MELVIN BREWPUB

108d, 109, & 110 HILLTOP VILLAGE CENTER DR. EUREKA, MO 63025

SYMBOLS LEGEND

FIN FLR	SPOT ELEVATION TAG
(1) A5.1 (DRAWING NUMBER) (SHEET NUMBER)	DETAIL REFERENCE
A A4.1 (DRAWING NUMBER) (SHEET NUMBER)	ELEVATION REFERENCE
1	DOOR REFERENCE
A	WINDOW REFERENCE
	REVISION REFERENCE
1	EQUIPMENT REFERENCE
B 1	GRID LINES
A MATCH LINE	MATCH LINE
1 (ELEVATION NUMBER) (DRAWING NUMBER) A2.2 (SHEET NUMBER)	INTERIOR ELEVATION REFERENCE
ROOM (ROOM NAME) 100 (ROOM NUMBER)	ROOM LABEL
A (DRAWING NUMBER) A2.1 (SHEET NUMBER)	SECTION REFERENCE
## (NUMBER OF OCCUPANTS/EXIT)	EGRESS SYMBOL
	EGRESS PATH OF TRAVEL
EXIT	EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MIN. BATTERY BACKUP

ABBREVIATIONS

A.B.	ANCHOR BOLT	H.B.	HOSE BIB
A.C.	ASPHALTIC CEMENT	H.C.	HOLLOW CORE
A/C	AIR CONDITIONING	HDR	HEADER
ADJ.	ADJACENT	HTG	HEATING
A.F.F.	ABOVE FINISH FLOOR	INT	INTERIOR
ALT.	ALTERNATE	INSUL.	INSULATION
ALUM.	ALUMINUM	JST	JOIST
AUTO.	AUTOMATIC	LAM. PLAS.	LAMINATED PLASTIC
B.F.	BOTTOM OF FOOTING	MAS.	MASONRY
BLK(G)	BLOCK(ING)	MATL.	MATERIAL
BM.	BEAM	MAX.	MAXIMUM
BOT.	BOTTOM	M.B.	MACHINE BOLT
BRG.	BEARING	MFGR.	MANUFACTURER
C.I.	CAST IRON	(N)	NEW
CL	CENTERLINE	NG	NATURAL GRADE
C.J.	CEILING JOIST	N.I.C.	NOT IN CONTRACT
CLG	CEILING	N.T.S.	NOT TO SCALE
CNTR	COUNTER	O/C	ON CENTER
COL.	COLUMN	O.H.	OPPOSITE HAND
CONC.	CONCRETE	PL	PROPERTY LINE
CONT.	CONTINUOUS	PLYWD	PLYWOOD
CORR.	CORRIDOR	PNL.	PANEL
C.T.	CERAMIC TILE	P.O.C.	POINT OF CONNECTION
DBL.	DOUBLE	PR.	PAIR
D.F.	DOUGLAS FIR	R.	RADIUS
DR.	DOOR	REQD.	REQUIRED
D.S.	DOWNSPOUT	RG	ROUGH GRADE
DWG.	DRAWING	RWD	REDWOOD
EA	EACH	S.C.	SOLID CORE
E.F.	EACH FACE	SHTG	SHEATHING
ELEC	ELECTRICAL	SHT.	SHEET
ELEV.	ELEVATION	SIM	SIMILAR
E.N.	EDGE NAIL	SQ.	SQUARE
E.S.	EACH SIDE	STL.	STEEL
EWC	ELECTRICAL WATER COOLER	STRUCT	STRUCTURE
EQ	EQUAL	SUSP	SUSPENDED
(E)	EXISTING	T.B.	TOP OF BEAM
EXT.	EXTERIOR	T.C.	TOP OF CONCRETE
F.D.	FLOOR DRAIN	T.F.	TOP OF FOOTING
FAU	FORCED AIR UNIT	T&G	TONGUE & GROOVE
FDN	FOUNDATION	T.S.	TOP OF SLAB
F.E.	FIRE EXTINGUISHER	T.W.	TOP OF WALL
F.F.	FINISH FLOOR	TYP.	TYPICAL
FG	FINISH GRADE / FIXED GLASS	U.N.O.	UNLESS NOTED OTHERWISE
FIN.	FINISH	V.C.T.	VINYL COMPOSITION TILE
FIXT.	FIXTURE	V.T.R.	VENT THRU ROOF
FLR.	FLOOR	w/	WITH
FN	FIELD NAIL	WP	WATERPROOF
FOC	FACE OF CONCRETE	w/o	WITHOUT
FOM	FACE OF MASONRY	W.R.	WATER RESISTANT
FOS	FACE OF STUD	W.W.F.	WELDED WIRE FABRIC
FTG	FOOTING		
GFI	GROUND FAULT INTERRUPTER		
GL	GLASS		
GI	GALVONIZED IRON		
GR.	GRADE		
GYP. BD.	GYPSUM BOARD		

SHEET INDEX (CONTINUED)

NO.	DESCRIPTION
FS-0.1	FOOD SERVICE - MASTER PLAN
FS-1	FOOD SERVICE - EQUIPMENT PLAN
FS-2	FOOD SERVICE - PLUMBING PLAN
FS-3	FOOD SERVICE - ELECTRIC PLAN
FS-4	FOOD SERVICE - BUILDING WORKS PLAN
FS-5	FOOD SERVICE - DETAILS
FS-6	FOOD SERVICE - EXHAUST HOOD
FS-7	FOOD SERVICE - EXHAUST HOOD
FS-8	FOOD SERVICE - EXHAUST HOOD
FS-9	FOOD SERVICE - EXHAUST HOOD
FS-10	FOOD SERVICE - EXHAUST HOOD
FS-11	FOOD SERVICE - EXHAUST HOOD
FS-12	FOOD SERVICE - EXHAUST HOOD
FS-13	FOOD SERVICE - WALK-IN
FS-14	FOOD SERVICE - WALK-IN
I0.1	FINISH LEGEND / SCHEDULES
I1.0	NEW FLOOR PLAN
I1.1	NEW FURNITURE PLAN
I2.0	REFLECTED CEILING PLAN
I3.0	INTERIOR ELEVATIONS
I3.1	INTERIOR ELEVATIONS
I3.2	INTERIOR ELEVATIONS
I3.3	EXTERIOR ELEVATION
I4.0	DETAILS
I4.1	DETAILS

SHEET INDEX

NO.	DESCRIPTION
T	PROJECT INFORMATION
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A0.1	SITE PLAN
A0.2	OCCUPANCY PLAN
A0.3	EGRESS AND ACCESSIBILITY PLAN
A1.1	EXISTING / DEMOLITION PLAN
A1.2a	NEW FLOOR PLAN - SOUTH
A1.2b	NEW FLOOR PLAN - NORTH
A1.2c	NEW FLOOR PLAN - EAST
A1.3	REFLECTED CEILING PLAN
A1.4	ROOF PLAN
A2.1	EXTERIOR BUILDING ELEVATIONS
A3.1	BUILDING SECTIONS
A3.2	BUILDING SECTIONS
A5.1	ACCESSIBLE NOTES & DETAILS
A5.2	ARCHITECTURAL DETAILS
A5.3	ARCHITECTURAL DETAILS
A5.4	ARCHITECTURAL DETAILS
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S1.2	STRUCTURAL SCHEDULES AND TYPICAL DETAILS
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S2.4	STRUCTURAL INDOOR RAMP PLAN AND DETAILS
S2.5	STRUCTURAL NEW DOCK/BREWING TANK SLAB PLAN & DTLS
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S2.7	STRUCTURAL RESTROOM/GRAIN/BREWER/PATIO PLAN & DTLS
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M1.2	MECHANICAL ROOF PLAN
M2.1	MECHANICAL SCHEDULES
M2.2	MECHANICAL DETAILS
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M3.1	MECHANICAL SPECIFICATIONS
M3.2	MECHANICAL SPECIFICATIONS
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PD1.1	PLUMBING DEMOLITION PLAN
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P1.3	PLUMBING FLOOR PLAN - WASTE AND VENT
P1.4	PLUMBING SPECIFICATION
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ED1.0	ELECTRICAL DEMOLITION PLAN
E1.0	ELECTRICAL LIGHTING PLAN
E1.1	ELECTRICAL POWER PLAN
E1.2	ELECTRICAL FLOOR PLAN
E2.0	ELECTRICAL SCHEDULES AND RISER DIAGRAMS
E2.1	ELECTRICAL SCHEDULES AND NOTES
E2.2	ELECTRICAL NOTES AND DETAILS
E3.0	ELECTRICAL SPECIFICATIONS
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LS0.0	LIFE SAFETY LEGEND AND NOTES
LS1.0	LIFE SAFETY FLOOR PLAN
FP0.0	FIRE PROTECTION LEGEND, NOTES, AND DETAILS
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FP1.2	FIRE PROTECTION FLOOR PLAN
FP1.3	FIRE PROTECTION SPECIFICATIONS

CODE ANALYSIS

OCCUPANT LOAD
(PER TABLE 1004.1.1 BASED ON 2009 INTERNATIONAL BUILDING CODE)

A-2		
CUSTOMER AREA	3,858 S.F. @ 1:15 = 257.2	= 258
F-2		
BREWERY AREA	1,262 S.F. @ 1:200 = 6.31	= 7
WAREHOUSE AREA	3,406 S.F. @ 1:200 = 17.1	= 18
SUBTOTAL	8,526 S.F.	= 273
ACCESSORY AREAS		
BAR BACK	420 S.F. @ 1:200 = 2.1	= 3
KITCHEN / SERVICE	1,415 S.F. @ 1:200 = 7.08	= 8
BACK OF HOUSE	1,021 S.F. @ 1:200 = 2.7	= 3
COLD BOXES	783 S.F. @ 1:200 = 3.91	= 4
RESTROOMS	447 S.F. @ 1:200 = 2.24	= 3
OFFICE	97 S.F. @ 1:100 = .97	= 1
SUBTOTAL	4,183 S.F.	= 22
INTERIOR TOTAL	12,709 S.F.	= 295
EXTERIOR		
COVERED PATIO	990 S.F. @ 1:15	= 66
OUTDOOR PATIO	1,299 S.F. @ 1:15 = 86.6	= 87
TOTAL:	2,289 S.F.	= 153

PLUMBING REQUIREMENTS
(PER CPC TABLE A - OCCUPANT LOAD FACTOR)

A-2:	6,147 S.F. @ 1:30 = 204.9	= 205
TOTAL		= 103 MEN & 103 WOMEN
F-2	4,668 S.F. @ 1:2000 = 2.3	= 3
TOTAL		= 2 MEN & 2 WOMEN

MINIMUM PLUMBING FACILITIES (PER CPC TABLE 422.1)

	MALE	FEMALE	URINAL	LAV
A-2	2:51-150= 1.7	4:101-200= 3.5	1:1-200= .51	1:1-150= .68
F-2	1:1-50 = .04	1:1-50= .04	1:1-50= .04	1:1-50= .04
TOTAL:	= 2	= 4	= 1	= 1

PLUMBING FACILITIES PROVIDED
MEN: 2 WATER CLOSET, 2 URINALS, & 2 LAVATORIES
WOMEN: 4 WATER CLOSETS & 2 LAVATORIES PROVIDED
ACCESSIBLE UNISEX: 1 WATER CLOSET & 1 LAVATORY

PROJECT TEAM

OWNER: PAREFRONT GROUP LP
421 SHEFFIELD ESTATE DR.
SAINT LOUIS, MO 63141

TENANT: MELVIN BREWING EUREKA, LLC
CONTACT: JAMIE MORRIS
624 COUNTY RD #101
ALPINE, WY 83128
(802) 238-7864
morris@melvinbrewing.com

ARCHITECT: T. DUSTIN HAUCK
HAUCK ARCHITECTURE
4888 RONSON CT., STE. F
SAN DIEGO, CA 92123
(858) 384-7795
dustin@hauckarchitecture.com

STRUCTURAL: AEDIFICA CASE ENGINEERING
ERIC GOADY
796 MERUS CT.
FENTON, MO 63026
(636) 349-1600 ext. 267
egowdy@aedifica.com

MECHANICAL, ELECTRICAL, & PLUMBING: ENGINEERING DESIGN SERVICES, INC.
WILLIAM T. MAYER III, P.E.
141 INDUSTRIAL DRIVE
SLATERSVILLE, RHODE ISLAND 02876
(401) 765-7659
WMayer@edesignservice.com

FOOD SERVICE: KYLE BREWER
RAPIDS FOODSERVICE CONTRACT & DESIGN
13739 RIDER TRAIL NORTH, SUITE 105
EARTH CITY, MO 63045
(314) 344-1161
kyle.brewer@rapidscontract.com

PROJECT INFORMATION

PROJECT NAME:	MELVIN BREWING BREWPUB
PROJECT ADDRESS:	108d, 109, & 110 HILLTOP VILLAGE CENTER DR. EUREKA, MO 63025
APN:	01-0058
LEGAL DESCRIPTION:	LOT PTS 36 37 40 & 41 LOC 1057.28 FT S VILLAGE OF MUIR HILLTOP VILLAGE PLAT 14 1 28 82
YEAR BUILT:	1981
ZONE:	C - COMMERCIAL
EXISTING USE:	RESTAURANT
PROPOSED USE:	BREWPUB
CODES:	2009 INTERNATIONAL BUILDING CODE 2012 NATIONAL FIRE CODE 2009 NATIONAL ELECTRICAL CODE (WITH LOCAL AMENDMENTS) 2009 INTERNATIONAL MECHANICAL CODE (WITH LOCAL AMENDMENTS) 2009 IAPMA INCLUDING GREASE WASTE
LOT AREA:	14,511 A.C.
BUILDING AREA:	±12,905 S.F. GROSS FLOOR AREA
TENANT LEASE AREA:	12,709 S.F. (AREA OF WORK)
EXISTING OCCUPANCY:	A-2
PROPOSED OCCUPANCY:	A-2 & F-2
CONSTRUCTION TYPE:	II-B
NUMBER OF STORIES:	1
SCOPE OF WORK:	BUILDING, ELECTRICAL, MECHANICAL, AND PLUMBING PERMITS FOR A TENANT IMPROVEMENT TO AN EXISTING RESTAURANT. WORK TO INCLUDE ADDING A BREWERY WITH RELATED FRAMING, ELECTRIC, MECHANICAL, AND PLUMBING WORK. EXTERIOR WORK TO INCLUDE NEW OUTDOOR PATIO, EQUIPMENT ENCLOSURE, AND LOADING DOCK.

DEFERRED SUBMITTAL

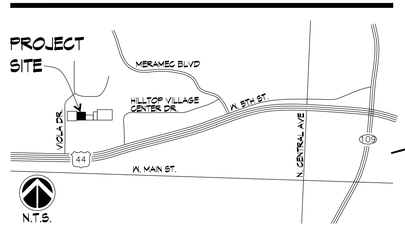
IT IS UNDERSTOOD THAT THE PLANS FOR THE PROJECT HAVE, AT THIS TIME, BEEN REVIEWED FOR COMPLIANCE WITH ALL APPLICABLE STATE AND CITY REGULATIONS, AND THAT THE PROJECT AS A WHOLE HAS BEEN APPROVED BY THE CITY, WITH THE EXCEPTION OF THE DEFERRED ITEMS LISTED.

I/WE UNDERSTAND THAT I/WE WILL NOT BE AUTHORIZED ANY INSPECTION OF THE DEFERRED ITEMS PROPOSED PRIOR TO THE SUBMITTAL AND APPROVAL OF PLANS AND/OR CALCULATIONS FOR THOSE DEFERRED ITEMS.

1. FIRE SPRINKLER MODIFICATIONS
2. FIRE ALARM MODIFICATIONS
3. FIRE SUPPRESSION FOR TYPE 1 HOODS

NOTE:
-PLANS FOR ALL FIXED FIRE PROTECTION EQUIPMENT SUCH AS STANDPIPES, SPRINKLER SYSTEMS AND FIRE ALARM SYSTEMS, MUST BE SUBMITTED TO THE BUILDING DIVISION AND APPROVED BY THE FIRE DEPARTMENT BEFORE THIS EQUIPMENT IS INSTALLED.
-PLANS FOR THE DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED IN A TIMELY MATTER BUT NOT LESS THAN 30 BUSINESS DAYS PRIOR TO INSTALLATION. ALL COMMENTS RELATED TO THE DEFERRED SUBMITTAL MUST BE ADDRESSED TO THE SATISFACTION OF THE PLAN CHECK DIVISION PRIOR TO THE APPROVAL OF THE SUBMITTAL ITEMS.

VICINITY MAP



HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
http://www.hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB
108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

PROJECT INFORMATION

STAMP: STATE OF MISSOURI THOMAS DUSTIN HAUCK NUMBER A-2008004390 ARCHITECT

SHEET NUMBER: T

ALL IDEAS, DESIGNS, ARRANGEMENTS AND PLANS INDICATED OR REPRESENTED BY THIS DRAWING ARE OWNED BY AND ARE THE PROPERTY OF HAUCK ARCHITECTURE, AND WERE CREATED, EVOLVED AND DEVELOPED FOR USE ON AND IN CONNECTION WITH THE SPECIFIED PROJECT. NONE OF SUCH IDEAS, DESIGNS, ARRANGEMENTS OR PLANS SHALL BE USED BY OR DISCLOSED TO ANY PERSON, FIRM OR CORPORATION FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF HAUCK ARCHITECTURE. PLANS THESE DRAWINGS OR SPECIFICATIONS WITH ANY PUBLIC AGENCY IS NOT PUBLICATION OF SAME AND NO COPYING, REPRODUCTION OR USE WITHOUT PERMISSIBLE WITHOUT THE CONSENT OF HAUCK ARCHITECTURE.

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GENERAL ACCESSIBILITY NOTES

1. ALL FACILITIES SHALL BE ACCESSIBLE FOR THE PHYSICALLY HANDICAPPED PER THE 2009 INTERNATIONAL BUILDING CODE, THE AMERICANS WITH DISABILITIES ACT, TITLE 3 AND UFAS / ANSI 117.1

2. ALL PRIMARY ENTRANCES SHALL BE ACCESSIBLE.

3. HAZARDS:
(A) HEADROOM OF 80" MIN. SHALL BE MAINTAINED FOR WALKS, CORRIDORS, AISLES, ETC.
(B) OBJECTS WITH PROTRUDING EDGES BELOW 27" ABOVE FINISHED FLOOR MAY PROTRUDE ANY AMOUNT.
(C) FREESTANDING OBJECTS MOUNTED ON POSTS BETWEEN 27" AND 80" ABOVE THE FLOOR MAY PROJECT A MAXIMUM OF 12".
(D) ABRUPT CHANGES IN LEVEL EXCEEDING 4" ADJACENT TO WALKS, EXCEPT BETWEEN WALKS AND ADJACENT STREETS OR DRIVES, SHALL BE IDENTIFIED BY 6" HIGH WARNING CURBS ABOVE WALKING SURFACE.

4. ELECTRICAL REQUIREMENTS
(A) 15, 20 AND 30 AMP RECEPTACLE OUTLETS SHALL BE INSTALLED BETWEEN 18" AND 24" ABOVE THE FLOOR.
(B) CENTER OF SWITCH SHALL BE LOCATED NOT LESS THAN 36" NOR MORE THAN 48" ABOVE THE FLOOR.

ENTRANCES, EXITS, DOORS & AREAS FOR EVACUATION ASSISTANCE
1. ALL ENTRANCES AND ALL EXTERIOR GROUND-FLOOR EXIT DOORS TO BUILDINGS AND FACILITIES SHALL BE MADE ACCESSIBLE TO PERSONS WITH DISABILITIES.

2. DURING PERIODS OF PARTIAL OR RESTRICTED USE OF A BUILDING OR FACILITY, THE ENTRANCES USED FOR PRIMARY ACCESS SHALL BE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES.

3. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN A PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVEL TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNATED TO PROVIDE PASSAGE WITHOUT REQUIRING TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE. LOCKED EXIT DOORS SHALL OPERATE AS ABOVE IN EGRESS DIRECTION.

4. HAND-ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 30" AND 44" ABOVE THE FLOOR.

5. EVERY DOORWAY WHICH IS LOCATED WITHIN AN ACCESSIBLE PATH OF TRAVEL SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND NOT LESS THAN 6 FEET 8 INCHES IN HEIGHT. WHEN INSTALLED, EXIT DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES AND SHALL BE SO MOUNTED THAT THE CLEAR WIDTH OF THE EXIT IS NOT LESS THAN 32".

6. FOR HINGED DOORS, THE OPENING WIDTH SHALL BE MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

7. WHERE A PAIR OF DOORS IS UTILIZED, AT LEAST ONE OF THE DOORS SHALL PROVIDE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32" WITH THE LEAF POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

8. WHEN AN AUTOMATIC DOOR OPERATOR IS UTILIZED TO OPERATE A PAIR OF DOORS, AT LEAST ONE OF THE DOORS SHALL PROVIDE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32" WITH THE LEAF POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

9. MINIMUM MANEUVERING CLEARANCES AT DOORS SHALL BE AS SHOWN THE 2009 INTERNATIONAL BUILDING CODE. THE FLOOR OR GROUND AREA WITHIN THE REQUIRED CLEARANCES SHALL BE LEVEL AND CLEAR.

10. THERE SHALL BE A LEVEL AND CLEAR FLOOR OF LANDING ON EACH SIDE OF A DOOR. THE LEVEL AREA SHALL HAVE A LENGTH IN THE DIRECTION OF DOOR SWING OF AT LEAST 60" AND THE LENGTH OPPOSITE THE DIRECTION OF DOOR SWING OF 48" AS MEASURED AT RIGHT ANGLE TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.

11. THE WIDTH OF THE LEVEL AREA ON THE SIDE TO WHICH THE DOOR SWINGS SHALL EXTEND A MINIMUM OF 24" PAST THE STRIKE EDGE OF THE DOOR FOR EXTERIOR DOORS AND A MINIMUM OF 18" PAST THE STRIKE EDGE FOR INTERIOR DOORS. ADDITIONAL 12" IS REQUIRED AT THE PUSH SIDE, IF DOOR IS EQUIPPED WITH BOTH LATCH AND CLOSER.

12. THE FLOOR OR LANDING SHALL BE NOT MORE THAN 1/2" LOWER THAN THRESHOLD OF THE DOORWAY.

13. THE SPACE BETWEEN TWO CONSECUTIVE DOOR OPENINGS IN A VESTIBULE, SERVING OTHER THAN A REQUIRED EXIT STAIRWAY, SHALL PROVIDE A MINIMUM OF 48" OF CLEAR SPACE FROM ANY DOOR OPENING INTO SUCH VESTIBULE WHEN THE DOOR IS POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OF AWAY FROM THE SPACE BETWEEN THE DOORS.

14. THE BOTTOM 10" OF ALL DOORS EXCEPT AUTOMATIC AND SLIDING SHALL HAVE A SMOOTH, UNINTERRUPTED SURFACE TO ALTOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. WHERE NARROW FRAME DOORS ARE USED, A 10" HIGH SMOOTH PANEL SHALL BE INSTALLED ON THE PUSH SIDE OF THE DOOR, WHICH WILL ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION.

15. MAXIMUM EFFORT TO OPERATE DOORS SHALT NOT EXCEED 5 POUNDS FOR EXTERIOR DOORS, AND FIVE POUNDS FOR INTERIOR DOORS, SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGED DOORS AND AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED TO THE MAXIMUM ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS.

16. ALL RATED DOORS SHALL BE POSITIVE LATCHING AND SELF-CLOSING.

17. ALL 20 MINUTE RATED ASSEMBLIES SHALL BE PROVIDED GASKETING MATERIAL SO INSTALLED TO PROVIDE AS SEAL WHERE THE DOOR MEETS THE STOP ON BOTH SIDES AND ACROSS THE TOP.

SANITARY FACILITIES
A. GENERAL

1. SANITARY FACILITIES THAT SERVE BUILDINGS, FACILITIES OR PORTIONS OF BUILDINGS OR FACILITIES THAT ARE REQUIRED TO BE ACCESSIBLE TO PERSONS WITH DISABILITIES ARE REQUIRED TO BE ACCESSIBLE.

2. WHERE SEPARATE FACILITIES ARE PROVIDED FOR NON-DISABLED PERSONS OF EACH SEX, SEPARATE FACILITIES SHALL BE PROVIDED FOR PERSONS WITH DISABILITIES OF EACH SEX ALSO. WHERE ALL GENDER FACILITIES ARE PROVIDED FOR PERSONS WITH DISABILITIES, THOSE FACILITIES SHALL BE WITHIN CLOSE PROXIMITY TO THE NON-ACCESSIBLE FACILITY

3. DOORWAYS LEADING TO MEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY AN EQUILATERAL TRIANGLE 1/4" THICK WITH EDGES 12" LONG AND A VERTEX POINTING UPWARD. WOMEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER. GEOMETRIC (CIRCLE AND TRIANGLE) SYMBOLS ON SANITARY FACILITY DOORS SHALL BE CENTERED ON THE DOOR AT A HEIGHT OF 60" AND THEIR COLOR AND CONTRAST SHALL BE DISTINCTLY DIFFERENT FROM THE COLOR AND CONTRAST OF THE DOOR.

4. ADDITIONAL SIGNAGE REQUIREMENTS: RAISED LETTERS SHALL BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. CHARACTERS ON SIGNS SHALL BE SANS SERIF UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 BRAILLE. THEY SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3 INCHES OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

B. SINGLE ACCOMMODATION SANITARY FACILITIES

1. THERE SHALL BE SUFFICIENT SPACE IN THE TOILET ROOM FOR A WHEELCHAIR MEASURING 30" WIDE BY 48" LONG TO ENTER THE ROOM AND PERMIT THE DOOR TO CLOSE.

2. THERE SHALL BE IN THE ROOM A CLEAR FLOOR SPACE OF AT LEAST 60" IN DIAMETER. NO DOOR SHALL ENCROACH INTO THIS SPACE FOR MORE THAN 12".

3. THE WATER CLOSET SHALL BE IN A SPACE WHICH PROVIDES A MINIMUM 28" WIDE CLEAR SPACE FROM A FIXTURE OR A MINIMUM 32" WIDE CLEAR SPACE FROM A WALL AT ONE SIDE. THE OTHER SIDE SHALL PROVIDE 18" FROM THE CENTERLINE OF THE WATER CLOSET TO THE WALL. A MINIMUM 48" CLEAR SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET.

4. ALL DOORS, FIXTURES AND CONTROLS SHALL BE ON AN ACCESSIBLE ROUTE WITH A MINIMUM CLEAR WIDTH OF 36" EXCEPT AT DOORS. IF A PERSON IN A WHEELCHAIR MUST MAKE A TURN AROUND AN OBSTRUCTION, THE MINIMUM CLEAR WIDTH OF THE ACCESSIBLE ROUTE.

C. MULTIPLE ACCOMMODATION SANITARY FACILITIES

1. A CLEAR SPACE MEASURE FROM THE FLOOR TO A HEIGHT OF 27" ABOVE THE FLOOR, WITHIN THE SANITARY FACILITY ROOM, OF SUFFICIENT SIZE TO INSCRIBE A CIRCLE WITH A DIAMETER NOT LESS THAN 60", OR A CLEAR SPACE 56" BY 65" IN SIZE, SHALL BE PROVIDED FOR WHEELCHAIR MANEUVERING. DOORS OTHER THAN THE DOOR TO THE ACCESSIBLE TOILET COMPARTMENT IN ANY POSITION MAY ENCROACH INTO THIS SPACE BY NOT MORE THAN 12".

2. A WATER CLOSET FIXTURE LOCATED IN A COMPARTMENT SHALL PROVIDE A MINIMUM 28" WIDE CLEAR SPACE FROM A FIXTURE OR A MINIMUM 32" WIDE CLEAR SPACE FROM A WALL AT ONE SIDE OF THE WATER CLOSET. THE OTHER SIDE OF THE WATER CLOSET SHALL PROVIDE 18" FROM THE CENTERLINE OF THE WATER CLOSET TO THE WALL. GRAB BARS SHALL NOT PROJECT MORE THAN 5" INTO THESE CLEAR SPACES.

3. A MINIMUM 48" LONG CLEAR SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET IF THE COMPARTMENT HAS AN END OPENING DOOR AND A MINIMUM 60" LONG CLEAR SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET IF THE COMPARTMENT HAS A DOOR LOCATED AT THE SIDE. GRAB BARS SHALL NOT PROJECT MORE THAN 5" INTO THESE CLEAR SPACES.

4. WATER CLOSET COMPARTMENTS SHALL BE EQUIPPED WITH A DOOR THAT HAS AN AUTOMATIC CLOSING DEVICE, AND SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32" WHEN LOCATED AT THE END AND 34" WHEN LOCATED AT THE SIDE WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

5. THE INSIDE AND OUTSIDE OF THE COMPARTMENT DOOR SHALL BE EQUIPPED WITH A LOOP OR U-SHAPED HANDLE IMMEDIATELY BELOW THE LATCH. THE LATCH SHALL BE FLIP-OVER STYLE, SLIDING, OR OTHER HARDWARE NOT REQUIRING THE USER TO GRASP OR TWIST.

6. IF THE COMPARTMENT HAS AN END-OPENING DOOR (FACING THE WATER CLOSET) A MINIMUM 60-INCHES-WIDE AND 48-INCHES-DEEP CLEAR FLOOR SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET. THE DOOR SHALL BE LOCATED IN FRONT OF THE CLEAR FLOOR SPACE AND DIAGONAL TO THE WATER CLOSET, WITH A MAXIMUM STILE WIDTH OF 4 INCHES.

7. WHERE SIX OR MORE STALLS ARE PROVIDED WITHIN A MULTIPLE ACCOMMODATION TOILET ROOM, IN ADDITION TO THE STANDARD ACCESSIBLE STALL REQUIRED ABOVE, AT LEAST ONE ADDITIONAL STALL SHALL BE PROVIDED WITH A WIDTH OF 36" WITH AN OUTWARD SWINGING SELF-CLOSING DOOR AND PARALLEL GRAB BARS.

D. SANITARY FACILITY FIXTURES AND ACCESSORIES

1. THE HEIGHT TO ACCESSIBLE WATER CLOSETS SHALL BE A MINIMUM OF 17" AND A MAXIMUM OF 19" MEASURED TO THE TOP OF A MAXIMUM 2" HIGH TOILET SEAT. EXCEPT THAT 3 SEATS SHALL BE PERMITTED ONLY IN ALTERATIONS WHERE THE EXISTING FIXTURE IS LESS THAN 15" HIGH.

2. A CLEAR FLOOR SPACE 30" BY 48" SHALL BE PROVIDED IN FRONT OF A LAVATORY TO ALLOW A FORWARD APPROACH. SUCH CLEAR FLOOR SPACE SHALL ADJOIN OR OVERLAP AN ACCESSIBLE ROUTE AND SHALL EXTEND INTO KNEE AND TOE SPACE UNDERNEATH THE LAVATORY. DOOR SHALL NOT SWING INTO THIS SPACE.

3. LAVATORIES ADJACENT TO A WALL SHALL BE MOUNTED WITH A MINIMUM DISTANCE OF 18" TO THE CENTERLINE OF THE FIXTURE.

4. ALL LAVATORIES THAT ARE DESIGNED TO BE ACCESSIBLE SHALL BE MOUNTED WITH THE RIM OR COUNTER EDGE NO HIGHER THAN 34 INCHES ABOVE THE FINISHED FLOOR AND VERTICAL CLEARANCE MEASURED FROM THE BOTTOM OF THE APRON OR OUTSIDE BOTTOM EDGE OF THE LAVATORY OF 29 INCHES REDUCING TO 27 INCHES AT A POINT LOCATED 8 INCHES BACK FROM EDGE.

5. HOT WATER AND DRAINPIPES UNDER LAVATORIES SHALL BE INSULATED OR OTHERWISE COVERED. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES.

6. SELF-CLOSING FAUCET CONTROLS VALVES ARE ALLOWED IN THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.

7. WHERE URINALS ARE PROVIDED, AT LEAST ONE SHALL HAVE A CLEAR FLOOR SPACE 30" BY 48" IN FRONT OF THE URINAL TO ALLOW FORWARD APPROACH. DOOR SHALL NOT SWING INTO THIS SPACE.

8. WHERE ONE OR MORE URINALS ARE PROVIDED, AT LEAST ONE WITH A RIM PROJECTING A MINIMUM OF 14" FROM THE WALL AND AT A MAXIMUM OF 17" ABOVE THE FLOOR SHALL BE PROVIDED.

9. CONTROLS FOR WATER CLOSET FLUSH VALVES SHALL BE MOUNTED ON THE WIDE SIDE TO TOILET AREAS.

10. WATER CLOSET AND URINAL FLUSH VALVE CONTROLS, AND FAUCET AND OPERATING MECHANISM CONTROLS, SHALL BE OPERABLE WITH ONE HAND, SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST, AND SHALL BE MOUNTED NO MORE THAN 44" ABOVE THE FLOOR.

11. THE FORCE REQUIRED TO ACTIVATE WATER CLOSET AND URINAL FLUSH VALVE CONTROLS, AND FAUCET AN OPERATING MECHANISM CONTROLS, SHALL BE NOT GREATER THAN 5 IBF.

12. MIRRORS SHALL BE MOUNTED WITH THE BOTTOM EDGE NO HIGHER THAN 40" FROM THE FLOOR.

13. WHERE TOWELS, SANITARY NAPKINS, WASTE RECEPTACLES, AND OTHER SIMILAR DISPENSING AND DISPOSAL FIXTURES ARE PROVIDED, AT LEAST ONE OF EACH TYPE SHALL BE LOCATED WITH ALL OPERABLE PARTS, INCLUDING COIN SLOTS, WITHIN 40" FROM THE FINISHED FLOOR.

14. TOILET TISSUE DISPENSERS SHALL BE LOCATED ON THE WALL WITHIN 12" OF THE FRONT EDGE OF THE TOILET SEAT AND NO LOWER THAN 19" FROM THE FLOOR. DISPENSERS THAT CONTROL DELIVERY OR THAT DOES NOT PERMIT CONTINUOUS PAPER FLOW SHALL NOT BE USED.

15. TOILET ROOM FLOORS SHALL HAVE A SMOOTH, HARD NONABSORBENT SURFACE SUCH AS PORTLAND CEMENT, CONCRETE, CERAMIC TILE OR OTHER APPROVED MATERIAL, WHICH EXTENDS UPWARD ONTO THE WALLS AT LEAST 5". WALLS WITHIN WATER CLOSET COMPARTMENTS AND WALLS WITHIN 24" OF THE FRONT AND SIDES OF URINALS SHALL BE SIMILARLY FINISHED TO A HEIGHT OF 48" AND, EXCEPT FOR STRUCTURAL ELEMENTS, THE MATERIALS USED IN SUCH WALLS SHALL BE A TYPE, WHICH IS NOT ADVERSELY AFFECTED BY MOISTURE.

E. GRAB BARS

1. GRAB BARS SHALL BE LOCATED ON EACH SIDE, OR ON ONE SIDE AND THE BACK OF THE ACCESSIBLE TOILET STALL OR COMPARTMENT.

2. GRAB BARS AT THE SIDE SHALL BE AT LEAST 42" LONG WITH THE FRONT END POSITIONED 24" IN FRONT OF THE WATER CLOSET STOOL AND WITH THE BACK END POSITIONED NO MORE THAN 12" FROM THE REAR WALL. GRAB BARS AT THE BACK SHALL BE NOT LESS THAN 36" LONG.

3. GRAB BARS SHALL BE SECURELY ATTACHED 33" ABOVE AND PARALLEL TO THE FLOOR, EXCEPT THAT WHERE A TANK-TYPE TOILET IS USED WHICH OBSTRUCTS PLACEMENT AT 33", THE GRAB BAR MAY BE AS HIGH AS 36".

4. THE DIAMETER OR WIDTH OF THE GRIPPING SURFACES OF A GRAB BAR SHALL BE 1-1/4" TO 1-1/2" OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE. IF GRAB BARS ARE MOUNTED ADJACENT TO A WALL, THE SPACE BETWEEN THE WALL AND THE GRAB BARS SHALL BE 1-1/2".

5. THE STRUCTURAL STRENGTH OF GRAB BARS, TUB AND SHOWER SEATS, FASTENERS, AND MOUNTING DEVICES SHALL MEET THE SPECIFICATIONS OF THE 2009 INTERNATIONAL BUILDING CODE.

6. THE GRAB BAR AND ANY WALL OR OTHER SURFACE ADJACENT TO IT SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENTS. EDGES SHALL HAVE A MINIMUM RADIUS OF 1/8".

FIRE PROTECTION NOTES

1. ALL INTERIOR WALL AND CEILING FINISH MATERIALS SHALL HAVE A MINIMUM FIRE SPREAD RATING AS SPECIFIED BY THE 2012 NATIONAL FIRE CODE.

2. ALL FINISH SURFACES OF WALL & CEILING MATERIALS SHALL NOT EXCEED A FLAME SPREAD RATING OF 200 AND A SMOKE DENSITY RATING OF 450 OR AS DICTATED BY THE 2012 NATIONAL FIRE CODE.

3. CONTRACTOR TO PROVIDE SUFFICIENT 2A10BC FIRE EXTINGUISHERS SO THAT AN EXTINGUISHER CAN BE REACHED WITHIN 75 FEET OF NORMAL TRAVEL FROM ANY POINT REACHED WITHIN A SUITE. EXTINGUISHER LOCATIONS SHALL BE IN ACCORDANCE WITH FCF 906 AND LOCATED ON FLOOR PLAN WITH SIZE.

4. DURING CONSTRUCTION, AT LEAST ONE EXTINGUISHER SHALL BE PROVIDED ON EACH FLOOR LEVEL AT EACH STAIRWAY. IN ALL STORAGE AND CONSTRUCTION SHEDS, IN LOCATIONS WHERE FLAMMABLE OR COMBUSTIBLE LIQUIDS ARE STORED OR USED, AND WHERE OTHER SPECIAL HAZARDS ARE PRESENT.

5. ADDRESS IDENTIFICATION SHALL BE PROVIDED FOR ALL NEW AND EXISTING BUILDINGS IN A LOCATION THAT IS PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. WHERE ACCESS IS BY WAY OF A PRIVATE ROAD AND THE BUILDING ADDRESS CANNOT BE VIEWED FROM THE PUBLIC WAY, AND APPROVED SIGN OR MEANS SHALL BE USED TO IDENTIFY THE STRUCTURE. PREMISES IDENTIFICATION SHALL CONFORM TO THE 2012 NATIONAL FIRE CODE.

6. PROJECT TO COMPLY WITH THE 2012 NATIONAL FIRE CODE FOR, "FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION".

7. DUMPSTERS AND TRASH CONTAINERS EXCEEDING 1.5 CUBIC YARDS SHALL NOT BE STORED IN BUILDINGS OR PLACED WITHIN 5 FEET OF COMBUSTIBLE WALLS, OPENINGS OR COMBUSTIBLE ROOF EAVE LINES UNLESS PROTECTED BY AN APPROVED SPRINKLER SYSTEM OR LOCATED IN A TYPE I OR IIA STRUCTURE SEPARATED BY 10 FEET FROM OTHER STRUCTURES. CONTAINERS LARGER THAN 1 CUBIC YARD SHALL BE OF NON- OR LIMITED- COMBUSTIBLE MATERIALS OR SIMILARLY PROTECTED OR SEPARATED.

8. OPEN FLAMES, FIRE AND BURNING ON ALL PREMISES IS PROHIBITED EXCEPT AS SPECIFICALLY PERMITTED BY THE CITY OF EUREKA FIRE DEPARTMENT.

9. THE EGRESS PATH SHALL REMAIN FREE AND CLEAR OF ALL OBSTRUCTIONS AT ALL TIMES. NO STORAGE IS PERMITTED IN ANY EGRESS PATHS.

10. LOCATIONS AND CLASSIFICATIONS OF EXTINGUISHERS SHALL BE IN ACCORDANCE WITH THE 2012 NATIONAL FIRE CODE.

11. BUILDING UNDERGOING CONSTRUCTION, ALTERATION, OR DEMOLITION SHALL CONFORM TO THE 2012 NATIONAL FIRE CODE FOR WELDING, CUTTING, AND OTHER HOT WORK.

12. WALL, FLOOR, AND CEILING FINISHES AND MATERIALS SHALL NOT EXCEED THE INTERIOR FINISH CLASSIFICATIONS IN THE 2012 NATIONAL FIRE CODE AND SHALL MEET THE FLAME PROPAGATION PERFORMANCE CRITERIA. DECORATIVE MATERIALS SHALL BE PROPERLY TREATED BY A PRODUCT OR PROCESS APPROVED BY THE STATE FIRE MARSHALL WITH APPROPRIATE DOCUMENTATION PROVIDED TO THE CITY OF EUREKA.

13. EXITS, EXIT SIGNS, FIRE ALARM PANELS, HOSE CABINETS, FIRE EXTINGUISHER LOCATIONS, AND STANDPIPE CONNECTIONS SHALL NOT BE CONCEALED BY CURTAINS, MIRRORS, OR OTHER DECORATIVE MATERIAL.

14. IN BUILDINGS THAT REQUIRE STANDPIPES, STANDPIPES SHALL BE PROVIDED DURING CONSTRUCTION WHEN THE HEIGHT REACHES 40 FT. ABOVE THE LOWEST LEVEL OF FIRE DEPT VEHICLE ACCESS. A FIRE DEPT CONNECTION SHALL BE NO MORE THAN 100 FT FROM AVAILABLE FIRE DEPT VEHICLE ACCESS ROADWAYS.

15. KEY BOXES SHALL BE PROVIDED FOR ALL HIGH-RISE BUILDINGS, POOL ENCLOSURES, GATES IN THE PATH OF FIREFIGHTER TRAVEL TO STRUCTURES, SECURED PARKING LEVELS, DOORS GIVING ACCESS TO ALARM PANELS AND/OR ANNUNCIATORS, AND ANY OTHER STRUCTURES OR AREAS WHERE ACCESS TO AN AREA IS RESTRICTED.

GENERAL NOTES

1. THE FOLLOWING NOTES ARE GENERAL IN NATURE AND OTHER SECTIONS OF WORK SHOULD BE REFERRED TO FOR MORE SPECIFIC INFORMATION.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINISHING OF HIS WORK IN THE MANNER AND FORMS PRESCRIBED BY THE PLANS AND SPECIFICATIONS. REPORT DISCREPANCIES OF ERROR AND OMISSIONS IN THE PLANS AND SPECIFICATIONS FOR THE WORK PRIOR TO SUBMITTING BID.

3. CONTRACTORS ARE TO PROTECT ALL PROPERTY AND THE WORK OF ALL OTHER TRADES AGAINST DAMAGE OR INJURY CAUSED BY HIS ACTIVITY AND THE ACTIVITY OF THE SUBCONTRACTOR.

4. CONTRACTORS SHALL INDIVIDUALLY WARRANT FOR ONE YEAR ALL MATERIALS AND WORKMANSHIP EXCEPT AS OTHERWISE AGREED.

5. IN CASE OF CONFLICT, NOTES AND SPECIFIC DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER THESE "GENERAL NOTES" AND "SPECIFICATIONS" AND OVER TYPICAL DETAILS.

6. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED.

7. THE OWNER RESERVES THE RIGHT TO CHANGE, INCREASE, OR REDUCE THE WORK AS MAY BE NECESSARY.

8. CONTRACTOR SHALL NOT MAKE CHANGES NOR DO EXTRA WORK WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER OR HIS REPRESENTATIVE.

9. THE ARCHITECT WILL IN NO WAY BE RESPONSIBLE FOR HOW FIELD WORK IS PERFORMED, SAFETY IN, ON, OR ABOUT THE JOB SITE, METHODS OF PERFORMANCE OR TIMELINESS OF PERFORMANCE OF WORK.

10. THE CONTRACTOR SHALL CAREFULLY STUDY AND COMPARE THE CONTRACT DOCUMENTS AND SHALL AT ONCE REPORT TO THE ARCHITECT ANY DISCREPANCY OR OMISSIONS HE MAY DISCOVER.

11. THE SUBCONTRACTORS ARE CONSIDERED TO BE EXPERTS IN THEIR RESPECTIVE FIELDS AND SHALL NOTIFY THE OWNER AND THE ARCHITECT IMMEDIATELY OF ANY WORK DESIGNED BY THE ARCHITECT WHICH CANNOT BE FULLY COMPLIED WITH OR GUARANTEED PRIOR TO THE INSTALLATION OF THE WORK.

12. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON DRAWINGS.

13. THE CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE SAFETY CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE OWNER AND THE ARCHITECT FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH PERFORMANCE OF WORK ON THIS PROJECT.

14. ALL WORK, INCLUDING MATERIALS AND WORKMANSHIP, SHALL CONFORM TO THE REQUIREMENTS OF LOCAL CODES, LAWS, ORDINANCES IN EFFECT DURING THIS PROJECT.

15. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BIDDING AND SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO BEGINNING THE WORK. SHOULD ANY CONDITION ARISE WHERE THE INTENT OF THE DRAWINGS IS IN DOUBT OR WHERE THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

16. ALL UTILITIES TO BE UNDERGROUND PER UTILITY COMPANY AND LOCAL CODE REQUIREMENTS.

17. "THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY." SAFETY OF ALL PARTIES PRESENT ON THE JOB SITE IS THE CONTRACTOR'S RESPONSIBILITY.

18. DIMENSIONS SHOWN ON FLOOR PLANS, SECTIONS, AND DETAILS ARE TO FACE OF STUDS, COLUMN GRID LINES AND FACE OF CONCRETE AND BLOCK WALLS, UNLESS OTHERWISE NOTED OR SHOWN.

19. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FURNISHINGS OF HIS WORK IN THE MANNER AND FORMS PRESCRIBED BY THE PLANS AND SPECIFICATIONS. REPORT DISCREPANCIES, CONFLICTS AND OMISSIONS IN THE PLANS AND SPECIFICATIONS FOR THE WORK PRIOR TO SUBMITTING BID. FAILURE TO DO SO WILL NOT BE GROUNDS FOR FUTURE CHANGE ORDERS.

20. ALL EQUIPMENT TO BE NATIONAL SANITATION FOUNDATION DESIGN AND INSTALLATION REQUIREMENTS PRIOR TO INSTALLATION.

21. CONTRACTOR TO VERIFY MAKE, MODEL, SIZE AND CONNECTION REQUIREMENTS OF ALL EQUIPMENT PRIOR TO INSTALLATION. NOTIFY OWNER / ARCHITECT IMMEDIATELY SHOULD DISCREPANCIES EXIST.

22. CONTRACTOR TO PROVIDE BACKING AS NECESSARY FOR ALL WALL MOUNTED ITEMS PRIOR TO INSTALLATION.

23. CAREFULLY REVIEW LOCATION AND CONDITIONS OF ALL UTILITIES TO BE FURNISHED FOR THE SPACE AND VERIFY LOCATIONS FURNISHED BY THE OWNER/UTILITY COMPANIES AS SHOWN ON THE DRAWING.

24. SPECIAL ATTENTION SHALL BE GIVEN TO EXISTING AREAS SURROUNDING THE EXTERIOR OF THE PROJECT SPACE. ALL CONSTRUCTION AND INSTALLED EQUIPMENT, WALKS, AND LANDSCAPED AREAS SHALL BE PROTECTED AND GUARDED BY BARRIERS OR OTHER MEANS NECESSARY TO PROTECT AREAS FROM DAMAGE DURING CONSTRUCTION. ALL AREAS DAMAGED WILL BE RESTORED TO THEIR ORIGINAL CONDITION PRIOR TO FINAL PAYMENT AT THE SOLE EXPENSE OF THE GENERAL CONTRACTOR.

25. INSTALL SAFETY BARRIERS DURING CONSTRUCTION AS NECESSARY TO PROTECT THE PUBLIC FROM INJURY AND ACCESS TO THE SITE. REVIEW SPECIFIC REQUIREMENTS WITH THE OWNER PRIOR TO BEGINNING CONSTRUCTION.

26. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO SECURE AND PROTECT FROM DAMAGE, ALL ITEMS ON THE PREMISES, INCLUDING, BUT NOT LIMITED TO; CONSTRUCTION MATERIALS, LIGHT FIXTURES, FOOD SERVICE EQUIPMENT, EQUIPMENT, AND THE FURNITURE PACKAGE. AFTER RECEIPT ON JOB SITE, ANY LOST, STOLEN OR ITEMS DAMAGED LATER BY SUBCONTRACTORS OR OTHERS IN THE BUILDING, SHALL BE REPLACED OR REPAIRED AT THE GENERAL CONTRACTOR'S SOLE EXPENSE. THE GENERAL C

ALL IDEAS, DESIGNS, ARRANGEMENTS AND PLANS INDICATED OR REPRESENTED BY THIS DRAWING ARE OWNED BY AND THE PROPERTY OF HAUCK ARCHITECTURE, AND WERE CREATED, EVOLVED AND DEVELOPED FOR USE ON AND IN CONNECTION WITH THE SPECIFIED PROJECT. NONE OF SUCH IDEAS, DESIGNS, ARRANGEMENTS OR PLANS SHALL BE USED BY OR DISCLOSED TO ANY PERSON, FIRM OR CORPORATION FOR ANY PURPOSE WHATSOEVER WITHOUT PRIOR WRITTEN PERMISSION OF HAUCK ARCHITECTURE. USE OF THIS DRAWING IS PROHIBITED WITHOUT THE CONSENT OF HAUCK ARCHITECTURE.

SITE PLAN NOTES

1. SURFACE SLOPES OF ACCESSIBLE PARKING SPACES SHALL BE THE MINIMUM POSSIBLE AND SHALL NOT EXCEED ONE UNIT VERTICAL TO 50 UNITS HORIZONTAL (2 PERCENT SLOPE) IN ANY DIRECTION.

2. AN ADDITIONAL SIGN SHALL ALSO BE POSTED IN A CONSPICUOUS PLACE AT EACH ENTRANCE TO OFF-STREET PARKING FACILITIES OR IMMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL OF SPACE. THE SIGN SHALL BE NOT LESS THAN 17 INCHES BY 22 INCHES IN SIZE WITH LETTERING NOT LESS THAN 1 INCH IN HEIGHT, WHICH CLEARLY AND CONSPICUOUSLY STATES THE FOLLOWING:
"UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES MAY BE TOWED AWAY AT OWNER'S EXPENSE. TOWED VEHICLES MAY BE RECLAIMED BY TELEPHONING _____."

3. WALKS AND SIDEWALKS SUBJECT TO THESE REGULATIONS SHALL HAVE A CONTINUOUS COMMON SURFACE, NOT INTERRUPTED BY STEPS OR BY ABRUPT CHANGES IN LEVEL EXCEEDING 1/2".

4. WHEN CHANGES IN LEVEL NOT EXCEEDING 1/2" OCCUR, THEY SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL TO 2 UNIT HORIZONTAL (50%), EXCEPT THAT LEVEL CHANGES NOT EXCEEDING 1/4" MAY BE VERTICAL.

5. WALK AND SIDEWALK SURFACE SHALL BE SLIP RESISTANT AS FOLLOWS:
-SURFACES WITH A SLOPE OF LESS THAN 6% GRADIENT SHALL BE AT LEAST A SLIP RESISTANT AS THAT DESCRIBED AS A MEDIUM SALTED FINISH
-SURFACES WITH A SLOPE OF 6% OR GREATER GRADIENT SHALL BE SLIP RESISTANT.

6. WALK AND SIDEWALK SURFACE CROSS SLOPES SHALL NOT EXCEED 1/4" PER FOOT.

7. WALK AND SIDEWALKS, AND PEDESTRIAN WAYS SHALL BE FREE OF GRATING WHENEVER POSSIBLE. FOR GRATING LOCATED IN THE SURFACE OF ANY OF THESE AREAS, GRID OPENINGS IN GRATING SHALL BE LIMITED TO 1/2" IN THE DIRECTION OF THE TRAFFIC FLOW. IF GRATING HAVE ELONGATED OPENINGS THEY SHALL BE PLACED SO THAT THE DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

8. ISLAND / CURBS ADJACENT TO FIRE LANE SHALL BE PAINTED RED WITH CONTRASTING WHITE LETTERS 4 INCHES IN HEIGHT, STATING FIRE LANE, NO PARKING. RED CURBING SHALL BE PAINTED 15 FEET IN FRONT AND 15' BEHIND EACH FIRE HYDRANT.

9. GENERAL CONTRACTOR TO ENSURE EXISTING HANDICAP ACCESSIBLE PARKING STALLS ARE IN COMPLIANCE WITH THE 2009 INTERNATIONAL BUILDING CODE. EXISTING SITE FULLY COMPLIES WITH THE 2009 INTERNATIONAL BUILDING CODE REQUIREMENTS AND IS SUBJECT TO FIELD VERIFICATION.

10. IF THE BUILDING INSPECTOR DETERMINES NONCOMPLIANCE WITH ANY ACCESSIBILITY PROVISIONS, HE/SHE SHALL REQUIRE COMPLETE, DETAILED PLANS CLEARLY SHOWING ALL EXISTING NON-COMPLYING CONDITIONS AND THE PROPOSED MODIFICATIONS TO MEET CURRENT ACCESSIBILITY PROVISIONS AFFECTED BY THE REMODEL (INCLUDING SITE PLAN, FLOOR PLANS, DETAILS, ETC.). THE PLANS MUST BE STAMPED BY THE FIELD INSPECTOR AND RESUBMITTED TO THE BUILDING DEVELOPMENT REVIEW DIVISION.

13. THE WORDS "NO PARKING" SHALL BE PAINTED ON THE GROUND WITHIN EACH LOADING AND UNLOADING ACCESS AISLE. THIS NOTICE SHALL BE PAINTED IN WHITE LETTERS NO LESS THAN 12" HIGH AND LOCATED SO THAT IT IS VISIBLE TO TRAFFIC ENFORCEMENT OFFICIALS.

14. A PROPERTY OWNER'S FINAL REPORT FORM FOR WORK REQUIRED TO HAVE SPECIAL INSPECTIONS, TESTING AND STRUCTURAL OBSERVATIONS MUST BE COMPLETED BY THE PROPERTY OWNER, PROPERTY OWNERS AGENT OF RECORD, ARCHITECT OR RECORD OR ENGINEER OF RECORD AND SUBMITTED TO THE INSPECTION SERVICES DIVISION.

15. PROVIDE DETECTABLE WARNINGS AT A WALKS NOT SEPARATED BY CURBS, RAILINGS OR OTHER ELEMENTS THAT CROSSES OR ADJOINS A VEHICULAR WAY. THE BOUNDARY BETWEEN THE AREAS SHALL BE DEFINED BY A CONTINUOUS DETECTABLE WARNING 36 INCHES (914 MM) WIDE.

16. "PEDESTRIANS SHALL BE PROTECTED DURING CONSTRUCTION, REMODELING AND DEMOLITION ACTIVITIES.

BEST MANAGEMENT PRACTICES

1. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND SHALL NOT BE TRANSPORTED FROM THE SITE VIA SWALES, AREA DRAINS OR NATURAL DRAINAGE COURSES.

2. STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY WIND OR WATER.

3. FUELS, OILS, SOLVENTS AND OTHER MATERIALS SHALL BE STORED IN ACCORDANCE WITH THEIR LISTING. STORAGE CONTAINERS SHALL BE PROTECTED FROM THE WEATHER. SPILLS SHALL BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS SHALL NOT BE WASHED INTO THE DRAINAGE SYSTEM.

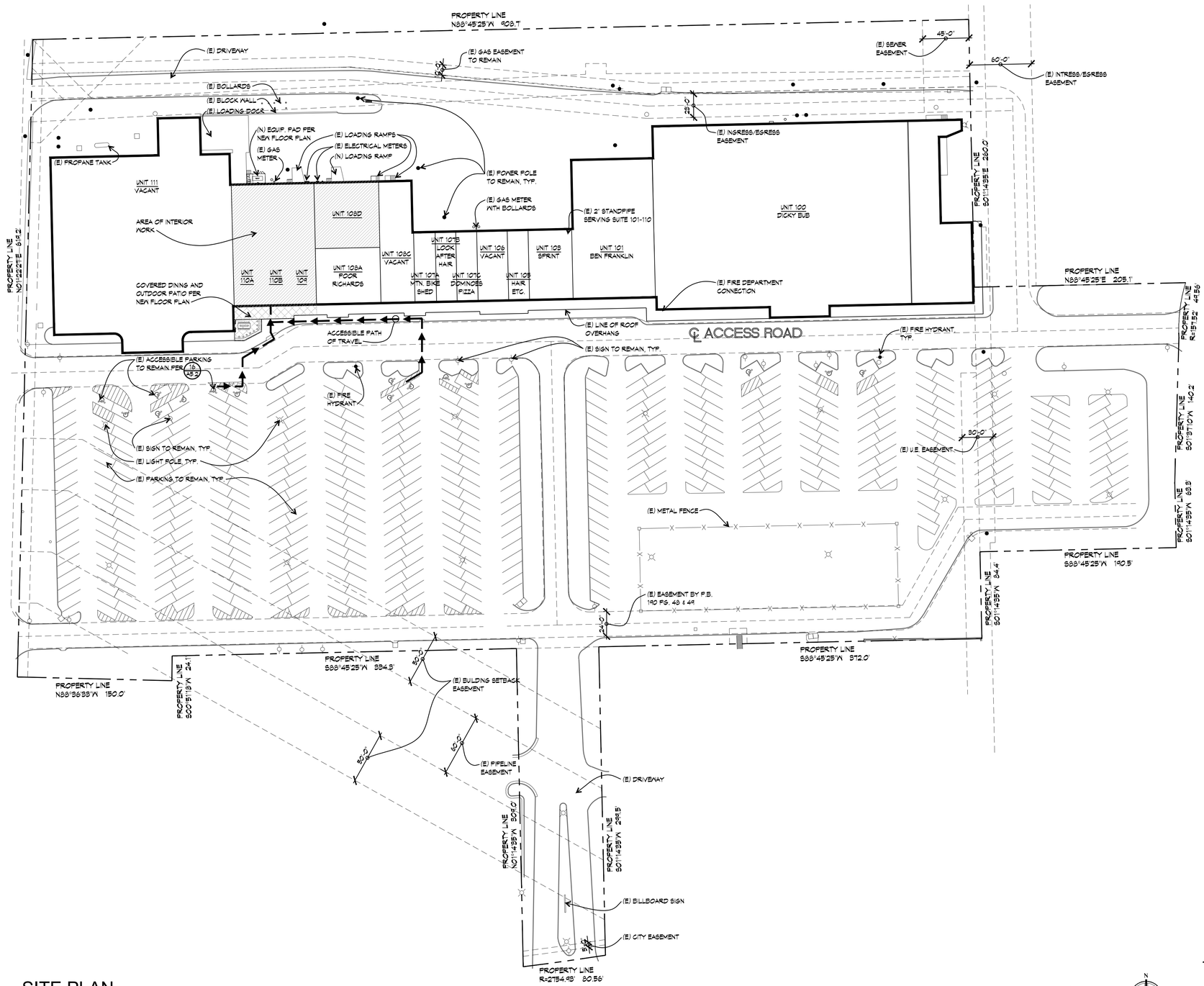
4. EXCESS CONCRETE SHALL NOT BE WASHED INTO ANY DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.

5. TRASH AND CONSTRUCTION RELATED DEBRIS MUST BE DEPOSITED INTO A COVERED RECEPTACLE AT ALL TIMES.

6. SEDIMENTS AND CONSTRUCTION MATERIALS SHALL NOT BE TRACKED FROM THE SITE BY VEHICLES. THE CONSTRUCTION ENTRANCE ROADWAYS SHALL BE STABILIZED TO INHIBIT SEDIMENTS FROM BEING DEPOSITED ON THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS SHALL BE SWEPT UP IMMEDIATELY.

7. ANY SLOPES WITH DISTURBED SOILS SHALL BE STABILIZED TO PREVENT EROSION.

8. CONTRACTOR TO ENSURE EXISTING HANDICAP ACCESSIBLE PARKING STALLS ARE IN COMPLIANCE WITH THE 2009 INTERNATIONAL BUILDING CODE, SUBJECT TO FIELD VERIFICATION.



SITE PLAN

0 25 25
SCALE: 1" = 50'-0"

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
http://www.hauckarchitecture.com
ca lic.#26855 - co lic.#C31127 - fl lic.#ar99187 - md lic.# 19161
mo lic.#ra-2008004390 - pa lic.#pa012071 - tx lic. # 27116 - wa lic.# 11810

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

SITE PLAN LEGEND

ADA PATH OF TRAVEL: ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING ¼" IF BEVELED AT 1:2 MAX SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING ¼" MAX AND AT LEAST 48" IN WIDTH, SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED, ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 84" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 84" S.C. SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

CONSTRUCTION STORMWATER BMPS NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL SILT AND MUD ON ADJACENT STREET(S), DUE TO CONSTRUCTION VEHICLES OR ANY OTHER CONSTRUCTION ACTIVITY, AT THE END OF EACH WORK DAY, OR AFTER A STORM EVENT THAT CAUSES A BREECH IN INSTALLED CONSTRUCTION BMP'S WHICH MAY COMPROMISE STORM WATER QUALITY WITHIN ANY STREET(S), A STABILIZED CONSTRUCTION EXIT MAY BE REQUIRED TO PREVENT CONSTRUCTION VEHICLES OR EQUIPMENT FROM TRACKING MUD OR SILT ONTO THE STREET.

2. ALL STOCKPILES OF SOIL AND/OR BUILDING MATERIALS THAT ARE INTENDED TO BE LEFT FOR A PERIOD GREATER THAN SEVEN CALENDAR DAYS ARE TO BE COVERED. ALL REMOVABLE BMP DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN FIVE DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.

3. A CONCRETE WASHOUT SHALL BE PROVIDED ON ALL PROJECTS WHICH PROPOSE THE CONSTRUCTION OF ANY CONCRETE IMPROVEMENTS WHICH ARE TO BE POURED IN PLACE ON SITE.

4. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER AFTER EACH RUN-OFF PRODUCING RAINFALL OR AFTER ANY MATERIAL BREACH IN EFFECTIVENESS.

5. ALL SLOPES THAT ARE CREATED OR DISTURBED BY CONSTRUCTION ACTIVITY MUST BE PROTECTED AGAINST EROSION AND SEDIMENT TRANSPORT AT ALL TIMES.

6. THE STORAGE OF ALL CONSTRUCTION MATERIALS AND EQUIPMENT MUST BE PROTECTED AGAINST ANY POTENTIAL RELEASE OF POLLUTANTS INTO THE ENVIRONMENT.

PARKING ANALYSIS

STANDARD PARKING SPACES PROVIDED:	488
ACCESSIBLE PARKING SPACES PROVIDED:	15
TOTAL PARKING SPACES PROVIDED:	523

NOTE: NONE OF THE AREA BEHIND THE BEHIND THE BUILDING OR IN THE GARDENS ARE COUNTED IN THE PARKING ANALYSIS.

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

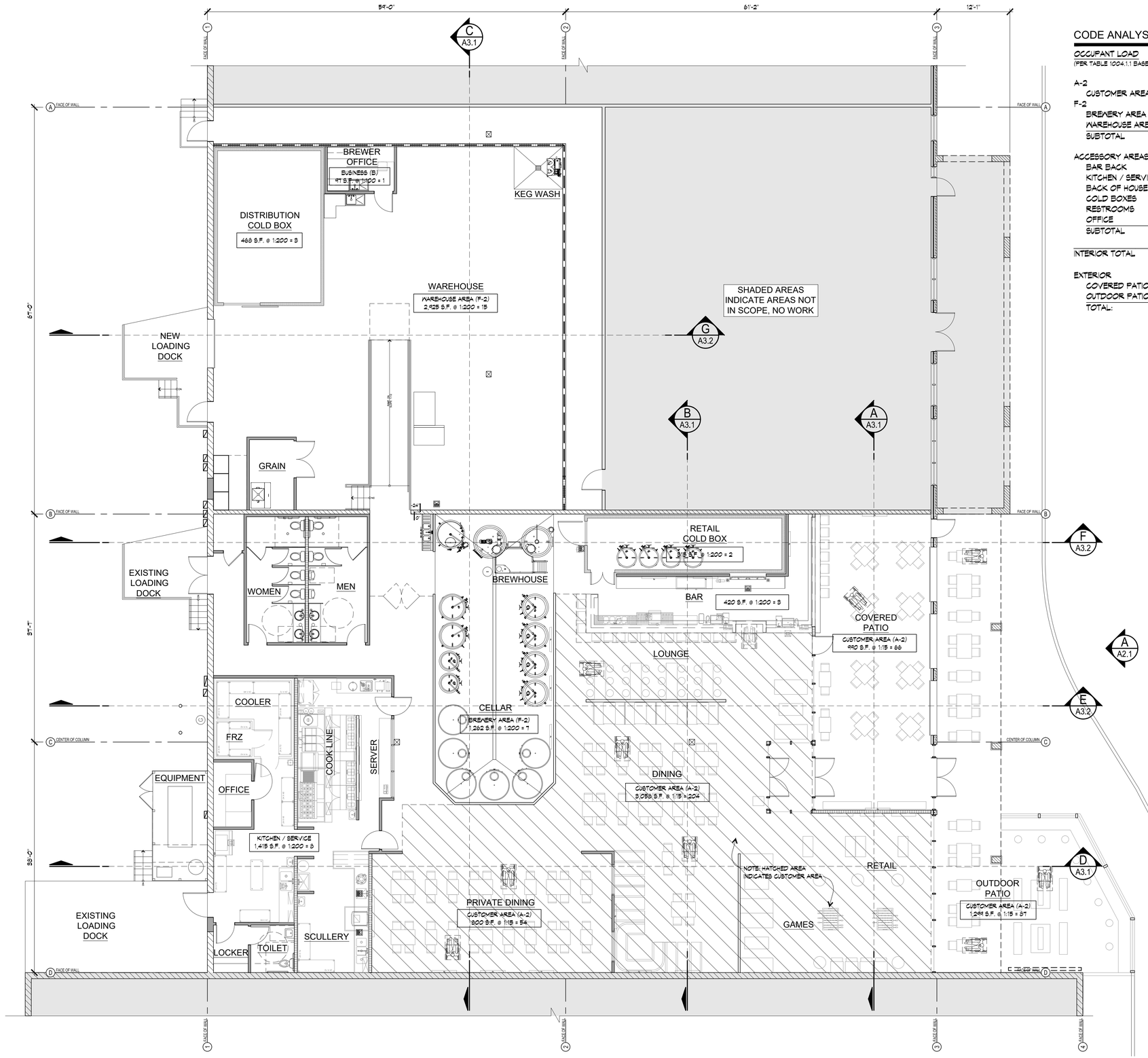
SITE PLAN

STAMP:

STATE OF MISSOURI
TODD DUSTIN HAUCK
NUMBER A-2000004390
ARCHITECT

SHEET NUMBER:

A1.0



OCCUPANCY PLAN

SCALE: 1/8" = 1'-0"

CODE ANALYSIS

OCCUPANT LOAD
(PER TABLE 1004.1.1 BASED ON 2009 INTERNATIONAL BUILDING CODE)

A-2		
CUSTOMER AREA	3,858 S.F. @ 1:15 = 257.2	= 258
F-2		
BREWERY AREA	1,262 S.F. @ 1:200 = 6.31	= 7
WAREHOUSE AREA	3,406 S.F. @ 1:200 = 17.1	= 18
SUBTOTAL	8,526 S.F.	= 273
ACCESSORY AREAS		
BAR BACK	420 S.F. @ 1:200 = 2.1	= 3
KITCHEN / SERVICE	1,415 S.F. @ 1:200 = 7.08	= 8
BACK OF HOUSE	1,021 S.F. @ 1:200 = 2.7	= 3
COLD BOXES	788 S.F. @ 1:200 = 3.91	= 4
RESTROOMS	447 S.F. @ 1:200 = 2.24	= 3
OFFICE	97 S.F. @ 1:100 = .97	= 1
SUBTOTAL	4,188 S.F.	= 22
INTERIOR TOTAL	12,709 S.F.	= 295
EXTERIOR		
COVERED PATIO	990 S.F. @ 1:15	= 66
OUTDOOR PATIO	1,299 S.F. @ 1:15 = 86.6	= 87
TOTAL:	2,289 S.F.	= 153

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- NEW CONSTRUCTION PER NEW FLOOR PLAN
- NEW CONSTRUCTION PER NEW FLOOR PLAN
- NEW MANUFACTURED PANEL

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

OCCUPANCY PLAN

STAMP:

STATE OF MISSOURI
JAMES RANDOLPH HAUCK
A-2008004390
ARCHITECT

SHEET NUMBER:

A0.2

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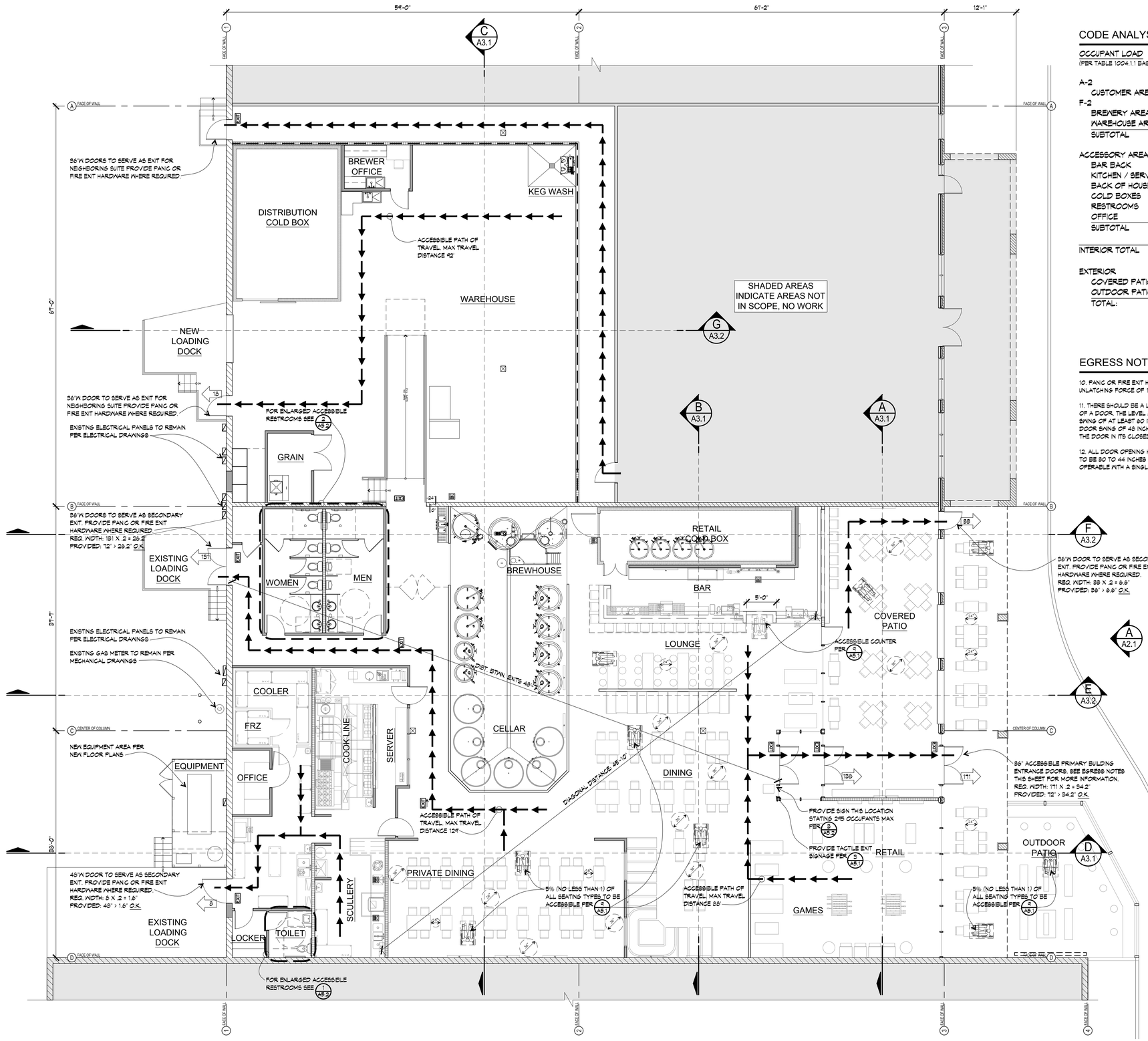

EGRESS AND ACCESSABILITY PLAN

SCALE: 1/8" = 1'-0"

CODE ANALYSIS

OCCUPANT LOAD
(PER TABLE 1004.1.1 BASED ON 2015 INTERNATIONAL BUILDING CODE)

A-2		
CUSTOMER AREA	8,858 S.F. @ 1:15 = 251.2	= 258
F-2		
BREWERY AREA	1,262 S.F. @ 1:200 = 6.31	= 7
WAREHOUSE AREA	3,406 S.F. @ 1:200 = 17.1	= 18
SUBTOTAL	8,526 S.F.	= 273
ACCESSORY AREAS		
BAR BACK	420 S.F. @ 1:200 = 2.1	= 3
KITCHEN / SERVICE	1,415 S.F. @ 1:200 = 7.08	= 8
BACK OF HOUSE	1,021 S.F. @ 1:200 = 2.7	= 3
COLD BOXES	788 S.F. @ 1:200 = 3.91	= 4
RESTROOMS	447 S.F. @ 1:200 = 2.24	= 3
OFFICE	97 S.F. @ 1:100 = .97	= 1
SUBTOTAL	4,188 S.F.	= 22
INTERIOR TOTAL	12,709 S.F.	= 295
EXTERIOR		
COVERED PATIO	990 S.F. @ 1:15	= 66
OUTDOOR PATIO	1,299 S.F. @ 1:15 = 86.6	= 87
TOTAL:	2,289 S.F.	= 153

EGRESS NOTES CONT.

10. PANIC OR FIRE EXIT HARDWARE SHALL BE OPERABLE WITH A MAXIMUM UNLATCHING FORCE OF 15 POUNDS.

11. THERE SHOULD BE A LEVEL AND CLEAR FLOOR OR LANDING ON EACH SIDE OF A DOOR. THE LEVEL AREA SHALL HAVE LENGTH IN THE DIRECTION OF DOOR SWING OF AT LEAST 60 INCHES AND THE LENGTH OPPOSITE THE DIRECTION OF DOOR SWING OF 48 INCHES AS MEASURED AT RIGHT ANGLE TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.

12. ALL DOOR OPENING HARDWARE TO BE ACCESSIBLE. CENTER OF HARDWARE TO BE 30 TO 44 INCHES ABOVE FLOOR. LATCHING AND LOCKING DOORS TO BE OPERABLE WITH A SINGLE EFFORT BY LEVER OR PUSH-PULL TYPE HARDWARE.

EGRESS NOTES

1. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED AT ALL TIMES AND SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM (BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR) THAT WILL AUTOMATICALLY ILLUMINATE THE EXIT SIGNS FOR A DURATION OF NOT LESS THAN 90 MINUTES.

2. THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, SHALL BE ILLUMINATED TO A LEVEL OF NOT LESS THAN ONE FOOT-CANDLE AT THE WALKING SURFACE AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED.

3. LOCATIONS AND CLASSIFICATIONS OF EXTINGUISHERS TO BE IN ACCORDANCE WITH THE 2012 NATIONAL FIRE CODE.

4. EXITS, EXIT SIGNS, AND FIRE EXTINGUISHER LOCATIONS SHALL NOT BE CONCEALED BY CURTAINS, MIRRORS, OR OTHER DECORATIVE MATERIAL.

5. THE EGRESS PATH SHALL REMAIN FREE AND CLEAR OF ALL OBSTRUCTIONS AT ALL TIMES. NO STORAGE IS PERMITTED IN ANY EGRESS PATHS.

6. THE PRIMARY BUILDING ENTRANCE/EXIT DOOR SHALL REMAIN UNLOCKED DURING BUSINESS HOURS AND PROVIDED WITH: a) KEY LOCKING DEVISE, b) READILY VISIBLE DURABLE SIGN INSTALLED ADJACENT TO THE DOOR STATING "THIS DOOR MUST REMAIN UNLOCKED WHENEVER THE BUILDING IS OCCUPIED", c) TACTILE SIGNAGE INDICATING THIS IS THE ACCESSIBLE EXIT.

8. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR EXTERIOR DOORS AND INTERIOR DOORS, APPLIED AT RIGHT ANGLES TO HINGED DOORS AND AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED.

7. RECESSED DOOR MATS, IF USED, SHALL BE ADEQUATELY ANCHORED TO PREVENT INTERFERENCE WITH WHEELCHAIR TRAFFIC.

9. THE BOTTOM 10 INCHES OF ALL DOORS EXCEPT AUTOMATIC AND SLIDING SHALL HAVE A SMOOTH, UNINTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. WHERE NARROW FRAME DOORS ARE USED, A 10 INCH HIGH SMOOTH PANEL SHALL BE INSTALLED ON THE PUSH SIDE.

9. THE FLOOR OR LANDING SHALL BE NOT MORE THAN ½ INCH LOWER THAN THE THRESHOLD OF THE DOORWAY. CHANGE IN LEVEL BETWEEN ¼ INCH AND ½ INCH SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL TO 2 UNIT HORIZONTAL.

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- NEW CONSTRUCTION PER NEW FLOOR PLAN
- NEW CONSTRUCTION PER NEW FLOOR PLAN
- NEW MANUFACTURED PANEL
- EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MINUTE BATTERY BACKUP AND TACTILE SIGNAGE PER SHEET A5.1
- ACCESSIBLE PATH OF TRAVEL
- NUMBER OF OCCUPANTS THIS EXIT

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

EGRESS AND ACCESSIBILITY PLAN

STAMP:

STATE OF MISSOURI
TODD DUSTIN HAUCK
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

A0.3

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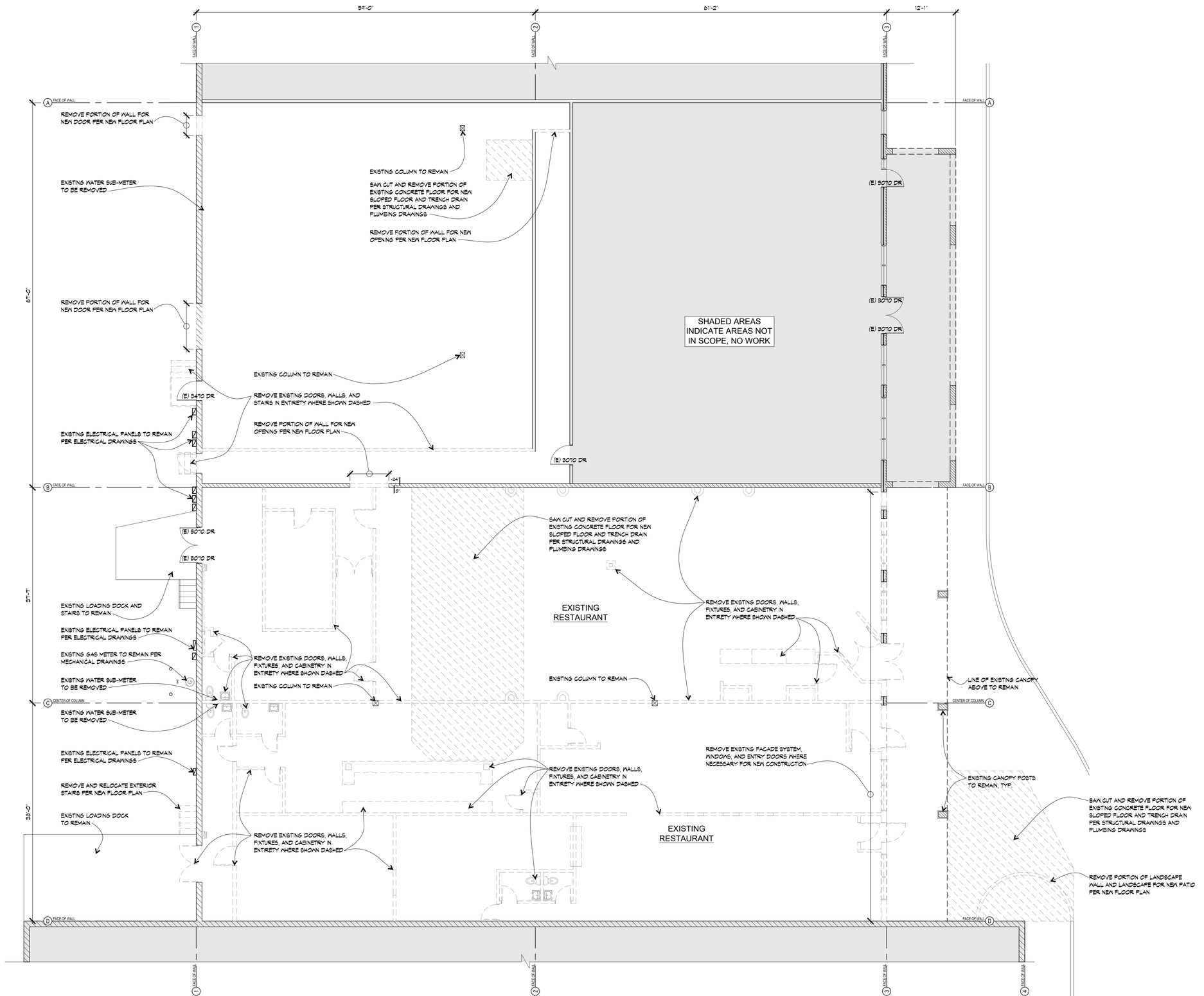

EXISTING / DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- EXISTING NON-LOAD BEARING AND NON-SHEAR CONSTRUCTION TO BE REMOVED

DEMOLITION NOTES

1. CONTRACTOR TO CONFIRM WITH ALL APPLICABLE UTILITY COMPANIES THE SHUT OFF & REMOVAL OF UTILITIES PRIOR TO THE START OF DEMOLITION.

2. CONSTRUCTION SHOWN AS BEING REMOVED ARE GENERAL AND IS THE MINIMUM TO CONSTRUCT THE PROJECT. THE ACTUAL AMOUNT OF DEMOLITION MAY BE FAR GREATER FOR THE PRACTICAL PURPOSE OF BUILDING THIS PROJECT. THE CONTRACTOR SHALL REVIEW PLANS & VISIT THE SITE TO DETERMINE THE ACTUAL AMOUNT OF DEMOLITION NECESSARY TO BUILD THIS PROJECT.

3. CONTRACTOR TO PERFORM A WALK THRU WITH OWNER & DETERMINE ALL ITEMS TO BE SAVED IN PLACE DURING CONSTRUCTION OR REMOVED AND SAVED FOR RE-INSTALLATION AT END OF CONSTRUCTION.

4. THIS PROJECT TO CONFORM TO THE CITY OF EUREKA REQUIREMENTS FOR RECYCLING AND DISPOSAL OF CONSTRUCTION AND DEBRIS.

5. CONTRACTOR TO IMPLEMENT CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT.

6. CONTRACTOR TO TEST FOR LEAD AND ASBESTOS PER EPA REQUIREMENTS AND PRESENT RESULTS TO OWNER.

7. CONTRACTOR TO SHORE AND BRACE ALL WORK PRIOR TO DEMOLITION.

8. DEMOLITION WORK TO BE PERFORMED IN A CAREFUL AND CAUTIOUS MANNER TO KEEP ALL EXISTING FRAMING TO REMAIN INTACT AND UNDAMAGED.

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

EXISTING / DEMOLITION FLOOR PLAN

STAMP:

STATE OF MISSOURI
TIMOTHY DUSTIN HAUCK
A-2008004390
ARCHITECT

SHEET NUMBER:

A1.1

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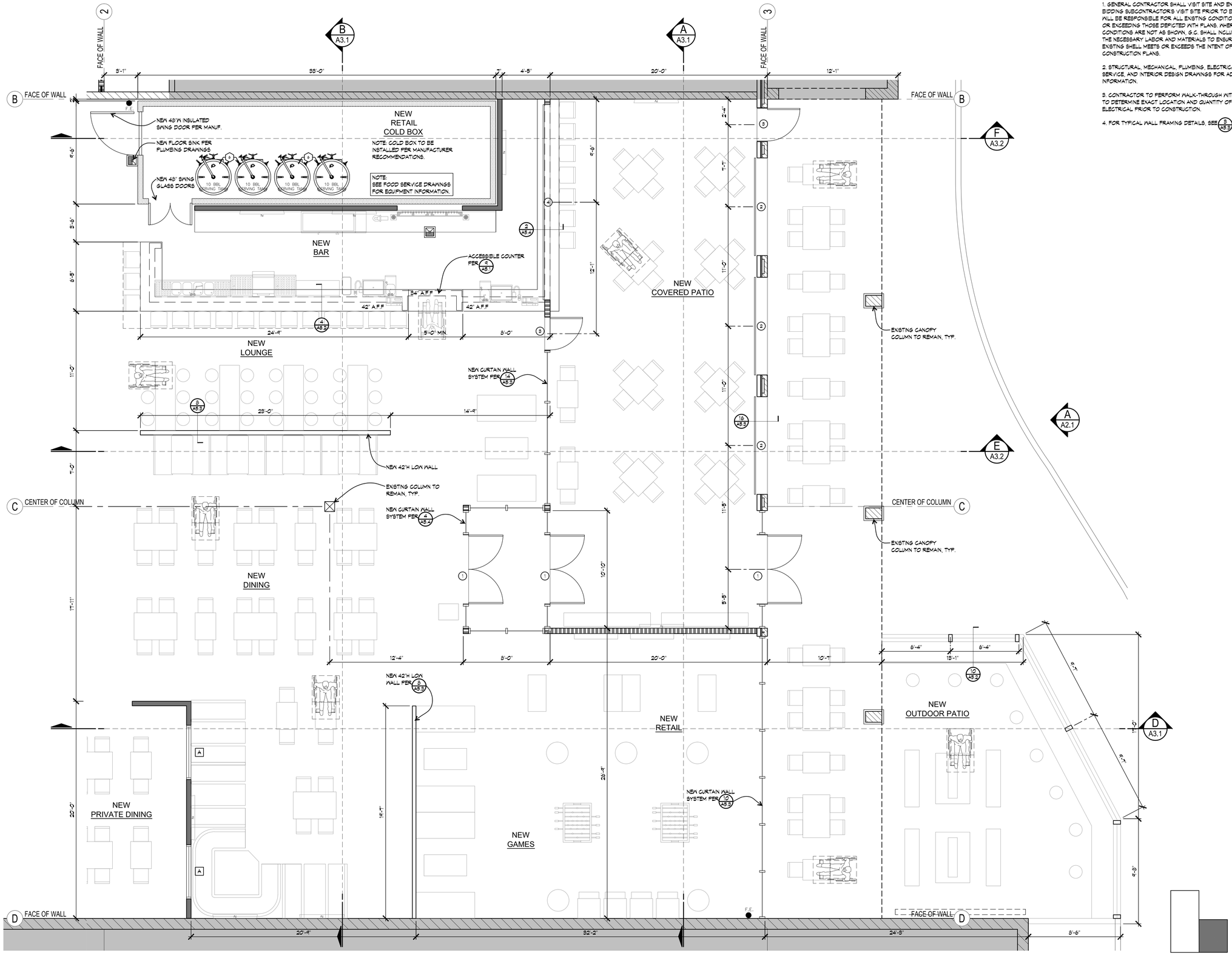

NEW FLOOR PLAN - SOUTH

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

KEY PLAN

NOTES

1. GENERAL CONTRACTOR SHALL VISIT SITE AND ENSURE ALL BIDDING SUBCONTRACTOR'S VISIT SITE PRIOR TO BID. G.C. WILL BE RESPONSIBLE FOR ALL EXISTING CONDITIONS MEETING OR EXCEEDING THOSE DEPICTED WITH PLANS. WHERE EXISTING CONDITIONS ARE NOT AS SHOWN, G.C. SHALL INCLUDE IN BID THE NECESSARY LABOR AND MATERIALS TO ENSURE THE EXISTING SHELL MEETS OR EXCEEDS THE INTENT OF THE CONSTRUCTION PLANS.

2. STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, FOOD SERVICE, AND INTERIOR DESIGN DRAWINGS FOR ADDITIONAL INFORMATION.

3. CONTRACTOR TO PERFORM WALK-THROUGH WITH TENANT TO DETERMINE EXACT LOCATION AND QUANTITY OF ALL ELECTRICAL PRIOR TO CONSTRUCTION.

4. FOR TYPICAL WALL FRAMING DETAILS, SEE 9/A5.5 7/A5.5

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- NEW 20 GA. 3⅝" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- NEW 20 GA. 6" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- EXISTING 1-HOUR WALL
- NEW 1-HOUR WALL PER 9/A5.5
- NEW MANUFACTURED PANEL
- EXIT — EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MINUTE BATTERY BACKUP AND TACTILE SIGNAGE PER SHEET A5.1
- F.E. — FIRE EXTINGUISHER PER 5/A5.2
- DOOR PER SCHEDULE SHEET A7.1
- A — WINDOW PER SCHEDULE SHEET A7.1
- EQUIPMENT PER SCHEDULE SHEET A7.1

EQUIPMENT NOTES

1. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER ALL TANK ANCHORAGE AND ATTACHMENT POINTS. VERIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO WORK.

2. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER UTILITY DROP POINTS, TANK ORIENTATION, AND CONNECTION POINTS PRIOR TO INSTALLATION.

3. GENERAL CONTRACTOR TO PROVIDE VENT STACKS FOR BREW HOUSE PER MANUFACTURER INSTRUCTIONS AND PER MECHANICAL.

4. GENERAL CONTRACTOR TO VERIFY ALL BREWING EQUIPMENT SPECIFICATIONS AND UTILITY REQUIREMENTS.

5. GENERAL CONTRACTOR TO INCLUDE GLYCOL PIPING TO BREWING AND COLD BOX EQUIPMENT PER OWNER DIRECTION. VERIFY EXACT REQUIREMENTS, SIZING AND ROUTING WITH GLYCOL EQUIPMENT MANUFACTURER / SUPPLIER AND OWNER. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

6. BREW HOUSE CONTROL SYSTEM TO BE PROVIDED BY OWNER. GENERAL CONTRACTOR TO COORDINATE LOCATION, INSTALLATION AND UTILITY REQUIREMENTS WITH MANUFACTURER AND OWNER PRIOR TO WORK.

7. GENERAL CONTRACTOR TO PROVIDE COMPLETE COMPRESSED GAS PIPING (TYPE M COPPER, CLEAN AND CAPPED, SILVER BRAZED SOLDER, AND PRESSURE TESTED) AND FIRE DEPARTMENT APPROVAL (HAZ. MAT. PERMIT). PROVIDE BID ALTERNATE FOR FLEXIBLE SUPPLY LINE TUBING. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

8. GENERAL CONTRACTOR TO PROVIDE COMPLETE GRAIN CONVEYANCE SYSTEM (PROVIDE BID ALTERNATE FOR CHAIN DISK VS. FLEX/SCREW AUGER CONVEYOR SYSTEM) PER OWNERS DIRECTION. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECT'S APPROVAL PRIOR TO WORK.

9. CONTRACTOR TO PROVIDED CONVENIENCE OUTLETS AT BREW HOUSE AND CELLAR PER ELECTRICAL DRAWINGS. VERIFY EXACT LOCATIONS WITH OWNER PRIOR TO INSTALLATION.

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4888 ronson ct., ste.f, san diego, ca 92111
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

NEW FLOOR PLAN - SOUTH

STAMP:

STATE OF MISSOURI · TODD DUSTIN HAUCK · NUMBER A-2008004390 · ARCHITECT

SHEET NUMBER:

A1.2a

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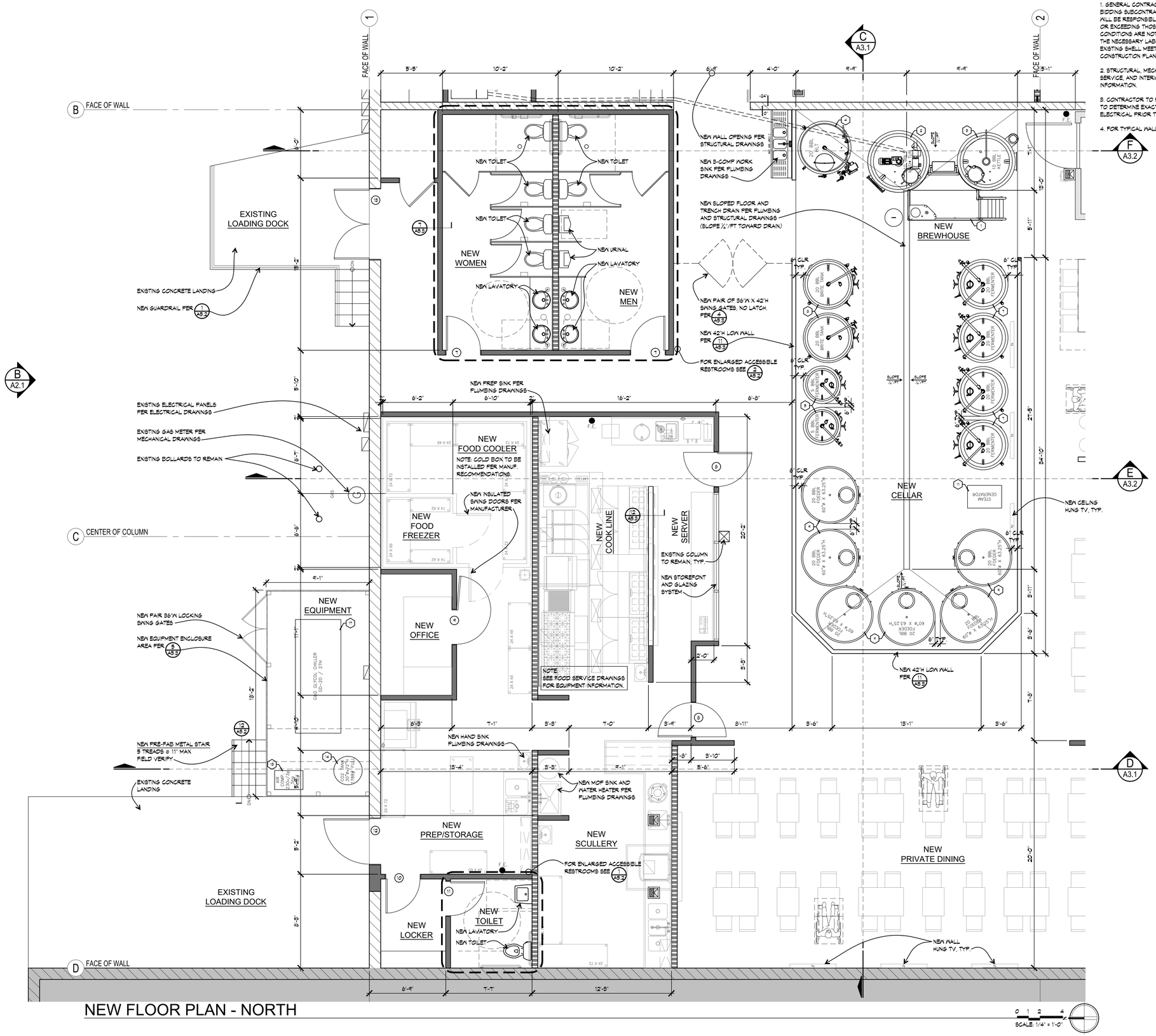

NEW FLOOR PLAN - NORTH

NOTES

1. GENERAL CONTRACTOR SHALL VISIT SITE AND ENSURE ALL BIDDING SUBCONTRACTOR'S VISIT SITE PRIOR TO BID. G.C. WILL BE RESPONSIBLE FOR ALL EXISTING CONDITIONS MEETING OR EXCEEDING THOSE DEPICTED WITH PLANS. WHERE EXISTING CONDITIONS ARE NOT AS SHOWN, G.C. SHALL INCLUDE IN BID THE NECESSARY LABOR AND MATERIALS TO ENSURE THE EXISTING SHELL MEETS OR EXCEEDS THE INTENT OF THE CONSTRUCTION PLANS.

2. STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, FOOD SERVICE, AND INTERIOR DESIGN DRAWINGS FOR ADDITIONAL INFORMATION.

3. CONTRACTOR TO PERFORM WALK-THROUGH WITH TENANT TO DETERMINE EXACT LOCATION AND QUANTITY OF ALL ELECTRICAL PRIOR TO CONSTRUCTION.

4. FOR TYPICAL WALL FRAMING DETAILS, SEE 9 A5.5 7 A5.5

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- NEW 20 GA. 3⅝" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- NEW 20 GA. 6" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- EXISTING 1-HOUR WALL
- NEW 1-HOUR WALL PER 9 A5.5
- NEW MANUFACTURED PANEL
- EXIT — EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MINUTE BATTERY BACKUP AND TACTILE SIGNAGE PER SHEET A5.1
- F.E. — FIRE EXTINGUISHER PER 5 A5.2
- DOOR PER SCHEDULE SHEET A7.1
- A — WINDOW PER SCHEDULE SHEET A7.1
- EQUIPMENT PER SCHEDULE SHEET A7.1

EQUIPMENT NOTES

1. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER ALL TANK ANCHORAGE AND ATTACHMENT POINTS. VERIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO WORK.

2. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER UTILITY DROP POINTS, TANK ORIENTATION, AND CONNECTION POINTS PRIOR TO INSTALLATION.

3. GENERAL CONTRACTOR TO PROVIDE VENT STACKS FOR BREW HOUSE PER MANUFACTURER INSTRUCTIONS AND PER MECHANICAL.

4. GENERAL CONTRACTOR TO VERIFY ALL BREWING EQUIPMENT SPECIFICATIONS AND UTILITY REQUIREMENTS.

5. GENERAL CONTRACTOR TO INCLUDE GLYCOL PIPING TO BREWING AND COLD BOX EQUIPMENT PER OWNER DIRECTION. VERIFY EXACT REQUIREMENTS, SIZING AND ROUTING WITH GLYCOL EQUIPMENT MANUFACTURER / SUPPLIER AND OWNER. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

6. BREW HOUSE CONTROL SYSTEM TO BE PROVIDED BY OWNER. GENERAL CONTRACTOR TO COORDINATE LOCATION, INSTALLATION AND UTILITY REQUIREMENTS WITH MANUFACTURER AND OWNER PRIOR TO WORK.

7. GENERAL CONTRACTOR TO PROVIDE COMPLETE COMPRESSED GAS PIPING (TYPE M COPPER, CLEAN AND CAPPED, SILVER BRAISED SOLDER, AND PRESSURE TESTED) AND FIRE DEPARTMENT APPROVAL (HAZ. MAT. PERMIT). PROVIDE BID ALTERNATE FOR FLEXIBLE SUPPLY LINE TUBING. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

8. GENERAL CONTRACTOR TO PROVIDE COMPLETE GRAIN CONVEYANCE SYSTEM (PROVIDE BID ALTERNATE FOR CHAIN DISK VS. FLEX/SCREW AUGER CONVEYOR SYSTEM) PER OWNER'S DIRECTION. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECT'S APPROVAL PRIOR TO WORK.

9. CONTRACTOR TO PROVIDED CONVENIENCE OUTLETS AT BREW HOUSE AND CELLAR PER ELECTRICAL DRAWINGS. VERIFY EXACT LOCATIONS WITH OWNER PRIOR TO INSTALLATION.

KEY PLAN

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

NEW FLOOR PLAN - NORTH

STAMP: STATE OF MISSOURI TODD DUSTIN TAYLOR NUMBER A-2008004390 ARCHITECT

SHEET NUMBER: A1.2b

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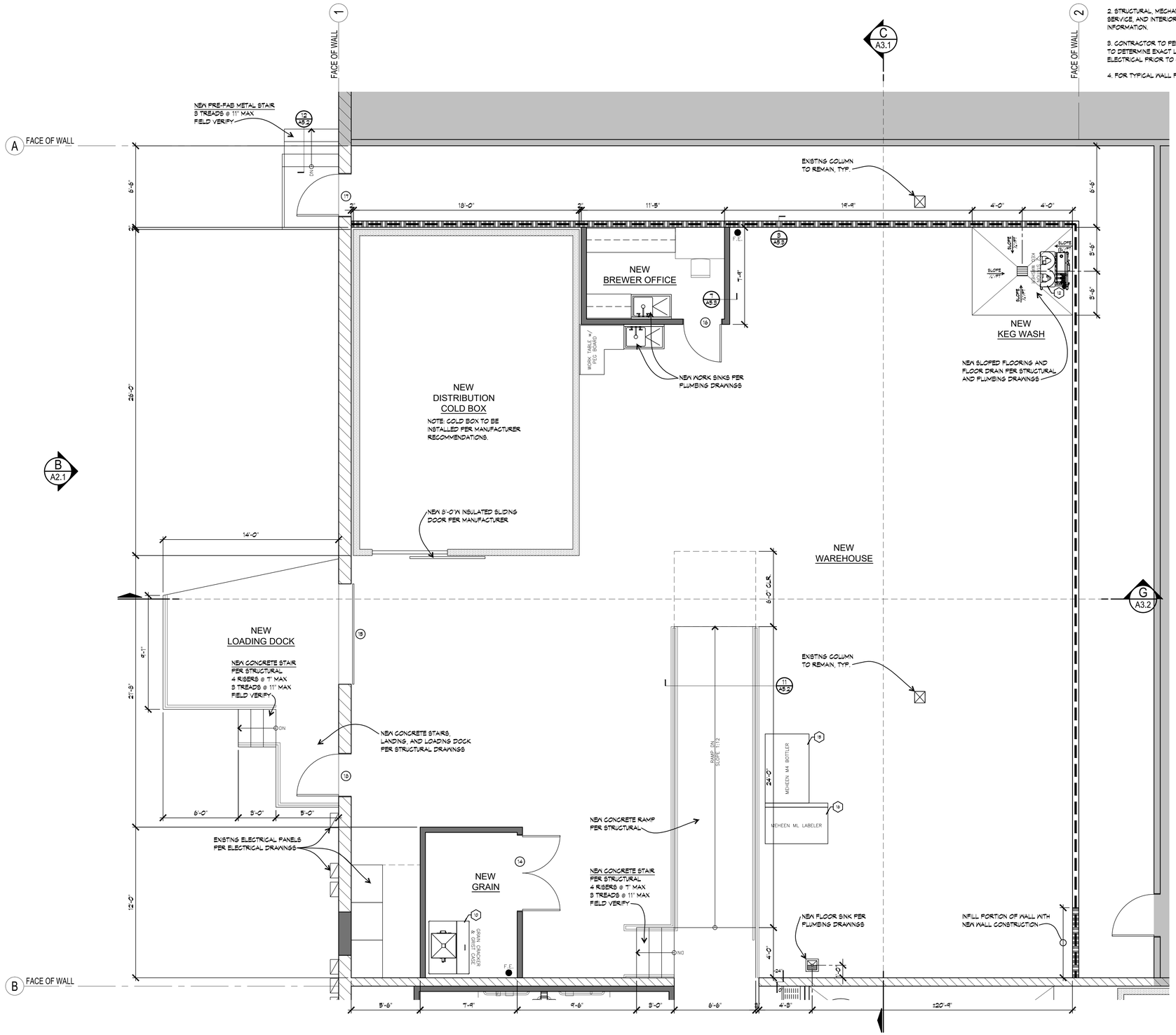

NEW FLOOR PLAN - EAST

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

KEY PLAN

NOTES

1. GENERAL CONTRACTOR SHALL VISIT SITE AND ENSURE ALL BIDDING SUBCONTRACTOR'S VISIT SITE PRIOR TO BID. G.C. WILL BE RESPONSIBLE FOR ALL EXISTING CONDITIONS MEETING OR EXCEEDING THOSE DEPICTED WITH PLANS. WHERE EXISTING CONDITIONS ARE NOT AS SHOWN, G.C. SHALL INCLUDE IN BID THE NECESSARY LABOR AND MATERIALS TO ENSURE THE EXISTING SHELL MEETS OR EXCEEDS THE INTENT OF THE CONSTRUCTION PLANS.

2. STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, FOOD SERVICE, AND INTERIOR DESIGN DRAWINGS FOR ADDITIONAL INFORMATION.

3. CONTRACTOR TO PERFORM WALK-THROUGH WITH TENANT TO DETERMINE EXACT LOCATION AND QUANTITY OF ALL ELECTRICAL PRIOR TO CONSTRUCTION.

4. FOR TYPICAL WALL FRAMING DETAILS, SEE 9/A5.5 7/A5.5

LEGEND

- EXISTING MASONRY WALLS TO REMAIN
- EXISTING WALLS TO REMAIN
- NEW 20 GA. 3⅝" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- NEW 20 GA. 6" METAL STUDS @ 16" O.C. WITH 1 LAYER ⅝" GYPSUM WALLBOARD EACH SIDE
- EXISTING 1-HOUR WALL
- NEW 1-HOUR WALL PER 1/A5.5
- NEW MANUFACTURED PANEL
- EXIT — EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MINUTE BATTERY BACKUP AND TACTILE SIGNAGE PER SHEET A5.1
- F.E. — FIRE EXTINGUISHER PER 5/A5.5
- DOOR PER SCHEDULE SHEET A7.1
- A — WINDOW PER SCHEDULE SHEET A7.1
- EQUIPMENT PER SCHEDULE SHEET A7.1

EQUIPMENT NOTES

1. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER ALL TANK ANCHORAGE AND ATTACHMENT POINTS. VERIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO WORK.

2. GENERAL CONTRACTOR TO VERIFY WITH EQUIPMENT MANUFACTURER UTILITY DROP POINTS, TANK ORIENTATION, AND CONNECTION POINTS PRIOR TO INSTALLATION.

3. GENERAL CONTRACTOR TO PROVIDE VENT STACKS FOR BREW HOUSE PER MANUFACTURER INSTRUCTIONS AND PER MECHANICAL.

4. GENERAL CONTRACTOR TO VERIFY ALL BREWING EQUIPMENT SPECIFICATIONS AND UTILITY REQUIREMENTS.

5. GENERAL CONTRACTOR TO INCLUDE GLYCOL PIPING TO BREWING AND COLD BOX EQUIPMENT PER OWNER DIRECTION. VERIFY EXACT REQUIREMENTS, SIZING AND ROUTING WITH GLYCOL EQUIPMENT MANUFACTURER / SUPPLIER AND OWNER. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

6. BREW HOUSE CONTROL SYSTEM TO BE PROVIDED BY OWNER. GENERAL CONTRACTOR TO COORDINATE LOCATION, INSTALLATION AND UTILITY REQUIREMENTS WITH MANUFACTURER AND OWNER PRIOR TO WORK.

7. GENERAL CONTRACTOR TO PROVIDE COMPLETE COMPRESSED GAS PIPING (TYPE M COPPER, CLEAN AND CAPPED, SILVER BRAISED SOLDER, AND PRESSURE TESTED) AND FIRE DEPARTMENT APPROVAL (HAZ. MAT. PERMIT). PROVIDE BID ALTERNATE FOR FLEXIBLE SUPPLY LINE TUBING. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

8. GENERAL CONTRACTOR TO PROVIDE COMPLETE GRAIN CONVEYANCE SYSTEM (PROVIDE BID ALTERNATE FOR CHAIN DISK VS. FLEX/SCREW AUGER CONVEYOR SYSTEM) PER OWNER'S DIRECTION. PROVIDE SHOP DRAWINGS FOR OWNER / ARCHITECTS APPROVAL PRIOR TO WORK.

9. CONTRACTOR TO PROVIDED CONVENIENCE OUTLETS AT BREW HOUSE AND CELLAR PER ELECTRICAL DRAWINGS. VERIFY EXACT LOCATIONS WITH OWNER PRIOR TO INSTALLATION.

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

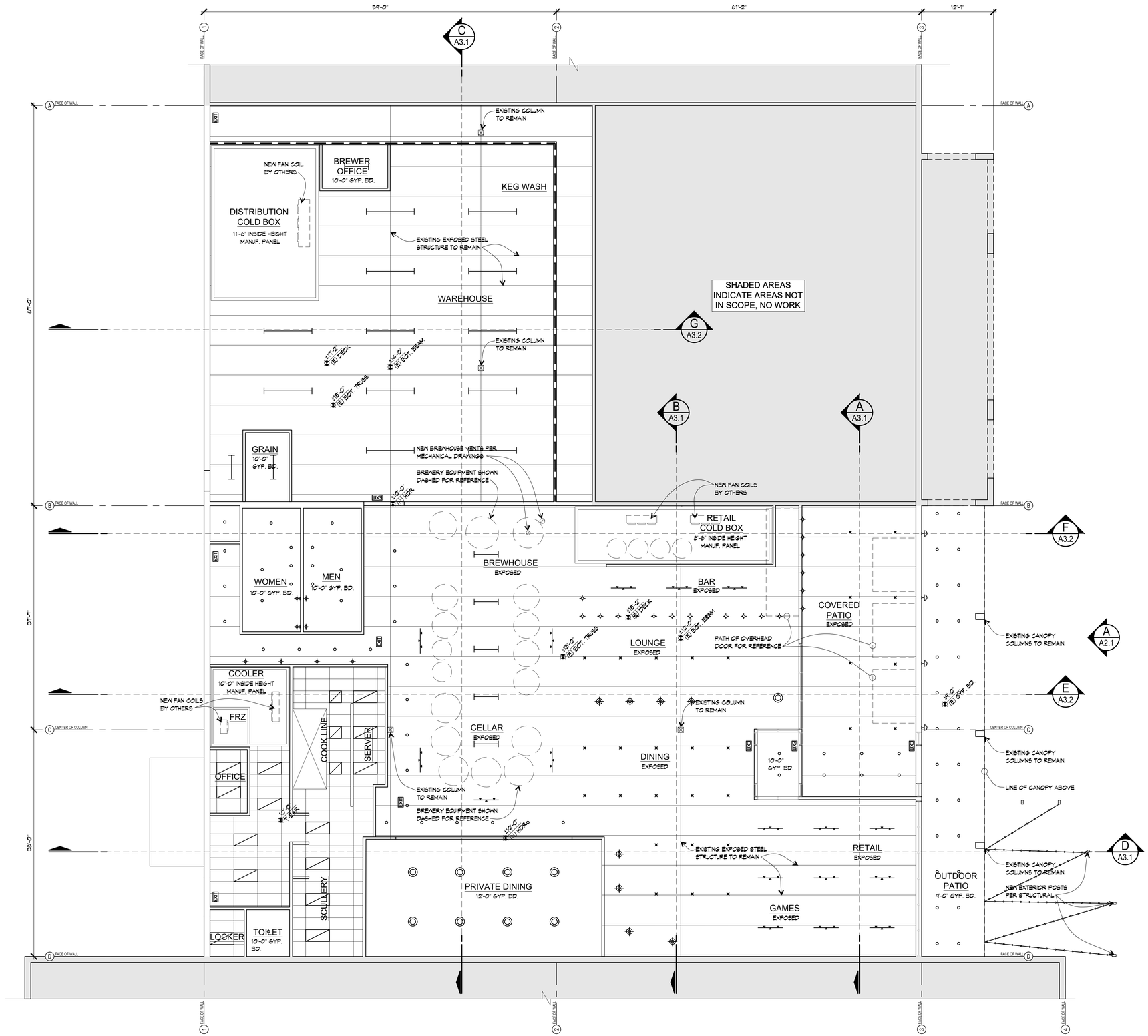
NEW FLOOR PLAN - EAST

STAMP:

STATE OF MISSOURI
TODD DUSTIN HAUCK
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

A1.2c



REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

LEGEND

- WALL PER NEA FLOOR PLAN
- EXIT — EXIT SIGN AND 2 LAMP EMERGENCY LIGHT WITH INTEGRAL 90 MINUTE BATTERY BACKUP AND TACTILE SIGNAGE PER SHEET A5.1
- LF-01 - BAR PENDANTS
- LF-02 - DINING PENDANTS
- LF-03 - BATHROOM SCONCE
- LF-04 - BAR UNDER-COUNTER LED STRIP LIGHTING. SHOWN ON 11.0
- LF-05 - EVENT ROOM PENDANTS
- LF-06 - PATIO STRING LIGHTS
- LF-07 - GENERAL LIGHTING
- LF-08 - PATIO SCONCE
- LF-9 - TRACK LIGHTING
- LF-10 - CAN LIGHTING
- LF-11 - PRODUCTION LIGHTING
- LF-12 - LED PANELS

REFLECTED CEILING PLAN NOTES

1. GENERAL CONTRACTOR SHALL VISIT SITE AND ENSURE ALL BIDDING SUBCONTRACTORS VISIT SITE PRIOR TO BID. G.C. WILL BE RESPONSIBLE FOR ALL EXISTING CONDITIONS MEETING OR EXCEEDING THOSE DEPICTED WITH PLANS. WHERE EXISTING CONDITIONS ARE NOT AS SHOWN, G.C. SHALL INCLUDE IN BID THE NECESSARY LABOR AND MATERIALS TO ENSURE THE EXISTING SHELL MEETS OR EXCEEDS THE INTENT OF THE CONSTRUCTION PLANS.

2. MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

3. ALL NEW LIGHT FIXTURES TO BE PROVIDED WITH INDEPENDENT WIRE SUPPORT FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE AS FOLLOWS:
- FIXTURES LESS THAN 10 POUNDS, PROVIDE ONE #12 GAGE WIRE (MAY BE SLACK)
- FIXTURES 11 - 55 POUNDS, PROVIDE TWO #12 GAGE WIRES (MAY BE SLACK)
- FIXTURES 56 POUNDS OR MORE SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE WITHOUT USING THE CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT
- PENDANT HUNG FIXTURES SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE USING #8 GAGE WIRE

4. ALL CEILING MOUNTED AIR TERMINALS OR SERVICES TO BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION MAIN RUNNERS. IN ADDITION, PROVIDE INDEPENDENT WIRE SUPPORT FROM THE AIR TERMINAL OR SERVICE TO THE STRUCTURE ABOVE AS FOLLOWS:
- AIR TERMINALS OR SERVICES WEIGHING 20 TO 56 LBS.: PROVIDE TWO #12 GAUGE WIRES (MAY BE SLACK)
-AIR TERMINALS OR SERVICES WEIGHING MORE THAN 56 LBS. SHALL BE SUPPORTED DIRECTLY TO THE STRUCTURE ABOVE.

5. PROVIDE NEA R-30 BATT INSULATION WITH PAPER SCREED AT ALL EXPOSED CEILING AREAS. (COLOR TO BE DETERMINED BY OWNER)

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A1.3

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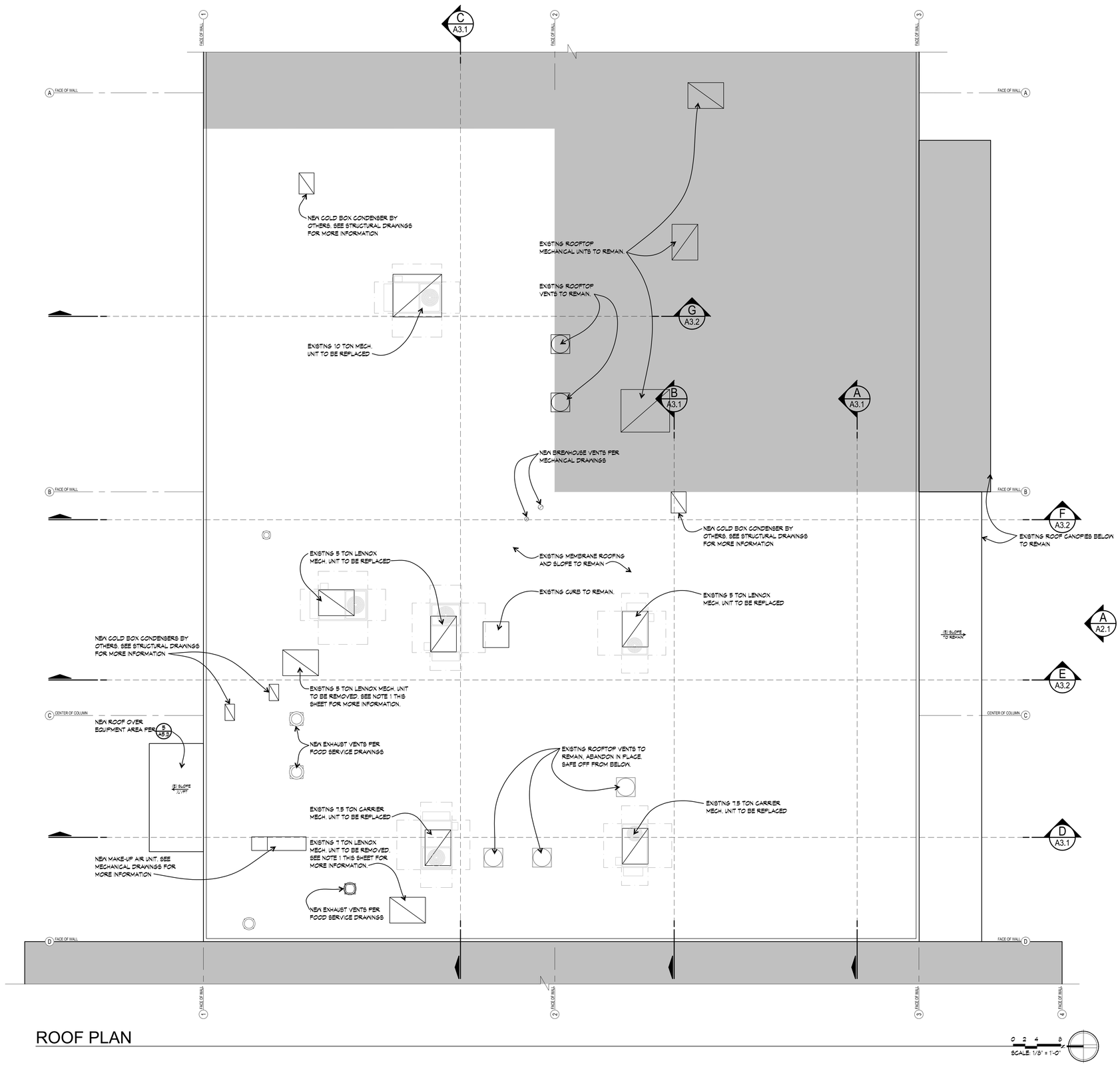

ROOF PLAN

SCALE: 1/8" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ROOF PLAN NOTES

1. AT EXISTING ROOF TOP UNITS TO BE REMOVED AND NOT REPLACED, CONTRACTOR TO PATCH ROOF PENETRATION WITH NEW TPO ROOFING TO MATCH EXISTING.

2. ALL NEW ROOFING WORK TO BE COORDINATED / PERFORMED BY LANDLORD'S ROOFING CONTRACTOR TO ENSURE MAINTENANCE OF WARRANTIES.

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

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ROOF PLAN

STAMP:

SHEET NUMBER:

A1.4

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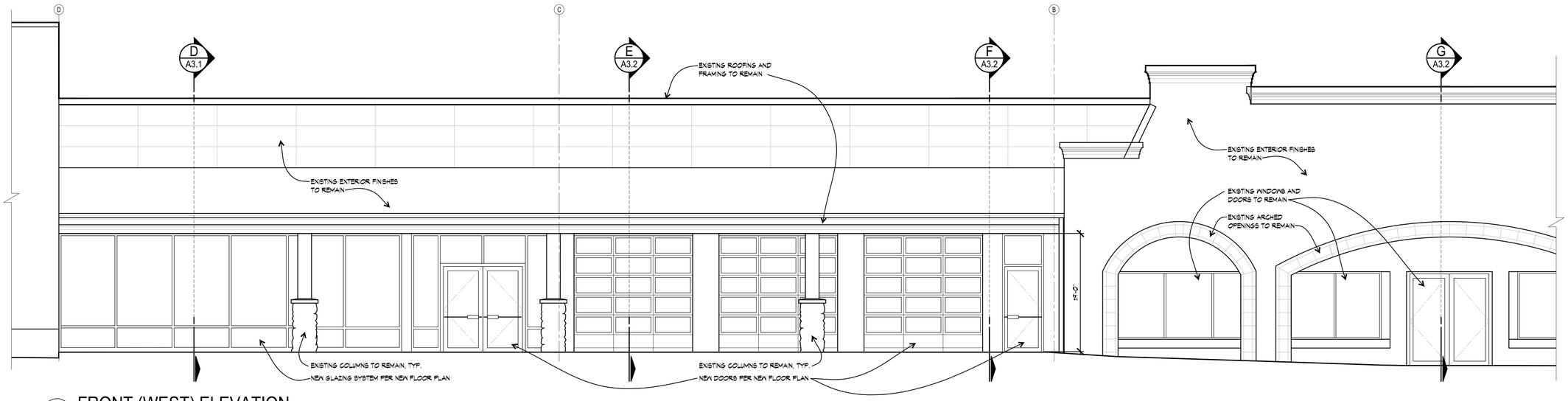
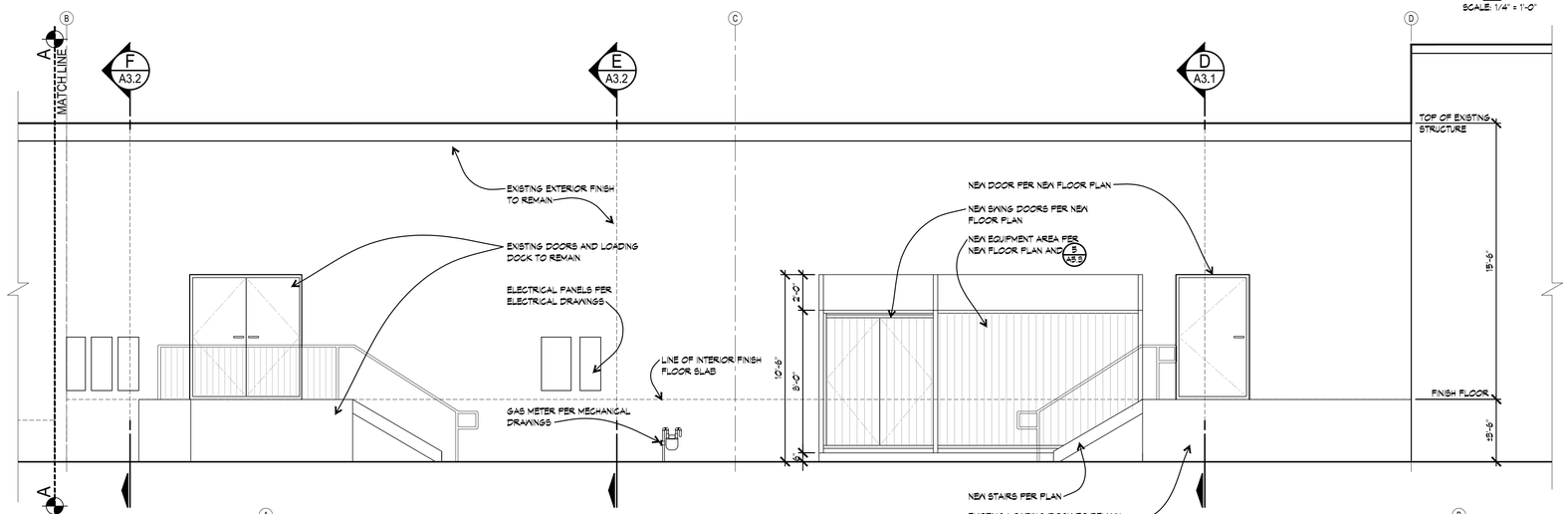
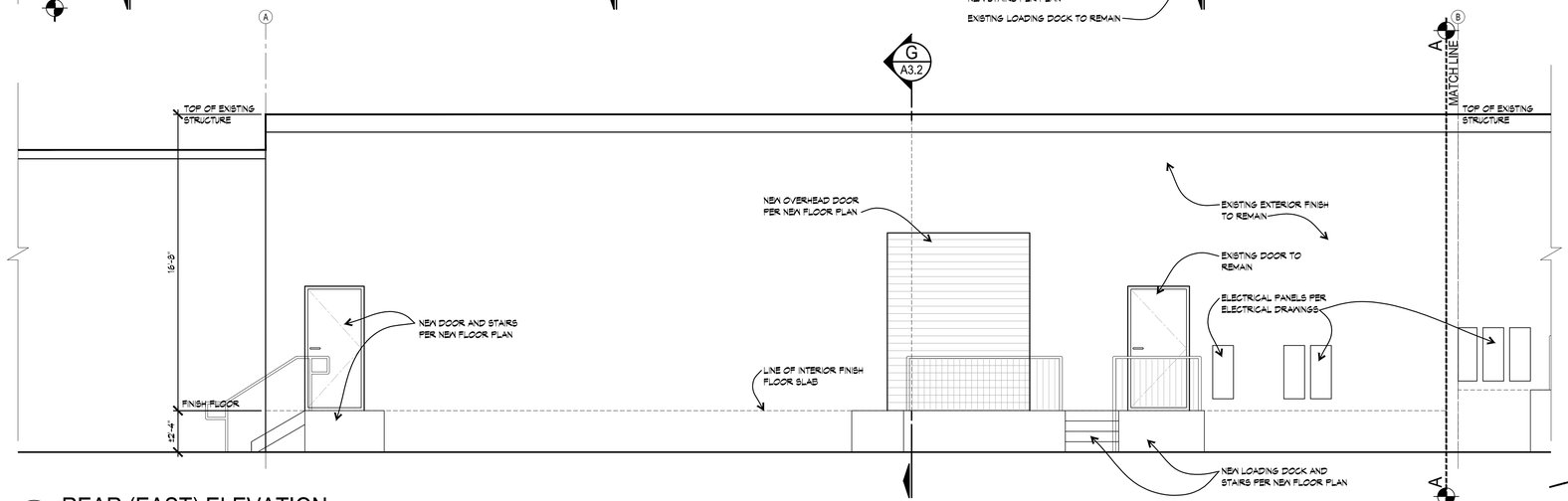


A FRONT (WEST) ELEVATION

0 1 2 4
SCALE: 1/4" = 1'-0"





B REAR (EAST) ELEVATION

0 1 2 4
SCALE: 1/4" = 1'-0"

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EXTERIOR ELEVATIONS

STAMP:

STATE OF MISSOURI
TODD DUSTIN TAYLOR
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

A2.1

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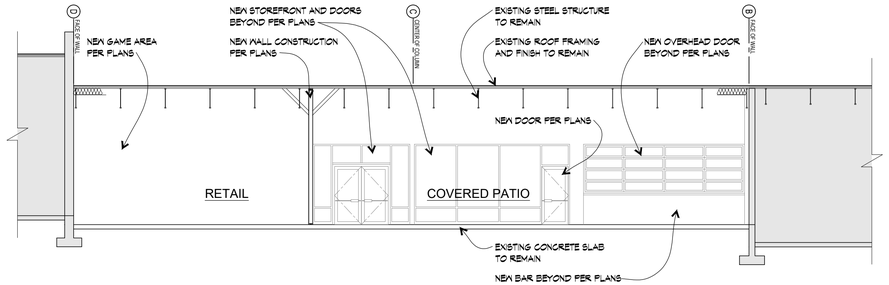
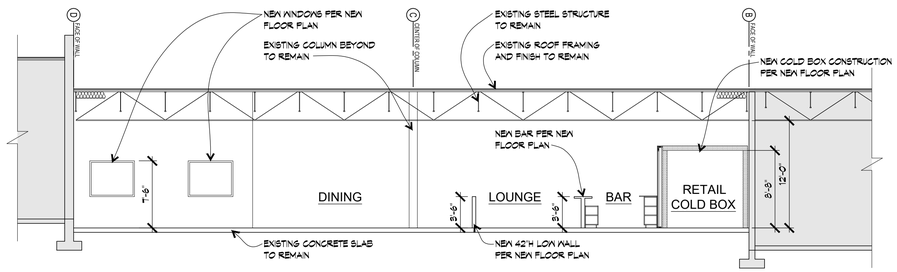


A BUILDING SECTION

SCALE: 1/8" = 1'-0"



B BUILDING SECTION

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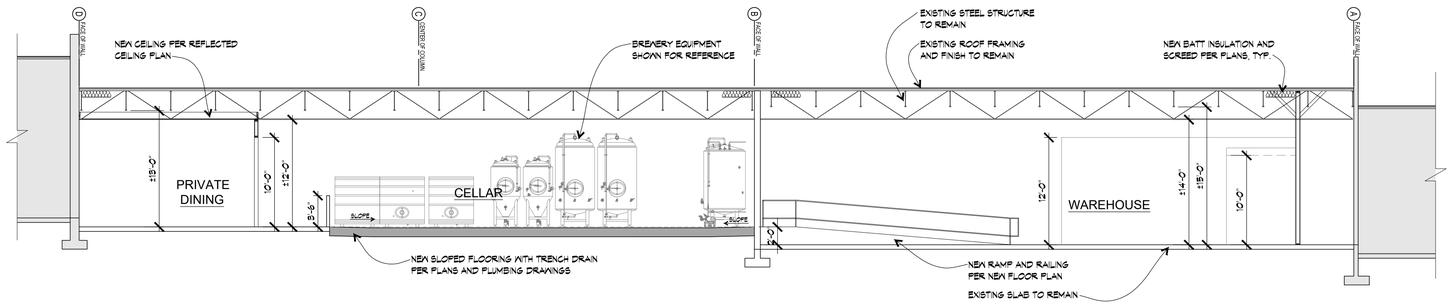

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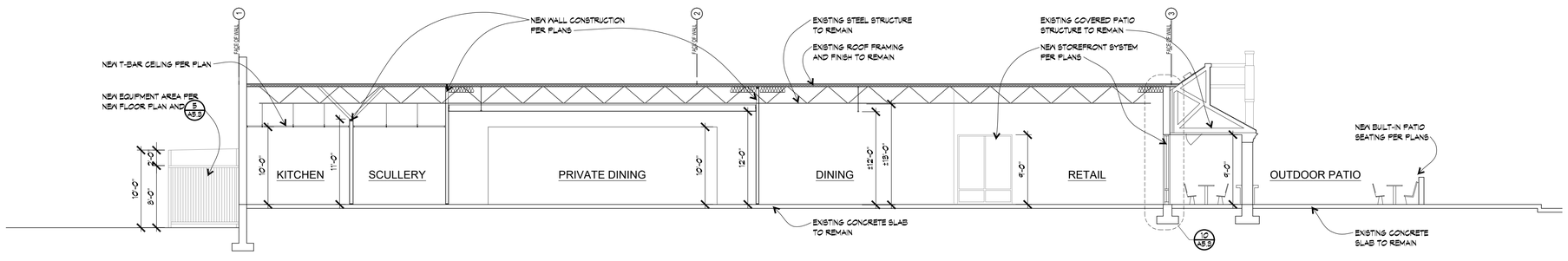

D BUILDING SECTION

SCALE: 1/8" = 1'-0"

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PROJECT 18020

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Eureka, MO 63025

SHADED AREAS INDICATE AREAS NOT IN SCOPE, NO WORK

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A3.1

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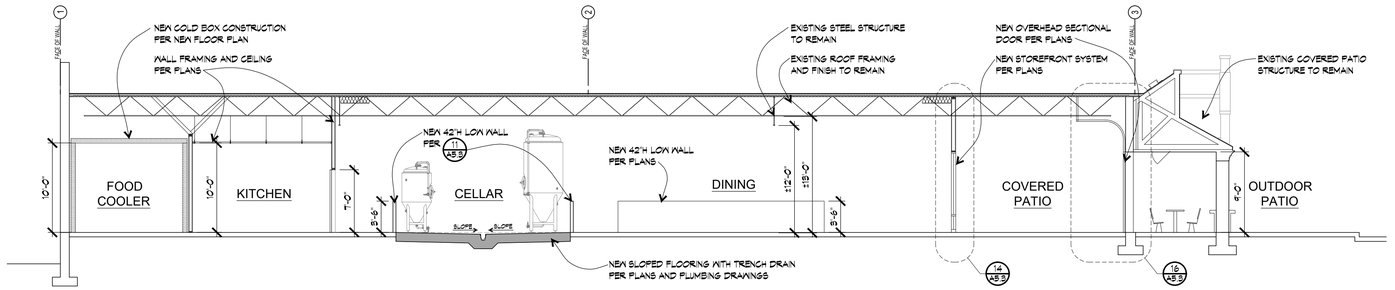

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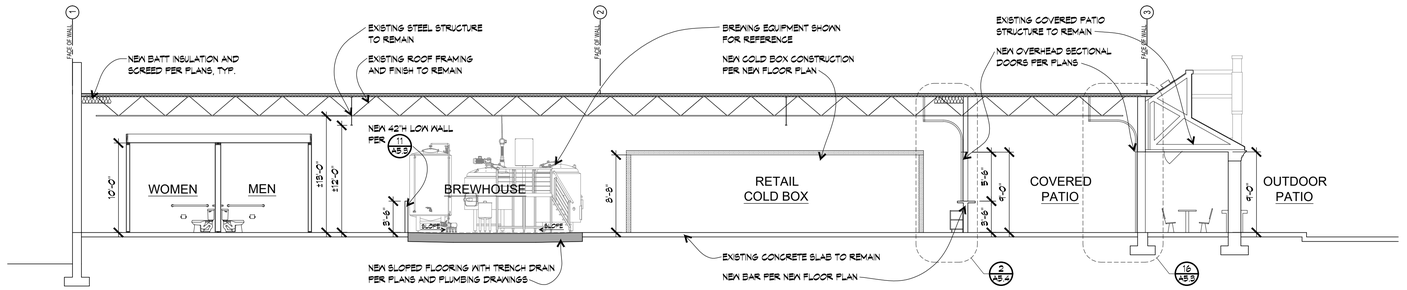
SCALE: 1/8" = 1'-0"



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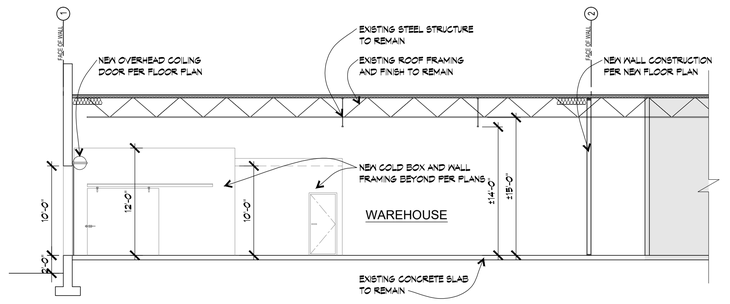

G BUILDING SECTION

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ARCHITECT

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A3.2

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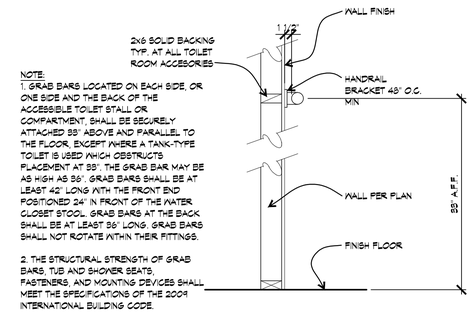
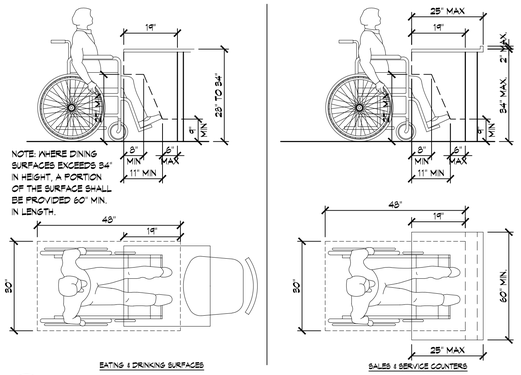


NOTE:
1. GRAB BARS LOCATED ON EACH SIDE, OR ONE SIDE AND ONE AT THE BACK OF THE ACCESSIBLE TOILET STALL OR COMPARTMENT, SHALL BE SECURELY ATTACHED 33" ABOVE AND PARALLEL TO THE FLOOR, EXCEPT WHERE A TANK-TYPE TOILET IS USED WHICH OBSTRUCTS PLACEMENT AT 33". THE GRAB BAR MAY BE AS HIGH AS 36". GRAB BARS SHALL BE AT LEAST 42" LONG WITH THE FRONT END POSITIONED 24" IN FRONT OF THE WATER CLOSET STOOL. GRAB BARS AT THE BACK SHALL BE AT LEAST 36" LONG. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTINGS.

2. THE STRUCTURAL STRENGTH OF GRAB BARS, TUB AND SHOWER SEATS, FASTENERS, AND MOUNTING DEVICES SHALL MEET THE SPECIFICATIONS OF THE 2009 INTERNATIONAL BUILDING CODE.

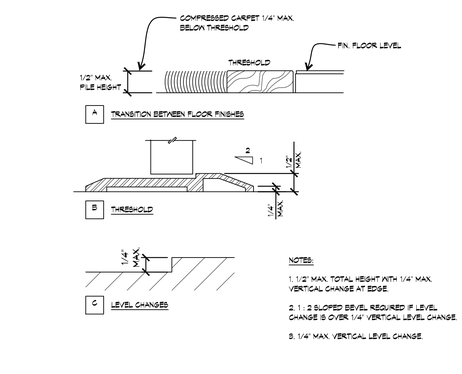
13 TOILET ROOM GRAB BAR REINFORCEMENT

Scale: 1"=1'-0"



9 ADA SEATING & SERVICE

Scale: 1/2"=1'-0"



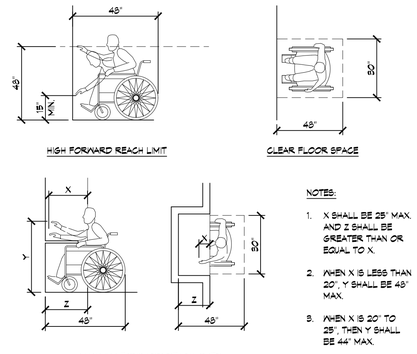
NOTES:

1. 1 1/2" MAX. TOTAL HEIGHT WITH 1/4" MAX. VERTICAL CHANGE AT EDGE.

2. 1 : 2 SLOPED BEVEL REQUIRED IF LEVEL CHANGE IS OVER 1/4" VERTICAL LEVEL CHANGE.

3. 1/4" MAX. VERTICAL LEVEL CHANGE.

5 ACCESSIBLE THRESHOLDS

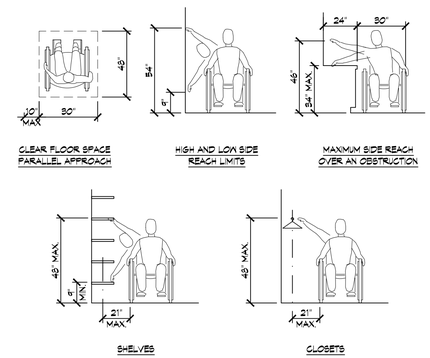


NOTES:

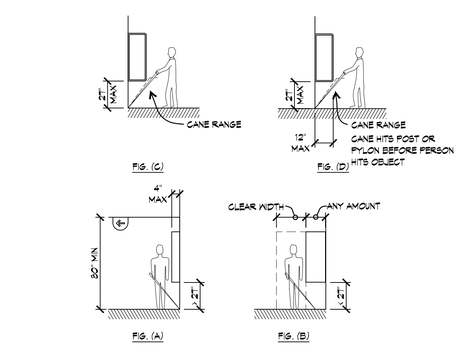
1. X SHALL BE 25" MAX. AND Z SHALL BE GREATER THAN OR EQUAL TO X.

2. WHEN X IS LESS THAN 20", Y SHALL BE 48" MAX.

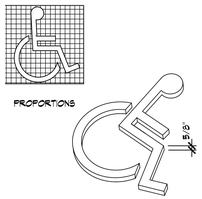
3. WHEN X IS 20" TO 25", THEN Y SHALL BE 44" MAX.

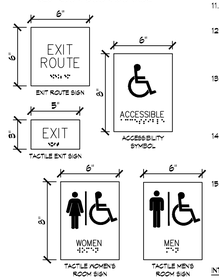


7 REACH REQUIREMENTS



8 PROTRUDING OBJECTS





LETTERS AND NUMBERS:

1. LETTERS AND NUMBERS ON SIGNS SHALL BE RAISED 1/32" MINIMUM AND SHALL BE SANS-SERIF CHARACTERS ACCOMPANIED BY GRADE 2 BRAILLE.
2. RAISED CHARACTERS OR SYMBOLS SHALL BE A MINIMUM OF 5/8" HIGH, 2" MAX.
3. PICTORIAL SYMBOL SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY TEXT DESCRIPTORS PLACED DIRECTLY BELOW THE PICTOGRAM. THE BORDER DIMENSION OF THE PICTOGRAM SHALL BE A MINIMUM OF 6" IN HEIGHT.
4. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE "O" IS 60 PERCENT AND 110 PERCENT MAXIMUM THE HEIGHT OF THE UPPER CASE "I"
5. CHARACTERS AND SYMBOLS AND THEIR BACKGROUNDS SHALL HAVE A NON-GLARE FINISH AND SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.
6. CHARACTERS AND NUMBERS ON SIGNS SHALL BE SIZED ACCORDING TO THE VIEWING DISTANCE FROM WHICH THEY ARE TO BE READ.
7. CONTRACTED GRADE 2 BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE SPECIFICALLY REQUIRED IN OTHER PORTIONS OF THESE REGULATIONS.
8. GEOMETRIC SYMBOLS ON SANITARY FACILITY DOORS SHALL CONSIST OF COLORS AND CONTRASTS DISTINCTLY DIFFERENT FROM THE COLOR AND CONTRAST OF THE DOOR.

SIGN LOCATIONS:

9. ALL BUILDING ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQUIRED, TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS.
10. WHEN PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, RAISED LETTERS SHALL BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT LEAF DOORS, SIGNS SHALL BE PLACE ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING HEIGHT SHALL BE 60" ABOVE THE FINISH FLOOR TO THE CENTERLINE OF THE SIGN. MOUNTING LOCATION SHALL BE DETERMINED SO THAT THE PERSON MAY APPROACH WITHIN 3" OF THE SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.
11. ADDITIONAL DIRECTIONAL SIGNS ALONG ACCESSIBLE PATH OF TRAVEL ARE REQUIRED.
12. BUILDINGS REMODELED TO PROVIDE ACCESSIBLE SANITARY FACILITIES FOR PUBLIC USE SHALL HAVE INFORMATION POSTED IN THE ENTRY AS PART OF THE BUILDING DIRECTORY.
13. IDENTIFY DOORWAYS LEADING TO MEN'S SANITARY FACILITIES WITH A 1/4 INCH THICK EQUILATERAL TRIANGLE WITH EDGES 12 INCHES LONG AND A VERTEX POINTING UPWARD. CENTER SYMBOL ON DOOR, 60 INCHES ABOVE FLOOR.
14. IDENTIFY DOORWAYS LEADING TO WOMEN'S SANITARY FACILITIES WITH A 1/4 INCH THICK, 12 INCH DIAMETER CIRCLE. CENTER SYMBOL ON DOOR, 60 INCHES ABOVE FLOOR.
15. ADJACENT TO THE LATCH OUTSIDE THE SANITARY FACILITIES DOOR, PROVIDE RAISED LETTERS AND BRAILLE. IF THERE IS NO WALL SPACE ON THE LATCH SIDE, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. THE CENTER OF THE SIGN SHALL BE 60 INCHES HIGH, MOUNTED SO A PERSON MAY APPROACH WITHIN 3 INCHES WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR DOOR SWING.

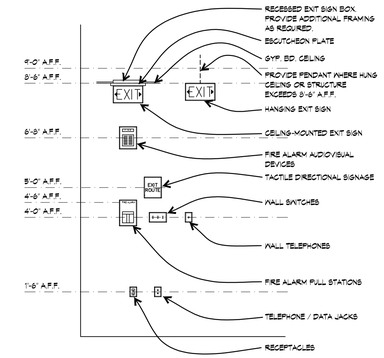
INTERNATIONAL SYMBOL OF ACCESSIBILITY:

16. STANDARD USED TO IDENTIFY ACCESSIBLE FACILITIES.
17. WHITE FIGURE ON BLUE BACKGROUND. COLOR = 15090 ON FEDERAL STANDARD = 595A.
18. WHEN ENFORCING AGENCY DETERMINES, IF APPROPRIATE, SPECIAL DESIGNS AND COLORS MAY BE APPROVED.

BRAILLE:

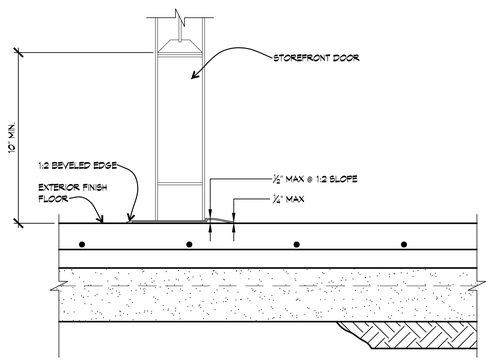
19. USE CONTRASTED GRADE 2 BRAILLE. DOTS TO BE 0.1 INCH ON CENTER IN EACH CELL.
20. 0.2 INCH SPACE BETWEEN CELLS.
21. DOTS RAISED MINIMUM 0.025 INCH ABOVE BACKGROUND.

3 ADA SIGNAGE



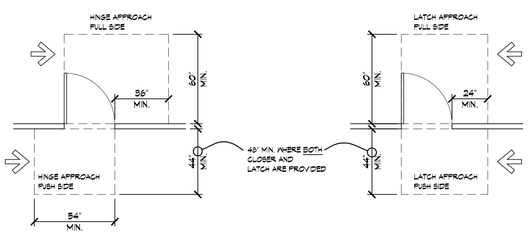
4 DEVISE MOUNTING HEIGHTS

14 DOOR PANEL

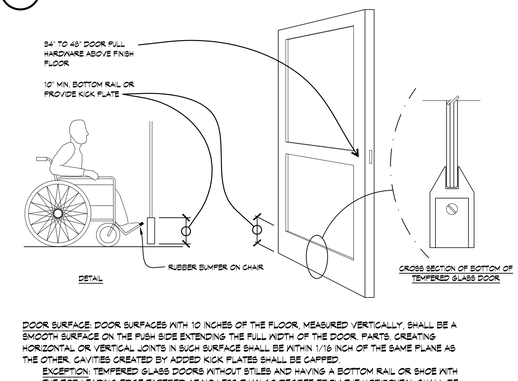


15 THRESHOLD AT EXT. DOOR

Scale: 1 1/2"=1'-0"



16 DOOR MANUEVERING CLEARANCES



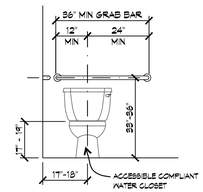
DOOR SURFACE: DOOR SURFACES WITH 10 INCHES OF THE FLOOR, MEASURED VERTICALLY, SHALL BE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR. PARTS, CREATING HORIZONTAL OR VERTICAL JOINTS IN SUCH SURFACE SHALL BE WITHIN 1/16 INCH OF THE SAME PLANE AS THE OTHER. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED

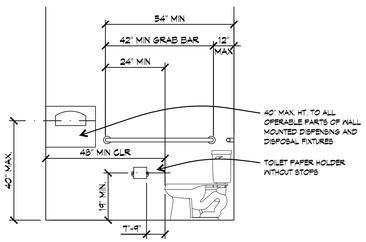
EXCEPTION: TEMPERED GLASS DOORS WITHOUT STILES AND HAVING A BOTTOM RAIL OR SHOE WITH THE TOP LEADING EDGE TAPERED AT NO LESS THAN 60 DEGREE FROM THE HORIZONTAL SHALL BE BE REQUIRED TO COMPLY WITH THE 10 INCH BOTTOM RAIL HEIGHT REQUIREMENT.

DOOR HARDWARE: HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST TO OPERATE. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FLOOR. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.

10 LAVATORY ELEVATIONS

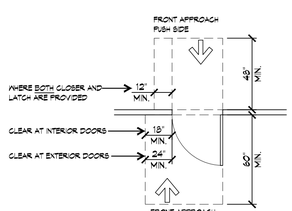
Scale: 1/2"=1'-0"





11 TOILET ELEVATIONS

Scale: 1/2"=1'-0"



THIS SYMBOL INDICATES DIRECTION OF TRAVEL OR APPROACH

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ACCESSIBLE NOTES & DETAILS

STAMP:

SHEET NUMBER:

A5.1

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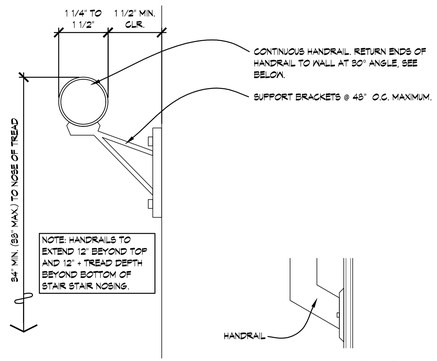
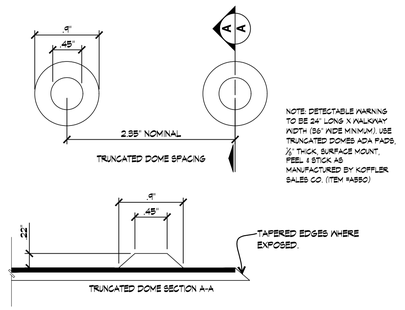
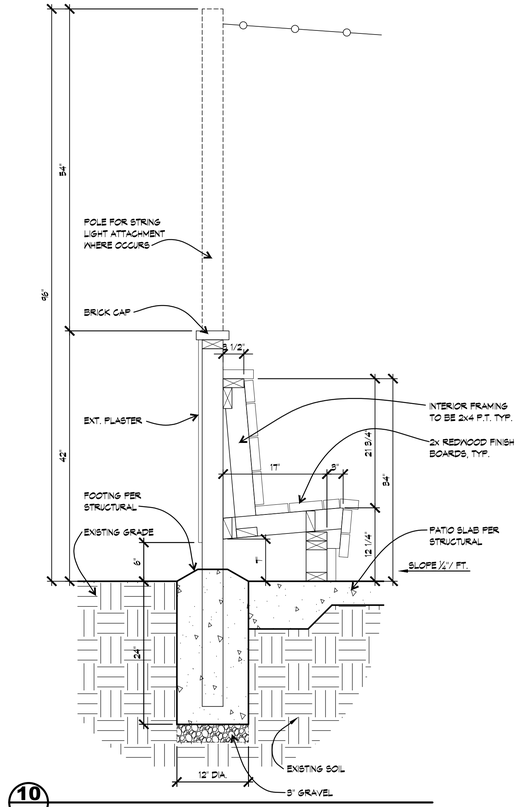


13 HANDRAIL



14 DETECTABLE WARNING



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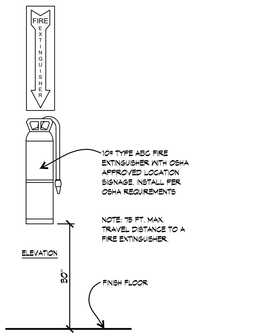

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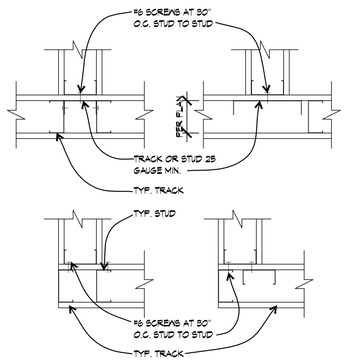
Scale: 3/8"=1'-0"



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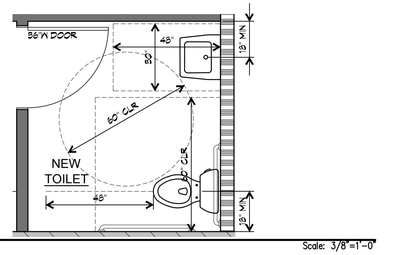

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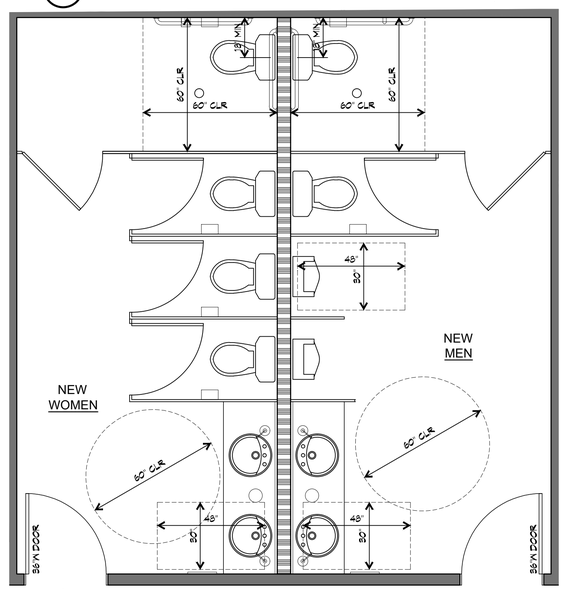
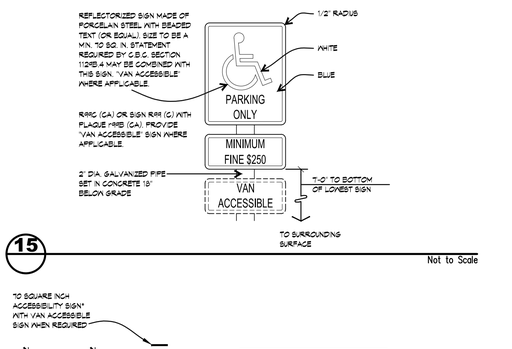
Scale: 3/8"=1'-0"



2 ACCESSIBLE RESTROOM

Scale: 3/8"=1'-0"



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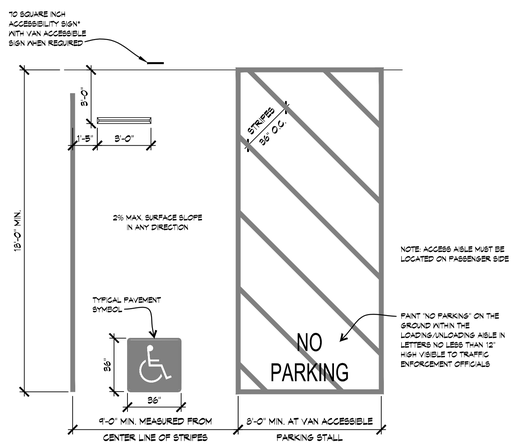
Not to Scale



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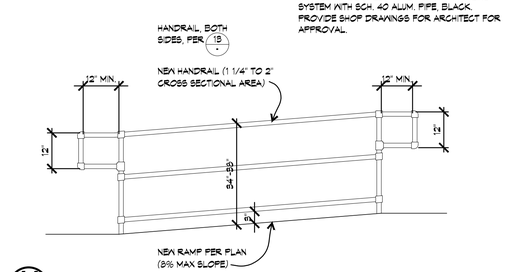

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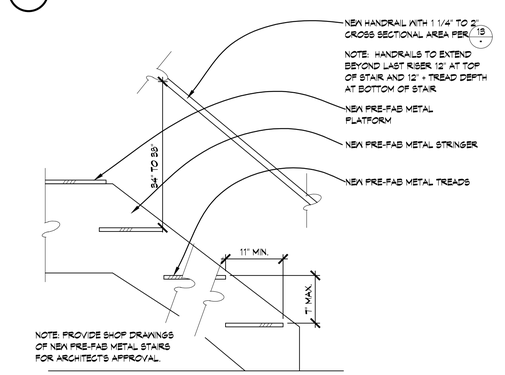

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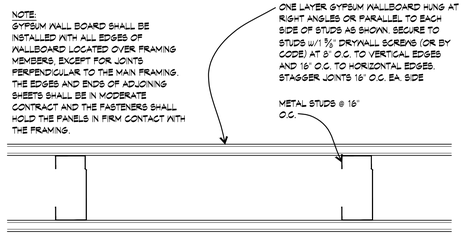
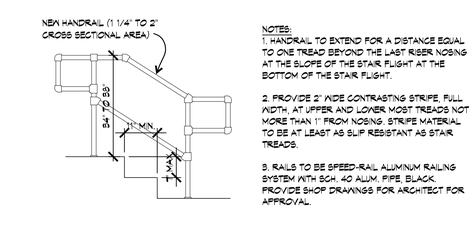


7

Scale: 3"=1'-0"

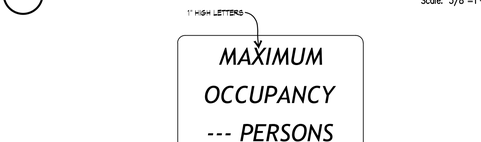


NOTES:
1. HANDRAIL TO EXTEND FOR A DISTANCE EQUAL TO ONE TREAD BEYOND THE LAST RISER NOSING AT THE SLOPE OF THE STAIR FLIGHT AT THE BOTTOM OF THE STAIR FLIGHT.

2. PROVIDE 2" WIDE CONTRASTING STRIPE, FULL WIDTH, AT UPPER AND LOWER MOST TREADS NOT MORE THAN 1" FROM NOSING. STRIPE MATERIAL TO BE AT LEAST AS SLIP RESISTANT AS STAIR TREADS.

3. RAILS TO BE SPEED-RAIL ALUMINUM RAILING SYSTEM WITH SCH. 40 ALUM. PIPE, BLACK. PROVIDE SHOP DRAWINGS FOR ARCHITECT FOR APPROVAL.

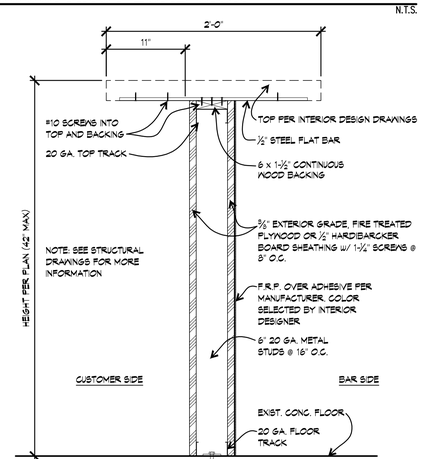
8



NOTE: EVERY ROOM OR SPACE WHICH IS USED FOR ASSEMBLY HAVING AN OCCUPANT LOAD OF 50 OR MORE SHALL HAVE THE OCCUPANT LOAD POSTED IN A CONSPICUOUS PLACE, NEAR THE MAIN ENT OR EXIT ACCESS DOORWAY FROM THE ROOM OR SPACE. POSTED SIGNS SHALL BE OF AN APPROVED LEGIBLE PERMANENT DESIGN AND SHALL BE MAINTAINED BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT.

3 OCCUPANCY LOAD SIGN

N.T.S.



4

Scale: 3/8"=1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

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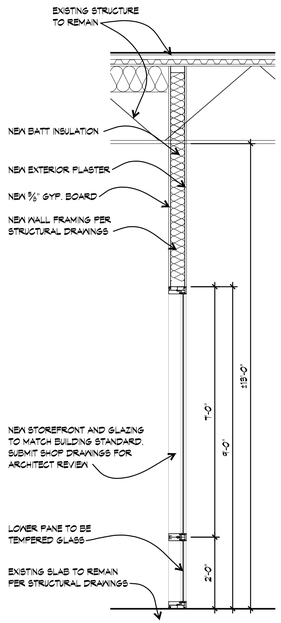
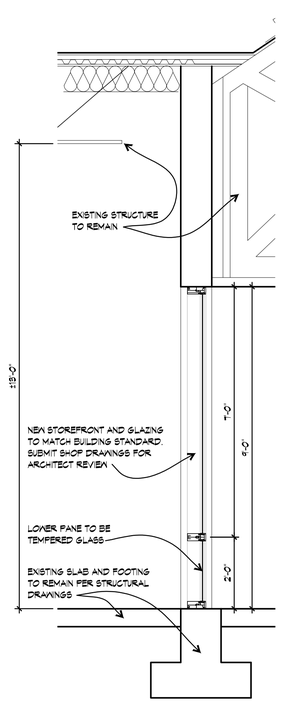


14 Scale: 1/2"=1'-0"



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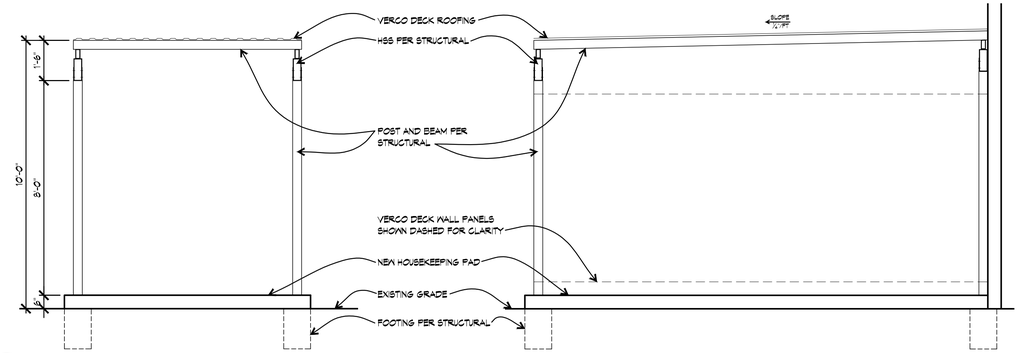
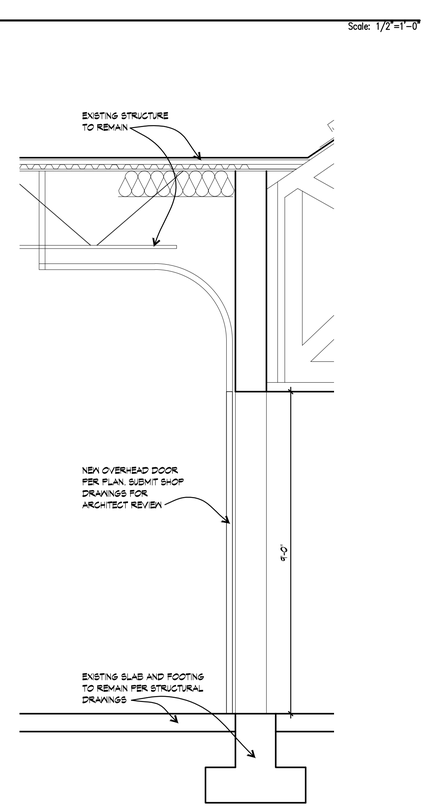
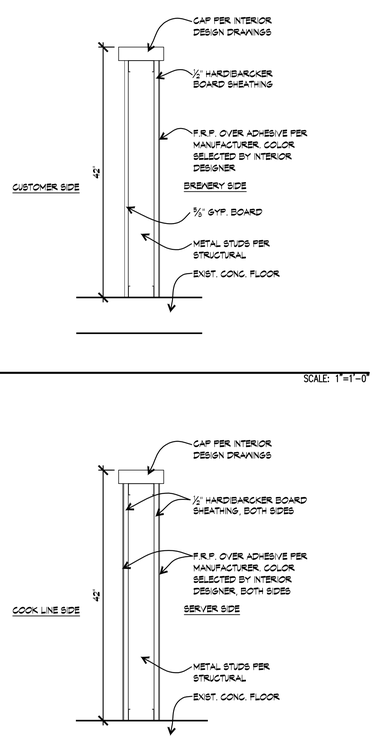


5 **EQUIPMENT ENCLOSURE** Scale: 3/8"=1'-0"



16 SCALE: 1/2"=1'-0"



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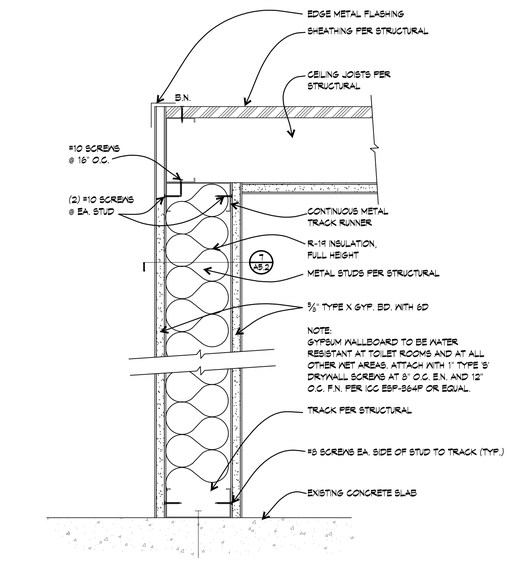


NOTES:
1. GYPSUM WALL BOARD SHALL BE INSTALLED WITH ALL EDGES OF WALLBOARD LOCATED OVER FRAMING MEMBERS, EXCEPT FOR JOINTS PERPENDICULAR TO THE MAIN FRAMING.

2. THE EDGES AND ENDS OF ADJOINING SHEETS SHALL BE IN MODERATE CONTACT AND THE FASTENERS SHALL HOLD THE PANELS IN FIRM CONTACT WITH THE FRAMING.

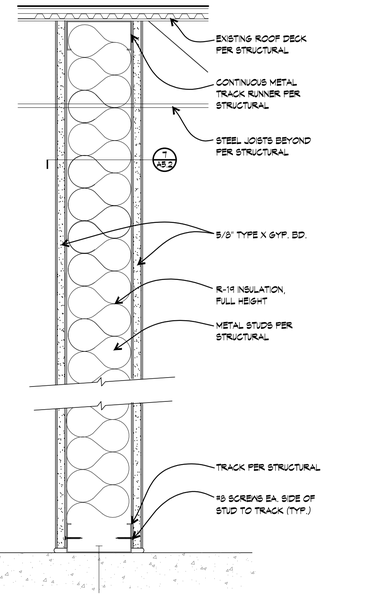
3. GYPSUM WALLBOARD HUNG AT RIGHT ANGLES OR PARALLEL TO EACH SIDE OF STUDS AS SHOWN.

4. SECURE TO STUDS w/ 1⅝" TYPE 'S' DRYWALL SCREWS (OR BY CODE) AT 8" O.C. E.N. AND 12" O.C. F.N. TO VERTICAL EDGES AND 16" O.C. TO HORIZONTAL EDGES. STAGGER JOINTS 16" O.C. EA. SIDE PER ICC ESP-3064P OR EQUAL.

5. GYPSUM WALL BOARD TO BE WATER RESISTANT AT TOILET ROOMS AND AT ALL OTHER WET AREAS.

6. FOR MORE INFORMATION, SEE 6/A5.2 1/A5.2

7 Scale: 3"=1'-0"



NOTES:
1. GYPSUM WALL BOARD SHALL BE INSTALLED WITH ALL EDGES OF WALLBOARD LOCATED OVER FRAMING MEMBERS, EXCEPT FOR JOINTS PERPENDICULAR TO THE MAIN FRAMING.

2. THE EDGES AND ENDS OF ADJOINING SHEETS SHALL BE IN MODERATE CONTACT AND THE FASTENERS SHALL HOLD THE PANELS IN FIRM CONTACT WITH THE FRAMING.

3. GYPSUM WALLBOARD HUNG AT RIGHT ANGLES OR PARALLEL TO EACH SIDE OF STUDS AS SHOWN.

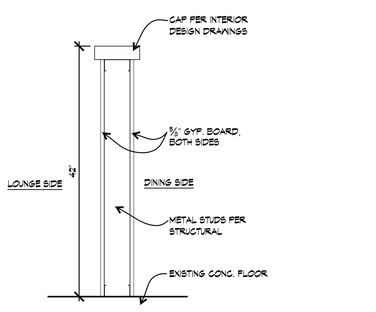
4. SECURE TO STUDS w/ 1⅝" TYPE 'S' DRYWALL SCREWS (OR BY CODE) AT 8" O.C. E.N. AND 12" O.C. F.N. TO VERTICAL EDGES AND 16" O.C. TO HORIZONTAL EDGES. STAGGER JOINTS 16" O.C. EA. SIDE PER ICC ESP-3064P OR EQUAL.

5. GYPSUM WALL BOARD TO BE WATER RESISTANT AT TOILET ROOMS AND AT ALL OTHER WET AREAS.

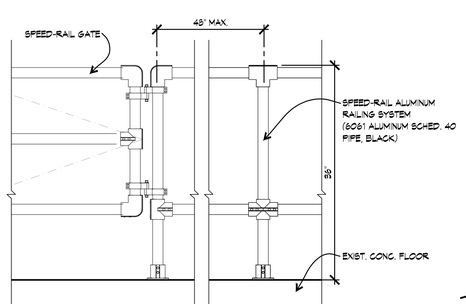
6. FOR MORE INFORMATION, SEE 6/A5.2 1/A5.2

3 SCALE: 3"=1'-0"

12 SCALE: 1"=1'-0"



8 SCALE: 1"=1'-0"



4 SCALE: 1"=1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ARCHITECTURAL DETAILS

STAMP:

SHEET NUMBER:

A5.3

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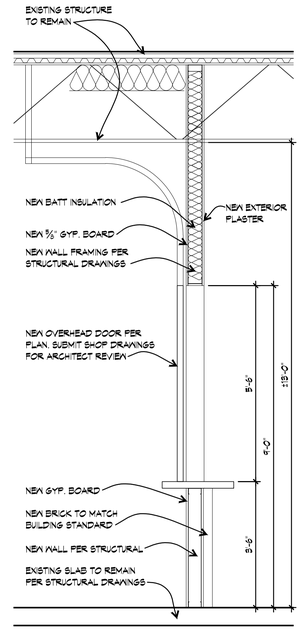

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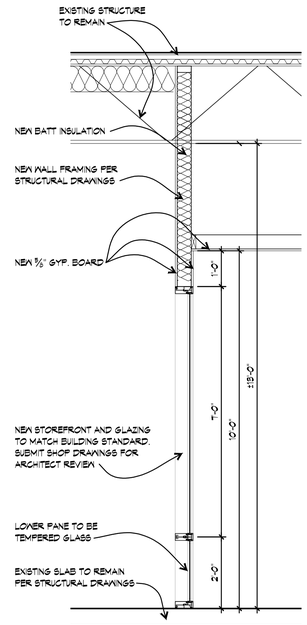

4 Scale: 1/2"=1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ARCHITECTURAL DETAILS

STAMP:

STATE OF MISSOURI
TODD DUSTIN TAUCK
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

A5.4

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MELVIN BREWING EQUIPMENT SCHEDULE

#	EQUIPMENT	QTY.	MANUFACTURER	MODEL NO.	DIMENSIONS	WEIGHT	VOLTAGE	AMPERAGE	PHASE	HZ	KW	HP	HARDWIRED	PLUG-IN	COLD WATER	HOT WATER	DIRECT DRAIN	INDIRECT DRAIN	BTU	NATURAL GAS	COMPRESSED AIR	NOTES
	BREWERY																					
1	10 BBL BREW HOUSE PLATFORM / CONTROL PANEL	1	PREMIER STAINLESS		74.6"L x 92.9"W x 125.7"H		120	2.8	1	60												
2	10 BBL MASH TUN	1	PREMIER STAINLESS		65"Ø x 95.7"H	4298#																
3	10 BBL DIRECT FIRE KETTLE	1	PREMIER STAINLESS		61"Ø x 95.6"H	4509#																
4	20 BBL HOT WATER TANK	1	PREMIER STAINLESS		56"Ø x 119.6"H	7517#																
	CELLAR																					
5	5 BBL FERMENTER	2	PREMIER STAINLESS		39.5"Ø x 95.3"H	2365#																
6	10 BBL BRITE	4	PREMIER STAINLESS		39.4"Ø x 90.9"H	4170#																
7	20 BBL FERMENTER	4	PREMIER STAINLESS		52"Ø x 138.3"H	7854#																
8	20 BBL BRITE	2	PREMIER STAINLESS		52"Ø x 145.3"H	7577#																
9	20 BBL FOEDER	6	FOEDER CRAFTERS		60"Ø x 65.25"H	5750#																
	CIP PUMP	1	PREMIER STAINLESS				208	8	3	60												
	GRAIN HANDLING																					
10	GRAIN CRACKER & GRIST CASE	1	PREMIER STAINLESS	600 ROBIX	33.5"L x 50.5"W x 85.5"H	225#	208	8	3	60												PROVIDE EMERGENCY DISCONNECT
	MISCELLANEOUS																					
11	STEAM GENERATOR	1																				
12	MOBILE KEG WASHER - 2 STATION	1	PREMIER STAINLESS	KM-SA-1V-CS	35"L x26"W x 60"H		208	12.5	3	60			●									● PROVIDE AIR, CO2, WATER, & ELECT. PER MANUF. INSTRUCTIONS
13	AIR COMPRESSOR	1	INGERSOLL RAND	5T5IS	20"L x 80"W x 71"H	450#	230	21.5	3			5										60 GAL. TANK
14	CO2 TANK	1	GRYOGAS	CARBO-MAX 1000	30"Ø x 72"H	1788#																1,000 GAL
15	BOTTLER	1	MEHEEN																			
16	LABELER	1	MEHEEN																			
	CHILLER																					
17	GLYCOL CHILLER	1	G4D CHILLERS	GD-27H	48"L x 120"W x 81"H	3960#	230	##	3		13.5 (x2)		●									ADDITIONAL 1.5 HP CHILLER PUMP

DOOR HARDWARE SET SCHEDULE

SET NO. 1
3 HINGES
1 CYLINDER - 'E' KEYWAY (REMOVABLE CORE)
1 CLOSER
1 SET PUSH/PULL BARS
1 SET PERIMETER GASKETS (LENGTH AS REQUIRED)
1 BRUSH WEATHERSTRIPPING (LENGTH AS REQUIRED)
1 THRESHOLD (LENGTH AS REQUIRED) (ANSI & ADA COMPLIENT)
1 DRIP (LENGTH AS REQUIRED)
1 FLOOR STOP (MOUNT AS CLOSE TO OBSTRUCTION AS POSSIBLE)
1 HOLD OPEN
1 PROVIDE PANIC HARDWARE

SET NO. 2
3 HINGES
1 CYLINDER - 'E' KEYWAY (REMOVABLE CORE)
1 EXIT PANIC
1 CLOSER
1 SET PUSH/PULL BARS
1 SET PERIMETER GASKETS (LENGTH AS REQUIRED)
1 BRUSH WEATHERSTRIPPING (LENGTH AS REQUIRED)
1 THRESHOLD (LENGTH AS REQUIRED) (ANSI & ADA COMPLIENT)
1 DRIP (LENGTH AS REQUIRED)
1 FLOOR STOP (MOUNT AS CLOSE TO OBSTRUCTION AS POSSIBLE)
1 HOLD OPEN
2 KICK PLATE

SET NO. 3
3 HINGES
1 KEYED LOCK
1 CLOSER
2 KICK PLATE
1 FLOOR STOP (MOUNT AS CLOSE TO OBSTRUCTION AS POSSIBLE)
2 PUSH PLATES

SET NO. 4
3 HINGES
1 PRIVACY LOCK
1 CLOSER
1 FLOOR STOP (MOUNT AS CLOSE TO OBSTRUCTION AS POSSIBLE)
2 KICK PLATE

SET NO. 5
2 INSIDE SLIDE LOCK
1 MANUAL HOIST
2 LIFT TRACK
1 HOLD OPEN

DOOR HARDWARE SET NOTES
1. ALL HARDWARE SHALL MEET ADA AND ANSI REQUIREMENTS FOR ACCESSIBILITY

2. SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL

3. ALL STYLES AND FINISHES TO BE SELECTED BY OWNER

WINDOW SCHEDULE

SYM		QTY.	SIZE	TYPE	MATERIAL	FINISH	NOTES
A	PRIVATE DINING	2	5040	FIXED	ALUM. W/ DUAL CLR TEMP. GLASS	CLEAR ANNODIZED	SILL AT 42"H

DOOR SCHEDULE

SYM	LOCATION	QTY.	SIZE	HARDWARE SET	TYPE	MATERIAL	FINISH	NOTES
1	NEW COVERED PATIO / DINING	3	3'-0"xT'-0"x1 1/4" (PAIR)	1	SWING	ALUM. W/ CLR TEMP. GLASS	CLEAR ANNODIZED	WITH TRANSOM WINDOW ABOVE
2	NEW COVERED PATIO	3	9'-0"Wx9'-0"H	5	OVERHEAD SECTIONAL	ALUM. W/ CLR TEMP. GLASS	CLEAR ANNODIZED	
3	NEW COVERED PATIO	2	3'-0"xT'-0"x1 1/4"	2	SWING	ALUM. W/ CLR TEMP. GLASS	CLEAR ANNODIZED	WITH TRANSOM WINDOW ABOVE
4	NEW BAR	1	18'-0"Wx5'-6"H	5	OVERHEAD SECTIONAL	ALUM. W/ CLR TEMP. GLASS	CLEAR ANNODIZED	
5	NOT USED							
6	NEW MEN & WOMEN	2	3'-0"xT'-0"x1 1/4"	4	SWING	SOLID CORE WOOD	STAINED	
7	NEW KITCHEN	2	3'-0"xT'-0"x1 1/4"	3	SWING	SOLID CORE WOOD	STAINED	DOOR TO BE DOUBLE ACTING
8	NEW OFFICE	1	3'-0"xT'-0"x1 1/4"	3	SWING	SOLID CORE WOOD	STAINED	DOOR TO OPEN 180 DEGREES
9	NEW LOCKER	1	3'-0"xT'-0"x1 1/4"	3	SWING	SOLID CORE WOOD	STAINED	
10	NEW TOILET	1	3'-0"xT'-0"x1 1/4"	4	SWING	SOLID CORE WOOD	STAINED	
11	EXISTING LOADING DOCK	1	3'-0"xT'-0"x1 1/4"	1	SWING	HOLLOW METAL	PAINTED	
12	EXISTING LOADING DOCK	1	3'-0"xT'-0"x1 1/4" (PAIR)	-	SWING	HOLLOW METAL	PAINTED	EXISTING DOORS TO REMAIN
13	NEW UTILITY	1	3'-0"xT'-0"x1 1/4"	3	SWING	SOLID CORE WOOD	STAINED	
14	NEW GRAIN	1	3'-0"xT'-0"x1 1/4" (PAIR)	3	SWING	SOLID CORE WOOD	STAINED	
15	NEW LOADING DOCK	1	8'-0"Wx10'-0"H	5	OVERHEAD COILING	ALUMINUM	PAINTED	
16	NEW BREWER OFFICE	1	3'-0"xT'-0"x1 1/4"	3	SWING	SOLID CORE WOOD	STAINED	
17	NEW EXIT	1	3'-0"xT'-0"x1 1/4"	1	SWING	HOLLOW METAL	PAINTED	
18	NEW WAREHOUSE	1	3'-4"xT'-0"x1 1/4"	-	SWING	HOLLOW METAL	PAINTED	EXISTING DOOR TO REMAIN

DOOR SCHEDULE NOTES
1. ALL NEW EXTERIOR DOORS TO BE WEATHERTIGHT AND GASKETED.

2. THE EXTERIOR LANDING OR FLOOR AT REQUIRED EGRESS DOORS SHALL NOT BE MORE THAN 7.75 INCHES BELOW THE TOP OF THE THRESHOLD, PROVIDED THE DOOR DOES NOT SWING OVER THE LANDING OR

3. DOOR FRAMES TO BE TIMELY, PRE-PAINTED. COLOR TO BE SELECTED BY OWNER.

MELVIN BREWPUB FINISH SCHEDULE

ROOM	FLOOR						WALLS								CEILING					
	SEALED CONCRETE	CERAMIC TILE WITH COVE BASE (SELECTED BY OWNER)	STAINED & SEALED CONCRETE (SELECTED BY OWNER)	URETHANE (OR APPROVED EQUAL) FLOOR COATING	EPOXY (OR APPROVED EQUAL) FLOOR COATING	WITH INTEGRATED 6" COVE BASE	EXPOSED MASONRY TO REMAIN	5'-0" HIGH F.R.P. BEHIND WET AREAS, PAINT ELSEWHERE	MANUFACTURED PANEL	54" HIGH CERAMIC TILE WITH PAINTED GYPSUM BOARD ABOVE	48" HIGH F.R.P. WITH PAINTED GYPSUM BOARD ABOVE	EXPOSED TO STRUCTURE	GYPSUM BOARD, PAINTED	GYPSUM BOARD, PAINTED	2x4 T-BAR WITH WASHABLE PANELS	MANUFACTURED PANEL	EXPOSED TO STRUCTURE ABOVE
DINING			●				●						●				●
LOUNGE			●				●						●				●
BAR			●								●		●				●
RETAIL COLD BOX	●								●							●	
COVERED PATIO			●				●						●				●
PRIVATE DINING			●				●						●				●
BREWHOUSE AND CELLAR				●							●						●
KITCHEN					●	●		●							●		
OFFICE					●	●							●		●		
SCULLERY					●	●		●							●		
TOILET					●	●					●			●			
LOCKER					●	●					●				●		
RESTROOMS			●							●				●			
GRAIN	●												●	●			
WAREHOUSE	●						●						●				●
KEG WASH				●							●						●
BREWER OFFICE	●												●	●			
DISTRIBUTION COLD BOX	●								●							●	

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PROJECT 18020

MELVIN BREWPUB

MELVIN BREWING

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

EQUIPMENT NOTES

1. SMOKING OR THE USE OF HEATING OR OTHER DEVICES EMPLOYING AN OPEN FLAME, OR THE USE OF SPARK-PRODUCING EQUIPMENT IS PROHIBITED IN AREAS WHERE COMBUSTIBLE DUST IS GENERATED, STORED, MANUFACTURED, PROCESSED OR HANDLED.

5. ACCUMULATION OF COMBUSTIBLE DUST SHALL BE KEPT TO A MINIMUM IN THE INTERIOR OF BUILDINGS. ACCUMULATED COMBUSTIBLE DUST SHALL BE COLLECTED BY VACUUM CLEANING OR OTHER MEANS THAT WILL NOT PLACE COMBUSTIBLE DUST INTO SUSPENSION IN AIR. FORCED AIR OR SIMILAR METHODS SHALL NOT BE USED TO REMOVE DUST FROM SURFACES.

6. CONTRACTOR TO SUBMIT IN WRITING ON COMPANY LETTERHEAD, A STATEMENT THAT THE SYSTEM WAS INSTALLED IN ACCORDANCE WITH FIRE CODE. THE STATEMENT SHALL ALSO INCLUDE THE INSTALLING CONTRACTOR, SITE PLAN OF LOCATION OF THE SYSTEM IN THE BUILDING, AND THE DATE OF INSTALLATION. STATEMENTS SHALL BE SUBMITTED TO: THE OWNER, THE ARCHITECT, AND THE FIRE DEPARTMENT.

7. COMPRESSED GAS CONTAINERS, CYLINDERS AND TANKS AND SYSTEMS IN STORAGE OR USE SHALL BE SEPARATED FROM MATERIALS AND CONDITIONS THAT POSE AN EXPOSURE HAZARDS TO OR FROM EACH OTHER.

DOOR AND HARDWARE NOTES

1. ALL HARDWARE SHALL COMPLY WITH ACCESSIBILITY REQUIREMENTS OF THE AMERICAN DISABILITY ACT, CALIFORNIA ADMINISTRATIVE CODE TITLE 24, AND ALL LOCAL AUTHORITY REGULATIONS.

2. GENERAL CONTRACTOR TO PROVIDE AND INSTALL ALL DOORS, FRAMES, AND RELATED HARDWARE UNLESS OTHERWISE NOTED.

3. ALL DOORS, FRAMES AND RELATED HARDWARE ARE TO BE AS SPECIFIED OR EQUIVALENT AND BE APPROVED BY THE DESIGNER.

4. ALL DOORSTOPS TO BE FLOOR MOUNTED UNLESS OTHERWISE NOTED.

5. GENERAL CONTRACTOR SHALL SUBMIT DOOR SHOP DRAWINGS, A DETAILED HARDWARE AND KEYING SCHEDULE AND CUT SHEETS TO DESIGNER FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS.

6. THE GENERAL CONTRACTOR SHALL UNDERCUT DOORS AS REQUIRED TO CLEAR FLOORING MATERIAL BY ½ INCH.

7. ALL RATED DOORS, IF ANY, SHALL BE ORDERED SO AS TO CLEAR FLOORING MATERIAL BY ½ INCH.

8. ALL DOORS, HINGE SIDE, TO BE LOCATED 4" FROM DAYLIGHT OF DOOR TO ADJACENT WALL UNLESS OTHERWISE NOTED.

9. ALL EXIT DOORS TO BE OPERABLE FROM INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.

10. ALL MANUFACTURED WINDOW AND DOOR UNITS SHALL MEET THE MINIMUM INFILTRATION REQUIREMENTS.

11. DOORS WITH SELF-CLOSERS TO BE ADJUSTED SO THAT FROM AN OPEN POSITION THE DOOR LEAF WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POSITION 3 INCHES FROM LATCH TO LANDING EDGE OF DOOR.

12. DOORS TO UNISEX TOILET ROOMS AND UNISEX BATHING ROOMS SHALL HAVE PRIVACY LATCHES.

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

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SCHEDULES

STAMP:

STATE OF MISSOURI
TODD DUSTIN HAUCK
NUMBER
A-2008004390
ARCHITECT

SHEET NUMBER:

A7.1

STRUCTURAL ABBREVIATIONS

#	POUND(S), NUMBER
&	AND
(E)	EXISTING
@	AT
AB	ANCHOR BOLT
ADDL	ADDITIONAL
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
B/FTG	BOTTOM OF FOOTING
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BMD	BOTTOM OF METAL DECK
BOT	BOTTOM
BP	BASE PLATE
BRG	BEARING
BTWN	BETWEEN
C-C	CENTER TO CENTER
CANT	CANTILEVER(ED)
CFS	COLD-FORMED STEEL
CIP	CAST-IN-PLACE
CJ	CONTROL OR CONST JOINT
CL	CENTER LINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CTR	CENTER
DBL	DOUBLE
DC	DEMAND CRITICAL (WELD)
deg	DEGREE
DF (L)	DOUGLAS FIR (LARCH)
dia	DIAMETER
DIM	DIMENSION
do / DO	DITTO
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELEV	ELEVATOR
EMB	EMBEDMENT
EQ	EQUAL
ETC	ET CETERA
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
FDN	FOUNDATION
FF	FINISH FLOOR
FIN	FINISH
FLR	FLOOR
FRMG	FRAMING
FTG	FOOTING
FV	FIELD VERIFY
ga	GAUGE
GALV	GALVANIZE(D)
GLB	GLUE-LAMINATED BEAM
HGR	HANGER
HK	HOOK
HORIZ	HORIZONTAL

STRUCTURAL ABBREVIATIONS

HSS	HOLLOW STRUCTURAL SECTION
INT	INTERIOR
J/BRG	JOIST BEARING
JG	JOIST GIRDER
JG/BRG	JOIST GIRDER BEARING
JST	JOIST
JT	JOINT
kip	1,000 POUNDS
ksi	kips PER SQUARE INCH
LB	POUND
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
NTS	NOT TO SCALE
oc	ON CENTER
OPNG	OPENING
PAF	POWER-ACTUATED FASTENER
PARA	PARAPET
PEMB	PRE-ENGINEERED METAL BUILDING (MANUFACTURER)
PIL	PILASTER
PL	PLATE
PLYWD	PLYWOOD
psf	POUNDS PER SQUARE FOOT
PTDF(L)	PRESSURE TREATED DOUGLAS FIR (LARCH)
PTSPF	PRESSURE TREATED SPRUCE PINE FIR
PTSYP	PRESSURE TREATED SOUTHERN YELLOW PINE
REINF	REINFORCED, REINFORCING
REQD	REQUIRED
SCHED	SCHEDULE
SHTG	SHEATHING
SIM	SIMILAR
SPF	SPRUCE PINE FIR
STD	STANDARD
STL	STEEL
STRUC	STRUCTURAL
SYP	SOUTHERN YELLOW PINE
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T/BRG	TRUSS BEARING
T/CONC	TOP OF CONCRETE
T/FTG	TOP OF FOOTING
T/PAN	TOP OF PANEL
T/PARA	TOP OF PARAPET
T/PIL	TOP OF PILASTER
T/S	TOP OF SLAB
T/STL	TOP OF STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
USGS	US GEOLOGICAL SURVEY
VAR	VARIES
VERT	VERTICAL
w/	WITH
WHS	WELDED HEADED STUD(S)
WP	WORK POINT
WWR	WELDED WIRE REINFORCEMENT

DEFERRED SUBMITTALS

THE FOLLOWING DESIGN ELEMENTS MUST BE SIGNED & SEALED BY A PROFESSIONAL ENGINEER (PE/SE) REGISTERED IN THE STATE WHERE THIS PROJECT IS LOCATED, AND SUBMITTED TO THE ENGINEER OF RECORD. DESIGNED DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND RECORD.

1. COLD-FORMED STEEL FRAMING:
   - A. STUDS, JOISTS, HEADERS, AND CONNECTIONS NOT SHOWN ON DRAWINGS.
   - B. STRUCTURAL CALCULATIONS INCLUDING MEMBER SIZES, LAYOUT, SPAN, SPACING, DEFLECTION, AND TYPICAL & SPECIAL CONNECTIONS.

SHOP DRAWING AND SUBMITTAL NOTES

1. SHOP DRAWINGS AND/OR SUBMITTALS SHALL BE FURNISHED FOR ALL STRUCTURAL COMPONENTS. UNLESS OTHERWISE NOTED, THESE SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION IN ACCORDANCE WITH THESE CONTRACT DRAWINGS, AND PROJECT SPECIFICATIONS (IF APPLICABLE). CONTRACTOR SHALL ALLOW A MINIMUM OF 2 WEEKS FROM RECEIPT OF SHOP DRAWINGS FOR AEDIFICA CASE ENGINEERING TO PROVIDE RESPONSE.
2. PRIOR TO SUBMITTAL TO THE ENGINEER, THE CONTRACTOR AND ARCHITECT SHALL HAVE REVIEWED THE SHOP DRAWINGS AND MADE ANY CORRECTIONS REQUIRED. THE CONTRACTOR AND ARCHITECT SHALL STAMP AND SIGN THE DRAWINGS, INDICATING THE SUBMITTAL HAS BEEN REVIEWED.
3. STRUCTURAL DRAWINGS ARE THE SOLE PROPERTY OF AEDIFICA CASE ENGINEERING. REPRODUCTION OF STRUCTURAL DRAWINGS FOR USE IN SHOP DRAWING SUBMITTALS IS NOT ACCEPTABLE WITHOUT OUR WRITTEN AGREEMENT.

BUILDING CODES AND STANDARDS USED FOR DESIGN

1. INTERNATIONAL BUILDING CODE 2009 EDITION
   OCCUPANCY CATEGORY: II

DESIGN LOADS

1. DESIGN LOADS
   - ROOF LIVE LOAD: 20 psf
   - ROOF DEAD LOAD: 20 psf
2. SNOW LOAD DESIGN CRITERIA
   - SNOW LOAD IMPORTANCE FACTOR, I: 1.0
   - GROUND SNOW LOAD, Pg: 20 psf
   - FLAT ROOF SNOW LOAD. Pf: 14 psf
   - THERMAL FACTOR, Ct: 1.0
   - EXPOSURE FACTOR, Ce: 1.0
   - MINIMUM FROST DEPTH: 2'-6"
3. WIND LOAD DESIGN CRITERIA
   - WIND IMPORTANCE FACTOR, I: 1.0
   - BASIC WIND SPEED: 90 MPH (3 SEC GUST)
   - WIND EXPOSURE CATEGORY: C
   - GCpi: +/- 0.18
4. SEISMIC LOAD DESIGN CRITERIA
   - SEISMIC IMPORTANCE FACTOR, I: 1.0
   - SITE CLASS: D
   - SPECTRAL RESPONSE ACCELERATION: Ss=0.3949g, S1=0.154g
   - SPECTRAL RESPONSE COEFFICIENTS: Sds=0.39g, Sd1=0.235g

GENERAL STRUCTURAL NOTES

1. THIS DRAWING SET IS TO BE VIEWED AS A WHOLE AND COORDINATED WITH ARCHITECTURAL, MECHANICAL, CIVIL, AND OTHER DISCIPLINES. ALL WORK PERTAINING TO A SPECIFIC CONTRACTOR MAY OR MAY NOT BE SHOWN ON SPECIFIC DRAWING SECTIONS. IT IS EACH SUBCONTRACTOR'S RESPONSIBILITY TO PREPARE HIS BID FROM A COMPLETE SET OF PLANS.
2. THE CONTRACTOR SHALL FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE DRAWINGS. DIMENSIONS NOT SHOWN ON PLAN TO BE COORDINATED WITH ARCHITECTURAL PLANS.
3. ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY AT ANY SIMILAR SITUATION ELSEWHERE ON THE JOB, EXCEPT WHERE A DIFFERENT DETAIL OR SECTION IS SHOWN.
4. THE STRUCTURE SHALL BE ADEQUATELY BRACED AND SHORED DURING ERECTION AGAINST WIND AND ERECTION LOADS. STRUCTURAL MEMBERS ARE DESIGNED FOR "IN-PLACE" LOADS ONLY.
5. BRACE ALL BELOW GRADE WALLS UNTIL FLOOR STRUCTURE IS IN PLACE & CONCRETE OR PLYWOOD FLOOR DIAPHRAGM IS IN PLACE.
6. THE GENERAL CONTRACTOR SHALL VERIFY ALL OPENING SIZES, PAD SIZES, AND LOCATIONS WITH THE RESPECTIVE CONTRACTORS.
7. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND ACTUAL FIELD CONDITIONS.
8. THE VARIOUS SUBCONTRACTORS ARE RESPONSIBLE FOR PLACING SLEEVES, OUTLET BOXES, ANCHORS, VENT OPENINGS, ETC. THAT MAY BE REQUIRED IN FOUNDATION WALLS. CONSTRUCTION MANAGER SHALL COORDINATE ALL PLACEMENT OF ITEMS IN FOUNDATION WALLS.
9. SEE ARCHITECTURAL PLANS FOR ADDITIONAL DETAILS AND INFORMATION.
10. ALL ELEVATIONS GIVEN ARE REFERENCED TO FINISHED FLOOR ELEVATIONS AT 100'-0", UNLESS SHOWN AS USGS ELEVATIONS.
11. WHERE GENERAL NOTES OR TYPICAL DETAILS CONTRADICT INFORMATION PROVIDED IN BUILDING SECTIONS, THE BUILDING SECTIONS TAKE PRECEDENCE.
12. ALL HOLES THROUGH CONSTRUCTION SHALL BE CORE DRILLED OR SAWCUT.
13. ALL STAIR STRINGERS, LANDINGS, AND HANDRAILS TO BE DESIGNED AND FABRICATED BY STAIR FABRICATOR.
14. WHERE INFORMATION PROVIDED IN THESE STRUCTURAL DRAWINGS CONTRADICTS INFORMATION PROVIDED IN PROJECT SPECIFICATIONS, THE SPECIFICATIONS SHALL TAKE PRECEDENCE.
15. FOR ARCHITECTURAL, MEP, & STRUCTURAL COORDINATION: MODELED ELEMENTS SHOWN ON STRUCTURAL DRAWINGS SUCH AS TRUSSES, OPEN-WEB JOISTS, AND JOIST GIRDERS, ARE NOT THE FINAL CONFIGURATION. ALL COORDINATION SHALL BE PERFORMED BETWEEN THE VARIOUS TRADES AND THE SUPPLIERS OF THESE ELEMENTS ON THE STRUCTURE, NOT WITH THE STRUCTURAL MODEL.

EXISTING CONSTRUCTION NOTES

1. ALL DIMENSIONS AND ELEVATIONS TO EXISTING CONSTRUCTION ARE FOR REFERENCE ONLY. FIELD VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO PREPARING SHOP DRAWINGS, FABRICATING MEMBERS (STRUCTURAL ITEMS), AND INSTALLATION.
2. ALL HOLES THROUGH EXISTING CONSTRUCTION SHALL BE CORE-DRILLED OR SAWCUT. DO NOT CUT ANY REINFORCING STEEL WHILE DRILLING INTO EXISTING CONCRETE. DO NOT TORCH CUT.
3. NOTIFY STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND STRUCTURAL DRAWINGS.
4. FOR ALL EXISTING CONSTRUCTION: DUE TO LIMITED OBSERVATION, OR NOT BEING ABLE TO VISIT THE EXISTING BUILDING DURING THE PREPARATION OF THESE DOCUMENTS, ÆDIFICA CASE ENGINEERING HAS ASSUMED THE EXISTING STRUCTURE IS IN LIKE-NEW CONDITION WITH NO CORROSION, DETERIORATION, OR DAMAGE, AND WAS CONSTRUCTED PER ANY ORIGINAL CONSTRUCTION DOCUMENTS PROVIDED (IF ANY EXIST). CONTRACTOR SHALL VERIFY THESE ASSUMPTIONS TO THE BEST OF THEIR ABILITY AND NOTIFY THE ENGINEER OF ANY CONCERNS, ISSUES, OR DISCREPANCIES.

COMPRESSION LAP SPLICE LENGTH IN CONCRETE NOTES

1. VALUES IN TABLE ARE BASED ON 60 ksi OR 80 ksi REBAR. THERE SHALL BE NO ADJUSTMENT PERMITTED FOR REBAR EXCEEDING 80 ksi IN YIELD STRENGTH.
2. MULTIPLY LENGTHS IN TABLE BY 1.33 FOR f'c LESS THAN 3,000 psi.
3. WHERE BARS OF DIFFERENT SIZES ARE SPLICED, PROVIDE THE LAP LENGTH OF THE LARGER BAR.
4. VALUES IN THE TABLE CAN BE MULTIPLIED BY 0.75 WHERE LAP OCCURS WITHIN A SPIRAL IN A SPIRALLY REINFORCED COLUMN, BUT SHALL NOT BE LESS THAN 12".
5. REBAR IN ALL CONCRETE MEMBERS SHALL BE SPLICED IN ACCORDANCE WITH THE "TENSION LAP SPLICE LENGTH" TABLE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

COMPRESSION LAP SPLICE LENGTH IN CONCRETE (INCHES) f'c = 3,000 psi OR GREATER TABLE

BAR SIZE	fy = 60 ksi	fy = 80 ksi
#3	12	18
#4	15	24
#5	19	30

SPECIAL INSPECTIONS

1. REFER TO THE SPECIAL INSPECTION TABLES FOR THE LIST OF ELEMENTS OF CONSTRUCTION THAT SHALL REQUIRE SPECIAL INSPECTION. THIS SHALL BE CONSIDERED A GUIDE, AND THE CONTRACTOR AND INSPECTOR SHALL REFER TO THE IBC FOR COMPLETE REQUIREMENTS, QUALIFICATIONS, EXCEPTIONS, AND SUBMITTALS. REFER TO IBC SECTION 1704 FOR 2003-2009 CODES, AND SECTION 1705 FOR 2012-2015 CODES. THE OWNER SHALL BE RESPONSIBLE FOR EMPLOYING THE SPECIAL INSPECTION AGENCY. ANY "OBSERVATIONS" BY THE EOR WILL NOT BE TO PERFORM SPECIAL INSPECTIONS AND SHALL NOT BE INTERPRETED AS SUCH.
2. COPIES OF ALL INSPECTION REPORTS THAT REPORT COMPLIANCE SHALL BE SUBMITTED TO THE ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, AND BUILDING INSPECTOR WITHIN 7 CALENDAR DAYS OF COMPLETION OF THAT PORTION OF WORK. A MINIMUM OF ONE (1) PROGRESS REPORT PER MONTH FOR EACH TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION SHALL BE SUBMITTED TO THE STRUCTUAL ENGINEER OF RECORD.
3. SPECIAL INSPECTOR SHALL INFORM ENGINEER OF RECORD IMMEDIATELY OF NON-COMPLIANCE WITH CONSTRUCTION DOCUMENTS OR APPROVED SUBMITTALS. CONTACT ENGINEER OF RECORD THE SAME DAY NON-COMPLIANCE IS DISCOVERED AND FOLLOW UP WITH AN OFFICIAL REPORT WITHIN 2 BUSINESS DAYS.
4. THE SPECIAL INSPECTIONS IDENTIFIED ON THE PLANS ARE IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY A BUILDING INSPECTOR.
5. SPECIAL INSPECTIONS ARE NOTED AS EITHER "CONTINUOUS" OR "PERIODIC". A "CONTINUOUS" INSPECTION REQUIRES THE PRESENCE OF A QUALIFIED INSPECTOR IN THE VICINITY OF THE WORK BEING PERFORMED FOR 100% OF THAT WORK. A "PERIODIC" INSPECTION REQUIRES PART-TIME OBSERVATION OF THE WORK BEING PERFORMED. THE INSPECTOR SHALL ALSO OBSERVE THE FINAL CONDITION OF THE WORK BEFORE IT IS CLOSED FROM VIEW.
6. WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED, IT SHALL BE THE RESPONSIBILITY OF THE AGENT TO EMPLOY A SUFFICIENT NUMBER OF SPECIAL INSPECTORS TO ASSURE THAT ALL WORK IS CONTINUOUSLY INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.

CONCRETE NOTES

1. ALL CONCRETE WORK INCLUDING FORMING, REINFORCING, MIXING, PLACING, AND CURING SHALL BE DONE IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318, AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301 LATEST EDITIONS.
2. IT SHALL BE THE RESPONSIBILITY OF THE MIX DESIGN SUPPLIER TO PROPORTION MIXES APPROPRIATELY TO REACH THE REQUIRED DESIGN STRENGTH NOTED, AND SHALL BE APPROPRIATE FOR THEIR INTENDED USE. ADMIXTURES ARE OPTIONAL. HOWEVER, AIR-ENTRAINING ADMIXTURES SHALL BE USED FOR CONCRETE EXPOSED TO THE EXTERIOR OR FREEZE-THAW CYCLES.
3. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR EACH INTENDED USE ON THE PROJECT FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD. CONTENTS OF THE MIX DESIGN SHALL COMPLY WITH, AND INCLUDE ALL INFORMATION REQUIRED BY, ACI 318, CHAPTER 5 (FOR 2011 AND EARLIER CODE EDITIONS), & CHAPTER 26 (FOR 2014 CODE EDITION). THIS INCLUDES, BUT IS NOT LIMITED TO NUMBER OF TESTS AND AGE OF TESTS INCLUDED IN THE MIX DESIGN REPORT.
4. ALL CONCRETE DENSITY SHALL BE NORMAL WEIGHT (145 pcf +/- 5) UNLESS OTHERWISE INDICATED. LIGHT WEIGHT CONCRETE SHALL BE 110 pcf +/- 5, UNO.
5. FLY ASH ALLOWANCES:
   - 20% MAXIMUM BY WEIGHT IN FOOTINGS
   - 15% MAXIMUM BY WEIGHT IN SLABS
   - 0% (NONE) ALLOWED IN TILT-UP PANELS
   - 0% (NONE) IN SLABS USED FOR CASTING TILT-UP PANELS
6. COORDINATE CONCRETE WORK WITH THAT OF OTHER TRADES TO ALLOW FOR SETTING OF SLEEVES, ACCESSORIES, ETC.
7. ALL REINFORCING STEEL, ANCHOR RODS, DOWELS, AND INSETS SHALL BE WELL-SECURED IN POSITION PRIOR TO PLACING CONCRETE.
8. TEST CYLINDERS WILL BE REQUIRED (4 MINIMUM FOR 6"x12"), AND RECORDS OF RESULTS SHALL BE SUBMITTED TO ENGINEER OF RECORD (1 AT 7 DAYS, 2 AT 28 DAYS, ONE SPARE). ALTERNATIVELY, PROVIDE 5 MINIMUM 4"x8" CYLINDERS (1 AT 7 DAYS, 3 AT 28 DAYS, ONE SPARE). SLUMP TESTS ARE RECOMMENDED.
9. CONSTRUCTION JOINTS IN CONCRETE INDICATED WITH A ROUGH, CLEAN SURFACE SHALL HAVE A 1/4" AVERAGE AMPLITUDE.
10. ALL COLD JOINTS SHALL BE ROUGHENED AND CLEANED PRIOR TO PLACING CONCRETE.
11. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE FOLLOWING:
    - (A) TOTAL AIR CONTENT LIMITS INCLUDE BOTH ENTRAINED AND ENTRAPPED AIR +/- 1 1/2%. "N" IN COLUMN INDICATES THE ADDITION OF ENTRAINED AIR IS NOT REQUIRED, BUT IS PERMITTED.

CONCRETE TABLE

INTENDED USE	MINIMUM 28 DAY STRENGTH f'c	MAX WATER-CEMENT RATIO	TOTAL AIR LIMITS (MAX % RATIO) (A)
INTERIOR SLAB ON GRADE	4 ksi	0.48	3
FOOTINGS/FOUNDATION WALLS	4 ksi	0.48	6 (WHERE EXPOSED TO EXT.)
CONCRETE EXPOSED TO DEICERS	4.5 ksi	0.40	6
ALL CONCRETE NOT OTHERWISE SPECIFIED	4 ksi	0.40	6

REINFORCING STEEL NOTES

1. NON-WELDED STEEL BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60. WELDED STEEL BAR REINFORCING SHALL CONFORM TO ASTM A706.
2. WELDING OF REINFORCING STEEL SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN CONFORMANCE WITH AWS D1.1 USING E90 ELECTRODES FOR ASTM A615 REBAR, AND E80 ELECTRODES FOR ASTM A706 REBAR UNLESS OTHERWISE NOTED ON THE DRAWINGS.
3. WELDED WIRE REINFORCEMENT (WWR) SHALL BE SMOOTH WIRE PER ASTM A185 WITH MINIMUM YIELD STRENGTH, fy = 65 ksi, OR DEFORMED WIRE PER ASTM A497 WITH MINIMUM YIELD STRENGTH, fy = 70 ksi, UNLESS NOTED OTHERWISE.
4. MINIMUM CONCRETE COVER FOR REINFORCING STEEL IN CAST-IN-PLACE (NON-PRESTRESSED) CONCRETE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED ON THE DRAWINGS:
   - A. CONCRETE CAST AGAINST EARTH = 3"
   - B. CONCRETE EXPOSED TO WEATHER:
     - #6 BAR AND LARGER = 2"
     - #5 BAR AND SMALLER = 1 1/2"
   - C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER (SLABS, WALLS, & JOISTS):
     - #14 BARS AND LARGER = 1 1/2"
     - #11 BARS AND SMALLER = 3/4"
   - D. CONCRETE NOT EXPOSED TO EARTH OR WEATHER (BEAMS & COLUMNS):
     - PRIMARY REINFORCEMENT, TIES, STIRRUPS, & SPIRALS = 1 1/2"
5. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITION OF ACI 315 (SP-66), DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.

POST-INSTALLED ANCHOR NOTES

POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED ON THESE DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING, AT A MINIMUM, THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE BUILDING CODE.

1. TYPICAL POST-INSTALLED ANCHORS IN CONCRETE AND CMU SHALL COMPLY WITH THE LATEST OF THEIR RESPECTIVE ICC EVALUATION REPORTS.
2. WHEN INSTALLING ANCHORS IN CONCRETE AND CMU, CONTRACTOR SHALL LOCATE EXISTING REINFORCING STEEL, CONDUITS, ETC, PRIOR TO DRILLING FOR ANCHORS. CONTRACTOR SHALL USE CARE AND CAUTION TO PREVENT DAMAGE TO EXISTING REINFORCING BARS.
3. CONTRACTOR SHALL PROVIDE 1" MINIMUM CLEARANCE BETWEEN EDGES OF ANY HOLES FOR POST-INSTALLED ANCHORS AND EXISTING REINFORCING STEEL.
4. CONTRACTOR SHALL PROVIDE INSPECTION AND TESTING AS REQUIRED PER THE "SPECIAL INSPECTIONS" SECTION OF THESE GENERAL STRUCTURAL NOTES.

COLD-FORMED STEEL FRAMING NOTES

1. STEEL FOR COLD-FORMED SECTIONS, AND STEEL SHEET AND PLATE USED IN COLD-FORMED STEEL CONSTRUCTION SHALL CONFORM TO SECTION A2.1 OF AISI STANDARD: "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
2. ALL 12, 14, AND 16 GAUGE MEMBERS SHALL MEET THE REQUIREMENTS OF ASTM A1003, GRADE ST50H (MINIMUM YIELD OF 50,000 psi). ALL 18 AND 20 GAUGE MEMBERS SHALL MEET THE REQUIREMENTS OF ASTM A1003 GRADE ST33H (MINIMUM YIELD OF 33,000 psi).
3. SCREWS FOR COLD-FORMED STEEL CONSTRUCTION SHALL HAVE A MINIMUM ULTIMATE TENSILE STRENGTH OF 58 ksi.
4. ALL WELDING SHALL BE PERFORMED BY AWS WELDERS QUALIFIED FOR WELDING COLD-FORMED STEEL CONFORMANCE WITH AWS D1.3 USING E60 ELECTRODES, UNLESS OTHERWISE NOTED. STEEL REQUIRING WELDING SHALL BE 16ga MINIMUM.
5. ALL COLD-FORMED STUDS AND JOISTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS REGARDING MINIMUM INSTALLATION STANDARDS FOR BEARING, BRIDGING, AND BRACING.
6. BOTTOM TRACK TO MATCH STUD GAUGE WITH A MINIMUM 1-1/4" FLANGE UNLESS OTHERWISE NOTED.
7. ALL EXTERIOR WALLS TO HAVE HORIZONTAL BRIDGING @ 4'-0" MAXIMUM.
8. REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

STRUCTURAL STEEL NOTES

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS IS TO BE IN ACCORDANCE WITH "AISC CODE OF STANDARD PRACTICE", LATEST EDITION.
2. IT IS THE RESPONSIBILITY OF THE STEEL FABRICATOR TO DESIGN THE CONNECTIONS. CONNECTIONS ARE TO BE IN ACCORDANCE WITH CURRENT AISC STANDARDS AND APPLICABLE GOVERNMENT CODES. ALL CONNECTIONS SHALL BE BOLTED OR WELDED AND SHALL DEVELOP 60% OF THE ALLOWABLE UNIFORM LOAD TABULATED IN THE AISC "MANUAL OF STEEL CONSTRUCTION" FOR ALLOWABLE STRESS DESIGN, 10k (ASD), OR SHEAR REACTION SHOWN ON THE DRAWINGS, WHICHEVER IS GREATER. PROVIDE MINIMUM NUMBER OF ASTM F3125 GRADE A325 OR A490 BOLTS AS SHOWN IN THE "STRUCTURAL STEEL BOLTED CONNECTIONS" TABLE.
3. ANCHOR RODS TO BE ASTM F1554, GRADE 36 FULLY-THREADED RODS WITH PLATE WASHERS AND NUTS ON THE BOTTOM UNLESS NOTED OTHERWISE-SEE "TYPICAL ANCHOR BOLT" DETAIL.
4. BOLT HOLES SHALL BE 1/16" OVERSIZE UNLESS OTHERWISE NOTED ON THE DRAWINGS. FIELD BURNING OF BOLT HOLES SHALL NOT BE PERMITTED.
5. WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN CONFORMANCE WITH AWS D1.1, USING E70 SERIES ELECTRODES, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. ALL STEEL SHALL BE SHOP PAINTED WITH A STANDARD ALKYD PRIMER (GRAY). FOR HARSH ENVIROMENTS USE A GRAY ZINC ORGANIC OR INORGANIC PRIMER.
7. FABRICATE ALL BEAMS WITH THE MILL CAMBER UP.
8. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS AND GRADES:
   - ANGLES, CHANNELS, PLATES, BARS, AND RODS = A36, fy = 36ksi
9. REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
http://www.hauckarchitecture.com
ca lic.#5885 - az lic.#031127 - fl lic.#AR98187 - mo lic.# 2010
mo lic.#o-2008030490 - pa lic.#rm407077 - tx lic. # 22795 - wa lic.# 11300

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica case engineering
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
F 636. 349.1730
aedificacase.com
mechanical
electrical
plumbing
fire protection
structural
CERTIFICATE OF AUTHORITY NO. E-2000155319-D

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REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

GENERAL NOTES

STAMP:

STATE OF MISSOURI · STEPHEN F. SACKS · NUMBER PE-2010021660 · PROFESSIONAL ENGINEER

SHEET NUMBER:

S1.1

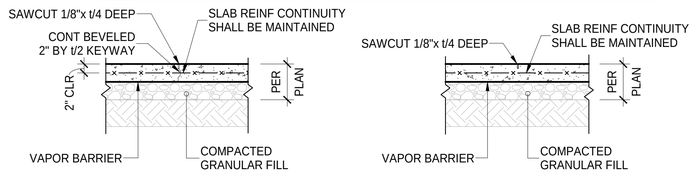
ACE - ZZMB -

SPECIAL INSPECTIONS - CONCRETE TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
REINFORCEMENT	PERIODIC	INSPECT REINFORCEMENT (INCLUDING PRESTRESSING TENDONS) AND PLACEMENT; VERIFY CONFORMANCE WITH CONSTRUCTION DOCUMENTS, AND THAT BARS ARE FREE FROM MATERIALS THAT COULD PREVENT BOND, ARE ADEQUATELY LAPPED, SPLICED, TIED, AND SUPPORTED
REINFORCEMENT	PERIODIC	VERIFY WELDABILITY OF REBAR OTHER THAN ASTM A 706; INSPECT SINGLE PASS FILLET WELDS NOT GREATER THAN 5/16"
REINFORCEMENT	CONTINUOUS	INSPECT ALL OTHER WELDS (SEE ALSO "STEEL" SPECIAL INSPECTIONS TABLE)
ANCHOR INSTALLATION	PERIODIC	INSPECT CAST-IN-PLACE ANCHORS AND BOLTS
ANCHOR INSTALLATION	PERIODIC	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS NOT OTHERWISE SPECIFIED
ANCHOR INSTALLATION	CONTINUOUS	INSPECT POST-INSTALLED ADHESIVE ANCHORS THAT RESIST SUSTAINED TENSION LOADS
ANCHOR INSTALLATION	CONTINUOUS	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS PER THE REQUIREMENTS IN THEIR RESPECTIVE ICC-ES REPORTS
MIX DESIGN	PERIODIC	VERIFY USE OF APPROVED MIX DESIGN
SAMPLING AND TESTING	CONTINUOUS	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTING; PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF THE CONCRETE
CONCRETE PLACEMENT	PERIODIC	VERIFY MAINTENANCE OF CURING TEMPERATURE AND TECHNIQUES
CONCRETE PLACEMENT	PERIODIC	ERECTION OF PRECAST CONCRETE MEMBERS
CONCRETE PLACEMENT	PERIODIC	VERIFY STRENGTH OF CONCRETE PRIOR TO STRESSING TENDONS IN POST-TENSIONED CONCRETE, AND PRIOR TO REMOVAL OF SHORES
CONCRETE PLACEMENT	PERIODIC	INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED
CONCRETE PLACEMENT	CONTINUOUS	CONCRETE PLACEMENT
CONCRETE PLACEMENT	CONTINUOUS	SHOTCRETE PLACEMENT

SPECIAL INSPECTIONS - OFF-SITE FABRICATION (INCLUDING PRE-MANUFACTURED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES, AND STEEL FABRICATING)		
ITEM	INSPECTION FREQUENCY	SCOPE
FABRICATION AND IMPLEMENTATION PROCEDURES	PERIODIC	VERIFY THAT FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS; REVIEW PROCEDURES FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENTS FOR THE FABRICATOR'S SCOPE OF WORK
NOTE	-	SPECIAL INSPECTION FOR OFF-SITE FABRICATION IS NOT REQUIRED FOR FABRICATORS APPROVED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH THE CODE

SPECIAL INSPECTIONS - STEEL TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
MATERIAL VERIFICATION	PERIODIC	HIGH STRENGTH BOLTS, NUTS, AND WASHERS: REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE; IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	STRUCTURAL STEEL: REVIEW MANUFACTURER'S CERTIFIED MILL TEST REPORTS; IDENTIFICATION MARKINGS ON STEEL SHAPES TO CONFORM TO AISC STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	WELD FILLER MATERIALS: REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE; IDENTIFICATION MARKINGS TO CONFORM WITH AWS SPECIFICATIONS IN THE CONSTRUCTION DOCUMENTS
MATERIAL VERIFICATION	PERIODIC	COLD-FORMED STEEL DECK: REVIEW MANUFACTURER'S CERTIFIED TEST REPORTS; IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
HIGH-STRENGTH BOLTING	PERIODIC	BEARING-TYPE CONNECTIONS: VERIFY BOLTS, NUTS, WASHERS, PAINT, INSTALLATION, AND TIGHTENING CONFORM TO THEIR RESPECTIVE STANDARDS
HIGH-STRENGTH BOLTING	PERIODIC	SLIP-CRITICAL/ PRETENSIONED CONNECTIONS: SAME AS ABOVE, PLUS OBSERVE INSTALLATION WHEN USING TURN-OF-THE-NUT METHOD WITH MATCHMARKING TECHNIQUES, DIRECT TENSION INDICATORS, OR TWIST-OFF BOLTS
HIGH-STRENGTH BOLTING	CONTINUOUS	SLIP-CRITICAL/ PRETENSIONED CONNECTIONS: SAME AS ABOVE PLUS MONITORING WHEN USING THE CALIBRATED WRENCH METHOD OR TURN-OF-THE-NUT METHOD WITHOUT MATCHMARKING; OBSERVE PRE-INSTALLATION TESTING AND CALIBRATION PROCEDURES WHEN REQUIRED BY PROJECT SPECIFICATIONS OR INSTALLATION METHOD
WELDING	PERIODIC	SINGLE PASS FILLET WELDS NOT GREATER THAN 5/16"
WELDING	PERIODIC	VERIFY WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706; ALL REINFORCING STEEL NOT REQUIRING CONTINUOUS INSPECTION
WELDING	CONTINUOUS	COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS; MULTIPASS FILLET WELDS; SINGLE PASS FILLET WELDS > 5/16"
WELDING	CONTINUOUS	REINFORCING STEEL IN INTERMEDIATE AND SPECIAL CONCRETE MOMENT FRAMES
WELDING	CONTINUOUS	REINFORCING STEEL AT BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS
WELDING	CONTINUOUS	SHEAR REINFORCEMENT
STRUCTURAL DETAILS	PERIODIC	INSPECT STEEL FRAME FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS FOR MEMBER SIZES AND LOCATIONS, BRACING, AND CONNECTIONS

NOTES:
1. SAW-CUT CONTROL JOINTS TO BE CUT AS SOON AS SURFACE WILL NOT BE TORN, ABRADED, OR OTHERWISE DAMAGED BY CUTTING ACTION. (WITHIN 8 TO 10 HR. OF BURNISHING)
2. SPACE CONTROL JOINTS AT 15'-0" MAX. FOR INTERIOR SLABS UNO ON PLANS.
3. CONSTRUCTION JOINTS TO BE USED AT END OF EACH POUR.

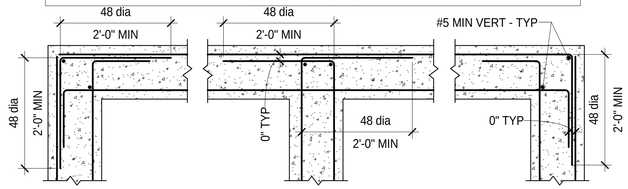


CONSTRUCTION JOINT **CONTROL JOINT**

A S1.2 TYPICAL SLAB-ON-GRADE CONSTRUCTION & CONTROL JOINT DETAILS

N.T.S.

NOTES:
1. WHERE SINGLE CURTAIN OF REINFORCING OCCURS, BEND BARS AS SHOWN FOR OUTSIDE BARS.
2. FOR MORE THAN 2 BARS PER LAYER, EXTEND INNER BARS 12" INTO PERPENDICULAR FOOTING. OUTER BARS SHALL BE PLACED AS INDICATED.
3. CORNER BARS TO MATCH WALL REINFORCEMENT.

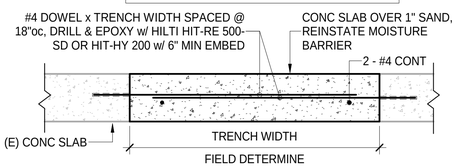


PLAN OF ALT CORNER **PLAN OF INTERSECTION** **PLAN OF TYPICAL CORNER**

B S1.2 TYP CONCRETE WALL REINFORCEMENT

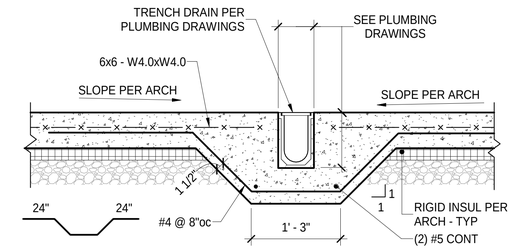
N.T.S.

NOTES:
1. NEW SLAB TO BE 4,000 PSI
2. MATCH EXISTING SLAB DEPTH
3. COORD w/ARCH & PLUMBING DRAWINGS



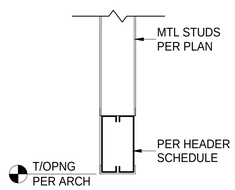
C S1.2 TYP TRENCH REPAIR DETAIL

N.T.S.



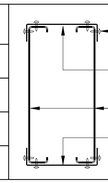
D S1.2 TYPICAL TRENCH DRAIN DETAIL

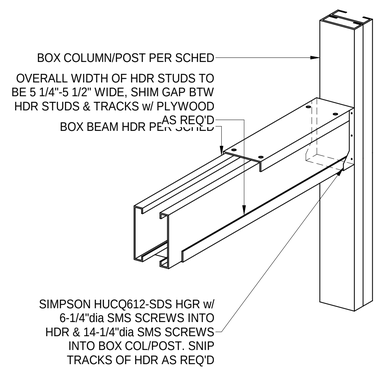
N.T.S.



HEADER SCHEDULE

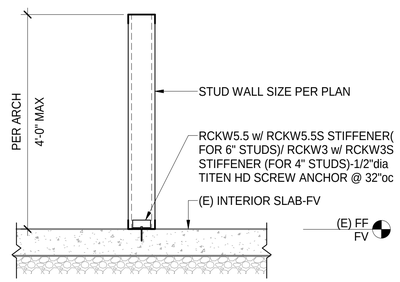
OPENING WIDTH	HEADER
1'-0" TO 4'-0"	600S162-43
4'-1" TO 8'-0"	800S162-43
8'-1" TO 12'-0"	1000S162-43





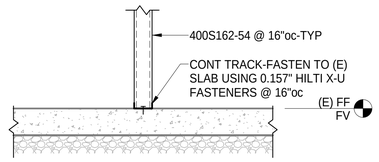
E S1.2 BOX HDR TO BOX BM DETAIL

N.T.S.



F S1.2 TYPICAL KNEEWALL CONX.

N.T.S.



G S1.2 TYPICAL STUD WALL CONX.

N.T.S.

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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica case engineering
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
F 636. 349.1730
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SHEET NUMBER: S1.2

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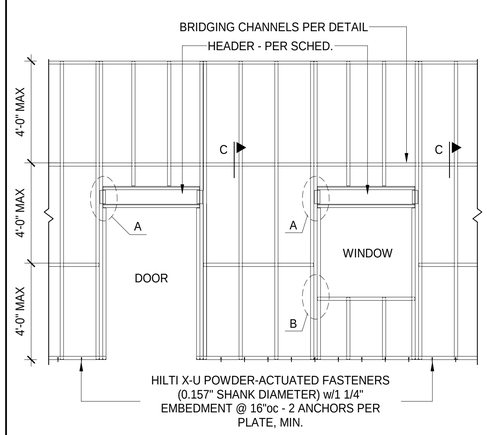
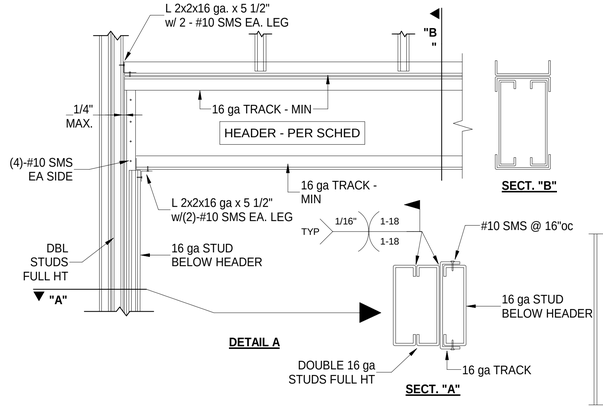
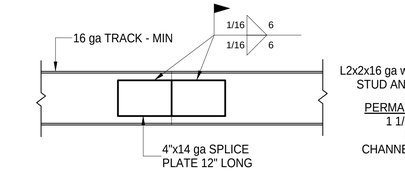
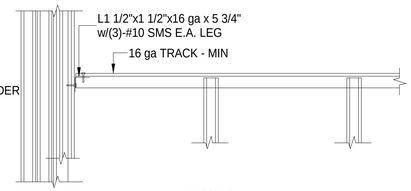
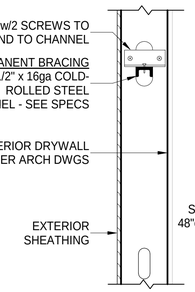
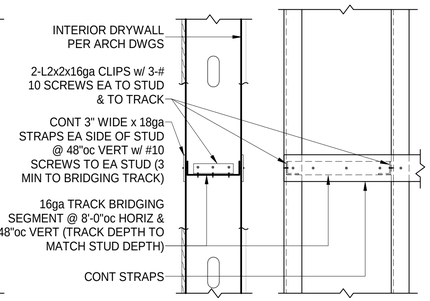












A S1.3 TYPICAL LIGHT GAUGE COLD-FORMED STRUCTURAL STEEL STUD WALL FRAMING DETAILS

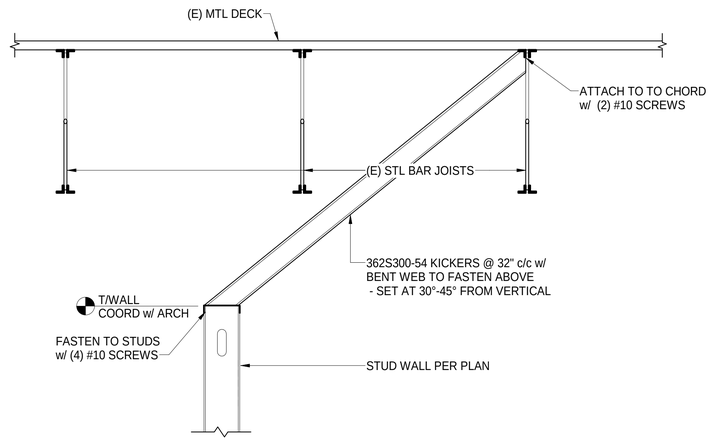
N.T.S.

B S1.3 TYPICAL CMU WALL OPENING w/ 2L STEEL LINTEL IN (E) CMU

N.T.S.

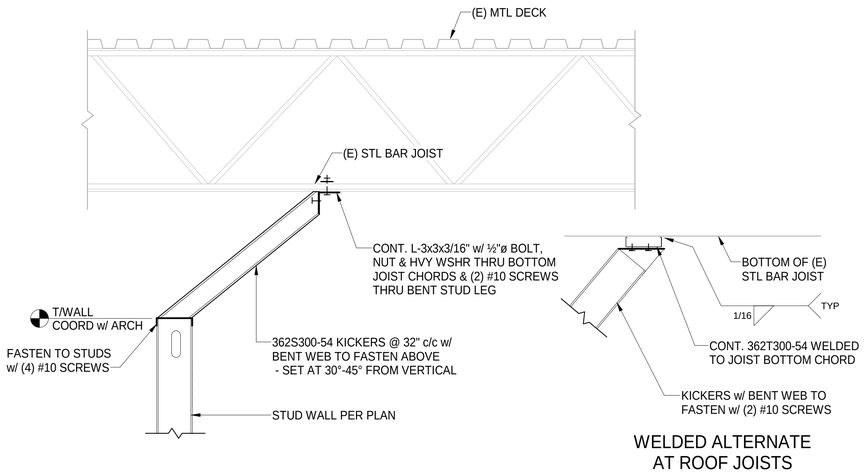
C S1.3 TYP BEAM/HSS COLUMN CONX.

N.T.S.



D S1.3 TYPICAL INTERIOR WALL BRACING TO STRUCTURE-PARALLEL TO JOIST

N.T.S.



E S1.3 TYPICAL INTERIOR WALL BRACING TO STRUCTURE - PERPENDICULAR TO JOISTS

N.T.S.

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108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

Ædifica case engineering
St. Louis - Montreal
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
F 636. 349.1730
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SHEET NUMBER:

S1.3

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A / S2.1 **TYPICAL CMU WALL IN-FILL ELEVATION**

N.T.S.

STUD WALL LEGEND

- -DENOTES 600S162-54 KNEEWALL
- -DENOTES 400S162-54 KNEEWALL
- -DENOTES 400S162-54 11'-0" TALL WALL-UNO
- -DENOTES 400S162-54 12'-0" TALL WALL-UNO

NOTE:
1. COORDINATE ALL INTERIOR STUD WALL LOCATIONS/DIMENSIONS AND DESIGNATIONS WITH ARCHITECTURAL DRAWINGS.
2. COORDINATE ALL NEW WALL OPENING/INFILL LOCATIONS WITH ARCHITECTURAL DRAWINGS.

EXISTING CMU WALL LEGEND

- -DENOTES INFILL OF EXISTING CMU WALL PER DETAIL A/S2.1.
- -DENOTES NEW CMU WALL OPENING IN (E) CMU WALL PER DETAIL B/S1.3

(E) PARTIAL FLOOR PLAN

PLAN NOTES

SCALE: 1/8" = 1'-0"

1. SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. SEE ARCHITECTURAL DRAWINGS FOR STAIRS, DIMENSIONS, SECTIONS, AND ELEVATIONS NOT SHOWN HEREON.
3. ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"

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Eureka, MO 63025

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St. Louis, MO 63026
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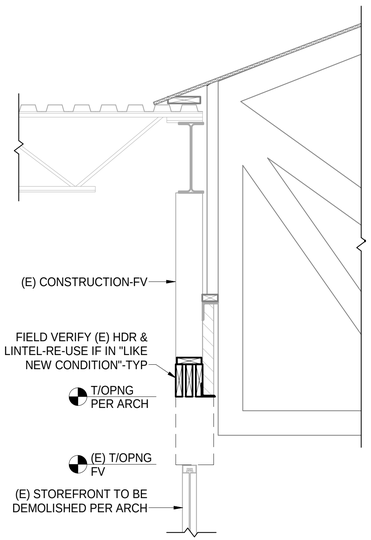
STATE OF MISSOURI STEPHEN J SACKS NUMBER PE-2010018010 PROFESSIONAL ENGINEER

SHEET NUMBER:

S2.1

ACE - ZZMB -



A S2.2 **FRAMING SECTION**
N.T.S.

(E) PARTIAL ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

PLAN NOTES

1. SEE SHEETS S1.1-S1.3 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0"

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OVEREALL (E) ROOF FRAMING PLAN

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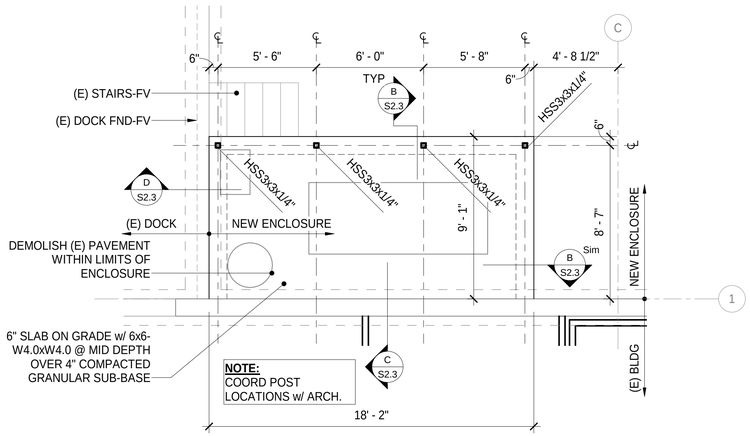
SHEET NUMBER:

S2.2

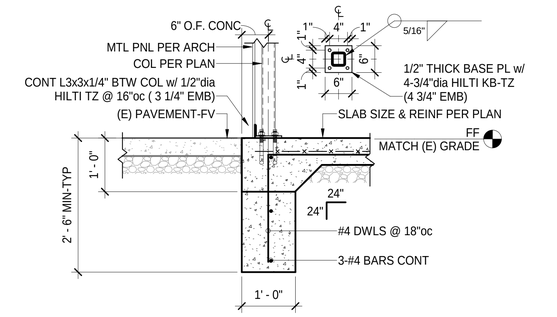
ACE - ZZMB -



A S2.3 OUTDOOR ENCLOSURE FOUNDATION PLAN

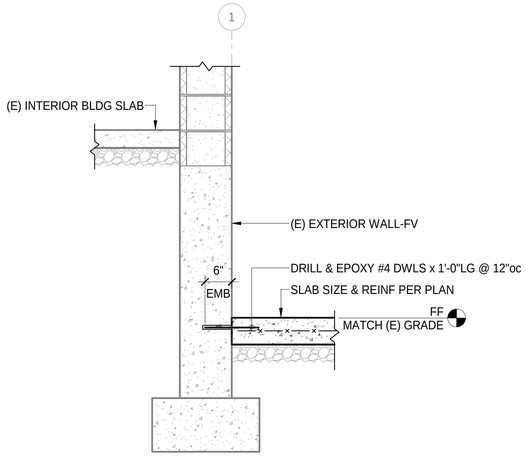
1/4" = 1'-0"

ANCHORAGE SCHEDULE	
GLYCOL CHILLER	SIMPSON STRONG BOLT 2, 4-1/2"dia ANCHORS (3" EMB)
AIR COMPRESSOR	SIMPSON STRONG BOLT 2, 4-1/2"dia ANCHORS (3" EMB)
CO2 TANK	SIMPSON STRONG BOLT 2, 4-1/2"dia ANCHORS (3" EMB)



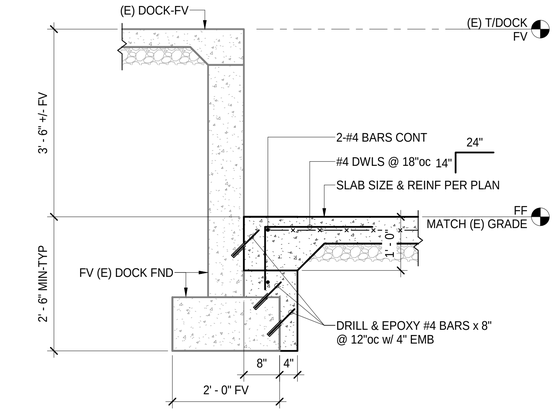
B S2.3 FOUNDATION SECTION

3/4" = 1'-0"



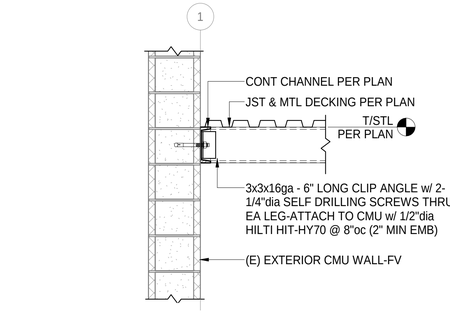
C S2.3 FOUNDATION SECTION

3/4" = 1'-0"



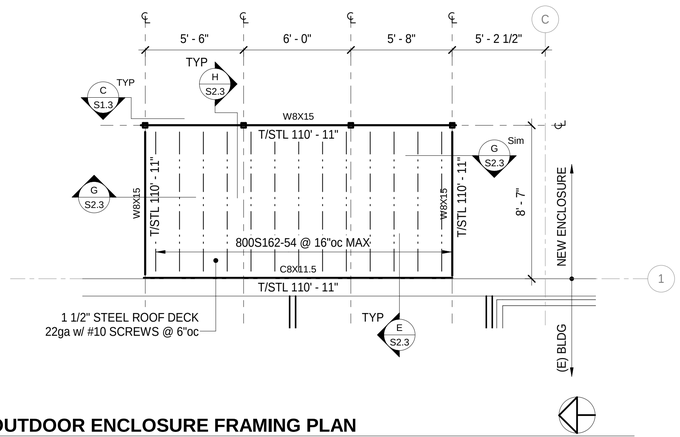
D S2.3 FOUNDATION SECTION

3/4" = 1'-0"



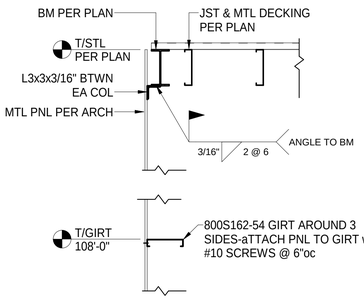
E S2.3 FRAMING SECTION

3/4" = 1'-0"



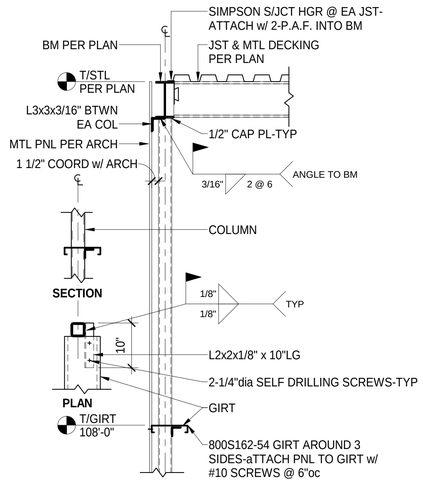
F S2.3 OUTDOOR ENCLOSURE FRAMING PLAN

1/4" = 1'-0"



G S2.3 FRAMING SECTION

3/4" = 1'-0"



H S2.3 FRAMING SECTION

3/4" = 1'-0"

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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village
Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica case engineering
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St. Louis, MO 63026
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NUMBER PE-2010021
PROFESSIONAL ENGINEER

SHEET NUMBER:

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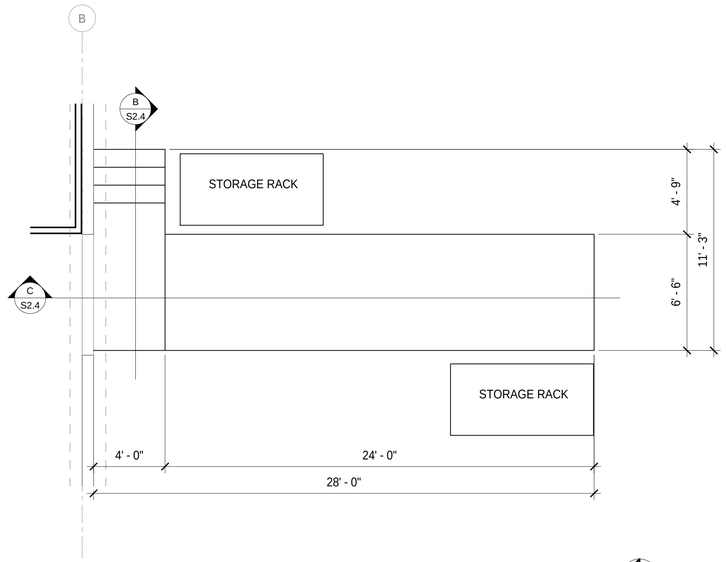
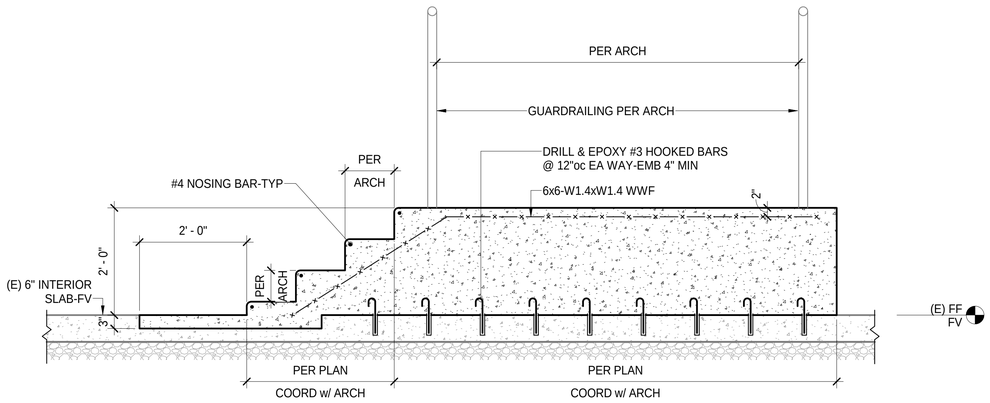
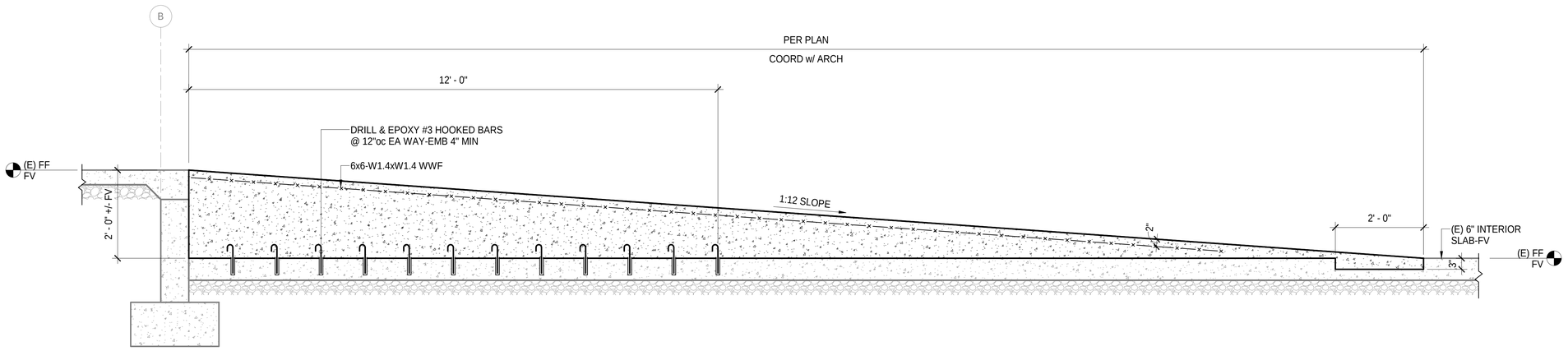


A INDOOR RAMP PLAN
S2.4 1/4" = 1'-0"



B FOUNDATION SECTION
S2.4 3/4" = 1'-0"



C FOUNDATION SECTION
S2.4 3/4" = 1'-0"

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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica | case engineering
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
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STEPHEN J. SACCO
NUMBER A-2178
PROFESSIONAL ENGINEER

SHEET NUMBER:

S2.4

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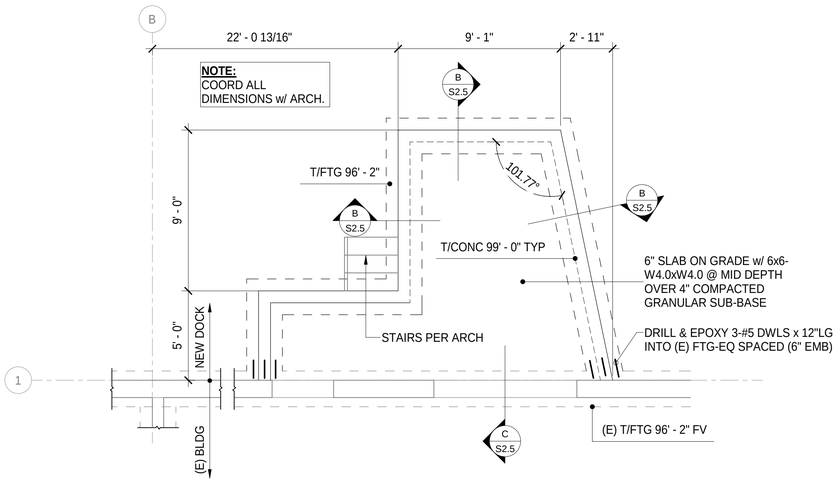
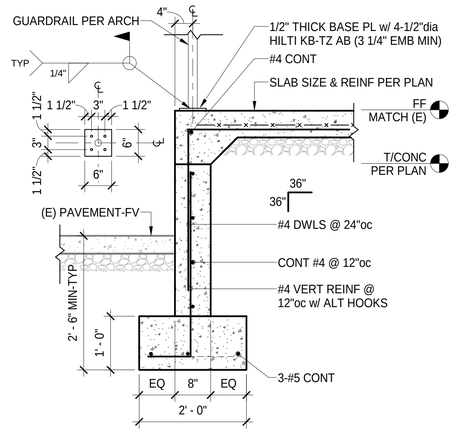
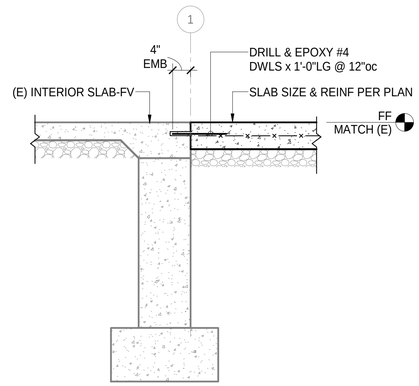


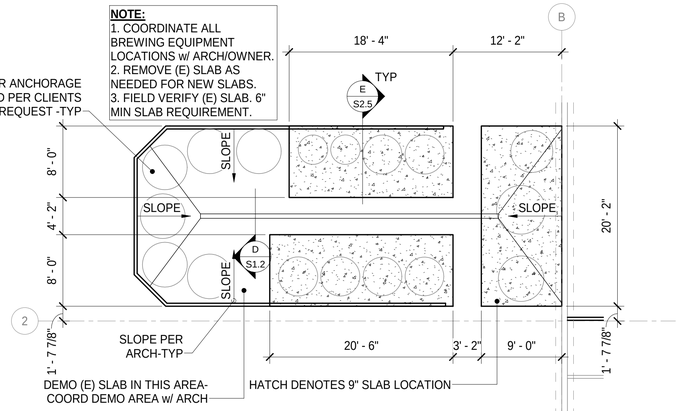
A NEW EXTERIOR DOCK FOUNDATION PLAN
S2.5 **1/4" = 1'-0"**



B FOUNDATION SECTION
S2.5 **3/4" = 1'-0"**

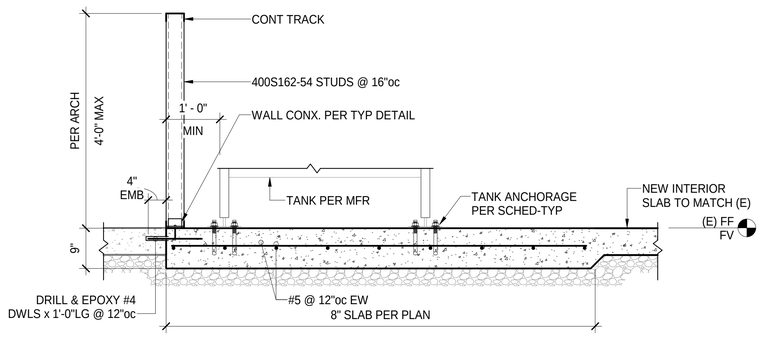


C FOUNDATION SECTION
S2.5 **3/4" = 1'-0"**



BREWING TANK SCHEDULE	
TANK	ANCHORAGE
10 BBL XL MASH/LAUTER	4 - 1/2"dia SIMPSON STRONG BOLT 2 (3 1/4" EMB)
10 BBL KETTLE/WHIRLPOOL	4 - 1/2"dia SIMPSON STRONG BOLT 2 (3 1/4" EMB)
20 BBL HLT	4 - 3/4"dia SIMPSON STRONG BOLT 2 (5 3/4" EMB)
5 BBL FERMENTER	3 - 1/2"dia SIMPSON STRONG BOLT 2 (3 1/4" EMB)
20 BBL FERMENTER	4 - 3/4"dia SIMPSON STRONG BOLT 2 (5 3/4" EMB)
20 BBL BRITE TANK	4 - 3/4"dia SIMPSON STRONG BOLT 2 (5 3/4" EMB)
20 BBL FOEDER	TBD

D BREWING TANK SLAB PLAN
S2.5 **1/8" = 1'-0"**



E FOUNDATION SECTION
S2.5 **3/4" = 1'-0"**

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p: 858.384.7795 e: info@hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica case engineering
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
F 636. 349.1730
aedificacase.com
mechanical
electrical
plumbing
fire protection
structural
CERTIFICATE OF AUTHORITY NO. E-2000155319-D

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TANK SLAB PLANS &
DETAILS

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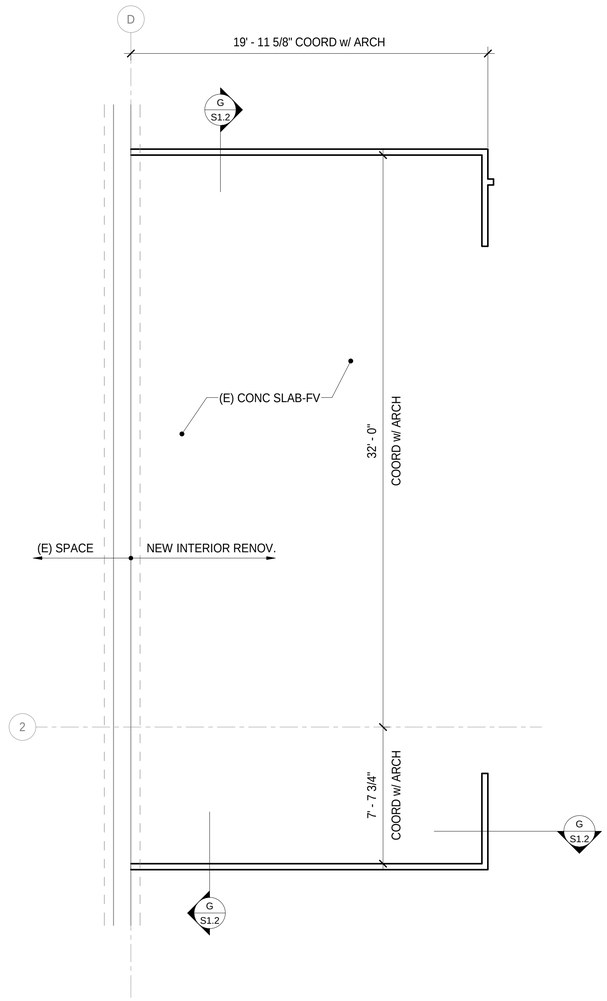
SHEET NUMBER:

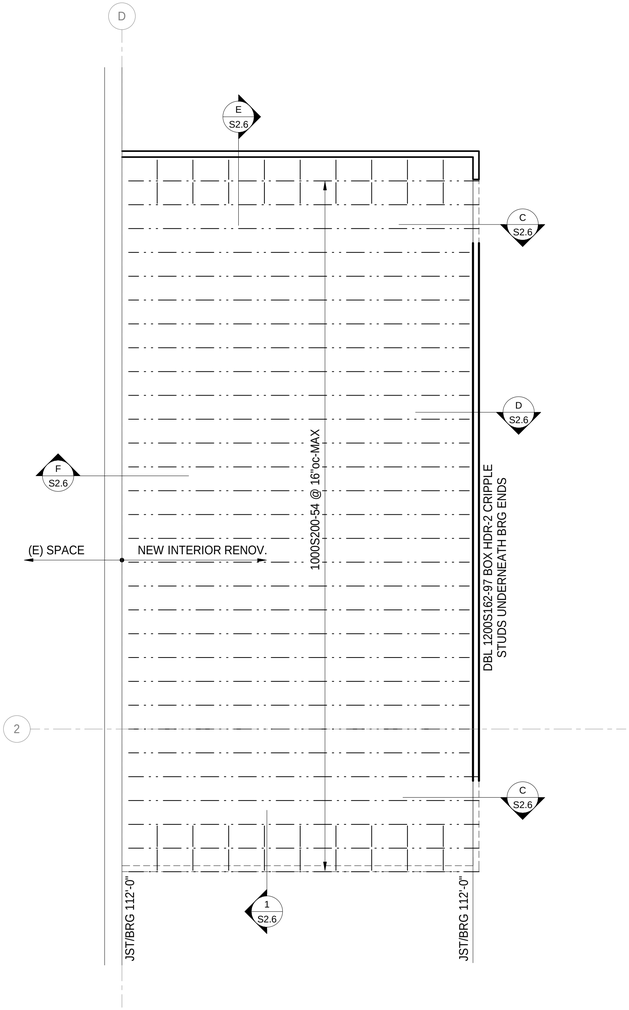
S2.5

ACE - ZZMB -



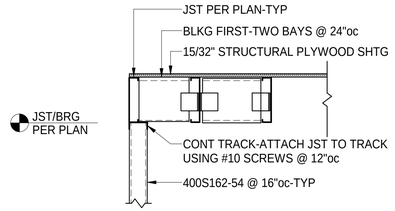
A S2.6 INTERIOR PRIVATE DINING PLAN

1/4" = 1'-0"



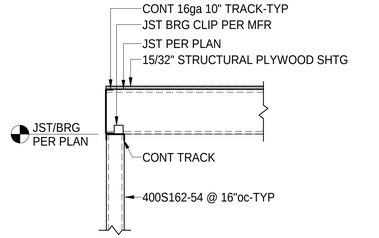
B S2.6 INTERIOR PRIVATE DINING FRAMING PLAN

1/4" = 1'-0"



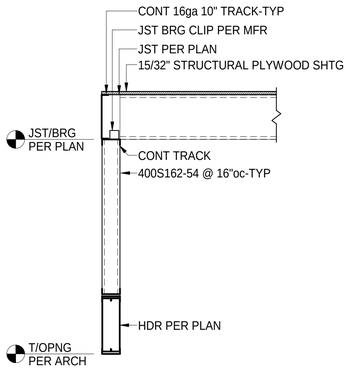
1 S2.6 FRAMING SECTION

3/4" = 1'-0"



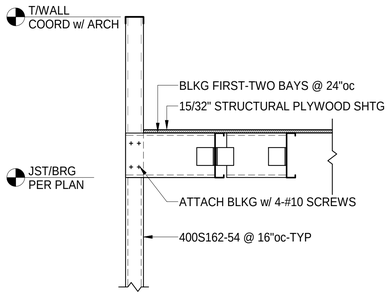
C S2.6 FRAMING SECTION

3/4" = 1'-0"



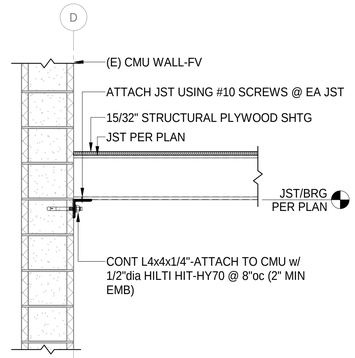
D S2.6 FRAMING SECTION

3/4" = 1'-0"



E S2.6 FRAMING SECTION

3/4" = 1'-0"



F S2.6 FRAMING SECTION

3/4" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica | case engineering
796 Merus Court
St. Louis, MO 63026
T 636. 349.1600
F 636. 349.1730
aedificacase.com
mechanical
electrical
plumbing
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CERTIFICATE OF AUTHORITY NO. E-2000155319-D

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STATE OF MISSOURI STEPHEN J. SACRO NUMBER PE-2010021 PROFESSIONAL ENGINEER

SHEET NUMBER:

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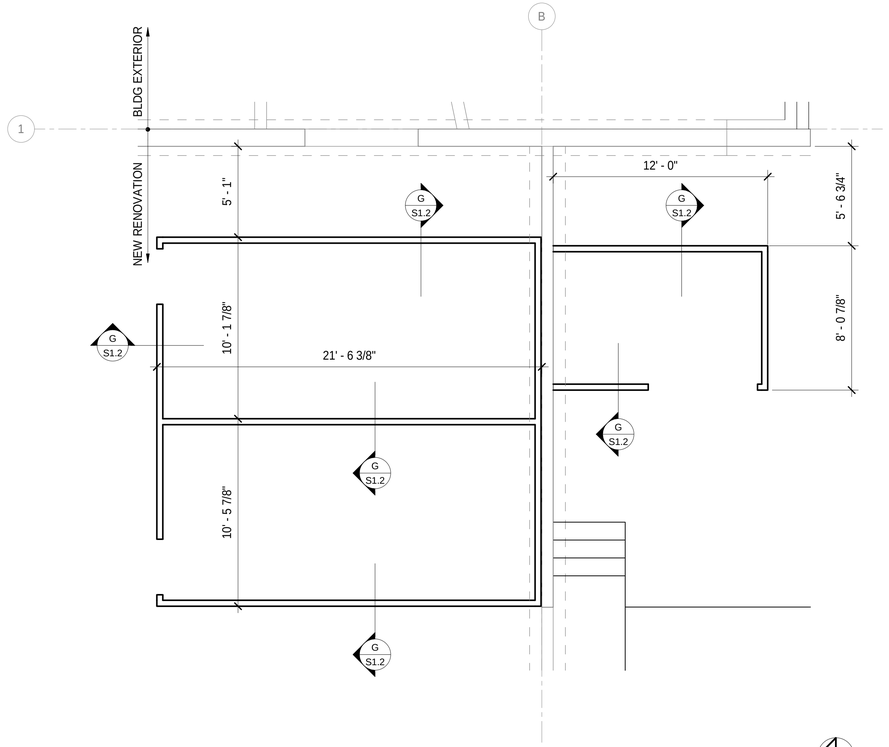
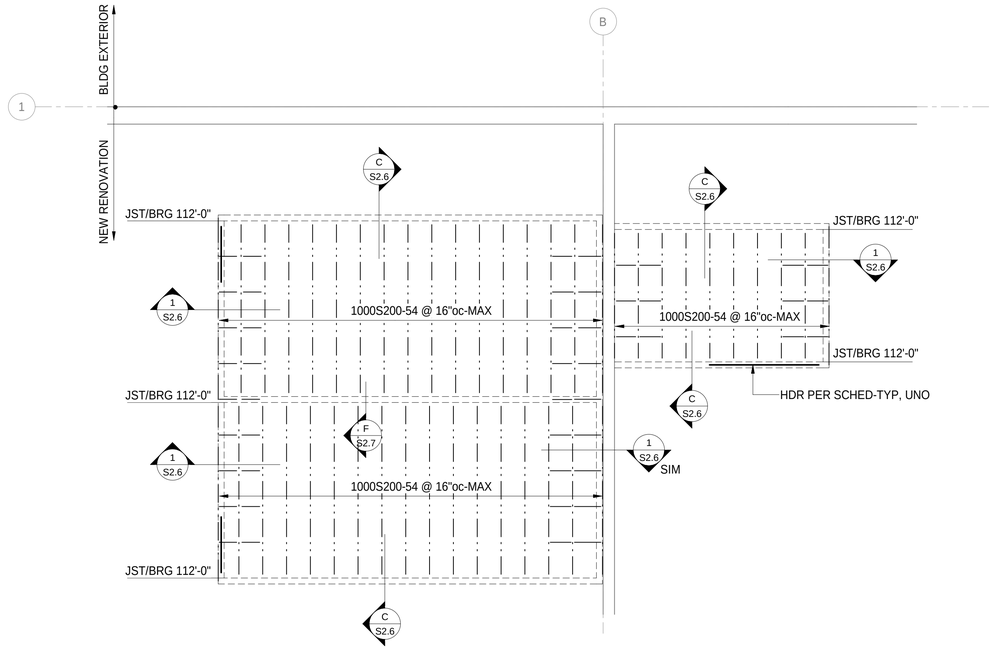
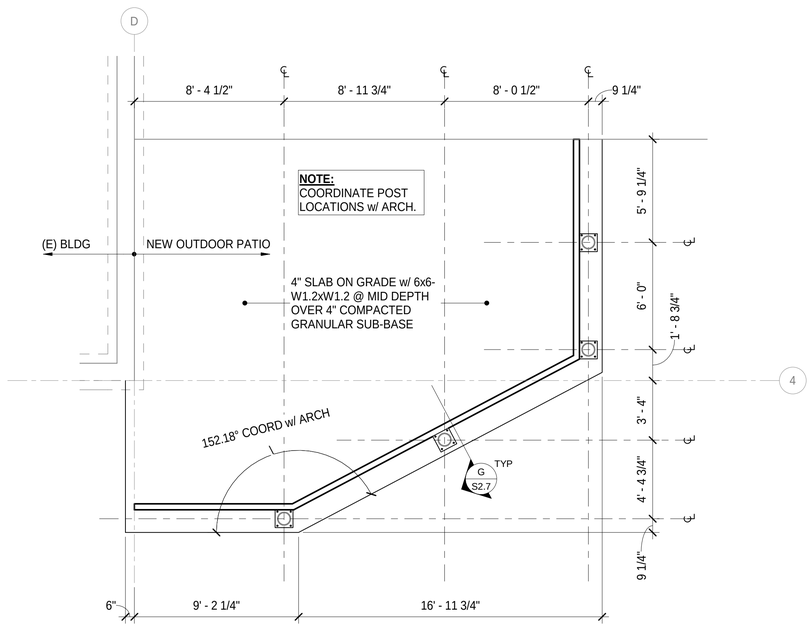


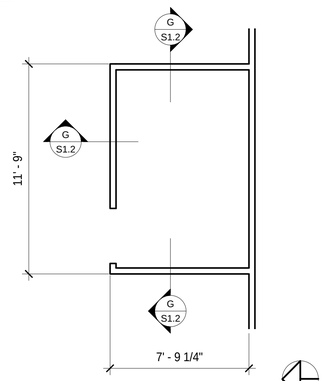
A RESTROOM & GRAIN ROOM FLOOR PLAN
S2.7 **1/4" = 1'-0"**



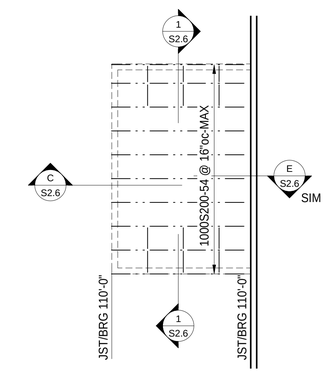
B RESTROOM & GRAIN ROOM FRAMING PLAN
S2.7 **1/4" = 1'-0"**



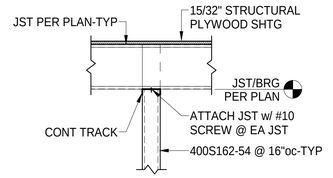
E OUTDOOR PATIO PLAN
S2.7 **1/4" = 1'-0"**



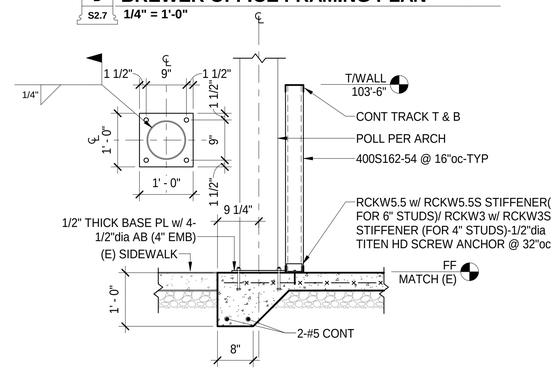
C BREWER OFFICE PLAN
S2.7 **1/4" = 1'-0"**



D BREWER OFFICE FRAMING PLAN
S2.7 **1/4" = 1'-0"**



F FRAMING SECTION
S2.7 **3/4" = 1'-0"**



G FOUNDATION SECTION
S2.7 **3/4" = 1'-0"**

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108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

St. Louis - Montreal
Ædifica case engineering
796 Merus Court
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T 636. 349.1600
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CERTIFICATE OF AUTHORITY NO. E-2000155319-D

ORIGINAL DATED: BID/PERMIT SUBMITTAL 09-18-18

REVISIONS:

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STATE OF MISSOURI · STEPHEN J. DACUS · NUMBER PE-2010021644 · PROFESSIONAL ENGINEER

SHEET NUMBER:

S2.7

ACE - ZZMB -

GENERAL CONSTRUCTION NOTES:

1. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
3. THIS CONTRACTOR, PRIOR TO SUBMITTING HIS BID, SHALL VISIT THE PROJECT SITE TO FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS. REQUESTS FOR COMPENSATION FOR EXTRA WORK, WHICH WOULD HAVE BEEN EVIDENT BY COMPLIANCE WITH THE PREVIOUS STATEMENT, WILL NOT BE CONSIDERED. THE CONTRACTOR SHALL CONDUCT A THOROUGH FIELD INVESTIGATION TO VERIFY WORK SHOWN ON THE DRAWINGS. THE DRAWINGS REFLECT THE BEST AVAILABLE INFORMATION FROM EXISTING PLANS AND SITE INVESTIGATIONS.
4. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW THE EXACT ROUTING OF SYSTEMS OR LOCATION OF COMPONENTS. THE EXACT LOCATIONS, DIMENSIONS AND ALL OTHER DETAILS OF EQUIPMENT ARE THE RESPONSIBILITY OF THIS CONTRACTOR. THIS CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE. PROVIDE ALL DUCT AND PIPE TRANSITIONS REQUIRED FOR CONNECTION TO EQUIPMENT.
5. THIS CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK. WHERE DISCREPANCIES OCCUR BETWEEN THESE DOCUMENTS AND EXISTING CONDITIONS, THE DISCREPANCY SHALL BE REPORTED TO THE OWNER AND/OR ENGINEER FOR EXPEDITING AND RESOLVE.
6. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS OF TEMPORARY PARTITIONS AND/OR TARPS TO KEEP DUST AND DEBRIS WITHIN THE CONSTRUCTION AREA.
7. CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSED BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT.
8. ALL OPENINGS IN WALLS SHALL BE KEPT PROPERLY SEALED AT ALL TIMES, EXCEPT WHEN BEING WORKED ON TO PRECLUDE THE POSSIBILITY OF FLOODING DUE TO STORM OR OTHER CAUSES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT, AND ENVIRONMENTAL CONDITIONS.
10. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK. ALL OFFSETS IN PIPING AND DUCTS TO AVOID OBSTRUCTIONS SHALL BE PROVIDED AT NO COST TO THE OWNER.
11. CONTRACTOR SHALL REFER TO THE COMPLETE SET OF CONTRACT DOCUMENTS INCLUDING SPECIFICATIONS AND OTHER TRADES FOR A FULL UNDERSTANDING OF ALL WORK REQUIRED.
12. WHERE USED THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
13. PROVIDE ALL REQUIRED RIGGING TO ACCOMMODATE THE REMOVAL & INSTALLATION OF ALL EQUIPMENT.
14. PROVIDE ACCESS PANELS FOR ALL CONCEALED DAMPERS, VALVES, AND EQUIPMENT.
15. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.
16. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF REGISTERS, DIFFUSERS, AND GRILLES.
17. CONTRACTOR SHALL SPRAY PAINT INSIDE OF DUCT BLACK, BEHIND ALL GRILLES AND REGISTERS.
18. ALL DUCTWORK AND PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A NEAT AND WORKMANLIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. DUCTWORK AND PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED.
19. IF A SECTION OF DUCT OR PIPE IS NOT LABELED FOR SIZE, THEN THE LARGER SIZE INDICATED ON THE DRAWINGS SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSERS SHALL EQUAL DIFFUSER NECK SIZE UNLESS OTHERWISE NOTED.
20. PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.
21. PROVIDE CONDENSATE PUMPS THROUGHOUT CONDENSATE DRAINAGE SYSTEM AS REQUIRED TO PROPERLY REMOVE CONDENSATE. PROVIDE A PER PUMP LINE-ITEM ALLOWANCE.
22. REFRIGERANT PIPE SIZING SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. LENGTH OF PIPE, ELEVATION CHANGE AND EQUIPMENT ORIENTATION SHALL BE TAKEN INTO ACCOUNT.
23. SUCCESSFULLY PRESSURE TEST ALL REROUTED PIPING SYSTEMS. TEST SHALL BE PERFORMED AT TWICE SYSTEM OPERATING PRESSURES. REPAIR AND RETEST AS REQUIRED UNTIL SYSTEMS PROVE TIGHT.
24. ALL ROOF MOUNTED EQUIPMENT SHALL BE INSTALLED A MINIMUM OF 10' FROM THE ROOF EDGE. EQUIPMENT INSTALLED CLOSER THAN 10' SHALL REQUIRE THE INSTALLATION OF GUARD RAILS.
25. ALL CONCEALED ELECTRICAL CONNECTIONS SHALL BE HARD WIRED. PLUGS SHALL NOT BE USED AS A DISCONNECTING MEANS IN CONCEALED LOCATIONS.
26. CONTRACTOR SHALL PROVIDE ALL TEMPERATURE CONTROLS INCLUDING WIRING, TUBING, AND THERMOSTATS (WITH LOCKING COVERS) AND ALL MISCELLANEOUS APPURTENANCES TO MEET THE INTENT OF THESE DOCUMENTS. THERMOSTATS SHALL BE INSTALLED 48" AFF.
27. DUCT SMOKE DETECTORS SHALL BE FURNISHED BY ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCTWORK BY MECHANICAL CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR.
28. ALL FRESH AIR INTAKES & DIRECT VENTS SHALL TERMINATE AT LEAST 10' HORIZONTALLY FROM ANY GAS METERS.

GENERAL RENOVATION NOTES:

1. ALL SHUT DOWNS OF EXISTING SYSTEMS SHALL BE SCHEDULED AND APPROVED BY THE OWNER PRIOR TO COMMENCING WITH WORK.
2. NO DUCTWORK, PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED, OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE OWNER AND/OR ENGINEER TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL, OR DISCONNECTION, 1 WEEK NOTICE MUST BE GIVEN TO THE OWNER INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG A PERIOD.
3. USE OF THE OWNER'S ELEVATORS AND BUILDING CORRIDORS FOR HANDLING OF THE OWNER'S AND REMOVED EQUIPMENT AND MATERIALS SHALL BE AT THE DIRECTION OF THE OWNER AND SHALL BE COORDINATED WITH HIS OPERATIONS.
4. ALL ITEMS REMOVED SHALL BECOME PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS PER OWNER'S INSTRUCTIONS, UNLESS INDICATED OTHERWISE. ALL ITEMS WHICH ARE NOT TO BE STORED ON SITE BY OWNERS SHALL BE REMOVED FROM THE BUILDING IMMEDIATELY.
5. DISCONNECT AND REMOVE ALL EXISTING EQUIPMENT, PIPING, DUCTWORK, FLUES, REGISTERS, SUPPORTS, HANGERS, AND ALL OTHER MECHANICAL COMPONENTS MADE OBSOLETE BY THIS PROJECT.
6. PRIOR TO RENOVATION, CONTRACTOR TO RECORD ALL SUPPLY & RETURN MAIN AIRFLOWS & SUBMIT A COPY TO THE ENGINEER. ALL READINGS SHALL BE PERFORMED BY A CERTIFIED NEBB CONTRACTOR. COMPARE NEW EQUIPMENT VALUES & ALERT DISCREPANCIES FOR ENGINEER FEEDBACK. AT THE END OF THE PROJECT EXISTING SYSTEMS SHALL BE BALANCED TO PRE-CONSTRUCTION VALUES OR ADJUSTED VALUES BASED ON PRE-CONSTRUCTION TESTING ENGINEERING FEEDBACK.
7. ALL NEW, RELOCATED, OR EXISTING EQUIPMENT AFFECTED BY THIS SCOPE OF WORK SHALL BE REBALANCED BEFORE BEING PLACED IN SERVICE.
8. PROVIDE ALL REQUIRED CUTTING AND PATCHING AS REQUIRED TO COMPLETE THE INSTALLATION OF NEW MECHANICAL SYSTEM. PATCH ALL SURFACES TO MATCH AND MAINTAIN ALL FIRE RATINGS.
9. EXISTING ROOF CUTTING, FLASHING, SEALING, ETC. TO BE ACCOMPLISHED BY A ROOFING CONTRACTOR APPROVED BY THE EXISTING ROOF MANUFACTURER AND INSTALLED IN ACCORDANCE WITH ROOF MANUFACTURER'S RECOMMENDATIONS SO AS NOT TO VOID ROOF WARRANTY.
10. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS SUCH ON THE DRAWINGS. ALL MATERIALS AND EQUIPMENT LISTED AS NEW MUST BE NEW.
11. THE FIRE PROOFING OF THE EXISTING STRUCTURE IS NOT TO BE REMOVED FOR THE INSTALLATION OF HANGERS, SUPPORTS AND DUCTWORK ETC. IF FIRE PROOFING IS DAMAGED, IT SHALL BE REPAIRED AT THE EXPENSE OF THE TRADE.

MECHANICAL SYMBOL LEGEND

AIR DEVICES

- 4-WAY SUPPLY DIFFUSER
- 3-WAY SUPPLY DIFFUSER
- 2-WAY SUPPLY DIFFUSER
- 2-WAY CORNER SUPPLY DIFFUSER
- 1-WAY SUPPLY DIFFUSER
- RETURN REGISTER
- EXHAUST REGISTER
- SIDE WALL SUPPLY DIFFUSER
- SIDE WALL RETURN OR EXHAUST GRILLE

DUCTWORK

- STANDARD SIZE REDUCTION
- ASYMMETRICAL TRANSITION
- SQUARE-TO-ROUND TRANSITION
- STANDARD BRANCH TAKE-OFF
- ROUND BRANCH TAKE-OFF
- STANDARD TEE
- STANDARD TEE WITH TURNING VANES
- SLOPED DUCT RISE
- FIRE DAMPER ACCESS DOOR
- GREASE DUCT ACCESS DOOR
- DUCT RISE
- DUCT DROP
- STANDARD SQUARE ELBOW
- SQUARE ELBOW WITH TURNING VANES
- STANDARD RADIUS ELBOW (R=D)
- FIRE WRAPPED DUCTWORK
- ACOUSTICALLY LINED DUCTWORK
- OPEN ENDED DUCT OUTLET
- OPEN ENDED DUCT INTAKE
- OPEN ENDED DUCT OUTLET W/ SCREEN
- OPEN ENDED DUCT INTAKE W/ SCREEN

CONTROLS

- THERMOSTAT
- TEMPERATURE SENSOR
- DUCT MOUNTED SMOKE DETECTOR

AIR DAMPERS

- MANUALLY ADJUSTABLE VOLUME DAMPER
- FIRE DAMPER
- MOTORIZED DAMPER

TAGS

- DIFFUSER TAG
- EQUIPMENT TAG
- REVISION

LEGEND NOTE:
NOT ALL SYMBOLS ARE NECESSARILY USED. ABSENCE OF A SYMBOL ON THE DRAWINGS DOES NOT NECESSARILY MEAN IT IS NOT REQUIRED. REFER TO DETAILS & SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF WORK REQUIRED.

ABBREVIATIONS

GENERAL ABBREVIATIONS:

AAV	AUTOMATIC AIR VENT
ADD'L	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AMS	AIR FLOW MEASURING STATION
ALT	ALTITUDE OR ALTERNATE
AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECT
ATC	AUTOMATIC TEMP. CONTROL
ATM	ATMOSPHERE
AVG	AVERAGE
BDD	BACKDRAFT DAMPER
BG	BLAST GATE DAMPER
BHP	BRAKE HORSEPOWER
BI	BACKWARDS INCLINED
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTH	BTU PER HOUR
CA	COMPRESSED AIR
CDW	CONDENSER WATER
CENT	CENTRIFUGAL
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
C.L.	COLUMN LINE
CND	CONDENSATE
CLG	CEILING OR COOLING
C.O.	CLEAN-OUT
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
COL	COLUMN
CONN	CONNECTION
CONTR	CONTRACTOR
CV	CONSTANT VOLUME
DB	DRY BULB TEMPERATURE
DEG	DEGREE DIRECT
DDC	DIGITAL CONTROL
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DW/DI	DOUBLE WIDTH DOUBLE INLET
DX	DIRECT EXPANSION
EA	EACH OR EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ECH	ELECTRIC CABINET HEATER
EFF	EFFICIENCY
ELEC	ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ENT	ENTER
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST.	EXISTING
F	FAHRENHEIT OR FAN
FA	FREE AREA
FD	FIRE DAMPER (ACCESS DOOR)
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOW SWITCH
FT	FEET
FTR	FINNED TUBE RADIATION
G	GAS
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALL BOARD
HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HGT	HEIGHT
HP	HORSEPOWER
HR	HOUR
HTG	HEATING
HPS	HIGH PRESSURE STEAM
HW	HOT WATER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATT
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LF	LINEAR FEET
LD	LINEAR DIFFUSER
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LVD	LOUVERED DOOR
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTH
MCA	MINIMUM CIRCUIT AMPS
MD	MOTOR OPERATED DAMPER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MPS	MEDIUM PRESSURE STEAM
MUA	MAKE-UP AIR
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
No.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
ODP	OPEN DRIP PROOF
OED	OPEN END DUCT
OV	OUTLET VELOCITY
PD	PRESSURE DROP
PH	PHASE
PHC	PREHEAT COIL
PBG	PLUMBING
POS	PROVIDED BY OTHER SECTION
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSID	PSI DIFFERENTIAL
PSIG	PSI GAUGE
PVC	POLYVINYL CHLORIDE
PRV	PRESSURE REDUCING VALVE
QTY	QUANTITY
R	RADIUS
RA	RETURN AIR
REG	REGISTER
RET	RETURN
REQD	REQUIRED
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RLL	REFRIGERANT LIQUID LINE
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RSL	REFRIGERANT SUCTION LINE
SA	SUPPLY AIR
SCH	SCHEDULE
SD	SMOKE DETECTOR
SEN	SENSIBLE
SHC	SENSIBLE HEAT CAPACITY
SP	STATIC PRESSURE
SPECS	SPECIFICATIONS
SQ	SQUARE
SF	SQUARE FEET
SS	STAINLESS STEEL
STL	STEEL
SUP	SUPPLY
SWSI	SINGLE WITH SINGLE INLET
T	TEMPERATURE
TEL	TELEPHONE
TEFC	TOT. ENCLOSED FAN COOLED
TEMP	TEMPERATURE
TSTAT	THERMOSTAT
TOD	TOP OF DUCT
TON	12,000 BTH
TOP	TOP OF PIPE
TOT	TOTAL
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
V	VENT
VB	VACUUM BREAKER
VD	VOLUME DAMPER
V	VOLTS (ELECTRICAL)
VEL	VELOCITY
W	WIDTH OR WATT
W/	WITH
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WG	WATER GAUGE
WMS	WIRE MESH SCREEN
W/O	WITHOUT
WPD	WATER PRESSURE DROP
WTD	WATER TEMPERATURE DIFF.

CONTROLS ABBREVIATIONS:

ACD	AUTOMATIC CONTROL DAMPER
ACV	AUTOMATIC CONTROL VALVE
AMS	AIR FLOW MEASURING STATION
ALM	ALARM
ATC	AUTOMATIC TEMPERATURE CONTROL
ATS	AIR TEMPERATURE SENSOR
BD	BACKDRAFT DAMPER
BV	BYPASS VALVE
CO2	CARBON DIOXIDE SENSOR
CO	CARBON MONOXIDE SENSOR
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
DDC	DIRECT DIGITAL CONTROL
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE SENSOR
DPV	DIFF. PRESSURE BYPASS VALVE
DSD	DUCT MOUNTED SMOKE DETECTOR
DWDI	DOUBLE WIDTH DOUBLE INLET
ES	END SWITCH
FM	FLOW METER/TRANSMITTER
FZ	FREEZESTAT
H	HUMIDISTAT
H2	HYDROGEN SENSOR
HEPA	HIGH EFF. PARTICULATE AIR FILTER
HGB	HOT GAS BYPASS
HHL	HIGH HUMIDITY LIMIT SENSOR
HOA	HANDS-OFF AUTOMATIC SWITCH
HS	HUMIDITY SENSOR
HZ	HERTZ
LSPS	LOW STATIC PRESSURE SWITCH
LS	LEVEL SENSOR
MD	MOTORIZED DAMPER
NC	NORMALLY CLOSED (POWER LOSS)
NO	NORMALLY OPEN (POWER LOSS)
NOX	NITROGEN OXIDE
OAH	OUTSIDE AIR HUMIDITY SENSOR
OAT	OUTSIDE AIR TEMP. SENSOR
RH	RELATIVE HUMIDITY
S	SWITCH
SP	STATIC PRESSURE SENSOR
SD	SMOKE DETECTOR
SP	STATIC PRESSURE SENSOR
SPD	SPEED CONTROL
S/S	START/STOP
T	THERMOSTAT
TS	TEMPERATURE SENSOR
WTS	WATER TEMPERATURE SENSOR

EQUIPMENT ABBREVIATIONS:

AC	AIR CONDITIONING UNIT
ACU	AC CONDENSING UNIT
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
B	BOILER
BB	BASE BOARD
BC	BRANCH CONTROLLER
BFW	BOILER FEED WATER UNIT
BP	BOILER PUMP
BT	BUFFER TANK
CAC	CRITICAL COOLING AC UNIT
CC	COOLING COIL
CCU	CC CONDENSING UNIT
CH	CHILLER
CP	CIRCULATOR PUMP
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CWC	CHILLED WATER COIL
DC	DRY COOLER
DEF	DISHWASHER EXHAUST FAN
E	EXHAUST GRILLE
EBB	ELECTRIC BASE BOARD
ECH	ELECTRIC CABINET HEATER
ECH	ELECTRIC CEILING HEATER
EF	EXHAUST FAN
ERV	ENERGY RECOVERY VENTILATOR
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
F	FURNACE
FC	FAN COIL UNIT
FPB	FAN POWERED VAV
FT	FINTUBE
GMS	GLYCOL MAKE-UP SYSTEM
GUH	GAS FIRED UNIT HEATER
H	HUMIDIFIER
HP	HEAT PUMP
HPU	HP CONDENSING UNIT
HV	HEATING & VENTILATING UNIT
HWC	HOT WATER COIL
LV	LOUVER
KEF	KITCHEN EXHAUST FAN
MAU	MAKE-UP AIR UNIT
MCC	MOTOR CONTROL CENTER
P	PUMP
PTAC	PACKAGED TERMINAL AC UNIT
R	RETURN GRILLE
RHP	RADIANT HEATING PANEL
RTU	ROOF TOP UNIT
S	SUPPLY DIFFUSER
SA	SOUND ATTENUATOR
SAC	SPLIT AC UNIT
SHP	SPLIT HEAT PUMP
SF	SUPPLY FAN
T	TRANSFER GRILLE
UH	UNIT HEATER
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME BOX
VFD	VARIABLE FREQUENCY DRIVE
WSHP	WATER SOURCE HEAT PUMP

HAUCK ARCHITECTURE
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p:858.384.7795 e:info@hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:
eds ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

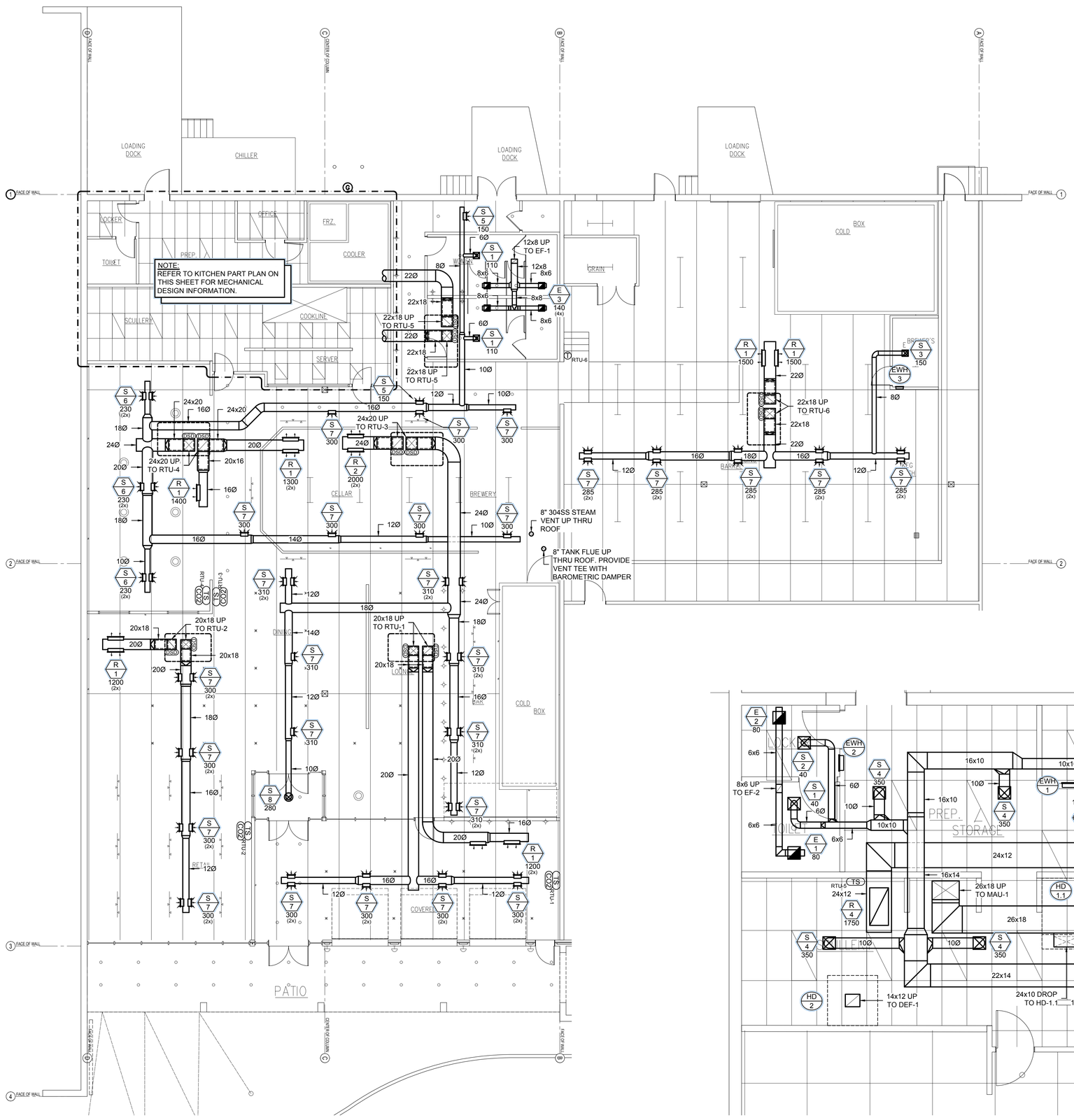
MECHANICAL LEGENDS & NOTES

STAMP:

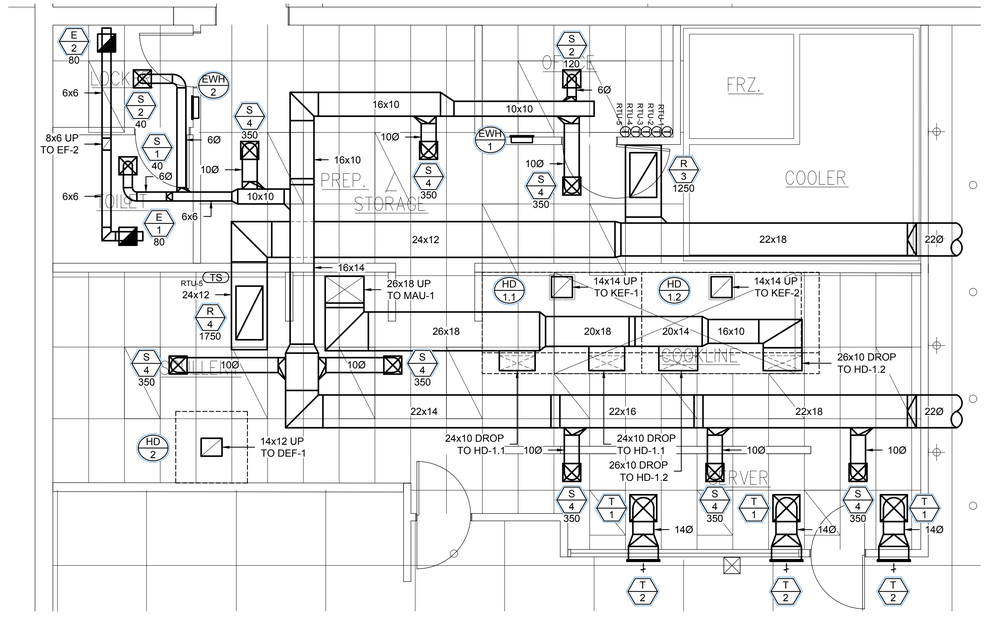
STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

M0.0



MECHANICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"



MECHANICAL KITCHEN PARTIAL PLAN
SCALE: 1/4" = 1'-0"

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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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MECHANICAL ROOF PLAN

SCALE: 1/8" = 1'-0"

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p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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MECHANICAL ROOF PLAN

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WILLIAM T MAYER III
NUMBER PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

M1.2

ROOFTOP UNIT SCHEDULE (BASED ON TRANE)

SYMBOL	MODEL	NOMINAL CAPACITY	TOTAL CFM	O.A. CFM	ESP (IN)	EVAP. FAN RPM	EVAP. FAN HP	COOLING DATA					HEAT PUMP HEATING DATA			ELECTRIC HEATING DATA				ELECTRICAL DATA					WEIGHT (LBS)	NOTES
								EDB °F	EWB °F	OAT °F	TOTAL MBH	SENSIBLE MBH	EDB °F	OAT °F	OUTPUT MBH	KW	MBH	STAGES	LAT °F	EER	IEER	MCA	MOP	VOLTAGE		
RTU-1	WSC072H3	6.0	2400	600	0.5	857	1	83.0	72.0	100.0	80.0	45.3	50.0	0.0	26.6	27.0	92.2	2	95.8	11.4	13.0	106.0	110	208/3/60	850	1,2,3,4,5
RTU-2	WSC072H3	6.0	2400	600	0.5	857	1	83.0	72.0	100.0	80.0	45.3	50.0	0.0	26.6	18.0	61.7	2	84.1	11.4	13.0	82.0	90	208/3/60	850	1,2,3,4,5
RTU-3	WSC120H3	10.0	4000	1000	0.6	1381	2.75	83.0	72.0	100.0	114.1	95.3	60.0	0.0	40.3	36.0	122.9	2	87.8	11.0	12.2	147.0	150	208/3/60	1100	1,2,3,4,5
RTU-4	WSC120H3	10.0	4000	1000	0.6	1381	2.75	80.0	67.0	100.0	114.1	95.3	60.0	0.0	40.3	36.0	122.9	2	87.8	11.0	12.2	147.0	150	208/3/60	1100	1,2,3,4,5
RTU-5	WSC092H3	7.5	3000	600	0.5	725	1	80.0	67.0	100.0	92.3	73.3	60.0	0.0	36.3	27.0	92.2	2	99.7	11.0	12.2	110.0	110	208/3/60	950	1,2,3,4
RTU-6	WSC092H3	7.5	3000	400	0.5	725	1	80.0	67.0	100.0	92.3	73.3	60.0	0.0	36.3	27.0	92.2	2	99.7	11.0	12.2	110.0	110	208/3/60	950	1,2,3,4

NOTES:
1. EER IS AT ARI CONDITIONS.
2. PROVIDE WITH DISCONNECT. REFER TO ELECTRICAL PLANS FOR RATINGS & COORDINATE WITH E.C.
3. PROVIDE WITH ADAPTOR CURB. CONTRACTOR SHALL FIELD COORDINATE CURB REQUIREMENTS.
4. PROVIDE WITH ENTHALPY ECONOMIZER & BAROMETRIC RELIEF.
5. PROVIDE WITH CO2 BASED DEMAND CONTROL VENTILATION.

ELECTRIC HEATER SCHEDULE (BASED ON QMARK)

SYMBOL	MODEL	CFM	KW	MBH	ATR °F	ELECTRICAL DATA		NOTES
						AMPS	VOLTAGE	
EWH-1,2,3	CWH3150F	100	1.5	5.1	47.4	12.5	120/1/60	1,2

NOTES:
1. PROVIDE WITH DISCONNECT, UNIT MOUNTED THERMOSTAT & RECESS MOUNTING KIT.
2. PROVIDE WITH 14GA SECURITY FRONT COVER.

KITCHEN MAKE UP AIR UNIT SCHEDULE (BASED ON GREENHECK)

SYMBOL	MODEL	ASSOCIATED EXHAUST FAN	HEATING					FAN			MOTOR DATA				NOTES
			TYPE	FUEL	MBH IN	MBH OUT	ATR °F	CFM	RPM	ESP	HP	MCA	MOP	VOLTAGE	
MAU-1	XDG-112.1-H10	KEF-1,2	DIRECT	NG	235.7	216.9	60.0	3355	1143	0.5	3	13.9	20	208/3/60	1,2

NOTES:
1. MAU TO BE FURNISHED BY KITCHEN CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
2. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.

EXHAUST FAN SCHEDULE

SYMBOL	MODEL	TYPE	DRIVE	CFM	ESP (IN)	FAN RPM	MOTOR DATA			WEIGHT (LBS)	NOTES
							POWER	FLA	VOLTAGE		
EF-1	G-098-VG	ROOF	DIRECT	460	0.7	1462	1/4	-	115/1/60	80	1,5,6,7
EF-2	G-097-VG	ROOF	DIRECT	160	0.6	1341	1/4	-	115/1/60	80	1,5,6,7
KEF-1	XRUB-141-10	ROOF	BELT	2140	0.6	1473	1	4.6	208/3/60	150	2,3,4
KEF-2	XRUB-141-10	ROOF	BELT	2050	0.6	1463	1	4.6	208/3/60	150	2,3,4
DEF-1	XRUD-099-VG	ROOF	DIRECT	600	0.3	1278	1/4	5.8	115/1/60	100	2,3,4,6

NOTES:
1. BASED ON GREENHECK.
2. BASED ON ACCUREX.
3. FAN SHALL BE FURNISHED BY KITCHEN CONTRACTOR & INSTALLED BY MECHANICAL CONTRACTOR.
4. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.
5. PROVIDE WITH SOUND ATTENUATING ROOF CURB & MOTORIZED DAMPER.
6. PROVIDE WITH E.C. MOTOR WITH MOTOR MOUNTED POTENTIOMETER FOR BALANCING.
7. ESP INCLUDES LOSSES DUE TO CURB & DAMPER.

EXHAUST HOOD AIRFLOW SCHEDULE

SYMBOL	SERVING	ASSOCIATED EXHAUST FAN	EXHAUST					SUPPLY PLENUM					NOTES
			TOTAL CFM	RISERS				TOTAL CFM	RISERS				
				QUANTITY	SIZE	CFM EA.	SP (inwg)		QUANTITY	SIZE	CFM EA.	SP (inwg)	
HD-1.1	COOKLINE	KEF-1	2140	1	14x14	2140	0.45	1590	2	26x10	795	0.14	1,2
HD-1.2	COOKLINE	KEF-2	2050	1	14x14	2050	0.42	1765	2	24x10	882	0,14	1,2
HD-2	DISHWASHER	DEF-1	600	1	14x12	600	0.03	NOT APPLICABLE					1,2

NOTES:
1. HOOD TO BE FURNISHED BY KITCHEN CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
2. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.

AIR DEVICE SCHEDULE (BASED ON PRICE)

SYMBOL	MODEL	TYPE	THROW	CFM	SIZE	NOTES
S-1	SCD	SQ. CONE	4-WAY	40-110	6Ø	1,3
S-2	SCD	SQ. CONE	4-WAY	40-120	6Ø	2,4
S-3	SCD	SQ. CONE	4-WAY	150	8Ø	1,3
S-4	10	PERF RETURN	-	350	14x14	2,5,6,10
S5	520	LVD. GRILLE	DOUBLE DEF.	150	14x6	1,7,8
S-6	520	LVD. GRILLE	DOUBLE DEF.	230	12x8	1,7,8
S-7	520	LVD. GRILLE	DOUBLE DEF.	280-310	16x8	1,7,8
S-8	RCD	RND. CONE	ROUND	280	10Ø	1
R-1	535	LVD. GRILLE	-	1200-1500	48x14	1,8
R-2	535	LVD. GRILLE	-	2000	48x20	1,8
R-3	535	LVD. GRILLE	-	1250	32x20	2,9
R-4	535	LVD. GRILLE	-	1750	44x20	2,9
E-1	535	LVD. GRILLE	-	80	6x6	1,7
E-2	535	LVD. GRILLE	-	80	6x6	2,5,7
E-3	535	LVD. GRILLE	-	140	8x8	1,7
T-1	535	LVD. GRILLE	-	-	18x18	2,5,10
T-2	535	LVD. GRILLE	-	-	20x14	1

NOTES:
1. PROVIDE WITH SURFACE MOUNTING FRAME.
2. PROVIDE WITH T-BAR MOUNTING FRAME.
3. PROVIDE WITH 20x20 FACE SIZE.
4. PROVIDE WITH 24x24 FACE SIZE.
5. PROVIDE WITH 2x2 LAY-IN PANEL.
6. RETURN GRILLE USED A SUPPLY DIFFUSER.
7. PROVIDE WITH OPPOSED BLADE DAMPER.
8. PROVIDE WITH SPIRAL DUCT BOOT.
9. PROVIDE WITH 4x2 LAY-IN PANEL.
10. PROVIDE WITH SQUARE-TO-ROUND TRANSITION.

* - S-SUPPLY, R-RETURN, E-EXHAUST, T- TRANSFER
** - SIZE
*** - CFM

AIR BALANCE SCHEDULE

UNIT	SERVING	KITCHEN	PUBLIC AREA	OTHER
RTU-1	PATIO DINING	-	+ 600	-
RTU-2	GAME DINING	-	+ 600	-
RTU-3	BAR DINING	-	+ 1000	-
RTU-4	PRIVATE DINING	-	+ 1000	-
RTU-5	KITCHEN	600	-	-
RTU-6	BARREL AGING	-	-	+ 400
MAU-1	HD-1.1	1590	-	-
	HD-1.2	1765	-	-
KEF-1	HD-1.1	- 2140	-	-
KEF-2	HD-1.2	- 2050	-	-
DEF-1	DISHWASHER	- 600	-	-
EF-1	RESTROOMS	-	- 480	-
EF-2	LOCKER ROOM	- 160	-	-
TOTALS		- 1535	+ 2720	NOT PART OF SPACE AIR BALANCE
TOTAL SPACE		+ 1185		

NOTE:
AIR BALANCE IS CALCULATED WITH ALL EQUIPMENT OPERATING AT DESIGN CAPACITY AND ECONOMIZERS OFF.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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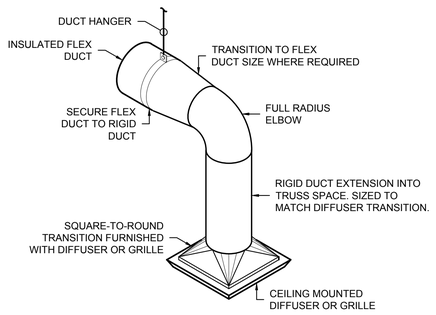
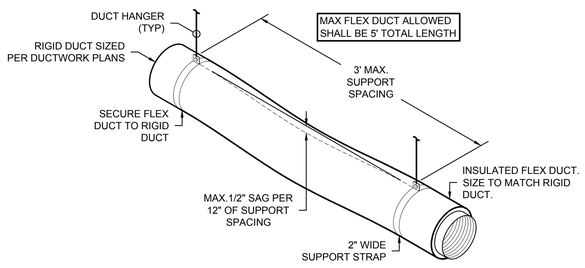
M2.1



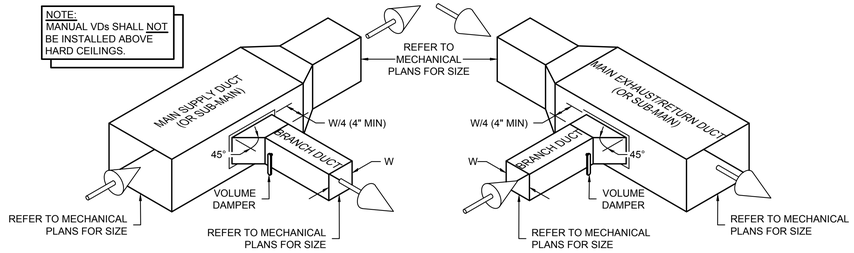
DIFFUSER CONNECTION DETAIL

NTS



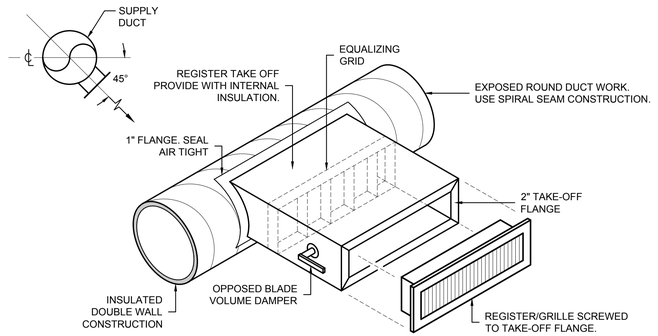
FLEX DUCT SUPPORT DETAIL

NTS



BRANCH DUCT CONNECTIONS

NTS



EXPOSED DUCT REGISTER CONNECTION

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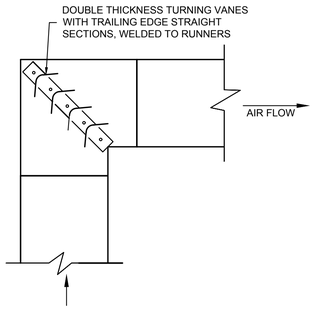
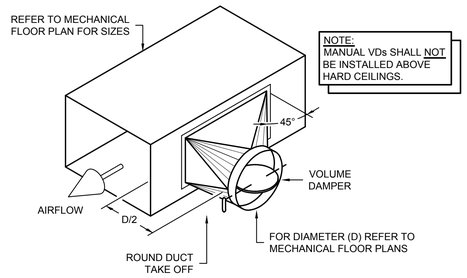


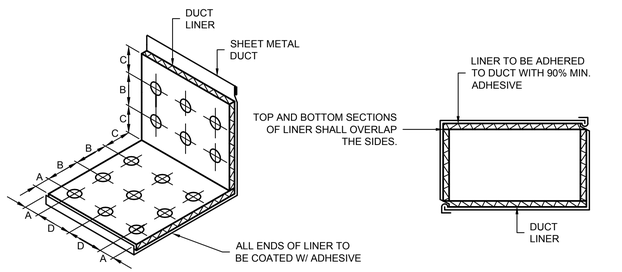
TYPICAL SQUARE ELBOW

NTS



ROUND DUCT TAKE OFF DETAIL

NTS



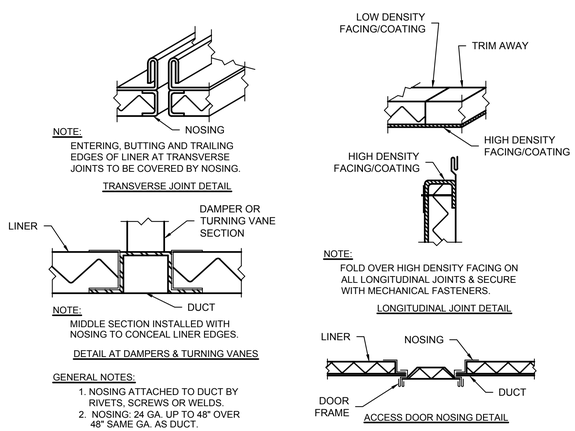
NOTES:

1. METAL FASTENERS SHALL BE OMARK INSUL-PINS DURO DYNE FASTENERS OR GRIP NAILS
2. GRIP NAILS SHALL BE INSTALLED BY "GRIPNAIL AIR HAMMER" OR BY AUTOMATIC FASTENER EQUIPMENT
3. ENDS OF LINER SHALL BE BUTTED FIRMLY TOGETHER
4. SEE "DUCT LINER NOSING DETAIL"

VELOCITY	DIMENSIONS			
	A	B	C	D
0-2500 FPM	3"	12"	4"	18"
2501-6000 FPM	3"	6"	4"	16"

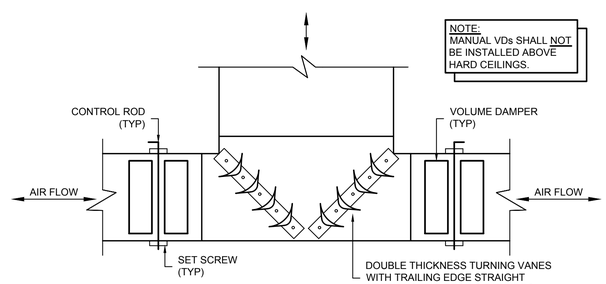
DUCT LINER DETAIL

NTS



DUCT LINER NOSING DETAIL

NTS



TYPICAL TEE CONNECTION

NO SCALE

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - ca.lic.#c.31127 - f.lic.#ca 98187 - md.lic.# 19161
mo.lic.#o 2008040R - pa.lic.#o 40077 - tx.lic.# 21795 - wa.lic.# 1180

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

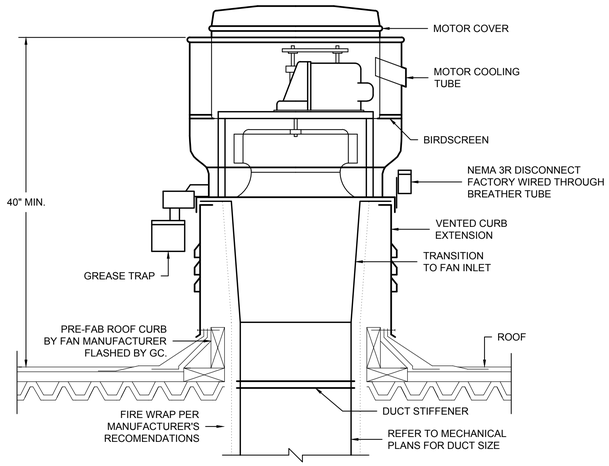
MECHANICAL DETAILS

STAMP:

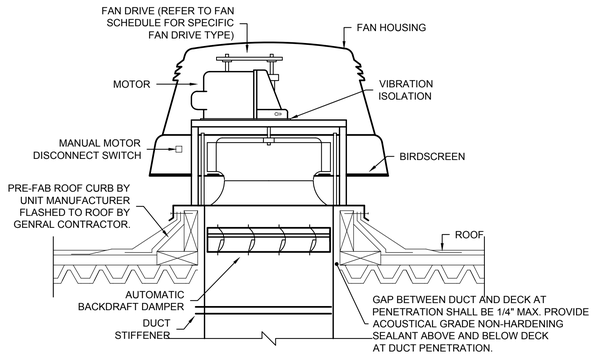
STATE OF MISSOURI
WILLIAM T MAYER III
NUMBER PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

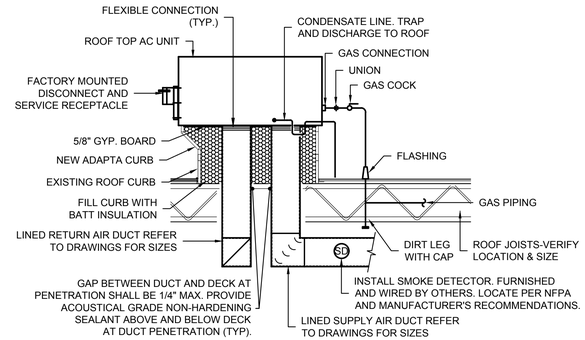
M2.2



KITCHEN EXHAUST FAN DETAIL
NTS



ROOF EXHAUST FAN DETAIL
NO SCALE



ROOFTOP UNIT DETAIL
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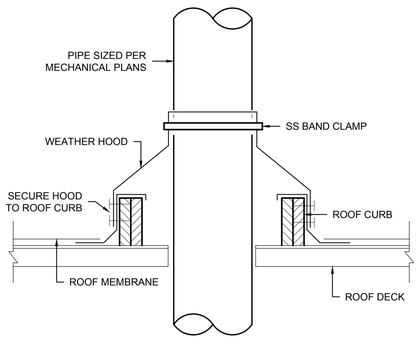
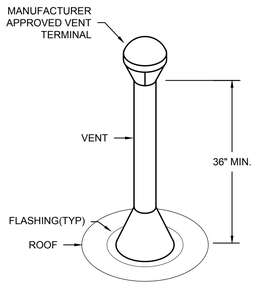


NOTE:
INSTALL IN ACCORDANCE WITH ROOFING MANUFACTURER'S RECOMMENDATIONS SO AS NOT TO VOID THE ROOFING WARRANTY.

PIPE THRU ROOF DETAIL
NTS



NOTE:
UNIT VENT SHALL BE LOCATED MINIMUM 10' FROM ANY FRESH AIR INTAKE. INSTALL PER ALL LOCAL AND STATE CODES AS WELL AS MANUFACTURERS RECOMMENDATION.

DIRECT VENT TERMINATION DETAIL
NTS

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p:858.384.7795 e:info@hauckarchitecture.com
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WILLIAM T MAYER III
PE-2008021197
PROFESSIONAL ENGINEER

SHEET NUMBER:

M2.3

SECTION 15500 - MECHANICAL

PART 1:GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY OF WORK

A. Provide complete functional Heating, Ventilating and Air Conditioning system as shown on Mechanical Construction Documents.

1.3 REFERENCE STANDARDS

A. NFPA Standards

B. ANSI Standards

C. ASME Standards

D. ASTM Standards

E. AWWA Standards

F. ASHRAE Standards

G. SMACNA Standards

H. OSHA Standards

I. NEBB Standards

J. Local Codes and Ordinances

K. Owner's Insurance Company Requirements

L. Where the contract documents indicate more stringent requirements than the above codes and ordinances, the contract documents shall take precedence.

M. File all documents, pay all fees and secure all permits, inspections and approvals necessary for the work of this section.

1.4 CONTRACT DRAWINGS & SPECIFICATIONS

A. The Contract Drawings are generally diagrammatic and convey the Scope of Work and General Arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect and Engineer before being installed. The Subcontractor shall follow drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Subcontractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or before proper execution of the work.

B. Specifications: The specifications are intended only to complement the drawings; however, work detailed and/or noted only on the drawings or work described only in the specifications shall all be considered as part of the scope of work.

1.5 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

A. In case of conflict between the contract drawings and specifications, the Engineer shall determine which takes precedence.

1.6 SHOP DRAWINGS AND PRODUCT DATA

A. SUBMITTALS: Submit shop drawings, manufacturers data and certificates for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and have them approved before procurement, fabrication, or delivery of the items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry, and technical society publication references, and other information necessary to establish contract compliance of each item the Contractor propose to furnish.

B. Submit in accordance with Division 1.

C. It is the intent of the these specifications that all equipment, materials and workmanship used on this project be in complete conformance with all local, state and national codes, ordinances and standards.

D. Substitutions shall be equivalent to specified equipment in all aspects of quality and performance and shall conform to the intent stated above. It is the contractor's responsibility to submit only those items that meet these requirements. Should any non-conforming items be installed, they shall be replaced by the contractor at no additional cost to the owner.

E. The approval of the equipment does not relieve the Subcontractor of responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist.

F. Refer to General Requirements for the substitutions of equipment and submittal of shop drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, piping, supports, or construction, it shall be provided. Contractor to assume cost and entire responsibility thereof.

1.7 INSPECTION AND TESTS

A. During the progress of the work it shall be subject to the inspection of the Owner and to such other inspectors, as may have jurisdiction.

B. At completion of the work, Contractor shall submit to the Owner's representative in writing a statement stating: (1) that the work is complete; (2) that the entire installation is in accordance with the specification; (3) that preliminary tests have been made; and (4) that the work is ready for final inspection and test.

C. A final inspection of the installation to determine compliance with the drawing and specifications will be made by the Owner's representative. Work will be checked for quality of materials, quality of workmanship, proper installation and finished appearance. This Contractor shall provide the services of the project foreman for inspection purposes. The foreman shall remove and reinstall access panels, ceiling tiles, etc., as required to facilitate any inspections required by the Owner's representative.

D. The Contractor shall arrange and conduct operating tests on all equipment in the presence of the Owner's representative. The component parts of systems and the various systems shall be demonstrated to operate in accordance with the requirements and intent of this specification. Any non-complying or defective materials or workmanship disclosed as a result of the inspection and the Contractor shall correct tests promptly, and the tests repeated as often as necessary until approved and accepted by the Owner's representative.

1.8 ELECTRICAL EQUIPMENT

A. Electrical components of mechanical equipment and systems, such as motors, factory mounted motor starters, disconnects, and control equipment shall be provided under the related Section of Division 15.

B. Temperature control equipment, including thermostats, zone valves, relays, aquastats, etc. shall be provided under related sections of Division 15. Temperature control wiring not specifically shown on electrical drawings shall be provided under related Section of Division 15.

C. Upon completion of temperature control system wiring, the responsibility of the control system will fall under Division 15.

D. All electrical equipment installed in concealed spaces shall be provided with a hard-wired electrical connection. Plug-type disconnects shall not be allowed in concealed spaces. Equipment provided with plug-in cords shall not have their cords modified.

1.9 OPENINGS IN EXTERIOR WALLS OR ROOF

A. Openings in exterior walls or roof shall be kept properly plugged and caulked at all times, except when being worked on to preclude the possibility of flooding due to storm or other causes. After completion of work, openings shall be permanently sealed and caulked in a manner approved by the Architect.

1.10 GUARANTEE

A. Except as otherwise specified, all work, materials and equipment shall be guaranteed against defects resulting from the use of inferior materials, equipment, or workmanship for one year from the date of final completion of the contract, or from full acceptance by the Owner, whichever is earlier.

B. If, within any guarantee period, repairs or changes to guaranteed work are required as a result of the use of defective materials or equipment, inferior workmanship or work that is not in accordance with the terms of the contract, and upon receipt of notice from the Owner, the following shall be done without expense to the Owner.

C. Place in satisfactory condition in every particular all of such guaranteed work and correct all defects therein.

D. Repair all damage to the building or site/equipment or contents thereof which is the result of the use of defective materials or equipment or inferior workmanship, or of work not in accordance with the terms of the contract.

E. Make good any work or materials, or the equipment and contents of said building or site disturbed in fulfilling any such guarantee.

F. In fulfilling the requirements of the contract or of any guarantee embraced in or required thereby, any work guaranteed under another contract is disturbed, restore such disturbed work to original condition and guarantee such restored work to the same extent as it was guaranteed under such other contract.

G. If upon failure to proceed promptly after notice to comply with the terms of the guarantee, the Owner may have the defects corrected and Contractor and his surety shall be liable for all expenses incurred.

H. This Contractor shall obtain in the General Contractor's and Owner's name, the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities, which the Contractor may have by law or other provisions of the Contract Documents. The guarantee shall be for a period of one (1) year minimum from the date of acceptance or final payment.

1.11 CLEANING OF SYSTEM

A. Thoroughly clean piping, ducts, fixtures and equipment of all foreign substances inside and out before placing in operation. All air handling equipment shall be provided with "construction filters" for use during construction. Once construction is substantially complete and prior to final testing adjusting and balancing, furnish and install new filters for each piece of equipment.

B. If any foreign matter should stop any part of a system after being placed in operation, clean and reconnect system.

C. Remove all covers of interior floor drains and cleanouts, clean of all dirt, concrete traces, etc., then lightly grease and reinstall.

1.12 TEMPORARY OPENINGS

A. Coordinate construction and provide temporary openings in the building as required for the admission of equipment furnished under this Division.

1.13 DEFINITIONS

A. "Piping" includes, in addition to pipe, all fittings, valves, hangers, and other accessories relating to such piping.

B. "Concealed" means hidden from sight in trenches, chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.

C. "Exposed" means not installed underground or "concealed" as defined above.

D. "Provide" means furnish and install complete and ready to operate.

1.14 EQUIPMENT DEVIATIONS

A. Where proposals to use an item of equipment other than that specified which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical or architectural layout, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Architect at the Contractor's expense.

B. Where such approved deviation requires a different quantity and arrangement of ductwork, piping, wiring, conduit, and equipment from that specified or indicated on the drawings, furnish and install any such ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

1.15 ELECTRICAL ROOM REQUIREMENTS

A. Do not install any piping, ductwork or equipment in or through electrical rooms, transformer rooms, electrical closets, telephone rooms or elevator machine rooms, unless piping or ductwork of equipment is intended to serve these rooms. Additionally, no ductwork or piping will be installed above electric panels. If the Contractor violates this requirement, he shall remove and/or relocate all items as required at his expense and to the satisfaction of the Architect.

1.16 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the Architect any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. Coordination drawings shall be initiated by this contractor. It this contractor's responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided under Section 15500 of the Specifications. These drawings shall be prepared at not less than 1/4 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. Drawings shall indicate horizontal and vertical dimensions, to avoid interference with structural framing, ceilings, partitions, and other services. A reproducible copy of each drawing prepared shall then be submitted to each Contractor working under Sections 15300, 15400 and 16000, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After each Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, and appropriate revisions made, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.17 PROJECT RECORD DOCUMENTS:

A. Each Contractor shall record clearly, neatly, accurately, and promptly as work progresses the following data:

1. Changes made resulting from change orders or instructions issued by the Architect.
2. Changes in routing made to avoid conflict with other trades or structural conditions.
3. Final location of equipment and panels if different than contract documents.

B. Upon completion of the project submit to the Architect a set of electronic media noting "as built" conditions indicating all variations and deviations of his work from contract documents.

1.18 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Operating Instructions: Provide operating instructions to the Owner's designated representative with respect to the operation functions and maintenance procedures for all equipment and systems installed. The cost of providing a manufacturer's representative at the site for instructional purposes shall be included in the Contract Price.

B. Maintenance Manuals: At the completion of the project, turn over to the General Contractor four (4) complete manuals in 3-ring binders, indexed, containing the following:

1. Complete shop drawings of all material and equipment of this section.
2. Operation descriptions of all systems.
3. Names, addresses and telephone numbers of all suppliers of system components.
4. Preventative maintenance instructions for all systems.
5. Spare parts list of all system components.
6. Copies of all valve charts.

1.19 PROTECTION

A. Protect all work and material from damage by work and workmen, and accept liability for all damage thus caused.

B. Be responsible for work and equipment until finally inspected, tested, and accepted. Protect work against theft, injury or damage; and carefully store material and equipment received on site, which is not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

C. All openings in stored & installed ductwork shall be covered & sealed when not in use to prevent contamination from dust & debris.

1.20 SCAFFOLDING, RIGGING AND HOISTING

A. Provide scaffolding, rigging, hoisting and services necessary for delivery, erection and installation of material, equipment and apparatus furnished under this division. Remove same from premises upon completion of work.

B. Coordinate propose routing with architect prior to rigging and protect all existing building components against damage.

1.21 MATERIALS AND WORKMANSHIP

A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Architect shall be furnished.

B. Furnish the services of an experienced foreman who shall be constantly in charge of the installation of the work, together with all skilled workmen, fitters, metal workers, welder, helpers, and labor required to unload, transfer, erect, connect, adjust, start, operate, and test each system.

C. All equipment and materials shall be installed in strict accordance with the manufacturer's recommended installation instructions as well as UL Listing instructions and all Local, State and National codes.

1.22 QUIET OPERATION AND VIBRATION

A. Work shall operate under all conditions of load without any objectionable sound or vibration. In case of moving machinery, sound, or vibration noticeable outside of room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable shall be corrected in an approved manner at no expense to the Owner. Vibration control shall be means of approved vibration eliminators in a manner as recommended by the manufacturer of the eliminators.

1.23 ACCESSIBILITY

A. Assure and be responsible for the adequacy of shafts and chases, the adequate clearance in double partitions and hung ceilings for the proper installation of the work. Cooperate with all other trades whose work is in the same space. Such spaces and clearances shall, however, be kept to the minimum size required.

B. Locate all equipment, which must be serviced, operated, adjusted or maintained fully accessible positions. Equipment shall include, but not be limited to, valves, traps, cleanouts, motors, controllers, filters, dampers, starters, coils, fire dampers, smoke dampers and drain points. If required for better accessibility, furnish access doors for this purpose. Minor deviations from drawings may be made to allow for better accessibility, and the engineer shall approve any change.

C. Provide access panels for installation in concrete block walls or gypsum wallboard ceilings and partitions in locations, which require access for service to the items located behind the permanent gypsum wallboard or concrete block finish.

D. Access panels shall be installed where required to gain access to valves, dampers, controls, etc. Panels shall be flush, insulated, contain continuous steel hinge and screwdriver operated latch. Panels shall be rated equal to the assembly that they are being installed in panels shall be UL listed.

E. Access panels located in fire rated partitions shall be fire panels. The frame and panel assembly of these fire panels shall be manufactured under the Factory Inspection Service of the Underwriters' Laboratories, Inc., and shall bear a label reading: "Frame and Fire Panel Assembly, Rating 2 hours. (B) Temperature Rise 30 Minutes, 250° F. Maximum." Rated panels shall be equipped with automatic closing mechanism and be self-latching.

F. Panels shall be provided with screwdriver operated flush cam locks.

G. Panel size shall be 12 inches x 12 inches except furnish a larger size if required to service a particular item. The exact location and size of each access panel shall be reviewed with, and approved by, the Engineer.

1.24 CUTTING AND PATCHING

A. Provide all cutting and patching necessary to install the work specified in this division. Patching shall match adjacent surfaces.

B. At floor slabs & wall openings to be cored drilled or cut, contractor shall find and mark on both faces all reinforcing, rebar, conduits, utilities, etc., by means of x-ray, pach-ometer or prof-ometer. Submit sketch showing locations of all findings and proposed cuts or cores for review.

C. No structural members shall be cut without the approval of the Structural Engineer, and all such cutting shall be accomplished in a manner directed by the Structural Engineer.

1.25 GROUNDING

A. All components of mechanical piping systems shall be properly grounded to building ground. Where ground path is interrupted by non-conductive materials, appropriate bonding or grounding to building ground shall be provided.

1.26 WATERPROOFING

A. Where any work pierces waterproofing including waterproof concrete, the method of installation shall be as approved by the Architect before work is started. Furnish all necessary sleeves required.

1.27 DEMOLITION

A. Prior to submitting bid, visit site and identify existing conditions and difficulties that will affect work of this section. Demolition work will require careful site examination prior to bidding. No compensation will be granted for additional work caused by unfamiliarity with site conditions that are visible or readily construed by experienced observers.

B. Prior to commencing demolition, contractor shall identify with owner any equipment to be returned to the owner after demolition. All other debris shall be disposed of by this contractor in accordance with all applicable regulations. Any shutdowns required for demolition shall be coordinated with building owner to avoid impact to operations.

C. During demolition, any equipment, ductwork, piping, etc. found to be abandoned shall be demolished. Existing unused connections to existing ducts or piping shall be cut back to the mains and capped accordingly.

D. Under demolition, the following is, in brief, the extent of the work to be performed by the mechanical contractor under this contract.

1. The mechanical contractor shall be responsible for the disconnection and removal of the existing mechanical equipment, ductwork, piping, valves, etc.,in designated areas. Cut & cap piping and ductwork back to mains. Patch all roof and wall penetrations to match existing.
2. This contractor shall protect work against injury or damage; and carefully store material and equipment to be relocated. Open ends of work shall be closed with temporary covers or plugs during storage and construction to prevent entry of obstructing material.
3. All existing HVAC components, including but not limited to ductwork, piping, equipment, controls & accessories, shall be removed from the area of renovation.
4. Coordinate all demolition with other trades to ensure all relevant portions of the system including associated electrical and plumbing components are removed.
5. Refer to drawing plans and notes for additional information.

1.28 REBATES

A. The contractor shall make the owner aware of all applicable "upstream" energy rebates available for this project.

B. The contractor shall provide the owner all necessary information and documentation for completion and submission of energy rebate applications.

PART 2:PRODUCTS

2.1 IDENTIFICATION, MARKING AND TAGGING

A. Systems and equipment to be identified and marked and valves tagged include, but are not limited to the Heating, Air Conditioning & Ventilating systems.

B. Submit samples of marking and tagging devices and wording, lettering and numbering scheme for each system.

C. Equipment Identification:

1. Manufacturer's nameplates or trademark shall be permanently affixed to all equipment and materials furnished under this division. Manufacturer's nameplates shall include all pertinent data relative to the piece of equipment including model number, serial number, and operating characteristics as applicable.
2. Separate Equipment Identification Markers shall identify each item of equipment with a permanently attached marker indicating designation and/or number corresponding to design documents.
3. Shall be of rigid black Bakelite or phenolic construction with white engraved or incised letters.
4. Lettering on equipment markers shall be of adequate size to be legible from floor levels. In all cases marker lettering shall no be less than 1 inch high.

2.2 SLEEVES, INSERTS AND ESCUTCHEONS

A. Provide sleeves for all work passing through floor, wall, and ceiling construction. Locate and provide sleeves and inserts before the floor, wall or ceiling is constructed. If this contractor does not comply with the above, he shall bear all costs incurred for cutting and patching required for the installation of sleeves and inserts. Holes required for sleeves in existing walls and floors, or to conform to the above shall be saw cut or core drilled. This Contractor shall provide all drilling required for the installation of hangers.

B. Pipe sleeves through outside walls shall be Schedule 80 black steel pipe with 150 lb. black steel slip-on welded flanges welded at the center of the outside. Extend sleeves 1/2 inch beyond each side of the wall. Pack the space between sleeve and pipe with oakum to within 2 inches of each face of the wall. Pack the remaining space and make watertight with an approved waterproof compound.

C. Pipe sleeves through concrete floors or interior masonry walls shall be Schedule 40 black steel pipe, set flush with finished wall or ceiling surfaces, but extending 2 inches above finished floors. Plastic, PVC, or light metal sleeves shall not be installed.

D. Provide individual or strip type inserts pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4-inch diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods to 1/2 inch diameter to be passed through the insert body. Strip inserts shall have attached rods with hooded ends to allow fastening to reinforcing rods.

E. Where pipe motion due to expansion and contraction will occur, make sleeves of sufficient diameter to permit free movement of pipe. Where sleeves pass insulated pipes, the sleeves shall be large enough to pass the pipe and the insulation. Check floor and wall construction finishes to determine proper length of sleeves for various locations.

F. Provide 22 gauge galvanized steel duct sleeves through interior walls, floors and ceilings set flush with finished surfaces.

G. Pack the space between sleeves and structure, and sleeves and pipes or ducts passing through fire rated interior walls, floors, and ceilings with an approved fire and smoke proof packing material. Fire-stopping material shall maintain its dimensions and integrity while preventing the passage of flame, smoke, and gases under conditions of installation and user when exposed to the ASTM E119 time-temperature curve for a time period equivalent to the rating of the assembly penetrated. Cotton waste shall not ignite when placed in contact with the non-fire side during the test. Fire-stopping material shall be non-combustible as defined by ASTM E136; and in addition, for insulation materials, melt point shall be a minimum of 1700 degrees F. for 1-hour protection and 1850 degrees F. for 2-hour protection.

H. Fasten sleeves securely in floors, walls, etc. so that they will not become displaced when concrete is poured or when construction is built around them. Take precautions to prevent concrete, plaster, or other materials being forced into the space between pipe and sleeve during construction.

I. In all areas where ducts are exposed and pass through floors, the hole shall be surrounded by a 4-inch high by 3-inch wide concrete curb, or otherwise protected as determined by the Engineer.

J. Escutcheon plates shall be provided for all exposed un-insulated pipes passing through walls, floors, and ceilings. Plates shall be nickel plated, of the split ring type, of size to match the pipe. Where plates are provided for pipes passing through sleeves, which extend above the floor surface, provide deep recessed plates to conceal pipe sleeves.

2.3 SUPPORTS & ATTACHMENTS

A. Provide all necessary supports and bases required for all equipment, piping and for all other equipment furnished under this contract. Submit shop drawings to the Architect for approval before purchase, fabrication or construction of same.

B. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are not strong enough shall be replaced as directed.

C. Vibration Isolation: All mechanical equipment, piping and ductwork shall be mounted on vibration isolators/inertia bases to prevent the transmission of vibration and mechanically transmitted sound to the building structure.

1. Vibration isolators shall be selected in accordance with the weight distribution so as to produce reasonably uniform deflections.
2. All isolators and isolation materials shall be of the same manufacturer and shall be certified by the manufacturer.

2.4 SEISMIC RESTRAINTS

A. It is the intent of this seismic specification that this contractor shall provide all necessary seismic restraints required to keep all mechanical building system components in place during a seismic event as required by the Building Code.

B. All mechanical systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a conflict occurs between the manufacturer's or construction standards, the most stringent shall apply.

C. This contractor shall engage a professional structural engineer registered in the jurisdiction of this project to review the entire installation to determine all seismic restraint requirements and methods. Contractor shall submit a report outlining the structural engineer's review as well as seismic restraint shop drawings and supporting calculations prepared by the professional structural engineer for review by the Architect.

1. Any questions relative to Component Importance factors shall be issued to the Architect/Engineer for resolution prior to seismic analysis.

D. Seismic restraints shall be designed in accordance with seismic force levels as detailed in the applicable building code.

2.5 ELECTRIC MOTORS/STARTERS

A. Electric motors and starters shall conform to requirements of the AIEE, NEMA, UL, and NEC and shall be suitable for load duty, voltage, phase, frequency, service and location required. Provide inverter duty rated motors for use with variable frequency drives. Provide shaft grounding rings for all VFD controlled motors.

B. All motors shall be rated at 85% power factor at full rated load. Motors less than 85% power factor shall be corrected to 90% power factor at the factory. All motors shall be rated high efficiency.

C. Starters shall be Cerus International or equal.

1. Enclosed Non-Combination Starter
   a) Motor Starter shall be enclosed in a Type 1 or Type 4 UL rated enclosure.
   b) Motor Starter shall be rated for NEMA class B motors for AC-3 switching and AC-4 switching.
   c) Controls and annunciation shall include Hand- OFF- Auto keypad. LED indication shall include Hand, Off, Auto, Run and Overload. Overload reset shall be available.
   d) Control inputs shall include: Auto Wet input, Auto Dry input, Permissive Auto input, Damper Status Input and Override Input. Automatic control inputs shall be capable of accepting a transistorized input without the need for interposing relays. Wet control inputs shall accept AC or DC inputs from 10 to 138VACor DC.
   e) Damper control shall be built into the starter to provide 24VAC or 120VAC damper control and monitoring.
   f) Override input shall disable the starter from operating in either Hand or Auto mode.
   g) Protective Functions
      (i) Electronic Overload shall provide phase failure and phase loss protection, stall, and class 1 - 30 selectable overload protection. Phase failure protection shall initiate when phase loss is greater than 70% for 3 seconds or phase unbalance is greater than 50% for more than 5 seconds.
      (ii) Cycling fault protection shall be integral to the starter. Cycling fault shall be enabled whenever the starter is cycled more than 1000 times in a one hour period. This feature shall be selectable to be disabled. Cycling fault shall cause overload LED to blink rapidly.
2. Enclosed Combination Starter
   a) Enclosed combination starter shall include all of the above descriptions in addition to either a motor circuit protector with lock-out mechanism, a UL 508 breaker, or a fused disconnect with lock-out mechanism.
   b) The Motor Circuit protector shall be a UL listed 508 manual motor starter with magnetic trip elements only. The breaker and shall carry a UL 508F rating (up to 100A frame size) which provides for coordinated short circuit rating for use with the motor contactor and provides an interrupting rating for the breaker and contactor combination.
   c) Fused disconnect shall be UL 98 suitable for service entrance protection.
   d) UL 508 breaker shall include thermal and magnetic trip mechanisms.

D. Disconnects provided by this contractor will be installed by Division 16, with the exception of factory mounted disconnects.

E. Motors smaller than 1/2 HP shall be capacitor-start or split phase type, single phase, 60-hertz alternating current for voltage required. Motors 1/2 HP and larger shall be squirrel-cage induction three phase 60 hertz alternating current for voltage required, unless specifically noted otherwise.

F. Where available, starters and disconnects shall be factory mounted by the unit manufacturer.

2.6 USE OF INSTALLATION

A. The Owners shall have the privilege of using any part of the installation when sufficiently complete, but such use thereof, or partial or final payment shall not be considered as an acceptance of such work in lieu of a written certificate from the Engineer.

2.7 DUCTWORK

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, supports and sealing for operating pressures indicated.

B. Galvanized Steel Ducts: ASTM A525 and ASTM A527 galvanized steel sheet, lock-forming quality, having G90 zinc coating of in conformance with ASTM A90.

1. Sealant: As recommended by manufacturer specifically for sealing joints and seams in ductwork.
2. Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.
3. Hanger Rod: ASTM A36; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

C. Round Exposed Ductwork: Provide a complete double wall, spiral wound, insulated, round ductwork system as designed on the drawings with all necessary fittings, hangers, supports, turning vanes, and all other appurtenances for the installation of an operable system. All ductwork and fittings shall be galvanized sheet metal in accordance with ASTM-A527 specifications. Ductwork shall be of round spiral lockseam construction.

D. Hanger Rod: ASTM A36; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

E. Flexible Ductwork: Duct shall be Flexmaster Triple Lock Buck Insulated Duct as manufactured by Buckley Associates or approved equal.

1. Flexible duct shall be Underwriters Laboratory Listed (UL 181 Class 0 Airduct) and constructed in accordance with NFPA Standards 90A and 90B. It shall have a smoke/flame spread rating of 50/25.
2. Flexible Ductwork shall be made from a tape of dead soft aluminum sheet, spiral wound into a tube and spiral corrugated to provide strength and stability. The joint shall consist of a triple lock that is mechanically performed without the use of adhesives to make a durable airstream seam. A double lock is not acceptable.
3. Insulated flex shall have a fire retardant polyethylene outer jacket with a 1/2 lb. density, 1-1/2" thick fiberglass insulation blanket, factory wrapped.
4. The flexible duct shall be supported as required to prevent sagging. Flexible duct with excessive sagging will not be approved.
5. Flexible ductwork shall be rated at 12" positive pressure and 12" negative pressure for sizes up to 16". Negative pressure for 18" to 20" shall be 8".
6. Length of installed flexible duct shall not exceed 6'-0" in developed length.

F. Flexible Connections

1. Flexible connections shall be provided where a fan connects to a duct or casings to prevent transmission of vibration to ductwork.
2. Flexible connections shall fit tightly around ducts and fans and be securely bolted or clamped in place. Taping shall not be allowed.
3. Flexible duct connections shall be 6" long and made of straight, waterproof, flame retardant fabric having a flame spread rating of not over 25 and a smoke development rating of not over 50

G. Dishwasher Exhaust Ductwork:

1. Discharge ductwork shall be 16 gauge stainless steel, waterproof and detergent-proof, all welded construction.
2. Provide 16 gauge stainless steel volume damper at each dishwasher discharge connection.
3. Pitch ductwork toward dishwasher.
4. Duct shall be #316/No. 4 finish for exposed areas and #304/No. 1 finish for concealed areas.

H. Kitchen Exhaust Ducts:

1. Ducts shall be constructed of and supported by no less than 18 ga. 304 stainless steel No. 4 finish for exposed areas or 16 ga. Carbon steel (where concealed).
2. All seams, joints, penetrations and connections shall have a liquid-tight external weld.
3. On horizontal ducts at least one 20 x 20 opening shall be provided for personnel entry. Where an opening of this size is not possible, openings large enough to permit thorough cleaning shall be provided at 12 ft intervals.
4. Cleanouts shall be installed at the base of all vertical rise elbows. Cleanouts shall be installed at the base of elbows for any change in elevation.
5. On vertical runs of ductwork where personnel entry is not possible, provide cleanouts on each floor.

I. Existing Ductwork: Any existing ductwork within the area of work or connected to systems within the area of work shall be professionally cleaned by a experienced certified duct cleaning company. Contractor shall submit before/after photographs of each duct system cleaned.

J. Volume Dampers:

1. Provide Young Regulator manual adjustable rectangular opposed blade dampers for duct heights less than 12" with factory-installed locking hand quadrants extended 2" for all dampers installed in externally insulated duct:
   a) On each supply, return and general duct take-off.
   b) At each take-off to register, grille or diffuser (not all are shown on drawing).
2. Dampers are manufactured approximately 5/16" smaller in width and 1/8" smaller in height than size of duct in which they are installed; e.g., nominal damper size is 24" x 10"; actual size is approximately 23-11/16" x 9-7/8".
3. Damper frame shall be constructed of #6063 extruded aluminum reinforced channel with minimum thickness of .050". Opposed damper blades shall be #6063 extruded aluminum with minimum thickness of .050" and shall include reinforcing ribs. Each blade shall be supported in the damper frame by individual Teflon axle bearings, and shall be driven by stainless steel connecting slide linkage controlled by 3/8" square steel control shaft.
4. Note: All required volume dampers may not be indicated on drawings but dampers shall be provided as necessary for systems balancing.
5. Dampers 12" and larger in height shall be opposed multi-blade equal to Greenheck, Nailor or Vent Products.
6. Where dampers are inaccessible, use Young Rectangular locking type ceiling regulators and miter gear or worm gear for all horizontal dampers. Bearing coupling for bottom duct control may be used for shaft on vertical blade dampers. The 3/8" rod between ceiling regulator and damper shall be provided by Contractor.
7. Where dampers are to be located above hard ceilings Young Regulator Bowden Cable Control Dampers shall be utilized. Controllers (actuators) shall be of the concealed ceiling type. Controller type, finish & locations to be approved by architect prior to purchase & installation. The cable between the damper and controller shall be provided by the contractor.
8. Damper blades shall be two gauges heavier than adjoining ductwork, and shall be riveted to supporting rods. Hem over edges parallel to rods.
9. Brackets shall be galvanized metal, secured to ductwork with sheetmetal screw with locking quadrant arms (see seal class section for additional requirements). Provide 2" handle extension for all dampers on externally insulated ductwork.
10. Note: All required volume dampers may not be indicated on Drawings but dampers shall be provided as necessary for system balancing.

2.8 VENT STACK

A. The vent shall be of the double-wall, factory-built type for use on condensing appliances or pressurized venting systems serving Category II, III or IV appliances or as specified by the equipment manufacturer.

B. Maximum temperature shall not exceed 550°F (288°C).

C. Vent shall be listed for an internal static pressure of 6" w.g. and tested to 15" w.g.

D. Vent Construction:

1. Vent shall be constructed with an inner and outer wall, with a 1" annular insulating air space.
2. The inner wall (vent) shall be constructed of 304 stainless steel, .015 thickness for 6"-12" diameters and .024 thickness for 14"-24" diameters. The outer wall (casing) shall be constructed of aluminized steel, .018 thickness for 6"-12" diameters and .024 thickness for 14"-24" diameters. Inner and outer walls shall be connected by means of spacer clips that maintain the concentricity of the annular space and allow unobstructed differential thermal expansion of the inner and outer walls.

E. All vent parts exposed to the weather shall be 304 stainless steel.

F. All supports, roof or wall penetrations, terminations, appliance connectors and drain fittings, required to install the vent system shall be included.

G. Roof penetration pieces shall be UL listed and provided by the vent manufacturer. Roof curbs shall be required on roofs greater than 12:12 pitch.

H. All inner vent connections shall be secured by means of profiled connector bands with gear clamp tighteners. Joints shall be sealed with P077 Sealant. Where exposed to weather, the outer closure band shall be sealed to prevent rainwater from entering the space between inner and outer walls.

I. Vent shall terminate in accordance with installation instructions and local codes.

2.9 DUCT INSULATION

A. Compliance: Insulation thickness, conductivity and installation shall comply with local Mechanical and Energy Codes.

B. Concealed supply & return ducts for heating, cooling and air intakes:

1. Insulation: ASTM C553; flexible, foil faced, noncombustible blanket.
   a) Interior Concealed/Tempered: R-Value of 6.0 installed.
   b) Interior Ventilated/Untempered: R-Value of 8.0 installed
2. Vapor Barrier Jacket:
   a) Kraft paper with glass fiber yarn and bonded to aluminized film.
      (i) Moisture vapor transmission: ASTM E96; 0.02 perms.
      (ii) Secure with pressure sensitive tape.
3. Vapor Barrier Tape:
   a) Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

C. Exhaust Ductwork:

1. Interior Concealed/Tempered:
   a) Direct Exhaust: No Insulation Required.
2. Interior Ventilated/Untempered: Refer to concealed supply & return ducts for heating, cooling and air intakes; Interior Ventilated/Untempered.

D. Fire Wrap

1. Provide fire wrap on Kitchen Exhaust Ductwork as indicated on drawings and/or after ductwork penetrates a fire barrier/partition or where proper clearance to combustibles (as required by NFPA 96 and local codes and ordinances) cannot be achieved.
2. Acceptable Manufacturer: Thermal Ceramics; 2102 Old Savannah Rd., Augusta, GA 30906. ASD. Toll Free Tel: (800) KAOWOOL. Tel: (706) 796-4200. Fax: (706) 796-4398. Email: firemaster@thermalceramics.com. Web: http://www.thermalceramics.com.
3. Substitute products shall demonstrate compliance with all sections of ASTM E 2336 and also have a current ESR report allowing their use on grease ducts for clearance reduction and also for fire-resistive-rated enclosures.
4. 2 Hour Applied Fire Protection for Commercial Kitchen Grease Ducts when tested in accordance with ASTM E 2336 - Passes all 5 Acceptance Criteria in Sections 16.1 to 16.5 - Reference ICC-ES Building Code Report ESR 2213, also reference UL Listing HNKT G-18.
5. 1 and 2 Hour Applied Fire Protection when tested in accordance with UL 1978; Compliant per UL Listing HNKT G14 (Single Layer Installation).
6. 1 and 2 Hour F- and T-Rated Through Penetration Firestop when tested in accordance with ASTM E 814 (UL 1479): UL Through Penetration listings; C-AJ-1562; C-AJ-7004; C-AJ-7012; C-AJ-7014; C-AJ-7019; C-AJ-7021; C-AJ-7047; C-AJ-7095; C-AJ-7098; C-AJ-7119; F-A-1093; F-A-1094; F-A-3048; F-C-7036; F-C-7037; W-L-7041; W-L-7099; W-L-7121; W-L-7145; W-J-7086.
7. 1 and 2 Hour Applied Fire Protection for Ventilation Air Duct when tested in accordance with ISO 6944-1985 - Reference UL Listings HNLV V19; HNLV V1; HNLV V2; HNLV V3; HNLV V4.
8. Thermal Material: 2000 F degree rated core blanket, manufactured from patented bio-soluble Superwool chemistry (Calcium Magnesium Silicate)
9. Product: FireMaster FastWrap XL as manufactured by Thermal Ceramics.
10. Fully encapsulated thermal material in fiberglass reinforced aluminum/polypropylene scrim.
    a) Encapsulation material marked with UL Classification Mark
    b) Encapsulation material marked with ICC-ES report number ESR 2213
    c) Collars supplied in 6 inch (150 mm) wide by 25 feet (7620 mm) long rolls.
11. Product Characteristics:
    a) Thickness: 1-1/2 inch (38 mm).
    b) Nominal Density: of 6 pcf
    c) R-Value: 7.35 per layer of FireMaster FastWrap XL when tested in accordance with ASTM C 518.
    d) Flame Spread: <25 when tested in accordance with ASTM E 84.
    e) Smoke Development: <50 when tested in accordance with ASTM E 84.
12. Glass Filament Tape: Minimum 3/4 inch (19 mm) wide - used to temporarily secure blanket until permanent attachment using steel banding and/or steel insulation pins.
13. Aluminum Foil Tape: Minimum 3 inches (76 mm) used

1. 20' upstream and downstream from all air handling units exceeding 10 tons.
2. 10' upstream and downstream from all air handling unit of 10 tons or less.
3. 5' downstream from all other fan powered units including, but not limited to, fan powered VAV boxes.

C. Areas provided with interior duct lining shall also be provided with exterior duct insulation as indicated by these specifications.

2.11 PIPING

A. Steam Vent Piping
1. Stainless Steel Pipe: SAE 304 Stainless steel, Schedule 40.

B. Equipment Drains and Overflows
1. Copper Tubing: ASTM B88, Type L, hard drawn.
a) Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
b) Joints: Solder, lead free, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F (220 to 280 degrees C) or Victaulic grooved joints.

C. Unions, Flanges and Couplings
1. Unions for Pipe 2 Inches (50 mm) and Under:
a) Ferrous Piping: 150 psig (1034 kPa) malleable iron, threaded.
b) Copper Pipe: Bronze, soldered joints.
2. Flanges for Pipe Over 2 Inches (50 mm):
a) Ferrous Piping: 150 psig (1034 kPa) forged steel, slip-on.
b) Copper Piping: Bronze.
c) Gaskets: 1/16 inch (1.6 mm) thick preformed neoprene.
3. Flange Adapters for Victaulic Systems 2 inches and Larger:
a) Style 741/W741 for direct connection to ANSI Class 125/150 flanges
b) Style 743 for direct connection to ANSI Class 300 flanges.
4. Couplings for Victaulic Grooved Joint Systems for Steel Piping Systems 2 inches and Larger:
a) Rigid: Provides system rigidity and support and hanging in accordance with ASME B31.1 and B31.9. Style 107 (8" and smaller), Styles 07/W07 (10" and larger)
b) Flexible: : Use in locations where vibration attenuation and stress relief are required. Style 177/77/W77.
c) Gaskets: Grade EHP EPDM rated for -30F to 250F for 8" and smaller and Grade E EPDM rated for -30F to 230F for 10" and larger.
5. Couplings for Victaulic Grooved Joint Systems for Copper Piping Systems 2 inches and Larger:
a) Rigid: Style 607 with Grade EHP EPDM gasket rated for -30F to 250F.
6. Provide di-electric ~~fittings~~ waterways wherever copper pipe meets steel pipe or other dissimilar metals.

D. Plenum Return Applications
1. Where piping is installed in a return air plenum piping shall be plenum rated.
2. PVC and/or PEX piping shall not be allowed in return air plenums.

2.12 PIPING INSTALLATION

A. Piping shall be inspected, tested and approved before being buried, covered or concealed. Horizontal piping shall be pitched with a minimum grade of one inch in 50 feet. Fittings shall be provided for changes in direction of piping, and for all connections. Fuel supply piping shall allow for ample tank movement and pipe expansion.

B. Install piping free from traps and drain toward tank.

C. Pipe Sleeves: Firmly pack space between the pipe or tubing, and sleeve with oakum and caulk on both ends of sleeve with elastic cement.

D. Unions, Flanges and Victaulic Couplings: Place unions, flanges or Victaulic couplings where necessary to permit easy disconnection of piping and apparatus. Each connection having a screw end valve shall have a union.

E. Valves: Install valves in positions accessible for operation and repair. Install check valve and an isolation valve on suction line of each fuel oil storage tank.

F. Field Testing: Upon completion and before final acceptance of the work, each system shall be tested as in service to demonstrate conformance with the contract requirements and in accordance with the requirements of ANSI B31.3 and NFPA 30.

G. Each new piping system will be hydrostatically tested at not less than 1.5 times the working pressure in accordance with ANSI B16.3, but in no case less than 200 psig and shall show no leakage or dials indicating not less than 1.5 times nor more than 2 times the test being placed in operation. Remove fuel quality monitor elements and water separator elements from filter separators before hydrostatic tests. Do not subject tank to pipe test pressures. Refer to tank manufacturers data for maximum test conditions.

H. Contractor shall provide one full tank load of fuel oil of the proper grade after successful testing.

I. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. Cut or roll grooves in ends of pipe based on pipe and coupling manufacturer's written instructions for pipe wall thickness. Use grooved-end fittings and rigid or flexible, where required, grooved-end-pipe couplings. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified. Gaskets shall be molded and produced by the grooved coupling manufacturer. Grooved end shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. A Victaulic factory trained field representative shall provide on-site training for contractor's field personnel in the use of grooving tools, application of groove, and installation of grooved piping products. Factory trained representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed products.

J. Piping which contains any fluid which could potentially freeze is strictly prohibited from being installed within areas which may be subject to freezing temperatures. If, during the installation process, it is noted that such piping will be located in an area subject to freezing temperatures it must be brought immediately to the attention of the engineer. If such an installation is unavoidable affected piping shall be provided with additional insulation as required by the energy code as well as heat tracing and associated power circuiting as required to avoid the fluid freezing.

2.13 FIRESTOPPING

A. Provide Firestopping systems for penetrations in fire-resistance-rated assemblies, including both membrane and through penetrations. This contractor shall thoroughly review architectural plans for assembly type and location and shall prepare bid accordingly.

B. Materials and systems shall be designed to meet the requirements of the intended application and shall be installed per manufacturer's guidelines.

C. Submittals: Provide for review Manufacturer's product literature and tested assembly for each type of fire protection material including product characteristics, typical uses, installation procedures, performance and limitation criteria.

PART 3:EXECUTION

3.1 OPERATING INSTRUCTIONS

A. Instruction to the Owner's Personnel - After completion of all work and all tests and at such times as designated by the Architect, provide the necessary skilled personnel to operate the entire installation until receipt of owners acceptance.

B. During the operating period, instruct the Owner's representative in the complete operation, adjustment, and maintenance of the entire installation.

C. Give at least forty-eight (48) hours advance notice to the Owner to coordinate scheduling of this instructional period.

D. Furnish to the Architect five (5) complete bound sets of typewritten or blueprinted instruction manuals for operating and maintaining all systems and equipment included in the contract. All instruction manuals shall be submitted in draft, for approval, prior to final issue. Manufacturer's advertising literature or catalogs will not be acceptable for operating and maintenance instructions.

E. The above-mentioned instructions shall include the maintenance schedule for the principal items of equipment furnished under this contract.

3.2 MANUFACTURER'S RECOMMENDATIONS:

A. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Architect prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

3.3 TESTING, ADJUSTING, STARTING UP AND COMMISSIONING

A. Testing: All work must be proved satisfactory. The tests herein specified shall be applied in the presence of, and to the satisfaction of, the Architect before the work is covered, concealed or made inaccessible to testing, repair, correction or replacement. Accommodate the testing operation to the progress of the project as a whole. Correct all defects appearing under test and repeat the tests until all parts of the work have been successfully tested. Apply the specific tests herein described. Present all work for acceptance in clean condition, properly adjusted and in good working order; for instance, all machinery must be quiet, well balanced, and must be in place and reading accurately. All systems, equipment, controls, and devices in this work shall be tested in operation and must prove for their purposes in the judgment of the Architect or his authorized representative. All internal surfaces of all lines and equipment shall be blown or flushed clean. Where pressure tests are specified, the apparatus shall be clean before the tests are applied. Contractor shall provide adequate protection of piping and duct systems to prevent vandalism and/or accidental damage, blockage, etc., that will hinder or prevent proper operation of the finished systems.
1. Provide instruments, pumps, gauges, supplies, equipment, materials, and labor for testing and starting up. Dispose of test water and wastes after test, in a manner approved by all applicable codes.
2. Perform tests which may be required by authorities or agencies in addition to those herein specified.
3. Piping for steam, hot water, chilled water, supply and return, drain, escape and relief valve discharge shall be tested with water and made tight under pressure of 150 pounds per square inch gauge maintained for one hour without pumping or as long as required to inspect all joints. Repair all leaks and retest. Piping shall be made tight without caulking. Apply pressure tests to piping only before connection of equipment. In no case shall piping, equipment or accessories be subjected to a pressure exceeding it's rating. Low-pressure elements shall be isolated or removed before tests are conducted.
4. Test valve bonnets for tightness. Test operate all valves at least once from closed-to-open-to-closed positions while valve is under pressure. Test all automatic valves for proper operation at the settings indicated. Test pressure relief valves at least three (3) times.
5. Test piping specialties for proper operation. Test air vent points to ensure that air has been vented.
6. Furnish certified shop test records for all pressure vessels. After installation, test at full operating pressures and temperatures maintained for one hour. Set and test all pressure control, relief and safety devices.
7. Repair or replace all defective work and repeat tests until the particular system and component parts thereof receive the approval of the Architect.
8. The duration of tests shall be as determined by authorities having jurisdiction, but in no case less than the time prescribed in each section of the specifications.
9. Test equipment and systems, which normally operate during seasons of the year during the appropriate season. Perform tests on individual equipment, systems and their controls. Whenever the equipment or system under test is interrelated with and depends upon the operation of other equipment, systems and controls for proper operation, function, and performance; the latter shall be operated simultaneously with the equipment of system being tested.

B. Adjusting, Balancing and Starting Up
1. Flush clean all systems prior to starting up the system. Any damages to the building or system components caused by failure to clean the systems properly shall be corrected to the satisfaction of the Architect or his authorized representative at no additional cost to the Owner.
2. In duct and piping systems, eliminate all noise and vibration and take all measures to secure proper circulation.
3. Run motor-driven equipment continuously for at least two hours in the presence of the Architect. Correct all defects of noise, vibration, alignment and balance. Replace all motors, which overheat or are noisy.
4. Balance systems completely for temperature, volume, and pressure per NEBB performance standards. Balancing subcontractor shall provide proof of certification by NEBB.
5. Air and water volumetric flow rates shall be within ten (10) percent of those specified. Air and water quantities and pressures shall be tested, balanced and recorded at all terminal devices. Volumetric flows and pressures shall be recorded on suitable forms and submitted for approval.
6. Provide any and all labor and equipment necessary to properly balance the installation including but not limited to dampers, valves, flow stations, test ports, sheaves, belts, etc.
7. All sequences of the system shall be checked and all temperature controls operated and commissioned as required to insure that all systems operate per Engineers intent.

C. Commissioning
1. This Contractor shall provide the deliverables to the engineer/owner.
2. Copies of all records shall be provided to the Engineer by this Contractor including, but not limited to:
a) Equipment manuals including the name of at least one service agency;
b) Testing and Balancing reports;
c) Functional performance testing of the equipment, controls, economizers, and lighting control systems.
3. All commissioning shall be performed as indicated here and elsewhere in the specifications and shall comply with provisions of the applicable Energy Conservation Code.

3.4 SEQUENCE OF OPERATIONS

A. Sequence of Operations: This is a performance-based specification intended to convey the control intent of the various systems. The contractor shall provide detailed shop drawings including P&ID diagrams, equipment lists and finalized sequences for review by the Engineer prior to installation. Any questions concerning specific details shall be referred to the engineer for clarification.

B. System: It is the intent of this specification that programmable electronic controls be provided to control occupied/unoccupied modes of all HVAC systems within the facility. Systems shall be provided with all additional required controls including, but not limited to, space mounted monitoring and user interface devices, to provide the specified sequence.

C. Equipment and Wiring: This contractor shall provide all control equipment, and wiring (regardless of voltage) to accomplish the sequence of operations as detailed below.

D. Control and Monitoring: Sensors shall be provided throughout the HVAC systems (hydronic and air) as required to control and monitor their operation. Provide sensors with remote mounted stats where indicated on the drawings. Where multiple space mounted sensors are required for a given unit they shall be located in the same general area.

E. Safety Controls: This contractor shall provide all safety controls required to protect the building and all controlled equipment from damage as well as those controls necessary to signal abnormal operation or malfunction of equipment. These shall include but not be limited to high limits, low limits, freezestats, flow switches, interlocks and relays.

F. Energy Efficiency: All controls and sequences shall be configured to provide maximum energy efficiency while maintaining occupant comfort.

G. Functional Performance Testing: The contractor shall perform complete and thorough Control Functional Performance Test (FPT) and Commissioning of the control systems. Upon completion of the FPT, a report shall be submitted to the engineer for review and comment. The FPT shall include testing of:
1. Safeties in every mode, i.e., in manual run mode as well as auto mode.
2. Signals to and from the fire alarm, security and entry systems.
3. Sequences of operation step by step in every mode and possible situation.
4. The operation of all control loops under actual operating conditions.
5. The interlocked operation of all equipment (i.e., the operation of starters in manual and off modes as well as auto mode, damper end switch interlock, etc.)
6. Commissioning should test every conceivable life safety scenario and every conceivable operational scenario that the system will encounter and document this testing with printed graphs of trend logs.

H. Kitchen Exhaust and Make-Up Air Unit Control:
1. Exhaust fan and Make-Up Air Unit shall be switched from the control panel on the kitchen hood and interlocked to operate in conjunction with one another. Make up Air unit Discharge air thermostat shall fire the gas furnace to maintain a constant discharge temperature (adj.).
2. Upon activation of Hood fire protection system, the make-up air unit shall be de-energized and the associated exhaust fan shall remain active.

I. Packaged Rooftop HVAC Unit
1. Occupied winter: Supply fan shall run continuously. Thermostat shall cycle the compressor, reversing valve & electric heating stages in sequence to maintain the thermostat set point. Outside air damper shall open to allow minimum outside air flow.
2. Unoccupied winter: Upon a drop in space temperature below the night setback temperature, the supply fan and compressor, reversing valve & electric heating stages shall be cycled to maintain thermostat night setback set point temperature. Outside air damper shall be closed.
3. Occupied summer: Supply fan shall run continuously. The cooling circuits shall energize as required to maintain the thermostat and set points. The electric heat shall be de-energized. Outside air damper shall open to allow minimum outside air flow.
4. Unoccupied summer: Supply fan shall be de-energized. Outside air damper shall be closed.
5. Economizer & Differential Enthalpy Economizer Control: When the outside air is suitable for cooling, the outside air damper and interlocked exhaust fan shall modulate to increase the percentage of outside air, up to 100% to satisfy cooling load. In addition, when the enthalpy of the outside air is less than that of the return air, differential enthalpy economizer operation shall be initiated allowing mechanical cooling in conjunction with economizer operation.
6. CO2 Demand Ventilation Control (Where Applicable):
a) When outside air is not suitable for cooling as indicated by outside air enthalpy sensor, the unit return air damper, outside air damper and exhaust fan VFD shall modulate to maintain minimum outside air.
b) Provide CO2 sensors to enable demand controlled ventilation, the unit return air damper, outside air damper and exhaust fan VFD shall modulate to maintain ASHRAE recommended levels of CO2 in the return air stream (adj.)
c) When outside air is suitable for cooling as indicated by outside air enthalpy sensor (CO2 sensor override), the unit return air damper, outside air damper and exhaust fan VFD shall modulate to provide maximum outside air to the space.
d) Minimum allowable Outside Air Supply Volume shall be 20% of the scheduled value in the occupied mode.

J. Exhaust Fans:
1. Bathroom exhaust fans shall be interlocked to run when the corresponding RTU is in the occupied mode unless otherwise noted.
2. Kitchen and Dishwasher exhaust fans shall be switched from the kitchen hoods. Refer to Kitchen Exhaust sequence and kitchen equipment plans for additional information.

K. Electric Heater Control: (cabinet type, unit type, baseboard type, etc.)
1. Provide single temperature unit or room mounted thermostat to cycle electric heating coil and fan motor to maintain constant space temperature.

END OF SECTION

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42886 - calic.#c 31127 - flic.#ar 98187 - mdlic.# 19161
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PROJECT 18020

MELVIN BREWING

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

MECHANICAL SPECIFICATIONS

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

M3.2

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE DESCRIPTION	MANUFACTURER	MODEL	TYPE	SIZE	FITTING MANUFACTURER	FITTING TYPE	SUPPLY	TRAP	CARRIER	REMARKS
P-1	WATER CLOSET	TOTO	CT705EN(G)	FLOOR MOUNTED 1.6 GAL/FLUSH	-	KOHLER	MANUAL K-13516	1"CW SUPPLY TO FLUSH VALVE	INTEGRAL	N/A	SEAT TOTO SC534 WHITE COMMERCIAL GRADE W/OPEN FRONT
P-1A	ADA WATER CLOSET	TOTO	CT705EN(G)	FLOOR MOUNTED 1.6 GAL/FLUSH	-	KOHLER	MANUAL K-13516	1"CW SUPPLY TO FLUSH VALVE	INTEGRAL	N/A	SEAT TOTO SC534 WHITE COMMERCIAL GRADE W/OPEN FRONT
P-2	LAVATORY	AMERICAN STANDARD	AQUALYN DROP-IN	COUNTER MOUNTED	-	AMERICAN STANDARD	SELTRONIC BATTERY POWERED	SUPPLIES WITH STOPS, LOOSE KEY	1-1/4"x1-1/2"CAST BRASS P-TRAP w/C.O. PLUG	N/A	PROVIDE OFFSET TAILPIECE AND TRUEBRO LAV GUARD INSULATION
P-2A	ADA LAVATORY	AMERICAN STANDARD	LUCERNE	WALL HUNG	-	AMERICAN STANDARD	SELTRONIC BATTERY POWERED	SUPPLIES WITH STOPS, LOOSE KEY	1-1/4"x1-1/2"CAST BRASS P-TRAP w/C.O. PLUG	CONCEALED ARM	PROVIDE OFFSET TAILPIECE AND TRUEBRO LAV GUARD INSULATION
P-3	URINAL	TOTO	UT105U(G)	WALL MOUNTED 1/8 GAL/FLUSH	-	KOHLER	MANUAL K-13520	3/4"CW SUPPLY TO FLUSH VALVE	INTEGRAL	ZURN OR EQUAL	
P-3A	ADA URINAL	TOTO	UT105U(G)	WALL MOUNTED 1/8 GAL/FLUSH	-	KOHLER	MANUAL K-13520	3/4"CW SUPPLY TO FLUSH VALVE	INTEGRAL		MOUNT AT ADA COMPLIANT HEIGHT
P-4	MOP BASIN SINK	FIAT	MSB-2424	FLOOR MNTD. MOLDED STONE	24" X 24" X 12"	CHICAGO	MANUAL 897	SUPPLIES WITH STOPS, LOOSE KEY	3" P-TRAP	N/A	W/FIAT #889-CC MOP HANGER, 1453-BB STRAINER, 832-AA HOSE, E-77-AA GUARD & MSG 2424 WALL GUARD

ALL FIXTURES TO COMPLY WITH A.D.A.
INSTALL SILICONE SEALANT WHERE FIXTURES MEET FLOOR AND WALL.

WATER HEATER SCHEDULE

SYMBOL	MANUFACTURER AND LOCATION	MODEL	TYPE	MAX. GPM @ 75° RISE	MIN. GPM TO ACTIVATE	CFH INPUT & RECOVERY	PHASE	VOLTS	DISCHARGE TEMP.	REMARKS
GWH-1	LOCHINVAR KITCHEN AREA	SHIELD #SNA151-100	GAS FIRED STORAGE TYPE 90 GALLON	-	-	150 CFH RECOVERY 175GPH @ 100° RISE	1	208	140°	INCLUDE NEUTRALIZER KIT AND PVC INTAKE AND EXHAUST PIPING WITH CONCENTRIC TERMINATION KIT. COORDINATE WITH MECHANICAL CONTRACTOR
GWH-2&3	RINNAI OR NAVIAN STORAGE RM.		GAS FIRED INSTANTANEOUS	4.0	.5	199 CFH EACH	1	208	120°	INCLUDE NEUTRALIZER KIT AND PVC INTAKE AND EXHAUST PIPING WITH CONCENTRIC TERMINATION KIT. COORDINATE WITH MECHANICAL CONTRACTOR

BIDDING NOTE: PLUMBING CONTRACTOR TO INCLUDE THE COST FOR MATERIALS AND LABOR TO PROVIDE AND INSTALL ALL 3" INTAKE AND EXHAUST PIPING FOR NEW INCLUDE HANGERS AND SUPPORTS AND CONCENTRIC FITTINGS.

SHOCK ABSORBER SCHEDULE

SYMBOL	A	B	C	D	E
FIXTURE UNITS	1-11	12-32	33-60	61-113	114-154
JOSAM	75001	75002	75003	75004	75005
SMITH	5005	5010	5020	5030	5040
ZURN *	1700-100	1700-200	1700-300	1700-400	1700-500

CLEANOUT, FLOOR SINK, TRENCH DRAIN & FLOOR DRAIN SCHEDULE

SYMBOL	TYPE	MFGR	MODEL	OUTLET	MATERIAL	REMARKS
FCO-1	FLOOR CLEANOUT (FINISHED AREAS)	J R SMITH	4026C	CAULK	NICKEL BRONZE TOP BRONZE PLUG	FINISHED AREAS (PROVIDE CARPET MARKER IN CARPETED AREAS)
FCO-2	FLOOR CLEAN OUT (UNFINISHED AREAS)	J R SMITH	4256C	CAULK	CAST IRON BRONZE PLUG	SLAB ON GRADE, HEAVY-DUTY TRAFFIC
WCO	WALL CLEANOUT	J R SMITH	4422-PB	-	POLISHED BRONZE COVER	FINISHED AREAS
FD-1	FLOOR DRAIN	J R SMITH	2005-P050	CAULK	NICKEL BRONZE TOP BRONZE PLUG	INSTALL TRAP PRIMER VALVES FOR ALL FLOOR DRAINS NOT RECEIVING INDIRECT WASTE PIPING
FS-1	FLOOR SINK	J R SMITH	3020-10 HALF GRATE	CAULK	STAINLESS STEEL TOP ANTI-SPLASH DOME STRAINER	
TD-1	TRENCH DRAIN	ME-JOSAM PRO-PLUS 100 6" WIDE	SHEET MOLDING COMPOUND/GLASS REINFORCED POLYESTER	CAULK	NYLON GRATE MODEL #14045 56,000#	DRAIN TO BE PRE-SLOPED. DRAIN TO BE SUPPLIED BY TRENCH DRAIN SUPPLY 877-903-7426 OR APPROVED EQUAL

PIPING

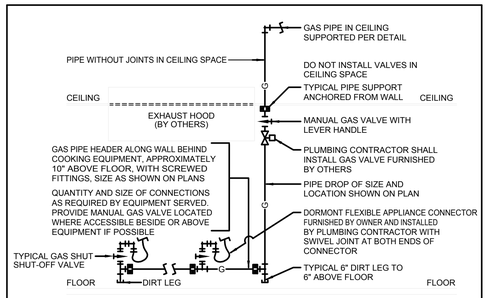
SYMBOL	ABBREVIATION	DESCRIPTION
		NEW WORK (ABOVE GROUND) (PERTAINS TO ALL SYSTEM)
		NEW WORK (BELOW GROUND) (PERTAINS TO ALL SYSTEM)
	CW	COLD WATER
	HW	HOT WATER 120°F
	V	VENT
G	G	NATURAL GAS PIPING

VALVES

SYMBOL	ABBREVIATION	DESCRIPTION
	BV	SHUTOFF VALVE (BALL VALVE)

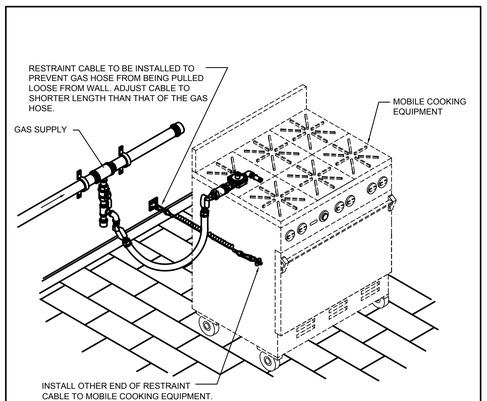
GENERAL

SYMBOL	ABBREVIATION	DESCRIPTION
	FCO	CLEANOUT (FLUSH FLOOR)
	FD	FLOOR DRAIN AND TRAP
	DN	DOWN (PENETRATES LEVEL BELOW)
	DROP	DROP (BUT DOES NOT PENETRATE LEVEL BELOW)
	RISE	RISE (BUT DOES NOT PENETRATE LEVEL ABOVE)
	UP	UP (PENETRATES LEVEL ABOVE)
	P-1	FIXTURE DESIGNATION
		INDICATES DIRECTION OF FLOW
		INDICATES DIRECTION OF SLOPE DOWN
	INV	INVERT ELEVATION
	VTR	VENT THROUGH ROOF
	NFWH	NON-FREEZE WALL HYDRANT
	W & T	WASTE & TRAP



PROVIDE ANY GAS APPLIANCE PRESSURE REGULATORS REQUIRED, INSTALL ANY FURNISHED WITH KITCHEN EQUIPMENT. VERIFY ROUGH-IN REQUIREMENTS WITH KITCHEN EQUIPMENT. COORDINATE WITH ELECTRICAL CONTRACTOR. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT ACTUAL CONDITIONS. ATTACH RISER AND HEADER TO WALL WITH 1" CLEARANCE BEHIND PIPE. MAKE FINAL CONNECTION TO EQUIPMENT AS RECOMMENDED BY MANUFACTURER. PROVIDE WELDED FITTINGS AND JOINTS IN ANY CONCEALED UNVENTILATED LOCATION

COOKING APPLIANCE GAS PIPE DETAIL
NOT TO SCALE



QUICK DISCONNECT GAS HOSE ASSEMBLY DETAIL
NOT TO SCALE

PLUMBING GENERAL NOTES

1. BIDDERS SHALL UTILIZE A COMPLETE SET OF PLUMBING BIDDING DOCUMENTS IN PREPARING OF BID INCLUDING DRAWINGS AND SPECIFICATIONS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ERRORS OR MISINTERPRETATIONS RESULTING FROM THE USE OF INCOMPLETE SETS OF PLUMBING BIDDING DOCUMENTS.
   THESE PLUMBING BIDDING DOCUMENTS SHALL INCLUDE:
   DRAWINGS
   P0.0 GENERAL NOTES, LEGEND & SCHEDULES
   PD1.1 PLUMBING FLOOR PLAN - DEMOLITION
   P1.2 PLUMBING FLOOR PLAN - PROPOSED WATER & GAS
   P1.3 PLUMBING FLOOR PLAN - PROPOSED WASTE & VENT
   P1.4 PLUMBING - SPECIFICATION
2. THE WORK COVERED CONSISTS OF FURNISHING ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND READY FOR CONTINUOUS OPERATION, THE PLUMBING SYSTEMS, APPARATUS AND EQUIPMENT FOR THIS PROJECT.
3. ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE PLUMBING SUB-CONTRACT, LABOR AND TESTING PERFORMED HEREIN SHALL BE IN COMPLETE ACCORDANCE WITH THE STATE BUILDING CODE, AND PLUMBING CODES, ALL LOCAL CODES AND REGULATIONS, NATIONAL FIRE PROTECTION ASSOCIATION, INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.
4. ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURRED.
5. WHERE WATER PIPING IS SHOWN DROPPING INTO PLUMBING CHASES WITH SIZES NOTED, THAT SIZE SHALL BE CARRIED FULL LENGTH THROUGH THE CHASE.
6. UNLESS OTHERWISE NOTED, ALL HORIZONTAL SANITARY, WASTE AND PIPING WHICH IS 2" OR LESS IN DIAMETER SHALL PITCH NOT LESS THAN 1/4" PER FOOT AND ALL HORIZONTAL PIPING WHICH IS 3" OR LARGER IN DIAMETER SHALL PITCH OF NOT LESS THAN 1/8" PER FOOT.
7. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MNTG. HEIGHTS OF ALL PLUMBING FIXTURES.
8. ACCESSIBLE FIXTURES SHALL BE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES AND ANSI A117.1 STANDARD ON ACCESSIBLE USABLE BUILDINGS AND FACILITIES.
9. SHOCK ABSORBERS SHALL BE EXTENDED VERTICALLY WITHIN CHASE TO ABOVE FINISHED CEILING. SHUTOFF VALVES SHALL BE INSTALLED DIRECTLY BEFORE THE DEVICE TO ENABLE THE REPLACEMENT WITHOUT HAVING TO SHUT DOWN THE ENTIRE BRANCH OR MAIN.
10. MISCELLANEOUS DISCREPANCIES OR OMISSIONS WHICH MIGHT APPEAR ON THE PLANS OR SPECIFICATIONS WILL NOT RELIEVE THE PLUMBING SUB-CONTRACTOR OF CODE COMPLIANCE.
11. COMPLY WITH ALL RULES AND REGULATIONS OF THE EUREKA M0. WATER DEPARTMENT AND THE TOWN OF EUREKA MO. PLUMBING INSPECTOR'S OFFICE.

KITCHEN / BAR EQUIPMENT

PROVIDE ROUGHING AND FINAL CONNECTIONS FOR WATER, WASTE, VENT AND GAS SYSTEMS; INCLUDING TRAPS, TAILPIECE AND STRAINERS, WHEEL HANDLE STOPS, VALVES, COCKS AND APPURTENANCES TO FIXTURES AND EQUIPMENT REQUIRING SAME. EACH FIXTURE AND PIECE OF EQUIPMENT, INCLUDING WORK IN, UNDER OR THROUGH TABLES, CABINETS AND EQUIPMENT CHASES, SHALL BE VALVED AND TRAPPED.

AS EQUIPMENT PURCHASED MAY VARY FROM THAT INDICATED ON THIS PLAN, AND, THEREFORE, REQUIRE SOME RE-ARRANGEMENTS OF EQUIPMENT DIFFERENT FROM THAT INDICATED ON THE DRAWINGS, MAKE CONNECTIONS TO SUCH RE-ARRANGED EQUIPMENT WITHOUT ADDITIONAL COST TO OWNER. UNPACK, ASSEMBLE AND INSTALL SUPPLY TRIM FOR EQUIPMENT AND FIXTURES FURNISHED BY OWNER.

PROVIDE MISCELLANEOUS EQUIPMENT CONNECTIONS AND INDIRECT DRAINS FROM SERVICE UNITS AND SIMILAR EQUIPMENT. UNIONS SHALL BE INSTALLED AT KITCHEN/BAR EQUIPMENT AND AT OTHER SUCH PLACES AS MAY BE NECESSARY TO DISCONNECT PIPING SO AS TO MAKE REPAIRS.

ROUGHING SHALL NOT BE UNDERTAKEN UNTIL ARCHITECT HAS APPROVED EQUIPMENT AND FIXTURE SHOP DRAWINGS AND KITCHEN/BAR TEMPLATE IS FURNISHED BY PERTINENT MANUFACTURER SO THAT CONNECTING REQUIREMENTS MAY BE VERIFIED AND WORK INSTALLED IN A NEAT AND WORKMANLIKE MANNER. EXACT LOCATION OF SERVICE CONNECTIONS SHALL BE OBTAINED PRIOR TO ROUGHING.

HOOK-UP BETWEEN A GARBAGE DISPOSER AND COLD WATER BRANCH SHALL INCLUDE INSTALLATION OF GATE VALVE, SOLENOID VALVE AND VACUUM BREAKER.

SHOCK ABSORBERS SHALL BE INSTALLED IN CONJUNCTION WITH QUICK CLOSING VALVES INCLUDING DISHWASHER AND BOOSTER HEATER. SHUT OFF VALVE SHALL BE INSTALLED BENEATH EACH ABSORBER. ABSORBER SHALL BE SIZED IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD PDI-WH 201.

PROVIDE 1/2 IN. STOP VALVES ON ALL FIXTURES AND EQUIPMENT SUPPLIES. VACUUM BREAKER SHALL BE INSTALLED IN CONJUNCTION WITH WATER LINES TO BOOSTER, GARBAGE DISPOSAL AND DISHWASHER AND WHERE REQUIRED TO PREVENT POLLUTED BACK-SIPHONAGE.

WHERE AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM IS PROVIDED FOR THE PROTECTION OF COMMERCIAL TYPE COOKING EQUIPMENT (I.E. FRYERS, GRIDDLES, RANGE TOPS, GRILLS, ETC.) SOLENOID VALVES SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR TO AUTOMATICALLY SHUTDOWN THE FUEL SUPPLY TO THE COOKING EQUIPMENT.
REFER TO KITCHEN FOOD SERVICE EQUIPMENT PLANS FOR A COMPLETE UNDERSTANDING OF PLUMBING REQUIREMENTS & SERVICE SCHEDULES AND INCLUDE ALL SUCH COSTS IN BID AMOUNT.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c-31127 - fllic.#ar 98187 - mdlic.# 19161
mdlic.#b 20080400 - pelic.#lc 40707 - txlic.# 27195 - wclic.# 1020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:
eds ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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PLUMBING LEGEND, NOTES & SCHEDULES

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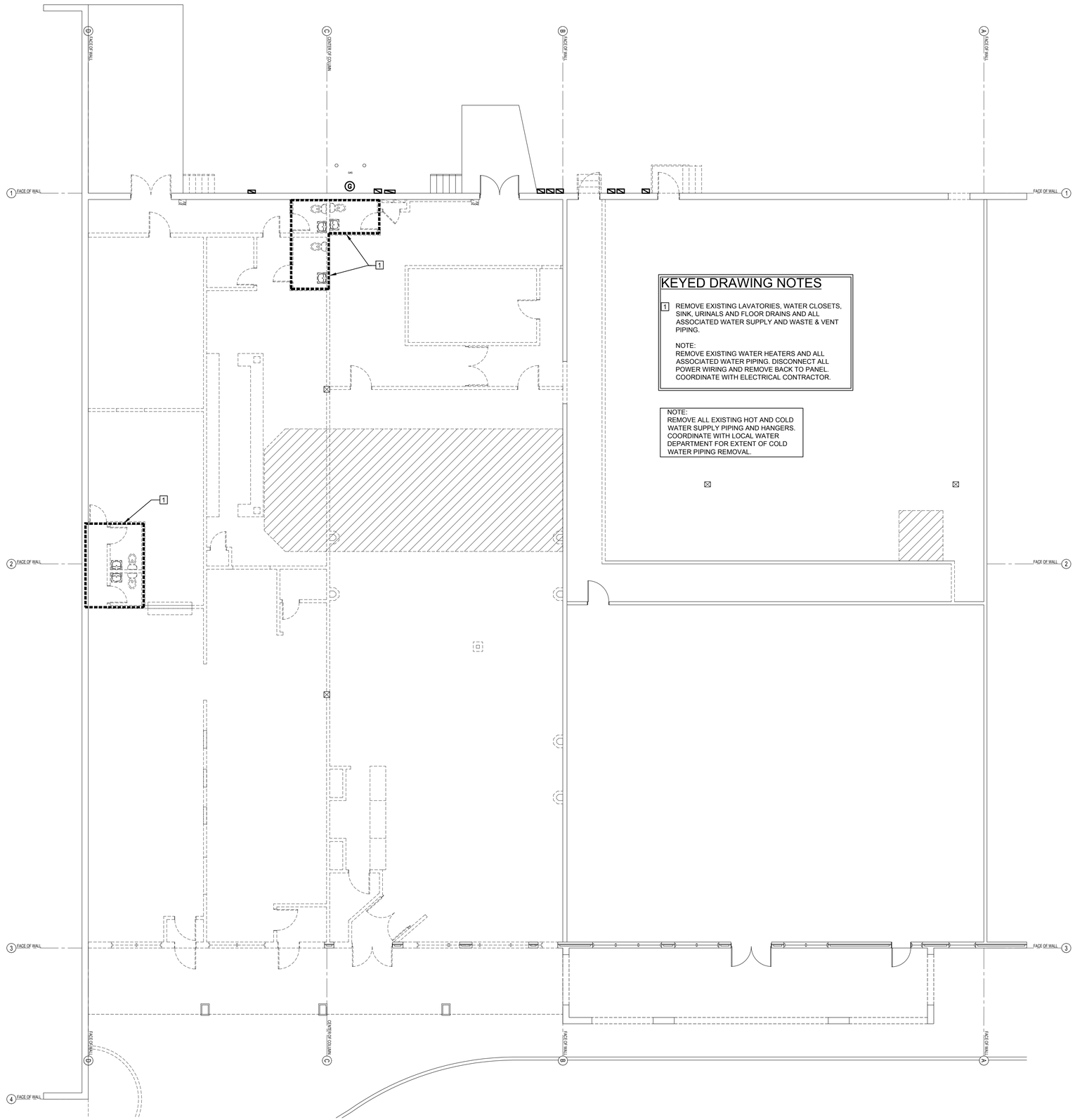
WILLIAM T MAYER III
NUMBER PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

P0.0



PLUMBING DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
cslc # 42885 - cca lic #c 31127 - f lic.#'ar 98187 - mdlic.# 19163
mdlic.#p 2008004261 - pdlic #m: 40707 - hdc # 27795 - wdc # 1102

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141 Industrial Highway Slatersville, RI 02876
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PLUMBING DEMOLITION PLAN

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PROFESSIONAL ENGINEER

SHEET NUMBER:

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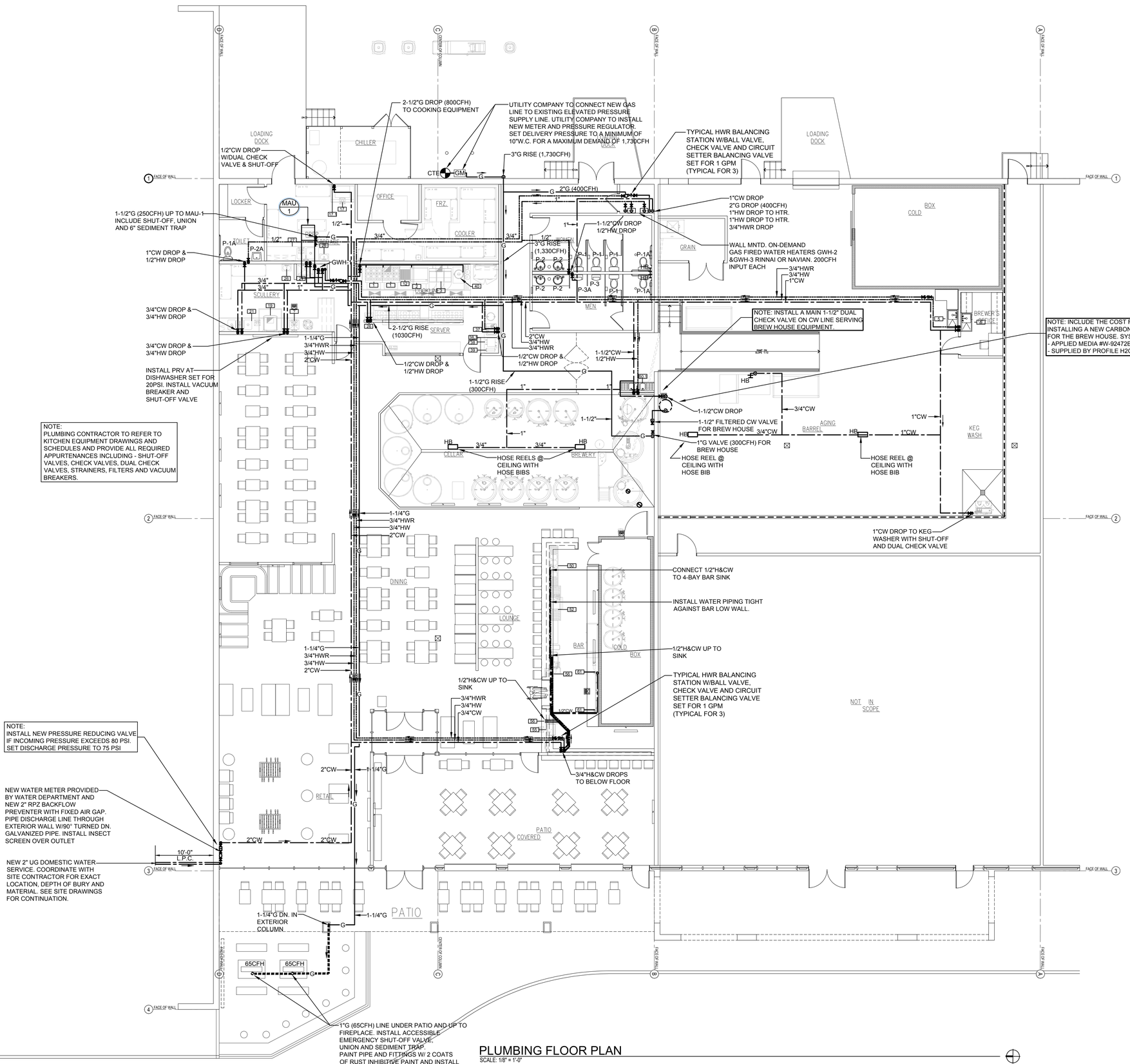

PLUMBING FLOOR PLAN
SCALE: 1/8" = 1'-0"

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4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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REVISIONS:

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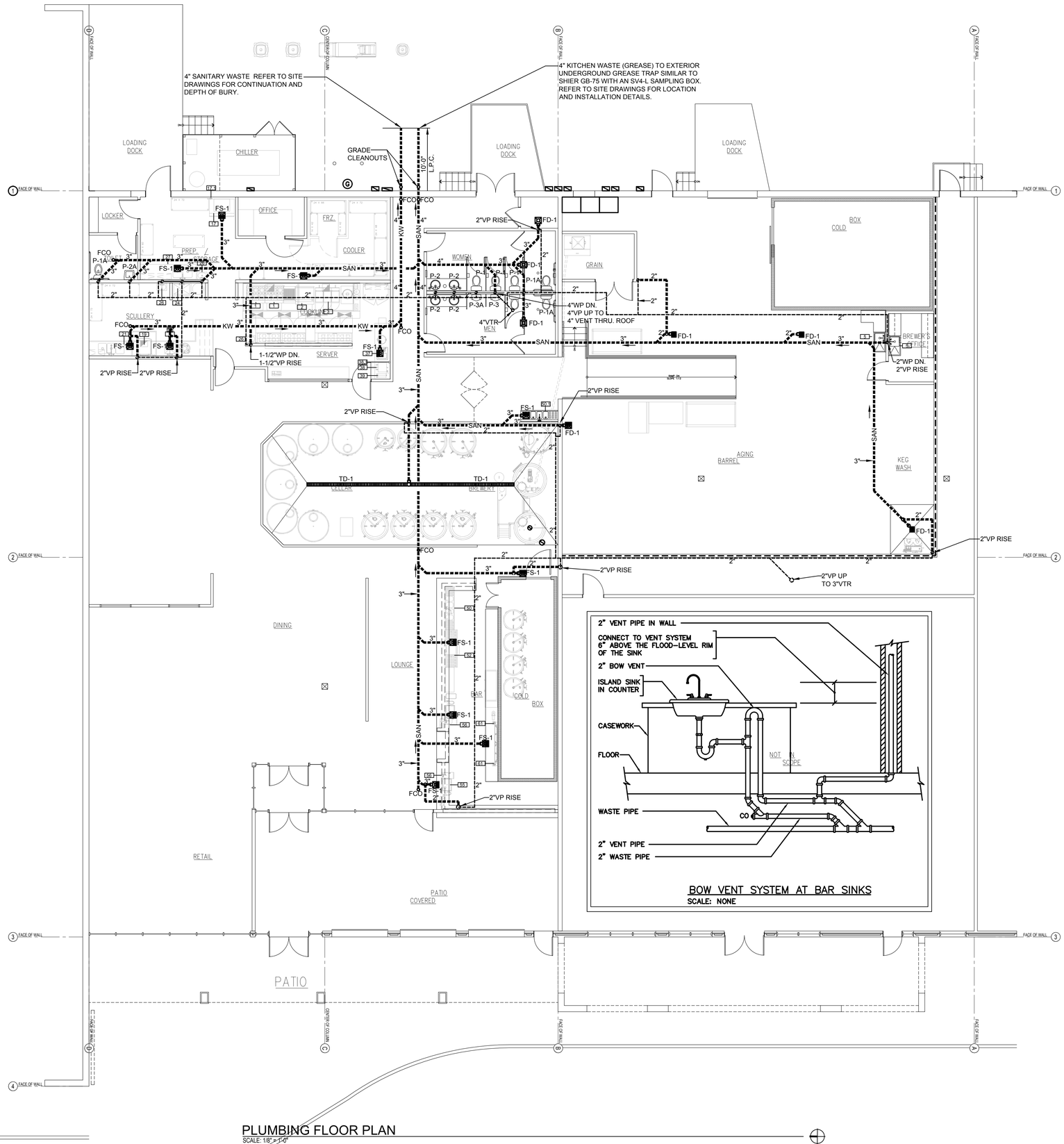
PLUMBING FLOOR PLAN
WATER & GAS

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
NUMBER PE-2008021197
PROFESSIONAL ENGINEER

SHEET NUMBER:

P1.2



PLUMBING FLOOR PLAN
SCALE: 1/8" = 1'-0"

BOW VENT SYSTEM AT BAR SINKS
SCALE: NONE

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c 31127 - f.llc.#ar 98187 - mdlic.# 19161
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108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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PLUMBING FLOOR PLAN
WASTE & VENT

STAMP:

SHEET NUMBER:

P1.3

SECTION 15400 - PLUMBING

PART I — GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. This section addresses materials and methods common to more than one Subcontractor. Refer to the drawings to determine the extent of work required of each individual trade.

1.4 DESCRIPTION OF WORK

A. The work described herein shall be interpreted as work to be done by the Plumbing Subcontractor. Work to be performed by other trades will be specifically referenced to a particular Contractor or Subcontractor.

B. The work under this section shall consist of furnishing all labor, materials, equipment, supervision, transportation, construction, facilities, devices and incidentals necessary to provide complete plumbing systems as hereinafter described and as indicated on the drawings, including, but not limited to the following:

1. Sanitary, waste and vent piping systen
2. Process waste and vent piping systen
3. Domestic hot and cold water piping systen
4. Natural Gas Piping System.
5. Plumbing fixtures and trim
6. Sleeves, escutcheons, hangers and supports
7. Fire safing of pipe penetrations
8. Insulation
9. Valves
10. Water Hammer arrestors
11. Vacuum Breakers
12. Fittings, unions and couplings
13. Cleaning, flushing, testing and disinfection
14. All supplementary steel for piping and equipment support
15. Guarantees
16. Drilling forof inserts
17. Vibration isolation and flexible connections
18. Core drilling
19. Access panels

1.5 CODES, ORDINANCES AND PERMITS

A. All material and work provided shall be in accordance with the following codes and standards:

1. State Plumbing and Fuel Gas Code
2. State Department of Public Safety
3. Standards of the Underwriters' Laboratories (UL)
4. State and local Building Codes
5. Occupational Safety and Health Act
6. Local Codes and Board of Health requirements
7. Requirements of the RI Department of Environmental Protection
8. Requirements of the City of Warwick.

B. Where the contract documents indicate more stringent requirements than the above codes and ordinances, the contract documents shall take precedence.

C. File all documents, pay all fees and secure all permits, inspections and approvals necessary for the work of this section.

1.6 CONTRACT DRAWINGS & specifications

A. The Contract Drawings are generally diagrammatic and convey the Scope of Work and General Arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect and Engineer before being installed. The Subcontractor shall follow drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Subcontractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or before proper execution of the work.

B. Specifications: The specifications are intended only to complement the drawings; however, work detailed and/or noted only on the drawings or work described only in the specifications shall all be considered as part of the scope of work.

1.7 SHOP DRAWINGS

A. Within thirty (30) days after the date of notice to proceed, and before purchasing any materials or equipment, submit for approval a complete list, in six (6) copies, of all materials to be incorporated in the work.

B. After the list has been processed, submit six (6) complete sets of shop drawings of all equipment. These shop-drawing submittals shall be submitted within thirty (30) days after the processing date of the original submittal.

C. All submittals shall be complete and shall be in three-ring loose-leaf binders. No consideration will be given to partial submittals, except with prior approval.

D. The approval of the equipment does not relieve the Subcontractor of responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist.

E. Refer to General Requirements for the substitutions of equipment and submittal of shop drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, piping, supports, or construction, same shall be provided. Plumbing Subcontractor to assume cost and entire responsibility thereof.

1.8 RECORD DRAWINGS

A. The General Contractor will provide two sets of black or blue line and white drawings to the Plumbing Contractor to maintain and submit record drawings. One set of which shall be maintained at the site, and which shall, at all times, be accurate, clear and complete. Showing the actual location of all equipment and piping. The record drawings shall be available to the Architect/Engineer and/or General Contractor field representative at all times.

B. Any addenda, sketches, and supplementary drawings issued during the course of construction shall be transferred to the "as-built" drawings.

C. At the completion of the contract, submit an accurate, checked set of "as-built" drawings.

D. All valves installed shall be indicated on these drawings, and shall be numbered with numbers corresponding to those on the valve charts.

E. All costs related to these requirements shall be paid for by this Subcontractor.

1.9 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Operating Instructions: Provide operating instructions to the Owner's designated representative with respect to the operation functions and maintenance procedures for all equipment and systems installed. The cost of such instructions, up to one full day of the Contractor's time, shall be included in the contract price. The cost of providing a manufacturer's representative at the site for instructional purposes shall be included in the Contract Price.

B. Maintenance Manuals: At the completion of the project, turn over to the General Contractor four (4) complete manuals in 3-ring binders, indexed, containing the following:

1. Complete shop drawings of all material and equipment in Part 2 of this section.
2. Operation descriptions of all systems.
3. Names, addresses and telephone numbers of all suppliers of system components.
4. Preventative maintenance instructions for all systems.
5. Spare parts list of all system components.
6. Copies of all valve charts.

1.10 GUARANTEE

A. This Contractor shall obtain in the General Contractor's and Owner's name, the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents. The guarantee shall be for a period of one (1) year minimum from the date of acceptance or final payment.

1.11 STORAGE OF MATERIALS

A. Store materials prior to their installation where designated by the General Contractor. This Contractor shall be responsible for all materials stored and protect all installed equipment from injury or defacement.

1.12 SITE VISITATION

A. This Contractor shall be required to visit the site and to have examined the existing conditions, which may affect the work under this contract. Failure to do so shall be this Subcontractor's responsibility and no claims for extra compensation or extension of the shall be allowed because of it.

1.13 INSPECTION AND TESTS

A. If inspection of materials installed shows defects, such defective work, materials, and/or equipment shall be replaced at no cost to the General Contractor or Owner, and the inspection and tests repeated.

B. Make all reasonable tests as required, and prove the integrity of all work and leave the entire installation in correct adjustment and ready to operate.

1.14 DEFINITION OF TERMS

A. "Contractor and/or Subcontractor" specifically means, the Plumbing Subcontractor working under this Section of the Specification.

B. "Furnish and Install" or "Provide" means to supply, erect, install and connect in complete readiness for operation, the particular work referred to, unless otherwise specified.

C. "Concealed" means hidden, in chases, furred spaces, walls, above ceilings or enclosed in construction.

D. "Exposed" means visible, in sight, or not installed "concealed" as defined above.

E. "Approved Equal" means any equipment or material, which is approved by the engineer, and equal in quality, durability, appearance, strength, design and performance to the equipment or material originally specified.

F. "Piping" means all piping including fittings, joints, hangers, supports and valves.

G. "Underground" means piping that is buried exterior to or within the building.

1.15 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

A. In case of conflict between the contract drawings and specifications, the Engineer shall determine which takes precedence.

1.16 CONTRACT COST BREAKDOWN

A. Submit a breakdown of contract price to aid the General Contractor in determining the value of work installed, as the job progresses.

B. No requisitions will be paid to the Contractor until after the breakdown is delivered to the General Contractor.

1.17 ELECTRICAL CHARACTERISTICS

A. In general, and unless specifically indicated otherwise in the specifications or noted on the drawings, all building service equipment shall be of the following characteristics:

B. Motors up to and including 1/3 horsepower shall be suitable for 120 volt, single-phase operation.

C. Motors larger than 1/3 horsepower shall be suitable for 480 volts, three-phase operation.

1.18 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the Architect any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. Coordination drawings shall be initiated under Section 15500 of the Specifications. It is their responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided. These drawings shall be prepared at not less than 3/8 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. A reproducible copy of each drawing prepared shall then be submitted to each Contractor working under Sections 15380, 15400, 15500 and 16000, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After this Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

D. The Coordination Drawings shall be produced on AutoCAD Release 2000 minimum or compatible system. A disc and one (1) set of reproducible sepias (all-trade composite) shall be provided to the Architect/Engineer for review.

E. The cost of preparing and reproducing these Drawings will be included as part of this Contract.

F. Coordination Drawings shall not be construed as replacing any Shop Drawings.

G. The Plumbing Subcontractor shall be additionally responsible for preparing drawings indicating all the buried or underground plumbing systems. Include in these documents all other underground components such as, but not limited to, underslab drainage systems, foundation drainage systems, footings, foundation walls, pits, tie beams, electric and telephone duct banks.

1.19 DEMOLITION

A. Prior to commencing demolition, contractor shall identify with owner any equipment to be returned to the owner after demolition. All other debris shall be disposed of by this contractor in accordance with all applicable regulations. Any shutdowns required for demolition shall be coordinated with building owner to avoid impact to operations.

B. During demolition, any equipment found to be abandoned shall be demolished. Existing unused connections to existing ducts or piping shall be capped accordingly. Abandoned elements built into walls or located above existing inaccessible ceilings shall remain and ends capped and marked abandoned.

C. Under demolition, the following is, in brief, the extent of the work to be performed by the Plumbing Contractor under this contract.

1. The plumbing contractor shall be responsible for the disconnection and removal of the existing equipment, fixtures, piping, valves, etc. in designated areas. Cut & cap piping back to mains. Patch all roof and wall penetrations to match existing.
2. This contractor shall protect work against injury or damage; and carefully store material and equipment to be relocated. Open ends of work shall be closed with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

PART 2 - PRODUCTS

2.1 ACCESS PANELS

A. Furnish access panels for access to all concealed parts of the plumbing system that require accessibility such as valves, shock absorbers and cleanouts. Access panels to be installed by others under the appropriate section of the specifications.

B. All access panels shall be located in a workmanlike manner, positioned so that the component can be easily reached and the size shall be sufficient for this purpose (minimum size 12-in. square). Location of access panels will be submitted for approval prior to installation.

C. Access panels shall be prime painted with can lock, as manufactured by Inland Steel Products Co. Milcor, Miami Carey or Walsh-Hunnan-Gladwin, Inc., Voylactor or an approved equal. Provide fire rated access panels where required by applicable code. They should be as follows:

1. Drywall Surfaces: Acudor DW-5040
2. Masonry Construction: Acudor UF-5000
3. Plastered Surfaces: Acudor PS-5030

D. Access panel shop drawings shall be submitted to the Architect for approval.

2.2 PIPING/FITTINGS/JOINTS

A. Pipe and fittings shall be of US manufacture, and shall conform to the latest ASA, ASTM and/or FS Standards.

B. Above Ground Water Piping 2 in and Smaller:

1. Pipe:
   a. Type L copper tubing, conforming to Federal Specification WW-T-799 hard temper, or ASTM B88 drawn copper.
   b. ASTM A312, 304/304L Stainless Steel, .049 wall, certified for use with Press fit® products.
2. Fittings:
   a. Wrought copper and bronze solder joints.
   b. 304/304L Precision cold drawn austenitic stainless steel, Vic-Press 304™.
3. Joints:
   a. Soldered joints shall be lead free solder.
   b. Vic-Press 304™ fittings and couplings, complete with elastomer O-ring.

C. Above Ground and Below Ground Sanitary Waste and Vent:

1. Schedule 40 PVC DWV with solvent cement glued fittings.
2. Type L hard tempered copper tube with soldered cast bronze or wrought copper fittings of the recessed drainage pattern, for waste and vent piping 1-1/2 in. and smaller.

D. Natural Gas Piping 2-1/2 in. and Larger: Schedule 40, seamless black steel pipe (ASTM A120) with Schedule 40, black steel fittings. Pipe joints shall be welded or flanged.

E. Natural Gas Piping 2 in. and Smaller: Schedule 40, seamless black steel pipe (ASTM B16.3) with 125-psi malleable iron, screwed fittings.

2.3 HANGERS

A. All piping shall be supported from the building structure by means of approved standard weight UL/FM hangers and supports. Piping shall be supported to maintain required grading and pitching of lines to prevent vibration and to secure piping in place and shall be so arranged as to provide for expansion and contraction. Piping shall not be hung from the hangers of other trades.

B. The spacing of hangers for horizontal piping shall be in accordance with State Plumbing and Fuel Gas Code. In no case shall horizontal piping be supported at intervals greater than 10 ft. Vertical lines shall be adequately supported at their bases by a suitable hanger placed in the horizontal line near the riser and at every story height vertically.

C. Hangers shall be manufactured by Grinnell, Carpenter and Patterson, Fee and Mason, or equal. All hangers and support figure numbers referred to are Carpenter and Patterson.

1. Steel clevis hangers: Fig. 100) attached to steel rod with two nuts for piping 3 in. and larger.
2. For piping 2-1/2 in. and smaller, steel clevis hanger: Fig. 100, or steel band or adjustable swivel ring hanger: Fig. 800.
3. Beam clamps shall be Fig. 196 with Fig. 22 retaining clip.
4. Riser clamps shall be Fig. 126 or Fig. 89; riser clamps shall be installed at all risers through floors at each floor.
5. In lieu of individual hangers, Fig. 342 gang hangers, clips and shields may be used.

D. On insulated piping, each hanger shall be oversized so that the hanger will allow the insulation to pass through undisturbed and uncut. Install a 14 gauge metal pipe shield between pipe insulation and at all pipe hangers or saddles. Hangers shall be around insulation so insulation will be between pipe and hanger or saddle.

E. Seismic Restraints: It is the intent of this seismic specification to keep all mechanical building system components in place during a seismic event.

1. All mechanical systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a conflict occurs between the manufacturer's or construction standards, the most stringent shall apply.
2. This contractor shall engage a professional structural engineer registered in the jurisdiction of this project to review the entire installation to determine all seismic restraint requirements and methods. Contractor shall submit a report outlining the structural engineer's review as well as seismic restraint shop drawings and supporting calculations prepared by the professional structural engineer for review by the Architect.
3. Seismic restraints shall be designed in accordance with seismic force levels as detailed in the applicable building code.

2.4 INSULATION

A. Pipe and equipment installed under this Contract shall be covered as follows:

1. All cold water piping: 1/2 in. glass fiber, 3-1/2 pound density, snap-on fiberglass insulation with vapor barrier jacket and self-sealing lap.
2. All Hot Water and Tempered Water Piping: 1 in. glass fiber, 3-1/2 pound density, snap-on fiberglass insulation with jacketed vapor barrier and self-sealing lap.
3. All valves and fittings shall have fiberglass insulation and covered with Manville's Zeston or Proto, PVC fitting covers with a 25/50 flame and smoke rating. The covers shall be Manville's Zeston or an approved equal. The covers shall be secured in place with a 1-inch wide white vinyl tape on all seams, joints and throat. No tacks or staples will be allowed on this project.
4. All piping on factory assembled equipment shall be insulated same as for field installed piping.

B. All pipe insulation shall be covered with a fire retardant vapor jacket in accordance with NFPA. Jacket shall be constructed of outer layers of white kraft paper and one mil aluminum foil with a glass fiber reinforcing between, laminated together with fire retardant adhesive. This jacket shall have a water vapor permeability of .02 perms.

C. Joints: The end joints of insulation shall be tightly butted and covered with factory furnished end joint sealing tapes. The jacket overlap shall be sealed with an approved sealer which shall not rer the jacket finish. End joints on cold water piping shall be sealed with vapor barrier mastic.

D. All sealer, solvents, tapes, adhesives and mastics used in conjunction with the installation of all insulation specified under this section of the specifications, shall pass the maximum possible fire safe qualities available and be of a type approved under NFPA or NFBU 91A and 90B Standards. The flame-spread rating shall not exceed 25. Smoke development rating shall not exceed 50.

E. No covering will be applied until the piping has passed all tests as required by the Engineer and approving authority.

F. All covering shall be Gustin Bacon, Johns-Manville, Owens Corning Fiberglass or other equal by recognized manufacturer, and shall be installed by reputable Sub-subcontractors regularly engaged in this work and employing particularly skilled therein.

2.5 VALVES

A. Furnish and install valves, required by code, where indicated on the drawings or specifications, so located that they may be operated, repaired or replaced with minimum effort and repacked under pressure. Provide access panels where valves are concealed behind non-removable ceilings or walls. Provide shut off valves for each battery of fixtures.

B. Gate valves 1/2 in. to 2-1/2 in. shall be all bronze, solder end, non-rising stem, 200-psi cold working pressure.

C. Ball valves 2 in. and smaller shall be two piece, all bronze with full port chrome plated ball, teflon seats, solder or threaded ends, extended stems and 600 psi cold working pressure.

D. Stop and waste ball valves 3/4 in. and smaller shall be two piece, all bronze, with full port chrome plated ball, drain cap, teflon seats, solder or threaded ends, extended stems and 400-psi cold working pressure.

E. Swing checks 3 in. and smaller shall be horizontal, all bronze, regrinding bronze disc, solder end, 200-psi working pressure.

F. Pressure Reducing Valves (If required): PRV 2-1/2 in. and smaller shall be pressure regulating, all bronze construction with separate strainer, thread end, 250-psi inlet pressure, adjustment range 25-75 psi with built-in bypass feature. Equal to Zurn/Wilkins 500YSBR (1/2" to 2") or Watts 223SB.

2.6 HOSE BIBS

A. Hose bibs shall be Chicago No. 293, 1/2-in. brass "Y" pattern with lock shield, composition disk, loose tee handler and 3/4 in. hose end. Provide watts #8-H chrome plated backflow preventer on outlet. Mount the hose bib with the outlet 16-in. above finish floor. Install hose bib where existing water service enters basement.

2.7 TRAPS

A. Furnish and install traps with cleanouts on all fixtures and equipment requiring connections to the sanitary system of the same size and material as the pipe on which they occur.

B. Traps installed on threaded pipe shall be recessed drainage pattern.

2.8 DRAINS / TRAPS

A. Furnish and install all drains as shown on the drawings.

B. Floor Drains in Bathrooms and Shower Areas shall be Zurn no. ZN-415, 2 inch, B Type with 6-inch diameter strainers, or approved equal.

2.9 PLUMBING FIXTURES

A. Plumbing fixtures shall be of the best quality as fabricated by a manufacturer of established reputation.

B. All fixtures shall have the manufacturer's guarantee label or trademark indicating first quality.

C. All materials specified to be chromium plated shall be thoroughly cleaned and polished before plating and plate shall be heavily, thoroughly and evenly plated, guaranteed not to strip or peel.

D. Where escutcheons are not furnished with plumbing fixtures, this Contractor shall supply them. Fixtures shall meet the requirements for the conservation of hot and cold water as noted in the State Plumbing Code.

E. Each fixture shall be separately trapped, using the type and size of trap required by the Plumbing Code or as specifically denoted otherwise. Unless otherwise specified, faucets and all exposed fittings and pipe shall be chrome plated. All replacement materials shall be verified in the field to assure a trouble free installation.

F. Dimensions locating plumbing fixtures shall be as shown on the architectural drawings.

2.10 PLUMBING FIXTURE DESCRIPTION

A. Water Closets (WC-1) shall be tank type floor mounted,1.28 gallons per flush, ADA compliant with commercial grade seat, open front less cover. Include pop-up strainer Refer to architectural drawings for locations.

B. Lavatories (LAV-1) shall be wall hung ADA compliant with single lever chrome plated faucet and pop-up strainer. Insulate all exposed piping under sink with Tru-Bro insulation kit.

C. Sink (SK-1) shall be wall hung stainless steel hand sink with wrist-blades and gooseneck.

D. Emergency Eyewash (EEW) Guardian wall mounted unit #G1814P with Guardian #G3600 Thermostatic Mixing Valve. Include dust covers for each spray nozzle.

2.11 PIPING ACCESSORIES

A. Furnish and install pressure and temperature relief valves, ASME rated, temperature relief 210 degree F, double BTU rated, self-closing as manufactured by Watts Regulator Co. or approved equal.

B. Furnish and install vacuum reliefs, Watts Regulator Co. or approved equal.

2.12 SHOCK ABSORBERS

A. Furnish and install where shown on or as scheduled on the drawings and where required to prevent water hammer, Zurn Z-1700 Shocktrol arrestors stainless steel, gas filled, bellows type shock absorber. Installation of absorbers shall be as per manufacturer's recommendations. Access panels are required at shock absorbers.

2.13 DRAIN VALVES

A. It shall be possible to drain the water from all the cold and hot water piping risers located in the lower levels. This subcontractor shall furnish and install 1/2-in. bronze gate valves with 3/4-in. hose outlets to drain each section and branch.

2.14 FIRE SAFING

A. Where piping passes through fire rated walls, floors and ceilings, provide a fire safing system so as to maintain the integrity of the rated assemblies to the satisfaction of the Architect and the Building Inspector. The fire safing system shall be as manufactured by 3M, Dow, Bio-Fire Shield, or Nelson. Provide manufacturer's details or custom details when there are not manufacturer's details for each condition with a UL listing referenced. Where piping is insulated, pipe insulation shall run continuously through the rated opening. Details shall show the required depth and annular space width requirements and limitations and any packing requirements.

B. Refer to architectural drawings for rated walls and partitions. Where there are no architectural drawings or they do not indicate rated walls and partitions, the following guidelines shall be used. All floors, corridor walls, party walls, mechanical room walls, duct and pipe chase walls, stairwells, trash room and chute walls shall be considered minimum two hour fire rated walls.

C. Products for fire safing of PVC piping shall be Proset System "C" or approved equal.

2.16 SYSTEMS IDENTIFICATION

A. All systems identification materials shall meet ANSI standard A13.1 - 1975, and be as manufactured by Seton Name Plate Corporation or approved equal.

B. Valve tags shall be circular 19 gauge brass, 1-1/2 in. diameter, with black filled text Seton No. 250-BL with No 530 brass hooks, No. 16 brass jack chain, or No6 nickel-plated bead chain. Letter abbreviations shall be 4 in. high above 1/2-in. high numbers.

C. Pipe markers shall be setmark type "SNA" pre-molded acrylic plastic, snap on markers, either 8 in. or 12 in. long with overlap, for up to 6 in. diameter EX and type "STP" strap for 6 in. and larger. The background, field and legend colors and letter sizes shall be per ANSI standards.

2.17 ESCUTCHEONS

A. Install escutcheons around exposed pipe passing through finished floor, wall or ceiling. Escutcheons shall be one piece heavy cast brass, chromium plated, with set screw adjustable and shall be of sufficient outside dioneter to cover sleeve opening and shall fit snugly around pipe.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Prior to the work of this section, this Contractor must ascertain that preceding work has been accomplished in a manner to permit compliance with the level of quality required by this Section.

B. The entire work provided in this specification shall be constructed and finished in every respect in a workmanlike and substantial manner. It is not intended that the drawings shall show every pipe, fitting, and appliance. Furnish all parts as may be necessary to complete the system in accordance with the best trade practices and to be the satisfaction of the Architect, Engineer and General Contractor.

C. This Contractor shall keep other contractors fully informed as the shape, size and position of all openings required for his apparatus and shall give full information to the General Contractor or other contractors sufficiently in advance of the work so that all openings may be built in advance. Furnish and install all sleeves, supports, etc., specified or required.

D. In the case of failure on the part of this Subcontractor to give proper and timely information as noted above, he shall do his own cutting and patching, or have same done by the General Contractor at this subcontractor's expense, but in any case, without extra expense to the Owner and General Contractor.

E. This Contractor shall obtain detailed information from the manufacturer of apparatus as to the proper method of installing and connecting same. He shall also obtain all information from the General Contractor and the other contractors which may be necessary to facilitate his work and the completion of the whole project.

3.2 CORE DRILLING

A. All holes through concrete or masonry for the passage of plumbing piping not provided by sleeves or openings at the time of casting, shall be cut by the Plumbing Contractor using an approved core boring machine with diamond edge bit and vacuum sludge removal device. The size of holes shall provide for fire stopping around a pipe. The location of all core drilled holes shall be coordinated with the structural reinforcing and be reviewed by the Architect prior to commencing work.

B. Prior to coring, the Plumbing Contractor shall submit a minimum 1/8 in. scale plan, dimensioning the location of proposed cored opening locations and indicating the core diameter. Prior to developing the coring plan, the Plumbing Contractor shall examine the site carefully in an attempt to determine whether there are structural, mechanical or electrical obstacles in the proposed coring locations. The coring plans are reviewed by the Architect and Owner's representative, the Plumbing Contractor may proceed with caution. If an electrical conduit, for example, was hit during coring operations, and it was determined that the Plumbing Contractor was negligent by not noting a conduit turning into the slab below, he would be responsible for the repair cost. If the Contractor were not found to be negligent, then the Owner would assume the cost of the repair.

3.3 TESTING PIPING SYSTEMS

A. Test all work in the presence of the Architect/Engineer and/or Owner, Owner's representative and Plumbing Inspector as called for in local codes.

B. After soil, waste and vent piping is in place and before being furred in, plug lower ends and fill. The system shall be left tight under these conditions and water level shall be maintained intact for a period of at least four hours.

C. Test domestic water piping and service by applying a hydrostatic pressure of 125 psi using a pump for this purpose. Make sure that all lines are properly plugged or capped, and that air has been vented before applying pressure, which shall remain constant without pumping for one hour at least.

D. This Contractor shall furnish all equipment, labor and materials, required for these tests.

E. Any leaks in joints or evidence of defective pipe or fittings disclosed by tests shall be immediately corrected by replacing defective parts with new joints or corrected materials. No makeshift repairs will be allowed, including caulking threaded pipe with lead wool, application of wicking or patented compounds being permitted. Perform smoke tests as required by local code or by the Architect/Engineer.

3.4 PROTECTION AND CLEANING

A. Each subcontractor shall be responsible for his work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment, which are not immediately installed after delivery on site. Close open ends or work with temporary covers or plug during construction to prevent entry of obstructing materials.

B. Each subcontractor shall protect work and materials of other trades from damage that might be caused by his work or workmen and make good damage thus caused.

C. The premises shall be kept reasonably clean at all times, and rubbish shall be removed as directed by the General Contractor.

D. Upon completion of this work, the Contractor shall clean all fixtures and equipment and replace damaged parts. Upon failure of this Contractor to fulfill his obligation, this work will be taken care of at his expense.

3.5 WORK COORDINATION AND AID COORDINATION

A. Plumbing equipment shall not be installed in congested and possible problem areas without first coordinating the installation of same with the other trades and the General Contractor.

B. Particular attention shall be directed to the coordination of system with all equipment of other trades installed in and above the ceiling areas. Conflicts in heights and clearance above hung ceilings shall be brought to the attention of the General Contractor for a decision before equipment is installed.

C. Furnish to the General Contractor and other trades all information relative to the position of the plumbing installation that will affect them so that they may plan their work and installation accordingly.

3.6 SUPPLEMENTARY STEEL, CHANNEL AND SUPPORTS

A. Furnish and install all supplementary steel, channels and supports required for the proper installation, mounting and support of all equipment.

B. Supplementary steel and channels shall be firmly connected to building construction in a manner approved by the Architect/Engineer.

C. The type and size of the supporting channels and supplementary steel shall be determined by the Plumbing Subcontractor and shall be sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

D. All supplementary steel and channels shall be installed in a neat and workmanlike manner parallel to the walls, floor and ceiling construction. All turns to be made with 90 degree fittings, as required to suit the construction and installation conditions.

3.7 SLEEVES AND INSERTS

A. Sleeves shall be furnished, set and properly secured in place and at all points where piping passes through masonry or concrete. All sleeves shall be of sufficient diameter to provide 1/4-in. clearance around the pipe.

B. Sleeves through concrete slabs, and interior concrete and masonry walls or partitions shall be steel pipe. Fire stop annular openings between sleeves and pipes at floor slab passages and make watertight. Galvanized sleeves and copper piping shall not be placed in concrete.

C. Install UL listed and FM approved inserts or other anchoring devices in concrete and masonry construction as required to support piping. Inserts shall be of the adjustable type as manufactured by Carpenter and Patterson, Grinnell, or Fee and Mason.

3.8 SYSTEM IDENTIFICATION

A. All valves on pipes of every description shall have circular brass valve tags of at least 1-1/2 in. diameter, attached with brass hooks to each valve sten. Stamp number of the valve and the service, such as "HV", "CV", , etc., for hot water, cold water, etc., respectively. The numbers shall be serially assigned consecutive and shall correspond with the numbers indicated for valves and controls on the record drawings and on three printed valve lists. These printed lists shall contain number and locations of each valve and control and the section, fixture or equipment which it controls.

B. The printed valve lists shall be prepared in a form to meet the approval of the Architect and Engineer and one copy shall be framed under glass and mounted in approved locations.

C. All plumbing lines and equipment shall be identified by pipe markings, which shall be provided by this Contractor. Markers shall be applied every 20 ft. Markings shall indicate pipe content and direction of flow. The markers shall be as manufactured by Seton Name Plate Corp. or equal.

3.9 SAFETY PRECAUTIONS

A. Furnish, place and maintain proper guards for the prevention of accidents and any other necessary construction required to secure safety of life and property.

3.10 INSERTS AND OPENINGS

A. Inserts: Install inserts or other anchoring devices in concrete and masonry construction as required to support piping. Inserts shall be of the adjustable type as manufactured by Carpenter and Patterson, Grinnell of Fee and Mason.

B. Escutcheons: All exposed pipe, uncovered, passing through walls, floors or ceilings shall be fitted with one piece chromium plated brass escutcheons with set screw holding in position. Floor escutcheons to be deep enough to fit over sleeves, fastened to pipe and extending down to floor.

3.11 PLANS AND SPECIFICATIONS

A. The drawing showing layout of the plumbing systems indicate the approximate location of outlets, apparatus and equipment are schematic. The final determination as to the routing shall be governed by structural conditions and other obstructions.

B. The right to make any reasonable change in the location of outlets, apparatus and equipment up to the time of the roughing-in is reserved by the Architect and Engineer without involving any expense to the Owner or the General Contractor.

C. The specifications supplement the drawings and provide specifics pertaining to the methods of material to be used in the execution of the work.

3.12 SANITARY WASTE AND VENT SYSTEMS

A. Furnish and install piping to take wastes from all soil and waste stacks, fixtures, drains and equipment as indicated and/or described in these plans and specifications.

B. Unless specifically noted otherwise on the plans, all horizontal piping 3 in. and larger shall be pitched at the rate of 1/8 in. per foot in the direction of the flow. Horizontal sanitary piping 2 in. and smaller shall be pitched at the rate of 1/4 in. per foot in the direction of the flow.

C. Vent System: Furnish and install piping to vent all stacks, fixtures, traps and appliances as indicated on the drawings and/or required to meet the Plumbing Code. All vent piping shall be concealed where possible with the horizontal pipe pitching back toward fixtures to allow connection to drain. Whether indicated on plan or not, offset vents below the roof to avoid air intakes, equipment, penthouse mansard etc., bring vents through the roof a minimum of 25 ft. away from air intakes, windows, and operable sash and 10 ft. away from other obstructions.

3.13 HOT AND COLD WATER SYSTEMS

A. Furnish and install complete cold and hot water systems to service all fixtures and equipment indicated on the drawings or specified as requiring cold or hot water. Cold water piping shall start at the connection to the water main indicated on plan and extend to all fixtures and equipment, including piping, fittings and valves requiring connections. Hot water piping shall extend from the hot water heater to all fixtures and equipment, including piping, fittings and valves. In general, piping shall pitch upward in the direction of flow with each branch and riser separately valved and with 1/2 in. hose end drains on the outlet side of the valve and at all low points in the systems. Install valves and drains on all equipment of fixtures and other valves as necessary to isolate all parts of these systems. All valves shall be accessible.

3.14 CHLORINATION

A. All water lines and water service shall be thoroughly flushed and chlorinated before being put into service. The domestic cold and hot water systems shall be chlorinated and flushed in accordance with the requirements of the State Plumbing Code and Local Inspector.

B. Submit a certificate of compliance when chlorination has been completed stating when performed, by whom and who witnessed the procedure.

END OF SECTION

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
ca lic.# 6886 - az lic.# c.31127 - fl lic.#ar 98187 - md lic.# 19161
nv lic.# no. 0008040 - pa lic.# 407017 - tx lic.# 27195 - wa lic.# 11820

PROJECT 18020

MELVIN BREWPUB

MELVIN BREWING

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING design SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

PLUMBING SPECIFICATIONS

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

P1.4

LIGHTING CONTROL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
SM	MANUAL MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERLOADS.	48" A.F.F.
Sa	SINGLE POLW SWITCH; "a" INDICATES LIGHTING FIXTURES CONTROLLED.	48" A.F.F.
S3a	THREE-WAY SWITCH; "a" INDICATES LIGHTING FIXTURES CONTROLLED.	48" A.F.F.
WS	WALL SWITCH VACANCY SENSOR (MANUAL "ON" AND AUTOMATIC "OFF") SENSOR SWITCH #WSX-PDT-2P-2SA-XX. INSTALL PER MANUFACTURERS INSTRUCTIONS.	48" A.F.F.
SK	KEYED SWITCH; REFER TO PLANS FOR NUMBER OF POLES AND FIXTURES CONTROLLED	48" A.F.F.
PC	PHOTOCELL #CM-ADC	-
LVa	LOW VOLTAGE SWITCH/CONTROLLER (ZONE 1) EQUAL TO ACUITY NLIGHT CONTROLS #NPODM-DX-XX; "a" INDICATES LIGHTING FIXTURES CONTROLLED. WIRE PER MANUFACTURE'S INSTRUCTIONS.	48" A.F.F.
LVb	LOW VOLTAGE SWITCH/CONTROLLER (ZONE 2) EQUAL TO ACUITY NLIGHT CONTROLS #NPODM-DX-XX; "b" INDICATES LIGHTING FIXTURES CONTROLLED. WIRE PER MANUFACTURE'S INSTRUCTIONS.	48" A.F.F.
LVc	LOW VOLTAGE SWITCH/CONTROLLER (ZONE 3) EQUAL TO ACUITY NLIGHT CONTROLS #NPODM-DX-XX; "c" INDICATES LIGHTING FIXTURES CONTROLLED. WIRE PER MANUFACTURE'S INSTRUCTIONS.	48" A.F.F.
DC	DC CONTROLLER; COORDINATE REQUIREMENTS WITH LIGHTING CONTROL REPRESENTATIVE. COOPER GREENGATE #RC3D-PL	-
US	ULTRASONIC VACANY SENSOR EQUAL TO ACUITY SENSORSWITCH #CM-PDT-9-R-ADC WITH 360-DEGREES CAPABILITY. PROVIDE POWER PACK & WIRE PER MANUFACTURERS INSTRUCTIONS FOR MANUAL "ON" WITH WALL LOW VOLTAGE SWITCH AND AUTOMATIC "OFF" WITH SENSOR. SET DELAY TIMES FOR 15 MINUTES.	CEILING
PP	POWER PACK FOR "DT" & "US" VACANCY SENSORS. WIRE PER MANUFACTURERS INSTRUCTIONS FOR MANUAL "ON" WITH WALL LOW VOLTAGE SWITCH AND AUTOMATIC "OFF" WITH SENSOR. #PP20	-
LVM	LOW VOLTAGE SWITCH EQUAL TO SENSOR SWITCH #SPODM XX; WIRE PER MANUFACTURE'S INSTRUCTIONS. WIRE TO SENSOR & POWER PACK PER MANUFACTURER'S INSTRUCTIONS.	48" A.F.F.
TS	PROGRAMMABLE TIME SWITCH. PROGRAM ON/OFF TIMES PER THE OWNER'S DIRECTION AND ADJUST ALL SET-POINTS (LATITUDE, TIME OF DAY, DATE, ETC..) TO CORRECT SETTINGS. PROVIDE ACUITY SENSORSWITCH PTS 60/720 (COLOR BY ARCHITECT) OR EQUAL.	48" A.F.F.
DTS	DUAL TECHNOLOGY VACANCY SENSOR EQUAL TO ACUITY NLIGHT CONTROLS #NWV-PDT-16-KIT. PROVIDE ACUITY NLIGHT CONTROLS #NAR40 OUTPUT DEVICE; WIRE TO POWERPACK PER MANUFACTURERS INSTRUCTIONS FOR MANUAL "ON" WITH WALL LOW VOLTAGE SWITCH AND AUTOMATIC "OFF" WITH SENSOR. SET DELAY TIMES FOR 15 MINUTES. SET SENSOR SO THAT ONLY ONE TECHNOLOGY IS NEEDED TO KEEP LIGHTS ON.	CEILING
DTS 360°	DUAL TECHNOLOGY VACANCY SENSOR EQUAL TO ACUITY NLIGHT CONTROLS #NCM-PDT-9 WITH 360-DEGREES CAPABILITY. PROVIDE #NAR40 OUTPUT DEVICE; WIRE TO POWERPACK PER MANUFACTURERS INSTRUCTIONS FOR MANUAL "ON" WITH WALL LOW VOLTAGE SWITCH AND AUTOMATIC "OFF" WITH SENSOR. SET DELAY TIMES FOR 15 MINUTES. SET SENSOR SO THAT ONLY ONE TECHNOLOGY IS NEEDED TO KEEP LIGHTS ON.	CEILING
DL	DIMMING PHOTOCELL WITH ADJUSTABLE DAY-LIGHT SENSOR DOME; ACUITY NLIGHT CONTROLS #NCM-ADCX.	CEILING
DC	DIMMING POWERPACK EQUAL TO ACUITY NLIGHT CONTROLS #NPP16-D. WIRE PER MANUFACTURER'S INSTRUCTIONS.	48" A.F.F.
RC	PLUG LOAD ROOM CONTROLLER EQUAL TO ACUITY NLIGHT CONTROLS #NPP20-PL. WIRE PER MANUFACTURER'S INSTRUCTIONS.	48" A.F.F.
SD	DIMMER SWITCH WITH PRE-SET EQUAL TO ACUITY NLIGHT CONTROLS #NPODM-DXXX SUITABLE FOR LED DRIVER BEING CONTROLLED. COORDINATE WITH MANUFACTURER FOR COMPATIBILITY WITH LIGHTING FIXTURES.	48" A.F.F.
SD3	DIMMER 3-WAY SWITCH WITH PRE-SET EQUAL TO ACUITY NLIGHT CONTROLS #NPODM-DX-XX (TO BE USED IN CONJUNCTION WITH 3-WAY TOGGLE SWITCH) SUITABLE FOR LED DRIVER BEING CONTROLLED. COORDINATE WITH MANUFACTURER FOR COMPATIBILITY WITH LIGHTING FIXTURES.	48" A.F.F.

NOTES:

- E.C. SHALL FURNISH AND INSTALL ALL DEVICES AND ACCESSORIES FOR A COMPLETE LIGHTING CONTROL INSTALLATION.
- COORDINATE EXACT REQUIREMENTS FOR INSTALLATION WITH LIGHTING CONTROL REPRESENTATIVE.
- PROVIDE ALL LOW VOLTAGE CABLING REQUIRED FOR CONTROLS.

CONTACT REPRESENTATIVE *GEORGE KYLLER* AT (781) 696-6238 FOR QUESTIONS OR CLARIFICATIONS.

WIRING DEVICE LEGEND

	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE	18" A.F.F.
	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	42" A.F.F. OR 6" ABOVE COUNTER
	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE WITH GROUND FAULT PROTECTION.	18" A.F.F.
	DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE WITH GROUND FAULT PROTECTION.	42" A.F.F. OR 6" ABOVE COUNTER
	SPECIAL NEMA CONFIGUATION OUTLET; VERIFY NEMA TYPE WITH EQUIPMENT TO BE SERVED.	--
	SINGLE CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	18" A.F.F.
	DEDICATED DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	18" A.F.F.
	SWITCHED DUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE, TOP OUTLET SWITCHED, BOTTOM OUTLET UN-SWITCHED. REFER TO PLANS FOR SWITCH LOCATION(S).	18" A.F.F.
	QUADRUPLEX CONVENIENCE OUTLET; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	18" A.F.F.
	DUPLEX CONVENIENCE OUTLET IN FLOOR BOX; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	FLOOR
	DUPLEX CONVENIENCE OUTLET IN CEILING; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	CEILING
	QUAD-RUPLEX CONVENIENCE OUTLET IN FLOOR BOX; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	FLOOR
	QUAD-RUPLEX CONVENIENCE OUTLET IN CEILING; 125 VOLT, 20 AMPERE, U-SLOT GROUNDING TYPE.	CEILING
J	JUNCTION BOX; SIZE AS REQUIRED PER CODE.	-
R	RELAY; REFER TO PLANS FOR RATINGS.	-
C	CONTACTOR; REFER TO PLANS FOR RATINGS.	-
TC	TIMECLOCK; REFER TO DETAILS ON PLANS.	-
	MOTOR; REFER TO PLANS FOR DETAILS.	-
60/50	FUSED DISCONNECT SWITCH. 60/50 INDICATES FRAME SIZE/FUSE SIZE IN THAT ORDER. STARTERS FOR HVAC EQUIPMENT BY MECHANICAL CONTRACTOR.	-
	SURFACE MOUNTED PANELBOARD; 208Y/120V, 3-PHASE, 4-WIRE. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION.	MOUNT 6'-6" AFF TO TOP BREAKER.
	RECESSED MOUNTED PANELBAORD; 208Y/120V, 3-PHASE, 4-WIRE. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION.	MOUNT 6'-6" AFF TO TOP BREAKER.
	SURFACE MOUNTED PANELBOARD; 480Y/1277V, 3-PHASE, 4-WIRE. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION.	MOUNT 6'-6" AFF TO TOP BREAKER.
	RECESSED MOUNTED PANELBOARD; 480Y/1277V, 3-PHASE, 4-WIRE. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION.	MOUNT 6'-6" AFF TO TOP BREAKER.
	GROUNDING CONDUCTOR / MEANS & METHOD; IN ACCORDANCE WITH THE *"NATIONAL ELECTRIC CODE"*, (NEC). REFER TO PLANS FOR SIZING.	-

NOTES:

DEVICES WITH THE FOLLOWING SUBSCRIPTS SHALL BE PROVIDED & UL LISTED TO BE INSTALLED / WIRED AS NOTED:

H - HOSPITAL GRADE
IG - ISOLATED GROUND
T - TAMPER RESISTANT

1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE G.C. FOR WALLS BEING FURRED-OUT WITH SHEETROCK DRYWALL SO OUTLET BOXES & DEVICES CAN BE INSTALLED FLUSH WITHIN THE WALLS. (TYPICAL)
2. ALL RECEPTACLES SHALL BE PROVIDED WITH AN ADHERED, TYPED LABEL INDICATING PANEL NAME AND CIRCUIT NUMBER. HANDWRITTEN LABELS WILL NOT BE ACCEPTED.
3. ALL RECEPTACLES WITH A DEDICATED CIRCUIT SHALL BE LABELED WITH PANEL NAME AND CIRCUIT NUMBER AS INDICATED IN NOTE #3 AS WELL AS LABELED "DEDICATED".
4. ALL COLORS OF RECEPTACLES AND ASSOCIATED FACEPLATES TO BE CONFIRMED WITH OWNER'S REPRESENTATIVE AND LOCAL (AHJ) PRIOR TO ANY SUBMITTALS. PURCHASE AND/OR INSTALLATION OF EQUIPMENT. THIS REQUIREMENT AS INDICATED IN NOTE #11 SHALL BE CORRECTED AS REQUIRED.
5. ALL TYPES AND LOCATIONS OF RECEPTACLES TO BE CONFIRMED WITH OWNER'S REPRESENTATIVE AND LOCAL (AHJ) PRIOR TO ANY SUBMITTALS. PURCHASE AND/OR INSTALLATION OF EQUIPMENT. FAILURE OF THIS REQUIREMENT AS INDICATED IN NOTE #3 SHALL BE CORRECTED AS REQUIRED.
6. ANY CONFLICT WITH RECEPTACLE LOCATIONS, TYPES OF RECEPTACLES OR COLORS OF RECEPTACLES WITH OWNER'S REPRESENTATIVE OR WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, AND GENERAL CONTRACTOR TO PROVIDE ALL ADDITIONAL WORK AND EXPENSES TO REPAIR AND CORRECT. NO ADDITIONAL REIMBURSEMENTS OR TIME OF COMPLETION FOR WORK WILL BE ALLOWED.
7. ALL RECEPTACLES LOCATED WITHIN HEATHCARE FACILITIES SHALL BE PROVIDED WITH AN ILLUMINATED FACE, OR INDICATOR LIGHT.
8. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH LOCAL (AHJ) FOR ALL INSTALLATIONS AND REQUIREMENTS.

ALL DEVICES ARE BASED ON LEGRAND.
CONTACT DEVICE REPRESENTATIVE FOR QUESTIONS OR CLARIFICATIONS SPECIFICALLY REGARDING EQUIPMENT.

COMMUNICATIONS SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	TEL./DATA OUTLET; PROVIDE BACK BOX, TEL/DATA JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	18" A.F.F.
	DATA OUTLET; PROVIDE BACK BOX, DATA JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	18" A.F.F.
	TELEPHONE OUTLET; PROVIDE BACK BOX, TELEPHONE JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	18" A.F.F.
WIFI CLG. MTD.	PA / INTERCOM SYSTEM SPEAKER; PROVIDE BACK BOX, DATA JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	FLUSH IN CEILING
SP	INTERCOM SYSTEM OUTLET; PROVIDE BACK BOX, DATA JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	FLUSH IN WALL, VERFIY HGT. WITH ARCH.
54" NT	INTERCOM SYSTEM OUTLET; PROVIDE BACK BOX, DATA JACKS, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	FLUSH IN MTD. 54" A.F.F.
TV	TELEVISION OUTLET; PROVIDE BACK BOX, COAX JACK, COVER PLATES AND CONDUIT. CONDUIT TO BE RUN FROM BACKBOX UP WALL IN 3/4" CONDUIT TO ABOVE DROP CEILING. TERMINATION OF TEL/DATA EQUIPMENT BY OTHERS. ALL EQUIPMENT COLORS TO TO BE SELECTED BY ARCHITECT. EX	
	PENDANT HUNG CABLE TRAY SYSTEM AS MANUFACTURED BY "CABLOFIL" (OR) APPROVED EQUAL. CONTRACTOR SHALL PROVIDE ALL REQUIRED COMPONENTS TO INSTALL A COMPLETE WIRE MANAGEMENT SYSTEM. CABLE TRAY SYSTEM TO BE A MINIMUM OF 12" WIDE BY 2" TALL, CONSTRUCTED OF STEEL / MESH TYPE.	FLUSH IN WALL, VERFIY HGT. WITH ARCH.
	PLENUM RATED, CAT #6 WIRING. MFG. TELEDATA EXPRESS, CATALOG #101360 (OR) APPROVED EQUAL.	VERIFY

ABBREVIATIONS

A	AMPERES	F.A.	FIRE ALARM	NAC	F.A. NOTIFICATION APPLIANCE CIRCUIT EXPANDER PANEL
ADA	AMERICANS WITH DISABILITIES ACT	FACP	FIRE ALARM CONTROL PANEL	NEC	NATIONAL ELECTRICAL CODE
AMPS	AMPERES	FLR	FLOOR	NTS	NOT TO SCALE
AFF	ABOVE FINISHED FLOOR	G.C.	GENERAL CONTRACTOR	P	POLE
A/C	AIR CONDITIONING	GFCI	GROUND FAULT CIRCUIT INTERUPTER.	P.C.	PLUMBING CONTRACTOR
AWG	AMERICAN WIRE GAGE	G	GROUND	PNL	PANEL
C	CONDUIT	GND	GROUND	RE	RE-LOCATED DEVICE OR EQUIPMENT SHOWN IN NEW LOCATION
C/B	CIRCUIT BREAKER	HVAC	HEATING, VENTILATING, & & AIR CONDITIONING	TYP	TYPICAL
CF	COMPACT FLUORESCENT	JB	JUNCTION BOX	UL	UNDERWRITERS LABATORY
CLG	CEILING	KVA	KILOVOLT-AMPERES	UON	UNLESS OTHERWISE NOTED
℄	CENTERLINE	KW	KILOWATT	UPS	UNINTERRUPTIBLE POWER SUPPLY
DN	DOWN	LTG	LIGHTING	V	VOLTS
DWG	DRAWING	MAX	MAXIMUM	W	WATTS
E.C. EQ	ELECTRICAL CONTRACTOR EQUAL	M.C.	MECHANICAL CONTRACTOR	WP	WEATHER-PROOF
ETR	EXISTING TO REMAIN	MECH	MECHANICAL		
ER	EXISTING TO BE REMOVED	MIN	MINIMUM		
ERL	EXISTING TO BE RE-LOCATED	MTD	MOUNTED		

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4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c-31127 - f.llc.#ar 98187 - mdlic.# 19163
mdlic.#p 20080490 - pelic.#no 40077 - txlic.# 27196 - wdlic.# 1100

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ELECTRICAL LEGENDS & NOTES

STAMP:

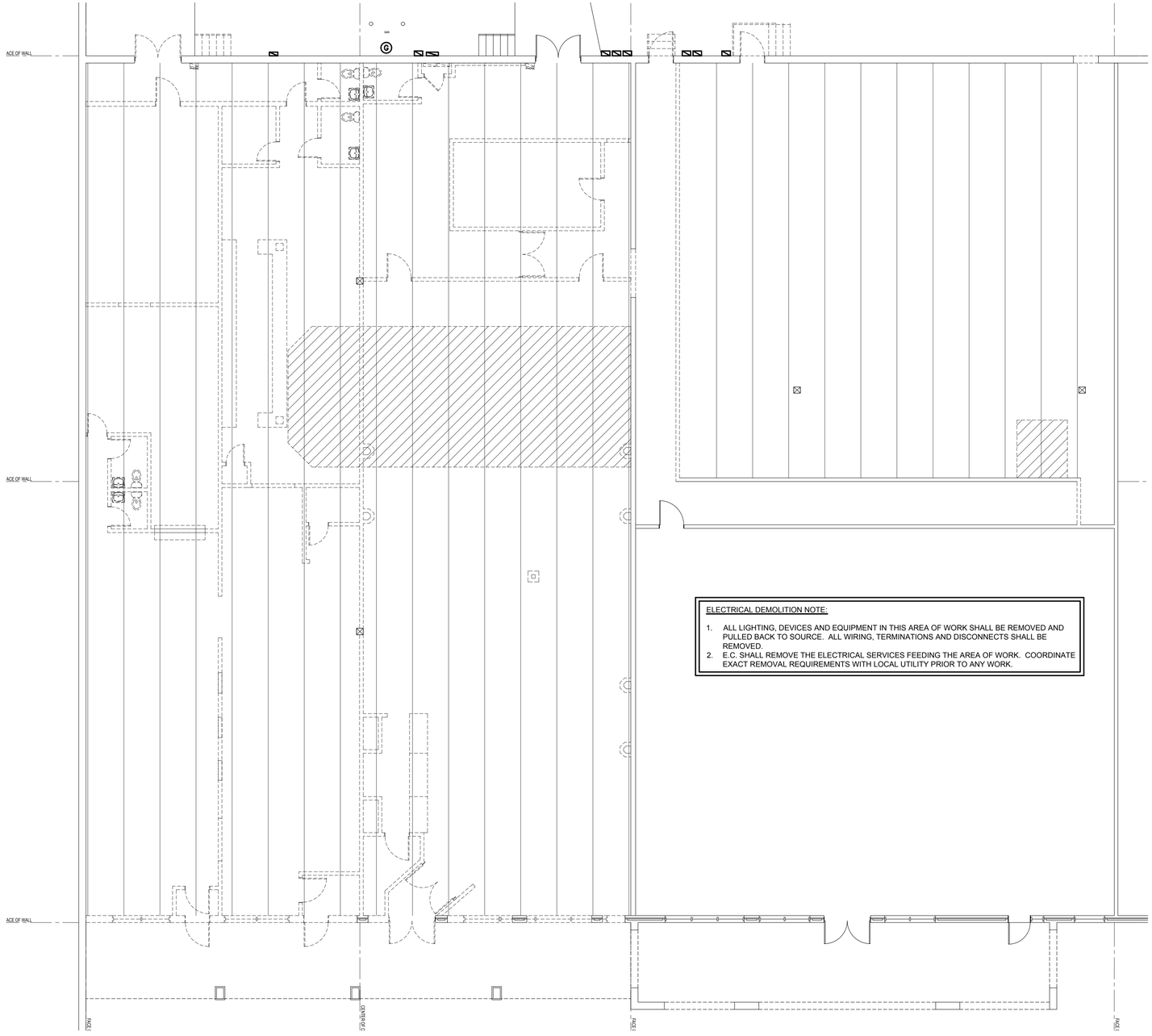
STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER
PROFESSIONAL ENGINEER

SHEET NUMBER:

E0.0

TYPICAL DEMOLITION NOTES

1. THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL OF THE ARCHITECTS AND OTHER TRADES DRAWINGS TO VERIFY ALL AREAS OF RENOVATION AND TO GET A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED BY THIS PROJECT.
2. PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. RENOVATION WORK WILL REQUIRE CAREFUL SITE EXAMINATION PRIOR TO BIDDING. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER.
3. COORDINATE ALL WORK WITH THE BUILDING OWNER 10 DAYS PRIOR TO DISRUPTION TO ANY POWER.
4. DISCONNECT AND REMOVE ALL FIXTURES, WIRING DEVICES, CONDUIT AND FITTINGS, WIRING & CABLE, FIRE ALARM DEVICES/COMPONENTS , HANGERS, SUPPORTS, WIREWAYS, AND ALL OTHER ELECTRICAL COMPONENTS MADE OBSOLETE BY THIS PROJECT.
5. REFER TO ALL CONSTRUCTION DOCUMENTS TO GAIN A COMPLETE UNDERSTANDING OF THE DEMOLITION WORK REQUIRED.
6. ALL HVAC UNITS SCHEDULED TO BE REMOVED OR RE-LOCATED SHALL BE DONE SO BY THE HVAC CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND MAKE-SAFE FOR REMOVAL.
7. CUT, REMOVE AND LEGALLY DISPOSE OF SELECTED ELECTRICAL EQUIPMENT, COMPONENTS AND MATERIALS AS INDICATED, INCLUDING, BUT NOT LIMITED TO, REMOVAL OF ELECTRICAL ITEMS INDICATED TO BE REMOVED AND ITEMS MADE OBSOLETE BY THE WORK. THE OWNER RESERVES THE OPTION OF SALVAGE RIGHTS TO DEMOLISHED MATERIAL AND REMOVED EQUIPMENT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO OBTAIN A LIST OF MATERIALS AND REMOVED EQUIPMENT TO BE TURNED OVER TO THE OWNER. ALL OTHER MATERIAL AND REMOVED EQUIPMENT NOT BEING SALVAGED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR.
8. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED. PROTECT THE ELECTRICAL WORK AND THE WORK OF OTHERS IN A MANNER BEST SUITED TO THE PARTICULAR CASE. CORRECT ANY DAMAGE DONE TO ANY WORK AT NO ADDITIONAL COST.
9. (NOT USED)
10. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
11. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
    A. EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING SYSTEM IN SERVICE COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER AND ARCHITECT/ENGINEER AT LEAST TEN DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED.
    B. EXISTING FIRE ALARM SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL THE MODIFIED/EXPANDED SYSTEM IS TESTED AND ACCEPTED BY THE FIRE DEPARTMENT. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND LOCAL FIRE DEPARTMENT AT LEAST TEN DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA AS REQUIRED OR PROVIDE A "FIRE-WATCH" SYSTEM COORDINATED WITH THE LOCAL FIRE DEPARTMENT.
    C. EXISTING TELEPHONE & DATA SYSTEMS: MAINTAIN EXISTING SYSTEM IN SERVICE COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER, ARCHITECT/ENGINEER AND TELEPHONE UTILITY COMPANY AT LEAST TEN DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.
12. THESE DRAWINGS HAVE BEEN COMPILED FROM THE BEST AVAILABLE INFORMATION AND ARE NOT INTENDED TO LIMIT THE SCOPE OF THE WORK. THE ELECTRICAL CONTRACTOR MAY ENCOUNTER HIDDEN OR COVERED CONDITIONS, NOT INDICATED IN THESE DOCUMENTS, REQUIRING THE ELECTRICAL CONTRACTOR TO PROVIDE ADDITIONAL WORK FOR THE COMPLETION OF HIS OR HER CONTRACT. IT WILL BE ASSUMED THAT THE CONTRACTOR HAS INSPECTED THE SITE PRIOR TO BIDDING AND VERIFIED THE INFORMATION SUPPLIED HEREIN.
13. PROTECT ALL EXISTING WALLS, FLOORS, CEILINGS, LIGHT FIXTURES, ETC. WHICH ARE TO REMAIN & TO PREVENT DAMAGE DURING ALL CONSTRUCTION PHASES



ELECTRICAL DEMOLITION NOTE:

1. ALL LIGHTING, DEVICES AND EQUIPMENT IN THIS AREA OF WORK SHALL BE REMOVED AND PULLED BACK TO SOURCE. ALL WIRING, TERMINATIONS AND DISCONNECTS SHALL BE REMOVED.
2. E.C. SHALL REMOVE THE ELECTRICAL SERVICES FEEDING THE AREA OF WORK. COORDINATE EXACT REMOVAL REQUIREMENTS WITH LOCAL UTILITY PRIOR TO ANY WORK.

ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
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mo lic.#p 2008024261 - pa lic.#rm 40077 - tx lic.# 27795 - wa lic.# 21020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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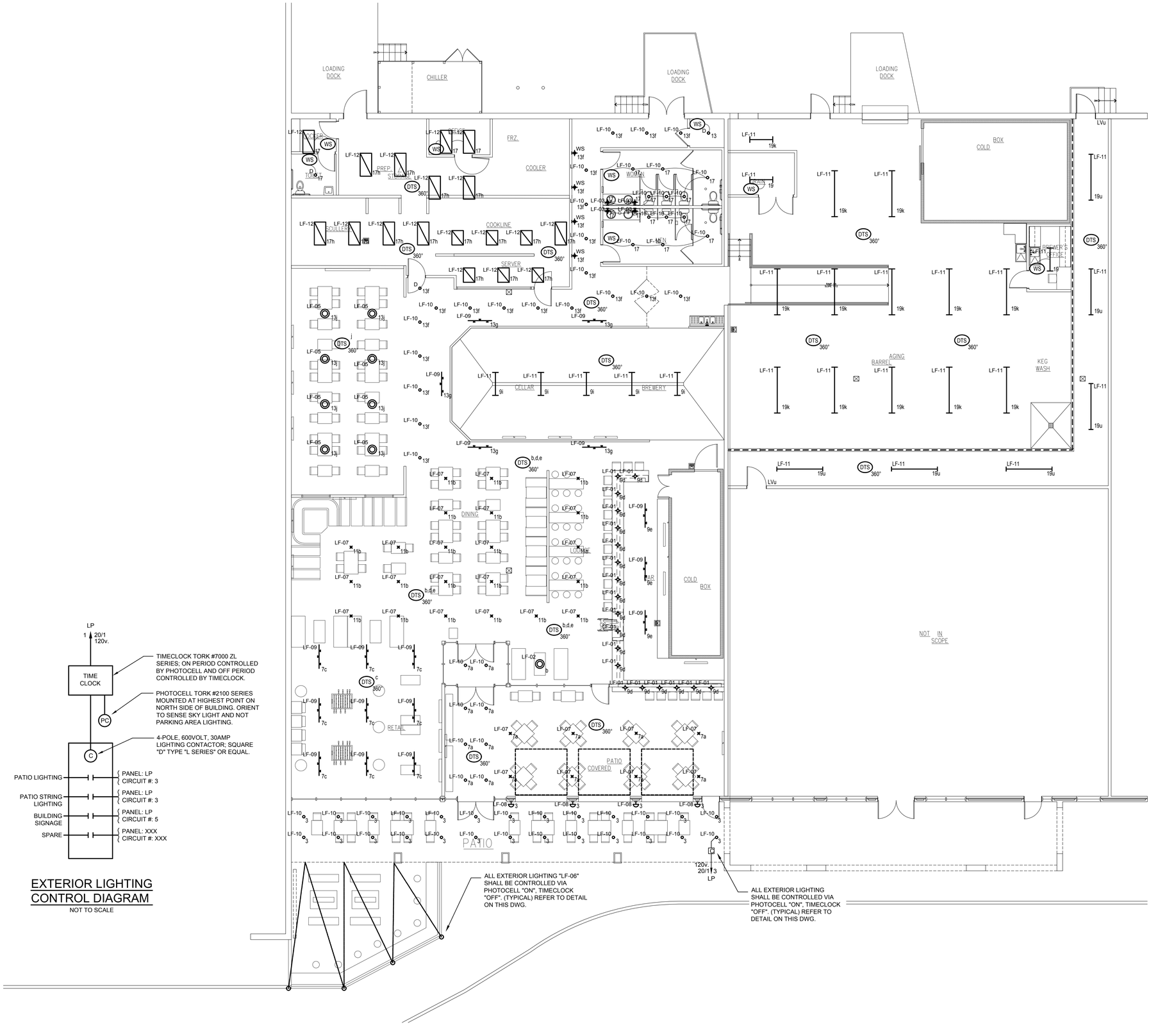

LIGHTING FLOOR PLAN
SCALE: 1/8" = 1'-0"

EXTERIOR LIGHTING CONTROL DIAGRAM
NOT TO SCALE

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p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
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MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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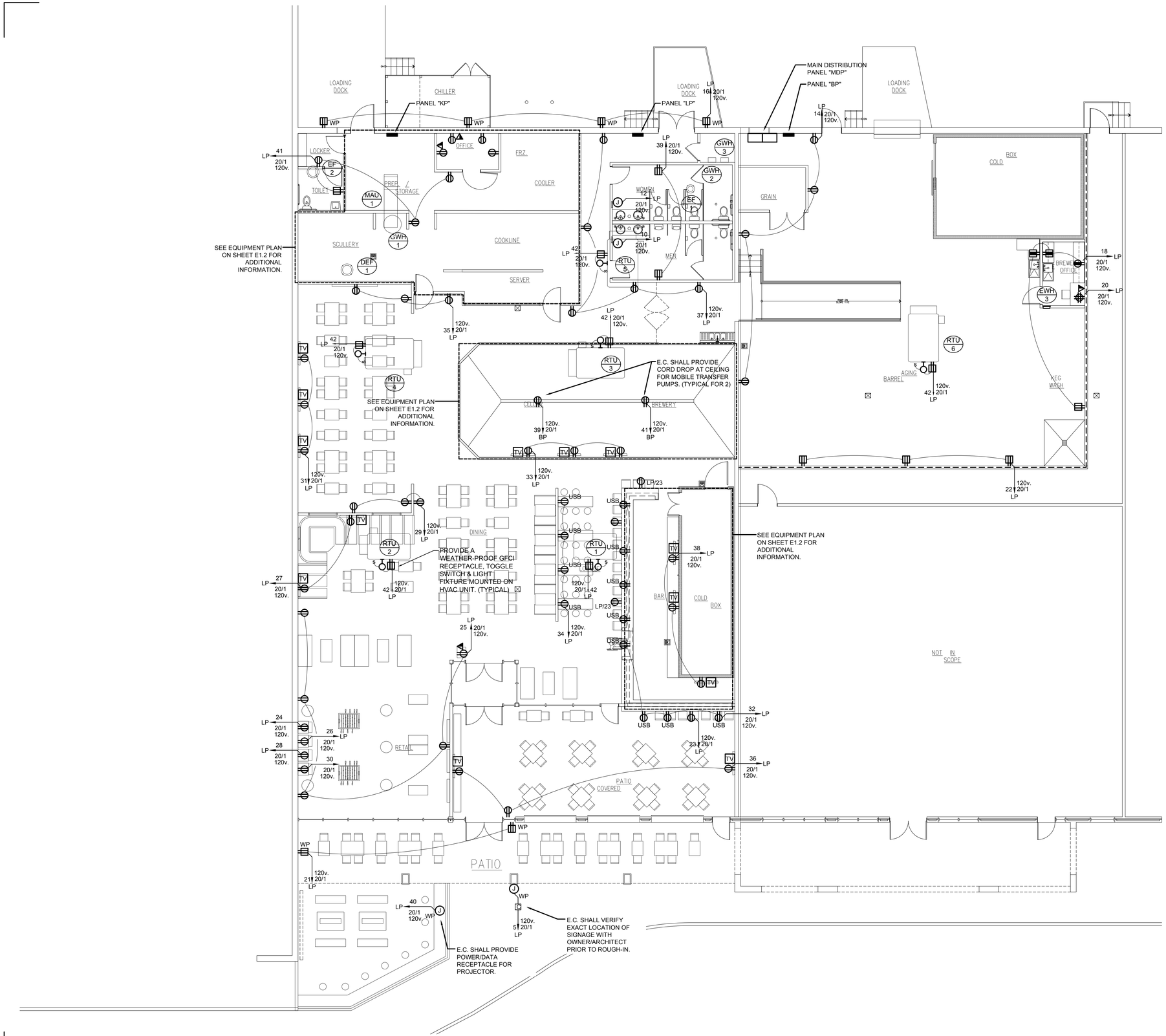

ELECTRICAL POWER PLAN

SCALE: 1/8" = 1'-0"

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4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - ca.lic.#c.31127 - fl.lic.#ar 98187 - mo.lic.# 19161
mo.lic.#p 2008040 - pa.lic.#rm 40707 - tx.lic.# 27195 - wa.lic.# 1920

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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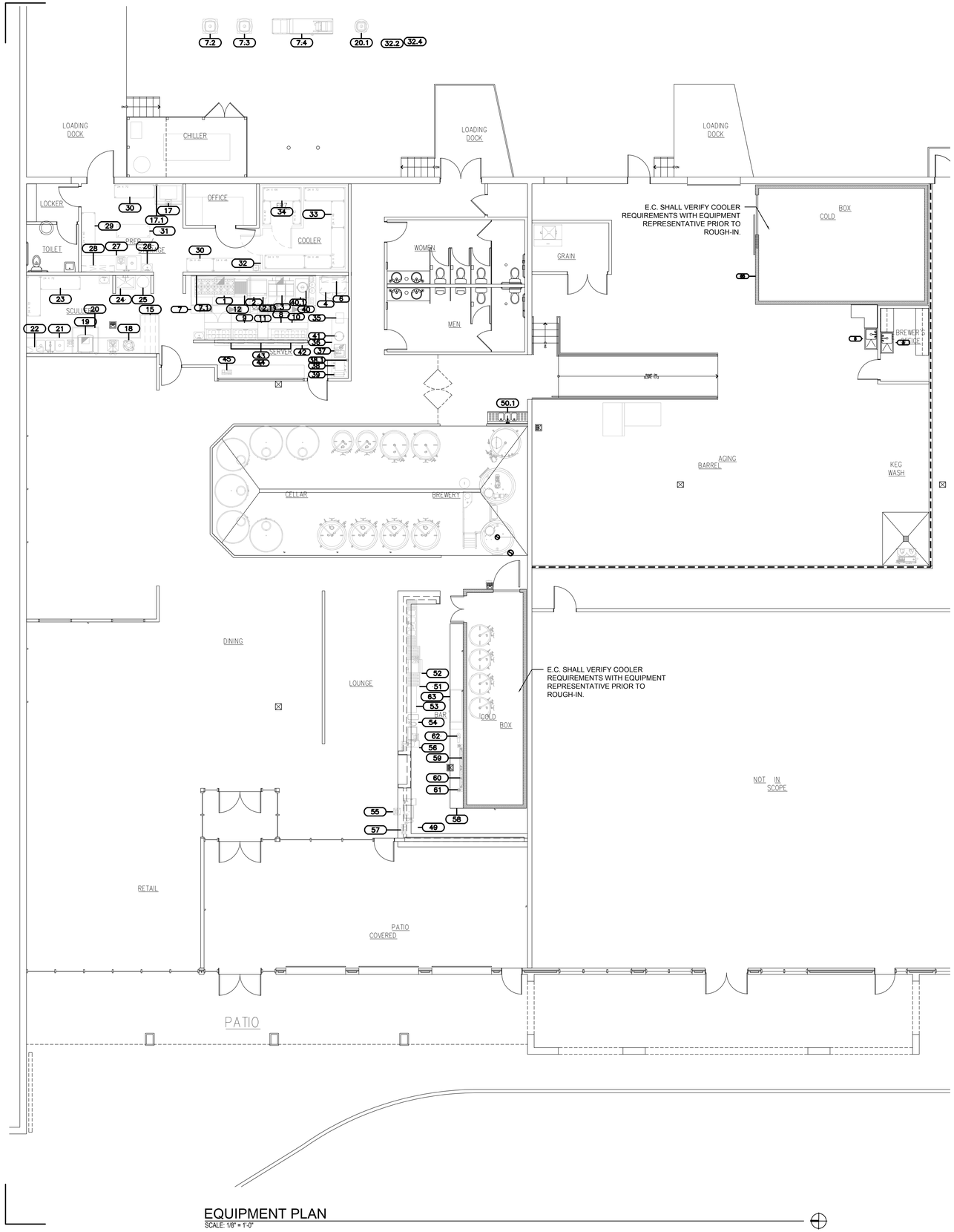
STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER PE-2009017168
PROFESSIONAL ENGINEER

SHEET NUMBER:

E1.1



EQUIPMENT PLAN
SCALE: 1/8" = 1'-0"

FOOD SERVICE EQUIPMENT SCHEDULE

ITEM	QTY	DESCRIPTION	ELECTRICAL CHARACTERISTICS						CIRCUIT	CIRCUIT BREAKER (HACR TYPE)	DISC. SWITCH				NOTES SEE BELOW
			VOLTS	PH	AMPS	KW	HP	CONN.			SIZE	FUSE	POLES	NEMA	
4	4	WORKTOP FREEZER	120	1	3.2	-	-	PLUG	KP/1&3&5&7	15A/1P	-	-	-	-	1,2,3,5
7	1	EXHAUST HOOD	120	1	20	-	-	DIRECT	KP/9	20A/1P	-	-	-	-	1,2,3,5
7.1	1	FIRE SUPPRESSION SYSTEM									-	-	-	-	1,2,3,5
7.2	1	EXHAUST FAN	208	3	4.6	-	-	DIRECT	KP/11,13,15	15A/3P	30	15	3	3R	2,3,5
7.3	1	EXHAUST FAN	208	3	4.6	-	-	DIRECT		15A/3P	30	15	3	3R	2,3,5
7.4	1	MAKE-UP AIR UNIT	208	3	14.0	-	-	DIRECT	KP/17,19,21	20A/3P	30	20	3	3R	2,3,5
8	1	SAND/SALAD PREP	120	1	7.2	-	-	PLUG	KP/23	15A/1P	-	-	-	-	1,2,3,5
9	2	SAND/SALAD PREP	120	1	5.8	-	-	PLUG	KP/25	15A/1P	-	-	-	-	1,2,3,5
11	1	HOT WELL	120	1	10.0	-	-	PLUG	KP/27	15A/1P	-	-	-	-	1,2,3,5
19	1	DISHMACHINE	120	1	12.0	-	-	DIRECT	KP/29	15A/1P	-	-	-	-	1,2,3,5
20.1	1	EXHAUST FAN	120	1	5.8	-	-	DIRECT	KP/31	15A/1P	-	-	-	-	1,2,3,5
32	1	WALK-IN COMBO	120	1	20.0	-	-	DIRECT	KP/33	20A/1P	-	-	-	-	1,2,3,5
32.1	1	COOLER EVAP COIL	208	1	1.6	-	-	DIRECT	KP/26,28	15A/2P	30	15	2	3R	2,3,5
32.2	1	COOLER CONDENSING UNIT	208	1	7.2	-	-	DIRECT	KP/30,32	20A/2P	30	20	2	3R	2,3,5
32.3	1	FREEZER EVAP COIL	208	1	9.8	-	-	DIRECT	KP/34,36	15A/1P	30	15	2	3R	2,3,5
32.4	1	FREEZER CONDENSING UNIT	208	1	112.6	-	-	DIRECT	KP/38,40	30A/1P	30	30	2	3R	2,3,5
35	1	HOT DOG STEAMER	120	1	10.0	-	-	DIRECT	KP/37	15A/1P	-	-	-	-	1,2,3,5
38	1	COFFEE BREWER	208	1	26.0	-	-	DIRECT	KP/39,41	35A/2P	60	35	2	3R	2,3,5
39	1	COFFEE GRINDER	120	1	9.4	-	-	DIRECT	KP/2	15A/1P	-	-	-	-	1,2,3,5
41	1	RICE WARMER	120	1	1.4	-	-	DIRECT	KP/4	15A/1P	-	-	-	-	1,2,3,5
43	3	HEAT LAMP	120	1	7.0	-	-	DIRECT	KP/6&8&10	15A/1P	-	-	-	-	1,2,3,5
45	1	POS STATION	120	1	15.0	-	-	PLUG	KP/12	20A/1P	-	-	-	-	1,2,3,5
49	1	BAG IN BOX	120	1	15.0	-	-	DIRECT	KP/14	20A/1P	-	-	-	-	1,2,3,5
52	1	GLASS WASHER	120	1	16.0	-	-	PLUG	KP/16	20A/1P	-	-	-	-	1,2,3,5
57	2	POS STATION	120	1	15.0	-	-	DIRECT	KP/18&20	20A/1P	-	-	-	-	1,2,3,5
63	1	BACK BAR CABINET	120	1	2.8	-	-	PLUG	KP/22	15A/1P	-	-	-	-	1,2,3,5
64	1	WALK-IN COOLER	120	1	-	-	-	DIRECT	-	-	-	-	-	-	6
64.1	1	COOLER EVAP COIL			-	-	-	DIRECT	-	-	-	-	-	-	6
64.2	1	COOLER CONDENSING UNIT			-	-	-	DIRECT	-	-	-	-	-	-	6
65	1	WALK-IN COOLER	120	1	-	-	-	DIRECT	-	-	-	-	-	-	6
65.1	1	COOLER EVAP COIL			-	-	-	DIRECT	-	-	-	-	-	-	6
65.2	1	WALK-IN CONDENSING UNIT			-	-	-	DIRECT	-	-	-	-	-	-	6
900	1	FIRE PULL	-	-	-	-	-	DIRECT	-	-	-	-	-	-	6
901	3	CONVENIENCE OUTLET	120	1	-	-	-	PLUG	KP/24	20A/1P	-	-	-	-	3
902	3	CONVENIENCE OUTLET	120	1	-	-	-	PLUG			-	-	-	-	3

NOTES:

1. CONTRACTOR SHALL PROVIDE A MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERLOADS.
2. PAINT DISCONNECT SWITCH TO MATCH WALL, VERIFY EXACT COLOR WITH ARCHITECT.
3. CONTRACTOR SHALL PROVIDE NEW PLUG AND RECEPTACLE FOR KITCHEN EQUIPMENT. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO CONFIRM EXACT AMPERAGE, PHASE, VOLTAGE AND NEMA CONFIGURATION FOR EACH PEICE OF EQUIPMENT PRIOR TO ANY INSTALLATION. (TYPICAL)
4. CONTRACTOR SHALL PROVIDE ISOLATED GROUND RECEPTACLE FOR EQUIPMENT.
5. TYPICAL GENERAL PURPOSE RECEPTACLES SHALL BE INSTALLED FOR ALL REFRIGERATION EQUIPMENT. GFCI RECEPTACLES SHALL NOT BE USED FOR THIS EQUIPMENT.
6. E.C. SHALL VERIFY EXACT ELECTRICAL REQUIREMENTS FOR FREEZER/COOLER CONDENSERS, COILS, ETC. WITH COOLER/FREEZER REP.

BREWERY EQUIPMENT SCHEDULE

ITEM	QTY	DESCRIPTION	ELECTRICAL CHARACTERISTICS						CIRCUIT	CIRCUIT BREAKER (HACR TYPE)	DISC. SWITCH				NOTES SEE BELOW
			VOLTS	PH	AMPS	KW	HP	CONN.			SIZE	FUSE	POLES	NEMA	
1	1	BREW HOUSE PLATFORM CONTROL PANEL	208	3	13.0	-	-	DIRECT	BP/2,4,6	20A/3P	30	20	3	2	2,3
-	1	CELLAR CIP PUMP	208	3	8.0	-	-	DIRECT	BP/3,5,7	15A/3P	30	15	3	2	2,3
10	1	GRAIN CRACKER & GRIST CASE	208	3	8.0	-	-	DIRECT	BP/9,11,13	15A/3P	30	15	3	2	2,3
12	1	MOBILE KEG WASHER	208	3	12.5	-	-	PLUG	BP/15,17,19	20A/3P	30	20	3	2	2,3
17a	1	GLYCOL CHILLER	230	3	13.5	-	-	DIRECT	BP/21,23,25	20A/3P	30	20	3	3R	2,3
17b	1	GLYCOL CHILLER	230	3	13.5	-	-	DIRECT	BP/27,29,31	20A/3P	30	20	3	3R	2,3
17c	1	ADDITIONAL CHILLER PUMP	230	3	-	-	1.5	DIRECT	BP/33,35,37	15A/3P	30	15	3	3R	2,3
-	1	CELLAR CONTROL PANEL	120	1	-	-	2.8	DIRECT	BP/1	15A/1P	-	-	-	-	1,2,3
-	1	CELLAR GAS BURNER	120	1	-	-	2.0	DIRECT	BP/8	15A/1P	-	-	-	-	1,2,3

NOTES:

1. CONTRACTOR SHALL PROVIDE A MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERLOADS.
2. PAINT DISCONNECT SWITCH TO MATCH WALL, VERIFY EXACT COLOR WITH ARCHITECT.
3. CONTRACTOR SHALL PROVIDE NEW PLUG AND RECEPTACLE FOR KITCHEN EQUIPMENT. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO CONFIRM EXACT AMPERAGE, PHASE, VOLTAGE AND NEMA CONFIGURATION FOR EACH PEICE OF EQUIPMENT PRIOR TO ANY INSTALLATION. (TYPICAL)
4. E.C. SHALL PROVIDE A TRANSFORMER IN ORDER TO POWER EQUIPMENT RATED FOR 230/240V.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c-31127 - f.llc.#ar 98187 - mdlic.# 19161
mdlic.#b 20080400 - pelic.#ln 40707 - hdc.# 27795 - wdc.# 1020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ELECTRICAL FLOOR PLAN

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER
PROFESSIONAL ENGINEER

SHEET NUMBER:

E1.2

(EQUIPMENT) SIZING CIRCUIT

AMP / POLE PANEL / SERVICE	POLES	TYPE (XHHW) COPPER CONDUCTORS
15A, 20A	1 (or) 2	2#12 + 1#12 GND. IN 3/4" CONDUIT
15A, 20A	3	3#12 + 1#12 GND. IN 3/4" CONDUIT
25A, 30A	1 (or) 2	2#10 + 1#10 GND. IN 3/4" CONDUIT
25A, 30A	3	3#10 + 1#10 GND. IN 3/4" CONDUIT
35A, 40A	1 (or) 2	2#8 + 1#10 GND. IN 3/4" CONDUIT
35A, 40A	3	3#8 + 1#10 GND. IN 3/4" CONDUIT
45A, 50A, 55A	1 (or) 2	2#6 + 1#10 GND. IN 3/4" CONDUIT
45A, 50A, 55A	3	3#6 + 1#10 GND. IN 3/4" CONDUIT
60A	2	2#4 + 1#10 GND. IN 1" CONDUIT
60A	3	3#4 + 1#10 GND. IN 1" CONDUIT
70A	3	3#4 + 1#8 GND. IN 1" CONDUIT
80A	3	3#3 + 1#8 GND. IN 1-1/4" CONDUIT
90A	3	3#2 + 1#8 GND. IN 1-1/4" CONDUIT
100A, 110A	3	3#1 + 1#6 GND. IN 1-1/4" CONDUIT
125A, 150A	3	3#1/0 + 1#6 GND. IN 1-1/2" CONDUIT
175A	3	3#2/0 + 1#6 GND. IN 2" CONDUIT
200A	3	3#3/0 + 1#4 GND. IN 2" CONDUIT

NOTES:

(PANEL / SWITCHBOARD / SERVICE) FEEDER SIZING

AMPERES	POLES	TYPE (XHHW) COPPER CONDUCTORS
30A	3	4#10 + 1#8 GND. IN 3/4" CONDUIT
60A	2	3#4 + 1#8 GND. IN 1" CONDUIT
60A	3	4#4 + 1#8 GND. IN 1-1/4" CONDUIT
100A	2	3#1 + 1#6 GND. IN 1-1/4" CONDUIT
100A	3	4#1 + 1#6 GND. IN 1-1/2" CONDUIT
125A, 150A	2	3#1/0 + 1#6 GND. IN 1-1/2" CONDUIT
125A, 150A	3	4#1/0 + 1#6 GND. IN 2" CONDUIT
200A	2	3#3/0 + 1#4 GND. IN 2" CONDUIT
200A	3	4#3/0 + 1#4 GND. IN 2" CONDUIT
225A	3	4#4/0 + 1#2 GND. IN 2-1/2" CONDUIT
300A	3	4#350kcmil + 1#2 GND. IN 3" CONDUIT
400A	3	4#600kcmil + 1#1/0 GND. IN 3-1/2" CONDUIT
600A	3	2 SETS OF: (4#350kcmil + 1#2 GND.) IN TWO (2) 3" CONDUITS
800A	3	2 SETS OF: (4#600kcmil + 1#1/0 GND.) IN TWO (2) 3-1/2" CONDUITS
1000A	3	3 SETS OF: (4#400kcmil + 1#1/0 GND.) IN THREE (3) 3" CONDUITS
1200A	3	3 SETS OF: (4#600kcmil + 1#1/0 GND.) IN THREE (3) 3-1/2" CONDUITS
1600A	3	4 SETS OF: (4#600kcmil + 1#1/0 GND.) IN FOUR (4) 3-1/2" CONDUITS
2000A	3	5 SETS OF: (4#600kcmil + 1#1/0 GND.) IN FIVE (5) 3-1/2" CONDUITS
2500A	3	6 SETS OF: (4#600kcmil + 1#1/0 GND.) IN SIX (6) 3-1/2" CONDUITS
3000A	3	7 SETS OF: (4#700kcmil + 1#1/0 GND.) IN SEVEN (7) 4" CONDUITS

RECEPTACLE BRANCH CIRCUIT WIRING SCHEDULE

CONDUCTOR AWG.	MAXIMUM CONDUCTOR LENGTH AT 120V	GROUND CONDUCTOR AWG.
#12	100'-0"	#12
#10	165'-0"	#10
#8	255'-0"	#10
#6	405'-0"	#10

RECEPTACLE BRANCH CIRCUIT WIRING SCHEDULE NOTES:

1. BASED ON 20A CIRCUIT LOADED TO 9A USING SINGLE PHASE, 2 WIRE CIRCUITS.
2. THE ABOVE SCHEDULE REPRESENTS MINIMUM CONDUCTOR SIZE BASED FROM PANEL TO CENTER OF LEAD TO OVERCOME VOLTAGE DROP.
3. MAKE PROVISIONS FOR JUNCTION BOX ADJACENT TO OUTLET TO TRANSITION TO #12 WIRE FOR FINAL TERMINATIONS TO DEVICE AS REQUIRED.

LUMINAIRE BRANCH CIRCUIT WIRING SCHEDULE

CONDUCTOR AWG.	MAXIMUM CONDUCTOR LENGTH AT 120V	GROUND CONDUCTOR AWG.
#12	175'-0"	#12
#10	285'-0"	#10
#8	445'-0"	#10
#6	-	#10

RECEPTACLE BRANCH CIRCUIT WIRING SCHEDULE NOTES:

1. BASED ON 20A CIRCUIT LOADED TO 9A USING SINGLE PHASE, 2 WIRE CIRCUITS.
2. THE ABOVE SCHEDULE REPRESENTS MINIMUM CONDUCTOR SIZE BASED FROM PANEL TO CENTER OF LEAD TO OVERCOME VOLTAGE DROP.
3. MAKE PROVISIONS FOR JUNCTION BOX ADJACENT TO OUTLET TO TRANSITION TO #12 WIRE FOR FINAL TERMINATIONS TO DEVICE AS REQUIRED.

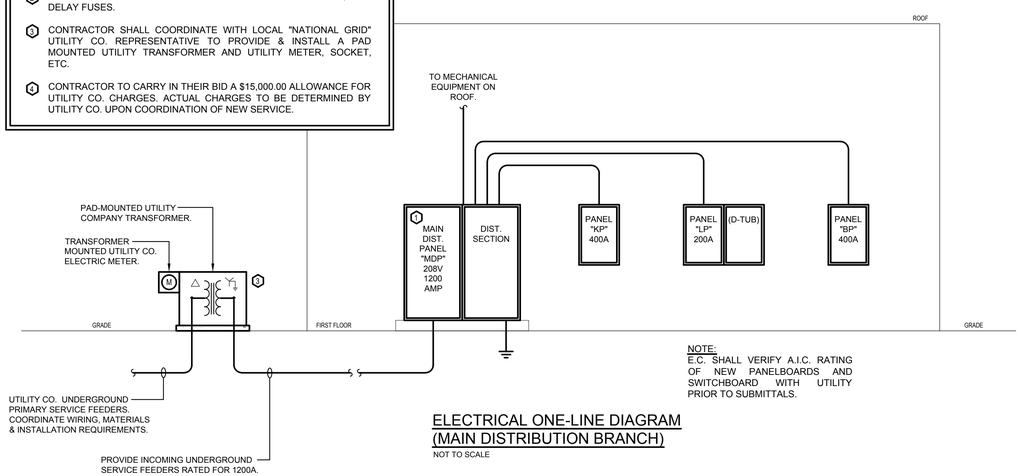
MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

ITEM No. (XXX / ##)	DESCRPITION	LOCATION	EQUIPMENT CHARACTERISTICS					CIRCUIT	CIRCUIT BREAKER (HACR TYPE)	DISCONNECT SWITCH				MANUAL MOTOR CONTROLLER	REMARKS
			VOLTS	PH	FREQ.	(KW)/HP	FLA			SIZE	FUSE	POLES	NEMA		
RTU-1	ROOF TOP UNIT	ROOF	208	3	60	-	106.0	MDP/2	110A/3P	200	110	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
RTU-2	ROOF TOP UNIT	ROOF	208	3	60	-	82.0	MDP/3	110A/3P	100	90	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
RTU-3	ROOF TOP UNIT	ROOF	208	3	60	-	147.0	MDP/4	110A/3P	200	150	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
RTU-4	ROOF TOP UNIT	ROOF	208	3	60	-	147.0	MDP/5	110A/3P	200	150	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
RTU-5	ROOF TOP UNIT	ROOF	208	3	60	-	110.0	MDP/6	110A/3P	200	110	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
RTU-6	ROOF TOP UNIT	ROOF	208	3	60	-	110.0	MDP/7	110A/3P	200	110	3	3R	PROVIDE "WP" DISCONNECT SWITCH WITH FUSING AS INDICATED.	SEE BELOW
EF-1	EXHAUST FAN	(SEE PLANS)	120	1	60	1/4	-	LP/2	15A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
EF-2	EXHAUST FAN	(SEE PLANS)	120	1	60	1/4	-			-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
EWH-1	ELECTRIC HEAT	(SEE PLANS)	120	1	60	-	12.5	LP/4	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
EWH-2	ELECTRIC HEAT	(SEE PLANS)	120	1	60	-	12.5	LP/6	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
EWH-3	ELECTRIC HEAT	(SEE PLANS)	120	1	60	-	12.5	LP/8	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
GWH-1	GAS WATER HEATER	(SEE PLANS)	120	1	60	-	-	KP/35	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
GWH-2	GAS WATER HEATER	(SEE PLANS)	120	1	60	-	-	LP/43	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW
GWH-3	GAS WATER HEATER	(SEE PLANS)	120	1	60	-	-	LP/45	20A/1P	-	-	-	-	PROVIDE MOTOR RATED TOGGLE SWITCH WITH THERMAL OVERRIDES.	SEE BELOW

NOTES:
1. COORDINATE WITH HVAC CONTRACTOR & DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT PRIOR TO INSTALLING ELECTRICAL COMPONENTS.
2. COORDINATE WITH PLUMBING CONTRACTOR & DRAWINGS FOR EXACT LOCATIONS OF ALL PLUMBING EQUIPMENT PRIOR TO INSTALLING ELECTRICAL COMPONENTS.
3. ALL DISCONNECTING MEANS SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
4. ALL STARTERS, VFD'S ETC. SHALL BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL WIRE ALL HVAC EQUIPMENT.
5. ALL HVAC CONTROL WIRING SHALL BE PROVIDED BY OTHERS.
6. ALL WATER HEATERS SHALL HAVE ALL ASSOCIATED PUMPS POWERED BY THE SAME CIRCUIT AS THE WATER HEATER. VERIFY EXACT WIRING REQUIREMENTS IN FIELD WITH REPRESENTATIVE.

"POWER RISER" NOTES

1. PROVIDE A 1200 AMP SERVICE ENTRANCE RATED, MAIN SERVICE BREAKER & DISTRIBUTION SECTIONS.
2. PROVIDE 200 AMP DISC. SWITCH WITH 175 AMP DUAL ELEMENT, TIME DELAY FUSES.
3. CONTRACTOR SHALL COORDINATE WITH LOCAL "NATIONAL GRID" UTILITY CO. REPRESENTATIVE TO PROVIDE & INSTALL A PAD MOUNTED UTILITY TRANSFORMER AND UTILITY METER, SOCKET, ETC.
4. CONTRACTOR TO CARRY IN THEIR BID A $15,000.00 ALLOWANCE FOR UTILITY CO. CHARGES. ACTUAL CHARGES TO BE DETERMINED BY UTILITY CO. UPON COORDINATION OF NEW SERVICE.



NOTE:
E.C. SHALL VERIFY A.I.C. RATING OF NEW PANELBOARDS AND SWITCHBOARD WITH UTILITY PRIOR TO SUBMITTALS.

ELECTRICAL ONE-LINE DIAGRAM (MAIN DISTRIBUTION BRANCH)
NOT TO SCALE

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:
ELECTRICAL SCHEDULES AND RISER DIAGRAM

STAMP:
STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER
PROFESSIONAL ENGINEER

SHEET NUMBER:
E2.0

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG No.	MOUNTING	LAMPING			VOLTAGE	DESCRIPTION / REMARKS
				TYPE	WATTAGE	QUANTITY		
LF-01	MAXIM LIGHTING	35017EB	PENDANT	LED	13	1	120	PENDANT MOUNTED BAR LIGHTING PROVIDE WITH LED LAMPING
LF-02	MAXIM LIGHTING	10031CLSN	PENDANT	LED	13	1	120	DINING ROOM PENDANT PROVIDE WITH LED LAMPING
LF-03	TROY LIGHTING	B3831	WALL	LED	-	1	120	BATHROOM WALL SCONCE
LF-04	-	LED TAPE LIGHTING	-	LED	4.6/FT	1	120	LED TAPE LIGHTING
LF-05	FRANKLIN IRON WORKS	W2425	PENDANT	LED	13	3	120	PENDANT MOUNTED BAR LIGHTING PROVIDE WITH LED LAMPING
LF-06	LAMPS PLUS	STRING LIGHT	PENDANT	LED	1200	X	120	LED STRING LIGHTS
LF-07	-	-	RECESSED	LED	29	1	120	LED DOWNLIGHT
LF-08	KICHLER	49059OZ	WALL	LED	19	1	120	EXTERIOR WALL SCONCE PROVIDE WITH LED LAMPING
LF-09	-	ET-LED-336-1300LDIMTR-120-WFL-30K-90	TRACK	LED	17	3	120	LED TRACK FIXTURE
LF-10	NORA	NLCBC-45	RECESSED	LED	14	1	120	LED DOWNLIGHT FIXTURE
LF-11	METALUX	4SNLED-LD5-41SL-LC-UNV-LBXX-CD1-U (4-FOOT) 8TSNLED-LD5-90SL-LC-UNV-LBXX-CD1-U (8-FOOT)	SURFACE	LED	31/69	1	120	SURFACE MOUNTED LED FIXTURES
LF-12	MAXLITE	MLFP-22EP-20-35 (2X2) MLFP-24EP-30-35 (2X4)	RECESSED	LED	31/69	1	120	RECESSED LED FLAT PANEL

NOTES:

1. PROVIDE ACCESSORIES AND MOUNTING HARDWARE AS REQUIRED FOR ALL FIXTURES.
2. ALL FIXTURE/ACCESSORY COLORS NOT INDICATED ON DRAWING'S SHALL BE SELECTED BY ARCHITECT.
3. PROVIDE LAMPING FOR ALL FIXTURES UNLESS LAMPING IS INCLUDED WITH FIXTURE AS INDICATED IN SCHEDULE.
4. PROVIDE TYPICAL UNIT MOCK UP FOR LIGHT FIXTURE HANGING HEIGHTS AND EXPOSED ELECTRICAL CONDUIT LAYOUT TO BE REVIEWED BY ARCHITECT.
5. ALL LIGHT FIXTURES WITH INCANDESCENT LAMPING SHALL BE PROVIDED W/ CFL/LED LAMP IN LIEU OF INCANDESCENT LAMP.
6. CBA = COLOR TO BE SELECTED BY ARCHITECT (THE ELECTRICAL CONTRACTOR SHALL VERIFY COLOR & FINISH WITH ARCHITECT PRIOR TO SUBMITTAL OF SHOP DRAWINGS.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION	BUS AMPS	MAIN	LOCATION	VOLTAGE	PH	BREAKERS						TOTAL POLES	MOUNTING	REMARKS
						USED			SPARE					
						1-POLE	2-POLE	3-POLE	1-POLE	2-POLE	3-POLE			
MDP	1200	1200	(SEE PLANS)	208Y/120	3	(SEE SCHEDULE)			-	-	-	??	SURFACE	DISTRIBUTION POWER, PANEL BOARD.
KP	400	MLO	(SEE PLANS)	208Y/120	3	(11)15A	(2)15A, (1)20A, (1)30A, (1)25A	(1)15A	(2) 20A	-	-	42	SURFACE	BRANCH CIRCUIT POWER PANEL
LP	200	MLO	(SEE PLANS)	208Y/120	3	(31)20A	-	-	(5) 20A	-	-	84	SURFACE	DOUBLE TUB BRANCH CIRCUIT POWER PANEL BOARD.
BP	400	MLO	(SEE PLANS)	208Y/120	3	(1)20A	-	(2)15A, (2)20A	(5) 20A	-	-	42	SURFACE	BRANCH CIRCUIT POWER PANEL

NOTES:

1. ALL PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED NAMEPLATE ON THE DOOR INDICATING THE PANELBOARD DESIGNATION, VOLTAGE, RATING OF MCB OR MAIN LUGS AND SOURCE OF SUPPLY. ENGRAVED PLATE SHALL BE AS CALLED FOR IN THE SPECIFICATIONS.
2. ALL PANELBOARDS SHALL BE PROVIDED WITH A TYPED (HAND WRITTEN IS NOT ALLOWED) CIRCUIT DIRECTORY INDICATING THE LOAD FED BY EACH CIRCUIT BREAKER AND ITS LOCATION IN THE BUILDING.
3. ALL PANELBOARDS SHALL BE PROVIDED WITH FULL SIZE EQUIPMENT GROUND AND NEUTRAL BUSSES ON EACH SIDE OF THE ENCLOSURE SO AS TO PROVIDE A SEPARATE EQUIPMENT GROUND AND NEUTRAL TERMINAL FOR EACH BRANCH CIRCUIT.
4. SPACES SHALL BE PROVIDED WITH ALL REQUIRED BUSSING, SUPPORTS, CONNECTORS, ETC.. NECESSARY FOR FUTURE INSTALLATION OF CIRCUIT BREAKERS.
5. FLUSH MOUNTED PANELBOARDS SHALL BE PROVIDED WITH FIVE (5) EMPTY 1" EMT CONDUITS INSTALLED UP TO ABOVE ACCESSIBLE CEILING FOR FUTURE USE.
6. ALL PANELBOARDS SHALL HAVE HINGED "DOOR-IN-DOOR" TYPE COVERS.
7. REFER TO THE SPECIFICATIONS FOR ALL OTHER PANELBOARD REQUIREMENTS.
8. ALUMINUM BUSSING *"SHALL NOT"* BE AN ACCEPTABLE SUBSTITUE FOR COPPER BUSSING.
9. SERIES RATED EQUIPMENT *"SHALL NOT"* BE APPROVED.
10. CONFIRM BREAKER COUNTS WITH FLOOR PLANS.

DISTRIBUTION PANELBOARD SCHEDULE "MDP"

BUS AMPERAGE: 1200 AMPS | VOLTAGE: 208Y/120 | A.I.C. RATING: VERIFY WITH UTILITY | MOUNTING: WALL

DESIG.	LOAD		CIRCUIT BREAKER			REMARKS
	KVA	AMPS	FRAME	TRIP	POLE	
1	345.3	959.2 Amps (Connected)	1200A	1200A	3	MAIN BREAKER (CONNECTED LOAD / NO ALLOWANCES)
2	38.1	106.0	150A	110A	3	ROOF TOP UNIT, "RTU-1"
3	29.5	82.0	100A	90A	3	ROOF TOP UNIT, "RTU-2"
4	52.9	147.0	150A	150A	3	ROOF TOP UNIT, "RTU-3"
5	52.9	147.0	150A	150A	3	ROOF TOP UNIT, "RTU-4"
6	39.6	110.0	150A	110A	3	ROOF TOP UNIT, "RTU-5"
7	39.6	110.0	150A	110A	3	ROOF TOP UNIT, "RTU-6"
8	47.1	130.8	400A	400A	3	PANEL "KP"
9	24.2	67.2	200A	200A	3	PANEL "LP"
10	21.4	59.3	400A	400A	3	PANEL "BP"
11	-	-	-A	-A	3	SPARE
12	-	-	-A	-A	3	SPARE
13	-	-	-A	-A	3	SPARE
14	-	-	-A	-A	3	SPARE
15	-	-	-A	-A	3	SPARE

GENERAL NOTES

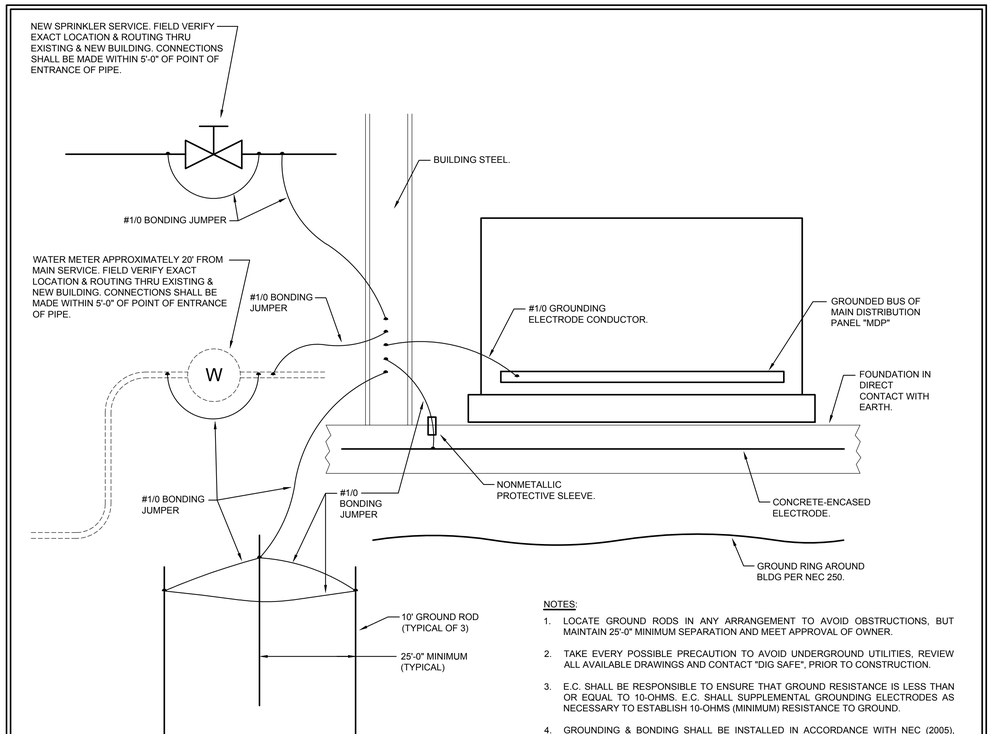
1. ALL CONDUCTORS INDICATED ARE BASED ON COPPER.

2. ALL FEEDER SIZES SHOWN, HAVE HAD "VOLTAGE DROP" CALCULATIONS INCORPORATED. (TYPICAL)

3. ALL NEW ELECTRICAL SWITCHGEAR HAS BEEN BASED ON "SIEMENS".

MANUFACTURER CONTACT:

SIEMENS INDUSTRY, INC.
BRIAN KELLEY
1-860-208-8295
EMAIL: briankelley@siemens.com



GROUNDING GRID SCHEMATIC
NO SCALE

NOTES:

1. LOCATE GROUND RODS IN ANY ARRANGEMENT TO AVOID OBSTRUCTIONS, BUT MAINTAIN 25'-0" MINIMUM SEPARATION AND MEET APPROVAL OF OWNER.
2. TAKE EVERY POSSIBLE PRECAUTION TO AVOID UNDERGROUND UTILITIES. REVIEW ALL AVAILABLE DRAWINGS AND CONTACT "DIG SAFE", PRIOR TO CONSTRUCTION.
3. E.C. SHALL BE RESPONSIBLE TO ENSURE THAT GROUND RESISTANCE IS LESS THAN OR EQUAL TO 10-OHMS. E.C. SHALL SUPPLEMENTAL GROUNDING ELECTRODES AS NECESSARY TO ESTABLISH 10-OHMS (MINIMUM) RESISTANCE TO GROUND.
4. GROUNDING & BONDING SHALL BE INSTALLED IN ACCORDANCE WITH NEC (2005), ARTICLE 250.
5. E.C. SHALL FIELD VERIFY THAT THE EXISTING (2ND) ELECTRICAL SERVICE TO THE BUILDING LOCATED AT THE TRANSFORMER VAULT IS GROUNDED AND BONDED TO THE EXISTING WATER SERVICE. IF THE EXISTING (2ND) ELECTRICAL SERVICE IS NOT PROPERLY GROUNDED & BONDED; THE E.C. SHALL PROVIDE A COST TO CONNECT TO THE GROUNDING GRID AS SHOWN IN THE DETAIL.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - ca.lic.#c.31127 - fl.lic.#ar 98187 - mo.lic.# 19161
mo.lic.#p 2008040 - pa.lic.#rm 40077 - tx.lic.# 27795 - wa.lic.# 11020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ELECTRICAL SCHEDULES AND NOTES

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER 2010019813
PROFESSIONAL ENGINEER

SHEET NUMBER:

E2.1

TYPICAL ELECTRICAL NOTES

1. FURNISH LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE PROPER AND COMPLETE INSTALLATION OF ALL ELECTRIC WORK SHOWN ON THE DRAWINGS AND HEREIN SPECIFIED.
2. ALL ITEMS NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE ELECTRICAL INSTALLATION, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS PROJECT.
3. ALL ELECTRICAL INSTALLATIONS AND GROUNDING SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE LOCAL, STATE AND NATIONAL CODES.
4. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
5. MATERIALS AND WORKMANSHIP SHALL BE THE BEST OF THEIR RESPECTIVE KIND AND IN FULL ACCORDANCE WITH THE MOST MODERN ELECTRICAL CONSTRUCTION STANDARDS. ALL MATERIAL SHALL BE NEW, UNLESS OTHERWISE NOTED AND FREE OF ANY DEFECTS.
6. THE ELECTRICAL CONTRACTOR SHALL CLEAN AT THE END OF EACH DAY ALL AREAS WORKED IN. EMPTY BOXES, RUBBISH, AND OTHER CONSTRUCTION MATERIALS OF NO USE SHALL BE REMOVED FROM THE BUILDING.
7. ALL WORK SEQUENCES SHALL BE COORDINATED WITH THE G.C. AND SHALL BE COORDINATION WITH OTHER BUILDING TRADES AND G.C. BUILDING SCHEDULES.
8. ALL BRANCH CIRCUITS RATED AT 120 VOLTS, 20 AMPERES EXCEEDING 75 FEET SHALL BE MINIMUM #10 AWG.
9. THE ELECTRICAL CONTRACTOR (E.C.) SHALL COORDINATE WITH THE LOCAL UTILITY POWER COMPANY AND PROVIDE ALL MATERIAL & LABOR REQUIRED TO COMPLY WITH THE UTILITY POWER COMPANY'S REQUIREMENTS AND STANDARDS, PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT, SUCH AS, SWITCHGEAR, PANELS, TRANSFORMERS, DISCONNECT SWITCHES, ETC... E.C. SHALL CONFIRM METERING SEQUENCE (HOT OR COLD) AND MAKE THE APPROPRIATE PROVISIONS FOR THE APPROVED METERING SEQUENCE ARRANGEMENT. A.I.C. RATINGS, GROUNDING, BONDING, RACEWAYS, ETC... SHALL BE IN ACCORDANCE WITH THE UTILITY COMPANY'S STANDARDS.
10. THE ELECTRICAL CONTRACTOR (E.C.) SHALL COORDINATE WITH THE LOCAL TELEPHONE COMPANY AND PROVIDE ALL MATERIAL & LABOR REQUIRED TO COMPLY WITH THE TELEPHONE COMPANY'S REQUIREMENTS AND STANDARDS, PRIOR TO ODERING ANY ELECTRICAL EQUIPMENT, SUCH AS, TERMINAL BOARDS, GROUNDING, RACEWAYS, ETC...
11. ALL RECEPTACLE WITH "WP" DESIGNATION SHALL BE PROVIDED WITH A WEATHER-PROOF WHILE IN-USE ENCLOSURE. (TYPICAL)
12. ELECTRICAL CONTRACTOR TO ALLOW TIME FOR DIRECTIONAL ADJUSTMENT OF ALL LIGHT FIXTURES AS DIRECTED BY OWNER.
13. ALL RECEPTACLES SHALL BE LABELED INDICATING THEIR RESPECTIVE PANEL & CIRCUIT NUMBER.
14. AT EXISTING FLOOR SLABS AND WALLS TO BE CORE-DRILLED OR CUT, THE CONTRACTOR SHALL FIND AND MARK ALL EXISTING REINFORCING, PIPING, CONDUIT & FEEDERS, ETC IN BOTH FACES LOCATED BY MEANS OF X-RAY, PACH-OMETER, OR PROFOMETER. SUBMIT DRAWING SHOWING LOCATIONS OF EXISTING REBAR, PIPING AND/OR CONDUIT AND PROPOSED CORES AND/OR CUTS FOR REVIEW.
15. ALL PENETRATIONS FOR POWER RECEPTACLES, JUNCTION BOXES, TELEPHONE/DATA OUTLETS, SWITCHES, BACKBOXES, ETC.. LOCATED IN EXTERIOR WALLS SHALL BE PROVIDED WITH APPROPRIATE CAULKING AND GASKETS TO SEAL OFF AND PREVENT AIR LEAKAGE. FOLLOW CAULKING AND GASKET MANUFACTURERS INSTALLATION GUIDELINES TO ENSURE CORRECT AND EFFECTIVE INSTALLATION.

SEISMIC RESTRAINT NOTE

A. GENERAL: IT IS THE INTENT OF THIS SEISMIC SPECIFICATION TO KEEP ALL ELECTRIAL BUILDING SYSTEM COMPONENTS IN PLACE DURING A SEISMIC EVENT. ALL ELECTRICAL SYSTEMS MUST BE INSTALLED IN STRICT ACCORDANCE WITH SEISMIC CODES, COMPONENT MANUFACTURER'S AND BUILDING CONSTRUCTION STANDARDS. WHENEVER A CONFLICT OCCURS BETWEEN THE MANUFACTURER'S OR CONSTRUCTION STANDARDS, THE MOST STRINGENT SHALL APPLY.

B. THIS CONTRACTOR SHALL ENGAGE A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE JURISDICTION OF THIS PROJECT TO REVIEW THE ENTIRE INSTALLATION TO DETERMINE ALL SEISMIC RESTRAINT REQUIREMENTS AND METHODS. CONTRACTOR SHALL SUBMIT A REPORT OUTLINING THE STRUCTURAL ENGINEER'S REVIEW AS WELL AS SEISMIC RESTRAINT SHOP DRAWINGS AND SUPPORTING CALCULATIONS PREPARED BY THE PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW BY THE ARCHITECT.

C. SEISMIC RESTRAINTS SHALL BE DESIGNED IN ACCORDANCE WITH SEISMIC FORCE LEVELS AS DETAILED IN THE APPLICABLE BUILDING CODE.

1. ALL EQUIPMENT, CONDUIT AND PULL BOXES SHALL BE ADEQUATELY RESTRAINED TO RESIST SEISMIC FORCES. RESTRAINT DEVICES SHALL BE DESIGNED AND SELECTED TO MEET SEISMIC REQUIREMENTS AS DEFINED IN THE LATEST ISSUE OF THE BOCA NATIONAL BUILDING CODE IN ACCORDANCE WITH THE APPLICABLE SEISMIC ZONE.
2. ANCHOR BOLT CALCULATORS, SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED SHOWING ADEQUACY OF THE BOLT SIZING AND TYPE. STAMPED CALCULATIONS SHALL ALSO BE FURNISHED FOR ANCHORS ON RESTRAINT DEVICES, CABLES, ISOLATORS AND RIGIDLY MOUNTED EQUIPMENT.

TYPICAL FIRE STOPPING NOTES

A. GENERAL: FIRE STOPPING SHALL BE PROVIDED BY THIS CONTRACTOR FOR ALL FLOOR, CEILING AND FIRE RATED WALL PENETRATIONS FOR CONDUIT, SLEEVES AND/OR CABLING AS REQUIRED BY JOB CONDITIONS.

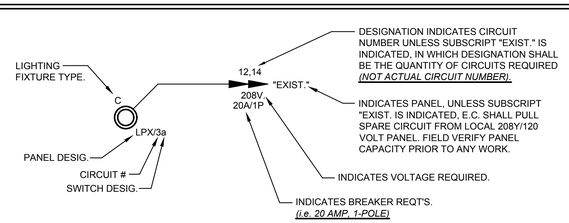
B. THE CONTRACTOR SHALL PROVIDE A FIRE STOP SYSTEM IN ACCORDANCE WITH THE FOLLOWING:

1. THE SYSTEM SHALL CONSIST OF A WATERBASED SEALANT AND SUITABLE DAMMING MATERIALS (WHERE REQUIRED) AND BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.
2. THE SEALANT SUPPLIED SHALL BE A TWO STAGED INTUMESCENT AND CAPABLE OF EXPANDING UP TO 8 TIMES ITS ORIGINAL VOLUME.
3. THE SEALANT SUPPLIED SHALL CONTAIN NO ASBESTOS, NO FIBERGLASS, AND NO SOLVENTS NOT CORROSIVE MINERAL SALTS OF ANY KIND.
4. THE SEALANT SHALL FORM A SURFACE CAPABLE OF BEING SANDED AND PAINTED TO MATCH SURROUNDING SURFACES AND SHALL BE IMPERVIOUS TO WATER WHEN DRY.
5. THE FIRE STOP SYSTEM SHALL BE TESTED TO THE TIME/TEMPERATURE REQUIREMENTS OF ASTM E119 AND SHALL BE UL1479 (ASTM E814) AND CLASSIFIED FOR UP TO 3 HOURS.
6. THE FIRE STOP SEALANT SHALL BE SPECSEAL SEALANT AS MANUFACTURED BY SPECIFIED TECHNOLOGIES, INC. OR APPROVED EQUAL.
7. SPECIAL CARE SHALL BE TAKEN WITH ELECTRICAL SYSTEMS NOT TO COMPROMISE ANY OF THE BUILDING FIRE PARTITIONS, FLOORS, WALLS OR MEMBRANES. PROVIDE ALL FIRESTOPPING REQUIRED TO COMPLY WITH THE BUILDING CODE, THE ELECTRICAL CODE AND THE UL LISTING OF EACH ASSEMBLY. COORDINATE LOCATIONS AND TYPES OF MEMBRANES WITH ARCHITECT.

TELEPHONE & DATA RACEWAY NOTES

1. NO SECTION OF CONDUIT SHALL BE LONGER THAN 100-FEET BETWEEN PULL POINTS.
2. NO SECTION OF CONDUIT SHALL CONTAIN MORE THAN TWO 90-DEGREE BENDS, OR EQUIVALENT, BETWEEN PULL POINTS (e.g., OUTLET BOXES, TELECOMMUNICATIONS CLOSETS, OR PULL BOXES). IF THERE IS A REVERSE (U-SHAPED) BEND IN THE SECTION, A PULL BOX SHALL BE INSTALLED.
3. THE INSIDE RADIUS OF A BEND IN CONDUIT SHALL BE AT LEAST 6 TIMES THE INTERNAL DIAMETER. BENDS IN THE CONDUIT SHALL NOT CONTAIN ANY KINKS OR OTHER DISCONTINUITIES THAT MAY HAVE A DETRIMENTAL EFFECT ON THE CABLE SHEATH DURING CABLE PULLING OPERATIONS.
4. ANY SINGLE CONDUIT RUN EXTENDING FROM A TELECOMMUNICATIONS CLOSET SHALL NOT SERVE MORE THAN THREE OUTLET BOXES.
5. CONDUITS PROTRUDING / PENETRATING THROUGH THE FLOOR IN THE TELECOMMUNICATIONS CLOSETS SHALL BE TERMINATED 3-INCHES ABOVE THE FLOOR ADJACENT WALLS. PROTRUSIONS / PENETRATIONS SHALL BE LOCATED TO AVOID CREATING A TRIPPING HAZARD WITHIN THE CLOSETS. FIRESTOP ALL PROTRUSIONS / PENETRATIONS.
6. A MINIMUM 3/4-INCH CONDUIT SHALL BE PROVIDED FROM THE TELECOMMUNICATIONS CLOSET TO SERVE EACH WALL-MOUNTED PUBLIC TELEPHONE. IN DISCUSSION WITH THE TELEPHONE PROVIDER, AND WHERE IT IS DESIRABLE TO CONCEAL THE OUTLET BOX DIRECTLY BEHIND THE TELEPHONE, THE CENTER OF THE OUTLET BOX SHALL BE LOCATED 48-INCHES ABOVE THE FINISHED FLOOR. FOR RECESSED APPLICATIONS, THE CONDUIT AND BOX SHALL BE INSTALLED TO SUIT THE SPECIFIC TYPE OF MOUNTING. REFER TO APPLICABLE CODES, ADA GUIDELINES, UNIFORM FEDERAL ACCESSIBILITY STANDARDS, MANUFACTURES SPECIFICATIONS AND ANSI STANDARDS FOR ADDITIONAL REQUIREMENTS.
7. WHERE A TELECOMMUNICATIONS CONDUIT IS TO BE INSTALLED TO A DEVICE EXPOSED TO THE WEATHER, CARE SHALL BE TAKEN TO PREVENT THE INGRESS OF MOISTURE. CARE SHALL ALSO BE TAKEN TO ENSURE THAT MOISTURE WILL NOT COLLECT IN LOW POINTS, FREEZE AND DAMAGE THE CABLE. NONMETALLIC CONDUIT SHALL BE UV RESISTANT AND MARKED ACCORDINGLY.
8. CONDUITS SHALL BE REAMED TO ELIMINATE SHARP EDGES. METALLIC CONDUIT SHALL BE TERMINATED WITH AN INSULATED BUSHING.
9. REFER TO ANSI/TIA/EIA-606 FOR ADMINISTRATION OF THE CONDUIT SYSTEM IDENTIFICATION.
10. ALL CONDUITS SHALL BE PROVIDED WITH PULL STRINGS.
11. OUTLET BOXES SHALL BE NO SMALLER THAN 2-INCHES WIDE, 3-INCHES HIGH AND 2.5-INCHES DEEP. THIS WILL ACCOMODATE ONE OR TWO 3/4-INCH CONDUITS. WHERE A LARGER CONDUIT IS REQUIRED, THE BOX SHALL BE INCREASED ACCORDINGLY. A MAXIMUM 1-1/4-INCH CONDUIT WILL REQUIRE A 4-11/16-INCH x 4-11/16-INCH x 2-1/2-INCH BOX.
12. CONDUIT TYPES SHALL BE ELECTRICAL METALLIC TUBING (EMT) OR RIGID METAL CONDUIT. LOCATIONS SUBJECT TO MOISTURE SHALL BE RIGID PVC. FLEXIBLE CONDUIT SHALL NOT BE USED FOR TELE/DATA RACEWAYS.
13. CONDUIT REQUIREMENTS FOR SUPPORT, END PROTECTION AND CONTINUITY SHALL COMPLY WITH APPROPRIATE ELECTRICAL CODES.
14. CONDUIT AND BOXES FOR TELE/DATA WIRING SHALL BE DEDICATED TO THOSE SYSTEMS. POWER WIRING SHALL BE KEPT OUT OF CONDUIT AND BOXES DEDICATED TO TELE/DATA WIRING.
15. CONDUIT SIZE FOR MAXIMUM NUMBER OF CABLES (SEE TABLE BELOW):

Conduit Trade Size	Maximum number of cables based upon allowable fill									
	Cable Outside Diameter in Inches									
	0.13	0.18	0.22	0.24	0.29	0.31	0.37	0.53	0.62	0.70
1/2"	1	1	0	0	0	0	0	0	0	0
3/4"	6	5	4	3	2	2	1	0	0	0
1"	8	8	7	6	3	3	2	1	0	0
1-1/4"	16	14	12	10	6	4	3	1	1	1
1-1/2"	20	18	16	15	7	6	4	2	1	1
2"	30	26	22	20	14	12	7	4	3	2
2-1/2"	45	40	36	30	17	14	12	6	3	3
3"	70	60	50	40	20	20	17	7	6	6
3-1/2"	-	-	-	-	-	-	22	12	7	6
4"	-	-	-	-	-	-	30	14	12	7



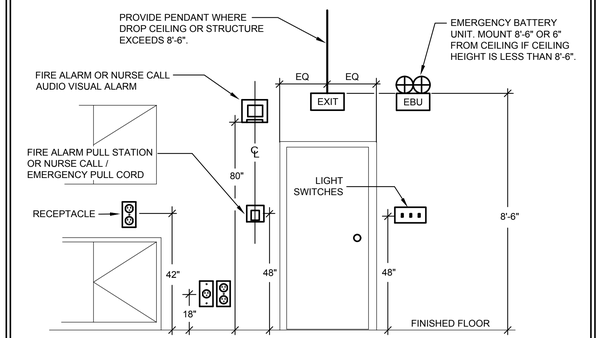
NOTES:

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT. INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS BUT NOT ON PLANS, AND VICE VERSA, SHALL APPLY OR SHALL BE PROVIDED AS THOUGH EXPRESSLY REQUIRED ON BOTH. IT IS NOT INTENDED THAT EVERY JUNCTION BOX, OFFSET, FITTING OR COMPONENT BE SPECIFIED OR SHOWN ON DRAWINGS; HOWEVER, CONTRACT DOCUMENTS REQUIRE PROVISION OF ALL COMPONENTS AND MATERIALS NECESSARY FOR COMPLETE AND OPERATIONAL ELECTRICAL INSTALLATION, WHETHER OR NOT INDICATED OR SPECIFIED.
2. BRANCH CIRCUIT WIRING MAY NOT BE GRAPHICALLY SHOWN ON DRAWINGS AND MAY BE SHOWN BY CIRCUIT NUMBERS BESIDE FIXTURES, DEVICES AND EQUIPMENT. PROVIDE COMPLETE WIRING SYSTEM WHETHER OR NOT SHOWN GRAPHICALLY. WIRING IS SHOWN BY CONDUIT RUNS ON DRAWINGS WHERE SPECIFIC ROUTING IS REQUIRED OR FOR OTHER SPECIAL REASONS. ONLY ROOMS WITH MULTIPLE SWITCHING HAVE "SWITCH CONTROL LETTERS" ASSIGNED. PROVIDE THHN CONDUCTORS IN AREAS WITH HIGH AMBIENT TEMPERATURES SUCH AS BOILER ROOMS, INCINERATOR ROOMS, MECHANICAL EQUIPMENT ROOMS ETC., FOR SIZES LARGER THAN NO. 10 AWG.

TYPICAL CIRCUITING DETAIL
NOT TO SCALE

NOTES FOR ALUMINUM EQUIPMENT

1. THESE DRAWINGS ARE BASED ON THE USE OF COPPER IN CONDUCTORS, TRANSFORMER WINDINGS, SWITCHBOARDS, DISTRIBUTION PANELBOARDS, BRANCH CIRCUIT PANELBOARDS, LOAD CENTERS, DISCONNECT SWITCHES & CIRCUIT BREAKERS.
2. ALTHOUGH PERMITTED BY CODE, THIS OFFICE DOES NOT RECOMMEND THE USE OF ALUMINUM ELECTRICAL EQUIPMENT.
3. USE OF ALUMINUM CONDUCTORS, TRANSFORMERS WITH ALUMINUM WINDINGS AND SWITCHBOARDS, DISTRIBUTION PANELBOARDS, BRANCH CIRCUIT PANELBOARDS, LOAD CENTERS, DISCONNECT SWITCHES & CIRCUIT BREAKERS WITH ALUMINUM BUSS IS AT THE DISCRETION & DECISION OF THE OWNER.
4. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO DETERMINE ALL CONDUCTOR AND CONDUIT SIZES, PER NEC, SHOULD ALUMINUM BE USED.
5. IF ALUMINUM EQUIPMENT IS USED IN ANY OF THE ELECTRICAL COMPONENTS OF ITEM "3" ABOVE, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
   - A. INSTALLATION SHALL BE IN ACCORDANCE WITH IEEE STD. 241-1990, PARAGRAPH 8.7.2
   - B. WHEN CUTTING CABLE, AVOID NICKING THE STRANDS.
   - C. UNPLATED CONTACT SURFACES SHALL BE CLEANED WITH WIREBRUSH, STEEL WOOL, EMERY CLOTH OR SIMILAR ABRASIVE TOOL OR MATERIAL.
   - D. PLATED SURFACES SHALL BE CLEANED WITH AN APPROVED SOLVENT.
   - E. APPLY JOINT COMPOUND TO THE CONDUCTOR IF THE CONNECTOR DOES NOT ALREADY HAVE IT.
   - F. USE ONLY CONNECTORS SPECIFICALLY TESTED AND APPROVED FOR USE ON ALUMINUM CONDUCTORS.
   - G. REFER TO ANSI/UL486B-1982.
   - H. ON MECHANICAL CONNECTORS, TIGHTEN THE CONNECTOR WITH A SCREWDRIVER OR WRENCH TO THE REQUIRED TORQUE. REMOVE EXCESS COMPOUND.
   - I. ON COMPRESSION CONNECTORS, CRIMP THE CONNECTOR USING THE PROPER TOOL AND DIE. REMOVE EXCESS COMPOUND.
   - J. ALWAYS USE JOINT COMPOUND THAT IS COMPATIBLE WITH THE INSULATION AND AS RECOMMENDED BY THE MANUFACTURER.
   - K. WHEN MAKING AN ALUMINUM-TO-COPPER CONNECTION THAT IS EXPOSED TO MOISTURE, PLACE THE ALUMINUM CONDUCTOR ABOVE THE COPPER. IF THERE IS NO EXPOSURE TO MOISTURE, THE RELATIVE POSITION OF THE TWO METALS IS NOT IMPORTANT.
   - L. WHEN USING INSULATED CONDUCTORS OUTDOORS, EXTEND THE CONDUCTOR INSULATION OR COVERING AS CLOSE TO THE CONNECTOR AS POSSIBLE TO MINIMIZE WEATHERING THE JOINT. OUTDOOR JOINTS SHALL BE COMPLETELY PROTECTED BY TAPE OR OTHER MEANS. WHEN OUTDOOR JOINTS ARE COVERED OR PROTECTED, THE PROTECTION SHALL COMPLETELY EXCLUDE MOISTURE.
6. WHEN ALUMINUM FEEDERS ARE INCLUDED AS VE ITEMS, IT IS RECOMMEND THAT ALUMINUM BE USED ONLY FOR DISTRIBUTION FEEDERS LARGER THAN 100 A PROVIDED THAT COMPRESSION AL/CU PIN TERMINATIONS ARE UTILIZED. VOLTAGE DROP CALCULATIONS SHALL BE REVISED UTILIZING ALUMINUM CONDUCTORS. IT IS NOT RECOMMEND THAT ALUMINUM FEEDERS BE UTILIZED FOR ROTATING (MOTORS) OR VIBRATING TRANSFORMERS OR EQUIPMENT.



NOTE:

THIS DETAIL INDICATES CENTERLINE FOR FIRE ALARM/PULL STATION SWITCHES AND RECEPTACLES. HOWEVER THIS SAME CENTERLINE PRINCIPLE SHALL BE FOR ALL GROUP MTD. ELECTRICAL DEVICES. IF FIRE ALARM IS ON SAME SIDE OF DOOR AS SWITCHES, PULL STATION SHALL BE HORIZONTALLY SEPARATED BY A MINIMUM OF 18". THIS ELEVATION IS A GENERAL ARRANGEMENT OF OF DEVICES. ARCHITECT PLANS TAKE PRECEDENCE FOR EXACT LOCATIONS.

MOUNTING HEIGHT DETAIL
NOT TO SCALE

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c 31127 - f.llc.#ar 98187 - mdlic.# 19161
mdlic.#p 20080490 - pslic #rn 40707 - hdc # 27196 - wdc # 1100

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ELECTRICAL NOTES AND DETAILS

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER PE-2009018166
PROFESSIONAL ENGINEER

SHEET NUMBER:

E2.2

SECTION 160000 (26 00 00) ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

B. This Contractor shall also include allowances for startup and for making the systems fully operational, and for scope and design contingencies. Future changes in price for items not shown on these drawings will not be allowed if the system itself is shown on these Drawings.

C. Give notices, file plans, obtain permits and licenses, pay fees and back charges, and obtain necessary approvals from authorities that have jurisdiction as required to perform work in accordance with all legal requirements and with Specifications, Drawings, Addenda and Change Orders, all of which are part of Contract Documents.

D. The drawings show the layout of the electrical systems and indicate the approximate locations of outlets, apparatus, and equipment. The runs of feeders and branches as shown on the drawings are schematic only. The exact routing of branch circuits and feeders shall be determined by the structural conditions and possible obstructions. This shall not be construed to mean that the design of the systems may be changed, but refers only to exact runs between given points. The Engineer reserves the right to revise the drawings from time to time to indicate changes in the work.

E. The Contractor shall consult and review all contract and reference drawings which may affect the location of any outlets, apparatus and equipment to avoid any possible interference and permit full location of outlets, apparatus and equipment up to the time of rough-in is reserved by the Engineer and such change shall be made without additional expense to the Owner.

F. It shall be the responsibility of this Contractor to see that all electrical equipment such as junction and pull boxes, panelboards switches, controls and such other apparatus as may require maintenance and operation from time to time is made accessible. Although the equipment may be shown on the drawings in certain locations, the construction may disclose the fact that such locations do make its position accessible. In such cases this Contractor shall call the attention of the Engineer to the condition before advancing the construction to a state where a change will reflect additional expense to the Owner.

1.2 SUMMARY

A. This Section specifies the basic requirements for electrical installations and includes requirements common to more than one section of Division 26. It expands and supplements the requirements specified in sections of Division 1.

B. These documents have been prepared with the intention that they call for finished, tested work, in full operating condition and complete with necessary accessories.

C. The contract drawings are generally diagrammatic and convey the scope of work and general arrangement of apparatus and equipment. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect/Engineer before being installed. The Contractor shall follow the drawings in laying out work and shall check drawings of the other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. If directed by the General Contractor, Engineer and/or Architect, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

D. These contract documents are complementary. What is called for by one shall be as binding as if called for by all. Materials or work described in words, which have well-known technical, or trade meaning shall be held to refer to such recognized standards. Incidental devices and accessories needed for complete, operational systems shall be provided even though they may not be indicated or identified in the documents.

E. If apparatus have been omitted, notify the Architects/Engineers of such belief. It is understood that bidder has included all required items and work in his bid, and will not if bid is successful, claim extra compensation for furnishing a complete and satisfactory system. If a particular item is called for or specified more than once in these contract documents, the higher grade shall be considered specified.

F. Should it appear that the character of the work is not sufficiently explained in these specifications or on the drawings, apply to the A/E for further information. Conform to the A/E's decision and directions as shall become part of these contract documents. The A/E reserves the right to be sole interpreter of the drawings and specifications, and all decisions shall be conclusive, final and binding on the parties.

G. Materials called for in these documents shall be new, unused equipment and of the latest recognized standards.

H. The work to be done under Division 16 is shown on the electrical drawings.

1.3 OUTLINE SCOPE OF WORK

A. The work under this contract, without limiting the generality thereof, includes all materials, labor, equipment, services, and transportation, unless otherwise specified, necessary to complete all systems of electrical wiring and equipment required by the drawings and/or as specified herein. It is the intent of this section and accompanying electrical drawings that these systems be furnished complete in every respect. The Electrical Contractor shall furnish all wiring, equipment and labor needed for a complete operating installation.

B. The Electrical Contractor shall fully indemnify the Owner against any damages, removals and alteration work. This is in addition to the requirements of the General Conditions of the Specifications.

C. The Electrical Contractor shall review architectural, interior design and all other trades plans, elevations and details prior to any work and identify any conflicts between furnishings, furniture, art-work, molding, casework, televisions, signage, awnings, canopies, diffusers, fixtures, etc.. and electrical, fire alarm, audio/visual and communications devices shown on the electrical plans and details. The Electrical Contractor shall prepare 8.5" x 11" sketches showing the conflicts and submit to the Architect for resolution prior to any work. Failure of the electrical contractor to coordinate, identify and obtain a field-directive on any conflict herein noted, that results in installed electrical work to be relocated to the Owner//Architects liking shall be the sole-responsibility of the Electrical Contractor. The Electrical Contractor shall assume and cover all costs associated with conflicts not coordinated, identified and submitted to the Architect, inclusive of material, labor, overtime pay, etc.. and shall not affect the project of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

G. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

H. Where mounting heights are not detailed or dimensioned, the exact location shall be determined by the A/E, install electrical services and overhead equipment to provide the code and/or utility requirements.

I. Install electrical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

J. Coordinate the installation of electrical materials and equipment above ceilings with suspension systems, mechanical equipment and systems, and structural components.

K. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

L. Attention is directed to areas and items indicated on the drawings by the notations "HOLD", "N.I.C.", "BY OTHERS" and words of similar intent. The work indicated in these areas is shown for information and continuity only. Work or items furnished and installed in these areas solely for the convenience of this Contractor or others, without prior written approval of the Owner, shall be removed at the option of the Owner and at the Contractor's expense.

M. Provide all required staging and scaffolding for all the work under this section.

1.9 ALTERATION WORK

A. Maintain continuity of service in areas where occupancy is to be maintained during alterations. If it becomes necessary to disconnect or interrupt service, obtain written consent of the Owner, and only disconnect service at the convenience of, and with the consent of the Owner. A copy of the written request for a shutdown shall be forwarded to the A/E.

1.10 CUTTING AND PATCHING

A. Cutting and patching of electrical equipment, components, and materials specified under Division 16 (conduit, sleeves, equipment, etc.) shall be performed by Electrical Contractor.

B. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 Section: "Cutting and Patching" for definitions, requirements, and procedures.

C. Cutting and patching of existing structures (thru walls, floors, ceilings, etc.) to accommodate equipment, components, and materials of all Contractors, including Mechanical and Electrical Contractors, shall be performed by General Contractor and/or his designated Subcontractor.

D. Cutting and patching of new structures (thru walls, floors, ceilings, etc.) to accommodate installation of ill-timed work or removal and replacement of defective work or work not conforming to requirements of Contract Documents, shall be performed by General Contractor and/or his designated Subcontractor and costs shall be back charged to appropriate trade Contractor.

E. Do not endanger or damage installed work through procedures and processes of cutting and patching.

F. Arrange for repairs required to restore other work, because of damage caused as a result of electrical installations.

G. Arrange to have ducts, raceways, conduit, panelboards, boxes, and such other pertinent parts, set in place ahead of construction work so that they will be built-in with structures and eliminate need for cutting and patching. Failure to conform to this paragraph will require that this Contractor perform any cutting and patching required for his work at his expense. Cutting shall be neatly finished to match adjoining work in a manner acceptable to the A/E. Cutting and patching shall not affect the fire rating of walls or other parts. Cutting and patching required to correct work, due to error or negligence of the Contractor, or to defects in his material or workmanship, shall be corrected at no additional cost to the Owner. Patching shall meet or exceed quality of adjacent surfaces. Cutting must be accomplished as not to weaken adjacent structural members and must be approved by the Structural Engineer before proceeding.

H. Perform cutting, fitting, and patching of electrical equipment and material required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.
3. Remove and replace work not conforming to requirements of the contract documents.
4. Remove samples of installed work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the A/E, uncover and restore work to provide for A/E observation of concealed work.

I. Cut, remove and legally dispose of selected electrical equipment, components and materials as indicated, including, but not limited to, removal of electrical items indicated to be removed and items made obsolete by the work.

J. Protect the structure, furnishing, finishes, and adjacent materials not indicated or scheduled to be removed. Protect the electrical work and the work of others in a manner best suited to the particular case. Correct any damage done to any work at no additional cost.

K. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

L. Locate, identify, and protect electrical services passing through areas that are to under-go remodeling or demolition. Electrical services serving other areas required to be maintained, and transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.

1.11 SUBMITTALS

A. Within fifteen (15) business days after the date of notice to proceed and before purchasing any materials or equipment, submit for approval a complete list, in six (6) copies, of all materials to be incorporated in the work.

B. Shop drawings/manufacturer's cuts are required for:

1. Wire & Cable.
2. Lighting Fixtures.
3. Panelboards.
4. Transformers.
5. Disconnect Switches.
6. Wiring Devices and Plates.
7. Fire Alarm System.
8. Fire Stopping Materials.
9. Generator & Transfer Switches.
10. Seismic Restraint Components.

C. After the list has been processed, submit complete shop drawings of all equipment. These shop drawings submittals shall be submitted within thirty days after the processing date of the original submittal.

D. All submittals shall be complete and submitted electronically to all applicable parties. No consideration will be given to partial submittals except with prior approval. No consideration will be given to faxed submittals.

E. Explanation of Shop Drawing Stamp:

1. Approved: indicates that we have not found any reason why this item should not be acceptable within the intent of the documents.
2. Approved with Comments: indicates that we have found questionable components which, if corrected or otherwise explained, make the product acceptable.
3. Resubmit for Final Review: indicates that this item should be resubmitted for approval before further processing.
4. Does Not Conform: indicates that the item will not meet the intent of the Contract.

F. No shop drawing stamp or note shall constitute an order to fabricate or ship. Such notification can only be performed by the Project Manager for construction, the Contractor scheduling his own work, or the Owner.

G. Submittal of shop drawings, product data, will be reviewed only when submitted by the Contractor. Data submitted from Sub-contractors and material suppliers directly to the A/E will not be processed.

H. If shop drawing is not in compliance after two submissions, a third submission for the same manufacturer will not be considered for review.

I. Check shop drawings and other submittals to assure compliance with contract documents before submittal to A/E.

J. Review of shop drawings is final and no further changes shall be considered without written application. Shop drawing review does not apply to quantities, dimensions, nor relieve this Contractor of his responsibility for furnishing materials or performing his work in full compliance with these contract drawings and specifications. Review of these shop drawings shall not be considered a guarantee of the measurements of this building or the conditions encountered.

K. General requirements for the substitution of equipment and submittal of shop drawings as follows. If apparatus, systems or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, wiring, supports, or construction, it shall be provided by this Contractor at no additional cost to the Owner. This Contractor shall assume all cost and entire responsibility thereof. The approval of substituted equipment does not relieve the contractor of his/her responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist. It is the contractor's responsibility to submit only those items that meet the specified apparatus, systems and material. Should any non-conformance code items be installed, they shall be replaced by this Contractor at no additional cost to the Owner. The construction means and methods used in the project shall be reviewed and approved through the local building department or a deputy inspector to insure compliance with the current codes, project specifications and general building practices.

L. Coordination drawings shall be submitted and shall show all HVAC, Electrical, Plumbing and Fire Protection systems superimposed in order to identify conflicts and ensure inter-coordination of all trades. Coordination drawings shall be initiated under this Section of the Specifications. It is this Contractors responsibility for preparation of project coordination drawings showing the installation of all electrical equipment, switchgear, motor control centers, panelboards, transformers, transfer switches, disconnect switches, enclosed circuit breakers, conduits, outlets, switches and accessories to be provided under this Section of the Specifications. These drawings shall be prepared at not less than 3/8 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. A reproducible copy of each drawing prepared shall then be submitted to the Mechanical, Plumbing and Sprinkler Contractors, who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After this Contractor has fulfilled his obligation, he shall notify all other Contractors. After each drawing has been coordinated between trades, each trade shall sign each drawing, indicating acceptance of the installation. This Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings. A Subcontractor who fails to promptly review and incorporate his work on the drawings shall assume full responsibility of any installation conflicts affecting his work and of any schedule ramifications. Review of coordination drawings shall not diminish responsibility under this Contract for final coordination of installation and maintenance clearances of all systems and equipment with Architectural, Structural, Mechanical, and Electrical Contractors.

1.12 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. If materials of equipment are substituted for specified items that alter the systems shown or its physical characteristics, or which have different operating characteristics, clearly note the alterations or differences and call it to the attention of the A/E. Under no circumstances shall substitutions be made unless identical material or equipment has been successfully operated for at least three consecutive years.

C. All substitution made by the Contractor shall require the Contractor to fully coordinate the substitution with other trades. The Contractor must make any modifications required by the substitution at no additional cost to the Owner. In addition the Contractor must notify the A/E of any changes required and obtain approval for the changes. The review of the shop drawings by the A/E shall not relieve the Contractor from his responsibility as set forth in this specification.

1.13 NAMEPLATE DATA

A. Provide permanent operational data nameplate on each item of power operated equipment, conduits with pull wires, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in a readily accessible location.

1.14 DELIVERY STORAGE AND HANDLING

A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage. All devices shall be stored in a locked room. Assume responsibility for the devices until the date of final inspection.

C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1.15 RECORD DOCUMENTS

A. As work progresses and for the duration of Contract, maintain a complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately including work installed as a modification or addition to the original design. Work shall be updated on a weekly basis and shall be made available for review by Architect. Failure to perform this work shall be reason for withholding requisition payments. In addition, take photographs of all concealed equipment in gypsum board ceilings, shafts, and other concealed, inaccessible work. At completion of work, make copies of photographs with written explanation on back. These shall become part of Record Documents.

B. At completion of work prepare a complete set of Record As-Built Drawings in AutoCAD, Computer Aided Drafting (CAD) software, showing all systems as actually installed, including all fire alarm and electrical circuitry. The Record As-Built Drawings computer files shall be made available to the Architect, Engineer and Owner prior to final payment.

C. The Architect will not certify the accuracy of the Record Drawings. This is the sole responsibility of the Electrical Contractor.

D. This trade shall submit the record set for approval by the Fire and Building Departments in a form acceptable to the departments, when required by the jurisdiction.

E. Drawings shall show record condition of details, sections, riser diagrams, control changes and corrections to schedules. Schedules shall show actual manufacturer and make and model numbers of final equipment installation.

1.16 WARRANTIES

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. All work and equipment furnished under this Section shall be guaranteed free from defects in workmanship or materials for a period of one (1) year, unless specifically noted otherwise for a particular system, from the date of final acceptance of the systems as set forth in this Contract. The Subcontractor shall replace any defective work developing during this period, unless such defects are clearly the result of misuse of equipment by persons not under the control of the Subcontractor, without cost to the Owner. Where such defective work results in damage to work of other Sections, all such work shall be restored to its original condition by mechanics skilled in the affected trade, at the expense of the Subcontractor. The Subcontractor shall submit a separate written guarantee stipulating the aforesaid conditions.

C. Prior to or at the time of Substantial Completion for the work and during administrative close-out of the project, submit one (1) copy of all specified warranties and guarantees to the Architect for review, approval and subsequent transmittal to the Owner.

D. Warranties and guarantees, including those specified in excess of the general one (1) year guarantee, shall be complete for all specific materials, systems, sub-systems, equipment, appliances and products specified and required by the Contract Document.

E. Warranties and guarantees shall clearly define what is to be guaranteed; the extent, terms, conditions, time and effective dates.

F. Copies of the same warranties and guarantees shall be included in the "Operating and Maintenance Manual" as specified herein.

1.17 CLEANING

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 for definitions, requirements, and procedures.

B. Upon completion of work, the Contractor shall clean, polish and leave bright, fixtures and lamps, and shall remove dust, dirt, debris and loose plaster from panelboards, controls, and switchboards. Unused openings in pull boxes, junction boxes, equipment and raceways shall be capped or closed by an approved means. Replace all inoperative lamps.

1.18 DEFINITION OF TERMS

A. "This Contractor" or "E.C." specifically means, the Electrical Contractor working under this section of the specifications.

B. "Concealed" means hidden, in chases, furred spaces, walls, above ceilings or enclosed in construction.

C. "Exposed" means visible in sight or not installed "concealed" as defined above.

D. "Approved Equal" means any equipment or material which is approved by the Engineer and equal in quality, durability, appearance, strength, design and performance to the equipment or material originally specified.

E. "Conduit" shall mean all conduit including fittings, joints, hangers and supports.

F. "Furnish" shall mean to purchase and deliver to the project site complete with every necessary appurtenance and support, all as part of the electrical work.

G. "Install" shall mean to perform every operation necessary to establish secure mounting and correct operation at the proper location in the project, all as part of the electrical work.

H. "Provide" shall mean to furnish and install.

1.19 QUALITY ASSURANCE

A. Obtain services of manufacturer's representatives of electrical equipment, during erection and construction of their respective equipment to insure proper installation of same.

B. A letter is required from each system manufacturer's representative certifying to the A/E that requirements have been checked and are properly installed and operating.

1.20 PERFORMANCE TESTS - ELECTRICAL

A. Test and adjust the electrical systems and equipment during the progress of the work.

B. Upon completion of work and after preliminary tests to assure that all systems are complete and in proper working order, arrange with the A/E to conduct performance tests of the electrical systems. These tests may be witnessed by the A/E prior to acceptance of systems and shall be arranged for the purpose of demonstrating compliance with contract documents. During this period, visually inspect all electrical equipment. Lighting fixtures shall be tested with specified lamps in place for not less than six (6) hours. Check voltages to assure that all transformer taps are properly set.

C. General operating tests shall be performed under as near design conditions as possible, for a period of not less than one (1) hour for each system, and shall demonstrate that all equipment is functioning in accordance with specifications. Furnish all instruments, ladders, test equipment and personnel required for tests. Any equipment or systems found by test to be deficient or unsatisfactory shall be replaced and tests repeated as often as necessary to assure compliance with contract documents.

D. Test all feeders, sub-feeders and all branch wiring for amperage, voltage, phase balance, phase sequence of A,B,C and insulation resistance, then submit the results of this test to the A/E neatly typed in triplicate for review. This test may be conducted at any time up to, through and including, the guarantee period if requested by the A/E, at no additional cost to the Owner.

E. Phase balance the complete electrical system, phase balance all panels as near as loads will permit under normal working conditions.

F. Test all ground conductors for current flow, as near design operating conditions as possible. If any measured current exceeds one (1) ampere, determine and correct the cause. Also, if measured resistance is greater than 5 ohms indoor or 10 ohms outdoor, determine and correct the cause.

G. During the progress or completion of the work it shall be subject to the inspection of the Owner and to such other inspectors, as may have jurisdiction, including those of the Electric Company, Fire Department and the Telephone Company.

H. The Contractor shall be responsible for correct voltages, tap settings, trip settings and correct phasing on all equipment. Secondary voltages shall be measured at the line side of the main breakers with the breakers in an open position, at panelboards, and at such other location on the distribution systems and branch circuits as directed by the Engineer.

I. At completion of the work, Contractor shall submit to the Owner's representative in writing a statement stating: (1) that the work is complete; (2) that the entire installation is in accordance with the drawings and specifications; (3) that preliminary tests have been made; and (4) that the work is ready for final inspection and test.

J. A final inspection of the installation to determine compliance with the drawings and specifications will be made by the Owner's representative. Work will be checked for quality of materials, quality of workmanship, proper installation and finished appearance. The electrical contractor shall provide the services of the project electrical foreman for inspection purposes. The foreman shall remove and reinstall wiring devices, junction box covers, panelboard trims, switchboard covers, terminal box covers, ceiling tiles, lighting fixtures, etc. as required to facilitate any inspections required by the Owner's representative.

K. The Contractor shall arrange and conduct operating tests on all equipment in the presence of the Owner's representative. The components parts of systems and the various systems shall be demonstrated to operate in accordance with the requirements and intent of this specification. Any non-complying or defective materials or workmanship disclosed as a result of the inspection and tests shall be corrected promptly by the Contractor, and the tests repeated as often as necessary until approved and accepted by the Owner's representative.

L. The Contractor shall visit the site to acquaint himself with existing conditions. No extra compensation will be paid for failure to comply with this paragraph.

M. The Electrical Contractor shall provide supervision, labor, materials, tools, test equipment, and all other equipment or services and expenses required to test, adjust, set, calibrate, and operationally check work and components of the electrical systems and circuitry throughout this section.

N. The electrical contractor shall pay for all tests including expenses incident to retests occasioned by defects and failures of equipment to meet specifications at no additional cost to the owner.

O. Any defects or deficiencies discovered in any of the electrical work shall be corrected at no cost to the owner.

P. All testing shall be compatible with the manufacturer's installation instructions.

1.21 SEISMIC RESTRAINT

A. It is the intent of this seismic specification to keep all electrical building system components in place during a seismic event.

B. All electrical systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a Conflict occurs between the manufacturer's or construction standards, the most stringent shall apply.

C. This contractor shall engage a professional structural engineer registered in the jurisdiction of this project to review the entire installation to determine all seismic restraint requirements and methods. Contractor shall submit a report outlining the structural engineer's review as well as seismic restraint shop drawings and supporting calculations prepared by the professional structural engineer for review by the Architect.

D. Seismic restraints shall be designed in accordance with seismic force levels as detailed in the applicable building code.

1.22 TEMPORARY LIGHT AND POWER

A. Under this Section of the specifications, this Contractor shall provide temporary electric service, sized suitable for construction for each trade. This contractor shall provide all material and labor for temporary electrical service per the local power company's requirements and standards with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. This contractor shall pay all associated costs, up front.

B. Where temporary electrical service cannot be obtained from the local power company, this contractor shall provide a temporary, on-site, electric generator with all necessary panelboards, disconnect switches, transformers, conduit, wiring, etc. as required. The fuel used for the generator shall be provided and paid for by this Contractor.

C. This contractor shall provide a distribution system with circuits for receptacles and lighting as required for construction. This contractor shall maintain the temporary electrical system during construction and remove the system when construction is complete.

D. Under this section of the specifications, this Contractor shall provide and maintain temporary lighting based on using not less than one 100-watt lamp for each 100 square feet of building floor area and one duplex GFCI receptacle for each 200 square feet of building floor area. Where higher lighting intensities are required by Federal or State laws or otherwise specified, the above specified wattage shall be increased to provide the increase intensities.

E. This contactor shall provide temporary power and telephone services from the local telephone company for site trailers, fax machines, computers, etc., per the general contractor's direction.

F. The service shall incorporate ground fault protection and comply with NEC Article 527 and OSHA requirements.

1.23 PERMITS

A. Obtain all required electrical permits and pay all fees for same.

B. Provide to Engineer, in duplicate, a certificate of final inspection from the authority having jurisdiction for the electrical and systems.

1.24 OPERATING, INSTRUCTION, AND MAINTAINANCE MANUALS

A. Refer to Section 01700 - CONTRACT CLOSEOUT for submittal procedures pertaining to operating and maintenance manuals.

B. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed.

1.25 BIDDERS REPRESENTATION

A. By the act of submitting a bid for the proposed contract, the Bidder represents that:

1. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the drawings, specifications and other construction contract documents and have found them complete and free from ambiguities and sufficient for the purpose intended; further that,
2. The Bidder and workmen, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the construction contract documents bid upon; further that,
3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations, allegedly authorized or unauthorized from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the bid figure; and further that,
4. The bid figure is based solely upon the construction contract documents and properly issued written addenda and not upon any other written representation.

1.26 UTILITY COMPANY & AGENCY COORDINATION

A. This section includes, but is not limited to coordination with the following utilities, agencies and authorities having jurisdiction:

1. Power Company: This Contractor shall coordinate with the local utility power company and provide all material & labor required to comply with the utility power company's requirements and standards, prior to ordering any electrical equipment, such as, switchgear, panels, transformers, disconnect switches, TVSS, etc. This Contractor shall confirm metering sequence (hot or cold) and make the appropriate provisions and/or changes for the utility companies approved metering sequence arrangement. Notify Engineer of discrepancies between the plans and the local utility company's standards. No extra compensation will be given for corrections required to this Contractor for failure to coordinate with the utility company, but corrections shall be made. All A.I.C. ratings, grounding, bonding, concrete pads & curbs, protective bollards, raceways, ductbank, manholes, etc., shall be in accordance with the utility company's standards.
2. Telephone Company: This Contractor shall coordinate with the local telephone company and provide all material & labor required to comply with the telephone company's requirements and standards, prior to ordering any electrical or telephone equipment, such as, terminal boards, grounding systems, raceways, ductbanks, manholes, etc. This Contractor shall confirm the telephone company's requirements and provide as necessary. Notify Engineer of discrepancies between the plans and the telephone company's standards. No extra compensation will be given for corrections required to this Contractor for failure to coordinate with the telephone company, but corrections shall be made.
3. Cable TV Company: This Contractor shall coordinate with the local cable TV company and provide all material & labor required to comply with the cable TV company's requirements and standards, prior to ordering any electrical or cable TV equipment, such as, terminal boards, grounding systems, raceways, ductbanks, manholes, etc. This Contractor shall confirm the cable TV company's requirements and provide as necessary. Notify Engineer of discrepancies between the plans and the cable TV company's standards. No extra compensation will be given for corrections required for failure to coordinate with the cable TV company, but corrections shall be made.
4. Local Fire Marshal: This contractor shall verify with the local fire alarm official, the type of master-box or municipal connection required for this project. This contractor shall provide all material & labor to comply with the local municipality. Notify Engineer of discrepancies between the plans and the municipality's standards. No extra compensation will be given for corrections required for failure to coordinate with the municipality, but corrections shall be made.
5. Electrical Inspector: Review plans and specifications with the local electrical and/or wiring inspector(s). Obtain and pay for all permits.
6. Building Inspector: Review plans and specifications with the local building inspector, if not done so by the General Contractor.
7. OSHA Representative: Review plans and specifications with the local OSHA representative, if not done so by the General Contractor.
8. Dig Safe: This contractor shall notify and coordinate with Dig Safe prior to any excavation; digging; trenching; grading; tunneling; augering; boring; drilling; pile driving; plowing-in or pulling-in pipe, cable, wire, conduit, or other sub-structure; backfilling; demolition; and blasting related to this construction.

B. The Electrical Contractor shall pay for all permits, inspections, labor, material and fees associated with the various Utility Companies coordination requirements mentioned in this section and for this Contractor's work under this project.

C. The Electrical Contractor shall carry a minimum of $15,000 of utility expenses. In the case the expenses are less than the carried expense, the difference will be credited to the owner. In the case the utility charges are more than the carried expense, the remaining payment shall be coordinated between the Electrical Contractor, General Contractor and Owner.

D. HVAC, Plumbing, Fire Protection, and Electrical Drawings are diagrammatic. They indicate general arrangements of mechanical and electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structural and other trades and to meet Architectural requirements.

E. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Architect. Where the electrical work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owners, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.

F. If any electrical work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the trades involved without extra cost to the Owners.

G. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Architect and Engineer for review and approval.

PART 2 - PRODUCTS

2.1 CONDUIT

A. Minimum Size: ¾-inch, unless otherwise specified.

B. Underground Installations:

1. More than Five Feet from Foundation Wall: Use thick wall nonmetallic conduit concrete encased.
2. Within Five Feet from Foundation Wall: Use rigid steel conduit concrete encased.
3. In or Under Slab on Grade: Use plastic coated conduit.
4. Minimum Size: 1-inch.

C. Outdoor Locations, Above Grade: Use rigid steel conduit.

D. In Slab Above Grade:

1. Use rigid steel conduit.
2. Maximum Size Conduit in Slab: ¾ inch (19 mm); ½ inch (13 mm) for conduits crossing each other.

E. Wet and Damp Locations: Use rigid aluminum conduit.

F. Dry Locations:

1. Concealed and in Cable-Tray: Use metal clad (MC) cable (see Division 1)
2. Exposed: (Unfinished or utility spaces) Use electrical metallic tubing.

G. Metal conduit: Rigid Steel Conduit shall comply with ANSI C80.1 and be heavy wall zinc coated steel. Rigid Aluminum Conduit shall comply with ANSI C80.5. Intermediate Metal Conduit (IMC) shall be rigid steel. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1 and material to match conduit. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

H. Flexible metal conduit shall be interlocked aluminum contruction. Fittings shall comply with ANSI/NEMA FB 1. Acceptable manufacturers are AFC Cable Systems, Electri-Flex Company and Eastern Flexible Conduit Technologies. All flexible conduits shall include a grounding conductor.

I. Electrical metallic tubing (EMT) shall comply with ANSI C80.3; galvanized zinc coated steel tubing. Fittings and Conduit Bodies shall comply with ANSI/NEMA FB 1; steel, compression or set screw type. Acceptable manufacturers are Western Tube and Conduit Company, Allied Tube and Conduit Company and Triangle Wire and Cable, Inc.

J. Nonmetal conduit shall comply with NEMA TC 2; Schedule 40 PVC, or as indicated on plans. Fittings and Conduit Bodies shall comply with NEMA TC 3. Acceptable manufacturers are Carlon or approved equal.

K. Flexible nonmetallic conduit (Sealtite) shall be UL and CSA listed for purpose specified and shown. Acceptable manufacturers are Carlon or approved equal.

L. Install conduit in accordance with NECA "Standard of Installation." Install nonmetallic conduit in accordance with manufacturer's instructions.

M. Arrange supports to prevent misalignment during wiring installation. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits. Fasten conduit supports to building structure and surfaces under provisions of Division 1. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports. Do not attach conduit to ceiling support wires.

N. Arrange conduit to maintain headroom and present neat appearance. Route exposed conduit parallel and perpendicular to walls. Route conduit installed above accessible ceilings parallel and perpendicular to walls. Route conduit in and under slab from point-to-point. Do not cross conduits in slab.

O. Maintain adequate clearance between conduit and piping. Maintain 12-inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

P. Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

Q. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.

R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints. At expansion and deflection fittings shall have a ground strap. Provide suitable pull string in each empty conduit except sleeves and nipples. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

S. Ground and bond conduit under provisions of NEC 250.

2.2 SURFACE RACEWAYS

A. Multi-outlet assemblies shall be steel channel with fitted cover suitable for use as multi-outlet assembly. There shall be two compartments separated be a steel divider; one for power wiring and one for tele/data wiring. Provide flush feed box equal to Wiremold #WSA42-4 with backfeed kit #WSA86. Color of surface raceway per the Architect and Owner.

B. Provide 125 volt, 20 amp duplex receptacles with ground slot spaced 12 inches (300 mm) on center or as indicated on the plans. Color of receptacles per the Architect and Owner.

C. Provide tele/data outlets spaced 12 inches (300 mm) on center or as indicated on the plans. The number of jacks per tele/data outlet as indicated or as required per the Owner. Color of outlets per the Architect and Owner.

D. Provide cover plates equal to Wiremold #4049.

E. Coordinate with Architect and Owner for exact height of surface raceway prior to installing any material. De-rate conductors as required per code. Coordinate with furniture supplier and millwork supplier to avoid conflicts with counter wall supports and surface raceways. Coordinate bushed openings in counters for cord & plug connections, where receptacles will be installed under counters.

F. Acceptable manufacturers are Wiremold Company, Hubbell or approved equal.

G. Fittings: Furnish manufacturer's standard couplings, elbows, outlet and device boxes, and connectors.

H. Wireways shall be steel with rust inhibiting primer coating with gray enamel finish for general wiring in unfinished spaces. Provide as necessary per the job conditions.

I. Install and mount products in accordance with the manufacturer's instructions. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level. Use suitable insulating bushings and inserts at connections to outlets and corner fittings. Close ends of wireway and unused conduit openings. Ground and bond under provisions of NEC 250.

2.3 CABLE TRAY

A. General: Except as otherwise indicated, provide metal cable trays, of types, classes and sizes indicated with splice hangers and all other necessary accessories. Provide cable trays with rounded edges and smooth surfaces in compliance with applicable standards, and with the following additional construction features.

B. Materials and Finishes - Aluminum: Rails and rungs shall be extruded from Aluminum Association Alloy 6063. All hardware and fasteners shall be zinc-plated steel.

C. Rungs shall be spaced every 9 inches.

D. Straight sections shall be supplied in 12 foot lengths.

E. Cable tray width shall be 18 inches.

F. Cable tray loading depth shall be 4 inches.

G. Cable tray shall meet the loading requirements of NEMA 12C.

H. Cable tray shall meet the requirements of NEMA VE-1 or CSA C22.2 No. 126-M91.

I. Manufacturer: Subject to compliance with these specifications, cable tray system shall be as manufactured by B-Line Systems, Square D, Huskey or equal.

2.4 DUCT BANK

A. Verify that field measurements are as indicated. Verify routing and termination locations of duct bank prior to excavation for rough-in. Verify locations of manholes prior to excavating for installation. Duct bank routing is shown in approximate locations unless dimensions are indicated. Route as required to complete duct system. Manhole locations are shown in approximate locations unless dimensions are indicated. Locate as required to complete duct bank system.

B. Underground Warning Tape: Provide 3-inch wide

E. Final connections to motors shall be made with 18" of neoprene sheathed flexible conduit.

F. Minimum branch circuit conductor size shall be No. 12 AWG installed in conduit. Motor control circuit wiring shall be minimum No. 14 AWG installed in conduit.

G. Fire alarm and security system wiring shall be No. 16 twisted non-shielded pairs for alarm and trouble circuits and a minimum of #14 AWG for device power, control and alarm annunciation circuits. Fire alarm system riser circuits shall be 2-hour rated, CI type (circuit integrity) cable per NFPA 72 and NEC 760.

H. Other wires and cables required for the various systems described elsewhere in this section of the Specifications shall be as specified herein, as shown on the Contract Drawings, or as recommended by the manufacturer of the specific equipment for which they are used, all installed in conduit.

I. Metal clad sheathed cable NFPA 70, type MC may be used for branch circuitry where shown and where run concealed and not subject to physical damage. All branch circuits shall be run in conduit from the panelboard to the first outlet. All type MC cable used shall contain a full size insulated ground conductor. All conductors shall be copper. All type MC cable insulation used shall have voltage rating of 600 volts, shall have a temperature rating of 75° C, and shall be thermoplastic material. Armor material shall be steel and armor design shall be interlocked metal tape. Fire alarm rated MC cable may be used for fire alarm work where concealed and approved by the Authority Having Jurisdiction.

J. Metal-Clad cable (Type MC) for circuits supplying computer equipment, electronic discharge lighting and other sensitive electronic equipment shall consist of 90°C THHN copper conductors with insulated ground and oversized neutral conductor (or one full size neutral conductor for each phase conductor). Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 334 and 675.

K. Use armored cable (AFC Type HCF-90 or equal) for branch circuits and feeders in areas of patient care in hospitals, nursing homes and medical centers, medical office buildings and nurses' office areas of schools. This cable shall consist of 90°C THHN copper conductors with combined armor/bond wire (equipment) plus a green insulated ground (redundant). Use insulated bushings. Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 333, 517 and 645.

L. Use armored cable (AFC Type HCF-90 or equal) for branch circuits and feeders in all buildings in the following areas; data processing systems, places of assembly, under raised floors, above suspended ceilings and in other environmental air-handling spaces. This cable shall consist of 90°C THHN copper conductors with combined armor/bond wire (equipment) plus a green insulated ground (redundant). Use insulated bushings. Cable shall be U.L. listed/labeled, and shall meet the requirements of NEC Art. 333, 517 and 645.

M. Mineral-insulated metal-sheathed fire-resistive cables, type MI, shall consist of a factory assembly of one or more solid copper conductors insulated with highly-compressed magnesium oxide and enclosed in a seamless, liquid and gas-tight continuous copper sheath. Cables shall be rated for 600 volts. Cable shall comply with Article 330 of the National Electrical Code. Cables shall be classified by Underwriters Laboratories, Inc. as having a 2-hour fire resistive rating. Cable terminations shall be made with UL listed mineral-insulated cable fittings. Installation of MI cables shall be in accordance with the manufacturer's instructions. Cables shall be as manufactured by Pyrotenax USA, Inc., or approved equal.

N. Wiring materials except MI cable shall be manufactured by Triangle, Essex, General Cable, AFC, Southwire or equal.

O. Concealed Dry Interior Locations: Use only building wire Type THHN/THWN or XHHW insulation in raceway, or metal clad cable where concealed and code acceptable.

P. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

Q. Above Accessible Ceilings: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway or metal clad cable where code acceptable.

R. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

S. Exterior Locations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

T. Underground Installations: Use only building wire, Type THHN/THWN or XHHW insulation, in raceway.

U. Wiring methods, in general, are as follows:

1. Galvanized rigid steel conduit shall be used for telephone system sleeves for main cable runs between floors, closets, etc. and for sweeps, bends, etc. in ductbanks and as specifically noted on the plans. EMT shall be used generally for exposed circuiting in unfinished spaces. Metal clad cable (type MC) may be used for branch circuiting and fire alarm rated MC cable for fire alarm circuiting where run concealed and where code acceptable.
2. To prevent transmittal of vibration to conduit, connections to any vibration producing equipment (i.e. transformers, motors, etc.) shall be terminated by 18 inches of flexible metal conduit. Where flexible connections are exposed to grease and oil, liquid-tight flexible metal conduit shall be used.
3. In general, no splices or joints shall be permitted in either feeders or branches except at outlets or accessible junction boxes. Splices in wire #8 AWG and smaller shall be pigtail type, made mechanically tight. All conduit systems shall be complete.
4. Raceway, boxes, etc., run on walls in wet areas which are subject to being washed down, shall be mounted on the walls with 1/4" stand-offs. All boxes shall be cast type.

V. Route wire and cable as required to meet the Project Conditions. Install cable in accordance with the NECA "Standard of Installation." Use solid conductor for feeders and branch circuits 10 AWG and smaller. Use stranded conductors for control circuits. Use conductor not smaller than 12 AWG for power and lighting circuits. Use conductor not smaller than 16 AWG for control circuits. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (25 m). Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet (160 m). Pull all conductors into raceway at same time. Use suitable wire pulling lubricant for building wire 4 AWG and larger. Protect exposed cable from damage.

W. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system, cables that are not part of the ceiling system cannot be supported from ceiling supports. Do not rest cable on ceiling panels. Use suitable cable fittings and connectors. Neatly train and lace wiring inside boxes, equipment, and panelboards.

X. Clean conductor surfaces before installing lugs and connectors. Make splices, taps, and terminations to carry full ampacities of conductors with no perceptible temperature rise. Use suitable reducing connectors or mechanical connector adapters for connecting aluminum conductors to copper conductors. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape un-insulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller. Identify and color code wire and cable. Identify each conductor with its circuit number or other designation indicated.

2.6 BOXES

A. Outlet Boxes:

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated or zinc coated sheet metal type. Old work boxes with Madison clamps are not allowed in new construction.
2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of NFPA 70. Boxes shall not be less than 1-1/2" deep unless shallower boxes are required by structural conditions and are specifically approved by Architect. Ceiling and bracket outlet boxes shall not be less than 4" octagonal except that smaller boxes may be used where required by particular fixture to be installed. Flush or recessed fixtures shall be provided with separate junction boxes when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4" square or of comparable volume. Luminaire and equipment supporting boxes shall be rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.
3. Acceptable Manufacturers:
   a. Appleton
   b. Crouse Hinds
   c. Steel City
   d. RACO

B. Pull and Junction Boxes: Where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws. Box size shall be as required by Code. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type. Boxes larger than 4-inches square shall have hinged covers. Boxes larger than 12-inches in one dimension will be allowed to have screw fastened covers, if a hinged cover would not be capable of being opened a full 90 degrees due to installation location.

C. Fiberglass Handholes shall be die molded glass fiber. Cable Entrance shall be pre-cut 6-inch x 6-inch (150 mm x 150 mm) cable entrance at center bottom of each side. Cover shall be glass fiber weatherproof cover with nonskid finish.

D. Install boxes in accordance with NECA "Standard of Installation." Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

E. Set wall mounted boxes at elevations to accommodate mounting heights indicated or specified in section for outlet device. Electrical boxes are shown on drawings in approximate locations unless dimensioned. Adjust box location up to 10-feet (3m) if required to accommodate intended purpose. Orient boxes to accommodate wiring devices. Maintain headroom and present neat mechanical appearance.

F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 7.

G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

H. Use flush mounting outlet box in finished areas. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Do not install flush mounting box back-to-back in walls; provide minimum 6-inches (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use stamped steel bridges to fasten flush mounting outlet box between studs. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

I. Use adjustable steel channel fasteners for hung ceiling outlet box. Do not fasten boxes to ceiling support wires. Support boxes independently of conduit. Use gang box where more than one device is mounted together. Do not use sectional box. Use gang box with plaster ring for single device outlets. Use cast outlet box in exterior locations exposed to the weather and wet locations. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations. Set floor boxes level.

J. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

K. Adjust floor box flush with finish flooring material. Adjust flush-mounting outlets to make front flush with finished wall material. Install knockout closures in unused box openings.

2.7 WIRING DEVICES

A. Provide wiring device type plates for all wall-mounted devices. All wall plates shall be either brushed aluminum or smooth high impact nylon for all public areas as directed by the Architect. Provide galvanized steel for all Utility, Electric and Mechanical Rooms. Colors of wall plates as directed by the Architect.

B. Wiring devices standard for the project (i.e., with no specific type indicated) shall conform to the following:

1. Visible part colors of wiring devices shall be as directed by the Architect for all public areas. Provide ivory colored devices for all Utility, Electrical and Mechanical rooms.
2. Exclude compact type devices.

C. Wiring device switches shall be toggle type, A.C. quiet design, specification grade, 20 amps on 120 volt circuits. Switches shall be mounted 48-inches to center line above finished floor unless noted otherwise. Equivalent 277/volt, 20 amp switches shall be used where required.

D. Standard duplex convenience receptacles shall be 125volt, 20 amps, three wire (two circuit wires plus ground), "U-slot" ground NEMA configuration 5-20R, specification grade. Receptacles shall be mounted 18" to center line above finished floor unless noted otherwise. Where indicated on plans provide receptacles with ground fault current interrupters, UL Class A; 20A, 125V.

E. Non-standard convenience receptacles and special purpose power supply receptacles shall be as listed on plans.

F. Use "Hospital-Grade" receptacles in areas of patient care in nurses' office areas of schools. Preschool and Kindergarten rooms & other area indicated on the plans shall be tamper resistant type receptacles. When connected to an Essential Electrical System, all "Hospital Grade" receptacles shall be illuminated.

G. Weatherproof Receptacle Enclosures shall be NEMA 3R rated for rain-tight while-in-use, gasketed, impact resistant thermoplastic with hinged gasketed device cover.

H. Provide extension rings to bring outlet boxes flush with finished surface. Clean debris from outlet boxes. Install devices plumb and level. Install receptacles with grounding pole on top. Connect wiring device grounding terminal to branch circuit equipment grounding conductor. Use jumbo size plates for outlets installed in masonry walls. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

I. Install wall switch 48 inches above finished floor to top of handle. On position, shall be up. Install convenience receptacles 18-inches above finished floor. Install convenience receptacle 6-inches above backsplash of counter. Install dimmer switches 48 inches above finished floor to top.

J. Verify that each receptacle device is energized. Test each receptacle device for proper polarity. Test each GFCI receptacle device for proper operation.

2.8 CABINETS & ENCLOSURES

A. Cabinets shall be as follows: Boxes: Galvanized steel. Box Size: As required and/or indicated on plans. Backboard: Provide 3/4-inch thick plywood backboard for mounting terminal blocks. Paint matte white. Fronts: Steel, flush type with concealed trim clamps, door with concealed hinge, and flush lock keyed to match branch circuit panelboard. Finish with gray baked enamel. Knockouts: As required and/or indicated on plans. Provide metal barriers to form separate compartments wiring of different systems and voltages. Provide accessory feet for free-standing equipment.

B. Hinged Cover Enclosures shall be as follows: Construction: NEMA 250, Type 1, 3R, or 4 steel enclosure, unless otherwise indicated on plans. Covers: Continuous hinge, held closed by flush latch operable by key or hasp and staple for padlock. Provide interior plywood panel for mounting terminal blocks and electrical components; finish with white enamel. Enclosure Finish: Manufacturer's standard enamel.

C. Install in accordance with NECA "Standard of Installation." Install enclosures and boxes plumb. Anchor securely to wall and structural supports at each corner under the provisions of Section 16190. Install cabinet fronts plumb.

D. Clean electrical parts to remove conductive and harmful materials. Remove dirt and debris from enclosure. Clean finishes and touch up damage.

E. ICS 4 – Terminal blocks for industrial control equipment and systems, Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 300 volts. Provide ground bus terminal block, with each connector bonded to enclosure.

F. Provide grounding provisions for all cabinets/enclosures and bond to grounding system as required per Code.

2.9 GROUNDING & BONDING

A. Ground all systems and equipment in accordance with best industry practice, the requirements of NFPA 70 and the following:

1. The ground bus of the main switchboard shall be connected to the main grounding electrode specified below by means of insulated conductors run in conduit.
2. The main grounding electrode shall be an accessible point on the nearest metallic main water service pipe. Connection shall be made on the street side of the main valve utilizing a ground clamp of a type specifically manufactured for the purpose. Bonding jumpers shall be provided around the water meters and around insulating joints and/or sections.
3. Establish a ground bonding connection from the effectively grounded structural building steel to each cold-water main entering the building. Each bonding connection shall consist of insulated conductors run in conduit.
4. The water pipe ground shall be supplemented by an additional electrode consisting of three (3) buried 3/4" diameter by 10'-0" long copperweld ground rods spaced 10'-0" apart, and provided in sufficient quantity so as to have measured resistance to ground of not more than 10 ohms. Provide independent certification confirming this. Establish a bonding connection from the electrode consisting of green insulated conductors run in conduit and sized as indicated hereinafter for main and supply side of service bonding jumpers.
5. Provide grounding bonds between all metallic conduits of the light and power system which enter and leave cable chambers or other non-metallic cable pulling and splicing boxes. Accomplish this by equipping the conduits with bushings of the grounding type individually cross connected.
6. Bond metallic conduits containing grounding electrode conductors and main bonding conductors to the ground bus service enclosure and/or grounding electrode at both ends of each run utilizing grounding bushings and jumpers.
7. Provide grounding bonds for all metallic conduits of the light and power system which terminate in pits below equipment for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually to the ground bus.
8. Provide supplementary ground bonding where metallic conduits terminate at metal clad equipment (or at the metal pull box of equipment) for which a ground bus is specified. Accomplish this be equipping the conduits with bushings of the grounding type connected individually by means of jumpers to the ground bus. Exclude the jumpers where directed. This exclusion will be required where an isolated ground for electronic equipment is to be maintained.
9. Each grounding type bushing shall have the maximum ground wire accommodation available in standard manufacture for the particular conduit size. Connection to bushing shall be with wire of this maximum size.
10. Bonding conductors on the load size of the service device and equipment grounding conductors shall be sized in relation to the fuses or trip size of the overcurrent device supplying the circuit.
11. The central equipment for the fire protective alarm system and telephone system shall have its grounding terminal connected to the grounding electrode by means of a No. 6 green coded insulated conductor, run in 3/4" conduit. Utilize a ground clamp of a type specifically manufactured for the purpose.
12. Install rod electrodes per this section & in compliance with Code. Install additional rod electrodes as required to achieve specified resistance to ground. Install 4/0 AWG bare copper wire in foundation footing as required. Provide isolated grounding conductor for circuits supplying personal computers as indicated on the plans. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Provide a 3/4" raceway with #6 AWG ground wire from main telephone terminal board to the service ground.
13. Perform inspections and tests listed in NETA ATS, Section 7.13. Document test results in Record Documents.
14. Swimming Pools, fountains & similar installations: Refer to NEC 680 for requirements for grounding and bonding. Provide all grounding and bonding per NEC 680 and 250.
15. Grounding means shall never exceed 10 ohms when located outdoors, or 5 ohms when located indoors.
16. An acceptable means of grounding is to provide an underground 2" thick, concrete-encased electrode of either ½" diameter, electrically conductive reinforcing bar of #4/0 bare copper conductor (minimum of 20-feet in length) per NEC 250.52(A)(3).

2.10 EQUIPMENT WIRING SYSTEM

A. Cords & Caps: Manufacturers: Hubbel, Pass & Seymour or Arrow Hart. Attachment Plug Construction: Conform to NEMA WD 1. Configuration: NEMA WD 6; match receptacle configuration at outlet provided for equipment. Cord Construction: ANSI/NFPA 70, Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Motor Control Equipment: Each motor shall have a starter furnished under this Section where it is not being supplied by other sections. Wire and installed under this Section, unless otherwise noted herein or on the drawings.

1. Connect the motor starting devices for all motors, except where otherwise specifically provided for under other sections, furnish all necessary connections between controllers and motors, in conduit and leave motors ready to start. Change connections, if necessary, to secure proper rotation of motors.
2. Perform all the necessary wiring in connection with the motor starting and remote control equipment, where so designated, furnished under other sections. Where control or starting equipment is sent to the job as individual units, they shall be installed, wired up complete and left ready for operation under work of this section.
3. Wiring to motor shall be in rigid conduit with watertight flexible conduit from wall to motor only.

C. Included in the general requirements for motor control equipment wiring and connections, the following specified items shall be performed:

1. Installation and connection of motor controls which will be furnished under the heating, ventilating and air conditioning section and the plumbing section.

D. Starters by This Contractor: Where starters are not provided under other sections, this Contractor shall furnish starters for motors 1/2 HP and larger and where required by the control sequence for smaller motors and shall be magnetic across the line starters with adjustable overload protection in each phase line, all in NEMA 1 enclosures. Starters shall be solid state or acceptable substitute. Combination starters shall be with fused or non-fusible disconnect as required.

1. Magnetic starters shall have 120 volt holding circuits, integral transformers, auxiliary contacts as required by the control sequence and integral selector switches with push-to-test pilot lights. One side of each pilot light shall be connected on the load side of the motor starter.
2. Integral transformers shall have overload protection on the secondary section and, also, the secondary neutral shall be grounded.
3. Starters shall be as manufactured by Square D Company or General Electric.

E. Temperature control wiring shall be by others as indicated under the heating, ventilating and air conditioning section.

F. Provide a suitable plywood backboard on a wall and/or angle iron or unistrut framework with plywood for all starters. Starters will be installed and wired under this section.

G. All starters shall be located next to the panel feeding same, if panel is in a closet or utility space, unless noted otherwise on the drawings. If panel is located in a finished space (i.e. corridor, gymnasium, etc.) starters shall be located in nearby utility closet or space acceptable to the Engineer.

H. Nameplates: Each starter shall have a 1.0" x 2.5" hot stamped nameplate identifying the unit and panel it is fed from. The lettering shall be white 1/2" high in a black background.

I. Connections to systems: Make electrical connections in accordance with equipment manufacturer's instructions. Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit with watertight connectors in damp or wet locations. Make wiring connections using wire and cable with insulation suitable for temperatures encountered in heat producing equipment. Provide receptacle outlet where connection with attachment plug is indicated. Provide cord and cap where field-supplied attachment plug is indicated. Provide suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes. Install disconnect switches, controllers, control stations, and control devices as indicated. Modify equipment control wiring with terminal block jumpers as indicated. Provide interconnecting conduit and wiring between devices and equipment where indicated

2.11 SUPPORTING DEVICES

A. Materials and Finishes: Provide adequate corrosion resistance. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products. Steel channel shall be galvanized.

B. Anchors and Fasteners:

1. Concrete Structural Elements: Use precast insert system, expansion anchors.
2. Steel Structural Elements: Use beam clamps, or welded fasteners.
3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
5. Solid Masonry Walls: Use expansion anchors or preset inserts.
6. Sheet Metal: Use sheet metal screws.
7. Wood Elements: Use wood screws.

C. Installation: Install products in accordance with manufacturer's instructions. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation". Do not fasten supports to pipes, ducts, mechanical equipment, and conduit. Do not use spring steel clips and clamps. Do not use powder-actuated anchors. Do no drill or cut structural members. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts. Install surface-mounted cabinets and panelboards with minimum of four anchors. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch off wall. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

2.12 ELECTRICAL IDENTIFICATION

A. Nameplates: Engraved three-layer laminated plastic, black letters on white background. Locations: Each electrical distribution and control equipment enclosure, communication cabinets. Letter Size: Use 1/8 inch letters for identifying individual equipment and loads. Use 1/4 inch letters for identifying grouped equipment and loads.

B. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use for identification of individual power receptacle faceplates indicating panel & circuit number the outlet is fed from and other miscellaneous devices as indicated on drawings. Use labels on all panelboards, disconnect switches and enclosed circuit breakers to identify where the equipment is fed from, voltage & phase.

C. Wire markers: Tape, or tubing type wire markers. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection. Power and Lighting Circuits shall be marked with panel and branch circuit or feeder number as indicated on drawings. Control Circuits shall be marked with control wire number indicated on schematic and interconnection diagrams on drawings

D. Conduit markers: Corrosion and abrasion resistant. Location: Furnish markers for each conduit longer than 6 feet (2 m). Spacing: 20 foot on center. Indicate voltage and phase.

E. All panelboards shall be provided with a typed (hand written is not allowed) circuit directory indicating the load fed by each circuit breaker and it's location in the building.

2.13 ENCLOSED SWITCHES

A. Fusible Switch Assemblies shall be provided in accordance with the following. Description: NEMA KS 1, Type GD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses. Provide NEMA 3R where located outdoors, kitchens or other inther wet areas.

B. Non-fusible switch assemblies shall be provided in accordance with following. Description: NEMA KS 1, Type GD with externally operable handle interlocked to prevent opening front cover with switch in ON position enclosed load interrupter knife switch. Handle lockable in OFF position. Provide NEMA 3R where located outdoors, kitchens or other interior wet areas.

C. Install in accordance with NECA "Standard of Installation". Install fuses in fusible disconnect switches. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

2.14 PANELBOARDS

A. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

B. Panelboard Bussing: Bus bars shall be copper. Provide copper ground bus bar in all panelboards.

C. Minimum Integrated Short Circuit Rating: 10,000 amperes RMS symmetrical for 240 volt panelboards; 65,000 amperes RMS symmetrical for 480 volt panelboards, or as indicated.

D. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.

E. Enclosure: NEMA PB 1, Type 1.

F. Cabinet Box: 6 inches deep, 20 inches wide for 240 volt and less panelboards, 20 inches wide for 480 volt panelboards.

G. Cabinet Front: Flush or Surface cabinet front as scheduled with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard ANSI 49 enamel.

2.15 ENCLOSED CIRCUIT BREAKERS

A. Enclosed Molded Case Circuit Breaker: Comply with NEMA AB 1. Include provisions for padlocking. Provide insulated grounding lug in each enclosure. Provide Products suitable for use as service entrance equipment where so applied. Fabricate enclosure from steel.

B. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions. Install enclosed circuit breakers plumb. Provide supports in accordance with these specifications. Height: 5 ft (1.6 M) to operating handle. Provide engraved plastic nameplates.

C. Inspect each circuit breaker visually. Perform several mechanical ON-OFF operations on each circuit breaker. Verify circuit continuity on each pole in closed position. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements. Include description of testing and results in test report.

2.16 FUSES

A. All fuses shall be rated for proper voltage in which they are applied. Interrupting ratings shall be greater than the short circuit current available at the terminals of the switch.

B. Fuse types:

1. Fuses for branch circuits shall be time delay class J.
2. Fuses for equipment other than motor loads shall be general fast acting RK-5 or Class J.
3. Control power transformers for motor controller circuits shall be as recommended by motor starter and motor control center manufacturer.
4. Fuses for motors shall be sized at 250% of the motor FLA.
5. Fuses for non-motor loads shall be sized at 125% of the rated FLA of equipment served.
6. Fuses for elevator lifts shall be dual element type and sized in accordance with the elevator manufacturer's recommendations.

C. Spare Fuses

1. Provide spare fuses in the amount of 20% (not less than three (3) nor more than nine (9) of all sizes and types).
2. Spare fuses shall include general purpose fuses, motor fuses, and control fuses used in motor control centers, starters etc.
3. A complete list and quantity of spare fuses shall be submitted with record drawings for review.

2.17 ENCLOSED MOTOR CONTROLLERS

A. The Electrical Contractor shall review the mechanical drawings and coordinate with the Mechanical Contractor for electrical components of the mechanical equipment and systems such as motors, factory mounted motor starters, factory mounted disconnect switches, variable frequency drives and controls to be provided under Division 15 (by the Mechanical Contractor).

B. The Electrical Contractor shall provide motor starters, variable frequency drives and disconnect switches for equipment shown on the drawings where the Mechanical Contractor is not providing such equipment.

C. The electrical contractor shall provide all power wiring for all HVAC equipment.

D. Manual Motor Controller: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller with thermal overload elements on each phase, red pilot light, NO, NC auxiliary contact, and push button or toggle operator.

E. Fractional Horsepower Manual Controller: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload elements on each phase, red pilot light, and toggle operator.

F. Motor Starting Switch: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, without thermal overload elements on each phase, with red pilot light and toggle operator.

G. Enclosures: NEMA ICS 6; Type 1 for indoors and Type 3R for outdoors and wet/damp locations (kitchens, mechanical rooms, pool equipment rooms, etc...).

H. Automatic Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower. Reversing Controllers: Include electrical interlock and integral time delay transition between FORWARD and REVERSE rotation. Two Speed Controllers: Include integral time delay transition between FAST and SLOW speeds. Coil operating voltage: 120volts, 60 Hertz. Overload Relay: NEMA ICS; bimetal or melting alloy. Enclosure: NEMA ICS 6, Type 1 for indoors or Type 3R for outdoors and wet/damp locations (kitchens, mechanical rooms, pool equipment rooms, etc...).

I. Product Options and Features as follows. Auxiliary Contacts: NEMA ICS 2, 2 each normally open and closed contacts in addition to seal-in contact. Cover Mounted Pilot Devices: NEMA ICS 2, standard duty type. Pilot Device Contacts: NEMA ICS 2, Form Z, rated A150. Pushbuttons: Recessed type. Indicating Lights: LED type. Selector Switches: Rotary type. Relays: NEMA ICS 2. Control Power Transformers: 120 volt secondary, in each motor starter. Provide fused primary and secondary, and bond un-fused leg of secondary to enclosure.

J. Installation Requirements: Install enclosed controllers where indicated, in accordance with manufacturer's instructions. Install enclosed controllers plumb. Provide supports in accordance with these specifications. Height: 5 feet to operating handle. Install fuses in fusible switches. Select and install overload heater elements in motor controllers to match installed motor characteristics. Provide engraved plastic nameplates under these specifications. Provide neatly typed label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.

2.18 SWITCHBOARD

A. Description: NEMA PB 2 switchboard with electrical ratings and configurations as indicated and specified. The dimensions shown in the detail are based on Siemens. The electrical contractor (E.C.) shall be responsible for verifying physical sizes of any substituted equipment and ensure the equipment will fit in the space shown with all required clearances prior to submitting substituted equipment shop drawings. Bracing and protective devices shall be such as to withstand and interrupt short circuit stresses of 65,000 amperes symmetrical or available short circuit whichever is larger. The main switchboard shall be listed with an Underwriters label attesting to its suitability as service entrance equipment. Acceptable manufacturers are Cutler-Hammer, Square D, Siemens or General Electric. Provide manufacturers integral transient voltage surge suppression (TVSS) on main.

B. Ratings:

1. Voltage: 208Y/120 volts as required.
2. Configuration: Three-phase, four wire, grounded.
3. Main Bus: 1200 amperes.
4. Integrated Equipment Rating: As noted on the plans.

C. Main Section Devices: Individually mounted.

D. Distribution Section Devices: Group mounted.

E. Auxiliary Section Devices: Individually mounted.

F. Bus Material: Copper with tin plating, standard size.

G. Bus Connections: Bolted, accessible from front for maintenance.

H. Ground Bus: Extend length of the switchboard.

I. Molded Case Circuit Breakers: (distribution) molded case breakers with inverse time and instantaneous tripping characteristics. Provide circuit breakers UL listed as Type HACR for air-conditioning equipment branch circuits. Circuit breakers shall have thermal-magnetic trip units and inverse time-current characteristics.

J. Molded Case Circuit Breakers: (main breaker) 2000ampere / 3-pole inverse time, instantaneous tripping characteristics and ground fault protection shall be provided.

K. Line and Load Terminations: Accessible from the front only of the switchboard, suitable for the conductor materials and sizes indicated.

L. Pull /Tap Section: Size as required. Depth and height to match switchboard.

M. Future Provisions: Fully equip spaces for future devices with bussing and bus strap connections for maximum CB listed, suitably insulated and braced for short circuit currents. Provide continuous current rating as indicated.

N. Pull Box: If required, shall have removable top and sides, same construction as switchboard, size as shown on Drawings. Provide insulating, fire-resistive bottom with separate openings for each circuit to pass into switchboard.

O. E.C. shall coordinate with general and mechanical contractors prior to installation of the switchboard or any mechanical systems to verify and ensure all systems, piping, ductwork, etc... foreign to switchboard will comply with NEC article 110 for "working space" and "dedicated electrical space".

P. The switchboard shall be provided with an engraved nameplate on the front indicating the designation, voltage, rating of main circuit breaker or main lugs and source of supply. In addition, all branch circuit breakers shall be provided with engraved nameplates indicating the designation of the load being fed (i.e. "Panel LB-1").

Q. Enclosure: Type 1 - General Purpose.

1. Align sections at front and rear.
2. Switchboard Height: 90 inches, excluding floor sills, lifting members and pull boxes.
3. Finish: Manufacturer's standard light gray enamel over external surfaces. Coat internal surfaces with minimum one coat corrosion-resisting paint, or plate with cadmium or zinc.

R. Provide a micro-processor based monitoring device that provides simultaneous current, voltage, and frequency metering. 1% accuracy for AC amperes and AC voltage and 0.5% accuracy for frequency.

S. Current Transformers: ANSI C57.13, 5 ampere secondary, wound or window type, with single secondary winding and secondary shorting device, primary/secondary ratio as required, burden and accuracy consistent with connected metering and relay devices, 60 hertz.

T. Potential Transformers: ANSI C57.13, 120 volt single secondary, disconnecting type with integral fuse mountings, primary/secondary ratio as required, burden and accuracy consistent with connected metering and relay devices, 60 Hertz.

U. Tighten accessible bus connections and mechanical fasteners after placing switchboard. Adjust all operating mechanisms for free mechanical movement. Tighten bolted bus connections in accordance with manufacturer's instructions. Adjust circuit breaker trip and time delay settings to values as required by manufacturer.

2.19 ENCLOSED CONTACTORS

A. General purpose contactors: NEMA ICS 2, AC general purpose magnetic contactor. Coil Voltage as indicated. Poles as indicated. Size as indicated. Enclosure per ANSI/NEMA ICS 6, Type as scheduled.

B. Lighting contactors: NEMA ICS 2, magnetic lighting contactor. Coil Voltage as indicated. Poles as indicated. Size as indicated. Contact Rating shall match branch circuit overcurrent protection, considering de-rating for continuous loads.

C. Accessories: Provide Pushbuttons and Selector Switches per NEMA ICS 2, heavy duty type. Provide indicating lights per NEMA ICS 2, push-to-test type. Provide auxiliary contacts per NEMA ICS 2, Class A300 or A600 as required per equipment served.

2.20 INTERIOR LUMINAIRES

A. Lighting fixtures shall be in accordance with identifications as follows:

B. All lamping shall be of the highest quality available.

C. Finishes shall be as selected by the Architect or as indicated on the plans.

D. Any additional appurtenances required for installation and operation, where same are not covered by the identification used on the drawings, shall be included. Lighting fixtures and equipment shall be furnished complete, wired and assembled, including canopies, lamps and other incidental items. Install specified lamps in each luminaire.

E. Recessed fixtures shall be coordinated with ceiling construction by the Electrical Contractor prior to Bid. Refer to the Architect's plans, details and elevations for ceiling types by area. Provide plaster trim kits as required by ceiling construction.

F. Exact location of all fixtures shall be confirmed with Architect prior to rough-in. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

G. Recessed fixtures throughout shall have their components, wiring and external connections coordinated for use in ceilings utilized as air handling plenums. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. Install clips to secure recessed grid-supported luminaires in place.

H. Fixtures for use outdoors or in areas designated as damp locations, shall be suitably gasketed and UL listed for such applications.

I. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire

J. Emergency batteries for exterior fixtures shall be remote mounted within the building. Verify maximum distances for remote mounting the emergency batteries with the manufacturer prior to installation. Locate remote emergency batteries above accessible ceilings or utility rooms as required. Provide test switches for all emergency batteries as required.

K. Unless noted otherwise, all fixtures shall be 3500K and have a minimum CRI of 85.

L. The Contractor shall obtain all information relative to the exact type of hung ceilings and suspension systems to be installed before ord

board. Connect pig tail to building steel or electrical service grounding system per the CATV utility company's requirements.

C. The Electrical Contractor shall provide and install the CATV outlet backboxes per the Owner's specifications and direction as shown on the plans. Install 1-1/2" EMT conduit with pull string from backbox to above accessible ceiling. Provide bushed endcap on conduit (above ceiling end of conduit).

2.25 SHORT CIRCUIT/COORDINATION STUDY AND ARC FLASH RICK ASSESSMENT

A. GENERAL

1. The electrical contractor shall retain the services of an independent third party firm, or the equipment manufacturer's technical services group, to perform a short circuit/coordination study and arc flash risk assessment as described herein
2. Preliminary studies shall be submitted to the A/E prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment for manufacture to ensure the characteristics and ratings of the proposed overcurrent devices will be satisfactory. The final submittal shall capture any changes in circuit lengths, wire sizes, additional loads, etc. that may occur during the construction project
3. The studies shall include all portions of the electrical distribution system from the normal power source or sources, and emergency/standby sources, down to and including the smallest circuit breaker in the distribution system (for short circuit calculations). Normal system connections and those which result in maximum fault conditions shall be adequately covered in the study
4. The firm should be currently involved in medium- and low-voltage power system evaluation. The study shall be performed, stamped and signed by a registered professional engineer in the State of the project is located in. Credentials of the individual(s) performing the study and background of the firm shall be submitted to the A/E for approval prior to start of the work. A minimum of five (5) years experience in power system analysis is required for the individual in charge of the project
5. The firm performing the study should demonstrate capability and experience to provide assistance during start up as required
6. The study and assessment shall be performed on SKM Dapper, Captor and PowerTool software or EasyPower product suite software.

B. REFERENCE STANDARDS

1. Standards listed in the IEEE "Buff Book", latest edition
2. National Fire Protection Association (NFPA) 70E, latest addition
3. IEEE 1584 - Guide for Performing Arc Flash Calculations

C. DATA COLLECTION FOR THE STUDY

1. The contractor shall provide the required data for preparation of the studies. The engineer performing the system studies shall furnish the contractor with a listing of the required data immediately after award of the contract.
2. The contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to release of the equipment for manufacture.

D. SUBMITTALS

E. THIRD PARTY QUALIFICATIONS

1. Submit qualifications of individual(s) who will perform the work to the A/E for approval prior to commencement of the studies.

F. PRELIMINARY REPORT

1. Submit a draft of the studies to the A/E for review prior to delivery of the final study to the Owner. Make all additions or changes as required by the reviewer.

G. FINAL STUDY REPORT

1. Provide studies in conjunction with equipment submittals to verify equipment ratings required.
2. The results of the power system studies shall be summarized in a final report and provided in the following formats. Provide (2) bound hard copies of the final report. Provide (2) electronic copies (on CD) of the final report and one-line diagrams in PDF format. Provide (2) electronic copies (on CD) of the final report in MS Word format and the one-line diagrams in CAD format.
3. Also provide (2) electronic copies (on CD) of all files generated by the SKM or EasyPower software for all scenarios evaluated in the studies. The files shall permit the studies to be opened, reviewed or updated by any user of the analysis software used for the studies.
4. The report shall typically include the following sections:

I. Overview
II. Short Circuit Study
SC-1 Purpose
SC-2 Explanation of Data
SC-3 Assumptions
SC-4 Analysis of Results
SC-5 Recommendations
SC-6 Fault Analysis Input Report from Software Program
SC-7 Fault Contribution Report
III. Protective Device Coordination Study
PDC-1 Purpose
PDC-2 Explanation of Data
PDC-3 Assumptions
PDC-4 Analysis of Results
PDC-5 Recommendations (Including NEC 700-27 Requirement)
PDC-6 Results from Software Program
PDC-7 Example Drawings
IV. Arc Flash Study
ARC-1 Purpose
ARC-2 Explanation of Data
ARC-3 Assumptions
ARC-4 Analysis of Results
ARC-5 Recommendations
ARC-6 Arc Flash Evaluation Report from Software Program
V. Prioritized Recommendations and Conclusions
VI. Appendices
APP-1 One-line Diagrams from Software Program
APP-2 AutoCAD One-line Diagrams
APP-3 Protective Device Summaries from Software Program
APP-4 Reference Data
APP-5 Sample Work Permit Form
APP-6 Copy of Warning Labels, including study date

5. The above sections shall include the following items in detail:
   a. Obtain available fault current from the local utility company.
   b. Short circuit studies shall evaluate the available fault current at each bus (each change of impedance), including all three-phase motors.
   c. Coordination study recommendations for relay settings, breaker settings, and motor protection settings.
   d. Recommendations for improving the coordination and/or load distribution, as well as ground fault requirements.
   e. Worst case Arc Flash values (highest incident energy) for project specific scenarios (low short circuit and high short circuit for each possible power supply source).
   f. Arc flash values for two maintenance cases, which define the arc flash values available at the equipment that would be available if the instantaneous trip of the upstream circuit breaker is set at a minimum value. This is recommended if someone must work on live equipment.
   g. IEEE standard one-line diagram with equipment evaluation and circuit breaker settings that clearly define the system data and are easy to interpret. The diagrams should include the bus names and references used in the studies.
   h. Recommendations to reduce the arc flash incident energy in all areas that are subject to 8 calories per square centimeter or greater of available incident energy.
   i. Condition of Maintenance information for any existing equipment included in the study.
   j. Prioritized report summarizing all recommendations from this study. This shall include observed NEC code violations and their corrective action.
   k. The contractor shall provide a one-line diagram that meets IEEE/ANSI standard 141, mounted on 24" x 36" (minimum) Styrofoam backboard. This one-line diagram shall be mounted in each electrical room.

H. EXECUTION

1. SHORT CIRCUIT AND COORDINATION STUDY
   a. The short circuit, coordination, and arc flash hazard studies shall be performed using SKM Dapper, Captor and PowerTool for Windows software or EasyPower product suite Windows based software packages. In the short circuit study, provide calculation methods and assumptions, the base per unit quantities selected, one-line diagrams, source impedance data including power company system characteristics, typical calculations, and recommendations. Calculate short circuit interrupting and momentary (when applicable) duties for an assumed 3-phase bolted fault at each supply switchgear lineup, unit substation primary and secondary terminals, low voltage switchgear lineup, switchboard, motor control center, distribution panelboard, pertinent branch circuit panelboard, and other significant locations throughout the system. Provide a ground fault current study for the same system areas, including the associated zero sequence impedance data. Include in tabulations fault impedance, X to R ratios, asymmetry factors, motor contribution, short circuit KVA, and symmetrical and asymmetrical fault currents.
   b. In the protective device coordination study, provide time-current curves graphically indicating the coordination proposed for the system, centered on conventional, full-size, log-log forms. Include with each curve sheet a complete title and one-line diagram with legend identifying the specific portion of the system covered by that particular curve sheet. Include a detailed description of each protective device identifying its type, function, manufacturer, and time-current characteristics. Tabulate recommended device tap, time dial, pickup, instantaneous, and time delay settings.
   c. Include on the curve sheets power company relay and fuse characteristics, system medium-voltage equipment relay and fuse characteristics, low-voltage equipment circuit breaker trip device characteristics, pertinent transformer characteristics, pertinent transformer characteristics, pertinent motor and generator characteristics, and characteristics of other system load protective devices. Include at least all devices down to largest branch circuit and largest feeder circuit breaker in each motor control center, and main breaker in branch panelboards.
   d. Include all adjustable settings for ground fault protective devices. Include manufacturing tolerance and damage bands in plotted fuse characteristics. Show transformer full load and 150, 400, or 600 percent currents, transformer magnetizing inush, ANSI transformer withstand parameters, and significant asymmetrical and asymmetrical fault currents. Terminate device characteristic curves at a point reflecting the maximum symmetrical or asymmetrical fault current to which the device is exposed.
   e. Select each primary protective device required for a delta-wye connected transformer so that its characteristic or operating band is within the transformer characteristics, including a point equal to 58 percent of the ANSI withstand point to provide secondary line-to-ground fault protection. Where the primary device characteristic is not within the transformer characteristics, show a transformer damage curve. Separate transformer primary protective device characteristic curves from associated secondary device characteristics by a 16 percent current margin to provide proper coordination and protection in the event of secondary line-to-line faults. Separate medium-voltage relay characteristic curves from curves for other devices by at least a 0.4-second time margin.
   f. Include complete fault calculations as specified herein for each proposed and ultimate source combination. Note that source combinations may include present and future supply circuits, large motors, or generators as noted on drawing one-lines.
   g. Utilize equipment load data for the study obtained by the Contractor from contract documents, including contract addendums issued prior to bid openings.
   h. Include fault contribution of all motors in the study. Notify the Engineer in writing of circuit protective devices not property rated for fault conditions.
   i. Provide settings for the chiller motor starters or obtain from the mechanical contractor, include in the study package, and comment.
   j. When an emergency generator is provided, include phase and ground coordination of the generator protective devices, to meet NEC 700.27 requirements. Show the generator decrement curve and damage curve along with the operating characteristic of the protective devices. Obtain the information from the generator manufacturer and include the generator actual impedance value, time constants and current boost data in the study. Do not use typical values for the generator.
   k. Evaluate proper operation of the ground relays in 4-wire distributions with more than one main service circuit breaker, or when generators are provided, and discuss the neutral grounds and ground fault current flows during a neutral to ground fault.
   l. For motor control circuits, show the MCC full-load current plus symmetrical and asymmetrical of the largest motor starting current to ensure protective devices will not trip major or group operation.

I. FIELD SETTINGS

1. The Contractor shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The settings shall be in accordance with the approved short circuit study, protective device coordination study and arc flash risk assessment.
2. Necessary field settings and adjustments of devices and minor modifications to equipment to accomplish conformance with the approved short circuit and protective device coordination study shall be carried out by the Contractor at no additional cost to the owner.

J. ARC FLASH RISK ASSESSMENT

1. As part of the short circuit and coordination study, arc flash risk assessment shall be included. The study shall include the following:
   a. Determine and document all possible utility and generator/emergency sources that are capable of being connected to each piece of electrical gear. Calculations shall be based on highest possible source connection.
   b. Calculations to conform to National Fire Protection Association (NFPA) 70E recognized means of calculation standards. All incident energy units shall be calculated in calories per square centimeter.
   c. Provide recommended boundary zones and personal protective equipment (PPE) based on the calculated incident energy and requirements of NFPA 70E for each piece of electrical gear.
   d. Electrical Contractor shall provide warning labels as required by OSHA based upon the results of the arc flash risk assessment. At a minimum, the labeling shall contain the following information: nominal system voltage, arc flash boundary, limited approach boundary, restricted approach boundary, available incident energy and the corresponding working distance or the arc flash PPE category, minimum arc rating of clothing, and study date. Label shall also include the name or logo and the phone number of the company performing the study.
   e. Arc flash warning labels shall be affixed to all electrical equipment that is likely to require examination, adjustment, servicing or maintenance while energized. This includes, but is not limited to, medium-voltage switchgear, transformers, switchboards, panel boards, three-phase disconnect switches, transfer switches, motor control centers, motor controllers, and three-phase motor disconnect switches.

PART 3 - EXECUTION

3.1 BASIC REQUIREMENTS

A. Adhere to best industry practice and the following:

1. All work shall be concealed.
2. Route circuitry runs embedded in concrete to coordinate with structural requirements.
3. Equip each raceway intended for the future installation of wire or cable with a nylon pulling cord 3/16" in diameter and clearly identify both ends of the raceway.
4. Provide all outlet boxes, junction boxes, and pull boxes for proper wire pulling and device installation. Include those omitted from the drawings due to symbolic methods of notation.
5. Utilize lugs of the limited type to make connections at both ends of cables installed on the line side of main service overcurrent and switching devices. Provide cable limiters for each end of each service entrance cable.
6. Beyond the termination of raceways, fireproof the following:
   a. All wires and cables within pad-mounted transformer enclosure.
   b. All service feeder cables ahead of main service overcurrent protection devices, and elsewhere where not in raceways.
7. Fireproofing of wires and cables shall be by means of a half-lapped layer of arcproof or by means of sleeving of a type specifically manufactured for the purpose. Ends of tape or sleeving shall be severed with twine. Fireproofing shall be extended up into raceways. After conductors have been finally shaped into their permanent configuration, fireproofing tape or sleeving shall be coated with silicate of soda (water glass). Fireproofing shall be applied in an overall manner to raceway groupings of conductors.
8. Provide all sleeves through fireproof and waterproof slabs, walls, etc., required for electric work.
9. Provide waterproof sealing for the sleeves through waterproof slabs, walls, etc.
10. Provide fireproof sealing for the sleeves through fireproof walls, slabs, etc.
11. Provide fireproof sealing for the openings in fireproof walls, slabs, etc., resulting from removal of existing electrical sleeves, conduits, poke-thru's etc.
12. No splicing of wires will be permitted in the Fire Alarm System.
13. Bundle wiring passing through pull boxes and panelboards in a neat and orderly manner with plastic cable ties. Cable ties shall be by Ty-Raps as manufactured by Thomas & Betts, Holub Industries Inc., Quick Wrap, Bundy Unirap, or equal.
14. Turn branch circuits and auxiliary system wiring out of wiring gutters at 90 degrees to circuit breakers and terminal lugs.

3.2 TESTING REQUIREMENTS & INSTRUCTIONS

A. Where any repairs, modifications, adjustments, tests or checks are to be made, the Contractor shall contact the Engineer to determine if the work should be performed by or with the Manufacturer's Representative.

B. Tests are to:

1. Provide initial equipment/system acceptance.
2. Provide recorded data for future routine maintenance and trouble-shooting.
3. Provide assurance that each system component is installed satisfactorily and can be expected to perform, and continue to perform its specified function with reasonable reliability throughout the life of the facility.

C. At any stage of construction and when observed, any electrical equipment or system determined to be damaged, or faulty, is to be reported to the Engineer. Corrective action by the Contractor requires prior Engineer approval, retesting, and inspection.

D. When the electrical tests and inspections specified or required within Division 16 are completed and results reported, reviewed, and approved by the Engineer, the Contractor may consider that portion of the electrical equipment system or installation electrically complete. The Contractor will then affix appropriate, approved, and dated completion or calibration labels to the tested equipment and notify the Engineer of electrical completion. If the Engineer finds completed work unacceptable, he will notify the Contractor in writing of the unfinished or deficient work, with the reason for his rejection, to be corrected by the Contractor. The Contractor will notify the Engineer in writing when exceptions have been corrected. The Contractor will prepare a "Notification or Substantial Electrical Completion" for approval by the Engineer following Engineer's acceptance of electrical completion. If later in-service operation or further testing identified problems attributable to the Contractor, these will be corrected by the Contractor, at no additional cost to the Authority.

E. Grounding Systems:

1. Test main building loops and major equipment grounds to remote earth, directly referenced to an extremely low resistance (approximately 1 ohm) reference ground benchmark. Perform a visual inspection of the systems, raceway and equipment grounds to determine the adequacy and integrity of the grounding. Ground testing results shall be recorded, witnesses, and submitted to the Engineer.
2. Perform ground tests using a low resistance, null-balance type ground testing ohmmeter, with test lead resistance compensated for. Use the type of test instrument which compensates for potential and current rod resistances.
3. Test each ground rod and measure ground resistance. If resistance is not 10 ohms or less, drive additional rods to obtain a resistance of 10 ohms or less. Submit tabulation of results to Engineer. Include identification of electrode, date of reading and ground resistance valve in the test reports.
4. Test each building and major equipment grounding system for continuity of connections and for resistance. Ground resistance of conduits, equipment cases, and supporting frames, shall not exceed 5 ohms to ground. Submit all readings to the Engineer.
5. Where ground test results identify the need for additional grounding conductors or rods that are not indicated or specified, design changes will be initiated to obtain the acceptable values. The Contractor is responsible for the proper installation of the grounding indicated and specified.
6. Operating Instructions: Furnish operating instructions to Owner's designated representative with respect to operations, functions and maintenance procedures for equipment and systems installed. Cost of such instruction up to a full five (5) days of Electrical Subcontractor's time shall be included in contract. Cost of providing a Manufacturer's Representative at site for instructional purposes shall also be included.

3.3 BRANCH CIRCUITRY

A. For all lighting and appliance branch circuitry, raceway sizes shall conform to industry standard maximum permissible occupancy requirements except where these are exceeded by other requirements specified elsewhere.

B. Circuits shall be balanced on phases at their supply as evenly as possible.

C. Feeder connections shall be in the phase rotation which establishes proper operation for all equipment supplied.

D. Reduced size conductors indicated for any feeders shall be taken as their grounding conductors.

E. Feeders consisting of multiple cables and raceways shall be arranged such that each raceway of the feeder contains one (1) cable for each leg and one (1) neutral cable, if any.

F. For circuitry indicated as being protected at 20 Amps or less, abide by the following:

1. All 20 amp, 120/208 volt, 3-phase, 4-wire combined branch circuit homeruns shall be provided with a #8 AWG neutral conductor.
2. Minimum conductor size shall be No. 12 AWG cooper.
3. Conductors operating at 120 volts extending in excess of 100 ft. or at 277 volts extending in excess of 200 ft., or the last outlet or fixture tap shall be No. 10 AWG cooper throughout.
4. Lighting fixtures and receptacles shall not be connected to the same circuit.

G. Type MC Cable Installation:

1. Where cable is permitted under the products section, the installation of same shall be done in accordance with code and the following:
   a. Cable shall be supported in accordance with code. Tie wire is not an acceptable means of support. Cable supports such as Caddy WMX-6, MX-3, and clamps such as Caddy 449 shall be used. Where cables are supported by the structure and only need securing in place, then ty-raps will be acceptable. Ty-raps are not acceptable as a means of support. All fittings, hangers, and clamps for support and termination of cables shall be of type specifically designed for use with cable, i.e., romex connectors not acceptable.
   b. Armor of cable shall be removed with rotary cutter device equal to roto-split by Seatek Co.; not with a hacksaw.
   c. Use split "Insuliner" sleeves at terminations.

3.4 REQUIREMENTS GOVERNING ELECTRICAL WORK IN DAMP OR WET LOCATIONS

A. Outlets and outlet size boxes shall be of galvanized cast ferrous metal only.

B. The finish of threaded steel conduit shall be galvanized only.

C. Wires for pulling into raceways for lighting and appliance branch circuitry shall be limited to "THWN".

D. Wires for pulling into raceways for feeders shall be limited to "THWN".

E. Plates for toggle switches and receptacles shall have gasketed snap shut covers suitable for wet locations while in use.

F. Final connections of flexible conduit shall be neoprene sheathed.

G. Apply one (1) layer of half looped plastic electric insulating tape over wire nuts used for joining the conductors of wires.

H. Enclosures, junction boxes, pull boxes, cabinets, cabinet trims, wiring troughs and the like, shall be fabricated of galvanized sheet metal, shall conform to the following:

1. They shall be constructed with continuously welded joints and seams.
2. Their edges and weld spots shall be factory treated with cold galvanizing compound.
3. Their connection to circuitry shall be by means of watertight hub connectors with sealing rings.

I. Enclosures for individually mounted switching and overcurrent devices shall be NEMA Class IV weatherproof construction.

J. The covers, doors and plates and trims used in conjunction with all enclosures, pull boxes, outlet boxes, junction boxes, cabinets and the like shall be equipped with gaskets.

K. Panels shall be equipped with doors without exception.

L. The following shall be interpreted as damp or wet locations within building confines:

1. Spaces where any designations indicating weatherproof (WP) or vapor proof appear on the drawings.
2. Below waterproofing in slabs applied directly on grade.
3. Spaces defined as wet or damp locations by Article 100 of the National Electric Code.
4. Parking garage.

grade involved in the conduit replacement.

P. Provide a nylon cord for the pulling of cable in each conduit in which no cable is to be installed as part of the electric work.

Q. The Electrical Sub-Contractor shall provide all insulated racks as required for proper support of all cables and wires.

R. Provide a continuous nylon warning tape above each full length of duct bank 12 inches below grade.

3.7 LIMITING NOISE PRODUCED BY ELECTRICAL INSTALLATION

A. Perform the following work, in accordance with field instructions issued by the Architect to assure that minimal noise is produced by electrical installations due to equipment furnished as part of the electrical work.

B. Check and tighten the fastenings of sheet metal plates, covers, doors and trims used in the enclosures of electrical equipment.

C. Remove and replace any individual device containing one or more magnetic flux path mettallic cores (e.g., discharge lamp ballast, transformer, reactor, dimmer, and solenoid) which is found to have a noise output exceeding that of other identical devices installed at the project.

3.8 SUPPORTS AND FASTENINGS

A. Support work in accordance with best industry standards, and Local Electric Code.

B. Include supporting frames or racks for equipment, intended for vertical surface mounting, which is required in a free standing position.

C. Supporting frames or racks shall be of standard angle, standard channel or specialty support system steel members. They shall be rigidly bolted or welded together and adequately braces to form a substantial structure. Racks shall be of ample size to assure a workmanlike arrangement of all equipment mounted on them.

D. No work intended for exposed installation shall be mounted directly on any building surface. In such locations, flat bar members or spaces shall be used to create a minimum of ¼" air space between the building surfaces and the work. Provide ¾" thick exterior grade plywood painted with two (2) coats of fire-retardant gray paint for mounting of panelboards.

E. Nothing (including outlet, pull and junction boxes and fittings) shall depend on electric conduits, raceways or cables for support.

F. Nothing shall rest on, or depend for support on, suspended ceiling media.

G. Support less than 2" trade size, vertically run, conduits at intervals no greater than 8'. Support such conduits, 2-1/2" trade size or larger, at intervals no greater than they story height, or 15', whichever is smaller.

H. Where they are not embedded in concrete, support less than 1" trade size, horizontally run, conduits at intervals no greater than 7'. Support such conduits, 1" trade size or larger, at intervals no greater than 10'.

I. Support all lighting fixtures directly from structural slab, deck or framing member.

J. Where fixtures and ceilings are such as to require fixture support from ceiling openings frames, include in the electric work the members necessary to tie back the ceiling opening frames to ceiling suspension members or slabs so as to provide actual support for the fixtures noted above.

K. As a minimum procedure, in suspended ceilings support smalls runs of circuitry (e.g., conduit not in excess of 1" trade size) from ceiling suspension members as defined above. Support larger runs of circuitry directly from structural slabs, decks or framing members.

L. Fasten electric work to building structure in accordance with the best industry practice.

M. Floor mounted equipment shall not be held in place solely by its own dead weight. Include floor anchor fastenings in all cases.

N. For items which are shown as being ceiling mounted at locations where fastenings to the building construction element above is not possible, provide suitably auxiliary channel or angle iron bridging tying to building structural elements.

O. As a minimum procedure, where weight applied to the attachment points is 100 lbs. or less, fasten to concrete and solid masonry with bolts and expansion shields.

P. As a minimum procedure, where weight applied to building attachment points exceed 100 lbs., but is 300 lbs. or less, conform to the following:

1. At field poured concrete slabs, utilize inserts with 20' minimum length slip-through steel rods, set transverse to reinforcing steel.

3.9 SPLICING AND TERMINATING WIRES AND CABLES

A. Maintain all splices and joints in removable cover boxes or cabinets where they may be easily inspected.

B. Locate each completed conductor splice or joint in the outlet box, junction box, or pull box containing it, so that it is accessible from the removal cover side of the box.

C. Join solid conductors No. 8 AWG and smaller by securely twisting them together and soldering, or by using insulated coiled steel spring "wire nut" type connectors. Exclude "wire nuts" employing non-expandable springs. Terminate conductors No. 8 AWG and smaller by means of a neat and fast holding application of the conductors directly to the binding screws or terminals of the equipment or devices to be connected.

D. Join, tap and terminate standard conductors No. 6 AWG and larger by means of solder sleeves, taps, and lugs with applied solder or by means of bolted saddle type or pressure indent type connectors, taps and lugs. Exclude connectors and lugs of the types which apply set screws directly to conductors. Where equipment or devices are equipped with set screw type terminals which are impossible to change, replace the factory supplied set screws with a type having a ball bearing tip. Apply pressure indent type connectors, taps and lugs utilizing tools manufactured specifically for the purpose and having features preventing their release until the full pressure has been exerted on the lug or connector.

E. Except where wire nuts are used, build up insulation over conductor joints to a value, equal both in thickness and dielectric strength, to that of the factory applied conductor insulation. Insulation of conductor taps and joints shall be by means of half-lapped layers of rubber tape, with an outer layer of friction tape; by means of half-lapped layers of approved plastic electric insulating tape; or by a means of split insulating casings manufactured specifically to insulate the particular connector and conductor, and fastened with stainless steel or non-metallic snaps or clips.

3.10 PULLING WIRES INTO CONDUITS AND RACEWAYS

A. Delay pulling wires or cables in until the project has progressed to a point when general construction procedures are not liable to injure wires and cables, and when moisture is excluded from raceways.

B. Utilize nylon snakes or metallic fish tapes with ball type heads to set up for pulling. In raceways 2" trade size and larger, utilize a pulling assembly ahead of wires consisting of a suitable brush followed by a 3-1/2" diameter ball mandrel.

C. Leave sufficient slack on all runs of wire and cable to permit the secure connection of devices and equipment.

D. Include circular wedge-type cable supports for wires and cables at the top of any vertical raceway longer than 20 feet. Also include additional supports spaced at intervals which are no greater than 10'. Supports shall be located in accessible pull boxes. Supports shall be of a non-deteriorating insulating material manufactured specifically for the purpose.

E. Pulling lubricants shall be used. They shall be products manufactured specifically for the purpose.

3.11 REQUIREMENTS FOR THE INSTALLATION OF JUNCTION BOXES, OUTLET BOXES AND PULL BOXES

A. Flush wall-mounted outlet boxes shall not be set back to back but shall be offset at least 12" horizontally regardless of any indication on the drawings.

B. Locate all boxes so that their removable covers are accessible without necessitating the removal of parts of permanent building structure, including piping, ductwork, and other permanent mechanical elements.

C. In conjunction with concealed circuitry, abide by one of the following instructions (as may be applicable to the conditions) in order to assure the aforementioned accessibility. (Not required for circuitry concealed by removable suspended ceiling tiles.)

D. For a small (outlet size) box on circuitry concealed in a partition or wall, locate box or fitting so that its removable cover side, (or the face of any applied raised cover) penetrates through to within 1/8" of the exposed surface of the building materials concealing the circuitry and apply a blank or device plate to suit the functional requirements.

E. For a large box on circuitry concealed in a partition, suspended ceiling, or wall, locate box totally hidden but with its removable cover directly behind an architectural access door or panel (included for the purpose, separate from the electric work) in the building construction which conceals the circuitry.

F. Include all required junction and pull boxes regardless of indications on the drawings (which, due to symbolic methods of notation, may omit to show some of them).

G. Unless noted below or otherwise specifically indicated, include a separate outlet box for each individual wiring device, lighting fixture and signal or communication system outlet component. Outlet boxes supplied attached to lighting fixtures shall not be used as replacements for the boxes specified herein.

H. Utilize an outlet box no smaller than 5" square by 2-1/2" deep.

I. Allow no fixture to be supplied from an outlet box in another room.

J. Multiple local switches indicated at a single location shall be gang-mounted in a single outlet box.

K. Install junction boxes, pull boxes and outlet boxes in conjunction with concealed circuitry.

L. Close up all unused circuitry openings in outlet boxes. Unused openings in cast boxes shall be closed with approved cast metal threaded plugs. Unused openings in sheet metal boxes shall be closed with sheet metal knock-out plugs.

M. Outlet boxes for switches shall be located at the strike side of doors. Indicate door swings are subject to field change. Outlet boxes shall be located on the basis of final door swing arrangements.

N. Boxes and plaster covers for duplex receptacles shall be arranged for vertical mounting of the receptacle.

O. Equip outlet boxes used for devices which are connected to wires of systems supplied by more than one set of voltage characteristics with barriers to separate the different systems.

P. Barriers in junction and pull boxes of outlet size shall be of the same metal as the box.

Q. Barriers in junction and pull boxes which are larger than outlet size shall be of the polyester resin fiberglass of adequate thickness for mechanical strength, but in no case less than 1/4" thick. Each barrier shall be mounted, without fastenings, between angle iron guides so that they may be readily removed.

3.12 LOCATING AND ROUTING OF CIRCUITRY

A. In general, all circuitry shall be run concealed except that it shall be run exposed where the following conditions occur:

1. Horizontally at the ceiling of permanently unfinished spaces which are not assigned to mechanical or electrical equipment.
2. Horizontally and vertically in mechanical equipment spaces.
3. Horizontally and vertically in electric equipment rooms.

B. Concealed circuitry shall be so located that building construction materials can be applied over its thickset elements without being subject to spalling or cracking.

C. All circuitry and raceways shall not be run within slabs. If field conditions requires raceways to be embedded in field-poured structural building construction concrete fill or slab shall conform to the following:

1. Where turned up or down into a wall or partition they shall, before entering same, be routed parallel for a long enough distance to assure that no relocation of the wall or partition will be necessary to conceal the required bend.
2. They shall be routed in such a manner as to coordinate with the structural requirements of the building.
3. They shall be routed in accordance with field instructions issued by the Architect where such instructions differ from specifications set forth herein.

D. Circuitry run exposed shall be routed parallel to building walls and column lines.

E. Circuitry shall be routed so as to prevent electric conductors from being subject to high ambient temperature. Minimum clearances from heated lines or surfaces shall be maintained as follows:

1. Crossing where uninsulated: 3".
2. Crossing where insulated: 1".
3. Running parallel where uninsulated: 36".
4. Running parallel where insulated: 6".

F. Circuitry shall not be run in elevator shafts, hoistways, and the like. Where outlets for trail cables, pit lights, run be level lights, and the like, are involved, only the "final connection" outlet boxes themselves shall be located within or open into, the confines of the shaft.

3.13 INSTALLING CIRCUITRY

A. The outside surface of circuitry, which is to be embedded in cinder concrete, shall be coated with asphaltum paint.

B. In runs of conduit or raceway including flexible limit the number of bends between cable access points to a total which does not exceed the maximum specified for the particular system. Where no such maximum is specified, limit the number to four (4) right angle bends or the equivalent thereof.

C. In each conduit or raceway assigned for the future pulling in of wires, include a nylon drag cord. In raceways 2" trade size and larger, the cord shall be pulled in utilizing a suitable brush, followed by an 85% diameter ball mandrel ahead of the cord in the pulling assembly. In the event that obstructions are encountered, which will not permit the drag cord to be installed, the blocked section of raceway shall be replaced and any cutting and patching of the structure involved in such replacement shall be included as part of the electric work.

D. Circuitry shall be arranged such that conductors of one feeder or circuitry carrying "going" current are not separated from conductors of the same feeder or circuitry carrying "return" current by any ferrous or other metal. Where not within raceways, all "going" and "return" current conductors of one feeder or circuit shall be laced together so as to minimize induction heating of adjacent metal components.

E. Sleeves used where circuitry is to penetrate waterproof slabs, decks and walls, shall be of a type selected to suit the water condition encountered in the field.

END OF SECTION

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

ELECTRICAL SPECIFICATIONS

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER
PROFESSIONAL ENGINEER

SHEET NUMBER:

E3.2

FIRE ALARM LEGEND

NFPA SYMBOL	TYPICAL INDUSTRY SYMBOL	DESCRIPTION / REMARKS
FACP	FACP	FIRE ALARM SYSTEM CONTROL PANEL.
FAA	FAA	FIRE ALARM SYSTEM REMOTE ANNUNCIATOR PANEL - FROM NECA 100, SYMBOL 7.006.
WP MB	WP M	FIRE ALARM SYSTEM, MASTER-BOX. PROVIDE ALL REQUIRED ACCESSORIES, ANTENNA, CABLE, ETC.
WP K	WP K	FIRE ALARM SYSTEM, WEATHER-PROOF KNOX BOX.
WP	WP	FIRE ALARM SYSTEM, WEATHER-PROOF "RED" BEACON, LOCATED AT ENTRANCE OF BUILDING MOUNTED DIRECTLY OVER "KNOX-BOX".
	S	FIRE ALARM SYSTEM, SPEAKER / STROBE DEVICE, SUB-SCRIPT INDICATES CANDELA RATING.
60cd	60cd F	FIRE ALARM SYSTEM, HORN / STROBE DEVICE, SUB-SCRIPT INDICATES CANDELA RATING.
WP	WP F	FIRE ALARM SYSTEM, WEATHER-PROOF HORN / STROBE DEVICE, LOCATED ON THE EXTERIOR OF THE BUILDING AT THE ENTRANCE / LOCATION OF FACP.
15cd	15cd	FIRE ALARM SYSTEM STROBE. SUB-SCRIPT INDICATES CANDELA RATING.
M	F	FIRE ALARM SYSTEM MINI HORN. ALL STROBES SHALL BE SYNCHRONIZED AND COMPLY WITH ADA.
LF M	LF F	FIRE ALARM SYSTEM "LOW FREQUENCY" HORN. ALL STROBES SHALL BE SYNCHRONIZED AND COMPLY WITH ADA.
P	F	FIRE ALARM SYSTEM, PULL STATION, PROVIDE WITH STOPPER II PROTECTIVE COVER AND MOUNTED SO THAT THE OPERABLE PART OF THIS DEVICE IS 48" ABOVE FINISHED FLOOR.
R	R	FIRE ALARM SYSTEM, RELAY.
AIM	MM	FIRE ALARM MONITOR MODULE.
AOM	CM	FIRE ALARM CONTROL MODULE.

NFPA SYMBOL	TYPICAL INDUSTRY SYMBOL	DESCRIPTION / REMARKS
	S	FIRE ALARM SYSTEM, SMOKE DETECTOR.
R	SH	FIRE ALARM SYSTEM, COMBINATION SMOKE / (RATE-OF-RISE) HEAT DETECTOR.
CO	S CO	FIRE ALARM SYSTEM, CARBON MONOXIDE DETECTOR.
P	S	FIRE ALARM SYSTEM, DUCT SMOKE DETECTOR LOCATED IN THE SUPPLY & RETURN DUCTWORK OF HVAC UNITS WITH 2000 CFM (OR) GREATER.
	DH	FIRE ALARM SYSTEM, DOOR HOLDER.
R	135° R/R H	FIRE ALARM SYSTEM, RATE-OF-RISE TEMPERATURE HEAT DETECTOR, SUB-SCRIPT INDICATES TEMPERATURE RATING. (SUITABLE FOR 50'-0" "ON CENTER" MOUNTING)
F	190° FT H	FIRE ALARM SYSTEM, FIXED TEMPERATURE HEAT DETECTOR, SUB-SCRIPT INDICATES TEMPERATURE RATING. (SUITABLE FOR 50'-0" "ON CENTER" MOUNTING)
R/F	ATTIC RR H	FIRE ALARM SYSTEM, "CONVENTIONAL" TYPE, RATE-OF-RISE HEAT DETECTOR INSTALLED IN ATTIC SPACE. (SUITABLE FOR 50'-0" "ON CENTER" MOUNTING)
	FS	SPRINKLER SYSTEM FLOW SWITCH BY OTHERS. CONTRACTOR SHALL PROVIDE MONITOR MODULE TO TIE INTO FIRE ALARM SYSTEM. COORD. TIE-IN.
	TS	SPRINKLER SYSTEM TAMPER SWITCH BY OTHERS. CONTRACTOR SHALL PROVIDE MONITOR MODULE TO TIE INTO FIRE ALARM SYSTEM. COORD. TIE-IN.
	PS	SPRINKLER SYSTEM PRESSURE SWITCH BY OTHERS. CONTRACTOR SHALL PROVIDE MONITOR MODULE TO TIE INTO FIRE ALARM SYSTEM. COORD. TIE-IN.

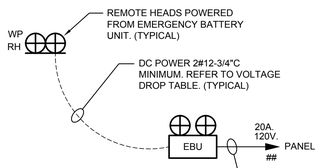
NOTES:

CONTRACTOR SHALL CONTACT AND COORDINATE WITH LOCAL MANUFACTURER'S REPRESENTATIVE, FOR ALL SPECIFIC INSTALLATION AND EQUIPMENT INFORMATION REQUIRED. (OR EQUAL) FIRE ALARM SYSTEM SHALL BE APPROVED DURING SUBMITTAL REVIEW.

REFER TO FLOOR PLANS FOR EXACT NUMBER OF FIRE ALARM DEVICES.

EMERGENCY LIGHTING NOTE:

ALL NEW EMERGENCY BATTERY UNITS AND EXIT SIGNS, SHALL BE TIED INTO LOCAL AREA, 120 VOLT LIGHTING CIRCUIT AHEAD OF ANY / ALL SWITCHING. (TYPICAL)



NOTES:

1. E.C. SHALL PROVIDE CIRCUIT BREAKER "LOCK-ON" DEVICE FOR ALL CIRCUITS TO EMERGENCY BATTERY UNITS (EBU). (TYPICAL)
2. DETAIL IS TYPICAL TO ALL DRAWINGS, UON.

TYPICAL EMERGENCY LIGHTING CONNECTION DETAIL

NOT TO SCALE

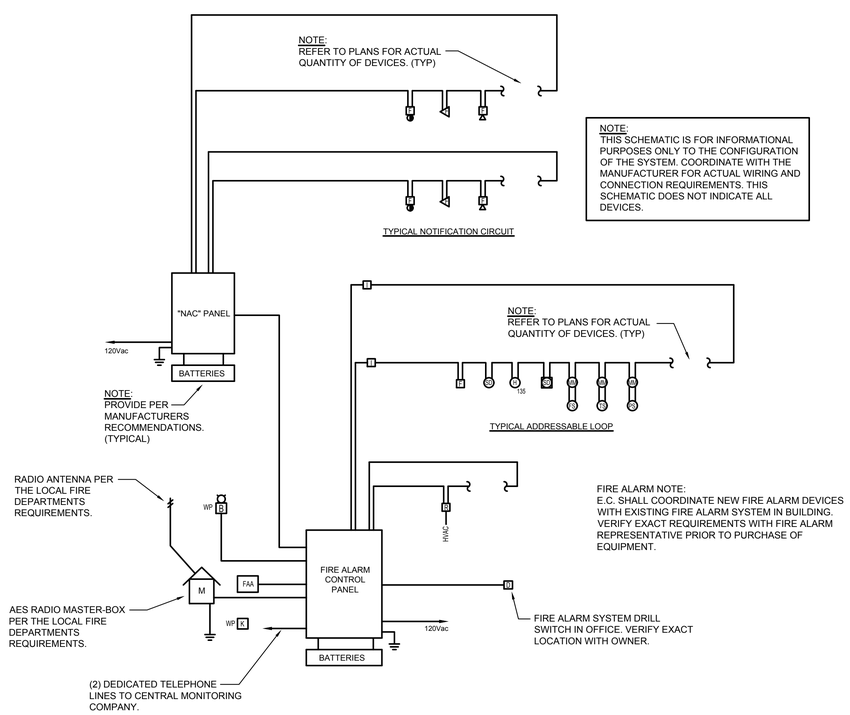
EMERGENCY LIGHTING 6-VOLT SYSTEM VOLTAGE DROP TABLE

TOTAL WATTS ON WIRE RUN	WIRE GAUGE 12	10	8	6
6	94	150	238	379
7	81	129	204	325
8	70	112	179	284
10	56	90	143	227
12	44	70	112	178
14	40	64	102	162
16	33	53	84	134
18	30	47	75	119
20	28	45	71	114
21	27	43	68	108
24	24	38	60	95
25	21	34	54	86
30	19	30	48	76
35	15	25	39	63
40	13	21	33	53
48	11	17	28	44
50	11	17	27	43
75	7	11	18	29
100	5	8	14	21
125	4	7	11	17
150	3	5	9	14
175	3	5	8	12
200	2	4	6	10
225	2	4	6	10
250	2	3	5	9

MAXIMUM LENGTH OF RUN IN FEET

EMERGENCY LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	SELF-CONTAINED EMERGENCY, WALL MOUNTED LIGHTING FIXTURE WITH DUAL LIGHTING HEADS. COORDINATE WITH E.C. TO PROVIDE ALL NECESSARY ACCESSORIES FOR WIRING DEVICES. MFG. MULE, CAT. #SQ-80-LED-W	WALL
EBU	SELF-CONTAINED EMERGENCY, WALL MOUNTED LIGHTING FIXTURE WITH DUAL LIGHTING HEADS & SPARE CPACITY FOR REMOTE LIGHTING HEADS. COORDINATE WITH E.C. TO PROVIDE ALL NECESSARY ACCESSORIES FOR WIRING DEVICES. MFG. MULE, CAT. #SQ-80-LED-W-REM	WALL
	(LINE VOLTAGE) WALL MOUNTED LIGHTING FIXTURE. COORDINATE WITH E.C. TO PROVIDE ALL NECESSARY ACCESSORIES FOR WIRING DEVICES. MFG. MULE, CAT. #RLED-2-3.6V	
WP	WEATHER PROOF (LINE VOLTAGE) WALL MOUNTED LIGHTING FIXTURE. COORDINATE WITH E.C. TO PROVIDE ALL NECESSARY ACCESSORIES FOR WIRING DEVICES. MFG. MULE, CAT. #RLED-2-WP-3.6V	UNIVERSAL (VERIFY IN FIELD)
WALL (OR) CLG.	RECESSED / HIDDEN EMERGENCY WALL MOUNTED LIGHTING FIXTURE WITH INTEGRAL BATTERY BACK-UP & FLIP-OUT LIGHTING HEADS. E.C. TO PROVIDE ALL NECESSARY ACCESSORIES. EQUAL TO MULE, CAT. #CVT-35-NC-2-LED.	
	LOW VOLTAGE POWER WIRING BETWEEN EMERGENCY BATTERY UNITS AND REMOTE LIGHTING HEADS. REFER TO "EMERGENCY LIGHTING CONNECTION DETAIL" FOR WIRING REQUIREMENTS. CONTRACTOR TO VERIFY ALL ROUTING, LENGTHS AND TERMINATIONS OF WIRING .	UNIVERSAL (VERIFY IN FIELD)
X	SINGLE / DOUBLE FACE LED LIGHTED EXIT SIGN WITH EMERGENCY BATTERY BACK-UP. MFG. MULE, CAT. #MXBRU. PROVIDE ARROWS AS INDICATED ON PLANS, FIELD VERIFY WALL (OR) CEILING MOUNTING.	WALL / CLG.
X1	SINGLE FACE LED EDGE-LIT EXIT SIGN WITH EMERGENCY BATTERY BACK-UP. MFG. MULE, CAT. #PVT-2-B-R-U-BA-(ARROWS). PROVIDE ARROWS AS INDICATED ON PLANS, FIELD VERIFY WALL (OR) CEILING MOUNTING.	WALL / CLG.
X2	DOUBLE FACE LED EDGE-LIT EXIT SIGN WITH EMERGENCY BATTERY BACK-UP. MFG. MULE, CAT. #PVT-2-B-R-U-BA-(ARROWS). PROVIDE ARROWS AS INDICATED ON PLANS, FIELD VERIFY WALL (OR) CEILING MOUNTING.	WALL / CLG.
X3	COMBINATION SINGLE / DOUBLE FACE LED LIGHTED EXIT SIGN WITH EMERGENCY LIGHTING HEADS, BATTERY BACK-UP & SPARE CAPACITY FOR REMOTE LIGHTING HEADS. MFG. MULE, CAT. #SQC-LED-U-R-WW-REM. PROVIDE ARROWS AS INDICATED ON PLANS, FIELD VERIFY WALL (OR) CEILING MOUNTING.	WALL / CLG.



NOTE:
THIS SCHEMATIC IS FOR INFORMATIONAL PURPOSES ONLY TO THE CONFIGURATION OF THE SYSTEM. COORDINATE WITH THE MANUFACTURER FOR ACTUAL WIRING AND CONNECTION REQUIREMENTS. THIS SCHEMATIC DOES NOT INDICATE ALL DEVICES.

FIRE ALARM NOTE:
E.C. SHALL COORDINATE NEW FIRE ALARM DEVICES WITH EXISTING FIRE ALARM SYSTEM IN BUILDING. VERIFY EXACT REQUIREMENTS WITH FIRE ALARM REPRESENTATIVE PRIOR TO PURCHASE OF EQUIPMENT.

TYPICAL FIRE ALARM SCHEMATIC

NOT TO SCALE

FIRE ALARM NOTES

1. E.C. SHALL PROVIDE CIRCUIT BREAKER LOCK-ON DEVICES FOR FACP CIRCUIT.
2. E.C. SHALL FURNISH AND INSTALL REMOTE INDICATING LIGHTS/TEST SWITCHES FOR DUCT SMOKE DETECTORS.
3. REFER TO FLOOR PLANS FOR EXACT NUMBER OF DEVICES AND CANDELA RATINGS.
4. COLOR CODE WIRING PER THE LATEST EDITION OF THE STATE FIRE CODE.
5. SPLICES WILL NOT BE ALLOWED. WIRENUTS WILL NOT BE ALLOWED.
6. RED PAINTED TERMINAL CABINETS & BOXES WITH LOCKABLE COVERS SHALL BE PROVIDED AT ALL JUNCTION POINTS.
7. AFC FIRE ALARM / CONTROL CABLE TYPE MC (UL LISTED) MAY BE USED ABOVE CEILINGS AND IN CONCEALED AREAS WHERE ACCEPTABLE TO THE LOCAL AUTHORITY HAVING JURISDICTION. EXPOSED AREAS SHALL BE EMT, PAINTED PER ARCHITECTS DIRECTION. ALL CONDUCTORS SHALL BE A MINIMUM OF #16AWG SOLID COPPER, TYPE THHN, THWN OR TFN. ALL WIRING SHALL RUN CONTINUOUSLY FROM DEVICE TO DEVICE.
8. THE CONTRACTOR AT COMPLETETION OF THE FIRE ALARM SYSTEM SHALL TEST THE ENTIRE SYSTEM PER THE LOCAL FIRE DEPARTMENTS REQUIREMENTS. THE CONTRACTOR SHALL REPLACE OR FIX ANY PART OF THE SYSTEM NOT PROPERLY WORKING.
9. THE MINIMUM SEPARATION BETWEEN THE OUTGOING AND RETURN FIRE ALARM CIRCUITS SHALL BE A MINIMUM OF 1-FOOT VERTICALLY AND 4-FEET HORIZONTALLY IN ACCORDANCE WITH THE PROVISIONS OF NFPA-72.
10. ALL FIRE ALARM SYSTEM COMPONENTS & MOUNTING HEIGHTS SHALL COMPLY WITH ADA REQUIREMENTS.
11. E.C. SHALL PROVIDE ANY AND ALL AUXILARY EQUIPMENT IN ORDER TO PROVIDE A COMPLETE, PROPERLY FUNCTIONING SYSTEM. COODINATE REQUIREMENTS WITH LOCAL MANUFACTURERS REP.
12. ALL FIRE ALARM STROBE SIGNAL DEVICES SHALL BE SYNCHRONIZED TYPE DEVICES AND COMPLY WITH ADA REQUIREMENTS.
13. NO T-TAPPING OF FIRE ALARM WIRING SHALL BE ALLOWED. (TYPICAL)
14. ALL FIRE ALARM WIRING & RACEWAY SHALL BE SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT BE LOCATED AS TO BE DAMAGED BY BUILDING USE.
15. PROVIDE A WEATHER-PROOF KNOX-BOX 3200 SERIES ON THE EXTERIOR OF THE BUILDING. COORDINATE EXACT LOCATION WITH LOCAL FIRE DEPARTMENT.
16. ALL SMOKE DETECTORS SHALL BE MOUNTED ON THE CEILING AND UL LISTED FOR CEILING MOUNTING AND LOCATED NOT LESS THAN 12-INCHES FROM ANY WALL. DETECTORS SHALL NOT BE IN A DIRECT AIR FLOW NOR CLOSER THAN 3-FEET FROM ANY AIR SUPPLY DIFFUSER. (TYPICAL)
17. UL LISTED INSULATED THROAT, SET SCREW CONNECTORS SHALL BE USED WITH MC CABLE INSTALLATIONS, (CLAMP CONNECTORS ARE NOT ALLOWED). A CABLE CUTTING TOOL WITH CONTROLLED DEPTH OF CUT SHALL BE USED IN ALL MC CABLE INSTALLATIONS.
18. FAULT ISOLATION MODULES SHALL BE INSTALLED FOR EVERY 25 DEVICES AND IN NO CASE SHALL THE LENGTH OF AN AREA BE DISABLED BY A WIRE-TO-WIRE SHORT CIRCUIT FAULT EXCEED 200' IN ANY ONE DIRECTION. WHERE A SINGLE CIRCUIT SERVES MORE THAN ONE FLOOR; FAULT ISOLATION MODULES SHALL BE INSTALLED TO PREVENT A WIRE-TO-WIRE SHORT CIRCUIT FAULT ON ONE FLOOR TO DISABLE THE CIRCUIT ON ANOTHER FLOOR.
19. WIRING FOR THE FIRE ALARM SYSTEM SHALL BE CLASS "A".
20. REFER TO THE SPECIFICATIONS FOR THE "SEQUENCE OF OPERATION" AND ADDITIONAL INFORMATION.
21. E.C. SHALL PRODUCE A MANUFACTURER'S COMPLETE FIRE ALARM SYSTEM ONE-LINE DIAGRAM AND ADDRESS PLAN DURING THE SHOP DRAWING SUBMITTAL PROCESS.
22. E.C. SHALL PROVIDE ALARM INDICATORS AND HVAC EQUIPMENT OVERRIDE SWITCHES MOUNTED IN UTILITY ROOMS WITH FIRE ALARM PANEL. ALL SWITCHES AND HEATING UNITS SHALL BE CLEARLY LABELED BY NUMBERS AS PER PLANS.
23. E.C. SHALL OBTAIN FROM THE LOCAL FIRE DEPARTMENT, A LIST OF FIRE ALARM ZONE CODES AND DESCRIPTIONS AND PROGRAM INTO FIRE ALARM SYSTEM AS REQUIRED.

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - calic.#c-31127 - f.llc.#ar 98187 - mdlic.# 19161
mdlic.#p 22080400 - pdlic #m 40077 - txlic.# 27195 - wdlic.# 1020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds
ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

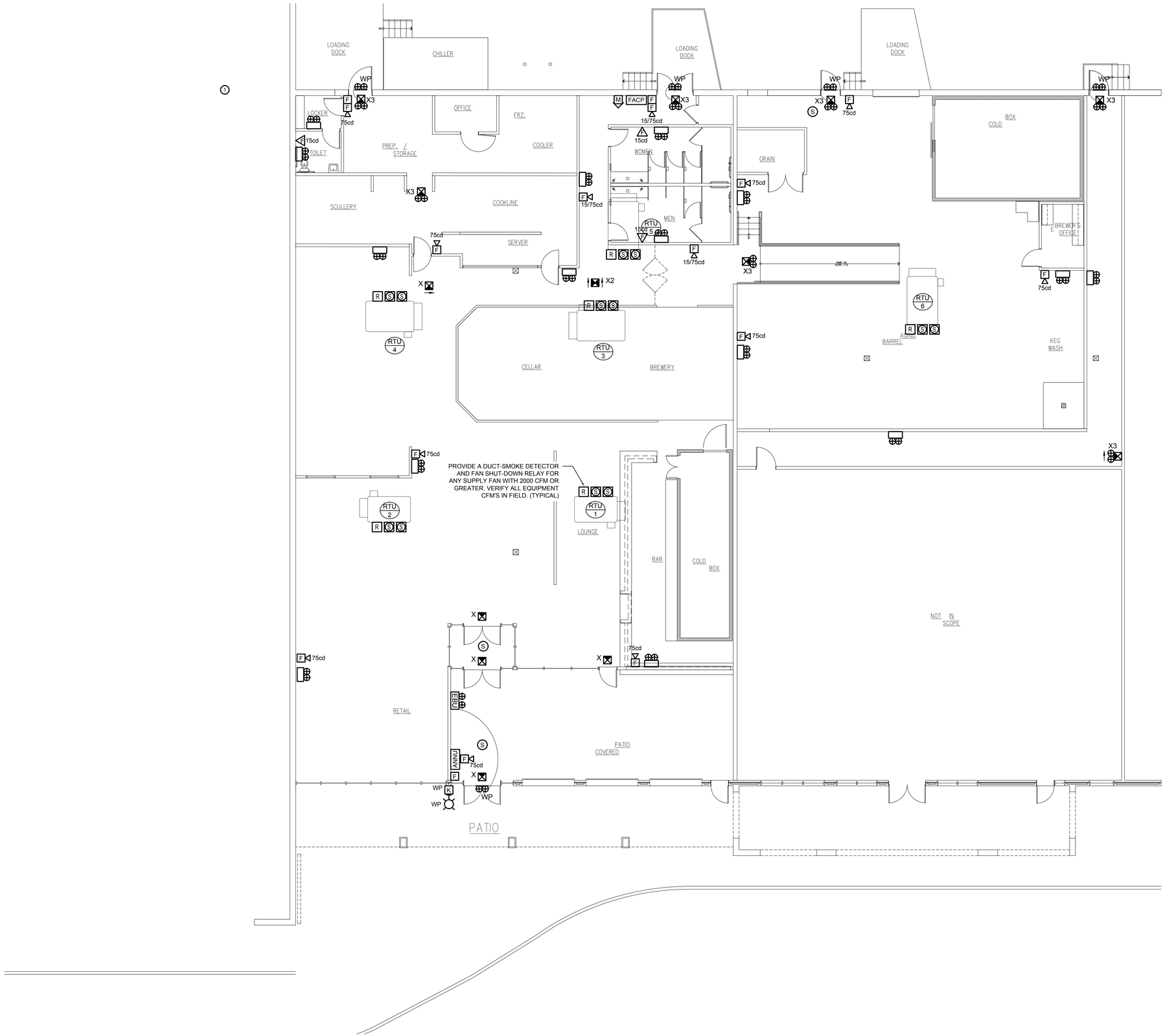
LIFE SAFETY LEGENDS & NOTES

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER PE-2009017669
PROFESSIONAL ENGINEER

SHEET NUMBER:

LS0.0



LIGHTING FLOOR PLAN

SCALE: 1/8" = 1'-0"

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
arch.# 42885 - calif.#c-31127 - fl lic.#ar 98187 - mo lic.# 19163
mo lic.#p 2008040910 - pa lic.# 40577 - tx lic.# 27195 - wa lic.# 11920

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Eureka, MO 63025

CONSULTANT:

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LIFE SAFETY FLOOR PLAN

STAMP:

STATE OF MISSOURI
RAYMOND W. DUSSEAULT III
NUMBER
PROFESSIONAL ENGINEER

SHEET NUMBER:

LS1.0

FIRE PROTECTION SPECIFIC NOTES:

1. BIDDERS SHALL UTILIZE A COMPLETE SET OF FIRE PROTECTION BIDDING DOCUMENTS IN PREPARING OF BID INCLUDING DRAWINGS AND SPECIFICATIONS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ERRORS OR MISINTERPRETATIONS RESULTING FROM THE USE OF INCOMPLETE SETS OF FIRE PROTECTION BIDDING DOCUMENTS.

   THE FIRE PROTECTION BIDDING DOCUMENTS SHALL INCLUDE:

   DRAWINGS
   FP0.0 TO FP1.3 FIRE PROTECTION LEGEND,GENERAL NOTES & DETAILS, FLOOR PLAN AND SPECIFICATION

2. THE WORK COVERED CONSISTS OF FURNISHING ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND READY FOR CONTINUOUS OPERATION, THE FIRE PROTECTION SYSTEMS, APPARATUS AND EQUIPMENT FOR THIS PROJECT.

3. ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE FIRE PROTECTION SUB-CONTRACT, LABOR AND TESTING PERFORMED HEREIN SHALL BE IN COMPLETE ACCORDANCE WITH THE STATE BUILDING CODE, ALL LOCAL CODES AND REGULATIONS, NATIONAL FIRE PROTECTION ASSOCIATION, INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.

4. ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURED.

5. PROVIDE A COMPLETE HYDRAULICALLY CALCULATED MODIFIED SPRINKLER SYSTEM AS INDICATED ON DRAWINGS. ALL WORK SHALL BE IN STRICT CONFORMANCE WITH NFPA 13 AND INCLUDING ALL RULES AND REGULATIONS OF THE STATE FIRE MARSHAL'S OFFICE AND LOCAL FIRE DEPARTMENT.

6. THE SPRINKLER CONTRACTOR SHALL PREPARE WORKING DRAWINGS OF THE SPRINKLER WORK AND OBTAIN APPROVALS FROM THE LOCAL FIRE DEPARTMENT PRIOR TO INSTALLATION.

10. ROUTING OF SPRINKLER MAINS, BRANCHES AND HEADS SHALL BE THOROUGHLY COORDINATED WITH OTHER TRADES AND BUILDING STRUCTURE PRIOR TO SUBMISSION OF COORDINATED SHOP DRAWINGS.

11. SPRINKLER HEAD FINISHES SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

    SPRINKLER HEADS IN AREAS WITH NO FINISHED CEILING SHALL BE UPRIGHT BRASS TYPE LOCATED AS HIGH AS POSSIBLE

    SPRINKLER HEADS IN FINISHED AREAS SHALL BE CHROME PLATED RECESSED TYPE.

12. MISCELLANEOUS DISCREPANCIES OR OMMISSIONS WHICH MIGHT APPEAR ON THE PLANS OR SPECIFICATIONS WILL NOT RELIEVE THE FIRE PROTECTION SUB-CONTRACTOR OF CODE COMPLIANCE.

FIRE PROTECTION GENERAL NOTES

A. THE FIRE PROTECTION WORK COVERED HEREIN SHALL BE INSTALLED BY A LICENSED FIRE PROTECTION SUB-CONTRACTOR HIRED BY THE GENERAL CONTRACTOR TO PROVIDE ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND MAKE READY FOR CONTINUOUS OPERATION, THE PLUMBING SYSTEMS, APPARATUS AND EQUIPMENT FOR THIS PROJECT.

B. ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE FIRE PROTECTION CONTRACT, LABOR AND TESTING PERFORMED HEREIN SHALL BE IN COMPLETE ACCORDANCE WITH THE STATE BUILDING CODE, ALL LOCAL CODES AND REGULATIONS, NATIONAL FIRE PROTECTION ASSOCIATION, INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.

C. ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURED.

D. SHOP DRAWINGS: SHOP DRAWINGS OF ALL SPECIFIED HARDWARE AND APPARATUS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

E. GUARANTEE: ALL MATERIALS AND EQUIPMENT FURNISHED AND INSTALLED UNDER THIS SPECIFICATION SHALL BE GUARANTEE IN WRITING FOR ONE (1) YEAR FROM THE DATE OF ACCEPTANCE OF THE BUILDING BY THE OWNER.

F. INSPECTION: ALL WORK SHALL BE SUBJECT TO THE INSPECTION OF THE OWNER, THE ARCHITECT AND SUCH OTHER INSPECTORS HAVING JURISDICTION. A PROPERLY EXECUTED CERTIFICATE OF INSPECTION SHALL BE PROVIDED.

G. EXAMINATION OF SITE: THE FIRE PROTECTION SUBCONTRACTOR, BEFORE SUBMITTING PRICES OR BEGINNING WORK, SHALL THOROUGHLY EXAMINE THE SITE AND CONTRACT DOCUMENTS. NO CLAIM FOR EXTRA COMPENSATION WILL BE RECOGNIZED IF DIFFICULTIES WHICH AN EXAMINATION OF SITE CONDITIONS AND CONTRACT DOCUMENTS PRIOR TO EXECUTING CONTRACT WOULD HAVE REVEALED.

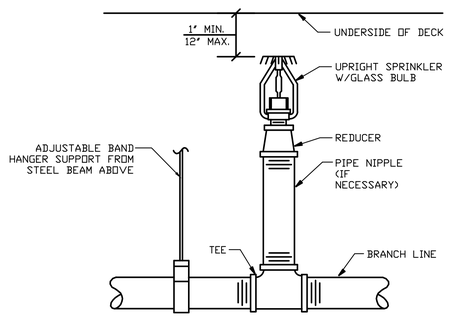
H. COORDINATION: COORDINATE ALL WORK INSTALLED UNDER THIS SPECIFICATION WITH THAT OF ALL OTHER TRADES.

I. PROTECTION OF PROPERTY: PROTECT ALL NEW AND EXISTING WORK BEFORE, DURING AND AFTER INSTALLATION.

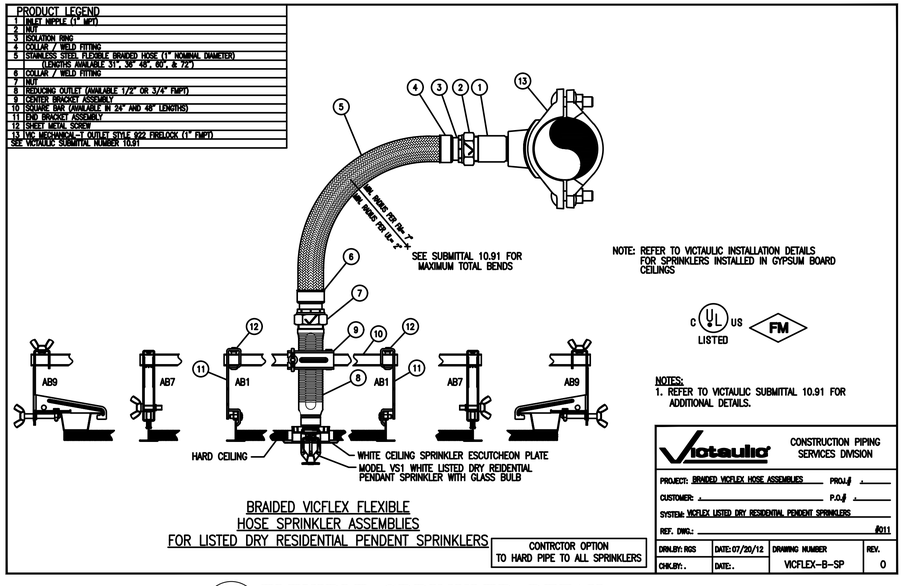
J. CERTIFICATES OF APPROVAL: UPON COMPLETION OF ALL WORK, THE FIRE PROTECTION SUBCONTRACTOR SHALL FURNISH, IN DUPLICATE, CERTIFICATES OF INSPECTIONS FROM ALL INSPECTORS AND AUTHORITIES HAVING JURISDICTION.

K. ALL VALVES SHALL BE PROVIDED WITH A SUPERVISORY SWITCH.
SUPERVISORY SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE FIRE PROTECTION SUBCONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR. SUPERVISORY SWITCH SHALL BE POTTER ROEMER 6220 OR APPROVED EQUAL.

L. FLOW SWITCHES SHALL BE INSTALLED WHERE REQUIRED PER CODE.
FLOW SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE FIRE PROTECTION SUB CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR. FLOW SWITCH SHALL BE POTTER ROEMER 6200 SERIES, RED, TAMPER-PROOF SWITCH HOUSINGS WITH FLOW PADDLE, ADJUSTABLE PNEUMATIC RETARD SETTING OR APPROVED EQUAL.



1 FP000 UPRIGHT SPRINKLER DETAIL
SCALE: NONE



BRAIDED VICFLEX FLEXIBLE
HOSE SPRINKLER ASSEMBLIES
FOR LISTED DRY RESIDENTIAL PENDENT SPRINKLERS

CONTRCTOR OPTION
TO HARD PIPE TO ALL SPRINKLERS

2 FP000 FLEXIBLE SPRINKLER DETAIL
SCALE: NONE (FOR WET SYSTEM ONLY)

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - ca.lic.#c.31127 - fl.lic.#ar 98187 - md.lic.# 19161
mo.lic.#p 2008042450 - pa.lic.#rm 40577 - tx.lic.# 27195 - wa.lic.# 21020

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

EDS ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

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NO.	DATE	DESCRIPTION

SHEET TITLE:

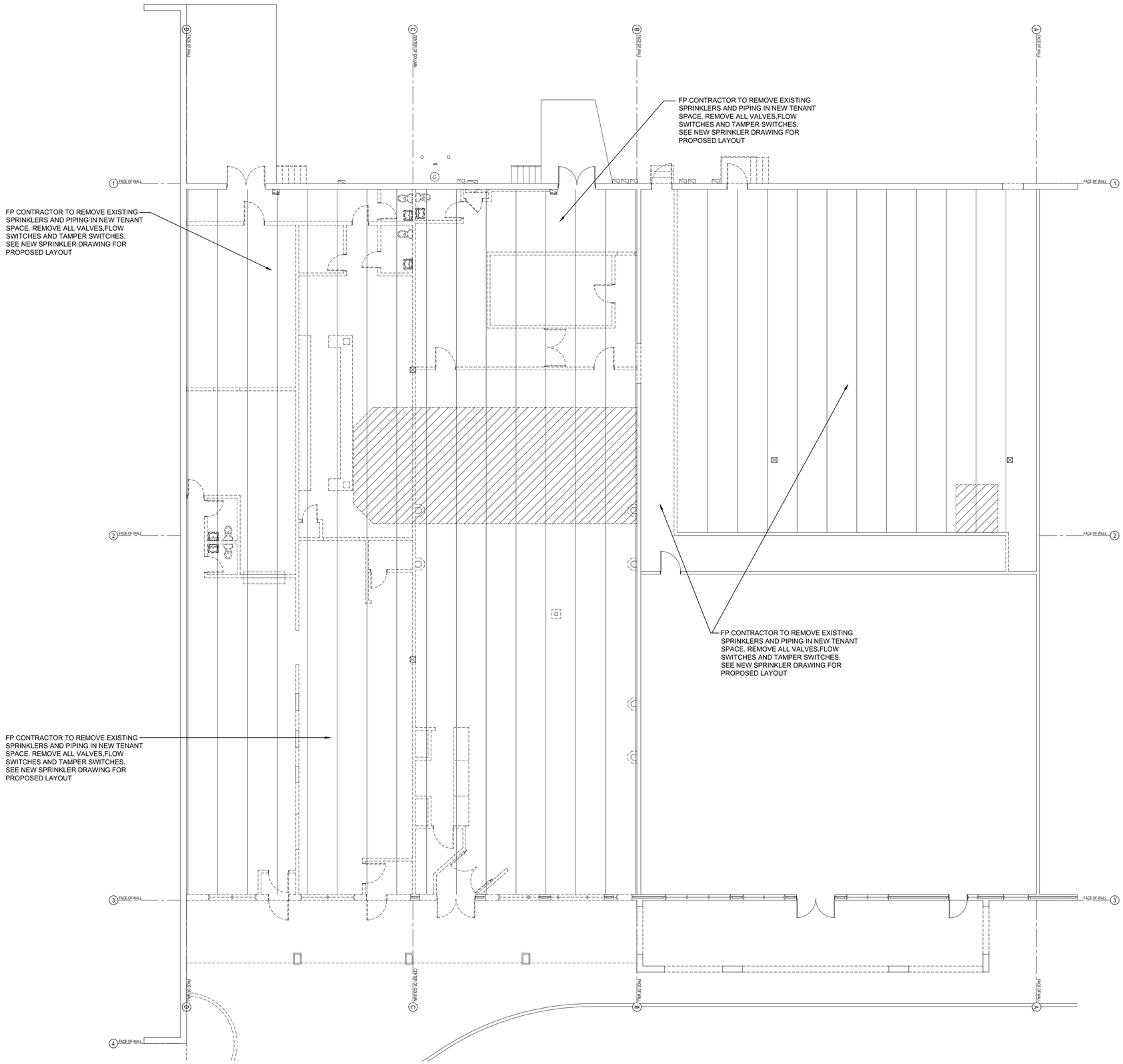
FIRE PROTECTION LEGEND NOTES AND DETAILS

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

FP0.0



FIRE PROTECTION DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
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ms lic.#p 20080249 - pa lic.#no 40077 - tn lic.# 27195 - wa lic.# 11020

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108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

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ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
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ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

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SHEET TITLE:

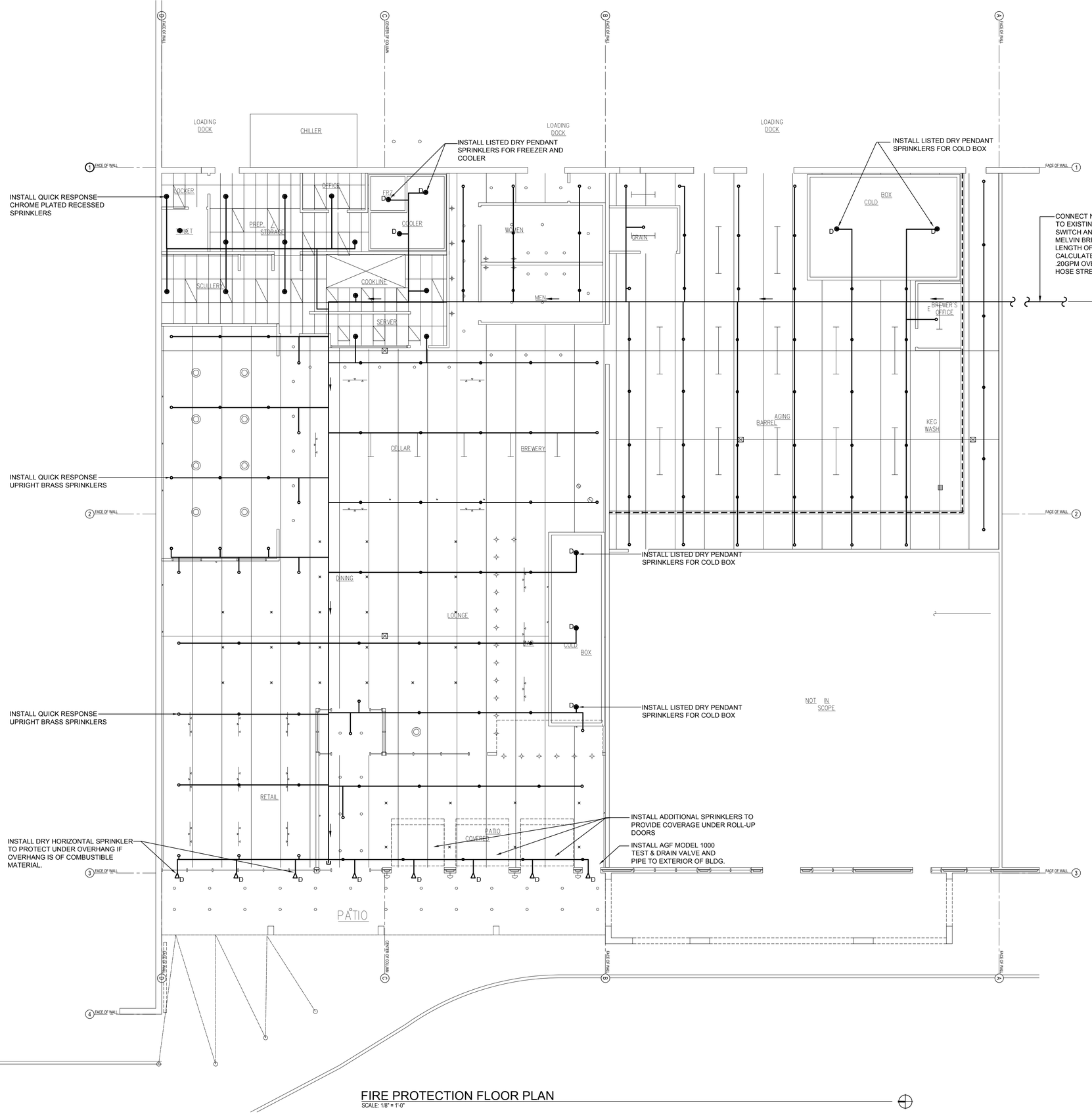
FIRE PROTECTION DEMOLITION PLAN

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008012197
PROFESSIONAL ENGINEER

SHEET NUMBER:

FP1.1



FIRE PROTECTION FLOOR PLAN

SCALE: 1/8" = 1'-0"

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4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 42885 - ca.lic.#c.31127 - f.lic.#ar 98187 - md.lic.# 19161
mo.lic.#o 2008040 - pa.lic.#rm 40077 - tx.lic.# 27195 - va.lic.# 1102

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

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FIRE PROTECTION FLOOR PLAN

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
PE-2008021197
PROFESSIONAL ENGINEER

SHEET NUMBER:

FP1.2

SECTION 15300 - FIRE PROTECTION

1.1 DESCRIPTION OF WORK

A. The work under this section shall consist of furnishing all labor, materials, equipment, supervision, transportation, construction, facilities, devices and incidentals necessary to provide complete fire protection systems as hereinafter described and as indicated on the drawings, including, but not limited to the following:

1. Install a new wet sprinkler system throughout the new tenant space.
2. Preparation of complete and detailed working plans in accordance with the latest editions of NFPA 13
3. Current hydrant flow test.
4. Hydraulic calculations.
5. Submit drawings to insurer and local authorities and obtain necessary approvals, permits and certificates.
6. Sprinkler heads, piping, fittings, hangers and valves.
7. Sleeves, escutcheons, hangers and supports.
8. Fire safing of new pipe penetrations through rated floor and wall assemblies.
9. Testing.
10. Core drilling
11. Coordination of drawings.
12. Access panels

B. Furnish and install a complete automatic sprinkler system within the basement, hydraulically designed on computer program.

The sprinkler system shall be installed in accordance with the following design densities:

Light Hazard Occupancies
Office and toilet rooms, dining seating
.10gpm/1,500 sq. ft
Ordinary Hazard Group I
Kitchen cooking areas, storage & mechanical rooms
.15gpm/1,500 sq. ft.
Ordinary Hazard Group II
Retail areas (mercantile) .20gpm/2,000 sq. ft.

C. The complete fire protection systems shall be flushed, fully tested, accepted by the local fire department, and in operation, prior to final acceptance by the Engineer. Flush fire service and fire protection piping prior to connecting to new piping and equipment.

1.2 CODES, ORDINANCES AND PERMITS

A. All material and work provided shall by in accordance with the following codes and standards:

1. NFPA Pamphlets 13 and 25 latest editions.
2. State Fire Safety Code
3. State Department of Public Safety
4. Standards of the Underwriter's Laboratories (UL)
5. State and Local Building Codes
6. Local Fire Department/Fire Marshal requirements
7. Local Water Department requirements
8. Owner's insurance company

B. Where the contract documents indicate more stringent requirements than the above codes and ordinances, the contract documents shall take precedence.

C. File all documents, pay all fees and secure all inspections and approvals necessary for the work of this section.

D. It shall be the responsibility of this Contractor to prepare drawings showing complete and fully coordinated sprinkler head and piping layouts in accordance with the requirements of NFPA and those authorities having jurisdiction over this project. It shall also be the responsibility of the Sprinkler Subcontractor to obtain all approvals from local authorities and the Owner's Insurance Underwriter prior to submission to the Architect. Revise head location as required for areas that have ornate ceiling work or as requested by the Architect. Provide side wall heads in area's as instructed.

1.3 SHOP DRAWINGS

A. Within thirty (30) days after the date of notice to proceed, and before purchasing any materials or equipment, submit for approval a complete list, in six (6) copies, of all materials to be incorporated in the work.

B. After the list has been processed, submit six (6) complete sets of shop drawings of all equipment. These shop drawing submittals shall be submitted within thirty (30) days after the processing date of the original submittal.

C. The approval of the equipment does not relieve the Subcontractor of responsibility of shop drawing errors related to details, sizes, quantities, wiring diagram arrangements and dimensions which deviate from the Specifications, and/or job conditions as they exist.

D. Refer to General Requirements for the substitutions of equipment and submittal of shop drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in, or additional connections, piping, supports, or construction, same shall be provided. The Sprinkler Subcontractor to assume cost and entire responsibility thereof.

1.4 RECORD DRAWINGS

A. All costs related to the following requirements shall be paid for by this Subcontractor.

B. Purchase and maintain at the job site a complete and separate black line set of prints of the Contract Drawings on which accurately indicate daily progress by coloring materials and apparatus as installed. Schedules shall be modified to reflect data consistent with that of the installed equipment. Clearly show all changes to the work as a result of change orders, instructions issued by the Architect or conditions encountered in the field. Accurately indicate the location, size, type and elevation of new utilities and their relationship to existing utilities.

C. The marked up and colored in prints will be used as a guide for determining the progress of the work installed. They shall be inspected weekly and shall be corrected immediately if found inaccurate or incomplete. Requisitions for payment will not be approved until the Drawings are accurate and up_to_date.

D. At the completion of the work, submit one (1) set of marked up prints for review and comment. After review and comment, these marked up prints shall be used in the preparation of the Record Drawings. The Record Drawings shall consist of these prints (corrected) previously indicated, as well as two (2) CAD disks of the Final Coordination Drawings, corrected on the basis of the Architect/Engineer's final comments.

1.5 WORKING PLANS

A. Submit Working Plans and hydraulic calculations signed and sealed by a Professional Engineer licensed to practice fire protection state in which project is located, to authorities that have jurisdiction, including: Architect, Insurance Underwriter and Fire Department

B. Working plans and computerized hydraulic calculations shall be prepared by a registered professional engineer.

C. Working plans shall be at least 1/8 in. = 1' 0" scale on sheets of uniform size. Working plans shall show all data required by NFPA 13. Submit working plans and hydraulic calculations in one complete package.

D. Working plans will be subject to Architect's final approval. Submit to Architect after review by other authorities. If necessary to submit plans to Architect before review by other authorities, identify authorities that have not reviewed plans and resubmit for final approval when review by all parties is complete.

1.6 MAINTENANCE MANUALS

A. Maintenance Manuals: At the completion of the project, turn over to the General Contractor four (4) complete manuals in 3-ring binders, indexed, containing the following:

1. Complete shop drawings of all material and equipment in Part 2 of this section.
2. Operation description of all systems.
3. Names, addresses and telephone numbers of all suppliers of system components.
4. Preventative maintenance instruction for all systems.
5. Spare parts list of all system components.
6. Copies of all valve charts.

1.7 GUARANTEE

A. The Contractor shall obtain in the General Contractor's and Owner's name, the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which this Contractor may have by law or other provisions of the Contract Documents. The guarantee shall be for a period of one (1) year minimum from the date of acceptance or final payment.

1.9 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the Architect any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. Coordination drawings shall be initiated under this section of the Specifications. It is their responsibility for preparation of project coordination drawings showing the installation of all equipment, piping, ducts and accessories to be provided under this of the Specifications. These drawings shall be prepared at not less than 3/8 in. = 1 ft. scale, and shall show building room layouts, structural elements, ductwork and lighting layouts of function. A reproducible copy of each drawing prepared shall then be submitted to each Contractor who shall be responsible to coordinate his equipment and systems and shall show these on the drawings submitted. After this Contractor has fulfilled his obligation, he shall return the drawings to the HVAC Contractor. After each drawing has been coordinated between trades, each trade shall sign each drawing, indicating acceptance of the installation. The HVAC Contractor shall then print the coordination original and these prints submitted through the General Contractor to the architect for review and comment, similar to shop drawings. Comments made on these drawings shall result in a correction and re-submittal of the drawings.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

D. The cost of preparing and reproducing these Drawings will be included as part of this Contract.

E. Coordination Drawings shall not be construed as replacing any Shop Drawings.

PART 2 - PRODUCTS

2.1 PIPING AND FITTINGS

A. Schedule 40 black steel for piping 2" and smaller. Schedule 10 black steel for piping 2-1/2" and larger.

B. Pipe fittings and couplings used in the sprinkler systems shall be of the materials indicated above and shall be designed to withstand a working pressure of not less than 175 PSI.

2.2 HANGERS

A. Hangers and hanging methods shall be NFPA 13 Standards or more stringent requirements, as specified herein. All hangers, clamps, rods, shields, etc., shall be UL listed and FM approved.

B. Provide additional supports on piping as necessary to prevent movement of piping as required by the Architect and Engineer. Of particular concern are vertical runs of piping, and the top and bottom of standpipe risers. Supports may consist of wall plates, properly secured to the building structure, threaded rods, and split ring pipe clamps.

C. Seismic Restraints: It is the intent of this seismic specification to keep all building system components in place during a seismic event.

1. All systems must be installed in strict accordance with seismic codes, component manufacturer's and building construction standards. Whenever a conflict occurs between the manufacturer's or construction standards, the most stringent shall apply.
2. This contractor shall engage a professional structural engineer registered in the jurisdiction of this project to review the entire installation to determine all seismic restraint requirements and methods. Contractor shall submit a report outlining the structural engineer's review as well as seismic restraint shop drawings and supporting calculations prepared by the professional structural engineer for review by the Architect.
3. Seismic restraints shall be designed in accordance with seismic force levels as detailed in the applicable building code.

2.3 SPRINKLER HEADS

A. All sprinkler heads shall be UL listed FM approved and shall meet the specified criteria.

B. Sprinkler heads to be installed in occupied areas, unless otherwise indicated, shall be chrome plated recessed pendant type, 165 degree F. rating with c.p. adjustable escutcheon.

C. Sprinklers in unfinished areas without ceilings and in all concealed combustible areas shall be quick response, upright, brass, rough finish, conventional design, temperature rating as required by their location. In finished areas without hung ceilings, the upright sprinkler head finish shall be chrome plated.

2.4 FIRE SAFING

A. Where new piping passes through fire rated walls, floors and ceilings, provide a fire safing system so as to maintain the integrity of the rated assemblies to the satisfaction of the Architect and the Building Inspector. The fire safing system shall be as manufactured by Hilti, 3M, Dow, Bio-Fire Shield, or Nelson. Provide manufacturer's details or custom details when there are no manufacturer's details for each condition with a UL listing referenced. Where there piping is insulated, pipe insulation shall run continuously through the rated opening. Details shall show the required depth and annular space width requirements and limitations and any packing requirements.

B. Refer to architectural drawings for rated walls and partitions. When there are not architectural drawings, or they do not indicate rated walls and partitions, the following guide lines shall be used: All floors, corridor walls, party walls, mechanical room walls, duct and pipe chase walls, stairwells, trash roon and chute walls shall be considered minimum two hour fire rated walls.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. The entire work provided in this specification shall be constructed and finished in every respect in a workmanlike and substantial manner. It is not intended that the drawings shall show every pipe, fitting, and appliance. Furnish all parts as may be necessary to complete the system in accordance with the best trade practices and to be the satisfaction of the Architect, Engineer and General Contractor.

B. This Contractor shall keep other contractors fully informed as to the shape, size and position of all openings required for his apparatus and shall give full information to the General Contractor or other contractors sufficiently in advance of the work so that all openings may be built in advance. Furnish and install all sleeves, supports, etc., specified or required.

C. In the case of failure on the part of this Subcontractor to give proper and timely information as noted above, he shall do his own cutting and patching, or have same done by the General Contractor at this Subcontractor's expense, but in any case, without extra expense to the Owner.

D. This Contractor shall obtain detailed information from the manufacturer of apparatus as to the proper method of installing and connecting same. He shall also obtain all information from the General Contractor and the other contractors which may be necessary to facilitate his work and the completion of the whole project.

3.2 CORE DRILLING

A. All holes through concrete or masonry for the passage of fire protection piping not provided by sleeves or openings at the time of casting, shall be cut by the Fire Protection Contractor using an approved core boring machine with diamond edge bit and vacuum sludge removal device. The size of holes shall provide for fire stopping around a pipe. The location of all core drilled holes shall be coordinated with the structural reinforcing and be reviewed by the Architect prior to commencing work.

3.3 TESTING PIPING SYSTEMS

A. Test all work in the presence of the Architect/Engineer and/or Owner, Owner's representative and Fire Inspector as called for in local codes in the following manner:

1. Upon completion and prior to acceptance of the installation, the new Fire Protection work shall be tested as required by the National Fire Protection association Pamphlet No. 13 and Insurance Underwriter and arrangements made for approval. Piping shall be tested to a hydrostatic test pressure of 200 psi for a period of two hours.
2. Provide 48 hours notice prior to commencing tests.

B. Testing shall include piping from the fire department connection to the alarm check valve.

C. Any leaks in joints or evidence of defective pipe or fittings disclosed by tests shall be immediately corrected by replacing defective parts with new joints or materials. No makeshift repairs effected by caulking threaded pipe with lead wool, application of wicking or patented compounds being permitted. Perform smoke tests as required by local code or by the Architect/Engineer.

D. This subcontractor shall furnish all equipment, labor and materials, required for these tests.

3.4 PROTECTION PIPING

A. Each subcontractor shall be responsible for his work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment which are not immediately installed after delivery on site. Close open ends or work with temporary covers or plug during construction to prevent entry of obstructing materials.

B. Each subcontractor shall protect work and materials of other trades from damage that might be caused by his work or workman and make good damage thus caused.

C. The premises shall be kept reasonably clean at all times, and rubbish shall be removed as directed by the General Contractor.

D. Upon completion of this work, this Contractor shall clean all equipment and replace damaged parts. Upon failure of this Contractor to fulfill his obligation, this work will be taken care of at his expense.

3.5 WORK COORDINATION AND JOB COORDINATION

A. Sprinkler system and equipment shall not be installed in congested and possible problem areas without first coordinating the installation of same with the other trades and the General Contractor.

B. Particular attention shall be directed to the coordination of system with all equipment of other trades installed in and above the ceiling areas. Conflicts in heights and clearance above hung ceilings shall be brought to the attention of the General Contractor for a decision before equipment is installed.

C. Furnish to the General Contractor and other trades all information relative to the position of the sprinkler/standpipe installation that will affect them so that they may plan their work and installation accordingly.

D. Fire Protection contractor shall arrange for a 'Fire-Watch' condition when existing sprinkler system is shut-down. Contact Providence Fire Department and owner 48 hours in advance. 'Fire-Watch' condition shall not end until sprinkler system has been re-activated.

3.6 SUPPLEMENTARY STEEL, CHANNEL AND SUPPORTS

A. Furnish and install all supplementary steel, channels and supports required for the proper installation, mounting and support of all equipment.

B. Supplementary steel and channels shall be firmly connected to building construction in a manner approved by the Architect/Engineer.

C. The type and size of the supporting channels and supplementary steel shall be determined by the Sprinkler Subcontractor and shall be sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

D. All supplementary steel and channels shall be installed in a neat and workmanlike manner parallel to the walls, floor and ceiling construction. All turns to be made with 90 degree fittings, as required to suit the construction and installation conditions.

3.7 SLEEVES AND INSERTS

A. Sleeves shall be furnished, set and properly secured in place and at all points where piping passes through masonry or concrete. All sleeves shall be of sufficient diameter to provide 4 in. clearance around piping 4" and greater and 2 in. clearance around pipe less that 4" in diameter.

B. Sleeves through concrete slabs, and interior concrete and masonry walls or partitions shall be steel pipe. Fire stop annular openings between sleeves and pipes at floor slab passages and make watertight. Galvanized sleeves and copper piping shall not be placed in concrete.

C. Install UL listed and FM approved inserts or other anchoring devices in concrete and masonry construction as required to support piping. Inserts shall be of the adjustable type as manufactured by Carpenter and Patterson, Grinnell, or Fee and Mason.

3.8 WATER SUPPLY

A. Water supply data shall be recent and shall include static pressure and residual pressure flowing at greater than the demand GPM. Flow tests shall be dated less than one year from date of receipt of the contract. Flow tests dated later than one year shall not be valid, and a new test shall be performed by this Contractor to the requirements of NFPA. Tests shall be taken at hydrants in close proximity (within 500 ft.) of the building to be serviced.

3.9 INSTALLATION OF SPRINKLER PIPING

A. Pipe, fittings and hangers shall be installed in accordance with the recommendations of NFPA 13 , in a neat and workmanlike manner.

B. Where possible, all piping shall be concealed. Where it is not possible to conceal piping, it shall be located as inconspicuously as possible to minimize the visual impact and shall be approved by the Architect prior to installation.

C. Care shall be taken to insure that all new piping shall be installed in practical alignment. Pitch piping to drain or draw-off points.

D. Test valves and flushing connections shall be provided in the piping system as required for proper operation and by code.

END OF SECTION

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p:858.384.7795 e:info@hauckarchitecture.com
http://www.hauckarchitecture.com
calic.# 6886 - calic.#c-31127 - f.llc.#ar 98187 - mo.lic.# 19161
mo.lic.#a- 2008040901 - pa.lic.#s- 40077 - ny.lic.# 27195 - wa.lic.# 11820

PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

CONSULTANT:

eds ENGINEERING DESIGN SERVICES INCORPORATED
141 Industrial Highway Slatersville, RI 02876
Tel (401) 765-7659 Fax (401) 765-2984

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09.19.2018

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

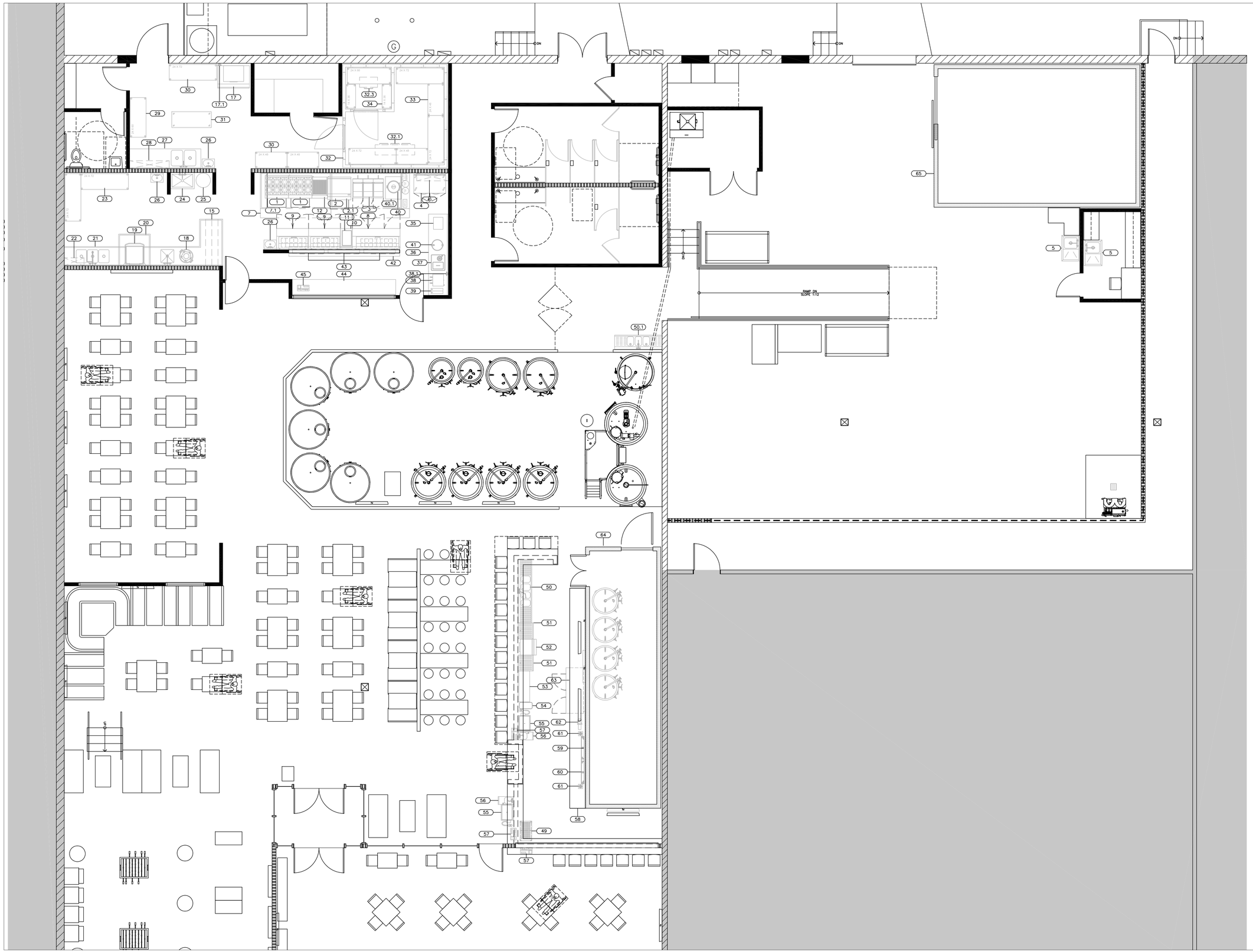
FIRE PROTECTION SPECIFICATIONS

STAMP:

STATE OF MISSOURI
WILLIAM T MAYER III
NUMBER PE-2008021297
PROFESSIONAL ENGINEER

SHEET NUMBER:

FP1.3



RAPIDS
FOODSERVICE CONTRACT & DESIGN

36

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136

ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
Marion, IA

THIS PLAN IS PRIMARILY A GENERAL ARRANGEMENT OF EQUIPMENT PREPARED FROM AVAILABLE INFORMATION FOR THE CONVENIENCE OF CONTRACTORS; PLUMBING, ELECTRICAL AND VENT OUTLETS HAVE BEEN LOCATED AS ACCURATELY AS POSSIBLE AND ARE INTENDED TO SUIT EQUIPMENT TO BE SUPPLIED-HOWEVER, ALL DIMENSIONS ARE TO BE FIELD CHECKED BY PURCHASER. PROVIDE POWERED VALVES, CONTROLS, WIRING, CONDUIT, ETC. AS REQUIRED FOR ANSI STANDARD #4. ALL NECESSARY ELBOWS, TRAPS, VALVES, FAUCETS, STARTING SWITCHES, ETC. AND ARE TO MAKE FINAL CONNECTIONS ON THE JOB. COMPLETE RESPONSIBILITY FOR ADHERENCE TO ALL CODES REST WITH THE GENERAL CONTRACTOR AND/OR HIS SUBCONTRACTORS. RAPIDS CANNOT ASSUME RESPONSIBILITY FOR CODE COMPLIANCE BECAUSE WE HAVE NO CONTROL OVER THE QUALITY OF WORK PERFORMED BY OTHERS. ANY CHANGES MADE TO THIS PLAN MUST BE VERIFIED AND APPROVED BY RAPIDS IN WRITING OR THE SUBSTITUTION OR CHANGES IN EQUIPMENT SHOWN ON THIS PLAN, THIS PLAN MUST BE VERIFIED AND NOT STAND ANY EXPENSE FOR CHANGES MADE NECESSARY BY LOCAL BUILDING CODES, ORDINANCES, STRUCTURAL CONDITIONS, OR BY THE SUBSTITUTION OR CHANGES IN EQUIPMENT SHOWN ON THIS PLAN. THIS PLAN MUST BE VERIFIED AND APPROVED BY RAPIDS IN WRITING BEFORE ANY WORK IS STARTED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALL CHANGES TO THIS PLAN AS REQUIRED BY LOCAL CODES AND ORDINANCES. THIS PLAN IS FULLY PROTECTED UNDER THE COPYRIGHT LAWS OF THE UNITED STATES.
USED OR REPRODUCED WITHOUT CONSENT; AND MUST BE RETURNED TO R.F.C.D. UPON REQUEST. THIS PLAN IS FULLY

Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
MASTER PLAN

REVISIONS

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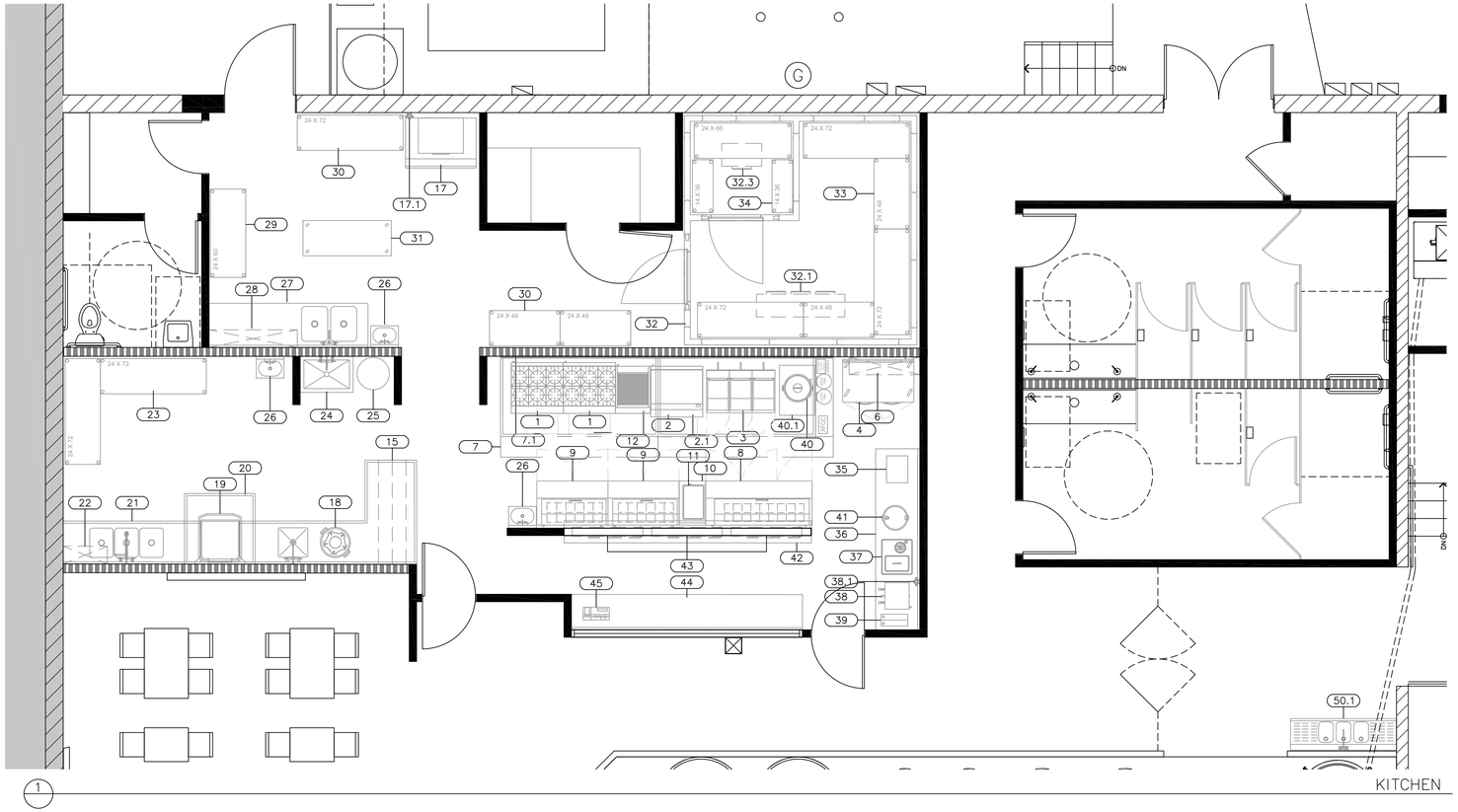
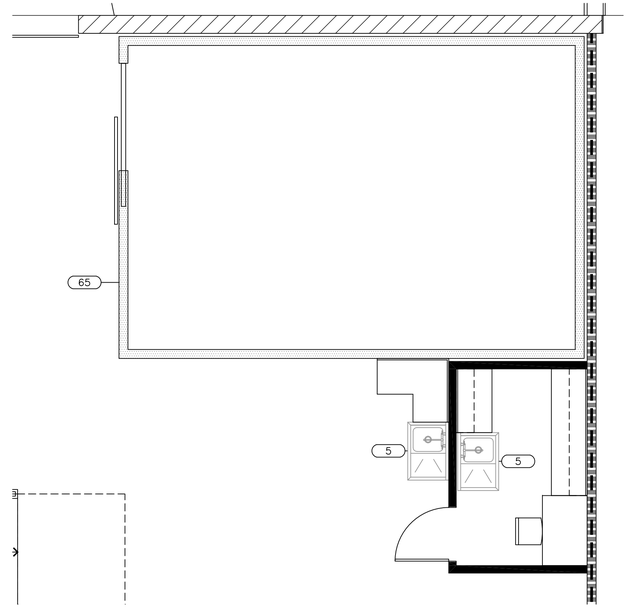
DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	3/16" = 1'-0"
JOB NO.	1808JW01

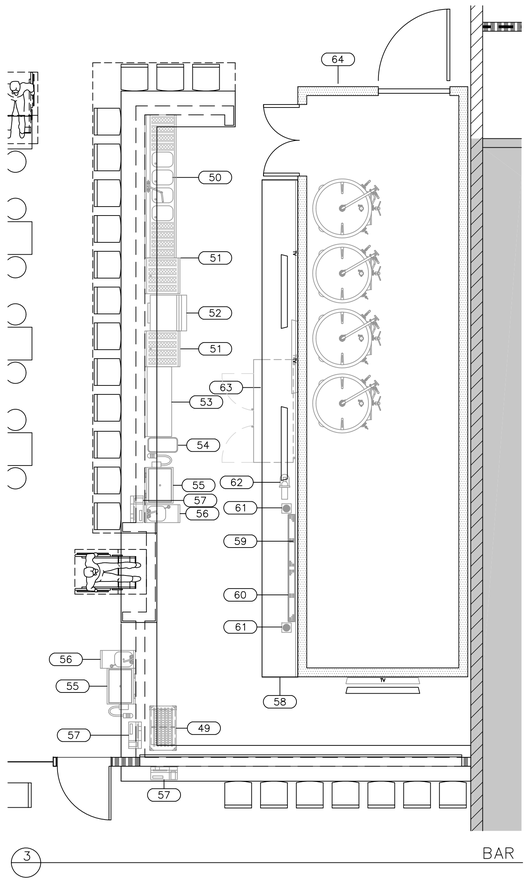
FS-0.1



1 KITCHEN



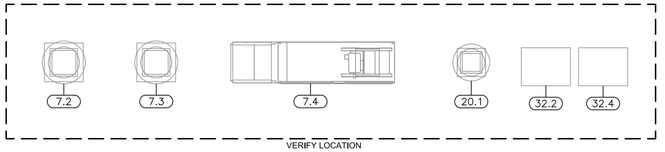
2 BREWER'S LOUNGE



3 BAR

EQUIPMENT SCHEDULE			
Item No	Qty	Equipment Category	Equipment Remarks
1	2	RANGE	
2	1	GRIDDLE/RANGE	
2.1	1	EQUIPMENT STAND	
3	3	FRYERS	
4	1	WORKTOP FREEZER	
5	2	1 COMP SINK	BY OTHERS
6	2	SHELVING, WALL MOUNTED	
7	1	EXHAUST HOOD	
7.1	1	SS WALL PANEL	
7.2	1	EXHAUST FAN	VERIFY LOCATION
7.3	1	EXHASUT FAN	VERIFY LOCATION
7.4	1	MAKE-UP AIR UNIT	VERIFY LOCATION
8	1	SAND/SALAD PREP	
9	2	SAND/SALAD PREP	
10	1	WORK TABLE	
11	1	HOT WELL	
12	1	CHARBROILER	
13		-SPARE NUMBER-	
14		-SPARE NUMBER-	
15	1	SOILED DISHTABLE	
16		-SPARE NUMBER-	
17	1	ICE MACHINE	
17.1	1	WATER FILTER	
18	1	TRASH CAN	BY OTHERS
19	1	DISHAMCHINE	BY OTHERS
20	1	CONDENSATE HOOD	
20.1	1	EXHASUT FAN	VERIFY LOCATION
21	1	CLEAN DISHTABLE	
22	1	SHELVING, WALL MOUNTED	
23	2	SHELVING	
24	1	MOP SINK	BY PLUMBER
25	1	WATER HEATER	BY OTHERS
26	3	HAND SINK	
27	1	WORK TABLE W/ 2 COM P SINK	
28	2	SHELVING, WALL MOUNTED	
29	2	SHELVING	
30	3	SHELVING	
31	1	MOBILE WORK TABLE	
32	1	WALK-IN COMBO	

EQUIPMENT SCHEDULE			
Item No	Qty	Equipment Category	Equipment Remarks
32.1	1	COOLER EVAP COIL	NOT SHOWN
32.2	1	COOLER CONDENSING UNIT	NOT SHOWN VERIFY LOCATION
32.3	1	FREEZER EVAP COIL	NOT SHOWN
32.4	1	FREEZER CONDENSING UNIT	NOT SHOWN VERIFY LOCATION
33	5	COOLER SHELVING	
34	3	FREEZER SHELVING	
35	1	HOT DOG GRILL	
36	1	WORK TABLE	
37	1	ICE BIN & WATER DISPENSER	
38	1	COFFEE BREWER	
38.1	1	WATER FILTER	
39	1	TEA BREWER	
40	1	RICE COOKER	
40.1	1	EQUIPMENT STAND	
41	1	RICE WARMER	
42	1	PASS OVER SHELF	
43	3	HEAT LAMP	
44	1	WORK TABLE	
45	1	POS STATION	BY OTHERS
46		-SPARE NUMBER-	
47		-SPARE NUMBER-	
48		-SPARE NUMBER-	
49	1	BAG-N-BOX	BY VENDOR
50	1	UNDERBAR SINK	
50.1	1	UNDERBAR SINK	
51	1	GLASS RACK	
52	1	GLASS WASHER	BY OTHERS
53	1	WORK TABLE	
54	1	TRASH CAN	BY OTHERS
55	2	ICE BIN W/ SODA GUN	BY VENDOR
56	1	UNDERBAR HANDSINK	
57	2	POS STATION	BY OTHERS
58	LOT	MILLWORK	BY OTHERS
59	1	BEER SYSTEM	BY OWNER
60	1	DRIP TRAY	BY OWNER
61	2	GLASS RINSER	BY OWNER
62	1	CAN CROWLER	BY OTHERS
63	1	BACK BAR COOLER	
64	1	WALK-IN COOLER	BY OTHERS
65	1	WALK-IN COOLER	BY OTHERS



VERIFY LOCATION

GENERAL NOTES:

1. THE DRAWINGS PROVIDED BY RAPIDS FOODSERVICE CONTRACT & DESIGN ARE SUPPLIED TO INDICATE THE SIZE AND LOCATION OF THE FOOD SERVICE EQUIPMENT AND THE UTILITIES NECESSARY TO OPERATE THIS EQUIPMENT, AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION DRAWINGS. THE OWNER AND/OR HIS ARCHITECT SHALL INCORPORATE THE INFORMATION PROVIDED BY RAPIDS FOODSERVICE CONTRACT & DESIGN INTO THE PROJECT'S ARCHITECTURAL AND MECHANICAL PLANS, AND ADAPT THE INFORMATION TO PREVAILING NATIONAL, STATE, AND LOCAL CODES. THE OWNER AND/OR HIS ARCHITECT SHALL SUBMIT THE COMBINED PLANS AND SPECIFICATIONS TO THE APPROPRIATE AUTHORITIES HAVING JURISDICTION.
2. DIMENSIONS ARE GIVEN TO THE FINISHED FACE OF THE WALLS OR PARTITIONS AND ARE TO THE CENTERLINE OF THE BOX OR PIPE. CONTACT RAPIDS FOODSERVICE FOR ANY OMISSIONS OR CLARIFICATION.
3. THE GENERAL AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL CONDITIONS AND DIMENSIONS AT THE JOB SITE AS INDICATED BY THESE DRAWINGS AND SHALL NOTIFY RAPIDS FOODSERVICE CONTRACT & DESIGN OF ANY DISCREPANCIES BEFORE BEGINNING THEIR WORK.
4. ALL PLUMBING, ELECTRICAL, REFRIGERATION, AND VENTILATION WORK INCLUDING ROUGH-INS AND FINAL CONNECTIONS OF THE EQUIPMENT IS TO BE PERFORMED BY THE APPROPRIATE TRADES. THIS IS NOT A PART OF RAPIDS FOODSERVICE CONTRACT & DESIGN'S CONTRACT UNLESS NOTED OTHERWISE.
5. VERIFY THE SIZE, LOCATION, AND CAPACITIES OF UTILITIES NECESSARY TO OPERATE ALL EQUIPMENT INDICATED AS EXISTING, BY OWNER, OR BY OTHERS. IF UTILITIES ARE INDICATED FOR THIS EQUIPMENT ON THE RAPIDS FOODSERVICE CONTRACT & DESIGN DRAWINGS, THEY ARE TYPICAL CONNECTION ONLY AND MUST BE VERIFIED AS TO NECESSITY, CAPACITY, AND LOCATION.
6. ALL ROUGH-INS ARE TO STUB THRU THE FLOOR OR TERMINATE IN THE WALLS AS INDICATED BY THESE DRAWINGS. SEE THE MANUFACTURER'S SPECIFICATION SHEETS AND DETAIL DRAWINGS FOR FINAL CONNECTIONS.
7. THE FOODSERVICE EQUIPMENT DRAWINGS INDICATE ONLY THE UTILITIES NECESSARY TO OPERATE THE FOOD SERVICE EQUIPMENT. SEE THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL CONVENIENCE RECEPTACLES, EXIT LIGHTS, EMERGENCY LIGHTING, PHONE CONNECTIONS, PA SYSTEMS, ALARM SYSTEMS, HOSE BIBS, WATER COOLERS, FLOOR AND AREA DRAINS.
8. WHERE EXISTING EQUIPMENT IS BEING REUSED IN PLACE, NO UTILITIES ARE INDICATED BY RAPIDS FOODSERVICE CONTRACT & DESIGN'S PLUMBING/MECHANICAL PLANS. IT IS ASSUMED THAT THIS EQUIPMENT IS TO BE OPERATED ON THE EXISTING UTILITIES AND THAT THE EXISTING UTILITIES ARE FUNCTIONAL AND ADEQUATE IN SIZE AND CAPACITY. THE APPROPRIATE CONTRACTOR/ENGINEER SHALL VERIFY THE SUITABILITY AND OPERATION OF THE EXISTING UTILITIES AND NOTIFY THE OWNER/ARCHITECT IF THEY CANNOT BE REUSED.
9. WHERE EXISTING UTILITIES ARE INDICATED AS BEING REUSED FOR NEW EQUIPMENT OR EXISTING EQUIPMENT WHICH IS TO BE RELOCATED, THE APPROPRIATE CONTRACTOR/ENGINEER SHALL VERIFY THE OPERATION, SIZE CAPACITIES, AND CODE COMPLIANCE OF THE UTILITIES AND NOTIFY, THE OWNER/ARCHITECT IF THEY CANNOT BE USED AS INDICATED.
10. ANY ASBESTOS ABATEMENT REQUIRED IN CONNECTION WITH INSTALLATION OF THE FOOD SERVICE EQUIPMENT SHALL BE BY OTHERS.
11. SEALED DRAWINGS AND HEAT LOSS/HEAT GAIN CALCULATIONS FOR EXHAUST HOOD/HVAC PERMITS SHALL BE BY THE MECHANICAL CONTRACTOR.
12. INSTALLATION OF EQUIPMENT (BY RAPIDS FOODSERVICE CONTRACT & DESIGN) SHALL INCLUDE DELIVERY, UNLOADING, UNCRATING, SETTING IN PLACE OF EQUIPMENT, LEVELING AND CAULKING AS REQUIRED, INSTALLATION DOES NOT INCLUDE HOISTING OF EQUIPMENT TO THE ROOF TOP, CORE DRILLING, ROOF PENETRATIONS, BUILDING PENETRATIONS AND PITCH POCKETS, FIRE STOPPING, WEATHERPROOFING, IN WALL BLOCKING, INTERCONNECTING WIRING FROM EQUIPMENT CONTROLS TO EQUIPMENT, INTERCONNECTING PLUMBING, PERMITS, FEES, INTERCONNECTING DUCT WORK FROM EQUIPMENT TO BUILDING HVAC SYSTEMS, HEAT TAPE, INSULATION.
13. REMOVAL OF TRASH FROM THE JOB SITE IF REQUIRED WILL BE BY THE GENERAL CONTRACTOR UNLESS THE ON SITE DUMPSTER CAN BE USED. COST OF THE DUMPSTER SHALL BE BY THE GENERAL CONTRACTOR.
14. ALWAYS VERIFY SCALE WITH DIMENSIONS GIVEN.

RAPIDS
FOODSERVICE CONTRACT & DESIGN

36

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EQUIPMENT PLAN

REVISIONS
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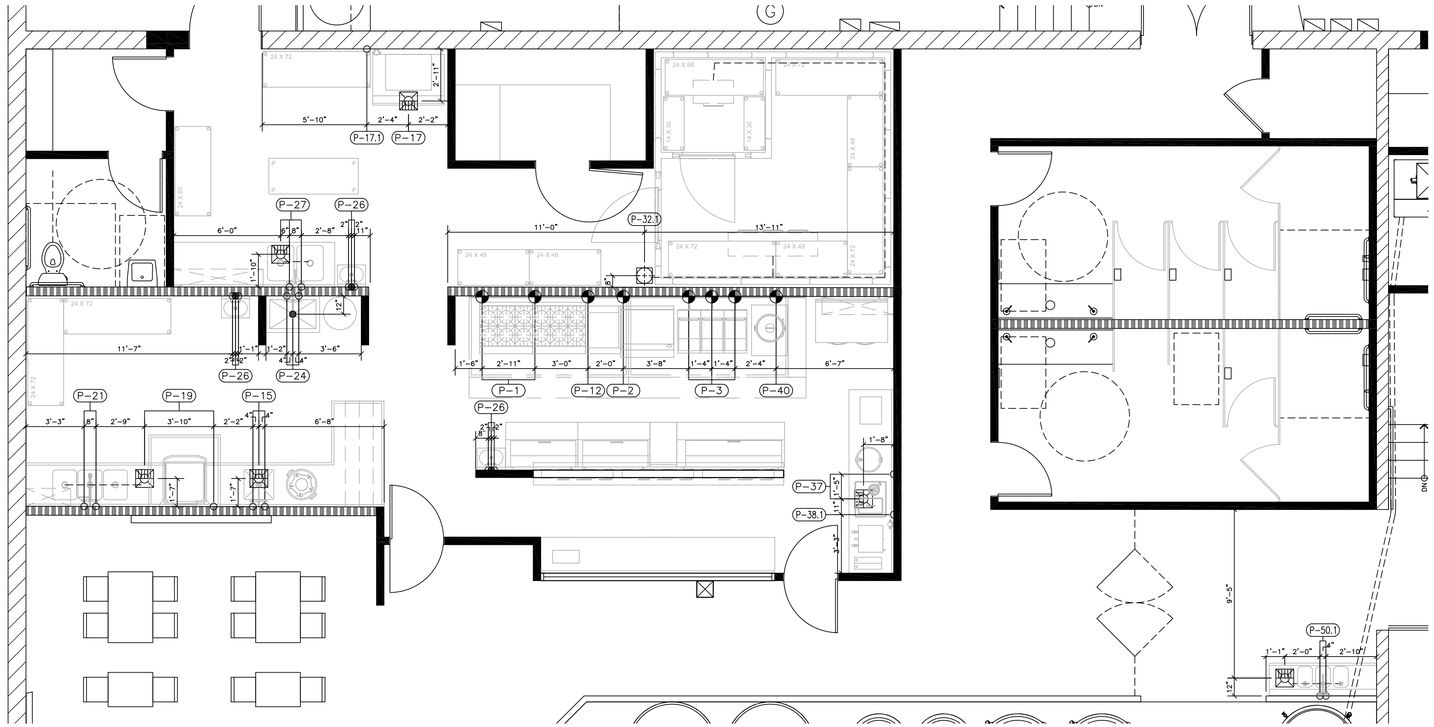
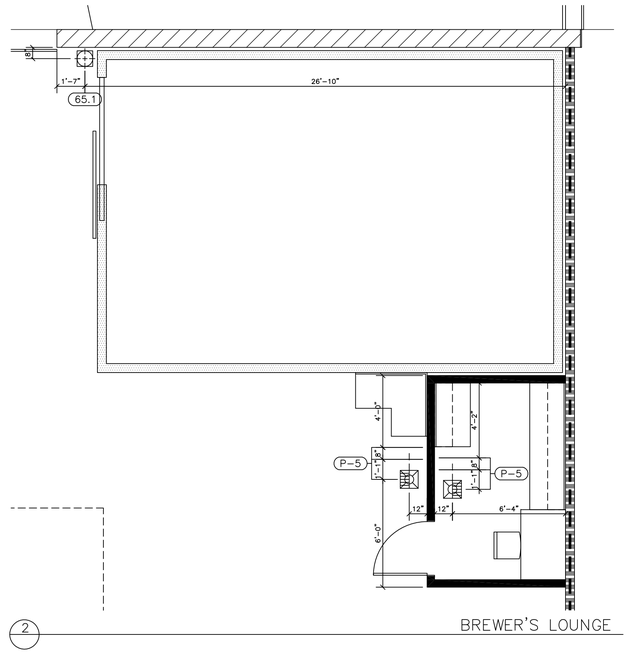
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	1/4" = 1'-0"
JOB NO.	1808JW01

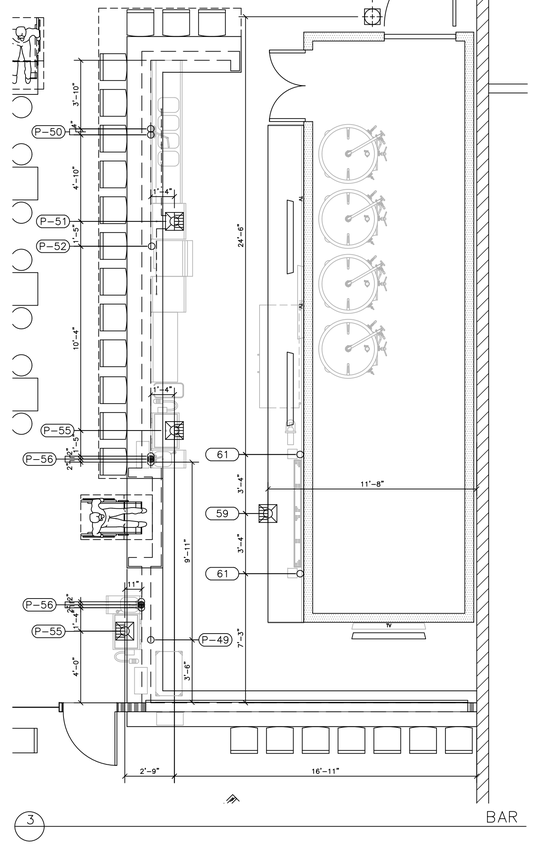
FS-1



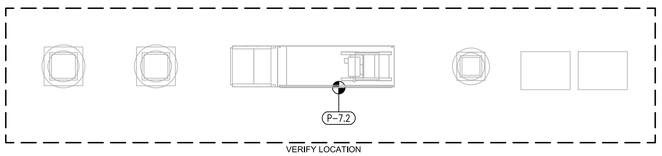
1 KITCHEN



2 BREWER'S LOUNGE



3 BAR



VERIFY LOCATION

LEGEND – PLUMBING CONNECTION

- HW–HOT WATER, OR CW–COLD WATER
- GAS SUPPLY
- WASTE, DIRECT–CONNECTED UNLESS NOTED "OPEN HUB"
- FLOOR SINK WITH HALF GRATE UNLESS NOTED OTHERWISE
- FLOOR DRAIN W/ATTACHED FUNNEL
- FIELD CONNECTIONS

PLUMBING SCHEDULE

Item No	Qty	Equipment Category	Cold Water Size (in)	Cold Water AFF (in)	Hot Water Size (in)	Hot Water AFF (in)	HW & CW Rough-In	Direct Drain Size (in)	Direct Drain AFF (in)	Direct-Drain Rough-In	Indir Drain Size (in)	Indir Drain AFF (in)	Indirect-Drain Rough-In	Plumbing Remarks	Gas Size (in)	MBTUH	Gas AFF (in)	Gas Rough-In	Plumbing Remarks
1	2	RANGE													0.75	236	20	P-1	SEE NOTES 9, 10 & 17.
2	1	GRIDDLE													0.75	84	20	P-2	SEE NOTES 9, 10 & 17.
3	3	FRYERS													0.75	70	20	P-3	SEE NOTES 9, 10 & 17.
5	2	1 COMP SINK	0.5	16	0.5	16	P-5	1.5	FL	P-5									
7.4	1	MAKE-UP AIR UNIT													0.75	235.7		P-7.4	VERIFY LOCATION. SEE MANUFACTURES DRAWINGS.
12	1	CHARBROILER													0.75	72	20	P-12	SEE NOTES 9, 10 & 17.
15	1	SOILED DISHTABLE	0.5	16	0.5	16	P-15	2	FL	P-16									
17	1	ICE MACHINE									0.75	FL	P-17	SEE NOTE 7.					
17.1	1	WATER FILTER	0.375	72			P-17.1							P.C. TO EXTEND CW LINE THRU TO ITEM 17. SEE NOTE 6.					
19	1	DISHMCHINE	0.5	61			P-19				2	FL	P-19	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. FLOOR SINK ALSO SERVICES ITEM 21 CLEAN DISHTABLE. SEE NOTES 14 & 24. 15-20 psi. 120° MIN 140° RECOMMENDED INCOMING WATER.					
21	1	CLEAN DISHTABLE	0.5	16	0.5	16	P-21				(3)2	FL	P-19	SEE ITEM 19.					
24	1	MOP SINK	0.5	36	0.5	36	P-24	3	FL	P-24				BY PLUMBER. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.					
26	3	HAND SINK	0.5	22	0.5	22	P-26	1.5	24	P-26									
27	1	WORK TABLE W/ 2 COM P SINK	0.5	16	0.5	16	P-27				(2)2	FL	P-27						
32.1	1	COOLER EVAP COIL									0.75	FL	P-32.1	SEE MANUFACTURERS DRAWINGS. SEE NOTE 16.					
32.3	1	FREEZER EVAP COIL									0.75	FL	P-32.1	SEE MANUFACTURERS DRAWINGS. SEE NOTE 16.					
37	1	ICE & WATER DISPENSER	0.5	16							1	FL	P-37	SEE NOTE 7.					
38.1	1	WATER FILTER	0.375	64			P-38.1							P.C. TO EXTEND CW LINE THRU TO ITEMS 38 & 39. SEE NOTE 6.					
40	1	RICE COOKER													0.5	35	20	P-40	SEE NOTES 9, 10 & 17.
49	1	BAG-N-BOX	0.5	16			P-49							BY VENDOR. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.					
50	1	UNDERBAR SINK	0.5	12	0.5	12	P-50				(4)1.5	FL	P-51	SEE ITEM 51.					
50.1	1	UNDERBAR INK	0.5	12	0.5	12	P-50.1				(3)1.5	FL	P-50.1						
51	2	UNDERBAR FILLERS & DRAINBOARDS									1	FL	P-51	GLASSWASHER.					
52	1	GLASS WASHER	0.5	12			P-52				2	FL	P-51	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE ITEM 51. SEE NOTE 24. 15-25 psi. 120° MIN 140° RECOMMENDED INCOMING WATER.					
55	2	ICE BIN W/ SODA GUN									1	FL	P-55	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 7 & 24.					
56	1	UNDERBAR HANDSINK	0.5	12	0.5	12	P-56	1.5	14	P-56									
59	1	BEER SYSTEM	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.																
61	2	GLASS RINSER	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.																
64.1	1	COOLER EVAP COIL	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.																

PLUMBING NOTES:

1. ALL PLUMBING SERVICES TO MEET LOCAL, STATE, AND NATIONAL CODES.
2. ALL FINAL MECHANICAL CONNECTIONS TO EQUIPMENT, EXTERNAL AND INTERNAL PARTS, FITTINGS AND ETC, TO MAKE EQUIPMENT OPERATIONAL, TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR, UNLESS OTHERWISE SPECIFIED.
3. CHECK WITH ARCHITECT AND/OR OWNER FOR ANY ADDITIONAL PLUMBING CONNECTIONS, SUCH AS FLOOR DRAINS, DRAINS, AND ETC. ALSO CHECK FOR SERVICES TO EQUIPMENT WHICH IS NOT SHOWN OR SUPPLIED BY RAPIDS FOODSERVICE CONTRACT AND DESIGN.
4. MECHANICAL SERVICES SHOWN ON THIS PLAN ARE ACTUAL SIZE AT PIECE OF EQUIPMENT. LINES ARE TO BE RUN TO EQUIPMENT OF SIZE REQUIRED, OR AS STATED ON MECHANICAL ENGINEER'S DRAWINGS.
5. SUGGESTED ROUGH-IN LOCATIONS HAVE BEEN SHOWN. MECHANICAL CONTRACTOR TO MAKE ADJUSTMENTS FOR BEAMS, FOOTINGS, AND ETC., IF REQUIRED.
6. DO NOT PROVIDE SOFT WATER SUPPLIES TO COFFEE URNS, COFFEE MAKERS, WATER STATIONS, ICE MACHINES, & STEAM EQUIP, UNLESS OTHERWISE SPECIFIED. P.C. TO EXTEND THRU WATER FILTER PRIOR TO FINAL CONNECTION. P.C. TO VERIFY WATER QUALITY WITH EQUIPMENT SPECIFICATIONS.
7. MECHANICAL CONTRACTOR TO EXTEND DRAIN OUTLETS FROM TROUGH(S), HOT WATER BOOSTER(S), ICE BIN(S) ICE MACHINE(S), SINK HEATER(S), ETC, TO ADJACENT FLOOR DRAIN.
8. VERIFY WITH HEALTH AND PLUMBING CODES IF WASTES SHOULD BE DIRECT OR INDIRECT. ALSO VERIFY IF CLEAN WATER WASTES ARE REQ'D TO EMPTY INTO STORM SEWERS AND TELL TALE DRAINS ARE REQUIRED. DRAINS TO BE SUPPLIED AND INSTALLED BY P.C.
9. QUICK GAS DISCONNECTS, (SUPPLIED BY RAPIDS FOODSERVICE), ARE TO BE INSTALLED BY MECHANICAL CONTRACTOR ON ALL GAS FIRED COOKING EQUIPMENT.
10. THE MECHANICAL CONTRACTOR SHALL INSTALL A GAS SHUT-OFF VALVE(S) IN THE MAIN GAS SUPPLY LINE(S) TO THE FOOD SERVICE COOKING EQUIPMENT. THE VALVE(S) SHALL BE PROVIDED BY THE FIRE SUPPRESSION SYSTEM CONTRACTOR.
11. PLUMBING CONTRACTOR SHALL PROVIDE AND LOCATE GREASE INTERCEPTORS, AND RUN ALL APPLICABLE WASTE LINES THROUGH SUCH INTERCEPTORS AS DIRECTED BY MECHANICAL CONTRACTOR.
12. ALL ROUGH-IN HEIGHTS AS SHOWN IN SCHEDULE ARE FROM FINISHED FLOOR TO CENTERLINE OF ROUGH-IN, AND SUCH ROUGH-INS SHALL STUB OUT OF WALL, FLOOR, OR CEILING AS NOTED AT SAID HEIGHT.
13. MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL BACKFLOW PREVENTER DEVICE(S) AS REQUIRED BY CODE.
14. MECHANICAL CONTRACTOR TO CONNECT DISHWASHER, STEAMER, COMBI OVEN, FLOOR TROUGH DRAINS TO SINK TAILPIECE WITH APPROVED AIR GAP FITTING. DRAIN PIPING TO WITHSTAND BOILING WATER.
15. ALL FOOD PREPARATION SINKS SHALL BE CONNECTED TO AN INDIRECT DRAIN AND SHALL HAVE AN AIR GAP AT THE DRAIN EQUAL TO TWICE THE DIAMETER OF THE SINK DRAIN PIPING.
16. DRAINLINES SHALL BE TRAPPED OUTSIDE OF WALK-IN. FREEZER DRAIN SHALL BE HEATED AND INSULATED TO PREVENT FREEZING BY PLUMBING CONTRACTOR.
17. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL GAS REGULATORS AS REQUIRED FOR ALL KITCHEN EQUIPMENT.
18. MECHANICAL CONTRACTOR SHALL SEAL ALL PLUMBING/PIPING FLOOR OPENINGS WATER-TIGHT. PROVIDE CHROME-PLATED REMOVABLE ESCUTCHEONS AT ALL WALL AND FLOOR PENETRATIONS. PROVIDE AND INSTALL SLEEVES THAT EXTEND 4" ABOVE FLOOR (OR RAISED BASE) AND SEAL OPENING BETWEEN SLEEVE AND PIPE.
19. MECHANICAL CONTRACTOR SHALL CONCEAL AS MUCH PLUMBING AND PIPING AS POSSIBLE IN THE WALLS/FLOOR/CEILING CONSTRUCTION. MINIMIZE EXPOSED PIPING RUNS TO MAKE THEM AS SHORT AS POSSIBLE. EXPOSED PIPING SHALL BE 6" ABOVE THE FLOOR MINIMUM AND 1" OFF THE WALL MINIMUM. CHROME PLATE ALL EXPOSED PIPING.
20. MECHANICAL CONTRACTOR SHALL INTERCONNECT DISPOSALS TO REMOTE CONTROL PANELS, BOWLS, AND TROUGH INLETS THROUGH SOLENOID VALVES AND FLOW CONTROLS, AND PROVIDE/INSTALL A SUPPLY SHOCK ABSORBER.
21. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL "P" TRAPS WITH TAILPIECES, TO MEET CODES.
22. M.C. TO TERMINATE ALL INDIRECT WASTE LINES 1" ABOVE THE FLOOD PLAIN OF FLOOR DRAINS OR RIM OF FLOOR SINKS; TO MEET LOCAL CODES.
23. P.C. SHALL PROVIDE RIGID METAL SLEEVES THROUGH BEARING WALLS FOR ALL WATER, GAS, WASTE LINES, ETC.
24. THIS EQUIPMENT IS OWNER/OWNER'S VENDOR SUPPLIED. VERIFY ROUGH-IN REQUIREMENTS WITH EQUIPMENT SUPPLIED.
25. THIS EQUIPMENT IS EXISTING. VERIFY ROUGH-IN REQUIREMENTS WITH EXISTING EQUIPMENT.

RAPIDS
FOODSERVICE CONTRACT & DESIGN

36

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136

ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
Marion, IA

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
PLUMBING PLAN

REVISIONS
1
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5
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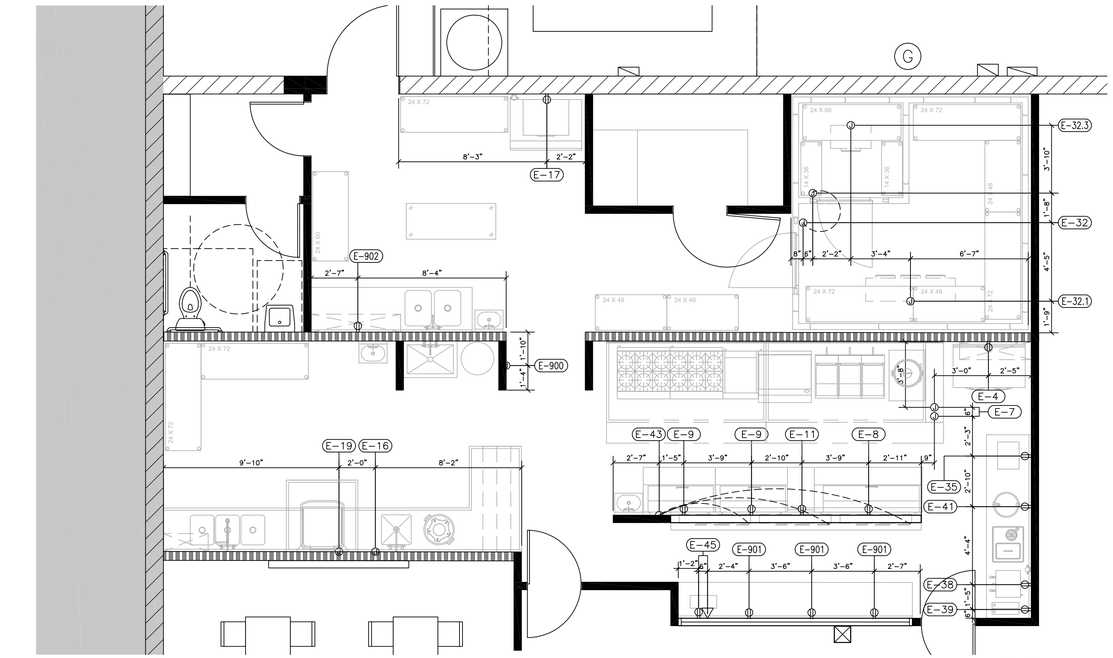
7

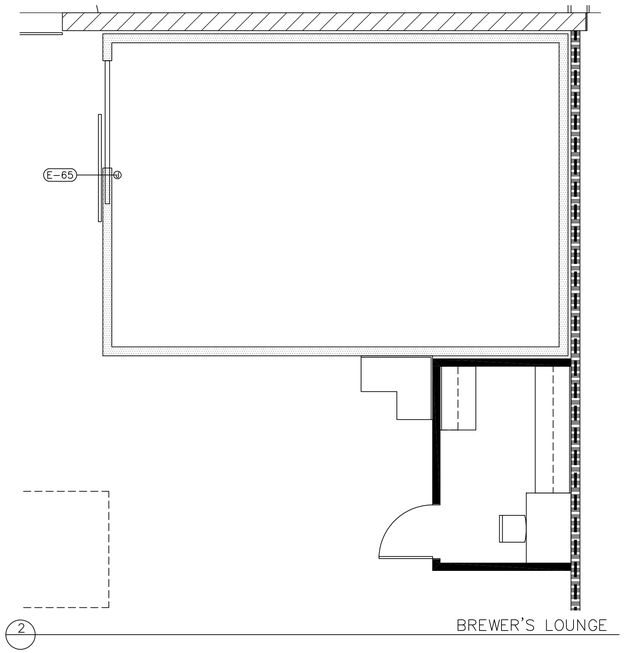
DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	1/4" = 1'-0"
JOB NO.	1808JW01

FS-2

SHEET 3 OF 15



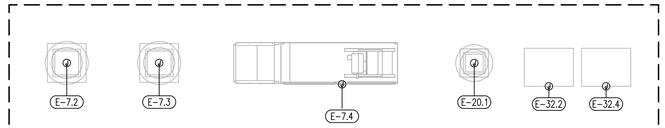
1 KITCHEN



2 BREWER'S LOUNGE

LEGEND – ELECTRICAL CONNECTION

- DUPLEX RECEPT., 20–AMP, 120–VOLT, GROUND TYPE, HORIZONTAL MOUNT
- SPECIAL PURPOSE OUTLET, 120–VOLT, GROUND TYPE, HORIZONTAL MOUNT
- SPECIAL PURPOSE OUTLET, 208/240–VOLT AS INDICATED, GROUND TYPE, HORIZONTAL MOUNT
- J — JUNCTION BOX
- FIELD WIRING, CONCEALED IN WALL, FLOOR, OR CEILING
- △ — DATA CONNECTION
- QUADPLEX RECEPT., 20–AMP, 120–VOLT GROUND TYPE, HORIZONTAL MOUNT



VERIFY LOCATION

ELECTRICAL NOTES:

1. ALL ELECTRICAL SERVICES TO MEET LOCAL, STATE, & NATIONAL CODES.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, AND FEES TO INSTALL THE ELECTRICAL SERVICE AND SYSTEMS AS REQUIRED TO OPERATE THE FOODSERVICE EQUIPMENT, AND AS INDICATED BY THESE DRAWINGS AND SPECIFICATIONS. E.C. TO MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT EXTERNAL, AND INTERNAL, PARTS, FITTINGS, AND ETC. TO MAKE EQUIPMENT OPERATIONAL, TO BE SUPPLIED AND INSTALLED BY THE E.C.; UNLESS SPECIFIED OTHERWISE.
3. CHECK WITH ARCHITECT AND/OR OWNER FOR ANY ADDITIONAL ELECTRICAL CONNECTIONS, SUCH AS E.C.O.'S AND ETC. ALSO CHECK FOR SERVICES TO EQUIPMENT WHICH IS NOT SHOWN OR SPECIFIED BY RAPIDS FOODSERVICE CONTRACT AND DESIGN.
4. SUGGESTED ROUGH-IN LOCATIONS HAVE BEEN SHOWN, E.C. TO MAKE ADJUSTMENTS FOR BEAMS, FOOTINGS, AND ETC., IF REQUIRED.
5. ELECTRICAL SERVICES ARE TO BE EXTENDED TO RECEPTACLE OR J.B.LOCATED IN CABINET FIXTURE. RECEPTACLE AND/OR J.B. TO BE SUPPLIED BY E.C. AND/OR RAPIDS FOODSERVICE CONTRACT AND DESIGN.
6. CORD SETS TO BE SUPPLIED AND INSTALLED BY E.C., UNLESS EQUIPMENT IS FACTORY EQUIPPED WITH SAME. IF CORD SETS ARE SPEC'D AND SUPPLIED BY RAPIDS FOODSERVICE CONTRACT AND DESIGN, E.C. TO INSTALL.
7. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL MAGNETIC STARTERS AND THERMAL OVERLOAD PROTECTION FOR ALL MOTORS, IF REQUIRED.
8. OUTLET HEIGHTS AS SHOWN IN THE SCHEDULE ARE FROM FINISHED FLOOR TO CENTER LINE OF OUTLET, AND SUCH OUTLETS SHALL STUB OUT OF WALL, FLOOR, OR CEILING AS NOTED AS SAID HEIGHT.
9. HOOD LIGHTS AND EXHAUST FANS WIRED TO WALL SWITCH BY DIVISION 16 CONTRACTOR. IF EXHAUST HOOD IS SUPPLIED WATER WASH OR FIRE PROTECTION SYSTEM, PROVIDE AS 24 HOUR, 120V./1PH. SERVICE FOR CONTROLS. SEE ATTACHED WIRING DIAGRAM DATA.
10. CHECK WITH ELECT. ENGINEER FOR LOCATION OF ON/OFF SWITCH(ES) FOR EXHAUST AND /OR MAKE-UP AIR FAN(S). ALSO VERIFY LOCATION OF EXHAUST HOOD LIGHTS. E.C. TO INTERCONNECT TO LIGHTS, EXHAUST FAN, AND MAKE-UP AIR. BULBS BY DIVISION 16.
11. DIVISION 16 CONTRACTOR TO INTERWIRE FIRE PROTECTION SYSTEM TO POWER SHUT-OFF DEVICE SUPPLIED BY DIVISION 16 CONTRACTOR SO THAT POWER TO ALL ELECTRICAL COOKING EQUIPMENT BELOW HOOD IS SHUT OFF UPON ACTIVATION OF FIRE PROTECTION SYSTEM.
12. DIVISION 16 CONTRACTOR TO VERIFY WITH ARCHITECT IF FIRE PROTECTION SYSTEM IS TO BE WIRED TO CENTRAL FIRE ALARM STATION AND TO MAKE-UP AIR FAN SHUT-OFF.
13. DIVISION 16 CONTRACTOR SHALL PROVIDE A DEDICATED CIRCUIT WITH INSULATED GROUND AT ALL POINTS OF SALE AND COMPUTER EQUIPMENT AND SHALL PROVIDE CONDUIT FOR COMMUNICATIONS LINK AS REQUIRED-VERIFY WITH SUPPLIER.
14. DIVISION 16 TO PROVIDE AND INSTALL ALL CONDUIT AND WIRING FOR ALARM, CONTROLS, LIGHT(S) DOOR HEATER(S), EVAP, COIL(S) COMPRESSORS, HEATED VENTS, DEFROST HEATERS, DRAIN LINE HEAT TAPE PLUG, SWITCHE(S), AND ETC, FOR WALK-IN COOLER(S), FREEZER(S), DO NOT USE GFI OUTLET ON HEAT TAPE.
15. GENERAL CONTRACTOR TO PROVIDE ALL CURB & ROOF WORK FOR REMOTE CONDENSERS, ALL CEILING PENETRATIONS FOR UTILITIES & REFRIGERATION LINES ARE BY GENERAL CONTRACTOR. ALL PENETRATIONS TO BE SEALED IN ACCORDANCE W/ LOCAL FIRE & BUILDING CODES.
16. DIVISION 16 CONTRACTOR TO SUPPLY DISCONNECTS FOR OUTDOOR CONDENSING UNITS.
17. ELECTRICAL ROUGH-INS SHALL BE BY THE ELECTRICAL CONTRACTOR. (NOT A PART OF RAPIDS FOODSERVICE CONTRACT AND DESIGN'S CONTRACT)
18. ALL ABOVE COUNTER RECEPTACLES IN BUILDING WALLS TO BE MOUNTED HORIZONTALLY, UNLESS NOTED OTHERWISE.
19. FOR ALL HARDWIRED COUNTERTOP ITEMS, E.C. TO LEAVE ENOUGH SEAL-TIGHT FLEX FROM WALL TO DEVICE FOR REMOVAL OF ITEM FOR CLEANING AND MAINTENANCE.
20. PROVIDE CONNECTION FROM EXHAUST FAN TO VENT CONTROL ON DISHMACHINE SO FAN IS ACTIVATED WHEN DISHMACHINE IS OPERATIONAL AND SHUTS OFF WHEN DISHMACHINE IS "OFF".
21. E.C. SHALL MOUNT ALL DISPOSER SWITCHES/CONTROL PANELS AND PROVIDE AND INSTALL INTERCONNECTING WIRING BETWEEN DISPOSER SWITCHES/CONTROL PANELS AND SOLENOID VALVES.
22. E.C. SHALL PROVIDE ALL NECESSARY G.F.C.I. RECEPTACLES AS REQUIRED BY LOCAL, STATE, & NATIONAL CODES.
23. E.C. SHALL PROVIDE AND INSTALL A 4"X4"X2" OCTAGON BOX, BOX TO BE RECESSED IN WALL, CREW HOLE AT 2 O'CLOCK AND 8 O'CLOCK FOR REMOTE PULL.
24. THIS EQUIPMENT IS OWNER/OWNER'S VENDOR SUPPLIED, VERIFY ROUGH-IN REQUIREMENTS WITH OWNER'S EQUIPMENT.
25. THIS EQUIPMENT IS EXISTING. VERIFY ROUGH-IN REQUIREMENTS WITH EXISTING EQUIPMENT.

SOMETIMES RIPPE

14. DIVISION 16 TO MAKE FINAL CONNECTIONS AND INSTALL ALL CONDUIT AND WIRING AS INDICATED ON DETAIL (1/E404) FOR ALARM, CONTROLS, LIGHT(S), DOOR HEATER(S),EVAP, COIL(S), COMPRESSORS, HEATED VENTS, DEFROST HEATERS, DRAIN LINE HEAT TAPE PLUG, SWITCHE(S), AND ETC. FOR WALK-IN COOLER(S), FREEZER(S). SEE DETAIL SD-191/FS3.30)

SOMETIMES

25. E.C. SHALL MAKE REQUIRED ELECTRICAL JUMPER CONNECTIONS BETWEEN TWO SHIPPING SPLITS ON ENERGY DISTRIBUTION SYSTEM IF APPLICABLE, SEE MANUFACTURER'S DRAWINGS.

ELECTRIC SCHEDULE

Item No	Qty	Equipment Category	Amps	KW	HP	Volts	Phase	Direct	Plug	NEMA	Electrical AFF (in)	Electrical Rough-In	Elec Remarks
4	1	WORKTOP FREEZER	3.2		0.5	115	1		X	5-15P	18	E-4	REQUIRES 15 AMP DEDICATED OUTLET.
7	1	EXHAUST HOOD	20			120	1	X			CL	E-7	LIGHTS & CONTROLS. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
								X			CL		FIRE SUPPRESSION SYSTEM. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
7.2	1	EXHAUST FAN	4.6		1	208	3	X				E-7.2	VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
7.3	1	EXHAUST FAN	4.6		1	208	3	X				E-7.3	VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
7.4	1	MAKE-UP AIR UNIT	14		3	208	3	X				E-7.4	VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
8	1	SAND/SALAD PREP	7.2		0.5	115	1		X	5-15P	18	E-8	REQUIRES 15 AMP DEDICATED OUTLET.
9	2	SAND/SALAD PREP	5.8		0.3	115	1		X	5-15P	18	E-9	REQUIRES 15 AMP DEDICATED OUTLET.
11	1	HOT WELL	10.0	1.2		120	1		X	5-15P	46	E-11	
17	1	ICE MACHINE	10.2			208-230	3				66	E-17	MINIMUM 15 AMP CIRCUIT REQUIRED.
19	1	DISHMCHINE	12			115	1	X			62	E-19	MINIMUM 15 AMP CIRCUIT REQUIRED. BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 20 & 24.
20.1	1	EXHAUST FAN	5.8		0.25	115	1	X				E-20.1	VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 9, 10, 11 & 12.
32	1	WALK-IN COMBO	20.0			120	1	X			CL	E-32	LIGHT, ALARM & DOOR HEATER. SEE MANUFACTURERS DRAWINGS. SEE NOTES 14, 15 & 16.
32.1	1	COOLER EVAP COIL	1.6			115	1	X			CL	E-32.1	NOT SHOWN. SEE MANUFACTURERS DRAWINGS. SEE NOTES 14, 15 & 16.
32.2	1	COOLER CONDENSING UNIT	7.2		1.0	208-230	1	X				E-32.2	NOT SHOWN. VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 14, 15 & 16.
32.3	1	FREEZER EVAP COIL	9.8			208-230	1	X			CL	E-32.3	NOT SHOWN. SEE MANUFACTURERS DRAWINGS. SEE NOTES 14, 15 & 16.
32.4	1	FREEZER CONDENSING UNIT	12.6		1.5	208-230	1	X				E-32.4	NOT SHOWN. VERIFY LOCATION. SEE MANUFACTURERS DRAWINGS. SEE NOTES 14, 15 & 16.
35	1	HOT DOG STEAMER	10.0	1.2		120	1		X	5-15P	48	E-35	
38	1	COFFEE BREWER	26.0	6.1		120/240	1				48	E-38	SEE NOTE 6.
39	1	COFFEE GRINDER	9.4	1.1	0.8	120	1		X	5-15P	48	E-39	
41	1	RICE WARMER	1.4	0.8		120	1				48	E-41	SEE NOTE 6.
43	3	HEAT LAMP	7	0.8		120	1	X			52	E-43	
45	1	POS STATION	15.0			115	1		X	5-15P	48	E-45	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 13 & 24.
		DATA						X			48		DATA PORT
49	1	BAG-N-BOX	15			120	1		X	5-15P	18	E-49	BY VENDOR. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.
52	1	GLASS WASHER	16			115	1	X			18	E-52	MINIMUM 20 AMP CIRCUIT REQUIRED. BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTE 24.
57	2	POS STATION	15.0			115	1		X	5-15P	18	E-57	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 13 & 24.
								X			18		DATA PORT
63	1	BACK BAR CABINET	2.8		0.25	115	1		X	5-15P	STUB	E-63	REQUIRES 15 AMP DEDICATED OUTLET. STUB UP 10". P.C. TO RUN WIRING THRU CONDUIT ALONG SURFACE OF WALK-IN TO RECEPTACLE @ 18" A.F.F.
64	1	WALK-IN COOLER	BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 14, 15, 16 & 24.										
64.1	1	COOLER EVAP COIL	NOT SHOWN. BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 14, 15, 16 & 24.										
64.2	1	COOLER CONDENSING UNIT	NOT SHOWN. BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 14, 15, 16 & 24.										
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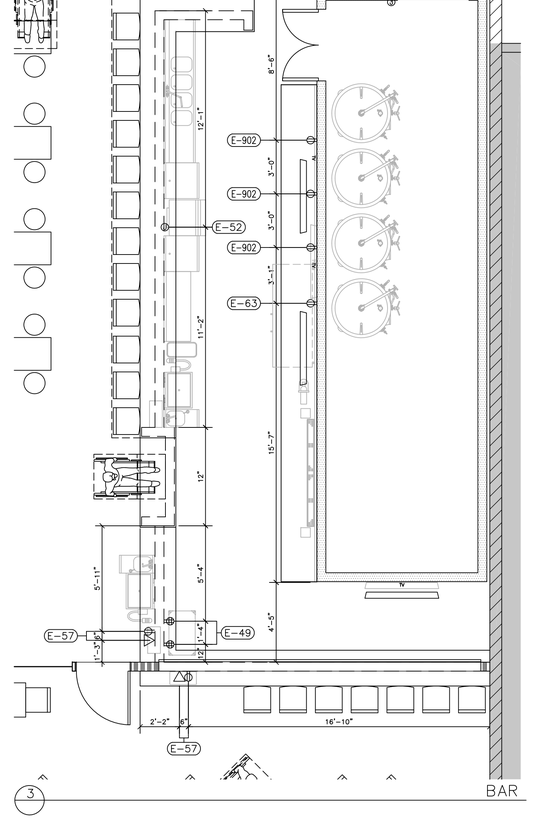
65.2	1	COOLER CONDENSING UNIT	NOT SHOWN. BY OTHERS. VERIFY ROUGH-IN REQUIREMENTS. SEE NOTES 14, 15, 16 & 24.										
900	1	FIRE PULL						X			48	E-900	SEE DETAIL 2/FS-5. SEE NOTE 23.
901	3	CONVENIENCE OUTLET	15			120	1	X		5-15R	46	E-901	CONVENIENCE OUTLET.
902	3	CONVENIENCE OUTLET	15			120	1	X		5-15R	STUB	E-902	STUB UP 10". CONVENIENCE OUTLET. P.C. TO RUN WIRING THRU CONDUIT ALONG SURFACE OF WALK-IN TO RECEPTACLE @ 48" A.F.F.



3 BAR

RAPIDS
FOODSERVICE CONTRACT & DESIGN
36
13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344–1161
Fax: (314)344–1136
ADDITIONAL LOCATIONS
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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
ELECTRIC PLAN

REVISIONS
1
2
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4
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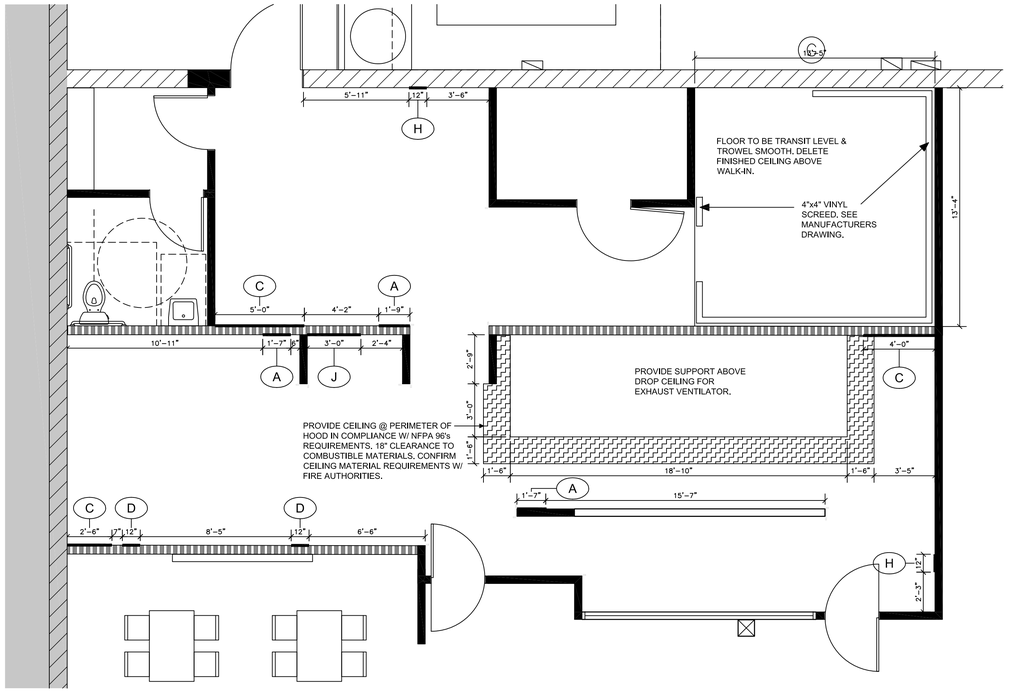
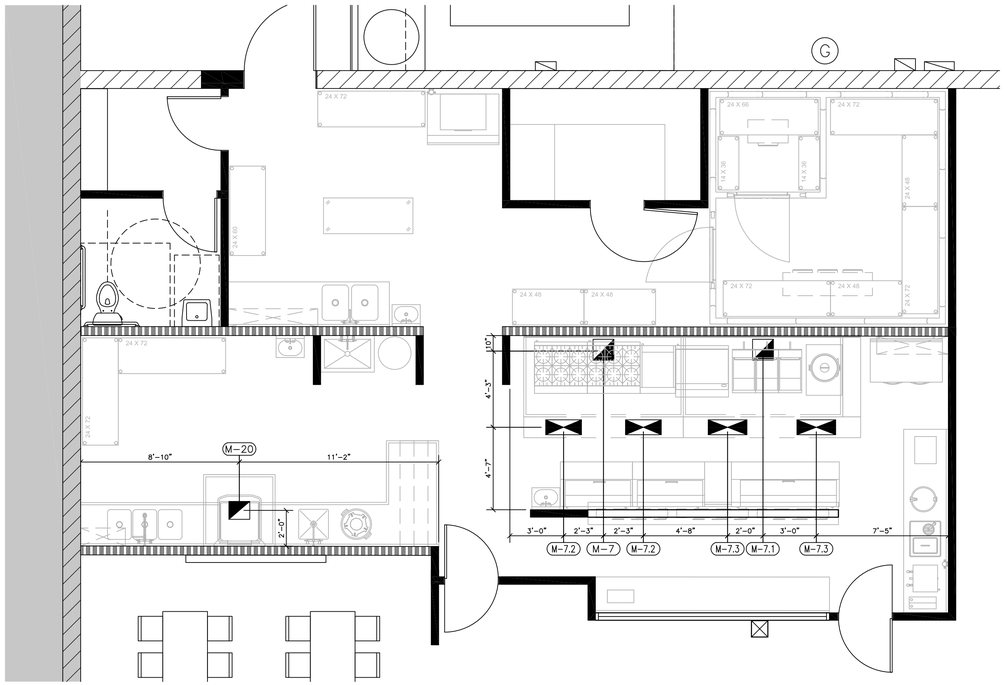
DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	1/4" = 1'-0"
JOB NO.	1808JW01

FS-3



1 KITCHEN SPECIAL CONDITIONS PLAN



2 VENTILATION PLAN

LEGEND – SPECIAL CONDITIONS

Ⓢ =SODA LINE

CEILING TO MEET NFPA96

LEGEND

[END WALL GUARD (DBL)–"EG"

⌟ CORNER WALL GUARD (SINGLE)–"CG"

SPECIAL CONDITIONS NOTES:

1. BY MECHANICAL/ELECTRICAL CONTRACTOR.
2. SEE MECHANICAL/ELECTRICAL ENGINEER'S DRAWINGS AND SPECIFICATIONS.
3. SEE ARCHITECTURAL PLANS FOR DETAILS.
4. CORNER AND END WALL GUARDS BY GENERAL CONTRACTOR.
5. SEE MANUFACTURER'S DRAWINGS.
6. SODA LINES TO BE INSTALLED AT CODE REQUIREMENTS. BELOW SLAB. SODA RUNS FROM SODA SYSTEM, ITEM #2 TO SYSTEM RUN. CONDUIT FOR SODA LINES AT A MINIMUM 24" RADIUS BENDS. VERIFY REQUIREMENTS WITH VENDOR.
7. ROOF CURBS AND ALL PENETRATIONS FOR REFRIGERATION UNITS AND UTILITIES ARE NOT BY SECT.114000 CONTRACTOR. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
8. PER RAPIDS RFI #1 RECESSED DIMENSION IS 10" FROM TOP OF FINISHED FLOOR (QUARRY TILE) TO TOP OF RECESSED SLAB. SEE ARCHITECT DETAIL; 19/A-502 FOR WALK-IN.

WALL BACKING LEGEND

DENOTES BACKING

- GENERAL CONTRACTOR TO PROVIDE AND INSTALL 5/8" THICK (MINIMUM) FIRE–RATED PLYWOOD, OR 12GA. GALV. SHEET METAL, BEHIND GYP. BOARD AT THE LOCATIONS SHOWN ON THIS PLAN.
- DIMENSIONS FOR WALL BACKING FALLS BETWEEN STUDS. G.C. TO EXTEND BACKING TO NEXT FULL LENGTH STUD. WALL BACKING NOT REQUIRED IF ON DIRECT CONCRETE BLOCK WALL BACKING ELEVATIONS ARE AS FOLLOW:

(A) FROM 24" A.F.F. TO 60" A.F.F. FOR MOUNTING HAND SINKS.

(B) FROM 42" A.F.F. TO 70" A.F.F. FOR MOUNTING SLANTED RACK SHELVES.

(C) FROM 42" A.F.F. TO 90" A.F.F. FOR MOUNTING WALL SHELVES, WALL CAB'S & REFRIGERATED DISPLAY CABINETS.

(D) FROM 48" A.F.F. TO 60" A.F.F. FOR MOUNTING PRE–RINSE SUPPORT BRACKETS.

(E) FROM 40" A.F.F. TO 5'–6" A.F.F. FOR MOUNTING MOP HOLDER.

(F) FROM 65" A.F.F. TO 96" A.F.F. FOR MOUNTING HOSE REEL SPRAYERS.

(G) FROM FINISHED CEILING DOWN TO 24" FOR MOUNTING FIRE BOX.

(H) FROM 56" A.F.F. TO 70" A.F.F. FOR MOUNTING WATER FILTER.

(I) FROM 22" A.F.F. TO 29" A.F.F. FOR MOUNTING WATER FILTERS.

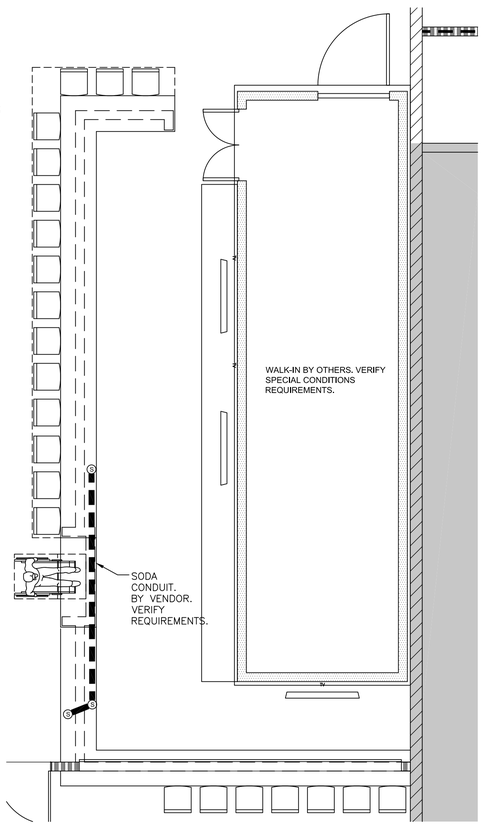
(J) FROM 30" A.F.F. TO 96" A.F.F. FOR MOUNTING WALL FAUCET AND WALL CABINET.

(K) FROM 34" A.F.F. TO 40" A.F.F. FOR MOUNTING S/ST "Z" CLIP AT TABLE BACKSPLASH.

(L) FROM 6" A.F.F. TO 12" A.F.F. FOR MOUNTING WALL–MOUNTED TABLE CROSSBRACE.

(M) FROM 12"A.F.F. TO 24"A.F.F. FOR MOUNTING COOKING EQUIP. RESTRAINING DEVICE.

(N) FROM 48" A.F.F. TO 70" A.F.F. FOR MOUNTING SALAMANDER.



3 BAR SPECIAL CONDITIONS PLAN

LEGEND – MECHANICAL CONNECTION

EXHAUST DUCT CONNECTION

MAKE–UP AIR DUCT CONNECTION

MECHANICAL NOTES:

1. ALL EXHAUST DUCTS SHALL BE FULLY WELDED, WATERTIGHT, CORROSION RESISTANT AND SHALL COMPLY WITH NFPA 96 AND ALL APPLICABLE CODES.
2. SEE MECHANICAL/ELECTRICAL ENGINEER'S DRAWINGS AND SPECIFICATIONS.
3. BY MECHANICAL/ELECTRICAL CONTRACTOR.
4. SEE MECHANICAL/ELECTRICAL ENGINEER'S DRAWINGS AND SPECIFICATIONS FOR FAN REQUIREMENTS.
5. ALL FINAL MECHANICAL CONNECTIONS TO EQUIPMENT, EXTERNAL AND INTERNAL PARTS, FITTINGS, AND ETC, TO MAKE EQUIPMENT OPERATIONAL, TO BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR, UNLESS OTHERWISE SPECIFIED.
6. ALL VERTICAL DUCT DROPS TO THE EXHAUST HOOD, CONDENSATE HOOD, AC, AND THE CEILING MAKE-UP AIR DIFFUSERS SHOULD NOT BE INSTALLED UNTIL THE EXHAUST HOOD, AC, MAKE-UP AIR DIFFUSERS ARE HUNG IN THEIR PERMANENT LOCATIONS.

VENTILATION SERVICE SCHEDULE

Item No		Qty	HVAC Exhaust Duct Size (in)	HVAC Exhaust CFM	HVAC Exhaust SPWG	HVAC Exhaust Rough-In	HVAC Make-Up Duct Size (in)	HVAC Make-Up CFM	HVAC Make-Up SPWG	HVAC Make-Up Rough-In	HVAC Remarks
7	EXHAUST PLENUM	1	14x14	2140	-0.453	M-7					SEE MANUFACTURER DRAWING FOR DETAILS. SEE NOTES
	EXHAUST PLENUM	1	14x14	2051	-0.416	M-7.1					SEE MANUFACTURER DRAWING FOR DETAILS. SEE NOTES
	SUPPLY PLENUM	2					10x24	794	0.14	M-7.2	SEE MANUFACTURER DRAWING FOR DETAILS. SEE NOTES
	SUPPLY PLENUM	2					10x26	883	0.14	M-7.3	SEE MANUFACTURER DRAWING FOR DETAILS. SEE NOTES
20	EXHAUST PLENUM	1	12x14	600	-0.032	M-20					SEE MANUFACTURER DRAWING FOR DETAILS. SEE NOTES

RAPIDS
FOODSERVICE CONTRACT & DESIGN

36

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344–1161
Fax: (314)344–1136

ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
Marion, IA

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

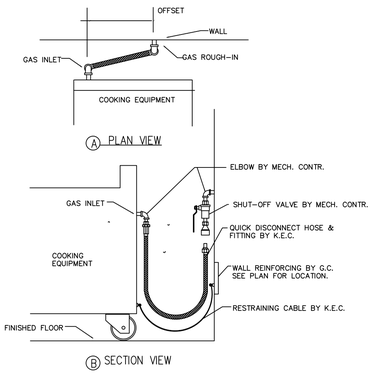
FOODSERVICE
BUILDING WORKS PLAN

REVISIONS

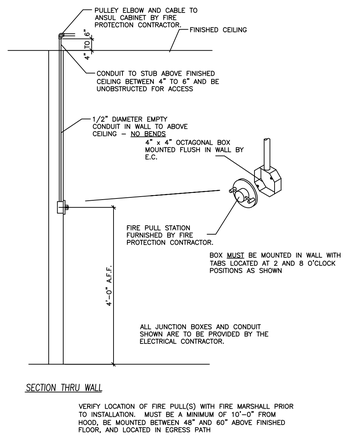
1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	1/4" = 1'-0"
JOB NO.	1808JW01

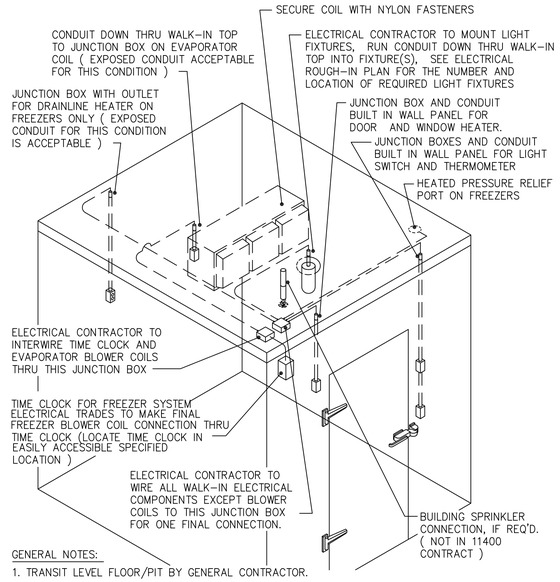
FS-4



1 QUICK DISCONNECT DETAIL
NOT TO SCALE



2 FIRE PULL DETAIL
NOT TO SCALE



GENERAL NOTES:

1. TRANSIT LEVEL FLOOR/PIT BY GENERAL CONTRACTOR.
2. ALL INTERCONNECTING CONDUIT TO BE RUN ABOVE WALK-IN OR BUILT-IN THE WALL PANELS, EXPOSED CONDUIT INSIDE WALK-IN WILL NOT BE ACCEPTABLE EXCEPT FOR THE CONDITIONS SHOWN AND NOTED IN THE ABOVE ILLUSTRATION BY E.C.
3. SEAL ALL PENETRATIONS THRU WALK-IN CEILING, WALL PANELS AND INSIDE ELECTRICAL CONDUIT OUTSIDE AND INSIDE WALK-IN WITH DOW CORNING #999A SILICONE GLAZING SEALANT, BY E.C.
4. PROVIDE HOLE FOR SPRINKLER HEAD (IF REQUIRED) AND ELECTRICAL CONDUIT AFTER INSTALLATION SEAL WITH DOW CORNING #999A SILICONE GLAZING SEALANT.
5. E.C. PROVIDE 1/2" OC PVC CONDUIT AT ALL PENETRATIONS THRU INSULATED PANELS. SEAL WITH DOW CORNING #999A SILICONE SEALANT, BY ELECTRICAL CONTRACTOR.
6. DRAIN LINES: PLUMBING CONTRACTOR DRAINS SHALL BE TRAPPED OUTSIDE OF WALK-IN FREEZER DRAIN SHALL BE HEATED AND INSULATED TO PREVENT FREEZING. ALL PLUMBING TO BE IN ACCORDANCE WITH APPLICABLE CODES.
7. WALK-IN ROOF NOT DESIGNED FOR FOOT TRAFFIC OR STORAGE.
8. ALLOW MINIMUM 1" CLEARANCE ALL AROUND WALK-IN.
9. ALLOW MINIMUM 2" CLEARANCE ALL ABOVE WALK-IN.
10. SHEET METAL PANEL FACINGS MAY BE SUSCEPTIBLE TO STAINING DUE TO EXCESSIVE MOISTURE CREATED BY HYDRATION OF CONCRETE TYPE MATERIALS: IT IS ABSOLUTELY NECESSARY THAT EACH ROOM BE PROPERLY VENTILATED. ALSO NOTE THAT SPECIAL PRECAUTIONS MUST BE TAKEN WHEN USING MURIATIC ACID DUE TO EFFECTS HYDROCHLORIC ACID FUMES HAVE ON ALUMINUM AND STAINLESS STEEL.
11. ELECT. CONTR. TO PROVIDE AND INSTALL ALL CONDUIT AND WIRING FOR CONTROLS, LIGHT(S), DOOR HEATER(S), EVAP. COIL(S), HEATED VENTS, COMPRESSORS DRAINLINE HEAT TAPE PLUG, DEFROST HEATERS, AND ETC. FOR WALK-IN COOLER(S), FREEZER(S).
12. ALL FLOOR, WALL, AND CEILING JOINTS TO BE SEALED WITH DOW CORNING #999A SILICON GLAZING SEALANT, BY WALK-IN INSTALLER.
13. INTERIOR OF CONDUIT TO BE SEALED BY E.C. UPON INSTALLATION TO PREVENT MOISTURE BUILD UP INSIDE CONDUIT LINES AND WALK-IN.

3 WALK-IN WIRING DETAIL
NOT TO SCALE

RAPIDS
FOODSERVICE CONTRACT & DESIGN
13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
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Burlington, NC
Marion, IA

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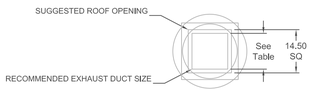
Direct Drive Upblast Centrifugal Roof Exhaust Fan

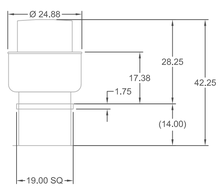
MARK INFORMATION		FAN INFORMATION						MOTOR INFORMATION					
QTY	MARK	MODEL	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	NEC FLA*
1	DEF-1	XRUD-099-VG	600	0.5	1,278	0.1	63	0.25	115/60/1	OP	1725	1	5.8

*NEC FLA - Based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.

DEF-1 : SELECTED OPTIONS AND ACCESSORIES
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Roof Curb-Galv., GPI-19-12-G14, Under Sized 1.5 in. Total, Tray, 1 in. Insulation
Foam Curb Seal (Attached)
Damper Shipped Loose, BD-100-PB-12X12, Gravity Operated, Not Coated
Birdscreen: Galvanized

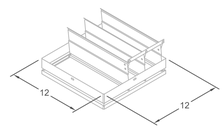


DUCT TYPE	SIZE
STANDARD	12 SQ
FIRE-WRAPPED	4 SQ

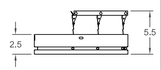


DUCT DIMENSIONS ARE LARGEST POSSIBLE DUCT TO FIT THROUGH CURB. CONSULT SYSTEM DESIGN ENGINEER FOR RECOMMENDED DUCT SIZE.

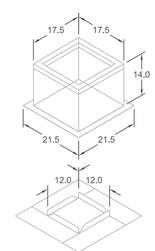
OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.



DAMPER



TYP. SECTION VIEW



PROJECT 8/27/2018

MARK

DEF-1

MELVIN BREWING

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

ACCUREX

RAPIDS
FOODSERVICE CONTRACT & DESIGN

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
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USED OR REPRODUCED WITHOUT CONSENT; AND MUST BE RETURNED TO R.F.C.D. UPON REQUEST.

Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

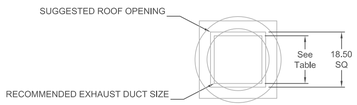
FS-6

Belt Drive Upblast Centrifugal Roof Exhaust Fan

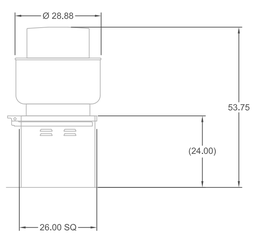
MARK INFORMATION		FAN INFORMATION						MOTOR INFORMATION					
QTY	MARK	MODEL	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	NEC FLA*
1	EF-1	XRUB-141-10	2,140	0.75	1,473	0.66	126	1	208/60/3	OP	1725	1	4.6

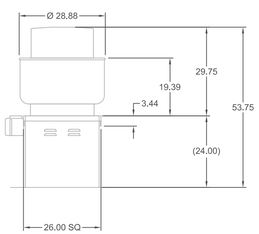
*NEC FLA - Based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.

EF-1 : SELECTED OPTIONS AND ACCESSORIES
Larger curb cap size - 26 in. square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-1, Toggle, Shipped with Unit
Roof Curb-Galv., GPFV-26-G24, Under Sized 1.25 in. Total
Hinged Base (Attached)
High Temp Curb Seal Rated for Continuous Duty at 2000 F (Attached)
Grease Trap (PN 475538)
Heat Baffle (Attached)
Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)



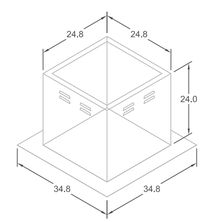
DUCT TYPE	SIZE
STANDARD	16 SQ
FIRE-WRAPPED	8 SQ





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

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.



ACCUREX

PROJECT 8/27/2018

MELVIN BREWING

EF-1

MARK

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-7

SHEET 8 OF 15

RAPIDS
FOODSERVICE CONTRACT & DESIGN
13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
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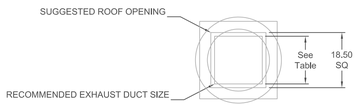
Belt Drive Upblast Centrifugal Roof Exhaust Fan

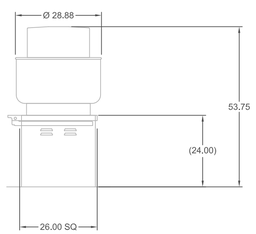
MARK INFORMATION		FAN INFORMATION						MOTOR INFORMATION					
QTY	MARK	MODEL	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	NEC FLA*
1	EF-2	XRUB-141-10	2,051	0.75	1,436	0.61	126	1	208/60/3	OP	1725	1	4.6

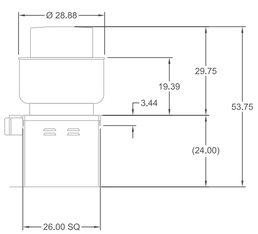
*NEC FLA - Based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.

EF-2 : SELECTED OPTIONS AND ACCESSORIES
Larger curb cap size - 26 in. square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-1, Toggle, Shipped with Unit
Roof Curb-Galv., GPFV-26-G24, Under Sized 1.25 in. Total
Hinged Base (Attached)
High Temp Curb Seal Rated for Continuous Duty at 2000 F (Attached)
Grease Trap (PN 475538)
Heat Baffle (Attached)



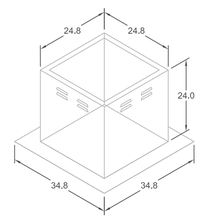
DUCT TYPE	SIZE
STANDARD	16 SQ
FIRE-WRAPPED	8 SQ





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

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR.



PROJECT 8/27/2018

MARK

MELVIN BREWING

EF-2

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

ACCUREX

RAPIDS
FOODSERVICE CONTRACT & DESIGN

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
St. Paul, MN
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Marion, IA

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-8

HOOD INFORMATION

HOOD NO.	MARK	MODEL	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	COOKING LOAD / DUTY RATING	EXHAUST					SUPPLY		TOTAL WEIGHT LBS.	SECTION LOCATION
			LENGTH	WIDTH	HEIGHT			TOTAL CFM	COLLAR(S)				MUA CFM	AC CFM		
									WIDTH	LENGTH	DIA.	CFM	S.P.			
1	HOOD 1	XBEW-107-S	107	54	24	430 SS WHERE EXPOSED	HEAVY	2140	14	14		2140	0.453	1587		338.833	LEFT
2	HOOD 1	XBEW-107-S	107	54	24	430 SS WHERE EXPOSED	HEAVY	2051	14	14		2051	0.416	1765		338.833	RIGHT

HOOD INFORMATION

HOOD NO.	MARK	LIGHTING DETAILS			GREASE FILTRATION DETAILS			UTILITY CABINET(S)				
		FIXTURE TYPE BULB / LAMP INFO	QTY	FOOT CANDLES	TYPE / MODEL MATERIAL	QTY	SIZE (IN.)	LOCATION	FIRE SYSTEM		CONTROLS	
							L H		TYPE	SIZE	MODEL	INTERFACE
1	HOOD 1	INCANDESCENT (GLOBE) 100W A19 (BULBS NOT INCL.)	3	41.7	BAFFLE STAINLESS STEEL	4	16 20					
						2	20					
2	HOOD 1	INCANDESCENT (GLOBE) 100W A19 (BULBS NOT INCL.)	3	41.7	BAFFLE STAINLESS STEEL	4	16 20	RIGHT	AMEREX KP	7.5	XFCC	SWITCHES
						2	20					

SUPPLY PLENUM INFORMATION

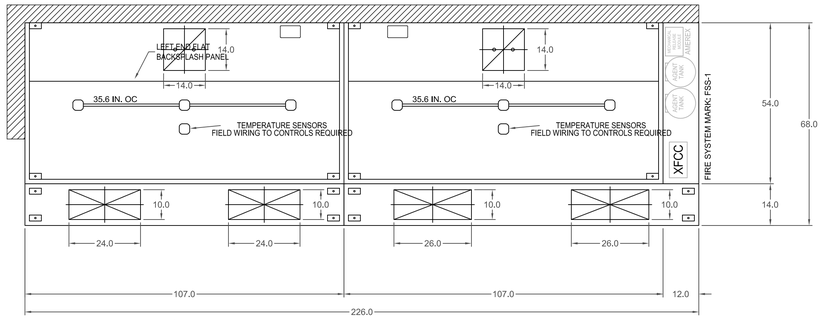
HOOD NO.	MARK	POS.	TYPE	SIZE (IN.)			INSULATED	DAMPER(S)	LED LIGHT(S)		TOTAL CFM	COLLARS								
				L	W	H			SUPPLIED	QTY		TYPE	MOUNTING	QTY	W	L	DIA.	CFM	S.P.	VEL.
1	HOOD 1	FRONT	ASP	107	14	10	NO	YES	NO		1587	MUA	LOOSE	2	10	24		794	0.14	476
2	HOOD 1	FRONT	ASP	119	14	10	NO	YES	NO		1765	MUA	LOOSE	2	10	26		883	0.14	489

HOOD OPTIONS

- UL 710 LISTED W/ OUT EXHAUST FIRE DAMPER - UL #R25625
- SHIPPED LOOSE EXHAUST COLLAR(S)
- PERFORMANCE ENHANCING LIP (PEL) TECHNOLOGY
- STANDING SEAM CONSTRUCTION FOR SUPERIOR STRENGTH

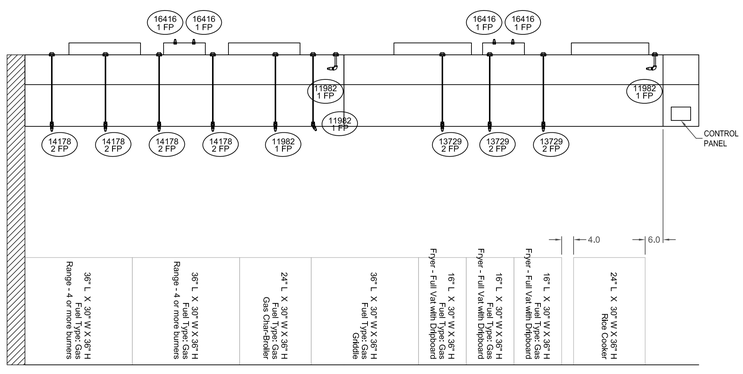
SPECIAL DESIGN REQUESTS

- SDR #Q9999999 - VERIFY PARTIAL LEFT WALL DIMENSION



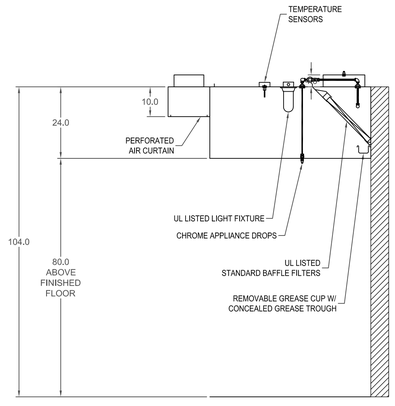
MARK: HOOD 1 - SECTION 1
PLAN VIEW

MARK: HOOD 1 - SECTION 2
PLAN VIEW



MARK: HOOD 1 - SECTION 1
ELEVATION VIEW

MARK: HOOD 1 - SECTION 2
ELEVATION VIEW



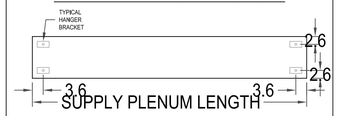
MARK: HOOD 1 (LAST HOOD IN ROW)
SECTION VIEW

HOOD HANGING HEIGHT FOR FIRE SYSTEMS

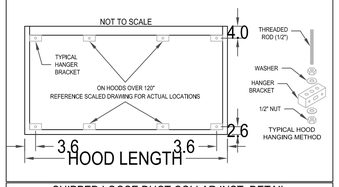
VERIFICATION OF HOOD HANGING HEIGHT ABOVE FINISHED FLOOR (A.F.F.) IS REQUIRED FOR CORRECT PLACEMENT OF FIRE SYSTEM NOZZLES.

- ☐ RECOMMENDED HANGING HEIGHT = 80" FROM FINISHED FLOOR TO LOWER FRONT EDGE OF HOOD.
- ☐ OTHER HANGING HEIGHT = _____" FROM FINISHED FLOOR TO LOWER EDGE OF HOOD.

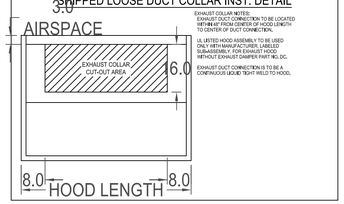
SUPPLY PLENUM HANGER BRACKET DETAIL



HOOD HANGER BRACKET DETAIL



SHIPPED LOOSE DUCT COLLAR INST. DETAIL



PROJECT 8/27/2018
MARK HOOD 1

MELVIN BREWING

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

ACCUREX

RAPIDS
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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-9

SHEET 10 OF 15

CONTROL INFORMATION

MARK	ELECTRICAL CONTROL PACKAGE		USER INTERFACE		FANS CONTROLLED				
	MODEL	LOCATION	TYPE	LOCATION	MARK	TYPE	VOLT	PHASE	HP
HOOD 1 CONTROLS	XFCC	CABINET – RIGHT END OF HOOD 1	SWITCHES	CABINET – RIGHT END OF HOOD 1	EF-1	EXHAUST	208	3	1
					MUA-1	SUPPLY	208	3	3
					EF-2	EXHAUST	208	3	1

CONTROL FEATURES

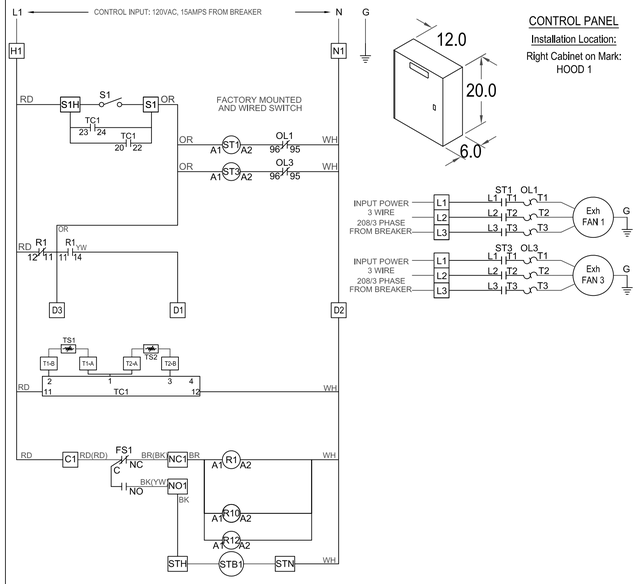
- STARTERS PROVIDED IN CONTROL PANEL - QTY 2
- 2 POSITION LIGHT SWITCH - QTY 1
- 2 POSITION FAN SWITCH - QTY 1
- -FACTORY MOUNTED EXHAUST TEMPERATURE SENSORS - QTY 2
- TURN ON EXHAUST IN FIRE
- LIGHTS OUT IN FIRE
- MUA INTERFACE
- POWER FOR SHUNT TRIP
- THERMAL OVERLOADS IN CABINET

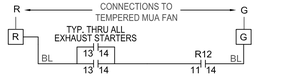
Kitchen Fan Control Center (XFCC)
Electrical Prewire Package
Melvin Brewing

SYSTEM DRAWING NOTE

These drawings shall not be removed from this equipment.
For additional information call ACCUREX at 1-800-371-6858

ACCUREX





TEMPERATURE INTERLOCK CALIBRATION

1. PRESS SET BUTTON. 'St1' WILL APPEAR.
2. PRESS UP OR DOWN BUTTON TO NAVIGATE TO SET POINT THAT YOU WISH TO ADJUST ('St1', 'St2', OR 'St3'),
3. PRESS SET BUTTON TO VIEW CURRENT SET POINT. PRESS UP OR DOWN BUTTON TO ADJUST AND PRESS SET BUTTON TO STORE VALUE.
4. PRESS SET + DOWN BUTTONS TOGETHER TO EXIT OR WAIT 1 MINUTE.
5. CHECK SYSTEM OPERATION BEFORE MAKING ADDITIONAL ADJUSTMENTS.

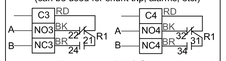
Panel Mark:	HOOD 1 CONTROLS
Hood Mark(s):	HOOD 1
Serial Number:	
Model:	XFCC

Motor	Fan Mark	HP	Volt	PH	FLA	Wire	Breaker
F1-E	EF-1	1	208	3	4.6	14 ga	15 amp
F2-S	MUA-1	3	208	3	10.6	14 ga	15 amp
F3-E	EF-2	1	208	3	4.6	14 ga	15 amp

1	Qty. Fan Switches (0-3)	X	Exhaust in Fire
1	Qty. Light Switches (0-3)	X	MUA Interface
0	Qty. Temp. Switches (0-1)	X	Lights Out In Fire
	One Switch for L & F	X	Fire Relay (#1)
X	Digital Temperature Interlock		Extra Fire Relay (#2)
2	Mounted Sensors - Factory		Extra Fire Relay (#3)
0	Mounted Sensors - Field		DPDT Relay w/SF
	Heat Switch \ Tempering SW		DPDT Relay w/EF
	Cool Switch /		Off Delay Relay
	AD Switch		SF Failure Light
X	Hood Switches		EF Failure Light
	Audible Alarm		Fan Failure Light (Appl.)
	Gas Reset Gas Off w/Fans		Aux. Supply Contact
	Power for Gas Solenoid		Tie In WWCP
X	Power for Shunt Trip		

Spare Fire Switch Contact (dry contacts for building alarm)

Spare Relay Contacts (activated by FS1)
(can be used for shunt trip, alarms, etc.)



A open w/power at H1/N1 & fire system armed
closed on fire or no power

B closed w/power at H1/N1 & fire system armed
open on fire or no power

TORQUE:	FIELD WIRING:
TERMINAL BLOCKS = 8 LB.IN GROUNDING BLOCKS = 8 LB.IN	USE MINIMUM 60° Copper Wire

LABEL DESCRIPTION

EF	Exhaust Fan	FACTORY WIRING
SF	Supply Fan	FIELD WIRING
ST	Starter	
OL	OverLoad	ALL WIRING 90°C 14 GA. UNLESS SPECIFIED
C	Contactor	
G	Ground	
S	Switch	WIRE COLOR
LT	Light	
FS	Fire Switch	BK - black
R	Relay	BL - blue
AF	Air Flow Switch	BR - brown
SV	Gas Solenoid	OR - orange
STB	Shunt Trip Breaker	PR - purple
D	Damper	RD - red
PB	PushButton	YW - yellow
EC	Evap Cooler	WH - white
TS	Temperature Sensor	
TC	Temperature Controller	

NOTES:
DRAWING SHOWN DE-ENERGIZED AT L1 (TERM. #H1). W/ FIRE SYSTEM ARMED (NON-FIRE MODE). (NORMAL OPERATION, R1 & R2 ARE ENERGIZED) IF WALL MOUNTED PREWIRE, OR FIELD INSTALLED FIRE SYSTEM, THE FIRE SYSTEM MICROSWITCHES MUST BE FIELD WIRED.

LISTED 438M — COMMERCIAL APPLIANCE OUTLET CENTER
ELECTRICAL RATINGS: 120V, 1PHASE, 60HZ, 15A
FILE #E313951

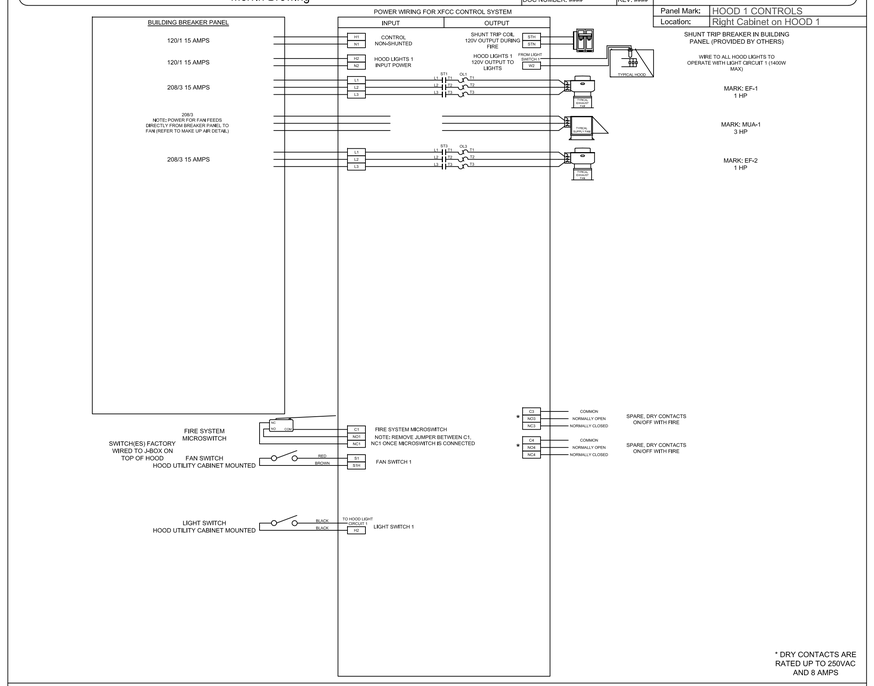
Wiring Diagram Code:

DOC NUMBER: #### REV: ####

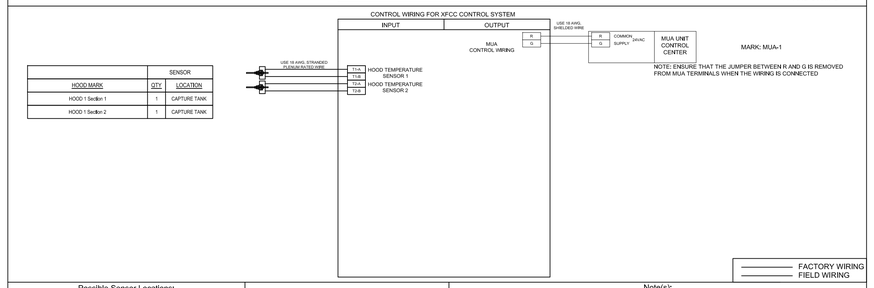
Kitchen Fan Control Center (XFCC)
Electrical - Field Wiring Schematic
Melvin Brewing

ACCUREX

Panel Mark:	HOOD 1 CONTROLS
Location:	Right Cabinet on HOOD 1

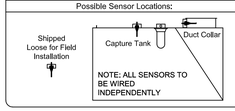


* DRY CONTACTS ARE RATED UP TO 250VAC AND 8 AMPS



	SENSOR	
HOOD MARK	QTY	LOCATION
HOOD 1 Section 1	1	CAPTURE TANK
HOOD 1 Section 2	1	CAPTURE TANK

Possible Sensor Locations:



Note(s):

1. All wiring to be done by certified and qualified persons and must be wired to all local & national codes.
2. Exhaust and supply fan(s) shown as typical for representation of the fan. For exhaust or supply fan detail see fan submittals.
3. Exhaust and/or supply fans may be shown more than once for purpose of separating power versus control wiring.
4. Power wiring is the responsibility of the electrician. Control wiring is the responsibility of controls contractor. If there is no controls contractor, both power and control wiring is the responsibility of the electrician.
5. All ground wiring not shown on above diagram for clarity.
6. For further instructions please see the XFCC Installation and Operations Manual that was shipped with panel, or contact ACCUREX's Kitchen Ventilation team at 1-800-371-6858

FACTORY WIRING
FIELD WIRING

PROJECT 8/27/2018

MARK

MELVIN BREWING

HOOD 1 CONTROLS

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

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RAPIDS
FOODSERVICE CONTRACT & DESIGN

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
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Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-10

HOOD INFORMATION

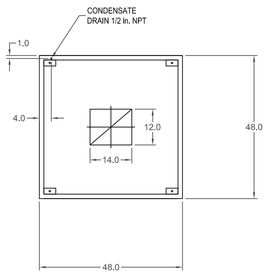
HOOD NO.	MARK	MODEL	HOOD DIMENSIONS (IN.)			HOOD CONSTR.	COOKING LOAD / DUTY RATING	EXHAUST					SUPPLY		TOTAL WEIGHT LBS.	SECTION LOCATION
			LENGTH	WIDTH	HEIGHT			TOTAL CFM	COLLAR(S)				MUA CFM	AC CFM		
									WIDTH	LENGTH	DIA.	CFM	S.P.			
1	HOOD 2 DISH	XD1-48-S	48.00	48	24	430 SS 100%	0	600	12	14		600	0.032			144	SINGLE

HOOD INFORMATION

HOOD NO.	MARK	LIGHTING DETAILS			BAFFLE FILTRATION DETAILS				UTILITY CABINET(S)				
		FIXTURE TYPE BULB / LAMP INFO	QTY	FOOT CANDLES	TYPE / MODEL MATERIAL	QTY	SIZE (IN.)		LOCATION	FIRE SYSTEM		CONTROLS	
							L	H		TYPE	SIZE	MODEL	INTERFACE
1	HOOD 2 DISH												

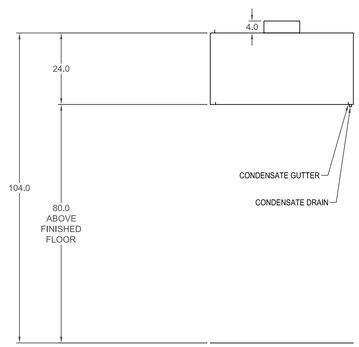
HOOD OPTIONS

SHIPPED LOOSE EXHAUST COLLAR(S)

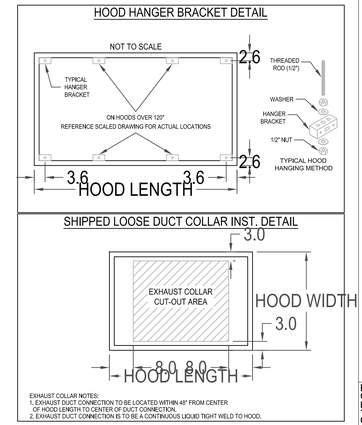


MARK: HOOD 2 DISH - SECTION 1
PLAN VIEW

MARK: HOOD 2 DISH - SECTION 1
ELEVATION VIEW



MARK: HOOD 2 DISH
SECTION VIEW



PROJECT 8/27/2018

MARK

MELVIN BREWING

HOOD 2 DISH

ACCUREX EASTERN MO SOUTHERN IL
TIM REAMS
SCOTT.DALLMAN@ACCUREX.COM
(314)324-2495

ACCUREX

RAPIDS
FOODSERVICE CONTRACT & DESIGN

36

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
Marion, IA

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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
EXHAUST HOOD

REVISIONS

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-11

EQUIPMENT SCHEDULE

Tempered Make-Up Air Unit — **Mark: MUA-1**

Qty	Accurex Model	Volume	External SP	Total SP	FRPM	Operating Power	Weight
1	XDG-112.1-H10	3,352 CFM	0.5 in. wg	1.619 in. wg	1143	2.25 hp	541 lb

Motor Information

Size	V/C/P	Enclosure	Motor with Shaft Grounding	Motor RPM	Windings	MCA	MOP
3 hp	208/60/3	ODP	No	1725	1	13.9	20

Heating

Type	Gas Type	Temperature			Energy			Connection Gas	Building Gas Pressure	Control Access
		Winter DB	Max Δ	Max LAT	Input	Output	Efficiency			
Direct Gas	Natural	5.1 F	59.9 F	65.0 F	235.7 MBH	216.9 MBH	92%	3/4"	1/2 PSI	11a

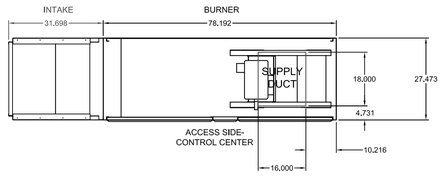
Outlet Sound Power By Octave Band

62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
94.6	85.6	77.1	76.8	74.5	71.6	69.3	61.7	80.3	69.3	17.5

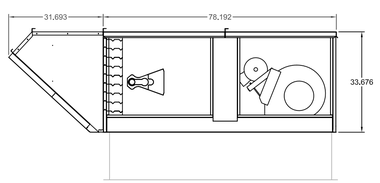
- LwA - A weighted sound power level based on ANSI S1.4
- dBA - A weighted sound pressure level base in 1/1 dB attenuation per octobe band at 5.0 ft.
- Noise Criteria (NC) based on an average attenuation of 1/1 5.00 per octobe band at 5.0 ft.

OPTIONS AND ACCESSORIES

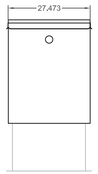
Air Flow Arrangement: Outdoor Air Only
Weatherhood: Aluminum Mesh, 20x25x2 - (1), 16x25x2 - (1)
Damper: Inlet
Outdoor Air Intake Position: End
Discharge Position: Bottom
Coating: Galvanized
Insulation: Duct Liner - Heat Source On
Access Side: Right-Hand
Control Center
Heat Inlet Air Sensor
Unit Controls: Terminal Strip
Temperature Control: Discharge
Direct Gas Options/Accessories
Approvals: ETL and IRI
Flame Sensing: Flame Rod
Ignition Control: Pilot
Unit Rated Gas Pressure: 1/2 PSI
Mounting: GPI-24.5/74.5-G16
Curb Includes: 1 In. Insul.
Unit Warranty: 1 Yr (Standard)



PLAN VIEW



ELEVATION VIEW



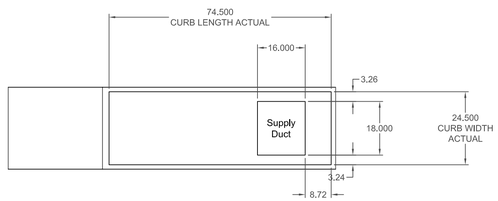
END VIEW

NOTE: Roof Opening Requirements:

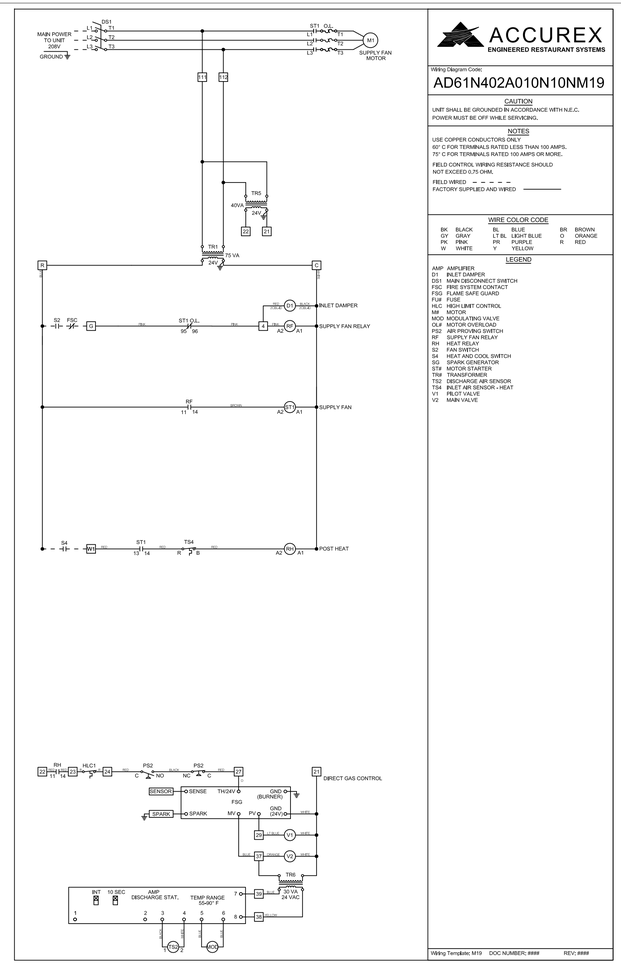
Minimum Roof Opening: The minimum roof opening size is the illustrated duct diameter plus 0.25 in. on all sides.
For example: If the duct size is 14 x 14 in. square, the minimum roof opening size is 14.5 x 14.5 in. square.

Maximum Roof Opening: There must be a minimum perimeter of 1.75 in. between the roof opening and the roof curb.
For example: If the roof curb is 75 x 30 in. square, the maximum roof opening is 71.5 x 26.5 in. inches square.

NOTE: The weatherhood and filter sections of the make-up air unit are not supported by the curb.
This is by design, in order to help alleviate water infiltration issues. MUA Unit supports are shipped loose with unit.



FOOTPRINT



ACCUREX
ENGINEERED RESTAURANT SYSTEMS

Wiring Diagram Code:
AD61N402A010N10NM19

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

NOTES
USE COPPER CONDUCTORS ONLY
60° C FOR TERMINALS RATED LESS THAN 100 AMPS.
75° C FOR TERMINALS RATED 100 AMPS OR MORE.

FIELD CONTROL WIRING RESISTANCE SHOULD NOT EXCEED 0.75 OHM.

FIELD WIRED - - - - - -
FACTORY SUPPLIED AND WIRED ———

WIRE COLOR CODE

BK	BLACK	BL	BLUE	BR	BROWN
GY	GRAY	LBL	LIGHT BLUE	O	ORANGE
PK	PINK	PP	PURPLE	R	RED
W	WHITE	Y	YELLOW		

LEGEND

AMP	AMPLIFIER
D1	INLET DAMPER
DS1	MAIN DISCONNECT SWITCH
FSC	FIRE SYSTEM CONTACT
FSG	FLAME SAFE GUARD
FU#	FUSE
HLC	HIGH LIMIT CONTROL
M#	MOTOR
MOD	MODULATING VALVE
OL#	MOTOR OVERLOAD
PS2	AIR PROVING SWITCH
RF	SUPPLY FAN RELAY
RH	HEAT RELAY
S2	FAN SWITCH
S4	HEAT AND COOL SWITCH
ST1	MOTOR STARTER
ST4	MOTOR STARTER
TR#	TRANSFORMER
TS2	DISCHARGE AIR SENSOR
TS4	INLET AIR SENSOR - HEAT
V1	PILOT VALVE
V2	MAIN VALVE

PROJECT 8/27/2018 | MARK | MUA-1

MELVIN BREWING

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RAPIDS
FOODSERVICE CONTRACT & DESIGN

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109-110 Hilltop Village Center dr.
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FOODSERVICE
EXHAUST HOOD

REVISIONS
1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-12

SHEET 13 OF 15

WALK - IN SPECIFICATIONS

Walkin

OVERALL SIZE: 13'-2" X 13'-0" X 8'-6 1/4"

PANELS
FOAMED IN PLACE URETHANE FOAM 4"

EXTERIOR FINISH
WALL: GALVALUME - EMBOSSED 26 GA EXCEPT AS NOTED
TOP: GALVALUME - EMBOSSED 26 GA
FLOOR: GALVALUME - EMBOSSED 26 GA

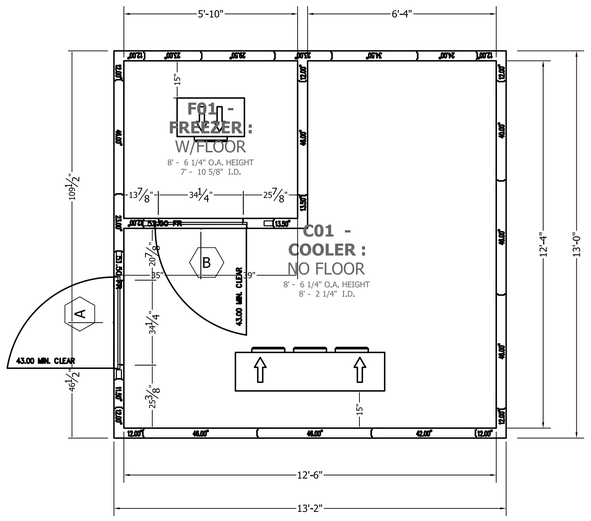
INTERIOR FINISH
WALL: GALVALUME - EMBOSSED WHITE 26GA.
TOP: GALVALUME - EMBOSSED WHITE 26GA.

FLOOR TYPE
C01 COOLER : SCREED, VINYL 4" X 4" HIGH
F01 FREEZER :
STANDARD 1000# ERA
ALUMINUM - SMOOTH ALUMINUM .100

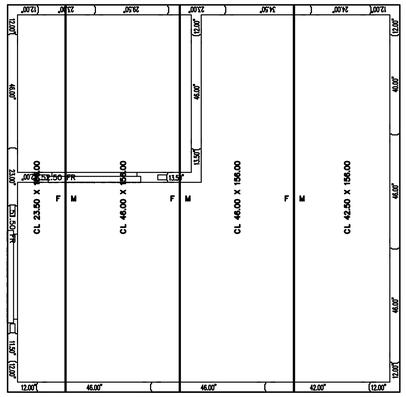
WALK-IN ACCESSORIES
(1) ARCTICFOX WIFI LDA KIT 120V 60HZ
(3) LIGHT FIXTURE - KASON 1810LC LED 48IN 120/230V 50/60HZ (DIODE STRIPS)

REFRIGERATION
Freezer :
KPC198LZOP-2E VOLTS: 208-230-60-1,BTU:6240
KEL16-049-2EC-PR-8 VOLTS: 208-230-60-1,BTU:6503
TEMP: WALK-IN -10,AMBIENT TEMP: 90

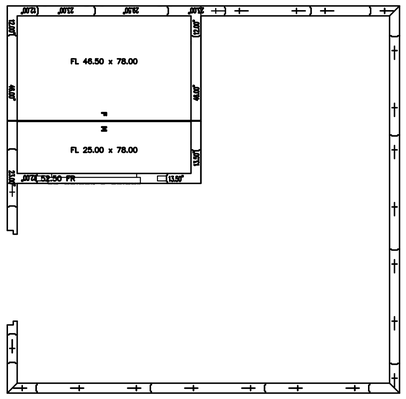
Cooler :
KPC149MOP-2E VOLTS: 208-230-60-1,BTU:13142
KAM36-141-1EC-PR-4 VOLTS: 115-60-1,BTU:14645
TEMP: WALK-IN 35,AMBIENT TEMP: 90



WALLS LAYOUT



TOPS LAYOUT



FLOORS LAYOUT

ATTENTION

1. **SUBMITTAL DRAWING** NOT INTENDED FOR INSTALLATION. **AS-BUILT DRAWING** FOR INSTALLATION WILL BE AVAILABLE AFTER ORDER IS PLACED. HARD COPY OF AS-BUILT DRAWING WILL BE IN HARDWARE BOX WITH WALK-IN SHIPMENT TO JOBSITE.
2. ALL WALK-INS ARE DESIGNED FOR INDOOR APPLICATION UNLESS NOTED OTHERWISE
3. PENETRATIONS AND SEALING OF ARE THE RESPONSIBILITY OF OTHERS
4. ALLOW 2" MINIMUM CLEARANCE WITH AIRFLOW OF 5 CFM PER 100 SQ FT AROUND ENTIRE PANEL SURFACES. INDOOR WALK-INS REQUIRE A 75°F AMBIENT AND 55% RELATIVE HUMIDITY OR LESS AROUND THE EXTERIOR OF THE WALK-IN.
5. GENERAL CONTRACTOR TO REFER TO DESIGN AND SPECIFICATION MANUAL FOR FLOOR DETAIL INFORMATION
6. QUARRY TILE OR CONCRETE FLOOR APPLICATIONS: METAL PANEL FACING MAY BE SUSCEPTIBLE TO STAINING DUE TO EXCESSIVE MOISTURE CREATED BY THE HYDRATION OF CONCRETE TYPE MATERIALS. IT IS ABSOLUTELY NECESSARY THAT EACH ROOM BE PROPERLY VENTILATED. SPECIAL PRECAUTIONS MUST ALSO BE TAKEN WHEN USING MURIATIC ACID DUE TO EFFECTS HYDROCHLORIC FUMES HAVE ON METAL MATERIALS
7. PANEL LAYOUT MAY CHANGE BASED ON OPTIMAL MANUFACTURING STANDARDS
8. WALK-IN TOP IS NOT DESIGNED FOR FOOT TRAFFIC OR STORAGE UNLESS NOTED OTHERWISE
9. IF CONDENSING UNIT IS LOCATED IN THE INTERIOR OF BUILDING A MINIMUM OF 24" OF CLEARANCE IS REQUIRED AROUND TOP AND SIDES
10. FLOOR, CURB, AND PIT DETAILS ARE FOR GENERAL REFERENCE ONLY. THESE DRAWINGS SHOULD NOT BE USED OR INCORPORATED IN THE DESIGN OR PREPARATION OF THE INSULATED FLOOR, SUB-SLAB OR CURBS, WITHOUT HAVING THE DESIGN REVIEWED BY A QUALIFIED ENGINEER. ALL FOOTINGS, FOUNDATION WALLS AND CONCRETE WEAR SLABS ARE THE RESPONSIBILITY OF THE BUILDING ENGINEER OR ARCHITECT.
11. THE FOAM PLASTIC USED IN THIS PRODUCT COMPLIES TO THE IBC SECTION 2603 AS FOLLOWS: FLAME SPREAD RATING: 20; SMOKE DEVELOPED RATING: 450; FLASH IGNITION TEMPERATURE RATING: 915°f; SPONTANEOUS IGNITION TEMPERATURE RATING: 950°f.
12. R-VALUES MEET DOE REQUIREMENTS AND ARE ASTM C518 TESTED. COOLER R-VALUES ARE R-29 FOR 4" THICK, R-36 FOR 5" THICK, AND R-44 FOR 6" THICK PANELS. FREEZER R-VALUES ARE R-32 FOR 4" THICK, R-40 FOR 5" THICK, R-48 FOR 6" THICK PANELS, AND R-29 FOR 4" FLOORS.

FOR APPROVAL
YOU MUST REVIEW ALL NOTES, DETAILS, DIMENSIONS, FINISHES, DOORS SIZES, LOCATIONS AND SWINGS

☐ **APPROVAL**- NO CHANGE REQUIRED, MANUFACTURE AS DRAWN.

☐ **APPROVED AS NOTED**- MAKE REQUIRED CHANGES AND MANUFACTURE AS DRAWN.

☐ **NOT APPROVED**- DESIGN CHANGES REQUIRE DRAWING REVISION AND RESUBMISSION.

DATE:_____ BY:_____

SMOOTH FINISH DISCLAIMER

Panels with non-textured and/or no-profile panel finishes (smooth finishes) on the exterior and interior faces may exhibit "oil canning" and flatness imperfections on the surface. Our standard panels have a stucco embossed texture on both faces that helps to reduce oil canning and any other irregularities in the exposed surface. Please be aware of this potential situation in your specification process. Such "oil canning" and flatness issues are typical and are not covered under standard warranties.

SPACE DESIGNATED FOR ENGINEERS SEAL

DRAWING #: A13260 9R2
UNIT #: 001
ORDER #:

KOLPAK
A Welbilt Brand

MELVIN BREWING COMBO
SAINT LOUIS,MO 63101 USA

KAIN MCARTHUR

DATE:
QUOTE REVISION:
DATE:
CHECK BY:
DATE:
DRAWN BY:

SHEET #
AD-1 of 2

RAPIDS
FOODSERVICE CONTRACT & DESIGN
13789 Rider Trail North
Suite: 101
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Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

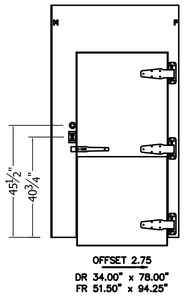
FOODSERVICE
WALK-IN

REVISIONS
1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-13

SHEET 14 OF 15



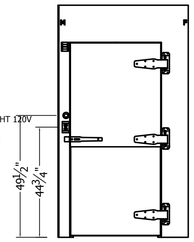
OFFSET 2.75
DR 34.00" x 78.00"
FR 51.50" x 94.25"

DW-1

FRAME:
RECESSED 0" WITH 0" LEVELING SAND AND 0" TILE AND GROUT
EXT: GALVALUME - EMBOSSED 26 GA
INT: GALVALUME - EMBOSSED WHITE 26GA.

PLUG:
EXT: GALVALUME - EMBOSSED 26 GA
EXT: KICKPLATE, ALUM .063 DIAMOND TREAD 36" HIGH
INT: GALVALUME - EMBOSSED WHITE 26GA.
INT: KICKPLATE, ALUM .063 DIAMOND TREAD 36" HIGH

HARDWARE AND ACCESSORIES:
(1) SWITCH - PILOT LIGHT INCLUDED UL (STD)
(1) THERMOMETER - 2 INCH DIAL W/6' LEAD (STD)
(1) LIGHT FIXTURE - KASON 1803 LED W/BULB, GLOBE AND NIGHTLIGHT 120V (STD)
(3) HINGE - KASON 1278 STEEL POWDER COATED (SPRING ASSISTED)
(1) HANDLE - KASON 27C POLISHED CHROME
(1) DOOR CLOSER - KASON 1094 POLISHED CHROME



OFFSET -3.25
DR 34.00" x 78.00"
FR 52.50" x 94.25"

DW-2

FRAME:
RECESSED 0" WITH 0" LEVELING SAND AND 0" TILE AND GROUT
EXT: GALVALUME - EMBOSSED 26 GA
INT: GALVALUME - EMBOSSED WHITE 26GA.

PLUG:
EXT: GALVALUME - EMBOSSED 26 GA
EXT: KICKPLATE, ALUM .063 DIAMOND TREAD 36" HIGH
INT: GALVALUME - EMBOSSED WHITE 26GA.
INT: KICKPLATE, ALUM .063 DIAMOND TREAD 36" HIGH

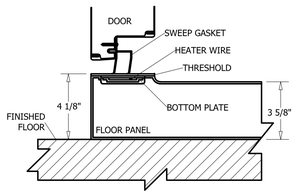
HARDWARE AND ACCESSORIES:
(1) VENT - PRESSURE RELIEF, HEATED KASON 1825 (STD)
(1) LIGHT FIXTURE - KASON 1803 LED W/BULB, GLOBE AND NIGHTLIGHT 120V (STD)
(1) THERMOMETER - 2 INCH DIAL W/6' LEAD (STD)
(1) SWITCH - PILOT LIGHT INCLUDED UL (STD)
(3) THRESHOLD, STAINLESS STEEL 14 GA
(1) HEATER WIRE, 2.5 WATT / FT
(1) DOOR CLOSER - KASON 1094 POLISHED CHROME
(1) HANDLE - KASON 27C POLISHED CHROME
(3) HINGE - KASON 1278 STEEL POWDER COATED (SPRING ASSISTED)

A

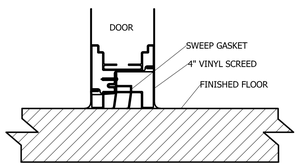
DOOR ELECTRICAL INFORMATION				
DESCRIPTION	QTY	VOLT	AMP	AMP LOAD
VAPOR PROOF LIGHT	0	115	1	0
FLUORESCENT LIGHT	0	115	1.7	0
LED LIGHT	1	115	1	1
HEATER WIRE	0	115	0.9	0
DIGITAL THERMOMETER	0	115	0.1	0
HEATED AIR VENT	0	115	0.1	0
HEATED VIEWPORT	0	115	0.9	0
AIR SHIELD	0	115	1.4	0
IN/OUT BUZZER	0	115	0.1	0
MODULARM 75/75B OR DATALARM	0	115	6	0
OTHER ALARMS	0	115	1	0
115 VOLT, SINGLE PHASE, 60 Hz, TOTAL DOOR AMPS:				1

B

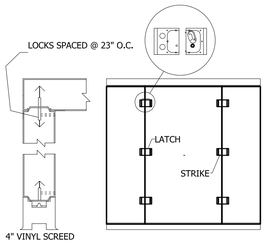
DOOR ELECTRICAL INFORMATION				
DESCRIPTION	QTY	VOLT	AMP	AMP LOAD
VAPOR PROOF LIGHT	0	115	1	0
FLUORESCENT LIGHT	0	115	1.7	0
LED LIGHT	1	115	1	1
HEATER WIRE	1	115	0.5	0.5
DIGITAL THERMOMETER	0	115	0.1	0
HEATED AIR VENT	1	115	0.04	0.04
HEATED VIEWPORT	0	115	0.9	0
AIR SHIELD	0	115	1.4	0
IN/OUT BUZZER	0	115	0.1	0
MODULARM 75/75B OR DATALARM	0	115	6	0
OTHER ALARMS	0	115	1	0
115 VOLT, SINGLE PHASE, 60 Hz, TOTAL DOOR AMPS:				1.54



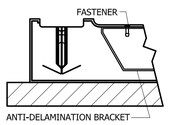
1 DETAIL - 4IN FLOOR-HTR WIRE
Scale: NTS



2 DETAIL - 4IN VSCD
Scale: NTS

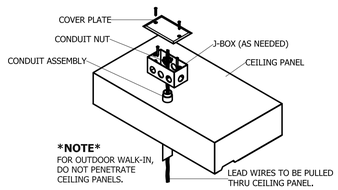


3 DETAIL - PANEL CONNECTION AT 4IN VINYL SCREEDS
Scale: NTS



4 DETAIL - FOOT-LIGHT ROLLING CART FLOOR CONSTRUCTION
Scale: NTS

AT EVERY ENTRANCE CONDUIT, FORCE SEALANT AROUND THE EXTERIOR OF THE ELECTRICAL CONDUIT AND INSIDE THE CONDUIT AROUND THE WIRES. FAILURE TO ELIMINATE AIRFLOW IN THE CONDUIT WILL ALLOW MOISTURE TO DAMAGE ELECTRICAL COMPONENTS ESPECIALLY LIGHTS WHICH **WILL NOT BE COVERED UNDER WARRANTY.**

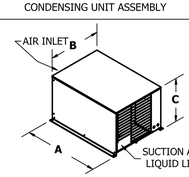


5 DETAIL - ELECTRICAL CONDUIT PENETRATION
Scale: NTS

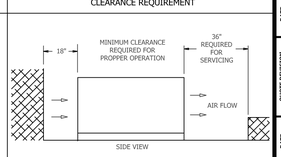
COMPARTMENT		CONDENSING UNIT																		
	TEMP F				DIMENSIONS				COMPRESSOR						CONDENSER FAN MTR			TOTAL AMPS	MX AMP DISC	CONNECTIONS O.D.		RCV CAP
DESCRIPTION	WI	QTY	MODEL#	COMPRESSOR TYPE	L (A)	W (B)	H (C)	LBS	HP	RLA	LRA	V	HZ	Φ	FLA	V	Φ			SUCT	LIQ	@ 90% FULL (lbs)
Freezer	-10	1	KPC198LZOP-2E	Scroll	33	25.5	19.25	186	2	13.6	61	208-230	60	1	1.2	208-230	1	15.1	30	7/8	3/8	10.4
Cooler	35	1	KPC149MOP-2E	Hermetic	33	25.5	19.25	163	1 1/2	9.6	59.2	208-230	60	1	1.1	208-230	1	10.9	20	7/8	3/8	10.4

COMPARTMENT		UNIT COOLER											
	TEMP F			DIMENSIONS				FAN		HEATER			CONNECTIONS O.D.		
DESCRIPTION	WI	QTY	MODEL # (DEFROST: A-AIR E-ELECTRIC)	L (D)	W (E)	H (F)	LBS	TOTAL AMPS	V	TOTAL AMPS	V	Φ	SUCT	LIQ	DRAIN
Freezer	-10	1	KEL16-049-2EC-PR-8	27.125	15.5	16.75	47	0.5	208-230	4.9	208-230	1	5/8	3/8	3/4
Cooler	35	1	KAM36-141-1EC-PR-4	60.125	15.5	16.75	72	2.4	115	0	N/A	0	5/8	3/8	3/4

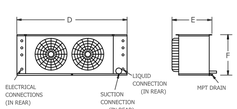
CONDENSING UNIT ASSEMBLY



CLEARANCE REQUIREMENT



EVAPORATOR - MODEL AM, EM, EL, AMB, ELB



DRAWING #: A132609R2
UNIT #: 001
ORDER #:

KOLPAK
A Welbilt Brand
2915 Technicum Avenue North, Plymouth, TN 55441 | (763) 694-7626 | (800) 526-7626

MELVIN BREWING COMBO
SAINT LOUIS,MO 63101 USA

KAIN MCARTHUR

DRAWN BY:	DATE:
CHECK BY:	DATE:
QUOTE REVISION	DATE:

SHEET #
AD-2 of 2

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RAPIDS
FOODSERVICE CONTRACT & DESIGN

13789 Rider Trail North
Suite: 101
Earth City, MO 63045
Phone: (314)344-1161
Fax: (314)344-1136
ADDITIONAL LOCATIONS
St. Paul, MN
Burlington, NC
Marion, IA

Melvin Brewing
109-110 Hilltop Village Center dr.
Eureka, MO 63025

FOODSERVICE
WALK-IN

REVISIONS
1
2
3
4
5
6
7

DRAWN BY	K.P.B.
CHECKED BY	K.P.B.
DATE ISSUED	8-31-2018
SCALE	NTS
JOB NO.	1808JW01

FS-14

SHEET 15 OF 15

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FINISH LEGEND

FABRIC

FA-01
DESCRIPTION: BUILT-IN SEAT FABRIC
MANUF.: C.F. STINSON
PATTERN: STAPLE
COLOR: STP 76 MINK
VENDOR INFO: SEE SPEC SHEET

FA-01
DESCRIPTION: CURTAIN
MANUF.: CARNEGIE FABRIC
PATTERN: 101560 LINK
COLOR: 201
VENDOR INFO: SEE SPEC SHEET

GLASS

GL-01
DESCRIPTION: BATHROOM MIRROR
MANUF.: PROVIDED BY G.C.
STYLE/COLOR: FRAME-LESS

METAL

MT-01
DESCRIPTION: 7/8" CORRUGATED METAL
MANUF.: BRIDGER STEEL
COLOR: BLACK
VENDOR INFO: SEE SPEC SHEET

MT-02
DESCRIPTION: BLACKENED STEEL
MANUF.: PROVIDED BY G.C.
REMARKS:

MT-03
DESCRIPTION: PERFORATED METAL
MANUF.: MCNICHOLS CO.
MODEL/STYLE: 17169169MT / HEXAGONAL
SIZE: 24" X 48"
MATERIAL: ALUMINUM
VENDOR INFO: SEE SPEC SHEET

PAINT

PT-01
DESCRIPTION: GENERAL PAINT COLOR
MANUF.: SHERWIN WILLIAMS
COLOR: SW 7060 ATTITUDE GRAY
FINISH: EGGSHELL AT WALLS/FLAT AT CEILING/ SEMI-GLOSS AT MILLWORK AND TRIM

PT-02
DESCRIPTION: GREEN ACCENT PAINT
MANUF.: SHERWIN WILLIAMS
COLOR: SW 6419 SAGUARO
FINISH: EGGSHELL AT WALLS/FLAT AT CEILING/ SEMI-GLOSS AT MILLWORK AND TRIM

PT-03
DESCRIPTION: BLACK ACCENT PAINT
MANUF.: SHERWIN WILLIAMS
COLOR: SW 6990 CAVIAR
FINISH: EGGSHELL AT WALLS/FLAT AT CEILING/ SEMI-GLOSS AT MILLWORK AND TRIM

PLASTIC LAMINATE

PC-01
DESCRIPTION: BATHROOM PARTITION
MANUF.: WILSONART
STYLE/COLOR: BLACK/MATTE FINISH
VENDOR INFO: SEE SPEC SHEET

STONE

ST-01
DESCRIPTION: BAR COUNTERTOP
MANUF.: PORCELANOSA
STYLE/COLOR: 0901 GREY NATURE
SLAB SIZE: 145" X 30" X 1/2"
EDGE DETAIL: 2" MITERED
VENDOR INFO: SEE SPEC SHEET

ST-02
DESCRIPTION: BAR THIN BRICK
MANUF.: HEBRON BRICK COMPANY
STYLE/COLOR: LEO'S PUB
VENDOR INFO: SEE SPEC SHEET

TILE

TL-01
DESCRIPTION: BATHROOM WALL TILE
MANUF.: ARIZONA TILE
STYLE/COLOR: STAGE RED
SIZE: 12" X 24"
GROUT: TBD
VENDOR INFO: SEE SPEC SHEET

TL-02
DESCRIPTION: BATHROOM WALL TILE
MANUF.: ARIZONA TILE
STYLE/COLOR: RED BOSS
SIZE: 24" X 24"
GROUT: TBD
VENDOR INFO: SEE SPEC SHEET

TL-03
DESCRIPTION: TILE METAL TRIM
MANUF.: SCHLUTER SYSTEMS
STYLE/COLOR: JOLLY/TBD
SIZE: G.C. TO DETERMINE
GROUT: TBD

TL-04
DESCRIPTION: TILE METAL COVE BASE
MANUF.: SCHLUTER SYSTEMS
STYLE/COLOR: DILEX-AHKA/TBD
SIZE: G.C. TO DETERMINE
GROUT: TBD

WOOD

WD-01
DESCRIPTION: RECLAIMED WOOD
MANUF.: PROVIDED BY G.C.
REMARKS: G.C. TO SOURCE LOCALLY AND GET OWNER APPROVAL

WD-02
DESCRIPTION: GENERAL WOOD
MANUF.: PROVIDED BY G.C.
REMARKS: NEED STAIN COLOR

PLUMBING & ACCESSORY SCHEDULE

#	EQUIPMENT	QTY.	MANUFACTURER	MODEL NO.	DIMENSIONS	FINISH	NOTES
	PLUMBING FIXTURES						
EQ-01	CUSTOMER TOILET FLUSH VALVE	6	KOHLER	K-13516-CP	N/A	CHROME	
EQ-02	CUSTOMER URINAL FLUSH VALVE	2	KOHLER	K-13520-CP	N/A	CHROME	
EQ-03	CUSTOMER TOILET	6	TOTO	CT705EN	N/A	WHITE	PAIRED WITH SC534 COMMERCIAL SEAT
EQ-04	CUSTOMER URINAL	2	TOTO	UT105U	N/A	WHITE	
EQ-05	CUSTOMER FAUCET	4	KOHLER	K-T11837-CO	N/A	CHROME	
EQ-06	CUSTOMER STAINLESS STEEL TROUGH SIN	2	TBD	TBD	TBD	STAINELESS STEEL	
EQ-07	EMPLOYEE TOILET	1	PROFLO	PF1400T	N/A	WHITE	
EQ-08	EMPLOYEE WALL HUNG SINK	1	PROFLO	PF5514WH	N/A	WHITE	
EQ-09	EMPLOYEE FAUCET	1	DELTA	86T1153	N/A	CHROME	
	BATHROOM ACCESSORIES						
AC-01	TOILET PAPER DISPENSER	7	BOBRICK	B-2888	6" X 11"	STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS
AC-02	SANITARY NAPKIN DISPOSAL	5	BOBRICK	B-270		STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS
AC-03	SEAT COVER DISPENSER	7	BOBRICK	B-221		STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS
AC-04	SOAP DISPENSER	3	BOBRICK	818615		STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS
AC-05	PAPER TOWEL DISPENSER & TRASH CAN	3	BOBRICK	B-3944		STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS
AC-06	GRAB BAR	6	BOBRICK	B-5806	36" L & 48" L	STAINLESS STEEL	INSTALL PER ADA REQUIREMENTS

FURNITURE/ACCESSORIES/ART SCHEDULE

#	ITEM	QTY.	MANUFACTURER	MODEL NO.	DIMENSIONS	FINISH	NOTES
	FURNITURE						
BQ-01	SUMMER SETTEE	4	KELLEX	1019-20	65" W X 34" H X 39" D	1409-OAK	FABRIC FINISH: FA-01
CG-01	CLOTHES RACK	4	STOREFIXTURE.COM	TEPERCKMPL	40.5" W X 64" H X 20" D	CHERRY	
CG-01	WALL MOUNT STORAGE BASKET	4	AMAZON	N/A	7.5" H X 5.5" D X 15.25" W	GRAY	
CH-01	DINING CHAIR	120	WEBSTAURANT STORE	JSSSCASH-RU	14.25" W X 34.5" H X 19.25" D	AUTUMN ASH/RUSTIC STEEL	
CH-02	BAR STOOL W/ BACK	22	WEBSTAURANT STORE	JSSSBASH-RU	16.25" W X 40.5" H X 18" D	AUTUMN ASH/RUSTIC STEEL	
CH-03	PATIO CHAIR	58	REST FURN 4 LESS	TLH-017WA-GG	21.75" W X 24" H X 22" D	ALUMINUM	
CH-04	BAR STOOL	24	WEBSTAURANT STORE	2510BASH-SB	16" W X 30" H X 16" D	AUTUMN ASH/BLACK	
CH-05	KOCHI BENCH	4	SEASONAL LIVING	501FT030P2G	19" H X 16" D X 68" W	SLATE GREY	
CH-06	DINING CHAIR	6	WEBSTAURANT STORE	169JSSSCASHB	19" H X 16" D X 68" W	AUTUMN ASH/BLACK	
FA-01	SUMMER SETTEE FABRIC	N/A	C.F.STINSON	STP76	54" W	MINK	FABRIC FOR BQ-01
FE-01	GAS FIRE TABLE	2	WOODLAND DIRECT	N62300169	56" W X 38" D X 16" H	TBD	NEEDS GAS LINE
TB-01	30" X 48" TABLE TOP	18	WEBSTAURANT STORE	VN3048AA	30" X 48"	AUTUMN ASH	PAIRED WITH BA-01
TB-02	24" X 30" TABLE TOP	18	WEBSTAURANT STORE	VN2430AA	24" X 30"	AUTUMN ASH	PAIRED WITH BA-02
TB-03	30" SQUARE TABLE TOP	8	WEBSTAURANT STORE	VN3030AA	30" X 30"	AUTUMN ASH	PAIRED WITH BA-02
TB-04	PATIO TABLE	19	REST FURN 4 LESS	TLH-055-1-GG	23.5" X 23.5"	ALUMINUM	
TB-05	COFFEE TABLE	3	WEBSTAURANT STORE	NAN-JH-1790CT-GG	23.5" X 47.25"	WALNUT/BLACK	
TB-06	STUMP SIDE TABLE	8	ETSY	N/A	N/A	N/A	
TB-07	BARREL TABLE	5	N/A	N/A	N/A	N/A	OWNER SUPPLIED
BA-01	DINING HEIGHT BLACK END TABLE BASE	18	WEBSTAURANT STORE	PHTB0022BL	29" H X 21.5" L X 9.5" W	BLACK	PAIRED WITH TB-01
BA-02	DINING HEIGHT 4-LEG TABLE BASE	25	WEBSTAURANT STORE	PHTB2626BL	29.5" H	BLACK	PAIRED WITH TB-02 & TB-03
	ART FEATURE						
AF-01	METAL WALL MOUNT PLANT CONTAINER	18	TBD	TBD	TBD	TBD	PROVIDED BY GROWING GREEN INC

LIGHTING SCHEDULE

SYM	LOCATION	QTY.	SIZE	MODEL #	MANF.	WEIGHT	FINISH	NOTES
LF-01	BAR PENDANT	19	9.25" W x 5.75" h	Pier M - 35017EE	MAXIM LIGHTING	2.2 LBS	EMPIRE BRONZE	SEE FLOOR PLAN/ELEVATION FOR LOCATION
LF-02	DINING PENDANT	8	7.5" W X 9.25" H X 7.5" L	DIANNE-10091CLS!	MAXIM LIGHTING	2.75 LBS	SATIN NICKEL	SEE FLOOR PLAN/ELEVATION FOR LOCATION
LF-03	BATHROOM SCONCE	8	5.25" W X 13.5" H X 4.75" D	ATLAS-BS831	TROY LIGHTING	5 LBS	AUTUMN BRONZE	SEE FLOOR PLAN/ELEVATION FOR LOCATION
LF-04	LED TAPE LIGHTING	N/A	N/A	N/A	N/A	N/A	RGB+WW	FOR UNDER COUNTER AND BACKLIT LOGO
LF-05	EVENT ROOM/ LOUNGE PENDANTS	9	18" W X 8" H	W2425	LAMPS PLUS	8 LBS	DARK RUST	SEE FLOOR PLAN/ELEVATION FOR LOCATION
LF-06	PATIO STRING LIGHTS	N/A	N/A	N/A	N/A	N/A	N/A	
LF-07	CEILING MOUNT GENERAL LIGHTING	30	6" W X 12" H	N/A	N/A	N/A	N/A	
LF-08	PATIO SCONCE	4	8" W X 7.5" H	RIPLEY-440590Z	KICHLER	N/A	OLDE BRONZE	SEE FLOOR PLAN/ELEVATION FOR LOCATION
LF-09	TRACK LIGHTING	7 SETS	N/A	ET-LED-336	N/A	N/A	BLACK	
LF-10	GENERAL CAN LIGHTING	69	N/A	N/A	N/A	N/A	WHITE	
LF-11	PRODUCTION LIGHTING	20	TBD ON SITE	SNLED LENSED	N/A	N/A	N/A	
LF-12	KITCHEN LED PANEL	18	TBD ON SITE	MLFP SERIES	MAXLITE	N/A	WHITE	

HAUCK ARCHITECTURE
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

FINISH LEGEND / SCHEDULES

STAMP:

STATE OF MISSOURI
TED DUSTIN HAUCK
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

I0.1

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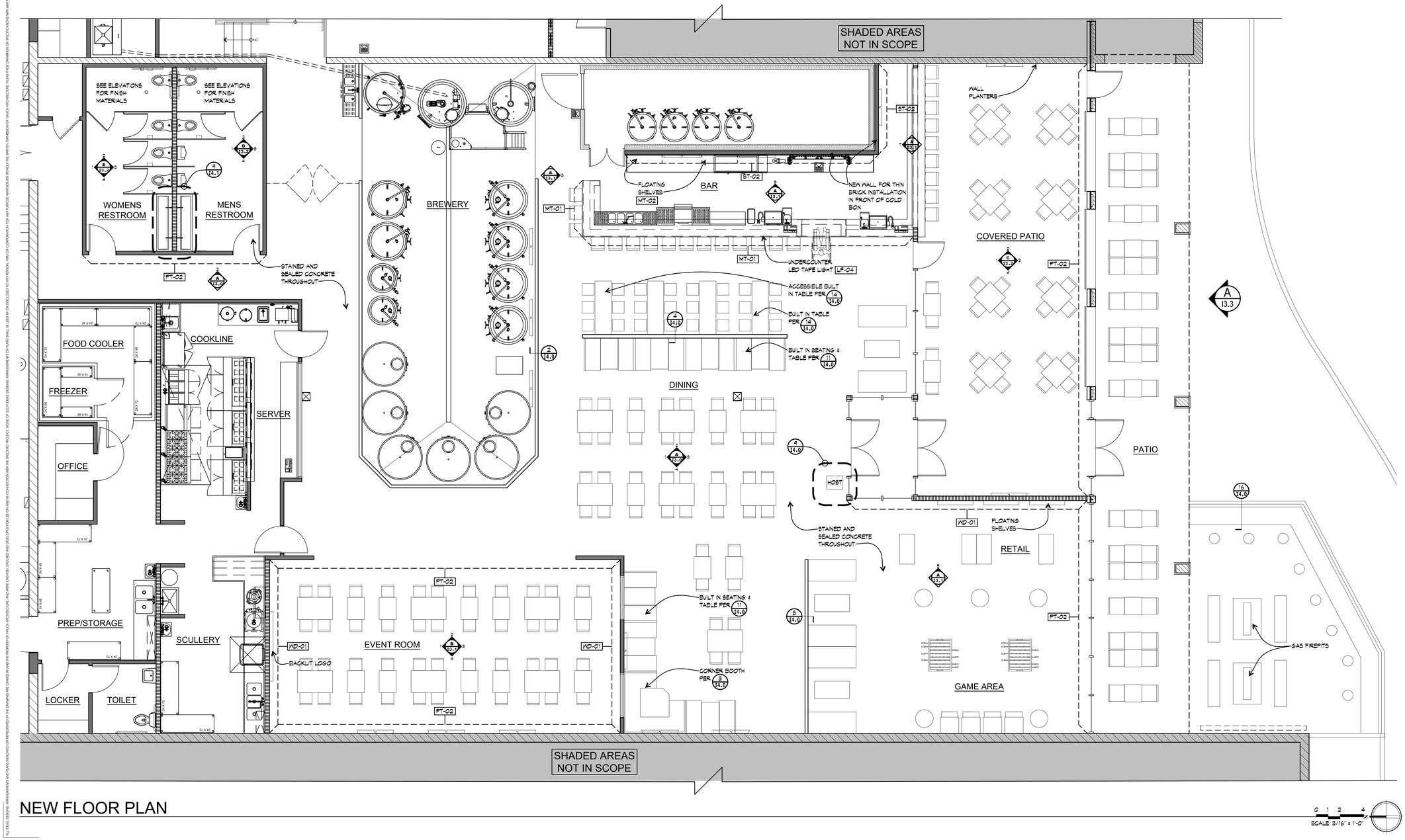

NEW FLOOR PLAN

SCALE: 3/16" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

LEGEND

XX-## WALL FINISH

NOTE: WALLS WITHOUT WALL FINISH SYMBOL TO BE PT-01 UNLESS OTHERWISE NOTED.

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

NEW FLOOR PLAN

STAMP:

STATE OF MISSOURI · TODD DUSTIN TAUNTON · NUMBER A-2008004390 · ARCHITECT

SHEET NUMBER:

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PROJECT 18020

MELVIN BREWPUB

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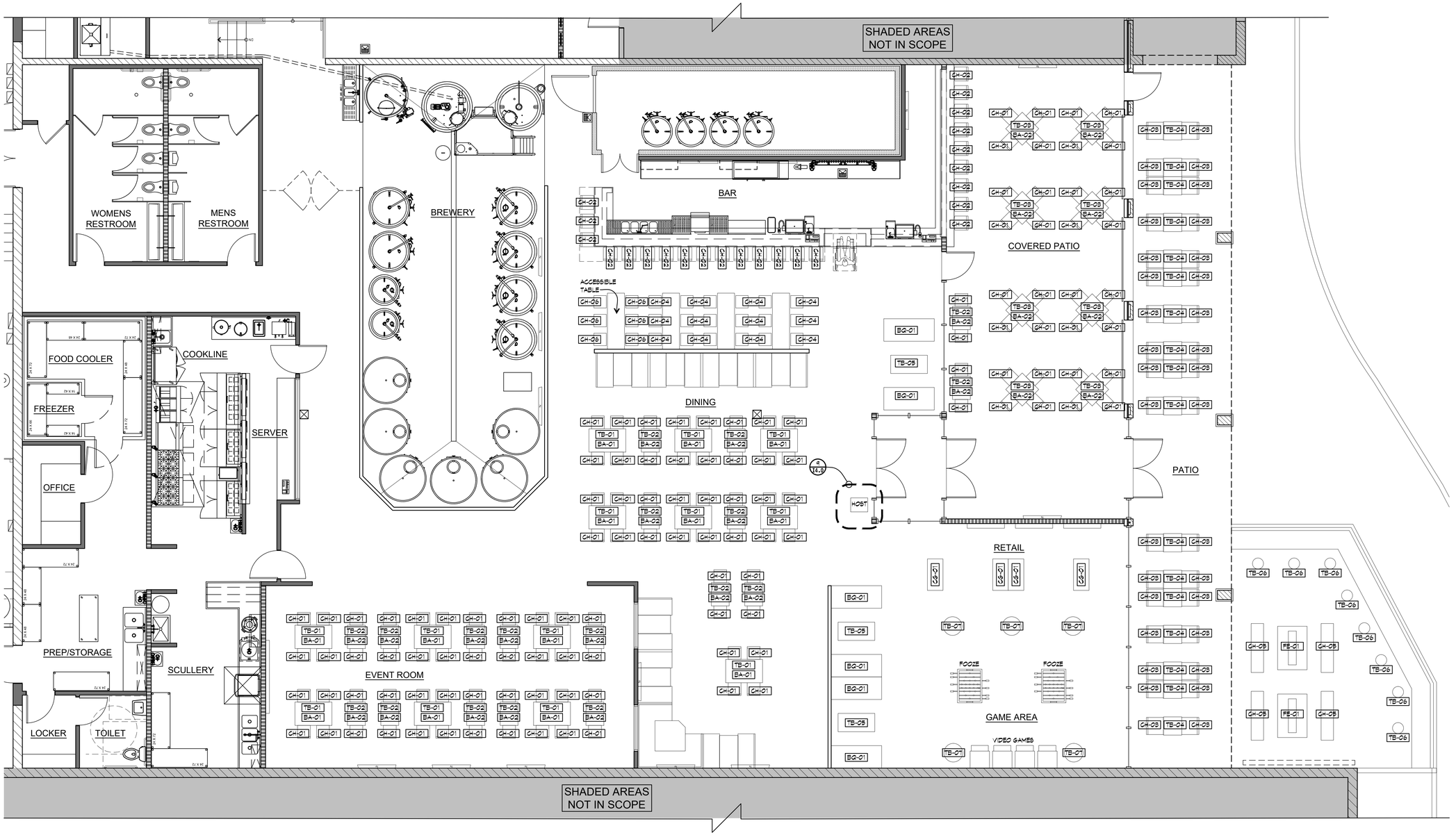
Eureka, MO 63025



NEW FLOOR PLAN

SCALE: 3/16" = 1'-0"

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

NEW FURNITURE PLAN

STAMP:

STATE OF MISSOURI · TODD DUSTIN TAUCK · A-2008004390 · ARCHITECT

SHEET NUMBER:

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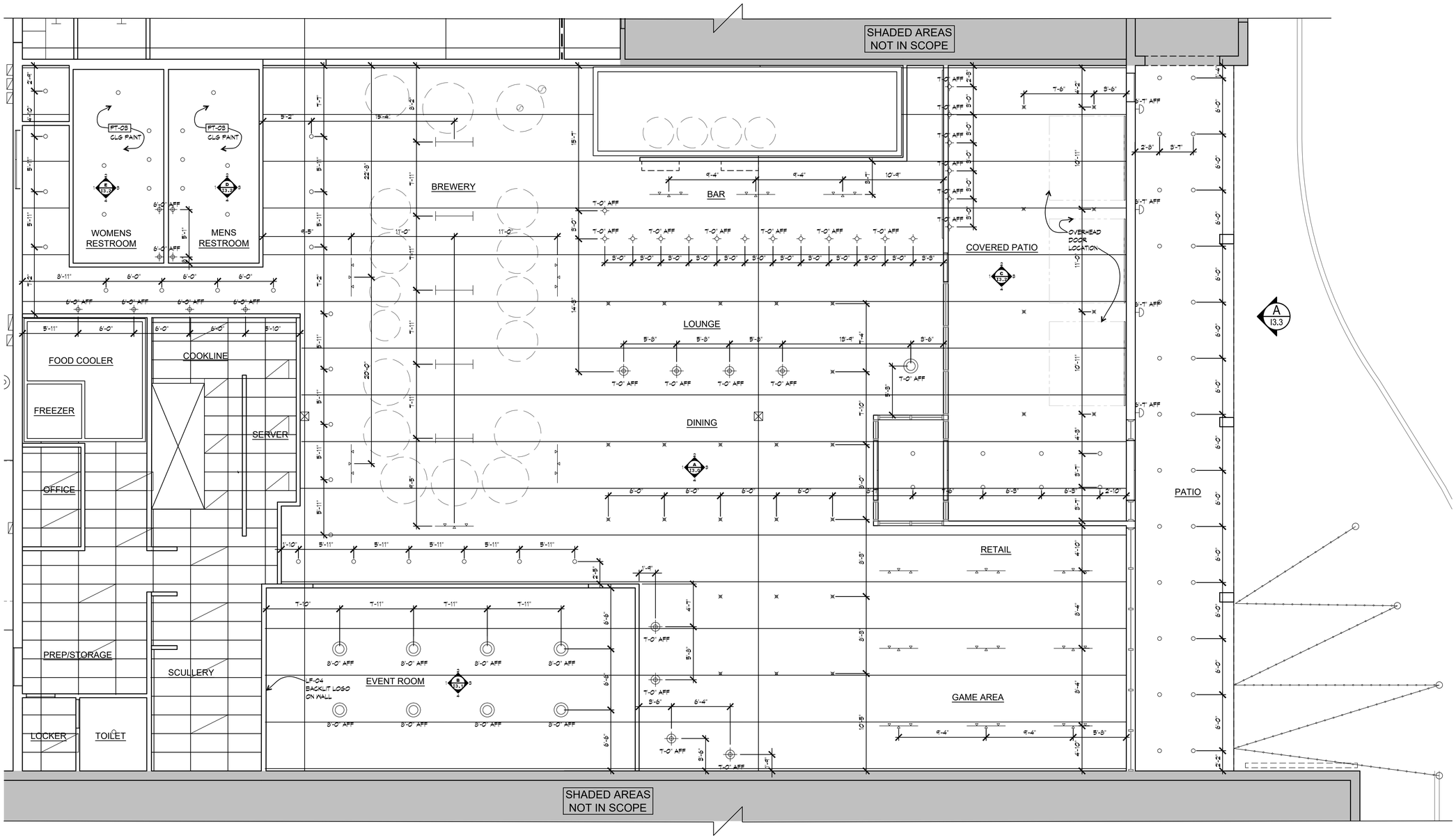

REFLECTED CEILING PLAN

SCALE: 3/16" = 1'-0"

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

LIGHTING LEGEND

- LF-01 - BAR PENDANTS
- LF-02 - DINING PENDANTS
- LF-03 - BATHROOM SCONCE
- LF-04 - LED STRIP LIGHTING FOR BAR UNDER COUNTER & LOGO IN EVENT ROOM
- LF-05 - EVENT ROOM PENDANTS
- LF-06 - PATIO STRING LIGHTS
- LF-07 - GENERAL LIGHTING
- LF-08 - PATIO SCONCE
- LF-09 - TRACK LIGHTING
- LF-10 - CAN LIGHTING
- LF-11 - PRODUCTION LIGHTING
- LF-12 - LED PANELS

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

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STATE OF MISSOURI
TODD DUSTIN HAUCK
A-2008004390
ARCHITECT

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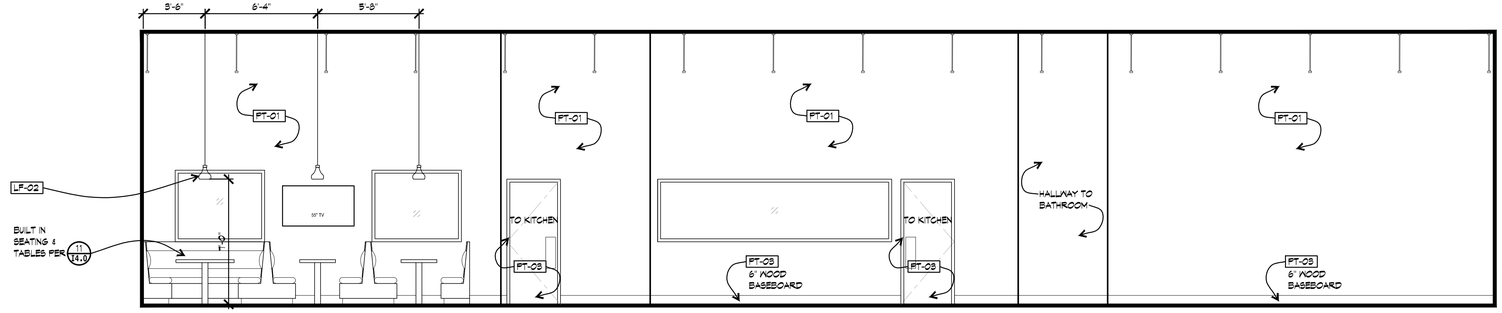

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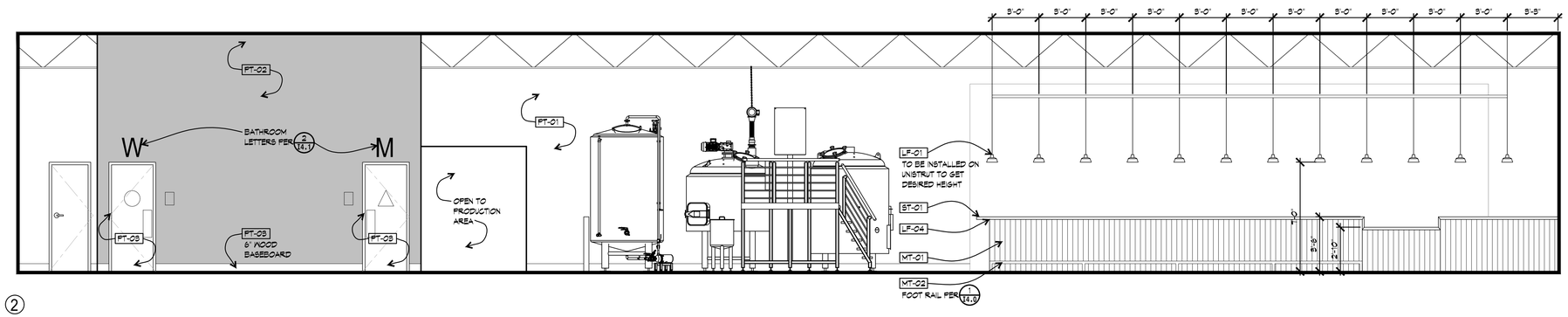

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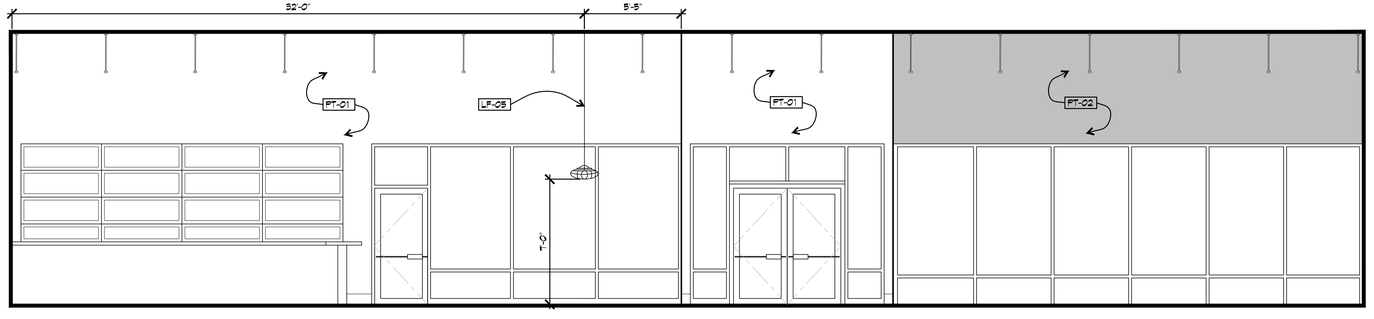

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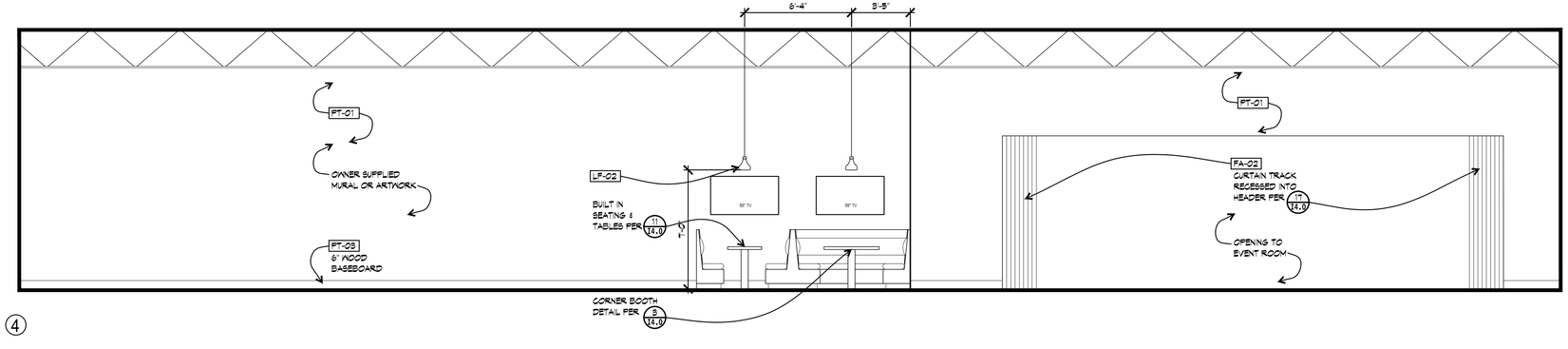

④

A TASTING ROOM

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

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

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STATE OF MISSOURI
TODD DUSTIN HAUCK
NUMBER A-2008004390
ARCHITECT

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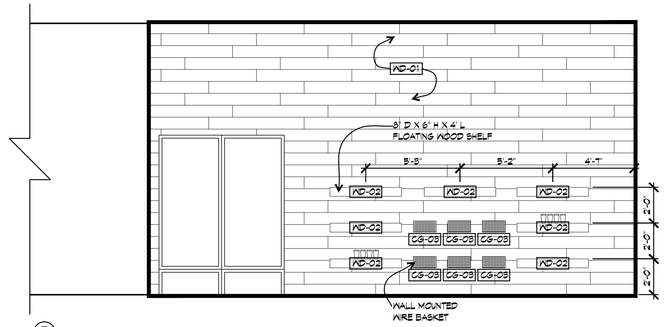

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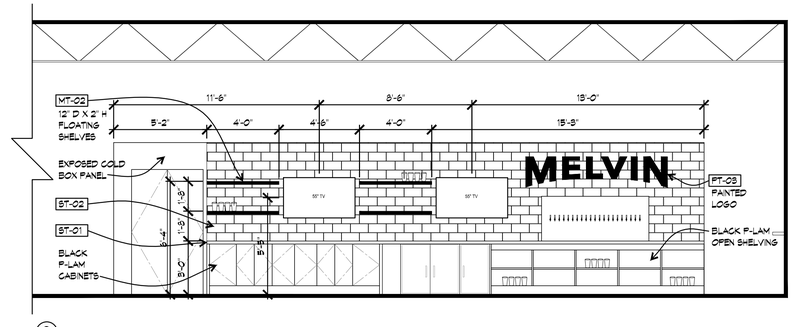

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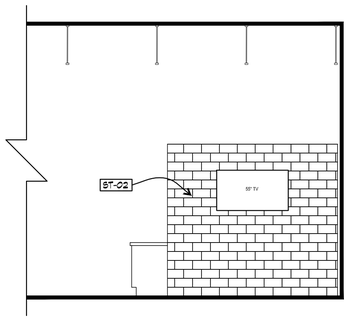

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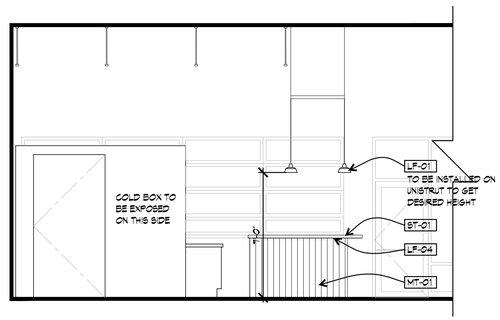

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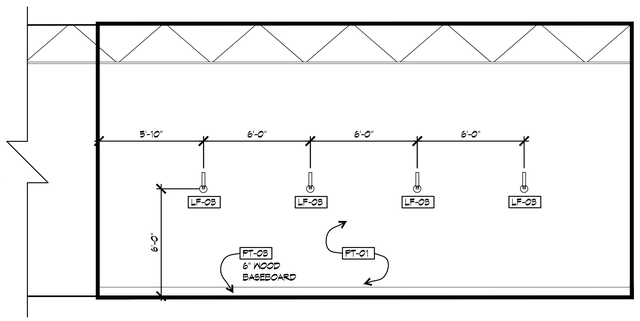

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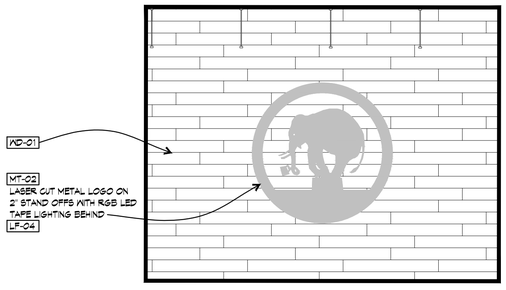
A TASTING ROOM CONTINUED

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



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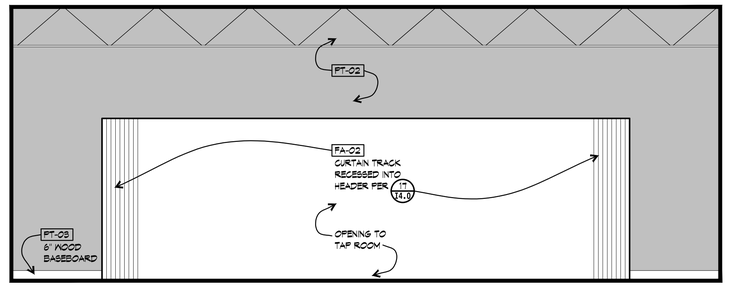

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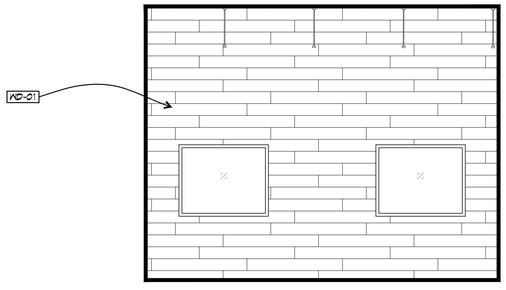

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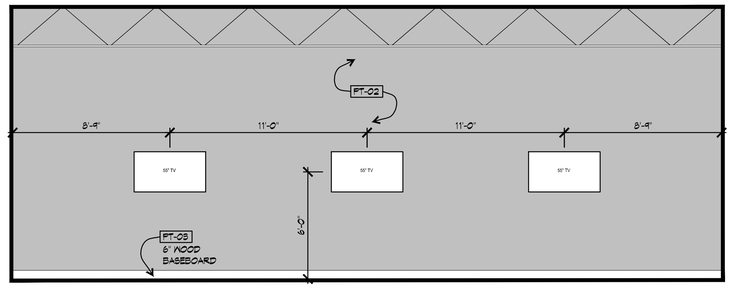

④

B EVENT ROOM

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

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

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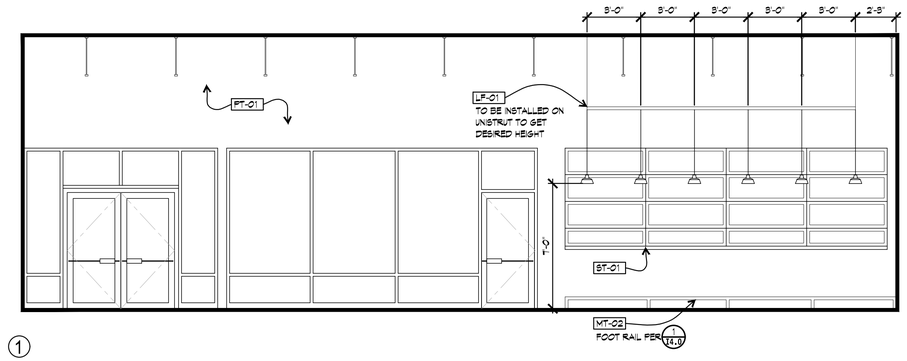

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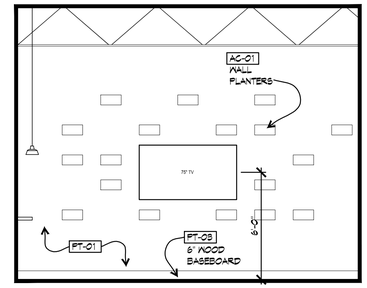

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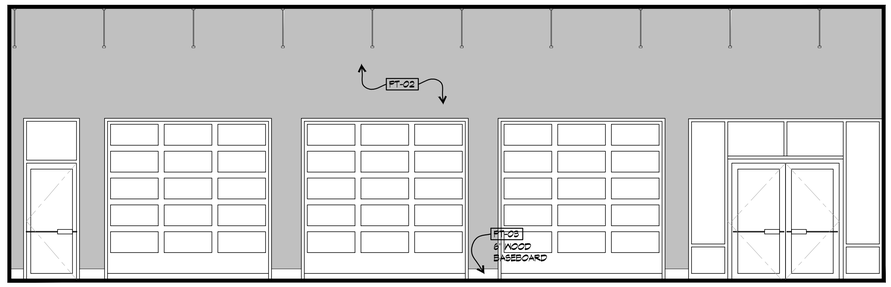

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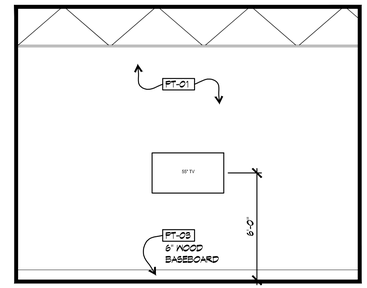
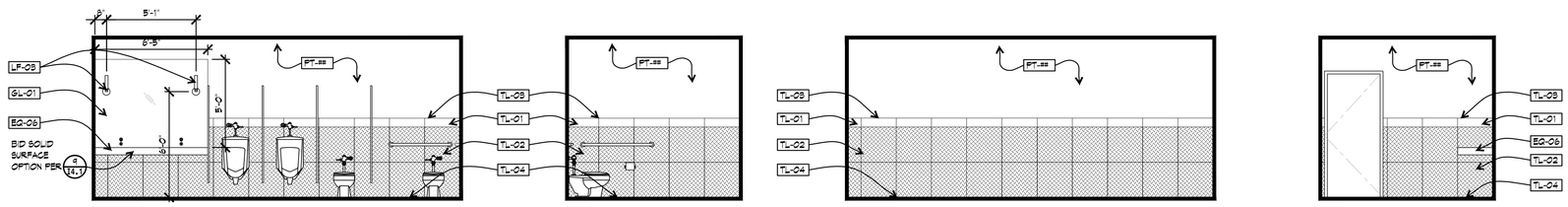


4

C COVERED PATIO

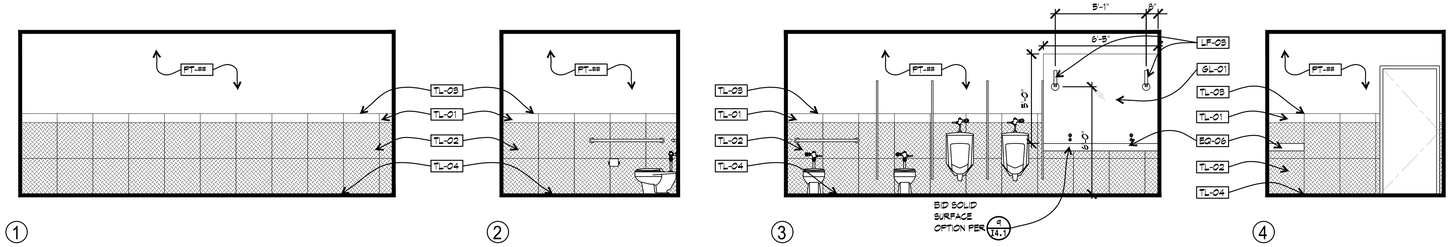
Scale: 1/4" = 1'-0"



1 2 3 4

D MENS BATHROOM

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



1 2 3 4

E WOMENS BATHROOM

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

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

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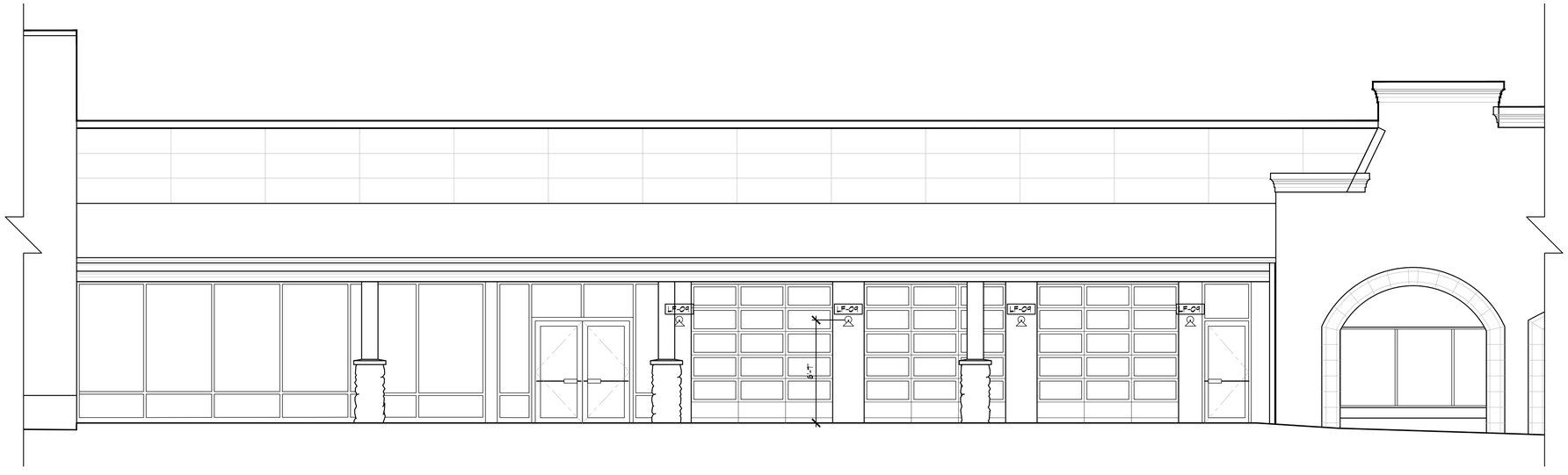
PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025



A EXTERIOR ELEVATION

0 1 2 4
Scale: 1/4" = 1'-0"

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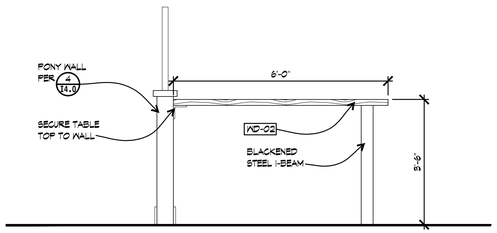
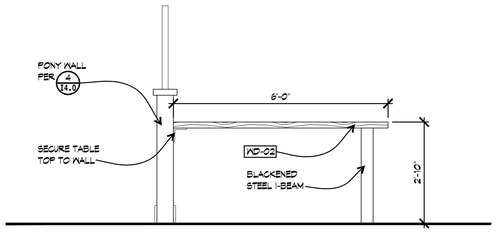


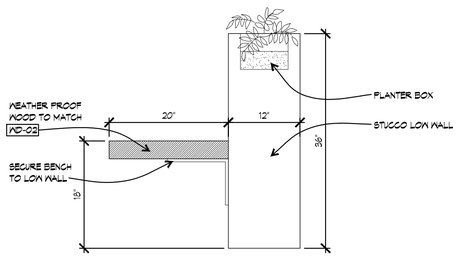
BAR HEIGHT



ADA HEIGHT

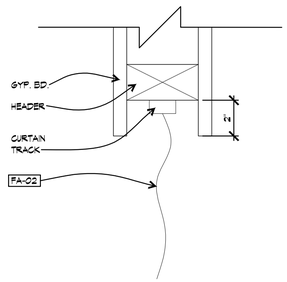
14 BUILT IN TABLE @ LOUNGE

Scale: 1/2"=1'-0"



16 PATIO BENCH

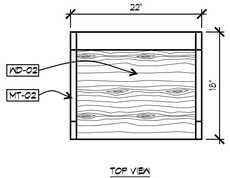
Scale: 1"=1'-0"



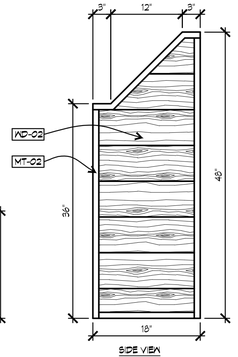
17 EVENT ROOM CURTAIN

Scale: 3"=1'-0"

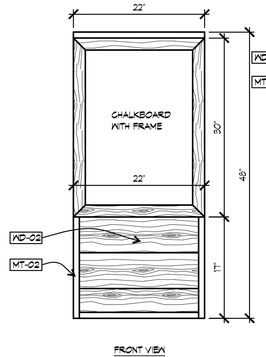
INSPIRATION



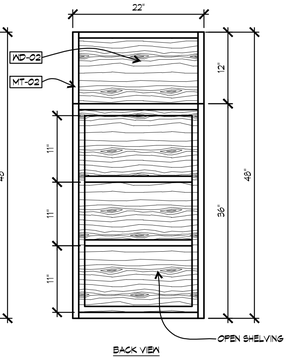
TOP VIEW



SIDE VIEW



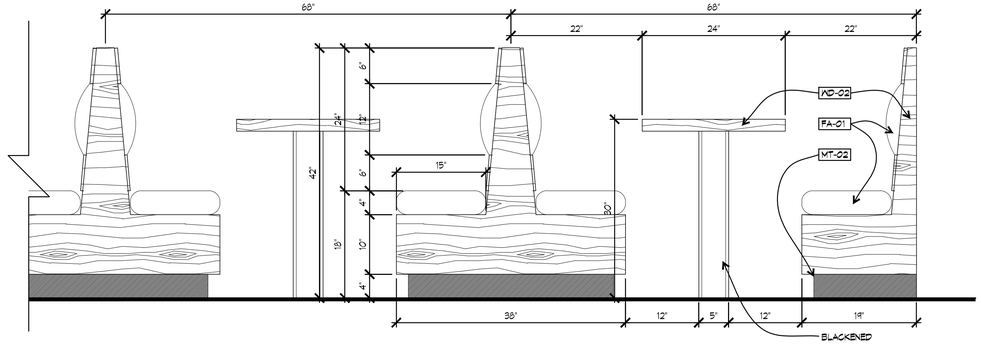
FRONT VIEW



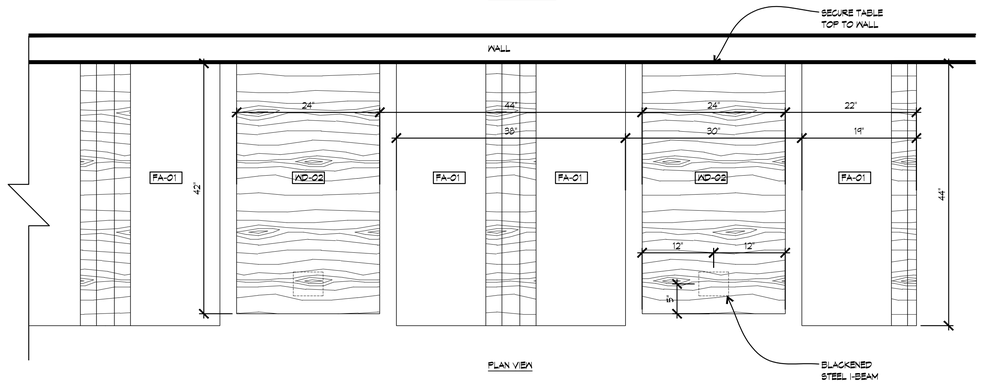
BACK VIEW

9 HOST STAND

Scale: 1" = 1'-0"



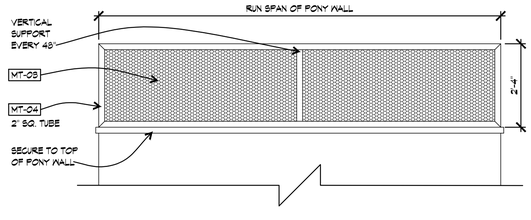
ELEVATION VIEW



PLAN VIEW

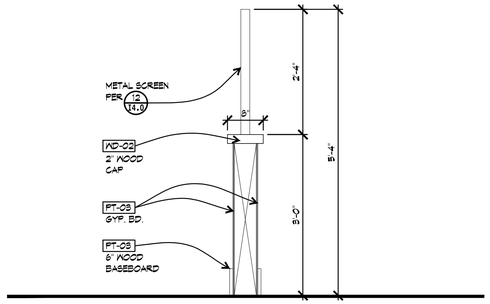
11 BUILT IN SEATING

Scale: 1" = 1'-0"



12 METAL SCREEN DETAIL

Scale: 1/2"=1'-0"

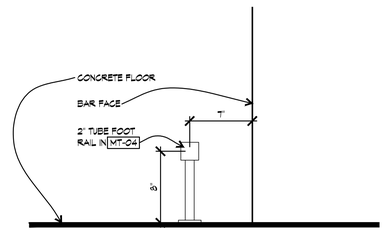


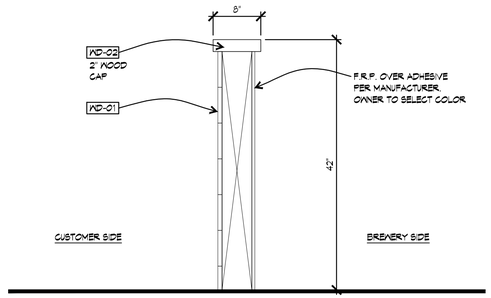
8 GAME AREA PONY WALL

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

1 FOOT RAIL DETAIL

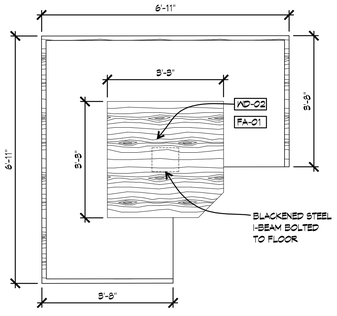
Scale: NTS





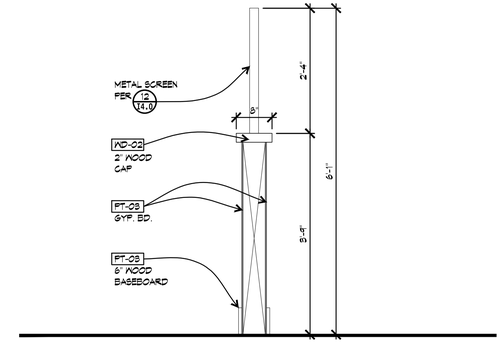
2 BREWERY PONY WALL

Scale: 1"=1'-0"



3 CORNER BOOTH DETAIL

Scale: 1/2"=1'-0"



4 LOUNGE PONY WALL

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

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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

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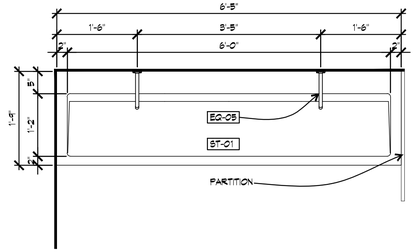
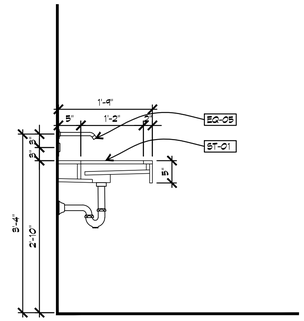
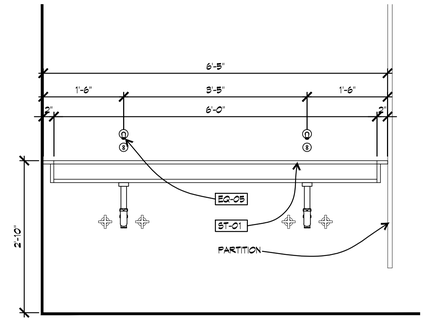


PLAN VIEW



SECTION VIEW



FRONT SECTION VIEW

9 SOLID SURFACE SINK OPTION

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

INSPIRATION PHOTO

2 BATHROOM LETTERS

Scale: 1"=1'-0"

HAUCK ARCHITECTURE
4888 ronson ct., ste.f, san diego, ca 92111
p: 858.384.7795 e: info@hauckarchitecture.com
http://www.hauckarchitecture.com
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PROJECT 18020

MELVIN BREWPUB

108d, 109, & 110 Hilltop Village Center Dr.
Eureka, MO 63025

ORIGINAL DATE: BID/PLAN CHECK SUBMITTAL 09-19-18

REVISIONS:

NO.	DATE	DESCRIPTION

SHEET TITLE:

DETAILS

STAMP:

STATE OF MISSOURI
TODD DUSTIN TAUCK
NUMBER A-2008004390
ARCHITECT

SHEET NUMBER:

I4.1

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