GEORGIA INSTITUTE OF TECHNOLOGY CHERRY EMERSON PETER YUNKER LAB FIT-UP.

PROJECT LOCATION: Cherry Emerson Building- 2nd Floor, Rooms 230, 232 310 Ferst Drive NW Atlanta, Georgia 30332

100% CONSTRUCTION DOCUMENTS

AUGUST 31st, 2020

OWNER:

GEORGIA INSTITUTE OF TECHNOLOGY **FACILITIES MANAGEMENT O'KEEFE BUILDING** 151 SIXTH STREET NW, 3RD FLOOR ATLANTA, GA 30332-0351 CONTACT: NGUGI MATHU 470.428.0160 T.

ARCHITECT:

HERA LABORATORY PLANNERS 1447 PEACHTREE ST NE **SUITE 880** ATLANTA, GA, 30309 314.289.9202 T. 314.289.6167 F.

DRAWING LIST:

GENERA G-001 G-003 G-002 G-000

ABBREVIATIONS, LEGENDS AND NOTES LIFE SAFETY PLAN PARTITION TYPES COVER SHEET

DEMOLITION AD-102 DEMOLITION FLOOR PLAN AD-402 DEMOLITION REFLECTED CEILING PLAN

LABORATORY

QL-202 ENLARGED LABORATORY PLAN QL-501 LABORATORY INTERIOR ELEVATIONS QL-010 SCHEDULES QL-901 DETAILS REFLECTED CEILING PLAN QL-402

MECHANICAL

MD-102 MECHANICAL DEMO PLAN- LEVEL 2 M-001 MECHANICAL LEGEND AND SYMBOLS M-002 MECHANICAL SPECIFICATIONS M-202 MECHANICAL PLAN- LEVEL 2

PLUMBING PD-102 P-000 P-001

C-1

PLUMBING - DEMOLITION PLAN PLUMBING- LEGENDS, ABBREVIATIONS & SYMBOLS PLUMBING SPECIFICATIONS P-002 PLUMBING SPECIFICATIONS P-501 PLUMBING- DETAILS P-202 PLUMBING PLAN- LEVEL2

ELECTRICAL ELECTRICAL- LEVEL 2- DEMO ED-102 E-001 ELECTRICAL LEGEND E-002 ELECTRICAL SCHEDULES E-202 **ELEC LIGHTING-LEVEL 2** E-302 ELEC POWER-LEVEL 2 E-003 ELECTRICAL SPECIFICATIONS TELECOM

DEMO AND AREA OF NEW WORK

PROJECT DESCRIPTION

GEORGIA TECH HAS A BURGEONING INTERDISCIPLINARY FOCUS WITH HS IN MICROBIOLOGY. IT IS CRUCIAL THAT YUNKER'S LAB BRINGS BIOPHYSICAL EXPERTISE AND INSTRUMENTATION TO CHERRY EMERSON, PERFORMING MICROSCOPY AND MECHANICAL MEASUREMENTS OF BACTERIA



MEP/ FP ENGINEERS

VANDERWEIL 260 PEACHTREE STREET, NW. **SUITE 1401** ATLANTA, GEORGIA 30303 (617) 556-9308 T.







ABORATC	ORY ABBREVIATIONS			LA AB
A &	AND	<u> </u>	ANGLE-(SIZE)	A
@ ACC	AT ACCESSIBLE	L LAB		A Z
ADJ		LAM		Z
AHJ	AUTHORITY HAVING JURUISDICTION	LIQ		E
ALT ALUM	ALTERNATE ALUMINUM	LKR LLH	LOCKER (SEE DIV 10 SECTION) LONG LEG HORIZONTAL	E
ARCH AW	ARCHITECT/ARCHITECTURAL ARCHITECTURAL WOODWORK (SEE ARCH)	LLV LN	LONG LEG VERTICAL LIQUID NITROGEN	_ N
		LT	LIGHT	G
B	PALANCE	M		
BAL BDNG	BEDDING	MATL	MATERIAL	5 \
BKG BLDG	BACKING BUILDING	MAX MECH	MAXIMUM MECHANICAL	F
BLKG BO	BLOCKING BOTTOM OF	MFR MIN	MANUFACTURER MINIMUM	
BOT	BOTTOM	MKR BD	MARKER BOARD (SEE DIV 10 SECTION)	F
BSC		MTG	MOUNTING	F
BSL-#	BIOLOGICAL SAFETY LEVEL (NUMBER)	MIL	METAL	ç
С		N		
C CAB	CHANNEL-(SIZE) CABINET(S)	N	NORTH NOT APPLICABLE	L
CAV		NEG	NEGATIVE	
CFOI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	NO	NUMBER	A (
CH CHEM	CANOPY HOOD CHEMICAL	NOM NTS	NOMINAL NOT TO SCALE	ł
CL CLG	CENTER LINE CEILING			1
CLOS	CLOSURE	_0	ON OFNITED	(
COL	COLUMN	OD		١
COMP	COMPUTER CONCRETE	OFCI OFOI	OWNER FURNISHED, CONTRACTOR INSTALLED OWNER FURNISHED, OWNER INSTALLED	(
CONSTR CONT	CONSTRUCTION CONTINUOUS	OH OPH	OVERHEAD OPPOSITE HAND	l
CONTR		OPNG	OPENING OPENING	ł
CSWK	CASEWORK	OSC	OVERHEAD SERVICE CARRIER	I
CTRL	COUNTER CONTROL(LED)			
CYL	CYLINDER	P PF		
D			PHENOLIC	
D	DEEP, DEPTH	PLAM PLBG	PLASTIC LAMINATE PLUMBING	
DEG	DEGREE DETAIL	PLYWD PNL	PLYWOOD PANEL	
dia Dim	DIAMETER DIMENSION	POS PP	POSITIVE POLYPROPYLENE	
DIV DN		PROJ SCRN	PROJECTION SCREEN (SEE DIV 11 SECTION)	
DWG	DRAWING(S)	PTN	PARTITION	
-				L
E E	EAST	Q QTY	QUANTITY	
EA EL	EACH ELEVATION			
ELEC EMER	ELECTRIC(AL) EMERGENCY	R		
		RAD	RADIUS	
EP	ELECTRICAL PANEL (SEE ELECTRICAL)	RCP RE	REFLECTED CEILING PLAN (SEE ARCHITECTURAL) REFER TO	
eq Equip	EQUAL EQUIPMENT	REC REF	RECESSED REFRIGERATOR	
EST EXH	ESTIMATE(D) EXHAUST	REQ		
EX EXT	EXISTING	REV	REVISION	
EGS	EMERGENCY GAS SHUTOFF	RH RM	RELATIVE HUMIDITY ROOM	
F				
F F#	FILLER (VERIFY WIDTH) FILLER, (NUMBER) INCH WIDE	S	SOUTH	
FB FD	FIRE BLANKET (SEE DIV 10 SECTION) FLOOR DRAIN (SEE PLUMBING)	SBSTR	SUBSTRATE	
FE FEC	FIRE EXTINGUISHER/BRACKET (SEE DIV 10 SECTION) FIRE EXTINGUISHER CABINET (SEE DIV 10 SECTION)	SD	SOAP DISPENSER (SEE DIV 10 SECTION)	
FH	FUME HOOD	SHR	SHEET	
FLR	FLOOR	SHV SIM	SHELF/SHELVING SIMILAR	
rr∠ FT	FREEZER FOOT/FEET	SK SP	SINK SPACE(S)	
FUT	FUTURE	SQ	SQUARE	
G		SS	SAFETY STATION (SEE PLUMBING)	
GA	GAUGE	SSM SST	SOLID SURFACE MATERIAL STAINLESS STEEL	
GALV GL	GALVANIZED GLASS	STD STL	STANDARD STEEL	
GT GYP BD	GROUT GYPSUM BOARD	STOR	STORAGE STRUCTURE/STRUCTURAL	
		SW	SWITCH	
<u>н</u>				
HAZ	HAZARD(OUS)	I TEMP	TEMPERATURE	
нв HDW	HOSE BIBB (SEE PLUMBING) HARDWARE	THK THRU	THICK(NESS) THROUGH	
HORIZ HT	HORIZONTAL HEIGHT	TK BD TO	TACK BOARD (SEE DIV 10 SECTION) TOP OF	
HVY	HEAVY	TR Te #		
1		TYP	TYPICAL	
ID		IH		
IN INC	INCH(ES) INCUBATOR		UNDER-COUNTER, UNDER CABINET	
INSUL INT	INSULATION INTERIOR		UNDER-CABINET LIGHT	
ISO	ISOLATION	UPS		
1		UTIL	UTILITT	
J JT	JOINT	V		
		VAR VAV	VARIES VARIABLE AIR VOLUME	
K KS	KNEE SPACE		VERTICAL	
		VIF	VERIFY IN FIELD	
		VUL	VULUIVIE	
		W		
		W W	WEST WIDE/WIDTH	
		W/	WITH WITHOUT	
		WD	WOOD	
		WT	WEIGHT	

WIREWAY (SEE ELECTRICAL)

WW

TORY SERVICE FITTING	REFERENCE SYMBOL	<u>S LEGEND</u>	LINE TYPE LEGEND
AIR (LAB) AIR, PERSONNEL (BREATHING) ZERO AIR	- N	NORTH ARROW	CONTINUOUS - LAB FURNISHINGS & EQUIPMENT, EXCEPT AS INDICATED BELOW
RICAL AND DATA DATA ELECTRICAL AL GAS	# SHT ())	ENLARGED PLAN, DETAIL	——————————————————————————————————————
GAS PIPED SERVICES STEAM	# 	SECTION/ELEVATION	SCREENED - EXISTING, NOT IN CONTRACT, OR BY OTHERS
D WATER DEIONIZED WATER DISTILLED WATER	# 4 SHT 2	ELEVATION, INTERIOR ELEVATION(S)	OTHERS
REVERSE OSMOSIS WATER		KEYED NOTE	
DRENCH HOSE EYE WASH	-	WORK POINT	MATCH LINE MATCH LINE MATCH LINE
ARGON CARBON DIOXIDE HYDROGEN HELIUM NITROGEN	#'-#"	SPOT ELEVATION	LOOSE DASH - EXISTING TO BE REMOVED
OXYGEN SPECIAL GAS-(CHEMICAL SYMBOL)		REVISION TAG	
PROCESS CHILLED WATER SUPPLY PRE-RINSE			
BORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE DRAIN C WHERE ABOVE/BELOW COUNTER ITEM	IOUNTED LAB CASEWORK E FITTINGS IK ERTOP AND SPLASH GROOVES/BOARD INDICATED K TAG	XX-##	ACCESSORY TAG:LA=LAB ACCESSORYLE=LOCAL EXHAUST VENTLS=LAB SINKLT=LAB TABLEMC=MOBILE CARTPB=PEGBOARDUM=UMBILICAL(AND AS SCHEDULED)
ABORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE COUNTED COUNTED COUNTER ITEM CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED)	IAB CASEWORK E FITTINGS IK ERTOP AND SPLASH GROOVES/BOARD INDICATED IK TAG E FITTING L AS	XX-## (A) _{36"}	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SINK LT = LAB TABLE MC = MOBILE CART PB = PEGBOARD UM = UMBILICAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT)
ABORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE COUNTE COUNTED CE FITTING, TING T CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) CUP SINK WHERE INDICATED FUME HOOD TAG X X X X X K E E E E E E E E E E E E E	IAB CASEWORK E FITTINGS IK ERTOP AND SPLASH GROOVES/BOARD INDICATED IK TAG E FITTING LAS FUME HOOD	XX-## (A) _{36"}	ACCESSORY TAG:LA=LAB ACCESSORYLE=LOCAL EXHAUST VENTLS=LAB SINKLT=LAB TABLEMC=MOBILE CARTPB=PEGBOARDUM=UMBILICAL(AND AS SCHEDULED)COUNTERTOP MATERIAL AND HEIGHT TAG:(SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT)MATERIALS:HEIGHTS: ADJE= EPOXYAADJL= PLASTIC LAMINATE30"M= SOLID SURFACE MATERIAL34"P= PHENOLIC36"S= STAINLESS STEELW= WOOD
BORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE DRAIN O ULS## ABOVE/BELOW COUNTER ITEM CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) THE INDICATED FUME HOOD TAG X X X E E E E E E E E E E E E E E E E E E E	LAB CASEWORK THE FITTINGS IN ERTOP AND SPLASH SROOVES/BOARD TINDICATED IN TAG E FITTING LAS FUME HOOD	XX-## (A) _{36"}	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SINK LT = LAB TABLE MC = MOBILE CART PB = PEGBOARD UM = UMBILICAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT) <u>MATERIALS: HEIGHTS:</u> E = EPOXY ADJ L = PLASTIC LAMINATE 30" M = SOLID SURFACE MATERIAL 34" P = PHENOLIC 36" S = STAINLESS STEEL W = WOOD -LAB EQUIPMENT TAG
BORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE DRAIN O WHERE ABOVE/BELOW COUNTER ITEM COUNTER ITEM CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) FH-#X K H/C CUP SINK WHERE INDICATED FUME HOOD TAG X X E E BSC #X BSC TAG BSC TAG BSC TAG BSC TAG	IAB CASEWORK TE FITTINGS IK ERTOP AND SPLASH SROOVES/BOARD INDICATED IK TAG 2E FITTING LAS FUME HOOD BIOLOGICAL SAFETY CABINET UMBILICAL	XX-##	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SINK LT = LAB TABLE MC = MOBILE CART PB = PEGBOARD UM = UMBILICAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT) <u>MATERIALS: HEIGHTS:</u> E = EPOXY ADJ L = PLASTIC LAMINATE 30" M = SOLID SURFACE MATERIAL 34" P = PHENOLIC 36" S = STAINLESS STEEL W = WOOD -LAB EQUIPMENT TAG -GENERIC LAB EQUIPMENT / PRODUCT SCHEDULED)
BORATORY PLAN SYMBOLS LEGEND DECK M SERVICI LAB SIN COUNTE COUNTER COUNTER COUNTER COUNTER ITEM CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) THE HOOD TAG X X FUME HOOD TAG X X FUME HOOD X E (E @ BOTTOM) DECK M SERVICE ORDER E BSC TAG BSC-#X E BSC SERVICE	ADUNTED LAB CASEWORK E FITTINGS IK ERTOP AND SPLASH SROOVES/BOARD INDICATED INDICATED IK TAG E FITTING LAS FUME HOOD BIOLOGICAL SAFETY CABINET UMBILICAL PEGBOARD	XX-## (A) 36"	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SINK LT = LAB TABLE MC = MOBILE CART PB = PEGBOARD UM = UMBLICAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT) <u>MATERIALS: HEIGHTS:</u> E = EPOXY ADJ L = PLASTIC LAMINATE 30" M = SOLID SURFACE MATERIAL 34" P = PHENOLIC 36" S = STAINLESS STEEL W = WOOD -LAB LAB EQUIPMENT (CFCI) EQUIPMENT TAG -GENERIC (JNLESS EQUIPMENT / PRODUCT SCHEDULED)
BORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTE DRAIN OF COUNTER LAB SIN COUNTER ITEM COUNTER ITEM CASEWORK MOUNTED SERVICE (KS, IN-CABINET, APRON/PANEL NOTED) THERE INDICATED FUME HOOD TAG X X FUME HOOD SERVICE ORDER E E E E E E E BSC TAG BSC #X BSC SERVICE TTTTTT ADJOINING CONSTRUCTION	AOUNTED LAB CASEWORK EF FITTINGS IK ERTOP AND SPLASH GROOVES/BOARD INDICATED IK TAG DE FITTING LAS FUME HOOD BIOLOGICAL SAFETY CABINET UMBILICAL PEGBOARD SAFETY STATION CLEAR FLOOR SPACE 30"x60" MIN. TYPE VARIES (SEE PLUMBING)	XX-## (A) 36" (EQUIP NAME #### ####	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SINK LT = LAB SINK LT = LAB SINK MC = MOBILE CART PB = PEGBOARD UM = UMBILICAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT) MATERIALS: HEIGHTS: E = EPOXY ADJ L = PLASTIC LAMINATE 30° M = SOLID SURFACE MATERIAL 34" P = PHENOLIC 36" S = STAINLESS STEEL W = WOOD -LAB LAB EQUIPMENT (CFCI) EQUIPMENT TAG -GENERIC LABEL OWNER FURNISHED (UNLESS EQUIPMENT / PRODUCT SCHEDULED) EQUIPMENT TAG -EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TAG
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ABORATORY PLAN SYMBOLS LEGEND DECK M SERVICE LAB SIN COUNTED ICE FITTING, TO MOUNTED ICE FITTING, TTING	MOUNTED LAB CASEWORK EFITTINGS IK ERTOP AND SPLASH GROOVES/BOARD INDICATED IK TAG E FITTING LAS FUME HOOD BIOLOGICAL SAFETY CABINET UMBILICAL PEGBOARD SAFETY STATION CLEAR FLOOR SPACE 30"x60" MIN. TYPE VARIES (SEE PLUMBING) E - EYEWASH, FREE-STANDING F - SAFETY SHOWER, OVERHEAD PULL G - COMBINATION SAFETY SHOWER / EYEWASH, FREE-STANDING	XX-## (A) 36" EQUIP NAME #### EQUIP NAME EQUIP NAME	ACCESSORY TAG: LA = LAB ACCESSORY LE = LOCAL EXHAUST VENT LS = LAB SNIK LT = LAB TABLE MC = MOBILE CART PB = PEGBOARD UM = UMBILCAL (AND AS SCHEDULED) COUNTERTOP MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT TAG: (SEE GENERAL NOTES FOR TYPICAL MATERIAL AND HEIGHT 30° M = SOLID SURFACE MATERIAL 34° P = PHENOLIC 33° S = STAINLESS STEEL W = WOOD -LAB EQUIPMENT TAG -GENERIC (UNLESS COUNTERTOP MATERIAL SONE, CLEAR FLOOR SPACE EQUIPMENT TAG EQUIPMENT TAG EQUIPMENT TONE, CLEAR FLOOR SPACE

GAS FITTINGS: (ALL GAS VALVES SHOUWN ARE NOT REQUIRED REFER TO FLOOR PLANS)

NG-2-1

CO2-1-1 CARBON DIOXIDE GAS VALVE WALL MOUNTED, SINGLE CO2-2-1 CARBON DIOXIDE GAS VALVE DECK MOUNTED MOUNTED, SINGLE NITROGEN GAS VALVE WALL MOUNTED, SINGLE NITROGEN GAS VALVE DECK MOUNTED, SINGLE N2-1-1 N2-2-1 CA-1-1 COMPRESSED AIR GAS VALVE WALL MOUNTED, SINGLE CA-2-1 COMPRESSED AIR GAS VALVE DECK MOUNTED, SINGLE NG-1-1 NATURAL GAS VALVE WALL MOUNTED, SINGLE NATURAL GAS VALVE DECK MOUNTED, SINGLE NG-2-1 NG-1-1 VACUUM GAS WALL MOUNTED, SINGLE

VACUUM GAS DECK MOUNTED, SINGLE

LABORATORY FURNISHINGS AND EQUIPMENT KEYED...

1 PATCH AND FILL HOLE IN CONCRETE FLOOR FROM RELOCATED EMERGENCY SHOWER.

PAPER TOWEL DISPENSER, O.F.C.I.

HAND SANITIZER DISPENSER, O.F.C.I.

ELECTROSTATICALLY APPLIED COATING; SEE SPEC. SECTION 09 9110.

BLACKOUT CURTAIN TRACK; SEE SPEC. SECTION 10 2123. CEILING SERVICE COLUMN; SEE SPEC. SECTION 11 6000. NEW EPOXY COUNTERTOP; SEE SPEC. SECTION 12 3553. WALL MOUNTED GAS VALVES; SEE SPEC. SECTION 12 3553. NEW PEGBOARD AT SINKS; SEE SPEC. SECTION 12 3553. SALVAGE RACEWAY; SEE SPEC. SECTION ELECTRICAL DWGS.

- NEW WOOD DOOR; SEE SHEET QL-202. NEW RACEWAY; SEE ELECTRICAL DWGS.
- NEW PRIVACY CURTAIN WITH WALL SUPPORT AT EMERGENCY SHOWER; REFER TO SHEET QL-010. NEW ELECTRICAL SWITCH, SEE ELECTRICAL DRAWINGS.
- SURFACE MOUNTED EMERGENCY SHUT-OFF VALVE; REFER TO SHEET P-202.



HERA Laboratory Planners 1447 Peachtree St. NE., Suite 880

Atlanta, GA 30309 314.289.9202 t. 314.289.6167 f.

www.herainc.com



GT PROJECT #: 0360-2020



Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308 T

1	08/31/2020	100% CD DOCUMENTS
No.	Date	Description



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100% CONSTRUCTION DOCUMENTS



DRAWN BY: Author	CHECKED BY: Checker	
PROJECT NO: 20176.00	DATE: 08/31/2020	Σ
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SCALE:		8/31,



1. Wall Assembly — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire

Resistance Directory. Max diam of opening is 26 in. (660 mm).

2. Through-Penetrant — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe — Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. Iron Pipe — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. Conduit — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. Through Penetrating Product* — Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly. OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly. GASTITE, DIV OF TITEFLEX

CAUTIE, DIV OF THEFEEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG L L C

3. Fill, Void or Cavity Material* — Caulk or Sealant — Min 5/8., 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In (mm)	F Rating Hr	F
1 (25)	1 or 2	0+
1 (25)	3 or 4	
4 (102)	1 or 2	
6 (152)	3 or 4	
12 (305)	1 or 2	

+When copper pipe is used, T Rating is 0 h.

3M COMPANY - CP 25WB+ or FB-3000 WT.



Design No. V497

August 22, 2017

Nonbearing Wall Rating - 1 Hr

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



 Steel Studs — Channel shaped, fabricated from min 25 MSG corrosion-prote steel, min 3-5/8 in. wide, min 1-1/4 in. flanges, spaced a max of 24 in. OC. Studs be cut 3/8 to 3/4 in. less than assembly height.

3. Laminating Compound — For use with Item 4 - Used to bond outer layer wallboard to inner layer wallboard. Powder type mixed with water in accordance instructions shown on bags. Applied to entire surface of base layer wallboard. Applied with notched trowel producing continuous beads about 1/4 in. wide and in. high.

4. Gypsum Board* — Applied to one side of steel studs (Item 2). Two layers of a in. gypsum panels with beveled, square or tapered edges. Gypsum panels applied vertically with joints centered over studs. Base layer applied with 1 in. Type S sc spaced 24 in. oc. Face layer applied vertically with joints centered over studs and offset from base layer joints by 24 in. Face layer applied with 1-5/8 in. Type S sc spaced 12 in. oc starting with a 6 in. offset from the bottom of the gypsum panel. NATIONAL GYPSUM CO — 5/8 in. thick Type eXP-C, FSL, FSW, FSK, FSW-3, FSW-5, FSW-G, FSK-G, FSW-6, FSW-8, FSW-C, FSMR-C, FSK-C, SoundBreal Type X Gypsum Board

PARTITION TYPES

NOTE: ALL PARTITIONS MAY NOT BE USED. REFER TO FLOOR PLAN FOR WALL TYPE.



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						Georgia Institute
						of Technology
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						CARLOS A. PEREZ-RUBIO R 08/28 (2020 0) R 08/28 (2020 0) PEREZ-RUBIO R 08/28 (2020 0) PEREZ-RUBIO R 08/28 (2020 0) PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.005 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO R 0.0038 PEREZ-RUBIO
						THESE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND WE EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF
						100% CONSTRUCTION
	SOUND	FIF	RE			
RATING	TEST	RATING 0 MIN	TEST	HEIGHT 4" ABV CLG	REMARK	
_		0 MIN 0 MIN		TO DECK 4" ABV CLG	2 ^{1/2} " STUD 3 ^{5/8} " STUD	PARTITION
		0 MIN 0 MIN	_	TO DECK 4" ABV CLG	3 5/8" STUD 6" STUD	TYPES
		0 MIN 0 MIN		4" ABV CLG 4" ABV CLG	7/8" FURRING CHANNEL 1 1/2" FURRING CHANNEL	DRAWN BY:CHECKED BY:AuthorNJPROJECT NO:DATE:20176 0000/01/00000
						20176.00 08/31/2020 SHEET NO: ••••••••••••••••••••••••••••••••••••
						G-002
						SCALE:



GENERAL NOTES RELATING TO CHEMICAL INVENTORY:

1. IF THE NUMBER OF CHEMICALS IS LESS THAN OR EQUAL TO 30, PROVIDE ALL SDS HARDCOPIES. IF THE NUMBER OF CHEMICALS EXCEEDS 30, PROVIDE SDS HARDCOPIES FOR CHEMICALS WITH THE FOLLOWING DESIGNATIONS: SEE ATTACHED SDS SHEETS A. NFPA RATING OF 3 OR 4 IN ANY CATEGORY OR

20

20

100

25

10

250

125

500

8836 L

B. NFPA FLAMMABILITY RATING IS 1,2,3, OR 4 OR C. ANY ENTRY IN NFPA SPECIAL NOTICE COLUMN

SOLIDS

Fluorescein G418 sulfate

Sudan III

Sudan IV

Oil Red O

GASES

Poly(vinyl alcohol)

Polystyrene beads

Compressed Air

Poly-L-lysine-hydrobromide

1,2-Dipalmitoyl-sn-Glycero-3-P

2. A STATEMENT AT EACH FLAMMABLE STORAGE CABINET INDICATED IN THE DRAWINGS DENOTING THE AMOUNT OF MATERIAL BEING STORED AS REFERENCED FROM THE CHEMICAL LIST.

9002-89-5

25988-63-0

2321-07-5

108321-42-2

63-89-8

85-86-9

85-83-6

1320-06-5

7727-37-9, 7782-44-7

45 GAL FLAMMABLE STORAGE CABINET MUST BE VENTED PER GA TECH. FIRE MARSHAL REQUIREMENTS. VENTING REQUIREMENTS FOR FLAMMABLE STORAGE CABINETS WITH A CAPACITY OF LESS THAN 45 GAL 4.

WILL REVIEWED AND DETERMINED.

AN EMERGENCY GAS SHUTOFF BUTTON IS REQUIRED FOR TWO OR MORE GASES OUTLETS PER NFPA 45 STATE FIRE MARSHAL MODIFICATIONS. INCLUDE SHUTOFF FOR TWO OR MORE GASES THAT SERVE 5. AN EXPERIMENT.

				Date:	
			Planned	Inventory I	Data
Quantity	Container Material	Liquid	Solid	Gas (Gaseous) cubic	Gas (Liquefied) cubic
		liters	grams	metres	metres
			-		
6	glass				
1	plastic				
1	plastic	1921			
2	plastic				
1	plastic				
1	plastic				
5	plastic				
1	glass				
1	glass	1			
1	plastic				
1	plastic				
1	glass		Ş §		
2	plastic	-			
1	plastic				
1	glass				
1	plastic				1
1	plastic	5			
1	glass				·
5	plastic				
1	glass				
1	glass				
1	glass	1022			
2	metal				

LIFE SAFETY PLAN - LEGEND EXIT ACCESS TRAVE ## -COMMON PATH OF T DEAD END DISTANCE EXISTING PARTITION TO BE 1-HR RATED \Box

FE FEC

FIRE EXTINGUISHER FIRE EXTINGUISHER EXIT SIGNS LIMITS OF CONSTRU

1-HR RATED

2-HR RATED

A GA. AMENDMENTS (2020) MENDMENTS) H GA. AMENDMENTS (2020) MENDMENTS) H GA. AMENDMENTS (2020) MENDMENTS) H GA. AMENDMENTS (2020) MITH GA. AMENDMENTS (2020) MITH GA. AMENDMENTS (2020) ORGIA AMENDMENTS (2020) ORGIA AMENDMENTS (2020) DR LABORATORIES USING ISTRATION, 29 CFR	EULDING SUMMARY: EXISTING BUILDING: 3 STORIES ABOVE GRADE STOOR STARS: 3 BUILDING FULLY SPRINKLERED: GA TECH IS IN THE PLANNING/DESIGN STAGES FOR A PREACTION SPRINKLER SYSTEM. REMOVATION OF ROOM 230: 804 NET SQUARE FOOTAGE B. AREA OF ROOM 232: 322 NET SQUARE FOOTAGE B. AREA OF ROOM 232: 322 NET SQUARE FOOTAGE B. AREA OF ROOM 232: 322 NET SQUARE FOOTAGE B. AREA OF ROOM 232: 322 NET SQUARE FOOTAGE B. MARE OF ROOM 232: 322 NET SQUARE FOOTAGE B. MARE OF ROOM 232: 322 NET SQUARE FOOTAGE BASED ON THE LIFE SAFETY CODE (NFPA 101) SECTION 6.1.12: GENERAL INDUSTRIAL MAX. TRAVEL IDISTANCE TO AN EXIT: (NFPA 101-TABLE 40.2.6) -GENERAL INDUSTRIAL: SOFT NOT FULLY SPRINKLERED AND 100FT FULLY SPRINKLERED -MAX. LENGTH OF DEAD END: (NFPA 101- TABLE 40.2.5) -GENERAL INDUSTRIAL: SOFT -MAX. LENGTH OF DEAD END: (NFPA 101- TABLE 40.2.5) -GENERAL INDUSTRIAL: SOFT -BASED ON NFPA 43 SECTION FOR A 2.1. LAB SHALL BE CLASSIFED AS A CLASS C (LOW FRE HAZARD) E SEPARATION INFORMALE 2.1. LAB SHALL BE CLASSIFED AS A CLASS C (LOW FRE HAZARD) E SEPARATION IS REQUIRED PERN NFPA 45 TABLES 1.1.1 FOR LAB CLASSIFED ASA ACLASSIFED AS A CLASS C (LOW FRE HAZARD)<	<image/> <section-header><section-header><section-header><section-header><text><text><text><text><text></text></text></text></text></text></section-header></section-header></section-header></section-header>
EL DISTANCE TRAVEL E N BELIEVED R (FE), R CABINET (FEC)	PER IBC REQUIREMENTS: A. INTERIOR FIRE WINDOW IN FIRE ASSEMBLIES, SECTION 718. B) DOOR WITH VIEW PANELLESS THAN 100 SOIN, MARKING ON THE GLAZING SHALL BE D20 (D- MEET S) FIRE DOOR ASSEMBLY CRITERIA AND MUST MEET THE NEPPA 252, AND IS NOT REQUIRED TO MEET THE HOSE STREAM TEST. FOR THIS PROJECT ALL EXISITING DOORS SHALL BE REPLACED AND NEW DOORS INSTALLED PER SECTION 716. B. PER IBC FIRE PARTION SECTION 717.5. FIRE DAMPERS XARE REQUIRED TO MUST DUCT OR AIR TRANSFER OPENING PENETRATES A FIRE PARTITION AND MUST BE RATED BASED ON THE FIRE RATING OF THE PARTITION. KEY PLAN KEY PLAN	<image/> <text><text><section-header><section-header><section-header></section-header></section-header></section-header></text></text>

6 7 1 <u>SECOND FLC</u> 1/4" = 1'-0"	OR LABORATORY PLAN	8		
A DEMOLISH EXAMPLE A DEMOLISH EXAMPLE B DEMOLISH C C DEMOLISH EXAMPLE D EXISTING ELL DRAWINGS E DEMOLISH E F DEMOLISH P	EMOLITION PLAN KEY NO (ISTING COUNTERTOP, BASE, AND DUNTERTOP ONLY. EXISTING BASE (ISTING DOOR. REFER TO HAZARD IT MATERIALS THAT REQUIRES AB ECTRICAL PANEL AND TRANSFORM NTIRE ISLAND BENCH DRTION OF WALL AS NECESSARY ,	TES WALL CABINETS E CABINETS AND WALL CABINETS TO OOUS MATERIAL REPORT FOR ASBES ATEMENT. MER TO REMAIN. REFER TO ELECTRI MER TO REMAIN. REFER TO ELECTRI	P EXIS D REMAIN. REM STOS Q DEM ICAL S DEM T EXIS U DEM LLATION V REM	STING COUNTERTOP TO REMAI MAIN 10LISH ALL EXISTING FLOORING 10LISH RACEWAY 10LISH SHELVES ABOVE SINK STING PURE WATER SHELF & S` 10LISH AND SALVAGE THE UNIS 10VE WALL CLOCKS AND PLAC
G DEMOLISH E H FIRE EXTING J REMOVE AND K DEMOLISH C	(ISTING EXPOSED PIPING RUNNING JISHER TO BE REMOVED AND SAL) SALVAGE FLOOR TO CEILING MO DUNTERTOP IN THIS AREA; SALVA	G ALONG WALL TO FUMEHOOD VAGED. UNTED EXISTING EMERGENCY SHO ^I GE EXISTING SINK AND FAUCET. BA	WER SE	

EXISTING RACEWAY TO REMAIN 0







6.

DEMOLISH EXISTING SUPPLY DIFFUSERS, REFER TO SHEET MD-102.

	REMOVE 2X4 LIGHT FIXTURES, SEE ELEC DWGS	
	REMOVE GYPSUM BOARD BULKHEAD	×
	REMOVE ACT CEILING	
X	EXISTING FUMEHOOD TO REMAIN	
	REMOVE RETURN, SEE MECH DWGS	
	REMOVE SUPPLY, SEE MECH DWGS	

SCALE:

	Identification		LABOR		PMENT MAT		Inctrical			Service	e										
			v sting	th (in)	ght (in) unting Location	ight (Ibs) nber Of Outlets licated Circuits	d Wire Or Plug	p d Water	Water	np. Air	2 ect Exhaust	Gas									
Equipment TagEquipment DescriptEQ-01MINI INCUBATOR	Manufacturer VWR	Model Number 97025-630	OFOI • New Point of the second	Dep Mid Tutt	Heić 12" B	0 Nun	Hare Volt	Amp	Hot Drai	Con Vac	CO2 Dire	- Nat.	Re	narks							
EQ-02 MINI INCUBATOR EQ-03 VORTEX MIXER	VWR VWR	97025-630 ANALOG VORTEX	OFOI • OFOI •	11" 14" 8" 5"	12" B 8" B	0 0 0 0 0 0						-									
EQ-04 VORTEX MIXER	VWR	MIXER ANALOG VORTEX	OFOI •	8" 5"	8" B	0 0 0						-			_						
EQ-05 VORTEX MIXER	VWR	MIXER ANALOG VORTEX	OFOI •	8" 5"	8" B	0 0 0						-									
EQ-06 U/C FREEZER	FISHER SCIENTIFIC	97-926-1	OFOI •	25" 24"	34" F	40 0 0															
EQ-07 REFRIGERATOR EQ-08 UNIVERSAL TESTING MAC	NE ZWICK/ROELL	Z0101 UTM	OFOI • OFOI •	29" 34" 36" 18"	68" F 90" F 2	40 0 0 200 0 0					X	-									
	FISCHER SCIENTIFIC	100L OVEN GRAVITY		11" 22"	34" B	0 0 0						-			_						
EQ-10 INTERFEROMETER EQ-11 INCUBATOR BOX	OKOLAB		OFOI OFOI	45 30 28" 16"	16" B	105 0 0 15 0 0					X	-									
EQ-12 CO2 UNIT EQ-14 NIKON EQ-15 CONEQCAL LASER LINIT		A1R/ECLIPE TI	OFOI •	32" 29"	66" B 3	0 0 0 300 0 0 95 0 0						-									
EQ-16 OPTICAL TABLE	TBD	TBD	OFOI •	48" 48"	36" F							-									
EQ-18 OPTICAL TABLE EQ-21 ELOW CHAMBER	TBD FBLAB	TBD CAPTAIR FLOW	OFOI •	48" 48"	36" F	200 0 0						-									
EQ-25 WATER PURIFICATION SYS	EMD MILLIPORE	ELIX	OFOI •	24" 24"	24" W	100 0 0	120	X				-									
					IOOD SCHEI	DULE									 _						
TAG TYPE	VENTILATI	ON SASH TYPE	WORK SUR SURFACE HE MATERIAL (INC	FACE IGHT HES) DET	AIL					Comm	nents										
FH-6A-EX EXISTING GENERAL PURPC	E, BENCH TYPE CV, GC TO CO	NFIRM VERTICAL	EPOXY	36	NOTE 1,	,2,3, 4															
	RAI NOTES.]						
				SMATERIAI																	
APPROVED COMPANIES F	R THIS SCOPE:	U.S. OLLINED TO REMOV		I LINAL.																	
Gordon Reynolds, gordor 678.858.8105	eynolds@axisonline.us																				
2. HEPACO Richard Dollar, rdollar@k	paco.com																				
470.277.5250																					
3. ENV Services www.envservices.com																					
800.394.3368 R CLEAN AND DEDAID EVIC																					
C. ENSURE THAT THE CUP S	K AND FAUCET ARE IN GOOD V																				
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6 7 1 ENLARGED FLOOR PLAN 1/4" = 1'-0" BOOR TYPE PROFILES	6 7 1 ENLARGED FLOOR PLAN 1/4" = 1'-0"	8 DOOR TYPE PROFILES
	PT-1 MANUFACTURER: SHERWIN WILLIAMS, ACRYLIC LATEX, EGG SHELL:	

- P1-3 DOOR FRAME. MANUFACTURER: SHERWIN WILLIAMS COLOR: TIN LIZZIE SW 9163 SEMI-GLOSS. REFER TO SPEC. SECTION 09 9123. RB-1 RUBBER BASE COVE, MANUFACTURER JOHNSONITE, COLOR: #20
- CHARCOAL WG. REFER TO SPEC. SECTION 09 6513. A. HEIGHT: 4" ALONG CASEWORK AND AT FUME HOOD. B. HEIGHT: 6" ALONG WALLS.
- ACT-1 2'X2' TILE ACOUSTICAL CEILING, MANUFACTURER: ARMSTRONG, ULTIMA BELEVED TEGULAR TILE #1911. REFER TO SPEC. SECTION 09 5100.
- VCT-1 1'X1' VINYL COMPOSITE TILE FLOORING, MANUFACTURER: FLOORING ARMSTRONG, STANDARD EXCELON, COLOR: #51860 SOFT COOL GRAY. REFER TO SPEC. SECTION 09 6519.

GENERAL FINISH SCHEDULE

- A. CONTRACTOR SHALL PAINT ALL WALLS IN BOTH LABS.
- WOOD SPECIES: WHITE OAK; CUT: PLAIN SLICED; DOOR FINISH:CLEAR, TO MATCH EXISTING WOOD DOORS ALONG CORIDOR. 2. REUSE DOOR HINGES IF IN GOOD CONDITION 3. EXISTING FRAMES SHALL BE TESTED AND CERTIFIED TO ENSURE THAT MEET THE 1 HOUR RATING REQUIREMENT AS STATED PER CODE. DOOF

D.

- FRAME SHALL BE LABELED IN ACCORDANCE WITH BUILDING CODE. 4. LITE KIT: MANUFACTURER: NATIONAL GUARD- LOW PROFILE FOR A DOOR 1 3/4" THK. DOORS, GLASS THICKNESS 3/16", 1/4" OR 5/16".
- MODEL: L-FRA100. 5. GLAZING: MANUFACTURER: NATIONAL GUARD; MODEL PARAN PLATINUM F (FIRE- PROTECTIVE SAFETY GLASS CERAMIC). THICKNESS 3/16", CLEAR AND WIRELESS.



D1 D2 FRAME TYP.	232 3' - 6" 7' - 0" 20 HM-EX D2 WOOD ¥ES B EX. EX. 1,2,3,4,5 230.1 3' - 0" 8' - 0" HM D2 WOOD ¥ES C 6/QL-901 5/QL-901 1,2,4,5	I. J. K.
DOOR GENERAL NOTES:	DOOR HARDWARE SCHEDULE	FL
 A. REUSE EXISTING DOOR MOUNTED ROOM SIGNS AT TWO LAB ENTRANCES. GC TO COORDINATE SIGNAGE WITH GA TECH. B. MAINTAIN DOOR HEIGHT TO MATCH EXISTING DOORS IN CORRIDOR, CONTRACTOR TO FIELD VERIFY EXISTING DOOR HEIGHTS. C. GC TO SUBMIT DOOR HARDWARE SHOP DRAWING, AND DOOR WOOD SAMPLE TO ARCHITECT FOR APPROVAL. DOOR FINISH SHALL MATCH EXISTING DOORS ALONG CORRIDOR. D. DOOR INSTALLER TO FIELD VERIFY ALL HARDWARE AND INSTALLATION DEOL/DEMENTE. DEOL/DEDLACEADADADD MORTICE SET UP 	HARDWARE GROUP: A1CYPHER LOCKSET (7-PIN CORE CYLINDER)LH8146B26D41 BEST2MOP PLATESK10502MOP PLATESK10502MOP PLATESK10503FLUSH BOLT FLOOR STOP29622SILENCER608ROCKWOOD	1. L 2. 2 3. M 4. F 5. E 6. E
E. HOLLOW METAL FRAME REFER TO SPEC SECTION 08 1113. DOOR SCHEDULE NOTES: 1. PROVIDE NEW SOLID CORE DOORS. BASIS OF DESIGN: MANUFACTURER: MASONITE ARCHITECTURAL, ASPIRO SERIES SELECT WOOD VENEER DOORS. WOOD SPECIES: WHITE OAK; CUT: PLAIN SLICED; DOOR FINISH:CLEAR, STAIN: TO MATCH EXISTING WOOD DOORS ALONG CORIDOR. 2. REUSE DOOR HINGES IF IN GOOD CONDITION	HARDWARE GROUP B:1CYPHER LOCKSET (7-PIN CORE CYLINDER)LH8146B26D41DORMAKABA BEST2MOP PLATES.K1050US32D 24" X 34"ROCKWOOD1SURFACE MOUNTED CLOSER1461 ALLCN3SILENCER GASKETS608ROCKWOOD608PEMKO	7. E 8. F 9. E 10. E
 EXISTING FRAMES SHALL BE TESTED AND CERTIFIED TO ENSURE THAT THEY MEET THE 1 HOUR RATING REQUIREMENT AS STATED PER CODE. DOOR AND FRAME SHALL BE LABELED IN ACCORDANCE WITH BUILDING CODE. LITE KIT: MANUFACTURER: NATIONAL GUARD- LOW PROFILE FOR A 	HARDWARE GROUP C:4BALL BEARING HINGESFBB191 US32D 4.5 X4.5STANLEY1CYPHER LOCKSETLR8146B26D41DORMAKABA(7-PIN CORE CYLINDER)BEST	11. F S 12. F

	FLOOR PLAN SHEET NOTES
1.	LASER CURTAIN SHALL BE MOVED FROM THE DR YUNKER BOO
2	SALVAGED LABORATORY SINK AND FAUCET SHALL BE INSTALL
3.	MOUNT TO WALL SALVAGED AND REFURBISHED FIRE EXTINGL
4.	RELOCATED THE SALVAGE EMERGENCY SHOWER. PROVIDE M
5.	EXISTING FUMEHOOD TO BE REFURBISHED. REFER TO SHEET
	INFORMATION.
6.	EXISTING WALL IS SCHEDULED AS A 1 HOUR RATED PARTITION
	TO STRUCTURE, GC SHALL COMPLETE THE ONE HOUR RATED
	EXISTING HOLES, AND USE A FIRE RATED CAULKING TO SEAL
	THROUGH THE WALL.
7.	EXISTING RACEWAY, TO REMAIN. ADD MORE OUTLETS TO EXIS
	ELECTRICAL DWGS.
8.	PROVIDE A DEDICATED 120V OUTLET AND A COLD WATER SUP
	PIPE THREAD) VALVE FOR THE WATER PURIFICATION SYSTEM.
9.	EXISTING ELECTRICAL PANEL AND TRANSFORMER ALONG WAI
10.	EXISTING RACEWAY TO REMAIN.
11.	PROVIDE NEW HOLLOW METAL DOOR FRAME AND NEW WOOD
40	SCHEDULE ON SHEET QL-202.
12.	IF THE WALL DOES NOT EXTEND TO STRUCTURE, GC SHALL C
	PARTITION. FILL ANY EXISTING HOLES, AND USE A FIRE RATEL
12	
13.	PROVIDE CORVED TRACK AT THIS LOCATION AND PROVIDE ON

			- EXISTING E SHOWER - EXISTING F - EXISTING G - EXISTING E DUCT	EMERGENCY FIRE ALARM GYP. SOFFIT	NC REF A.	LECTED CEILIN	G GENERAL NI
EXISTING CR	EILING SOFFIT	FOR LAB 230	- EXISTING E DUCT	EXPOSED HVA	B. C. D. E. F. T. 1. 2. 3. 4. 5. 6. 7. 8. 9.	LECTED CEILIN CONTRACTO EXISTING M CONTRACTO EXISTING M SOFFIT. SEE SHALL STAY CEILING SEF PROVIDE NE EXISTING FI RELOCATED EXISTING SI EXISTING FI	A-OUTFOR ABB AL-010 FOR EQ AECHANICAL D IFFUSER. LECTRICAL DF W SPINKLER S ND COORDINA G SHEET NOTE OR SHALL ADJI ECHANICAL DU ECHANICAL DU MECHANICAL DU MECHANICAL DU MECHANICAL DU MECHANICAL DU ENCE COLUMN W CEILING GF EILING AND GR EW LED LIGHT RE ALARM, TO D SALVAGED E IDE WALL SUPF RANSFORMER

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1 <u>REFLECTED CEILING PLAN_ROOM 230, 232</u> 1/4" = 1'-0"

<u>DTES:</u>	LABORATORY FURNISHINGS AND EQUIPMENT KEYED	LABORATOR	Y DEMOLITION PLAN LEGE	END
S ARE 9'-0" UNLESS NOTED OTHERWISE. REVIATIONS, LEGENDS AND NOTES. UIPMENT MATRIX, AND SCHEDULES. RAWINGS FOR LOCATION OF SUPPLY AND	2 ACOUSTICAL CEILING TILE; SEE SPEC. SECTION 09 5100. 7 BLACKOUT CURTAIN TRACK; SEE SPEC. SECTION 10 2123.		2X4 RECESSED LIGHT FIXTURE, SEE ELEC DEWS	
AWINGS FOR LIGHTING FIXTURE INFORMATION. SYSTEM IN BOTH SPACES. CONTRACTOR SHALL TE WITH CLIENT THIS SCOPE OF WORK.			GYPSUM BOARD BULKHEAD	
ES: JST EXISTING SOFFIT TO ENCLOSE THE EXPOSED			2X2 ACT CEILING	
DRAWINGS. HOWEVER THE EXISTING FIRE ALARM FER TO 2/ QL-402 N, REFER TO 4/QL-901 RID, AND ACOUSTICAL CEILING TILE. RID TO REMAIN			RECESSED RETURN DIFFUSERS, SEE MECH DWGS	
FIXTURES, REFER TO ELECTRICAL DWGS. REMAIN. MERGENCY SHOWER. PLY GRILLES IN SOFFIT. TO REMAIN			RECESSED SUPPLY, SEE MECH DWGS	S
		1		



1/2020 4-22-58 PN





7 ROOM 232_S 1/4" = 1'-0"



SHEET NOTES

PROVIDE NEW RACEWAY PROVIDE 120V DEDICATED ELECTRICAL OUTLET FOR EQ-25. REFER TO ELECTRICAL DWGS.

- PROVIDE NEW METAL SUPPORT FOR END OF COUNTERTOP. GC TO FIELD VERIFY HEIGHT OF EXISTING FIXED CASEWORK. PROVIDE GROMMET AND ELECTRICAL OUTLET AT EQUIPMENT SPACE. SEE DETAIL
- 2/QL-901 AND ELECTRICAL DWGS.
- EXISTING TRANSFORMER, TO REMAIN. RELOCATED EMERGENCY SHOWER
- PROVIDE CW CONNECTION TO THE RELOCATED EMERGENCY SHOWER.REFER
- TO PLUMBING DRAWINGS. RELOCATED CYLINDER RESTRAINTS PROVIDE A 1" EPOXY SHELF.
- 9. SALVAGED RACEWAY AT ISLAND BENCH. 10.

LABORATORY FURNISHINGS AND EQUIPMENT KEYED ...

 $\langle x \rangle$ PAPER TOWEL DISPENSER, O.F.C.I. 3

4

- HAND SANITIZER DISPENSER, O.F.C.I.
- ELECTROSTATICALLY APPLIED COATING; SEE SPEC. SECTION 09 9110.
- NEW EPOXY COUNTERTOP; SEE SPEC. SECTION 12 3553.
- WALL MOUNTED GAS VALVES; SEE SPEC. SECTION 12 3553. 11 NEW PEGBOARD AT SINKS; SEE SPEC. SECTION 12 3553. 12
- SALVAGE RACEWAY; SEE SPEC. SECTION ELECTRICAL DWGS. 15
- NEW WOOD DOOR; SEE SHEET QL-202. 16 17
- NEW RACEWAY; SEE ELECTRICAL DWGS. NEW PRIVACY CURTAIN WITH WALL SUPPORT AT EMERGENCY 20 SHOWER; REFER TO SHEET QL-010.
- NEW ELECTRICAL SWITCH, SEE ELECTRICAL DRAWINGS. 21 SURFACE MOUNTED EMERGENCY SHUT-OFF VALVE; REFER TO 22 SHEET P-202.



HERA Laboratory Planners 1447 Peachtree St. NE., Suite 880 Atlanta, GA 30309

314.289.9202 t. 314.289.6167 f.



GT PROJECT #: 0360-2020



Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308 T

1	08/31/2020	100% CD DOCUMENTS
No.	Date	Description



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100% CONSTRUCTION DOCUMENTS

LABORATORY INTERIOR ELEVATIONS

DRAWN BY:	CHECKED BY:
Author	Checker
PROJECT NO:	DATE:
20176.00	08/31/2020
SHEET NO:	
QL-	-501



SCALE:



(1)	HVAC - LEVEL 2 - DEMO
\cup	1/4" = 1'-0"

GENER 1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS AN 2. ALL EXISTING FIELD CONDITIONS MAY NOT BE ACCURATE 3. EXISTING TEMPERATURE CONTROL TO REMAIN AS CURREN 4. EXISTING FUME HOOD TO REMAIN AS CURRENTLY INSTALL 5. EXISTING AIRFLOWS AS PREVIOUSLY BALANCED TO REMAN AVAILABLE FOR VERIFICATION. COORDINATE WITH OWNER AN K 1 DEMOLISH EXISTING TRANSFER AIR OPENING IN DOOR 2 DEMOLISH EXISTING FLEX DUCT AND CEILING DIFFUSE		
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 K DEMOLISH EXISTING TRANSFER AIR OPENING IN DOOR DEMOLISH EXISTING FLEX DUCT AND CEILING DIFFUSE 	1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS A 2. ALL EXISTING FIELD CONDITIONS MAY NOT BE ACCURAT 3. EXISTING TEMPERATURE CONTROL TO REMAIN AS CURF 4. EXISTING FUME HOOD TO REMAIN AS CURRENTLY INSTA 5. EXISTING AIRFLOWS AS PREVIOUSLY BALANCED TO REM AVAILABLE FOR VERIFICATION. COORDINATE WITH OWNER	
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	 DEMOLISH EXISTING TRANSFER AIR OPENING IN DOC DEMOLISH EXISTING FLEX DUCT AND CEILING DIFFUS)R SE

HVAC GENERAL NOTES <u>GENERAL</u> HVAC GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL "M" SERIES DRAWINGS. 1. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND 2. GENERAL ARRANGEMENT. DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. DRAWINGS CANNOT BE FULLY AND CORRECTLY INTERPRETED WITHOUT REFERENCE TO LEGENDS, DETAILS, 3. SCHEDULES AND SPECIFICATIONS. IT IS THE INTENT OF THE DRAWINGS TO SHOW THE INSTALLATION, AS DETAILED BY THE TYPICAL ARRANGEMENT. ITEMS SHOWN ONCE ON THE FLOOR PLANS. ELEVATIONS, DETAILS, OF DIAGRAMS MAY NOT BE REPEATED IN FULL FOR OTHER TYPICAL INSTANCES. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. 4. PROVIDE INFORMATION AND HARDWARE AS NECESSARY TO COORDINATE CONCRETE PADS AND STEEL PLATFORMS REQUIRED FOR MECHANICAL WORK. COORDINATE ROOF AND WALL PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. COORDINATE SLAB PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH EXISTING POST-TENSION CABLES. RUN DUCTS AND PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS. ALL DUCTWORK SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALL AND UNDERSIDE OF BEAMS AND JOISTS. INSTALL SENSORS (TEMPERATURE, HUMIDITY, CO2, THERMOSTATS) AT LOCATIONS SHOWN ON PLANS OR AS 8. DIRECTED BY ARCHITECT. MOUNTING HEIGHT AFF SHALL COMPLY WITH ADA AND SHALL BE MOUNTED LEVEL WITH ADJACENT SWITCHES (IE LIGHT SWITCHES). COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS AND WITH ALL TRADES INVOLVED. 9. PROVIDE OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS. ACCESS PANELS SHALL BE PROVIDED TO CLEAN COILS AND SERVICE DAMPERS, HEATERS, VALVES AND ALL 10. CONCEALED MECHANICAL EQUIPMENT. PROVIDE ACCESS PANELS THROUGH BUILDING ASSEMBLIES TO SERVICE AND MAINTAIN EQUIPMENT UNLESS SUCH EQUIPMENT IS INSTALLED IN EXPOSED LOCATIONS OR ABOVE LAY-IN

ELEMENTS OF THE WORK SHALL BE INSTALLED IN A MANNER SUCH THAT AT SUBSTANTIAL COMPLETION THE 11. FOLLOWING ITEMS, NEW OR EXISTING SHALL BE "FULLY AND REASONABLY ACCESSIBLE": HVAC CONTROL BOXES. JUNCTION BOXES, VALVES (OF EVERY SHAPE, SORT AND FUNCTION), DDC CONTROL BOXES, ELECTRICAL PANELS FILTERS, BELTS, WATER COILS, DISCONNECT SWITCHES, AND MAINTENANCE ACCESS ELEMENTS INCLUDING PULL SPACE.

CEILINGS. COORDINATE THE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE EXACT QUANTITY, SIZE,

AND LOCATIONS AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO

THE CLOSURE OF THE AFFECTED CEILINGS AND BUILDING ASSEMBLIES. MINIMUM ACCESS PANEL AND DOOR SIZE

SHALL BE 18"x18" UNLESS OTHERWISE NOTED. OBTAIN APPROVAL FOR ALL PANEL LOCATIONS FROM ARCHITECT.

- "FULLY AND REASONABLY ACCESSIBLE" SHALL BE DEFINED AS: NATIONAL ELECTRIC CODE REQUIRED CLEARANCE FOR POWERED EQUIPMENT AND CAPABLE OF BEING ACCESSED FOR SERVICE, REPAIR OR REPLACEMENT BY AN AVERAGE SIZED INDIVIDUAL (ON A LADDER IF NECESSARY) AND CAPABLE OF BEING SERVICED OR REMOVED WITHOUT REMOVING OR MODIFYING OR DISTORTING OTHER COMPONENTS OF THE WORK. THE DESIGN INTENT PROVIDES A MINIMUM 2'x2'x2' ZONE FOR MAINTENANCE.
- CONFLICT WITH MEETING THESE REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IN A TIMELY MANNER AND SHALL BE CORRECTED AT NO ADDITIONAL COST.
- 12. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE. PROVIDE VIBRATION ISOLATION FOR ROTATING EQUIPMENT, DUCTWORK AND PIPING IN ACCORDANCE WITH THE SPECIFICATIONS. PROVIDE TO GC A LIST OF ALL WEIGHTS AND METHODS OF SUPPORT FOR COORDINATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 13. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC, AND COORDINATED WITH OTHER DIVISIONS.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW 14.

AIR SYSTEM SPECIFIC NOTES:

- VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
- SHEETMETAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTES SHALL BE ALLOWED WITHOUT PRIOR CONSENT FROM ARCHITECT/ENGINEER.
- REFER TO SPECIFICATIONS FOR DUCTWORK CONSTRUCTION CLASSES, SEAL, AND LEAKAGE CLASSES. 3.
- EXTERIOR LOUVERS ARE INDICATED FOR LOCATION ONLY. 4.
- SMOKE DETECTORS SHALL BE FURNISHED AND WIRED TO THE FIRE ALARM SYSTEM. MOUNT THE DETECTORS IN 5. DUCTWORK, WHERE REQUIRED BY CODE. WIRE THE DETECTORS TO THE BAS SYSTEM AND FAN STARTERS FOR SHUTDOWN.
- SMOKE DAMPERS SHALL BE UL555S LISTED. FIRE DAMPERS SHALL BE UL555 LISTED. PROVIDE FIRE DAMPERS, 6. SMOKE DAMPERS AND ASSOCIATED ACCESS PANELS WHERE DAMPERS ARE SHOWN ON THE DRAWINGS IN COMPLIANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES AND NFPA 90A. ACCESS DOOR DIMANTIONS SHALL MEET REQUIREMENTS OF NFPA 90A AND NFPA 90B.
- REFER TO REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES. 7
- 8. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. INCREASE SIZE FOR LINER IF APPLICABLE.
- DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZE ARE NOMINAL. REFER TO DIFFUSER 9. SCHEDULE FOR DUCT RUN-OUT SIZES.
- PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND AIR HANDLING UNITS UNLESS 10. INTERNALLY ISOLATED. ALL DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
- 11. THE INSIDE OF DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
- 12. ALL RETURN AIR OPENINGS ABOVE CEILING SHALL BE PROVIDED WITH A 1/4" MESH ALUMINUM OR GALVANIZED SCREEN (80% FREE AREA MINIMUM).
- INSULATE DUCTWORK: PERFORM TESTS BEFORE INSULATING. 13.
- ELBOWS IN DUCT SYSTEMS SHALL BE FULL RADIUS (CENTERLINE RADIUS = 1.5 DUCT WIDTH) WHERE SPACE 14. PERMITS. WHERE LIMITED CLEARANCE OCCURS, PROVIDE SHORT RADIUS ELBOW WITH FULL LENGTH SPLITTER VANES PER SMACNA. MITERED (SQUARE) ELBOWS WITH TURNING VANES MAY NOT BE USED.
- 15. UNLESS INDICATED OTHERWISE, AND AS A MINIMUM PROVIDE 24"x24" MINIMUM SIZE CLEANOUTS IN KITCHEN EXHAUST DUCTS AT CHANGES IN DIRECTION AND BASES OF RISERS, AND EVERY 10 FEET IN STRAIGHT RUNS.
- MANUAL DAMPERS ARE NOT SHOWN ON THE DRAWINGS IN ORDER FOR DRAWING CLARITY. PROVIDE MANUAL 16. ADJUSTABLE DAMPERS ON EACH LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCT TAKE OFF, AND AT EACH TAKE OFF TO REGISTERS, GRILLES, DIFFUSERS.

SCOPE COORDINATION WITH OTHER DISCIPLINES

MECHANICAL CONTRACTOR SHALL COORDINATE THE ELECTRICAL CHARACTERISTICS OF ALL HVAC EQUIPMENT (VOLTAGE, PHASE, ETC.) WITH THE ELECTRICAL CONTRACTOR AND ELECTRICAL PLANS BEFORE EQUIPMENT. ANY SUBSEQUENT MISMATCH BETWEEN MECHANICAL EQUIPMENT ELECTRICAL REQUIREMENTS AND THE ELECTRICAL SERVICE, AS DESIGNED AND PROVIDED SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

	AIR SYSTEM SPECIFIC ABBREVIATIONS					
AC	AIR CONDITIONING	LAT	LEAVING AIR TEMPERATURE			
ACC	AIR COOLED CONDENSER	LD	LINEAR DIFFUSER			
ACCU	AIR COOLED CONDENSING UNIT	LUVR	LOUVER			
ACD		LVDR	LOUVERED DOOR			
ACU		20011				
ACC AE						
		IVI V D	MANUAL VOLUME DAMIFER			
		04				
ALD						
AID						
AVS	AIR VOLUME TRAVERSE STATION					
		OED				
BDD		00				
BI						
BOD	BOTTOM OF DUCT					
		FIIO	FREITEAT COL			
CACU	COMPUTER ROOM AIR CONDITIONING UNIT					
CC	COOLING COIL					
CD	CEILING DIFFUSER	RD				
CFM	CUBIC FEET PER MINUTE	KF DO				
CG	CEILING GRILLE	RG	RETURN GRILLE			
		RHC				
DD	DUAL DUCT SUPPLY AIR TERMINAL	RL				
DIFF	DIFFUSER	RLF				
DWDI	DOUBLE WIDTH DOUBLE INLET	RR	RETURN REGISTER			
DWSI	DOUBLE WIDTH SINGLE INLET	RS	REFRIGERANT SUCTION			
	DIRECT EXPANSION	RTU	ROOF TOP UNIT			
		RV	ROOF VENT			
EF	EXHAUST FAN	RBR	REMOTE BREAK ROOM			
EG	EXHAUST GRILLE					
EHC	ELECTRICAL HEATING COIL	SA	SUPPLY AIR			
EPHC	ELECTRIC PREHEAT COIL	SATT	SOUND ATTENUATOR			
ER	EXHAUST REGISTER	SCR	SCREEN			
ERHC	ELECTRIC REHEAT COIL	SD	SMOKE DAMPER			
ESP	EXTERNAL STATIC PRESSURE	SDET	SMOKE DETECTOR			
20.		SEF	SMOKE EXHAUST FAN			
F	FAN	SF	SUPPLY FAN			
F&B	FACE AND BYPASS					
FB	FAN BOX					
FC	FORWARD CURVED	SG	SUPPLY GBILLE			
FA	FREE AREA	SGD	SLIDE GATE DAMPER			
FCU	FAN COIL UNIT	SM	SHEETMETAL			
FD	FIRE DAMPER (W/ ACCESS DOOR)	SP	STATIC PRESSURE			
FLTR	FILTER	SR	SUPPLY REGISTER			
FPI	FINS PER INCH	SWDI	SINGLE WIDTH DOUBLE INLET			
FSD		SWDI				
		31131	SINGLE WIDTH SINGLE INLET			
	DAMPER WITH ACCESS DOOR	TF	TOILET EXHAUST			
GE	GENERAL EXHAUST	TE	TBANSEER FAN			
GH	GRAVITY HOOD	TG	TBANSEER GRILLE			
		TR	TBANSEER			
HC	HEATING COIL	TOP				
HEGA	HIGH EFFICIENCY GAS ABSORBER AIR FILTER	101	TOTAL STATIC FILESSONE			
HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER	UC	UNDERCUT DOOR			
HPU	HEAT PUMP UNIT	~~				
HRU	HEAT BECOVERY LINIT					
HV	HEATING & VENTILATING LINIT	VD				
HU	HUMIDIFIER	VV	VARIABLE VOLUME SUPPLY AIR TERMINAL B			
		VVE	VARIABLE VOLUME EXHAUST AIR			
н			TERMINAL BOX			
		WMS	WIRE MESH SCREEN			
10		VVIVIO				

NTS

SCALE:

- GENERAL REQUIREMENTS
 - THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. POTENTIAL PROBLEMS AREA SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.
 - ANY DEMOLITION SHALL BE COORDINATED WITH OWNER, ARCHITECT, G.C., AND ENGINEER.
- 3. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM CONDITIONS.
 - a. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
 - b. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD.
 - c. CARE SHALL BE TAKEN DURING THE INSTALLATION OF THE NEW WORK, AS NOT TO DAMAGE OR INTERRUPT THE EXISTING BUILDING SYSTEMS AND SERVICES INSTALLED.
 - d. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED AS WELL AS WITH EXISTING SYSTEMS, THE STRUCTURE, AND OTHER OBSTRUCTIONS.
 - e. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION OF NEW WORK SHALL BE COORDINATED IN ADVANCE WITH THE CONSTRUCTION MANAGER AND BUILDING OWNER.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
- ALL MATERIALS AND EQUIPMENT SHALL BE UNUSED AND OF NEW MANUFACTURE, EXCEPT FOR EXISTING COMPONENTS INDICATED TO REMAIN AND BE REUSED.
- ACCESS PANELS SHALL BE PROVIDED TO CLEAN AND SERVICE DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
- INSTALL THERMOSTATS AT MOUNTING HEIGHTS ABOVE FINISHED FLOOR IN ACCORDANCE WITH "ADA" REQUIREMENTS, OR AS DIRECTED OTHERWISE BY ARCHITECT.
- CONTRACTOR SHALL REPORT ANY EQUIPMENT DEFICIENCIES FOUND TO THE OWNER AND THE ARCHITECT AND/OR ENGINEER.
- WORK SHALL CONFORM TO THE CURRENT IN-FORCE EDITIONS OF THE FOLLOWING:
- a. SHEET METAL SMACNA STANDARDS.
- GEORGIA BUILDING CODES AND AMENDMENTS.
- INTERNATIONAL MECHANICAL CODE (IMC).
- INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
- e. ALL OTHER APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
- WORK SHALL ALSO CONFORM TO BASE BUILDING SPECIFICATIONS AND STANDARDS.
- 10. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
- 11. SUBMITTALS

MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL MATERIAL AND EQUIPMENT, CONTRACTOR SHALL POINT OUT ANY DEVIATIONS OF THE SHOP DRAWINGS FROM THE DESIGN, SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME. FOR SUBMITTAL REVIEW. SHOP DRAWINGS MAY BE PAPER OR ELECTRONIC. ELECTRONIC SHOP DRAWINGS SHALL BE IN SEARCHABLE PDF FORMAT. IN ADDITION TO THE FOREGOING, SUBMIT PAPER SHOP DRAWINGS SHOWING THE FOLLOWING:

- a. DUCTWORK SHOP DRAWINGS AND DETAILS. THE ROUTING OF DUCTWORK ON VANDERWEIL'S DRAWINGS IS SHOWN DIAGRAMMATICALLY AND APPROXIMATELY, AS ARE THE POSITIONS OF NEW VAV BOXES AND OTHER ABOVE-THE-CEILING COMPONENTS. THE CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LOCATIONS, PROVIDING PROPER CLEARANCES, MAKING PROVISIONS FOR MAINTENANCE ACCESS, AND COORDINATING WITH EXISTING AND NEW COMPONENTS OF OTHER TRADES, THE STRUCTURE, AND OTHER OBSTRUCTIONS. THE DUCTWORK SHOP DRAWING SUBMITTAL SHALL BE BASED ON THIS COORDINATION EFFORT AND SHALL SHOW ALL AIR DISTRIBUTION COMPONENTS. DUCTWORK AND COMPONENTS SHALL BE DRAWN TO SCALE, AND DUCT SIZES SHALL BE INDICATED.
- b. CONTROLS SHOP DRAWINGS, INCLUDING EQUIPMENT AND SYSTEM CONTROL SCHEMATICS, SEQUENCES OF OPERATIONS, LOGIC DIAGRAMS AND SYSTEM COMPONENTS INCLUDING DETAILS OF TIE-IN TO EXISTING BUILDING CONTROL MANAGEMENT SYSTEM.
- 12. AS-BUILT DRAWINGS

MAINTAIN ONE SET OF PRINTS ON THE SITE AND NOTE ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DESIGN THEREON. AT THE COMPLETION OF THE PROJECT INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT CD FOR APPROVAL.

13. OPERATING AND MAINTENANCE INSTRUCTIONS

PROVIDE THREE SETS OF MANUFACTURERS OPERATING AND MAINTENANCE INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT AND SYSTEM. COMPILE INTO THREE HARD COVER THREE RING BINDERS WITH INDEX PAGE AND INDEXING TABS. ALL NAME TAG INFORMATION SUCH AS MAKE, TYPE, SIZE, CAPACITY, SERIAL NUMBER, ETC. SHALL BE INCLUDED AS PART OF THE MANUAL.

- 14. HANGERS AND SUPPORTS
 - a. STRUCTURAL STEEL SUPPORTS, HANGERS, ETC. SHALL BE ANGLE IRON, STEEL CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC., ALL SUPPORTS, HANGERS, BRACKETS, ETC., SHALL BE AS APPROVED BY THE ENGINEER. ALL HANGERS SHALL BE GALVANIZED OR PAINTED WITH TWO COATS OF RUSTOLEUM PAINT BEFORE THEIR INSTALLATION.
 - b. ATTACH HANGERS AND SUPPORTS DIRECTLY ONTO THE STRUCTURE BY FIRST REMOVING EXISTING FIRE PROOFING AND AFTER SECURING THE ATTACHMENT, REPAIRING THE FIRE PROOFING TO ITS ORIGINAL CONDITION, CONTINUOUSLY OVER THE ATTACHMENT.
- 15. CLEANING

ENTIRE INSTALLATION AND ALL WORK AREAS SHALL BE LEFT AS CLEAN AS NEW. CLEAN INTERNALS OF ALL DUCTWORK AND AIR HANDLING UNITS, AND REPLACE FILTERS AFTERWARDS. FLUSH AND CLEAN PIPING.

16. PUNCHLIST

WHEN THE WORK IS NEARING COMPLETION, THE HVAC CONTRACTOR'S PROJECT EXECUTIVE OR DESIGNATED REPRESENTATIVE SHALL PHYSICALLY WALK DOWN THE INSTALLATION, EXAMINING IT IN DETAIL, AND PREPARE A PUNCH LIST CONTAINING AN ITEMIZATION OF WORK REMAINING FOR 100% COMPLETION. SUBMIT THIS TO THE ENGINEER WHO WILL THEN INSPECT THE WORK AND PREPARE THE ENGINEER'S PUNCH LIST. CONTRACTOR SHALL COMPLETE ALL PUNCH LIST ITEMS TO THE SATISFACTION OF THE OWNER AND ARCHITECT/ENGINEER.

- 17. TESTING AND BALANCING
- a. TEST AND VERIFY ALL EXISTING SYSTEMS BEING MODIFIED AS PART OF THIS WORK PRIOR TO STARTING DEMOLITION. RECORD RESULTS AND COMPARE WITH EXISTING T&B DATA. REPORT AND COORDINATE ANY DEVIATIONS WITH ARCHITECT OR ENGINEER.
- b. TEST DUCTWORK AND BALANCE SYSTEMS BEING MODIFIED AS PART OF THIS WORK, INCLUDING NEW AND EXISTING REGISTERS, GRILLES, DIFFUSERS, AND VAV BOXES, TO PERFORMANCE DATA SHOWN ON PLANS AND AS SPECIFIED.
- c. DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL
- d. LEAKS, DAMAGE AND DEFECTS DISCOVERED OR RESULTING FROM TESTING, AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS. TEST SHALL BE CONTINUED UNTIL SYSTEM OPERATES WITHOUT ADJUSTMENT OR REPAIR.
- e. UPON COMPLETION OF CONSTRUCTION, THE EXISTING FUME HOOD SHALL BE TESTED FOR PERFORMANCE BASED ON ASHRAE 110 STANDARDS. T&B CONTRACTOR TO ISSUE FUME HOOD AIRFLOW CERTIFICATION UPON COMPLETION.
- f. SUBMIT COPY OF TESTING AND BALANCING REPORT TO ARCHITECT FOR APPROVAL.

18. WARRANTY

11.

UNDER WARRANTY WITHIN CONTRACT PRICE.

- DUCTWORK AND AIR DISTRIBUTION EQUIPMENT
 - REFER TO GENERAL NOTE "SUBMITTALS", FOR ROUTING. WHERE DUCT SIZES ARE NOT INDICATED. CONTRACTOR SHALL SELECT SIZES BASED ON THE CFM USING THE "LOW PRESSURE DUCT SIZING TABLE."

LOW PRESSURE DUCT SIZING TABLE

Airflow (cfm)	Round Duct Size (inches)	Equivalent Re	ectangular Duct Siz	es (inches x inches))
80-100	6	4x8	6x6		
100-150	7	4x12	6x8		
150-200	8	6x10	8x8		
200-300	9	6x12	8x10		
300-400	10	6x16	8x12	10x10	
400-500	11	6x20	8x14	10x10	
500-600	12	6x24	8x16	10x12	
600-750	13	8x18	10x14	12x12	
750-1000	14	8x24	10x16	12x14	
1000-1200	15	8x26	10x20	12x16	14x14
1200-1400	16	8x30	10x24	12x18	14x16
1200-1700	17	10x26	12x22	14x18	16x16
1700-1900	18	10x28	12x24	14x20	16x18
1900-2200	19	12x26	14x24	16x20	18x18
2200-2500	20	12x30	14x26	16x22	18x20
2500-2800	22	12x36	14x30	16x26	18x24

- 2. SPECIAL DUCTWORK REQUIREMENTS
 - a. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. CONTRACTOR SHALL INCREASE SIZE FOR LINER IF APPLICABLE.
 - b. DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZES ARE NOMINAL.
 - PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND HEAT PUMPS. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS
 - MAXIMUM LENGTH OF FLEXIBLE RUN-OUT TO DIFFUSERS SHALL BE 6'-0". PROVIDE ADDITIONAL LENGTH OF RIGID DUCT (ROUND OR RECTANGULAR) ON RUN-OUT AS REQUIRED. SAG SHALL NOT EXCEED 1/2" PER FOOT OF SPACING BETWEEN SUPPORTS.
 - ACCESS DOORS.
 - f. DUCTWORK SHALL NOT RUN ALONG FULL HEIGHT PARTITIONS.
 - g. PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK NOT UTILIZED FOR NEW LAYOUT.
 - h. THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
 - WHEN SECTION OF DUCTWORK IS NOT LABELED FOR SIZE, THE LARGER SIZE INDICATED ON THE CONNECTED DUCT SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSER SHALL EQUAL DIFFUSER NECK SIZE.
 - DUCT BRANCH CONNECTIONS AND TAKE OFFS SHALL BE MADE WITH 45° CONNECTION, BELLMOUTH OR CONICAL ONLY. SPIN IN COLLARS AND STRAIGHT TAPS SHALL NOT BE USED.
 - k. ELBOWS AND BENDS FOR RECTANGULAR DUCTS SHALL HAVE CENTER LINE RADIUS OF 1.5 TIMES DUCT WIDTH WHEREVER POSSIBLE. WHERE CENTERLINE RADIUS IS LESS THAN 1.5 TIMES DUCT WITH, ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEEL AND FULL LENGTH SPLITTER VANES.

HVAC SPECIFICATIONS

- PROVIDE WARRANTY FOR WORK OF THIS SECTION IN WRITING FOR ONE YEAR FROM DATE OF OWNERS ACCEPTANCE OF SUBSTANTIAL COMPLETION. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT. WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS
- 1. ROUTING AND SIZING OF DUCTWORK

e. ALL DUCTS PENETRATING RATED FIRE WALLS SHALL BE PROVIDED WITH FIRE DAMPERS AND

- 3. MATERIALS AND PRESSURE RATING
- a. SHEET METAL DUCTS SHALL BE CONSTRUCTED OF HOT DIPPED G90 GALVANIZED SHEET META UNLESS OTHERWISE SPECIFIED.
- 4. FLEXIBLE DUCTWORK
 - a. FLEXIBLE DUCTWORK, CONNECTING TO UNINSULATED OR UNLINED DUCT, SHALL BE VINYL CO. FIBERGLASS CLOTH 0.0057" MINIMUM THICKNESS, 25 STRANDS PER INCH MINIMUM THREAD CC WITH CORROSION-RESISTANT HELICAL WIRE REINFORCEMENT, AND RATED FOR 12" W.C. POSI PRESSURE,
 - b. RATING SHALL BE 2" W.C. NEGATIVE PRESSURE WITH A MAXIMUM VELOCITY OF 4000 FPM. FLEXDUCT MUST BE LISTED AS A CLASS 1 CONNECTOR ACCORDING TO UL 181 AND SHALL MEE REQUIREMENTS OF NFPA 90A - MAXIMUM ASTM E-84 FIRE HAZARD RATING. UNINSULATED FLEX DUCT SHALL BE EQUIVALENT TO FLEXMASTER TYPE 4.
 - c. FLEXIBLE DUCT CONNECTED TO INSULATED OR LINED DUCT SHALL BE INSULATED WITH 1-1/2", LB. DENSITY FIBERGLASS INSULATION AND FLAME RETARDANT (UL LISTED) VAPOR BARRIER, MEETING ASTM E-84 RATING.
- 5. FIRE DAMPERS (DYNAMIC STYLE ONLY):
 - a. PROVIDE FIRE DAMPERS AND ACCESS DOORS THROUGHOUT AIR DISTRIBUTION SYSTEM AS SH ON DRAWINGS, AND WHERE DUCTS PENETRATE FIRE WALLS.
 - b. FIRE DAMPERS INSTALLED IN SYSTEMS THAT CAN REMAIN IN OPERATION AFTER DAMPER HAS SHALL BE DYNAMIC TYPE DAMPERS. ALL OTHER FIRE DAMPERS MAY BE STATIC TYPE FIRE DAM
- 6. SMOKE DAMPER:
- a. BASIS OF DESIGN PRODUCT: SUBJECT TO COMPLIANCE REQUIREMENTS, PROVIDE PRODUCT ON DRAWINGS OR COMPARABLE PRODUCT BY ONE OF THE FOLLOWING:
- 1. GREENHECK FAN CORPORATION 2. NAILOR INDUSTRIES INC.
- 3. RUSKIN COMPANY.
- b. GENERAL REQUIREMENTS: LABEL ACCORDING TO UL 555S BY AN NRTL.
- c. SMOKE DETECTOR: INTEGRAL, FACTORY WIRED FOR SINGLE-POINT CONNECTION.
- d. FRAME: HAT SHAPED, 0.094-INCH THICK, GALVANIZED SHEET STEEL, WITH INTERLOCKING, GI MECHANICALLY ATTACHED CORNERS AND MOUNTING FRAME.
- e. BLADES: ROLL-FORMED, HORIZONTAL, INTERLOCKING OR OVERLAPPING, 0.034-INCH THICK,
- f. RATED PRESSURE AND VELOCITY TO EXCEED DESIGN AIRFLOW CONDITIONS.
- g. MOUNTING SLEEVE: FACTORY INSTALLED, 0.039-INCH THICK, GALVANIZED SHEET STEEL.
- 7. VOLUME DAMPERS

PROVIDE MANUAL ADJUSTABLE VOLUME DAMPERS, WITH EXTENDED MOUNT INDICATING AND LC QUADRANTS ON EACH SUPPLY, RETURN, AND GENERAL EXHAUST DUCT TAKEOFF, AND AT EACH TAKEOFF TO A REGISTER, GRILLE, OR DIFFUSER (NOT ALL DAMPERS ARE SHOWN ON DRAWINGS DAMPERS SHALL BE LOCATED AS FAR UPSTREAM AS POSSIBLE IN THE BRANCH DUCT OR TAKE (MINIMIZE DOWNSTREAM NOISE.

- 8. DIFFUSERS, REGISTERS, AND GRILLES
- PROVIDE DIFFUSERS, REGISTERS, AND GRILLES FOR SUPPLY, RETURN, AND EXHAUST OUTLETS, SIZE, TYPE, MATERIAL AND DESIGN SHOWN ON DRAWINGS. ACCEPTABLE MANUFACTURERS SHA TUTTLE & BAILEY, ANEMOSTAT, KRUEGER, METALAIRE, OR TITUS. SOUND PRESSURE LEVELS SHA EXCEED NC 30. COLOR AND FINISH SHALL BE SELECTED BY THE ARCHITECT.
- 9. DUCTWORK INSULATION (EXTERNAL)
- a. INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA. INSULATE (EXISTING AND NEW RETURN DUCTS AND PLENUMS WITH A MINIMUM OF R-6 (AS INSTALLED) INSULATION WHEN UNCONDITIONED SPACES AND A MINIMUM OF R-8 (AS INSTALLED) INSULATION WHEN LOCAT ENVELOP. INSULATION SHALL BE FIBROUS GLASS DUCT WRAP, WITH FOIL-KRAFT FLAME RE ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD. 50 SMOKE DEVELOPED AND
- b. INSULATE STANDING SEAMS IN DUCTWORK WITH THE SAME MATERIAL AND THICKNESS AS
- c. ACOUSTICALLY LINED DUCTWORK SHALL NOT BE INSULATED.
- d. INSULATION AND VAPOR BARRIER SHALL BE CONTINUOUS AROUND ENTIRE PERIMETER OF METAL STRAPS SHALL HAVE INSULATION ENCOMPASSING STRAPS, WHERE STRAPS PENETI AROUND STRAP WITH INSULATING TAPE. DUCTS SUPPORTED BY TRAPEZE TYPE HANGERS DENSITY RIGID INSULATION PROVIDED BETWEEN DUCT AND HANGER, INSULATION SHALL BI BARRIER AS SPECIFIED FOR SPECIFIC DUCT TYPE. RIGID INSULATION SECTION SHALL BE FU MINIMUM 12" LONG. TAPE AND SEAL ALL SEAMS WHERE RIGID INSULATION MEETS OTHER IN
- e. IF EXISTING INSULATION PROPERTIES DO NOT MATCH THE ABOVE-SPECIFIED REQUIREMENT SECTIONS OF INSULATION MAY BE REPLACED WITH FIELD-LIKE INSTALLED INSULATION.

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DOCUMENTS

MECHANICAL

SPECIFICATIONS

CHECKED BY:

08/31/2020

DP

DATE:

DRAWN BY:

PROJECT NO:

DP

30089

SHEET NO:

	DIFFUSER, REGISTER, AND GRILLE SCHEDULE						
TAG	SERVICE	FACE SIZE	NECK SIZE	MOUNTING	MATERIAL	MANUFACTURER	NOTES
SG-1	SIDEWALL SUPPLY	20x6	20x6	SIDEWALL/SOFFITT	ALUMINUM	TITUS - 300FL	1,2,3
RAG	CEILING RETURN/EXHAUST	24x24	24x24	LAY-IN CEILING	ALUMINUM	TITUS - 50F	3,4,5
NOTES:							

1. PROVIDE CABLE-OPERATED, ALUMINUM, OPPOSED BLADE BALANCING DAMPER. 2. PROVIDE DEFLECTION BLADES AND DIRECT BLADES 30 deg AS SHOWN ON PLANS.

3. FINISH SHALL BE OF TYPE AND COLOR COORDINATED WITH ARCHITECT.

4. FRAME STYLE TO MATCH ARCHITECTURAL CEILING PLAN AND CEILING SUSPENSION SYSTEM.

5. PROVIDE ADAPTOR FITTING FOR SURFACE MOUNT APPLICATIONS WHERE APPLICABLE.

1 HVAC DUCTWORK - LEVEL 2 1/4" = 1'-0"

GENE 1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS AN 2. ALL EXISTING FIELD CONDITIONS MAY NOT BE ACCURATE 3. EXISTING TEMPERATURE CONTROL TO REMAIN AS CURRE 4. EXISTING FUME HOOD TO REMAIN AS CURRENTLY INSTAL 5. EXISTING AIRFLOWS AS PREVIOUSLY BALANCED TO REMA 6. EXISTING BRANCH DUCTWORK SERVING LABS 230 & 232 S DUCT AIR LEAKAGE AS RECORDED DURING FINAL T&B SHAL 7. EXISTING RE-HEAT COILS SERVING LABS 230 & 232 SHALL RECORDED DURING FINAL T&B SHALL BE COORDINATED WIT $\langle 1 angle$ NEW TRANSFER DUCT BETWEEN LAB AND ADJACENT (2) CONNECT NEW RECTANGULAR DUCTWORK TO EXISING CEILING SOFFITT LOCATIONS. (3) PROVIDE NEW FACE VELOCITY SENSOR BY TSI/ALNOR FOR EXISTING FUME HOOD. SENSOR TO INDICATE FAC SENSOR, THUS IT DOES NOT COMMUNICATE WITH BAS EXHAUST AIRFLOW RATE IS BASED ON CURRENT T&B I MAINTAINED UPON CONSTRUCTION COMPLETION. CONFIRM FIRE DAMPER AT THIS LOCATION. 1. INSTALL A 1-Hr RATED FIRE DAMPER AT WALL PENET 2. DEDUCTIVE ALTERNATE: DELETE NEW FIRE DAMPER $\left<5\right>$ EXISTING FUME HOOD EXHAUST DUCT TO REMAIN AS

 $\begin{tabular}{|c|c|c|c|c|c|} \hline \hline 6 & $BALANCE EXISTING DIFFUSERS TO THE AIRFLOWS SHOTS START OF CONSTRUCTION. \end{tabular}$

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				Georgia Institute
				Cherry Emerson Peter Yunker Lab Fit-Up
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AND COORDINATE ANY E FELY REPRESENTED. RENTLY INSTALLED. ALLED. MAIN UNCHANGED FOR SHALL BE CLEANED AN ALL BE SEALED. EXISTING L BE FLUSHED AND CLE	DISCREPANCIES WITH ARCHITECT OR ENGINEER. THIS SCOPE. D CHECKED FOR AIR LEAKAGE. EXCESSIVE G DUCT INSULATION SHALL BE FIXED AS NEEDED. GANED. EXCESSIVE PRESSURE DROPS AS			
KEYED NOTES				
T SPACE. NG BRANCH DUCT SERV	VING LAB 230. REFER TO ARCH RCP FOR NEW			$\frac{1}{2}$
R, MODEL AIRGARD LAE ACE VELOCITY BASED OI AS OR OTHER LOCAL PR B REPORT AND CURREN	3 HOOD MODEL 335, OR EQUAL BY TRIATEK N SASH POSITION ONLY. THIS IS A STAND-ALONE RESSURE MONITORING DEVICES. FUME HOOD IT OPERATING CONDITIONS, THUS MUST BE			DRAWN BY: CHECKED BY: DP DP
ETRATION IN ABSENCE (ER IF EXISTING DAMPER	OF EXISTING. IS PRESENT AND CONFIRMED TO BE 1-Hr RATED.			PROJECT NO: DATE: 30089 08/31/2020 SHEET NO:
HOWN. AIRFLOWS ARE E	EXISTING AND SHOULD BE VERIFIED PRIOR TO			M-202
				SCALE: As indicated

2 CAP AND VALVE EXISTING 1 1/4" CW (VERIFY IN FIELD) $\langle 3 \rangle$ REMOVE AND SALVAGE EXISTING EMERGENCY SHOW $\langle \overline{\mathbf{4}} \rangle$ EXISTING LAB SINK AND EMERGENCY EYEWASH TO RE 5 FUMEHOOD CONNECTIONS TO BE REFURBISHED (REF 6 EXISTING CA AND VAC BENCH OUTLETS TO BE REMOV (7) REMOVE EXISTING 3/4" PVC PIPING SPILLING TO FUME

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GENERAL NOTES SHALL BE PROTECTED DURING THE DEMOLITON PHASE		PLUMBING - DEMOLITION
KEYED NOTES D) WER FOR RE-USE REMAIN EFER TO QL-010). DVED. CAP AND VALVE CA AND VAC ABOVE CEILING EHOOD		PLAN DRAWN BY: CHECKED BY: KG JB PROJECT NO: DATE: 30089 08/31/2020 SHEET NO: PDD-102 SCALE: $1/4" = 1'-0"$

PLUMBING NOTES - GENERAL

- 1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL DRAWINGS MARKED P AND OR FP.
- 2. DRAWINGS ARE DIAGRAMATIC: DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
- 3. DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL.
- 4. DETERMINE EXACT LOCATIONS IF EXISTING UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM
- WORK OF THIS SECTION.
 ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE LATEST PLUMBING CODE AND ALL APPLICABLE LOCAL CODES.
- IT SHALL BE THE RESPONSABILITY OF THIS CONTRACTOR TO COORDINATE THE WORK WITH THAT OF ALL OTHER TRADES, INCLUDING BUT NOT LIMIT TO, ELECTRICAL, HVAC, PROCESS PIPING, SPRINKLER, PLUMBING, STRUCTURAL AND GENERAL ARCHITECTURE.
- 7. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
- 8. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
- 9. ALL PIPING PENETRATING CEILINGS AND WALL SHALL BE INSTALLED WITH ESCUTCHEONS AT THE PENETRATON. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHERTIGHT. PIPING PENETRATING FIRE RATED PARTITIONS SHALL BE PROVIDED WITH FIRE RATED SEALS AS REQUIRED BY LOCAL CODE AUTHORITY. (SEE DETAILS)
- 10. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
- 11. INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.
- 12. PROVIDE ACCESS PANELS TO SYSTEM COMPONENTS THAT ARE CONCEALED AND REQUIRE PERIODIC SERVICE.
- 13. TOPS OF ALL FLOOR DRAINS SHALL BE SET FLUSH WITH FINISHED FLOOR. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING STRUCTURE OR COMPONENTS.
- 14. ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
- 15. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS.
- 16. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
- 17. PROVIDE VENTS AT HIGHT POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
- 18. PROVIDE GAUGE FITTINGS AND THERMOMETER WELLS AT HOT WATER SUPPLY AND RETURN BRANCHES AND AT PUMP INLETS AND OUTLETS.
- 19. PITCH PRESSURE PIPING IN DIRECTION OF FLOW.
- 20. VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO RUNNING ANY PIPING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL FIXTURES AND EQUIPMENT. REFER TO KITCHEN LAYOUT DRAWING FOR EXACT LOCATION AND ROUGHT-IN REQUIREMENTS OF ALL KITCHEN FIXTURES AND EQUIPMENT.
- 21. ALL WASTE PIPING FROM LAB SINKS & HOODS SHALL BE VALVED IN BASE CABINET OF HOOD. NO CONNECTION TO LAB WASTE & LAB VENT PIPING SYSTEM SHALL BE MADE.
- 22. OBTAIN GAS PERMITS AND DEFRAY ALL COSTS INCIDENTAL TO THE GAS PIPING SYSTEM. CONTRACTORS WORK SHALL COMMENCE ON THE HOUSE SIDE OF THE UTILITY CO. METER.
- 23. A SUITABLE DRIP OF CONDENSATE POCKET SHALL BE INSTALLED AT THE BOTTOM OF ALL GAS RISERS.
- ALL GAS PIPING TO COMPLY WITH LOCAL AND STATE CODES.
 GAS PIPING AND SAFETY DEVICES SHALL CONFORM TO THE REQUIREMENTS OF NFPA 54 AND SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE STATE REGULATORY BOARD.
- 26. PROVIDE A SUITABLE GAS COCK VALVE AT EACH BRANCH RUNOUT FROM THE MAIN RISER SERVING GAS OUTLETS AND AT EACH INDIVIDUAL GAS FIXTURE.

PLUMBING ABBREVIATIONS - LAB DRAINAGE

DW	DOUBLE WALL CONTAINMENT SYSTEM
LV	LABORATORY VENT
LW	LABORATORY WASTE
LW-DW	LABORATORY WASTE-DOUBLE WALL
LW-FM	LABORATORY WASTE-FORCE MAIN
LWMH	LABORATORY WASTE MANHOLE
SV	SPECIAL VENT
SW	SPECIAL WASTE

PLUMBING ABBREVIATIONS - LAB WATER

AWS	ANIMAL WATERING SYSTEM
DI	DE-IONZED WATER
DW	DISTILLED WATER
EW	EMERGENCY WATER FOR SAFETY EQUIPMENT
NCCLS	NATIONAL COMMITTEE FOR LAB STANDARDS
PCW	PROTECTED COLD WATER
PHW	PROTECTED HOT WATER
PHWR	PROTECTED HOT WATER RETURN
PWR-#	PURE WATER RETURN STREAM #
PWS-#	PURE WATER SUPPLY STREAM #
RO/DI	REVERSE OSMOSIS DEIONIZED WATER
TDS	TOTAL DISSOLVED SOLIDS
TOC	TOTAL ORGANIC CARBON
TW	TEMPERED WATER
UF	ULTRAFILTRATION
USP	UNITED STATES PHARMACOPEIA
UV	ULTRAVIOLET
WFI	WATER FOR INJECTION

PLUMBING ABBREVIATIONS - GENERAL

ABB.	ABBREVIATION
AC	AIR CHAMBER
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
ABCH	ABCHITECT
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF RISER
BV	BALL VALVE
CEM	CUBIC FEET PEB MINUTE
CI	CASTIRON
CL	CENTER LINE
CLDI	CEMENT LINED DUCTILE IRON
CLG	CEILING
COI	COLLIMN
	CONTINUATION
	CONTINUATION
CP	CHROME PLATED
CP-#	HOT WATER CIRCULATING PUMP #
CTE	CONNECT TO EXISTING
CV	CHECK VALVE
	DOWN
DWG	DRAWING
EL	ELEVATION
EQ	EQUAL
ETBR	EXISTING TO BE REMOVED
FTR	FXISTING TO REMAIN
EX	EXISTING
FC	FAIL CLOSED
FFE	FINISH FLOOR ELEVATION
FO	FAIL OPEN
	EEET
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GV	GATE VALVE
GWH	GAS WATER HEATER
HC	HANDICAPPED ACCESSIBLE
HP	HORSEPOWER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
12101	
KW	KILOWATTS
KW MAX	KILOWATTS MAXIMUM
KW MAX MECH	KILOWATTS MAXIMUM MECHANICAL
KW MAX MECH MEZZ	KILOWATTS MAXIMUM MECHANICAL MEZZANINE
KW MAX MECH MEZZ MFR	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTUBEB
KW MAX MECH MEZZ MFR	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANIHOLE
KW MAX MECH MEZZ MFR MH	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE
KW MAX MECH MEZZ MFR MH MIN	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM
KW MAX MECH MEZZ MFR MH MIN MISC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS
KW MAX MECH MEZZ MFR MH MIN MISC MTD	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOBMALLY CLOSED
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A NC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A NC NIC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A NC NIC NO	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A NC NIC NO NO.	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A N/A NC NIC NO NO. NO. NTS	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NUMBER NOT TO SCALE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO. NTS NUM	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NORMALLY OPEN NUMBER NOT TO SCALE NUMBER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NIC NIC NIC NO NO. NTS NUM OC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NIC NO NO NO. NTS NUM OC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT IN CONTRACT NORMALLY OPEN NUMBER ON T TO SCALE NUMBER ON CENTER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NTS NUM OC OD	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NTS NUM OC OD OS&Y	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT NO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NIC NO NO NO NO NO NO NO OD OS&Y PC	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NO NO NO NO OD OS&Y PC PH	KILOWATTS MAXIMUM MECHANICAL MEZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NO NO NO NO OD OD OS&Y PC PH POS	KILOWATTSMAXIMUMMECHANICALMECHANICALMEZZANINEMANUFACTURERMANHOLEMINIMUMMISCELLANEOUSMOUNTEDMIXING VALVENOT APPLICABLENORMALLY CLOSEDNOT IN CONTRACTNORMALLY OPENNUMBERON CENTEROUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE SCREW & YOKEPLUMBING CONTRACTORPHASEPROVIDED UNDER OTHER SECTION
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NO NO NO OD OD OS&Y PC PH POS PP	KILOWATTSMAXIMUMMECHANICALMECHANICALMEZZANINEMANUFACTURERMANHOLEMANHOLEMINIMUMMISCELLANEOUSMOUNTEDMIXING VALVENOT APPLICABLENORMALLY CLOSEDNOT IN CONTRACTNORMALLY OPENNUMBERON CENTEROUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE SCREW & YOKEPLUMBING CONTRACTORPHASEPROVIDED UNDER OTHER SECTIONPOLYPROPYLENE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NIC NO NO NO NO NO NO OD OS&Y PC PH POS PP PRV	KILOWATTS MAXIMUM MECHANICAL MEZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT IN CONTRACT NORMALLY OPEN NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NIC NIC NO NO NO NO OS&Y PC PH POS PP PRV PSI	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT IN CONTRACT NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POLYPROPYLENE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PRV PSI DV/P	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NIC NO NO NO NO NO NO PC PH PC PH POS PP PRV PSI PVB	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NO NO NO PC PH PC PH PC PH POS PP PRV PSI PVB PVC	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT TO SCALE NUMBER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE POUNDS PER SQUARE INCH PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO NO NO NO NO PC PH PC PH PC PH PC PH PC PH PSI PVB PVC QTY	KILOWATTSMAXIMUMMECHANICALMECHANICALMEZZANINEMANUFACTURERMANHOLEMANHOLEMINIMUMMISCELLANEOUSMOUNTEDMIXING VALVENOT APPLICABLENORMALLY CLOSEDNOT IN CONTRACTNORMALLY OPENNUMBERON CENTEROUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE SCREW & YOKEPLUMBING CONTRACTORPHASEPROVIDED UNDER OTHER SECTIONPOLYPROPYLENEPRESSURE REDUCING VALVEPOUNDS PER SQUARE INCHPRESSURE VACUUM BREAKERPOLYVINYL CHLORIDEQUANTITY
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PRV PSI PVC QTY RCP	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PROSUDE DIAMER SECTION POLYPROPYLENE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PRV PSI PVC QTY RCP REQ'D	KILOWATTS MAXIMUM MECHANICAL MEZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PRV PSI PVC QTY REQ'D RPBP	KILOWATTSMAXIMUMMECHANICALMECHANICALMEZANINEMANUFACTURERMANUFACTURERMANHOLEMINIMUMMISCELLANEOUSMUNTEDMISCELLANEOUSMOUNTEDMIXING VALVENOT APPLICABLENORMALLY CLOSEDNOT IN CONTRACTNORMALLY OPENNOT TO SCALENUMBERON CENTEROUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE DIAMETER OR OVERFLOW DRAINOUTSIDE SCREW & YOKEPLUMBING CONTRACTORPHASEPROVIDED UNDER OTHER SECTIONPOLYPROPYLENEPROSURE REDUCING VALVEPOUNDS PER SQUARE INCHPRESSURE REDUCING VALVEPOLYVINYL CHLORIDEQUANTITYREINFORCED CONCRETE PIPEREQUIREDREQUIREDREQUIREDREDUCED PRESSURE BACKFLOW PREVENTOR
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PRV PSI PVC QTY REQ'D RPBP RPM	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MANHOLE MINIMUM MISCELLANEOUS MUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT MALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR BEVOLUTIONS PER MINI ITE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO OC OD OS&Y PC PH POS PP PKV PSI PVC QTY RCP RPBP RPM SCH	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANHOLE MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY COSED NORMALLY OPEN NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REDUCED PRESSURE BACKFLOW PREVENTOR
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NO OC OD OS&Y PC PH POS PP PRV PSI PVB PVC QTY RCP RPBP RPM SCH	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MEZZANINE MANUFACTURER MANHOLE MANHOLE MINIMUM MISCELLANEOUS MUSCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE POUNDS PER SQUARE INCH PRESSURE
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NO NC POS PP PRV PSI PVB PVC QTY RCP REQ'D RPBP RPM SCH SF	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MANUFACTURER MINIMUM MISCELLANEOUS MOUNTED MISSELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NOT IN CONTRACT NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SQUARE FOOT
KW MAX MECH MEZZ MFR MH MIN MIN MIN MIN MIN MIN MIN MV N/A NC N/A NC NO NO NO OC OD OS&Y PC PH POS PP PKV PSI PVB PVC QTY RCP REQ'D RPBP RPM SCH SF ST.ST.	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MANUFACTURER MANUFACTURER MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT NO SCALE NOT NO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DUNDER SCREW & YOKE PLUMBING CONTRACTOR PLUMBING CONTRACTOR POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SQUARE FOOT <tr< th=""></tr<>
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NO NO OC OD OS&Y PC PH POS PP PKV PSI PVB RCP REQ'D RPBP RCH SF ST.ST. SWH	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MANUFACTURER MIXIMUM MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT NO CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PROSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SQUARE FOOT STAINLESS STEEL STEAM WATER HEATER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NO NO OC OD OS&Y PC PH POS PP PKV PSI PVB PVC QTY RCP REQ'D RPBP RPM SCH SF ST.ST. SWH TOR	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SQUARE FOOT STAINLESS STEEL STAINLESS STEEL
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO POS PH POS PF PRV PSI PVC QTY RCP REQ'D RPBP RPM SCH SF ST.ST. SWH TOR	KILOWATTS MAXIMUM MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANUFACTURER MINIMUM MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MOT APPLICABLE NOT APPLICABLE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SCHEDULE SCHEDULE SCHEDULE STEAM WATER HEATER TOP OF RISER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO POS PH POS PF PRV PSI PVC QTY RCP REQ'D RPBP RPM SCH SF ST.ST. SWH TOR TP	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MEZZANINE MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOR ALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE NUMBER NOT TO SCALE NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SQUARE FOOT STAINLESS STEEL STEAM WATER HEATER TOP OF RISER TRAP PRIMER
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC N/A NC NO NC POS PP PKV PSI PVC QTY RCP REQ'D RPBP RCH SCH SF ST.ST. SWH TOR TP YZE/	KILOWATTS MAXIMUM MACHANICAL MECHANICAL MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT APPLICABLE NOT IN CONTRACT NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE DUNDER OTHER SECTION PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO NO POS PP PRV PSI PVC QTY RCP REQ'D RPBP RPM SCH SF ST.ST. SWH TOR TP YIV	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NOT MOUNTED NOT NOT IN CONTRACT NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PHASE PROVIDED UNDER OTHER SECTION POLYBROPYLENE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REQUIRED REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SQUARE FOOT STAINLESS STEEL STAINLESS STEEL STAINLESS STEEL
KW MAX MECH MEZZ MFR MH MIN MISC MTD MV N/A NC NIC NO NO POS PP PKV PSI PVC QTY RCP REQ'D RPBP RVC QTY RCP REQ'D RPM SCH SF ST.ST. SWH TOR TP YIV VIV	KILOWATTS MAXIMUM MECHANICAL MECHANICAL MANUFACTURER MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MOUNTED MISCELLANEOUS MOUNTED MIXING VALVE NOT APPLICABLE NORMALLY CLOSED NOT IN CONTRACT NORMALLY OPEN NUMBER ON CENTER OUTSIDE DIAMETER OR OVERFLOW DRAIN OUTSIDE SCREW & YOKE PLUMBING CONTRACTOR PLASE PROVIDED UNDER OTHER SECTION PHASE PROVIDED UNDER OTHER SECTION POLYPROPYLENE PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH PRESSURE VACUUM BREAKER POLYVINYL CHLORIDE QUANTITY REINFORCED CONCRETE PIPE REDUCED PRESSURE BACKFLOW PREVENTOR REVOLUTIONS PER MINUTE SCHEDULE SQUARE FOOT STAINLESS STEEL STEAM WATER HEATER TOP OF RISER TRAP PRIMER
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PLUMBING ABBREVIATIONS - INSTRUMENTS

FM	FLOW METER
FS	FLOW SWITCH
PI	PRESSURE INDICATOR
RM	RESISTIVITY METER

PLUMBING ABBREVIATIONS - DOMESTIC FIXTURE		
BT	BATH TUB	
DF	DRINKING FOUNTAIN	
EWC	ELECTRIC WATER COOLER	
HB	HOSE BIBB W/ VACUUM BREAKER	
JS	JANITOR SINK	
L	LAVATORY	
MSB	MOP SERVICE BASIN	
SH	SHOWER	
SK	SINK	
SS	SERVICE SINK	
UR	URINAL	
WC	WATER CLOSET	
WH	WALL HYDRANT	

PLUMBING ABBREVIATIONS - DOMESTIC WATER

140F HW	140° HOT WATER SUPPLY
140F HWR	140° HOT WATER RETURN
CW	COLD WATER
CWR	CHILLED DRINKING WATER RETURN
CWS	CHILLED DRINKING WATER SUPPLY
HW	HOT WATER
HWR	HOT WATER RETURN
NPCW	NON-POTABLE COLD WATER
W	WATER SERVICE

PLUMBING ABBREVIATIONS - DRAINAGE

AD	AREA DRAIN	
BWV	BACK WATER VALVE	
CI	CAST IRON	
CO	CLEANOUT	
FCO	FLOOR CLEANOUT	
FD	FLOOR DRAIN	
FM	FORCE MAIN	
FS	FLOOR SINK	
GCO	GRADE CLEANOUT	
IW	INDIRECT WASTE	
KW	KITCHEN WASTE	
OD	OVERFLOW ROOF DRAIN (SECONDARY)	
OED	OPEN END DRAIN	
RD	ROOF DRAIN	
RW	RAINWATER	
SAN	SANITARY	
SS	SOIL STACK	
V	VENT	
VS	VENT STACK	
W	WASTE	
W & T	WASTE & TRAP	
W & V	WASTE & VENT	
WCO	WALL CLEANOUT	
WS	WASTE STACK	

PLUMBING ABBREVIATIONS - GASES CA COMPRESSED AIR CA-# COMPRESSED AIR - #PSI CAI COMPRESSED AIR INTAKE CO2 CARBON DIOXIDE GAP GAS ALARM PANEL GVC GAS VALVE CABINET

LGAP	LOCAL GAS ALARM PANEL
MGAP	MASTER GAS ALARM PANEL
MGCV	MEDICAL GAS CONTROL VALVE
NG	GAS (NATURAL)
O2	OXYGEN
RV	RELIEF VENT
VAC	VACUUM
VT	VACUUM TRAP
ZVB	ZONE VALVE BOX

PLUMBING ABBREVIATIONS - HOSPITAL / LAB FIXTURES

ASME	AMERICAN SOC. OF MECHANICAL ENGINEERS
ASTM	AMER. SOC. FOR THE TESTING & MATERIALS
CS	CUP SINK
ES	EMERGENCY SHOWER
EW	EMERGENCY EYEWASH
FH	FUME HOOD
LS	LAB SINK
Т	LABORATORY TRIM OUTLET

	SYMBOLS - GENERAL
Ū,	AUTO-VENT
م ا BF	BLIND FLANGE
	CONNECT TO EXISTING
ĭ	CAP OR END OF PIPE
•	CONCENTRIC REDUCER
\Box	CONCENTRIC REDUCER
	CUT LINE
\bigtriangleup	DIRECTION OF FLOW
حر ر	DIRECTION OF SLOPE
	ECCENTRIC REDUCER
	ECCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
1400041	EXPANSION JOINT
* * *	ETBR
ЬWH	FLEXIBLE CONNECTION
++++	HEAT TRACE
-+-	HOSE BIBB
к-Г нс	HOSE CONNECTION (GENERIC)
- CTTD	IN-LINE MIXER
— — ——————————————————————————————————	PIPE ANCHOR
2	PIPE BREAK
С	PIPE FITTING DOWN OR DROP
0	PIPE FITTING TEE DOWN
0	PIPE FITTING UP
	PIPE SLEEVE OR BEAM PENETRATION
<u>}</u>	QUICK DISCONNECT - FEMALE
-Op-	SIGHT GLASS
Ŕ	STRAINER
	UNION FITTING
<u> </u>	VACUUM RELIEF
-+-	WALL HYDRANT
	WATER HAMMER ARRESTOR
	WATERPROOF SLEEVE
	Y STRAINER W/ PLUGGED BLOWDOWN
	Y STRAINER W/ VALVE

SYMBOLS - DRAINAGE

\boxtimes	AREA DRAIN
₽ √1	BACK WATER VALVE
—	CLEANOUT
0	FLOOR OR GRADE CLEANOUT
0	FLOOR DRAIN
\boxtimes	PLANTER DRAIN
) O	P TRAP
\boxtimes	ROOF DRAIN (PRIMARY)
Ø	ROOF DRAIN (OVERFLOW)
	TRENCH DRAIN

	SYMBOLS - VALVES
<u> </u>	ANGLE VALVE
•	BALL VALVE
	BALANCING VALVE ASSEMBLY
انعرا	BUTTERFLY VALVE
	CHECK VALVE
	DIAPHRAGM VALVE (CLOSED)
\boxtimes	DIAPHRAGM VALVE (OPEN)
<u> </u>	FOUR WAY VALVE
L KI	FUSIBLE LINK VALVE
	GAS COCK
	GATE VALVE (CLOSED)
Χ	GATE VALVE (OPEN)
, I	KNIFE GATE VALVE
図	MIXING VALVE
Ţ	NEEDLE VALVE
Ř	NEEDLE VALVE
₩.	OS&Y VALVE
Шн Шн	PINCH VALVE
山	POST VALVE
k M N	PRESSURE REDUCING VALVE
XX	REDUCED PRESSURE BACK FLOW PREVENTOR
X	SOLENOID VALVE
る	TEMP. & PRESSURE RELIEF VALVE
₩ X	THREE WAY BALL VALVE
Rest and the second sec	THREE WAY CONTROL VALVE
Х•	TWO WAY CONTROL VALVE
→	VALVE IN THE VERTICAL

	SYMBOLS - INSTRUMENTS
FM	FLOW METER
FS	FLOW SWITCH
-3	PRESSURE INDICATOR W/BALL VALVE
RM	RESISTIVITY METER
	TEMP. INDICATOR W/BALL VALVE

			PLUMBING SCHEDUL	E - SPECIALTY GAS	OUTLETS	
TAC	G					
ABB.	No.	DESCRIPTION	TYPE	MANUFACTURER	MODEL	REMARKS
WO	VAC-1	SURFACE MOUNTED GAS OUTLET	WALL OUTLET, SHUT-OFF BALL VALVE	WATERSAVER	L4200	VACUUM OUTLET, POLISHED CHROME FINISH.
WO	CA-1	SURFACE MOUNTED GAS OUTLET	WALL OUTLET, SHUT-OFF BALL VALVE	WATERSAVER	L4200	COMPRESSED AIR OUTLET, POLISHED CHROME FINISH.
WO	CO2-1	SURFACE MOUNTED GAS OUTLET	WALL OUTLET, SHUT-OFF BALL VALVE	WATERSAVER	L4200	CARBON DIOXIDE OUTLET, POLISHED CHROME FINISH.
WO	NG-1	DECK MOUNTED GAS OUTLET	BENCH OUTLET, LIFT/TURN BALL VALVE	WATERSAVER	L4260-131WSA	NATURAL GAS OUTLET, POLISHED CHROME FINISH.
WO	VAC-2	SERVICE COLUMN MOUNTED GAS OUTLET	PUSH BUTTON QUICK CONNECT	WATERSAVER	QPFL	VACUUM OUTLET, POLISHED CHROME FINISH.
WO	CA-2	SERVICE COLUMN MOUNTED GAS OUTLET	PUSH BUTTON QUICK CONNECT	WATERSAVER	QPFL	COMPRESSED AIR OUTLET, POLISHED CHROME FINISH.

X-#	X-#: RISER DESIGNATION DRAWING
X	X: SECTION DESIGNATION LETTER
X-#	X-#: SECTION DESIGNATION DRAWING
	KEYNOTE DESIGNATION
F	HANDICAPPED ACCESSIBLE (HC)

0224000

1.1

PART 1 - GENERAL SUMMARY

BEQUIREMENTS OF THIS SECTION APPLY TO DIVISION 22 SECTIONS. FURNISH SERVICES, SKILLED AND COMMON LABOR, AND APPARATUS AND MATERIALS REQUIRED FOR THE COMPLETE INSTALLATION AS SHOWN AND WITHIN THE INTENT OF THE DRAWINGS AND THESE SPECIFICATIONS, AND IN ACCORDANCE WITH REQUISITE LOCAL PLUMBING CODES. THE FOLLOWING REQUIREMENTS ARE MINIMUM:

- 1. PREPARE COORDINATION DRAWINGS, SHOP DRAWINGS, SUBMITTALS, AS-BUILT DRAWINGS, AND OPERATING AND MAINTENANCE INSTRUCTIONS.
- 2. DETERMINE ITEMS AND QUANTITIES REQUIRED. 3. PROVIDE COMPLETE, CONTINUOUS, OPERATIONAL, AND
- FUNCTIONING SYSTEMS 4. FULLY COORDINATE WITH WORK OF OTHER SECTIONS, INCLUDING FIELD VERIFICATION OF ELEVATIONS, DIMENSIONS,
- CLEARANCE, AND ACCESS 5. REPAIR OF ALL DAMAGE DONE TO PREMISES AS A RESULT OF THIS INSTALLATION AND REMOVAL OF DEBRIS LEFT BY THOSE
- ENGAGED IN THIS INSTALLATION. RIGGING, HOISTING, TRANSPORTATION, AND ASSOCIATED WORK NECESSARY FOR PLACEMENT OF EQUIPMENT IN THE FINAL LOCATION SHOWN
- 7. DISASSEMBLY AND RE-ASSEMBLY OF EQUIPMENT FURNISHED UNDER THIS SECTION, SHOULD THIS BE REQUIRED IN ORDER TO MOVE EQUIPMENT INTO FINAL LOCATION SHOWN ON THE
- 8. TEMPORARY SCAFFOLDING NECESSARY FOR PERFORMANCE OF THE WORK IN THIS DIVISION.
- CUTTING AND CORE DRILLING REQUIRED
- 10. PIPE SLEEVES FOR ALL HOLES IN WALLS, FLOORS, AND CEILINGS, AND CUTTING OF FLOOR SLABS AND SLABS ON GRADE
- 11. WATERPROOFING WHERE NECESSARY FOR INSTALLATION UNDER THIS DIVISION 12. COOPERATION WITH AND ASSISTANCE TO THE BUILDING
- MANAGEMENT SYSTEM CONTRACTOR AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL PLUMBING SYSTEM. 13. COUNTERFLASHING OF ROOF PENETRATIONS FOR WORK OF DIVISION 22.
- 14. SIZES, AND LOCATIONS FOR INSTALLATION OF ANY CURBS AND PADS FOR WORK OF DIVISION 22.
- 15. TEMPORARY AND PERMANENT STANDS AND SUPPORTS FOR EQUIPMENT REQUIRING THEM INCLUDING VIBRATION ISOLATION
- TEMPORARY PROTECTION OF EXISTING INSTALLATION.
- PIPING, VALVES AND EQUIPMENT IDENTIFICATION.
- 18. FIRESTOPPING OF PENETRATIONS OF PIPING, THROUGH WALLS, FLOORS, AND CEILING ASSEMBLIES. 19. TEMPORARY UTILITIES AS REQUIRED TO INSTALL WORK ON DIVISION 22 INCLUDING LIGHTING, WATER, GAS, ELECTRICITY,
- 20. FEES, PERMITS, INSPECTIONS, TAXES, AND APPROACH FROM AGENCIES THAT HAVE JURISDICTION OVER INSTALLATION OF

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1.8

INFORMATION CONTAINED WITHIN AT THE MINIMUM AS WELL AS THE CONTRACTOR'S PROPOSED SOLUTION, WITH SKETCHES AS REQUIRED:

- PROJECT NAME AND RELINUMBER 2. DATE OF RFI SUBMISSION / DATE OF REQUIRED RFI RESPONSE
- (3-DAY MINIMUM) 3. NAME OF CONTRACTING COMPANY SUBMITTING RFI AND
- NAME OF PERSON SUBMITTING RFI
- 4. SPECIFICATION SECTION CITED AND DRAWING NUMBER REFERENCED
- CONTRACTOR EMAIL ADDRESS AND FAX NUMBER (FOR RESPONSE
- 6. CONTRACTOR FIELD QUESTION (PROVIDE A NARRATIVE WITH SUPPLEMENTAL SKETCH)
- 7. CONTRACTOR PROPOSED SOLUTION (PROVIDE A NARRATIVE WITH SUPPLEMENTAL SKETCH)
- 8. RESPONDENT NARRATIVE BOX (FOR ENGINEER'S RESPONSE) CODES, STANDARDS, AUTHORITIES AND PERMITS
- PERFORM WORK IN ACCORDANCE WITH RULES, REGULATIONS, STANDARDS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LEGAL JURISDICTION OVER THE SITE.
- PRIOR TO WORK COMMENCEMENT OF WORK, NOTIFY STATE AND APPLICABLE AUTHORITIES AND SUBMIT ALL OF THE APPLICABLE NOTIFICATIONS FOR CONSTRUCTION, OPERATION AND/OR DEMOLITION.
- MATERIALS AND EQUIPMENT SHALL BE MANUFACTURED, INSTALLED AND TESTED AS SPECIFIED IN LATEST EDITIONS OF APPLICABLE PUBLICATIONS, STANDARDS, RULINGS AND DETERMINATIONS
- 1.9 1.12 GUARANTEE

A. GUARANTEE THE WORK OF THIS SECTION IN WRITING FOR ONE YEAR Α. FOLLOWING THE DATE OF SUBSTANTIAL COMPLETION. IF THE EQUIPMENT IS USED FOR VENTILATION. TEMPORARY HEAT, OR OTHER USE PRIOR TO INITIAL BENEFICIAL OCCUPANCY BY THE OWNER, THE BID PRICE SHALL INCLUDE AN EXTENDED PERIOD OF WARRANTY COVERING THE ONE-YEAR OF BENEFICIAL OCCUPANCY BY THE OWNER. THE GUARANTEE SHALL REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO ARCHITECT'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

1.10 SUBMITTALS

DOCUMENTS

- SUBMIT UNDER PROVISIONS OF DIVISION 01 SECTIONS "GENERAL REQUIREMENTS", AND DIVISION 01 SECTION "SPECIAL PROCEDURES." PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT B.
- SPECIFICATION SHEETS FOR EACH SYSTEM COMPONENT AND DEVICE TO BE PROVIDED THAT INCLUDES DATA NEEDED TO PROVE COMPLIANCE WITH THIS SPECIFICATION. CLEARLY INDICATE THE EXACT MODEL OF EACH COMPONENT TO BE PROVIDED.

SHOP DRAWINGS SHALL BE DRAWN TO A SCALE OF 1/4 INCH = 1 FOOT (1:25) OR LARGER, AND SHALL INCLUDE COMPLETE DIMENSIONS. LOCATIONS, ELEVATIONS, AND CLEARANCES FOR PLUMBING, PIPING. DUCTWORK, EQUIPMENT, AND VALVE NUMBERS. IDENTIFY EQUIPMENT USING DESIGNATIONS SHOWN ON THE CONTRACT

DIVISION 22. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION. PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH SPECIFICATIONS, DRAWINGS, ADDENDA AND CHANGE ORDERS, ALL OF WHICH ARE PART OF CONTRACT DOCUMENTS.

POTABLE WATER DISINFECTION REPORT PARTICIPATION IN AND COORDINATION WITH THE 22 COMMISSIONING PROCESS.

23. WARRANTY 1.2 DEFINITIONS

- "PROVIDE" MEANS "FURNISH AND INSTALL."
- "FURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT,
- "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT.

'POS' MEANS PROVIDED UNDER OTHER SPECIFICATION SECTION.

"ARCHITECT" MEANS THE "PRIME DESIGN CONSULTANT." IF R.G. VANDERWEIL ENGINEERS. LLP IS NOT THE PRIME DESIGN CONSULTANT. THE ARCHITECT MAY AUTHORIZE R.G. VANDERWEIL ENGINEERS, LLP TO ACT ON THE ARCHITECT'S BEHALF IN MATTERS CONCERNING THE ALL SECTIONS OF SPECIFICATIONS.

1.3 CONTRACT DOCUMENTS

- REFER TO ARCHITECTURAL, FIRE PROTECTION, PLUMBING, HVAC, Α. ELECTRICAL, STRUCTURAL, TELE/DATA AND ALL OTHER DRAWINGS AND OTHER SECTIONS THAT INDICATE TYPES OF CONSTRUCTION IN WHICH WORK SHALL BE INSTALLED AND WORK OF OTHER TRADES WITH WHICH WORK OF THIS SECTION MUST BE COORDINATED
- EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF AN ITEM. IN THE DRAWINGS OR SPECIFICATIONS OR BOTH, CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM. BEGARDLESS OF WHETHER OR NOT THIS INSTRUCTION IS EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION.
- ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS SHALL BE PROVIDED IN QUANTITIES NECESSARY TO COMPLETE WORK.
- DATA THAT MAY BE FURNISHED ELECTRONICALLY (ON COMPACT DISK (CD), ELECTRONIC MAIL, OR OTHERWISE) IS DIAGRAMMATIC. ELECTRONICALLY FURNISHED INFORMATION IS SUBJECT TO THE SAME LIMITATION OF PRECISION DESCRIBED ABOVE. IF FURNISHED ELECTRONIC DATA IS FOR CONVENIENCE AND GENERALIZED REFERENCE. AND SHALL NOT SUBSTITUTE FOR SEALED OR STAMPED CONSTRUCTION DOCUMENTS.

ELECTRONIC CAD FILES 1.4

- ELECTRONIC CAD FILES FOR PLUMBING DRAWINGS WILL BE FURNISHED BY ENGINEER AT CONTRACTOR'S REQUEST. ENGINEER WILL FORWARD THE 'RELEASE OF LIABILITY' FORM TO CONTRACTOR FOR COMPLETION/SIGNATURE. CONTRACTOR TO RETURN FORM TO ENGINEER PRIOR TO ENGINEER'S ISSUANCE OF ELECTRONIC CAD
- DISCREPANCIES IN DOCUMENTS
 - ALL SHOP DRAWINGS SHALL CLEARLY CALL OUT IN BOLD LETTERS. AND CLOUD SYMBOLS DEVIATIONS FROM THE SPECIFICATIONS AND CONTRACT DOCUMENTS, NO MATTER HOW MINOR. SHOP DRAWINGS SHALL BE SUBMITTED WITH A SEPARATE COVER
- C. SHEET COMPLETED FOR EACH PRODUCT, BATHER THAN ONE COVER SHEET FOR MULTIPLE PRODUCTS, WHETHER OR NOT SUPPLIED BY ONE MANUFACTURER OR VENDOR.

		SHOP DRAWING	COVER SHE	ET		
PROJ	ECT:		CONTRA	ACTOR:		
DIVIS	ION NO .:		SECTIO	N NO.:		
DESC	RIPTION:					
CONT	RACT DRAWING R	EFERENCE NO:				
EQUI	PMENT TAG:					
SUBM	IISSION (CIRCLE OI	NE): FIRST, SECOND, TH	IRD, FOURTH	1		
DATE	5					
INFOR	RMATION AND CHE	CKLIST				
1.	Contractor's Log #	۹D				
2.	Name, address, a	nd phone number of suppl	lier.			
3.	Are all specified or exactly match sch	scheduled items included eduled/specified items?	i and	Yes	No	
4.	Is this item a subs	titution?		Yes	No	
5.	Are deviations clea	arly identified?		Yes	No	
6.	Does equipment fi documents, coord field conditions?	t space shown on construe nation drawings, and actu	ction Ial	Yes	No	
7.	Has support, erect been coordinated	ion, weights, and installati with all trades?	ion	Yes	No	
8.	Does the proposed violate UL or code	1 installation void warrantie requirements?	es and/or	Yes	No	
9.	Does this material trades or project c	/equipment add expense t osts?	to other	Yes	No	
10.	Does equipment re divisions and spec	equire interface with other ifics requiring coordination	trades? List 1?	Yes	No	
11.	Is control interface	coordinated?		Yes	No	
12.	List electrical char	acteristics (Voltage/Phase	Hz/Amps)			

D. SUBMITTAL PROCEDURES, CONTENTS, AND FORMAT

CONSTRUCTION MANAGER OR GENERAL CONTRACTOR SHALL FIRST REVIEW SUBMITTAL PACKAGES FOR COMPLIANCE WITH CONTRACT DOCUMENTS. UPON REVIEW BY THE G.C. THE SUBMITTALS WILL THEN BE SUBMITTED FOR REVIEW BY ARCHITECT. REVIEW BY CONSTRUCTION MANAGER OR CONTRACTOR IS INTENDED TO ENSURE THAT THE SUBMITTALS INCLUDE THE FOREGOING COVER SHEET, ARE IN THE CORRECT ELECTRONIC FORMAT AS SPECIFIED BELOW, AND THAT THE DEVICES/EQUIPMENT/ITEMS FIT INTO THE SPACE PROVIDED. ALSO, THAT THE SUBMITTAL CONTAINS ADEQUATE INFORMATION TO VERIFY SPECIFICATION REQUIREMENTS AS WELL AS THE PERFORMANCE AND DIMENSIONAL REQUIREMENTS SHOWN ON THE DRAWINGS. IF A SHOP

Page | 2

DRAWING IS RETURNED WITH A SUBMITTAL STATUS OF REJECTED" OR "REVISE AND RESUBMIT", IT INDICATES THE

WHERE DRAWINGS OR SPECIFICATIONS CONFLICT OR ARE UNCLEAR, SUBMIT CLARIFICATION REQUEST IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF CONTRACT DOCUMENTS SHALL BE FINAL, AND NO ADDITIONAL COMPENSATION SHALL BE PERMITTED DUE TO DISCREPANCIES OR UN-CLARITIES THUS RESOLVED.

WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURERS' RECOMMENDATIONS OR WITH APPLICABLE CODES AND STANDARDS, SUBMIT CLARIFICATION REQUEST IN WRITING BEFORE INSTALLATION. OTHERWISE, MAKE CHANGES IN INSTALLED WORK REQUIRED FOR COMPLIANCE WITH MANUFACTURER INSTRUCTIONS OR CODES AND STANDARDS WITHIN CONTRACT PRICE. C. IT IS THE REQUIREMENT OF THESE CONTRACT DOCUMENTS TO REQUIRE PROVISION OF SYSTEMS AND COMPONENTS THAT ARE FULLY COMPLETE AND OPERATIONAL AND FULLY SUITABLE FOR THE INTENDED USE. THERE MAY BE SITUATIONS IN THE DOCUMENTS WHERE INSUFFICIENT INFORMATION EXISTS TO PRECISELY DESCRIBE A CERTAIN COMPONENT OR SUBSYSTEM. OR THE ROUTING OF COMPONENT OR ITS COORDINATION WITH OTHER BUILDING ELEMENTS. IN THESE CASES, WHERE NOTIFICATION REQUIRED BY PARAGRAPH (A) ABOVE HAS NOT BEEN SUBMITTED, PROVIDE THE SPECIFIC COMPONENT OR SUBSYSTEM WITH ALL PARTS NECESSARY FOR THE INTENDED USE, FULLY COMPLETE AND OPERATIONAL, AND INSTALLED IN WORKMANLIKE MANNER EITHER CONCEALED OR EXPOSED IN ACCORDANCE WITH THE DESIGN INTENT.

IN CASES COVERED BY PARAGRAPH (C) ABOVE, WHERE THE CONTRACTOR BELIEVES ENGINEERING GUIDANCE IS NEEDED THE CONTRACTOR SHALL, SUBMIT A SKETCH IDENTIFYING PROPOSED SOLUTION. ARCHITECT SHALL REVIEW, NOTE IF NECESSARY, AND APPROVE THE SKETCH

WHERE DISCREPANCIES EXIST BETWEEN THE MECHANICAL PLUMBING, FIRE PROTECTION, ELECTRICAL AND TELE/DATA DRAWINGS IN REGARDS TO WHAT TRADE OWNS EQUIPMENT SUCH AS DISCONNECTS, STARTERS, ETC.,, SUBMIT RFI TO THE ARCHITECT BEGARDING SUCH DISCREPANCY. MODIFICATIONS IN LAYOUT

1.6

1.7

1.11

UPON REQUEST

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Α

TO OBTAIN THE INTENDED AESTHETICS IN SPACES USED BY BUILDING OCCUPANTS, PRIOR TO INSTALLATION OF VISIBLE MATERIAL AND EQUIPMENT (INCLUDING ACCESS PANELS), REVIEW ARCHITECTURAL DRAWINGS FOR DESIRED LOCATIONS AND WHERE NOT DEFINITIVELY INDICATED, REQUEST INFORMATION FROM ARCHITECT.

CHECK CONTRACT DRAWINGS, AS WELL AS SHOP DRAWINGS, TO VERIFY AND COORDINATE SPACES IN WHICH WORK OF THIS SECTION WILL BE INSTALLED. MAINTAIN MAXIMUM HEADROOM AT ALL LOCATIONS. ALL PIPING, DUCT,

CONDUIT, AND ASSOCIATED COMPONENTS TO BE AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE. MAKE REASONABLE MODIFICATIONS IN LAYOUT AND COMPONENTS

NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES. SYSTEMS SHALL BE RUN IN A RECTILINEAR FASHION. REQUEST FOR INFORMATION (RFI'S)

WHERE AN RFI IS A REQUEST TO RESOLVE A CONFLICT OR AN UN-CLARITY, OR A REQUEST FOR ADDITIONAL DETAIL, CONTRACTOR'S RFI SHALL INCLUDED SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION. IN ACCORDANCE WITH PARAGRAPHS "DISCREPANCIES IN DOCUMENTS; AND "MODIFICATIONS IN LAYOUT" ABOVE

B. TO EXPEDITE THE PROCESSING OF RFI'S, THE CONTRACTOR SHALL SUBMIT AN ELECTRONIC CORRESPONDENCE WITH THE FOLLOWING

> SHOP DRAWING WAS NOT ADEQUATELY REVIEWED BY THE CONTRACTOR. SUBSEQUENT SUBMITTALS SHALL INCLUDE A WRITTEN RESPONSE TO PREVIOUS ITEMS. SUBMITTALS WILL BE PROVIDED TO ENGINEER IN ELECTRONIC

> (PDF) FORMAT. A SINGLE PDF FILE SHALL BE SUBMITTED FOR EACH RESPECTIVE SUBMITTAL. THE PDF FILE WILL BE FORMATTED IN THE FOLLOWING WAY: FIRST PAGE: CONTRACTOR TRANSMITTAL

SECOND PAGE: SHOP DRAWING COVER SHEET (ILLUSTRATED ABOVE) FILLED OUT/COMPLETED BY SUBMITTING CONTRACTOR.

SUBSEQUENT PAGES: EQUIPMENT/DEVICE SUBMITTAL INFORMATION, DIAGRAMS, MANUFACTURER REQUIREMENTS, ETC.

SUBMITTALS WILL BE 'EMAILED' TO THE MECHANICAL/ELECTRICAL TEAM VIA THE ARCHITECT: COORDINATION DRAWINGS:

B. THE INITIATION OF THESE DRAWINGS BEGINS WITH THE SHEET METAL

A. A SINGLE SET OF COORDINATION DRAWINGS SHALL BE MUTUALLY PREPARED BY ALL MECHANICAL, PLUMBING, FP AND ELECTRICAL TRADES

SUBCONTRACTOR. C. FABRICATION SHALL NOT START UNTIL COPIES OF COMPLETED COORDINATION DRAWINGS ARE RECEIVED BY THE ARCHITECT AND HAVE BEEN REVIEWED.

REVIEW BY ENGINEER OF COORDINATION DRAWINGS IS LIMITED TO CONFIRMING THAT REQUIREMENTS FOR COORDINATION AND PREPARATION OF PLANS HAVE BEEN COMPLIED WITH BY THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR FINAL COORDINATION OF INSTALLATION AND MAINTENANCE CLEARANCES OF ALL SYSTEMS AND EQUIPMENT WITH ARCHITECTURAL, STRUCTURAL

MECHANICAL, ELECTRICAL AND OTHER RELATED WORK. HOLD REGULAR COORDINATION SESSIONS WITH TRADES UNTIL COORDINATION ISSUES ARE RESOLVED.

PREPARE SEPARATE COMPOSITE COORDINATION DRAWINGS TO A SCALE OF 1/4 INCH = 1 FOOT (1:25) OB LARGER, SHOWING WORK OF DIVISIONS TO DEMONSTRATE COORDINATION, CLEARANCE, ACCESS, ETC. BETWEEN DUCTWORK, EQUIPMENT, TEMPERATURE CONTROLS CABLE TRAYS, CONDUITS, LIGHT FIXTURES, PIPING, PLUMBING STRUCTURAL ELEMENTS, ARCHITECTURAL ELEMENTS, ETC. THESE DRAWINGS ARE TO BE THE BASIS FOR THE DETAILED SHOP DRAWINGS AND NEED NOT BE SUBMITTED, BUT ARE TO BE AVAILABLE FOR REVIEW

PREPARE FLOOR PLANS, ELEVATIONS, AND DETAILS TO INDICATE PENETRATIONS IN FLOORS, WALLS, AND CEILINGS AND THEIR RELATIONSHIP TO OTHER PENETRATIONS AND INSTALLATIONS.

EACH TRADE IS TO ADJUST THEIR SHOP DRAWINGS BASED ON THE OUTCOME OF COORDINATION SESSIONS. INDICATE LOCATIONS WHERE SPACE IS LIMITED FOR INSTALLATION AND ACCESS AND WHERE SEQUENCING AND COORDINATION OF INSTALLATIONS ARE OF IMPORTANCE TO

THE EFFICIENT FLOW OF THE WORK. INDICATE SCHEDULING, SEQUENCING, MOVEMENT, AND POSITIONING OF LARGE EQUIPMENT INTO THE BUILDING DURING CONSTRUCTION.

INDICATE THE PROPOSED LOCATIONS, OF PIPING, DUCTWORK, EQUIPMENT, AND MATERIALS. INCLUDE THE FOLLOWING:

- CLEARANCES FOR INSTALLING AND MAINTAINING a. INSULATION.
- CLEARANCES FOR SERVICING AND MAINTAINING EQUIPMENT, INCLUDING SPECIFIC CEILING TILE OF CEILING ACCESS PANEL ACCESS AND SPACE FOR EQUIPMENT DISASSEMBLY REQUIRED FOR PERIODIC MAINTENANCE.
- EQUIPMENT CONNECTIONS AND SUPPORT DETAILS.
- d. FIRE-RATED WALL AND FLOOR PENETRATIONS. SIZES AND LOCATION OF REQUIRED CONCRETE PADS
- AND BASES. VALVE STEM MOVEMENT.
- SIZES AND LOCATIONS OF NEW AND EXISTING EQUIPMENT SUPPORT CURBS ON ROOF
- SIZES AND LOCATIONS OF NEW OPENINGS, EITHER SLEEVED, CUT, OR CORE-DRILLED, IN NEW CONCRETE CONSTRUCTION UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.
- MAINTAIN ONE COMPLETE SET OF COMPOSITE COORDINATION DRAWINGS AT THE JOB SITE. PERIODICALLY UPDATE DRAWINGS BASED ON ACTUAL FIELD CONDITIONS.
- SUBMIT FINAL COORDINATION DRAWINGS AS PART OF RECORD DOCUMENT REQUIREMENTS.
- 1.12 RECORD DRAWINGS A. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS. SUCH CHANGES SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE RESULTING FROM RFI'S, FIELD CONDITIONS, AND MODIFICATIONS AND ADDITIONS. INCLUDE ACTUAL LOCATION OF EXISTING UTILITIES IF THEY DIFFER FROM DESIGN DOCUMENTS. AT COMPLETION OF PROJECT CONTRACTOR SHALL INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT FOR REVIEW AND APPROVAL.
- ACCURACY OF THE RECORD DRA RESPONSIBILITY OF THE CONTRACTOR AT COMPLETION OF WORK, PREPARE DRAWINGS IN ELECTRONIC FORMA ARCHITECT FOR APPROVAL. DRAWINGS SHALL SHOW REC SECTIONS, RISER DIAGRAM CORRECTIONS TO SCHEDUL ACTUAL MANUFACTURER AND FINAL EQUIPMENT INSTALLATIO D. AFTER APPROVAL, DELIVER THE FOLLO ORIGINAL (NOT SCANNED) DRAWINGS IN APPROVED FO DRAWINGS," AND CONFORM CHANGES TO THE ORIGINAL CHANGES SHALL BE CLO IDENTIFIED. DELIVER ONE C CONTRACTOR, OWNER, ARCHI DELIVER TO THE OWNER ON 2. DRAWINGS STAMPED "RECO APPROPRIATE SUBCONTRACTO ELECTRONIC VERSION OF CO ADDENDA INCORPORATED, VANDERWEIL AS THE RECORD BULLETINS, MANUALS, AND OPERATING INSTRUCTIONS - ELECTRONIC FORMA

B. THE INSTALLING CONTRACTOR SHALL

FOR ACCURACY. THE ARCHITECT/ENG

PROVIDE ELECTRONICALLY FORMATTED (SEARCHABLE PDF) FILES OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT AND SYSTEM. COMPILE RESPECTIVE WORK OF EACH DISCIPLINE INTO A SINGLE FILE FOR EACH DISCIPLINE. PROVIDE, WITHIN THE ELECTRONIC FILE, TABLE OF CONTENTS/INDEX LISTING. 2. PROVIDE VALVE DIRECTORY FOR ALL ISOLATION VALVES.

PART 2 - PRODUCTS

GENERAL

- 2.2 MATERIALS AND SUBSTITUTIONS COMPLY WITH DIVISION 01 SECTION "GENERAL REQUIREMENTS - SPECIFIED ITEMS AND SUBSTITUTES."
- 2.3 PLUMBING FIXTURES AND TRIM
- A. REFER TO ARCHITECTURAL AND PLUMBING DRAWINGS FOR QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES PROVIDED UNDER THIS SECTION B. FIXTURE TRIM, TRAPS, FAUCETS, ESCUTCHEONS AND WASTE PIPES EXPOSED TO VIEW IN FINISHED SPACES SHALL BE I.P.S. BRASS WITH POLISHED CHROMIUM PLATING OVER NICKEL FINISH.
- C. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURER'S RECOMMENDATIONS. FIXTURE FITTINGS INTENDED TO DELIVER POTABLE WATER FOR HUMAN CONSUMPTION SHALL BE CERTIFIED FOR "LEAD-FREE" AND SHALL COMPLY WITH THE NEW FEDERAL MANDATE KNOWN AS THE "REDUCTION OF LEAD IN DRINKING WATER ACT-2014"
- 2.4 PIPE, FITTINGS AND VALVES
- A. ALL PIPE, FITTINGS, AND VALVES USED IN POTABLE WATER DISTRIBUTION SYSTEM MUST COMPLY WITH THE NEW FEDERAL MANDATE KNOWN AS THE "REDUCTION OF LEAD IN DRINKING WATER ACT-2014" B. PLASTIC PIPING SYSTEMS: DO NOT USE PLASTIC PIPING SYSTEMS IN RETURN AIR PLENUMS. ALL PIPING USED IN PLENUM APPLICATIONS SHALL BE SO RATED
- C. PIPE MATERIALS

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2.1

WATER PIPING SERVICES	CODE	PIPE MATERIAL	FABRICATION OR JOINTING METHOD	VALVES
POTABLE HOT, COLD, HWR DOMESTIC WATER	CW HW HWR	TYPE L SEAMLESS COPPER TUBING, CONFORMING TO ASTM B-88	ASTM SOLDER FILLER MATERIAL SHALL BE LEAD FREE TO COMPLY WITH THE FEDERAL MANDATE OF 2014. ASTM B-813 LIQUID OR PASTE FLUX. SOLDERING PROCEDURES SHALL COMPLY WITH ASTM B-828. PRESS FITTINGS 1/2" THROUGH 4" SHALL BE JOINED USING CERTIFIED VIEGA PROPRESS TOOLS	2 " AND SMALLER - ALL BRONZE LEAD FREE, 2-PIECE, FULL PORT, PTFE SEATS, SOLDER END CONNECTIONS. 600 PSIG WOG. APOLLO 77BLF-100, WATTS MILWAUKEE, WATTS LF- B6081.
LABORATORY WATER PIPING	LCW LHW LHWR	TYPE L SEAMLESS COPPER TUBING, CONFORMING TO ASTM B-88	ASTM SOLDER FILLER MATERIAL SHALL BE LEAD FREE TO COMPLY WITH THE FEDERAL MANDATE OF 2014. ASTM B-813 LIQUID OR PASTE FLUX. SOLDERING PROCEDURES SHALL COMPLY WITH ASTM B-828. PRESS FITTINGS 1/2" THROUGH 4" SHALL BE JOINED USING CERTIFIED VIEGA PROPRESS TOOLS.	2 " AND SMALLER - ALL BRONZE LEAD FREE, 2-PIECE, FULL PORT, PTFE SEATS, SOLDER END CONNECTIONS. 600 PSIG WOG. APOLLO 77BLF-100, WATTS MILWAUKEE, WATTS LF- B6081.
TEPID WATER	TW	TYPE L SEAMLESS COPPER TUBING, CONFORMING TO ASTM B-88	ASTM SOLDER FILLER MATERIAL SHALL BE LEAD FREE TO COMPLY WITH THE FEDERAL MANDATE OF 2014. ASTM B-813 LIQUID OR PASTE FLUX. SOLDERING PROCEDURES SHALL COMPLY WITH ASTM B-828. PRESS FITTINGS 1/2" THROUGH 4" SHALL BE JOINED USING CERTIFIED VIEGA PROPRESS TOOLS.	2 " AND SMALLER - ALL BRONZE LEAD FREE, 2-PIECE, FULL PORT, PTFE SEATS, SOLDER END CONNECTIONS. 600 PSIG WOG. APOLLO 77BLF-100, WATTS MILWAUKEE, WATTS LF- B6081.
NOTES				

. VALVES, FITTINGS, COMPONENTS, AND EACH LENGTH OF TUBE SHALL BE FACTORY CLEANED AND SUITABLE FOR MEDICAL OXYGEN SERVICE IN ACCORDANCE WITH CGA PAMPHLET G-4.1. THEY SHALL BE PERMANENTLY LABELED AND DELIVERED PLUGGED, CAPPED, BAGGED, OR OTHERWISE SEALED. PLUG CAPS OR OTHER SEALS SHALL REMAIN IN PLACE UNTIL FINAL ASSEMBLY. 2. JOINTS MADE BETWEEN DISSIMILAR MATERIALS SHALL BE JOINED WITH PROPER ADAPTERS AND TRANSITION FITTINGS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

3. THREADED JOINTS MAY BE USED FOR SMALLER SIZES UP TO THE PRESCRIBED REQUIREMENTS OF THE JURISDICTIONAL CODE. USE WELDED JOINTS FOR ALL HIGH PRESSURE GAS PIPING GREATER THAN 2 INCH WHEN PRESSURES EXCEED 14 "W.C.

		PIPE	FABRICATION OR JOINTING METHOD	VALVES
SERVICES	CODE	MATERIAL		
LABORATORY COMPRESSED AIR	AIR	SEAMLESS COPPER TUBE, MEDICAL GAS,	FITTINGS: WROUGHT COPPER, SOLDER-JOINT. ASME B16.22.	ALL BRONZE, 3-PIECE, FULL PORT, PTFE SEATS, CHROME PLATED BRONZE BALL, SOLDER END
FIFING		DRAWN TEMPER, TIPEL. ASTWID-019.	JOINTS: ANSI/AWS A5.8 BRAZING FILLER MATERIAL, BCUP	CONNECTIONS. 800 FSIG WOG. AFOLLO 82-200-57, ORMEDA 8802, WATTS B-8601.
		SEE NOTE 1	SERIES. NO FLUX.	
LABORATORY CO2 PIPING	CO ₂	SEAMLESS COPPER TUBE, MEDICAL GAS,	FITTINGS: WROUGHT COPPER, SOLDER-JOINT. ASME B16.22.	ALL BRONZE, 3-PIECE, FULL PORT, PTFE SEATS, CHROME PLATED BRONZE BALL, SOLDER END
		DRAWN TEMPER, TYPE L. ASTM B-819.	JOINTS: ANSI/AWS A5.8 BRAZING FILLER MATERIAL, BCUP	CONNECTIONS. 600 PSIG WOG. APOLLO 82-200-57, OHMEDA 6802, WATTS B-6801.
		SEE NOTE 1	SERIES. NO FLUX.	
LABORATORY VACUUM	VAC	SEAMLESS COPPER TUBE, DRAWN TEMPER, TYPE L. ASTM B-88	PRESSURE WROUGHT COPPER, SOLDER-JOINT, DRAINAGE PATTERN, ASME B16.22	ALL BRONZE, 3 PIECE, FULL PORT, PTFE SEATS, CHROME PLATED BRONZE BALL, SOLDER END CONNECTIONS. 600 PSIG WOG. APOLLO 82-200, OHMEDA 6802, WATTS B-6801.
			JOINTS: ANSI/AWS A5.8 BRAZING FILLER MATERIAL, BCUP SERIES	
HIGH PURITY GAS PIPING	HP	SEAMLESS 316 STAINLESS STEEL TUBING.	FITTINGS: WELDED OR VCR TYPE	316 STAINLESS STEEL DIAPHRAGM VALVE, VCR CONNECTIONS. SWAGELOK DP SERIES
		ASTMAT4. BRIGHT ANNEALED, WELDED SEAM		
GAS VENT	RV	SEAMLESS COPPER TUBE, MEDICAL GAS,	FITTINGS: WROUGHT COPPER, SOLDER-JOINT. ASME B16.22.	
		DRAWN TEMPER, TYPE L. ASTM B-819.	JOINTS: ANSI/AWS A5.8 BRAZING FILLER MATERIAL, BCUP	
			SERIES. NO FLUX.	
GAS (NATURAL)	NG	SCHEDULE 40 CARBON. STEEL	THREAD OR WELD. SEE NOTE 3	BOTTOM LOADED PRESSURE STEM VALVE RATED AT 600 PSI WOG. WATTS B-6000-UL-MASS
				APOLLO 70 SERIES, OR EQUAL. ISIMET #LA-1112-R VALVE CONTROLLER W/ SOLENOID VALVE
NOTES				

1. VALVES, FITTINGS, COMPONENTS, AND EACH LENGTH OF TUBE SHALL BE FACTORY CLEANED AND SUITABLE FOR MEDICAL OXYGEN SERVICE IN ACCORDANCE WITH CGA PAMPHLET G-4.1. THEY SHALL BE PERMANENTLY LABELED AND DELIVERED PLUGGED, CAPPED, BAGGED, OR OTHERWISE SEALED. PLUG CAPS OR OTHER SEALS SHALL REMAIN IN PLACE UNTIL FINAL ASSEMBLY 2. JOINTS MADE BETWEEN DISSIMILAR MATERIALS SHALL BE JOINED WITH PROPER ADAPTERS AND TRANSITION FITTINGS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

CERTIFY RECORD DRAWINGS INEER WILL NOT CERTIFY THE WINGS - THIS IS THE SOLE	F.	
A COMPLETE SET OF RECORD T. DELIVER THESE TO THE	1.13	
CORD CONDITION OF DETAILS, S, CONTROL CHANGES AND SS. SCHEDULES SHALL SHOW MAKE AND MODEL NUMBERS OF N.	A.	
WING:		
ELECTRONIC VERSION OF RMAT, NOTATED AS "RECORD MED TO INCORPORATE ALL DESIGN NOTED ABOVE. THE UDED AND APPROPRIATELY OPY EACH TO THE GENERAL TECT, AND ENGINEER.		
E SET OF BLACKLINE RECORD DRD" AND SIGNED BY THE DRS.	-	
NTRACT SPECIFICATIONS WITH WILL BE PROVIDED BY SPECIFICATIONS.	B.	

RECORD DOCUMENTS: UPON COMPLETION OF THE WORK COVERED BY THIS CONTRACT. INCLUDE CHANGES INSTALLED UNDER THIS CONTRACT WHICH ARE NOT IN ACCORDANCE WITH THE CONTRACT DRAWINGS. NOTE THAT THESE AS-BUILT DRAWINGS ARE TO BE BASED ON THE CONTRACT DRAWINGS. IN ADDITION, SUBMIT FINAL COPIES OF THE SHOP DRAWINGS AND COORDINATION DRAWINGS. RESPONSIBILITY

INTENT OF ARCHITECT'S SUBMITTAL REVIEW IS TO CHECK FOR CAPACITY, RATING, AND CERTAIN CONSTRUCTION FEATURES. CONTRACTOR SHALL ENSURE THAT WORK MEETS REQUIREMENTS OF CONTRACT DOCUMENTS REGARDING INFORMATION THAT PERTAINS TO FABRICATION PROCESSES OR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR COORDINATION OF WORK OF THIS AND OTHER SECTIONS. WORK SHALL COMPLY WITH SUBMITTALS MARKED "REVIEWED" TO EXTENT THAT THEY AGREE WITH CONTRACT DOCUMENTS. SUBMITTAL REVIEW SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR DIMENSIONAL COORDINATION, QUANTITIES, INSTALLATION, WIRING, SUPPORTS AND ACCESS FOR SERVICE, NOR SHOP DRAWING ERRORS OR DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS NOTING OF SOME ERRORS WHILE OVERLOOKING OTHERS WILL NOT EXCUSE PROCEEDING IN ERROR. CONTRACT DOCUMENTS REQUIREMENTS ARE NOT LIMITED, WAIVED NOR SUPERSEDED BY REVIEW

SCHEDULE: INCORPORATE SHOP DRAWING REVIEW PERIOD INTO CONSTRUCTION SCHEDULE SO THAT WORK IS NOT DELAYED CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DELAYS CAUSED BY NOT INCORPORATING THE FOLLOWING SHOP DRAWING REVIEW TIME REQUIREMENTS INTO HIS PROJECT SCHEDULE, WORKING DAYS LISTED REFERENCE THE TIME IN THE ENGINEER'S OFFICE. IT DOES NOT INCLUDE TRANSMITTAL OR REVIEW TIME OF OTHERS. 1.14 START-UP TRAINING

A. PREPARE A FORMAL TRAINING PROGRAM FOR OPERATING STAFF PRIOR TO THE SCHEDULED START-UP DATE. THE PROGRAM WILL CONSIST OF THE DESIGN_START-UP_AND OPERATION OF THE PLUMBING SYSTEMS. COORDINATE THE TRAINING PROGRAM WITH THE PRODUCTION OF THE OPERATION AND MAINTENANCE MANUALS. PROVIDE INDEXED BINDER AND TRAINING MATERIALS TO EACH PARTICIPANT

A. IN ADDITION TO MATERIAL AND EQUIPMENT SPECIFIED, PROVIDE INCIDENTAL MATERIALS TO EFFECT A COMPLETE INSTALLATION. SUCH INCIDENTAL MATERIALS INCLUDE SOLDERS, TAPES, CAULKING, MASTICS, GASKETS AND SIMILAR ITEMS. B. MATERIALS AND EQUIPMENT SHALL BE UNIFORM THROUGHOUT THE INSTALLATION. EQUIPMENT OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER. MATERIALS AND EQUIPMENT SHALL BE NEW.

HERA Laboratory Planners

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Georgia Institute of Technology Cherry Emerson Peter

Yunker Lab Fit-Up GA PROJECT #: 0360-2020

Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308

PLUMBING -SPECIFICATIONS

DRAWN BY: KG	CHECKED BY	:
PROJECT NO: 30089	DATE: 08/31/2020	
SHEET NO:		
P -	001	
SCALE:		NTS

COMPRESSED GAS PIPING SERVICES CODE	PIPE	FABRICATION OR JOINTING METHOD	VALVES
3. THREADED JOINTS MAY BE USED FOR SMALLE	R SIZES UP TO THE PRESCRIBED REC	QUIREMENTS OF THE JURISDICTIONAL CODE.	
SPECIALTY VALVES BACKFLOW PREVENTERS. : REDUCED PREVENTERS WITH 175 PSI WORKING PRESSUI RATING, SEPARATE STRAINER AND VALVES	I PRESSURE BACKFLOW RE, 140°F TEMPERATURE S ON INLET AND OUTLET I	 COLD WATER SUPPLY PIPING, VALVES AND FITTINGS SHALL BE ½" UP TO 1¼" DIAMETER TUBE AND 1" FOR LARGER SIZES. IN ADDITION, CONTINUOUS VAPOR BARRIER SHALL BE MAINTAINED. ALL PLUMBING LINES THAT ARE HEAT TRACED SHALL BE INSULATED TO 	 A. GENERAL ASSEMBLY 1. FURNISH AND INSTALL MANIFOLD SYSTEMS AS SHOWN ON PLUMBING DRAWINGS.
WHERE INDICATED ON THE DRAWINGS. PRO WITH FULL SET OF SEALS, WASHERS, AND SPE	OVIDE SPARE PARTS KIT ECIAL TOOLS. BFP SHALL	ENERGY CODE STANDARDS. HANGERS, ANCHORS, CLAMPS AND INSERTS	2. WARRANTY FOR CROSSOVER MANIFOLD ASSEMBLIES
AND CERTIFIED UNDER AWWA-ASSE STANDAF 6C OR FEBCO 825Y OR APPROVED EQUAL.	RDS: WATTS 909, BEECO	A. PROVIDE ADJUSTABLE CLEVIS HANGERS FOR PIPING 4" & LARGER, AND CAST BRASS SPLIT-RING HINGED HANGERS FOR SMALLER PIPING.	a. SEE PART 1
		SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE	REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF FOLLOWING
INTERVALS NO LONGER THAN 20'-0". PIPE MARI LAMINATED PLASTIC PROTECTED BY CLEAR	CATION MARKERS AT KERS SHALL BE SNAP-ON ACRYLIC COATING. PIPE	PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS.	a. CONCOA b. LINDE/SPECTRA
MARKERS SHALL BE APPLIED AFTER ARC WHERE SUCH IS REQUIRED.	CHITECTURAL PAINTING	CONCRETE INSERTS OR PHILLIPS OR APPROVED EQUAL EXPANSION SHIELDS. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED.	d. PRAX AIR e. BEACON MADEAS
PROVIDE ARROW MARKER WITH EACH PIPE I TO INDICATE DIRECTION OF FLOW. IF FLO DIRECTION USE DOUBLE-HEADED ARROW MA	IDENTIFICATION MARKER OW CAN BE IN EITHER	C. COVER INSERTS WITH JACKET MATERIAL MATCHING ADJACENT PIPE INSULATION. INSTALL SHIELDS OVER JACKET, ARRANGED TO PROTECT	t. WESTERN ENTERPRISES
PROVIDE PVC JACKETS COVERS OVER ASJ IN A		JACKET FROM TEAR OR PUNCTURE BY HANGER, SUPPORT, AND SHIELD.	a. ALL MANIFOLD PIPING, HEADERS, SWITCHING CONTRO TO BE FURNISHED AND INSTALLED AS A COMPLETE
LOWER THAN 8 FEET THROUGHOUT	I BK ATTACH ENGRAVED	D. PROVIDE SUPPORT MATERIALS: HANGER STRAPS, HANGER RODS, SADDLES, SUPPORT RINGS, AND HIGH DENSITY INSERTS.	 b. MANIFOLD RACKS SHALL BE FURNISHED AND INSTALL WITH SUPPORT CHAINS AND/OR BRACKETS. INCLUDE
LAMINATED PLASTIC TAGS TO ALL VALVES. TA CHARACTERS ON WHITE FACE, CONSECUT	AGS SHALL HAVE BLACK	E. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL CODES.	C. CONTROL WIRING FROM CONTROL PANELS, REGULAT
PREFIXED WITH LETTER P FOR GENERAL VAL LEAST 1" DIAMETER WITH NUMERALS AT ATTACHED BY AN "S" HOOK.	LVES. TAGS SHALL BE AT 2.9 LEAST 3/8" HIGH AND	A. PROVIDE SLEEVES FOR ALL PENETRATIONS. PIPE SLEEVES THROUGH	TO BE FURNISHED WITH THE MANIFOLD SYSTEMS UND THIS SECTION SUCH THAT ALL MANIFOLD SYSTEMS
WHERE VALVES ARE INSTALLED IN AN SYNCHRONIZE AND CONTINUE VALVE TAG	N EXISTING BUILDING, G NUMBERING SYSTEM.	FIRE-RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS	FUNCTION FULLY. d. ALL REGULATORS, HEADER PIPING, RELIEF PIPING, VALVES ALARMS AND APPURNATURES NECESSARY FO
COORDINATE WITH OWNER. NON-POTABLE WATER OUTLETS SHALL	BE IDENTIFIED WITH	AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND	FULL FUNCTION OF THE SYSTEM e. ALARMS AND WARNING SYSTEMS: INSTALL ALARM:
PERMANENTLY ATTACHED RED LAMINATE AD TALL WHITE LETTERING. THE TAG SHALL HAV DANGER - LINSAFE WATER - DO NOT DRIVING	DHESIVE TAGS WITH 3/8" VE 3 LINES THAT READS:	BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FIRE STOP PENETRATION SEALS IN FIRE-RATED CONSTRUCTION SHALL RECERTION SEALS IN FIRE-RATED CONSTRUCTION SHALL	AND COMPONENT CONTROL WIRING TO ALARMS SUCH THAT ALARM SYSTEMS FUNCTION LOCALLY. f. THE CONTROLLER SHALL HAVE THE ABILITY TO
		MINERAL FIBER BOARD, MATTING OR PUTTY INSTALL NEW ELECTRIC WATER HEATERS, ELECTRIC WATER COOLERS, KITCHEN SINKS, FOR	COMMUNICATE COMMON FIELD-BUS PROTOCOLS SUP ALL INSTRUMENT COMMUNICATION TRANSITION HARDWARE TO THE RUIL DING MANAGEMENT SYSTEM
INSULATE ALL HOT, COLD, AND RE-CIRCULAT SHALL BE BY OWENS-CORNING, CERTAIN-TEEL ENERGY CODE	ING PIPING. INSULATION D OR MANVILLE. PER THE	DAMMING AND FORMING. FINISH SEALS FLUSH TO WALL SURFACE AND FILL GAPS WITH SILICONE ADHESIVE SEALANT CAULKING.	(BMS) INSTALLER SUCH THAT ALL ALARMS ARE REPORTED TO THE BUILDING MANAGEMENT SYSTEM
INSULATION, JACKETS AND ADHESIVES SHALL AND SHALL HAVE ASTM E-84 FIRE HAZARD	L BE FLAME RETARDANT RATINGS OF 25 FLAME	COURDINATE PROPER FIRE SEAL STOPPING OF THERMOPLASTIC PIPE PENETRATIONS: PROVIDE A PROPER ENGINEERED UL FIRESTOPPED PENETRATION PRODUCT EQUAL TO THE WALL OR FLOOR THROUGH	5. RELATED WORK IN OTHER SECTIONS: a. ELECTRICAL COMPONENTS, DEVICES. AND
SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL HOT WATER SUPPLY PIPING SHALL BE IN	CONTRIBUTED. NSULATED WITH HEAVY	WHICH IT PASSES, SUBMIT PROPER HILTI, 3M FOR FIRESPEC UL DETAILS FOR EACH PENETRATION.	ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MAR
DENSITY FIBERGLASS WITH SELF-SEALING JACKET. FITTINGS AND VALVES SHALL BE	LAP AND ALL SERVICE	D. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBER OR	 b. ELECTRICAL POWER CONNECTIONS TO FIXED CONTR CABINET OR DUPLEX RECEPTACLES
BE RATED FOR MAXIMUM OPERATING TEM INSULATION THICKNESS SHALL BE 1"UP TO 11/4"	MPERATURE OF 450° F. "PIPE DIAMETER AND 1½"	E. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL	6. CAPACITIES, NUMBERS OF CYLINDERS PER SIDE AND SPEC
FOR ALL PIPING EQUAL TO AND LARGER THAN	1 1½" IN DIAMETER	WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.	a. SEE PLUMBING DRAWINGS FOR FURTHER INFORMATI
i			7. CYLINDERS AND TEST GASES
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WHERE REVISIONS OR CHANGES IN THE EXISTING WORK ARE REQUIRED TO PERMIT THE INSTALLATION OF NEW WOY THEY SHALL BE MADE AT NO ADDITIONAL COST NO ALLOWANCE SHALL BE SUBSEQUENTLY MADE FOR ERROR OR OMISSION. UNDERSTANDING OF WORK: STUDY, EXAMINE, AND COMPARE OF THE CONTR DOCUMENTS, INCLUDING DRAWINGS AND SPECIFICATIN THE SUBCONTRACTOR SHALL HAVE A FULL UNDERSTAND OF HOW THE WORK IN THIS PART IS SCHEDULED, PHASED, INSTALLED WITH WORK OF OTHER TRADES. INCLUDE IN THIS INSTALLATION PIPING, DUCTWORK, DEVI AND EQUIPMENT THAT ARE NECESSARY FOR COMPLETE OPERATING SYSTEMS AS SPECIFIED AND AS REQUIRED. CONNECT PIPING AND DUCTWORK FROM FIXTURES, OUTL AND EQUIPMENT THAT ARE NECESSARY FOR COMPLETE OPERATING SYSTEMS AS SPECIFIED AND AS REQUIRED. CONNECT PIPING AND DUCTWORK FROM FIXTURES, OUTL AND EQUICES FULL SIZE TO THE NEAREST SUITABLE MAIN RISER. CERTAIN INSTALLATIONS MAY BE PRESENTED AS TYPICAL, FULL DETAILS ARE NOT REPEATED FOR EACH AND EVERY CASE, MAKE ADJUSTMENTS TO TYPICAL DETAILS TO SUIT E SPECIFIC INSTALLATION AS PART OF THE BASIC WORK. INSTALLATION OF WORK PRESENTED ON THE DIAGRAMS APPLICABLE TO THE PLANS, AND WORK DEPICTED ON PLANS ARE APPLICABLE TO THE DIAGRAMS. IF THERE IS A DISCREPANCY IN THE DRAWINGS SPECIFICATIONS, THE CONTRACTOR SHALL FIGURE THE W BASED ON THE MOST STRINGENT REQUIREMENTS COMPLETE THE INSTALLATION AND OBTAIN CLARIFICATE THE WRASE ON THE ARCHITECT BEFORE INSTALLATION. ACCURACY OF DATA ACCURACY OF PING, DUCTS, AND EQUIPMENT. SHOULD IT BE NECESSARY TO DEVIATE FROM ARRANGEMENT AND LOCATION OF PIPING, DUCTS, AND EQUIPMENT. SHOULD IT BE NECESSARY TO DEVIATE FROM ARRANGEMENT AND LOCATION OF PIPING, DUCTS, AND EQUIPMENT. SHOULD IT DE NECESSARY TO DEVIATE FROM ARRANGEMENT AND LOCATION OF PIPING, DUCTS, AND EQUIPMENT. SHOULD IT DE NECESSARY TO DEVIATE
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PRESSURE TRANSDUCERS: COMPACT, ENCLOSUBE IP-67, WETTED PARTS STAINLESS STEEL, OUTPUT 4-20 MA,0- 6,000 PSI PRESSURE RANGE, EXTERNAL, PRESSURE PORT 144 INCH NPT MALE, ELECTRICAL CONNECTION 3 PIN PACKARD, ACCURACY 0.5 PERCENT FS FOR LESS THAN 1,000 PSI, TEMPERATURE RANGE, 40 TO 257 LESS THAN 1,000 PSI, TEMPERATURE RANGE, 40 TO 257 LESS THAN 1,000 CSI, TEMPERATURE RANGE, 40 DZ 57 LESS THAN 1,000 CSI, TEMPERATURE RANGE, 40 DZ 57 LESS THAN 1,000 CSI, TEMPERATURE RANGE, 40 DZ 57 LESS THAN 1,000 PSIG MAXIMUM INLET PRESSURE, 0.100 PSIG 0/ITET PRESSURE MOUNTING BRACKET: STAINLESS STEEL X GAUGE, 7,24 INCORED ON DRAKES STEEL DIAPHRAGM, RATED AT 3,000 PSIG MAXIMUM INLET PRESSURE, 0.100 PSIG 0/ITE, STAINLESS STEEL DASSENDEL OT 140 DEG F. MONITING BRACKET: STAINLESS STEEL X GAUGE, 7,24 INDCARD 1X10° HE CC/SEC. WITH A MASS SPECTROMETER MANIFOLD HEADERIS, FOR NUMB	 CORRELATION. 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PMENSURE TRANSDUCENS: COMPACT, ENCLOSUBE IP-67, WETTED PARTS STAINLESS STEEL, OUTPUT 4: 20 MA,0- 6, 400 CPSI PRESSURE RANGE, EXTERNAL PRESSURE PORT 14 IN CH NPT MALE, ELECTRICAL CONNECTION 3 PIN PACKARD, ACCURACY 0.5 PERCENT FS FOR LESS THAN 1,000 FSI, TEMPERATURE RANGE, EATERNAL PRESSURE PORT 14 IN CH NPT MALE, ELECTRICAL CONNECTION 3 PIN PACKARD, ACCURACY 0.5 PERCENT FS FOR LESS THAN 1,000 FSI, TEMPERATURE RANGE, EATERNAL PRESSURE PORT 14 IN CONPORATE ENCAPSULATED SEATS THAT FLITER 10- MICRON OR LARGE PASS STEEL BAR-STOCK BODY AND DIFFUSION RESISTANT 316L DIAPHRAGMS THAT EXCEED THE 10,000 CYCLE REQUIRE INTRINSIC SAFETY) LINE PRESSURE RANGS, FLITER 10 MICRON BRONZE SINTERED METAL, HIGH PURITY DIFFUSION RESISTANT 3,000 PSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 ET PRESSURE. STEEL DIAPHRAGM, RATED 47, 3,000 PSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 ET PRESSURE SINTERED METAL, HIGH PURITY DIFFUSION RESISTANT 1,000 FSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 ET PRESSURE SINTERED METAL, HIGH PURITY DIFFUSION RESISTANT 1,000 FSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 ET PRESSURE 1,001 CALCAC ON NOR THAT EXCEPT 1,000 CYCLE PART ECCSEC. WITH A MASS SPECTROMETER MANIFOLD HEADERSH, FOUN 7/16 INCH MOUNTING 5,000 FSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 FSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 FSIG MAXIMUM INLET PRESSURE, 00 PSIG 0,001 FSIG MAXIMUM INDET	 CORRELATION. WHERE REVISIONS OR CHANGES IN THE EXISTING WORK ARE REQUIRED TO PERMIT THE INSTALLATION OF NEW WORTHEY SHALL BE MADE AT NO ADDITIONAL COST NO ALLOWANCE SHALL BE SUBSEQUENTLY MADE FOR ERROR OR OMISSION. UNDERSTANDING OF WORK: STUDY, EXAMINE, AND COMPARE OF THE CONTR DOCUMENTS, INCLUDING DRAWINGS AND SPECIFICATIC THE SUBCONTRACTOR SHALL HAVE A FULL UNDERSTAND. 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PRESSURE TRANSDUCERS: COMPACT, ENCLOSUBE IP-67, WETTED PARTS STAINLESS STEEL CONNECTION 3 PIN PACKARD, ACCURACY 0.5 PERCENT FS FOR LESS THAN 1.000 PGIS I TEMPERATURE RANGE. EXTERNAL PRESSURE PORT 14/ INCH PMT MALE, ELECTRICAL CONNECTION 3 PIN PACKARD, ACCURACY 0.5 PERCENT FS FOR LESS THAN 1.000 PGIS I TEMPERATURE RANGE. EXTERNAL PRESSURE PART 55 CM DOY AND DIFFUSION RESISTANT 316L DIAPHRAGMS THAT EXCEED THE 10,000 CYCLE REQUIREMENT OF CGA E-4 AND INCORPORATE ENCAPSULATED SEATS THAT FILTER 10 MICGRO NO R LARGER PARTICULATE, CAPSULE WITH SEATS PCTFE FOR INLET REQUIREMENT OF CGA E-4 AND INCORPORATE ENCAPSULATED SEATS THAT FILTER 10 MICGRO NO R LARGER PARTICULATE, CAPSULE WITH SEATS PCTFE FOR INLET REQUIREMENT OF CGA E-4 AND INCORPORATE ENCAPSULATED SEATS THAT FILTER 10 MICGRO NO RALAGER PARTICULATE, CAPSULE WITH SEATS PCTFE FOR INLET REQUIREMENT OF CGA E-4 AND INCORPORATE ENCAPSULE. MOUNTING BRACKET: STAINLESS STEEL LARGE 40 DEG F TO 140 DEG F. MOUNTING BRACKET: STAINLESS STEEL CAUGUER FTO A DIAPHRAGM SELSON. DEPERATING TEMPERATURE RANGE -40 DEG F TO 140 DEG F. MOUNTING BRACKET: STAINLESS STEEL LARGE AND DESIGN. DOPERATING TEMPERATURE RANGE -40 DEG F TO 140 DEG INNEGARD TO NO THE SPECIFICATIONS. MODILATE DESIGN. DOPERATING TEMPERATURE RANGE -40 DEG F TO 140 DEG INNEGARD ED (THE DARGEN'	 CORRELATION. WHERE REVISIONS OR CHANGES IN THE EXISTING WORK ARE REQUIRED TO PERMIT THE INSTALLATION OF NEW WOR THEY SHALL BE MADE AT NO ADDITIONAL COST NO ALLOWANCE SHALL BE SUBSECUENTLY MADE FOR ERROR OR OMISSION. UNDERSTANDING OF WORK: STUDY, EXAMINE, AND COMPARE OF THE CONTRI DOCUMENTS, INCLUDING DRAWINGS AND SPECIFICATIC THE SUBCONTRACTOR SHALL HAVE A FULL UNDERSTAND OF HOW THE WORK IN THIS PART IS SCHEDULED, PHASED, INSTALLED WITH WORK OF OTHER TRADES. INCLUDE IN THIS INSTALLATION PIPING, DUCTWORK, DEWNAND OCH OOTHER TRADES. INCLUDE IN THIS INSTALLATION PIPING, DUCTWORK, DEWNAND OCH OOTHER TRADES. INCLUDE IN THIS INSTALLATION PIPING, DUCTWORK, DEWNAND OPHONT WITH WORK OF OTHER TRADES. CONNECT PIPING AND DUCTWORK FROM FIXTURES, OUTL AND DEVICES FULL SIZE TO THE NEAREST SUITABLE MAIN RISER. CONNECT PIPING AND DUCTWORK FROM FIXTURES, OUTL AND DEVICES FULL SIZE TO THE NEAREST SUITABLE MAIN RISER. CERTAIN INSTALLATION SMAY BE PRESENTED FOR EACH C. SUBCONTRACTOR SHALL PROVIDE COMPLETE INSTALLATION AS PART OF THE BASIC WORK. INSTALLATION OF WORK PRESENTED ON THE DRAWINGS SPECIFICATIONS, THE CONTRACTOR SHALL FIGURE THEW BASED ON THE ADISONST STIMURGENT REQUIREMENTS TO TYPICAL DETAILS APPLICABLE TO THE DIAGRAMS. IF THERE IS A DISCREPANCY IN THE DRAWINGS SPECIFICATIONS, THE CONTRACTOR SHALL FIGURE THEW BASED ON THE ARCHITECT TO EFFORM TRACTING. CLARIFICAT FROM THE ARCHITECT DEFORE INSTALLATION. THEME IS A DISCREPANCY IN THE DRAWINGS ON SPECIFICATIONS, STALLATION AND ODTIAN CLARIFICAT FROM THE ARCHITECT THE INSTALLATION. MCLADED THE RECENT AND CONTRACTOR SHALL FIGURE THEW BASED ON THE ARCHITECT THE ADIS AND ON NO DOTION NODIOTS INTOLOGATED IN ORDER TO MEET ARCHITECTHAL CONDITIONS ON SO CONDITIONS, OR DUCT ON THE PROMARMANDES INTOLCATIONS ON SO COND

MECHANICAL EQUIPMENT ROOMS, DATA AND TELECOMM ROOMS, CEILING SPACES, SHAFTS, CORRIDORS, LABORATORIES, ETC.

- COOPERATE AND COORDINATE WITH WORK OF OTHER SECTIONS IN EXECUTING WORK OF THIS SECTION.
- PERFORM WORK SO THAT PROGRESS OF ENTIRE PROJECT INCLUDING WORK OF OTHER SECTIONS SHALL NOT BE INTERFERED WITH OR DELAYED.
- PROVIDE INFORMATION AS REQUESTED ON ITEMS FURNISHED 3 UNDER ONE SECTION WHICH SHALL BE INSTALLED UNDER OTHER SECTIONS.
- FOR FOUIPMENT PROVIDED UNDER ANY DIVISION OR SECTION 4 WHICH HAS CONNECTION MADE UNDER THE MECHANICAL OR ELECTRICAL SECTIONS, OBTAIN DETAILED INSTALLATION AND HOOKUP INFORMATION FROM THE EQUIPMENT MANUFACTURERS.
- OBTAIN FINAL ROUGHING DIMENSIONS OR OTHER 5. INFORMATION AS NEEDED FOR COMPLETE INSTALLATION OF ITEMS FURNISHED UNDER OTHER SECTIONS OR BY OWNER.
- KEEP FULLY INFORMED AS TO SHAPE. SIZE AND POSITION OF 6. OPENINGS REQUIRED FOR MATERIAL OR EQUIPMENT TO BE PROVIDED UNDER ALL SECTIONS. GIVE FULL INFORMATION SO THAT OPENINGS REQUIRED BY WORK OF THIS SECTION MAY BE COORDINATED WITH OTHER WORK AND OTHER OPENINGS AND MAY BE PROVIDED FOR IN ADVANCE. IN CASE OF FAILURE TO PROVIDE SUFFICIENT INFORMATION IN PROPER TIME, PROVIDE CUTTING AND PATCHING OR HAVE SAME DONE, AT OWN EXPENSE AND TO FULL SATISFACTION OF ARCHITECT.
- NOTIFY ARCHITECT OF LOCATION AND EXTENT OF EXISTING 7 PIPING, CONDUIT, DUCTWORK AND EQUIPMENT THAT INTERFERES WITH NEW CONSTRUCTION. IN COORDINATION WITH AND WITH APPROVAL OF ARCHITECT, RELOCATE PIPING, DUCTWORK AND EQUIPMENT TO PERMIT NEW WORK TO BE PROVIDED. REMOVE NONFUNCTIONING AND ABANDONED PIPING, DUCTWORK AND EQUIPMENT. DISPOSE OF OR STORE

SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF MECHANICAL SYSTEMS, MATERIALS, AND EQUIPMENT. COMPLY WITH THE FOLLOWING REQUIREMENTS

- A. COORDINATE MECHANICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
- B. VERIFY DIMENSIONS BY FIELD MEASUREMENTS. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
- COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED.
- E. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF MECHANICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE BUILDING.
- WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED INSTALL SYSTEMS, MATERIALS AND EQUIPMENT TO PROVIDE TH MAXIMUM HEADROOM POSSIBLE. WORK SHALL BE ABOVE CEILINGS OR CEILING LINE.
- G. COORDINATE INSTALLATION AND CONNECTION OF MECHANICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE.

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3.4

- A. PIPING FURNISH PIPE CLEANING CHEMICALS, CHEMICAL FEED 1. EQUIPMENT, MATERIALS AND LABOR NECESSARY TO CLEAN PIPING 4. FLUSHING OPERATION.
- PERMANENTLY INSTALL NECESSARY CHEMICAL INJECTION 2. FITTINGS COMPLETE WITH STOP VALVES. 3.12 <u>TESTS</u>
- A. UPON COMPLETION OF THE MECHANICAL CONSTRUCTION WORK, PERFORM TESTS AND PROVIDE TEST REPORTS AS SPECIFIED IN THIS AND OTHER SECTIONS. B. EACH TRADE SHALL ARRANGE THAT AN OFFICER OF THE CONTRACTING COMPANY SHALL CERTIFY THAT EACH AND EVERY SYSTEM HAS BEEN TESTED. AT THE CONCLUSION OF THE TESTS, SUBMIT A LETTER AND ENCLOSED COMMISSIONING FORMS SIGNED BY THE OFFICER STATING:
- C. ALL TESTS SHALL BE MADE IN THE PRESENCE OF A REPRESENTATIVE OF THE PROJECT MANAGER. THE SUBCONTRACTOR SHALL SUBMIT TO THE PROJECT MANAGER 3 COPIES OF TEST RESULTS, CERTIFIED IN WRITING. WITNESSED. SIGNED AND DATED, IMMEDIATELY UPON COMPLETION OF WORK. UNSATISFACTORY CONDITION REVEALED BY THESE TEST RESULTS, OR UNSATISFACTORY METHODS OF TESTS AND/OR TESTING APPARATUS AND INSTRUMENTS, SHALL BE CORRECTED BY THE SUBCONTRACTOR TO THE SATISFACTION OF THE PROJECT MANAGER.
- D. THE PROJECT MANAGER RESERVES THE RIGHT TO REQUIRE THAT THE SUBCONTRACTOR PERFORM AND REPEAT TESTS THAT ARE DEEMED NECESSARY TO COMPLETE OR CHECK THE TESTS OR THE CERTIFIED RECORDS OF THE SUBCONTRACTOR DURING THE COURSE OF THE WORK. CORRECT UNSATISFACTORY PORTION OF ITS WORK THAT IS REVEALED BY THE TESTS OR THAT MAY BE DUE TO PROGRESSIVE DETERIORATION DURING THIS PERIOD, UNLESS THE ITEM IN QUESTION WAS A DIRECT SPECIFICATION.

SYSTEM	TEST MEDIUM	TEST PRESSURE	TEST DURATION	OTHER
WATER (ALL SYSTEMS)	WATER	150 PSIG MIN OR 1.5 OPERATING PRESSURE	1 HOUR	DO NOT SUBMIT THERMOPLASTIC PIPING SYSTEMS TO TEST PRESSURES HIGHER THAN 90 PSIG
LABORATORY COMPRESSED AIR	GAS FOR THE TEST SHALL BE CLEAN, DRY, OIL-FREE AIR OR NITROGEN	PRESSURIZE THE FLUID IN THE CLOSED SYSTEM TO 50 PSIG; OR 1.5 TIMES THE DESIGN PRESSURE FOR THE SYSTEM, WHICHEVER IS THE GREATER.	4 HOUR	
LABORATORY CO2	GAS FOR THE TEST SHALL BE CLEAN, DRY, OIL-FREE AIR OR NITROGEN	PRESSURIZE THE FLUID IN THE CLOSED SYSTEM TO 50 PSIG; OR 1.5 TIMES THE DESIGN PRESSURE FOR THE SYSTEM, WHICHEVER IS THE GREATER.	4 HOUR	
LABORATORY VACUUM	GAS FOR THE TEST SHALL BE CLEAN, DRY, OIL-FREE AIR OR NITROGEN	PRESSURIZE THE FLUID IN THE CLOSED SYSTEM TO 50 PSIG; OR 1.5 TIMES THE DESIGN PRESSURE FOR THE SYSTEM, WHICHEVER IS THE GREATER.	4 HOUR	
NATURAL GAS	AIR	10 INCH MERCURY MINIMUM FOR EACH 500 CUBIC FEET OF PIPE VOLUME	1 HOUR	

THE ARCHITECT/OWNER.

PROJECT CLOSE-OUT PROCEDURE

A. A. PROJECT CLOSE-OUT CHECKLIST

- RETURN THE PIPING SYSTEM TO ITS PRE-TEST CONDITION SUBMIT AS PART OF THE CLOSEOUT DOCUMENTS, A TEST REPORT FOR EACH FLUID SYSTEM ABOVE. THE TEST FORM FOR THE SELECTED PIPING SYSTEM SHALL BE FILLED-OUT, SIGNED AND DATED BY THE CONTRACTOR AND OWNER OR 2
- ITS REPRESENTATIVE WITNESSING THE TEST AS THE ACCEPTANCE DOCUMENT FOR FILING IN OWNER'S DOCUMENTATION FILE FOR THE PROJECT. REPAIR ALL SYSTEMS LEAKS WHERE FOUND DURING TEST PROCEDURES. RETEST SYSTEMS AFTER REPAIRS PER THE ABOVE TABLE. 3. DISINFECTION OF WATER SYSTEMS
- 3.13 WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE.
- CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPO CHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM.
- DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.
- SUBMIT A CHLORINATION DISINFECTION REPORT AS RECORD OF D. PROCEDURE. PROJECT PUNCH LIST PROCEDURE
- 3.14 A. IF, WHEN THE ENGINEER ARRIVES AT THE SITE CERTAIN AREAS ARE
- NOT COMPLETE AND READY FOR PUNCH OUT. THE ENGINEER WILL NOT REVIEW THESE AREAS. WHEN A SECOND NOTIFICATION IS ISSUED INDICATING THE INSTALLATION IS COMPLETED AND THE CONTRACTOR
- Page | 8

H. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, O GREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. COORDINATE WITH INDIVIDUAL SYSTEM REQUIREMENTS.

INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS IS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH

OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO AN ACCESSIBLE INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-

WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A

COORDINATE WITH THE LOCATIONS OF ELECTRICAL PANELS AND AVOID INSTALLING PIPING AND DUCTWORK OVER THEM. ELECTRICAL PANELS ARE PURPOSELY LOCATED AND HAVE PRIORITY FOR LOCATION. THE CONTRACTOR IS RESPONSIBLE FOR REQUIRED PIPING AND DUCTWORK OFFSETS TO INSURE THAT THE PANELS ARE LOCATED AS DESIGNED AND FOR OTHER CONDITIONS.

BUILDING EXPANSION JOINTS AND FIREWALLS

LOCATION.

3.5

3.6

3.7

Α.

A

Α

SPECIFIED SLOPE.

FIREPROOFED SLEEVES.

INSTALLATION

THE WORK.

DRAWINGS.

EQUIPMENT

В.

3.15

2.

PLUMBING PIPING AND OTHER HORIZONTAL DISTRIBUTION SYSTEMS SHALL BE PROVIDED WITH APPROVED EXPANSION PROVISIONS WHEN PASSING BY BUILDING EXPANSION JOINTS. SYSTEMS SHALL BE RUN THROUGH RATED WALLS, PARTITIONS, AND FLOORS VIA APPROVED

INSTALLATION SHALL PROVIDE ACCESS TO SYSTEMS INSTALLATION SHALL ALLOW CLEARANCES FOR EASY ACCESS TO

SYSTEMS FOR ROUTINE MAINTENANCE, FOR REPAIRS, AND FOR INSTALLING NEW CABLE IN CONDUIT AND CABLE TRAYS. ACCESS PANELS SHALL BE INSTALLED IN CEILINGS THAT ARE NOT COMPOSED OF REMOVABLE TILES. THESE SHALL BE LOCATED WHEREVER SYSTEMS COMPONENTS EXIST THAT HAVE MOVING PARTS.

MOTORS OR OTHER COMPONENTS BEOLIBING PERIODIC MAINTENANCE, ADJUSTMENT, OR REPLACEMENT, ACCESS PANELS SHALL BE SHOWN ON COORDINATION DRAWINGS AND SHALL BE OF THE TYPE AND FINISH AS APPROVED BY THE ARCHITECT.

MANUFACTURER'S DIRECTIONS: FOLLOW MANUFACTURER'S DIRECTIONS COVERING POINTS NOT SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN. MANUFACTURER'S DIRECTIONS DO NOT TAKE PRECEDENCE OVER DRAWINGS AND SPECIFICATIONS. WHERE THESE ARE IN CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS. NOTIFY

THE PROJECT MANAGER FOR CLARIFICATION BEFORE INSTALLING B. CARPENTRY, CUTTING, PATCHING, AND CORE DRILLING:

PROVIDE CARPENTRY, CUTTING, PATCHING, AND CORE DRILLING REQUIRED FOR INSTALLATION OF MATERIAL AND EQUIPMENT SPECIFIED IN THIS DIVISION.

NO PENETRATIONS SHALL BE SLEEVED, CUT, OR CORE DRILLED THROUGH CONCRETE CONSTRUCTION WITHOUT A SUBMITTAL INDICATING EXACT LOCATIONS AND SIZES AND SPECIFIC WRITTEN APPROVAL FROM THE UNIVERSITY OR UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL

3. IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO ACCURATELY SIZE AND LOCATE OPENINGS THROUGH THE STRUCTURE. THE DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE FOR GENERAL INFORMATION ONLY. PROVIDE SPECIFIC SIZES, DIMENSIONS, REQUIREMENTS, ETC.

C. SEISMIC MOUNTING: MATERIAL AND EQUIPMENT, INCLUDING FLOOR MOUNTED EQUIPMENT, PIPING, AND APPURTENANCES SHALL COMPLY WITH DIVISION 01 SECTION "LATERAL FORCE PROCEDURES". PROTECTION OF WORK

- EACH CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND A EQUIPMENT UNTIL FINALLY INSPECTED, TESTED, AND ACCEPTED CAREFULLY STORE MATERIALS AND EQUIPMENT THAT IS NOT IMMEDIATELY INSTALLED AFTER DELIVERY TO SITE. CLOSE OPEN ENDS OF WORK WITH TEMPORARY COVERS OR PLUG DURING CONSTRUCTION TO PREVENT ENTRY OF OBSTRUCTING MATERIAL. COVER WORK SUBJECT TO FALLING DEBRIS WITH TEMPORARY COVERS.
- PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR TO PROVIDE ADEQUATE PROTECTION OF ALL EQUIPMENT DURING THE COURSE OF CONSTRUCTION. THIS INCLUDES PROTECTION FROM MOISTURE AND FOREIGN MATERIAL. AT COMPLETION, ALL WORK MUST BE TURNED OVER TO OWNER CLEAN AND IN NEW CONDITION.
- C. PROTECT THE WORK AND MATERIAL OF OTHER TRADES THAT MIGHT BE DAMAGED BY WORK OR WORKMEN AND MAKE GOOD ALL DAMAGE THUS CAUSED. 3.9
- FIREPROOFING: A. CLIPS, HANGERS, CLAMPS, SUPPORTS AND OTHER ATTACHMENTS TO SURFACES TO BE FIREPROOFED SHALL BE INSTALLED, INSOFAR AS POSSIBLE, PRIOR TO START OF SPRAY FIBER WORK.
- PIPING AND OTHER ITEMS THAT WOULD INTERFERE WITH PROPER В. APPLICATION OF FIREPROOFING SHALL BE INSTALLED AFTER COMPLETION OF SPRAY FIBER WORK.
- C. PATCHING AND REPAIRING OF FIREPROOFING DUE TO CUTTING OR DAMAGING TO FIREPROOFING DURING COURSE OF WORK SPECIFIED UNDER THIS SECTION SHALL BE PERFORMED BY INSTALLER OF FIREPROOFING AND PAID FOR BY TRADE RESPONSIBLE FOR DAMAGE AND SHALL NOT CONSTITUTE GROUNDS FOR AN EXTRA TO OWNER.
- ASSUME RESPONSIBILITY FOR DAMAGE TO OF THE WORK OR PREMISES BEFORE SUBSTANTIAL COMPLETION. SHOULD NEW OR EXISTING EQUIPMENT BECOME DAMAGED, RESTORE IT TO ITS ORIGINAL CONDITION AND FINISH BEFORE FINAL ACCEPTANCE DAMAGE INCURRED TO OWNER PROPERTY OR TO THE WORK OF OTHER DIVISIONS, CAUSED BY THIS DIVISION, SHALL BE REPLACED OR REPAIRED BY, AND AT THE EXPENSE OF, THE SUBCONTRACTOR WARRANTY
- CONTINUITY OF SERVICES

3.10

- A. DO NOT INTERRUPT EXISTING SERVICES WITHOUT OWNER'S APPROVAL. SCHEDULE INTERRUPTIONS IN ADVANCE, ACCORDING TO OWNER'S Β.
- INSTRUCTIONS. SUBMIT, IN WRITING, WITH REQUEST FOR INTERRUPTION, METHODS PROPOSED TO MINIMIZE LENGTH OF INTERRUPTION. INTERRUPTIONS SHALL BE SCHEDULED AT TIMES OF DAY AND WORK
- SO THAT THEY HAVE MINIMAL IMPACT ON OWNER'S OPERATIONS. D. .SUBCONTRACTOR SHALL COORDINATE SHUTDOWNS OF EXISTING SYSTEMS. 3.11 CLEANING

3. AFTER PIPING SYSTEMS HAVE BEEN PRESSURE TESTED AND APPROVED FOR TIGHTNESS, CLEAN AND FLUSH PIPING AS SPECIFIED AND IN ACCORDANCE WITH APPLICABLE CODES. MAINTAIN CONTINUOUS BLOWDOWN AND MAKE-UP DURING

AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT, INCLUDING CONCRETE RESIDUE, DIRT AND PAINT RESIDUE.

3.16

HAS PUNCHED AND CORRECTED THESE AREAS, THE ENGINEER WILL THEN RE-VISIT THE SITE FOR FINAL OBSERVATIONS AND PUNCH LIST. SYSTEMS SHALL BE OPERATED UNDER ACTUAL OR SIMULATED FULL LOAD CONDITIONS. IDENTIFY THE OPERATING

CONDITIONS IN THE WORK PLAN. WORK PLAN SHALL INCORPORATE THE "DEMONSTRATION OF SUCCESSFUL OPERATION" DESCRIBED BELOW. THE ARCHITECT/OWNER MAY CHECK THE COMPLETED AND

COMMISSIONED INSTALLATION EITHER SEQUENTIALLY AS DIFFERENT PARTS ARE COMPLETED, AND/OR WHEN THE ENTIRE INSTALLATION IS COMPLETE, AT THE SOLE OPTION OF

1. 1. REVIEW REQUIREMENTS OF EACH SECTION OF THE SPECIFICATIONS AND SUBMIT FOR APPROVAL TO ARCHITECT THE SIGN-OFF FORMS THAT SHALL BECOME THE PROJECT CLOSE-OUT CHECKLIST, THIS, AT A MINIMUM, SHALL INCLUDE THE FOLLOWING INFORMATION SHOWN IN ATTACHED PROJECT CLOSEOUT CHECKLIST EXAMPLE. THE ARCHITECT AND/OR

- OWNER MAY INCORPORATE ADDITIONAL SPECIFIC ITEMS TO THE FOLLOWING CHECKLIST WHICH SHALL BECOME PART OF THE PROJECT REQUIREMENTS. SUBMIT RECORD DRAWINGS TO OWNER AND
- ARCHITECT/ENGINEER MAINTENANCE AND OPERATING INSTRUCTIONS AND TRAINING
- A. REFER TO DIVISION 01 SECTION "GENERAL REQUIREMENTS", FOR MAINTENANCE AND OPERATING INSTRUCTIONS, AND TRAINING REQUIREMENTS. AT TIME OF OCCUPANCY, ARRANGE FOR MANUFACTURER'S
- REPRESENTATIVES TO INSTRUCT OPERATING AND MAINTENANCE PERSONNEL IN THE USE OF EQUIPMENT REQUIRING OPERATING AND MAINTENANCE. ARRANGE FOR PERSONNEL TO BE INSTRUCTED AT ONE TIME. COSTS FOR THIS SERVICE SHALL BE INCLUDED IN THE SUBCONTRACT
- MAINTENANCE AND OPERATING INSTRUCTIONS AND TRAINING FOR FURNISHED EQUIPMENT WILL BE PROVIDED BY THE EQUIPMENT VENDOR. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OTHER EQUIPMENT.

HERA Laboratory Planners

www.herainc.com Georgia Institute of Technology **Cherry Emerson Peter**

Yunker Lab Fit-Up GA PROJECT #: 0360-2020

Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308

PLUMBING -SPECIFICATIONS

DRAWN BY: KG	CHECKED BY: JB	
PROJECT NO: 30089	DATE: 08/31/2020	
SHEET NO:		
P-	002	
SCALE:		NTS

$\langle 1 \rangle$	3/4" VAC DROP, 1/2" CA DROP, 1/2" CO2 D
$\langle 2 \rangle$	3/4" VAC DROP AND 1/2" CA DROP TO WA
$\langle 3 \rangle$	3/4" VAC DROP AND 1/2" CA DROP TO SE
$\langle 4 \rangle$	1 1/4" CW DROP TO SALVAGED/RELOCAT
$\langle 5 \rangle$	FUMEHOOD CONNECTIONS TO BE REFU
$\langle 6 \rangle$	EXTEND 1" RV TO ATMOSPHERE
$\langle 7 \rangle$	1" RV RISE AND 1/2" CO2 RISE FROM CO2
$\langle 8 \rangle$	1/2" CO2 DROP TO WALL OUTLET. RUN P
$\langle 9 \rangle$	1/2" CO2 DROP TO <u>EQ-08</u> . RUN PIPING EX
$\langle 10 \rangle$	PROVIDE 1/2" CW SUPPLY TO NEW PURI
$\langle 11 \rangle$	1/2" NG DROP TO NEW WALL OUTLET. PF
(12)	1" CA & 1" VAC CONNECT TO EXISTING R
(13)	1/2" NG CONNECT TO EXISTING RISER
$\langle 14 \rangle$	PROVIDE NEW SOLENOID VALVE AND MA
(15)	SURFACE MOUNTED EMERGENCY SHUT
(16)	REMOTE EMERGENCY SHUT-OFF BUTTC
$\langle 17 \rangle$	1/2" CW DROP TO EW-1 (WATERSAVER #

	INSULATION SHIELD SCHEDULE				
PIPE SIZE	DIMENSION "A"	GAUGE OF SHIELD	SHIELD THICKNESS		
1/2" TO 4"	12"	18	0.0480		
5" TO 6"	18"	16	0.0600		
ABOVE 6"	24"	14	0.0750		

NOTE:

1. SEE SPECIFICATION FOR FLANGER SIZES

PIPE HANGER SHIELD

SCALE: NTS

2

5

6 SCALE: NTS

NTS

SCALE:

THIS EXISTING FLOOR PLAN HAS BEEN RECEPTACLES, LIGHTS, CONDUITS, JU MAY NOT INDICATE CORRECT IDENTIFI VERIFY THE NUMBER OF DEVICES WITH AMOUNT OF DEMOLITION WORK REQUI DEMOLITION DRAWINGS AND AS REQU DEMOLITION WORK MUST FOLLOW THI MECHANICAL DRAWINGS AND CONTRA REMOVE ALL DEVICES, EQUIPMENT, MA DIRECTED BY THE CONSTRUCTION MA SYSTEM. ALWAYS FIELD VERIFY SYSTE FITTINGS, SUPPORTS, JUNCTION BOXE JUNCTION BOX OR DEVICE IF THE REM MAINTAIN AND RESTORE, IF INTERRUP THROUGH AND SERVING UNDISTURBE REMOVAL TO ASSURE THAT THEIR REM ELECTRICAL SUBCONTRACTOR SHALL CIRCUITS PASSING THROUGH THE COM CONSTRUCTION AREA. EXTEND AND R NEW WORK. SUBCONTRACTOR SHALL POWER TO AREAS ADJACENT TO THIS ELECTRICAL SUBCONTRACTOR SHALL CONTRACTOR SHALL PROVIDE NECES AFFECTED BY THIS DEMOLITION WORK IN ANY AREA REQUIRING THE PERFORM ELECTRICAL ITEMS IN PATH OF WORK IN THAT AREA, IN ACCORDANCE WITH ALL EXISTING CONDUITS STUBBED THR SHALL BE CUT OFF FLUSH WITH SLAB L AND IN GOOD CONDITION. EXISTING C IN ALL EXISTING OR NEW AREAS SPECI REQUIRED INCLUDING BUT NOT LIMITEI PAINTING. ANY ITEM NOT REMOVED AN INVENTORY MAJOR ELECTRICAL ITEMS RETAINED. ALL ITEMS REJECTED BY TH DISCONNECT, MAKE SAFE AND REMOV BRANCH CIRCUIT WIRING TO DEVICES I

THE PANELBOARD. THE CONTRACTOR CONTINUITY OF BRANCH CIRCUIT WIRI

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	HERA Laboratory Planners
C C	www.herainc.com Georgia Institute of Technology Cherry Emerson Peter Yunker Lab Fit-Up GA PROJECT #: 0360-2020
Restrom	Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308 T
B	
	No. Date Description
A 11 12 A BENERAL NOTES	D8/27/2020 THESE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND WE EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE DEDUCT
DEVELOPED UTILIZING EXISTING DOCUMENTS AND READILY OBSERVABLE SITE CONDITIONS. ALL DEVICES, NCTION BOXES, ELECTRICAL EQUIPMENT, EQUIPMENT SIZES, ETC. SHOWN ARE FOR REFERENCE ONLY AND CATION, AND SIZE; AND TOTAL QUANTITIES OF ITEMS SCHEDULED FOR DEMOLITION. VISIT SITE AND FIELD HIN THE CONSTRUCTION PHASE AREA PRIOR TO THE BID AND REMOVAL. THE DRAWINGS DO NOT LIMIT THE IRED THE ELECTRICAL CONTRACTOR MUST PERFORM THE DEMOLITION WORK AS INDICATED ON THE IIRED FOR THE NEW WORK. E CONSTRUCTION PHASING SEQUENCE AND MUST BE COORDINATED WITH THE GENERAL AND ACTORS. ATERIAL, AND CIRCUITS IN THEIR ENTIRETY, WHICH INTERFERE WITH THE NEW CONSTRUCTION AS NAGER. NO ELECTRICAL OR ELECTRONIC CIRCUIT TRACERS WERE USED TO VERIFY CONFIGURATION OF EM PRIOR TO STARTING WORK AT SITE. THE TERM ASSOCIATED CIRCUITRY SHALL MEAN CONDUIT, S, CONDUCTORS, ETC. BACK TO THE RESPECTIVE PANELBOARD (POWER SOURCE); OR TO THE LAST IANING PORTION OF THE CIRCUIT SERVES EXISTING EQUIPMENT OR AREAS WHICH SHALL REMAIN. TED BY REMOVALS OR IN PATH OF NEW CONSTRUCTION, ALL CIRCUITS, CONDUITS AND FEEDERS PASSING D AREAS (SHOWN OR NOT SHOWN). VERIFY CIRCUITS, DEVICES, AND EQUIPMENT SCHEDULED FOR	100% CONSTRUCTION DOCUMENTS
MAINTAIN POWER TO ALL CIRCUITS ADJACENT AREAS NOT BEING RENOVATED. MAINTAIN POWER TO ALL CIRCUITS ADJACENT TO THE CONSTRUCTION AREA. THIS SHALL INCLUDE ANY NSTRUCTION AREA OR CIRCUITS BEING POWERED FROM POWER PANELS OR BUS DUCTS WITHIN THE ELOCATE THESE CIRCUITS AS REQUIRED TO MAINTAIN SERVICE AND TO AVOID INTERFERENCE WITH THE NOTIFY REPRESENTATIVE FROM CONSTRUCTION MANAGER SHOULD IT BE NECESSARY TO INTERRUPT CONSTRUCTION AREA. VERIFY ALL LIGHTING CIRCUITS WITHIN THE CONSTRUCTION AREA BEFORE DISCONNECTING POWER. SARY WIRING TO MAINTAIN LIGHTING IN AREAS ADJACENT TO THIS CONSTRUCTION AREA WHICH WOULD BE (, MANCE OF ANY TRADE'S WORK, THIS CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY OR ALL , REINSTALLING AND RECONNECTING SAME AS REQUIRED, AFTER COMPLETION OF OTHER TRADE'S WORK THE PLANS AND/OR AS DIRECTED. ROUGH FLOOR SERVING ITEMS TO BE REMOVED AND NOT SHOWN OR NOT REQUIRED TO BE REUSED, LEVEL WITH CONCRETE. EXISTING FLUSH OUTLET BOXES MAY BE REUSED IF AT PROPER HEIGHT, LOCATION PANEWAYS MAY BE DELISED IF IN COOD CONDITION. BACEMAYS FOR ORDUITED CONCURPTION OF	ELECTRICAL - LEVEL 2 - DEMO
IFIED OR SHOWN TO BE PAINTED, THIS CONTRACTOR SHALL REMOVE ALL ELECTRICAL ITEMS AS D TO LIGHTING FIXTURES, DEVICE PLATES, DEVICES, ETC., REINSTALLING SAME AFTER COMPLETION OF ND PAINTED OVER SHALL BE SUITABLY CLEANED OR REPLACED WITH NEW ITEM BY THIS CONTRACTOR. S THAT ARE REMOVED AND PROVIDE A LIST TO THE OWNER FOR THEIR SELECTION OF ITEMS TO BE HE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE VE ALL TEMPORARY AND ABANDONED WIRE WITHIN THE SPACE. IN AREAS OF DEMOLITION SHALL BE DISCONNECTED, MADE SAFE AND REMOVED COMPLETELY BACK TO	DRAWN BY: CHECKED BY: RZ FS PROJECT NO: DATE: 30089 08/31/2020 SHEET NO: The state of th
SHALL NOT ABANDON BRANCH CIRCUIT WIRING IN EXISTING WALLS AND CEILINGS. MAINTAIN THE NG TO ANY AREAS WHICH ARE TO REMAIN BUT ARE AFFECTED BY THE DEMOLITION OR NEW	SCALE: 1/4" = 1'-0"

	GENERAL ABBREVIATIONS				
	AMPERES	kVA	KILOVOLT AMPERES		
Ą	AMERICANS WITH DISABILITIES ACT	kW	KILOWATTS		
-	ABOVE FINISH FLOOR	LTG	LIGHTING		
G	ABOVE FINISH GRADE	LFMC	LIQUIDTIGHT FLEXIBLE METAL		
J	AUTHORITY HAVING JURISDICTION		CONDUIT		
J	AIR HANDLING UNIT	MC	METAL CLAD CABLE		
	AMPERE INTERRUPTING CAPACITY	MCB	MAIN CIRCUIT BREAKER		
	ALUMINUM	MCC	MOTOR CONTROL CENTER		
SI	AMERICAN NATIONAL STANDARDS	MCP	MOTOR CIRCUIT PROTECTOR		
	INSTITUTE	MISC	MISCELLANEOUS		
СН	ARCHITECT	MLO	MAIN LUGS ONLY		
3	AUTOMATIC TRANSFER SWITCH	NC	NORMALLY CLOSED		
2	AUTOMATIC TEMPERATURE CONTROL	NEC	NATIONAL ELECTRIC CODE		
'G	AMERICAN WIRE GAUGE	NEMA	NATIONAL ELECTRICAL		
G	BELOW FINISH GRADE		MANUFACTURES ASSOCIATION		
)G	BUILDING	NFPA	NATIONAL FIRE PROTECTION		
	CONDUIT		ASSOCIATION		
Г	CATALOG	N.I.C.	NOT IN CONTRACT		
	CIRCUIT BREAKER	NO	NORMALLY OPEN OR NUMBER		
М	CERTIFIED BALLAST MANUFACTURERS	NTS	NOT TO SCALE		
Г	CIRCUIT	Р	POLE		
	CENTERLINE	PB	PUSHBUTTON		
-	CURRENT LIMITING FUSE	PNL	PANEL		
L	COLUMN	POS	PROVIDED UNDER OTHER SECTIONS		
Г	CONTROL POWER TRANSFORMER	PT	POTENTIAL TRANSFORMER		
	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE		
	COPPER	PWR	POWER		
Н	CABINET UNIT HEATER	QTY	QUANTITY		
L	DIRECT DIGITAL CONTROL	REQ'D	REQUIRED		
'G	DRAWING	RMC	RIGID METAL CONDUIT		
	ELECTRICAL CONTRACTOR	RMS	ROOT MEAN SQUARED		
	EXHAUST FAN	RNMC	RIGID NON-METALLIC CONDUIT		
	EMERGENCY	RTU	ROOF TOP UNIT		
Т	ELECTRICAL METALLIC TUBING	SP	SPARE		
C	EMERGENCY POWER OFF	SW	SWITCH		
С	ELECTRIC WATER COOLER	SYM	SYMMETRICAL		
	FUSE	TEL	TELEPHONE		
	FIRE ALARM	TMCB	THERMAL MAGNETIC CIRCUIT		
J	FAN COIL UNIT				
1	FULL LOAD AMPERES	UG	UNDERGROUND OR UNDERGRADE		
С	FLEXIBLE METAL CONDUIT	UL	UNDERWRITERS LABORATORIES		
	FEET	U.O.N.	UNLESS OTHERWISE NOTED		
	GROUND FAULT INTERRUPTER	UH	UNIT HEATER		
D,G	GROUND OR GROUNDING	UPS	UNINTERRUPTABLE POWER SUPPLY		
MC	GALVANIZED RIGID METALLIC CONDUIT	V	VOLT		
A	HAND, OFF, AUTOMATIC SWITCH	W	WIRE		
F	HIGH POWER FACTOR	WH	WATER HEATER		
	ISOLATED GROUND	WP	WEATHERPROOF		
ΕŢ		XFMR	TRANSFORMER		
		Δ	DELTA		
;	INTERMEDIATE METAL CONDUIT	Y	WYE		
		Φ	PHASE		
nil	THOUSAND CIRCULAR MILS				

LIGHTING EQUIPMENT LEGEND			
(REFER TO LI	GHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION)		
	LIGHT FIXTURE "A" INDICATES FIXTURE TYPE "13" INDICATES CIRCUIT NUMBER "a" INDICATES SWITCH CONTROL		
о <mark>о</mark> •	LIGHTING FIXTURES INDICATED WITH SHADING DENOTES CIRCUITED TO NORMAL/EMERGENCY SUPPLY.		
RP	POWER PACK. PROVIDE OCCUPANCY SENSORS FOR 100% SPACE COVERAGE		
\$ _D	LINE VOLTAGE WALL DIMMER SWITCH		
\$ _{3D}	LINE VOLTAGE WALL THREE WAY DIMMER SWITCH		

EXISTING EQUIPMENT LEGEND		
XM XN XN	SYMBOLS OUT OF FUNCTION DENOTES EXISTING "XM" ADJACENT TO EQUIPMENT DENOTES EXISTING EQUIPMENT TO REMAIN. "XN" ADJACENT TO EQUIPMENT DENOTES EXISTING EQUIPMENT TO BE REMOVED AND REPLACED WITH NEW. "XR" ADJACENT TO EQUIPMENT DENOTES EXISTING	
XD	TO BE RELOCATED AS SHOWN. CUT BACK AND/OR EXTEND EXISTING BRANCH CIRCUIT WIRING AND CONDUIT AS REQUIRED SO AS TO PROVIDE A COMPLETE OPERATIONAL INSTALLATION. "XD" ADJACENT TO EQUIPMENT DENOTES EXISTING TO BE REMOVED. CUT BACK AND MAKE SAFE ALL ASSOCIATED BRANCH CIRCUIT WIRING CONDUIT BACK TO POWER SOURCE AND LABEL BREAKER IN PANELBOARD AS SPARE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CIRCUITRY TO DEVICES UNAFFECTED BY DEMOLITION.	
XL XS	"XL" ADJACENT TO EQUIPMENT DENOTES RELOCATED EXISTING AT NEW LOCATION "XS" ADJACENT TO EQUIPMENT DENOTES EXISTING TO BE REMOVED, STORED, CLEANED AND REINSTALLED IN EXISTING LOCATION.	

WIRING DEVICES LEGEND			
2 &	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE. "2" DENOTES CIRCUIT NUMBER.		
€=	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER.		
a e	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE WITH ONE OUTLET SWITCHED. "a" DENOTES SWITCH CONTROL.		
⊕ =	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DOUBLE DUPLEX RECEPTACLE.		
e	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DOUBLE DUPLEX RECEPTACLES MOUNTED ABOVE COUNTER.		
GF GF	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE CONNECTED TO GROUND FAULT CIRCUIT BREAKER.		
WP WP	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT INTERRUPTER AND MOUNTED IN CAST OUTLET BOX WITH WEATHERPROOF COVER.		
GFI	125 VOLT, 2 POLE, 3 WIRE, 20 AMP., DUPLEX RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT INTERRUPTER.		
4 H	SPECIAL PURPOSE RECEPTACLE. REFER TO "SPECIAL PURPOSE RECEPTACLE SCHEDULE".		
5	SPECIAL PURPOSE RECEPTACLE, FLUSH MOUNTED. REFER TO "SPECIAL PURPOSE RECEPTACLES		
2 ▽	PROVIDE BOX AND 1" EMPTY CONDUIT TO ABOVE LAY-IN CEILING. IF MOUNTED IN WIREMOLD 4000, PROVIDE 1" EMPTY CONDUIT TO ABOVE LAY-IN CEILING FOR WIREMOLD REGARDLESS OF DATA OUTLET QUANTITIES.		
NOTES:			
 RECEPTACLES FED FROM EMERGENCY PANELS SHALL BE RED IN COLOR. 			
2. RECEPTACLE COLOR.	. RECEPTACLES FED FROM UPS PANELS SHALL BE ORANGE IN COLOR.		
. RECEPTACLES FED FROM NORMAL POWER PANELS SHALL BE			

- 4. ALL RECEPTACLES SHALL BE INSTALLED WITH GROUND PRONG
- IN THE UP POSITION. 5. ALL RECEPTACLES SHALL BE SIDE WIRED.

6. ALL COVERPLATES SHALL BE STAINLESS STEEL.

LEGEND NOTES

1. THIS SHEET IS A GENERAL LIST OF SYMBOLS AND SHALL BE USED AS A REFERENCE TO DEFINE ITEMS INDICATED ON THE DRAWINGS. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

Cherry Emerson Peter Yunker Lab Fit-Up

GA PROJECT #: 0360-2020

Vanderweil 260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303 (617) 556-9308 T

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ELECTRICAL
LEGEND

DRAWN BY: Author	CHECKED BY: Checker
PROJECT NO: 30089	DATE: 08/31/2020
SHEET NO:	
E-	001

TYPE	DESC
А	2x4 LED RECESSED L
AE	2x4 LED RECESSED L EMERGENCY BATTER

					LIGHTING F	IXTU	RE	SCH	HEDL	JLE								
RIPTION		MOUNTING	MANUFACTURER		MODEL		DIMMI	NG VOL		TOTAL VATTAGE	WATTAGE PER FOOT	POWER FACTOR	LUMENS OUTPUT	COLOR TEMP.	LAMP	BALLAST		COMMENTS
GHT FIXTURE		RECESSED	MARK	WHSPR-QS-2X4-4	800LM-35K-80CRI-MIN1-ZT-MVOLT-SW0	>	Yes		277	42		0.9	4800 lm	3500 K	LED			
GHT FIXTURE / BACKUP	WITH	RECESSED	MARK	WHSPR-QS-2X4-4	800LM-35K-80CRI-MIN1-ZT-MVOLT-SWC	C-E10WLCP	Yes		277	42		0.9	4800 lm	3500 K	LED			
Г													· ··· <u>–</u>					
	#				ELEC		<u>AL I</u>	LAB	EQL	<u>IIPMF</u>	<u>:NISC</u>	<u>CHED</u>	ULE					
	TEM #	QUANTITY	ELEC AFF		DESCRIPTION	VOLTAG	ìΕΦ	AMPS	kVA	DEVICE	BREAKEF	R WIRE &	CONDUIT			REMAF	RKS	
-	EQ-01	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	MINI INCUBATOR	120	1	1	0.07	5-15R	15	2#12, #12G	, 3/4"C.					
-	EQ-02	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	MINI INCUBATOR	120	1	1	0.07	5-15R 5-15B	15	2#12, #12G	, 3/4"C.					
	EQ-04	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	VORTEX MIXER	120	1	0	0.1	5-15R	15	2#12, #12G	, 3/4"C.					
ŀ	EQ-05 EQ-06	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	FREEZER	120	1	0	0.1	5-15R 5-15R	15	2#12, #12G 2#12, #12G	i, 3/4"C. i, 3/4"C.					
	EQ-07	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	REFRIGERATOR	120	1	1	0.13	5-15R	15	2#12, #12G	, 3/4"C.					
-	EQ-08 EQ-09	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	OVEN	208	1	10	2.08	6-30R 6-20R	20	2#10, #10G 2#12, #12G	i, 3/4 °C. i, 3/4 °C.					
-	EQ-10	1	COORDINATE WITH EQUIPME			120	1	20	2.4	5-30R	30	2#10, #10G	, 3/4"C.					
ŀ	EQ-11 EQ-12	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	C02 UNIT	120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4 °C.					
_	EQ-13	1	COORDINATE WITH EQUIPME			120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.					
_	EQ-14	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	CONFOCAL LASER UNIT	120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.					
-	EQ-16	1	COORDINATE WITH EQUIPME			120	1	1	0.13	5-15R 5-15B	15	2#12, #12G	, 3/4"C.					
	EQ-18	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	AFM MICROSCOPE	120	1	1	0.13	5-15R	15	2#12, #12G	i, 3/4"C.					
-	EQ-19 EQ-21	1	COORDINATE WITH EQUIPME COORDINATE WITH EQUIPME	ENT SUPPLIER	MICROSCOPE FLOW CHAMBER	120	1	<u>1</u> 0	0.13	5-15R 5-15R	15	2#12, #12G	i, 3/4"C.					
	EQ-22	2	COORDINATE WITH EQUIPME	ENT SUPPLIER	SHAKER	120	1	0	0.5	5-15R	15	2#12, #12G	, 3/4"C.					
-	EQ-24 EQ-25	1	COORDINATE WITH EQUIPME	ENT SUPPLIER	WATER DISTILLATION	120	1	6 15	0.72	5-15R 5-15R	15	2#12, #12G 2#12, #12G	i, 3/4"C. i, 3/4"C.					
-	EO 26	2			CENTRIEUGE	100		1	0.12	5 15D	15	2#12 #120	2/4"C					

	LIGHTING FIXTURE SCHEDULE															
	MOUNTING	MANUFACTURER		MODEL					TOTAL VATTAGE	WATTAGE PER FOOT	POWER FACTOR	LUMENS OUTPUT	COLOR TEMP.	LAMP	BALLAST	COMMENTS
	RECESSED	MARK	WHSPR-QS-2X4-48	BOOLM-35K-80CRI-MIN1-ZI-MVOLI-SWC		Yes	2	77	42		0.9	4800 lm	3500 K	LED		
REWITH	RECESSED	MARK	WHSPR-QS-2X4-48	300LM-35K-80CRI-MIN1-21-MVOL1-SWG-	E10WLCP	Yes	2	11	42		0.9	4800 Im	3500 K	LED		
#				ELEC	IRIC	AL L	-AB	EQU	ЛЬМЕ	:NIS(CHED	ULE				
			_													
			-	DESCRIPTION	VOLTAGI		AIVIP3	KVA				CONDUN			REIMARI	N3
EQ 01	1				120	1	1	0.07	5 15D	15	2#12 #120	3/4"C				
EQ-01	1				120	1	1	0.07	5-15R	15	2#12, #120	3/4"C				
EQ-02	1	COORDINATE WITH EQUIP		VORTEX MIXEB	120	1	0	0.07	5-15R	15	2#12, #120	, 3/4"C.				
EQ-04	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	VORTEX MIXER	120	1	0	0.1	5-15R	15	2#12, #12G	, 3/4"C.				
EQ-05	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	VORTEX MIXER	120	1	0	0.1	5-15R	15	2#12, #12G	, 3/4"C.				
EQ-06	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	FREEZER	120	1	1	0.13	5-15R	15	2#12, #12G	, 3/4"C.				
EQ-07	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	REFRIGERATOR	120	1	1	0.13	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-08	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	UNIVERSAL TESTING MACHINE	208	1	22	4.61	6-30R	30	2#10, #10G	, 3/4"C.				
EQ-09	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	OVEN	208	1	10	2.08	6-20R	20	2#12, #12G	i, 3/4"C.				
EQ-10	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	INTERFEROMETER	120	1	20	2.4	5-30R	30	2#10, #10G	i, 3/4"C.				
EQ-11	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	INCUBATOR BOX	120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-12	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	C02 UNIT	120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-13	1	COORDINATE WITH EQUIPM	MENT SUPPLIER	T UNIT	120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-14	1	COORDINATE WITH EQUIPM	MENT SUPPLIER		120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-15	1	COORDINATE WITH EQUIPM			120	1	0	0.15	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-16	1				120	1	1	0.13	5-15R	15	2#12, #12G	i, 3/4"C.				
EQ-17	1			OPTICAL TABLE (ECLIPSE NI-E/AFM)	120	1	1	0.13	5-15R	15	2#12, #12G	, 3/4°C.				
EQ-18	1				120	1	1	0.13	5-15R	15	2#12, #12G	, 3/4°C.				
	1				120		1	0.13	5-15K	15	2#12, #12G	1, 3/4 U.				
EQ-21	1 2				120	1	0	0.20	5-15K	15	2#12, #120	3/4 U.				
EQ-22	1				120	1	6	0.5	5-15R 5-15R	15	2#12, #120	3/4"C				
EQ 24	1				120	1	15	1.8	5-15R	15	2#12 #12G	, 3/4"C				
FQ-26	2			CENTRIFUGE	120	1	1	0.12	5-15B	15	2#12 #12G	, 3/4"C				
EQ-27	2			CENTRIFUGE	120	1	1	0.14	5-15R	15	2#12, #12G	., <u>3</u> /4"C.				
	-				.20		•	.	0 1011		, ".20	, -, - - .	1			

#	Image: Special purpose receptable schedule											
SVMROL #				WIDE		CIRCUIT	BRANCH CIRCUITRY WIRE & CONDUIT					
STIVIDOL #			VOLTAGE		FULLS		STILL	BREAKER	PHASE	NEUTRAL	GROUND	CONDUIT
3	5-30R	30	120	1	2	3	STRAIGHT BLADE	30A-1P	1#10 AWG	1#10 AWG	1#10 AWG	3/4"
6	6-20R	20	208	1	2	3	STRAIGHT BLADE	20A-2P	2#12 AWG	-	1#12 AWG	3/4"
7	6-30R	30	208	1	2	3	STRAIGHT BLADE	30A-2P	2#10 AWG	-	1#10 AWG	3/4"

PANEL NAME: A MOUNTING: Surface VOLTAGE: 208Y/120V SSC RATING: 10K FED FROM:						BUS AMPS: 150 MLO: No MCB: Yes MCB RATING: 40 SHUNT TRIP: No						PANELBOARD OPTIONS & ACCESSORIESNEUTRAL BUS: YesSUB-FEED LUGS: NoNEUTRAL BUS RATING: 100%FEED-THRU LUGS: NoEQUIPMENT GROUND: YesSURGE SUPPRESSION: NoISOLATED GROUND: No					
скт	TYPE	DESCRIPTION	BKR TYPE	TRIP	POLE	A (I	kVA)	B (ł	(VA)	C (I	kVA)	POLE	TRIP	BKR TYPE	DESCRIPTION	ТҮРЕ	ск
1		RECEPTACLES		20	1	0	0					1	20		WIREMOLD - RM 232		2
3	R	RECEPTS - LAB 232		20	1			0.36	0			1	20		PLUGMOLD - RM 232		4
5	R	RECEPTS - LAB 232		20	1					0.36	0	1	20		PLUGMOLD - RM 232		6
7		SPARE		20	1	0	0					1	20		PLUGMOLD - RM 232		8
9		QUAD RECEPT-RM 235		20	1			0	0			1	20		COUNTERTOP RECEPT - RM		10
11				00	0					0	0	1	20		COUNTERTOP RECEPT - RM		12
13 DEDICATED RECEPTACLE			20	2	0	0					1	20		COUNTERTOP RECEPT - RM		14	
15 17 TRANSFORMER T230			70	0			0	0			1	20		COUNTERTOP RECEPT - RM		16	
			70	2					0	0	1	20		QUAD RECEPT - RM 232		18	
19					-	0	0					1	20		EXISTING LOAD		20
21	21 STILL-230			20	2			0	0.72			1	20		RECEPTS - LAB 230	R	22
23		T.V HALL		20	1					0	0.18	1	20		GAS MANIFOLD	R	24
25	R	INTERFEROMETER		30	1	2.08	0.54					1	20		RECEPTS - LAB 230	R	26
27	R	RECEPTS - LAB 230		20	1			0.36	0.18			1	20		GAS MANIFOLD	R	28
29	R	RECEPTS - LAB 230		20	1					0.54	0.54	1	20		RECEPTS - LAB 230	R	30
31 33	R	OVEN		20	2	1.04	1.04	1.04	1.04			2	30		UNIVERSAL TESTING MACHINE	R	32
35	R	RECEPTS - LAB 232		20	1					0.18	0.18	1	20		RECEPTS - LAB 232	R	36
37	R	UNIVERSAL TESTING MACHINE	Ξ	20	1	0.54	0.72					1	20		RECEPTS - LAB 230	R	38
39	R	RECEPT - LAB 232		20	1			0.54	0.18			1	20		GAS SHUTOFF	R	40
41	R	RECEPTS - LAB 230		20	1					0.36	0.18	1	20		GAS SHUTOFF	R	42
		•	PH	ASE LO	OAD:	5.	.96	4.	42	2	.52						
			PH	ASE A	MPS:	5	52	3	9	2	21]					
LOA	D TYP	E CONNECTED (kVA) DEMAND	(kVA)	LOAD) TYPE	KEY		BRE	AKER		(EY				PANEL TOTALS		
R		12.9 11.4	5	R = R	ECEPT	ACLE	=	BLAN	IK = ST	ANDA	RD						
L = LIGHTING				G		G3 =	GROU	ND FA	ULT 30	Ma (E	QUIP)		CONNECTED LOAD (kVA):	12.	9		
M = MECH/E			QUIF)	G = 0	ROUN	D FAU	LT 5 M	a			DEMAND LOAD (kVA):	11.4	45			
			K = KITCH			N		A = A	RC FA	ULT					CONNECTED LOAD (AMPS):	36	;
		C = CONTI				UOUS	S	ST =	SHUNT	TRIP					DEMAND LOAD (AMPS):	32	2
N = NONCON				ΝΤΙΝΙ	JOUS	LH =	LOCKI	NG HA	SP			D	EMAND LOAD x 125% (AMPS):	40)		
							HT =	HANDL	E TIE								
Note	es:							•						ł	I		

he
HERA Laboratory Planners
www.herainc.com
of Technology
Cherry Emerson Peter Yunker Lab Fit-Up
GA PROJECT #: 0360-2020
Vanderweil 260 Peachtree Street, NW. Suite 1401
Atlanta, GA 30303 (617) 556-9308 T
No. Date Description
GEORG GREGISTERED T
★ (No. PE21771 PROFESSIONAL) ★
08/27/2020
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ELECTRICAL
SCHEDULES

DRAWN BY: Author	CHECKED BY: Checker
PROJECT NO: 30089	DATE: 08/31/2020
SHEET NO:	~~~
E	-002
SCALE:	

26130 BOXES AND DEVICES <u>OUTLET BOXES</u> 1. OUTLET BOXES ON CONCEALED WORK SHALL BE AT LEAST 4" SQUARE OR OCTAGONAL, GALVANIZED PRESSED STEEL WITH PLASTER RINGS AS REQUIRED. OUTLET BOXES FOR EXPOSED CONDUIT WORK IN PUBLIC

- AREAS SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS, TYPE "FS" BOX.
 2. SWITCH BOXES, RECEPTACLE BOXES AND OTHER OUTLET BOXES SHALL BE
- STANDARD 4" SQUARE WITH PLASTER RINGS OR GANG COVER AS REQUIRED.
- 3. OUTLET BOXES SHALL BE BY STEEL CITY ELECTRIC COMPANY, APPELLATION ELECTRIC COMPANY, NATIONAL ELECTRIC PRODUCTS COMPANY OR APPROVED EQUAL.
- 4. PROVIDE ONLY ENOUGH CONDUIT OPENINGS TO ACCOMMODATE CONDUITS AT INDIVIDUAL LOCATION. EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE NUMBER AND SIZES OF CONDUITS, WIRES AND SPLICES TO MEET NEC REQUIREMENTS, BUT SHALL BE AT LEAST SIZE SHOWN OR SPECIFIED. NECESSARY VOLUME SHALL BE OBTAINED BY USING BOXES OF PROPER DIMENSIONS. BOX DEPTHS GREATER THAN 2" SHALL NOT BE USED TO OBTAIN NECESSARY VOLUME, BUT MAY BE USED WITH ARCHITECT'S APPROVAL TO FACILITATE INSTALLATION. OCTAGONAL HUNG CEILING BOXES WITH SUSPENSION BARS MAY BE 3 1/2 " DEEP. RECTANGULAR BOXES FOR INTER-CONNECTION OF BRANCH CIRCUIT CONDUITS MAY BE 2 1/2" DEEP.

JUNCTION BOXES, PULL BOXES AND CABLE TROUGHS

- 1. PROVIDE CODE GAUGE GALVANIZED STEEL JUNCTION AND PULL BOXES FOR CONDUIT 11/4" TRADE SIZE AND LARGER, WHERE INDICATED AND AS NECESSARY TO FACILITATE INSTALLATION, OF REQUIRED DIMENSIONS, WITH ACCESSIBLE, REMOVABLE SCREW-ON COVERS. PROVIDE JUNCTION AND PULL BOXES IN SPECIAL SIZES AND SHAPES DETERMINED IN FIELD WHERE NECESSARY. JUNCTION BOXES FOR EXPOSED CONDUIT WORK IN FINISHED AREAS SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.
- 2. JUNCTION BOX COVERS SHALL BE READILY ACCESSIBLE. DO NOT INSTALL JUNCTION BOXES ABOVE SUSPENDED CEILINGS EXCEPT WHERE CEILING IS REMOVABLE OR WHERE ACCESS PANEL IS PROVIDED.

WIRING DEVICES AND PLATES

- 1. PROVIDE WIRING DEVICES BY SINGLE MANUFACTURER: CATALOG DESIGNATIONS OF HUBBELL ARE SPECIFIED TO ESTABLISH STANDARDS OF QUALITY FOR MATERIALS AND PERFORMANCE ACCEPTABLE ALTERNATES ARE ARROW-HART, LEVITON, BRYANT, OR APPROVED EQUAL.
- 2. TOGGLE SWITCHES: SINGLE-POLE SHALL BE HBL NO. 1221, 20A., 120-277 V AC. THREE-WAY SHALL BE HBL NO. 1223, 20A., 120-277 V AC. FOUR-WAY SHALL BE HBL NO. 1224, 20A., 120-277 V AC.
- 3. RECEPTACLES: DUPLEX SHALL BE HBL NO. 5362, 125V, 20A, 2-POLE, 3W, GROUNDING. GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES SHALL BE HOSPITAL GRADE.
- 4. UNLESS NOTED OTHERWISE BY THE ARCHITECT, FACEPLATES SHALL BE 0.040" BRUSHED STAINLESS STEEL. NAMEPLATE DESIGNATIONS FOR DEVICE PLATES SHALL BE STICK-ON TYPE WITH PANEL AND CIRCUIT NUMBER.
- 5. UNLESS NOTED OTHERWISE BY THE ARCHITECT, DEVICES SHALL BE THE FOLLOWING COLORS.
- 5.1. RECEPTACLES FED FROM EMERGENCY PANELS SHALL BE RED IN COLOR.
 5.2. RECEPTACLES FED FROM UPS PANELS SHALL BE ORANGE IN COLOR.
 5.3. RECEPTACLES FED FROM NORMAL POWER PANELS SHALL BE WHITE IN COLOR
- 5.4. ALL DEDICATED RECEPTACLES SHALL BE GRAY IN COLOR.

26070 TESTING AND INSPECTION

TEST WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS BEFORE CONNECTING; DEMONSTRATE INSULATION RESISTANCE BY MEGGER TEST AS REQUIRED. INSULATION RESISTANCE BETWEEN CONDUCTORS AND GROUNDS FOR SECONDARY DISTRIBUTIONS SYSTEMS SHALL MEET NEC REQUIREMENTS.

VERIFY AND CORRECT AS NECESSARY: VOLTAGES, TRIP SETTINGS AND PHASING ON EQUIPMENT FROM SECONDARY DISTRIBUTION SYSTEM TO POINTS OF USE. TEST SECONDARY VOLTAGES AT PANELBOARDS, AND AT OTHER LOCATIONS ON DISTRIBUTION SYSTEMS AS NECESSARY. TEST SECONDARY VOLTAGES UNDER NO-LOAD AND FULL-LOAD CONDITIONS. PROVIDE NECESSARY TESTING EQUIPMENT AND TESTING.

FAILURE OR DEFECTS IN WORKMANSHIP OR MATERIALS REVEALED BY TESTS OR INSPECTION SHALL BE CORRECTED PROMPTLY AND RETESTED. REPLACE DEFECTIVE MATERIAL.

CLEAN PANELS. PANELBOARD INTERIORS SHALL BE CLEANED AND VACUUMED. BEFORE ENERGIZING ANY MOTOR, IT SHALL BE VISUALLY INSPECTED FOR SERVICEABILITY. VERIFY THAT PROPER ALIGNMENT HAS BEEN

PERFORMED. CHECK NAMEPLATE FOR ELECTRICAL POWER REQUIREMENTS. CHECK BOLT TORQUES FOR FEEDER TERMINATIONS AND OTHER ASSOCIATED EQUIPMENT IN THIS SECTION BY CALIBRATED TORQUE WRENCH METHOD.

TEST RUN ALL MOTORS PREFERABLY UNCOUPLED OR UNLOADED, BEFORE PLACING INTO REGULAR SERVICE. A CHECK ON THE MOTOR FOR ROTATION, SPEED, CURRENT AND TEMPERATURE RISE SHALL BE MADE AND RESULTS RECORDED. PROVIDE TESTING OF ALL NEW CIRCUIT BREAKERS RATED 100 AMPERES AND ABOVE FOR NORMAL/UTILITY POWER POWER AND 20 AMP BREAKERS AND ABOVE FOR UPS POWER:

- CONTACT RESISTANCE SHALL BE MEASURED. CONTACT RESISTANCE SHALL BE COMPARED TO ADJACENT POLES AND SIMILAR BREAKER. DEVIATIONS OF MORE THAN FIFTY PERCENT (50%) SHALL BE INVESTIGATED
- 2. TIME-CURRENT CHARACTERISTIC TESTS SHALL BE PERFORMED BY PASSING THREE HUNDRED PERCENT (300%) RATED CURRENT THOUGH EACH POLE SEPARATELY. TRIP TIME SHALL BE DETERMINED.
- 3. INSTANTANEOUS PICKUP CURRENT SHALL BE DETERMINED BY RUN-UP OR PULSE METHOD. CLEARING TIMES SHOULD BE WITHIN FOUR (4) CYCLES OR LESS. INSTANTANEOUS PICKUP CURRENT LEVELS SHOULD BE WITHIN TWENTY PERCENT (20%) OF MANUFACTURER'S PUBLISHED VALUES.
- 4. INSULATION RESISTANCE SHALL BE DETERMINED POLE TO POLE, ACROSS POLE AND POLE TO GROUND. TEST VOLTAGE SHALL BE 1000 VOLTS D. C. INSULATION RESISTANCE SHALL NOT BE LESS THAN FIFTY (50) MEGOHMS.
- ALL TRIP TIMES SHALL FALL WITHIN TABLE BELOW. CIRCUIT BREAKERS EXCEEDING MAXIMUM THREE HUNDRED PERCENT (300%) TIME (COLUMN 5) SHALL BE REPLACED.

	VALUES OF CIRCUIT BREAKER OVERCURRENT TRIP TEST										
	VALUES FOR OVERCURRENT TRIP TEST (AT 300 PERCENT OF RATED CONTINUOUS CURRENT OF BREAKER)										
	VOLTAGE,	RANGE OF		ES, SECONDS							
	VOLTs	RATED	MINIMUM		MAXIMUM	MAXIMUM TRIPPING					
		CURRENT, AMPERES	THERMAL BREAKERS	MAGNETIC BREAKERS		TIMES FOR CABLE PROTECTION*					
	(1)	(2)	(3)	(4)	(5)	(6)					
	240	15 - 45	3		59	100					
	240	50 - 100	5		70	200					
	600	15 - 45	5	5	80	100					
	600	50-100	5	5	150	200					
	240	110 - 225	10	5	200	300					
	600	110 - 225	10		200	300					
	600	250 - 450	25		250	300					
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*THESE VALUES ARE BASED ON HEAT TESTS CONDUCTED BY CIRCUIT BREAKER MANUFACTURERS ON CONDUCTORS IN CONDUIT. NEMA REFERENCE.

26120 RACEWAY & WIRING

RACEWAYS

- RIGID METALLIC CONDUIT (RMC) AND ELECTRICAL METALLIC TUBING (EMT) SHALL BE OF ZINC-COATED STEEL MANUFACTURED BY ALLIED TUBE AND CONDUIT, WHEATLAND TUBE, OR APPROVED EQUAL.
- 2. FLEXIBLE METALLIC CONDUIT SHALL BE GALVANIZED STEEL, SPIRAL WRAPPED METALLIC CONDUIT (GREENFIELD).
- 3. CONDUIT EXPANSION FITTINGS SHALL BE THREADED HOT-DIPPED GALVANIZED MALLEABLE IRON WITH INTERNAL BONDING ASSEMBLY BY O.Z./GEDNEY OR APPROVED EQUAL.
- 4. CONDUIT FIRE SEAL FITTINGS SHALL HAVE HEAT-ACTIVATED INTUMESCENT MATERIAL FOR FIRE RATING EQUAL TO OR HIGHER THAN THAT OF FLOOR OR WALL BY O.Z./GEDNEY OR APPROVED EQUAL.
- 5. PROVIDE CONNECTORS AND COUPLINGS WITH INSULATED THROATS; MANUFACTURED ELBOWS; LOCKNUTS; AND PLASTIC OR BAKELITE BUSHINGS AT TERMINATIONS, AS NECESSARY. COUPLINGS AND CONNECTORS SHALL BE STEEL CONCRETE-TIGHT SET SCREW. COUPLINGS AND CONNECTORS SHALL FORM POSITIVE GROUND. BUSHINGS FOR RIGID STEEL AND CONNECTORS FOR EMT SHALL HAVE INSULATING INSERTS THAT MEET REQUIREMENTS OF UL 514 FLAME TEST.

WIRE AND CABLE (600 V INSULATION)

- 1. PROVIDE SINGLE-CONDUCTOR, ANNEALED COPPER WIRE AND CABLE WITH INSULATION RATED 600 V, OF SIZES SPECIFIED AND SCHEDULED ON DRAWINGS BY SOUTHWIRE, OKONITE OR APPROVED EQUAL. WIRE SIZES SHOWN AND SPECIFIED ARE AMERICAN WIRE GAUGE FOR COPPER.
- 2. WIRE #10 AND LARGER SHALL BE STRANDED. WIRE AND CABLE SHALL HAVE THWN-THHN OR XHHW INSULATION.

TERMINATIONS

1. PROVIDE STANDARD BOLT-ON LUGS WITH HEX SCREWS TO ATTACH COPPER WIRE AND CABLE TO PANELBOARDS AND ELECTRICAL EQUIPMENT.

COLOR CODING

. MAKE TERMINATIONS AND SPLICES FOR CONDUCTORS #6 AND LARGER WITH CORROSION-RESISTANT, HIGH-CONDUCTIVITY PRESSURE INDENT, HEX SCREW OR BOLT-CLAMP CONNECTORS, WITH OR WITHOUT TONGUES, DESIGNED SPECIFICALLY FOR INTENDED SERVICE.

2. COLOR CODE SHALL MATCH FACILITY STANDARD.

WIRING METHODS

- 1. MC CABLE IS ACCEPTABLE IN CONCEALED LOCATIONS, EMT SHALL BE USED IN EXPOSED APPLICATIONS.
- 2. INSTALL CONNECTORS AND COUPLINGS AS RECOMMENDED BY MANUFACTURERS. COMPRESSION FITTINGS SHALL NOT BE USED WITH RIGID STEEL CONDUITS.
- 3. SIZE RIGID STEEL CONDUIT, EMT AND FLEXIBLE METALLIC CONDUIT AS REQUIRED BY NEC EXCEPT AS SPECIFIED OR SHOWN ON DRAWINGS OTHERWISE.
- 4. INSTALL CONDUIT SYSTEMS COMPLETE BEFORE DRAWING IN CONDUCTORS. BLOW THROUGH AND CLEAN CONDUIT FREE OF DEBRIS BEFORE CONDUCTORS ARE INSTALLED.
- 5. CHECK RACEWAY SIZES TO DETERMINE THAT GREEN EQUIPMENT GROUND CONDUCTOR FITS IN SAME RACEWAY WITH PHASE AND NEUTRAL CONDUCTORS TO MEET NEC PERCENTAGE OF FILL REQUIREMENTS. INCREASE DUCT, CONDUIT, TUBING AND RACEWAY SIZES SHOWN OR SPECIFIED AS REQUIRED TO ACCOMMODATE CONDUCTORS.
- 6. EXPANSION/DEFLECTION FITTINGS: CONDUIT OR EMT SECURED RIGIDLY ON OPPOSITE SIDES OF BUILDING EXPANSION JOINTS AND LONG RUNS OF EXPOSED RACEWAY SUBJECT TO STRESS SHALL HAVE EXPANSION FITTINGS. FITTINGS SHALL SAFELY DEFLECT AND EXPAND TO TWICE DISTANCE OF STRUCTURAL MOVEMENT.PROVIDE SEPARATE EXTERNAL COPPER BONDING JUMPER SECURED WITH GROUNDING STRAPS ON EACH END OF FITTING.
- 7. ATTACH PULL ROPES TO CONDUCTORS WITH BASKET-WEAVE GRIPS ON PULLING EYES. PULL CABLES THAT SHARE CONDUIT AT SAME TIME.
- 8. WIRE AND CONDUIT SIZES INDICATED ON HOMERUNS SHALL BE CONTINUOUS THROUGHOUT THE CIRCUIT. CONDUIT HOMERUNS SHOWN ON THE DRAWING WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THIS CONTRACTOR SHALL NOT INSTALL MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS DONE SO STRICTLY BY THE NATIONAL ELECTRIC CODE.
- 9. THE E.C. IS RESPONSIBLE FOR ALL NECESSARY CORE DRILLING. ALSO, THE E.C. SHALL PROVIDE FIRE STOPPING AND WEATHERPROOF SEALANT AROUND THE ANNULAR OF EACH CONDUIT THAT IS CORE DRILLED.
- 10. ALL CONDUITS SHALL BE SUPPORTED BY USE OF HOT DIPPED GALVANIZED POWER STRUT, RACKS, THREADED ROD, BEAM CLAMPS, POWER TRAP AND ALL NECESSARY ACCESSORIES FOR A COMPLETE WIRING SYSTEM. ALL RACKS SHALL BE PROVIDED WITH DOUBLE TIERS FOR FUTURE CONDUITS.
- 11. ALL WIRING SHALL BE RUN CONCEALED WHERE POSSIBLE.

26060 GROUNDING AND BONDING

<u>GROUNDING</u>

- 1. PROVIDE EQUIPMENT GROUNDING SYSTEM AS PER N.E.C.
- 2. SYSTEM SHALL MEET NEC REQUIREMENTS, MODIFIED AS SHOWN ON DRAWINGS AND AS SPECIFIED.
- 3. A GROUNDING CONDUCTOR SHALL BE INCLUDED IN EACH RACEWAY AND SIZED IN ACCORDANCE WITH THE N.E.C.

26410 SAFETY DISCONNECT SWITCHES

- PROVIDE UL-LISTED QUICK-MAKE/QUICK-BREAK SAFETY SWITCHES. CURRENT-CARRYING PARTS SHALL BE HIGH-CONDUCTIVITY COPPER. CONTACTS SHALL BE SILVER-TUNGSTEN OR PLATED.
- 2. TYPE HD, (HEAVY DUTY), UNLESS SPECIFIED OTHERWISE. PROVIDE [DUST PROOF] NEMA-1 ENCLOSURE FOR DRY APPLICATION. PROVIDE NEMA-12 ENCLOSURE FOR MECHANICAL SPACES IN DRY APPLICATIONS. PROVIDE NEMA 3R FOR WET APPLICATIONS. SWITCHES SHALL BE RATED 600V MINIMUM AS REQUIRED FOR VOLTAGE OF ASSOCIATED CIRCUIT AND SHALL BE RATED IN HORSEPOWER. FUSES SHALL INTERRUPT LOCKED ROTOR CURRENT OF ASSOCIATED MOTOR OR TEN TIMES FULL RATED LOAD CURRENT, WHICHEVER IS GREATER.
- 3. CURRENT-CARRYING PARTS SHALL BE HIGH-CONDUCTIVITY COPPER. CONTACTS SHALL BE SILVER-TUNGSTEN OR PLATED. PROVIDE POSITIVE PRESSURE FUSE CLIPS AND SWITCH OPERATING MECHANISM SUITABLE FOR CONTINUOUS USE AT RATED CAPACITY WITHOUT AUXILIARY SPRINGS IN CURRENT PATH.
- 4. SWITCHES SHALL WITHSTAND AVAILABLE FAULT CURRENT OR LET-THROUGH CURRENT BEFORE OPERATING, WITHOUT DAMAGE OR RATING CHANGE.

26010 BASIC ELECT	RICAL REQUIREMENTS	26010 BASIC ELECTRICAL REQUIREMENTS (CONTINUED)
REFERENCES		WARRANTY
1. EXAMINE DRAWINGS AND C THAT AFFECT WORK OF TH	OTHER SECTIONS OF SPECIFICATIONS FOR REQUIREMENTS IS SECTION.	1. WARRANTY WORK IN WRITING FOR ONE YEAR FROM DATE OF FINAL ACCEPTANC REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO C CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENT
2. AS USED IN THIS SECTION, "PROVIDED UNDER OTHER THE PROJECT SITE COMPL AND "INSTALL" MEANS "TO	"PROVIDE" MEANS "FURNISH AND INSTALL" AND "POS" MEANS SECTIONS". "FURNISH" MEANS "TO PURCHASE AND DELIVER TO ETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM	UNDER WARRANTY AT NO COST TO OWNER. 2. SUBMIT WARRANTY TO OWNER BEFORE FINAL PAYMENT.
EVERY OPERATION NECES	SARY TO ESTABLISH SECURE MOUNTING AND CORRECT R LOCATION IN THE PROJECT."	3. STATEMENT OF WARRANTY REQUIREMENTS SHALL NOT BE INTERPRETED TO LIM OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
3. PERFORM WORK AND PRO AS SPECIFIED OR INDICATE SPECIFIED AND NOT SHOW	DE MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND D IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE WORK N, AND WORK SHOWN AND NOT SPECIFIED AS THOUGH	SUBMITTALS
EXPLICITLY REQUIRED BY E SPECIFIED, PROVIDE SUPP DEVICES AND MATERIALS (COMPLETE INSTALLATION.	BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR LEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DBVIOUSLY NECESSARY FOR A SOUND, SECURE AND REMOVE ALL DEBRIS CAUSED BY CONTRACTORS' WORK.	1. DEFINITIONS: SHOP DRAWINGS ARE INFORMATION PREPARED BY THE CONTRACT TO ILLUSTRATE PORTIONS OF THE WORK IN MORE DETAIL THAN SHOWN IN THE CONTRACT DOCUMENTS.
4. AS WORK PROGRESSES AN SEPARATE SET OF PRINTS WORK COMPLETED AND AL AND ACCURATELY INCLUD	ND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE AND OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD L CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY ING WORK INSTALLED AS A MODIFICATION OR ADDITION TO	2. SHOP DRAWINGS SHALL BE SUBMITTED ACCORDING TO SPECIFICATION SECTION SEPARATE COVER SHEET COMPLETED FOR EACH PRODUCT, RATHER THAN ONE SHEET FOR MULTIPLE PRODUCTS, WHETHER OR NOT SUPPLIED BY ONE MANUFA OR VENDOR.
5. ITEMS REFERRED TO IN SIN PROVIDED IN QUANTITIES N	IGULAR NUMBER IN CONTRACT DOCUMENTS SHALL BE	3. MATERIAL AND EQUIPMENT REQUIRING SHOP DRAWING AND PRODUCT DATA SUBMITTAL SHALL INCLUDE CABLE, CONDUIT, DISCONNECTS, VFD'S AND FILTERS
CONTRACT DOCUMENTS		SUBMITTAL PROCEDURES AND FORMAT
1. EXCEPT WHERE MODIFIED UNDERSTOOD THAT THE IN DRAWINGS OR SPECIFICAT FURNISH AND INSTALL THE IS EXPLICITLY STATED AS P	BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE IDICATION AND/OR DESCRIPTION OF ANY ITEM, IN THE IONS OR BOTH, CARRIES WITH IT THE INSTRUCTION TO ITEM, REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION PART OF THE INDICATION OR DESCRIPTION.	 REVIEW SUBMITTAL PACKAGES FOR COMPLIANCE WITH CONTRACT DOCUMENTS BEFORE SUBMITTING. REVIEW BY THE CONTRACTOR IS INTENDED TO ENSURE T SHOP DRAWINGS CONTAIN ADEQUATE INFORMATION TO VERIFY EACH SPECIFIC/ REQUIREMENT AS WELL AS THE PERFORMANCE AND DIMENSIONAL REQUIREMENT SHOWN ON THE DRAWINGS BEFORE SUBMISSION. IF A SHOP DRAWING IS RETUF WITH A "REJECTED" OR "REVIEW AND RESUBMIT" IT INDICATES THAT THE SHOP D WAS NOT ADEQUATELY REVIEWED BY THE CONTRACTOR.
2. DRAWINGS ARE DIAGRAMM THEY ARE NOT INTENDED T THE PURPOSE OF THE DRA COMPONENTS OF THE SYS	IATIC. THEY ARE NOT INTENDED TO BE ABSOLUTELY PRECISE; TO SPECIFY OR TO SHOW EVERY CONDUIT AND COMPONENT. WINGS IS TO INDICATE A SYSTEMS CONCEPT, THE MAIN TEMS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS.	2. RE-SUBMITTALS SHALL BE COMPLETE AND SHALL INCLUDE A COVER LETTER SUMMARIZING THE CORRECTIONS MADE IN RESPONSE TO THE REVIEW COMMENTHE SUBMITTAL PAGE NUMBERS WHICH WERE REVISED.
BASED ON THE SYSTEMS C GEOMETRICAL RELATIONSI COMPONENTS AND MATER AND OPERATIONAL.	ONCEPT, THE MAIN COMPONENTS, AND THE APPROXIMATE HIPS, THE CONTRACTOR SHALL PROVIDE ALL OTHER IALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE	 COORDINATION SHOP DRAWINGS SHOWING LAYOUTS OF SYSTEMS SHALL CONT SUFFICIENT PLANS, ELEVATIONS, SECTIONS, DETAILS AND SCHEMATICS TO DES WORK CLEARLY. THEY SHALL BE 1/4" = 1'-0" SCALE UNLESS SPECIFIED OTHERWISH
3. BRANCH CIRCUIT WIRING M SHOWN BY CIRCUIT NUMBE WIRING SYSTEM WHETHER RUNS ON DRAWINGS WHEF ONLY ROOMS WITH MULTI	AY NOT BE GRAPHICALLY SHOWN ON DRAWINGS AND MAY BE ERS BESIDE DEVICES AND EQUIPMENT. PROVIDE COMPLETE OR NOT SHOWN GRAPHICALLY. WIRING IS SHOWN BY CONDUIT RE SPECIFIC ROUTING IS REQUIRED OR FOR SPECIAL REASONS. PLE SWITCHING HAVE "SWITCH CONTROL LETTERS" ASSIGNED.	4. SHOP DRAWINGS SHOWING MANUFACTURER'S PRODUCT DATA SHALL CONTAIN DETAILED DIMENSIONAL DRAWINGS, WEIGHTS, CONSTRUCTION DETAILS, INSTAL OPERATION AND MAINTENANCE MANUALS, ACCURATE AND COMPLETE DESCRIP MATERIALS OF CONSTRUCTION, MANUFACTURER'S PUBLISHED PERFORMANCE CHARACTERISTICS AND CAPACITY RATINGS (PERFORMANCE DATA, ALONE, IS NO
4. REMOVE, EXTEND, ALTER A RECONNECT EXISTING CON WORK. PROVIDE NEW CON NEW AND EXISTING WORK SYSTEM. REMOVE CONDUI WHERE DIRECTED.	AND RECONNECT EXISTING CONDUITS AS DIRECTED BY OWNER. NDUIT THAT IS CUT AND DISCONNECTED TO ACCOMMODATE DUIT WHERE WIRE CANNOT BE PULLED IN EXISTING. CONNECT TO FUNCTION AS COMPLETE, CONTINUOUSLY GROUNDED T AND EQUIPMENT NOT INTENDED FOR REUSE AND STORE	ACCEPTABLE), ELECTRICAL REQUIREMENTS AND WIRING DIAGRAMS. DRAWINGS CLEARLY INDICATE LOCATION (TERMINAL BLOCK OR WIRE NUMBER), VOLTAGE A FUNCTION FOR ALL FIELD TERMINATIONS, AND OTHER INFORMATION NECESSAR DEMONSTRATE COMPLIANCE WITH ALL REQUIREMENTS OF CONTRACT DOCUME INCLUDE ALL APPLICABLE MANUFACTURER WARRANTIES AND DETAILS INVOLVIN OTHER TRADES.
5. THE E.C. SHALL FURNISH A MAKE THE ELECTRICAL WC	ND INSTALL ALL INCIDENTAL ACCESSORIES NECESSARY TO ORK COMPLETE AND READY FOR OPERATION.	5. PRODUCT DATA TO BE SUBMITTED SHALL BE PUBLISHED BY THE MANOPACTURE SHALL CONTAIN COMPLETE AND DETAILED ENGINEERING AND DIMENSIONAL INFORMATION. THE CONTRACTOR SHALL SUBMIT PRODUCT DATA AS DESCRIBED BELOW. PRODUCT DATA WHICH DOES NOT COMPLY WITH THESE REQUIREMENT
6. EXACT LOCATION OF MECH CONNECTIONS AS SHOWN	HANICAL EQUIPMENT THAT REQUIRE ELECTRICAL ON THE MECHANICAL DRAWINGS.	6 PRODUCT DATA SUBMITTALS SHALL CONTAIN ONLY INFORMATION BELEVANT TO
7. CHECK CONTRACT DRAWIN TO VERIFY AND COORDINA INSTALLED.	IGS, AS WELL AS SHOP DRAWINGS, OF ALL SUBCONTRACTORS TE SPACES IN WHICH WORK OF THIS SECTION WILL BE	PARTICULAR EQUIPMENT OR MATERIALS TO BE FURNISHED. THE CONTRACTOR NOT SUBMIT CATALOGS WHICH DESCRIBE SEVERAL DIFFERENT ITEMS IN ADDITION THOSE ITEMS TO BE FURNISHED AND INSTALLED ON THIS PROJECT, UNLESS ALL IRRELEVANT INFORMATION IS MARKED OUT OR RELEVANT INFORMATION IS CLEAR
8. MAINTAIN MAXIMUM HEADF JUNCTION BOXES, AND ASS STRUCTURE AS POSSIBLE	ROOM AT ALL LOCATIONS. ALL RACEWAYS, PULL BOXES, SOCIATED COMPONENTS TO BE AS TIGHT TO UNDERSIDE OF	ARE INCLUDED. CLEARLY INDICATE THE SPECIFIC PIECE OF EQUIPMENT BEING PROVIDED.
 MAKE REASONABLE MODIF PREVENT CONFLICT WITH N TO PARAGRAPHS ABOVE. S 	ICATIONS IN LAYOUT AND COMPONENTS NEEDED TO NORK OF OTHER TRADES AND TO COORDINATE ACCORDING SYSTEMS SHALL BE RUN IN A RECTILINEAR FASHION.	 PRODUCT DATA FROM EACH MANUFACTURER SHALL BE IDENTIFIED AND SUBMIT SEPARATELY. WHERE APPLICABLE, FOURMENT PRODUCT DATA SHALL INCLUDE WIRING AND
10. WHERE CONFLICTS OR PO DESIRED, SUBMIT SKETCH AND APPROVAL.	TENTIAL CONFLICTS EXIST AND ENGINEERING GUIDANCE IS OF PROPOSED RESOLUTION TO ARCHITECT FOR REVIEW	INTERLOCK DIAGRAMS USING THE STANDARD WIRING DIAGRAMS WITH ALL TERM WHICH HAVE BEEN PROVIDED FOR USE BY THE DIVISION 15 AND SUBCONTRACTO CLEARLY INDICATED.
1. WHERE DRAWINGS OR SPE IN WRITING BEFORE AWAR OF CONTRACT DOCUMENT BE PERMITTED DUE TO DIS	ECIFICATIONS CONFLICT OR ARE UNCLEAR, ADVISE ARCHITECT D OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION S SHALL BE FINAL, AND NO ADDITIONAL COMPENSATION SHALL CREPANCIES OR UNCLARITIES THUS RESOLVED.	9. SCAINED NON-SEARCHABLE DOCOMENTS SHALL NOT CONSTITUTE A SHOP DRA AND WILL BE RETURNED FOR RE-SUBMITTAL. THE CONTRACTOR SHALL ALLOCA ADEQUATE TIME TO PROVIDE A PROPER SUBMITTAL IN A TIMELY FASHION. REQUIRED USE OF ACCEPTABLE MANUFACTURERS ON THIS PROJECT
2. WHERE DRAWINGS OR SPE RECOMMENDATIONS, OR V IN WRITING BEFORE INSTA ARCHITECT REQUIRES WIT	ECIFICATIONS DO NOT COINCIDE WITH MANUFACTURERS' VITH APPLICABLE CODES AND STANDARDS, ALERT ARCHITECT LLATION. OTHERWISE, MAKE CHANGES IN INSTALLED WORK AS HIN CONTRACT PRICE.	1. SUBSTITUTION OF PRODUCTS OTHER THAN THOSE OF THE ACCEPTABLE MANUFACTURERS SPECIFIED HEREIN SHALL NOT BE MADE. ONLY THE SPECIFIEI OR THE COMPARABLEPRODUCT BY ONE OF THE SPECIFIED ALTERNATE MANUFACTURERS SHALL BE SUBMITTED. PRODUCTS BY OTHER MANUFACTUREF
3. IF THE REQUIRED MATERIA DIFFERENTLY FROM DRAW CONTRACTOR SHALL PROV	IL, INSTALLATION, OR WORK CAN BE INTERPRETED ING TO DRAWING, OR BETWEEN DRAWINGS AND SPECS, THIS /IDE THAT MATERIAL, INSTALLATION, OR WORK WHICH IS OF	DEVIATIONS
 IT IS THE REQUIREMENT OF PROVIDE SYSTEMS AND COMPANY AND COMPANY	THESE CONTRACT DOCUMENTS TO HAVE THE CONTRACTOR	1. CONCERNING DEVIATIONS, PROPOSED DEVIATIONS FROM CONTRACT DOCUMEN SHALL BE REQUESTED INDIVIDUALLY IN WRITING WHETHER DEVIATIONS RESULT
AND FULLY SUITABLE FOR DOCUMENTS WHERE INSU CERTAIN COMPONENT OR COORDINATION WITH OTHE	THE INTENDED USE. THERE MAY BE SITUATIONS IN THE FFICIENT INFORMATION EXISTS TO PRECISELY DESCRIBE A SUBSYSTEM, OR THE ROUTING OF A COMPONENT OR ITS FR BUILDING FLEMENTS. IN CASES SUCH AS THIS, WHERE THE	WITH TRANSMITTAL OF SHOP DRAWINGS WHICH FLAGS THE DEVIATION TO THE ATTENTION OF THE ARCHITECT.
CONTRACTOR HAS FAILED ACCORDANCE WITH PARA(SPECIFIC COMPONENT OR USE, FULLY COMPLETE ANI EITHER CONCEALED OR EX	TO NOTIFY THE ARCHITECT OF THE SITUATION IN GRAPH (A) ABOVE, THE CONTRACTOR SHALL PROVIDE THE SUBSYSTEM WITH ALL PARTS NECESSARY FOR THE INTENDED D OPERATIONAL, AND INSTALLED IN WORKMANLIKE MANNER (POSED PER THE DESIGN INTENT.	THE ARCHITECT MAY NOT NOTICE SUCH DEVIATION OR MAY NOT REALIZE ITS RAMIFICATIONS. THEREFORE, IF SUCH LETTERS ARE NOT SUBMITTED TO THE ARCHITECT, THE CONTRACTOR SHALL HOLD THE ARCHITECT AND HIS CONSULT. HARMLESS FOR ANY AND ALL ADVERSE CONSEQUENCES RESULTING FROM THE DEVIATIONS BEING IMPLEMENTED. THIS SHALL APPLY REGARDLESS OF WHETHI SHOP DRAWINGS CONTAINING THE DEVIATION, HAS BEEN REVIEWED AND APPRO
 IN CASES COVERED BY PAI NEEDS ENGINEERING GUID PROPOSED SOLUTION AND APPROVE THE SKETCH. 	RAGRAPH ABOVE, WHERE THE CONTRACTOR BELIEVES HE DANCE, HE SHALL SUBMIT A SKETCH IDENTIFYING HIS D THE ARCHITECT SHALL REVIEW, NOTE IF NECESSARY, AND	 AND WILL BE STRICTLY ENFORCED. 3. APPROVAL OF PROPOSED DEVIATIONS, IF ANY, WILL BE MADE AT DISCRETION OF ARCHITECT
6. WHERE DISCREPANCIES EX	XIST BETWEEN THE MECHANICAL, PLUMBING, FIRE	SUBMITTAL NOTATIONS
PROTECTION, AND ELECTR EQUIPMENT SUCH AS DISC BROUGHT TO THE ARCHITE ABOVE. IF THE SCOPE IS NO ELECTRICAL CONTRACTOF	CAL DRAWINGS IN REGARDS TO WHAT TRADE OWNS ONNECTS, STARTERS, ETC., THE DISCREPANCY SHALL BE ECT'S ATTENTION IN ACCORDANCE WITH PARAGRAPH (A) OT RESOLVED PRIOR TO THE AWARD OF CONTRACT, THE SHALL PROVIDE SUCH ITEMS.	 SUBMITTALS WILL BE RETURNED FROM THE ARCHITECT MARKED AS ILLUSTRATI BELOW: REVIEWED" REVIEWED AND FOUND GENERALLY ACCEPTABLE. MINOR DEVIATIONS MAY
REQUEST FOR INFORMATION	<u>(RFI'S)</u>	IND FURTHER SUBMITTAL REQUIRED IF NOTATIONS ARE COMPLIED "REVIEWED DEVIATIONS NOTED: REVISE AND RESURMIT"
1. IF THE RFI IS A REQUEST FOR ADDITIONAL DETAIL, DESCRIPTION OF CONTR/ PARAGRAPHS ABOVE IN "	TO RESOLVE A CONFLICT OR AN UNCLARITY, OR A REQUEST CONTRACTOR'S RFI SHALL INCLUDE A SKETCH OR EQUIVALENT ACTOR'S PROPOSED SOLUTION, IN ACCORDANCE WITH DISCREPANCIES IN DOCUMENTS".	 SUBMITTAL CONTAINS DEVIATIONS WHICH SHALL BE CORRECTED AND CON BY A NEW SUBMITTAL. "BEJECTED"
1. PERFORM WORK IN STRIC	TIES AND PERMITS T ACCORDANCE WITH THE RULES, REGULATIONS, STANDARDS,	 SUBMITTAL IS INCORRECT TO SUCH AN EXTENT THAT MATERIAL IS UNACCE OR IS INCOMPLETE TO SUCH AN EXTENT THAT A COMPLETE REVIEW CANNON MADE. RESUBMIT IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRAC DOCUMENTS." "NO ACTION"
LEGAL JURISDICTION OVER	THE SITE.	•• SUBMITTAL NOT REVIEWED.

3. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE

JURISDICTION

2. MATERIAL AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES (UL).

)	26010 BASIC ELECTRICAL REQUIREMENTS	
	SUBMITTAL RESPONSIBILITY	
CE. OWNER. NTS	1. INTENT OF SUBMITTAL REVIEW IS TO CHECK FOR CAPACITY, RATING, AND CERTAIN CONSTRUCTION FEATURES. CONTRACTOR SHALL ENSURE THAT WORK MEETS REQUIREMENTS OF CONTRACT DOCUMENTS REGARDING INFORMATION THAT PERTAINS TO FABRICATION PROCESSES OR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR COORDINATION OF WORK OF THIS AND OTHER SECTIONS. WORK SHALL COMPLY WITH SUBMITTALS MARKED "REVIEWED" TO EXTENT THAT THEY AGREE WITH CONTRACT DOCUMENTS. SUBMITTAL REVIEW SHALL	
	NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR DIMENSIONAL COORDINATION, QUANTITIES, INSTALLATION, WIRING, SUPPORTS AND ACCESS FOR SERVICE, NOR SHOP DRAWING ERRORS OR DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS. THE NOTING OF SOME ERRORS WHILE OVERLOOKING OTHERS WILL NOT EXCUSE THE CONTRACTOR FROM PROCEEDING IN ERROR. CONTRACT DOCUMENTS REQUIREMENTS ARE NOT LIMITED, WAIVED NOR SUPERSEDED IN ANY WAY BY REVIEW.	www.herainc.com
N WITH A E COVER	2. INFORM SUBCONTRACTORS, MANUFACTURERS, SUPPLIERS, ETC. OF SCOPE AND LIMITED NATURE OF REVIEW PROCESS AND ENFORCE COMPLIANCE WITH CONTRACT DOCUMENTS <u>MATERIALS AND WORKMANSHIP</u>	Georgia Institute
S.	1. WORK SHALL BE EXECUTED IN WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR AND MECHANICAL APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN RACEWAYS EXPOSED UNLESS SHOWN EXPOSED ON DRAWINGS. MATERIAL AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDED BEST PRACTICE SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.	Cherry Emerson Peter Yunker Lab Fit-Up
S	26510 LIGHTING CONTROLS	
THAT THE CATION ENTS JRNED	1. INTERCONNECT LIGHTING CONTROL SYSTEM COMPONENTS, INCLUDING ROOM CONTROLLERS, SWITCHES, OCCUPANCY SENSORS, ETC. VIA HARD-WIRE CONNECTIONS; WIRELESS DEVICES ARE NOT ACCEPTABLE.	
DRAWING	2. PROVIDE ALL NECESSARY ROOM CONTROLLERS, DEVICES, POWER PACKS, CABLING, RACEWAYS, SOFTWARE, SYSTEM INTERCONNECTIONS AND PROGRAMMING REQUIRED OR RECOMMENDED BY THE MANUFACTURER FOR A COMPLETE LIGHTING CONTROL SYSTEM.	Vanderweil
INTS AND	 PROVIDE UL924 LISTED EMERGENCY BYPASS RELAYS/MODULES FOR CONTROLLED EMERGENCY LIGHTING CIRCUITS TO RAISE CONTROLLED EMERGENCY LIGHTS TO FULL BRIGHTNESS DURING A POWER FAILURE. INSTALL DEVICES IN ACCORDANCE WITH MANUFACTURERS INSTALLATION 	260 Peachtree Street, NW. Suite 1401 Atlanta, GA 30303
SE. LLATION, PTION OF	 AND WIRING INSTRUCTIONS. 5. PROVIDE INDEPENDENT-PARTY FUNCTIONAL TESTING ON ENTIRE LIGHTING CONTROL SYSTEM IN ACCORDANCE WITH 2013 ASHRAE-90.1 SECTION 9.4.3. 6. LOCATE ROOM CONTROLLERS / POWER PACKS TYPICALLY ABOVE CEILING AT ENTRY DOORS TO FACUL ROOM FOR FACY FUTURE MAINTENANCE. EXACT 	(017) 336-9306 1
OT IS SHALL	LOCATIONS SHALL BE IDENTIFIED ON THE AS-BUILTS.	
AND RY TO ENTS.	26510 LIGHTING	
NG ERS AND	PROVIDE LIGHTING FIXTURES, EQUIPMENT AND COMPONENTS WHERE SHOWN ON DRAWINGS, AS LISTED IN FIXTURE SCHEDULES AND AS SPECIFIED, WIRED AND ASSEMBLED, PROVIDE APPROVED CANOPIES, HANGERS AND OTHER	
ED TS WILL	 2. LED FIXTURES SHALL HAVE LOW LOSS, HIGH EFFICIENCY, HIGH POWER 	
O THE SHALL	 FACTOR, DRIVERS, WITH DLC RATING 3. VERIFY CEILING CONSTRUCTIONS, AND PROVIDE FIXTURES, DRIVERS, AND OTHER ACCESSORIES SUITABLE FOR CONSTRUCTION ENCOUNTERED. 	
ION TO _L ARI Y	4. REFER TO FIXTURE SCHEDULE FOR SPECIFIC LAMP REQUIREMENTS.	
Y THEY	1. COORDINATE INSTALLATION OF FIXTURES WITH INSTALLATION OF CEILING	
TTED	 DO NOT INSTALL FIXTURES UNTIL WORK OF OTHER TRADES THAT MAY DAMAGE FIXTURES IS COMPLETED. 	
MINALS,	3. INVESTIGATE LIGHTING FIXTURE LOCATIONS AND SUPPORTS TO ENSURE THAT NO INTERFERENCE EXISTS WITH HANGERS, DUCTS, SPRINKLERS, PIPES AND OTHER EQUIPMENT.	
AWING	 DO NOT SUSPEND OR SUPPORT LIGHTING FIXTURES OR SAFETY CHAINS FROM HUNG CEILING, CONDUIT OR DUCT. SUPPORT FIXTURES WITH THREADED ROD FROM STRUCTURAL MEMBERS ONLY. 	No. Date Description
AIE	26510 LICHTING CONTROL S TESTING	★ No. PE21771 PROFESSIONAL ★
		FRASH A SHAHLE
ed items :RS	 LIGHTING SYSTEM FUNCTIONAL TESTING. CONTROLS FOR AUTOMATIC LIGHTING SYSTEMS SHALL COMPLY WITH THIS SECTION. FUNCTIONAL TESTING. PRIOR TO ISSUING THE FINAL ELECTRICAL AFFIDAVITS, 	08/27/2020
INTS T FROM	THE REGISTERED DESIGN PROFESSIONAL SHALL BE PROVIDED WITH FORMAL EVIDENCE THAT THE LIGHTING CONTROL SYSTEMS HAVE BEEN TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH	THESE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND WE EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF TWO PROJECT.
TTER	 SECTIONS 3, 4 AND 5 FOR THE APPLICABLE CONTROL TYPE. OCCUPANT SENSOR CONTROLS. WHERE OCCUPANT SENSOR CONTROLS ARE PROVIDED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED: 	100%
LE THAT	A. CERTIFY THAT THE OCCUPANT SENSOR HAS BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.	CONSTRUCTION
E IER THE	B. FOR PROJECTS WITH SEVEN OR FEWER OCCUPANT SENSORS, EACH SENSOR SHALL BE TESTED.	
) DF	FOR OCCUPANT SENSOR CONTROLS TO BE TESTED, VERIFY THE FOLLOWING:	
	C.1. WHERE OCCUPANT SENSOR CONTROLS INCLUDE STATUS INDICATORS, VERIFY CORRECT OPERATION.	
TED	C.2. FOR AUTO-ON OCCUPANT SENSOR CONTROLS, THE LIGHTS	
	TURN ON TO THE PERMITTED LEVEL WHEN AN OCCUPANT ENTERS THE SPACE.	FI ECTRICAI
) WITH.	C.4. FOR MANUAL-ON OCCUPANT SENSOR CONTROLS , THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED.C.5. THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT	SPECIFICATIONS
NFIRMED	 IN ADJACENT AREAS OR BY HVAC OPERATION. 4. THE ELECTRICAL CONTRACTOR IS TO PROVIDE FORMAL DOCUMENTATION THAT THE ABOVE BEOLUBED TESTING HAS OCCURRED. THE ELECTRICAL 	
EPTABLE,	CONTRACTOR IS TO SUBMIT A LIST OF ALL THE SPACES AND AREAS WITHIN THE SCOPE OF THIS PROJECT WITH LIGHTING CONTROLS. THE LIST IS TO BE ON THE CONTRACTORS LETTER HEAD AND SIGNED BY THE ELECTRICAL	
CT	CONTRACTORS REPRESENTATIVE WHO'S LICENSES WAS USED TO OBTAIN THE PERMIT. THE LIST WILL INDICATE EACH AND EVERY ROOM DEFINED BY NAME AND NUMBER AND THE RESULTS OF THE REOUTIRED TESTING	DRAWN BY: CHECKED BY: Author Checker
	LIGHTING CONTROL SYSTEMS OF THE TIME BASED CONTROL, DALI, DIMMING SYSTEMS, ETC, WILL BE COMMISSIONED BY THE AUTHORIZED MANUFACTURERS FACTORY TECHNICIAN. FORMAL DOCUMENTATION IS TO	PROJECT NO: DATE: 30089 08/31/2020 SHEET NO: 3000000000000000000000000000000000000
	BE INCLUDED IN THIS DOCUMENT BY THE MANUFACTURERS REPRESENTATIVE THAT THE SYSTEM(S) IS FULLY TESTED AND IN PERFECT OPERATING CONDITION. DOCUMENTATION IS TO BE ON THE MANUFACTURERS LETTER HEAD AND SIGNED.	E-003
		SCALE: 12" - 1'-0"

FOR ELECTRICAL LEGE FOR LIGHTING FIXTURE FOR EXACT LOCATIONS REFLECTED CEILING PL

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			r c
			HERA Laboratory Planners
			www.herainc.com
			Georgia Institute
		C)	Cherry Emerson Peter
			GA PROJECT #: 0360-2020
			Vanderweil
			Suite 1401 Atlanta, GA 30303
			(617) 556-9308 1
		В	
	Restroom		
			No. Date Description
			EORG
			$\star \begin{pmatrix} No. PE21771 \\ PROFESSIONAL \end{pmatrix} \star$
			TRANS A. SHAHL
			08/27/2020
11	12		THESE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND WE EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE LISED FOB ANY PART OR PARTS OF
GEND AND GENERAL NOTES F	REFER TO DRAWING E001.		CONSTRUCTION
NS, QUANTITIES AND MOUNTI PLANS AND ELEVATIONS.	ING HEIGHTS OF ALL LIGHTING FIXTURES REFER TO ARCHITECT'S		DOCUMENTS
	KEYED NOTES		
IXTURES TO CIRCUIT PREVIO S SHOWN E WALL DIMMER SWITCH FOR	USLY SERVING REMOVED LIGHT FIXTURES IN THIS AREA AND TO NEW		ELEC
HOT CONDUCTOR TO EMERO ROLS DURING A LOSS OF PO	GENCY LIGHTING FIXTURE. LIGHTING FIXTURE SHALL ILLUMINATE WER.		LIGHTING -
			DRAWN BY: CHECKED BY: RZ FS
			PROJECT NO: DATE: 30089 08/31/2020 SHEET NO:
			E-202
			SCALE: 1/4" = 1'-0"

FOR REFERENCE ONLY - BOXES AND CONDUITS BY GENERAL CONTRACTOR. CABLING BY G.T. CONTRACTOR. GENERAL CONTRACTOR SHALL COORDINATE WITH G.T. TELECOM CONTRACTOR TO PHASE DEMOLITION AND NEW WORK.

GENERAL NOTES

- 1 PROVIDE 1 X 7' CAT5e PATCH CABLE FOR EACH DATA CABLE INSTALLED. ALSO PROVIDE 1 CAT5e PATCH CABLE TO LENGTH FOR EVERY DATA CABLE IN IDF BETWEEN PATCH PANELS AND NETWORK SWITCH.
- 2 MOVE PATCH PANELS UP AS NEEDED TO ACCOMMODATE A SECOND NETWORK SWITCH.

TELECOMMUNICATIONS BOXES / CONDUITS

ELECTRICAL SHALL PROVIDE AND INSTALL ALL PATHWAYS, BOXES, CONDUITS, SLEEVES, FLOOR BOXES, ETC... FOR TELECOMMUNICATION / AV CABLING. COORDINATE WITH TELECOM, AV, AND OTHER TRADES. STUB CONDUITS ABOVE ACCESSIBLE CEILINGS. MAXIMUM OF (2) 90° BENDS AND (2) OFFSETS (45° OR LESS) BETWEEN PULL BOXES. ALL PULL BOXES SHALL BE LOCATED IN ACCESSIBLE AREAS. DO <u>NOT</u> DAISY CHAIN TELECOM CONDUITS .DUAL CHANNEL 4000 RACEWAY TO BE PROVIDED AND INSTALLED BY ELECTRICAL WITH CENTER DIVIDER, AND 4050 BRACKET AND 5507–6TJ FACEPLATE PROVIDED FOR LOW VOLTAGE LOCATIONS.

KEY NOTES

TO FOR RELOCATED VOICE CABLES, COIL ABOVE CEILING UNTIL NEW WORK IS COMPLETED THEN DROP DOWN INTO A NEW WALL MOUNT PLATE.

TELECOMMUNICATION SYMBOL LEGEND

*D/*V/*C/*A ▼	6-PORT COMMUNICATIONS DEVICE PLATE WITH JACKS/ BLANKS AS INDICATED. *D NUMBER OF CAT5E DATA JACKS *V NUMBER OF CAT5e VOICE JACKS *C NUMBER OF COAX F-CONNECTORS *A NUMBER OF AV JACKS CAT6 SHIELDED
E/R/X	EXISTING/ RELOCATE/ REMOVE
(w) ▼	1-PORT STAINLESS FACEPLATE WITH TABS FOR WALL-MOUNT TELEPHONE.
1D WAP	(1) CAT5e DATA CABLE TERMINATED IN A JACK WITH 20' ADDITIONAL CABLE COILED ABOVE CEILING FOR WIRELESS ACCESS POINT.
*D/*V/*C/*A 🗸	EXISTING LOW VOLTAGE PLATE TO BE REMOVED. DEMO CABLING AS INDICATED BACK TO IDF.
	FLOOR BOX, CABLING AS NOTED.
*D/*V/*C/*A 🔻	12-PORT (2-GANG) INFORMATION MANAGEMENT OUTLET.

