		ELECTRICAL DRAWING LIST
E-0.1		ELECTRICAL LEGENDS, DIAGRAM AND SCHEDULES
E-1.1	-	ELECTRICAL SPECIFICATIONS
E-1.2	_	ELECTRICAL SPECIFICATIONS AND NOTES
E-2.1	_	ELECTRICAL MAIN FLOOR DEMOLITION PLAN
E-2.2	_	ELECTRICAL MAIN FLOOR LIGHTING PLAN
E-2.3	_	ELECTRICAL POWER & SYSTEMS PLANS
E-2.4	_	ELECTRICAL MECHANICAL POWER PLANS
E-2.5	_	ELECTRICAL BASEMENT CONDUIT ROUTING PLAN
E-3.1	_	ELECTRICAL FOOD SERVICE EQUIPMENT SCHEDULE

	ELECTRICAL GENERAL
	SYMBOLS AND ABBREVIATIONS
וו	JUNCTION BOX
	SONCTION BOX
B	JUNCTION BOX WITH BLANK FACEPLATE
	CONTROL WIRING IN CONDUIT
— <u>E</u> —	EMERGENCY BRANCH CIRCUIT IN CONDUIT
/	BRANCH CIRCUIT IN CONDUIT CONCEALED BELOW FLOOR SLAB
888	BRANCH CIRCUIT IN FLEXIBLE CONDUIT
16	BRANCH CIRCUIT IN CONDUIT — HOT LEG, NEUTRAL AND EQUIPMENT GROUND, RESPECTIVELY
	BRANCH CIRCUIT HOMERUN — PANEL AND SPACE AS INDICATED ON DRAWINGS
	EXISTING EQUIPMENT/WIRE TO BE REMOVED
	EXISTING EQUIPMENT/WIRE TO REMAIN
	NEW EQUIPMENT/WIRE
AFF	ABOVE FINISHED FLOOR
ER	EXISTING TO REMAIN
WP	WEATHER-PROOF

	ELECTRICAL LIGHTING
	SYMBOLS AND ABBREVIATIONS
	LIGHTING OUTLET, CEILING MOUNTED
 . I	STRIP LIGHTING OUTLET, CHAIN-HUNG
	COVE LIGHTING OUTLET, SURFACE MOUNTED
77	LIGHTING OUTLET, TRACK MOUNTED
 	DECORATIVE LIGHTING OUTLET, PENDANT CEILING MOUNTED
 	LIGHTING OUTLET, RECESSED CEILING MOUNTED
Ю	EXIT SIGN, WALL MOUNTED — CHEVRONS AS INDICATED ON DRAWINGS
Ф	OCCUPANCY SENSOR WALL SWITCH — LOWERCASE LETTER INDICATES CONTROLLED LIGHT FIXTURES — DUAL—TECHNOLOGY TYPE UNLESS OTHERWISE NOTED
OS	OCCUPANCY SENSOR, CEILING MOUNTED - LOWERCASE LETTER INDICATES CONTROLLED LIGHT FIXTURES - DUAL-TECHNOLOGY TYPE UNLESS OTHERWISE NOTED
PP	POWER PACK FOR LOW-VOLTAGE OCCUPANCY SENSORS - LOWERCASE LETTER INDICATES CONTROLLED LIGHT FIXTURES AND OCCUPANCY SENSORS
ŧ	DIMMING SYSTEM ENTRY STATION — LOWERCASE LETTER INDICATES CONTROLLED LIGHT FIXTURES
D	DIMMING SYSTEM CONTROL UNIT
ЕМ	EGRESS LIGHTING/EXIT SIGN ON EMERGENCY CIRCUIT

NS NON-SWITCHED

ELECTRICAL POWER & SYSTEMS SYMBOLS AND ABBREVIATIONS

SIMPLEX RECEPTACLE, WALL MOUNTED - TYPE AS INDICATED ON DRAWINGS

DUPLEX RECEPTACLE, WALL MOUNTED

DUPLEX RECEPTACLE, FLUSH MOUNTED IN FLOOR

QUADRAPLEX RECEPTACLE, WALL MOUNTED

VOICE AND/OR DATA OUTLET, WALL MOUNTED

HANDICAPPED PUSH BUTTON FOR MOTORIZED DOOR

NONFUSED DISCONNECT SWITCH - TYPE AND SIZE AS INDICATED ON

FUSED DISCONNECT SWITCH - TYPE AND SIZE AS INDICATED ON DRAWINGS

MANUAL MOTOR STARTER, TOGGLE-OPERATED WITH THERMAL OVERLOADS SIZED PER MANUFACTURER'S SPECIFICATIONS

ELECTRIC MOTOR - "#" INDICATES HORSEPOWER RATING AND "MD" INDICATES MOTORIZED DOOR

••• CIRCUIT BREAKER

METER WITH CURRENT TRANSFORMERS

METER

GFI

EXISTING PANELBOARD/LOADCENTER, SURFACE MOUNTED

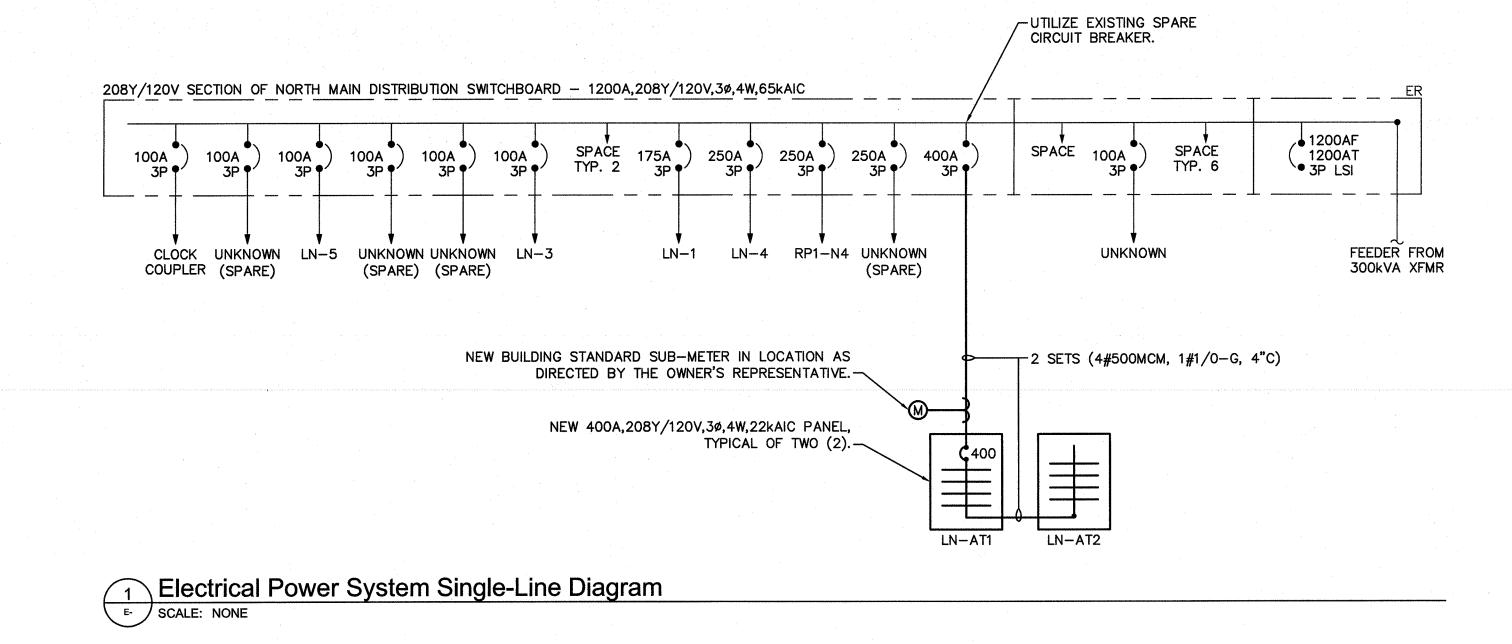
NEW PANELBOARD/LOADCENTER, SURFACE MOUNTED

ACCESS-CONTROL CARD READER - BY OTHERS

ACCESS-CONTROL ELECTROMAGNETIC LOCK - BY OTHERS

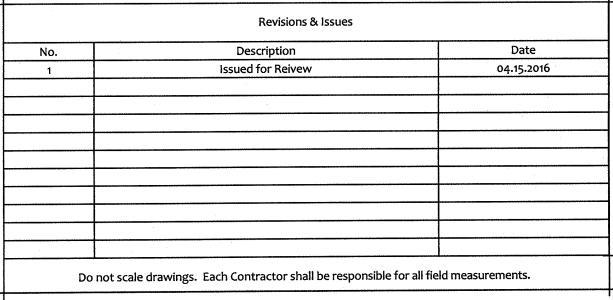
GROUND-FAULT CIRCUIT INTERRUPTING TYPE DEVICE

ACCESS-CONTROL EXIT REQUEST - BY OTHERS



VOLTAGE: 208Y/120)V			PA	NEL:	"LN	V-AT1		_		MOL	JNTING: FLUSH			
CU BUS RATING: 400A										ENCL	OSURE: NEMA 1				
MAIN: 400A MC	B			E	Q. GND	CU BUS:	YE	ES			LO	CATION: ARGO TEA ELEC			
AIC RATING: 22,000				IS	O. GND	CU BUS:	N	0			FED	FROM: NO. LVSWBD			
		OAD (V	A \\	Lob				OID.	1	OAD (V	Λ.)				
SERVES	AØ	BØ	cø	CIR.	BKR.		BKR.	CIR. NO.	AØ	BØ	cø	SERVES			
WAREWASHER - DISHWASH ROOM	3328	שם	CO	1	2 /		1/20	2	1208	<u> </u>	CØ	I IREC - DISHWASH RM FREEZER			
WAREVWASHER - DISHWASH ROOM	3320	3328		3	40		1/20	4	1200	1058		REC - DISHWASH RM REFRIGERATOR			
REC - FOOD PREP MERCHANDISER		3320	1695	5	2 70		2	6		1000	1664	REC - FOOD PREP TOP COMBI-OVEN			
THE TOOLING MENON MEDICEN	1695		,000	7	30		20	8	1664						
REC - FOOD PREP BARISTA STEAMER		1400		9	2		2	10		1664		REC - FOOD PREP BOTTOM COMBI-OVEN			
, , , , , , , , , , , , , , , , , , ,			1400	11		+++	20	12			1664				
REC - FOOD PREP EXPRESSO MACHINE	1300	· .		13	2 /	+++	2	14	1700			JBOX - FOOD PREP LT. BAKING OVEN			
		1300		15	20	+++	20	16		1700					
REC - FOOD PREP COFFEE MAKER			1997	17	2 /	+++	2	18			1700	JBOX - FOOD PREP RT. BAKING OVEN			
de versión de marcia internación de la servición de la companya de la defenda de la companya de la companya de La companya de la co	1997			19	/ 30	+++	20	20	1700						
REC - FOOD PREP HOT WATER		2028		21	2	+++	2 /	22		1269		JBOX - FOOD PREP ICE MAKER			
DISPENSER			2028	23	/ 30	+++	20	24			1269				
REC - FOOD PREP UC FREEZER	748			25	1/20	+++	1/20	26	380			REC - FOOD PREP SALAD REFRIG			
REC - FOOD PREP FRONT COUNTER		180		27	1/20	+++	1/20	28	·	180		REC - FOOD PREP BACK COUNTER			
REC - FOOD PREP AIR COMPRESSOR			440	29	1/20	+++	1/20	30			955	REC - FOOD PREP UC REFRIGERATOR			
REC - FOOD PREP SIDE COUNTER	180			31	1/20	+++	1/20	32	748			REC - FOOD PREP LT. UC REFRIG			
REC - BSMT STORAGE FREEZER		1208		33	1/20	+++	1/20	34	·	748		REC - FOOD PREP RT. UC REFRIG			
REC - BSMT STORAGE REFRIGERATOR			1058	35	1/20	+++	1/20	36			1128	REC - FOOD PREP COFFEE GRINDER			
SPARE				37	1/20	+++	1/20	38				SPARE			
SPARE				39	1/20	+++	1/20	40				SPARE			
SPARE				41	1/20		1/20	42		*****		SPARE			
	9248	9444	8618	<u> </u>	.Ø	BØ	C		7400	6619	8380				
	X	Υ	Z	16	648	16063	169		X	Y	Z	SUBTOTALS			
	S	UB-FEE	D	14	872	14908	147	782	PAN	EL "LN-	AT2"				
				31	520	30971	317	780							
TOTAL: 94,271	VA	261	1.67	A							***************************************				

VOLTAGE: 208Y/12	VC	_		PA	NEL:	"LI	N-AT2	**	_		MO	UNTING: FLUSH		
CU BUS RATING: 400A		-							-		ENCL	OSURE: NEMA 1		
MAIN: LUGS ON	ILY	-		E	Q. GND	CU BUS:	Y	ΞS			LO	CATION: ARGO TEA ELEC		
AIC RATING: 22,000		-		IS	o. GND	CU BUS	N	0			FED	FROM: "LN-AT1"		
SERVES	L	OAD (V	A)	CIR.	BKR.		BKR.	CIR.		OAD (V	A)	SERVES		
SERVES	AØ	ВØ	CØ	NO.	DKK.	-	DKK.	NO.	AØ	BØ	CØ	JLRVES		
REC - FOOD PREP MONITORS	720			1	1/20		1/20	2	384			JBOX - DOOR OPERATORS		
REC - FOOD PREPLT, POS		600		3	1/20	┤╁╁┼	1/20	4		360		REC - CUSTOMER AREA CONFERENCE		
REC - FOOD PREPRT, POS			600	5	1/20	+++	1/20	6			1080	REC - CUSTOMER AREA BY COLUMN		
REC - HOST TABLE, TEA DISPLAY	540			7	1/20	╅┼┼	1/20	8	1440			REC - CUSTOMER AREA SEATING		
REC - BACK RM, ROOF		540		9	1/20	+++	1/20	10		900		REC - CUSTOMER AREA WALLS		
REC - OFFICE			360	11	1/20	+++	1/20	12			360	REC - CUSTOMER AREA MONITORS		
_TS - RESTRMS, LOBBY, OFFICE	319			13	1/20	+++	1/20	14	1450			JBOX - MEN HAND DRYER		
LTS - SERVING, FOOD PREP, BACK RM		392		15	1/20	+++	1/20	16		1450		JBOX - WOMEN HAND DRYER		
TS - CUSTOMER AREA			1175	17	1/20	+++	1/20	18			540	REC - VESTIBULE, ELEV LOBBY		
SPARE			in an interpretation of the	19	1/20	+++	1/20	20		************		SPARE		
SPARE				21	1/20	+++	1/20	22				SPARE		
SPARE				23	1/20	+++	1/20	24				SPARE		
SPARE				25	1/20	 	1/20	26	852			FANS, VAV-6 & FCU-1		
SPARE				27	1/20	+++	1/20	28		1500		VAV-5		
SPARE				29	1/20	+++	1/20	30			1500	VAV-3		
VAV-1	2333			31]3 /	+++	3 /	32	1167			VAV-2		
		2334		33		+++	//_	34		1166		_		
			2333	35	25	+++	15				1167			
VAV-4	2667			37	3 /	* :++	3 /	38	3000			HOT WATER HEATER		
		2666		39		+++	/_	40		3000		-		
			2667	41	30	+++	35				3000			
	6579	6532	7135		Ø	BØ		Ø	8293 X	8376	7647	SUBTOTALS		
	Х	Υ	Z	14	Y Z 14872		14908 14782			Y	Z			





Sargo tea.

SUNY PURCHASE

735 Anderson Hill Road Purchase, NY 10577

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Southport Associates

Southport Engineering Associates, PC 11 Bailey Avenue Ridgefield, CT 06877 Tel.: (203) 431-6844 Fax: (203) 431-6877



to alter these documents in any way once the seal

and signature have been affixed by the Architect.

June. 7, 2016

E-0.1

DAVID A. TETRO ARCHITECT P.C. AIA - LEED A.P. - NCARB

Electrical Legends, Diagram and Schedules

302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.com



A. GENERAL - 260100:

- PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES FOR THE COMPLETION OF ELECTRICAL SYSTEMS AS SHOWN ON THESE DRAWINGS AND AS REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL CODES, AND OSHA REGULATIONS. THE CONTRACTOR SHALL PAY ALL FEES; AND OBTAIN ALL CERTIFICATES AND INSPECTIONS.
- 2. NON-COMPLIANCE: SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE BUILDING CODES, STATE LAWS, LOCAL ORDINANCES AND INDUSTRY STANDARDS; HE SHALL BEAR ALL COSTS ARISING IN CORRECTING THE DEFICIENCIES.
- 3. IN CASE OF DIFFERENCE BETWEEN BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, THESE SPECIFICATIONS AND CONTRACT DRAWINGS: THE MOST STRINGENT SHALL GOVERN. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY SUCH DIFFERENCE.
- 4. ALL EQUIPMENT SHALL BE NEW AND UNUSED; AND SHALL BE "UL" LISTED AND BEAR THE "UL" LABEL.
- 5. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL MATERIALS SHALL BE OF THE BEST QUALITY FOR THE PURPOSE INTENDED. TRADE NAMES AND CATALOG NUMBERS ARE INTENDED TO INDICATE THIS QUALITY AND GRADE. OBTAIN WRITTEN APPROVAL FROM THE OWNER FOR ANY SUBSTITUTIONS MADE AFTER ACCEPTANCE OF SUBMITTAL FOR ANY ITEM.
- 6. ON ACCEPTANCE OF CONTRACT, THE CONTRACTOR AGREES TO GUARANTEE ALL WORK AND EQUIPMENT FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF INITIAL OPERATION. MANUFACTURED EQUIPMENT SHALL CARRY FULL PERIOD OF THE MANUFACTURER'S GUARANTEE AND SHALL NOT BE LESS THAN ONE (1) YEAR.
- 7. PRIOR TO SUBMISSION OF BID, THE CONTRACTOR SHALL VISIT THE JOB SITE TO ASCERTAIN ACTUAL FIELD CONDITIONS AS THEY RELATE TO THE WORK IN THESE SPECIFICATIONS AND DRAWINGS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER AT THIS TIME. ALL ITEMS NOT RESOLVED PRIOR TO BID SHALL BE INCLUDED AS WRITTEN QUALIFICATIONS TO THE BID DOCUMENT. SUBMISSION OF BID SHALL BE EVIDENCE THAT VERIFICATION OF THE JOB SITE HAS BEEN PERFORMED.
- 8. THE GENERAL CONTRACTOR SHALL PERFORM ALL CUTTING NECESSARY FOR PROPER INSTALLATION OF ELECTRICAL WORK.
- 9. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRE-STOPPED USING APPROVED METHODS. ACCEPTABLE MANUFACTURERS ARE HILTI AND 3M BUT MATERIAL MUST BE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL ELECTRICAL INSTALLATIONS THAT ARE WITHIN CLOSE PROXIMITY OF OTHER TRADES. CONDUIT SHALL BE INSTALLED AS HIGH AS POSSIBLE ABOVE FINISHED CEILING TO AVOID CONFLICTS WITH OTHER TRADES. ALL WORK SHALL BE COORDINATED WITH THAT OF OTHER TRADES.
- 11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TEMPORARY LIGHTING AND POWER DURING CONSTRUCTION.
- 12. COVER LIGHT FIXTURES, EQUIPMENT, APPARATUS, ETC. TO PROTECT AGAINST CHEMICAL, WATER, DIRT OR MECHANICAL DAMAGE BEFORE AND DURING THE CONSTRUCTION PERIOD UNTIL THE FINAL ACCEPTANCE. ALL EQUIPMENT SHALL BE DELIVERED, PROPERLY PACKED AND STORED AT THE SITE UNTIL FINAL INSTALLATION.
- 13. THE CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY HIMSELF OR HIS WORKMEN. RESTORE TO ORIGINAL CONDITION ANY APPARATUS, EQUIPMENT OR SURFACE DAMAGED UNDER THIS SCOPE OF WORK PRIOR TO FINAL ACCEPTANCE, INCLUDING RESTORATION OF DAMAGES TO SHOP COATS OF PAINT.
- 14. IT IS THE INTENT OF THESE SPECIFICATIONS AND DRAWINGS TO REQUIRE AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL IN THESE SPECIFICATIONS AND DRAWINGS. IF AN ITEM OF WORK IS SHOWN ON THE DRAWINGS, IT SHALL BE CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT THAT IS NECESSARY FOR COMPLETE INSTALLATION WHETHER SPECIFICALLY MENTIONED OR NOT.
- 15. THE DRAWINGS FOR ELECTRICAL WORK UTILIZE SYMBOLS AND SCHEMATIC DIAGRAMS WHICH HAVE NO DIMENSIONAL SIGNIFICANCE. THE WORK SHALL BE INSTALLED TO FULFILL THE DIAGRAMMATICAL INTENT EXPRESSED ON THE DRAWINGS AND IN CONFORMITY WITH DIMENSIONS INDICATED ON FINAL WORKING DRAWINGS, FIELD LAYOUTS AND SHOP DRAWINGS FROM ALL TRADES.
- 16. PROVIDE TO THE OWNER, A COMPLETE SET OF REPRODUCIBLE AS-BUILT DRAWINGS ON AUTOCAD CLEARLY INDICATING ANY DEVIATIONS FROM THE DESIGN AS SHOWN ON THE DRAWINGS.
- 17. PROVIDE TO THE OWNER FOUR (4) COPIES OF THE OPERATING AND MAINTENANCE MANUALS WITH CATALOG INFORMATION ON ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO: PANELBOARDS, VOICE & DATA SYSTEMS, SECURITY SYSTEMS AND FIRE ALARM SYSTEMS.
- 18. SHOP DRAWINGS AND OTHER INFORMATION REQUIRED: PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIALS, A MANUFACTURER'S LIST SHALL BE SUBMITTED FOR REVIEW. PRIOR TO ASSEMBLING OR INSTALLING THE WORK, THE FOLLOWING SHALL BE SUBMITTED FOR REVIEW:
- 18.1. CATALOG INFORMATION SHEETS, FACTORY ASSEMBLY DRAWINGS AND FIELD INSTALLATION DRAWINGS AS REQUIRED FOR A COMPLETE EXPLANATION AND DESCRIPTION OF ALL ITEMS OR EQUIPMENT SPECIFIED IN THE FOLLOWING SECTIONS.
- 18.2. THE PURPOSE FOR THE REVIEW OF SHOP DRAWINGS IS TO MAINTAIN THE INTEGRITY OF THE DESIGN. UNLESS THE CONTRACTOR CLEARLY INDICATED IN WRITING AND ON HIS LETTERHEAD; ANY CHANGES, SUBSTITUTIONS, DELETIONS OR OTHER DIFFERENCES BETWEEN SUBMISSION AND CONTRACT DOCUMENTS, APPROVAL BY THE ENGINEER DOES NOT CONSTITUTE ACCEPTANCE.
- 18.3. NO SUBSTITUTIONS FOR ANY EQUIPMENT MATERIAL AND/OR MANUFACTURER SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL INCLUDING AN EXPLANATION FOR SUBSTITUTION. A LIST OF ANY DEVIATIONS FROM SPECIFIED THE MODEL. SHOP DRAWINGS AND ASSOCIATED CREDIT. IT SHALL NOT BE ASSUMED THAT THE ENGINEER HAS READ TEXT OR REVIEWED ANY TECHNICAL DATA OF A MANUFACTURED ITEM AND ITS COMPONENTS EXCEPT WHERE THE VENDOR HAS SPECIFICALLY MENTIONED ALL DIFFERENCES BETWEEN THE SUBSTITUTED PRODUCT AND THE SPECIFIED MODEL.
 - 18.3.g. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EQUIPMENT, WIRING, DEVICES, ETC. REQUIRED FOR THE PROPER INSTALLATION OF THE SUBSTITUTED PRODUCT. THIS INCLUDES MODIFICATIONS OF ANY KIND THAT ARE REQUIRED TO ALL ASSOCIATED SYSTEMS AFFECTED BY THE SUBSTITUTION. SUCH ITEMS SHALL BE PROVIDED AT THE FULL EXPENSE OF THE CONTRACTOR WITH NO COSTS INCURRED TO THE OWNER.
 - 18.3.b. ALL SUBSTITUTED PRODUCTS SHALL CONFORM TO PERFORMANCE AND SPATIAL REQUIREMENTS IN THESE SPECIFICATIONS AND DRAWINGS. ALL MODIFICATIONS OR REPLACEMENTS OF ANY PRODUCTS THAT DO NOT MEET THESE REQUIREMENTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
- 19. THE CONTRACTOR SHALL PROVIDE TESTS FOR EACH OF THE FOLLOWING:

Do not scale drawings. Each Contractor shall be responsible for all field measurements.

- 19.1. PRIOR TO ENERGIZING THE ELECTRICAL SYSTEM, THE CONTRACTOR SHALL PROVIDE 600-VOLT INSULATION RESISTANCE TESTS FOR ALL DISTRIBUTION AND UTILIZATION EQUIPMENT. THE CONTRACTOR SHALL PROVIDE A SUITABLE AND STABLE SOURCE OF TEST POWER. THE INSULATION TEST SHALL BE A "MEGGER" TEST AT 500 VOLTS DC FOR 30 SECONDS. THE TEST SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER. A TEST REPORT SHALL BE SUBMITTED TO THE OWNER. THE MINIMUM INSULATION RESISTANCE SHALL BE 1.000,000 OHMS FOR #12AWG CONDUCTORS AND 250,000 OHMS FOR LARGER CONDUCTORS. CONDUCTORS TESTING BELOW THE MINIMUM INSULATION RESISTANCE SHALL BE REPLACED AND TESTED AGAIN.
- 19.2. THE CONTRACTOR SHALL PERFORM A CONTINUITY TEST ON THE ENTIRE ELECTRICAL SYSTEM PRIOR TO ENERGIZING THE SYSTEM TO INSURE PROPER CABLE CONNECTIONS.

- 19.3. THE CONTRACTOR SHALL PERFORM CONNECTION TORQUE TESTS FOR ALL LARGER CONDUCTOR BOLTED CONNECTIONS USING A TORQUE WRENCH. TORQUE SHALL BE TO NATIONAL ELECTRICAL TESTING ASSOCIATION'S (NETA) STANDARDS.
- 19.4. THE CONTRACTOR SHALL PERFORM MECHANICAL OPERATION TESTS FOR ALL ELECTRICAL EQUIPMENT, SUCH AS DISCONNECT SWITCHES, CIRCUIT BREAKERS, ETC.; TO VERIFY THAT THE MECHANICAL PORTIONS OF THE DEVICE ARE FUNCTIONING.
- 19.5. AT THE COMPLETION OF THE LIFE-SAFETY SYSTEM INSTALLATION, THE CONTRACTOR SHALL TEST ALL FIRE ALARM AND EMERGENCY LIGHTING DEVICES. THE CONTRACTOR SHALL SUBMIT A REPORT TO THE ENGINEER VERIFYING THAT THE SYSTEMS ARE FULLY OPERATIONAL.
- B. ELECTRICAL DEMOLITION 260501:
 - 1. PRIOR TO SUBMISSION OF BID, THE CONTRACTOR SHALL THOROUGHLY INSPECT THE WORK AREA. BASED ON THIS INSPECTION, THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT TO ACCOMPLISH DEMOLITION WORK.
 - 2. AS PART OF DEMOLITION WORK, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING EXISTING SYSTEMS (NOT SCHEDULED FOR REMOVAL) ENERGIZED. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRING TO KEEP EXISTING DEVICES THAT SHARE THE SAME CIRCUITS AS DEMOLITION ITEMS ACTIVE. THIS INCLUDES RECEPTACLE AND LIGHTING CIRCUITS, FIRE ALARM DEVICES, ETC.
 - 3. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH THE EXISTING ELECTRICAL SYSTEMS.
 - 4. VERIFY THAT ALL ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.
- 5. REMOVE ALL ABANDONED WIRING AND EXPOSED CONDUIT, INCLUDING THOSE ABANDONED ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOORS; AND PATCH SURFACES.
- 6. ALL EXISTING BRANCH CIRCUITS THAT ARE NOT TO BE REUSED SHALL BE REMOVED BACK TO SERVING PANELBOARD. CIRCUIT BREAKERS SHALL BE LABELED AS SPARE AND PLACED IN THE "OFF" POSITION. EXISTING CONDUIT SHALL REMAIN FROM PANELBOARD TO ABOVE ACCESSIBLE CEILING SPACE.
- 7. ASBESTOS PROCEDURE: THE CONTRACTOR SHALL, UPON CONTACTING MATERIAL SUSPECTED OF BEING ASBESTOS, NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY AND WORK AROUND SUSPECTED AREA.
- C. WIRES AND CABLES 260519:
 - 1. ALL CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY REFINED COPPER, INSULATION TYPE THHN/THWN" RATED 600 VOLTS UNLESS INDICATED OTHERWISE.
 - 2. FACTORY COLOR CODE USING THE SAME CODE THROUGHOUT FOR CONDUCTORS AS FOLLOWS: 120/208 VOLTS - BLACK, RED, BLUE AND WHITE NEUTRAL CONDUCTOR 277/480 VOLTS - BROWN, ORANGE, YELLOW AND GRAY NEUTRAL CONDUCTOR GREEN CONDUCTOR SHALL BE USED WHERE EQUIPMENT GROUND WIRE IS SPECIFIED.
 - 3. MINIMUM CONDUCTOR SIZES SHALL BE #12AWG FOR POWER AND LIGHTING CIRCUITS, #10AWG FOR BRANCH CIRCUIT RUNS LONGER THAN 100 FEET AND #14AWG FOR CONTROL CIRCUITS UNLESS INDICATED OTHERWISE.
 - 4. NO CONDUCTORS SHALL BE PULLED INTO ANY CONDUIT RUN BEFORE ALL CONDUIT JOINTS ARE TIGHT AND ENTIRE RUN IS SECURED IN PLACE. WHERE NECESSARY FOR WIRING INSTALLATION, PULLING COMPOUND SHALL BE POWDERED SOAPSTONE, MINERALLAC #100 OR APPROVED EQUAL.
 - 5. TERMINATIONS OF #6AWG OR LARGER AT SWITCHBOARDS SHALL BE MADE WITH COMPRESSION TYPE CONNECTORS. TERMINATIONS OF #6AWG OR LARGER AT PANELBOARDS SHALL BE MADE WITH MECHANICAL LUGS.
 - 6. JOINS AND TAPS OF #6AWG OR LARGER SHALL BE MADE WITH PRESSURE-INDENT TYPE CONNECTORS.
- 7. TAG ALL FEEDERS ROUTED THROUGH ELECTRICAL BOXES, GUTTER SPACES AND WIREWAYS.
- 8. ALL WIRES #10AWG AND SMALLER SHALL BE SOLID COPPER. ALL WIRES #8AWG AND LARGER SHALL BE STRANDËD COPPER.
- 9. METAL CLAD CABLE MAY BE USED FOR INDOOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS WHEN WRITTEN APPROVAL IS GIVEN BY THE OWNER AND SHALL BE INSTALLED ONLY WHERE PERMITTED BY CODE. METAL CLAD CABLE SHALL BE LIGHTWEIGHT GALVANIZED STEEL INTERLOCKED ARMOR WITH CONDUCTORS AS SPECIFIED ABOVE. CABLE SHALL BE PROVIDED WITH SEPARATE EQUIPMENT GROUNDING CONDUCTOR. ARMOR SHALL NOT BE USED AS MEANS OF GROUNDING.
- 10. ACCEPTABLE MANUFACTURERS ARE ALLIED, GENERAL CABLE, PHELPS DODGE, ROME, SIMPLEX AND SOUTHWIRE FOR WIRES AND CABLES. -ROMEX IS NOT ALLOWED. -
- 11. ACCEPTABLE MANUFACTURERS ARE AFC, ALLIED AND SOUTHWIRE FOR METAL CLAD CABLE.
- D. GROUNDING AND GROUND-FAULT PROTECTION 260526:
 - 1. GROUNDING SHALL COMPLY WITH NEC ARTICLE 250.
 - 2. EACH CIRCUIT SHALL HAVE AN EQUIPMENT GROUND CONDUCTOR. MULTI-WIRE CIRCUITS OF DIFFERENT PHASES MAY SHARE EQUIPMENT GROUND CONDUCTOR. THE EQUIPMENT GROUND CONDUCTOR SHALL NOT BE LESS THAN #12AWG OR AS SHOWN ON DRAWINGS. PROVIDE ELECTRICALLY CONTINUOUS, TIGHT GROUNDING CONNECTIONS FOR ALL WIRING DEVICES UNLESS NOTED OTHERWISE. WIRING DEVICE GROUNDING CONNECTIONS SHALL BE MADE VIA PIGTAIL FROM GROUND SCREW WITHIN DEVICE BACK BOX. INSTALL IN STRICT ACCORDANCE WITH NEC ARTICLE 300.13 (B).
 - 3. EQUIPMENT GROUND CONDUCTORS SHALL BE INSTALLED IN CONDUIT OR SUITABLY PROTECTED FROM
 - 4. CONDUITS ARE NOT TO BE USED AS MEANS OF GROUNDING.
- 5. ACCEPTABLE MANUFACTURERS ARE BURNDY, ERICO AND SQUARE D.
- E. SUPPORTING DEVICES 260529:
- 1. SUPPORT OF NEW ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE BEST INDUSTRY PRACTICES. DO NOT FASTEN SUPPORTS TO MECHANICAL EQUIPMENT, DUCTWORK, PIPING OR CONDUIT.
- 2. FURNISH AND INSTALL STEEL SUPPORT FRAMES, MEMBERS, HANGERS, BRACKETS, ETC. AS REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL EQUIPMENT.
- 3. SUPPORT FRAMES FOR NEW LIGHT FIXTURES INDEPENDENT OF OTHER SUPPORTS WHEREVER POSSIBLE.
- 4. SUPPORT FRAMES BOLTED TO FLOOR SLAB AND EXTENDING TO SLAB ABOVE SHALL BE PROVIDED AS REQUIRED FOR FREE STANDING EQUIPMENT OR WHERE WALLS ARE UNABLE TO SUPPORT EQUIPMENT
- 5. ALL CONDUITS UP TO 1 1/2" TRADE SIZE SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS SECURED TO BLACK IRON CEILING SUPPORT SYSTEM, STRUCTURAL MEMBERS OR SLAB ABOVE AT INTERVALS NO GREATER THAN 7'-0" AND WITHIN 12" OF CONDUIT END. ALL CONDUITS 2" TRADE SIZE OR LARGER SHALL BE SUPPORTED BY APPROVED HANGERS AND INSERTS FROM SLAB ABOVE AT INTERVALS NO GREATER THAN 10'-0" AND WITHIN 18" OF CONDUIT END. SUPPORT FROM CEILING TEES. CROSS TEES OR WIRES IS PROHIBITED.

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- F. RACEWAYS FOR ELECTRICAL SYSTEMS 260533:
- 1. MATERIALS:

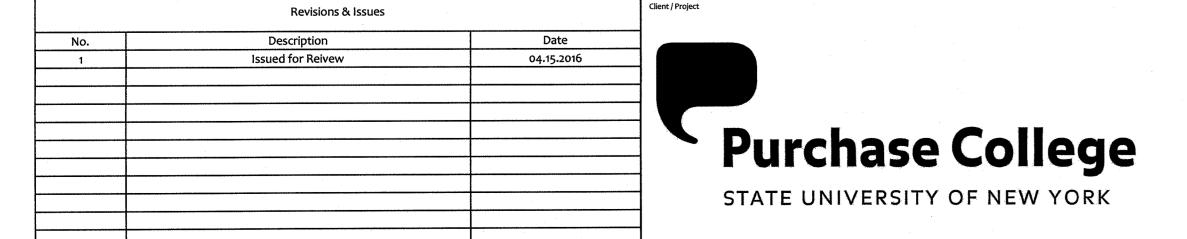
- 1.1. EMT: THIN WALL, HOT-DIPPED GALVANIZED STEEL (3/4" MINIMUM) CONDUIT TO BE USED FOR ALL WORK CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS; AND FOR EXPOSED RUNS UP TO 1 1/2" TRADE SIZE. USE WITH STEEL COMPRESSION FITTINGS ONLY.
- 1.2. IMC: HOT-DIPPED GALVANIZED STEEL CONDUIT MAY BE USED FOR RISERS, PANELBOARD FEEDERS, THREE-PHASE MOTOR FEEDERS; AND FOR CONCEALED RUNS 2" TRADE SIZE AND LARGER. USE WITH THREADED FITTINGS ONLY.
- 1.3. RMC: HOT-DIPPED RIGID GALVANIZED STEEL UNLESS OTHERWISE NOTED; CONDUIT TO BE USED FOR ALL RISERS, PANELBOARD FEEDERS, THREE-PHASE MOTOR FEEDERS, CONDUIT INSTALLED IN SLAB: AND FOR EXPOSED RUNS 2" TRADE SIZE AND LARGER. CONDUIT SHALL BE GALVANIZED FOR CORROSION PROTECTION FOR CONDUIT INSTALLED IN CONCRETE SLAB. USE WITH THREADED FITTINGS ONLY.
- 1.4. FMC: INTERLOCKING COIL FORMED GALVANIZED STEEL STRIP (6' MAXIMUM LENGTH) CONDUIT TO BE USED FOR ALL LIGHT FIXTURE WHIPS AND FINAL CONNECTIONS TO TRANSFORMERS AND MOTORS. USE WITH INSULATED THROAT BITE-TITE CONNECTORS.
- 1.5. LFMC: HELICALLY WOUND GALVANIZED STEEL STRIP WITH MOISTURE SEALING JACKET (6' MAXIMUM LENGTH) — CONDUIT TO BE USED FOR ALL LOCATIONS WITHIN 6'-0" OF A WATER SOURCE OR WHERE EXPOSED TO DAMP ATMOSPHERES OR CORROSIVE MATERIALS. USE WITH INSULATED LIQUID-TIGHT THROAT BITE-TITE CONNECTORS.
- 2. KEEP CONDUITS AND OTHER OPENINGS CLOSED TO PREVENT ENTRY OF FOREIGN MATTER DURING CONSTRUCTION AND PRIOR TO WIRE OR CABLE INSTALLATION.
- 3. ALL CONDUIT IN FINISHED AREAS SHALL BE CONCEALED IN WALLS OR ABOVE FINISHED CEILING WHERE POSSIBLE. IN AREAS WHERE ANY CONDUIT CANNOT BE CONCEALED DUE TO FIELD CONDITIONS, THE GENERAL CONTRACTOR SHALL PAINT CONDUIT AS DIRECTED BY THE ARCHITECT.
- 4. ALL CONDUIT SHALL BE SECURELY FASTENED IN PLACE TO STRUCTURAL MEMBERS. DO NOT FASTEN TO PIPING, MECHANICAL EQUIPMENT, ETC. PROVIDE HANGERS AND/OR SUPPORTS AT EACH ELBOW AND WITHIN 12" OF EACH CONDUIT TERMINATION INTO A BOX, ENCLOSURE OR CABINET. PROVIDE APPROVED BEAM CLAMPS, PIPE STRAPS OR HEAVY IRON TIES WHERE CONDUITS PENETRATE FLOOR/CEILING SLABS.
- 5. ALL CONDUIT TERMINATING IN METAL ENCLOSURES SHALL BE PROVIDED WITH AN INSULATED BUSHING. PROVIDE "GROUNDING" TYPE BUSHING WHERE REQUIRED.
- 6. EXPANSION FITTINGS SHALL BE PROVIDED AT ALL EXPANSION JOINTS.
- 7. CONDUIT TO BE INSTALLED TO AVOID PROXIMITY WITH STEAM AND HOT WATER PIPING. MAINTAIN 12" BETWEEN CONDUIT AND PIPING WHEREVER POSSIBLE. AT NO POINT SHALL SPACING BE LESS THAN 4" BETWEEN CONDUIT AND PIPING INSULATION.
- 8. ACCEPTABLE MANUFACTURERS ARE ALLIED TUBE & CONDUIT, NATIONAL WIRE PRODUCTS, REPUBLIC AND TRIANGLE FOR CONDUITS AND ASSOCIATED FITTINGS.
- G. BOXES FOR ELECTRICAL SYSTEMS 260534:
- 1. OUTLET, JUNCTION AND PULL BOXES SHALL BE INDUSTRY STANDARD GAUGE, GALVANIZED SHEET STEEL. BOXES SHALL BE INSTALLED WHERE NECESSARY TO FULFILL DESIGN INTENT REGARDLESS OF INDICATIONS AS SHOWN ON DRAWINGS. ALL BOXES SHALL BE MADE ACCESSIBLE. PROVIDE ACCESS PANELS WHERE NECESSARY AND COORDINATE LOCATIONS WITH THE ARCHITECT.
- 2. POKE-THRU BOXES IN SLAB SHALL BE FIRE-RATED GALVANIZED STEEL WITH AN INTUMESCENT FIRE-STOP MATERIAL TO MAINTAIN THE FIRE RATING OF FLOOR SLAB. SIZE AS REQUIRED FOR INSTALLATION OF ALL WIRING DEVICES AS SHOWN ON DRAWINGS. PROVIDE POKE-THRU WITH STAMPED STEEL JUNCTION BOXES FOR POWER AND VOICE/DATA REQUIRED CONNECTIONS AS WELL AS METALLIC FLANGE AND DEVICE COVER OF FINISH AS DIRECTED BY THE ARCHITECT.
- BARRIERS SHALL BE INDUSTRY STANDARD GAUGE, CONDUCTIVE MATERIAL WITH ANGLE IRON FRAMING SUPPORT AROUND ITS PERIMETER AND SHALL HAVE ADEQUATE THICKNESS (1/8" MINIMUM) AS REQUIRED FOR MECHANICAL STRENGTH NECESSARY TO FULLY PROTECT THE SYSTEM. BARRIERS SHALL BE PROVIDED BETWEEN SEPARATE SYSTEMS AND BETWEEN SEPARATE VOLTAGES.
- 4. NORMAL POWER AND EMERGENCY POWER SYSTEMS SHALL NOT BE INSTALLED IN COMMON ELECTRICAL BOXES AND SHALL BE KEPT SEPARATE.
- 5. PROVIDE ADEQUATE OUTLET BOXES FOR MOUNTING ALL DEVICES. DO NOT USE ROUND JUNCTION BOXES.
- 5.1. FURNISH AND INSTALL 4 11/16" SQUARE BY 1 1/2" OR 2 1/8" DEEP BACK BOX WITH EXTENSION RING FOR SWITCH AND RECEPTACLE OUTLETS. MULTI-GANG BACK BOXES SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE INSTALLED WIRING DEVICES.
- 5.2. FURNISH AND INSTALL 4" OCTAGONAL BY 2 1/8" DEEP BACK BOX WITH 3/8" FIXTURE STUD FOR CEILING AND/OR SUSPENDED LIGHTING OUTLETS.
- 6. JUNCTION AND PULL BOXES SHALL HAVE REMOVABLE SCREW-ON COVER PLATES AND BE PROVIDED EVERY 100 FEET OF CONDUIT RUN AND WHERE NECESSARY TO FACILITATE THE INSTALLATION OF EQUIPMENT AND WIRING.
- 6.1. BOXES SERVING FIRE ALARM SYSTEM SHALL BE PAINTED RED IN COLOR AND LABELED "FIRE".
- 6.2. BOXES SERVING EMERGENCY SYSTEM SHALL BE PAINTED YELLOW IN COLOR.
- 6.3. BOXES SHALL BE SIZED TO COMPLY WITH MINIMUM BENDING RADIUS CRITERIA AS SPECIFIED BY
- 6.4. BOXES HAVING ANY SINGLE DIMENSION LARGER THAN 36" SHALL BE PROVIDED WITH CABLE SUPPORT RACKS. CABLE SUPPORT RACKS SHALL CONSIST OF 3/4" DIAMETER STEEL PIPING WITH FLANGED ENDS BOLTED TO FRAME OF BOX AND FITTED CONTINUOUS FIBER INSULATING SLEEVES ARRANGED IN TIERS. INSTALL RACKS WITHIN 36" OF BOX.
- 7. ACCEPTABLE MANUFACTURERS ARE APPLETON, CROUSE HINDS, O.Z./GEDNEY, RACO AND THOMAS & BETTS FOR OUTLET, JUNCTION AND PULL BOXES.
- 8. ACCEPTABLE MANUFACTURERS ARE FSR, HUBBELL, THOMAS & BETTS AND WIREMOLD FOR POKE-THRU BOXES.
- 9. ACCEPTABLE MANUFACTURERS ARE BURNDY, CROUSE HINDS, NEPCO, O.Z./GEDNEY, RACO AND THOMAS & BETTS FOR BUSHINGS, CONNECTORS, COUPLINGS AND FITTINGS.
- VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS 260548:
- PROVIDE SEISMIC RESTRAINTS, INCLUDING ALL STRUCTURAL STEEL MEMBERS, INSERTS, ANCHORS, WIRES, ETC. AS REQUIRED FOR ALL ELECTRICAL EQUIPMENT. ALL SEISMIC RESTRAINTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL CODES, ORDINANCES AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- ELECTRICAL IDENTIFICATION 260553:
- PROVIDE THERMOPLASTIC ENGRAVED NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO: CIRCUIT BREAKERS, DISCONNECT SWITCHES, PANELBOARDS, ETC. AS REQUIRED BY THE NATIONAL ELECTRIC CODE. NAMEPLATES SHALL INDICATE EQUIPMENT NAME, VOLTAGE AND AMPERAGE.
- 2. NAMEPLATES FOR EQUIPMENT ON NORMAL POWER SHALL BE BLACK WITH WHITE LETTERING. NAMEPLATES FOR EQUIPMENT ON EMERGENCY POWER SHALL BE YELLOW WITH BLACK LETTERING.

- 3. PROVIDE "DANGER" LABELING FOR ALL ELECTRICAL EQUIPMENT, BOXES, ETC. AS REQUIRED BY NEC CODES. LABELING SHALL INCLUDE ALL REQUIREMENTS FOR ARC-FLASH AND FAULT-CURRENT IDENTIFICATION IN ACCORDANCE WITH NEC CODES.
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MARKING ALL FIXED EQUIPMENT, RECEPTACLES AND SWITCHES WITH THE PANELBOARD NAME AND CIRCUIT BREAKER NUMBER SERVING EACH DEVICE WITH TYPEWRITTEN LABELS.
- J. LIGHTING CONTROL DEVICES 260923:
- 1. PROVIDE OCCUPANCY SENSOR TYPE DEVICES AS FOLLOWS:
- 1.1. OCCUPANCY CEILING SENSORS: PROVIDE U.L. LISTED COMMERCIAL GRADE, ADAPTIVE DUAL TECHNOLOGY WITH 360° AND 2000 SQFT. MINIMUM COVERAGE OCCUPANCY SENSOR
- 1.2. OCCUPANCY WALL SENSORS: PROVIDE U.L. LISTED COMMERCIAL GRADE, ADAPTIVE DUAL TECHNOLOGY WITH 180° AND 1200 SQFT. MINIMUM COVERAGE OCCUPANCY SENSOR.
- 1.3. OCCUPANCY SINGLE-RELAY WALL SWITCHES: PROVIDE U.L. LISTED COMMERCIAL GRADE. ADAPTIVE DUAL TECHNOLOGY WALL SWITCH WITH MANUAL OVERRIDE BUTTON ON SENSOR FACE AND 1000 SQFT. COVERAGE.
- 1.4. PROVIDE POWER PACKS AND RELAYS AS REQUIRED TO ACHIEVE DESIGN INTENT REGARDLESS OF INDICATIONS ON DRAWINGS. COORDINATE EXACT WIRING REQUIREMENTS WITH THE EQUIPMENT
- 1.5. ACCEPTABLE MANUFACTURERS ARE HUBBELL BUILDING AUTOMATION, LEVITON, LUTRON, PHILIPS LIGHTING CONTROLS AND SENSOR SWITCH.
- K. MODULAR DIMMING CONTROL 260936:

SUPPLIER.

- 1. DIMMING SYSTEMS:
- SINGLE-ROOM DIMMING SYSTEM: FURNISH AND INSTALL WALL CONTROL STATION RATED 208/120V,1ø,3W AT 20 AMPERES. PROVIDE WITH A MINIMUM OF SIX (6) ZONES AND FOUR (4) SCENES. CONTROL STATION SHALL BE CAPABLE OF COMMUNICATING WITH MULTIPLE CONTROL
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE MANUFACTURERS OF THE DIMMING SYSTEM AND LIGHT FIXTURE BALLASTS TO ENSURE COMPATIBILITY OF DEVICES.
- 3. INCLUDE ALL EQUIPMENT, WIRING, ETC. AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM TO ACHIEVE THE DESIGN INTENT AS SHOWN ON DRAWINGS. COORDINATE EXACT REQUIREMENTS AND INSTALLATION WITH THE DIMMING SYSTEM EQUIPMENT SUPPLIER.
- 4. ACCEPTABLE MANUFACTURERS ARE CRESTRON, DIGITAL LIGHTING SYSTEMS AND LUTRON.
- L. PANELBOARDS 262416:
- NEW PANELBOARDS
 - NEW PANELBOARDS SHALL BE RATED WITH MAIN CIRCUIT BREAKER OR MAIN LUGS ONLY AS SHOWN ON DRAWINGS. PANELBOARD BOX SHALL BE MADE OF SHEET STEEL "BENT-UP", RIVETED OR BOLTED TOGETHER WITH EXTERIOR ANGLE IRON FRAME MOUNTED FLUSH OR SURFACE AS INDICATED ON DRAWINGS AND SHALL HAVE "DOOR-WITHIN-DOOR" TYPE CODE GAUGE STEEL DOORS INCLUDING LOCK AND KEY FOR INNER DOOR. BOX AND DOORS SHALL BE PROVIDED WITH ONE COAT OF GRAY ENAMEL PAINT. PROVIDE WITH COPPER BUS BARS. 100% RATED SOLID COPPER NEUTRAL, COPPER EQUIPMENT GROUND, COPPER ISOLATED GROUND (WHERE SPECIFIED) AND BOLT—ON BRANCH CIRCUIT BREAKERS. AIC RATING AND AVAILABLE SPACE AS SHOWN ON DRAWINGS.
 - ACCEPTABLE MANUFACTURERS ARE CUTLER-HAMMER "PRL1" SERIES, GENERAL ELECTRIC "AQ" SERIES, SIEMENS "P1" SERIES AND SQUARE D "NQ" SERIES.
 - 1.2. NEW PANELBOARDS TO BE MOUNTED 72" AFF TO TOP OF BOX UNLESS NOTED OTHERWISE. PROVIDE WITH TYPEWRITTEN DIRECTORY LOCATED ON INSIDE OF DOOR BEHIND TRANSLUCENT
- NEW PANELBOARD MAIN CIRCUIT BREAKERS SHALL BE INDIVIDUALLY MOUNTED AND SEPARATE FROM BRANCH CIRCUIT BREAKERS. BRANCH-MOUNTED MAIN CIRCUIT BREAKERS SHALL NOT BE PERMITTED.
- 2. EXISTING PANELBOARDS/LOADCENTERS: CLEAN EXPOSED SURFACES AND CHECK TIGHTNESS OF ALL ELECTRICAL CONNECTIONS. REPLACE ALL DAMAGED CIRCUIT BREAKERS AND PROVIDE NEW CIRCUIT BREAKERS WHERE NECESSARY. NEW CIRCUIT BREAKERS SHALL MATCH EXISTING PANELBOARD/LOADCENTER IN MANUFACTURER AND AIC RATING. PROVIDE CLOSURE PLATES FOR VACANT POSITIONS. PROVIDE NEW UPDATED TYPEWRITTEN DIRECTORY SHOWING REVISED CIRCUITING ARRANGEMENT. THE CONTRACTOR SHALL VERIFY ALL CONDUIT AND FEEDER SIZES ASSOCIATED WITH PANELBOARDS/LOADCENTERS. ALL CODE DISCREPANCIES SHALL BE BROUGHT TO ATTENTION OF THE ARCHITECT AND THE ENGINEER.
- M. ELECTRICITY METERING 262713:
 - NEW METERS SHALL BE SINGLE UNIT WITH TWO INPUTS AND TWO (2) SETS OF CT'S RATED FOR THREE-PHASE, FOUR-WIRE WITH VOLTAGE AND AMPERES AS REQUIRED. METER SHALL HAVE DIRECT-READ LCD DISPLAY WITH MULTIPLIER FOR ACCUMULATIVE KWH AND "REAL-TIME" KW LOAD. DEMAND OPTION TO DISPLAY KW/DEMAND AND KW PEAK WITH DATE AND TIME STAMP. INCLUDE ANY EQUIPMENT NECESSARY FOR PROPER OPERATION. PROVIDE COMMUNICATION CABLE FROM METER TO MONITOR STATION AS DIRECTED BY THE BUILDING REPRESENTATIVE, IF APPLICABLE.
- 1.1. ACCEPTABLE MANUFACTURERS ARE E-MON D-MON, ELECTRO INDUSTRIES/GAUGE TECH, OHIO SEMITRONICS AND SQUARE D.

(CONTINUED ON DRAWING E.02)



SUNY PURCHASE

735 Anderson Hill Road Purchase, NY 10577

Southport Associates

Southport Engineering Associates, PC 11 Bailey Avenue Tel.: (203) 431-6844 Ridgefield, CT 06877 Fax: (203) 431-6877



Electrical Specifications

June. 7, 2016

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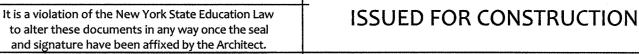
302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.ne

www.DavidTetroArchitect.com

DAVID A. TETRO

ARCHITECT P.C.

AIA - LEED A.P. - NCARB



ELECTRICAL SPECIFICATIONS

- N. WIRING DEVICES 262726:
- 1. WIRING DEVICES SHALL BE SPECIFICATION GRADE AND AS FOLLOWS:

RECEPTACLE WITH SELF-TEST CIRCUITRY.

- 1.1. RECEPTACLES: PROVIDE UL498 LISTED COMMERCIAL GRADE, 20A/125V NEMA 5-20R, DECORATIVE ARCHITECTURAL STYLE RECEPTACLES UNLESS INDICATED OTHERWISE.
- 1.2. GROUND-FAULT CIRCUIT INTERRUPTING TYPE RECEPTACLES: PROVIDE UL498 LISTED COMMERCIAL GRADE, 20A/125V NEMA 5-20R, DECORATIVE ARCHITECTURAL STYLE GFCI TYPE
- SINGLE-POLE SWITCHES: PROVIDE U.L. LISTED COMMERCIAL GRADE, 20AMP, 120-277VAC SINGLE-POLE, TOGGLE-OPERATED, QUIET-TYPE, DECORATIVE ROCKER STYLE WALL SWITCH.
- 1.4. FACEPLATES: PROVIDE THERMOPLASTIC FACEPLATES WITH COLOR AND STYLE AS DIRECTED BY THE ARCHITECT IN ALL PUBLIC SPACES. PROVIDE STAINLESS STEEL FACEPLATES IN MECHANICAL AND ELECTRICAL SPACES. FACEPLATES SHALL BE INSTALLED FLAT AGAINST WALL. NO GAPS WILL BE ALLOWED.
- 1.5. ACCEPTABLE MANUFACTURERS FOR RECEPTACLES AND SWITCHES ARE COOPER ARROW—HART DECORATOR SERIES, HUBBELL STYLE LINE DECORATOR SERIES, LEVITON DECORA SERIES, LUTRON ARCHITECTURAL SERIES AND PASS & SEYMOUR DECORATOR SERIES.
- 2. ALL RECEPTACLE OUTLETS INSTALLED WITHIN 6'-0" OF SINKS OR OTHER SOURCES OF WATER SHALL BE GROUND-FAULT CIRCUIT INTERRUPTING TYPE.
- 3. ALL RECEPTACLE OUTLETS SHALL BE INSTALLED WITH GROUNDING PIN LOCATED IN THE TOP POSITION.
- 4. ALL SWITCHES SHALL BE INSTALLED WITH "OFF" IN THE BOTTOM POSITION.
- 5. ALL EXTERIOR WIRING DEVICES SHALL BE PROVIDED WITH A WEATHER-PROOF "WHILE-IN-USE" COVER.
- 6. ALL WIRING DEVICES SHALL BE INSTALLED PLUMB, SQUARE AND TRUE. WIRING DEVICES INSTALLED IN ADJACENT LOCATIONS SHALL BE ALIGNED.
- 7. WIRING DEVICES INSTALLED AT A SINGLE LOCATION SHALL BE INSTALLED IN A MULTI-GANG BACK BOX WITH SUITABLE FACEPLATE WHEREVER POSSIBLE. PROVIDE BARRIERS AS REQUIRED BY CODE.
- 8. WIRING DEVICES SHALL BE COLORED AS DIRECTED BY THE ARCHITECT UNLESS NOTED OTHERWISE.
- 0. FUSES 262813:
- FUSES SHALL BE CURRENT-LIMITING TYPE WITH AN INTERRUPTING CURRENT CAPACITY OF 200,000RMS AMPERES AND A CONTINUOUS CURRENT RATING AS SHOWN ON DRAWINGS.
- 2. FUSES SHALL HAVE AN AVERAGE MELTING TIME-CURRENT CHARACTERISTIC TO MEET UNDERWRITERS' LABORATORIES REQUIREMENTS OF "CLASS K" FOR 0-600 AMP FUSES AND "CLASS L" FOR OVER 600
- 3. ACCEPTABLE MANUFACTURERS ARE BUSSMAN, GOULD SHAWMUTT AND GENERAL ELECTRIC.
- P. ENCLOSED SWITCHES AND CIRCUIT BREAKERS 262816:
 - DISCONNECT SWITCHES SHALL BE "QUICK-MAKE", "QUICK-BREAK" HEAVY DUTY WITH VOLTAGE RATINGS OF 600 VOLTS FOR 480/277-VOLT SYSTEMS AND 240 VOLTS FOR 208/120-VOLT SYSTEMS. PROVIDE SINGLE OR THREE PHASE WITH AMPERE RATINGS AS SHOWN ON DRAWINGS. U.L. 98 LISTED, NEMA KS1. ENCLOSURES SHALL BE NEMA 1 FOR INDOOR AND NEMA 3R FOR OUTDOOR INSTALLATIONS.
 - ACCEPTABLE MANUFACTURERS ARE CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS AND SQUARE
- 2. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, "QUICK-MAKE, QUICK-BREAK" TYPE WITH NONWELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES. PROVIDE WITH ELECTRONIC, FIELD ADJUSTABLE, LSI TRIP FUNCTIONS FOR CIRCUIT BREAKERS RATED 400 AMPERES AND ABOVE. ALL CIRCUIT BREAKERS SERVING MECHANICAL EQUIPMENT SHALL BE "HACR" RATED.
- 2.1. WHERE INSTALLED IN EXISTING PANELBOARDS, CIRCUIT BREAKERS SHALL MATCH THE EXISTING PANELBOARD IN MANUFACTURER AND AIC RATING.
- 2.2. FOR STAND-ALONE APPLICATIONS, CIRCUIT BREAKERS SHALL BE IN A NEMA 1 ENCLOSURE. PROVIDE MINIMUM SHORT CIRCUIT RATINGS OF 22,000 AMPERES SYMMETRICAL FOR 120/280-VOLT SYSTEMS AND 35,000 AMPERES SYMMETRICAL FOR 277/480-VOLT SYSTEMS UNLESS NOTED OTHERWISE.
 - 2.2.a. ACCEPTABLE MANUFACTURERS ARE CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS AND
- Q. LIGHT FIXTURES 265100:
 - FURNISH, INSTALL, SET AND LAMP NEW LIGHT FIXTURES. INCLUDE ALL NECESSARY SUPPORTS AND HANGERS WHERE REQUIRED. LIGHT FIXTURES SHALL BE AS SPECIFIED ON ARCHITECTURAL LIGHT FIXTURE SCHEDULE UNLESS OTHERWISE INDICATED. LIGHT FIXTURES SHALL BE LISTED AND LABELED BY AN APPROVED NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL). ALL LAY-IN TYPE LUMINARIES SHALL BE SECURED WITH "EARTHQUAKE CLIPS".
 - 2. PROVIDE LAMPS SUITABLE FOR THE SPECIFIED LIGHT FIXTURE AND AS INDICATED ON LIGHT FIXTURE SCHEDULE. ALL TYPES OF FLUORESCENT LAMPS THAT ARE TO BE USED FOR DIMMING PURPOSES SHALL BE "BURNED-IN" FOR A PERIOD OF TIME AS REQUIRED BY THE MANUFACTURER BUT NO LESS THAN 100 HOURS. LAMPS TO BE GENERAL ELECTRIC, PHILLIPS OR SYLVANIA.
 - 2.1. FLUORESCENT LAMPS SHALL BE WARM WHITE, RAPID START WITH A LOW MERCURY CONTENT.
 - 2.2. COMPACT FLUORESCENT LAMPS SHALL BE WARM WHITE, INSTANT START WITH A LOW MERCURY CONTENT.
 - LED LAMPS SHALL BE WARM WHITE. PROVIDE LED LAMP DRIVERS AS DIRECTED BY THE LED MANUFACTURER TO MEET THE DESIGN INTENT AS SHOWN ON THE DRAWINGS.
 - 3. PROVIDE FLUORESCENT BALLASTS IN EACH LIGHT FIXTURE RATED AT VOLTAGE AS REQUIRED TO ACHIEVE DESIGN INTENT AS SHOWN ON DRAWINGS.
 - 3.1. NON-DIMMING BALLASTS TO BE ADVANCE, OSRAM-SYLVANIA OR UNIVERSAL. BALLASTS PROVIDED WITH LIGHT FIXTURE BY THE LIGHT FIXTURE MANUFACTURER ARE ACCEPTABLE IF BALLAST COMPLY WITH THE FOLLOWING.
 - 3.1.a. FLUORESCENT BALLASTS SHALL BE ELECTRONIC HIGH-FREQUENCY, FULL OUTPUT, DUAL
 - VOLTAGE WITH CLASS "A" SOUND RATING AND 10% LOW HARMONIC DISTORTION. 3.2. DIMMING BALLASTS TO BE ADVANCE MARK X, LUTRON HI-LUME, OSRAM-SYLVANIA POWERSENSE OR UNIVERSAL SUPERDIM.
 - 3.1.g. FLUORESCENT BALLASTS SHALL BE ELECTRONIC PROGRAMMED START, RELATIVE LIGHT OUTPUT OF 100-5 PERCENT FOR COMPACT FLUORESCENT LAMPS AND DIMMING WITH A
 - CLASS "A" SOUND RATING AND 10% LOW HARMONIC DISTORTION. 3.1.b. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING BALLAST AND CONTROL MANUFACTURERS TO ENSURE COMPATIBILITY OF DEVICES.
 - 4. EMERGENCY BATTERY BACK-UP BALLASTS AND PACKS TO PROVIDE A MINIMUM OF 1100 LUMENS FOR 90 MINUTES AND SHALL HAVE A SELF-TEST SWITCH AND INDICATOR LAMP THAT IS EASILY VISIBLE.
 - 4.1. ACCEPTABLE MANUFACTURERS ARE BODINE, IOTA OR AS PROVIDED BY THE LIGHT FIXTURE MANUFACTURER.

Do not scale drawings. Each Contractor shall be responsible for all field measurements

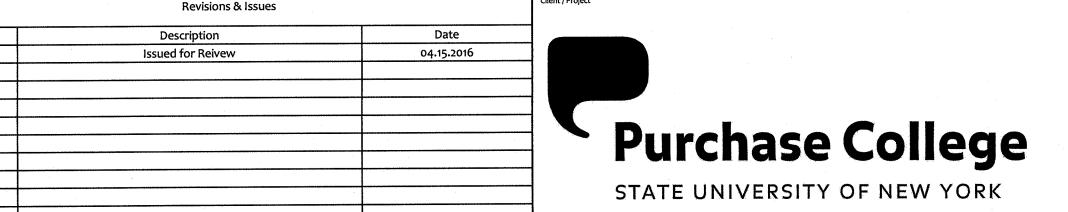
- 5. CONNECTIONS TO LIGHT FIXTURES SHALL BE MADE FROM JUNCTION BOXES VIA FLEXIBLE WHIP (6'-0" MAXIMUM LENGTH). LIGHTING SHALL NOT BE "THRU-WIRED".
- R. VOICE AND DATA SYSTEMS 270740:
 - 1. REFER TO ARCHITECTURAL PLANS FOR DESCRIPTION AND SCOPE OF WORK. THE LOCATION OF VOICE AND DATA OUTLETS ARE SHOWN ON THE ARCHITECT'S POWER/VOICE/DATA PLAN. EXACT LOCATIONS TO BE COORDINATED WITH THE ARCHITECT.
 - 2. BACK BOX AND RACEWAY REQUIREMENTS:
 - 2.1. FURNISH AND INSTALL 4 11/16" SQUARE BY 2 1/8" DEEP BACK BOX WITH SINGLE GANG EXTENSION RING AT EACH OUTLET LOCATION.
 - 2.2. FURNISH AND INSTALL 1" EMT CONDUIT AND SUITABLE PULL WIRE FROM BACK BOX TO ABOVE ACCESSIBLE CORRIDOR CEILING WITHIN 2'-0" OF A CABLE SUPPORT. PROVIDE WITH RUBBER GROMMET AT CONDUIT END.
- S. ACCESS CONTROL SECURITY SYSTEM 281300:
 - 1. REFER TO ARCHITECTURAL PLANS FOR DESCRIPTION AND SCOPE OF WORK. THE LOCATION OF SECURITY DEVICES ARE SHOWN ON THE ARCHITECT'S POWER/VOICE/DATA PLAN. EXACT LOCATIONS TO BE COORDINATED WITH THE ARCHITECT.
 - 2. COORDINATE INSTALLATION WITH THE SECURITY SYSTEM SUPPLIER. THE CONTRACTOR SHALL REFER TO THE SECURITY SYSTEM SUPPLIER WIRING DIAGRAMS AND SPECIFICATIONS FOR EXACT REQUIREMENTS.
- 3. BACK BOX AND RACEWAY REQUIREMENTS:
 - 3.1. FURNISH AND INSTALL BACK BOX WITH EXTENSION RING SIZED PER THE SECURITY SYSTEM SUPPLIER REQUIREMENTS.
- 3.2. FURNISH AND INSTALL 3/4" EMT CONDUIT AND SUITABLE PULL WIRE FROM BACK BOX TO ABOVE ACCESSIBLE CORRIDOR CEILING WITHIN 2'-0" OF A CABLE SUPPORT. PROVIDE WITH RUBBER GROMMET AT CONDUIT END.
- T. FIRE ALARM SYSTEM 283111:
 - 1. THE CONTRACTOR SHALL FURNISH AND INSTALL STANDARD BUILDING FIRE ALARM DEVICES WHERE SHOWN ON DRAWINGS. NEW FIRE ALARM WIRING FOR DEVICES, MODULES AND EQUIPMENT SHALL BE ROUTED TO THE EXISTING BUILDING MAIN FIRE ALARM CONTROL PANEL.
 - 2. FINAL CONNECTIONS AND TESTING OF THE SYSTEM SHALL BE PERFORMED BY THE BUILDING FIRE ALARM CONTRACTOR. THE CONTRACTOR SHALL OBTAIN AND PAY THE SERVICES OF THE FIRE ALARM CONTRACTOR TO PERFORM THIS WORK.
 - 3. PRIOR TO BID, THE CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH THE BUILDING FIRE ALARM CONTRACTOR AND INCLUDE IN HIS PRICE ALL WORK, EQUIPMENT, INTERCONNECTIONS AND PROGRAMMING THAT IS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - 4. ALL FIRE ALARM EQUIPMENT, DEVICES, CABLING, ETC. NOT SCHEDULED FOR REMOVAL SHALL BE MAINTAINED AND KEPT IN OPERATION AT ALL TIMES.
 - 5. REFER TO FIRE ALARM DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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ELECTRICAL GENERAL NOTES

- A. DEMOLITION WORK:
 - 1. ALL SALVAGEABLE ITEMS SUCH AS LIGHT FIXTURES, ETC. THAT ARE NOT TO BE REUSED SHALL BE TURNED OVER TO THE OWNER.
 - 2. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR ACCESS TO WORK AREAS, CONSTRUCTION SCHEDULING AND SERVICE INTERRUPTIONS.
 - 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION IN AREAS OF RENOVATION. ALL LIGHT FIXTURES, WIRING DEVICES, WIRE AND CONDUIT THAT ARE TO BE REMOVED SHALL BE STORED AS DIRECTED BY THE OWNER OR RELOCATED AS SHOWN ON NEW FLOOR PLANS. APPROPRIATE MEASURES SHALL BE TAKEN TO ASSURE CONTINUITY OF EXISTING CIRCUITS WHERE REQUIRED. ALL OUTAGES WHICH MAY RESULT SHALL BE COORDINATED WITH THE OWNER PRIOR TO THE WORK.
 - 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING SCHEDULES IN ALL ELECTRICAL PANELS THAT ARE AFFECTED BY THIS WORK. THE UPDATED SCHEDULES ARE TO BE TYPEWRITTEN.
 - 5. REFER TO ARCHITECTURAL PLANS FOR GENERAL DEMOLITION ITEMS SUCH AS WALLS, CEILINGS, ETC.
- B. NEW WORK:
- 1. ALL WORK SHALL COMPLY WITH THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE.
- 2. EACH CIRCUIT SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR. MULTI-WIRE CIRCUITS OF DIFFERENT PHASES MAY SHARE EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTOR SIZE SHALL NOT BE LESS THAN #12AWG OR AS INDICATED ON THE DRAWINGS.
- 3. ON THREE-PHASE, FOUR-WIRE SYSTEMS; DO NOT USE A COMMON NEUTRAL FOR MORE THAN THREE BRANCH CIRCUITS. MORE THAN THREE BRANCH CIRCUITS IN ANY ONE CONDUIT IS NOT ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
- 3.1. EACH BRANCH CIRCUIT SHALL BE ON A DIFFERENT PHASE. BRANCH CIRCUITS OF THE SAME PHASE SHALL NOT UTILIZE A COMMON NEUTRAL AND/OR BE INSTALLED IN SAME CONDUIT.
- 3.2. ALL APPLIANCE AND EQUIPMENT (MICROWAVES, REFRIGERATORS, ETC.) BRANCH CIRCUITS SHALL HAVE A DEDICATED NEUTRAL.
- 3.3. ALL LIGHTING BRANCH CIRCUITS USED FOR DIMMING PURPOSES SHALL HAVE A DEDICATED NEUTRAL.
- 4. MINIMUM CONDUCTOR SIZE SHALL BE #12AWG UNLESS OTHERWISE SPECIFIED. ALL CONDUCTORS #10AWG AND SMALLER SHALL BE SOLID COPPER AND ALL CONDUCTORS #8AWG AND LARGER SHALL BE STRANDED COPPER USING BOLTED LUGS AT TERMINALS.
- . MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE SPECIFIED. ALL CONDUIT SHALL BE INSTALLED AS HIGH AS POSSIBLE (MOUNT TO BOTTOM OF STRUCTURE) TO AVOID CONFLICTS WITH DUCTWORK AND PIPING. COORDINATE INSTALLATION WITH THE MECHANICAL CONTRACTOR.
- 6. THE CONTRACTOR SHALL REFER TO MECHANICAL DRAWINGS FOR THE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT. FIELD COORDINATE THESE LOCATIONS WITH THE MECHANICAL CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL CONTROL WIRING FOR MECHANICAL EQUIPMENT AS DIRECTED BY THE MECHANICAL CONTRACTOR.
- 7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR THE EXACT LOCATIONS OF ALL WIRING DEVICES.
- 8. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS FOR THE EXACT LOCATIONS OF ALL LIGHT FIXTURES. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL LIGHT FIXTURE SCHEDULE FOR MANUFACTURER CATALOG INFORMATION AND DESCRIPTIONS FOR ALL LIGHT FIXTURES.
- 9. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE BUILDING MANAGEMENT AS FOLLOWS:
- 9.1. THE CONTRACTOR SHALL OBTAIN A COPY OF THE BUILDING RULES & REGULATIONS PRIOR TO BID SUBMISSION TO DETERMINE REQUIREMENTS AND EXTENT OF PREMIUM TIME WORK REQUIRED BY THE BUILDING MANAGEMENT. FOR THE PURPOSE OF THE BID, THE CONTRACTOR SHALL NOT PERFORM ANY NOISY WORK (CHOPPING, CORE DRILLING, ETC.) AND BASE BUILDING SYSTEM INTERRUPTIONS DURING NORMAL BUSINESS HOURS.
- 9.2. THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE BUILDING RULES & REGULATIONS. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE BUILDING RULES & REGULATIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND/OR ENGINEER FOR REVIEW WITH BID SUBMISSION.
- 9.3. THE CONTRACTOR SHALL COORDINATE WITH THE BUILDING MANAGEMENT FOR ANY SERVICE INTERRUPTIONS OF EXISTING SYSTEMS A MINIMUM OF TWO (2) DAYS PRIOR TO ANY WORK; AND AFTER APPROVAL IS OBTAINED FROM THE BUILDING MANAGEMENT. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER BEFORE PERFORMING WORK ON PREMIUM TIME, IF SO DIRECTED BY THE BUILDING MANAGEMENT; SO AS NOT TO DISTURB BUILDING OPERATIONS.



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735 Anderson Hill Road Purchase, NY 10577

Southport Associates Southport Engineering Associates, PC

11 Bailey Avenue

Tel.: (203) 431-6844 Fax: (203) 431-6877 Ridgefield, CT 06877



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June. 7, 2016

Electrical Specifications and Notes

E-1.2

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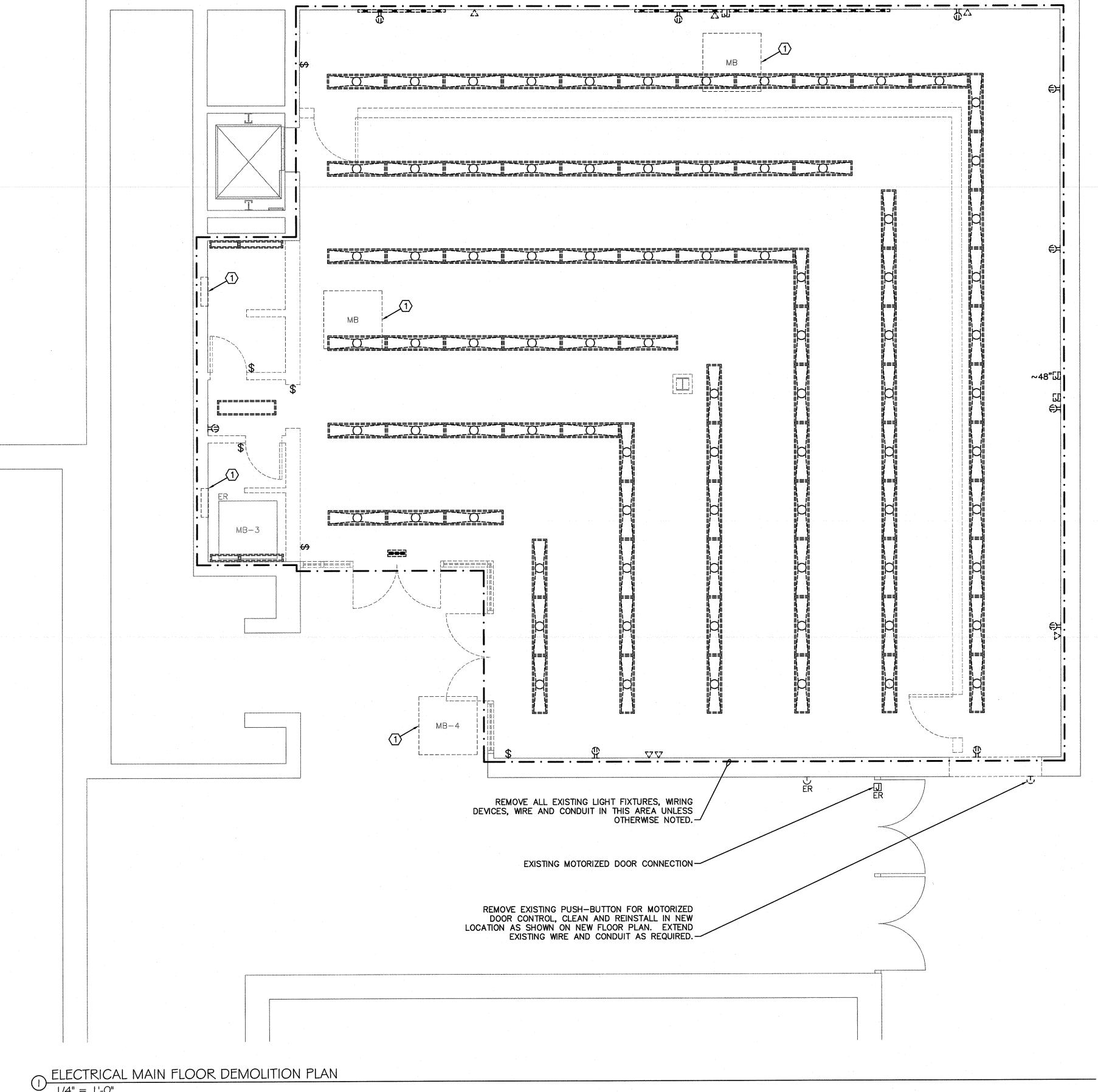
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ARCHITECT P.C.

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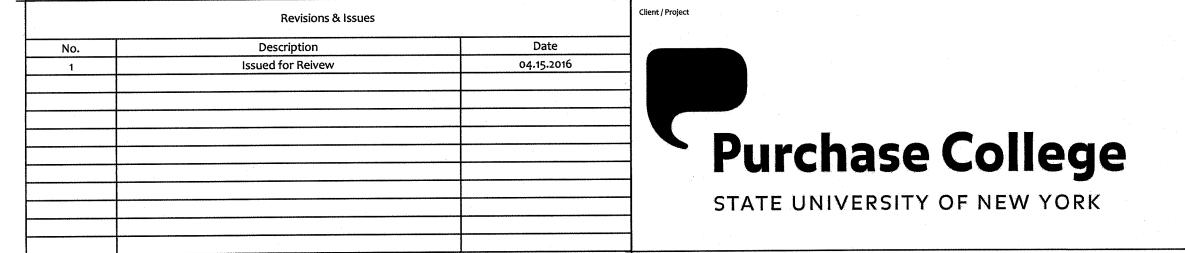


ELECTRICAL GENERAL DEMOLITION NOTES

- 1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER AS TO CONSTRUCTION SCHEDULING, SERVICE INTERRUPTIONS, AND ACCESS TO WORK
- 2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION IN AREAS OF RENOVATION. ALL LIGHT FIXTURES, WIRING DEVICES, WIRE AND CONDUIT THAT ARE TO BE REMOVED SHALL BE STORED AS DIRECTED BY THE OWNER OR RELOCATED AS SHOWN ON NEW FLOOR PLANS.
- 3. APPROPRIATE MEASURES SHALL BE TAKEN TO ASSURE CONTINUITY OF EXISTING CIRCUITS WHERE REQUIRED. ALL OUTAGES WHICH MAY RESULT SHALL BE COORDINATED WITH THE OWNER PRIOR TO THE WORK.
- 4. ALL EXISTING BRANCH CIRCUITS NOT TO BE REUSED SHALL BE REMOVED BACK TO PANEL IN THEIR ENTIRETY. CIRCUIT BREAKERS SHALL BE LABELED AS SPARE AND PLACED IN THE "OFF" POSITION.
- 5. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING SCHEDULES IN ALL ELECTRICAL PANELS THAT ARE AFFECTED BY THIS WORK. UPDATED SCHEDULES ARE TO BE TYPEWRITTEN.
- 6. ALL SALVAGEABLE ITEMS SUCH AS LIGHT FIXTURES, ETC. THAT ARE NOT TO BE REUSED SHALL BE TURNED OVER TO THE OWNER.
- ABANDON OR REUSE EXISTING CONDUIT IN EXISTING WALLS THAT ARE TO REMAIN AS SHOWN ON NEW FLOOR PLAN.
- 8. REFER TO ARCHITECTURAL PLANS FOR GENERAL DEMOLITION ITEMS SUCH AS CEILINGS, WALLS, ETC.

ELECTRICAL KEYED DEMOLITION NOTES

1 REMOVE ALL WIRING DEVICES, WIRE AND CONDUIT ASSOCIATED WITH MECHANICAL EQUIPMENT THAT IS TO BE REMOVED BY OTHERS. COORDINATE DEMOLITION WITH THE MECHANICAL CONTRACTOR.



Do not scale drawings. Each Contractor shall be responsible for all field measurements.

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Electrical Main Floor

Demolition Plan

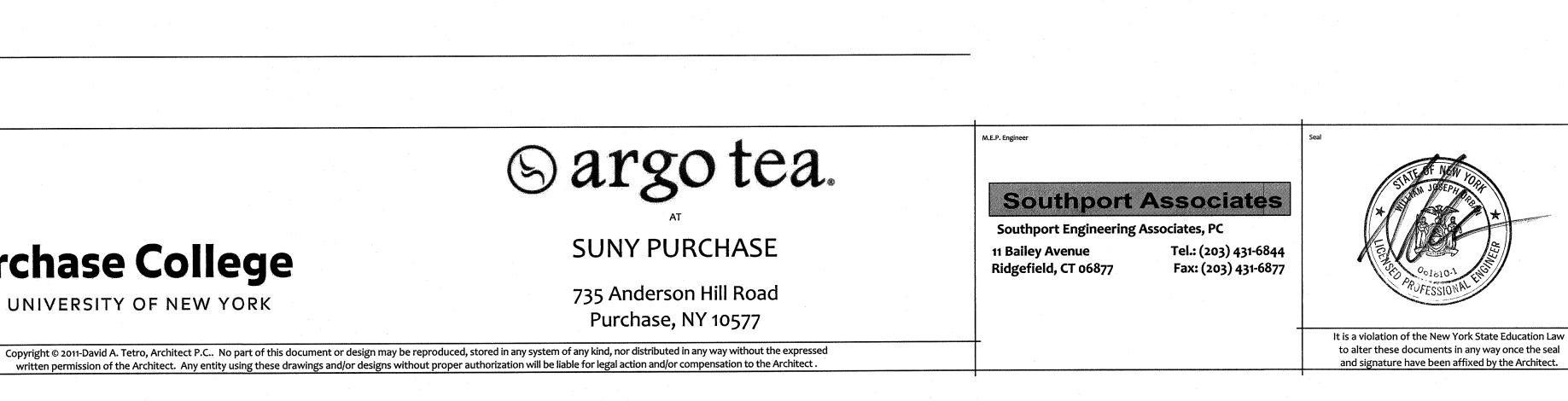
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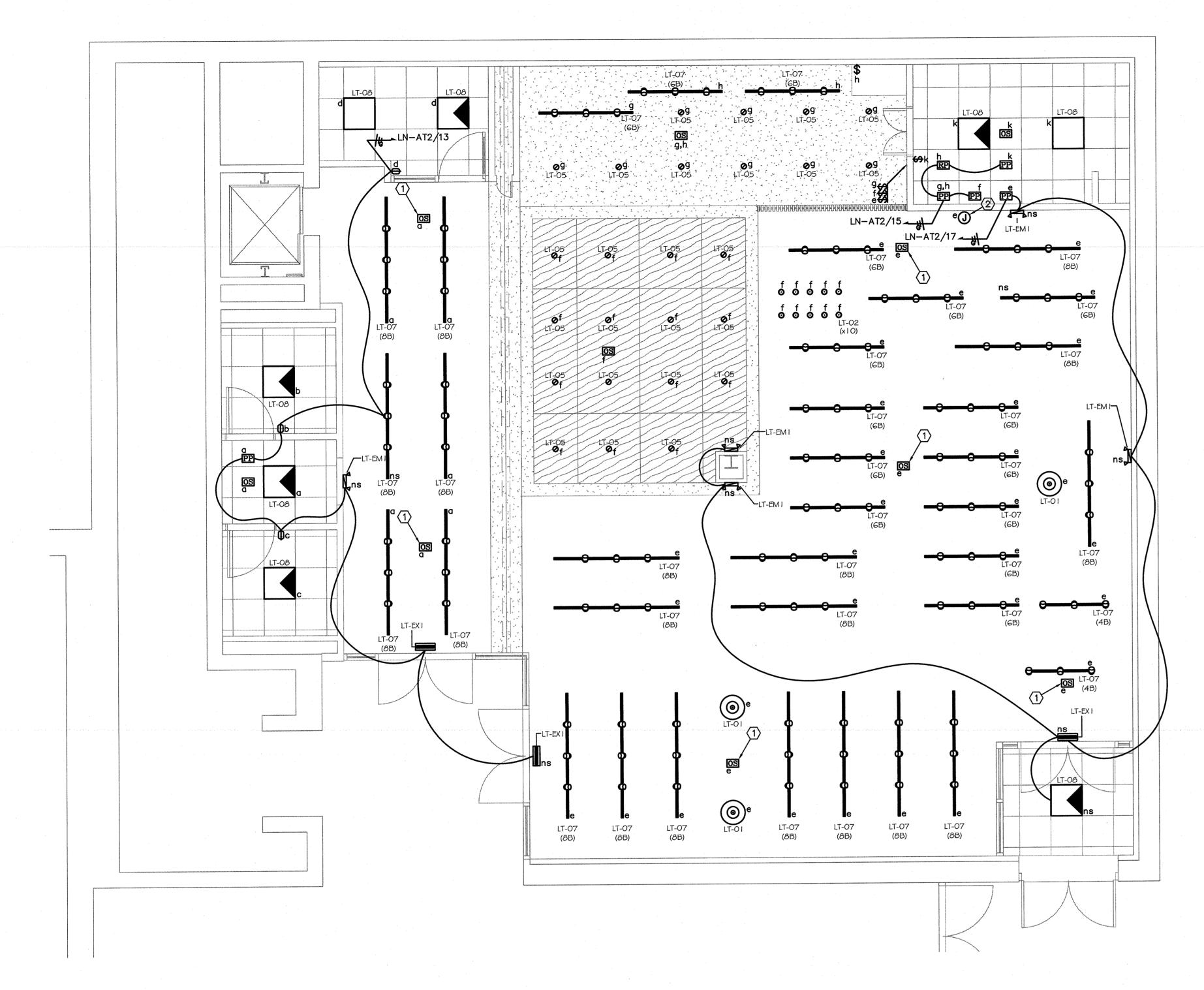
E-2.1

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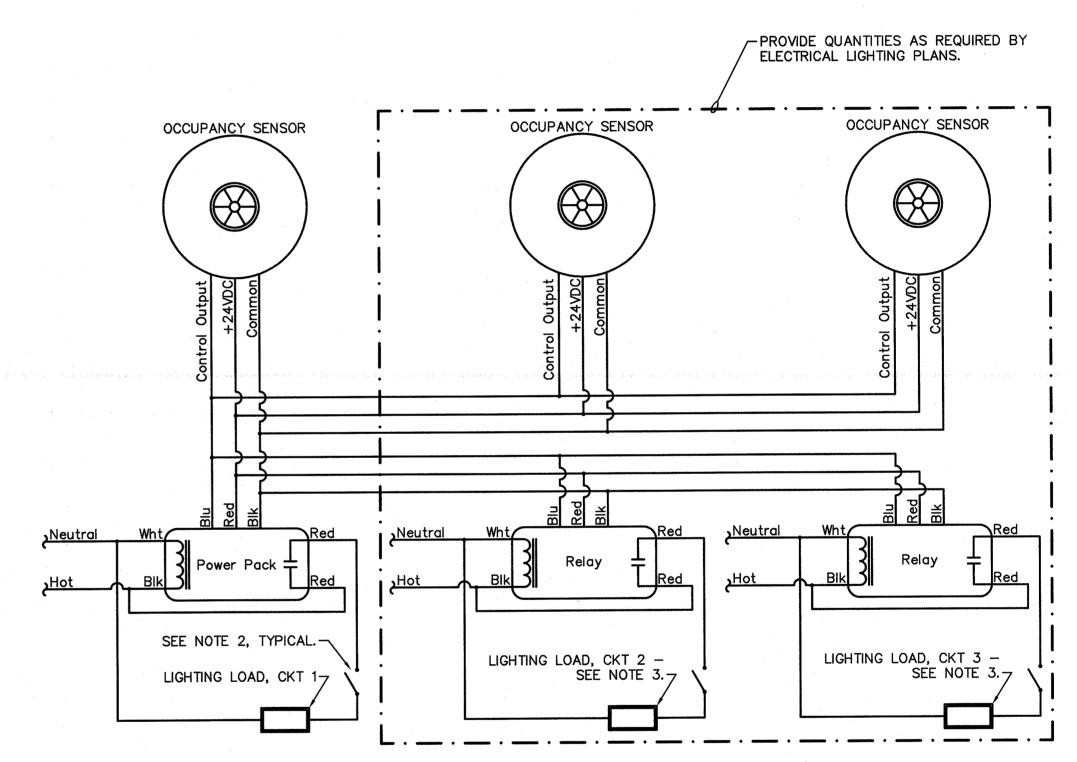
ELECTRICAL MAIN FLOOR LIGHTING PLAN

1/4" = 1'-0"

Do not scale drawings. Each Contractor shall be responsible for all field measurements.

ELECTRICAL KEYED NOTES

- 1) INSTALL OCCUPANCY SENSOR ON BOTTOM OF NEAREST BEAM. PAINT EXPOSED JUNCTION BOX(ES) AND CONDUIT TO MATCH FINISHED CEILING.
- 2 JUNCTION BOX FOR CONNECTION TO LED STRIP LIGHTS LOCATED IN MILLWORK. COORDINATE INSTALLATION WITH THE MILLWORK INSTALLER.



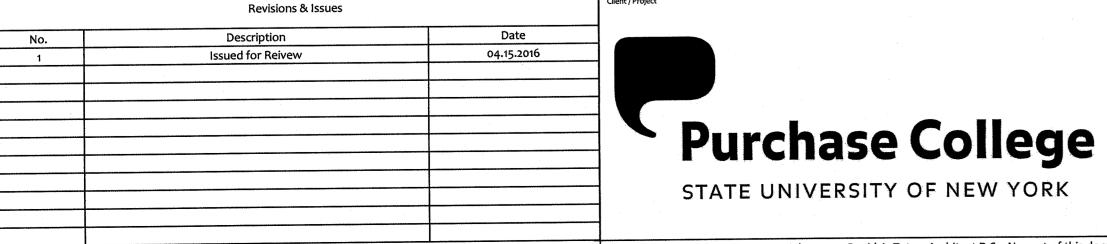
2 Low-Voltage Occupancy Sensor Control Wiring Diagram for Multiple Circuits

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- 1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT REQUIREMENTS AND SPECIFICATIONS WITH THE EQUIPMENT SUPPLIER.
- 2. LOCAL WALL SWITCH(ES) FOR MANUAL "OFF" OVERRIDE CONTROL OF LIGHT FIXTURES.
- 3. PROVIDE RELAYS AS REQUIRED FOR COMMON CONTROL OF LIGHT FIXTURES THAT ARE DIFFERENT CIRCUITS. FOR REFERENCE, MULTIPLE CIRCUITS MAY BE SHOWN ON DRAWINGS TO ACCOMMODATE LOAD, SWITCHING SCHEMES, DIFFERENT VOLTAGES AND/OR EMERGENCY CIRCUITING.

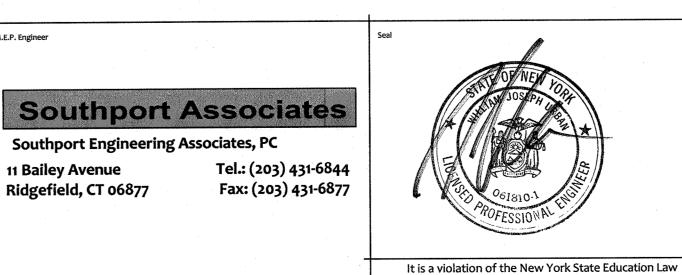


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E-2.2

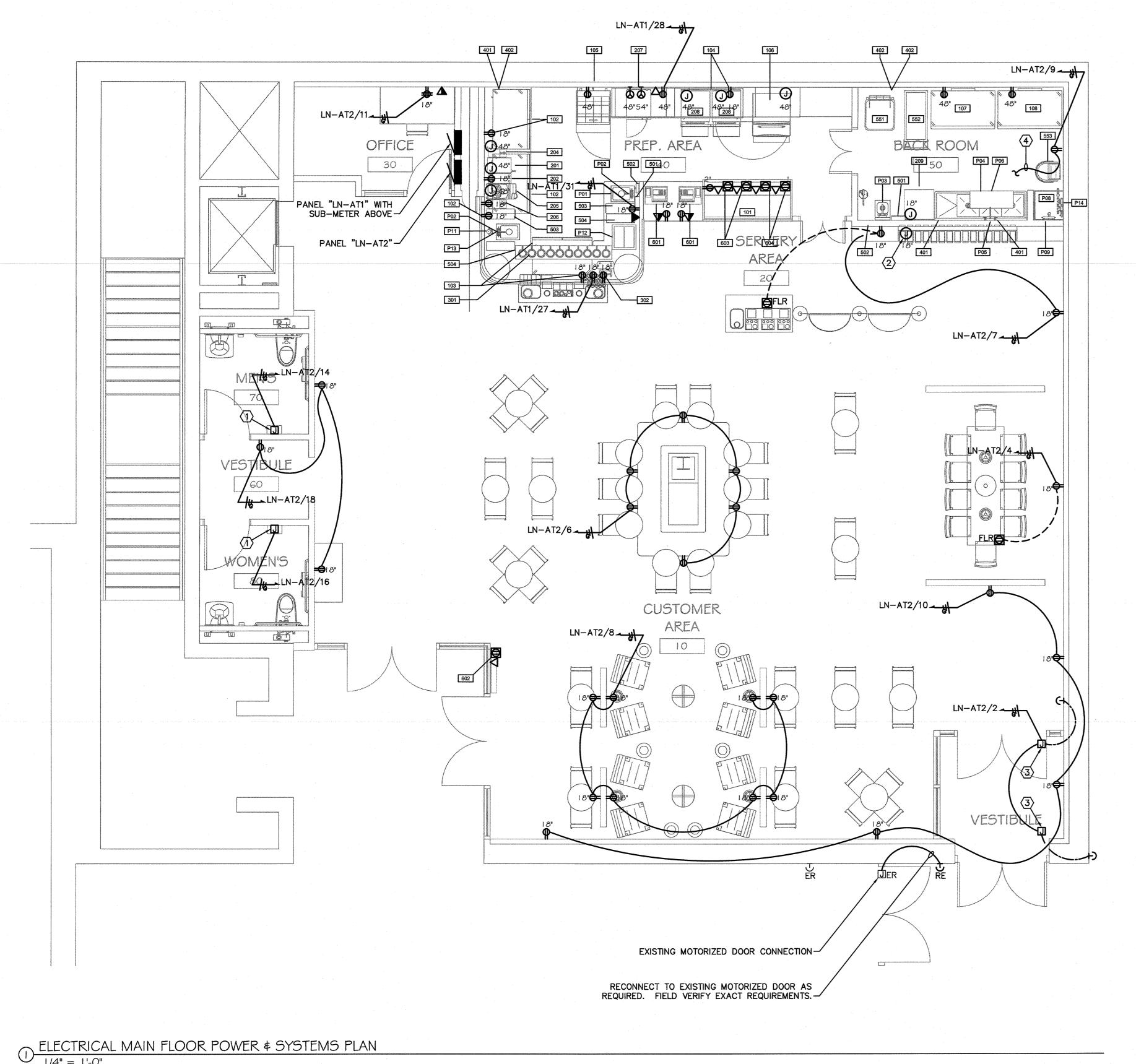
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Electrical Main Floor Lighting Plan

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ELECTRICAL GENERAL NOTES

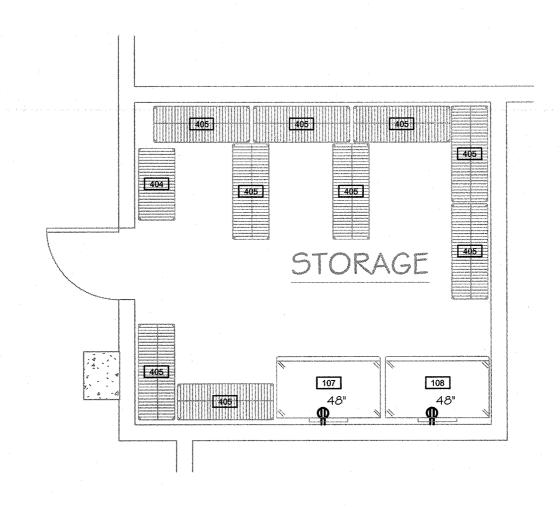
- FIELD VERIFY EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR.
- 2. FIELD COORDINATE EXACT LOCATION OF ALL POKE-THRU DEVICES WITH THE WAFFLE FLOOR SLAB. ENSURE POKE-THRU IS LOCATED IN SHALLOWEST PART OF SLAB.

ELECTRICAL KEYED NOTES

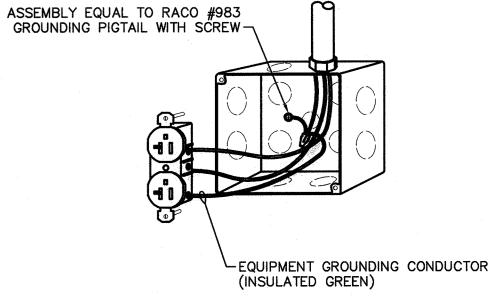
- 1 JUNCTION BOX FLUSH MOUNTED IN WALL FOR CONNECTION TO ELECTRIC HAND DRYER. FIELD COORDINATE EXACT LOCATION WITH THE EQUIPMENT
- 2 JUNCTION BOX FOR CONNECTION TO LED STRIP LIGHTS MOUNTED IN MILLWORK. FIELD COORDINATE EXACT LOCATION AND MOUNTING WITH THE MILLWORK INSTALLER. REFER TO ELECTRICAL MAIN FLOOR LIGHTING PLAN ON DRAWING E-2.1 FOR WIRING REQUIREMENTS.
- 3 JUNCTION BOX FOR CONNECTION TO MOTORIZED DOOR OPERATOR. FIELD COORDINATE EXACT LOCATION WITH THE EQUIPMENT INSTALLER. COORDINATE WIRING REQUIREMENTS WITH THE EQUIPMENT INSTALLER.
- 4 UP TO RECEPTACLES ON ROOF. REFER TO ELECTRICAL MAIN FLOOR MECHANICAL POWER PLAN ON DRAWING E-2.4 FOR CONTINUATION.

ELECTRICAL FOOD SERVICE NOTES

- REFER TO ELECTRICAL FOOD SERVICE EQUIPMENT SCHEDULE ON DRAWING E-3.1 FOR ELECTRICAL REQUIREMENTS FOR ALL FOOD SERVICE EQUIPMENT.
- REFER TO THE FOOD SERVICE DRAWINGS FOR EXACT ROUGH-IN LOCATIONS AND MOUNTING HEIGHTS, CONNECTION TYPES, POSITIONS, FIXTURE TYPES, HEIGHTS, AND LOAD REQUIREMENTS. FIELD COORDINATE EXACT LOCATIONS WITH THE FOOD SERVICE EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
- 3. FINAL CONNECTIONS TO ALL EQUIPMENT AND BUILDING'S ELECTRICAL POWER SYSTEMS SHALL BE BY THE ELECTRICAL CONTRACTOR INCLUDING, BUT NOT LIMITED TO; ALL REQUIRED MATERIALS SUCH AS DISCONNECTS, BOXES, OUTLETS (EXCEPT AS FURNISHED AS PART OF THE EQUIPMENT), RIGID CONDUIT, FLEXIBLE CONDUIT, WIRING, ETC.
- 4. ALL 125-VOLT, 15 OR 20-AMP RECEPTACLES INSTALLED IN PREP AREA AND BACK ROOM SHALL BE GROUND-FAULT CIRCUIT-INTERRUPTING TYPE.
- WHEN APPLICABLE; THE ELECTRICAL CONTRACTOR SHALL PROVIDE WIRING DEVICES, WIRE AND CONDUIT, INSTALL ELECTRICAL COMPONENTS (PROVIDED BY K.E.C.), AND PROVIDE ALL INTERCONNECTIONS BETWEEN THE FOLLOWING:
- 5.1. REMOTE REFRIGERATION SYSTEMS TO EVAPORATOR COILS.
- 6. ELECTRICAL COMPONENTS MUST NOT INTERFERE WITH THE OPERATION OF THE FOOD SERVICE EQUIPMENT.
- 7. COORDINATE EXACT NEMA CONFIGURATION WITH THE FOOD SERVICE EQUIPMENT INSTALLER.
- 8. INSTALL DEDICATED CIRCUITS FOR ALL APPLIANCES UNLESS OTHERWISE NOTED.
- 9. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY EXACT POWER REQUIREMENTS AND LOCATIONS OF ALL FOOD SERVICE EQUIPMENT WITH THE FOOD SERVICE EQUIPMENT SUPPLIER.
- 10. THE ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL WIRING DEVICES AND EQUIPMENT LOCATED IN MILLWORK WITH THE MILLWORK INSTALLER.



2 ELECTRICAL BASEMENT POWER \$ SYSTEMS PLAN



3 Device/Junction Box Grounding Detail
NTS

1. UTILIZE SAME GROUNDING METHOD FOR SWITCHES.

E-2.3



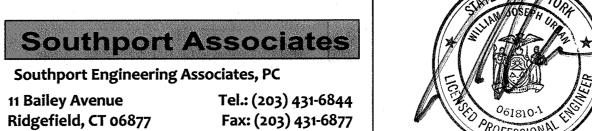
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Electrical Power & Systems Plans

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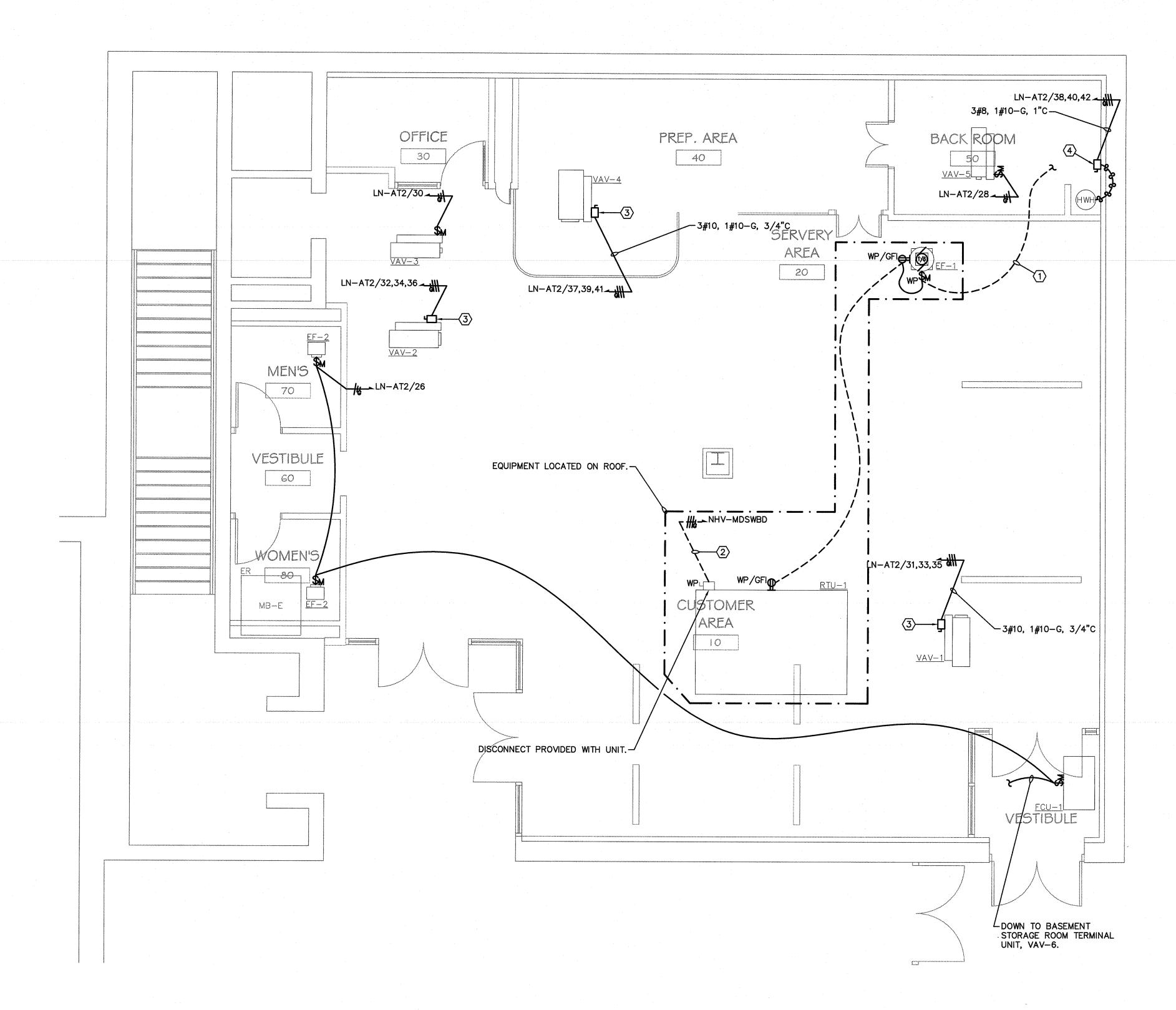
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DAVID A. TETRO

ARCHITECT P.C.

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ELECTRICAL MAIN FLOOR MECHANICAL POWER PLAN

1/4" = 1'-0"

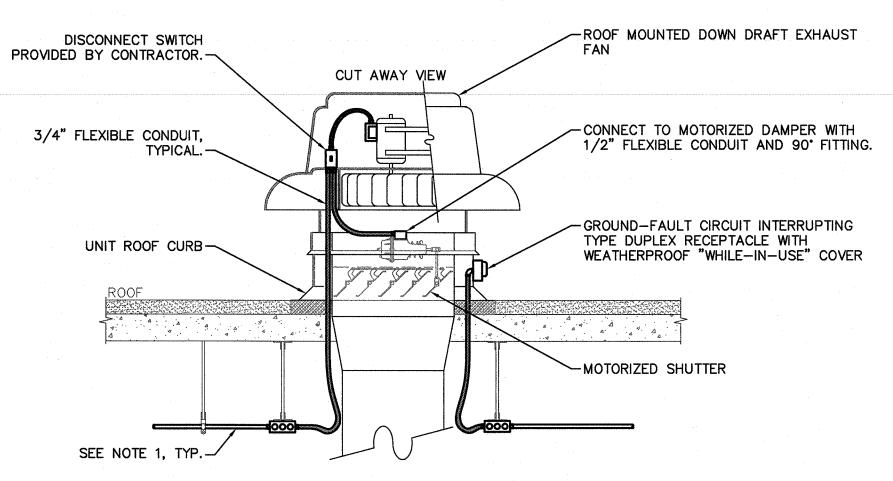
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ELECTRICAL GENERAL NOTES

FIELD VERIFY EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR.

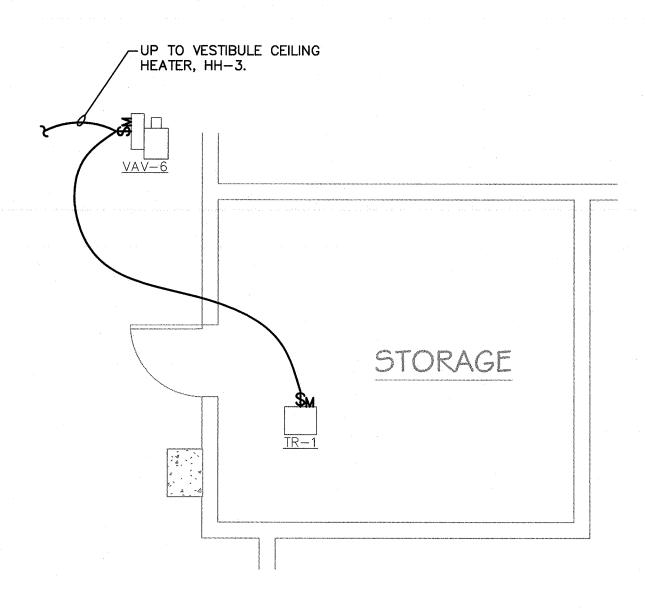
ELECTRICAL KEYED NOTES

- DOWN TO RECEPTACLE IN BACK ROOM. REFER TO ELECTRICAL MAIN FLOOR POWER & SYSTEMS PLAN ON DRAWING E-2.3 FOR CONTINUATION.
- 3#4, 1#10-G IN 1 1/4" CONDUIT TO NEW 70A/3P CIRCUIT BREAKER IN AVAILABLE SPACE IN 480Y/277V SECTION OF EXISTING NORTH MAIN DISTRIBUTION SWITCHBOARD. PROVIDE NEW BUILDING STANDARD SUB-METER IN LOCATION AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- 3 30A,240V,3P NONFUSED DISCONNECT SWITCH IN NEMA 1 ENCLOSURE MOUNTED ADJACENT TO UNIT ON STRUCTURAL STEEL.
- (4) 60A,240V,3P NONFUSED DISCONNECT SWITCH IN NEMA 1 ENCLOSURE MOUNTED ADJACENT TO HOT WATER HEATER ON WALL.



3 Electrical Connections to Roof Mounted Exhaust Fan Detail NTS

1. ROUTE 3/4" CONDUIT IN CEILING SPACE BELOW ROOF. REFER TO ELECTRICAL PLANS FOR CONTINUATION AND CIRCUITING.



2 ELECTRICAL BASEMENT MECHANICAL POWER PLAN

1/4" = 1'-0"



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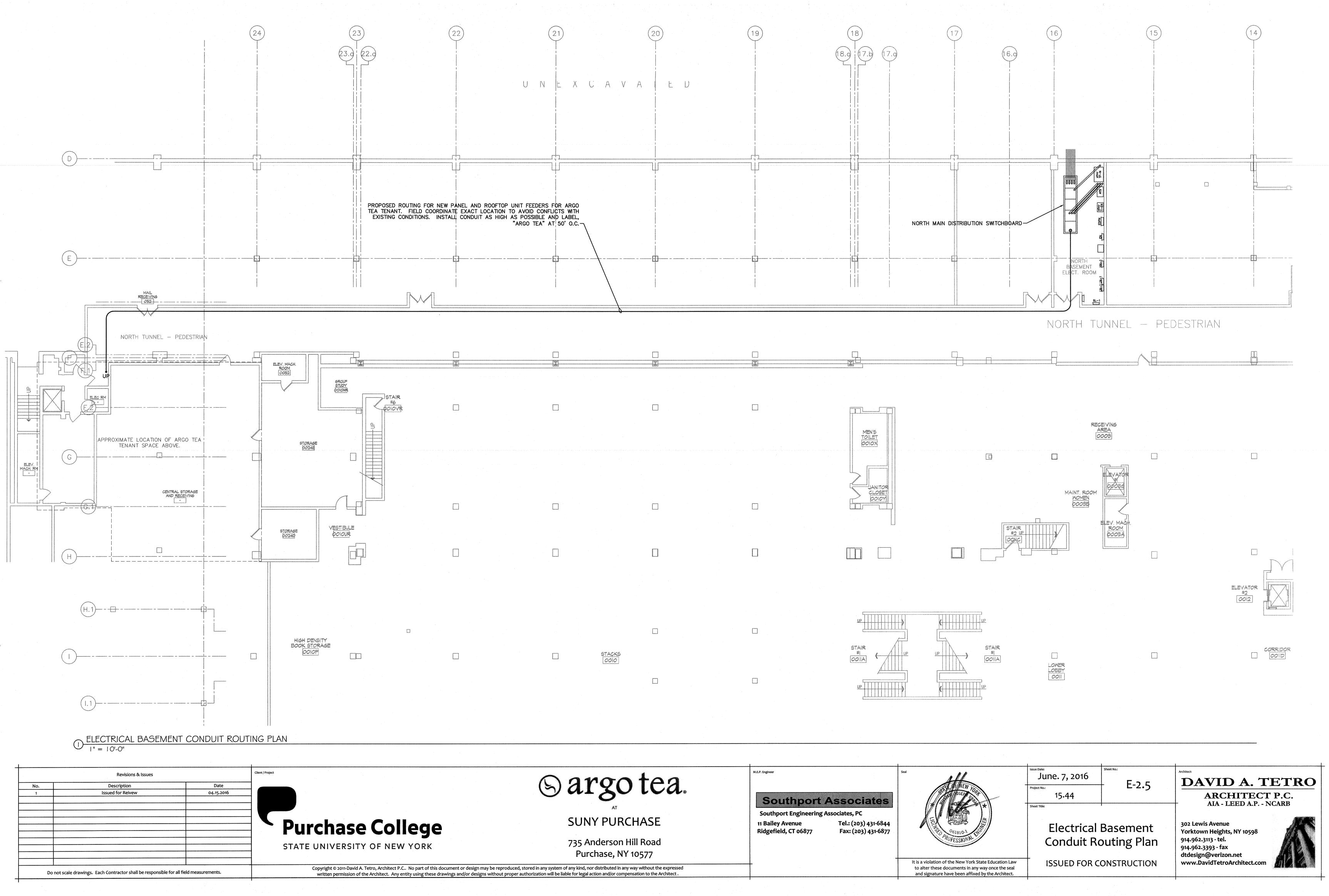
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Electrical Mechanical Power Plans

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ELECTRICAL FOOD SERVICE EQUIPMENT SCHEDULE

ELECTRICAL INFO

												·				SAL						
							40			တ	Щ	щ	15			TRIC IN)				CIRCUIT		
ITEM	OTV		MANUFACTURED	MODEL NUMBER			MPS	 	a	OLT	HAS	YCL	IRE		EMA	LEC FF (ITEM	SERVING	POSITION	BREAKER	WIRE/CONDUIT	ITE
NO		EQUIPMENT CATEGORY	MANUFACTURER	MODEL NUMBER		EQUIPMENT REMARKS	∠ ✓		I	>	<u> </u>	ပ		<u> </u>	Z	шК	NO	PANEL	Nos.	INFO	QUANTITY AND SIZE	: NO
101		OPEN MERCHANDISER		SCRFC7248-MS-MOD-AR	CUSTOM 72" WIDE U	JNIT	16.3			120/208	1 1	60		X	L14-30P	2	101	LN-AT1	5,7	30A/2P	3#10, 1#10-G, 3/4"C	101
102				MUR-48			6.5		1/3	115	1	60		X	5-15P	18	102	LN-AT1	32,34	(2) 20A/1P	(2) 2#12, 1#12-G, 3/4"C	
103		REFRIGERATOR, UNDERCOUNTER	 	MUR-48-CUSTOM			6.5		1/3	115	1 1	60		X	5-15P	18	103	LN-AT1	30	20A/1P	2#12, 1#12-G, 3/4"C	103
104		FREEZER, UNDERCOUNTER	 	MUF-48			8.3		1/2	115	1 1	60		X	5-15P	18	104	LN-AT1	25	20A/1P	2#12, 1#12-G, 3/4"C	104
105				MST-28-12			3.3		1/4	115	1 1	60		X	5-15P	48	105	LN-AT1	26	20A/1P	2#12, 1#12-G, 3/4"C	105
106			MANITOWOC ICE	IY-0906A /B-570			12.2			208-230	1 1	60	X		·	48	106	LN-AT1	22,24	20A/2P	2#12, 1#12-G, 3/4"C	106
107		REFRIGERATOR, REACH-IN		M3R47-2		IN BASEMENT (SEE Q200B FOR ROUGHIN LOCATION			1/3	115	1	60		X	5-15P	48	107	LN-AT1	4,35	(2) 20A/1P	(2) 2#12, 1#12-G, 3/4"C	
108		FREEZER, REACH-IN		M3F47-2	(1) TO BE LOCATED	IN BASEMENT (SEE Q200B FOR ROUGHIN LOCATION			3/4	115	1	60		X	5-15P	48	108	LN-AT1	2,33	(2) 20A/1P	(2) 2#12, 1#12-G, 3/4"C	
201			BUNN-O-MATIC	34800.0002			19.2	4.0		120/208	1 1	60	Х			48	201	LN-AT1	17,19	25A/2P	3#10, 1#10-G, 3/4"C	201
202			 	33700.0000			9.4			120	1 1	60		_X	5-15P	48	202	LN-AT1	36	20A/1P	2#12, 1#12-G, 3/4"C	202
204			BUNN-O-MATIC	43600.0000			19.5	4.05		208	1 1	60	Х			48	204	LN-AT1	21,23	25A/2P	2#10, 1#10-G, 3/4"C	204
205		ESPRESSO MACHINE/GRINDER, SUPER-AUTOMATIC	LACIMBALI	M1 TurboSteam				2.6		208/240	1 1	60	Х			48	205	LN-AT1	13,15	20A/2P	2#12, 1#12-G, 3/4"C	205
206	———	STEAMER, 2 BARISTA STEAM WANDS		Service Unit Plus A02		S - VERIFY SPECIFICATIONS		2.8		230	1	60	Х			18	206	LN-AT1	9,11	20A/2P	3#12, 1#12-G, 3/4"C	206
207				JET14	UNITS TO BE STACK		16.0	3.2		208-240	1	60		X	6-20P	48 / 54		LN-AT1	6,8,10,12	(2) 20A/2P	(2) 2#12, 1#12-G, 3/4"C	
208		BAKING OVEN, ELECTRIC CONVECTION WITH STEAM CONDENSOR HOOD		Gusto / gu 3.0403		S - VERIFY SPECIFICATIONS		3.4		208	1	60	Х			48	208	LN-AT1	14,16,18,20	(2) 25A/2P	(2) 2#10, 1#10-G, 3/4"C	
209			MOYER DIEBEL	201HT	(1) ELECTRICAL CO	NNECTION	32.0			208	1	60	Х			18	209	LN-AT1	1,3	40A/2P	3#8, 1#10-G, 1"C	209
301			APEX BEVERAGE EQUIPMI														301					301
302			SENCO	PC1010			4.0		1.0	110	1	60		X	5-15P	18	302	LN-AT1	29	20A/1P	2#12, 1#12-G, 3/4"C	302
			FOCUS FOODSERVICE	FF1848C											to a section of the second		401		/			401
402	10	SHELVING WALL MOUNTS	FOCUS FOODSERVICE	FWB18SCH													402					402
403		SHELVING WALL MOUNTS	FOCUS FOODSERVICE	FWB18DCH					-								403			-		403
404	1	WIRE SHELVING w/CASTERS	FOCUS FOODSERVICE	FF1836C	LOCATED IN BASEM	IENT STORAGE AREA										-	404				, in the second	404
405	9	WIRE SHELVING w/CASTERS	FOCUS FOODSERVICE	FF1848C	LOCATED IN BASEM	IENT STORAGE AREA			-								405					405
501	2	TOWEL DISPENSER, KITCHEN	BOBRICK	B-2621					-								501					501
502	2	SOAP DISPENSER, WALL MOUNT, HORIZONTAL	BOBRICK	B-2112													502					502
503	2	DISPENSER, CUP, COUNTER TOP	DISPENSE-RITE	WR-CT-4								·					503					503
504	2	DISPENSER, LID	DISPENSE-RITE	CTLD-15						•		-	-		•		504					504
551	1	GARBAGE BIN, 41 QUART	RUBBERMAID	FG295700-GREY													551					551
552	1	ROLLING CART	RUBBERMAID	FG409100-BLA													552					552
553	1	MOP BUCKET	RUBBERMAID	7580-88											·		553					553
601	2	POS	PROVIDED BY OPERATIONS	TBD	CASH DRAWER, SC	ANNER, RECEIPT PRINTER & SCALE W/DISPLAY	10.0			115	1	60		Х	5-15P	18	601	LN-AT2	3,5	(2) 20A/1P	(2) 2#12, 1#12-G, 3/4"C	601
			PROVIDED BY OPERATIONS		ESTIMATED UTILITIE	S - VERIFY SPECIFICATIONS	10.0			115	1	60		х	5-15P	48	602	LN-AT2	12	20A/1P	2#12, 1#12-G, 3/4"C	602
603	3	LED DISPLAY MONITOR (40") TEA & COFFEE MENU	PROVIDED BY OPERATIONS	ME40B	ESTIMATED UTILITIE	S - VERIFY SPECIFICATIONS	10.0			115	1	60		Х	5-15P	48	603	LN-AT2	1	20A/1P	2#12, 1#12-G, 3/4"C	603
604	1	LED DISPLAY MONITOR (65") SIGNATURE DRINK MENU	PROVIDED BY OPERATIONS	ME65B	ESTIMATED UTILITIE	S - VERIFY SPECIFICATIONS	10.0			115	1	60		Х	5-15P	48	604	LN-AT2	1	SHARED	2#12, 1#12-G, 3/4"C	604
P01			ADVANCE TABCO	DI-1-10SP			-									·	P01					P01
				3515													P02					P02
P03		HAND SINK, WALL MOUNT		7-PS-56									·		-		P03					P03
P04		3-COMP SINK, NSF, 3 comp, 14 gauge	ADVANCE TABCO	FS-3-1818-18L	(3) DRAINS												P04					P04
P05			FISHER	13277													P05					P05
LL_				G-1412													P06					P06
			ZURN	Z1996-24					-					-			P08					P08
				911-ISCP													P09					P09
			PROVIDED BY OTHER	TBD				9.0		208	3		X		·		P10	LN-AT2	38,40,42	35A/3P	3#8, 1#10-G, 1"C	P10
P11		WATER FILTER FOR ESPRESSO MACHINE	3M		ESTIMATED UTILITIF	S - VERIFY SPECIFICATIONS											P11		, , ,			P11
P12	H	DROP-IN, ICE BIN	ADVANCE TABCO	D-24-IBL												·	P12					P12
P13		DROP-IN SINK		DI-1-10													P13					P13
P14		WATER FILTER ASSEMBLY		ICE260-S						-							P14					P14
	<u> </u>	TAN THE FILL TO CHAINE I	THE TAIL TO A LIGHT	10-200			L	<u></u>	L	<u> </u>	JL		<u> </u>][1	<u> </u>	<u> </u>		

	Revisions & Issues		Client / Project
No.	Description	Date	
1	Issued for Reivew	04.15.2016	
			Develope College
			Purchase College
			STATE UNIVERSITY OF NEW YORK

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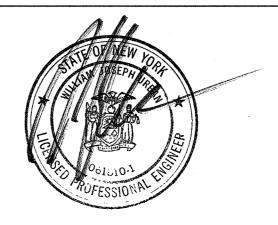
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June. 7, 2016 E-3.1

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Electrical Food Service **Equipment Schedule**

302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.com

ISSUED FOR CONSTRUCTION

		FIRE ALARM DRAWING LIST	
FA-1.1	_	FIRE ALARM LEGEND, NOTES AND RISER	
FA-2.1	_	FIRE ALARM MAIN FLOOR DEMOLITION PLAN	
FA-2.2	<u> </u>	FIRE ALARM CONSTRUCTION PLANS	
FA-2.3	_	FIRE ALARM BASEMENT REFERENCE PLAN	
,			

	FIRE ALARM GENERAL SYMBOLS AND ABBREVIATIONS
	BUILDING STANDARD FIRE ALARM AUDIO/VISUAL DEVICE, WALL MOUNTED ADA COMPLIANT - 87db AND 110cd UNLESS NOTED OTHERWISE
፟	BUILDING STANDARD FIRE ALARM VISUAL DEVICE, WALL MOUNTED ADA COMPLIANT — 30cd UNLESS NOTED OTHERWISE
E	BUILDING STANDARD FIRE ALARM PULL STATION
S	BUILDING STANDARD FIRE ALARM AREA SMOKE DETECTOR, CEILING MOUNTED
⑤ el	BUILDING STANDARD FIRE ALARM AREA SMOKE DETECTOR WITH ELEVATOR RECALL, CEILING MOUNTED
DD	BUILDING STANDARD FIRE ALARM DUCT SMOKE DETECTOR
R	BUILDING STANDARD FIRE ALARM RELAY MODULE
ES	BUILDING STANDARD WATER FLOW SWITCH - BY OTHERS
TS	BUILDING STANDARD TAMPER SWITCH - BY OTHERS
	EXISTING EQUIPMENT/WIRE TO BE REMOVED
	EXISTING EQUIPMENT/WIRE TO REMAIN
•••••	NEW EQUIPMENT/WIRE
	CONTROL WIRING
ER	EXISTING TO REMAIN

FIRE ALARM GENERAL NOTES

A. DEMOLITION WORK:

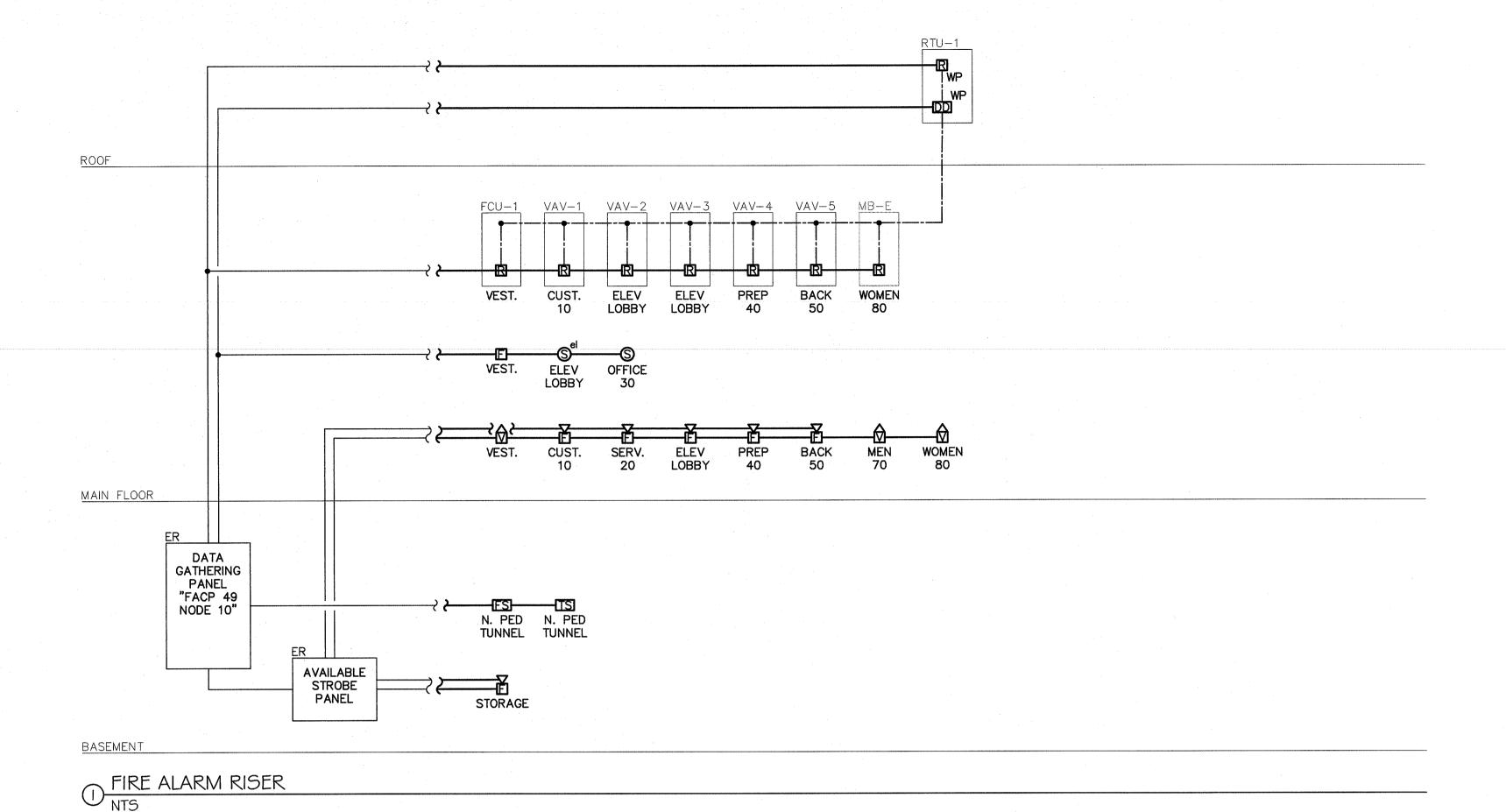
- 1. ALL SALVAGEABLE ITEMS SUCH AS SMOKE DETECTORS, AUDIO AND/OR VISUAL DEVICES, ETC. THAT ARE NOT TO BE REUSED SHALL BE TURNED OVER TO THE OWNER.
- 2. REFER TO ARCHITECTURAL PLANS FOR GENERAL DEMOLITION ITEMS SUCH AS CEILINGS, WALLS, ETC.
- 3. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER AS TO CONSTRUCTION SCHEDULING, SERVICE INTERRUPTIONS AND ACCESS TO WORK AREAS.
- 4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION IN AREAS OF RENOVATION. ALL FIRE ALARM DEVICES, WIRE AND CONDUIT THAT ARE TO BE REMOVED SHALL BE STORED AS DIRECTED BY THE OWNER; OR RELOCATED AS SHOWN ON NEW FLOOR PLANS. APPROPRIATE MEASURES SHALL BE TAKEN TO ASSURE CONTINUITY OF EXISTING CIRCUITS WHERE REQUIRED. ALL OUTAGES WHICH MAY RESULT SHALL BE COORDINATED WITH THE OWNER PRIOR TO THE WORK AND APPROPRIATE "FIRE WATCHES" SHALL BE PROVIDED.

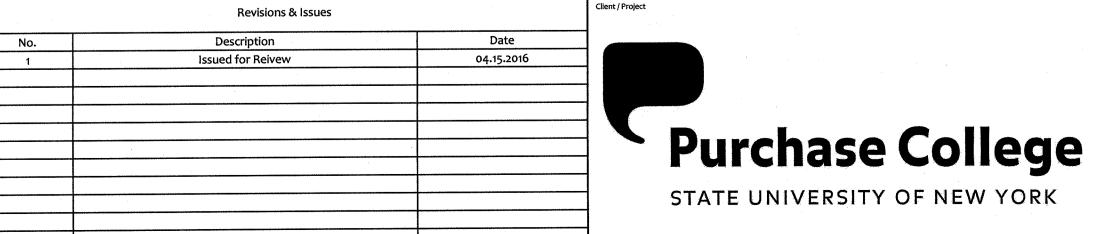
B. NEW WORK:

- 1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL BUILDING STANDARD FIRE ALARM DEVICES WHERE SHOWN ON THE PLANS. NEW FIRE ALARM WIRING FOR DEVICES, MODULES AND EQUIPMENT SHALL BE ROUTED TO THE FIRE ALARM CONTROL PANEL.
- 2. FINAL CONNECTIONS AND TESTING OF THE SYSTEM SHALL BE PERFORMED BY THE BUILDING FIRE ALARM CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL OBTAIN THE SERVICES OF THE FIRE ALARM CONTRACTOR TO PERFORM THIS WORK.
- 3. PRIOR TO BID, THE ELECTRICAL CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH THE BUILDING FIRE ALARM CONTRACTOR AND INCLUDE IN HIS PRICE ALL WORK, EQUIPMENT, INTERCONNECTIONS AND PROGRAMMING THAT IS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
- 4. THE OPERATION OF THE FIRE ALARM INSTALLATION DOES NOT CONSTITUTE AN ACCEPTANCE OF THE WORK BY THE OWNER. FINAL ACCEPTANCE IS TO BE MADE AFTER THE ELECTRICAL CONTRACTOR HAS DEMONSTRATED THAT THE WORK FULFILLS THE REQUIREMENTS FOR APPROVAL BY ALL AUTHORITIES HAVING JURISDICTION.
- 5. THE FIRE ALARM RISER DIAGRAM SHOWN IS AN INDICATION OF THE WORK REQUIRED AND SHALL BE USED FOR ESTIMATING PURPOSES ONLY. THE SUCCESSFUL ELECTRICAL CONTRACTOR SHALL OBTAIN A POINT-TO-POINT WIRING DIAGRAM FROM THE BUILDING FIRE ALARM CONTRACTOR AND PERFORM ALL WORK IN ACCORDANCE WITH THAT DIAGRAM.
- 6. ALL FIRE ALARM EQUIPMENT, DEVICES, CABLING, ETC. NOT SCHEDULED FOR REMOVAL SHALL BE MAINTAINED AND KEPT IN OPERATION AT ALL TIMES.
- 7. WHERE PERMITTED BY LOCAL CODES, FIRE ALARM AUDIO AND VISUAL DEVICES SHALL BE WHITE IN COLOR.
- 8. SMOKE DETECTORS SHALL NOT BE INSTALLED WITHIN 3'-0" OF ANY SUPPLY DIFFUSERS REGARDLESS OF THEIR LOCATION SHOWN ON THE DRAWINGS. COORDINATE EXACT LOCATIONS WITH THE MECHANICAL CONTRACTOR.
- 9. FOR ALL DUCT DETECTORS LOCATED ABOVE ACCESSIBLE CEILINGS, PROVIDE REMOTE TEST SWITCH IN ACCESSIBLE CEILING BELOW DETECTOR LOCATION WHETHER SHOWN ON DRAWINGS OR NOT.
- 10. SYSTEM CABLES SHALL BE PLENUM-RATED UNLESS INSTALLED IN CONDUIT. SYSTEM CABLES ARE TO BE INSTALLED IN CONDUIT BELOW 96" AFF, WHERE ROUTED THROUGH WALLS OR ABOVE HARD CEILINGS, AND IN EXPOSED LOCATIONS. SYSTEM CONDUITS ARE TO BE INSTALLED AS HIGH AS POSSIBLE TO ABOVE ACCESSIBLE CEILING SPACE WITHIN 24" OF A CABLE SUPPORT.
- 11. ALL ROUTING OF CONDUIT FROM NEW FIRE ALARM DEVICES TO FIRE ALARM CONTROL PANEL SHALL BE DIRECTED AND APPROVED BY THE OWNER'S REPRESENTATIVE. OBTAIN PERMISSION FROM THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
- 12. PROVIDE PLASTIC BUSHING ON EACH CONDUIT TERMINATION.
- 13. THE EXISTING FIRE ALARM SYSTEM IS MODEL EST3 AS MANUFACTURED BY EDWARDS. CONTACT THE OWNER'S REPRESENTATIVE FOR SERVING FIRE ALARM CONTRACTOR.

FIRE ALARM SEQUENCE OF OPERATION NOTES

- A. OPERATION OF A MANUAL PULL STATION WILL:
- ACTIVATE ALL AUDIO AND/OR VISUAL DEVICES ON THE FLOOR IN ALARM, FLOOR BELOW AND FLOOR
- ACTIVATE INQUIRY TONE THROUGHOUT THE BUILDING.
- RELEASE ALL DOOR HOLD-OPEN DEVICES. OPERATE ALL DOOR STRIKE RELEASE RELAYS TO OPEN LOCKED DOORS.
- DISPLAY ALARM AT THE FIRE ALARM CONTROL PANEL AND FIRE ALARM REMOTE ANNUNCIATOR(S). 6. DISPLAY APPROPRIATE ZONE AT THE FIRE ALARM CONTROL PANEL AND FIRE ALARM REMOTE
- ANNUNCIATOR(S). 7. CALL FIRE DEPARTMENT VIA CENTRAL STATION.
- B. OPERATION OF AN ALARM BY AREA HEAT OR SMOKE DETECTOR WILL:
- EFFECT THE SAME ACTIONS AS A MANUAL PULL STATION (A.1 TO A.7 ABOVE).
- OPERATE ALL REQUIRED DAMPER RELAYS. 3. STOP ALL FANS SERVING THE FLOOR IN ALARM.
- C. OPERATION OF A DUCT SMOKE DETECTOR WILL:
- 1. DISPLAY SUPERVISORY SIGNAL AT THE FIRE ALARM CONTROL PANEL AND FIRE ALARM REMOTE
- 2. DISPLAY APPROPRIATE ZONE AT THE FIRE ALARM CONTROL PANEL AND FIRE ALARM REMOTE
- ANNUNCIATOR(S). 3. SHUTDOWN CORRESPONDING HVAC UNITS.
- D. OPERATION OF AN ELEVATOR LOBBY SMOKE DETECTOR OR WATER FLOW SWITCH WILL:
- 1. EFFECT THE SAME ACTIONS AS AN AREA HEAT OR SMOKE DETECTOR IN ALARM (B.1 TO B.3
- 2. RECALL TO LOBBY ALL ELEVATORS SERVING THE ALARMED FLOOR.
- E. TROUBLE SIGNALS FROM ALL DEVICES WILL BE DISPLAYED AT THE FIRE ALARM CONTROL PANEL.





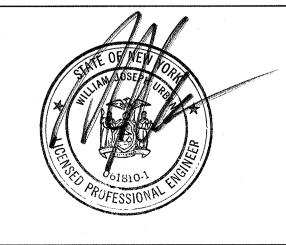
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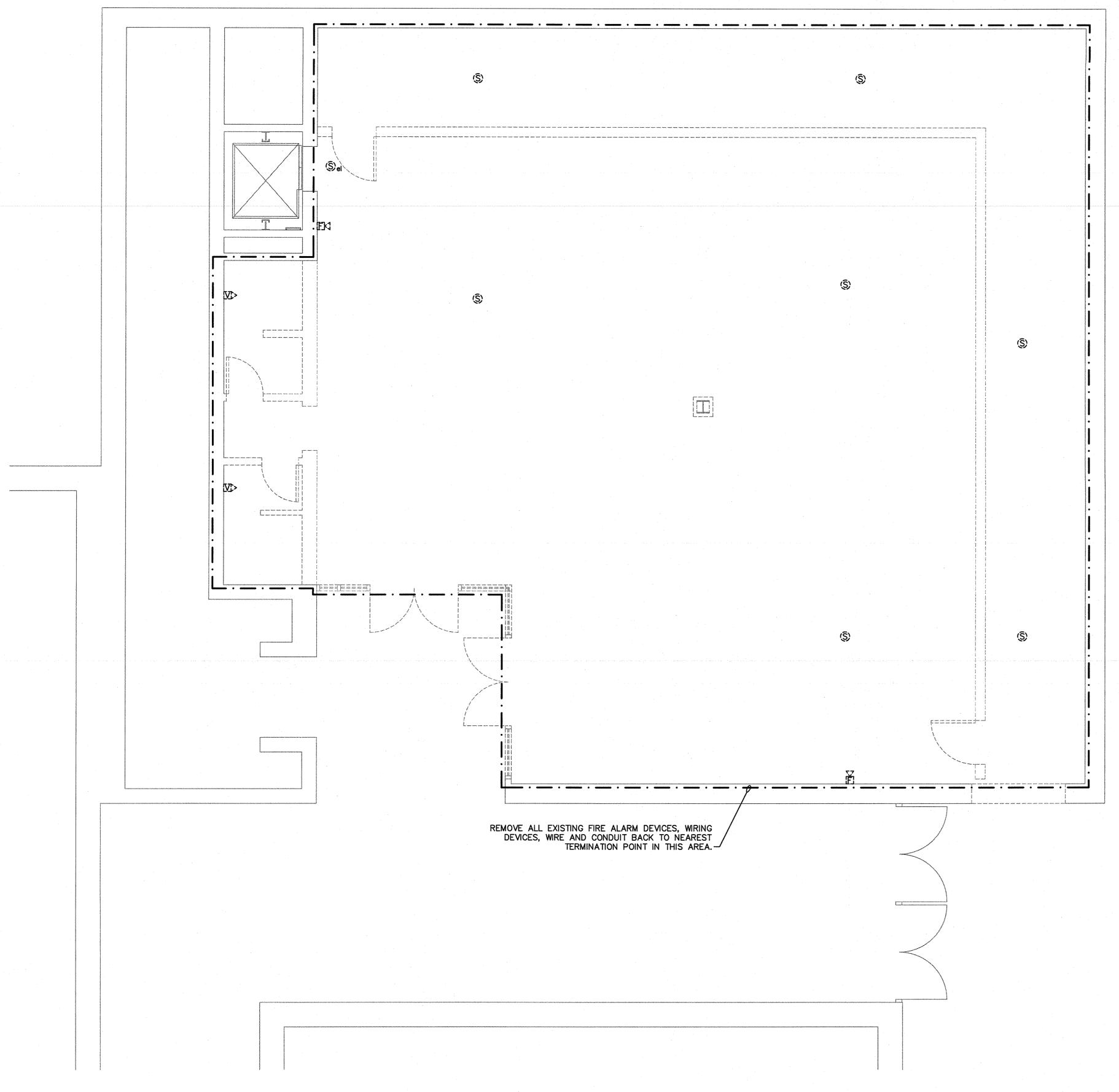
Fire Alarm Legend, Notes and Riser

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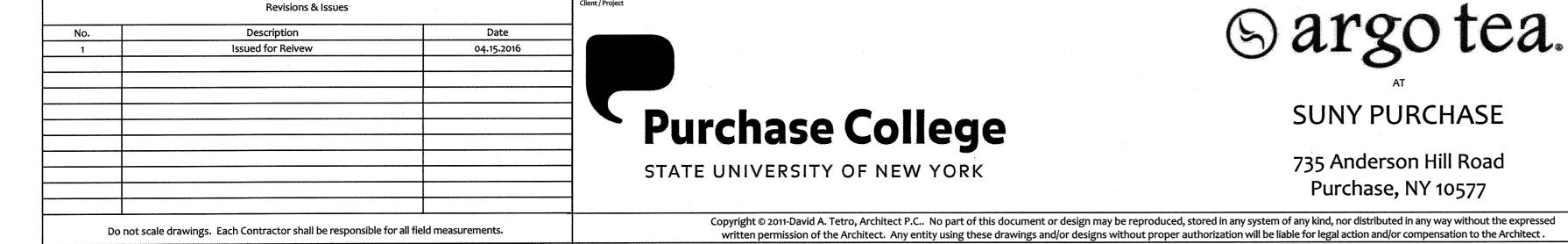


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FIRE ALARM MAIN FLOOR DEMOLITION PLAN

1/4" = 1'-0"



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Fire Alarm Main Floor

Demolition Plan

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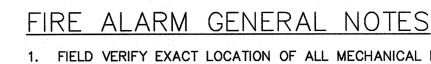
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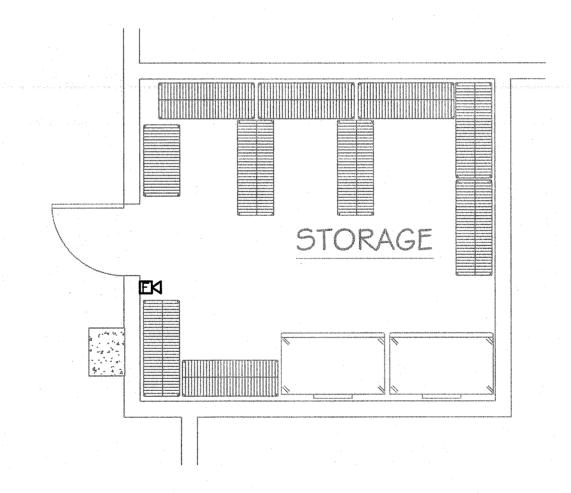
DAVID A. TETRO FA-2.1 ARCHITECT P.C. AIA - LEED A.P. - NCARB

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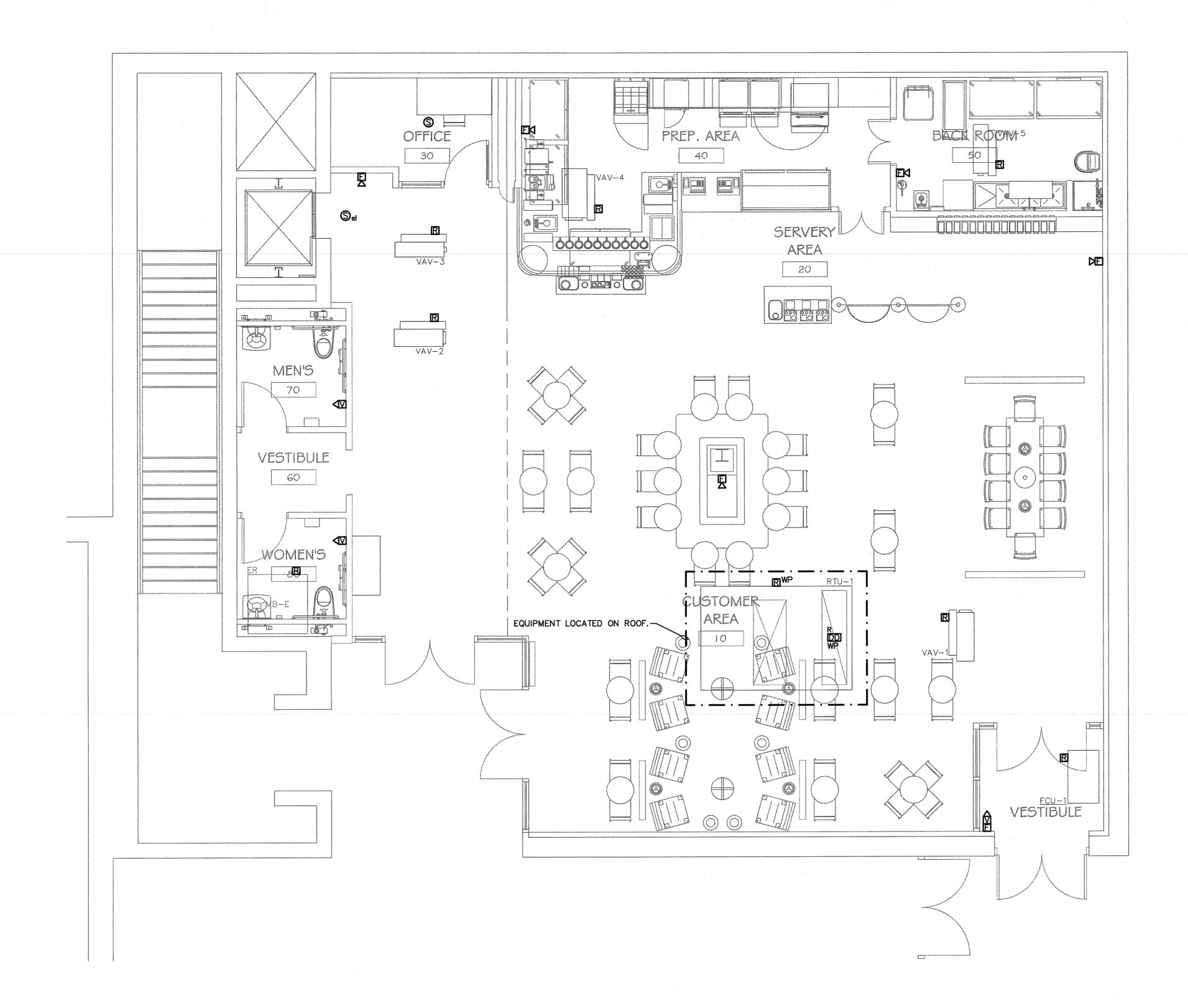


1. FIELD VERIFY EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR.



2 FIRE ALARM BASEMENT CONSTRUCTION PLAN

1/4" = 1'-0"



FIRE ALARM MAIN FLOOR CONSTRUCTION PLAN

1/4" = 1'-0"

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Revisions & Issues Date Description 04.15.2016 Issued for Reivew **Purchase College** STATE UNIVERSITY OF NEW YORK

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15.44 Fire Alarm Construction

Plans

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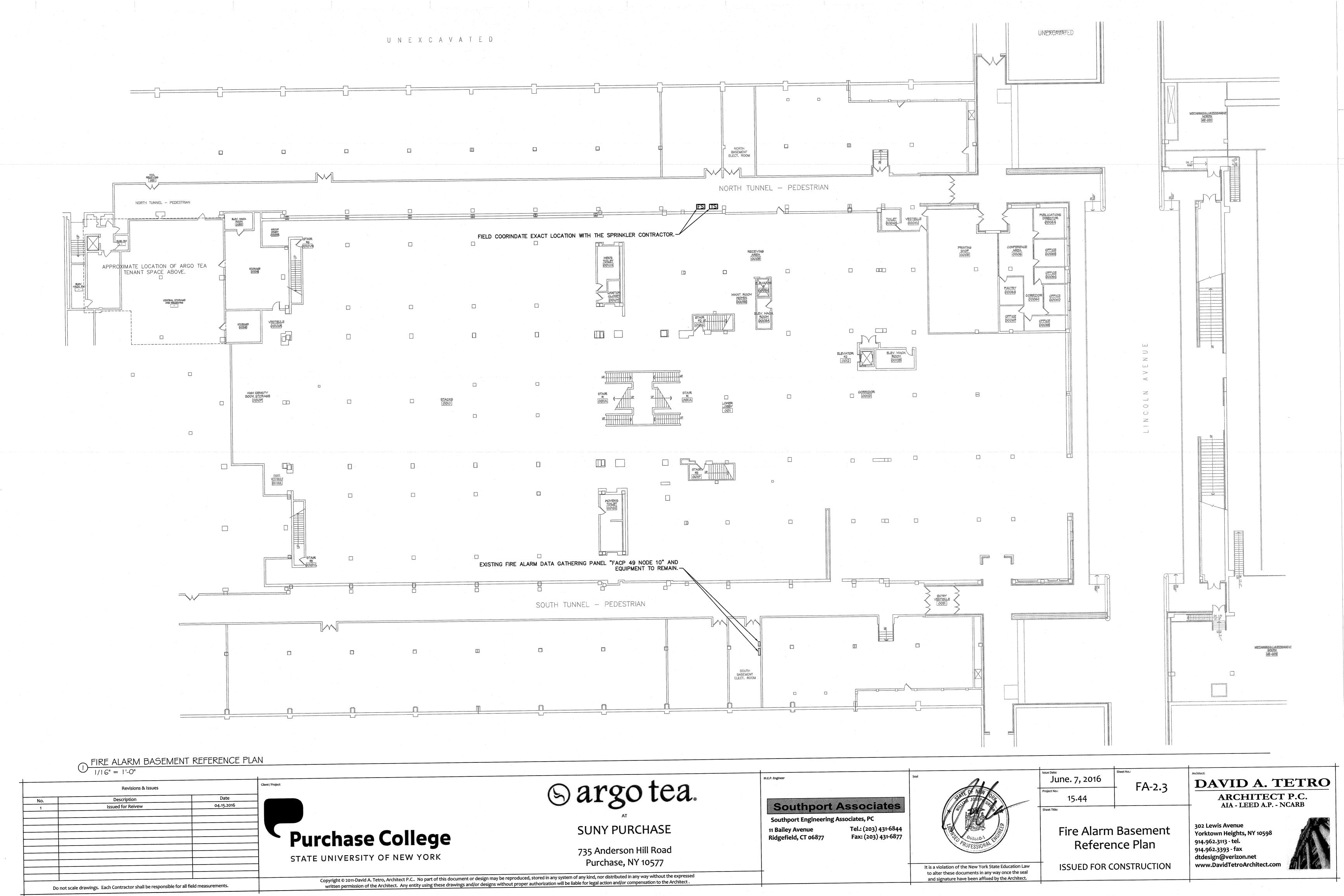
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DAVID A. TETRO



H	VAC PIPING AND S		
	·		
CHWS(R)	CHILLED WATER SUPPLY (RETURN)	HWS(R)	HEATING WATER SUPPLY (RETURN)
CWS(R)	CONDENSER WATER SUPPLY (RETURN)	CW	CITY WATER
41.41.41.41.41.41.41.41.41.41.41.41.41.4			
DR	DRAIN	PD	PUMP DISCHARGE
BFP	BACKFLOW PREVENTOR		
GPM	GALLONS/MINUTE		
<u></u>			
ıδı	BALL VALVE	M	ELECTRIC ACTUATOR
III	BUTTERFLY VALVE	S	SOLENOID ACTUATOR
<u> </u>	PLUG VALVE		PNEUMATIC ACTUATOR
M	GATE VALVE	Δ	CONCENTRIC REDUCER
M	GLOBE VALVE		ECCENTRIC REDUCER
Ø	BALANCING VALVE		FLOW LIMITING VALVE
A	PRESSURE REDUCING VALVE	•	PUMP
41−	SAFETY RELIEF VALVE	Ø	PRESSURE GAUGE
	CHECK VALVE		THERMOMETER
₩	STRAINER W/ BLOWDOWN VALVE	↑ A	MANUAL AIR VENT (A=AUTO VENT)
Ø ™	TRIPLE-DUTY VALVE	TTW	THERMOWELL
M	3-WAY VALVE	> × →	PIPE ANCHOR
∫ 	UNION	>===	PIPE GUIDE
∫ ∞ FC	FLEXIBLE CONNECTION	Ş-□EJ	EXPANSION JOINT
\hookrightarrow	ELBOW DOWN	\bigcirc	ELBOW UP
> €	BOTTOM CONNECTION	⊱ T	TOP CONNECTION
CV	CONTROL VALVE & TRIM	P 1/4	PIPE PITCHED DOWN I IN DIRECTION OF ARROW. NUMBER INDICATES INCHES OF PITCH PER FOOT (WHEN SHOWN).

HVAC DUCTWORK ABBREVIATIONS AND SYMBOLS OUTSIDE AIR FIRE DAMPER FIRE/SMOKE DAMPER SA SUPPLY AIR FSD BDD BACKDRAFT DAMPER RETURN AIR AD ACCESS DOOR EXHAUST AIR WMS WIRE MESH SCREEN TRANSFER AIR FLEXIBLE CONNECTION CFM CUBIC FEET/MINUTE FC ACOUSTICAL LINING (100) AIR FLOW-CFM AL ROUND DIAMETER OBD OPPOSED BLADE DAMPER RG RETURN GRILLE CD CEILING DIFFUSER LINEAR DIFFUSER OUTSIDE AIR INTAKE FA NET FREE AREA SINGLE LINE DOUBLE LINE SYMBOL SYMBOL NEW DUCT - FIRST DIMENSION IS TOP SIZE 10x8 10x8

(CLEAR INSIDE DIMENSION, INCHES)

(ALSO REFER TO SPECIFICATIONS)

INTERNALLY LINED DUCT

DUCT UP (RETURN SHOWN)

DUCT DOWN (RETURN SHOWN)

FLEXIBLE DUCT

(8 INCH DIAMETER)

J J J	RADIUS I	ELBOW	TURNING VANES)										
\frac{\frac{1}{2}}{2}													
\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	BRANCH	TAKE-OFF	,										
5		BRANCH TAKE-OFF (45 DEGREES)											
√	RADIUS	RADIUS TAKE-OFF											
INTAKE SYMBOI	S	RETURN	/EXHAUST SYMBOLS										
DUCT			DUCT										
AIRFLOW DIREC	CTION		AIRFLOW DIRECTION										
CEILING DIFFU	SER		CEILING GRILLE										
LINEAR DIFFUS	SER	<u> </u>	LINEAR RETURN										
YMBOLS		· · · · · · · · · · · · · · · · · · ·											
DIFFUSER THR AIRFLOW IN SI DIRECTION)	OW (NO HADED	onzwija na zaja otko je nazvijeko otko je	e de la companya de l										
MANUAL VOLU DAMPER	IME		FIRE & SMOKE FIRE=FD FIRE/SMOKE=FSD										
SPLITTER DAM	IPER		SMOKE=SMD										
BACK DRAFT	DAMPER	M	CONTROL DAMPER										
VAV BOX		SD	DUCT SMOKE DETECTOR										
DUCT COIL		Ð	THERMOSTAT/SENSOR										
FLEXIBLE CON	NECTION	@2	CARBON DIOXIDE SENSOR										
		R 12	DUCT RISE (R) OR DROP (D) IN DIRECTION OF ARROW.										
		D 12	NUMBER INDICATES INCHES OF RISE/DROP (WHEN SHOWN).										
	DUCT AIRFLOW DIRECT CEILING DIFFU LINEAR DIFFUS MBOLS DIFFUSER THR AIRFLOW IN SI DIRECTION) MANUAL VOLU DAMPER SPLITTER DAM BACK DRAFT VAV BOX DUCT COIL FLEXIBLE CON RECTANGULAR	AIRFLOW DIRECTION CEILING DIFFUSER LINEAR DIFFUSER YMBOLS DIFFUSER THROW (NO AIRFLOW IN SHADED DIRECTION) MANUAL VOLUME DAMPER SPLITTER DAMPER BACK DRAFT DAMPER VAV BOX	AIRFLOW DIRECTION CEILING DIFFUSER LINEAR DIFFUSER MBOLS DIFFUSER THROW (NO AIRFLOW IN SHADED DIRECTION) MANUAL VOLUME DAMPER SPLITTER DAMPER BACK DRAFT DAMPER VAV BOX DUCT COIL FLEXIBLE CONNECTION RECTANGULAR TO ROUND TRANSITION										

M	EC	CHANICAL DRAWING LIST
M1.1	_	MECHANICAL SPECIFICATIONS
M1.2	_	MECHANICAL SPECIFICATIONS CONTINUED
M2.1	-	MECHANICAL DEMOLITION
м3.1	_	MECHANICAL NEW WORK
M4.1	-	MECHANICAL DETAILS
M5.1	_	MECHANICAL SCHEDULES
M6.1	-	MECHANICAL CONTROLS

Client / Project

MECHANICAL SPECIFICATION

1.0 GENERAL

1 SCOPE OF WORK

- A.THE WORK UNDER THIS SECTION OF THE SPECIFICATIONS INCLUDES ALL LABOR. MATERIALS. EQUIPMENT AND SERVICES FOR AIR HANDLING SYSTEMS REPLACEMENT AND CONTROLS UPGRADE AND OTHER WORK AS SHOWN ON THE CONTRACT DRAWINGS. WORK SHALL BE IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE CONTRACT DRAWINGS AND SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT. THE WORK IN GENERAL CONSISTS OF, BUT IS NOT LIMITED TO, THE FOLLOWING:
- 1. DEMOLITION OF EXISTING MIXING BOXES
- 2. DEMOLITION OF EXISTING HOT WATER CABINET HEATERS
- 3. INSTALLATION OF DX/ELECTRIC ROOFTOP UNIT WITH VAV/REHEAT
- 4. INSTALLATION OF HYDRONIC HEATERS
- 5. INSTALLATION OF EXHAUST FANS
- 6. DUCTWORK, PIPING, INSULATION AND ASSOCIATED WORK.
- 7. ELECTRICAL WORK
- 8. DDC CONTROLS SYSTEMS

ELECTRICAL DRAWINGS.

- 9. AIR BALANCING
- 10. RECORD AS-BUILT DRAWINGS AND OPERATING AND MAINTENANCE MANUALS FOR EQUIPMENT PROVIDED BY THIS CONTRACTOR.
- 11. ELECTRICAL WORK

SUBCONTRACT WITH ELECTRICAL CONTRACTOR TO PROVIDE ALL REQUIRED WIRING TO COMPLETE THE SCOPE OF WORK, REFER TO

.2 BIDDING

- A. CONTRACTOR SHALL VISIT THE JOB AND FULLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS PRIOR TO SUBMISSION OF BIDS.
- B. CONTRACTOR SHALL COORDINATE THE REQUIREMENTS OF ANY AND ALL DRAWINGS INCLUDING MECHANICAL, ELECTRICAL AND CONTROLS. ANY CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PERIOD.
- C. CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION TO DETERMINE THE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY THE BUILDING.

.3 GENERAL REQUIREMENTS

- A. ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES.
- B. CONTRACTOR SHALL PAY ALL FEES AND TAXES, OBTAIN ALL PERMITS AND APPROVALS, FILE THE REQUIRED DOCUMENTS. SCHEDULE AND PAY ALL FEES FOR ALL BUILDING AND FIRE DEPARTMENT INSPECTIONS. INCLUDING SPECIAL INSPECTIONS, CONTROLLED INSPECTIONS AND FINAL SIGN-OFF INSPECTIONS.
- C. THE CONTRACTOR SHALL WARRANTY ALL WORK FOR A PERIOD OF 12 MONTHS FROM ACCEPTANCE BY OWNER. DURING THIS WARRANTY PERIOD, CONTRACTOR SHALL RESPOND TO ALL CALLS FOR SERVICE, REPAIRS AND ADJUSTMENTS REQUIRED BY OWNER. CONTRACTOR SHALL INSTALL REPLACEMENT PARTS AND MATERIAL REQUIRED AT NO COST TO THE OWNER. ALL EQUIPMENT WARRANTIES SHALL BE TRANSFERRED TO OWNER AND SERVICED BY CONTRACTOR AS PART OF THIS CONTRACT.
- D. CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS INCLUDING, ELECTRICAL. PLUMBING, FIRE PROTECTION, CONTROLS AND GENERAL CONTRACTOR. CONTRACTOR SHALL PARTICIPATE IN DEVELOPMENT OF COORDINATED SHOP DRAWINGS.
- E. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY WALL OR FLOOR PENETRATIONS FOR NEW DUCT OR PIPING WORK AND SHALL PATCH AND REPAIR, TO MATCH EXISTING, ALL HOLES, ACCESS OPENINGS, ETC. DUE TO NEW WORK AND DEMOLITION WORK. ALL PENETRATIONS SHALL BE PATCHED AND FIRESTOPPED AS REQUIRED TO MAINTAIN THE INTENDED FIRE RATING. UNLESS NOTED OTHERWISE ALL FLOORS AND MECHANICAL ROOM WALLS SHALL BE CONSIDERED TO BE 2-HOUR RATED.
- F. CONTRACTOR SHALL INFORM ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ASBESTOS OR OTHER HAZARDOUS MATERIAL THAT WILL BE DISTURBED DUE TO THIS WORK.
- G. DEMOLITION AND OTHER WORK WHICH MAY CREATE A DISTURBANCE MUST BE COORDINATED WITH THE OWNER. THE DELIVERY, HANDLING AND INSTALLATION OF MATERIALS, EQUIPMENT AND REMOVAL OF DEBRIS MUST BE ARRANGED TO AVOID ANY INCONVENIENCE AND ANNOYANCE TO OWNER. THE CONTRACTOR SHALL DISPOSE OF ALL DEMOLITION AND UNUSED MATERIALS.
- THOROUGHLY BRUSH AND CLEAN UP WORK AT THE END OF EACH DAY. REMOVE ALL DEBRIS FROM INSIDE AND OUTSIDE OF ALL DUCTWORK, PIPING AND EQUIPMENT. PAINTED EXPOSED WORK, SOILED OR DAMAGED, SHALL BE CLEANED OR REPAINTED TO MATCH ADJOINING WORK BEFORE FINAL
- SUBSTITUTIONS FOR THE SPECIFIED EQUIPMENT SHALL NOT BE PERMITTED WITHOUT APPROVAL FROM THE ENGINEER. THE ASSOCIATED CHANGE IN THE CONTRACT PRICE SHALL BE INCLUDED WITH ANY PROPOSED SUBSTITUTIONS.
- H. SEISMIC MOUNTING AND BRACING OF ALL EQUIPMENT, PIPING ETC. SHALL BE IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS. THE SEISMIC REQUIREMENTS SHALL BE BASED ON A USE TYPE [4]
- THE CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER'S SERVICE REPRESENTATIVE TO ENSURE PROPER INSTALLATION, PIPING AND SERVICE CLEARANCE REQUIREMENTS ARE MET.
- J. LAYOUT SYSTEMS TO MAINTAIN ACCESS AND SERVICE CLEARANCES FOR

- INSTALLED EQUIPMENT, VALVES, CONTROLS, VOLUME DAMPERS, FIRE/SMOKE DAMPERS AND ALL COMPONENTS REQUIRING ACCESS. SERVICE ACCESS SHALL BE AS RECOMMENDED BY MANUFACTURER OR AS REQUIRED BY CODE WHICHEVER IS GREATER.
- K. MAINTAIN OPERATION OF BUILDING SYSTEMS DURING CONSTRUCTION. ANY REQUIRED SHUTDOWNS OF BUILDING SYSTEMS MUST BE COORDINATED WITH THE OWNER. SYSTEMS TO REMAIN OPERATIONAL INCLUDE: STEAM.
- L. UNLESS OTHERWISE SPECIFIED, THE MOST RECENT VERSIONS OF THE FOLLOWING CODES AND STANDARDS APPLY AND ARE MADE A PART OF THIS SPECIFICATION
- 1. NEW YORK STATE CODE (IMC)
- 2. UNDERWRITER'S LABORATORIES, INC. (UL).
- 3. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
- 4. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
- 5. AMERICAN NATIONAL STANDARD INSTITUTE (ANSI).
- 6. OSHA FEDERAL STANDARDS
- 7. AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS, INC. (ASHRAE).
- 8. AIR CONDITIONING & REFRIGERATION INSTITUTE (ARI).
- AMERICAN WELDING SOCIETY (AWS).
- 10. AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM).

1.4 COORDINATION WITH BUILDING MANAGEMENT

- A. THIS CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE BUILDING OWNER'S RULES AND REGULATIONS. ANY DISCREPANCIES BETWEEN THE CONTRACTOR DOCUMENTS AND THE BUILDING RULES AND REGULATIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT/ENGINEER FOR REVIEW, WITH BID SUBMISSION.
- B. COORDINATE WITH BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF TWO (2) DAYS PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT. CONTRACTOR IS TO PERFORM WORK ON PREMIUM TIME. IF SO DIRECTED BY BUILDING OWNER, SO AS NOT TO INTERRUPT BUILDING SERVICES DURING OCCUPIED PERIODS.

1.5 SUBMITTALS

- A. SHOP DRAWINGS OF THE FOLLOWING SHALL BE SUBMITTED FOR REVIEW PRIOR TO PURCHASE AND INSTALLATION.
 - 1. MANUFACTURER'S SUBMITTAL DATA FOR ALL EQUIPMENT SUPPLIED. SUBMITTALS SHALL CLEARLY INDICATE SPECIFIC ITEMS PROPOSED AND WHERE EACH ITEM IS TO BE APPLIED.
 - 2. EQUIPMENT SOUND POWER DATA BROKEN INTO OCTAVE BANDS.
 - 3. DIMENSIONED AND DETAILED PIPING, EQUIPMENT AND DUCTWORK LAYOUT AT 3/8" = 1'-0" SCALE, MINIMUM.
 - 4. SHOP STANDARDS AND INSTALLATION DETAILS FOR DUCTWORK, PIPING, INSULATION, STRUCTURAL SUPPORTS, VIBRATION ISOLATION, AND SIESMIC SUPPORT.
 - 5. PIPE CLEANING AND FLUSHING PROCEDURE.
- 6. AIR BALANCING REPORTS.
- 7. OTHER SUBMITTAL DATA NOTED ELSEWHERE.
- B. SUBMITTAL QUANTITIES AND METHODS SHALL BE AS OUTLINED IN THE GENERAL PROVISIONS OF THE CONTRACT DOCUMENTS AS APPLICABLE. OTHERWISE A MINIMUM OF TWO HARD COPIES AND ONE "PDF" COPY SHALL BE SUBMITTED.
- C. SUBMIT DETAILED PROJECT SCHEDULE, WITHIN TWO (2) WEEKS OF CONTRACT AWARD.

1.8 RECORD DRAWINGS

A MAINTENANCE MANUALS. AS-BUILT DRAWINGS SHOWING ALL DUCTWORK PIPING AND EQUIPMENT AND TEST AND BALANCING REPORTS SHALL BE SUBMITTED TO THE OWNER AT THE COMPLETION OF THE WORK. THE AS-BUILT DRAWINGS SHALL ALSO SHOW EXISTING WORK WITHIN THE WORK AREA INCLUDING DUCTS AND PIPING THAT WAS CAPPED, REROUTED AND REMAINING IN WORK AREA.

2.0 DUCTWORK MATERIALS AND INSTALLATIONS

2.1 DUCTWORK

- A. ALL DUCTWORK SHALL BE LOCK FORMING QUALITY GALVANIZED STEEL SHEETS UNLESS OTHERWISE NOTED ON DRAWINGS. ALL DUCTWORK SHALL CONFORM TO THE CONSTRUCTION DETAILS AND RECOMMENDATIONS IN THE LATEST ISSUES OF THE ASHRAE GUIDE, NFPA BULLETINS 90A, B & C AND THE SMACNA DUCT MANUAL. INSTALLATION OF DUCTWORK SHALL BE AS RECOMMENDED BY THE ABOVE. ALL DUCT SEAMS SHALL BE SEALED WITH DUCT SEALANT. DUCT LEAKAGE SHALL NOT EXCEED VALUES SET BY THE SMACNA STANDARDS, AND RECOMMENDATIONS BY ASHRAE, AND IN NO CASE SHALL BE MORE THAN 5 PERCENT.
- B. PRESSURE CLASSIFICATIONS SHALL BE MINIMUM OF 2" W.G. EXCEPT AS INDICATED BELOW AND AS INDICATED ON DRAWINGS. ALL SYSTEM COMPONENTS SHALL BE SELECTED AND INSTALLED TO ACHIEVE THE PRESSURE RATINGS.

ERVICE	PRESSURE RATING
LL DUCTWORK	2" IN. W.G

11 Bailey Avenue

Ridgefield, CT 06877

C. THE CONTRACTOR SHALL PROVIDE BALANCING DAMPERS, AS SHOWN ON THE PLANS AND AS REQUIRED TO ACHIEVE SPECIFIED AIR FLOW.

- D. ALL 90 DEGREE MITER ELBOWS SHALL HAVE DOUBLE THICKNESS AIR FOIL TYPE TURNING VANES AS DETAILED IN THE SMACNA STANDARDS. ALL OTHER ELBOWS SHALL HAVE A MINIMUM TURNING RADIUS OF ONE DUCT WIDTH AS MEASURED FROM THE CENTER LINE. ALL DUCT SUPPORTS SHALL CONFORM TO SMACNA STANDARDS.
- E. FLEXIBLE DUCTS SHALL BE CONSTRUCTED OF GALVANIZED SPRING STEEL LAMINATED WITH MULTIPLE LAYERS OF REINFORCED ALUMINUM FOIL POLYESTER LAMINATE, [1-1/2"] FIBERGLASS INSULATION AND ALUMINUM FOIL COVERING. DUCT SHALL BE DESIGNED FOR APPROPRIATE DUCT PRESSURE AND SHALL BE CLASS 1 RATED AND HAVE UL181 LISTING AND CONFORM TO NFPA 90A AND 90B. FLEX DUCT SECTIONS SHALL NOT EXCEED 2 FEET IN LENGTH AND SHALL BE INSTALLED WITH GRADUAL BENDS WITHOUT CRIMPING OR COMPRESSION. FLEXIBLE DUCTS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL UNION STANDARDS AND LOCAL CODES AND SHALL BE USED FOR ALIGNMENT ONLY.
- F. DUCT DIMENSIONS SHOWN ON DRAWINGS SHALL BE CLEAR INSIDE DIMENSIONS.

2.2 FIRE DAMPERS.

A. FIRE DAMPERS SHALL BE UL 555 AS MANUFACTURED BY RUSKIN OR APPROVED EQUAL.

2.3 DUCT AND AIR SYSTEMS INSULATION

- A. DUCTWORK INSULATION SHALL CONFORM TO MAXIMUM FLAME SPREAD/SMOKE DEVELOPMENT/FUEL CONTRIBUTION RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED IN ACCORDANCE WITH ASTM E84. WITH "K" VALUE OF 0.29 AT 75 DEGREES F INSULATION SHALL PROVIDE CONTINUOUS, VAPOR BARRIER AND JOINTS SHALL BE SECURED WITH PRESSURE SENSITIVE TAPE. MOISTURE VAPOR TRANSMISSION PER ASTM E96, 1.3 PERM. MINIMUM DUCTWORK INSULATION R VALUES SHALL BE AS FOLLOWS:
- B. DUCT AND PLENUM INSULATION SCHEDULE.

SERVICE	THICKNESS							
	WITHIN COND. AREA (NOTE 1)	OUTDOORS AND UNCOND. AREA						
CONDITIONED SUPPLY	1-1/2"	2"						
CONDITIONED RETURN	1-1/2"	2"						
OUTSIDE AIR	1-1/2"	2"						

- C. DUCTS AND PLENUMS IN EXPOSED LOCATIONS: 3.0 LBS/CF DENSITY, RIGID GLASS FIBER BOARD INSTALLED ON EXTERIOR OF DUCTS AND PLENUMS: OUTSIDE AIR DUCTS AND PLENUMS, MIXED AIR PLENUMS, AND SUPPLY DUCTS WITHIN MECHANICAL ROOMS AND OTHER EXPOSED LOCATIONS.
- D. DUCTS AND PLENUMS IN CONCEALED (ACCESSIBLE) LOCATIONS: 1.5 LBS/CF DENSITY, FLEXIBLE GLASS FIBER WRAP.
- E. SCHEDULE ACOUSTICAL LINING

SERVICE	THICKNESS	DISTANCE-FEET
UPSTREAM AND DOWNSTREAM OF AHU	1"	SEE NOTE 1

- NOTE 1: ALL EXPOSED DUCTWORK SHALL BE INTERNALLY LINED.
- F. FOR LOCATIONS SUBJECT TO AIR CONDITIONED SUPPLY AIR: PROVIDE CLOSED CELL ELASTOMERIC INTERNAL RIGID DUCT LINER M OF AIR HANDLING UNITS AND OTHER LOCATIONS WHERE INDICATED ON THE DRAWINGS. LINED SUPPLY DUCTWORK DOES NOT REQUIRE EXTERNAL DUCT INSULATION. AP/ARMAFLEX "GRAY" INSTALLED PER SMACNA STANDARDS.
- G. PROVIDE JOHNS-MANVILLE LINACOUSTIC RD DUCT LINING, 2" THICK TO ALL NEW EXTERIOR DUCTWORK.
- H. INSULATION SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SMACNA GUIDELINES.

2.4 AIR SYSTEM - VIBRATION ISOLATION

- A. PROVIDE VIBRATION ISOLATION FOR ALL FANS WHERE NOT INTERNALLY ISOLATED.
- B. WHERE FANS ARE NOT PROVIDED WITH INTERNALLY ISOLATED FANS -APROVIDE NEOPRENE FLEXIBLE CONNECTIONS IN DUCTWORK AT FAN CONNECTIONS TO DUCTWORK.

3.0 PIPING MATERIALS AND INSTALLATION

3.1 GENERAL

A. PRESSURE RATINGS FOR PRESSURIZED PIPING SHALL BE AS INDICATED BELOW AND AS NOTED ON THE DRAWINGS. ALL SYSTEM MATERIALS AND COMPONENTS SHALL BE SELECTED AND INSTALLED TO ACHIEVE THE PRESSURE RATINGS AS FOLLOWS:

SERVICE	PRESSURE RATING
ALL PIPING	125 PSI
·	

3.2 PIPE AND FITTINGS

A. PROVIDE PIPING AS INDICATED ON SCHEDULE BELOW AND INDICATED ON DRAWINGS.

SERVICE	PIPING	JOINTS
HW - UP TO 2 IN.	TYPE L COPPER	SWEAT
AC CONDENSATE	TYPE M COPPER	SWEAT
AC REFRIGERANT	TYPE ACR COPPER	BRAZED

- B. COPPER PIPING: WROUGHT COPPER FITTINGS. SWEAT JOINTS 95-5 TIN ANTIMONY SOLDER JOINTS.
- C. JOINTS: SCREWED FOR PIPE 2 INCH AND UNDER.
- D. FLANGES, UNIONS, AND COUPLINGS: PIPE SIZE 2 INCHES AND UNDER: SERVICE 150 PSI WORKING PRESSURE MALLEABLE IRON UNIONS FOR THREADED FERROUS PIPING; BRONZE UNIONS FOR COPPER PIPE, SOLDERED

JOINTS.

3.3 VALVES AND PIPING SPECIALTIES

- A. ALL VALVES SHALL BE OF A DESIGN WHICH THE MANUFACTURER LISTS FOR THE SERVICE AND SHALL BE OF MATERIALS ALLOWED BY THE LATEST EDITION OF THE ASME CODE FOR PRESSURE PIPING, FOR THE MAXIMUM OPERATING PRESSURE AND TEMPERATURE, UNLESS A HIGHER GRADE OR QUALITY IS HEREIN SPECIFIED. ALL VALVES SHALL BE OF THE SAME MANUFACTURER, EXCEPT FOR SPECIAL APPLICATIONS.
- B. EACH VALVE SHALL HAVE THE MAKER'S NAME OR BRAND. THE FIGURE OR LIST NUMBER AND THE GUARANTEED WORKING PRESSURE CAST ON THE BODY AND CAST OR STAMPED ON THE BONNET, OR SHALL BE PROVIDED WITH OTHER MEANS OF EASY IDENTIFICATION.
- C. PROVIDE VALVES AS INDICATED ON SCHEDULE BELOW AND INDICATED ON DRAWINGS.

SERVICE	VALVE	JOINTS
HW, - UP TO 3 IN.	BALL	

- D. BALL VALVES UP TO 2-1/2 INCHES: BRONZE TWO PIECE BODY, STAINLESS STEEL FULL PORT BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE SOLDER ENDS.
- E. PROVIDE EXTENDED SHAFT HANDLES FOR BALL VALVES WHERE INSULATION IS REQUIRED TO ALLOW INSULATION OF SPECIFIED THICKNESS TO BE INSTALLED.
- F. FLOW LIMITING VALVES SHALL BE Y-BODY WITH REPLACEABLE INSERTS. MINIMUM OPERATING PRESSURE SHALL BE 2 PSI OR LESS. FLOW LIMITING VALVES SHALL BE GRISWOLD, HAYS OR APPROVED EQUAL.
- G. CHECK VALVES INSTALLED IN THE HORIZONTAL POSITION SHALL BE SWING CHECKS: VALVES INSTALLED IN THE VERTICAL POSITION SHALL BE SILENT CHECKS, EXCEPT THAT ALL CHECK VALVES IN PUMP DISCHARGES SHALL BE SILENT CHECKS.
- H. ALL VALVES 2 INCHES IN DIAMETER AND SMALLER SHALL BE ALL BRONZE WITH BRONZE BODIES.
- I. ALL VALVES AND SPECIALTIES SHALL BE SO PLACED AS TO PERMIT EASY OPERATION AND ACCESS.

J. ALL VALVES UP TO 2 INCHES IN DIAMETER SHALL HAVE SWEAT OR SCREW

K. DRAIN VALVES SHALL BE PROVIDED WITH HOSE END, BRONZE BODY WITH CAP AND CHAIN.

3.4 CONTROL VALVES

- A. PROVIDE CONTROL VALVES. WATER VALVES SHALL BE SIZED FOR MAXIMUM OF 3 PSI PRESSURE DROP. HAVE EQUAL PERCENTAGE CHARACTERISTIC AND HAVE MINIMUM RANGEBILITY OF 100. VALVES MAY BE ROTARY OR GLOBE TYPE. ANSI LEAKAGE CLASS IV OR BETTER.
- B. ELECTRIC ACTUATORS SHALL HAVE MANUAL OVERRIDE PROVISIONS. PROVIDE SPRING RETURN FAIL-OPEN TYPE FOR PREHEAT APPLICATIONS. BELIMO MFT ACTUATORS.
- C. VALVES AND ACTUATORS SHALL BE BY BELIMO.

3.5 PIPING SYSTEMS INSTALLATION

- A. DIELECTRIC FITTINGS MUST BE USED AT JOINTS CONNECTING DISSIMILAR METAL PIPE OR VALVE MATERIALS.
- B. ROUTE PIPING IN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE, AND MAINTAIN SPECIFIED GRADIENTS.
- C. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
- D. ALL VALVES AND SPECIALTIES SHALL BE SO PLACED AS TO PERMIT EASY OPERATION AND ACCESS. E. PROVIDE VALVES IN ALL BRANCHES MAINS AND RISERS AND CONTROL
- VALVES. HEATING AND AT ALL APPARATUS; SO LOCATED, ARRANGED AND OPERATED AS TO GIVE COMPLETE SHUTOFF, EXCEPT WHERE FLANGED VALVES ARE USED, EACH CONNECTION TO EQUIPMENT SHALL INCORPORATE A UNION ON THE EQUIPMENT SIDE OF THE VALVE.
- F. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION, AND ACCESS TO VALVES AND FITTINGS.
- G. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN AT ALL LOW POINTS WITH 3/4" MINIMUM DRAIN VALVES AND CAPS.
- H. PROVIDE AUTOMATIC AIR VENTS AT SYSTEM HIGH POINTS AND AS INDICATED ON DRAWINGS. AIR VENTS TO BE 3/4" MINIMUM. PROVIDE SHUT OFF VALVES. PIPE VENTS TO DRAIN WHÉRE INSTALLED OVER ELECTRICAL EQUIPMENT OR IN A CONCEALED LOCATION.
- I. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.
- J. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
- K. BULLHEAD TEES ARE NOT PERMITTED.

M-1.1

- L. ALL NEW PIPING MUST BE TESTED. LEAK TEST SHALL BE CONDUCTED ON ALL PIPING SYSTEMS PRIOR TO FINAL CONNECTIONS TO EQUIPMENT OR APPLYING INSULATION OR CONCEALING. TEST SHALL BE CONDUCTED IN THE PRESENCE OF REPRESENTATIVE OF THE OWNER AND AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR IS TO CAP OFF OR ISOLATE ALL NEWLY INSTALLED PIPING AND HYDRAULICALLY PRESSURE TEST NEW PIPING AT 150 PERCENT OF THE SYSTEMS WORKING PRESSURE OR 100 PSI, WHICH EVER IS GREATER. TEST PRESSURE SHALL BE MAINTAINED FOR TWO (2) HOURS WITH NO DROP IN PRESSURE. THE CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS TO SERVICES, INSTRUMENTS, PUMPS AS NECESSARY FOR TESTING.
- M. PRE-OPERATIONAL CLEANING: AFTER THE PIPING SYSTEMS HAVE BEEN PRESSURE TESTED. THE CONTRACTOR SHALL PERFORM A PRE-OPERATIONAL CLEANING OF THE PIPING SYSTEMS. ALL CHEMICALS AND APPLICATION PROCEDURES SHALL BE SUBMITTED TO ENGINEER FOR REVIEW. ENGINEER AND OWNER AND ENGINEER SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF WHEN THE CLEANING IS TO TAKE PLACE, AND SCHEDULE SHALL BE APPROVED BY THE OWNER AND ENGINEER.

Revisions & Issues Description 04.15.2016 Issued for Reivew Do not scale drawings. Each Contractor shall be responsible for all field measurements.

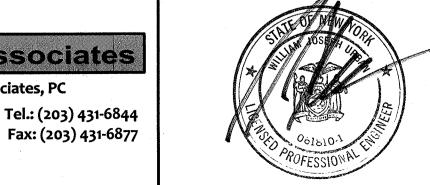
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735 Anderson Hill Road Purchase, NY 10577

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Southport Associates **Southport Engineering Associates, PC**



Mechanical

June. 7, 2016

15.44

302 Lewis Avenue 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net

DAVID A. TETRO

ARCHITECT P.C.

AIA - LEED A.P. - NCARB

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3.8 PIPING AND HYDRONIC EQUIPMENT INSULATION

A. ALL WATER PIPING SHALL BE INSULATED. INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. ALL HOT WATER PIPING INSULATION SHALL BE MOLDED FIBERGLASS WITH FACTORY APPLIED VAPOR BARRIER JACKET. INSULATION SHALL HAVE SMOKE DEVELOPED RATING OF 25 OR LESS AND A FLAME SPREAD AND FUEL CONTRIBUTED RATING OF 50 OR LESS. FOR COLD WATER PIPING MAINTAIN INSULATION VAPOR BARRIER USING VAPOR BARRIER ADHESIVES AT JOINTS AND MASTIC AT END JOINTS AS RECOMMENDED BY MANUFACTURER. INSULATION THICKNESS SHALL BE AS FOLLOWS:

B. SCHEDULE

SERVICE	SIZE	THICKNESS
HEATING HW	1-1/2" & SMALLER	1-1/2"

C. PROVIDE PREINSULATED PROTECTION SHIELDS AT PIPE HANGERS. PIPING SHALL NOT BE IN DIRECT CONTACT WITH HANGER FOR INSULATED PIPING.

3.9 PIPING SYSTEMS HANGERS, ANCHORS AND SUPPORTS

- A. ATTACHMENTS TO STRUCTURE FOR ALL NEW AND MODIFIED PIPING TO BE SUPPORTED BY SUPPLEMENTARY STRUCTURAL STEEL CONNECTED TO STRUCTURAL BEAMS. PROVIDE ALL REQUIRED SUPPLEMENTARY STEEL.
- B. ATTACHMENTS FOR PIPING 2" AND SMALLER WITH LOADS ONLY UP TO 250 LBS. IS TO BE ACCOMPLISHED BY DRILLED-IN EXPANSION SHIELD TYPE
- C. HANGERS FOR COPPER PIPING SHALL BE COPPER PLATED.
- D. BUILDING FIRE PROOFING SHALL BE RESTORED WHERE DISTURBED
- E. DO NOT HANG PIPING FROM HANGERS FOR OTHER TRADES.
- F. PIPE HANGERS SHALL BE OF THE CLEVIS TYPE, EXCEPT WHERE OTHERWISE
- G. HANGER RODS SHALL BE GALVANIZED STEEL. HANGER ROD SHALL BE GALVANIZED AND NOT EXCEED 6 FEET IN LENGTH. SUPPLEMENTARY STEEL SHALL BE PROVIDED AS NECESSARY. PROVIDE HANGERS PER DRAWING DETAILS.
- H. BEAM CLAMPS HANGERS SUPPORTED FROM STEEL SHALL BE APPROVED I BEAM CLAMPS FOR HANGERS SUPPORTING PIPING 2 INCHES AND SMALLER SHALL BE GRINNELL FIG. 2L7. FOR PIPING 2-L/2 INCHES AND LARGER, I BEAM CLAMPS SHALL BE FORGED STEEL. GRINNELL FIG. NO. 228. "C" CLAMPS ARE NOT TO BE USED.
- I. WHERE PIPING IS RUN NEAR THE FLOOR AND NOT HUNG FROM THE CEILING CONSTRUCTION, BUT IS SUPPORTED FROM THE FLOOR OR IN A TRENCH, SUCH SUPPORTS SHALL BE OF PIPE STANDARDS WITH BASE FLANGE AND ADJUSTABLE TOP YOKE.
- J. WHERE PIPING IS RUN ABOVE THE FLOOR, AND IS NOT HUNG FROM THE CFILING CONSTRUCTION OR NOT SUPPORTED FROM THE FLOOR, SUCH PIPING SHALL BE SUPPORTED FROM THE WALL WITH BRACKET HANGERS, EXPANSION BOLTED TO THE WALL.

3.10 PIPING SYSTEMS VIBRATION ISOLATION

A PROVIDE VIBRATION ISOLATION FOR ALL MOTORIZED EQUIPMENT, ALL SPRING TYPE ISOLATORS SHALL BE SEISMICALLY STABLE AND SHALL HAVE AN ADDITIONAL TRAVEL TO SOLID OF 50%, ALL COMPONENTS OF EXPOSED ISOLATORS INCLUDING FASTENERS SHALL BE CORROSION PROTECTED BY INC OR GALVANIZED PLATING, POWDER COATING OR OTHER METHODS ACCEPTABLE TO THE ENGINEER.

4.0 IDENTIFICATION

- A. PROVIDE IDENTIFICATION OF PIPING USING SPRAY PAINT AND TEMPLATES OR WITH PLASTIC STRAP ON MARKERS AS MANUFACTURED BY SETON NAME PLATE COMPANY. COLORS AND LETTERING SHALL MATCH EXISTING. PIPING SHALL BE LABELED A MINIMUM OF EVERY 30 FEET AND WHERE PIPING PASSES THROUGH WALLS.
- B. PROVIDE IDENTIFICATION OF ALL EQUIPMENT (RTU, VAV's, ETC.) VFDS, STARTERS AND OTHER EQUIPMENT USING SPRAY PAINT AND TEMPLATES OR OTHER APPROVED METHOD.
- C. ALL EQUIPMENT MUST HAVE THE MANUFACTURER'S NAMEPLATE VISIBLE AND SHALL NOT BE PAINTED OVER, INSULATED OR LOCATED WHERE DIFFICULT TO VIEW.

5.0 MOTORS, MOTOR STARTERS & VARIABLE SPEED DRIVES

5.1 GENERAL

- A. MOTORS, MOTORS STARTERS AND VARIABLE SPEED DRIVES SHALL BE PROVIDED BY THIS CONTRACTOR AND INSTALLED/CONNECTED BY THE ELECTRICAL CONTRACTOR.
- B. ENCLOSURES SHALL BE NEMA 1 FOR INDOOR APPLICATIONS AND NEMA 3R FOR OUTDOOR OR LOCATIONS SUBJECT TO MOISTURE.

5.1 MOTORS

- A. MOTOR ELECTRICAL CARACHETERISTICS ARE IDENTIFIED ON DRAWINGS. COORDINATE REQUIREMENTS WITH ELECTRICAL CONTRACTOR. ALL THREE PHASE MOTORS SHALL NEMA MG-1 PREMIUM EFFICIENCY. MOTORS USED WITH VARIABLE SPEED DRIVES SHALL BE NEMA MG-1 INVERTER-DUTY TYPE. SINGLE PHASE MOTORS SHALL BE PSC UNLESS SPECIFIED OTHERWISE [ECM].
- B. UNLESS NOTED OTHERWISE MOTORS TO BE ODP FOR INDOORS AND TEFC FOR OUTDOOR OR LOCATIONS SUBJECT TO MOISTURE.

5.2 MOTOR STARTERS

A. EXCEPT AS NOTED OTHERWISE, ALL MOTORS SHALL BE PROVIDED WITH MOTORS STARTERS TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS TO BE COMBINATION FUSED DISCONNECT AND ACROSS-THE-LINE MAGNETIC TYPE WITH: HAND-OFF-AUTOMATIC SWITCH, OVERLOADS MATCHED TO THE MOTOR, OPERATING INDICATOR LIGHT, AUXILIARY CONTACTS (MINIMUM OF 2 OR AS NEEDED FOR CONTROL) AND CONTROL TRANSFORMER.

Revisions & Issues

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5.3 VARIABLE SPEED DRIVES

- A. VARIABLE SPEED DRIVES (VSD'S) SHALL BE SOLID STATE PWM INVERTER TYPE, 3 PHASE, 460V, 60 HZ INPUT, RATED FOR CONTINUOUS DUTY, AND HOUSED IN A NEMA 3 ENCLOSURE. VSD SHALL HAVE THE FOLLOWING LIGHT INDICATORS: POWER ON AND PROBLEM, . PROVIDE FRONT MOUNTED KEYPAD TO PROGRAM USER FUNCTIONS AND TO INTERFACE WITH VSD DISPLAY. THE LCD DISPLAY SHALL BE ALPHANUMERIC, BACK LIGHT ILLUMINATED WITH PREPROGRAMMED MENU TO GUIDE USER, AND ABLE TO DISPLAY AS A MINIMUM: SET-UP PARAMETERS, RUNNING PARAMETERS, FAULT REASON, AND HISTORY OF PREVIOUS FAULTS. DRIVE SHALL BE DESIGNED TO OPERATE RELIABLY AT TEMPERATURE RANGE FROM 0 TO 40C. AND 0 TO 90% RH.
- B. VSD SHALL HAVE CAPABILITY TO COMMUNICATE WITH THE NEW CONTROL SYTEM (BMS) USING MODBUS OR OTHER MAJOR COMMUNICATION PROTOCOL COMPATIBLE WITH THE BMS. A MINIMUM OF TWO ANALOG AND TWO DIGITAL OUTPUT FUNCTIONS SHALL BE AVAILABLE FOR REMOTE MONITORING. PROVIDE INTEGRAL DOOR INTERLOCKED DISCONNECT. PROVIDE EXTENDED WARRANTY. C. VSD'S SHALL INCLUDE SELF PROTECTION AND RELIABILITY FEATURES, INCLUDING CURRENT LIMITING, OVERCURRENT TRIP, OVERVOLTAGE TRIP. UNDERVOLTAGE TRIP. OVERTEMPERATURE TRIP. AUTOMATIC RESET/RESTART AND STATUS INDICATION. UNIT SHALL ALSO HAVE SINGLE POLE, DOUBLE THROW CONTACT FOR REMOTE ALARMING; CONTACT WILL CHANGE WHEN ANY TRIP CONDITION HAS OCCURRED.
- MANUFACTURER AND MODEL: SQUARE D IN A NEMA 3 ENCLOSURE, WITH THE FOLLOWING ACCESSORIES: HAND-OFF AUTO SWITCH, ANNUAL POTENTIOMETER, 0-100% SPEED METER, REMOTE "ENABLED" INDICATION AND DISCONNECT SWITCH.
- D. PROVIDE FUSED OR CIRCUIT BREAKER DISCONNECT WITH VSD WHERE SHOWN ON ELECTRICAL DRAWINGS.
- E. INSTALLATION OF VSDS AS INDICATED ON DRAWINGS
- F. WARRANTY AND START-UP SERVICE
- 1. THE VSD MANUFACTURER REPRESENTATIVE SHALL BE SUBCONTRACTED TO PROVIDE START UP SERVICE FOR ALL VFD'S PROVIDED. SERVICE SHALL INCLUDE INSPECTION, FINAL ADJUSTMENT, OPERATIONAL CHECKS, AND A FINAL REPORT FOR RECORD PURPOSE. START UP SERVICE SHALL BE PERFORMED BY A FACTORY APPROVED AND CERTIFIED TECHNICIAN.

2. VSDS SHALL HAVE 2 YEAR PARTS AND LABOR WARRANTY.

6.0 TESTING AND BALANCING

- SUBCONTRACT WITH AN INDEPENDENT AGENCY FOR THE TESTING, ADJUSTMENT, AND BALANCING OF AIR AND WATER SYSTEMS, AGENCY SHALL BE COMPANY SPECIALIZING IN THE ADJUSTING AND BALANCING OF SYSTEMS SPECIFIED IN THIS SECTION WITH MINIMUM 5 YEARS EXPERIENCE, CERTIFIED BY AABC. PERFORM WORK UNDER SUPERVISION OF REGISTERED PROFESSIONAL ENGINEER. TOTAL SYSTEM BALANCE SHALL BE PERFORMED IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE.
- B. PRIOR TO START THE TESTING AND BALANCING THE CONTRACTOR SHALL CONFIRM ALL SYSTEMS ARE PROPERLY CLEAN,
- C. ADJUST FLOW TO WITHIN 10 PERCENT OF DESIGN REQUIREMENTS. PREPARE AND SUBMIT AN AIR & WATER BALANCING REPORT SHOWING ALL READINGS OF CFM (OR GPM) FOR EACH OUTLET, TRAVERSES OF ALL MAIN SUPPLY AIR DUCTS AND THE TOTAL FOR THE SYSTEM. INCLUDE DESIGN VALUES FOR THE SAME. REPORT TO INCLUDE ACTUAL ELECTRICAL CHARACTERISTICS OF EACH PIECE OF EQUIPMENT TO BE BALANCED (RPM, AMPS, BHP, ETC.) AS WELL AS ELECTRICAL NAMEPLATE CHARACTERISTICS. ACCURATELY RECORD ACTUAL LOCATIONS OF BALANCING VALVES AND DAMPERS
- D. SEQUENCE WORK TO COMMENCE AFTER COMPLETION OF SYSTEMS AND SCHEDULE COMPLETION OF WORK BEFORE SUBSTANTIAL COMPLETION OF PROJECT. BEFORE COMMENCING WORK, VERIFY THAT SYSTEMS ARE COMPLETE AND OPERABLE. ENSURE THE EQUIPMENT IS OPERABLE AND IN A SAFE AND NORMAL CONDITION. THE TEMPERATURE CONTROL SYSTEMS ARE INSTALLED COMPLETE AND OPERABLE AND PROPER THERMAL OVERLOAD PROTECTION IS IN PLACE FOR ELECTRICAL EQUIPMENT. BEGINNING OF WORK MEANS ACCEPTANCE OF EXISTING CONDITIONS
- REPORT ANY DEFECTS OR DEFICIENCIES NOTED DURING PERFORMANCE OF SERVICES TO ENGINEER. PROMPTLY REPORT ABNORMAL CONDITIONS IN MECHANICAL SYSTEMS OR CONDITIONS WHICH PREVENT SYSTEM BALANCE.
- PERMANENTLY MARK SETTINGS OF DAMPERS AND OTHER ADJUSTMENT DEVICES ALLOWING SETTINGS TO BE RESTORED. SET AND LOCK MEMORY STOPS. AFTER ADJUSTMENT, TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR THAT SUCH DISRUPTION HAS BEEN RECTIFIED.
- G. LEAVE SYSTEMS IN PROPER WORKING ORDER, CLOSING DOORS TO ELECTRICAL SWITCH BOXES, AND RESTORING THERMOSTATS TO SPECIFIED
- REPLACE BELTS AND SHEAVES FOR EXISTING FANS WHERE A SPEED CHANGE IS REQUIRED TO ACHIEVE CFM INDICATED ON DRAWINGS AND TO MINIMIZE FAN ENERGY.

COORDINATION DRAWING

1.1 DESCRIPTION

- A. GENERAL CONTRACTOR SHALL COORDINATE CONSTRUCTION OPERATIONS INCLUDED IN VARIOUS SECTIONS OF SPECIFICATIONS AS PROVIDED TO ASSURE EFFICIENT AND ORDERLY INSTALLATION OF ALL PARTS OF WORK. COORDINATE CONSTRUCTION OPERATIONS INCLUDED UNDER DIFFERENT SECTIONS THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND OPERATION. COORDINATION OF ALL PARTS OF WORK SHALL BE LIMITED TO BUT NOT EXCLUSIVE OF THE CONTRACT TO WHICH GENERAL CONTRACTOR IS UNDER CONTRACT TO PROVIDE.
- B. COORDINATION DRAWINGS: REPRODUCIBLE DRAWINGS SHOWING WORK WITH HORIZONTAL AND VERTICAL DIMENSIONS TO AVOID INTERFERENCE WITH STRUCTURAL FRAMING. CEILINGS, PARTITIONS, EQUIPMENT, LIGHTS, MECHANICAL, ELECTRICAL, CONVEYING SYSTEMS, AND OTHER SERVICES:
- a. IN AND ABOVE CEILINGS.
- b. WITHIN WALLS.
- c. WITHIN CHASES. d. IN MECHANICAL SPACES.
- e. IN ELECTRICAL SPACES.
- C. PREPARE COORDINATION DRAWINGS WHERE COORDINATION IS NEEDED FOR INSTALLATION OF PRODUCTS AND MATERIALS FABRICATED BY SEPARATE
- D. PREPARE COORDINATION DRAWINGS WHERE LIMITED SPACE AVAILABILITY NECESSITATES MAXIMUM UTILIZATION OF SPACE FOR EFFICIENT INSTALLATION OF DIFFERENT COMPONENTS.
- E. COORDINATE INSTALLATION OF DIFFERENT COMPONENTS TO ASSURE MAXIMUM ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE, AND
- F. WORK OUT ALL "TIGHT" CONDITIONS INVOLVING WORK OF VARIOUS SECTIONS IN ADVANCE OF INSTALLATION.
- G. SLEEVE, COREDRILL AND BLOCKOUT LAYOUT DRAWINGS: DRAWINGS SHOWING PROPOSED LOCATIONS AND SIZES OF SLEEVES, COREDRILLS BLOCKOUTS, AND EMBEDDED ITEMS IN CONCRETE WALLS, COLUMNS, FLOORS AND BEAMS. H. PRIOR TO START OF WORK AND INSTALLATION IN ANY GIVEN AREA,
- CONTRACTOR/SUBCONTRACTOR TO WHICH GENERAL CONTRACTOR IS UNDER CONTRACT SHALL APPROVE, SIGN, COORDINATION DRAWINGS AFFECTING THE CONTRACTOR/SUBCONTRACTOR'S WORK IN THAT AREA.
- MODIFICATIONS REQUIRED AS RESULT OF FAILURE TO RESOLVE INTERFERENCE'S, PROVIDE CORRECT COORDINATION DRAWINGS, OR CALL ATTENTION TO CHANGES REQUIRED IN OTHER WORK AS RESULT OF MODIFICATIONS SHALL BE PAID FOR BY RESPONSIBLE CONTRACTOR/SUBCONTRACTOR.
- J. COORDINATION MEETINGS SHALL BE SCHEDULED BY THE GENERAL CONTRACTOR, WITH ALL AFFECTED SUBCONTRACTORS.
- 1.2 PRODUCTION OF COORDINATION DRAWINGS
- A. CONTRACTOR SHALL PROVIDE MINIMUM 1/4 IN SCALE PLAN, ELEVATION AND SECTION DRAWINGS, BOTH AS PAPER HARD COPIES AND AS CAD ELECTRONIC FILES PREFERABLY DEVELOPED USING AUTOCAD, SHOWING:
- a. PARTITIONS.
- b. FIRE/SMOKE RATED BARRIERS.
- CEILING HEIGHTS.
- STRUCTURAL FRAMING LOCATIONS AND ELEVATIONS.
- e. COLUMN LINES.
- f. OTHER WORK.
- B. GENERAL CONTRACTOR SHALL PROVIDE AS IS CONTRACTED PER INDIVIDUAL TRADE, COORDINATION DRAWINGS IN ORDER FOR CONTRACTOR/SUBCONTRACTORS TO PRODUCE COMBINED COORDINATION LAYOUT DRAWINGS PLAN AND SECTIONS OF HVAC DUCTWORK, HYDRONIC,
- STEAM, CONDENSATE, FUEL OIL, FIRE PROTECTION PIPING, PLUMBING, SPECIAL WATER SYSTEMS, GAS SYSTEMS, ELECTRICAL CABLE TRAY, CONDUIT, CONVEYING SYSTEMS, EQUIPMENT AND OTHER WORK, WHERE
- C. GENERAL CONTRACTOR SHALL WORK TO RESOLVE MAJOR INTERFERENCE'S AT INITIAL COORDINATION MEETING PRIOR TO PRODUCTION OF ANY
- D. GENERAL CONTRACTOR SHALL WORK TO PRODUCE INITIAL COORDINATION DRAWINGS WITHIN REASON, AFTER INITIAL MEETING, SO AS NOT TO DELAY PROPOSED TIMELINES, AND SCHEDULES.
- E. GENERAL CONTRACTOR SHALL MEET AS IS REQUIRED, WITHIN REASON, TO RESOLVE INTERFERENCE'S AND CORRECT DRAWINGS.
- 1.3 AFTER APPROVAL

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- A. AFTER SUBCONTRACTORS' WRITTEN APPROVAL OF COORDINATION DRAWINGS, CONTRACTOR SHALL DETERMINE METHOD USED TO RESOLVE INTERFERENCE'S NOT PREVIOUSLY IDENTIFIED.
- B. CONTRACTOR SHALL GIVE WRITTEN APPROVAL OF CHANGES TO COORDINATION DRAWINGS PRIOR TO START OF WORK IN AFFECTED AREA.
- C. MAINTAIN ONE COPY OF CURRENT APPROVED COORDINATION DRAWINGS AT PROJECT SITE.
- 1.4 PRECEDENCE OF SERVICES FOR COORDINATION DRAWINGS
- A. IN EVENT OF CONFLICTS INVOLVING LOCATION AND LAYOUT OF WORK; GENERAL CONTRACTOR SHALL USE THE FOLLOWING PRIORITY TO RESOLVE
- a. STRUCTURE AND PARTITIONS HAVE HIGHEST PRIORITY.
- EQUIPMENT LOCATION AND ACCESS.
- CEILING SYSTEM AND RECESSED LIGHT FIXTURES.
- GRAVITY DRAINAGE LINES.
- HIGH PRESSURE DUCTWORK AND DEVICES. LARGE PIPE MAINS, VALVES AND DEVICES.
- LOW PRESSURE DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, HVAC EQUIPMENT.
- FIRE PROTECTION PIPING, DEVICES AND HEADS.
- B. CONDUITS INSTALLED IN CORRIDORS SHALL BE MAINTAINED AT LEAST 9 IN ABOVE FINISHED CEILING. CONDUITS SHALL BE GROUPED WITHIN A 12 IN

SMALL PIPING, TUBING, ELECTRICAL CONDUIT, AND DEVICES.

- C. THE SPACE UTILIZED FOR CONDUIT SHALL BE SELECTED TO ALLOW ACCESS TO ALL DEVICES WHICH NORMALLY REQUIRE ADJUSTMENT, REPAIR, RESETTING, ETC.
- D. SLEEVES THROUGH RATED PARTITIONS.
- E. ACCESS PANELS.

1.5 PRODUCTION OF LAYOUT DRAWINGS

- A. CONTRACTOR SHALL PROVIDE TO GENERAL CONTRACTOR SCALE PLAN AND ELEVATION DRAWINGS, IN CAD FORMAT PREFERABLY FOR USE WITH AUTOCAD
- B. SUBCONTRACTORS SHALL INDICATE TO GENERAL CONTRACTOR, PROPOSED LOCATION AND SIZE OF THEIR REQUIRED SLEEVES, COREDRILLS, BLOCKOUTS AND EMBEDDED ITEMS.
- a. 1. AT FLOOR SLABS AND WALLS TO BE CORE DRILLED OR CUT, CONTRACTOR SHALL FIND AND MARK ALL REINFORCING IN BOTH FACES LOCATED BY MEANS OF X-RAY, PACH-OMETER, OR PROF-OMETER. SUBMIT SKETCH SHOWING LOCATION OF REBAR AND PROPOSED CORES FOR REVIEW AND IMPLEMENTATION BY GENERAL CONTRACTOR.

1.6 SUBMITTALS

- A. PROJECT INFORMATION:
- CONTRACTOR'S APPROVED COORDINATION DRAWINGS.
- b. LETTER INDICATING ONE COPY OF APPROVED COORDINATION DRAWINGS AVAILABLE AT PROJECT SITE.
- c. ONE COPY OF APPROVED COORDINATION DRAWINGS TO THE OWNER/GENERAL CONTRACTOR FOR INFORMATION, IF REQUESTED.
- d. CONTRACTOR'S PROPOSED SLEEVE, COREDRILL AND BLOCKOUT LAYOUT

Date Description **Issued for Reivew** 04.15.2016 STATE UNIVERSITY OF NEW YORK

lient / Project

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Purchase, NY 10577

Southport Associates **Southport Engineering Associates, PC**

Tel.: (203) 431-6844 11 Bailey Avenue Fax: (203) 431-6877 Ridgefield, CT 06877



June. 7, 2016 M-1.215.44

Mechanical

Specifications

ARCHITECT P.C. AIA - LEED A.P. - NCARB

> 302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel.

DAVID A. TETRO

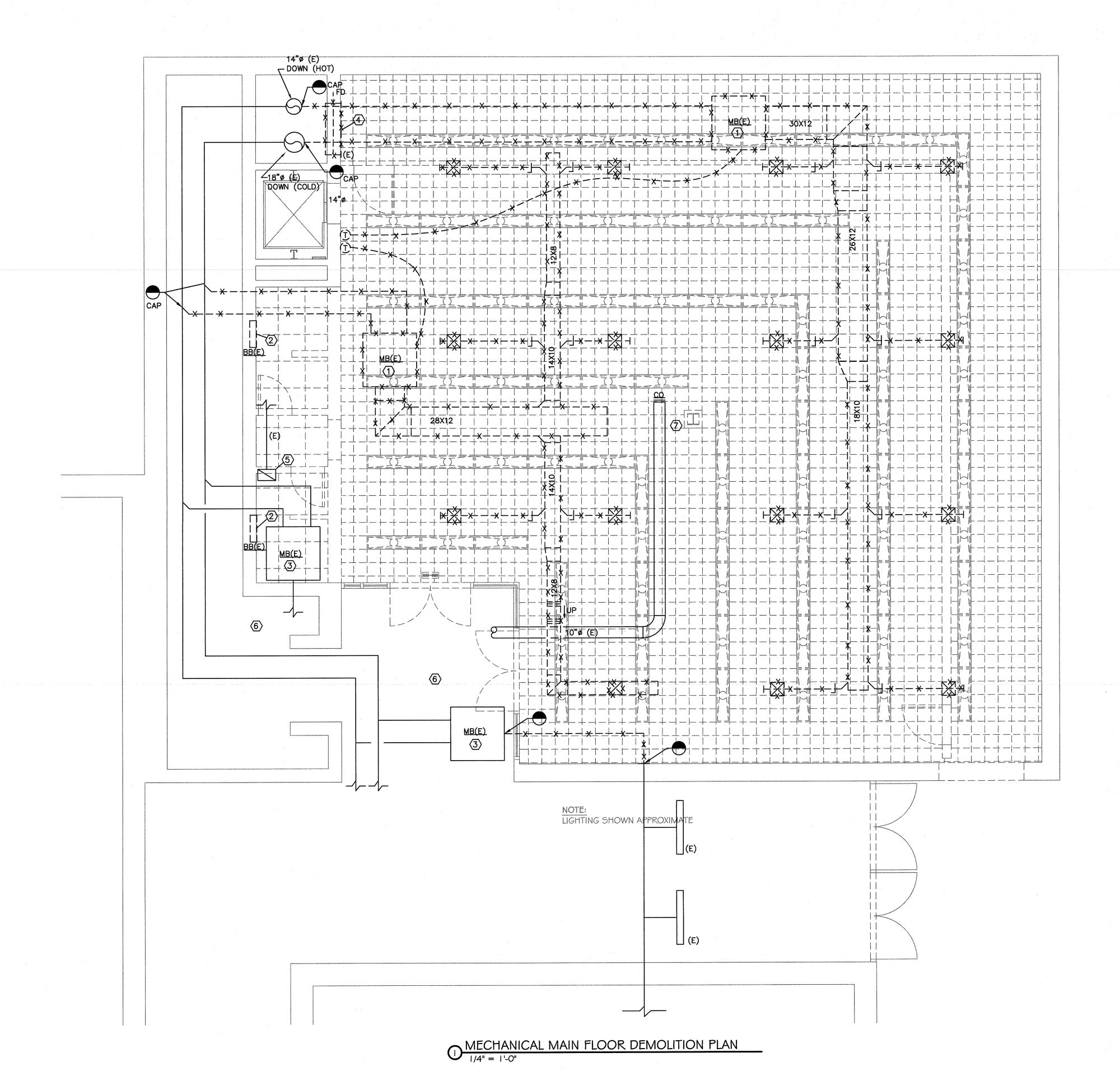




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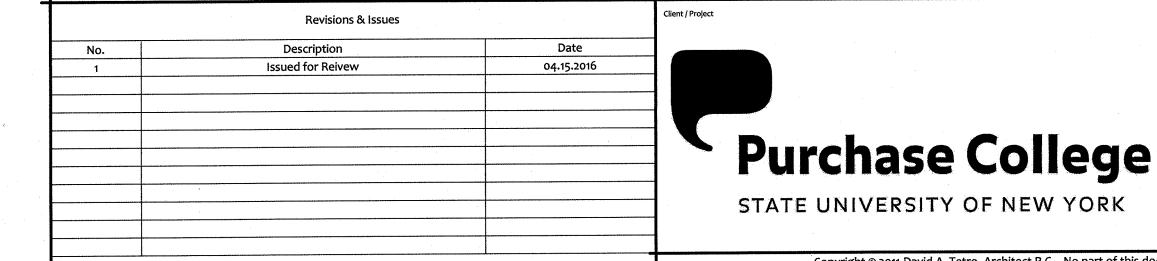


GENERAL NOTES - DEMOLITION LOWER LEVEL

1. REMOVE EXISTING DUCTWORK AND ASSOCIATED SPECIALTIES WHERE INDICATED ON DRAWINGS. REFER TO DWG M-300.00 FOR NEW SCOPE OF WORK.

DESIGN NOTES - DEMOLITION LOWER LEVEL

- (1) REMOVE EXISTING MIXING BOXES WHERE INDICATED INCLUDING ALL INTAKE DUCTWORK BACK TO MAIN AND CAP, DISCHARGE DUCTWORK AND SPECIALTIES, CIRCUITRY, SUPPORTS AND CONTROLS.
- (2) REMOVE EXISTING RECESSED HOT WATER CABINET HEATERS SERVING THE RESTROOMS AND ALL ASSOCIATED CONTROLS, REMOVE HOT WATER PIPING BACK TO FLOOR SLAB AND CAP.
- (3) EXISTING MIXING BOXES AND ASSOCIATED AIR DISTRIBUTION AND CONTROLS TO REMAIN.
- (4) REMOVE EXISTING RETURN GRILLE AND ASSOCIATED DUCTWORK AND SPECIALTIES THRU RATED ENCLOSURE AND REPAIR TO MATCH EXISTING. COORDINATE WITH ARCHITECT.
- (5) EXISTING EXHAUST DUCT THRU ROOF TO REMAIN
- (6) HVAC SCOPE OF WORK NOT REQUIRED ON THIS AREA.



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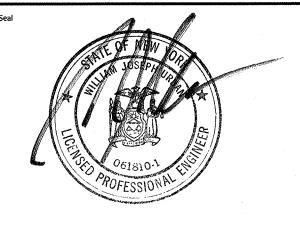
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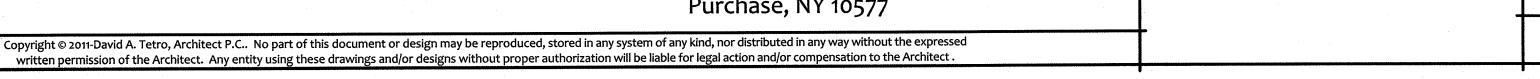
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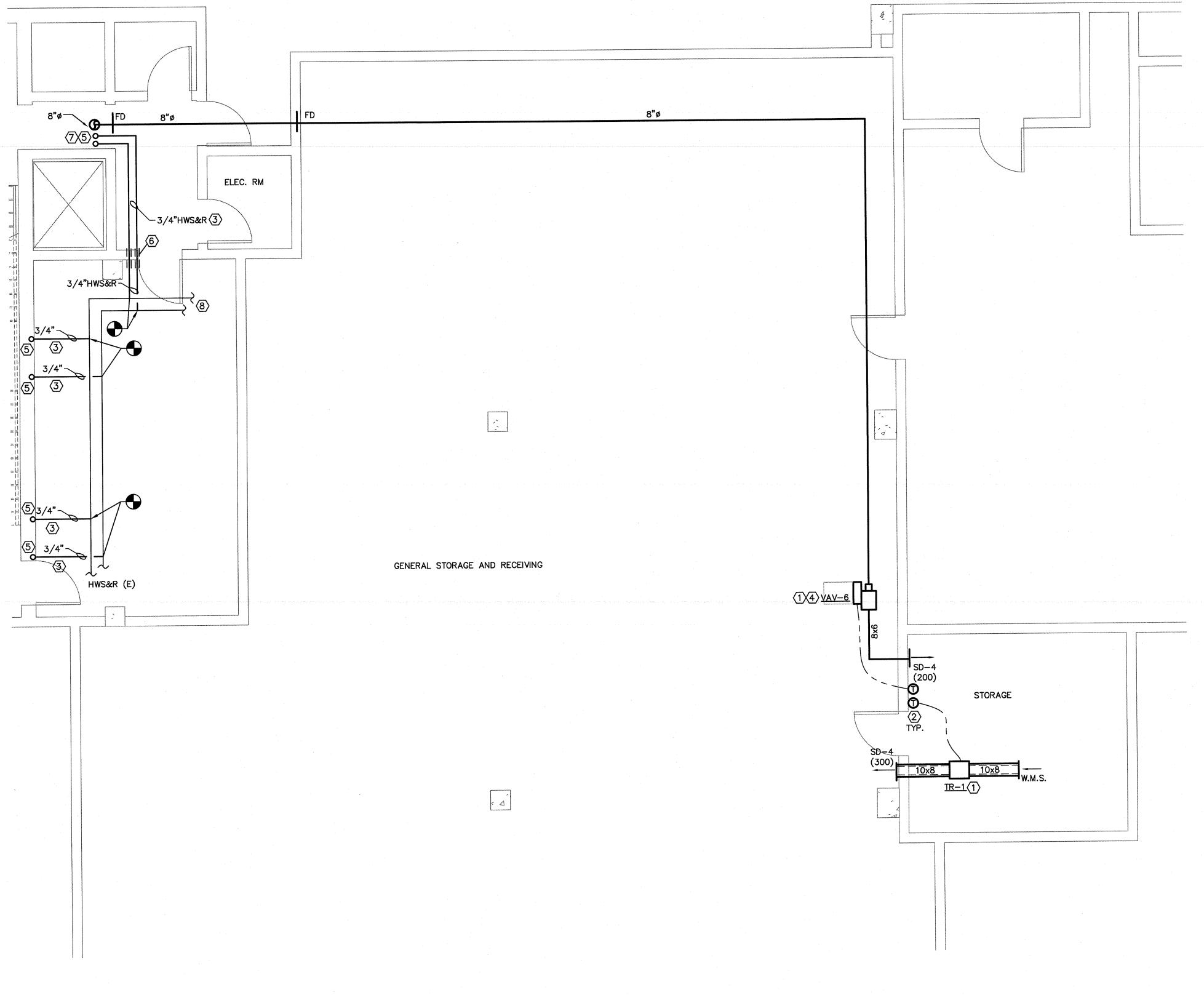
M-2.1

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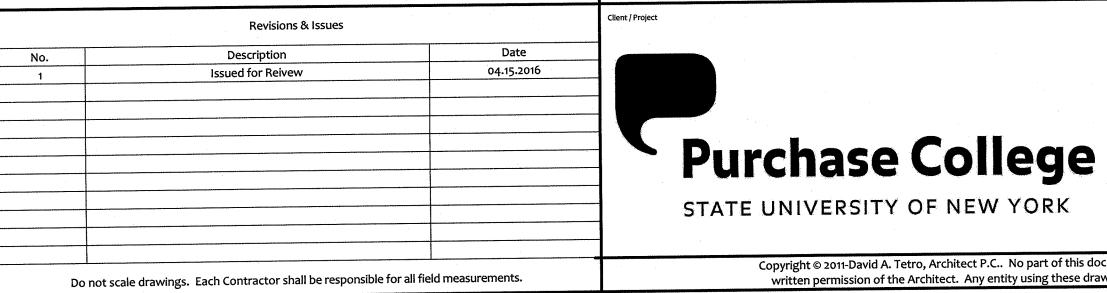
<u>GENERAL NOTES - NEW WORK</u>

EXISTING CEILING AREAS THAT SHALL BE REMOVED TO PERFORM MECHANICAL SCOPE OF WORK SHALL BE REPAIR TO MATCH EXISTING.

<u>DESIGN NOTES - NEW WORK</u>

- 1 BALANCE INDICATED VAV'S BOXES AND FAN TO THE AIR FLOWS SHOWN ON ITS RESPECTIVE SCHEDULE ON DWG M5.1.
- 2 PROVIDE NEW TEMPERATURE SENSOR WHERE INDICATED MINIMUM 48" ABOVE FINISHED FLOOR. COORDINATE FINAL LOCATION WITH ARCHITECT.
- ROUTE HWS&R PIPING TO ITS RESPECTIVE HYDRONIC HEATER TIGHT TO THE SLAB.
- PROVIDE VAV'S WITH MANUFACTURER RECOMMENDED MINIMUM MAINTENANCE CLEARANCE.
- 5 FOR CONTINUATION REFER TO DWG M3.2
- PROVIDE SLEEVES FOR PIPING ROUTED THRU IRE RATED WALL PENETRATIONS. PROVIDE FIRESTOP AS
- 7 FIREPROOFING PIPING THRU SHAFT ENCLOSURE.
- 8 EXISTING HW&R HEATING LOOP. COORDINATE SHUTDOWNS WITH OWNER.

MECHANICAL PARTIAL BASEMENT FLOOR PLAN - NEW WORK



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M-3.115.44

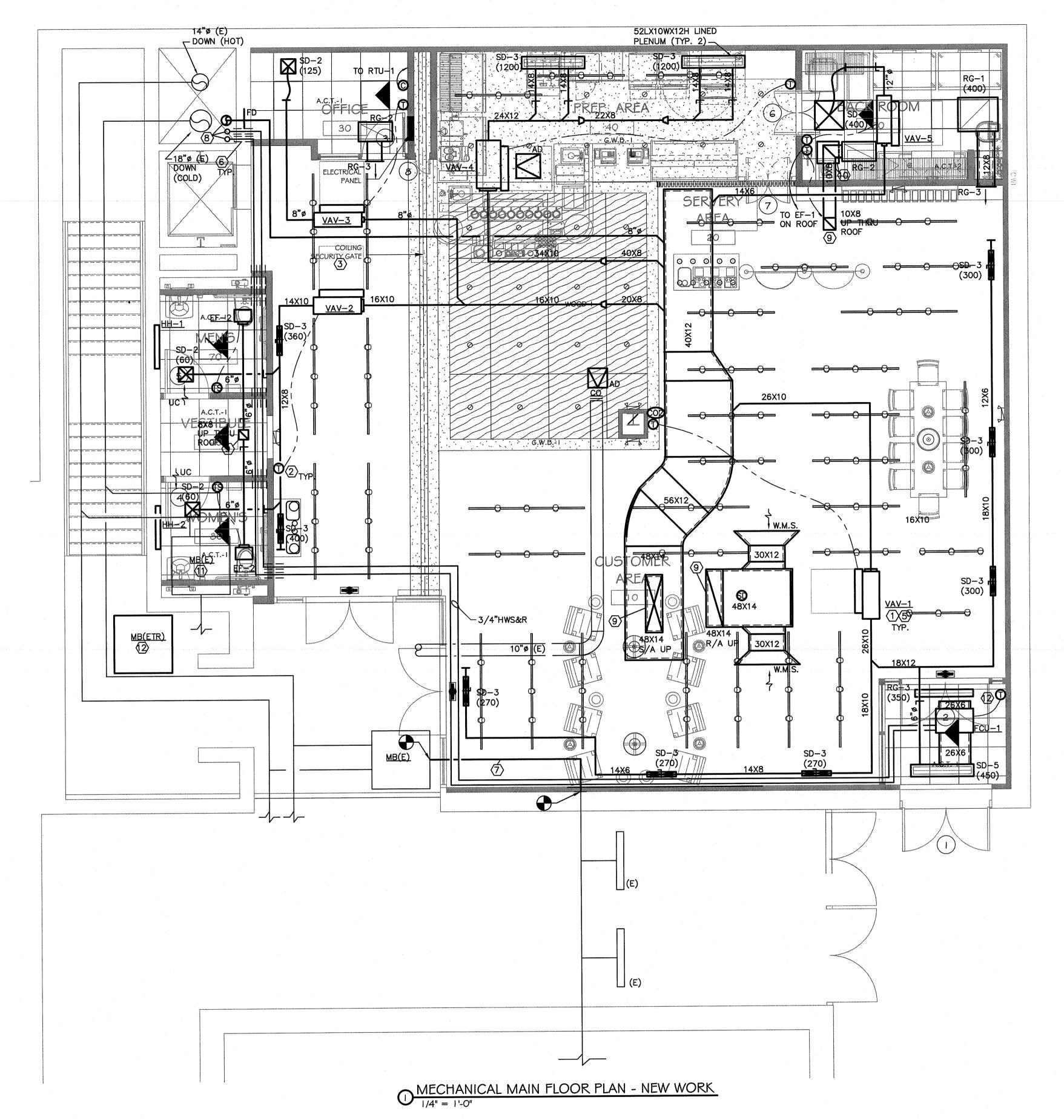
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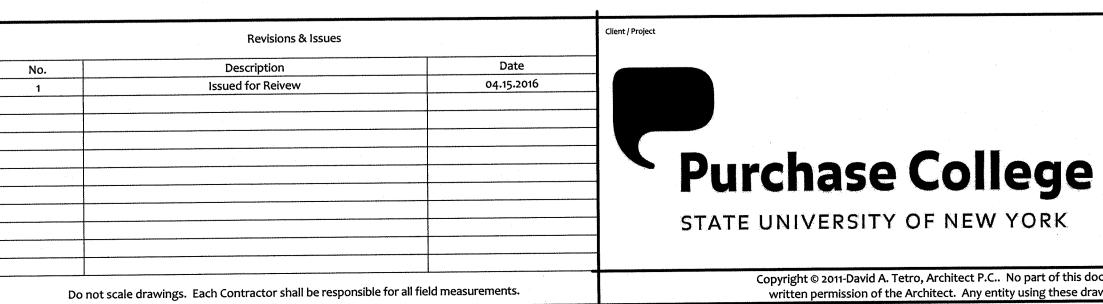


<u>GENERAL NOTES - NEW WORK</u>

- 1. PROVIDE LINED DUCTWORK TO NEW SUPPLY AND RETURN DUCTWORK FOR RTU AND VAV'S BOXES. ALL EXPOSED DUCTWORK SHALL BE INTERNALLY LINED. REFER TO DUCTWORK SPECIFICATIONS ON DWG M1.1 FOR ADDITIONAL INFORMATION.
- 2. EXISTING CEILING AREAS THAT SHALL BE REMOVED TO PERFORM MECHANICAL SCOPE OF WORK SHALL BE REPAIR TO MATCH EXISTING.
- 3. PROVIDE LINED PLENUM TO EACH LINEAR DIFFUSER WITH TAG "SD-3" FOR THE SIZES INDICATED.

<u>DESIGN NOTES - NEW WORK</u>

- BALANCE INDICATED RTU AND VAV'S BOXES TO THE AIR FLOWS SHOWN ON ITS RESPECTIVE SCHEDULE ON DWG M4.1.
- 2 PROVIDE NEW TEMPERATURE SENSOR WHERE INDICATED MINIMUM 48" ABOVE FINISHED FLOOR. COORDINATE FINAL LOCATION WITH ARCHITECT. PROVIDE TAMPER PROOF COVERS IF REQUESTED BY
- ROUTE HWS&R PIPING TO ITS RESPECTIVE AIR HEATER TIGHT TO THE SLAB.
- PROVIDE FLAT OVAL TAKE-OFF TRANSITION WHERE NEW OR EXISTING DUCT HEIGHT MATCH NEW DUCTWORK BRANCH SIZE.
- PROVIDE VAV'S WITH MANUFACTURER RECOMMENDED MINIMUM MAINTENANCE CLEARANCE.
- 6 PROVIDE SLEEVES FOR PIPING ROUTED THRU WALL PENETRATIONS AND FIREPROOFING THRU SHAFT ENCLOSURE.
- PROVIDE EXISTING MIXING BOX WITH NEW LINED SUPPLY DISCHARGE DUCTWORK WHERE INDICATED. SIZE TO MATCH EXISTING.
- FOR CONTINUATION REFER TO DWG M3.1
- (9) FOR CONTINUATION REFER TO DWG M3.3
- PROVIDE ALUMINUM DUCTWORK FOR DUCTWORK SERVING THE EF-1. PITCH DUCTWORK BACK TO 18X18 DRAIN PAN WHERE INDICATED. EXTEND DRAIN TO NEAR FLOOR DRAIN AND TERMINATE WITH 2" AIR
- PROVIDE AN ALTERNATE TO RELOCATE EXISTING MIXING BOX TO CORRIDOR, RECONNECT ALL ASSOCIATED UTILITIES (DUCTWORK, CONTROL, POWER) AND PROVIDE NEW ACCESS PANEL. CONFIRM NEW LOCATION WITH BUILDING ENGINEER AND FIELD
- PROVIDE THERMOSTAT WITH INSULATED BACK COVER.



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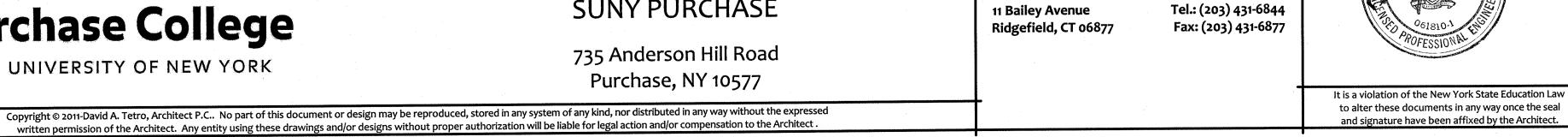
M-3.2

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Mechanical

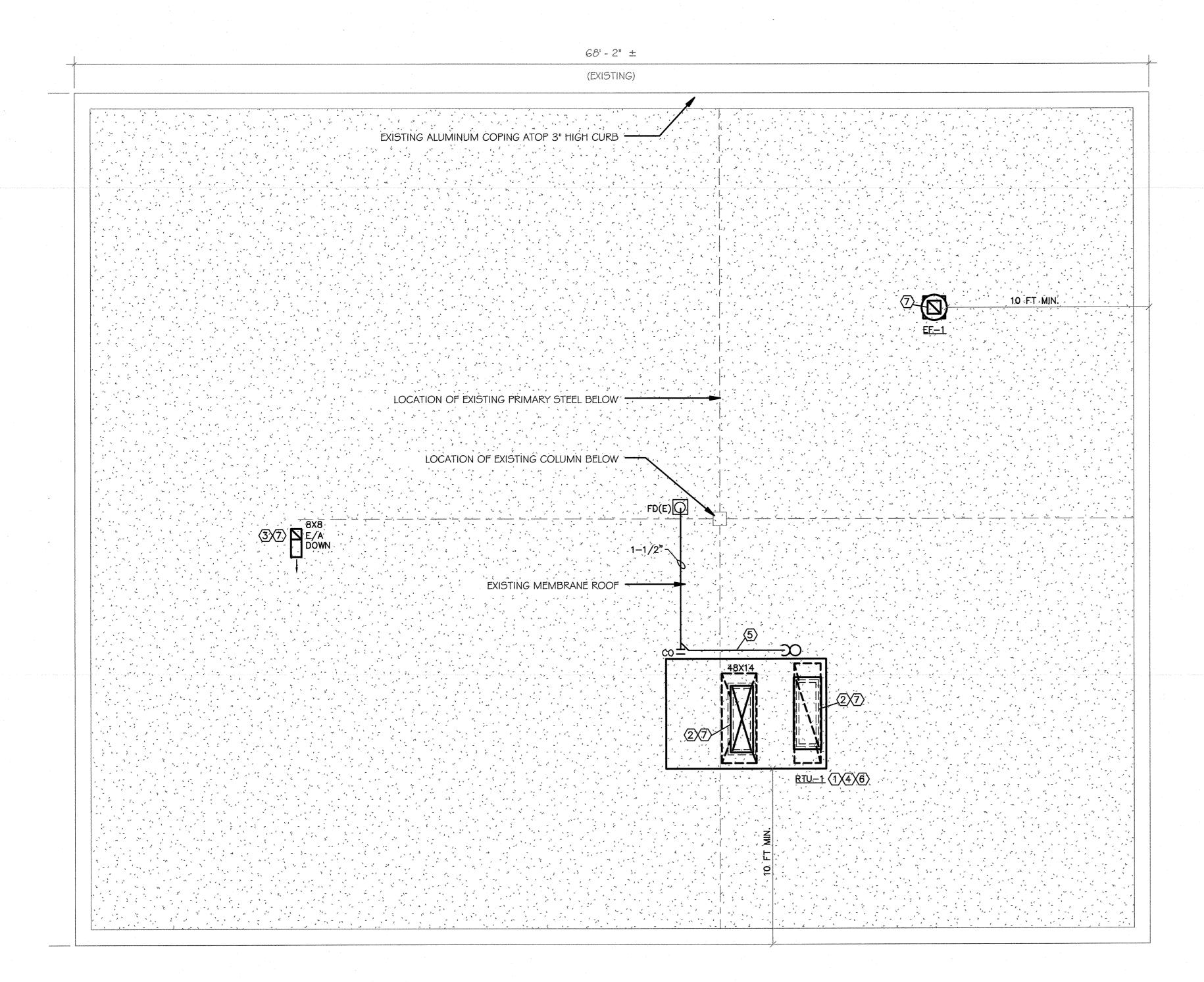






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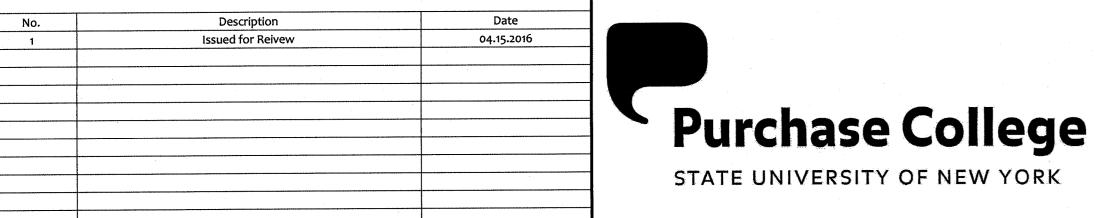


MECHANICAL MAIN FLOOR PLAN - NEW WORK

DESIGN NOTES - ROOF LEVEL

- RTU UNIT SHALL BE INSTALLED TO MAINTAIN MANUFACTURER RECOMMENDED MAINTENANCE CLEARANCE AND MINIMUM 10 FT FROM EDGE OF BUILDING. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 2 EXTEND DUCTWORK TO RTU-1, PROVIDE DUCT SUPPORT AND 2" INTERNAL INSULATION TO ALL EXPOSED DUCTWORK. REFER TO EXTERIOR DUCTWORK INSULATION SPECIFICATIONS ON DWG M1.1. PROVIDE GALVINIZED SHEETMETAL DUCT (G90) TO EXTERIOR DUCTWORK AND ALL JOINTS SHALL BE WATERPROOF. DUCT SUPPORTS SHALL BE PAINT WITH RUST RESISTANT PRIMER AND (2) COATS ENAMEL PRIOR TO INSTALL.
- (3) EXTEND EXHAUST DUCTWORK THRU ROOF AND TERMINATE WITH GOOSENECK. SEAL DUCT PENETRATION THRU ROOF WATER TIGHT. REFER TO DUCT PENETRATION THRU ROOF AND GOOSENECK DETAILS ON DWG M4.1
- 4 REFER TO STRUCTURAL DRAWINGS FOR RTU STEEL DUNNAGE PROVIDE AS-BUILTS SHOP DRAWINGS FOR ENGINEER APPROVAL PRIOR TO INSTALL.
- (5) EXTEND CONDENSATE PIPING TO ROOF DRAIN, FIELD VERIFY EXACT LOCATION AND TERMINATE WITH 2" AIR GAP.
- 6 CONTRACTOR SHALL TAKE SPECIAL PRECAUTION WHEN RIGGING HVAC UNIT TO ROOF. ADJACENT AREA AROUND BUILDING IS "PLAZA" AND IS RATED 30 PSF. RIGGER SHALL HIRE LICENSE STRUCTURAL ENGINEER TO REVIEW APPROACH TO PLACEMENT OF HVAC UNIT. SUBMIT DETAILED PLANS TO OWNERSHIP FOR APPROVAL PRIOR TO RIGGING HVAC UNIT.





Revisions & Issues

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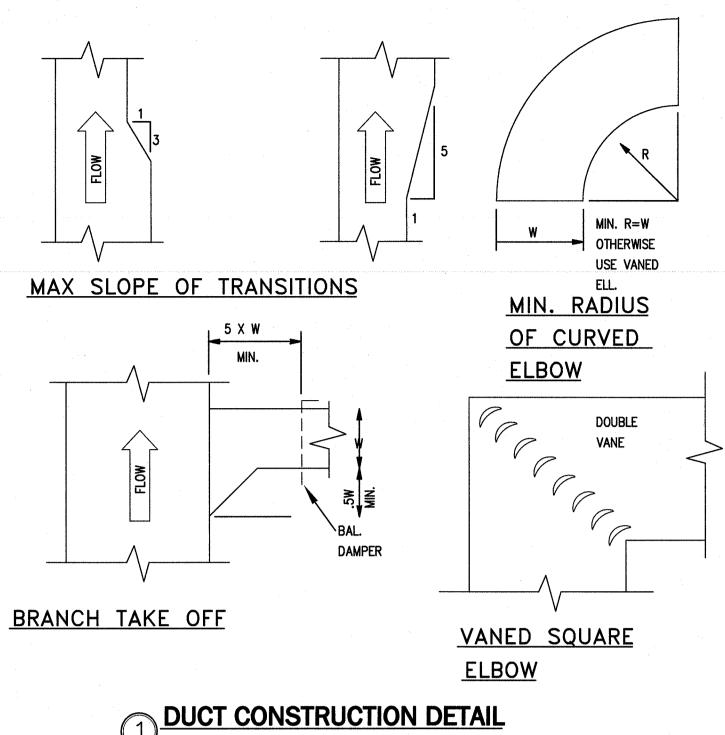
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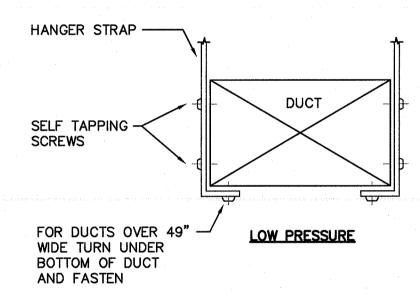
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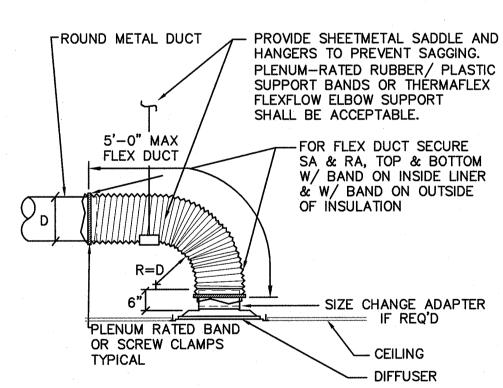


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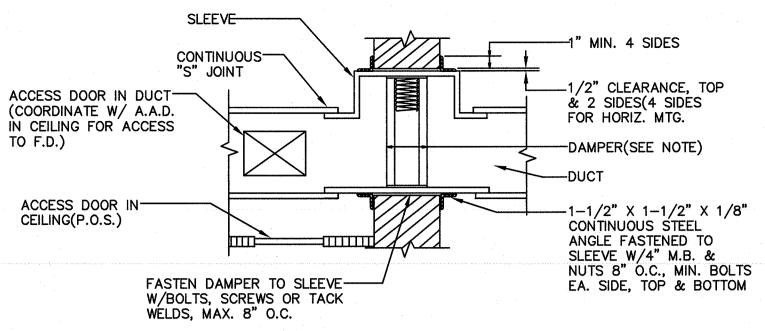




NETHOD OF HANIGING DUCTWORK SCALE: NONE



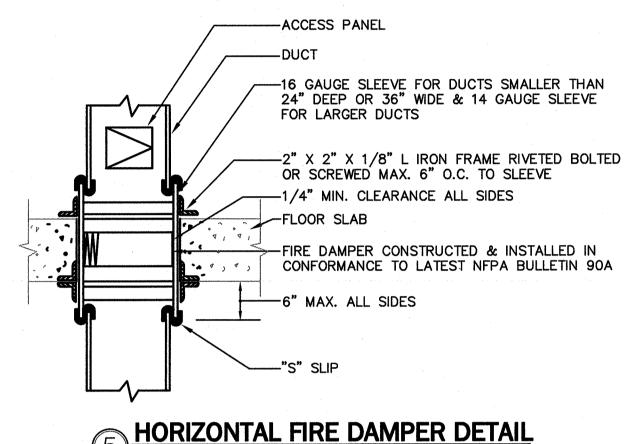
TYPICAL DIFFUSER CONNECTION DETAIL SCALE: NTS



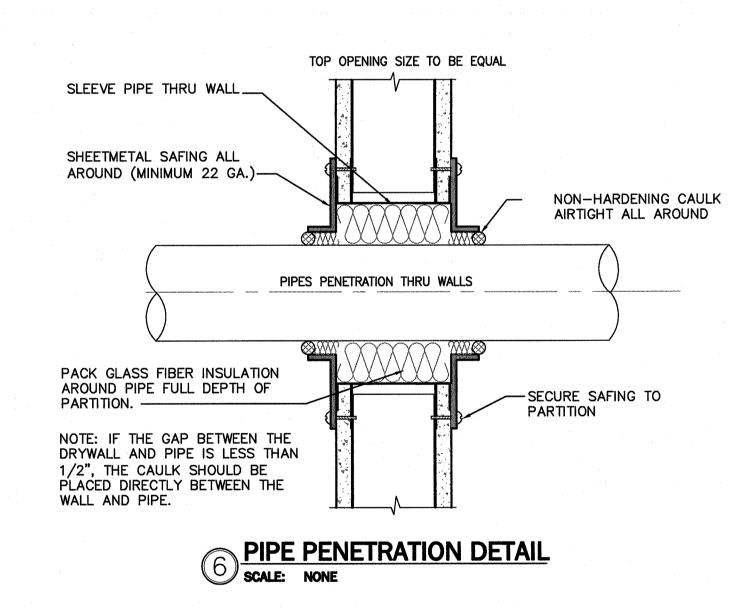
NOTES: 1. DAMPER STYLE & SLEEVE CONFIGURATION IS GOVERNED BY MAINTAINING A MAX. .06 STATIC PRESSURE @ 2500 F.P.M. FACE VELOCITY. 2. DEPTH OF DAMPER TO BE COORDINATED WITH WALL THICKNESS.

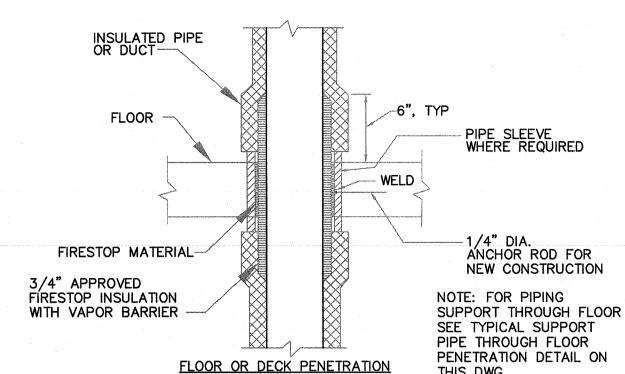
VERTICAL FIRE DAMPER DETAIL SCALE: NONE

3. INSTALLATIONS & MATERIALS PER U.L. 555.

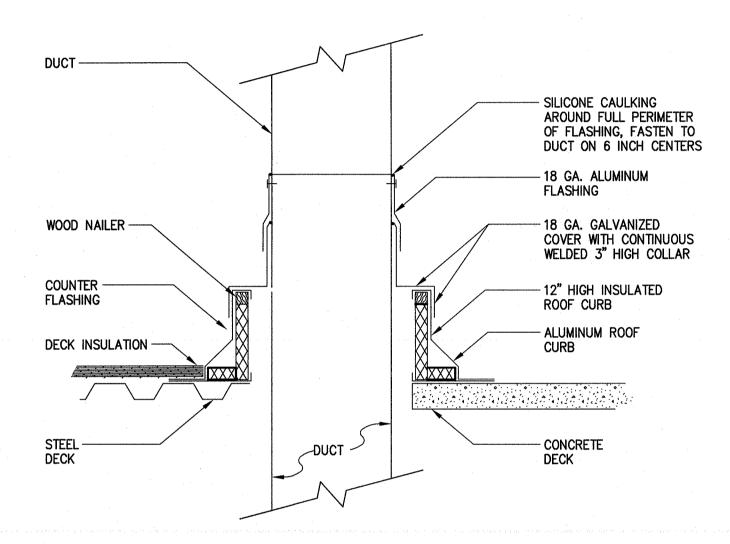


HORIZONTAL FIRE DAMPER DETAIL SCALE: NONE



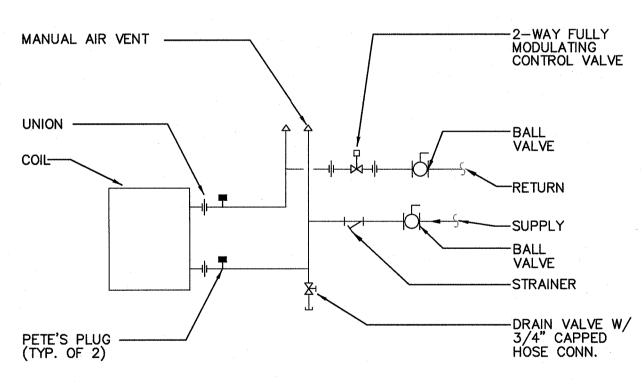


PIPE/DUCT PENETRATION OF FIRE BARRIERS SCALE: NONE



1. COORDINATE CURB STEP HEIGHT WITH ROOF DECK INSULATION THICKNESS

DUCT PENETRATION THROUGH ROOF DETAIL



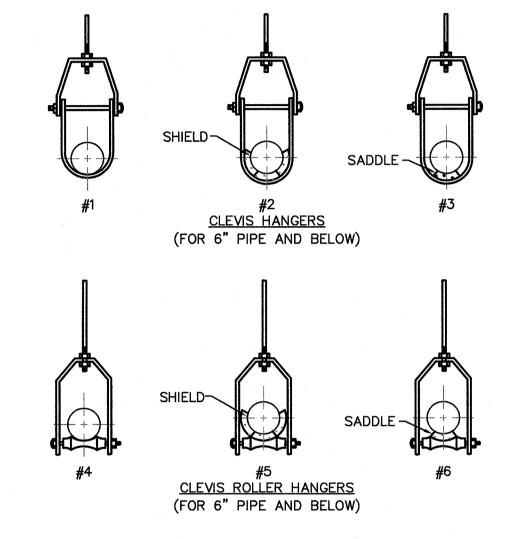
9 HOT WATER COIL DETAIL
SCALE: NONE

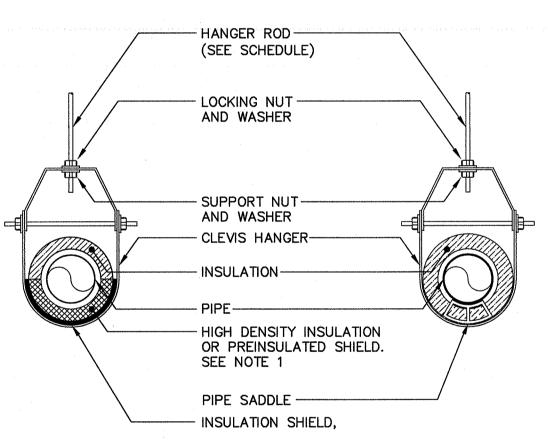
PIPE HANGER AND SUPPORT NOTES

- 1. PIPE SUPPORTS, ROD SPACING AND ROD SIZING SHALL COMPLY TO MSS-69.
- SHIELDS AND HIGH DENSITY INSULATION SHALL BE A MINIMUM OF 12" OR 1.5 PIPE DIAMETER WHICHEVER IS LONGER, MAXIMUM LENGTH OF SHIELD IS 24". SHIELDS THICKNESS 0.06 UP TO 6 INCH PIPE SIZE. 0.075" FOR LARGER

	HANGER ROL	SCHEDULE	HANGER ROD SPACING								
	PIPE SIZE	ROD SIZE	PIPE SIZE	MAX. SPACING							
	UP TO 2"	3/8" DIA.		1/2" to 1-1/4	7'						
	2 1/2" THRU 3"	1/2"		1 1/2"	9'						
	4 & 5"	5/8"		2" AND 3	10'						
,	6"	3/4"		4" AND 5	14'						
	8 THRU 12"	7/8"		6" AND 8	17'						
	LARGER SIZES	1"		LARGER	20'						

PIPE HANGER ROD SCHEDULE NOT TO SCALE





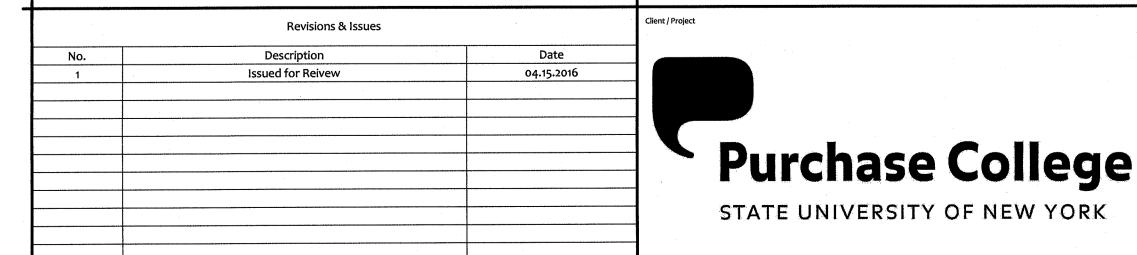
INSULATED PIPE SUPPORT DETAIL

CLEVIS HANGER SHOWN: INSTALLATION TYPICAL FOR ROLLER HANGERS AND TRAPEZE HANGERS.

June. 7, 2016

15.44

HIGH DENSITY REQUIRED FOR BOTTOM HALF FOR CLEVIS AND ROLLER HANGERS, AND ALL AROUND FOR TRAPEZE HANGERS. HIGH DENSITY INSULATION INSERT FOR COLD PIPING SHALL BE CELLULAR TYPE OR APPROVED FOR COLD USE. CALCIUM SILICATE SHALL BE USED FOR HOT PIPING.



Do not scale drawings. Each Contractor shall be responsible for all field measurements.

Sargo tea.

SUNY PURCHASE

735 Anderson Hill Road Purchase, NY 10577

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Southport Associates **Southport Engineering Associates, PC** 11 Bailey Avenue Tel.: (203) 431-6844 Ridgefield, CT 06877 Fax: (203) 431-6877



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Mechanical Details and

ISSUED FOR CONSTRUCTION

Schedulees

M-4.1

DAVID A. TETRO ARCHITECT P.C. AIA - LEED A.P. - NCARB

302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.com



	ROOFTOOP DX/ELECTRIC UNIT SCHEDULE																				
		·	AIR FLOW	DATA			COOLING CAPACITY				HEATING CAPACITY POWER EXHAUST				ELECTRICAL DATA					REMARKS	
TAG	SERVING	NOMINAL OL	JTDOOR AIR	ВНР	EXT SP	EAT F	EATF	LATF	TOTAL	SENSIBLE		TEMP		CFM	MOTOR	VOLTS/PH/Hz	MCA	МОСР	Filter	MANUFACTURER	
NO.		CFM	CFM		(IN. WG)	DB	WB	DB	MBH	MBH	KW	EAT°F	LAT °F		BHP				<u>.</u>	MODEL	
					·															·	
RTU-1	ARGO TEA	5600	2050	10.25	1.5	82.1	68.3	58	212	159	36	50	70	5,600	3.95	460/3	65	70	MERV 8	Trane / TDH210	1,2,3,4,5,6,7,8,9,10,11

NOTES: 1. Factory mount disconnect switch

2. Provide single point power connection 3. Low ambient control to 0°F

9. Provide unit with economizer

8. Provide unit with bacnet

4. Provide with hot gas bypass 5. Provide with CO2 override

10. Provide Manufacturer recommended VFD's 11. Provide powered convienence outlet

6. Provide hinged filter access door. 7. Provide Manufacturer recommended controller

MANUFACTURER SERIES/MODEL LOCATION DIM

1. Provide with Manufacturer recommended access door

2. Provide back only insulation

3. Provide bronze header 3/4" NPT w/Copper tube/Alum fins.

4. Provide 4" single end pocket

5. Provide stamped louvers pencil proof

FAN SCHEDULE																	
MARK	LOCATION	SERVES	AIRFLOW	TYPE	DRIVE	SP	RPM		MOTOR			SONES	CONTROL	MANUFACTURER	MODEL	REMARKS	
NO.			(CFM)			(in WG)		WATTS	HP	V	PH	Hz					
																<u> </u>	
EF-1	ROOF	STORAGE	300	DOWNBLAST	DIRECT	0.25	1725	-	VG-1/6	115	1	60	6.3	THERMOSTAT	GREENHECK	G-070	1,2,3
EF-2	CEILING	RESTROOMS	100	CEILING FAN	DIRECT	0.25	1100	52.5	-	115	1	60	1.3	TIMER SWITCH	GREENHECK	SP-A125	1,2,3,4,5,6
ASSESSMENT OF THE PARTY OF THE				,													
TR-1	CEILING	STORAGE	300	IN-LINE	DIRECT	0.25	1350	140	-	115	1	60	2	THERMOSTAT	GREENHECK	CSP-A390	1,2,3
								1		l							L
NOTES:																	

1. Provide with disconnect switch

3. Coordinate color with Architect.

5. Provide with frame and border type 2

4. Provide with Manufacturer single blade damper model AG-30

Do not scale drawings. Each Contractor shall be responsible for all field measurements.

2. Provide fan with backdraft damper

4. Provide Manufacturer recommended roof curb

5. Provide hinged curb cap with cablers field installed. 6. Provide curb seal

3. Provide fan with speed controller

SD-1 SUPPLY SURFACE MOUNT 155.20 24X24 6 30 ALUMNUM TITUS OMNI 1.2,3	SYMBOL	SERVICE	TYPE	CFM RANGE	FACE WIDTH X LENGTH	NUMBER OF SLOTS	PLENUM HEIGHT	INLET SIZE SQUARE OR ROUND	N.C. @ MAX CFM	MATERIAL	MANUFACTURER	MODEL	REMARKS
205-300 24X24 -				0-150	24X24	-	-	6	30				
SD-2 SUPPLY	SD-1	SUPPLY	SURFACE MOUNT	155-200	24X24	-		6	30	ALUMINUM	TITUS	OMNI	1,2,3
SD-2 SUPPLY LAY-IN 0-150 12X12 6 30 ALUMINUM TITUS OMNI 1,2,3				205-300	24X24	-	-	8	.1				
SD-2 SUPPLY LAY-IN 0-150 12X12 6 30 ALUMINUM TITUS OMNI 1,2,3 SD-3 SUPPLY SURFACE MOUNT 0-150 12X3 30 ALUMINUM TITUS CT-580 4 155-250 12X5				305-450	24X24	-	-						
SD-3 SUPPLY SURFACE MOUNT 0-150 12X3 30 ALUMINUM TITUS CT-580 4 155-250 12X5				450-600	24X24	-	-	12	30			***************************************	
155-250 12X5	SD-2	SUPPLY	LAY-IN	0-150	12X12	***************************************		6	30	ALUM INUM	TITUS	OMNI	1,2,3
255-300 12X6	SD-3	SUPPLY	SURFACE MOUNT		I	**	-		30	ALUM INUM	TITUS	CT-580	4
305-450 24X4					1		*****************************					***************************************	
SD-4 SUPPLY SURFACE MOUNT 0-200 8x6 - - - 30 ALUMINUM TITUS 301FL 1,2,3					1					***************************************			
SD-4 SUPPLY SURFACE MOUNT 0-200 8x6 30 ALUMINUM TITUS 301FL 1,2,3 205-450 12x8		*******************************			.l		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			***************************************	••••••		
205-450 12X8				2400	48X6						The same of the sa		
DDED 22X6	SD-4	SUPPLY	SURFACE MOUNT	0-200	8x6	***************************************	-	_	30	ALUM INUM	TITUS	301FL	1,2,3
SD-5 SUPPLY LAY-IN 0-150 48X2-1/2 - - - 30 ALUMINUM TITUS CT-580 5 RG-1 RETURN LAY-IN - 24X24 - - - 30 ALUMINUM TITUS TDC 1,3 RG-2 RETURN LAY-IN 0-300 24X12 - - - 30 ALUMINUM TITUS 355RL 1,3 RG-3 TRANSFER SIDEWALL - 12X8 - - - 30 ALUMINUM TITUS 300RL 1,3		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			<u> </u>						~~~	***************************************	
RG-1 RETURN LAY-IN - 24X24 30 ALUMINUM TITUS TDC 1,3 RG-2 RETURN LAY-IN 0-300 24X12 30 ALUMINUM TITUS 355RL 1,3 RG-3 TRANSFER SIDEWALL - 12X8 30 ALUMINUM TITUS 300RL 1,3				DDED	22X6	***************************************						***************************************	
RG-2 RETURN LAY-IN 0-300 24X12 30 ALUMINUM TITUS 355RL 1,3 RG-3 TRANSFER SIDEWALL - 12X8 30 ALUMINUM TITUS 300RL 1,3	SD-5	SUPPLY	LAY-IN	0-150	48X2-1/2	***************************************	_	-	30	ALUM INUM	TITUS	CT-580	5
RG-3 TRANSFER SIDEWALL - 12X8 30 ALUMINUM TITUS 300RL 1,3	RG-1	RETURN	LAY-IN		24X24	•			30	ALUM INUM	TITUS	TDC	1,3
	RG-2	RETURN	LAY-IN	0-300	24X12		-	-	30	ALUMINUM	TITUS	355RL	1,3
NOTE TO THE PROPERTY OF THE PR	PC 2	TRANCER	SIDEWALL		12X8		-	-	30	ALUMINUM	TITUS	300RL	1.3
RG-4 RETURN LAY-IN - 48X2-1/2 30 ALUMINUM TITUS CT-580 5	<u> </u>	IKANSFER	SIDEVVALL		12/0	***************************************	***************************************		ļ				
	RG-4	RETURN	LAY-IN	*	48X2-1/2	***************************************	-	-	30	ALUMINUM	TITUS	CT-580	5

	Revisions & Issues		Client / Project
No.	Description	Date	
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			Purchase College
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			STATE UNIVERSITY OF NEW YORK

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735 Anderson Hill Road Purchase, NY 10577

Southport Engineering	Associates, PC
11 Bailey Avenue	Tel.: (203) 431-684
Ridgefield, CT 06877	Fax: (203) 431-687

Southport	Associates
Southport Engineering	Associates, PC
11 Bailey Avenue	Tel.: (203) 431-6844
Ridgefield, CT 06877	Fax: (203) 431-6877
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	Project No.:
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•	Sheet Title:

M-5.1

Mechanical

Schedulees

ISSUED FOR CONSTRUCTION

DAVID A. TETRO ARCHITECT P.C. AIA - LEED A.P. - NCARB

www.DavidTetroArchitect.co

02 Lewis Avenue	
orktown Heights, NY 10598	
14.962.3113 - tel.	
14.962.3393 - fax	
tdesign@verizon.net	
www.DavidTetroArchitect.com	100

												•
		A STATE OF THE STA			HYDRONIC H	EATER SCHE	DULE			-		
TAG	MANUFACTURER	SERIES/MODEL	LOCATION	DIMENSIONS			HEATING CAPACITY	,			-	-
									AVG. WATER	AIR FLOW HIGH		
					вти/н	GPM	WATER PD/FT	ROWS	TEMP.	CFM	FILTER	REMARKS
HH-1/HH-2	BEACON/MORRIS	FWG-A / 436-18	RECESSED WALL	36Lx4-13/16Dx18H	2500	0.5	0.16	_	160		_	1,2,3,4,5
NOTES:						<u> </u>						
	1. Provide with Manu	facturer recommend	ed access door									

											-			
				HOT \	NATE	R FAN	COI	L UN	IT SCH	HEDUL	E		neconomical services.	
					FAI	MOTOR			HE	ATING CAF	PACITY			REMARKS
TAG	MAKE	MODEL	CFM	SPEED	WATTS	EXT. SP	VOLT	PH	TOTAL MBH	FLOW (GPM)	LAT (°F)	COIL ROWS	FILTER	
FCU-1	IEC	CPY-04	350	MED	165	0.35	115	1	28	2	95	1	1" THROAWAWAY	1,2,3,4
NOTES:		The state of the s		44				4 4 4				THE STATE OF THE S		мона клифия, монаримомумочного положено положена положена на кл
	1	DE MANUF					toward the state of the state o	Account to the second second	ALCONOMICS CONTRACTOR AND		1			
	2. PROVI	DE CONTRO	OL VALVE	PIPING	PACKAG	E INCLUI	DING TV	VO WA	Y VALVE	, 2-BALL	VALVES W	ITH 24 VOLT	ACTUACTORS AND A	UTO CIRCUIT SETTE

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

MANUFACTURER & MODEL

TITUS - DESV

2. MOUNTING BRACKETS TO ACCEPT ALL-THREAD HANGING RODS AND VIBRATION INSULATION HANGERS AND SEISMIC RESTRAINTS

5.PROVIDE ELECTRIC HEATERS INTERLOCK DISCONNECT, MAGNETIC CONTACTORS AND MANUAL RESET THERMAL CUTOOF

3. CONTRACTOR SHALL CONFIRM FAN COIL UNIT PIPING CONFIGURATION PER FIELD CONDITIONS.

SYMBOL

VAV-1

VAV-2

VAV-3

VAV-4

VAV-5

VAV-6

3. PROVIDE STERI-LOC LINING

4. CONTROLS BY CONTROLS CONTRACTOR

7. PROVIDE AUTO RESET THERMAL CUTOFFS

4. PROVIDE HIGH STATIC ECM MOTOR

8. PROVIDE AIRFLOW SAFETY SWITCH

NOTES:

SERVES

SEE DWG'S

SEE DWG'S

SEE DWG'S

SEE DWG'S

SEE DWG'S

SEE DWG'S

1. PROVIDE 7'-0" OF ACOUSTICAL LINING DOWNSTREAM OF ALL TERMINAL BOXES

6. PROVIDE ELECTRIC HEATER CONTROL TRANSFORMER FOR DDC CONTROLS

DAMPER & AIR VALVE DATA

CFM RANGE MIN P.D INLET

MIN MAX (IN W.G.) SIZE

400 0.09

720 1800 0.095

360 900 0.116

50 125 0.03

840 2400 0.1

60 200 0.04

ELECTRIC HEATER

208/3

115/1

KW VOLT/PH

14 7.0 208/3 3

16 8.0 208/3 3

10 3.5

0.5

1.5

No. OF

MAX NC | REMARKS

30 1.2.3.4

30 1.2.3.4

30 1.2.3.4

30 1.2.3.4

30 1.2.3.4

CONTROL SPECIFICATION

1.0 GENERAL

1.1 WORK INCLUDED

- A. THE WORK INCUDES INSTALLATION OF DIRECT DIGITAL CONTROLS AS SPECIFIED IN THESE SPECIFICATIONS AND ON FLOW AND CONTROL DIAGRAMS ON DRAWING M6.1 AND AS NOTED ON OTHER PROJECT DRAWINGS. OTHER CONTROLS WORK SHALL INCLUDE:
- B. INTERNET INTERFACE AND SYSTEM MANAGER FOR PROGRAM AND DATA STORAGE AND COMMUNICATIONS INTERFACE.
- C. BACNET INTERFACE (OR OTHER APPROVED INTERFACE) TO RTU.
- D. LOW AND LINE VOLTAGE WIRING.

1.2 DIRECT DIGITAL CONTROLS

A. BASE BID: PROVIDE LOCAL CONTROLLER TO EACH SYSTEM AND ASSOCIATED INTERFACE CONTROLS AS INDICATED ON THE SEQUENCE OF OPERATION THIS PAGE.

1.3 GENERAL REQUIREMENTS

- A. DIRECT DIGITAL CONTROLLERS (DDCS) WHICH ALLOW CUSTOM PROGRAMMING SHALL BE USED FOR ALL CONTROL APPLICATIONS. UNITARY CONTROLLERS, APPLICATION SPECIFIC CONTROLLERS AND CONTROLLERS WHICH LIMIT THE NUMBER OF CONTROL LOOPS AND FUNCTIONS SHALL NOT BE USED.
- B. A MINIMUM OF 2 SPARE POINTS OF EACH TYPE SHALL BE INSTALLED IN NEW DDC CONTROLLERS. WHERE A DDC PANEL(S) IS INSTALLED WITHIN A CONTRACTOR SUPPLIED ENCLOSURE THE ENCLOSURE MUST BE SIZED TO ALLOW THE ADDITION OF AT LEAST ONE POINT EXPANSION MODULE.
- C. IDENTIFY ALL EQUIPMENT INTERNAL TO PANEL AND FACE MOUNTED WITH LABELS TO MATCH APPROVED SHOP DRAWINGS.
- D. THE CONTRACTOR SHALL WARRANTY THE CONTROLS TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER
- E. THE OWNER SHALL NOT BE RESTRICTED IN THE USE AND MODIFICATIONS OF ALL SOFTWARE INSTALLED FOR THIS PROJECT. COPYWRITING OR OTHER RESTRICTIONS, BY THE CONTRACTOR, ON THE ACCESS, BY THE OWNER, TO THE INSTALLED SOFTWARE SHALL BE PROHIBITED.

1.4 SUBMITTALS

- A. SUBMIT THREE HARD COPIES AND ONE SOFT COPY (PDF) OF THE SUBMITTALS INDICATED BELOW. INDICATE AT THE BEGINNING OF EACH SUBMITTAL, KNOWN SUBSTITUTIONS AND DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS.
- B. SHOP DRAWING SUBMITTALS TO INCLUDE SUFFICIENT DATA TO INDICATE COMPLETE COMPLIANCE WITH CONTRACT DOCUMENTS. SUBMISSIONS IN FORM OF DRAWINGS, BROCHURES, BULLETINS, CATALOG DATA, CONTROL PROGRAMMING AND SEQUENCE OF OPERATIONS. DRAWING SIZE, 11" X 17"
- C. FINAL CALIBRATION, COMMISSIONING AND TESTING REPORTS.
- D. PREPARE AS-BUILT DRAWINGS UPON COMPLETION OF THE PROJECT. AS-BUILT DRAWINGS TO INCLUDE POINT-TO-POINT WIRING, AND INDICATE ALL EQUIPMENT LOCATIONS.

2.0 PRODUCTS

2.1 SENSORS AND CONTROL DEVICES

A. GENERAL

- 1. PROVIDE SENSORS AND CONTROL DEVICES AS INDICATED ON DEVICE SCHEDULE PLANS, CONTROL DIAGRAMS AND AS REQUIRED TO MEET SPECIFIED PERFORMANCE.
- 2. ALL COMPONENTS OF SENSORS EXPOSED TO PROCESS SHALL BE RATED TO WITHSTAND 150 PERCENT OF MAXIMUM PROCESS TEMPERATURE AND PRESSURE.

B. TEMPERATURE SENSORS

- 1. TEMPERATURE SENSOR ACCURACY SHALL NOT EXCEED ±1.0°F
- 2. OUTSIDE AIR SENSORS SHALL BE MOUNTED ON A NORTHERN EXPOSURE AND MOUNTED WITHIN A VENTILATED ENCLOSURE.
- 3. IMMERSION SENSORS SHALL BE PROVIDED WITH A SEPARABLE STAINLESS STEEL OR BRASS WELL.
- C. CURRENT RELAY: SHALL BE SPLIT CORE, ADJUSTABLE SETPOINT, CURRENT SENSING RELAY WITH SPDT OUTPUT CONTACTS

2.2 SOFTWARE

- A. GRAPHICS: EACH SYSTEM CONTROLLED SHALL HAVE A UNIQUE GRAPHIC.
- B. HISTORICAL TRENDING: ALL SYSTEM POINTS EITHER REAL OR CALCULATED SHALL BE ASSIGNABLE TO THE HISTORICAL TRENDING PROGRAM.

3.0 EXECUTION

3.1 LOCATION OF EQUIPMENT

- A. THE DRAWINGS AND SPECIFICATIONS DESCRIBE APPROXIMATE LOCATIONS OF THE WORK. VERIFY ALL LOCATIONS IN THE FIELD.
- B. LOCATE EQUIPMENT AND ACCESSORIES SO AS TO PROVIDE EASY ACCESS FOR PROPER SERVICE AND MAINTENANCE.
- C. DIRECT DIGITAL CONTROLLERS AND FIELD EQUIPMENT PANELS SHALL BE LOCATED IN THE VICINITY OF THE EQUIPMENT CONTROLLED IN MECHANICAL, ELECTRICAL AND UTILITY ROOMS IN APPROVED LOCATIONS.
- D. DDCS AND FEPS SHALL NOT BE LOCATED DIRECTLY UNDERNEATH VALVES OR OTHER AREAS WHERE THEY MAY BE SUBJECT TO WATER OR HEAT DAMAGE. IN ADDITION, PANELS SHALL BE MOUNTED WITH THE BOTTOM NO LOWER THAN 3 FEET AND TOP NO HIGHER THAN 7 FEET ABOVE THE FLOOR, WITH A MINIMUM OF 3 FEET DEEP BY 2.5 FEET WIDE FOOT CLEARANCE AT THE FRONT.

3.2 INSTALLATION OF WIRING

- A. PROVIDE CONTROL WIRING FOR CONTROL DEVICES. MONITORING DEVICES. INSTRUMENTATION, AND INTERLOCKS AS REQUIRED FOR A COMPLETE
- B. RUN ALL WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AUTHORITIES AND CODES HAVING JURISDICTION. ALL WIRING WITHIN BOILER ROOM AND PUMP ROOMS, AND OTHER EXPOSED AREAS TO BE INSTALLED
- C. PROVIDE SLEAVES FOR WIRING THROUGH FIRE RATED WALLS AND FLOORS. FIRESTOP TO MAINTAIN WALL AND FLOOR RATINGS.
- D. WIRING LESS THAN 50 VOLTS SHALL NOT BE RUN IN THE SAME RACEWAY WITH WIRING GREATER THAN 50 VOLTS.

120V OR GREATER VOLTAGE WIRING, THHN 600V INSULATED WIRING SHALL

- E. WHERE LOW VOLTAGE WIRING IS INSTALLED WITHIN AN ENCLOSURE WITH
- F. USE GREENFIELD FOR FINAL CONNECTIONS TO VALVES, MOTORS, ETC.

BE USED FOR WIRING LOW VOLTAGE.

- G. CONNECTIONS FROM DDC CONTROLLER TO ITS FIELD DEVICES SHALL BE WITH BARRIER TYPE TERMINAL STRIPS.
- H. CONDUITS SHALL BE SEALED WHERE SUBJECT TO MOISTURE AND CONDENSATION SUCH AS CONNECTION TO COLD WATER VALVE ACTUATORS, COOLING TOWERS, OUTSIDE WALLS AND EQUIPMENT IN UNCONDITIONED
- I. COLOR CODE OR NUMBER ALL CONTROL WIRING. CODING SHALL CORRESPOND WITH CODING SHOWN ON THE APPROVED TEMPERATURE CONTROL SYSTEM DRAWINGS.
- J. ALL WIRES IN HVAC UNIT CONTROL CABINETS, PANELS, BOXES, ETC., SHALL BE NEATLY ARRANGED. TIED WHERE NECESSARY AND LEFT WITH SUFFICIENT SLACK FOR EASE OF SERVICING. WIRES SHALL BE NEATLY GROUPED AND BUNDLED. FOR WIRING BUNDLES WITH 20 OR MORE CONDUCTORS RUN IN PANDUIT OR APPROVED PLASTIC WIREWAYS WITH SNAP-ON COVERS. SEPARATE TERMINAL BLOCKS SHALL BE INSTALLED FOR 120 VOLT A.C. WIRING AND FOR LOW LEVEL SIGNAL WIRING. TERMINAL BLOCKS SHALL BE 300 VOLT RATED, MEDIUM DUTY, CHANNEL MOUNTED, WITH NUMBERED MARKING STRIPS. SPLICES USING "WIRE NUTS" OR OTHER METHODS SHALL NOT BE PERMITTED.
- K. CONTROLS TRANSFORMERS SHALL HAVE SERVICE SWITCHES AND BE FUSED ON THE HIGH VOLTAGE SIDE.

3.3 INSTALLATION OF SENSORS AND CONTROL DEVICES

- A. EACH DDC, UC, AND CONTROL DEVICE, FIELD OR PANEL MOUNTED, SHALL BE IDENTIFIED BY A NAMEPLATE PERMANENTLY ATTACHED TO ITS ENCLOSURE (1/4" HIGH LETTERS MINIMUM). IDENTIFIERS SHALL MATCH RECORD DOCUMENTS.
- B. PROVIDE CAPPED TEST PORTS ON BOTH PORTS OF PRESSURE AIR AND WATER TRANSDUCERS.
- C. CURRENT SENSORS SHALL BE SET AT APPROXIMATELY 75% OF THE NORMAL OPERATING AMPS.

A. THE CONTRACTOR SHALL GIVE INSTRUCTION IN THE ADJUSTMENT, OPERATION AND MAINTENANCE, INCLUDING PERTINENT SAFETY REQUIREMENTS, OF THE EQUIPMENT AND SYSTEM INSTALLED. THREE TRAINING SESSIONS SHALL BE PROVIDE WITH A MINIMUM OF 8 HOURS

3.5 CALIBRATION AND COMMISSIONING

A. PERFORM COMMISSIONING CONSISTING OF FIELD I/O CALIBRATION AND COMMISSIONING, SYSTEM PROGRAM COMMISSIONING, AND SEASONAL COMMISSIONING. DOCUMENT ALL COMMISSIONING INFORMATION ON COMMISSIONING DATA SHEETS THAT SHALL BE SUBMITTED PRIOR TO ACCEPTANCE TESTING.

3.6 AUTOMATIC CONTROL PROGRAMS AND SEQUENCES

A. GENERAL

- 1. ALL CONTROL AND ALARM FUNCTIONS WHICH USE ANALOG POINTS TO SWITCH EQUIPMENT ON AND OFF (E.G., FANS.) MUST BE PROGRAMMED WITH DEAD BANDS, TIME DELAYS, MINIMUM ON AND ON TIME FUNCTIONS AND/OR OTHER FUNCTIONS TO PREVENT SHORT CYCLING OF EQUIPMENT AND NUISANCE ALARMS.
- 2. DEGRADED MODE: IF, BY FAILURE OF ANOTHER DDC, SENSOR OR SYSTEM COMPONENT WHICH CAUSES INFORMATION CRITICAL TO A DDC'S PROGRAM TO BE LOST, DEFAULT VALUES OR SUBROUTINES WILL AUTOMATICALLY BE USED TO APPROXIMATE CRITICAL INFORMATION TO ENSURE CONTINUED CONTROL.
- 3. WHERE HEATING AND COOLING IS AVAILABLE TO A TEMPERATURE CONTROL ZONE THE ZONE SHALL BE PROVIDED WITH A MINIMUM OF 5 DEGREE DEADBAND BETWEEN OPERATION OF HEATING AND COOLING SUPPLIED TO THE ZONE (EXCEPTION: LOW OR HIGH LIMIT CONTROL FUNCTIONS).

B. RTU-1 AND VAV BOXES:

1. REFER TO CONTROL DIAGRAM THIS PAGE.

C. HYDRONIC HEATER. (HH-1 THRU HH-3)

1. THE HEATER SHALL BE ENABLE BY ITS DEDICATED THERMOSTAT, THE CONTROL VALVE SHALL OPEN TO MAINTAIN SPACE SETPOINT, UPON SETPOINT ITS ACHIEVE THE CONTROL VALVE SHALL CLOSE.

D. EXHAUST FAN (EF-1)

Client / Project

1. EXHAUST FAN EF-1 SHALL BE INTERLOCKED TO WASHER MACHINE.

I. EXHAUST FANS (EF-2/EF-3)

1. EXHAUST FAN EF-5 SHALL BE ENABLE START/STOP BY ITS DEDICATED TIMER SWITCH.

DEVICE SCHEDULE DESCRIPTIONS

THE FOLLOWING DEVICE SCHEDULE IDENTIFIES THE MINIMUM MONITORING AND CONTROL DEVICE REQUIREMENTS. ADDITIONAL HARDWARE AND SOFTWARE REQUIRED TO PERFORM THE AUTOMATIC CONTROL SEQUENCES AND PROVIDE A COMPLETE WORKING CONTROL SYSTEM SHALL BE INCLUDED BY THIS CONTRACTOR WITHOUT ADDITIONAL COST.

DO - DIGITAL OUTPUT DI- DIGITAL INPUT

AO - ANALOG OUTPUT AOP - ANALOG OUTPUT - PNEUMATIC

AI - ANALOG INPUT CALC - CALCULATED POINT

POINT FUNCTIONS - INDICATES THE MINIMUM REQUIRED FMCS PROCESSING AND ALARM FUNCTIONS.

PRF (PROOF ALARM) — IF THE STATUS OF THE CONTROLLED DEVICE DOES NOT MATCH THE COMMANDED STATE OF THE DEVICE, AFTER ANS ADJUSTABLE TIME DELAY, A PROOF ALARM SHALL BE ANNUNCIATED AT THE OPERATORS TERMINAL.

TERMINAL.

ALM (ALARM) - WHENEVER THE POINT CHANGES FROM THE NORMAL STATE AN ALARM SHALL BE ANNUNCIATED AT THE OPERATORS

HA (HIGH ALARM) - WHENEVER THE POINT VALUE EXCEEDS THE HIGH ALARM LIMIT AN ALARM SHALL BE ANNUNCIATED AT THE OPERATORS TERMINAL.

LA (LOW ALARM) - WHENEVER THE POINT VALUE FALLS BELOW THE LOW ALARM LIMIT AN ALARM SHALL BE ANNUNCIATED AT THE OPERATOR'S TERMINAL.

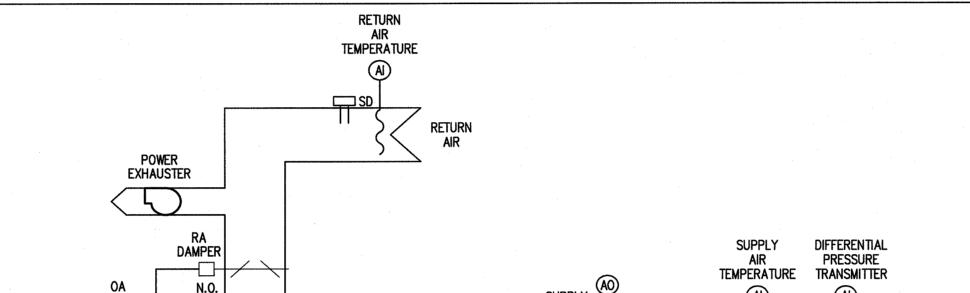
DEV (SETPOINT DEVIATION ALARM) — IF THE MEASURED VARIABLE OF A CONTROL LOOP DEVIATES FROM THE SETPOINT BY A PRESET OFFSET FOR MORE THAN A PRESET TIME LIMIT A DEVIATION ALARM SHALL BE ANNUNCIATED AT THE OPERATOR'S TERMINAL.

RT (RUN HOURS) - TOTALIZE THE HOURS OF OPERATION OF THE CONTROLLED DEVICE. WHEN THE TOTAL HOURS EXCEEDS A HIGH LIMIT VALUE AN ALARM SHALL BE ANNUNCIATED AT THE OPERATOR'S

TOT (TOTAL) - TOTALIZE THE CUMULATIVE VALUE OF THE POINT (I.E., CUMULATIVE FLOW FROM A FLOW METER POINT).

PA (PULSE ACCUMULATE.) - COUNT A PULSED DIGITAL SIGNAL AND CALCULATE AN EQUIVALENT ANALOG VALUE.

CALC (CALCULATE) - CALCULATE VALUE FROM OTHER POINT INFORMATION.

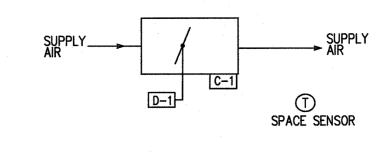


TEMPERATURE CONTROL: THE REFRIGERANT CIRCUIT (DX COOLING COIL/COMPRSSOR/CONDENSER) AND THE ELECTRIC HEATER IN THE UNIT SHALL FUNCTION TO MAINTAIN A SUPPLY AIR DISCHARGE TEMPERATURE SETPOINT WITH RESET BASED ON RETURN TEMPERATURE

SMOKE DETECTOR: WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, THE UNIT WILL SHUTOFF AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE EXHAUST FANS ASSOIATED WITH THE UNIT SHALL BE TURNED OFF

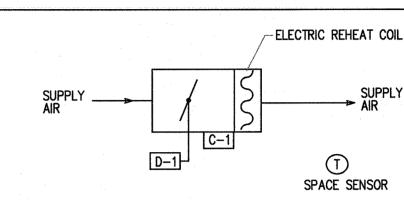
DDC CONTROLS FOR THE ASSOCIATED VAV BOXES/CO2 SENSORS SHALL BE PROVIDED BY EMCS VENDOR

SCHEMATIC CONTROL DIAGRAM FOR VARIABLE AIR VOLUME RTU-1



ROOM THERMOSTAT SHALL CONTROL DAMPER OPERATOR FOR VARIABLE VOLUME TERMINAL UNIT. ON A DROP IN ROOM TEMPERATURE BELOW THE SET POINT, ROOM THERMOSTAT, THRU DDC CONTROLLER, SHALL REDUCE THE AIR FLOW TO THE ROOM TO THE UNIT

VAV AIR TERMINAL UNIT (COOLING ONLY)



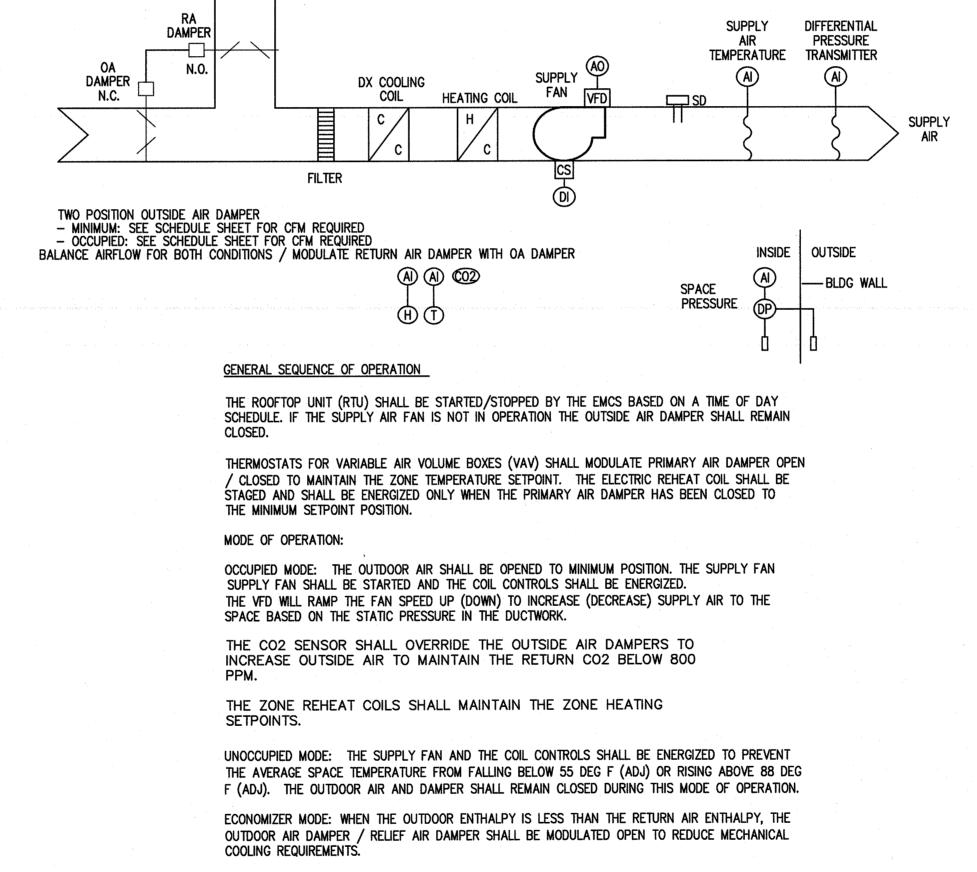
THE VAV BOX FAN SHALL BE ENERGIZED FROM THE EMCS TO "OCCUPIED" MODE. THE VAV BOXES CONTROL ACTION SHALL BE INDEXED TO HEATING OR COOLING VIA SIGNAL FROM THE EMCS. THE CONTROL ACTION OF THE BOX SHALL REVERSE

ROOM THERMOSTAT SHALL CONTROL DAMPER OPERATOR FOR VARIABLE VOLUME TERMINAL UNIT. ON A DROP IN ROOM TEMPERATURE BELOW THE SET POINT, ROOM THERMOSTAT, THRU DDC CONTROLLER, SHALL REDUCE THE AIR FLOW TO THE ROOM TO THE UNIT MINIMUM SETTING.

WHEN THE SPACE TEMPERATURE CALLS FOR HEAT AFTER THE PRIMARY AIR DAMPER IS CLOSED TO MINIMUM FLOW, CONTROL SHALL THEN PASS THROUGH THE TEMPERATURE DEAD BAND. WHEN THE SPACE TEMPERATURE HAS DROPPED THROUGH THE TEMPERATURE DEAD BAND THE ELECTRIC REHEAT COIL SHALL BE ENERGIZED ONE STEP AT A TIME TO MAINTAIN THE HEATING SETPOINT.

WHEN IN THE "UNOCCUPIED MODE", DAMPER "D-1" SHALL BE AT MIN. WHEN THE SPACE TEMPERATURE CALLS FOR HEAT, THE VAV BOX FAN SHALL CYCLE THROUGH AN ADJUSTABLE DEADBAND, AND ELECTRIC REHEAT COIL SHALL BE ENERGIZED, ONE STEP AT A TIME TO MAINTAIN THE HEATING SETPOINT.

VAV AIR TERMINAL UNIT WITH ELECTRIC REHEAT



Description 04.15.2016 Issued for Reivew

Revisions & Issues

Do not scale drawings. Each Contractor shall be responsible for all field measurements.

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SUNY PURCHASE

735 Anderson Hill Road Purchase, NY 10577

Southport Associates **Southport Engineering Associates, PC**

11 Bailey Avenue

Ridgefield, CT 06877

Tel.: (203) 431-6844 Fax: (203) 431-6877

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Mechanical Controls

June. 7, 2016

15.44

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M-6.1

ARCHITECT P.C. AIA - LEED A.P. - NCARB **302 Lewis Avenue** Yorktown Heights, NY 10598

DAVID A. TETRO

914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.co





PLUMBING SPECIFICATIONS

- 1. GENERAL
- 1.1. SCOPE OF WORK
- A. FURNISH ALL MATERIALS, PRODUCTS, ACCESSORIES, TOOLS, LABOR AND OTHER ITEMS NECESSARY TO COMPLETE THE WORK SPECIFIED HEREIN AND SHOWN ON DRAWINGS OR NECESSARY FOR A COMPLETE AND WORKABLE SYSTEM.
- B. INSTALL COLD WATER, HOT WATER, SANITARY AND VENT SERVICES TO FIXTURES AS SPECIFIED BY ARCHITECT AND SHOWN HEREIN. MODIFY EXISTING SERVICES AS REQUIRED. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE TYPES AND EQUIPMENT SUPPLIED BY OTHERS.
- C. THE CONTRACTOR SHALL PERFORM ALL CUTTING, DEMOLISHING, REMOVAL, DISPOSAL, PATCHING, SEALING, RESTORATION ALL ELSE REQUIRED TO COMPLETE THE PLUMBING INSTALLATION.
- D. DEVICES MUST BE INSTALLED BY LICENSED MASTER PLUMBER

1.2 REQUIREMENTS

- A. THE CONTRACTOR SHALL VISIT THE SITE, PRIOR TO SUBMITTING A PROPOSAL, AND CAREFULLY EXAMINE THE SYSTEMS AND AREAS OF THE BUILDING AFFECTED BY THIS WORK SO AS TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND DIFFICULTIES THAT MAY AFFECT THE EXECUTION OF THE WORK.
- B. SUBMISSIONS OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. WILL NOT BE RECOGNIZED.
- C. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK CITY BUILDING CODE, THE CONSTRUCTION POLICIES AND GENERAL BUILDING RULES OF THE BUILDING OWNER INCLUDING, BUT NOT LIMITED TO, USE OF ELEVATOR, DUMPSTER, DRILLING. AND WORK WITHIN OTHER TENANT'S SPACE, ETC, AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
- D. ALL UTILITY SHUT DOWNS SHALL BE SCHEDULED WITH BUILDING OWNER.
- E. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM THE FIELD VERIFICATION. ALL LOCATIONS, CONNECTIONS AND DIMENSIONS SHALL BE
- F. CONTRACTOR SHALL COMPLY WITH BUILDING'S GENERAL CONDITIONS, SUPPLEMENTAL GENERAL CONDITIONS AND SPECIAL CONDITIONS DOCUMENTS. THESE WILL APPLY TO ALL TRADES ON THE PROJECT. CONTRACTORS WILL FAMILIARIZE THEMSELVES WITH THESE DOCUMENTS AND COMPLY WITH ALL PROVISIONS.
- 1.3 PERMITS, FEES AND INSPECTION
- A. THE CONTRACTOR SHALL PAY ALL FEES, TAXES, OBTAIN ALL PERMITS AND APPROVALS, FILE THE REQUIRED DOCUMENTS AND CAUSE ALL PLUMBING AND SPECIAL INSPECTIONS TO TAKE
- 1.4 SHOP DRAWINGS AND SUBMITTALS
- A. SHOP DRAWINGS OF THE FOLLOWING (5 COPIES) SHALL BE SUBMITTED TO THE OWNER PROJECT REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION:
- 1. PIPING MATERIALS, JOINTS AND FITTINGS.
- BACKFLOW PREVENTORS, SUPPORTS AND APPURTENANCES
- . VALVES AND ACCESSOROES. 4. DIMENSIONAL PIPING LAYOUT, COORDINATED WITH ALL OTHER TRADES.
- 5. VALVE TAGS AND NAME PLATES WITH SCHEDULE AND LOCATION.
- B. REPRODUCIBLE RECORD DRAWINGS SHOWING ALL WORK SHALL BE SUBMITTED TO THE OWNER AT THE COMPLETION OF THE WORK.
- C. PROOF INSPECTION AND APPROVAL, SHOP DRAWINGS, OPERATING AND MAINTENANCE MANUALS, SCHEDULES AND ALL OTHER PERTINENT INFORMATION SHALL BE FILED WITH THE BUILDING MANAGER BEFORE WORK IS ACCEPTED.
- 1.5 UNLESS OTHERWISE SPECIFIED, THE MOST RECENT VERSIONS OF THE FOLLOWING CODES AND STANDARDS APPLY AND ARE MADE A PART OF THIS SPECIFICATION:
- NYC BUILDING CODE/2014.
- NEW YORK STATE DEPARTMENT OF HEALTH CROSS CONTROL CONNECTION
- NEW YORK CITY DEP SUPPLEMENT TO THE NEW YORK STATE DEPARTMENT OF HEALTH'S HANDBOOK FOR CROSS CONNECTION CONTROL
- NYC PLUMBING CODE/2014.
- NATIONAL ELECTRICAL CODE (NEC)/2005.
- NYC MECHANICAL CODES/2014
- UNDERWRITER'S LABORATORIES. INC. (UL).
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
- NYC FUEL GAS CODES/2014.
- OSHA FEDERAL STANDARDS
- AMERICAN WELDING SOCIETY (AWS).
- AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM).
- 1.6 ASBESTOS
- CONTRACTOR SHALL NOTIFY OWNERS REPRESENTATIVE IF HE ENCOUNTERS ANY MATERIAL SUSPECTED OF CONTAINING ASBESTOS.
- PART 2.0 PRODUCTS (FURNISH ONLY THOSE DEVICES AS SPECIFIED IN APPROVED NYC DEP DRAWINGS.)

2.1 PIPE MATERIALS

Revisions & Issues

Do not scale drawings. Each Contractor shall be responsible for all field measurements

- A. WASTE AND VENT PIPING SHALL BE TYLER HUBLESS CAST IRON PIPE WITH NO HUB FITTINGS CISPI 301. FITTINGS SHALL BE RUBBER NEOPRENE SLEEVE WITH STAINLESS STEEL SHIELD AND CLAMPS ASTM A564.
- B. DOMESTIC HOT AND COLD WATER PIPING SHALL BE HARD DRAWN SEAMLESS TYPE L COPPER TUBING, ASTM B88 WITH WROUGHT COPPER FITTINGS, ANSI B16.22 AND BRIDGIT NO LEAD CONTENT SOLDER JOINTS ASTM B32-83 ALLOY GRADES SN96 OR SB5. SOLDER FLUX LEAD CONTENT-ZERO PERCENT

lient / Project

- C. ALL EXPOSED PIPING SHALL BE CHROME PLATED CAST BRASS.
- D. DIELECTRIC FITTINGS MUST BE USED AT JOINTS CONNECTING DISSIMILAR METAL PIPE OR VALVE
- E. ROUTE PIPING IN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE, AND MAINTAIN SPECIFIED GRADIENTS.
- F. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
- G. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION, AND ACCESS TO VALVES AND
- H. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN AT ALL LOW POINTS WITH 3/4" MINIMUM DRAIN VALVES AND CAPS.
- I. ALL PRESSURIZED PIPING SYSTEM COMPONENTS TO BE RATED FOR A MINIMUM OF 150 PSI
- J. ALL NEW PIPING MUST BE TESTED. LEAK TEST SHALL BE CONDUCTED ON ALL PIPING SYSTEMS PRIOR TO FINAL CONNECTIONS TO EQUIPMENT OR APPLYING INSULATION OR CONCEALING. TEST SHALL BE CONDUCTED IN THE PRESENCE OF REPRESENTATIVE OF THE OWNER AND AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR IS TO CAP OFF OR ISOLATE ALL NEWLY INSTALLED PIPING AND HYDRAULICALLY PRESSURE TEST NEW PIPING AT 150 PERCENT OF THE SYSTEMS WORKING PRESSURE OR 100 PSI, WHICH EVER IS GREATER. TEST PRESSURE SHALL BE MAINTAINED FOR TWO (2) HOURS WITH NO DROP IN PRESSURE. THE CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS TO SERVICES, INSTRUMENTS, PUMPS AS NECESSARY FOR TESTING.

2.2 VALVES AND PIPING SPECIALTIES

- A. GATE AND GLOBE VALVES SHALL NOT BE INSTALLED WITH THE STEM POINTING DOWNWARDS. VALVES MAY BE INSTALLED WITH THE STEM AT OR ABOVE A HORIZONTAL PLANE. PROVIDE ADEQUATE CLEARANCE FOR STEM RISE.
- B. CHECK VALVES MAY BE INSTALLED EITHER IN THE HORIZONTAL OR VERTICAL POSITION. NON-SPRING LOADED CHECK VALVES SHALL ONLY BE INSTALLED IN THE VERTICAL POSITION WHEN THE FLOW IS UPWARDS.
- C. PROVIDE ALL VALVES WITH A 1-1/2" DIAMETER BRASS TAG HAVING 1/2" HIGH BLACK FILLED NUMBERS AND 1/4" HIGH LEGEND ABOVE, AS MANUFACTURED BY SETON OR ACCEPTED
- D. ALL VALVES AND SPECIALTIES SHALL BE SO PLACED AS TO PERMIT EASY OPERATION ANDALL VALVES SHALL BE OF A DESIGN WHICH THE MANUFACTURER LISTS FOR THE SERVICE AND SHALL BE OF MATERIALS ALLOWED BY THE LATEST EDITION OF THE ASME CODE FOR PRESSURE PIPING FOR THE PRESSURE AND TEMPERATURE CONTEMPLATED, UNLESS A HIGHER GRADE OR QUALITY IS HEREIN SPECIFIED. ALL VALVES SHALL BE OF THE SAME MANUFACTURER, EXCEPT FOR SPECIAL APPLICATIONS.
- E. EACH VALVE SHALL HAVE THE MAKER'S NAME OR BRAND, THE FIGURE OR LIST NUMBER AND THE GUARANTEED WORKING PRESSURE CAST ON THE BODY AND CAST OR STAMPED ON THE BONNET, OR SHALL BE PROVIDED WITH OTHER MEANS OF EASY IDENTIFICATION.
- F. PROVIDE LINE-SIZE BLOW-OFF VALVES AT ALL STRAINERS, AND WHERE SHOWN ON THE DRAWINGS.
- G. PROVIDE TAMPER SWITCHES ON ALL CONTROL VALVES TO FIRE PROTECTION SYSTEMS.

H. GATE VALVES:

2-1/2" AND ABOVE:

CLASS 125, OUTSIDE SCREW AND YOKE, IRON BODY, BRONZE TRIM, (IBBM), RISING STEM, SOLID BRONZE WEDGE DISC UP TO SIZE 3-1/2" AND CAST IRON WITH BRONZE WEDGE FACE RINGS IN LARGER SIZES, NON-ASBESTOS PACKING, FLANGED ENDS.

MANUFACTURERS:

- 1) NIBCO F-617-0.
- 2) MILWAUKEE F-2885 ACCEPTED EQUIVALENT.
- I. BALL VALVES
- 1. CITY WATER SYTEM: ALLOWED ONLY FOR SHUT-OFF, NOT FOR BALANCING SERVICE. PROVIDE 3 INCH STEM EXTENSIONS FOR INSULATED LINE.
- 2. PORTING: NO REDUCED PORTS SHALL BE ACCEPTABLE IN ANY BALL VALVE. 3. UP TO 2":
- A. CLASS 150, 400/600 PSI WOG, FULL PORT, THREE PIECE CONSTRUCTION, BLOWOUT-PROOF STEM, NON-ASBESTOS PACKING, BRONZE BODY, SILICONE BRONZE STEM, BRONZE/ BRASS/CHROME PLATED BALL, TEFLON RESILIENT SEAT, AND EPDM O RING SEAL.
- B. MANUFACTURERS:
- 1) NIBCO T/S-595-Y. HAMMOND 8604/8601.
- 3) MILWAUKEE BA-300SS/350S. 4) ACCEPTED EQUIVALENT.

2.3 HANGERS, ANCHORS AND SUPPORTS

- A. ATTACHMENTS TO STRUCTURE FOR ALL NEW AND MODIFIED PIPING TO BE SUPPORTED BY SUPPLEMENTARY STRUCTURAL STEEL CONNECTED TO STRUCTURAL BEAMS. PROVIDE ALL REQUIRED SUPPLEMENTARY STEEL.
- B. ATTACHMENTS FOR OTHER PIPING 2" AND SMALLER WITH LOADS ONLY UP TO 250 LBS. IS TO BE ACCOMPLISHED BY DRILLED-IN EXPANSION SHIELD TYPE ANCHORS.
- C. HANGERS FOR COPPER PIPING SHALL BE COPPER PLATED.
- D. BUILDING FIRE PROOFING SHALL BE RESTORED WHERE DISTURBED.
- E. DO NOT HANG PIPING FROM HANGERS FOR OTHER TRADES.
- F. PIPE HANGERS SHALL BE OF THE CLEVIS OR PIPE ROLL TYPES, EXCEPT WHERE OTHERWISE
- G. HANGER RODS SHALL BE GALVANIZED STEEL. HANGER ROD SHALL BE GALVANIZED AND NOT EXCEED 6 FEET IN LENGTH. SUPPLEMENTARY STEEL SHALL BE PROVIDED AS NECESSARY. PROVIDE ROD DIAMETERS AS FOLLOWS:

PIPE SIZE	HANGER SPACING	ROD DIAMETER
2" AND BELOW 2-1/2" AND 3"	8' 10'	3/8" 1/2"
4" AND 5"	15'	5/8"

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H. WHERE PIPING IS RUN NEAR THE FLOOR AND NOT HUNG FROM THE CEILING CONSTRUCTION, BUT IS SUPPORTED FROM THE FLOOR OR IN A TRENCH, SUCH SUPPORTS SHALL BE OF PIPE STANDARDS WITH BASE FLANGE AND ADJUSTABLE TOP YOKE.

2.4 IINSULATION

- A. ALL COLD WATER PIPING SHALL BE INSULATED WITH 1" THICK PREMOLDED 2 PIECE 3.5 LB HEAVY DENSITY FIBERGLASS PIPE INSULATION, UL RATED NON-COMBUSTIBLE WITH ALL SERVICE JACKET. ON VALVES AND FITTINGS USE "PREFORMED FIBERGLASS FITTING UNDER PVC FITTING COVERS AND SEAL PVC COVER SEAMS WITH 1" VAPOR BARRIER GLASS MESH ADHESIVE TAPE. SELF-SEALING LAP SHALL BE STAPLED AFTER SEALING AT 3" O.C. INTERVALS. INSULATION MATERIAL SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS AND FUEL CONTRIBUTION OF 50 OR LESS AS REQUIRED BY NFPA 255.
- 3.0 EXECUTION
- 3.1. INSTALLATION
- A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DELIVERY AND SAFE STORAGE OF THE REQUIRED MATERIALS AND EQUIPMENT. ANY MATERIALS AND EQUIPMENT DAMAGED DURING DELIVERY, STORAGE OR HANDLING SHALL BE REPLACED AT NO COST TO THE OWNER.
- B. THIS CONTRACTOR SHALL THOROUGHLY BRUSH AND CLEAN UP WORK. REMOVE ALL DEBRIS FROM SITE, INTERIOR AND EXTERIOR OF NEW PIPING SHALL BE CLEANED OF DIRT, RUST, GREASE AND OTHER FOREIGN MATTER TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE OR ENGINEER.
- 1. THE INTERIOR OF THE PIPE SHALL BE CLEANED AS FOLLOWS: THE SYSTEM SHALL BI FLUSHED WITH CLEAN WATER UNTIL NO DIRTY WATER APPEARS AT POINTS OF OUTLET
- C. ALL PIPE PENETRATIONS THROUGH NEW AND EXISTING STRUCTURE SHALL BE SEALED WITH FIRE RETARDANT SEALANT EQUAL IN RATING TO THE STRUCTURE PENETRATED, SEALANT SHALL EXTEND THE FULL THICKNESS OF STRUCTURE.
- D. ALL DRAINAGE PIPING SHALL BE INSTALLED RUN AT A UNIFORM GRADE OF AT LEAST 1/8" PER FOOT, UNLESS OTHERWISE INDICATED. RUN AS STRAIGHT AS POSSIBLE AND SHALL HAVE EASY BENDS WITH LONG TURN FITTINGS.
- E. ALL WATER PIPING SHALL BE RUN FREE OF TRAPS. ANY TRAPS FORMED SHALL BE PROVIDED WITH DRIP VALVES TO ALLOW FOR COMPLETE DRAINING OF SYSTEM.

3.2 TESTS

- A. TEST ALL PIPING EXCEPT DRAINAGE PIPING, INCLUDING VALVES, FITTINGS AND JOINTS HYDROSTATICALLY AT A PRESSURE EQUAL TO 1-1/2 TIMES THE RATED PRESSURE, BUT NO LESS THAN 100 PSIG FOR A MINIMUM OF ONE HOUR. BLANK OFF OR REMOVE ALL ELEMENTS OR EQUIPMENT WHICH MAY BE DAMAGED BY THE PRESSURE. OPEN BUT DO NOT BACK-SEAL VALVES. INSPECT ALL JOINTS AND CONNECTIONS.
- B. TEST DRAINAGE PIPING HYDROSTATICALLY UNDER A 10 FOOT MINIMUM HEAD OF WATER WITH NO HEAD DROP FOR ONE HOUR OR IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
- C. REPAIR ALL LEAKS, DEFECTS OR DAMAGE REVEALED BY THE TESTING AND RE-TEST SYSTEM. D. ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER OR OWNER'S REPRESENTATIVE.

3.3 WARRANTY

A. THE CONTRACTOR SHALL WARRANTY ALL WORK FOR A PERIOD OF 12 MONTHS FROM FINAL ACCEPTANCE BY OWNER. DURING THE WARRANTY PERIOD, CONTRACTOR SHALL RESPOND TO ALL CALLS FOR SERVICE AND REPAIRS REQUIRED BY THE OWNER. CONTRACTOR SHALL INSTALL ALL REPLACEMENT PARTS AND MATERIALS AT NOT COST TO OWNER.

FOOD SERVICE PIPING NOTES:

- PLUMBING PLAN SHOWS ROUGH-IN AND CONNECTION LOCATIONS WITH CAPACITIES SEE ROUGH-IN DRAWINGS FURNISHED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR FOR ACTUAL ROUGH-IN LOCATION.
- 2. ROUGH-INS FOR WATER, WASTE, AND NATURAL GAS SERVICES SHALL EXTEND 6" BEYOND FINISH WALLS AND ABOVE FINISH FLOORS OR EQUIPMENT PADS - ALL FLOOR PENETRATIONS SHALL BE SEALED WATER TIGHT.

3. WATER PRESSURE IN FOOD, SERVICE AND BEVERAGE AREAS SHOULD BE 50 PSI

- MAXIMUM.WATER PRESSURE AT DISHMACHINES, BOOSTER HEATERS, GLASS AND UTENSIL WASHERS TO BE 25 PSI. 4. PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY VALVES, TRAPS,
- TAIL PIECES, LINE STRAINERS, PRESSURE REDUCING VALVES AND VACUUM BREAKERS AND CONNECT ALL WATER, GAS, AND WASTE LINES TO FOOD SERVICE EQUIPMENT.
- 5. PLUMBING CONTRACTOR TO PROVIDE GAS SERVICES AT EQUIPMENT TO MAINTAIN A 4" WATER COLUMN, FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE GAS PRESSURE REGULATORS AS REQUIRED BY CODE AND A.G.A. FOR INSTALLATION BY PLUMBER IN LINE BETWEEN BUILDING SERVICES AND EQUIPMENT.
- 6. PLUMBING CONTRACTOR SHALL INSTALL & CONNECT ALL FAUCETS AND DRAINS FURNISHED WITH FOOD SERVICE BEVERAGE EQUIPMENT.
- 7. PLUMBING CONTRACTOR SHALL FURNISH & INSTALL ALL INDIRECT WASTE LINES FROM FOOD SERVICE AND BEVERAGE EQUIPMENT TO FLOOR SINKS AND INSULATE WASTE LINES FROM ICE BINS, EVAPORATORS AND BAIN MARIES.
- 8. FOOD SERVICE EQUIPMENT CONTRACTOR SHALL FURNISH & INSTALL FIRE SUPPRESSION SYSTEM. FSE CONTRACTOR SHALL FURNISH & PLUMBER SHALL INSTALL NORMALLY OPEN MECHANICALLY ACTIVATED ELECTRICAL SOLENOID GAS SHUT-OFF VALVE ABOVE SUSPENDED CEILING TILE.
- 9. WHERE PERMITTED BY LOCAL CODE, FLOOR SINKS SHALL BE INSTALLED FLUSH WITH FINISH FLOOR WITH GRATE COVER AS INDICATED.
- 10. PLUMBING CONTRACTOR TO RUN GREASE WASTE TO EXISTING GREASE INTERCEPTOR AS REQUIRED PER LOCAL CODES.
- 11. PLUMBER SHALL INSTALL WATER FILTER SYSTEMS PROVIDED BY THE FOOD SERVICE EQUIPMENT CONTRACTOR TO SERVICE ICE MAKERS, COFFEE MAKERS/URNS, SODA SYSTEMS, STEAMERS, ETC.

12. FOOD SERVICE EQUIPMENT CONTRACTOR TO PROVIDE, PLUMBER TO INSTALL, FLEXIBLE

CONNECTORS FOR FOOD SERVICE & BEVERAGE EQUIPMENT REQUIRING GAS AND WATER

GENERAL DRAWING ABBREVIATIONS								
CLIVE DIVIVINO ADDICEVIATIONS								
		HW	HOT WATER					
СМ	COFFEE MAKER	LV	LAVATORY					
CW	COLD WATER	S	SANITARY					
DCV	DOUBLE CHECK VALVE	TD	TRENCH DRAIN					
DPCO	DECK PLATE CLEAN OUT	UR	URINAL					
ETR	EXISTING TO REMAIN	٧	VENT					
FCW	FILTERED COLD WATER	VIF	VERIFY IN FIELD					
FD	FLOOR DRAIN	W	WASTE					
FS	FLOOR SINK	WC	WATER CLOSET					

		DEMOLITION			
		EXISTING			
		SANITARY			
		SANITARY BELOW SLAB			
—GW	GW	GREASE WASTE			
		VENT PIPING			
		COLD WATER SUPPLY			
		HOT WATER SUPPLY			
· 140° ——	140°	140° HOT WATER SUPPLY			
		HOT WATER RETURN			
		GAS PIPING			
	5	FULL PORT SHUT-OFF VALVE			
1/1	∕₩-	DOUBLE CHECK VALVE GAS SHUT-OFF VALVE GAS PRESSURE REDUCING VALVE			
	}				
D	B				
(⊘ FD	FLOOR DRAIN			
	FS	FLOOR SINK			
-ODPC	o /—IICO	CLEANOUT			
	2	CONNECTION TO EXISTING			
C		PIPE DOWN/DROP			
		PIPE UP/RISE			
		PIPE TEE DN/DROP			
(1		REDUCER			

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SUNY PURCHASE

735 Anderson Hill Road Purchase, NY 10577

Southport Associates

Southport Engineering Associates, PC 11 Bailey Avenue Tel.: (203) 431-6844 Fax: (203) 431-6877 Ridgefield, CT 06877

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Plumbing Specifications

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June. 7, 2016

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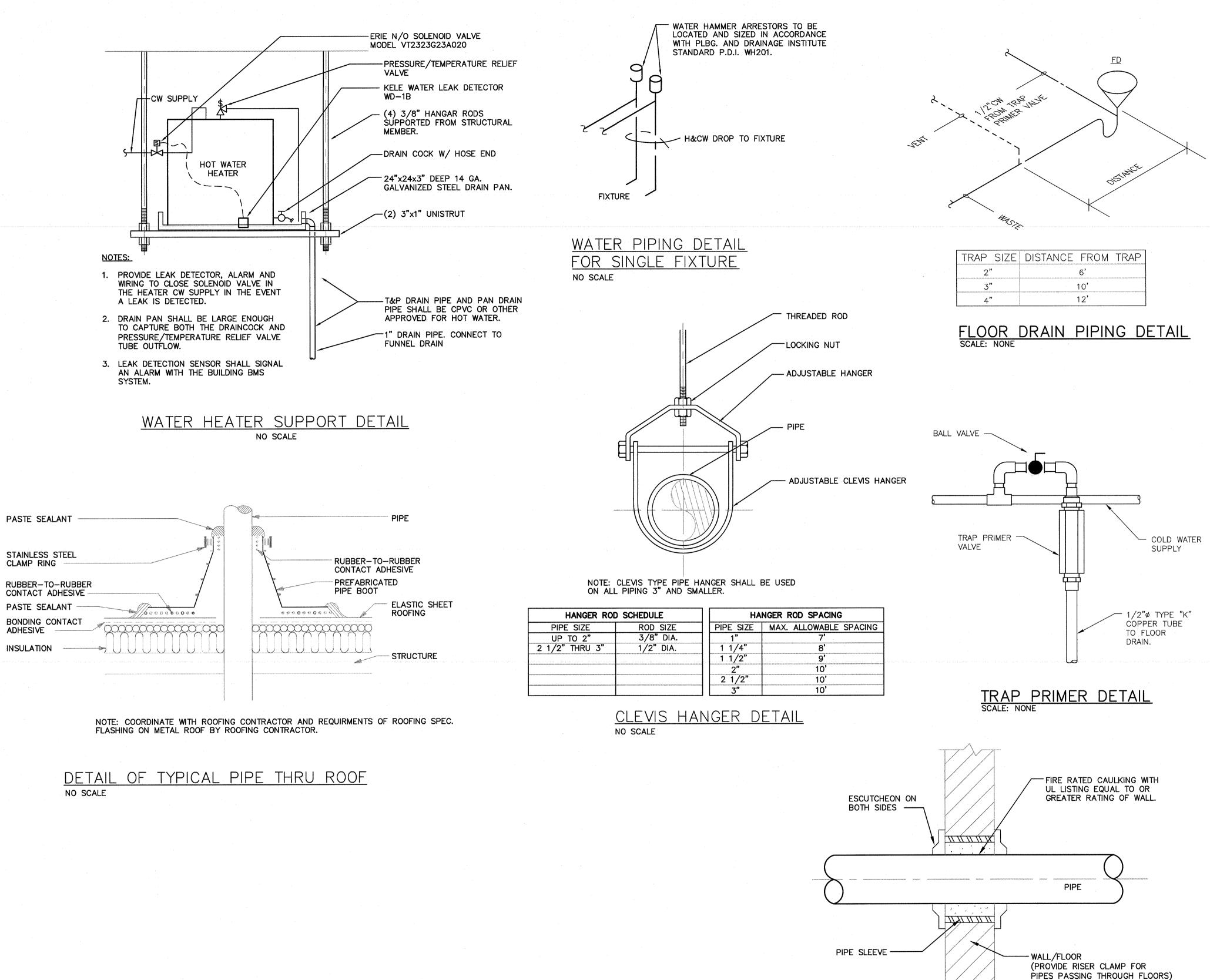
302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.com



DAVID A. TETRO

ARCHITECT P.C.

AIA - LEED A.P. - NCARB



PIPES PASSING THROUGH FLOORS)

ALL SPRINKLER PIPES PASSING THROUGH WALLS/FLOORS SHALL COMPLY WITH BUILDING CODE.

PIPE PENETRATION DETAIL

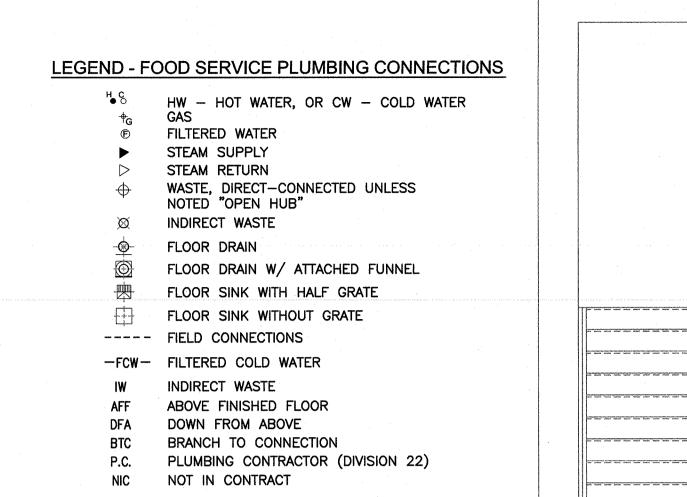


PASTE SEALANT

PASTE SEALANT

ADHESIVE

INSULATION



		FO	OD SE	RVI	CE EQUIPMENT SCHEDULE	×.					,							
ITE M NO 21		EQUIPMENT CATEGORY	ANUFACTUR	DEL NUME	EQUIPMENT REMARKS	AMPS	HP VOLTS	PHASE	CYCLE	DIRECT	PLUG	ELECTRICAL VFF (IN)	SECIMATER	A STER STATE WATER	JEE (in)	SIZE (IN) SIRECT DRAIN AFF (IN)	NDIR DRAIN	INDIR DRAIN AFF (IN) S S H
I TO K		Eggii MERT OATEGORT		1					1									
101 1	OPEN MERCHANDISER		RPI		CUSTOM 72" WIDE UNIT	12.0	11		60		X 5-15			+				101
	REFRIGERATOR, UNDERCOL		TURBO AIR	MUR-48		6.5	11		60	_		5F 18	07.4	+++		-		102
	REFRIGERATOR, UNDERCOL	INTER	TURBO AIR	MUR-48-CUS		6.5	11		60			5F 18	.3/: 14	++				103
104 1	FREEZER, UNDERCOUNTER		TURBO AIR	MUF-48		8.3	11		60	+		5F 18		+			-	104
	REFRIGERATOR, SANDWICH	SALAD PREP	TURBO AIR	MST-28-12		3.3	11		60	-	X p-10	5F 48	27/ 40	+-+			0.75	105 FS 106
	I ICE MAKER W/BIN		MANITOWOC IC			12.2	208-		60	-	V 5 1/	5F 48	.37: 42	++		+	0.75	107
	REFRIGERATOR, REACH-IN		TURBO AIR	M3R47-2	(1) TO BE LOCATED IN BASEMENT (SEE Q200B FOR ROUGHIN LOCATION	9.2	11		60			5F 48						107
	FREEZER, REACH-IN	CVCTEM	TURBO AIR BUNN-O-MATIC	M3F47-2 34800.0002	(1) TO BE LOCATED IN BASEMENT (SEE Q200B FOR ROUGHIN LOCATION	19.2	20/		60		A p-10		.37: 14					201
	COFFEE MAKER, SATELLITE COFFEE GRINDER	STSTEW.	BUNN-O-MATIC			9.4	1207		60		X 5-15		.57. 14			+		202
		PALLON	BUNN-O-MATIC			19.5	20		60		X p-13		0.25 14					204
204	DISPENSER, HOT WATER, 5 (LACIMBALI	M1 TurboStea		2.6	+		60	-	educinal pizionella	48	7.23 14	+++			-	205
205	1 ESPRESSO MACHINE/GRIND 1 STEAMER, 2 BARISTA STEAM		CARIMALI		ESTIMATED UTILITIES - VERIFY SPECIFICATIONS		23		60	-		18		+++			-	206
206	OVEN, MICROWAVE/CONVEC		ACP, Inc.	JET14	UNITS TO BE STACKED	16.0	208-		60		X 8-20	0F48 / 54						207
		NVECTION WITH STEAM CONDENSOR HOOD	MWE America		ESTIMATED UTILITIES - VERIFY SPECIFICATIONS	3.4			60		7 7 2 0	48		1	_	1		208
			MOYER DIEBEL		(2) ELECTRICAL CONNECTIONS		20					18		0.75	14		0.625	FS 209
	WAREWASHER, UNDERCOULD 1 12-FAUCET DISPENSING TOV		APEX BEVERA	1	(2) ELECTRICAL CONNECTIONS	52.0	1 20	-		+^+		+	_	10.70			7.020	301
	AIR COMPRESSOR, 1 GALLO			PC1010		4.0	11	0 1	60		Y 5.11	5F 18		++		+		302
		N CAPACITT, OLTRA QUIET	FOCUS FOODS			7.0	++ ''		- 00		7 7-10			+++				401
	WIRE SHELVING		FOCUS FOODS						-							++		402
	0 SHELVING WALL MOUNTS 7 SHELVING WALL MOUNTS		FOCUS FOODS						-			+-	_	1		1		403
	WIRE SHELVING W/CASTERS		FOCUS FOODS		LOCATED IN BASEMENT STORAGE AREA				╬					+++		+		404
	WIRE SHELVING W/CASTERS WIRE SHELVING W/CASTERS		FOCUS FOODS		LOCATED IN BASEMENT STORAGE AREA									+++			_	405
	TOWEL DISPENSER, KITCHE	The state of the s	BOBRICK	B-2621	ESSATES IN SACRIMENT STORIGE VICEN											+++		501
	2 SOAP DISPENSER, WALL MC			B-2112			H							+				502
	2 DISPENSER, CUP, COUNTER		DISPENSE-RITE											11		+		503
	DISPENSER, LID	TOF	DISPENSE-RITE			++								++				504
	GARBAGE BIN, 41 QUART			FG295700-G							.			1				551
	ROLLING CART			FG409100-B	The state of the s		+					+		11				552
	MOP BUCKET			7580-88									-	11		1		553
	POS		PROVIDED BY		CASH DRAWER, SCANNER, RECEIPT PRINTER & SCALE W/DISPLAY	10.0	11	5 1	60	1	X 5-1	5F 18				+		601
	2 LED DISPLAY MONITOR (55")	PROMOTIONAL MENIL	PROVIDED BY	<u> </u>	ESTIMATED UTILITIES - VERIFY SPECIFICATIONS	10.0		5 1	60			5F 48		11		11		602
-	LED DISPLAY MONITOR (40")		PROVIDED BY		ESTIMATED UTILITIES - VERIFY SPECIFICATIONS	10.0	11		60	-		5F 48		++		1		603
——			PROVIDED BY		ESTIMATED UTILITIES - VERIFY SPECIFICATIONS	10.0	11		60			5F 48		1				604
	LED DISPLAY MONITOR (65")	SIGNATURE DRINK MENU	ADVANCE TAB	ļ	COTHEN TED OTHER TEO - VENI 1 OF EOF IOA FOND	10.4	++''		- 30			70					15	FS P01
	1 SINK DROP-IN		FISHER	3515	The state of the s					1	-		0.5 1/	1 0.5	14			P02
	FAUCET, PANTRY TYPE		ADVANCE TAB				+		-			+	J.U 1	10.5		5 12	\dashv	P03
	HAND SINK, WALL MOUNT	4 gauge	ADVANCE TAB		(3) DRAINS		H		-			+		++		+	15	FS P04
	1 3-COMP SINK, NSF, 3 comp, 1		FISHER	13277	(O) DIVINO	+				++		1	0.5 1/	1 0.5	14			P05
	1 3-COMP SINK FAUCET, 14" S	F001				++			-	+		+	9.0 1	10.0	1-7			P06
	1 GREASE TRAP		ROCKFORD ZURN	G-1412 Z1996-24					+	╁┼				++	1	5 0		P08
	MOP SINK		CHICAGO FAUG	<u> </u>		+ +			-				0.5 4	3 0.5		+	- 	P09
	MOP SINK FAUCET		PROVIDED BY			++	11			+		+-		10.0			1	P10
	1 WATER HEATER	SO MACHINE	3M		ESTIMATED UTILITIES - VERIFY SPECIFICATIONS						-		0.75 14	+		+		P11
	1 WATER FILTER FOR ESPRES	SO INIACHINE	ADVANCE TAB		LOTINATED OFFICIES - VEINE FOR EQUIDATIONS	++			\dashv			+	4 1	++		+-	1	FS P12
	1 DROP-IN, ICE BIN		ADVANCE TAB			++			+					++				FS P13
	1 DROP-IN SINK 1 WATER FILTER ASSEMBLY		3M PURIFICATION			++							0.75 14	##		+	+	P14
P14	I WATEK LIFTER WOSEMBLY		OWI F UNIFICATION	10-200-3					L				1					

J. J			PREP. ARE/	SERVERY 20	P03	ROPO5 50 PO4 PO6	P14 P08 P09 P10
 VESTIBULE UMBING MAIN FLO	OOR KITCHEN EQU	IPMENT PLAN	windsdelments				

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Revisions & Issues

Do not scale drawings. Each Contractor shall be responsible for all field measurements.

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735 Anderson Hill Road Purchase, NY 10577

Southport Associates

Southport Engineering Associates, PC Tel.: (203) 431-6844 Fax: (203) 431-6877 11 Bailey Avenue Ridgefield, CT 06877

15.44 Plumbing Kitchen

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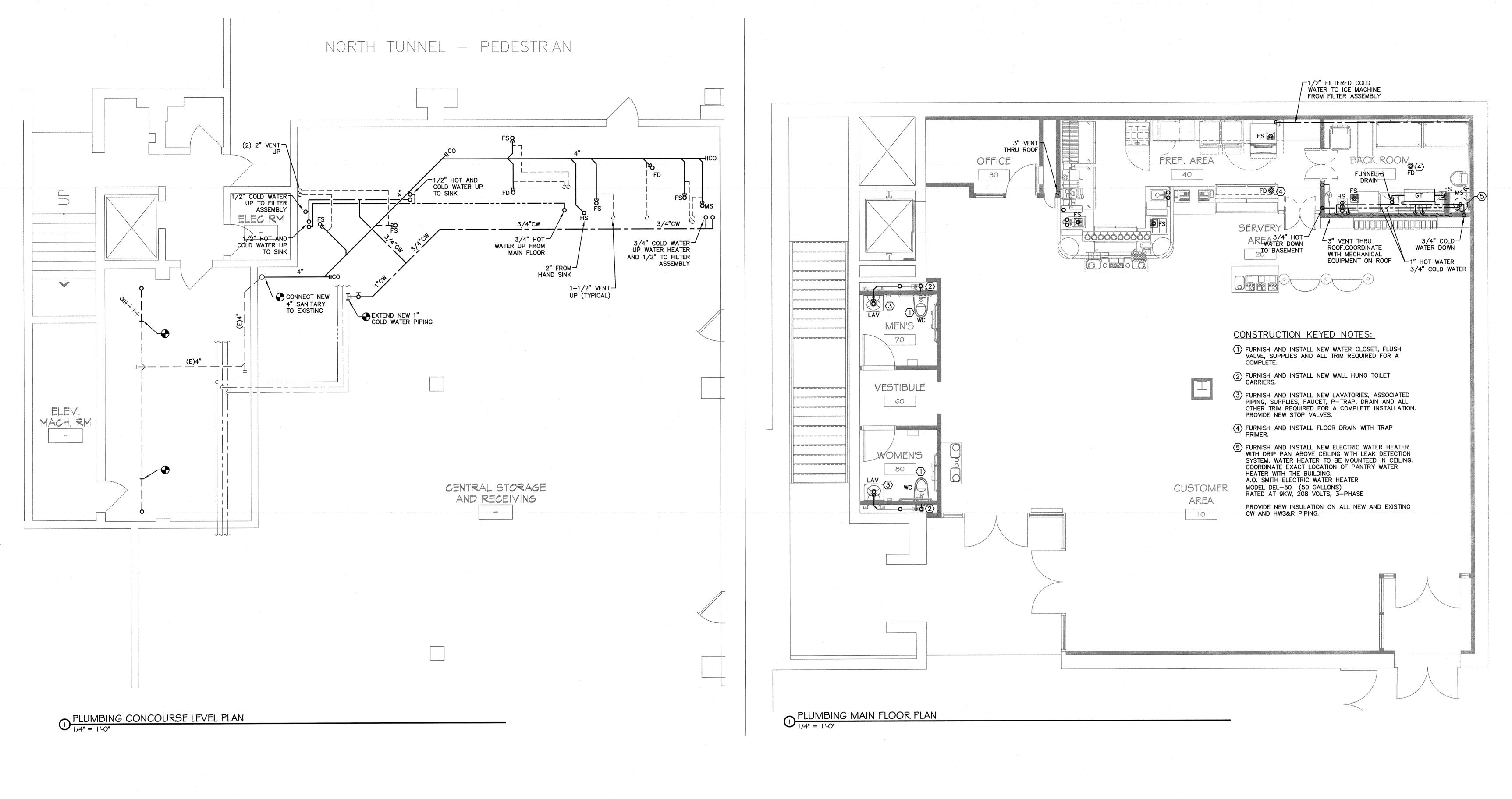
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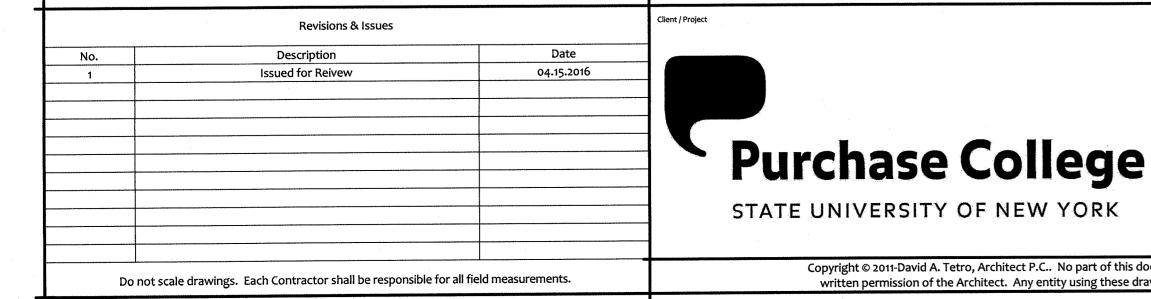
Equipment Plan

302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.net www.DavidTetroArchitect.com

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735 Anderson Hill Road Purchase, NY 10577

Southport Associates

Southport Engineering Associates, PC

11 Bailey Avenue Tel.: (203) 431-6844
Ridgefield, CT 06877 Fax: (203) 431-6877

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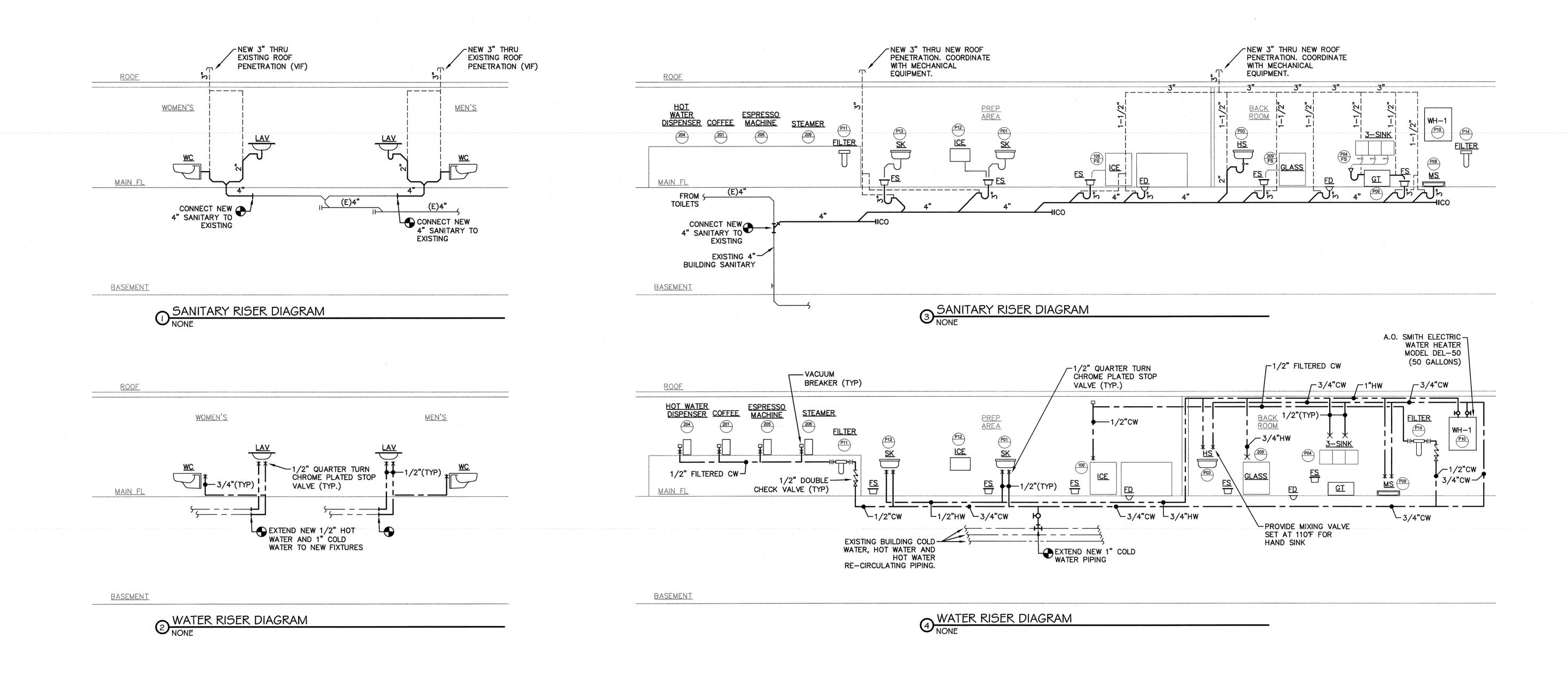
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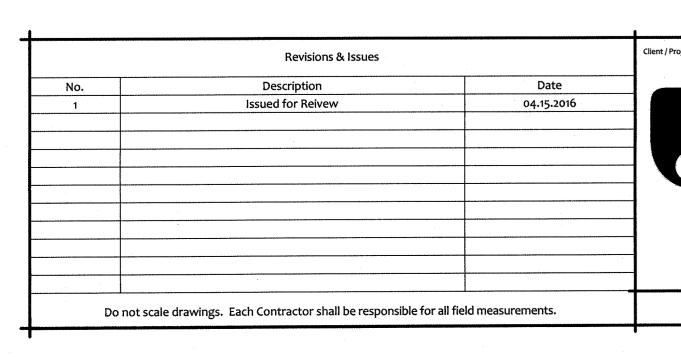
Plumbing
Construction Plans
302 Lewis Avenue
Yorktown Heights, NY
914.962.3113 - tel.
914.962.3393 - fax
dtdesign@verizon.net



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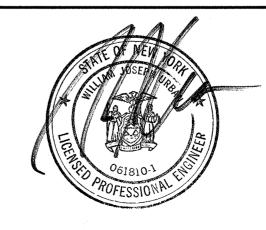
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Southport Associates

Southport Engineering Associates, PC

11 Bailey Avenue Tel.: (203) 431-6844
Ridgefield, CT 06877 Fax: (203) 431-6877



June. 7, 2016

Oject No.:

15.44

Reet Title:

DAVID A. TETRO

ARCHITECT P.C.
AIA - LEED A.P. - NCARB

Plumbing Riser Diagrams 302 Lewis Avenue
Yorktown Heights, NY 10598
914.962.3113 - tel.
914.962.3393 - fax
dtdesign@verizon.net
www.DavidTetroArchitect.com

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FIRE PROTECTION SPECIFICATIONS

- 1.1 REQUIREMENTS
- A. THE FIRE PROTECTION CONTRACTOR (ALSO REFERRED TO AS CONTRACTOR) SHALL BE A LICENSED, AUTHORIZED INSTALLER OF FIRE PROTECTION SYSTEMS AND SHALL HAVE A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF FIRE PROTECTION SYSTEMS. THE SYSTEM DESIGNER SHALL BE LICENSED BY THE STATE OF NEW YORK.
- B. BEFORE SUBMITTING BID, THE FIRE PROTECTION CONTRACTOR SHALL VISIT THE SITE AND BECOME FULLY FAMILIAR WITH THE EXISTING CONDITIONS. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION TAKEN PLACE.
- C. PRIOR TO SUBMITTING THE PROPOSAL, THE CONTRACTOR SHALL INFORM THE ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE FIRE PROTECTION INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA DESIGN, LABOR, EQUIPMENT OR MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.
- D. THE SCHEDULING OF THE FIRE PROTECTION WORK SHALL BE COORDINATED WITH THE BUILDING OWNER, CONSTRUCTION MANAGER AND THE OTHER TRADES.
- E. ANY NECESSARY SHUT-DOWNS OF BASE BUILDING FIRE PROTECTION SYSTEM MUST BE COORDINATED WITH THE BUILDING OWNER, FIRE DEPARTMENT AND CONSTRUCTION MANAGER.
- A. PROVIDE A COMPLETE FIRE PROTECTION SYSTEM THROUGHOUT AS INDICATED ON THE CONTRACT DRAWINGS.
- B. ALL WORK SHALL COMPLY WITH NFPA STANDARDS, LOCAL AND STATE BUILDING AND FIRE CODES, LOCAL FIRE MARSHAL REQUIREMENTS, AND OWNER'S INSURANCE COMPANY.
- C. ALL DRAIN AND TEST PIPING SHALL TERMINATE AT ARCHITECT AND/OR ENGINEER APPROVED BUILDING EXTERIOR LOCATIONS UNLESS OTHERWISE NOTED. FINISH OF EXTERIOR PIPING SHALL BE SELECTED BY ARCHITECT.
- D. PROVIDE ALL REQUIRED AUXILIARY DRAIN ASSEMBLIES FOR COMPLETE DRAINAGE OF SYSTEM PER NFPA STANDARDS.
- E. ALL PIPE AND FITTINGS SUBJECT TO INTERIOR ALTERNATING WET AND DRY CONDITIONS SUCH AS DRAIN AND FIRE DEPARTMENT CONNECTION PIPING SHALL BE GALVANIZED.
- F. PROVIDE SPRINKLER COVERAGE IN ALL COMBUSTIBLE CONCEALED SPACES IN ACCORDANCE WITH NFPA 13 REQUIREMENTS.
- G. PROVIDE SPRINKLER COVERAGE FOR ALL EXTERIOR CANOPIES OVER 4 FT. IN WIDTH, IF REQUIRED IN ACCORDANCE WITH NFPA STANDARDS.
- H. PROVIDE SPRINKLER HEADS BELOW ALL EXPOSED DUCTWORK GREATER THAN 4 FT. IN WIDTH IN ACCORDANCE WITH NFPA 13. ALSO PROVIDE COMPLETE SPRINKLER PROTECTION BELOW ALL OTHER DUCTS/OBSTRUCTIONS IN ACCORDANCE WITH THE OBSTRUCTION REQUIREMENTS IN NFPA 13.
- INSURE THAT PIPE SIZES ARE ADEQUATELY SIZED FOR NUMBER OF SPRINKLER HEADS ON EACH BRANCHLINE AND CROSSMAIN BY PERFORMING HYDRAULIC CALCULATIONS FOR THE SYSTEM. PROVIDE A HYDRAULIC CALCULATION FOR EACH HAZARD CLASSIFICATION. PROVIDE ANY ADDITIONAL CALCULATIONS REQUESTED BY THE ENGINEER.
- J. SPRINKLER HEAD LAYOUT SHALL BE BASED ON THE LOCATIONS INDICATED ON THE PLANS AND MAY NOT NECESSARILY SHOW ALL REQUIRED HEADS. THE CONTRACTOR SHALL COORDINATE THE WORK WITH EXISTING CONDITIONS AND WITH THE NEW WORK OF ALL OTHER 2.4 VALVES TRADES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICTS BETWEEN TRADES BEFORE INSTALLATION OF SPRINKLER SYSTEM.
- K. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS, FOR EXACT LOCATIONS, MOUNTING HEIGHTS, ETC., REFER TO ARCHITECTURAL DRAWINGS AND DETAILS. ALL DIMENSIONS AND LOCATIONS OF EXISTING SPRINKLER HEADS AND PIPING SHALL BE FIELD VERIFIED.
- .. SUBMIT A COMPLETE SET OF DRAWINGS AND HYDRAULIC CALCULATIONS FOR REVIEW AND RECEIVE APPROVAL PRIOR TO ORDERING OR INSTALLING ANY PIPE, FITTINGS, DEVICES AND EQUIPMENT.
- M. PROVIDE CURRENT (WITHIN ONE YEAR) MUNICIPAL WATER SUPPLY DATA ON SHOP DRAWINGS INCLUDING HYDRANT LOCATIONS AND ELEVATION OF GAUGED HYDRANT. IF CURRENT TEST IS NOT AVAILABLE, CONTRACTOR SHALL REQUEST AND PAY FOR NEW WATERFLOW TEST.
- N. PROPERLY REMOVE AND DISPOSE OF FIRE PROTECTION DEMOLITION AND/OR UNUSED REMAINING MATERIALS FROM SITE.
- O. IF HAZARDOUS MATERIALS ARE SUSPECTED OR DISCOVERED, IMMEDIATELY CONTACT THE OWNER IN WRITING SO THAT OWNER CAN ARRANGE FOR INVESTIGATION AND ANY REQUIRED ABATEMENT OF MATERIALS.
- P. CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR AN ADDITIONAL 10 HEADS ALONG WITH 10 FT. OF ASSOCIATED PIPE, FITTINGS & HANGER ASSEMBLY AS PART OF THE BASE BID TO ACCOMMODATE FIELD CONDITIONS.
- 1.3 SUBMITTALS AND SHOP DRAWINGS A. THE CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL PRIOR TO INSTALLATION FOR THE FOLLOWING: MATERIAL SUBMITTALS, HYDRAULIC CALCULATIONS. AND FULLY COORDINATED
- SHOP DRAWINGS INCLUDING:
- SHOP DRAWINGS SHALL BE PREPARED IN AUTOCAD. SUCH DRAWINGS AND ALL ASSOCIATED ELECTRONIC FILES SHALL BE PROPERTY OF THE OWNER.
- COMPLETE SCHEMATIC RISER DIAGRAM, SITE PLAN, AND FULL HEIGHT BUILDING
- CROSS-SECTION

PIPE, FITTINGS, AND COUPLINGS

- BACKFLOW PREVENTER, IF PART OF CONTRACT SPRINKLER HEADS
- CONTROL VALVE WITH BUILT IN TAMPER SWITCH AND OTHER VALVES
- HORN STROBE RISER CHECK VALVE ASSEMBLY
- FIRE DEPARTMENT CONNECTION

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- SPRINKLER HEAD CABINET & WRENCH
- VALVE TAGS AND SIGNAGE HANGERS AND SUPPORTS INCLUDING SEISMIC BRACING, IF REQUIRED
- FIRE STOPPING ASSEMBLY ALL OTHER DEVICES AND EQUIPMENT, ETC.
- HYDRAULIC CALCULATIONS SIGNED AND SEALED BY A PE OR NICET (LEVEL III OR IV)
- CERTIFIED IN FIRE SPRINKLER DESIGN B. SHOP DRAWINGS/SUBMITTALS SHALL BE REVIEWED UP TO TWO TIMES BY ENGINEER.

ADDITIONAL REVIEWS BE REQUIRED, CONTRACTOR SHALL BE RESPONSIBLE FOR BACK

CHARGES FOR ADDITIONAL REVIEW TIME/OR CORRECTIONS PERFORMED BY ENGINEER.

SHOULD CONTRACTOR FAIL TO MAKE ALL CORRECTIONS REQUIRED BY ENGINEER OR SHOULD

C. PROVIDE AS-BUILT RECORD DRAWINGS. AS-BUILT DRAWINGS SHALL BE PREPARED USING AUTOCAD AND SUBMITTED ELECTRONICALLY (DWG AND PDF FORMATS) ALONG WITH HARD COPIES FOR REVIEW BY OWNER AND ENGINEER. ALL APPROVED DRAWINGS, CALCULATIONS,

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MATERIAL DATA SHEETS, ETC., SHALL BECOME PROPERTY OF THE OWNER

1.4 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES A. THE CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS, MATERIAL DATA, AND SPECIFICATIONS WITH THE AUTHORITIES HAVING JURISDICTION AND BE RESPONSIBLE FOR

OBTAINING PERMITS AND FINAL APPROVALS.

B. ARRANGE FOR INSPECTIONS AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME INCLUDE ALL SIGNED-OFF INSPECTIONS AND TEST CERTIFICATES WITH AS-BUILT DOCUMENTS.

2. MATERIALS

- A. THE FIRE PROTECTION SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, SPRINKLER HEADS, HANGERS AND SUPPORTS INCLUDING MISCELLANEOUS WORK ITEMS SUCH AS SIGNAGE, VALVE TAGS, ETC. AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR A COMPLETE, FULLY OPERABLE, AND APPROVED FIRE PROTECTION SYSTEM.
- B. ALL PIPE FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC. SHALL CONFORM TO THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. THREADED REDUCING BUSHINGS ARE NOT PERMITTED. REDUCING FITTINGS SHALL BE PROVIDED IN LIEU OF BUSHINGS.
- C. ALL MATERIALS MUST BE RATED FOR HIGHEST ANTICIPATED PRESSURES AND IN NO CASE LESS THAN 175 PSI.
- 2.2 FIRE PROTECTION PIPING AND FITTINGS A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE ALL FLANGED AND THREADED FITTINGS SHALL BE BLACK CAST IRON. GROOVED FITTINGS SHALL BE DUCTILE
- B. ALL EXPOSED PIPE & FITTINGS SHALL BE PROPERLY PREPPED FOR PAINTING BY OTHERS UNLESS OTHERWISE NOTED. PAINTING IS NOT PART OF THE FIRE PROTECTION SCOPE OF
- 2.3 SPRINKLER HEADS A. ALL SPRINKLER HEADS SHALL BE U.L. LISTED, F.M. APPROVED, AND QUICK RESPONSE TYPE UNLESS OTHERWISE NOTED. ARCHITECT TO SELECT ALL FINISHES AND COLORS FOR SPRINKLER HEADS.
- B. SPRINKLER HEADS INSTALLED IN CEILINGS SHALL BE CONCEALED PENDENT TYPE WITH FACTORY PAINTED COVER PLATES SIMILAR TO RELIABLE G5-56 OR APPROVED EQUAL.
- C. SPRINKLER HEADS INSTALLED IN CEILING WITH FIBERGLASS PANELS SHALL BE QUICK RESPONSE STANDARD PENDENT STYLE WITH ESCUTCHEON SIMILAR TO RELIABLE FIFR OR APPROVED EQUAL.
- D. SPRINKLER HEADS INSTALLED ON EXPOSED PIPING SHALL BE BRASS EITHER UPRIGHT OR PENDENT TYPE SIMILAR TO RELIABLE MODEL F1FR OR APPROVED EQUAL.
- E. SIDEWALL SPRINKLER HEADS SHALL BE HORIZONTAL TYPE WITH CHROME FINISH SIMILAR TO RELIABLE MODEL F1FR OR APPROVED EQUAL.
- F. DRY HORIZONTAL SIDEWALL AND PENDENT SPRINKLER HEADS AND ESCUTCHEONS SHALL HAVE A NON-CORROSIVE COATING AND BE SIMILAR TO RELIABLE MODEL F3QR OR APPROVED EQUAL.
- G. CONTRACTOR SHALL FURNISH A MINIMUM OF SIX SPRINKLER HEADS IN A SPRINKLER HEAD CABINET WITH A SPRINKLER WRENCH IN ACCORDANCE WITH NFPA 13. SPRINKLERS SHALL CORRESPOND TO THE TYPE AND TEMPERATURE RATINGS OF THE SPRINKLER HEADS ON THE PROPERTY.

- A. INTERIOR CONTROL VALVES 2" AND SMALLER 1. BUTTERFLY TYPE SLOW CLOSE INDICATING VALVE WITH BUILT-IN TAMPER SWITCH, 300 PSI
- 2. OS&Y GATE TYPE THREADED BRONZE, 300 PSI, (WITH EXTERNAL TAMPER SWITCH).
- B. INTERIOR CONTROL VALVES 2½" TO 6"
- 1. TIGHT CLOSING, EPOXY COATED DUCTILE IRON, ELASTOMER ENCAPSULATED DISC, GROOVED TYPE BUTTERFLY VALVES, 300 PSI, WITH STAINLESS STEEL SHAFT, LIFETIME BEARINGS, HAND WHEEL GEAR OPERATOR WITH POSITION INDICATOR, AND BUILT-IN TAMPER SWITCH. SIMILAR TO: VICTAULIC "FIRELOCK", SERIES 705W WRD OR APPROVED EQUAL.
- 2. O.S.&Y, BOLTED BONNET, RESILIENT WEDGE, EPOXY COATED BODY INSIDE AND OUT, FLANGED END CONNECTIONS, LISTED BY UL, FM APPROVED, 300 PSI SIMILAR TO NIBCO F-697-0 OR APPROVED EQUAL.
- C. 21/2" FIRE HOSE VALVES SUBJECT TO APPROVAL BY AHJ
- 1. HOSE VALVES SHALL BE 2½" NTS.
- 2. 2½" CAST BRASS VALVE WITH RED HANDWHEEL. FEMALE NPT INLET BY MALE HOSE THREAD OUTLET. 300 PSI. ANGLE VALVE. SIMILAR TO: POTTER ROEMER MODEL 4065. 3. PROVIDE A BRASS, WITH ROCKER LUGS, FEMALE THREAD LARGER THAN MALE THREAD 2½" X 1½" REDUCER. SIMILAR TO: POTTER ROEMER MODEL 2810RL.
- 4. PROVIDE A 11/8" CAST BRASS CAP WITH FEMALE HOSE THREAD, ROCKER LUGS AND CHAIN. SIMILAR TO: POTTER ROEMER MODEL 4615RL.

2.5 FIRE DEPARTMENT CONNECTION

- A. FLUSH MOUNTED CHROME PLATED 4"x 2½"x 2½" FIRE DEPARTMENT CONNECTION. STYLE AND LOCATION TO BE APPROVED BY THE LOCAL FIRE DEPARTMENT; FINISH TO BE APPROVED BY THE ARCHITECT.
- 2.6 SUPERVISORY AND ALARM ACTUATING DEVICES
- A. CLOSED CIRCUIT OS&Y TYPE VALVE TAMPER SWITCHES TO OPERATE WITHIN TWO REVOLUTIONS OF VALVE WHEEL, SIMILAR TO POTTER ELECTRIC SIGNAL CO. MODEL OSYSU-2.
- B. CLOSED CIRCUIT BALL TYPE VALVE TAMPER SWITCHES TO MONITOR FULL OPEN POSITION OF BALL VALVE, BUILT-IN MODEL, SIMILAR TO POTTER ELECTRIC SIGNAL CO. MODEL RBVS.
- C. CLOSED CIRCUIT PADDLE-TYPE WATERFLOW INDICATORS WITH RETARDING DEVICE TO PREVENT FALSE ALARMS FROM SURGES: 1. 13" AND SMALLER SIMILAR TO POTTER ELECTRIC SIGNAL, MODEL VSR-S
- 2. 2" AND LARGER SIMILAR TO POTTER ELECTRIC SIGNAL, MODEL VSR-FE-2.
- D. ALL WIRING FROM DEVICES TO MAIN FIRE ALARM PANEL BY ELECTRICAL CONTRACTOR.
- 2.7 ALARM INDICATING DEVICES A. PROVIDE A UL LISTED HORN STROBE AND COORDINATE EXTERIOR LOCATION WITH FIRE DEPARTMENT AND ARCHITECT. WIRING FROM DEVICE TO MAIN FIRE ALARM PANEL BY ELECTRICAL CONTRACTOR.

2.8 HANGERS

- A. HANGER COMPONENTS SHALL BE CARBON STEEL TYPE.
- B. HANGER RINGS SHALL BE SWIVEL RING OR CLEVIS TYPE.
- C. ANCHORS USED IN CONCRETE INSTALLATIONS SHALL BE LISTED FOR CRACKED CONCRETE AND BE SIMILAR TO POWERS SNAKE+ OR APPROVED EQUAL. ANCHOR LOCATIONS TO BE APPROVED BY STRUCTURAL ENGINEER.

D. TOP BEAM CLAMPS USED FOR STEEL BEAM INSTALLATIONS SHALL HAVE RETAINING STRAPS. 3. INSTALLATION

3.1 CUTTING AND PATCHING

- A. DO ALL CUTTING NECESSARY FOR THE INSTALLATION OF THE FIRE PROTECTION WORK. ACCURATELY LAY OUT WORK FOR WHICH CUTTING IS REQUIRED TO AVOID UNNECESSARY LARGE OPENINGS. CUTTING OF BEAMS, JOISTS, FLOORS OR WALLS OF THE BUILDING WILL NOT BE PERMITTED EXCEPT AFTER RECEIVING WRITTEN APPROVAL FROM THE BUILDING OWNER OR CONSTRUCTION MANAGER.
- B. PROVIDE FIRE STOPPING AT ALL PENETRATIONS THROUGH RATED CONSTRUCTION. FIRE STOPPING SHALL BE A UL LISTED ASSEMBLY SIMILAR TO HILTI FIRESTOP SYSTEMS.

3.2 SPRINKLER HEADS

- A. WHERE MAXIMUM CEILING TEMPERATURES EXCEED 100°F, PROVIDE PROPER TEMPERATURE SPRINKLER HEADS IN ACCORDANCE WITH NFPA 13.
- B. INSTALL SPRINKLER HEADS AT CEILING ALIGNED WITH ADJACENT HEADS AND OTHER CEILING FEATURES. ALL HEADS SHALL BE INSTALLED CENTER-OF-TILE.
- C. LOCATE AND INSTALL SPRINKLER HEADS IN ACCORDANCE WITH NFPA AND MANUFACTURER SPECIFICATIONS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS AND CONTRACT DRAWINGS FOR SPRINKLER HEAD LOCATION. NOTIFY ARCHITECT AND ENGINEER IN WRITING IF THERE ARE ANY DISCREPANCIES.

3.3 INSERTS, HANGERS, ETC.

- A. ALL PIPING SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN ACCORDANCE WITH NFPA STANDARDS, LOCAL CODES AND THE AUTHORITY HAVING JURISDICTION.
- B. FIRE PROTECTION PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.
- C. FIRE PROTECTION PIPING SHALL NOT BE ATTACHED DIRECTLY TO THE ROOF DECKING.
- D. WHEN FIRE PROTECTION PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUPPORTED FROM THE BUILDING'S STRUCTURE, NOT FROM THE DUCTWORK OR THE CEILING
- E. THE MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FEET FOR 1" AND 1-1/4" PIPE SIZES AND 15 FEET FOR PIPE SIZES 1-1/2" AND LARGER
- G. PROVIDE AND INSTALL SEISMIC BRACES ON ALL SPRINKLER PIPING AS REQUIRED BY CODE.

3.4 ESCUTCHEONS

A. PROVIDE CHROME PLATED METAL ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEONS SHALL BE HELD IN PLACE BY INTERNAL TENSION DEVICE OR A SET SCREW.

3.5 INSPECTIONS AND TESTING

- A. THE FIRE PROTECTION SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AND STATE BUILDING CODES.
- B. THE FIRE PROTECTION SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSI (300 PSI FOR STANDPIPE SYSTEMS IN NYC) OR 50 PSI OVER THE HIGHEST WORKING PRESSURE (WHICHEVER IS GREATER).
- C. BEFORE THE SPRINKLER SYSTEM IS CONCEALED, THE BUILDING AND FIRE DEPARTMENTS SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR INSPECTIONS AND TESTING. THE BUILDING AND/OR FIRE DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. THE CONTRACTOR SHALL OBTAIN FINAL APPROVAL OF THE FIRE PROTECTION SYSTEM FROM THE BUILDING AND/OR FIRE DEPARTMENTS AS REQUIRED.
- D. SPECIAL INSPECTIONS FOR FIRE PROTECTION SYSTEMS SHALL BE IN ACCORDANCE WITH NYC BUILDING CODE 1704.21. CONTRACTOR SHALL COORDINATE AND COOPERATE WITH OWNER'S INSPECTOR RELATED TO COMPLETION OF REQUIRED TR-1.
- E. CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING AND COORDINATING ALL REQUIRED PROGRESS INSPECTIONS WITH THE OWNER'S APPROVED INSPECTOR. A MINIMUM 72 HOURS NOTICE SHALL BE PROVIDED PRIOR TO THE INSPECTION. CONTRACTOR SHALL NOTIFY CONSTRUCTION MANAGER/OWNER. INSPECTIONS MUST BE MADE BEFORE WORK IS COVERED.
- F. IN ACCORDANCE WITH SECTION BC109.9 WHERE AN INSPECTION OR TEST FAILS, THE CORRECTION MUST BE MADE AND RE-INSPECTED BY THE PROGRESS INSPECTOR UNTIL IT COMPLIES.
- G. PROVIDE TRAINING TO OWNER DESIGNATED REPRESENTATIVE(S) FOR OPERATING, TESTING AND MAINTENANCE OF PUMPS; ALLOW EIGHT HOURS FOR TRAINING.

3.6 OPERATION AND MAINTENANCE MANUALS

A. PROVIDE FOUR OPERATION AND MAINTENANCE (O&M) MANUALS. O&M MANUALS SHALL INCLUDE AS-BUILT RECORD DRAWINGS AND HYDRAULIC CALCULATIONS WITH HYDRAULIC SUMMARY, VALVE TAG CHARTS, SIGNED AND WITNESSED COPIES OF ALL TESTING AND INSPECTION FORMS, MATERIALS SUBMITTALS WITH OPERATION AND MAINTENANCE INFORMATION, AND AN INDEX OF ALL PAGES. FURTHER, PROVIDE A CD CONTAINING ALL CAD FILES AND HYDRAULIC CALCULATIONS. INCLUDE A COPY OF NFPA 25.

3.7 GUARANTEE

A. GUARANTEE ALL WORK, MATERIALS AND DEVICES FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER, REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECT, ENGINEER OR OWNER WITHOUT ANY COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITHIN THE PERIOD OF THE GUARANTEE.

SAFETY NOTES:

- PERFORM WORK IN ACCORDANCE WITH ALL STATE AND LOCAL BUILDING AND FIRE
- WORK SHALL BE PERFORMED DURING NORMAL WORKING HOURS MONDAY TO FRIDAY
- UNLESS DIRECTED OTHERWISE. NO MEANS OF EGRESS SHALL BE BLOCKED.
- BUILDING SERVICES SHALL BE MAINTAINED WHILE WORK IS BEING INSTALLED.
- CONFINE DUST TO WORK AREA ONLY. CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS SO THAT EQUIPMENT ON THIS APPLICATION AND ITS INSTALLATION WILL NOT AFFECT FIRE SAFETY IN THE BUILDING. EGRESS AND ENTRY TO THE BUILDING, AND STRUCTURAL SAFETY OF THE BUILDING.
- CONTRACTOR SHALL LEAVE THE WORK SITE BROOM CLEAN EACH DAY. 8. THE FIRE PROTECTION SYSTEM MUST BE MAINTAINED IN EGRESS STAIRS AND HALLWAYS. RETURN AS MUCH OF THE EXISTING SPRINKLER SYSTEM AS POSSIBLE BACK TO OPERATING STATUS AT THE END OF EACH WORKING DAY. PROVIDE ANY REQUIRED
- CAPS OR TEMPORARY PIPING NECESSARY TO MAXIMIZE THE OPERABLE PORTION OF THE SPRINKLER SYSTEM. NOTIFY AND COORDINATE ANY FIRE PROTECTION SYSTEM IMPAIRMENTS WITH THE LOCAL FIRE DEPARTMENT. IF THESE CONDITIONS CANNOT BE MET, PROVIDE A CERTIFIED FIRE GUARD/WATCH AS REQUIRED IN ACCORDANCE WITH LOCAL CODES.

	NEW FIRE PROTECTION PIPING		CAP
	EXISTING FIRE PROTECTION PIPING] —	PLUG
	FIRE PROTECTION - PIPING TO BE REMOVED		ELBOW DOWN
•	CONCEALED SPRINKLER HEAD	0	ELBOW UP
•	PENDENT SPRINKLER HEAD		TEE DOWN
0	UPRIGHT SPRINKLER HEAD		TEE UP
(PENDENT SPRINKLER HEAD WITH CAGE GUARD		FLOW ARROW
FP	FIRE PROTECTION	_\$	OS&Y VALVE W/ TAMPER SWITCH
SPK	SPRINKLER	─ ₩	BUTTERFLY VALVE W/ TAMPER SWITCH
NAS	NO AUTOMATIC SPRINKLERS	<u>-</u>	WATERFLOW SWITCH (WFS)
FDC	FIRE DEPARTMENT CONNECTION		CHECK VALVE
STP	STANDPIPE	>	FIRE DEPARTMENT CONNECTION (FDC)
SCA	SPRINKLER CONTROL ASSEMBLY	M	LOCAL ALARM - HORN STROBE
ABD	AUTOMATIC BALL DRIP		FIRE DEPARTMENT VAL W/ HOSE
FDV	FIRE DEPARTMENT VALVE	•	CONNECT NEW TO EXISTING
FHC	FIRE HOSE CABINET	•	POINT OF DEACTIVATIO

GENERAL DRAWING								
ABBREVIATIONS								
W/	WITH	W/0	WITHOUT					
TYP	TYPICAL	NIC	NOT IN CONTRACT					
EX	EXISTING	DN	DOWN					
AD	ACCESS DOOR	VIF	VERIFY IN FIELD					
AFF	ABOVE FINISH FLOOR	C/L	CENTER LINE					
DWG	DRAWING	UON	UNLESS OTHERWISE NOTED					

DESIGN CRITERIA - SPK SYSTEM

- LIGHT HAZARD SEATING AREA, BATHROOM, OFFICE, ETC. 0.10 GPM/SQ. FT. FOR MOST REMOTE 1500 SQ. FT. 225 SQ. FT. MAXIMUM COVERAGE PER SPRINKLER HEAD; FOR OTHER THAN SMOOTH CEILING AREAS, REFER TO NFPA 13 FOR SQ. FT. COVERAGE PER SPRINKLER HEAD PLUS 100 GPM OUTSIDE HOSE
- ORDINARY HAZARD GROUP I MECHANICAL ROOMS, ETC.
- 0.15 GPM/SQ. FT. FOR MOST REMOTE 1500 SQ. FT. 130 SQ. FT. MAXIMUM COVERAGE PER SPRINKLER HEAD PLUS 250 GPM OUTSIDE HOSE

5. <u>ORDINARY HAZARD GROUP I</u>

PREP AREA, BACK ROOM, ETC 0.2 GPM/SQ. FT. FOR MOST REMOTE 1500 SQ. FT. 130 SQ. FT. MAXIMUM COVERAGE PER SPRINKLER HEAD PLUS 250 GPM OUTSIDE HOSE

INCLUDE ALL MODIFICATIONS TO REMOTE AREA IN ACCORDANCE WITH NFPA 13.

Revisions & Issues Date Description 04.15.2016 Issued for Reivew Do not scale drawings. Each Contractor shall be responsible for all field measurements.

Purchase College



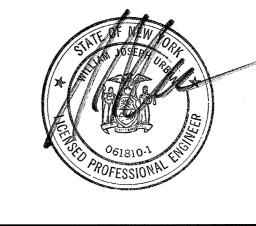
735 Anderson Hill Road Purchase, NY 10577

SUNY PURCHASE

Southport Associates

A.E.P. Engineer

Southport Engineering Associates, PC Tel.: (203) 431-6844 11 Bailey Avenue Fax: (203) 431-6877 Ridgefield, CT 06877



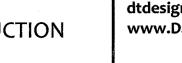
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June. 7, 2016

DAVID A. TETRO SP-1.1 ARCHITECT P.C. AIA - LEED A.P. - NCARB

Sprinkler Specifications

302 Lewis Avenue Yorktown Heights, NY 10598 914.962.3113 - tel. 914.962.3393 - fax dtdesign@verizon.ne www.DavidTetroArchitect.com



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ISSUED FOR CONSTRUCTION

