

**GENERAL NOTES**

- a. CONTRACTOR TO FAMILIARIZE HIMSELF WITH THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND ADJUST FOR ACTUAL FIELD CONDITIONS AT NO EXPENSE TO OWNER. REPORT TO THE ARCHITECT AND OR ENGINEER ANY DISCREPANCIES WITH THE PLANS AND EXISTING CONDITIONS.
- b. SCHEDULE OF WORK: THIS CONTRACTOR SHALL BE REQUIRED TO FAMILIARIZE HIMSELF WITH THE PROPOSED WORK SCHEDULE & SHALL COORDINATE HIS WORK SCHEDULE WITH THE OTHER TRADES, SO THAT WORK PROGRESSES CAN BE PLANNED IN A PROPER SYSTEMATIC FASHION TO AVOID ANY DUPLICATION OF EFFORT & RESULTANT DELAY OF PROJECT.
- c. PROVIDE OPERABLE HVAC SYSTEMS COMPLETE IN ALL RESPECTS AS CONTEMPLATED BY THE INFORMATION INDICATED ON THE DRAWINGS. IT IS NOT INTENDED THAT THE DRAWINGS & SPECIFICATIONS INDICATE EACH & EVERY ITEM OF INFORMATION NECESSARY FOR COMPLETE SYSTEMS BUT INDICATE SUFFICIENT INFORMATION FOR THE CONTRACTOR TO SECURE ADDITIONAL INFORMATION FROM OTHER SOURCES & PROVIDE ALL MATERIALS, EQUIPMENT & LABOR NECESSARY FOR COMPLETE INSTALLATIONS.
- d. ALL LABOR, MATERIALS & EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR GUARANTEE FROM DEFECTS.
- e. CUTTING & PATCHING: THIS CONTRACTOR MUST LAY OUT HIS WORK IN ADVANCE OF NEW CONSTRUCTION IN ORDER THAT UNNECESSARY CUTTING & PATCHING WILL BE AVOIDED. OPENINGS SHALL BE REUSED AS SHOWN AND ANY MODIFICATIONS TO ROOF OPENINGS SHALL BE APPROVED BY THE LANDLORD, DONE BY THE LANDLORD'S ROOFING CONTRACTOR AND PAID FOR BY THE CONTRACTOR.
- f. ALL ROOF CURBS/PENETRATIONS ARE TO BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S DETAILS. ALL REQUIRED ROOFING SHALL BE BY THE LANDLORD'S DESIGNATED ROOFING CONTRACTOR AS REQUIRED TO MAINTAIN THE WARRANTY AND INTEGRITY OF THE ROOF.
- g. PROVIDE REQUIRED STRUCTURAL SUPPORT FOR ANY NEW ROOF MOUNTED OR SUSPENDED HEATING, VENTILATION, OR AIR CONDITIONING EQUIPMENT AS REQUIRED. COORDINATE SIZES AND PLACEMENT OF UNITS WITH THE LANDLORD.
- h. ALL DUCTWORK, HANGERS, DAMPER CONSTRUCTION, SEAMS, INSTALLATION, ETC., SHALL CONFORM TO THE STANDARDS AS ADOPTED BY A.S.H.R.A.E. & SMACNA. ALL WORK SHALL CONFORM TO ALL APPLICABLE LAWS, RULES & REGULATIONS & RECOMMENDATIONS OF LOCAL BUILDING DEPARTMENT, NATIONAL BOARD OF FIRE UNDERWRITERS, N.F.P.A., & SHOPPING CENTER GENERAL SPECIFICATIONS. ALL DUCTWORK SHALL BE SHEET METAL CONFORMING TO SMACNA STANDARDS FOR LOW PRESSURE DUCTWORK & A.S.H.R.A.E. STANDARD 90-75.
- i. SUPPLY DUCTWORK INSIDE BUILDING SHALL BE INSULATED WITH R-6, 2.5" ALUMINUM FOIL FACED FIBERGLASS BLANKET OVERLAPPED & WIRED ON & ALL DUCTWORK SHALL BE INSTALLED IN CONCEALED SPACE ABOVE CEILINGS.
- j. DUCT SYSTEM SHALL BE SEALED TO A LEAKAGE RATE NOT TO EXCEED 6 PERCENT OF THE NOMINAL AIRFLOW RATES, AND SHALL BE CONFIRMED THROUGH FIELD VERIFICATION AND DIAGNOSTIC TESTING.
- k. PROVIDE RETURN AIR FILTERS AT HVAC UNITS ON ROOF, NOT AT RETURN AIR GRILLE IN SPACE.
- l. IT IS THE OWNER'S RESPONSIBILITY TO CONTRACT WITH A COMMISSIONING AUTHORITY TO COMPLY WITH LOCAL CODES.
- m. PROVIDE ARCHITECT WITH THREE (3) COPIES OF AIR BALANCE REPORT. INSTRUCT OWNER IN USE OF EQUIPMENT. AIR BALANCE REPORT TO BE AN INDEPENDENT TESTING AGENCY. AIR BALANCE TEST REPORT TO BE TAKEN IN THE LATE AFTERNOON WITH THE FOLLOWING TEMPERATURE READINGS DOCUMENTED (IN ADDITION TO CFM) 1.) TEMPERATURE OF AIR LEAVING EACH CEILING DIFFUSER, 2.) TEMPERATURE OF AIR LEAVING HVAC UNIT, 3.) TEMPERATURE OF OUTSIDE AIR AT HVAC UNIT, 4.) TEMPERATURE OF AIR WITHIN SALES AREA (AT THERMOSTAT).

**MECHANICAL SYMBOLS LEGEND**

	SUPPLY GRILLE AS SPECIFIED	AFF	ABOVE FINISHED FLOOR
	RETURN GRILLE AS SPECIFIED	AHU	AIR HANDLING UNIT
	SIDEWALL SUPPLY GRILLE AS SPECIFIED	CD	CONDENSATE DRAIN
	FLOW ARROW	CFM	AIR VOLUME - CUBIC FEET / MINUTE
	TURNING VANES	CU	CONDENSING UNIT
	EXHAUST DUCT THROUGH ROOF	DIA	DIAMETER
	VOLUME DAMPER	EDH	ELECTRIC DUCT HEATER
	MOTORIZED DAMPER	EF	EXHAUST FAN
	FIRE DAMPER	ESP	EXTERNAL STATIC PRESSURE
	THERMOSTAT	FLA	FULL LOAD AMPS
	ELECTRIC DUCT HEATER	GPM	GALLONS / MINUTE
	PUMP	HP	HORSEPOWER
	DUCT MOUNTED SMOKE DETECTOR	LL	LANDLORD
	DUCT MOUNTED SMOKE DETECTOR REMOTE TEST STATION WITH AUDIOVISUAL ALARM	MCA	MINIMUM CIRCUIT AMPACITY
	EXHAUST FAN	MD	MOTORIZED DAMPER
	REMOTE TEMPERATURE SENSOR	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MOTOR	NIC	NOT IN CONTRACT
	RECTANGULAR DUCT BREAK/CONTINUATION	NTS	NOT TO SCALE
	ROUND DUCT BREAK/CONTINUATION	OA	OUTSIDE AIR
	DUCT TRANSITION	RA	RETURN AIR
	DUCT DIMENSIONS - WIDTH x HEIGHT	RTU	ROOF TOP UNIT
	GRILLE TYPE } SUPPLY/RETURN GRILLE TAG NECK SIZE } CFM }	SA	SUPPLY AIR
		TEN	TENANT
		TGC	TENANT GENERAL CONTRACTOR
		T-STAT	THERMOSTAT
		TYP	TYPICAL
		UH	UNIT HEATER
		UNO	UNLESS NOTED OTHERWISE
		VD	VOLUME DAMPER
		VIF	VERIFY IN FIELD

**ABBREVIATIONS**

NOTE: NOT ALL SYMBOLS OR ABBREVIATIONS MAY APPEAR ON PLANS.

**FIELD VERIFY ALL CONDITIONS**

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTOR'S COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES. THE PLANS AND SPECIFICATIONS NOT WITHSTANDING, THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

ISSUED REVISIONS:


EXISTING PACKAGED ROOFTOP UNIT WITH GAS HEAT SCHEDULE

MARK RTU-	ARRANGEMENT	NOM. TONS	SUPPLY FAN		COMPRESSOR			CONDENSER		COOLING PERFORMANCE										HEATING PERFORMANCE						ELECTRICAL DATA				MANUFACTURER MAKE AND MODEL	UNIT WEIGHT (LBS)	NOTES					
			S/A CFM	O/A CFM	EXT. S.P.	MOTOR H.P.	NO.	R.L.A.	REF. TYPE	NO. FANS	AMBIENT TEMP		INTERIOR CONDITIONS		ENTERING AIR		NET CAPACITY (MBH)			LEAVING AIR		IEER / SEER2	EER / EER2	AMBIENT TEMPERATURE	INTERIOR TEMPERATURE	ENTERING AIR D.B.	INPUT (MBH)	OUTPUT (MBH)	NO. STAGES				LEAVING AIR D.B.	VOLT	Ph.	MCA	MOCP
											D.B.	W.B.	D.B.	W.B.	D.B.	W.B.	SENS	LATENT	TOTAL	D.B.	W.B.																
1	S.A.E	7.5 (V.I.F)	3000 (V.I.F)	400	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	71.0 (V.I.F)	S.A.E	95.2 (V.I.F)	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	180 (V.I.F)	S.A.E	S.A.E	S.A.E	208-230 (V.I.F)	3 (V.I.F)	38.8 (V.I.F)	50 (V.I.F)	S.A.E	S.A.E	1-6
2	S.A.E	5.0 (V.I.F)	2000 (V.I.F)	200	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	47.7 (V.I.F)	S.A.E	61.9 (V.I.F)	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	115 (V.I.F)	S.A.E	S.A.E	S.A.E	208-230 (V.I.F)	3 (V.I.F)	26.5 (V.I.F)	40 (V.I.F)	S.A.E	S.A.E	1-6
3	S.A.E	5.0 (V.I.F)	2000 (V.I.F)	200	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	47.7 (V.I.F)	S.A.E	61.9 (V.I.F)	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	115 (V.I.F)	S.A.E	S.A.E	S.A.E	208-230 (V.I.F)	3 (V.I.F)	26.5 (V.I.F)	40 (V.I.F)	S.A.E	S.A.E	1-6
4	S.A.E	7.5 (V.I.F)	3000 (V.I.F)	400	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	71.0 (V.I.F)	S.A.E	95.2 (V.I.F)	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	180 (V.I.F)	S.A.E	S.A.E	S.A.E	208-230 (V.I.F)	3 (V.I.F)	38.8 (V.I.F)	50 (V.I.F)	S.A.E	S.A.E	1-6

- NOTES:
- S.A.E: SAME AS EXISTING, V.I.F: VERIFY IN FIELD.
  - EXISTING RTUs WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
  - CONTRACTOR TO CONFIRM IF EXISTING RTUs ARE WORKING AT ITS 100% RATED CAPACITY.
  - CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF RTUs ON SITE.
  - CONTRACTOR TO RE-BALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON EXISTING RTUs TO MATCH VALUES MENTIONED IN ABOVE TABLE.
  - REPLACE ALL AIR FILTERS WITH NEW MERV-13 FILTERS BEFORE HANDING OVER THE SPACE TO THE OWNER/TENANT.

EXHAUST FAN SCHEDULE

MARK	INSTALLATION LOCATION	CFM	STATIC PRESSURE (IN. W.C.)	DRIVE	ELECTRICAL DATA		MAXIMUM SONES	MANUFACTURER & MODEL	WEIGHT (LBS.)	NOTES
					HP / WATTS	VOLT / PHASE				
EF-1(E)	ROOF (V.I.F)	225 (V.I.F)	.25 (V.I.F)	S.A.E	S.A.E	120 / 1 (V.I.F)	S.A.E	COOK 100C10DH (V.I.F)	S.A.E	8-9
EF-2(N)	CEILING	80	.50	DIRECT	17W	115 / 1	2.5	GREENHECK SP-LP0511-1	15	1-7

- NOTES:
- PROVIDE A GRAVITY BACKDRAFT DAMPER
  - SUSPEND FROM STRUCTURE ABOVE WITH FAN MANUFACTURER'S HANGING VIBRATION ISOLATOR KIT
  - PROVIDE WITH PREWIRED FAN SPEED CONTROLLER.
  - PROVIDE FAN WITH INTEGRAL DISCONNECT
  - TERMINATE PER PLAN WITH MANUFACTURER'S CURB-MOUNTED ROOF CAP WITH BIRD SCREEN.
  - PROVIDE A WHITE, ALUMINUM GRILLE
  - FAN TO BE INTERLOCKED WITH LOCAL LIGHT SWITCH.
  - S.A.E: SAME AS EXISTING, V.I.F: VERIFY IN FIELD.
  - FAN TO BE INTERLOCKED WITH BUILDING LIGHTING CONTROLS TO OPERATE CONTINUOUSLY.

EXISTING AIR DEVICE SCHEDULE

MARK	SYSTEM	FACE SIZE	MOUNTING	DEVICE TYPE	MATERIAL	MANUFACTURER & MODEL	MAX N.C.	TYPE
A	SUPPLY	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	EXISTING
B	SUPPLY	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	EXISTING
C	SUPPLY	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	EXISTING
D	RETURN	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	EXISTING
E	EXHAUST	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	EXISTING

- NOTES:
- S.A.E: SAME AS EXISTING.

AIR CURTAIN SCHEDULE

MARK	CFM	ELECTRICAL DATA			MANUFACTURER & MODEL	WEIGHT (LBS.)	NOTES
		WATTS	VOLT / PHASE	MOCP			
AC-1,AC-2	200	100	120 / 1	15	BERNER DTU-03-2026A	14	1
AC-3,AC-4	1020	320	120 / 1	15	BERNER SLC07-1036A	35	1

- NOTES:
- PROVIDE WITH MANUFACTURER'S CONTROL PACKAGE.

AIR BALANCE SCHEDULE

UNIT	SPACE	SUPPLY AIR	RETURN AIR	OUTSIDE AIR	EXHAUST AIR	AIRFLOW NET
RTU-1(E)	SEE PLAN	3000	2600	400	-	400
RTU-2(E)	SEE PLAN	2000	1800	200	-	200
RTU-3(E)	SEE PLAN	2000	1800	200	-	200
RTU-4(E)	SEE PLAN	3000	2600	400	-	400
MUA(N)	KITCHEN	2948	-	2948	-	2948
KEF(N)	KITCHEN	-	-	-	-3468	-3468
EF-1(E)	RESTROOM	-	-	-	-225	-225
EF-2(N)	RESTROOM	-	-	-	-80	-80
TOTALS		12948	8800	4148	-3773	375

VENTILATION CALCULATION TABLE

ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER 2021 IMC	NUMBER OF PEOPLE AS PER 2021 IMC	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER 2021 IMC		EFFECTIVENESS (Ebz)	REQUIRED OUTSIDE AIR (CFM)	PROVIDED OUTSIDE AIR (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT) OR (CFM/FIXTURE)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
						CFM/PEOPLE	CFM/SQ.FT						
102-ORDER	374	15	6	28	6	7.5	0.12	0.8	112	1200	0	0	0
103-BEVERAGE	95	100	10	2	2	7.5	0.18	0.8	40	1200	0	0	0
104-DINING	760	70	54	0	60	7.5	0.18	0.8	734	1200	0	0	0
105-HALLWAY	45	0	0	0	0	0	0.06	0.8	3	1200	0	0	0
106-WOMEN'S	52	0	0	0	0	0	0	0	0	1200	70	70	75
107-MEN'S	62	0	0	0	0	0	0	0	0	1200	70	70	150
108-DRIVE THRU PICKUP	55	2	1	0	1	10	0.12	0.8	21	1200	0	0	0
109-KITCHEN	419	70	30	0	4	7.5	0.18	0.8	132	1200	0.7	293	3468
110-OFFICE	58	5	1	1	1	5	0.06	0.8	11	1200	0	0	0
111-STORAGE	405	0	0	0	0	0	0.12	0.8	61	1200	0	0	80
114-RECEIVING	100	2	1	0	0	10	0.12	0.8	15	1200	0	0	0
116-DRIVE-THRU POS	50	2	1	1	1	10	0.12	0.8	20	1200	0	0	0
TOTAL	2475	-	-	32	75	-	-	-	1148	1200	-	433	3773

ISSUED REVISIONS:


**HOOD INFORMATION**

HOOD NO.	MARK	MODEL	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	COOKING LOAD / DUTY RATING	TOTAL CFM	EXHAUST COLLAR(S)					SUPPLY		HANGING WEIGHT LBS.	SECTION LOCATION
			LENGTH	WIDTH	HEIGHT				WIDTH	LENGTH	DIA.	CFM	S.P.	MUA CFM	AC CFM		
1	310 HOOD	XXEW-92.5-S	92.5	54	24	430 SS WHERE EXPOSED	HEAVY	1734	9	17	1734	0.576	1384		288	LEFT	
2	310 HOOD	XXEW-92.5-S	92.5	54	24	450 SS WHERE EXPOSED	HEAVY	1734	9	17	1734	0.576	1564		376	RIGHT	

**HOOD INFORMATION**

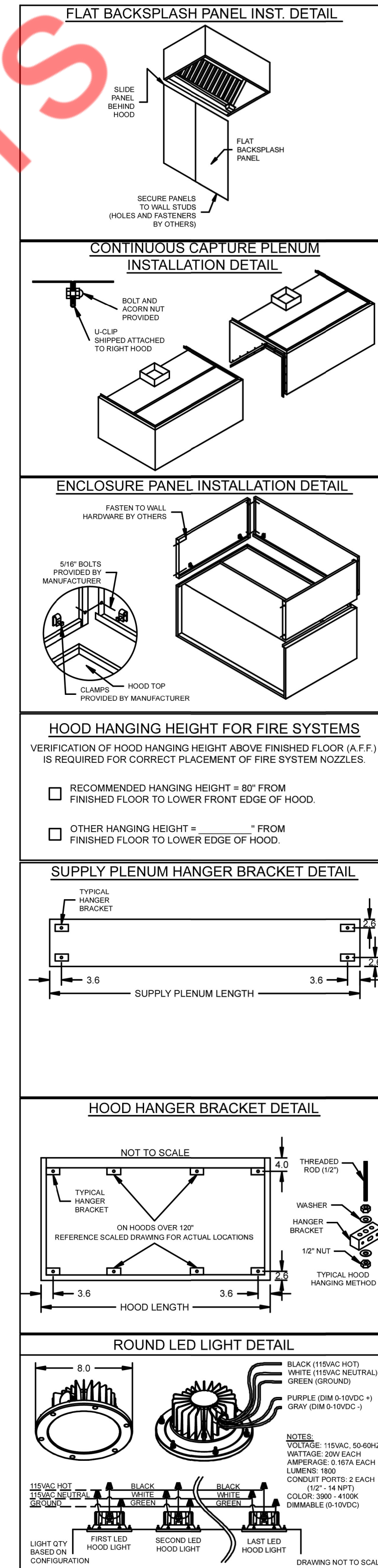
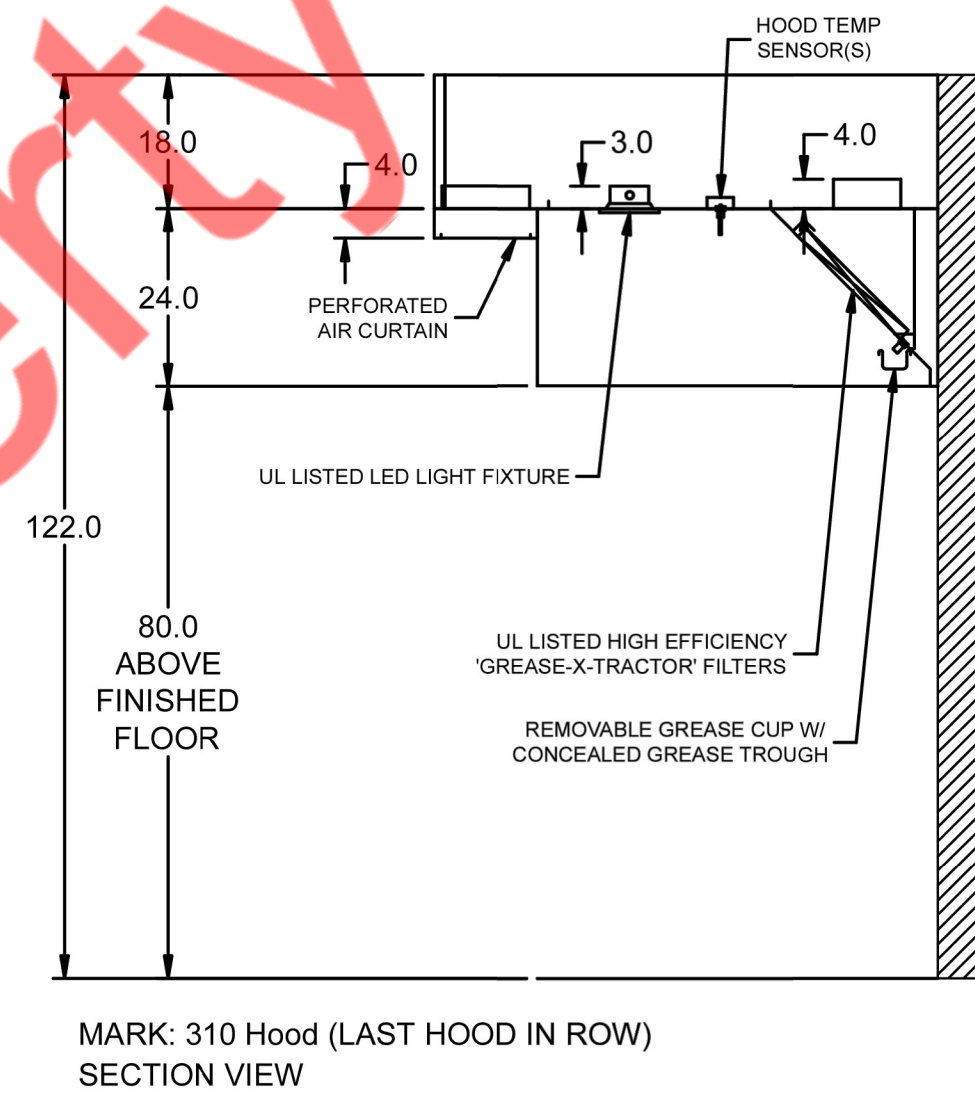
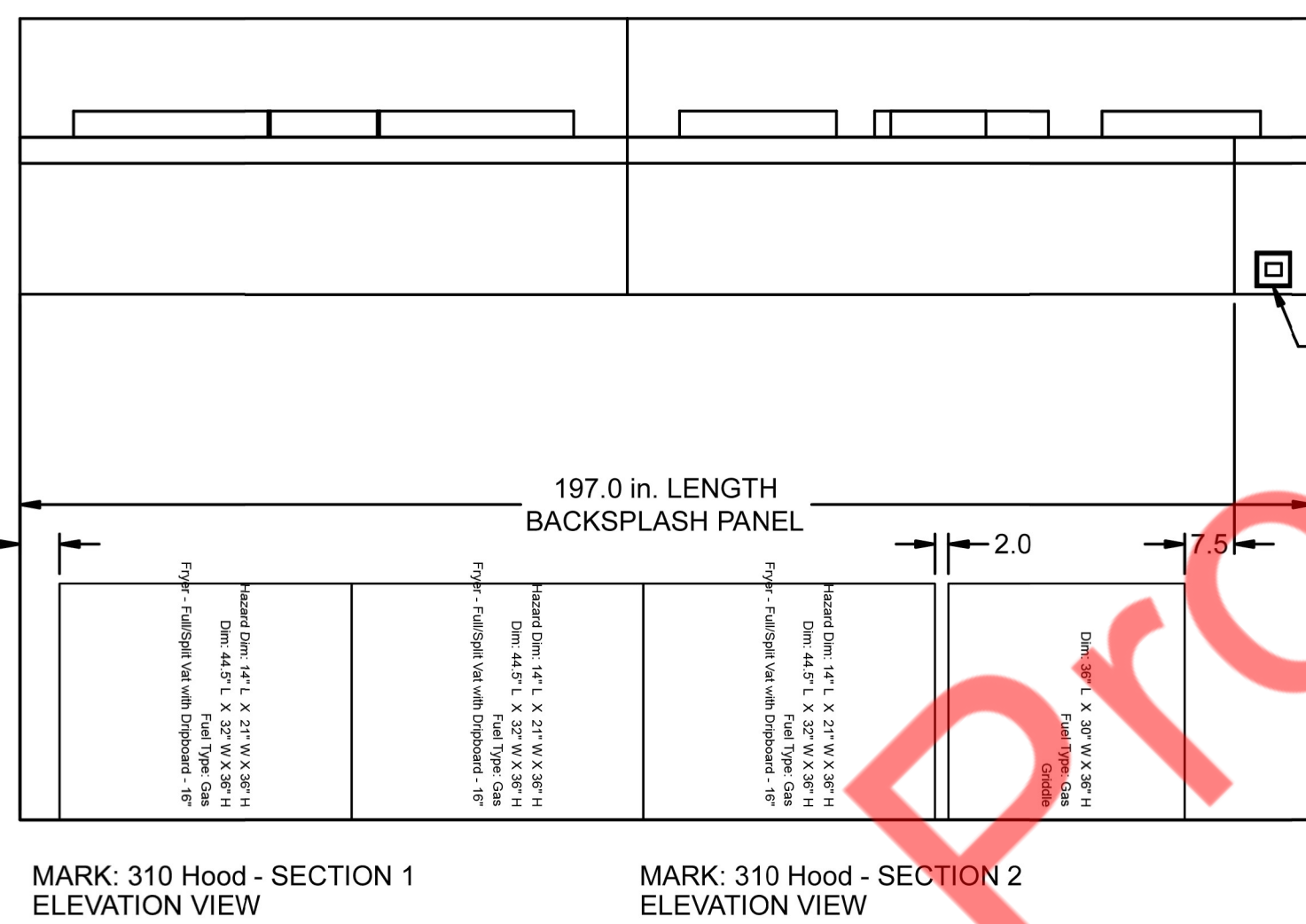
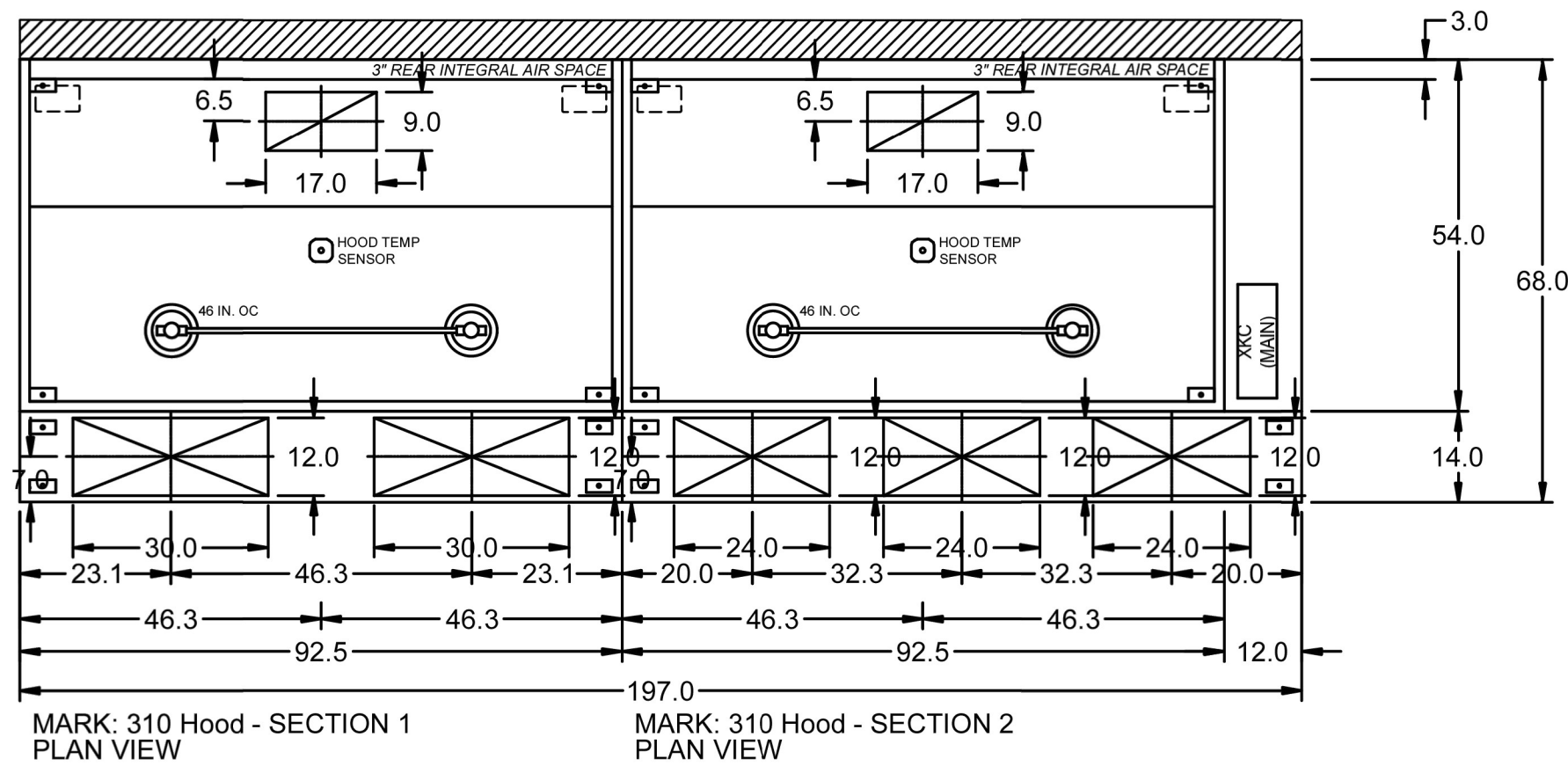
HOOD NO.	MARK	LIGHTING DETAILS		GREASE FILTRATION DETAILS		UTILITY CABINET(S)						
		FIXTURE TYPE BULB / LAMP INFO	QTY	FOOT CANDLES	TYPE / MODEL MATERIAL	QTY	SIZE (IN.) L H	LOCATION	FIRE SYSTEM TYPE	SIZE	MODEL	CONTROLS INTERFACE
1	310 HOOD	ROUND LED	2	65.64	X-TRACTOR (SPARK ARRESTOR INCL.) STAINLESS STEEL	2	16 20					TOUCHSCREEN
2	310 HOOD	ROUND LED	2	65.64	X-TRACTOR (SPARK ARRESTOR INCL.) STAINLESS STEEL	2	16 20	RIGHT			XKC	

**SUPPLY PLENUM INFORMATION**

HOOD NO.	MARK	POS.	TYPE	SIZE (IN.)			INSULATED	DAMPER(S)	LED LIGHT(S) SUPPLIED	QTY	TOTAL CFM	TOTAL S.P.	COLLARS						
				L	W	H							TYPE	MOUNTING	QTY	W	L	DIA.	CFM
1	310 HOOD	FRONT	ASP	92.5	14	4	NO	YES	NO		1384	0.02	MUA	FACTORY	2	12	30	692	277
2	310 HOOD	FRONT	ASP	104.5	14	4	NO	YES	NO		1564	0.01	MUA	FACTORY	3	12	24	521	261

**HOOD OPTIONS**

UL 710 LISTED W/ OUT EXHAUST FIRE DAMPER - UL #R25625  
 BACK INTEGRAL AIR SPACE - 3 IN WIDE  
 18 IN HIGH CEILING ENCLOSURES - FRONT LEFT RIGHT - FIELD INSTALLED  
 CONTINUOUS CAPTURE  
 FACTORY MOUNTED EXHAUST COLLAR(S)  
 BACKSPASH 80.00 IN HIGH 197.00 IN LONG  
 PERFORMANCE ENHANCING LIP (PEL) TECHNOLOGY  
 STANDING SEAM CONSTRUCTION FOR SUPERIOR STRENGTH



**ACCUREX**

LAYNE'S CHICKEN FINGERS LEANDER TX-R1

PROJECT: 6/2/2025 MARK: ACCUREX SOUTH TX LEE.DOCTOROFF@ACCUREX.COM (512)934-0899

UL NSF

ISSUED REVISIONS:


Layne's Chicken Fingers  
Mechanical Kitchen Equipment

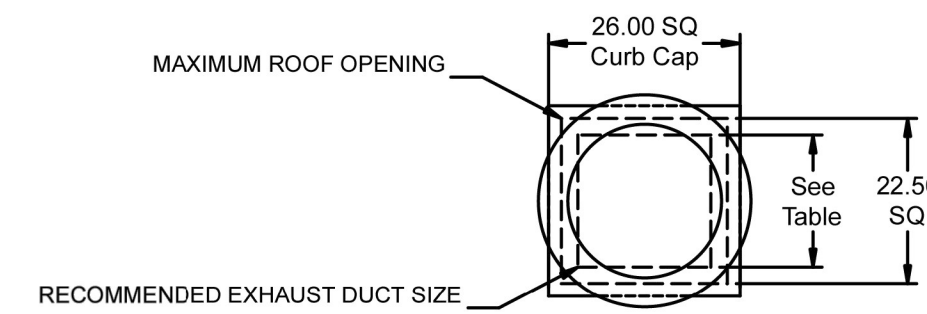
Direct Drive Upblast Centrifugal Roof Exhaust Fan

MARK INFORMATION			FAN INFORMATION							SOUND INFORMATION					MOTOR INFORMATION									
MARK	QTY	MODEL	DRIVE TYPE	VOLUME (CFM)	EXTERNAL SP (IN. WG)	TOTAL EXTERNAL SP (IN. WG)	FAN SPEED (RPM)	OUTLET VELOCITY (FT/MIN)	FEI	TOTAL WEIGHT (LB)	INLET dBA	INLET SONES	INLET SONES (SPHERICAL)	OUTLET dBA	OUTLET SONES	OPERATING POWER (HP)	MOTOR SIZE (HP)	FEP INPUT POWER (KW)	ENCLOSURE	VOLTAGE	CYCLE	PHASE	EC MOTOR	NEC FLA*
EF	1	XCUE-160-A	Direct	3,468	1.25	1.25	1,579	2,016.28	1.11	117	73.79	22.44	0	0	0	1.44	2	1.35	OP	208	60	3	No	7.5

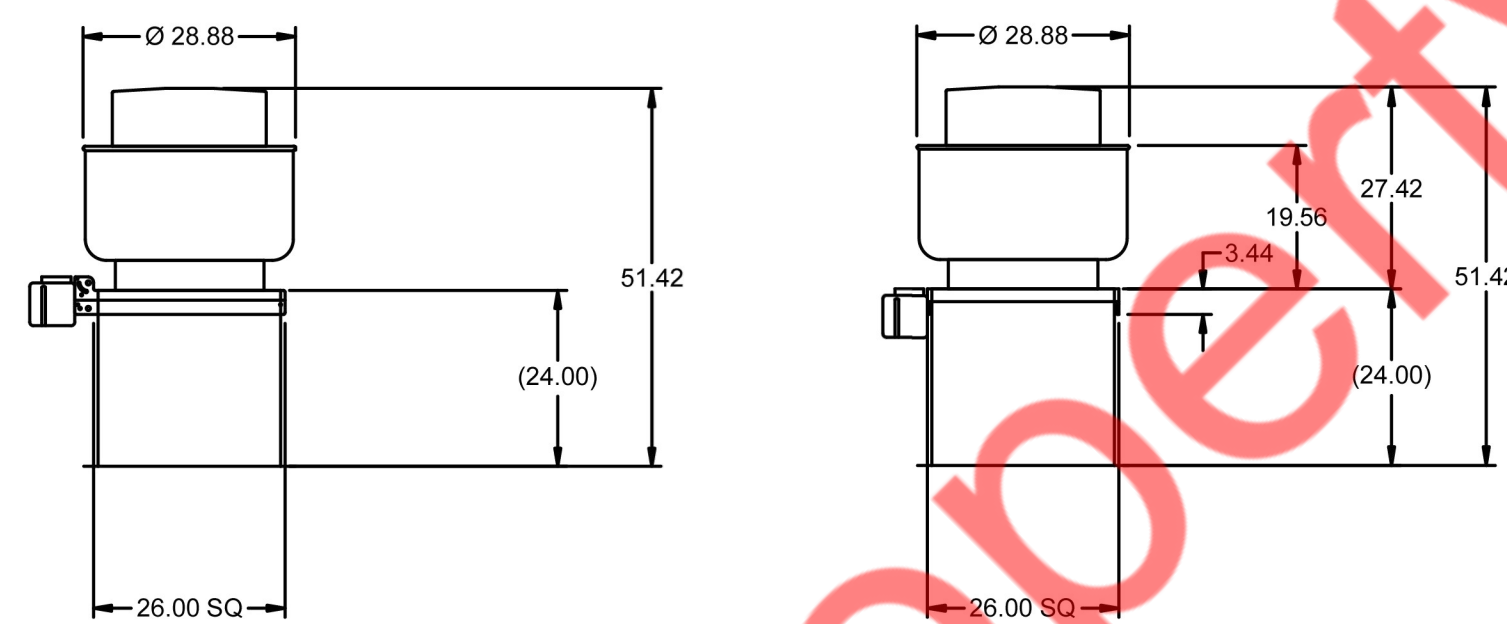
\*NEC FLA - Based on table 430.250 or 430.248 of National Electrical Code 2020. Actual motor FLA may vary for sizing thermal overload, consult factory"

EF : SELECTED OPTIONS AND ACCESSORIES

Motor VFD Rated without Shaft Grounding Protection  
 One piece fully welded windband  
 Tapered bushing wheel hub  
 Breather tube outlet area min. 4.4 sq. in. (sizes 99-480), 2.0 sq. in. (sizes 60-95)  
 Min. windband material thickness: 0.051" aluminum (060-240), 0.064" aluminum (240HP, 240XP),  
 0.080" aluminum (sizes 300-480)  
 Larger Curb Cap Size - 26 Square  
 UL/CUL 705 Listed - Supplement SC - "Power Ventilators for Restaurant Exh. Appliances" (Formerly UL 762)  
 Switch, NEMA-3R, Toggle,  
 Hinge, Factory Installed  
 High Temp Curb Seal Rated for Continuous Duty at 1500 F (Factory Attached)  
 Fastener Material: Stainless  
 Grease Trap (PN 475538)  
 Aluminum Wheel Material

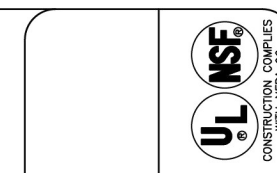
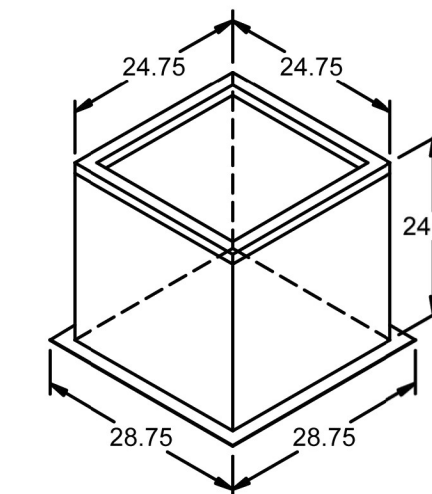


DUCT TYPE	SIZE
STANDARD	18 SQ
FIRE-WRAPPED	12 SQ



DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB.  
 CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

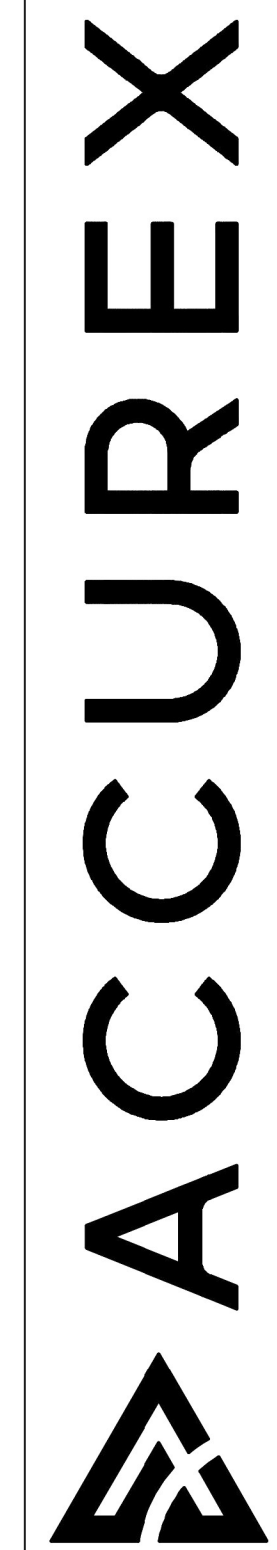
OVERALL HEIGHT MAY BE GREATER DEPENDING ON  
 MOTOR, ADAPTER, AND/OR HINGE BASE.



LAYNE'S CHICKEN FINGERS  
 LEANDER TX-R1

PROJECT  
 6/2/2025

ACCUREX SOUTH TX  
 LEE.DOCTOROFF  
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 (512)934-0899



MARK  
 EF

ISSUED REVISIONS:


Layne's Chicken Fingers  
 Mechanical Kitchen Equipment



CONTROL INFORMATION

MARK	MAIN ELECTRICAL CONTROL PACKAGE		MAIN USER INTERFACE				FANS CONTROLLED									
	MODEL	LOCATION	TYPE	LOCATION	FAN #	TYPE	FAN	FAN MARK	ZONE	CFM	MOTOR HP	MOTOR VOLT	CYCLE	MOTOR PHASE	MOTOR STARTER IN PANEL	VFD IN PANEL
CONTROLS	XKC-CV-SB-11-2-1-0	RIGHT CABINET ON 310 HOOD	FULL COLOR TOUCHSCREEN	CABINET - RIGHT CABINET ON 310 HOOD	1	EXHAUST	E1	EF	1	3468	2	208	55	3	NO	YES
					2	SUPPLY	S1	MUA	1	2948	1.5	208	60	3	NO	NO

CONTROL FEATURES

HOOD LIGHT CONTROL  
 TEMP SENSORS (FACTORY INSTALLED) - QTY. 2  
 DRY FIRE CONTACTS - QTY. 1  
 LIGHTS OFF DURING FIRE  
 EXHAUST MAX DURING FIRE  
 SUPPLY OFF DURING FIRE  
 BMS INTEGRATION - BACNET MSTP  
 VFD(S) IN CONTROL PANEL PROVIDED FOR BALANCING



DOC NUMBER: --- REV: ---

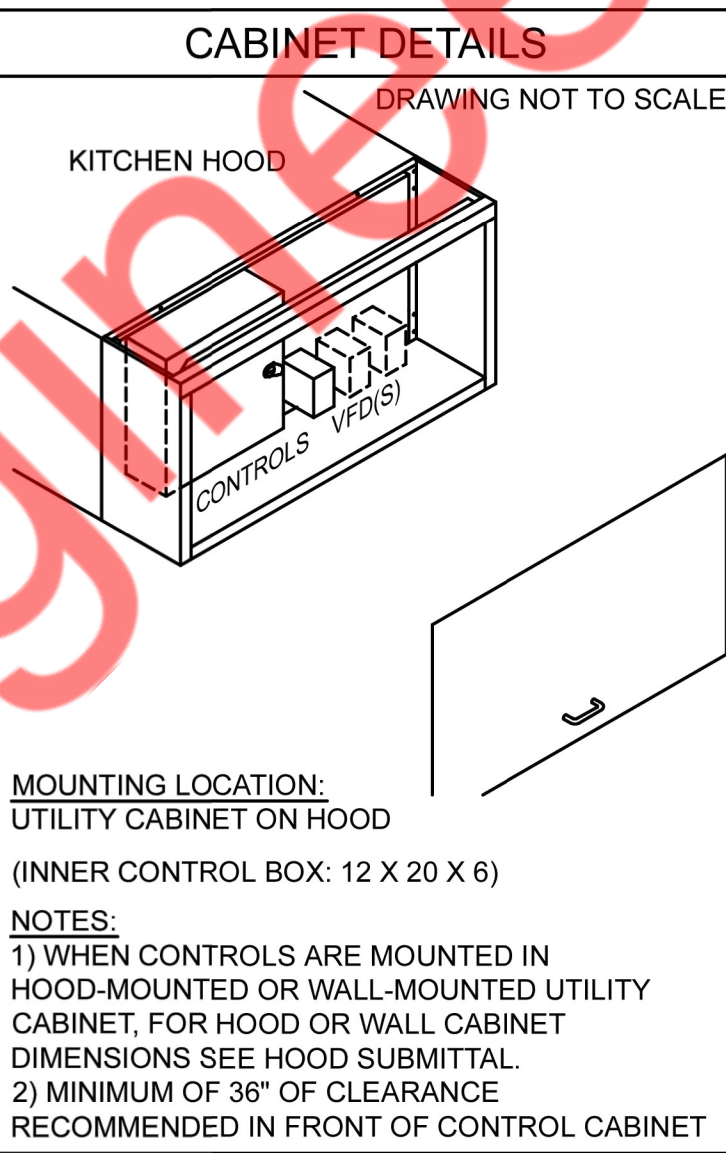
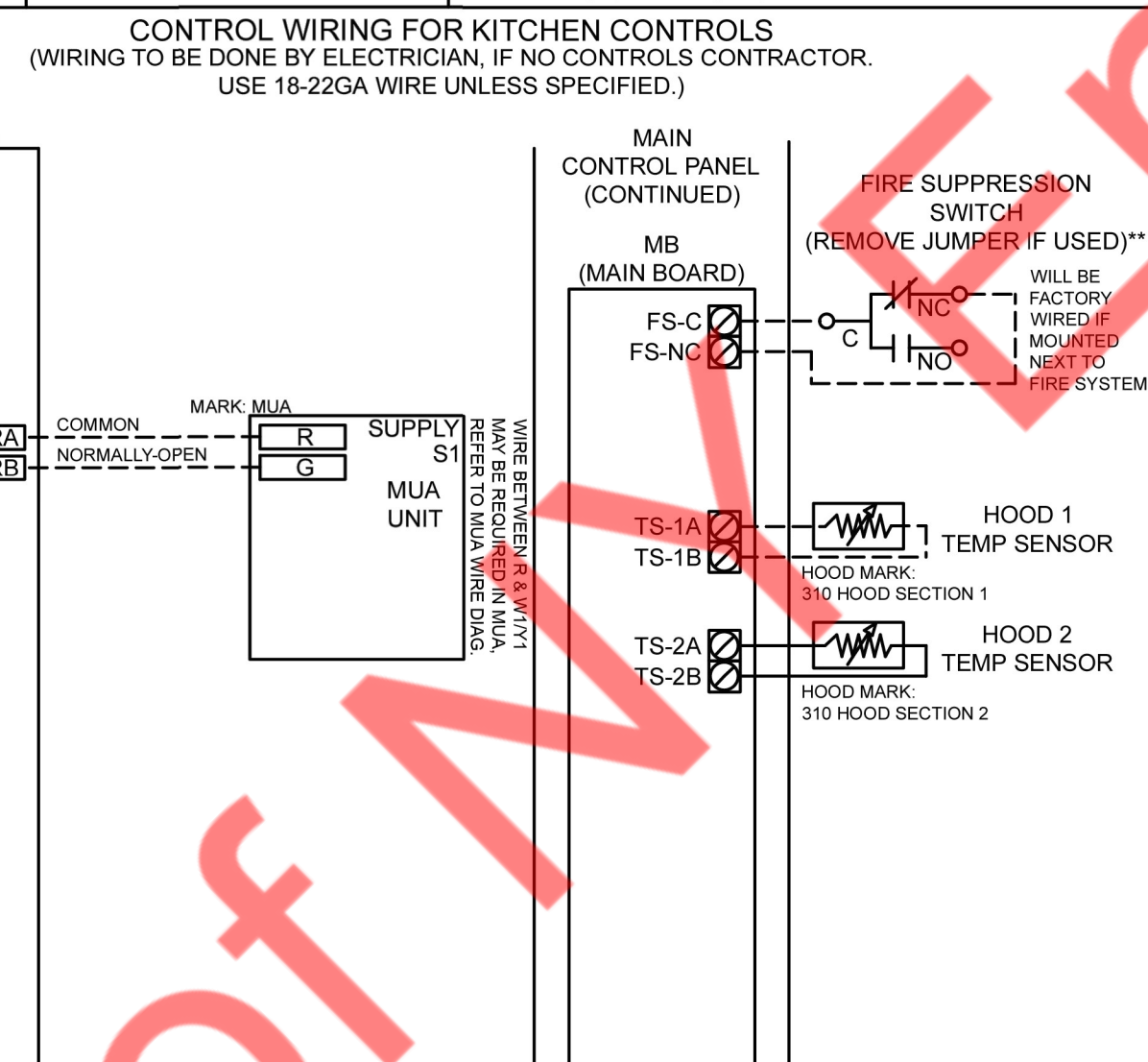
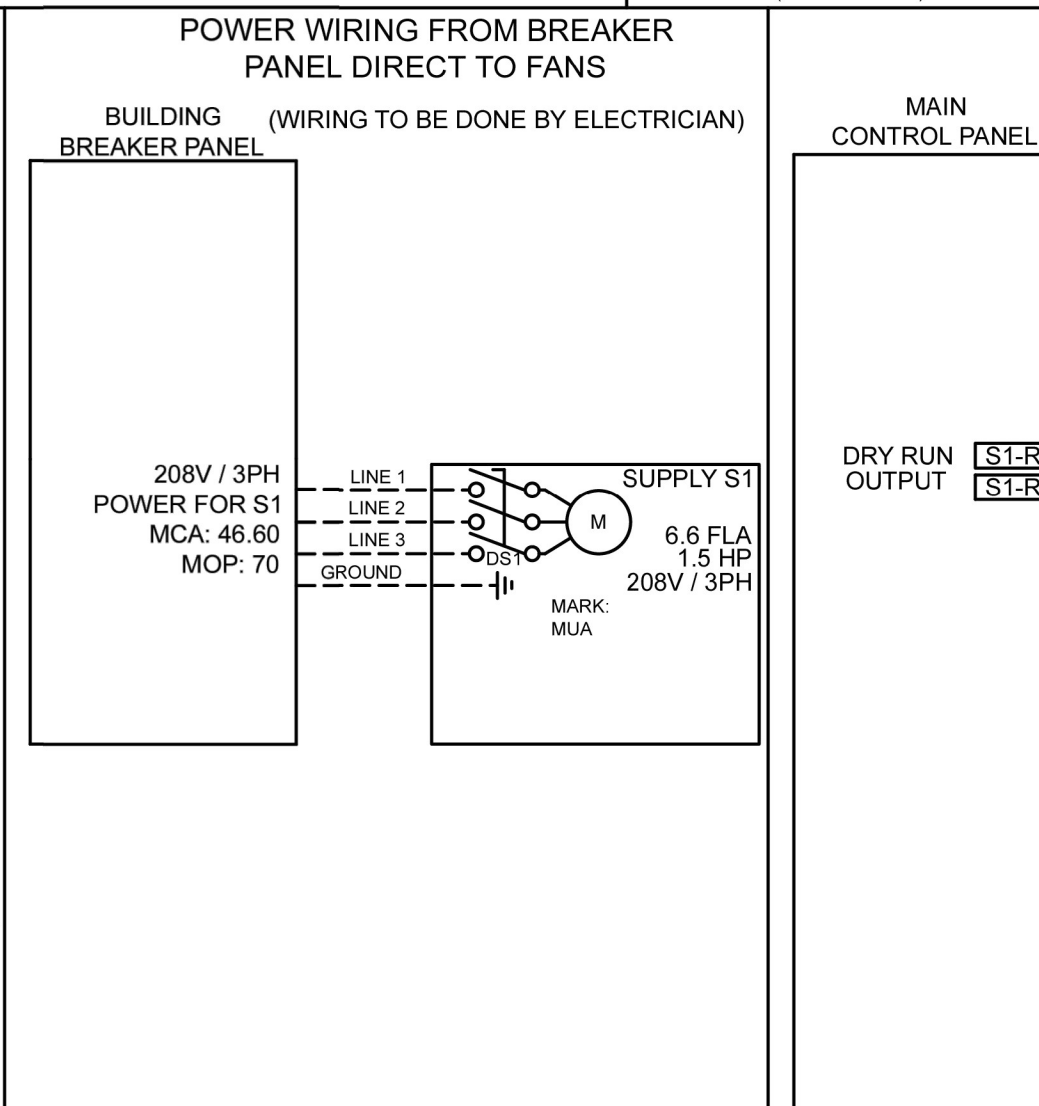
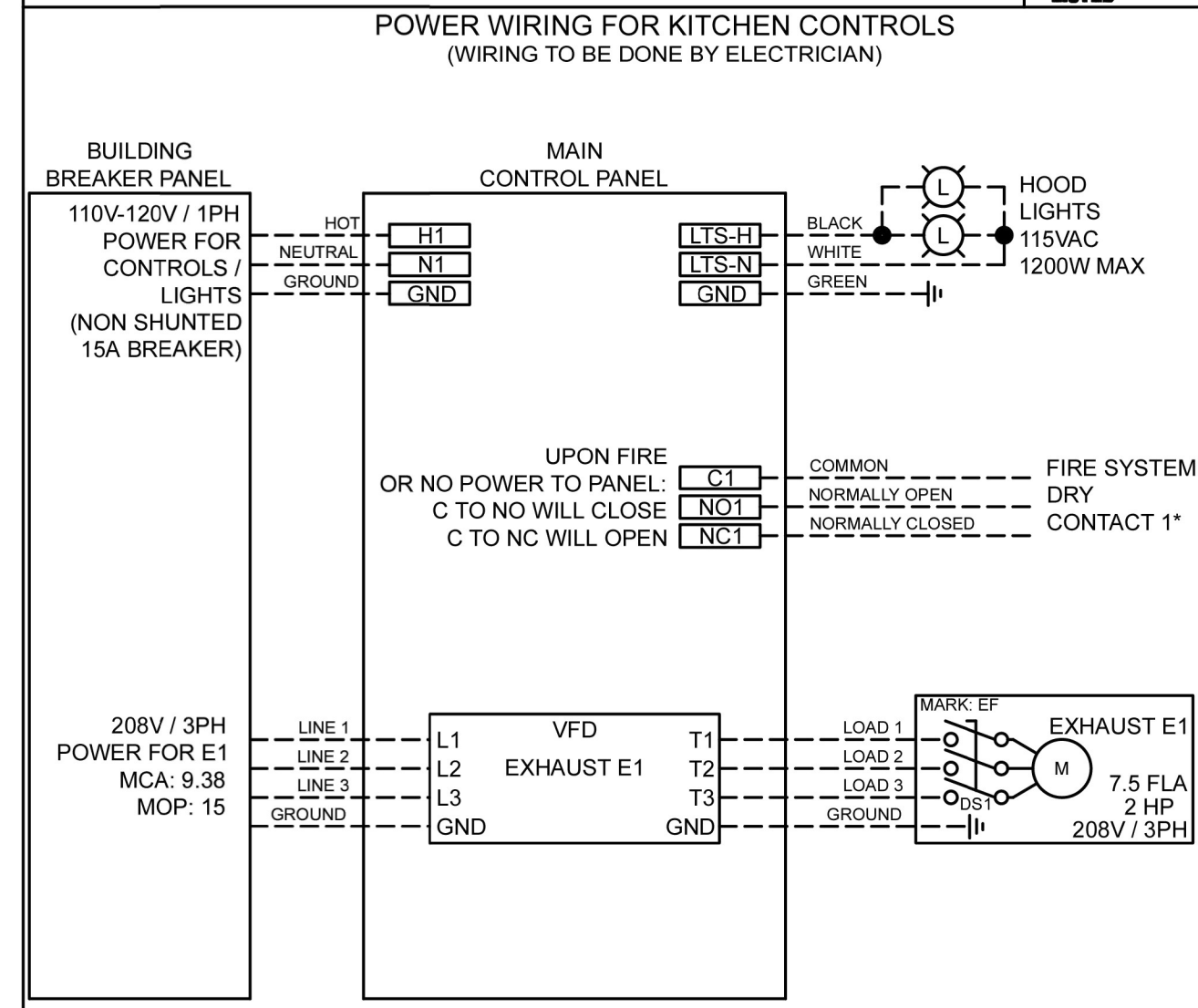
**CAUTION**  
 UNIT MUST BE GROUNDED IN ACCORDANCE WITH N.E.C. POWER MUST BE OFF WHILE SERVICING

**ATTENTION**  
 L'APPAREIL DOIT ÊTRE MIS À LA TERRE CONFORMÉMENT AU CODE C.E. L'ALIMENTATION DOIT ÊTRE COUPÉE DURANT L'ENTRETIEN.

COMMERCIAL APPLIANCE OUTLET CENTER  
 ELECTRICAL RATINGS: 110-240V, 1PHASE, 50-60HZ, 15A  
 BASE FILE #E200816, ML FILE #E313951

NE PAS RETIRER CES DESSINS DE CET ÉQUIPEMENT SAUF INDICATION CONTRAIRE. UTILISER DES CONDUCTEURS EN CUIVRE CLASSÉS 90°C. SERRER LES BORNES DE COMMANDE ET DE MISE À LA TERRE À 8 LBS-PO. SERRER LES COSSÉS VIS D'ALIMENTATION AUX COUPLES INDIGUES POUR LE COMPOSANT. SERRER LES BORNES À VIS DE LA CARTE DE COMMANDE À 3.5 LBS-PO. LA RÉSISTANCE DU CÂBLAGE DE COMMANDE LOCAL NE DOIT PAS DÉPASSER 275 OHM. POUR PLUS D'INFORMATION, CONSULTER LE MANUEL OU APPELER 1-800-371-6858

WIRING DIAGRAM CODE: WDC#  
 JOB NAME: LAYNE'S CHICKEN FINGERS LEANDER TX-R1  
 MODEL: XKC-CV-SB-11-2-1-0  
 SERIAL NUMBER: WDSN#  
 MARK: CONTROLS

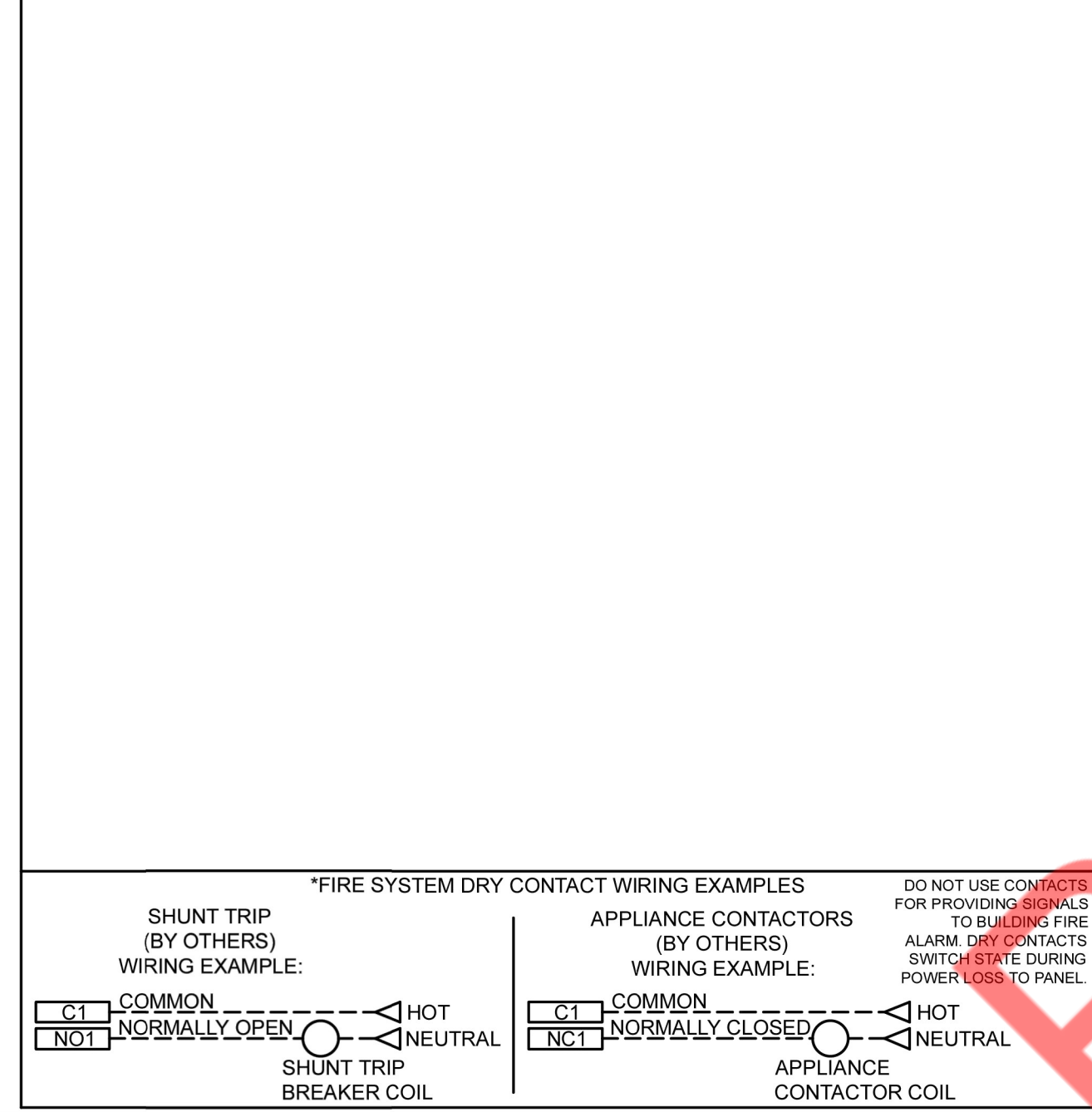


MAIN USER INTERFACE DETAILS

MOUNTING TYPE: FACTORY MOUNTED; UTILITY CABINET - RIGHT END OF HOOD

USER INTERFACE CONTROL: FANS AND LIGHTS

INTERFACE CABLE LENGTH: 7FT (FACTORY PROVIDED)



FACTORY SETTINGS

TYPE: CV  
 CONFIGURATION: STANDARD  
 ZONES: 1  
 HOODS: 2  
 EXHAUST FANS: 1  
 SUPPLY FANS: 1  
 MB ROOM SENSOR: NO  
 MB TEMP SENSORS: 2  
 HIGH TEMP FAULT: NO  
 FREEZE PROTECTION: YES  
 MB GAS RESET: NO  
 FAN PROVING: NO  
 BMS: BACNET MSTP

EXHAUST FAN SETTINGS: SEE FAN CONFIGURATION TABLE BELOW

SUPPLY FAN SETTINGS: SEE FAN CONFIGURATION TABLE BELOW

SENSOR SETTINGS: SEE HOOD CONFIGURATION TABLE BELOW

USER INTERFACE SETTINGS (IMB): FAN & LIGHT BUTTONS: SHOW BOTH (SEPARATE)

GENERAL SETTINGS: TIMEZONE: CENTRAL DAYLIGHT (DEFAULT)

MB DEFAULT SETTINGS: EVALYST DURING FIRE: MAX  
 SUPPLY DURING FIRE: OFF  
 LIGHTS DURING FIRE: OFF

ZONE SETTINGS: SEE ZONE CONFIGURATION TABLE BELOW

HOOD SETTINGS: SEE HOOD CONFIGURATION TABLE BELOW

ZONE CONFIGURATION

ZONE #	ZONE	ROOM TEMP
1	Z1	PRESET

HOOD CONFIGURATION

HOOD #	HOOD	HOOD MARK	ZONE	EXH A	EXH B	SUPPLY	MB TEMP SENSORS
1	H1	310 HOOD SECTION 1	Z1	E1	-	S1	TS1
2	H2	310 HOOD SECTION 2	Z1	E1	-	S1	TS2

FAN CONFIGURATION

FAN #	TYPE	FAN	FAN MARK	ZONE	MIN CFM	MAX CFM	MODBUS VFD	VFD ADDRESS	MIN FREQ	MAX FREQ	MIN VDC	MAX VDC
1	EXHAUST	E1	EF	Z1	-	3468	YES	1	-	55	-	-
2	SUPPLY	S1	MUA	Z1	-	2948	NO	-	-	-	-	10.0

UL NSF

PROJECT: 6/2/2025

MARK: ACCUREX SOUTH TX, LEE DOCTOROFF@ACCUREX.COM, LEE DOCTOROFF@ACCUREX.COM (612)934-0889

LAYNE'S CHICKEN FINGERS LEANDER TX-R1

CONTROLS

ACCUREX

ISSUED REVISIONS:

NO.	DATE	DESCRIPTION

Layne's Chicken Fingers  
 Mechanical Kitchen Equipment

SERVICE INFORMATION

MARK: SYSTEM VERIFICATION	MODEL: CERTIFICATION
ITEM: SERVICE	QUANTITY: 1

ACCUREX AFTERMARKET CERTIFICATION PROGRAM CONFIRMS THE EQUIPMENT IS INSTALLED AND OPERATING ACCORDING TO THE MANUFACTURER'S REQUIREMENTS BY A FACTORY AUTHORIZED SERVICER (FAS). INSTALLATION AND START-UP OF EQUIPMENT PER THE MANUFACTURER'S INSTALLATION AND OPERATIONS MANUAL TO BE PERFORMED BY OTHERS PRIOR TO THIS SERVICE. A WRITTEN REPORT WILL BE PROVIDED AFTER THIS SERVICE IS COMPLETED.

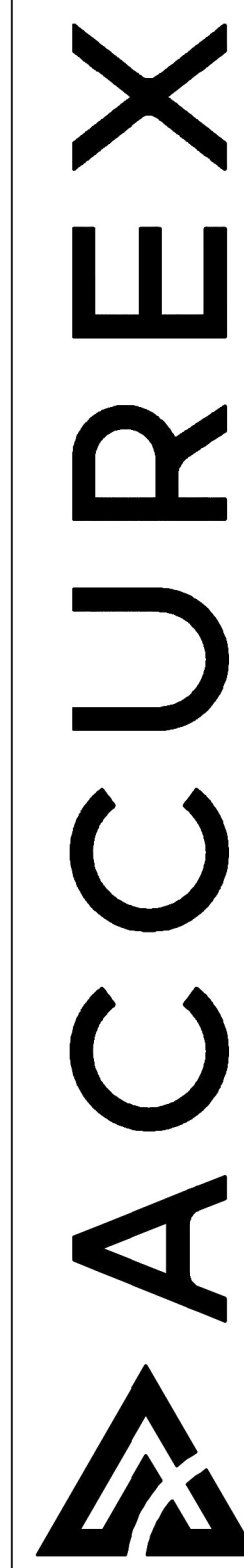
TRIP QUANTITY: 1

ONE TRIP TO THE JOBSITE INCLUDED FOR THE CERTIFICATION WORK TO BE PERFORMED (TIME ONSITE TBD BASED ON EQUIPMENT SELECTED)

EQUIPMENT INCLUDED IN CERTIFICATION:

CONTROLS  
EF  
310 HOOD  
MUA

Property of NY Engineers



ACCUREX SOUTH TX  
LEE DOCTOROFF  
LEE.DOCTOROFF@ACCUREX.COM  
(612)934-0889

PROJECT] 6/2/2025  
MARK LAYNE'S CHICKEN FINGERS  
LEANDER TX-R1  
UL NSF  
SYSTEM VERIFICATION

ISSUED REVISIONS:


Layne's Chicken Fingers  
Mechanical Kitchen Equipment

**SECTION 1 - SUPPLEMENTARY CONDITIONS FOR MECHANICAL WORK**

**1.1.1 GENERAL CONDITIONS**  
A. ALL WORK COVERED BY THIS SECTION OF THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE RESPECTIVE DRAWINGS, INFORMATION OF INSTRUCTIONS TO BIDDERS, GENERAL REQUIREMENTS AND THE SUPPLEMENTARY GENERAL CONDITIONS OF THESE SPECIFICATIONS.

B. BIDDERS SHALL DETERMINE THE CONTENTS OF A COMPLETE SET OF DRAWINGS AND SPECIFICATIONS AND BE AWARE THAT THEY MAY BE BIDDING FROM A PARTIAL SET OF DRAWINGS, APPLICABLE ONLY TO THE VARIOUS SEPARATE CONTRACT, SUBCONTRACTS OR TRADES AS MAY BE ISSUED FOR BIDDING PURPOSES ONLY. THE CONTRACT DOCUMENTS ARE THE COMBINED ARCHITECTURAL, STRUCTURAL, PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. ALL DRAWINGS AND SPECIFICATIONS ARE ON FILE IN THE ARCHITECT'S OFFICE, AND EACH BIDDER SHALL THOROUGHLY ACQUAINT HIMSELF WITH ALL OF THE DETAILS OF THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS BEFORE SUBMITTING HIS BID. ALL DRAWINGS AND SPECIFICATIONS FORM A PART OF THE CONTRACT DOCUMENTS FOR EACH SEPARATE CONTRACT. THEY SHALL BE CONSIDERED AS BOUND THEREWITH IN THE EVENT PARTIAL SETS OF PLANS AND SPECIFICATIONS SHALL BE DEEMED EVIDENCE OF THE REVIEW AND EXAMINATION OF ALL DRAWINGS, SPECIFICATIONS AND ADDENDA ISSUED FOR THIS PROJECT. NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH ANY PORTION OF THE COMPLETE SET OF DOCUMENTS.

C. ALL EQUIPMENT AND MATERIALS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

**1.1.2 SCOPE**  
A. THE WORK INCLUDED UNDER THIS SPECIFICATION CONSISTS OF THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICES, ETC. WHICH ARE APPLICABLE AND NECESSARY TO COMPLETE THE INSTALLATION OF THE SYSTEMS SPECIFIED HEREIN, AS WELL AS THE SPECIFICATIONS, AS ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, OR AS DIRECTED BY THE ARCHITECT.

B. IN GENERAL, THE VARIOUS LINES AND DUCTS TO BE INSTALLED BY THE VARIOUS TRADES UNDER THIS SPECIFICATION SHALL BE RUN AS INDICATED, AS SPECIFIED HEREIN, AS REQUIRED BY PARTICULAR CONDITIONS AT THE SITE AND AS REQUIRED TO CONFORM TO THE GENERALLY ACCEPTED STANDARDS SO AS TO COMPLETE THE WORK IN A NEAT AND SATISFACTORILY WORKABLE MANNER. RUN WORK PARALLEL OR PERPENDICULAR TO THE LINES OF THE BUILDING UNLESS OTHERWISE NOTED.  
C. THE CONSTRUCTION DETAILS FOR THE BUILDING ARE ILLUSTRATED ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. EACH CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE DETAILS BEFORE SUBMITTING HIS BID, AS NO ALLOWANCE WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH THESE DETAILS. PLACE ALL INSERTS TO ACCOMMODATE THE ULTIMATE INSTALLATION OF PIPE HANGERS IN THE FORMS BEFORE CONCRETE IS POURED. SET SLEEVES IN PLACE IN FORMS BEFORE CONCRETE IS POURED, AND IN MASONRY WALLS WHILE THEY ARE UNDER CONSTRUCTION. ALL CONCEALED LINES SHALL BE INSTALLED AS REQUIRED BY THE FACE OF THE GENERAL CONSTRUCTION TO PRECEDE THAT GENERAL CONSTRUCTION.

**1.1.3 INSPECTION OF SITE**  
A. THE CONTRACTORS SHALL VISIT THE SITE, VERIFY ALL EXISTING ITEMS SHOWN ON PLANS OR SPECIFIED HEREIN, AND FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS, HAZARDS, EXISTING GRADES, ACTUAL FORMATIONS, SOIL CONDITIONS, AND LOCAL REQUIREMENTS. THE CONTRACTOR'S UNFAMILIARITY WITH ANY OF THESE DETAILS, PLACE ALL INSERTS TO ACCOMMODATE THE ULTIMATE INSTALLATION OF PIPE HANGERS IN THE FORMS BEFORE CONCRETE IS POURED. SET SLEEVES IN PLACE IN FORMS BEFORE CONCRETE IS POURED, AND IN MASONRY WALLS WHILE THEY ARE UNDER CONSTRUCTION. ALL CONCEALED LINES SHALL BE INSTALLED AS REQUIRED BY THE FACE OF THE GENERAL CONSTRUCTION TO PRECEDE THAT GENERAL CONSTRUCTION.

**1.1.4 UTILITIES, LOCATIONS AND ELEVATIONS**  
A. LOCATIONS AND ELEVATIONS OF THE VARIOUS UTILITIES INCLUDED WITHIN THE SCOPE OF THIS WORK SHALL BE OBTAINED FROM CITY AND/OR OTHER SUBSTANTIALLY RELIABLE SOURCES AND ARE OFFERED SEPARATELY FROM THE CONTRACT DOCUMENTS, AS A GENERAL GUIDE ONLY. WITHOUT GUARANTEE AS TO ACCURACY, THE CONTRACTOR SHALL EXAMINE THE SITE, SHALL VERIFY TO THEIR OWN SATISFACTION THE LOCATIONS, ELEVATIONS AND AVAILABILITY OF ALL UTILITIES AND SERVICES REQUIRED AND ADEQUATELY INFORM THEMSELVES AS TO THEIR RELATION TO THE WORK; THE SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE THEREOF.

**1.1.5 CODE REQUIREMENTS**  
A. ALL WORK SHALL COMPLY WITH THE PROVISIONS OF THESE SPECIFICATIONS, AS ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, OR AS DIRECTED BY THE ARCHITECT, AND SHALL SATISFY ALL LOCAL ORDINANCES, OR REGULATIONS OF THE GOVERNING BODIES, AND ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK, OR SERVICES THERETO. IN ALL CASES WHERE ALTERATIONS TO, OR DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION, THE CONTRACTOR SHALL REPORT SAME IN WRITING TO THE PROJECT ARCHITECT AND OBTAIN HIS APPROVAL BEFORE PROCEEDING. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE COMPLETE UTILITY SERVICE CONNECTIONS, AS DIRECTED, AND SUBMIT, AS REQUIRED, ALL NECESSARY DRAWINGS; HE SHALL SECURE ALL PERMITS AND INSPECTIONS NECESSARY IN CONNECTION WITH HIS WORK AND PAY ALL LEGAL FEES ON ACCOUNT THEREOF. IN THE ABSENCE OF OTHER APPLICABLE LOCAL CODES ACCEPTABLE TO THE ARCHITECT, THE NATIONAL ELECTRICAL CODE AND INTERNATIONAL PLUMBING CODE SHALL APPLY TO THIS WORK.

**1.1.6 RECORDS FOR THE OWNER**  
A. THE CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE A COMPLETE, FULL-SIZE SET OF PRINTS ON WHICH HE SHALL KEEP AN ACCURATE RECORD OF THE INSTALLATION OF ALL MATERIALS AND SYSTEMS COVERED BY HIS CONTRACTUAL AGREEMENT. THE RECORD SHALL INDICATE THE LOCATION OF ALL EQUIPMENT AND THE ROUTING OF ALL SYSTEMS. ALL CONDUIT BURIED IN CONCRETE SLABS, WALLS, AND BELOW GRADE SHALL BE LOCATED BY DIMENSION UNLESS A SURFACE MOUNTED DEVICE IN EACH SPACE INDICATES THE EXACT LOCATION. HE SHALL THEN OBTAIN AT HIS EXPENSE ONE COMPLETE REPRODUCIBLE SET OF THE ORIGINAL DRAWINGS ON WHICH HE SHALL NEATLY TRANSFER HIS NOTATIONS AND DELIVER THESE DRAWINGS TO THE ENGINEER AT JOB COMPLETION BEFORE THE FINAL PAYMENT FOR DELIVERY TO THE OWNER.  
B. IN ADDITION TO THE ABOVE, THE CONTRACTOR SHALL ACCUMULATE DURING THE JOB PROGRESS THE FOLLOWING DATA IN DUPLICATE PREPARED IN A NEAT BROCHURE OR PACKET FOLDER BOUND FOR SUBMIT TO THE OWNER: THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF BINDING IN A BOOK.

1. ALL WARRANTIES, GUARANTEE, AND MANUFACTURER'S DIRECTIONS ON EQUIPMENT AND MATERIAL COVERED BY THE CONTRACT.
2. COPIES OF APPROVED SHOP DRAWINGS AND SUBMITTALS.
3. COPIES OF SEQUENCE OF OPERATIONS FOR ALL EQUIPMENT COVERED BY CONTRACT.

**1.1.7 MATERIALS AND WORKMANSHIP**  
A. ALL MATERIALS, UNLESS OTHERWISE SPECIFIED, SHALL BE NEW, FREE FROM ANY DEFECTS AND OF THE BEST QUALITY OF THEIR RESPECTIVE KINDS. ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURER, MODEL AND QUALITY, UNLESS OTHERWISE SPECIFIED.  
B. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED, ADJUSTED AND CONDITIONED AS RECOMMENDED BY THE MANUFACTURERS, OR ALL INDICATED IN THEIR PUBLISHED LITERATURE, UNLESS SPECIFICALLY HEREIN SPECIFIED TO THE CONTRARY. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT WORKMEN AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER PROTECTING A THOROUGH AND COMPLETE INSTALLATION. WORK SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION, INCLUDING THE SHIELDING OF SOFT OR FRAGILE MATERIALS AND THE TEMPORARY PLUGGING OF OPEN LINES DURING CONSTRUCTION. AT COMPLETION, THE INSTALLATION SHALL BE THOROUGHLY CLEANED, AND ALL TOOLS, EQUIPMENT, OBSTRUCTION OR DEBRIS PRESENT AS A RESULT OF THIS CONTRACT SHALL BE REMOVED FROM THE PREMISES.

**1.1.8 STORAGE AND PROTECTION**  
A. PROVIDE ADEQUATE FACILITIES FOR ITEMS FURNISHED UNDER THESE SPECIFICATIONS WHICH ARE SUBJECT TO DAMAGE IF EXPOSED TO ELEMENTS. TAKE SUCH PRECAUTIONS AS NECESSARY TO PROPERLY PROTECT APPARATUS FROM DAMAGE. FAILURE TO COMPLY WITH THESE PROVISIONS WILL BE SUFFICIENT CAUSE FOR REJECTION OF THE PARTICULAR APPARATUS INVOLVED.

**1.1.9 COOPERATION**  
A. ALL WORK UNDER THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN CONJUNCTION WITH OTHER TRADES ON THIS PROJECT IN A MANNER WHICH WILL ALLOW EACH TRADE ADEQUATE TIME AT THE PROPER STAGE OF CONSTRUCTION TO FULFILL HIS WORK.  
B. MAINTAINING CONTACT AND BEING FAMILIAR WITH THE PROGRESS OF THE GENERAL CONSTRUCTION AND THE TIMELY INSTALLATION OF SLEEVES AND INSERTS, ETC., BEFORE CONCRETE IS PLACED SHALL BE THE RESPONSIBILITY OF THIS TRADE, AS WILL THE INSTALLATION OF THE REQUIRED SYSTEMS IN THEIR SEVERAL STAGES, AT THE PROPER TIME TO EXPEDITE THIS CONTRACT AND AVOID UNNECESSARY DELAYS IN THE PROGRESS OF OTHER CONTRACTS, AND MEET ALL REQUIREMENTS OF PROGRESS SCHEDULES SET UP BY THE ARCHITECT.

C. SHOULD ANY QUESTION ARISE BETWEEN TRADES AS TO THE PLACING OF LINES, DUCTS, CONDUITS, FIXTURES OR EQUIPMENT, OR SHOULD IT APPEAR DESIRABLE TO REMOVE ANY GENERAL CONSTRUCTION WHICH WOULD AFFECT THE APPEARANCE OR STRENGTH OF THE STRUCTURE, REFERENCE SHALL BE MADE TO THE ARCHITECT FOR INSTRUCTION.

**1.1.10 SCHEDULE OF MATERIAL AND EQUIPMENT**  
A. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A COMPLETE SCHEDULE OF MATERIAL AND EQUIPMENT WHICH IS TO BE INSTALLED UNDER THE CONTRACT. THE SCHEDULE SHALL BE SUBMITTED WITHIN 30 DAYS AFTER THE AWARD OF THIS CONTRACT AND PRIOR TO THE INSTALLATION OR FABRICATION OF ANY OF THE MATERIAL INVOLVED. THE SCHEDULE SHALL INCLUDE FOR MATERIALS THE BIDDERS SHALL DETERMINE THE MANUFACTURER, TYPE AND TRADE NAME. IN ADDITION, FOR EQUIPMENT, ATTACH MANUFACTURER'S ENGINEERING DATA AND SPECIFICATION SHEET.

- 1.1.11 SHOP DRAWINGS AND SUBMITTALS:**
1. PROVIDE SUBMITTALS AND SHOP DRAWINGS (3 COPIES MINIMUM) FOR THE FOLLOWING EQUIPMENT AND LAYOUT:
    - a. DUCTWORK FABRICATION DETAILS AND LAYOUT AT 1/8" = 1'-0" SCALE.
  2. MECHANICAL EQUIPMENT CUT SHEETS INCLUDING ALL PERFORMANCE CHARACTERISTICS, ACCESSORIES, DRAWINGS, WIRING DIAGRAMS, ETC. ACCESSORIES SHALL BE CLEARLY LABELED TO SHOW WHAT IS AND IS NOT PROVIDED.
  3. PIPING DETAILS SHOWING MATERIALS USED AND JOINING/SEALING METHODS.
    - a. PIPING LAYOUT AT 1/8" = 1'-0" SCALE.
    - b. EQUIPMENT SHALL NOT BE ORDERED UNTIL APPROVED BY THE ARCHITECT AND ENGINEER OF RECORD. THE CONTRACTOR SHALL ALLOW TWO (2) WEEKS FOR DESIGN TEAM REVIEW OF SUBMITTALS.

**1.1.12 DRAWINGS AND SPECIFICATIONS**  
A. THE DRAWINGS SHOW, DIAGRAMMATICALLY, THE LOCATIONS OF THE VARIOUS LINES, DUCTS, CONDUITS, FIXTURES AND EQUIPMENT AND THE METHOD OF CONNECTING AND CONTROLLING THEM. IT IS NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL AND ALL FITTINGS REQUIRED FOR A COMPLETE SYSTEM. THE SYSTEMS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE ITEMS SHOWN ON THE DRAWINGS. ALL ASPECTS OF THESE ITEMS SHALL BE DETERMINED BY REFERENCE TO THE GENERAL PLANS AND MEASUREMENTS AT THE BUILDING AND IN COOPERATION WITH OTHER SUB-CONTRACTORS AND, IN ALL CASES, SHALL BE SUBJECT TO THE APPROVAL OF THE CONTRACTOR. THE CONTRACTOR RESERVES THE RIGHT TO MAKE ANY REASONABLE CHANGE IN THE LOCATION OF ANY PART OF THIS WORK WITHOUT ADDITIONAL COST TO THE OWNER.  
B. SHOULD ANY CHANGES BE DEEMED NECESSARY BY THE CONTRACTOR IN ITEMS SHOWN ON THE CONTRACT DRAWINGS, SHOP DRAWINGS AND DESCRIPTIONS, THE REASON FOR THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.  
C. EXCEPTIONS AND INCONSISTENCIES IN PLANS AND SPECIFICATIONS SHALL BE BROUGHT TO THE CONTRACTOR'S ATTENTION BEFORE BIDS ARE SUBMITTED. OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ANY AND ALL CHANGES AND ADDITIONS THAT MAY BE NECESSARY TO ACCOMMODATE HIS PARTICULAR APPARATUS.  
D. THE CONTRACTOR SHALL LAY OUT HIS WORK MAINTAINING ALL LINES, GRADES AND DIMENSIONS ACCORDING TO THESE DRAWINGS WITH DUE CONSIDERATION FOR OTHER TRADES AND VERIFY ALL DIMENSIONS AT THE SITE PRIOR TO ANY FABRICATION OR INSTALLATION. SHOULD THE LAYOUT BE IMPRACTICAL, THE CONTRACTOR SHALL BE NOTIFIED BEFORE ANY INSTALLATION OR FABRICATION, AND THE EXISTING CONDITIONS SHALL BE INVESTIGATED AND PROPER CHANGES EFFECTED WITHOUT ANY ADDITIONAL COST.

E. EACH TRADE'S WORK AND PARAGRAPHS IN THESE SPECIFICATIONS ARE INTRODUCED MERELY FOR CONVENIENCE AND ARE NOT TO BE CONSTRUED AS A CORRECT OR COMPLETE SEGREGATION TO TABULATION OF THE VARIOUS UNITS OF MATERIAL AND/OR WORK. THE ARCHITECT DOES NOT ASSUME ANY RESPONSIBILITY, EITHER DIRECT OR IMPLIED, FOR OMISSIONS OR DUPLICATIONS BY THE CONTRACTOR OR ANY SUB-CONTRACTOR DUE TO REAL OR ALLEGED ERROR IN THE ARRANGEMENT OF MATERIAL LISTED IN THE CONTRACT DOCUMENTS.

**1.1.13 ARCHITECT'S APPROVAL**  
A. IN ANY STATEMENT UNDER THIS CONTRACT WHERE "APPROVAL" IS REQUIRED OR REQUESTED, IT IS UNDERSTOOD THAT SUCH APPROVAL MUST BE OBTAINED FROM THE ARCHITECT IN WRITING BEFORE PROCEEDING WITH THE PROPOSAL, AND AN APPROVED NUMBER OF COPIES OF ANY SUCH PROPOSAL SHALL BE SUBMITTED TO THE ARCHITECT.  
B. THE APPROVAL BY THE ARCHITECT OF ANY MATERIALS, CHANGES, DRAWINGS, ETC., SUBMITTED BY THE CONTRACTOR WILL BE CONSIDERED AS GENERAL ONLY AND TO AID THE CONTRACTOR IN EXPEDITING HIS WORK. SUCH APPROVAL AS MAY BE GIVEN DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM THE NECESSITY OF COMPLYING WITH THE DRAWINGS AND PERFORMING ALL WORK AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS.

**1.1.14 LOCAL RESTRICTIONS**  
A. THE CONTRACTOR SHALL BECOME FAMILIAR WITH ALL RULES AND REGULATIONS OF THE CITY, COUNTY AND STATE, OR ANY OTHER AUTHORITY HAVING JURISDICTION REPORT SAME IN WRITING TO THE PROJECT ARCHITECT AND OBTAIN HIS APPROVAL BEFORE PROCEEDING. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE COMPLETE UTILITY SERVICE CONNECTIONS, AS DIRECTED, AND SUBMIT, AS REQUIRED, ALL NECESSARY DRAWINGS; HE SHALL SECURE ALL PERMITS AND INSPECTIONS NECESSARY IN CONNECTION WITH HIS WORK AND PAY ALL LEGAL FEES ON ACCOUNT THEREOF. IN THE ABSENCE OF OTHER APPLICABLE LOCAL CODES ACCEPTABLE TO THE ARCHITECT, THE NATIONAL ELECTRICAL CODE AND INTERNATIONAL PLUMBING CODE SHALL APPLY TO THIS WORK.

**1.1.15 ELECTRICAL WIRING**  
A. EXCEPT FOR SUCH ITEMS AS ARE NORMALLY WIRED UP AT THEIR POINT OF MANUFACTURE AND SO DELIVERED, AND UNLESS SPECIFICALLY NOTED TO THE CONTRARY, THE ELECTRICAL SUBCONTRACTOR WILL DO ALL ELECTRICAL WIRING OF EVERY CHARACTER FOR POWER SUPPLY. THE MECHANICAL SUBCONTRACTOR SHALL ERECT ALL MOTORS IN PLACE READY FOR CONNECTIONS AND SHALL FURNISH WITH EACH SUCH MOTOR A STARTER OF THE TYPE SPECIFIED AND DELIVER IT IN GOOD CONDITION TO THE ELECTRICAL SUBCONTRACTOR AT THE JOB. THE ELECTRICAL SUBCONTRACTOR WILL MOUNT ALL SUCH STARTERS, AS DIRECTED, FURNISHING SUPPORTING STRUCTURES WHERE NECESSARY. THE OWNER AND OTHER SUBCONTRACTORS SHALL FURNISH WITH EACH ITEM REQUIRED ELECTRICAL CONNECTIONS, THE NECESSARY INSTRUCTIONS AND WIRING DIAGRAMS TO THE ELECTRICAL SUBCONTRACTOR. THE ELECTRICAL SUBCONTRACTOR SHALL REFER TO THE SPECIFICATIONS TO DETERMINE THE SCOPE OF THE WORK.  
B. ALL LARGE APPARATUS AND EQUIPMENT WHICH IS SPECIFIED OR SHOWN TO BE FURNISHED OR INSTALLED UNDER THIS CONTRACT, AND WHICH MAY BE TOO LARGE TO BE MOVED INTO ITS FINAL POSITION THROUGH THE NORMAL BUILDING OPENINGS PLANNED, SHALL BE PLACED BY THIS SUBCONTRACTOR IN ITS APPROXIMATE FINAL POSITION. THIS SHALL BE ACCOMPLISHED THROUGH COOPERATION AND COORDINATION WITH OTHER SUBCONTRACTORS BEFORE ANY OBSTRUCTING STRUCTURE IS INSTALLED. ALL APPARATUS SHALL BE CRIBBED UP FROM THE FLOOR BY THIS SUBCONTRACTOR AND CARED FOR AS SPECIFIED UNDER "STORAGE AND PROTECTION" OR AS DIRECTED BY THE ARCHITECT.

**1.1.17 RESPONSIBILITY**  
A. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE SATISFACTORY AND COMPLETE EXECUTION OF ALL WORK INCLUDED. HE SHALL PRODUCE COMPLETE FINISHED OPERATING SYSTEMS AND PROVIDE ALL INCIDENTAL ITEMS REQUIRED AS PART OF HIS WORK, REGARDLESS OF WHETHER SUCH ITEM IS PARTICULARLY SPECIFIED OR INDICATED.  
**1.1.18 CLEAN UP**  
A. CLEAN UP TRASH AND DEBRIS CAUSED BY THE WORK OF THIS SECTION, KEEPING PREMISES, STREETS, SIDEWALKS AND ADJACENT AREAS CLEAN AND NEAT AT ALL TIMES. B. DISPOSE OF SUCH MATERIALS OUTSIDE THE LIMITS OF THE PROJECT SITE TO APPROVED LOCATIONS.

**1.1.19 PAINTING**  
A. UPON COMPLETION, CLEAN ALL PIPES AND EQUIPMENT BEFORE PAINTING. PAINTING OF MECHANICAL EQUIPMENT AND PIPING IS SPECIFIED IN ARCHITECTURAL PAINTING SECTION.  
**1.1.20 ACCESS DOORS**  
A. ACCESS DOORS ARE TO BE PROVIDED BY THE CONTRACTOR. CONTRACTOR WILL CLOSELY COORDINATE LOCATIONS OF VALVES, ETC. IN ORDER TO HAVE ACCESS TO ALL CONCEALED PORTIONS OF THE SYSTEM REQUIRING PERIODIC SERVICE. PREPARE SHOP DRAWINGS FOR COORDINATION OF ALL ACCESS DOORS. LOCATING SAME FOR INSTALLATION BY GENERAL CONTRACTOR. ACCESS DOOR LOCATIONS SHALL BE APPROVED BY ARCHITECT OR OWNER BEFORE INSTALLATION.

**1.1.21 EXCAVATION AND BACKFILLING**  
A. PROVIDE NECESSARY EXCAVATING AND BACKFILLING FOR THE INSTALLATION OF WORK SPECIFIED IN THIS DIVISION. TRENCHES FOR UNDERGROUND PIPING AND CONDUIT SHALL BE EXCAVATED TO REQUIRED DEPTHS WITH BELL HOLES PROVIDED AS NECESSARY TO INSURE UNIFORM BEARING. ARE SHOULD BE TAKEN NOT TO EXCAVATE BELOW DEPTH, AND ANY EXCAVATION BELOW DEPTH SHALL BE REFILLED WITH SAND OR GRAVEL FIRMLY COMPACTED. WHERE ROCK OR HARD OBJECTS ARE ENCOUNTERED, THEY SHALL BE EXCAVATED TO A GRADE SIX INCHES (6") BELOW THE LOWERMOST PART OF THE PIPE AND REFILLED TO THE PIPE GRADE AS SPECIFIED. AFTER THE PIPE HAS BEEN INSTALLED, TESTED AND APPROVED, THE TRENCHES SHALL BE BACKFILLED IN GRADE WITH APPROVED MATERIAL, WELL TAMPED OR Puddled COMPACTLY IN PLACE. DO NOT PROCEED WITH BACKFILL OPERATIONS UNTIL THE ARCHITECT OR CONTRACTOR HAS INSPECTED PIPING. ALL PIPING OUTSIDE THE BUILDING SHALL BE INSTALLED BELOW THE FROST LINE, WHERE STREETS, SIDEWALKS, ETC. ARE DISTURBED, CUT OR DAMAGED BY THIS WORK, THE EXPENSE OF REPAIRING SAME IN A MANNER APPROVED BY THE ARCHITECT SHALL BE A PART OF THIS CONTRACT.

**1.1.22 SLEEVES AND ESCUTCHEONS**  
A. ALL PIPING OTHER THAN SANITARY SEWER LINES AND PVC OR POLYBUTYLENE PASSING THROUGH CONCRETE FLOOR SLABS SHALL BE COMPLETELY ISOLATED IN 1/2" THICK FLEXIBLE FOAM PLASTIC INSULATION FROM 6" BELOW THE SLAB TO 2" ABOVE THE SLAB. IF PIPES PASS THROUGH GRADE BEAMS, THE INSULATION THICKNESS SHALL BE 3/8"; SANITARY SEWER LINES PASSING GRADE BEAMS SHALL BE WRAPPED WITH TWO (2) PLY OF 15#0 FELT TO ISOLATE THE PIPE FROM THE CONCRETE.  
B. ESCUTCHEONS EXCEPT AS SPECIFICALLY NOTED OR SPECIFIED SHALL BE CAST ON ALL PIPES PASSING EXPOSED THROUGH THE FLOORS, WALLS OR CEILING. ESCUTCHEONS SHALL BE CHROME PLATED SECTIONAL FLOOR AND CEILING PLATES AND SHALL FIT SNUGLY AND NEATLY AROUND PIPE OR PIPE INSULATION OR INSTALLED LINES. SOLID CHROME PLATES WITH SETSCREWS SHALL BE USED IF SECTIONAL PLATES DO NOT FIT PROPERLY OR STAY IN PLACE.

**1.1.23 FLASHINGS**  
A. FLASH AROUND ALL PIPES PASSING THROUGH THE ROOF IN CONNECTION WITH THIS CONTRACT WITH STANDARD MANUFACTURED FLASHINGS. FLASHINGS SHALL BE SHEET METAL WITH RUBBER GASKETS. FLASHINGS SHALL EXTEND INTO ROOFING AND UP PIPE DISTANCES IN ACCORDANCE WITH THE LOCAL CODE.  
**1.1.24 EXPANSION OF PIPING**  
A. THIS SUBCONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES REQUIRED TO PERMIT THE EXPANSION AND CONTRACTION OF ALL PIPE WORK INSTALLED PARTICULARLY IN WATER SUPPLY AND CIRCULATING SYSTEMS. IN THE MAIN WATER AND CIRCULATING LINES, HE SHALL EMPLOY EXPANSION JOINTS AS REQUIRED OR WHERE DIRECTED.

B. SHOULD THE INSTALLATION OF MECHANICAL EXPANSION JOINTS BECOME NECESSARY IN THE OPINION OF THE ARCHITECT, JOINTS 1-1/2" AND SMALLER SHALL BE FULTON SYPHON NO. 111 PACKLESS EXPANSION JOINTS. JOINTS ON 2" AND LARGER LINES SHALL BE ADSCO, FLEXONES OR TUBE TURN, BELLOW TYPES. EXPANSION JOINTS WITH THE PROPER NUMBER OF BELLOWS SECTIONS OF STAINLESS STEEL.  
C. ANCHOR ALL LINES HAVING EXPANSION JOINTS SO THAT EXPANSION AND CONTRACTION EFFECT IS EQUALLY DISTRIBUTED. VERIFY EXACT LOCATIONS OF ANCHORS WITH THE ARCHITECT PRIOR TO MAKING INSTALLATION. THE LINES HAVING EXPANSION JOINTS SHALL BE ACCURATELY GUIDED ON BOTH SIDES OF EACH JOINT. THESE GUIDES SHALL CONSIST OF SADDLES AND "C" CLAMPS PROPERLY ARRANGED AND SUPPORTED. SUBMIT COMPLETE DETAILS FOR APPROVAL.  
**1.1.25 FLAME SPREAD PROPERTIES OF MATERIALS**  
A. ALL MATERIALS AND ADHESIVES USED FOR ACOUSTICAL LININGS AND INSULATION, JACKETS, TAPES, ETC. SHALL CONFORM TO INTERIM FEDERAL STANDARD FLAME-SPREAD PROPERTIES OF MATERIALS, INC. FED. STD. NO. 80338A (MCM, NBS). THE CLASSIFICATION SHALL NOT EXCEED NO. 2, WITH THE RANGE OF INDICES BETWEEN 0 AND 25 FOR THESE CLASSIFICATIONS AS LISTED IN THE FEDERAL SPECIFICATIONS FOR THE BASIC MATERIALS, THE FINISHES, ADHESIVES, ETC. SPECIFIED FOR EACH SYSTEM, AND SHALL BE SUCH THAT WHEN COMPLETELY ASSEMBLED THE TOTAL WILL NOT EXCEED AN INDEX OF 50 IN CLASSIFICATION 111 AS LISTED IN THE FEDERAL SPECIFICATIONS. MODIFICATIONS SHALL BE MADE TO INSULATING MATERIALS, ETC. AS REQUIRED TO COMPLY WITH THE FEDERAL SPECIFICATIONS.

**1.1.26 GUARANTEE**  
A. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE IN TRIPPLICATE, WARRANTING ALL MATERIALS, EQUIPMENT AND LABOR FURNISHED BY HIM TO BE FREE OF ALL DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. HE SHALL FURTHER GUARANTEE THAT ALL EQUIPMENT SHALL MEET THE CHARACTERISTICS, CAPACITIES AND WORKMANSHIP SPECIFIED AND WITHIN THE WARRANTY PERIOD, THE DEFECTS AND/OR EQUIPMENT WILL BE REPAIRED OR MADE GOOD WITHOUT COST TO THE OWNER. THE CONTRACTOR FURTHER AGREES TO CORRECT WARRANTY DEFICIENCIES WITHIN 48 HOURS OF NOTIFICATION BY MANAGEMENT.  
B. REFERENCE DOCUMENTS: CONDITIONS OF THE CONTRACT AND DIVISION 01 "GENERAL REQUIREMENTS" ARE MADE A PART OF THIS SECTION WHETHER ATTACHED HERETO OR NOT.

**SECTION 4 - HEATING, VENTILATION AND AIR-CONDITIONING SYSTEMS**  
**4.1.1 SCOPE**  
A. PROVIDE COMPLETE AIR SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST SYSTEMS INCLUDING FANS, TERMINAL DEVICES AND OTHER COMPONENTS SPECIFIED HEREIN.  
**4.1.2 SUBMITTALS**  
A. SHOP DRAWINGS: SUBMIT COMPLETE SHOP DRAWINGS, IN ACCORDANCE WITH SECTION 1, INDICATING MATERIALS, QUANTITIES, SIZES AND INSTALLATION DETAILS.  
**4.1.3 COORDINATION**  
A. INSTALL MATERIALS AND EQUIPMENT AT PROPER TIME TO KEEP PACE WITH THE GENERAL CONSTRUCTION AND THE WORK OF THE OTHER TRADES INVOLVED.  
**4.1.4 WARRANTY**  
A. THE MECHANICAL SUB-CONTRACTOR SHALL WARRANTY ALL MATERIAL, WORKMANSHIP AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE BY THE OWNER. THE WARRANTY SPECIFICALLY IMPLIES THAT ANY DEFECTIVE PORTION BECOMING APPARENT DURING THIS PERIOD WILL BE REPAIRED, REPLACED OR OTHERWISE MADE GOOD AT NO ADDITIONAL COST TO THE OWNER. IT SHALL FURTHER INCLUDE REPLACEMENT OR REFRIGERANT LOSS NOT DUE TO OWNER NEGLIGENCE. COMPRESSORS SHALL CONTAIN AN ADDITIONAL FOUR-YEAR WARRANTY.

**4.2.1 DUCTWORK**  
A. RIGID DUCTWORK: ALL AIR CONDITIONING AND EXHAUST DUCTWORK, PLENUM, CASINGS AND SHEET METAL, CONNECTIONS SHALL BE FABRICATED OF NEW JOINT-FORMING QUALITY GALVANIZED PRIME GRADE SHEETS.  
B. RECTANGULAR LOW PRESSURE DUCTS: CONSTRUCTED OF THE FOLLOWING MINIMUM GAUGES:  
LARGEST DIMENSION OF DUCT GAUGE OF METAL  
UP TO 12" NO. 26 U.S. GAUGE  
13" TO 30" NO. 24 U.S. GAUGE  
31" TO 54" NO. 22 U.S. GAUGE  
C. ROUND LOW PRESSURE DUCTS: "SNAP-LOCK" AS MANUFACTURED BY UNITED SHEET METAL COMPANY.  
D. RECTANGULAR DUCTWORK FITTINGS: FABRICATED PER SMACNA STANDARDS FOR LOW-PRESSURE DUCTWORK(2-INCH PRESSURE CLASS).  
E. ROUND DUCTWORK FITTINGS: AS MANUFACTURED BY UNITED SHEET METAL CO., AND/OR AS DETAILED ON THE DRAWINGS.  
F. FLEXIBLE CONNECTIONS: CONNECTIONS TO AIR CONDITIONING UNITS AND FANS SHALL BE FLEXIBLE CONNECTIONS WHICH SHALL BE NEOPRENE COATED GLASS FABRIC WEIGHING NOT LESS THAN 30 OUNCES PER SQUARE YARD AND AT LEAST 1/16" THICK.  
G. AT THE CONTRACTOR'S OPTION, 2" INSULATED FLEXIBLE DUCT MAY BE USED FOR FINAL RUN OUT TO AIR DEVICES WHEN INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. FLEXIBLE RUN OUTS SHALL NOT EXCEED 5-FEET EXTENDED LENGTH.  
H. SURFACE-BURNING CHARACTERISTICS FOR SEALANTS AND GASKETS SHALL BE A MAXIMUM FLAME-SPREAD INDEX OF 25 AND A MAXIMUM SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO UL 723; CERTIFIED BY AN NRTL.

I. ACCESS DOORS SHALL BE PROVIDED FOR ACCESS TO ALL DAMPERS, FUSIBLE LINKS, AND WHERE REQUIRED FOR MAINTENANCE AND CLEANING OPERATIONS. ACCESS DOORS SERVING INSULATED DUCTS SHALL BE DOUBLE-SKIN DOORS WITH ONE INCH OF INSULATION ON THE DOOR. WHERE DOOR SIZE PERMITS, THE ACCESS DOORS SHALL BE 18-INCHES BY 19-INCHES. ACCESS DOORS SHALL BE AS MANUFACTURED BY MILCOR.  
**4.3.1 INSULATION**  
A. ALL RECTANGULAR SHEET METAL DUCTS SHALL BE INSULATED WITH 1.5-INCH" THICK, 3/4" LB DENSITY FIBERGLASS-FACED INSULATION, OR AS REQUIRED TO MEET A MINIMUM INSTALLED R-VALUE OF 12. INSTALL WITH ALL JOINTS OVERLAPPED AND NEATLY SEALED.  
B. ALL ROUND SHEET METAL DUCTS SHALL BE INSULATED WITH 2" THICK, 3/4" LB DENSITY FIBERGLASS-FACED INSULATION, OR AS REQUIRED TO MEET A MINIMUM INSTALLED R-VALUE OF 12. INSTALL WITH ALL JOINTS OVERLAPPED AND NEATLY SEALED WITH UL 181 LISTED SEALANT.  
C. INSULATE REFRIGERANT PIPING WITH 3/8" THICK ARMAFLEX. APPLY INSULATION WITH ALL JOINTS FIRMLY BUTTED TOGETHER.

**4.4.1 FILTERS**  
A. FILTERS SHALL BE 1" THROW AWAY TYPE AND SHALL BE FARR 30-30 FILTER OR EQUAL TYPES BY CAMBRIDGE OR MICROTRON. MAXIMUM VELOCITY THROUGH FILTER MEDIA SHALL BE 500 FPM.  
**4.5.1 AIR DISTRIBUTION DEVICES**  
A. AIR DISTRIBUTION DEVICES SHALL BE FURNISHED WITH FRAME STYLES, DEFLECTING DEVICE, DAMPERS AND OTHER ACCESSORIES AS SHOWN ON THE SCHEDULE, AS MANUFACTURED BY TITUS OR APPROVED EQUAL BY METAL-AIRE, PRICE, OR KROEGER.  
B. FAN LOUVERS SHALL BE RECESSED FRAME DOUBLE WEATHER STOP WITH BIRD SCREEN, PROVIDE RUSKIN MODEL L545 OR APPROVED EQUAL BY GREENHECK OR SEMCO.  
C. FURNISH AND INSTALL SCREENS ON ALL DUCT, FAN OR OTHER MECHANICAL OPENINGS OR EQUIPMENT FURNISHED BY THIS CONTRACTOR, WHICH LEAD TO OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, ONE-HALF INCH MESH IN REMOVABLE GALVANIZED FRAMES.

**4.6.6 SYSTEM CHARGING AND STARTUP**  
A. SUPPLY THE INITIAL CHARGE OF REFRIGERANT AS REQUIRED TO COMPLETELY CHARGE THE SYSTEM. ANY LOSS OF REFRIGERANT OR OIL DURING TESTING PERIOD OR INITIAL RUNS SHALL BE REPLACED BY THE MECHANICAL SUB-CONTRACTOR AT HIS COST.  
B. THE SYSTEMS SHALL BE CHARGED ONLY AFTER THEY HAVE BEEN TESTED AND RENDERED FREE OF LEAKS AND THOROUGHLY EVACUATED USING A VACUUM PUMP AND A RELIABLE VACUUM DEHYDRATION INDICATOR, FOLLOWING STANDARD RECOMMENDED PROCEDURES.  
C. MECHANICAL SUB-CONTRACTOR SHALL OPERATE ALL SYSTEMS UNTIL THE SATISFACTORY PERFORMANCE OF SPECIFICATION REQUIREMENTS IS DEMONSTRATED TO THE COMPLETE SATISFACTION OF THE CONTRACTOR. PRIOR TO AND DURING OPERATION, ALL CONTROLS AND OTHER APPURTENANCES AND DEVICES SHALL BE ADJUSTED AND CALIBRATED. TEST ALL SAFETY DEVICES AND MAKE READY FOR AUTOMATIC OPERATION. ALL SYSTEMS SHALL BE CALIBRATED, AND ALL FANS AND OTHER ROTATING PARTS SHALL BE PROPERLY LUBRICATED AND CHECKED FOR CORRECT ALIGNMENT.  
D. THE MECHANICAL SUB-CONTRACTOR, DURING OPERATION AND BALANCING PERIODS, SHALL INSTRUCT THE CONTRACTOR'S AND OWNER'S PERSONNEL IN THE OPERATION AND CONTROL OF THE SYSTEMS AND MAINTENANCE SCHEDULE.

**SECTION 5 - SYSTEM BALANCING**  
**5.1.1 SCOPE**  
A. TESTING, ADJUSTMENT AND START-UP OF MECHANICAL SYSTEMS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE AMERICAN AIR BALANCE COUNCIL OR SIMILAR ORGANIZATION. TESTING, ADJUSTING AND BALANCING SHALL BE PERFORMED BY AN INDEPENDENT 3RD PARTY CONTRACTOR. ALL NECESSARY TEST EQUIPMENT, INSTRUMENTS, MATERIALS AND LABOR REQUIRED FOR PERFORMING ALL THE TESTS DESCRIBED SHALL BE PROVIDED AS PART OF THE WORK OF THIS DIVISION.  
B. UPON COMPLETION OF THE INSTALLATION AND START-UP OF THE MECHANICAL EQUIPMENT, CHECK, ADJUST AND BALANCE SYSTEMIC COMPONENTS TO OBTAIN OPTIMUM CONDITIONS IN EACH CONDITIONED SPACE IN THE BUILDING.  
C. PRIOR TO REQUESTING A FINAL INSPECTION, THIS SUB-CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ARCHITECT/ENGINEER OF RECORD COMPLETE REPORTS ON THE BALANCE AND OPERATIONS OF THE SYSTEM, BEARING THE SEAL OF A CERTIFIED AIR BALANCE TECHNICIAN. IN THIS REPORT, THE ORIGINAL CONDITIONS MEASURED AT STARTUP AND FINAL CONDITIONS AFTER BALANCING OF ALL EQUIPMENT SHALL BE CLEARLY INDICATED.  
D. MAKE AN INSPECTION IN THE BUILDING DURING THE OPPOSITE SEASON FROM THAT IN WHICH THE INITIAL ADJUSTMENTS WERE MADE AND, AT THE TIME, MAKE ANY NECESSARY MODIFICATIONS TO THE INITIAL ADJUSTMENTS REQUIRED TO PRODUCE OPTIMUM OPERATION OF THE SYSTEMIC COMPONENTS TO PRODUCE THE PROPERTY CONDITIONS IN EACH CONDITIONED SPACE.

**5.1.2 WORK INCLUDED**  
A. THE BALANCING TECHNICIAN SHALL BE RESPONSIBLE FOR INSPECTING, ADJUSTING, BALANCING AND LOGGING THE DATA ON THE PERFORMANCE OF FANS, ALL DAMPERS IN THE DUCT SYSTEMS AND ALL AIR DISTRIBUTION DEVICES. THE MECHANICAL CONTRACTOR AND THE SUPPLIERS OF THE EQUIPMENT INSTALLED SHALL ALL COOPERATE WITH THE BALANCING TECHNICIAN TO PROVIDE ALL NECESSARY DATA ON THE DESIGN AND PROPER APPLICATION OF THE SYSTEMATIC COMPONENTS AND SHALL FURNISH ALL LABOR AND MATERIALS REQUIRED TO ELIMINATE ANY DEFICIENCIES OR IMPROPER-PERFORMANCE.  
B. DURING THE BALANCING, THE TEMPERATURE REGULATION SHALL BE ADJUSTED FOR PROPER RELATIONSHIP BETWEEN CONTROLLING INSTRUMENTS AND CALIBRATED BY THE TEMPERATURE CONTROLS SUB-CONTRACTOR USING DATA SUBMITTED BY THE BALANCING TECHNICIAN. THE TOTAL VARIATION SHALL NOT EXCEED 3 DEGREES FROM THE PRESENT MEDIAN TEMPERATURE DURING THE ENTIRE TEMPERATURE SURVEY PERIOD.  
C. IN ALL FAN SYSTEMS, BALANCE THE AIR QUANTITIES TO BE BETWEEN PLUS 10- TO MINUS 5-PERCENT OF THE VALUES SHOWN ON THE PLANS. IT SHALL BE THE OBLIGATION OF THE MECHANICAL CONTRACTOR TO FURNISH OR REVISE FAN DRIVES AND/OR MOTORS, IF NECESSARY, WITHOUT COST TO THE CONTRACTOR, TO ATTAIN THE SPECIFIED AIR VOLUME.

**5.1.3 REPORT**  
A. BEFORE FINAL ACCEPTANCE IS MADE, THE BALANCING TECHNICIAN SHALL PREPARE A DETAILED, WRITTEN REPORT.  
B. THE DATA SHALL BE NEATLY ENTERED ON APPROPRIATE FORMS TOGETHER WITH ANY TYPED SUPPLEMENTS REQUIRED TO COMPLETELY DOCUMENT ALL RESULTS.  
C. WRITTEN EXPLANATIONS OF ANY ABNORMAL CONDITIONS SHALL BE INCLUDED. ALL THIS SHALL BE ASSEMBLED INTO A SUITABLE BROCHURE, AND A TOTAL OF FOUR COPIES SHALL BE PROVIDED.  
D. THE TYPED TEST DATA SHEETS AND CORRELATION OF THE TEST RESULTS SHALL BE CERTIFIED TO BE TRUE AND CORRECT BY A CERTIFIED AIR BALANCE TECHNICIAN UNDER THE SIGNATURE OF THE SUBCONTRACTOR. SUCH SIGNATURE SHALL BE EXECUTED BY AN OFFICER IF THE SUBCONTRACTING FIRM IS A CORPORATION, A PARTNER IF A PARTNERSHIP, OR BY THE OWNER IF A SOLE OWNERSHIP. THIS DATA SHALL BE DELIVERED TO DESIGNATED MEMBERS OF THE BUILDING OPERATING PERSONNEL NOT LESS THAN THREE DAYS AFTER THE TESTS ARE COMPLETE. SETTINGS, READING, ETC. SHALL BE PREPARED AND SUBMITTED IN QUADRUPPLICATE.  
**5.1.4 INSTRUCTIONS**  
A. DURING THE TEST PERIODS, THE BALANCING TECHNICIAN SHALL INSTRUCT THE BUILDING MAINTENANCE PERSONNEL IN THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT.

ISSUED REVISIONS:

**KITCHEN EXHAUST NOTES**

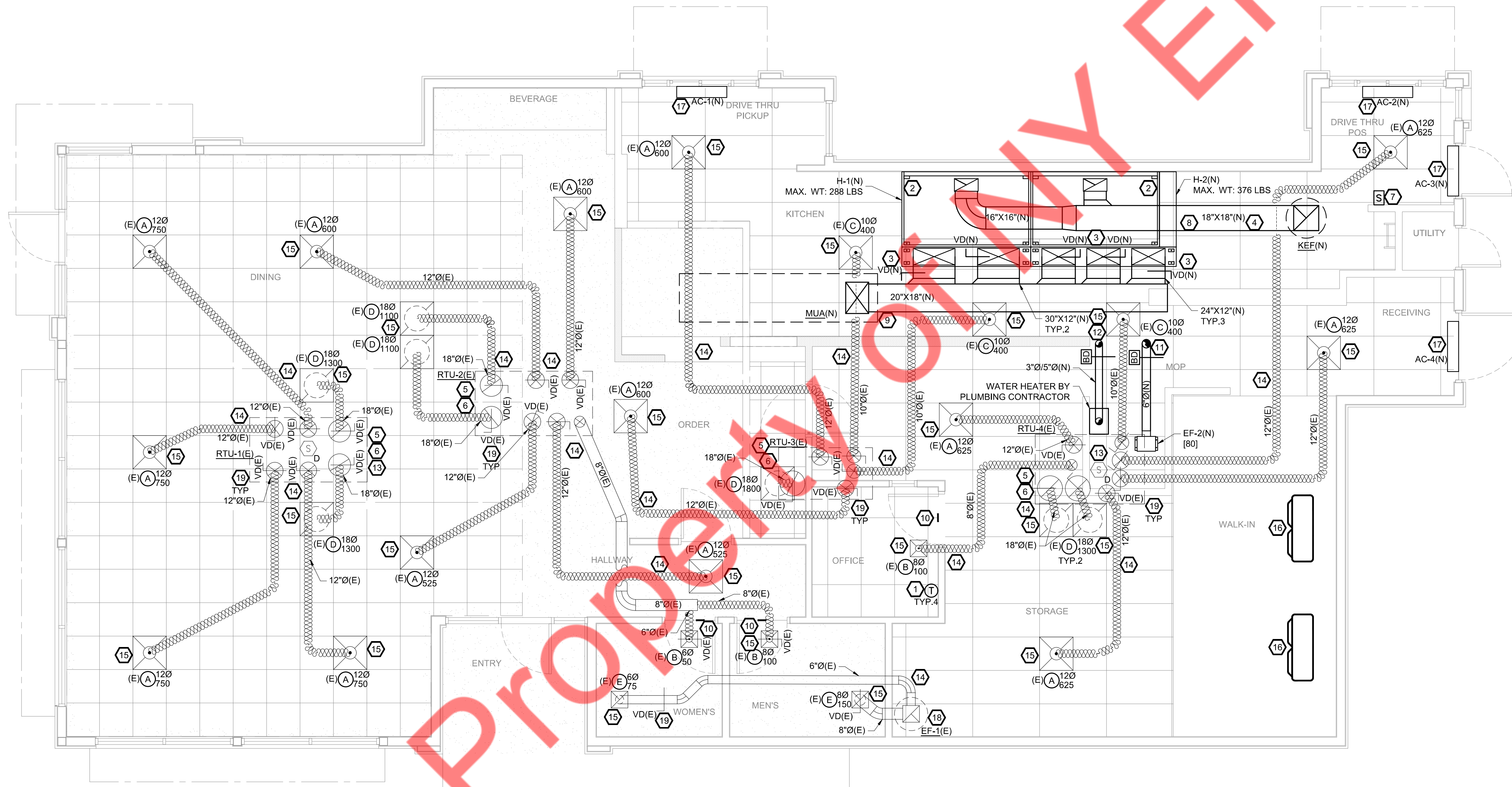
1. ALL TYPE I GREASE DUCT SHALL BE WRAPPED WITH TWO LAYERS OF 3M™ FIRE BARRIER DUCT WRAP 615+ DUCT ENCLOSURE SYSTEM PROVIDING 2-HOUR FIRE RESISTANT PROTECTION. WRAP SHALL CONSIST OF 3" PERIMETER AND LONGITUDINAL OVERLAPS WITH ZERO CLEARANCE TO COMBUSTIBLES. DUCT WRAP SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 96 AND ICC-ES EVALUATION REPORT NO. ESR-1255. DUCT WRAP IS UL LISTED. DUCT WRAP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. MATERIAL - STEEL NOT LESS THAN 0.0575 INCH (NO. 16 GAGE) IN THICKNESS, WITH JOINTS AND SEAMS MADE WITH A CONTINUOUS LIQUID-TIGHT WELD MADE ON THE EXTERNAL SURFACE OF THE DUCT SYSTEM.
3. ALL TURNS IN KITCHEN EXHAUST DUCT SHALL BE ACHIEVED WITH THE USE OF A 1.5 RADIUS/WIDTH SMOOTH RADIUS ELBOW, REFERENCE DETAILS.
4. HORIZONTAL DUCT SERVING TYPE I HOODS SHALL BE SLOPED NOT LESS THAN 2% TOWARD HOOD.
5. A PERFORMANCE TEST SHALL BE CONDUCTED UPON COMPLETION AND BEFORE FINAL APPROVAL OF THE INSTALLATION OF A VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES. THE TEST SHALL VERIFY THE RATE OF EXHAUST AIRFLOW, MAKEUP AIRFLOW, AND PROPER OPERATION AS SPECIFIED IN THE MECHANICAL CODE (INCLUDING CAPTURE AND CONTAINMENT TEST). THE PERMIT HOLDER SHALL FURNISH THE NECESSARY TEST EQUIPMENT AND DEVICES REQUIRED TO PERFORM THE TESTS. COORDINATE ALL TESTS WITH AHJ INCLUDING FINAL REPORT/SUBMITTAL AND WITNESS REQUIREMENTS.
6. SLOPE ALL HORIZONTAL GREASE DUCT 1" PER FOOT WHERE SPACE ALLOWS, BUT NOT LESS THAN 1/4" PER FOOT AS REQUIRED BY AHJ.
7. CONTRACTOR TO PROVIDE AND INSTALL ALL CODE REQUIRED FIRE RATED ACCESS DOORS IN GREASE DUCTS AT ALL LOCATIONS REQUIRED BY CODE AND LOCAL AUTHORITY HAVING JURISDICTION.
8. PROVIDE CLEANOUTS IN ALL KITCHEN EXHAUST DUCTWORK AT EVERY CHANGE OF DIRECTION AND AT EVERY 12' OF DUCT. PROVIDE ACCESS PANELS AT ALL GREASE DUCT CLEANOUTS. PROVIDE AS PER LOCAL CODE.
9. COORDINATE HOOD INSTALLATION WITH HOOD PLANS. HOOD OPERATION, CAPTURE, SIZE AND ACCESSORIES ARE BASED ON EQUIPMENT AND CLEARANCES INDICATED IN PLANS. FIELD VERIFY AND COORDINATE HOODS WITH EQUIPMENT FURNISHED. COORDINATE HOOD CONNECTIONS WITH HOOD PLANS AND MANUFACTURER PRIOR TO FABRICATION.
10. COORDINATE INTERLOCKS AND HOOD CONTROLS WITH HOOD PLANS AND HOOD MANUFACTURER PRIOR TO INSTALLATION.

**MECHANICAL GENERAL NOTES**

- A. PROVIDE NEW DUCTWORK AS SHOWN. DUCT WORK ABOVE CEILING TO BE INSULATED ACCORDING TO 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
- B. TEST & BALANCE SYSTEM PRIOR TO CLOSEOUT OF PROJECT. PROVIDE A DETAILED REPORT TO OWNER, ARCHITECT, & ENGINEER.
- C. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.
- D. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSION.
- E. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TRUSSES AND MODIFY DUCTWORK ACCORDINGLY.
- F. PROVIDE FIRE OR FIRE-SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS/SLABS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS.
- G. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- H. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.
- I. PROVIDE DUCT INSULATION AS SPECIFIED WITH MINIMUM VALUES AS FOLLOWS:  
R-8 SUPPLY & RETURN DUCT INSULATION IN UNCONDITIONED SPACES WITHIN BUILDING.  
R-8 SUPPLY & RETURN DUCT INSULATION WITHIN BUILDING ENVELOPE ASSEMBLY.  
R-8 SUPPLY & RETURN DUCT INSULATION OUTSIDE OF BUILDING.
- J. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- K. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- L. ALL ITEMS TO BE REUSED OR RELOCATED SHALL BE CLEANED, REPAIRED, AND RESTORED TO LIKE NEW CONDITION PRIOR TO REUSE.
- M. CONTRACTOR SHALL BALANCE EACH AIR DIFFUSER WITH THE CFM SHOWN ON PLAN.
- N. RETAIN AND REUSE EXISTING DUCTWORK & DIFFUSERS AS MUCH AS POSSIBLE. CLEAN THE EXISTING DIFFUSERS, REPLACE THE EXISTING DUCTWORK/DIFFUSERS IF NECESSARY.

**KEYED NOTES (#)**

1. RELOCATE AND REUSE EXISTING THERMOSTATS. IF EXISTING THERMOSTATS ARE NOT IN GOOD CONDITION TO REUSE, THEN INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTATS. CONTRACTOR TO FIELD IN FIELD PRIOR TO BID. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
2. INSTALL TYPE-I GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. TRANSITION FROM HOOD CONNECTION TO WELDED KITCHEN EXHAUST DUCT SIZES SHOWN. THE HOOD AND DUCT SHALL HAVE AN APPROVED FIRE PROTECTION. THE FIRE-EXTINGUISHING SYSTEM SHALL BE INTERCONNECTED TO THE FUEL OR CURRENT SUPPLY SO THAT THE FUEL OR CURRENT SUPPLY IS AUTOMATICALLY SHUT OFF TO ALL EQUIPMENT UNDER THE HOOD WHEN THE SYSTEM IS ACTUATED. REFER TO HOOD SCHEDULE AND DRAWINGS FOR HOOD SPECIFICATIONS AND FOR BALANCE OF MAKE-UP AIR AND SUPPLY TO HOOD.
3. FURNISH AND INSTALL MANUAL VOLUME DAMPER IN EACH SUPPLY AIR DUCT CONNECTED TO HOOD SUPPLY AIR PLENUM. REFER TO HOOD SCHEDULE FOR REQUIRED AIRFLOW AT EACH CONNECTION.
4. 18"X18" GREASE EXHAUST DUCT FROM HOOD UP THRU ROOF TO KITCHEN EXHAUST FAN. PROVIDE FIRE WRAP ON ON DUCT RATED FOR 0" CLEARANCE TO COMBUSTIBLES.
5. RETAIN & REUSE THE EXISTING SUPPLY & RETURN DUCTWORK FROM EXISTING PLENUMIZED CURBS OF ROOFTOP UNITS. EXTEND OR MODIFY AS / IF REQUIRED.
6. REUSE EXISTING REMOTE TEMP. SENSORS MOUNTED IN RETURN AIR DUCT/SPACE. PROVIDE NEW IF EXISTING TEMP. SENSORS ARE DAMAGED OR NOT WORKING PROPERLY. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
7. PROVIDE AND INSTALL EMERGENCY MANUAL SHUTDOWN PUSH BUTTON FOR HOOD. PUSH BUTTON SHALL BE IN THE PATH OF EGRESS, A MINIMUM OF 10' AWAY FROM THE HOOD AND A MAXIMUM OF 20'.
8. GREASE DUCT TO BE PROVIDED WITH KITCHEN EQUIPMENT AND INSTALLED BY MECHANICAL CONTRACTOR. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
9. EXTEND MAKE-UP AIR DUCT FROM HOOD COLLAR UP TO MOUNTED MAKE-UP AIR UNIT ON ROOF MUA-1. ALL CONTROLS AND INTERLOCKING SHALL BE PROVIDED BY CAPTIVE-AIRE.
10. PROVIDE 6"X6" DOOR GRILLE FOR TRANSFER AIR.
11. ROUTE 6"Ø EXHAUST DUCT UP THROUGH ROOF WITH TALL FLASHING, WEATHER SKIRT AND GOOSENECK. MAINTAIN A MINIMUM 10'-0" FROM ALL OUTSIDE AIR INTAKES.
12. PROVIDE 3"Ø/5"Ø CONCENTRIC VENT FOR WATER HEATER INTAKE & EXHAUST VENT. INSTALL AS PER MANUFACTURER'S RECOMMENDATION/INSTRUCTIONS.
13. REUSE EXISTING SMOKE DETECTOR. IF EXISTING SMOKE DETECTOR IS NOT IN GOOD CONDITION TO REUSE, REPLACE WITH SIMILAR KIND. SMOKE DETECTOR SHALL BE FURNISHED / INSTALLED IN RETURN AIR DUCT BY MECHANICAL CONTRACTOR & WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS.
14. EXISTING SUPPLY, RETURN & EXHAUST AIR DUCTWORK TO REMAIN & TO BE REUSED. CONTRACTOR SHALL CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING DUCTWORK. EXTEND/MODIFY DUCTWORK AS/IF REQUIRED. REPLACE WITH SIMILAR KIND IF BEYOND REPAIR/CLEAN. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
15. REUSE AND RELOCATE EXISTING SUPPLY, RETURN & EXHAUST AIR DIFFUSERS/GRILLES AS SHOWN ON PLAN. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING DIFFUSERS/GRILLES. CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. EXTEND/MODIFY DUCTWORK AS/IF REQUIRED. REPLACE WITH SIMILAR KIND IF BEYOND REPAIR/CLEAN. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.
16. WALK-IN COOLER/FREEZER EVAPORATOR UNIT. COORDINATE REQUIREMENTS WITH WALK-IN COOLER SUPPLIER. REFER TO PLUMBING PLANS FOR CONDENSATE DISPOSAL.
17. PROVIDE AND INSTALL AIR CURTAIN PER MANUFACTURER'S REQUIREMENTS. VERIFY EXACT LOCATION WITH OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.
18. EXISTING RESTROOM EXHAUST DUCTWORK UP TO EXISTING FAN EF-1 ON ROOF.
19. EXISTING VOLUME DAMPERS TO REMAIN & TO BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING VOLUME DAMPERS. RE-BALANCE OR RE-ADJUST THE VOLUME DAMPERS TO MATCH THE AIRFLOW AS INDICATED ON PLAN. PROVIDE A NEW VOLUME DAMPER OR COLLAR DAMPER IF THE EXISTING ONE IS DAMAGED. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.



**MECHANICAL CEILING PLAN**

SCALE: 1/4"=1'-0"



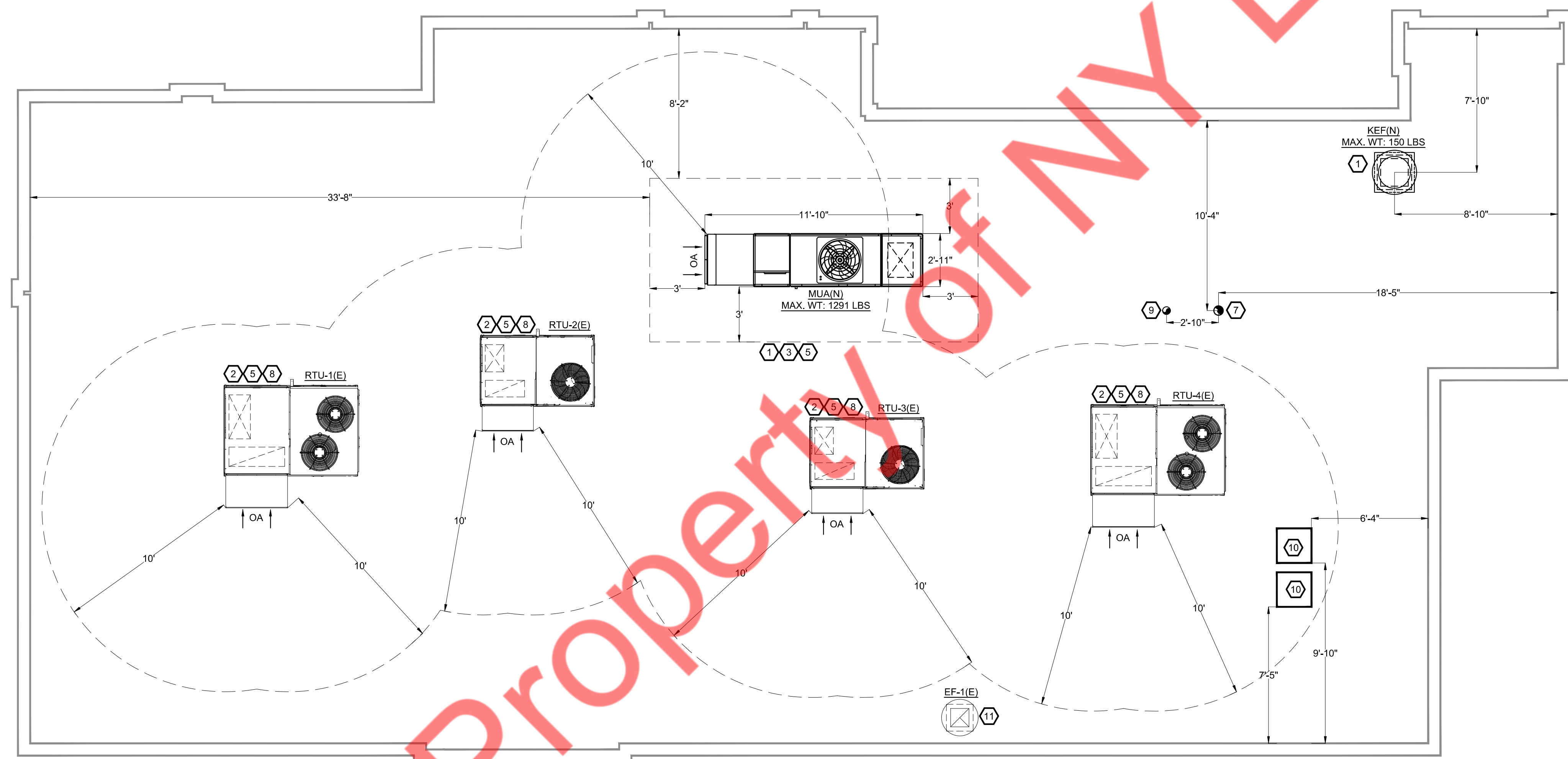
ISSUED REVISIONS:


**MECHANICAL GENERAL NOTES**

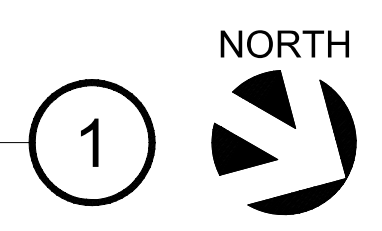
- A. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TRUSSES AND MODIFY DUCTWORK ACCORDINGLY.
- B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- C. G.C. TO PATCH & REPAIR EXTRA PENETRATION ON ROOF TO MATCH EXISTING IN ALL ASPECTS.
- D. ALL ITEMS TO BE REUSED OR RELOCATED SHALL BE CLEANED, REPAIRED, AND RESTORED TO LIKE NEW CONDITION PRIOR TO REUSE.
- E. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- F. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- G. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- H. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10' LINEAR FEET SEPARATION BETWEEN ANY SOURCE OF EXHAUST. CONTRACTOR IS RESPONSIBLE TO ADJUST DUCT LENGTH AS NEEDED.
- I. EXISTING ROOF CURBS TO BE REUSED WHEREVER POSSIBLE. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING CURBS. REPLACE EXISTING CURBS IF NOT IN A GOOD CONDITION.
- J. IF EXISTING ROOF CURBS ARE DAMAGED OR NOT REUSABLE, REPLACE WITH NEW ROOF CURB REQUIRED AND REDO ROOFING. COORDINATE WITH ROOFING CONTRACTOR.

**KEYED NOTES (#)**

- 1. COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL ENGINEER/DRAWINGS.
- 2. EXISTING RTUs TO REMAIN AS IS AND TO BE REUSED WITH ALL ITS EXISTING ACCESSORIES & ROOF CURB. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION ON SITE. CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. REPAIR / REPLACE ANY ACCESSORIES AS/IF REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT. INFORM TO ARCHITECT IF ANY ACCESSORIES NOT WORKING OR NOT IN GOOD CONDITION.
- 3. CONDENSATE DRAIN FROM MUA SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF NOT LESS THAN 1/8" UNIT VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS SO AS TO CAUSE NUISANCE.
- 4. PROVIDE ROOF MOUNTED GREASE EXHAUST FAN. MAINTAIN A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES & A MINIMUM OF 40" ABOVE ROOF.
- 5. CONTRACTOR TO FIELD VERIFY THAT THE LOCATION OF ANY EXHAUST SOURCE SHOULD BE AT LEAST 10' AWAY FROM THE OUTSIDE AIR INTAKE OPENING OF RTUs & MAU.
- 6. PROVIDE MAKE-UP AIR UNIT AND ROOF CURB. PROVIDE FLEXIBLE CONNECTION ON THE SUPPLY DUCT CONNECTION TRANSITION TO DUCT SIZE INDICATED. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- 7. 6"Ø EXHAUST DUCT UP THROUGH ROOF WITH TALL FLASHING, WEATHER SKIRT AND GOOSENECK. MAINTAIN A MINIMUM 10'-0" FROM ALL OUTSIDE AIR INTAKES.
- 8. EXISTING CONDENSATE DRAIN FROM EXISTING RTUs TO REMAIN AS IS. CONTRACTOR TO FLUSH THE EXISTING DRAIN LINES. REPLACE AS/IF REQUIRED.
- 9. PROVIDE 3"Ø/5"Ø CONCENTRIC VENT FOR WATER HEATER INTAKE & EXHAUST VENT. INSTALL AS PER MANUFACTURER'S RECOMMENDATION/INSTRUCTIONS.
- 10. CONDENSING UNIT FOR WALK-IN COOLER SHOWN FOR REFERENCE ONLY. COMPLETE SYSTEM TO BE PROVIDED AND INSTALLED BY OWNER'S DESIGNATED CONTRACTOR.
- 11. EXISTING ROOF MOUNTED EXHAUST FAN TO REMAIN & TO BE REUSED WITH ALL ITS EXISTING ACCESSORIES AND ROOF CURB. CONTRACTOR TO MAKE SURE TO MAINTAIN A MINIMUM 10'-0" FROM ALL OUTSIDE AIR INTAKES. CONTRACTOR TO VERIFY EXACT LOCATION ON SITE. CLEAN AND REFURBISH TO "LIKE NEW" CONDITION. REPAIR / REPLACE ANY ACCESSORIES AS/IF REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT. INFORM TO ARCHITECT IF ANY ACCESSORIES NOT WORKING OR NOT IN GOOD CONDITION.

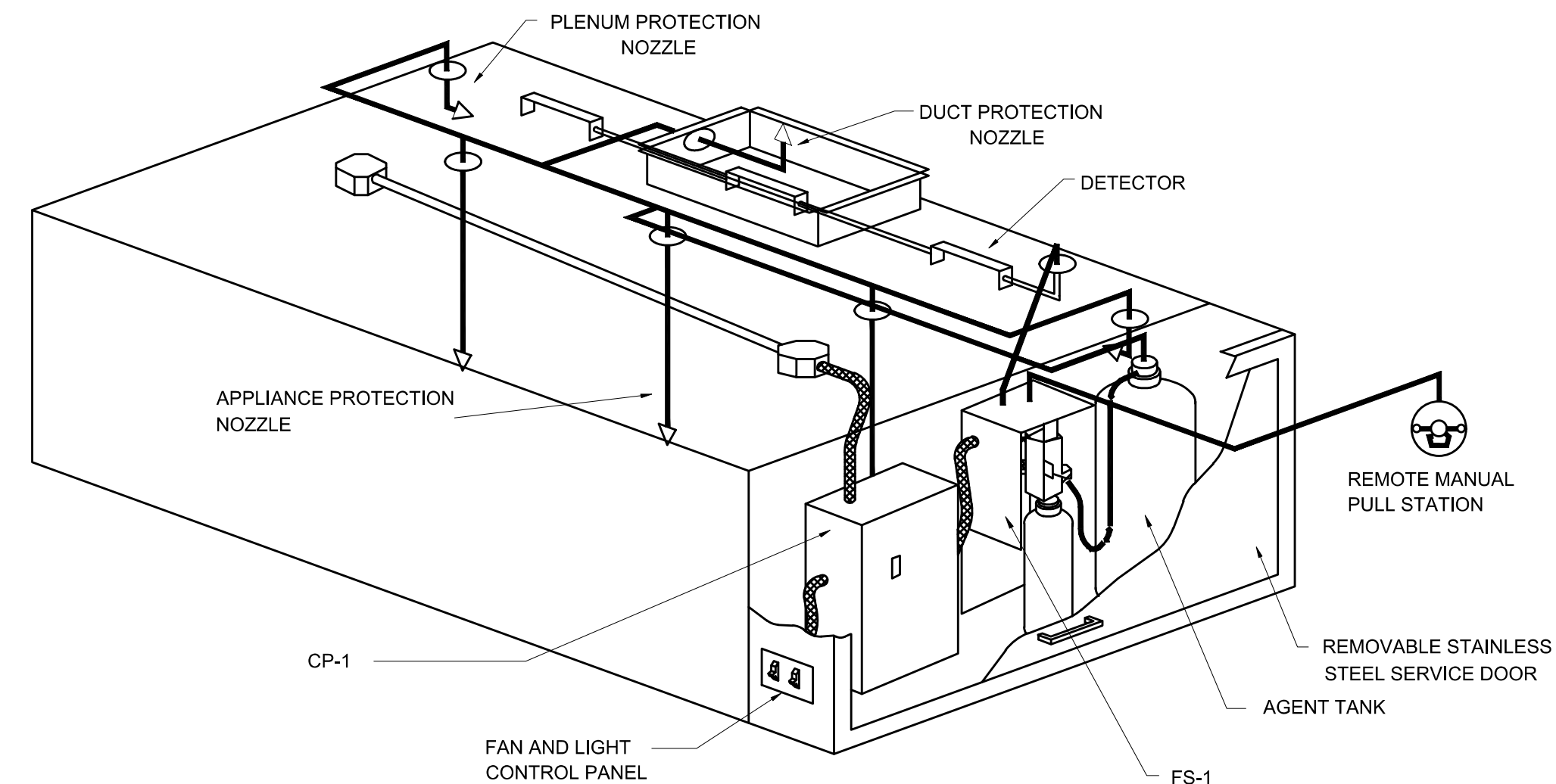


**MECHANICAL ROOF PLAN**  
SCALE: 1/4"=1'-0"



ISSUED REVISIONS:


**Layne's Chicken Fingers**  
Mechanical Roof Plan

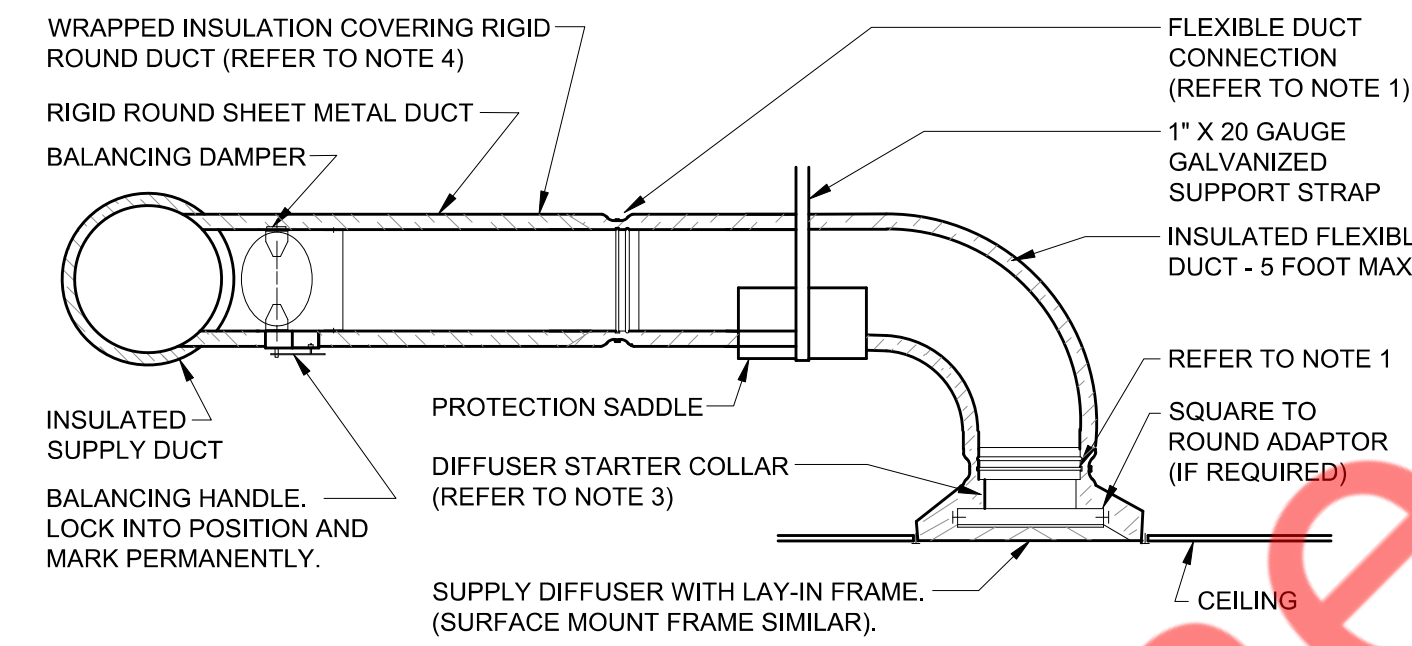


FIRE SUPPRESSION SYSTEM		
FIRE SYSTEM NO.	TYPE	FLOW POINTS
FS-1	ANSUL R102, WET CHEMICAL, MODEL FSSC.	6

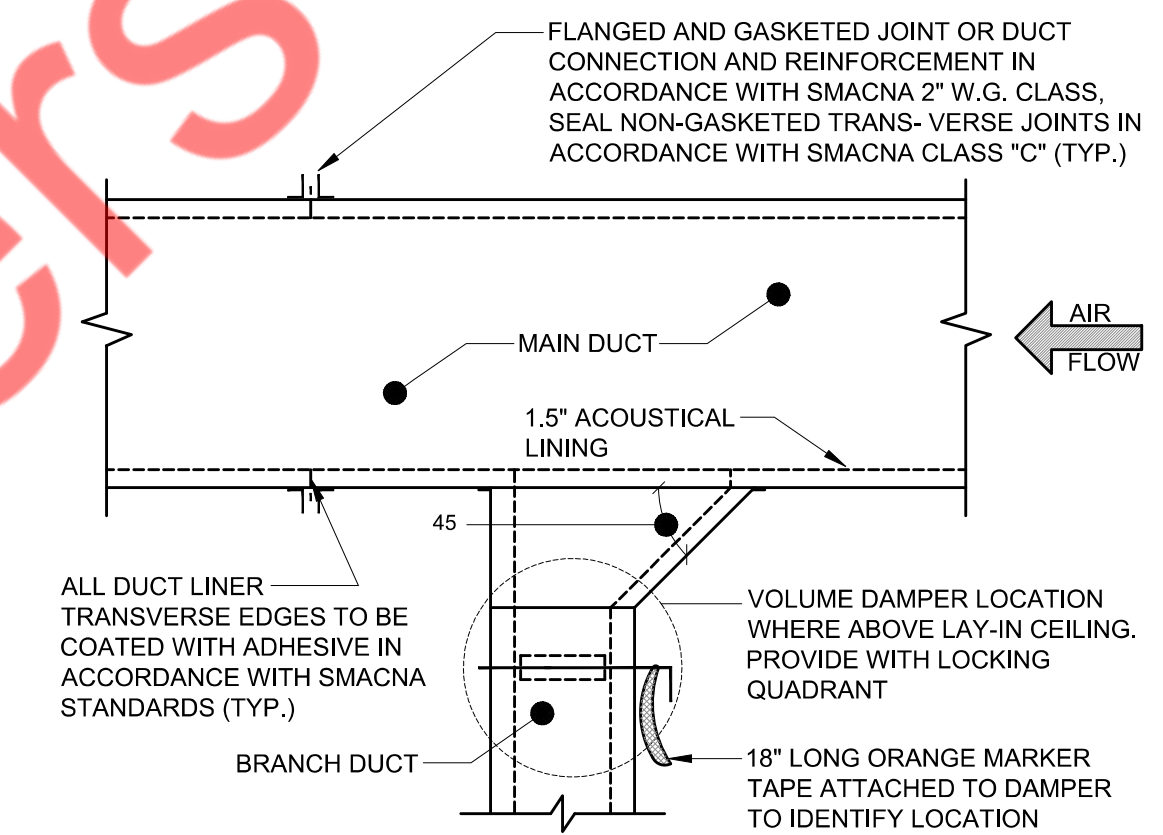
FIRE SUPPRESSION SYSTEM CONTROLS		
FIRE SYSTEM NO.	TYPE	POWER
CP-1	ANSUL CONTROL PANEL, MODEL XFCC.	208V/3PH

- DESIGNED IN ACCORDANCE WITH UL 300.
- PROVIDE WITH AUTOMATIC GAS SHUTOFF VALVE UPON ACTIVATION OF SYSTEM. PART#: ANSULMECHSHUTOFFVALVE200.
- PROVIDE WITH AUTOMATIC ELECTRICAL POWER SHUTDOWNS FOR, MUA & COOKING APPLIANCES UPON ACTIVATION OF SYSTEM.
- PROVIDE A REMOTE PULL STATION.

- PANEL TO CONTROL POWER TO KEF & MUA.
- 2 POSITION LIGHT AND FAN SWITCHES.
- EXHAUST/HOOD TEMPERATURE SENSORS/DETECTORS.
- POWERED SHUNT TRIP FOR MUA.



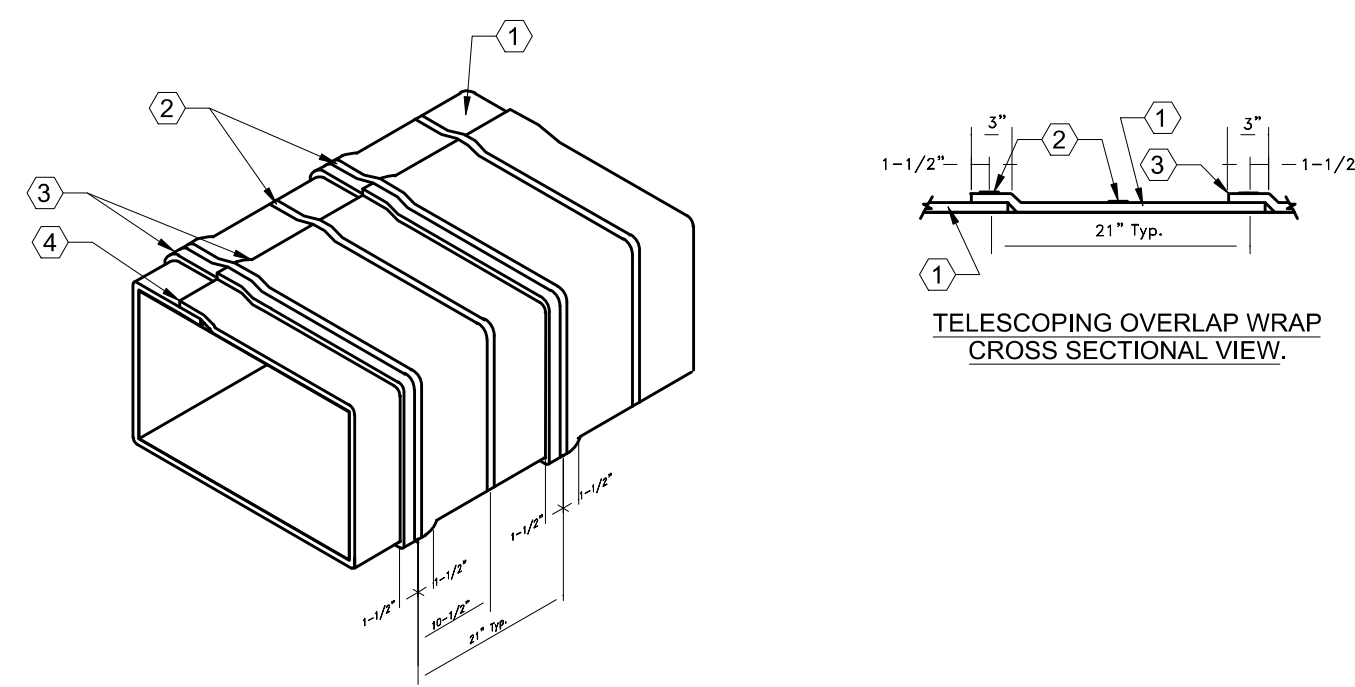
NOTES:  
 PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAWBAND WITH AN ADDITIONAL DRAWBAND.  
 PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.  
 PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.  
 BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.



1 TYPICAL ANSUL R-102 SYSTEM LAYOUT

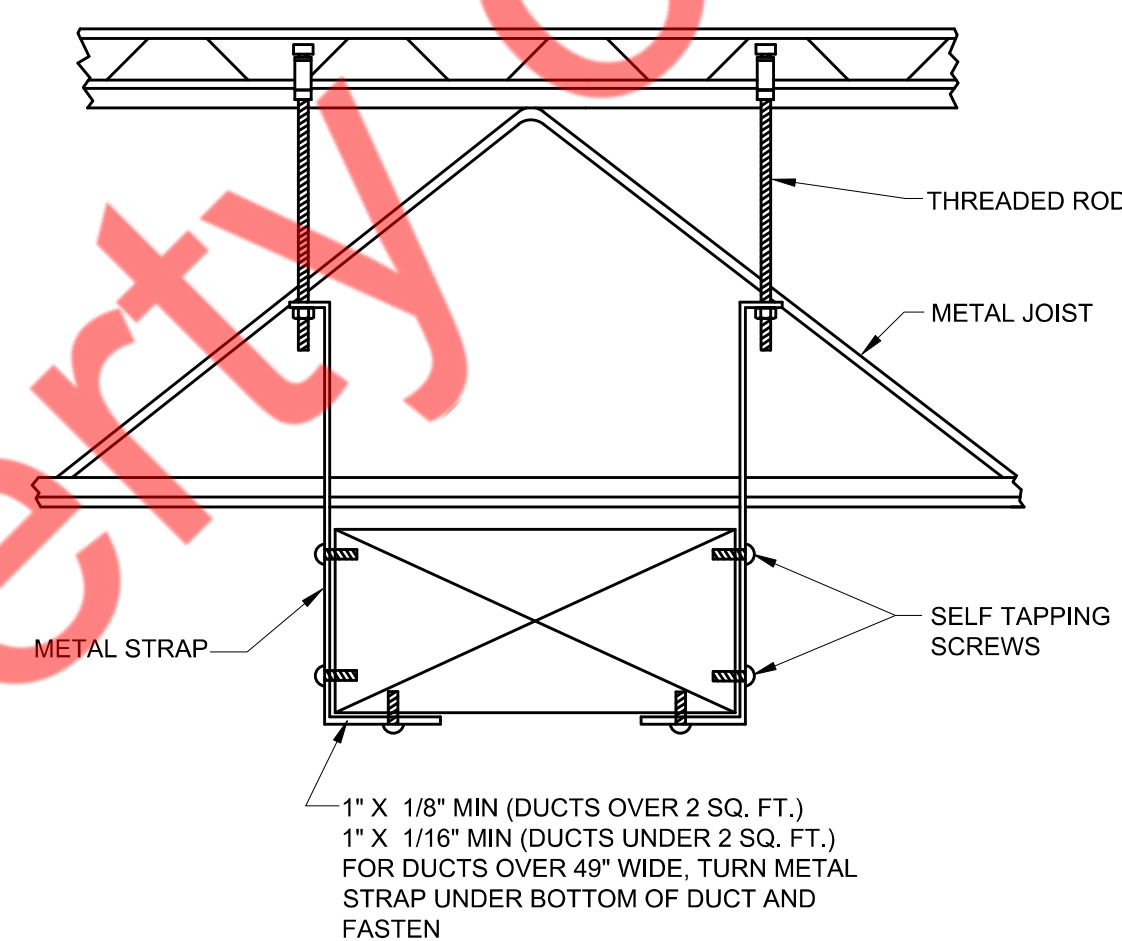
2 DIFFUSER CONNECTION DETAIL

3 RECTANGULAR TAKE-OFF DETAIL

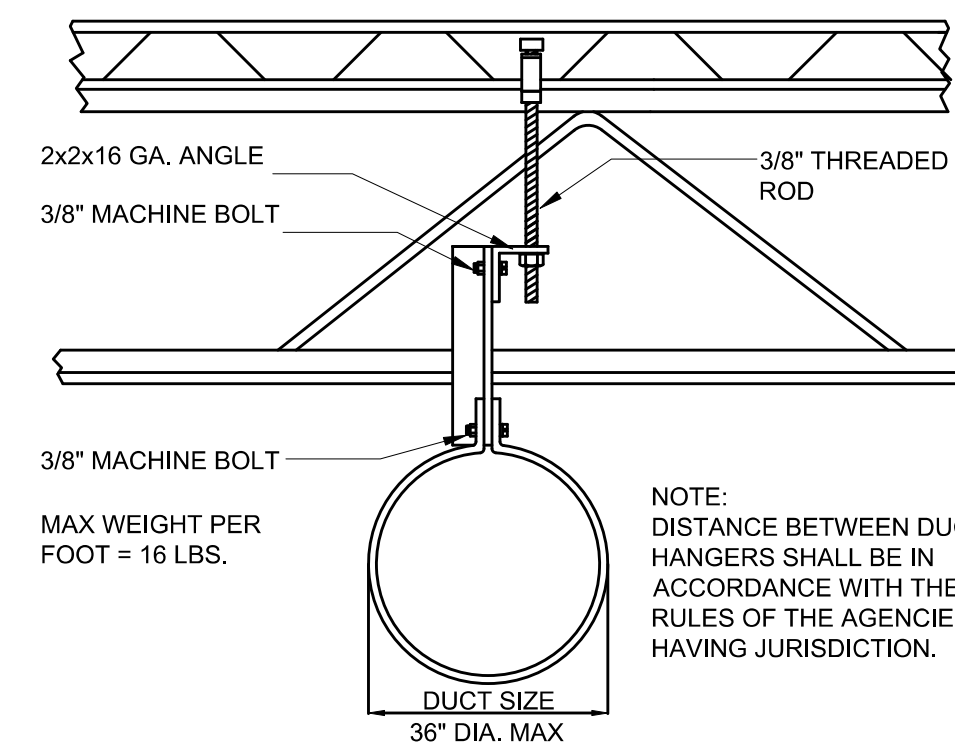


# KEYED NOTES:

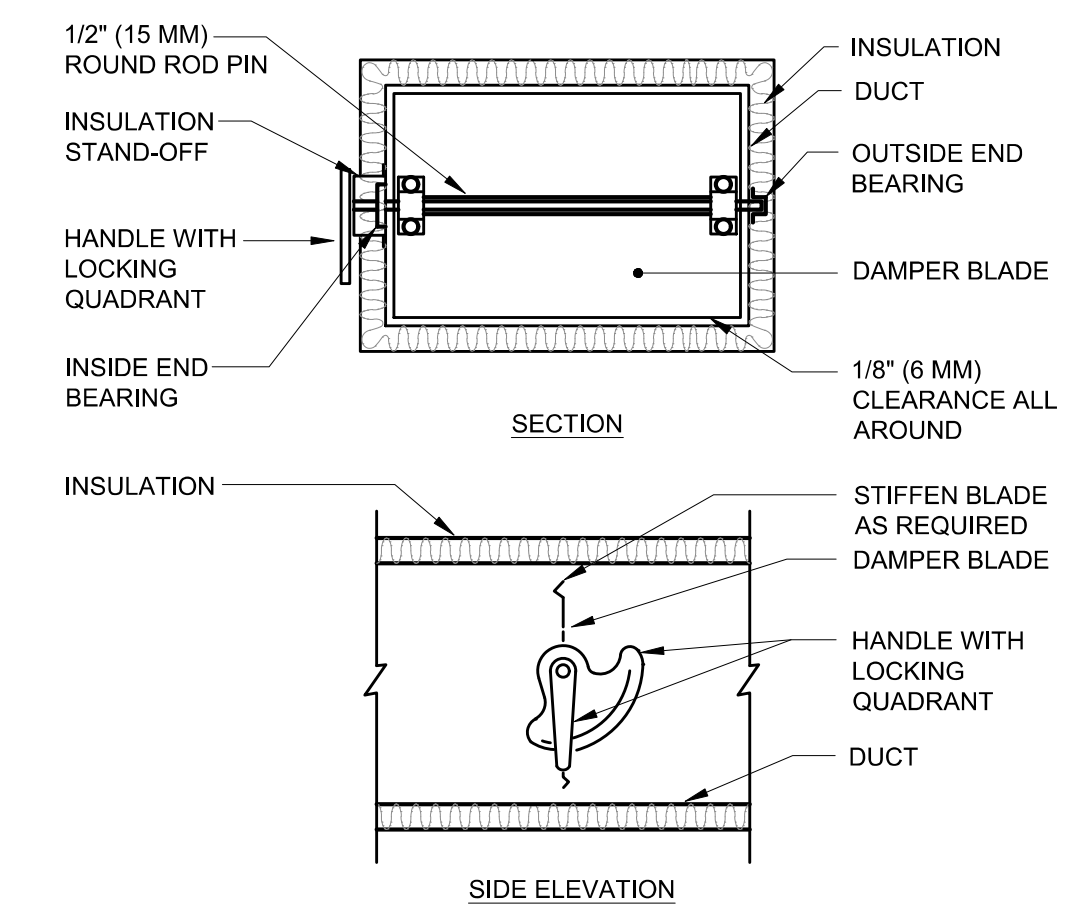
- SINGLE LAYER OF 3M FIRE BARRIER DUCT WRAP 15A ALL AROUND DUCT IN A TELESCOPING OVERLAPPING DESIGN AS INDICATED ABOVE IN THE CROSS SECTIONAL VIEW.
- SECURE DUCT WRAP WITH 1/2" WIDE STEEL BANDING WITH SPACING AS INDICATED ABOVE, TYP.
- PROVIDE A 3" MINIMUM LONGITUDINAL OVERLAP OF THE DUCT WRAP, REQUIRED.
- PROVIDE A 3" MINIMUM PERIMETER OVERLAP OF THE DUCT WRAP, REQUIRED.



1" X 1/8" MIN (DUCTS OVER 2 SQ. FT.)  
 1" X 1/16" MIN (DUCTS UNDER 2 SQ. FT.)  
 FOR DUCTS OVER 49" WIDE, TURN METAL STRAP UNDER BOTTOM OF DUCT AND FASTEN



DIAMETER INCHES	SPIRAL SEAM DUCT		DUCT STEEL MIN. GALV. SHT. GAUGE		FITTINGS STEEL MIN. GALV. SHT. GAUGE	
	THROUGH	MIN. GALV. SHT. GAUGE	THROUGH	MIN. GALV. SHT. GAUGE	THROUGH	MIN. GALV. SHT. GAUGE
12	28	26	26	26	26	26
13	28	26	26	26	26	26
18	28	26	26	26	26	26
19	28	26	26	26	26	26
28	28	26	26	26	26	26
29	28	26	26	26	26	26
36	24	22	20	22	22	22
37	22	20	18	20	20	20
52	20	18	18	18	18	18



NOTES:  
 1. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

4 MAKE-UP AIR SUPPLY BRANCH FIRE BARRIER DUCT WRAP INSTALLATION DETAIL

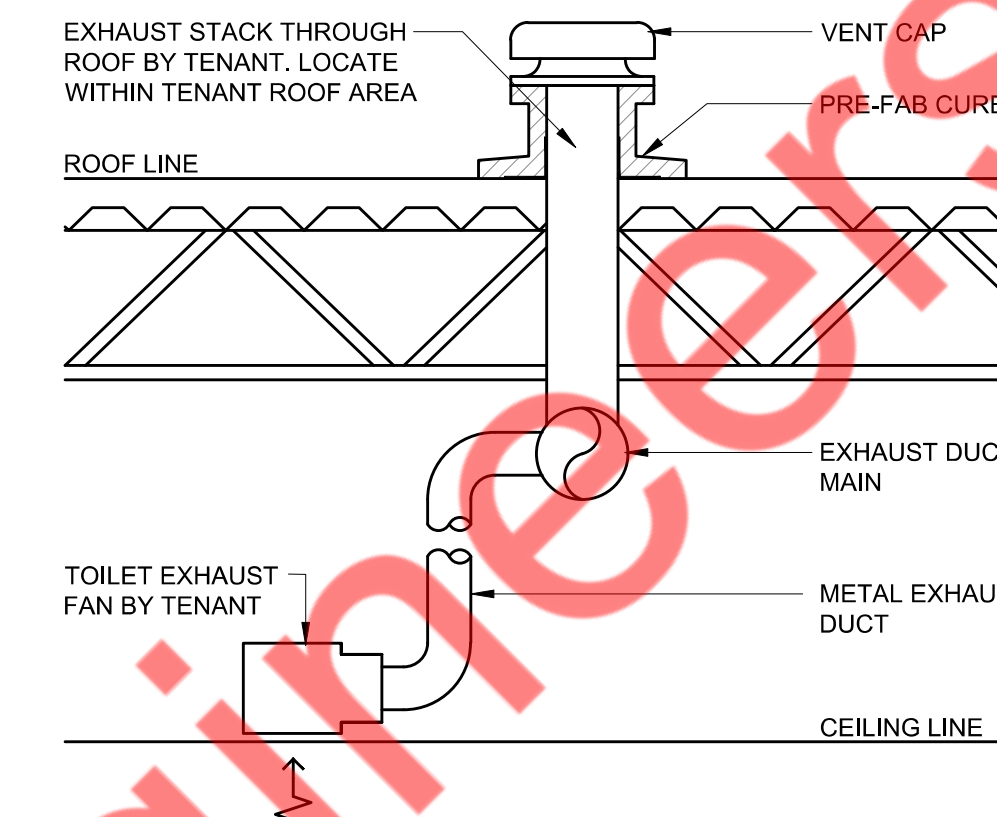
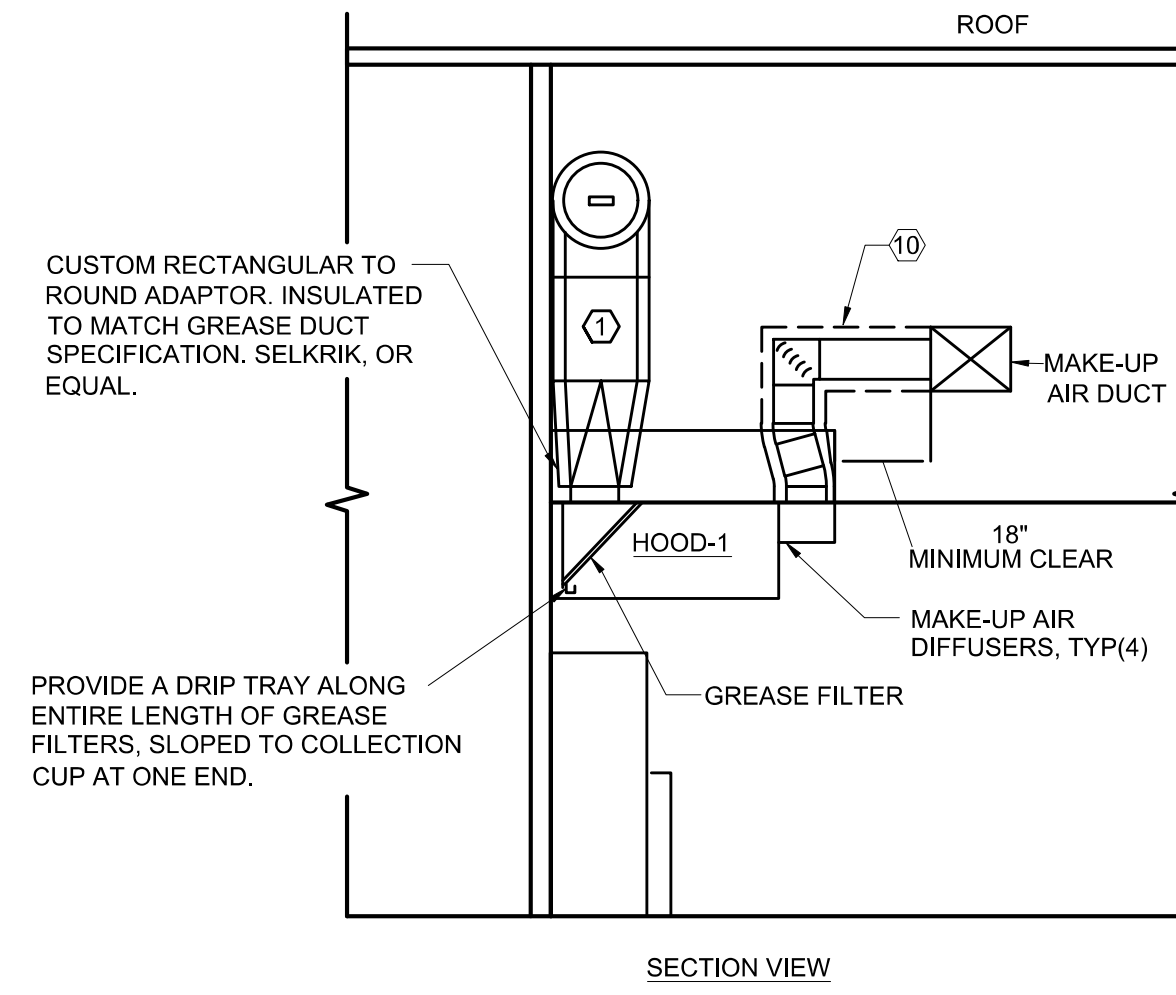
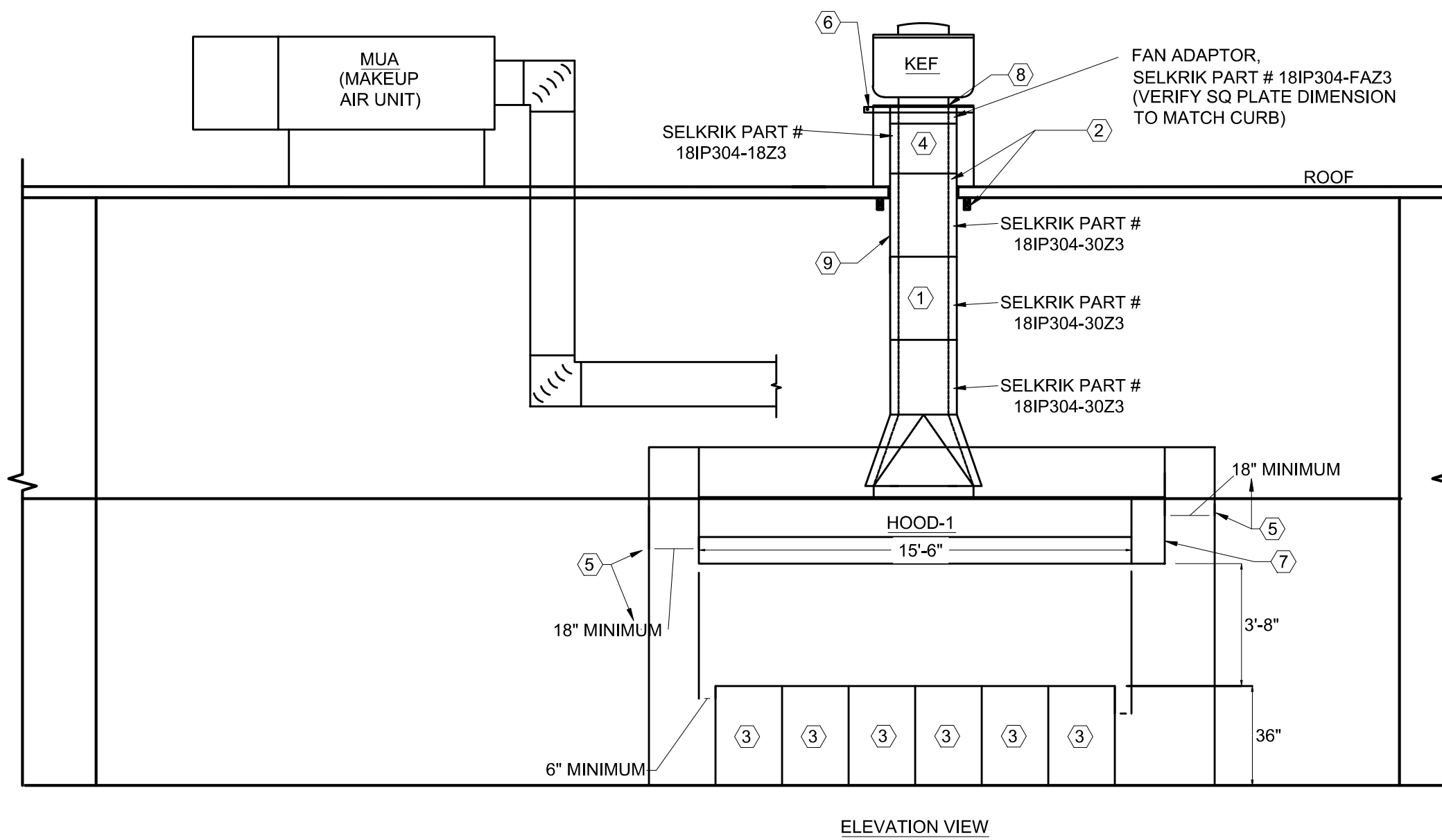
5 DUCT SUPPORT DETAIL

6 ROUND DUCT HANGING DETAIL

7 MANUAL DAMPER DETAIL

ISSUED REVISIONS:	

Layne's Chicken Fingers  
 Mechanical Details



**GENERAL MECHANICAL NOTES:**

A. CONTRACTOR TO FIELD VERIFY AND COORDINATE GREASE DUCT PIPE LENGTHS, ASSOCIATED FITTINGS, LOCATION OF ROOF PENETRATION & FINAL CONNECTIONS TO THE FUME HOOD AND POTENTIAL ROUTING CONFLICTS OF GREASE DUCT WITH OTHER TRADES BEFORE ORDERING AND INSTALLATION.

**KEYED NOTES:**

1. 18" O.D. FACTORY-BUILT COMMERCIAL DOUBLE WALLED GREASE DUCT WITH 3" OF HIGH TEMPERATURE CERAMIC FIBER INSULATION BETWEEN INNER AND OUTER WALLS, CONSTRUCTION TO MEET 1 HR FIRE RATED CHASE REQUIREMENTS THROUGH CEILING AND ROOF ASSEMBLIES WITH ZERO CLEARANCE TO COMBUSTIBLES, LISTED AND LABELED FOR UL1978 & UL 2221. SELKIRK ZEROCLEAR MODEL Z3/ZC, ACCUREX DURAVENT ZERO CLEARANCE, OR EQUAL.
2. COORDINATE GREASE DUCT PENETRATION AND LOCATION WITH EXISTING STRUCTURAL MEMBERS, PROVIDE ADDITIONAL SUPPORT FRAMING MEMBERS IF REQUIRED AROUND PENETRATION TO SUPPORT GREASE DUCT RISER, CURB AND EXHAUST FAN WEIGHTS, RATED SHAFT THROUGH ROOF NOT REQUIRED, GREASE DUCT CONSTRUCTED IN ACCORDANCE WITH UL 2221. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. COOKING EQUIPMENT
4. EXTEND GREASE DUCT A MINIMUM OF 18" ABOVE ROOF SURFACE.
5. PROVIDE A SMOOTH, CLEANABLE, NON ABSORBENT AN NONCOMBUSTIBLE MATERIAL INSTALLED BETWEEN THE HOOD AND GYPSUM OR CEMENT WALLBOARD.
6. EXHAUST FAN CURB TO BE PROVIDED WITH THE TOP HINGED ON ONE SIDE, SUPPLIED WITH A FLEXIBLE WEATHERPROOF ELECTRICAL CABLE TO ALLOW FOR INSPECTIONS AN CLEANING, HINGED TOP TO BE SUPPLIED WITH A RESTRAINT TO LIMIT THE SWING OF THE FAN INSTALLED ON IT WHEN IN OPEN POSITION.
7. FS-1 & CP-1 THIS SIDE OF HOOD. SEE DETAIL THIS SHEET.
8. PROVIDE A GASKET WITH A MINIMUM TEMPERATURE RATING OF 1500 DEG F BETWEEN THE FAN AND THE MOUNTING FLANGE.
9. GREASE DUCT SUPPORTS, PROVIDE AS MANY SUPPORTS AS REQUIRED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, SUPPORTS TO BE SECURED TO BUILDING STRUCTURE ABOVE, TYP.
10. 3" THICK SINGLE LAYER OF FIRE BARRIER DUCT WRAP MEETING OR EXCEEDING UL1978 REQUIREMENTS. WRAP FIRE BARRIER AROUND BRANCH DUCTWORK FROM HOOD TO MAIN DUCT CONNECTION IN ACCORDANCE WITH MANUFACTURES INSTRUCTIONS, FOUR 12 X 28 BRANCH DUCTS TOTAL 3M FIRE BARRIER DUCT WRAP 15A, OR EQUAL, TYP(4). SEE DETAIL 08M.201.

**NOTES:**

1. ALL ROOF CURBS/ PENETRATIONS ARE TO BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S DETAILS. ALL REQUIRED ROOFING SHALL BE BY THE LANDLORD'S DESIGNATED ROOFING CONTRACTOR AS REQUIRED TO MAINTAIN THE WARRANTY AND INTEGRITY OF THE ROOF.

1 KITCHEN HOOD SECTION AND ELEVATION

SCALE  
N.T.S.

2 CEILING EXHAUST FAN DETAIL

SCALE  
N.T.S.

ISSUED REVISIONS:	

Layne's Chicken Fingers  
Mechanical Details

M-301

ELECTRICAL SYMBOLS LEGEND		ABBREVIATIONS	
	WALL MOUNTED DUPLEX RECEPTACLE AT 18" AFF UNLESS NOTED OTHERWISE	#AF	SIZE INDICATED AMP FUSED
	WALL MOUNTED QUADRUPLEX RECEPTACLE AT 18" AFF UNLESS NOTED OTHERWISE	AFF	ABOVE FINISHED FLOOR
	WALL MOUNTED 208V RECEPTACLE AT 18" AFF UNLESS NOTED OTHERWISE	AHJ	AUTHORITY HAVING JURISDICTION
	SINGLE PURPOSE SPECIAL RECEPTACLE	AHU	AIR HANDLER UNIT
	CEILING MOUNTED DUPLEX RECEPTACLE	C/B	CIRCUIT BREAKER
	HALF-SWITCHED DUPLEX CONVENIENCE RECEPTACLE MOUNTED AT +18" AFF TO CENTER OF BOX OR AS NOTED. COMPUTER DUPLEX RECEPTACLE AT 18" AFF TO CENTER OR AS NOTED. PROVIDE 'GRAY' OUTLET BODY WITH STANDARD COVERPLATE OUTLETS.	#AS	SIZE INDICATED AMP SWITCH
	GFCI RECEPTACLE. COORDINATE MOUNTING HEIGHT AND LOCATION WITH PLANS.	#AS	SIZE INDICATED AMP SWITCH
	FLUSH FLOOR MOUNTED DUPLEX RECEPTACLE	CKT	CIRCUIT
	WALL MOUNTED JUNCTION BOX AT 18" AFF UNLESS NOTED OTHERWISE	CKT	CIRCUIT
	FLUSH FLOOR MOUNTED JUNCTION BOX	CU	CONDENSING UNIT
	DISCONNECT SWITCH IN NEMA ENCLOSURE - SIZE AS INDICATED ON PLANS	DED	DEDICATED
	FUSED DISCONNECT SWITCH IN NEMA ENCLOSURE - SIZE AS INDICATED ON PLANS	EC	ELECTRICAL CONTRACTOR
	WALL MOUNTED VOICE/DATA OUTLET AT 18" AFF UNLESS NOTED OTHERWISE	EDH	ELECTRIC DUCT HEATER
	WALL MOUNTED VOICE OUTLET AT 18" AFF UNLESS NOTED OTHERWISE	EF	EXHAUST FAN
	WALL MOUNTED DATA OUTLET AT 18" AFF UNLESS NOTED OTHERWISE	EM	EMERGENCY
	FLUSH FLOOR MOUNTED VOICE/DATA OUTLET	ETR	EXISTING TO REMAIN
	FLUSH FLOOR MOUNTED DATA OUTLET	EX	EXISTING TO REMAIN
	FLUSH FLOOR MOUNTED VOICE OUTLET	FA	FIRE ALARM
	SECURITY CAMERA	FACP	FIRE ALARM CONTROL PANEL
	DOOR BUZZER WITH LOW VOLTAGE TRANSFORMER	FLA	FULL LOAD AMPS
	PUSH BUTTON FOR DOOR BUZZER	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	THERMOSTAT	GND	GROUND
	MOTOR RATED SWITCH	HP	HORSEPOWER
	SINGLE POLE TOGGLE SWITCH	IG	ISOLATED GROUND
	OCCUPANCY SENSOR SWITCH	LL	LANDLORD
	OCCUPANCY SENSOR/DIMMER SWITCH	LTG	LIGHTING
	3-WAY SWITCH	MC	MECHANICAL CONTRACTOR
	CEILING MOUNT OCCUPANCY SENSOR	MCA	MINIMUM CIRCUIT AMPACITY
	DUCT SMOKE DETECTOR	MOCP	MAXIMUM OVERCURRENT PROTECTION
	SURFACE MOUNTED 120/208V PANEL - 3'-0" CLEARANCE IN FRONT OF PANEL PER NEC	NF	NON-FUSED
	RECESSED MOUNTED 120/208V PANEL - 3'-0" CLEARANCE IN FRONT OF PANEL PER NEC	NIC	NOT IN CONTRACT
	SURFACE MOUNTED 277/480V PANEL - 3'-0" CLEARANCE IN FRONT OF PANEL PER NEC	NL	NIGHT LIGHT
	RECESSED MOUNTED 277/480V PANEL - 3'-0" CLEARANCE IN FRONT OF PANEL PER NEC	NTS	NOT TO SCALE
	MAIN SWITCHBOARD OR DISTRIBUTION PANEL - VERIFY VOLTAGE ON RISER DIAGRAM	OS	OCCUPANCY SENSOR
	PHONE BOARD	PC	PLUMBING CONTRACTOR
	INVERTER AS SPECIFIED ON PLAN	PNL	ELECTRICAL PANEL
	BUCK BOOST TRANSFORMER	PWR	POWER
	STEP DOWN TRANSFORMER - SIZE AS INDICATED ON PLANS	QUAD	QUADRUPLEX RECEPTACLE
	GROUND	R	RELOCATED
	INDICATES HOMERUN	RTU	ROOF TOP UNIT
	INDICATES CIRCUIT CONTINUATION	T/C	TIMECLOCK
	INDICATES GROUND WIRE	TEN	TENANT
	INDICATES HOT WIRE	TGC	TENANT GENERAL CONTRACTOR
	INDICATES NEUTRAL WIRE	TYP	TYPICAL
	INDICATES SWITCHLEG	UNO	UNLESS NOTED OTHERWISE
	CO2 SENSOR	WP	WEATHER PROOF
	PANEL-CIRCUIT NUMBER	XFMR	TRANSFORMER
NOTE:	NOT ALL SYMBOLS OR ABBREVIATIONS MAY APPEAR ON PLANS. DIMENSION ARE TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.		

**FIELD VERIFY ALL CONDITIONS**

DESIGN DRAWINGS ARE SCHEMATIC. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THE CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTOR'S COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES. THE PLANS AND SPECIFICATIONS NOT WITHSTANDING, THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

ELECTRICAL CONTRACTOR SHALL VERIFY EXACT AMP DRAW ON ALL EXISTING CIRCUITS/PANELS TO BE REVISED TO ENSURE OVERLOADING CONDITION DOES NOT OCCUR PRIOR TO ADDING ADDITIONAL ITEMS TO CIRCUITS/PANELS.

**COMMISSIONING REQUIREMENTS**

CONTRACTOR SHALL HIRE A THIRD PARTY CERTIFIED COMMISSIONING AGENT TO PERFORM THE COMMISSIONING AND PROVIDE THE PRELIMINARY REPORT OF COMMISSIONING TO THE LOCAL CITY.

- THE CERTIFICATIONS ACCEPTABLE INCLUDE:
  - CBQP - CERTIFIED BUILDING COMMISSIONING PROFESSIONAL - ASSOCIATION OF ENERGY ENGINEERS
  - CCP - CERTIFIED COMMISSIONING PROFESSIONAL - BUILDING COMMISSIONING ASSOCIATION
  - CPMP - CERTIFIED PROCESS MANAGEMENT PROFESSIONAL - ASHRAE
  - CXA - CERTIFIED COMMISSIONING AUTHORITY - AABC COMMISSIONING GROUP
  - BSC - BUILDING SYSTEM COMMISSIONING CERTIFICATION - NATIONAL ENVIRONMENTAL BALANCING BUREAU
- FUNCTIONAL TESTING FOR AUTOMATIC LIGHTING CONTROLS IS REQUIRED PER C408.3. THE CONSTRUCTION DOCUMENTS MUST SPECIFY THAT THE BUILDING OWNER WILL BE GIVEN, WITHIN 90 DAYS FROM THE DATE OF RECEIPT OF CERTIFICATE OF OCCUPANCY, WRITTEN CERTIFICATION THAT THE LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE CRITERIA.
  - OCCUPANCY SENSORS: FOR PROJECTS WHERE FEWER THAN EIGHT OCCUPANCY SENSORS ARE INSTALLED, EACH MUST BE TESTED. IF MORE THAN SEVEN ARE INSTALLED, AT LEAST 10% (AND AT LEAST ONE) WILL BE TESTED FOR EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY. IF 30% OR MORE FAIL THE ACCEPTANCE CRITERIA, ALL REMAINING IDENTICAL COMBINATIONS MUST BE TESTED. VERIFY:
    - PROPER LOCATION AND AIMING.
    - CORRECTION OPERATION WHERE THE SENSORS INCLUDE STATUS INDICATORS.
    - THE LIGHTS TURN ON TO THE PERMITTED LEVEL WHEN THE SPACE BECOMES OCCUPIED (IF AUTO-ON).
    - THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED (IF MANUAL-ON).
    - FALSE-ON TRIGGERING DOES NOT OCCUR BY MOVEMENT IN ADJACENT AREAS OR FROM HVAC OPERATION.
  - TIME-SWITCH CONTROLS VERIFY:
    - THE TIME-SWITCH CONTROL IS PROGRAMMED WITH ACCURATE WEEKDAY, WEEKEND AND HOLIDAY SCHEDULES.
    - THE TIME SWITCH INCLUDES THE CORRECT TIME AND DATE.
    - ANY BATTERY BACKUP IS INSTALLED AND ENERGIZED.
    - THE OVERRIDE IS SET TO NO LONGER THAN TWO HOURS.
    - SIMULATING AN OCCUPIED CONDITION, THAT ALL LIGHTS CAN BE TURNED ON/OFF BY THEIR LOCAL THE MANUAL OVERRIDE ALLOWS ONLY LOCAL LIGHTING TO TURN ON AND REMAIN ON UNTIL THE NEXT TIME SWEEP OCCURS WITHIN TWO HOURS.
- ADDITIONAL TESTING MAY BE REQUIRED BY THE AHJ. THE OWNER MUST BE GIVEN DOCUMENTATION INDICATING THE PROGRAMMING (INCLUDING WEEKDAY, WEEKEND AND HOLIDAY SCHEDULES) AND ALL OTHER SETTINGS.

**GENERAL NOTES**

- THE ELECTRICAL CONTRACTOR SHALL REPLACE AND/OR REPAIR TO THE SATISFACTION OF THE ARCHITECT AND ENGINEER, ANY ITEMS THAT ARE DAMAGED OR REMOVED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THESE DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE OFF OF THE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- REFER TO THE ARCHITECTURAL PLANS, ELEVATIONS, AND DIAGRAMS FOR LOCATIONS OF FLOOR AND WALL ELECTRICAL DEVICES. ELECTRICAL DEVICES SHALL BE MOUNTED LONG AXIS VERTICAL AT THE FOLLOWING HEIGHTS AFF TO CENTER OF DEVICE: SWITCHES +48", RECEPTACLES +18", VOICE/DATA JACKS +18", UNLESS NOTED OTHERWISE WITHIN THE DRAWINGS.
- ON NEW FLOOR PLANS: ALL ITEMS SHOWN IN LIGHT LINE WEIGHT ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. ALL ITEMS SHOWN IN HEAVY LINE WEIGHT ARE NEW OR RELOCATED AS NOTED.
- ALL 120V BRANCH CIRCUITS SHALL BE 3-WIRE (PHASE, NEUTRAL, GROUND). PHASE, NEUTRAL, AND GROUND CONDUCTORS SHALL BE NO. 12 AWG UNLESS NOTED OTHERWISE. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE EQUIPMENT GROUNDING CONDUCTORS INSTALLED IN THE RACEWAY. USE OF THE CONDUIT BODY AS A GROUNDING METHOD IS PROHIBITED.
- ALL MOUNTING OF ELECTRICAL DEVICES (LUMINAIRES, TRANSFORMERS, PANELS, OUTLETS, CONDUIT RUNS, ETC.) SHALL COMPLY WITH STATE AND LOCAL SEISMIC REQUIREMENTS. ALL LUMINAIRES SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SUPPORT HANGERS IN COMPLIANCE WITH IBC AND NEC REQUIREMENTS.
- ADA COMPLIANCE: ELECTRICAL DEVICES PROJECTING FROM THE WALLS WITH THEIR LEADING EDGES BETWEEN 27" AND 80" AFF SHALL PROTRUDE NO MORE THAN 4" INTO WALKWAYS OR CORRIDORS.
- BACK TO BACK MOUNTING OF RECEPTACLES OR COMMUNICATION OUTLETS IS NOT PERMITTED. THE MINIMUM SEPARATION BETWEEN DEVICES SHALL BE 6" ON CENTER IN COMMON WALLS AND 24" ON CENTER IN SOUND-RATED WALLS.
- GFCI DEVICES SHALL BE PROVIDED AS NOTED AND SHALL COMPLY WITH NEC AND LOCAL REQUIREMENTS. NO FEED-THRU GFCI PROTECTION SHALL BE PERMITTED FOR DOWNSTREAM DEVICES. GFCI DUPLEX RECEPTACLES SHALL BE UL 943 2006 "LOCK-OUT" ACTION OR "NOTIFICATION" COMPLIANT.
- ALL RECEPTACLES IN BREAK ROOMS SHALL BE GFCI PROTECTED. PROVIDE REMOTE BLANK FACE GFCI DEVICE IN AN ACCESSIBLE LOCATION AS REQUIRED FOR INACCESSIBLE RECEPTACLES. VERIFY REMOTE BLANK FACE GFCI DEVICE LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
- ALL ELECTRICAL CABINETS, PANELS, DISCONNECTS, TRANSFORMERS, CONTROLS, RECEPTACLES, J-BOXES, ETC., SHALL BE MARKED, TAGGED AND IDENTIFIED. PROVIDE ADHESIVE FILM LABEL, MACHINE PRINTED, IN BLACK, BY THERMAL TRANSFER OR EQUIVALENT PROCESS, WITH MINIMUM LETTER HEIGHT OF 3/8". THE LABEL SHALL IDENTIFY THE ORIGINATING PANEL AND CIRCUIT NUMBER IN THE FOLLOWING FORMAT: PANEL-CKT. NOTE FEEDER SOURCE WHERE APPLICABLE. REFERENCE SPECIFICATIONS FOR ADDITIONAL LABELING REQUIREMENTS. WHERE THE PROJECT SPECIFICATIONS INDICATE MORE STRINGENT LABELING REQUIREMENTS, THOSE REQUIREMENTS SHALL TAKE PRECEDENCE.
- THE CONTRACTOR SHALL PROVIDE TYPED, UPDATED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.
- UPON COMPLETION OF THE PROJECT, ALL CHANGES SHALL BE DOCUMENTED, AND REDLINED. AS-BUILT DRAWINGS SHALL BE TURNED OVER TO THE OWNER BY THE CONTRACTOR.
- TRANSFORMERS INDICATED TO BE SUSPENDED FROM THE STRUCTURE SHALL BE SUPPORTED BY A UNISTRUT FRAME THAT IS ATTACHED TO THE STRUCTURE.
- 4" CONCRETE HOUSEKEEPING PADS SHALL BE FURNISHED FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.
- COORDINATE THE LOCATIONS AND CONTROLS OF ALL APPLICABLE FIRE/SMOKE DAMPERS WITH THE MECHANICAL CONTRACTOR, PRIOR TO CONSTRUCTION.
- PROVIDE (1) 3/4" WITH BUSHING AND PULL STRING FROM EACH TELEPHONE, DATA, COMMUNICATION, AND THERMOSTAT OUTLET TO ABOVE THE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE.
- COORDINATE THE INSTALLATION OF COMMUNICATIONS CABLING, ROUTING, MOUNTING BOXES, AND TERMINATIONS WITH THE OWNER OR IT MANAGER, PRIOR TO CONSTRUCTION.
- ALL LOW VOLTAGE AND SYSTEMS CABLING LOCATED ABOVE THE ACCESSIBLE CEILING SHALL BE PROPERLY RATED FOR THE APPLICATION. WITHOUT EXCEPTION, ALL CABLING SHALL BE HUNG FROM BRIDLE-TYPE RINGS OR PLACED IN CABLE TRAYS BY THE ELECTRICAL CONTRACTOR. IN EXPOSED CEILING AREAS, ALL CABLING SHALL BE RUN IN CONDUIT TO THE NEAREST ACCESSIBLE CEILING LOCATION.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID TO VERIFY EXISTING CONDITIONS. BY SUBMITTING A BID THE CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE SITE AND THE BID IS ADEQUATE TO PERFORM ALL OF THE WORK NECESSARY TO MAKE THE SYSTEMS COMPLETE AND OPERATIONAL. IF THE CONDITIONS AT THE SITE ARE NOT SUCH THAT THE WORK CAN BE INSTALLED AS SHOWN, CONTRACTOR'S BID SHALL INCLUDE COST TO COVER NECESSARY ADJUSTMENTS AND ADDITIONS, BASED UPON SITE CONDITIONS, TO MAKE THE SYSTEMS COMPLETE AND OPERATIONAL. CONTRACTOR SHALL CONTACT ARCHITECT/ENGINEER WITH ANY FIELD DISCREPANCIES.
- ON DEMOLITION PLANS: ALL ITEMS SHOWN IN LIGHT LINE WEIGHT ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. ALL ITEMS SHOWN IN HEAVY LINE WEIGHT SHALL BE REMOVED, UNLESS NOTED OTHERWISE.
- IN REMODEL AREAS WHERE OCCUPANCY SENSING DEVICES ARE SPECIFIED AND ARE REPLACING EXISTING MANUAL SNAP SWITCH CONTROL OF THE LIGHTING, PROVIDE A NEUTRAL CONDUCTOR FROM THE LIGHTING CIRCUIT BEING CONTROLLED TO THE OCCUPANCY SENSING DEVICE (OR SWITCH/POWER PACK, WHERE LOW VOLTAGE SENSORS ARE SPECIFIED). FOR BIDDING PURPOSES, ASSUME THAT THE EXISTING SNAP SWITCHES ARE WIRED WITHOUT A NEUTRAL CONDUCTOR, AND A NEW NEUTRAL CONDUCTOR WILL BE REQUIRED.
- THE NEW WIRING REQUIRED IN REMODELED AREAS SHALL BE FISHED THROUGH EXISTING WALLS OR CONCEALED IN NEW WALLS OR ABOVE CEILINGS. SURFACE MOUNTED CONDUIT SHALL NOT BE USED IN ANY FINISHED AREAS. CONTRACTOR SHALL NOT ROUTE ANY CONDUIT WITHIN STRUCTURAL OR TOPPING SLABS OF FLOORS UNLESS NOTED TO DO SO.
- ITEMS THAT ARE SHOWN TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL ASSOCIATED CONDUIT, WIRE, AND HANGERS BACK TO THE POINT OF ORIGIN OR THE NEAREST EXISTING ITEM THAT IS REMAINING, UNLESS NOTED OTHERWISE. WHERE EXISTING DEVICES, SWITCHES, MOTOR CONNECTIONS, ETC. ARE TO BE REMOVED FROM WALLS WHICH ARE REMAINING, WALLS SHALL BE PATCHED TO MATCH ORIGINAL FINISH AFTER CONDUCTORS HAVE BEEN REMOVED. BLANK COVERPLATES OVER EXISTING BOXES ARE NOT ACCEPTABLE. IF EXISTING CONDUITS ARE ROUTED IN CONCRETE FLOOR SLABS, WALLS OR CEILINGS, THEY SHALL BE CUT BACK TO WITHIN CONCRETE AND FILLED WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH FLUSH WITH CONCRETE SURFACE AFTER CONDUCTORS HAVE BEEN REMOVED.
- MAINTAIN CIRCUIT CONTINUITY FOR EXISTING ITEMS THAT ARE REMAINING OR BEING RELOCATED.

ISSUED REVISIONS:

**Layne's Chicken Fingers**  
 Electrical Symbols and Abbreviations



ELECTRICAL SPECIFICATIONS (CONT.)

SECTION 260923 - LIGHTING CONTROL DEVICES

- A. SENSOR LAYOUT: UTILIZING PROJECT-SPECIFIC FLOOR PLANS, MANUFACTURER SHALL PRODUCE A CAD LAYOUT OF THEIR RECOMMENDED LOCATIONS FOR ALL OCCUPANCY SENSORS AND DAYLIGHT SENSORS. INDICATE WHERE ADDITIONAL SENSORS ARE RECOMMENDED OR WHERE ANY SENSORS CAN BE ELIMINATED. CONTRACTOR SHALL USE THIS LAYOUT FOR ROUGH-IN OF SENSOR LOCATIONS.
B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
1. ACUITY CONTROLS
2. HUBBELL CONTROL SOLUTIONS
3. WATTSTOPPER
4. LUTRON
5. GREENGATE
6. DOUGLAS LIGHTING CONTROLS
7. CRESTRON
8. STEINEL PROFESSIONAL
9. TOUCHÉ LIGHTING CONTROL
10. B.E.G. CONTROLS
C. OCCUPANCY SENSORS, LINE VOLTAGE, WALL SWITCH TYPE
1. SHALL USE PASSIVE INFRARED MOTION DETECTION.
2. SHALL BE COMPATIBLE WITH INCANDESCENT, MAGNETIC OR ELECTRONIC LOW VOLTAGE, AND MAGNETIC OR ELECTRONIC FLUORESCENT, AS WELL AS MOTOR LOADS.
3. SWITCH SHALL BE MICROPROCESSOR CONTROLLED.
4. SHALL BE CAPABLE OF DETECTING OCCUPANCY WITH TRUE, 180° FIELD OF VIEW.
5. SHALL UTILIZE ZERO CROSSING CIRCUITRY, WHICH INCREASES RELAY LIFE, PROTECTS FROM THE EFFECTS OF INRUSH CURRENT, AND INCREASES SENSOR LONGEVITY.
6. WALL SWITCH SHALL HAVE INTEGRAL SHUTTERS THAT NARROW THE FIELD OF VIEW FROM 180°
7. SHALL FEATURE PUSHBUTTON FOR MANUAL ON AND OFF, WHICH TIMES OUT BASED UPON OCCUPANCY DETECTION.
8. AN LED SHALL INDICATE OCCUPANCY STATUS.
9. INTERNAL TIMER SHALL BE FACTORY SET AT 10 MINUTES, SHALL BE PUSH-BUTTON PROGRAMMABLE FROM 30 SECONDS TO 20 MINUTES AND SHALL RESET EVERY TIME OCCUPANCY IS RE-DETECTED. REQUIRES NO FIELD CALIBRATION OR SENSITIVITY ADJUSTMENTS.
10. MANUAL RANGE, PHOTOCELL, AND TIME SETTINGS SHALL BE USER-CONFIGURABLE.
11. SWITCH SHALL BE RATED AT 120/277V IN ONE UNIT.
12. UNIT SHALL FIT IN A STANDARD BOX AND USE A STANDARD WALLPLATE, WHICH IS GANGABLE.
13. WALL SWITCH SHALL NOT PROTRUDE MORE THAN .4 INCHES FROM BOX.
14. SHALL BE A DECORA STYLE UNIT WITH A MATCHING WALLPLATE AVAILABLE.
15. SHALL HAVE STANDARD 5 YEAR WARRANTY AND SHALL BE UL LISTED.
16. TWO-POLE DEVICES SHALL PROVIDE SWITCHING FOR 2 SEPARATE BANKS FROM A SINGLE UNIT.
D. OCCUPANCY SENSORS, LOW VOLTAGE, CEILING MOUNT
1. SHALL INCORPORATE DUAL-TECHNOLOGY PASSIVE INFRARED AND ULTRASONIC MOTION DETECTION.
2. SHALL MOUNT ON CEILING.
3. SHALL HAVE 360° COVERAGE WITH AT LEAST A 28 FT COVERAGE PATTERN (WHEN MOUNTED AT 9 FT) IN ALL DIRECTIONS FOR WALKING MOTIONS. SHALL AUTOMATICALLY ADAPT TO CHANGING ROOM CONDITIONS—INCLUDING BACKGROUND PIR LEVELS AND CONTINUOUS AIRFLOW NOT LESS THAN 6 FEET FROM SENSOR.
4. SHALL INCORPORATE A REAL-TIME MOTION INDICATOR LED, WHICH IS VISIBLE FROM THE FRONT OF UNIT.
5. SHALL HAVE MASK INSERTS FOR PIR REJECTION TO PREVENT FALSE TRIPPING.
6. INTERNAL TIMER SHALL BE FACTORY SET AT 10 MINUTES, SHALL BE PUSH-BUTTON PROGRAMMABLE FROM 30 SECONDS TO 20 MINUTES AND SHALL RESET EVERY TIME OCCUPANCY IS RE-DETECTED. REQUIRES NO FIELD CALIBRATION OR SENSITIVITY ADJUSTMENTS.
7. SHALL BE INCLUDED WITH A LOW VOLTAGE RELAY FOR TIE-IN TO BUILDING AUTOMATION SYSTEM.
8. SHALL HAVE STANDARD 5 YEAR WARRANTY AND SHALL BE UL LISTED.
E. POWER PACK
1. TRANSFORMERS 120 OR 277V TO CLASS 2, 15 TO 24V DC, TO POWER REMOTE SENSORS.
2. SHALL BE COMPATIBLE WITH INCANDESCENT, MAGNETIC OR ELECTRONIC LOW VOLTAGE, AND MAGNETIC OR ELECTRONIC FLUORESCENT, AS WELL AS MOTOR LOADS.
3. RATINGS: 20A INCANDESCENT, 20A FLUORESCENT, 120 OR 277V.
4. SHALL BE PLENUM RATED. MOUNT IN DEEP JUNCTION BOX WHERE REQUIRED PER LOCAL AHJ.
5. SHALL HAVE ELONGATED MOUNTING NIPPLE WHICH CAN BE MOUNTED EITHER DIRECTLY THROUGH A 1/2" KNOCKOUT IN A JUNCTION BOX OR TO BE LOCATED INSIDE AN ADJACENT BOX FOR SPECIFIC LOCAL CODE REQUIREMENTS. CONTRACTOR TO VERIFY.
6. SHALL BE CAPABLE OF POWERING UP TO 14 SENSORS.
7. SHALL HAVE SELF-CONTAINED RELAYS WITH RELAY CIRCUIT PROTECTION.
8. PROVIDE 2-POLE VERSION FOR ROOMS WITH TWO LEVELS OF LIGHTING CONTROL INCLUDING INBOARD/OUTBOARD SWITCHING.
9. SHALL HAVE STANDARD 5 YEAR WARRANTY AND SHALL BE UL LISTED.
F. WALL TIMER SWITCHES
1. THE TIMER SHALL BE AN ELECTRONIC INTERVAL TIMER WITH A MANUALLY OPERATED TOGGLE SWITCH.
2. THE TIMER SWITCH SHALL BE CAPABLE OF 3-WAY OPERATION.
3. SWITCH CONTACTS SHALL BREAK THE CURRENT AT THE END OF A PRESET TIME WHICH IS USER ADJUSTABLE FROM 1 MINUTE TO 18 HOURS. TIMER ADJUSTMENT SHALL BE HIDDEN AFTER WALLPLATE IS INSTALLED. FLICKER FEATURE SHALL BE PROVIDED TO PROVIDE A FLICK WARN OF THE LOAD CONTROLLED TWO MINUTES BEFORE THE END OF THE TIMED CYCLE AND AGAIN ONE MINUTE BEFORE THE END OF THE TIMED CYCLE.
4. UNIT SHALL FIT INTO A STANDARD 2-1/2 INCH DEEP WALL BOX, SINGLE OR MULTI-GANG INSTALLATION, AND ACCEPT A STANDARD TOGGLE SWITCHPLATE.
5. UNIT SHALL BE CAPABLE OF SWITCHING FLUORESCENT LIGHTS WITH ELECTRONIC OR ELECTROMAGNETIC BALLASTS, INCANDESCENT LIGHTS, OR MOTOR LOADS. UNIT SHALL ACCEPT INPUT OF 24, 120, 208-240, OR 277 VOLTS AC AT 60/60 HZ.
6. TIME SWITCH SHALL HAVE 5 YEAR WARRANTY AND SHALL BE UL LISTED.
G. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT, TEST, AND ADJUST FIELD-ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS, AND ASSIST IN FIELD TESTING. REPORT RESULTS IN WRITING. REMOVE AND REPLACE LIGHTING CONTROL DEVICES WHERE TEST RESULTS INDICATE THAT THEY DO NOT COMPLY WITH SPECIFIED REQUIREMENTS.

- H. ADJUSTING
1. FINAL OCCUPANCY SENSOR LOCATIONS SHALL BE DETERMINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND LOCATIONS ADJUSTED AS REQUIRED PRIOR TO ROUGH-IN. REFER TO SENSOR LAYOUT SUBMITTAL PROVIDED BY MANUFACTURER. ALL SENSORS SHALL HAVE NON-ADJUSTABLE FACTORY CALIBRATED SENSITIVITY FOR MAXIMUM PERFORMANCE. A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE SHALL BE ENGAGED TO MEET ON-SITE WITH THE CONTRACTOR TO DETERMINE PROPER DEVICE LOCATIONS PRIOR TO ROUGH-IN.
2. ONCE LIGHTING FIXTURES AND OCCUPANCY SENSORS HAVE BEEN INSTALLED, A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE SHALL BE ENGAGED TO SET-UP AND PROGRAM OCCUPANCY SENSORS AND PHOTOSENSORS. CONTRACTOR AND SERVICE REPRESENTATIVE SHALL MEET ON-SITE WITH THE OWNER TO DETERMINE APPROPRIATE SET POINTS AND PROGRAMMING.
a. ALL OCCUPANCY SENSORS SHALL BE FIELD ADJUSTED/AIMED TO EFFECTIVELY DETECT MOTION AND ELIMINATE NOISANCE TRIPPING.
b. TIME DELAY SETTINGS FOR OCCUPANCY SENSORS SHALL BE FACTORY SET AT 10 MINUTES, AND SHALL NOT BE FIELD ADJUSTED UNLESS SPECIFICALLY INSTRUCTED BY ARCHITECT. THIS DELAY SELECTION IS BASED ON LAMP LIFE VS. ENERGY SAVINGS AND SENSOR PERFORMANCE.
3. ONCE ALL OCCUPANCY SENSORS HAVE BEEN SET-UP, ADJUSTED AND PROGRAMMED, CONTRACTOR SHALL MEET AGAIN WITH FACTORY-AUTHORIZED SERVICE REPRESENTATIVE AND OWNER TO TEST OPERATION OF SYSTEMS. SERVICE REPRESENTATIVE SHALL BE ENGAGED TO MAKE ADJUSTMENTS TO SENSORS, SET POINTS AND PROGRAMMING AS NECESSARY FOR PROPER OPERATION.
I. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE SHALL BE ENGAGED TO PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO SITE OUTSIDE NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.
J. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN LIGHTING CONTROLS. REFER TO DIVISION 1 SECTION "CLOSEOUT PROCEDURES." PROVIDE A MINIMUM OF FOUR (4) HOURS OF OWNER TRAINING.

SECTION 262213 - DRY TYPE TRANSFORMERS

- A. TRANSFORMERS SHALL BE CONTINUOUSLY RATED ISOLATING TYPE FOR 60 HERTZ SERVICE UNLESS OTHERWISE INDICATED.
B. INSULATION SYSTEMS SHALL BE 220 DEGREES C (150 DEGREES C RISE).
C. ENCLOSURES FOR TRANSFORMERS SHALL BE METALLIC, SUITABLE FOR INDOOR AND OUTDOOR INSTALLATION AS APPLICABLE AND RODENT PROOF.
D. MANUFACTURER SHALL BE CUTLER-HAMMER, SQUARE "D", GENERAL ELECTRIC OR I.T.E.—SIEMENS. FRACTIONAL KVA TRANSFORMERS SHALL BE MANUFACTURED BY EDWARDS OR THE SPECIAL EQUIPMENT MANUFACTURER IN WHICH THE TRANSFORMERS ARE USED.
E. FOUR APPROVED VIBRATION DAMPENERS PER TRANSFORMER SHALL BE EMPLOYED AS NECESSARY TO AVOID TRANSMITTING ANY VIBRATION TO THE BUILDING STRUCTURE. SIZES OF THE MOUNTINGS SHALL BE SELECTED ON THE BASIS OF THE WEIGHT OF THE TRANSFORMER, USING:
1. A MINIMUM 1" THICK RUBBER-CORK-RUBBER SANDWICH TYPE FOR FLOOR MOUNTING.
2. A SPRING TYPE FOR SUSPENSION MOUNTING.
3. TWO (2) SPRING TYPE AT THE TOP (WITH TWO (2) STEEL BRACKETS) AND TWO (2) RUBBER-IN COMPRESSION TYPE AT THE BOTTOM (STAND-OFF) FOR WALL MOUNTING.
F. NO CONDUITS SHALL BE ATTACHED DIRECTLY TO THE TRANSFORMER. AT EACH ATTACHMENT, PROVIDE A VIBRATION DAMPENING ASSEMBLY CONSISTING OF:
1. A T&B #5721, 2, 3 ETC., OR EQUIVALENT FEMALE HUB TYPE LIQUID-TIGHT CONNECTOR BY STEEL CITY, EFCOR OR APPROVED EQUAL.
2. T&B #5331, 2, 3 ETC., OR EQUIVALENT MALE HUB TYPE LIQUID-TIGHT CONNECTOR WITH AN INSULATED THROAT BY STEEL CITY, EFCOR OR APPROVED EQUAL.
3. SHOR LENGTH (24" PLUS OR MINUS) OF LIQUID-TIGHT FLEXIBLE CONDUIT.
4. A BONDING JUMPER OF NEC SIZE OUTSIDE OF THE ASSEMBLY.
G. FLOOR MOUNTING: ALL FLOOR MOUNTED TRANSFORMERS SHALL BE INSTALLED ON A 4" HIGH CONCRETE PAD. THIS CONTRACTOR SHALL FURNISH AND INSTALL CONCRETE PAD.

SECTION 262416 - PANELBOARDS

- A. PANELBOARDS
1. PANELBOARDS SHALL BE ENCLOSED DEAD FRONT SAFETY TYPE WITH FEATURES AND RATINGS AS SCHEDULED ON THE DRAWINGS.
2. PANELS KNOWN AS "LOAD CENTERS" ARE UNACCEPTABLE.
3. MOLDED CASE CIRCUIT BREAKERS SHALL BE AS SCHEDULED ON THE DRAWINGS AND SPECIFIED IN THIS DIVISION.
4. ALL BUS BAR SHALL BE RECTANGULAR SOLID COPPER.
5. SPACE, WHERE SHOWN IN PANEL SCHEDULES, DESIGNATES SPACE FOR FUTURE PROTECTIVE DEVICES AND SHALL INCLUDE BUS AND SUPPORT.
6. INSTALL CABINETS SO THAT CENTER OF THE TOP BREAKER DOES NOT EXCEED 6'-6" ABOVE THE FINISHED FLOOR.
7. ENTRIES ON DIRECTORY CARDS SHALL BE TYPED, COMPLETE AND ACCURATE.
8. ALL BOLTED CONNECTIONS SHALL BE TORQUED IN ACCORDANCE WITH MANUFACTURER'S STANDARDS.
9. ELECTRICAL CONTRACTOR SHALL ARRANGE CIRCUITS AS NEAR AS POSSIBLE TO CIRCUIT NUMBERS ON THE DRAWINGS. AT COMPLETION OF JOB, ELECTRICAL CONTRACTOR SHALL TAKE CURRENT READING CHECKS OF RESPECTIVE PHASES. A MINIMUM OF CIRCUIT CONNECTIONS SHALL BE REARRANGED TO BALANCE, AS CLOSELY AS POSSIBLE, THE LOAD IN THE PANEL.
10. ALL BREAKERS SHALL BE BOLT-ON TYPE.
11. PROVIDE (3) SPARE 1" CONDUITS INTO ACCESSIBLE CEILING SPACE WHERE PANELS ARE FLUSH-MOUNTED.
12. MANUFACTURER SHALL BE SQUARE D, SIEMENS, G.E., OR CUTLER-HAMMER.

SECTION 262726 - WIRING DEVICES

- A. WIRING DEVICE COLOR SHALL BE SELECTED BY ARCHITECT, UNLESS OTHERWISE INDICATED.
B. PROVIDE TOTALLY ENCLOSED, 20 AMPERE, 120/277 VOLT, QUIET A/C GENERAL USE SNAP SWITCHES.
C. SWITCHES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL, P&S, OR LEVITON.
D. PROVIDE NEMA CONFIGURATION 5-20R DUPLEX 125 VOLT GROUNDING TYPE RECEPTACLES RATED FOR 20 AMPERES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
E. RECEPTACLES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL, P&S OR LEVITON.
F. RECEPTACLES REQUIRING AMPERAGES, VOLTAGES OR CONFIGURATIONS DIFFERENT FROM THE DUPLEX CONVENIENCE RECEPTACLES ABOVE SHALL BE AS INDICATED ON THE DRAWINGS.
G. PROVIDE OTHER RECEPTACLES OF A QUALITY, MATERIAL AND WORKMANSHIP EQUAL TO THAT SPECIFIED FOR DUPLEX CONVENIENCE RECEPTACLES.
H. PROVIDE COVER OR DEVICE PLATES FOR OUTLET BOXES AS FOLLOWS UNLESS OTHERWISE NOTED.
1. FINISHED AREAS: THERMOPLASTIC - COLOR TO MATCH DEVICE.
2. UNFINISHED AREAS: ZINC COATED SHEET METAL, ALUMINUM, OR CAST METAL AS APPROPRIATE FOR THE TYPE OF BOX.
3. EXTERIOR AREAS: COPPER FREE ALUMINUM WITH GRAY, POWDER EPOXY FINISH, GASKET, WEATHERPROOF, CRO USE-HINDS "WLRD" FOR DUPLEX RECEPTACLES AND WIRS FOR SINGLE RECEPTACLES OR EQUAL.
4. TELEPHONE, COMMUNICATION, AND SIGNAL OUTLET PLATES, SHALL MATCH THOSE USED FOR RECEPTACLES AND SWITCHES. ALL OUTLET AND/OR JUNCTION BOXES SHALL BE COMPLETE WITH A COVER PLATE BY THIS CONTRACTOR.
5. WHERE DEVICES ARE GANGED, THEY SHALL BE INSTALLED UNDER A COMMON COVER PLATE.

- I. LOCATE THE SWITCHES APPROXIMATELY 4'-0" ABOVE THE FINISHED FLOOR ELEVATION OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS OTHERWISE INDICATED. THE LONG DIMENSION OF THE SWITCHES SHALL BE VERTICAL.
J. LOCATE RECEPTACLES APPROXIMATELY 1'-6" ABOVE THE FINISHED FLOOR ELEVATION OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS NOTED OTHERWISE. THE LONG DIMENSION OF RECEPTACLES SHALL BE VERTICAL.

SECTION 262813 - FUSES

- A. THE CONTRACTOR SHALL FURNISH A COMPLETE SET OF FUSES FOR ALL SWITCHES, PLUS FUSIBLE EQUIPMENT FURNISHED BY OTHER TRADES, UNLESS INDICATED OTHERWISE ON PLANS. THE FUSES SHALL BE OF THE FOLLOWING TYPES:
1. FUSES 601 TO 6000 AMPS SHALL BE UL CLASS. TRADE TYPE SHALL BE KRP-C AS MANUFACTURED BY BUSSMANN COMPANY.
2. FUSES 1/10 TO 600 AMPS SHALL BE UL CLASS RK1. TRADE TYPE SHALL BE LOW PEAK LPS-RK (600V) AND LPN-RK (250V) AS MANUFACTURED BY BUSSMANN COMPANY.
3. ALL OTHER FUSES SHALL BE DUAL-ELEMENT CURRENT-LIMITING TYPE WITH 200,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY.
B. FUSES SHALL BE MANUFACTURED BY BUSSMANN, GOULD-SHAWMUTT, OR RELIANCE.
C. SPARE FUSES AMOUNTING TO A DUPLICATE SET OF EACH SIZE INSTALLED SHALL BE TURNED OVER TO THE OWNER UPON COMPLETION OF THE PROJECT. PROVIDE AND PLACE IN A SPARE FUSE CABINET SIMILAR TO BUSSMAN # SFC.
D. THIS CONTRACTOR SHALL REPLACE ALL FUSES BLOWN DURING CONSTRUCTION.

SECTION 262816 - SAFETY SWITCHES

- A. SAFETY SWITCHES SHALL BE THE ENCLOSED HEAVY-DUTY TYPE (TYPE HD) WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PAD LOCKABLE OPERATING HANDLE.
B. SAFETY SWITCHES SHALL BE RATED FOR 240 OR 600 VOLTS AS APPLICABLE. THEY SHALL BE HORSEPOWER RATED WHEN USED IN MOTOR CIRCUITS.
C. SAFETY SWITCHES SHALL BE FUSIBLE OR NON-FUSIBLE 2, 3, OR 4 POLE AS INDICATED ON THE DRAWINGS.
D. SAFETY SWITCHES SHALL BE SINGLE THROW UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
E. ENCLOSURES SHALL BE NEMA 1 INDOORS AND NEMA 3R OUTDOORS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
F. MANUFACTURER SHALL BE SQUARE D, SIEMENS, GE, OR CUTLER-HAMMER. ALL SAFETY SWITCHES SHALL BE BY ONE MANUFACTURER.
G. MOUNT THE SAFETY SWITCHES SECURELY BETWEEN 3' X 6' LEVELS ABOVE THE FLOOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
H. SWITCHES ON BLOCK WALLS SHALL BE MOUNTED ON A 3/4" PLYWOOD BACKBOARD, WHERE LOCATED INDOORS.

SECTION 262913 - MOTOR STARTERS

- A. PROVIDE MOTOR STARTERS (MAGNETIC OR FUSED COMBINATION) AND CONTROL EQUIPMENT WHERE SHOWN. STARTERS SHALL BE PROVIDED WITH 120 VOLT COILS, 3 OVERLOADS, CONTROL TRANSFORMER WITH FUSED 120VOLT SECONDARY CONTROL CIRCUIT, (2) N.O. AND (2) N.C. AUXILIARY CONTACTS, HAND-OFF-AUTO SELECTOR SWITCH AND RUNNING PILOT LIGHT, UNLESS OTHERWISE NOTED. WIRE THRU CONTROL DEVICES FURNISHED BY OTHER TRADES, SINCE MOTOR DRIVEN EQUIPMENT IS FURNISHED BY OTHER TRADES, THE CONTROL INDICATED ON THE DRAWINGS SHALL BE CONSIDERED AS FOR BIDDING PURPOSES ONLY. WIRE TO CONFORM TO THE ACTUAL EQUIPMENT SUPPLIED AND INSTALLED BY THE OTHER TRADES. ALL FUSES SHALL BE DUAL ELEMENT TYPE. PROVIDE "BLOWN-FUSE" INDICATOR LAMPS IN COVER.
B. STARTERS SHALL BE SQUARE D, G.E., CUTLER-HAMMER, OR SIEMENS.
C. THE EXACT NUMBER OF NORMALLY OPEN AND NORMALLY CLOSE AUXILIARY CONTACTS IN EACH STARTER SHALL BE DETERMINED BY THE TEMPERATURE CONTROL CONTRACTOR.
D. COORDINATE ALL EQUIPMENT INDICATED ON THE ELECTRICAL DRAWINGS WITH MECHANICAL EQUIPMENT SCHEDULES AND SPECIFICATIONS AND PROVIDE MOTOR STARTERS FOR ALL EQUIPMENT INDICATED AS BEING INTERLOCKED OR STARTED FROM A REMOTE LOCATION.
E. STARTERS SUPPLIED AS AN INTEGRAL PART OF EQUIPMENT SHALL BE FURNISHED UNDER THE DIVISION PROVIDING THE EQUIPMENT. WIRING AND DISCONNECT SHALL BE BY THIS CONTRACTOR. ALL OTHER STARTERS AND AUXILIARY CONTROL EQUIPMENT SHALL BE SUPPLIED AND WIRED BY THIS CONTRACTOR UNLESS OTHERWISE NOTED.

SECTION 265119 - LIGHTING FIXTURES

- A. LED LIGHTING FIXTURES:
1. RECESSED FIXTURES: COMPLY WITH NEMA LE 4.
2. BULB SHAPE COMPLYING WITH ANSI C79.1.
3. LAMP BASE COMPLYING WITH ANSI C81.61.
4. CRI OF MINIMUM 80.
5. CCT OF 3500K, UNLESS NOTED OTHERWISE ON THE PLANS OR FIXTURE SCHEDULE.
6. RATED LAMP LIFE OF 50,000 HOURS, MINIMUM AT 70 PERCENT LUMEN MAINTENANCE.
7. LAMPS DIMMABLE FROM 100 PERCENT TO 10 PERCENT OF MAXIMUM LIGHT OUTPUT, UNLESS NOTED OTHERWISE ON THE PLANS OR FIXTURE SCHEDULE.
8. INTEGRAL DRIVER. DRIVER POWER FACTOR SHALL BE 40 PERCENT OR GREATER. HARMONIC DISTORTION SHALL BE LESS THAN 10% THD. DRIVERS SHALL BE EQUIPPED WITH AUTOMATIC THERMAL PROTECTION AND 20 KA SURGE PROTECTION WITH END OF LIFE LED INDICATOR.
9. NOMINAL OPERATING VOLTAGE: AS INDICATED ON PLANS AND SCHEDULES.
10. EFFICIENCY MINIMUM OF 80 LUMENS PER WATT.
11. EACH LED LUMINAIRE TYPE SHALL BE BINNED WITHIN A THREE-STEP MACADAM ELLIPSE TO ENSURE COLOR CONSISTENCY AMONG LUMINAIRES.
12. FIXTURES SHALL COMPLY WITH UL 1598 AND UL 8750.
B. EXIT SIGNS:
2. COMPLY WITH UL 924; FOR SIGN COLORS AND LETTERING SIZE, COMPLY WITH AUTHORITIES HAVING JURISDICTION.
3. INTERNALLY LIGHTED SIGNS: LAMPS FOR AC OPERATION: LIGHT-EMITTING DIODES, 70,000 HOURS MINIMUM OF RATED LAMP LIFE.
4. NFPA 101 COMPLIANCE: COMPLY WITH VISIBILITY AND LUMINANCE REQUIREMENTS FOR EXIT SIGNS.
C. ALL LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR AS INDICATED ON THE LIGHTING FIXTURE SCHEDULE. OTHER ACCEPTABLE MANUFACTURERS SHALL BE AT THE DISCRETION AND APPROVAL OF THE ARCHITECT AND ENGINEER.
D. ALL FIXTURES SHALL BEAR THE UNDERWRITER'S LABORATORIES (UL) LABEL, BE LISTED AND APPROVED FOR THE PURPOSE INTENDED AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
E. EXISTING FIXTURES NOTED TO BE REUSED SHALL BE CLEANED AND RELAMPED.
F. ELECTRICAL CONTRACTOR SHALL CONFIRM THAT ALL LIGHTING FIXTURES AND ASSOCIATED DRIVERS, BALLASTS, ETC. ARE COORDINATED WITH THE LIGHTING/DIMMING CONTROLS BEING PROVIDED. CONTRACTOR SHALL VERIFY IF AND WHERE GENERATOR TRANSFER DEVICES (GTDs) ARE REQUIRED PRIOR TO ORDERING LIGHTING FIXTURES.
G. ELECTRICAL CONTRACTOR SHALL CONFIRM THAT ALL LIGHTING FIXTURE MOUNTING OPTIONS AND HARDWARE ARE COORDINATED WITH THE CEILING HEIGHT AND CONSTRUCTION. CONTRACTOR SHALL VERIFY FIXTURE MOUNTING HEIGHTS WITH ARCHITECT PRIOR TO ORDERING AND ROUGH-IN.
H. COORDINATE LAYOUT AND INSTALLATION OF LIGHTING FIXTURES AND SUSPENSION SYSTEM WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS OR IS SUPPORTED BY THEM, INCLUDING HVAC EQUIPMENT, FIRE-SUPPRESSION SYSTEM, AND PARTITION ASSEMBLIES.
I. SET ALL LIGHTING FIXTURES LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS.
J. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY SUPPORT MEDIA FOR ALL LIGHTING FIXTURES INCLUDING STRUCTURAL STEEL ANGLE, RODS, ETC. AND SHALL BE SUPPORTED IN A MANNER ACCEPTABLE TO THE LOCAL INSPECTION AUTHORITIES. ALL FIXTURES SHALL BE FIRMLY SUPPORTED FROM BEAMS OR JOISTS.
1. PROVIDE ALL NECESSARY BACKING, BLOCKING AND SUPPORTS FOR WALL MOUNTED FIXTURES.

- 2. FIXTURES SHALL NOT BE SUPPORTED FROM ROOF DECK.
3. SUPPORT FOR FIXTURES IN OR ON GRID-TYPE SUSPENDED CEILINGS:
a. INSTALL A MINIMUM OF FOUR CEILING SUPPORT SYSTEM RODS OR WIRES FOR EACH FIXTURE. LOCATE NOT MORE THAN 6 INCHES (150 MM) FROM FIXTURE CORNERS.
b. SUPPORT CLIPS: FASTEN TO FIXTURES AND TO CEILING GRID MEMBERS AT OR NEAR EACH FIXTURE CORNER WITH CLIPS THAT ARE UL LISTED FOR THE APPLICATION.
c. FIXTURES OF SIZES LESS THAN CEILING GRID: INSTALL AS INDICATED ON REFLECTED CEILING PLANS OR CENTER IN ACOUSTICAL PANEL, AND SUPPORT FIXTURES INDEPENDENTLY WITH AT LEAST TWO 3/4-INCH (20-MM) METAL CHANNELS SPANNING AND SECURED TO CEILING TEES.
4. SUSPENDED FIXTURE SUPPORT: PENDANTS AND RODS: WHERE LONGER THAN 48 INCHES (1200 MM), BRACE TO LIMIT SWINGING.
K. IF REQUIRED BY CODE, LIGHT FIXTURES SHALL BE CHICAGO PLENUM OR NEW YORK CITY RATED. IF REQUIRED BY CODE OR PROJECT REQUIREMENTS, LIGHT FIXTURES SHALL BE CALGREEN, DC GREEN, TITLE 24 AND/OR ENERGY STAR COMPLIANT/CERTIFIED.
L. RECESSED FIXTURES RECESSED IN AIR PLENUMS SHALL BE APPROVED FOR THE PURPOSE INTENDED AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS. FIXTURES SHALL BE AIR-TIGHT RATED AND/OR PROVIDE AIR-TIGHT GASKETS TO SEAL AROUND OPENINGS.
M. RECESSED FIXTURES IN DIRECT CONTACT WITH INSULATION SHALL BE IC (INSULATED CEILING) RATED. INSULATION SHALL BE KEPT AWAY FROM NON-IC RATED FIXTURES AS REQUIRED BY CODE AND MANUFACTURER'S INSTRUCTIONS. PROVIDE BARRIERS AS REQUIRED.
N. ALL PENETRATIONS ASSOCIATED WITH THE ELECTRICAL INSTALLATION LOCATED IN OR PASSING THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE-STOPPED USING A UL APPROVED METHOD. FURNISH AND INSTALL UL LISTED FIRE RATED MATERIALS AND EQUIPMENT SUCH AS BOXES, PUDDY PADS, ENDOTHERMIC MAT, LIGHTING FIXTURES WITH RATED ENCLOSURES, FIRE RATED COVERS FOR LIGHTING FIXTURES, ETC. TO COMPLY WITH CODE FOR PROJECT CONDITIONS. UL APPROVED METHOD FOR FIRE STOPPING SHALL MEET OR EXCEED FIRE RATING OF STRUCTURE BEING PENETRATED. REFERENCE ARCHITECTURAL PLANS FOR FIRE RATINGS.
O. ALL ADJUSTABLE FIXTURES SHALL BE AIMED AND ADJUSTED DURING EVENING HOURS TO THE SATISFACTION OF THE ARCHITECT.
P. SUBMITTALS: IN ACCORDANCE WITH OTHER SECTIONS OF THESE SPECIFICATIONS, PROVIDE SHOP DRAWINGS FOR LIGHTING FIXTURES CONTAINING THE FOLLOWING INFORMATION (AS APPLICABLE):
1. PROJECT SPECIFIC LUMINAIRE DESIGNATION
2. ALL FEATURES, OPTIONS, ACCESSORIES, MOUNTING, ETC. CLEARLY MARKED
3. LUMINAIRE DIMENSIONS
4. DELIVERED LUMEN OUTPUT, CCT AND CRI
5. LAMP LIFE
6. ENERGY EFFICIENCY DATA
7. PHOTOMETRIC DATA
8. LISTINGS (NRTL, IC, IP, ETC.)
9. LIGHTING CONTROLS COMPATIBILITY
10. EMERGENCY BATTERIES (INTEGRAL OR REMOTE) INCLUDING THE CAPACITY AND LUMEN OUTPUT
11. FACTORY SHOP DRAWINGS INDICATING PROJECT SPECIFIC LENGTHS AND LAYOUTS FOR ALL CONTINUOUS LINEAR PRODUCTS

SECTION 270528 - TELEPHONE SYSTEM

- A. ELECTRICAL CONTRACTOR TO PROVIDE TELEPHONE SERVICE CONDUIT OR DUCT TO TELEPHONE BOARD AS SHOWN ON PLANS. SERVICE CONDUIT SIZE AND QUANTITY SHALL BE AS DETERMINED BY LOCAL TELEPHONE COMPANY.
B. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUITS WITH PULL WIRES, OUTLET BOXES, METAL CABINETS AND PULL BOXES. PROVIDE A COMPLETE CONDUIT SYSTEM WITH PULL WIRE AS INDICATED ON DRAWINGS.
C. ALL PLATES SHALL BE STANDARD TELEPHONE TYPE WITH JACK. PROVIDE PLATES OF SAME MATERIAL AND FINISH AS SPECIFIED FOR RECEPTACLES. WALL PHONE PLATES SHALL HAVE MOUNTING STUDS.
D. PROVIDE FIRE-RATED PLYWOOD TERMINAL BOARD AS SHOWN ON DRAWINGS.
E. A CONDUIT RUN SHALL HAVE NOT MORE THAN THREE (3) BENDS IN A RUN BETWEEN OUTLET BOXES OR BETWEEN OUTLET BOX AND A METAL CABINET OR PULL BOX. WHEN A RUN REQUIRES MORE THAN THREE (3) BENDS, A PULL BOX OF SUITABLE SIZE SHALL BE PLACED IN SUITABLE LOCATION TO MEET THE ABOVE CONDITIONS.

ISSUED REVISIONS:
Table with 2 columns: No., Description

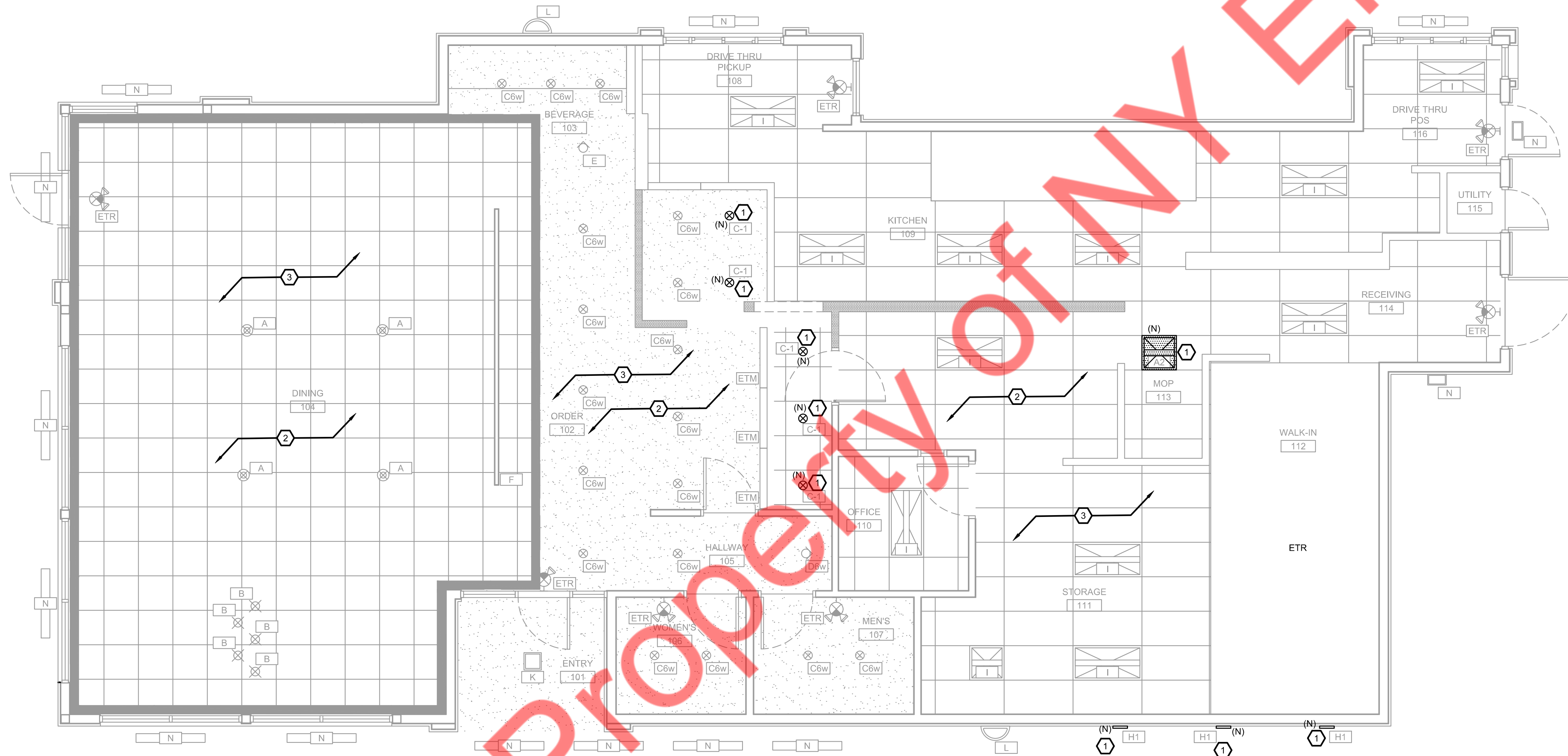
Layne's Chicken Fingers
Electrical Specifications

**GENERAL NOTES**

- a. LUMINAIRES SHALL BE FURNISHED AND INSTALLED WITH LAMPS, BALLAST(S), AND MOUNTING HARDWARE. ELECTRICAL CONTRACTOR SHALL SUBMIT FIXTURE CUT SHEETS TO CLIENT AND ARCHITECT FOR THEIR FINAL APPROVAL PRIOR TO ORDERING OF THE LUMINAIRES.
- b. ELECTRICAL CONTRACTOR SHALL COORDINATE LIGHTING FIXTURE QUANTITIES, MOUNTING REQUIREMENTS, FINISHES, FIXTURE AVAILABILITY AND LEAD TIME FOR DELIVERY TO SITE.
- c. LED LUMINAIRES THAT CONTAIN BALLAST(S) AND/OR LED DRIVERS THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS PER NEC ARTICLE 410.130(G) REQUIREMENTS. DISCONNECTING MEANS IS NOT REQUIRED FOR EMERGENCY ILLUMINATION REQUIRED IN 700.16.
- d. COORDINATE LAYOUT AND INSTALLATION OF LUMINAIRES AND MOUNTING MEANS WITH OTHER CONSTRUCTION THAT IS SUPPORTED OR THAT PENETRATES CEILINGS, INCLUDING BUT NOT LIMITED TO HVAC EQUIPMENT, FIRE-SUPPRESSION SYSTEM, AND PARTITION ASSEMBLIES PRIOR TO BEGINNING ANY WORK. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN HVAC EQUIPMENT AND LOCATION OF LUMINAIRES. VERIFY CLEARANCES REQUIRED.
- e. ALL LUMINAIRES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM BY MECHANICAL MEANS. LISTED SUPPORT CLIPS, LISTED FOR USE WITH THE TYPE OF CEILING GRID MEMBER AND LUMINAIRE, ARE PERMITTED AT EACH FIXTURE CORNER. FIXTURES WEIGHING LESS THAN 50 POUNDS SHALL ALSO HAVE A MINIMUM OF TWO NO. 9 GAUGE WIRES CONNECTED FROM THE OPPOSITE CORNERS OF THE FIXTURE HOUSING TO STRUCTURE. FIXTURES ABOVE 50 POUNDS SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE. FIXTURES OF SIZES LESS THAN CEILING GRID SHALL BE SUPPORTED INDEPENDENTLY WITH AT LEAST TWO 3/4-INCH LISTED METAL CHANNELS SPANNING AND SECURED TO CEILING TEES AND SUPPORTED WITH WIRES OR ROD TO BUILDING STRUCTURE.
- f. ALL LUMINAIRES AND FLEXIBLE WIRING WHIPS SHALL BE SUPPORTED INDEPENDENTLY OF THE GRID SUPPORT SYSTEM.
- g. ELECTRICAL CONTRACTOR SHALL PURCHASE ANY ADDITIONAL LUMINAIRES REQUIRED, DUE TO DAMAGE OR CLIENT REQUEST. MATCH EXISTING LUMINAIRES IN THE AREA.
- h. ALL SWITCHES SHALL BE LABELED WITH DESIGNATED PANEL AND CIRCUIT NUMBER(S) ON THE COVER PLATE.
- i. PROVIDE AN UNSWITCHED HOT AT EACH EMERGENCY LIGHT FIXTURE AND EMERGENCY LIGHTING UNIT. EMERGENCY LIGHTING SHALL BE SUPPLIED WITH A BATTERY TO SUPPLY AND MAINTAIN EMERGENCY LIGHTING LEVELS FOR A MINIMUM PERIOD OF 90 MINUTES.
- j. E.C. TO VERIFY THE OPERABLE CONDITION OF THE EXISTING AND REQUIREMENT OF THE NEW EMERGENCY AND EXIT SIGNS IN THE FIELD. THE EMERGENCY LIGHT FIXTURE SHALL PRODUCE AN AVERAGE OF 1FC AND A MINIMUM OF 0.1FC WITH MAX: MIN 40:1; REPLACE IF FOUND INOPERABLE AND PROVIDE ADDITIONAL EMERGENCY FIXTURES AND EXIT SIGNS IF REQUIRED.

**KEYED NOTES**

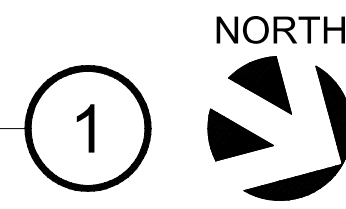
- 1. CONNECT THE NEW LIGHTING FIXTURES TO THE LIGHTING CIRCUIT AND CONTROL SPECIFIED FOR THE SAME AREA.
- 2. ALL THE LIGHTING FIXTURES SHOWN IN THE LIGHTING PLAN ARE EXISTING (OTHER THAN THOSE TAGGED AS "N") AND SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT AND CONTROL. VERIFY THE OPERABLE CONDITION OF ALL THE EXISTING LIGHTING FIXTURES (INTENDED TO REMAIN) AND REPLACE THEM IF FOUND INOPERABLE.
- 3. E.C. TO VERIFY THE TYPE AND OPERABLE CONDITION OF THE EXISTING LIGHTING CONTROLS IN THE FIELD. THE CONTROLS SHALL BE PER THE APPLICABLE ENERGY CODE. REPLACE IF FOUND INOPERABLE. INFORM EOR OF ANY DISCREPANCY BEFORE THE BID.



LIGHTING LEGEND				
MARK	MANUFACTURER	PRODUCT/MODEL #	COLOR	LUMENS
A	---	EXISTING SINGLE PENDANT	ETR	---
B	---	EXISTING SINGLE PENDANT	ETR	---
C6w	---	EXISTING 6" DIA. RECESSED DOWNLIGHT	ETR	---
C-1	TO MATCH EXISTING OR ELITE LIGHTING	NEW 6" DIA. RECESSED DOWNLIGHT, TO MATCH EXISTING OR RL631-950L-DIMTR-120-35K-90-WH WITH LD6IC-AT-DIMTR-120	TO MATCH C6w	---
D6w	---	EXISTING 6" DIA. ADJUSTABLE WALL WASH DOWNLIGHT	ETR	---
E	---	EXISTING ADJUSTABLE TRACK LIGHT	ETR	---
F	---	EXISTING LINEAR "PROFILE" LIGHT	ETR	---
G	---	EXISTING 2" DIA. DOWNLIGHT OR WALL WASH DOWNLIGHT, BUILT INTO EXISTING CEILING TRELLIS	ETR	---
I	---	EXISTING 2x4 OR 2x2 AS SHOWN RECESSED FLAT LENSE (NIGHT LIGHT SHOWN HATCHED)	ETR	---
A2	TO MATCH EXISTING OR ORACLE LIGHTING	NEW 2x2 LED PANEL (NIGHT LIGHT SHOWN HATCHED), TO MATCH EXISTING OR 22FPL1-LED-400L-DIM10-MVOLT-35K-85-0-EMG-LED-10W	TO MATCH I	---
K	---	EXISTING 12x12 RECESSED SOFFIT LIGHT	ETR	---
	---	EXISTING SURFACE MOUNTED EXTERIOR WALL SCNCE	ETR	---
M	---	EXISTING WET-LISTED 4' CANOPY LIGHT	ETR	---
N	---	EXISTING WALL-MOUNTED SECURITY LIGHT	ETR	---
H1	LIGMAN LIGHT	NEW EXTERIOR WALL WASH LIGHT, SLIM WALL LUMINAIRE, UAB-30092-738-W35-01-120V	01-BLACK RAL 9011	---
ETR	EMERGENCY EXIT LIGHT, ALL ARE EXISTING TO REMAIN			

ISSUED REVISIONS:

**ELECTRICAL LIGHTING PLAN**  
SCALE: 1/4"=1'-0"





**FOOD SERVICE ELECTRICAL SCHEDULE**

ITEM NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	VOLTAGE	PHASE	KW	HP	AMPS	TYPE	NEMA	HEIGHT	CONDUIT/WIRING	NOTES
102	COFFEE/TEA MAKER	BUNN	TB3Q	120	1	1.73		14.4	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	-
104	BEVERAGE BUBBLER	CARTHCO	D15-3	120	1	0.34		3	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	-
105	NUGGET ICE MAKER	MANITOWOC	RNP620	120	1	1.62		13.5	DIRECT		60"	2#12, 1#12G, 1/2"C	EC TO EXTEND TO ICE MAKER, GFCI CIRCUIT BREAKER
106	SODA/ICE DISPENSER	BY OTHERS	BY OTHERS	120	1	1.68		14	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	VENDOR SUPPLIED, VERIFY REQUIREMENTS PRIOR TO ROUGH-IN INSTALLATION.
201	NUGGET ICE MAKER	MANITOWOC	RNP620	120	1	1.95		16.3	DIRECT		60"	2#12, 1#12G, 1/2"C	EC TO EXTEND TO ICE MAKER, GFCI CIRCUIT BREAKER
203	SOFT SERVE MACHINE	SPACEMAN	6690-C	208	1	3.12		15	PLUG	L6-20P	48"	2#12, 1#12G, 1/2"C	GFCI CIRCUIT BREAKER
206	BEVERAGE BUBBLER	CARTHCO	D15-3	120	1	0.34		3	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	-
207	COFFEE/TEA BREWER	BUNN	TB3Q	120	1	1.70		14	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	-
209	SODA DISPENSER W/ICE BIN	BY OTHERS	BY OTHERS	120	1	1.70		14	GFCI PLUG	5-15P	48"	2#12, 1#12G, 1/2"C	VENDOR SUPPLIED, VERIFY REQUIREMENTS PRIOR TO ROUGH-IN INSTALLATION
211	DRIVE THRU POS SYSTEM	BY OTHERS	BY OTHERS	120	1	1.92		16	GFCI PLUG	5-20P	48"	2#12, 1#12G, 1/2"C	OWNER SUPPLIED, VERIFY REQUIREMENTS PRIOR TO ROUGH-IN INSTALLATION
300	REFRIGERATED SANDWICH PREP	CONTINENTAL	SW60N12	115	1	0.66		5.7	GFCI PLUG	5-15P	18"	2#12, 1#12G, 1/2"C	-
302	FRIED FOOD HOLDING STATION	MERCO	MCG2727NHN	208	1	2.87		13.8	PLUG	6-20P	28"	2#12, 1#12G, 1/2"C	EC TO EXTEND TO DUMP STATION, GFCI CIRCUIT BREAKER
304	FRYER BATTERY	HENNY PENNY	OFG342.0	120	1	1.44		12	GFCI PLUG	5-20P	18"	2#12, 1#12G, 1/2"C	EC TO EXTEND TO FRYER BATTERY, PROVIDE SHUNT TRIP CIRCUIT BREAKER
305	REFRIGERATED GRIDDLE STAND	CONTINENTAL	D36GN	115	1	0.30		2.5	GFCI PLUG	5-15P	18"	2#12, 1#12G, 1/2"C	PROVIDE SHUNT TRIP CIRCUIT BREAKER
310	EXHAUST HOOD SYTEM	ACCUREX	CUSTOM	120	1	1.08		9	DIRECT		DFA	2#12, 1#12G, 1/2"C	EC TO SERVICE J-BOX ON TOP OF EXHAUST HOOD FOR LIGHTS AND CONTROLS
316	WALK-IN COOLER/FREEZER	KOLPAK	CUSTOM	120	1			9	DIRECT		DFA	2#12, 1#12G, 1/2"C	EC TO EXTEND SERVICE J-BOX ON TOP OF WALK-IN FOR LIGHTS AND DOOR HEATERS
316A	COOLER COIL	KOLPAK	-	120	1			1.6	DIRECT		DFA	2#12, 1#12G, 1/2"C	EC TO EXTEND SERVICE J-BOX ON TOP OF WALK-IN FOR COOLER COIL
316B	FREEZER COIL	KOLPAK	-	208	1			4.9	DIRECT		DFA	2#12, 1#12G, 1/2"C	EC TO EXTEND SERVICE J-BOX ON TOP OF WALK-IN FOR FREEZER COIL
316C	COOLER COMPRESSOR	KOLPAK	-	208	3	3/4		5.9	DIRECT		VERIFY	3#12, 1#12G, 3/4"C	EC TO EXTEND SERVICE TO COOLER COMPRESSOR, VERIFY LOCATION
316D	FREEZER COMPRESSOR	KOLPAK	-	208	3	1-1/2		9.3	DIRECT		VERIFY	3#12, 1#12G, 3/4"C	EC TO EXTEND SERVICE TO FREEZER COMPRESSOR, VERIFY LOCATION
317	ROLL-IN REFRIGERATOR	CONTINENTAL	D1RIN	115	1	0.87		7.6	GFCI PLUG	5-15P	18"	2#12, 1#12G, 1/2"C	-
319	GRAVY WARMER	-	-	120	1	1.2		10	-	5-15P	50"	2#12, 1#12G, 1/2"C	-
322	REACH-IN FREEZER	CONTINENTAL	1FN	120	1	0.44		3.7	GFCI PLUG	5-15P	18"	2#12, 1#12G, 1/2"C	-
326	REFRIGERATED SANDWICH PREP	CONTINENTAL	SW72N18	115	1	0.69		6	GFCI PLUG	5-15P	18"	2#12, 1#12G, 1/2"C	-
415	BAG-IN-BOX RACK	BY OTHERS	BY OTHERS	120	1	1.8		15	GFCI PLUG	5-20P	48"	2#12, 1#12G, 1/2"C	VENDOR SUPPLIED, VERIFY REQUIREMENTS PRIOR TO ROUGH-IN INSTALLATION

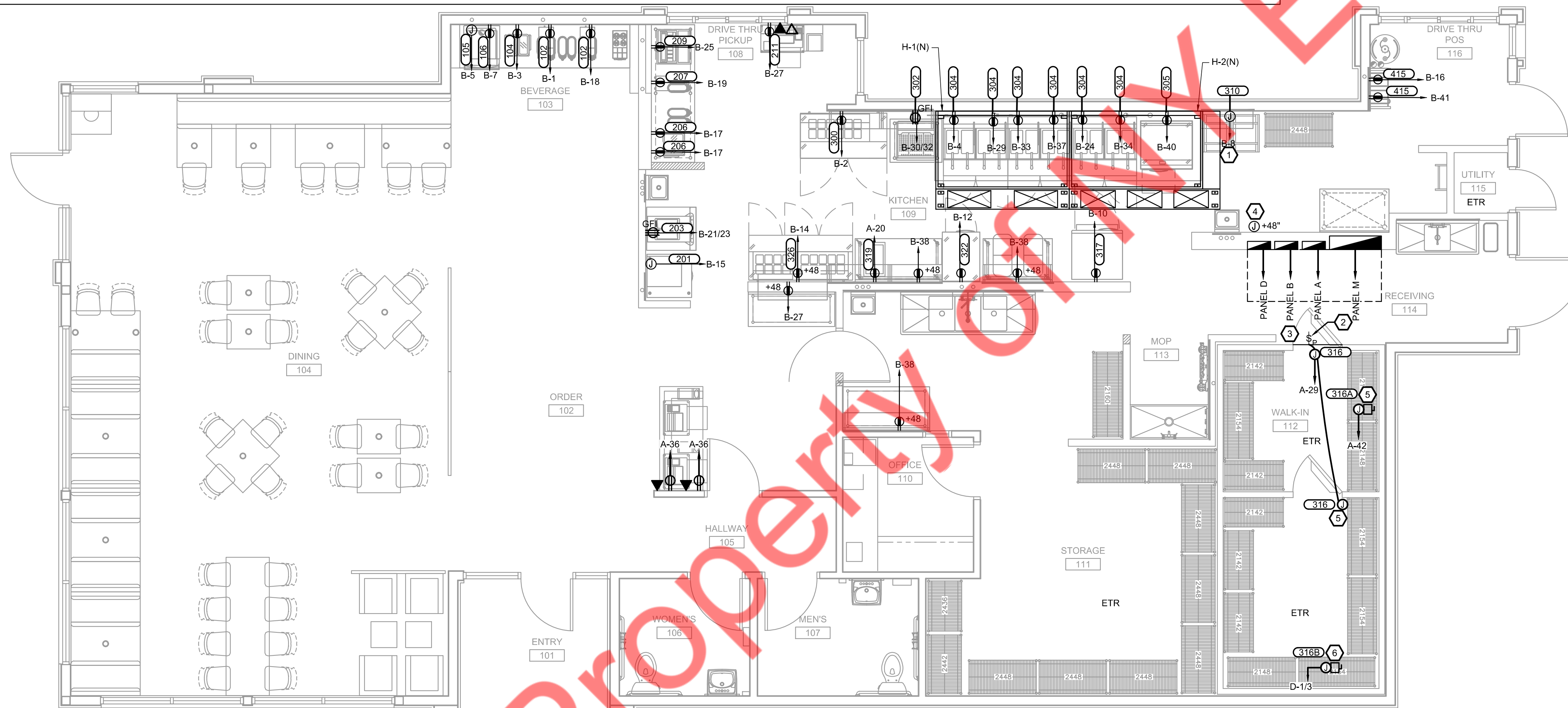
GENERAL NOTES:  
a. DFA - DROP FROM ABOVE

**KITCHEN GENERAL NOTES**

- COORDINATE ALL WORK WITH OTHER TRADES.
- LIGHTING UNDERNEATH KITCHEN EXHAUST HOODS AND INSIDE WALK-IN COOLERS AND WALK-IN FREEZERS IS BY OTHERS. COORDINATE INSTALLATION REQUIREMENTS WITH EQUIPMENT INSTALLER AND MANUFACTURER'S SPECIFICATIONS.
- ELECTRICAL CONTRACTOR SHALL VERIFY THAT ALL SMOKE CONTROL EQUIPMENT: FIRE/SMOKE DETECTORS, DUCT DETECTORS, MOTORIZED DAMPERS, ETC HAVE PROPER PROVISIONS FOR POWER. PROVIDE CIRCUIT FOR SMOKE CONTROL EQUIPMENT IF REQUIRED.
- ELECTRICAL CONTRACTOR SHALL VERIFY EXACT LOCATION AND MOUNTING HEIGHT OF ALL RECEPTACLE, EQUIPMENT DISCONNECTS AND TELECOMMUNICATIONS OUTLETS WITH ARCHITECT, TENANT AND MANUFACTURER'S SPECIFICATIONS BEFORE FINAL ROUGH-IN.
- INSTALLATION OF KITCHEN FIRE SUPPRESSION SYSTEM REQUIRES THAT ALL POWER FOR APPLIANCES, EQUIPMENT AND RECEPTACLES LOCATED UNDER COMMERCIAL KITCHEN EXHAUST HOODS AUTOMATICALLY SHUT OFF IN THE EVENT OF SYSTEM ACTIVATION. FIRE SUPPRESSION SYSTEMS HAVE A SWITCH OR INTEGRAL RELAY TO PROVIDE A SIGNAL TO DISCONNECT POWER. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL SHUNT TRIP BREAKERS, CONTACTORS, RELAY, WIRING AND OTHER NECESSARY MATERIALS TO INSURE PROPER FIRE SUPPRESSION SYSTEM OPERATION.
- THE NEC REQUIRES ALL 120V RECEPTACLES IN COMMERCIAL KITCHEN TO BE GFCI PROTECTED. PROVIDE GFCI CIRCUIT BREAKERS AT ELECTRICAL PANEL FOR ALL CIRCUITS FEEDING KITCHEN AND BAR AREA(S).
- ELECTRICAL CONTRACTOR SHALL COORDINATE POWER, CONNECTION TYPE, CONNECTION LOCATION, AND MOUNTING REQUIREMENTS WITH MANUFACTURER'S SPECIFICATIONS.
- ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF EQUIPMENT WITH FOOD SERVICE ELECTRICAL PLANS/DESIGNER, ARCHITECT, TENANT, AND EQUIPMENT INSTALLER PRIOR TO BEGINNING ANY WORK.
- SEALING: WHERE PORTIONS OF RACEWAY OR SLEEVES ARE SUBJECTED TO DIFFERENT TEMPERATURES AND CONDENSATION IS KNOWN TO BE A PROBLEM, SUCH AS COLD STORAGE AREAS OR WHERE CONDUITS PASS FROM INTERIOR TO BUILDING EXTERIOR, THE RACEWAY OR SEAL SHALL BE FILLED WITH AN APPROVED MATERIAL TO PREVENT THE RACEWAY OF WARM AIR TO A COLDER SECTION OF RACEWAY OR SLEEVE.
- EXPANSION FITTINGS SHALL BE PROVIDED WHERE NECESSARY TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION.
- GROUND-FAULT PROTECTION OF EQUIPMENT SHALL BE PROVIDED FOR ELECTRICAL HEAT TRACE AND HEAT PANELS PER NEC 427.22.

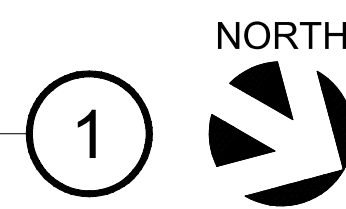
**KEYED NOTES**

- PROVIDE JUNCTION BOX AND COMPLETE CONNECTION TO HOOD CONTROL PANEL. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
- PROVIDE SEAL-OFF FITTINGS AT EACH WALK-IN COOLER PENETRATION.
- PROVIDE WITH RED PILOT LIGHT FOR WALK-IN COOLER LIGHTING.
- PROVIDE JUNCTION BOX FOR REMOTE ANSUL MANUAL PULL STATION. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH MECHANICAL DRAWINGS AND KITCHEN EXHAUST HOOD PROVIDER PRIOR TO ROUGH-IN.
- 30A, 1-POLE, 120V DISCONNECT SWITCH WITH FUSE SIZED PER MANUFACTURER'S SPECIFICATIONS LISTED FOR WALK-IN USE FOR COOLER EVAPORATOR COIL.
- 30A, 2-POLE, 208V DISCONNECT SWITCH WITH FUSE SIZED PER MANUFACTURER'S SPECIFICATIONS LISTED FOR WALK-IN USE FOR FREEZER EVAPORATOR COIL.



**ELECTRICAL KITCHEN PLAN**

SCALE: 1/4"=1'-0"



ISSUED REVISIONS:

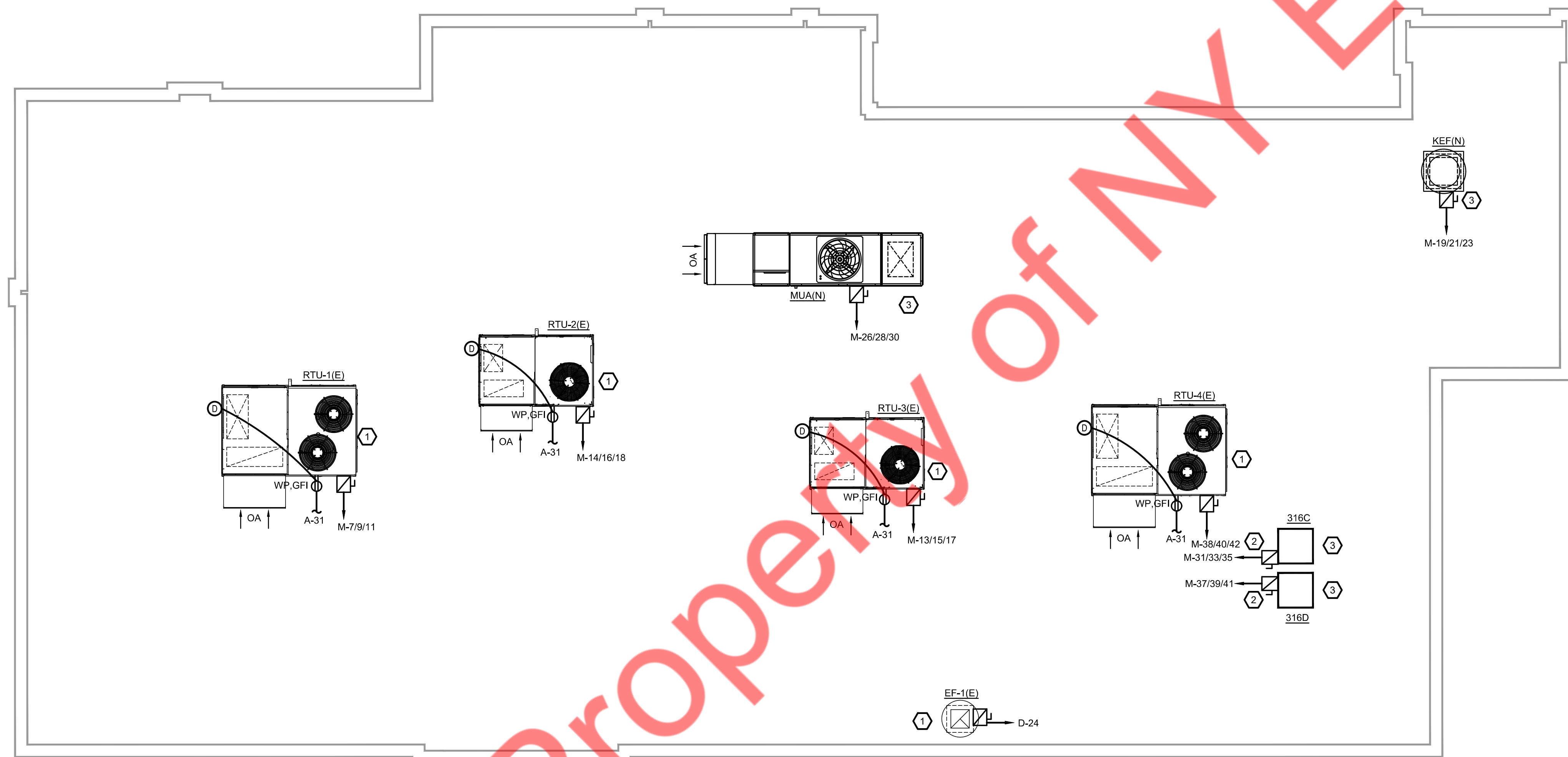

**Layne's Chicken Fingers**  
Kitchen Plan

KEYED NOTES (E)

- E.C. SHALL VERIFY THE EXACT LOCATION AND OPERABLE CONDITION OF THE EXISTING MECHANICAL UNIT IN THE FIELD. PROVIDE NEW CIRCUIT, DISCONNECT/SWITCH IF EXISTING IS INOPERABLE.
- PROVIDE 30/3/15A NEMA 3R FUSED DISCONNECT FOR WALK-IN COOLER AND WALK-IN FREEZER REMOTE CONDENSING UNITS PER MANUFACTURE'S SPECIFICATIONS. CONNECT TO CIRCUIT INDICATED USING (3)#12 THWN, (1)#12 GND, 3/4" CONDUIT. EC TO COMPLETE WIRING CONNECTION WITH WALK-IN COOLER EVAPORATOR COIL AND ENSURE THE DISCONNECT SWITCH HAS THE REQUIRED WORKING CLEARANCE PRIOR TO INSTALLATION.
- E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT OF THE UNIT IN THE FIELD. PROVIDE CIRCUIT AND CONTROL AS REQUIRED.

GENERAL NOTES

- ALL PENETRATIONS OF FIRE RATED WALLS OR CEILINGS SHALL BE EXECUTED PER ALL APPLICABLE CODES AND JURISDICTIONS.
- ALL WEATHERPROOF (WP) RECEPTACLES SHALL BE PROVIDED WITH UL LISTED CORROSION PROTECTION, UV RESISTANT AND COLD IMPACT RESISTANT WITH-IN-USE COVER.
- ALL ELECTRICAL EQUIPMENT MOUNTED ON ROOF (RECEPTACLES, DISCONNECT SWITCHES, ETC.) SHALL BE WEATHERPROOF AND/OR UL/NEMA 3R.
- ALL ROOF MOUNTED EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURE'S INSTALLATION INSTRUCTIONS, SHOP DRAWINGS AND APPROPRIATE DETAILS.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL UTILITIES ABOVE THE CEILING TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION AND FUTURE CHANGES IN MECHANICAL EQUIPMENT. CONDUIT AND PIPE TO BE RUN UP IN JOINTS SPACE. COORDINATE SERVICE AND ACCESS POINTS ABOVE CEILING TO MINIMIZE REQUIRED ACCESS.
- ROUTE CONDUIT FEEDS FOR ROOFTOP POWER AND CONTROL CIRCUITS VERTICALLY THROUGH ROOF BELOW CIRCUIT TERMINATION POINT. PROVIDE PITCH PANS COMPATIBLE WITH ROOFING MATERIAL AND APPROVED BY ROOFING MANUFACTURER. DO NOT ROUTE CONDUITS HORIZONTALLY ABOVE ROOF OR ALONG PARAPETS.
- STUB-UP CONDUITS FOR ROOF MOUNTED EQUIPMENT THROUGH EQUIPMENT ROOF CURBS OR IF NOT POSSIBLE THROUGH ROOF PENETRATIONS ACCEPTABLE TO ROOFING MANUFACTURER IMMEDIATELY BELOW ELECTRICAL TERMINATION POINTS ON EQUIPMENT. DO NOT ROUTE CONDUITS ACROSS ROOF OR ON PARAPETS.
- MOTOR PROTECTION: PROVIDE AND WIRE POWER MONITORING AND PROTECTION UNITS FOR EACH 3-PHASE MOTOR IN OR ON BUILDING. INCLUDE OVERVOLTAGE, UNDERVOLTAGE, VOLTAGE IMBALANCE, SINGLE-PHASING AND PHASE REVERSAL PROTECTION. WIRE TO MONITOR EACH PHASE AND INTERFACE WITH EQUIPMENT CONTROL CIRCUIT TO DISCONNECT POWER ON DETECTION OF A POWER ABNORMALITY AND AUTOMATICALLY RECONNECT UPON RESTORATION OF NORMAL CONDITIONS. LOCATION INSIDE STARTER OR CONTROL SECTION OF EQUIPMENT, OR IF NOT FEASIBLE, IN SEPARATE ENCLOSURE NIPPLED TO CONTROLLER, SYCOM MODEL 201-A WITH OT08 SOCKET BASE OR ACCEPTABLE SUBSTITUTION.
- VERIFY WITH CAPTIVE AIRE IF SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS IS REQUIRED. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MAKE-UP AIR SWITCH.
- REFER TO MECHANICAL DRAWINGS FOR EXACT SIZE, LOCATION, AND ELECTRICAL REQUIREMENTS FOR ALL MOTORS AND MECHANICAL EQUIPMENT. COORDINATE WITH MECHANICAL CONTRACTOR WAND PROVIDE ELECTRICAL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
- CONTRACTOR SHALL CAREFULLY REVIEW CONTRACT DOCUMENTS INCLUDING THE DRAWINGS AND PROJECT MANUAL. INFORMATION REGARDING WORK OF THE VARIOUS TRADES AND SUBCONTRACTORS ARE DISPERSED THROUGHOUT THE DOCUMENTS AND CANNOT BE ACCURATELY DETERMINED WITHOUT THE REFERENCE TO THE FULL SET OF DOCUMENTS.
- ELECTRICAL CONTRACTOR TO REFER TO CAPTIVE AIRE DRAWINGS AND PROVIDE ALL ASSOCIATED FINAL CONNECTIONS. CONDUIT AND WIRING AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.



ELECTRICAL ROOF POWER PLAN (1)

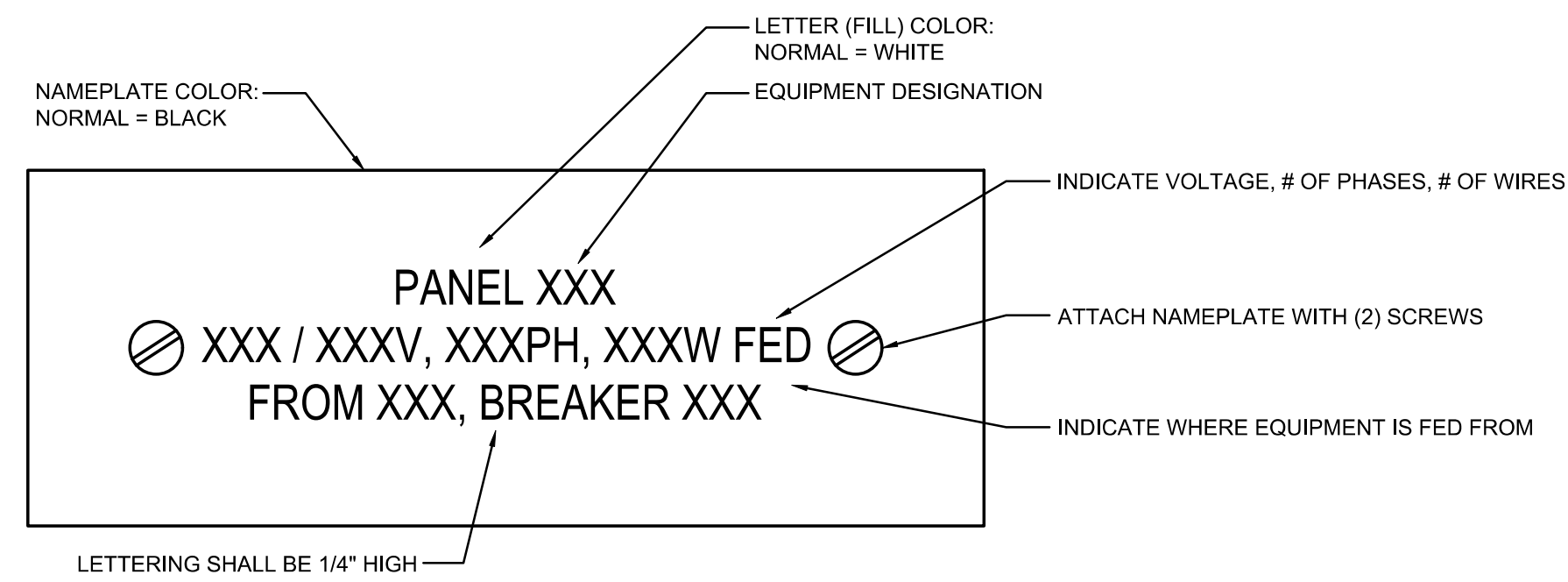
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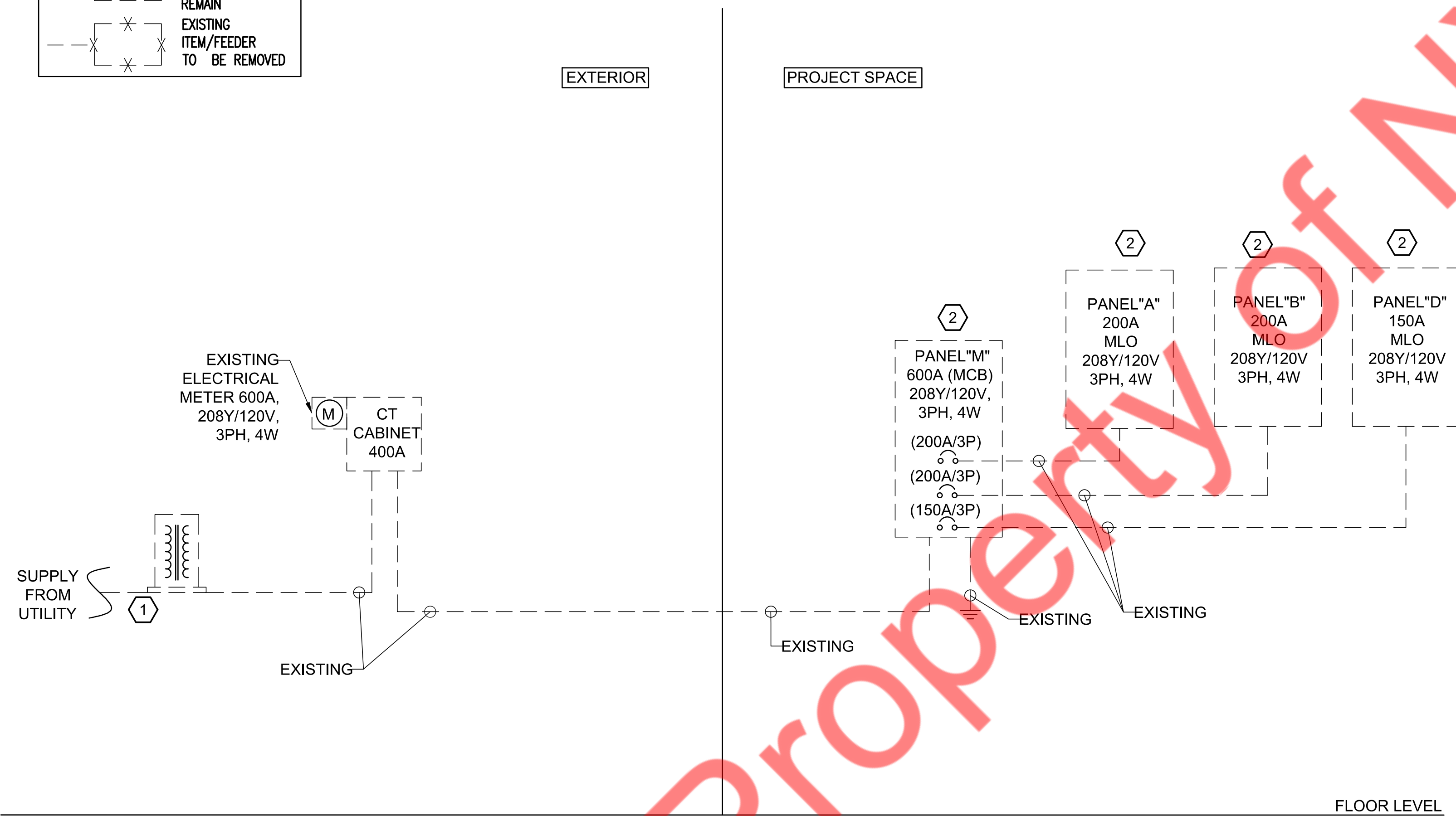
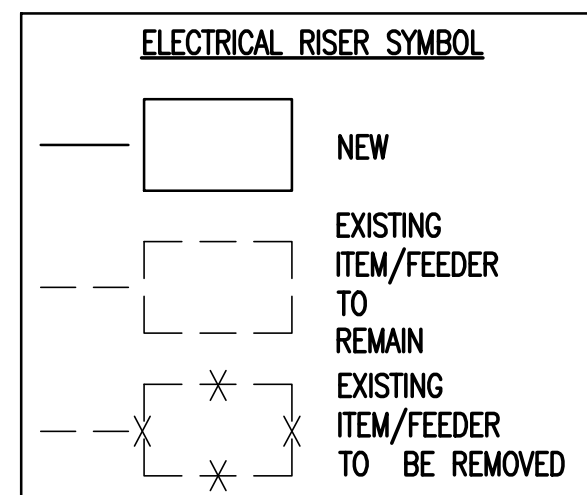
ISSUED REVISIONS:

Layne's Chicken Fingers  
Electrical Roof Plan

E-302



**PANELBOARD NAMEPLATE DETAIL** (2)  
SCALE: N.T.S.



**ELECTRICAL RISER DIAGRAM** (1)  
SCALE: N.T.S.

**KEYED NOTES** (#)

1. EXISTING 600A, 208Y/120V, 3PH, 4W ELECTRICAL SERVICE FEEDER FROM UTILITY FOR THE PROJECT SPACE TO REMAIN. VERIFY LOCATION, RATING, AND OPERABLE CONDITION IN THE FIELD. INFORM THE ENGINEER OF THE RECORD OF ANY DISCREPANCY. BEFORE BID.
2. E.C. SHALL VERIFY THE EXACT LOCATION, RATING, AND OPERABLE CONDITION OF EVERY PIECE OF EQUIPMENT MARKED AS EXISTING IN THE FIELD. INFORM THE ENGINEER OF THE RECORD OF ANY DISCREPANCY BEFORE BIDDING.

**GENERAL NOTES**

- A. VERIFY/COORDINATE THE EXACT POWER DISTRIBUTION AND SCOPE OF WORK WITH THE LANDLORD/OWNER BEFORE BIDDING.
- B. THE SERVICE ENTRANCE CONDUCTOR AND FEEDER SIZE HAVE BEEN SELECTED BASED ON THE 75 DEGREE COLUMN OF NEC 310.15 B 16 FOR COPPER CONDUCTOR. THE WIRE SIZE MIGHT CHANGE IF THE TEMPERATURE, MATERIAL, OR VOLTAGE DROP IS DIFFERENT. E.C. SHALL SIZE THE CONDUCTOR ACCORDINGLY.
- C. ENSURE THE COMBINED VOLTAGE DROP OF THE FEEDER AND BRANCH CIRCUIT IS NOT MORE THAN 5% PER CODE.
- D. ENSURE THAT A CLEAR WORKING AND DEDICATED SPACE HAS BEEN PROVIDED FOR THE EQUIPMENT AS PER NEC 110.26.
- E. THE VOLTAGE AND FREQUENCY FLUCTUATION IN THE ELECTRICAL UTILITY SERVICE AT THE SERVICE ENTRY SHALL NOT BE MORE THAN +/- 5% AND +/- 1%, RESPECTIVELY. PROVIDE THE REGULATORS IF SUCH A CASE IS OBSERVED.
- F. PROVIDE GEC AND EGC AS PER 250.66 & 250.122, RESPECTIVELY, AS NEEDED. PROVIDE SEPARATE GROUND CONDUCTORS IN ALL CONDUITS.
- G. THE PART OF THE RISER MARKED AS EXISTING IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY THE AVAILABILITY, LOCATION, RATING, OPERABLE CONDITION, AND EXACT POWER FLOW IN THE FIELD. INFORM EOR OF ANY DISCREPANCY BEFORE BID.
- H. REUSE OF THE EXISTING EQUIPMENT IS SUBJECT TO THE VERIFICATION OF THE AVAILABILITY, LOCATION, RATING, OPERABLE CONDITION, AND FAULT CURRENT IN THE FIELD. REPLACE THE EXISTING EQUIPMENT WITH EQUIPMENT OF THE SAME RATING IF THE EXISTING EQUIPMENT CANNOT BE REUSED DUE TO ANY OF THE REASONS MENTIONED EARLIER.
- I. ADDITION OR ALTERATION TO THE EXISTING SYSTEM SHALL NOT BE DONE WITHOUT THE WRITTEN CONSENT OF THE OWNER.
- J. THE EXISTING ELECTRICAL EQUIPMENT NOT INTENDED TO BE REUSED (WHETHER OR NOT SHOWN ON THE ELECTRICAL PLAN) SHALL BE DEMOLISHED. E.C. SHALL COORDINATE WITH THE OWNER/ARCHITECT IN THE FIELD BEFORE DEMOLITION.
- K. E.C. TO ENSURE THAT THE SPARE AMPS AVAILABLE IN THE EXISTING ELECTRICAL SERVICE IS MORE THAN THE NEWLY ADDED DEMAND AMPS.

ISSUED REVISIONS:

Layne's Chicken Fingers  
Riser Diagram

PANEL: M (EXISTING)		-										MOUNTING: RECESSED		
208Y/120	VOLTS	PHASE	3							DEMAND LOAD	156.30	PANEL LOCATION: RECEIVING		
600A	MCB	WIRE	4							DEMAND CURRENT	434.35	FED FROM: METER		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	NOTES	PER PHASE (KVA)			NOTES	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	200/3P	PANEL-A	X	12.30		25.62	B			13.32	X	PANEL-B	200/3P	2
3			X	12.30	ETR, SAE			25.62		13.32	X			4
5			X	12.30				25.62		13.32	X			6
7	60/3P	RTU-1(E)	H	4.65		6.93				2.27	X	PANEL-D	150/3P	8
9			H	4.65	ETR, SAE			6.93		2.27	X			10
11			H	4.65				6.93		2.27	X			12
13	50/3P	RTU-3(E)	H	3.18		6.36				3.18	H	RTU-2(E)	50/3P	14
15			H	3.18	ETR, SAE			6.36		3.18	H			16
17			H	3.18				6.36		3.18	H			18
19	20/3P	KEF(N)	M	0.90		0.90						SPARE	20/3P	20
21			M	0.90	RWC, NBEP			0.90						22
23			M	0.90				0.90						24
25	20/2P	SPARE				5.59				5.59	H	MUA(N)	70/3P	26
27						5.59				5.59	H			28
29		SPACE						5.59			H			30
31	15/3P	WALK-IN BOX COOLER COMPRESSOR -316C	H	0.71		0.71						SPARE	30/2P	32
33			H	0.71	RWC, NBEP			0.71						34
35			H	0.71				0.71				SPACE		36
37	15/3P	WALK-IN BOX FREEZER COMPRESSOR - 316D	H	1.12		5.77				4.65	H	RTU-4(E)	50/3P	38
39			H	1.12	RWC, NBEP			5.77		4.65	H			40
41			H	1.12				5.77		4.65	H			42
						<b>51.87</b>	<b>51.87</b>	<b>51.87</b>						

PANEL: D (EXISTING)		-										MOUNTING: RECESSED		
208Y/120	VOLTS	PHASE	3							DEMAND LOAD	6.51	PANEL LOCATION: RECEIVING		
150A	MLO	WIRE	4							DEMAND CURRENT	18.10	FED FROM: PANEL M		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	NOTES	PER PHASE (KVA)			NOTES	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20/2P	FREEZER COIL	E	0.51		0.51						SPARE	20/2P	2
3			E	0.51	RWC									4
5	20/2P	SPARE				0.32				0.32	H	AC-3(N)	20/1P	6
7											H	AC-4(N)	20/1P	8
9	20/2P	SPARE				0.32				0.32	H	SPARE	20/2P	10
11										0.00				12
13	30/2P	SPARE				0.72				0.72	R	OFFICE RECEPTACLES	20/1P	14
15										0.10	H	AC-1(N)	20/1P	16
17	20/1P	AC-2(N)	H	0.10								SPARE	30/2P	18
19	20/1P	MECH. MISC.	O	0.20						0.20				20
21	20/1P	UTILITY	R	1.92						3.84		UTILITY	20/1P	22
23		SPACE								0.20	M	EF-1(E)	20/1P	24
						<b>1.75</b>	<b>4.45</b>	<b>0.62</b>						

PANEL: A (EXISTING)		-										MOUNTING: RECESSED		
208Y/120	VOLTS	PHASE	3							DEMAND LOAD	43.28	PANEL LOCATION: RECEIVING		
200A	MLO	WIRE	4							DEMAND CURRENT	120.26	FED FROM: PANEL M		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	NOTES	PER PHASE (KVA)			NOTES	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20/2P	AREA LIGHTS	L	1.08		1.83				0.75	L	DINING RM. LIGHTS	20/1P	2
3			L	1.08	ETR			1.89		0.81	L	DINING RM. LIGHTS	20/1P	4
5	20/2P	AREA LIGHTS	L	1.08				2.58		1.50	L	KITCHEN AREA LIGHTS	20/1P	6
7			L	1.08	ETR			1.80		0.72	O	OCLU/ CREDIT CARD SWIPE	20/1P	8
9	20/1P	PYLON SIGN	L	1.20				2.10		0.90	L	DIGITAL MENU BOARD #94	20/1P	10
11	20/1P	SECONDARY PYLON SIGN	L	1.20	ETR			1.60		0.40	L	RESTROOM LIGHTS/EF-2	20/1P	12
13	20/1P	DRIVE-THRU MENU SIGNS	L	0.72				1.44		0.72	L	DIRECTIONAL SIGNS	20/1P	14
15	20/2P	RESTROOM DUCT HEATER	L	1.50				2.82		1.32	L	KITCHEN/SERVICE/OFFICE LIGHTS	20/1P	16
17			L	1.50	ETR			1.86		0.36	R	SHELF RECEPTACLES	20/1P	18
19	20/1P	CHANNEL LETTERS/LOGO	L	1.20				2.40		1.20	E	GRAVY WARMER-319	20/1P	20
21	20/1P	PARAPET LIGHT BAND	L	0.24				0.42		0.18	R	BOH RECEPTACLE	20/1P	22
23	20/1P	CHANNEL LETTERS/LOGO	L	1.20	ETR			2.75		1.55	L	EXTERIOR BUILDING LIGHTS	20/1P	24
25	20/1P	OFFICE RECEPTACLES	R	0.54				1.08		0.54	R	BOH RECEPTACLE	20/1P	26
27	20/1P	EXTERIOR BUILDING LIGHTS	L	1.48				1.84		0.36	R	DINING RECEPTACLES	20/1P	28
29	20/1P	WALK-IN COOL/FRZ LTS-316	L	0.40				1.12		0.72	R	MENU BOARD	20/1P	30
31	20/1P	ROOF/EXTERIOR RECEPTACLES	R	0.72				1.80		1.08	L	AREAL LIGHTS	20/2P	32
33	20/1P	SERVICE COUNTER/COORIDOR	R	0.18				1.26		1.08	L		20/2P	34
35	20/1P	IPAD RECEPTACLE	R	0.18				0.54		0.36	R	POS RECEPTACLE	20/1P	36
37	20/1P	KITCHEN AREA LIGHTS	L	1.20				2.70		1.50	O	VESTIBULE DUCT HEATER	20/2P	38
39	20/1P	IPAD RECEPTACLE	R	0.18				1.68		1.50	O		20/2P	40
41	20/1P	CHANNEL LETTERS/LOGO	L	1.20				1.39		0.19	E	COOLER COIL - 316A	20/1P	42
						<b>13.05</b>	<b>12.01</b>	<b>11.84</b>						

PANEL: B (EXISTING)		-										MOUNTING: RECESSED		
208Y/120	VOLTS	PHASE	3							DEMAND LOAD	26.90	PANEL LOCATION: RECEIVING		
200A	MLO	WIRE	4							DEMAND CURRENT	74.75	FED FROM: PANEL M		
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	NOTES	PER PHASE (KVA)			NOTES	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20/1P	COFFEE/TEA MAKER-102	E	1.73		2.39				0.66	E	REFRIGERATED SANDWICH PREP-300	20/1P	2
3	20/1P	BEVERAGE BUBBLER-104	E	0.34				1.78		1.44	E	FRYER BATTERY-304	20/1P	4
5	20/1P	NUGGET ICE MAKER-105	E	1.62				1.62						6
7	20/1P	SODA/ICE DISPENSER-106	E	1.68				2.76		1.08	E	EXHAUST HOOD SYSTEM-310	20/1P	8
9	20/1P	REAR DOOR BUZZER	O	0.72				1.59		0.87	E	ROLL-IN REFRIGERATOR-317	20/1P	10
11	20/1P	DOOR ALARM	O	0.72	ETR, SAE			1.16		0.44	E	REACH IN FREEZER-322	20/1P	12
13	20/1P	EX. WH. WH-1, RCP-1	O	0.30				0.99		0.69	E	REFRIGERATED SANDWICH PREP-326	20/1P	14
15	20/1P	NUGGET ICE MAKER-201	E	1.95				3.75		1.80	E	BAG-IN-BOX RACK-415	20/1P	16
17	20/1P	BEVERAGE BUBBLER-206	E	0.68				2.41		1.73	E	COFFEE/TEA MAKER-102	20/1P	18
19	20/1P	COFFEE/TEA BREWER-207	E	1.70				1.70				SPARE	20/1P	20
21	20/2P	SOFT SERVE MACHINE-203	E	1.56				1.56						22
23			E	1.56				3.00		1.44	E	FRYER BATTERY-304	20/1P	24
25	20/1P	SODA DISPENSER W/ICE BIN-209	E	1.70				1.70						26
27	20/1P	DRIVE THRU POS SYSTEM-211	E	1.92				2.28		0.36	R	GENERAL RECEPTACLE	20/1P	28
29	20/1P	FRYER BATTERY-304	E	1.44				2.88		1.44	E	FRYER BATTERY-304	20/1P	30
31								1.44		1.44	E	FRIED FOOD HOLDING STATION-302	20/2P	32
33	20/1P	FRYER BATTERY-304	E	1.44				2.88		1.44	E	FRYER BATTERY-304	20/1P	34
35								0.00						36
37	20/1P	FRYER BATTERY-304	E	1.44				1.98		0.54	R	GENERAL KITCHEN RECEPTACLE	20/1P	38
39								0.30		0.30	E	REFRIGERATED GRIDDLE STAND-305	20/1P	40
41	20/1P	BAG-IN-BOX RACK-415	E	1.80				1.80						42
						<b>12.96</b>	<b>14.14</b>	<b>12.87</b>						

PANEL SCHEDULE ABBREVIATIONS AND NOTES	
TAG	DESCRIPTION
L	LIGHTING
R	RECEPTACLE
H	HVAC
E	ELECTRICAL EQUIPMENT
M	LARGEST MOTOR
O	OTHER
N	NON COINCIDENT
X	LINKED CELL
*	VERIFY/COORDINATE IN FIELD
RWC	REFER TO THE WIRING CHART FOR WIRE SIZE
RRF	REFER RISER FOR FEEDER SIZE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
NBEP	NEW BREAKER IN THE EXISTING PANEL
HACR	HEAT AIR CONDITIONING AND REFRIGERATION
PAN	PROVIDE ADDITIONAL WIRE FOR NEUTRAL
LO	LOCKOUT BREAKER
STB	SHUNT TRIP BREAKER
SB	SPLIT BREAKER
ETR	EXISTING TO REMAIN
SAE	SAME AS EXISTING
VIF	VERIFY IN FIELD
LC	WIRE THROUGH LIGHTING CONTACTOR
NCL	NON COINCIDENT LOAD
DFB	DUAL FUNCTION BREAKER (AFCI+GFCI)
CB	COMBINATION BREAKER (S/P)

BRANCH CIRCUIT WIRING CHART	
BREAKER	BRANCH CIRCUIT SIZE
15/1P	2#12 + 1#12G, 3/4" C
20/1P	2#12 + 1#12G, 3/4" C
25/1P	2#10 + 1#10G, 3/4" C
30/1P	2#10 + 1#10G, 3/4" C
35/1P	2#8 + 1#10G, 3/4" C
40/1P	2#8 + 1#10G, 3/4" C
45/1P	2#8 + 1#10G, 3/4" C
50/1P	2#8 + 1#10G, 3/4" C
15/2P	2#12 + 1#12G, 3/4" C
20/2P	2#12 + 1#12G, 3/4" C
25/2P	2#10 + 1#10G, 3/4" C
30/2P	2#10 + 1#10G, 3/4" C
35/2P	2#8 + 1#10G, 3/4" C
40/2P	2#8 + 1#10G, 3/4" C
45/2P	2#8 + 1#10G, 3/4" C
50/2P	2#8 + 1#10G, 3/4" C
60/2P	2#6 + 1#10G, 3/4" C
70/2P	2#4 + 1#8G, 1" C
80/	

PART I - GENERAL

1.01 DESCRIPTION

- A. THE PLUMBING CONTRACTOR SHALL BE A LICENSED INSTALLER OF PLUMBING SYSTEMS IN THE CITY WHERE WORK IS PERFORMED.
B. THE CONTRACTOR SHALL BE QUALIFIED WITH AT LEAST 5 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
C. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE BUILDING CODE OF THE LATEST EDITION.

1.02 VERIFYING CONDITIONS

- A. EXAMINE ALL DRAWINGS COVERING THE WORK OF THIS SECTION AND REFER TO OTHER DRAWINGS, INCLUDING ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, WHICH MAY AFFECT THE WORK OF THIS SECTION OR REQUIRE COORDINATION BY SAME.
B. BEFORE STARTING ANY WORK, EXAMINE AND THOROUGHLY CHECK DRAWINGS, DIMENSIONS, SPECIFICATIONS, AND ADJOINING OR UNDERLYING CONDITIONS IN WHICH THE WORK OF THIS SECTION IS TO BE PERFORMED.
C. REPORT, IN WRITING, TO THE ARCHITECT ANY AND ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE WORK OF THIS SECTION. DO NOT COMMENCE WORK UNTIL ANY AND ALL SUCH CONDITIONS HAVE BEEN CORRECTED BY THE TRADE OR TRADES RESPONSIBLE.
D. FAILURE TO NOTIFY THE ARCHITECT OF UNSATISFACTORY CONDITIONS WILL BE CONSTRUED AS AN ACCEPTANCE OF ALL CONDITIONS.
E. THE EXECUTION OF THE WORK OF THIS SECTION CONSTITUTES ACCEPTANCE OF THE BASE OR ADJOINING WORK AND OTHER CONDITIONS AS BEING SATISFACTORY IN EVERY RESPECT AND LATER CLAIMS OF DEFECTS IN SUCH CASES WILL NOT BE ALLOWED.
F. THE DRAWINGS INDICATE AND THE SPECIFICATIONS DESCRIBE THE GENERAL ARRANGEMENT AND THE APPROXIMATE LOCATION OF EQUIPMENT, FIXTURES, PIPING, ETC. EXACT LOCATIONS MAY BE ADJUSTED IN THE FIELD TO SUIT EXISTING CONDITIONS.
G. THE CONTRACTOR SHALL, WITHOUT EXTRA COST TO THE OWNER, MAKE ALL REASONABLE MODIFICATIONS IN THE WORK AS MAY BE REQUIRED TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES, OR FOR THE PROPER INSTALLATION OF THE WORK.

1.03 SHOP DRAWINGS AND SAMPLES

- A. SUBMIT SHOP DRAWINGS AND SAMPLES WITH ALL DETAILS AND INFORMATION, AS REQUIRED FOR THE WORK OF THIS SECTION AND IN ACCORDANCE WITH GENERAL CONDITIONS OR AS REQUESTED BY THE ARCHITECT OR ENGINEER.
B. SUBMIT FOR APPROVAL, SAMPLES OF MATERIALS, AFFIDAVITS, CERTIFICATES, ETC., AS REQUIRED BY THE GENERAL CONDITIONS OR AS REQUESTED BY THE ARCHITECT OR ENGINEER.
C. SUBMIT FOR APPROVAL SHOP DRAWINGS AND CATALOG CUTS OF THE FOLLOWING:
1. PLUMBING FIXTURES AND EQUIPMENT
2. VALVES
3. PIPE AND FITTINGS
4. HANGERS
5. INSULATION
6. WATER HEATERS
7. VACUUM BREAKERS
8. PIPING LAYOUT
9. GREASE INTERCEPTORS
10. BACKFLOW PREVENTION DEVICES.

1.04 AS-BUILT DRAWINGS

- A. THE CONTRACTOR SHALL KEEP A SET OF PLANS ON THE JOB, NOTING DAILY ALL CHANGES MADE IN CONNECTION WITH THE FINAL INSTALLATION INCLUDING EXACT DIMENSIONED LOCATIONS OF ALL NEW AND UNCOVERED EXISTING UTILITY PIPING OUTSIDE THE BUILDING.
B. PREPARE AND SUBMIT "AS-BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

1.05 TESTS

- A. ALL PLUMBING SYSTEMS SHALL BE SUBJECT TO AN OPERATING TEST UNDER DESIGN CONDITIONS TO ENSURE PROPER SEQUENCE AND OPERATION THROUGHOUT THE RANGE OF OPERATION REGARDLESS OF THE SEASON.
B. ALL NEW PLUMBING SYSTEMS SHALL BE OPERATED SEPARATELY AND COINCIDENT WITH OTHER SYSTEMS FOR A PERIOD OF TIME TO DEMONSTRATE TO THE SATISFACTION OF THE OWNER, ENGINEER AND ARCHITECT THE ABILITY OF THE EQUIPMENT TO MEET CAPACITY AND PERFORMANCE REQUIREMENTS WHILE MAINTAINING DESIGN CONDITIONS IN ACCORDANCE WITH THE TRUE INTENT AND PURPOSE OF THESE SPECIFICATIONS
C. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER FUNCTIONING OF ALL SYSTEMS.

1.06 CLEANING

- A. ALL PIPING, FIXTURES, EQUIPMENT, ETC., INSTALLED UNDER THIS CONTRACT SHALL BE THOROUGHLY CLEANED AND PROTECTED DURING CONSTRUCTION AND PUT INTO FIRST-CLASS OPERATING CONDITION BEFORE BEING OFFERED FOR ACCEPTANCE.
B. UPON COMPLETION OF ALL WORK, THE PLUMBING CONTRACTOR SHALL THOROUGHLY CLEAN ALL PLUMBING FIXTURES AND LEAVE ALL ITEMS READY FOR USE BY THE OWNER. ALL FLOOR DRAINS SHALL BE CLEANED AND MANUFACTURERS PROTECTIVE COVERINGS SHALL BE REMOVED.

1.07 LAWS, ORDINANCES, ETC.

- A. THE WORK OF THIS CONTRACTOR MUST COMPLY WITH ALL LOCAL LAWS, ORDINANCES AND RULES. THIS CONTRACTOR MUST HAVE THE NECESSARY INSPECTIONS MADE BY THESE AUTHORITIES, PAY ALL THE REQUIRED FEES, AND FURNISH THE OWNER WITH CERTIFICATES OF APPROVAL BEFORE FINAL PAYMENT ON THIS CONTRACT IS MADE. HE SHALL APPLY, PAY FOR, AND OBTAIN ALL PERMITS.

1.08 SUPERVISION

- A. THIS CONTRACTOR SHALL HAVE A COMPETENT FOREMAN IN CHARGE OF THE WORK WHO SHALL BE ON THE SITE DURING THE INSTALLATION OF THE MATERIAL FURNISHED UNDER THIS SPECIFICATION UNTIL SAME HAS BEEN PUT IN COMPLETE OPERATIVE CONDITION AND ACCEPTED BY THE OWNER.

1.09 CUTTING AND PATCHING

- A. THIS CONTRACTOR SHALL DO ALL CUTTING AND PATCHING FOR PLUMBING WORK AND SHALL COORDINATE SAME WITH ALL OTHER TRADES. ALL CUTTING SHALL BE SUBJECT TO TRADE REGULATIONS. NO CUTTING OF STRUCTURAL MEMBERS SHALL BE DONE WITHOUT THE APPROVAL OF THE ARCHITECT.

PART 2 - MATERIAL

2.01 GENERAL

- A. THE PLUMBING SYSTEMS SHALL BE COMPLETE WITH ALL PIPES, FITTINGS, TRAPS, VALVES, HANGERS AND SUPPORTS, INSULATION, ETC. AND ALL OTHER ITEMS NECESSARY FOR COMPLETE AND OPERATING APPROVED TYPE SYSTEM.
B. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF PRODUCTS OF THIS TYPE WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
C. UL COMPLIANCE: PROVIDE COMPONENTS WITH UL LISTING AND LABELING WHEN THERE IS AN APPLICABLE UL CATEGORY.
D. PROVIDE MATERIALS, PRODUCTS, AND FABRICATIONS THAT COMPLY WITH ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS AND RECOMMENDATIONS REGARDING LEAD CONTENT AND CONTRIBUTION OF LEAD TO POTABLE WATER, THAT HAVE NO LEAD OR LEAD ALLOYS IN CONTACT WITH POTABLE WATER, AND THAT DO NOT CONTRIBUTE TO OR CAUSE LEAD IN POTABLE WATER.
E. PROVIDE MATERIALS, PRODUCTS, AND FABRICATIONS THAT COMPLY WITH ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS AND RECOMMENDATIONS REGARDING LEAD CONTENT AND CONTRIBUTION OF LEAD TO POTABLE WATER, THAT HAVE NO LEAD OR LEAD ALLOYS IN CONTACT WITH POTABLE WATER, AND THAT DO NOT CONTRIBUTE TO OR CAUSE LEAD IN POTABLE WATER.

2.02 SANITARY WASTE, VENT, AND STORM WATER DRAINAGE PIPE AND FITTINGS

- A. SANITARY SEWER - CAST IRON, COPPER, OR PVC PIPING MAY BE USED EXCEPT THAT ALL PIPING BELOW GRADE SHALL BE PVC. VENTS TWO (2) INCHES IN SIZE AND SMALLER MAY BE EITHER SCHEDULE 40 GALVANIZED STEEL OR COPPER PIPING.

2.04 COLD WATER AND HOT WATER PIPE AND FITTINGS

- A. DOMESTIC COLD AND HOT WATER PIPING SHALL BE COPPER TYPE "L" WITH WROUGHT COPPER FITTINGS. ALL WATER PIPING SHALL BE INSULATED WITH ARMAFLEX OR EQUIVALENT INSULATING TO A THICKNESS OF 1".
B. ALL SUPPLIES THROUGH WALLS TO FIXTURES SHALL BE 85% RED BRASS WITH THREADED BRASS FITTINGS. ALL EXPOSED PIPING IN FINISHED SPACES SHALL BE CHROME PLATED 85% RED BRASS.

1.01 GAS PIPING (ABOVE GROUND, AND INTERIOR)

- A. STEEL: BLACK STEEL, SCHEDULE 40, ASTM A53, A120, OR ANSI B36.10; 4" AND SMALLER, MALLEABLE IRON SCREWED FITTINGS, 150 LBS., ANSI B16.4; 2-1/2" AND LARGER, WROUGHT STEEL BUTT WELDING FITTINGS, ANSI B16.9.
1. LINE SIZES 1" AND SMALLER TO BE SOCKET WELDED.
2. LINE SIZES 1-1/4" AND LARGER TO BE BUTT-WELDED.

1.02 GAS PIPING (UNDERGROUND)

- A. PLASTIC: THERMOPLASTIC GAS PRESSURE PIPE AND FITTINGS, SDR 11 POLYETHYLENE PE2306 GRADE P23 CLASS C, WITH #14 STRANDED COPPER TW COMPANION WIRE.
B. FACTORY PREBENT, COATED STEEL RISERS, 2" AND SMALLER.
1. ANODELESS TYPE RISERS.
2. MEET ASTM D2513 AND DOT 192.283.
3. CSA APPROVED AND IAPMO LISTED.
4. EPOXY COATED.
5. SCHEDULE 40 STEEL CASING OR COLD FORMED CARBON STEEL ERW TUBING.
6. FACTORY INSTALLED TRACER WIRE.
7. MODEL: CENTRAL PLASTICS ANODELESS SERVICE RISERS.
C. FACTORY PREBENT, COATED STEEL RISERS, 2-1/2" AND 3".
1. ANODE PROTECTED.
2. MEET ASTM D2513 AND DOT 192.283.
3. CSA APPROVED AND IAPMO LISTED.
4. EPOXY COATED.
5. SCHEDULE 40 STEEL CASING.
6. FACTORY INSTALLED TRACER WIRE AND ANODE CONNECTION.
7. PROTECTED BY AN ANODE.
8. MODEL: CENTRAL PLASTICS TRANSITION SERVICE RISERS.

D. JOINTS: FUSION JOINTS, ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

- E. MANUFACTURERS: NIPAK POLYETHYLENE, CONTINENTAL MARK II, OR PHILLIPS MARLEX TR 418.
F. EPOXY RESIN: REINFORCED EPOXY RESIN GAS PRESSURE PIPE FITTING, SCHEDULE 40, ASTM D2517, WITH #14 STRANDED COPPER TW COMPANION WIRE

- G. STEEL, PROTECTED: GALVANIZED STEEL, SCHEDULE 40, ASTM A120; MALLEABLE IRON SCREWED FITTINGS, 150 LBS., ANSI B16.4; PLASTIC EXTRUDED COATING (EXTRUGOAT) WITH HOT APPLIED COAL TAR TAPE COATING (TAPECOAT 20) FOR FITTINGS OR HOT APPLIED COAL TAR TAPE COATING (TAPECOAT 20) FOR PIPE AND FITTINGS, FEDERAL SPECIFICATIONS T-1512. PROVIDE ANODES TO CATHODICALLY PROTECT METALLIC PIPE IN GROUND.
H. CORRUGATED STAINLESS STEEL TUBING: "GASTITE" OR ANSIIAS LC-1. ICBO EVALUATION REPORT ER-5122.

- 1. ASTM A240 TYPE 304, 321 CORRUGATED STAINLESS STEEL TUBING (THM 1042) WITH A MIN. WALL THICKNESS OF .010. JACKETS TO BE TENITE POLYETHYLENE MEETING THE REQUIREMENTS OF ASTM E84 FOR FLAME SPREAD AND SMOKE DENSITY.
2. ALL MECHANICAL TUBE FITTINGS ARE TO BE SAE C360 BRASS INCORPORATING DOUBLE WALL FLARE FOR SEALING AND "JACKET LOCK" JACKET CAPTURING FOR STEEL TUBING PROTECTION.

1.03 VENTING (GAS FIRED APPLIANCES)

- A. METAL: UL LISTED, DOUBLE WALL, TYPE B OR BW AS REQUIRED BY APPLIANCE LISTING; UL LISTED ANTI DRAFT RAINCAP.

1.04 GAS PRESSURE REGULATORS (IF APPLICABLE)

- A. PROVIDE ADJUSTABLE, SINGLE STAGED, STEEL JACKETED, CORROSION RESISTANT, ELEVATION COMPENSATED, SPRING LOADED REGULATOR WITH INTERNAL RELIEF VALVE, SCREENED VENT, "NPT GAUGE PORT WITH THREADED PIPE PLUG FOR HIGH PRESSURE SIDE TEST GAUGE, SIZED FOR INDICATED FLOW RATE AT SPECIFIC GRAVITY AND APPROPRIATE PRESSURE.

2.06 EXPANSION JOINTS AND ANCHORS

- A. PROVIDE ADJUSTABLE, SINGLE STAGED, STEEL JACKETED, CORROSION RESISTANT, ELEVATION COMPENSATED, SPRING LOADED REGULATOR WITH INTERNAL RELIEF VALVE, SCREENED VENT, "NPT GAUGE PORT WITH THREADED PIPE PLUG FOR HIGH PRESSURE SIDE TEST GAUGE, SIZED FOR INDICATED FLOW RATE AT SPECIFIC GRAVITY AND APPROPRIATE PRESSURE.
1. FISHER S102.
2. FISHER S201.
B. MAINS AND BRANCHES MUST BE SO INSTALLED WITH SWING CONNECTIONS SO AS TO PERMIT FREE EXPANSION OF PIPING.

2.07 HANGERS AND SUPPORTS

- A. FURNISH ALL NECESSARY HANGERS, SUPPORTS, INSERTS, CLAMPS, ETC. AS REQUIRED. ALL HANGERS AND SUPPORTS SHALL BE OF HEAVY CONSTRUCTION AND SUITABLE FOR THE SIZE OF PIPE TO BE SUPPORTED. ALL INSERTS AND HANGERS SHALL BE INSTALLED TO CLEAR WORK OF OTHER TRADES.
B. ALL HORIZONTAL CAST IRON PIPING SHALL BE SUPPORTED ON FIVE (5) FOOT CENTERS AND AT ALL JOINTS. ALL HORIZONTAL SCREWED PIPING SHALL BE SUPPORTED BY HANGERS SPACED NOT OVER TEN (10) FEET APART. ALL BRANCHES SHALL HAVE SEPARATE HANGERS. HANGERS SHALL BE CLEVIS TYPE, CONSTRUCTED OF HEAVY BAR STEEL STOCK, WITH PROPER SIZE SUSPENSION ROD AND LOCKNUTS. WHERE PIPING IS SUPPORTED FROM THE FLOOR, PROVIDE ADJUSTABLE PIPE SADDLE SUPPORT WITH U-BOLT.
C. WHERE PIPES ARE TO BE INSULATED, THE HANGERS SHALL BE OF AMPLE SIZE TO PROVIDE FOR THE COVERING SPECIFIED AND BE PROVIDED WITH GALVANIZED STEEL INSULATION SHIELDS.
D. ALL HANGERS, RODS, BEAM CLAMPS, ETC. SHALL BE SHOP ZINC COATED.
E. ALL HORIZONTAL COPPER TUBING SHALL BE SUPPORTED BY HANGERS NOT OVER SIX (6) FEET APART FOR PIPING 1-1/4 INCH AND SMALLER AND NOT OVER TEN (10) FEET APART FOR PIPING 1-1/2 INCH AND LARGER. ALLOW BRANCHES SHALL HAVE SEPARATE HANGERS. HANGERS SHALL BE CLEVIS TYPE WITH COPPER BOTTOM SUPPORT. IF CHANNEL OR ANGLE IRON TRAPEZE HANGERS ARE USED, THE SPACE ON HANGERS FOR THE COPPER TUBING SHALL BE WRAPPED WITH LEAD SHIELDS TO ISOLATE TUBING.
F. IN AREAS OF STEEL CONSTRUCTION, PIPE HANGERS SHALL BE SUPPORTED BY BEAM CLAMPS. COORDINATE WITH ENGINEER FOR MAXIMUM LOADING. BEAM CLAMPS SHALL BE STEEL WITH BOLT, NUT AND SOCKET THREADED FOR ROD CONNECTION AND SHALL BE F & S MANUFACTURING COMPANY FIG. #45, CENTRAL IRON, GRINNELL COMPANY, OR APPROVED EQUAL.

2.08 INSULATION

- A. COVER ALL HOT WATER PIPE WITH 1 INCH THICK AND ALL COLD WATER PIPE WITH 1/2 INCH THICK MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULATED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE LOCAL CODE REQUIREMENTS FOR OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50.

2.09 VALVES

- A. STOP VALVES, EXCEPT FIXTURE STOPS, ON HOT AND COLD WATER LINES 2 IN. AND SMALLER SHALL BE FULL PORT 400 LB. NON-SHOCK BRONZE BALL VALVES, NIBCO T-595-Y FOR THREADED CONNECTIONS, AND NIBCO S-595-Y FOR COPPER TO COPPER, OR APPROVED OTHER.
B. GLOBE VALVES UP TO AND INCLUDING 3 IN. SHALL BE SCREW-OVER BONNET, COMPOSITION DISC, BRASS, NIBCO T-211 FOR THREADED CONNECTIONS AND S-211 FO SOLDER CONNECTIONS, OR APPROVED OTHER.
C. CHECK VALVES SHALL BE OF THE SWING-TYPE, SIZES UP TO AND INCLUDING 3 IN. SHALL BE ALL BRASS, 125 LB. S.W.P., NIBCO T-413 FOR THREADED CONNECTIONS & NIBCO S-413 FOR SOLDER CONNECTIONS OR APPROVED OTHER.

2.10 VALVE TAGS AND CHART

- A. EACH VALVE, EXCEPT VALVES AT FIXTURES, SHALL HAVE A 2 INCH DIAMETER BRASS TAG WITH 1 INCH HIGH NUMERAL STAMPED THEREON, SECURED TO THE VALVE BY MEANS OF BRASS'S HOOK OR BRASS CHAIN. EACH SYSTEM TO HAVE A LETTER DESIGNATION IDENTIFYING SOURCE AS WELL.
B. THE CONTRACTOR SHALL FURNISH AN APPROVED, NEATLY DRAWN VALVE CHART, PROPERLY FRAMED, SHOWING THE USE AND LOCATION OF EACH VALVE THAT IS TAGGED.

2.11 SHOCK ARRESTORS

- A. SHOCK ARRESTORS SHALL BE JONESPEC MODEL #505000 SERIES OR APPROVED EQUAL.

2.12 BACKFLOW PREVENTION DEVICES

- A. VACUUM BREAKER (TYPE"A") - CAST BRASS C.P. IF EXPOSED TO PUBLIC VIEW SIMILAR TO WATTS NO. 288A. (NOT SUBJECT TO CONSTANT PRESSURE.)
B. VACUUM BREAKER (TYPE"B") - CAST BRASS C.P. IF EXPOSED TO PUBLIC VIEW SIMILAR TO WATTS NO. 909-S.
C. VACUUM BREAKER (TYPE"C") - CAST BRASS C.P. IF EXPOSED TO PUBLIC VIEW SIMILAR TO WATTS NO. 800MCO. (CONSTANT PRESSURE V.B.)
D. VACUUM BREAKER (TYPE"D") - CAST BRASS C.P. IF EXPOSED TO PUBLIC VIEW SIMILAR TO WATTS NO. N9C. (CONSTANT PRESSURE V.B.)

2.13 CONNECTION TO MISC. EQUIPMENT

- A. PROVIDE ALL NECESSARY PIPE, FITTINGS, VALVES, ETC. EXCEPT AS OTHERWISE SPECIFIED AND MAKE ALL FINAL PLUMBING PIPING CONNECTIONS, INCLUDING WASTE, VENT, HOT AND COLD WATER, ETC., TO ALL EQUIPMENT REQUIRING SAME, FURNISHED "UNDER ANOTHER SECTION OF THE SPECIFICATIONS"

2.14 CONDENSATE DRAIN PIPING

- A. CONDENSATE DRAIN PIPING SHALL BE TYPE "M" COPPER OR SCHEDULE 40 PVC, WHERE PERMITTED BY LOCAL CODE.

2.15 GUARANTEE

- A. THIS CONTRACTOR SHALL GUARANTEE FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE BY THE OWNERS. ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PARTS OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITHIN THE PERIOD OF THE GUARANTEE.
B. WHERE SPECIAL GUARANTEES COVERING INSTALLATION, OPERATION OR PERFORMANCE OF ANY SYSTEMS OR APPLIANCES FURNISHED UNDER THIS CONTRACTOR ARE REQUIRED, THE FULL RESPONSIBILITY FOR THE FULFILLMENT OF SUCH GUARANTEES MUST BE ASSUMED BY THE CONTRACTOR, WHO SHALL OBTAIN WRITTEN GUARANTEES, IN TRIPPLICATE, WHICH SHALL BE FILED WITH THE ARCHITECT BEFORE FINAL ACCEPTANCE.
C. CONTRACTOR WILL BE RESPONSIBLE FOR ALL LEAKS IN ALL PIPES FOR A PERIOD OF ONE YEAR FROM THE DATE OF COMPLETION OF WORK UNDER THIS CONTRACT. CONTRACTOR SHALL REPAIR AT NO COST TO THE OWNER, ALL SUCH LEAKS WHICH OCCUR AFTER COMPLETION OF THIS CONTRACT UPON 24 HOURS NOTICE THEREOF BY THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR. LEAKS WHICH OCCUR PRIOR TO THE COMPLETION OF THIS CONTRACT SHALL BE REPAIRED AT ONCE. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED BY SUCH LEAKS AND THE REPAIR THEREOF AND WILL REIMBURSE THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR FOR ALL EXPENSE INCURRED THEREBY.
D. DISINFECTION OF THE POTABLE WATER SYSTEM SHALL BE DISINFECTED PRIOR TO USE BY A METHOD OF DISINFECTION IN ACCORDANCE WITH THE NATIONAL PLUMBING CODE CHAPTER 10 PARAGRAPH-10.9. THE POTABLE WATER PURITY TEST RESULT FROM A NEW JERSEY CERTIFIED TESTER SHALL BE SUBMITTED FOR ENGINEER'S REVIEW AND APPROVAL.

2.16 PRESSURE REDUCING VALVE IF APPLICABLE (DOMESTIC WATER)

- A. SIZE 1/2" -2-1/2" THREADED BRONZE BODY CONSTRUCTION RENEWABLE STAINLESS STEEL SEAT, HIGH TEMPERATURE RESISTING DIAPHRAGM, SPRING CAGE CONSTRUCTION AND STRAINER, WATTS NO. 2235 OR APPROVED EQUAL. SEE DRAWINGS FOR PSI SETTINGS.

2.17 PLUMBING FIXTURES AND EQUIPMENT

- A. PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL ALL PLUMBING FIXTURES AND APPLIANCES, UNLESS OTHERWISE NOTED, AND MAKE ALL FINAL CONNECTIONS AS REQUIRED.
B. REFER TO ARCHITECTURAL PLANS AND/OR SPECIFICATIONS FOR EXACT PLUMBING FIXTURE TYPE, MAKE AND MOUNTING HEIGHTS.

WHEN REQUIRED, IT IS THE OWNER'S RESPONSIBILITY TO CONTRACT WITH A COMMISSIONING AUTHORITY TO COMPLY WITH LOCAL CODES.

ISSUED REVISIONS: Table with 2 columns for revision number and description.

Layne's Chicken Fingers Plumbing Specification

**GENERAL NOTES**

- a. GENERAL CONDITIONS AND SPECIAL CONDITIONS SHALL APPLY TO THIS CONTRACT. DRAWINGS ARE SCHEMATIC. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL COSTS TO MAKE NECESSARY ADJUSTMENTS TO PROVIDE A COMPLETE INSTALLATION AS CONTEMPLATED BY THE DRAWINGS AND SPECIFICATIONS READY FOR USE. PRIOR TO SUBMITTING HIS BID THE CONTRACTOR SHALL INSPECT THE SITE AND INCLUDE IN HIS BID ALL ADJUSTMENTS AND CHANGES REQUIRED DUE TO EXISTING CONDITIONS.
- b. ALL WORK SHALL CONFORM TO THE LOCAL BUILDING CODE AND ALL WORK SHALL BE PERFORMED IN A NEAT AND SAFE MANNER.
- c. INSULATE HOT AND COLD WATER PIPING WITH 1" FIBERGLASS.
- d. GIVE ALL NECESSARY NOTICES, OBTAIN AND PAY FOR ALL PERMITS, PERFORM ALL TESTS, PAY ALL LOCAL, STATE AND FEDERAL TAXES, FEES AND OTHER COSTS IN CONNECTION WITH THIS WORK. FILE ALL NECESSARY PLANS AND OBTAIN ALL REQUIRED PERMITS OF ALL AGENCIES HAVING JURISDICTION.
- e. GUARANTEE ALL WORK AND MATERIAL FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR AFTER COMPLETION OF PROJECT, DURING WHICH ALL REPAIRS SHALL BE MADE AT NO COST TO THE TENANT.
- f. DO NOT SCALE FROM THESE DRAWINGS.
- g. ALL SINKS TO BE FASTENED TO WALLS AS REQUIRED.
- h. PROVIDE INDIVIDUAL SHUT-OFF VALVES AT ALL WATER CONNECTIONS TO EQUIPMENT (LOCATED AT EQUIPMENT CONVENIENT TO OPERATOR).
- i. PROVIDE ESCUTCHEONS FOR ALL PIPES PIERCING PARTITIONS AND WALLS.
- j. PLUMBING CONTRACTOR SHALL VERIFY ALL INVERTS AND EXISTING CONDITIONS PRIOR TO INSTALLATION OF NEW WORK.
- k. PLUMBING CONTRACTOR SHALL PROVIDE FINAL CONNECTION TO ALL EQUIPMENT REQUIRING PLUMBING CONNECTION.
- l. LOCATION, TYPE AND SPACING OF FIXTURES SHALL COMPLY WITH LOCAL HANDICAPPED CODE REQUIREMENTS. COORDINATE WITH ARCHITECTURAL PLANS AND DETAILS. PLUMBING CONTRACTOR TO VERIFY CONDITIONS PRIOR TO INSTALLING FIXTURES.

**SANITARY SEWER AND WATER SERVICE PLUMBING CALCULATIONS**

PROJECT: LAYNE'S CHICKEN - LAMPASAS, TX

FIXTURE TYPE	QUANTITY	WASTE FIXTURE UNITS PER FIXTURE	TOTAL WASTE FIXTURE UNITS FOR FIXTURE TYPE	WATER FIXTURE UNITS PER FIXTURE	TOTAL WATER FIXTURE UNITS FOR FIXTURE TYPE
1 COMP SINK (313)	1	2	2	4	4
HAND SINK (320)	2	2	4	2	4
HAND SINK (403)	1	2	2	2	2
3 COMP SINK (405)	1	2	2	4	4
DRINKING FOUNTAIN	4	0.5	2	0.25	1
HOSE BIBB (USED SPARINGLY)	1	0	0	0	0
EMERGENCY TRENCH DRAIN	2	0	0	0	0
EMERGENCY FLOOR DRAIN	1	0	0	0	0
FLOOR SINK	6	0	0	0	0
<b>TOTAL FIXTURE UNITS:</b>			<b>12</b>		<b>15</b>
<b>SERVICE PIPE SIZE:</b>			<b>4"</b>		<b>1"</b>
<b>DISTANCE FROM METER TO MOST REMOTE FIXTURE (FEET):</b>					<b>75</b>
<b>EQUIVALENT LENGTH OF PIPING = DISTANCE x 1.2 (FEET):</b>					<b>90</b>

**PLUMBING FIXTURE SCHEDULE**

MARK	FIXTURE	SAN.	VENT	C.W.	F.W.	H.W.	REMARKS
102	COFFEE/TEA BREWER	-	-	-	1/2"	-	PROVIDE WITH WATTS - SD-3-FN DOUBLE CHECK VALVE. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
105	NUGGET ICE MAKER	-	-	-	1/2"	-	PROVIDE WITH WATTS - SS007M30T-S BACKFLOW PREVENTION DEVICE. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
106	SODA/ICE DISPENSER	1"	-	-	1/2"	-	ROUTE DRAIN LINES TO FLOOR SINK AND DRAIN VIA AIR GAP. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
202	ICE BIN	3/4"	-	-	-	-	ROUTE DRAIN LINES TO FLOOR SINK AND DRAIN VIA AIR GAP. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
313	PREP SINK	2"	1-1/2"	1/2"	-	1/2"	ROUTE DRAIN LINE TO FLOOR SINK AND DRAIN VIA AIR GAP. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
320	HAND SINK	2"	1-1/2"	1/2"	-	1/2"	THERMOSTATIC MIXING VALVE - WATTS - LFMMVM1-US, ASSE 1017, ASSE 1069, ASSE 1070. INTEGRAL CHECK VALVES AND ADJUSTMENT CAP WITH LOCKING FEATURE. SET TO 110°F. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
405	POT AND PAN SINK	2"	1-1/2"	1/2"	-	1/2"	ROUTE DRAIN LINES TO FLOOR SINK AND DRAIN VIA AIR GAP. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
415	BAG-IN-BOX RACK	1"	-	-	-	-	ROUTE DRAIN LINE TO FLOOR SINK AND DRAIN VIA AIR GAP. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
416	WATER FILTER	-	-	3/4"	-	-	REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
420	MOP SINK	3"	2"	1/2"	-	1/2"	REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
FD	FLOOR DRAIN	2"	1-1/2"	3/8"	-	-	ZURN - #Z415-BZ1 - TYPE B ROUND STRAINER WITH TRAP GUARD BY PROVENT SYSTEMS
FS	FLOOR SINK	3"	2"	-	-	-	ZURN - #Z1900 - 12"X12"X6" DEEP, ACID RESISTANT BODY PROVIDE WITH TRAP PRIMER PROTECTION
TD	TROUGH DRAIN 12" X 36" T-304 14 GA. S.S.	3"	2"	-	-	-	BK RESOURCES - #FRS-1236 - 2-3/4" PAN DEPTH, REMOVABLE 3/16" X 1" STAINLESS STEEL FLAT BAR SUBWAY GRATE, WITH DRAIN INCLUDED
EX.LAV	LAVATORY	E	E	E	-	E	EXISTING TO REMAIN
EX.WC	WATER CLOSET	E	E	E	-	-	EXISTING TO REMAIN
CP-1	CIRCULATING PUMP	-	-	3/4"	-	-	GRUNDFOS - ALPHA 2. AUTO TIMER KIT AND AQUASTAT WITH ADJUSTABLE SETPOINT. 115V/1PH, 50 WATTS.
HB	HOSE BIB	-	-	3/4"	-	-	ZURN - Z1350. LOCKABLE BOX, HINGED DOOR, CYLINDER LOCK.
GI	GREASE INTERCEPTOR	4"	-	-	-	-	SCHIER - GB-250 - HYDROMECHANICAL GREASE TRAP, MOLDED POLYETHYLENE, 1,895 LB GREASE CAPACITY AT 100-GPM FLOW RATE, INTEGRAL AIR RELIEF AND ANTI-SIPHON, H-20 RATED CAST IRON COVER, ASME A112.14.3 (TYPE D), ACCESS RESISTOR
WCO-1	WALL CLEAN OUT	-	-	-	-	-	ZURN - Z1441, CI BODY, RECESSED, THREADED BRASS PLUG, STAINLESS STEEL ACCESS COVER
FCO	FLOOR CLEANOUT	-	-	-	-	-	ZURN - 1400 - COATED CAST IRON BODY, COMBINATION ADJUSTABLE ROUND STAINLESS STEEL COVER AND PLUG TOP ASSEMBLY, GASKET SEAL, ASME 112.36.2

**KITCHEN GAS EQUIPMENT SCHEDULE**

MARK	DESCRIPTION	CONNECTION	BTU	REMARKS
304	FRYER BATTERY	3/4"	240,000	PROVIDE WITH QUICK DISCONNECT. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
306	GRIDDLE	3/4"	66,000	PROVIDE WITH QUICK DISCONNECT. REFER TO KITCHEN EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.

**WATER HEATER SCHEDULE**

MARK	MFR	MODEL	GAS TYPE	MIN MBH	MAX MBH	MAX GPM @ 80F INTAKE SIZE	VENT SIZE	COMBUSTION INTAKE SIZE	THERMAL EFFICIENCY
WH-1	RINNAI	CU199i	NATURAL	15	199	4.8	2" EACH	2" EACH	97%

NOTES:

- WATER HEATERS ARE 97% HIGH EFFICIENCY CONDENSING TYPE MODELS.
- WATER HEATERS ARE TO BE PROVIDED WITH OUTDOOR CONCENTRIC VENT ROOF TERMINATION KIT - ONE PER WATER HEATER.
- PROVIDE WITH RINNAI EZCONNECT CABLES FOR (2) UNITS #REU-EZC-2 AND INCLUDES 2-UNIT INTERIOR WALL HANGING RACK.
- PROVIDE CONDENSATE PIPE FROM EACH VENT LINE INTO (1) COMMERCIAL NEUTRALIZATION TANK W/MEDIA #103000067 ROUTED ROOF DRAIN OR NEAREST APPROVED RECEPTOR AS PER LOCAL AHJ.
- INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS AND HARDWARE AS REQUIRED.
- CONTRACTOR SHALL ORDER WATER HEATERS THROUGH THE RINNAI NATIONAL ACCOUNT: CONPRATEPRICING@RINNAI.US. INDICATE THE SYSTEM IS FOR TERIYAKI MADNESS.

**PLUMBING SYMBOLS LEGEND**

SYMBOL	DESCRIPTION	ABBREVIATIONS
	BALL VALVE	A.F.F. ABOVE FINISHED FLOOR
	GATE VALVE	CD CONDENSATE DRAIN
	CHECK VALVE	CW COLD WATER
	BACKFLOW PREVENTER	DF DRINKING FOUNTAIN
	2-WAY CONTROL VALVE	DIA DIAMETER
	3-WAY CONTROL VALVE	FCO FLOOR CLEAN OUT
	PIPE UNION	FD FLOOR DRAIN
	DIRECTION OF FLOW ARROW	FLA FULL LOAD AMPS
	END CAP	FW FILTERED WATER
	PIPE TURN UP	GPM GALLONS / MINUTE
	PIPE TURN DOWN	HP HORSEPOWER
	FLOOR DRAIN	HW HOT WATER
	SANITARY SEWER LINE	IWH INSTANTANEOUS WATER HEATER
	COLD WATER LINE	LAV LAVATORY
	HOT WATER LINE	LL LANDLORD
	HOT WATER RE-CIRCULATION LINE	MCA MINIMUM CIRCUIT AMPACITY
	FILTERED WATER LINE	MOCPP MAXIMUM OVERCURRENT PROTECTION
	VENT LINE	N.I.C. NOT IN CONTRACT
	COMPRESSED AIR	NTS NOT TO SCALE
	VACUUM LINE	SS SANITARY SEWER
	GAS LINE	TEN TENANT
	CONDENSATE LINE	T.G.C. TENANT GENERAL CONTRACTOR
	TANK TYPE WATER HEATER	TYP TYPICAL
	WATER METER	U.N.O. UNLESS NOTED OTHERWISE
	POINT OF CONNECTION	V.I.F. VERIFY IN FIELD
	GRADE CLEAN OUT	WC WATER CLOSET
	DOUBLE GRADE CLEAN OUT	WCO WALL CLEAN OUT
		WH TANK TYPE WATER HEATER

NOTE: NOT ALL SYMBOLS OR ABBREVIATIONS MAY APPEAR ON PLANS.

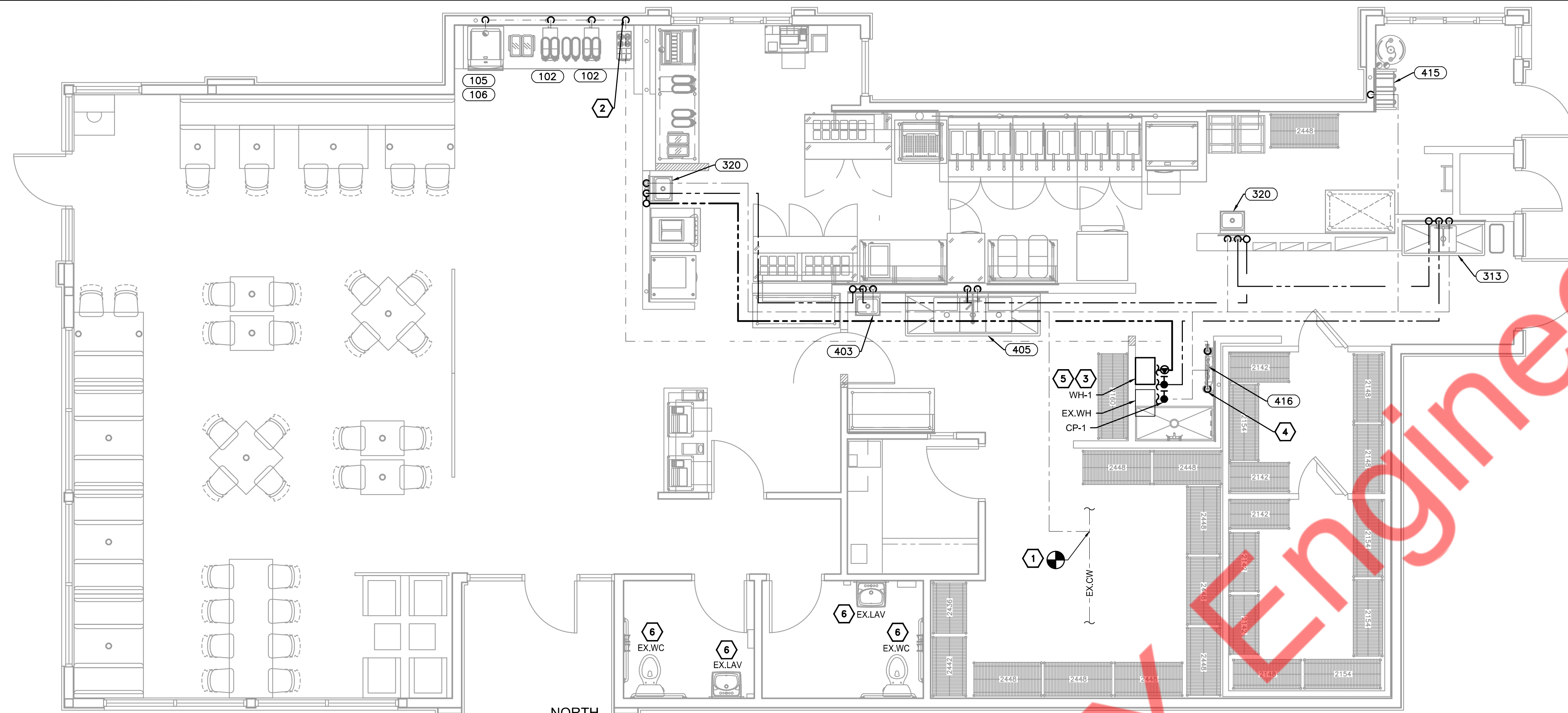
**FIELD VERIFY ALL CONDITIONS**

DESIGN DRAWINGS ARE SCHEMATIC. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO INSPECT EXISTING FIELD CONDITIONS. THE CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS IN HIS BID.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTOR'S COST.

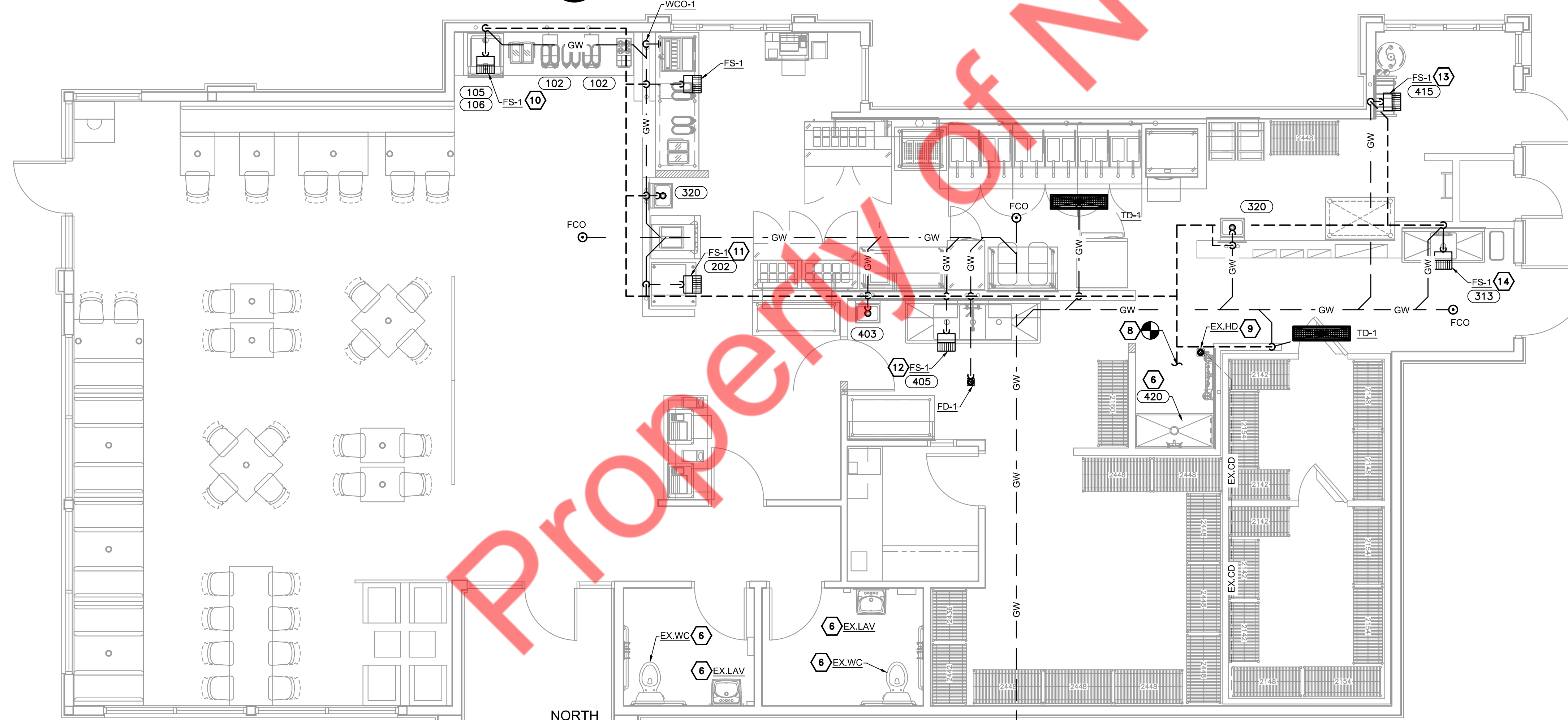
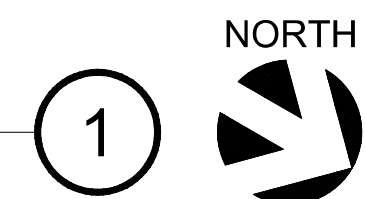
BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES. THE PLANS AND SPECIFICATIONS NOT WITHSTANDING, THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

ISSUED REVISIONS:

**DOMESTIC WATER PLAN**

SCALE: 1/4"=1'-0"



**SANITARY SEWER PLAN**

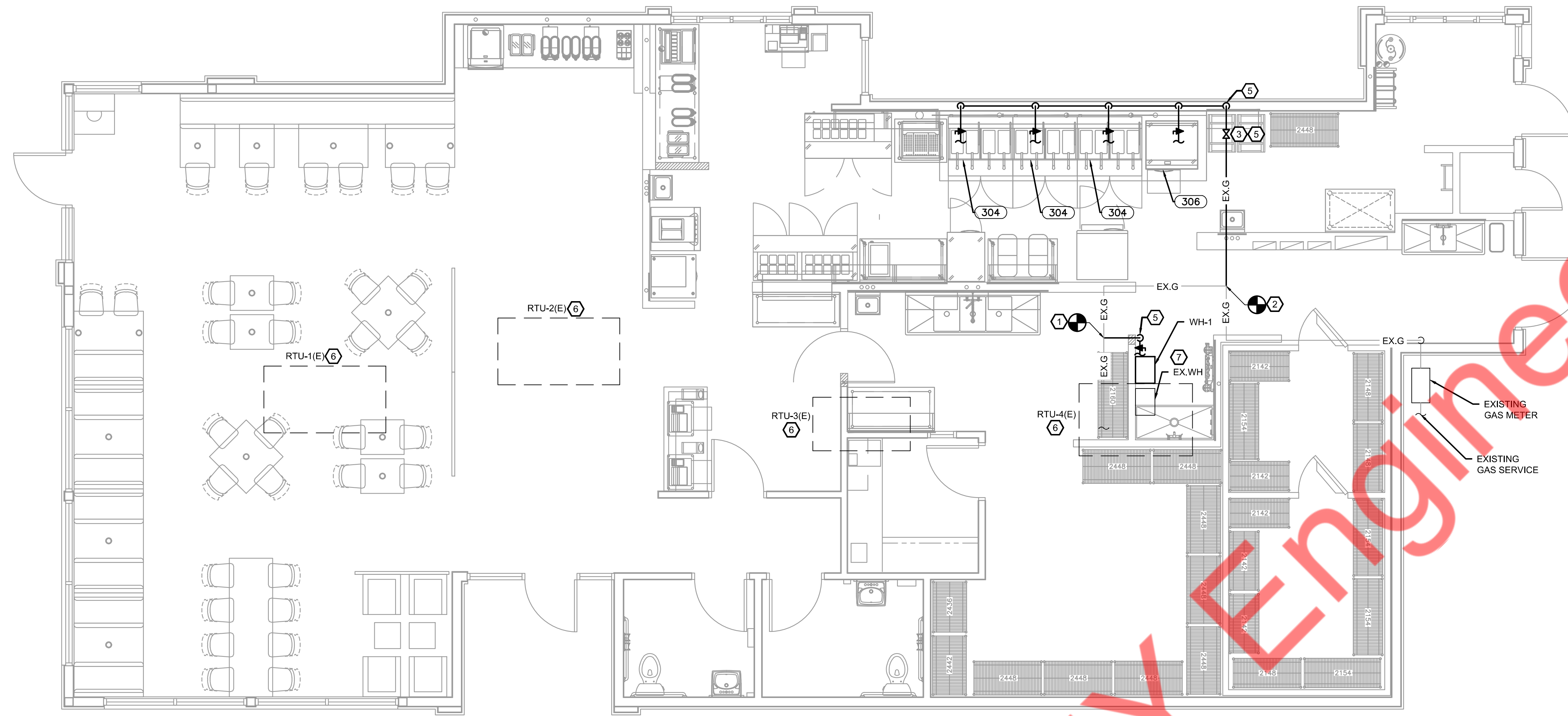
SCALE: 1/4"=1'-0"



**KEYED NOTES**

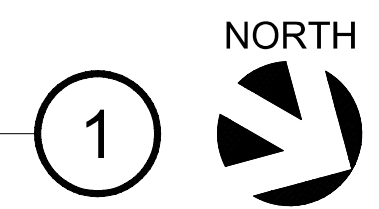
1. CONNECT NEW 1" DOMESTIC WATER PIPING TO EXISTING DOMESTIC WATER LINE CONNECTION POINT AT THE LOCATION SHOWN. VERIFY CONNECTION POINT LOCATION AND ROUTING PRIOR TO BID. COORDINATE ALL METER AND BACKFLOW REQUIREMENTS AND LOCATIONS WITH UTILITY COMPANY PRIOR TO BID. NOTIFY ARCHITECT AND ENGINEER OF RECORD IF PRESSURE AT FURTHEST FIXTURE IS NOT 20 PSI FOR POSSIBLE BOOSTER PUMP INSTALLATION. CONTACT ARCHITECT AND ENGINEER OF RECORD IF PRESSURE IS OVER 80 PSI AFTER TENANT CONNECTION POINT FOR POSSIBLE PRESSURE REDUCING VALVE INSTALLATION.
2. FILTER WATER LINE TURNED DOWN FURR OUT WALL TO BEVERAGE AND ICE MACHINES.
3. TURN DOMESTIC COLD WATER PIPING DOWN FOR CONNECTION TO TANKLESS WATER HEATER. MOUNT TANKLESS WATER HEATER AS HIGH AS POSSIBLE. INSTALL AS PER WATER HEATER MANUFACTURE'S INSTALLATION INSTRUCTIONS.
4. DOMESTIC COLD WATER LINE DOWN TO FILTER WATER
5. WATER HEATER DRAIN TO ADJACENT MOP SINK WITH APPROVED AIR GAP.
6. EXISTING PLUMBING FIXTURES WITH EXISTING WATER, SANITARY AND VENT PIPING CONNECTIONS, ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR FIELD VERIFY EXISTING WATER LINE CONDITION AND REPLACE IF REQUIRED.
7. EXTEND AND CONNECT NEW 4" GREASE WASTE PIPING TO EXISTING GREASE WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY SIZE, ROUTING AND INVERT. CONTRACTOR TO FIELD VERIFY THE LOCATION, CONDITION AND CAPACITY OF EXISTING GREASE INTERCEPTOR IS MORE OR EQUAL THAN 1500 GALLONS AND PROVIDE NEW IF EXISTING IS NOT SUFFICIENT.
8. EXTEND AND CONNECT NEW 3" VENT LINE TO EXISTING VENT LINE IN SPACE. CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION OF EXISTING VENT LINE. BASE BID ACCORDINGLY.
9. CONDENSATE DRAIN FROM WALK-IN COOLER AND FREEZER TO EXISTING HUB DRAIN WITH APPROVED AIR GAP.
10. INDIRECT WASTE FROM ICE MAKER(105), SODA/ICE DISPENSER(106) & COFFEE/TEA MAKER(102) TO FLOOR SINK WITH APPROVED AIR GAP.
11. INDIRECT WASTE FROM ICE MAKER(202) TO FLOOR SINK WITH APPROVED AIR GAP.
12. INDIRECT WASTE FROM 3-COMPARTMENT SINK(405) TO FLOOR SINK WITH APPROVED AIR GAP.
13. INDIRECT WASTE FROM B.I.B RACK(415) TO FLOOR SINK WITH APPROVED AIR GAP.
14. INDIRECT WASTE FROM 1-COMPARTMENT SINK(313) TO FLOOR SINK WITH APPROVED AIR GAP.

ISSUED REVISIONS:	



**PLUMBING GAS PLAN**

SCALE: 1/4"=1'-0"



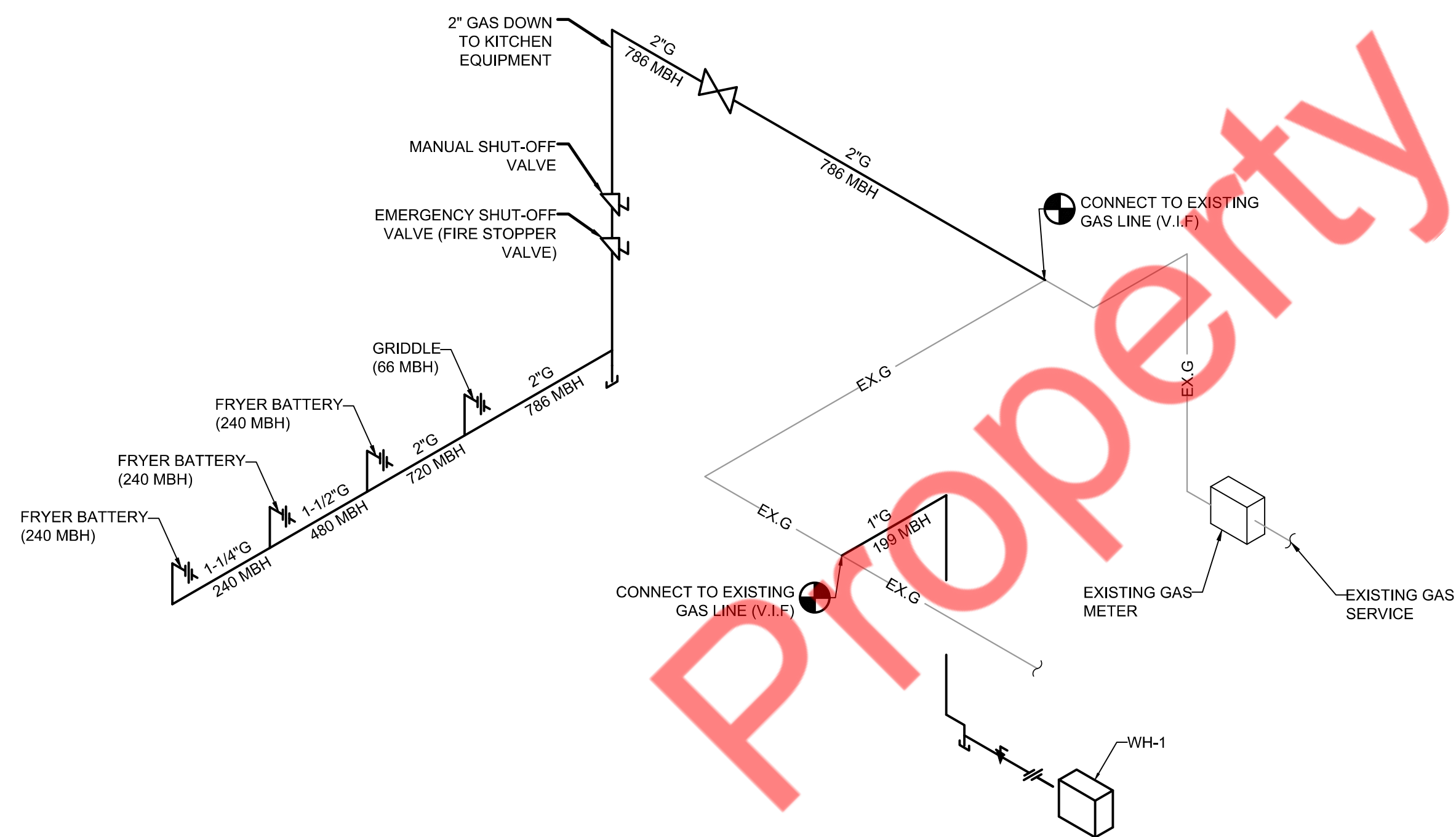
- GAS KEYED NOTES**
- CONNECT NEW 1" GAS LINE TO EXISTING GAS LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING GAS SIZE, ROUTING AND INVERT ON SITE.
  - CONNECT NEW 2" GAS LINE TO EXISTING GAS LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING GAS SIZE, ROUTING AND INVERT ON SITE.
  - PROVIDE GAS REGULATOR AND SET OUTPUT PRESSURE ACCORDING TO MANUFACTURE'S REQUIREMENTS.
  - GAS PIPING TURN DOWN THROUGH CEILING FOR CONNECTION OF KITCHEN EQUIPMENT BELOW. FLASH PER ARCHITECT'S INSTRUCTIONS.
  - PROVIDE GAS COCK, 6" DIRT LEG, AND UNION AT EACH GAS APPLIANCE.
  - EXISTING RTU WITH EXISTING GAS PIPING ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING GAS PIPING AND REPLACE IF REQUIRED.
  - EXISTING GAS FIRE WATER HEATER TO REMAIN WITH EXISTING GAS PIPING AND FITTING. CONTRACTOR TO FIELD VERIFY EXISTING GAS PIPING CONDITION. REPLACE IF REQUIRED.

GAS DESIGN	
1. PRESSURE:	10" WC
2. DEVELOPED LENGTH: APPROX	90'
3. TOTAL GAS LOAD (MBH):	1774

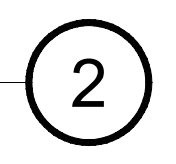
GAS SCHEDULE	
RTU-1(E)	180
RTU-2(E)	115
RTU-3(E)	115
RTU-4(E)	180
EX.WH	199
WH-1	199
304	240
304	240
304	240
306	66
TOTAL	1774

**GAS NOTE**  
 -CONTRACTOR TO VERIFY ALL METERING REQUIREMENTS WITH LANDLORD AND LOCAL UTILITY PRIOR TO BID.  
 -WHEN REQUIRED, IT IS THE OWNER'S RESPONSIBILITY TO CONTRACT WITH A COMMISSIONING AUTHORITY TO COMPLY WITH  
 -CONTACT EOR IF GAS PRESSURE IS NOT 10"WC.



**GAS PIPING ISOMETRIC**

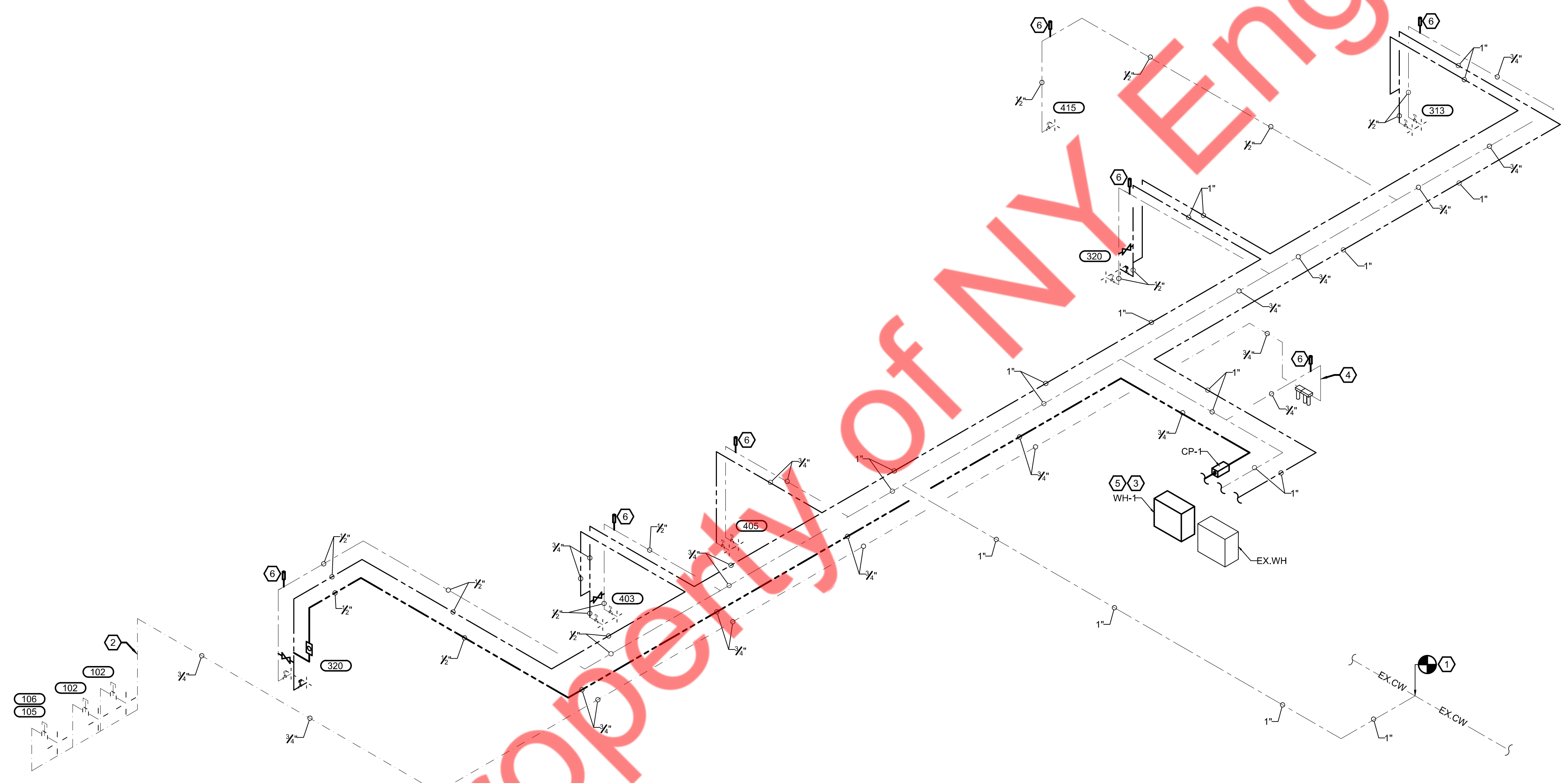
SCALE: NTS



ISSUED REVISIONS:


**Layne's Chicken Fingers**  
 Plumbing Plans (02 of 02)

- KEYED NOTES** ④
- CONNECT NEW 1" DOMESTIC WATER PIPING TO EXISTING DOMESTIC WATER LINE CONNECTION POINT AT THE LOCATION SHOWN. VERIFY CONNECTION POINT LOCATION AND ROUTING PRIOR TO BID. COORDINATE ALL METER AND BACKFLOW REQUIREMENTS AND LOCATIONS WITH UTILITY COMPANY PRIOR TO BID. NOTIFY ARCHITECT AND ENGINEER OF RECORD IF PRESSURE AT FURTHEST FIXTURE IS NOT 20 PSI FOR POSSIBLE BOOSTER PUMP INSTALLATION. CONTACT ARCHITECT AND ENGINEER OF RECORD IF PRESSURE IS OVER 80 PSI AFTER TENANT CONNECTION POINT FOR POSSIBLE PRESSURE REDUCING VALVE INSTALLATION.
  - FILTER WATER LINE TURNED DOWN FURR OUT WALL TO BEVERAGE AND ICE MACHINES.
  - TURN DOMESTIC COLD WATER PIPING DOWN FOR CONNECTION TO TANKLESS WATER HEATER. MOUNT TANKLESS WATER HEATER AS HIGH AS POSSIBLE. INSTALL AS PER WATER HEATER MANUFACTURE'S INSTALLATION INSTRUCTIONS.
  - DOMESTIC COLD WATER LINE DOWN TO FILTER WATER
  - WATER HEATER DRAIN TO ADJACENT MOP SINK WITH APPROVED AIR GAP.
  - INSTALL WATER HAMMER ARRESTER.

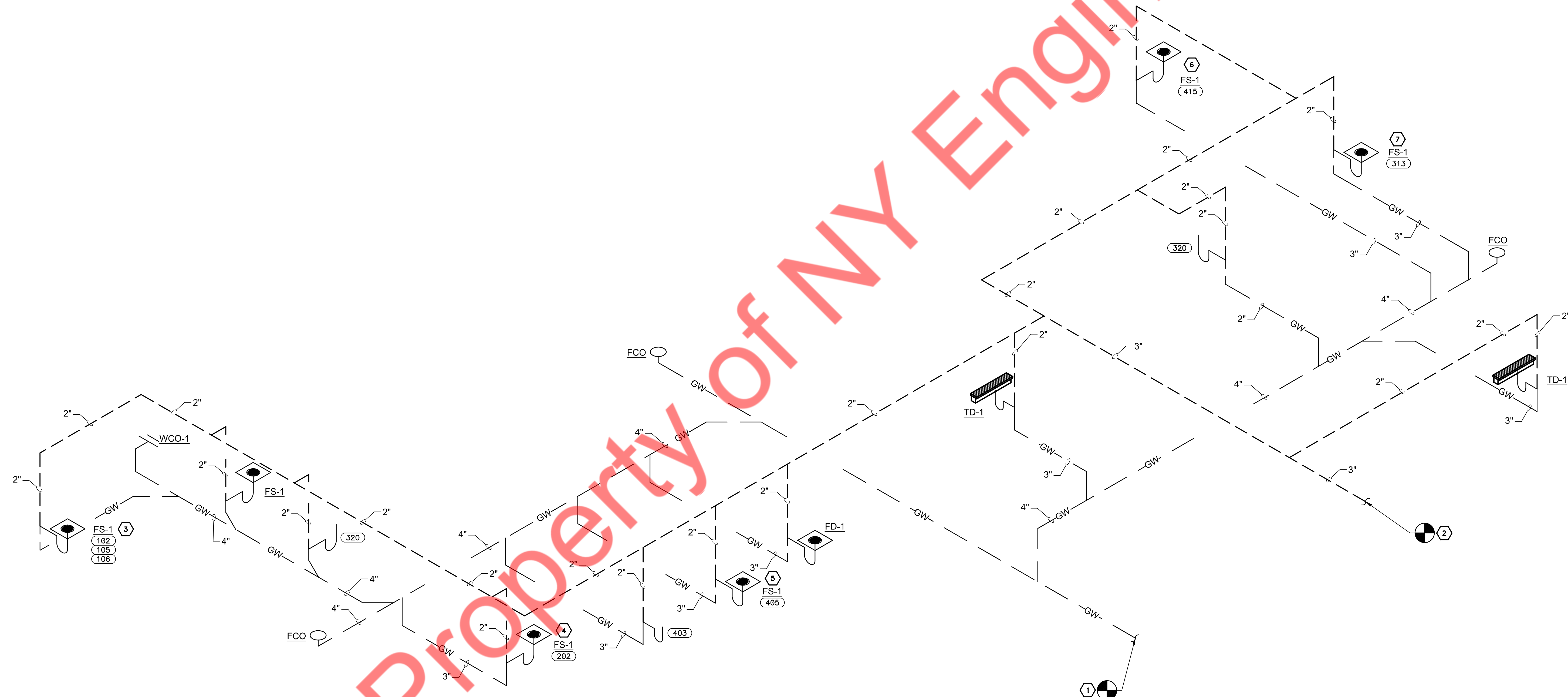


DOMESTIC WATER ISOMETRIC ①  
SCALE: NTS

ISSUED REVISIONS:


Layne's Chicken Fingers  
Plumbing Risers (01 of 02)

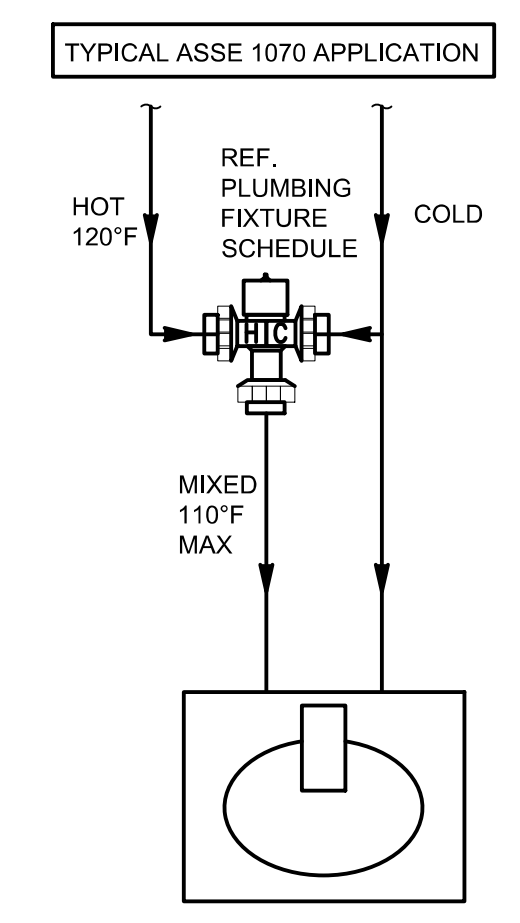
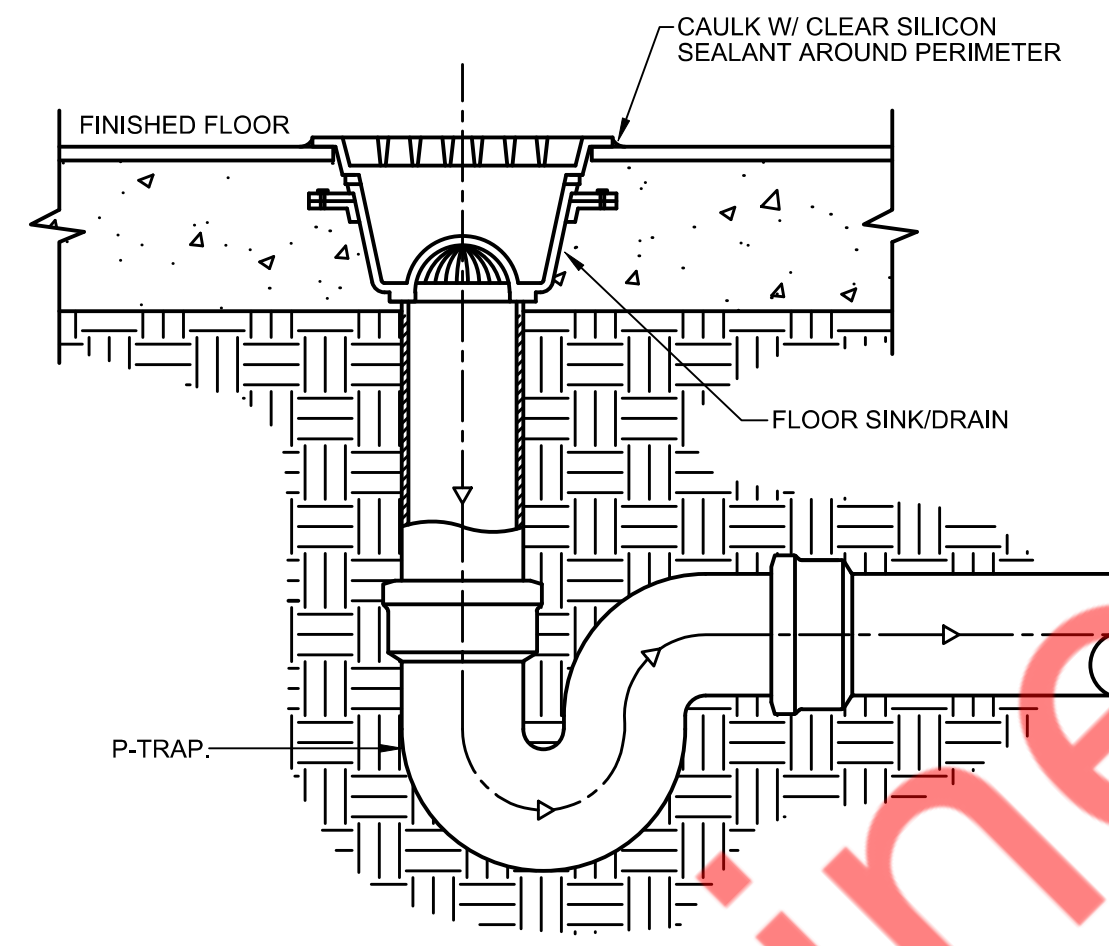
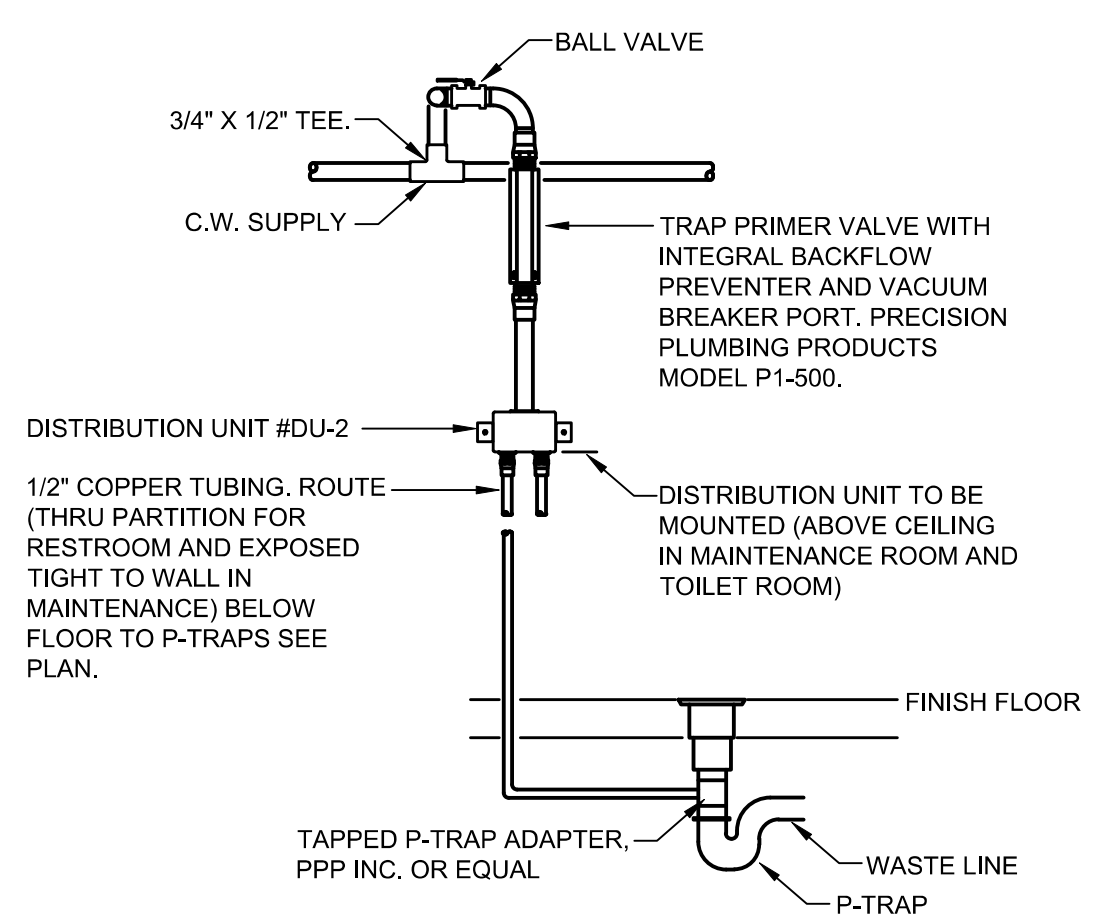
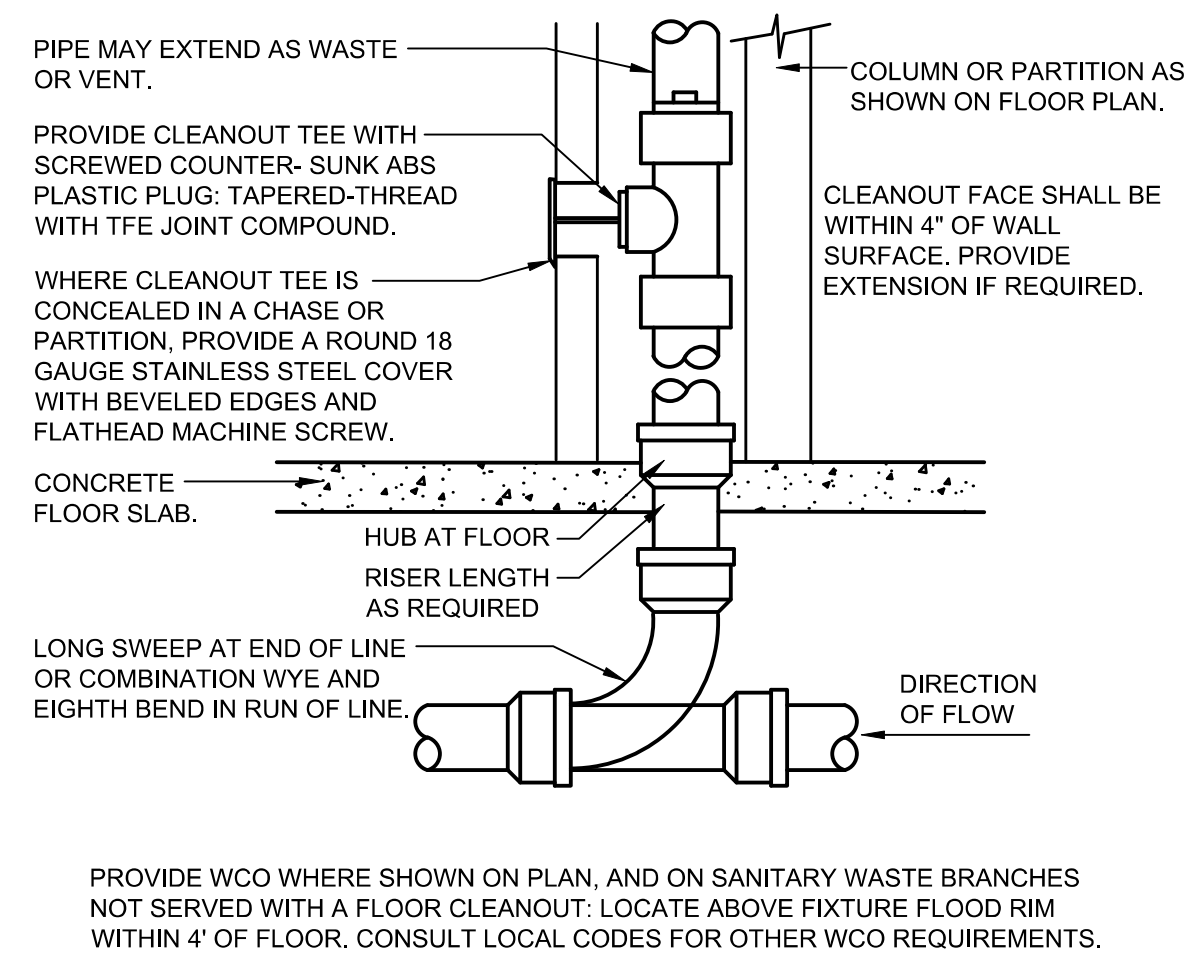
- SANITARY KEYED NOTES**
1. EXTEND AND CONNECT NEW 4" GREASE WASTE PIPING TO EXISTING GREASE WASTE LINE IN SPACE. CONTRACTOR TO FIELD VERIFY SIZE, ROUTING AND INVERT. CONTRACTOR TO FIELD VERIFY THE LOCATION, CONDITION AND CAPACITY OF EXISTING GREASE INTERCEPTOR IS MORE OR EQUAL THAN 1500 GALLONS AND PROVIDE NEW IF EXISTING IS NOT SUFFICIENT.
  2. EXTEND AND CONNECT NEW 3" VENT LINE TO EXISTING VENT LINE IN SPACE. CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION OF EXISTING VENT LINE. BASE BID ACCORDINGLY.
  3. INDIRECT WASTE FROM ICE MAKER(105), SODA/ICE DISPENSER(106) & COFFEE/TEA MAKER(102) TO FLOOR SINK WITH APPROVED AIR GAP.
  4. INDIRECT WASTE FROM ICE MAKER(202) TO FLOOR SINK WITH APPROVED AIR GAP.
  5. INDIRECT WASTE FROM 3-COMPARTMENT SINK(405) TO FLOOR SINK WITH APPROVED AIR GAP.
  6. INDIRECT WASTE FROM B.I.B RACK(415) TO FLOOR SINK WITH APPROVED AIR GAP.
  7. INDIRECT WASTE FROM 1-COMPARTMENT SINK(313) TO FLOOR SINK WITH APPROVED AIR GAP.



**SANITARY SEWER & VENT ISOMETRIC**  
 SCALE: NTS 1

ISSUED REVISIONS:


**Layne's Chicken Fingers**  
 Plumbing Risers (02 of 02)

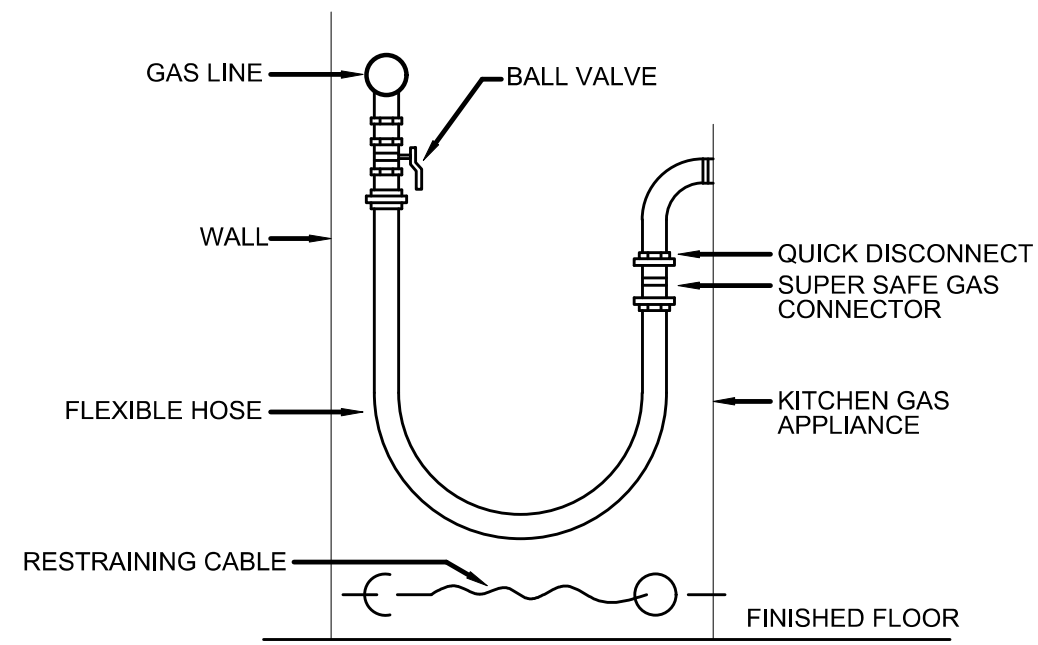


1 WALL CLEAN OUT DETAIL SCALE N.T.S.

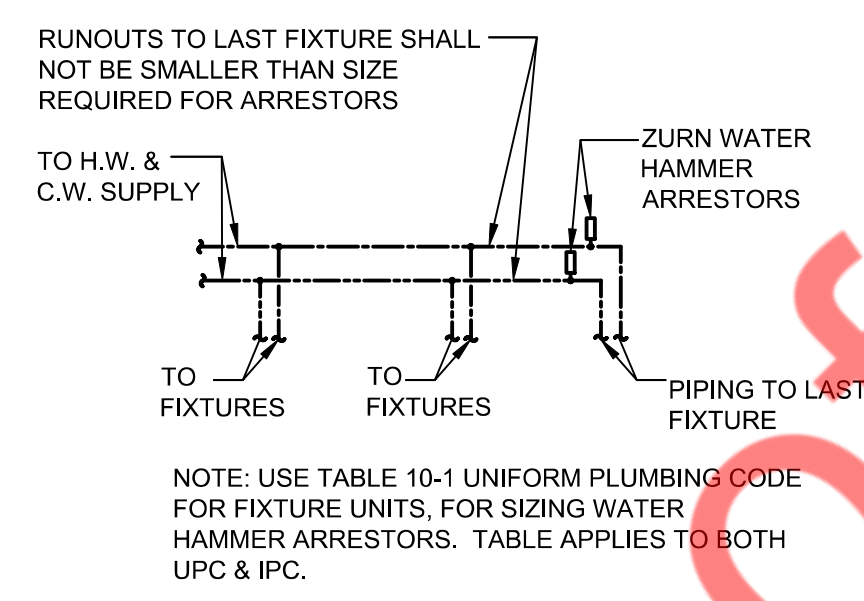
2 TRAP PRIMER DETAIL SCALE N.T.S.

3 FLOOR SINK DETAIL SCALE N.T.S.

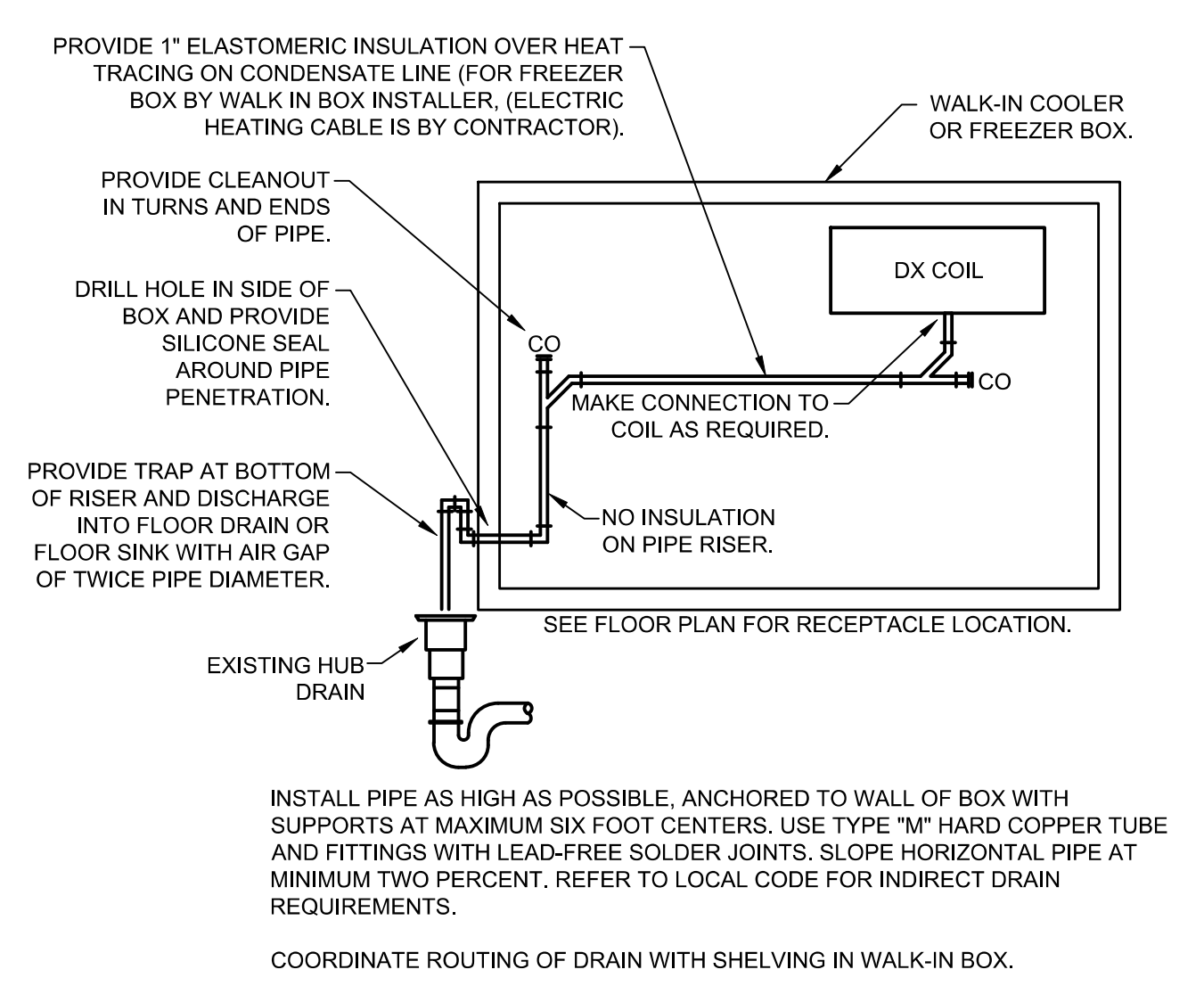
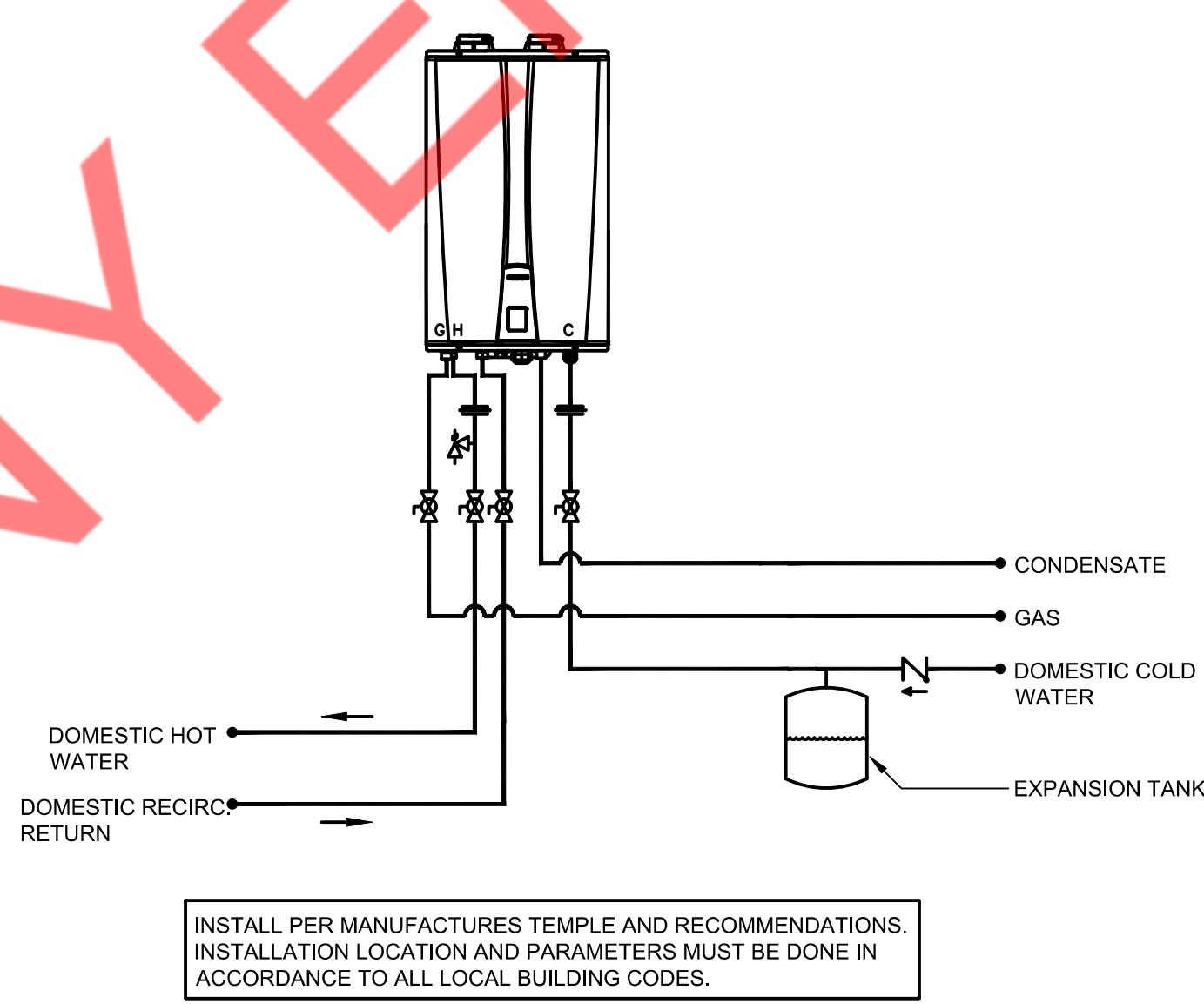
4 THERMOSTATIC MIXING VALVE DETAIL SCALE N.T.S.



FIXTURE UNIT RATING	CONNECTION TO SUPPLY LINE
1-11	3/4"
12-32	1"
33-60	1"
61-113	1"
114-154	1"
155-330	1"



NOTE: USE TABLE 10-1 UNIFORM PLUMBING CODE FOR FIXTURE UNITS, FOR SIZING WATER HAMMER ARRESTORS. TABLE APPLIES TO BOTH UPC & IPC.

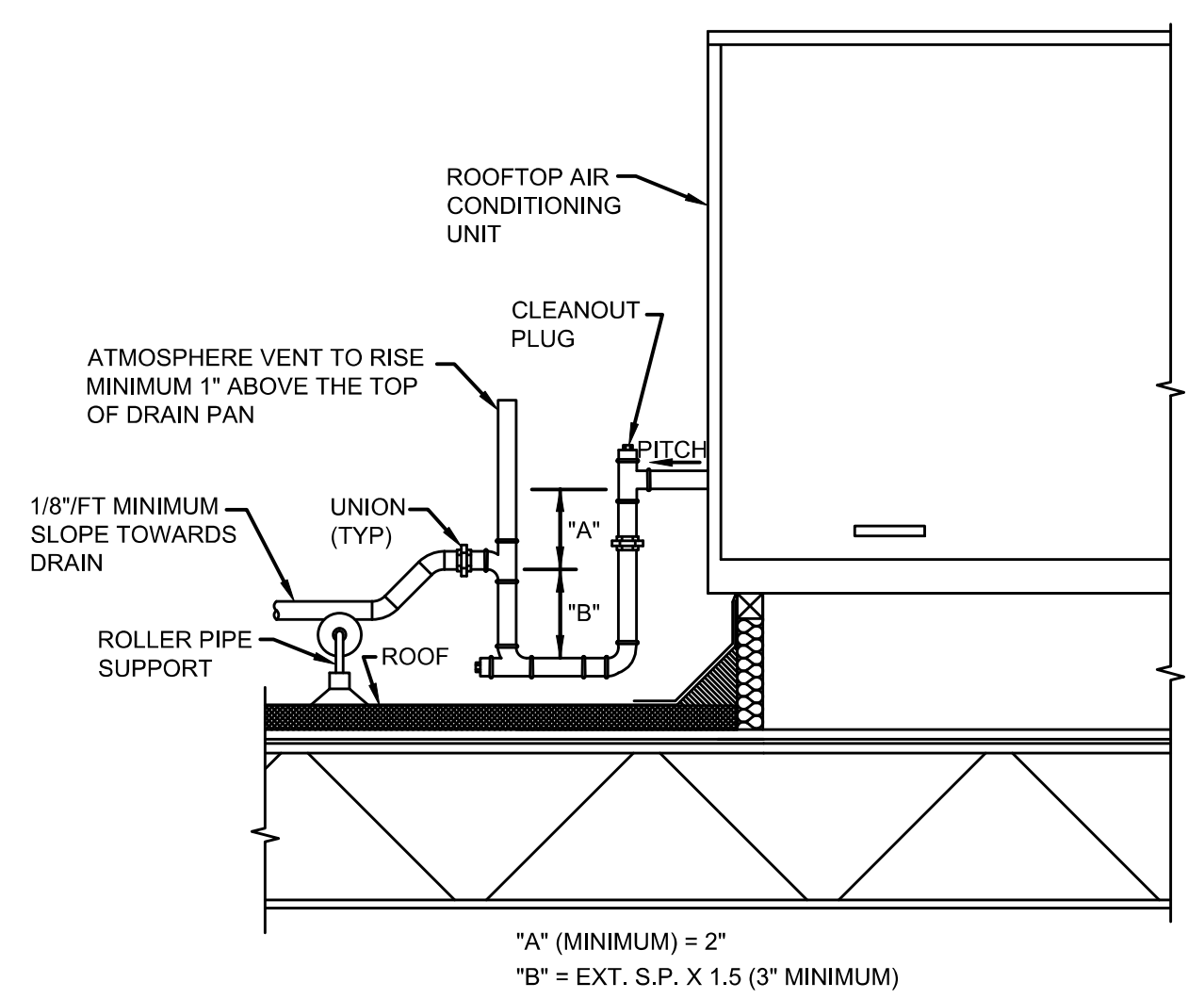


5 KITCHEN EQUIP. GAS CONNECTION SCALE N.T.S.

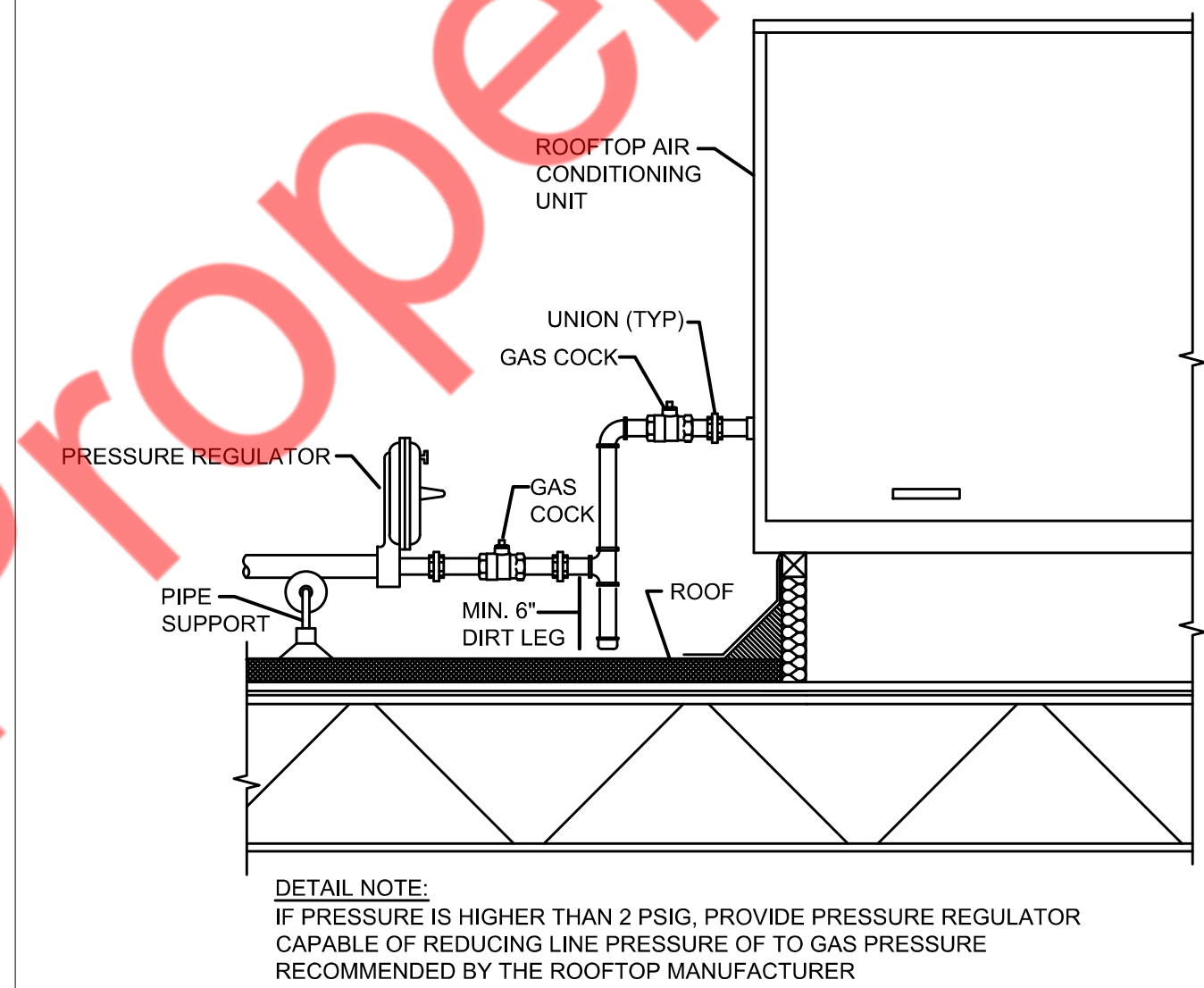
6 WATER HAMMER ARRESTOR DETAIL SCALE N.T.S.

7 WATER HEATER DETAIL SCALE N.T.S.

8 WALK-IN BOX CONDENSATE DRAIN DETAIL SCALE N.T.S.



"A" (MINIMUM) = 2"  
"B" = EXT. S.P. X 1.5 (3" MINIMUM)



DETAIL NOTE:  
IF PRESSURE IS HIGHER THAN 2 PSIG, PROVIDE PRESSURE REGULATOR CAPABLE OF REDUCING LINE PRESSURE OF TO GAS PRESSURE RECOMMENDED BY THE ROOFTOP MANUFACTURER

9 CONDENSATE DETAIL SCALE N.T.S.

10 GAS CONNECTION DETAIL SCALE N.T.S.
