

**BALCH HALL RENOVATION**

**Cornell University**

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Ithaca, New York 14853

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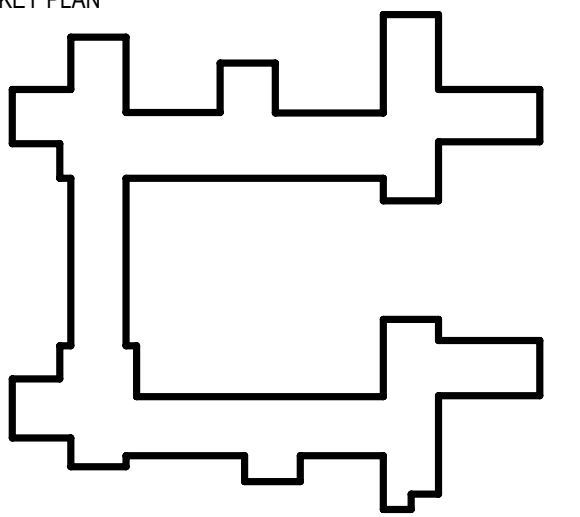
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2 | Bulletin #2

05/23/2022

**MECHANICAL SCHEDULES - SHEET 1**

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DRAWN: MJ DATE: 11/05/2021

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DRAWING NO.:

**M0.03**

**ENERGY RECOVERY VENTILATOR SCHEDULE**

ITEM	TYPE	NO.	MANUFACTURER	MODEL NO.	LOCATION	AREA SERVED	SUPPLY FAN							RETURN/RELIEF FAN									
							SUPPLY AIRFLOW [CFM]	DESIGN OUTSIDE AIRFLOW [CFM]	MINIMUM OUTSIDE AIRFLOW [CFM]	TOTAL S.P. [IN W.C.]	EXT S.P. [IN W.C.]	FAN SPEED [RPM]	BHP/MOTOR	HP/MOTOR	FAN CONFIG	FAN QTY.	VFD	RETURN AIRFLOW [CFM]	TOTAL S.P. [IN W.C.]	EXT S.P. [IN W.C.]	FAN SPEED [RPM]	BHP	HP
ERV	1		VENTROL	CSU-10K HW/CHW	NORTH MECH ROOM	NORTH BALCH	10300	10300	8000	4.95	1.50	1760	5.7	7.5	FANWALL	2	YES	7300	2.59	1.50	1760	2.3	3
ERV	2		VENTROL	CSU-7K HW/CHW	SOUTH MECH ROOM	SOUTH BALCH	7100	7100	6500	5.66	1.50	1750	4.6	5.0	FANWALL	2	YES	5000	3.03	1.50	1750	1.8	2

**ENERGY RECOVERY VENTILATOR SCHEDULE 2**

ITEM	TYPE	NO.	COIL PERFORMANCE			COOLING COIL								PREHEAT COIL													
			TOTAL CAP [MBH]	SENS CAP [MBH]	MAX VEL [FPM]	AIR				CHILLED WATER				HEATING COIL DESIGN AIRFLOW [CFM]	COMBINED COIL PERFORMANCE TOTAL CAP [MBH]	AIR			HOT WATER								
			MAX P.D. [IN W.C.]	DB [°F]	WB [°F]	DB [°F]	WB [°F]	CHW FLOW [GPM]	ENT TEMP [°F]	LVG TEMP [°F]	MAX P.D. [FT W.C.]	FLUID SYSTEM	CONDENSATE P-TRAP HEIGHT [IN]			MAX VEL [FPM]	MAX P.D. [IN W.C.]	ENT DB [°F]	LVG DB [°F]	HHW FLOW [GPM]	ENT TEMP [°F]	LVG TEMP [°F]	MAX P.D. [FT W.C.]	FLUID SYSTEM			
ERV	1		401.0	283.9	400	0.50	80	67	55	54	47	47	67	10.00	WATER	1'-0"	10300	779.6	400	0.00	-5	65	57	130	100	5.25	40% GLYCOL
ERV	2		269.0	75.4	400	0.50	80	67	55	54	32	47	67	10.00	WATER	1'-0"	7100	537.4	400	0.00	-5	65	39	130	100	3.00	40% GLYCOL

**ENERGY RECOVERY VENTILATOR SCHEDULE 3**

ITEM	TYPE	NO.	COMBINED ELECTRICAL POC				LIGHTS & RECEPTACLES [SEPARATE 120 V POWER]		PRE-FILTER		FINAL FILTER				INTERNAL VIBRATION ISOLATION FOR ALL FANS	OPERATING WEIGHT [LBS]	NOTES
			V	PH	HZ	MCA [AMPS]	FLA [AMPS]	MAX. FACE VEL. [FPM]	MERV RATING	MAX. FACE VEL. [FPM]	MERV RATING	RATED "DIRTY" PRESSURE DROP [IN W.G. @ FPM]	MIN. STATIC DEFL. [IN]				
ERV	1		208	3	60	80	75	Yes	500	8	500	13	0.30	0'-2"	13330		
ERV	2		208	3	60	59	55	Yes	500	8	500	13	0.30	0'-2"	10422		

**AIR-AIR HEAT EXCHANGER SCHEDULE**

ITEM	TYPE	NO.	AIRFLOW [CFM]	MAX AIR PD [IN WC]	SUMMER OUTSIDE AIR				SUMMER EXHAUST AIR				EFFECTIVENESS	WINTER OUTSIDE AIR				WINTER EXHAUST AIR				EFFECTIVENESS
					ENT	LVG	ENT	LVG	ENT	LVG	ENT	LVG		ENT	LVG	ENT	LVG					
					DB [°F]	WB [°F]	DB [°F]	WB [°F]	DB [°F]	RH [%]	LVG DB [°F]	SENS. [%]	DB [°F]	WB [°F]	DB [°F]	WB [°F]	DB [°F]	RH [%]	LVG DB [°F]	SENS. [%]		
ERV	1		10300	1	88	73	80	67	75	51.60%	86	85.9	-5	-5	42	42	72	54.80%	3	85.9		
ERV	2		7100	1	88	73	80	67	63	51.80%	87	89.3	-5	-5	43	43	72	54.80%	3	89.3		

**EXISTING AIR HANDLING UNIT SCHEDULE**

ITEM	TYPE	NO.	MANUFACTURER	LOCATION	AREA SERVED	SUPPLY FAN		PREHEAT COIL							NOTES
						DESIGN OUTSIDE AIRFLOW [CFM]	MAX. VEL [FPM]	AIR		HOT WATER					
						MAX. VEL [FPM]	MAX P.D. [IN W.C.]	ENT DB [°F]	LVG DB [°F]	HHW FLOW [GPM]	ENT TEMP [°F]	LVG TEMP [°F]	MAX P.D. [FT W.C.]	FLUID SYSTEM	
AHU		ETR	TRANE	TATKON MECH ROOM	TATKON	3750	500	0.26	-5	70	22	130	100	1.25	40% GLYCOL

- NOTES:
1. BASE SCOPE IS REPLACEMENT OF HEATING COIL
  2. EXISTING PREHEAT COIL IS ASSUMED TO BE STEAM. CONTRACTOR TO VERIFY IN FIELD STATUS OR REPORT
  3. ADD ALTERNATE SCOPE IS TO REPLACE UNIT IN KIND.

**DUCT SILENCER SCHEDULE**

ITEM	TYPE	NO.	MANUFACTURER	MODEL NO.	EQUIPMENT SERVED	AIRFLOW [CFM]	MAX. PRESSURE DROP [IN WC]	MINIMUM DYNAMIC INSERTION LOSS IN dB AT +1000 FPM FACE VELOCITY							NOTES	
								63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz		8 kHz
DS	1		VIBRO-ACOUSTICS	T-REFL-ULV-25792	FCU RETURN	250	0.15	13	29	39	41	42	40	40	23	1,2,3,4,5
DS	2		VIBRO-ACOUSTICS	REFL-ULV-25792	FCU SUPPLY	250	0.15	11	19	32	30	40	40	34	26	1,2,3,4,5
DS	3		VIBRO-ACOUSTICS	REFL-ULV-25792	FCU RETURN	250	0.15	11	19	32	30	40	40	34	26	1,2,3,4,5
DS	4		VIBRO-ACOUSTICS	REFL-MLV-25792	FCU SUPPLY	250	0.15	13	28	39	41	42	40	36	27	1,2,3,4,5
DS	5		VIBRO-ACOUSTICS	RD-MV-F1	FCU SUPPLY	250	0.15	13	29	39	41	42	40	40	23	1,2,3,4,5

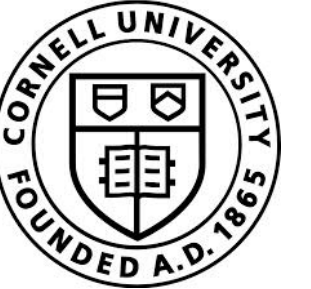
- NOTES:
1. T-REFL = TEE RECTANGULAR FILMED LINED ELBOW SILENCER, REFL= RECTANGULAR FILM LINED ELBOW SILENCER
  2. MAXIMUM PRESSURE DROP WITH SYSTEM EFFECTS = SILENCER PRESSURE DROP PER ASTM E477-13 + SYSTEM EFFECTS FOR NEARBY DUCT ELEMENTS
  3. FILM LINING SHALL BE VIBAR FILM

**FAN SCHEDULE**

ITEM	TYPE	NO.	MANUFACTURER	MODEL NO.	LOCATION	AREA SERVED	AIR FLOW [CFM]	E.S.P. [IN W.C.]	FAN [RPM]	MOTOR DATA					VIBRATION ISOLATION					
										BHP	HP	V	PH	HZ	SPEED CONTROL	MOUNT TYPE	MIN. STATIC DEFL. [IN]	OPERATING WEIGHT [LBS]	NOTES	
LX	1		GREENHECK	SQ-160-VG	1112 - LAUNDRY	2200	2200	0.5	1268	0.48	0.75	208	1	60	DIRECT DRIVE ECM	SPRING HANGERS	2"	150	1,2,3,4	
LX	2		GREENHECK	CSP-A2150	2207 - LAUNDRY	2207 - LAUNDRY	1780	1780	0.5	790	0.75	1.75	115	1	60	DIRECT DRIVE ECM	SPRING HANGERS	2"	68	1,2,3,4
TX	1		GREENHECK	SQ-60-VG	BELOW GRADE TUNNELS	BELOW GRADE TUNNELS	75	75	0.25	1550	0.10	0.25	115	1	60	DIRECT DRIVE ECM	SPRING HANGERS	2"	34	1,2,3,4
TX	2		GREENHECK	SQ-60-VG	BELOW GRADE TUNNELS	BELOW GRADE TUNNELS	75	75	0.25	1550	0.10	0.25	115	1	60	DIRECT DRIVE ECM	SPRING HANGERS	2"	34	1,2,3,4

- NOTES:
1. FANS TO BE PROVIDED W/ EC MOTORS.
  2. PROVIDE WITH MOTORIZED ISOLATION DAMPER.
  3. PROVIDE WITH 24" INSULATED ROOF CURB.
  4. PROVIDE WITH FACTORY MOUNTED CONTROLLER WITH 0-10 V SPEED CONTROL INPUT FROM BAS.
  5. PROVIDE WITH FACTORY MOUNTED DISCONNECT SWITCH.

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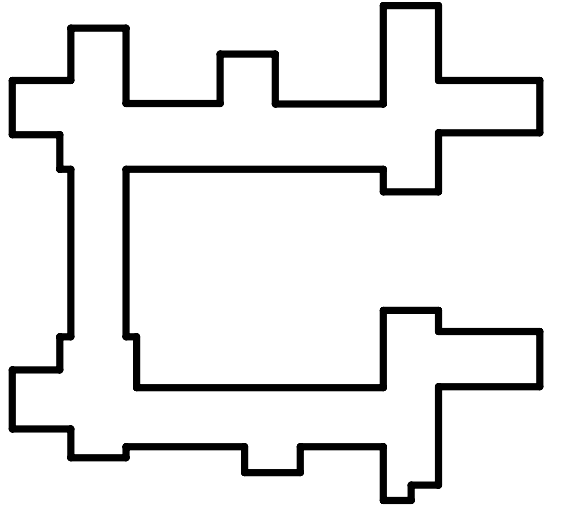
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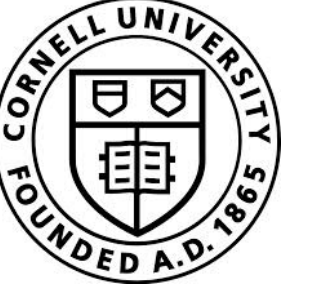
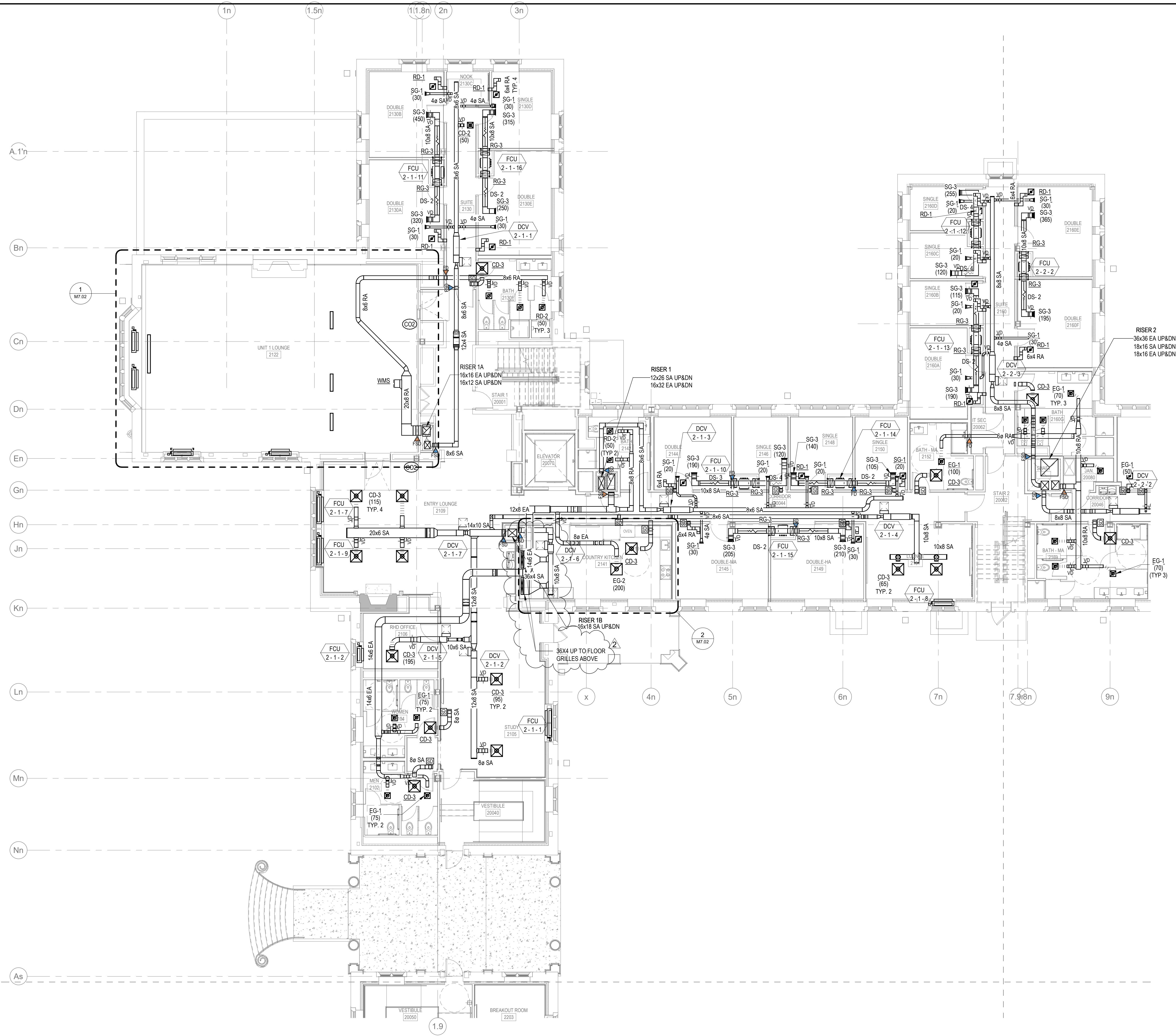
FAN COIL UNIT SCHEDULE

Main table containing unit schedule data with columns for ITEM, TAG, FAN DATA, COOLING COIL, HEATING COIL, MOTOR DATA, FILTER, and VIBRATION ISOLATION.

- NOTES: 1. COORDINATE SUPPORT W/ DIVISION 23. 2. PROVIDE W/ DISCONNECT SWITCH. 3. ALL FCUs SHALL BE PROVIDED W/ OVER FLOW DETECTORS CONFORMING TO UL508 IN THE DRAIN PAN THAT WILL SHUT OFF THE CHW VALVE TO THE EFFECTED UNIT IN THE EVENT OF A PRIMARY DRAIN BLOCKAGE. SENSORS TO BE PROVIDED BY BMS, REFER TO CONTROLS. PRIMARY DRAIN PAN TO BE CAPABLE OF SENSOR INSTALLATION. 4. FCU SHALL BE SELECTED TO MEET PERFORMANCE CRITERIA IN SCHEDULE WITH FAN SPEED NO GREATER THAN MEDIUM SETTING OR AS REQUIRED TO MATCH THE ACOUSTIC PERFORMANCE CRITERIA. SOUND DATA FOR SELECTED FAN SPEED SHALL BE PROVIDED IN THE SUBMITTAL. 5. ALL FCUs TO BE PROVIDED W/ MULTI SPLIT FILTERS NO LONGER THAN 24". 6. ALL FCUs TO BE PROVIDED W/ ELECTRONICALLY COMMUTATED MOTORS. 7. ALL FCUs TO BE REAR RETURN. 8. ALL FCUs TO BE PROVIDED W/ A 1" RETURN FILTER. 9. TWO 1/4 HP MOTORS

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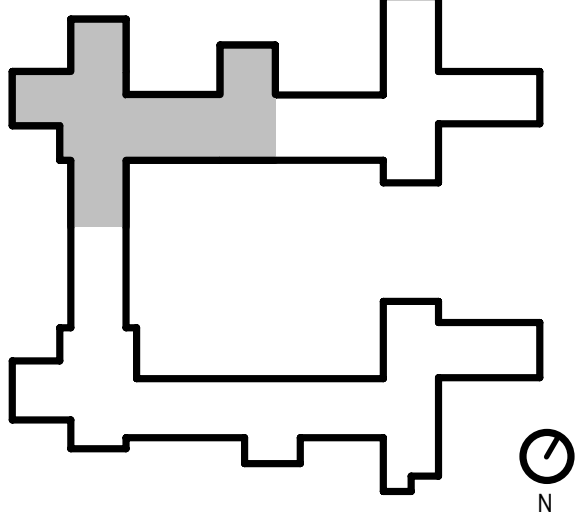
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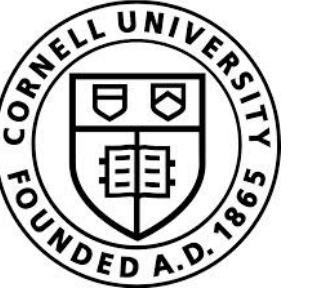
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## MECHANICAL DUCT SECOND FLOOR PLAN - A

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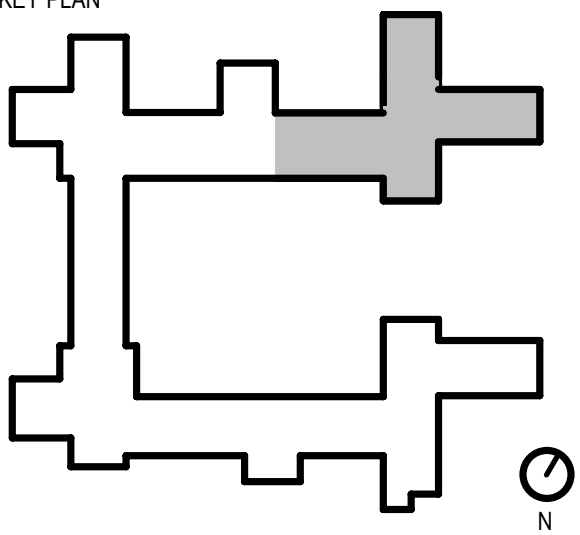
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**MECHANICAL DUCT SECOND  
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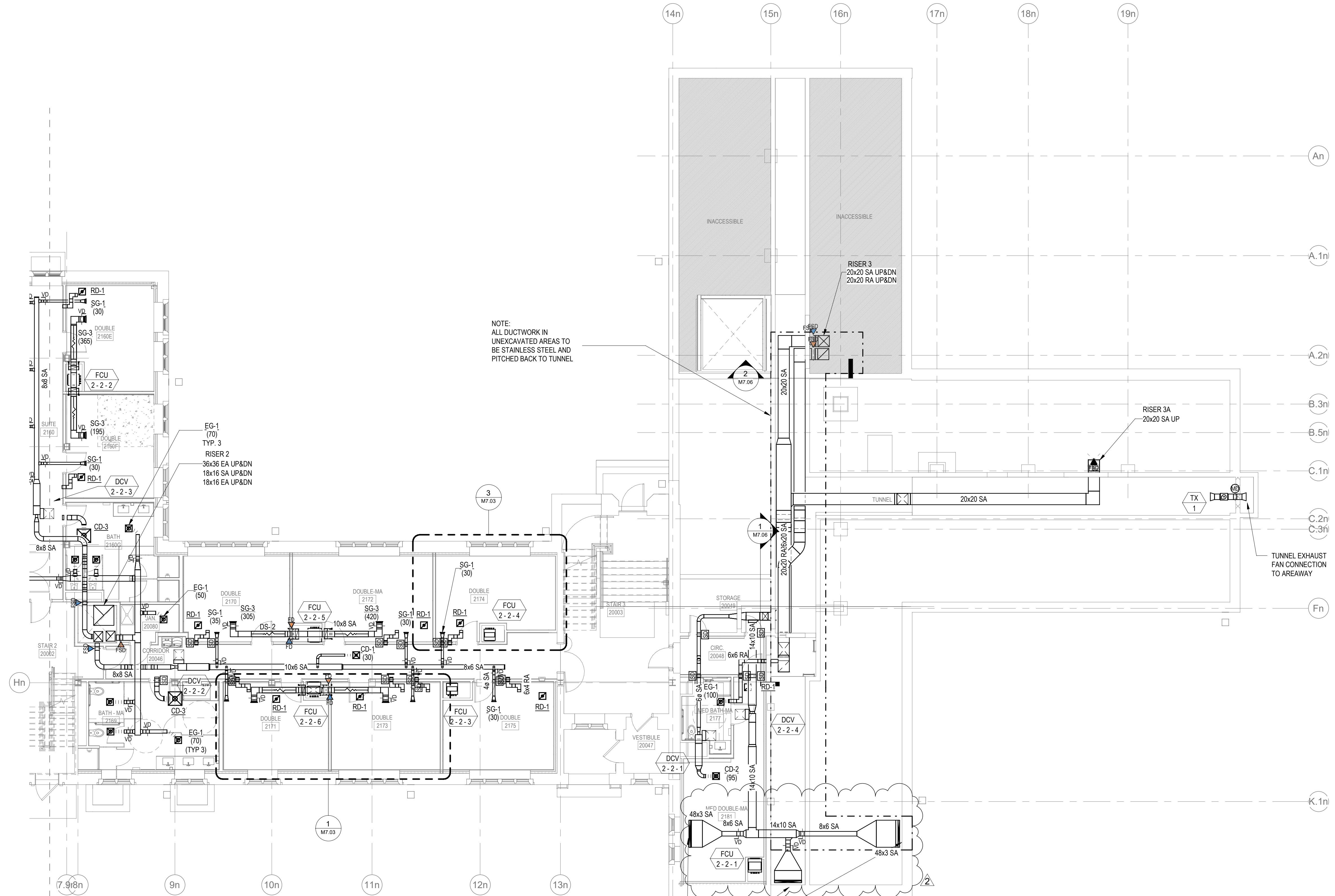
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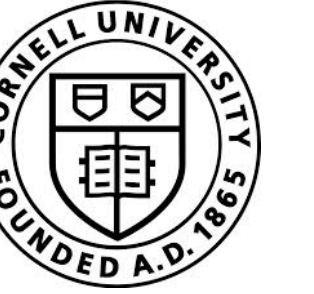
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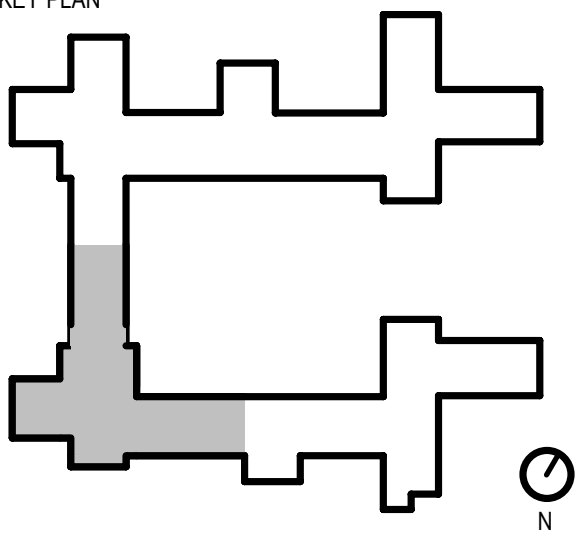
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## MECHANICAL DUCT SECOND FLOOR PLAN - C

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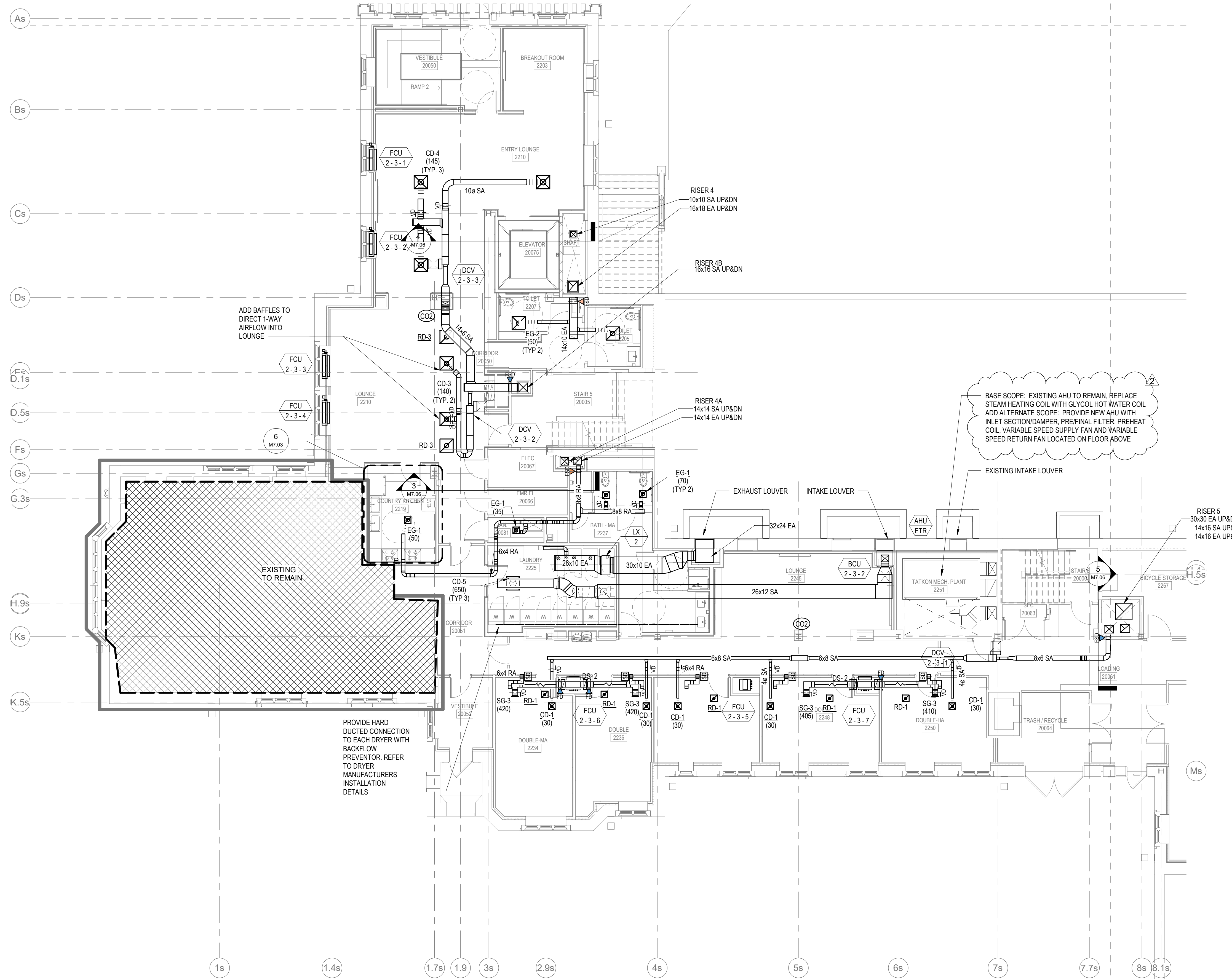
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ADD Baffles TO DIRECT 1-WAY AIRFLOW INTO LOUNGE

EXISTING TO REMAIN

PROVIDE HARD DUCTED CONNECTION TO EACH DRYER WITH BACKFLOW PREVENTOR. REFER TO DRYER MANUFACTURERS INSTALLATION DETAILS

BASE SCOPE: EXISTING AHU TO REMAIN, REPLACE STEAM HEATING COIL WITH GLYCOL HOT WATER COIL. ADD ALTERNATE SCOPE: PROVIDE NEW AHU WITH INLET SECTION DAMPER, PREFINAL FILTER, PREHEAT COIL, VARIABLE SPEED SUPPLY FAN AND VARIABLE SPEED RETURN FAN LOCATED ON FLOOR ABOVE

EXISTING INTAKE LOUVER

EXHAUST LOUVER

INTAKE LOUVER

RISER 5  
30x30 EA UP&DN  
14x16 SA UP&DN  
14x16 EA UP&DN

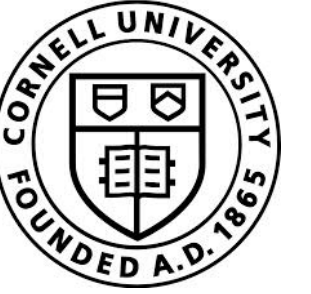
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16x18 EA UP&DN

RISER 4B  
16x16 SA UP&DN

RISER 4A  
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14x14 EA UP&DN

As  
Bs  
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Ds  
E  
D.1s  
D.5s  
Fs  
Gs  
G.3s  
H.9s  
Ks  
K.5s

1s 1.4s 1.7s 1.9 3s 2.9s 4s 5s 6s 7s 7.7s 8s 8.1s



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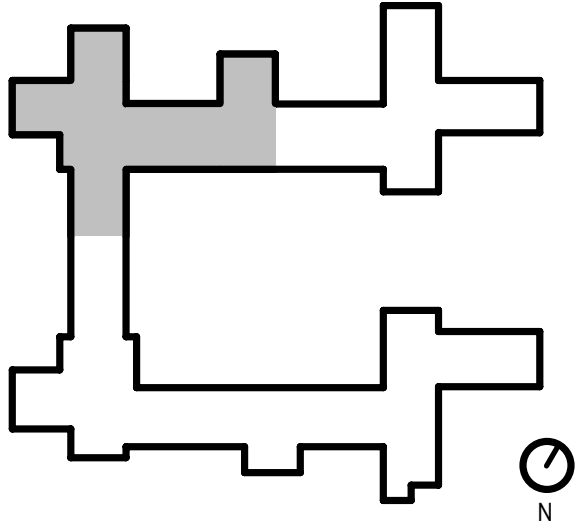
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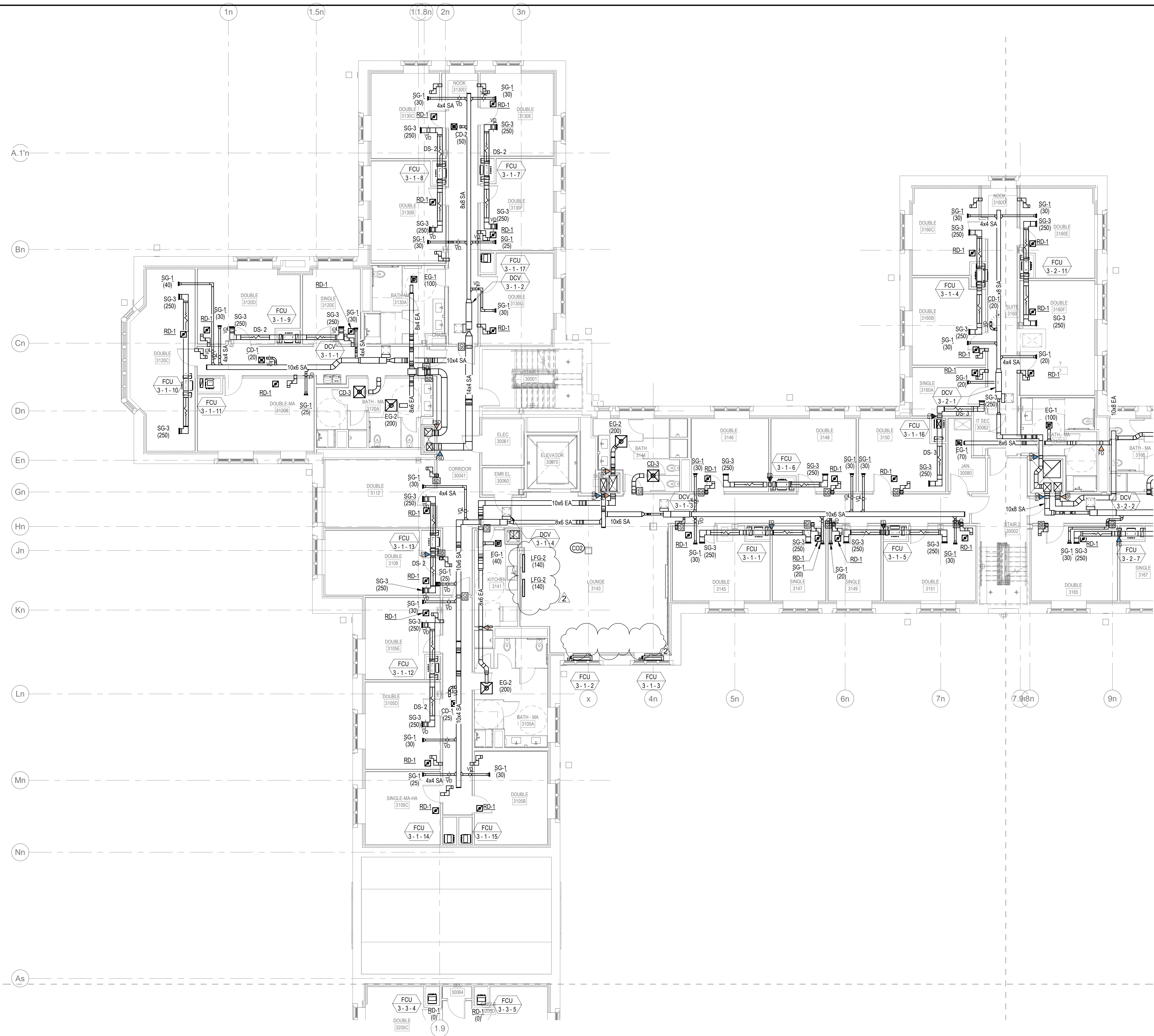
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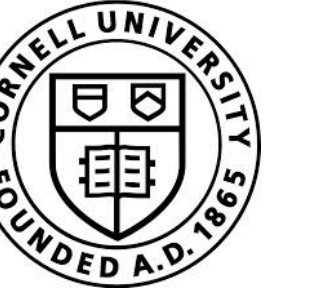
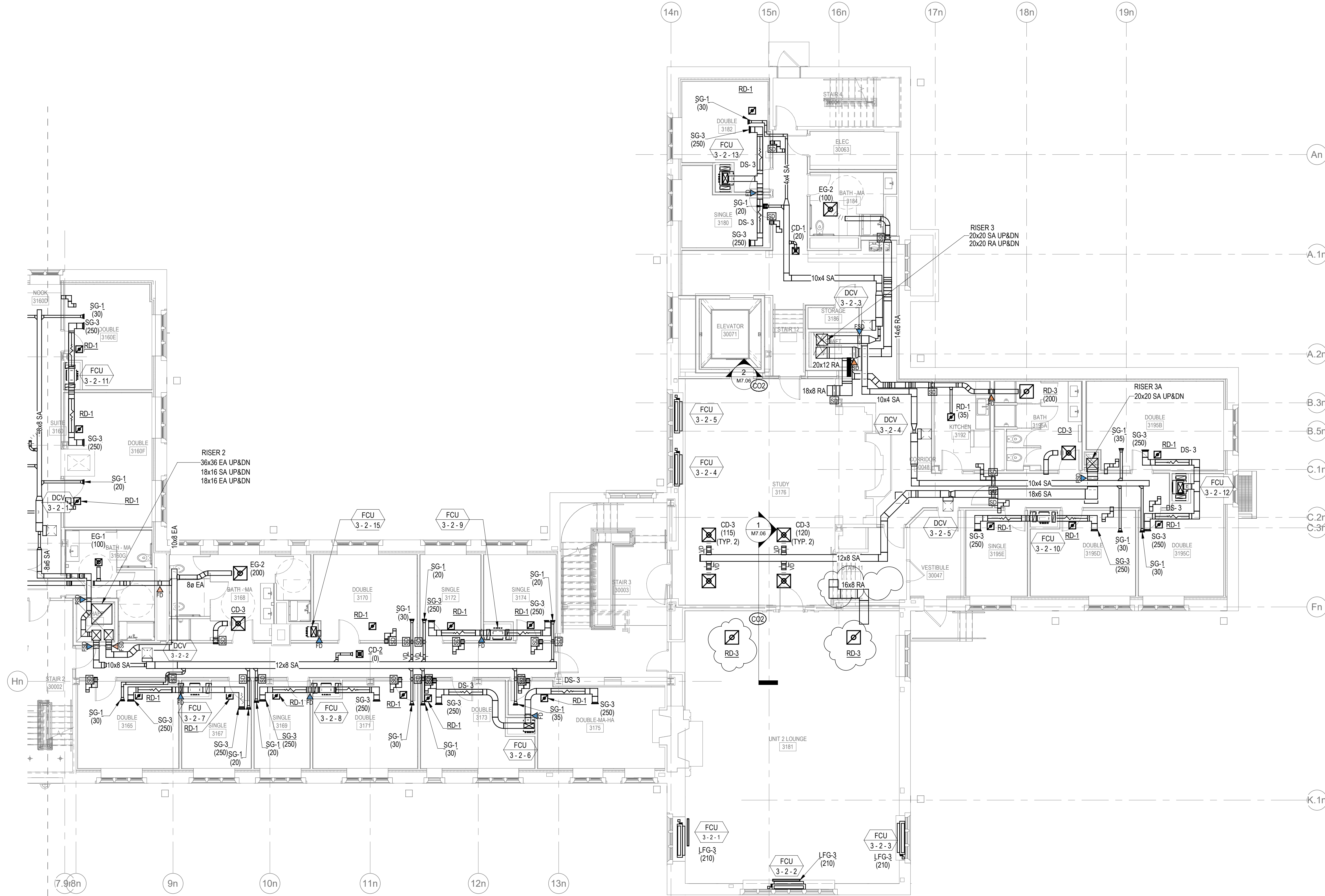
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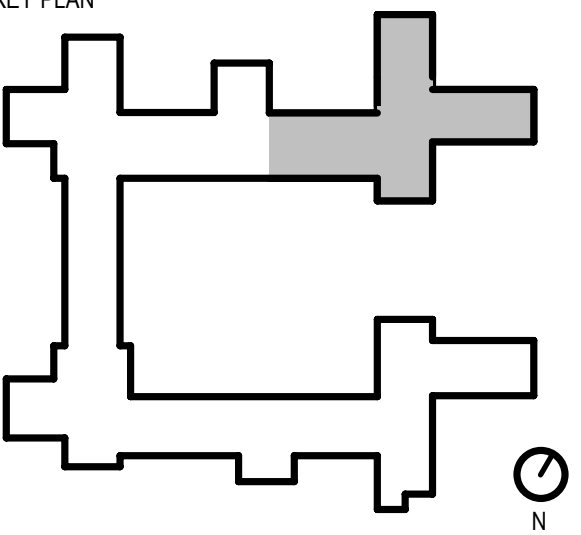
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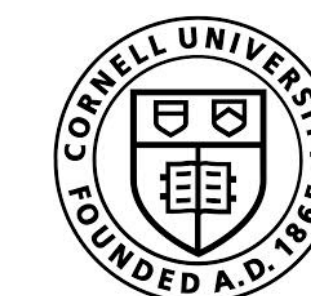
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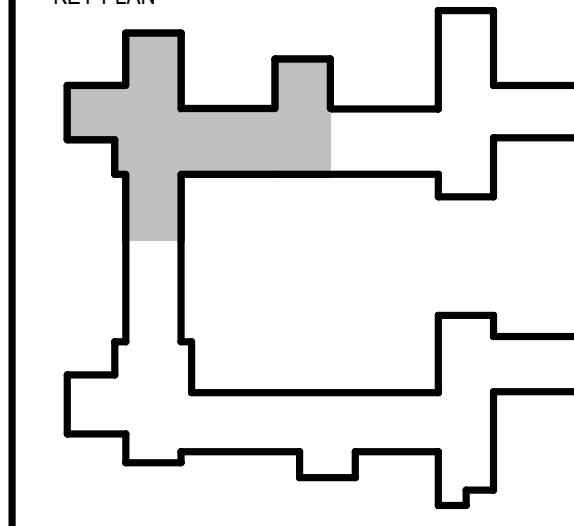
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**MECHANICAL PIPE FIRST  
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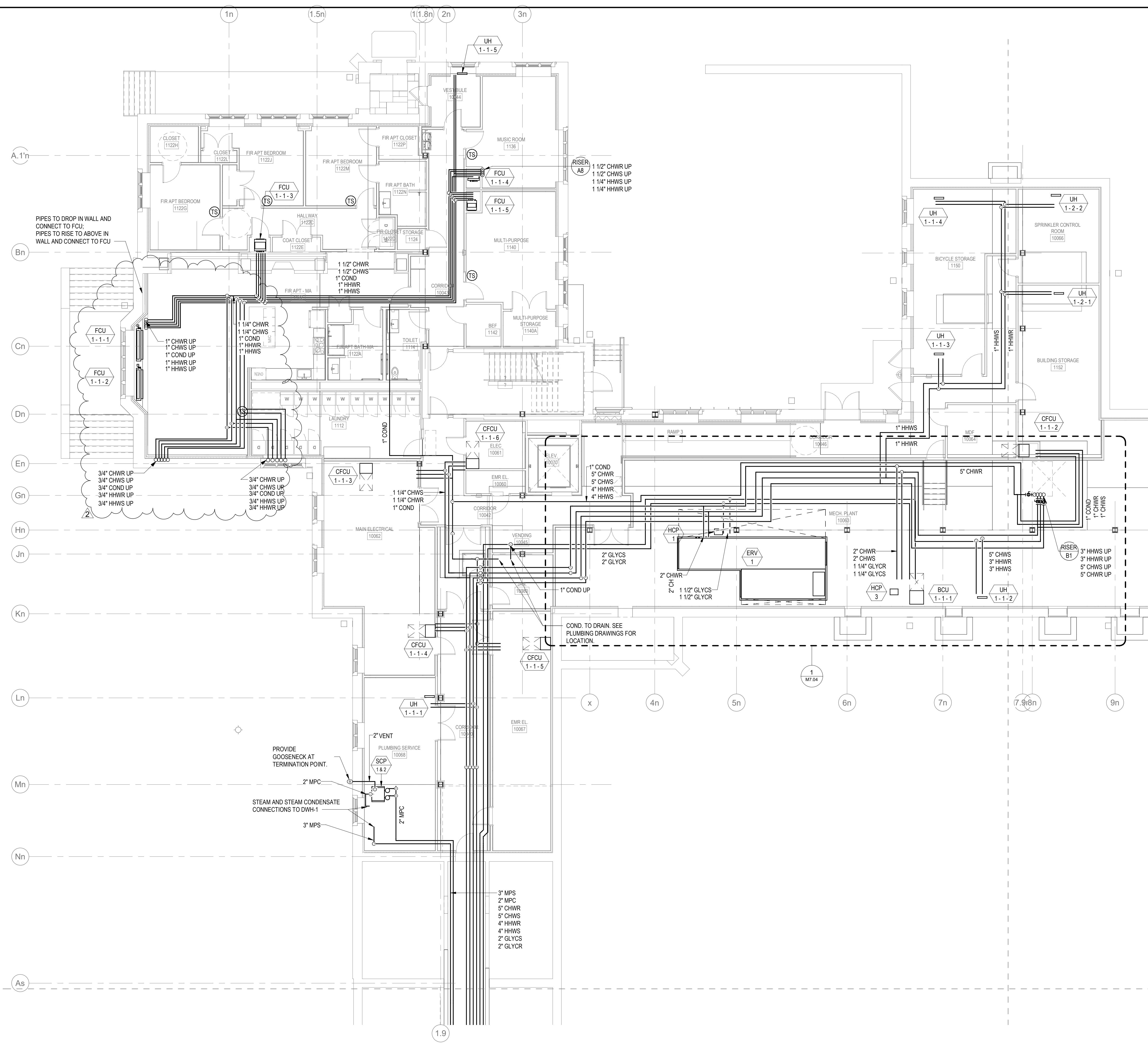
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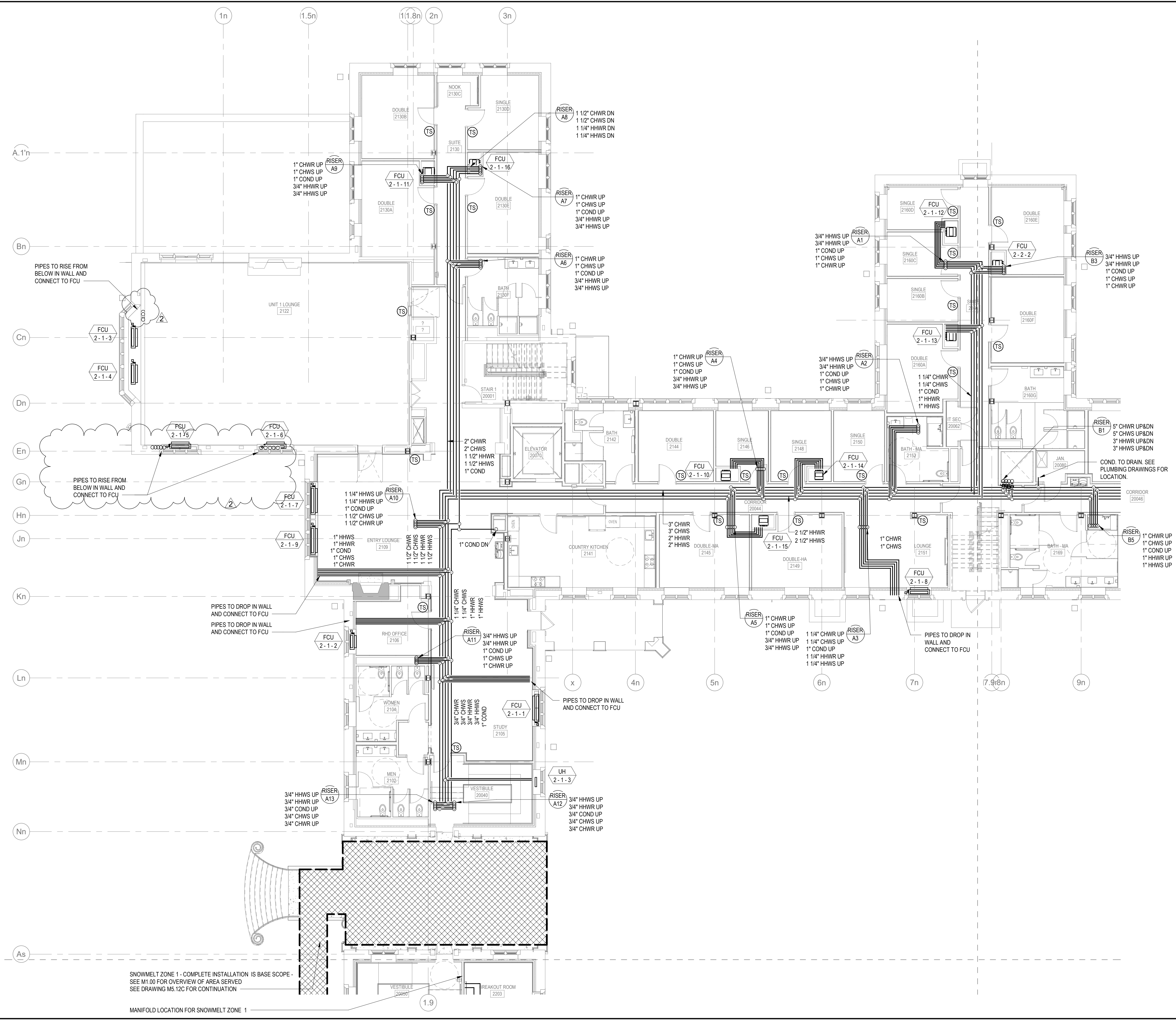
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PIPES TO RISE FROM BELOW IN WALL AND CONNECT TO FCU

PIPES TO RISE FROM BELOW IN WALL AND CONNECT TO FCU

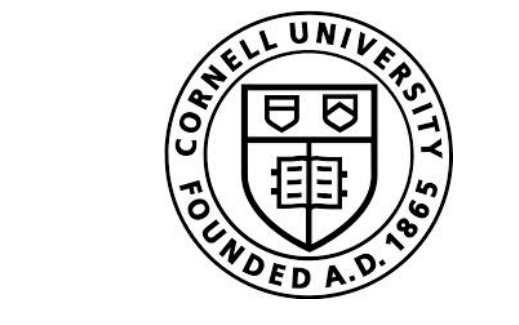
PIPES TO DROP IN WALL AND CONNECT TO FCU

PIPES TO DROP IN WALL AND CONNECT TO FCU

PIPES TO DROP IN WALL AND CONNECT TO FCU

SNOWMELT ZONE 1 - COMPLETE INSTALLATION IS BASE SCOPE - SEE M1.00 FOR OVERVIEW OF AREA SERVED SEE DRAWING M5.12C FOR CONTINUATION

MANIFOLD LOCATION FOR SNOWMELT ZONE 1



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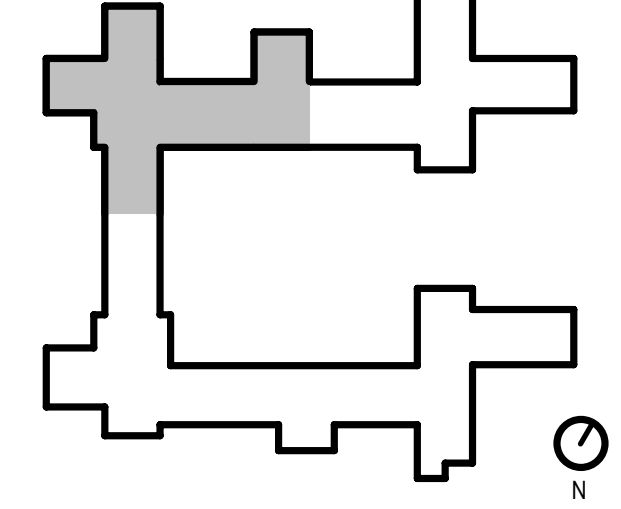
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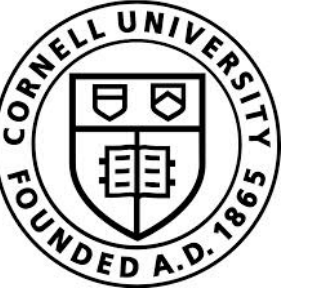
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## MECHANICAL PIPE SECOND FLOOR PLAN - A

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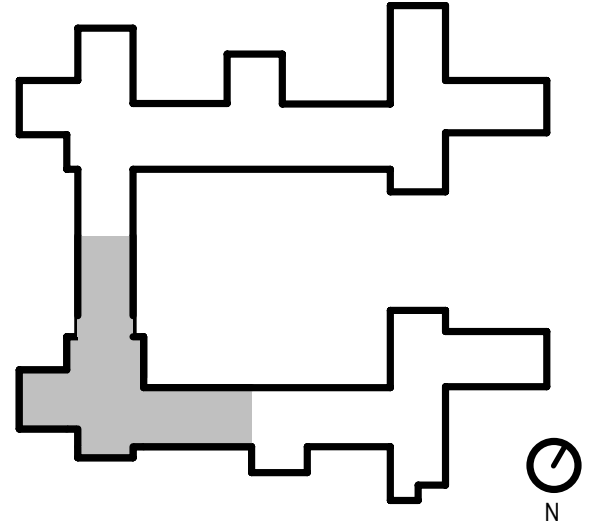
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**MECHANICAL PIPE SECOND FLOOR PLAN - C**

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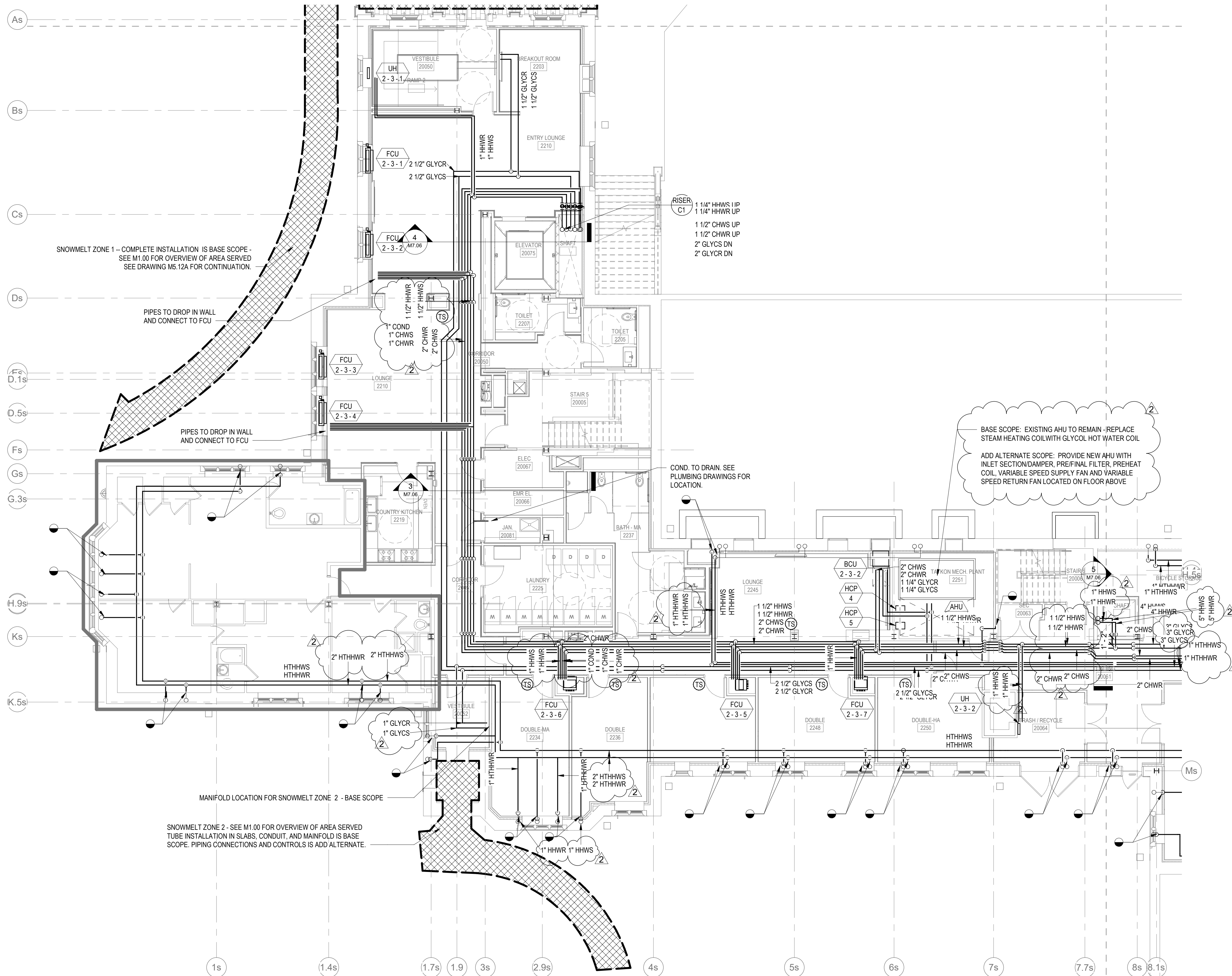
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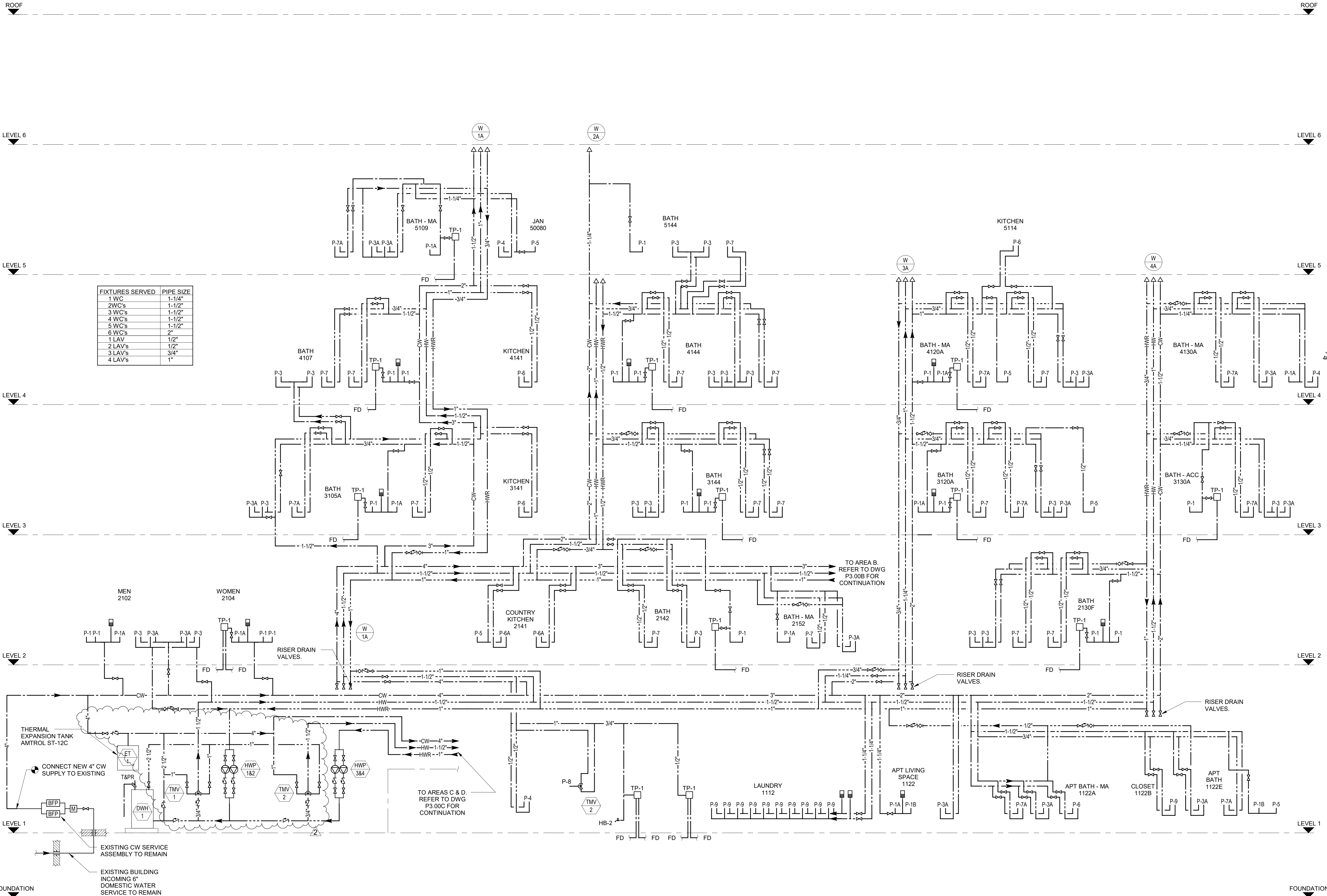
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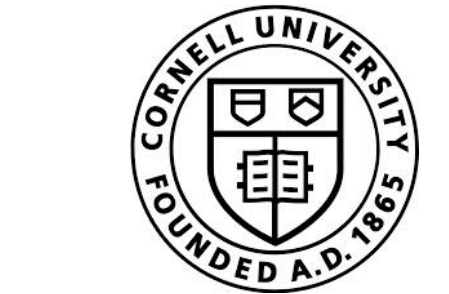
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FIXTURES SERVED	PIPE SIZE
1 WC	1-1/4"
2 WCs	1-1/2"
3 WCs	1-1/2"
4 WCs	1-1/2"
5 WCs	1-1/2"
6 WCs	2"
1 LAV	1/2"
2 LAVs	1/2"
3 LAVs	3/4"
4 LAVs	1"



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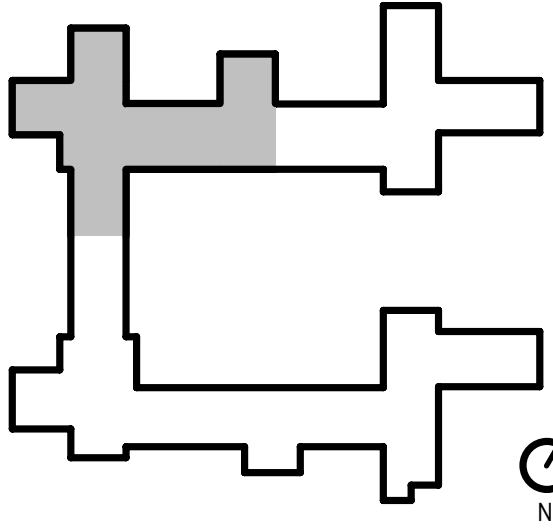
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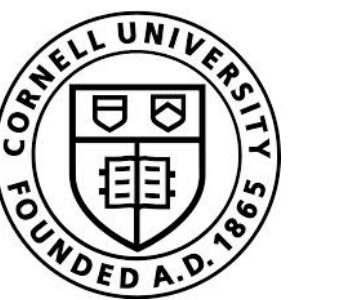
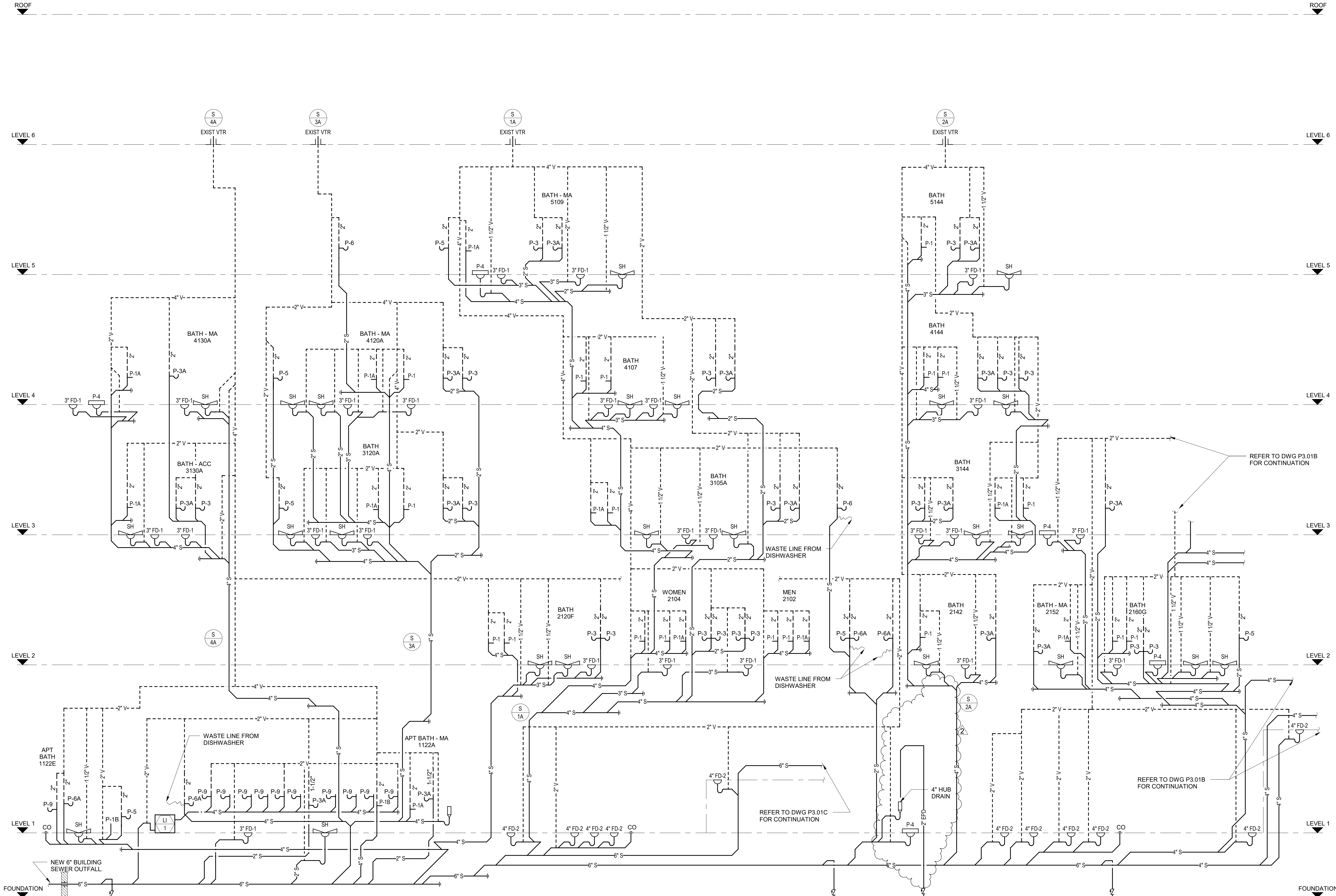
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**PLUMBING DOMESTIC  
WATER RISER DIAGRAM  
SHEET 1**

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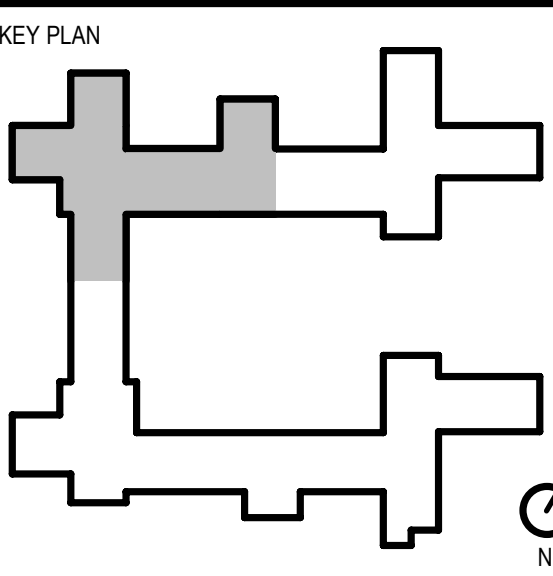
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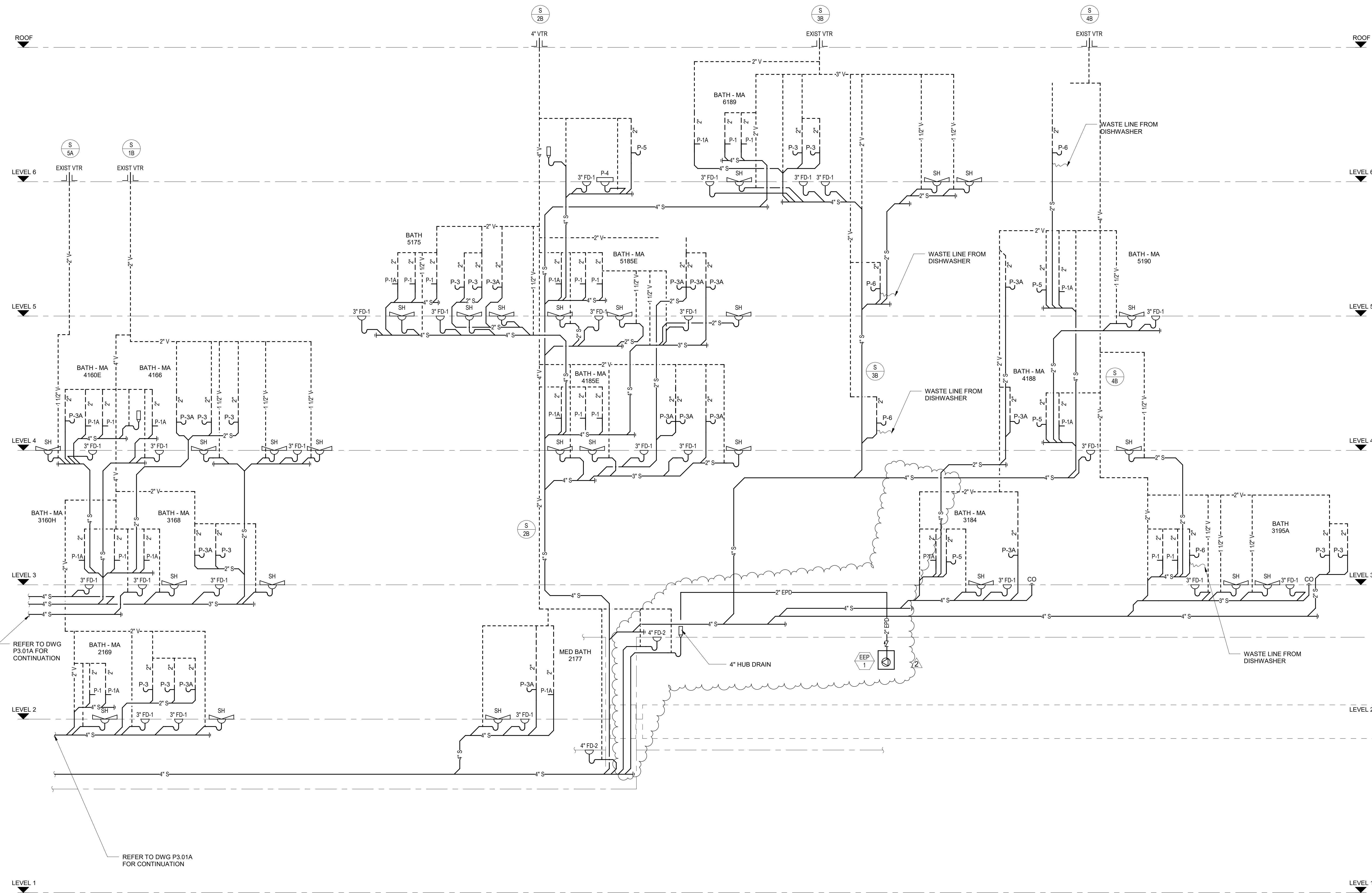
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DIAGRAM SHEET 1**

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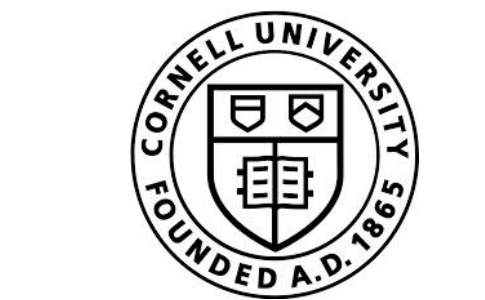
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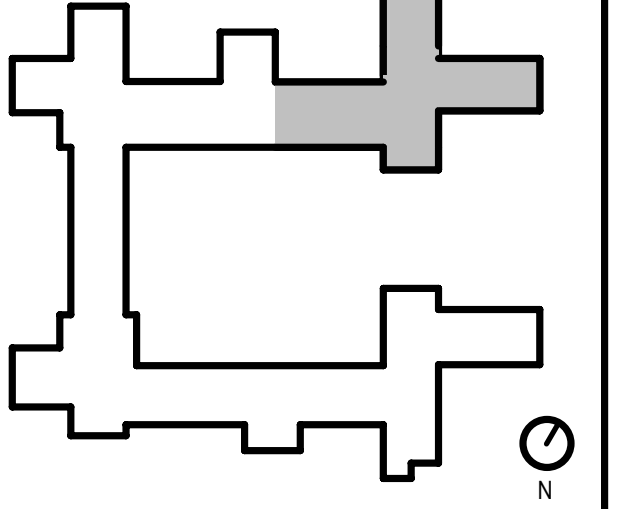
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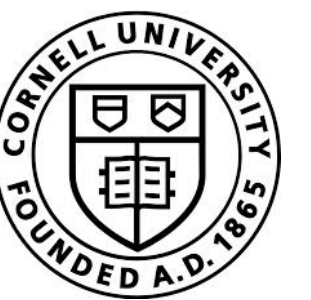
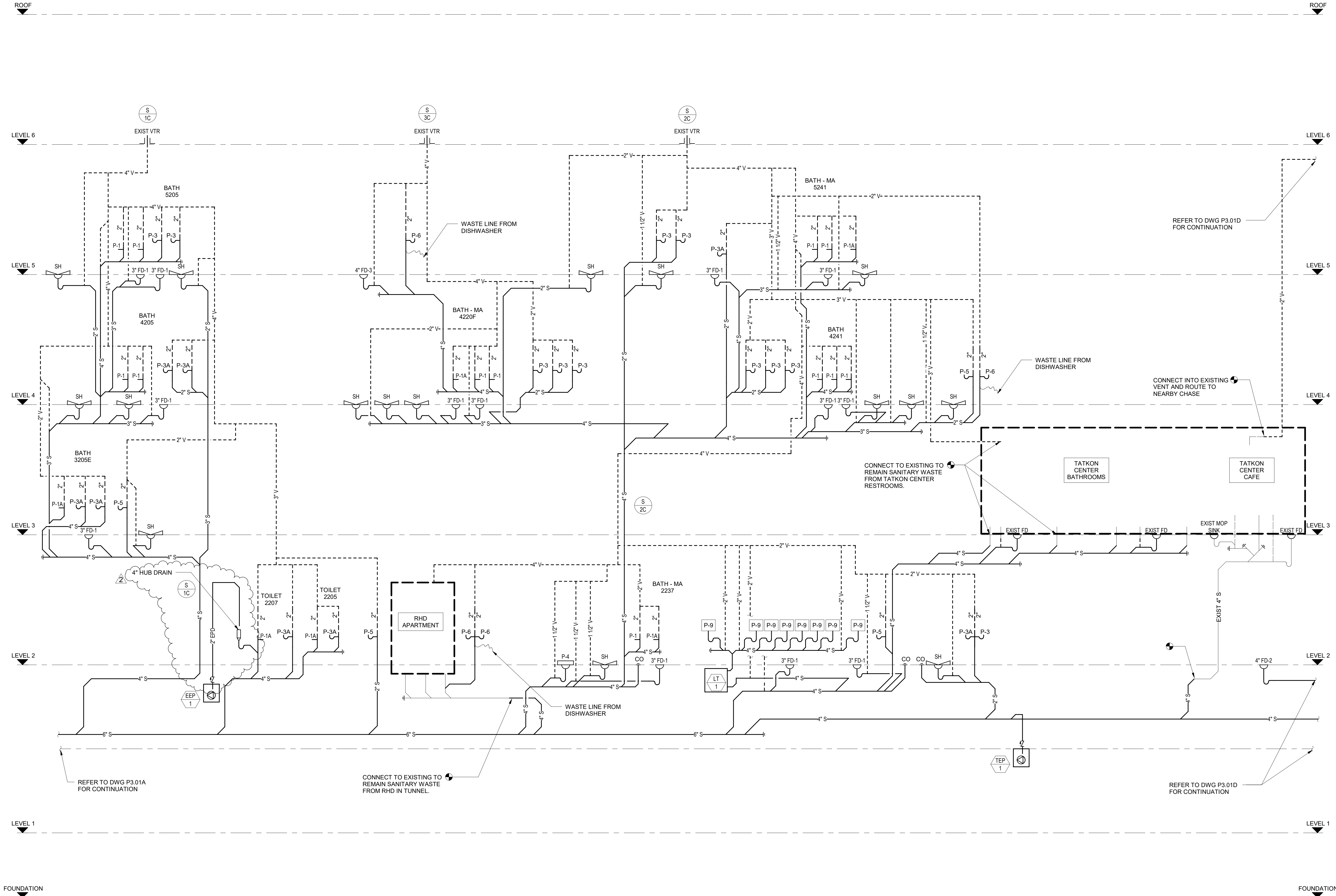
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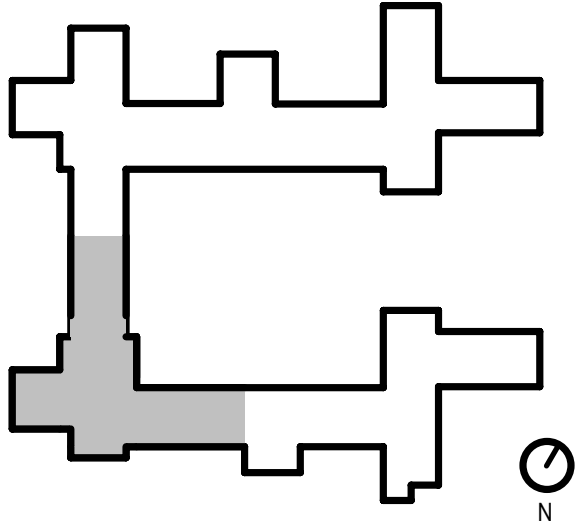
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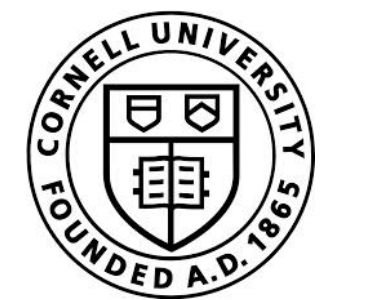
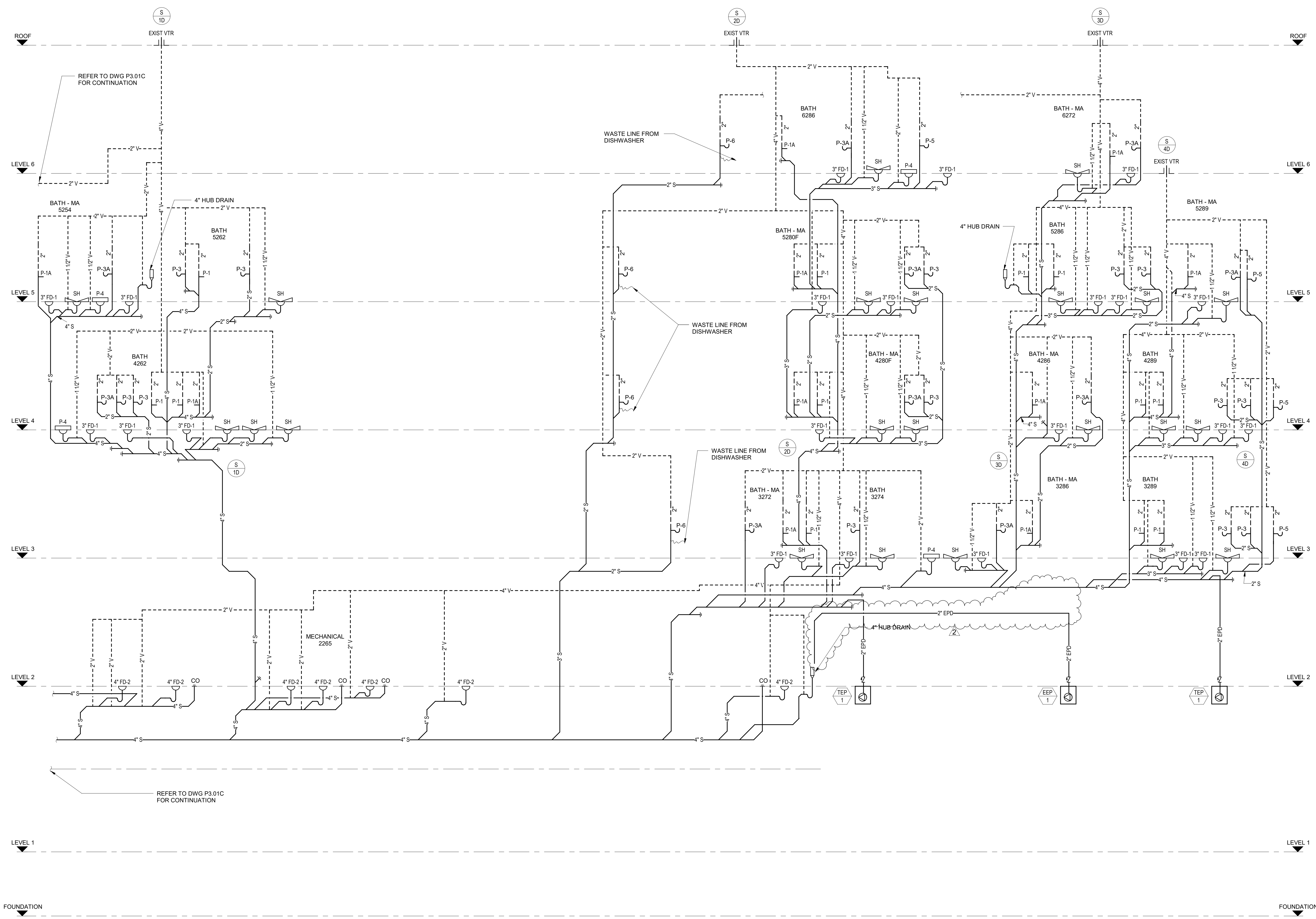
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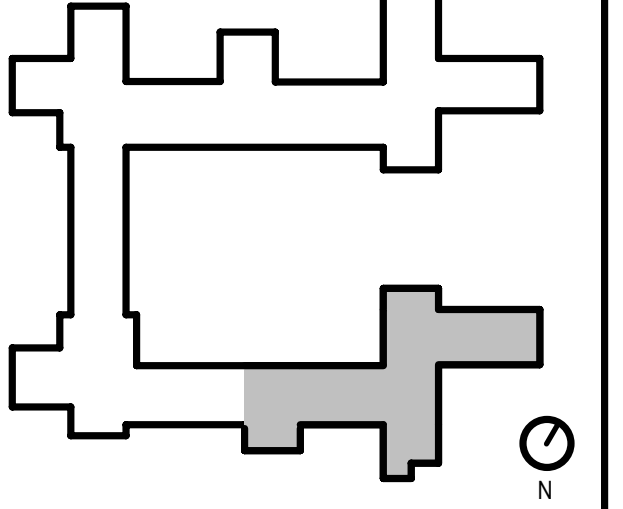
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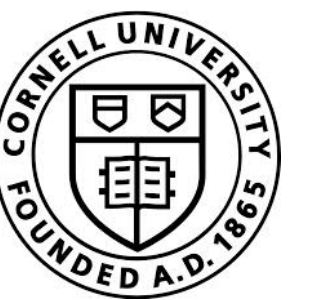
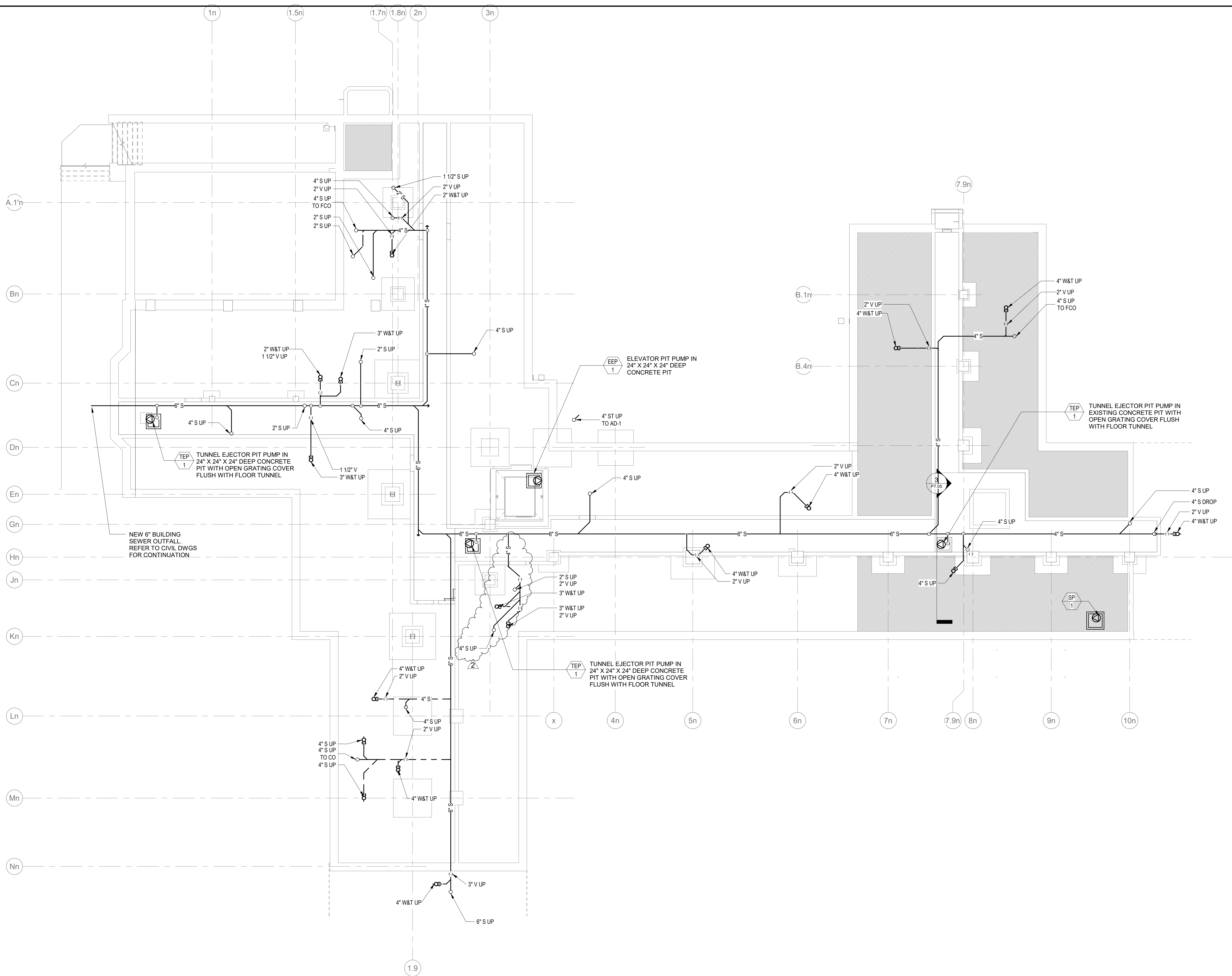
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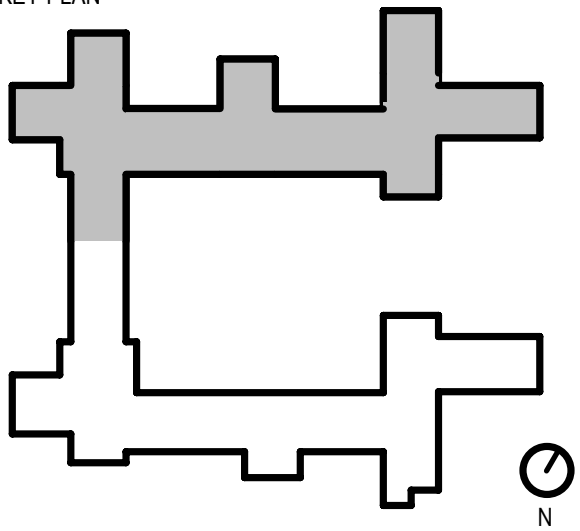
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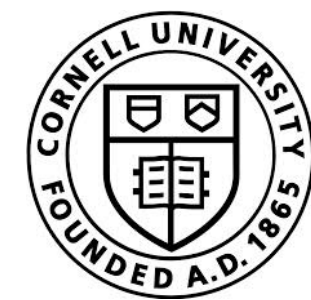
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## PLUMBING TUNNEL PLAN

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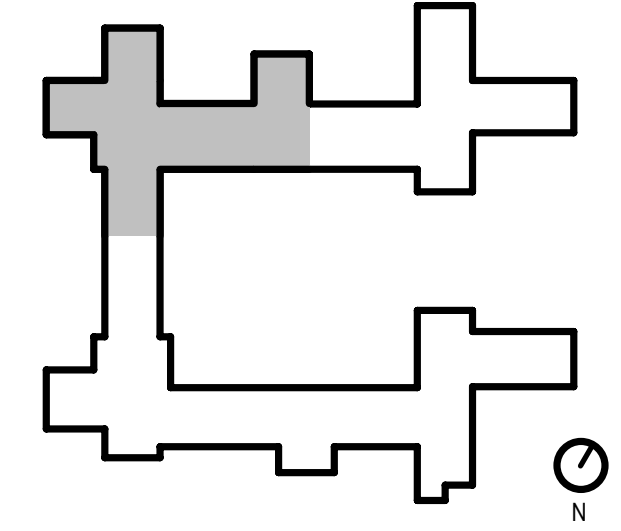
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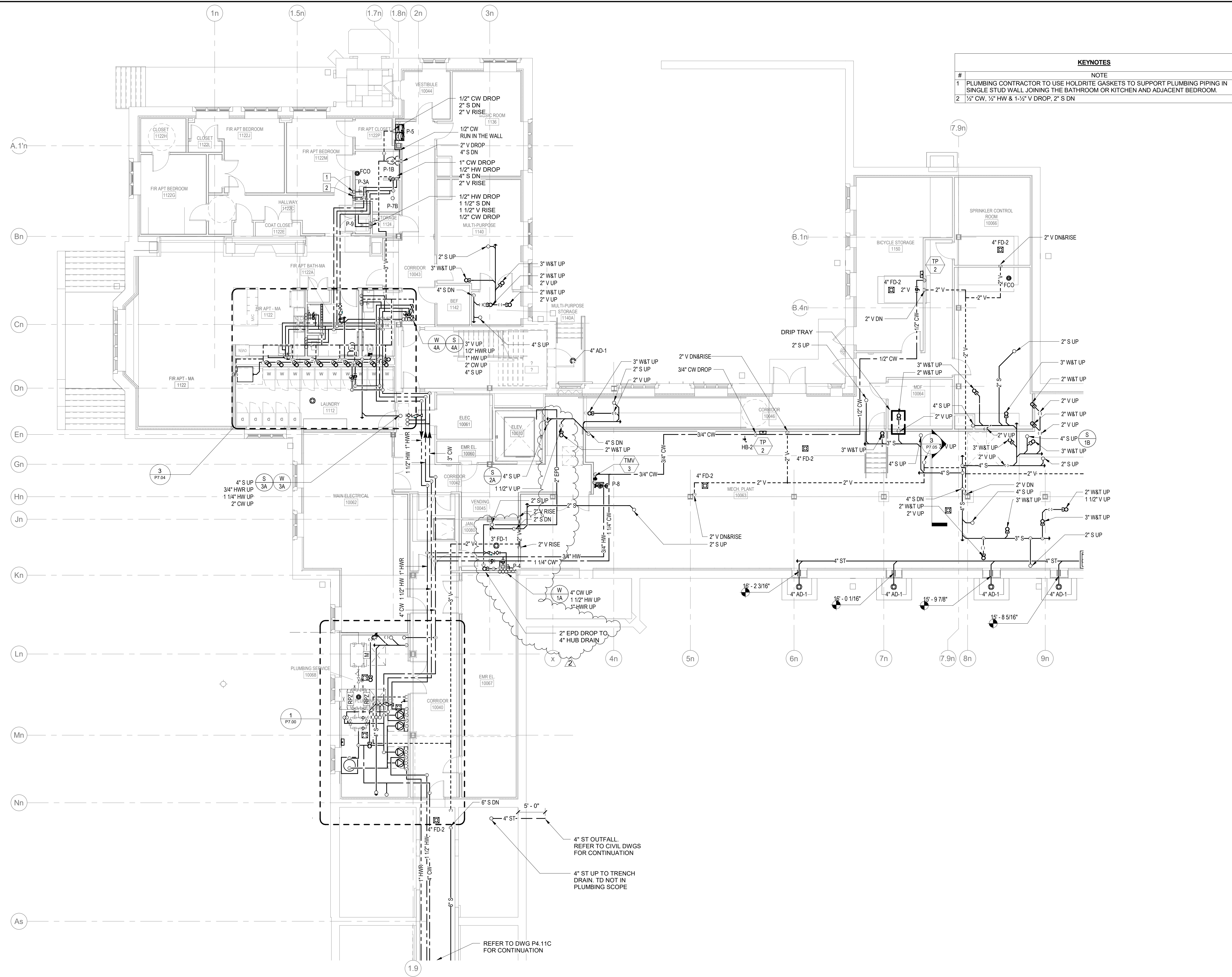
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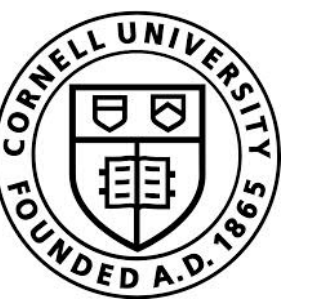
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KEYNOTES	
#	NOTE
1	PLUMBING CONTRACTOR TO USE HOLDRITE GASKETS TO SUPPORT PLUMBING PIPING IN SINGLE STUD WALL JOINING THE BATHROOM OR KITCHEN AND ADJACENT BEDROOM.
2	1/2" CW, 1/2" HW & 1-1/2" V DROP, 2" S DN



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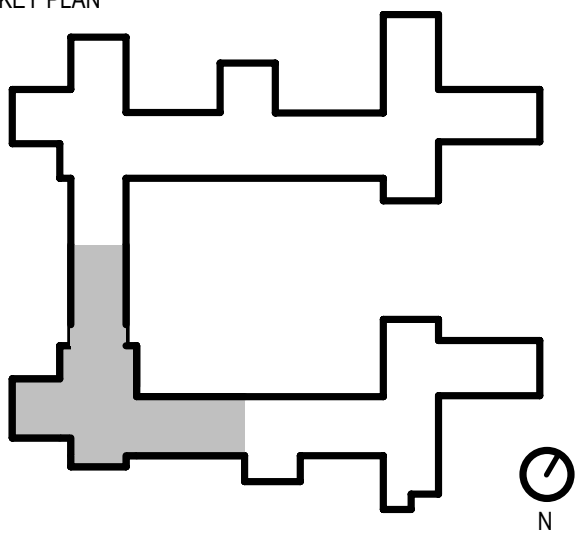
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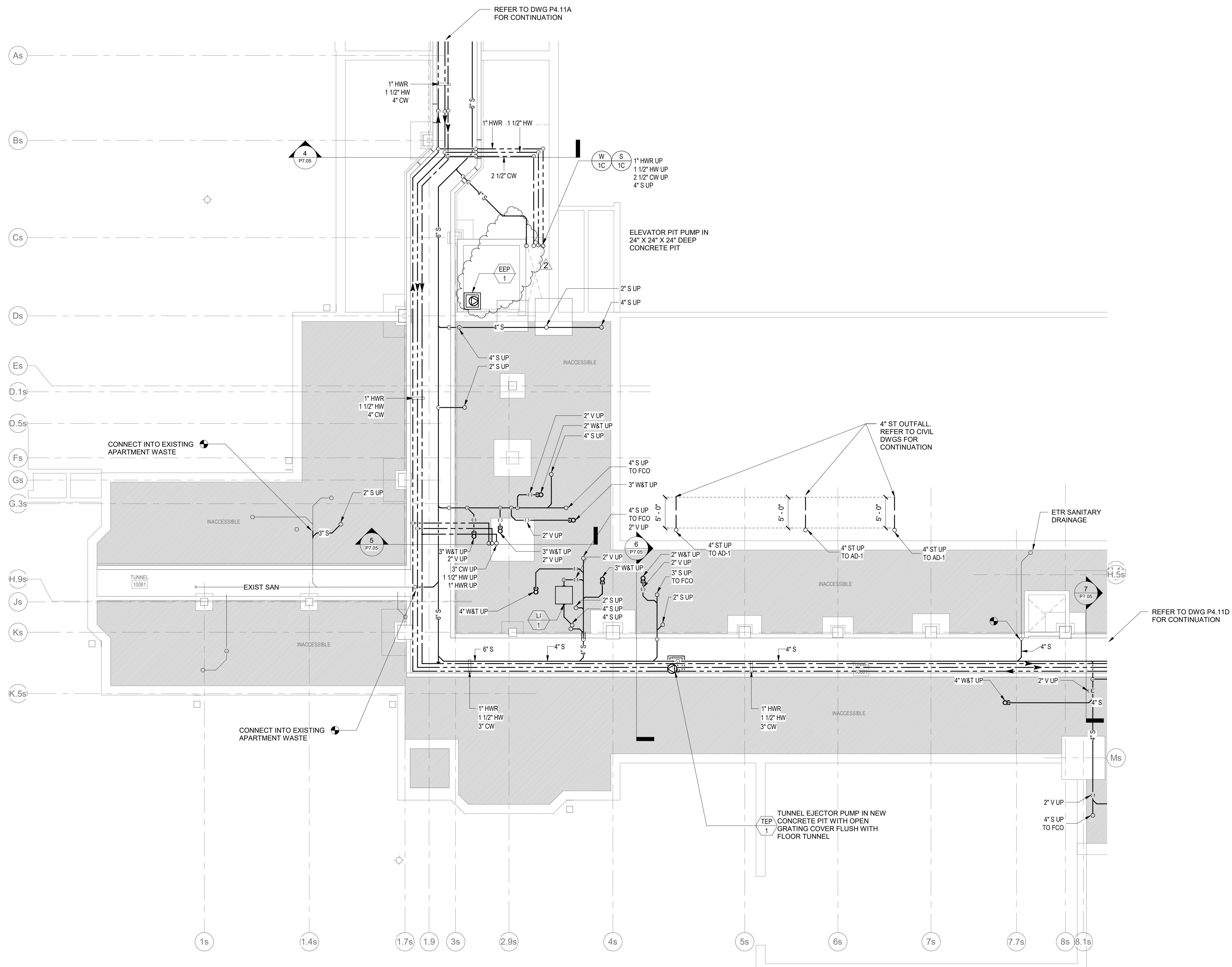
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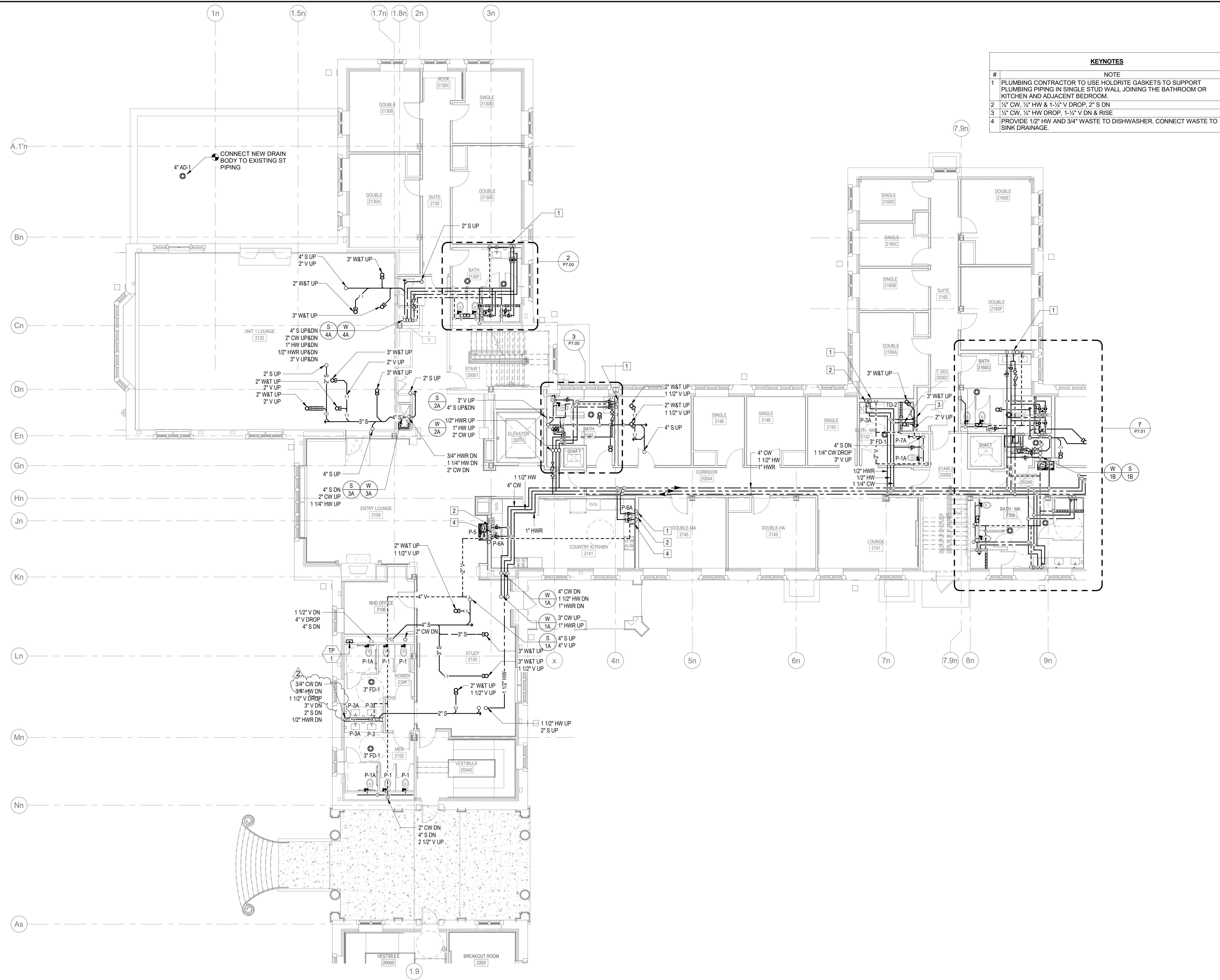
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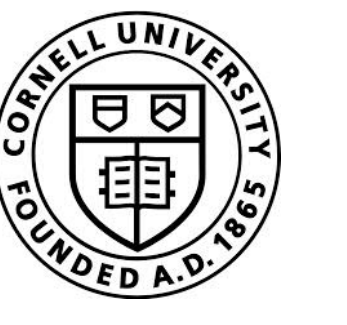
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KEYNOTES	
#	NOTE
1	PLUMBING CONTRACTOR TO USE HOLDRITE GASKETS TO SUPPORT PLUMBING PIPING IN SINGLE STUD WALL JOINING THE BATHROOM OR KITCHEN AND ADJACENT BEDROOM.
2	1/2" CW, 1/2" HW & 1-1/2" V DROP; 2" S DN
3	1/2" CW, 1/2" HW DROP, 1-1/2" V DN & RISE
4	PROVIDE 1/2" HW AND 3/4" WASTE TO DISHWASHER. CONNECT WASTE TO SINK DRAINAGE.



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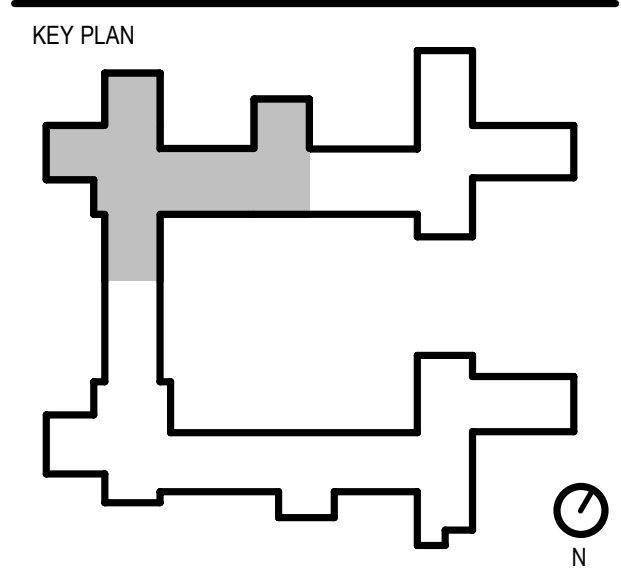
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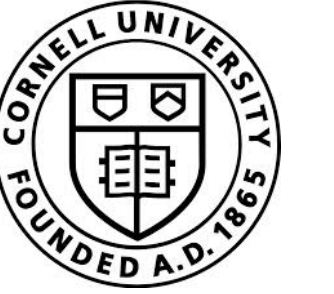
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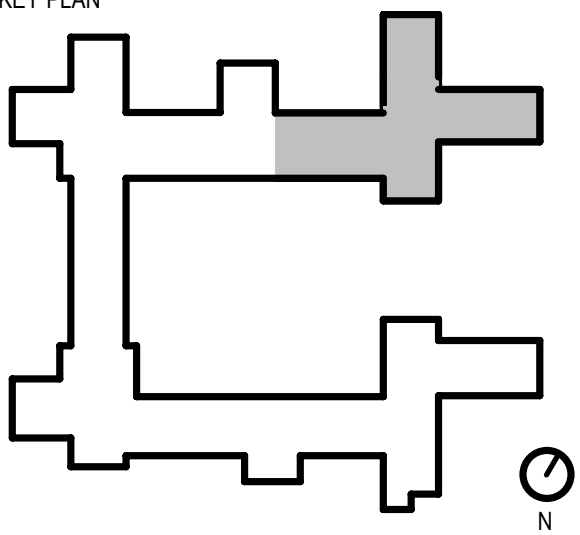
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### PLUMBING SECOND FLOOR PLAN - B

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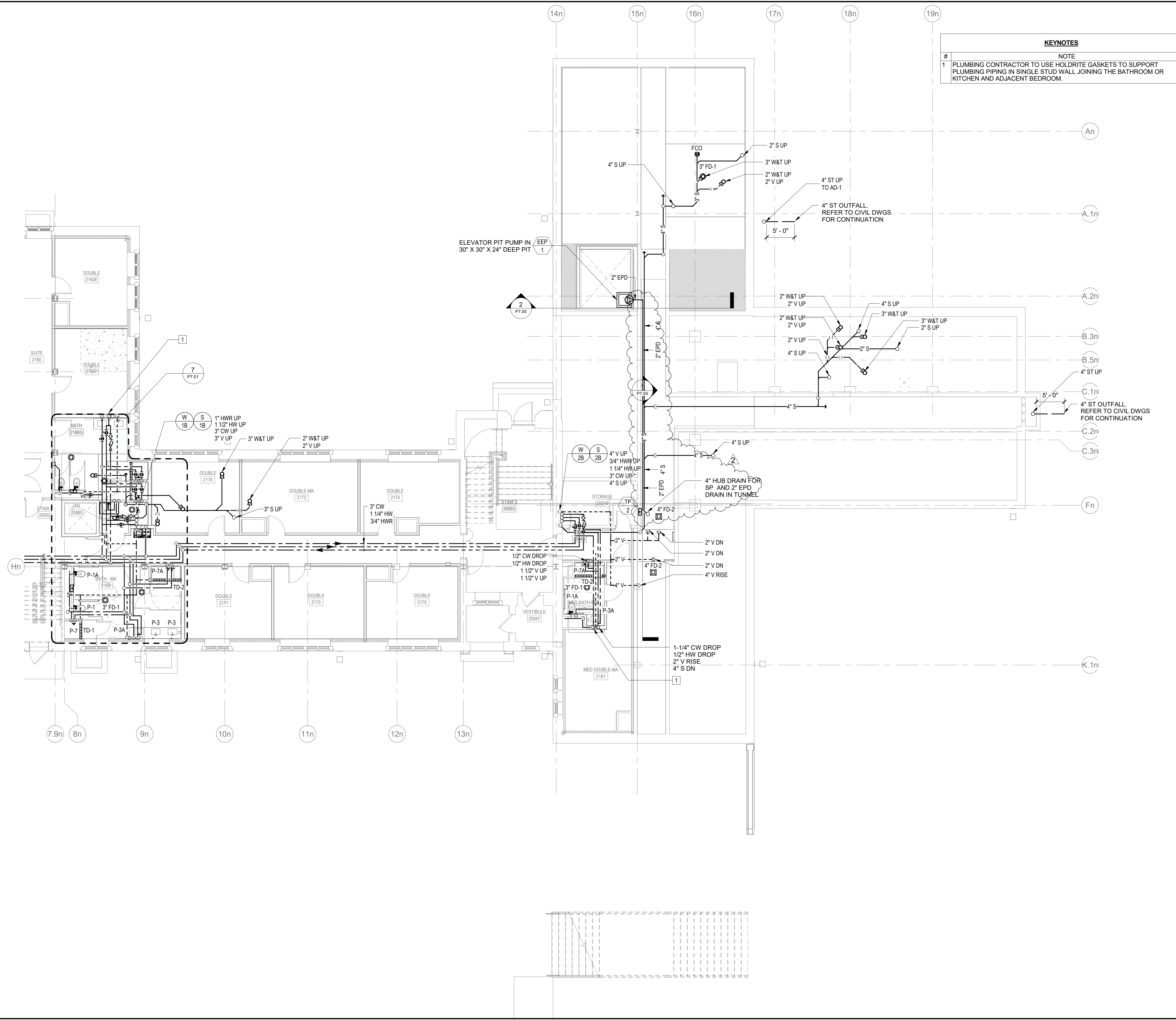
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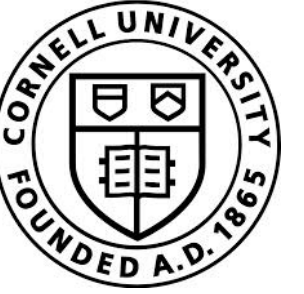
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#	NOTE
1	PLUMBING CONTRACTOR TO USE HOLDRITE GASKETS TO SUPPORT PLUMBING PIPING IN SINGLE STUD WALL JOINING THE BATHROOM OR KITCHEN AND ADJACENT BEDROOM.



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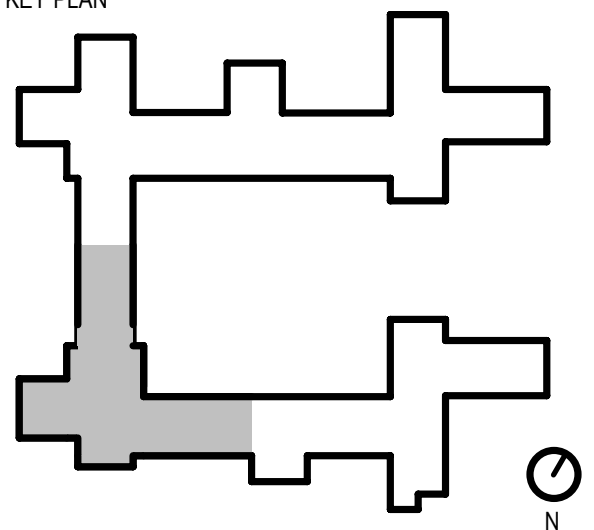
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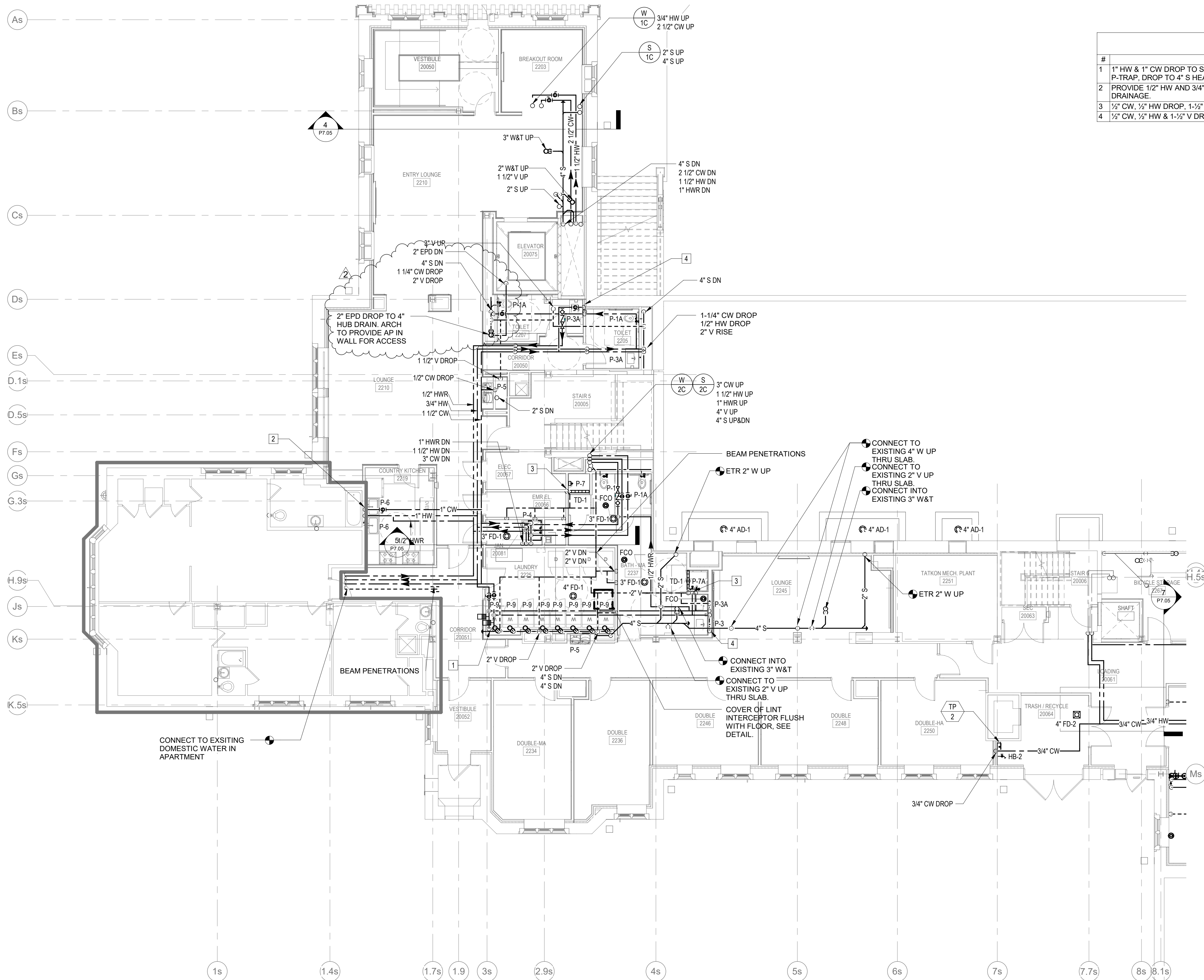
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DRAWN: WMJ DATE: 11/05/2021

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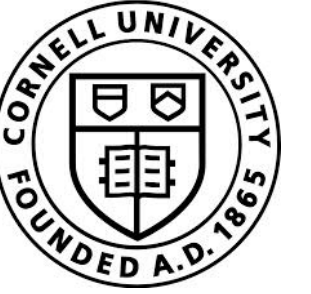
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**P4.12C**



KEYNOTES	
#	NOTE
1	1" HW & 1" CW DROP TO SUPPLY LAUNDRY BOXES IN WALL. CONNECT P-9 TO 2" P-TRAP. DROP TO 4" S HEADER IN WALL.
2	PROVIDE 1/2" HW AND 3/4" WASTE TO DISHWASHER. CONNECT WASTE TO SINK DRAINAGE.
3	1/2" CW, 1/2" HW DROP, 1-1/2" V DN & RISE
4	1/2" CW, 1/2" HW & 1-1/2" V DROP, 2" S DN

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### BALCH HALL RENOVATION

Cornell University

600 Thurston Ave  
Ithaca, New York 14853

**GOODYCLANCY**  
ARCHITECTURE / PLANNING / PRESERVATION

420 Boylston Street Boston, Massachusetts 02116-3866  
p. 617.262.2760 f. 617.262.9512  
www.goodyclancy.com

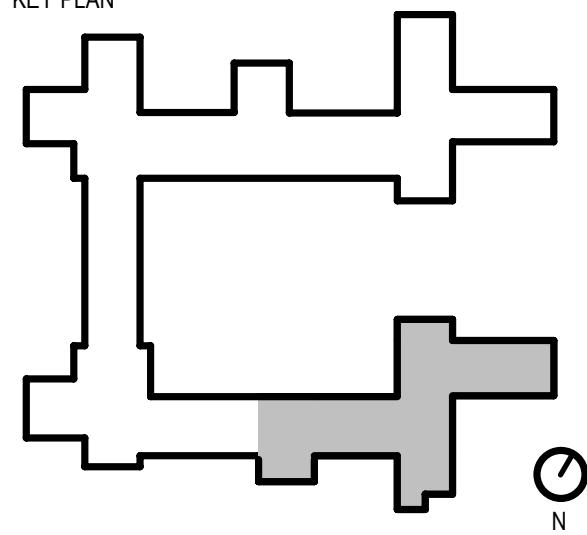
CONSULTANT

## ARUP

Ove Arup & Partners PC  
77 Water Street, New York NY 10005 USA  
212.896.3000  
www.arup.com

STAMP

KEY PLAN



**100% Construction Documents**

ISSUED: 11/05/2021

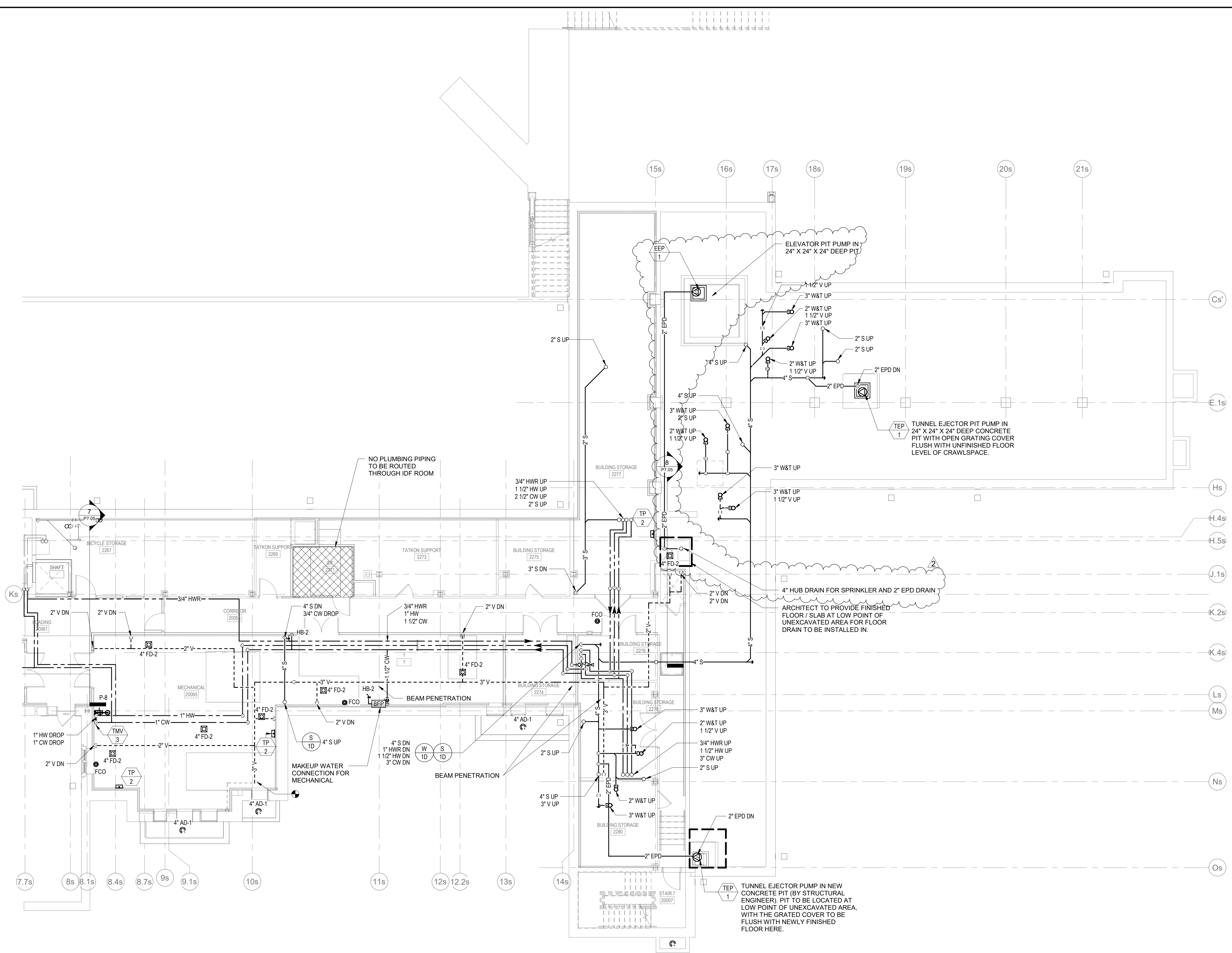
REVISIONS

NO.	DESCRIPTION	DATE

### PLUMBING SECOND FLOOR PLAN - D

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GOODY CLANCY PROJECT NUMBER 07400  
FILE NAME:  
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