

# MUSEUM OF THE ROCKIES PALEO DUST COLLECTION UPGRADES

MONTANA STATE UNIVERSITY - BOZEMAN MONTANA



MSU-CPDC  
MONTANA STATE UNIVERSITY  
BOZEMAN, MONTANA  
PHONE: 406.994.5413  
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## PROJECT TEAM

**OWNER:**  
STATE OF MONTANA  
HELENA, MONTANA  
(406) 444-3104

**MECHANICAL:**  
ASSOCIATED CONSTRUCTION ENGINEERING  
BELGRADE, MONTANA  
(406) 388-3320

**AGENCY:**  
MONTANA STATE UNIVERSITY  
BOZEMAN, MONTANA  
(406) 994-5413

**PLUMBING:**  
ASSOCIATED CONSTRUCTION ENGINEERING  
BELGRADE, MONTANA  
(406) 388-3320

**ARCHITECT:**  
N/A

**ELECTRICAL:**  
ASSOCIATED CONSTRUCTION ENGINEERING  
BELGRADE, MONTANA  
(406) 388-3320

**STRUCTURAL:**  
N/A

## APPLICABLE CODES

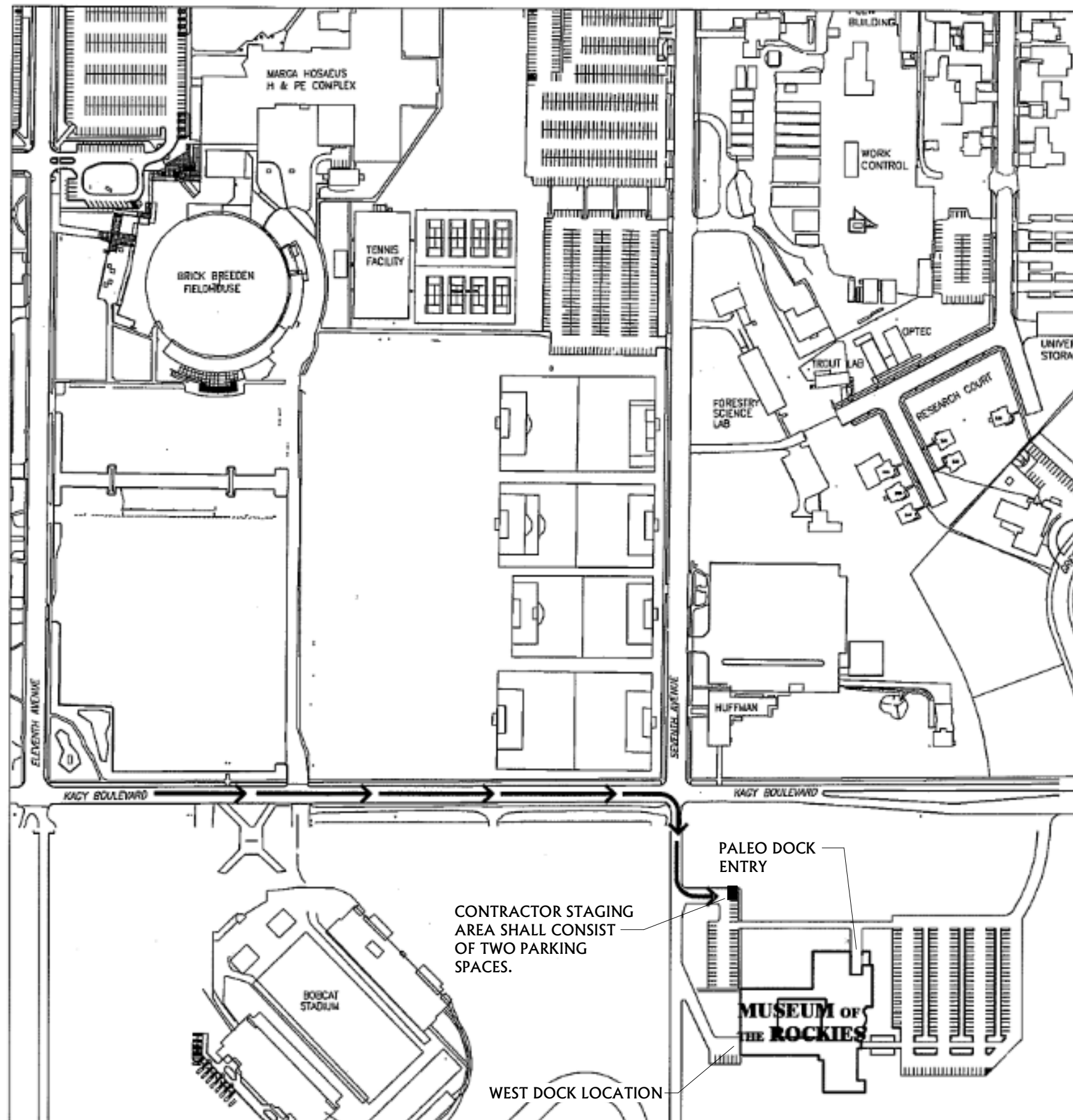
2020 INTERNATIONAL BUILDING CODE (IBC)  
2020 INTERNATIONAL MECHANICAL CODE (IMC)  
2020 UNIFORM PLUMBING CODE (UPC)  
2020 NATIONAL ELECTRIC CODE (NEC)

## PROJECT NOTES

- ALL WORK ON THE PROJECT SHALL CONFORM TO ALL LOCAL, CITY, STATE, AND NAT'L CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE N.F.P.A., N.E.C., I.B.C., I.M.C., U.P.C., I.E.C.C., AND THE LOCAL SERVING UTILITY COMPANIES.
- THE WORK ON THIS PROJECT SHALL CONSIST OF ALL ITEMS, ARTICLES, MATERIALS, EQUIPMENT, AND LABOR ALONG WITH ALL INCIDENTAL ITEMS REQUIRED BY GOOD PRACTICE AND WORKMANSHIP TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
- INSPECT THE EXISTING FACILITIES FOR VERIFICATION OF EXISTING CONDITIONS AND SYSTEMS.
- THE MECHANICAL CONTRACTORS SHALL BE RESPONSIBLE FOR AND PAY FOR ALL FEES AND PERMITS REQUIRED FOR WORK UNDER THEIR CONTRACT AND UNDER THEIR SUPERVISION BY SUBCONTRACT.
- MANUFACTURER TRADE NAMES AND CATALOG NUMBERS ARE LISTED TO INDICATE SPECIAL CONDITIONS AND QUALITY OF MATERIALS OR EQUIPMENT SUPPLIED. ALTERNATIVE EQUIPMENT OR MATERIALS MAY BE SUBMITTED FOR REVIEW FOR APPROVAL PRIOR TO ANY BIDDING.
- THE DRAWINGS DO NOT NECESSARILY SHOW THE EXACT LOCATION OF ALL PIPING AND DUCTWORK. ACTUAL CONDITIONS AND LOCATIONS SHALL BE FIELD VERIFIED.
- ALL WORK BY THE CONTRACTOR IS SUBJECT TO REVIEW AT ANY TIME BY THE ARCHITECT/ENGINEER.
- ALL WORK TO BE PERFORMED SHALL FIRST BE SCHEDULED AND SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR ACCEPTANCE.
- SMOKING SHALL NOT BE PERMITTED ANYWHERE IN THIS FACILITY.
- THE CONTRACTOR SHALL BE CAREFUL NOT TO BLOCK ANY PATHS OF EGRESS WHILE PERFORMING THE WORK SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF ALL MATERIALS RESULTING FROM HIS/HER WORK. CLEAN-UP SHALL BE PERFORMED TO THE LEVEL OF ACCEPTANCE OF THE OWNER'S REPRESENTATIVE.
- ALL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF SMACNA DUCTWORK CONSTRUCTION MANUALS, MINIMUM GAUGE OF 26, GALVANIZED STEEL.
- ENTIRE NEW AIR SYSTEM SHALL BE COMPLETELY BALANCED TO THE SATISFACTION OF THE ENGINEER IN ACCORDANCE WITH THE STANDARDS OF THE NEBB. TEST AND BALANCE CONTRACTOR SHALL BE CERTIFIED MEMBER OF (NEBB).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF A SATISFACTORY AND COMPLETE SYSTEM IN ACCORDANCE WITH DRAWINGS. PROVIDE, AT NO EXTRA COST TO THE OWNER, ALL INCIDENTAL ITEMS REQUIRED FOR A COMPLETE SYSTEM.

## SCHEDULE OF DRAWING

GENERAL	
NO.	DRAWING SHEET
G1.0	COVER SHEET
MECHANICAL	
NO.	DRAWING SHEET
M1.0	MECHANICAL COVER SHEET
M2.0	LOWER LEVEL MECHANICAL FLOOR PLAN
M2.1	UPPER LEVEL MECHANICAL FLOOR PLAN
M2.2	ENLARGED MECHANICAL FLOOR PLANS
M3.0	MECHANICAL DETAILS



## LEGEND

- AREAS NOT DEFINED BELOW ARE NOT IN THE CONTRACT (NIC) AND SHALL NOT BE USED BY THE CONTRACTOR, MACHINERY, OR PERSONNEL DURING THE TERM OF THE CONTRACT.
- CONSTRUCTION STAGING AREA: SITE SHOWN IS THE MAXIMUM AREA AVAILABLE TO THE CONTRACTOR FOR MATERIAL STORAGE, EQUIPMENT STORAGE, AND OTHER ACTIVITIES RELATED TO CONSTRUCTION. ALL AREAS USED FOR CONSTRUCTION OR AREAS DAMAGED DURING THE EXECUTION OF THIS CONTRACT SHALL BE REPAIRED AND IF NECESSARY RESODDED WHEN CONSTRUCTION IS COMPLETED. EXISTING TREES AND SIDEWALKS SHALL BE PROTECTED FROM DAMAGE AND SHALL BE REPLACED BY CONTRACTOR IF DAMAGED.
- PRIMARY ACCESS ROUTE - JOB RELATED VEHICULAR TRAFFIC SHALL ENTER THE CONSTRUCTION SITE ONLY BY THIS ROUTE. ACCESS FOR LOAD AND UNLOAD ONLY.

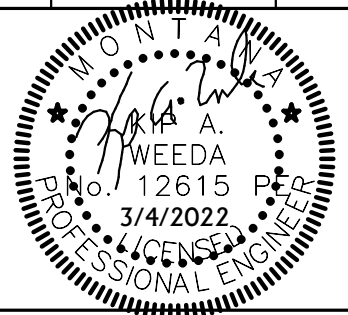
1 VICINITY MAP  
NOT TO SCALE

MUSEUM OF THE ROCKIES -  
PALEO DUST COLLECTION  
UPGRADES

ACE INC  
ASSOCIATED CONSTRUCTION ENGINEERING  
12 N. BROADWAY  
SECOND FLOOR  
BELGRADE, MT 59714  
406-388-3320  
MUSEUM OF THE ROCKIES -  
PALEO LAB 21BZ5355

DRAWN BY: KAW  
REVIEWED BY: KAW

REV.	DESCRIPTION	DATE



PPA#21-0077

SHEET TITLE  
COVER SHEET

SHEET  
**G1.0**

DATE  
03/04/2022

**DUST/FUME COLLECTION SYSTEM SCHEDULE**

PLAN CODE	MANUF.	MODEL NUMBER	CFM	EXTERNAL STATIC PRESSURE IN W.C.	TOTAL STATIC PRESSURE IN W.C.	RPM	NUMBER OF CARTRIDGES / FILTERS	FILTER TYPE	CARTRIDGE AREA	FAN HP	# OF GALLON DRUMS	VOLT/PHASE	WEIGHT	SOUND POWER LEVEL (dB)	REMARKS
DC-1	NEDERMAN	MCP 2-8S	1000	4.1	8.5	1350	8	SPUNBOUND POLYESTER WITH ePTFE MEMBRANE, MERV 16 RATED	1137	3	1-13 gal	208 V / 3 PH	1000	66	500 CFM/ARM - 2500 FPM, PROVIDE 1.9 CFM COMPRESSED AIR @ 90 PSI
DC-2	NEDERMAN	MCP 6-24SL	4000	5.3	9.3	2760	24	SPUNBOUND POLYESTER WITH ePTFE MEMBRANE, MERV 16 RATED	2170	15	2-26 gal	480 V / 3 PH	2300	85	500 CFM/ARM - 2500 FPM, PROVIDE 5.7 CFM COMPRESSED AIR @ 90 PSI

NOTES: 1) FOR BASE BID DUST COLLECTOR MANUFACTURER TO PROVIDE ONE VFD WITH INTEGRAL, LOCKABLE DISCONNECT. FOR BID ALTERNATE #2 DUST COLLECTOR MANUFACTURER TO PROVIDE TWO VFD'S, ONE PRIMARY VFD AND ONE 100% REDUNDANT VFD. PROVIDE ABB #ACH550 REDUNDANT DRIVES. WITH INTEGRAL, LOCKABLE DISCONNECT.  
2) MANUFACTURER TO PROVIDE INSIGHT PREMIUM CONTROL PANEL. CONTROL PANEL VOLTAGE SHALL MATCH DUST COLLECTOR VOLTAGE.  
3) EXTERNAL STATIC INCLUDES DUCTWORK, EXTRACTION ARMS, SOUND ATTENUATORS AND HEPA FILTERS. TOTAL STATIC INCLUDES EXTERNAL STATIC PLUS DUST COLLECTOR COMPONENTS AND FAN (DUST COLLECTOR CARTRIDGE TOTAL STATIC 3" FULLY LOADED).

**GRILLE - REGISTER - DIFFUSER SCHEDULE**

PLAN CODE	MANUFACTURER	MODEL NUMBER	FUNCTION	FACE SIZE	DUCT SIZE	MATERIAL	FINISH	CFM	VOLUME DAMPER	REMARKS
SG-1	NAILOR	61SH	SIDEWALL SUPPLY GRILLE	12" x 10"	SEE PLANS	STEEL	WHITE	SEE PLANS	MANUAL VOLUME DAMPER IN DUCT	SEE NOTES BELOW
SG-2	NAILOR	61SH	SIDEWALL SUPPLY GRILLE	18" x 12"	SEE PLANS	STEEL	WHITE	SEE PLANS	MANUAL VOLUME DAMPER IN DUCT	SEE NOTES BELOW

NOTES: 1) PROVIDE ALL DUCT TRANSITIONS TO AND FROM GRILLES AS REQUIRED.  
2) ALL GRILLES TO BE WHITE UNLESS NOTED OTHERWISE.  
3) PROVIDE MANUAL VOLUME DAMPERS FOR CONNECTIONS TO ALL GRILLES.  
4) SEE DRAWINGS FOR FURTHER GRD REQUIREMENTS.

**EXTRACTOR ARM SCHEDULE**

PLAN CODE	MANUFACTURER	MODEL NUMBER	SIZE (IN)	LENGTH (FT)	TYPE	DEGREE OF ROTATION	DAMPER	VOLUME CFM	HOOD MODEL NUMBER
EA-1	NEDERMAN	10502331	6	5	TELESCOPIC	360	FACTORY DAMPER	500	10374308

**FILTER SCHEDULE**

PLAN CODE	MANUF.	HOUSING MODEL NUMBER	FILTER HOUSING SIZE (LxWxH)	FILTER SIZE (WxHxD)	CFM @ 1.5" W.G.	FILTER MODEL NUMBER	FILTER QUANTITY	HOUSING WEIGHT (LBS)	REMARKS
HEP-1	KOCH	BIOMAX HEPA-LOCK HOUSING	27" x 28" x 27 1/2"	23 3/8" x 23 3/8" x 11 1/2"	1000	BIOMAX V2000	1	120	SEE NOTES BELOW
HEP-2	KOCH	BIOMAX HEPA-LOCK HOUSING	52" x 28" x 27 1/2"	23 3/8" x 23 3/8" x 11 1/2"	4000	BIOMAX V2000	2	190	SEE NOTES BELOW

NOTES: 1) FILTERS AND HOUSING SHALL BE RATED FOR 2" W.C. POSITIVE OR NEGATIVE STATIC PRESSURE.  
2) MAINTAIN MANUFACTURER RECOMMENDED CLEARANCE FOR FILTER REPLACEMENT.  
3) FILTER SHALL BE CONSTRUCTED OF WATER REPELLENT MICROBERGLASS MEDIA WITH 0.050 ALUMINUM FRAME. MEDIA PACKS SHALL BE MINI PLEATED WITH HOTMELT BEAD SEPARATOR AND SEALED TO TOP AND BOTTOM OF FRAME. FILTER SHALL BE SEALED WITH SOLID POLYURETHANE IN ALL VERTICAL SUPPORTS.  
4) FILTERS SHALL BE 99.97% EFFICIENT AT 0.3 MICRON. FINAL RESISTANCE 1.5" W.G. RATED VELOCITY 500 FPM. MAX OPERATING TEMP 160 DEG F.

**LUMINAIRE SCHEDULE**

CALLOUT	MANUF.	MODEL NUMBER	MOUNTING	MOUNTING HEIGHT	LAMP	INPUT WATTS	VOLTS	DESCRIPTION
S1	WILLIAMS	75S-4-L30/835-ACF/D48-DRV-UNV	SUSPENDED	8' - 0"	3000 LUMEN LED	19.7	120	4' LED STRIP

**SOUND ATTENUATOR SCHEDULE**

PLAN CODE	MANUF.	MODEL NUMBER	DUCT SIZE	CFM	LENGTH	A.P.D. (IN. W.G.)	VELOCITY F.P.M.	INSERTION LOSS RATINGS dB (AT OCTAVE BAND...)							
								63	125	250	500	1000	2000	4000	8000
SA-1	IAC ACOUSTICS	6LFM	26" x 26"	4000	72"	0.15	852	10	15	27	35	33	20	16	14

**MECHANICAL SYMBOLS LEGEND**

**AIR TERMINALS, EQUIPMENT & SPECIALTIES**

NEW EQUIPMENT  
EXISTING TO REMAIN  
EXISTING EQUIP TO BE REMOVED OR RELOCATED

SUPPLY AIR TERMINAL (NEW, EXIST., DEMO.)  
RETURN AIR TERMINAL (NEW, EXIST., DEMO.)  
EXHAUST AIR TERMINAL (NEW, EXIST., DEMO.)

LINEAR SLOT AIR TERMINAL  
PUMP  
P.O.D.C. - POINT OF DISCONNECTION  
P.O.C. - POINT OF CONNECTION

**EQUIPMENT TAG**  
TYPE OF EQUIPMENT  
EQUIPMENT NUMBER (REFER TO SCHEDULE)

**DIFFUSER/GRILLE TAG**  
AIR TERMINAL NUMBER  
AIR TERMINAL CFM (REFER TO SCHEDULE)

WALL LOUVER  
SIDEWALL AIR TERMINAL  
T'STAT. (ELEC./PNEU.)  
SWITCH

**DUCTWORK & ACCESSORIES**

NEW DUCTWORK  
EXISTING DUCTWORK TO REMAIN  
EXISTING DUCTWORK TO BE REMOVED  
DUCT BREAK  
RISE IN DUCTWORK  
FALL IN DUCTWORK  
FIRE DAMPER  
SMOKE DAMPER  
BACKDRAFT DAMPER  
MANUAL VOLUME DAMPER  
MOTORIZED DAMPER

18x12 INSIDE CLEAR DUCT SIZE: FIRST FIGURE INDICATED IS SIDE OF DUCT SHOWN  
DUCTWORK END CAP  
FLEXIBLE DUCTWORK  
SQUARE ELBOW UP SUPPLY/RETURN/EXH.  
SQUARE ELBOW DN SUPPLY/RETURN/EXH.  
ROUND ELBOW UP SUPPLY/RETURN/EXH.  
ROUND ELBOW DN SUPPLY/RETURN/EXH.  
SQUARE DIFFUSERS SUPPLY/RETURN/EXH.  
ROUND DIFFUSERS FULL / HALF  
INDICATED AIR FLOW SUPPLY / RETURN  
DUCT REDUCER

**DUCTWORK SHADING**

SUPPLY AIR  
RETURN AIR  
EXHAUST AIR  
OUTSIDE AIR

EXISTING  
DEMOLITION  
NEW

THIS IS A STANDARDIZED SYMBOLS LEGEND. ALL SYMBOLS SHOWN MAY NOT APPEAR ON OR WITHIN THIS SET OF CONTRACT DOCUMENTS.

**DUCTWORK CONSTRUCTION SCHEDULE**

**LINED DUCTWORK INCLUDES:**  
- ALL RECTANGULAR DUCTWORK FROM DUST COLLECTOR DC-1 TO SUPPLY GRILLES.

**BID ALTERNATE SCHEDULE**

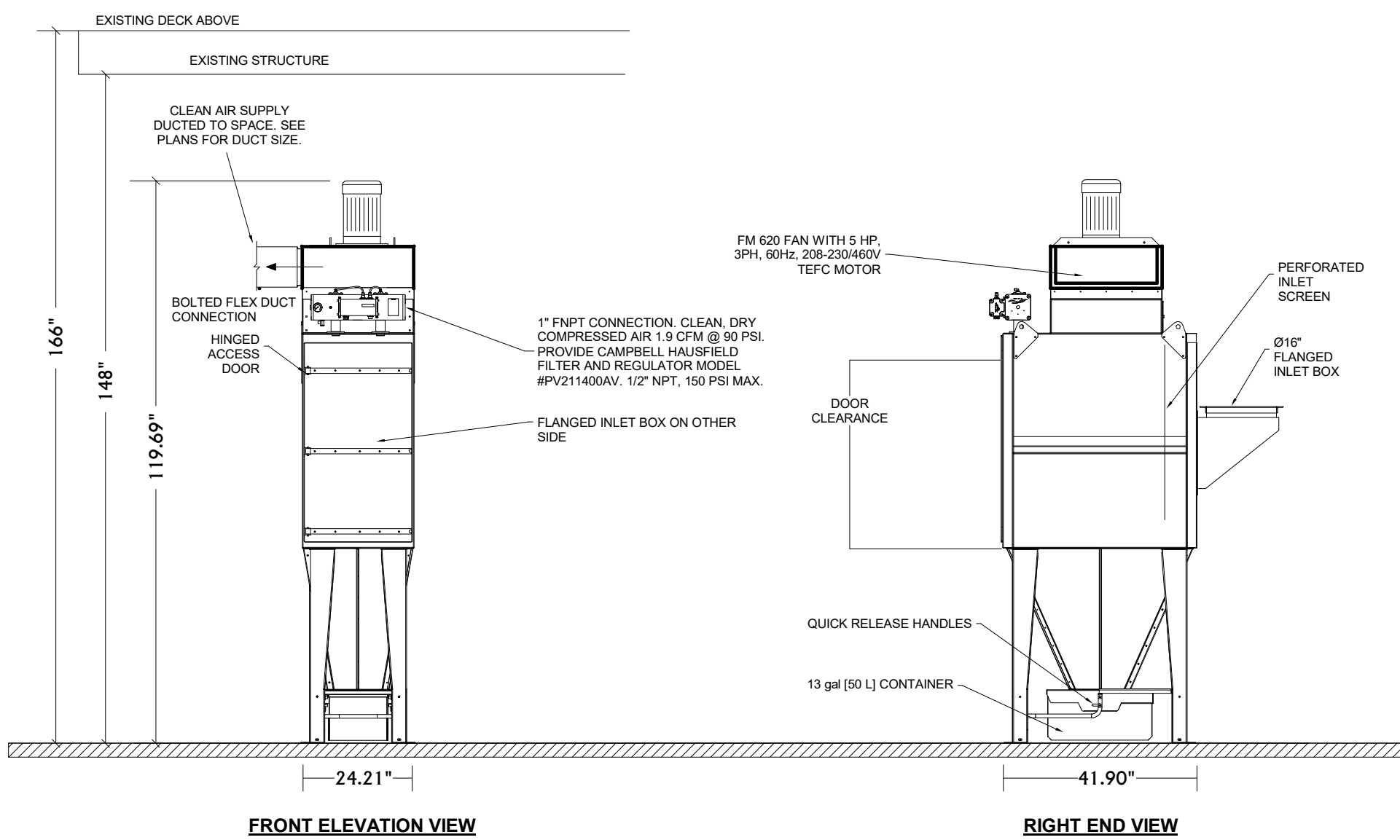
**BASE BID INCLUDES:**  
- ALL WORK IN THE LOWER PALEO LAB INCLUDING DUST COLLECTOR DC-2 AND ALL ASSOCIATED EXTRACTOR ARMS AND DUCTWORK.  
- DUST COLLECTOR MANUFACTURER TO PROVIDE ONE VFD PER DUST COLLECTOR.

**BID ALTERNATE #1 INCLUDES:**  
- ALL WORK IN THE VIEWING LAB INCLUDING DUST COLLECTOR DC-1 AND ALL ASSOCIATED EXTRACTOR ARMS AND DUCTWORK.

**BID ALTERNATE #2 INCLUDES:**  
- DUST COLLECTOR MANUFACTURER TO PROVIDE REDUNDANT VFD'S PER DUST COLLECTOR. PROVIDE ABB #ACH550 REDUNDANT DRIVES.

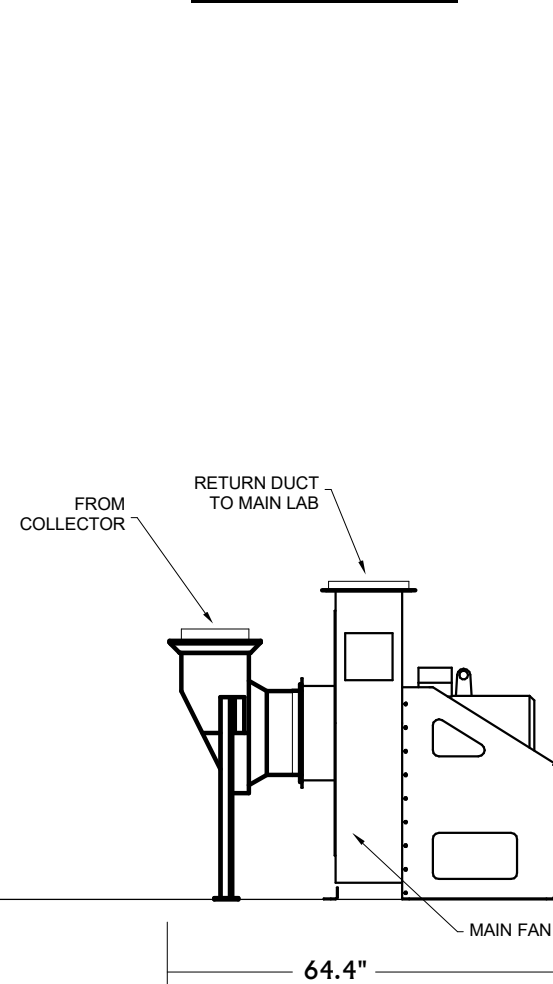
**DRAWING SCALE NOTE**

CONTRACTOR SHALL PRINT ALL DRAWINGS ON 24"x36" PAPER TO ENSURE PROPER SCALE.

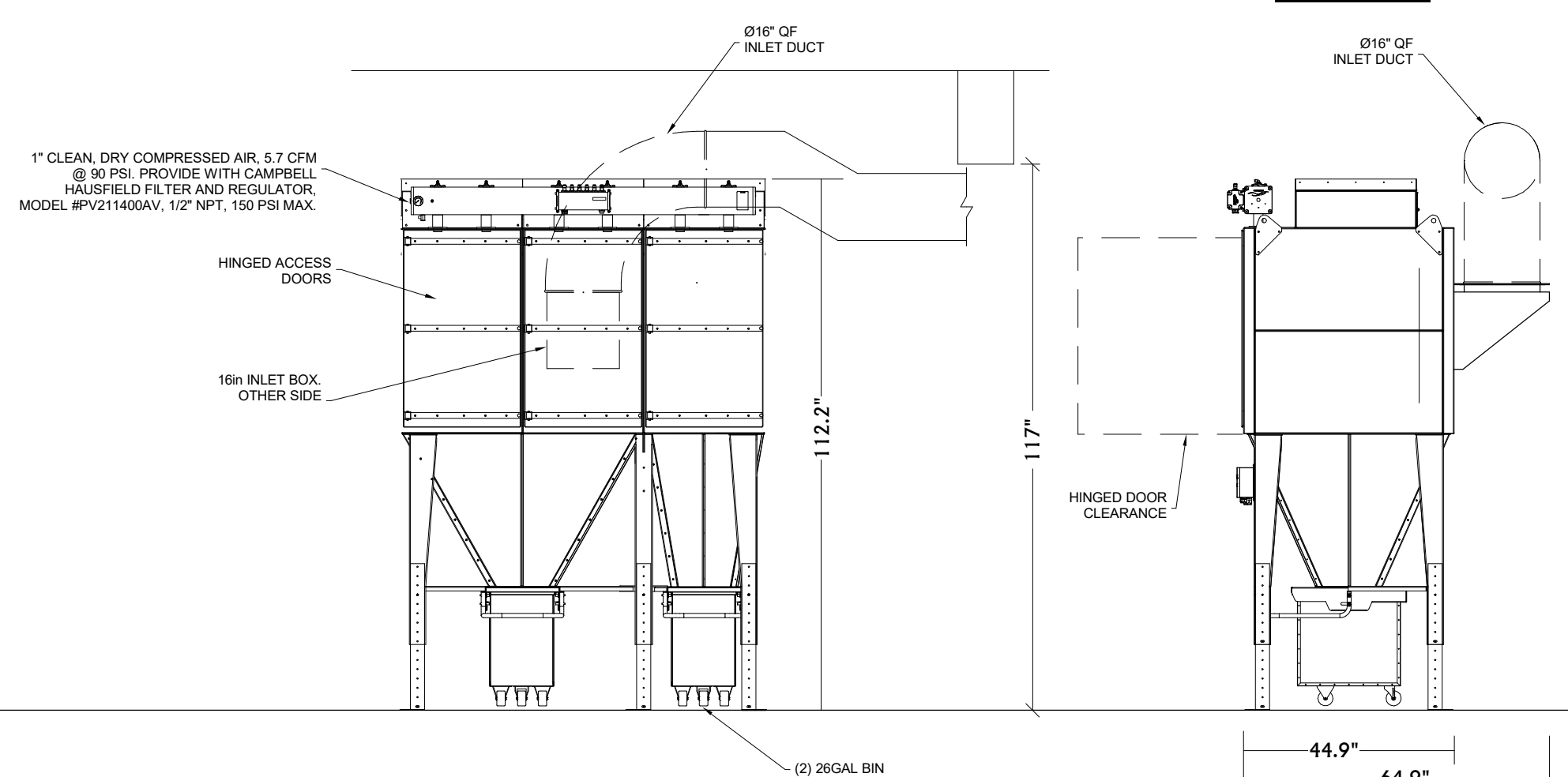


**1 DUST COLLECTOR DC-1 - SEE DETAIL 3/M3.0**  
NOT TO SCALE

**FAN ELEVATION**



**FILTER END**



**2 DUST COLLECTOR DC-2 - SEE DETAIL 4/M3.0 AND 5/M3.0**  
NOT TO SCALE

**MUSEUM OF THE ROCKIES -  
PALEO DUST COLLECTION  
UPGRADES**

**ACE** INC  
ASSOCIATED • CONSTRUCTION • ENGINEERING  
12 N. BROADWAY  
SECOND FLOOR  
BELGRADE, MT 59714  
406-388-3320  
MUSEUM OF THE ROCKIES -  
PALEO LAB 21BZ5355

DRAWN BY: **KAW**

REVIEWED BY: **KAW**

REV.	DESCRIPTION	DATE

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PPA#21-0077

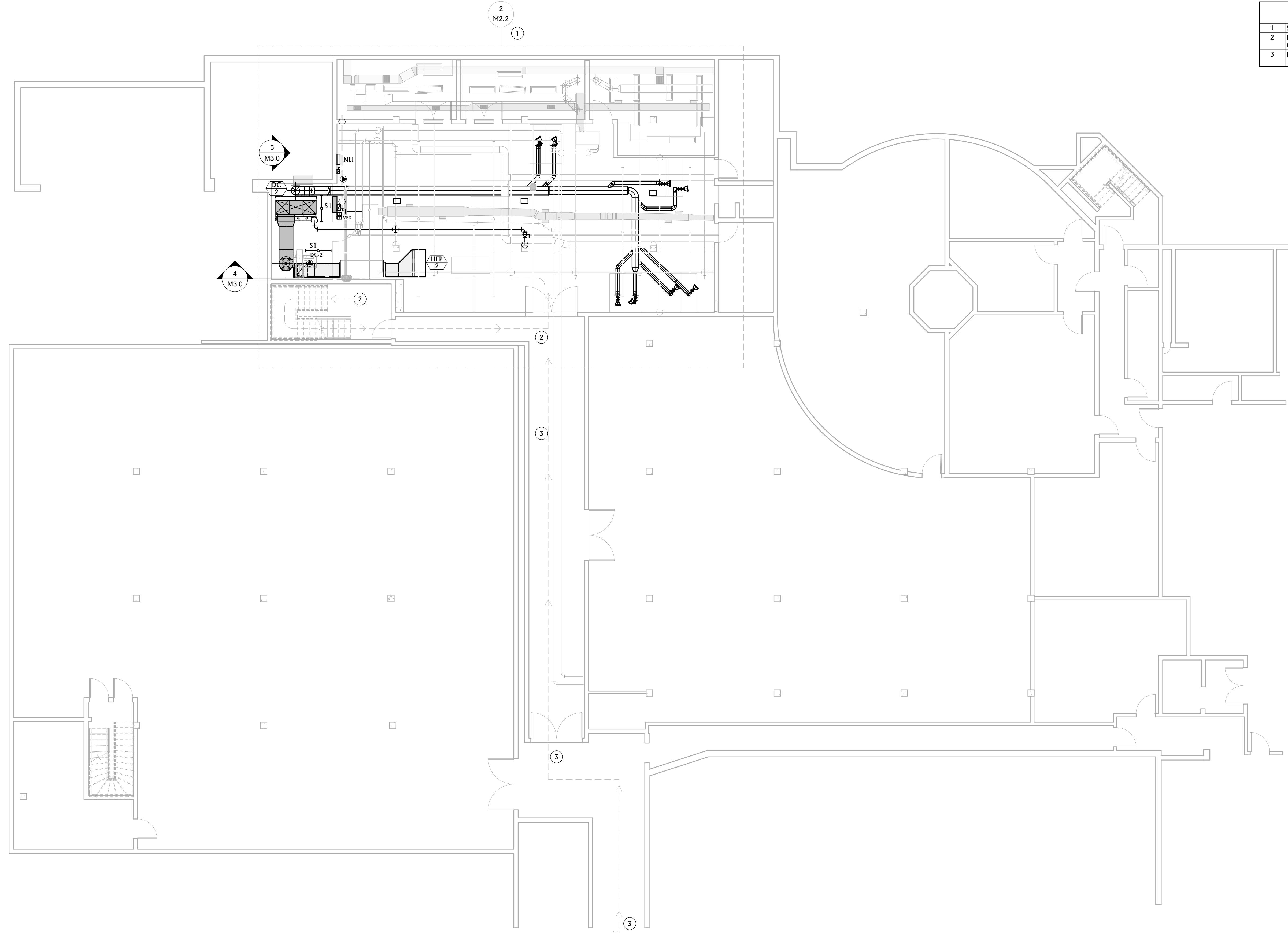
**SHEET TITLE**  
LOWER LEVEL  
MECHANICAL PLAN

**SHEET**  
**M2.0**

**DATE**  
**03/04/2022**

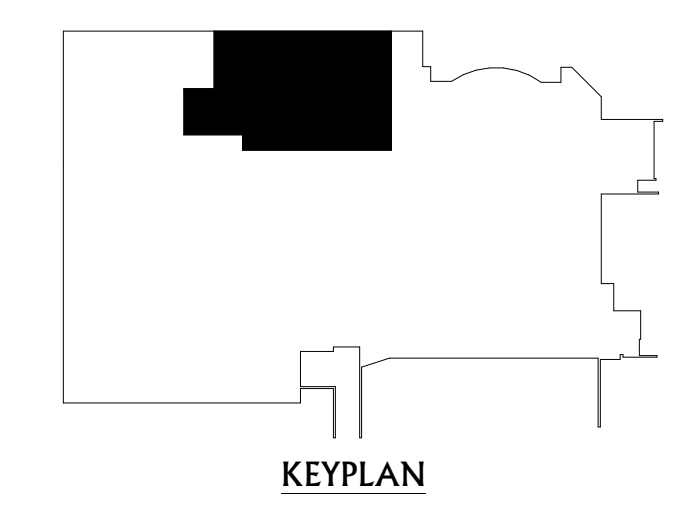
MECHANICAL GENERAL NOTES	
A	CONTRACTOR SHALL NOT CUT STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER. ANCHOR HOLES DRILLED INTO MAIN FLOOR SHALL ADHERE TO DETAIL 4/M2.2.
B	COORDINATE EXACT LOCATION OF DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN AND LIGHTING LAYOUT.
C	COORDINATE HVAC AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
D	ALL DUCT DIMENSIONS SHOWN ON PLANS ARE CLEAR INTERIOR DIMENSIONS.

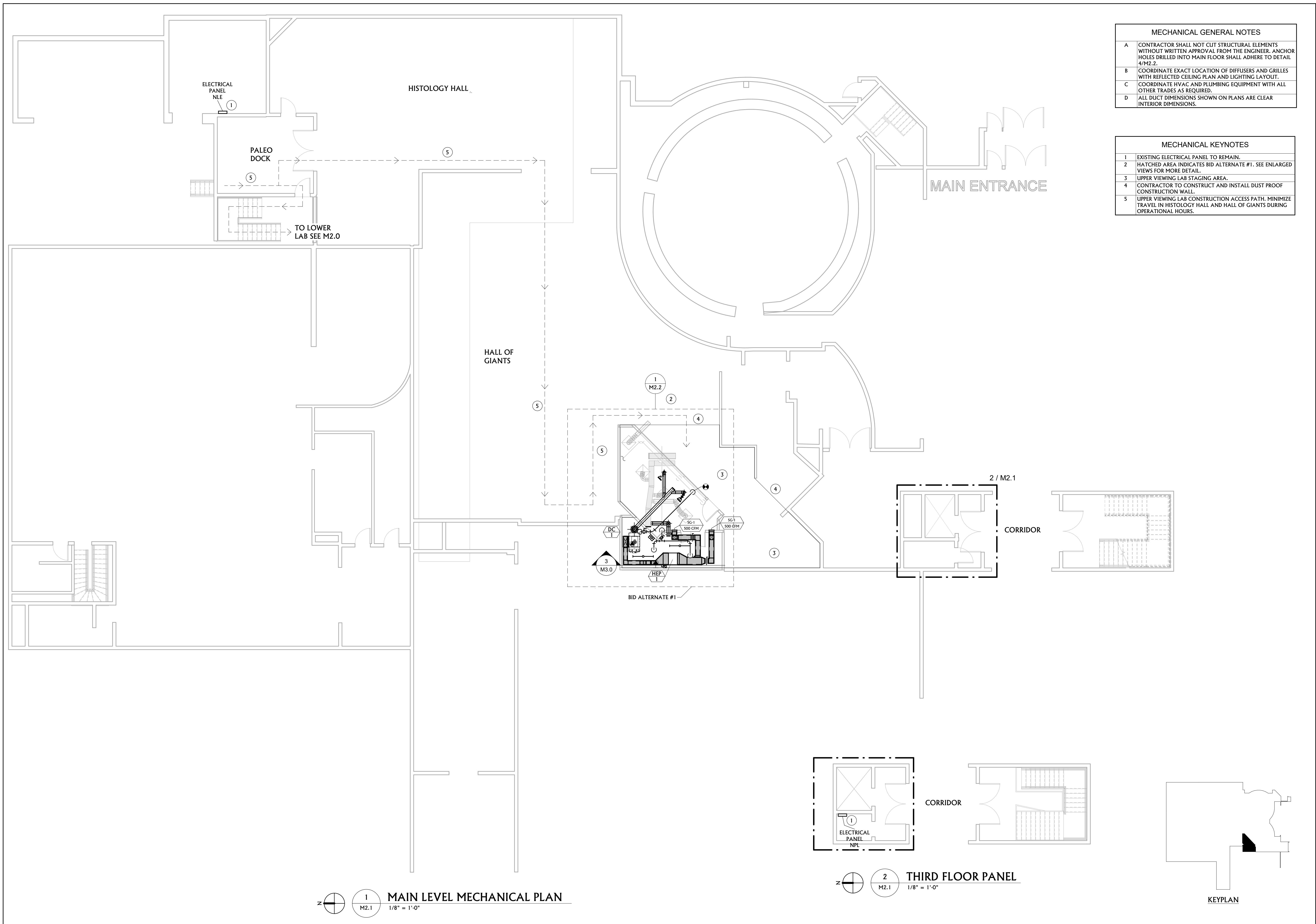
MECHANICAL KEYNOTES	
1	SEE ENLARGED VIEWS FOR MORE DETAIL.
2	LOWER LEVEL LAB CONSTRUCTION ACCESS. SEE M2.1 FOR CONTINUATION.
3	LARGE EQUIPMENT ACCESS THROUGH MAINTENANCE DOCK - 385' TRAVEL DISTANCE.



1  
M2.0  
1/8" = 1'-0"

**LOWER LEVEL MECHANICAL PLAN**





MECHANICAL GENERAL NOTES	
A	CONTRACTOR SHALL NOT CUT STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER. ANCHOR HOLES DRILLED INTO MAIN FLOOR SHALL ADHERE TO DETAIL 4/M2.2.
B	COORDINATE EXACT LOCATION OF DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN AND LIGHTING LAYOUT.
C	COORDINATE HVAC AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
D	ALL DUCT DIMENSIONS SHOWN ON PLANS ARE CLEAR INTERIOR DIMENSIONS.

MECHANICAL KEYNOTES	
1	EXISTING ELECTRICAL PANEL TO REMAIN.
2	HATCHED AREA INDICATES BID ALTERNATE #1. SEE ENLARGED VIEWS FOR MORE DETAIL.
3	UPPER VIEWING LAB STAGING AREA.
4	CONTRACTOR TO CONSTRUCT AND INSTALL DUST PROOF CONSTRUCTION WALL.
5	UPPER VIEWING LAB CONSTRUCTION ACCESS PATH. MINIMIZE TRAVEL IN HISTOLOGY HALL AND HALL OF GIANTS DURING OPERATIONAL HOURS.



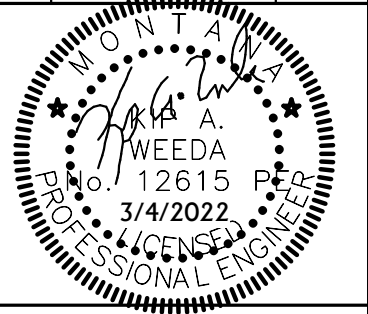
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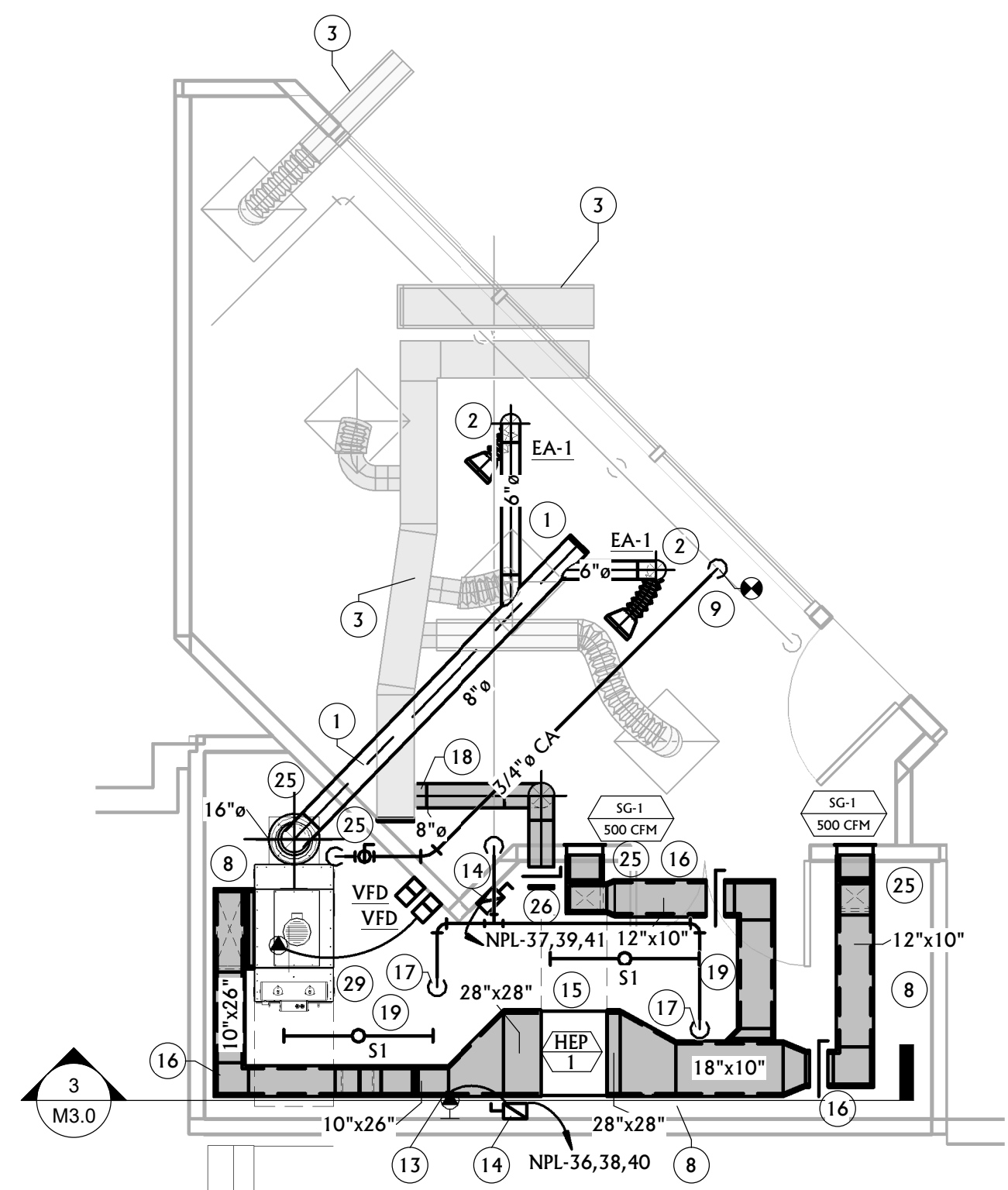
PPA#21-0077

**SHEET TITLE**  
MAIN LEVEL  
MECHANICAL PLAN

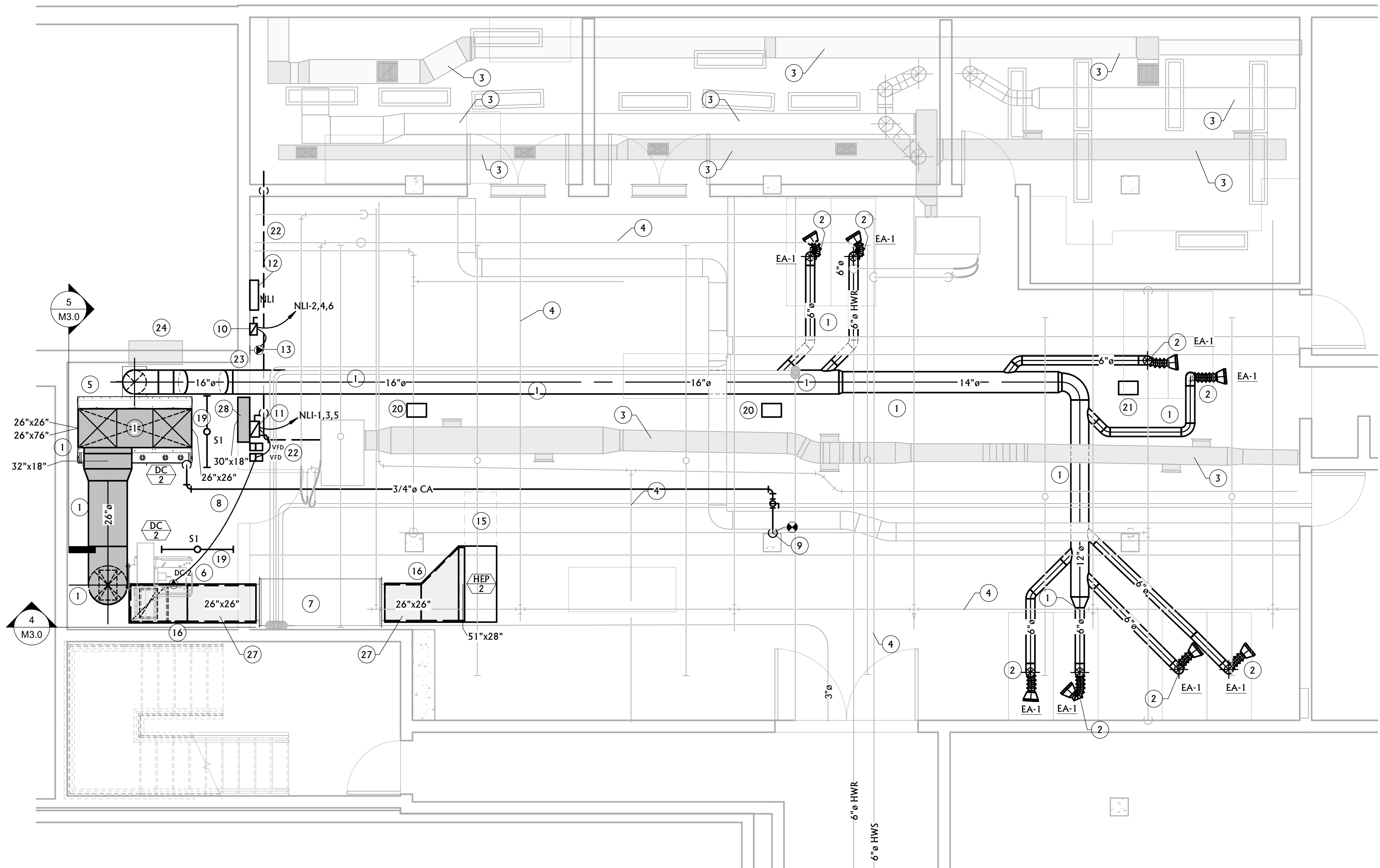
**SHEET**  
**M2.1**

**DATE**  
03/04/2022





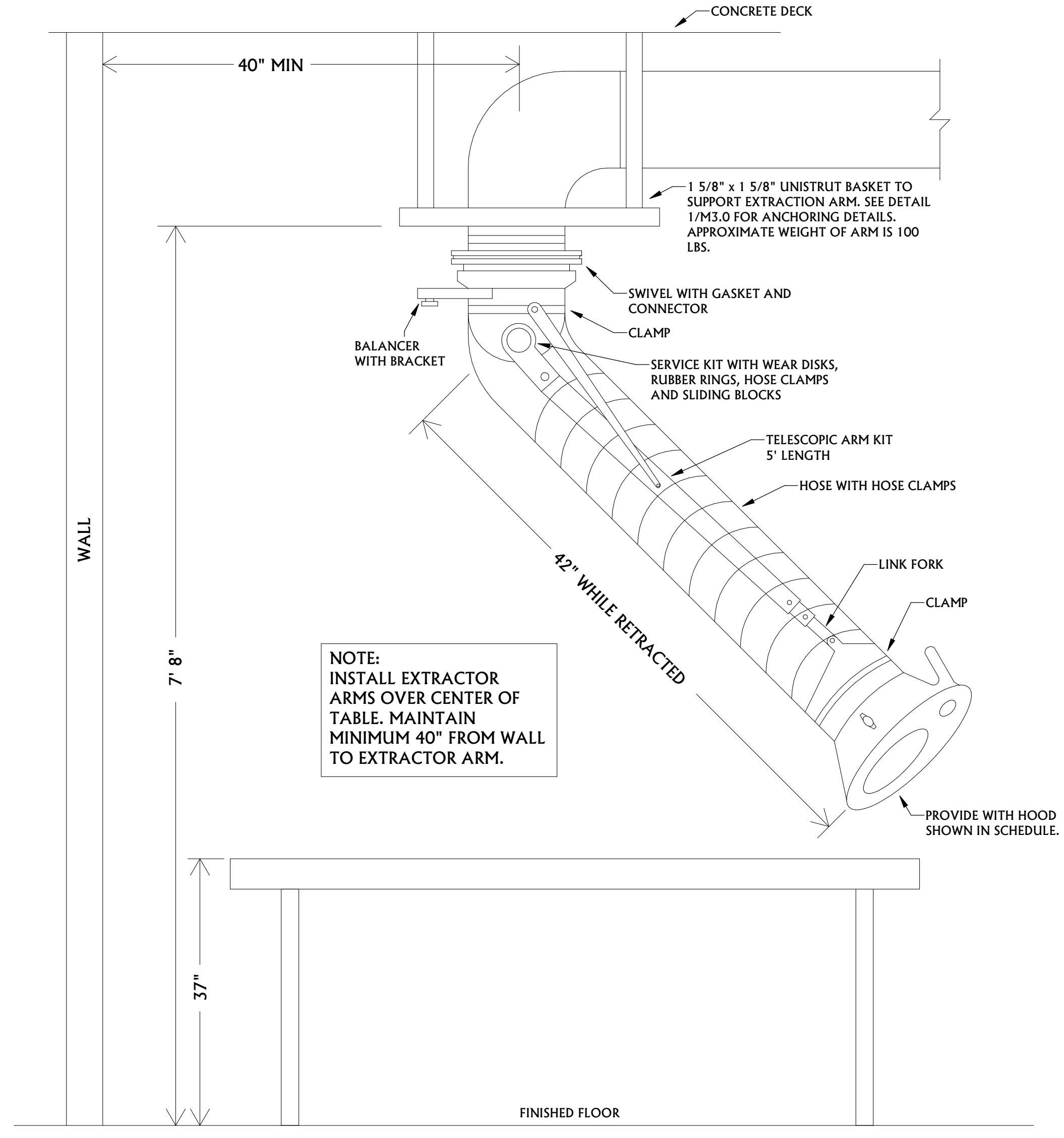
1 ENLARGED UPPER LEVEL MECHANICAL PLAN  
1/4" = 1'-0"



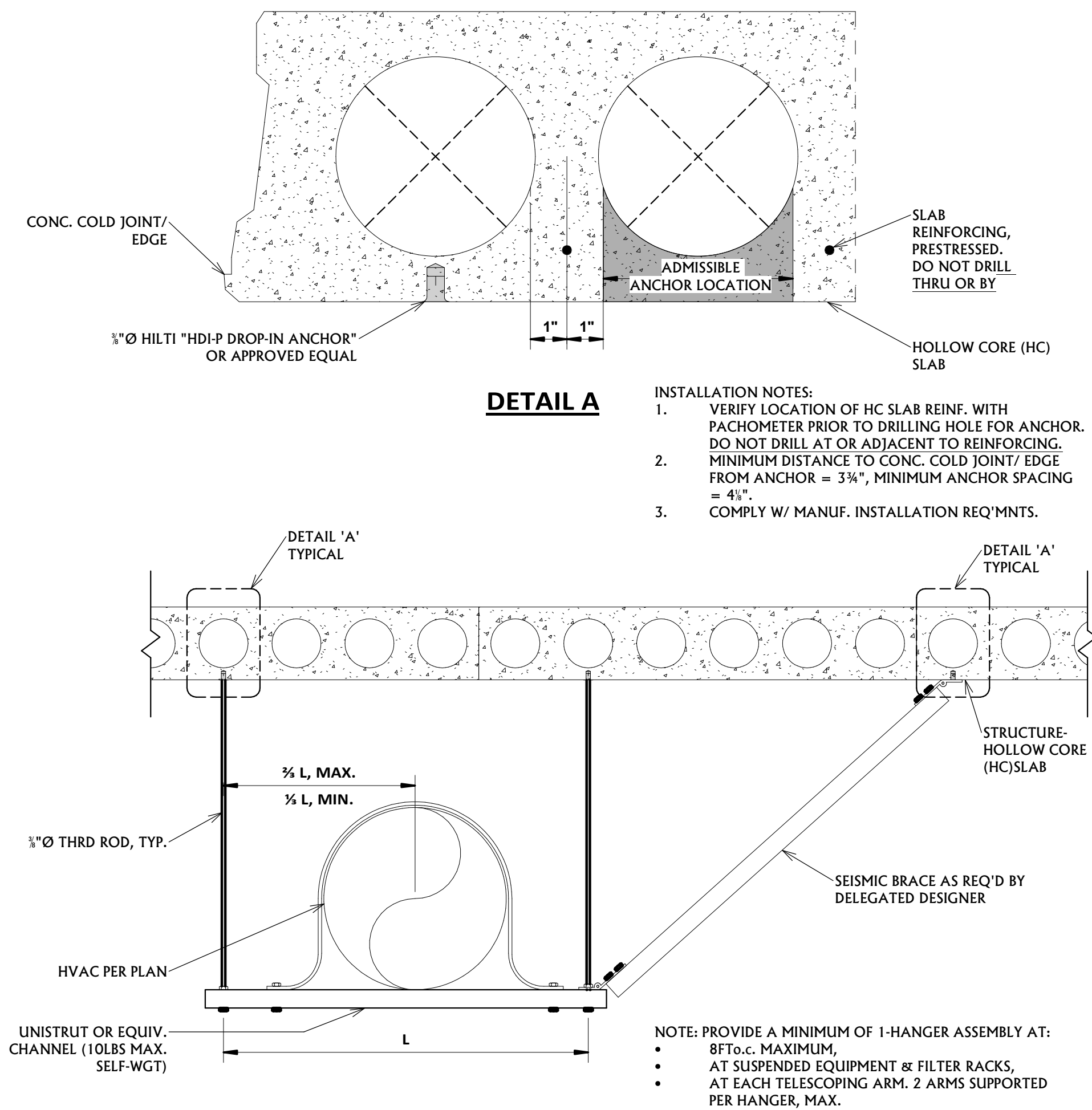
2 ENLARGED LOWER LEVEL MECHANICAL PLAN  
1/4" = 1'-0"

MECHANICAL GENERAL NOTES	
A	CONTRACTOR SHALL NOT CUT STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER. ANCHOR HOLES DRILLED INTO MAIN FLOOR SHALL ADHERE TO DETAIL 4/M2.2.
B	COORDINATE EXACT LOCATION OF DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN AND LIGHTING LAYOUT.
C	COORDINATE HVAC AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
D	ALL DUCT DIMENSIONS SHOWN ON PLANS ARE CLEAR INTERIOR DIMENSIONS.

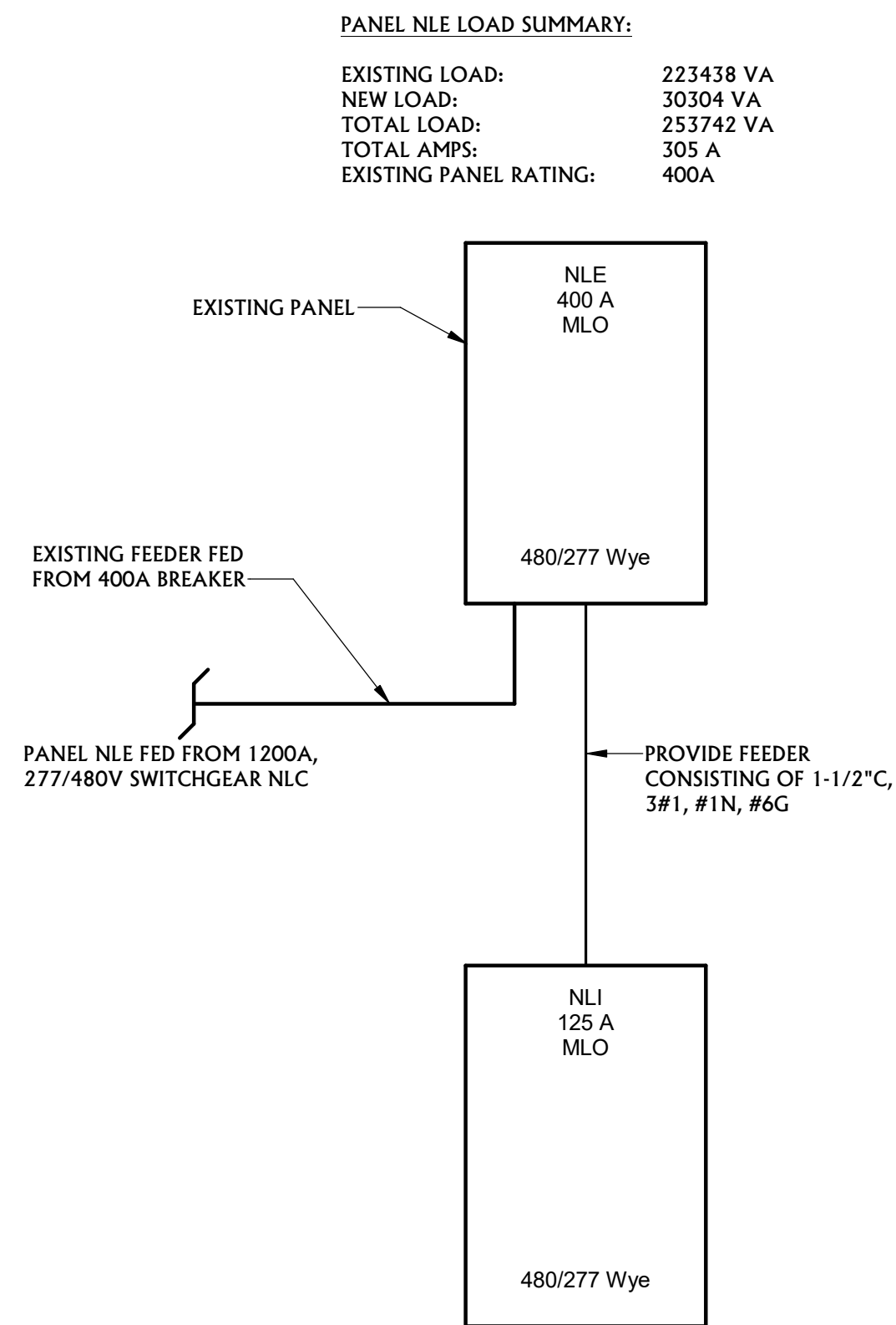
MECHANICAL KEYNOTES	
1	INSTALL DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS FOR 10" W.C. NEGATIVE STATIC. TYPICAL FOR ALL EXHAUST DUCTWORK.
2	MOUNT ARM TO STRUCTURE PER DETAIL 4/M2.2 ABOVE CENTER OF TABLE.
3	EXISTING DUCTWORK TO REMAIN.
4	EXISTING PIPING TO REMAIN.
5	INSTALL NEW DUST COLLECTOR AT APPROXIMATE LOCATION SHOWN. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR AS REQUIRED.
6	INSTALL DUST COLLECTOR FAN AT APPROXIMATE LOCATION.
7	SUSPEND DUST COLLECTOR SILENCER FROM STRUCTURE AS REQUIRED AT APPROXIMATE LOCATION.
8	DEMO EXISTING CEILING IN ITS ENTIRETY INCLUDING LIGHTS, DUCTS, ETC.
9	P.O.C. CONNECT TO EXISTING COMPRESSED AIR LINE AND PROVIDE NEW ISOLATION VALVE ON 3/4" PIPE SERVING DUST COLLECTOR. FIELD VERIFY EXACT LOCATION OF EXISTING PIPING.
10	EC TO PROVIDE 600V, 30A, 3-POLE LOCKABLE FUSED DISCONNECT IN A NEMA 1 ENCLOSURE. FUSE PER MANUFACTURERS RECOMMENDATIONS.
11	EC TO PROVIDE 600V, 60A, 3-POLE FUSED DISCONNECT IN A NEMA 1 ENCLOSURE. FUSE PER MANUFACTURERS RECOMMENDATIONS.
12	NEW PANEL NLI FED FROM EXISTING PANEL NLE LOCATED IN MECHANICAL ROOM ON FLOOR ABOVE. SEE M2.1 FOR LOCATION OF EXISTING PANEL NLE.
13	PROVIDE CIRCUIT FOR INSIGHT CONTROLLER PROVIDED BY OTHERS, WIRED COMPLETE BY EC. WIRE PER MANUFACTURERS RECOMMENDATIONS.
14	EC TO PROVIDE 240V, 30A, 3-POLE FUSED DISCONNECT IN A NEMA 1 ENCLOSURE. FUSE PER MANUFACTURERS RECOMMENDATIONS.
15	MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES FOR ACCESS TO FILTER.
16	LINE INSIDE OF DUCT WITH 1" ACOUSTICAL LINER AS SHOWN.
17	MODIFY EXISTING FIRE SPRINKLER SYSTEM AS REQUIRED FOR A ROOM WITH NO CEILING.
18	CUT EXISTING DUCT BACK TO APPROXIMATE LOCATION AND ROUTE 8" DUCT TO NEW DIFFUSER LOCATION AS REQUIRED.
19	PROVIDE NEW LIGHT FIXTURE AS SCHEDULED AND SUSPEND LIGHT FROM STRUCTURE AS REQUIRED. WIRE TO SAME CIRCUIT FROM EXISTING LIGHTS.
20	RELOCATE EXISTING ELECTRICAL CORD REEL AS REQUIRED TO MAKE ROOM FOR NEW DUCTS.
21	EXISTING ELECTRICAL CORD REEL TO REMAIN.
22	DEMO EXISTING CONDENSATE DRAIN PIPING FROM EXISTING MECHANICAL UNIT AND ROUTE NEW CONDENSATE PIPING ALONG WALL UNDER NEW EXHAUST DUCT. TERMINATE PIPING ABOVE EXISTING SINK WITH AIR GAP.
23	DEMO EXISTING TRANSFER GRILLE IN WALL. FIELD VERIFY EXACT LOCATION OF GRILLE. PATCH HOLE IN WALL AROUND NEW EXHAUST DUCT AS REQUIRED.
24	EXISTING DUCT TO REMAIN. REMOVE ELBOW SO OPEN DUCT STOPS AT WALL TO MAKE ROOM FOR NEW EXHAUST DUCT.
25	PATCH WALLS WITH SOUND BATT, SHEETROCK TO MATCH EXISTING THICKNESS, AND TAPE.
26	ROUTE 8" DUCT THROUGH WALL AND TERMINATE WITH BALANCE DAMPER WITH OPEN END. BALANCE AIR FLOW TO MATCH EXISTING.
27	CONSTRUCT DUCT FOR 2" W.C. POSITIVE STATIC PRESSURE.
28	RELOCATE EXISTING TRANSFER GRILLE TO APPROXIMATE LOCATION SHOWN. INSTALL AS HIGH ON WALL AS POSSIBLE.
29	PROVIDE EXTENDED GREASE LINES FROM THE MOTOR TO FRONT OF THE SILENCER FOR MAINTENANCE. SEE DETAIL 1/M1.0 FOR LOCATION.



3 TELESCOPIC ARM CEILING SUPPORT  
NOT TO SCALE



**1 EXTRACTOR ARM MOUNTING DETAIL**  
NOT TO SCALE



**2 ELECTRICAL ONE LINE**  
NOT TO SCALE

**Panel: NLI**

Location: \_\_\_\_\_ Volts: 480/277 Wye A.I.C. Rating: 18,000  
Supply From: NLE Phases: 3 Mains Type: MLO  
Mounting: Surface Wires: 4 Enclosure: Type I Bus Rating: 125 A

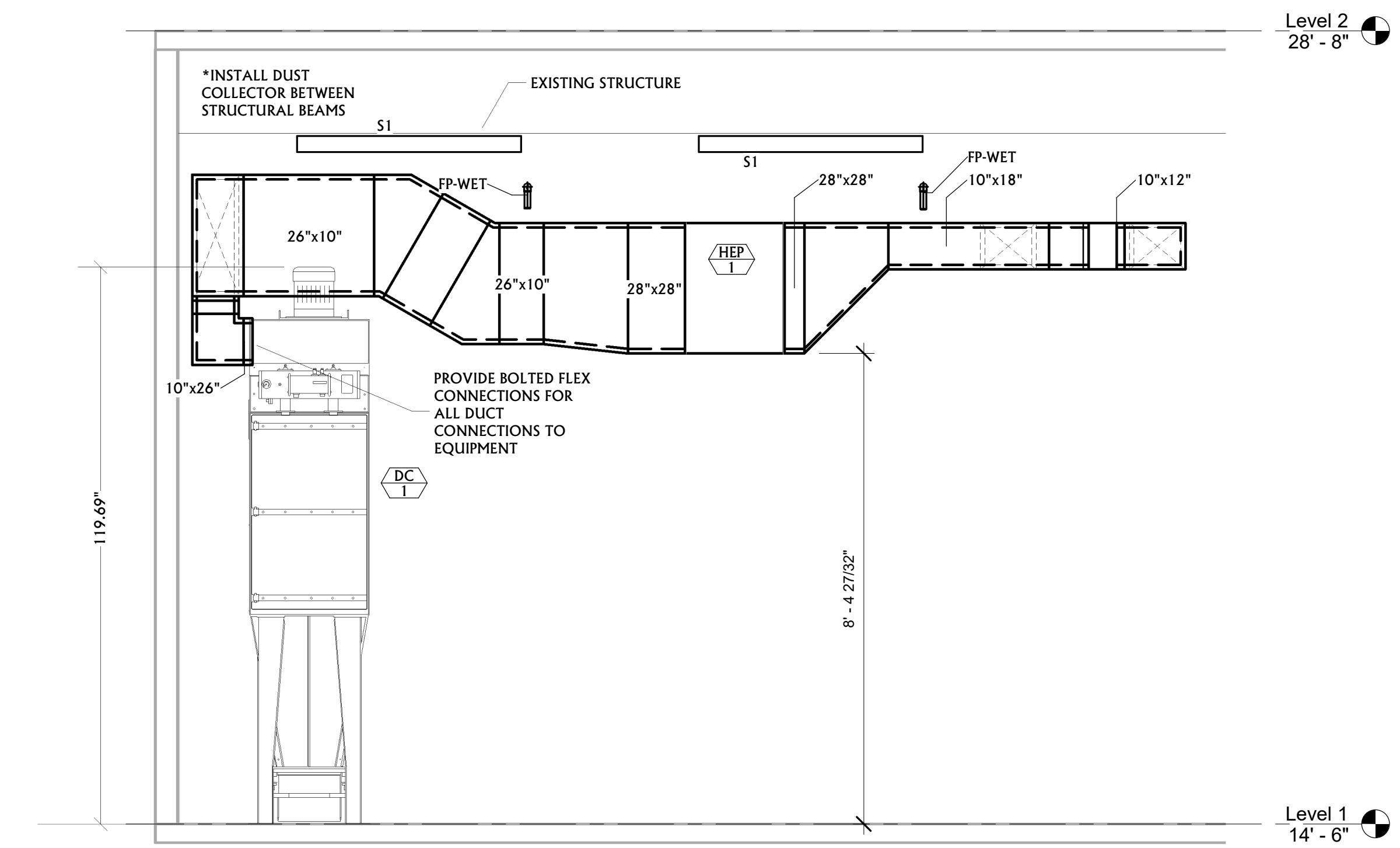
**Notes:**

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	DC-2, Motor	30 A	3	5877	2770		3	20 A	Insight Controller	2
3	--	--	--		5877	2770		--	--	4
5	--	--	--			5877	2770	--	--	6
7	Spare	20 A	1	0	0		1	20 A	Spare	8
9	Spare	20 A	1		0	0	1	20 A	Spare	10
11	Spare	20 A	1			0	0	20 A	Spare	12
13	Space	--	--	0	0		--	--	Space	14
15	Space	--	--		0	0	--	--	Space	16
17	Space	--	--			0	0	--	Space	18
				<b>Total Load:</b>	8647 VA	8647 VA	8647 VA			
				<b>Total Amps:</b>	31 A	31 A	31 A			

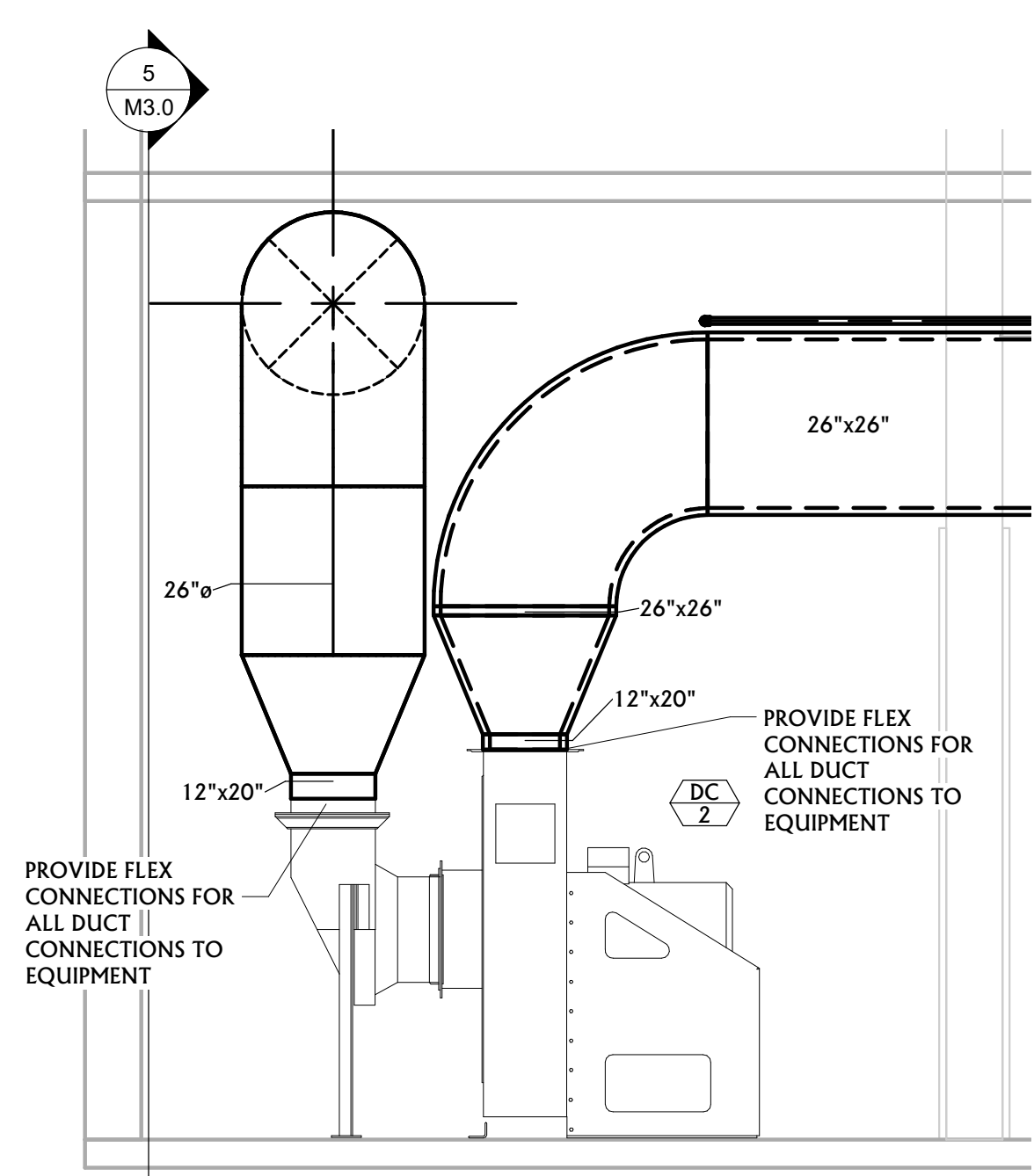
**Legend:**

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	25941 VA	116.82%	30304 VA	<b>Total Conn. Load: 25941 VA</b> <b>Total Est. Demand: 30304 VA</b> <b>Total Conn.: 31 A</b> <b>Total Est. Demand: 36 A</b>
Power	0 VA	0.00%	0 VA	

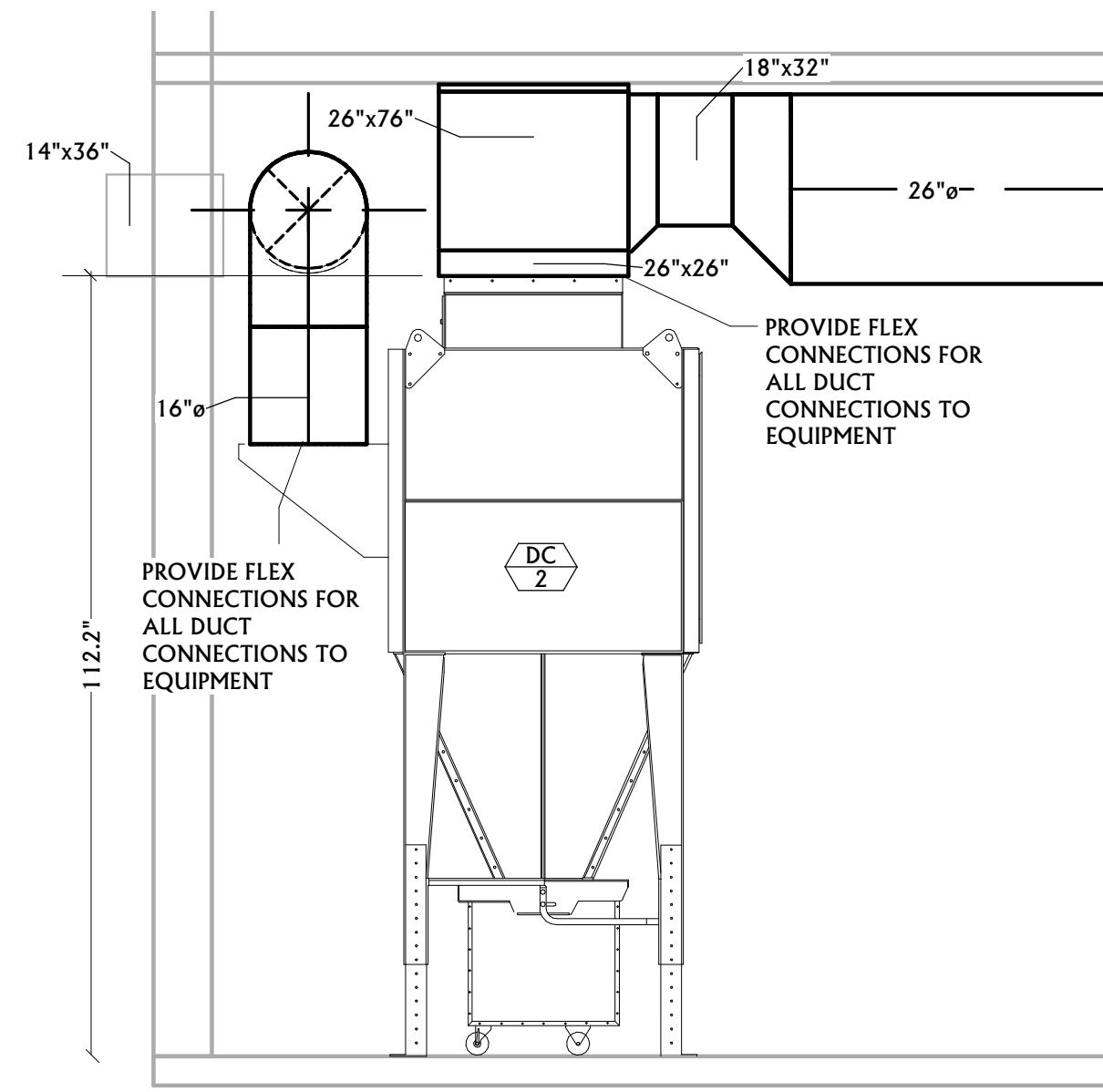
**Notes:**



**3 DC-1 SECTION DETAIL**  
NOT TO SCALE



**4 DUST FAN ELEVATION DETAIL**  
NOT TO SCALE



**5 LOWER LEVEL DUST COLLECTOR DETAIL**  
NOT TO SCALE