       | WALL MNT | 12'x42'x24' | TANK FS            | 4.0         | DCV-1111           | 1 LIGHT<br>1 FAN  | 240.00 LBS |
| 3       | WALL MNT | 12'x66'x24' | TANK FS            | 4.0/4.0/4.0 | DCV-2111           | 1 LIGHT<br>1 FAN  | 440.00 LBS |

**GREASE DUCT & CHIMNEY SPECIFICATIONS:**  
PROVIDE GREASE DUCT EQUAL TO K-TECH MODEL "KDW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "KDW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "KDW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURERS INSTALLATION GUIDE.  
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURERS LISTING MODEL "KDW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.  
  
IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO K-TECH MODEL "KDW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

K-TECH RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

**HVAC DISTRIBUTION NOTE**  
HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

**VERIFY CEILING HEIGHT**  
\_\_\_\_' - \_\_\_\_"  
HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

**CUSTOMER APPROVAL TO MANUFACTURE:**

APPROVED AS NOTED

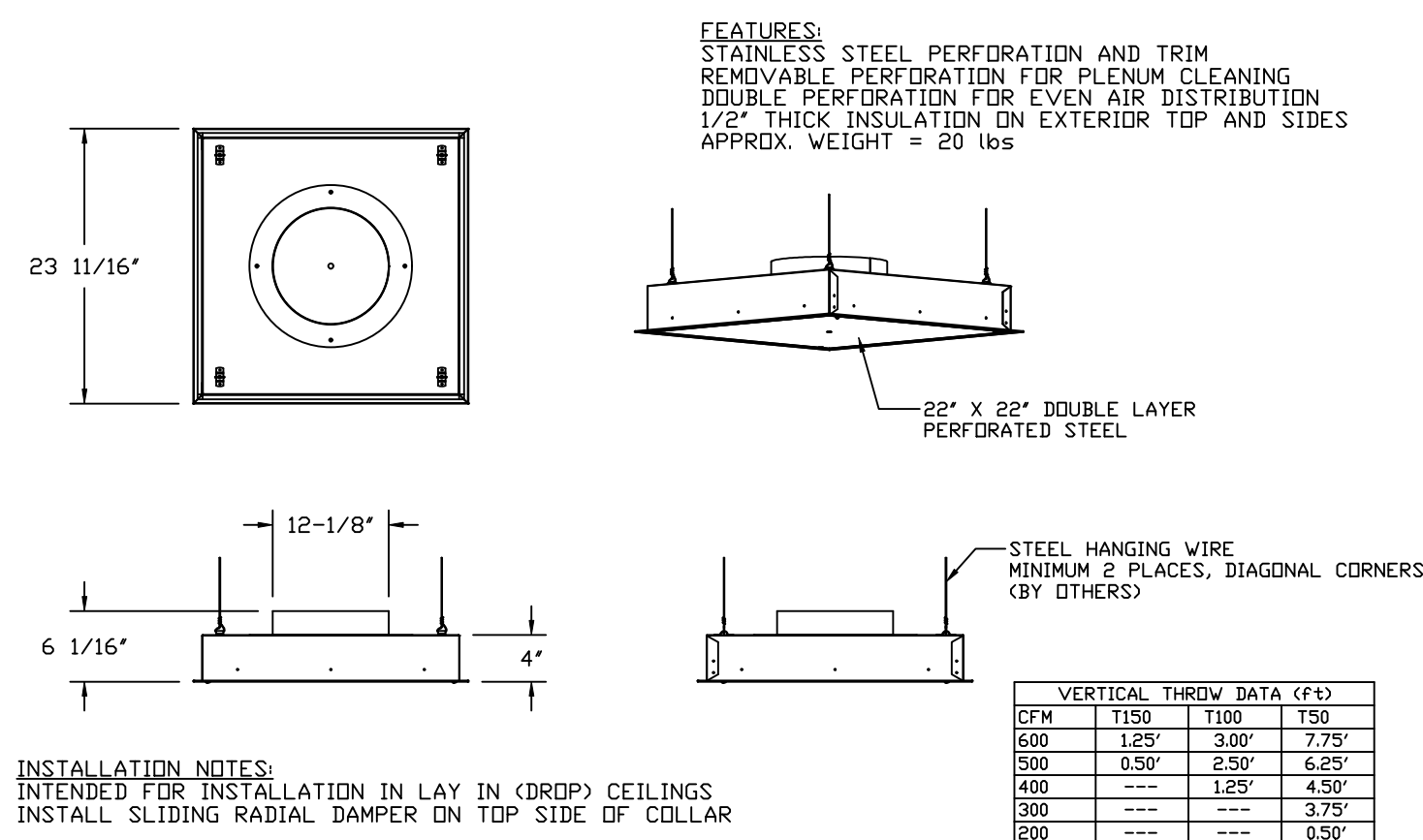
APPROVED WITH NO EXCEPTION TAKEN

REVISE AND RESUBMIT

SIGNATURE \_\_\_\_\_

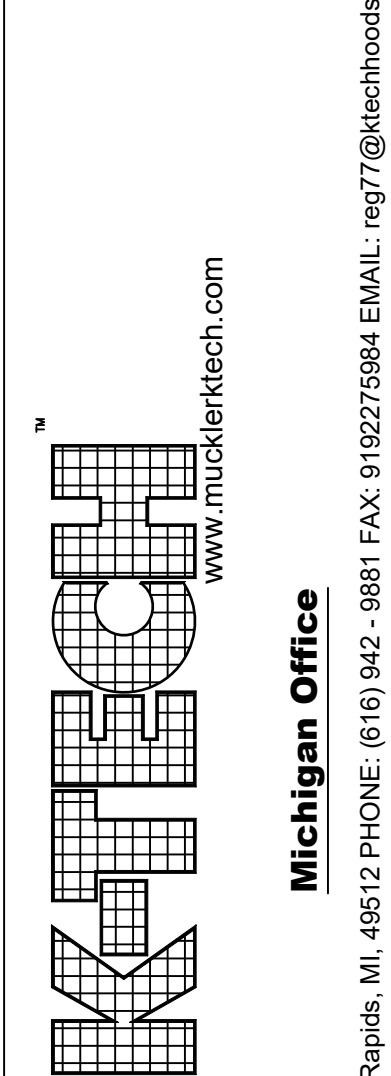
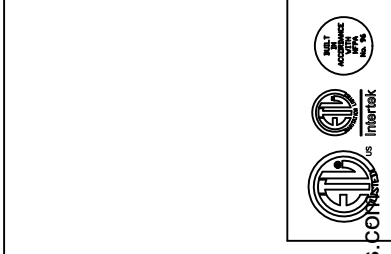
YOUR TITLE \_\_\_\_\_ DATE \_\_\_\_\_

**QTY 5-DROP-IN PERFORATED SUPPLY PLENUM DIFFUSER (DI-PSP)**



**REVISIONS**

| DESCRIPTION | DATE |
|-------------|------|
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|             |      |
|             |      |



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3876 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512  
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Nemo's Detroit Rev 1  
1384 Michigan Avenue,  
Detroit, MI, 48226

DATE: 10/9/2023

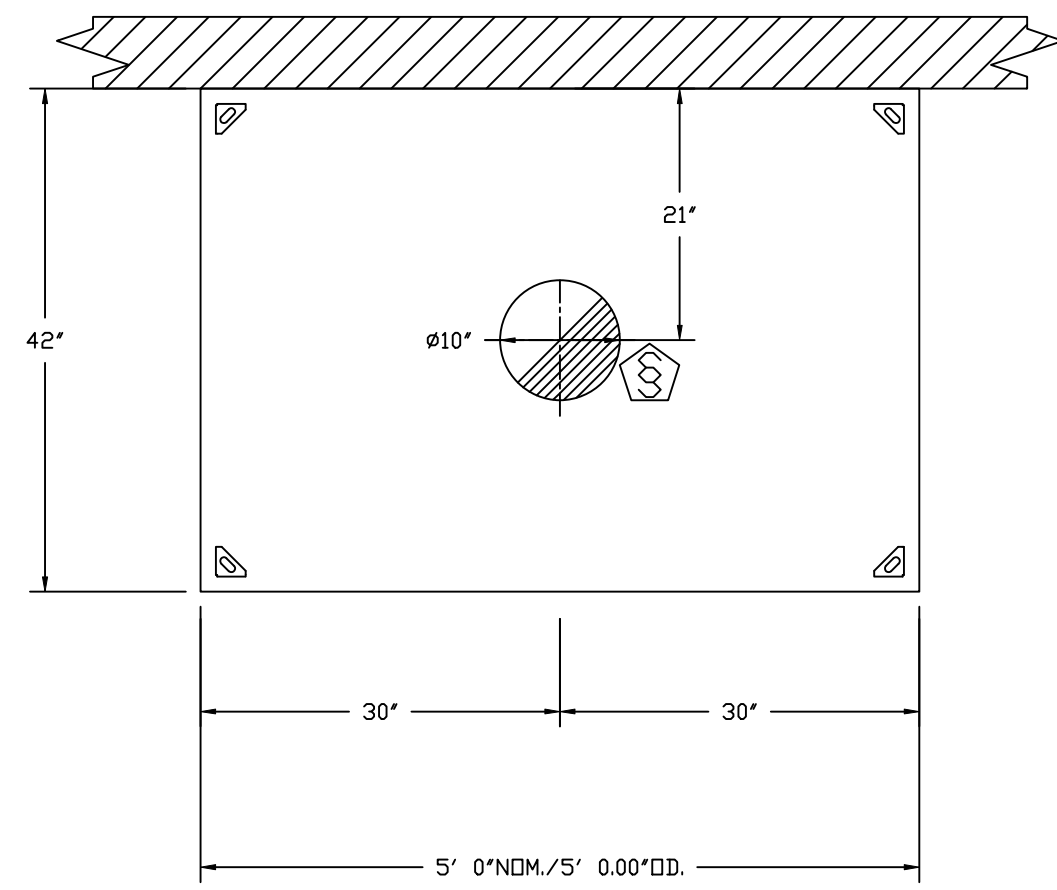
DWG.#:  
6259823

DRAWN BY: RJF

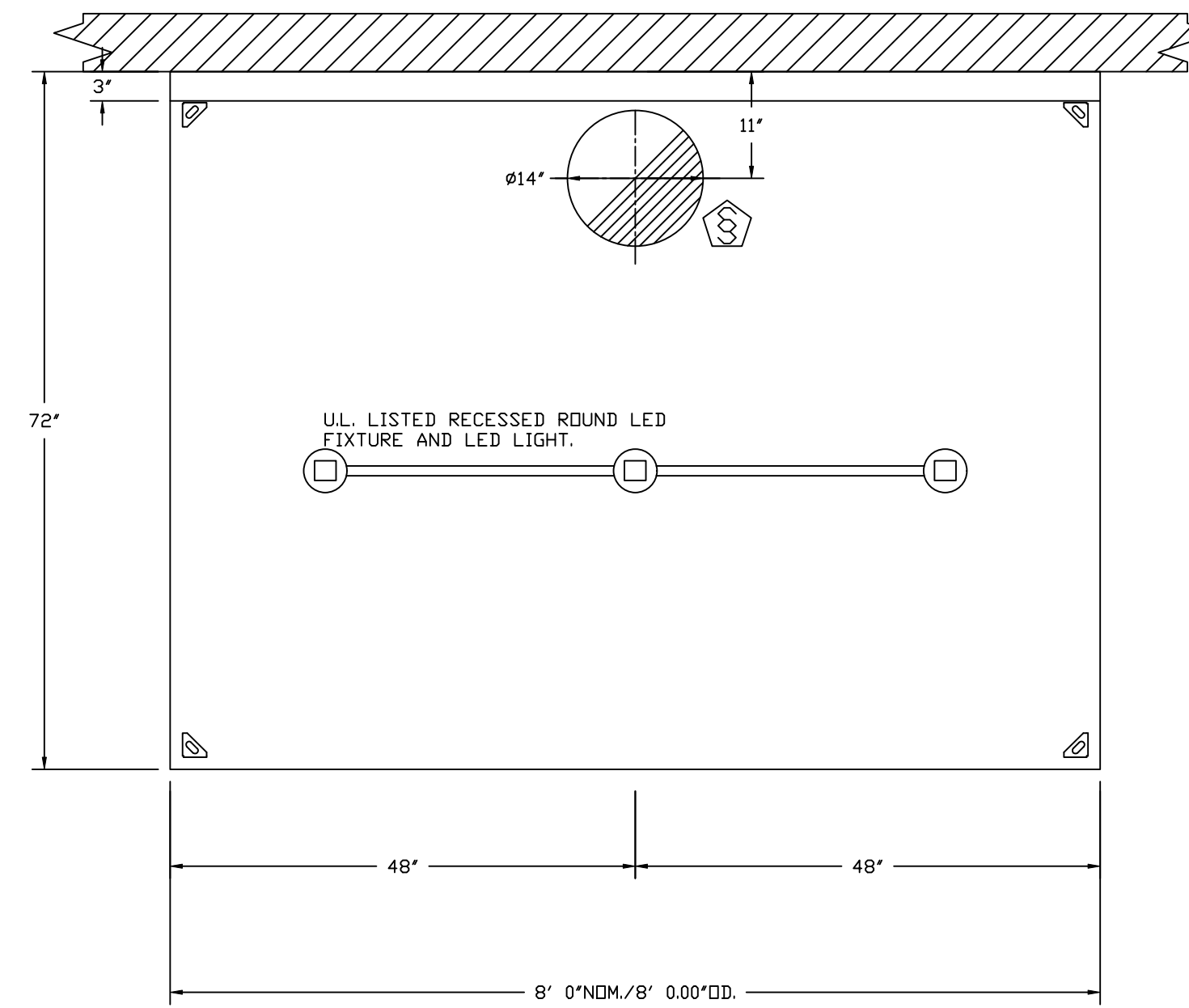
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3/4" = 1'-0"

MASTER DRAWING

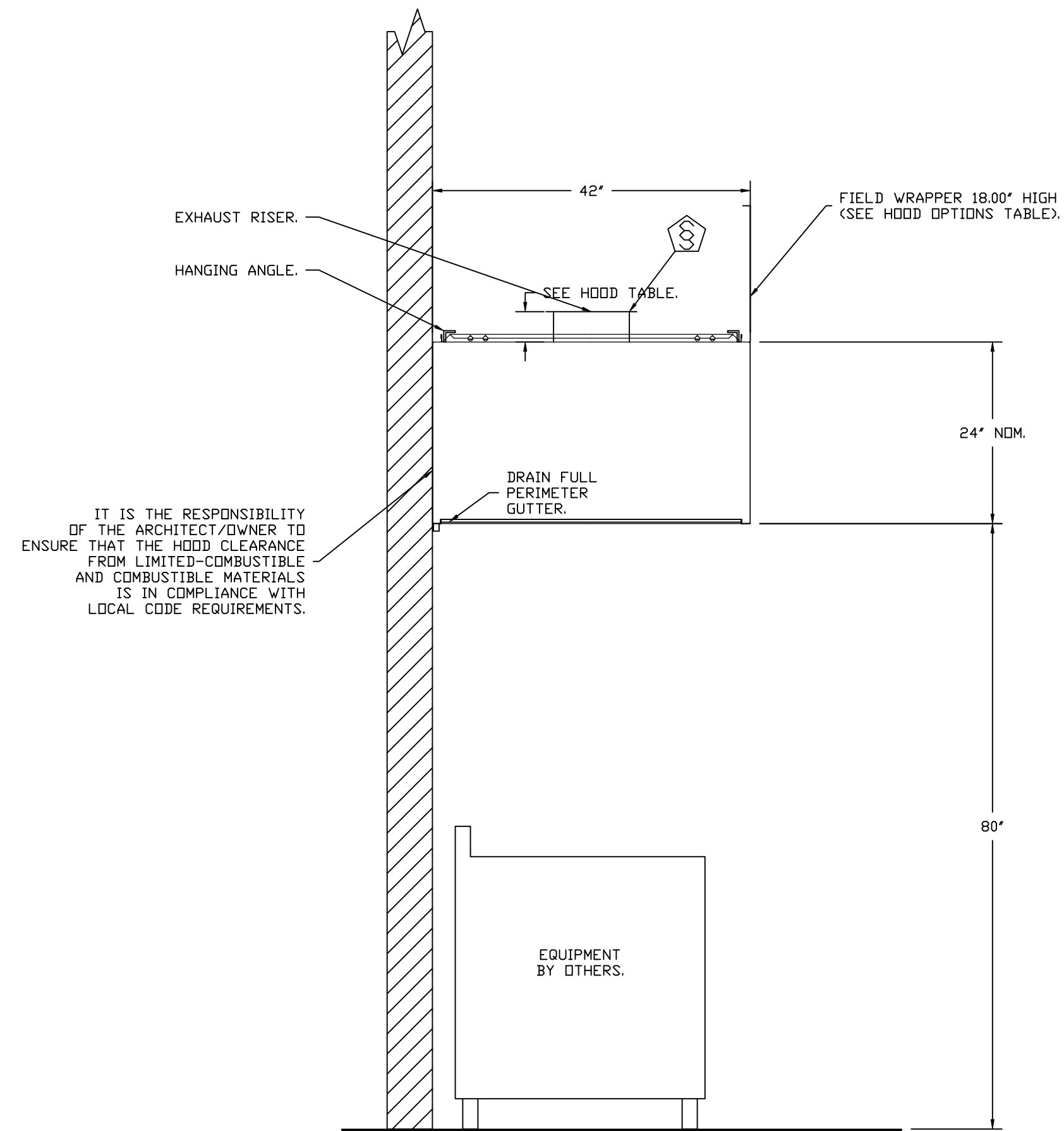
SHEET NO.  
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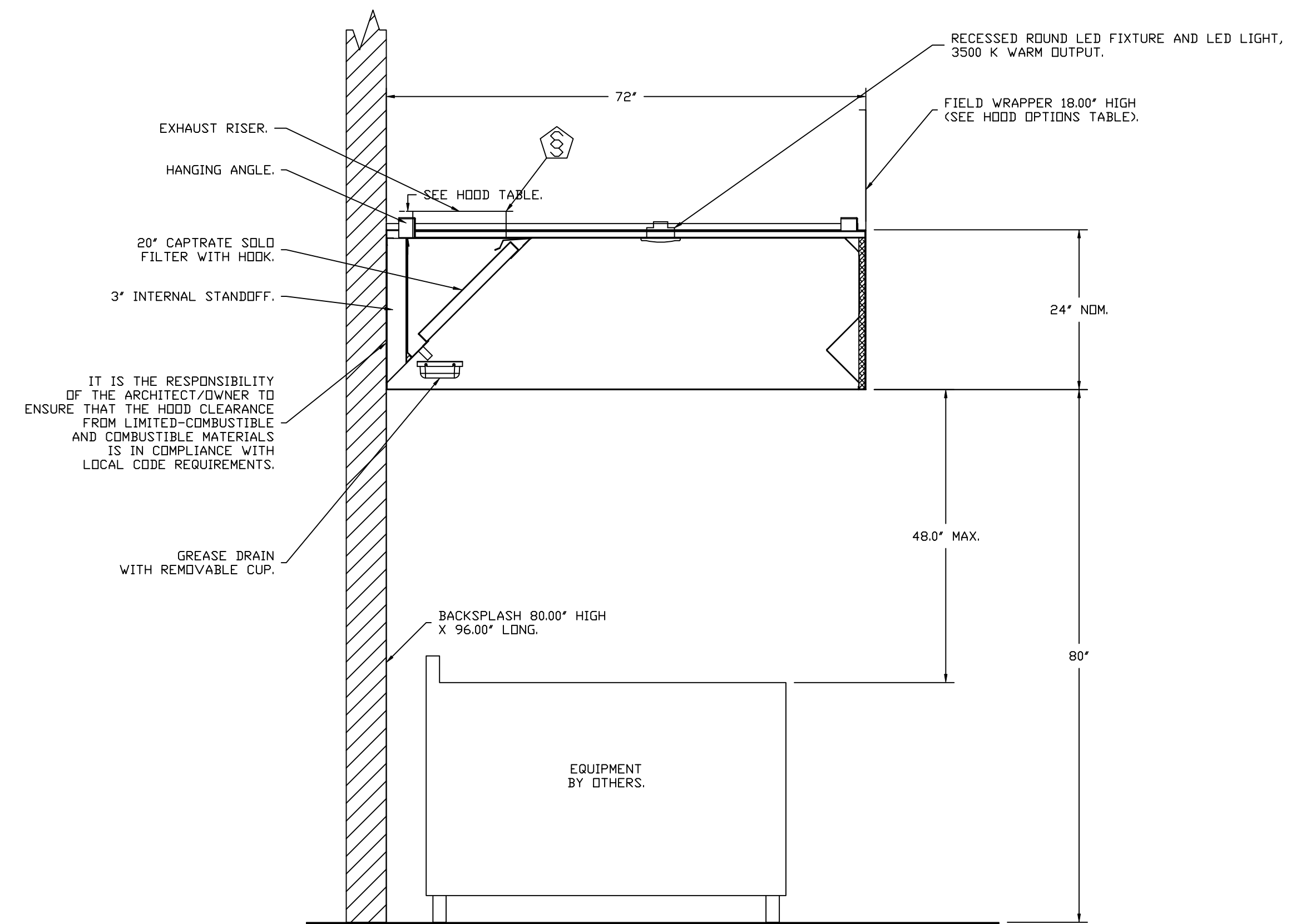
PLAN VIEW - HOOD #1 (18)  
5' 0.00" LONG 4224VHB-G



PLAN VIEW - HOOD #2 (28)  
8' 0.00" LONG 7224PK-ND-2 Q



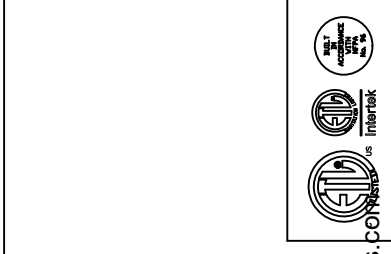
SECTION VIEW - MODEL 4224VHB-G  
HOOD - #1 (18)



SECTION VIEW - MODEL 7224PK-ND-2 Q  
HOOD - #2 (28)

**REVISIONS**

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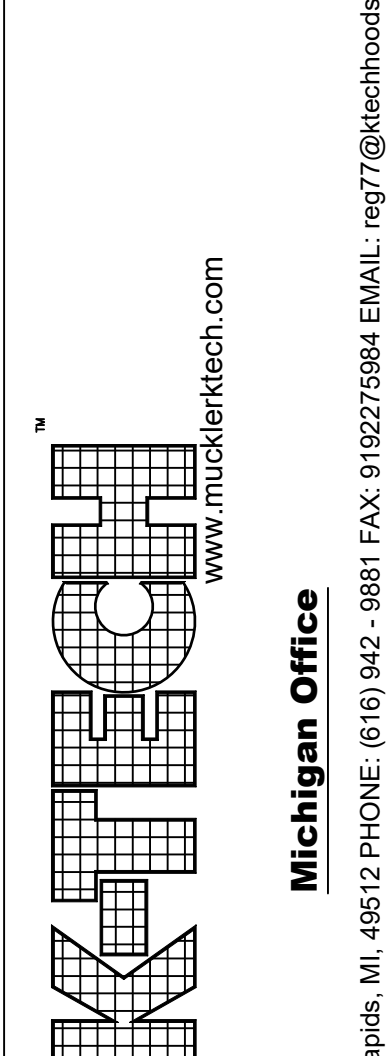
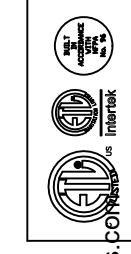
www.mucklettech.com  
**MUCKLETTECH**  
**Michigan Office**  
 3876 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 942-9881 FAX: 9192275984 EMAIL: reg77@techhoods.com

Nemo's Detroit Rev 1  
 1384 Michigan Avenue,  
 Detroit, MI, 48226

DATE: 10/9/2023  
 DWG.#: 6259823  
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 SCALE: 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
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| REVISIONS   |      |
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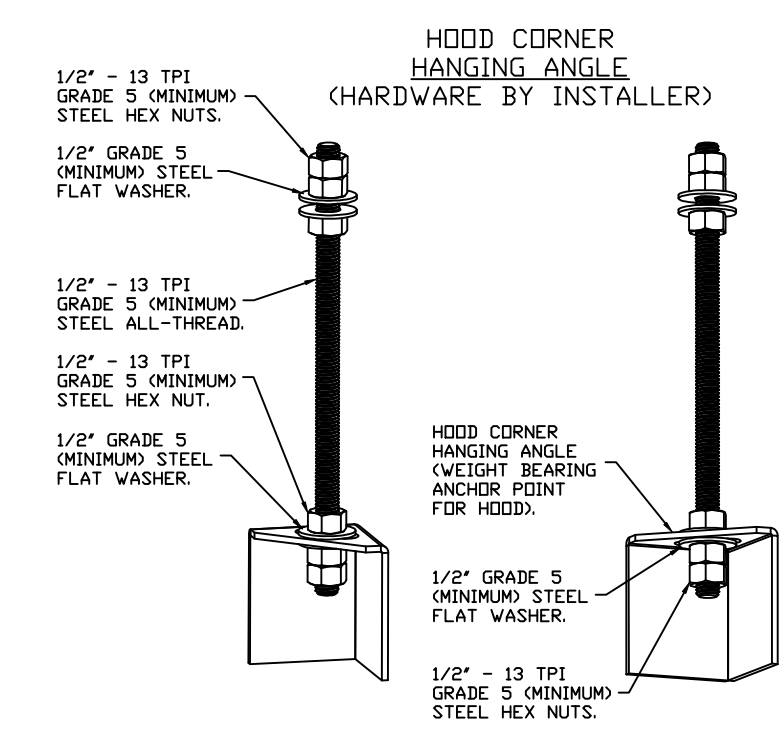


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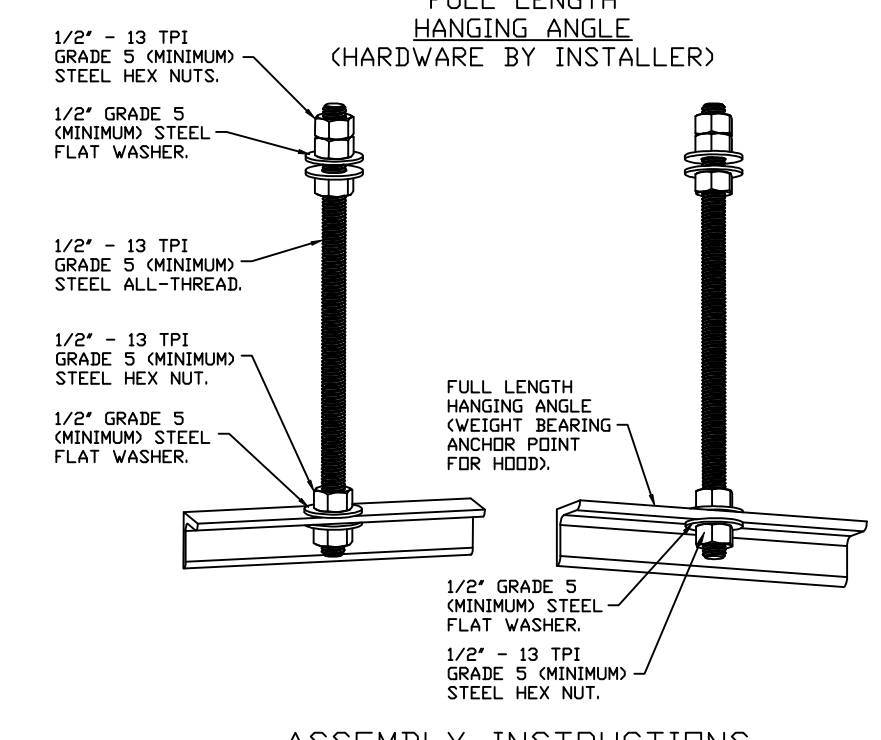
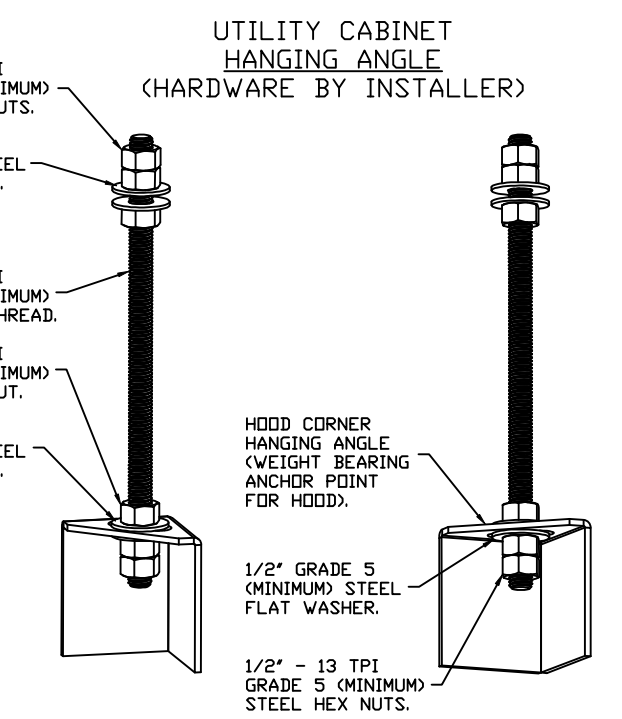
**ASSEMBLY INSTRUCTIONS**

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

**WALL-MOUNT UTILITY CABINET ASSEMBLY INSTRUCTIONS**

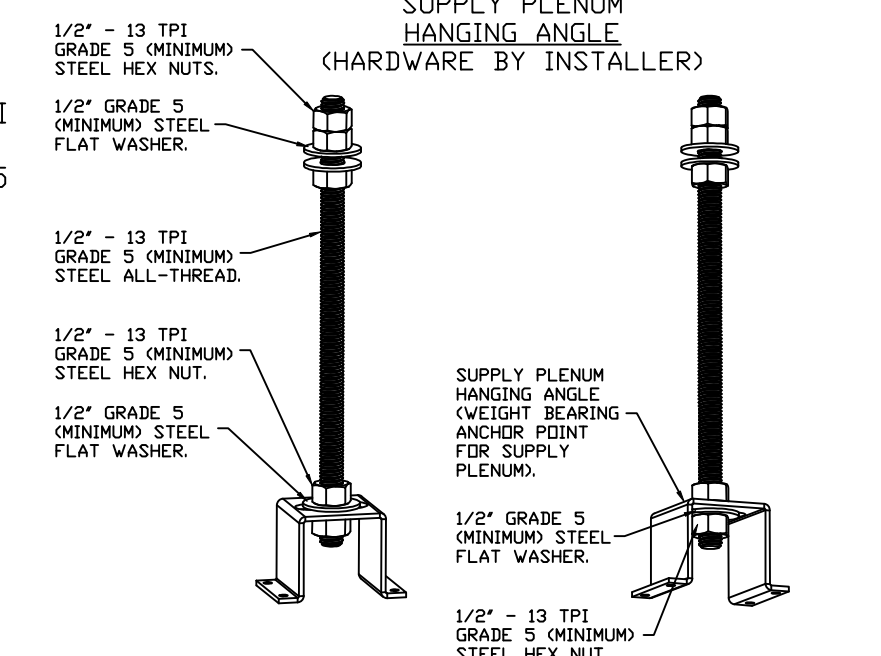
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CABINET TO BE HUNG BY HOOD INSTALLER. SEE UTILITY CABINET SCHEDULE FOR CABINET SIZE.



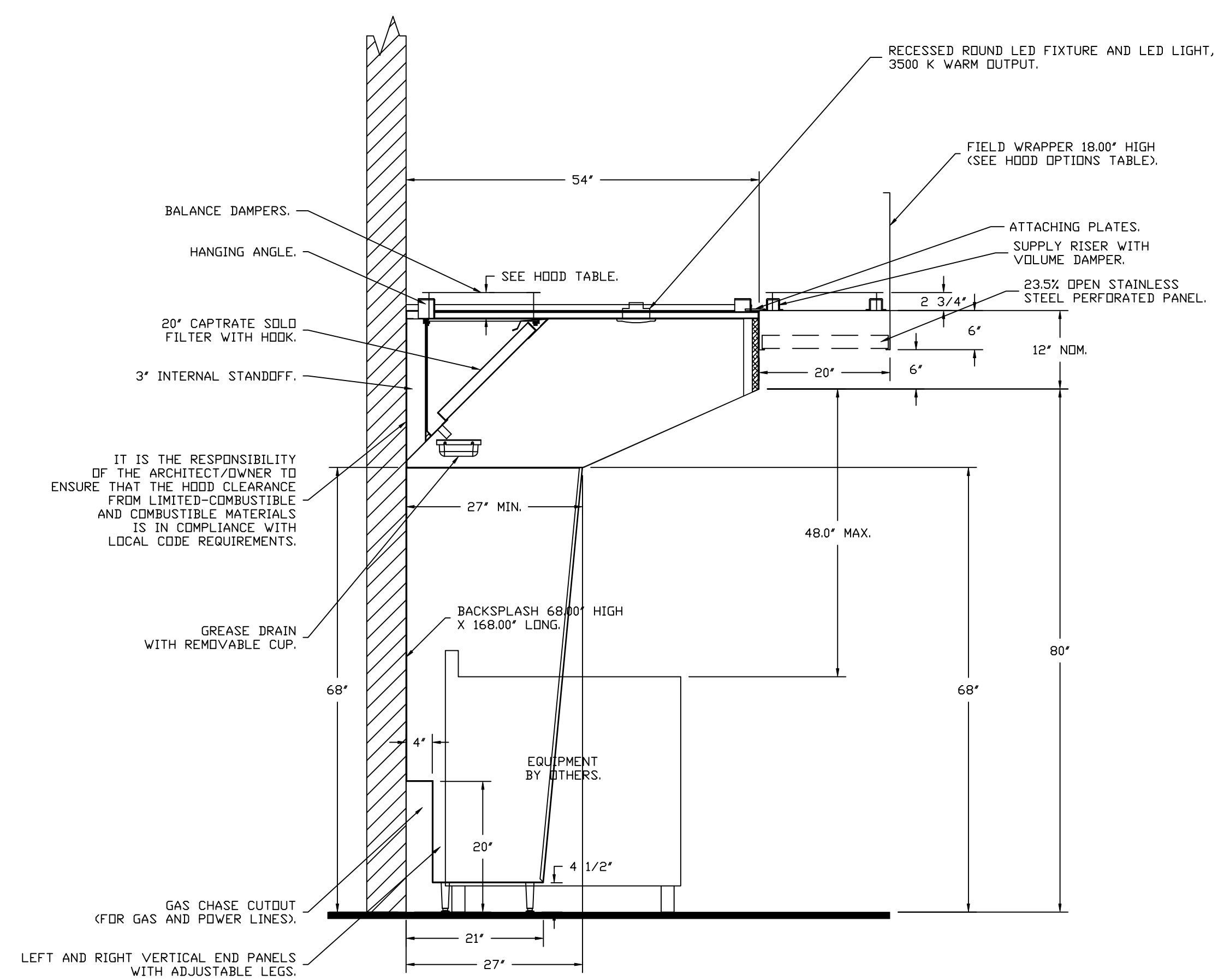
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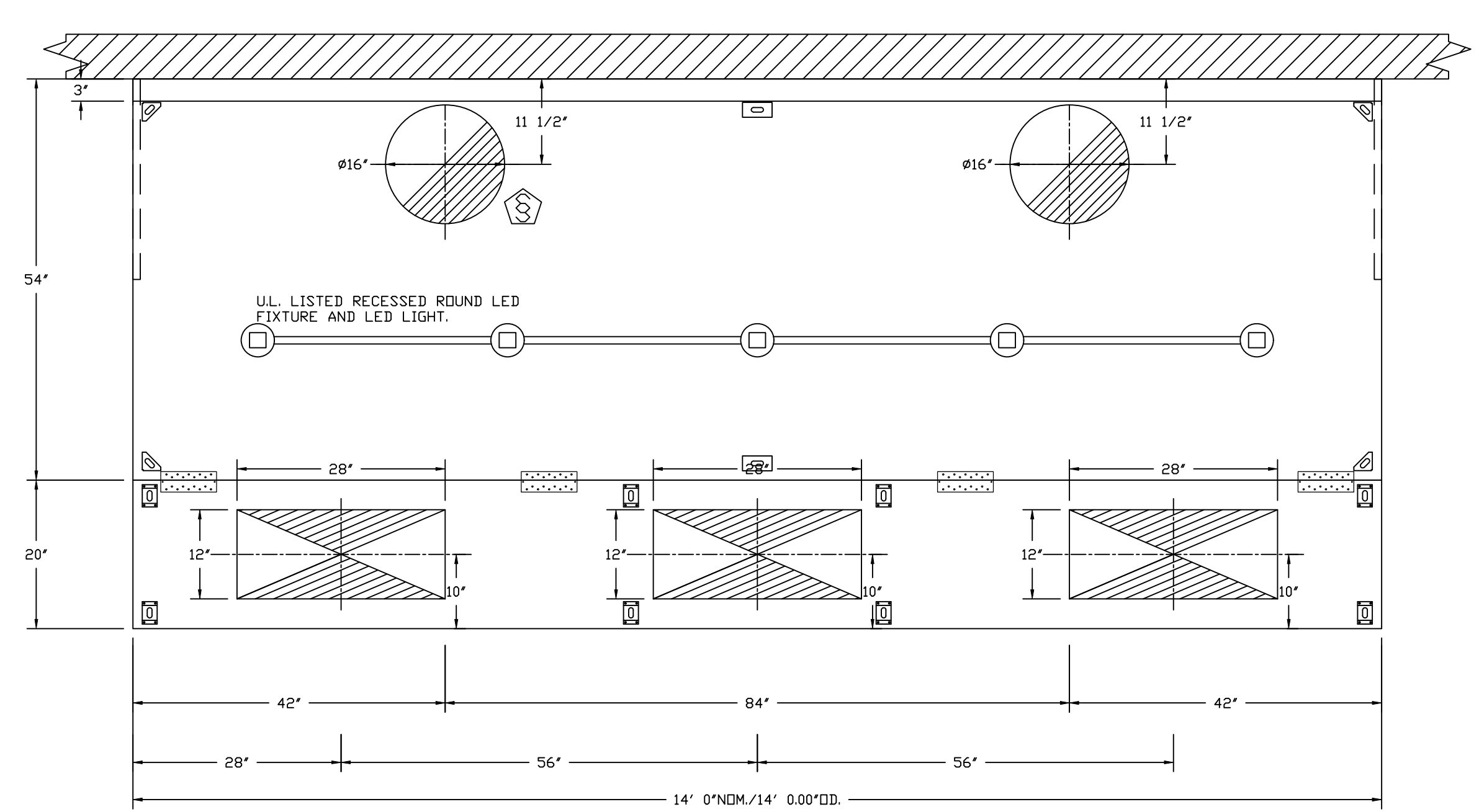


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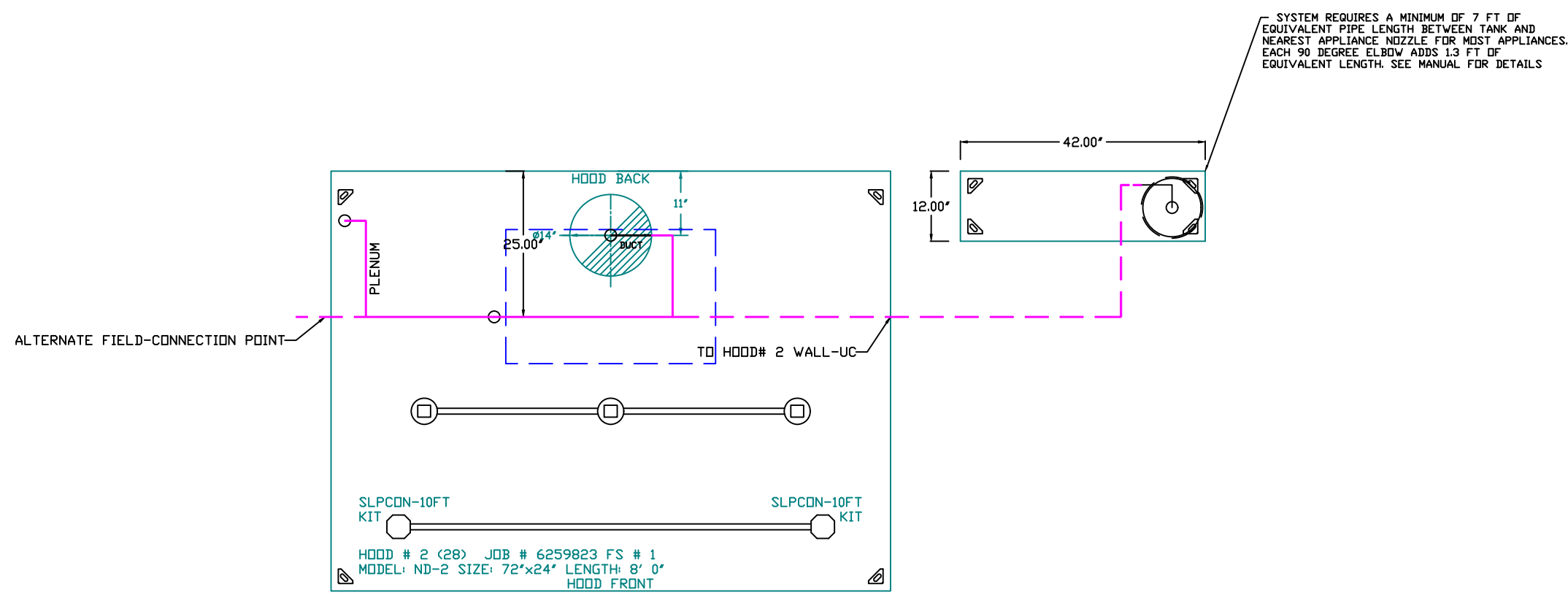


**SECTION VIEW - MODEL 5412PK-SND-2-SB-F HOOD - #3 (35)**



**PLAN VIEW - HOOD #3 (35)**  
 14' 0.00" LONG 5412PK-SND-2-SB-F  
 NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.





- NOTES
- FIELD PIPE DROPS AS SHOWN. PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY GAS.
  - FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
  - SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
  - RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVEING, SALAMANDERS, ETC.
  - OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
  - IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
  - FACTORY PIPING EXTENDS A MAXIMUM OF 6' ABOVE THE TOP OF THE HOOD.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

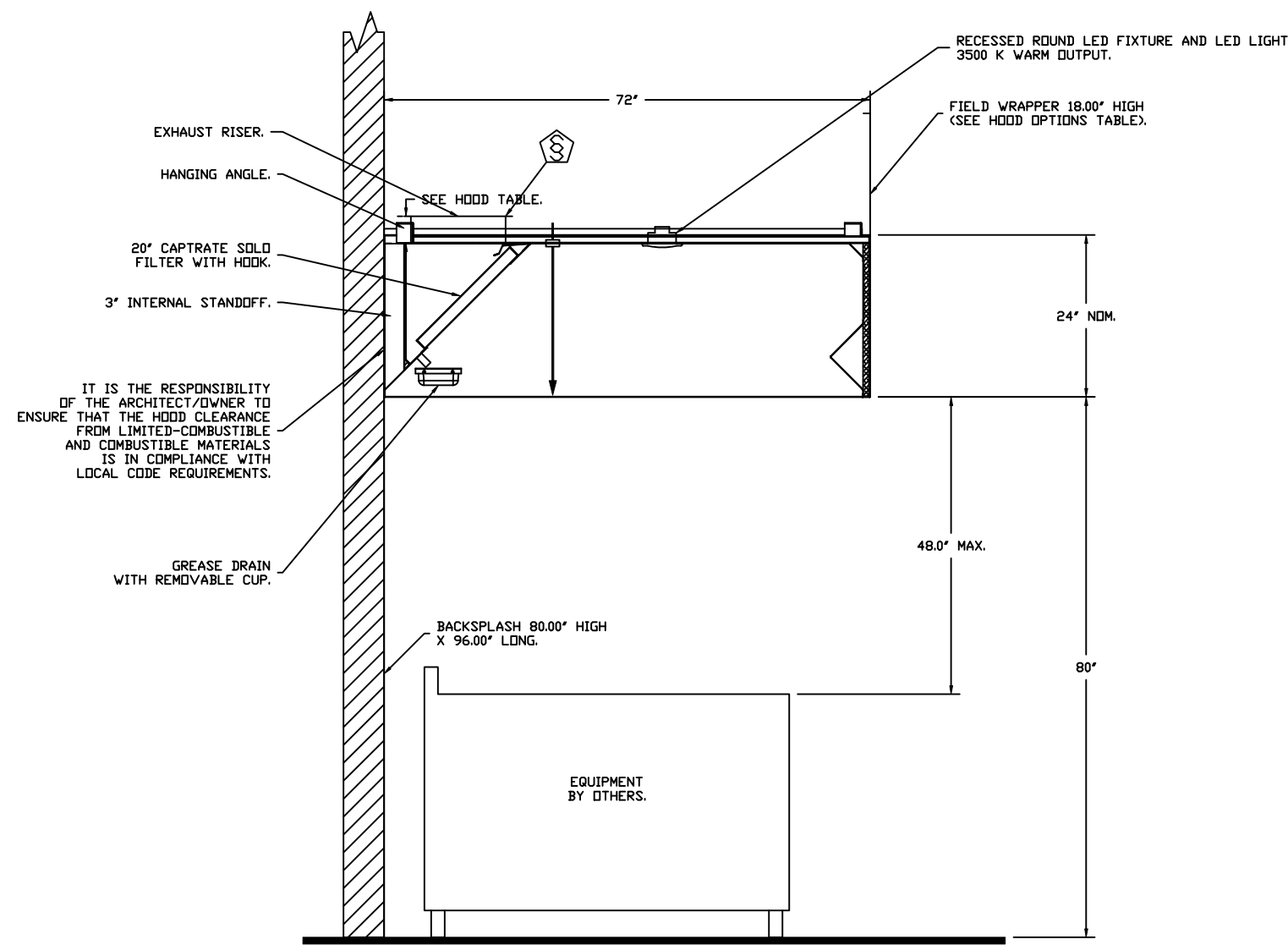
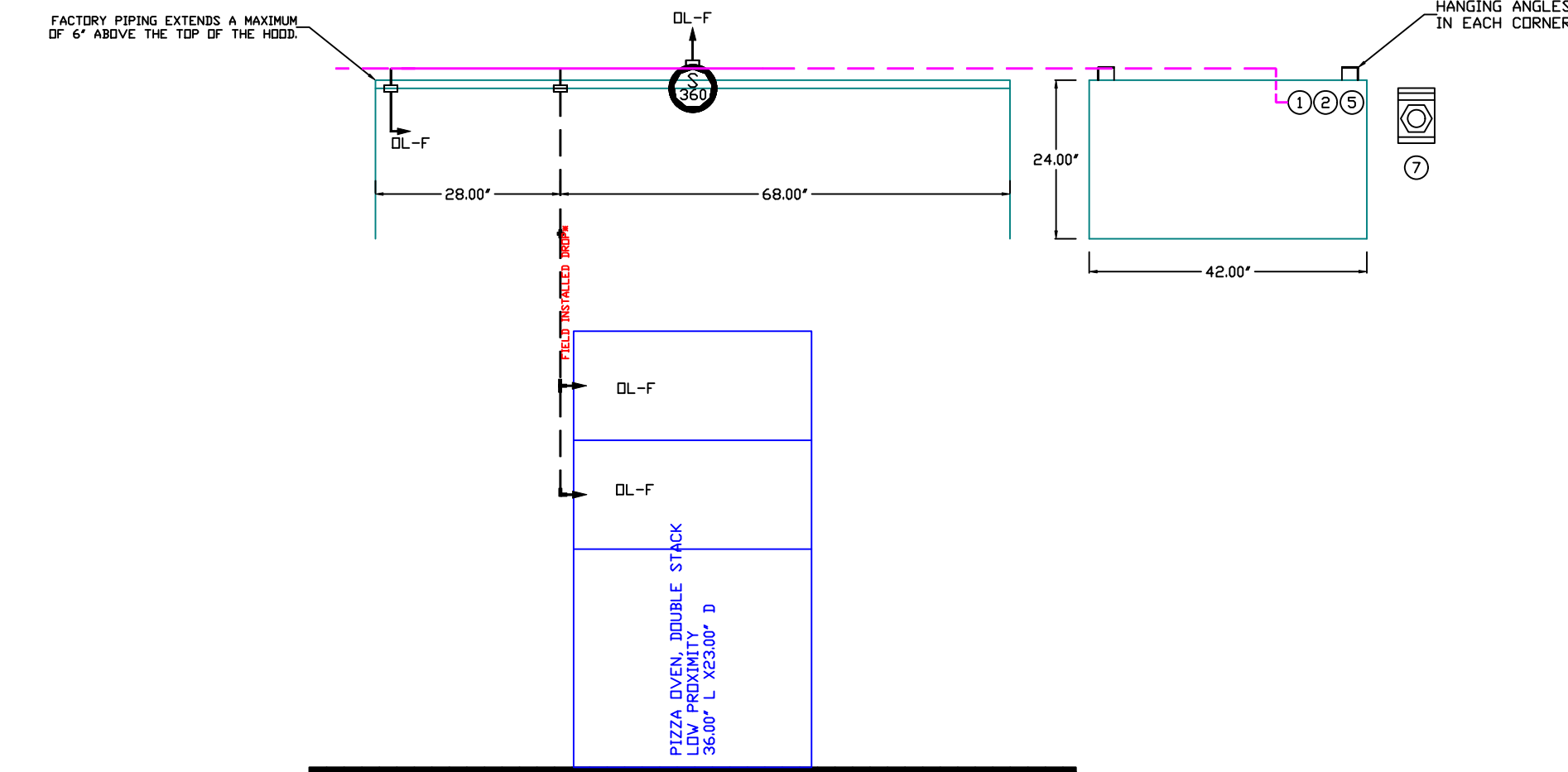
- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS  
 JOB #: 6259823  
 JOB NAME: NEMO'S DETROIT REV 1.

SYSTEM SIZE: TANK-SP-1-WC DESIGN FP: 16. MAXIMUM FP: 20.  
 HOOD # 2 8' 0.00' LONG x 72' WIDE x 24' HIGH.  
 RISER # 1 SIZE: 14" DIA.  
 HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.  
 - MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

**LEGEND - FIRE CABINET TANK SYSTEM**

- 4 GALLON TANK.
- PRIMARY ACTUATOR RELEASE.
- SECONDARY ACTUATOR RELEASE.
- PRESSURE SUPERVISION SWITCH.
- PRIMARY HOSE ASSEMBLY.
- SECONDARY HOSE ASSEMBLY.
- REMOTE MANUAL ACTUATION DEVICE.



SECTION VIEW - MODEL 7224PK-ND-2 Q  
 HOOD - #2

**FIRE SYSTEM INFORMATION - JOB#6259823**

| FIRE SYSTEM NO | TAG | TYPE    | SIZE        | MAX FP | DESIGN FP | INSTALLATION               |                  |
|----------------|-----|---------|-------------|--------|-----------|----------------------------|------------------|
|                |     |         |             |        |           | SYSTEM                     | LOCATION ON HOOD |
| 1              | 30  | TANK FS | 4.0         | 20     | 16        | WALL UTILITY CABINET RIGHT | N/A              |
| 2              | 43  | TANK FS | 4.0/4.0/4.0 | 60     | 46        | WALL UTILITY CABINET LEFT  | N/A              |

**GAS VALVES(S)**

| FIRE SYSTEM NO | TAG | TYPE          | SIZE  | SUPPLIED BY |
|----------------|-----|---------------|-------|-------------|
| 1              | 30  | SC ELECTRICAL | 2.000 | K-TECH      |
| 2              | 43  | SC ELECTRICAL | 2.000 | K-TECH      |

**FIRE SYSTEM PARTS LIST KEY**

| FIRE SYSTEM NO | TAG | KEY NUMBER - PART DESCRIPTION  | QTY BY FACTORY | QTY BY DIST |
|----------------|-----|--|----------------|-------------|
| 1              | 30  | 0 - 0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.   | 1              | 0           |
|                |     | 0 - 0 - TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.  | 1              | 0           |
|                |     | 0 - 0 - 12-F28021-32144-01-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO. CLOSE ON TEMP RISE AT 360°F.  | 1              | 0           |
|                |     | 0 - 0 - 361091 3/8" BRASS PLUG.  | 3              | 0           |
|                |     | 0 - 0 - 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.  | 1              | 0           |
|                |     | 0 - 0 - 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.   | 1              | 0           |
|                |     | 0 - 0 - 79425 3/8" NPT FEMALE TO 1/2" MALE PROGRESS ADAPTER.   | 3              | 0           |
|                |     | 0 - 0 - 79253 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.  | 1              | 0           |
|                |     | 0 - 0 - 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.   | 1              | 0           |
|                |     | 0 - 0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.   | 1              | 0           |
|                |     | 0 - 0 - 87-30003-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.   | 1              | 0           |
|                |     | 0 - 0 - 87-30015-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.   | 4              | 0           |
|                |     | 0 - 0 - 90S545SPC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LD.   | 3              | 0           |
|                |     | 0 - 0 - 9097200PC PRO PRESS PC611 1/2 PRESS TEE LD.  | 3              | 0           |
|                |     | 0 - 0 - 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.  | 2              | 0           |
|                |     | 0 - 0 - A0034332 JUNCTION BOX FOR MANUAL PULL STATION, 1.5" DEEP BACK BOX, RED COLOR.  | 1              | 0           |
|                |     | 0 - 0 - A31484 1/4" NPT SCHRAEDER VALVE AND CAP, JB INDUSTRIES, 1/4" FLARE X 1/4" NPT HALF UNION, USED ON TANK SERVICE PORT.   | 1              | 0           |
|                |     | 0 - 0 - B1145 3/8" BLACK IRON 90 ELL.  | 2              | 0           |
|                |     | 0 - 0 - C81-104 CHROME PLATED PIPE FITTING 3/8" NPT TEE.   | 1              | 0           |
|                |     | 0 - 0 - C81-106 CHROME PLATED PIPE FITTING 3/8" NPT 90 DEGREE ELBOW.   | 1              | 0           |
|                |     | 0 - 0 - C81-107 CHROME PLATED PIPE FITTING 3/8" NPT UNION.   | 1              | 0           |
|                |     | 0 - 0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.  | 1              | 0           |
|                |     | 0 - 0 - SLPDCN-10FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 9" GAP OR BACK TO BACK HOODS. KIT CONTAINS 12 FEET OF BLACK MG WIRE, 12 FEET OF TAN MG WIRE, 10 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.  | 2              | 0           |
|                |     | 0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.  | 3              | 0           |
|                |     | 0 - 0 - TFS-LUCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.  | 1              | 0           |
|                |     | 0 - 0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.  | 1              | 0           |
|                |     | 16 - 16 - 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.   | 3              | 0           |
|                |     | 16 - 16 - DL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).  | 4              | 0           |
|                |     | 26 - 26 - QSA-3/8 QUIK SEAL - 3/8" (UL).   | 3              | 0           |
|                |     | 34 - 34 - A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT, RED COLOR.  | 1              | 0           |
| 2              | 43  | 0 - 0 - TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.  | 1              | 0           |
|                |     | 0 - 0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.   | 1              | 0           |
|                |     | 0 - 0 - 12-F28021-32144-01-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO. CLOSE ON TEMP RISE AT 360°F.  | 2              | 0           |
|                |     | 0 - 0 - 361091 3/8" BRASS PLUG.  | 5              | 0           |
|                |     | 0 - 0 - 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.  | 3              | 0           |
|                |     | 0 - 0 - 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.   | 2              | 0           |
|                |     | 0 - 0 - 79425 3/8" NPT FEMALE TO 1/2" MALE PROGRESS ADAPTER.   | 5              | 0           |
|                |     | 0 - 0 - 79253 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.  | 2              | 0           |
|                |     | 0 - 0 - 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.   | 3              | 0           |
|                |     | 0 - 0 - 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.  | 2              | 0           |
|                |     | 0 - 0 - 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.  | 2              | 0           |
|                |     | 0 - 0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.   | 3              | 0           |
|                |     | 0 - 0 - 87-30003-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.   | 1              | 0           |
|                |     | 0 - 0 - 87-30015-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.   | 12             | 0           |
|                |     | 0 - 0 - 90S545SPC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LD.   | 7              | 0           |
|                |     | 0 - 0 - 9097200PC PRO PRESS PC611 1/2 PRESS TEE LD.  | 9              | 0           |
|                |     | 0 - 0 - 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.  | 6              | 0           |
|                |     | 0 - 0 - A0034332 JUNCTION BOX FOR MANUAL PULL STATION, 1.5" DEEP BACK BOX, RED COLOR.  | 1              | 0           |
|                |     | 0 - 0 - A31484 1/4" NPT SCHRAEDER VALVE AND CAP, JB INDUSTRIES, 1/4" FLARE X 1/4" NPT HALF UNION, USED ON TANK SERVICE PORT.   | 2              | 0           |
|                |     | 0 - 0 - B1145 3/8" BLACK IRON 90 ELL.  | 4              | 0           |
|                |     | 0 - 0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.  | 3              | 0           |
|                |     | 0 - 0 - SLPDCN-15FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 14" GAP OR BACK TO BACK HOODS. KIT CONTAINS 17 FEET OF BLACK MG WIRE, 17 FEET OF TAN MG WIRE, 15 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS. | 2              | 0           |
|                |     | 0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.  | 9              | 0           |
|                |     | 0 - 0 - TFS-LUCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.  | 3              | 0           |
|                |     | 0 - 0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.  | 3              | 0           |
|                |     | 16 - 16 - 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.   | 10             | 0           |
|                |     | 16 - 16 - DL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).  | 10             | 0           |
|                |     | 26 - 26 - QSA-3/8 QUIK SEAL - 3/8" (UL).   | 10             | 0           |
|                |     | 34 - 34 - A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT, RED COLOR.  | 1              | 0           |

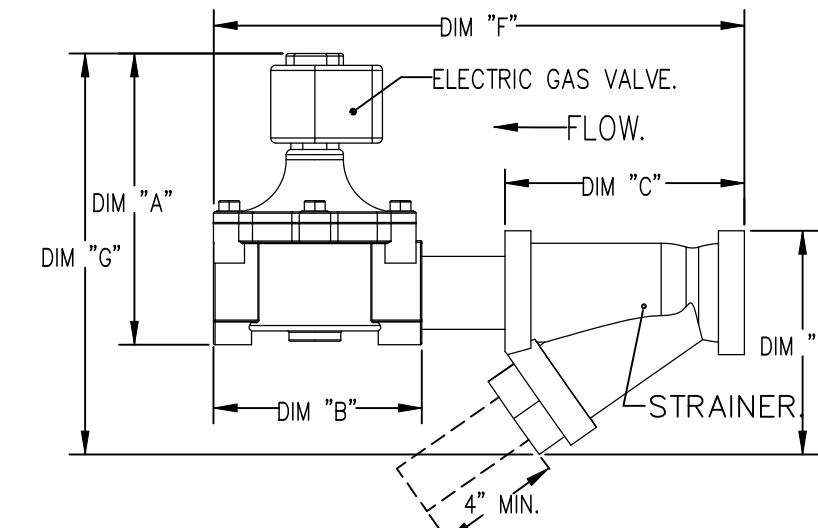
**GAS VALVES AND STRAINERS**

| TYPE       | SIZE | VOLTAGE | GAS VALVE SIZING                |                                   | GAS VALVE DIMENSIONS                        |   |        |        |        |          |         | INSTALLATION ORIENTATION | PART NUMBERS        |         |                       |
|------------|------|---------|---------------------------------|-----------------------------------|---|---|--------|--------|--------|----------|---------|--------------------------|---------------------|---------|-----------------------|
|            |      |         | MIN. INLET PRESSURE (0 IN.W.C.) | MAX. INLET PRESSURE (138 IN.W.C.) | FLOW AT 1 IN.W.C. DROP NATURAL GAS (BTU/HR) | FLOW AT 1 IN.W.C. DROP PROPANE (BTU/HR) | DM "A" | DM "B" | DM "C" | DM "D"   | DM "E"  |                          | DM "F"              | DM "G"  | GAS VALVE PART NUMBER |
| ELECTRICAL | 2"   | 120 VAC | 0 PSIG (0 IN.W.C.)              | 138 IN.W.C.                       | 2,940,500 BTU/HR                            | 1,800,000 BTU/HR                        | 7-5/8" | 6-3/8" | 7-1/4" | 7-13-16" | 15-5/8" | 13-15/16"                | HORIZONTAL/VERTICAL | 6214280 | 4417668               |

ALL GAS VALVES/STRAINERS PROPER CLEARANCE MUST BE PROVIDED IN ORDER TO SERVICE THE STRAINERS A MINIMUM OF 4" CLEARANCE DISTANCE MUST BE PROVIDED AT THE BASE OF THE STRAINER CUSTOMER MUST VERIFY BTU CONSUMPTION AS WELL AS PRESSURE RATING SPECIFIC GRAVITY OF NATURAL GAS = 0.64, SPECIFIC GRAVITY OF LP = 1.52.

TO CALCULATE GAS FLOW FOR OTHER THAN 1 IN.W.C. PRESSURE DROP: NEW BTU/HR = (BTU/HR AT 1 IN.W.C. PRESSURE DROP) X NEW PRESSURE DROP<sup>0.85</sup>

TO CALCULATE GAS FLOW FOR OTHER THAN 0.64 SPECIFIC GRAVITY: NEW BTU/HR = (BTU/HR AT 0.64) X (0.64 / NEW SPECIFIC GRAVITY)<sup>0.85</sup>



**REVISIONS**

| DESCRIPTION | DATE: |
|-------------|-------|
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**MUCKLETech**

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Nemo's Detroit Rev 1

1384 Michigan Avenue,  
 Detroit, MI, 48226

DATE: 10/9/2023

DWG.#:  
 6259823

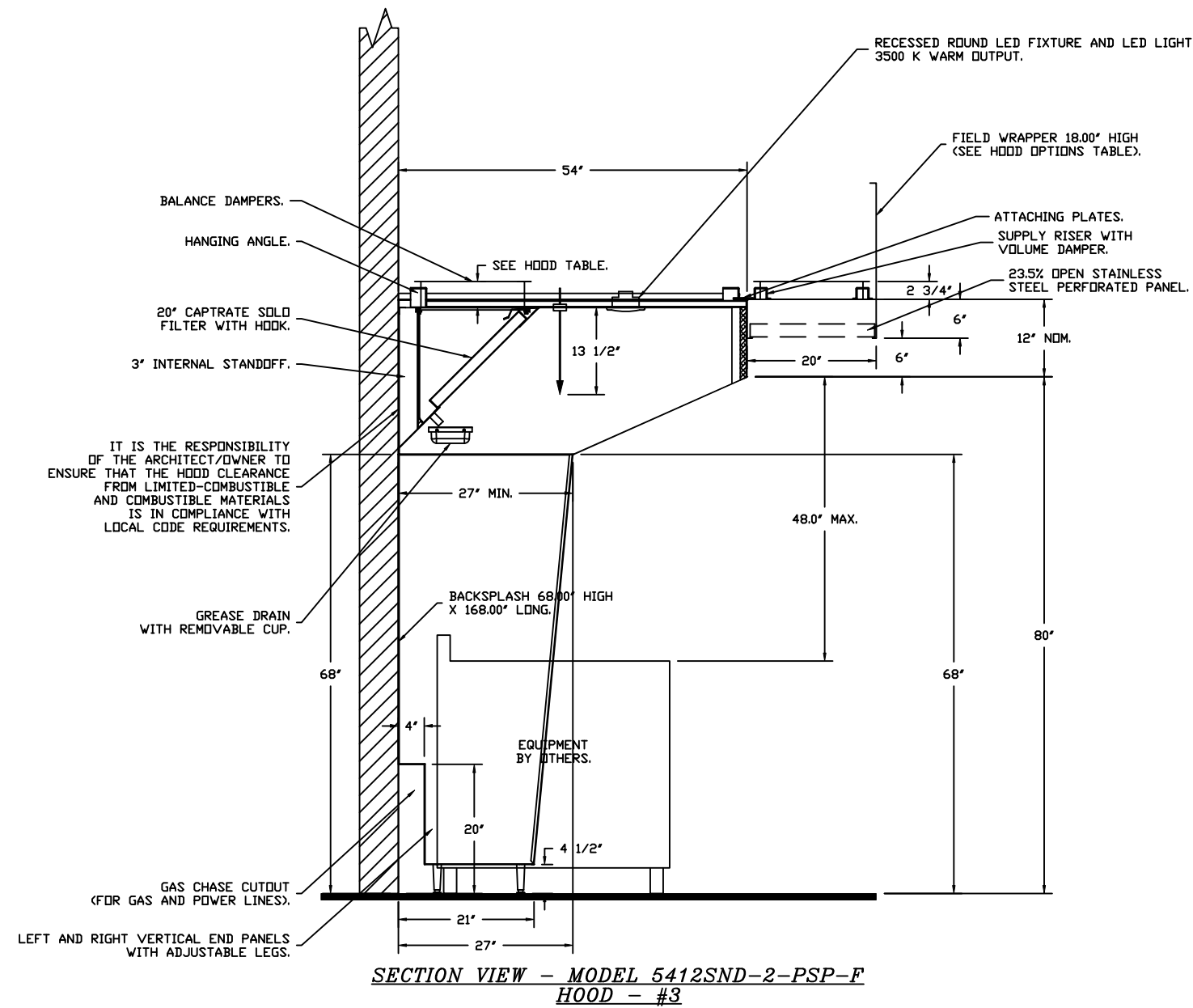
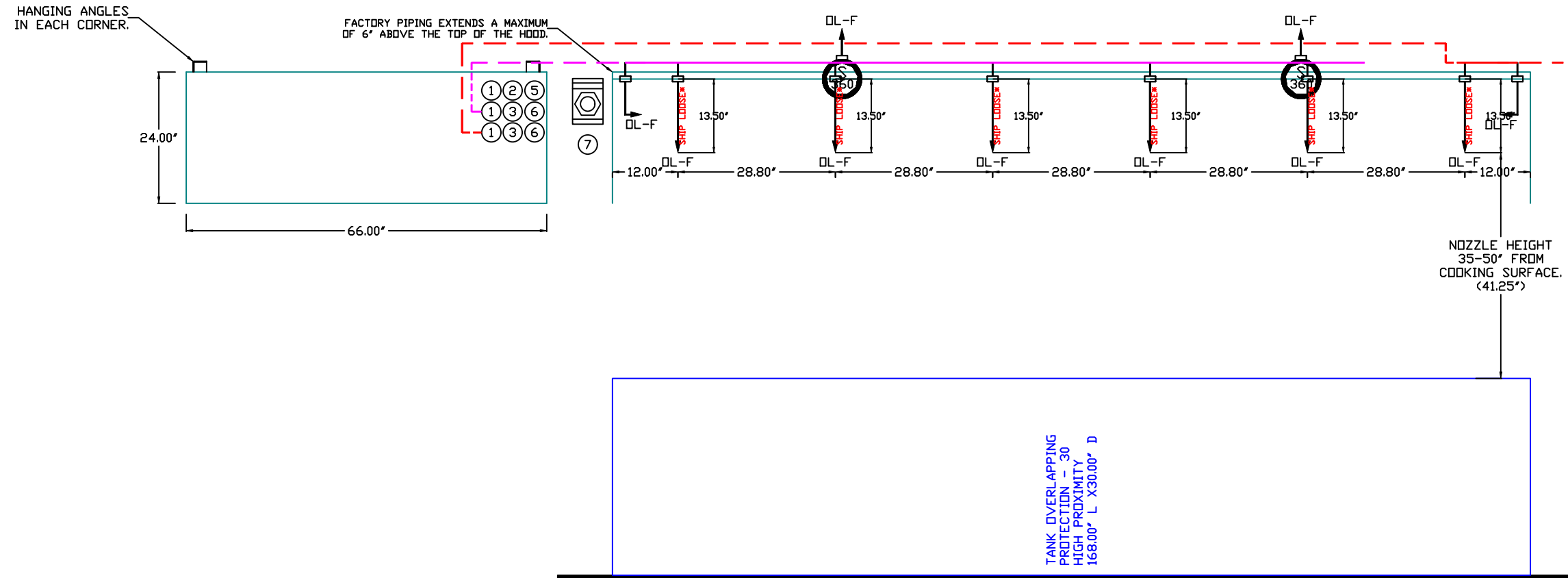
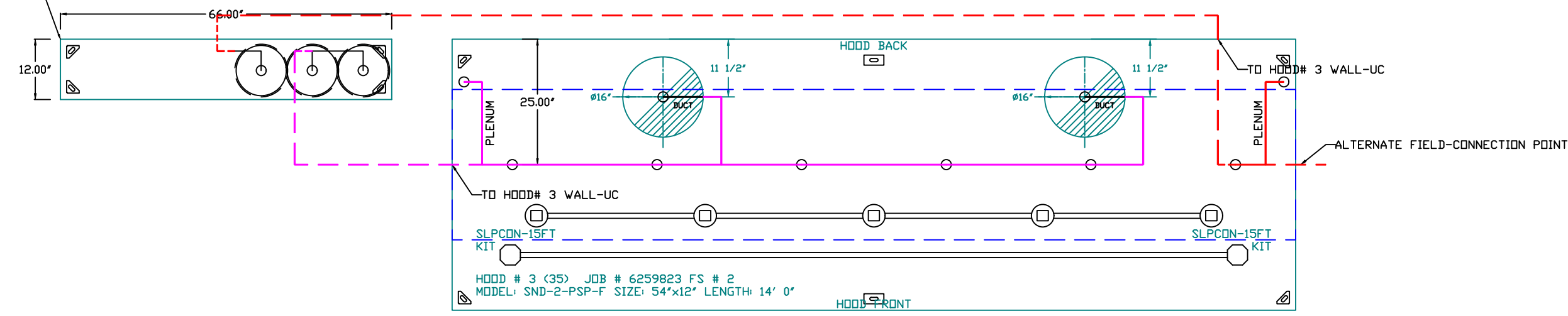
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SCALE:  
 1/2" = 1'-0"

MASTER DRAWING

SHEET NO.  
 4

SYSTEM REQUIRES A MINIMUM OF 7 FT OF EQUIVALENT PIPE LENGTH BETWEEN TANK AND NEAREST APPLIANCE NOZZLE FOR MOST APPLIANCES. EACH 90 DEGREE ELBOW ADDS 13 FT OF EQUIVALENT LENGTH. SEE MANUAL FOR DETAILS.



- NOTES
- FIELD PIPE DROPS AS SHOWN
  - PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY GAS
  - FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
  - SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
  - RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVEING, SALAMANDERS, ETC.
  - OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
  - IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
  - FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

JOB #: 6259823,  
JOB NAME: NEMO'S DETROIT REV 1.

SYSTEM SIZE: TANK-SP-3-WC DESIGN FP: 46, MAXIMUM FP: 60.  
HOOD # 3 14' 0.00' LONG x 54" WIDE x 12" HIGH.  
RISER # 1 SIZE: 16" DIA.  
RISER # 2 SIZE: 16" DIA.  
HOOD # 3 METAL BLOW-OFF CAPS INCLUDED.

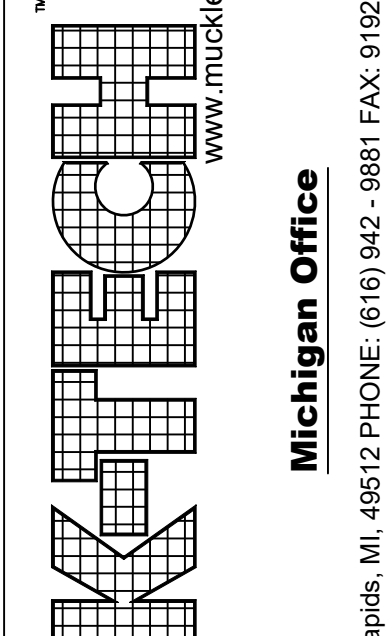
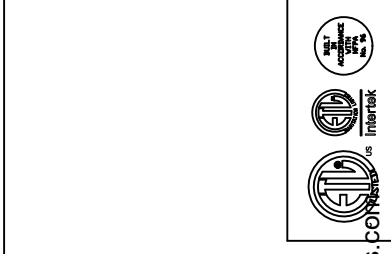
- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

**LEGEND - FIRE CABINET TANK SYSTEM**

- 1 4 GALLON TANK.
- 2 PRIMARY ACTUATOR RELEASE.
- 3 SECONDARY ACTUATOR RELEASE.
- 4 PRESSURE SUPERVISION SWITCH.
- 5 PRIMARY HOSE ASSEMBLY.
- 6 SECONDARY HOSE ASSEMBLY.
- 7 REMOTE MANUAL ACTUATION DEVICE.

INCLUDES: FIELD INSTALLATION AND HOOKUP DURING NORMAL BUSINESS HOURS BY CERTIFIED INSTALLERS ONLY IN THE LOCATION NOTED ABOVE. TWO SITE VISITS ONLY (ONE VISIT TO SET PULL STATION & SYSTEM HOOKUP AND ONE VISIT FOR ONE TEST). ADDITIONAL VISITS WILL RESULT IN ADDITIONAL CHARGES. ONE MECHANICAL OR ELECTRICAL GAS VALVE PER SYSTEM AT A MAXIMUM SIZE OF 2". PERMIT, AND SYSTEM TEST.  
EXCLUDES: UNION LABOR & PREVAILING WAGE LABOR & WAGES WILL BE ADDED IF APPLICABLE. GAS VALVE INSTALLATION, ELECTRICAL HOOKUP AND CONNECTIONS, HANGING OF FIRE CABINET, SHUNT TRIP, HANDHELD EXTINGUISHERS, ON-SITE RE-PIPING DUE TO EQUIPMENT LAYOUT CHANGES.

| REVISIONS   |       |
|-------------|-------|
| DESCRIPTION | DATE: |
|             |       |
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Nemo's Detroit Rev 1  
1384 Michigan Avenue,  
Detroit, MI, 48226

DATE: 10/9/2023

DWG.#: 6259823

DRAWN BY: RJF

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

MASTER DRAWING

SHEET NO. 5



**EXHAUST FAN INFORMATION - JOB#6259823**

| FAN UNIT NO | TAG      | QTY | FAN UNIT MODEL # | MANUFACTURER | CFM  | ESP   | RPM  | MOTOR ENCL | HP    | BHP    | PHASE | VOLT | FLA  | DISCHARGE VELOCITY | WEIGHT (LBS) | SDNES |
|-------------|----------|-----|------------------|--------------|------|-------|------|------------|-------|--------|-------|------|------|--------------------|--------------|-------|
| 1           | 18       | 1   | DU30HK           | K-TECH       | 600  | 0.500 | 1195 | TEFC       | 0.250 | 0.0870 | 1     | 115  | 3.0  | 297 FPM            | 66           | 6.8   |
| 2           | 28       | 1   | DU85HFA          | CAPTIVEAIRE  | 1800 | 0.800 | 1263 | TEAD-ECM   | 0.750 | 0.3910 | 1     | 208  | 5.2  | 570 FPM            | 94           | 10.6  |
| 4           | 35 LEFT  | 1   | DU180HFA         | CAPTIVEAIRE  | 2058 | 0.980 | 973  | TEAD-ECM   | 2.000 | 0.6980 | 1     | 208  | 15.5 | 475 FPM            | 147          | 9.6   |
| 5           | 35 RIGHT | 1   | DU180HFA         | CAPTIVEAIRE  | 2058 | 0.980 | 973  | TEAD-ECM   | 2.000 | 0.6980 | 1     | 208  | 15.5 | 475 FPM            | 147          | 9.6   |

**CONDENSER DETAILS**

| FAN UNIT NO | TAG | FAN UNIT MODEL #   | CONDENSER NO | TONNAGE | VOLTAGE | PHASE   | FREQUENCY | MCA       | RLA       | MAX FUSE SIZE | MIN WIRE SIZE | SEER |
|-------------|-----|--------------------|--------------|---------|---------|---------|-----------|-----------|-----------|---------------|---------------|------|
| 3           | 28  | K-A2-D.250-20D-MPU | 1            | 2.5     | 208-230 | 3 PHASE | 60 HZ     | 11.2 AMPS | 9.07 AMPS | 20 AMPS       | 14 AWG        | 14   |
|             |     |                    | 2            | 5       | 208-230 | 3 PHASE | 60 HZ     | 21.4 AMPS | 17.4 AMPS | 30 AMPS       | 10 AWG        | 14   |
| 6           | 35  | A2-D.500-20D-MPU   | 1            | 3       | 208-230 | 3 PHASE | 60 HZ     | 14.5 AMPS | 11.9 AMPS | 20 AMPS       | 14 AWG        | 14   |
|             |     |                    | 2            | 5       | 208-230 | 3 PHASE | 60 HZ     | 21.4 AMPS | 17.4 AMPS | 30 AMPS       | 10 AWG        | 14   |

**MUA FAN INFORMATION - JOB#6259823**

| FAN UNIT NO | TAG | QTY | FAN UNIT MODEL #   | BLOWER     | HOUSING  | MIN CFM | DESIGN CFM | ESP   | RPM  | MOTOR ENCL   | HP    | BHP    | PHASE | VOLT | FLA | MCA   | MCCP | WEIGHT (LBS) | SDNES |
|-------------|-----|-----|--------------------|------------|----------|---------|------------|-------|------|--------------|-------|--------|-------|------|-----|-------|------|--------------|-------|
| 3           | 28  | 1   | K-A2-D.250-20D-MPU | 20MF-2-MDD | A2-D.250 | 2000    | 2800       | 0.500 | 1440 | DDP, PREMIUM | 3.000 | 1.5330 | 3     | 208  | 9.5 | 11.9A | 20A  | 1528         | 13.1  |
| 6           | 35  | 1   | A2-D.500-20D-MPU   | 20MF-2-MDD | A2-D.500 | 2900    | 4116       | 0.500 | 1700 | DDP, PREMIUM | 3.000 | 2.6920 | 3     | 208  | 9.5 | 11.9A | 20A  | 1559         | 18.2  |

**COILS - JOB#6259823**

| FAN UNIT NO | TAG | COIL TYPE | DESIGN CFM | COOLING          |                  |                 |                 |                     |                    |                 |                |                |                   | HEATING         |                  |                 |                     |                    |                 |                |                |                |                   |     |
|-------------|-----|-----------|------------|------------------|------------------|-----------------|-----------------|---------------------|--------------------|-----------------|----------------|----------------|-------------------|-----------------|------------------|-----------------|---------------------|--------------------|-----------------|----------------|----------------|----------------|-------------------|-----|
|             |     |           |            | ENTERING DB TEMP | ENTERING WB TEMP | LEAVING DB TEMP | LEAVING WB TEMP | ENTERING FLUID TEMP | LEAVING FLUID TEMP | FLUID FLOW RATE | PERCENT GLYCOL | TOTAL CAPACITY | SENSIBLE CAPACITY | LATENT CAPACITY | ENTERING DB TEMP | LEAVING DB TEMP | ENTERING FLUID TEMP | LEAVING FLUID TEMP | FLUID FLOW RATE | PERCENT GLYCOL | STEAM PRESSURE | TOTAL CAPACITY | SENSIBLE CAPACITY |     |
| 3           | 28  | DX        | 2800       | 87.0°F           | 72.0°F           | 69.6°F          | 62.5°F          | ---                 | ---                | ---             | ---            | 90.0 MBH       | 50.6 MBH          | 39.4 MBH        | ---              | ---             | ---                 | ---                | ---             | ---            | ---            | ---            | ---               | --- |
| 6           | 35  | DX        | 4116       | 87.0°F           | 72.0°F           | 72.8°F          | 66.8°F          | ---                 | ---                | ---             | ---            | 75.0 MBH       | 60.8 MBH          | 14.2 MBH        | ---              | ---             | ---                 | ---                | ---             | ---            | ---            | ---            | ---               | --- |

**GAS FIRED MAKE-UP AIR UNIT(S)**

| FAN UNIT NO | TAG | INPUT BTUs | OUTPUT BTUs | TEMP RISE | REQUIRED INPUT GAS PRESSURE | GAS TYPE | BURNER EFFICIENCY(%) |
|-------------|-----|------------|-------------|-----------|-----------------------------|----------|----------------------|
| 3           | 28  | 248958     | 229041      | 80°F      | 7 IN. W.C. - 14 IN. W.C.    | NATURAL  | 92                   |
| 6           | 35  | 365968     | 336691      | 80°F      | 7 IN. W.C. - 14 IN. W.C.    | NATURAL  | 92                   |

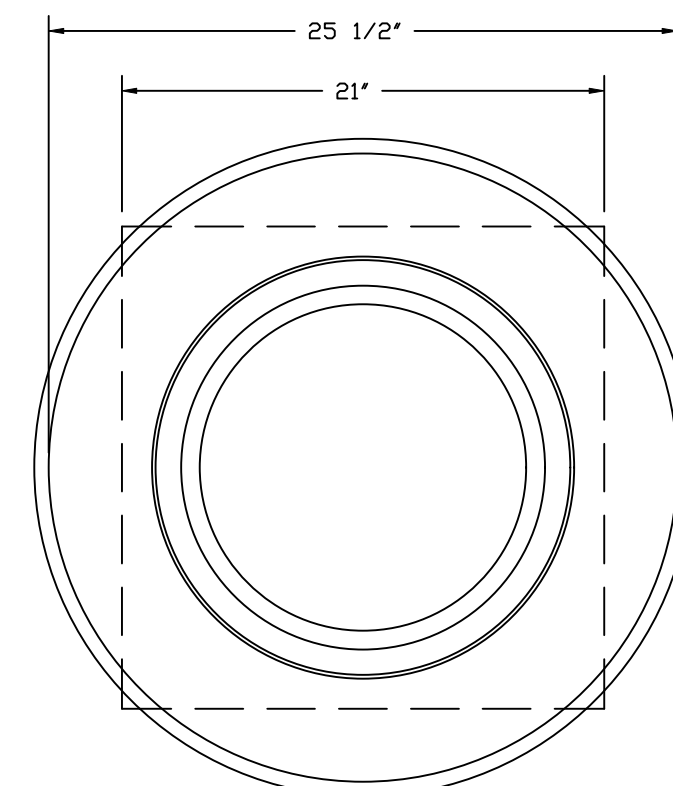
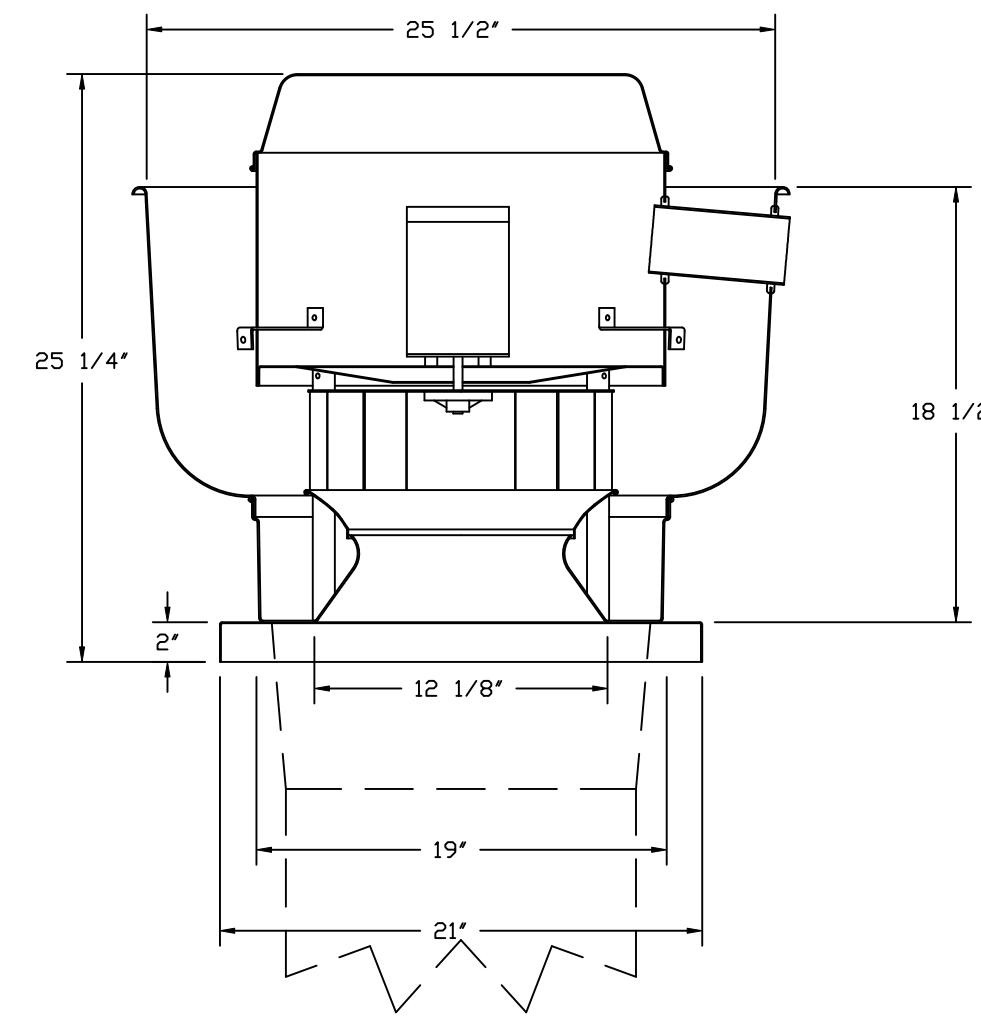
**FAN OPTIONS**

| FAN UNIT NO | TAG  | QTY | DESCRIPTION   |
|-------------|--|-----|---|
| 1           | 18   | 1   | SCR-11 BIRD SCREEN  |
|             |  | 1   | 2 YEAR PARTS WARRANTY   |
| 2           | 28   | 1   | GREASE BDX  |
|             |  | 1   | FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS   |
| 3           | 28   | 1   | ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION   |
|             |  | 1   | 2 YEAR PARTS WARRANTY   |
|             |  | 1   | INLET PRESSURE GAUGE, 0-35"   |
|             |  | 1   | MANIFOLD PRESSURE GAUGE, -5 TO 15" WC   |
|             |  | 1   | BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE)  |
|             |  | 1   | SHIP LOOSE GAS STRAINER 1"  |
|             |  | 1   | CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED   |
|             |  | 1   | MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS 1A RATING  |
|             |  | 1   | 7.5 TON 2 CIRCUIT (2.5/5) MODULAR PACKAGED AC COOLING OPTION FOR SIZE 2 DF/EH MUA (1125 TO 3000 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT DR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION |
|             |  | 1   | DOWNTURN PLENUM FOR SIZE 2 DX COIL MODULE   |
|             |  | 1   | SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV DR PREWIRE WITH VFD) - THREE PHASE ONLY  |
|             |  | 1   | SIZE 2 DIRECT FIRED HEATER LOW CFM PROFILE PACKAGE - USED ON HEATERS UNDER 2500 CFM   |
| 4           | 35 LEFT  | 1   | 2 YEAR PARTS WARRANTY   |
|             |  | 1   | GREASE BDX  |
| 5           | 35 RIGHT   | 1   | FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS   |
|             |  | 1   | ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION   |
| 6           | 35   | 1   | 2 YEAR PARTS WARRANTY   |
|             |  | 1   | GREASE BDX  |
|             |  | 1   | FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS   |
|             |  | 1   | ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION   |
|             |  | 1   | 2 YEAR PARTS WARRANTY   |
|             |  | 1   | INLET PRESSURE GAUGE, 0-35"   |
|             |  | 1   | MANIFOLD PRESSURE GAUGE, -5 TO 15" WC   |
|             |  | 1   | BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE)  |
|             |  | 1   | SHIP LOOSE GAS STRAINER 1"  |
|             |  | 1   | CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED   |
|             |  | 1   | MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS 1A RATING  |
|             |  | 1   | 8 TON 2 CIRCUIT (3/5) MODULAR PACKAGED COOLING OPTION FOR SIZE 2 DF/EH MUA (2,900 TO 4,800 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT DR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION      |
| 1           | DOWNTURN PLENUM FOR SIZE 2 DX COIL MODULE  |     |   |
| 1           | SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV DR PREWIRE WITH VFD) - THREE PHASE ONLY |     |   |
| 1           | 2 YEAR PARTS WARRANTY  |     |   |

**FAN ACCESSORIES**

| FAN UNIT NO | TAG      | EXHAUST    |                |            |                | SUPPLY         |                  |            |  |
|-------------|----------|------------|----------------|------------|----------------|----------------|------------------|------------|--|
|             |          | GREASE CUP | GRAVITY DAMPER | WALL MOUNT | SIDE DISCHARGE | GRAVITY DAMPER | MOTORIZED DAMPER | WALL MOUNT |  |
| 1           | 18       |            |                |            |                |                |                  |            |  |
| 2           | 28       | YES        |                |            |                |                |                  |            |  |
| 3           | 28       |            |                |            |                |                | YES              |            |  |
| 4           | 35 LEFT  | YES        |                |            |                |                |                  |            |  |
| 5           | 35 RIGHT | YES        |                |            |                |                |                  |            |  |
| 6           | 35       |            |                |            |                |                | YES              |            |  |

FAN #1 DU30HK - EXHAUST FAN (18)



TOP VIEW

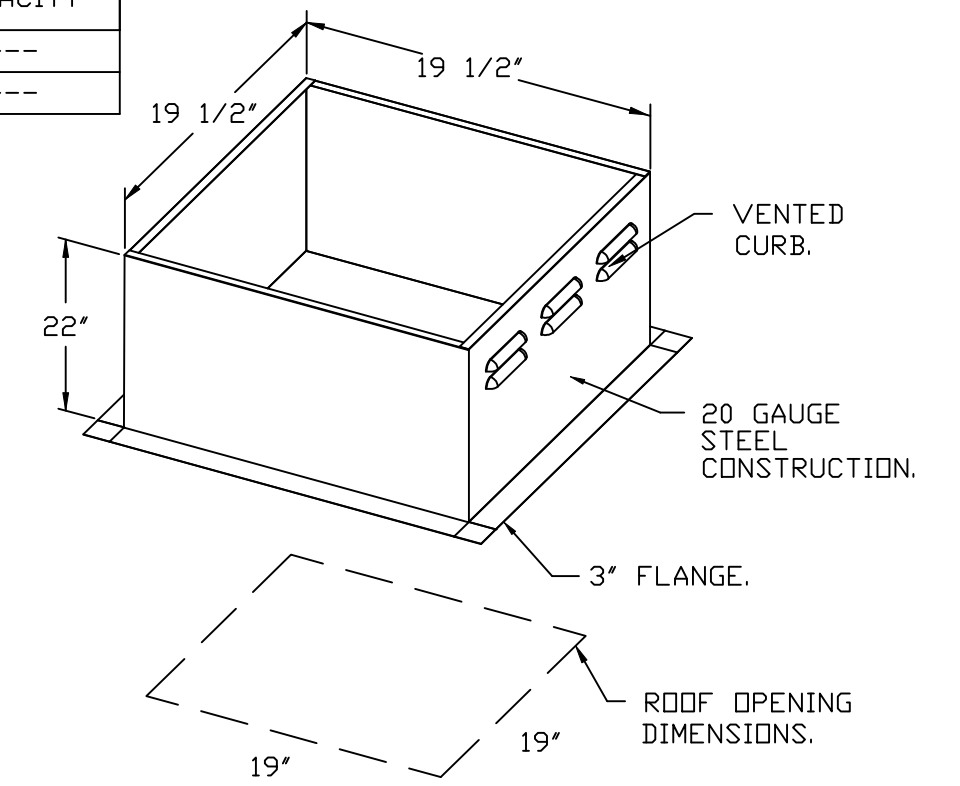
**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).

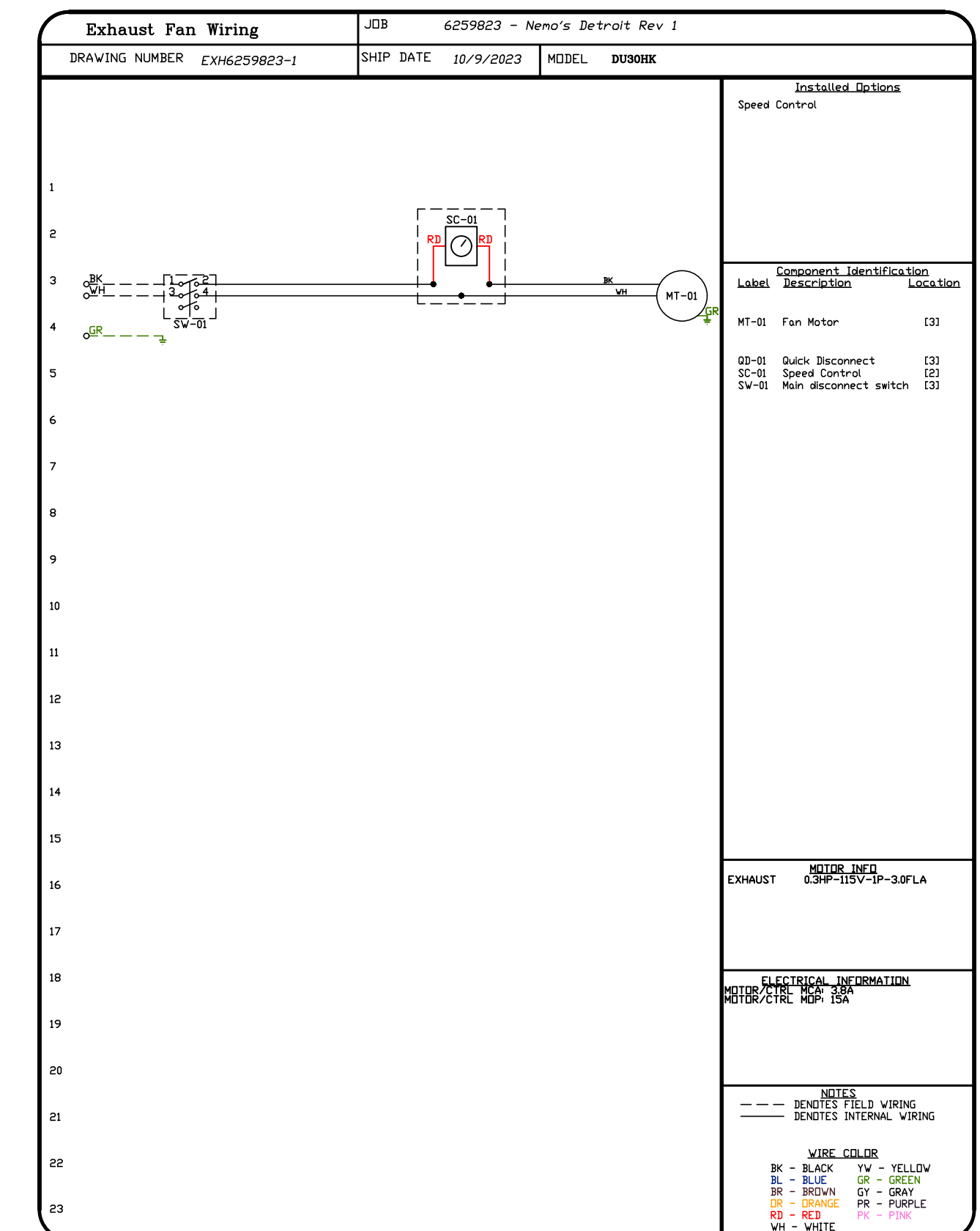
**OPTIONS:**

- SCR-11 BIRD SCREEN.
- 2 YEAR PARTS WARRANTY.

**NORMAL TEMPERATURE TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.  
SPECIFY PITCH:  
EXAMPLE: 7/12 PITCH = 30° SLOPE.



**REVISIONS**

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Detroit, MI, 48226

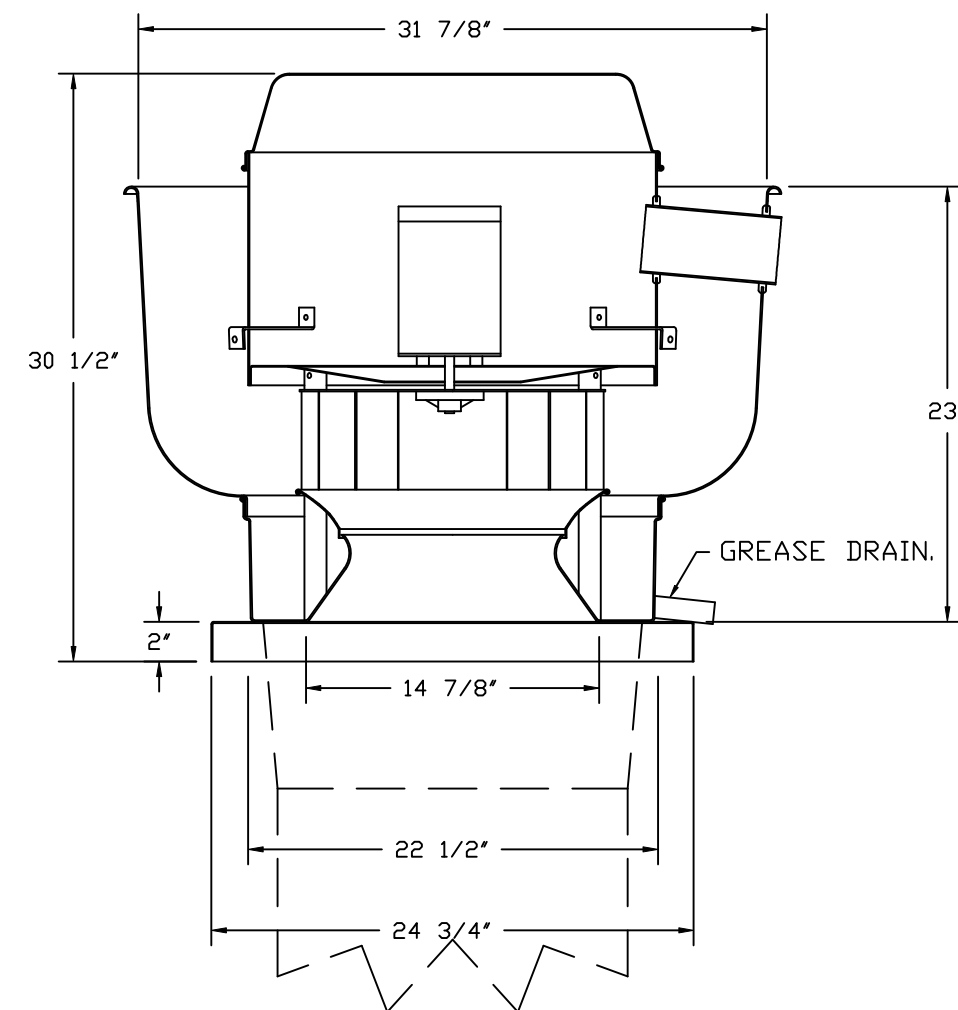
**DATE:** 10/9/2023  
**DWG.#:** 6259823  
**DRAWN BY:** RJF  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
6

**CURB ASSEMBLIES**

| NO | ON FAN | TAG     | WEIGHT | ITEM | SIZE   |
|----|--------|---------|--------|------|--|
| 1  | # 1    | 18      | 30 LBS | CURB | 19.500"W X 19.500"L X 22.000"H 1.000:12.000 PITCH VENTED.                            |
| 2  | # 2    | 28      | 36 LBS | CURB | 23.000"W X 23.000"L X 20.000"H 1.000:12.000 PITCH ALONG LENGTH, RIGHT HINGED.        |
| 3  | # 3    | 28      | 92 LBS | CURB | 31.000"W X 145.000"L X 20.000"H 1.000:12.000 PITCH ALONG WIDTH, RIGHT INSULATED.     |
| 4  | # 4    | 35 LEFT | 41 LBS | CURB | 26.500"W X 26.500"L X 20.000"H 1.000:12.000 PITCH ALONG LENGTH, RIGHT VENTED HINGED. |
| 5  | # 5    | 35 LEFT | 41 LBS | CURB | 26.500"W X 26.500"L X 20.000"H 1.000:12.000 PITCH ALONG LENGTH, RIGHT VENTED HINGED. |
| 6  | # 6    | 35      | 92 LBS | CURB | 31.000"W X 145.000"L X 20.000"H 1.000:12.000 PITCH ALONG WIDTH, RIGHT INSULATED.     |

FAN #2 DUB5HFA - EXHAUST FAN (28)



TOP VIEW

**FEATURES:**

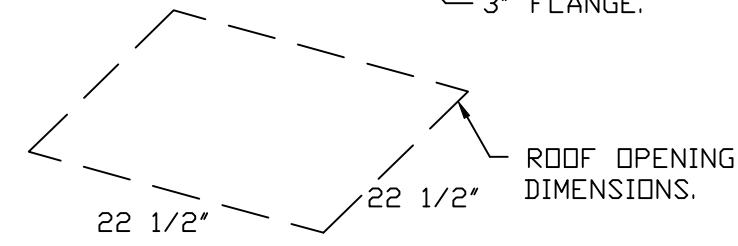
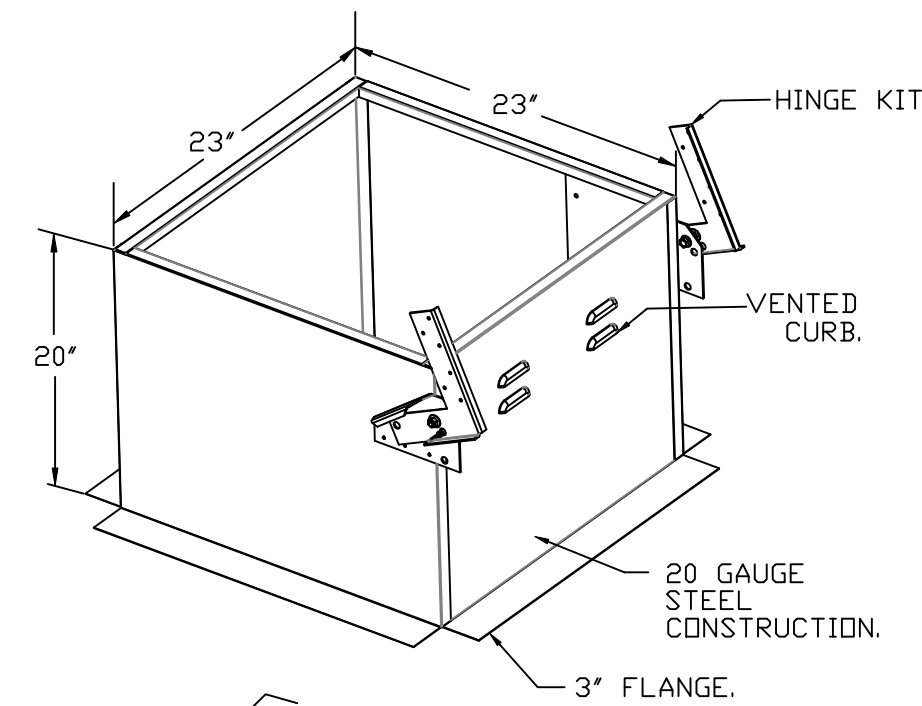
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

**NORMAL TEMPERATURE TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

**ABNORMAL FLARE-UP TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

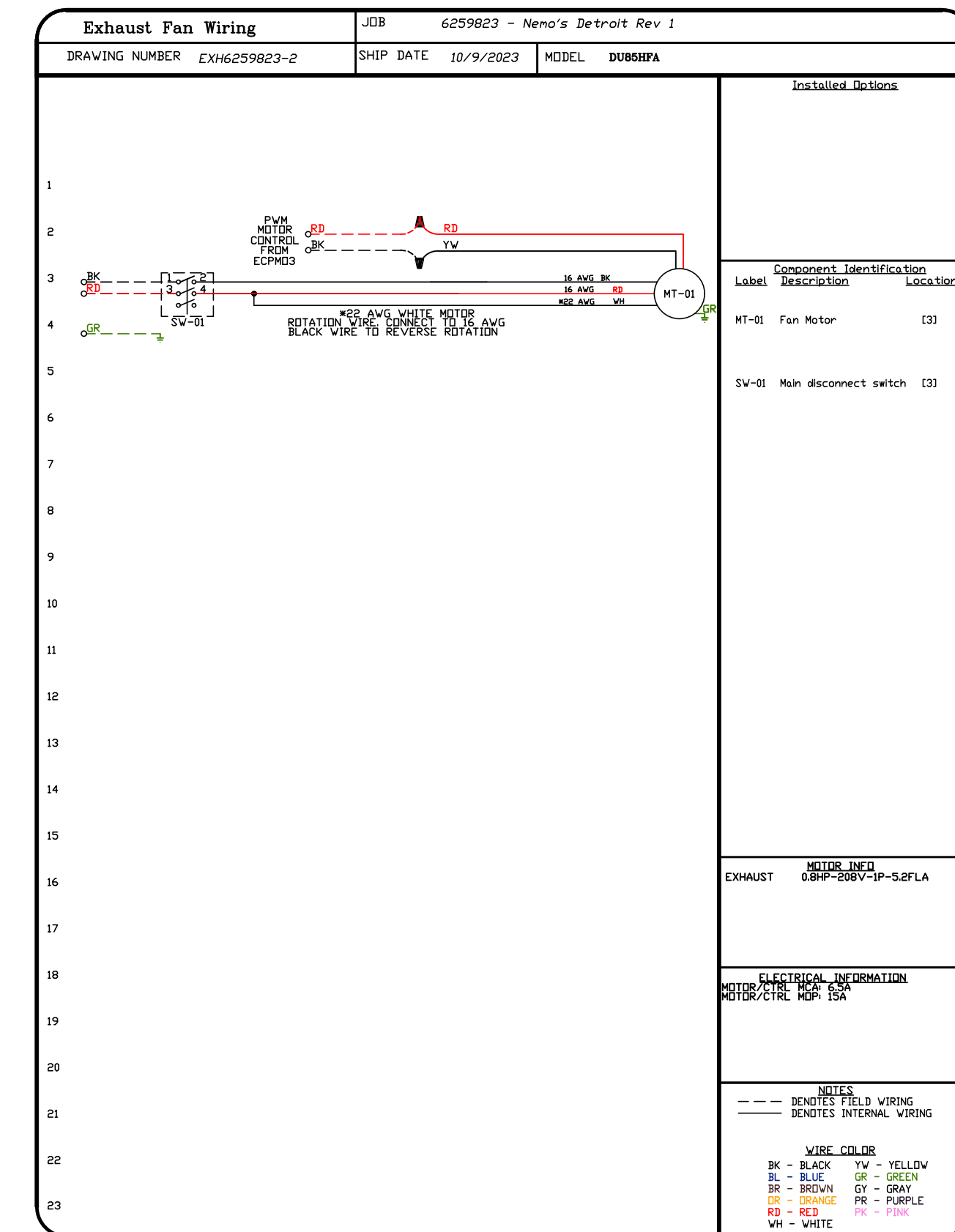
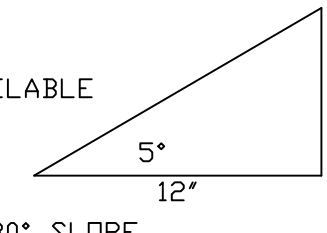
**OPTIONS**

- GREASE BOX.
- FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS.
- ECM WIRING PACKAGE - PWM SIGNAL FROM ECM/MS PREWIRE (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:  
EXAMPLE: 7/12 PITCH = 30° SLOPE.



**REVISIONS**

| NO | DESCRIPTION | DATE |
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| 1  |             |      |
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**DATE:** 10/9/2023

**DWG.#:** 6259823

**DRAWN BY:** RJF

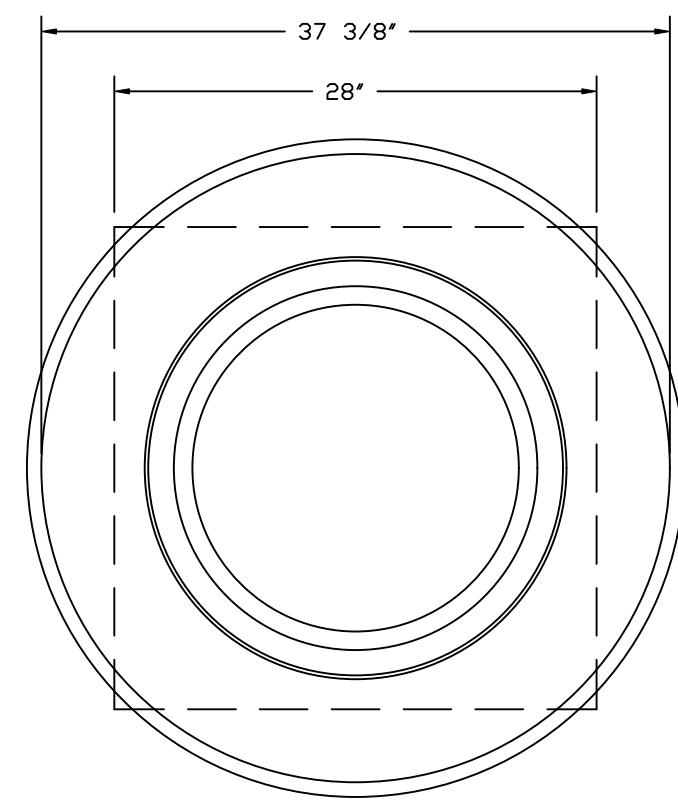
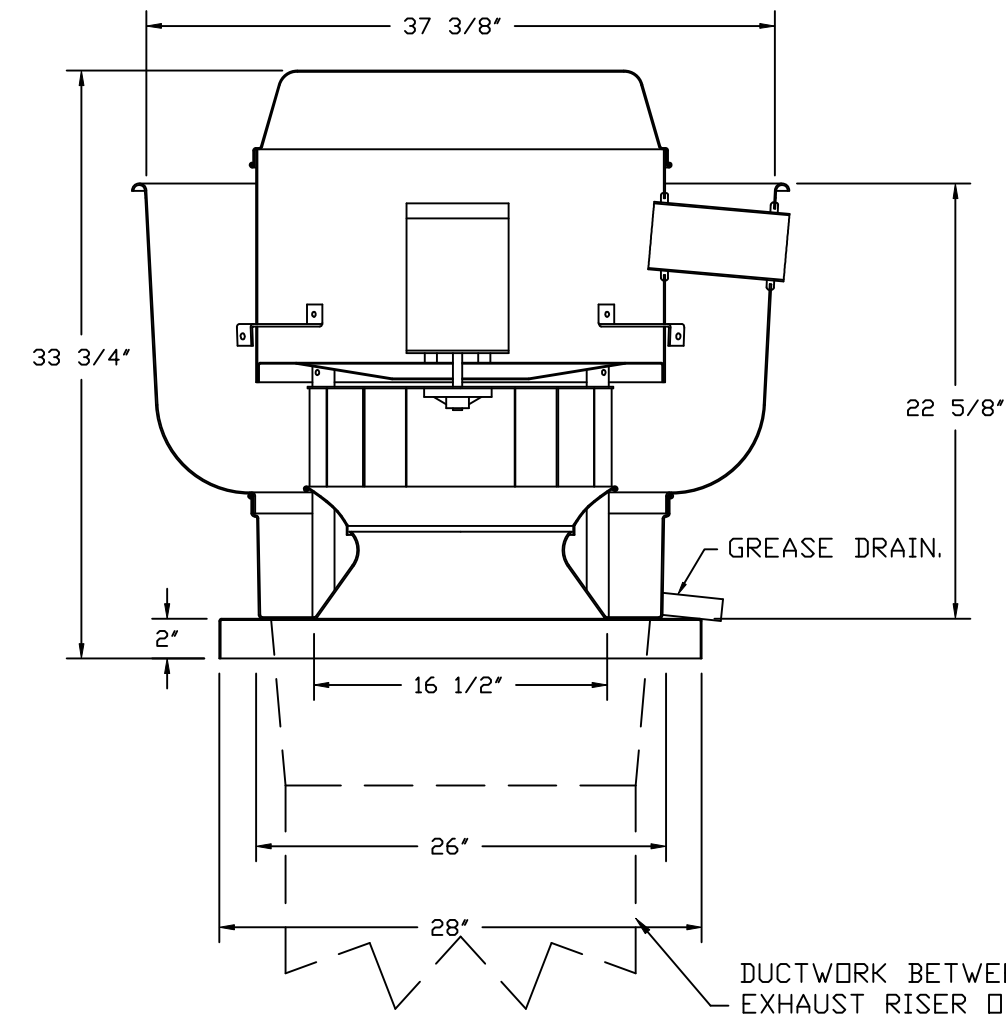
**SCALE:** 3/4" = 1'-0"

**MASTER DRAWING**

**SHEET NO.**  
7



FANS #4 (35 LEFT), #5 (35 RIGHT) - DU180HFA EXHAUST FAN



TOP VIEW

**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

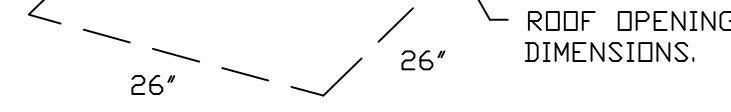
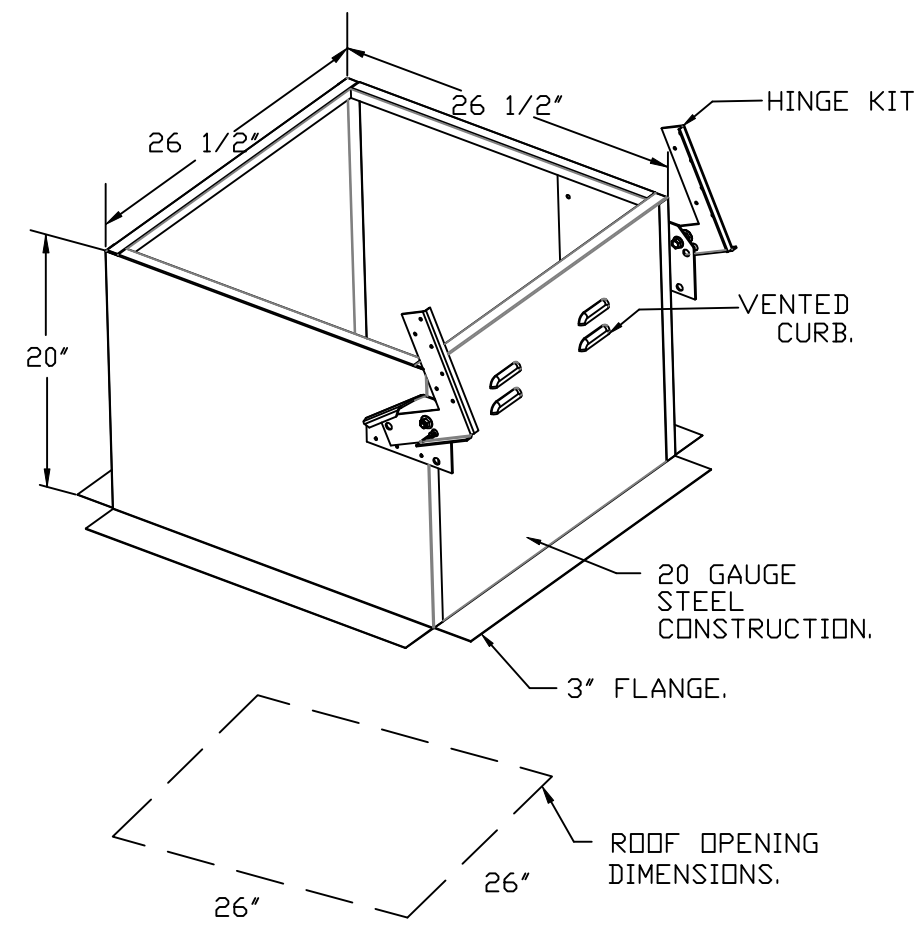
**NORMAL TEMPERATURE TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

**ABNORMAL FLARE-UP TEST**  
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

**OPTIONS**

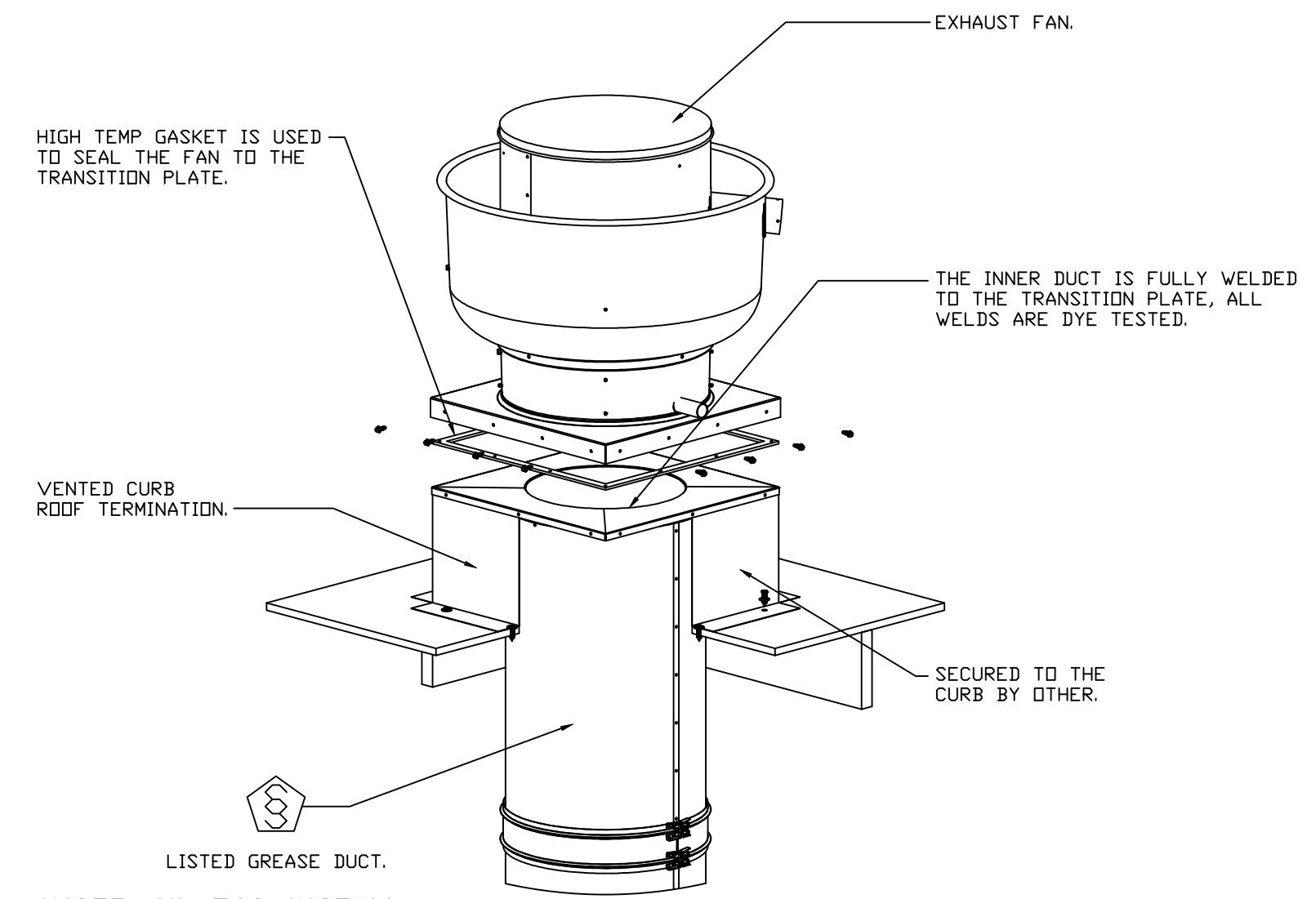
- GREASE BOX.
- FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS.
- ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.

DUCTWORK BETWEEN EXHAUST RISER ON HOOD AND FAN (BY OTHERS).

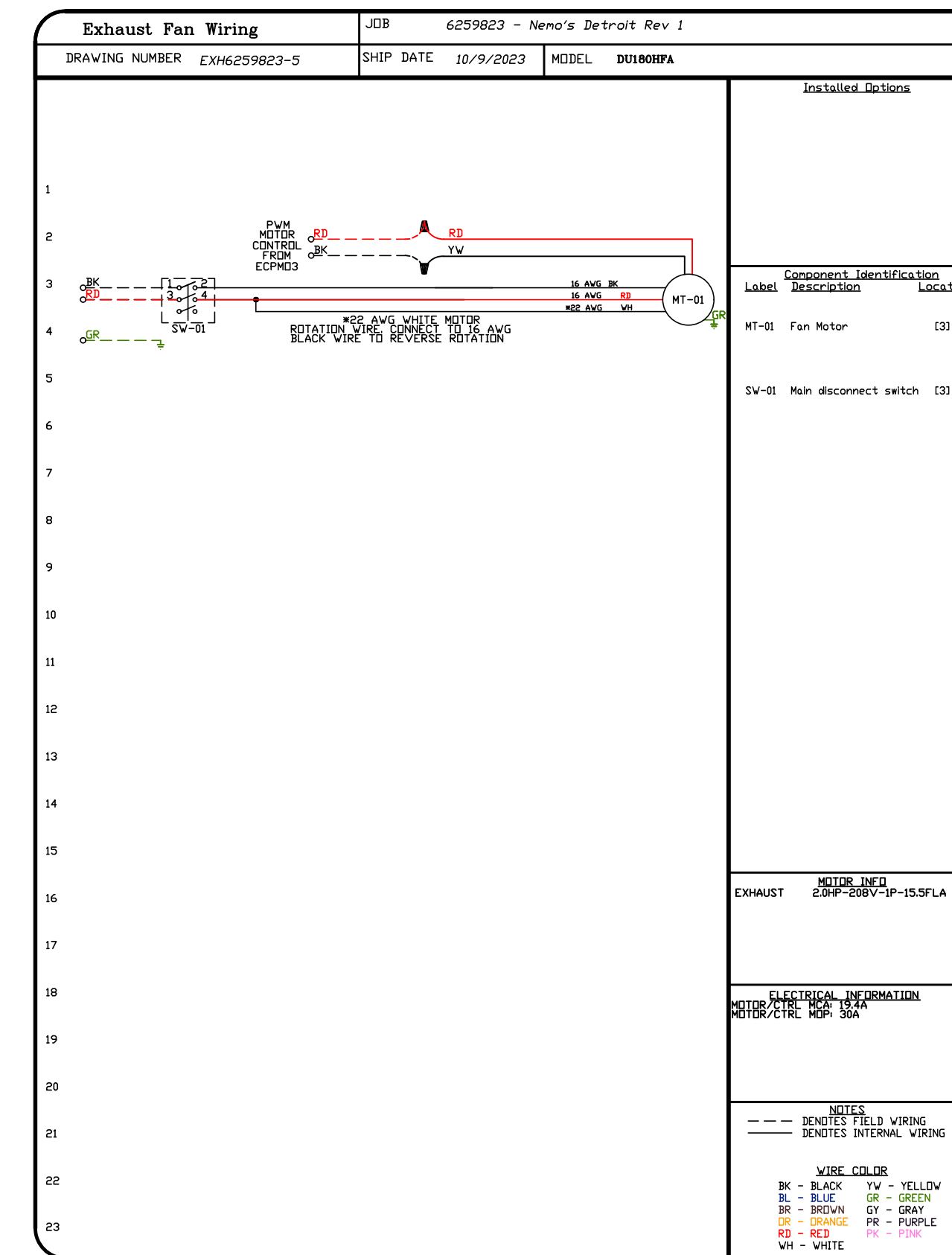
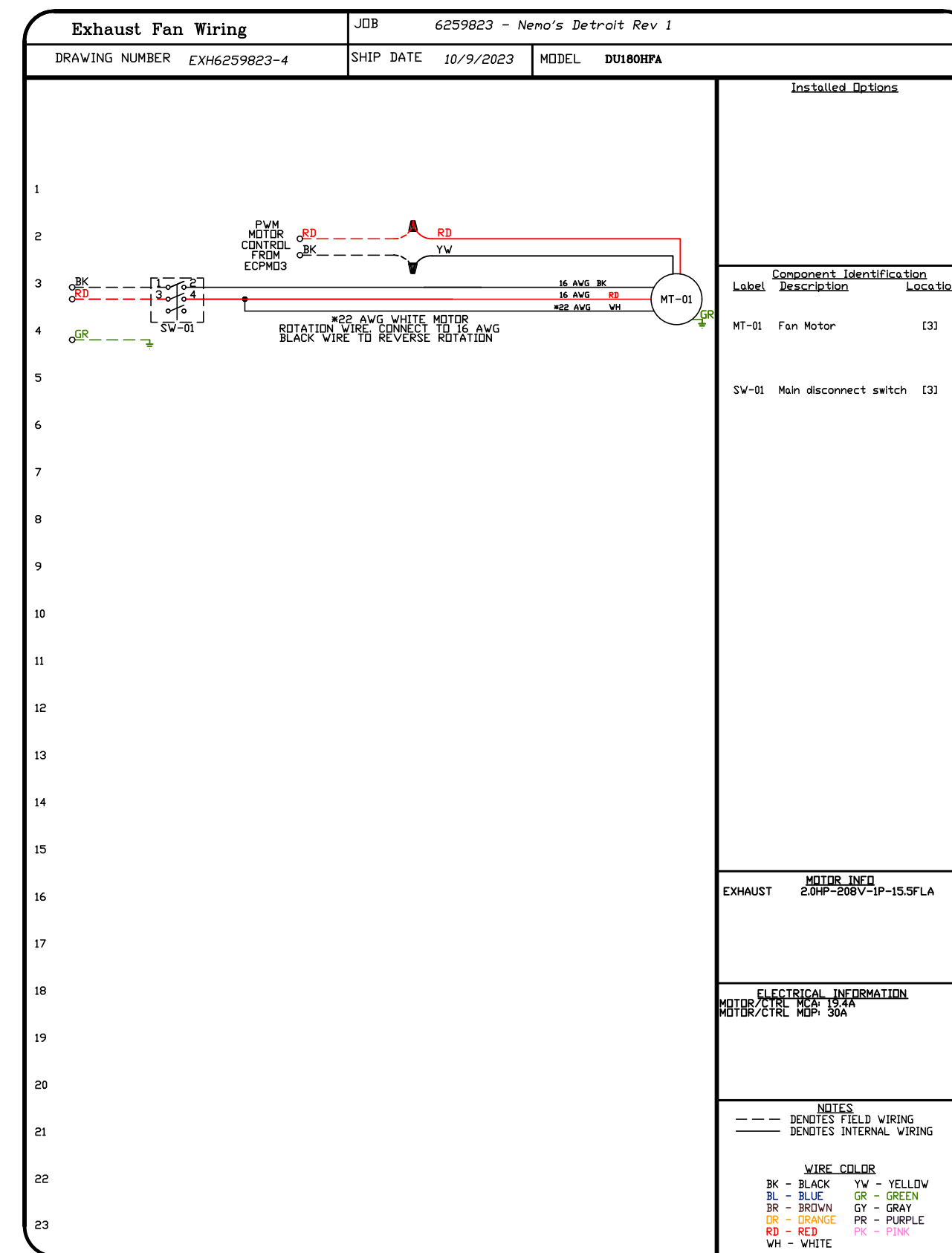


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

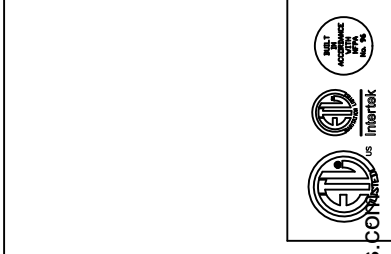
SPECIFY PITCH:  
EXAMPLE: 7/12 PITCH = 30° SLOPE.



\*NOTE: UL 762 INSTALL.



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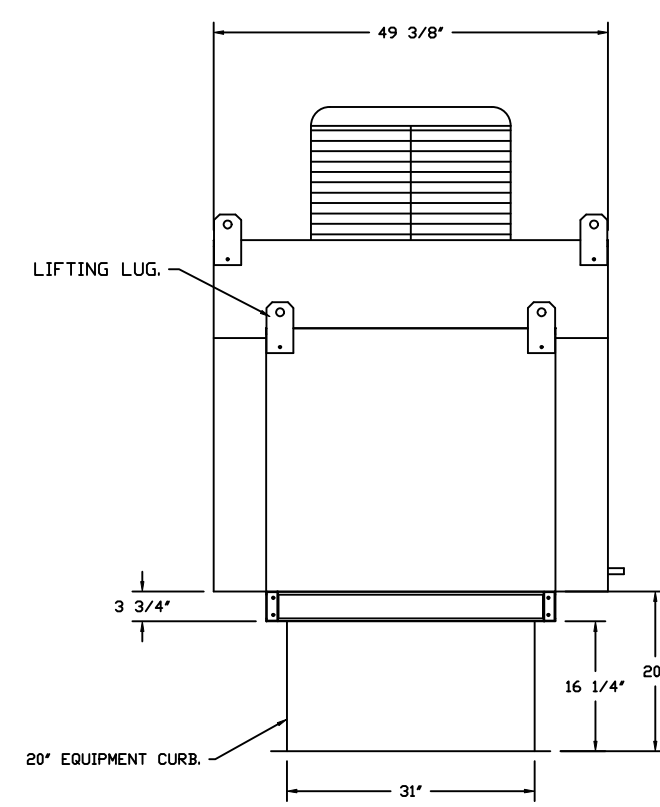
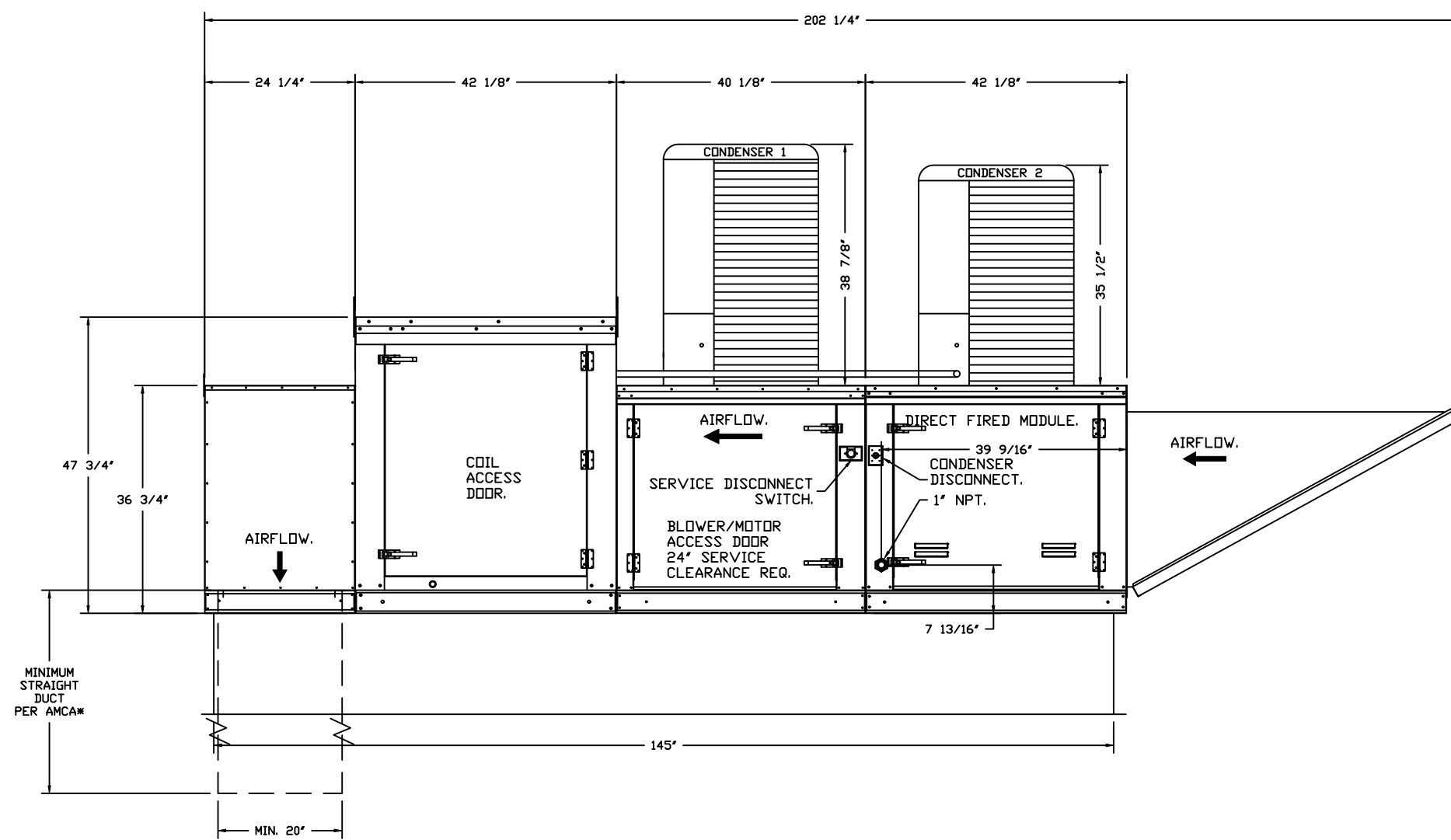
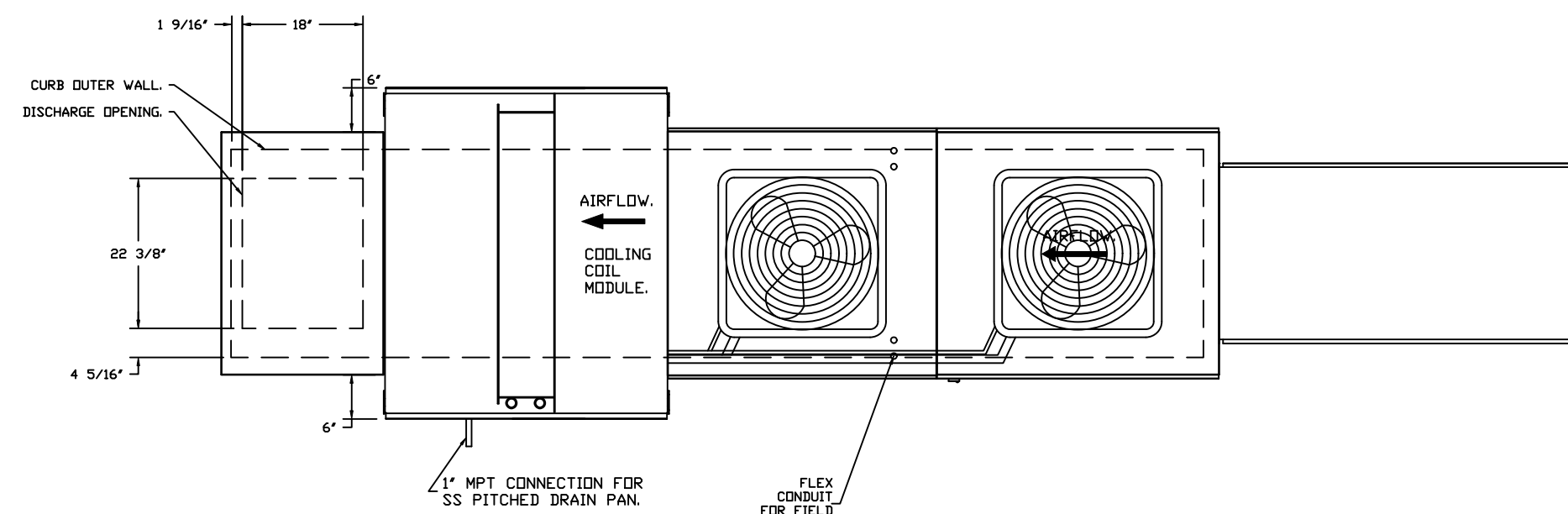


1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN
2. INTAKE HOOD WITH EZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. GAS PRESSURE GAUGE, 0-30", 2 1/2" DIAMETER, 1/4" THREAD SIZE
5. BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE)
6. SHIP LODGE GAS STRAINER, TO BE INSTALLED UPSTREAM OF UNIT CONNECTION, 1" CONNECTION
7. CASLINK BUILDING MONITORING SYSTEM COMMUNICATIONS MODULE, REQUIRES INTERNET & FIELD WIRED ETHERNET CONNECTION OR 56 CELLULAR SERVICE. INCLUDES REV. 3 COMM MODULE, RJ45 TO MODBUS CONVERTER, 3 FT CAT5 CABLE, AND 1 FT OF SHIELDED TWISTED PAIR
8. MOTORIZED BACK DRAHT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF1555 ACTUATOR INCLUDED
9. 1/2" TON, 240V, 3 PHASE, 208/230V MODULAR PACKAGED AC COOLING OPTION FOR SIZE 2 BL/WH MODULAR PACKAGED UNIT, INCLUDES CONDENSER, EX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING
10. 1/2" TON, 240V, 3 PHASE, 208/230V MODULAR PACKAGED AC COOLING OPTION FOR SIZE 2 BL/WH MODULAR PACKAGED UNIT, INCLUDES CONDENSER, EX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING
11. DOWNTURN PLENUM FOR SIZE 2 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS
12. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PRECISE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MAIN SWITCH
13. PROFILE PLATE CONFIGURATION FOR SIZE 2 DIRECT FIRED UNIT FOR LOW CFM APPLICATIONS
14. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (CURB/BL/WH/MPU SECTION)
15. 2 YEAR PARTS WARRANTY.

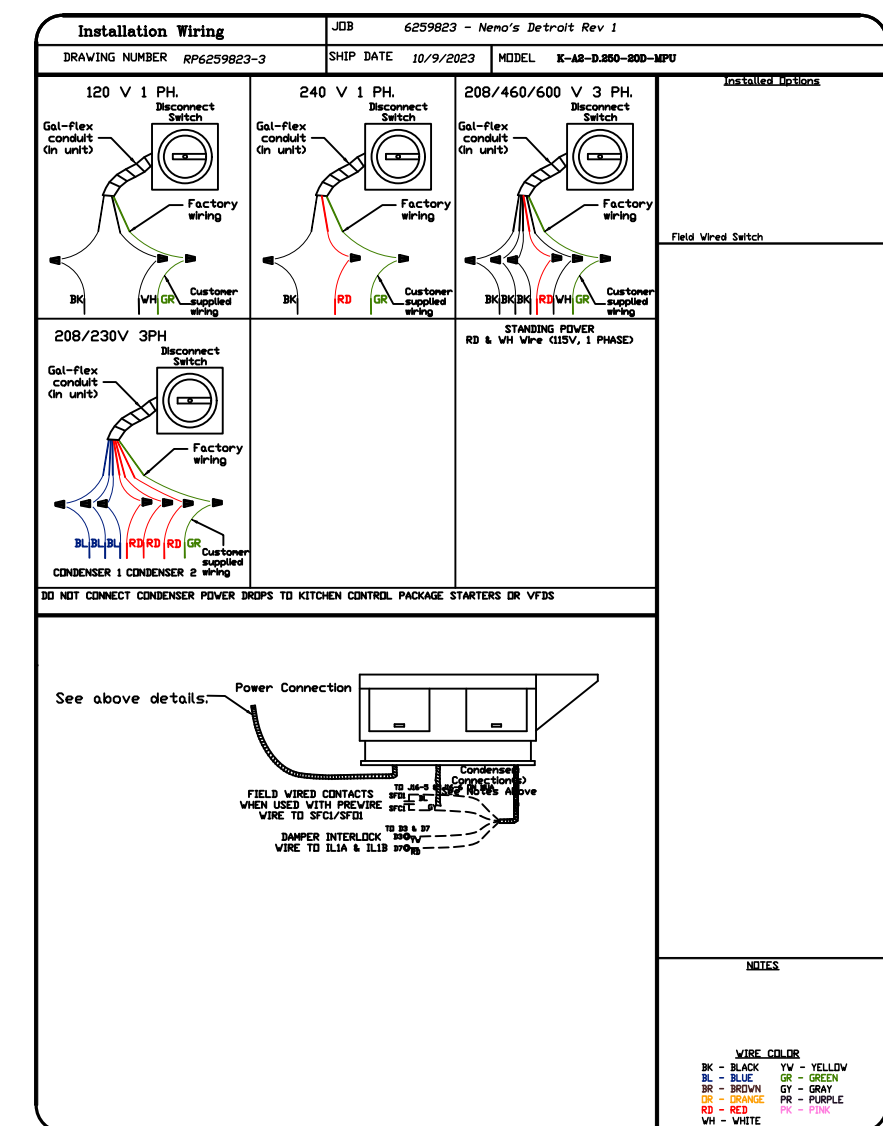
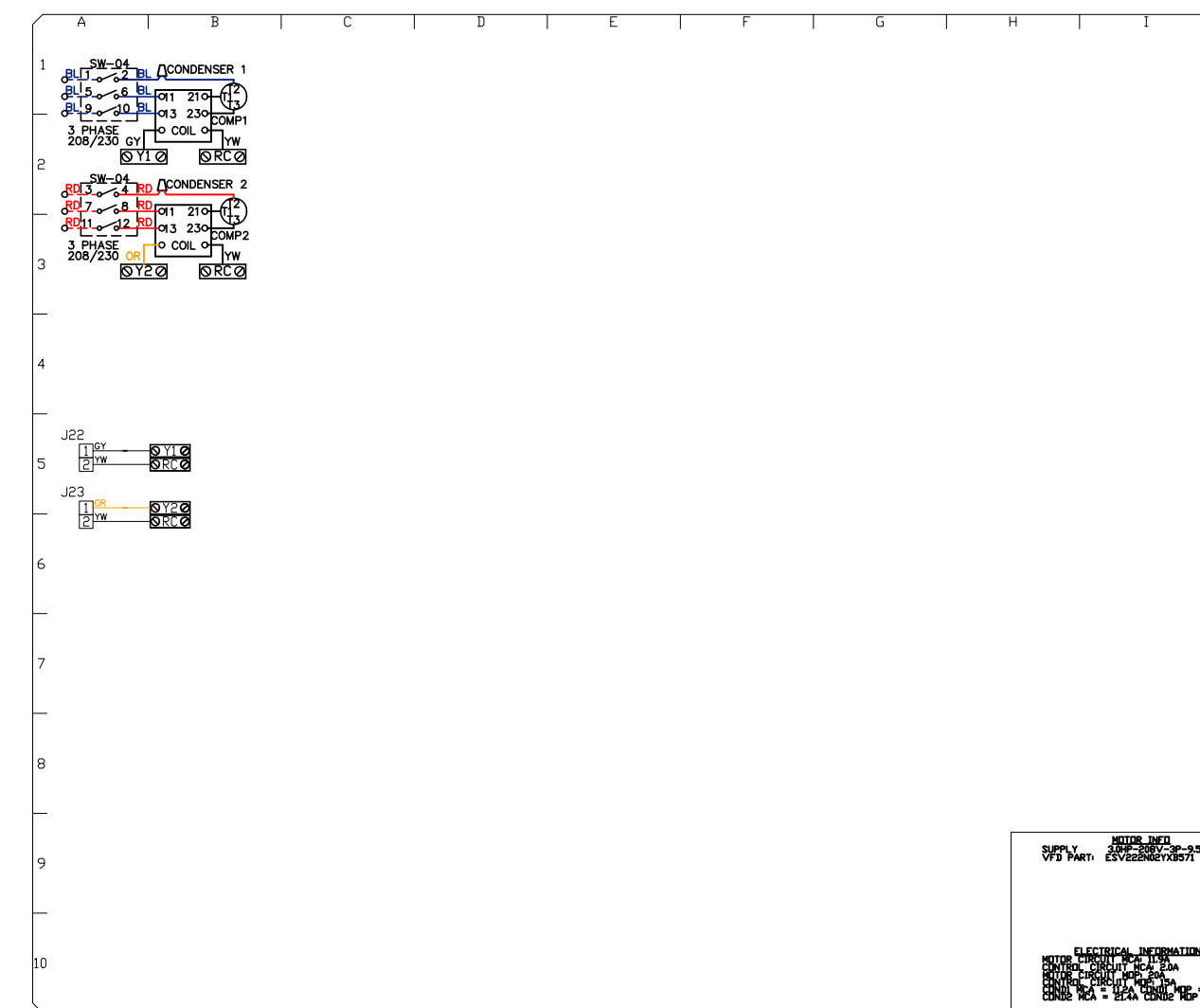
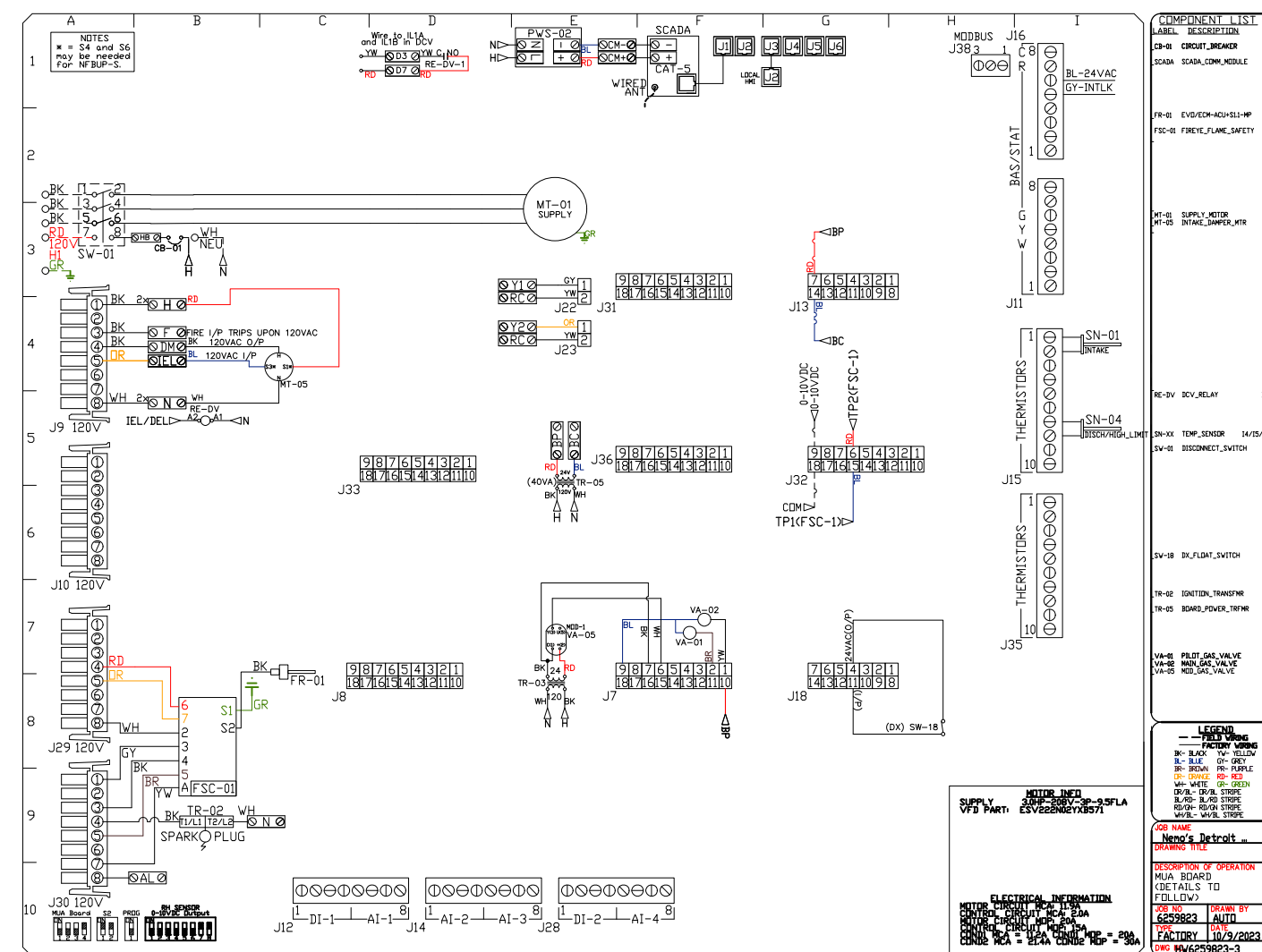
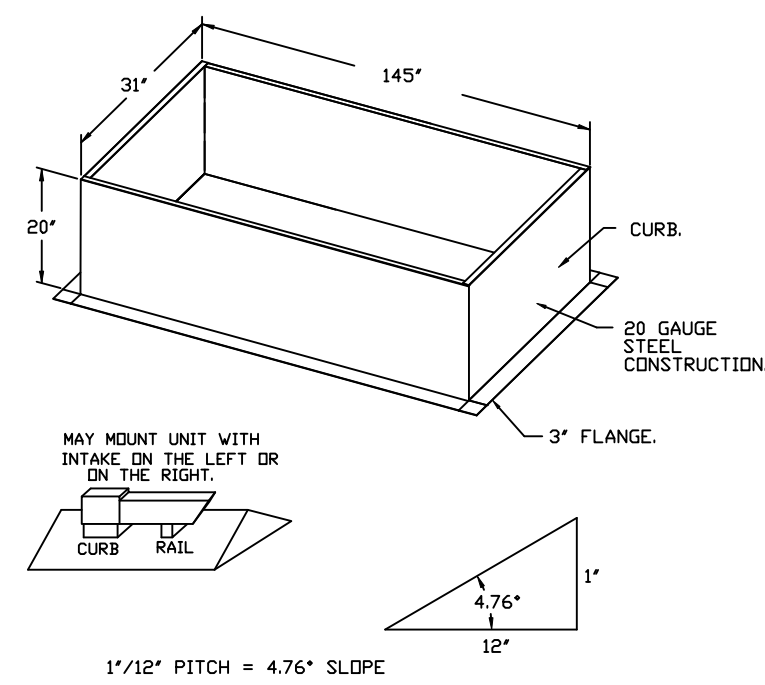
**SUPPLY SIDE HEATER INFORMATION:**

WINTER TEMPERATURE = 7°F, TEMP. RISE = 80°F.  
 BTUH CALCULATED OFF ACTUAL AIR DENSITY.  
 OUTPUT BTUH AT ALTITUDE OF 0.0 FT. = 254255.  
 INPUT BTUH AT ALTITUDE OF 0.0 FT. = 254408.  
 OUTPUT BTUH AT ALTITUDE OF 598 FT. = 252941.  
 INPUT BTUH AT ALTITUDE OF 598 FT. = 248958.

NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS DETAILED IN APCA PUBLICATION 826. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURN IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL PRACTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.  
 SUGGESTED STRAIGHT DUCT SIZE IS 20" X 20".



**OPTIONS:**  
 - FULL BOTTOM CORNERS.



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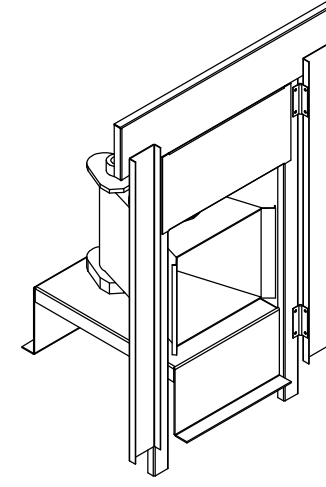
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**DATE:** 10/9/2023  
**DWG.#:** 6259823  
**DRAWN BY:** RJF  
**SCALE:** 1/2" = 1'-0"  
**MASTER DRAWING**

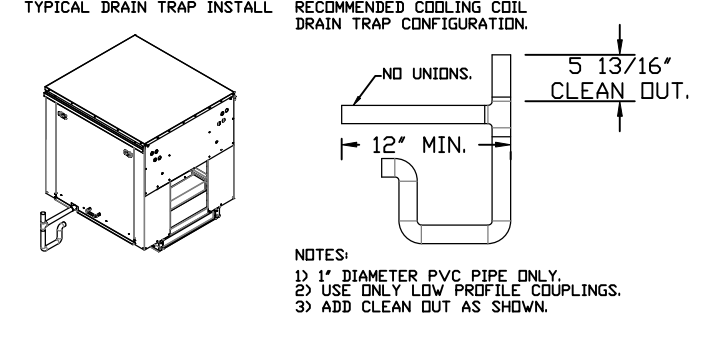
**SHEET NO.**  
 9

- FAN #6 A2-2500-200-MPU - HEATER (3S)
- DIRECT GAS FORCE HEATED MAKE UP AIR UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN
- INTAKE HOOD WITH EZ FILTERS
- DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
- GAS PRESSURE GAUGE, 0-30", 2 1/2" DIAMETER, 1/4" THREAD SIZE
- BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE)
- SNIP LOOSE GAS STRAINERS TO BE INSTALLED UPSTREAM OF UNIT CONNECTION, 1" CONNECTION
- CASLINK BUILDING MONITORING SYSTEM COMMUNICATIONS MODULE, REQUIRES INTERNET & FIELD WIRED ETHERNET CONNECTION OR 56 CELLULAR SERVICE. INCLUDES REV 3 COMM MODULE, RAS TO MODBUS CONVERTER, 3 FT CAT5 CABLE, AND 1 FT OF SHIELDED TWISTED PAIR
- MOTORIZED BACK DRAHT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF150S ACTUATOR INCLUDED
- 8 TON, RUAL CIRCUIT (3S) MODULAR PACKAGED COOLING OPTION FOR SIZE 2 3P/5P/5H MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRIER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING (2,500 TD 1/8" CPV) WHEN ORDERED WITH OPPOSITE AIRFLOW. CONDENSERS ACCESS AND COIL PIPING WILL REMAIN IN STANDARD POSITION. DRAIN AND SLEDS WILL MOVE TO THE OPPOSITE SIDE, ANY OTHER CHANGE WILL REQUIRE OIL CONDENSERS REQUIRE SEPARATE 3PHV, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION, COIL = SECTION
- DOWNTURN PLENUM FOR SIZE 2 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS
- SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREVIEW PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MAIN SWITCH
- HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/MPU SECTION)
- 5 YEAR PARTS WARRANTY

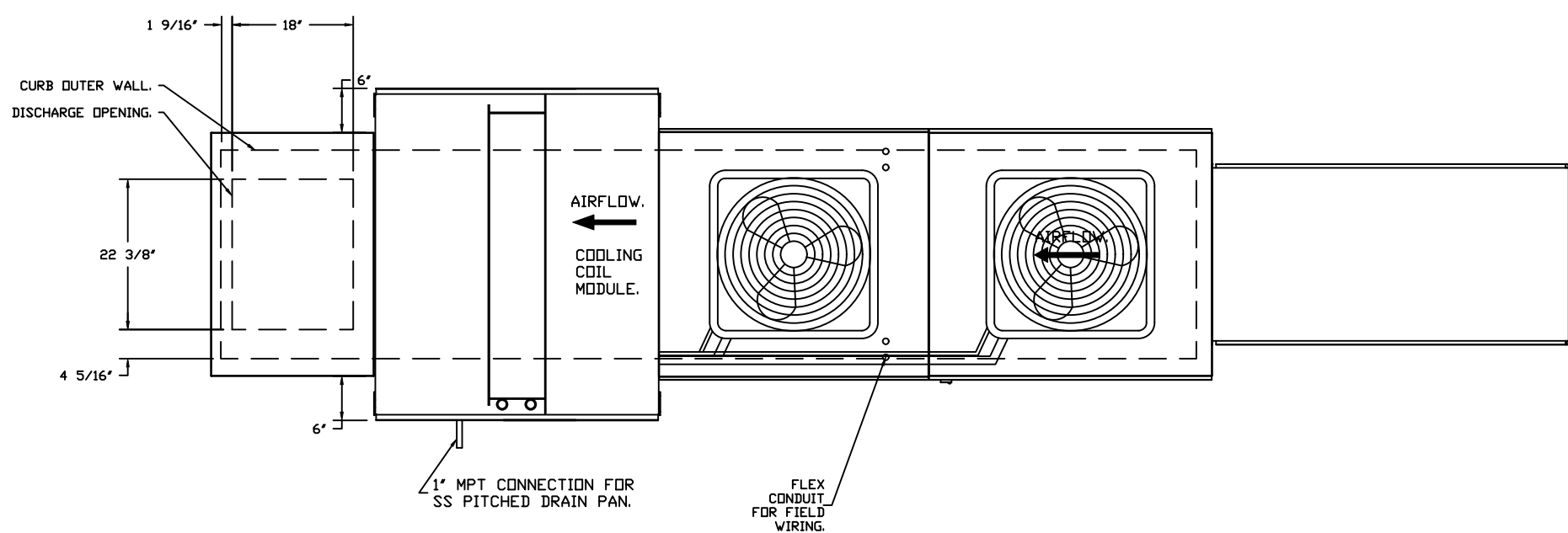
**SUPPLY SIDE HEATER INFORMATION:**  
 WINTER TEMPERATURE = 77° TEMP. RISE = 80°  
 BTU'S CALCULATED OFF ACTUAL AIR DENSITY  
 OUTPUT BTU'S AT ALTITUDE OF 0.0 FT. = 344061  
 INPUT BTU'S AT ALTITUDE OF 0.0 FT. = 273979  
 OUTPUT BTU'S AT ALTITUDE OF 598 FT. = 336659  
 INPUT BTU'S AT ALTITUDE OF 598 FT. = 269968



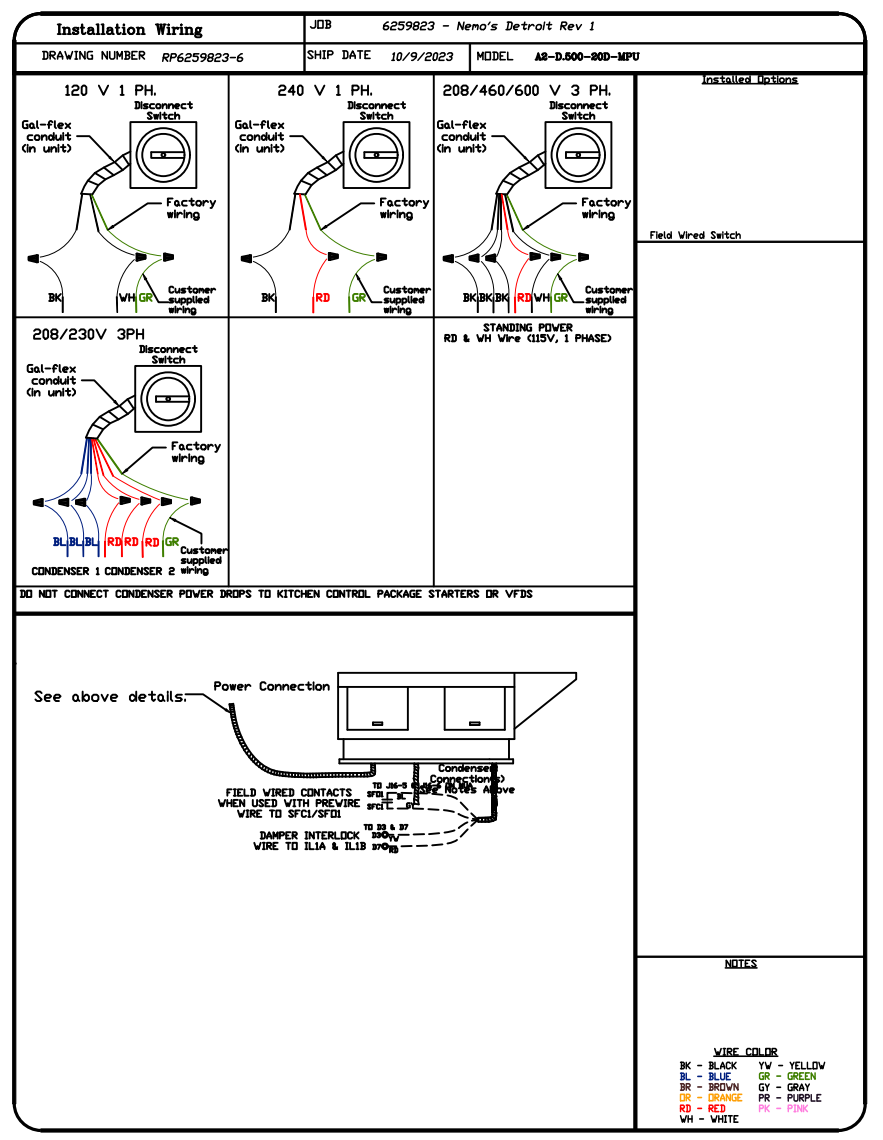
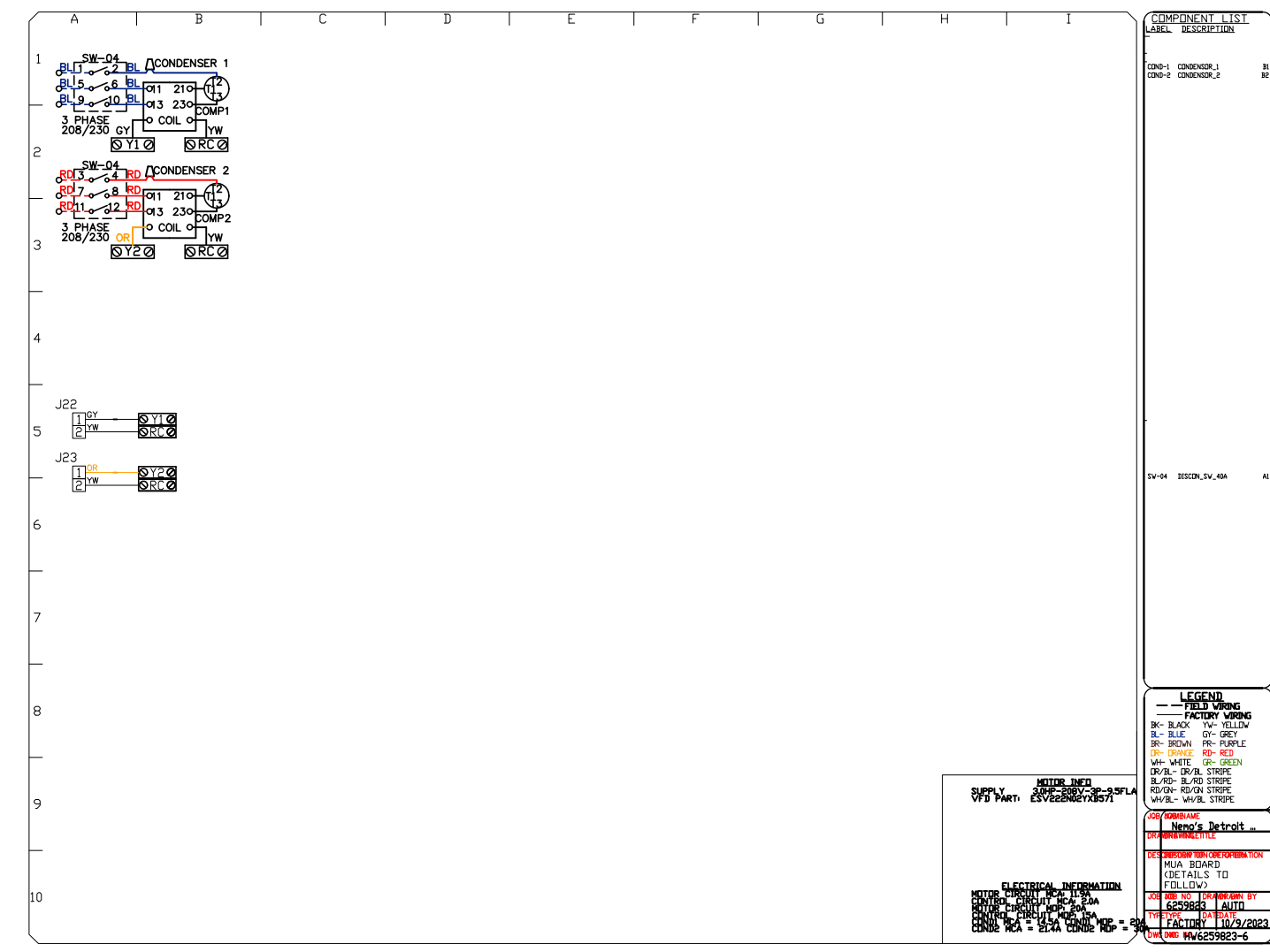
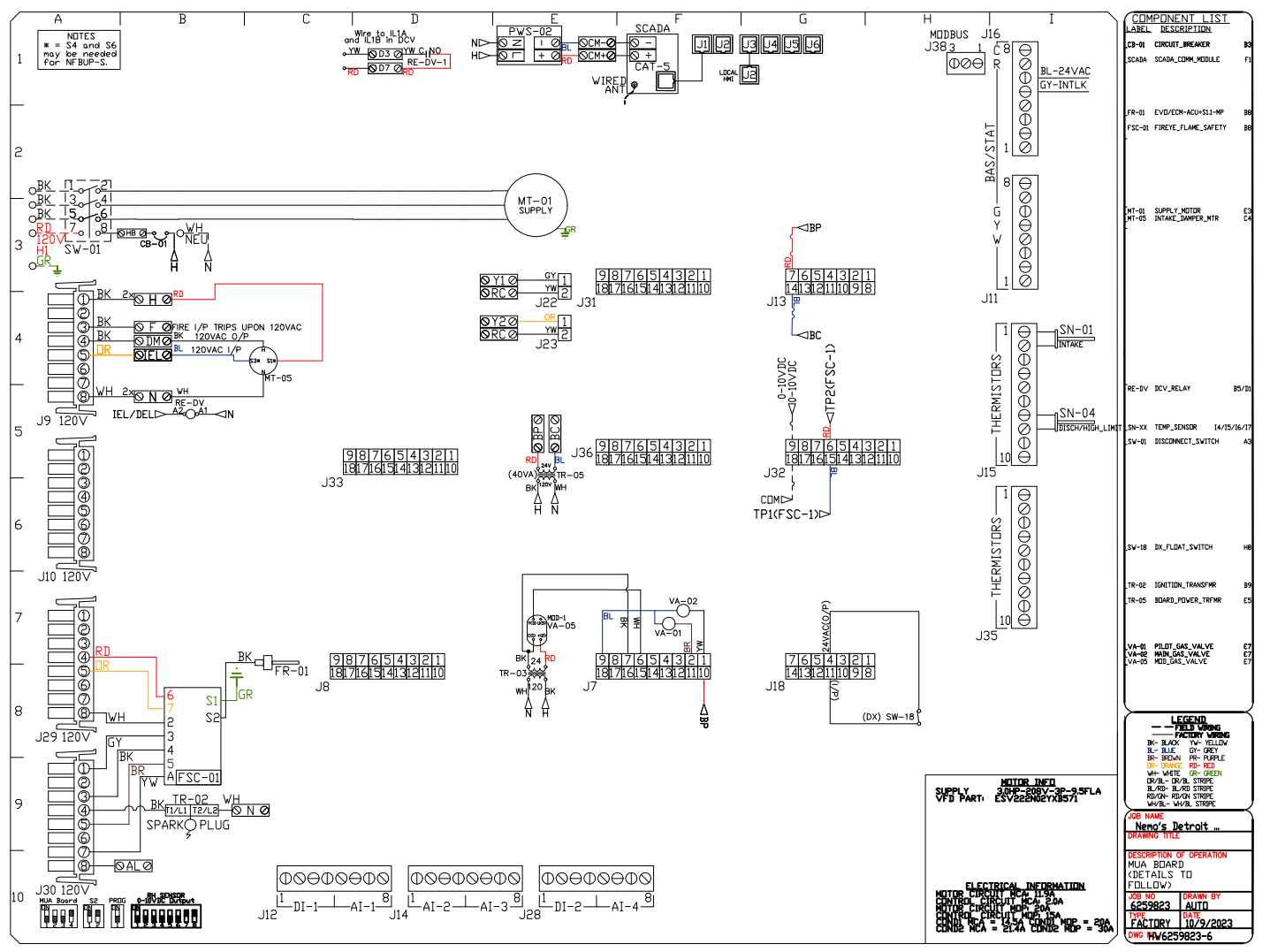
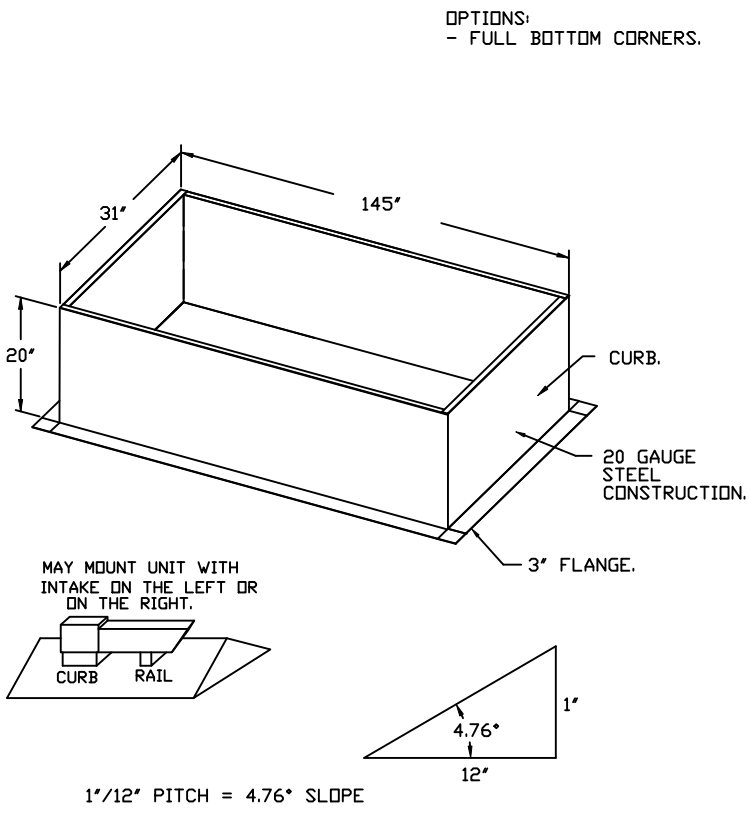
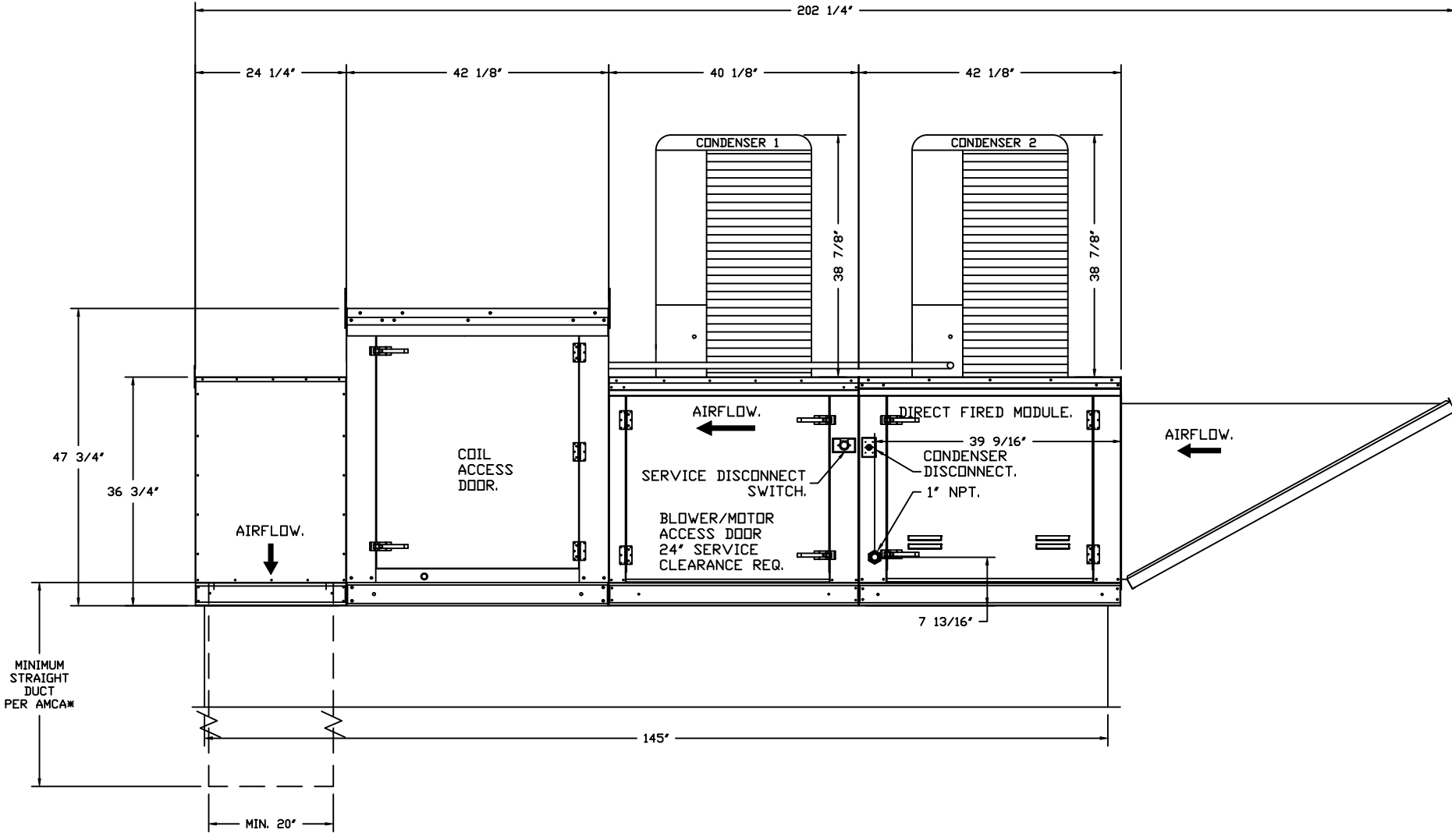
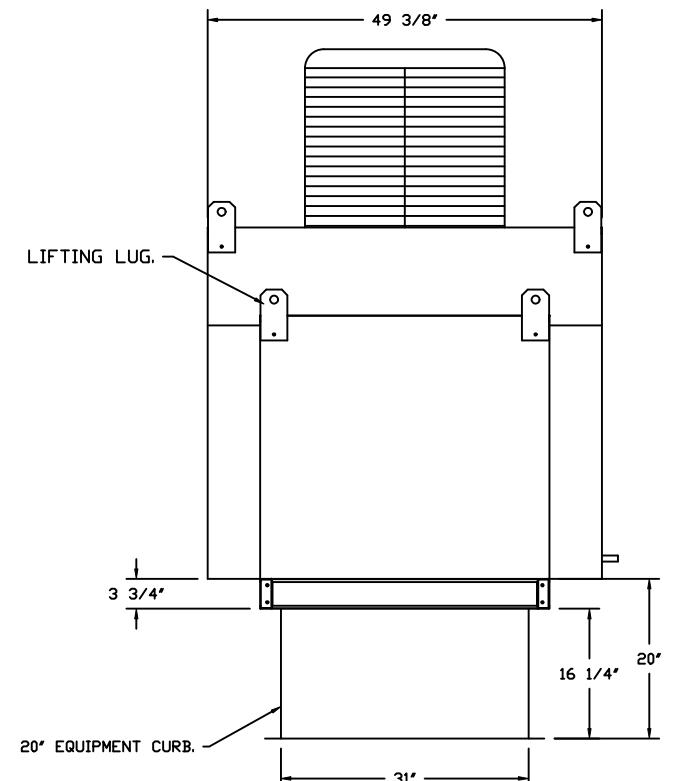
DIRECT FIRED (DF) PROFILE PLATE ASSEMBLY



NOTES:  
 1) 1" DIAMETER PVE PIPE ONLY  
 2) USE ONLY LHM PROFILE COUPLINGS  
 3) ADD CLEAN OUT AS SHOWN



**DIRECT FIRED PROFILE PLATE SPECIFICATIONS:**  
**DESCRIPTION:**  
 DIRECT FIRED BURNERS SHALL HAVE PATENTED (US PATENT NO. US6695923B2), SELF-ADJUSTING PROFILE PLATES DESIGNED TO ENSURE PROPER AIR VELOCITY AND PRESSURE DROP ACROSS THE BURNER. PROFILE PLATES SHALL ALLOW BURNERS TO ACHIEVE CLEAN COMBUSTION BY LIMITING BY-PRODUCT LEVELS TO A MAXIMUM OF 50PPM OF CARBON MONOXIDE (CO) AND 0.5PPM OF NITROGEN DIOXIDE (NO2). DIRECT FIRED UNITS SHALL BE CONFIGURED WITH THE BLOWER HEATED DOWNSTREAM OF THE BURNER. THIS ARRANGEMENT WILL ENSURE A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE.  
**APPLICATION:**  
 SPRING-LOADED BURNER PROFILE PLATES ARE ENGINEERED TO AUTOMATICALLY REACT TO THE MOMENTUM OF A FRESH AIR STREAM, WITHOUT THE NEED FOR ANY MOTORS OR ACTUATORS TO MECHANICALLY ADJUST THEM. WITH THIS FEATURE, ALL DF UNITS ARE DESIGNED FOR DEMAND CONTROL VENTILATION (DCV) REQUIREMENTS.  
**CERTIFICATIONS:**  
 ALL PROFILE PLATE ASSEMBLIES SHALL BE INCLUDED IN THE DF UNITS ETL LISTING AND COMPLY WITH COMBINED SAFETY STANDARDS ANS1 Z83.4 AND CSA 2.7 (NON-RECIRCULATING DF HEATERS) AND ANS1 Z83.18 (RECIRCULATING DF HEATERS).  
**GENERAL CONSTRUCTION:**  
 -PROFILE PLATES SHALL BE FORMED FROM 600 GALVANIZED STEEL.  
 -PROFILE PLATES SHALL VARY IN SIZE PER UNIT.  
 -PROFILE PLATES SHALL BE MOUNTED ALONG THE SAME PLANE AS THE DISCHARGE OF THE BURNER.  
 -DESIGN SHALL INCORPORATE PROPERLY TORQUED, PERMANENTLY MOUNTED SPRING HINGES.  
 -SPRING HINGES SHALL BE MADE FROM PLATED STEEL.



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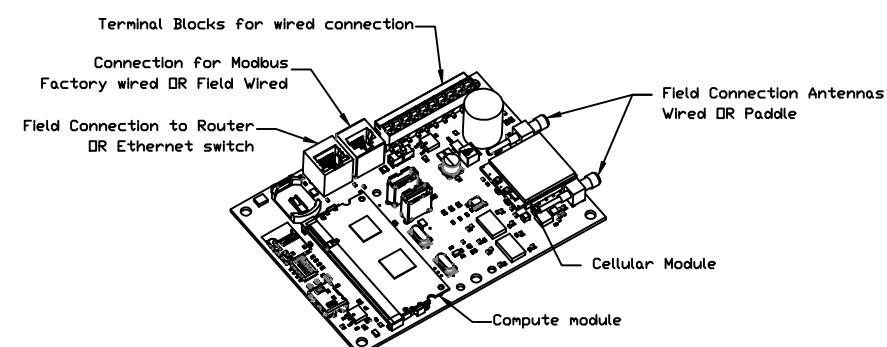
DATE: 10/9/2023  
 DWG.#:  
 6259823  
 DRAWN BY: RJF  
 SCALE:  
 1/2" = 1'-0"  
 MASTER DRAWING

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 10



**ELECTRICAL PACKAGE - JOB#6259823**

| NO | TAG | PACKAGE # | LOCATION                   | SWITCHES                 |                  | OPTION             | FANS CONTROLLED |         |   |       |      |      |
|----|-----|-----------|----------------------------|--------------------------|------------------|--------------------|-----------------|---------|---|-------|------|------|
|    |     |           |                            | LOCATION                 | QUANTITY         |                    | FAN TAG         | TYPE    | # | HP    | VOLT | FLA  |
| 1  | 28  | DCV-1111  | WALL UTILITY CABINET RIGHT | SHIP LOOSE W/<br>PREWIRE | 1 LIGHT<br>1 FAN | SMART CONTROLS DCV | 28              | EXHAUST | 1 | 0.750 | 208  | 5.2  |
| 2  | 35  | DCV-2111  | WALL UTILITY CABINET RIGHT | SHIP LOOSE W/<br>PREWIRE | 1 LIGHT<br>1 FAN | SMART CONTROLS DCV | 35 Left         | EXHAUST | 1 | 2.000 | 208  | 15.5 |
|    |     |           |                            |                          |                  |                    | 35 Right        | EXHAUST | 1 | 2.000 | 208  | 15.5 |
|    |     |           |                            |                          |                  |                    |                 | SUPPLY  | 3 | 3.000 | 208  | 9.5  |

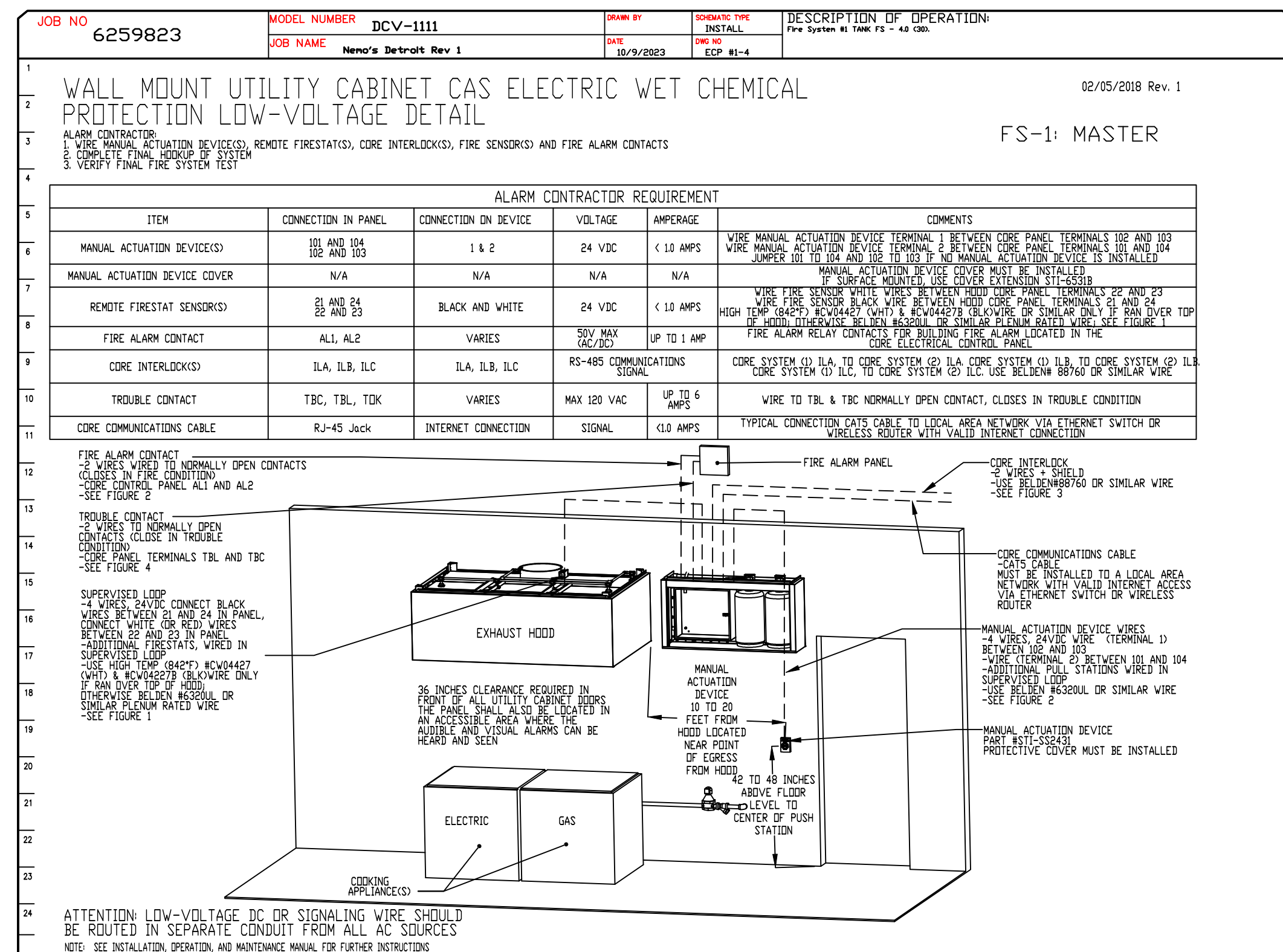
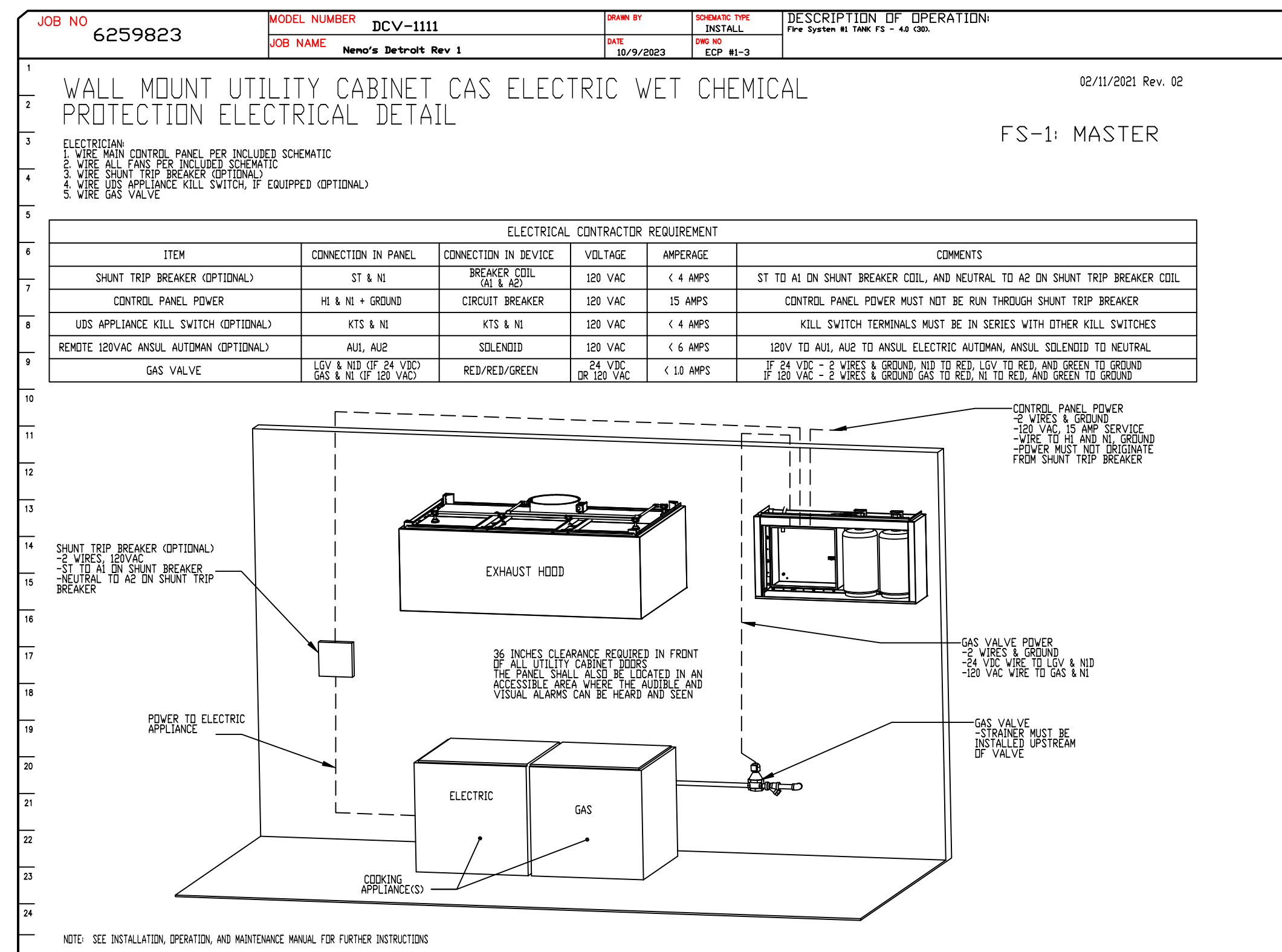
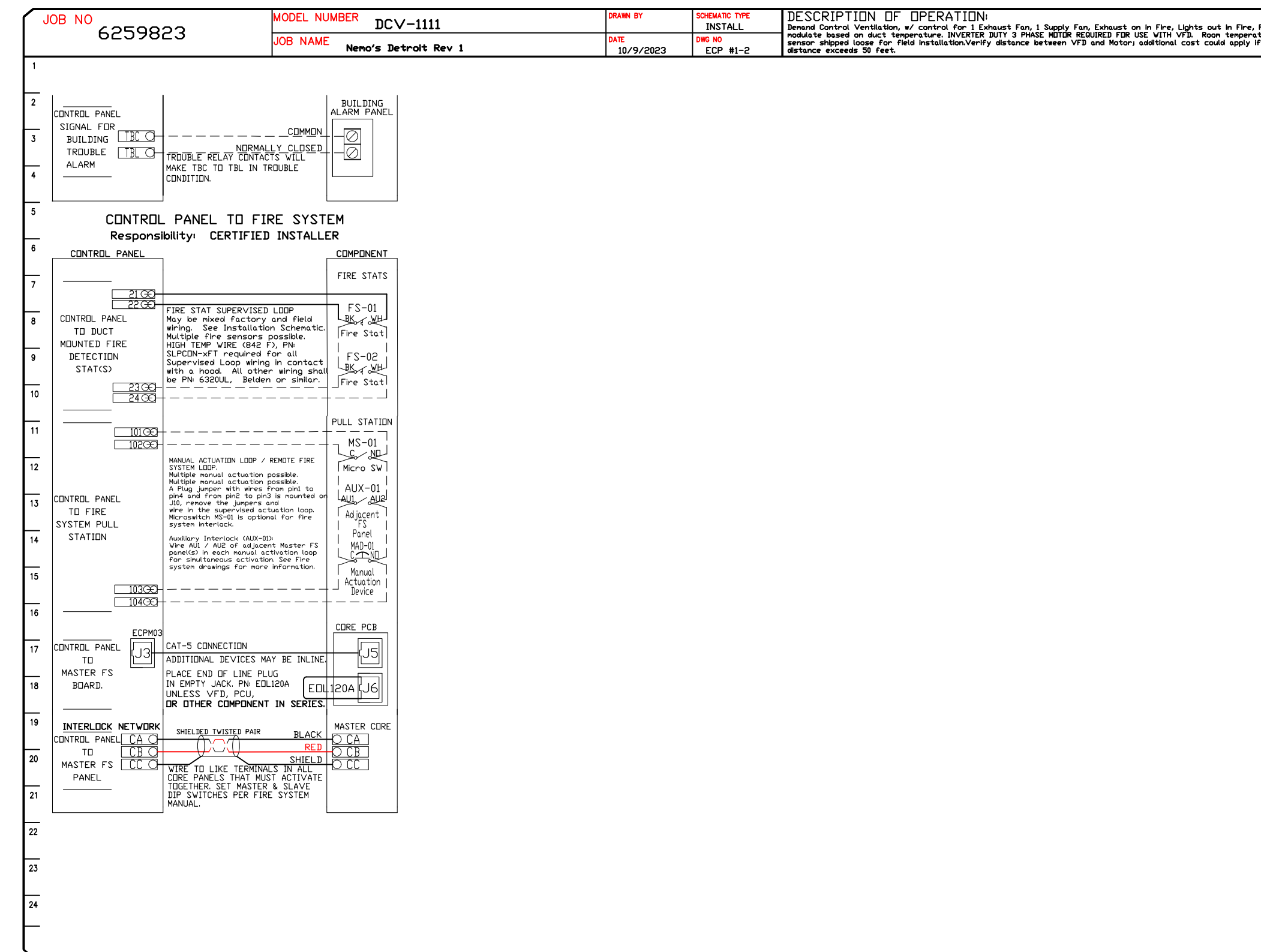
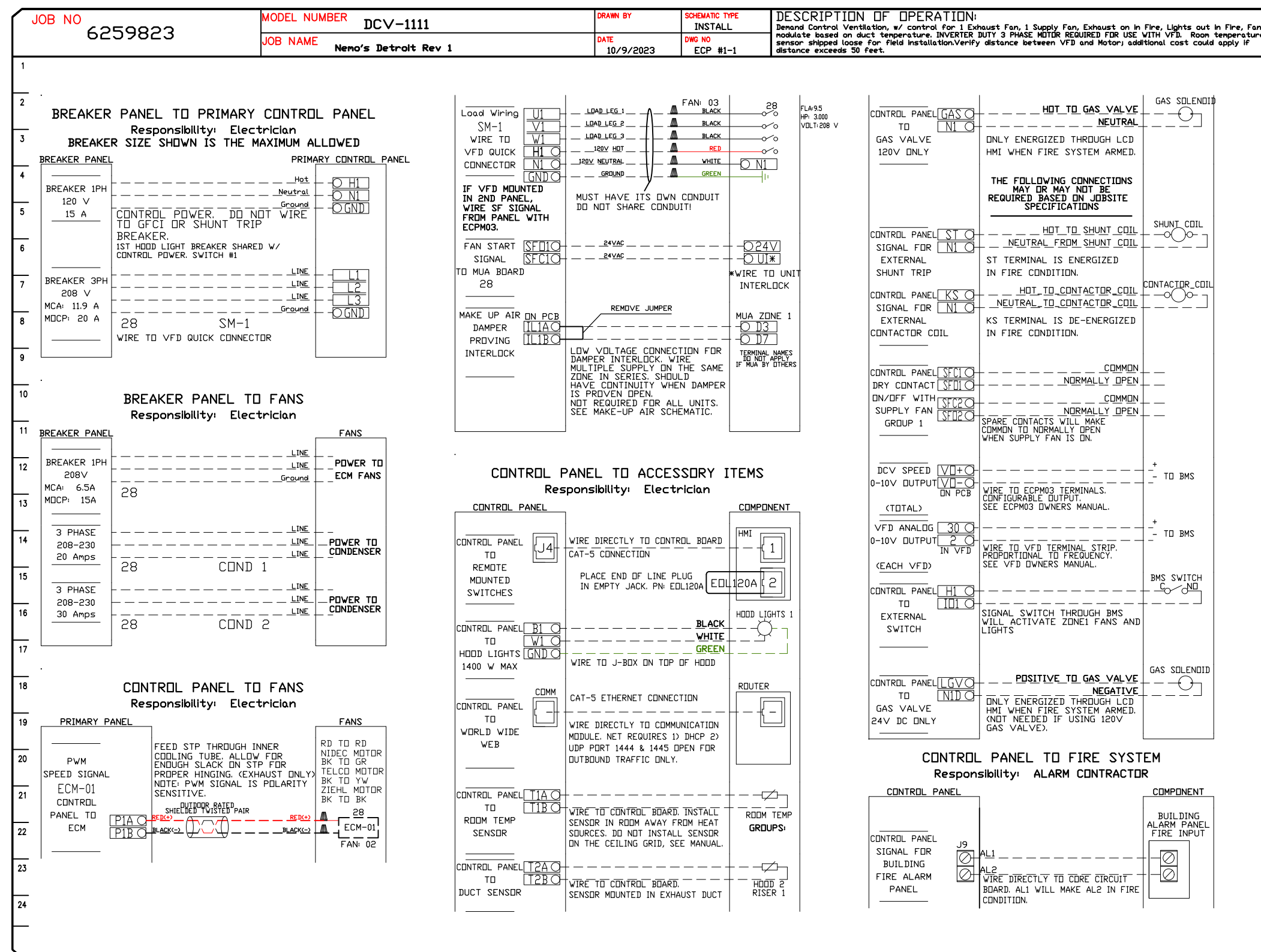


**CASlink Monitor and Control**

- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as **MONITOR** in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as **CONTROL** in the points list.
- Hood Control Panel to allow cloud-based Building Management System to implement **SYSTEM ECONOMIZER** control strategies for fully integrated Building Management.

**MONITORING AND CONTROL POINTS LIST**

| DCV Packages                      | Function          | SC Packages                       | Function          |
|-----------------------------------|-------------------|-----------------------------------|-------------------|
| Room Temperature                  | MONITOR           | Room Temperature(s)               | MONITOR           |
| Duct Temperature(s)               | MONITOR           | Duct Temperature(s)               | MONITOR           |
| MUA Discharge Temperature         | MONITOR           | MUA Discharge Temperature         | MONITOR           |
| Kitchen RTU Discharge Temperature | MONITOR           | Kitchen RTU Discharge Temperature | MONITOR           |
| Fan Speed                         | MONITOR           | Controller Faults                 | MONITOR           |
| Fan Amps                          | MONITOR           | Fan Faults                        | MONITOR           |
| Fan Power                         | MONITOR           | Fan Status                        | MONITOR           |
| VFD Faults                        | MONITOR           | PCU Faults                        | MONITOR           |
| Controller Faults                 | MONITOR           | PCU Filter Clog Percentages       | MONITOR           |
| Fan Faults                        | MONITOR           | Fire Condition                    | MONITOR           |
| Fan Status                        | MONITOR           | COBE Fire System                  | MONITOR           |
| PCU Faults                        | MONITOR           | Building Pressures                | MONITOR           |
| PCU Filter Clog Percentages       | MONITOR           | Fans Button(s)                    | MONITOR & CONTROL |
| Fire Condition                    | MONITOR           | Lights Button(s)                  | MONITOR & CONTROL |
| COBE Fire System                  | MONITOR           | Wash Button                       | MONITOR & CONTROL |
| Building Pressures                | MONITOR           |                                   |                   |
| Prop Time Button                  | MONITOR & CONTROL |                                   |                   |
| Fans Button                       | MONITOR & CONTROL |                                   |                   |
| Lights Button                     | MONITOR & CONTROL |                                   |                   |
| Wash Button                       | MONITOR & CONTROL |                                   |                   |



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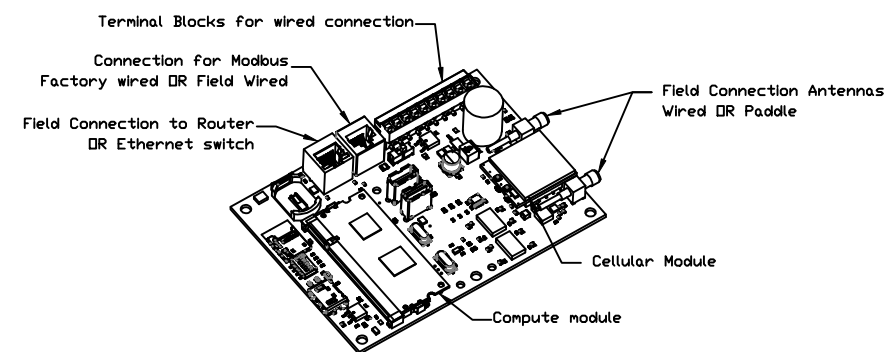
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 1384 Michigan Avenue,  
 Detroit, MI, 48226  
 3876 East Parle Ave SE, Suite 18, Grand Rapids, MI, 49514 PHONE: (616) 942-9881 FAX: 9192275984 E-MAIL: reg77@techhoods.com

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 SCALE: 3/4" = 1'-0"  
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 SHEET NO. 11







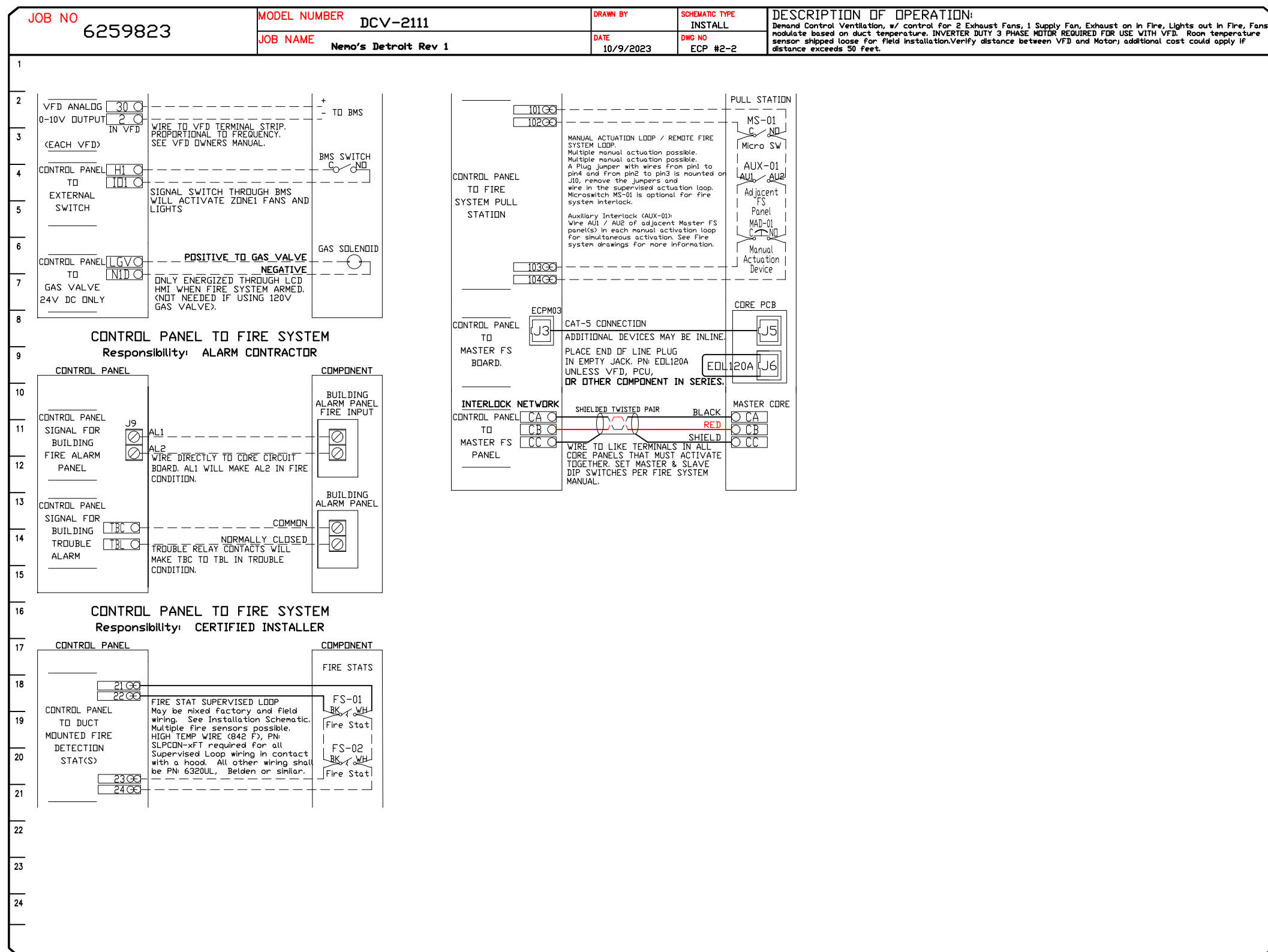
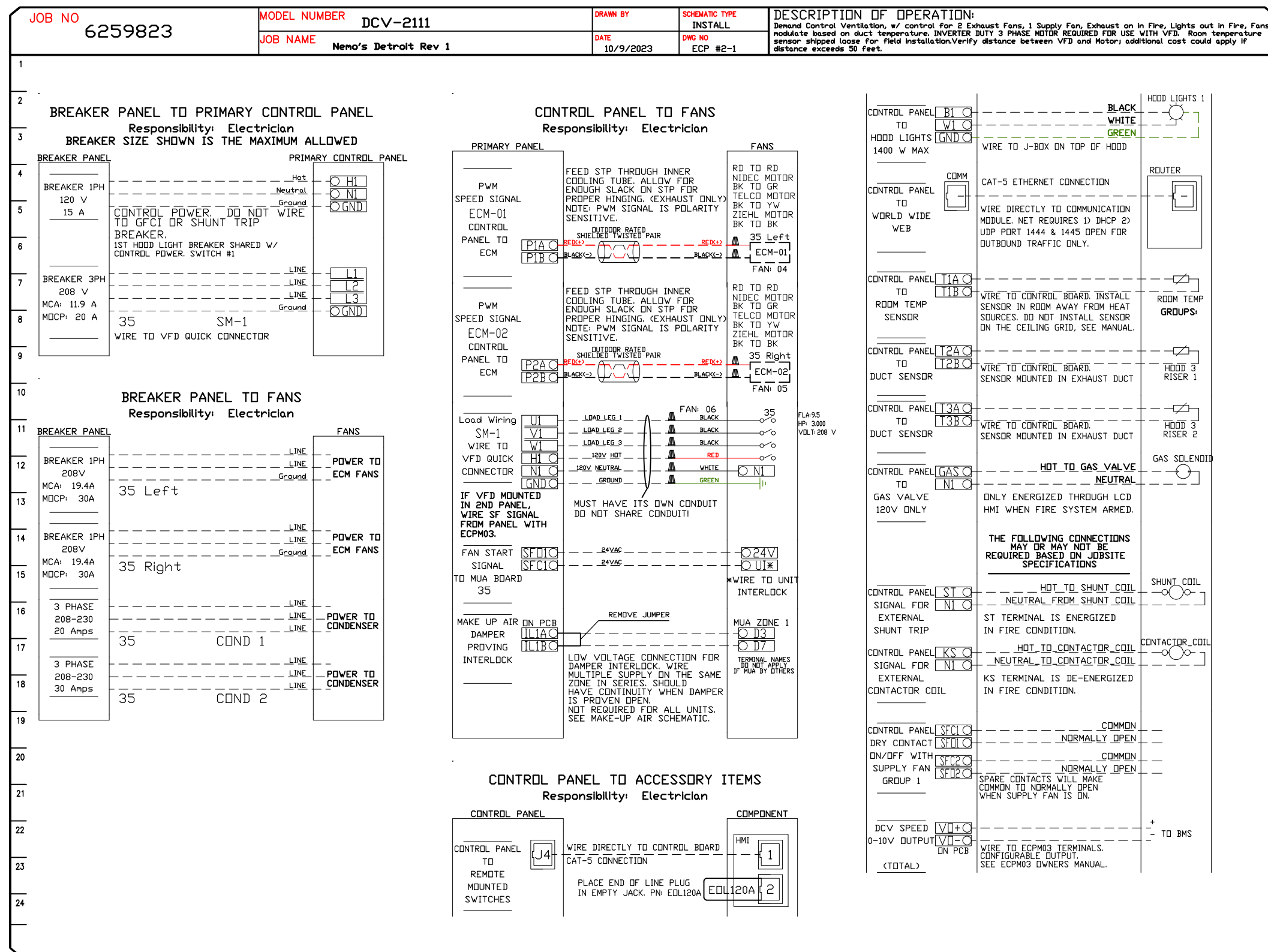


**CASlink Monitor and Control**

- Hood control panel to support communications to cloud-based Building Management Systems.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.
- Hood Control Panel to allow cloud-based Building Management System to implement SYSTEM ECONOMIZER control strategies for fully integrated Building Management.

**MONITORING AND CONTROL POINTS LIST**

| DCV Packages                      | Function          | DC Packages                       | Function          |
|-----------------------------------|-------------------|-----------------------------------|-------------------|
| Room Temperature                  | MONITOR           | Room Temperature(s)               | MONITOR           |
| Duct Temperature(s)               | MONITOR           | Duct Temperature(s)               | MONITOR           |
| MUA Discharge Temperature         | MONITOR           | MUA Discharge Temperature         | MONITOR           |
| Kitchen RTU Discharge Temperature | MONITOR           | Kitchen RTU Discharge Temperature | MONITOR           |
| Fan Speed                         | MONITOR           | Controller Faults                 | MONITOR           |
| Fan Amperage                      | MONITOR           | Fan Faults                        | MONITOR           |
| Fan Power                         | MONITOR           | Fan Status                        | MONITOR           |
| VFD Faults                        | MONITOR           | PCU Faults                        | MONITOR           |
| Controller Faults                 | MONITOR           | PCU Filter Clog Percentages       | MONITOR           |
| Fan Status                        | MONITOR           | Firm Condition                    | MONITOR           |
| Fan Faults                        | MONITOR           | CORE Fire System                  | MONITOR           |
| PCU Faults                        | MONITOR           | Building Pressures                | MONITOR           |
| PCU Filter Clog Percentages       | MONITOR           | Fans Button(s)                    | MONITOR & CONTROL |
| Firm Condition                    | MONITOR           | Lights Button(s)                  | MONITOR & CONTROL |
| CORE Fire System                  | MONITOR           | Wash Button                       | MONITOR & CONTROL |
| Building Pressures                | MONITOR           |                                   |                   |
| Prep Time Button                  | MONITOR & CONTROL |                                   |                   |
| Fans Button                       | MONITOR & CONTROL |                                   |                   |
| Lights Button                     | MONITOR & CONTROL |                                   |                   |
| Wash Button                       | MONITOR & CONTROL |                                   |                   |



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Nemo's Detroit Rev 1  
1384 Michigan Avenue,  
Detroit, MI, 48226

**DATE:** 10/9/2023

**DWG.#:**  
6259823

**DRAWN BY:** RJF

**SCALE:**  
3/4" = 1'-0"

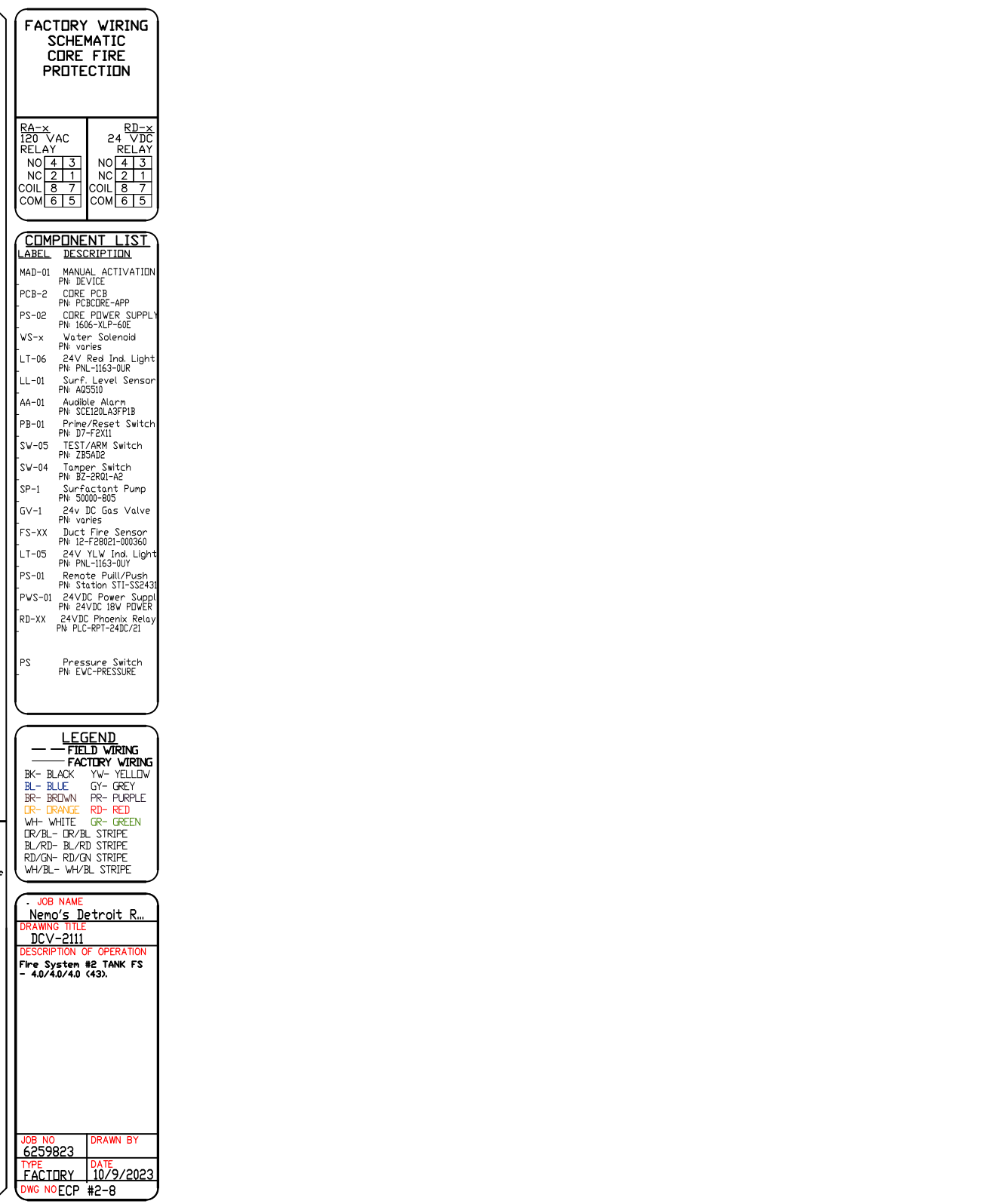
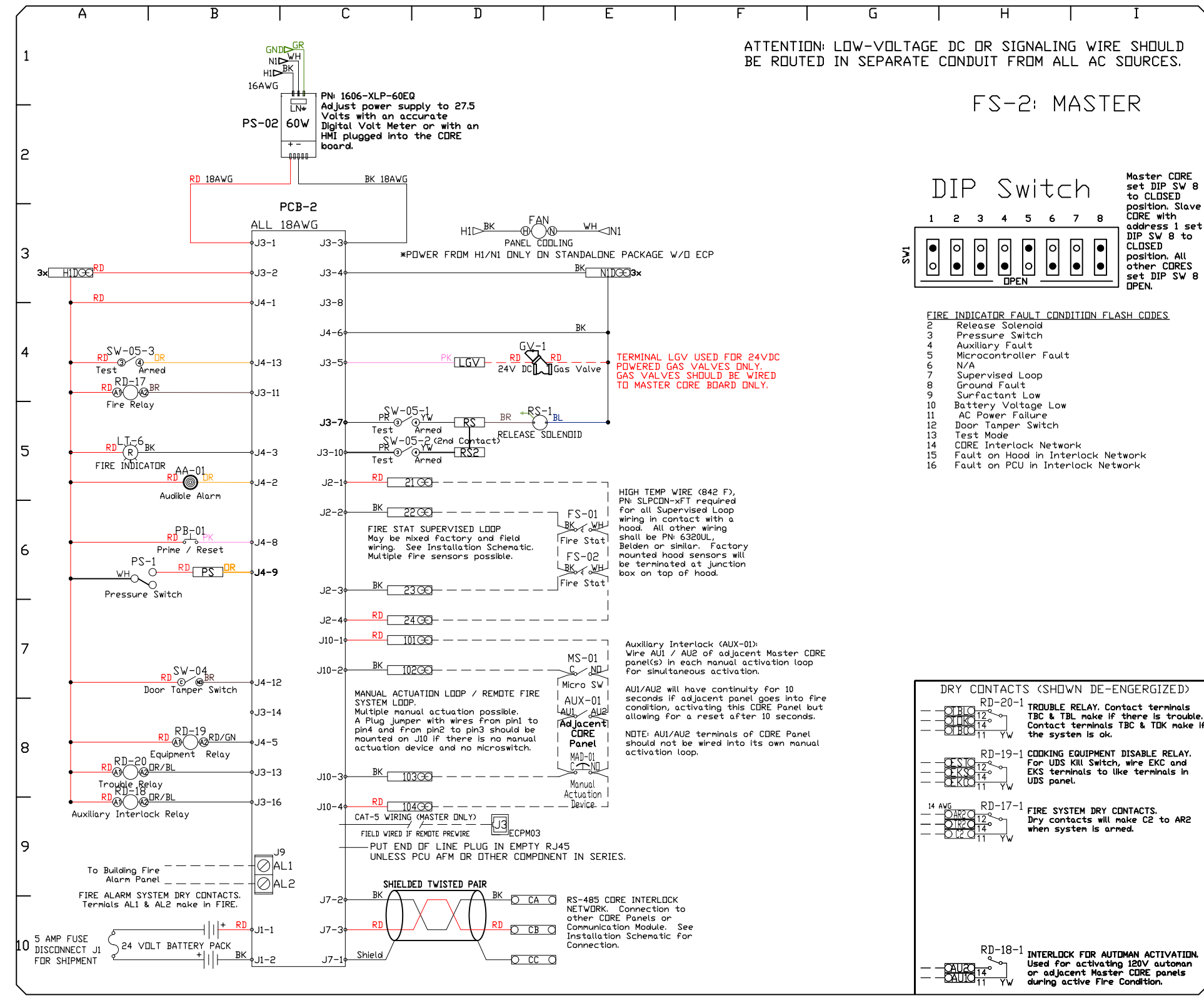
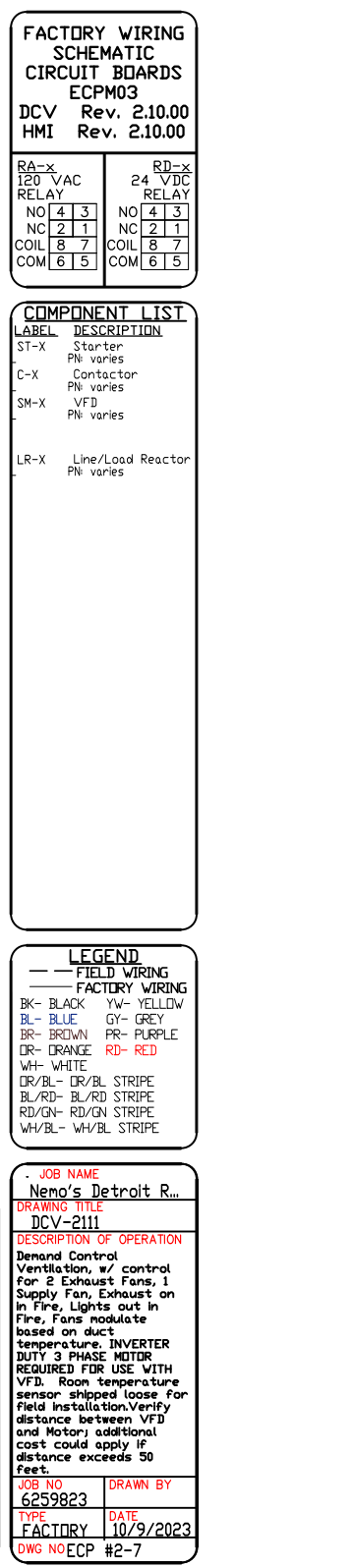
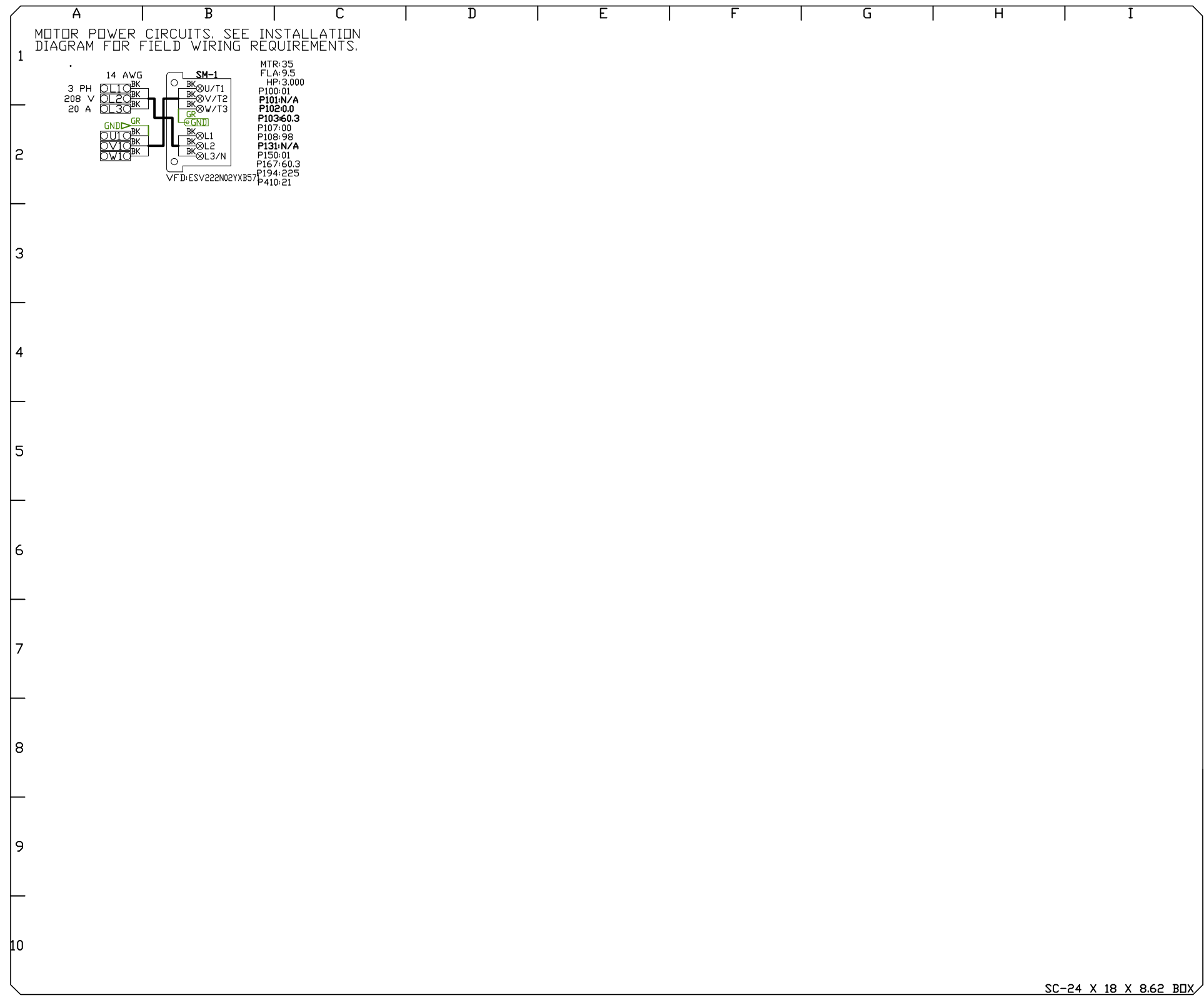
**MASTER DRAWING**

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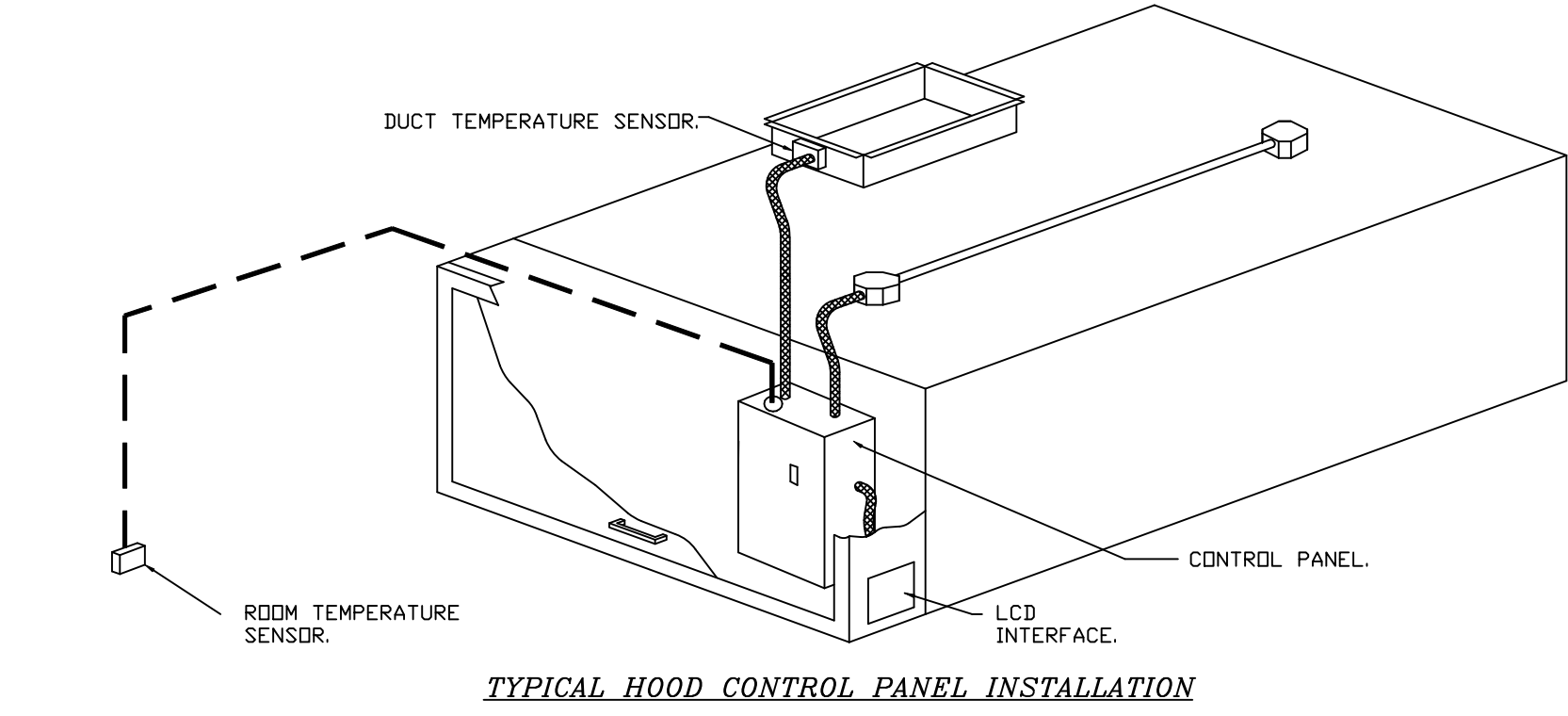






**DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:**

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDs BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:  
 A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.  
 B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).  
 C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.  
 D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.  
 E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.  
 F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.  
 G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDs.



**SEQUENCE OF OPERATIONS:**

- THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:
- **AUTOMATIC:** THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS "DYNAMIC", THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS "STATIC", FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
  - **MANUAL:** THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
  - **SCHEDULE:** A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
  - **OTHER:** THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
  - **FIRE:** UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

**REVISIONS**

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**DATE:** 10/9/2023

**DWG.#:** 6259823

**DRAWN BY:** RJF

**SCALE:** 3/4" = 1'-0"

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DUCTWORK #1 PARTS - JOB#6259823 18

| TAG                                      | PART #        | CFM | GPM | ZONE | COVEREDBY | SP      | WEIGHT | VELOCITY | QTY | DESCRIPTION  |
|--|---------------|-----|-----|------|-----------|---------|--------|----------|-----|--|
| P1                                       | KDW1045ASY    | 600 |     |      |           | -0.0192 | 4.62   | 1100.08  | 1   | SINGLE WALL DUCT 45 DEGREE ELBOW, 10" DUCT, ASSEMBLY.  |
| P2                                       | KDW1045ASY    | 600 |     |      |           | -0.0275 | 4.62   | 1100.08  | 1   | SINGLE WALL DUCT 45 DEGREE ELBOW, 10" DUCT, ASSEMBLY.  |
| P3                                       | KDW1035LT     | 600 |     |      |           | -0.0088 | 11.78  | 1100.08  | 1   | SINGLE WALL DUCT 10" DIAMETER, 35' LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.   |
| P4<br>ASSEMBLED W/P5                     | KDW1048AJDKIT | 600 |     |      |           | -0.0093 | 18.63  | 1100.08  | 1   | SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 47.5' LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL. |
| P5<br>ASSEMBLED W/P4 □=B<br>SYSTEM AT P5 | KDW1910TP     | 600 |     |      |           | -0.1377 | 0.00   | 1100.08  | 1   | DUCT TO CURB TRANSITION, 19-1/2" CURB TO 10" DUCT, 16 GA ALUMINIZED STEEL. MISC. NON-STANDARD TRANSITION PLATE.          |
|  | K3M-2000PLUS  |     |     |      |           |         | 0.80   |          | 1   | DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.   |
|  | KDW10CLASY    |     |     |      |           |         | 0.82   |          | 4   | DUCT *V* CLAMP WITH NEW DESIGN 14 GA BRACKETS, 10" DUCT, ASSEMBLY.   |
| TOTAL WEIGHT                             |               |     |     |      |           |         | 50.35  |          |     |  |

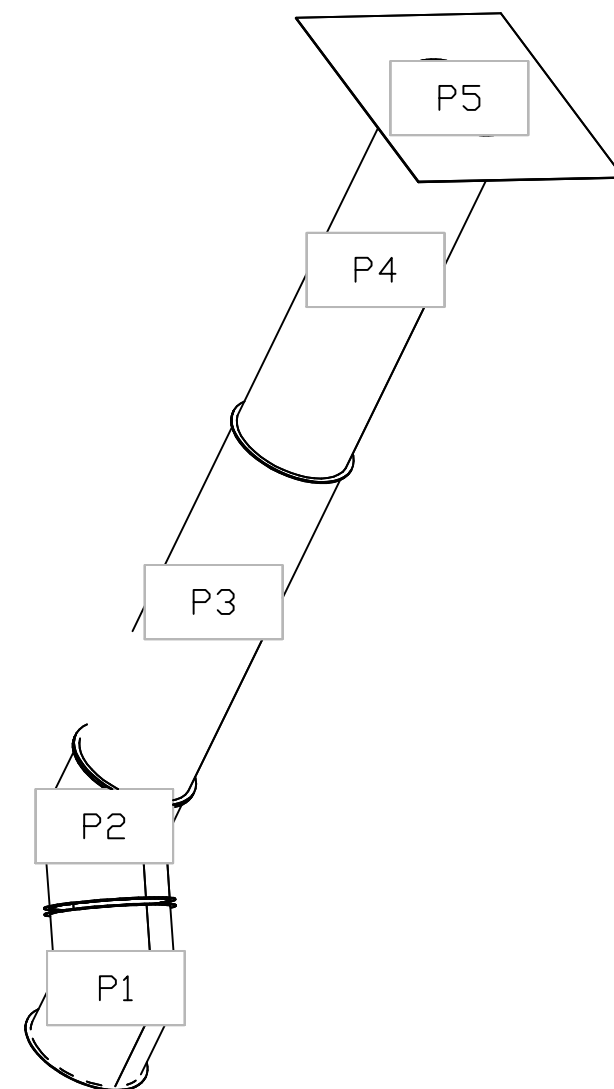
SINGLE WALL FACTORY BUILT DUCTWORK

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

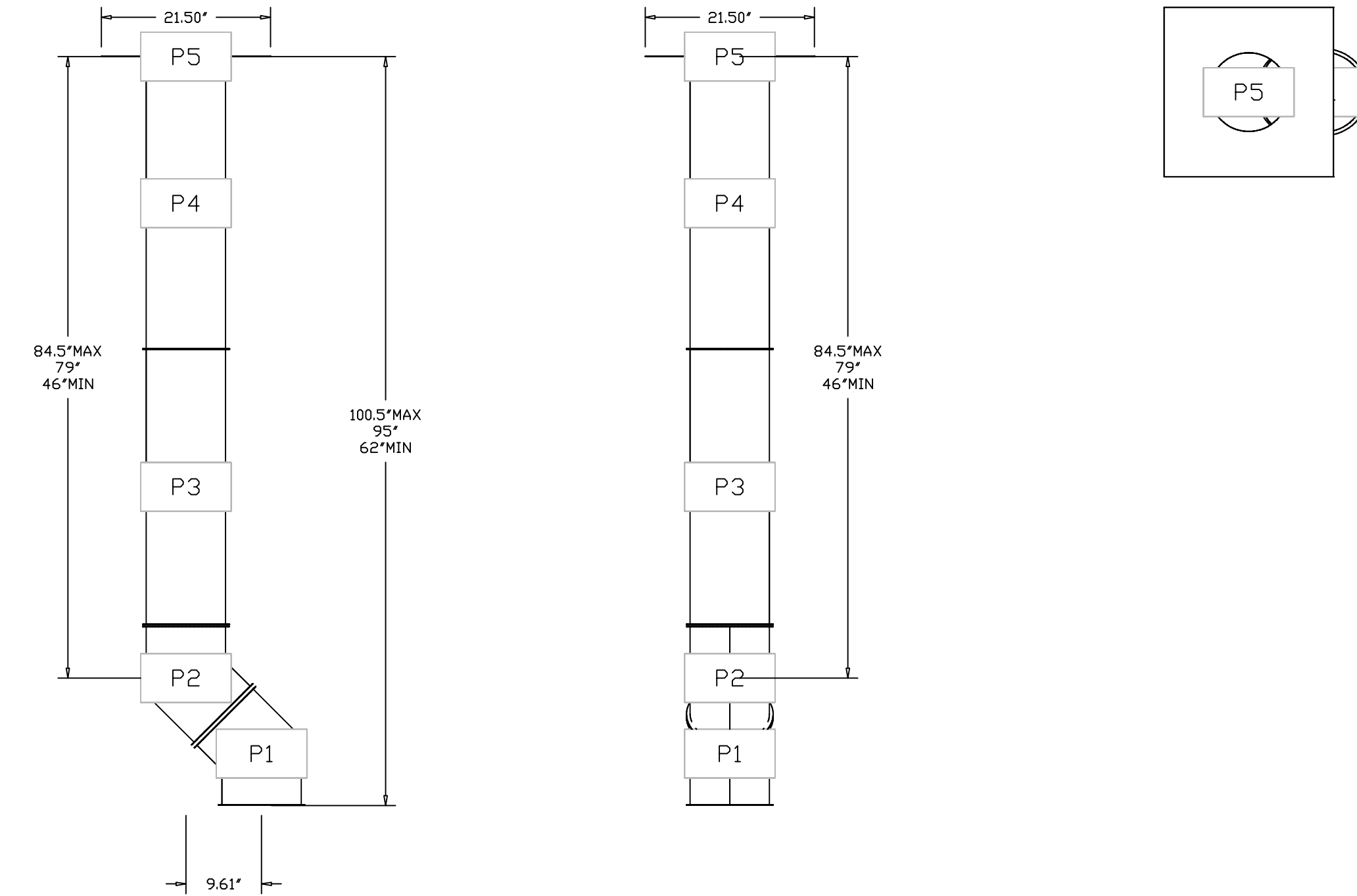
| DUCT DIAMETER | HORIZONTAL SUPPORT (FT) | VERTICAL WALL SUPPORT (FT) | VERTICAL CURB SUPPORT (FT) |
|---------------|-------------------------|----------------------------|----------------------------|
| 5"            | 10'                     | 10'                        | 24'                        |
| 6"            | 10'                     | 10'                        | 24'                        |
| 7"            | 10'                     | 10'                        | 24'                        |
| 8"            | 10'                     | 10'                        | 24'                        |
| 10"           | 10'                     | 10'                        | 24'                        |
| 12"           | 10'                     | 10'                        | 24'                        |
| 14"           | 10'                     | 10'                        | 24'                        |
| 16"           | 10'                     | 10'                        | 24'                        |
| 18"           | 10'                     | 10'                        | 24'                        |
| 20"           | 10'                     | 10'                        | 24'                        |
| 22"           | 10'                     | 10'                        | 24'                        |
| 24"           | 10'                     | 10'                        | 24'                        |
| 26"           | 10'                     | 10'                        | 24'                        |
| 28"           | 10'                     | 10'                        | 24'                        |
| 30"           | 10'                     | 10'                        | 24'                        |
| 32"           | 10'                     | 10'                        | 24'                        |
| 34"           | 10'                     | 10'                        | 24'                        |
| 36"           | 10'                     | 10'                        | 24'                        |

DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE FOR PROPER LEAK TESTING METHODS.

DUCTWORK #1 SE VIEW  
18



DUCTWORK #1 FRONT VIEW DUCTWORK #1 SIDE VIEW DUCTWORK #1 TOP VIEW  
18 18 18



| REVISIONS   |      |
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16

DUCTWORK #2 PARTS - JOB#6259823 DOUBLE WALL 28

| TAG          | PART #             | CFM               | GPM  | ZONE | COVEREDBY | SP      | WEIGHT | VELOCITY | QTY | DESCRIPTION  |
|--------------|--------------------|-------------------|------|------|-----------|---------|--------|----------|-----|--|
| P1           | KDW1445DWASY-2R-S  | 1800              |      |      |           | -0.0473 | 19.87  | 1683.79  | 1   | DOUBLE WALL DUCT - 14" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 18" STAINLESS STEEL OUTER SHELL.   |
| P2           | KDW1445DWASY-2R-S  | 1800              |      |      |           | -0.0675 | 19.87  | 1683.79  | 1   | DOUBLE WALL DUCT - 14" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 18" STAINLESS STEEL OUTER SHELL.   |
| P3           | KDW1447DWAJD-2R-S  | 1800              |      |      |           | -0.016  | 93.18  | 1683.79  | 1   | DOUBLE WALL ADJUSTABLE DUCT - 14" INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 18" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11' / MAX LENGTH = 48.5' / ADJUSTMENT = 30.5' / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL "V" CLAMPS. |
| P4           | ASSEMBLED W/P5     | KDW1435DWLTP-2R-S | 1800 |      |           | -0.015  | 48.06  | 1683.79  | 1   | DOUBLE WALL DUCT - 14" INNER DUCT, 35' LONG - 2 LAYERS REDUCED CLEARANCE - 18" STAINLESS STEEL OUTER SHELL - USED WITH TRANSITION PLATE.   |
| P5           | ASSEMBLED W/P4 D=B | KDW2314TP         | 1800 |      |           |         | 8.49   | 1683.79  | 1   | DUCT TO CURB TRANSITION, 23' CURB TO 14" DUCT, 16 GA ALUMINIZED. USED ON BDU15, DU75 & 85.   |
|              | SYSTEM AT P5       |                   |      |      |           | -0.8438 | 0.00   |          |     |  |
|              |                    | K3M-2000PLUS      |      |      |           |         | 0.80   |          | 2   | DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.   |
|              |                    | KDW14DWCLASY-2R-S |      |      |           |         | 7.21   |          | 1   | DUCT - 14" DUCT - 18" DOUBLE "V" CLAMP - 2R INSULATION & SINGLE "V" CLAMP INCLUDED - REDUCED CLEARANCE.  |
| TOTAL WEIGHT |                    |                   |      |      |           |         | 198.28 |          |     |  |

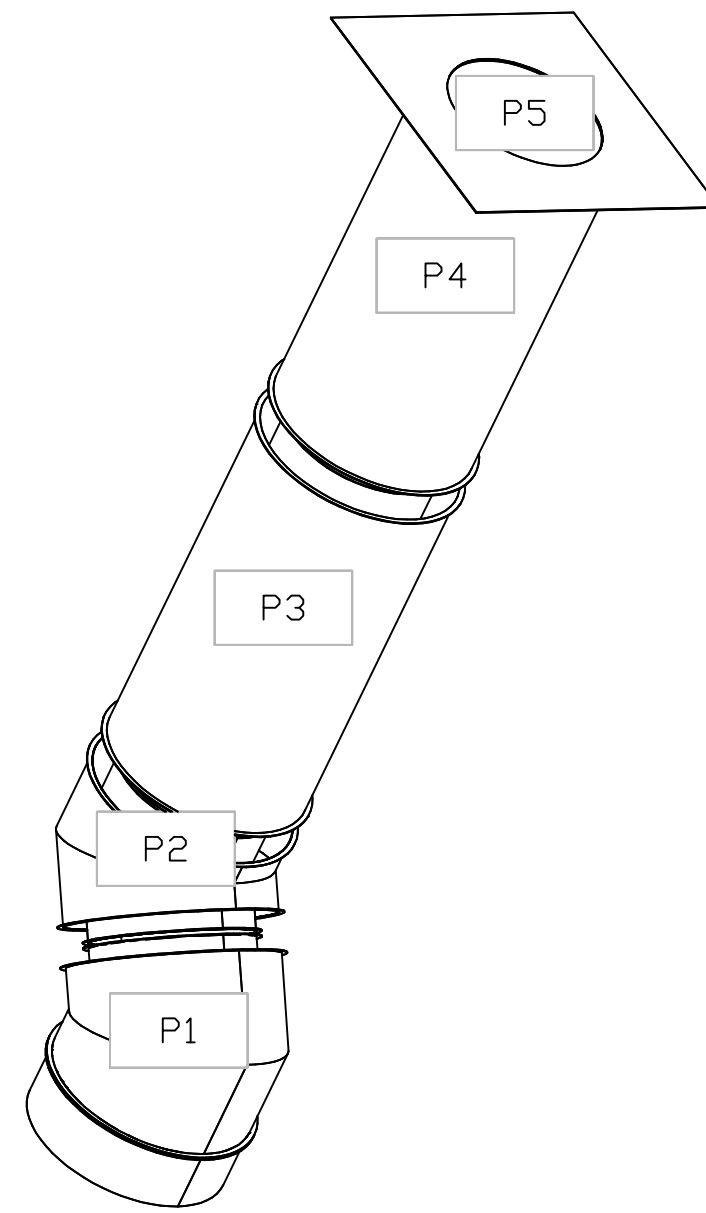
DOUBLE WALL FACTORY BUILT DUCTWORK

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

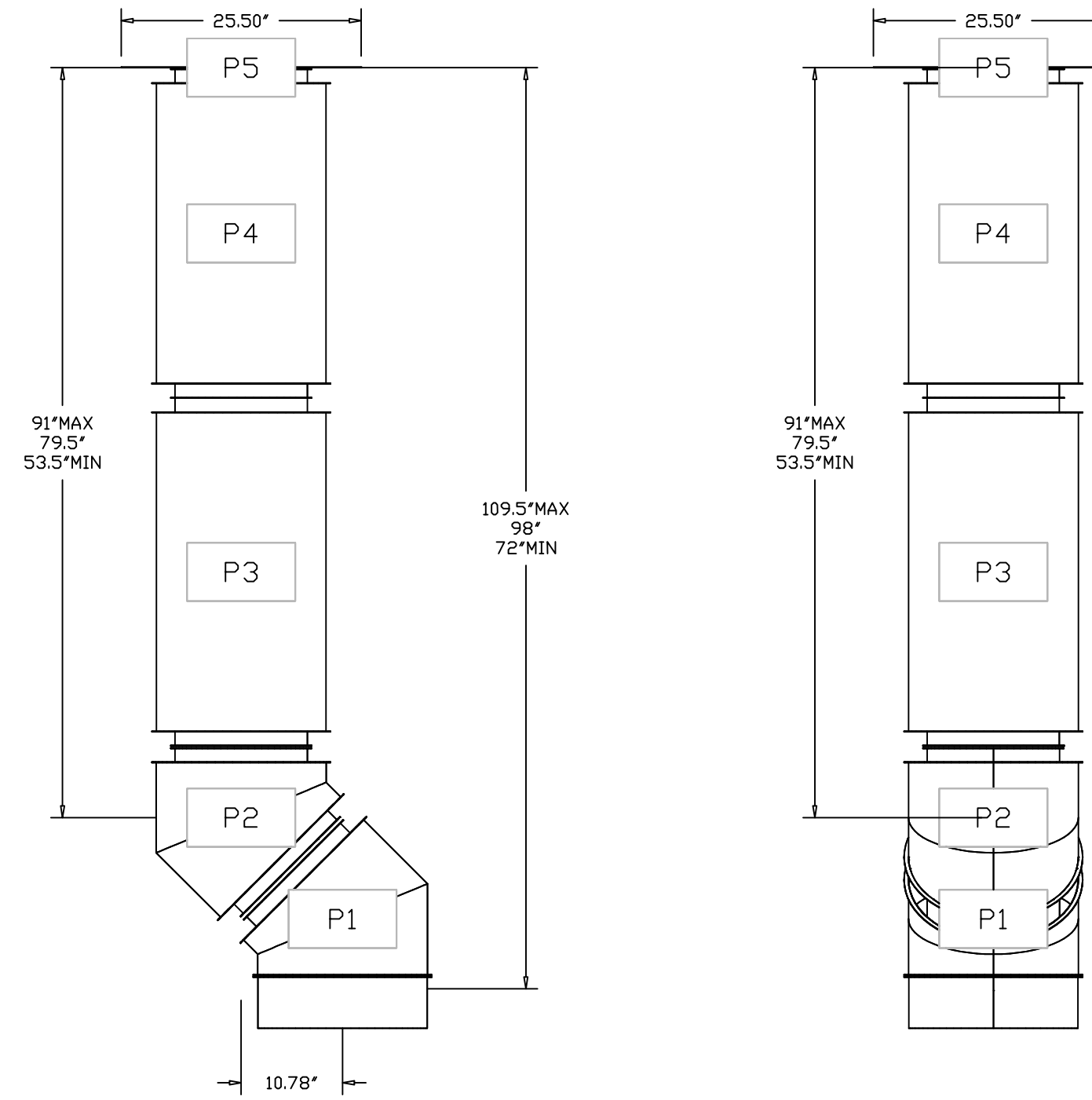
| HORIZONTAL    |                      |
|---------------|----------------------|
| DUCT DIAMETER | SUPPORT SPACING (FT) |
| 5'            | 7'                   |
| 6'            | 7'                   |
| 7'            | 7'                   |
| 8'            | 7'                   |
| 10'           | 7'                   |
| 12'           | 7'                   |
| 14'           | 7'                   |
| 16'           | 7'                   |
| 18'           | 5'                   |
| 20'           | 5'                   |
| 22'           | 5'                   |
| 24'           | 5'                   |
| 26'           | 5'                   |
| 28'           | 5'                   |
| 30'           | 5'                   |
| 32'           | 5'                   |
| 34'           | 5'                   |
| 36'           | 5'                   |

| VERTICAL            |                  |                  |                   |
|---------------------|------------------|------------------|-------------------|
| TYPE                | WALL SUPPRT (FT) | CURB SUPPRT (FT) | FLOOR SUPPRT (FT) |
| 2R & 2R HT (5'-16') | 20'              | 24'              | 24'               |
| 2R (18')            | 18'              | 24'              | 24'               |
| 3R & 3Z (5'-24')    | 10'              | 24'              | 24'               |
| 3Z (26' -36')       | 10'              | 20'              | 20'               |

DUCTWORK #2 SE VIEW 28

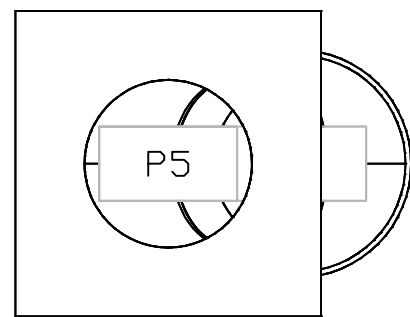


DUCTWORK #2 FRONT VIEW 28 DUCTWORK #2 SIDE VIEW 28



DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE FOR PROPER LEAK TESTING METHODS.

DUCTWORK #2 TOP VIEW 28



**GREASE DUCT & CHIMNEY SPECIFICATIONS:**  
 PROVIDE GREASE DUCT EQUAL TO K-TECH MODEL "KDW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "KDW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "KDW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.  
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "KDW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.  
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO K-TECH MODEL "KDW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

**CUSTOMER APPROVAL TO MANUFACTURE:**

|                                  |                          |
|----------------------------------|--------------------------|
| APPROVED AS NOTED                | <input type="checkbox"/> |
| APPROVED WITH NO EXCEPTION TAKEN | <input type="checkbox"/> |
| REVISE AND RESUBMIT              | <input type="checkbox"/> |
| SIGNATURE _____                  |                          |
| YOUR TITLE _____                 | DATE _____               |

**REVISIONS**

| DESCRIPTION | DATE |
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Nemo's Detroit Rev 1  
 1384 Michigan Avenue,  
 Detroit, MI, 48226

DATE: 10/9/2023  
 DWG.#: 6259823  
 DRAWN BY: RJF  
 SCALE: 3/4" = 1'-0"  
 MASTER DRAWING

SHEET NO. 17



DUCTWORK #3 PARTS - JOB#6259823 DOUBLE WALL 35

| TAG           | PART #             | CFM               | GPM  | ZONE | COVEREDBY | SP     | WEIGHT | VELOCITY | QTY | DESCRIPTION  |
|---------------|--------------------|-------------------|------|------|-----------|--------|--------|----------|-----|--|
| P1            | KDW1645DWASY-2R-S  | 2058              |      |      |           | -0.035 | 22.06  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL.   |
| P2            | KDW1645DWASY-2R-S  | 2058              |      |      |           | -0.05  | 22.06  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL.   |
| P3            | KDW1647DWAJD-2R-S  | 2058              |      |      |           | -0.01  | 103.34 | 1473.93  | 1   | DOUBLE WALL ADJUSTABLE DUCT - 16" INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11' / MAX LENGTH = 48.5' / ADJUSTMENT = 30.5' / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL *V* CLAMPS. |
| P4            | ASSEMBLED W/P5     | KDW1635DWLTP-2R-S | 2058 |      |           | -0.01  | 53.98  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER DUCT, 35' LONG - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL - USED WITH TRANSITION PLATE.   |
| P5            | ASSEMBLED W/P4 □=T | KDW2616TP         | 2058 |      |           |        | 11.62  | 1473.93  | 1   | DUCT TO CURB TRANSITION, 26-1/2" CURB TO 16" DUCT, 16 GA ALUMINIZED. USED ON BDU18.  |
| SYSTEM AT P5  |                    |                   |      |      |           | -0.882 | 0.00   |          |     |  |
| P6            | KDW1645DWASY-2R-S  | 2058              |      |      |           | -0.035 | 22.06  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL.   |
| P7            | KDW1645DWASY-2R-S  | 2058              |      |      |           | -0.05  | 22.06  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER 45 DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL.   |
| P8            | KDW1647DWAJD-2R-S  | 2058              |      |      |           | -0.01  | 103.34 | 1473.93  | 1   | DOUBLE WALL ADJUSTABLE DUCT - 16" INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11' / MAX LENGTH = 48.5' / ADJUSTMENT = 30.5' / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL *V* CLAMPS. |
| P9            | ASSEMBLED W/P10    | KDW1635DWLTP-2R-S | 2058 |      |           | -0.01  | 53.98  | 1473.93  | 1   | DOUBLE WALL DUCT - 16" INNER DUCT, 35' LONG - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL - USED WITH TRANSITION PLATE.   |
| P10           | ASSEMBLED W/P9 □=T | KDW2616TP         | 2058 |      |           |        | 11.62  | 1473.93  | 1   | DUCT TO CURB TRANSITION, 26-1/2" CURB TO 16" DUCT, 16 GA ALUMINIZED. USED ON BDU18.  |
| SYSTEM AT P10 |                    |                   |      |      |           | -0.882 | 0.00   |          |     |  |
|               | K3M-2000PLUS       |                   |      |      |           |        | 0.80   |          | 3   | DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.   |
|               | KDW16DWCLASY-2R-S  |                   |      |      |           |        | 7.96   |          | 2   | DUCT - 16" DUCT - 20" DOUBLE *V* CLAMP - 2R INSULATION & SINGLE *V* CLAMP INCLUDED - REDUCED CLEARANCE.  |
| TOTAL WEIGHT  |                    |                   |      |      |           |        | 444.44 |          |     |  |

DOUBLE WALL FACTORY BUILT DUCTWORK

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

| HORIZONTAL    |                      |
|---------------|----------------------|
| DUCT DIAMETER | SUPPORT SPACING (FT) |
| 5'            | 7'                   |
| 6'            | 7'                   |
| 7'            | 7'                   |
| 8'            | 7'                   |
| 10'           | 7'                   |
| 12'           | 7'                   |
| 14'           | 7'                   |
| 16'           | 7'                   |
| 18'           | 5'                   |
| 20'           | 5'                   |
| 22'           | 5'                   |
| 24'           | 5'                   |
| 26'           | 5'                   |
| 28'           | 5'                   |
| 30'           | 5'                   |
| 32'           | 5'                   |
| 34'           | 5'                   |
| 36'           | 5'                   |

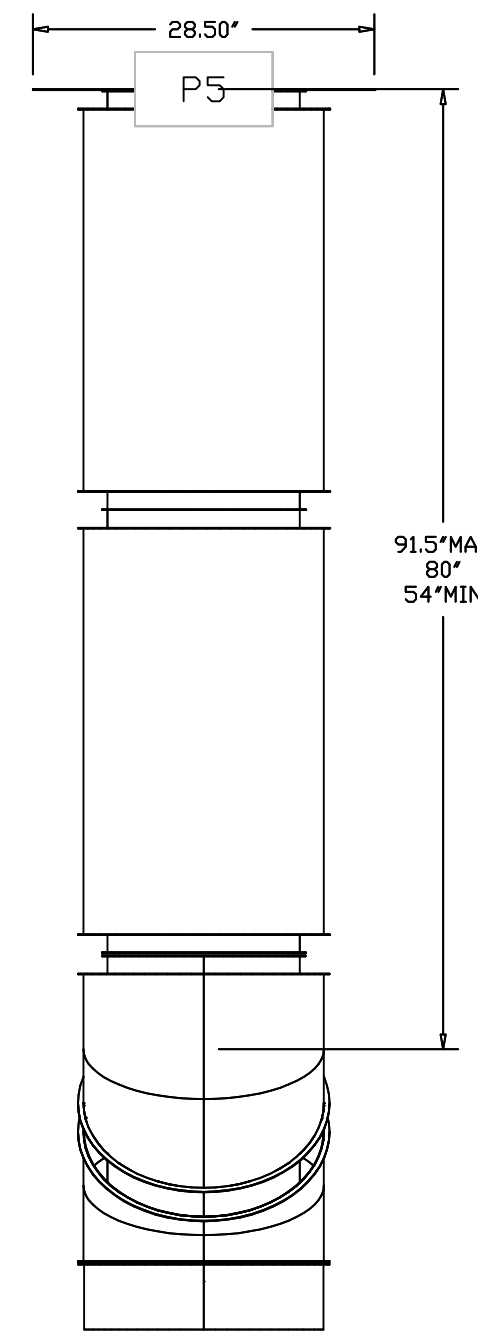
| VERTICAL            |                   |                   |                    |
|---------------------|-------------------|-------------------|--------------------|
| TYPE                | WALL SUPPORT (FT) | CURB SUPPORT (FT) | FLOOR SUPPORT (FT) |
| 2R & 2R HT (5'-16") | 20'               | 24'               | 24'                |
| 2R (18")            | 18'               | 24'               | 24'                |
| 3R & 3Z (5'-24")    | 10'               | 24'               | 24'                |
| 3Z (26" -36")       | 10'               | 20'               | 20'                |

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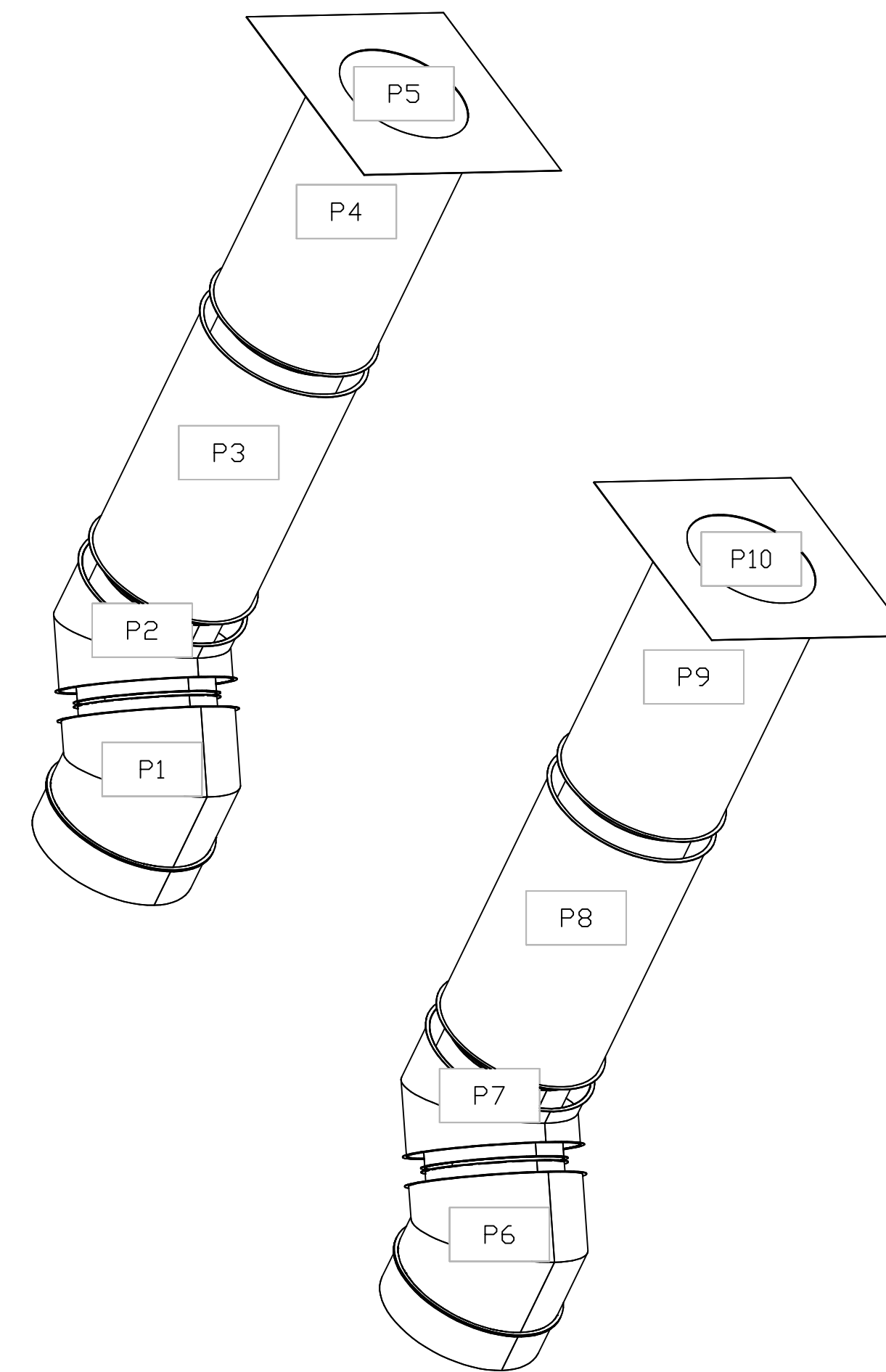
DUCTWORK #3 TOP VIEW  
35



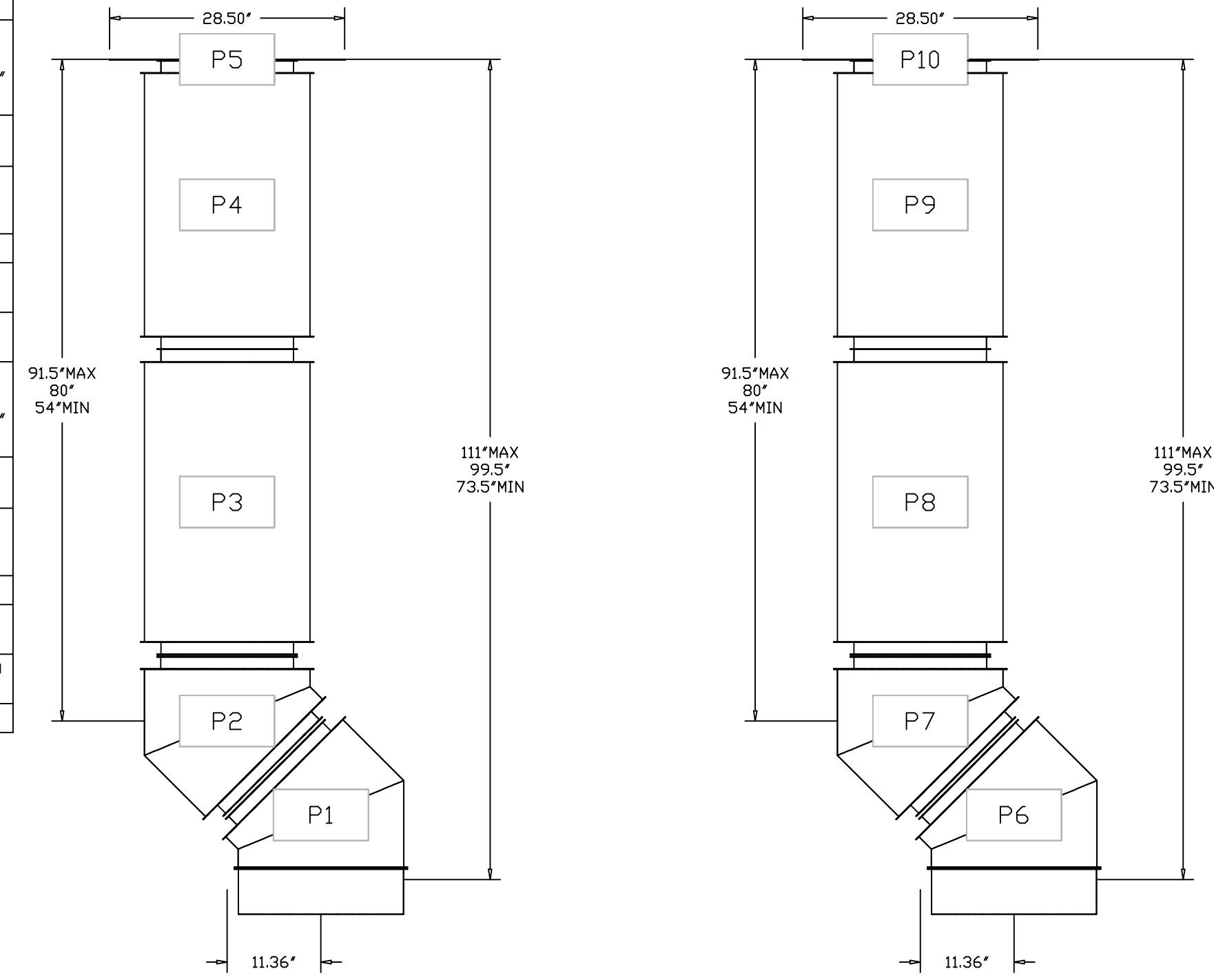
DUCTWORK #3 SIDE VIEW  
35



DUCTWORK #3 SE VIEW  
35



DUCTWORK #3 FRONT VIEW  
35



| REVISIONS   |      |
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| DESCRIPTION | DATE |
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DWG.#: 6259823  
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SHEET NO.  
18