

Attachment 3
Clean Room Drawings

STATE OF CONNECTICUT
UNIVERSITY OF CONNECTICUT



SUSAN HERBST
PRESIDENT

ISO 7 CLEANROOM M HAN

STORRS CAMPUS

67 NORTH EAGLEVILLE ROAD
STORRS, CT 06269

PROJECT NO.: 300092
AREA OF RENOVATION :
ENGINEERING & SCIENCE BUILDING, FIFTH FLOOR

PREPARED FOR:
UNIVERSITY PLANNING DESIGN & CONSTRUCTION

31 LEDOYT RD. UNIT 3038
STORRS, CT 06269
860-486-2776

APRIL 8, 2019

Project Architect:



Mitchell Giurgola Architects LLP
630 Ninth Avenue, Suite 711
New York, NY 10036

Mechanical Engineer:



Bard, Rao + Athanas Engineers
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New York, NY 10016

Electrical Engineer:

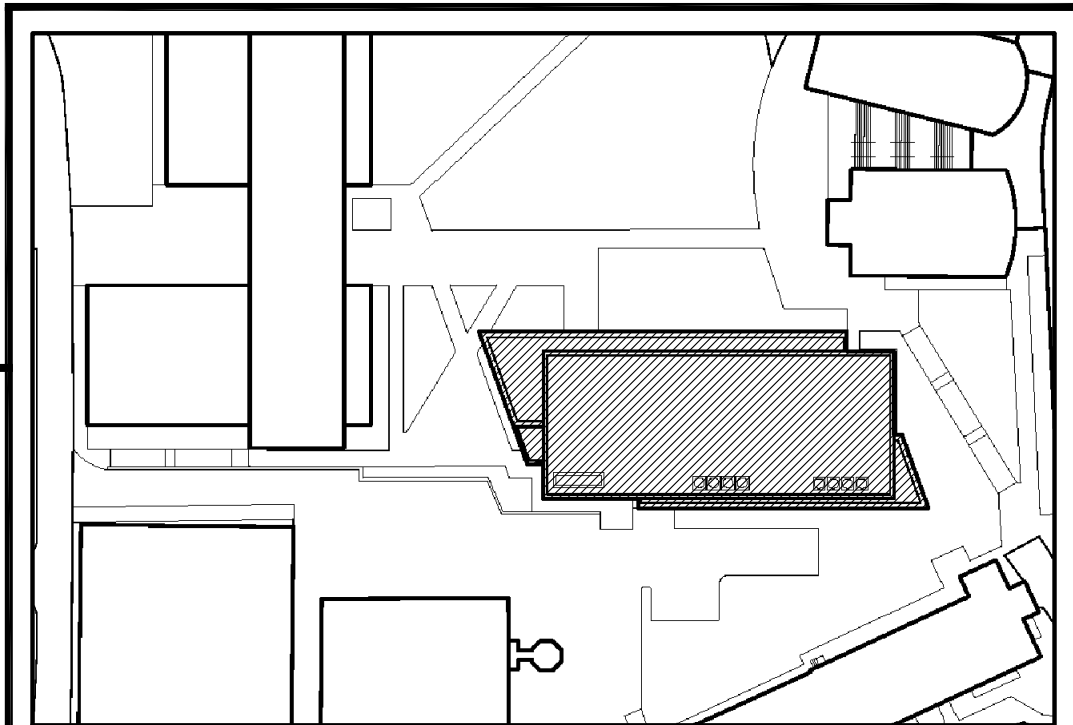


Bard, Rao + Athanas Engineers
105 Madison Avenue, 10th Floor
New York, NY 10016

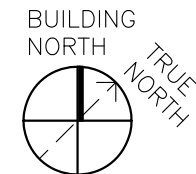
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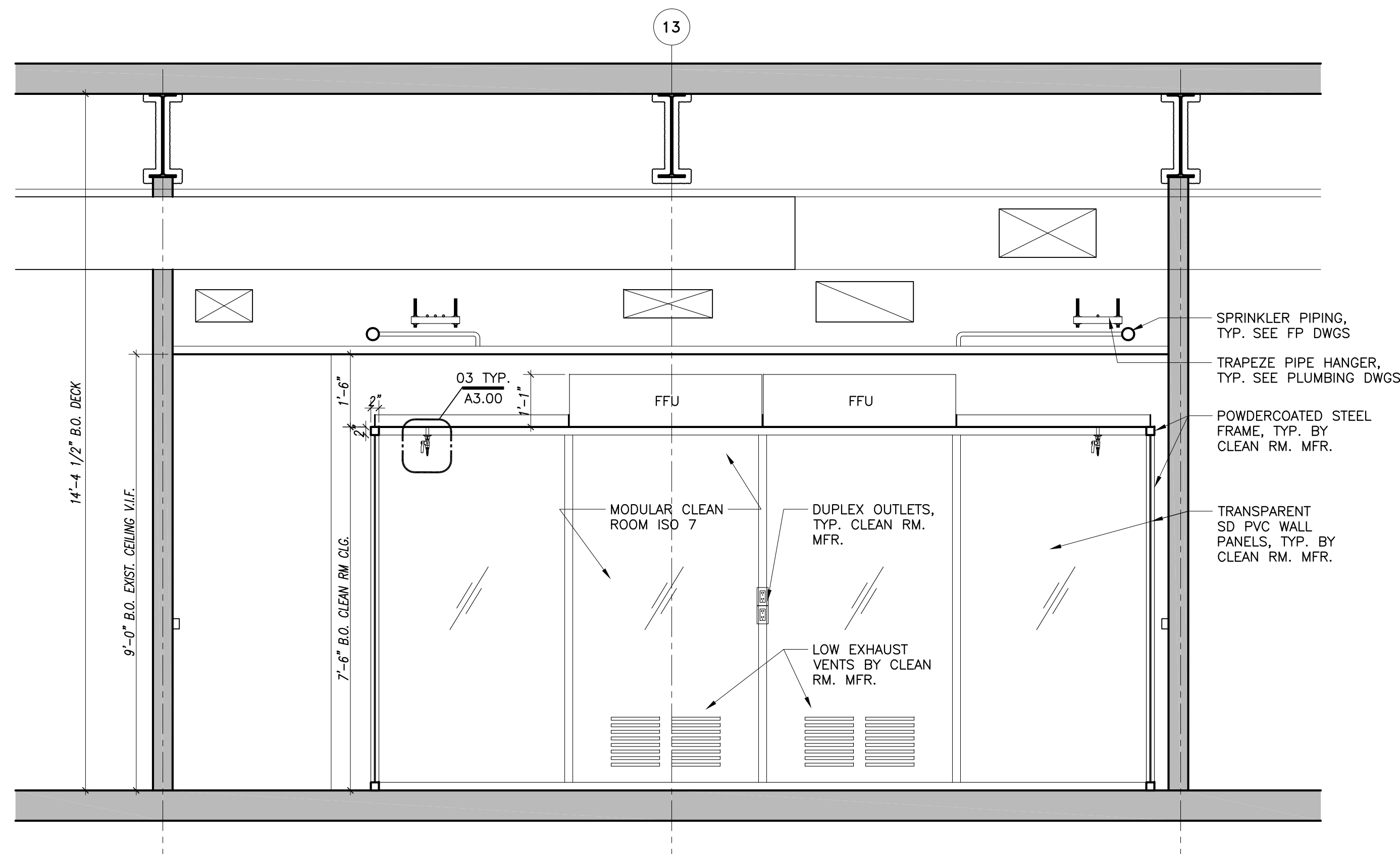


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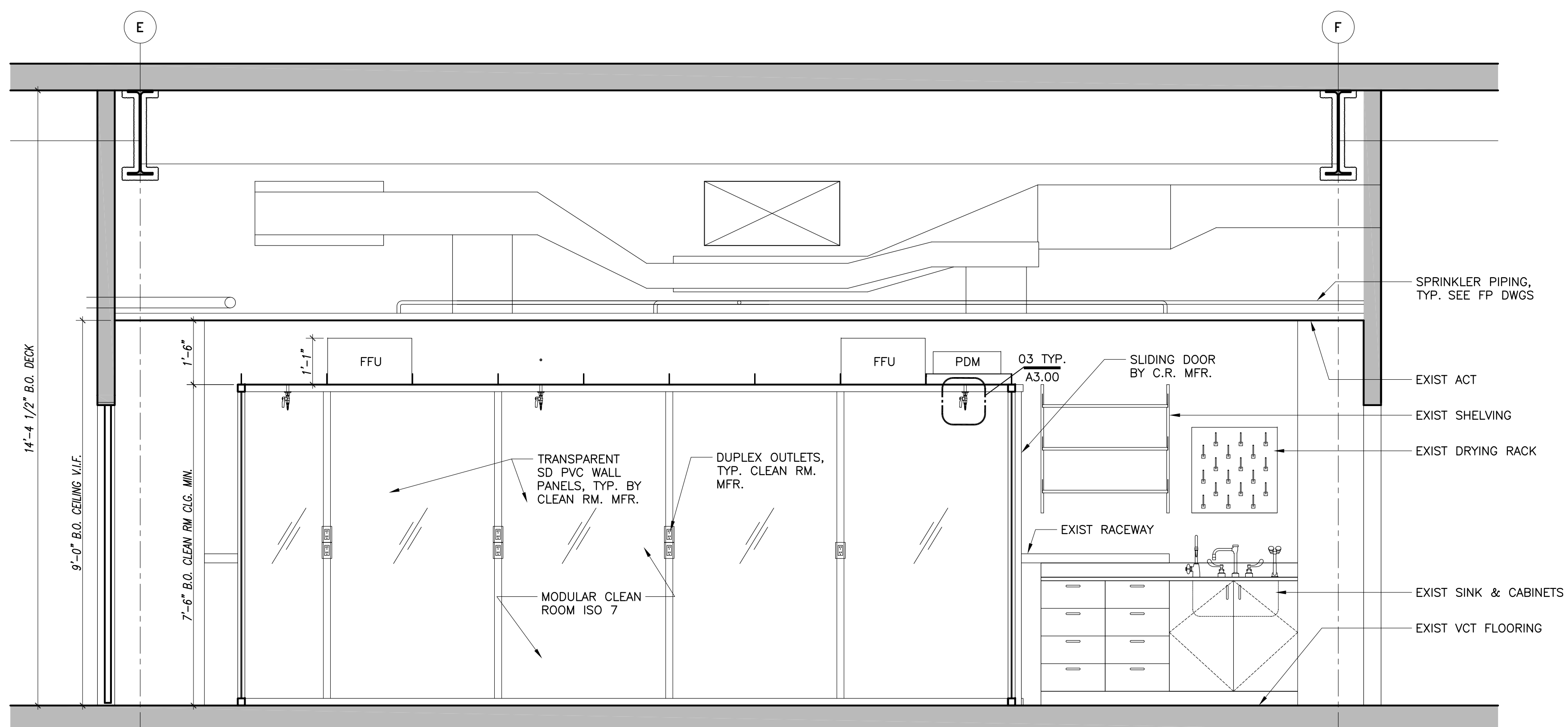


PROJECT SITE
NO SCALE





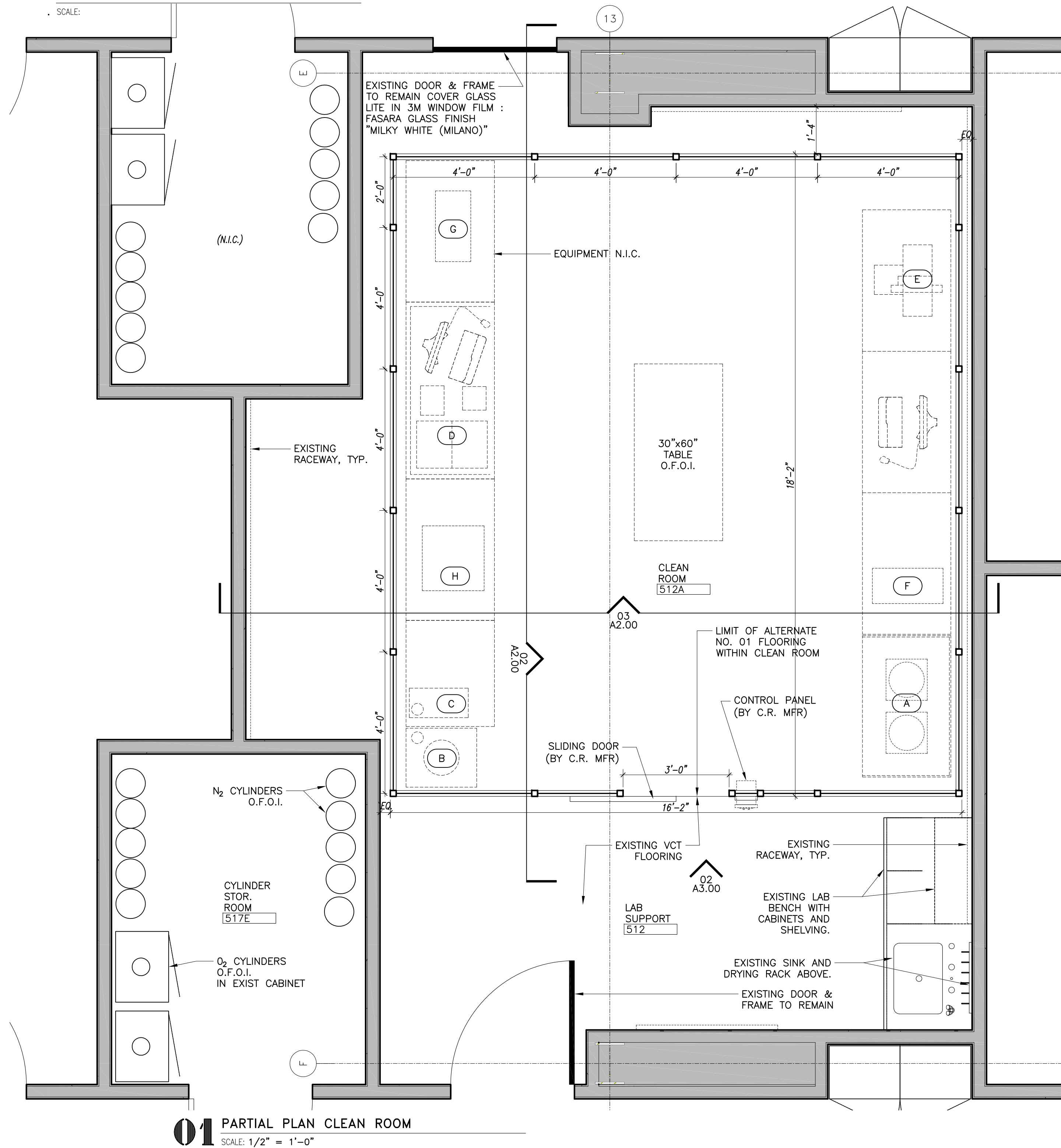
03 SECTION VIEW NORTH
SCALE: 1/2" = 1'-0"



02 SECTION VIEW EAST
SCALE: 1/2" = 1'-0"

Equip. #	Equipment Type	Manufacturer	Model #	Serial #	NEBP Room #	Bench/ Floor/ Hood	Hinge/Access Rt.	W	D	H	Electric	EM Power	Data	HVAC	Water	Vac	Air	Gases	Scientist	Remarks
A	Ductless fume hood	Terra Universal	1688-45		512	B	Top	48"	30"	86"	120V, 20A Max. +120V less lights	No	No	N/A	No	No	N2	M. Han		
B	Parylene deposition system w/chiller & SS table	SCS Specialty coating systems	SCSLabator 2 (PDS2010)	1484425	512	F	R	20"	24"	52"	110V, 20A, 1PH, 50/60 HZ	No	No	N/A	No	No	N2	M. Han	SS table 30" x 60" x 36" H	
C	Table chiller/cooler	Pie Scientific (Pieci cool)	FC100	322857-W	512	B	Top	10"	20"	18.5"	120V, 7A, 1PH, 60 HZ	No	No	N/A	No	No	N2	M. Han	Chiller on shelf below table	
D	Laser station & PC on SS table	A9	LX.XYB-Z5A-#W	902-1124	512	B		60"	30"	68"	(6) 120V outlets on 2 skts. Small amperage	No	Yes	N/A	No	No	N2	M. Han	PC on shelf below table	
E	Manual Wire Bender	West Bend Inc	7KEH		512	B		144"	30"	36"	(6) 120V outlets on 3 skts.	No	No	N/A	No	No	N2	M. Han	(3) 30" x 48" tables & wall mounted N2 cylinder	
F	Benoscope & assembly				512						N/A	No	No	N/A	No	No	N2	M. Han		
G	Plasma etcher	Pie Scientific			512	B		24"	12"	12"	110V-230V universal AC	No	No	N/A	No	No	Yes	N2, O2	M. Han	
H	Wire prep dissector	Terra Universal	Series 100		512	B		22"	21"	18"	N/A	No	No	N/A	No	No	N2	M. Han		

HAN - EQUIPMENT LIST FOR REFERENCE ONLY - O.F.O.I.



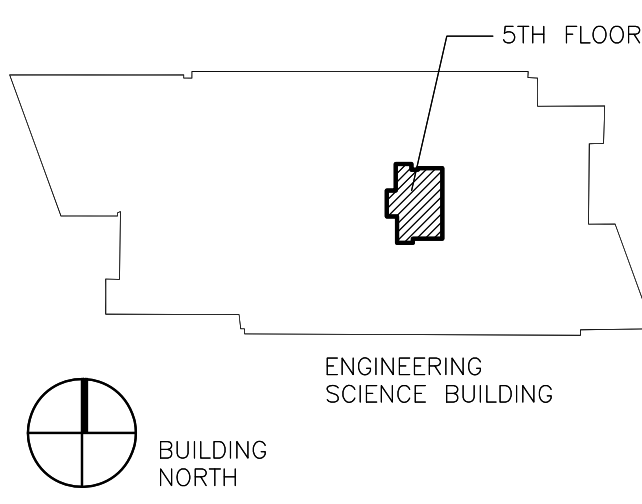
01 PARTIAL PLAN CLEAN ROOM
SCALE: 1/2" = 1'-0"

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Key Plan:



UNIVERSITY OF CONNECTICUT
STORRS, CT

NO	DATE	COMMENTS

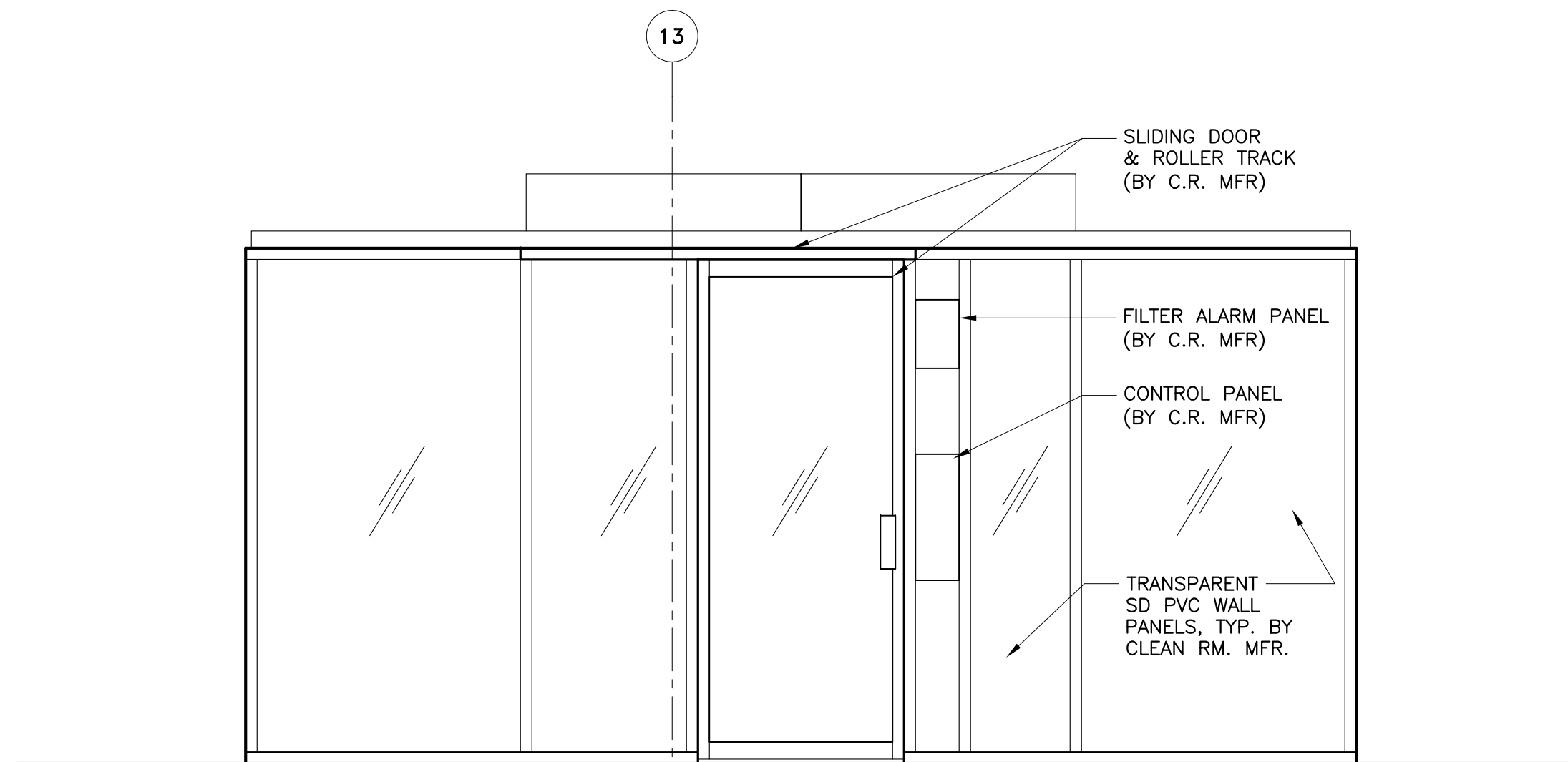
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Project:
ISO 7 CLEANROOM M HAN

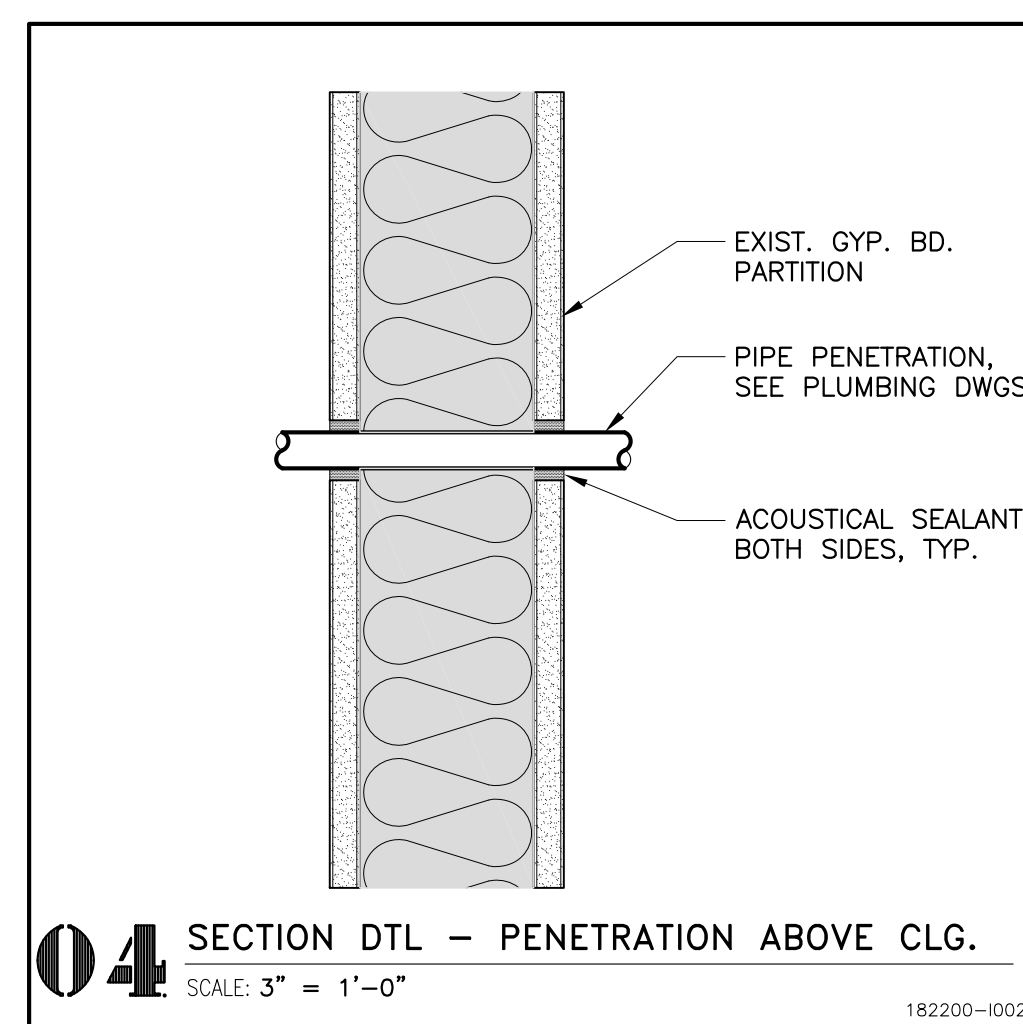
Drawing Title:
PARTIAL PLAN, SECTION,
ELEVATIONS - MODULAR
CLEAN ROOM

PROJECT NR: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: AS NOTED

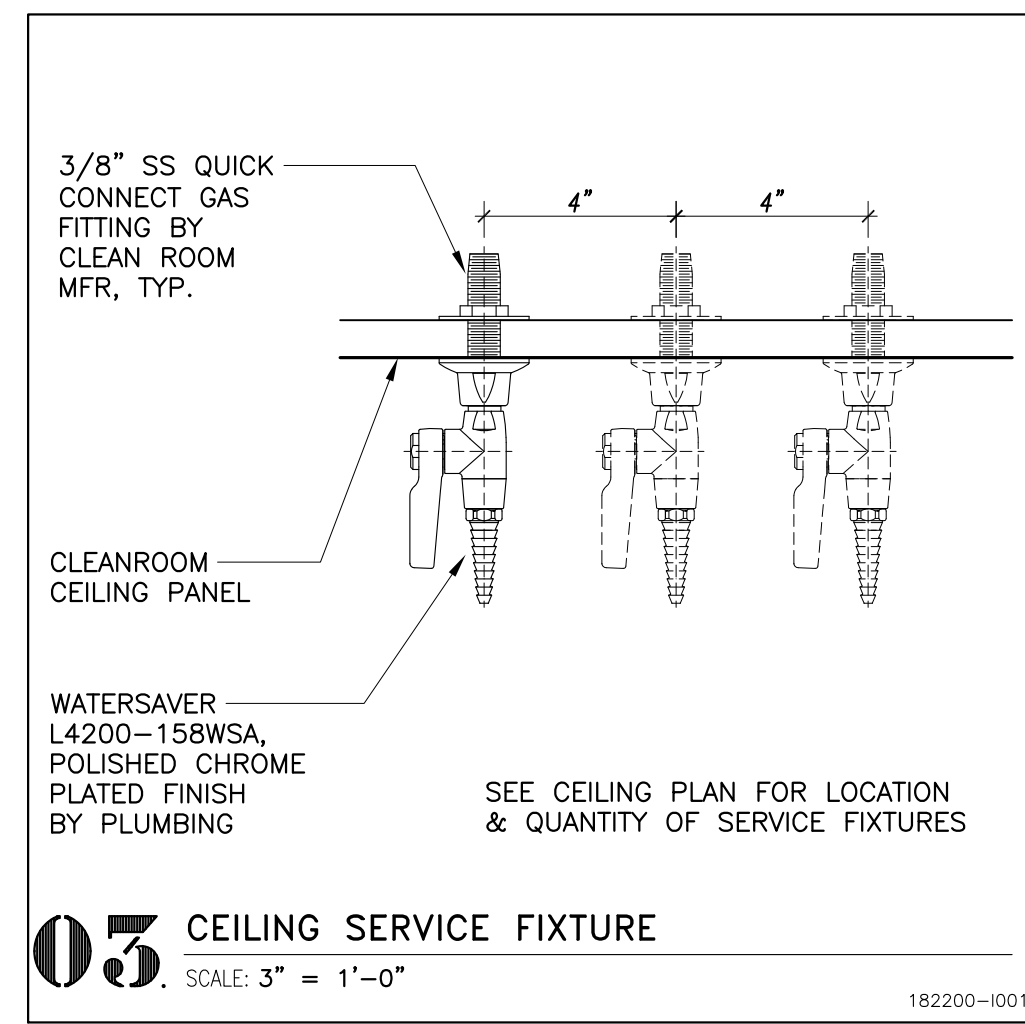
A2.00



02 CLEAN ROOM ELEVATION VIEW NORTH
SCALE: 1/2" = 1'-0"



04 SECTION DTL - PENETRATION ABOVE CLG.
SCALE: 3" = 1'-0"



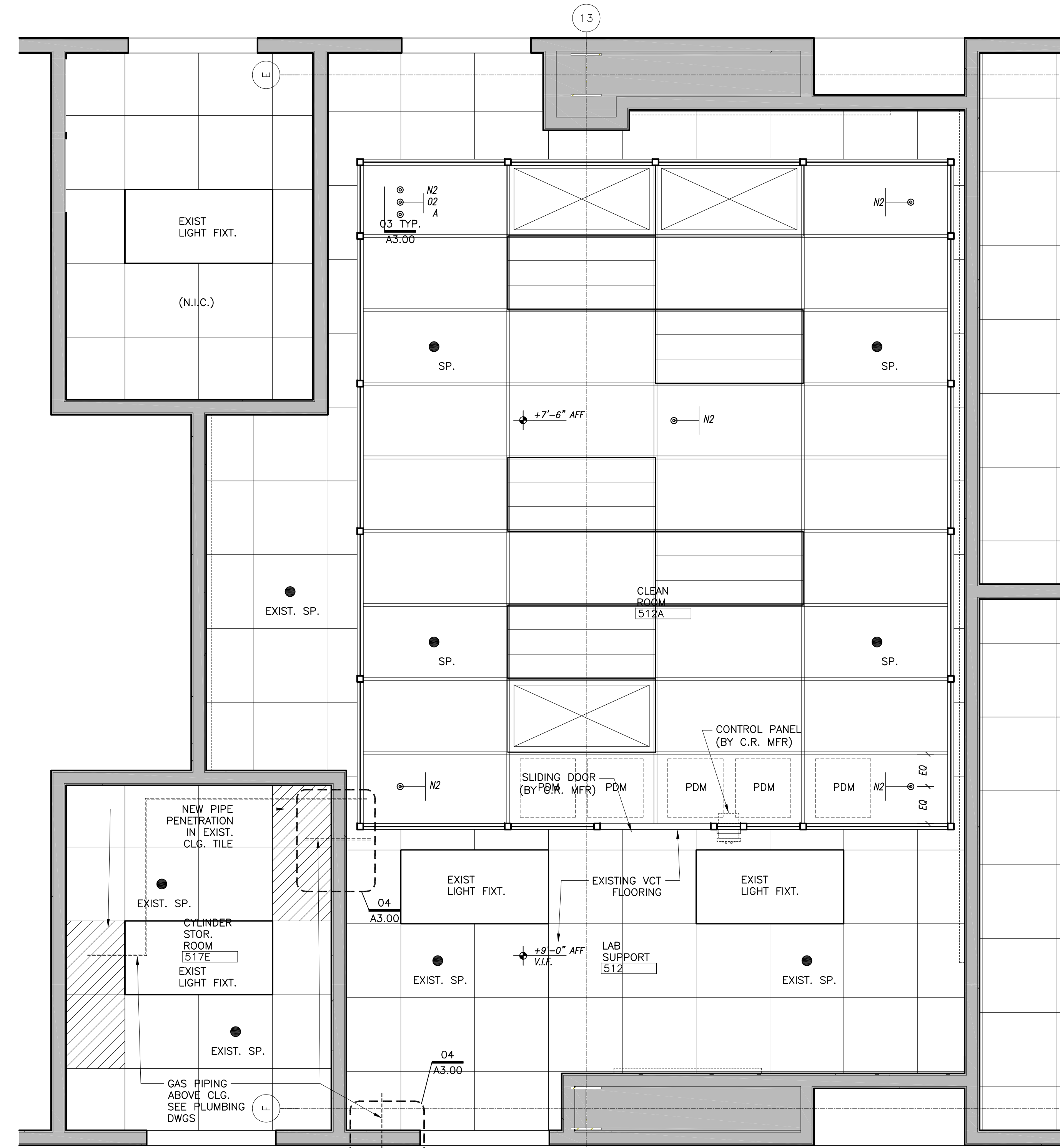
03 CEILING SERVICE FIXTURE
SCALE: 3" = 1'-0"

LEGEND

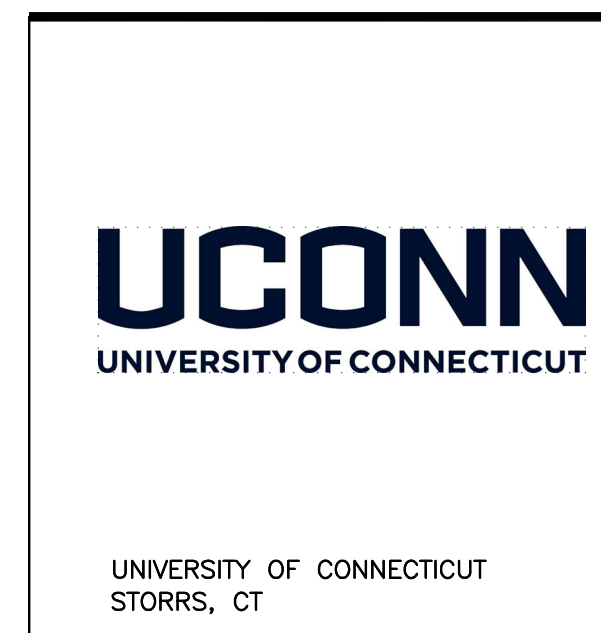
- EXIST. ACOUSTICAL CEILING TILE REFER TO A4.00 FOR BALANCE OF UTILITY SYMBOLS
- CLEAN ROOM LIGHT FIXTURE (BY C.R. MFR.)
- FAN FILTER UNIT (BY C.R. MFR.)
- POLYPROPYLENE CEILING PANELS IN STEEL JOIST GRID (BY C.R. MFR.)
- 9'-0" CEILING HEIGHT ELEVATION TAG A.F.F. (SEE RCP FOR HEIGHTS)

GENERAL NOTES

- ALL SPRINKLER HEADS ARE TO BE CENTERED ON CEILING TILES (U.O.N.)
- SEE FP DRAWINGS FOR SPRINKLER LOCATIONS IN ALL AREAS NOT SHOWN.
- CEILING HEIGHT TO BE AT DIMENSION A.F.F. AS NOTED ON REFLECTED CEILING PLAN
- REFER TO UTILITY PLANS ON A4.00 FOR NOTES ON UTILITIES.
- PATCH & REPAIR AT NEW PENETRATION THRU EXISTING WALLS AND CEILINGS. SEE DTL 04/A2.00.
- REPLACE EXISTING ACOUSTIC CEILING TILES IN KIND WHERE REMOVED BY HVAC WORK ABOVE CLEAN ROOM. REFER TO H.001

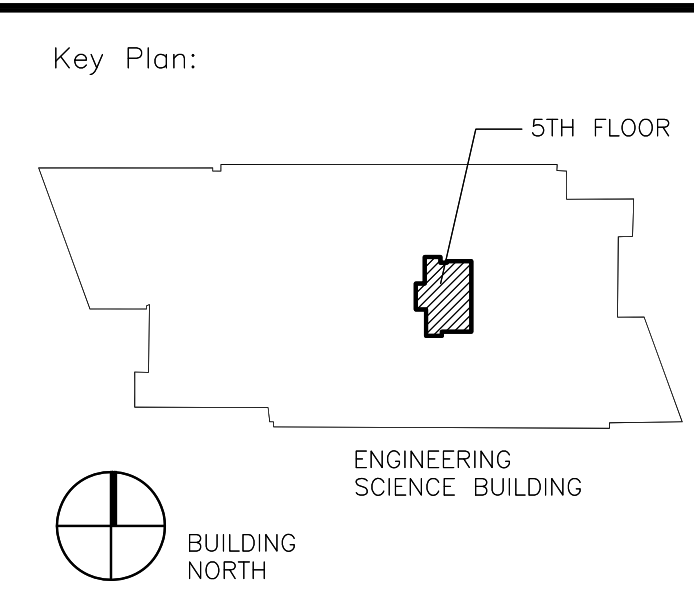


01 REFLECTED CEILING PLAN - CLEAN ROOM
SCALE: 1/2" = 1'-0"



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NO	DATE	COMMENTS

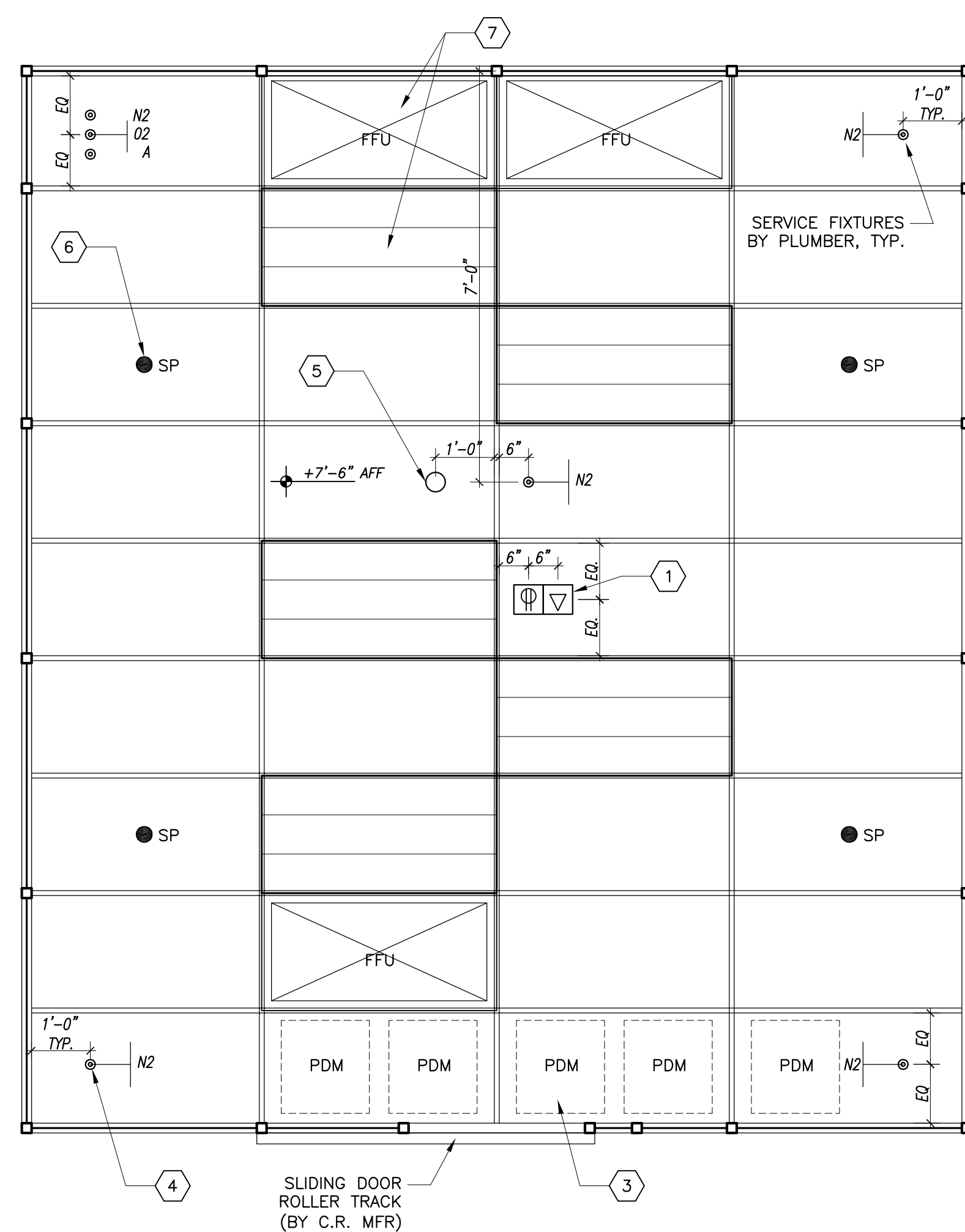
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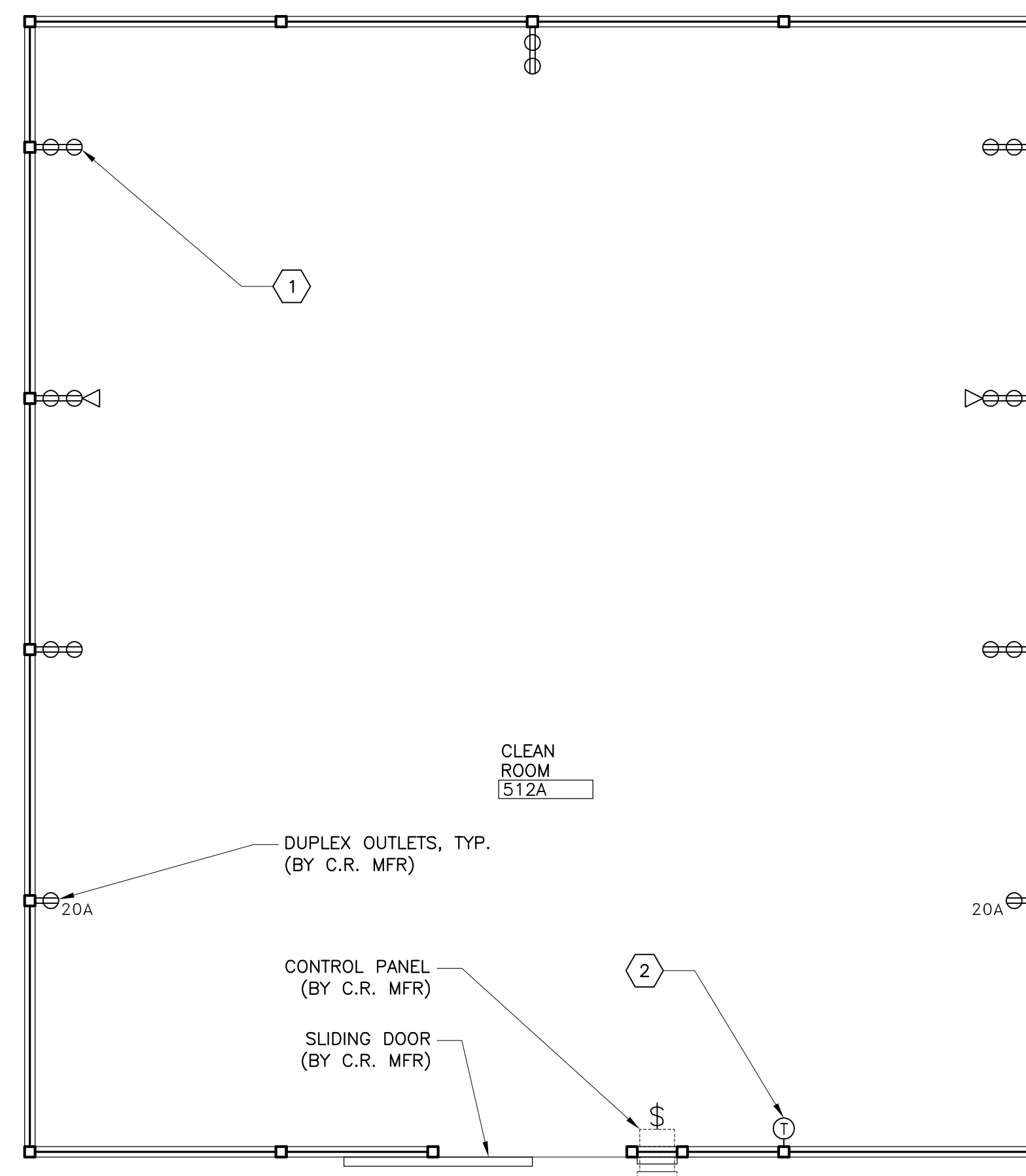
Project: ISO 7 CLEANROOM M HAN
Drawing Title: REFLECTED CEILING PLAN & ELEVATIONS - MODULAR CLEAN ROOM

PROJECT NO: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: AS NOTED

A3.00



02 CLEAN ROOM UTILITY REFLECTED CEILING PLAN
SCALE: 1/2" = 1'-0"



01 CLEAN ROOM UTILITY PLAN
SCALE: 1/2" = 1'-0"

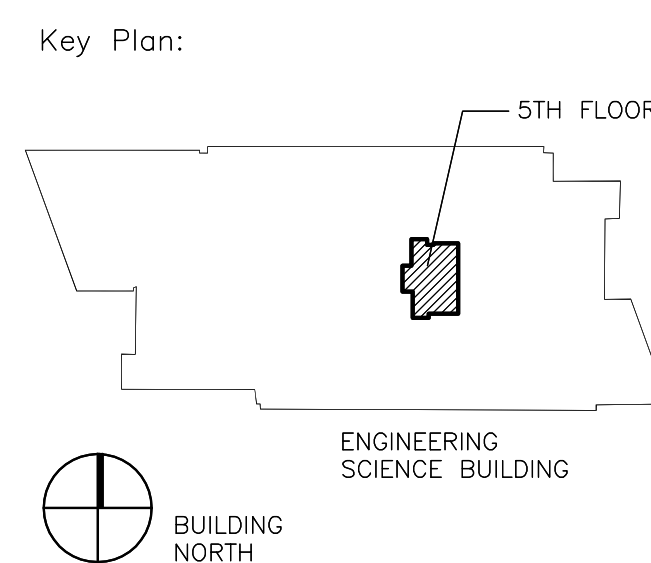
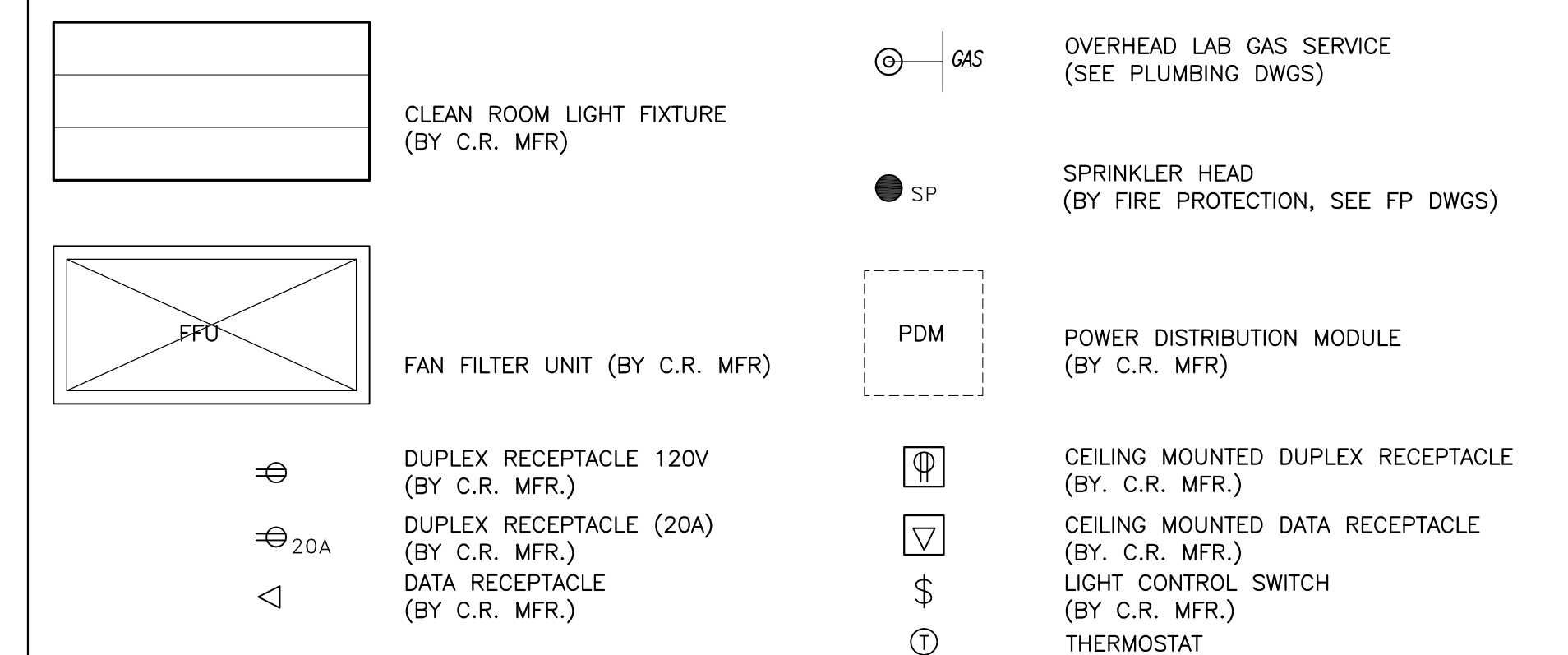
GENERAL NOTES

- CM/GC TO COORDINATE ALL POINTS OF CONNECTION BETWEEN SUBCONTRACTORS AND MODULAR CLEAN ROOM MFR. PRIOR TO INSTALLATIONS OF ANY UTILITIES. THIS SHALL INCLUDE BUT NOT BE LIMITED TO LOCATIONS, INTERFACE TYPE AND AIRTIGHT SEAL TYPE. MODIFICATION OF THE MODULAR CLEAN ROOM BY THE CONTRACTORS ON SITE SHALL NOT BE ACCEPTABLE. ANY RELOCATION OR REVISION TO THE UTILITIES TO COORDINATE WITH THE MODULAR CLEAN ROOM SHALL BE THE CM/GC'S RESPONSIBILITY AND NOT INCUR ADDITIONAL COST TO THE OWNER.
- ALL DIMENSIONS ARE TAKEN TO CENTERLINE OF CEILING SUPPORT MEMBERS OR FACE OF PARTITION, UNLESS OTHERWISE NOTED.

KEY NOTES

- ALL RECEPTACLES AND ELECTRICAL CONNECTIONS ASSOCIATED WITH MODULAR CLEAN ROOM SHALL BE WIRED BY CLEAN ROOM MFR. BACK TO SINGLE POINT POWER CONNECTIONS AT PDM'S.
- POINT OF CONNECTION FOR BMS CONTRACTOR AND MODULAR CLEAN ROOM MFR. CLEAN ROOM MFR. TO PROVIDE FACTORY MANUFACTURED OPENING AND WALL BACK BOX AND CONDUIT UP THROUGH CLEAN ROOM CEILING TO RECEIVE RELOCATED THERMOSTAT AND COMMUNICATION WIRE. BMS CONTRACTOR TO COORDINATE WITH PRE-MANUFACTURED BACK BOX AND RIGID CONDUIT. CM/GC TO ENSURE BACK BOX TO T'STAT INTERFACE IS GASKETED AND SEALED. REFER TO H1.00 FOR ADDITIONAL INFORMATION.
- POWER CONNECTION POINTS FOR ELECTRICAL CONTRACTOR TO MODULAR CLEAN ROOM. ELECTRICAL CONTRACTOR SHALL COORDINATE TERMINATION POINTS TO EACH PDM WITH MODULAR CLEAN ROOM MFR. REFER TO E2.00 FOR BRANCH CIRCUIT INFORMATION FOR EACH PDM.
- POINT OF CONNECTION FOR PLUMBING CONTRACTOR AND MODULAR CLEAN ROOM MFR. CLEAN ROOM MFR. TO PROVIDE FACTORY MANUFACTURED OPENINGS AND QUICK CONNECT TO RECEIVE LAB GAS PIPING AND VALVE. PLUMBING CONTRACTOR TO PROVIDE VALVE AND LAB GAS PIPING TO COORDINATE WITH PRE-MANUFACTURED QUICKCONNECT. CM/GC TO ENSURE THE PENETRATION IS GASKETED AND SEALED. TYPICAL FOR (7) LAB GAS TERMINATIONS. REFER TO P1.00 AND A3.00 FOR ADDITIONAL INFORMATION.
- POINT OF CONNECTION FOR FIRE ALARM CONTRACTOR AND MODULAR CLEAN ROOM MFR. CLEAN ROOM MFR. TO PROVIDE FACTORY MANUFACTURED OPENING WITH CEILING MOUNTED BACK BOX FOR CONNECTION TO NEW CEILING MOUNTED SPEAKER/STROBE. REFER TO ELECTRICAL PLANS FOR MORE INFORMATION E2.00.
- POINT OF CONNECTION FOR FIRE PROTECTION CONTRACTOR AND MODULAR CLEAN ROOM MFR. CLEAN ROOM MFR. TO PROVIDE FACTORY MANUFACTURED OPENINGS TO RECEIVE SPRINKLER HEADS. FIRE PROTECTION CONTRACTOR TO PROVIDE SPRINKLER HEAD AND ASSOCIATED PIPING TO COORDINATE WITH PRE-MANUFACTURED OPENING AND CEILING SYSTEM. CM/GC TO ENSURE THE PENETRATION IS GASKETED AND SEALED. TYPICAL FOR (4) SPRINKLERS. REFER TO FP1.00 FOR ADDITIONAL INFORMATION.
- ALL FFU AND LIGHTS WIRED BACK TO PDM BY MODULAR CLEAN ROOM MFR.

UTILITIES LEGEND



NO	DATE	COMMENTS

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Project: **ISO 7 CLEANROOM M HAN**
Drawing Title: **MODULAR CLEAN ROOM UTILITY PLANS**

PROJECT NO: **182200** DATE: **4/8/19**
PHASE: **BID DOCUMENTS** SCALE: **AS NOTED**



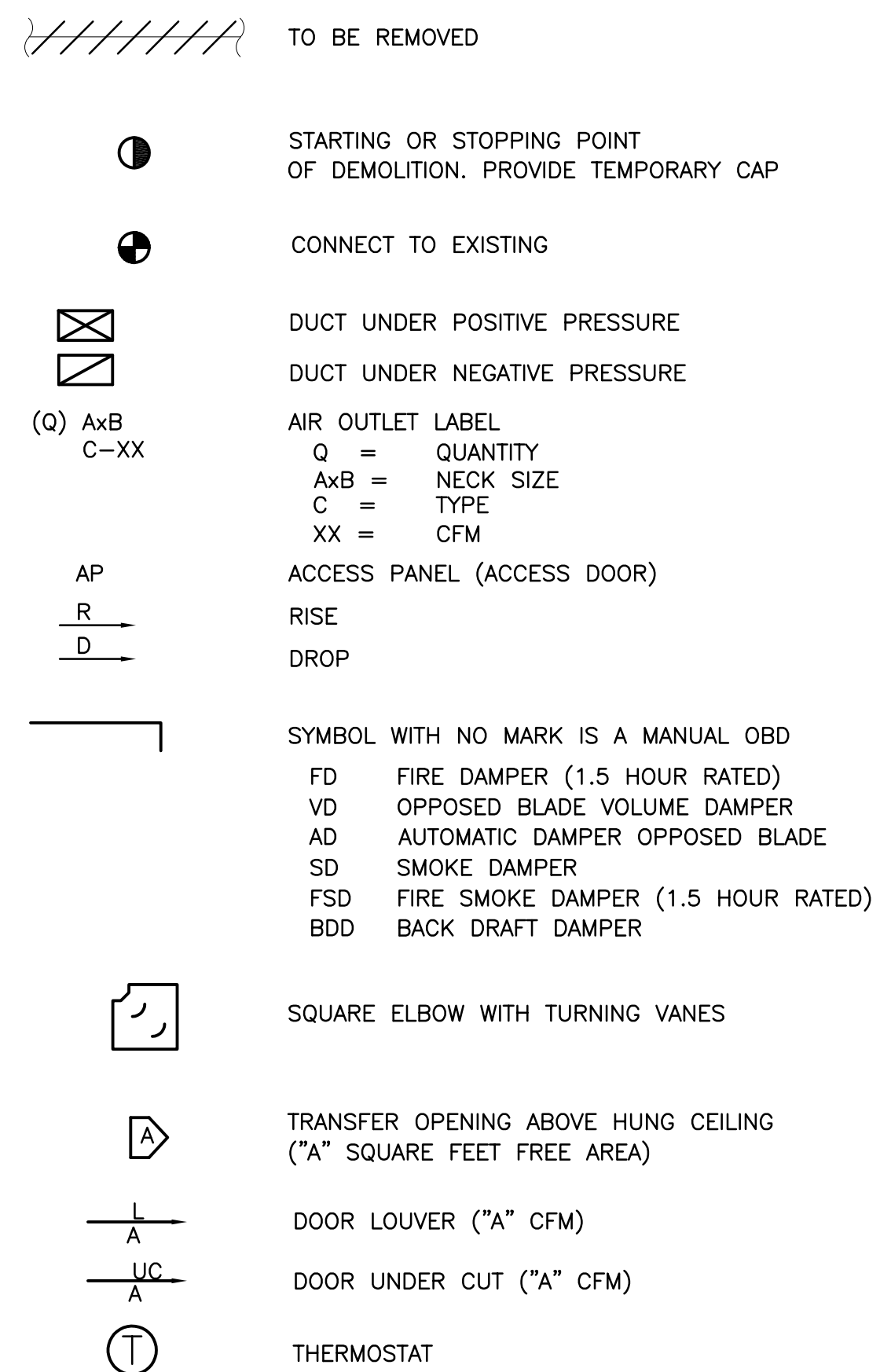
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1 HVAC LEGEND (SYMBOLS)

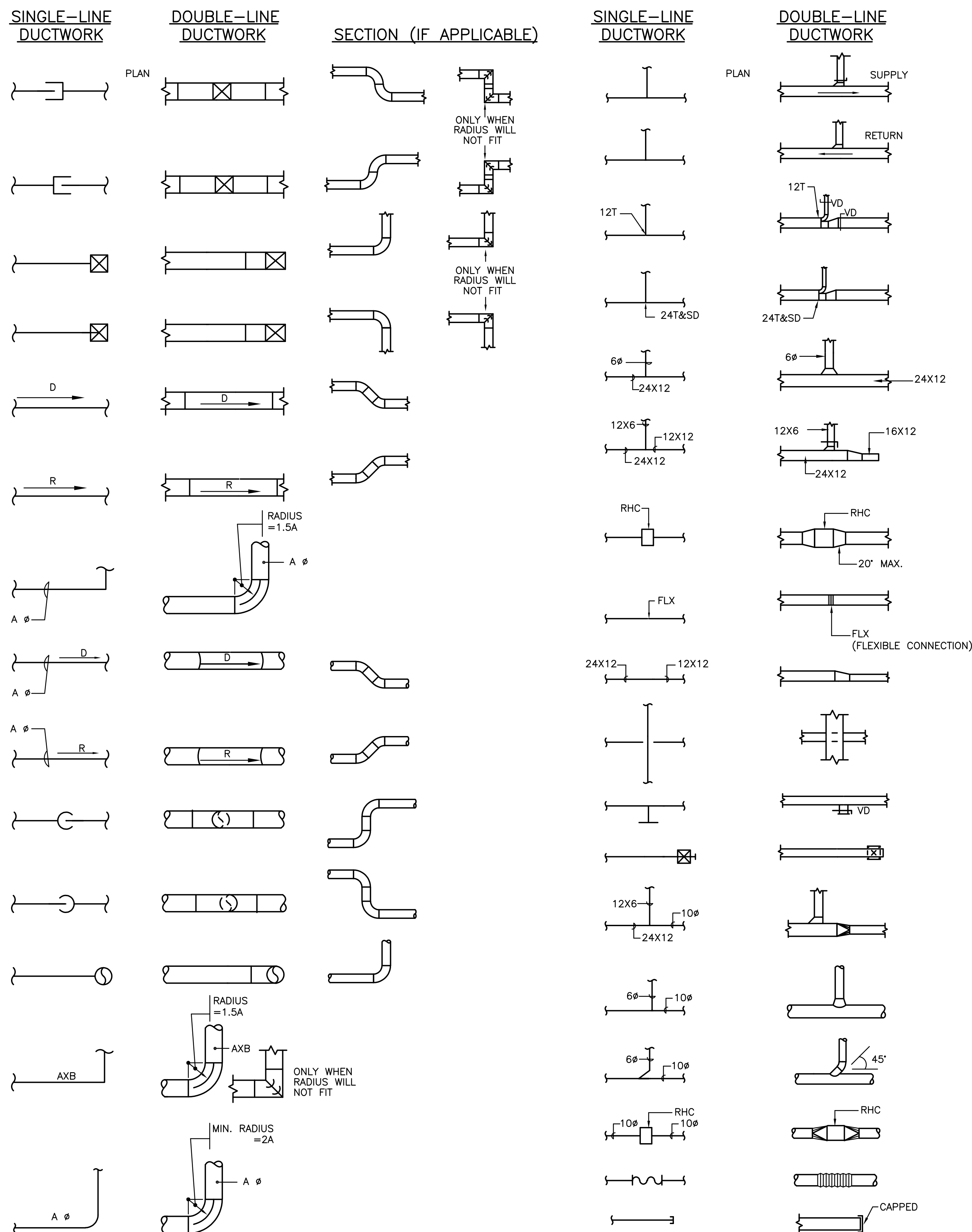
PLAN SYMBOLS



2 HVAC LEGEND (ABBREVIATIONS)

A/C	AIR CONDITIONING	LDB	LEAVING DRY BULB TEMPERATURE
ABS	ABSOLUTE	LWB	LEAVING WET BULB TEMPERATURE
AD	AUTOMATIC DAMPER	MER	MECHANICAL EQUIPMENT ROOM
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
ALUM.	ALUMINUM	OA	OUTSIDE AIR
AP	ACCESS PANEL	OB	OPPOSED BLADE DAMPER
ATM.	ATMOSPHERE	O.C.	ON CENTER
AUTO.	AUTOMATIC	RA	RETURN AIR
AVG	AVERAGE	S/S	STAINLESS STEEL
BFC	BELOW FINISHED CEILING	SA	SUPPLY AIR
BTU	BRITISH THERMAL UNIT	SEC	SECOND
CFM	CUBIC FEET PER MINUTE	SP	STATIC PRESSURE
DB	DRY BULB OR DECIBELS	SPECS	SPECIFICATIONS
DDC	DIRECT DIGITAL CONTROL	SQ. FT.	SQUARE FOOT
DIA	DIAMETER	STD	STANDARD
DN	DOWN	TEMP.	TEMPERATURE
DWG	DRAWING	TSP	TOTAL STATIC PRESSURE
EA	EACH	TYP.	TYPICAL
EAT	ENTERING AIR TEMPERATURE	UL	VOLTAGE
EDB	ENTERING DRY BULB TEMPERATURE	V	VOLUME
ETR	EXISTING TO REMAIN	W	WIDTH, WEST, WATER
EWB	ENTERING WET BULB TEMPERATURE	W/	WITH
FA	FREE AREA IN SQUARE FEET	W/O	WITHOUT
FPM	FEET PER MINUTE	WB	WET BULB
FPS	FEET PER SECOND	WMS	WIRE MESH SCREEN
GALV	GALVANIZED		
GC	GENERAL CONTRACTOR		
HVAC	HEATING VENTILATING AND AIR-CONDITIONING		
IN	INCHES		
IN H ₂ O	INCHES OF WATER		
IN W.G.	INCHES OF WATER GAUGE		
LAT	LEAVING AIR TEMPERATURE		

3 HVAC LEGEND (SINGLE AND DOUBLE-LINE DUCTWORK)



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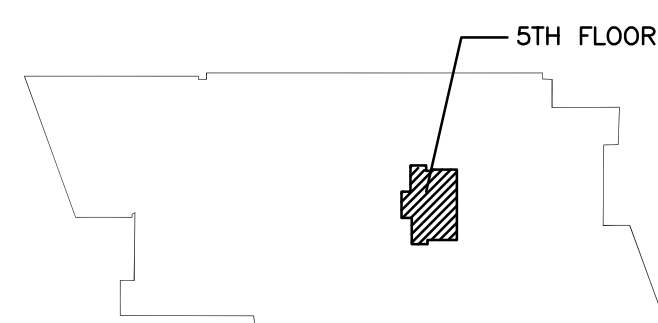
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ENGINEERING
SCIENCE BUILDING

№	DATE	COMMENTS

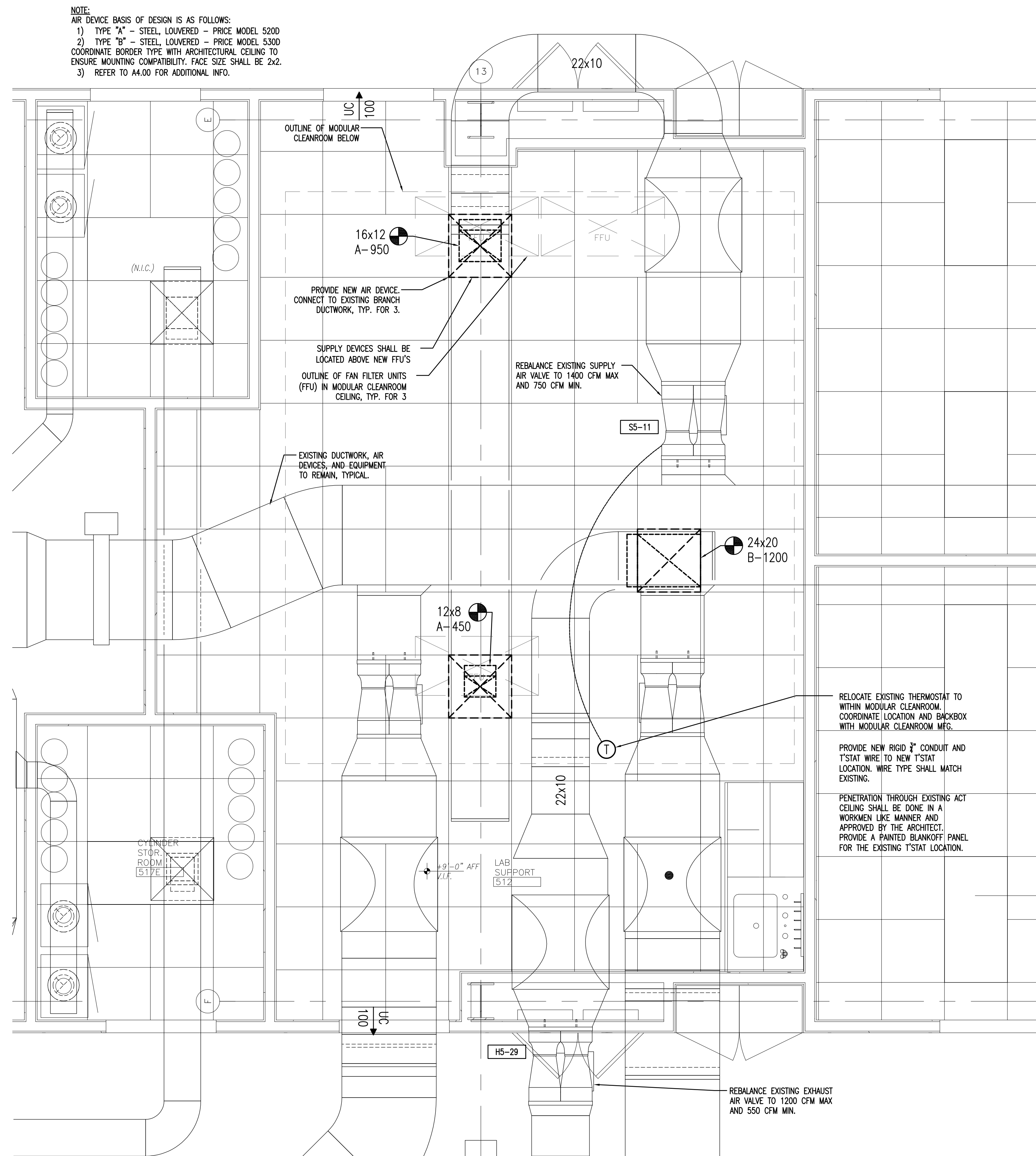
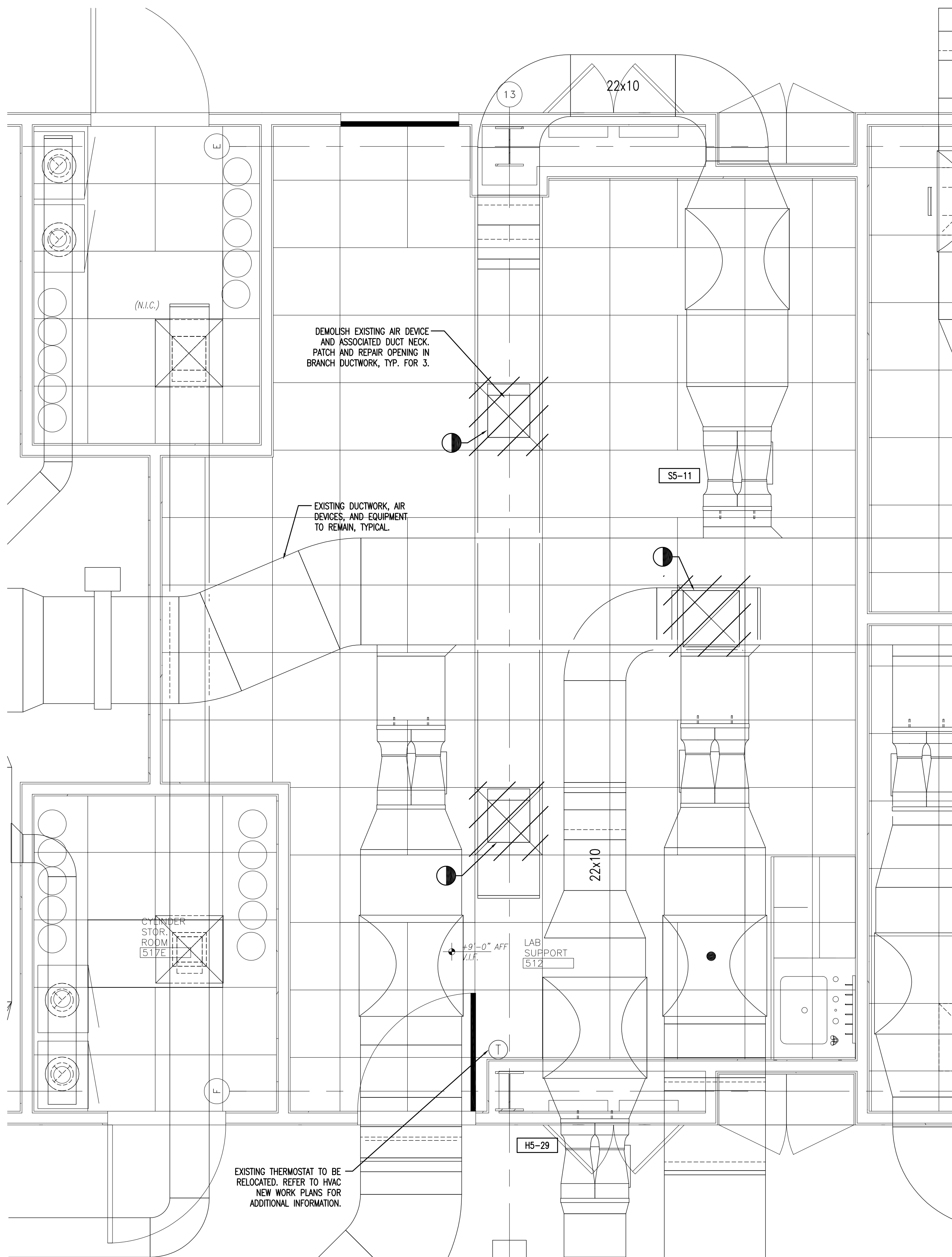
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Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
HVAC LEGENDS, SYMBOLS,
AND ABBREVIATIONS

PROJECT №: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: NTS

HO.OO



01 CLEAN ROOM HVAC DEMOLITION PLAN
SCALE: 1/2" = 1'-0"

02 CLEAN ROOM HVAC NEW WORK PLAN
SCALE: 1/2" = 1'-0"

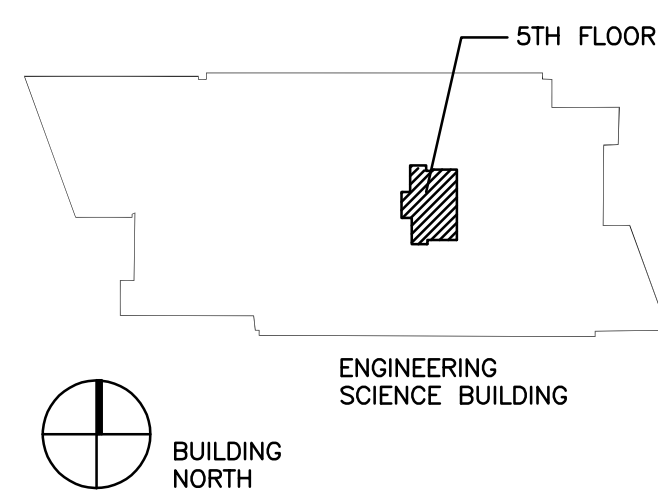
SCALE:

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NO.	DATE	COMMENTS

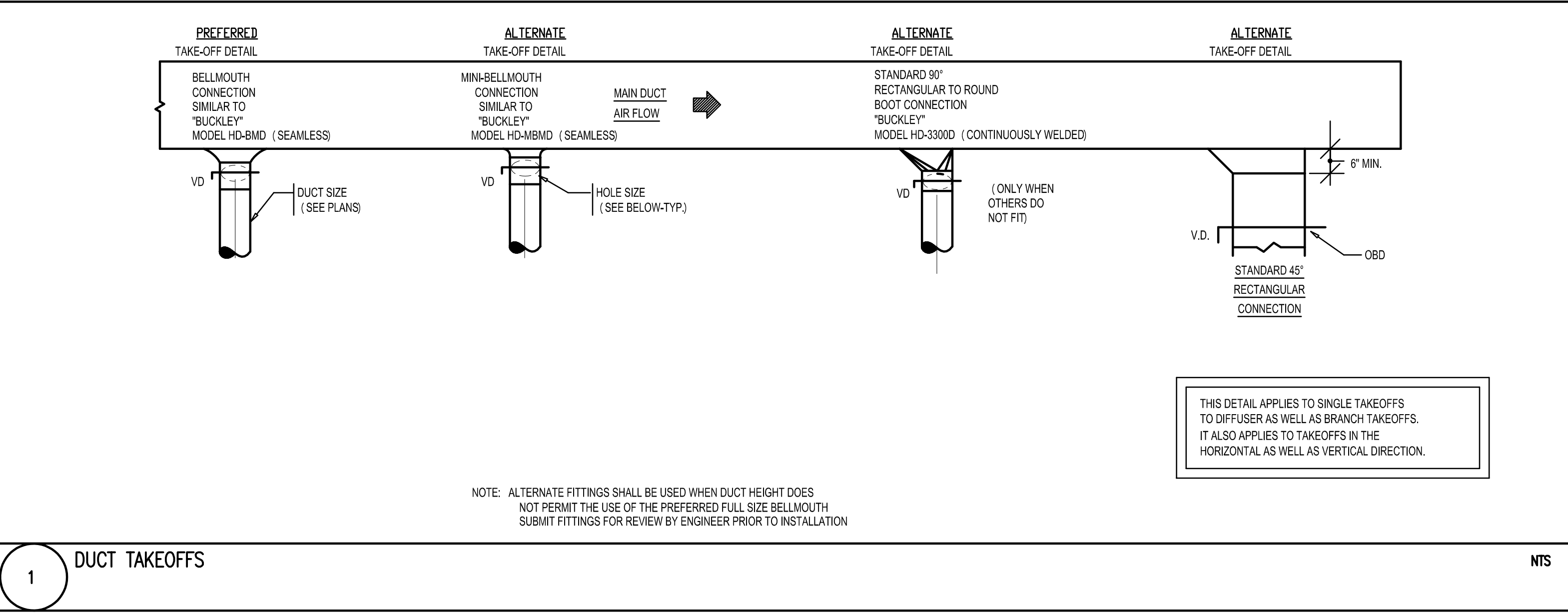
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Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
HVAC PLANS - FIFTH
FLOOR CLEAN ROOM

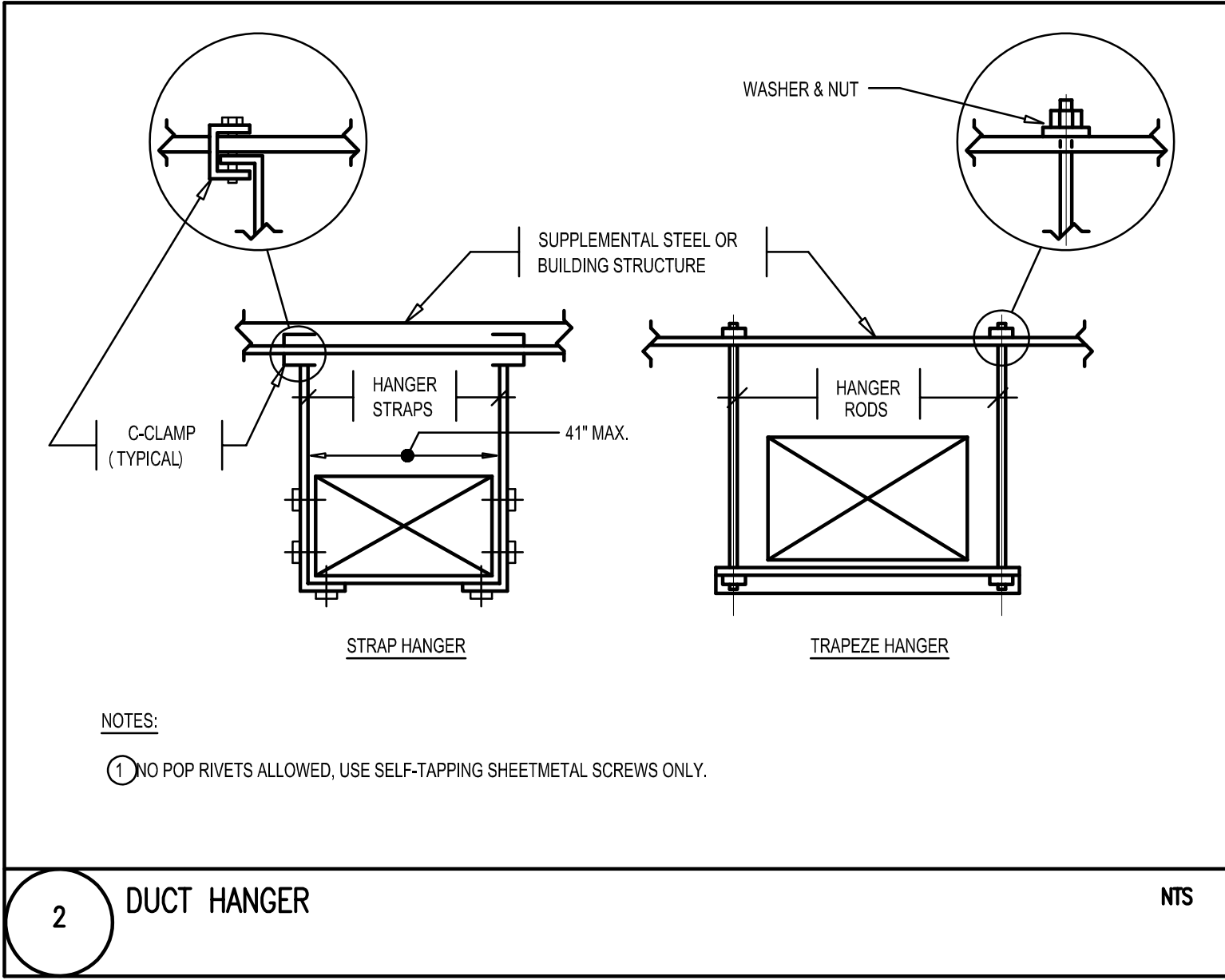
PROJECT NO: 182200
DATE: 4/8/19
PHASE: BID DOCUMENTS
SCALE: AS NOTED

H1.00



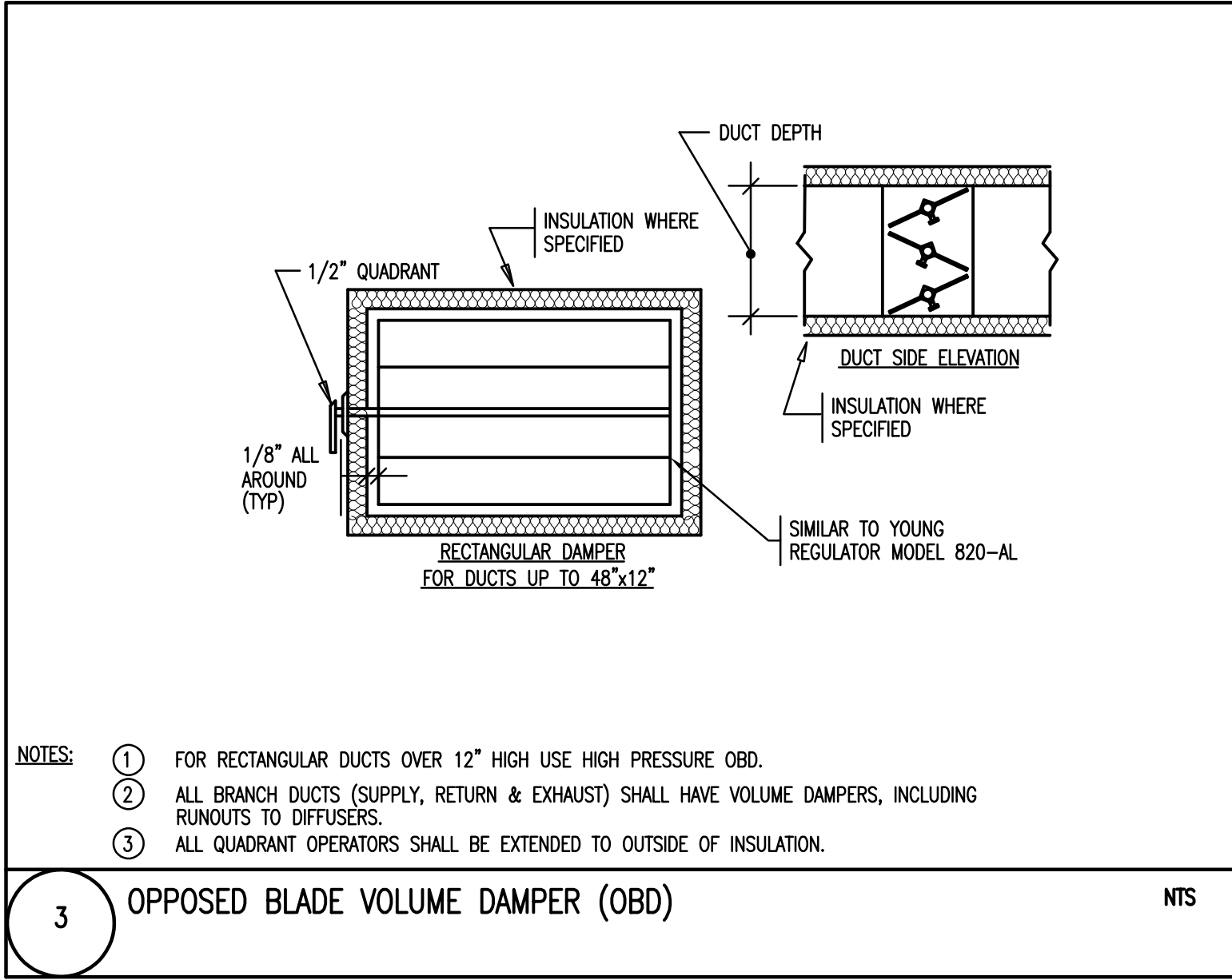
1 DUCT TAKEOFFS

NTS



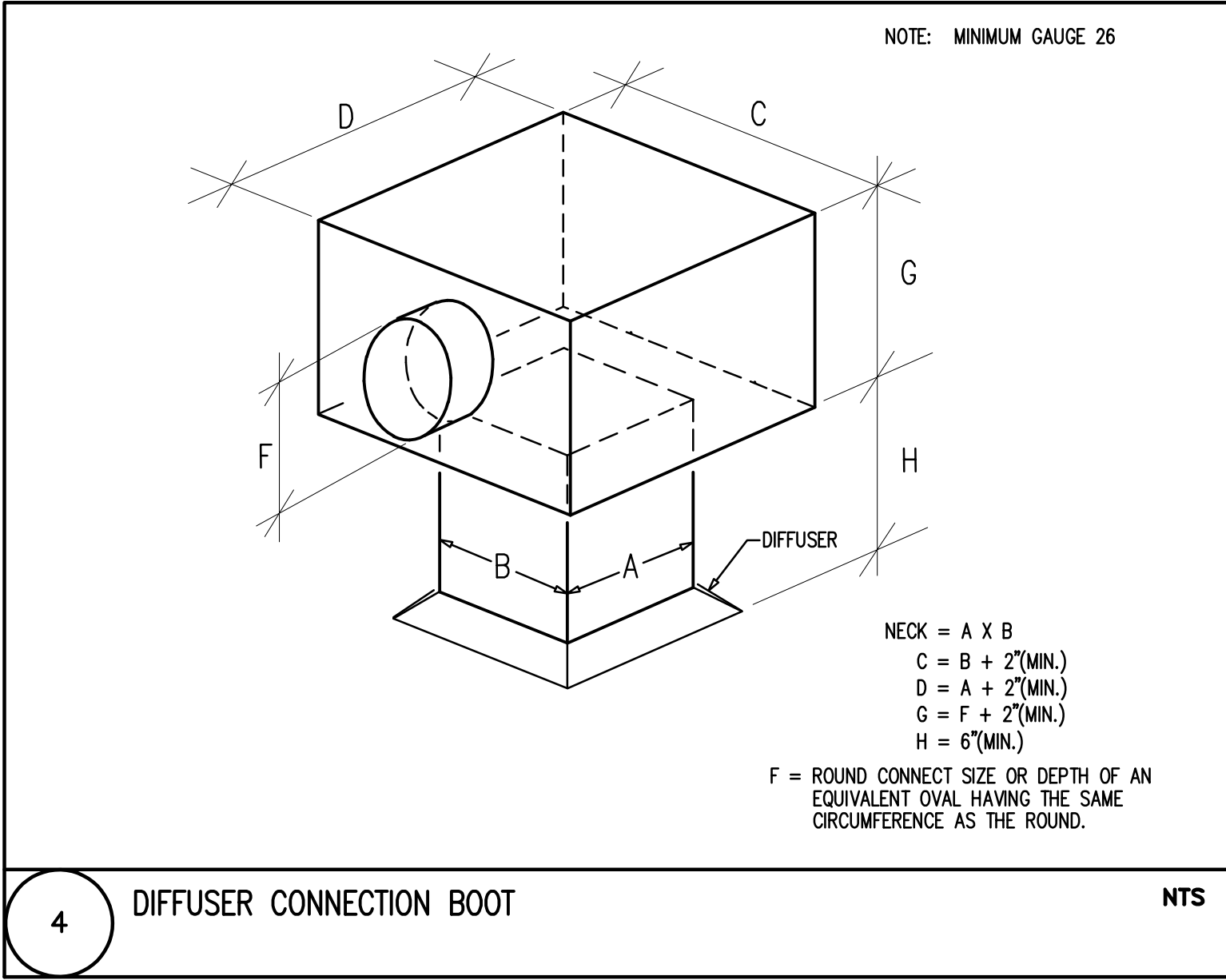
2 DUCT HANGER

NTS



3 OPPOSED BLADE VOLUME DAMPER (OBD)

NTS



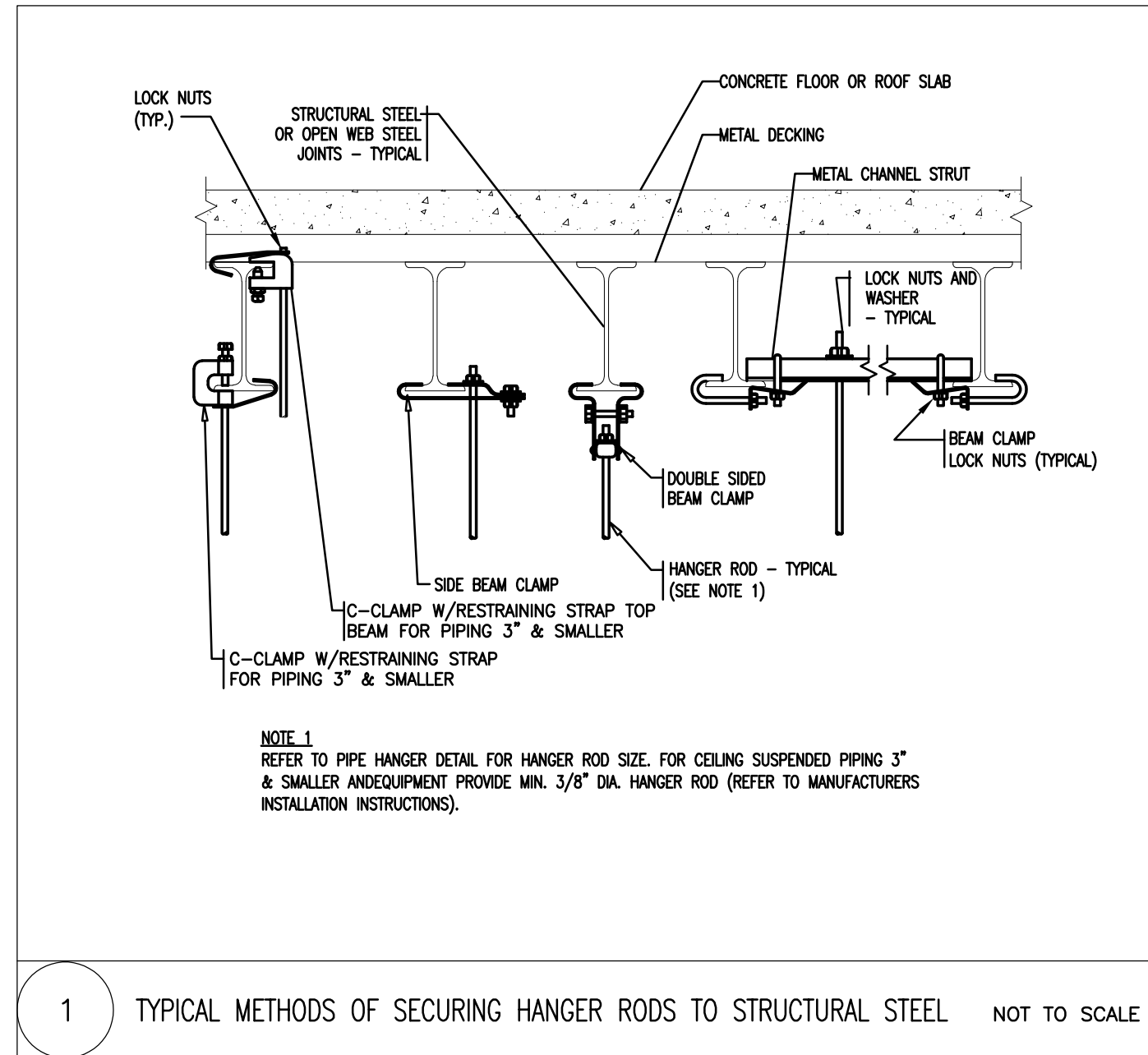
4 DIFFUSER CONNECTION BOOT

NTS

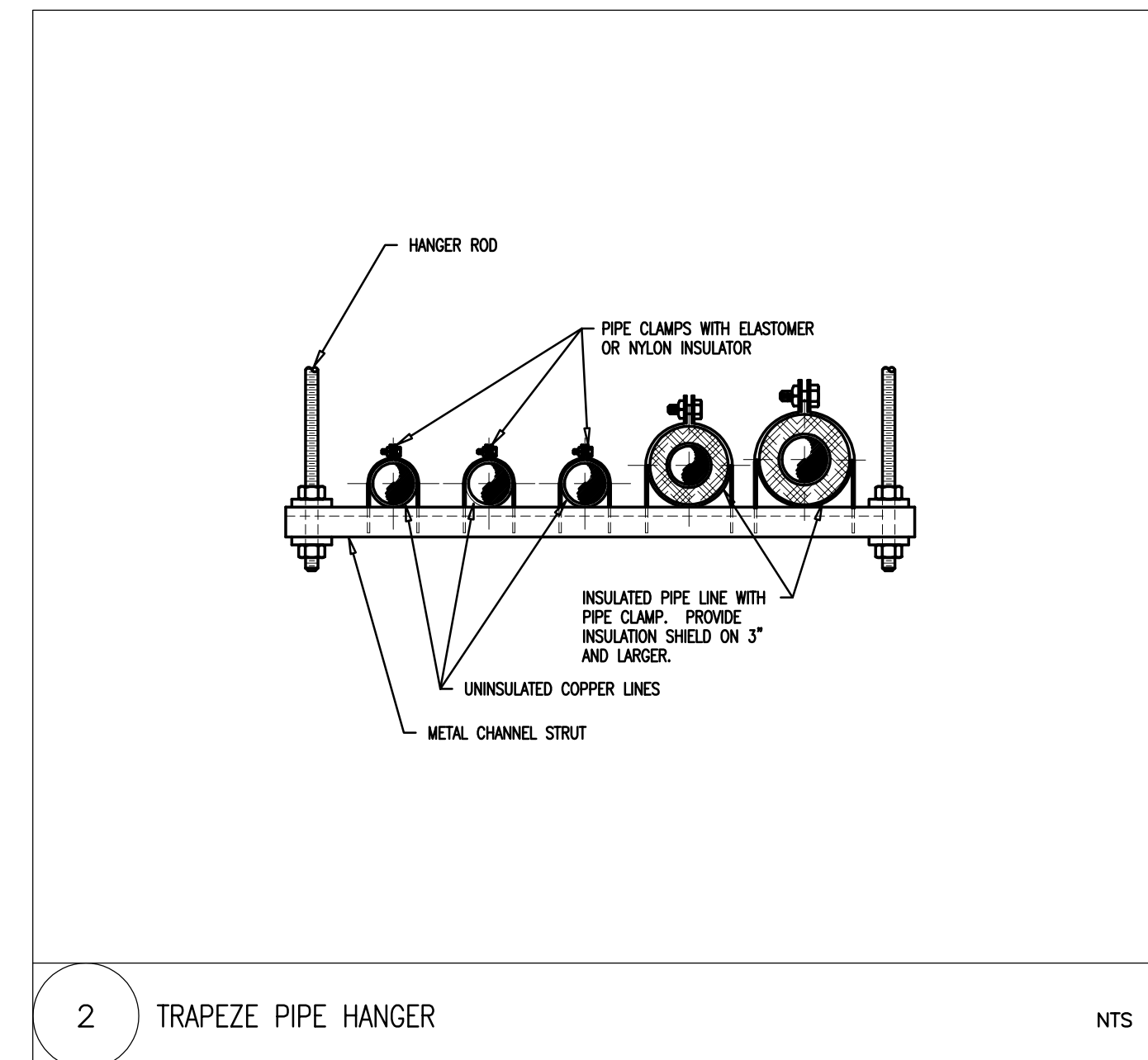
№	DATE	COMMENTS

PLUMBING LEGEND, SYMBOLS AND ABBREVIATIONS

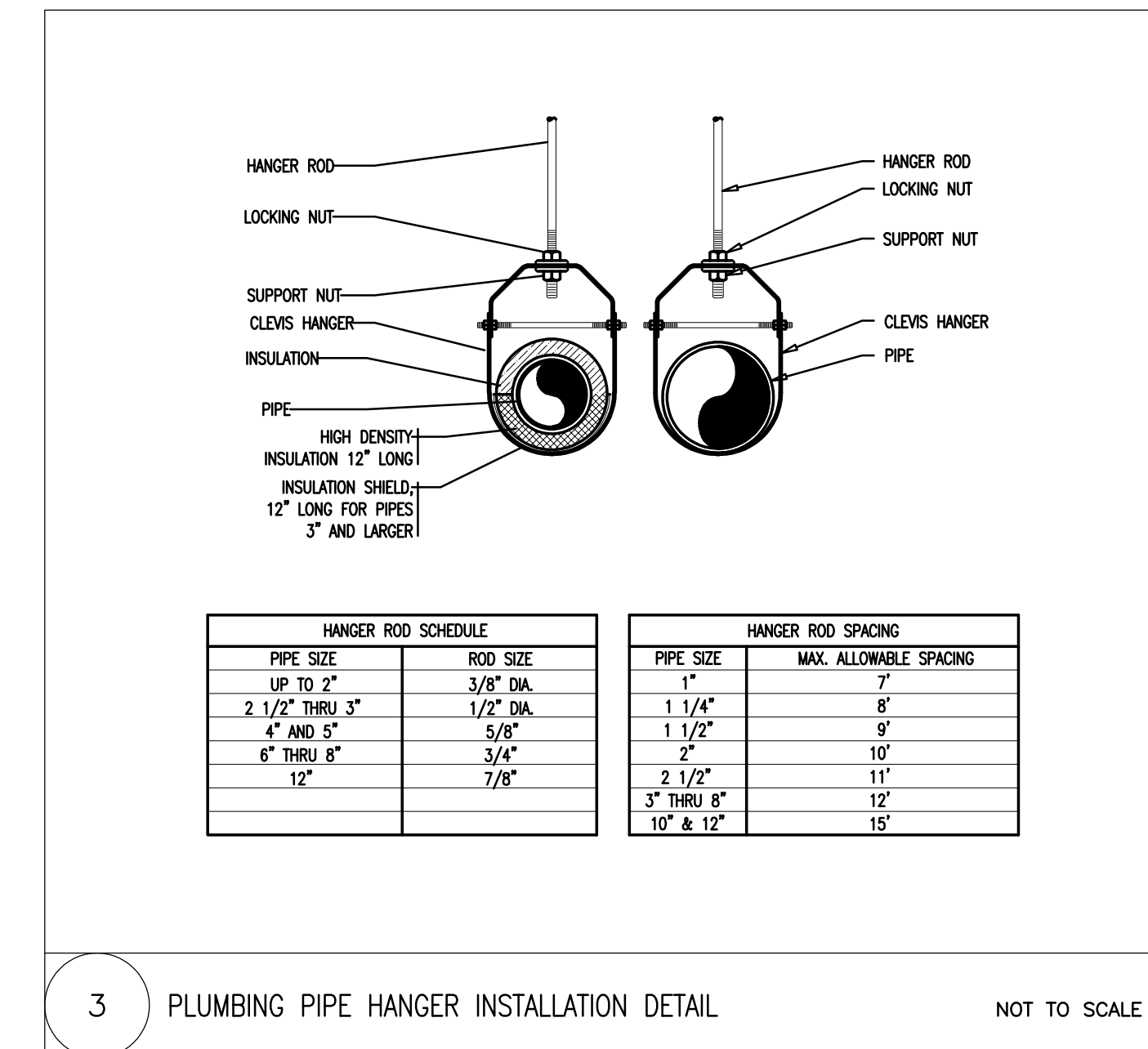
	CTE	CONNECT TO EXISTING
	LA	LABORATORY AIR
	OX	OXYGEN
	N2	NITROGEN - LOW PRESSURE
	DROP	PIPE DROP



1 TYPICAL METHODS OF SECURING HANGER RODS TO STRUCTURAL STEEL NOT TO SCALE



2 TRAPEZE PIPE HANGER NTS



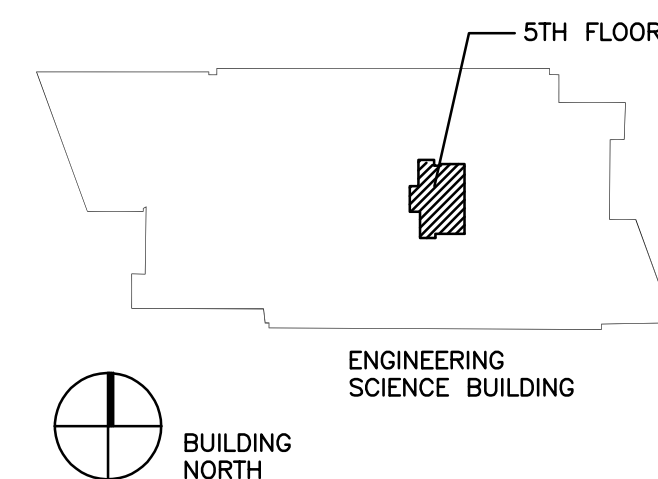
3 PLUMBING PIPE HANGER INSTALLATION DETAIL NOT TO SCALE

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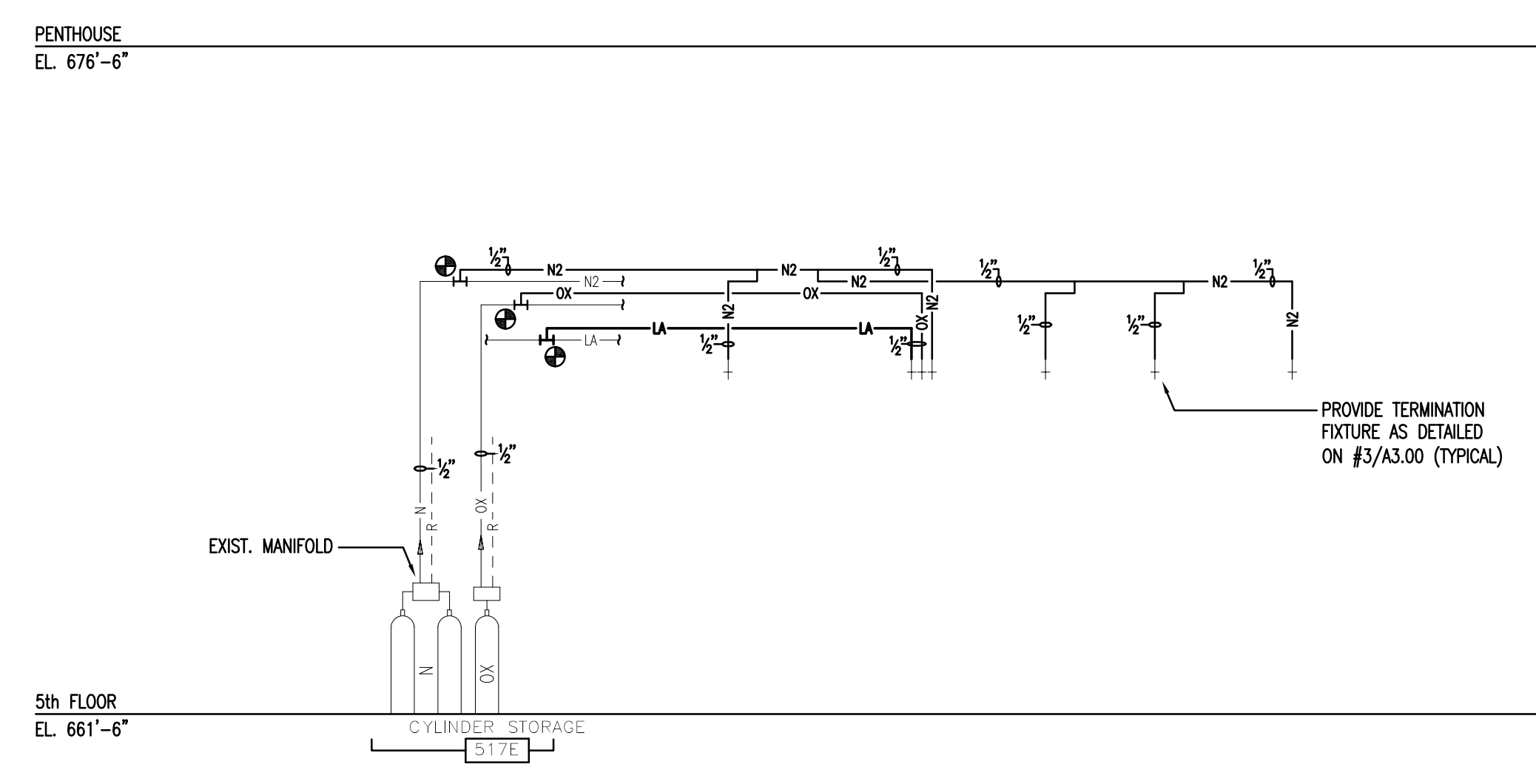
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ISO 7 CLEANROOM M HAN

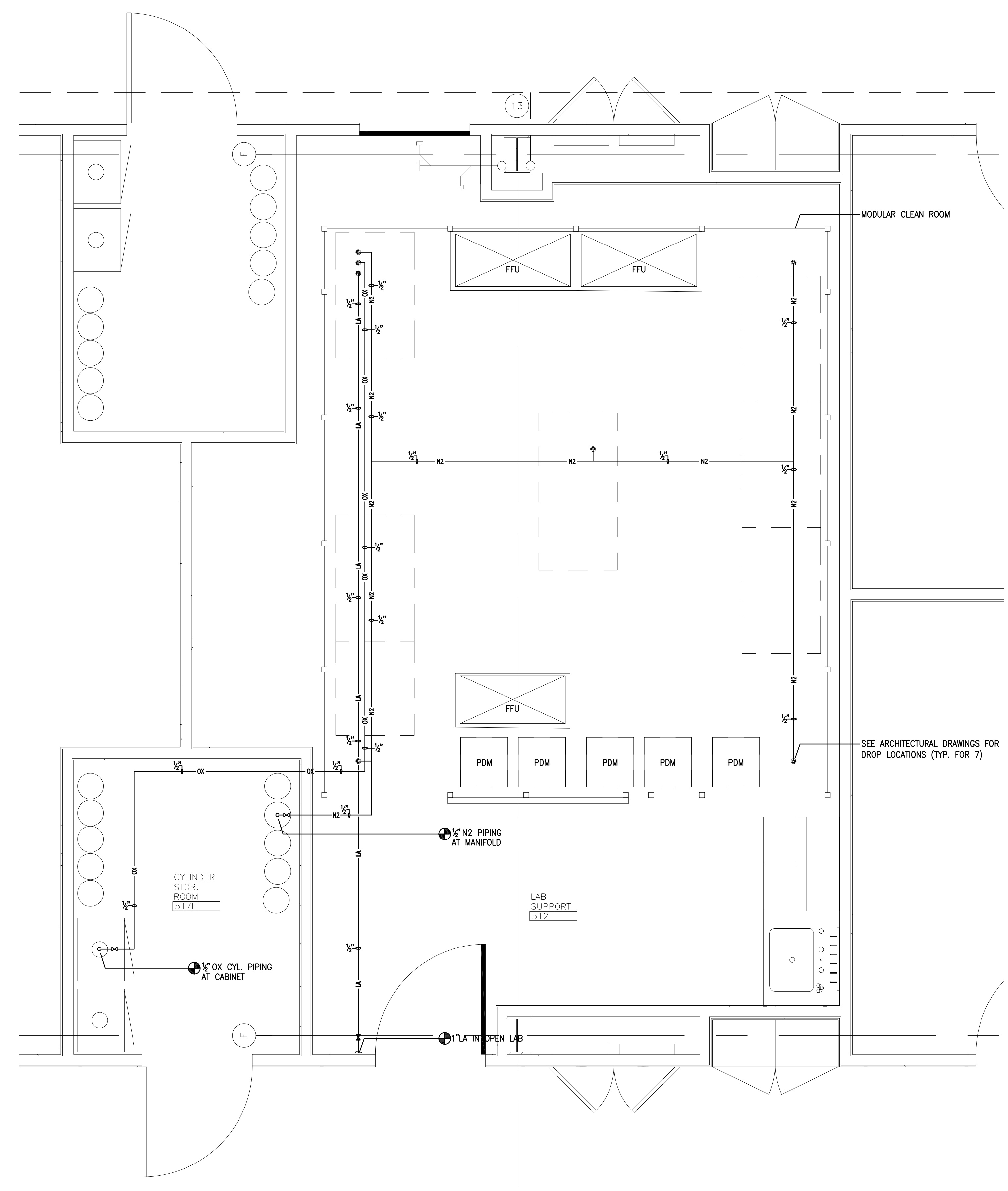
Drawing Title:
PLUMBING –
LEGEND AND DETAILS

PROJECT №: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: NOT TO SCALE

PO.00



02 PLUMBING RISER DIAGRAM
SCALE: NOT IN SCALE

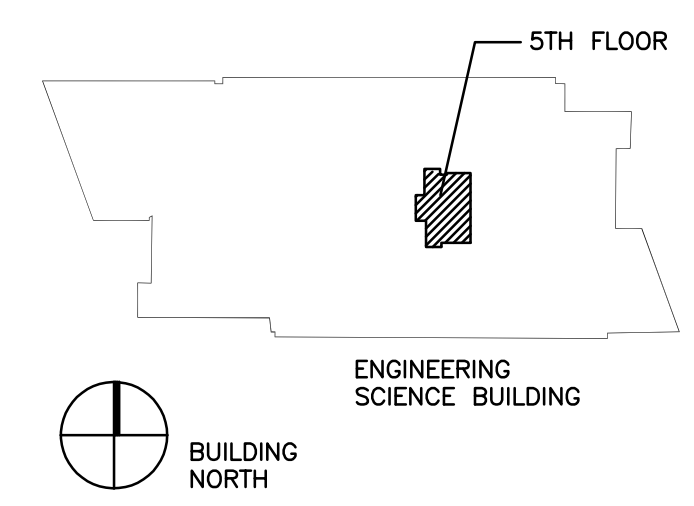


01 CLEAN ROOM PLUMBING PLAN
SCALE: 1/2" = 1'-0"

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Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
PLUMBING PLAN – FIFTH FLOOR CLEAN ROOM AND RISER DIAGRAM

PROJECT №: 182200	DATE: 4/8/19
PHASE: BID DOCUMENTS	SCALE: AS NOTED

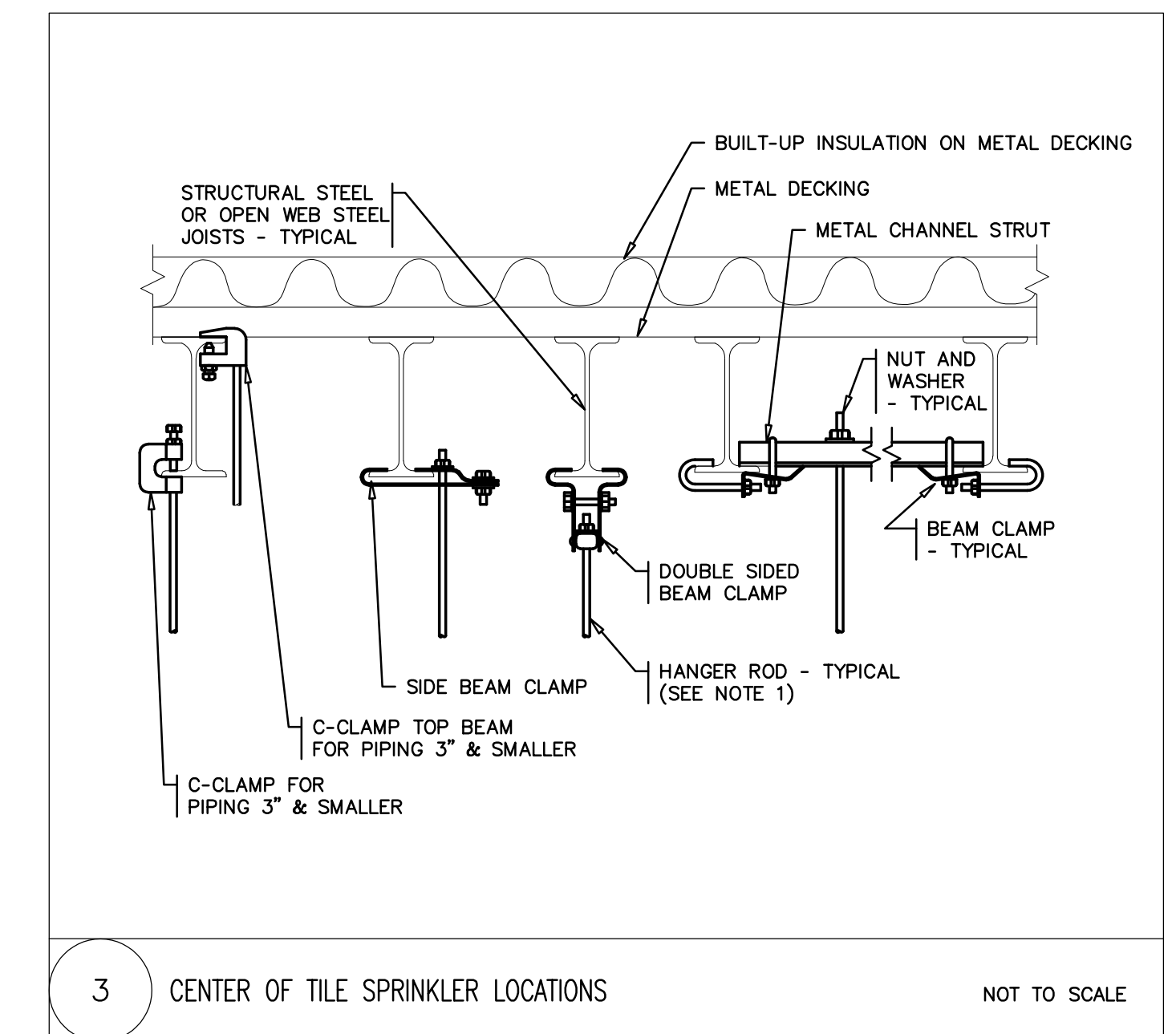
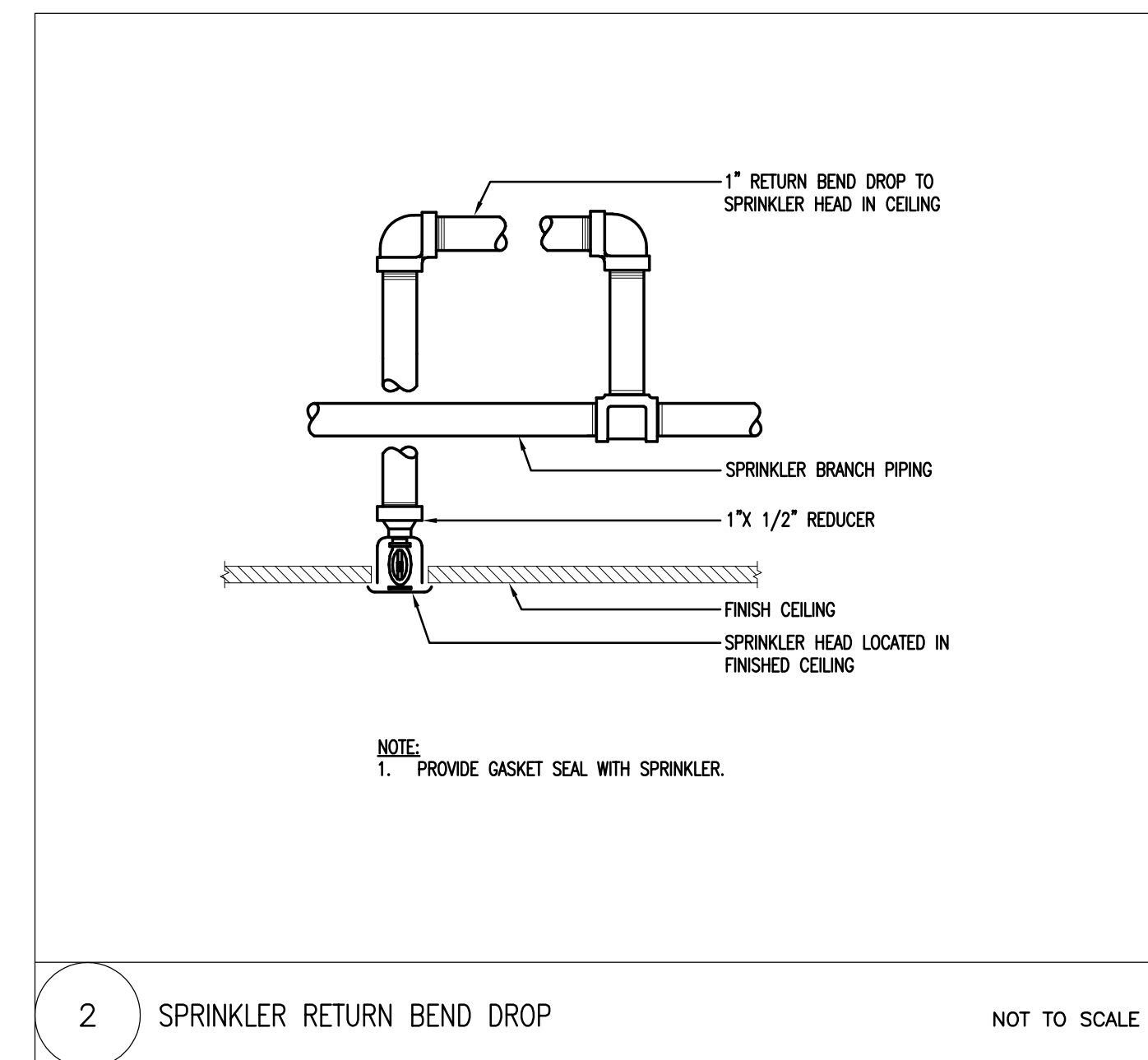
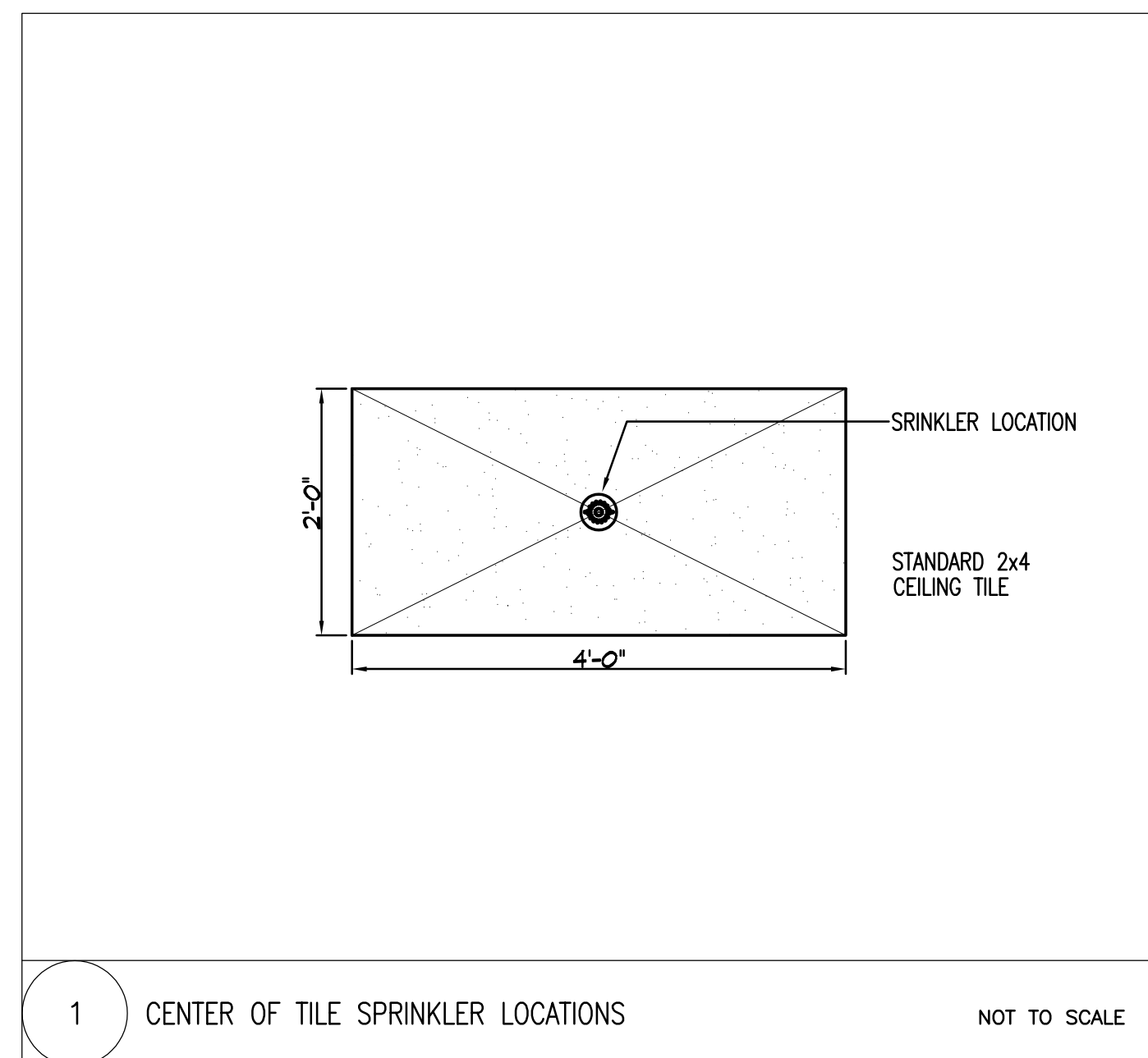
P1.00

FIRE PROTECTION GENERAL NOTES

1. THE BUILDING SHALL BE FULLY SPRINKLERED BASED ON NFPA 13, LATEST EDITION.
2. SPRINKLER SPACING SHALL BE BASED ON ORDINARY HAZARD GROUP 1 OCCUPANCY (130 SQ. FT. PER SPRINKLER) IN ADMINISTRATIVE SPACE, CORRIDORS, TOILET ROOMS, LABS, MECHANICAL AND STORAGE ROOMS.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR SPRINKLER HEAD TYPES AND LOCATIONS. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR DESIGN OF SPRINKLER COVERAGE.
4. PROVIDE OWNER STANDARD LABELS ON MECHANICAL AND SPRINKLER ROOM DOORS, INDICATING ACCESS TO FIRE PROTECTION EQUIPMENT.
5. HYDRAULIC DATA SHALL BE DETERMINED BY PERFORMING A HYDRANT FLOW TEST. THE TEST SHALL BE CONDUCTED BY THE CONTRACTOR.
6. SHOP DRAWINGS SHALL RECEIVE LOCAL AUTHORITY HAVING JURISDICTION AND OWNER'S INSURANCE COMPANY APPROVAL PRIOR TO ANY FABRICATION OF THE MATERIALS FOR THE FIRE PROTECTION SYSTEM. APPROVED SHOP DRAWINGS, INCLUDING WORKING PLANS AND CALCULATIONS WITH COVER LETTER SHALL BE FORWARDED TO THE LOCAL AUTHORITY HAVING JURISDICTION FOR FINAL APPROVAL.
7. THE FIRE PROTECTION DESIGN AND INSTALLATION SHALL COMPLY WITH ALL STATE AND LOCAL CODES.
8. PROVIDE COMPLETE SPRINKLER PROTECTION BELOW ALL DUCTS AND OBSTRUCTIONS 48" AND WIDER.

FIRE PROTECTION LEGEND, SYMBOLS AND ABBREVIATIONS

- CTE CONNECT TO EXISTING
- SPR — WET SPRINKLER PIPE
- PENDENT SPRINKLER
- UPRIGHT SPRINKLER
- DN PIPE DOWN
- DROP PIPE DROP
- UP PIPE UP
- NTS NOT TO SCALE
- TYP TYPICAL
- ////// EXISTING TO REMAIN

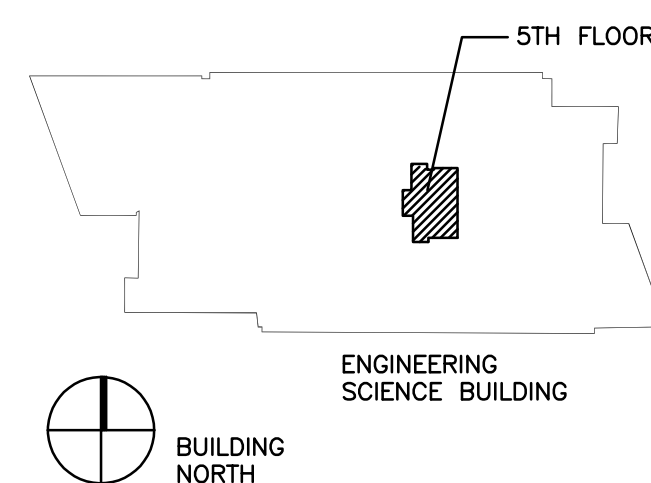


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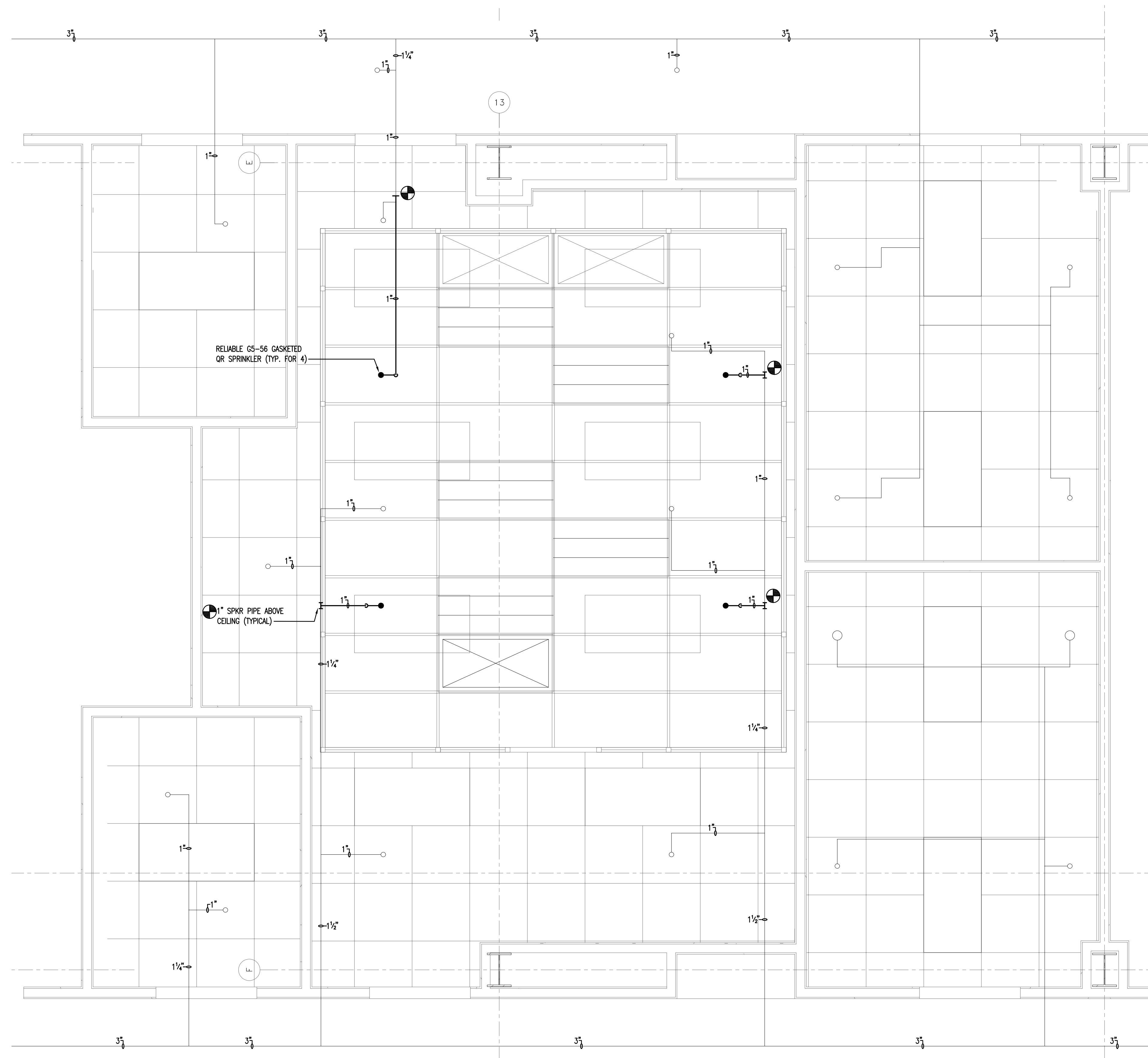
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Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
**FIRE PROTECTION -
LEGEND AND DETAILS**

PROJECT №: 182200	DATE: 4/8/19
PHASE: BID DOCUMENTS	SCALE: NOT TO SCALE

FPO.00



01 CLEAN ROOM FIRE PROTECTION PLAN
SCALE: 1/2" = 1'-0"

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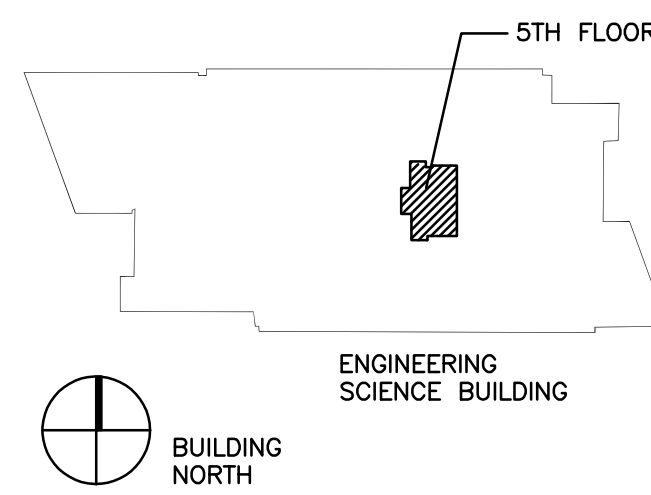
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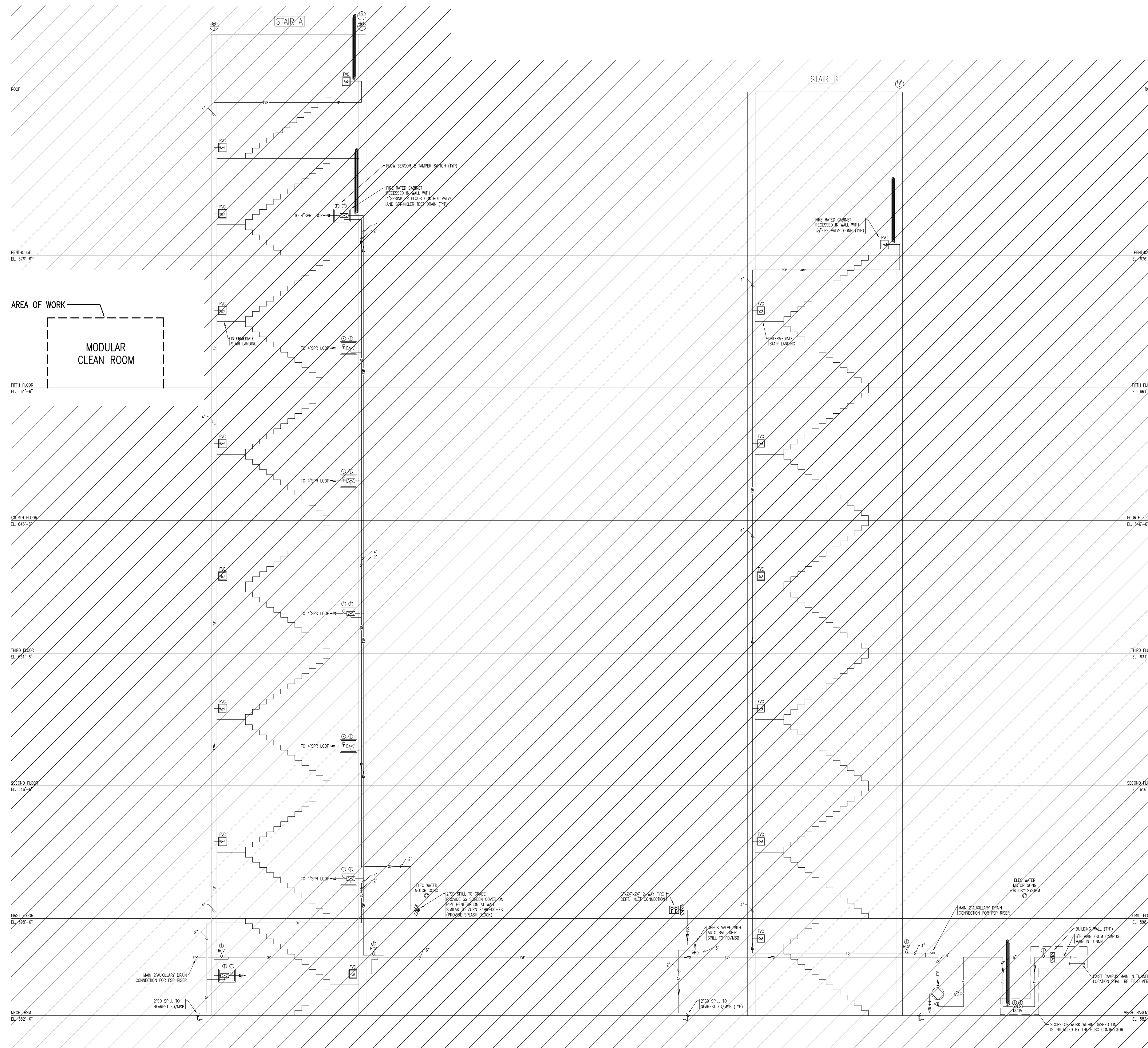
ISO 7 CLEANROOM M HAN

Drawing Title:

FIRE PROTECTION PLAN –
FIFTH FLOOR CLEAN ROOM

PROJECT Nº: 182200	DATE: 4/8/19
PHASE: BID DOCUMENTS	SCALE: AS NOTED

FP1.00



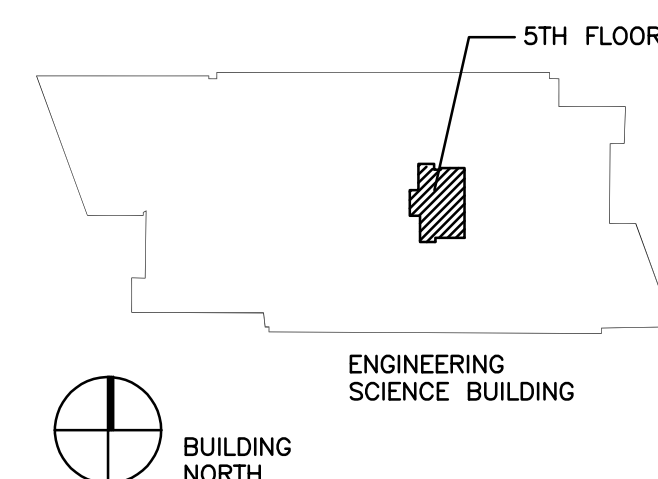
01 FIRE PROTECTION RISER DIAGRAM
SCALE: NOT TO SCALE

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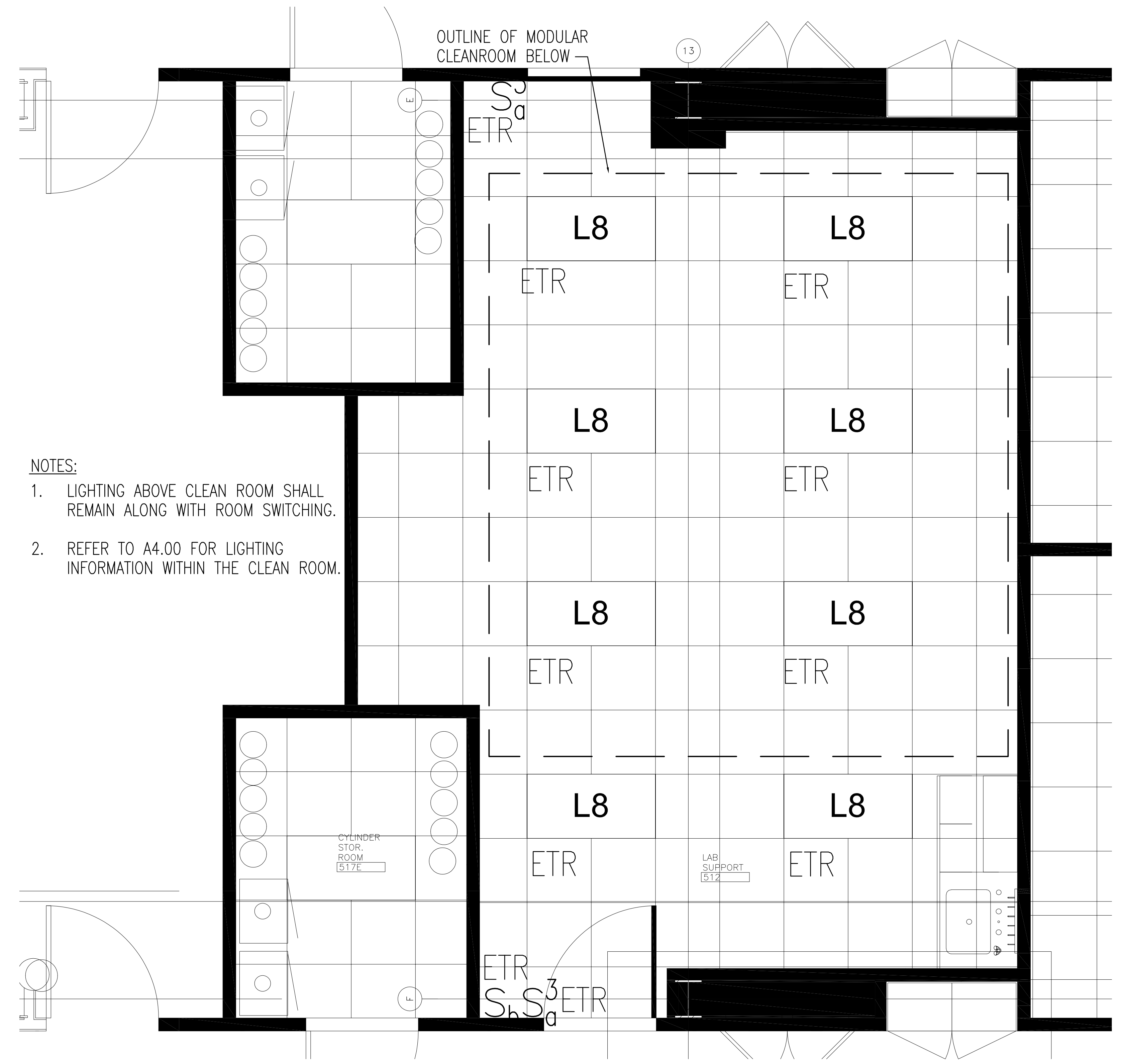
Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
FIRE PROTECTION –
RISER DIAGRAM

PROJECT NO: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: AS NOTED

FP2.00

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- NOTES:**
1. LIGHTING ABOVE CLEAN ROOM SHALL REMAIN ALONG WITH ROOM SWITCHING.
 2. REFER TO A4.00 FOR LIGHTING INFORMATION WITHIN THE CLEAN ROOM.

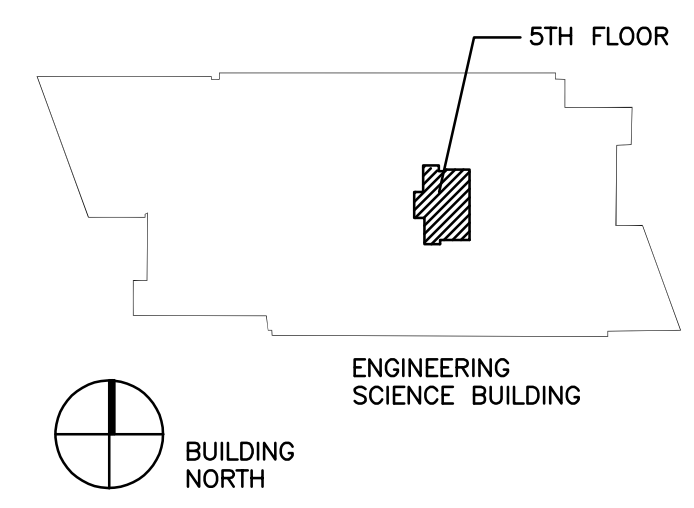
01 EXISTING LAB LIGHTING PLAN
SCALE: 1/2" = 1'-0"



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Project:
ISO 7 CLEANROOM M HAN

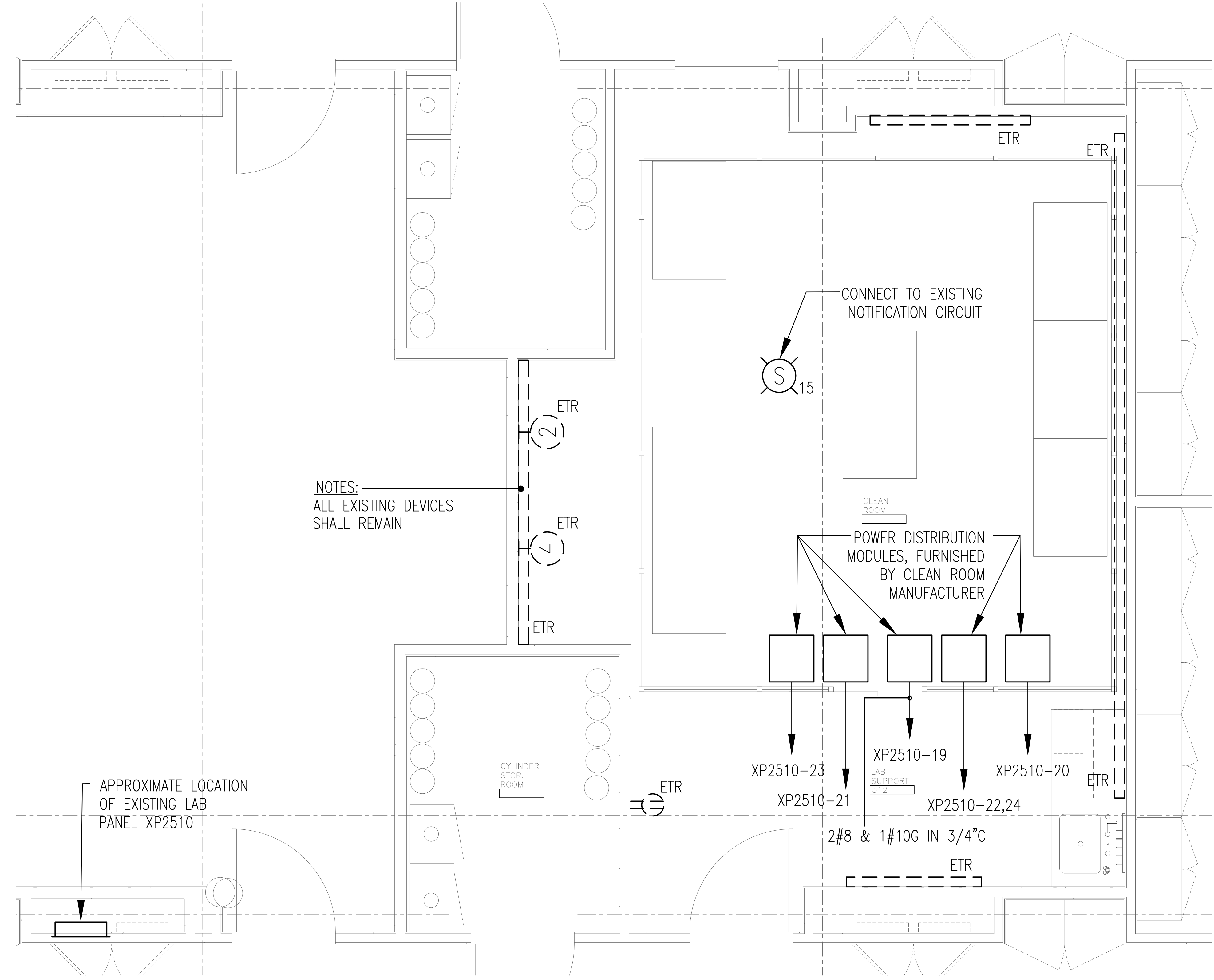
Drawing Title:
LIGHTING PLAN – FIFTH FLOOR CLEAN ROOM

PROJECT NO: 182200	DATE: 4/8/19
PHASE: BID DOCUMENTS	SCALE: AS NOTED

E1.00

VOLTAGE:	120/208	PHASE:	3 WIRE:	4	TOTAL WATTS. L1	11,020	PANEL NO.	EXISTING XP2510
MAIN BUS:	100 AMPS				TOTAL WATTS. L2	8,880		
MAIN BREAKER:	A FRAME		A TRIP		TOTAL WATTS. L3	8,880	LOC.	OPEN WET LAB 517
MOUNTING:	SURFACE	NOTES:			TOTAL WATTS	28,560		

DIRECTORY	WATTS LOAD			CKT.	AMPS	L1 L2 L3			AMPS	CKT.	WATTS LOAD			DIRECTORY
	L1	L2	L3			Y	Y	Y			L1	L2	L3	
R Existing	1,000			1	20				20	2	1,000			Existing
R Existing		1,000		3	20				20	4		1,000		Existing
R Existing			1,000	5	20				20	6			1,000	Existing
R Existing	1,000			7	20				20	8	1,000			Existing
R Existing		900		9	20				20	10		720		Existing
R Existing			900	11	20				20	12			720	Existing
R Existing	900			13	20				20	14	720			Existing
R Existing		720		15	20				20	16		720		Existing
R Existing			720	17	20				20	18			540	Existing
R Clean Room FPU, LTG circuit	3,500			19	35				20	20	1,900			Clean Room General Recep Ckt
R Clean Room General Recep Ckt		1,900		21	20				20	22		1,900		20A Dedicated Receptacle
R Clean Room General Recep Ckt			1,900	23	20				20	24			1,900	20A Dedicated Receptacle
R SPARE				25	20				20	26				SPARE
R SPARE				27	20				20	28				SPARE
R SPARE				29	20				20	30				SPARE
R SPARE				31	20				20	32				SPARE
R SPARE				33	20				20	34				SPARE
R SPARE				35	30/2				20	36				SPARE
R SPARE				37					20	38				SPARE
R SPARE				39	30/2				20	40				SPARE
R SPARE				41					20	42				SPARE



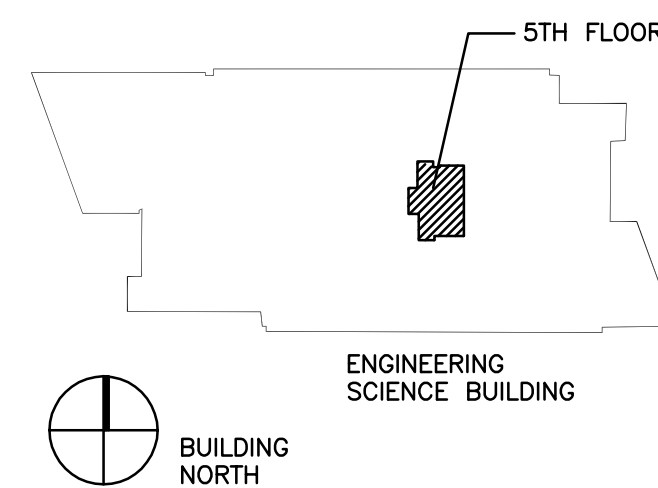
01 CLEAN ROOM POWER NEW YORK PLAN WITH EXISTING CONDITIONS
SCALE: 1/2" = 1'-0"



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Project:
ISO 7 CLEANROOM M HAN

Drawing Title:
POWER PLAN AND SCHEDULE – FIFTH FLOOR CLEAN ROOM

PROJECT NO: 182200 DATE: 4/8/19
PHASE: BID DOCUMENTS SCALE: AS NOTED

E2.00