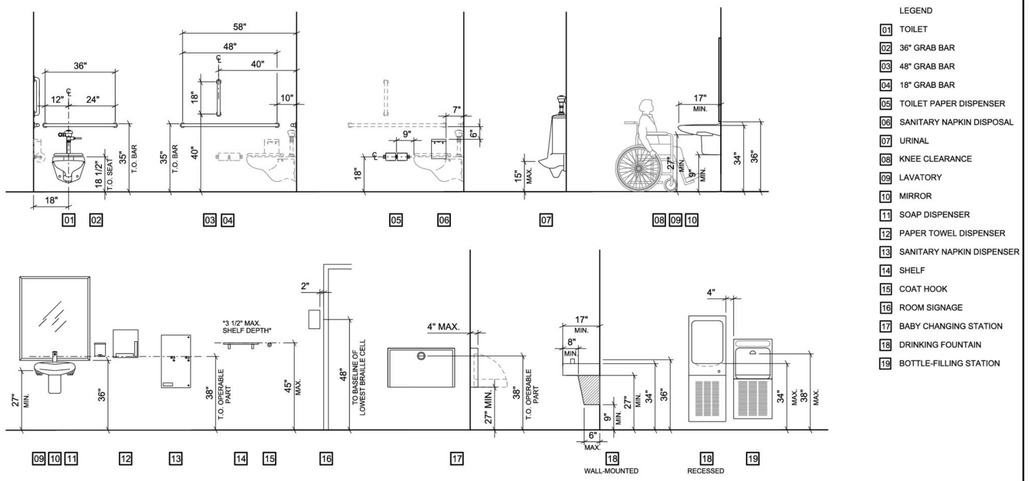
ROOTS FINE CUISINE

940 NW PRYOR RD, SUITE M
LESS'S SUMMIT, MO 64081

NewLine Studio
architecture + interiors

NewLine Studio, llc 3965 W. 83rd St. #135 Prairie Village, KS 66208 T: 913.318.5030 E: Robert.Wade@newlinestudio.net www.newlinestudio.net

ADA MOUNTING HEIGHTS FOR RESTROOM ACCESSORIES

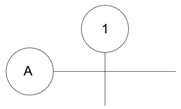


LEGEND

01	TOILET
02	36" GRAB BAR
03	48" GRAB BAR
04	18" GRAB BAR
05	TOILET PAPER DISPENSER
06	SANITARY NAPKIN DISPOSAL
07	URINAL
08	KNEE CLEARANCE
09	LAVATORY
10	MIRROR
11	SOAP DISPENSER
12	PAPER TOWEL DISPENSER
13	SANITARY NAPKIN DISPENSER
14	SHELF
15	COAT HOOK
16	ROOM SIGNAGE
17	BABY CHANGING STATION
18	DRINKING FOUNTAIN
19	BOTTLE-FILLING STATION

SYMBOLS LEGEND

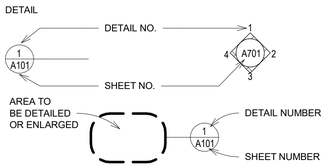
COLUMN GRID LINES



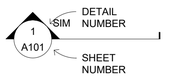
MISC. IDENTIFICATION

BREAK LINE

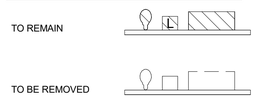
DETAIL REFERENCE **ELEVATION REFERENCE**



SECTION REFERENCE



EXISTING FIXTURES/EQUIPMENT

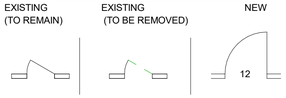


WINDOW TYPE. SHOWN ON EXTERIOR ELEVATIONS

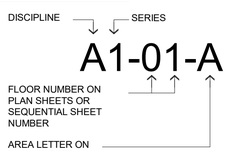
CURTAIN WALL TYPE. SHOWN ON EXTERIOR ELEVATIONS

LOUVER TYPE. SHOWN ON EXTERIOR ELEVATIONS

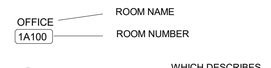
DOORS

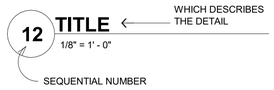


SHEET NUMBERING



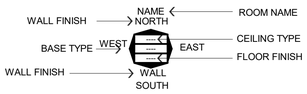
ROOM IDENTIFICATION





SHEET NUMBERING

INTERIOR FINISH SYMBOL



NORTH ARROW

GENERAL NOTES

DRAWINGS SUBMITTED ARE FOR DESIGN INTENT ONLY. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION REQUIRED FOR PROJECT COMPLETION. ANY ERRORS AND/OR OMISSIONS DURING CONSTRUCTION ARE NOT THE RESPONSIBILITY OF THE ARCHITECT.

CONTRACTOR SHALL VERIFY AND COORDINATE ALL NEW AND EXISTING CONDITIONS AND DIMENSIONS AT JOB SITE FOR COMPARISON WITH DRAWINGS AND SPECIFICATIONS PRIOR TO BIDDING, START OF AND DURING CONSTRUCTION. IF ANY DISCREPANCIES, INCONSISTENCIES OR OMISSIONS ARE FOUND, THE ARCHITECT SHALL BE NOTIFIED, FOR CLARIFICATION PRIOR TO PROCEEDING WITH WORK.

DO NOT SCALE DRAWINGS. CONTRACTORS SHALL RELY ON WRITTEN DIMENSIONS AS GIVEN. NOTIFY THE ARCHITECT FOR ALL REQUIRED CLARIFICATIONS.

ABBREVIATIONS THROUGHOUT THE PLANS ARE THOSE IN COMMON USE. NOTIFY THE ARCHITECT OF ANY ABBREVIATIONS IN QUESTION.

DIMENSIONS SHOWN ARE TO FACE OF WALL, MASONRY, CONCRETE OR GRID LINES UNLESS OTHERWISE NOTED.

DIMENSIONS OF DOOR OPENINGS ARE TO FINISH JAMB. DOOR OPENINGS NOT LOCATED BY DIMENSION SHALL BE CENTERED IN WALLS AS SHOWN OR LOCATED 3" FROM FINISH WALL TO FINISH JAMB (UNLESS OTHERWISE NOTED)

FINISHED FLOOR ELEVATIONS ARE THE ESTABLISHED DATUM LINE, UNLESS OTHERWISE NOTED.

CONTRACTOR SHALL PROVIDE ALL NECESSARY PERMITS AND INSPECTIONS

CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BIDDING AND CONSTRUCTION

SUBSTITUTIONS: REFERENCE TO MANUFACTURERS, BRAND, MODELS, ETC. TO ESTABLISH THE TYPE AND QUALITY DESIRED; SUBSTITUTION OF ACCEPTABLE EQUIVALENTS WILL BE PERMITTED IF APPROVED BY THE ARCHITECT AND OWNER PRIOR TO BID (UNLESS OTHERWISE NOTED)

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS

THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES BELOW GRADE AND RELATED SERVICE CONNECTIONS WITH THERE RESPECTIVE UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.

CONTRACTOR SHALL COORDINATE THE REMOVAL, ABANDONMENT, AND/OR RELOCATION OF EXISTING UTILITIES ABOVE OR BELOW GRADE WITH THE RESPECTIVE UTILITY COMPANIES.

ALL DISSIMILAR METALLIC MATERIALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO PREVENT GALVANIC ACTION.

ALL WOOD IN CONTACT WITH MASONRY OR CONCRETE SHALL BE PRESSURE TREATED WITH AN APPROVED PRESERVATIVE IN ACCORDANCE WHIT AWPA C22.

ALL INSULATION NOTED ON PLANS SHALL BE NON-COMBUSTIBLE AND MAINTAIN THERMAL MOISTURE PROTECTION.

ALL CHANGES WILL BE SUBMITTED IN WRITING TO OWNER FOR APPROVAL PRIOR TO INSTALLATION.

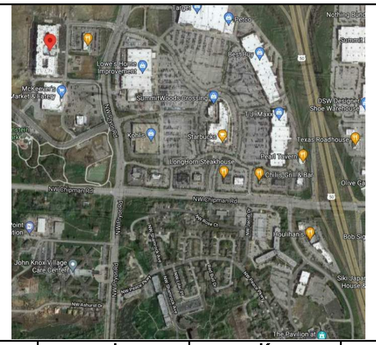
PROJECT 0'-0" ELEVATION REFERENCE POINT WHICH IS TO BE FINISHED FLOOR

ALL WINDOW SILLS JAMBS AND HEADS SHALL BE WRAPPED WITH GYPSUM BOARD UNLESS OTHERWISE NOTED.

ALL STRUCTURAL COLUMNS SHALL BE WRAPPED WITH GYPSUM BOARD UNLESS OTHERWISE NOTED.

IN LOCATIONS WHERE CONCRETE IS CUT, REMOVED AND REPLACED WITH NEW CONCRETE. INSTALL VAPORBARIER TO MATCH EXISTING SLAB BELOW NEW CONCRETE AND INSTALL #4 REBAR DOWELS (4" INTO EXISTING SLAB AND 4" INTO NEW CONCRETE.) AT 24" O.C.

LOCATION MAP



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A1-02	RCP
A1-03	ENLARGED RCP AND CEILING DETIALS
A1-04	FINISH PLAN
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A4-02	INTERIOR ELEVATIONS
A4-03	INTERIOR ELEVATIONS
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M3.2	KITCHEN HOOD DETAILS
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M3.5	KITCHEN HOOD DETAILS
M3.6	KITCHEN HOOD DETAILS
M3.7	KITCHEN HOOD DETAILS
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PROJECT DIRECTORY

OWNER/CLIENT:
AMANDA ACCORUSO AND BRANDON SHARP
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MEP ENGINEER:
BC ENGINEER
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E: GREG@VALENCIA-CONSTRUCTION.COM

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Vision to Reality Begins with a NewLine

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ROOTS FINE CUISINE

940 NW PRYOR RD, SUITE M
LESS'S SUMMIT, MO 64081

ROBERT L. WADE
LICENSED
4961
KANSAS
ARCHITECT
09.15.21

Revision	Date	No.

Project Number:	2106
Scale:	12" = 1'-0"
Date:	09.15.2021

TITLE SHEET

A0-01

PERMIT SET

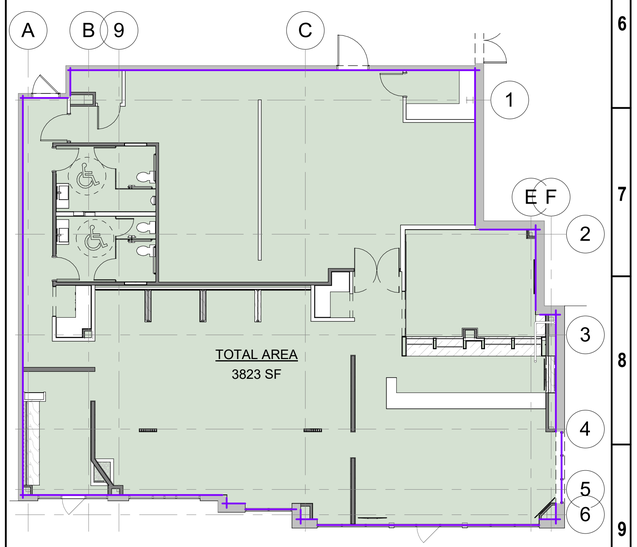
K9 LIFE SAFTEY PLAN
1/4" = 1'-0"

CODE SUMMARY

PROJECT NAME	ROOTS RESTAURANT
ADDRESS	940 NW PRYOR RD, SUITE M LESS'S SUMMIT, MO 64081
LEGAL DESCRIPTION	N/A
DESCRIPTION	TENANT FINISH - NEW RESTAURANT
JURISDICTION	LEE'S SUMMIT, MO
APPLICABLE CODES	2018 INTERNATIONAL BUILDING CODE 2018 NATIONAL ELECTRIC CODE 2018 INTERNATIONAL PLUMBING CODE 2018 INTERNATIONAL MECHANICAL CODE 2018 INTERNATIONAL FUEL GAS CODE 2018 INTERNATIONAL FIRE CODE
OCCUPANCY	A-2
CONST. TYPE	5-A
SPRINKLED	YES
MAX TRAVEL DIST	250 LF
ACTUAL EGRESS WIDTH	13'-0"

OCCUPANCY SCHEDULE

ROOM	NAME	AREA	AREA PER OCC.	OCCUPANTS	REQ'D EGRESS
101	WAITING	152 SF	7 SF	22	4 3/8"
102	DINING AREA	1004 SF	7 SF	144	2'-4 3/4"
103	BAR SEATING	403 SF	7 SF	58	11 5/8"
104	BAR	135 SF	15 SF	9	1 3/4"
105	PRIVATE DINING	245 SF	7 SF	35	7"
106	SERV 2	24 SF	15 SF	2	3/8"
107	SERV 1	31 SF	15 SF	3	5/8"
108	CIRCULATION	171 SF	0 SF		
109	WOMEN	114 SF	0 SF		
110	MEN	114 SF	0 SF		
111	PREP AREA	446 SF	200 SF	3	5/8"
112	KITCHEN	505 SF	200 SF	3	5/8"
113	DISH AREA	129 SF	200 SF	1	1/4"
114	OFFICE	59 SF	200 SF	1	1/4"
115	JC	25 SF	200 SF	1	1/4"
		3557 SF		282	4'-8 3/8"



P9 1ST FLOOR
1" = 10'-0"

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940 NW PRYOR RD, SUITE M
LESS'S SUMMIT, MO 64081

ROBERT L WADE LICENSED 4961 KANSAS ARCHITECT 09.15.21

Revision	Date	No.

Project Number:	2106
Scale:	As indicated
Date:	09.15.2021

CODE / LIFE SAFETY

A0-02

PERMIT SET

DOOR SCHEDULE

	DOOR								FRAME					
NO.	TYPE	MATERIAL	FINISH	WIDTH	HEIGHT	THICKNESS	RATING	HARDWARE	TYPE	MATERIAL	FINISH	JAMB	HEAD	COMMENTS
101	-	-	-	3'-0"	7'-9"		EXISTING	5		EXISTING	EXISTING			EXISTING
102	A			6'-0"	7'-0"		-	PER MFG						
103A	-	-	-	3'-0"	7'-9"		EXISTING	5		EXISTING	EXISTING			EXISTING
105	D	WOOD	STAIN	6'-6"	8'-0"	2"	-	3		WOOD	STAIN	C		
109	A	WOOD	STAIN	3'-0"	7'-0"	1 3/4"	-	6	A	WOOD	STAIN	B	A	
110	A	WOOD	STAIN	3'-0"	7'-0"	1 3/4"	-	6	A	WOOD	STAIN	B	A	
111	B	HM	PAINT	3'-6"	7'-0"	1 3/4"	-	2	A	HM				
112	A	HM	PAINT	4'-0"	7'-0"	1 3/4"	MATCH EXISTING	1	A	HM	PAINT	-	-	
114	C	HM	PAINT	3'-0"	7'-0"	1 3/4"	-	2	A	HM	PAINT	-	-	
115	B	HM	PAINT	3'-0"	7'-0"	1 3/4"	-	2	A	HM	PAINT			
117	A	-	-	3'-6"	7'-0"	1 3/4"	EXISTING	4	A	HM	PAINT	-	-	EXISTING

FINISH SCHEDULE

NO.	ROOM	FLOOR	BASE	CEILING	NORTH	SOUTH	WEST	EAST
101	WAITING	CT-1	CTB-1	GC-1	ST-1	PT-1	VWC-1	ST-1/WD-2
102	DINING AREA	CT-1	CTB-1	WC-1/GC-2	WP-1/STN-1/VWC-1	PT-1	WP-1/STN-1	WP-1/STN-1
103	BAR SEATING	CT-1	CTB-1	GC-1/ACT-4	NONE	PT-1	ST-1/WP-1	PT-1/WP-1
104	BAR	EP-1	CTB-1	WD-2/ACT-1	WP-1	NONE	NONE	WP-1
105	PRIVATE DINING	CT-1	CTB-1	GC-1	PT-1	STN-1/WP-1	PT-1	PT-1
106	SERV 2	CT-1	CTB-1	ACT-1	PT-2	PT-2	PT-2	PT-2
107	SERV 1	CT-1	CTB-1	ACT-1	PT-2	PT-2	PT-2	PT-2
108	CIRCULATION	CT-1	CTB-1	ACT-2	PT-3	STN-1	PT-3	PT-3
109	WOMEN	CT-2/CT-3	CTB-2	GC-1	PT-3	PT-3	CT-4/CT-5/PT-3	CT-2/CT-3
110	MEN	CT-2/CT-3	CTB-2	GC-1	PT-3	PT-3	CT-4/CT-5/PT-3	CT-2/CT-3
111	PREP AREA	EP-1	EPB-1	ACT-3	FRP-1	FRP-1/PT-4	PT-4	FRP-1
112	KITCHEN	EP-1	EPB-1	ACT-3	FRP-1	FRP-1	SS-1	FRP-1/SS-1
113	DISH AREA	EP-1	EP-1	ACT-3	FRP-1	SS-1	NONE	FRP-1
114	OFFICE	EP-1	EPB-1	ACT-3	PT-4	PT-4	PT-4	PT-4
115	JC	EP-1	EPB-1	ACT-3	FRP-1/PT-4	PT-4	FRP-1	PT-4

HARDWARE SETS

HARDWARE SET #1 - KITCHEN EGRESS DOOR
(1) EXITING HINGES TO REMAIN
(1) 1000R X 42" X 32D RIM PANIC, NON FIRE RATED
(1) LE – 08 X 32D TRIM, ENTRY FUNCTION
(1) 416 X 689 CLOSER
(1) 97V X 48" DOOR SWEEP
(1) 600A X 48" DOOR SWEEP

HARDWARE SET #2 - LOCK SET
(3) HINGE - PBB - PB-81 4.5 X 4.5 - (FINISH - BRUSHED STAINLESS STEEL)
(1) LOCKSET - CRPI - RL-00 ENTRANCE - (FINISH - BRUSHED STAINLESS STEEL)
(1) WALL BUMPER - ROC - 409 CONCAVE - (FINISH - BRUSHED STAINLESS STEEL)
(3) SILENCER - GJ - GJ64 PUSH IN TYPE - (FINISH - BRUSHED STAINLESS STEEL)

HARDWARE SET #3 - BARN DOOR SET
(1) BARN DOOR TRACK - KROWNLAB - BALDUR - TOP MOUNT - (FINISH - BLACK)
(1) DOOR GUID - KROWNLAB - BALDUR - ADJUSTABLE FELT - (FINISH - BLACK)
(2) PULL - STRONGAR - SH-PRO-304-LPH-B-12-1000 - (FINISH - MATT BLACK)

HARDWARE SET #4 - EGRESS DOOR SET
(1) EXITING HINGES TO REMAIN
(1) 1000R X 42" X 32D RIM PANIC, NON FIRE RATED, ALARMED
(1) LE – 08 X 32D TRIM, ENTRY FUNCTION
(1) 416 X 689 CLOSER (EXISTING TO REMAIN)
(1) 97V X 48" DOOR SWEEP
(1) 600A X 48" DOOR SWEEP

HARDWARE SET #5 - ENTRANCE DOOR SET
(1) EXITING DOOR HARDWARE TO REMAIN
(1) REPLACE PULL WITH - ROCKWOOD - RM2004 - (FINISH - STAINLESS STEEL)

HARDWARE SET #6 - RESTROOM DOOR SET
(3) HINGE - PBB - PB-81 4.5 X 4.5 - (FINISH - BLACK)
(1) PULL PLATE - IVES - 8302-8 - (FINISH - BLACK)
(1) PUSH PLATE - IVES - 8200 - (FINISH - BLACK)
(1) WALL BUMPER - ROC - 409 CONCAVE - (FINISH - BLACK)
(3) SILENCER - GJ - GJ64 PUSH IN TYPE - (FINISH - BLACK)
(1) FOOT PULL - STEPNPULL - (FINISH - BLACK)

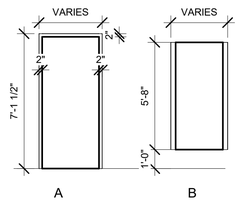
NOTE: LISTED MANUFACTURER ARE FOR REFERENCE. CONTRACTOR MAY SUBMIT ALTERNATIVES.

MATERIALS AND FINISHES

MATERIALS
WOOD - PLAIN SAWN - WHITE MAPLE
HM - HOLLOW METAL

FINISHES
STAIN - MATCH - WP-1
PAINT - PT-4

DOOR FRAME TYPES

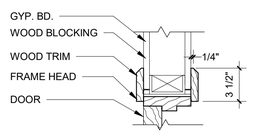


FINISH LEGEND

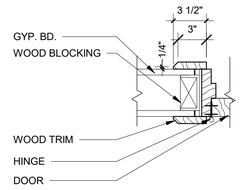
CODE	DESCRIPTION	MFG	NAME	SIZE	COLOR	COMMENTS	CONTACT
ACT-1	CEILING TILE	ARMSTRONG	CALLA	24X24	BLACK	15/16 SQUARE TEGULAR BLACK GRID	
ACT-2	CEILING TILE	ARMSTRONG	LYRA PB CONCEALED	48X48	WHITE	15/16 QUICK KERF EDGE	
ACT-3	CEILING TILE	ARMSTRONG	CALLA HEALTH ZONE	24X48	WHITE	15/16 SQUARE LAY-IN	
ACT-4	CEILING TILE	ARMSTRONG	LYRA PB CONCEALED	24X24	WHITE	15/16 QUICK KERF EDGE	
CT-1	CERAMIC TILE	MILE STONE	+ONE	24X48	COAL - MATTE FINISH		LYNDA WOOD - 248.519.1386
CT-2	CERAMIC TILE	WOW USA	FLOW DIAMOND DECOR	6X10	WHITE		BRITTLEI NORTH - 913.541.9700 (VIRGINA TILE)
CT-3	CERAMIC TILE	WOW USA	CHEVRON FLOOR	4X20.5	ICE WHITE - MATTE	CUT ENDS SQUARE TO ALIGN WITH CT-2	BRITTLEI NORTH - 913.541.9700 (VIRGINA TILE)
CT-4	CERAMIC TILE	WOW USA	FLOW DIAMOND DECOR	6X10	BLACK		BRITTLEI NORTH - 913.541.9700 (VIRGINA TILE)
CT-5	CERAMIC TILE	WOW USA	CHEVRON FLOOR	4X20.5	GRAPHITE - MATTE	CUT ENDS SQUARE TO ALIGN WITH CT-4	BRITTLEI NORTH - 913.541.9700 (VIRGINA TILE)
CTB-1	CERAMIC TILE BASE	MILE STONE	+ONE	4X48	COAL - MATTE FINISH	FIELD CUT TO DESIERED HEIGHT	BRITTLEI NORTH - 913.541.9700 (VIRGINA TILE)
CTB-2	CERAMIC TILE BASE	WOW USA	CHEVRON FLOOR	4X20.5	ICE WHITE - MATTE	CUT ENDS SQUARE TO ALIGN WITH CT-2	
EP-1	EPOXY FLOOR	DUR-A-FLEX (OR EQUAL)	POLY-CRETE MDB		CHARCOAL		
EPB-1	EPOXY BASE	DUR-A-FLEX (OR EQUAL)	POLY-CRETE MDB	6" HIGH	CHARCOAL		
FRP-1	FIBERGLASS REINFORCED PLASTIC PANELS	VARIOUS		MIN .09" THICK	WHITE	USE PVC MOLDING AT PANEL JOIST, INSIDE CORNERS, AND OUTSIDE CORNERS	
GC-1	GYP BD CEILING (PAINT)	TBD	LATEX		WHITE		
GC-2	GYP BD CEILING (PAINT)	TBD	LATEX		PT-2		
GC-3	GYP BD CEILING (PAINT)	TBD	EPOXY		TBD	MANUFACTURER IS FOR COLOR ONLY	
ML-1	METAL LAMINATE	MOZ	ELEMENTS		PATINA 212D SATIN	USE MATCHING MOZ TRIM FOR CORNERS AND EDGES	KRISTEN MORELAND - 913.633.5504
PLAM-1	PLASTIC LAMINATE	WILSONART	TRACELESS		ACORN VELVET ELM	15602-31	
PLAM-2	PLASTIC LAMINATE	FORMICA			BLACK - MATTE FINISH	909-58	
PT-1	PAINT	TBD	LATEX			MANUFACTURER IS FOR COLOR ONLY	
PT-2	PAINT	TBD	LATEX		BLACK	MANUFACTURER IS FOR COLOR ONLY	
PT-3	PAINT	TBD	EPOXY		WHITE	MANUFACTURER IS FOR COLOR ONLY	
PT-4	PAINT	TBD	EPOXY			MANUFACTURER IS FOR COLOR ONLY	
SS-1	STAINLESS STEEL WALL PANELS	VARIOUS	STAINLESS STEEL	16 GAUGE	SMOOTH TEXTURE	USE STAINLESS STEEL TRIM MOLDING PANEL JOIST, INSIDE CORNERS, AND OUTSIDE CORNERS	
STN-1	STONE PANEL	REALSTONE SYSTEMS	BIRCH HONED	VARIES	WHITE		LYNDA WOOD - 248.519.1386
VWC-1	VYNIL WALL COVERING	WOLF GORDON	KABUTO	52" WIDE	AMAZONITE		
WC-1	CUSTOM CEILING						
WP-1	3/8" WOOD PANELING	VIRIDIAN WOOD	WALNUT	4X96	WALNUT	3/8" THICK TONGUE AND GROOVE	KRISTEN MORELAND - 913.633.5504

NOTE:
TILE GROUT - TBD

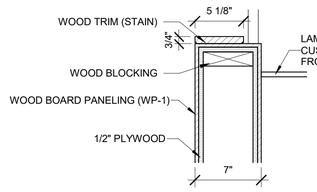
DOOR JAMB/OPENING DETAILS



A DOOR HEAD DETAIL
1 1/2" = 1'-0"

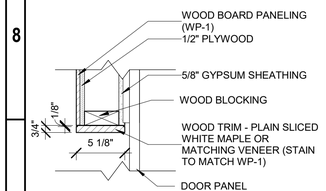


B DOOR JAMB DETAILS
1 1/2" = 1'-0"

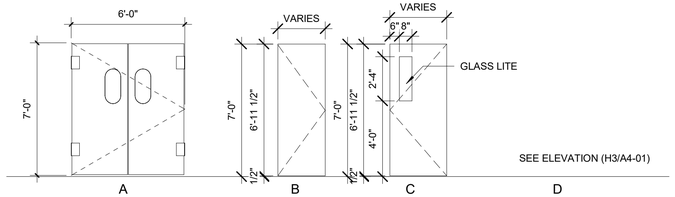


C DOOR OPENING DETAIL 2
1 1/2" = 1'-0"

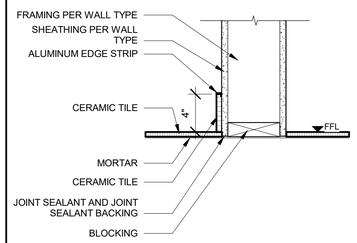
DOOR TYPES



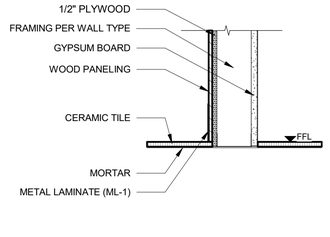
E DOOR OPENING DETAIL 1
1 1/2" = 1'-0"



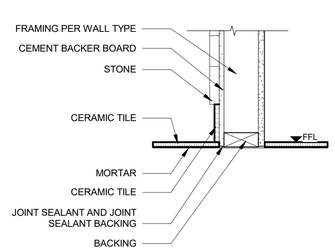
WALL BASE DETAILS



A GYP WALL WITH TILE BASE
1 1/2" = 1'-0"



B WOOD WALL M.L. WALL BASE (TYP.)
1 1/2" = 1'-0"



C STONE WALL WITH TILE BASE
1 1/2" = 1'-0"

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4961
KANSAS
ARCHITECT
09.15.21

Revision	Date	No.

Project Number: 2106
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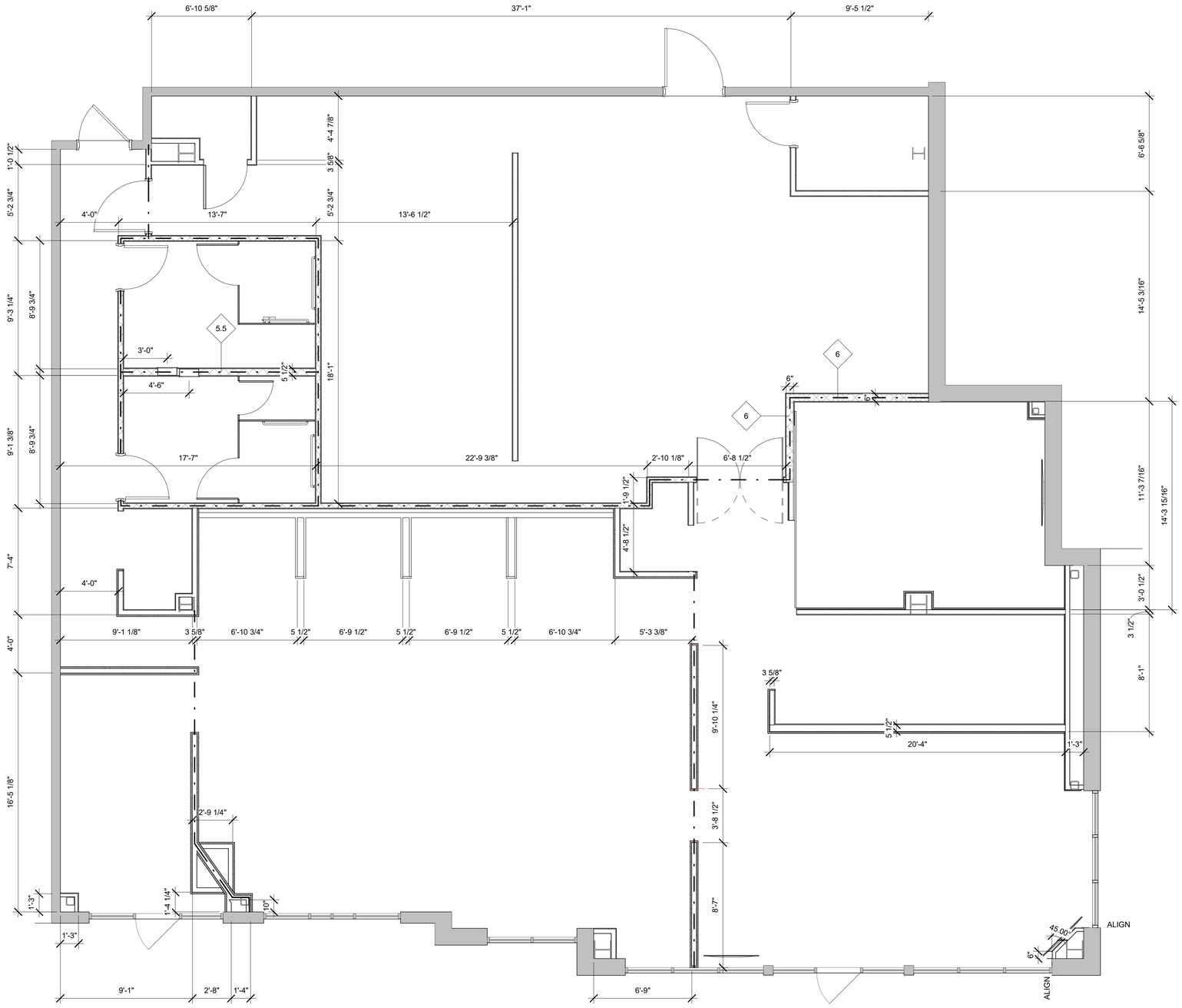
SCHEDULES

A0-03

PERMIT SET

NOTE:
DIMENSIONS ON THIS SHEET ARE TO FACE OF STUD OR FINISHED FACE OF DISMISSING AND EXTERIOR WALLS.



A9 1ST FLOOR - WALL LAYOUT
1/4" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION

WALL TYPES

	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON EACH SIDE. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED. SEE NOTES
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON EACH SIDE WITH ACOUSTICAL SOUND INSULATION. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED. SEE NOTES
	3-5/8" (UNO) METAL STUD WITH 1/2" PLYWOOD AND 3/8" WD BOARD PANELING ON EACH SIDE.
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON ONE SIDE. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED.
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 1/2" CEMENT BD AND 1 LAYER STONE ON EACH SIDE. EXTEND TO 4" ABOVE CEILING (UNO).
	DENOTES EXTEND TO DECK ABOVE

NOTES:

- IN ALL WET AREAS (KITCHEN, BAR, RESTROOMS, SERVER AREAS, AND KITCHEN OFFICE) USE WATER RESISTANT GYPSUM.BD.
- ALL WALLS WITH TILE OR STONE USE 1/2" CEMENT BACKER BD. INSTEAD OF GYPSUM BD.
- ALL WALLS WITH WOOD PANELING USE 1/2" PLYWOOD INSTEAD OF GYPSUM BD.

GENERAL NOTES

A. WALLS ARE DIMENSIONED TO FACE OF GYPSUM WALLBOARD, FACE OF TILE BACKER BOARD, OR FACE OF CONCRETE AS OCCURS
B. ALL GYPSUM WALLBOARD TO BE 5/8" TYPE 'X' UNLESS NOTED OTHERWISE.
C. PROVIDE 5/8" GLASS-MAT FACED WATER-RESISTANT GYPSUM WALLBOARD AT WET LOCATIONS, INCLUDING WALLS BEHIND PLUMBING FIXTURES AND THE BOTTOM 4' OF ALL PLUMBING WALLS AND TOILET ROOMS.
D. UNLESS DIMENSIONED, DOORS ARE TO BE LOCATED 4" FROM NEAREST ADJACENT PERPENDICULAR WALL TO FACE OF JAMB. SEE DOOR DETAILS.
E. COORDINATE POWER AND DATA OUTLET LOCATIONS WITH ELECTRICAL AND TECHNOLOGY DRAWINGS.
F. OUTLETS SHOWN BACK TO BACK SHALL BE OFFSET A MINIMUM OF 18". OUTLET IN SOUND PARTITIONS SHALL BE SEPERATED BY A STUD WITH ACOUSTIC PUTTY.
G. SEAL AROUND ALL INTERIOR JOINTS AT DOORS, WINDOWS, CABINETS, AND COUNTERTOPS. SEAL ALL OPENING IN SOUND PARTITIONS WITH ACOUSTIC SEALANT.

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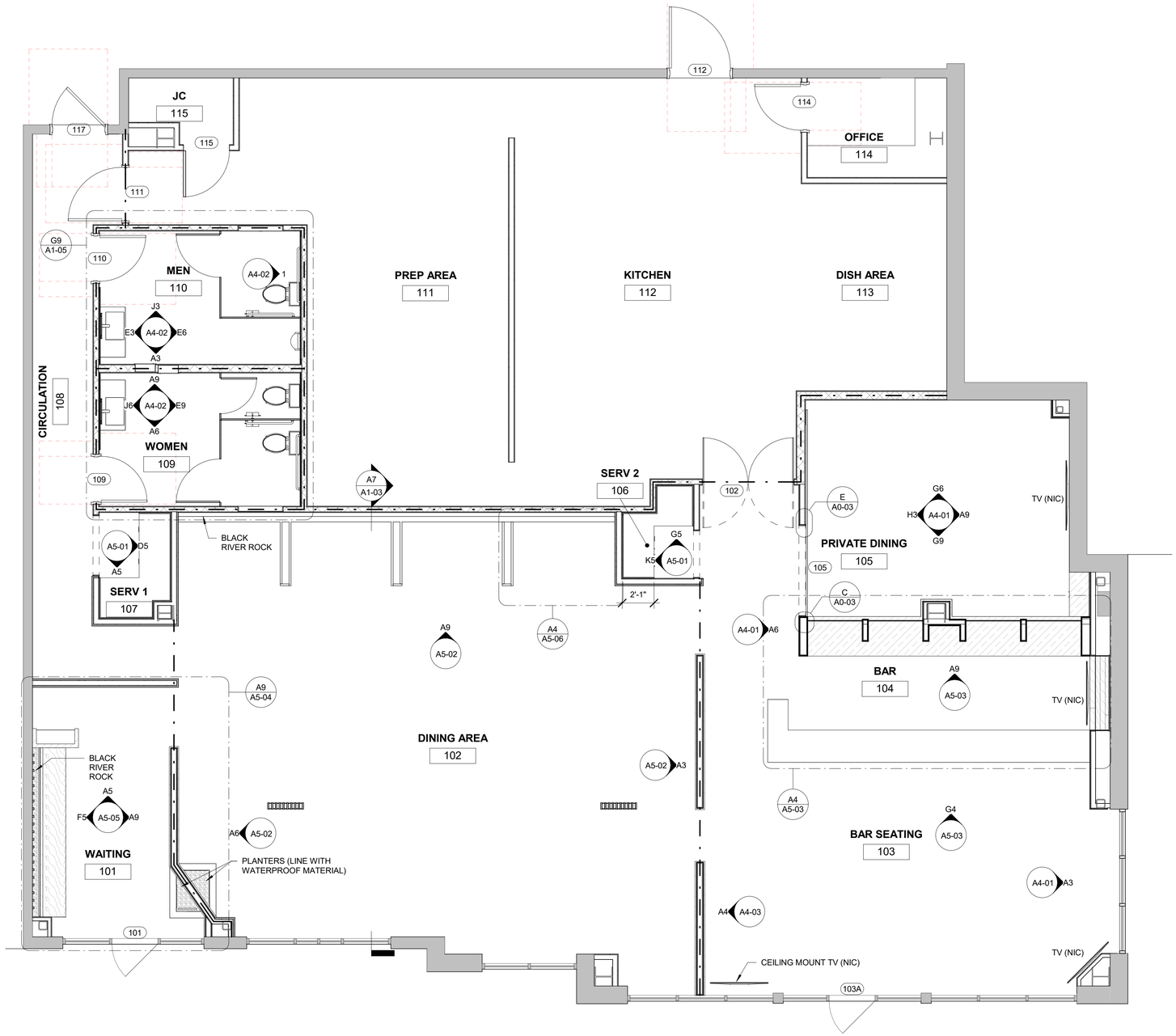
PLAN - WALL LAYOUT

A1-00

PERMIT SET



C9 1ST FLOOR
1/4" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION

WALL TYPES

	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON EACH SIDE. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED. SEE NOTES
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON EACH SIDE WITH ACOUSTICAL SOUND INSULATION. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED. SEE NOTES
	3-5/8" (UNO) METAL STUD WITH 1/2" PLYWOOD AND 3/8" WD BOARD PANELING ON EACH SIDE.
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 5/8" GYP BD ON ONE SIDE. EXTEND TO 4" ABOVE CEILING UNLESS OTHERWISE NOTED.
	3 5/8" (UNO) MTL STUD WITH 1 LAYER 1/2" CEMENT BD AND 1 LAYER STONE ON EACH SIDE. EXTEND TO 4" ABOVE CEILING (UNO).
- -	DENOTES EXTEND TO DECK ABOVE

NOTES:

- IN ALL WET AREAS (KITCHEN, BAR, RESTROOMS, SERVER AREAS, AND KITCHEN OFFICE) USE WATER RESISTANT GYPSUM.BD.
- ALL WALLS WITH TILE OR STONE USE 1/2" CEMENT BACKER BD. INSTEAD OF GYPSUM BD.
- ALL WALLS WITH WOOD PANELING USE 1/2" PLYWOOD INSTEAD OF GYPSUM BD.

GENERAL NOTES

A. WALLS ARE DIMENSIONED TO FACE OF GYPSUM WALLBOARD, FACE OF TILE BACKER BOARD, OR FACE OF CONCRETE AS OCCURS
B. ALL GYPSUM WALLBOARD TO BE 5/8" TYPE 'X' UNLESS NOTED OTHERWISE.
C. PROVIDE 5/8" GLASS-MAT FACED WATER-RESISTANT GYPSUM WALLBOARD AT WET LOCATIONS, INCLUDING WALLS BEHIND PLUMBING FIXTURES AND THE BOTTOM 4' OF ALL PLUMBING WALLS AND TOILET ROOMS.
D. UNLESS DIMENSIONED, DOORS ARE TO BE LOCATED 4" FROM NEAREST ADJACENT PERPENDICULAR WALL TO FACE OF JAMB. SEE DOOR DETAILS.
E. COORDINATE POWER AND DATA OUTLET LOCATIONS WITH ELECTRICAL AND TECHNOLOGY DRAWINGS.
F. OUTLETS SHOWN BACK TO BACK SHALL BE OFFSET A MINIMUM OF 18". OUTLET IN SOUND PARTITIONS SHALL BE SEPERATED BY A STUD WITH ACOUSTIC PUTTY.
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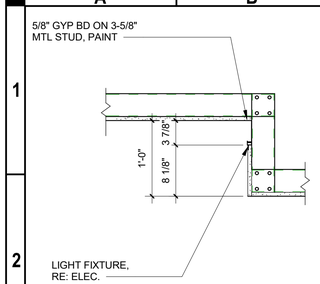
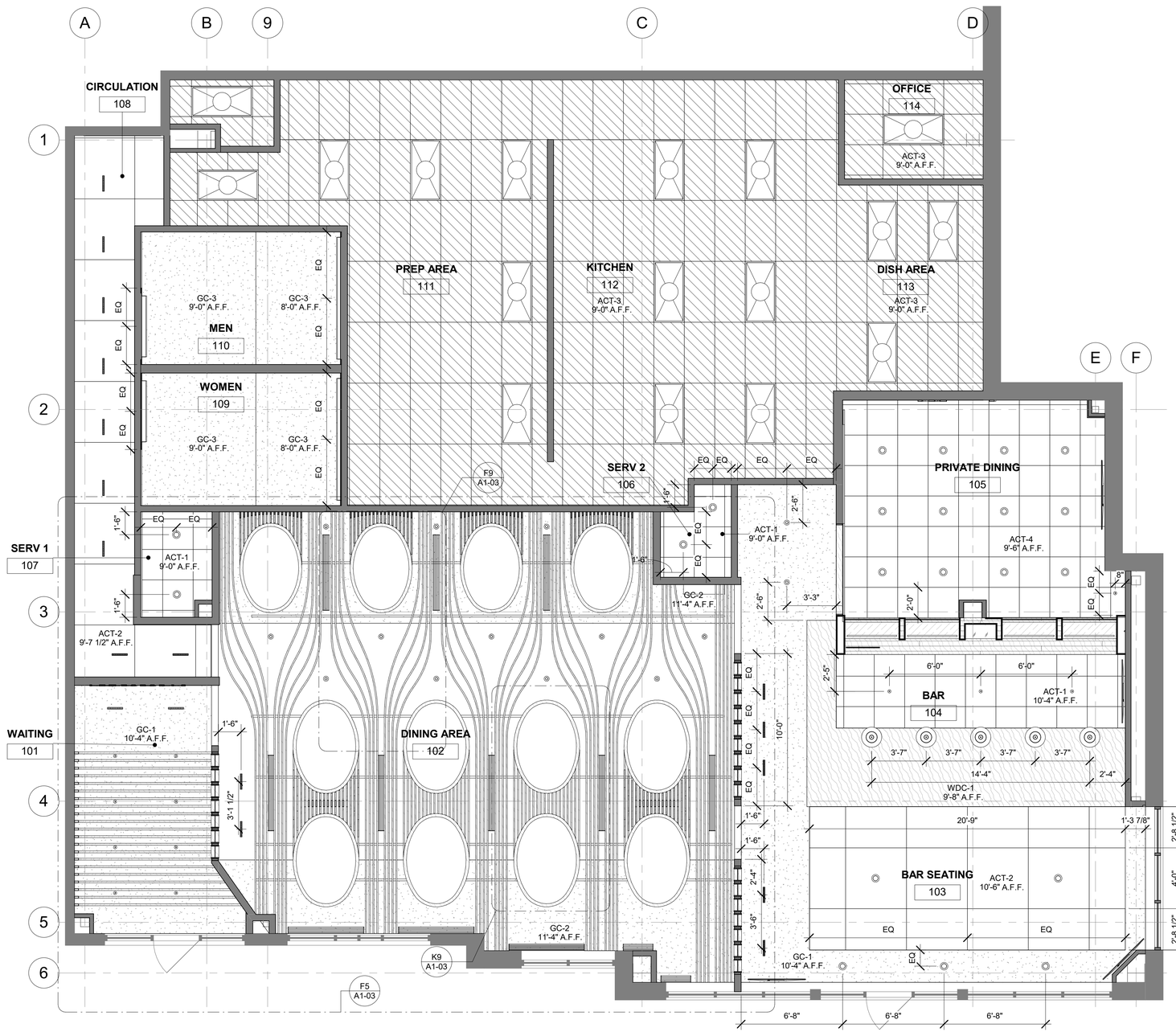
1ST FLOOR PLAN

A1-01

PERMIT SET



A2 LIGHT COVE SIDE
1" = 1'-0"



C9 1ST FLOOR - RCP
1/4" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION

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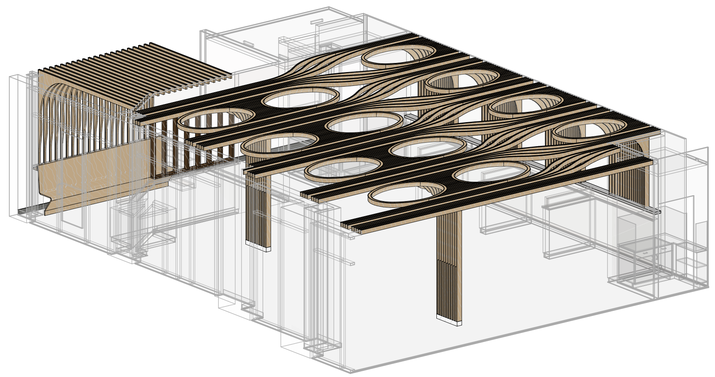
RCP

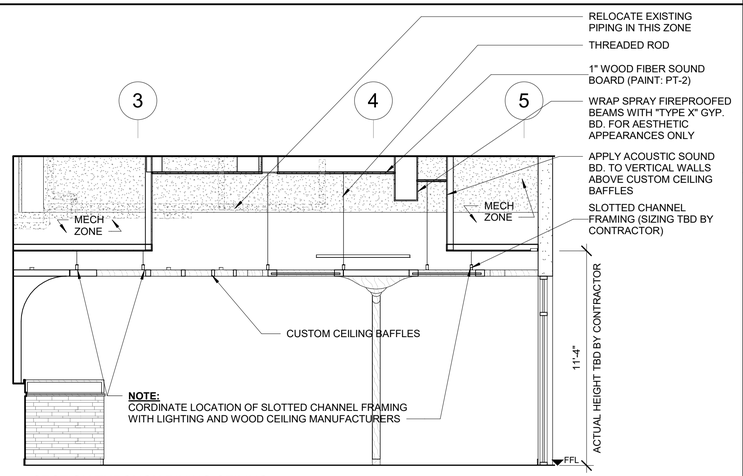
A1-02

PERMIT SET

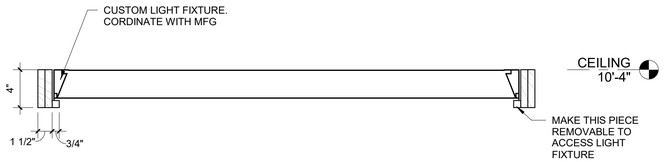


NOTE:
DURING BIDDING PROCESS SEPERATE CEILING AND WALL WOODWORK SHOW IN THIS VIEW AS A SEPERATE LINE ITEM.

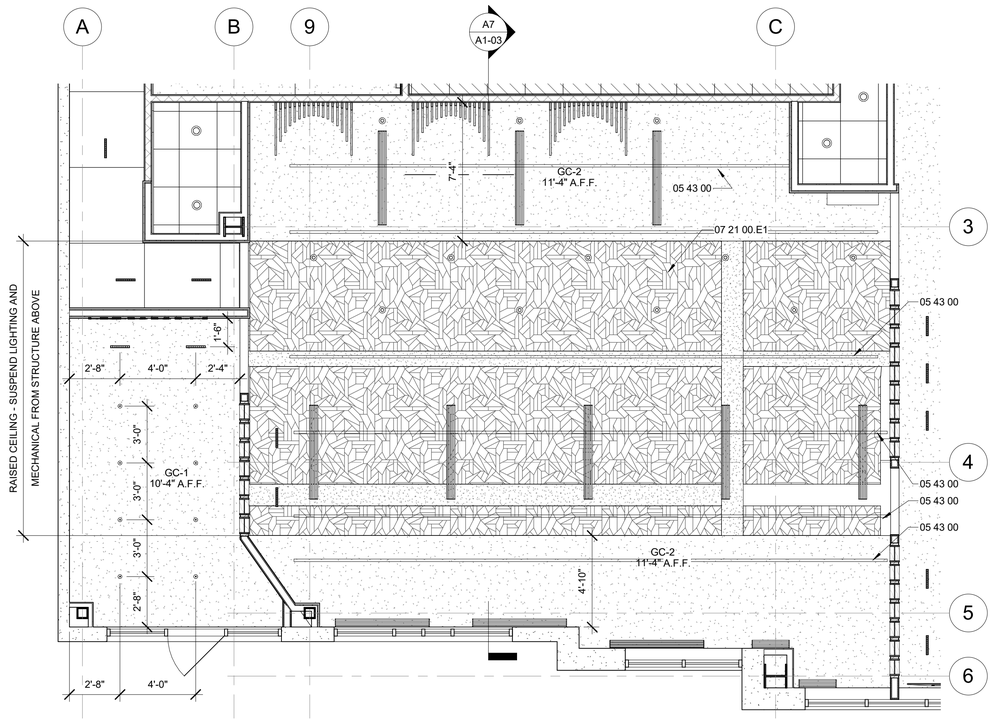
A4 AXON - CEILING / WALL WOOD WORK



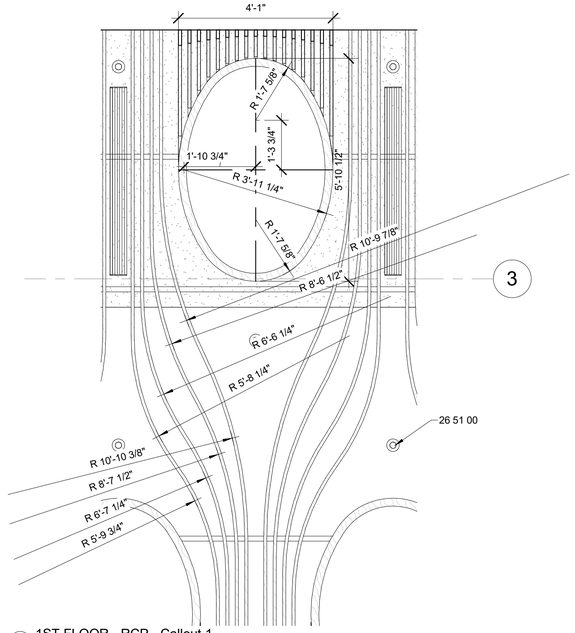
A7 SECTION THROUGH DINING CEILING
1/4" = 1'-0"



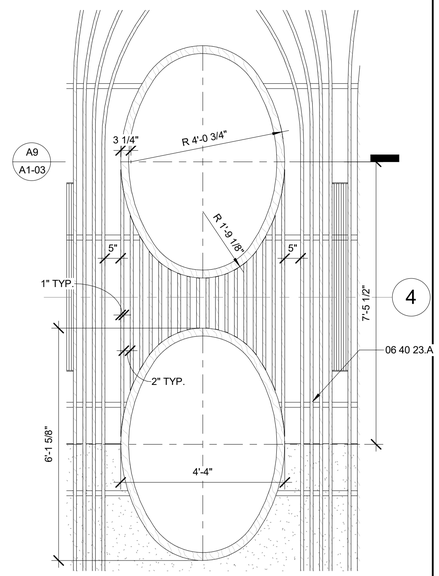
A9 SECTION DETAIL THRU LIGHT FIXTURE
1 1/2" = 1'-0"



F5 RCP-CEILING ABOVE WOOD DINING AREA
1/4" = 1'-0"



F9 1ST FLOOR - RCP - Callout 1
1/2" = 1'-0"



K9 1ST FLOOR - RCP - Callout 2
1/2" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION
05 43 00	SLOTTED CHANNEL FRAMING (SIZING TBD BY CONTRACTOR)
06 40 23.A	CUSTOM WOOD WALL AND CEILING ELEMENTS. MATCH WILSONART ACORN VELVET ELM (15602-31)
07 21 00.E1	1" WOOD FIBER SOUND BOARD (PAINT: PT-2)
26 51 00	LIGHTING (RE: ELEC)

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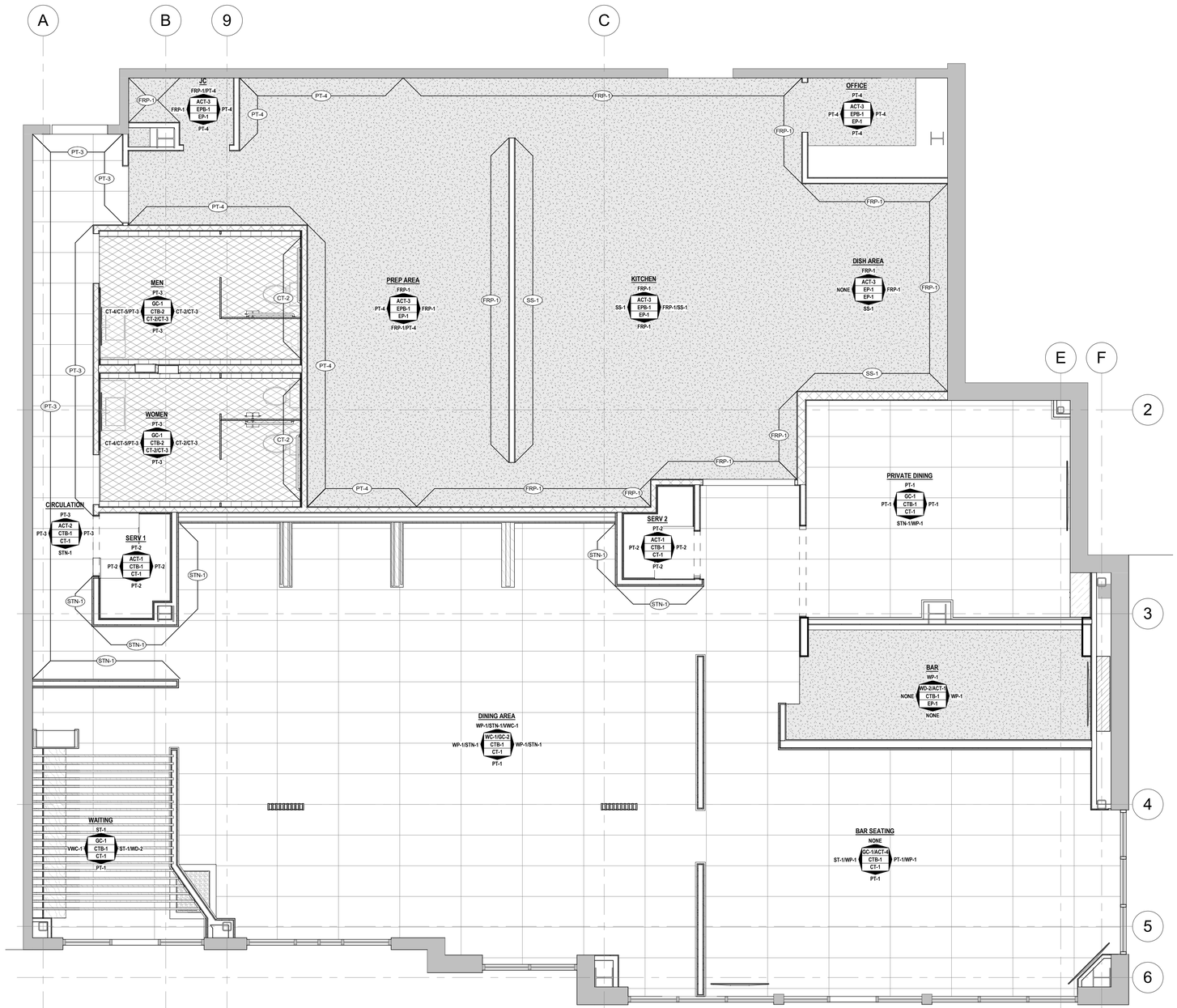
ENLARGED RCP AND CEILING DETIALS

A1-03

PERMIT SET



E9 1ST FLOOR FINISH PLAN
1/4" = 1'-0"

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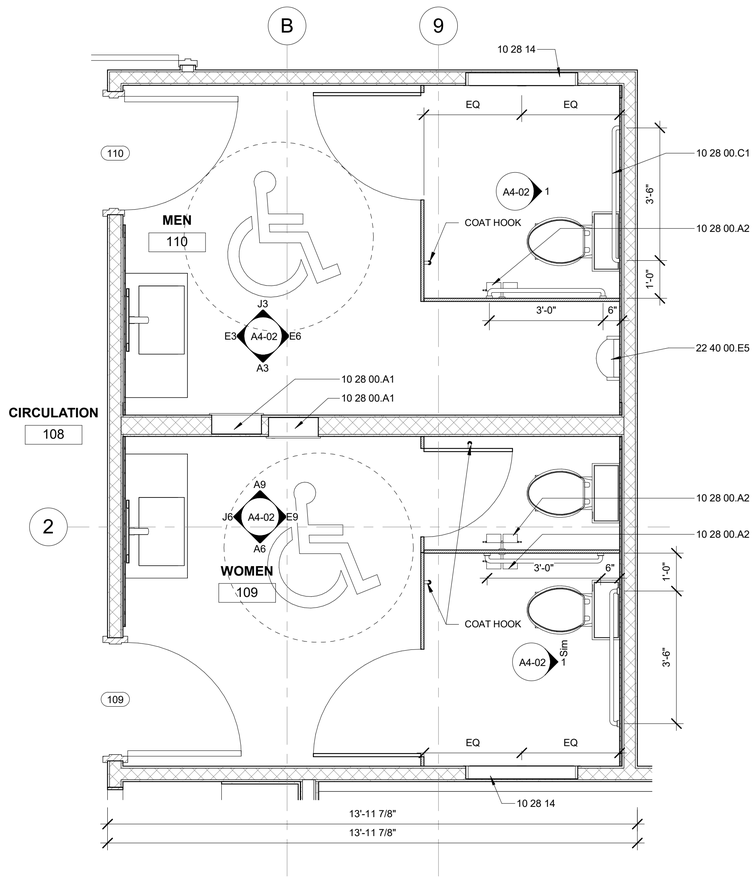
FINISH PLAN

A1-04

PERMIT SET

KEYNOTES

NUMBER	DESCRIPTION
10 28 00.A1	PAPER TOWEL DISPENSER / TRASH RECEPTACLE (MFG-ASI, 6462)
10 28 00.A2	TOILET TISSUE DISPENSER - MFG-ASI, # 7315-H
10 28 00.C1	GRAB BAR
10 28 14	BABY CHANGING STATION - KB310-SSRE HORIZONTAL STAINLESS STEEL RECESSED-MOUNTED
22 40 00.E5	URINAL



G9 ENLARGED PLAN-WC
1/2" = 1'-0"

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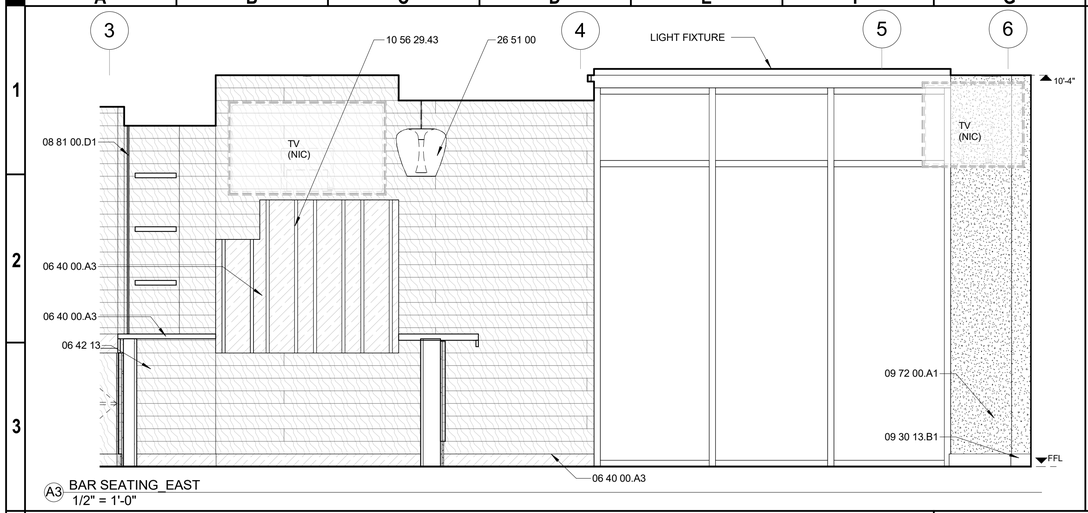
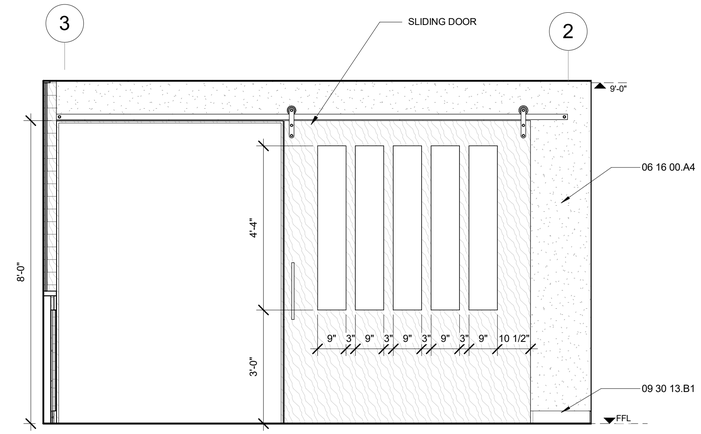
ENLARGED PLANS

A1-05

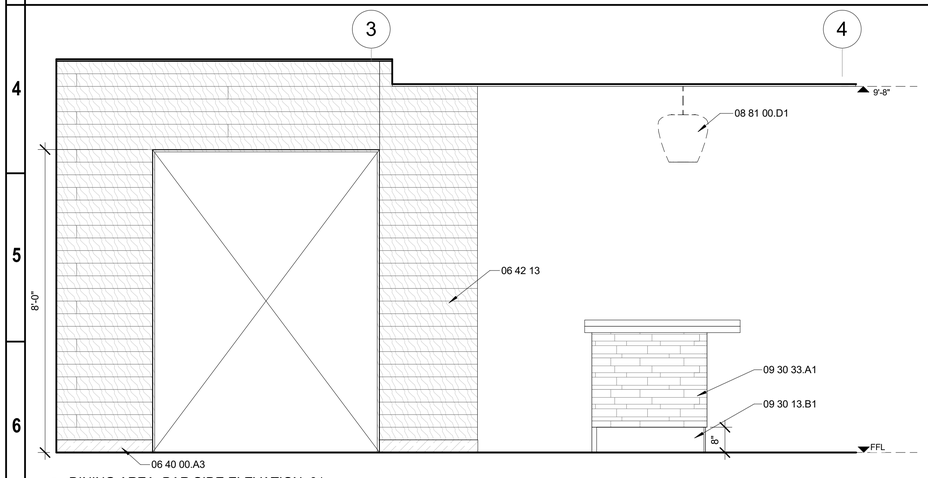
PERMIT SET



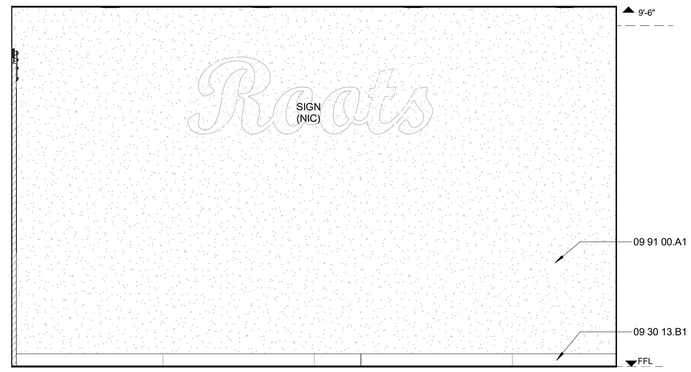
A3 BAR SEATING_EAST
1/2" = 1'-0"



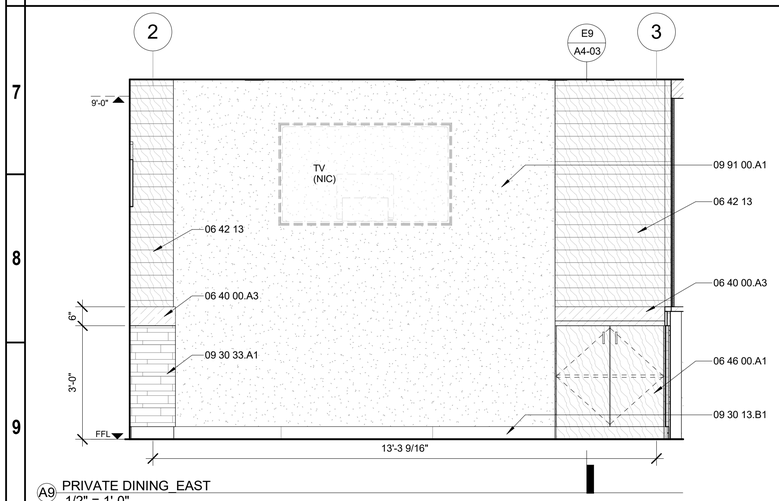
H3 PRIVATE DINING_WEST
1/2" = 1'-0"



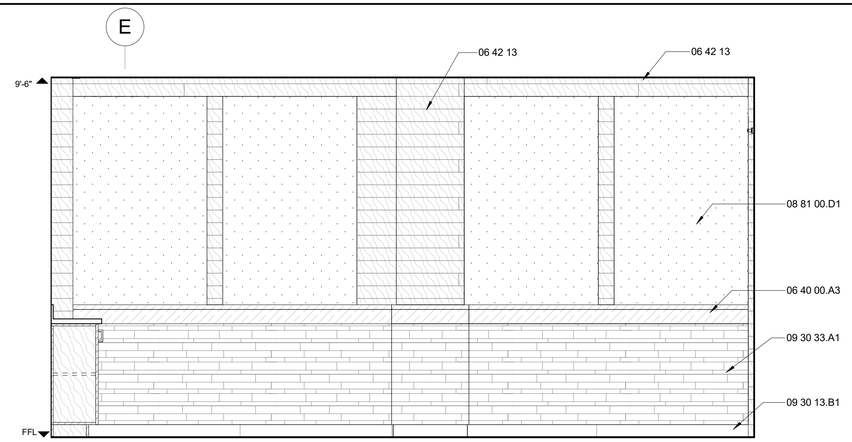
A6 DINING AREA_BAR SIDE ELEVATION_01
1/2" = 1'-0"



G6 PRIVATE DINING_NORTH
1/2" = 1'-0"



A9 PRIVATE DINING_EAST
1/2" = 1'-0"



G9 PRIVATE DINING_SOUTH
1/2" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION
06 16 00.A4	5/8" GYPSUM SHEATHING
06 40 00.A3	METAL LAMINATE (ML-1)
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
08 81 00.D1	LAMINATED GLASS WITH CUSTOM GRAPHIC FROSTED VINYL FILM
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 72 00.A1	VINYL WALL COVERING (VWC-1)
09 91 00.A1	PT-1
10 56 29.43	WINE STORAGE RACKS - WALL MOUNTED, MFG-VINTAGE VIEW, COLOR BLACK, (1) #WS33, (3) #WS43. PROVIDE BLOCKING FOR MOUNTING AS REQUIRED.

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ROOTS FINE CUISINE

940 NW PRYOR RD, SUITE M
LESS'S SUMMIT, MO 64081

ROBERT L. WADE
LICENSED
4961
KANSAS
ARCHITECT
09.15.21

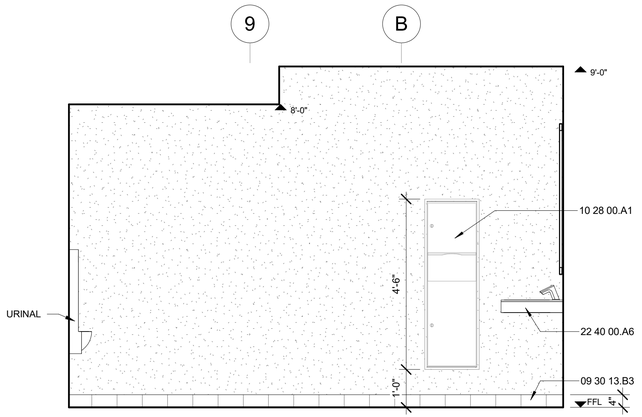
Revision	Date	No.

Project Number:	2106
Scale:	1/2" = 1'-0"
Date:	09.15.2021

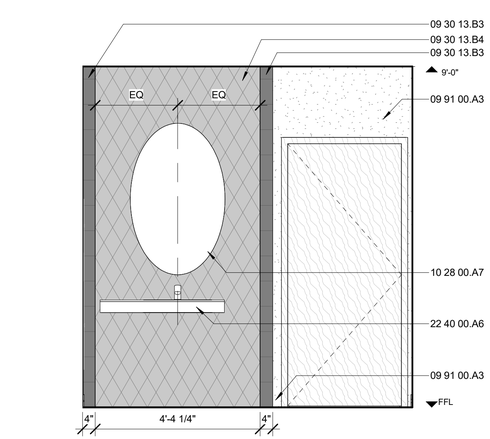
INTERIOR ELEVATIONS

A4-01

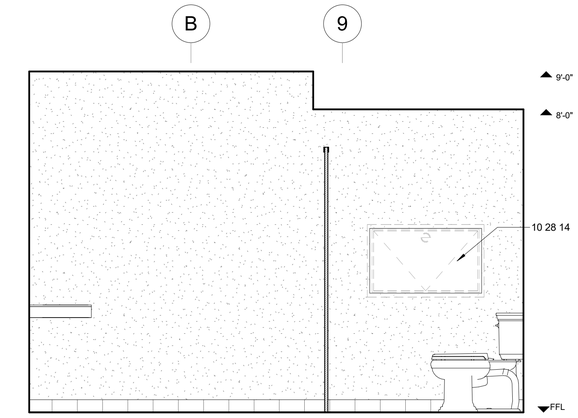
PERMIT SET



A3 MEN_SOUTH
1/2" = 1'-0"



E3 MEN_WEST
1/2" = 1'-0"



J3 MEN_NORTH
1/2" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION
06 64 00	ACRYLIC PANEL - FROSTED
09 30 13.B2	CERAMIC TILE (CT-2)
09 30 13.B3	CERAMIC TILE (CT-3)
09 30 13.B4	CERAMIC TILE (CT-4)
09 91 00.A3	PT-3
10 21 13.13.A1	TOILET PARTITION - MFG-IRONWOOD, DOOR LITE, COMPACT LAMINATE, COLOR-TBD
10 28 00.A1	PAPER TOWEL DISPENSER / TRASH RECEPTACLE (MFG-ASI, 6462)
10 28 00.A2	TOILET TISSUE DISPENSER - MFG-ASI, # 7315-H
10 28 00.A7	MIRROR - (MFG: PARIS MIRROR - OVAL (OVALX30483000), USE DIMMER SWITCH)
10 28 00.C1	GRAB BAR
10 28 14	BABY CHANGING STATION - KB310-SSRE HORIZONTAL STAINLESS STEEL RECESSED-MOUNTED
22 40 00.A6	WALL MOUNT SINK (RE: PLUMB)

A6 WOMEN_SOUTH
1/2" = 1'-0"

E6 MEN_EAST
1/2" = 1'-0"

J6 WOMEN_WEST
1/2" = 1'-0"

A9 WOMEN_NORTH
1/2" = 1'-0"

E9 WOMEN_EAST
1/2" = 1'-0"

1 RESTROOM EAST WALL
1/2" = 1'-0"

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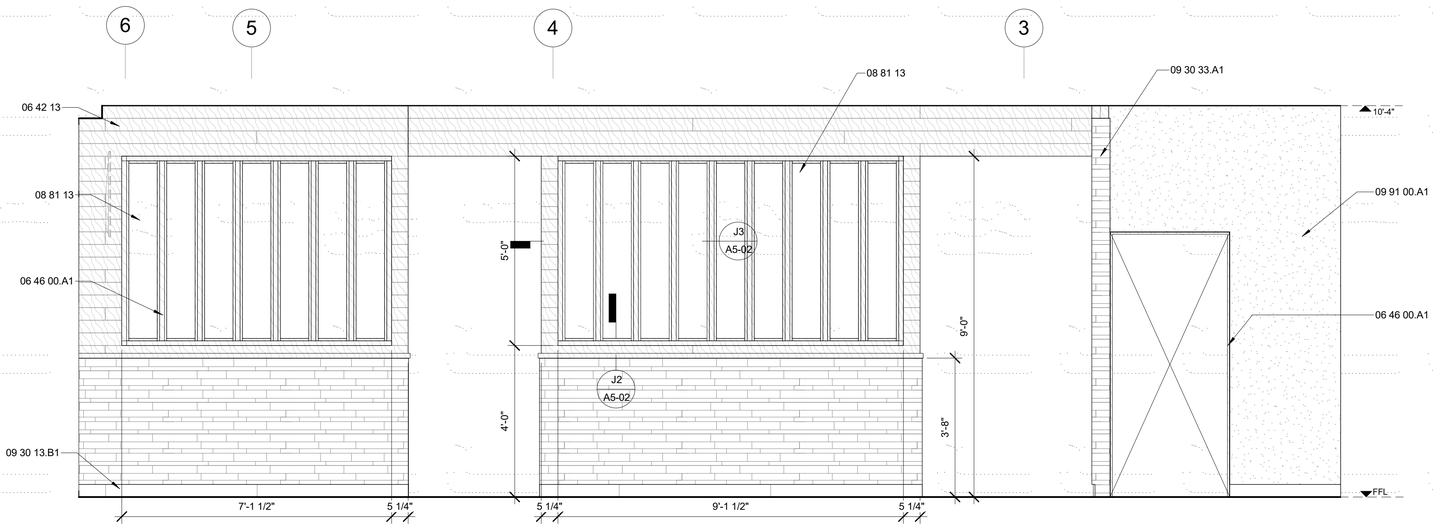
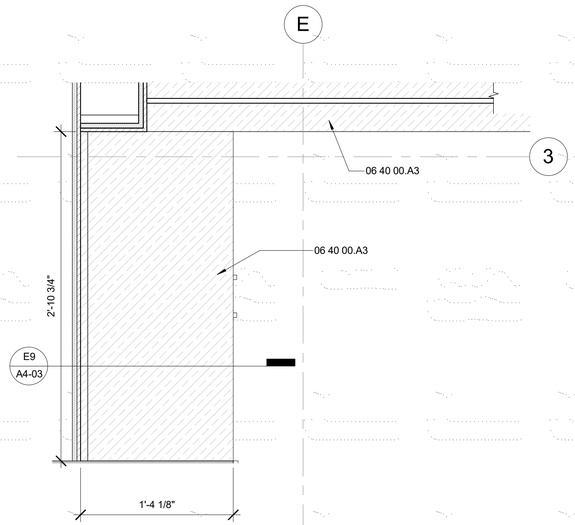
INTERIOR ELEVATIONS

A4-02

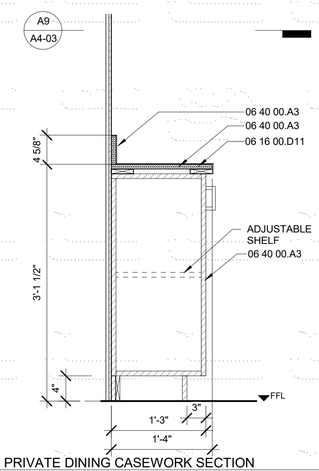
PERMIT SET



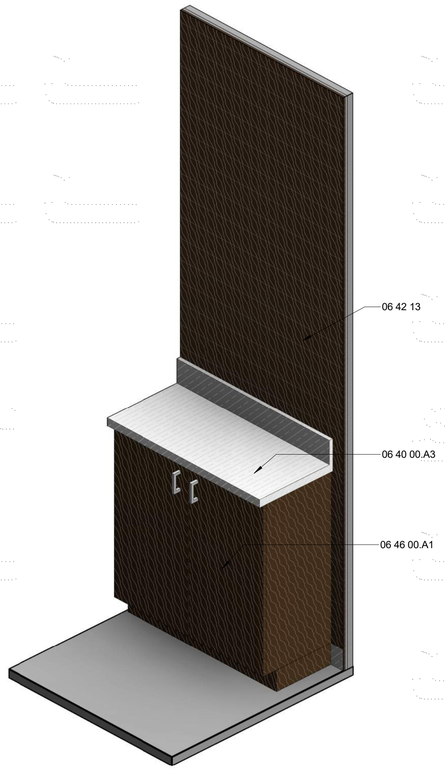
A4 BAR SEATING_WEST
1/2" = 1'-0"



A9 PRIVATE DINING -CASEWORK-PLAN
1 1/2" = 1'-0"



E9 PRIVATE DINING CASEWORK SECTION
1" = 1'-0"



J9 AXON - PRIVATE DINING CASEWORK

KEYNOTES

NUMBER	DESCRIPTION
06 16 00.D11	3/4" PLYWOOD
06 40 00.A3	METAL LAMINATE (ML-1)
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
08 81 13	ETCHED GLASS
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 91 00.A1	PT-1

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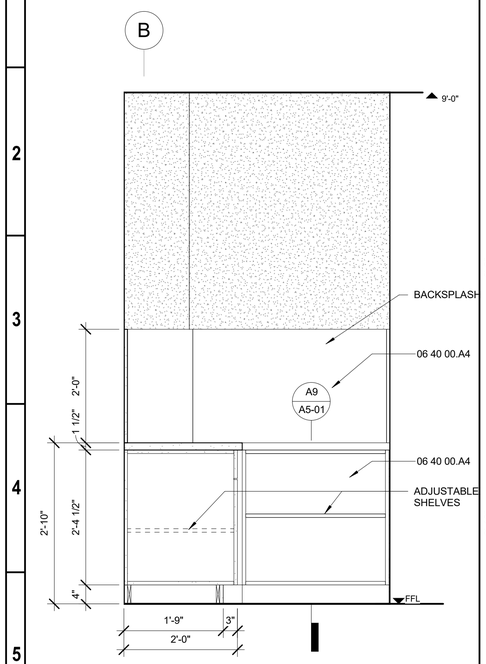
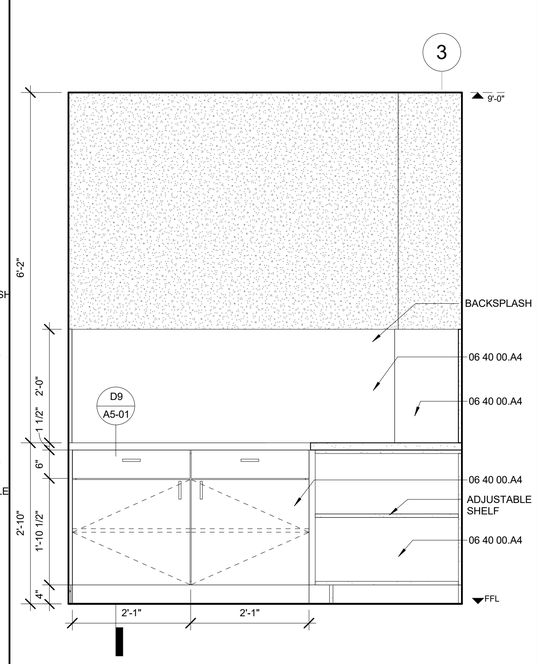
INTERIOR ELEVATIONS

A4-03

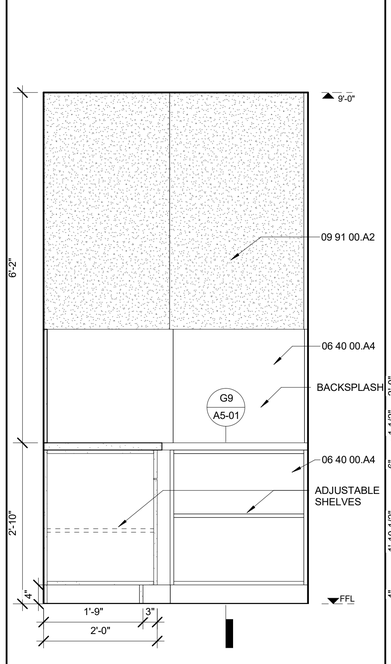
PERMIT SET



A5 SERV 1-SOUTH
3/4" = 1'-0"

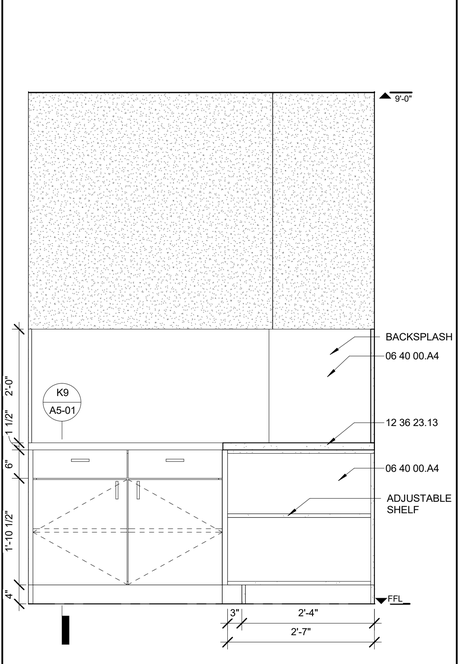


D5 SERV 1-EAST
3/4" = 1'-0"



G5 SERV 2-NORTH
3/4" = 1'-0"

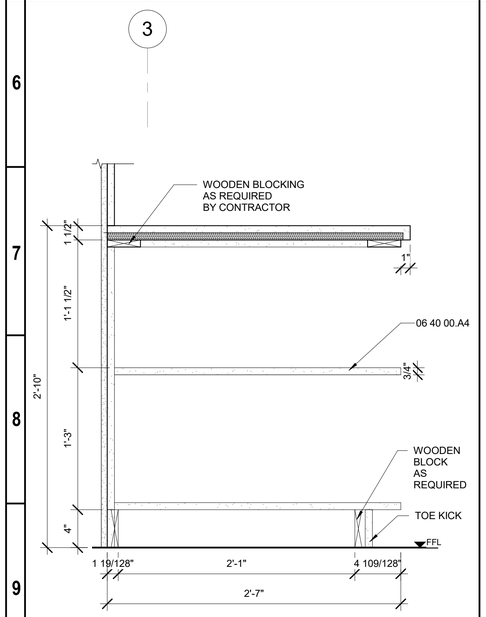
NOTE:
FOR ALL CABINET INTERIORS USE BLACK MELAMINE



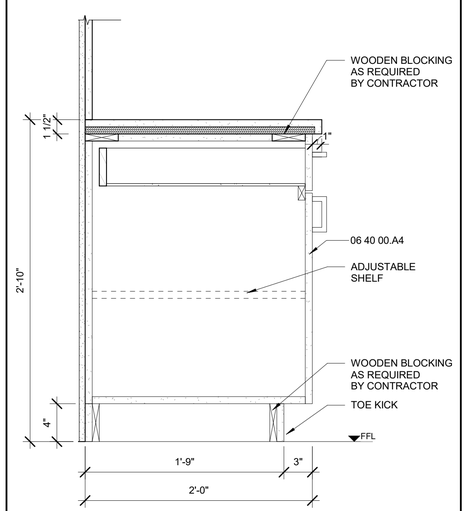
K5 SERV 2-WEST
3/4" = 1'-0"

KEYNOTES

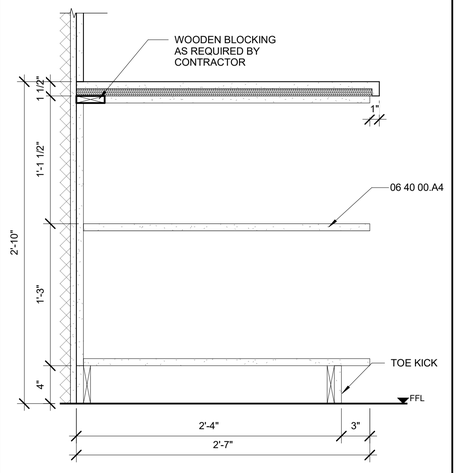
NUMBER	DESCRIPTION
06 40 00.A4	PLASTIC LAMINATE (PLAM-2)
09 91 00.A2	PT-2
12 36 23.13	PLASTIC-LAMINATE-CLAD COUNTERTOPS



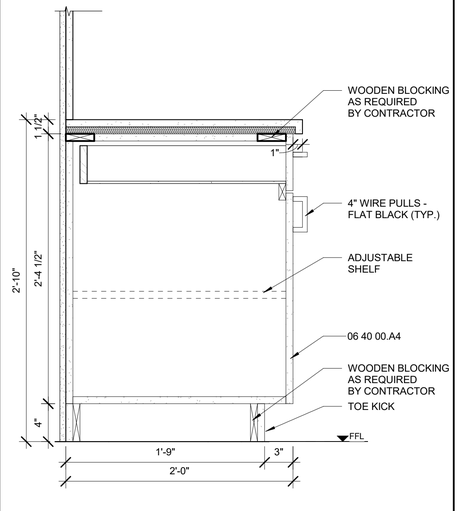
A9 SERV 1-SOUTH CABIN SECTION
1 1/2" = 1'-0"



D9 SERV 1-EAST CABIN SECTION
1 1/2" = 1'-0"



G9 SERV 2-NORTH CABIN SECTION
1 1/2" = 1'-0"



K9 SERV 2-WEST CABIN SECTION
1 1/2" = 1'-0"

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ROBERT L. WADE LICENSED 4961 KANSAS ARCHITECT
09.15.21

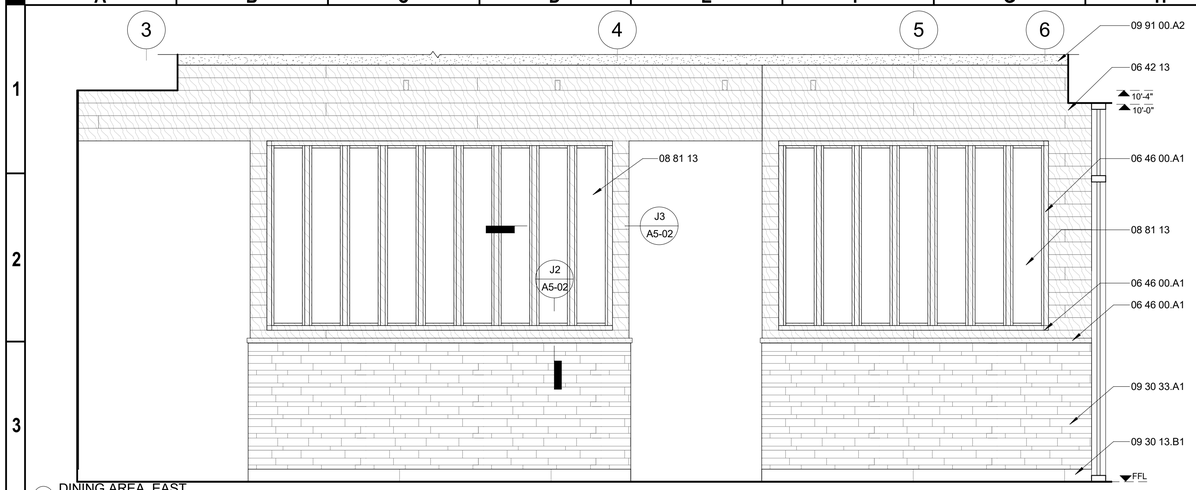
Revision	Date	No.

Project Number:	2106
Scale:	As indicated
Date:	09.15.2021

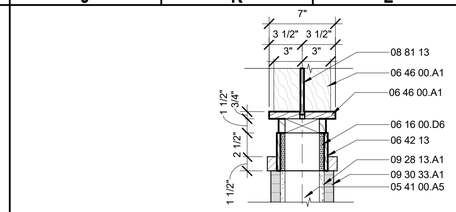
INTERIOR DETAILS/ELEVATIONS-SERV 1 & 2

A5-01

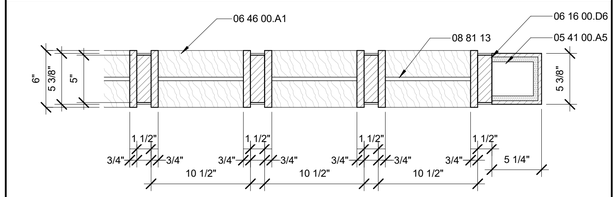
PERMIT SET



A3 DINING AREA_EAST
1/2" = 1'-0"



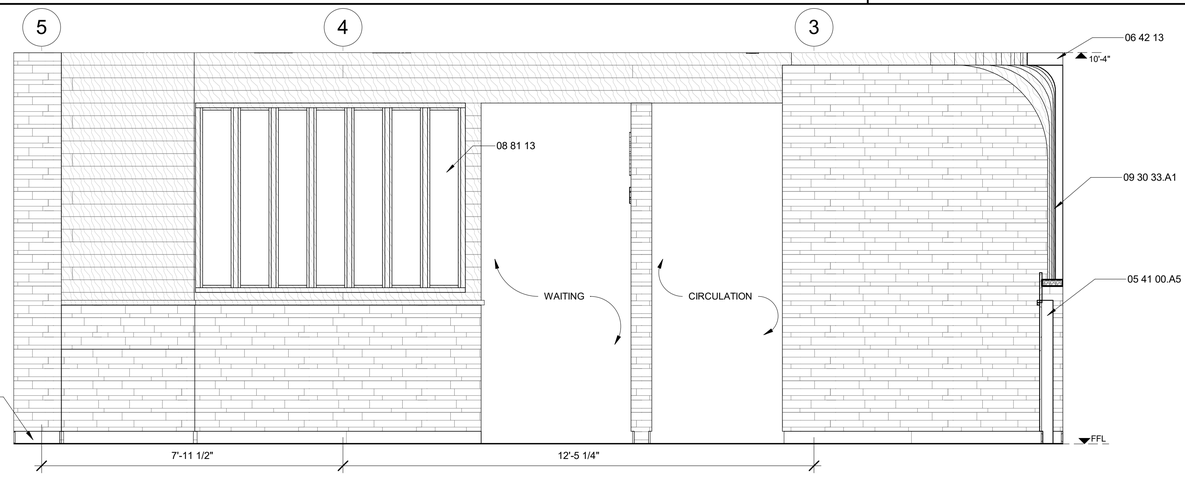
J2 SECTION DETAIL - GLAZING / STONE CAP
1 1/2" = 1'-0"



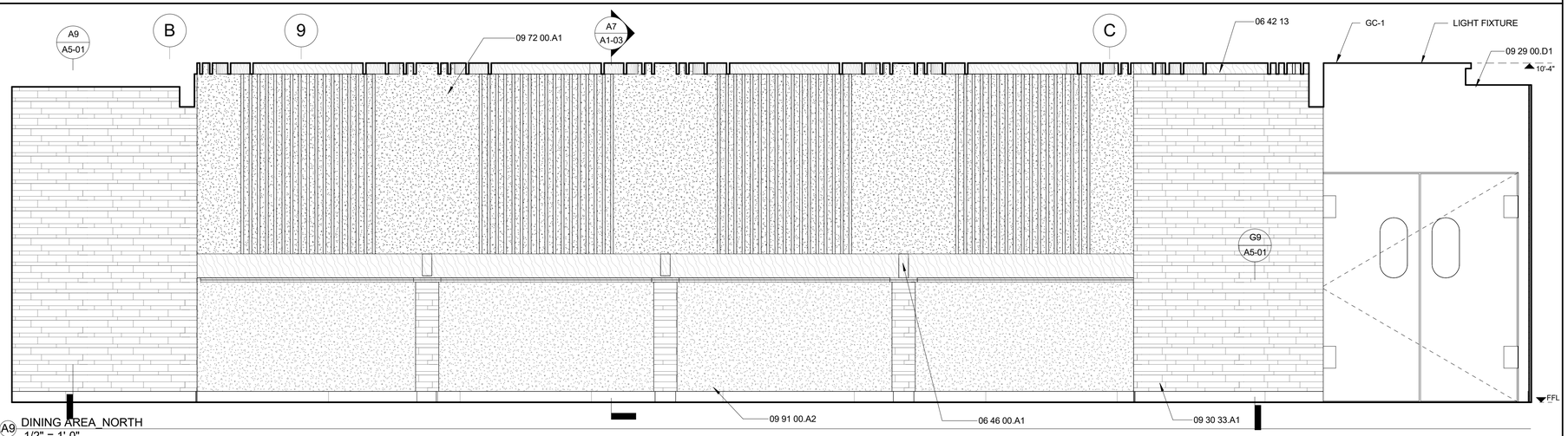
J3 PLAN DETAIL - TYP. GLASS FRAME
1 1/2" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION
05 41 00.A5	3-5/8" METAL STUD
06 16 00.D6	1/2" PLYWOOD
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
08 81 13	ETCHED GLASS
09 28 13.A1	1/2" CEMENT BOARD
09 29 00.D1	5/8" GYPSUM WALLBOARD
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 72 00.A1	VINYL WALL COVERING (VWC-1)
09 91 00.A2	PT-2



A6 DINING AREA_WEST
1/2" = 1'-0"



A9 DINING AREA_NORTH
1/2" = 1'-0"

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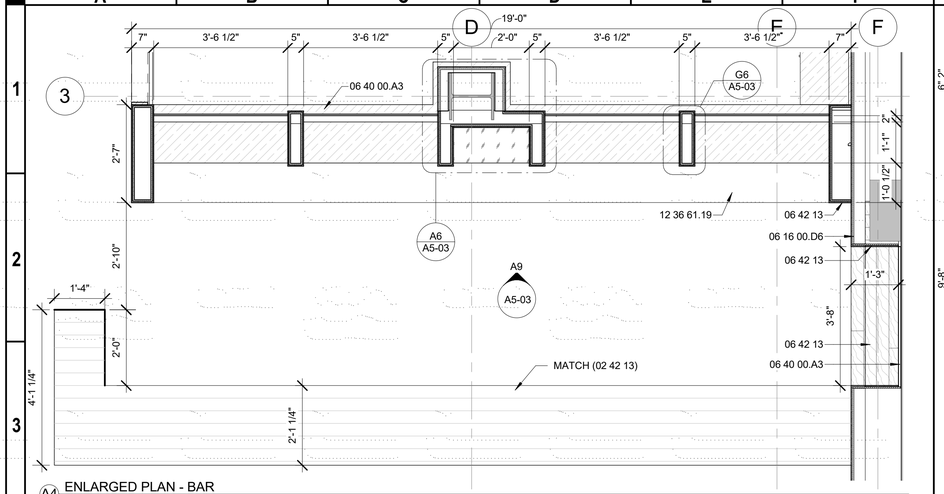
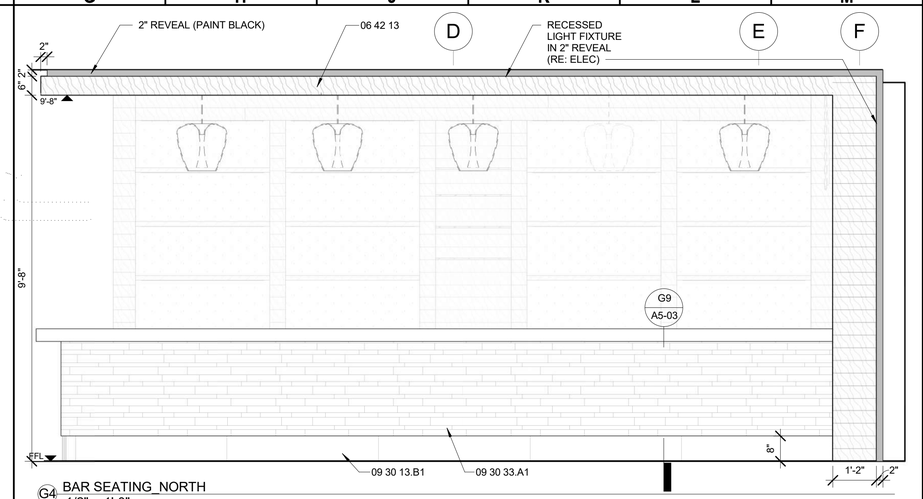
INTERIOR DETAILS/ELEVATIONS-DINING AREA

A5-02

PERMIT SET



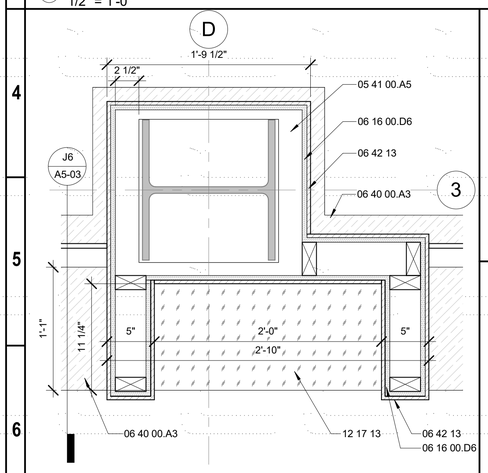
A4 ENLARGED PLAN - BAR
1/2" = 1'-0"



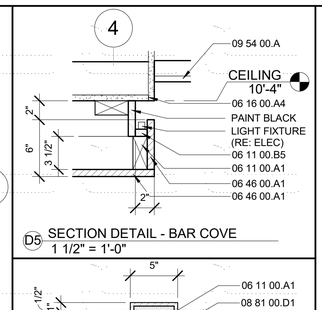
G4 BAR SEATING_NORTH
1/2" = 1'-0"

KEYNOTES

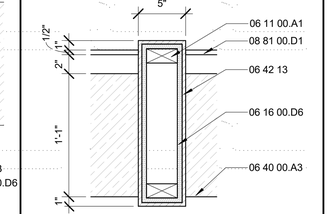
NUMBER	DESCRIPTION
05 41 00.A5	3-5/8" METAL STUD
05 41 00.A7	5-1/2" METAL STUD
06 11 00.A1	WOOD BLOCKING
06 11 00.B5	1X4
06 11 00.D7	2X4 STUDS
06 16 00.A4	5/8" GYPSUM SHEATHING
06 16 00.C5	3/4" PARTICLEBOARD
06 16 00.D6	1/2" PLYWOOD
06 16 00.D12	3/4" EXTERIOR GRADE PLYWOOD
06 40 00.A3	METAL LAMINATE (ML-1)
06 40 00.A4	PLASTIC LAMINATE (PLAM-2)
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
08 81 00.D1	LAMINATED GLASS WITH CUSTOM GRAPHIC FROSTED VINYL FILM
09 28 13.A1	1/2" CEMENT BOARD
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 54 00.A	SPECIALTY ACOUSTIC CEILING - C??
12 17 13	SHELVING - ETCHED GLASS - ADJUSTABLE
12 36 61.19	QUARTZ COUNTERTOP - MFG - WILSONART, COLOR - VESUVIUS



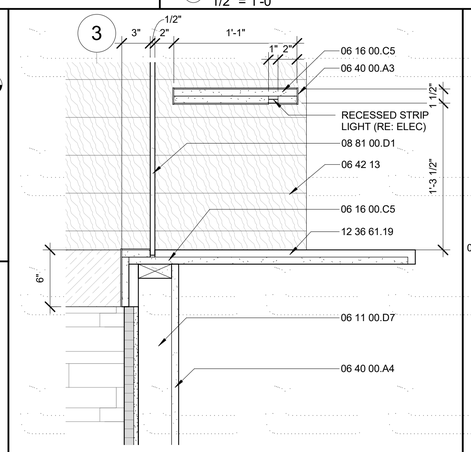
A6 PLAN DETAIL - BAR BACK 1
1 1/2" = 1'-0"



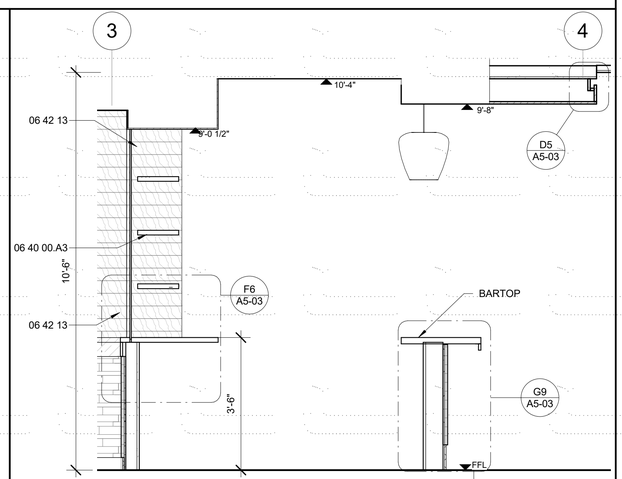
D5 SECTION DETAIL - BAR COVE
1 1/2" = 1'-0"



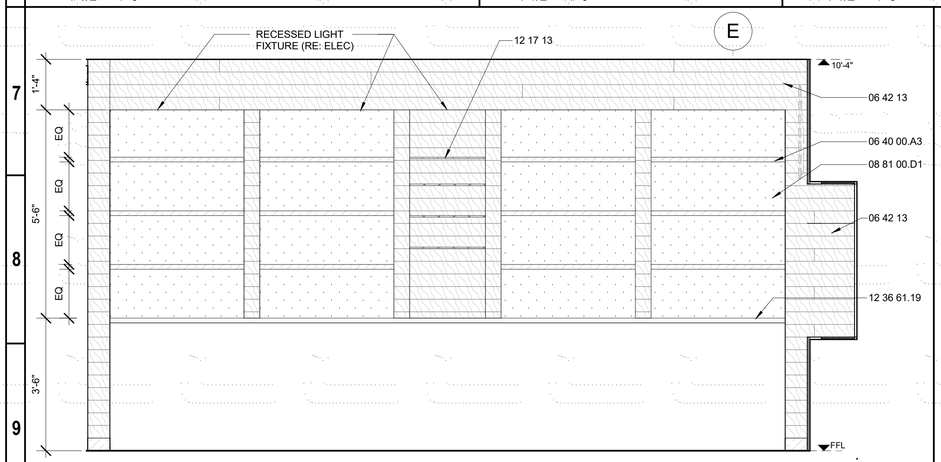
G6 PLAN DETAIL- BAR BACK 2
1 1/2" = 1'-0"



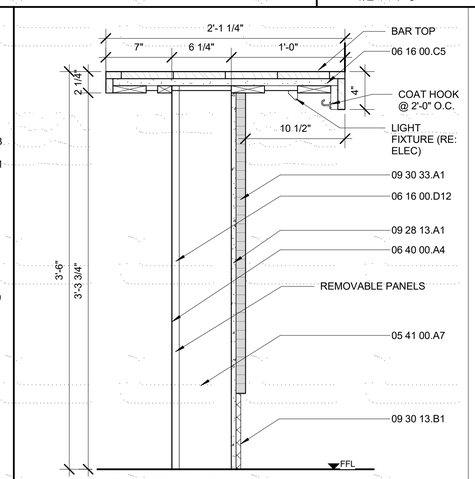
F6 SECTION DETAIL - BAR BACK 3
1 1/2" = 1'-0"



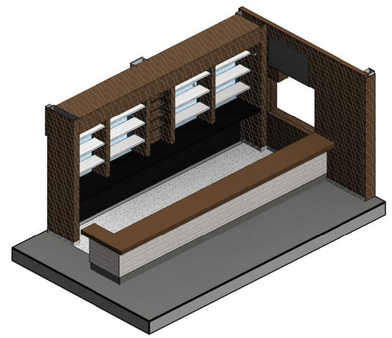
J6 BAR SECTION 2
1/2" = 1'-0"



A9 BAR-NORTH
1/2" = 1'-0"



G9 BARTOP CASEWORK DETAIL
1 1/2" = 1'-0"



K9 AXON - BAR

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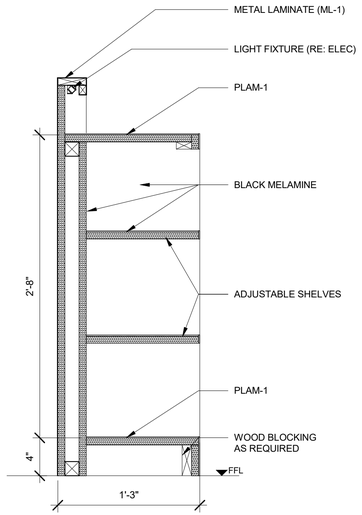
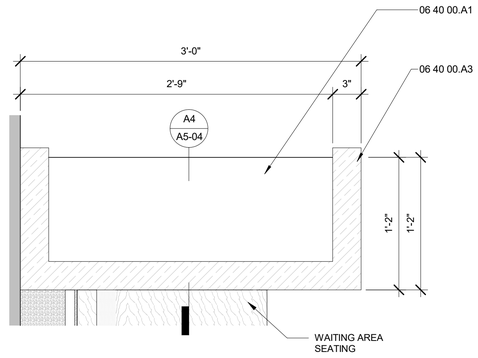
INTERIOR DETAILS/ELEVATIONS

A5-03

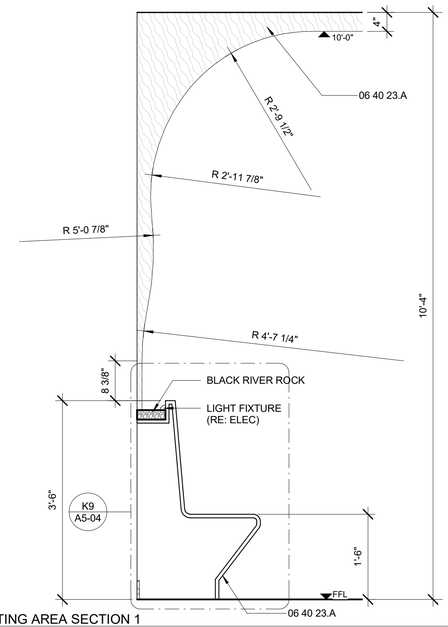
PERMIT SET



A4 WAITING AREA RACK- SECTION
1 1/2" = 1'-0"



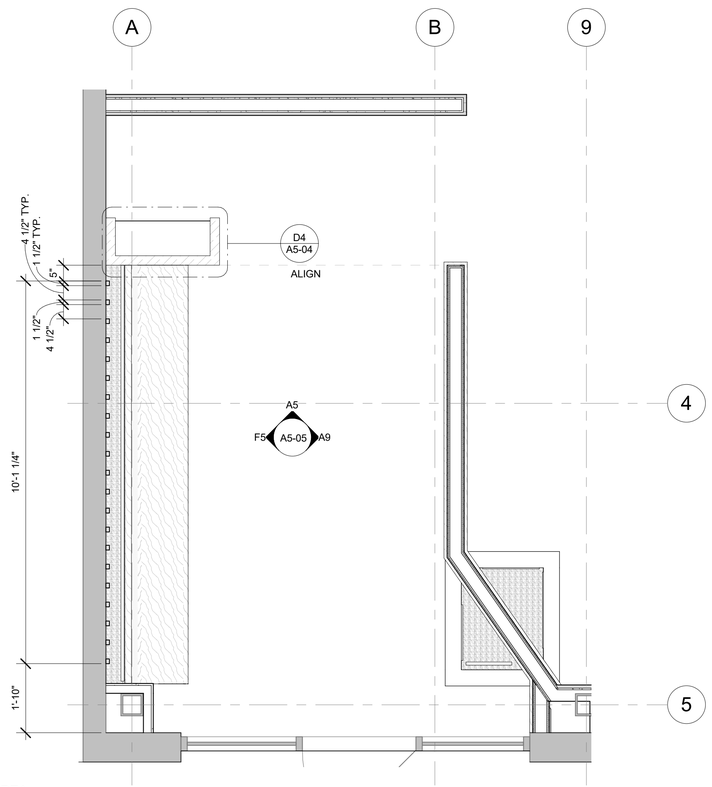
D4 WAITING AREA RACK- PLAN
1 1/2" = 1'-0"



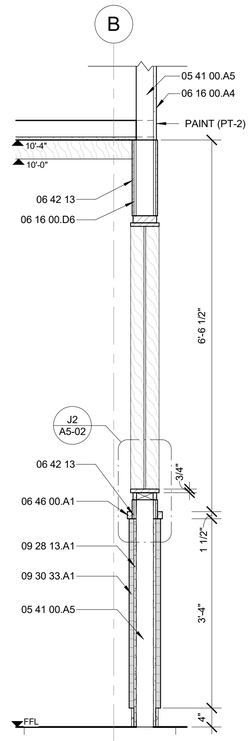
H4 WAITING AREA SECTION 1
3/4" = 1'-0"

KEYNOTES

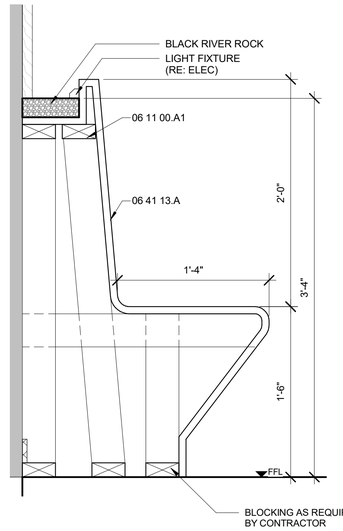
NUMBER	DESCRIPTION
05 41 00.A5	3-5/8" METAL STUD
06 11 00.A1	WOOD BLOCKING
06 16 00.A4	5/8" GYPSUM SHEATHING
06 16 00.D6	1/2" PLYWOOD
06 40 00.A1	PLASTIC LAMINATE (PLAM-1)
06 40 00.A3	METAL LAMINATE (ML-1)
06 40 23.A	CUSTOM WOOD WALL AND CEILING ELEMENTS. MATCH WILSONART ACORN VELVET ELM (15602-31)
06 41 13.A	WOOD VENEER (STAINED TO MATCH PLAM-1)
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
09 28 13.A1	1/2" CEMENT BOARD
09 30 33.A1	STONE WALL TILE (STN-1)



A9 WAITING AREA
1/2" = 1'-0"



G9 WAITING AREA SECTION 2
3/4" = 1'-0"



K9 SPOT DETAIL
1 1/2" = 1'-0"

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09.15.21

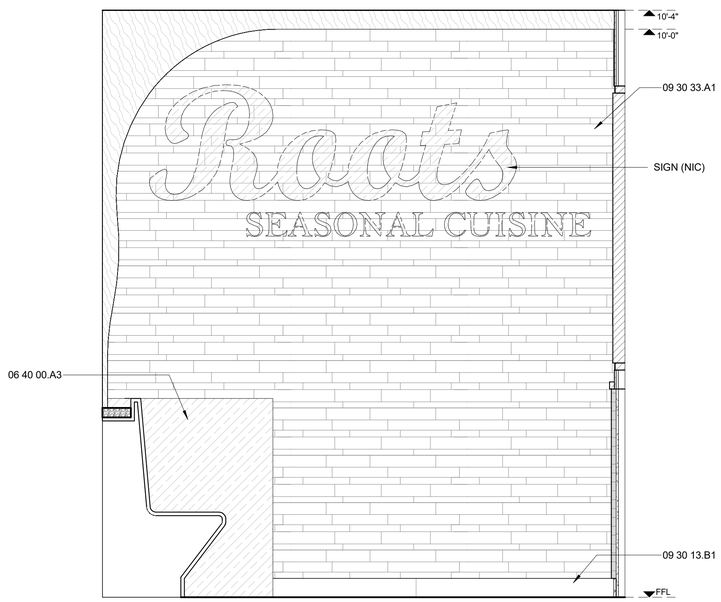
Revision	Date	No.

Project Number:	2106
Scale:	As indicated
Date:	09.15.2021

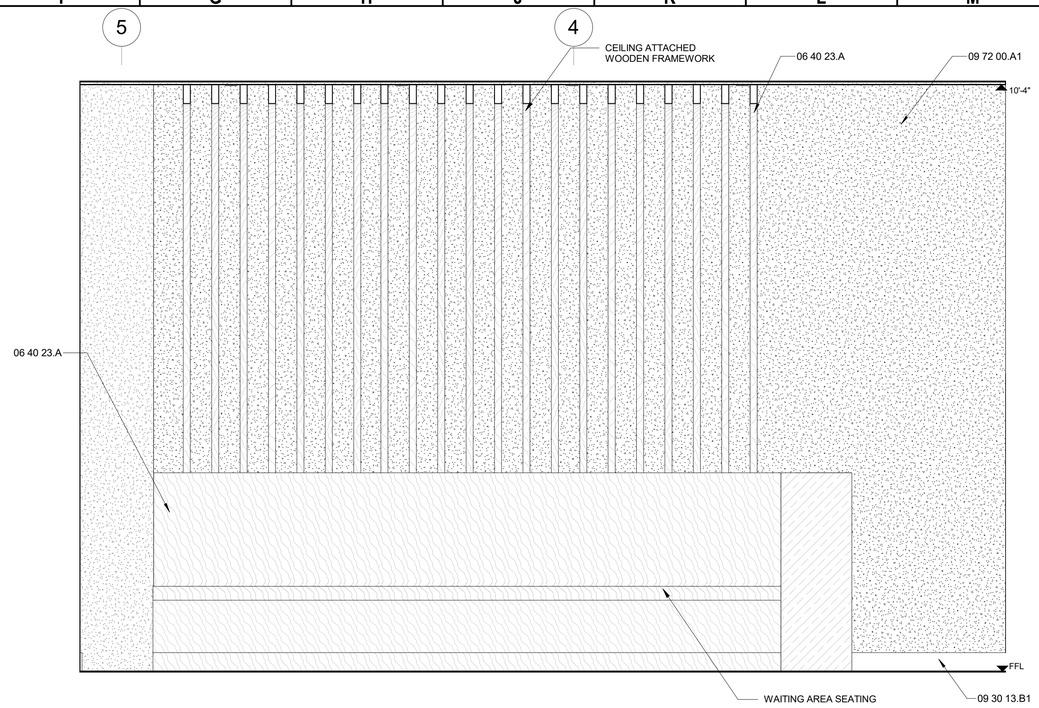
INTERIOR DETAILS/ELEVATIONS

A5-04

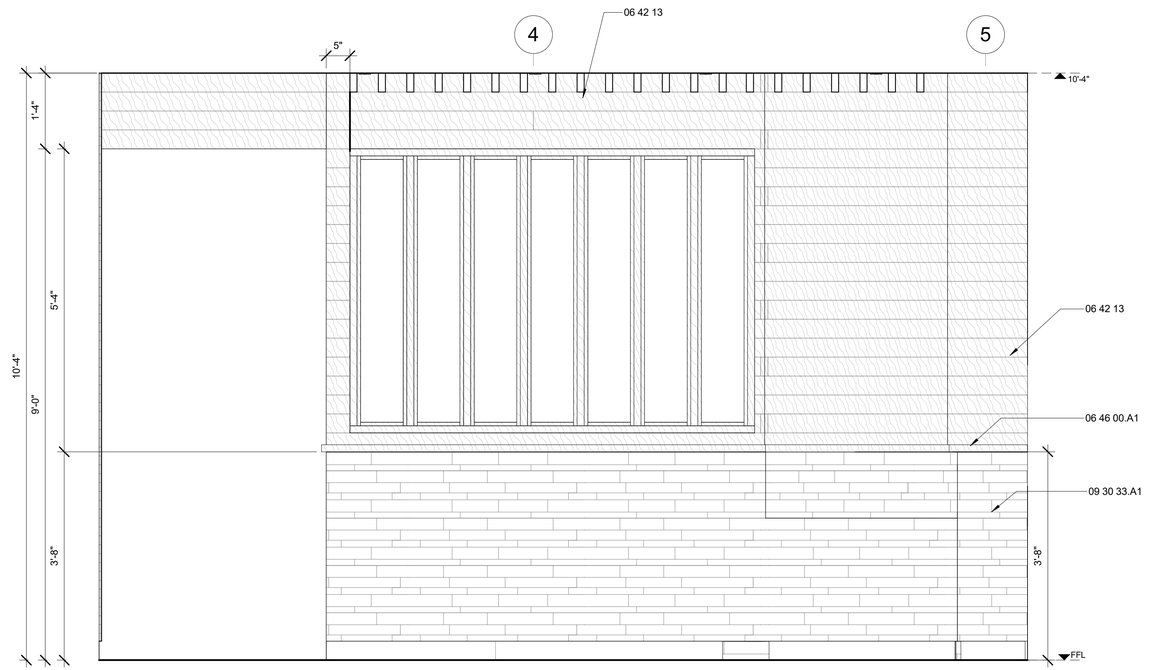
PERMIT SET



A5 WAITING AREA
3/4" = 1'-0"



F5 WAITING AREA
3/4" = 1'-0"



A9 WAITING AREA
3/4" = 1'-0"

KEYNOTES

NUMBER	DESCRIPTION
06 40 00.A3	METAL LAMINATE (ML-1)
06 40 23.A	CUSTOM WOOD WALL AND CEILING ELEMENTS. MATCH WILSONART ACORN VELVET ELM (15602-31)
06 42 13	WOOD BOARD PANELING (WP-1)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 72 00.A1	VINYL WALL COVERING (VWC-1)

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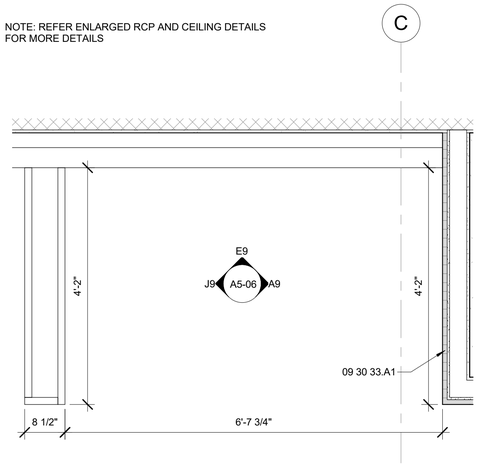
Date:	09.15.2021

INTERIOR DETAILS/ELEVATIONS

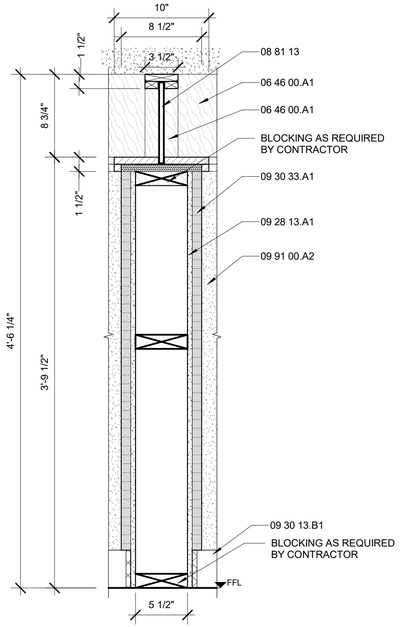
A5-05

PERMIT SET

NOTE: REFER ENLARGED RCP AND CEILING DETAILS FOR MORE DETAILS



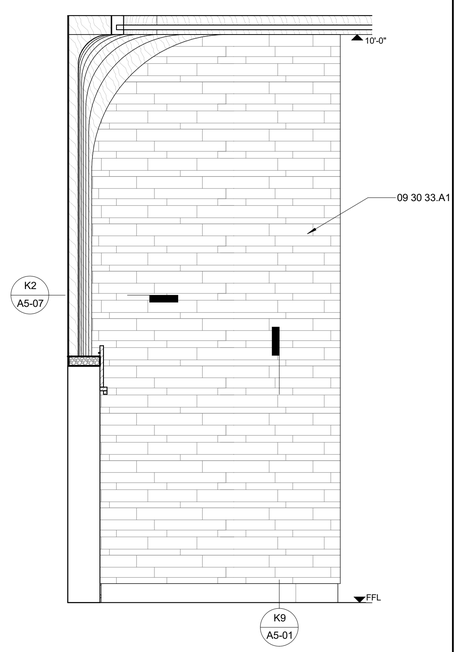
A4 ENLARGED PLAN - BOOTH
3/4" = 1'-0"



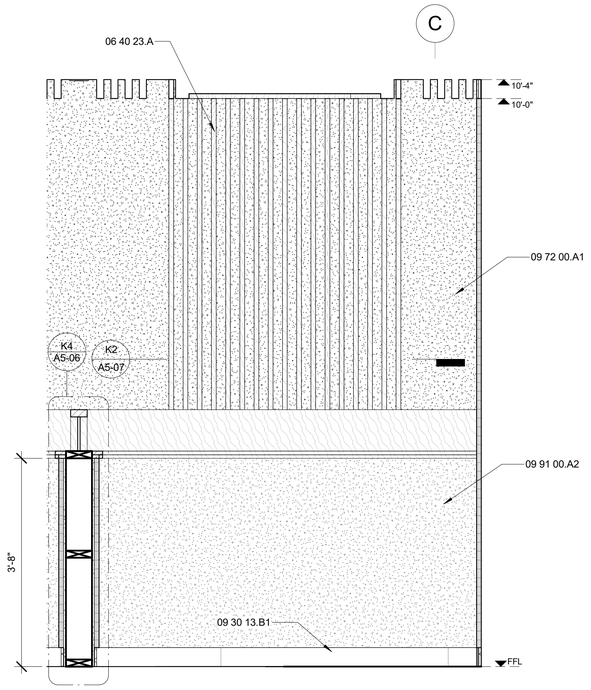
K4 SECTION DETAIL - BOOTH 01
1 1/2" = 1'-0"

KEYNOTES

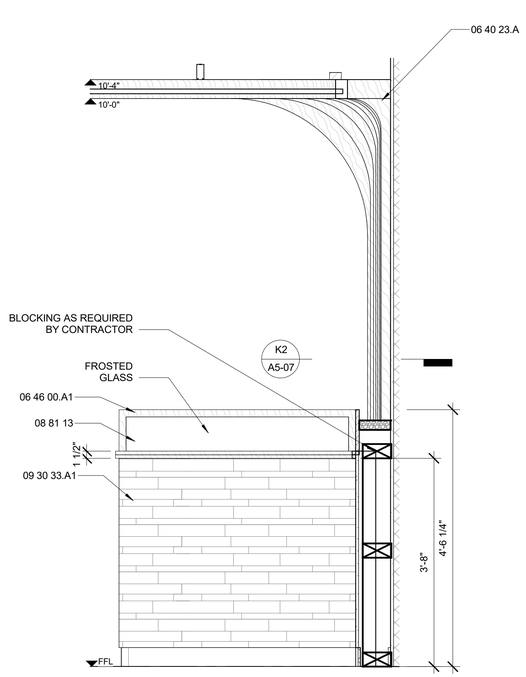
NUMBER	DESCRIPTION
06 40 23.A	CUSTOM WOOD WALL AND CEILING ELEMENTS. MATCH WILSONART ACORN VELVET ELM (15602-31)
06 46 00.A1	WOOD TRIM - PLAIN SLICED WHITE MAPLE OR MATCHING VENEER (STAIN TO MATCH WP-1)
08 81 13	ETCHED GLASS
09 28 13.A1	1/2" CEMENT BOARD
09 30 13.B1	CERAMIC TILE (CT-1)
09 30 33.A1	STONE WALL TILE (STN-1)
09 72 00.A1	VINYL WALL COVERING (VWC-1)
09 91 00.A2	PT-2



A9 BOOTH ELEVATION 1
3/4" = 1'-0"



E9 BOOTH ELEVATION 2
3/4" = 1'-0"



J9 BOOTH ELEVATION 3
3/4" = 1'-0"

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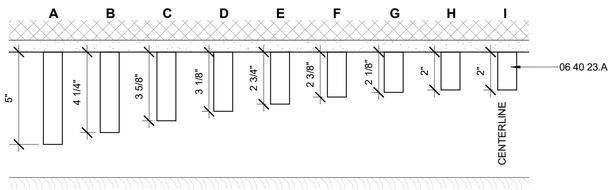
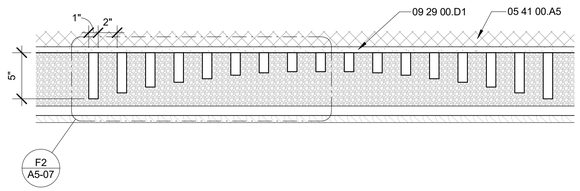
INTERIOR DETAILS/ELEVATIONS

A5-06

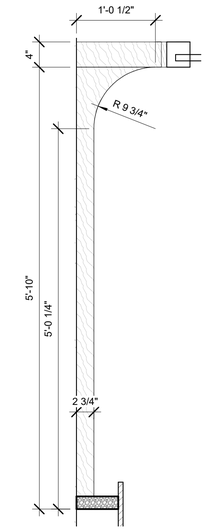
PERMIT SET



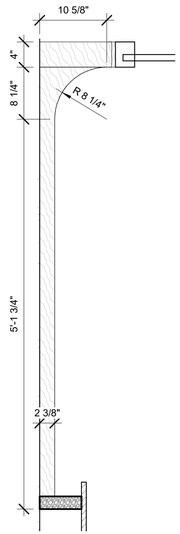
F2 ENLARGED PLAN DETAIL - NORTH WALL WOOD BAFFLES
3" = 1'-0"



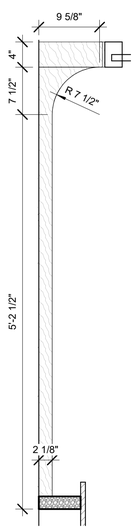
K2 PLAN DETAIL - NORTH WALL WOOD BAFFLES
1 1/2" = 1'-0"



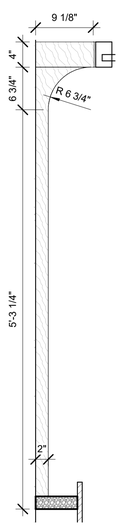
A6 ELEVATION - NORTH WALL WOOD BAFLLE - E
1" = 1'-0"



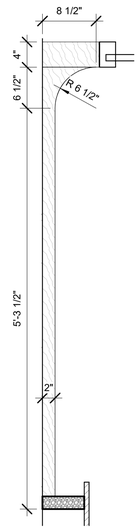
D6 ELEVATION - NORTH WALL WOOD BAFLLE - F
1" = 1'-0"



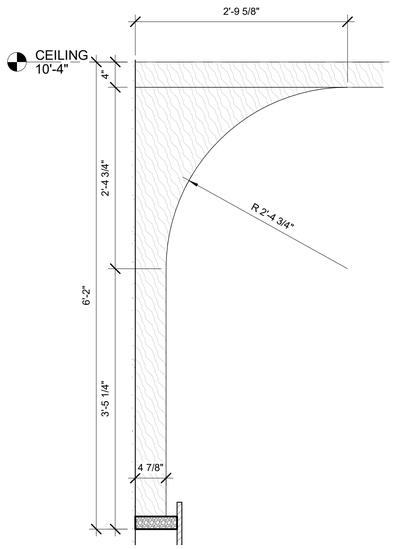
F6 ELEVATION - NORTH WALL WOOD BAFLLE - G
1" = 1'-0"



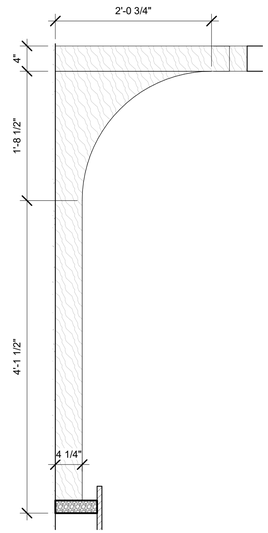
J6 ELEVATION - NORTH WALL WOOD BAFLLE - H
1" = 1'-0"



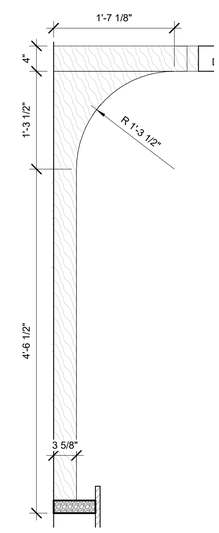
M6 ELEVATION - NORTH WALL WOOD BAFLLE - I
1" = 1'-0"



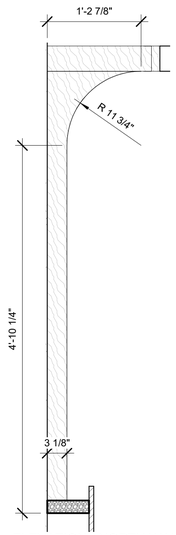
C9 ELEVATION - NORTH WALL WOOD BAFLLE - A
1" = 1'-0"



F9 ELEVATION - NORTH WALL WOOD BAFLLE - B
1" = 1'-0"



J9 ELEVATION - NORTH WALL WOOD BAFLLE - C
1" = 1'-0"



M9 ELEVATION - NORTH WALL WOOD BAFLLE - D
1" = 1'-0"

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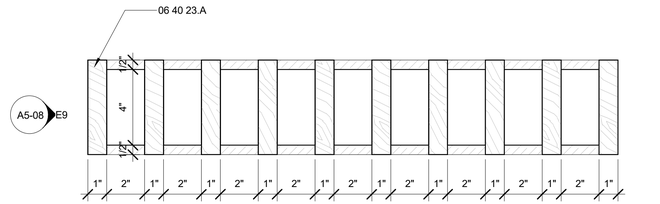
INTERIOR DETAILS/ELEVATIONS

A5-07

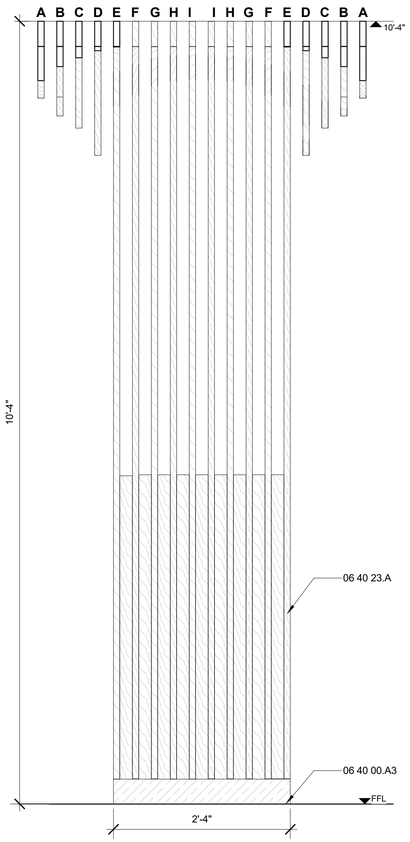
PERMIT SET



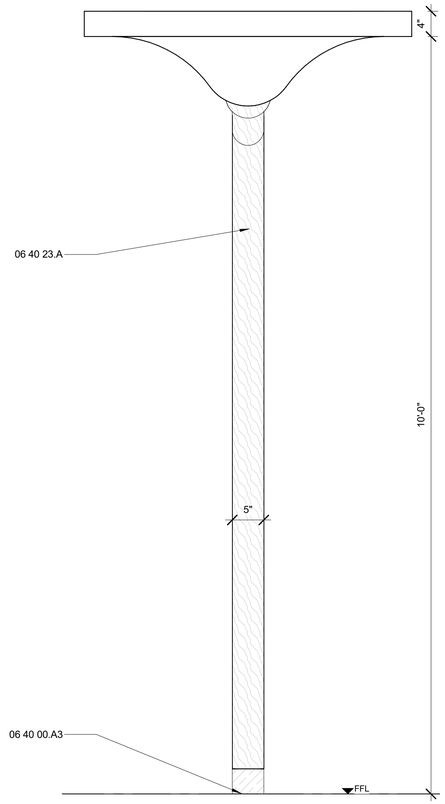
H3 COLUMN DETAIL PLAN VIEW
3" = 1'-0"

KEYNOTES

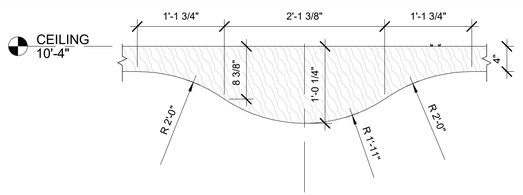
NUMBER	DESCRIPTION
06 40 00.A3	METAL LAMINATE (ML-1)
06 40 23.A	CUSTOM WOOD WALL AND CEILING ELEMENTS. MATCH WILSONART ACORN VELVET ELM (15602-31)

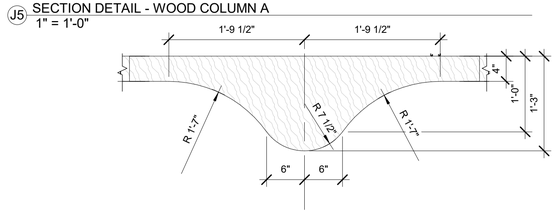


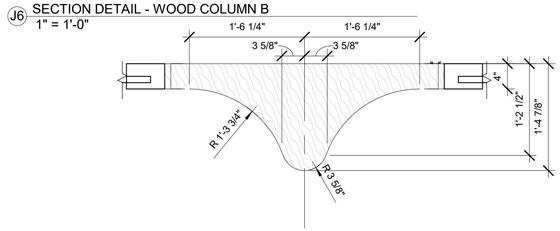
A9 COLUMN FRONT ELEVATION
1" = 1'-0"

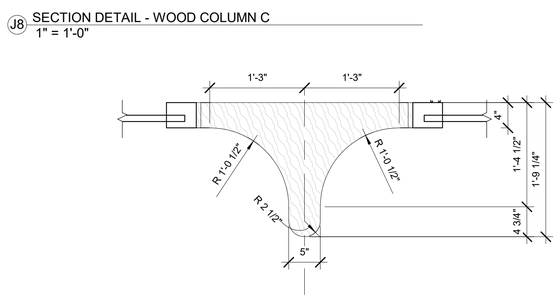


E9 COLUMN SIDE ELEVATION
1" = 1'-0"









J9 SECTION DETAIL - WOOD COLUMN D
1" = 1'-0"

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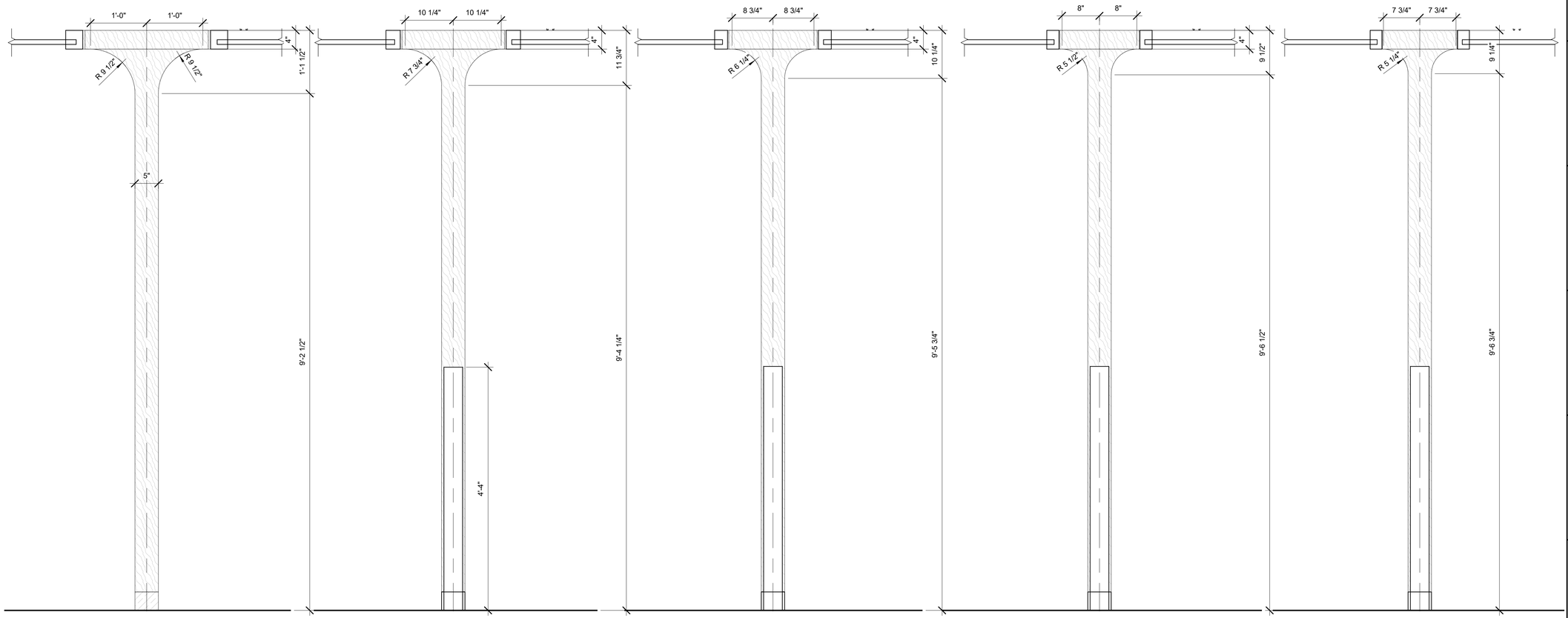
INTERIOR DETAILS/ELEVATIONS

A5-08

PERMIT SET



A9 SECTION DETAIL - WOOD COLUMN E
1" = 1'-0"

C9 SECTION DETAIL - WOOD COLUMN F
1" = 1'-0"

F9 SECTION DETAIL - WOOD COLUMN G
1" = 1'-0"

J9 SECTION DETAIL - WOOD COLUMN H
1" = 1'-0"

M9 SECTION DETAIL - WOOD COLUMN I
1" = 1'-0"

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INTERIOR DETAILS/ELEVATIONS

A5-09

PERMIT SET

MECHANICAL SPECIFICATIONS

1. GENERAL PROVISIONS:

A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.

B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.

C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.

D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.

F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.

G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.

2. OPERATION AND MAINTENANCE MANUALS:

A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.

B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.

C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.

3. MANUFACTURERS:

A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.

4. MOTORS:

A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.

5. TESTING, BALANCING, AND CLEANING:

A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.

B. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.

C. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

D. NATURAL GAS PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 50 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

E. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED INDEPENDENT BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

1) BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION OF PERFORMANCE OF ALL EQUIPMENT AND AUTOMATIC CONTROLS.

2) WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS, ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELED OR MAY BE AN ELECTRONIC PDF SUBMITTAL.

F. GREASE DUCT SHALL BE TESTED PRIOR TO USE OR CONCEALMENT OF ANY PORTION OF THE GREASE DUCT SYSTEM. DUCTS SHALL BE CONSIDERED TO BE CONCEALED WHEN INSTALLED IN SHAFTS OR COVERED BY DUCT WRAP INSULATION THAT PREVENTS THE DUCTWORK FROM BEING VISUALLY INSPECTED FROM ALL SIDES. THE PERMIT HOLDER SHALL BE RESPONSIBLE TO PROVIDE THE NECESSARY EQUIPMENT AND PERFORM THE GREASE DUCT LEAKAGE TEST PER NFPA 96 AND ALL LOCAL CODES.

G. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.

H. FIRE PROTECTION PIPING SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA.

6. PLUMBING:

A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.

B. ALL EXPOSED WASTE PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.

C. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.

D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.

E. CLEANOUTS:

1) VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL.
2) QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL.
3) CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL.
4) UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL.
5) WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.

F. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.

G. WATER HEATERS:

1) EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK.
2) BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACCUM RELIEF VALVE INSTALLED, ANSI Z21.22.
3) STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE.

H. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

1) INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
2) INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.
3) INSTALL ALL GREASE WASTE PIPING AT 1/4" PER FOOT FALL.

MECHANICAL SPECIFICATIONS (CONTINUED)

7. PIPING:

A. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING (ABOVEGROUND).

1) TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.
   a) WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200, ANSI B16.22, MSS SP-104.
   b) MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS, ASME B16.22, ASME B16.51, or ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO IAPMO PS-117 OR ASME B16.51.
2) PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
   a) PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PW-S", "NSF-61-S" OR OTHER NSF-APPROVED MARKING. ASTM F2023 FOR USE WITH CHLORINATED WATER. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
   b) PEX MECHANICAL, CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE. INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
3) VALVES
   a) TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE
   b) TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.
   c) TYPES:
      1. GATE VALVE: JOMAR T/S-3016 OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.
      2. GLOBE VALVE: JOMAR T-66 OR EQUAL.
      3. BALL VALVE: JOMAR JP100PNP OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE. UL842, CSA 3371-12 & 3371-42, FM, CALIFORNIA CODE AB1953, NSF61 ANNEX G APPROVED.
      4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110

B. LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS:

1) PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE WATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 8% LEAD CONTENT.
2) PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 372 AND SHALL HAVE A WEIGHTED AVERAGE LEAD CONTENT OF 0.25% OR LESS.

C. SANITARY SEWER, GREASE WASTE, AND VENTS. (UNDERGROUND, INTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 2965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.
2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.
5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

D. SANITARY SEWER, GREASE WASTE, AND VENTS. (ABOVE GROUND, INTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 2965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235. (NOT FOR USE IN A RETURN AIR PLENUM)
2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (NOT FOR USE IN A RETURN AIR PLENUM)
3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (WHERE APPROVED BY LOCAL JURISDICTIONS) (NOT FOR USE IN A RETURN AIR PLENUM)
4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.
5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

E. CONDENSATE DRAINS & INDIRECT WASTE (ABOVEGROUND).

1) DWV, WROUGHT COPPER, ANSI B-16.24 (CONDENSATE FROM COOLER/FREEZER).
2) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (CONDENSATE ON ROOF/FROM HVAC/MAU UNITS).
3) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (INDIRECT WASTE FROM FURNACES/ AHUS).
4) DWV, WROUGHT COPPER, ANSI B-16.24 (WATER HEATER T&P).

F. REFRIGERANT.

1) ASTM B 280, TYPE ACR, HARD-DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING.
2) WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS. BRAZED JOINTS, AWS A 5.8, CLASSIFICATION BAG-1 (SILVER).
3) TUBING SHALL BE FACTORY CLEANED, READY FOR INSTALLATION, AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS OF PIPE INTERIORS PRIOR TO SHIPPING.
4) SIZE AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

G. NATURAL GAS.

1) BLACK STEEL PIPE, SCHEDULE 40, ASTM A53.
   a) PIPE 3" AND SMALLER: 150 LB. MALLEABLE IRON, THREADED FITTINGS.
   b) PIPE 4" AND SMALLER: VIEGA MEGAPRESS G FOR WATER AND GAS. CSA LC4, TSSA/ASME B31 FOR USE WITH ASTM A53 SCHEDULE 40 BLACK IRON PIPE.
   c) PIPE 2-1/2" AND LARGER, WELDED.
   d) PLUG VALVE: ROCKWELL NORDSTROM FIGURE NO. 142 OR 143.
   e) BALL VALVE: JOMAR T-100NE. APPROVALS- UL842, FM, CSA, NSF 61-8, MSS SP-110

2) GAS PIPING LABELING:
   a) ALL ELEVATED PRESSURE GAS PIPING SHALL BE LABELED EVERY 40 FEET WITH SIGNS INDICATING 'ELEVATED PRESSURE'.

3) GAS PIPING PAINTING:
   a) ALL BLACK STEEL GAS PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE PRIMED AND PAINTED TO EITHER MATCH ADJACENT EXTERIOR WHERE LOCATED ON OR NEAR EXTERIOR WALL AND PAINTED SAFETY YELLOW WHERE LOCATED ON THE ROOF.

H. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELGEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.

I. SLEEVES

1) PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.

2) INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.

3) ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.

4) PROTECTION AGAINST CONTACT: METALLIC PIPING, EXCEPT FOR CAST IRON, DUCTILE IRON AND GALVANIZED STEEL SHALL NOT BE PLACED IN DIRECT CONTACT WITH STEEL FRAMING MEMBERS, CONCRETE, OR CINDER WALLS AND FLOORS OR OTHER MASONRY. METALLIC PIPING SHALL NOT BE PLACED IN DIRECT CONTACT WITH CORROSIVE SOIL. SHEATHING USED TO PREVENT DIRECT CONTACT SHALL HAVE A THICKNESS OF GREATER THAN .008" AND THE SHEATHING SHALL BE MADE OF PLASTIC. ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL OR FOOTING SHALL BE PROVIDED WITH A RELIEVING ARCH, OR A PIPE SLEEVE SHALL BE BUILT INTO THE FOUNDATION WALL. THE SLEEVE SHALL BE TWO SIZES GREATER THAN THE PIPE PASSING THOUGH THE WALL OR FOOTING.

5) PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.

J. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.

MECHANICAL SPECIFICATIONS (CONTINUED)

8. WATER HEATERS

A. GAS-FIRED, TANKLESS, DOMESTIC-WATER HEATERS

1) STANDARD: ANSI Z21.10.3/CSA 4.3 FOR GAS-FIRED, INSTANTANEOUS, DOMESTIC-WATER HEATERS FOR INDOOR APPLICATION.

2) CONSTRUCTION: COPPER PIPING OR TUBING COMPLYING WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE WATER, WITHOUT STORAGE CAPACITY.
   a) PRESSURE RATING: 150 PSIG.
   b) HEAT EXCHANGER: STAINLESS STEEL.
   c) INSULATION: COMPLY WITH ASHRAE/IES
   d) JACKET: METAL, WITH BAKED ENAMELED FINISH, OR PLASTIC.
   e) BURNER: FOR USE WITH TANKLESS, DOMESTIC-WATER HEATERS AND NATURAL-GAS FUEL.
   f) AUTOMATIC IGNITION: MANUFACTURER'S PROPRIETARY SYSTEM FOR AUTOMATIC, GAS IGNITION.
   g) TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT.

3) SUPPORT: BRACKET FOR WALL MOUNTING.

B. DOMESTIC-WATER EXPANSION TANKS:

1) DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND FACTORY-INSTALLED, BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.

2) CONSTRUCTION:
   a) TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME B1.20.1 PIPE THREAD.
   b) INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.
   c) AIR-CHARGING VALVE: FACTORY INSTALLED.

3) CAPACITY AND CHARACTERISTICS:
   a) WORKING-PRESSURE RATING: 150 PSIG .

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9/17/2021

ERIK B. KNUDSEN NUMBER PE-2004026504 — STATE OF MISSOURI — REGISTERED PROFESSIONAL ENGINEER

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MECHANICAL & PLUMBING SPECS

MP0.1

PHASE

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

BC ENGINEERS INCORPORATED
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MECHANICAL SPECIFICATIONS (CONTINUED)

9. INSULATION AND DUCT LINNG:

A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.

B. PIPE INSULATION - ABOVE GRADE:

1) THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu PER in/hr*sqft*F° OR LESS.

2) FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, ZESTON PREMOLDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3) FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.

4) FOR NON CIRCULATING SYSTEMS, THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.

5) FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED AS SPECIFIED BELOW.

6) INSULATION SCHEDULE:

a) DOMESTIC COLD WATER	1/2"
b) DOMESTIC HOT WATER	1" FOR PIPING UP TO 1-1/4"Ø, & 1-1/2" FOR PIPING 1-1/2"Ø AND LARGER
c) HOT WATER RECIRCULATING	1"
d) CONDENSATE DRAINS INSIDE BUILDING	1/2"
e) REFRIGERANT SUCTION	3/4"

C. PIPE INSULATION - BELOW GRADE:

1) THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu PER in/hr*sqft*F° OR LESS.

2) FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO K-FLEX INSUL-TUBE OR EQUAL RATED FOR UNDERGROUND INSTALLATION ABOVE THE WATER TABLE. COVER PIPING WITH A CLEAN FILL SUCH AS SAND (3"-5" LAYER) TO PROTECT INSULATION FROM COMPACTION.

3) PRE-INSULATED PIPE SYSTEMS WITH CLOSED CELL PEX-FOAM INSULATION AND COVERED BY A WATERPROOF CORRUGATED HDPE JACKET. UPONOR ECOFLEX OR EQUAL. ASTM F876, F877, CSA B137.5

4) INSULATION SCHEDULE.

a) DOMESTIC HOT WATER	1-1/2"
b) HOT WATER RECIRCULATING	1-1/2"

D. EQUIPMENT INSULATION:

1) FLEXIBLE FIBERGLASS: GLASS FIBER INSULATION, ASTM C 553, TYPE 1, CLASS B-4, SEMI-RIGID BOARD, WITH FACTORY LAMINATED KRAFT ALUMINUM FOIL (ALL SERVICE JACKET), VAPOR BARRIER, OWENS/CORNING PIPE AND TANK INSULATION.

E. DUCTWORK: ACOUSTICAL INSULATION.

1) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS.

a) DUCT LINING SCHEDULE:

(1) RECTANGULAR SUPPLY DUCT	1/2" ; THROUGHOUT THE FIRST 10 FEET OF DUCT.
(2) RETURN AIR DUCT	1/2" ; THROUGHOUT THE FIRST 10 FEET OF DUCT.

F. DUCTWORK: THERMAL INSULATION.

1) DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

a) DUCT COVERING SCHEDULE: MINIMUM R-6

(1) ROUND SUPPLY DUCT	2"
(2) RECTANGULAR SUPPLY DUCT	2"
(3) RETURN AIR DUCT	2"
(4) OUTDOOR AIR / MAKE-UP AIR DUCT	2"

2) DUCT COVERING (EXTERIOR SUPPLY AND RETURN)

a) EXTERIOR INSULATION: JOHN MANVILLE XSPECT ISOFOAM APF BOARD, 1-1/2" THICK R-9.9, UNIFORM CLOSED-CELL POLYISOCYANURATE FOAM CORE BONDED WITH A FOIL FACER. INSTALLED PER MANUFACTURER'S REQUIREMENTS. COVER ISOFOAM BOARD INSULATION WITH POLYGUARD ALUMAGUARD, COMPOSITE MEMBRANE MULTI-PLY EMBOSSED UV-RESISTANT ALUMINUM FOIL/POLYMER LAMINATE, ALL WEATHER FLEXIBLE WEATHER-PROOFING JACKET. MINIMUM R-9 RATING.

10. DUCTWORK:

A. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G 90 ZINC COATING IN ACCORDANCE WITH ASTM A 525; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.

B. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.

C. DUCTWORK, METAL GAUGES, REINFORCING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.

1) RECTANGULAR DUCT:

a) ELBOWS, UNLESS INDICATED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES.

b) RETURN AIR ACOUSTICAL ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.

c) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.

2) ROUND AND OVAL SPIRAL SEAM DUCT:

a) PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.

b) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.

c) AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LIEU OF SHOP-FABRICATED DUCT AND FITTINGS.

(1) ELBOWS: ONE PIECE CONSTRUCTION FOR 90 DEGREES AND 45 DEGREE ELBOW 14" AND SMALLER. PROVIDE MULTIPLE GORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.

(2) DIVIDED FLOW FITTINGS: 90 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.

d) ROUND LONGITUDINAL SEAM DUCT. USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS, UNLESS OTHERWISE INDICATED.

D. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES, ALLOWANCE FOR DUCT LINER HAS BEEN MADE WHERE APPLICABLE.

E. INSTALLATION OF METAL DUCTWORK:

1) GENERAL: ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 5% LEAKAGE), WITH NO OBJECTIONABLE NOISE, AND CAPABLE OF PERFORMING INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE STRAPS, BRACES, HANGERS AND ANCHORS IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" LATEST EDITION. DUCT HANGERS SHALL BE OF THE TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FLOOR.

2) AUXILIARY STEEL: PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.

3) ROUTING: LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW, BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

4) DO NOT ROUTE DUCTWORK THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES, UNLESS INDICATED OTHERWISE.

5) PENETRATIONS:

a) WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WALL.

b) WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL.

MECHANICAL SPECIFICATIONS (CONTINUED)

F. EQUIPMENT CONNECTIONS:

1) CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED, PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY. PROVIDE ACCESS DOORS AS REQUIRED.

G. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW.

1) UNCONDITIONED SPACES	CLASS B	CLASS A	CLASS C	CLASS B
2) CONDITIONED SPACES (PLENUM)	CLASS C	CLASS B	CLASS B	CLASS C
	SUPPLY ≤ 2" W.C.	SUPPLY > 2" W.C.	EXHAUST	RETURN

11. GREASE HOOD AND EXHAUST DUCT:

A. HOOD SHALL BE CONSTRUCTED OF 18 GAUGE STEEL OR 20 GAUGE STAINLESS STEEL IN ACCORDANCE WITH NFPA 96 AND LOCAL CODES.

1) GREASE FILTERS SHALL BE UL LISTED ALUMINUM GREASE EXTRACTORS.

2) PROVIDE A COMPLETE AUTOMATIC WET CHEMICAL FIRE EXTINGUISHING SYSTEM FOR THE HOOD AND DUCT AS REQUIRED BY NFPA AND LOCAL CODES. ALL COOKING EQUIPMENT UNDER THE HOOD SHALL BE INTERLOCKED WITH THE SYSTEM, TO SHUTDOWN IN AN ALARM CONDITION.

a) THE GREASE HOOD FIRE SUPPRESSION SYSTEM SHALL BE EQUAL TO AMEREX KP SERIES PRE-ENGINEERED , WET CHEMICAL, STORED-PRESSURE TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION SYSTEM. THE SYSTEM SHALL BE UL LISTED AND TESTED TO UL STANDARD 300.

b) THE SYSTEM SHALL UTILIZE AN AGENT EQUAL TO AMEREX KP LIQUID FIRE SUPPRESSANT, A POTASSIUM ACETATE BASED SOLUTION THAT SUPPRESSES COOKING GREASE FIRES, SHALL HAVE A PH OF 9 OR LESS, AND SHALL NOT HARM STAINLESS STEEL SURFACES.

c) THE SYSTEM SHALL BE PROVIDED WITH A MANUAL "DUAL ACTION" TYPE PULL STATION. PULL STATION SHALL BE LOCATED NOT LESS THAN 10 FEET AND A MAXIMUM OF 20 FEET FROM THE GREASE HOOD AND IN THE PATH OF EGRESS. THE MANUAL ACTUATION SHALL REQUIRE A MAXIMUM FORCE OF 40 POUNDS AND A MAXIMUM MOVEMENT OF 14 INCHES TO ACTUATE THE FIRE SUPPRESSION SYSTEM.

d) PROVIDE A GAS SHUT OFF VALVE FOR MOUNTING IN THE GAS PIPE THAT WILL SHUT OFF GAS FLOW TO EQUIPMENT UNDER THE HOOD IN AN ALARM CONDITION. PROVIDE AN ELECTRICAL SWITCH WHICH SHALL BE CAPABLE OF DE-ENERGIZING ALL ELECTRICAL DEVICES AND EQUIPMENT UNDER THE HOOD IN AN ALARM CONDITION.

B. GREASE DUCT SHALL BE CONSTRUCTED OF 16 GAUGE CARBON STEEL OR 18 GAUGE STAINLESS STEEL IN ACCORDANCE WITH NFPA 96 AND LOCAL CODES.

a) JOINTS, SEAMS AND PENETRATIONS OF GREASE DUCTS SHALL BE MADE WITH A CONTINUOUS LIQUID TIGHT WELD OR BRAZE MADE ON THE EXTERNAL SURFACE OF THE EXACT SYSTEM.

b) DUCT JOINTS SHALL BE BUTT JOINTS, WELDED FLANGE JOINTS WITH A MAXIMUM FLANGE DEPTH OF 1/2" OR OVERLAPPING DUCT JOINTS OF EITHER THE TELESCOPING OR BELL TYPE. OVERLAPPING JOINTS SHALL BE INSTALLED TO PREVENT LEDGES AND OBSTRUCTIONS FROM COLLECTING GREASE OR INTERFERING WITH GRAVITY DRAINAGE TO THE INTENDED COLLECTION POINT.

c) DUCT TO HOOD CONNECTIONS SHALL BE MADE WITH LISTED AND LABELED DUCT TO HOOD COLLAR CONNECTIONS THAT ARE INSTALLED PER THE TERMS OF THEIR APPROVAL AND PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.

d) DUCT TO EXHAUST FAN CONNECTIONS SHALL BE FLANGED AND GASKETED AT THE BASE OF THE FAN FOR VERTICAL DISCHARGE FANS, OR SHALL BE FLANGED, GASKETED AND BOLTED TO THE INLET OF THE FAN FOR SIDE INLET UTILITY FANS. GASKET SEALING MATERIALS SHALL BE RATED FOR A MINIMUM CONTINUOUS DUTY TEMPERATURE OF 1,500°F.

12. FLEXIBLE DUCT:

A. ATCO 9086 (R-6), OR EQUAL.

B. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.

C. MAXIMUM LENGTH OF 5'-0".

13. FLUES AND ACCESSORIES:

A. FLUE FOR GAS FIRED CONDENSING WATER HEATER OR FURNACE SHALL BE AS RECOMMENDED BY THE GAS APPLIANCE MANUFACTURER. FLUES SHALL BE SCHEDULE 40, PVC OR CPVC PIPE PER THE MANUFACTURERS INSTALLATION REQUIREMENTS.

B. PROVIDE MANUFACTURER'S STANDARD ACCESSORY ITEMS INCLUDING BIRD PROOF TOP, STORM COLLAR, ROOF THIMBLE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF THIMBLES THROUGH THE BUILDING ROOF SHALL BE SUITABLE FOR USE WITH THE ROOF PROVIDED.

14. EXHAUST FANS:

A. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY LUBRICATED, WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.

15. FURNACE AND CONDENSING UNIT:

A. CONDENSING FURNACES:

1) GAS FIRED FURNACE SHALL BE FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF SHEETMETAL CASING, SUPPLY FAN, GAS FIRED HEAT EXCHANGER, AND CONTROLS. CAPACITY SHALL BE AS SCHEDULED.

2) THE PRIMARY HEAT EXCHANGER SHALL BE ALUMINIZED STEEL CONSTRUCTION WITH A STAINLESS STEEL SECONDARY HEAT EXCHANGER.

3) THE FURNACE SHALL BE OF THE CONDENSING TYPE, UTILIZING A SEALED COMBUSTION CHAMBER. UNIT SHALL INCLUDE FINNED CAST IRON HEAT EXCHANGER, ALUMINIZED STEEL EXHAUST DECOUPLER SECTION, AND FINNED STAINLESS STEEL TUBE CONDENSER SECTION.

4) THE UNIT SHALL BE EQUIPPED WITH THE MANUFACTURER'S STANDARD CONTROLS INCLUDING 24 VOLT CONTROL TRANSFORMER, AUTOMATIC SPARK IGNITION, AUTOMATIC GAS VALVE TRAIN, HIGH TEMPERATURE LIMIT SWITCH, AND FAN TIMED DELAY RELAY.

5) RETURN AIR INLET ON UNIT SHALL BE PROVIDED WITH A 1" THROWAWAY TYPE FILTER AND SLIDE IN FRAME, MOUNTED ON THE UNIT.

6) FAN SHALL BE A DIRECT DRIVE MULTI-SPEED BLOWER, RESILIENTLY MOUNTED IN THE CASING. MOTOR SHALL BE PROVIDED WITH AUTOMATIC THERMAL OVERLOAD PROTECTION.

7) FURNACE SHALL BE AGA APPROVED.

B. CONDENSING UNIT SHALL BE FACTORY-ASSEMBLED AND TESTED AIR-COOLED CONDENSING UNIT, CONSISTING OF COMPRESSOR, CONDENSER COIL, FAN, MOTOR, REFRIGERANT RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.

1) COMPRESSOR: HERMETICALLY SEALED WITH BUILT-IN OVERLOADS AND VIBRATION ISOLATION. COMPRESSOR MOTOR, SHALL HAVE THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES, INTERNAL HIGH-PRESSURE PROTECTION, HIGH AND LOW PRESSURE CUTOUT SWITCHES, START CAPACITOR AND RELAY, 2-POLE CONTACTOR, CRANKCASE HEATER, AND TEMPERATURE ACTUATED SWITCH AND TIMER TO PREVENT COMPRESSOR RAPID CYCLE.

2) COIL SHALL BE COPPER TUBING WITH ALUMINUM FINS; COMPLETE WITH LIQUID ACCUMULATOR AND LIQUID SUBCOOLER. UNIT SHALL INCLUDE FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVE, LIQUID LINE SERVICE VALVE, AND REFRIGERANT PIPING EXTENDED TO EXTERIOR OF CASING.

16. CONTROL WIRING:

A. ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM, SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS OR SPECIFICATIONS.

B. INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN NEAT WORKMANLIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS.

1) INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.

2) INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 18 WIRE WITH 0.031 INCH HIGH TEMPERATURE 105 DEGREES F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL.

3) INSTALL ELECTRONIC CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.023 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER ALL.

4) INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.

5) ALL WIRING IN AREAS USED AS AIR PLENUMS SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW VOLTAGE WIRING MAY BE TEFLON COATED, ALUMINUM SHEATHED CABLE OR OTHER WIRE SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLENUMS, WHERE ACCEPTABLE BY LOCAL CODES.

6) ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL CODES.

MECHANICAL SPECIFICATIONS (CONTINUED)

G. THERMOSTATIC CONTROLS TO HAVE A 5°F DEADBAND AND SETPOINT OVERLAP RESTRICTIONS.

1) TEMPERATURE CONTROLS SETBACK TO BE 55°F (HEAT) AND 85° (COOL), 2-HOUR OCCUPANT OVERRIDE, 10-HOUR BACKUP.

17. REMODELING WORK:

A. DEMOLITION: DISCONNECT, DEMOLISH, AND REMOVE ABANDONED MECHANICAL MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN.

B. EQUIPMENT TO BE SALVAGED:

1) DISCONNECT AND REMOVE, EXISTING MECHANICAL EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE OWNER FOR STORAGE.

2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCATED SHALL BE CAREFULLY REMOVED, AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL ITEMS SHALL BE RESTORED TO "LIKE NEW" CONDITION WITH RUST OR CORROSION REMOVED, SURFACE PAINT TOUCHED UP OR REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION, AND THOROUGHLY CLEANED AND INSPECTED. ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF CONSTRUCTION OR DEMOLITION ACTIVITY SHALL BE REPLACED WITH NEW MATERIAL EQUIVALENT IN EVERY RESPECT.

C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.

D. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPLETE.

E. LOCATE, IDENTIFY, AND PROTECT MECHANICAL SERVICES PASSING THROUGH REMODELING AREA AND SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE REMODELING LIMITS. WHERE MECHANICAL SERVICES ARE LOCATED IN A WALL, ETC. TO BE DEMOLISHED, REROUTE PIPING TO NEW OR EXISTING CONSTRUCTION TO MAINTAIN CONTINUITY OF THE SYSTEM. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

F. REMOVE ALL PIPING TO BE DEMOLISHED BACK TO PIPE MAIN OR EDGE OF PROJECT AREA, AND CAP PIPE.

G. PIPING AND DUCTS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. PIPING AND DUCTS TO REMAIN SHALL BE APPROVED BY THE ARCHITECT. REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS. DRAIN AND CAP PIPING AND DUCTS ALLOWED TO REMAIN ABOVE CEILING OR BELOW FLOOR, CONCEALED FROM VIEW, EXCEPT AS OTHERWISE NOTED. PATCH FLOOR TO MATCH EXISTING.

H. PIPE AND DUCT SHALL BE CONCEALED WITH NEW OR EXISTING CONSTRUCTION WHENEVER POSSIBLE, UNLESS INDICATED OTHERWISE.

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9/17/2021

Revision	Date	No.

Project Number: 2002
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MECHANICAL & PLUMBING SPECS

MP0.2

PHASE

PLUMBING GENERAL NOTES:

1. INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.
2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.
4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
5. SAWCUT EXISTING FLOOR AS REQUIRED FOR INSTALLATION OF UNDERFLOOR PIPING. PATCH FLOOR TO MATCH EXISTING.
6. VERIFY IF FLOOR IS SLAB ON GRADE OR STRUCTURAL SLAB. IF SLAB ON GRADE, SAWCUT AND PATCH TO MATCH EXISTING FLOOR AS REQUIRED. IF STRUCTURAL SLAB, LOCATE PIPING IN CEILING VOID BELOW. ALL PENETRATIONS OF FLOOR SHALL BE IN ACCORDANCE WITH BUILDING REQUIREMENTS. ALL SAWCUTTING AND CORE DRILLING SHALL BE PERFORMED AS REQUIRED BY LANDLORD.
7. PROVIDE ¾" CONDENSATE DRAIN PIPE FOR EACH AIR HANDLING UNIT AND ¾" CONDENSATE AND ¾" FLUE CONDENSATE FOR EACH FURNACE AND ROUTE TO FLOOR DRAIN/SINK AND DISCHARGE WITH AIR GAP.
8. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
9. CONTRACTOR TO TEST WATER PRESSURE ON SITE AND PROVIDE PRESSURE REDUCING VALVE ON WATER SERVICE IF PRESSURE IS OVER 80 PSI.
10. FIRE-SEAL ALL PENETRATIONS THRU FIRE-RATED WALLS OR FLOORS.

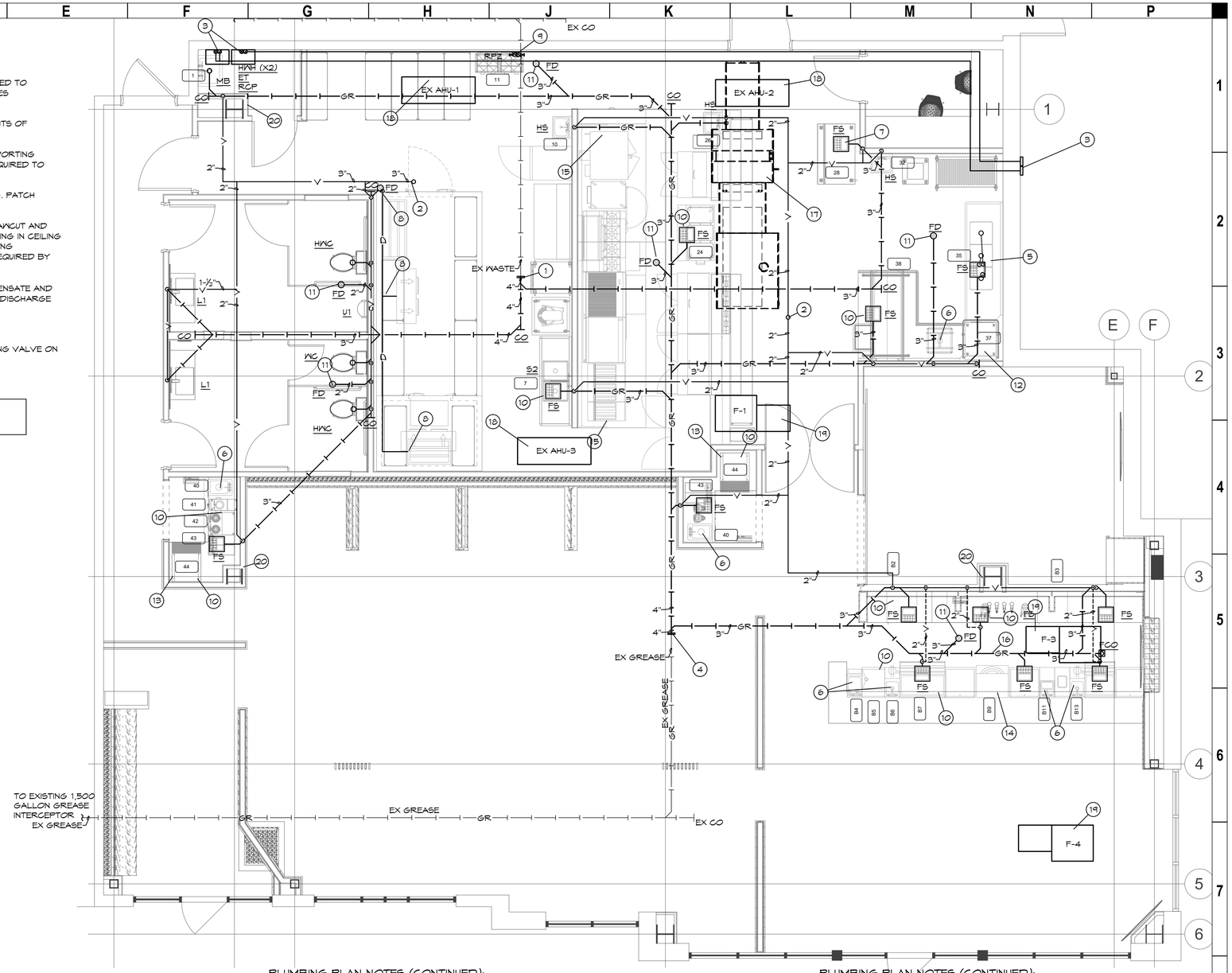
COORDINATE WITH LANDLORD AND TENANT(S) ABOVE TO EXTEND EXISTING WASTE PIPING LOCATED ABOVE AS REQUIRED TO INSTALL CLEANOUTS IN ACCESSIBLE LOCATIONS WITH CEILINGS.

PLUMBING SYMBOLS

- SOIL AND WASTE PIPING BELOW FLOOR/GRADE
- SOIL AND WASTE PIPING ABOVE FLOOR/GRADE
- GREASE WASTE PIPING TO GREASE INTERCEPTOR
- SANITARY VENT PIPING ABOVE GRADE
- SANITARY VENT PIPING BELOW GRADE
- DOMESTIC COLD WATER PIPING
- DOMESTIC COLD WATER PIPING BELOW FLOOR
- DOMESTIC HOT WATER PIPING
- DOMESTIC HOT WATER PIPING BELOW FLOOR
- DOMESTIC HOT WATER RECIRCULATION PIPING
- GAS PIPING
- EQUIPMENT DRAIN LINE
- PIPING TURNING DOWN
- PIPING TURNING UP
- TEE TOP CONNECTION
- UNION
- BACKFLOW PREVENTER
- FD — FLOOR DRAIN
- FCO — FLOOR CLEAN OUT
- WCO — WALL CLEAN OUT
- VALVE
- BALANCING VALVE
- SOLENOID VALVE
- PRESSURE REGULATOR
- CHECK VALVE
- CONNECT TO EXISTING
- I.E. — INVERT ELEVATION OF PIPE
- MATCH MARKS ON PLUMBING RISER DIAGRAM

PLUMBING PLAN NOTES:

1. CONNECT 4" WASTE TO EXISTING 4" SANITARY SEWER AS REQUIRED. VERIFY EXACT LOCATION AND ELEVATION PRIOR TO INSTALLATION OF ANY PIPING.
2. CONNECT VENT TO EXISTING 3" VENT PIPE AS REQUIRED. FIELD VERIFY EXACT LOCATION PRIOR TO INSTALLATION OF ANY PIPING.
3. 3" PVC FLUE & 3" PVC COMBUSTION AIR PIPING FOR WATER HEATER THRU WALL TO MANUFACTURER'S CONCENTRIC TERMINATION KIT AS REQUIRED. VERIFY 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
4. CONNECT 4" GREASE WASTE TO EXISTING 4" GREASE WASTE AS REQUIRED. VERIFY EXACT LOCATION AND ELEVATION PRIOR TO INSTALLATION OF ANY PIPING.
5. ROUTE (3) SEPARATE 1-½" COPPER DRAINS FROM 3-COMPARTMENT SINK TO FLOOR SINK WITH AIR GAPS. LOCATE FLOOR SINK IN AN ACCESSIBLE LOCATION.
6. CONNECT 1-½" DRAIN TO SINK AND ROUTE TO FLOOR SINK WITH AIR GAP. LOCATE FLOOR SINK IN AN ACCESSIBLE LOCATION.
7. ROUTE DRAIN FROM ICE MACHINE TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS. ROUTE CONDENSATE SEPARATELY TO FLOOR SINK.
8. PROVIDE 1" COPPER CONDENSATE DRAIN WITH AIR GAP FROM WALK-IN COOLER/FREEZER COIL TO MOP BASIN AS REQUIRED BY WALK IN COOLER/FREEZER. MANUFACTURER. COORDINATE WITH E.C. FOR HEAT TRACING.



PLUMBING PLAN NOTES (CONTINUED):

9. ROUTE DRAIN FROM RPZ BFP TO FLOOR SINK/DRAIN WITH AIR GAP.
10. PROVIDE DRAIN LINE FROM EQUIPMENT TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS. VERIFY EXACT LOCATION OF FS WITH OWNER.
11. PROVIDE TRAP SEAL ON FLOOR DRAINS SUSCEPTIBLE TO DRYING OUT.
12. ROUTE 1-½" INDIRECT DRAIN FROM DISH MACHINE TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS.
13. PROVIDE DRAIN LINE FROM SODA MACHINE TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS. ROUTE DRAIN LINE AT BACK OF CABINET TO MAXIMIZE USEABLE CABINET SPACE.
14. ROUTE 1-½" INDIRECT DRAIN FROM GLASS WASHER TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS.
15. NO COMBUSTIBLE MATERIALS WITHIN 18" OF TYPE I HOOD.
16. CORE DRILL THROUGH EXISTING FOUNDATION AS REQUIRED.
17. CONNECT CONDENSATE TO MAKE-UP AIR UNIT ON ROOF AS REQUIRED AND AS DETAILED.
18. EXISTING AIR HANDLER TO BE RELOCATED. ROUTE CONDENSATE TO NEAREST FLOOR SINK/MOP BASIN WITH AIR GAP AS REQUIRED.
19. CONNECT CONDENSATE TO FURNACE AND FURNACE FLUE AS REQUIRED AND AS DETAILED. ROUTE CONDENSATE TO NEAREST FLOOR SINK WITH AIR GAP AS REQUIRED.

PLUMBING PLAN NOTES (CONTINUED):

20. COORDINATE PIPE ROUTING WITH COLUMN/FOOTING AS REQUIRED.

NORTH

PLUMBING WASTE & VENT FLOOR PLAN

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

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9/17/2021
STATE OF MISSOURI
ERIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

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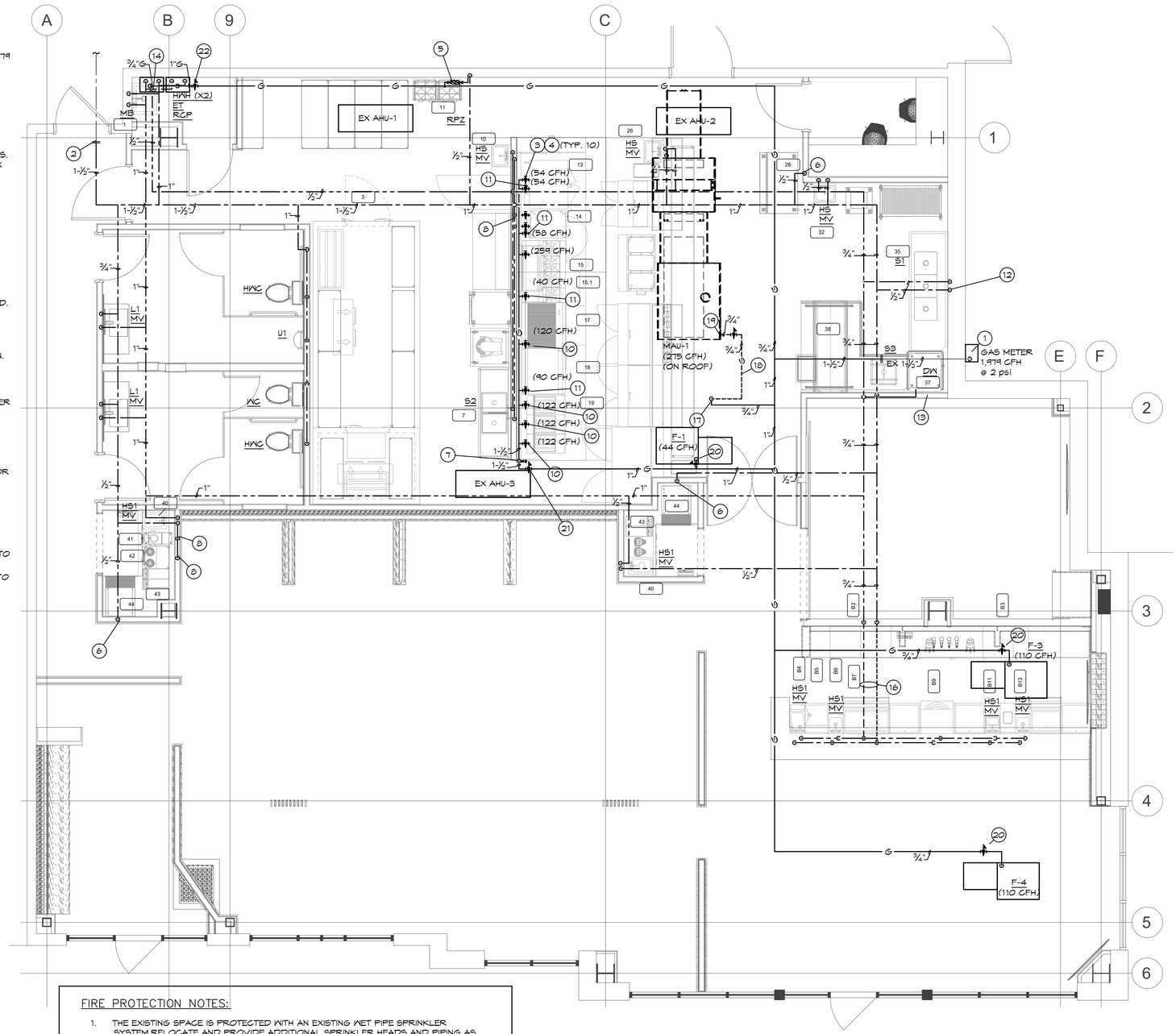
PLUMBING WASTE & VENT FLOOR PLAN

P1.0

PHASE

PLUMBING PLAN NOTES:

1. COORDINATE WITH GAS COMPANY FOR INSTALLATION OF NEW METER WITH CAPACITY FOR 1,979 CFH @ 2 PSI.
2. CONNECT 1-½" CW TO EXISTING 1-½" DOMESTIC CW AS REQUIRED. VERIFY EXACT LOCATION PRIOR TO INSTALLATION OF ANY PIPING.
3. CONNECT GAS PIPING TO EQUIPMENT AS DETAILED AND PER THE MANUFACTURERS INSTRUCTIONS.
4. PROVIDE GAS MANIFOLD WITH SHUTOFF VALVE AT 24" AFF. ALL APPLIANCE CONNECTIONS SHALL BE MADE WITH UL LISTED FLEXIBLE APPLIANCE CONNECTOR. FLEX CONNECTORS SHALL BE PROVIDED BY EQUIPMENT SUPPLIER. CONTRACTOR SHALL PROVIDE SAFETY LOCK AND CHAIN AT ALL GAS APPLIANCES ON WHEELS. PROVIDE PIPING REDUCERS AND INCREASERS AS REQUIRED TO MATE HARD PIPING WITH FLEX CONNECTORS.
5. PROVIDE ½" CW TO SODA SYSTEM. PROVIDE RPZ BACKFLOW PREVENTOR AS APPROVED BY WATER DEPARTMENT IN ACCESSIBLE LOCATION (24" AFF) ADJACENT TO BAG-IN-BOX. NO COPPER PIPE DOWNSTREAM OF BFP.
6. PROVIDE ½" CW WITH SHUT-OFF VALVE TO ICE MAKER WITH BFP-1 AS REQUIRED BY LOCAL JURISDICTION.
7. ROUTE 1-½" GAS PIPE TO COOKING LINE. INSTALL GAS SOLENOID SHUT-OFF VALVE (FIRE SUPPRESSION SYSTEM) ON WALL BELOW CEILING IN AN ACCESSIBLE LOCATION AS REQUIRED. ROUTE 1-½" MANIFOLD PIPE BEHIND EQUIPMENT AT 24" AFF.
8. CONNECT ½" CW WITH SHUTOFF VALVE AND BACKFLOW PREVENTOR TO EQUIPMENT AS REQUIRED BY THE KITCHEN EQUIPMENT SUPPLIER.
9. CONNECT ¾" GAS PIPE TO WATER HEATER AS REQUIRED BY MANUFACTURER AND AS DETAILED.
10. 1" GAS CONNECTION TO APPLIANCE.
11. ¾" GAS CONNECTION TO APPLIANCE.
12. ROUTE PIPING ON INTERIOR SIDE OF INSULATION/IN FURR-OUT WALL FOR FREEZE PROTECTION.
13. ½" HW TO D.W. CONNECT W/ VACUUM BREAKER & HAMMER ARRESTOR AS REQUIRED BY MANUFACTURER.
14. CONNECT HOT WATER RECIRC. PIPING BACK TO WATER HEATER AS REQUIRED. REFER TO RISER DIAGRAM FOR DETAILS.
15. 1-¼" GAS CONNECTION TO APPLIANCE.
16. ROUTE CW AND HW UNDER SLAB.
17. ROUTE 1-½" GAS PIPE UP THROUGH CHASE TO ROOF AS REQUIRED. SEAL PENETRATION WEATHERTIGHT. ALL CONCEALED JOINTS ARE TO BE WELDED OR USE FITTINGS APPROVED FOR CONCEALED USE.
18. GAS PIPING ON ROOF. SUPPORT AS REQUIRED AND AS DETAILED.
19. CONNECT GAS PIPING TO MAU WITH REGULATOR AS REQUIRED BY MANUFACTURER AND AS DETAILED.
20. CONNECT GAS PIPING TO EQUIPMENT WITH VENTLESS REGULATOR AS REQUIRED AND AS DETAILED.
21. PROVIDE AND INSTALL VENTLESS REGULATOR TO DROP 1,041 CFH FROM 2 PSI TO 7" W.C. 1" TO REGULATOR, 1-½" FROM REGULATOR.
22. PROVIDE AND INSTALL VENTLESS REGULATOR TO DROP 348 CFH FROM 2 PSI TO 7" W.C. ¾" TO REGULATOR, 1" FROM REGULATOR.



FIRE PROTECTION NOTES:

1. THE EXISTING SPACE IS PROTECTED WITH AN EXISTING WET PIPE SPRINKLER SYSTEM.RELOCATE AND PROVIDE ADDITIONAL SPRINKLER HEADS AND PIPING AS REQUIRED FOR THE NEW CONSTRUCTION. SPRINKLER HEADS IN FINISHED CEILINGS SHALL BE SEMI-RECESSED PENDENT TYPE (VERIFY FINISH). SPRINKLER HEADS IN ROOMS WITHOUT CEILINGS SHALL BE UPRIGHT BRASS TYPE HEADS.
2. SPRINKLER WORK SHALL BE PERFORMED BY A LICENSED SPRINKLER CONTRACTOR PRE-APPROVED BY THE OWNER/LANDLORD.
3. REFER TO THE ARCHITECTURAL DRAWINGS FOR NEW WALL CONSTRUCTION.
4. SPRINKLER PIPING SHALL MATCH EXISTING AND COMPLY WITH NFPA 13 WITH ORDINARY HAZARD FOR KITCHEN AND LIGHT HAZARD FOR DINING AREA.
5. SPRINKLER SYSTEM (SHOP DRAWINGS) SHALL BE APPROVED BY THE LOCAL FIRE AUTHORITY AND OWNERS/LANDLORD'S INSURANCE CARRIER PRIOR TO START OF WORK. ARCHITECT SHALL REVIEW ALL FIRE SPRINKLER LOCATIONS DURING SUBMITTAL.

NORTH

PLUMBING WATER & GAS FLOOR PLAN

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

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

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9/17/2021
STATE OF MISSOURI
ERIK B. KNUDSEN
NUMBER PE-2004026504
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Revision	Date	No.

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Date: 09/15/2021

PLUMBING WATER & GAS FLOOR PLAN

P1.1

PHASE

PLUMBING FIXTURE SCHEDULE (OR EQUAL):

WC — WATER CLOSET: TOTO, #CST744E(R)(G)N, "DRAKE CLOSE COUPLED TOILET",1.28 GALLON FLUSH, ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER.

HWC — HANDICAP WATER CLOSET: TOTO, #CST744EL(R,N, "DRAKE CLOSE COUPLED TOILET", 1.28 GALLON FLUSH, 16-1/2" HIGH ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER. HANDLE ON WIDE SIDE OF FIXTURE.

UI — URINAL, WALL HUNG: TOTO, #UT447.01, VITREOUS CHINA, WASHOUT, WALL HUNG URINAL WITH 3/4" TOP SPUD, #TEU1GNC-12 SENSOR OPERATED FLUSH VALVE, BATTERY POWERED, FLOOR MOUNTED FIXTURE SUPPORT. SET RIM HEIGHT PER ARCHITECTURAL DRAWINGS.

L1 — HANDICAP LAVATORY, WALL HUNG: HOMARY, #LO20810, VITREOUS CHINA, 39"x20" RECTANGULAR BASIN, SLOAN "BASYS" EFX-350 SENSOR BATTERY POWERED FAUCET, OFFSET GRID DRAIN WITH 1-1/4" TAILPIECE, CHROME PLATED P-TRAP(MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS,INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROVRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.

MV — MIXING VALVE: WATTS, #LFUSG-B, THERMOSTATIC CONTROLLED MIXING VALVE, LEAD FREE BRONZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL RESISTANT), COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH BRASS SHUTTLE, STAINLESSSTEEL SPRINGS, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS. (SET TO 110°F). ASSE 1070 LISTED.

RPZ — REDUCED ZONE PRESSURE BACKFLOW PREVENTOR: WATTS #LF009, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS WITH AN INTERMEDIATE RELIEF VALVE, AND BALL VALVE TEST COCKS.

FD — FLOOR DRAIN: JR SMITH, #2005-A-P050, CAST IRON FLOOR DRAIN WITH ADJUSTABLE TOP, 6" NIKALOY STRAINER, AND TRAP PRIMER (TS) CONNECTION.

FS — FLOOR SINK: JR SMITH, #3161, CAST IRON RECEPTOR, A.R.E. INTERIOR, 12"x 12" NICKEL BRONZE STRAINER, SEDIMENT BUCKET.

TS — TRAP SEAL: SURE SEAL PRE-ASSEMBLED INLINE FLOOR DRAIN TRAP SEALER. FLOOR RATING ASSE – 1072 AF-GN.

HWH — HOT WATER HEATER: RINNAI, #CU199I, GAS FIRED, 98% THERMAL EFFICIENCY, INSTANTANEOUS HEATER, 199 MBTUH INPUT, 5 GPM AT 115 DEGREES F RISE, WITH INTERNAL RECIRCULATION PUMP. PROVIDE WITH REMOTE CONTROLLER, EASY VALVE SET PRESSURE RELIEF VALVE, CONDENSATE DRAIN HOSE, CONDENSATE NEUTRALIZER, VENT TERMINATORS. SET AT 140°F.

ET — HOT WATER EXPANSION TANK: AMTROL, #ST-5, 2 GALLON EXPANSION TANK WITH DIAPHRAGM.

RCP — HOT WATER RECIRCULATING PUMP: BELL & GOSSETT, #SERIES NBF-10, 3 GPM @ 7 FT. HEAD, 1/12 HP, 120 VOLT, WITH HONEYWELL #L6006C1018 AQUASTAT & TACO #265-3 7-DAY DIGITAL TIMER, 135°-140°F, ½"Ø PIPE.

PLUMBING FIXTURE SCHEDULE (OR EQUAL):

HS — HAND SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER. THIS CONTRACTOR TO PROVIDE AND INSTALL P-TRAP WITH CLEANOUT, WASTE ARM TO WALL, AND WALL FLANGE. PROVIDE CHROME PLATED ANGLE STOPS AND RISERS.

HS1 — HAND SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER. THIS CONTRACTOR TO PROVIDE AND INSTALL P-TRAP WITH CLEANOUT, WASTE ARM TO WALL, AND WALL FLANGE. PROVIDE CHROME PLATED ANGLE STOPS AND RISERS.

HS2 — HAND SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER. THIS CONTRACTOR TO PROVIDE AND INSTALL P-TRAP WITH CLEANOUT, WASTE ARM TO WALL, AND WALL FLANGE. PROVIDE CHROME PLATED ANGLE STOPS AND RISERS.

S1 — 3-COMPARTMENT SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER, INSTALLED BY GENERAL CONTRACTOR. PROVIDE (3) 1-½" COPPER TAILPIECES, CHROME PLATED ANGLE STOPS AND RISERS.

S2 — 2-COMPARTMENT SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER, INSTALLED BY GENERAL CONTRACTOR. PROVIDE (2) 1-½" COPPER TAILPIECES, CHROME PLATED ANGLE STOPS AND RISERS.

S3 — PRE RINSE SINK: FURNISHED BY KITCHEN EQUIPMENT SUPPLIER, INSTALLED BY GENERAL CONTRACTOR. PROVIDE 1-½" TAILPIECE, WASTE PIPING, CHROME PLATED ANGLE STOPS AND RISERS.

BFP — BACKFLOW PREVENTOR: WATTS #SD-3, STAINLESS STEEL DUAL CHECK VALVE FOR CARBONATED BEVERAGE MACHINES. (ASSE 1022 LISTED)

BFP-1 — BACKFLOW PREVENTOR: WATTS #LF007, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS, AND BALL VALVE TEST COCKS.

DW — DISHWASHER: LOW TEMPERATURE CHEMICAL DISHWASHER, FURNISHED BY OWNER, INSTALLED BY PLUMBING CONTRACTOR. CONNECT HOT WATER, SHUT-OFF VALVE AND DRAIN PIPING PER MANUFACTURERS REQUIREMENTS.

WHA — WATER HAMMER ARRESTOR: JR SMITH 'HYDROTROL' #5000 LEAD-FREE WATER HAMMER ARRESTOR, SIZED AS PER MANUFACTURER'S RECOMMENDATIONS.

PLUMBING FIXTURE BRANCH PIPING SCHEDULE

FIXTURE	WASTE	VENT	CW	HW
WATER CLOSET (TANK TYPE)	4"	2"	1/2"	" "
URINAL	2"	1-1/2"	3/4"	" "
LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"
SINK	1-1/2"	1-1/2"	1/2"	1/2"
FLOOR SINK	3"	2"	" "	" "
FLOOR DRAIN	2"/3"	2"	" "	" "
MOP BASIN	2"	2"	1/2"	1/2"

NOTE: INDIVIDUAL VENTS FOR FIXTURES ON PLANS AND RISER DIAGRAMS HAVE BEEN INCREASED WHERE HORIZONTAL VENT LENGTH IS IN EXCESS OF THE MAXIMUM DISTANCE INDICATED BY THE CODE.

PIPE HANGER SCHEDULE

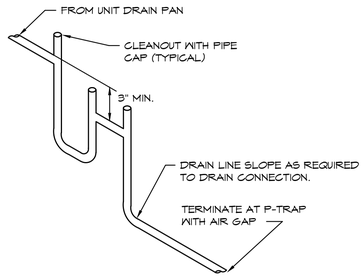
PIPE MATERIAL	MAXIMUM HANGER SPACING	HANGER ROD DIAMETER
ABS (All sizes)	4'	3/8"
PVC (All Sizes)	4'	3/8"
CPVC, 1 inch and smaller	3'	1/2"
CPVC, 1-1/4 inches and larger	4'	1/2"
Cast Iron (All Sizes)	5'	5/8"
Cast Iron (All Sizes) with 10 foot length of pipe	10'	5/8"
Copper Tube, 1-1/4 inches and smaller	6'	1/2"
Copper Tube, 1-1/2 inches and larger	10'	1/2"
Steel, 3 inches and smaller	12'	1/2"
Steel, 4 inches and larger	12'	5/8"
Pex, 1" and below without support channel	32"	3/8"
Pex, 1-1/4" and above without support channel	48"	3/8"
Pex ¾" and below with support channel	6'	3/8"
Pex 1" and above with support channel	8'	3/8"

FOODSERVICE EQUIPMENT SCHEDULE

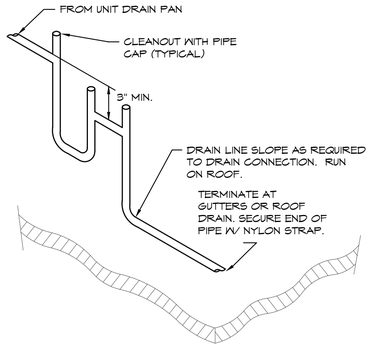
ITEM	DESCRIPTION
1	MOP SINK CABINET
3	WALK IN COOLER/ FREEZER
7	TWO COMPARTMENT PREP SINK
10	HAND SINK
11	BAG-N-BOX - NOT BY K.E.C.
13	CONVECTION OVEN - DOUBLE
14	CONVECTION STEAMER
15	8 OPEN BURNERS, 1 STANDARD OVEN, 1 CABINET
15.1	SALAMANDER
17	COUNTERTOP CHAR-GRILL GAS 36"
18	COUNTERTOP GRIDDLE 36"
19	FRYERS
24	ELECTRIC PORTABLE HOT FOOD UNITS W/ SEALED WELLS & DRAINS
26	HAND SINK
28	ICE MACHINE - NOT BY K.E.C.
30	DISH CABINET
32	HAND SINK
35	CLEAN STRAIGHT DISHTABLE
37	DISHWASHER-NOT BY K.E.C.
38	DIRTY DISHTABLE WITH LANDING & UNDERCOUNTER DUMP SINK
40	DROP IN SINK
41	TEA BREWER - NOT BY K.E.C
42	COFFEE BREWER - NOT BY K.E.C.
43	BEVERAGE DISPENSERS - NOT BY K.E.C
44	SODA & ICE DISPENSER - NOT BY K.E.C

BAR EQUIPMENT

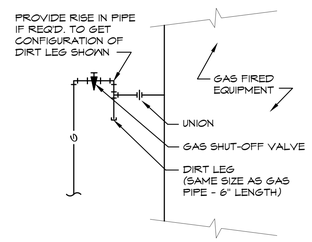
ITEM	DESCRIPTION
B4	HAND SINK
B5	DRAINBOARD
B6	BLENDER STATION W/ SINK
B7	ICE BIN W/ COLD PLATE
B9	GLASSWASHER - NOT BY KEC
B11	CHEMICAL STORAGE CABINET W/ SINK
B13	BLENDER STATION W/ SINK



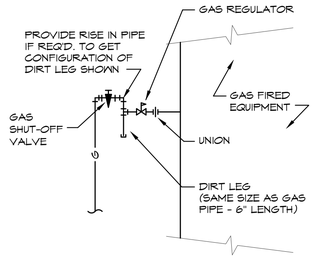
CONDENSATE DRAIN DETAIL
SCALE: NONE



CONDENSATE DRAIN DETAIL
SCALE: NONE

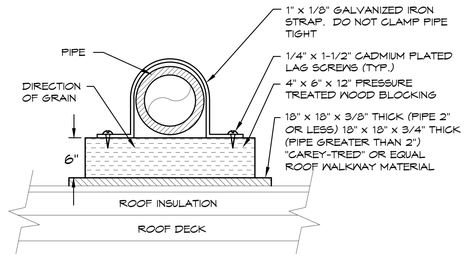


GAS CONNECTION DETAIL
SCALE: NONE



GAS PRESSURE REGULATORS FOR ROOFTOP UNITS (RTU) AND MAKE-UP AIR UNITS (MAU) SHALL BE SENSUS #143-80-2, 2 PSI INLET / 7" WC OUTLET PRESSURE WITH THE ORIFICE & SPRING SIZE AS RECOMMENDED BY THE MANUFACTURER.

GAS CONNECTION DETAIL
SCALE: NONE
FOR ROOFTOP UNITS, MAKE-UP AIR UNITS, ETC. WITH 2 PSI GAS PRESSURE



ROOF PIPE SUPPORT DETAIL
SCALE: NONE

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9/17/2021
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ERIK B. KNUDSEN
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PLUMBING SCHEDULES & DETAILS

P2.0

PHASE

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

BC ENGINEERS INCORPORATED
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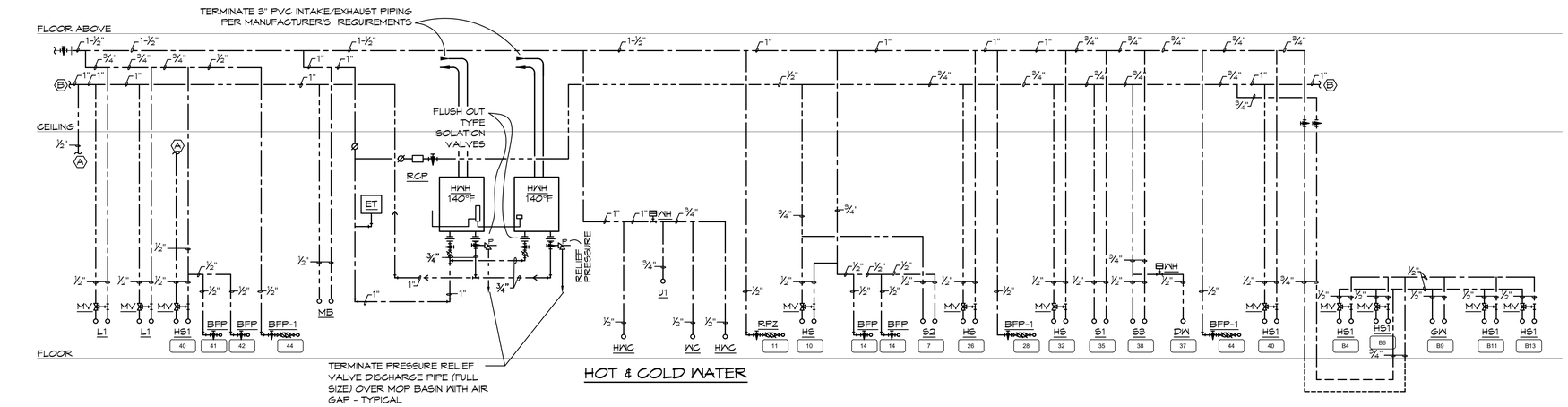

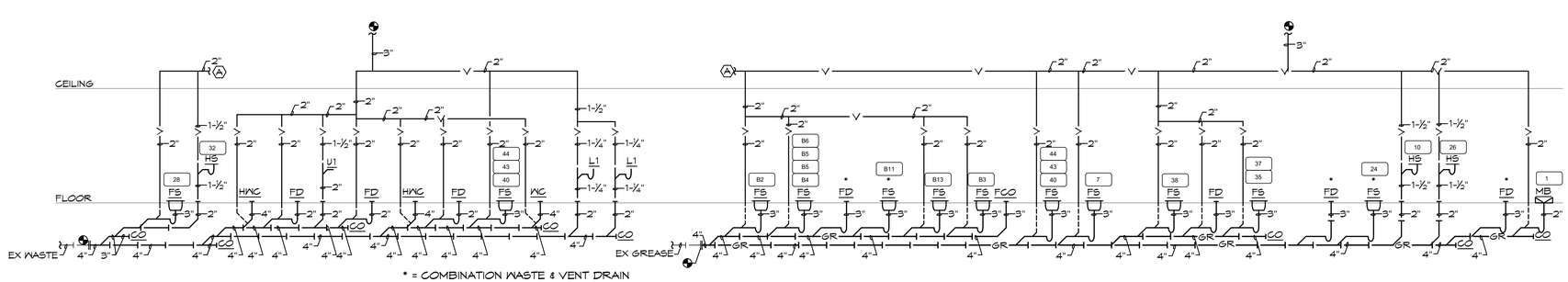

PLUMBING RISER DIAGRAMS

SCALE: NONE

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PLUMBING RISERS

P2.1

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DRAWN BY: MA/SM
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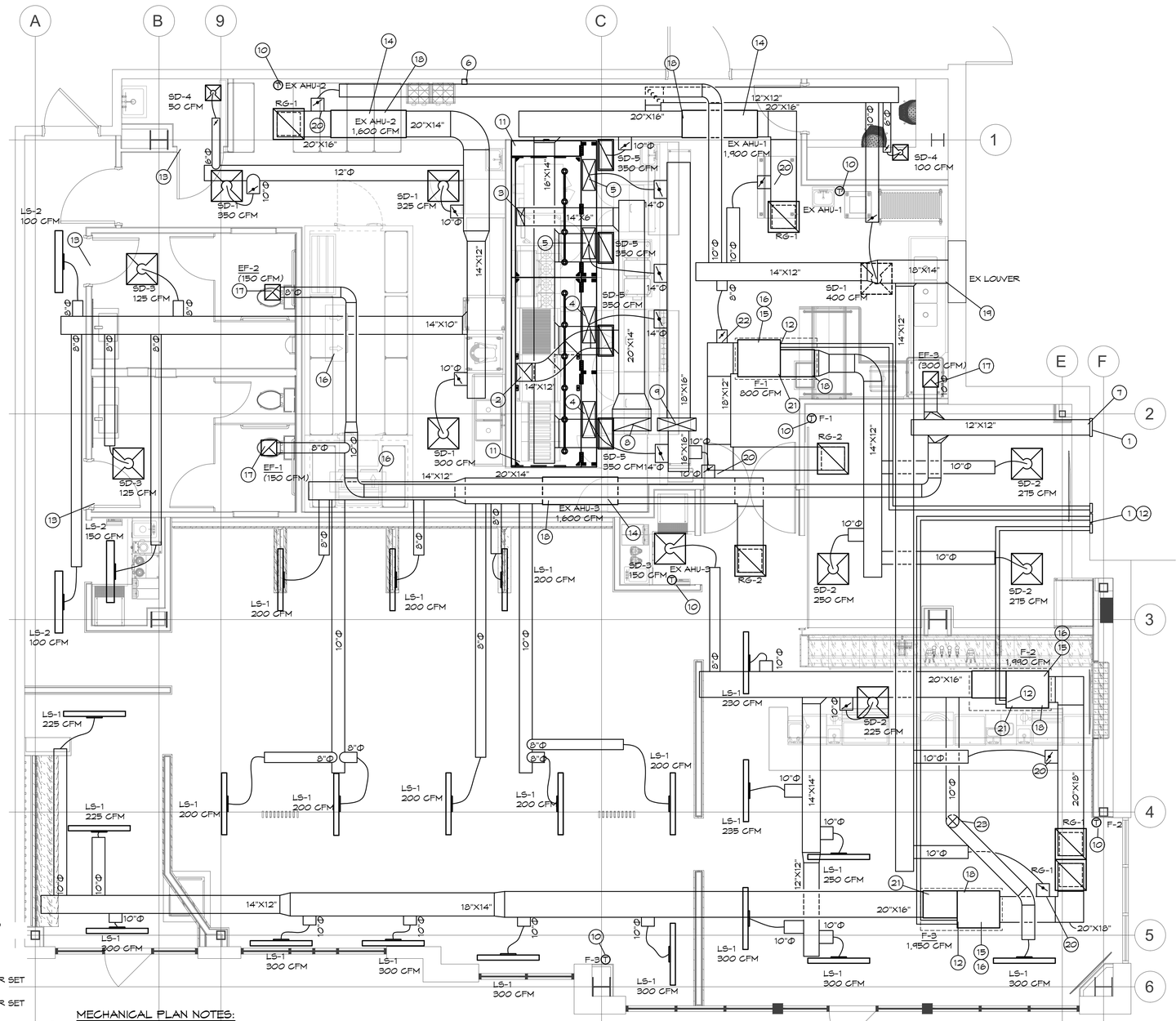
MECHANICAL GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
2. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEMS.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS.
4. INSTALL ALL DUCT, PIPE, ETC. AS HIGH AS POSSIBLE.
5. DUCT SIZES SHOWN ARE ACTUAL SHEET METAL SIZES AND INCLUDE AN ALLOWANCE FOR DUCT LINER WHERE APPLICABLE.
6. PROVIDE FLEXIBLE CONNECTION BETWEEN DUCTWORK AND ROOFTOP UNITS, EXHAUST FANS, AND OTHER MOTORIZED EQUIPMENT.
7. NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
8. ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
9. ALL MECHANICAL SYSTEMS SHALL BE BALANCED BY A CERTIFIED BALANCING CONTRACTOR. REFER TO SPECIFICATIONS FOR DETAILS.
10. FIRE-SEAL ALL PENETRATIONS THRU FIRE-RATED WALLS AND FLOORS.

MECHANICAL SYMBOLS

	NEW SUPPLY DIFFUSER
	NEW RETURN AIR GRILLE
	EXHAUST GRILLE/FAN
S	REMOTE TEMPERATURE SENSOR
T	THERMOSTAT, MOUNTED AT 48" AFF
	NEW DUCTWORK
32"X14"	SIZE OF RECTANGULAR DUCT
6"Φ	SIZE OF ROUND DUCT
	FLEXIBLE DUCTWORK
	FLEXIBLE CONNECTION TO FAN
(3)	FLOOR PLAN NOTE DESIGNATION
S.A.	SUPPLY AIR
R.A.	RETURN AIR
EXH.	EXHAUST AIR
	TRANSITION IN DUCT SIZE
	ELBOW WITH TURNING VANES
	MANUAL VOLUME DAMPER
	MANUAL VOLUME DAMPER
	SUPPLY AIR DUCT UP/DOWN
	RETURN AIR DUCT UP/DOWN
	EXHAUST AIR DUCT UP/DOWN
UP	CHANGE IN ELEVATION UP (UP) DOWN (DN) IN DIRECTION OF FLOW
R.TU-1	SCHEDULED MECHANICAL EQUIPMENT



MECHANICAL PLAN NOTES:

1. MAINTAIN 10' SEPARATION BETWEEN ALL EXH. & FLUE OUTLETS TO ALL OUTDOOR AIR INTAKES.
2. PROVIDE 14"X12" FIRE WRAPPED GREASE DUCT AND CONNECT TO HOOD AS REQUIRED. REFER TO DETAILS. REFER TO GREASE DUCT DETAIL ON M2.0.
3. PROVIDE 14"X6" FIRE WRAPPED GREASE DUCT AND CONNECT TO HOOD AS REQUIRED. REFER TO DETAILS. REFER TO GREASE DUCT DETAIL ON M2.0.
4. TRANSITION AND CONNECT 14"Φ TO 28"x10" DUCT TO MAKE-UP AIR DUCT WITH BALANCING DAMPER SET TO 768 CFM AS REQUIRED AND ROUTE TO SUPPLY PLENUM ON HOOD.
5. TRANSITION AND CONNECT 14"Φ TO 24"x10" DUCT TO MAKE-UP AIR DUCT WITH BALANCING DAMPER SET TO 523 CFM AS REQUIRED AND ROUTE TO SUPPLY PLENUM ON HOOD.
6. LOCATION OF MANUAL PULL STATION. COORDINATE LOCATION WITH LOCAL FIRE MARSHAL/ AHJ.
7. ROUTE 12"X12" DUCT OUT THROUGH WALL TO WALL CAP AS REQUIRE.D MANITAIN MIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATION WEATHERTIGHT.
8. TRANSITION AND CONNECT TO EXISTING 30"X8" GREASE DUCT IN CHASE AS REQUIRED. FIELD VERIFY EXACT LOCATION.
9. TRANSITION AND CONNECT TO EXISTING 30"X8" DUCT IN CHASE AS REQUIRED. FIELD VERIFY EXACT MATERIAL, SIZE AND LOCATION FRIOR TO INSTALLATION OF ANY DUCTWORK.
10. LOCATION OF THERMOSTATS MOUNTED ON WALL. COORDINATE EXACT LOCATION WITH OWNER. LABEL UNIT AND ZONE ACCORDINGLY.
11. MAINTAIN A MIN OF 18" FROM ALL COMBUSTIBLE MATERIALS TO TYPE 1 HOOD.
12. 3"Φ CPVC FLUE & COMBUSTION AIR INTAKE THROUGH WALL TO MANUFACTURER'S VENT TERMINATION AS REQUIRED. OFFSET AS REQUIRED TO MAINTAIN 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATIONS WEATHER TIGHT.

MECHANICAL PLAN NOTES:

13. COORDINATE WITH G.C. TO UNDER CUT DOOR AS REQUIRED TO ALLOW PROPER TRANSFER AIR PATH.
14. EXISTING AIR HANDLER TO BE RELOCATED TO THIS LOCATION AS REQUIRED. EXTEND REFRIGERANT LINES AS REQUIRED BY MANUFACTURER.
15. REFRIGERANT PIPING DOWN FROM ROOF THROUGH CHASE. SEAL PENETRATION WEATHERTIGHT. ROUTE AS HIGH AS POSSIBLE AND ROUTE TO UNITS.
16. CONNECT REFRIGERANT PIPING TO CONDENSING UNIT & COIL AS REQUIRED BY THE MANUFACTURER. PROVIDE AND INSTALL REFRIGERANT PIPING FOR CONDENSING UNIT AS REQUIRED BY MANUFACTURER.
17. SUPPORT FAN FROM STRUCTURE AS REQUIRED BY THE MANUFACTURER.
18. SUPPORT UNIT FROM STRUCTURE AND PROVIDE VIBRATION ISOLATION AS REQUIRED BY THE MANUFACTURER. PROVIDE ADDITIONAL SUPPORT STEEL AS REQUIRED.
19. TRANSITION & CONNECT OUTDOOR AIR DUCT TO EXISTING LOUVER AS REQUIRED. FIELD VERIFY EXACT SIZE AND LOCATION. INSULATE THE PLENUM BOX AND ALL DUCT, REFER TO SPECIFICATIONS.

MECHANICAL PLAN NOTES:

20. CONNECT 10"Φ OUTDOOR AIR DUCT WITH BALANCING DAMPER TO RETURN AIR DUCT. REFER TO OUTDOOR AIR CALCULATIONS FOR MINIMUM OUTDOOR AIR VOLUME.
21. PROVIDE WATERPROOF GALVANIZED SHEET METAL DRAIN PAN UNDER FURNACE & EVAPORATOR COIL. REFER TO PLUMBING PLANS FOR CONDENSATE PIPING.
22. CONNECT 8"Φ OUTDOOR AIR DUCT WITH BALANCING DAMPER TO RETURN AIR DUCT. REFER TO OUTDOOR AIR CALCULATIONS FOR MINIMUM OUTDOOR AIR VOLUME.
23. ROUTE DUCT UP TO AS HIGH AS POSSIBLE.

NORTH

MECHANICAL FLOOR PLAN

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

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

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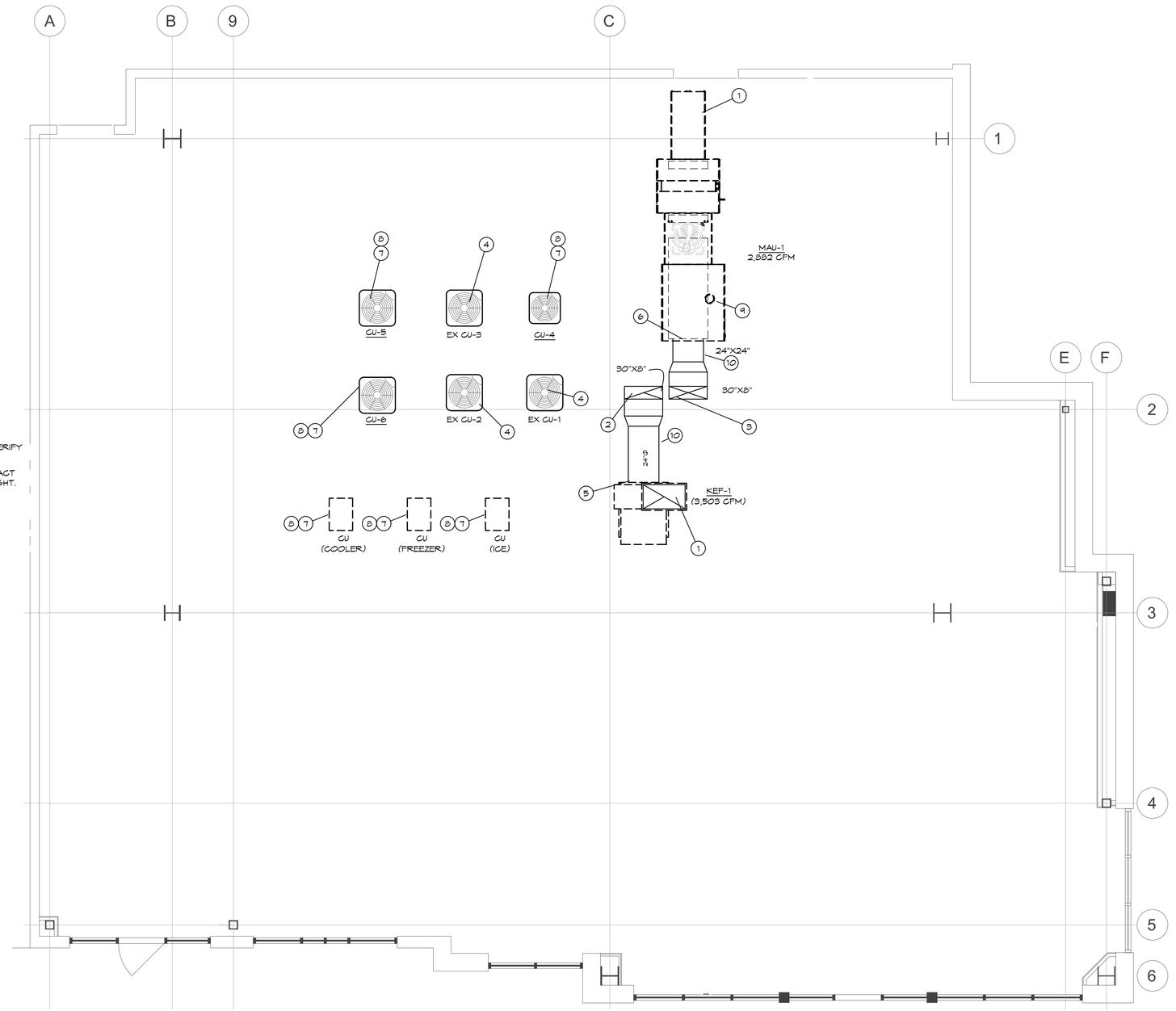
MECHANICAL FLOOR PLAN

M1.0

PHASE

MECHANICAL PLAN NOTES:

1. MAINTAIN 10' SEPARATION BETWEEN ALL EXH. & FLUE OUTLETS TO ALL OUTDOOR AIR INTAKES.
2. TRANSITION AND CONNECT TO EXISTING 30"X8" GREASE DUCT IN CHASE AS REQUIRED. FIELD VERIFY EXACT LOCATION. SEAL PENETRATION WEATHERTIGHT.
3. TRANSITION AND CONNECT TO EXISTING 30"X8" DUCT IN CHASE AS REQUIRED. FIELD VERIFY EXACT LOCATION. PROVIDE FIRE-DAMPER AT FIRE-PENETRATION AND SEAL PENETRATION WEATHERTIGHT.
4. EXISTING CONDENSING UNITS TO REMAIN AS IS. VERIFY UNITS ARE IN PROPER WORKING ORDER. COORDINATE WITH LANDLORD TO RELOCATE AS REQUIRED TO ALLOW FOR MAINTENANCE AND CLEARANCES FOR MECHANICAL EQUIPMENT.
5. TRANSITION AND CONNECT TO KEF-1 AS REQUIRED.
6. TRANSITION AND CONNECT TO MAU-1 AS REQUIRED.
7. REFRIGERANT PIPING DOWN THROUGH ROOF IN CHASE. SEAL PENETRATION WEATHERTIGHT. ROUTE AS HIGH AS POSSIBLE AND ROUTE TO UNITS.
8. CONNECT REFRIGERANT PIPING TO CONDENSING UNIT & COIL AS REQUIRED BY THE MANUFACTURER. PROVIDE AND INSTALL REFRIGERANT PIPING FOR CONDENSING UNIT AS REQUIRED BY MANUFACTURER.
9. VERIFY 10'-0" CLEARANCE FROM MAKE-UP AIR UNIT FLUE TO ALL OUTDOOR AIR INTAKES.
10. EXTERIOR DUCTWORK TO BE INSULATED WITH JACKETING, MINIMUM R-8. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.



NORTH

MECHANICAL ROOF PLAN

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

DRAWN BY:	MA/SM
BC PROJECT #:	21569
MISSOURI	PE COA #2009003629

BC ENGINEERS INCORPORATED
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ROOTS RESTAURANT

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9/17/2021
STATE OF MISSOURI
ERIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number:	2002
Scale:	
Date:	09/15/2021

MECHANICAL ROOF PLAN

M1.1

PHASE

EXHAUST FAN SCHEDULE

MARK	MFGR	MODEL	CFM	EXTERNAL STATIC P. IN. WG.	RPM	ELECTRICAL		FAN TYPE	CONTROLS	NOTES
						VOLT/Ø/HZ	PWR			
EF-1	COOK	GC-186	150	0.375	800	120/1/60	68 W	CEILING EXH.	LIGHTS	1
EF-2	↓	↑	↑	↑	↑	↓	↑	↓	↓	↓
EF-3	↓	GC-542	300	0.25	1,387	↓	100 W	↓	↓	↓

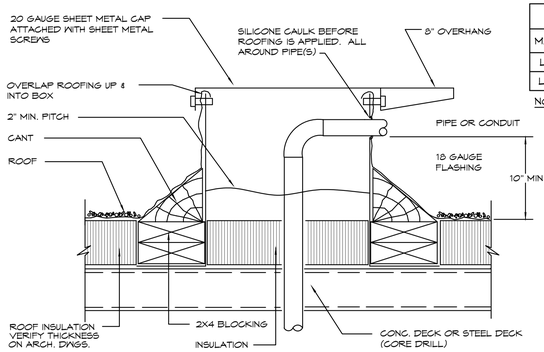
NOTES: 1. PROVIDE CEILING GRILLE, INTEGRAL BACK DRAFT DAMPER, VARI-SPEED CONTROLLER (NEAR FAN AND ABOVE CEILING).

DIFFUSER SCHEDULE

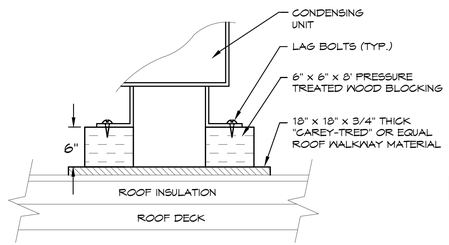
MARK	MFGR	MODEL	BORDER TYPE	NECK SIZE	FACE SIZE	FINISH	DAMPER	ACCESSORIES	NOTES
SD-1	TITUS	TMS	3	10"Ø	24"x24"	WHITE			
SD-2	↓	↓	↓	↑	↓	↓	OB DAMPER	GYP. FRAME	
SD-3	↓	↓	↓	8"Ø	↓	↓	OB DAMPER	GYP. FRAME	
SD-4	↓	↓	↓	6"Ø	12"x12"	↓			
SD-5	↓	PAR	↓	10"X22"	12"X24"	↓	OB DAMPER		
	↓	↓	↓	↓	↓	↓	↓	↓	↓
RG-1	↓	↓	↓	18"X18"	24"x24"	↓	↓	↓	↓
RG-2	↓	↓	↓	↑	↑	↓	↓	GYP. FRAME	↓
	↓	↓	↓	↓	↓	↓	↓	↓	↓

AIR BALANCE SCHEDULE:

SUPPLY AIR UNIT	OUTSIDE AIRFLOW (CFM)	RETURN AIRFLOW	SUPPLY AIRFLOW	OA/SA %	EXHAUST AIR UNIT	EXHAUST AIRFLOW (CFM)	REMARKS
EX AHU-1	360	1,630	1,990	18.1%	EF-1	150	
EX AHU-2	290	1,310	1,600	18.1%	EF-2	150	
EX AHU-3	290	1,310	1,600	18.1%	EF-3	300	
F-1	145	655	800	18.1%			
F-2	360	1,630	1,990	18.1%			
F-3	360	1,630	1,990	18.1%	KEF-1	3,503	
MUA-1	2,582	0	2,582	100.0%			
TOTAL	4,397	7,845	12,552	35.5%	TOTAL	4,103	
					RESULTING BUILDING PRESSURIZATION	294	CFM



MULTIPLE PIPES THRU ROOF DETAIL
SCALE: NONE



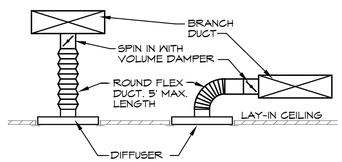
SET SUPPORT BLOCKS IN MASTIC ON WALKWAY MATERIAL.

CONDENSING UNIT SUPPORT DETAIL
SCALE: NONE

LINEAR DIFFUSER SCHEDULE

MARK	MFGR	MODEL	# SLOTS	SLOT WIDTH	LENGTH	FINISH	NOTES
LS-1	TITUS	TBDI-10	2	1"	48"	BLACK	W/ FLANGE
LS-2	↑	↑	↑	↑	↑	↑	↑

NOTES: 1. PROVIDE INSULATED PLENUM BOX AND INLET DAMPER FOR SUPPLY DIFFUSER.



DIFFUSER DETAIL
SCALE: NONE

FURNACE SCHEDULE

MARK	MFGR	MODEL NO.	CFM	EXT. STATIC P. IN. WG.	HEATING (GAS)		ELECTRICAL		OUTSIDE AIR (CFM)	NOTES
					BTUH INPUT	BTUH OUTPUT	VOLT/Ø/HZ	HP		
F-1	LENNOX	ML196UH450XE36B	800	0.8	44,000	42,800	115/1/60	1/2	145	1,2,3,4,5,6
F-2	↓	ML196UH090XE60C	1,990	0.8	110,000	107,200	↓	1	360	↓
F-3	↓	ML196UH110XE60C	1,990	0.8	110,000	107,200	↓	1	360	↓

NOTES:
1. PROVIDE 1" THICK THROWAWAY TYPE FILTER WITH HOLDING FRAME FOR EACH UNIT.
2. PROVIDE EACH UNIT WITH 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER THERMOSTAT WITH OPTIMUM START CONTROLS.
3. CONDENSING UNITS, COOLING COILS, AND FURNACES SHALL ALL BE OF THE SAME MANUFACTURER.
4. EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS AND COILS.
5. PROVIDE AND INSTALL GPS# FC-48-AC AS REQUIRED BY MANUFACTURER.
6. PROVIDE GALVANIZED WATERTIGHT DRAIN PAN AND CONDENSATE FLOAT SWITCH TO DE-ENERGIZE THE FURNACE IF THE DRAIN PAN FILLS WITH WATER.

CONDENSING UNIT SCHEDULE

MARK	MFGR	MODEL NO.	COOLING			ELECTRICAL			EVAP. COIL MODEL NO.	SEER	NOTES
			TOTAL BTUH	AMB.	EVAP. EAT DB/WB	VOLT/Ø/HZ	MIN. MCA (AMPS)	MIN. MOCP (AMPS)			
EX CU-1	GOODMAN	GSX14-0601	57,500	95	80/67	208/1/60	26.3	50	EX AHU-1	14	4
EX CU-2	↓	GSX14-0481	46,000	↓	↓	↓	21	45	EX AHU-2	↓	↓
EX CU-3	↓	↓	↓	↓	↓	↓	21	45	EX AHU-3	↓	↓
CU-4	LENNOX	14ACX024	23,400	↓	↓	↓	15	25	CHX35-24B	15	1,2,3
CU-5	↓	14ACX060	56,500	↓	↓	↓	34.8	60	CHX35-60D	14.5	↓
CU-6	↓	14ACX060	56,500	↓	↓	↓	34.8	60	CHX35-60D	14.5	↓

NOTES:
1. PROVIDE TIME DELAY ON COMPRESSOR RE-START, CRANKCASE HEATER, AND COMPRESSOR LOCK-OUT WITH AMBIENT BELOW 35 °F. PROVIDE INDOOR COIL WITH THERMAL EXPANSION VALVE (TXV).
2. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.
3. PROVIDE HAIL GUARDS FOR EACH UNIT.
4. UNITS ARE EXISTING TO REMAIN.

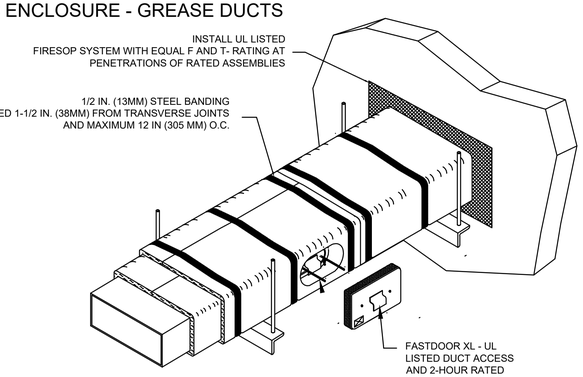
EXISTING AIR HANDLING UNIT SCHEDULE

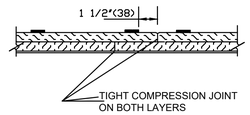
MARK	MFGR	MODEL NO.	CFM	E.S.P. IN. WG.	COOLING			HEATING (ELECTRIC) (RESISTANCE)		ELECTRICAL		OUTSIDE AIR (CFM)	NOTES
					TOTAL BTUH	AMB.	EVAP. EAT DB/WB	KW	STAGES	VOLT/Ø/HZ	HP		
EX AHU-1	GOODMAN	ARUF61D14	1,990	0.5	57,500	95	80/67	11.4	2	208/1/60	3/4	360	1,3
EX AHU-2	↓	↓	1,600	↓	46,000	↓	↓	↓	↓	↓	↓	290	1,3
EX AHU-3	↓	↓	1,600	↓	46,000	↓	↓	↓	↓	↓	↓	290	1,2,3

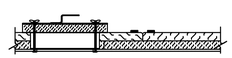
NOTES:
1. UNITS ARE EXISTING TO REMAIN. VERIFY UNITS ARE IN PROPER WORKING ORDER.
2. PROVIDE AND INSTALL GPS# FC-48-AC AS REQUIRED BY MANUFACTURER.
3. PROVIDE GALVANIZED WATERTIGHT DRAIN PAN AND CONDENSATE FLOAT SWITCH TO DE-ENERGIZE THE FURNACE IF THE DRAIN PAN FILLS WITH WATER.

FIRE RATED ENCLOSURE - GREASE DUCTS

1. THERMAL CERAMICS FIREMASTER FASTWRAP XL IS TESTED TO ASTM E2336 AND UL LISTED PER HNKT.G18 TO PROVIDE ZERO CLEARANCE TO COMBUSTIBLES AND TO PROVIDE A 1- OR 2- HOUR ENCLOSURE. THROUGH PENETRATIONS FIRESTOP SYSTEMS ARE TESTED IN ACCORDANCE WITH ASTM E 814 (UL 1479). ICC-ES APPROVAL PER REPORT ESR 2213 OR ESR 2832.
2. COMPLIANT TO THE FOLLOWING CODES:
   NFPA 96
   INTERNATIONAL MECHANICAL CODES
   UNIFORM MECHANICAL CODE.
   CALIFORNIA MECHANICAL CODE
3. INSULATION APPLIED IN TWO LAYERS WITH TIGHT COMPRESSION JOINT ON BOTH LAYERS AT ALL JOINTS.
4. MINIMUM 16 GAUGE CARBON STEEL (OR 18 GAGE STAINLESS STEEL) RECTANGULAR OR ROUND GREASE EXHAUST DUCT
5. INSTALL UL LISTED AND LIQUID TIGHT THERMAL CERAMICS FASTDOOR XL ACCESS DOORS AT ALL CHANGES IN DIRECTION AND AT MINIMUM EVERY 20 FT ON HORIZONTAL RUNS.
6. SUPPORT HANGER SYSTEMS DO NOT NEED TO BE WRAPPED PROVIDED THE HANGER RODS ARE MINIMUM OF 3/8 IN. DIAMETER AND SUPPORTS ARE MINIMUM 2 X 2 X 1/8 IN. STEEL ANGLE OR SMACNA EQUIVALENT SUPPORT SYSTEM.
7. THERMAL CERAMICS DUCT WRAP SHALL BE INSTALLED DIRECTLY ONTO THE DUCT AND APPLIED FROM THE HOOD CONNECTION TO THE CONNECTION TO THE FAN.
8. THERMAL CERAMICS DUCT ENCLOSURE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND UL LISTINGS.







UL LISTED - FASTDOOR XL

Morgan ThermalCeramics
P.O. Box 923
Augusta, Georgia 30903-0923
Phone: (706) 560-4038

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9/17/2021
STATE OF MISSOURI
TIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number: 2002
Scale:
Date: 09/15/2021

MECHANICAL SCHEDULES & DETAILS

M2.0

PHASE

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

BC ENGINEERS INCORPORATED
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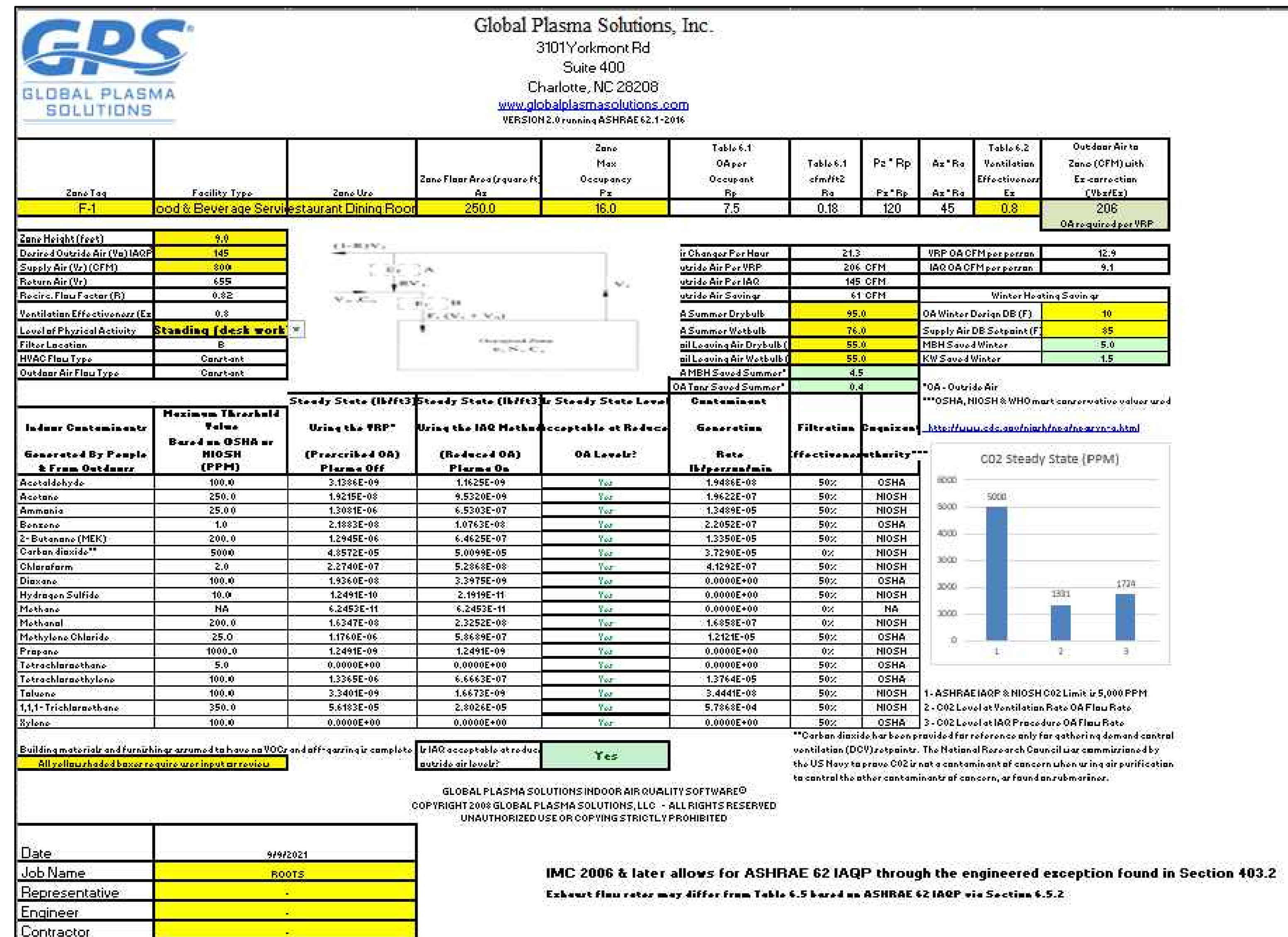

Global Plasma Solutions, Inc.
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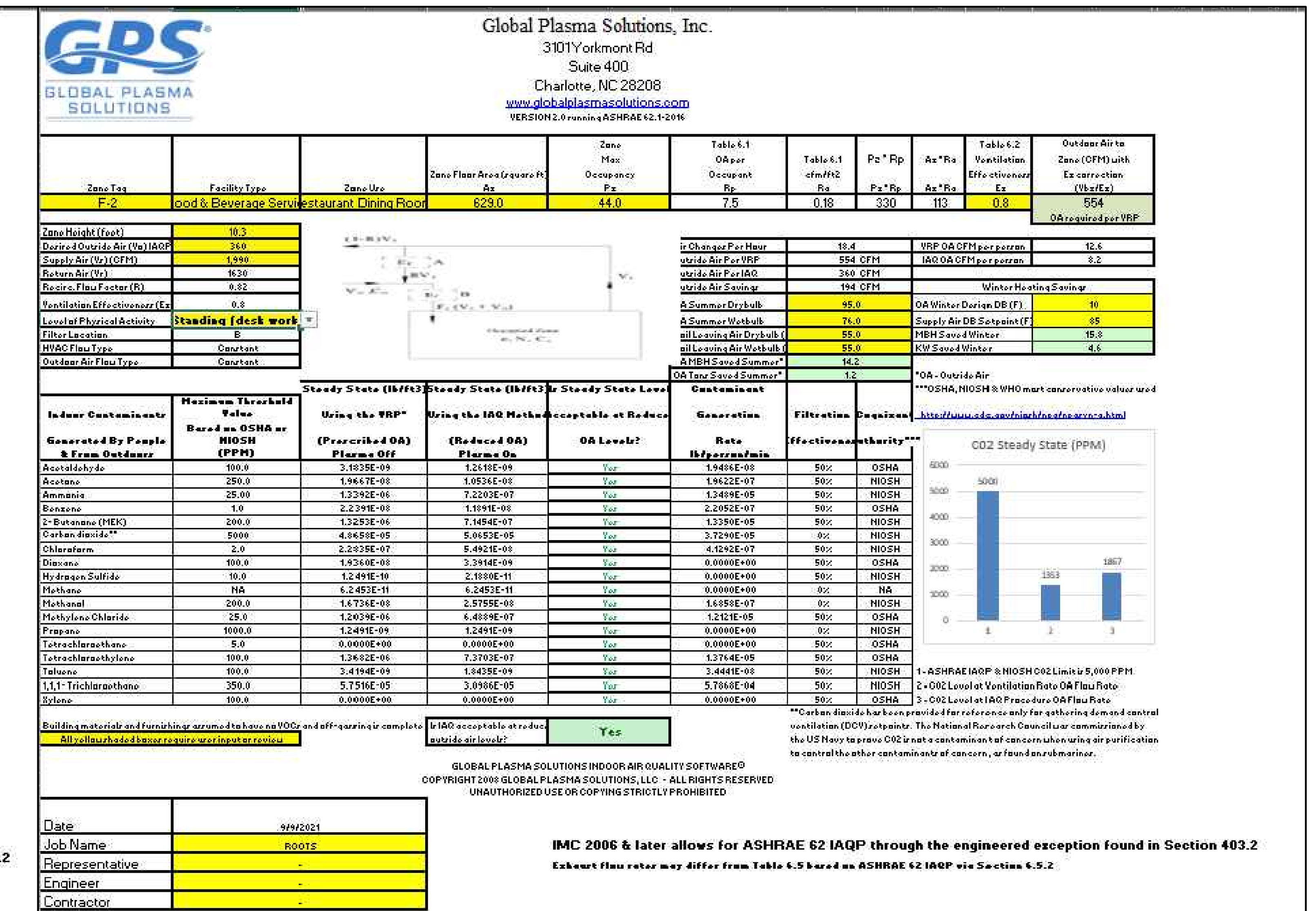
www.globalplasmasolutions.com
VERSION 2.0 running ASHRAE 62.1-2016

Zone Tag	Facility Type	Zone Use	Zone Floor Area (square ft) Az	Zone Max Occupancy Pz	Table 6.1 OA per Occupant Rp	Table 6.1 cfm/ft2 Ra	Pz * Rp	Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
F-1	Food & Beverage Service	Restaurant Dining Room	250.0	16.0	7.5	0.18	120	45	0.8	206



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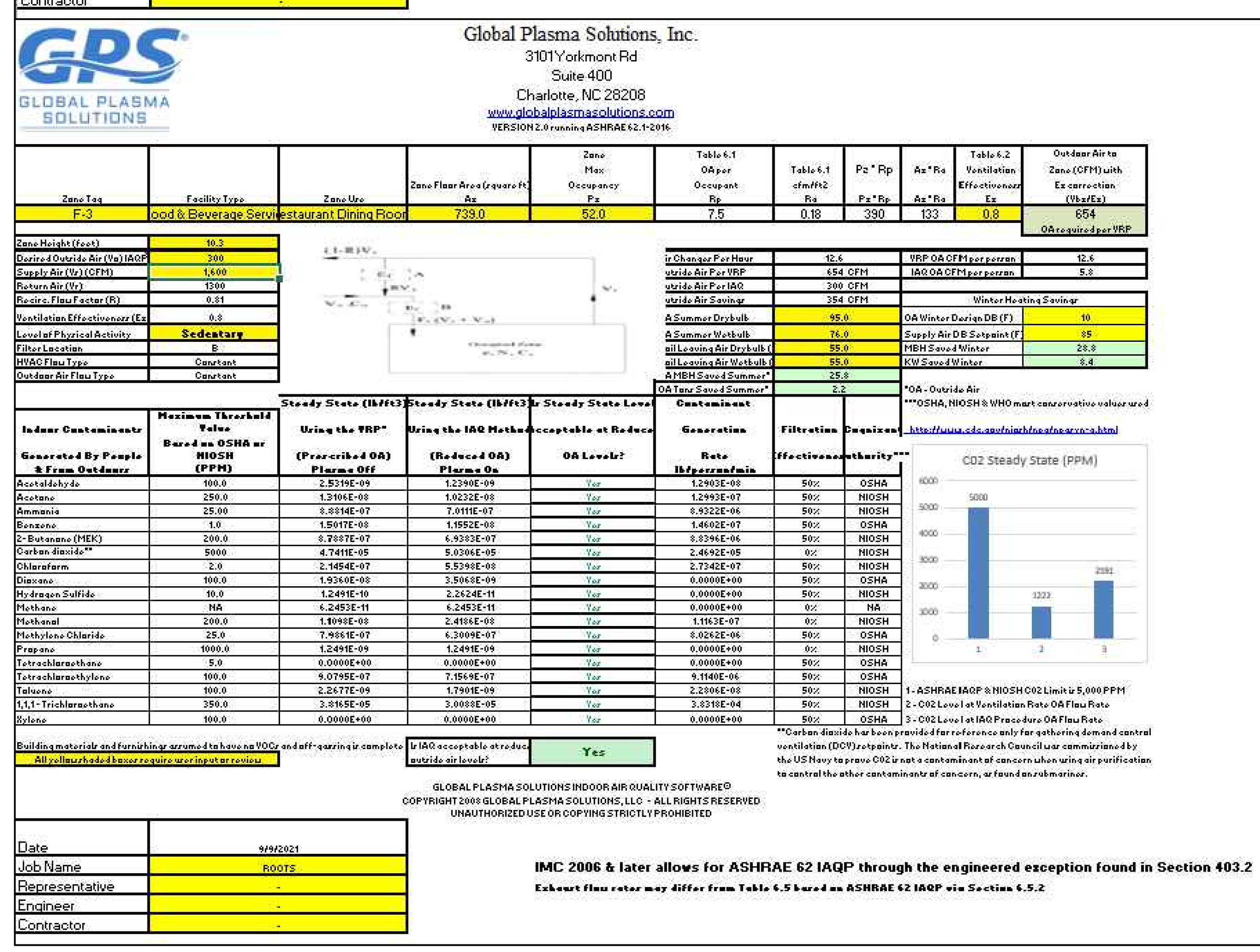
F-2	Food & Beverage Service	Restaurant Dining Room	629.0	44.0	7.5	0.18	330	113	0.8	554



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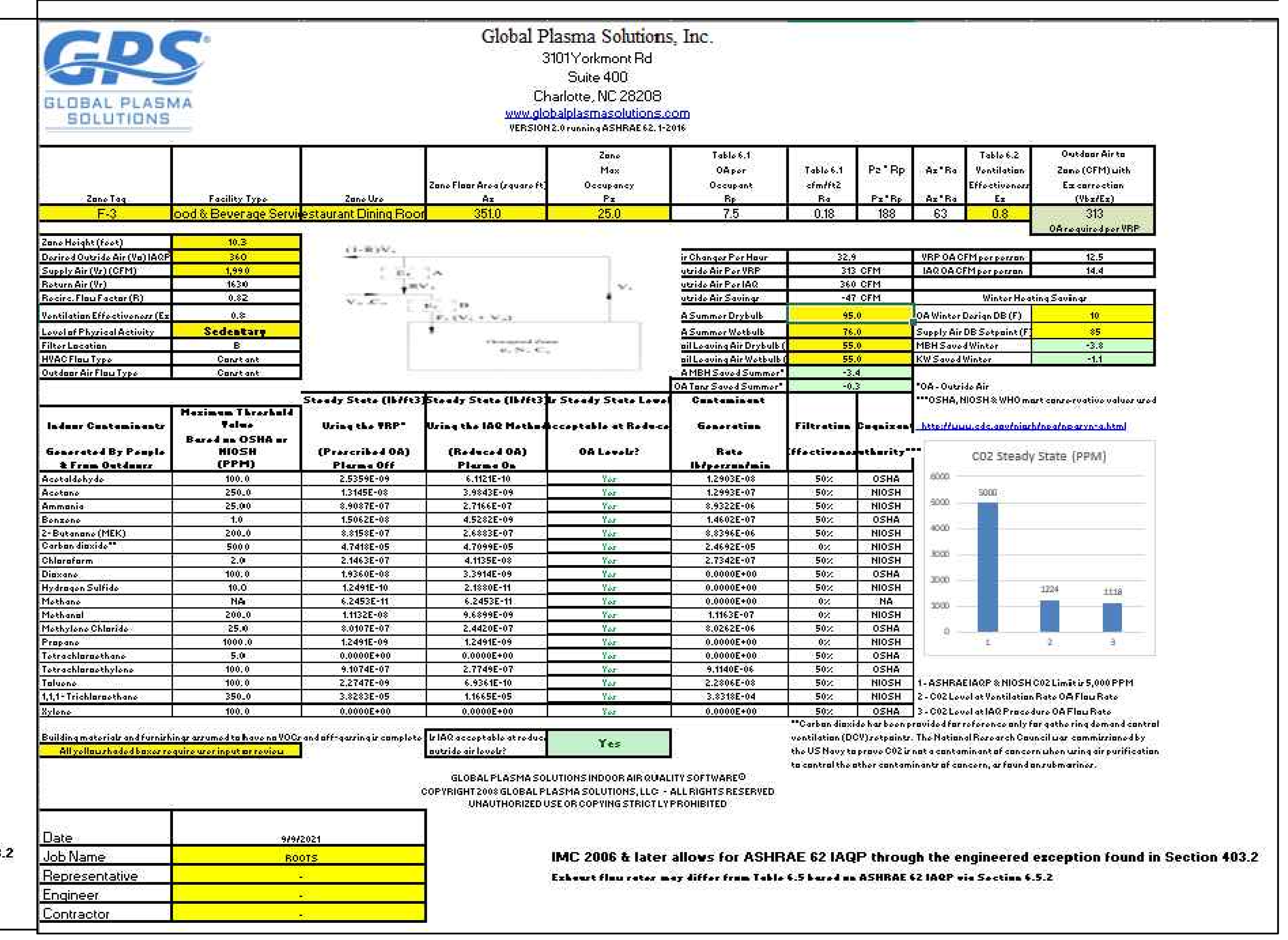
F-3	Food & Beverage Service	Restaurant Dining Room	739.0	52.0	7.5	0.18	390	133	0.8	654



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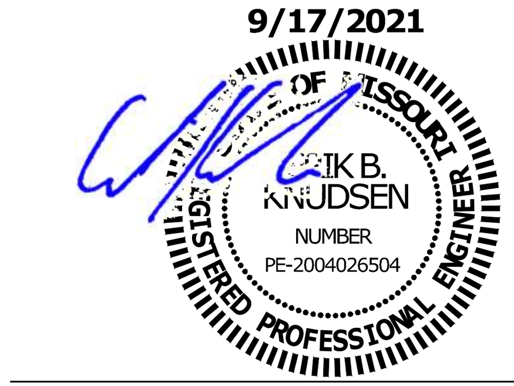
Zone Tag	Facility Type	Zone Use	Zone Floor Area (square ft) Az	Zone Max Occupancy Pz	Table 6.1 OA per Occupant Rp	Table 6.1 cfm/ft2 Ra	Pz * Rp	Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
F-3	Food & Beverage Service	Restaurant Dining Room	351.0	25.0	7.5	0.18	188	63	0.8	313

OUTDOOR AIR CALCULATIONS

UNIT	Area (sqft)	OCCUPANCY CLASSIFICATION	Occupant Density #/1000 sqft	People outdoor airflow rate in breathing zone, (Rp) cfm/person	Area outdoor airflow rate in breathing zone, (Ra) cfm/sqft	Exhaust airflow rate cfm/sqft	Breathing zone outdoor airflow (Vbz)	Zone air distribution effectiveness (Ez)	Zone outdoor airflow (cfm)
EX AHU-1, EX AHU-2	1068	Kitchens (cooking)	0	0	0	0.7	0	0.8	0
	167	Corridors	0	0	0.06		10	0.8	13
								Total	13

9/17/2021



Revision	Date	No.

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772

Project Number: 2002
Scale:
Date: 09/15/2021

MECHANICAL OUTDOOR AIR CALCULATIONS

M2.1

PHASE

FOR QUESTIONS, CALL THE
Tulsa Office
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EMAIL: reg80@captiveaire.com

PATENT NUMBERS

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

HOOD INFORMATION - JOB#5043183

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	27-L	5424 ND-2-PSP-F	CAPTIVEAIRE	12' 3"	600 DEG	I	HEAVY	190	2328	12'	14'	4'		2328	1995	-1.240"	1536	430 SS WHERE EXPOSED	LEFT	ALONE
2	27-R	5424 ND-2-PSP-F	CAPTIVEAIRE	7' 10"	600 DEG	I	HEAVY	150	1175	6'	14'	4'		1175	2014	-0.852"	1046	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

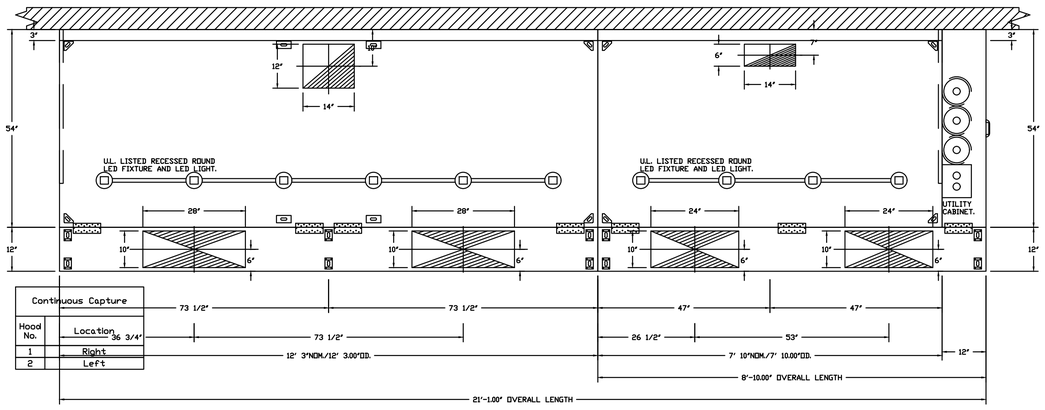
HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	AVERAGE FOOT CANDLES @ 36" AFF	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1	27-L	CAPTRATE SOLO FILTER	9	16"	16"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO	51							YES	701 LBS
2	27-R	CAPTRATE SOLO FILTER	5	16"	16"	85% SEE FILTER SPEC	4	RECESSED ROUND	NO	45	RIGHT	12"x54"x24"	ANSUL R102	3.0/3.0/3.0	DCV-1111	1 LIGHT 1 FAN	YES	666 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	27-L	FIELD WRAPPER 6.00" HIGH FRONT, LEFT.
		RISER SENSOR INSTALL 6IN PLEN.
		LEFT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
2	27-R	FIELD WRAPPER 6.00" HIGH FRONT, RIGHT.
		RISER SENSOR INSTALL 6IN PLEN.
		RIGHT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1	27-L	Front	147"	12"	6"	MUA	10"	28"		768	0.213"
						MUA	10"	28"		768	0.213"
2	27-R	Front	106"	12"	6"	MUA	10"	24"		523	0.150"
						MUA	10"	24"		523	0.150"



PLAN VIEW - HOOD #1 (27-L)
12' 3.00" LONG 5424ND-2-PSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

PLAN VIEW - HOOD #2 (27-R)
7' 10.00" LONG 5424ND-2-PSP-F

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

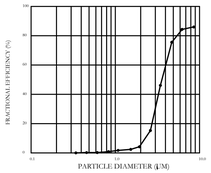
THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

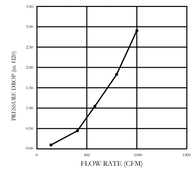
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

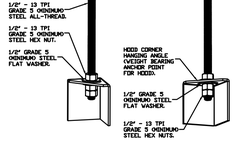
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.





CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH.
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

REVISIONS

	DESCRIPTION	DATE
1		
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Roots - Lee Summit, MO
LEES SUMMIT, MO, 64063

DATE: 8/17/2021
DWG.#: 5043183
DRAWN BY: RJH-80
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

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9/17/2021
STATE OF MISSOURI
ERIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

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Scale:
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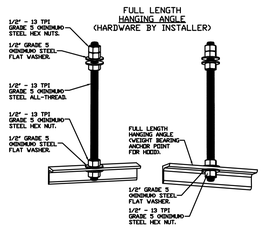
KITCHEN HOOD DETAILS

M3.0

PHASE



FULL LENGTH
HANGING ANGLE
(HARDWARE BY INSTALLER)

ASSEMBLY INSTRUCTIONS

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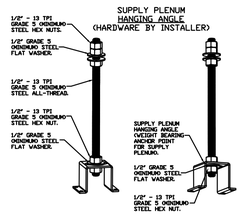

SUPPLY PLENUM
HANGING ANGLE
(HARDWARE BY INSTALLER)

ASSEMBLY INSTRUCTIONS

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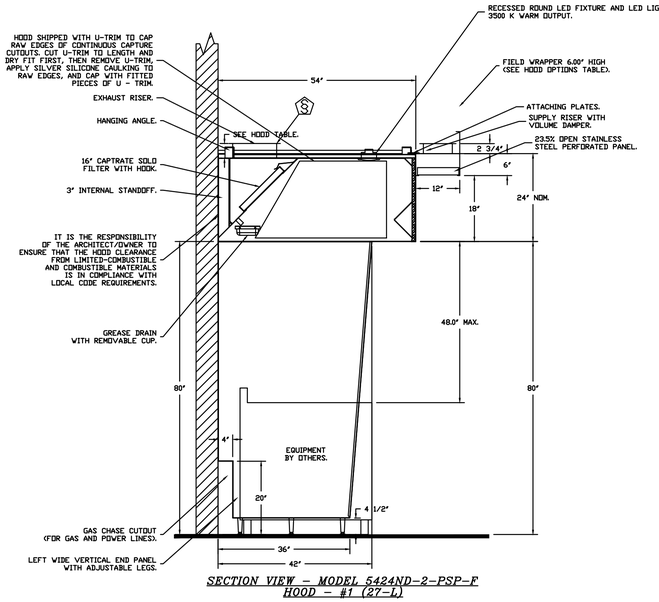
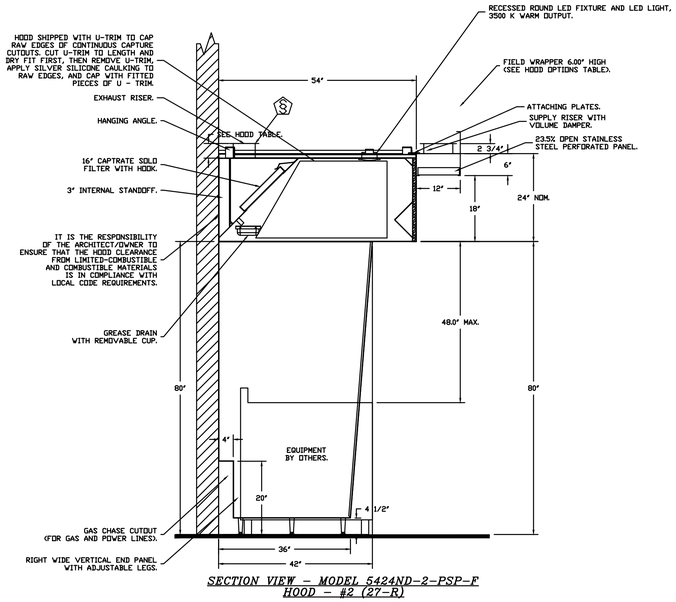


SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #1 (27-L)



SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #2 (27-R)

REVISIONS

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Roots - Lee Summit, MO
LEES SUMMIT, MO, 64063

DATE: 8/17/2021

DWG.#: 5043183

DRAWN BY: RJH-80

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

DRAWN BY:	MA/SM
BC PROJECT #:	21569
MISSOURI	PE COA #2009003629

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9/17/2021

STATE OF MISSOURI
ERIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number: **2002**
Scale:
Date: **09/15/2021**

KITCHEN HOOD DETAILS

M3.1

PHASE

FIRE SYSTEM INFORMATION – JOB#5043183

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1	FS (27)	ANSUL R102	3.0/3.0/3.0	27	FIRE CABINET RIGHT	RIGHT, HOOD 2

GAS VALVE(S)

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1	FS (27)	MECHANICAL	2.000	DISTRIBUTOR

FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1	FS (27)	0 - 0 - 43-15733 AIR CYLINDER ASSEMBLY - AIR CYLINDER AND TUBING FOR MECHANICAL GAS VALVES (ANSUL PART #15733).	0	1
		0 - 0 - 439861 LARGE BLOWOFF CAP, METAL, TO FIT NEW LASER-ETCHED ANSUL NOZZLES, A0024201.	17	0
		0 - 0 - CBI-146 CHROME PLATED PIPE NIPPLE 3/8" NPT 60 INCHES LONG.	2	0
		0 - 0 - TANK STRAP TANK STRAP - USED FOR ANSUL TANKS.	3	0
		0 - 0 - UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS.	3	0
		1 - 1 - AT - 3.0 TANK(#1B) - 3.0 GALLON SS TANK (FOR USE WITH AUTOMAN RELEASE, ACTUATOR, OR SS ENCLOSURE (UL/ULC)) MACOLA # 01-429862.	3	0
		3 - 3 - ANS-DEM REGULATED RELEASE - ANSUL REGULATED MECHANICAL RELEASE/BRACKET ASSEMBLY, DEM, R-102, CARTRIDGE DETECTION INCLUDED, ANSUL PART # 79493.	1	0
		5 - 5 - LIQ-30 AGENT - ANSULEX LOW PH WET CHEMICAL AGENT, 3 GALLON (UL) 79372.	0	3
		9 - 9 - DT-CART DOUBLE TANK NITROGEN CARTRIDGE.	0	1
		10 - 10 - TLINK LINK - TEST LINK (1 TEST LINK) ANSUL PART # 24916, MACOLA # 20-24916.	0	1
		11 - 11 - MICRO-SDA MICROSWITCH KIT- INCLUDES 2 SWITCHES AND MOUNTING HARDWARE. SINGLE DUAL ELECTRIC SWITCH, ONE STANDARD SWITCH, ONE ALARM DUTY SWITCH ANSUL PART # 437155, MACOLA # 08-437155.	1	0
		12 - 12 - HOSE HOSE - RUBBER HOSE.	2	0
		13 - 13 - 419337 NOZZLE - 2W NOZZLE, DUCT (REPLACES ANSUL PART# 419348, CAS PART# 419337) A0001267.	1	0
		14 - 14 - 419336 NOZZLE - 1W NOZZLE, DUCT/APPLIANCE (REPLACES ANSUL PART# 419347, CAS PART# 419336) A0001266.	1	0
		16 - 16 - 419335 NOZZLE - 1N NOZZLE, PLENUM/APPLIANCE (REPLACES ANSUL PART# 419346, CAS PART# 419335) A0001265.	6	0
		20 - 20 - 419340 NOZZLE - 245 NOZZLE, APPLIANCE (REPLACES ANSUL PART# 419351, PART# 419340) A0001270.	4	0
		24 - 24 - 419341 NOZZLE - 260 NOZZLE, APPLIANCE (REPLACES ANSUL PART# 419352, CAS PART# 419341) A0001271.	5	0
		25 - 25 - 418569 NOZZLE ADAPTOR - SWIVEL NOZZLE ADAPTOR (REPLACES CAS PART # 418569) A0001274.	12	0
		26 - 26 - QSA-3/8 QUIK SEAL - 3/8" (UL).	17	0
		27 - 27 - QPSA-1/2 PULLEY SEAL - 1/2" HOOD SEAL (UL) ANSUL PART # 423253, MACOLA # 32-79768.	5	0
		28 - 28 - S-DET DETECTOR - SERIES (SCISSOR LINKAGE) ANSUL PART # 435547/435548 (OLD # 417369/434480), MACOLA # 05-417369.	10	0
		29 - 29 - ANS-360FL FUSIBLE LINK - 360DEG F, R-102 AND PIRANHA, ANSUL PART # 439088.	2	0
		30 - 30 - ANS-500FL FUSIBLE LINK - 500DEG F, R-102 AND PIRANHA, ANSUL PART # 439232.	8	0
		34 - 34 - RPS-A REMOTE PULL STATION - RED COMPOSITE (WITHOUT WIRE ROPE) 434618 (OLD MACOLA #06-4835).	1	0
		35 - 35 - PE-LT PULLEY ELBOW - LOW TEMP. PULLEY ELBOW, SET SCREW TYPE ANSUL PART # 415670, MACOLA # 11-415671.	5	0
		36 - 36 - PE-HT PULLEY ELBOW - HIGH TEMP PULLEY ELBOW, COMPRESSION TYPE, ANSUL PART # 423251, MACOLA # 10-45771.	4	0
		38 - 38 - ELB-90 3/8" CHROME PLATED ELBOW - 90 DEG.	4	0
		39 - 39 - ELB-45 3/8" CHROME PLATED ELBOW - 45 DEG.	4	0

GAS VALVES AND STRAINERS

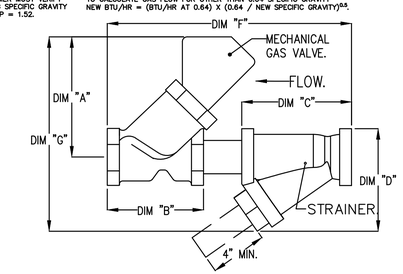
	GAS VALVE SIZING						GAS VALVE DIMENSIONS						INSTALLATION	PART NUMBERS		
	TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "F"	DIM "G"	MOUNTING ORIENTATION	GAS VALVE PART NUMBER	STRAINER PART NUMBER	GAS VALVE/STRAINER KIT
GAS VALVE FOR FS#1 →	MECHANICAL	2"	N/A	0 PSI (0 IN.W.C.)	10 PSI (277 IN.W.C.)	4,610,000 BTU/HR	2,995,256 BTU/HR	6-11/16"	5-7/8"	7-1/4"	7-13-16"	15-1/8"	13-3/16"	HORIZONTAL	28-55610	4417K68	MGVA2

ALL GAS VALVES/STRAINERS

PROPER CLEARANCE MUST BE PROVIDED IN ORDER TO SERVICE THE STRAINERS A MINIMUM OF 4" CLEARANCE DISTANCE MUST BE PROVIDED AT THE BASE OF THE STRAINER CUSTOMER MUST VERIFY BTU CONSUMPTION AS WELL AS PRESSURE RATING SPECIFIC GRAVITY OF NATURAL GAS = 0.64, SPECIFIC GRAVITY OF LP = 1.52.

CALCULATIONS

TO CALCULATE GAS FLOW FOR OTHER THAN 1 IN.W.C. PRESSURE DROP
NEW BTU/HR = (BTU/HR AT 1 IN.W.C. PRESSURE DROP) X NEW PRESSURE DROP$^{0.5}$
TO CALCULATE GAS FLOW FOR OTHER THAN 0.64 SPECIFIC GRAVITY
NEW BTU/HR = (BTU/HR AT 0.64) X (0.64 / NEW SPECIFIC GRAVITY)$^{0.5}$.



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LEES SUMMIT, MO, 64063

DATE: 8/17/2021

DWG.#: 5043183

DRAWN BY: RJH-80

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 3

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BC PROJECT #: 21569
MISSOURI PE COA #2009003629

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9/17/2021

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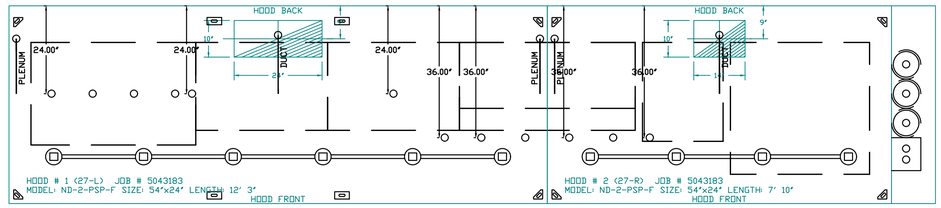
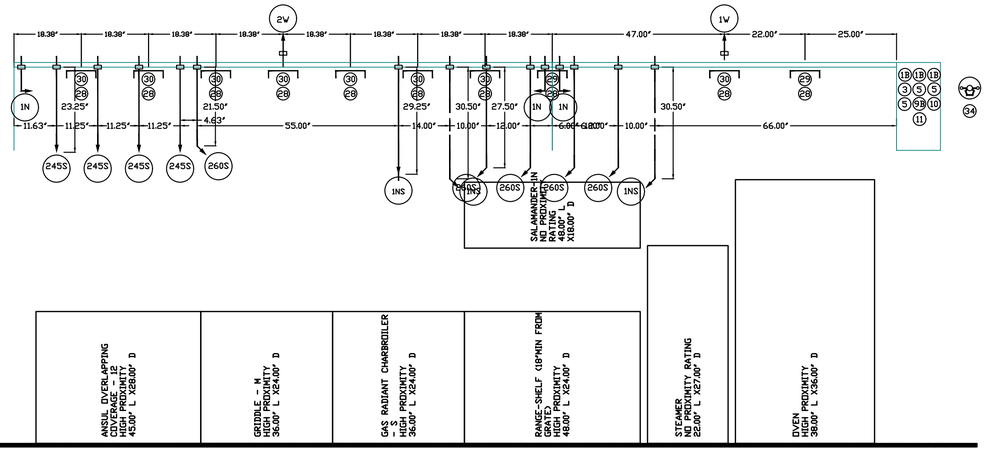
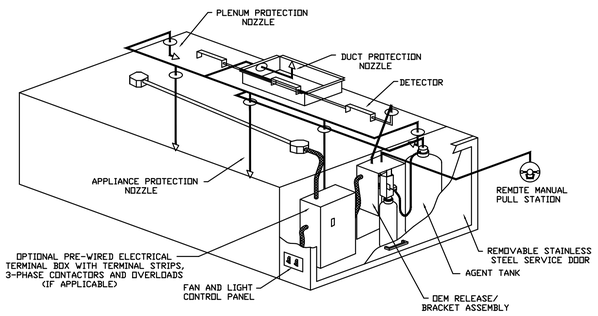
KITCHEN HOOD DETAILS

M3.2

PHASE







TYPICAL ANSUL R-102 SYSTEM LAYOUT

NOTES
- FIELD PIPE DROPS AS SHOWN
  SLEEVING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- MAXIMUM 9 ELBOWS IN SUPPLY LINE.
- MINIMUM 72 INCHES OF AGENT LINE FROM TANK TO FIRST NOZZLE COVERING A RANGE, FRYER, OR WOK TO REFLECT GENERAL PIPING REQUIREMENTS.
- IF APPLICABLE, PRE-PIPED CHARBROILER DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

JOB #: 5043183.
JOB NAME: ROOTS - LEE SUMMIT, MO.

SYSTEM SIZE: ANSUL-3.0/3.0/3.0 TOTAL FP REQUIRED: 27.
HOOD # 1 12' 3.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 10" x 24".
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.
HOOD # 2 7' 10.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 10" x 14".
HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

LEGEND - FIRE CABINET ANSUL SYSTEM

1A	1.5 GALLON TANK.
1B	3 GALLON TANK.
2	OEM AUTOMAN RELEASE.
3	OEM REGULATED RELEASE.
4	OEM REGULATED ACTUATOR.
5	ANSULEX LIQUID AGENT (3 GAL.).
6	ANSULEX LIQUID AGENT (1.5 GAL.).
7	CARTRIDGE (101-20).
8	CARTRIDGE (101-10).
9	CARTRIDGE (101-30).
9A	CARTRIDGE (LT-A-101-30).
9B	DOUBLE TANK CARTRIDGE.
10	TEST LINK.
11	DOUBLE MICROSWITCH.
12	HOSE ASSEMBLY.
1100	DUCT NOZZLE (430913).
2W	DUCT NOZZLE (419337).
1W	NOZZLE ASSEMBLY (419336).
1F	NOZZLE ASSEMBLY (419333).
1N	NOZZLE ASSEMBLY (419335).
1/2N	NOZZLE ASSEMBLY (419334).
3N	NOZZLE ASSEMBLY (419338).
245	NOZZLE ASSEMBLY (419340).
230	NOZZLE ASSEMBLY (419339).
2120	NOZZLE ASSEMBLY (419343).
290	NOZZLE ASSEMBLY (419342).
260	NOZZLE ASSEMBLY (419341).
28	DETECTOR BRACKET.
29	LOW TEMP FUSIBLE LINK.
30	HIGH TEMP FUSIBLE LINK.
MGV	MECHANICAL GAS VALVE.
EGV	ELECTRICAL GAS VALVE.
34	REMOTE MANUAL PULL STATION.
S	SWIVEL ADAPTOR.

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KITCHEN HOOD DETAILS

M3.3

PHASE

EXHAUST FAN INFORMATION – JOB#5043183

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF	1	USBI24DD-RM	CAPTIVEAIRE	3503	2.500	1105	ODP,PREMIUM	5.000	2.8770	3	208	15.8	1161 FPM	758	24

CONDENSER DETAILS

FAN UNIT NO	TAG	FAN UNIT MODEL #	CONDENSER NO	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX FUSE SIZE	MIN WIRE SIZE	SEER
2	MAU	A2-IBT-300-20D-MPU	1	5	208-230	3 PHASE	60 HZ	21.4 AMPS	17.4 AMPS	30 AMPS	10 AWG	14

MUA FAN INFORMATION – JOB#5043183

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
2	MAU	1	A2-IBT-300-20D-MPU	20MF-2-MOD	A2-IBT-300	2000	2882	2.250	1681	ODP,PREMIUM	5.000	2.7190	3	208	15.0	36.8A	50A	1799	17.6

COILS – JOB#5043183

FAN UNIT NO	TAG	COIL TYPE	DESIGN CFM	COOLING										HEATING								
				ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY	ENTERING DB TEMP	LEAVING DB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	STEAM PRESSURE	TOTAL CAPACITY	SENSIBLE CAPACITY
2	MAU	DX	2882	93.0°F	76.0°F	80.2°F	70.5°F	---	---	---	---	60.0 MBH	37.4 MBH	22.6 MBH	---	---	---	---	---	---	---	---	---

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2	MAU	274795	219836	65°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	80

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF	1	B124 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 24" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER.
		1	UTILITY SET GREASE CUP.
		1	B124 - 24" DISCHARGE EXTENSION.
		1	BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE.
		1	B124 - INLET CONNECTION STANDARD 24" FLANGED GREASE DUCT.
		1	UTILITY SET - SPRING VIBRATION ISOLATORS - B124 THRU B130 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
		1	UNIT MOUNTED VFD FOR USE WITH ECPM03.
		1	2 YEAR PARTS WARRANTY.
2	MAU	1	INLET PRESSURE GAUGE, 0-35".
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE.
		1	STANDARD ELECTRICAL CONNECTION (MAIN AND CONTROL PANEL) FOR STANDING POWER - SINGLE MODULE. IF A NON-DCV PREWIRE IS USED ON THE IBT HEATER, THE #28, #47, "NS", "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
		1	MOTORIZED BACKDRAFT DAMPER FOR A2-1 HOUSING. MEETS AMCA CLASS 1A RATING.
		1	IBT SIZE 1 & 2 SIDE DISCHARGE.
		1	5 TON SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 2 IBT MUA (2,000 TO 3,000 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION.
		1	INSULATED BLOWER SECTION SIZE 1-2 COMMERCIAL.
		1	SINGLE POINT MPU CONNECTION, 1 CONDENSER.
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY.
		1	UNIT MOUNTED VFD FOR USE WITH ECPM03.
		1	2 YEAR ENTIRE UNIT PARTS WARRANTY, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY.

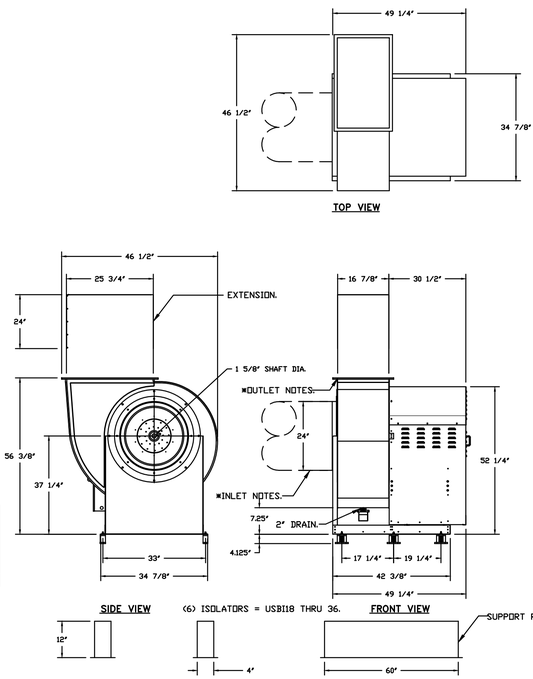
FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF	YES						
2	MAU				YES		YES	

CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF	56 LBS	RAIL	4.000"W X 60.000"L X 12.000"H ALONG WIDTH, RIGHT COMES AS A SET OF 2.
2	# 2		116 LBS	RAIL	6.000"W X 31.000"L X 14.000"H RIGHT.
	# 2			RAIL	6.000"W X 31.000"L X 14.000"H RIGHT.
2	# 2		116 LBS	CURB	31.000"W X 79.000"L X 14.000"H ALONG WIDTH, RIGHT INSULATED.

FAN #1 USBI24DD-RM-S - EXHAUST FAN (KEF)



FEATURES:

- ROOF MOUNTED FANS.
- UL705.
- UL762 AND ULC-S645 (RESTAURANT MODEL).
- HIGH HEAT OPERATION DIRECT DRIVE 350°F (176°C).
- HEAT SLINGER.
- NEMA 3R SAFETY DISCONNECT SWITCH.
- GREASE CLASSIFICATION TESTING.
- 2" DRAIN.
- MOTOR WEATHER COVER.
- FULLY SEALED SCROLL HOUSING.
- SCROLL ACCESS DOOR.
- FLANGE 2".

OPTIONS

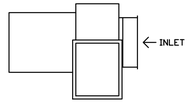
B124 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 24" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER.
UTILITY SET GREASE CUP.
B124 - 24" DISCHARGE EXTENSION.
BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE.
B124 - INLET CONNECTION STANDARD 24" FLANGED GREASE DUCT.
UTILITY SET - SPRING VIBRATION ISOLATORS - B124 THRU B130 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
UNIT MOUNTED VFD FOR USE WITH ECPM03.
2 YEAR PARTS WARRANTY.

* INLET/OUTLET NOTES:
LENGTH OF THE STRAIGHT DUCT ON THE INLET AND OUTLET TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER BEFORE CONNECTING TO ANY FITTINGS SUCH AS ELBOWS TO AVOID SYSTEM EFFECT.

NORMAL TEMPERATURE TEST DIRECT DRIVE
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 350°F (176°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

UNIT PLAN VIEW CORNER WEIGHTS:

167 LBS | 136 LBS



265 LBS | 190 LBS

CORNER WEIGHTS ARE CALCULATED BASED ON VERTICAL DISCHARGE. SUPPORT DUCT PROPERLY BEFORE FAN TO ENSURE CORNER WEIGHTS ARE NOT AFFECTED.

REVISIONS

	DESCRIPTION	DATE
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Roots - Lee Summit, MO
LEES SUMMIT, MO, 64063

DATE: 8/17/2021
DWG.#: 5043183
DRAWN BY: RJH-80
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 5

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9/17/2021

STATE OF MISSOURI
TIK B. KNUDSEN
NUMBER PE-2004026504
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number: 2002
Scale:
Date: 09/15/2021

KITCHEN HOOD DETAILS

M3.4

PHASE

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

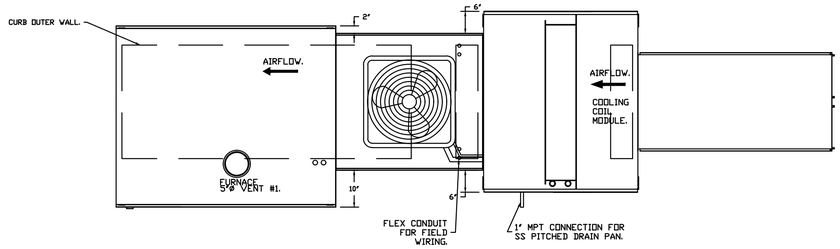
BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772

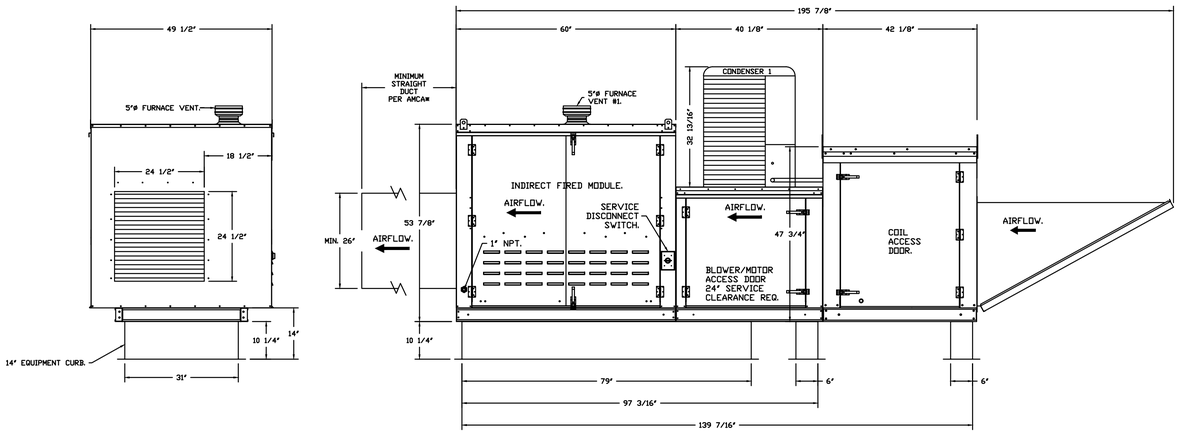
FAN #2 A2-IBT-300-20D-MPU - HEATER (MAU)
1. INDIRECT BENT TUBE GAS FIRED HEATER WITH 20" MIXED FLOW DIRECT DRIVE FAN, 1 FURNACE, ELECTRONIC FULL MODULATION, CONSTANT 80% EFFICIENCY, AND 6:1 MAX TURNDOWN FOR NG, (5:1 MAX TURNDOWN FOR LP). STAINLESS STEEL BURNER AND HEAT EXCHANGER.
2. INTAKE HOOD WITH EZ FILTERS.
3. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, 0 TO +10 INCHES WC, 2.5" DIAMETER, 1/8" THREAD SIZE, REAR THREAD.
6. SEPARATE 120V ELECTRICAL CONNECTION FOR ALL IBT HEATERS WITH 1 MODULE FOR STANDING POWER. 120V MUST BE RUN BY ELECTRICIAN FROM BUILDING PANEL TO MUA SWITCH.
7. MOTORIZED BACK DRAFT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF120S ACTUATOR INCLUDED.
8. USED WITH SIZE 1 AND SIZE 2 SIDE DISCHARGE IBT MODULES.
9. 5 TON SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 2 IBT MUA (2,000 TO 3,000 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION.
10. INSULATED BLOWER HOUSING SIZES 1-2 COMMERCIAL MODULAR.
11. SINGLE POINT MPU CONNECTION, 1 CONDENSER.
12. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.
13. UNIT MOUNTED VFD FOR USE WITH ECPM03.
14. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/MPU SECTION).
15. 2 YEAR ENTIRE UNIT PARTS WARRANTY, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY.
IBT - US PATENT 8771119 B2.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 26" x 26".

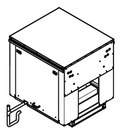
SUPPLY SIDE HEATER INFORMATION

WINTER TEMPERATURE = 10°F. TEMP. RISE = 65°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 227829.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 284787.
OUTPUT BTUs AT ALTITUDE OF 985 FT. = 219636.
INPUT BTUs AT ALTITUDE OF 985 FT. = 274795.

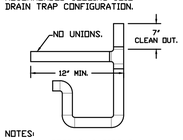




TYPICAL DRAIN TRAP INSTALL



RECOMMENDED COOLING COIL DRAIN TRAP CONFIGURATION.



NOTES:
1) 1" DIAMETER PVC PIPE ONLY.
2) USE ONLY LOW PROFILE COUPLINGS.
3) ADD CLEAN OUT AS SHOWN.

REVISIONS

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Roots - Lee Summit, MO
LEES SUMMIT, MO, 64063

DATE: 8/17/2021
DWG.#: 5043183
DRAWN BY: RJH-80
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 6

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

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9/17/2021
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
ERIK B. KNUDSEN
NUMBER PE-2004026504

Revision	Date	No.

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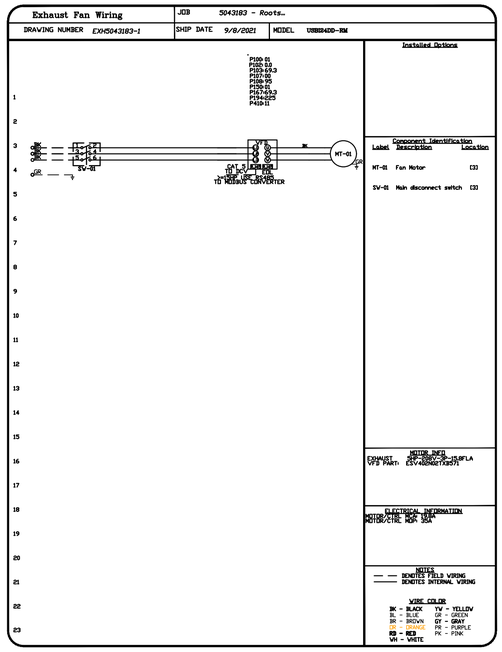
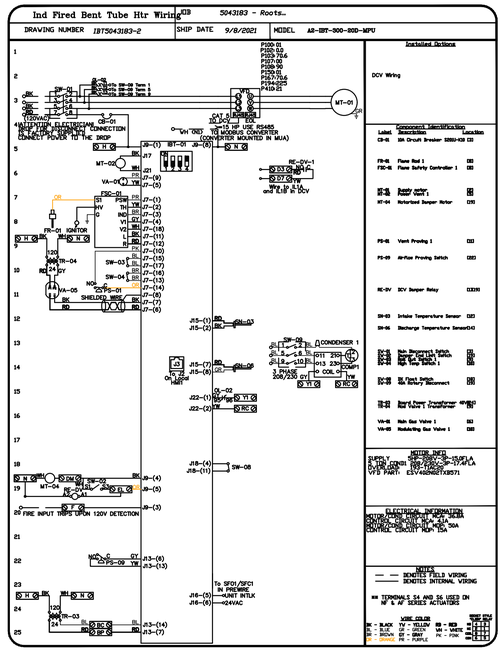
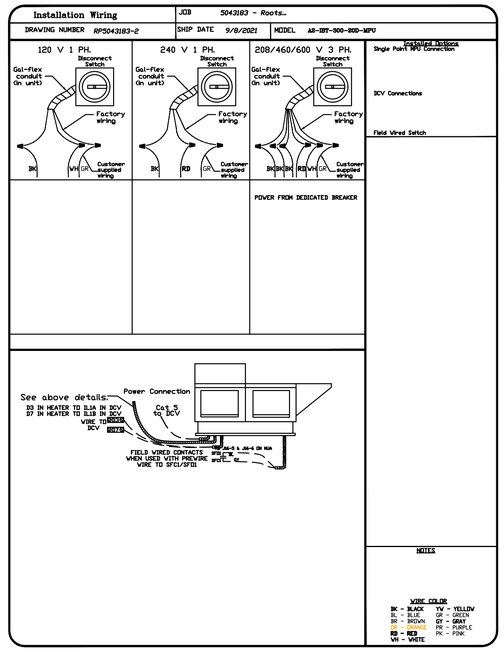
KITCHEN HOOD DETAILS

M3.5

PHASE







SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

REVISIONS

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KITCHEN HOOD DETAILS

M3.6

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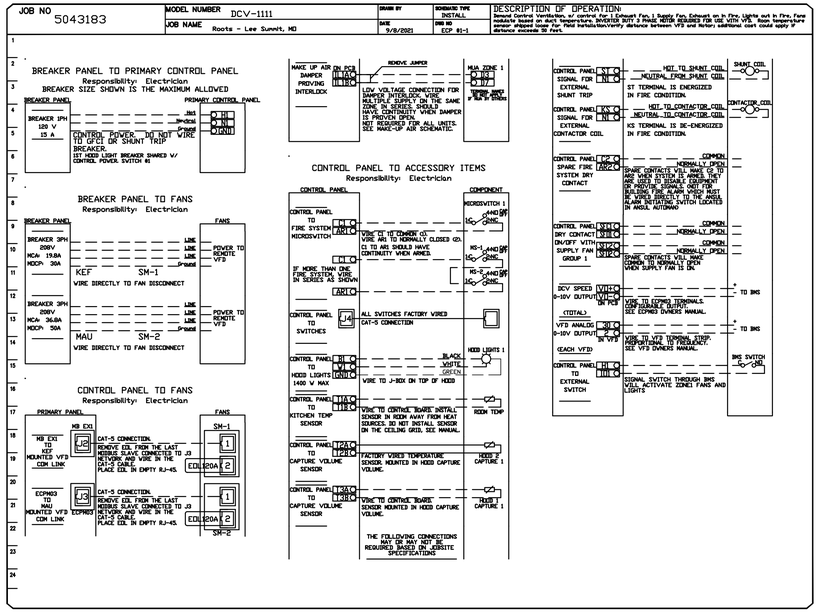
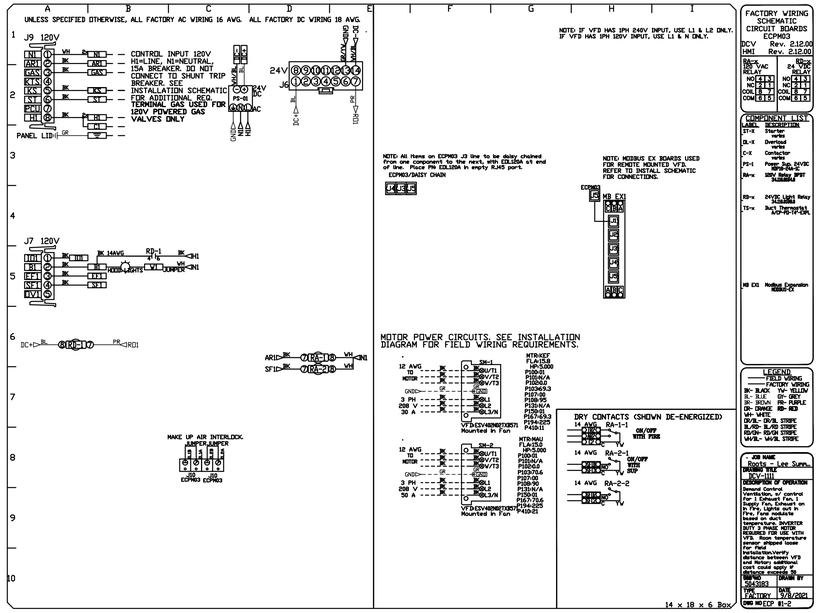
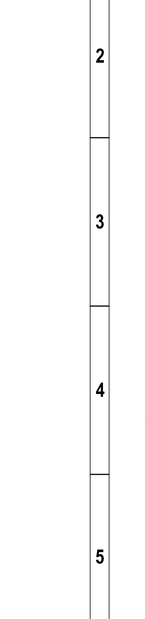
ELECTRICAL PACKAGE – JOB#5043183

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1	27	DCV-1111	UTILITY CABINET RIGHT	04 – UTILITY CABINET RIGHT HOOD # 2	1 LIGHT 1 FAN	SMART CONTROLS DCV	KEF	EXHAUST	3	5.000	208	15.8
							MAU	SUPPLY	3	5.000	208	15.0







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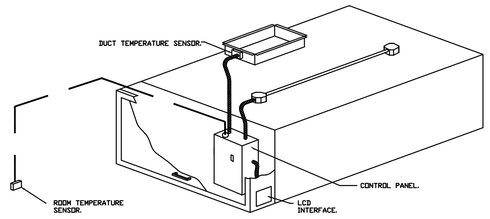
DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.2.8 (2015).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDS) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDS BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
  A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
  B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
  C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
  G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDS.



TYPICAL HOOD CONTROL PANEL INSTALLATION

SEQUENCE OF OPERATIONS:

THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

- AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS 'DYNAMIC', THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS 'STATIC', FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.2.8.
- MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
- SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
- OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

REVISIONS		
	DESCRIPTION	DATE
1		
2		
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4		
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KITCHEN HOOD DETAILS

M3.7

PHASE

ELECTRICAL SPECIFICATIONS

1. GENERAL PROVISIONS:
   A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED.
   B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
   C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC), AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
   D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
   E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
   F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
   G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
   H. CONTRACTOR SHALL PROVIDE ACCESS PANELS WHERE NECESSARY FOR CONCEALED ELECTRIAL COMPONENTS.
   I. CONTRACTOR SHALL PROMPTLY CALL ENGINEERS ATTENTION TO ANY APPARENT CONTRADICTIONS, AMBIGUITIES, ERRORS, DISCREPANCIES, OR OMISSIONS IN THE PLANS OR SPECIFICATIONS.
2. OPERATION AND MAINTENANCE MANUALS:
   A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
   B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.
   C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE COLLATED AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC. CONTRACTORS, ETC. DOCUMENTS SHALL BE COMPILED AND BOUND IN DIGITAL FILE OR 3 RING BINDER.
3. MANUFACTURERS:
   A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
4. TESTING, AND BALANCING:
   A. ALL CIRCUITS SHALL BE TESTED FOR CONTINUITY, SHORTS, AND GROUNDS BEFORE CONNECTING TO THE PROPER PHASE AS DESIGNED TO BALANCE THE LOADING BETWEEN PHASES.
   B. POWER AND LIGHTING PANELS SHALL BE PROPERLY PHASED TO DISTRIBUTE THE LOAD AND SHALL BE CONNECTED AND ADJUSTED TO OPERATE AS SPECIFIED.
   C. ALL MOTORS AND SIMILAR EQUIPMENT SHALL BE CHECKED FOR PROPER PHASE ROTATION AND OPERATION.
5. RACEWAYS:
   A. CONDUIT INSIDE THE BUILDING SHALL BE METALLIC TUBING (EMT), BEARING THE UL LABEL, WITH COMPRESSION TYPE FITTINGS OR SCREW SET FITTINGS.
   B. CONDUIT EXPOSED TO THE WEATHER, INSTALLED UNDERGROUND, IN CONCRETE, OR USED FOR SERVICE ENTRANCE SHALL BE STANDARD RIGID CONDUIT (GALVANIZED) WITH THREADED FITTINGS.
   C. UNDERGROUND CONDUIT MAY BE POLYVINYL CHLORIDE WITH A DEFLECTION TEMPERATURE, UNDER LOAD AT 264 PSI, OF 73 DEGREES C, AND A TENSILE STRENGTH OF 5,200 PSI. JOINTS SHALL BE FLUSH SOLVENT WELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE EQUAL TO CARLON POWER AND COMMUNICATIONS DUCT TYPE DB (DIRECT BURIAL). CONDUIT AND FITTINGS SHALL BE PRODUCED BY THE SAME MANUFACTURER.
   D. FLEXIBLE METAL CONDUIT SHALL ONLY BE USED FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND LIGHT FIXTURES. MAXIMUM LENGTH SHALL BE 6'-0".
6. CONDUCTORS:
   A. WIRES SHALL BE CONTINUOUS WITHOUT SPLICES OR TAPS IN CONDUIT RUNS. ALL SPLICES SHALL BE MADE IN JUNCTION, PULL, OR OUTLET BOXES. ALL WIRE SHALL BE INSTALLED IN CONDUIT, RACEWAYS, OR OTHER PROTECTIVE COVER SANCTIONED BY CODES.
   B. CONDUCTORS FOR LIGHTING AND POWER SHALL BE COPPER, MINIMUM NO. 12 A.W.G., 600 VOLT.
   C. NO. 10 GAUGE AND SMALLER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), SOLID CONDUCTOR, UNLESS OTHERWISE INDICATED.
   D. NO. 8 GAUGE AND LARGER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED, UNLESS OTHERWISE INDICATED.
   E. SERVICE ENTRANCE AND PANEL FEEDER CONDUCTORS, NO. 3 GAUGE AND LARGER SHALL BE TYPE XHHW-2 (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED COPPER, UNLESS OTHERWISE INDICATED.
7. MC CABLE:
   A. MC CABLE SHALL CONSIST OF INTERLOCK ARMORED CABLE MADE OF THREE OR FOUR TYPE THHN SOLID (#8 AWG AND LARGER MAY BE STRANDED) COPPER CONDUCTORS RATED 90°C FOR DRY LOCATIONS, WITH NYLON OR EQUIVALENT UL LISTED JACKET, PER UL STANDARD 83 THE THREE CONDUCTORS SHALL BE TWISTED TOGETHER WITH THE COPPER GROUNDING CONDUCTOR, SUITABLE FILLERS, AND WRAPPED IN BINDER TAPE. THE ASSEMBLY SHALL BE ARMORED WITH SPIRALLY WRAPPED INTERLOCKED ARMOR OF ALUMINUM OR GALVANIZED STEEL.
   B. CABLES SHALL BE TESTED IN ACCORDANCE WITH UL STANDARD 1569 FOR TYPE MC CABLE AND RATED AT 600 VOLTS, 90 DEG. C FOR DRY LOCATIONS AND 75 DEG. C FOR WET LOCATIONS.
8. WIRING DEVICES:
   A. WALL SWITCHES SHALL BE SPECIFICATION GRADE, QUIET TYPE, FLUSH TOGGLE SWITCH, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES.
      1) SINGLE POLE: HUBBELL #CS1221-X, OR EQUAL.
      2) THREE WAY: HUBBELL #CS1223-X, OR EQUAL.
      3) AS SPECIFIED ON PLANS
   B. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX, GROUNDING, THREE-WIRE TYPE, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES. HUBBELL #CR5352-X, OR EQUAL.
   C. GROUND FAULT INTERRUPTER RECEPTACLES (GFI) SHALL BE HUBBELL #GF20-XL. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
   D. ISOLATED GROUND RECEPTACLES (IG) SHALL BE HUBBELL #CR5352IG, ORANGE COLOR. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
   E. RECEPTACLES OUTSIDE BUILDING AND WHERE NOTED AS WEATHERPROOF, SHALL BE LISTED WEATHER-RESISTANT HUBBEL #5777R2X-X OR EQUAL AND SHALL BE INSTALLED IN A WEATHERPROOF ENCLOSURE WHICH SHALL BE INTERMATIC #WP1010HMD OR #WP1010HMD DIECAST METAL WEATHERPROOF RECEPTACLE COVER. COVER SHALL BE WEATHER PROOF RATED WHILE IN USE.
   F. VERIFY DEVICES AND DEVICE COVERPLATES COLOR AND STYLE WITH ARCHITECT.
9. BOXES:
   A. HOT DIPPED GALVANIZED STEEL BOXES. PROVIDE TYPE TO SUIT CONDITIONS FOR INSTALLATION.
   B. ALL BOXES SHALL BE FLUSH MOUNTED, UNLESS INDICATED OTHERWISE.

ELECTRICAL SPECIFICATIONS (CONTINUED)

10. PANELBOARDS:
   A. FURNISH AND INSTALL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE LISTED BY UL AND SO LABELED, AND SHALL BE FULLY RATED FOR THE VOLTAGE AND CURRENT CAPACITY INDICATED ON THE PANEL SCHEDULE. PANELBOARDS SHALL BE EQUAL TO SQUARE D TYPE NQ OR NF WITH BOLT IN TYPE BREAKERS. PANELBOARD LUGS SHALL BE RATED AT 75°C.
      1) CIRCUIT BREAKER INTERRUPTING CAPACITIES SHALL MEET OR EXCEED THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED AND AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT FROM LOCAL UTILITY.
   B. CIRCUIT BREAKERS SHALL MEET APPLICABLE PORTIONS OF UL STANDARD 489 AND NEMA AB-1. CIRCUIT BREAKERS SHALL BE BOLT-ON, GROUP MOUNTED, AMBIENT MAGNETIC WITH COMMON TRIP, UL RATED TO CARRY 80% OF NAMEPLATE RATING CONTINUOUSLY IN FREE AIR AT 40° C. CIRCUIT BREAKERS SHALL BE TRIP INDICATING AND FULLY INTERCHANGEABLE WITHOUT DISTURBING ADJACENT UNITS. WIRE TERMINALS SHALL BE RATED 75 DEGREES C. THE OPERATING MECHANISM SHALL BE TRIP-FREE SO THAT CONTACTS CANNOT BE HELD CLOSED AGAINST ANY ABNORMAL OVERCURRENT OR SHORT CIRCUIT CONDITION.
      a) BREAKERS SHALL MEET APPLICABLE NEMA AND/OR UL SPECIFICATIONS.
   C. PANELBOARD BOXES SHALL BE GALVANIZED SHEET STEEL WITH AMPLE WIRING GUTTER SPACE IN ACCORDANCE WITH NEC. FRONTS SHALL BE OF SHEET STEEL PAINTED LIGHT GREY OVER A SUITABLE RUST INHIBITOR PRIMER. PANELBOARDS SHALL BE EQUIPPED WITH ONE PIECE DOOR, CYLINDER TUMBLER TYPE LOCK, DIRECTORY CARD-HOLDER AND QUARTER-TURN ADJUSTABLE TRIM CLAMPS.
   D. PANELBOARD INTERIORS SHALL CONSIST OF REINFORCED GALVANIZED SHEET STEEL FRAMES WITH ALUMINUM BUS BARS AND CIRCUIT BREAKERS, PROPERLY SUPPORTED TO PREVENT VIBRATIONS AND BREAKAGE IN HANDLING. BUS BARS SHALL BE SEQUENCE PHASED. PANELBOARD SHALL HAVE A FULL SIZED SOLID ALUMINUM NEUTRAL AND GROUND BUS.
   E. BUS BAR BRACING SHALL BE UL LISTED AS INDICATED ON DRAWINGS. ADDITIONAL BRACING SHALL BE PROVIDED AS REQUIRED TO MEET OR EXCEED INDICATED AVAILABLE FAULT CURRENTS.
   F. DIRECTORY CARDS SHALL BE COMPLETELY FILLED IN BY TYPEWRITER, LISTING CIRCUIT NUMBERS AND LOAD SERVED, INCLUDING EXISTING CIRCUITS. CIRCUIT BREAKERS SHALL BE IDENTIFIED BY CIRCUIT NUMBER LABELS AS HEREINBEFORE SPECIFIED.
11. DISCONNECTS:
   A. DISCONNECTS SHALL BE EXTERNALLY OPERATED, QUICK-MAKE, QUICK-BREAK, SAFETY, WITH PROVISIONS FOR PAD LOCKING. FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS INDICATED.
   B. INDOOR SWITCHES SHALL BE NEMA 1 AND OUTDOOR SWITCHES SHALL BE NEMA 3R, UNLESS INDICATED OTHERWISE.
12. FUSES:
   A. FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING U.L. CLASS RK-1 FUSES WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE SILVER FOR RATINGS ABOVE 60 AMPERES.
   B. ALL OTHER FUSES SHALL BE U.L. CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM TIME-DELAY OF 10 SECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-CIRCUIT LINKS AND 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE COPPER.
13. LIGHT FIXTURES:
   A. WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIMUM OF 2 SUPPORT WIRES ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRUCTURE. SUPPORT WIRES SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED.
   B. FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWINGS. APPROVED LIGHTING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATHERPROOF WIRING IS REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.
   C. ALL FIXTURES SHALL CARRY UL AND ETL LABELS.
14. SLEEVES:
   A. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK.
   B. INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN CONDUIT AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
   C. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WEATHERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
15. GROUNDING:
   A. GROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) 250, AND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE CONDUIT IS USED. PROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.
   B. BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).
16. REMODELING WORK:
   A. DEMOLITION: DISCONNECT, DEMOLISH AND REMOVE ABANDONED ELECTRICAL MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN.
   B. EQUIPMENT TO BE SALVAGED:
      1) DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE OWNER FOR STORAGE.
      2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCATED SHALL BE CAREFULLY REMOVED, AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL ITEMS SHALL BE RESTORED TO "LIKE NEW" CONDITION WITH RUST OR CORROSION REMOVED, SURFACE PAINT TOUCHED UP OR REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION, AND THOROUGHLY CLEANED AND INSPECTED. ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF CONSTRUCTION OR DEMOLITION ACTIVITY SHALL BE REPLACED WITH NEW MATERIAL EQUIVALENT IN EVERY RESPECT.
   C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.
   D. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPLETE.
   E. PROVIDE ALL ALTERATIONS AND REWORK INDICATED AND/OR REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF ALL EXISTING ELECTRICAL SYSTEMS, INTEGRATING THE NEW AND EXISTING AREAS. LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH REMODELING AREA AND SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE REMODELING LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.
      1) ABANDONED CONDUIT SHALL HAVE WIRE REMOVED AND SHALL BE CAPPED. ABANDONED OUTLETS IN WALLS OR PARTITIONS SHALL HAVE DEVICES AND WIRE REMOVED, AND SHALL BE COVERED.
      2) WHERE EXISTING CONDUITS TERMINATE AT AN EXISTING OUTLET IN A WALL, CEILING, OR FLOOR TO BE REMOVED, DISCONNECT AND REMOVE DEVICE AND WIRE FROM CONDUIT. CONDUIT SHALL BE CUT BACK AND CAPPED (BELOW THE FLOOR OR ABOVE THE CEILING) SO NOT TO CREATE AN OBSTRUCTION. PATCH FLOOR TO MATCH EXISTING.
      3) WHERE EXISTING CIRCUITS EXTEND BEYOND THE OUTLET IN THE EXISTING WALL, CEILING, OR FLOOR TO BE REMOVED, FURNISH AND INSTALL NEW CONDUIT AND WIRE TO EITHER REROUTE THE CIRCUIT OR FEED THE REMAINING OUTLET(S) FROM ANOTHER ELECTRICAL SOURCE, BUT IN SUCH A MANNER AS NOT TO REVISE THE CIRCUIT. ALL REROUTED CONDUIT SHALL BE APPROVED BY THE ARCHITECT.
      4) WHERE EXISTING OUTLETS IN A WALL, CEILING, OR FLOOR TO BE REMOVED ARE ESSENTIAL TO MAINTAIN OPERATION OF OTHER REMAINING OUTLETS, RELOCATE THE OUTLET TO A NEW CONVENIENT LOCATION. EXISTING WIRING DEVICES SHALL NOT BE REUSED, UNLESS OTHERWISE INDICATED.
      5) WHERE LIGHTING FIXTURES ARE INDICATED TO BE DEMOLISHED, REMOVE ALL WIRE AND MODIFY THE EXISTING CONDUIT (IF APPLICABLE) FOR THE NEW LIGHTING. ALL UNUSED CONDUIT SHALL BE REMOVED.
      6) WHERE A TELEPHONE CIRCUIT EXTENDS BEYOND AN OUTLET IN AN EXISTING WALL, CEILING, OR FLOOR TO BE REMOVED, PROVIDE NECESSARY EMPTY CONDUIT AND NOTIFY THE OWNER WHO WILL REQUEST THE OWNER TO ARRANGE WITH THE TELEPHONE COMPANY FOR NEW WIRING TO OUTLETS THAT REMAIN.
      7) WHERE EXISTING CONDUIT AND WIRE RUNS ARE LOCATED IN OR ATTACHED TO AN EXISTING WALL, CEILING OR FLOOR TO BE REMOVED, THEY SHALL BE REROUTED IN EITHER NEW OR EXISTING CONSTRUCTION TO MAINTAIN CONTINUITY OF CIRCUITS UNLESS OTHERWISE INDICATED.
      8) CONDUIT SHALL BE CONCEALED WITHIN THE EXISTING BUILDING CONSTRUCTION WHEREVER POSSIBLE, EXCEPT WHERE OTHERWISE INDICATED.
      9) EXISTING WIRE SHALL BE DISCONNECTED AND REMOVED WHEREVER EXISTING CIRCUITS ARE ABANDONED.

ELECTRICAL SYMBOLS LIST

CIRCUITING & NOTES

+46"	SPECIAL MOUNTING HEIGHT FOR ASSOCIATED DEVICE (CENTERLINE OF DEVICE)
GFI	GROUND FAULT CIRCUIT INTERRUPTER DEVICE
WP	WEATHERPROOF ENCLOSURE ON DEVICE
WR	WEATHERPROOF RESISTANT DEVICE
IG	ISOLATED GROUND DEVICE
EM	EMERGENCY BATTERY BACKUP
TR	TAMPER RESISTANT OUTLET
USB	COOPER #TRTT56-X OR EQUAL DUPLEX RECEPTACLE WITH DUAL USB CHARGING PORTS. PROVIDE 2-1/8" DEEP BACK BOX.
(TIE)	PARTIAL HOMERUN. REFER TO PLANS FOR ADDITIONAL DEVICES CONNECTED TO THIS CIRCUIT.
X	ELECTRICAL FLOOR PLAN NOTE WITH DESIGNATION
2 LP	CONDUIT CONCEALED WHERE POSSIBLE OR AS NOTED, ARROWS INDICATE HOME RUN TO PANEL. CIRCUIT NUMBERS INDICATED
	#12 WIRE IN CONDUIT, UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION
	GROUNDING CONDUCTOR, #12 WIRE UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION
	CONDUIT ROUTED UNDER FLOOR/GRADE

LIGHTING

	EMERGENCY TWIN HEAD LIGHT FIXTURE
EXIT	EXIT LIGHT WITH DIRECTIONAL ARROWS INDICATED
A	STRIP FIXTURE WITH TYPE DESIGNATION
A	RECESSED OR SURFACE MOUNTED FIXTURE WITH TYPE DESIGNATION
A NL	NIGHT LIGHT, CONNECT TO UNSWITCHED CIRCUIT
A	CEILING OR RECESSED FIXTURE WITH TYPE DESIGNATION
A	WALL MOUNTED FIXTURE WITH TYPE DESIGNATION

POWER DEVICES

	DUPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE
	FOURPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE
	DEVICE MOUNTED ABOVE COUNTER AND/OR SPLASH GUARD
	HEAVY DUTY OUTLET - NEMA CONFIGURATION SIZE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION
	PANEL BOARD, TOP OF BOX 6'-0" AFF
J	JUNCTION BOX
	NON-FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	MAGNETIC STARTER
M	MOTOR WITH DESIGNATION
	FLOOR BOX

CONTROLS

S	SINGLE POLE WALL SWITCH, TOP OF BOX AT 48" AFF
S_P	SINGLE POLE WALL SWITCH WITH PILOT LIGHT, TOP OF BOX AT 48" AFF
S_2	TWO POLE WALL SWITCH, TOP OF BOX AT 48" AFF
S_3	THREE-WAY WALL SWITCH, TOP OF BOX AT 48" AFF
S_D	DIMMER SWITCH, TOP OF BOX AT 48" AFF
S_m	MANUAL MOTOR STARTER WITH OVERLOADS

OCCUPANCY SENSORS
1. DUAL TECHNOLOGY/ULTRASONIC CEILING SENSORS SHALL BE MOUNTED 6' FROM SUPPLY/EXHAUST AIR DIFFUSERS.
2. LOW VOLTAGE CEILING SENSORS SHALL BE PROVIDED WITH 6' SLACK CONDUCTOR COILED AT SENSOR.

S_O	WALL MOUNTED DUAL-TECHNOLOGY OCCUPANCY SENSOR, WATT STOPPER #DW-100, TOP OF BOX AT 48" AFF

COMMUNICATIONS

	DATA/TELEPHONE OUTLET WITH MINIMUM ¾" CONDUIT STUBBED UP TO ABOVE ACCESSIBLE CEILING, BOTTOM OF BOX AT 16", UNLESS NOTED OTHERWISE. PROVIDE WITH PULL STRING
TV	FLAT SCREEN TELEVISION - PROVIDE AND INSTALL ONE (1) HUBBELL #RR1510X RECESSED TAMPER-RESISTANT DUPLEX RECEPTACLE WITH COVERPLATE AND ONE(1) HUBBELL #HBL260 TWO GANG LARGE CAPACITY WALL BOX (UP TO 2" KNOCKOUT) W/ MUD RING AND COVERPLATE FOR DATA. PROVIDE 2"C WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR DATA CABLES. MOUNT BOX AT 7'-6" AFF UNLESS NOTED OTHERWISE (VERIFY)

ELECTRICAL SYMBOLS LIST (CONTINUED)

FIRE ALARM - FIRE ALARM SYSTEM IS EXISTING TO REMAIN. PROVIDE ADDITIONAL COMPATIBLE DEVICES AND CONNECT TO EXISTING SYSTEM AS REQUIRED.

FIRE ALARM

SD	CEILING MOUNT SMOKE DETECTOR
DD	DUCT MOUNT SMOKE DETECTOR
HD	CEILING MOUNT HEAT DETECTOR
F	FIRE ALARM PULL STATION, TOP OF BOX AT 48" AFF
	FIRE ALARM HORN/STROBE COMBINATION SIGNAL, CENTERLINE AT 6'-8" AFF
	FIRE ALARM HORN/STROBE COMBINATION SIGNAL, CEILING MOUNTED
	FIRE ALARM VISUAL STROBE, CENTERLINE AT 6'-8" AFF
	FIRE ALARM VISUAL STROBE, CEILING MOUNTED
WF	WATER FLOW SWITCH
TS	TAMPER SWITCH
R	RELAY

ELECTRICAL GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
2. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM REGARDLESS OF CIRCUITING INDICATED.
3. ALL EXPOSED RACEWAYS SHALL BE IN EMT CONDUIT, MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
4. ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, SYSTEMS, CONDUIT AND WIRE, ETC. NOT BEING REUSED. DO NOT JUST ABANDON.
5. ELECTRICAL CONTRACTOR TO COORDINATE MANUFACTURER ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT BEING FURNISHED WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. EQUIPMENT DISCONNECTS TO BE PROVIDED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE IN MECHANICAL SCHEDULES.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LIGHT FIXTURES AND DEVICES.
7. ALL ELECTRICAL DEVICES ARE EXISTING AND TO REMAIN UNLESS NOTED OTHERWISE OR CONFLICT WITH NEW CONSTRUCTION. MAINTAIN PROPER OPERATION OF ALL EXISTING ELECTRICAL.
8. ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
9. EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL PER NEC 210.4.
10. FIRE ALARM SYSTEM IS SHOWN FOR SCHEMATIC PURPOSES. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR PROVIDING DESIGN AND SHOP DRAWINGS SUBMITTAL TO FIRE MARSHAL FOR APPROVAL AS REQUIRED BY THE FIRE MARSHAL. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE ADDITIONAL DEVICES, POWER SUPPLIES, ETC FOR COMPLIANCE WITH CODE.
11. ALL BRANCH CIRCUITS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 3% VOLTAGE DROP. ALL FEEDERS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 2% VOLTAGE DROP. ELECTRICAL CONTRACTOR SHALL VERIFY WIRING INDICATED IS SUFFICIENT AND INCREASE CONDUCTOR SIZE AS REQUIRED BASED OFF ACTUAL INSTALLED LENGTH OF CONDUCTORS.
12. PROVIDE LOW VOLTAGE WIRING BETWEEN ALL 0-10V DIMMING DRIVERS CONTROLLED BY 0-10V DIMMERS PER MANUFACTURER'S INSTRUCTIONS WHETHER INDICATED ON PLANS OR NOT.
13. PROVIDE SEAL-OFF FITTINGS AT ALL COOLER/FREEZER PENETRATIONS.
14. TYPE 1 HOOD FIRE SUPPRESSION SYSTEM TO BE INTERLOCKED WITH FIRE ALARM SYSTEM. UPON ACTIVATION OF HOOD FIRE SUPPRESSION SYSTEM SIGNAL SHALL BE SENT TO FIRE ALARM.

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ROOTS RESTAURANT

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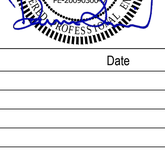
9/17/2021



Revision	Date	No.

Project Number: 2002
Scale:
Date: 09/15/2021

ELECTRICAL SPECS

E0.1

PHASE

BC ENGINEERS INCORPORATED
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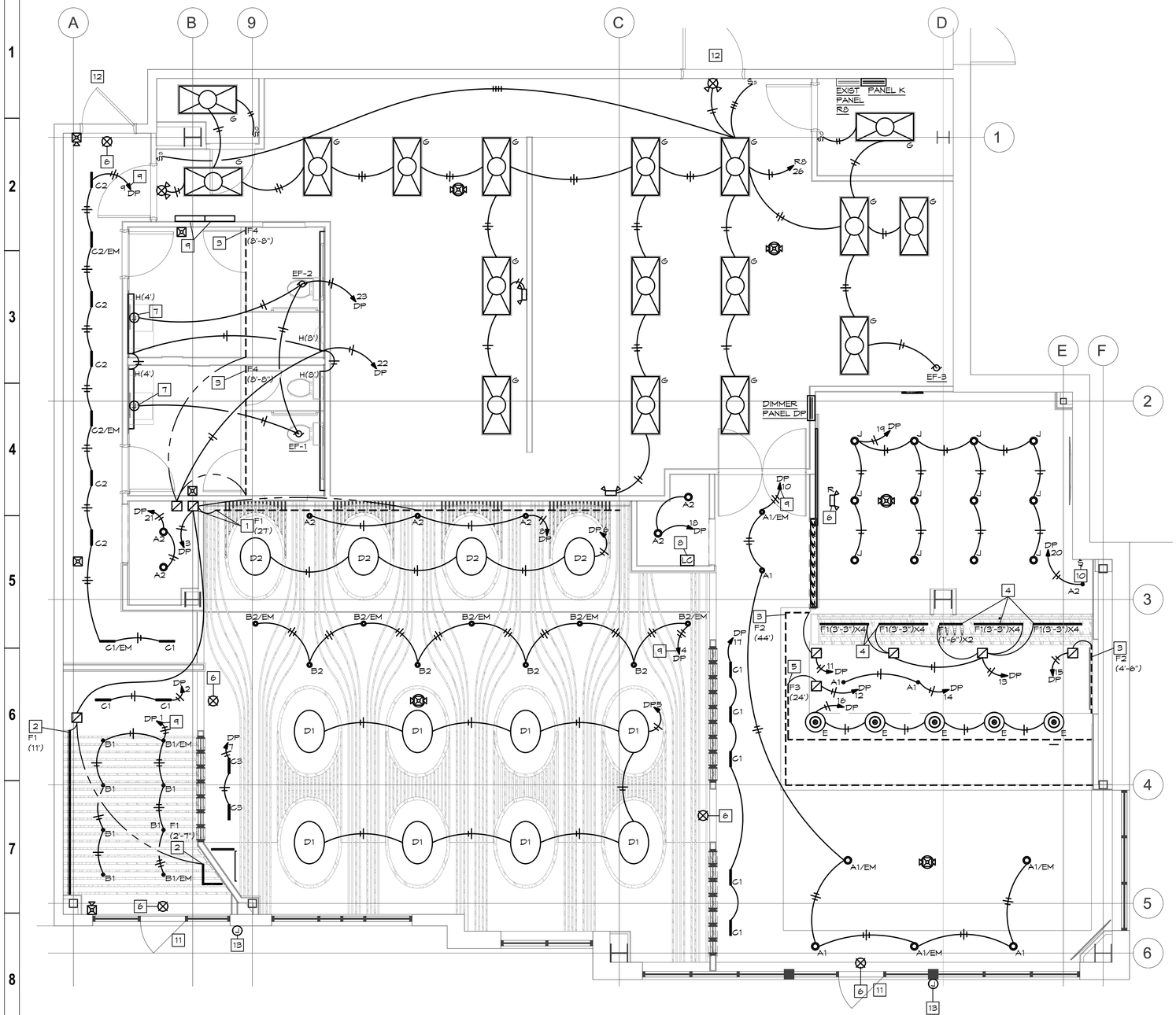

ELECTRICAL LIGHTING PLAN

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

LIGHTING PLAN NOTES:

1. LED CHANNEL ACCENT UPLIGHT, REFER TO ARCHITECTURAL PLANS FOR MOUNTING LOCATION. CONNECT TO REMOTE DIMMING DRIVER LOCATED IN ACCESSIBLE LOCATION.
2. LED CHANNEL ACCENT UPLIGHT, REFER TO ARCHITECTURAL PLANS FOR MOUNTING LOCATION. CONNECT TO REMOTE DIMMING DRIVER LOCATED IN HOSTESS STATION.
3. LED CHANNEL COVE LIGHT, REFER TO ARCHITECTURAL PLANS FOR MOUNTING LOCATION. CONNECT TO REMOTE DIMMING DRIVER ABOVE ACCESSIBLE CEILING. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. LED RECESSED CHANNEL IN BOTTOM OF EACH SHELF. REFER TO ARCHITECTURAL PLANS FOR MOUNTING LOCATION. CONNECT TO REMOTE DIMMING DRIVER ABOVE ACCESSIBLE CEILING. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. LED CHANNEL MOUNTED TO BOTTOM OF BARTOP, REFER TO ARCHITECTURAL PLANS FOR MOUNTING LOCATION. CONNECT TO REMOTE DIMMING DRIVER LOCATED IN ACCESSIBLE LOCATION. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. ALL EXIT AND EMERGENCY LIGHTING TO BE CONNECTED TO NON-DIMMED CIRCUIT DP-1A IN DIMMING PANEL 'DP' WITH 2#12, 1#12G, IN 1/2"C. CIRCUIT SHALL BE FOR CONTINUOUS OPERATION.
7. CONNECT ILLUMINATED MIRROR TO RESTROOM LIGHTING AND CONTROLS.
8. LOCATION OF MASTER LIGHTING CONTROL STATION BY MARLIN CONTROLS. VERIFY INSTALLATION REQUIREMENTS WITH THE OWNER PRIOR TO ROUGH-IN. SEE DIMMER SYSTEM DETAIL FOR MORE INFORMATION.
9. PROVIDE EMERGENCY BATTERY BACKUP FOR 'EM' TYPE FIXTURES WITH BYPASS FOR 0-10V DIMMING. LOCATE IN ACCESSIBLE REMOTE LOCATION. REFER TO INVERTER WIRING DIAGRAM ON SHEET E3.0.
10. LOCATION OF LOCAL SCENE LIGHTING CONTROL FOR PRIVATE DINING AREA.
11. EXTERIOR EGRESS LIGHTING EXISTING TO REMAIN.
12. LIGHTING IN THIS AREA IS EXISTING TO REMAIN.
13. EXISTING SIGNAGE CIRCUIT TO REMAIN. ROUTE CIRCUIT THRU NEW TIME CLOCK.

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ROOTS RESTAURANT

940 NW PRYOR RD, SUITE M
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9/17/2021

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
DARIN T. SEIDEL
NUMBER PE-2009003629

Revision	Date	No.

Project Number:	2002
Scale:	
Date:	09/15/2021

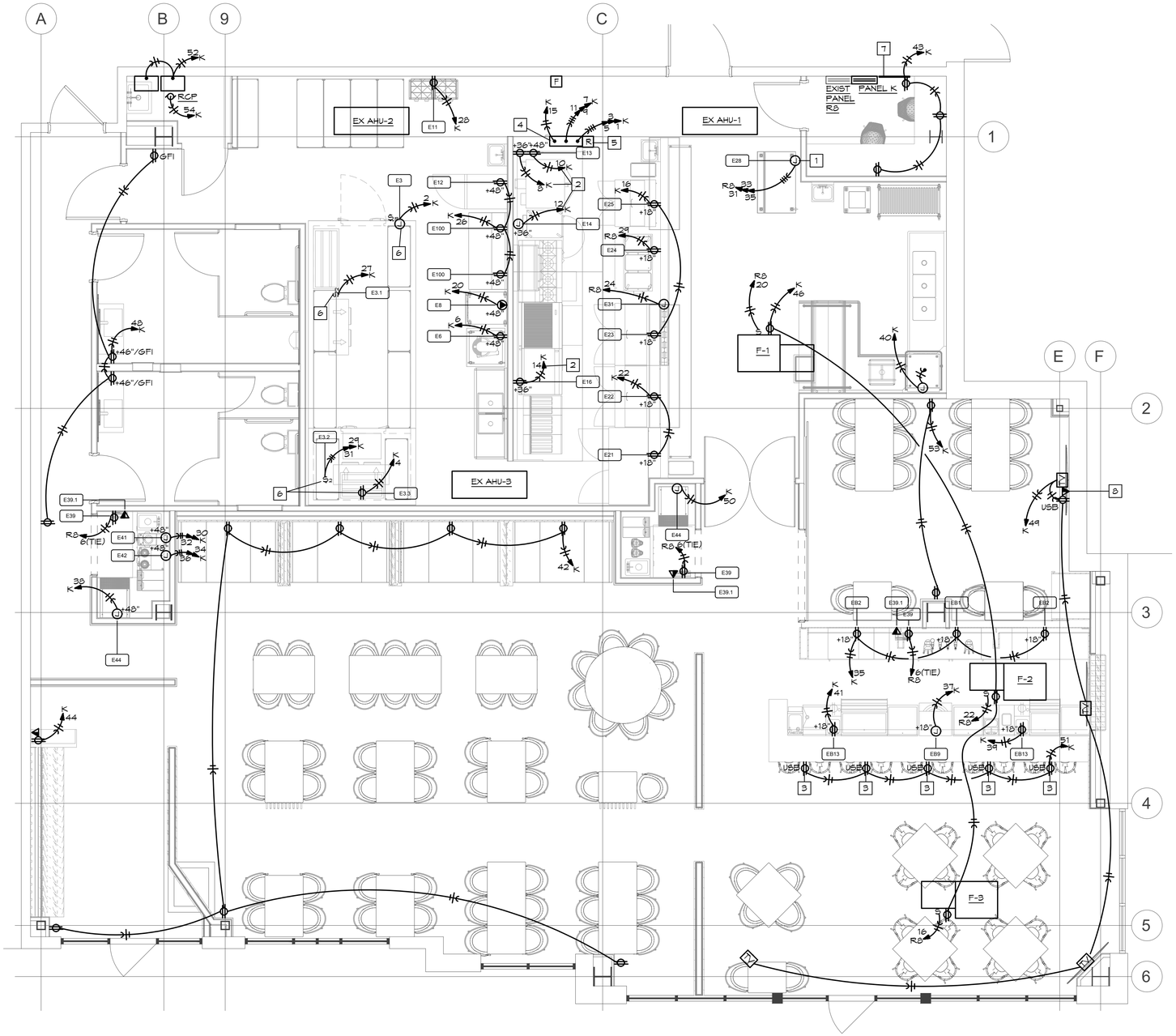
ELECTRICAL LIGHTING PLAN

E1.0

PHASE

DRAWN BY:	MA/SM
BC PROJECT #:	21569
MISSOURI	PE COA #2009003629

BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772



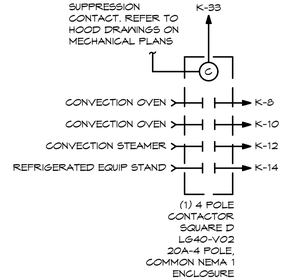
NORTH

ELECTRICAL POWER PLAN

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

POWER PLAN NOTES:

1. VERIFY ICE MACHINE REQUIREMENTS WITH VENDOR PRIOR TO ROUGH-IN.
2. ROUTE CIRCUIT TO PANEL VIA HOOD FIRE SUPPRESSION CONTACTOR SEE DETAIL THIS SHEET.
3. USB RECEPTACLE MOUNTED BELOW BAR.
4. HOOD CONTROL PACKAGE ON END OF HOOD. MAKE-UP AIR UNIT AND EXHAUST FAN SHALL BE ROUTED TO STARTERS IN HOOD PACKAGE. PROVIDE CIRCUITS FROM PANELS AS INDICATED FOR HOOD LIGHTS, CONTROLS, AND FANS. REFER TO MECHANICAL HOOD PACKAGE WIRING DIAGRAMS FOR ADDITIONAL WORK.
5. PROVIDE RELAY AND INTERLOCK ANSUL SYSTEM WITH FIRE ALARM PANEL AS REQUIRED BY FIRE MARSHALL.
6. CONNECT TO WALK-IN COOLER LIGHTS, EVAP AND HEAT TRACING PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATIONS.
7. TELEPHONE BACK BOARD. PROVIDE GROUND BAR WITH #6 CU BOND TO BUILDING ELECTRODE SYSTEM AND 1"C TO EXISTING TELEPHONE SERVICE ENTRANCE.
8. PROVIDE DATA BOX AND CONDUIT UP TO TV FOR FUTURE HDMI CONNECTIONS.



E.C. TO PROVIDE ALL DEVICES SHOWN HERE. THESE ARE NOT INCLUDED IN THE HOOD CONTROL PANEL.

HOOD SHUT-OFF DETAIL

SCALE: NONE

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9/17/2021

STATE OF MISSOURI
DARIN T. SEIDEL
NUMBER PE-2009030
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number:	2002
Scale:	
Date:	09/15/2021

ELECTRICAL POWER PLAN

E2.0

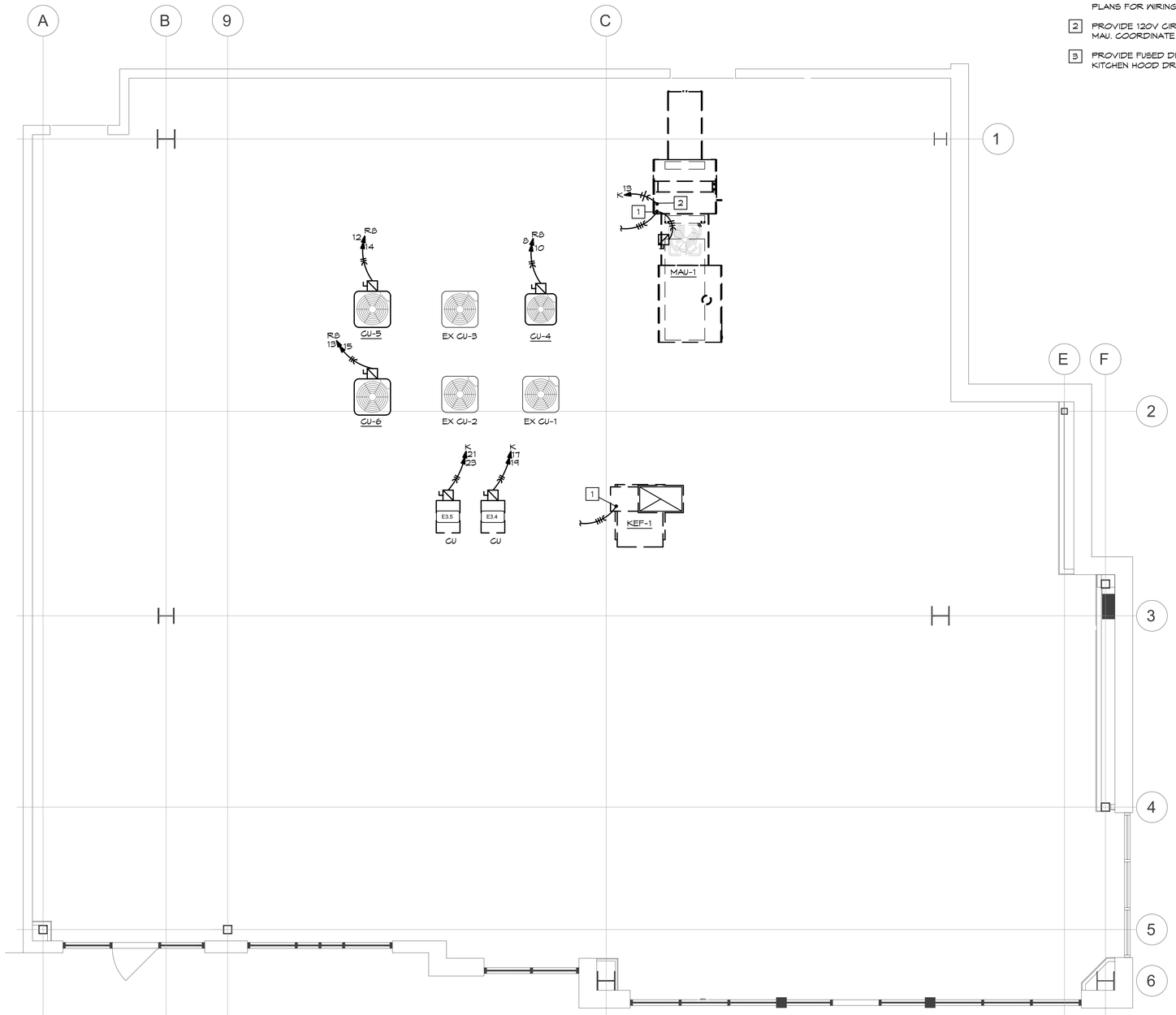
PHASE

DRAWN BY:	MA/SM
BC PROJECT #:	21569
MISSOURI	PE COA #2009003629

BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772

ROOF POWER PLAN NOTES:

1. MAU/EF FACTORY MOUNTED DISCONNECT, ROUTE CIRCUIT DOWN TO STARTER IN HOOD CONTROL PANEL. SEE SHEET E2 PLAN NOTE 4. REFER TO MECHANICAL HOOD PLANS FOR WIRING DIAGRAM.
2. PROVIDE 120V CIRCUIT FROM PANEL INDICATED THROUGH DCV TO SUPPLY FAN IN MAU. COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR.
3. PROVIDE FUSED DISCONNECT FOR MAU-1 CONDENSER. CIRCUIT THROUGH MAU-1 PER KITCHEN HOOD DRAWINGS ON MECHANICAL PLANS.



ELECTRICAL ROOF POWER PLAN

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

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9/17/2021

STATE OF MISSOURI
REGISTERED
DARIN T. SEIDEL
NUMBER PE-2009030629
PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number:	2002
Scale:	
Date:	09/15/2021

ELECTRICAL ROOF POWER PLAN

E2.1

PHASE

DRAWN BY:	MA/SM
BC PROJECT #:	21569
MISSOURI	PE COA #2009003629

BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772

LIGHT FIXTURE SCHEDULE

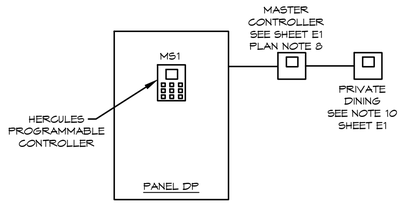
MARK NO.	MANUFACTURER & CATALOG NUMBER	VOLTS WATTS	LIGHT SOURCE	DESCRIPTION	EQUIVALENT MANUFACTURERS
A1	TECH LIGHTING ENGL3R-F-L15-I ENGL3R-F-D-927-W-W 353LEDGATOPT-60-MOC-EC	120 15	LED 1300LUM 2700K	3" DOWNLIGHT WITH 40° OPTIC AND 60° FIELD INSTALLED OPTIC AND EGGCRATE LOUVER, WHITE FINISH 0-10V DIMMING (1%)	OR EQUAL
A2	TECH LIGHTING ENGL3R-F-L26-I ENGL3R-F-D-927-W-W 353LEDGATOPT-20-MOC-EC	120 8	LED 700LUM 2700K	3" DOWNLIGHT WITH 40° OPTIC AND 20° FIELD INSTALLED OPTIC AND EGGCRATE LOUVER, WHITE FINISH 0-10V DIMMING (5%)	OR EQUAL
B1	LUMEN ART ACL.90-2700K-120V-30-BLACK-0-10V	120 15	LED 1060LUM 2700K	4" CYLINDER, BLACK FINISH 0-10V DIMMING (1%)	
B2	LIGHTHEADED C3P-R-6-24-24-B28-27-9018-P1-120-??-HC	120 16	LED 1800LUM 2700K	3" CYLINDER, BLACK FINISH 0-10V DIMMING (1%)	OR EQUAL
C1	LIGHTHEADED MMD-10-T-W-WS-LWA-27-9002-RM DRM-M10-P-120-MMD10TFP	120 20	LED 1800LUM 2700K	MULTI-(10)LAMP WALL WASH, WHITE FINISH 0-10V DIMMING (1%)	
C2	LIGHTHEADED MMD-15-T-W-WS-LWA-27-9002-RM DRM-M15-P-120-MMD10TFP	120 30	LED 2700LUM 2700K	MULTI-(10)LAMP WALL WASH, WHITE FINISH 0-10V DIMMING (1%)	
C3	LIGHTHEADED MMD-10-T-04-BA-LWA-27-9002-RM DRM-M10-P-120-MMD10TFP	120 20	LED 1800LUM 2700K	MULTI-(10)LAMP WALL WASH, BLACK FINISH 0-10V DIMMING (1%)	
D1	KELVIX FF2-SC-20W-27K-IP20-24	120 120	LED 8250LUM 2700K	CUSTOM WITH OVAL BARRISOL COVER AND 6 SQFT OF LED SHEET 0-10V DIMMING	
D2	KELVIX FF2-SC-20W-27K-IP20-24	120 100	LED 6875LUM 2700K	CUSTOM WITH OVAL BARRISOL COVER AND 5 SQFT OF LED SHEET 0-10V DIMMING	
D1 ALT	WILLIAMS (2) TBS-2-L25-8-27-DIM-UNV (2) TBS-3-L40-8-27-DIM-UNV	120 98	LED 13000LUM 2700K	CUSTOM FIXTURE WITH OVAL BARRISOL COVER AND LED STRIP FIXTURES 0-10V DIMMING (10%)	
D2 ALT	WILLIAMS (2) TBS-2-L25-8-27-DIM-UNV (2) TBS-3-L40-8-27-DIM-UNV	120 98	LED 13000LUM 2700K	CUSTOM FIXTURE WITH OVAL BARRISOL COVER AND LED STRIP FIXTURES 0-10V DIMMING (10%)	
E	ZANEEN D101797-COP	120 10.7	LED 1260LUM 2700K	DECORATIVE BAR PENDANT, COPPER FINISH	
F1	KELVIX DL2TK-24V CH502A-#-WH-CP-EC	120 2.6W/FT	LED 200LUM/FT 2700K	SHELF LIGHTING, LED TAPE, FLAT CHANNEL W/ FLAT WHITE LENS PROVIDE 0-10V DIMMING DRIVER	
F2	KELVIX DK2TK-24V CH502A-#-WH-CP-EC	120 3.3W/FT	LED 400LUM/FT 2700K	COVE LIGHTING, LED TAPE, FLAT CHANNEL W/ FLAT WHITE LENS PROVIDE 0-10V DIMMING DRIVER	
F3	KELVIX DL2TK-WR-24V CH607-#-CP-EC	120 2.6W/FT	LED 200LUM/FT 2700K	BAR SHELF LIGHTING, LED TAPE, MUD-IN CHANNEL W/ FLAT WHITE LENS PROVIDE 0-10V DIMMING DRIVER	
F4	KELVIX DK2TK-24V CH0013-#-WH-EC	120 3.3W/FT	LED 400LUM/FT 2700K	COVE LIGHTING, LED TAPE, MUD-IN CHANNEL W/ FLAT WHITE LENS PROVIDE 0-10V DIMMING DRIVER	
G	COOPER 24GST5535C	120 46.8	LED 5100LUM 3500K	2X4' TROFFER	
H	NULITE RZ4-07L30-YNV-D3-1C-N-M-#	120 7.65W/FT	LED 765LUM/FT 3000K	RECESSED LINEAR GRAZER, REFER TO PLANS FOR INDIVIDUAL LENGTHS 0-10V DIMMING (1%)	
J	BEGA 50 698-K27-1	120 21	LED 1840LUM 2700K	SEMI-RECESSED LED DOWNLIGHT - DIRECT/INDIRECT 0-10V DIMMING	
	DUAL-LITE EV4D-02L	120 2	INCL	EMERGENCY LIGHT WITH TWIN ADJUSTABLE 2 WATT LED HEADS AND BATTERY, MOUNT AT 7'-6"±, TO CLEAR OBSTACLES. (PROVIDES 1 FC AVG. ON 39' CENTER FIXTURE SPACING) DAMP LOCATION RATED.	SURE-LITES LITHONIA OR EQUAL
R	ISOLITE MIGN2-WH-MR-L-	120 9	INCL	RECESSED/CONCEALED FLUSH MOUNT EMERGENCY LIGHT WITH TWIN LED HEADS AND BATTERY, DAMP LOCATION RATED.	OR EQUAL
	LITHONIA EDG-1-R-EL-XX	120 1	INCL	EXIT LIGHT WITH LED LAMPS, RED LETTERS ON CLEAR BACKGROUND, VERIFY MOUNTING CONFIGURATION, BATTERY BACKUP	OR EQUAL
	LITHONIA LHQM-LED-R-HO-SD	120 3	INCL	COMBINATION EMERGENCY/EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, TWIN LED EMERGENCY LIGHT HEADS, UNIVERSAL MOUNT, BATTERY BACKUP	SURE-LITES LITHONIA OR EQUAL

NOTES:

'DP ' DIMMER PANEL SCHEDULE

MARK	FIXTURE MARK	TYPE	LOCATION
1	B1	0-10V	VESTIBULE
2	C1	0-10V	VESTIBULE SIGN
3	F1	0-10V	WAITING ACCENT
4	B2	0-10V	DINING CYLINDERS
5	D1	0-10V	DINING
6	D2	0-10V	DINING
7	C3	0-10V	DINING WALL
8	A2	0-10V	DINING ACCENT
9	C1/G1	0-10V	RESTROOM HALLWAY
10	A1	0-10V	BAR DINING
11	F2	0-10V	BAR SOFFIT
12	F3	0-10V	UNDER BAR
13	F1	0-10V	BAR SHELF
14	A1	0-10V	BAR
15	F2	0-10V	BAR TV NOOK
16	E	PHASE	BAR PENDANTS
17	C1	0-10V	BAR DINING WALL
18	A2	0-10V	BEVERAGE STATION
19	J	0-10V	PRIVATE DINING
20	A2	0-10V	PRIVATE DINING ALCOVE
21	A2	0-10V	BEVERAGE STATION
22	F4/H	ON/OFF	RESTROOM
23	-	ON/OFF	RR MIRROR/EF
24	-	-	SPARE
1A			EM/EXIT

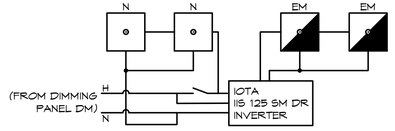
NOTES:



DIMMER SYSTEM DETAIL
SCALE: NONE

DETAIL NOTES:

1. INFORMATION SHOWN ON THIS DETAIL IS DIAGRAMMATIC ONLY. VERIFY EXACT PART NUMBER OF EACH COMPONENT AND ALL NECESSARY MATERIALS WITH MANUFACTURER PRIOR TO BID AS REQUIRED FOR AN OPERABLE DIMMING SYSTEM.
2. RUN SEPARATE NEUTRAL PER CIRCUIT TO THE DIMMER CABINET.
3. MOUNTING OF DIMMER PANEL AND ALL REQUIRED CONNECTIONS SHALL BE BY THE ELECTRICAL CONTRACTOR. NOTE: EACH PANEL SHALL CONTAIN 24 DIMMER MODULE, EACH WITH A 20 AMP CIRCUIT BREAKER PER NON-DIM/DIM CIRCUITS AND ONE 10 AMP CONTROL CIRCUIT BREAKER PER PANEL, SEE DIMMER SCHEDULE THIS SHEET.
4. PROVIDE 0-10 VOLT CONTROL WIRING FROM 0-10 VOLT DIMMING FIXTURES TO DIMMER MODULE. COORDINATE DIMMER WITH MARLIN CONTROLS.
5. INSTALLATION QUESTIONS: MARLIN CONTROLS, MOE CHIGANI 1-800-788-5750.



TYPICAL INVERTER WIRING DIAGRAM
SCALE: NONE

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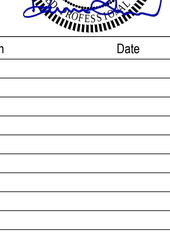
9/17/2021



Revision	Date	No.

Project Number: 2002
Scale:
Date: 09/15/2021

LIGHTING SCHEDULES AND DETAILS

E3.0

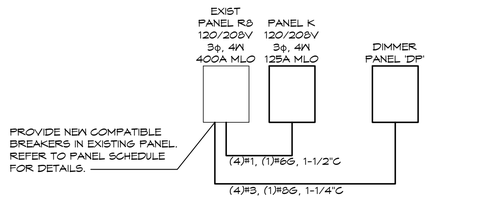
PHASE

DRAWN BY: MA/SM
BC PROJECT #: 21569
MISSOURI PE COA #2009003629

BC ENGINEERS INCORPORATED
5720 Reeder Shawnee, Ks. 66203 (913)262-1772

EXIST PANEL: RB		VOLTS: 120/208V			PH: 3Φ		WIRE: 4W		LOCATION: OFFICE				MOUNTING: SURFACE	
BUS: 400A		MAIN: 400A MLO											FEEDER: EXISTING	
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦC	ΦA	ΦB	ΦC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO
1	AHU-RB/1 [EX]	70	2	4	5,928			50			12	1	20	EXIT LIGHTING [EX]	2
3						5,928			1,200		12	1	20	EXTERIOR SIGNAGE [EX]	4
5	AHU-RB/2 [EX]	70	2	4			5,928			360	12	1	20	POS RECEPTS (E39) [GF]	6
7					5,928			1,560			10	2	25	CU-4	8
9	AHU-RB/3 [EX]	70	2	4		5,928			1,560						10
11							5,928			3,619	6	2	60	CU-5	12
13	CU-6	60	2	6	3,619			3,619							14
15						3,619			1,308		12	1	15	F-3	16
17	CU-RB/1 [EX]	50	2	6			2,735			845	12	1	20	BOH LIGHTING/EF	18
19					2,735			816			12	1	15	F-1	20
21	CU-RB/2 [EX]	45	2	8		2,184			1,308		12	1	15	F-2	22
23							2,184			3,096	8	1	40	FOOD WARMER (E31) [GF]	24
25	CU-RB/3 [EX]	45	2	8	2,184			2,376							26
27						2,184			2,376		8	3	35	KEF-1	28
29	HOT FOOD WELL (E24) [GF]	30	1				2,256			2,376					30
31					1,500			4,416							32
33	ICE MACHINE [HL]	20	3	12		1,500			4,416		6	3	50	MAU-1	34
35							1,500			4,416					36
37					14,507			846							38
39	PANEL K	125	3	1		14,415			1,308		3	3	100	DIMMER PANEL 'DP'	40
41							13,349			1,074					42
NOTES:					36,401	35,758	33,880	13,733	13,476	15,836					
[EX]-EXISTING BRKR, [GF]-GFCI BRKR 5mA					50,134		49,234		48,716					TOTAL CONNECTED LOAD:	149,084 VA
[HL]-HANDLE LOCK														NEC DEMAND LOAD:	110,871 VA
														DEMAND AMPS @ 208 VOLT / 3Φ:	307.75 A

PANEL: K		VOLTS: 120/208V			PH: 3Φ		WIRE: 4W		LOCATION: OFFICE				MOUNTING: SURFACE	
BUS: 125A		MAIN: 125A MLO			IC: 10,000 RMS SYM AMPS								FEEDER: SEE RISER DIAGRAM	
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦC	ΦA	ΦB	ΦC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO
1	SPARE	20	1					600			12	1	20	WALK-IN LIGHTS (E3)	2
3	SPARE	20	1						1,000		12	1	20	WALK-IN HEAT TRACE (E3.3) [GF]	4
5	SPARE	20	1							720	12	1	20	STAND MIXER (E6) [GF]	6
7	SPARE	20	1					948			12	1	20	CONVECTION OVEN (E13) [GF]	8
9	SPARE	20	1						948		12	1	20	CONVECTION OVEN (E13) [GF]	10
11	SPARE	20	1							1,800	12	1	20	CONVEC. STEAMER (E14) [GF]	12
13	MAU FAN CONTROLS	20	1	12	492			780			12	1	20	REFRIG. EQ. STAND (E15) [GF]	14
15	HOOD LIGHTING & CTRL	20	1	12		500			1,080		12	1	20	PREP REFRIG (E23/E25) [GF]	16
17	WALK-IN COOLER CU (E3.4)	20	2	12			1,186					1	20	SPARE	18
19					1,186			2,004			12	1	20	HEATED CABINET (E8) [GF]	20
21	WALK-IN FREEZER CU (E3.5)	20	2	12		1,310			1,200		12	1	20	REFRIG/FRZR (E21/E22) [GF]	22
23							1,310					1	20	SPARE	24
25	SPARE	20	1					360			12	1	20	REF/RCPTS (E12/E100) [GF]	26
27	WALK-IN COOLER EVAP (E3.1)	15	1	12		192			1,200		12	1	20	BAG-N-BOX (E11) [GF]	28
29	WALK-IN FRZR EVAP (E3.2)	15	2	12			593			1,004	12	2	20	TEA BREWER (E41) [HL]	30
31					593			1,004							32
33	HOOD CONTACTOR	20	1	12		100			1,560		12	2	20	COFFEE BREWER (E42) [HL]	34
35	BAR REFRIG (EB1/EB2) [GF]	20	1	12			936			1,560					36
37	GLASSWASHER (EB4)	20	1	12	1,320			1,800			12	1	20	SODA/ICE MACHINE (E44) [HL]	38
39	BLENDER (EB13) [GF]	20	1	12		1,800			1,125		12	1	20	DISHWASHER [HL]	40
41	BLENDER (EB13) [GF]	20	1	12			1,800			1,260	12	1	20	DINING RECEPTS	42
43	OFFICE RECEPTS	20	1	12	540			360			12	1	20	HOSTESS STATION	44
45	SPARE	20	1						540		12	1	20	CONVENIENCE RECEPTS	46
47	SPARE	20	1							720	12	1	20	RR CONV. RECEPTS	48
49	TV RECEPTS	20	1	12	720			1,800			12	1	20	SODA/ICE MACHINE (E44)	50
51	BAR RECEPTS	20	1	12		900			960		12	1	20	WATER HEATER CTRL	52
53	PRIVATE DINING RECEPTS	20	1	12			360			100	12	1	20	RECIRC PUMP	54
55	SPARE	20	1									1	20	SPARE	56
57	SPARE	20	1									1	20	SPARE	58
59	SPARE	20	1									1	20	SPARE	60
NOTES:					4,851	4,802	6,185	9,656	9,613	7,164					
[GF]-GFCI BRKR 5mA, [GFP]-GFEP BRKR 30mA					14,507		14,415		13,349					TOTAL CONNECTED LOAD:	42,271 VA
[HL]-HANDLE LOCK														NEC DEMAND LOAD:	36,371 VA
														DEMAND AMPS @ 208 VOLT / 3Φ:	100.97 A



ELECTRICAL RISER DIAGRAM

SCALE: NONE

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9/17/2021

STATE OF MISSOURI
DARIN T. SEIDEL
NUMBER PE-2009030629
REGISTERED PROFESSIONAL ENGINEER

Revision	Date	No.

Project Number: 2002
Scale:
Date: 09/15/2021

ELECTRICAL RISER AND SCHEDULES

E3.1

PHASE

DRAWN BY: MA/SM
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