NATURAL GAS PIPING

1. BELOW GRADE PIPING AND FITTINGS (OUTSIDE): PROVIDE SCHEDULE 40 BLACK STEEL, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND FORGED STEEL WELDING TYPE FITTINGS (ASTM A234) WITH (AWWA C105) POLYETHYLENE JACKET OR DOUBLE LAYER, HALF LAPPED 10 MIL POLYETHYLENE TAPE. PROVIDE WELDED JOINTS (ASME B31.9) FOR ALL UNDERGROUND PIPE. PROVIDE METALIZED WARNING TAPE BETWEEN GRADE AND ALL UNDERGROUND GAS PIPING.
2. ABOVE GRADE PIPING AND FITTINGS : PROVIDE SCHEDULE 40 BLACK STEEL PIPING, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND 150 PSI MALLEABLE BLACK IRON FITTINGS, GRADE 32510, (ASTM B 16.3) OR FORGED STEEL WELDING TYPE FITTINGS (ASTM A234). PROVIDE THREADED JOINTS FOR PIPE 2" AND SMALLER. PROVIDE WELDED JOINTS (ASME B31.9) FOR PIPE 2-1/2" AND LARGER.
3. SPACE GAS PIPING HANGER RODS 7'-0" ON CENTER MAXIMUM AND SPACE TRANSVERSE BRACING 20'-0" ON CENTER MAXIMUM. TRANSVERSE BRACING FOR ONE SECTION MAY ACT AS LONGITUDINAL BRACING FOR THE PIPE SECTION CONNECTED TO IT IF THE BRACING IS INSTALLED WITHIN 24" OF THE ELBOW OR TEE. COORDINATE HANGER LOCATIONS WITH STRUCTURAL DRAWING DETAILS.
4. PROVIDE A.G.A. CERTIFIED SHUT-OFF VALVES MINIMUM, 125 PSI RATED, NON- LUBRICATED PLUG TYPE WITH BRONZE BODY AND BRONZE PLUG, STRAINERS AND REGULATORS (AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER) FOR ALL EQUIPMENT CONNECTED TO THE NATURAL GAS SYSTEM.
5. GAS PRESSURE REGULATORS SHALL COMPLY WITH ANSI Z21.80. REGULATORS SHALL BE CAST IRON OR DIE-CAST ALUMINUM CONSTRUCTION WITH INTERCHANGEABLE ZINC-PLATED STEEL SPRINGS, ZINC-PLATED STEEL DIAPHRAGM PLATE, NITRILE RUBBER SEAT DISC, INTERCHANGEABLE ALUMINUM ORIFICE, AND ULTRAVIOLET-STABILIZED MINERAL FILLED NYLON SEAL PLUG. REGULATOR SHALL BE SINGLE-PORT SELF-CONTAINED WITH ORIFICE NO LARGER THAN REQUIRED AT MAXIMUM PRESSURE INLET AND NO PRESSURE SENSING PIPING EXTERNAL TO THE REGULATOR. PRESSURE REGULATOR SHALL MAINTAIN DISCHARGE PRESSURE SETTING DOWNSTREAM AND NOT EXCEED 150 PERCENT OF DESIGN DISCHARGE PRESSURE AT SHUTOFF. OVERPRESSURE PROTECTION DEVICE SHALL BE FACTORY MOUNTED ON REGULATOR. WHEN USING VENTLESS REGULATORS, MOUNT REGULATOR IN A HORIZONTAL UPRIGHT POSITION. IF VENTED TYPE REGULATORS ARE USED, INSTALL VENT PIPING (FULL SIZE OPENING) FROM GAS PRESSURE REGULATORS TO OUTDOORS AND TERMINATE IN WEATHERPROOF HOOD.
6. PAINT ALL GAS PIPING WITH 2 COATS OF YELLOW ENAMEL PAINT APPLIED WITH A BRUSH (2 MIL THICKNESS MINIMUM). LABEL ALL GAS PIPING ON 5'-0" CENTERS INDICATING THE GAS PRESSURE.
   2 PSI GAS PIPING SHALL BE LABELED "2-PSI GAS"
   LOW PRESSURE GAS PIPING SHALL BE LABELED "GAS"
7. CONTACT THE LOCAL GAS UTILITY COMPANY TO AND OBTAIN THE NATURAL GAS SERVICE AND GAS METER.

KITCHEN CONNECTION NOTES

1. PLUMBING CONTRACTOR TO BE RESPONSIBLE FOR PROTECTION OF DOMESTIC WATER SYSTEM AGAINST BACKFLOW AND BACK SIPHONING WHEN A 'HARD' CONNECTION IS MADE TO ANY KITCHEN EQUIPMENT OR APPLIANCE. PER NC PLUMBING CODE 608.3, ALL DEVICES, APPURTENANCES,APPLIANCES, AND APPARATUS INTENDED TO SERVE SPECIAL FUNCTIONS SUCH AS PROCESSING, COOKING, HEATING, OR STORAGE OF ICE THAT ARE CONNECTED TO THE WATER SUPPLY SHALL BE PROVIDED WITH PROTECTION AGAINST BACKFLOW CONTAMINATION OF WATER SUPPLY SYSTEM.
2. WATER FILTERS, SOFTENERS, AND HOLDING TANKS OF POTABLE WATER SHALL BE PROTECTED AGAINST CONTAMINATION. THE PC SHALL COOPERATE WITH KITCHEN EQUIPMENT CONTRACTOR AND SHALL VERIFY MOST ADEQUATE PROTECTION REQUIRED. ANY APPROVED DEVICE EITHER EXTERIOR TO OR BUILT-INTO THE APPLIANCE SHALL BE ACCEPTABLE.

LAB CONNECTION NOTES

1. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL INTER-CONNECTING WATER, WASTE, INDIRECT DRAIN PIPING AND FINAL CONNECTIONS TO LAB EQUIPMENT. COORDINATE WITH LAB EQUIP. SUPPLIER. SEE LAB EQUIPMENT DRAWINGS AND LAB EQUIPMENT SPECIFICATIONS FOR ADDITIONAL PLUMBING REQUIREMENTS.
2. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL LAB PIPING INCLUDING BUT NOT LIMITED TO LAB AIR, LAB VACCUUM, ACID WASTE/VENT, COMPRESSED AIR 100 PSI, DI-WATER, NITROGEN GAS, HELIUM, HYDROGEN, ARGON, LIQUID NITROGEN AND METHANE GAS. SEE LAB EQUIPMENT DRAWINGS AND LAB EQUIPMENT SPECIFICATIONS FOR ADDITIONAL PLUMBING REQUIREMENTS.

SANITARY WASTE, VENT & STORM DRAIN PIPING

1. BELOW GRADE PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564) OR NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321. FOAM CORE PVC PIPING IS NOT APPROVED. NOTE: PROVIDE CAST IRON PIPING SPECIFIED ABOVE FOR ALL KITCHEN GREASE WASTE PIPING UPSTREAM OF THE GREASE INTERCEPTOR.
2. ABOVE GRADE PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED. DO NOT INSTALL PVC PIPING IN RETURN AIR PLENUMS. (NOTE: SPACE ABOVE ALL CORRIDOR CEILINGS ARE RETURN AIR PLENUMNS.)
3. SLOPE WASTE AND STORM DRAIN PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. SLOPE ALL KITCHEN GREASE WASTE PIPING AT 1/4" PER FOOT MINIMUM.
4. PROVIDE CLEAN-OUTS AT THE BASE OF WASTE STACKS, STORM RISERS, AND AT EVERY TURN IN PIPING IN EXCESS OF 45° AND SPACED WITH-IN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
5. PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
6. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
7. WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.
8. INSULATE FLOOR DRAIN BODIES (FD2 & WB2) AND ASSOCIATED DRAIN PIPING ABOVE GRADE RECEIVING CONDENSATE FROM HVAC UNITS WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET (INSULATION MAY BE OMITTED ON VERTICAL PIPING CONCEALED IN WALL SPACE).
9. INSULATE ROOF DRAIN BODIES AND ASSOCIATED STORM DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET (INSULATION MAY BE OMITTED ON VERTICAL PIPING CONCEALED IN WALL SPACE).
10. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.

SUMP PUMP DRAIN PIPING

1. SUMP PUMP DISCHARGE PIPING: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32), JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8). SLOPE SUMP DISCHARGE LINE AT 1% SLOPE AWAY FROM SUMP PUMP.

DOMESTIC WATER PIPING

1. BELOW GRADE PIPING AND JOINTS: PROVIDE TYPE 'K' SOFT ANNEALED SEAMLESS COPPER TUBING (ASTM B 88) WITH NO JOINTS FOR PIPING 1" AND SMALLER. FOR PIPING 1-1/4" AND SMALLER, PROVIDE TYPE 'K' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH BCUP SILVER/PHOSPHORUS/COPPER BRAZED JOINTS (AWS A5.8). PROVIDE DUCTILE IRON PIPE AND FITTINGS (AWWA C151, AWWA C110) WITH RUBBER GASKET JOINTS AND RODS (AWWA C111) FOR PIPING 4" AND LARGER.
2. ABOVE GRADE PIPING AND JOINTS: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32), JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8). ALTERNATELY PRESS FITTINGS MAY BE USED FOR JOINTS. SEALING ELEMENTS FOR PRESS FITTINGS SHALL BE EPDM. SEALING ELEMENTS SHALL BE FACTORY INSTALLED. PRESS FITTINGS SHALL ALLOW IDENTIFICATION OF AN UNPRESSED FITTING DURING PRESSURE TESTING.
3. INSULATE PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT., SEE LIST BELOW FOR INSULATION THICKNESS:
   - PROVIDE 1" THICK INSULATION FOR HOT WATER & CIRCULATION PIPING SIZES 1/2" THRU 1-1/4".
   - PROVIDE 1-1/2" THICK INSULATION FOR HOT WATER & CIRCULATION PIPING SIZES 1-1/2" THRU 4".
   - PROVIDE 1/2" THICK INSULATION FOR COLD WATER PIPING SIZES 1/2" THRU 1-1/4".
   - PROVIDE 1" THICK INSULATION FOR COLD WATER PIPING SIZES 1-1/2" THRU 4".
4. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC INSULATION JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.
5. PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL PORT, 600 PSI WOG, BALL TYPE SHUT-OFF VALVES WITH BLOW-OUT PROOF STEMS AND ADJUSTABLE PACKING GLANDS. VALVES SHALL BE LEAD FREE PER NSF 61, ANNEX G REQUIREMENTS. INSTALL VALVES IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
6. PROVIDE A CHROME FINISH ON EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
7. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
8. PROTECT COPPER PIPING AGAINST CONTACT WITH MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
9. PERFORM A PRESSURE TEST ON ALL WATER PIPING. FILL PIPING WITH POTABLE WATER, CAP AND SUBJECT PIPING TO A STATIC WATER PRESSURE OF 50 PSIG ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS OR PRESSURIZE PIPING WITH AIR TO AT LEAST ONE-HUNDRED (100) PSI. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED
10. STERILIZE THE DOMESTIC WATER SYSTEM IN PER THE AMERICAN WATER WORKS ASSOCIATION'S INSTRUCTIONS SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
11. SLOPE WATER PIPING FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.
12. BALANCE THE DOMESTIC HOT WATER CIRCULATION SYSTEM TO THE PERFORMANCE SPECIFICATIONS INDICATED ON THE PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.

PLUMBING GENERAL NOTES

1. GENERAL AND SPECIAL CONDITIONS OF THE CONTRACT APPLY TO THE PLUMBING SCOPE OF WORK. THE PLUMBING DRAWINGS AND SPECIFICATIONS SHALL NOT BE INTERPRETED AS WAIVING OR OVERRULING ANY REQUIREMENTS EXPRESSED IN GENERAL CONDITIONS.
2. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 NORTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
3. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
4. PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
5. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.
6. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
7. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE AFFECTED AREAS.
8. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.
9. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
10. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
11. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
12. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
13. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
14. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE.
15. PIPE PENETRATIONS THRU WALLS, PARTITIONS AND FLOORS SHALL BE SLEEVED. CORE DRILLING THRU WALLS AND PARTITIONS IS PERMITTED IF PERFORMED IN A NEAT CRAFTSMAN LIKE MANNER. OPENINGS THRU WALLS, PARTITIONS, AND FLOORS SHALL BE LARGE ENOUGH FOR PIPE INSULATION TO REMAIN CONTINUOUS. PIPES PENETRATING THRU EXTERIOR WALLS SHALL BE SEALED WATER TIGHT. INSTALL ESCUTCHEONS IN ALL EXPOSED AREAS.
16. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS.
17. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
18. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
19. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
20. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
21. REFER TO THE STRUCTURAL PLANS AND DETAILS FOR ACCEPTABLE LOCATIONS TO ATTACH HANGERS AND SUPPORTS TO THE BUILDING STRUCTURE. HANGERS SHALL NOT ATTACH TO THE ROOF DECK.
22. PROVIDE MANUFACTURERS RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE.
23. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATION NO MORE THAN 18" ABOVE THE CEILING, PROVIDE OFFSETS IN PIPING AS NEEDED.
24. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, SEISMIC BRACING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, STORM DRAIN SYSTEM, NATURAL GAS SYSTEM.

FIRE STOPPING:

1. FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

SEISMIC BRACING:

1. PROVIDE DESIGN AND INSTALLATION OF SEISMIC RESTRAINT ELEMENTS FOR THE PLUMBING SYSTEM(S) IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF THE 2018 NORTH CAROLINA BUILDING CODE AND ASCE 7-10, CHAPTER 13. REFER TO THE APPENDIX B ON THE ARCHITECTURAL DRAWINGS FOR THE SITE'S SEISMIC DESIGN CATEGORY.
2. PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENT, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS.

PIPE IDENTIFICATION:

1. PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
2. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTORS REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).
2. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
140	140	140°F HOT WATER PIPING
140	140	140°F HOT WATER RETURN PIPING
	W	SANITARY WASTE PIPING
	V	SANITARY VENT PIPING
GW	GW	GREASE WASTE PIPING
SD	SD	STORM DRAIN PIPING
ESD	ESD	EMERGENCY STORM DRAIN PIPING
PD	PD	PUMP DISCHARGE (SUMP PUMP)
G	G	NATURAL GAS PIPING
D	D	DRAIN PIPING (INDIRECT)
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	SHUT-OFF VALVE
	-	CHECK VALVE
	-	BALANCING VALVE
	PRV	PRESSURE REDUCING VALVE
S	-	SOLENOID VALVE
	RPZ	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
	-	IN-LINE PUMP
	-	PIPING REDUCER
	FCO	FLOOR CLEANOUT
	YCO	YARD CLEANOUT
	WCO	WALL CLEANOUT
	CO	PLUG CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	RD	ROOF DRAIN
	HB	HOSE BIBB / WALL HYDRANT
	SA-#	SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
AVTR	ACID VENT THRU ROOF	T&P	TEMPERATURE AND PRESSURE
BAS	BUILDING AUTOMATION SYSTEM	TW	TEMPERED WATER
BFF	BELOW FINISHED FLOOR	TYP	TYPICAL
CFH	CUBIC FEET PER HOUR	UG	UNDERGROUND
CLG	CEILING	VTR	VENT THRU ROOF
CONT	CONTINUATION	WSV	WASTE STACK VENT
DN	DOWN	WC	WATER COLUMN
GPF	GALLONS PER FLUSH		
GPM	GALLONS PER MINUTE	EC	ELECTRICAL CONTRACTOR
HP	HORSE POWER	FSC	FOOD SERVICE CONTRACTOR
INV	INVERT ELEVATION	GC	GENERAL CONTRACTOR
KW	KILOWATT	MC	MECHANICAL CONTRACTOR
MBH	1,000 BRITISH THERMAL UNIT / HOUR	PC	PLUMBING CONTRACTOR

PLUMBING SHEET INDEX

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06-12-2024

CONSTRUCTION DOCUMENTS

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PAMLICO COUNTY
PAMLICO 6-12 SCHOOL
601 Main Street, Bayboro, NC, 28515

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 06/12/24

PROJECT #: 2205
DRAWN BY: CAW
CHECKED BY: GCF

PLUMBING LEGEND, INDEX, AND NOTES

P-001

STORAGE TANK WATER HEATER CALC. - KITCHEN

WASH SINK EQUIPMENT (CALCULATED AT 75% CAPACITY)	# OF COM-PARTMENTS	(INCHES) LENGTH	WIDTH	DEPTH	GALLONS PER HOUR (GPH)
TRIPLE COMPARTMENT POT SINK #1	3	26	18	14	64
TRIPLE COMPARTMENT POT SINK #1	3	26	18	14	64

PREP SINK EQUIPMENT (CALCULATED AT 5 GPH PER COMPARTMENT)	# OF COMPARTMENTS	GALLONS PER HOUR (GPH)
PREP SINK - VEGETABLE	2	10
PREP SINK - MEAT	1	5

OTHER KITCHEN EQUIPMENT	GPH EACH	QUANTITY	GALLONS PER HOUR (GPH)
HAND SINK	5	5	25
CAN WASH	10	1	10
MOP SINK	5	1	5
HOSE REEL	5	2	10
CLOTHES WASHER	15	1	15
PRE-RINSE SINK	45	1	45

DISH MACHINE (CALCULATED AT 70% OF MFG. FINAL RINSE)	FINAL RINSE	QUANTITY	GALLONS PER HOUR (GPH)
CHAMPION 44 PRO VHR	100	1	70
		RECOVERY RATE NEEDED (GPH)	318

GAS WATER HEATER BTU REQUIRED AT 100°F RISE: 349,000

ELECTRIC WATER HEATER KW REQUIRED AT 100°F RISE: 78

NOTES:
1. WATER HEATER CALCULATIONS BASED ON THE NC DIVISION OF HEALTH STORAGE WATER HEATER CRITERIA.
2. WATER HEATERS PROVIDED: RATED FOR 576 GPM AT 100°F RISE.

OUTDOOR GREASE INTERCEPTOR CALC. - GRS1

KITCHEN EQUIPMENT	INDIRECT DRAIN SIZE (SEE NOTE 1)	QUANTITY	FLOW RATE (GPM)	RATING FACTOR	SUB-TOTAL (GPM)
UTENSIL / POT WASH SINK	1-1/2" I.D. TO 3"FS	2	13	1	26.0
MEAT PREP. SINK	1-1/2" I.D. TO 3"FS	1	13	0.10	1.3
PRE-RINSE SINK	1-1/2" I.D. TO 3"FS	1	13	0.75	9.75
VEGETABLE PREP. SINK	1-1/2" I.D. TO 3"FS	1	13	0.10	1.3
CAN WASH	3" P-TRAP	1	7	1	7.0
MOP SINK	3" P-TRAP	1	7	1	7.0
HOOD COOKING EQUIPMENT DRAINS	1" I.D. TO 3"FS	1	58	0	0
DISHMACHINE (PEAK DRAIN RATE)	2" PUMP I.D. TO 4"FS	1	38	1.0	38
				TOTAL GPM	83.35
				RETENTION TIME	30 MIN.
				MIN. STORAGE GALLONS REQUIRED TOTAL GPM x RETENTION TIME	2,500

NOTE: FLOW RATE AND RATING VALUES ARE BASED ON THE 30 MIN RETENTION POLICY FOR OUTDOOR GREASE INTERCEPTORS AND THE MANNING FORMULA.

GREASE INTERCEPTOR - GRS1

SCHIER (2) GB-1500 OR APPROVED EQUAL BY ZURN OR XERXES. 3,000 GALLON WATER CAPACITY (TWO 1,500 GALLON TANKS), POLYETHYLENE CONSTRUCTION, 4" INLETS AND OUTLETS AND 3" VENTS. PROVIDE MANWAYS TO MEET INVERT DEPTH AND H-20 TRAFFIC RATED MANHOLE COVERS AND FRAMES INSTALLED FLUSH WITH FINISHED GRADE. PROVIDE REINFORCED CONCRETE RELIEVING SLAB AND INSTALL PER THE MANUFACTURERS INSTRUCTIONS. COORDINATE EXACT LOCATION WITH SITE UTILITY CONTRACTOR. SEE SCHEMATIC 19/P501

LAB SINK ACID NEUTRALIZATION TRAP - ANT1

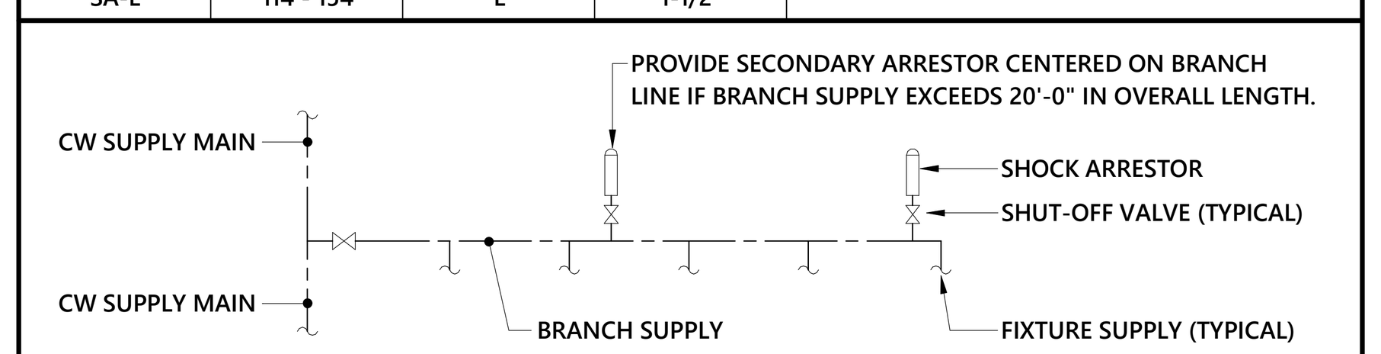
AT EACH LAB SINK, PROVIDE AN ACID NEUTRALIZATION DRUM TRAP EQUAL TO ZURN Z9A-PHIX, INCLUDING A GLASS-FILLED POLYPROPYLENE BODY WITH LOWER SEDIMENT CHAMBER, REMOVABLE NEUTRALIZATION CHAMBER, AND NEUTRALIZATION MEDIA . NEUTRALIZATION MEDIA SHALL CONSIST OF NON-HAZARDOUS SOLID ALKALI NON-RESIN MATERIALS. (Limestone, Marble, or Caustic Soda beads are NOT acceptable). SEE DETAIL 14/P501.

DOMESTIC BOOSTER PUMP - DBP1

HYFAB MODEL MVP-630-460 RATED FOR 200 GPM AT 30 PSI BOOST, TWO 3 HP, 480V/3 PHASE VARIABLE SPEED PUMPS, CONTROL PANEL WITH SINGLE POINT POWER CONNECTION, FUSES AND DISCONNECT, STAINLESS STEEL CASING AND INTERNALS, ANSI/ NSF 61 & 372 CERTIFIED. PUMP PACKAGE SHALL INCLUDE A 16 GALLON HYDRO-PNEUMATIC TANK WESSLES MODEL FX-60V, PRESSURE CONTROL VALVE, SUCTION PRESSURE GAUGE, FLEXIBLE TRANSITION FITTINGS AND A 4" FULL PORT BY-PASS VALVE. INSTALL PUMP PACKAGE PER THE MANUFACTURERS INSTRUCTIONS. PUMP PACKAGE TART-UP SHALL BE PERFORMED BY AN AUTHORIZED MANUFACTURERS TECHNICIAN. APPROVED EQUALS: TIGER-FLOW, CANARIIS, GRUNDFOS, SYNCROFLO.

SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	P.D.I. WH201 DESIGNATION	ARRESTOR SIZE	REMARKS
SA-A	1 - 11	A	1/2"	INSTALL SHOCK ARRESTORS PER THE PLUMBING DRAINAGE INSTITUTE (P.D.I.) GUIDELINES.
SA-B	12 - 32	B	3/4"	
SA-C	33 - 60	C	1"	ACCEPTED MANUFACTURERS:
SA-D	61 - 113	D	1-1/4"	SIOUX CHIEF, WATTS, PPP INC., ZURN
SA-E	114 - 154	E	1-1/2"	



PLUMBING SPECIALTIES SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
WB1	WASHING MACHINE CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL	3"	2"	1/2"	1/2"	FIXTURE: GUY GRAY T200TPPVCHA WITH WATER HAMMER ARRESTOR STOPS: INTEGRAL 1/4 TURN SUPPLIES: (2) 5/8" BRAIDED S.S. FLEXIBLE HOSES	2" DRAIN OUTLET, 2" STANDPIPE WITH 2" P-TRAP.
WB2	INDIRECT DRAIN CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL	2"	1-1/2"	-	-	FIXTURE: GUY GRAY T200LV WITH KNOCK-OUTS IN TOP OF BOX 2" DRAIN OUTLET WITH 2" DEEP SEAL P-TRAP	PROVIDE 2" TRAP GUARD EQUAL TO RECTORSEAL "SURE-SEAL". SEE 13/P501
IMB1	ICE MAKER CONNECTION BOX; 7"X 7"X 3.5", 20 GAUGE STEEL WITH WHITE POWDER COATING, RECESSED IN WALL	-	-	1/2"	-	FIXTURE: GUY GRAY MIB1AB STOP: QUARTER TURN WITH SHOCK ARRESTOR SUPPLY: 1/4" FLEXIBLE HOSE	PROVIDE INLINE DOUBLE CHECK VALVE WILIKINS SERIES 700
CS-x	BALANCING VALVE, THERMOSTATIC, AUTOMATIC, SUFFIX INDICATES PIPE SIZE, SEE FLOOR PLANS	-	-	-	**	EQUIPMENT: CIRCUIT SOLVER CS SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	PROVIDE 105°F MODEL
MV1	THERMOSTATIC MIXING VALVE, ASSE 1070, POINT OF USE, WITH 5"x3" FACTORY WALL MOUNT ENCLOSURE.	-	-	1/2"	1/2"	EQUIPMENT: AMERICAN STANDARD 605XTMV1070, NSF 61 CERTIFIED, WITH INTEGRAL CHECK VALVES AND SCREENS ON INLETS.	SET OUTLET TEMPERATURE TO 110°F
SA-x	SHOCK ARRESTOR, SUFFIX INDICATES PDI SIZE	-	-	x	-	EQUIPMENT: SIOUX CHIEF 650 SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	SEE SHOCK ARRESTOR TABLE THIS SHEET
HB1	HOSE BIBB, INTERIOR, WALL MOUNTED ENCASED, STAINLESS STEEL FACE PLATE, ANTI-SIPHON	-	-	1/2"	-	EQUIPMENT: WOODFORD MB24-1/2 PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB2	HOSE BIBB, EXTERIOR, WALL MOUNTED, ENCASED, STAINLESS STEEL FINISH, FREEZELESS, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: WOODFORD MB65 PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB3	HOSE BIBB, EXTERIOR, ENCASED, CHROME FINISH, FREEZELESS, ANTI-SIPHON, DUAL TEMPERATURE, RECESSED	-	-	3/4"	3/4"	EQUIPMENT: WOODFORD HCB67 WITH TEMPERATURE CONTROL MIXING VALVE PROVIDE VACUUM BREAKER AND METAL LOOSE KEY	MOUNT 42" AFF
HB4	HOSE BIBB, EXTERIOR, ROOF MOUNTED, FREEZELESS, AUTOMATIC DRAINING, ANTI-SIPHON, MOUNTING BASE, DECK CLAMP & SHIM.	-	-	3/4"	-	EQUIPMENT: WOODFORD RHY2-MS PROVIDE WITH 3/4" REMOVABLE ASSE 1052 BACKFLOW PREVENTER OUTLET	SEE DETAIL 14/P601.
CO	PLUG CLEANOUT, CAST IRON BODY	**	-	-	-	CLEANOUT: ZURN Z-1440-BP, BRONZE PLUG, CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT
WCO	WALL CLEANOUT, CAST IRON BODY, STAINLESS STEEL WALL PLATE	**	-	-	-	CLEANOUT: ZURN Z-1446-BP, BRONZE PLUG, CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT
FCO	FLOOR CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED FLOOR
YCO	YARD CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE, INSTALLED IN 18"x18"x6" CONCRETE PAD	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG INSTALL IN 18"x 18"x 6" DEEP CONCRETE PAD	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED GRADE
FD1	FLOOR DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN-415-B, 6" DIAMETER GRATE P-TRAP: 3" DEEP SEAL.	INSTALL TOP FLUSH WITH FINISHED FLOOR. SEE NOTE 1 BELOW.
FD2	CONDENSATE DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN-415-I, 9" DIAMETER RECESSED GRATE P-TRAP: NONE (CONNECTED TO STORM DRAIN SYSTEM)	SEE NOTE 2 BELOW.
FS1	FLOOR SINK, 12"x 12"x 6" DEEP, STAINLESS STEEL BODY AND GRATE	**	2"	-	-	DRAIN: ZURN Z1750 P-TRAP: CAST IRON, DEEP SEAL	SEE KITCHEN EQUIP. PLANS FOR GRATE (FULL / QUARTER / HALF)
FS2	FLOOR TROUGH BY FOOD SERVICE EQUIPMENT CONTRACTOR STAINLESS STEEL BODY AND GRATE	4"	2"	-	-	DRAIN: PROVIDED BY F.S.E.C. INSTALLED BY P.C. P-TRAP: 4" CAST IRON, DEEP SEAL	-
RD1	PRIMARY ROOF DRAIN - CAST IRON BODY, SUMP RECEIVER, GRAVEL STOP, AND ALUMINUM DOME	**	-	-	-	DRAIN: ZURN ZA-100-DP-EB WITH DECK PLATE AND ADJUSTABLE EXTENTION	SEE PLANS FOR SIZE.
DSN1	DOWNSPOUT NOZZLE, NICKEL BRONZE BODY	**	-	-	-	DRAIN: ZURN ZANB199 SERIES	MOUNT 18" ABOVE FINISHED GRADE. PROVIDE CONCRETE SPLASH BLOCK AT DISCHARGE LOCATION.

NOTES:
1. PROVIDE HOSE BIBB TO SERVE AS A TRAP PRIMER PER NCPC 412.6 EXCEPTION.
2. PROVIDE BACKWATER TYPE DEVICE FOR EACH CONDENSATE DRAIN CONFORMING TO ASSE 1072 AND EQUAL TO RECOTORSEAL"SURE-SEAL" MODEL SS3009V, INSTALLED IN THE OUTLET OF THE DRAIN BODY (NOT IN THE STRAINER). SEE DETAIL 13/P501

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
SHOCK ARRESTOR	SIOUX CHIEF, PPP INC., ZURN, WATTS
HOSE BIBBS	ZURN, WOODFORD, ZURN, J.R. SMITH
DRAINS	ZURN, J.R. SMITH, WADE
BACKFLOW PREVENTER	WILKINS, WATTS, APOLLO

PLUMBING EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	CONN. SIZE INLET	OUT	SPECIFICATION	REMARKS
WH1	KITCHEN WATER HEATER, COMMERCIAL STORAGE TANK, GAS FIRED, CONDENSING. 120 GALLON CAPACITY	1-1/4"	1-1/4"	EQUIPMENT: A.O. SMITH BTH-500-A GAS INPUT: 500,000 BTUH , RECOVERY: 576 GPM AT 100° RISE. ELEC: 120V, SINGLE PHASE	SET OUTLET TEMPERATURE TO 140°F SEE NOTES 1 AND 4, SEE DETAIL 3/P501
WH2	SCHOOL WATER HEATER (LESS KITCHEN), COMMERCIAL STORAGE TANK, GAS FIRED, CONDENSING. 120 GALLON CAPACITY	2"	2"	EQUIPMENT: A.O. SMITH BTH-500-A GAS INPUT: 500,000 BTUH , RECOVERY: 576 GPM AT 100° RISE. ELEC: 120V, SINGLE PHASE	SET OUTLET TEMPERATURE TO 110°F SEE NOTES 1 AND 4, SEE DETAIL 4/P501
ET1	THERMAL EXPANSION TANK 4.4 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12 MAX. ACCEPTANCE = 3.2 GAL.	SUPPORT FROM WALL, NOT FROM PIPING
ET2	THERMAL EXPANSION TANK 4.4 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12 MAX. ACCEPTANCE = 3.2 GAL.	SUPPORT FROM WALL, NOT FROM PIPING
RCP1	CIRCULATION PUMP, STAINLESS STEEL CONSTRUCTION VARIABLE SPEED.	3/4"	3/4"	PUMP: B&G ECOCIRC 18-20 SS, RATED FOR 9 GPM AT 10' HEAD ELEC: 10-70 WATT, 120V	SEE NOTE 2
RCP2	CIRCULATION PUMP, STAINLESS STEEL CONSTRUCTION VARIABLE SPEED.	1-1/4"	1-1/4"	PUMP: B&G ECOCIRC XL N 45-55, RATED FOR 20 GPM AT 35' HEAD ELEC: 1/2 HP, 208V, SINGLE PHASE	SEE NOTE 2
SP1	ELEVATOR SUMP PUMP AND HIGH WATER ALARM WITH AUDIBLE & VISUAL ALARMS, INTERLOCK WITH BUILDING MANAGEMENT SYSTEM.	-	2"	PUMP: LIBERTY 291 SERIES WITH FLOAT SWITCH, RATED FOR 50 GPM AT 22 FT. HEAD ELECTRICAL: 3/4 H.P, 120V HIGH WATER LEVEL ALARM: LIBERTY ALM-2	PROVIDE CHECK VALVE AND SHUT-OFF VALVE ON DISCHARGE LINE. SEE SCHEMATIC 2/P501
DBP1	DUPLEX VARIABLE SPEED DOMESTIC WATER BOOSTER PUMP PACKAGE AND HYDROPNEUMATIC TANK	4"	4"	PUMP: HYFAB MVP-630-460 ELECTRICAL: DUPLEX 3 HP (EACH), 480 V, 3 PHASE FLOW: 200 GPM PEAK @ 30 PSI BOOST (~69 FEET OF HEAD) HYDROPNUEMATIC TANK: WESSELS FX60V	PROVIDE WITH VARIABLE SPEED CONTROL PANEL. SEE NOTE 3 BELOW.

NOTES:
1. COMMERCIAL GAS FIRED WATER HEATER SHALL HAVE AT LEAST A 96% THERMAL EFFICIENCY RATING, A 5 YEAR WARRANTY, STAINLESS STEEL HEAT EXCHANGERS, REDUNDANT GAS VALVES, SEALED COMBUSTION CHAMBER, FAN ASSISTED COMBUSTION, ASME 150 PSI WORKING PRESSURE, INLET AND OUTLET TEMPERATURE GAUGE, TEMP GAUGE, 150 PSI T&P RELIEF VALVE, OPERATING LIMIT AND HIGH LIMIT CONTROLS, U.L. AND FM APPROVED GAS TRAIN, FLOW SWITCH, 100% SAFETY SHUTDOWN AND LOW NOX EMISSIONS. PROVIDE WITH FACTORY CONDENSATE NEUTRALIZATION KIT. WATER HEATER SHALL EXCEED ASHRAE 90.1 REQUIREMENTS. WATER HEATER SHALL BE MONITORED BY BUILDING BAS SYSTEM. COORDINATE WITH CONTROLS CONTRACTOR.
2. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND A 7-DAY, 24 HOUR DIGITAL TIMER EQUAL TO TORK EW SERIES CAPABLE OF 120/277 INPUT VOLTAGE WITH MANUAL OVERRIDE AND 4 DAY POWER BACKUP. SET CIRCULATION PUMP CONTROL MODE TO CONSTANT PRESSURE.
3. PROVIDE BOOSTER PUMP PACKAGE WITH HYDRO-PNEUMATIC TANK EASY CONNECT END CAP.
4. INSTALL DIRECT VENT PIPING WITH CONCENTRIC ROOF OUTLET PER MANUFACTURER'S DIRECTIONS. POLYPROPYLENE (TYPE BH VENT SYSTEM), CPVC PIPING, OR STAINLESS STEEL SHALL BE USED FOR VENT PIPING MATERIAL. PVC PIPING IS NOT ACCEPTABLE. DO NOT INSTALL CPVC PIPING IN RETURN AIR PLENUMS. PROVIDE CARBON MONOXIDE DETECTOR IN MECHANICAL ROOM ADJACENT TO GAS FIRED EQUIPMENT.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
WATER HEATERS	A.O. SMITH, LOCHINVAR, BRADFORD WHITE
EXPANSION TANKS	AMTROL, A.O. SMITH, WATTS, WESSELS
HW RECIRC PUMPS	B&G, TACO, ARMSTRONG, GRUNDFOS
ELEV. SUMP PUMPS	LIBERTY, OIL MINDER, WEIL
DW BOOSTER PUMPS	HYFAB, B&G, GRUNDFOS

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
P1	TOILET ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED (1.28 GPF) MANUALLY OPERATED FLUSH VALVE	4"	2"	1"	-	FIXTURE: AMERICAN STANDARD "AFWALL MILLENNIUM" MODEL# 2257101 FLUSH VALVE: SLOAN 111-1.28-CO SEAT: BEMIS 1955CT ANTI-MICROBIAL, COLOR: WHITE	15" RIM HEIGHT. SEE NOTE 5 BELOW
P1A	TOILET, A.D.A. COMPLIANT ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED (1.28 GPF) MANUALLY OPERATED FLUSH VALVE	4"	2"	1"	-	FIXTURE: AMERICAN STANDARD "AFWALL MILLENNIUM" MODEL# 2257101 - 16.5 HIGH FLUSH VALVE: SLOAN 111-1.28-CO SEAT: BEMIS 1955CT ANTI-MICROBIAL, COLOR: WHITE	16.5" RIM HEIGHT. SEE NOTE 5 BELOW
P2	URINAL WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) MANUALLY OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD "WASHBROOK" MODEL# 6590.001 FLUSH VALVE: SLOAN 186-0.5-H-CO	SEE NOTE 1 BELOW
P2A	URINAL, A.D.A. COMPLIANT WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) MANUALLY OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD "WASHBROOK" MODEL# 6590.001 FLUSH VALVE: SLOAN 186-0.5-H-CO	SEE NOTE 1 BELOW
P3	LAVATORY, A.D.A. COMPLIANT, 20"x18" RECTANGULAR BOWL, WHITE ENAMELED CAST IRON, CARRIER MOUNTED, 4" CENTER FAUCET HOLES, METERING FAUCET WITH PUSH TOP HANDLES (0.5 GPM) VANDAL RESISTANT AERATOR	2"	1-1/2"	1/2"	1/2"	FIXTURE: AMERICAN STANDARD 4867.004 FAUCET: AMERICAN STANDARD 1340.227 GRID DRAIN: McGUIRE 155A; P-TRAP: McGUIRE 8902C (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTES 2 & 4 BELOW
						FIXTURE: ACORN MERIDIAN KURVE THREE STATION WASHBASIN #3793-H WITH MANUALLY OPERATED HAND BUTTON FAUCETS. INSTALL AS PER MANUFACTURERS SPECIFICATIONS.	-
						FIXTURE: ACORN MERIDIAN KURVE TWO STATION WASHBASIN #3792-H WITH MANUALLY OPERATED HAND BUTTON FAUCETS. INSTALL AS PER MANUFACTURERS SPECIFICATIONS.	-
P4	WATER COOLER & BOTTLE FILLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, TWO-LEVEL DOUBLE BOWL, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER, SENSOR OPERATED BOTTLE FILLER WITH AUTO SHUT-OFF.	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY MODEL# LZSTL8WSLK ELEC: 260 WATT, 120 VOLT, SINGLE PHASE P-TRAP: McGUIRE 8902C (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	PROVIDE CANE APRON WHEN WATER COOLER IS LOCATED ON AN EXPOSED WALL. SEE NOTE 3 BELOW
P5	KITCHEN HAND SINK AND FAUCET PROVIDED BY FOOD SERVICE EQUIPMENT SUPPLIER AND INSTALLED BY P.C.	2"	1-1/2"	1/2"	1/2"	FIXTURE: PROVIDED BY FSEC, INSTALLED BY P.C. FAUCET: PROVIDED BY FSEC, INSTALLED BY P.C. GRID DRAIN: McGUIRE 155A; P-TRAP: McGUIRE 8902C (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTE 4 BELOW
P5A	SINK, A.D.A. COMPLIANT, 22"x19"x5.5" SINGLE BOWL, 18 GAUGE STAINLESS STEEL, COUNTER MOUNTED GOOSENECK FAUCET WITH WRIST BLADE HANDLES, (1.5 GPM) VANDAL RESISTANT AERATOR	2"	1-1/2"	1/2"	1/2"	FIXTURE: ELKAY LRAD221955 FAUCET: AMERICAN STANDARD "MONTERREY" MODEL# 7502.170 LEVER DRAIN: ELKAY LK86RT W/ OVERFLOW DRAIN SOLIDS TRAP: ZURN Z-1180 SUPPLY/STOP: ZURN 8806-XL-LR-LK	PROVIDE OVERFLOW DRILLING CENTERED IN SINK 2" BELOW DRAIN BOARD ELEVATION.
P5B	SINK, A.D.A. COMPLIANT, 33"x19"x5.5" DOUBLE BOWL, 18 GAUGE STAINLESS STEEL, COUNTER MOUNTED GOOSENECK FAUCET WITH WRIST BLADE HANDLES, (1.5 GPM) VANDAL RESISTANT AERATOR	2"	1-1/2"	1/2"	1/2"	FIXTURE: ELKAY LRAD331955 FAUCET: AMERICAN STANDARD "MONTERREY" MODEL# 7502.170 LEVER DRAIN: ELKAY LK86RT W/ OVERFLOW DRAIN SOLIDS TRAP: ZURN Z-1180 SUPPLY/STOP: ZURN 8806-XL-LR-LK	PROVIDE OVERFLOW DRILLING CENTERED IN SINK 2" BELOW DRAIN BOARD ELEVATION.
P5EW	EMERGENCY EYEWASH (AT HEALTH RM SINK) COUNTER MOUNTED WITH DUAL SPRAY HEADS, SWING VALVE OPERATED.	-	-	1/2"	1/2"	FIXTURE: BRADLEY S1944011BBC, ANSI Z358.1 COMPLIANT THERMOSTATIC MIXING VALVE: BRADLEY S19-2000EFX8	PROVIDE BRAIDED STAINLESS STEEL FLEXIBLE HOSE AND WALL BRACKET.
P6	MOP SINK, 24"x 24"x 12" TERRAZZO BASIN, 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD CAP, 36" HIGH STAINLESS STEEL WALL GUARDS, SERVICE FAUCET, HOSE, MOP HANGER BRACKET.	3"	2"	1/2"	1/2"	FIXTURE: FIAT TSB100, 830AA, 832AA, (2) MSG3624 FAUCET: AMERICAN STANDARD 8344.012 WITH INTEGRAL VACUUM BREAKER, DRAIN: 3" STAINLESS STEEL SLOTTED P-TRAP: 3" DEEP SEAL, CAST IRON	PROVIDE CHECK VALVES ON HW AND CW SUPPLIES. SEE DETAIL 8/P501.
P7	SHOWER, PRESSURE BALANCED SHOWER VALVE WITH 1.5 GPM WALL MOUNTED SHOWER HEAD WITH HAND HELD SHOWER AND SLIDE BAR.	2"	2"	1/2"	1/2"	FIXTURE: TILED WALLS AND FLOOR BY G.C. SHOWER VALVE & TRIM: LEONARD 4500S-H14 PROVIDE 2" FD1 AND 2" P-TRAP IN TILED FLOOR BASE	COORDINATE RIGHT OR LEFT HAND CONTROLS WITH ARCHITECTURAL PLANS AND ELEVATIONS
P7A	SHOWER, ADA COMPLIANT, PRESSURE BALANCED SHOWER VALVE WITH 1.5 GPM WALL MOUNTED SHOWER HEAD WITH HAND HELD SHOWER AND SLIDE BAR.	2"	2"	1/2"	1/2"	FIXTURE: TILED WALLS AND FLOOR BY G.C. SHOWER VALVE & HEAD : LEONARD 4500S-D2L-H14-515P(G)30 PROVIDE 2" FD1 AND 2" P-TRAP IN TILED FLOOR BASE	COORDINATE RIGHT OR LEFT HAND CONTROLS WITH ARCHITECTURAL PLANS AND ELEVATIONS

NOTES:
1. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1222-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
2. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED, ADJUSTABLE CONCEALED ARM CARRIER EQUAL TO ZURN Z1231-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND BLOCK WALL, PROVIDE EXTENDED CONCEALED ARM SLEEVES TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
3. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1225-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
4. PROVIDE PRE-MANUFACTURED A.D.A. COMPLIANT INSULATION KIT FOR EXPOSED P'TRAP AND SUPPLY TRIM UNDER SINK.
5. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED CARRIER EQUAL TO ZURN Z1203 (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
VITREOUS CHINA	KOHLER, AMERICAN STANDARD, TOTO
FLUSH VALVES	AMERICAN STANDARD, ZURN, SLOAN
ENAMELED CAST IRON	KOHLER, AMERICAN STANDARD
CARRIERS	ZURN, J.R. SMITH, WADE
STAINLESS STEEL SINKS	ELKAY, JUST, ADVANCE TABCO
FAUCETS	AMERICAN STANDARD, CHICAGO
WATER COOLERS	MURDOCK, ELKAY, HALSEY TAYLOR
SUPPLIES, STOPS	ZURN, MCGUIRE, BRASSCRAFT
HOSE BIBBS	ZURN, J.R. SMITH, WOODFORD
UTILITY SINKS	FIAT, FLORESTONE, STERN WILLIAMS
SHOWER VALVES	AMERICAN STANDARD, CHICAGO, SYMMONS

PLUMBING FIXTURE SCHEDULE (LAB SPACES)

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
L1	LAB SINK AND FAUCET BY LAB CASEWORK SUPPLIER.	2"	2"	1/2"	1/2"	FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - ZURN ZURN Z9A-PHIX (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTE 1 BELOW. SEE DETAILS 11 & 12/P501
L2	LAB FUME HOOD CUP SINK SINK AND FAUCET BY LAB CASEWORK SUPPLIER.	2"	2"	1/2"	1/2"	FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - ZURN ZURN Z9A-PHIX (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTE 1 BELOW. SEE DETAILS 11/P501
ES1	EMERGENCY EYEWASH & SHOWER, ADA COMPLIANT, WALL MOUNTED EYEWASH, CEILING MOUNTED SHOWER, STAINLESS STEEL FINISH	2"	2"	1"	1"	EYEWASH: BRADLEY S19-224SC SHOWER: BRADLEY S19-130SSBF THERMOSTATIC MIXING VALVE: BRADLEY S19-2100EFX25 PROVIDE 1-1/2" P-TRAP FOR EYEWASH DRAIN, PROVIDE STAINLESS STEEL SUPPLY PIPING FOR EXPOSED PIPING TO EMERGENCY SHOWER HEAD	PROVIDE TEST KIT WITH BUCKET. ANSI Z358.1 COMPLIANT. SEE DETAIL 10/P501.

NOTES:
1. GRID DRAIN / TAIL PIECE AND PIPING FROM THE LAB SINK TO THE NEUTRALIZATION TRAP SHALL BE ACID RESISTANT SCHEDULE 40 POLYPROPYLENE PIPE (ASTM D4101, ASTM F1412), NSF LISTED, CSA CERTIFIED WITH POLYPROPYLENE FITTINGS (ASTM D4101, ASTM F1412) WITH MECHANICAL JOINTS.

APPROVED EQUALS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
EMERGENCY FIXTURES	BRADLEY, GUARDIAN, SPEAKMAN
ACID WASTE SPECIALTY	ORION, ZURN, IPEX

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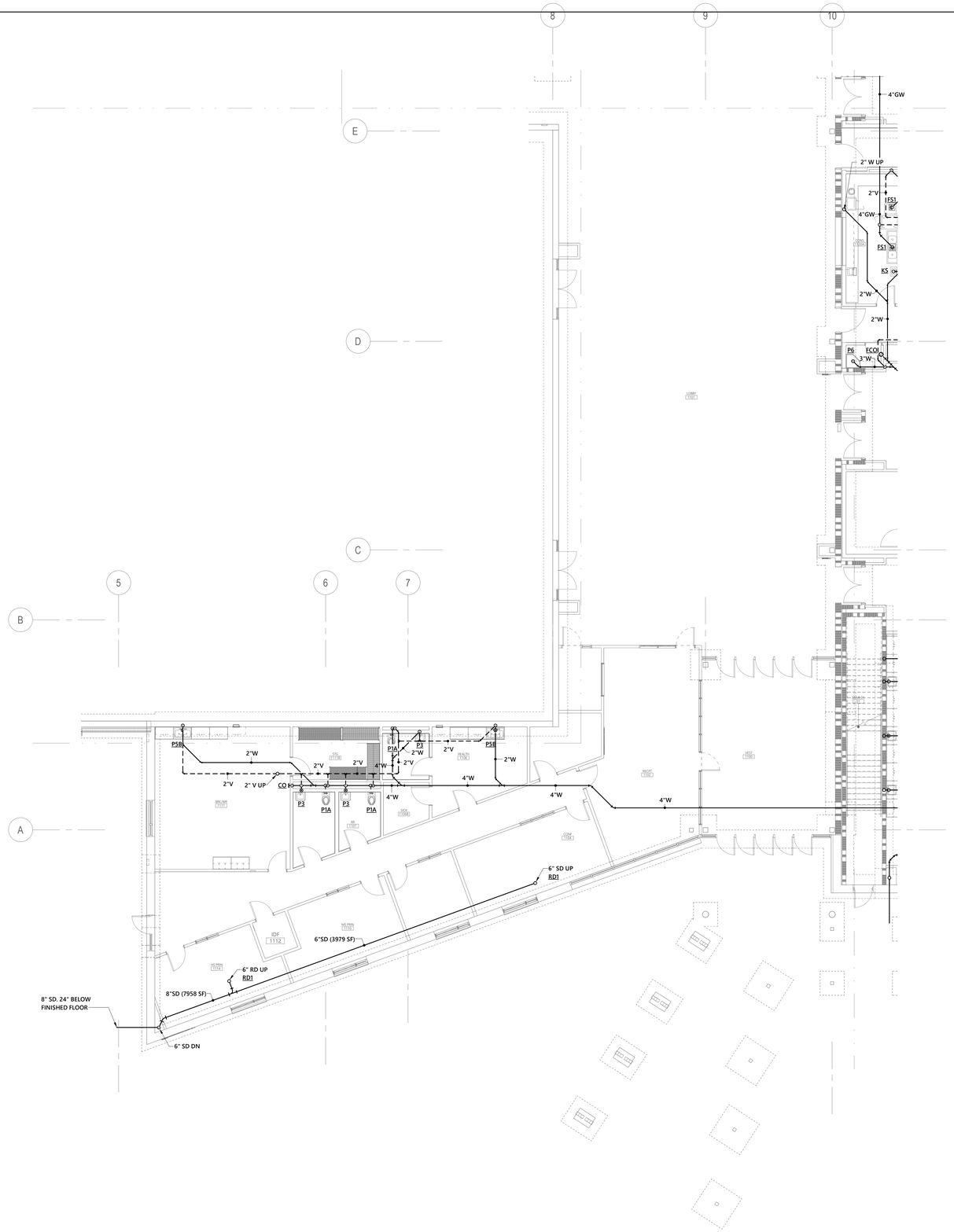
PLUMBING SCHEDULES

P-002



1 FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA A
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
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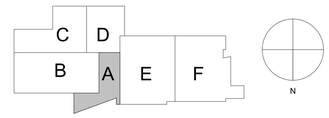
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA A

P-111A

Sheet No. 3 of 45

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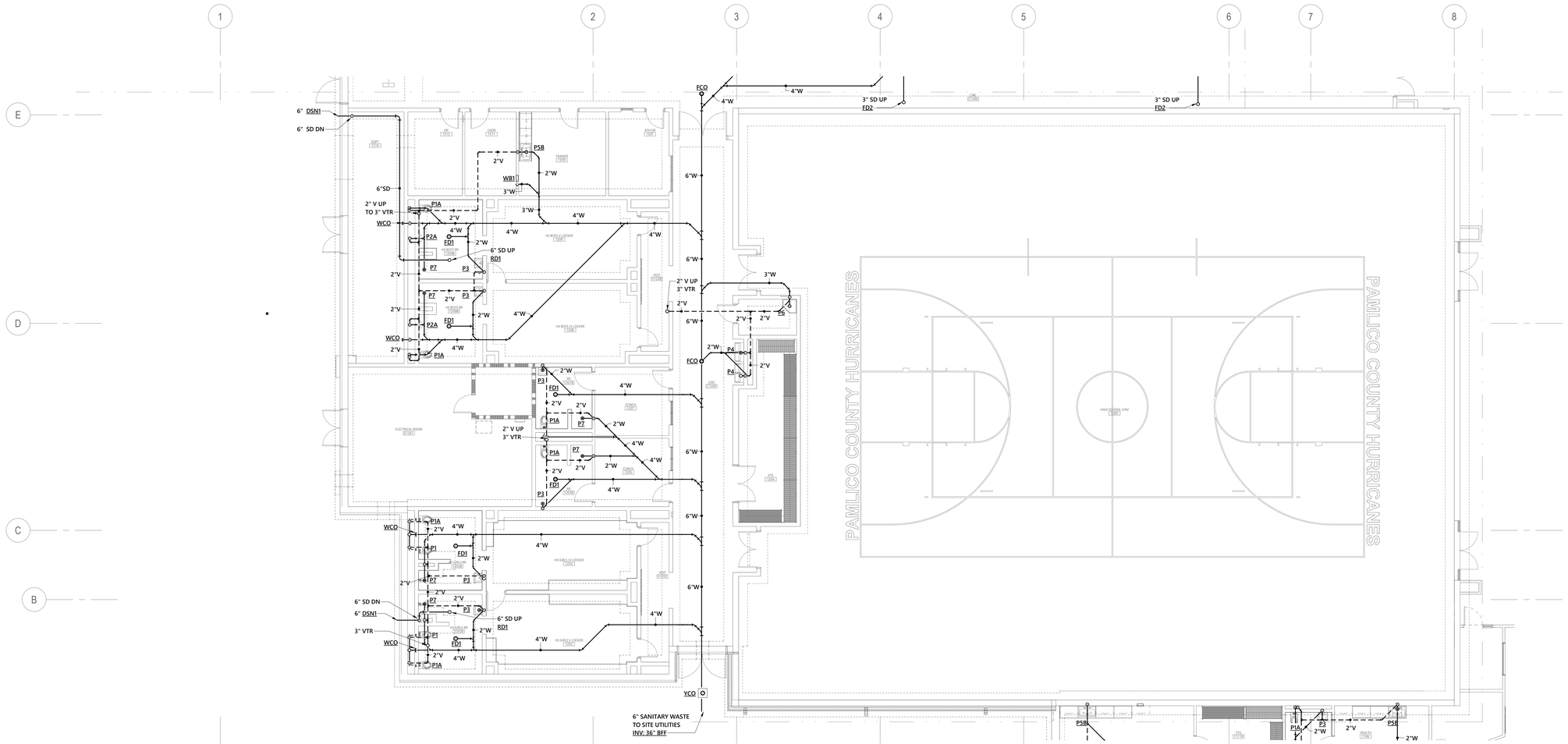

1 FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA B

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
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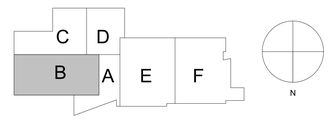
	2 HR FIRE RATED

KEYPLAN



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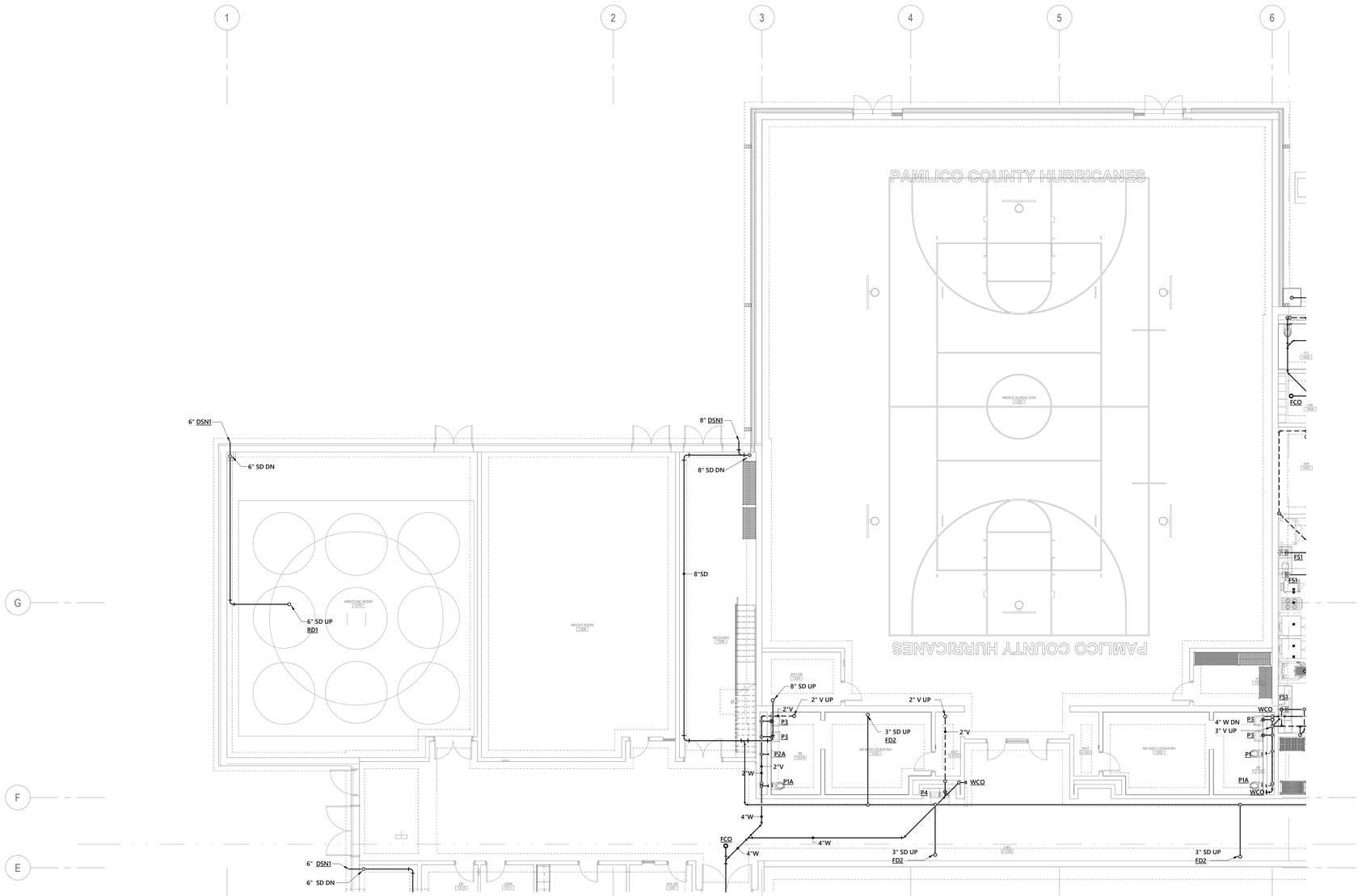
FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA B

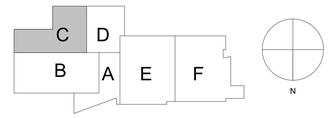
P-111B



1 FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA C
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA C

P-111C

Sheet No. 5 of 45

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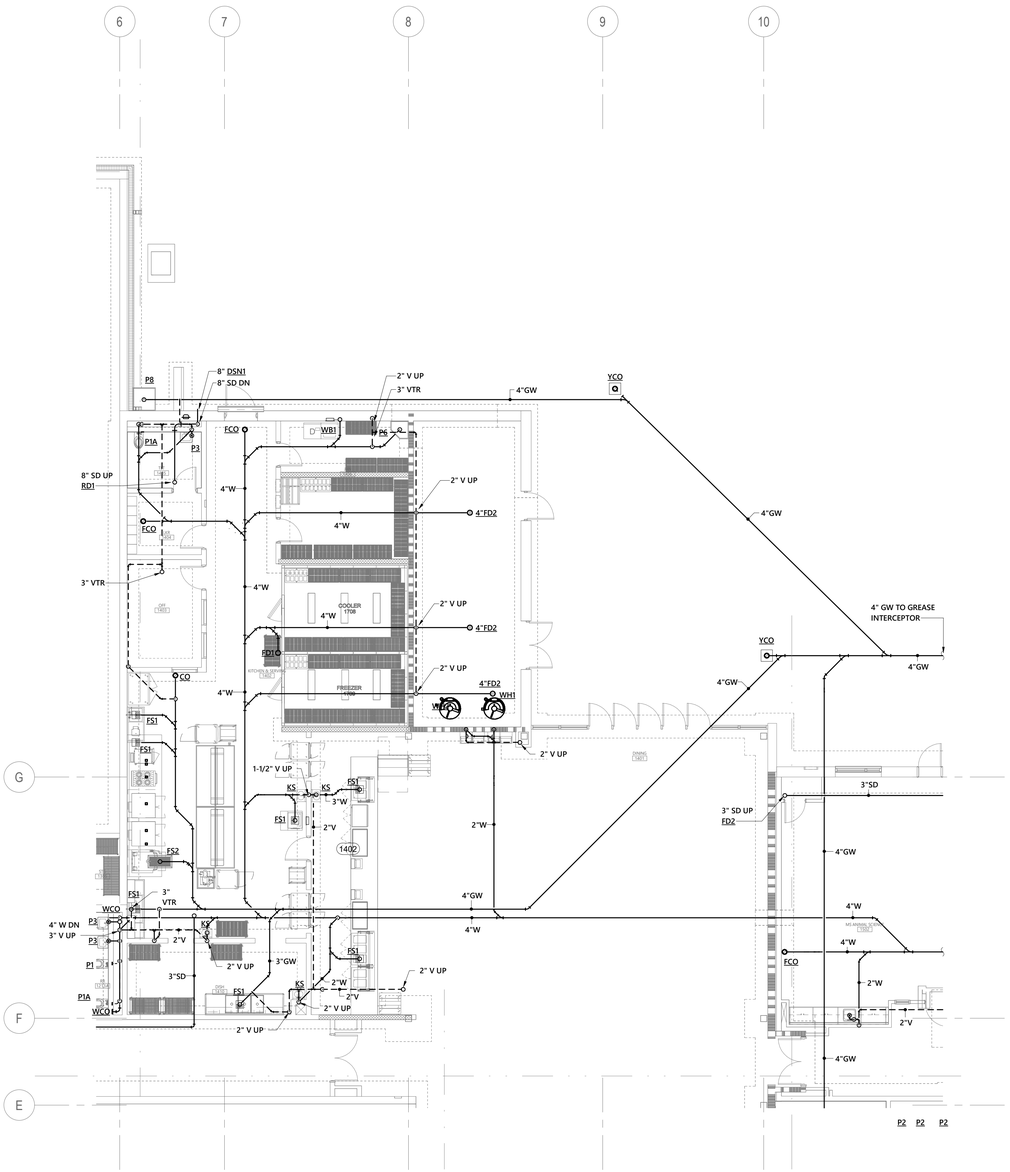
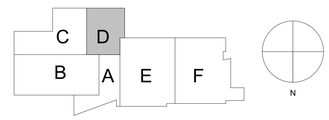


1 FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA D
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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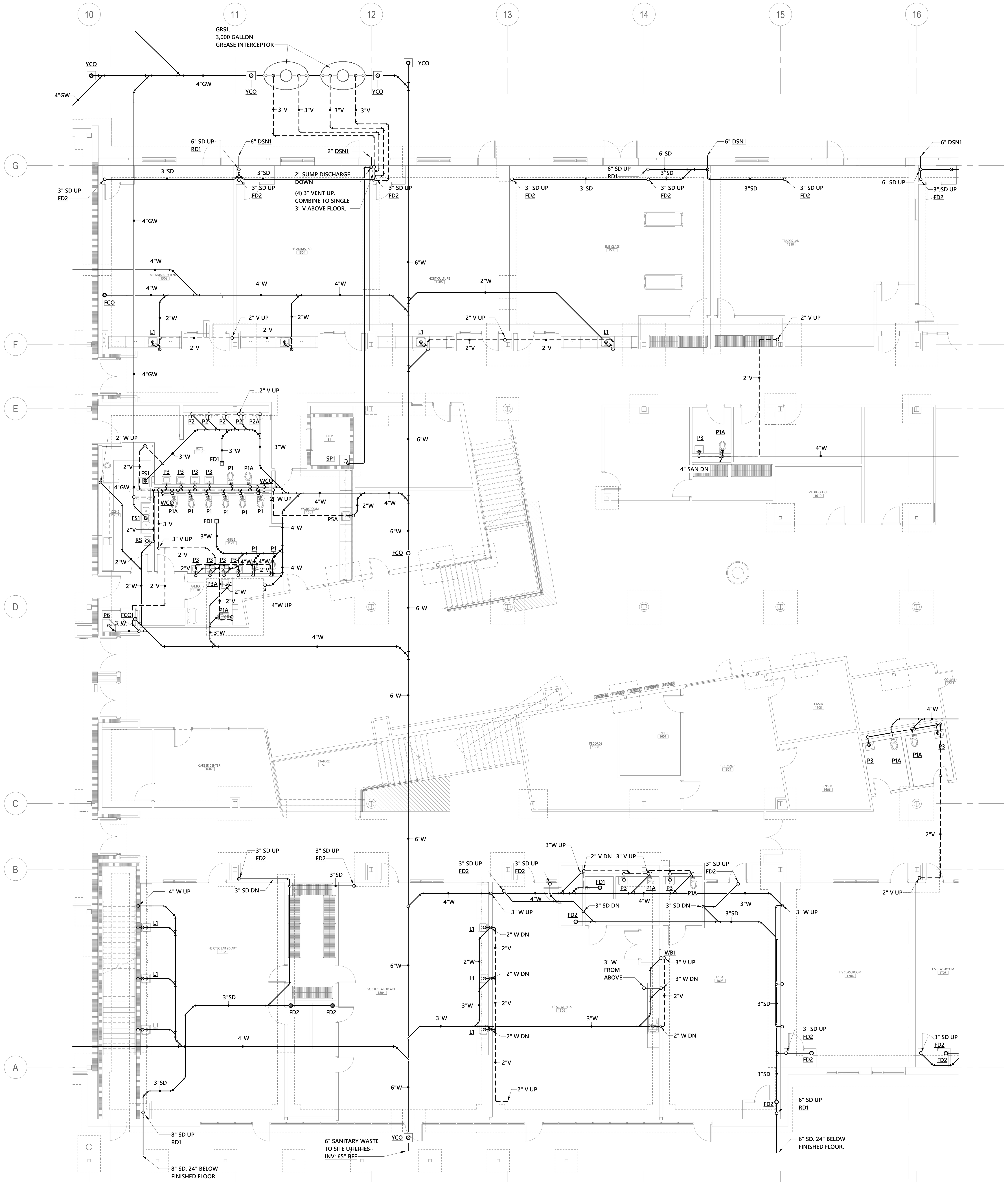
FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA D

P-111D



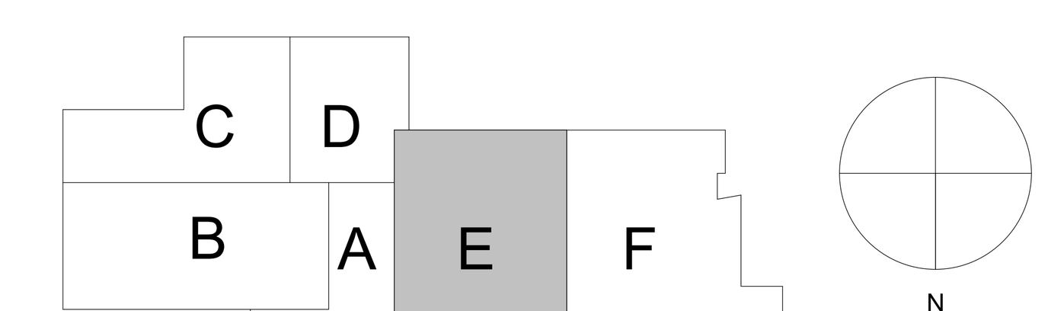
1 FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA E

1/8" = 1'-0"

RATED WALL LEGEND

SYMBOL	DESCRIPTION
▨	1 HR FIRE RATED
▨	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA E

P-111E

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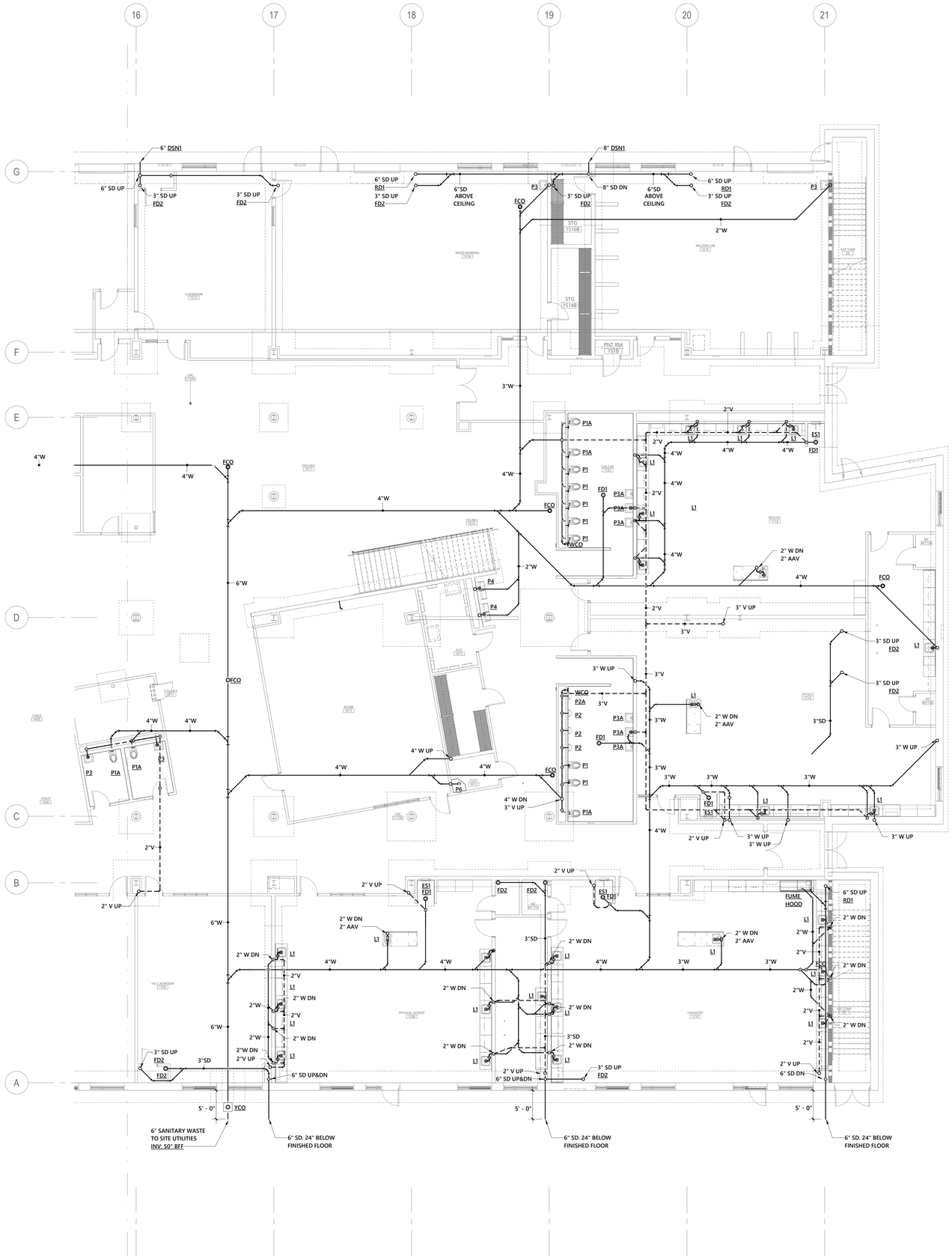
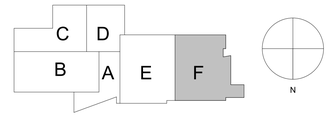


1 **FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA F**
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR WASTE & VENT PLUMBING PLAN - AREA F

P-111F

Sheet No. 8 of 45

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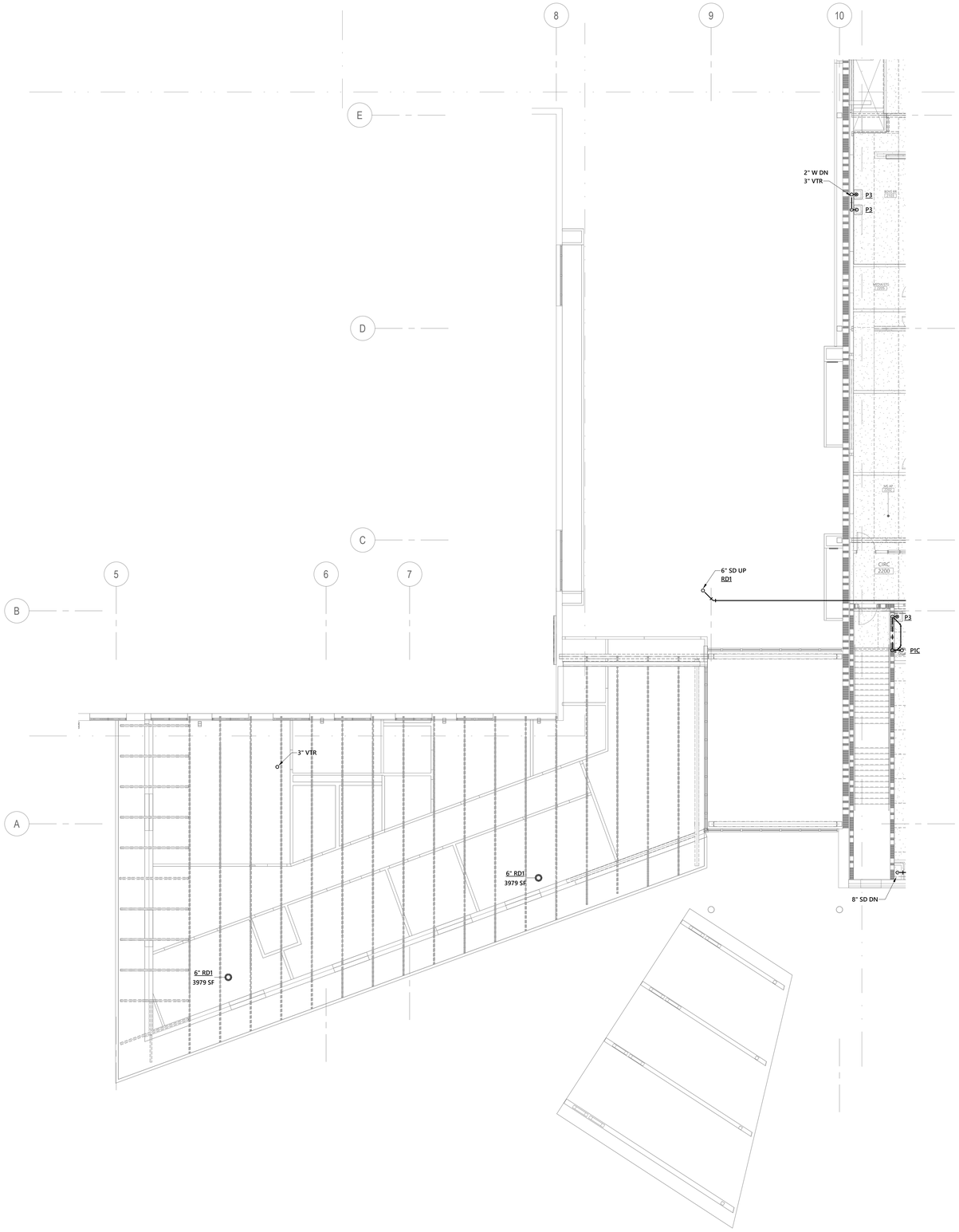
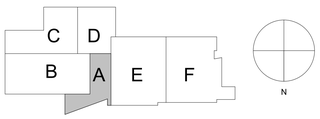


1 SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA A
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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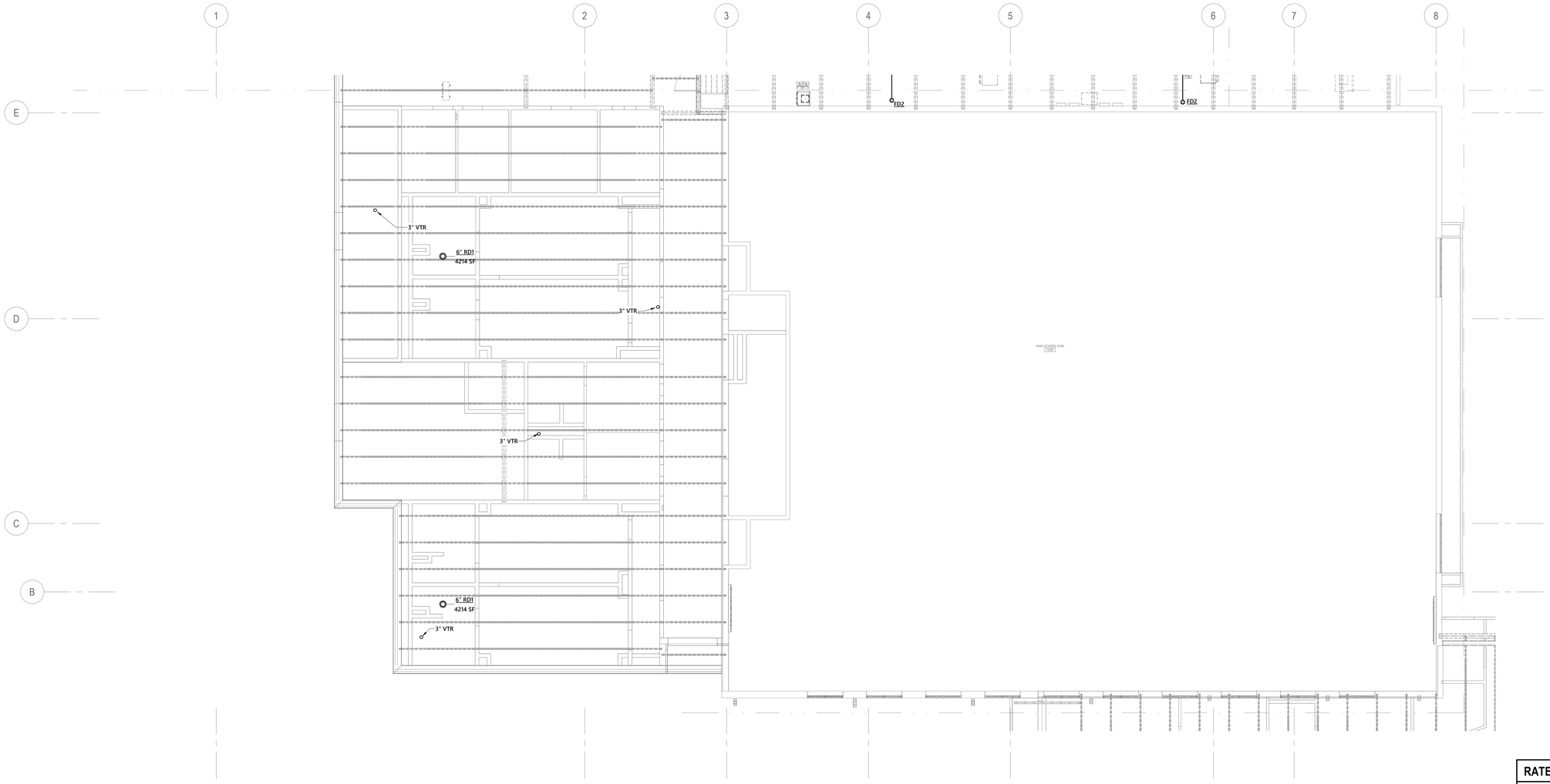
SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA A

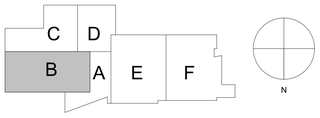
P-112A



1 SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA B
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA B

P-112B

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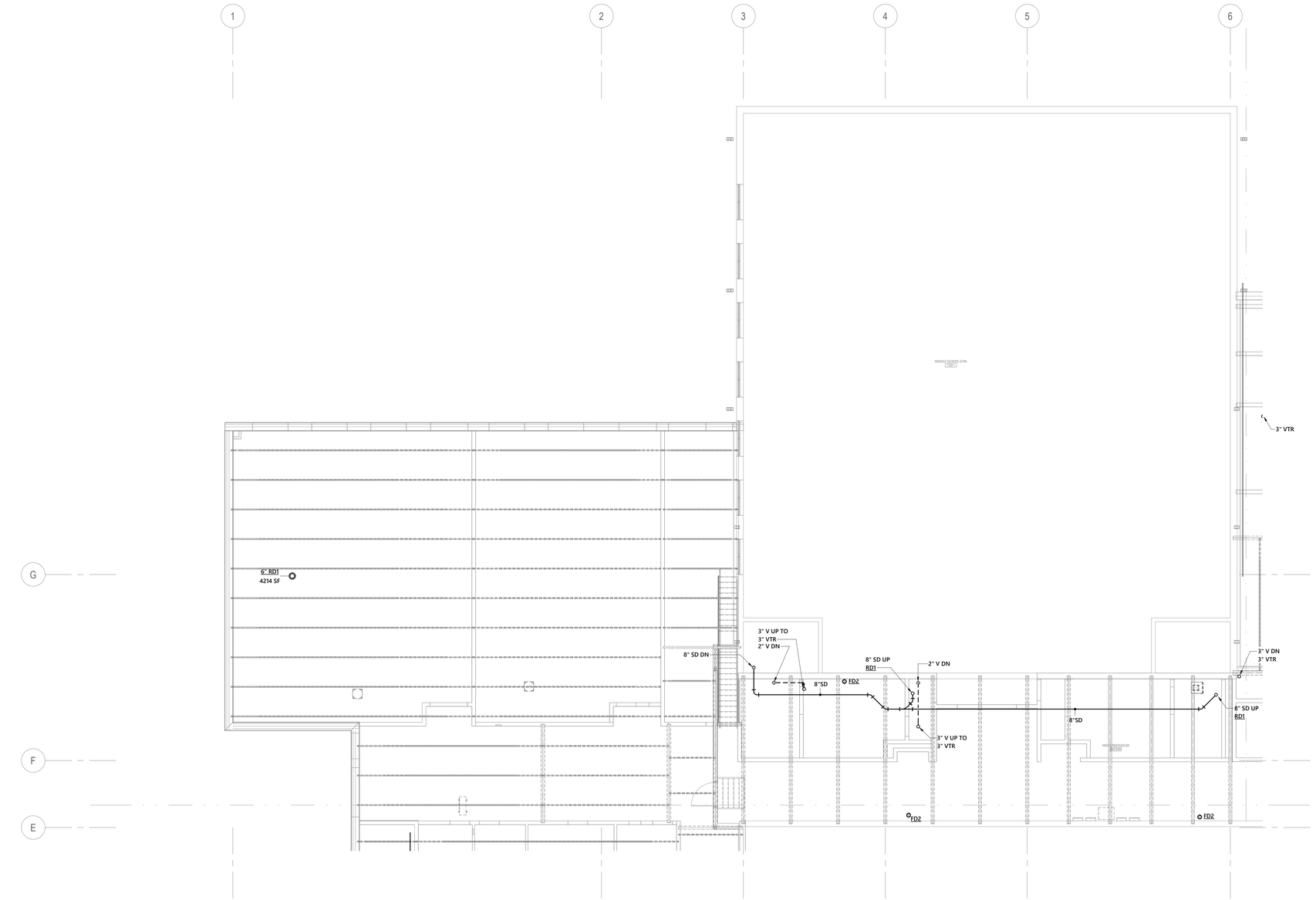
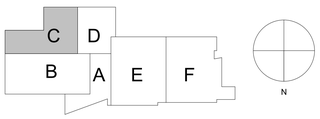


1 SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA C
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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No.	Date	Description

ISSUE DATE:	06/12/24
PROJECT #:	2205
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CHECKED BY:	GCF

SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA C

P-112C

Sheet No. 11 of 45

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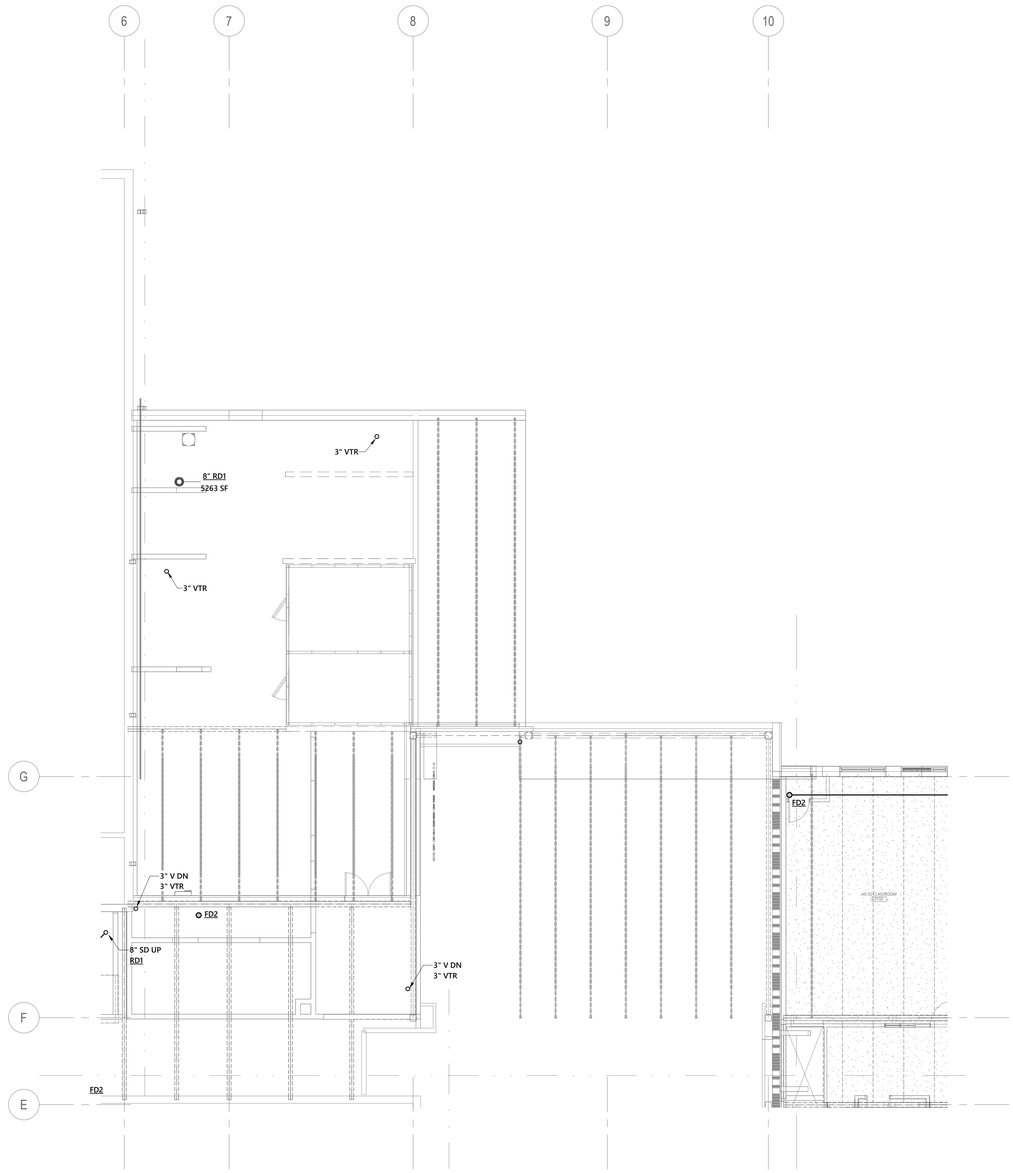
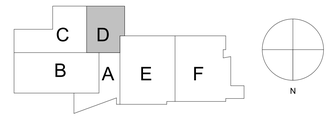


1 **SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA D**
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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No.	Date	Description
ISSUE DATE:		06/12/24
PROJECT #:		2205
DRAWN BY:		CAW
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SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA D

P-112D

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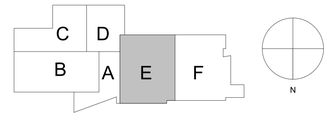
1 SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA E

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA E

P-112E

Sheet No. 13 of 45

OPTIMA# 23-0082R

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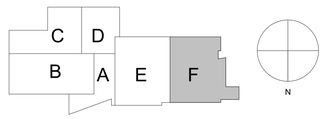
1 **SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA F**

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR WASTE & VENT PLUMBING PLAN - AREA F

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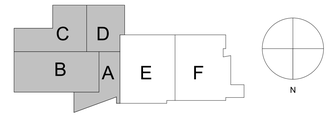
1 **ROOF PLUMBING PLAN - WEST**
1/16" = 1'-0"

KEYPLAN



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ROOF PLUMBING PLAN - WEST

P-113A

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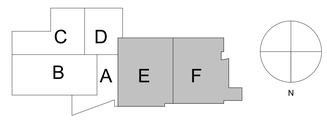
1 **ROOF PLUMBING PLAN - EAST**
1/16" = 1'-0"

KEYPLAN



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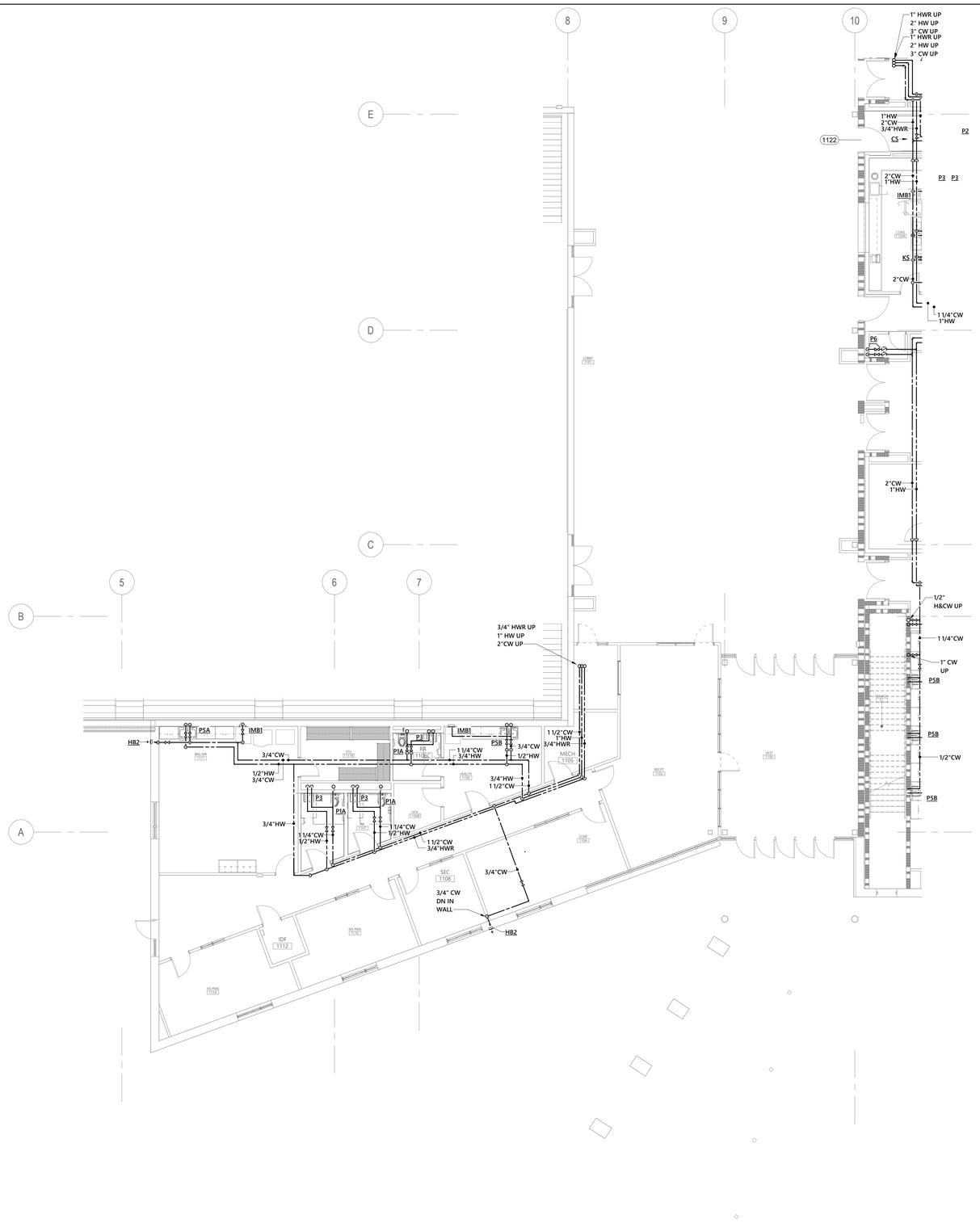
ROOF PLUMBING PLAN - EAST

P-113B

Sheet No. 16 of 45

OPTIMA# 23-0082R

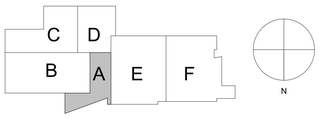


1 **FIRST FLOOR SUPPLY PIPING PLAN - AREA A**

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR SUPPLY PIPING PLAN - AREA A

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Sheet No. 17 of 45

OPTIMA# 23-0082R

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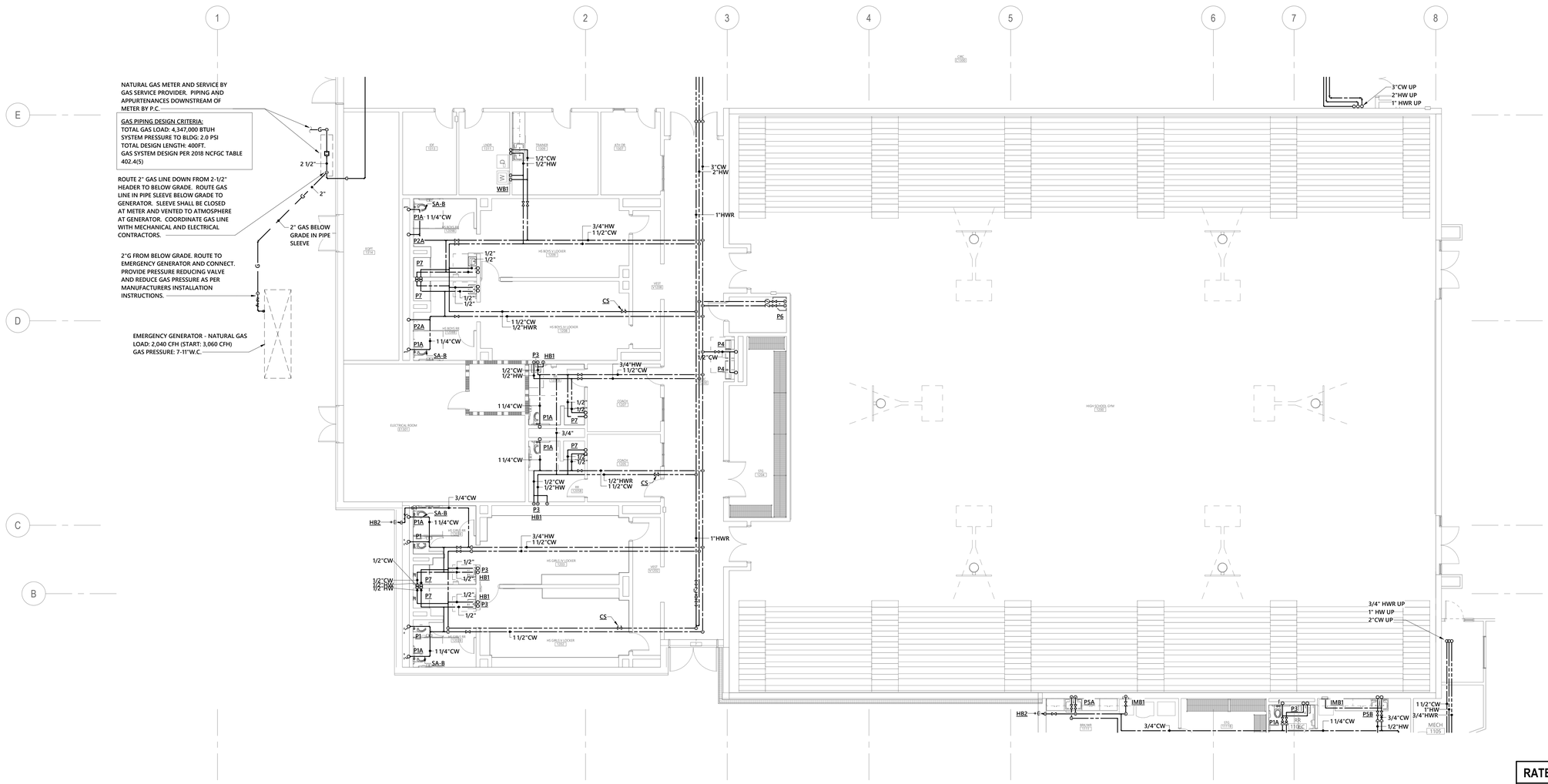
GAS EQUIPMENT SCHEDULE

TAG	EQPM DESCRIPTION	LOAD (BTUH)
---	EMERGENCY GENERATOR - NATURAL GAS	3,060,000
#27	FOOD SERVICE EQUIPMENT	93,000
#26	FOOD SERVICE EQUIPMENT	45,000
#26	FOOD SERVICE EQUIPMENT	45,000
#25	FOOD SERVICE EQUIPMENT	40,000
#24	FOOD SERVICE EQUIPMENT	32,000
#24	FOOD SERVICE EQUIPMENT	32,000
WH2	PLUMBING EQUIPMENT	500,000
WH1	PLUMBING EQUIPMENT	500,000
TOTAL GAS LOAD (BTUH)		4,347,000

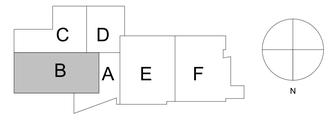


1 FIRST FLOOR SUPPLY PIPING PLAN - AREA B
1/8" = 1'-0"

RATED WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR SUPPLY PIPING PLAN - AREA B

P-211B

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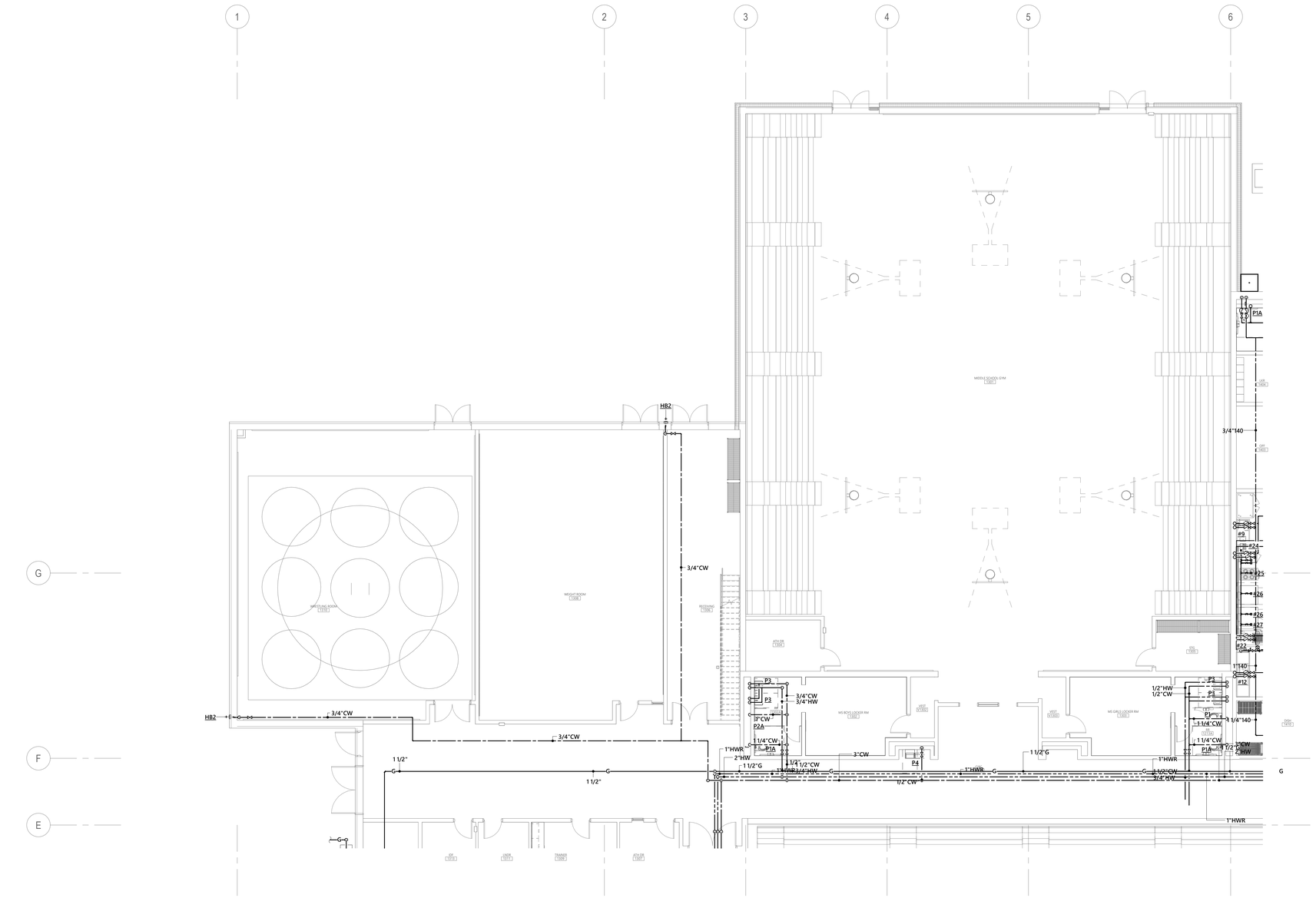
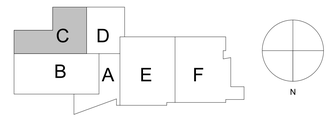


1 FIRST FLOOR SUPPLY PIPING PLAN - AREA C
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR SUPPLY PIPING PLAN - AREA C

P-211C

Sheet No. 19 of 45

OPTIMA# 23-0082R

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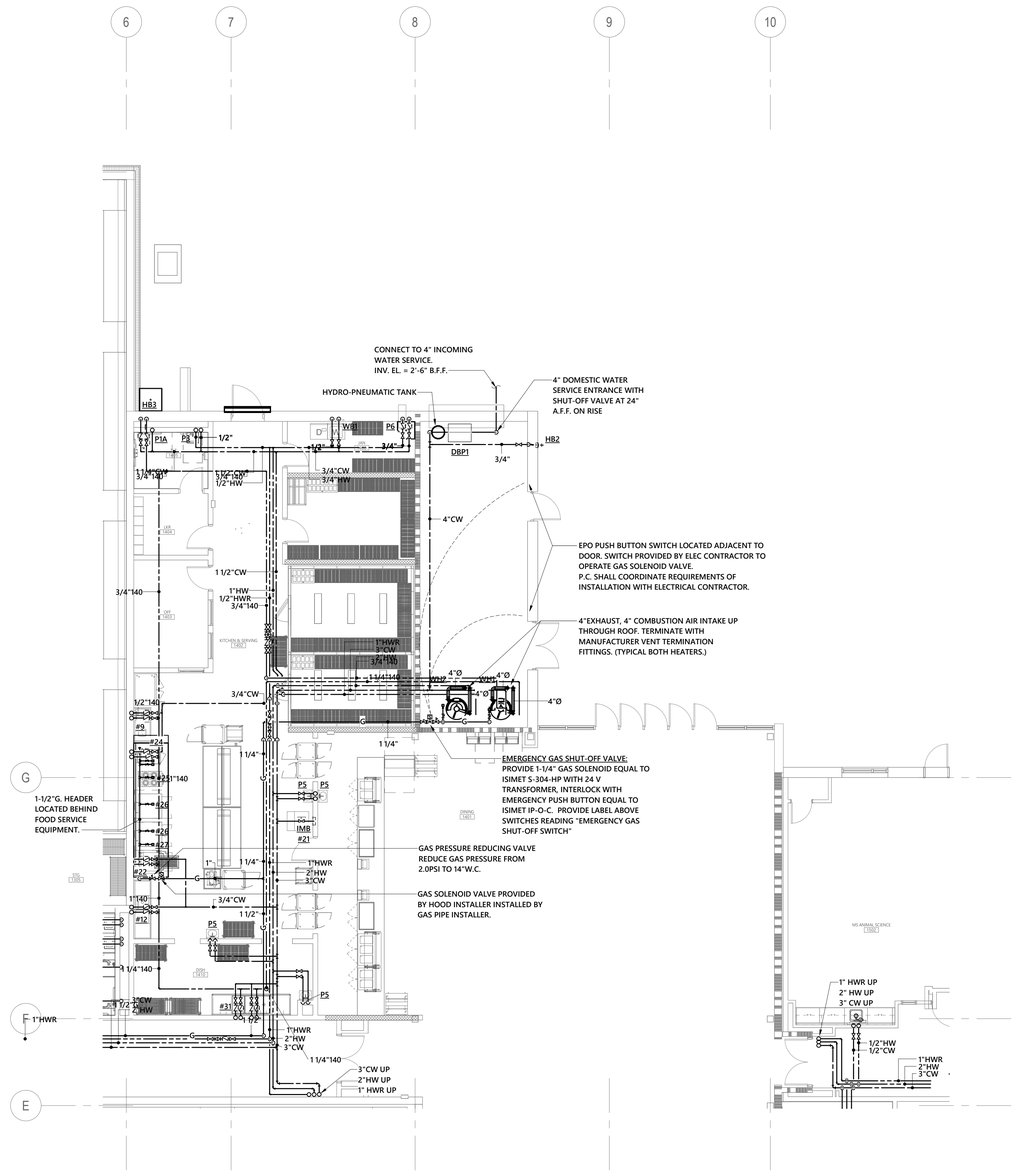
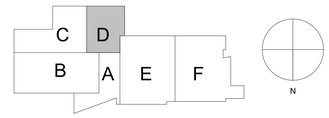


1 FIRST FLOOR SUPPLY PIPING PLAN - AREA D

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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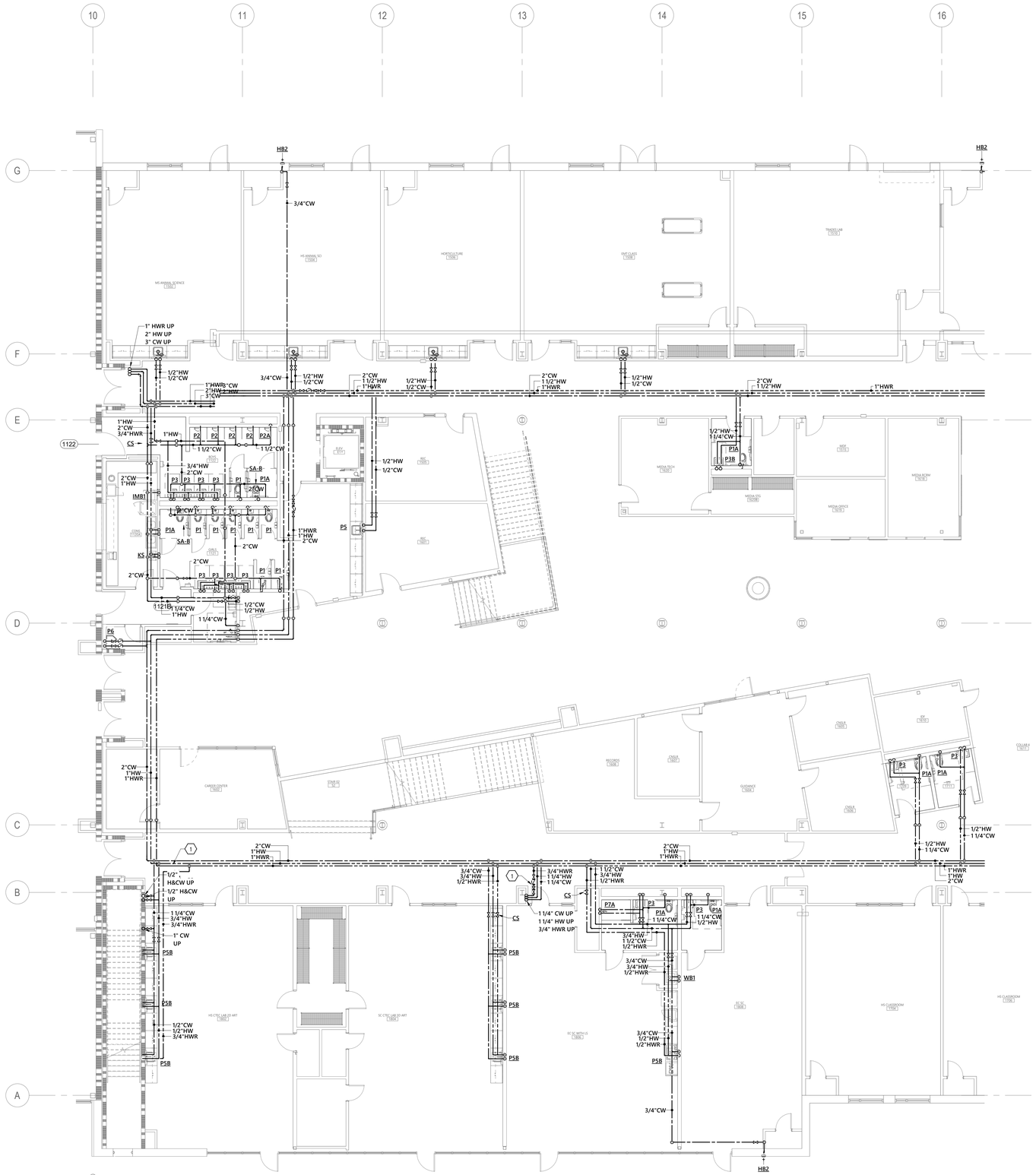
FIRST FLOOR SUPPLY PIPING PLAN - AREA D

P-211D

Sheet No. 20 of 45

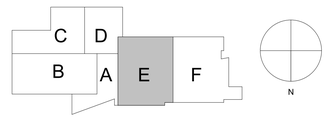
OPTIMA# 23-0082R



1 FIRST FLOOR SUPPLY PIPING PLAN - AREA E
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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FIRST FLOOR SUPPLY PIPING PLAN - AREA E

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Sheet No. 21 of 45

OPTIMA# 23-0082R

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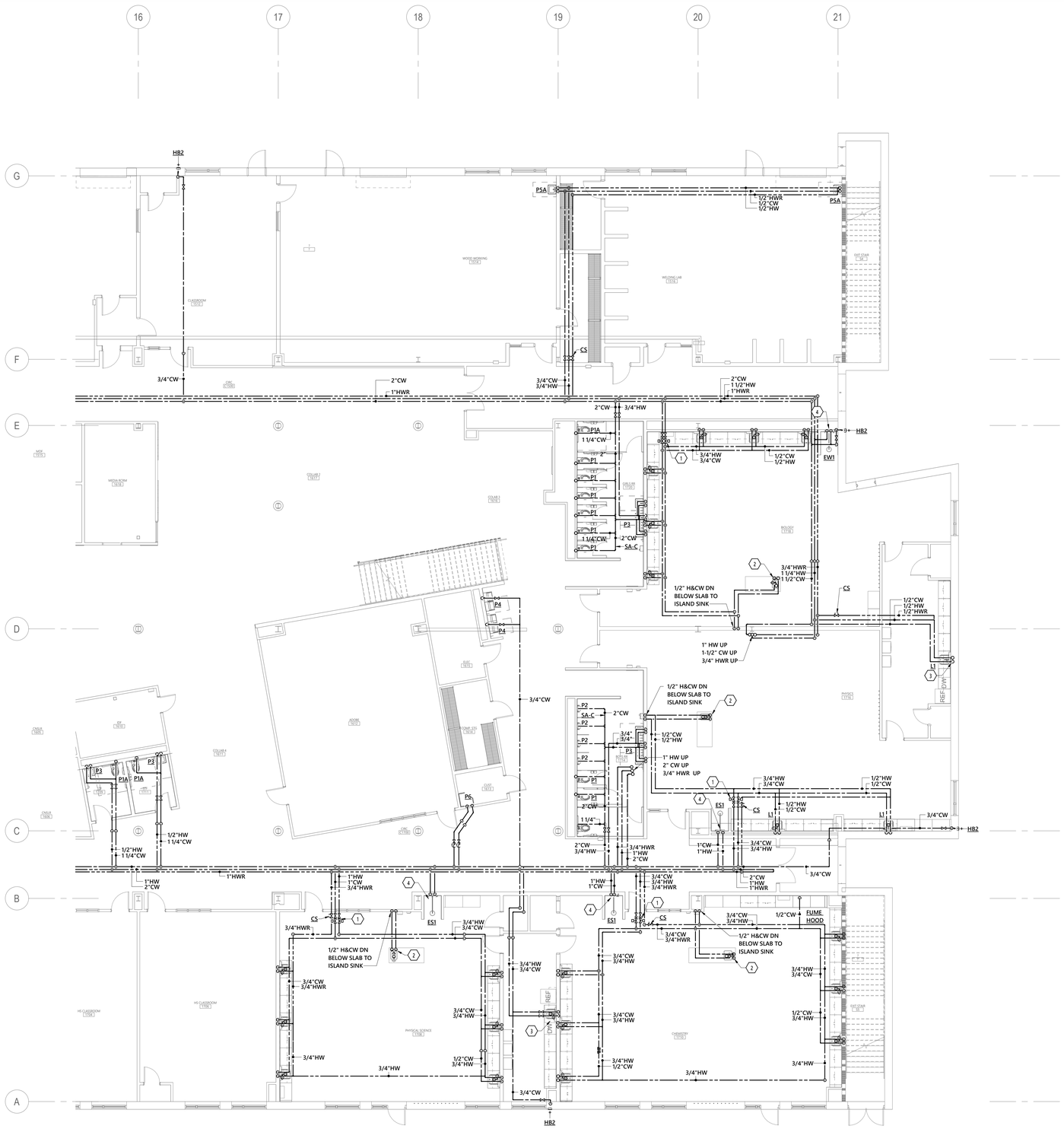


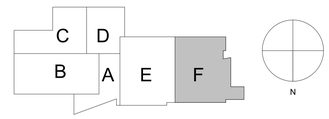
KEYNOTES

1. 1"CW, 1"HW, SOLENOID VALVES (FAIL CLOSED) PROVIDED BY E.C. INSTALLED BY P.C. INTERLOCKED WITH EMERGENCY SHUT-OFF SWITCH. SEE ELEC. PLANS OR SWITCH LOCATION. PROVIDE 1"CW & 1"HW PRESSURE REDUCING VALVES, SET OUTLET PRESSURE TO 40 PSI.
2. 1/2"HW & 1/2"CW DOWN TO BELOW FLOOR AND STUB UP IN INSTRUCTORS STATION CASEWORK.
3. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.
4. 1"HW & 1"CW TO EMERGENCY SHOWER. SEE DETAIL 10/P501 FOR CONTINUATION.

RATED WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



1 FIRST FLOOR SUPPLY PIPING PLAN - AREA F
1/8" = 1'-0"

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FIRST FLOOR SUPPLY PIPING PLAN - AREA F

P-211F

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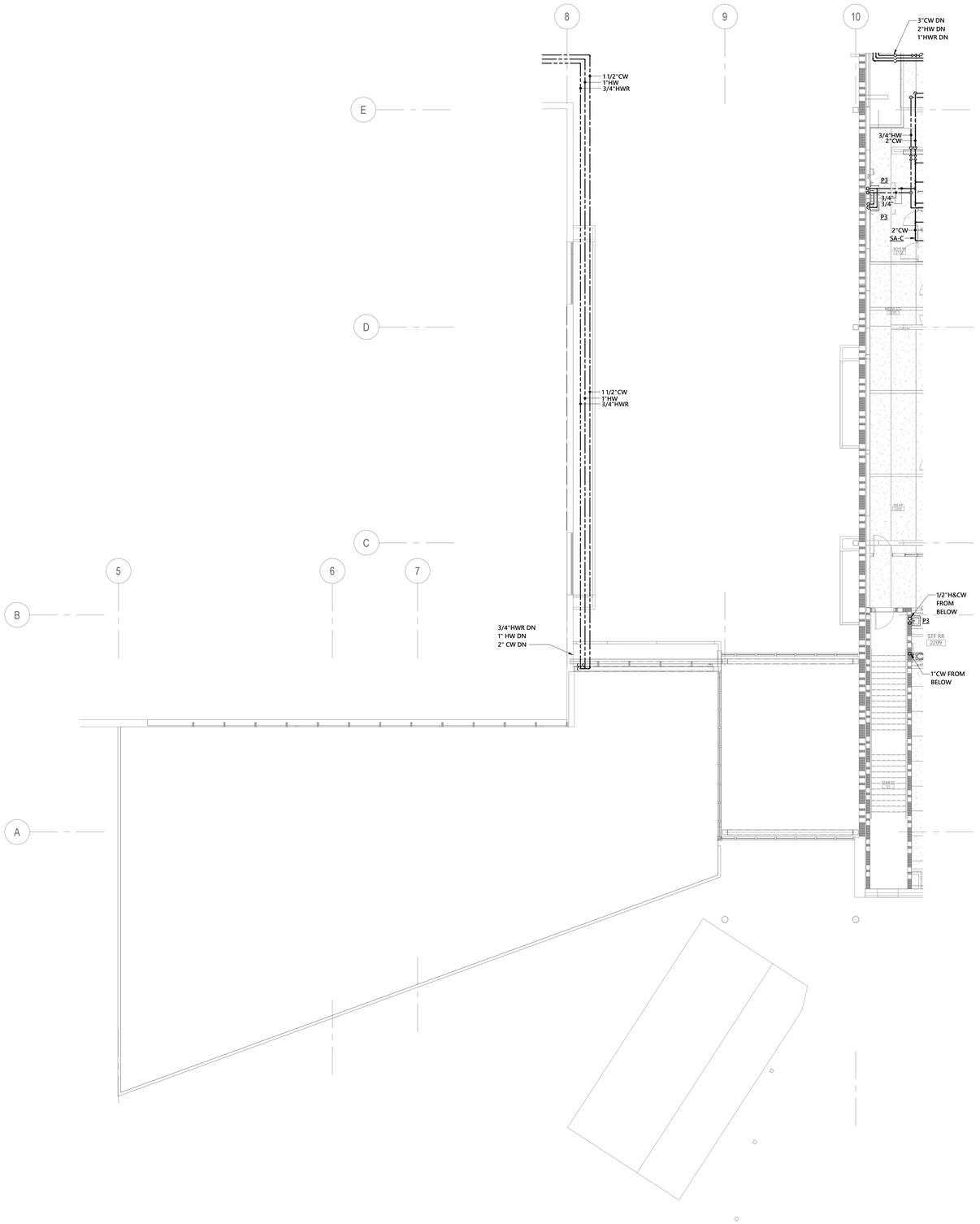
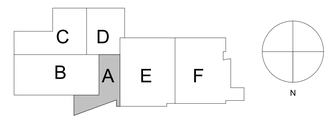


1 SECOND FLOOR SUPPLY PIPING PLAN - AREA A
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR SUPPLY PIPING PLAN - AREA A

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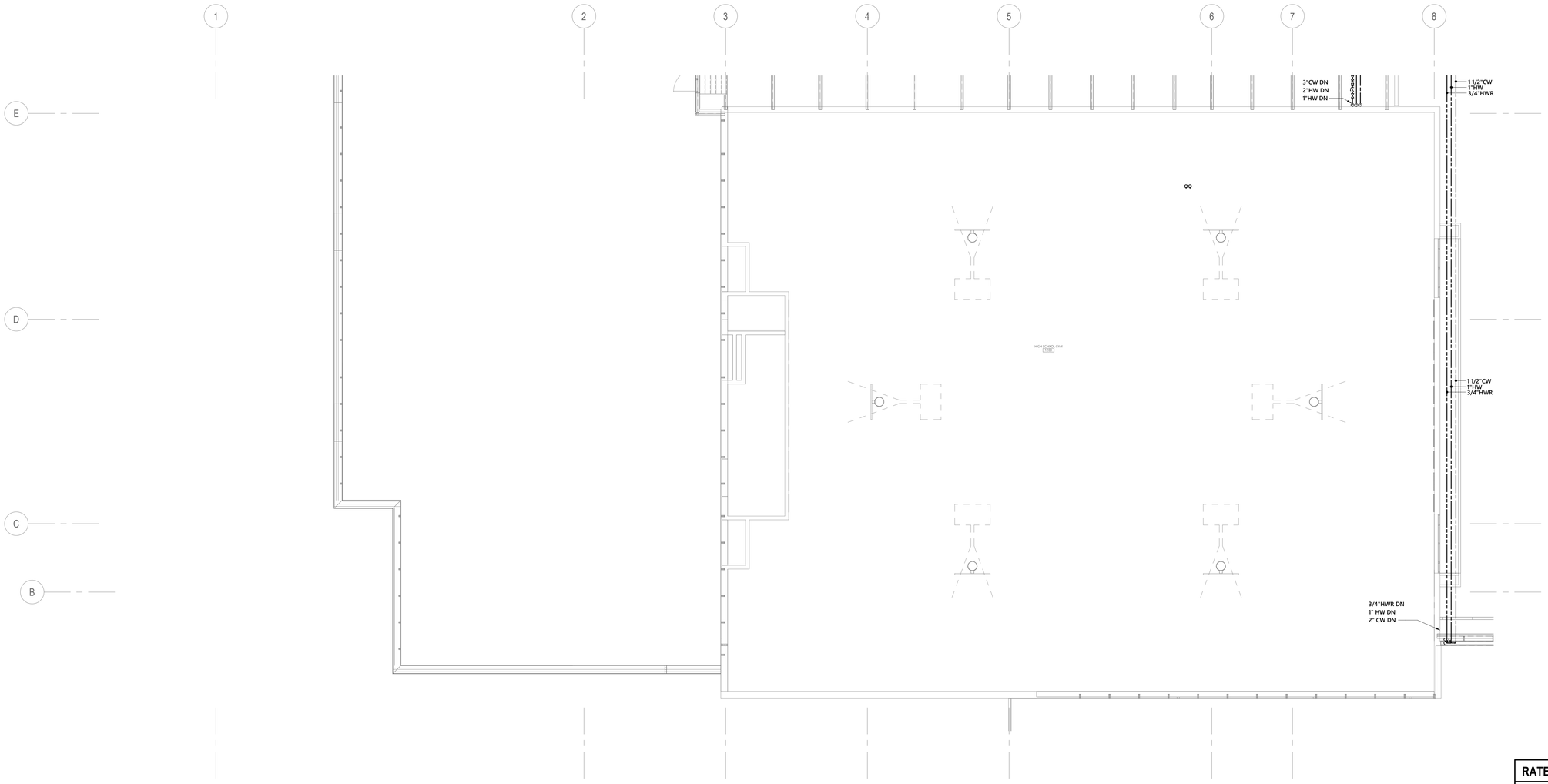
Sheet No. 23 of 45

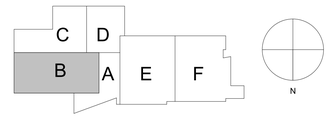
OPTIMA# 23-0082R



1 SECOND FLOOR SUPPLY PIPING PLAN - AREA B
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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ISSUE DATE:	06/12/24
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SECOND FLOOR SUPPLY PIPING PLAN - AREA B

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Sheet No. 24 of 45

OPTIMA# 23-0082R

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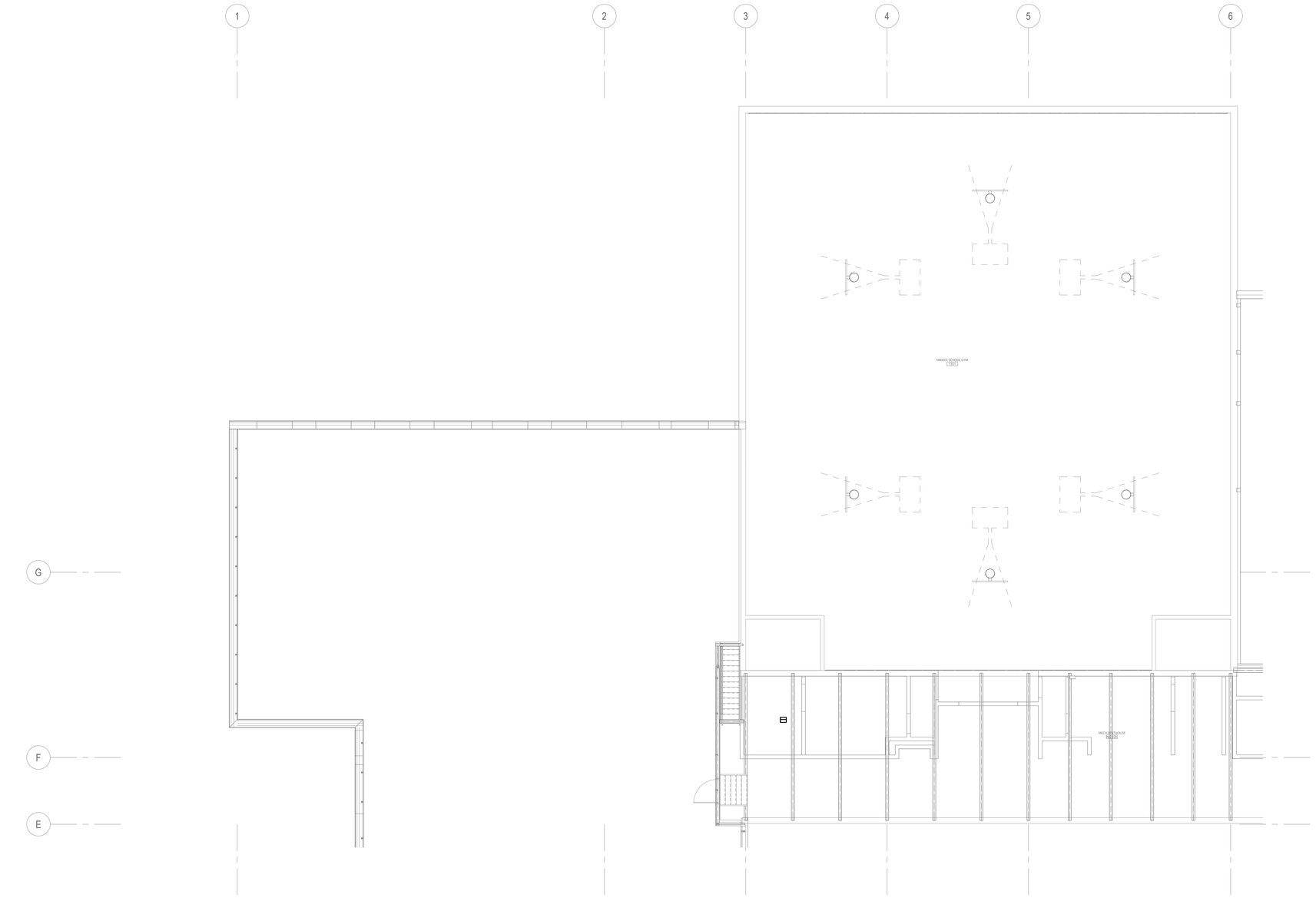
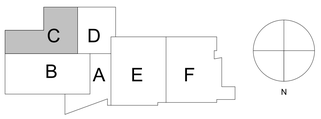


1 SECOND FLOOR SUPPLY PIPING PLAN - AREA C
1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR SUPPLY PIPING PLAN - AREA C

P-212C

Sheet No. 25 of 45

OPTIMA# 23-0082R

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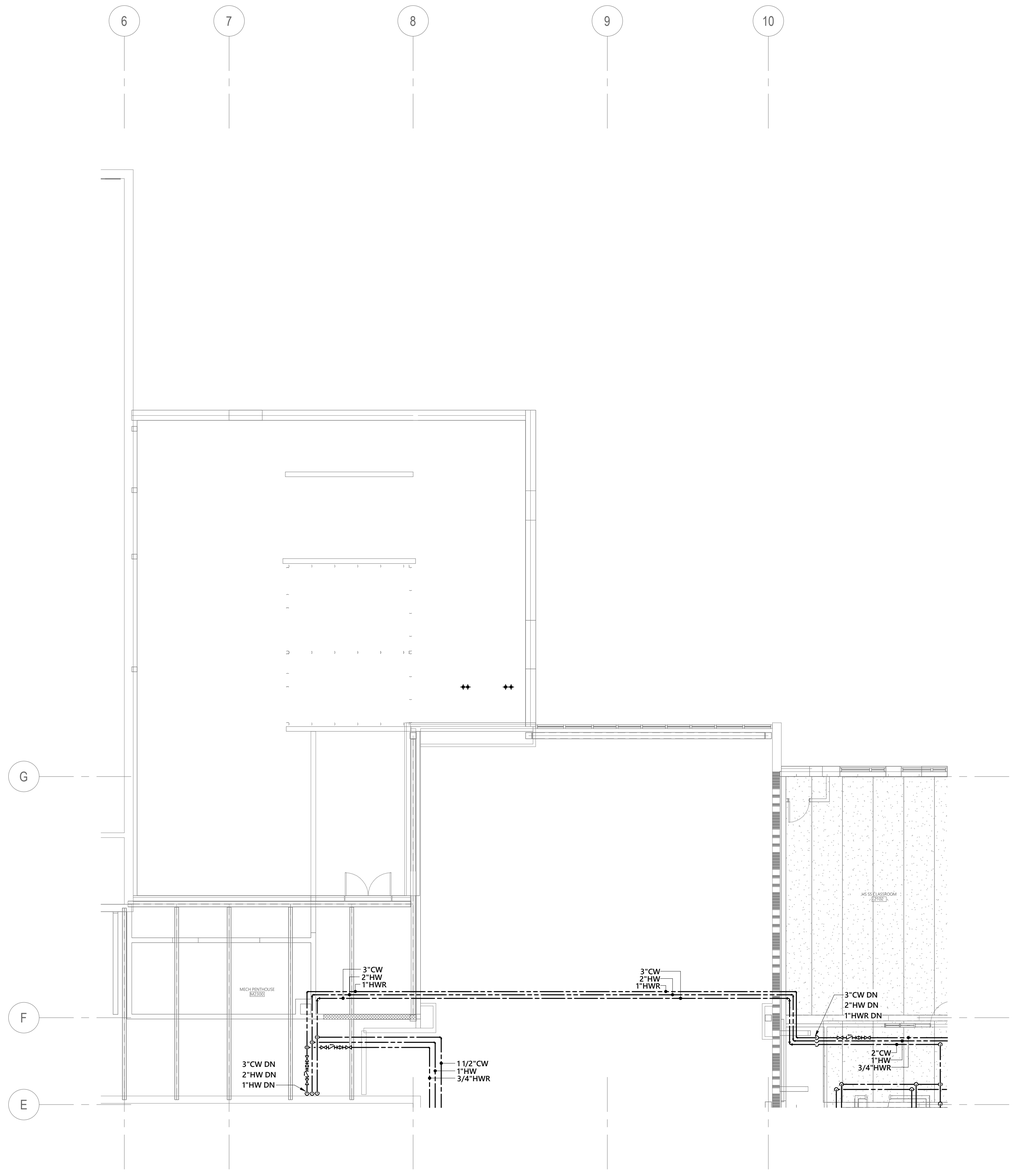
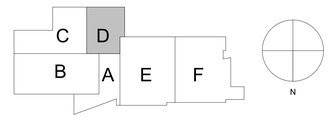


1 SECOND FLOOR SUPPLY PIPING PLAN - AREA D

1/8" = 1'-0"

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR SUPPLY PIPING PLAN - AREA D

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OPTIMA# 23-0082R

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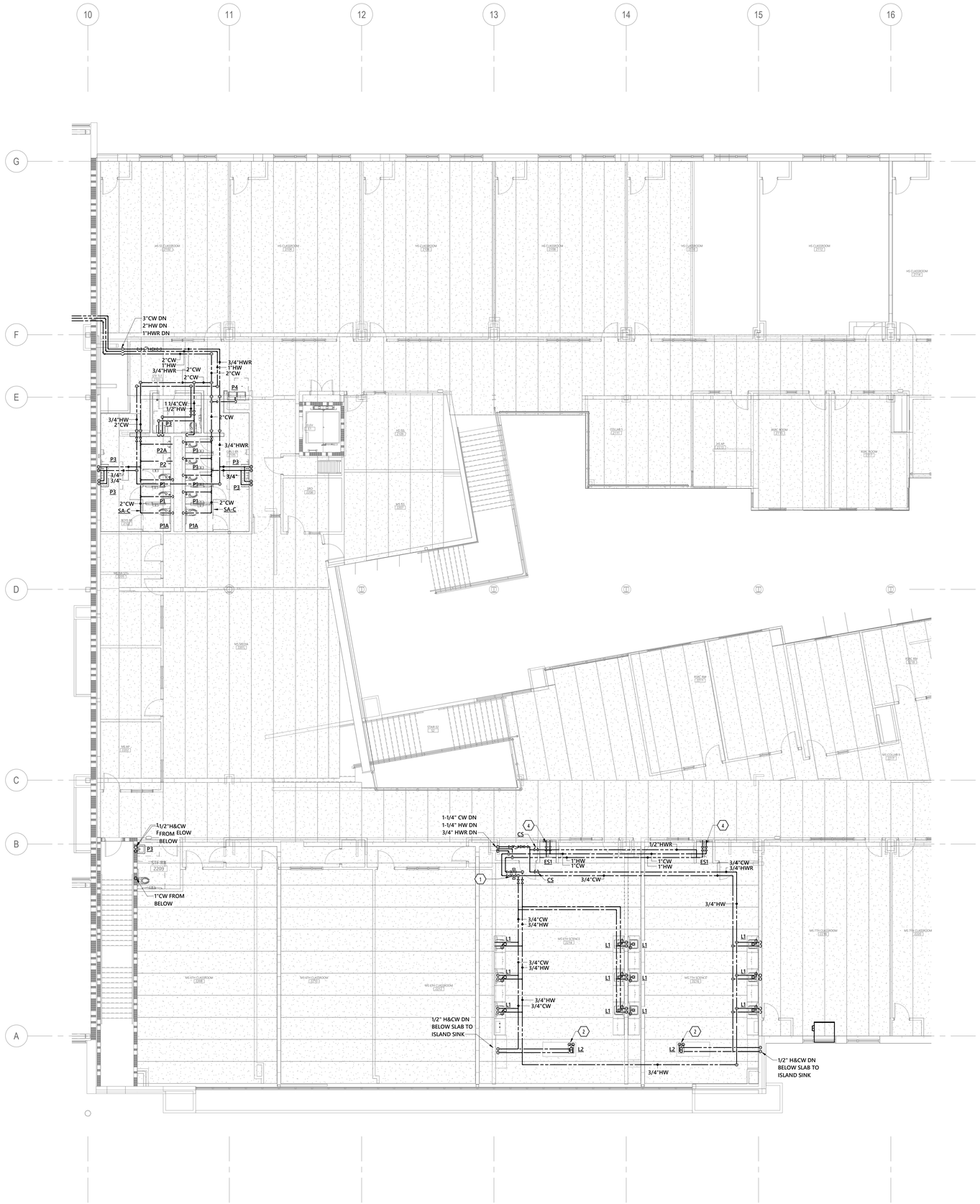


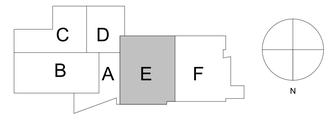
1 SECOND FLOOR SUPPLY PIPING PLAN - AREA E
1/8" = 1'-0"

KEYNOTES

1. 1"CW, 1"HW, SOLENOID VALVES (FAIL CLOSED) PROVIDED BY E.C. INSTALLED BY P.C. INTERLOCKED WITH EMERGENCY SHUT-OFF SWITCH. SEE ELEC. PLANS OR SWITCH LOCATION. PROVIDE 1"CW & 1"HW PRESSURE REDUCING VALVES, SET OUTLET PRESSURE TO 40 PSI.
2. 1/2"HW & 1/2"CW DOWN TO BELOW FLOOR AND STUB UP IN INSTRUCTORS STATION CASEWORK.
3. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.
4. 1"HW & 1"CW TO EMERGENCY SHOWER. SEE DETAIL 10/P501 FOR CONTINUATION.

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR SUPPLY PIPING PLAN - AREA E

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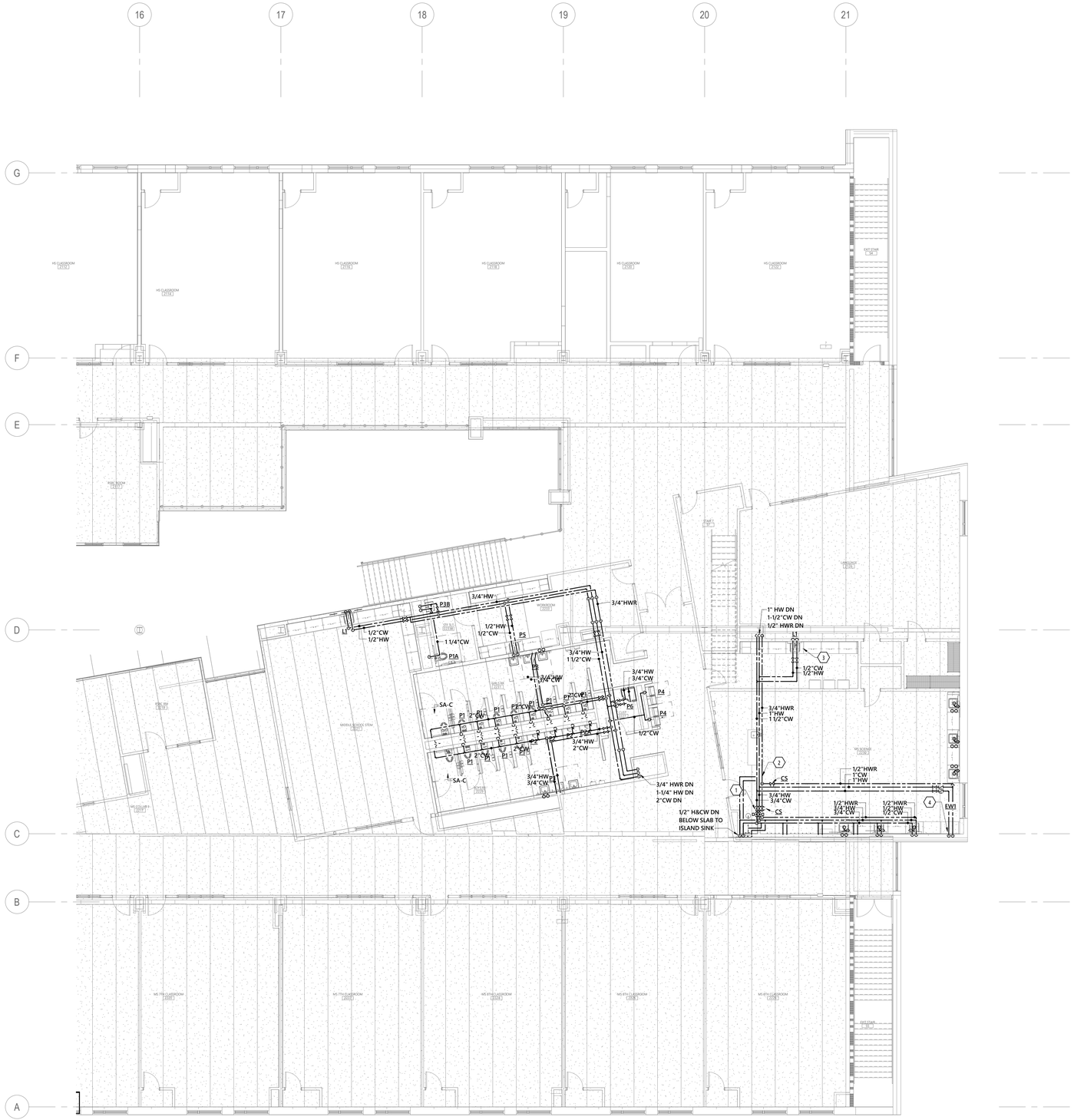


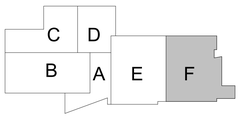
1 SECOND FLOOR SUPPLY PIPING PLAN - AREA F
1/8" = 1'-0"

KEYNOTES

1. 1"CW, 1"HW, SOLENOID VALVES (FAIL CLOSED) PROVIDED BY E.C. INSTALLED BY P.C. INTERLOCKED WITH EMERGENCY SHUT-OFF SWITCH. SEE ELEC. PLANS OR SWITCH LOCATION. PROVIDE 1"CW & 1"HW PRESSURE REDUCING VALVES, SET OUTLET PRESSURE TO 40 PSI.
2. 1/2"HW & 1/2"CW DOWN TO BELOW FLOOR AND STUB UP IN INSTRUCTORS STATION CASEWORK.
3. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.
4. 1"HW & 1"CW TO EMERGENCY SHOWER. SEE DETAIL 10/P501 FOR CONTINUATION.

RATED WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

KEYPLAN



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SECOND FLOOR SUPPLY PIPING PLAN - AREA F

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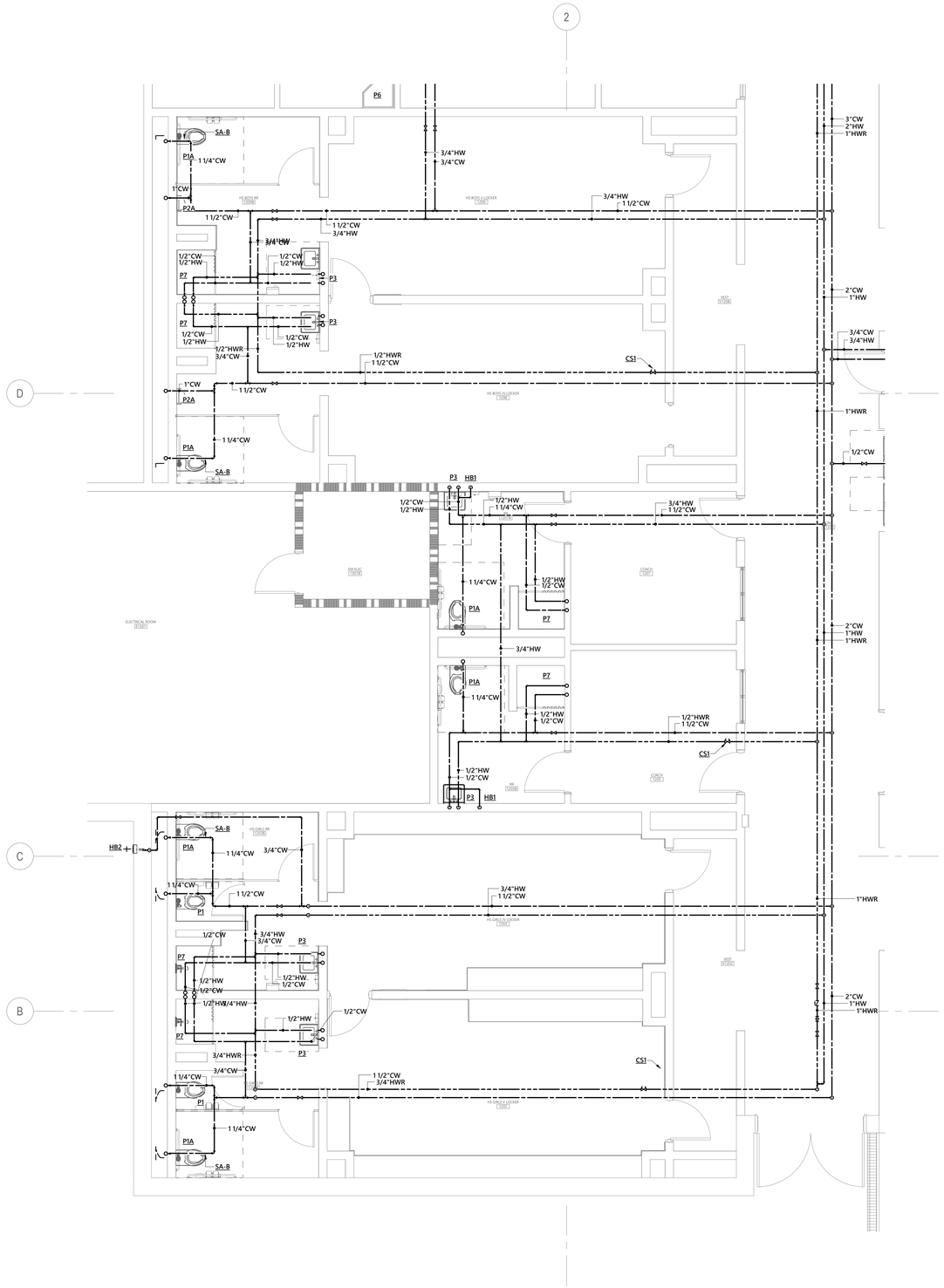

1 **ENLARGED SUPPLY PIPING PLAN- VARSITY LOCKER ROOMS**
1/4" = 1'-0"

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ENLARGED SUPPLY PLUMBING PLAN - VARSITY LOCKER ROOMS

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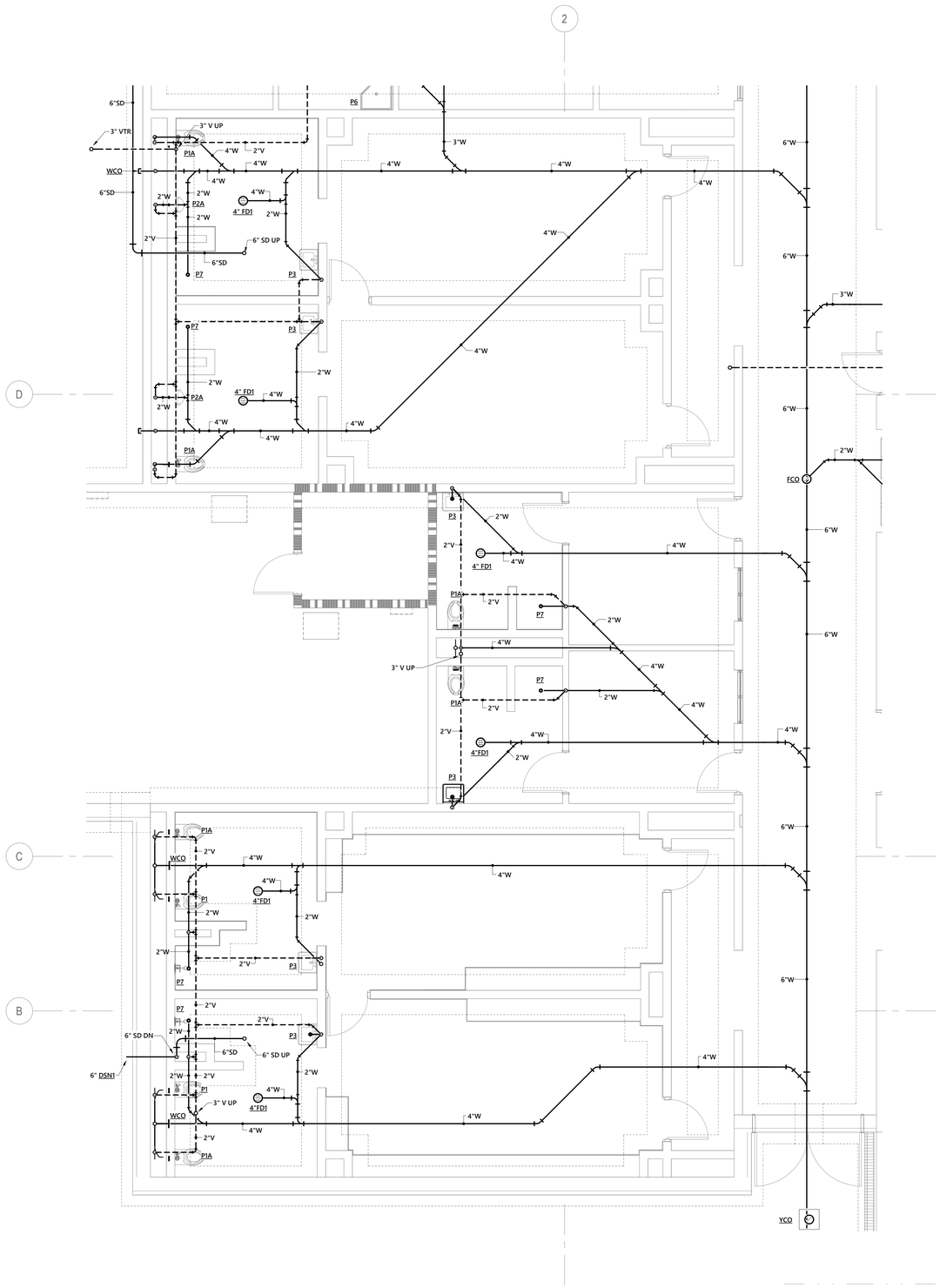

1 ENLARGED DRAINAGE PIPING PLAN - VARSITY LOCKER ROOMS
1/4" = 1'-0"

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ENLARGED DRAINAGE PLUMBING PLAN - VARSITY LOCKER ROOMS

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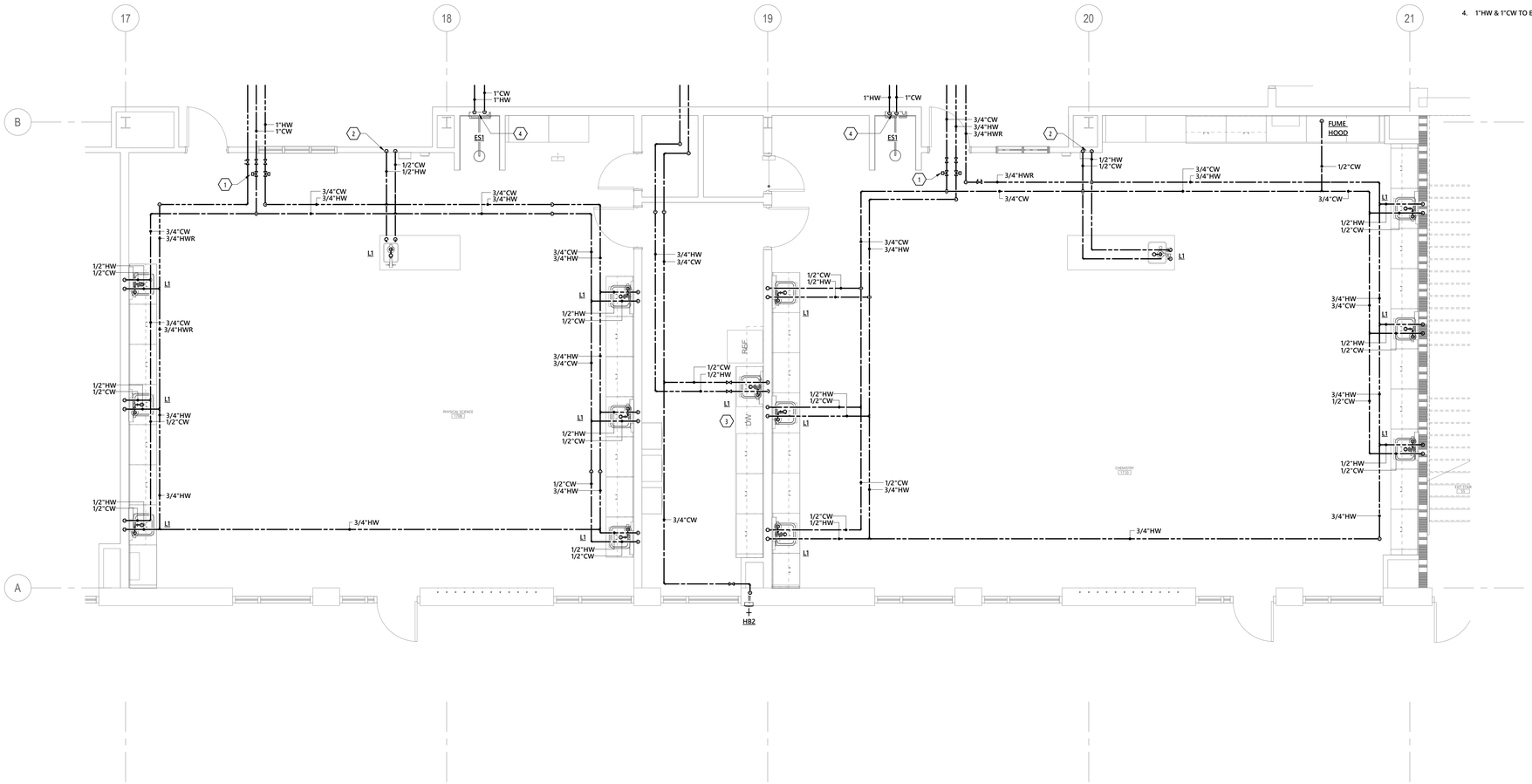

1 ENLARGED SUPPLY PIPING PLAN- PHYSICAL SCIENCE 1708 & 1710

1/4" = 1'-0"

KEYNOTES

1. 1"CW, 1"HW, SOLENOID VALVES (FAIL CLOSED) PROVIDED BY E.C. INSTALLED BY P.C. INTERLOCKED WITH EMERGENCY SHUT-OFF SWITCH. SEE ELEC. PLANS OR SWITCH LOCATION. PROVIDE 1"CW & 1"HW PRESSURE REDUCING VALVES, SET OUTLET PRESSURE TO 40 PSI.
2. 1/2"HW & 1/2"CW DOWN TO BELOW FLOOR AND STUB UP IN INSTRUCTORS STATION CASEWORK.
3. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.
4. 1"HW & 1"CW TO EMERGENCY SHOWER. SEE DETAIL 10/P501 FOR CONTINUATION.

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ENLARGED SUPPLY PLUMBING PLAN - PHYSICAL SCIENCE 1714

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OPTIMA# 23-0082R

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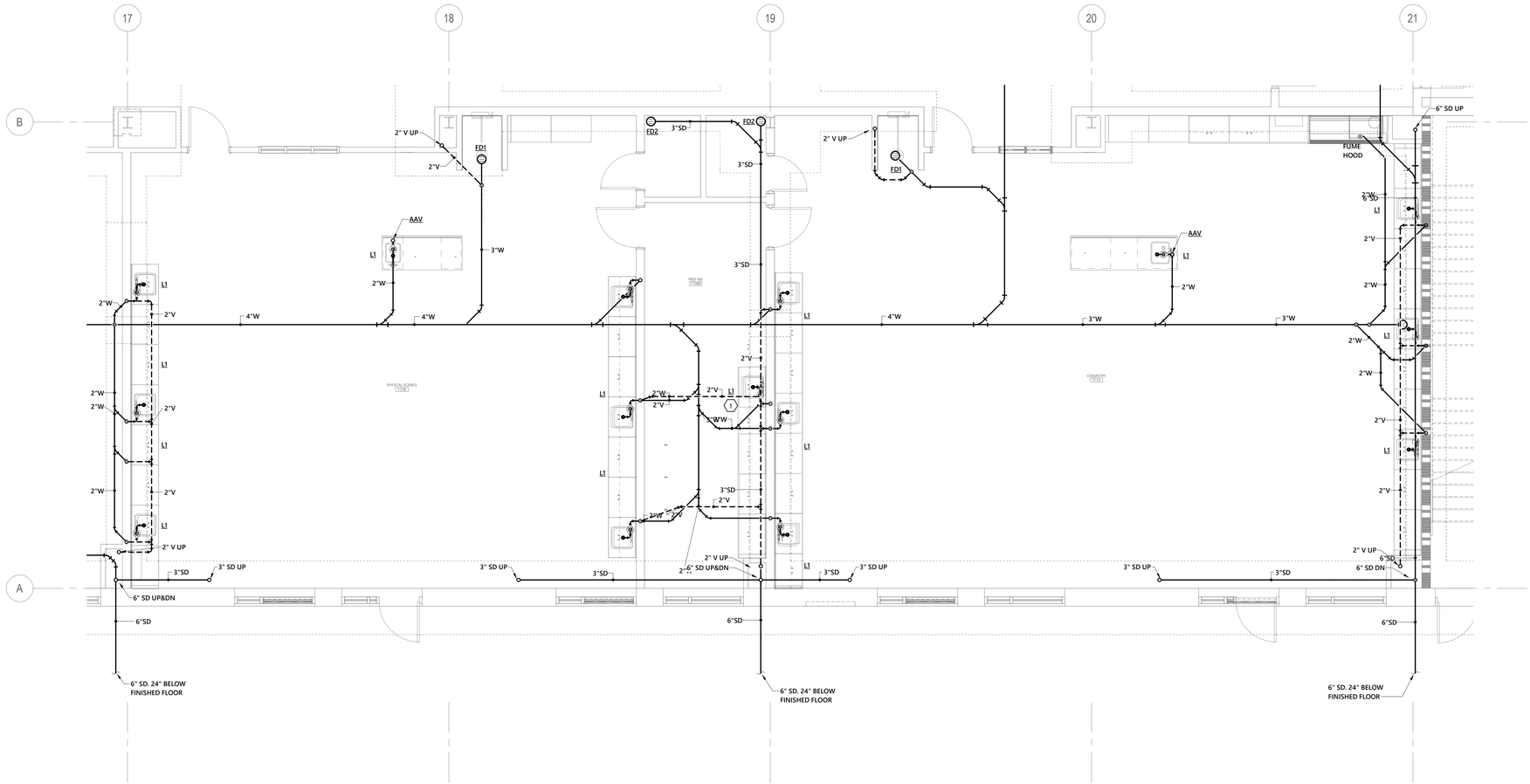
KEYNOTES

1. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.



1 ENLARGED DRAINAGE PIPING PLAN - PHYSICAL SCIENCE 1708 & 1710
1/4" = 1'-0"

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ENLARGED DRAINAGE PLUMBING PLAN - PHYSICAL SCIENCE 1714

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OPTIMA# 23-0082R

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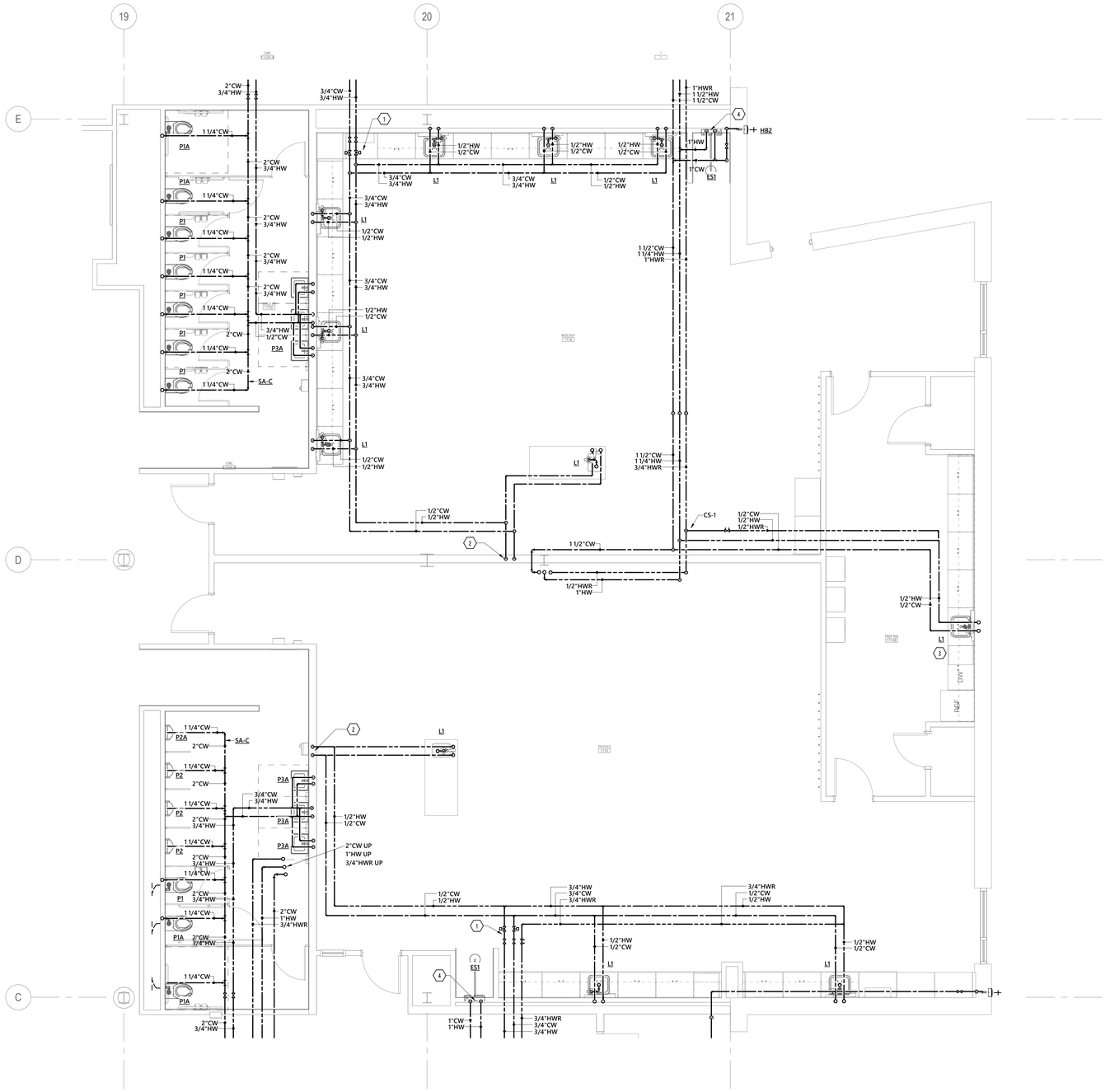

1 ENLARGED SUPPLY PIPING PLAN- PHYSICS 1725
1/4" = 1'-0"

KEYNOTES

1. 1"CW, 1"HW, SOLENOID VALVES (FAIL CLOSED) PROVIDED BY E.C. INSTALLED BY P.C. INTERLOCKED WITH EMERGENCY SHUT-OFF SWITCH. SEE ELEC. PLANS OR SWITCH LOCATION. PROVIDE 1"CW & 1"HW PRESSURE REDUCING VALVES, SET OUTLET PRESSURE TO 40 PSI.
2. 1/2"HW & 1/2"CW DOWN TO BELOW FLOOR AND STUB UP IN INSTRUCTORS STATION CASEWORK.
3. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.
4. 1"HW & 1"CW TO EMERGENCY SHOWER. SEE DETAIL 10/P501 FOR CONTINUATION.

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ENLARGED SUPPLY PLUMBING PLAN - PHYSICAL 1725

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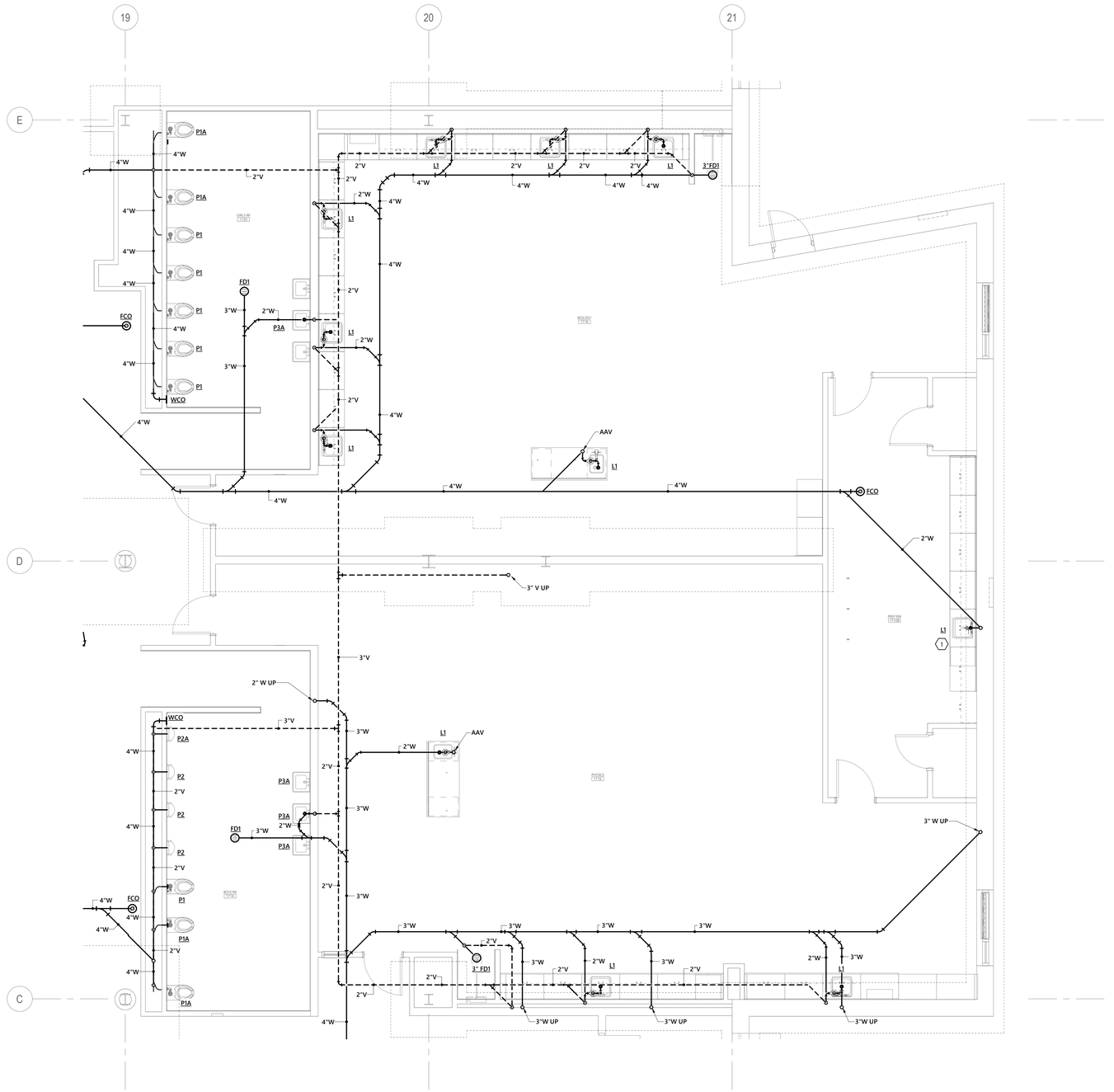

KEYNOTES

1. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.

1 ENLARGED DRAINAGE PIPING PLAN - SCIENCE 1716 &1718
1/4" = 1'-0"

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ENLARGED DRAINAGE PLUMBING PLAN - PHYSICAL 1725

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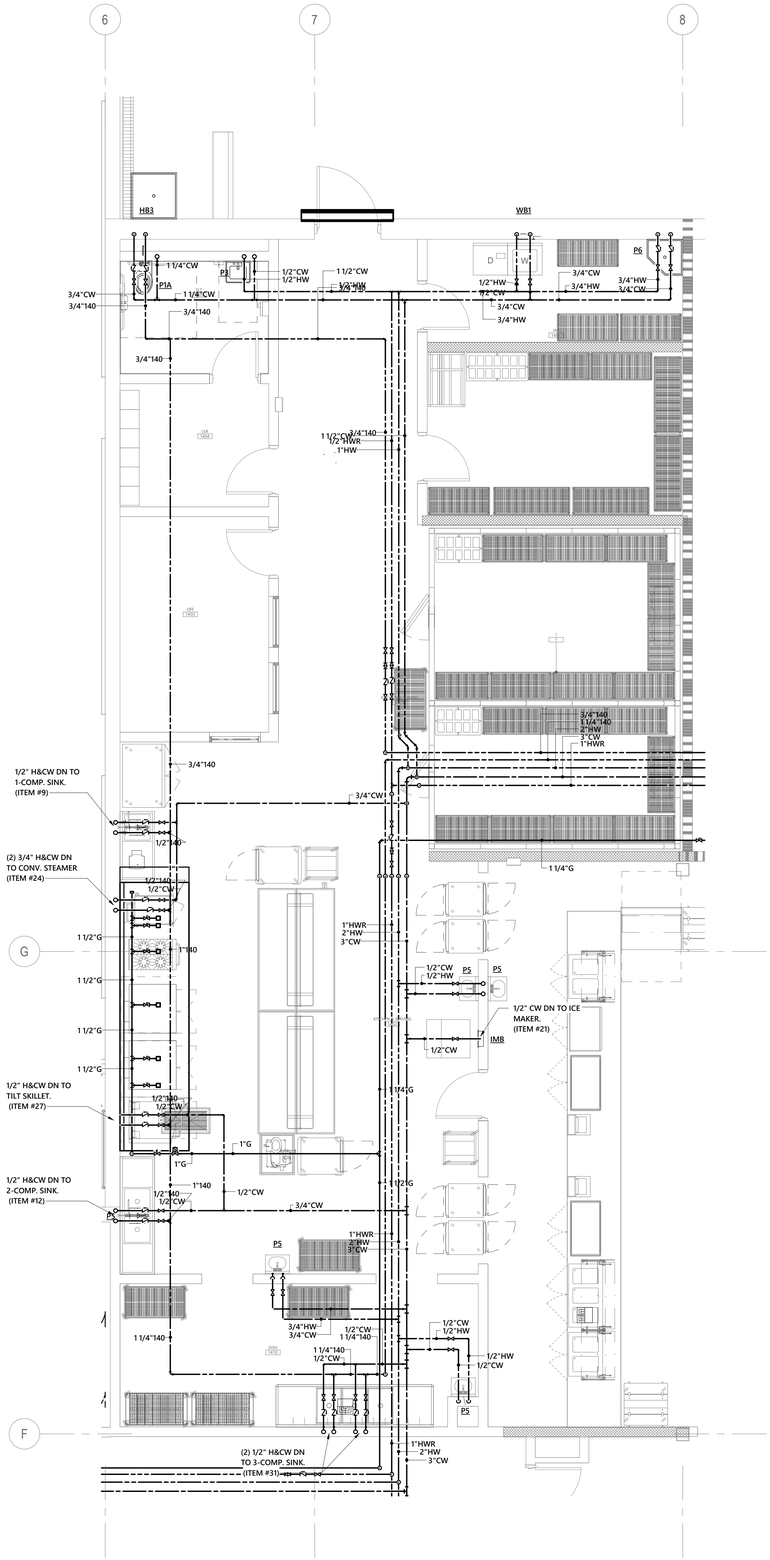
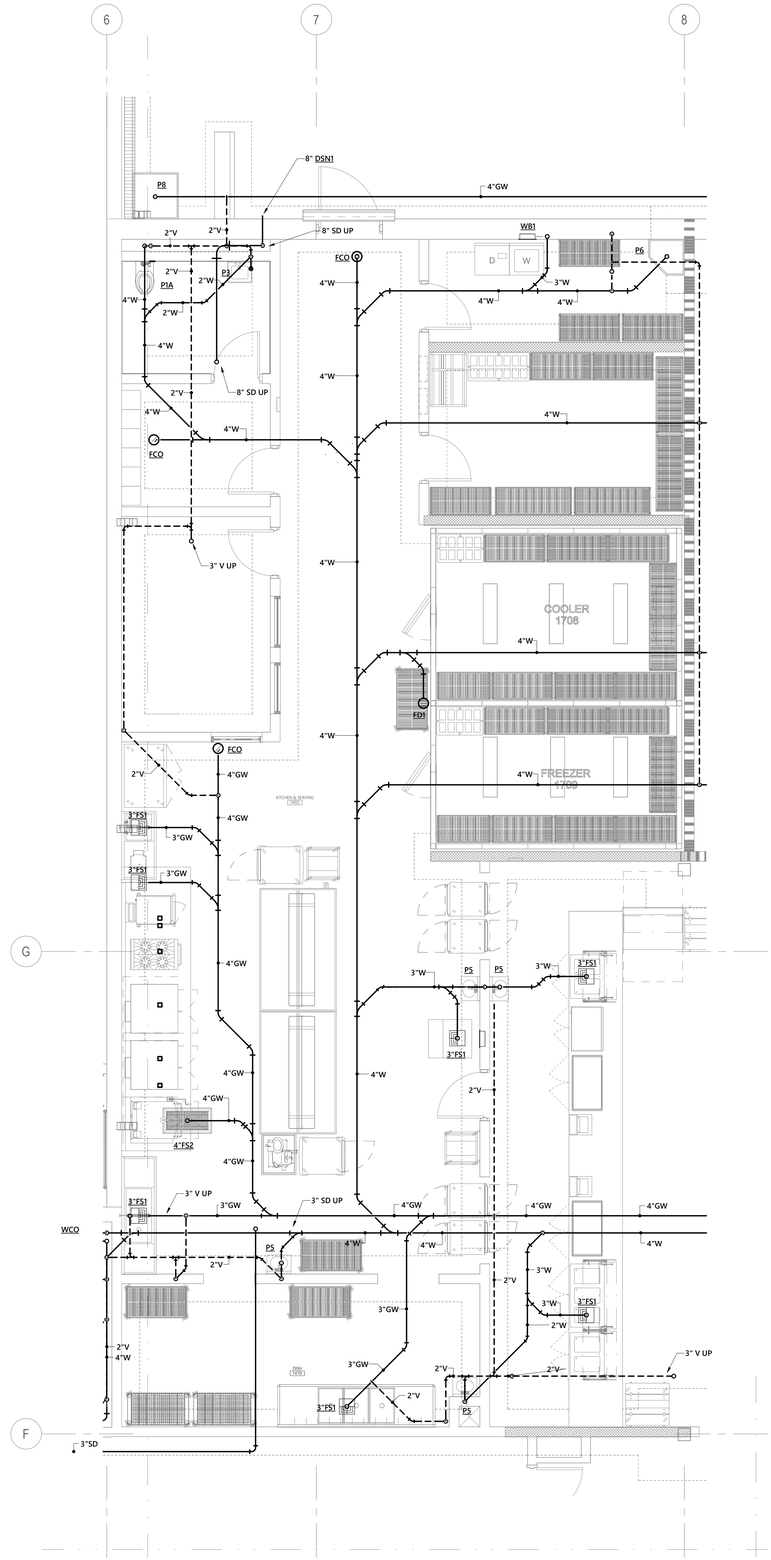


1 ENLARGED SUPPLY PIPING PLAN- KITCHEN & SERVING 1402

1/4" = 1'-0"



2 ENLARGED DRAINAGE PIPING PLAN - KITCHEN & SERVING 1402

1/4" = 1'-0"

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ENLARGED PLUMBING PLAN - KITCHEN & SERVING 1402

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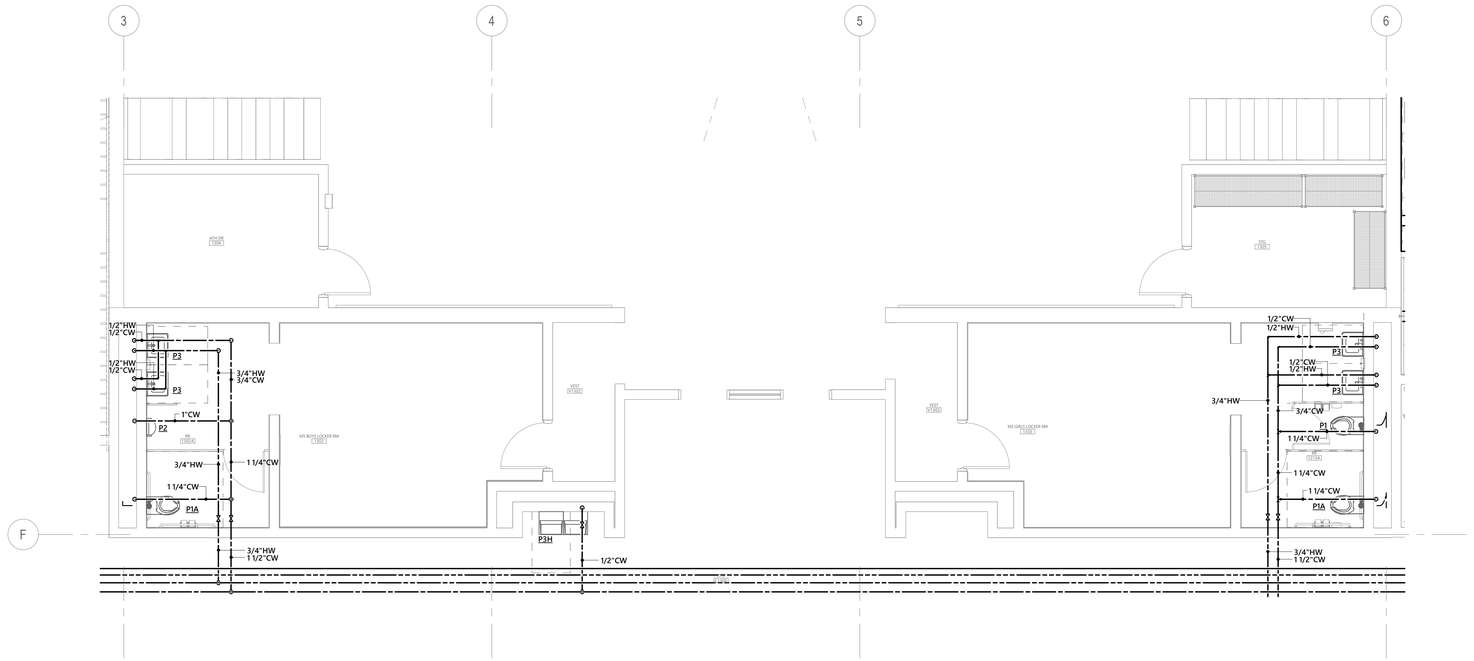
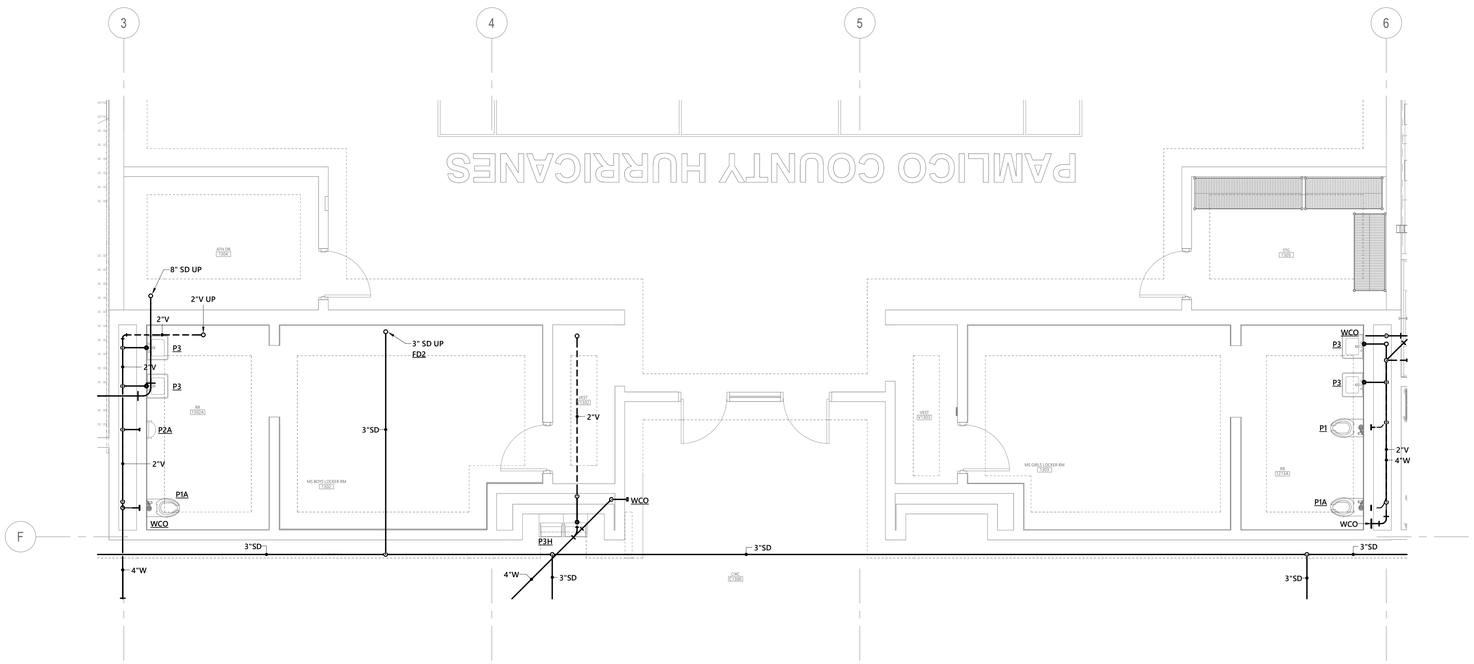


1 **ENLARGED SUPPLY PIPING PLAN- LOCKER ROOMS 1302 & 1303**

1/4" = 1'-0"



2 **ENLARGED DRAINAGE PIPING PLAN - LOCKER ROOMS 1302 & 1303**

1/4" = 1'-0"

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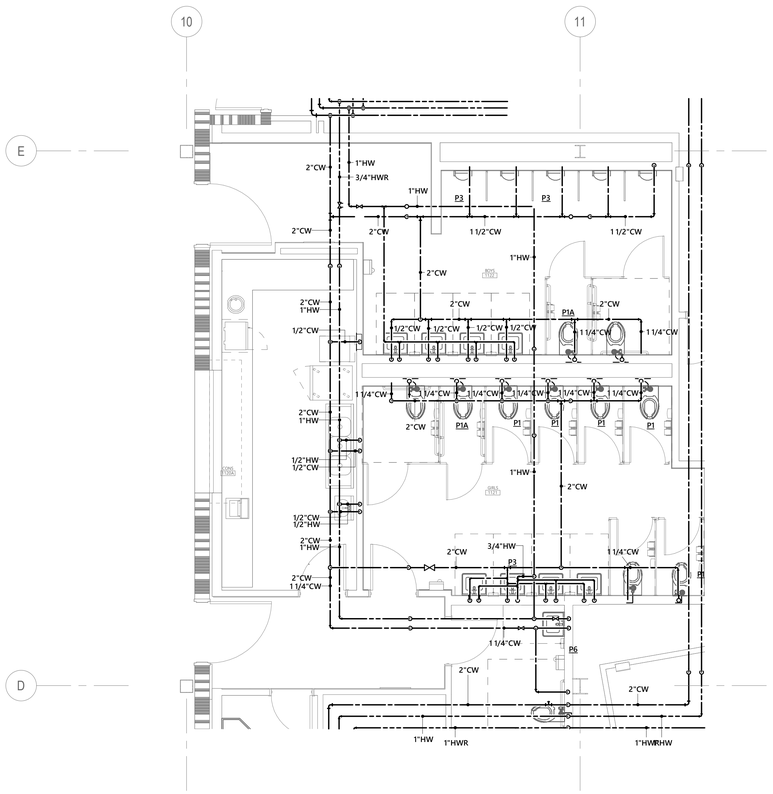
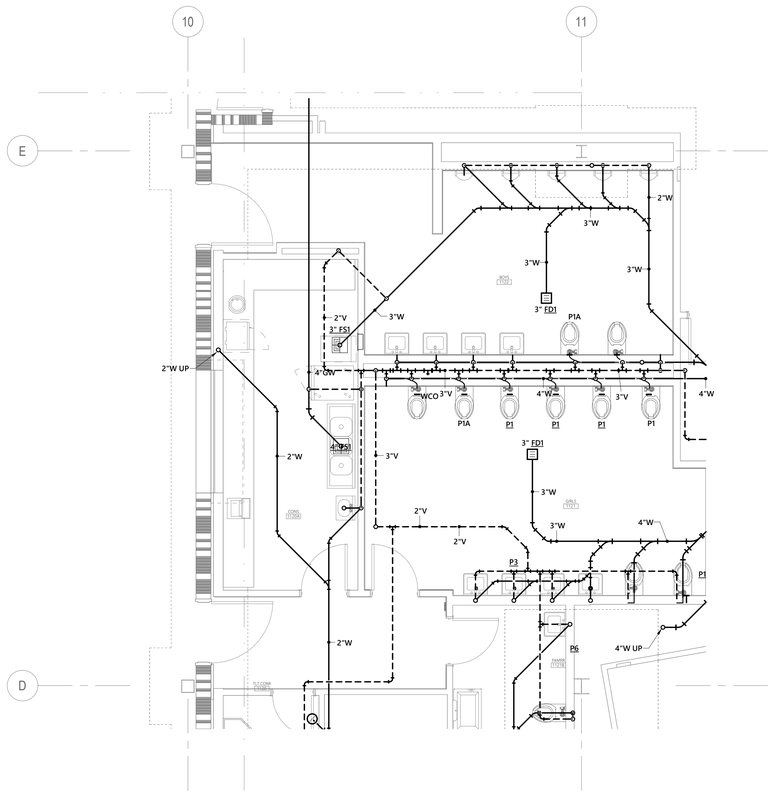
ENLARGED PLUMBING PLAN - LOCKER ROOM 1214

P-410



1 ENLARGED SUPPLY PIPING PLAN- RESTROOMS 1121 & 1122

1/4" = 1'-0"



2 ENLARGED DRAINAGE PIPING PLAN - RESTROOMS 1121 & 1122

1/4" = 1'-0"

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PAMLICO COUNTY
PAMLICO 6-12 SCHOOL

601 Main Street, Bayboro, NC, 28515

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 06/12/24

PROJECT #: 2205
DRAWN BY: CAW
CHECKED BY: GCF

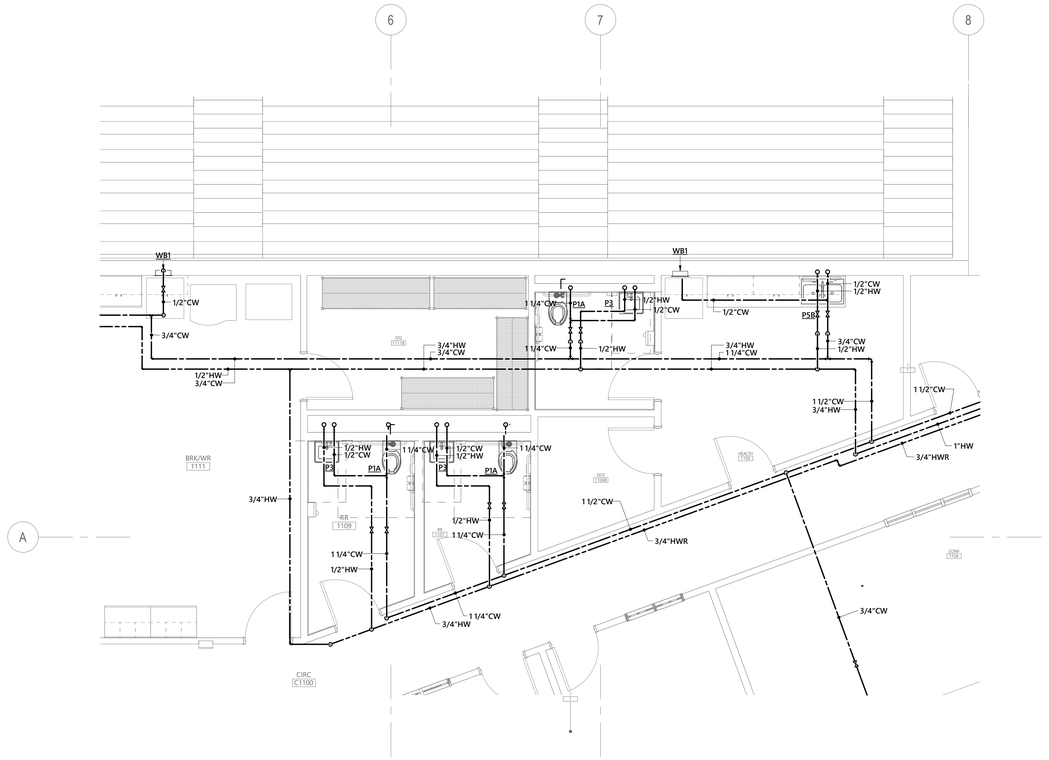
ENLARGED PLUMBING PLAN - RESTROOMS 1103 & 1105

P-414

Sheet No. 37 of 45

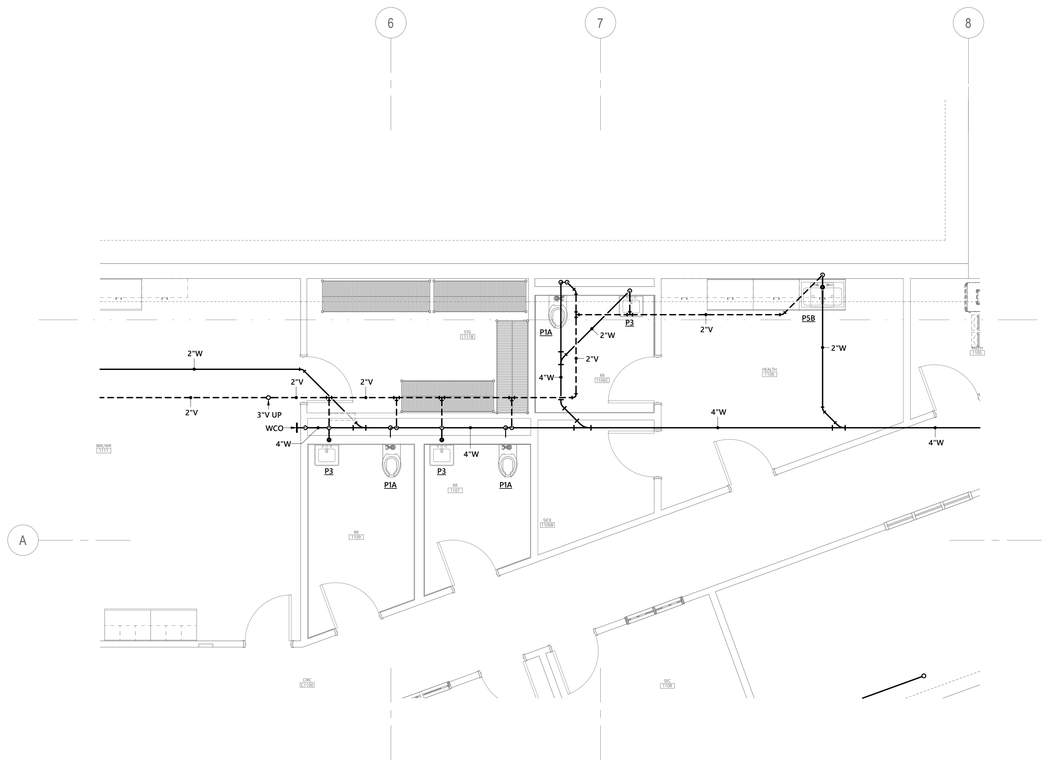
OPTIMA# 23-0082R

6/24/2024 9:56:18 AM Autodesk Docs://Pamlico High School/ 6-12/23-0082R_Pamlico HS_MEPFPT_R23.rvt



1 **ENLARGED SUPPLY PIPING PLAN- RESTROOMS 1107 & 1109**

1/4" = 1'-0"



2 **ENLARGED DRAINAGE PIPING PLAN - RESTROOMS 1107 & 1109**

1/4" = 1'-0"

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PROFESSIONAL SEAL

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No.	Date	Description

ISSUE DATE:	06/12/24
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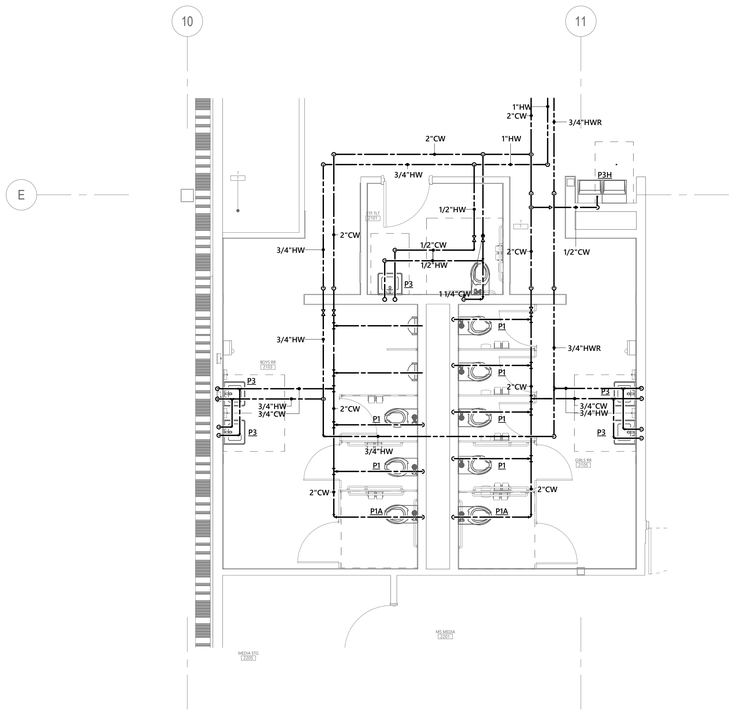
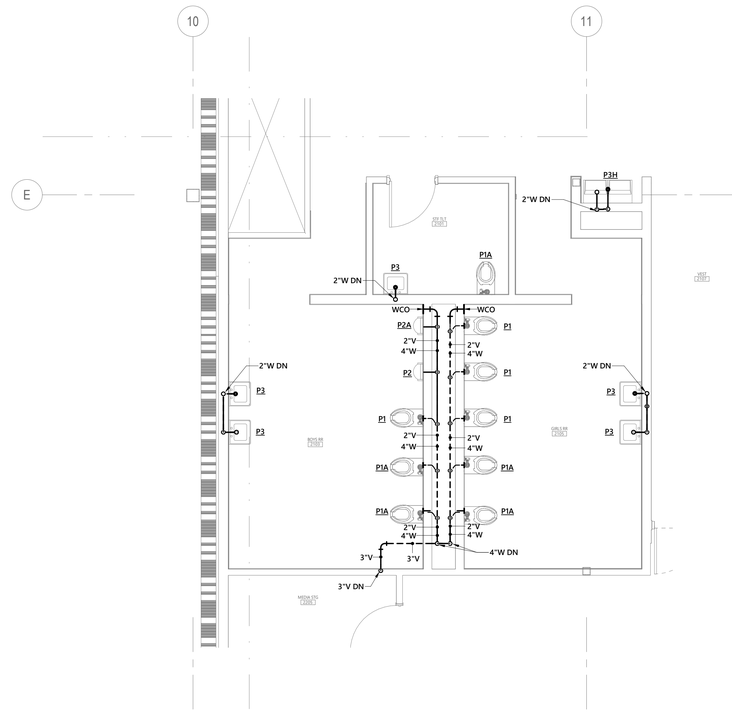
ENLARGED PLUMBING PLAN - RESTROOMS 1112C & 1118 & 1120

P-416



1 ENLARGED SUPPLY PIPING PLAN - BOYS & GIRLS RESTROOM 2103 & 2104
1/4" = 1'-0"



2 ENLARGED DRAINAGE PIPING PLAN - BOYS & GIRLS RESTROOM 2103 & 2104
1/4" = 1'-0"

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ENLARGED PLUMBING PLAN - BOYS & GIRLS RESTROOM 2103 & 2104

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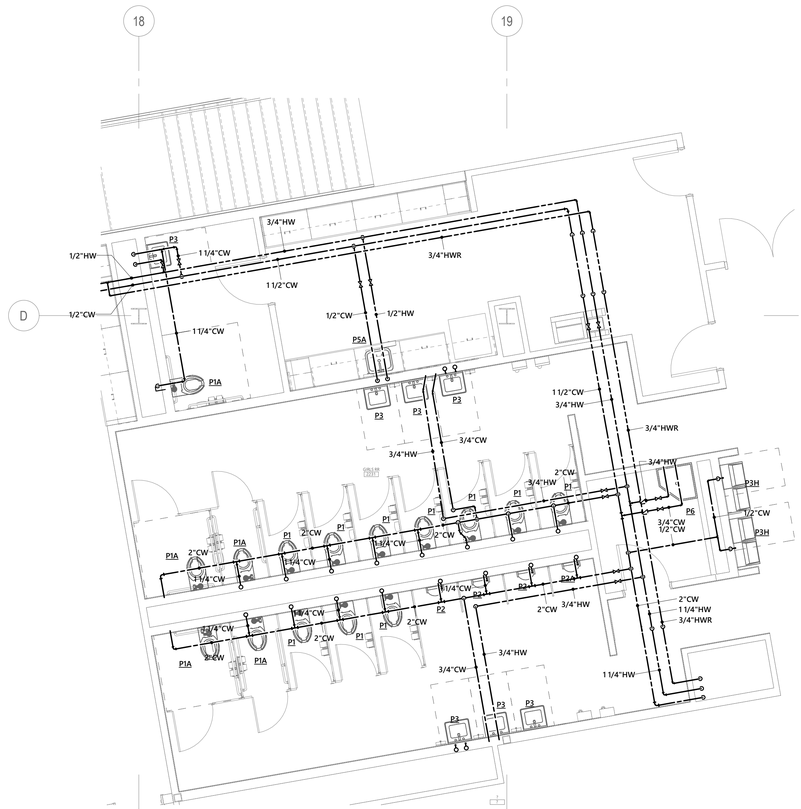
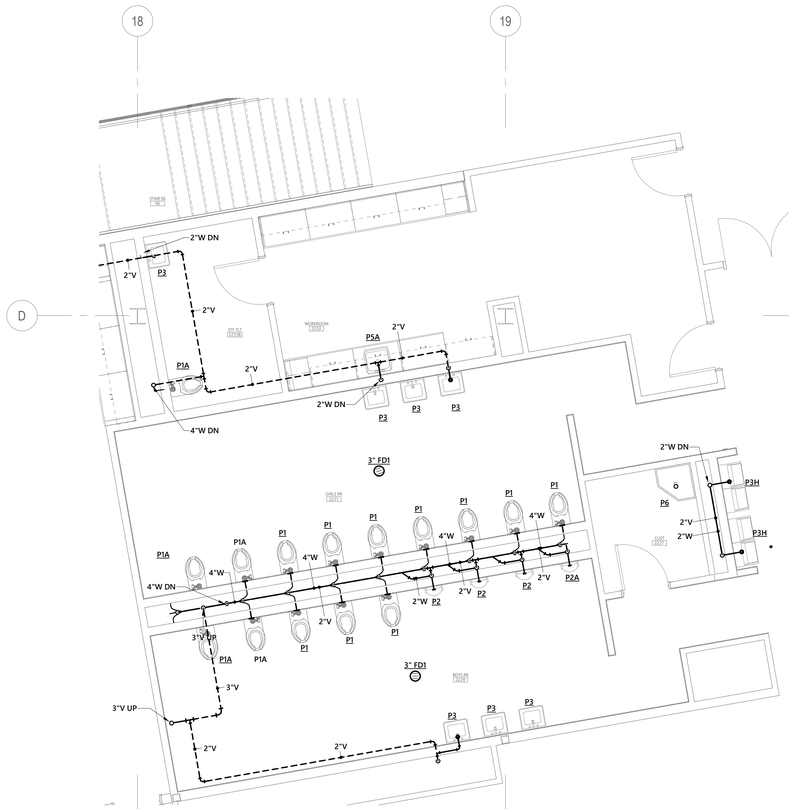
OPTIMA# 23-0082R



1 ENLARGED SUPPLY PIPING PLAN - BOYS & GIRLS RESTROOMS 2229 & 2230

1/4" = 1'-0"



2 ENLARGED DRAINAGE PIPING PLAN - BOYS & GIRLS RESTROOMS 2229 & 2230

1/4" = 1'-0"

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No.	Date	Description

ISSUE DATE:	06/12/24
PROJECT #:	2205
DRAWN BY:	CAW
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ENLARGED PLUMBING PLAN - BOYS & GIRLS RESTROOM 2229 & 2230

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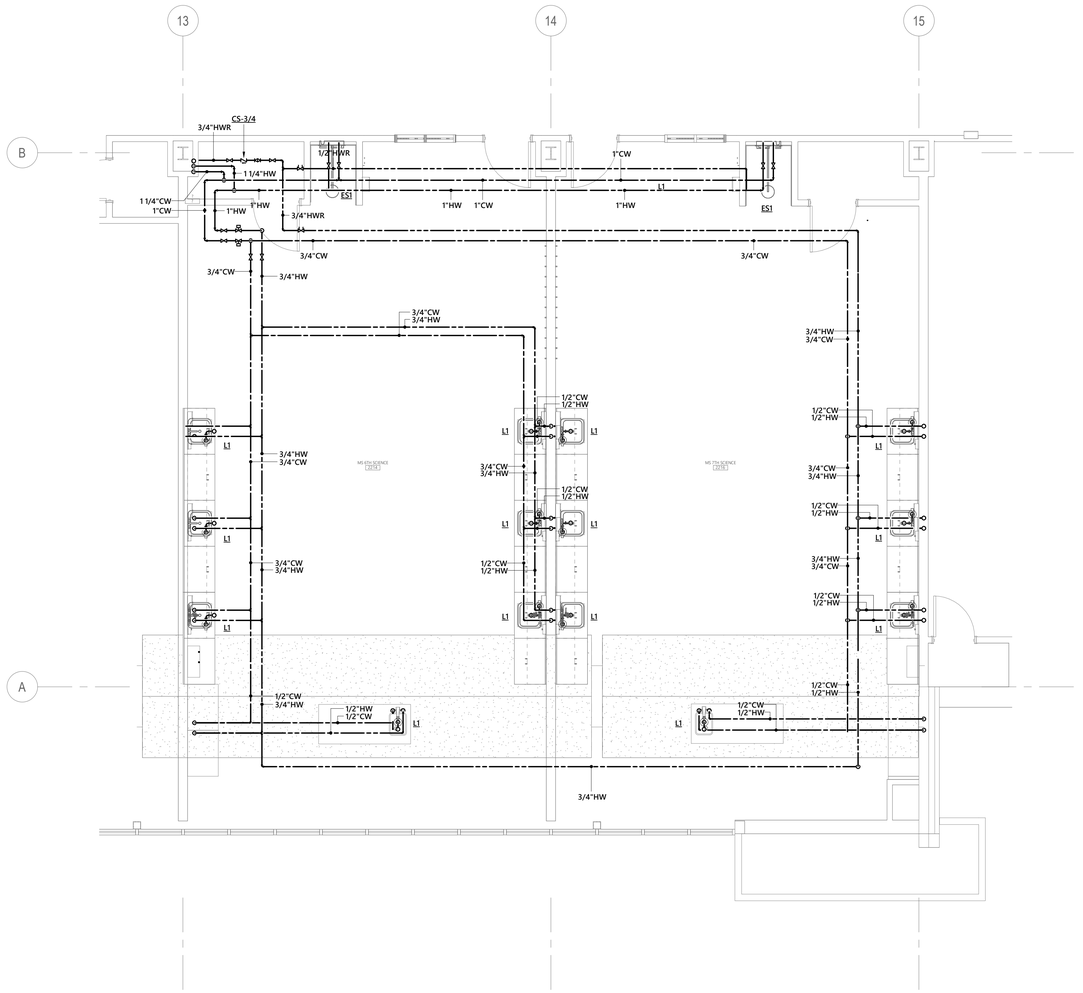

1 ENLARGED SUPPLY PIPING PLAN - MS 6TH & 7TH SCIENCE 2208 & 2210
1/4" = 1'-0"

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ENLARGED SUPPLY PLUMBING PLAN - MS 6TH & 7TH SCIENCE 2208 & 2210

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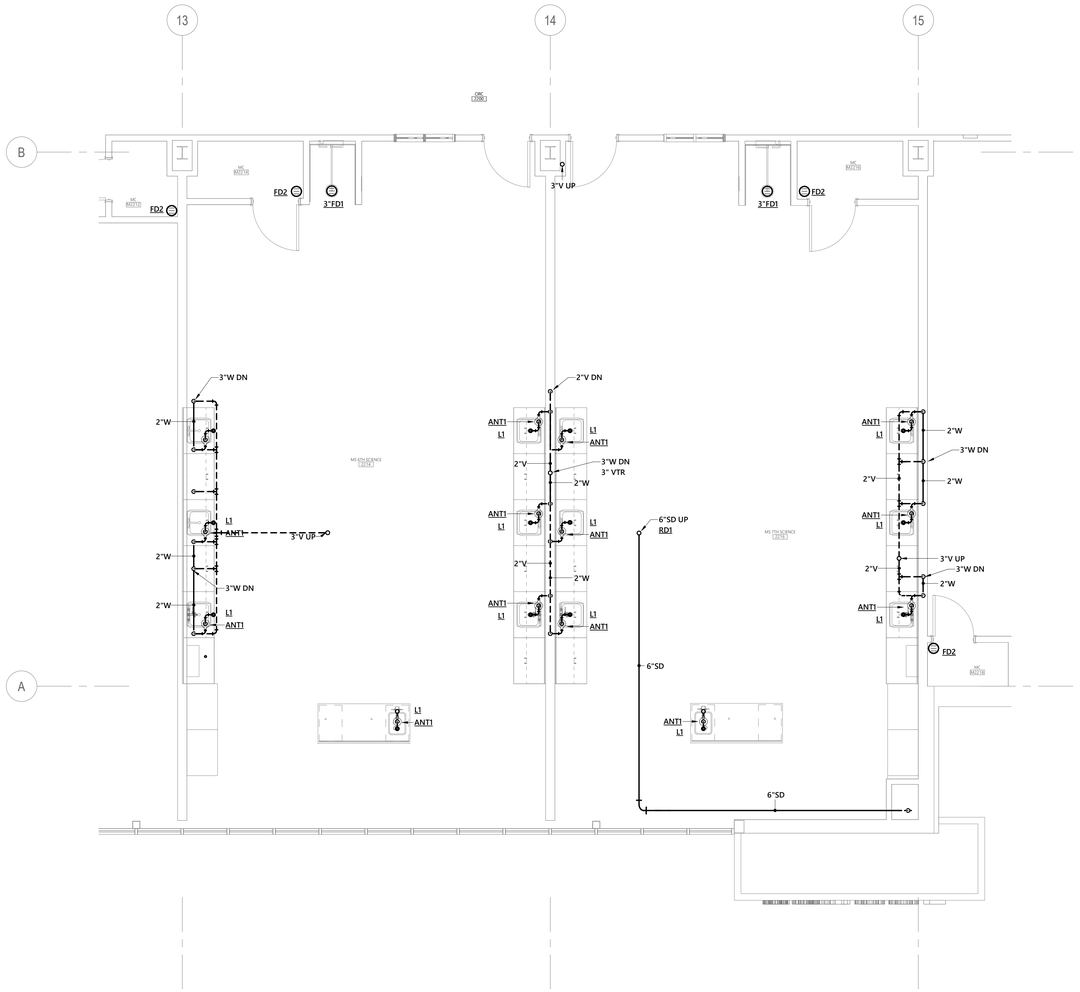
Sheet No. 41 of 45

OPTIMA# 23-0082R

6/24/2024 9:56:41 AM Autodesk Docs://Pamlico High School 6-12/23-0082R_Pamlico HS_MEPPT_R23.rvt



1 ENLARGED DRAINAGE PIPING PLAN - 6TH & 7TH SCIENCE 2214 & 2216
1/4" = 1'-0"

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ENLARGED DRAINGE PLUMBING PLAN - MS 6TH & 7TH SCIENCE 2208 & 2210

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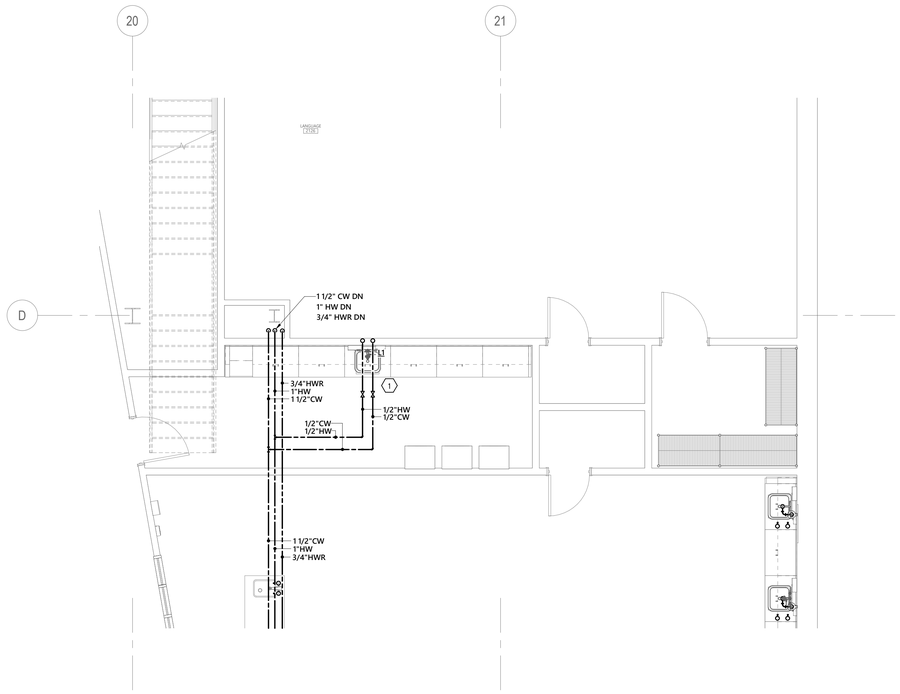
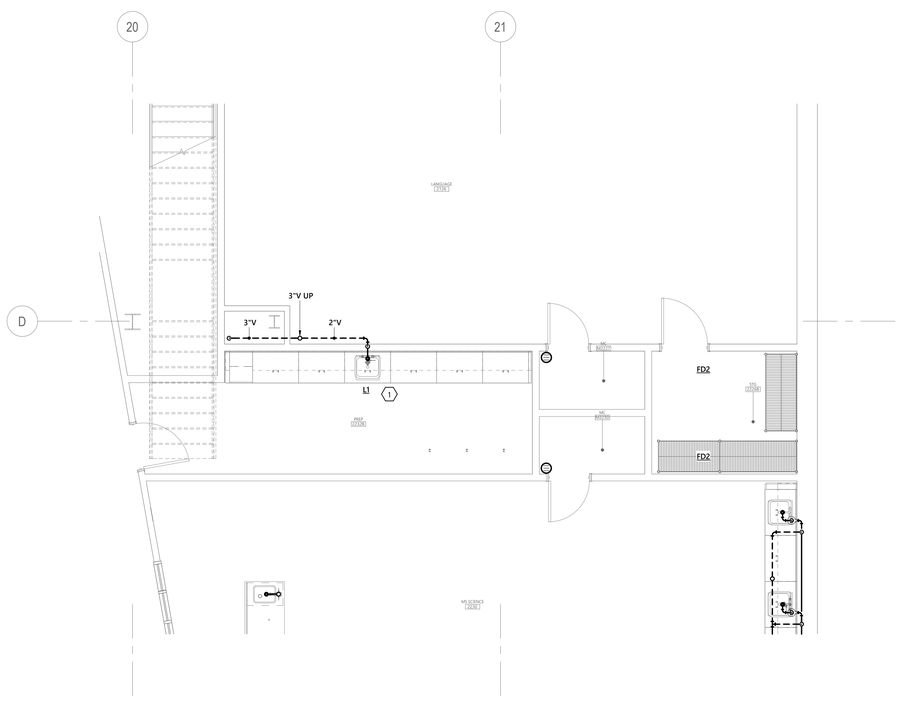


1 **ENLARGED SUPPLY PIPING PLAN - MS SCIENCE 2226**
1/4" = 1'-0"



2 **ENLARGED DRAINAGE PIPING PLAN - MS SCIENCE 2226**
1/4" = 1'-0"

KEYNOTES

1. PROVIDE HW AND WASTE CONNECTIONS TO LAB GLASS WASHER FROM ADJACENT LAB SINK.

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ENLARGED PLUMBING PLAN - MS SCIENCE 2226

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OPTIMA# 23-0082R

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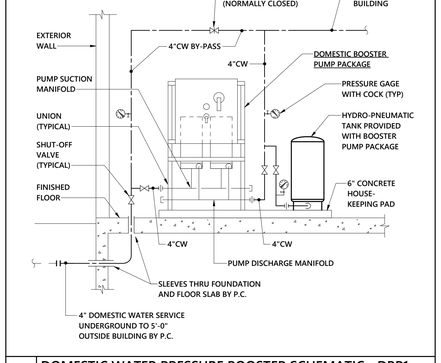
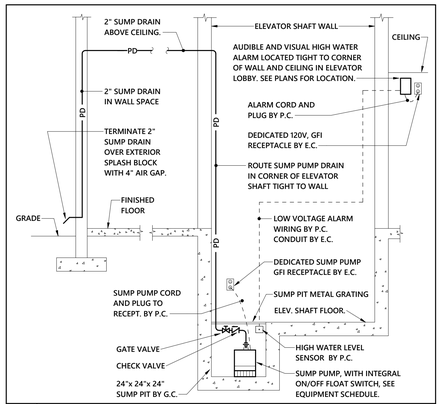
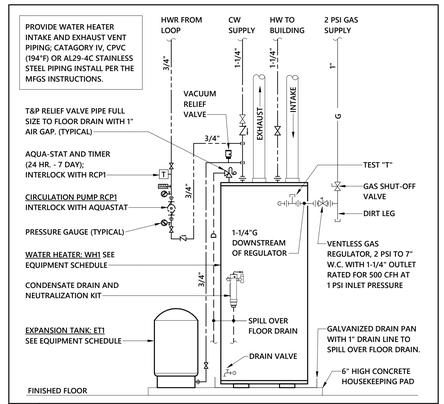


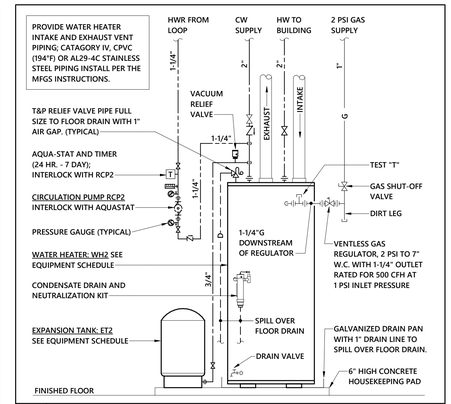
1 DOMESTIC WATER PRESSURE BOOSTER SCHEMATIC - DBP1
NOT TO SCALE



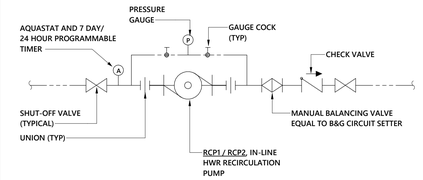
2 ELEVATOR SUMP PUMP SCHEMATIC - SP1 (TRACTION TYPE ELEVATOR)
NOT TO SCALE



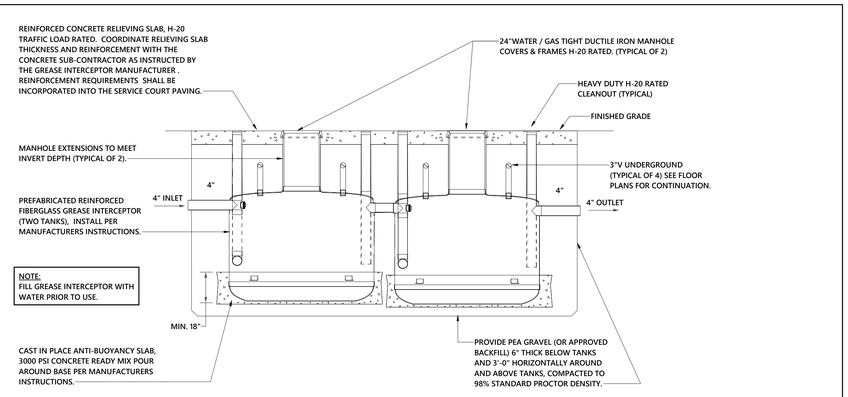
3 GAS FIRED WATER HEATER SCHEMATIC - WH1 - KITCHEN
NOT TO SCALE



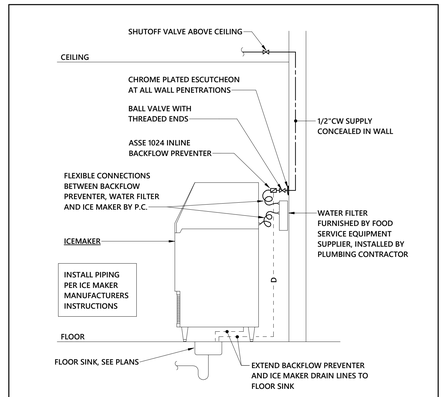
4 GAS FIRED WATER HEATER SCHEMATIC - WH2 - BUILDING
NOT TO SCALE



5 HOTWATER RECIRC PUMP DETAIL
NOT TO SCALE



6 GREASE INTERCEPTOR SCHEMATIC - GRS1
NOT TO SCALE



7 ICE MAKER PIPING SCHEMATIC
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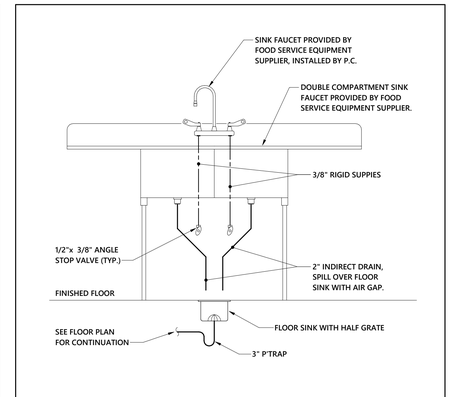

8 DOUBLE COMPARTMENT SINK PIPING DETAIL
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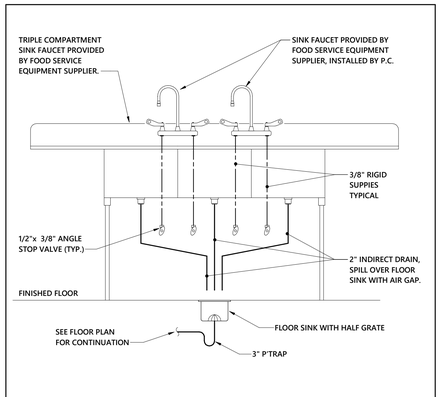

9 TRIPLE COMPARTMENT SINK PIPING DETAIL
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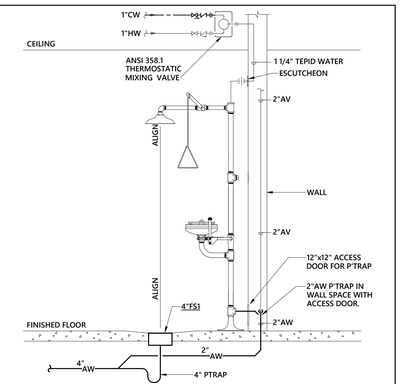
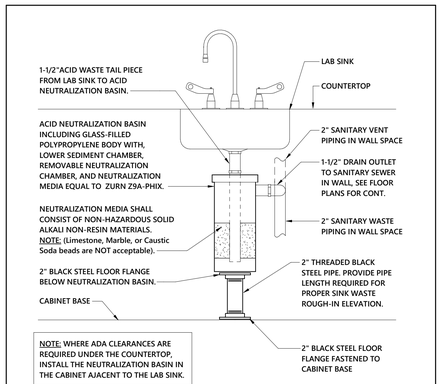


10 EMERGENCY SHOWER PIPING SCHEMATIC - WITH MIXING VALVE ABV CEILING
NOT TO SCALE



11 LAB SINK ACID NEUTRALIZATION BASIN DETAIL
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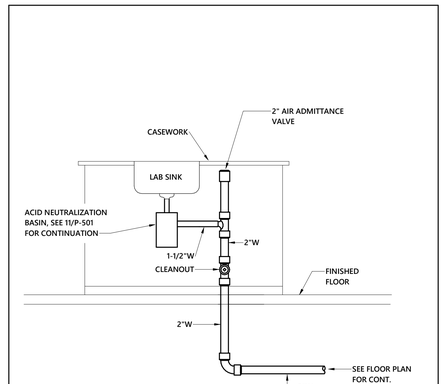

12 LAB ISLAND SINK PIPING SCHEMATIC
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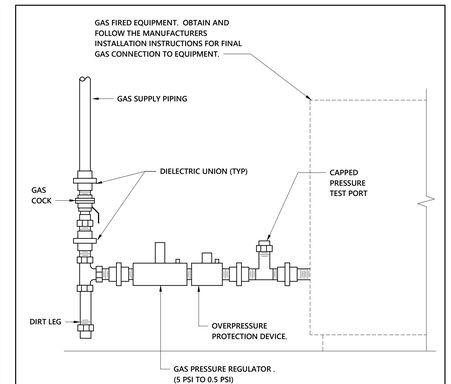

13 TYPICAL GAS PIPING CONNECTION TO EQUIPMENT DETAIL
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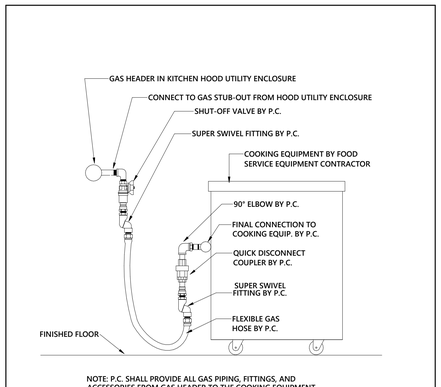
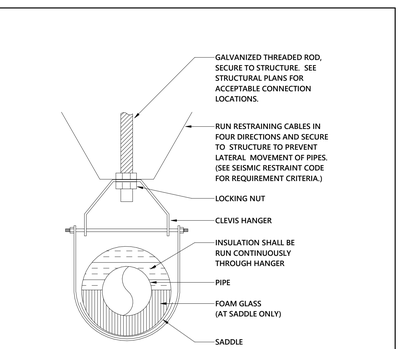
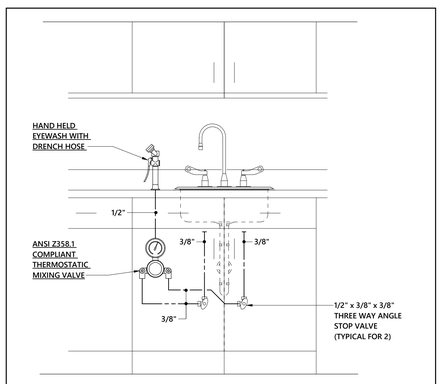


14 TYPICAL GAS CONNECTION TO KITCHEN EQUIPMENT
NOT TO SCALE



15 PIPE HANGER SCHEMATIC
NOT TO SCALE



16 DECK MOUNTED EYEWASH DETAIL - HAND HELD
NOT TO SCALE

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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER Patrick C. Fowler III 28425 SEAL
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No.	Date	Description

ISSUE DATE: 06/12/24
PROJECT #: 2205
DRAWN BY: CAW
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PLUMBING DETAILS

P-501

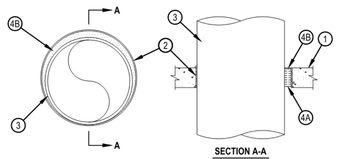
Sheet No. 44 of 45

OPTIMA# 23-0082R

System No. C-AJ-1226

CAJ 1226

F Rating — 3 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq Ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in.
2. Metallic Sleeve — (Optional) Nom 32 in. diam (or smaller) Schedule 40 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. above floor or beyond both surfaces of wall.

2A. Sheet Metal Sleeve — (Optional) Max 6 in. diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.

2B. Sheet Metal Sleeve — (Optional) - Max 12 in. diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.

3. Through-Penetrant — One metallic pipe, tube or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. Penetrant may be installed with continuous point contact. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic penetrants may be used:
   A. Steel Pipe — Nom 30 in. diam (or smaller) steel pipe.
   B. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit — Nom 6 in. diam (or smaller) steel conduit.
   F. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or sleeve or from both surfaces of wall or sleeve as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or sleeve or with both surfaces of wall or sleeve. At the point or continuous contact locations between penetrant and concrete or sleeve, a min 1/4 in. diam bead of fill material shall be applied at the concrete or sleeve/ pipe penetrant interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

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Hilti Firestop Systems

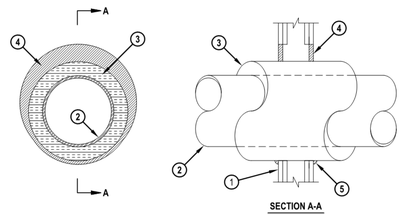
SYSTEM NO. C-AJ-1226

System No. W-L-5029

WL 5029

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



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Hilti Firestop Systems

1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).
3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).

3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above. See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

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Hilti Firestop Systems

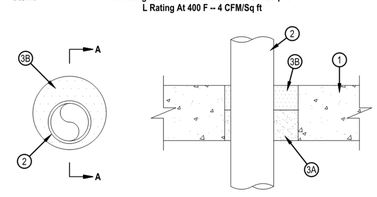
SYSTEM NO. W-L-5029

System No. C-AJ-2141

CAJ 2141

Classified by Underwriters Laboratories, Inc. to UL 1479

F Rating -- 3 Hr
T Rating -- 2 Hr
L Rating At Ambient -- Less Than 1 CFM/Sq Ft
L Rating At 400 F -- 4 CFM/Sq ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 6 in. (152 mm).
   See Concrete Blocks* (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe or conduit and the periphery of the opening shall be min 1/2 in. (13 mm) to max 2 in. (51 mm). The pipe or conduit to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes or conduits may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.
3. Firestop System — The firestop system shall consist of the following:
   A. Forming Material* — Min 2-1/2 in. (64 mm) thickness of forming material foamed into opening as a permanent form. Forming material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CF812 or CF-AS CJP Foam Sealant
   B. Fill, Void or Cavity Material* — Sealant — Min 2 in. (51 mm) thickness of fill material applied with annulus flush with top surface of floor or within both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Hilti Firestop Systems

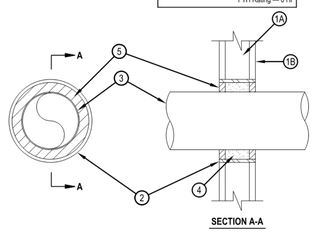
SYSTEM NO. C-AJ-2141

System No. W-L-7017

WL 7017

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 1 Hr
	FTH Rating — 0 Hr



SECTION A-A

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 8-5/8 in. (219 mm).
2. Metallic Sleeve — Nom 8 in. (203 mm) diam (or smaller) Schedule 40 (or heavier) steel sleeve cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Air Duct — Nom 6 in. (152 mm) diam (or smaller) prefabricated No. 28 MSG galv sheet metal duct. A min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm) annular space is required within the firestop system. Duct to be rigidly supported on both sides of wall assembly.
4. Forming Material* — Foamed plastic forming material foamed into opening as a permanent form. Forming material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CF812 or CF-AS CJP Foam Sealant
5. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark

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Hilti Firestop Systems

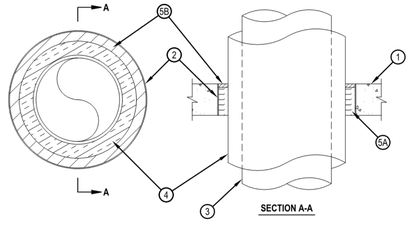
SYSTEM NO. W-L-7017

System No. C-AJ-5091

CAJ 5091

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 29 in. (737 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall. If the steel sleeve extends beyond the top surface of the floor or both surfaces of the wall, the T Rating of the firestop system is 0 hr.

2A. Sheet Metal Sleeve — (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 4 in. (25 mm) above the top surface of the floor.

2B. Sheet Metal Sleeve — (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.

3. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

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Hilti Firestop Systems

System No. C-AJ-5091

CAJ 5091

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft

4. Pipe Covering — Min 1/2 in. (13 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When thickness of pipe covering is less than 2 in. (51 mm), the T Rating for the firestop system is 0 hr.
   See Pipe Equipment Covering — Materials — (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4A. Pipe Covering — (Not Shown) — As an alternate to Item 4, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf or 224 kg/m³) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm).

5. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark

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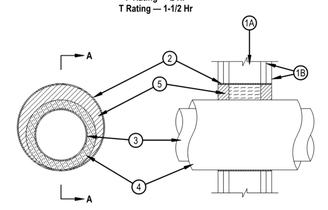
Hilti Firestop Systems

SYSTEM NO. C-AJ-5091

System No. W-L-7018

WL 7018

F Rating — 2 Hr
T Rating — 1-1/2 Hr



SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* — Two layers of nom 5/8 in. thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in.
2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. lap along the longitudinal seam. Length of sleeve to be 1/8 in. less than thickness of wall. Sleeve to be installed by coiling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.
3. Steel Duct — Nom 6 in. diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
4. Pipe Covering* — Nom 1 in. thick hollow cylindrical heavy density (3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or factory-applied self-sealing lap tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in.
   See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. beyond the periphery of the opening.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE Sealant

*Bearing the UL Classification Mark

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PAMLICO 6-12 SCHOOL

601 Main Street, Bayboro, NC, 28515

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 06/12/24
PROJECT #: 2205
DRAWN BY: CAW
CHECKED BY: GCF

U.L. PENETRATION DETAILS

P-502

Sheet No. 45 of 45

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