A New Building For:

Heartland MARKET

940 NE Colburn Rd
Lee's Summit, MO.

ARCHITECT

Craig Luebbert Architecture

24 NW CHIPMAN "B"
LEE'S SUMMIT, MO. 64063
PHONE: (816) 536-3472

DESIGN / BUILD CONTRACTOR

BARNETT CONTRACTING
816-331-0142
barnettcont@sbcglobal.net

17211 E 199th St,
Pleasant Hill, MO 64080

STRUCTURAL ENGINEER

J & S STRUCTURAL ENGINEERS
15185 LOWELL AVE
OVERLAND PARK, KS 66223
913-549-4701

MEP ENGINEER

BC

5720 Reeder St, Shawnee, KS 66203
Phone: (913) 262-1772

GENERAL NOTES

1. ALL CONSTRUCTION WORK SHALL BE IN ACCORDANCE WITH THE INCLUDED DRAWINGS.
2. ALL CONSTRUCTION WORK SHALL COMPLY WITH GOVERNING BUILDING CODES IN EFFECT AT THE TIME CONSTRUCTION PERMITS ARE ISSUED FOR THIS PROJECT.
3. SUB-CONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS SHOWN, AND SHALL REPORT ANY DISCREPENCY TO THE ENGINEER PRIOR TO COMMENCING WITH ANY RELATED CONSTRUCTION WORK. SUB-CONTRACTORS SHALL FURTHER REPORT TO THE ENGINEER ALL DISCREPENCIES BETWEEN ACTUAL AND SHOWN CONDITIONS, PRIOR TO BEGINNING WORK RELATED THERETO.
4. DIMENSIONS ARE TO FACE OF FINISH WALL UNLESS NOTED OTHERWISE.
5. THE SUB-CONTRACTORS SHALL VERIFY LOCATION OF EXISTING UTILITIES, AND SHALL BE RESPONSIBLE FOR PROTECTING THESE UTILITIES DURING THE EXECUTION OF HIS WORK AND RELOCATION.
6. SUB-CONTRACTOR TO LAY OUT BUILDING PRIOR TO ANY CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
7. SUB-CONTRACTOR TO ASSURE PROPER DRAINAGE AWAY FROM BUILDING.
8. THE SUB-CONTRACTORS SHALL BE SOLELY RESPONSIBLE FOR THE DESIGN, ADEQUACY, AND SAFETY OF ERECTION BRACING, SHORING AND TEMPORARY SUPPORTS, ETC. THE SUB-CONTRACTORS ARE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE PRIOR TO THE APPLICATION OF ALL SHEAR WALLS, ROOF SHEATHING, STRUCTURAL ELEMENTS AND FINISH MATERIALS.
9. THE SUB-CONTRACTORS ARE RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSION FOR THEIR ACCURACY AND CONFIRMING THAT WORK IS BUILDABLE AS SHOWN BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION QUESTIONS, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR ANY RELATED WORK.

THE SUB-CONTRACTORS SHALL TAKE ABSOLUTE CARE TO PROTECT NEWLY INSTALLED MATERIALS, MILLWORK, BUILT-NS AND FINISHES.

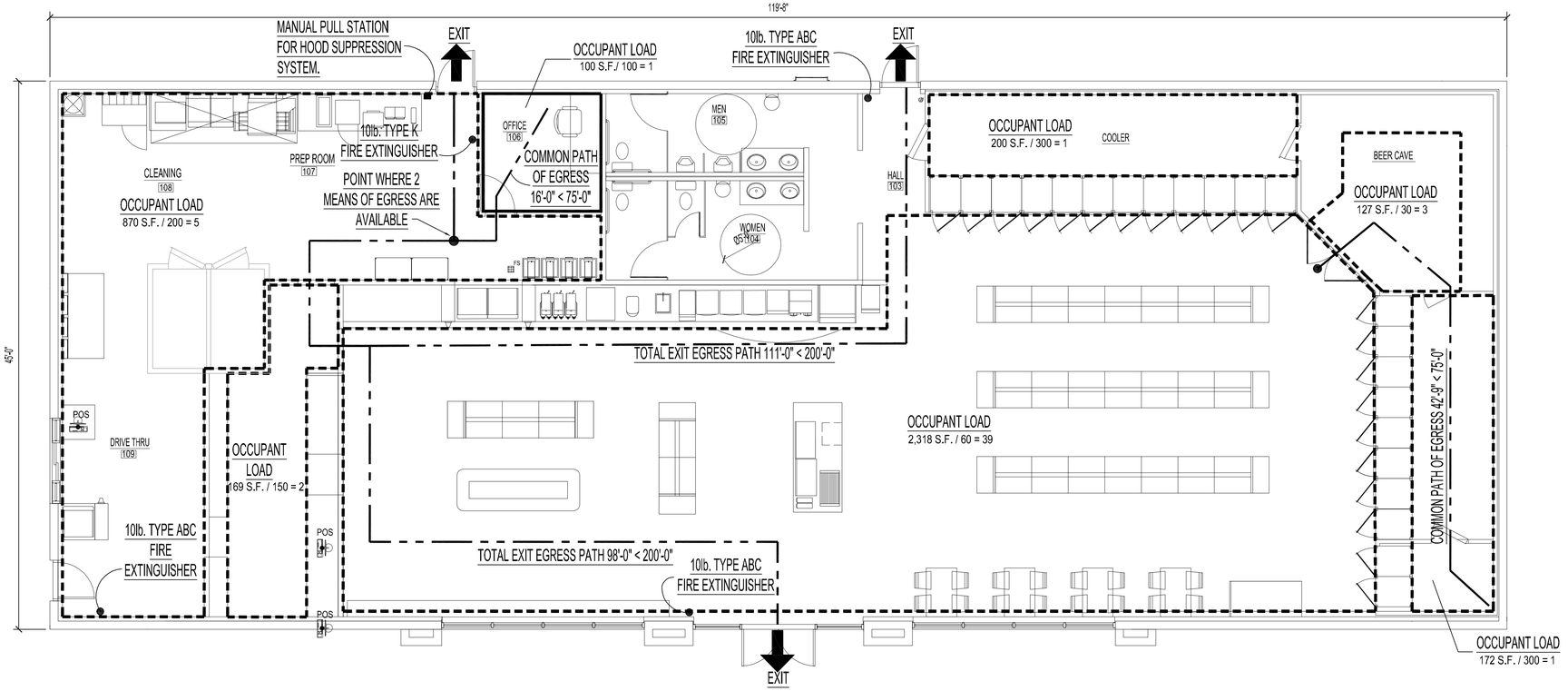
THE SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR ALL DAMAGE TO EXISTING STRUCTURES, UTILITIES, WALKS, STREETS, PAVED AREAS, CURBS, TREES AND OTHER LANDSCAPING CAUSED THROUGH HIS OPERATIONS UNDER THIS CONTRACT.
THE SUB-CONTRACTORS SHALL PERFORM HIGH QUALITY PROFESSIONAL WORK. JOIN MATERIALS TO UNIFORM, ACCURATE FITS SO THEY MEET WITH NEAT, STRAIGHT LINES, FREE OF SMEARS OR OVERLAPS. INSTALL EXPOSED MATERIALS APPROPRIATELY LEVEL, PLUMB AND AT ACCURATE RIGHT ANGLES, OR FLUSH WITH ADJOINING MATERIALS. WORK OF EACH TRADE SHALL MEET ALL NATIONAL STANDARDS PUBLISHED BY THAT TRADE, EXCEPT IN THE CASE WHERE THE CONTRACT DOCUMENTS ARE MORE STRINGENT.

ABBREVIATIONS

A/C	AIR CONDITIONING
AB	ANCHOR BOLT
AC	ACCOUSTICAL
ACT	ACCOUSTICAL TILE
AFF	ABOVE FINISHED FLOOR
AGG	AGGREGATE
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
ASPH	ASPHALT
AVG	AVERAGE
BD	BOARD
B.F.F.	BELOW FINISHED FLOOR
BIT	BITUMINOUS
BKR	BREAKER
BLDG	BUILDING
BM	BEAM
BRG	BEARING
BTU	BRITISH THERMAL UNIT
CCT	CIRCUIT
CEM	CEMENT
CFM	CUBIC FEET/MINUTE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNDT	CONDUIT
CO	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOS
CT	CERAMIC TILE
CW	COLD WATER
DBL	DOUBLE
DEPT	DEPARTMENT
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DWG	DRAWING
DWL	DOWEL
EA	EACH
EJ	EXPANSION JOINT
ELEC	ELECTRIC/ELECTRICAL
EL	ELEVATION
EMERG	EMERGENCY
ENCL	ENCLOSURE
ENT	ENTRANCE
EP	ELECTRICAL PANEL
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FLR	FLOOR
FLASH	FLASHING
FLOUR	FLOURESCENT
FOS	FACE OF STUD
FRM	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT
FTG	FOOTING
FUR	FURRING
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERAL
GND	GROUND
GRD	GRADE
GYP	GYPSUM
HB	HOSE BIBB
HDR	HEADER
HDWR	HARDWARE
HGT	HEIGHT
HORZ	HORIZONTAL
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HTR	HEATER
HW	HOT WATER
ID	INSIDE DIAMETER
IN	INCHES
INSUL	INSULATION
INT	INTERIOR
JB	JUNCTION BOX
JST	JOIST
JT	JOINT
L	LENGTH
LAV	LAVATORY
LT	LIGHT
LVL	LEVEL
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MTL	METAL
MFG	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANIOUS
MO	MASONRY OPENING
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OH	OVERHEAD
OPNG	OPENING
P	POLE
PL	PLATE
PLG	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PREFAB	PREFABRICATED
PSF	POUNDS/SQUARE FOOT
PSI	POUNDS/SQUARE INCH
PT	PAINT
PVC	POLYVINYL CHLORIDE
QT	QT QUARRY TILE
R	RADIUS
RSR	RISER
R/A	RETURN AIR
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESSED
REF	REFERENCE
REG	REGISTER
REINF	REINFORCING
REQD	REQUIRED
RFG	ROOFING
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTU	ROOF TOP UNIT
RV	ROOF VENT
SCHED	SCHEDULE
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SPK	SPEAKER
SQ	SQUARE
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUC	STRUCTURAL
SUP	SUPPLY
SUSP	SUSPEND
TEMP	THERMOSTAT TEMPORARY
THK	THICK
THRES	THRESHOLD
TYP	TYPICAL
UC	UNDERCUT
UL	UNDERWRITER LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
UTIL	UTILITIES
V	VOLT
VB	VAPOR BARRIER
VERT	VERTICLE
VEST	VESTIBULE
VOL	VOLUME
VTR	VENT THROUGH ROOF
W/	WITH
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WH	WATER HEATER
WP	WATER PROOFING
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
YD	YARD

DRAWING SCHEDULE

STATE OF MISSOURI
CRAIG A. LUEBBERT
NUMBER A-7179
REGISTERED ARCHITECT
7.14.23



1 Code Plan
SCALE: 3/16"=1'

TRUE NORTH

PROJECT CODE DATA CHART

A) TYPE OF OCCUPANCY: GROUP: M (309 IBC 2018)
OCCUPANT LOAD 52 (SEE PLAN FOR CALCULATIONS) :

B) TYPE OF CONSTRUCTION: BUILDING TYPE VB, UNPROTECTED. BUILDING IS NON SPRINKLED

C) CODE REFERENCES:

1. INTERNATIONAL BUILDING CODE - 2018 EDITION
2. INTERNATIONAL PLUMBING CODE - 2018 EDITION
3. INTERNATIONAL MECHANICAL CODE - 2018 EDITION
4. INTERNATIONAL FUEL GAS CODE - 2018 EDITION
5. INTERNATIONAL FIRE PREVENTION CODE - 2018 EDITION
6. NATIONAL ELECTRICAL CODE - 2017 EDITION
7. INTERNATIONAL FIRE CODE - 2018 EDITION
8. AMERICAN NATIONAL STANDARD ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES (ANSI A117.1-2009)

D) HEIGHT AND AREA CALCULATIONS: TABLES 503.3, 504.4, 506.2
GROUP: M
AREA: ALLOWED: 9,000
ACTUAL AREA: 6,000 SQUARE FEET.
HEIGHT ALLOWABLE: 1 STORY; 40'
HEIGHT ACTUAL: 1 STORY; 24'-4"
HEIGHT STORIES: 1 STORY
HEIGHT ACTUAL: 1 STORY

E) MINIMUM FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS
FIRE RATINGS OF STRUCTURAL ELEMENTS PER IBC TABLE 601: TYPE II B

ELEMENTS	FIRE RATING REQUIRED
STRUCTURAL FRAME	0
BEARING WALLS	
EXTERIOR	0
INTERIOR	0
NONBEARING EXT. WALLS	0
NONBEARING INT. WALLS	0
FLOOR CONSTRUCTION	0
ROOF CONSTRUCTION	0

F) PLUMBING FIXTURE REQUIREMENTS: CHAPTER 29
OCCUPANT LOAD: 52

	WATER CLOSETS	REQUIRED	PROVIDED
26 FEMALE:	1 PER 500	1	2
26 MALE:	1 PER 500	1	1 TOILET 1 URINAL

	LAVATORIES	REQUIRED	PROVIDED
26 FEMALE:	1 PER 750	1	2
26 MALE:	1 PER 750	1	2

(1) MOP SINKS PROVIDED

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C L A

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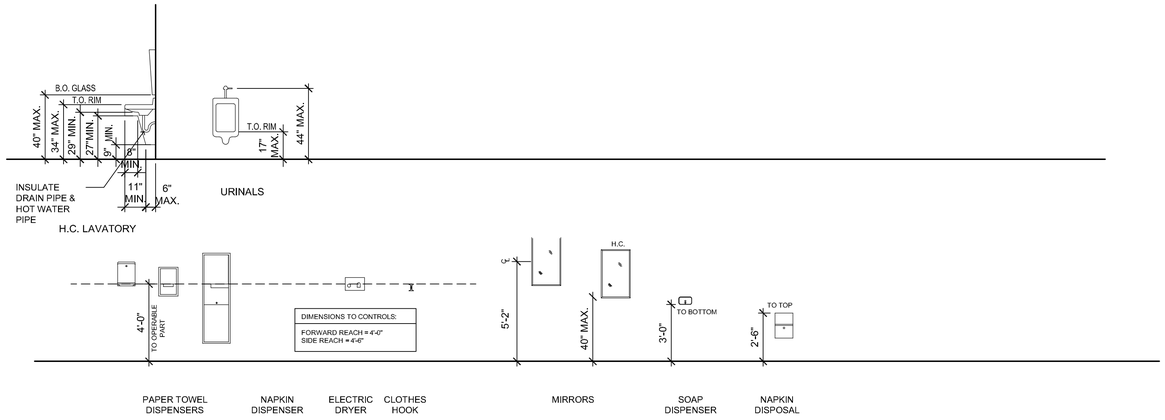
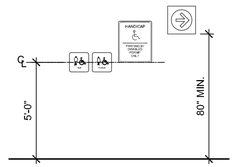
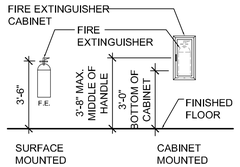


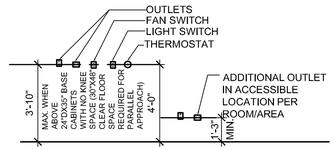
2 ACCESSIBLE MOUNTING HEIGHTS AT TOILET ACCESSORIES
SCALE: 1/4" = 1'-0"



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

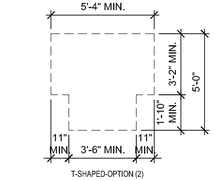


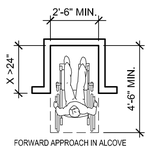
5 ACCESSIBLE FIRE EXTINGUISHER AND CABINET MOUNTING HEIGHT
SCALE: 1/4" = 1'-0"

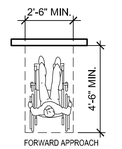


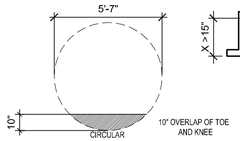
6 ACCESSIBLE MOUNTING HEIGHTS AT CONTROLS AND OUTLETS
SCALE: 1/4" = 1'-0"

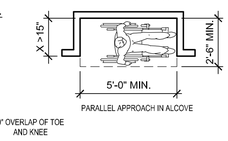
NOTE:
1. A 30"X48" CLEAR FLOOR SPACE AREA SHALL BE PROVIDED PERPENDICULAR TO THE WALL FOR A FORWARD REACH TO CONTROLS AND ACCESSIBLE OUTLETS.
2. ELECTRICAL OUTLETS ON WALLS OVER CABINETS MUST BE A MINIMUM 36" FROM A CORNER.

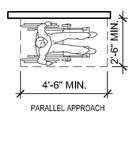








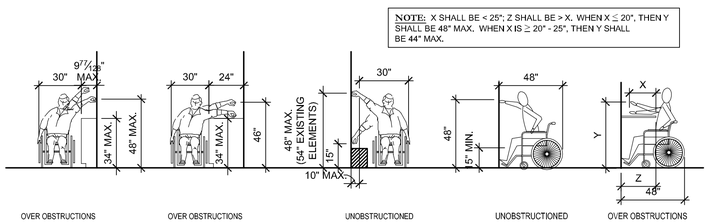


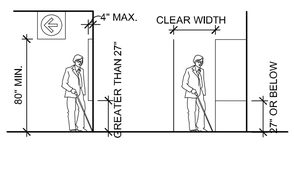


7 SIZE OF TURNING SPACE
SCALE: N.T.S.

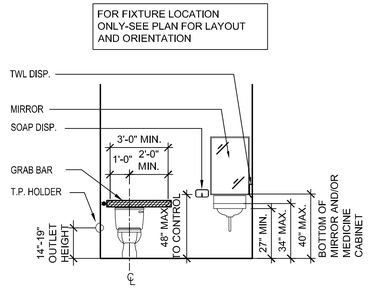
8 CLEAR FLOOR SPACE
SCALE: N.T.S.

NOTE: X SHALL BE < 25"; Z SHALL BE > X. WHEN X ≤ 20", THEN Y SHALL BE 48" MAX. WHEN X IS ≥ 20" - 25", THEN Y SHALL BE 44" MAX.

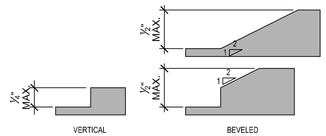




9 PROTRUDING OBJECTS
SCALE: N.T.S.



1 MINIMUM ACCESSIBLE TOILET ROOMS
SCALE: 1/4" = 1'-0"



3 CHANGES IN LEVEL
SCALE: N.T.S.

GENERAL ACCESSIBILITY NOTES

1. DRAWINGS ON THIS SHEET ARE INTERPRETATIONS BASED UPON:
   - 1.1. AMERICAN NATIONAL STANDARD ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES (ICC/ANSI A117.1-2009) AS PUBLISHED BY INTERNATIONAL CODE COUNCIL IN MAY, 2004.
   - 1.2. INTERNATIONAL BUILDING CODE 2003 AS PUBLISHED BY INTERNATIONAL CODE COUNCIL IN JANUARY 2004
   - 1.3. AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES FOR BUIDLINGS AND FACILITIES (ADAAG) AS PUBLISHED BY U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD)
2. THIS SHEET IS NOT INCLUSIVE OF ALL ACCESSIBILITY REQUIREMENTS BY ANY JURISICTION AND IS NOT INTENDED TO REPLACE OR ALTER ANY CODIFIED REQUIREMENTS BY ANY JURISDICTION.
3. ACCESSIBILITY REQUIREMENTS SHALL BE MET IN ACCORDANCE WITH ANY AND ALL FEDERAL AND STATE, LOCAL AND OTHER MUNICAPAL JURISDICTIONS.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND REPORT ANY CONFLICTS AND DISCREPANCIES TO ARCHITECT.
5. WALKWAYS WILL HAVE A SLOPE NO STEEPER THAN 1 : 20.
6. FLAT SURFACES SHALL HAVE A SLOPE NO STEEPER THAN 1 : 48 AT WET LOCATIONS.
7. PROVIDE NON-SLIP FLOOR SURFACES AT ALL WET LOCATIONS.
8. OPERABLE AND DISPENSING HEIGHTS SHALL BE 15" MINIMUM AND 44" MAXIMUM ABOVE FINISHED FLOOR UNLESS OTHERWISE REQUIRED AS DEFINED BY LOCAL AUTHORITY.
9. ALL FIXTURES AND ACCESSORIES SHALL BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS TO MEET ACCCESSIBILITY REQUIREMENTS.
10. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTINGS.
11. HANGING FIXURES AND ACCESSORIES SHALL HAVE WALL BLOCKING TO MEET MINIMUM FORCE REQUIREMENTS.
12. EXPOSED PIPING AT LAVOTORIES SHALL BE INSULATED. NO SHARP OR ABRASICE SURFACES SHALL BE ALLOWED.
13. PROVIDE SOAP AND HAND TOWEL DISPENSERS AT ALL HAND WASHING LOCATIONS.
14. SEE DRAWINGS FOR ACTUAL FIXTURE AND ACCESSORY LOCATIONS.

STATE OF MISSOURI
CRAIG A. LUEBBERT
NUMBER A-7179
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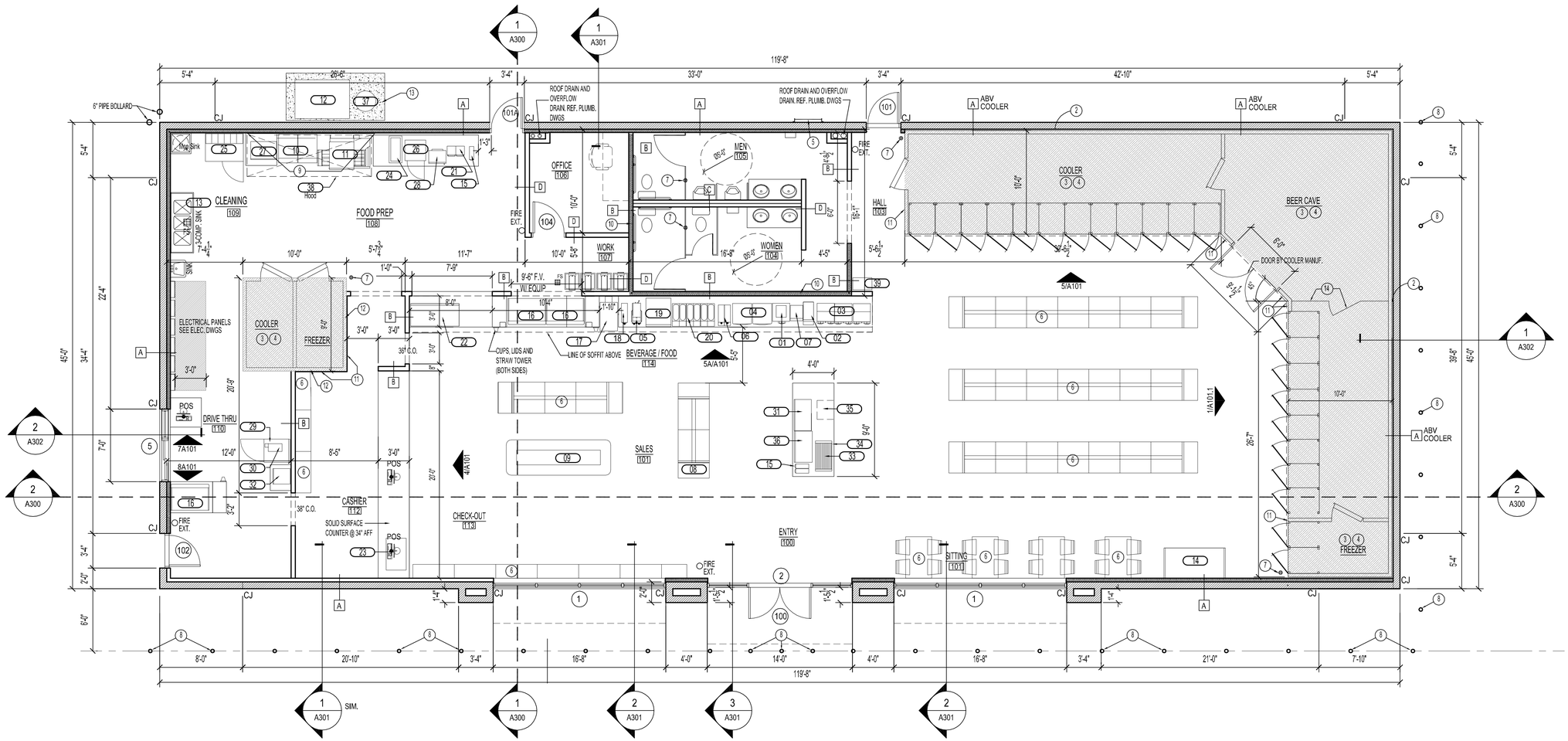


1 Floor Plan

SCALE: 3/16"=1'

PLAN NORTH

NOTE: ALL DIMENSIONS ARE FROM FACE OF MASONRY BLOCK TO FACE OF STUD UNLESS SHOWN OTHERWISE.

CJ - CONTROL JOINT PER INDUSTRY STANDARDS, PROVIDE BACKER ROD AND CAULK, TYP.

WALL TYPES

- A — 8" CMU BLOCK WALL W/ 3 5/8" MTL. STUDS @ 16" O.C. 5/8" GYP. BD. BATT INSULATION
- B — 3 5/8" MTL. STUDS W/ GYP. BD BOTH SIDES. EXTEND WALL TO B.O. OF TRUSSES. GYP. BD. TO B.O. TRUSSES (1) SIDE ONLY
- C — (2) 3 5/8" MTL. STUDS @ 16" O.C. PLUMBING WALL FACE OF STUD TO FACE OF STUD IS 8"
- D — 3 5/8" MTL. STUDS W/ GYP. BD BOTH SIDES. EXTEND WALL 4" ABOVE CEILING PROVIDE KICKER STUDS TO STRUCT AS REQUIRED

PLAN NOTES

1. NOTE NOT USED
2. PROVIDE 1-½" BETWEEN COOLER AND WALL
3. COOLERS / FREEZERS SHALL MEET UL RATINGS AND CONFORMANCE WITH IBC 2018. WALK-IN COOLER SHALL CONFORM TO 2603.4 THERMAL BARRIER AND 2603.4.1.3 WALK-IN COOLERS IN NON-SPRINKLERED BUILDINGS.
4. PROVIDE 2" RIGID INSUL UNDER SLAB W/ 15 mill VAPOR BARRIER AT COOLERS AND FREEZER- INDICATED BY HATCH - FLOORS TO BE SEALED CONCRETE
5. STEEL ROOF ACCESS LADDER SEE DETAIL 9/A104
6. SHELVING / FIXTURES BY OWNER
7. FLOOR DRAIN
8. 4" DIA. x 6'-6" TALL PIPE BOLLARD FILL W/ CONC. - 3'-6" FROM FIN. GRADE TO TOP OF BOLLARD TYP OF 23 IN FRONT OF BUILDING AND ON EAST SIDE
9. PROVIDE STAINLESS STEEL BEHIND HOOD FROM FIN. FLOOR TO B.O. OF HOOD
10. SOUND BATT INSULATE WALLS SURROUNDING TOILET ROOMS
11. APPLY ½" GYP. BD. ON COOLER WALL - TYPICAL
12. WALL ABOVE COOLER TO EXTEND TO B.O. OF ROOF DECKING W/ GYP. BD. ON BOTH SIDES
13. 4" REINF. CONCRETE SLAB - G.C. TO VERIFY SIZE
14. CHAIN LINK FENCE W/ GATE. SECURE TO FLOOR

EQUIPMENT LIST

G.C. TO VERIFY ALL EQUIPMENT W/ OWNER

01. SURE IMMERSION 312, FILTER STYLE COFFEE SYST.
02. KAN PAK REFRIGERATED LIQUID DISPENSER (CREAMER)
03. 3-BUNN DUAL SOFT HEAT COFFEE BREWER - SH DBC -(3)
04. CURTIS PRIMO CAPPUCCINO DISPENSING SYSTEMS - PCGT5 (2)
05. ICED TEA BREWING SYSTEM - TCTS10600
06. NEWCO ICED COFFE MACHINE - 706661
07. BEVERAGE SOLUTIONS GROUP - CREAMER AND SUGAR STATION
08. ROYSTON DONUT CASE 60101610
09. FEDERAL REFRIGERATED SELF-SERVE ISLAND. PROVIDE ELEC IN FLOOR - VERIFY LOCATION WITH MANUF.
10. RESFAB FRYERS - (2)
11. LINCOLN ELECTRIC OVEN (2) STACKED
12. OUTDOOR GREASE TANK - 1,400 LB CAPACITY
13. REGENCY (3) COMPARTMENT SINK WITH 2 DRAINBOARDS
14. FEDERAL REFRIGERATED SELF SERVE MERCHANDISER
15. GEHL'S NACHO DISPENSER (2)
16. LANCER ICE AND BEVERAGE DISPENSER IBD 4500-44 - (2)
17. MULTIPLEX FRESH BLENDER
18. NEWCO - LEMONADE DISPENSER
19. CORNELIUS - VIPER 4 FLAVOR FROZEN DISPENSER
20. Bunn ULTRA-2 HP Ultra Gourmet Ice Frozen Drink Machine
21. HATCO ROUND WAFFLE MAKER - RWM-2
22. RESFAB HOT FOOD CASE (CHICKEN) KK-4P
23. LOTTERY EQUIPMENT
24. NEMCO COUNTER TOP WARMER 6055A-43
25. MIGALI PIZZA PREP TABLE - C-PP44HC
26. CADCO HEAVY DUTY COUNTERTOP CONVECTION OVEN
27. AVANTCO COUNTERTOP GRIDDLE
28. SHARP MICROWAVE OVEN R-21LOFS
29. AVANTCO WORKTOP FREEZER SSWT
30. FREAL BLENDER
31. NEMCO DUAL SHELF MERCHANDISER - 6480-36S
32. NEMCO DUAL SHELF MERCHANDISER - 6480185-B
33. APW WYOTT HOT ROD ROLLER - HR(S) -50S W/ SNEEZE GUARD
34. APW WYOTT BUN WARMER - BWD-75
35. SAMSUNG MICROWAVE MS14K6000AS
36. HATCO GLO RAY PIZZA WARMER GRPWS-3618D
37. OUTDOOR CO2 TANK
38. HOOD - REF MECHANICAL DRAWINGS. PROVIDE STAINLESS STEEL FROM B.O. OF HOOD TO FLOOR
39. ATM

STATE OF MISSOURI
CRAIG A. LUEBBERT
NUMBER A-7179
REGISTERED ARCHITECT
7 14 23

Craig Luebbert Architecture

C L A

Construction Documents for:

HEARTLAND MARKET

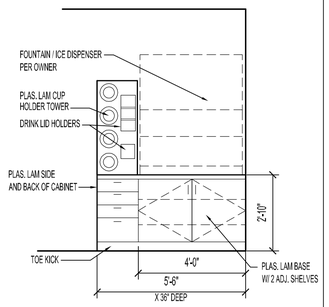
940 NE Colbern Rd.
Lee's Summit, MO.

DATE ISSUED:
7.14.23

REVISIONS:

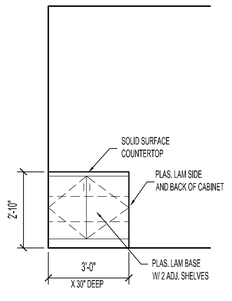
ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER A100



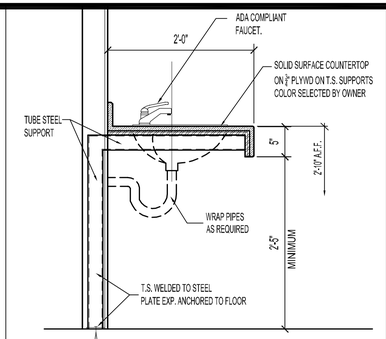
8 Fountain Disp. Cabinet - Drive Thru 110

SCALE: 3/8" = 1'



7 POS Cabinet - Drive Thru 110

SCALE: 3/8" = 1'



2 Vanity Detail

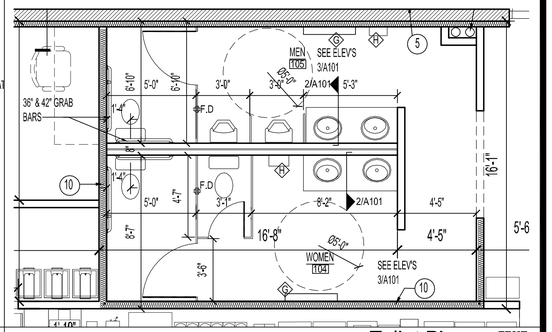
SCALE: 1 1/2" = 1'

TOILET ACCESSORIES

ALL WASHROOM ACCESORIES INSTALL PER MANUFACTURERS RECOMENDATIONS AND PER ANSI A117.1-2009 AND LOCAL CODE.

SEE SHEET A0.1 FOR FIXTURE / ACCESSORIES MOUNTING HEIGHTS PROVIDE BLOCKING IN WALLS AS REQUIRED FOR INSTALLAT

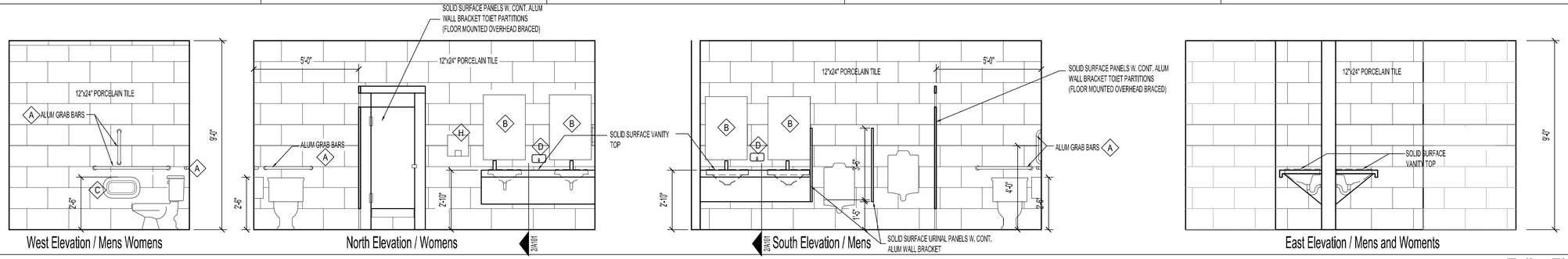
A	GRAB BARS	'BOBRICK' B-5806x42, B-5806x36, B-5806x18
B	MIRROR	BRADLEY 28"X 36"
C	TOILET TISSUE DISPENSER	BOBRICK B-2892 SURFACE MOUNTED
D	SOAP DISPENSER	B-818615
F	SANITARY NAPKIN DISPOSAL	B-270
G	CHANGING STATION	FOUNTAINS 100 EH BP
H	HAND DRYER	ELECTRIC HAND DRYER - XL-SB
J	ADA SIGNS	SEE SHEET A0.1



1 Toilet Plan

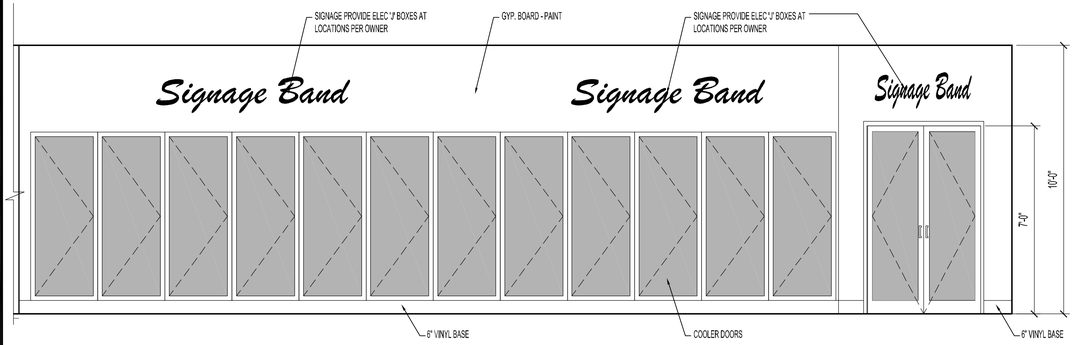
SCALE: 1/4"=1'

TRUE NORTH



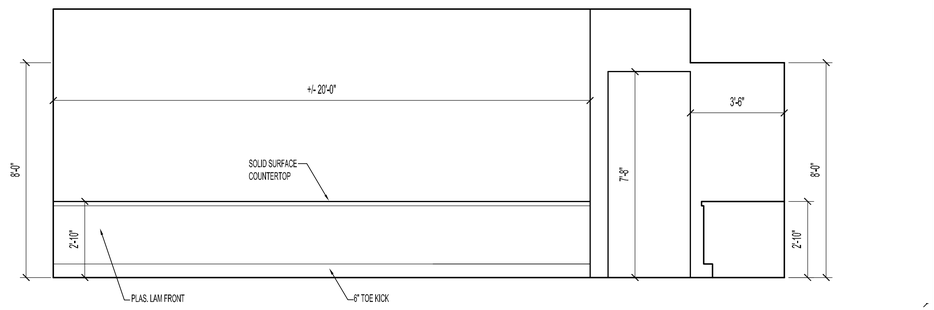
3 Toilet Elevations

SCALE: 3/8"=1'



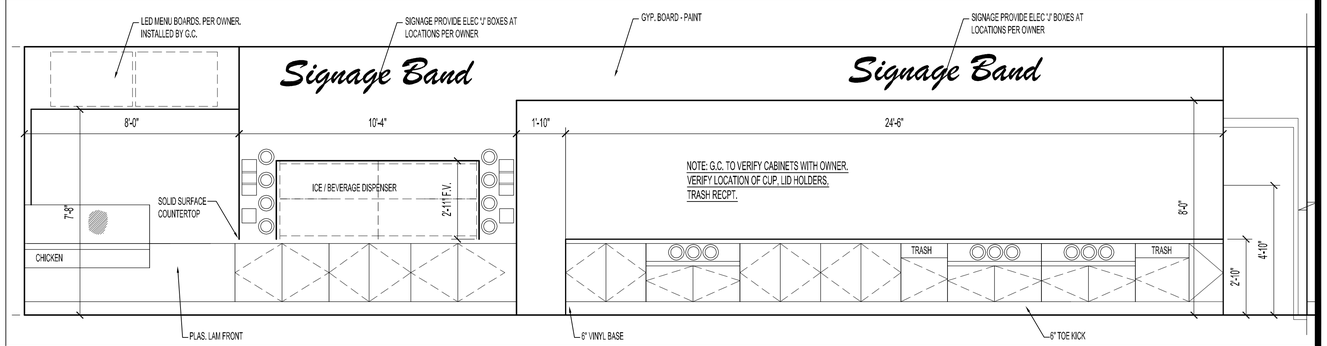
5 North Wall Cooler Elevation

SCALE: 3/8"=1'



4 Cashier Elevation

SCALE: 3/8"=1'



5A North Wall Cooler Elevation Cont'd

SCALE: 3/8"=1'

STATE OF MISSOURI CRAIG A. LUEBBERT NUMBER A-7179 REGISTERED ARCHITECT

7.14.23

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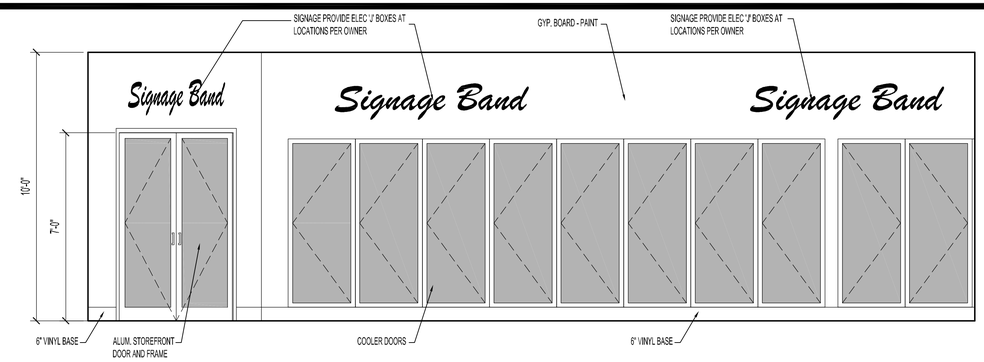
A101



1 East Wall Cooler / Freeezer Elevation

SCALE: 3/8"=1'

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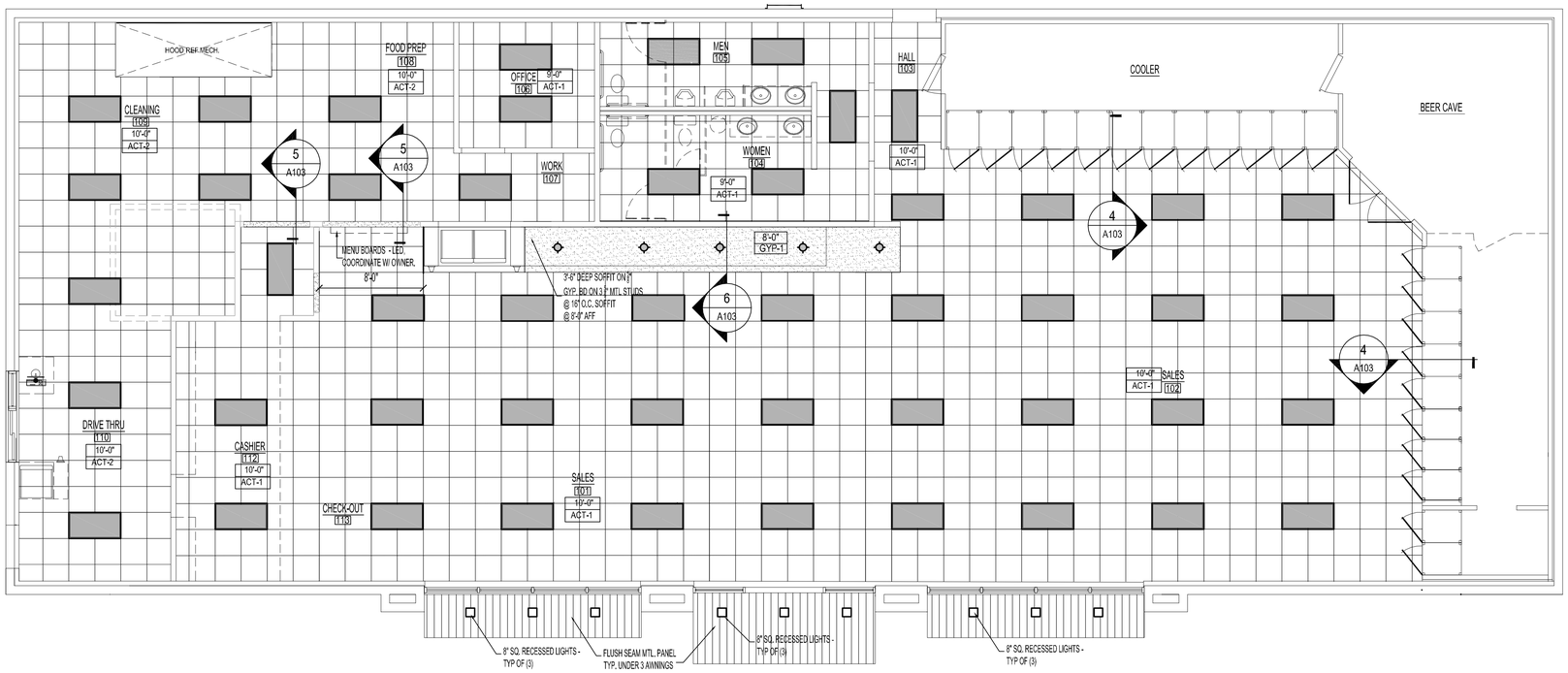
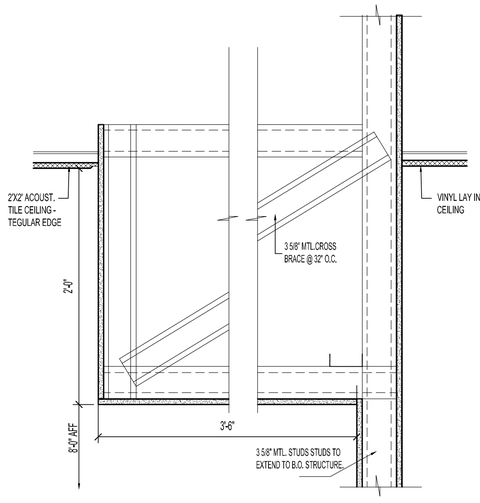
A101.1



NORTH

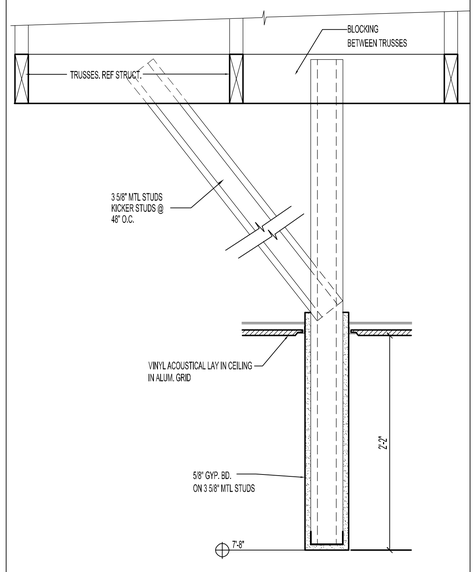
1 Reflected Ceilng Plan

SCALE: 3/16"=1'



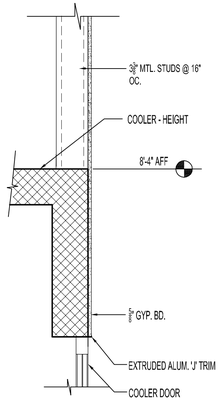
6 Soffit Above Beverage Center

SCALE: 1 1/2"=1'



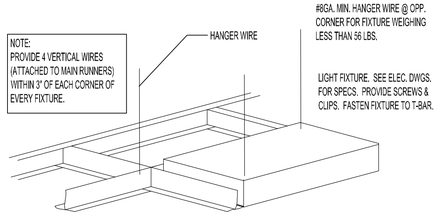
5 Soffit Detail

SCALE: 1 1/2"=1'



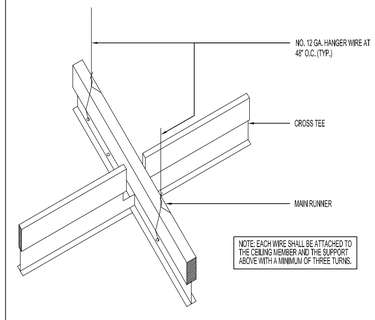
4 Bulkhead Detail @ Cooler

SCALE: 1 1/2"=1'



3 Ceiling Grid Detail / Light Attachment

SCALE: nts



2 Ceiling Grid Detail

SCALE: nts

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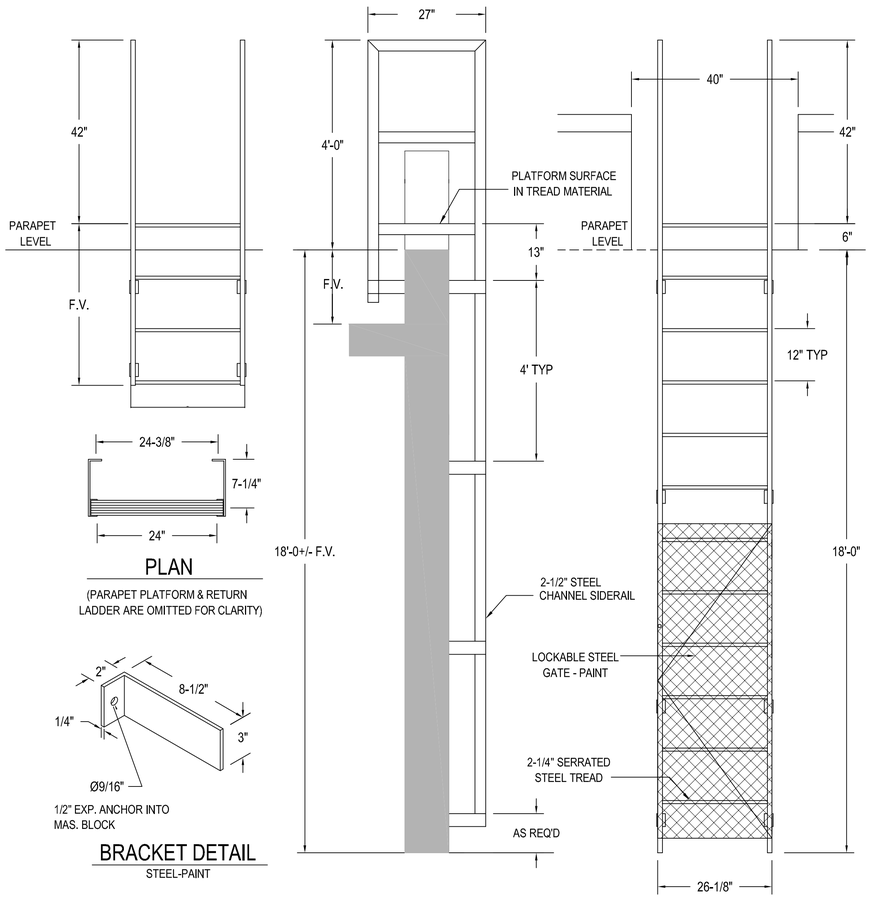
A102



PLAN

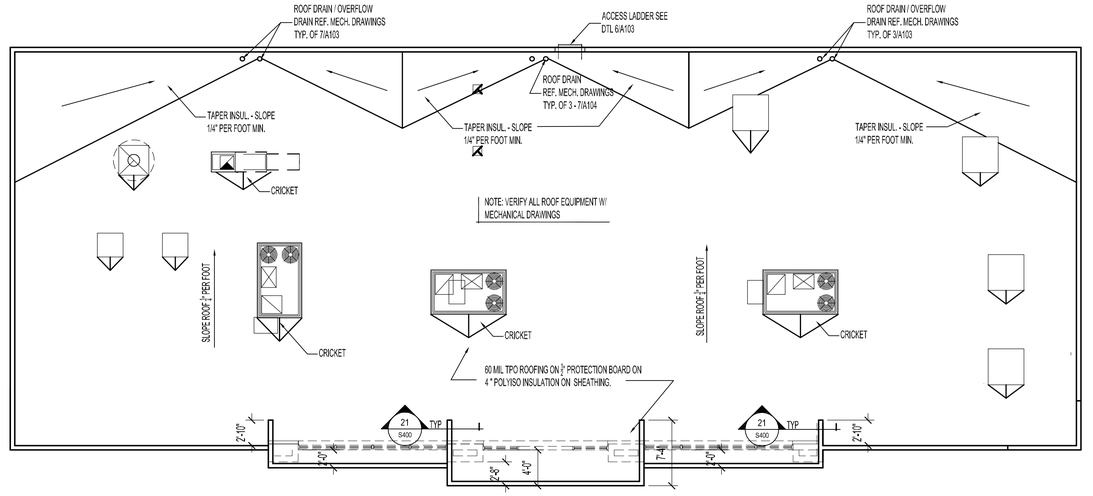
(PARAPET PLATFORM & RETURN LADDER ARE OMITTED FOR CLARITY)

BRACKET DETAIL

STEEL-PAINT

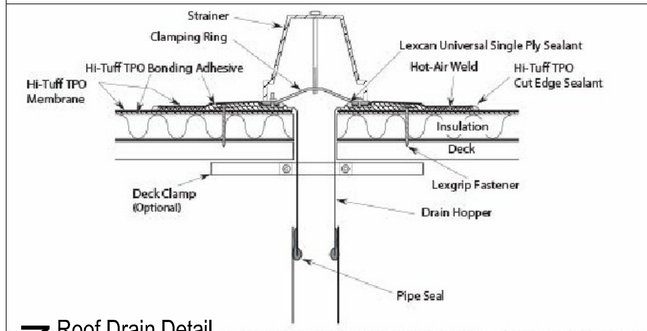
6 Roof Ladder Detal

SCALE: nts



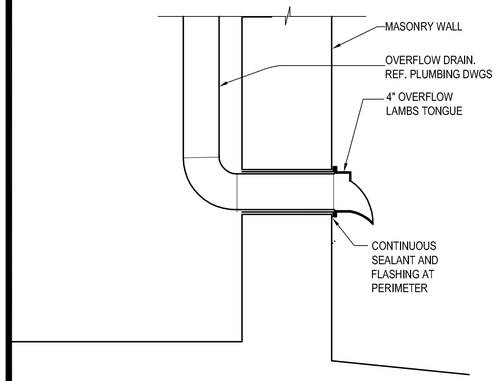
1 Roof Plan

SCALE: 1/8"=1'



7 Roof Drain Detail

SCALE: nts

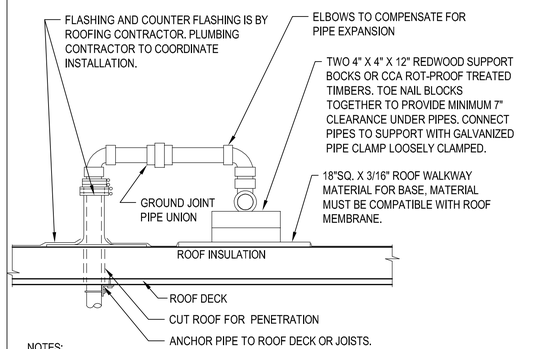


OVERFLOW LAMBS TONGUE

JOSAM SERIES OR EQUAL CAST BRONZE DOWNSPOUT NOZZLE, LOOSE WALL FLANGE AND INLET THREADED CONNECTION. 4" PIPE SIDE

5 Roof Scupper & Overflow Drain Detail

SCALE: 1 1/2"=1'

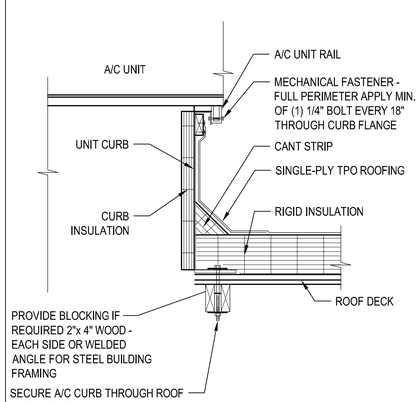


NOTES:

1. REFER TO PLANS FOR PIPE SIZE(S) AND LOCATION(S). USE WELDED OR SCREWED FITTINGS AS SPECIFIED FOR PIPE SIZE. LOCATE PENETRATION MINIMUM 18" FROM ADJACENT WALLS, EQUIPMENT CURBS, PARAPETS, EXPANSION JOINTS, ETCETERA.
2. LOCATE SUPPORTS AT THE FOLLOWING SPACING: 1-1/2"=9', 1-1/4"=8', 1"=7' & 3/4"=6'. PROVIDE SUPPORTS AS CLOSE AS POSSIBLE TO EACH ELBOW AND TEE.

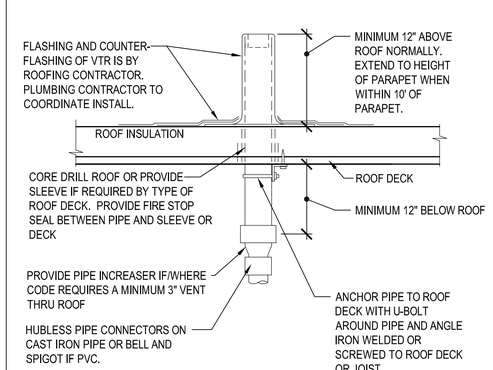
4 Pipe on Roof Detail

SCALE: nts



3 Roof Top Curb

SCALE: nts



2 Pipe Penetration

SCALE: nts

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⚠ CITY COMMENTS - 8.8.22

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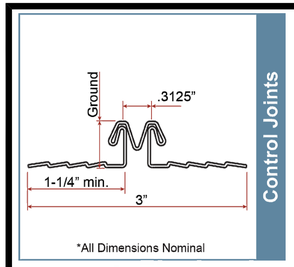
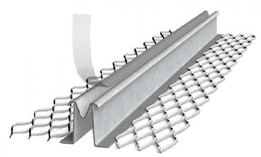


Control Joints

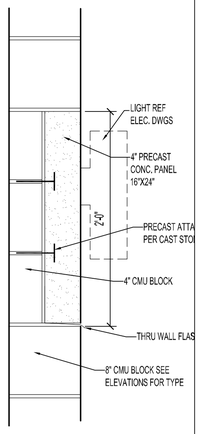


6 Stucco Joint

SCALE: NTS

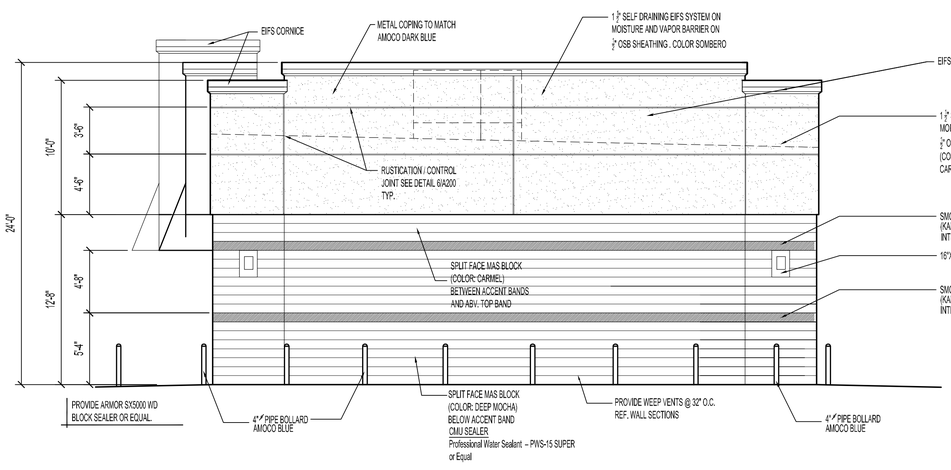
1 South Elevation

SCALE: 3/16"=1'



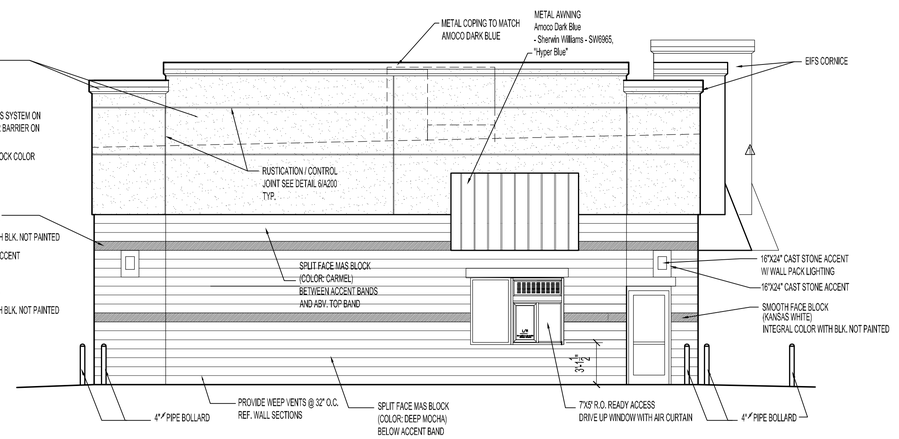
5 Precast Detail

SCALE: 1 1/2"=1'



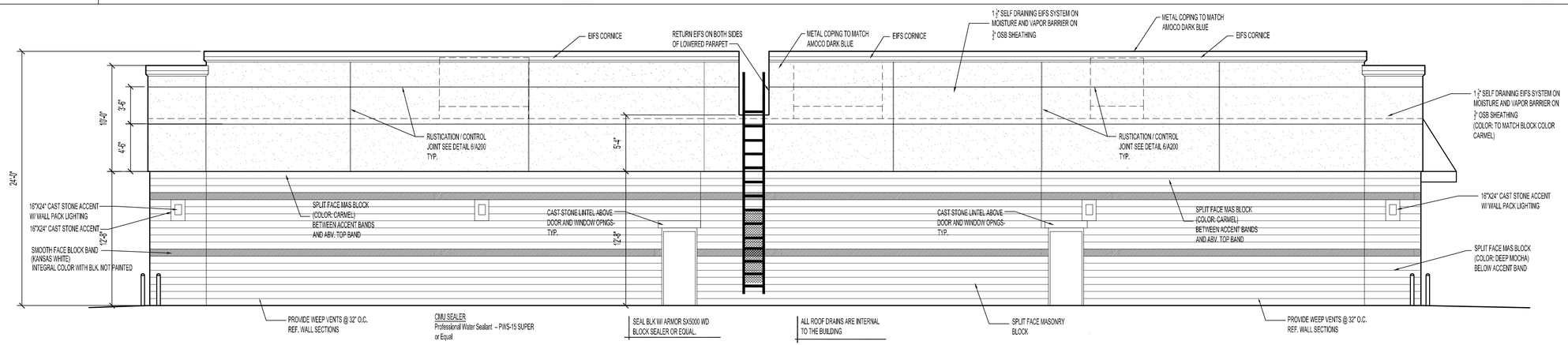
3 East Elevation

SCALE: 3/16"=1'



2 West Elevation

SCALE: 3/16"=1'



4 North Elevation

SCALE: 3/16"=1'

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1 CITY COMMENTS - 6.6.22

ARCHITECTURAL PROJECT NUMBER

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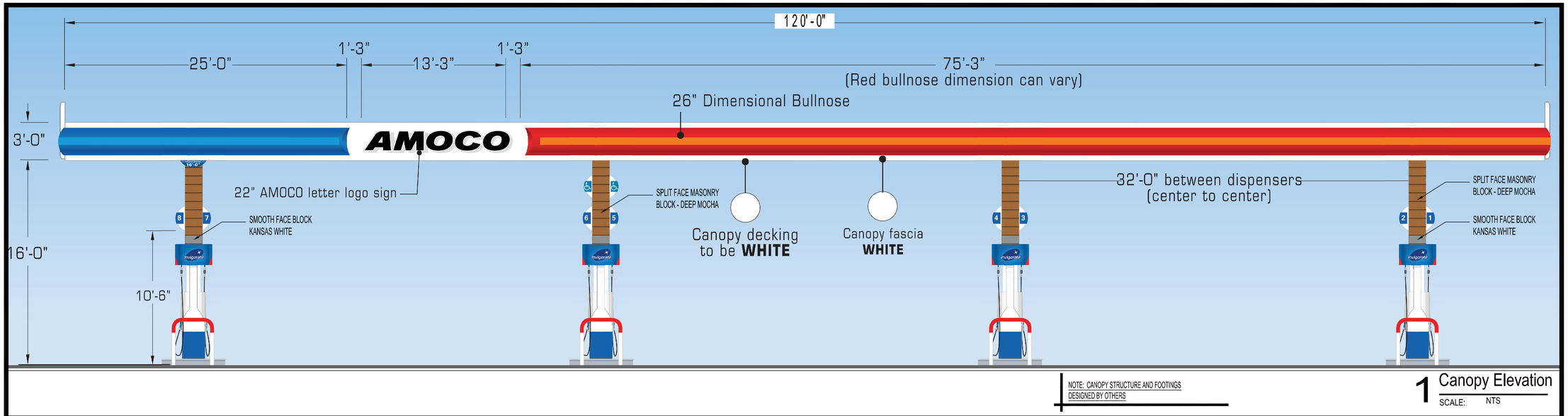
A200



1 Canopy Elevation
SCALE: NTS

Canopy Colors

C1 White (Canopy Deck, Canopy Columns, Store Exterior)
- Glidden Professional, Order #A0128, Spec #50GY 83/010, "White Wing"
- Sherwin Williams, SW7006, "Extra White"
- Benjamin Moore, OC-67, "Ice Mist" - P28 DTM (Gallon)
- Anchor Paint, BP White - 4900 (Acrylic), 900 (Oil)

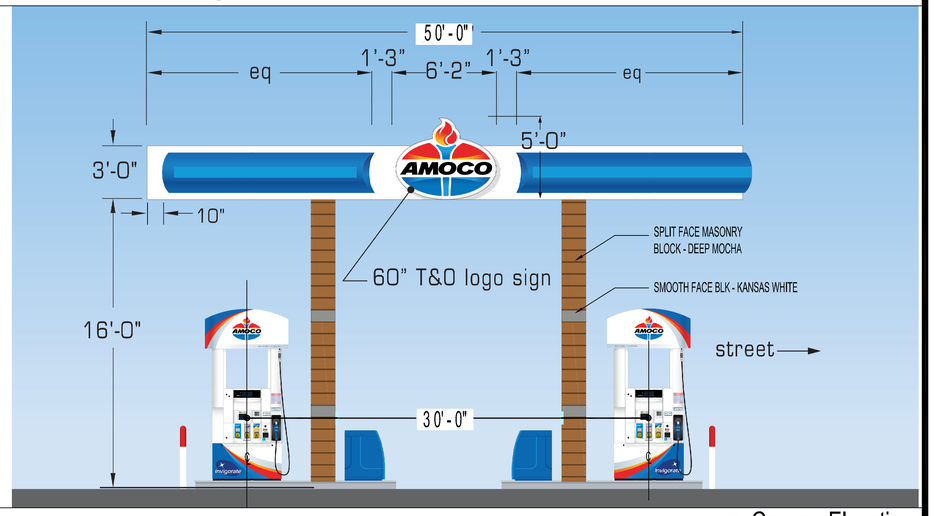
C2 Amoco Red
- Sherwin Williams, SW6869, "Stop"
- Glidden Professional, PPG Amoco Red (Custom Mix)

C3 BP Warm Gray - Pump Islands
- Sherwin Williams, SW7053, "Adaptive Shade"
- Glidden Professional, Order #A1660, Spec #40YY 25/074, "Grey Mountain"
- Benjamin Moore, 2137-40, "Desert Twilight" - P28 DTM (Gallon)
- Anchor Paint, BP Warm Gray - CC3068 (Acrylic), CC3115 (Oil)

C4 Amoco Dark Blue
- Sherwin Williams - SW6995, "Hyper Blue"
- Glidden Professional, PPG Amoco Blue (Custom Mix)

C5 Amoco Light Blue
Pantone Process BlueC (C100 M13 Y0 K0)

C7 Amoco Silver
Match PMS 877C



2 Canopy Elevation
SCALE: NTS

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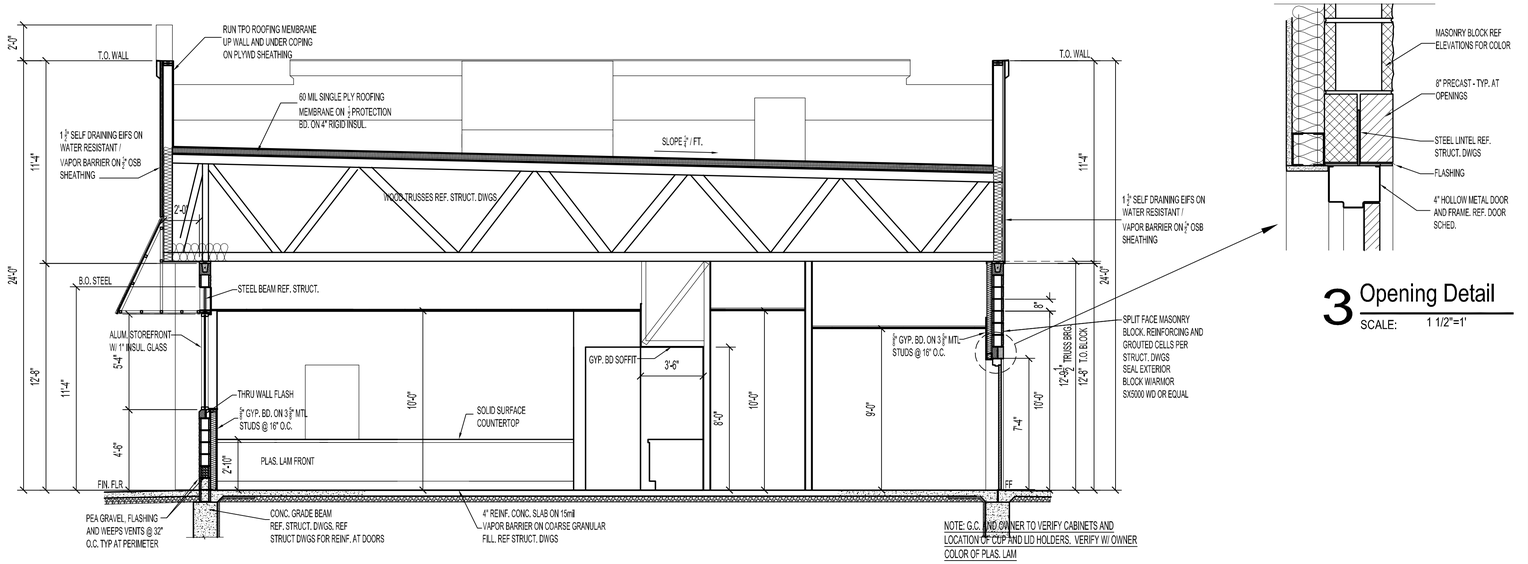
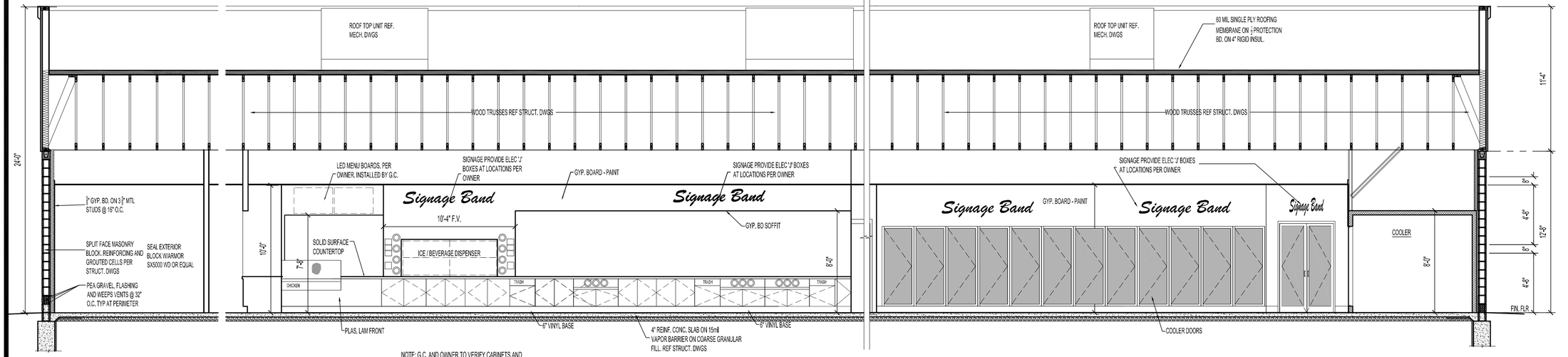
A201



1 Cross Section
SCALE: 1/4"=1'

3 Opening Detail
SCALE: 1 1/2"=1'



2 Longitudinal Section
SCALE: 1/4"=1'

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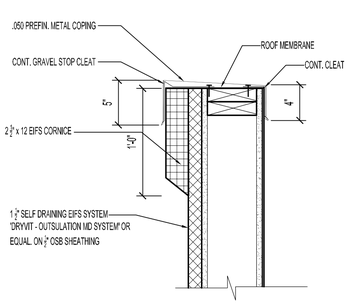
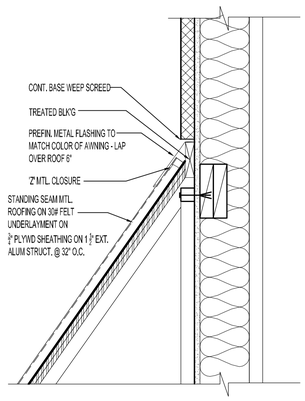
A300



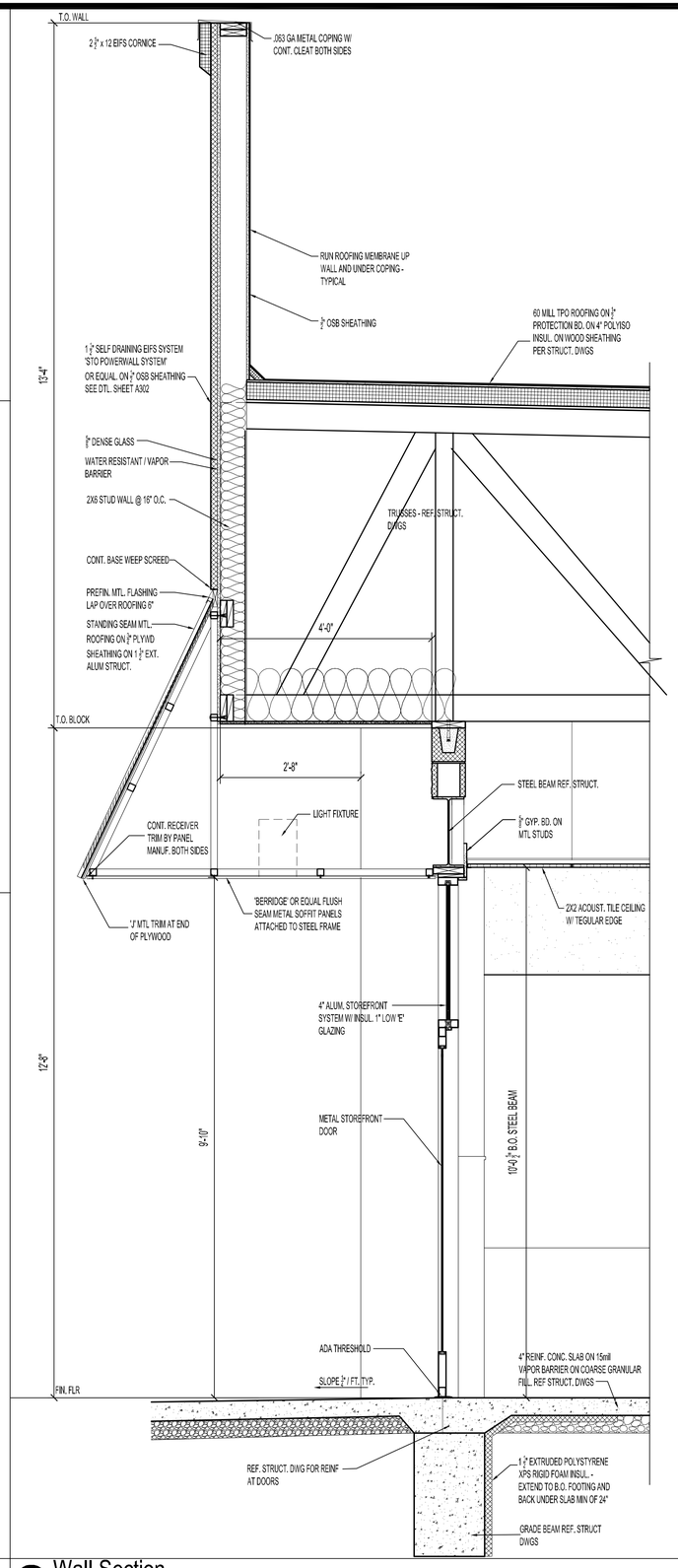
4 Coping Detail

SCALE: 1 1/2"=1'



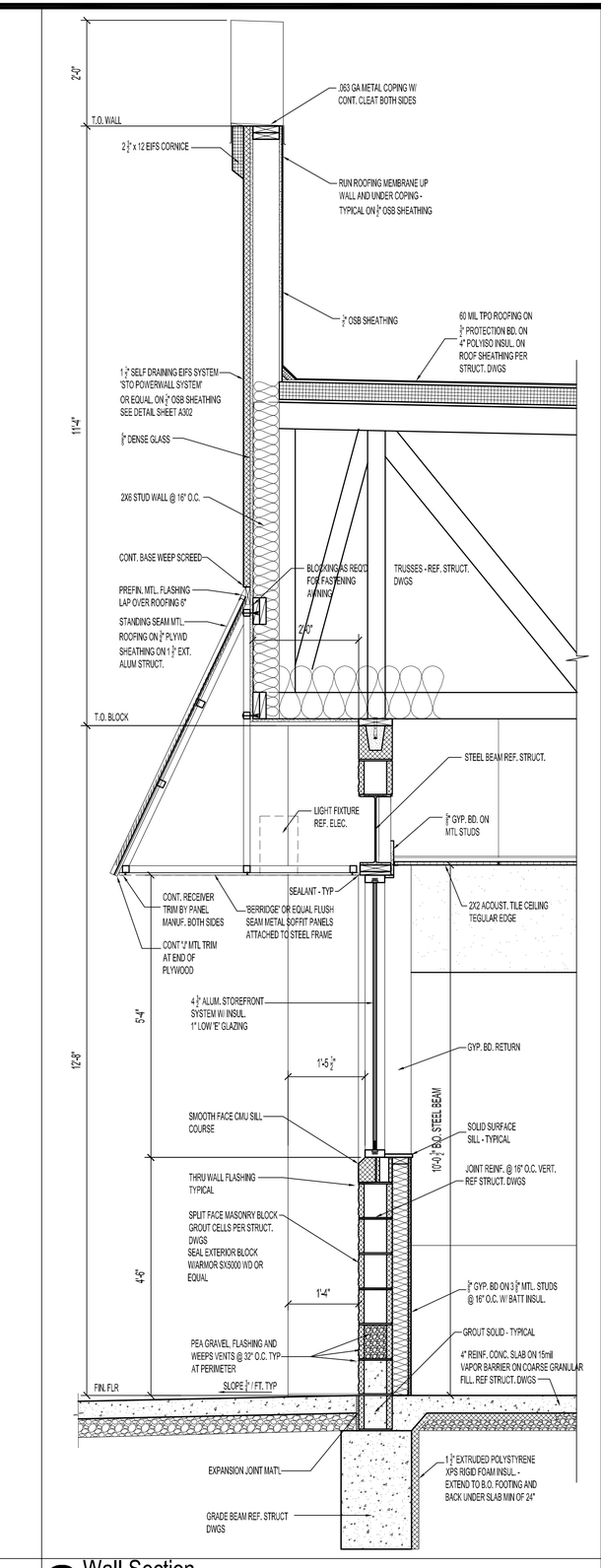
5 Awning Detail

SCALE: 1 1/2"=1'



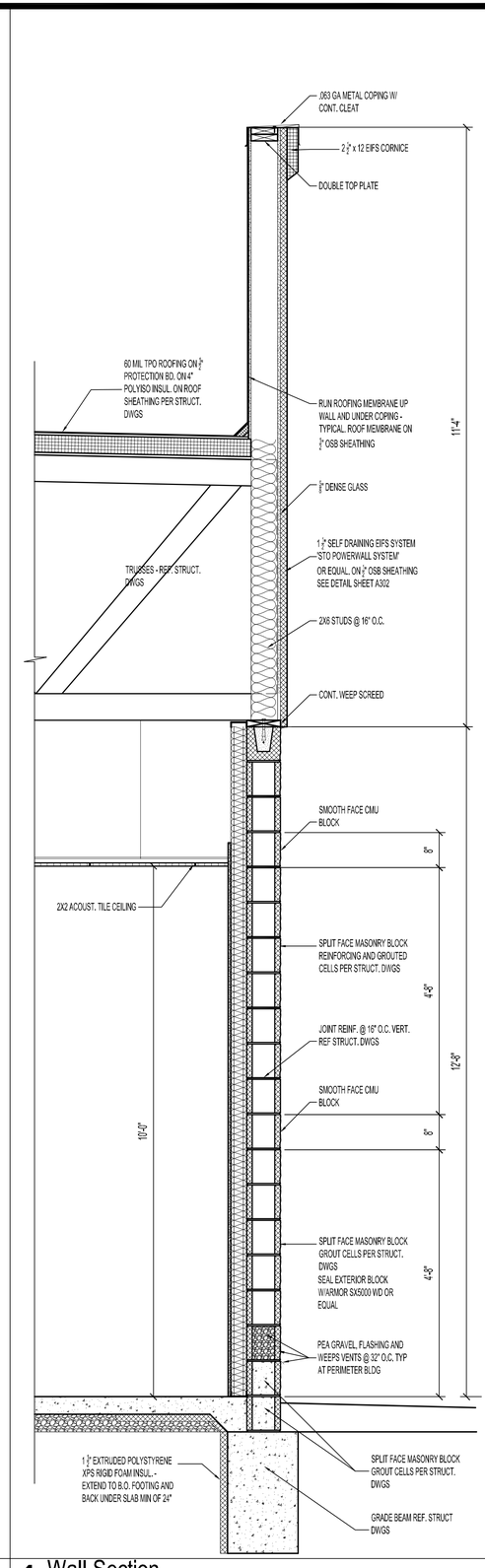
3 Wall Section

SCALE: 3/4"=1'



2 Wall Section

SCALE: 3/4"=1'



1 Wall Section

SCALE: 3/4"=1'

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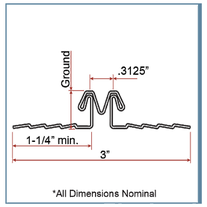
A301

ClarkDietrich

#XJ15 Double-J Control Joint (XJ15)

Expanded flange control joint with a taped reveal for a clean finish

09.22.36 (Metal Lath)



*All Dimensions Nominal

#XJ15 Expanded Flange Control Joint (Double-J) is used to relieve stresses in large plastered areas of walls, ceilings, and stucco areas. This expanded wing control joint minimizes cracking and assures proper plaster and stucco thickness. The Double-J has a 5/16" reveal and rolled outer edges to prevent visible separation cracking. The applied plastic tape keeps the reveal clean and is removed easily after the finish application.

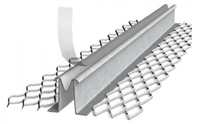
The #XJ15 enables plaster to key into the return lip to eliminate shrinkage separation, a preferred finish feature. The joint is taped, preventing stucco from getting caught inside during installation and providing a neatly finished job upon completion.

The #XJ15 Double-J Control Joint is also available in zinc alloy for increased corrosion resistance.

Product Data & Ordering Information:

Material: 26 Gauge, G60 Hot-Dipped Galvanized Steel
Also available in 99.97% pure Zinc - ASTM B-69 compliant
Dimensions: 1/2" to 7/8" Grounds, 10' lengths

Ground	Length	Pcs./Ctn.	Ft./Ctn.	Wt./Ctn.	Ctn./Skid
1/2"	10'	24	240	54 lbs.	27
3/4"	10'	24	240	69 lbs.	30
7/8"	10'	24	240	76 lbs.	30



ASTM & Code Standards:

- ASTM C841 (interior), C1063 (exterior), CE 240.01, ASTM C926, ML/SFA-920, the International Code Council IBC and IRC.
- All Expanded Metal Lath Accessories are fabricated from prime galvanized steel G60 zinc coating by the hot dipped method, conforming to steel and coating specification ASTM A653/A653M or zinc alloy meeting ASTM B-69 as required in ASTM C1063 and C847.
- SDS & Product Certification Information is available at www.clarkdietrich.com/SupportDocs
- For installation and placement instructions refer to ASTM C1063, C841 and C926.

Storage:

All stored materials shall be kept dry. Materials shall be stacked off the ground, supported on a level platform, and protected from the weather and surface contamination conforming to ASTM C1063.

Limitations:

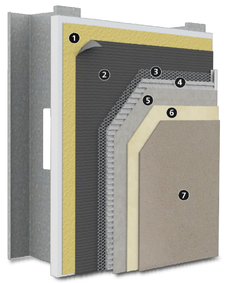
Galvanized steel products should not be used with magnesium oxychloride cement stucco or Portland cement stucco containing calcium chloride additives. The selection of the appropriate type of material for accessories shall be determined by the surrounding climatic and environmental conditions such as salt air, industrial pollution and high humidity.

sto Building with conscience.

System Bulletin

StoPowerwall®

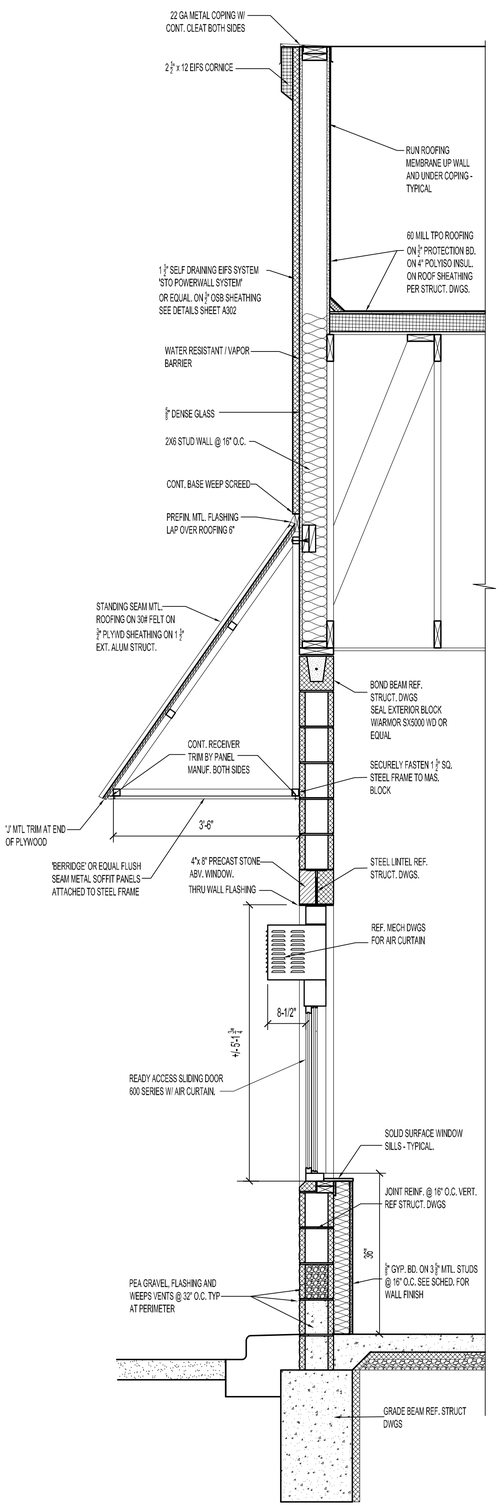
Portland cement stucco with StoGuard® air and water-resistive barrier system, drainage, and Sto high performance finishes



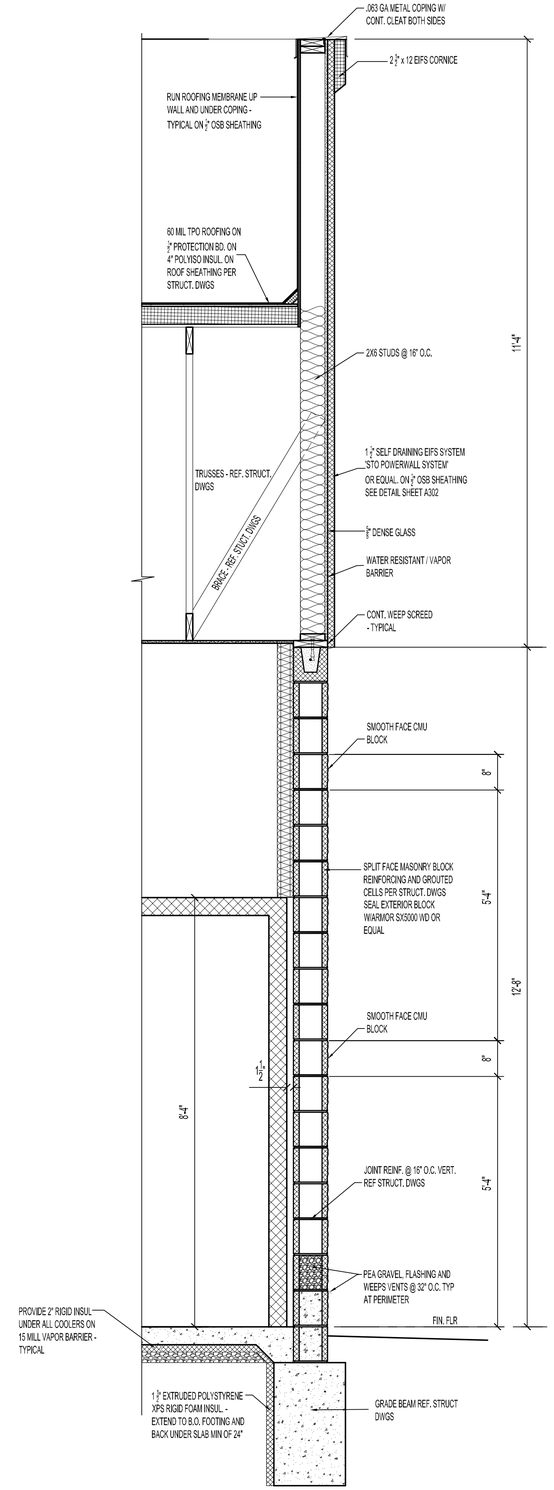
Substrate: Glass mat gypsum sheathing in compliance with ASTM C 1177, building code compliant wood-based sheathing (plywood or OSB), concrete, or concrete masonry (CMU)	
1)	StoGuard® Air and Water-Resistive Barrier
2)	Code compliant paper or felt Water-Resistive Barrier
3)	Code compliant minimum 2.5 lb/yd² (1.4 kg/m²) self-furred galvanized steel diamond mesh metal lath
4)	ASTM C926 compliant stucco scratch coat (as manufactured or listed by Sto Corp.)
5)	ASTM C926 compliant stucco brown coat (as manufactured or listed by Sto Corp.)
6)	Sto Primer
7)	• Sto Textured Finishes

System Description
StoPowerwall is a drainable stucco wall assembly that features a code compliant StoGuard air and water-resistive barrier system. It combines the strength and durability of traditional stucco with StoGuard air and water protection and Sto high performance finishes.
Uses
StoPowerwall can be used in residential or commercial wall construction for superior aesthetics, durability, and air and moisture control.

Features	Benefits
Integrally colored factory blended Sto textured, StoCast finishes, or Sto Specialty finishes	Consistent color and aesthetics increase curb appeal
StoGuard air and water-resistive barrier system	Fully compatible, code compliant air and water-resistive barrier system
Impact and puncture resistance	Withstands abuse, reduced maintenance
Optional Sto Crack Defense	Resists stucco cracking
Properties	
Weight (excluding sheathing / studs)	< 12 psf (56.6 kg/m²)
Assembly Thickness (from outer face of sheathing)	Nominal 7/8 inch (22mm)
R-value (from outer face of sheathing)	0.84 ft²•h•°F / Btu (0.148 m²•K / W)
Wind Load Resistance	Capable of achieving: +65, -48 psf (+3.11, -2.29 kPa)
StoGuard air and water-resistive barrier system code compliance with StoGuard Detail Components	• IBC and IRC (2015, 2018) • ASHRAE 90.1-2019
Construction Types, Fire Resistance	• For use on all Types of Construction • ASTM E119 hourly rated assemblies
Warranty	
10 year Limited Warranty when used with Sto Crack Defense	
Maintenance	
Requires periodic cleaning to maintain appearance, repair of cracks and impact damage if they occur, recoating to enhance appearance of weathered finish. Sealants and other façade components must be maintained to prevent water infiltration.	



2 Wall Section
SCALE: 3/4"=1'



1 Wall Section
SCALE: 3/4"=1'

STATE OF MISSOURI
CRAIG A. LUEBBERT
NUMBER A-7179
REGISTERED ARCHITECT
7 14 23

Craig Luebbert Architecture

CLA

Construction Documents for:

HEARTLAND MARKET

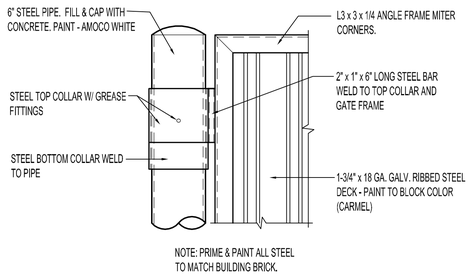
940 NE Colbern Rd.
Lee's Summit, MO.

DATE ISSUED:
7.14.23

REVISIONS:
⚠ CITY COMMENTS - 6.6.22

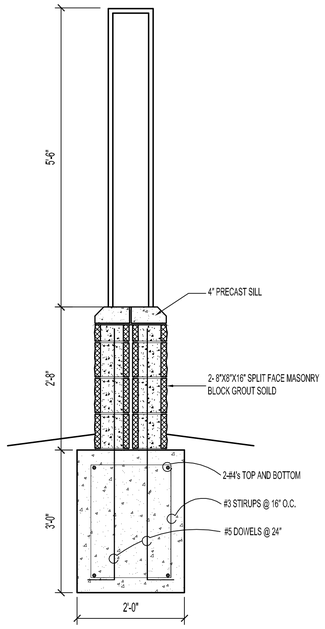
ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER
A302



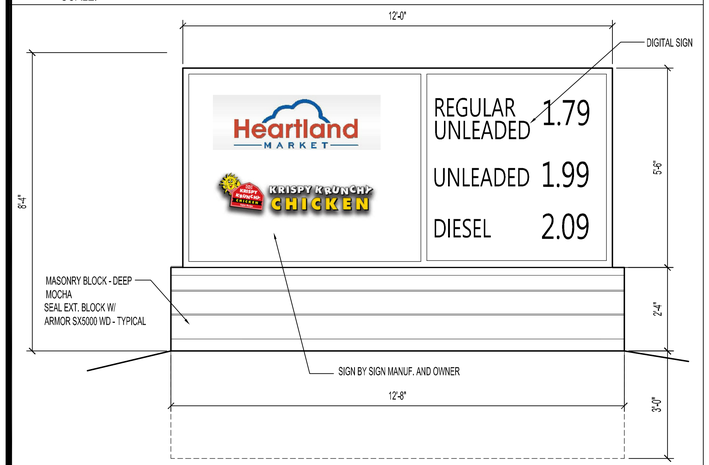
5 Gate Detail

SCALE: 1 1/2"=1'



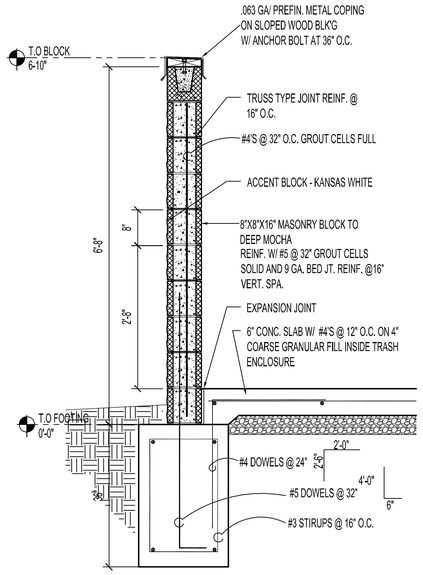
6 Monument Sign Section

SCALE: 3/4"=1'



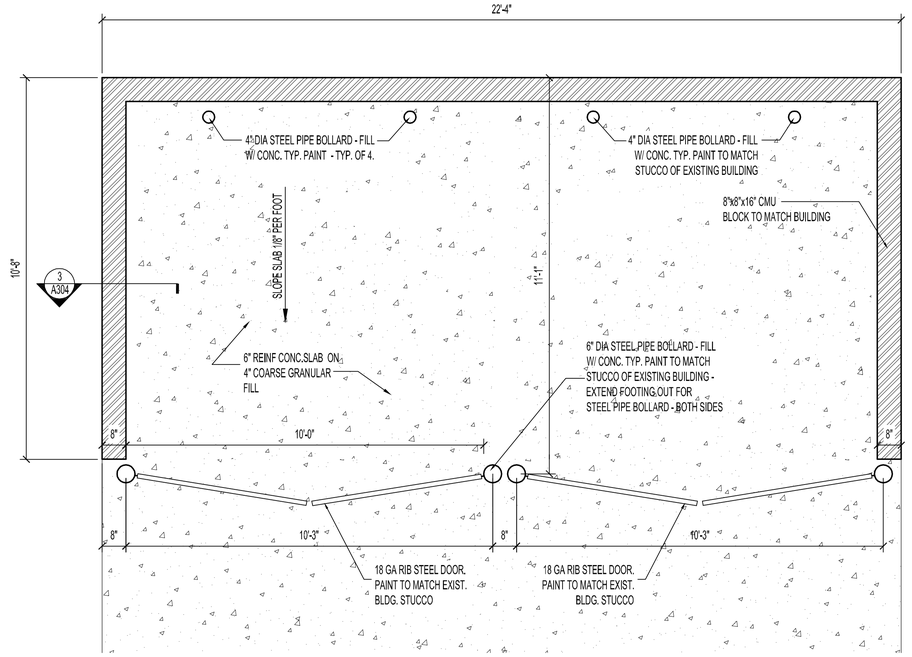
7 Monument Sign Elevation

SCALE: 1/2"=1'



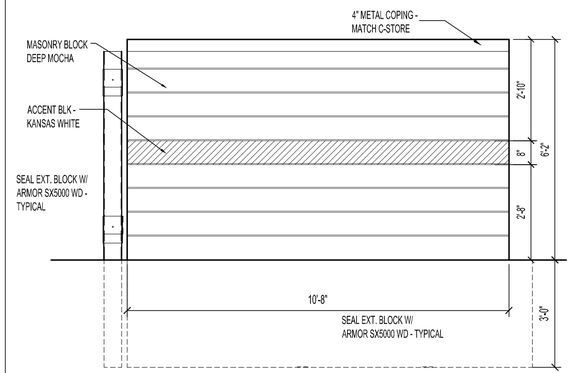
3 Trash Enclosure Section

SCALE: 3/4"=1'



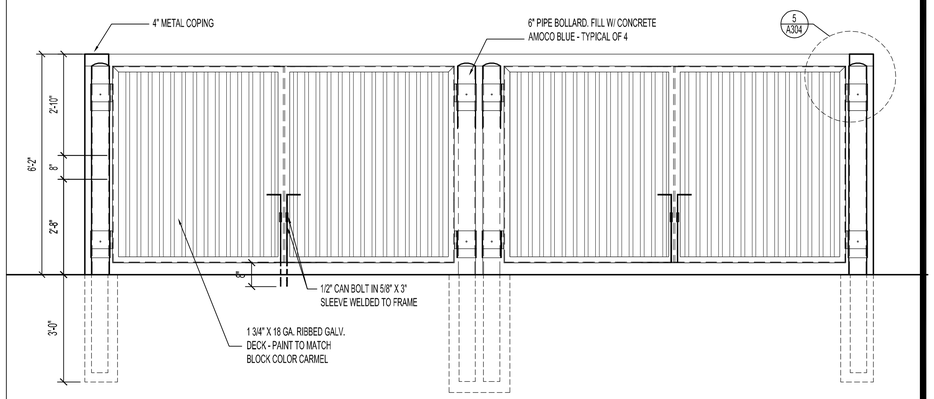
1 Trash Enclosure Plan

SCALE: 1/2"=1'



4 Trash Enclosure Elevation - North / South

SCALE: 1/2"=1'



2 Trash Enclosure Elevation

SCALE: 1/2"=1'

STATE OF MISSOURI
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NUMBER A-7179
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Craig Luebbert Architecture

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940 NE Colbern Rd.
Lee's Summit, MO.

DATE ISSUED: 7.14.23

REVISIONS:

ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER A303

DOOR SCHEDULE

DOOR NO.	DOOR LOCATION	DOOR SIZE	DOOR TYPE.	FRAME TYPE.	DOOR ELEV.	FRAME ELEV.	REMARKS / HARDWARE
100	OUTSIDE / 101 SALES	(2) 3'-0" x 7'-0"	ALUM	ALUM.	A	2	HARDWARE BY ALUM. STOREFRONT MANUFACTURE
101	OUTSIDE / 103 - HALL	3'-0" x 7'-0"	H.M.	H.M.	B	3	PANIC DEVICE, CLOSURE, 1 1/2 PAIR BUTTS, LOCKSET, ADA THRESHOLD, WEATHERSTRIPPING, DRIP CAP, KICK PLATE, DOOR ALARM
101A	OUTSIDE / 108 - FOOD PREP	3'-0" x 7'-0"	H.M.	H.M.	B	3	PANIC DEVICE, CLOSURE, 1 1/2 PAIR BUTTS, LOCKSET, ADA THRESHOLD, WEATHERSTRIPPING, DRIP CAP, KICK PLATE,
102	OUTSIDE / 109- DRIVE THRU	3'-0" x 7'-0"	ALUM	ALUM	A	—	HARDWARE BY ALUM. STOREFRONT MANUFACTURE
103	109 - DRIVE THRU / 110-LAUNDRY	3'-0" x 7'-0"	S.C.W.	K.D.F	C	4	1 1/2 PAIR BUTTS, ADA LEVER STYLE LATCH, OFFICE DOOR LOCK SET, WALL STOP
104	107-FOOD PREP / 106-OFFICE	3'-0" x 7'-0"	S.C.W.	K.D.F	C	4	1 1/2 PAIR BUTTS, ADA LEVER STYLE LATCH, FLOOR STOP, KICK PLATE (BOTH SIDES) OFFICE LOCK SET

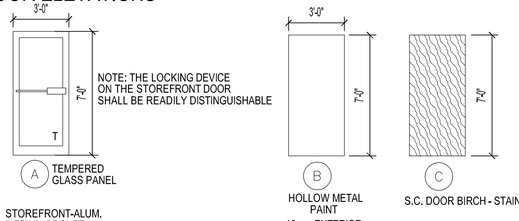
NOTE: GENERAL CONTRACTOR, OWNER AND DOOR HARDWARE SUPPLIER SHALL MEET TO GO OVER HARDWARE SELECTION, FINISH, LEVER TYPE STYLE LATCH SET AND KEYING PRIOR TO ORDERING DOORS.

NOTE: ALL HARDWARE LATCH SETS, PUSH PULL PLATES, THRESHOLDS AND PUSH BARS SHALL BE ADA COMPLICANT

ABBREVIATIONS:
ALUM. - ALUMINIUM H.M. - HOLLOW METAL
K.D.F. - METAL KNOCK DOWN FRAME S.C.W. - SOLID CORE WOOD (BIRCH)

DOORS WITH CLOSURES SHALL HAVE BALL BEARING HINGES.
DOOR HARDWARE FINISH AND STYLE SELECTED BY OWNER.

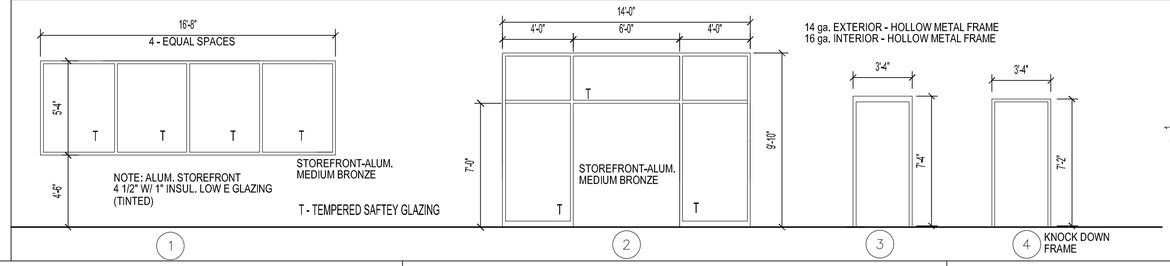
DOOR ELEVATIONS



NOTE:TEMPERED GLAZING / SAFETY GLAZING SHALL MEET THE SAFETY GLAZING IN HAZARDOUS LOCATIONS REQUIRED PER IBC 2406 AND IBC 2406.3

NOTE: INSTALL ALL DOOR HARDWARE REQUIRED TO MEET ADA REQUIREMENTS

ALUMINUM FRAME / WINDOW ELEVATIONS



ROOM FINISH SCHEDULE

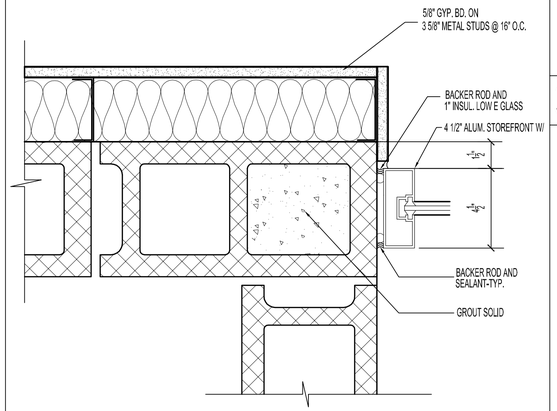
ROOM NO.	ROOM NAME	WALLS NORTH	WALLS SOUTH	WALLS EAST	WALLS WEST	FLOOR	BASE	CEILING	CEILING HEIGHT	REMARKS
CONVENIENCE STORE										
100	ENTRY	——	P-1	P-1	——	PT-1	VB-1	ACT-1	10'-0"	
101	SITTING	——	P-1	P-1	P-1	PT-1	VB-1	ACT-1	10'-0"	EAST WALL INSTALL GYP.BD. ON COOLER WALL - PAINT
102	SALES	P-1	P-1	P-1	——	PT-1	VB-2	ACT-1	10'-0"	
103	HALL	P-1	P-1	P-1	P-1	PT-1	VB-1	ACT-1	10'-0"	EAST WALL INSTALL GYP.BD. ON COOLER WALL - PAINT
104	WOMEN'S TOILET	PT-1	PT-1	PT-1	PT-1	PT-1	PT-1	ACT-1	9-0"	PROVIDE ACCENT TILE COLOR PER ELEVATIONS
105	MEN'S TOILET	PT-1	PT-1	PT-1	PT-1	PT-1	PT-1	ACT-1	9-0"	PROVIDE ACCENT TILE COLOR PER ELEVATIONS
106	OFFICE	P-1	P-1	P-1	P-1	PT-1	VB-1	ACT-1	9-0"	
107	STORAGE	FRP-1	FRP-1	FRP-1	——	PT-1	FRP-1	ACT-2	9-0"	
108	FOOD PREP	FRP-1/SS	FRP-1	FRP-1	——	PT-1	FRP-1	ACT-2	9-0"	PROVIDE STAINLESS STEEL ON WALL UNDER HOOD
109	CLEANING	FRP-1	——	——	FRP-1	PT-1	FRP-1	ACT-2	9-0"	
110	DRIVE THRU	——	FRP-1	FRP-1	FRP-1	PT-1	FRP-1	ACT-2	9-0"	
111	LAUNDRY	P-1	P-1	P-1	P-1	PT-1	VB-1	ACT-1	9-0"	
112	CASHIER	P-1	P-1	P-1	P-1	PT-1	VB-1	ACT-1	10'-0"	
113	CHECK-OUT	——	P-1	——	P-1	PT-1	VB-2	ACT-1	10'-0"	
114	BEVERAGE / FOOD	P-1	——	——	——	PT-1	VB-2	ACT-1	10'-0"	

WALLS
P-1 PRIME WALLS - PROVIDE 2 COAT SATIN PAINT
FRP-1 FIBERGLASS REINFORCED PANELS
PT-1 PORCELAIN TILE FLOOR TO CEILING
SS STAINLESS STEEL BEHIND HOOD FROM FLOOR TO B.O. HOOD

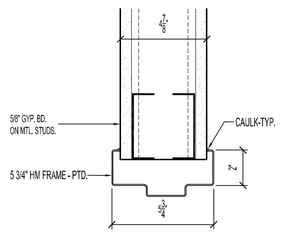
BASE
VB-1 4" HIGH VINYL COVE BASE-BLACK
VB-2 6" HIGH VINYL COVE BASE

FLOORING
PT-1 12"X12" PORCELAIN TILE
SC-1 SEALED CONCRETE

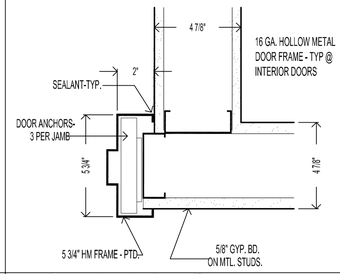
CEILINGS
ACT-1 ACOUSTICAL TILE CEILING - 2 x 2 TEGULAR
ACT-2 VINYL FACED ACOUSTICAL TILE CEILING - 2 x 2
GYP-1 GYP.BD SOFFIT - 8'-0" AFF



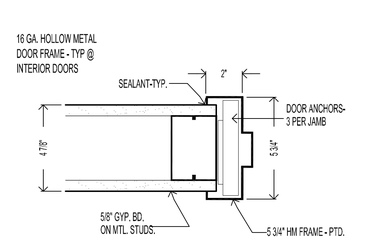
6 Alum. Storefront Jamb Detail
SCALE: 1"=3"



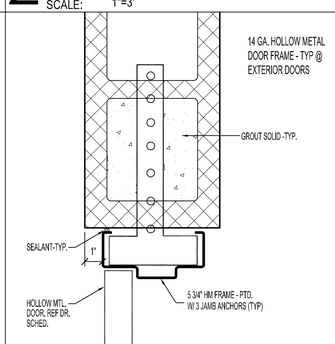
3 Door Head Detail
SCALE: 1"=3"



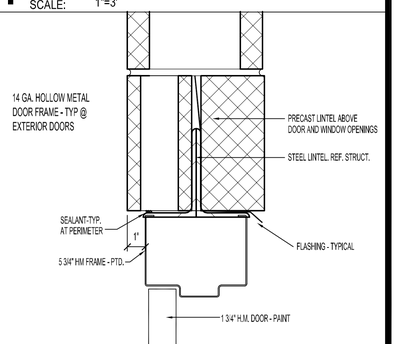
2 Door Jamb Detail
SCALE: 1"=3"



1 Door Jamb Detail
SCALE: 1"=3"



5 Door Jamb Detail
SCALE: 1"=3"



4 Door Head Detail
SCALE: 1"=3"

STATE OF MISSOURI
CRAIG A. LUEBBERT
NUMBER A-7179
REGISTERED ARCHITECT
7.14.23

Craig Luebbert Architecture
C L A

Construction Documents for:

HEARTLAND MARKET

940 NE Colbern Rd.
Lee's Summit, MO.

DATE ISSUED:
7.14.23

REVISIONS:

ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER
A400

STRUCTURAL NOTES

1 2018 INTERNATIONAL BUILDING CODE

GENERAL NOTES:

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE 2018 1 INTERNATIONAL BUILDING CODE.

2. THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE NEW STRUCTURE DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, BRACING, SHORING FOR CONSTRUCTION LOADS AND EQUIPMENT, ETC. THE ARCHITECT-ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTOR'S MEANS AND METHODS, SEQUENCES OF CONSTRUCTION, OR THE SAFETY PROGRAM. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT-ENGINEER WILL NOT INVOLVE REVIEW OF THESE ITEMS.

3. CONTRACTOR IS TO ESTABLISH AND VERIFY OPENINGS AND INSERTS FOR ITEMS TO BE INSTALLED BY OTHER TRADES PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.

4. CONSTRUCTION MATERIAL AND EQUIPMENT PLACED ON FRAMED CONSTRUCTIONS SHALL BE SUCH THAT THE LOAD DOES NOT EXCEED THE DESIGN LIVE LOAD OF THE CONSTRUCTION. PROVIDE SHORING OF CONSTRUCTIONS WHERE NECESSARY FOR LOADS.

5. DETAILS THAT ARE NOTED AS "TYP." ON DETAIL TITLES ARE TO BE APPLIED TO THE PROJECT CONSTRUCTION AS GENERAL CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. THESE DETAILS ARE NOT CUT AT ALL LOCATIONS THEY OCCUR AND MAY NOT BE CUT AT ALL.

6.

DESIGN:
ALL CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS, EXCEPT WHERE NOTED TO THE CONTRARY ON DRAWINGS OR WHERE MORE STRINGENT REQUIREMENTS ARE SHOWN.

ACI 117	STANDARD SPECIFICATIONS FOR TOLERANCE FOR CONCRETE CONSTRUCTION AND MATERIALS
ACI 301	SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
ACI 318	BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
AISC	SPECIFICATIONS FOR STRUCTURAL STEEL FOR BUILDINGS
AISI-NAS	NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
AWS D1.1	STRUCTURAL WELDING CODE

DEAD LOADS:
20 PSF ROOF LOAD

LIVE LOADS:
20 PSF ROOF LOAD

SNOW LOADS: 1
SNOW LOADS IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE AND ASCE 7 INCLUDING DRIFTING SNOW LOADS CHAPTER 16.
Ce = 1.0 Ct = 1.0
Is = 1.0 Pg = 20 PSF
Pf = 16 PSF Pf(min) = 20 PSF
RAIN ON SNOW LOAD= 5 PSF
DESIGN SNOW LOAD SHALL BE WORST CASE OF:
CASE 1: 20 PSF + SNOW DRIFT (SEE 31/S4.0 FOR JOIST SNOW DRIFT)
CASE 2: 25 PSF (BALANCED SNOW + RAIN-ON-SNOW)

WIND LOAD: 1
WIND LOADS IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE.
ULTIMATE DESIGN WIND SPEED = 115 MPH
EXPOSURE "C"
GCpi = +/- 0.18

SEISMIC LOAD: 1
SEISMIC DESIGN IN ACCORD WITH 2018 1 INTERNATIONAL BUILDING CODE.
I=1.0
SITE CLASS = D
MAPPED SPECTRAL RESPONSE COEFFICIENTS: S_S = 0.1005 S_I = 0.0686
SPECTRAL RESPONSE COEFFICIENTS: S_{DS} = 0.107 S_{DI} = 0.110
SEISMIC DESIGN CATEGORY B
R = 3.5
Cs = 0.0306
LATERAL LOAD RESISTANCE SYSTEM:
LATERAL LOAD SYSTEM CONSISTS OF ROOF DIAPHRAGMS TRANSFERRING LATERAL LOADS TO MASONRY SHEAR WALLS SUPPORTED BY CONCRETE FOUNDATIONS.

FOUNDATIONS:
1. A GEOTECHNICAL REPORT HAS NOT BEEN COMPLETED. FOUNDATIONS HAVE BEEN DESIGNED TO BEAR ON STRUCTURAL SOIL CAPABLE OF SUPPORTING 1500PSF.

2. MINIMUM FROST DEPTH: 3'-0"

CONCRETE:
1. CONCRETE MIX DESIGNS:
FOOTINGS:
MIN 28 DAY COMPRESSIVE STRENGTH = 3,000 PSI
W/C RATIO = 0.50
MAX AGGREGATE SIZE = ¾"
SLUMP = 4" ±1"
AIR CONTENT = 6% ±1.5% (ASTM C 260)

SLAB ON GRADE:
MIN 28 DAY COMPRESSIVE STRENGTH = 4,000 PSI
W/C RATIO = 0.45
MAX AGGREGATE SIZE = ¾"
MAX SLUMP = 4"
AIR CONTENT = 1.5% (ASTM C 260)

EXTERIOR CONCRETE:
MIN 28 DAY COMPRESSIVE STRENGTH = 4,500 PSI
W/C RATIO = 0.40
MAX AGGREGATE SIZE = ¾"
SLUMP = 4"±1"
AIR CONTENT = 6% ± 1.5% (ASTM C 260)

2. IF CONTRACTOR DESIRES TO INCREASE SLUMP ABOVE ALLOWABLE LIMITS TO FACILITATE PLACEMENT OR PUMPING, THIS SHALL BE DONE UTILIZING AN APPROPRIATE APPROVED ADMIXTURE - NO WATER SHALL BE ADDED AT THE PROJECT SITE WITHOUT THE ENGINEER'S PERMISSION. ALL ADMIXTURES SHALL BE APPROVED IN WRITING BY THE ENGINEER.

3. THE CONTRACTOR SHALL REJECT ANY CONCRETE THAT EXCEEDS THE SLUMP LIMITS NOTED ABOVE OR EXCEEDS THE TOTAL ALLOWABLE MIXING TIME.

4. FLY ASH MAY BE INCLUDED IN FOUNDATION CONCRETE.

5. NO ALUMINUM SHALL BE PLACED IN CONCRETE.

6. DURING HOT WEATHER (80 DEGREES F AND ABOVE, THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS ACI 305"HOT WEATHER CONCRETE." DURING COLD WEATHER (40 DEGREES F AND BELOW), THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS OF ACI-306 "COLD WEATHER CONCRETING."

7. THE CONCRETE MIX DESIGNS ARE TO BE SUBMITTED AS A FORMAL SUBMITTAL TO THE ENGINEER OF RECORD FOR REVIEW AND ACCEPTANCE. AFTER ACCEPTANCE OF THE MIX DESIGN BY THE ENGINEER OF RECORD, THE ACCEPTED DESIGNS MUST BE FORWARDED TO THE CITY INSPECTION DEPT. & THE SPECIAL INSPECTOR PRIOR TO CONCRETE BEING DELIVERED TO THE SITE.

CONCRETE REINFORCEMENT:

1. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

2. CONCRETE COVER REQUIREMENTS FOR CAST-IN-PLACE, UNLESS OTHERWISE NOTED ON DETAILS:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"

OTHER: #6 BARS AND LARGER: 2"
#5 BARS AND SMALLER: 1-½"

3. REINFORCING BAR SPLICES SHALL BE IN ACCORD WITH THE REQUIREMENTS OF ACI 318-11 AND THE REINFORCING SPLICE LENGTH TABLE SHOWN ON THE DRAWINGS.

MASONRY:
1. THE MINIMUM 28-DAY COMPRESSIVE STRENGTH OF THE CONCRETE MASONRY UNITS SHALL BE 1900 PSI ON THE NET AREA, PROVIDING A STRUCTURAL DESIGN COMPRESSIVE STRENGTH OF 1500 PSI PER THE 2018 INTERNATIONAL BUILDING CODE, TABLE 2105.2.2.1.2.

2. MORTAR SHALL BE TYPE S IN ACCORD WITH ASTM C270 AND ARTICLES 2.1 AND 2.6 A OF TMS 602/ACI S30.1/ASCE6. MORTAR PROPORTIONS FOR UNIT MASONRY, USING CEMENT LIME OR MORTAR CEMENT MIXES. (MASONRY CEMENT IS NOT ACCEPTABLE).

3. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF GROUT SHALL BE THE GREATER OF 2500 PSI OR THE COMPRESSIVE STRENGTH OF THE MASONRY UNITS. AIR ENTRAINMENT AND OTHER ADDITIVES ARE NOT ACCEPTABLE IN GROUT MIX. GROUT SHALL HAVE A SLUMP OF 8 TO 11 INCHES.

4. MASONRY REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

5. HORIZONTAL JOINT REINFORCING SHALL BE STANDARD LADDER TYPE, GALVANIZED, AT 16-INCHES ON CENTER, UNLESS OTHERWISE NOTED ON PLAN.

6. MINIMUM BOND BEAM REINFORCING SHALL BE 2 - #4 IN 6" AND 8" BOND BEAMS AND 2 - #5 IN 12" BOND BEAMS. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS EXCEPT AS NOTED ON TYPICAL MASONRY WALL OPENING DETAIL.

7. SPLICE LENGTHS FOR MASONRY REINFORCEMENT SHALL BE IN ACCORD WITH THE REINFORCING SPLICE LENGTH TABLE OR AS SHOWN ON THE DRAWINGS.

8. PROVIDE BOND BEAMS AT TOP OF ALL WALLS, AT ROOFS, STRUCTURAL FLOORS, OVER ALL OPENINGS IN WALLS AND WHERE SHOWN ON THE DRAWINGS.

9. REINFORCING SHALL BE HELD IN PLACE PRIOR TO GROUTING WITH WIRE POSITIONERS PLACED AT INTERVALS NOT EXCEEDING 192 BAR DIAMETERS NOR 10 FEET. PROVIDE POSITIONERS AT REINFORCING SPLICES.

10. VERTICAL REINFORCING SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLANS OR DETAILS.

8" CONC BLOCK	1-#5 @ 4'-0" OC
10" CONC BLOCK	1-#5 @ 4'-0" OC
12" CONC BLOCK	2-#6'S @ 4'-0" OC

11. PROVIDE #5 VERTICAL REINFORCING AT JAMB OPENINGS, ENDS AND CORNERS OF ALL WALLS AND EACH SIDE OF CONTROL JOINTS. SPECIAL JAMB REINFORCING, WHERE REQUIRED, IS CALLED OUT ON THE PLANS.

12. VERTICAL REINFORCING REQUIRED BY THESE NOTES OR SHOWN ON THE FOUNDATION PLANS SHALL EXTEND FROM FOUNDATION TO TOP OF WALL UNLESS OTHERWISE NOTED.

13. ELECTRICAL PANELS, CONDUITS, PIPES, FIRE EXTINGUISHER CABINETS, ETC., ARE TO BE LOCATED SO AS NOT TO INTERFERE WITH REINFORCED AND/OR GROUTED CELLS. PIPES AND CONDUITS PASSING HORIZONTALLY THROUGH WALLS SHALL BE SLEEVED. MINIMUM SPACING OF SLEEVES SHALL BE THREE DIAMETERS.

14. ALL MASONRY BELOW HIGHEST ADJACENT GRADE SHALL BE GROUTED SOLID.

15. GROUT SHALL BE MECHANICALLY CONSOLIDATED IN A MANNER TO FILL THE GROUT SPACE AND RECONSOLIDATED IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE.

16. PROVIDE GROUT AND MASONRY UNIT TESTING PRIOR TO AND DURING CONSTRUCTION IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE.

17. REINFORCEMENT PLACEMENT, GROUT SPACES AND GROUTING OPERATION SHALL BE INSPECTED BY TESTING LABORATORY IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE REQUIREMENTS. MORTAR FIN PROJECTION INTO THE GROUT SPACE SHALL NOT EXCEED ½ INCH.

STRUCTURAL STEEL: 1
1. FABRICATOR SHALL BE AN "APPROVED FABRICATOR" IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE SECTION 1704.2.5, REGISTERED AND APPROVED BY THE LOCAL BUILDING DEPARTMENT. IN LIEU OF THE PREVIOUS, FABRICATOR SHALL INCLUDE IN THEIR BID THE SERVICES OF A SPECIAL INSPECTOR TO PROVIDE INSPECTION/TESTING SERVICES FOR IN-SHOP WORK TO MEET THE REQUIREMENTS OF 2018 1 INTERNATIONAL BUILDING CODE SECTION 1704.

2. STRUCTURAL STEEL SHALL MEET ASTM A36 UNLESS NOTED OTHERWISE. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL MEET ASTM A992.

3. STEEL TUBES SHALL MEET ASTM A500, GRADE B.

4. STEEL PIPE SHALL MEET ASTM A53, TYPE E OR S, GRADE B.

5. BOLTS SHALL BE 3/4" DIAMETER A325-N UNLESS OTHERWISE NOTED.

6. FIELD BOLTING INSTALLATION SHALL BE INSPECTED IN ACCORD WITH THE 2018 1 INTERNATIONAL BUILDING CODE AND THE AISC LRFD MANUAL, SECOND EDITION. BOLTS SHALL BE INSTALLED SNUG TIGHT UNLESS NOTES OTHERWISE NOTED. ASTM A-325-SC SHALL BE FULLY TIGHTENED USING LOAD INDICATOR WASHERS.

7. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF THE AMERICAN WELDING SOCIETY CODE AWS D1.1-10. ELECTRODES SHALL MATCH BASE METALS AS SPECIFIED IN 2018 1 INTERNATIONAL BUILDING CODE.

8. ALL FIELD WELDING SHALL BE VISUALLY INSPECTED BY THE TESTING LABORATORY.

9. HOT DIP GALVANIZE ALL EXPOSED STEEL MEMBERS TO MEET ASTM 525 G60.

10. ALL STEEL BELOW GRADE SHALL BE ENCASED IN CONCRETE WHERE POSSIBLE; IF NOT POSSIBLE, STEEL SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTIC PAINT.

11. SEE ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL STRUCTURAL STEEL NOT CALLED OUT ON STRUCTURAL DRAWINGS.

PREFABRICATED WOOD TRUSSES:

1. ROOF AND FLOOR TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH TRUSS PLATE INSTITUTES (TPI) DESIGN SPECIFICAITON FOR METAL PLATE CONNECTED WOOD TRUSSES AND THE NATIONAL DESIGN SPECIFICAITON FOR WOOD CONSTRUCITON. BRACE TOP AND BOTTOM CHORDS OF TRUSSES DURING ERECTION PER MANUFACTURER RECOMMENDATIONS.

2. ROOF TRUSSES SHALL BE DESIGNED FOR AND CONSTRUCTED FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/360. FLOOR TRUSSES SHALL BE DESIGNED AND CONSTRUCTED FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/360 WITH NON BEARING WALLS BELOW AND L/480 AT CLEAR SPAN TRUSSES.

3. TRUSS SPACING IS AS DETERMINED BY TRUSS MANUFACTURER. MAXIMUM SPACING IS 24" OC.

4. LOADS ARE NOTED IN THE LOADING SECTION AND ARE MINIMUM. TRUSS DESIGNER IS RESPONSIBLE FOR ESTABLISHING. FINAL LOADS USED FOR DESIGN, INCLUDING LIVE, DEAD, SNOW (WITH DRIFTS) AND WIND LOADS. TRUSS FABRICATOR TO SUPPLY SEALED TRUSS SHOP DRAWINGS AND SEALED PLAN PLACEMENT DRAWINGS PREPARED UNDER THE SUPERVISION OF THE SAME LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI. SHOP DRAWINGS SHOULD INCLUDE DETAILED ERECTION DRAWINGS, AS WELL AS DESIGN INFORMATION FOR EACH TRUSS. PROVIDE ALL INFORMATION AS REQUIRED IN THE 2018 IBC SECTION 2303.4.1. 1

5. TRUSS MANUFACTURER IS RESPONSIBLE FOR DESIGNING ALL TRUSS-TO-TRUSS, TRUSS-TO-WALL AND TRUSS-TO-BEAM CONNECTIONS UNLESS NOTED OTHERWISE.

ROUGH CARPENTRY:

1. ALL WOOD FRAMING MEMBERS INDICATED ARE NOMINAL SIZES. PROVIDE ACTUAL DRESSED SIZES, KILN DRIED, WITH MAXIMUM IN PLACE MOISTURE CONTECT OF 19%.

2. ALL BOLTS ARE A36 OR A307, GRADE A, AND ALL NAILS ARE BOX NAILS UNLESS NOTED OTHERWISE.

3. SHEARWALL SHEATHING IS 7/16 " SHEATHING ATTACHED WITH NO. 8D NAILS SPA AT 6" MAX UNLESS NOTED OTHERWISE. SEE SHEARWALL SCHEDULE.

4. UNLESS NOTED OTHERWISE, FASTENER QUALITY, QUANTITY SIZE AND SPACING SHALL COMPLY WITH THE 2018 IBC FASTENING SCHEDULE (TABLE 2304.9) 1

5. ALL WOOD IN CONTRACT WITH THE CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESERVATIVE TREATED.

6. 15/32" ROOF SHEATHING STRUCTURAL WITH 10d NAILS AT 6" OC.

7. JOIST HEADERS AND WALL STUDS TO BE #2 DOUGLAS FIR AND LVL -E=1,900,000 PSI

POST-INSTALLED ANCHORS:
1. EXPANSION BOLTS INSTALLED IN CONCRETE SHALL BE HILTI KWIK BOLT-II ANCHORS OR APPROVED EQUAL WITH EMBEDMENT NOTED ON THE DRAWINGS OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ER-4627.

2. SCREW ANCHORS SHALL BE KWIK CON II CONCRETE ANCHORS BY HILTI, INC. OR APPROVED EQUAL. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ER-5259

3. ADHESIVE ANCHORS SHALL BE HILTI INC., HIT HY 200 ADHESIVE ANCHORING SYSTEM OR APPROVED EQUAL, WITH EMBEDMENT NOTED ON THE DRAWINGS OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ESR-3187.

4. ANCHORS ARE NOT TO BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED ITS DESIGN STRENGTH.

FIRE RATINGS:
1. FOR FIRE-RATING REQUIREMENTS AND METHODS, SEE ARCHITECTURAL DRAWINGS.

SPECIAL STRUCTURAL INSPECTIONS: 1
1. IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE, SECTION 1704, AS NOTED BELOW. TESTING AND INSPECTION SHALL BE BY AN INDEPENDENT TESTING/INSPECTION FIRM, UNDER THE SUPERVISION OF A LICENSED ENGINEER EMPLOYED BY THAT FIRM. THE BASIS FOR WELDING INSPECTOR QUALIFICATION SHALL BE AWS D1.1.

2. SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE LOCAL DEPARTMENT OF BUILDING SAFETY AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR HIS AUTHORIZED AGENT FROM REQUESTING THE PERIODIC AND CALLED INSPECTIONS REQUIRED BY THE 2018 INTERNATIONAL BUILDING CODE

3. VERIFICATION OF SOILS: PER SECTION 1705.6 AND TABLE 1705.6.

4. CONCRETE: PER SECTION 1705.3 AND TABLE 1705.3.(ALL CONCRETE EXCEPT SLABS-ON-GRADE AND SIDEWALKS). ANCHOR BOLTS SHALL BE INSPECTED.

5. STEEL: PER SECTION 1705.2 AND TABLE 1705.2.2. PROVIDE INSPECTION OF ALL SHOP WELDING AT CONTRACTOR'S EXPENSE IF WELDING IS NOT DONE IN AN APPROVED FABRICATOR'S SHOP.

6. HIGH STRENGTH BOLTING: PER SECTION 1704.3.3.

7. STRUCTURAL MASONRY: PER SECTION 1705.4.

8. EXPANSION BOLT, SCREW ANCHOR AND EPOXY ANCHOR INSTALLATION TO VERIFY INSTALLATION IN ACCORD WITH ICBO REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.

9. THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS WITH THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS.

10. THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE BUILDING OFFICIAL AND TO THE ENGINEER OF RECORD FOR CONFORMANCE TO THE CONTRACT DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL.

11. THE TESTING/INSPECTION FIRM'S ENGINEER SHALL COMPLETE, SIGN AND SEAL A FINAL REPORT CERTIFYING THAT TO THE BEST OF HIS KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

DEFERRED SUBMITTALS:
1. THE FOLLOWING ITEMS ARE DEFERRED SUBMITTAL ITEMS:
- STEEL JOISTS
- PRE ENGINEERED WOOD TRUSSES

2. DEFERRED SUBMITTAL ITEMS SHALL BE PREPARED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF THE PROJECT WITH CALCULATIONS, DRAWINGS, DETAILS, AND CUT SHEETS SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. ONCE REVIEWED, CONTRACTOR SHALL FORWARD TO THE BUILDING DEPARTMENT FOR APPROVAL. FABRICATION AND/OR INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT OCCUR UNTIL APPROVAL OF THE BUILDING DEPARTMENT IS RECEIVED.

SHOP DRAWING REVIEW:
1. J&S STRUCTURAL ENGINEERS, PA WILL REVIEW SHOP DRAWINGS AND RELATED SUBMITTALS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION GIVEN IN THE CONSTRUCTION DOCUMENTS. REVIEW OF A SPECIFIC ITEM SHALL NOT INCLUDE REVIEW OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.

2. THE FOLLOWING IS A LIST OF REQUIRED SHOP DRAWINGS AND RELATED SUBMITTALS. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR MORE INFORMATION AND A COMPLETE LIST OF REQUIRED SUBMITTALS:
- CONCRETE MIX DESIGNS, TESTS AND MATERIAL CERTIFICATIONS
- CONCRETE REINFORCING SHOP DRAWINGS AND REINFORCING MATERIAL CERTIFICATIONS.
- CONCRETE BLOCK COMPRESSION TESTS AND MATERIAL CERTIFICATIONS
- MASONRY GROUT AND AND MORTAR MIX DESIGNS
- MASONRY REINFORCING SHOP DRAWINGS
- STRUCTURAL STEEL SHOP DRAWINGS MATERIAL CERTIFICATIONS, WELDER CERTIFICATIONS.

ABBREVIATIONS:

ASD	ALLOWABLE STRESS DESIGN
ARCH	ARCHITECT
BPL	BASEPLATE
BTW	BETWEEN
BOTT	BOTTOM
BOTT OF	BOTTOM OF
BOL	BOTTOM OF LINTEL
CIP	CAST IN PLACE
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESSIBLE
CONC	CONCRETE
CONT	CONTINUOUS
CJ	CONTROL JOINT
DIM	DIMENSION
EA	EACH
EF	EACH FACE
ELEV	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
EW	EACH WAY
EXP	EXPANSION
FF	FINISH FLOOR
FND	FOUNDATION
FTG	FOOTING
GALV	GALVANIZED
GB	GRADE BEAM
HSS	HOLLOW STRUCTURAL SECTION
HORIZ	HORIZONTAL
IJ	ISOLATION JOINT
INFO	INFORMATION
INSUL	INSULATION
JT	JOINT
JB	JOIST BEARING
K	KIP = 1,000 POUNDS
LONG	LONGITUDINAL
LRFD	LOAD AND RESISTANCE FACTORED DESIGN
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAS	MASONRY
MAT'L	MATERIAL
MAX	MAXIMUM
MBM	METAL BUILDING MANUFACTURER
MIN	MINIMUM
OC	ON CENTER
PEM	PRE-ENGINEERED MEMBER (NOT BY J&S STRUCTURAL ENGINEERS)
PEMB	PRE-ENGINEERED METAL BUILDING (NOT BY J&S STRUCTURAL ENGINEERS)
PL	PLATE
LB	POUND
PSF	POUNDS PER SQUARE FOOT
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
SCHED	SCHEDULE
SPA	SPACE
SQ	SQUARE
STD	STANDARD
STL	STEEL
T&B	TOP AND BOTTOM
T&G	TONGUE-AND-GROOVE
TO	TOP OF
TOF	TOP OF FOOTING
TOL	TOP OF LINTEL
TOS	TOP OF STEEL
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WWR	WELDED WIRE REINFORCEMENT

MASONRY REINFORCEMENT SPLICE TABLE

BAR SIZE	6" BLOCK	8" BLOCK		10" BLOCK		12" BLOCK	
	BAR @ CL	BAR @ CL	BAR @ EDGE	BAR @ CL	BAR @ EDGE	BAR @ CL	BAR @ EDGE
#4	2'-1"	2'-1"	2'-1"	2'-1"	2'-6"	2'-1"	2'-4"
#5	2'-11"	2'-7"	4'-0"	2'-7"	3'-10"	2'-7"	3'-8"
#6	-	4'-5"	8'-3"	4'-5"	7'-9"	4'-5"	7'-4"
#7	-	5'-11"	-	5'-2"	10'-7"	5'-2"	10'-0"

NOTES:
WHEN REQUIRED SPLICE LENGTH EXCEEDS 4'-0" USE HIGH LIFT GROUTING OR USE MECHANICAL TENSION SPLICES WITH LOW LIFT GROUTING

CONCRETE SPLICE LENGTH TABLE

BAR SIZE	FOOTING OR GRADE BEAM	WALL (VERTICAL)	WALL (HORIZONTAL)	SLAB	COLUMN	BEAM (BOTTOM)	BEAM (TOP)
#3	-	1'-8"	1'-8"	1'-8"	-	-	-
#4	2'-3"	2'-3"	2'-3"	2'-3"	-	-	-
#5	2'-9"	2'-9"	2'-9"	2'-9"	2'-0"	2'-7"	3'-5"
#6	3'-4"	3'-4"	3'-4"	3'-4"	2'-5"	3'-1"	4'-1"
#7	4'-10"	4'-10"	4'-10"	4'-10"	3'-6"	4'-6"	5'-11"
#8	5'-6"	5'-6"	-	-	4'-0"	5'-2"	6'-9"
#9	-	-	-	-	4'-6"	5'-10"	7'-7"
#10	-	-	-	-	5'-1"	6'-7"	8'-6"
#11	-	-	-	-	5'-7"	7'-3"	9'-6"

NOTES:
1. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE LARGER SPLICE LENGTH SHALL BE USED.
2. BEAM TOP BAR IS DEFINED AS ANY HORIZONTAL BAR THAT HAS MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
3. TABLE SHALL ONLY BE USED WHEN:
- CONCRETE IS NORMAL WEIGHT
- REINFORCEMENT STEEL IS UNCOATED
- REINFORCEMENT STEEL MEETS ASTM A615, GRADE 60

EPOXY EMBEDMENT TABLE

BAR SIZE	REINFORCING STEEL			THREADED ROD ANCHORS	
	MINIMUM EMBEDMENT DEPTH			ANCHOR DIAMETER	MINIMUM EMBEDMENT DEPTH
	Pc=3,000 psi	Pc=3,500 psi	Pc=4,000 psi		
#3	3 1/2"	3"	2 3/4"	3/8"	5 1/4"
#4	5"	4 3/4"	4 1/4"	1/2"	6 3/8"
#5	6 1/4"	5 3/4"	5 1/4"	5/8"	7 1/2"
#6	7 1/2"	7"	6 1/2"	3/4"	10"
#7	9"	8 1/2"	7 3/4"	7/8"	11 1/4"
#8	10 1/2"	9 3/4"	9"	1"	12 1/2"
#9	11 1/2"	10 3/4"	10"	1 1/4"	15"
#10	13 1/2"	13"	12"	1 1/4"	18"

NOTES:
1. CONTRACTOR HAS THE OPTION TO EPOXY DOWELS AS AN ALTERNATE TO HOOKED OR CAST-IN-PLACE DOWELS WHERE NOTED ON DETAILS.
2. SEE GENERAL STRUCTURAL NOTES FOR APPROVED EPOXY.

STATE OF MISSOURI
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PROFESSIONAL ENGINEER
11/5/24

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24 NW Chipman 'B'. 816.875.4863

Construction Drawings for:
Heartland Market

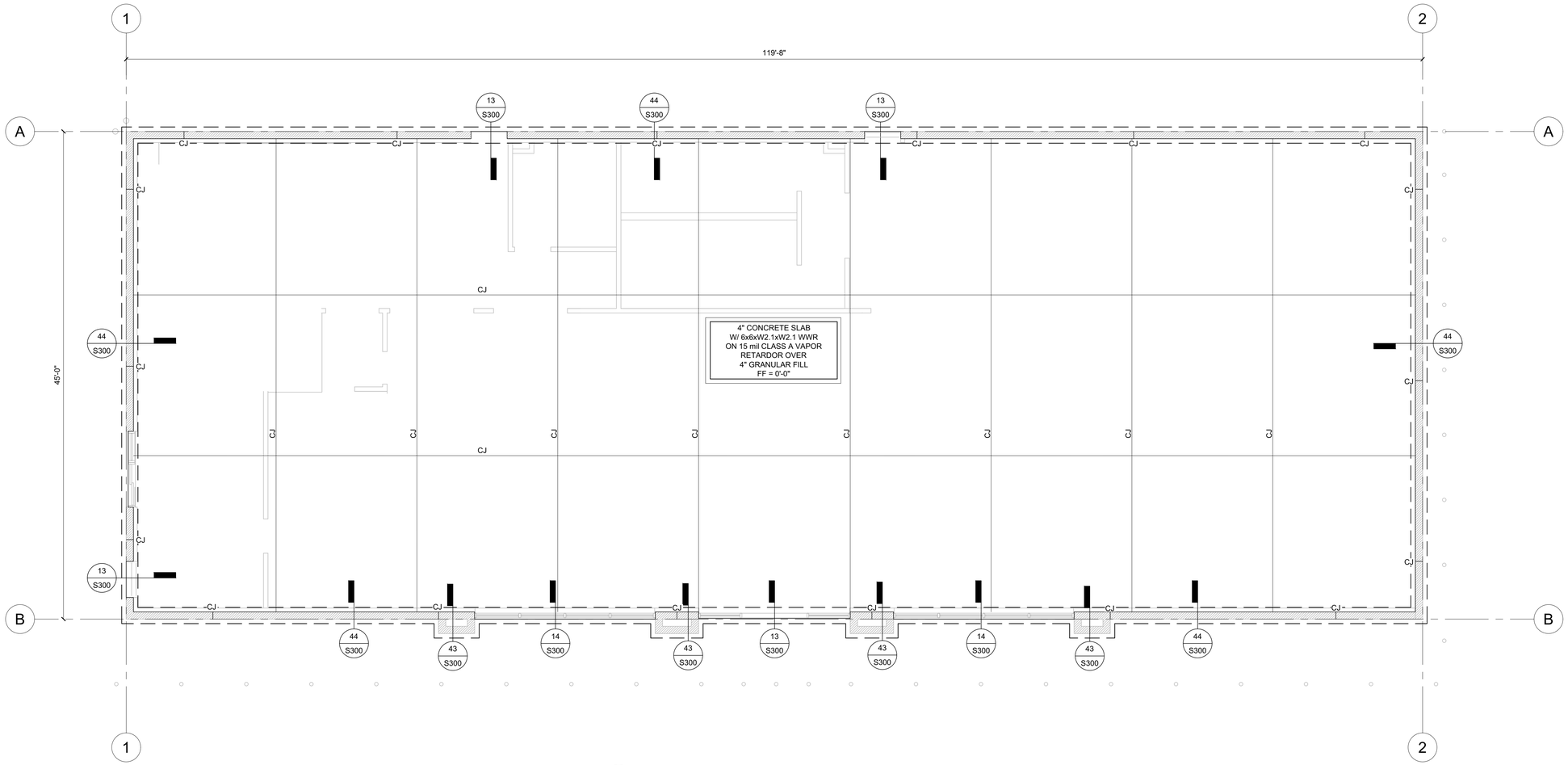
DATE ISSUED:
4/05/23

REVISIONS:
1 CODE UPDATE 11/5/24

ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER
S001

GENERAL STRUCTURAL NOTES



FOUNDATION PLAN
3/16" = 1'-0"

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Construction Drawings for:

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ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER
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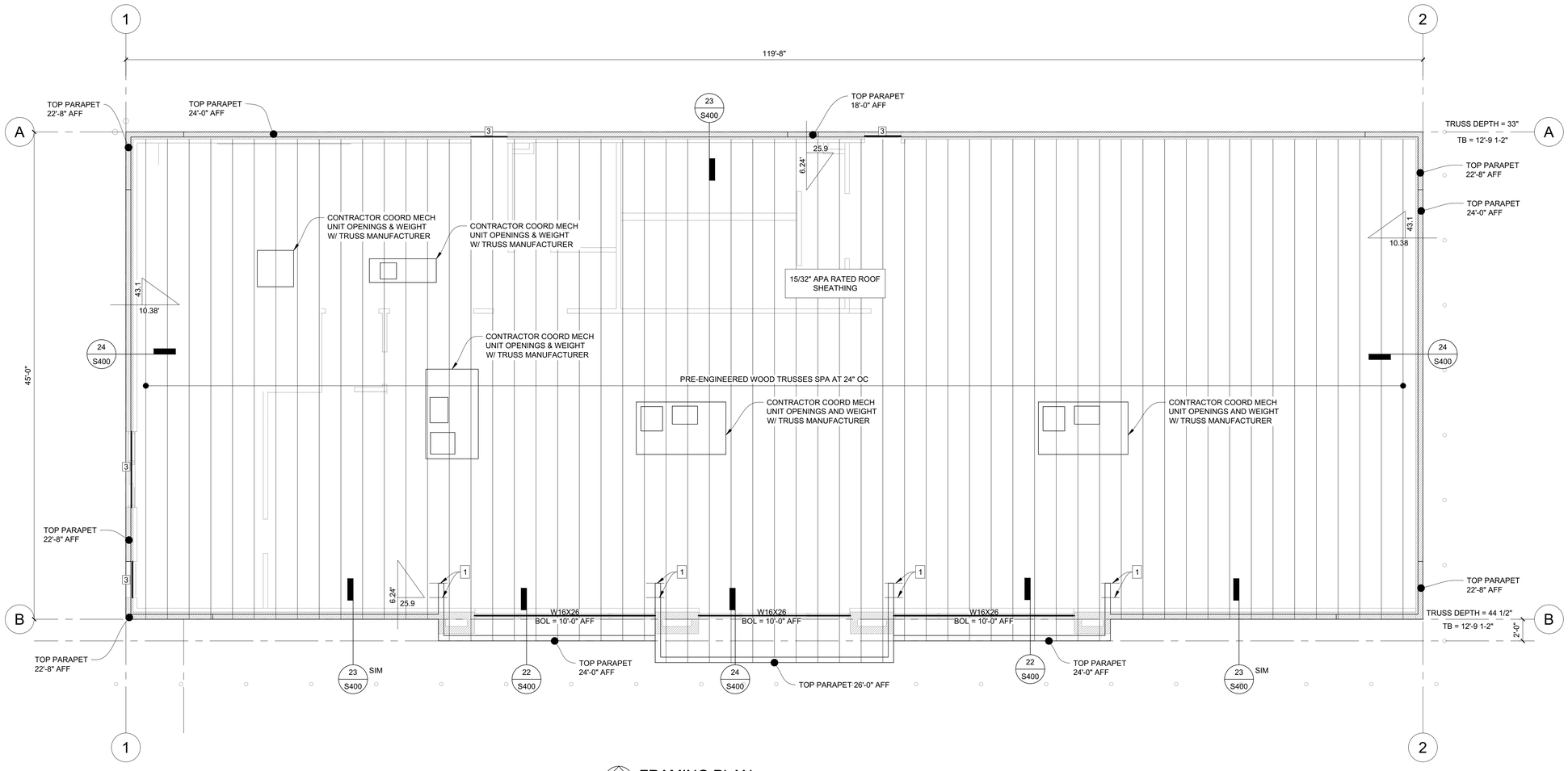
FOUNDATION PLAN

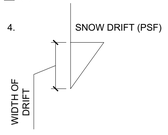


FRAMING PLAN

3/16" = 1'-0"

NOTES:

1. 2x6 TYP T&B - SEE 21/S400
2. TB INDICATES TRUSS BEARING ELEVATION.
3. (2)L3 1/2x3 1/2x5/16"
4. SNOW DRIFT (PSF)



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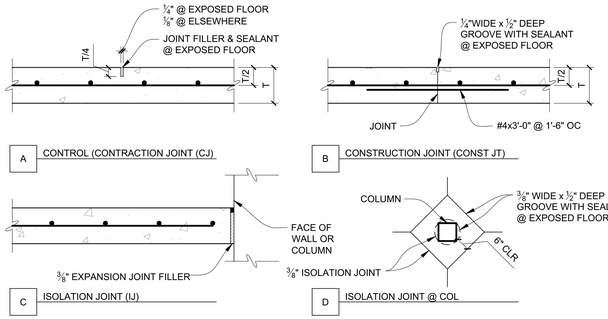
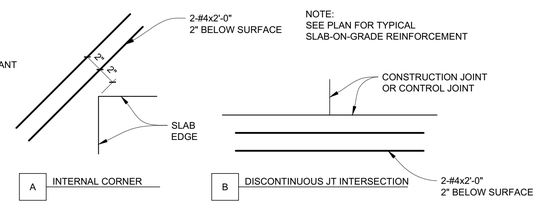
FRAMING PLAN

S200



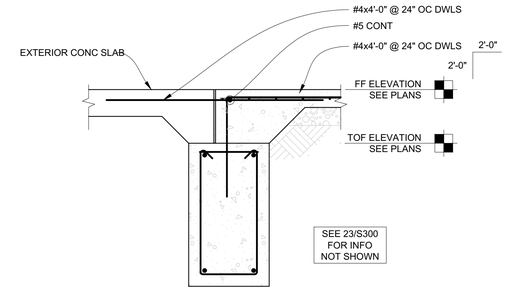
11 S300 TYPICAL SLAB-ON-GRADE JOINTS

NO SCALE



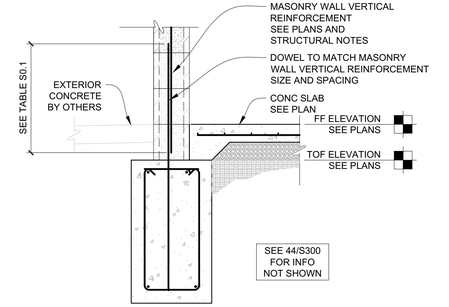
12 S300 ADDITIONAL SLAB-ON-GRADE REINF

NO SCALE



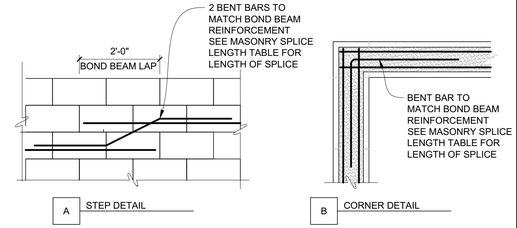
13 S300 DETAIL AT MAN DOOR

NO SCALE



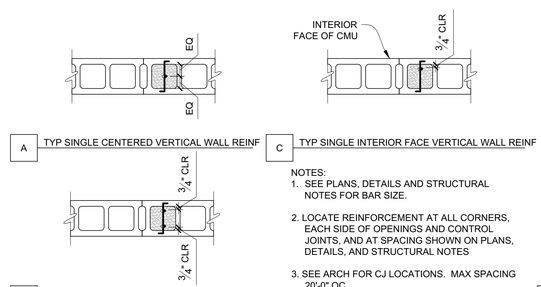
14 S300 MASONRY WALL FTG AT ENTRY

NO SCALE



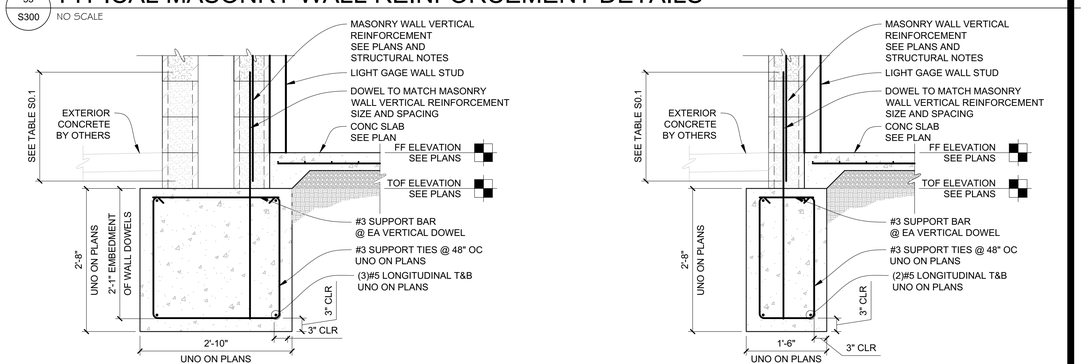
24 S300 TYPICAL BOND BEAM DETAILS

NO SCALE



33 S300 TYPICAL MASONRY WALL REINFORCEMENT DETAILS

NO SCALE

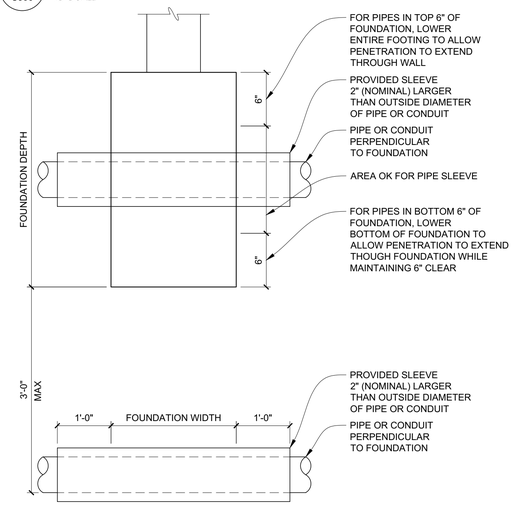


43 S300 MASONRY WALL FTG AT BUMPOUT

NO SCALE

44 S300 TYPICAL MASONRY WALL FOOTING

NO SCALE



NOTES:
1. FOR PIPE 3'-0" OR LESS BELOW FOUNDATION, PROVIDE SLEEVES AS SHOWN.
2. FOR PIPE AND CONDUITS MORE THAN 3'-0" BELOW FOUNDATION, PIPE SLEEVE MAY BE ELIMINATED.
3. COORDINATE WITH MECHANICAL, ELECTRICAL AND ALL OTHER EFFECTED TRADES.

31 S300 TYPICAL INSTALLATION OF PIPE

NO SCALE (@ FOUNDATIONS)

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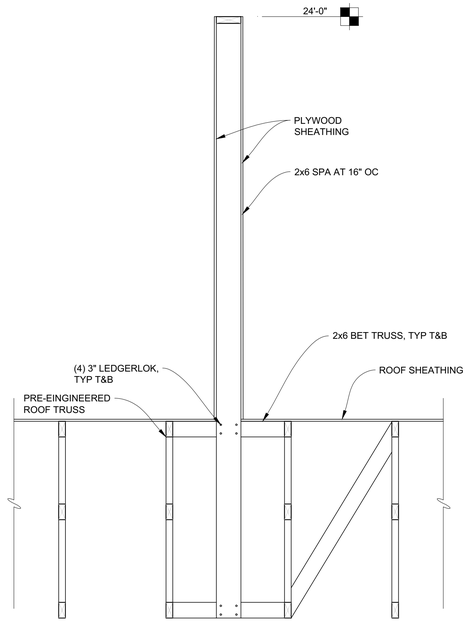
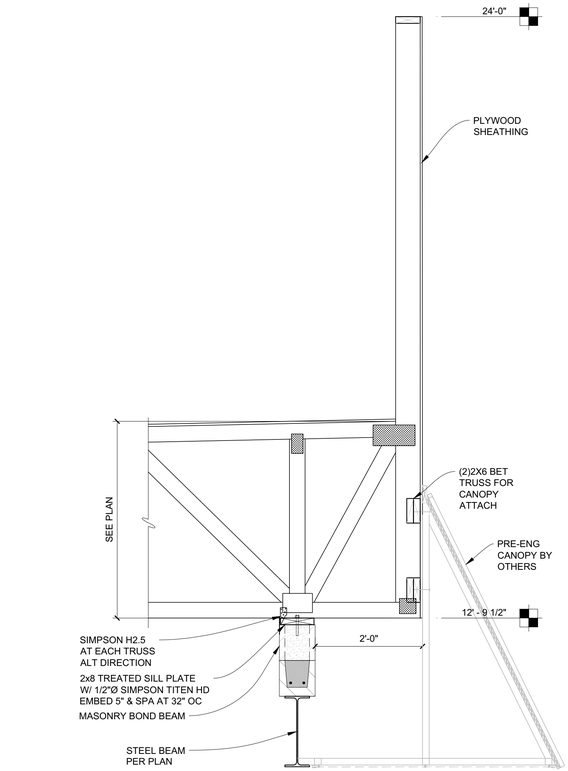
FOUNDATION AND MASONRY DETAILS

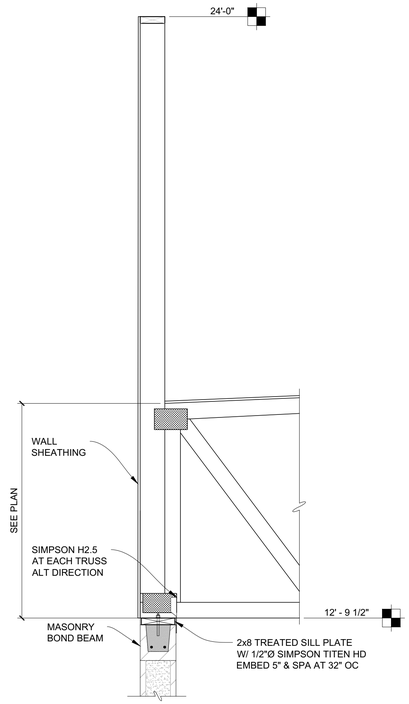
S300



21 S400 PARAPET SUPPORT DETAIL
SCALE: NO SCALE



22 S400 TYP TRUSS BRG AT EXT
SCALE: NO SCALE



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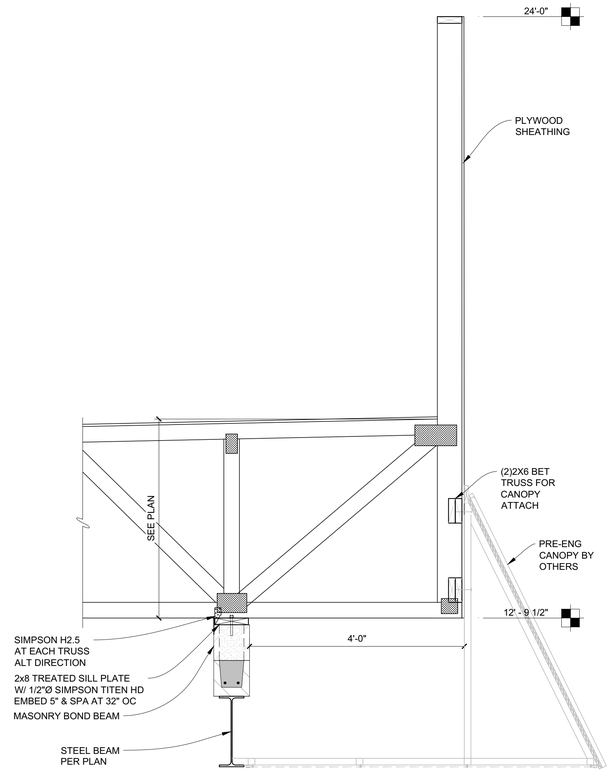

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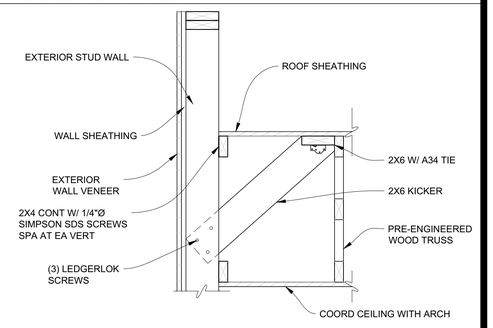

33 S400 TYP NON-BEARING DETAIL
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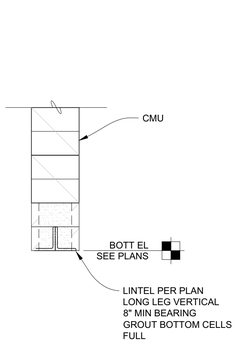

34 S400 TYP LINTEL DETAIL
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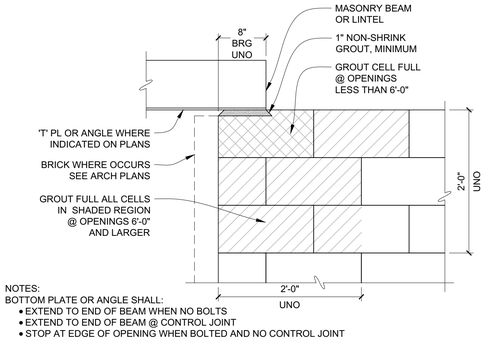

34 S400 TYP MASONRY BEAM/LINTEL BEARING
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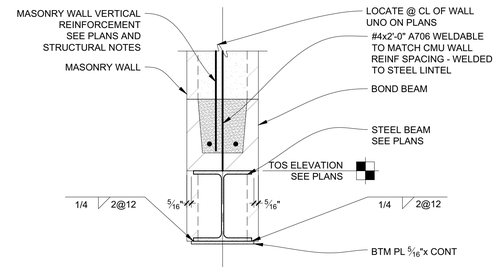

35 S400 TYP STEEL LINTEL DETAIL
NO SCALE

STATE OF MISSOURI
KIMBERLY EBERT JONES
PE-2005029619
PROFESSIONAL ENGINEER
11/8/24

Craig Luebbert Architecture
24 NW Chipman 'B': 816.875.4863

Construction Drawings for:

Heartland Market

DATE ISSUED:
4/05/23

REVISIONS:

ARCHITECTURAL PROJECT NUMBER

SHEET NUMBER

FRAMING DETAILS
S400

MECHANICAL SPECIFICATIONS

1. GENERAL PROVISIONS:

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

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

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

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

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

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

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

2. OPERATION AND MAINTENANCE MANUALS:

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

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

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

3. MANUFACTURERS:

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

4. MOTORS:

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

5. TESTING, BALANCING, AND CLEANING:

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

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

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

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

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

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

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

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

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

6. PLUMBING:

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

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

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

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

E. CLEANOUTS:

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

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

G. WATER HEATERS:

1) EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK.

2) BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACCUM RELIEF VALVE INSTALLED. ANSI Z21.22.

3) STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE.

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

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

I. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

1) INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE.

2) INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.

7. PIPING:

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

1) TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.

a) WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200. ANSI B16.22. MSS SP-104.

b) MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS. ASME B16.22, ASME B16.51, or ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO IAPMO PS-117 OR ASME B16.51.

2) PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03.

a) PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PW-G", "NSF-61-G" OR OTHER NSF-APPROVED MARKING. ASTM F2023 FOR USE WITH CHLORINATED WATER.

b) PEX MECHANICAL, CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS.

3) VALVES

a) TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE.

b) TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.

c) TYPES:

1. GATE VALVE: JOMAR T/S-301G OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.
2. GLOBE VALVE: JOMAR TGG OR EQUAL.
3. BALL VALVE: JOMAR JP100PxP OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE. UL842, CSA 3371-12 & 3371-92, FM, CALIFORNIA CODE AB1953, NSF61 ANNEX G APPROVED.
4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110

B. DOMESTIC WATER SERVICE, 1"-3"

1) TYPE K SOFT DRAWN COPPER TUBING, ASTM B-88.

a) Cast Copper Alloy Fittings for Flared Copper Tube, ASME/ANSI B16.26:

2) HDPE, PIGMENTED BLUE THROUGHOUT, CTS SIZES 1"-2" AWWA C901 4710 DR9 PC250
IPS SIZES 2"-3", AWWA C901 4710 DR11 PC200
MATERIAL AND INSTALLATION MUST CONFORM TO WATER DEPARTMENT REQUIREMENTS.

C. LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS:

1) PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE WATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 8% LEAD CONTENT.

2) PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 372 AND SHALL HAVE A WEIGHTED AVERAGE LEAD CONTENT OF 0.25% OR LESS.

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

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM:(ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.

2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM:(ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.

3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM:(ASTM D2665)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.

MECHANICAL SPECIFICATIONS (CONTINUED)

4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.

5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

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

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM:(ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.

2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM:(ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.

3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: (ASTM D 2665)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (WHERE APPROVED BY LOCAL JURISDICTIONS)

4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.

5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

F. SANITARY SEWER, GREASE WASTE AND VENTS.
(UNDERGROUND, EXTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: (ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 2680 FITTINGS SHALL CONFORM TO ASTM D 2680. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.

2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: (ASTM F1488)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM F 794. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.

3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: (ASTM D 2665)
PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 794. FITTINGS SHALL CONFORM TO ASTM F 794. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.

4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.

5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

6) COPPER DWV: DRAINAGE TUBE SHALL CONFORM TO ASTM B306, WROUGHT COPPER FITTINGS, ANSI B-16.29.

7) GALVANIZED STEEL PIPE, WITH MALLEABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEWERS SHALL CONFORM TO ASTM A 53.

G. CONDENSATE DRAINS & INDIRECT WASTE (ABOVEGROUND).

1) DWV, WROUGHT COPPER, ANSI B-16.29 (CONDENSATE INSIDE BUILDING).
2) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (CONDENSATE ON ROOF).
3) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (INDIRECT WASTE).
4) DWV, WROUGHT COPPER, ANSI B-16.29 (WATER HEATER T&P, INDIRECT WASTE FROM DISHWASHER/SINKS).

H. REFRIGERANT.

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

I. NATURAL GAS.

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

2) GAS PIPING PAINTING:

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

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

K. SLEEVES

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

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

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

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

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

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

8. WATER HEATERS

A COMMERCIAL, LIGHT-DUTY, STORAGE, ELECTRIC, DOMESTIC-WATER HEATERS:

1. STANDARD: UL 174

2. STORAGE-TANK CONSTRUCTION: STEEL, VERTICAL ARRANGEMENT.

a. PRESSURE RATING: 150 PSIG.
b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING LINING MATERIAL INTO TAPPINGS.

3. FACTORY-INSTALLED, STORAGE-TANK APPURTENANCES:

a. ANODE ROD: REPLACEABLE MAGNESIUM.
b. DIP TUBE: REQUIRED UNLESS COLD-WATER INLET IS NEAR BOTTOM OF TANK.
c. DRAIN VALVE: CORROSION-RESISTANT METAL WITH HOSE-END CONNECTION.
d. INSULATION: COMPLY WITH ASHRAE/IES 90.1
e. JACKET: STEEL WITH ENAMELED FINISH OR HIGH-IMPACT COMPOSITE MATERIAL.
f. HEAT-TRAP FITTINGS: INLET TYPE IN COLD-WATER INLET AND OUTLET TYPE IN HOT-WATER OUTLET.
g. HEATING ELEMENTS: ELECTRIC, SCREW-IN IMMERSION TYPE.
h. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT.
i. SAFETY CONTROL: HIGH-TEMPERATURE-LIMIT CUTOFF DEVICE OR SYSTEM.
j. RELIEF VALVE: ASME RATED AND STAMPED FOR COMBINATION TEMPERATURE-AND-PRESSURE RELIEF VALVES. INCLUDE RELIEVING CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WORKING-PRESSURE RATING OF DOMESTIC-WATER HEATER. SELECT RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK.

B. DOMESTIC-WATER EXPANSION TANKS:

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

2. CONSTRUCTION:

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

3. CAPACITY AND CHARACTERISTICS:

a. WORKING-PRESSURE RATING: 150 PSIG .

9. INSULATION AND DUCT LINING:

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

B. PIPE INSULATION - ABOVE GRADE:

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

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

MECHANICAL SPECIFICATIONS (CONTINUED)

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

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

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

6) INSULATION SCHEDULE:

a) DOMESTIC COLD WATER	1/2"
b) DOMESTIC HOT WATER	1" FOR PIPING UP TO 1-1/4"Φ, & 1-1/2" FOR PIPING 1-1/2"Φ AND LARGER
c) HOT WATER RECIRCULATING	1"
d) CONDENSATE DRAINS INSIDE BUILDING	1/2"
e) REFRIGERANT SUCTION	3/4" FOR PIPING UP TO 1-1/4"Φ, & 1" FOR PIPING 1-1/2"Φ AND LARGER
f) HORIZONTAL STORM PIPE	1/2"
h) ROOF DRAINS	1" INSULATION SHALL BE PROVIDED AT ROOF DRAIN BODY AND A MINIMUM OF 10' OF HORIZONTAL PIPING OR A MINIMUM OF 5' IF COMBINATION OF HORIZONTAL AND VERTICAL STORM PIPING DOWNSTREAM OF ROOF DRAIN BODY.

C. DUCTWORK: ACOUSTICAL INSULATION.

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

a) DUCT LINING SCHEDULE:

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

D. DUCTWORK: THERMAL INSULATION.

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

a) DUCT COVERING SCHEDULE: MINIMUM R-6

(1) ROUND SUPPLY DUCT	2"
(2) RECTANGULAR SUPPLY DUCT	2"
(3) RETURN AIR DUCT	2"

10. DUCTWORK:

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

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

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

1) RECTANGULAR DUCT:

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

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

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

2) ROUND AND OVAL SPIRAL SEAM DUCT:

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

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

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

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

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

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

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

E. INSTALLATION OF METAL DUCTWORK:

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

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

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

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

5) PENETRATIONS:

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

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

6) COORDINATION: COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES, DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS, AND OTHER ASSOCIATED WORK OF THE DUCTWORK SYSTEM.

7) INSTALLATION: INSTALL METAL DUCTWORK IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION.

F. EQUIPMENT CONNECTIONS:

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

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

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

I. ALUMINUM DUCTS WHERE INDICATED: ANSI/ASTM B209; ALUMINUM SHEET, ALLOY 3003-H14. ALUMINUM CONNECTORS AND BAR STOCK: ALLOY 6061-T6 OR OF EQUIVALENT STRENGTH.

11. GREASE HOOD AND EXHAUST DUCT:

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

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

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

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

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

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

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

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

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

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

MECHANICAL SPECIFICATIONS (CONTINUED)

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

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

C. DOUBLE WALL ROUND INSULATED GREASE DUCT:

1. THE GREASE DUCT SHALL BE INSULATED DOUBLE-WALL FACTORY -BUILT TYPE FOR USE WITH TYPE 1 KITCHEN HOODS, AS DESCRIBED IN NFPA-96 FOR THE TRANSPORTATION OF AIR AND GREASE-LADEN VAPORS FROM COMMERCIAL COOKING OPERATION.

2. PRODUCT DESCRIPTION:

a. ZERO CLEARANCE SERIES 3G GREASE DUCT BY METAL-FAB OR EQUAL.
b. FACTORY PRE-FABRICATED, DOUBLE WALL TYPE, LISTED FOR VENTING OF GREASE LADEN AIR FROM KITCHEN HOODS REQUIRING GREASE DUCT AS DESCRIBED IN NFPA 96.
c. RATED FOR CONTINUOUS OPERATION AT 500° F AND INTERMITTENT OPERATION AT 2000° F.
d. ALL COMPONENTS OF THE GREASE DUCT SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER TO ENSURE THE SYSTEM MEETS THE REQUIREMENTS OF THE LISTING INCLUDING DUCT SUPPORTS, GUIDES, FITTINGS, CLEANOUTS, AND EXPANSION JOINTS REQUIRED TO INSTALL THE DUCT.
e. GREASE DUCT SHALL CONFORM TO REQUIREMENTS OF ASTM E119 FIRE ENGULFMENT TEST, ASTM E814 3-HOUR FIRE STOP TEST, AND SHALL BE LISTED BY THE FOLLOWING AGENCIES WITH THE ASSOCIATED LISTED REPORTS:
f. UL 1978 (FILE MH8251) - GREASE DUCTS FOR RESTAURANT COOKING APPLIANCES.
g. UL 2221 (FILE R15388) - STANDARD FOR TESTS OF FIRE RESISTIVE GREASE DUCT ENCLOSURE ASSEMBLIES
h. ICC-ES (ESR2627)-ICC EVALUATION OF 3G & 4G GREASE DUCT SYSTEMS.
i. UL103HT (MH8251)-STANDARD FOR FACTORY BUILT CHIMNEYS AND BUILDING APPLIANCES.

D. SINGLE WALL ROUND GREASE DUCT:

1. FURNISH SINGLE-WALL, FACTORY BUILT, GREASE DUCT FOR USE WITH TYPE I KITCHEN HOODS, WHICH CONFORMS TO THE REQUIREMENTS OF NFPA-96. PRODUCTS SHALL BE ETL LISTED TO UL-1978 AND CAN/ULC-S662 FOR VENTING AIR AND GREASE VAPORS FROM COMMERCIAL COOKING OPERATIONS AS DESCRIBED IN NFPA-96.

2. THE DUCT WALL SHALL BE CONSTRUCTED OF .036 AND .047 THICK STAINLESS STEEL AND BE AVAILABLE IN DIAMETERS 8" THROUGH 24".

3. ALL SUPPORTS, FAN ADAPTERS, HOOD CONNECTIONS, FITTINGS AND EXPANSION JOINTS REQUIRED TO INSTALL GREASE DUCT SHALL BE INCLUDED.

4. ROOF PENETRATIONS SHALL COMPLY WITH LISTED CLEARANCE TO COMBUSTIBLES, SEE "CLEARANCE TO COMBUSTIBLES" GUIDE FOR DETAILS. THE GREASE DUCT WILL TERMINATE AT THE FAN ADAPTER PLATE, WILL BE FULLY WELDED TO THE FAN ADAPTER PLATE AND THE FAN ADAPTER PLATE WILL BE FASTENED TO THE CURB USING A SUITABLY SIZED FASTENER PROVIDED BY OTHERS; SEE PAGE 12 OF THE "INSTALLATION, OPERATION AND MAINTENANCE MANUAL" FOR DETAILS.

5. GREASE DUCT JOINTS SHALL BE HELD TOGETHER BY MEANS OF FORMED VEE CLAMPS AND SEALED WITH 3M FIRE BARRIER 2000+. SCREWS USED TO SECURE THE VEE CLAMPS SHALL BE OF THE HEX-HEAD TYPE WITH FLANGED STOPS AND TAPERED "LEAD IN" THREADS FOR EASY STARTING. NUTS SHALL BE RETAINED BY MEANS OF A FREE-FLOATING CAGE TO ALLOW EASY ALIGNMENT.

6. SINGLE-WALL GREASE DUCT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S "INSTALLATION, OPERATION AND MAINTENANCE MANUAL", ETL LISTING AND STATE AND LOCAL CODES.

7. GREASE DUCT INSTALLED OUTSIDE OF THE BUILDING SHALL BE PROTECTED AGAINST ACCIDENTAL DAMAGE OR VANDALISM.

8. SUPPORT VERTICALLY INSTALLED GREASE DUCT FROM THE BUILDING STRUCTURE USING RIGID STRUCTURAL SUPPORTS. ANCHOR SUPPORTS TO THE STRUCTURE BY WELDING OR BOLTING STEEL EXPANSION ANCHORS OR CONCRETE INSERTS. SUPPORT HORIZONTALLY INSTALLED GREASE DUCT FROM THE BUILDING STRUCTURE USING ABOVE METHOD. 1/2" THREADED ROD AND SADDLES MAY ALSO BE USED FOR THE SUPPORT OF HORIZONTAL GREASE DUCT.

9. FANS SHALL BE SUPPORTED INDEPENDENTLY FROM THE GREASE DUCT SECTIONS. PROTECT GREASE DUCT FROM TWISTING OR MOVEMENT CAUSED BY FAN TORQUE OR VIBRATION.

12. FLEXIBLE DUCT:

A. ATCO #086 (R-6), OR EQUAL.

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

C. MAXIMUM LENGTH OF 5'-0".

13. EXHAUST FANS:

A. CENTRIFUGAL TYPE FAN WITH CHARACTERISTICS AND CAPACITY AS SCHEDULED, ELECTRICALLY POWERED, SUITABLE FOR MOUNTING ON ROOF CURB, DIRECT OR BELT DRIVEN, HEAVY GAUGE SPUN-ALUMINUM WEATHERPROOF HOUSINGS OF THE HOODED DOME OR UPBLAST TYPE. PROVIDE PERMANENT SPLIT-CAPACITOR TYPE MOTOR FOR DIRECT DRIVEN FANS, AND CAPACITOR-START, INDUCTION-RUN TYPE MOTOR FOR BELT DRIVEN FANS.

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

14. ROOFTOP UNITS:

A. UNIT SHALL BE FACTORY-ASSEMBLED AND TESTED, DESIGNED FOR ROOF INSTALLATION, AND SHALL CONSIST OF SCROLL TYPE COMPRESSOR(S), CONDENSERS, EVAPORATOR COILS, THERMAL EXPANSION VALVE, CONDENSATE DRAIN PAN, CONDENSER AND EVAPORATOR FANS, CONDENSER FANS TO BE SEQUENCED. REFRIGERATION CONTROLS, GAS FIRED HEAT EXCHANGER OR ELECTRIC HEATING SECTION, FILTERS, AND DAMPERS. CAPACITIES AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED ON THE DRAWINGS.

B. COMPRESSOR(S): UNIT SHALL INCLUDE VIBRATION ISOLATORS AND CRANKCASE HEATER. REFRIGERANT CIRCUIT SHALL INCLUDE A FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVES, AND LIQUID LINE SERVICE VALVES.

C. SAFETY CONTROLS SHALL INCLUDE:

a) LOW PRESSURE CUTOUT, MANUAL RESET.
b) HIGH PRESSURE CUTOUT, MANUAL RESET.
c) COMPRESSOR MOTOR OVERLOAD PROTECTION, MANUAL RESET.
d) ANTI-RECYCLING TIMING DEVICE.
e) ADJUSTABLE LOW-AMBIENT LOCKOUT.
f) OIL PRESSURE SWITCH.

D. REFRIGERANT COIL: ALUMINUM FINS BONDED TO SEAMLESS COPPER TUBE BY MEANS OF MECHANICAL EXPANSION. AN EQUALIZING TYPE VERTICAL DISTRIBUTOR SHALL ENSURE EACH COIL CIRCUIT RECEIVES THE SAME AMOUNT OF REFRIGERANT.

E. ECONOMIZER SHALL CONSIST OF RETURN AIR DAMPER, OUTDOOR AIR DAMPER, AND BAROMETRIC RELIEF DAMPER. PROVIDE POWERED EXHAUST FAN WITH MANUFACTURER'S STANDARD CONTROLS FOR UNITS SCHEDULED ON THE DRAWINGS.

F. GAS HEAT: INDIRECT FIRED, GAS HEAT EXCHANGER, AUTOMATIC SPARK IGNITION, MANUFACTURER'S STANDARD GAS TRAIN WITH REGULATOR (IF REQUIRED), AGA APPROVED. VERIFY GAS SERVICE PRESSURE TO INDIVIDUAL ROOFTOP UNITS.

G. ROOFTOP UNITS SHALL BE WIRED TO SHUTDOWN ON A SIGNAL FROM THE SMOKE DETECTORS AND SHALL AUTOMATICALLY RESET WHEN THE SMOKE DETECTORS ARE RESET.

15. SMOKE DETECTORS:

A. UNITS MOUNTED IN THE DUCTWORK SHALL BE A DUCT MOUNTED UL LISTED PHOTO-ELECTRIC SELF-CONTAINED SMOKE DETECTOR WITH HOUSING. UNITS SHALL BE EQUAL TO SIMPLEX #4098-9687. THE SAMPLING TUBE SHALL BE #2098-9804, LENGTH AS REQUIRED FOR DUCT.

B. DUCT DETECTOR REMOTE TEST STATION SHALL BE SIMPLEX #4098-9842 WITH REMOTE ALARM INDICATOR, POWER-ON INDICATOR, TONE-ALERT, TONE-ALERT SILENCE SWITCH, AND TEST/RESET SWITCH.

1) DEVICES SHALL BE MOUNTED IN APPROVED LOCATION AS INDICATED ON THE FLOOR PLANS OR AS DIRECTED BY LOCAL AUTHORITY HAVING JURISDICTION.

C. PROVIDE AND INSTALL A PHOTO-ELECTRIC SMOKE DETECTOR IN THE RETURN AIR DUCT FOR EACH HVAC UNIT AS INDICATED ON THE FLOOR PLANS. DETECTORS ARE TO BE PROVIDED WITH A SUB-BASE CONTAINING AUXILIARY RELAY CONTACTS. RELAY CONTACTS SHALL BE WIRED INTO UNIT CONTROL WIRING, SO AS TO SHUT UNIT DOWN IN THE CASE OF SMOKE DETECTION. PROVIDE ALL CONTROL WIRING. ELECTRICAL CONTRACTOR SHALL PROVIDE 120 VOLT POWER TO EACH DETECTOR.

D. SMOKE DETECTORS SHALL BE INTERLOCKED. IN ALARM CONDITION OF A SINGLE DETECTOR ALL UNITS SHALL SHUT DOWN.

16. CONTROL WIRING:

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

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

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

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

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

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

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

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

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

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

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

CODE INFORMATION

2018 - INTERNATIONAL BUILDING CODE
2018 - INTERNATIONAL PLUMBING CODE
2018- INTERNATIONAL MECHANICAL CODE
2018 - INTERNATIONAL FUEL GAS CODE
2018 - INTERNATIONAL FIRE CODE
2017 - NATIONAL ELECTRICAL CODE
ICC/ANSI A117.1-2009, ACCESSIBLE & USABLE BUILDINGS & FACILITIES

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PE COA #2009003629

10/14/24
STATE OF MISSOURI
BRIAN A. QUISSELL
NUMBER
PE-2004000829
REGISTERED PROFESSIONAL ENGINEER

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

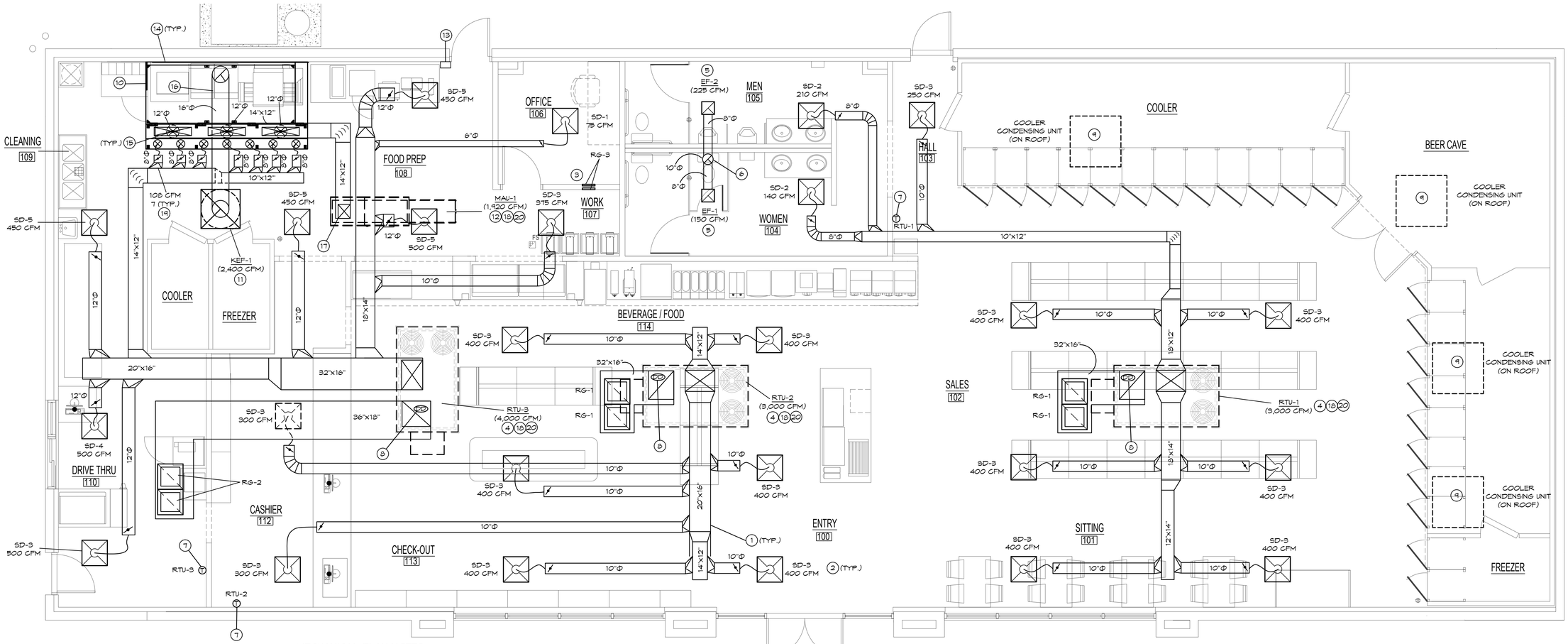
REVIEW SET
ISSUE DATE: 4-28-2023

REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

SHEET TITLE
MECH. & PLUMB SPECIFICATION

MP00

SHEET FILE LOCATION: N:\2022\22823\MECH\22823M.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL



MECHANICAL SYMBOLS

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

MECHANICAL PLAN NOTES:

1. PROVIDE CONCEALED SUPPLY AND RETURN DUCTWORK, TYPICAL FOR ALL UNIT. ROUTE DUCTWORK UP HIGH AND SUPPORT FROM THE STRUCTURE. PROVIDE TRANSITION AS REQUIRED TO INSTALL DUCTWORK BETWEEN JOISTS.
2. PROVIDE CEILING MOUNTED LAY IN SUPPLY DIFFUSER AS DETAILED.
3. PROVIDE RETURN GRILLES ON BOTH SIDE OF THE WALL FOR TRANSFER OF RETURN AIR. MOUNT RETURN GRILL AT 7'-6" AFF.
4. PROVIDE SINGLE PACKAGED ROOF TOP HVAC UNIT AS SHOWN ON THE PLAN. INSTALLATION OF EQUIPMENT SHALL COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION AND CLEARANCE REQUIREMENTS TO ALLOW FOR INSPECTION, SERVICE, REPAIR OR REPLACEMENT. FRESH AIR INTAKE OF THE ROOF TOP HVAC UNIT SHALL BE LOCATED A MINIMUM OF 10 FOOT FROM VENT THRU ROOF, FLUES AND EXHAUST FANS.
5. PROVIDE CEILING MOUNTED EXHAUST FAN WITH INTEGRAL BACKDRAFT DAMPER. ROUTE DUCTWORK UP AND TERMINATE THROUGH ROOF. SUPPORT UNIT FROM STRUCTURE AS REQUIRED BY THE MANUFACTURER.
6. ROUTE 10"Φ EXHAUST DUCT UP TO ROOF, PROVIDE ROOF CAP. ENSURE MIN. 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES, MIN. 10' AFF.
7. PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT WITH CONTROL FOR HEATING & COOLING. MOUNT 48" ABOVE THE FINISHED FLOOR.
8. PROVIDE DUCT MOUNTED SMOKE DETECTOR FOR HVAC UNIT THAT ARE GREATER THAN 2000 CFM, IN COMPLIANCE WITH IMC SECTION 606 AND NFPA 72. PROVIDE REMOTE ANNUNCIATOR AND LOCATE AS PER AHJ.
9. LOCATION OF WALK IN COOLER / FREEZER REMOTE CONDENSER. SUPPORT CONDENSING UNIT FROM ROOF AS DETAILED. CONNECT REFRIGERANT PIPING TO CONDENSING UNIT AS REQUIRED. RECHARGE LINES AS REQUIRED. INSTALL PIPING AS RECOMMENDED BY MANUFACTURER. VERIFY EXACT LOCATION WITH INSTALLING CONTRACTOR.
10. INSTALL TYPE 1 EXHAUST HOOD OVER KITCHEN EQUIPMENT. REFER TO KITCHEN HOOD MANUFACTURER'S DRAWINGS FOR MORE INFORMATION.
11. INSTALL ROOF MOUNTED EXHAUST HOOD FAN ON PRE-FABRICATED ROOF CURB AS PER MANUFACTURER SPECIFICATION. PROVIDE 40" MINIMUM CLEARANCE TO ROOF SURFACE.
12. INSTALL GAS FIRED MAKE UP AIR UNIT ON PRE-FABRICATED ROOF CURB AS PER MANUFACTURER SPECIFICATION.
13. LOCATION OF MANUAL PULL STATION FOR HOOD SUPPRESSION SYSTEM. COORDINATE EXACT LOCATION WITH FIRE MARSHALL.
14. MAINTAIN A MIN OF 18" FROM ALL COMBUSTIBLE MATERIALS TO TYPE 1 HOOD. PROVIDE FIRE WRAPPED GREASE DUCT FROM EXHAUST FAN DOWN TO TYPE 1 GREASE HOOD. TRANSITION AND CONNECT AS REQUIRED. TRANSITION AND CONNECT TO KITCHEN EQUIPMENT SUPPLIED EXHAUST FAN, REFER TO GREASE DUCT DETAIL.

MECHANICAL FLOOR PLAN

NORTH

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

MECHANICAL PLAN NOTES CONTINUED:

15. TRANSITION AND CONNECT ROUND DUCT TO MAKE UP AIR UNIT'S MAIN SUPPLY DROPS WITH BALANCING DAMPER AS REQUIRED AND ROUTE TO SUPPLY PLENUM ON HOOD.
16. ROUTE 16"Φ TYPE 1 GREASE DUCT UP TO KEF-1 AND CONNECT AS REQUIRED. MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
17. ROUTE MAKE UP AIR SUPPLY DUCT DOWN FROM MAKE UP AIR UNIT. TRANSITION AND CONNECT MAKE UP AIR SUPPLY DUCT AS REQUIRED. VERIFY THE EXACT SIZE AND LOCATION OF STRUCTURE BEFORE INSTALLING DUCTWORK. MOUNT DUCT AS HIGH AS POSSIBLE.
18. INTERLOCK RTU-1, RTU-2, RTU-3 AND MUA-1 AS REQUIRED TO SHUT DOWN WHEN THE FIRE SUPPRESSION SYSTEM IS ACTIVATED.
19. CONNECT 8"Φ SUPPLY DUCT TO KITCHEN HOOD AC CONNECTION AND SET TO 108 CFM AS LISTED ON SHEET M200.
20. REFER TO ARCHITECTURAL PLAN FOR INFORMATION ON ROOF TOP UNIT SCREENING.

MECHANICAL GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
2. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEMS.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS.
4. INSTALL ALL DUCT, PIPE, ETC. AS HIGH AS POSSIBLE.
5. DUCT SIZES SHOWN ARE ACTUAL SHEET METAL SIZES AND INCLUDE AN ALLOWANCE FOR DUCT LINER WHERE APPLICABLE.
6. PROVIDE FLEXIBLE CONNECTION BETWEEN DUCTWORK AND ROOFTOP UNITS, EXHAUST FANS, AND OTHER MOTORIZED EQUIPMENT.
7. NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
8. ALL MECHANICAL SYSTEMS SHALL BE BALANCED BY A CERTIFIED BALANCING CONTRACTOR. REFER TO SPECIFICATIONS FOR DETAILS.

BUILDING TEMPERATURE SET POINTS

OCCUPIED MODE ZONE SET POINTS (5° DEADBAND)
COOLING SET POINT 75°F (ADJUSTABLE), 50% RH
HEATING SET POINT 70°F (ADJUSTABLE), 50% RH
UNOCCUPIED MODE ZONE SET POINTS
COOLING SET POINT 80°F (ADJUSTABLE), 50% RH
HEATING SET POINT 65°F (ADJUSTABLE), 50% RH
THE MECHANICAL CONTRACTOR SHALL ENSURE THE SYSTEMS ARE WIRED, INTERLOCKED, PROGRAMMED CORRECTLY, AND FULLY TESTED IN ALL MODES TO ENSURE THESE REQUIREMENTS ARE MET.
THE SYSTEMS SHALL BE BALANCED BY A NEBB CERTIFIED BALANCER, AND SHALL BE STARTED BY FACTORY TRAINED PERSONNEL.

BC ENGINEERS INCORPORATED
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SHEET TITLE
MECHANICAL FLOOR PLAN

M100

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ROOFTOP UNIT SCHEDULE

MARK	MFGR	MODEL NO.	NOM. TONS	EVAP. CFM	EXT. STATIC P. IN. WG. (NOTE 2)	COOLING				HEATING (GAS)		ELECTRICAL				OUTDOOR AIR (CFM)	TOTAL WEIGHT (LBS)	SEER /EER	REF.	NOTES
						TOTAL BTUH	SENS. BTUH	AMB.	EVAP. EAT DB/WB	BTUH INPUT	BTUH OUTPUT	VOLT/Ø/HZ	BLOWER MOTOR	MIN. MCA (AMPS)	MOCP (AMPS)					
RTU-1	LENNOX	LGH092H4B	7.5	3,000	0.7	87,200	65,400	105	80/67	180,000	144,000	208/3/60	3 HP	42	50	500	1,450	- /12.5	R-410a	1,2,3,4,5,6,7,8
RTU-2	↓	↑	↑	↑	↓	↑	↑	↓	↓	↓	↓	↓	↓	↑	↑	↓	↑	↑	↓	1,2,3,4,5,6,7,8
RTU-3	↓	LGH120H4B	10	4,000	↓	116,700	87,525	↓	↓	↓	↓	↓	↓	49	60	↓	1,585	- /12.0	↓	1,2,3,4,5,6,7,8

NOTES:
1. PROVIDE OUTDOOR AIR ECONOMIZER WITH STANDARD CONTROLLER, FIXED DRY BULB CONTROL, BAROMETRIC RELIEF DAMPER, CONSTANT AIR VOLUME, HINGED ACCESS DOORS, SCROLL COMPRESSORS WITH CRANKCASE HEATER, HIGH PRESSURE SWITCHES, FREEZESTAT, HAIL GUARDS. STANDARD COOLING DOWN TO 30°F. OUTDOOR AIR DAMPER TO FULLY CLOSE W/ FAN SHUTDOWN FOR ALL UNITS.
2. EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS, COILS AND ECONOMIZERS. THE FAN AND MOTOR SHALL BE SIZED APPROPRIATELY TO MEET THIS DEFINITION OF EXTERNAL STATIC PRESSURE.
3. PROVIDE COMMERCIAL 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER THERMOSTAT WITH ECONOMIZER OUTPUT AND BUILT IN HUMIDITY SENSOR FOR EACH UNIT. ECONOMIZER/OUTDOOR AIR DAMPER IS TO CLOSE DURING UNOCCUPIED HOURS.
4. PROVIDE 18" HIGH (AT LOWEST POINT) PRE-FABRICATED INSULATED ROOF CURB WITH SLOPE TO MATCH SLOPE OF ROOF FOR EACH UNIT.
5. PROVIDE NEW 2" MERV 8 FILTERS UPON COMPLETION OF CONSTRUCTION.
6. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.
7. PROVIDE FACTORY MOUNTED SMOKE DETECTOR IN RETURN OF UNIT.
8. PROVIDE HOT GAS REHEAT (HUMIDITROL) OPTION FOR DEHUMIDIFICATION.

EXHAUST FAN SCHEDULE

MARK	MFGR	MODEL	CFM	EXTERNAL STATIC P. IN. WG.	RPM	ELECTRICAL		FAN TYPE	CONTROLS	NOTES
						VOLT/Ø/HZ	PWR			
EF-1	COOK	GC-166	150	0.3	1,100	120/1/60	51 W	CEILING EXH.	SWITCH	1
EF-2	↑	GC-188	225	↑	1,450	↑	99.5 W	↑	↑	1

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

DIFFUSER, REGISTER & GRILLE SCHEDULE

MARK	MFGR	MODEL	NECK SIZE	FACE SIZE	FINISH	NOTES
SD-1	TITUS	TMS/3	6"Ø	24"X24"	WHITE	-
SD-2	↓	↓	8"Ø	↓	↓	-
SD-3	↓	↓	10"Ø	↓	↓	-
SD-4	↓	↓	12"Ø	↓	↓	-
SD-5	↓	PAR/3	↓	↓	↓	-
RG-1	↓	↓	18"X18"	24"X24"	↓	-
RG-2	↓	↓	20"X20"	↓	↓	-
RG-3	↓	350RL	10"X8"	"	↓	-

AIR BALANCE SCHEDULE (STORE)

SUPPLY AIR UNIT	OUTSIDE AIRFLOW (CFM)	RETURN AIRFLOW	SUPPLY AIRFLOW	OA/SA %	EXHAUST AIR UNIT	EXHAUST AIRFLOW (CFM)	REMARKS
RTU-1	455	2,545	3,000	15.16%	EF-1	150	
RTU-2	455	2,545	3,000	15.16%	EF-2	225	
RTU-3	230	3,770	4,000	5.75%	KEF-1	2,400	
MUA-1	1,920	0	1,920	100.00%			
TOTAL	3,060	8,860	11,920	25.67%	TOTAL	2,775	
RESULTING BUILDING PRESSURIZATION						285 CFM	

OUTDOOR AIR CALCULATIONS

UNIT	Area (sqft)	OCCUPANCY CLASSIFICATION / Room Name	Occupant Density #/1000 sqft	People outdoor airflow rate in breathing zone, (Rp) cfm/person	Area outdoor airflow rate in breathing zone, (Ra) cfm/sqft	Exhaust airflow rate cfm/sqft	Breathing zone outdoor airflow (Vbz)	Zone air distribution effectiveness (Ez)	Zone outdoor airflow (cfm)
RTU-1 & RTU-2	72	MAIN ENTRY / Entry 100	10	5	0.06		8	0.8	10
	205	DINING / Sitting 101	70	7.5	0.18		145	0.8	181
	1635	SALES / Sales 102	15	7.5	0.12		380	0.8	475
	144	CORRIDOR / Hall 103	0	0	0.06		9	0.8	11
	265	SALES / Cashier 112	15	7.5	0.12		62	0.8	77
	236	SALES / Checkout 113	15	7.5	0.12		55	0.8	69
	304	SALES / Food & Beverage 113	15	7.5	0.12		71	0.8	88
								Total	910
RTU-3	106	OFFICE / Office 106	5	5	0.06		9	0.8	11
	52	PREP AREA / Work 107	15	7.5	0.12		12	0.8	15
	268	PREP AREA / Food Prep 108	15	7.5	0.12		62	0.8	78
	234	STORAGE / Cleaning 109	0	0	0.12		28	0.8	35
	300	SALES / Drive Thru 110	15	7.5	0.12		70	0.8	87
								Total	227

NOTES: 1. PROVIDE 455 CFM OF OUTDOOR AIR FOR RTU-1 & RTU-2 AND 230 CFM OF OUTDOOR AIR FOR RTU-3.

SEQUENCE OF OPERATION

A. PROVIDE STAND ALONE OR APPLICATION SPECIFIC CONTROLLERS AS REQUIRED TO PERFORM THE FOLLOWING SEQUENCES OF OPERATIONS.

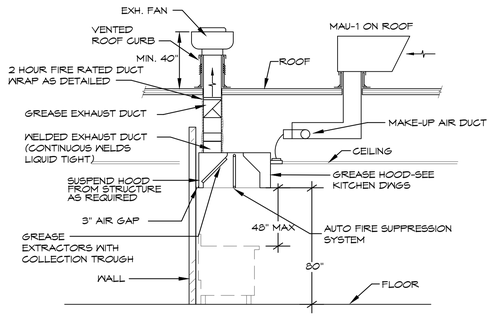
B. PACKAGED ROOFTOP UNITS
1. UNIT SHALL CONSIST OF SUPPLY AIR FAN, FILTERS, DX COOLING COIL, GAS-FIRED HEAT SECTION, AND A 7-DAY PROGRAMMABLE THERMOSTAT.
2. PROVIDE AN OVERRIDE SWITCH TO OPERATE THE UNIT DURING UNOCCUPIED HOURS. THIS SWITCH SHALL BE PART OF THE PROGRAMMABLE THERMOSTAT. OVERRIDE SWITCH ALLOWS THE UNIT TO OPERATE FOR TWO HOURS (ADJUSTABLE).
3. OCCUPIED MODE: BASED ON THE ROOFTOP UNIT'S HOURS OF OCCUPANCY, START THE UNIT AT THE BEGINNING OF OCCUPANCY AND SHUT DOWN THE UNIT AT THE END OF OCCUPANCY (NOTE: OUTSIDE AIR DAMPER WITHIN THE RTU SHALL OPEN AND THEN THE RTU SHALL START). THE UNIT SHALL START EARLIER AS DETERMINED BY THE PROGRAM FOR EARLY WARM-UP OR COOL DOWN. ON A SYSTEM STARTUP, THE RTU FAN SHALL START AND RUN CONTINUOUSLY AND THE INTERNAL FACTORY CONTROLS SHALL BE ENABLED. BASED ON THE SPACE TEMPERATURE SENSOR, THE UNIT SHALL CYCLE THE HEATING/COOLING TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
3.1. ECONOMIZER MODE: WHEN ENTHALPY OF OA IS BELOW 28 BTU/LB, ECONOMIZER MODE SHALL BE ENABLED. ECONOMIZER MODE SHALL LINEARLY MODULATE OUTDOOR AIR CFM FROM MINIMUM OA CFM TO 100% BASED ON ENTHALPY READINGS AND INTENT IS NO MORE THAN 55% RELATIVE HUMIDITY.
4. UNOCCUPIED MODE: THE RTU INTERNAL OA DAMPERS SHALL REMAINED CLOSED WHEN THE BUILDING IS NOT OCCUPIED. THE RTU SHALL STOP HEATING/COOLING AND THE FAN SHALL STOP. IF THE SPACE TEMPERATURE FALLS BELOW 60 DEGREE F (ADJUSTABLE), THE UNIT SHALL START AND HEAT UNTIL THE SPACE TEMPERATURE IS 61 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN. IF THE SPACE TEMPERATURE RISES ABOVE 85 DEGREE F (ADJUSTABLE), THE UNIT SHALL START AND COOL UNTIL THE SPACE TEMPERATURE IS 84 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN AND INTENT IS NO MORE THAN 55% RELATIVE HUMIDITY.
5. UPON DETECTION OF SMOKE BY UNIT SMOKE DETECTOR ALL RTUS SHALL SHUT DOWN AND AN ALARM SHALL BE SENT TO THE FIRE ALARM CONTROL PANEL (WHERE APPLICABLE). LOCAL REMOTE ANNUNCIATORS SHALL ALSO BE ACTIVATED.
6. ALL ROOF TOP UNITS SHALL BE INTERLOCKED WITH THE MAKE UP AIR UNIT SO THAT THE OUTDOOR AIR DAMPERS ARE OPEN, AND THE SUPPLY FANS RUN WHENEVER THE MAKE UP AIR UNIT FAN IS RUNNING.

C. KITCHEN HOOD EXHAUST FAN
1. THE KITCHEN HOOD EXHAUST FAN SHALL BE ENABLED WHEN ANY COOKING APPLIANCE LOCATED UNDER ITS RESPECTIVE HOOD, IS IN USE.

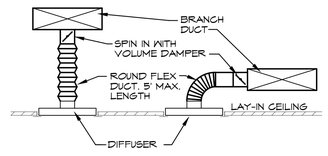
D. RESTROOM EXHAUST FAN
1. EXHAUST FAN SHALL BE POWERED BY LIGHT SWITCH IN RESTROOM. EXHAUST FAN SHALL BE "ON" WHEN LIGHT IS ON AND EXHAUST FAN SHALL BE "OFF" WHEN LIGHT SWITCH IS OFF

E. MAKE UP AIR UNIT
1. THE MAKE UP AIR UNIT SHALL BE ENABLED WHEN THE KITCHEN HOOD EXHAUST FAN (KEF-1) IS ENERGIZED. THE INTERNAL MOTORIZED DAMPER WITHIN WITH MAU-1 SHALL OPEN AND THE FAN SHALL RUN. IF OA IS LESS THAN 65° (ADJ.), THE MAU-1 GAS-FIRED HEAT SECTION SHALL BE ENABLED TO MAINTAIN A MINIMUM OF 65°.
2. WHEN KEF-1 IS OFF, MAU-1 SHALL BE DE-ENERGIZED AND THE INTERNAL MOTORIZED DAMPED SHALL CLOSE.

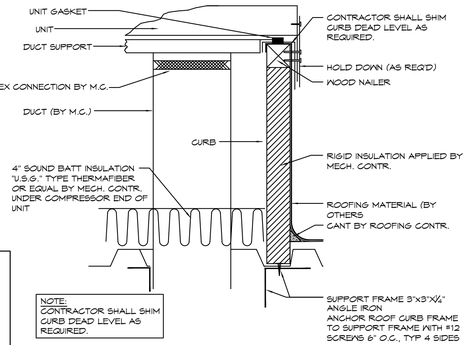
F. ANSUL SYSTEM ACTIVATION
1. UPON ACTIVATION OF ANSUL SYSTEM, SHUT DOWN MAU-1 AND RTU-3. PROVIDE RELAYS CONTACTS, INTERLOCKS, TRANSFORMERS AND ALL ASSOCIATED WIRING TO ACCOMPLISH SEQUENCE. MAU-1 IS ALREADY PREWIRED TO SHUT DOWN IN HOOD CONTROL PANEL. MECHANICAL CONTRACTOR SHALL INTERLOCK RTU-1 AND RTU-2 TO ALSO SHUT DOWN.



GREASE HOOD DETAIL
SCALE: NONE



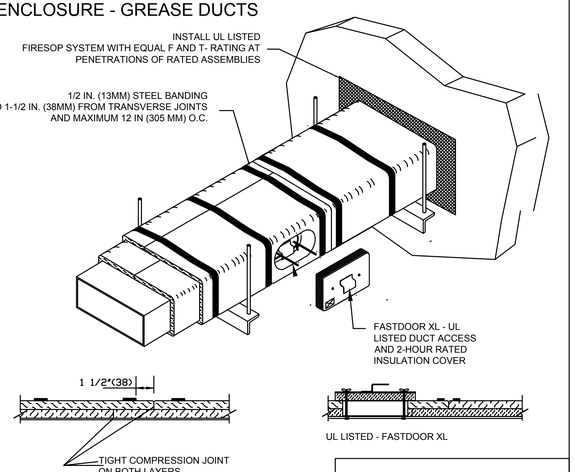
DIFFUSER DETAIL
SCALE: NONE



ROOF CURB DETAIL (RTU, MAU, & FANS)
SCALE: NONE

FIRE RATED ENCLOSURE - GREASE DUCTS

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



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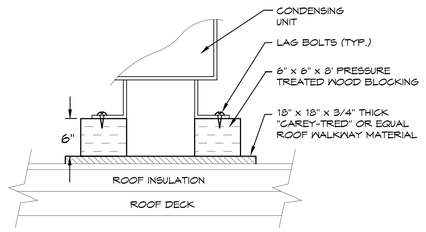

SET SUPPORT BLOCKS IN MASTIC ON WALKWAY MATERIAL.

CONDENSING UNIT SUPPORT DETAIL
SCALE: NONE

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SHEET TITLE
WASH BAY MECHANICAL PLAN

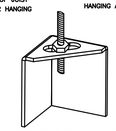
M101

SHEET FILE LOCATION: N:\2022\22823\MECH\22823M.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL

ND-2 HANGING ANGLE DETAIL

1/2" DIA. ALL THREAD ROD CONNECTED TO ROOF JOIST THROUGH ANOTHER HANGING ANGLE

1/2" DIA. HEAVY DUTY NUT ONE ABOVE AND ONE BELOW HANGING ANGLE



*ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR HANGING ANGLE IS PRE-PUNCHED AT FACTORY

HANGING ANGLE LOCATIONS

HOOD STYLE	DIM FROM REAR	DIM FROM FRONT (24"H)	DIM FROM FRONT (30"H)
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSP-F	4.166"	2.246"	2.246"
BACKSHELF BD-2	4.166"	2.246	–
VHB/VHB-G	36"X36"	42"X42"	48"X48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

CALCULATIONS UTILIZED

EXHAUST CFM=LENGTH OF HOOD X CFM/LIN.FT. (LOAD)

SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED

TOTAL DUCT AREA=144 X $\frac{\text{CFM}}{\text{FPM(*)}}$

DUCT LENGTH= $\frac{\text{TOTAL DUCT AREA}}{\text{DUCT DEPTH}}$

*CAPTIVE-AIRE DUCT CONNECTION SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1500-1800 FPM AND A SUPPLY VELOCITY OF 300-400 FPM.

BUILDING CODES

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

ETL LISTED 3054804-001 & 3054804-002

UL STANDARD 710

Intertek

BUILT IN ACCORDANCE WITH NFPA No. 96

Listed under ETL File number 3054804-001/002

CLEARANCE TO COMBUSTIBLES

CAPTIVE-AIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

GENERAL NOTES

INSTALLATION

1. ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
2. ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
3. HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
4. ALL CONNECTIONS FROM CAPTIVE-AIRE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
5. COOKING EQUIPMENT TO SHUTOFF IN EVENT OF FIRE.
6. EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
7. ALL LIGHTS FIXTURE SHOWN INSTALLED BY CAPTIVE-AIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
8. LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
9. SEISMIC RESTAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
10. INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITY FOR VERIFICATION OF DIMENSIONAL DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION, AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SHOWN.

BALANCE

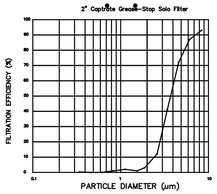
11. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
12. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

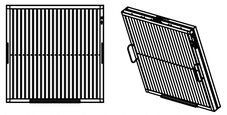
ADDITIONAL

14. WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
15. SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

FILTER DETAIL

FILTRATION EFFICIENCY (%) vs PARTICLE DIAMETER (µm) — 2" Captrate Grease-Stop Solo Filter





CaptiveAire Captrate Solo Filter
ETL Listed Grease Extracting Filters
Made From 430 Stainless Steel

HOOD INFORMATION – JOB#5702408

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	KH-1	5424 EX-2-ACPSP-F	ECON-AIR	12' 0"	450 DEG	I	MEDIUM	200	2400			4"	16"	2400	1719	-1.062"	1920	756	430 SS WHERE EXPOSED	ALONE	ALONE

PATENT NUMBERS

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

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINETS(S) LOCATION	SIZE	FIRE SYSTEM TYPE	SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1	KH-1	CAPTRATE SOLO FILTER	9	16"	16"	85% SEE FILTER SPEC	3	RECESSED ROUND	NO	RIGHT	12"x54"x24"	TANK FS	4.0/4.0/4.0	DCV-1111	1 LIGHT 1 FAN	YES	1236 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	KH-1	FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 122.00" HIGH X 192.00" LONG 430 SS VERTICAL.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1	KH-1	Front	156"	24"	6"	MUA	8"	36"		640	0.183"
						MUA	8"	36"		640	0.183"
						MUA	8"	36"		640	0.183"
						AC			8"	108	0.037"
						AC			8"	108	0.037"
						AC			8"	108	0.037"
						AC			8"	108	0.037"
						AC			8"	108	0.037"
						AC			8"	108	0.037"
						AC			8"	108	0.037"

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

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

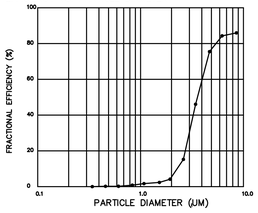
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

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

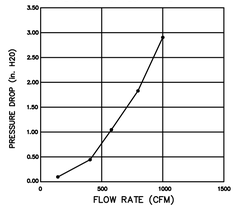
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

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

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



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

NSF ETL BUILT IN ACCORDANCE WITH NFPA No. 96

*** NOTE ***

ALL WALLS AND STRUCTURES THAT COME WITHIN 18" OF HOOD MUST BE METAL STUDS AND SHEETROCK. WOOD STUDS OR ANY OTHER COMBUSTIBLE MATERIAL WITHIN 18" OF HOOD NO ALLOWED.

*** NOTE ***

HOOD MANUFACTURER RECOMMENDS NO RETURNS OR 4-WAY DIFFUSERS WITHIN 10 FEET OF HOOD IN ALL DIRECTION.

*** NOTE ***

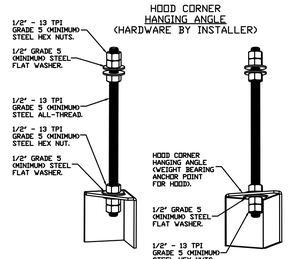
MAKEUP AIR SHALL BE DELIVERED INTO SPACE IN MANNER THAT WILL NOT DISRUPT HOODS ABILITY TO CAPTURE AND CONTAIN.

FOR QUESTIONS, CALL THE:
KANSAS CITY REGIONAL OFFICE
1126 SWIFT STREET, KANSAS CITY, MO 64116
PHONE: (816) 221-8575
FAX: (816) 221-8311

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐

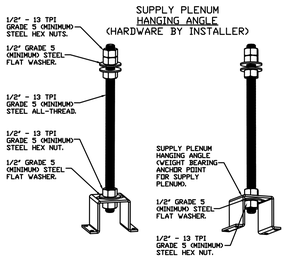
SIGNATURE _____
Your Title _____ Date _____



HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)

ASSEMBLY INSTRUCTIONS

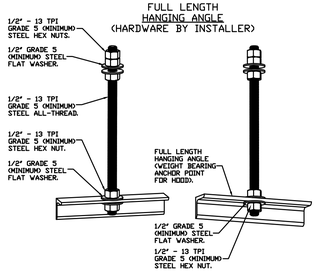
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND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



SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)

ASSEMBLY INSTRUCTIONS

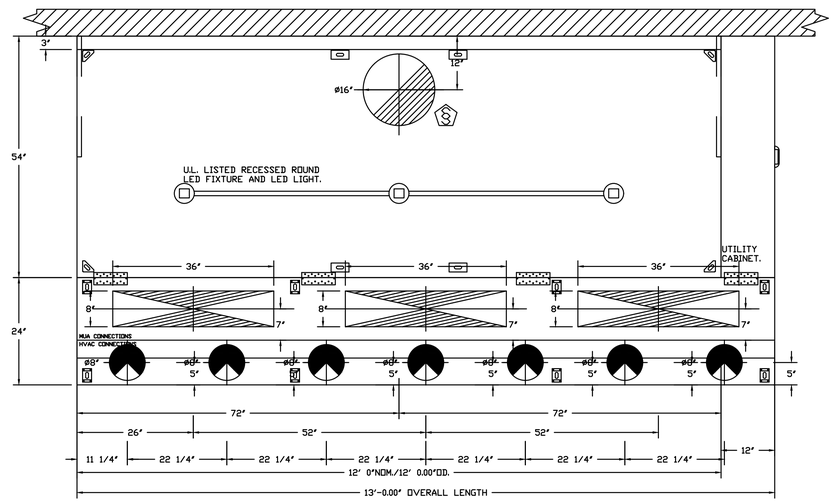
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE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



FULL LENGTH HANGING ANGLE (HARDWARE BY INSTALLER)

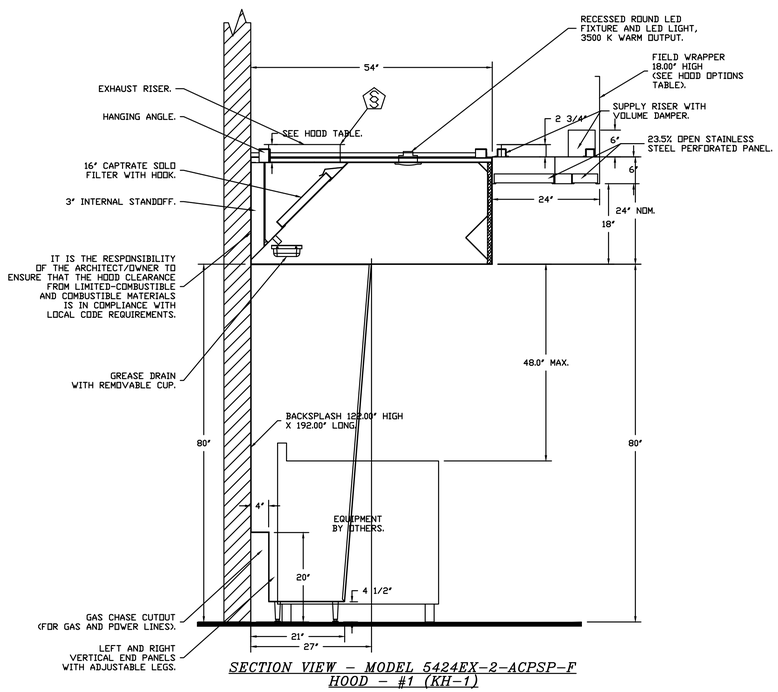
ASSEMBLY INSTRUCTIONS

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



PLAN VIEW – HOOD #1 (KH-1)
12' 0.00" LONG 5424EX-2-ACPSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION



SECTION VIEW – MODEL 5424EX-2-ACPSP-F
HOOD – #1 (KH-1)

REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
4		

CAPTIVE-AIRE
Air Solutions
www.captiveaire.com

Heartland Market - Lee's Summit
LEES SUMMIT, MO, 64082

DATE: 10/25/2022
DWG.#: 5702408
DRAWN BY: michael.c
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 1

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

PE COA #2009003629

10/14/24

STATE OF MISSOURI
BRIAN A. QUISSELL
NUMBER PE-2004000820
REGISTERED PROFESSIONAL ENGINEER

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

REVIEW SET
ISSUE DATE: 4-28-2023

REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

SHEET TITLE
HOOD DETAILS

M200

SHEET FILE LOCATION: N:\2022\22823\MECH\22823-HD.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL

FIRE SYSTEM INFORMATION – JOB#5702408

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0/4.0	46	FIRE CABINET RIGHT	RIGHT, HOOD 1

GAS VALVE(S)

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		SC ELECTRICAL	2.000	ECON-AIR

FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER – PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1		0 – 0 – TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – 12–FZ8021–32144–DT–360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO, CLOSE ON TEMP RISE AT 360°F.	1	0
		0 – 0 – 87–120042–001 SECONDARY ACTUATOR VALVE (SVA) – SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – 87–120045–001 HOSE, SECONDARY ACTUATOR HOSE, 7.5" BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – 87–300001–001 TANK – PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	3	0
		0 – 0 – 87–300030–001 PRIMARY ACTUATOR KIT (PAK) – ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87–300152–001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	12	0
		0 – 0 – 9055455PC PRD PRESS 1/2 PRESS X PRESS 90 ELBOW LD.	13	0
		0 – 0 – 9097200PC PRD PRESS PC611 1/2 PRESS TEE LD.	7	0
		0 – 0 – 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	6	0
		0 – 0 – A0034332 JUNCTION BOX FOR MANUAL PULL STATION. 1.5" DEEP BACK BOX, RED COLOR.	1	0
		0 – 0 – BI145 3/8" BLACK IRON 90 ELL.	3	0
		0 – 0 – CBI–104 CHROME PLATED PIPE FITTING 3/8" NPT TEE.	2	0
		0 – 0 – CBI–106 CHROME PLATED PIPE FITTING 3/8" NPT 90 DEGREE ELBOW.	2	0
		0 – 0 – CBI–107 CHROME PLATED PIPE FITTING 3/8" NPT UNION.	2	0
		0 – 0 – DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	3	0
		0 – 0 – TANK STRAP TANK STRAP – USED FOR TANK FIRE SUPPRESSION.	9	0
		0 – 0 – TFS–UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	3	0
		0 – 0 – WK–283952–000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	3	0
		16 – 16 – 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	9	0
		16 – 16 – DL–F NOZZLE – TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME–PLATED PIPE)– 4 FLOW POINTS.	11	0
		26 – 26 – QSA–3/8 QUIK SEAL – 3/8" (UL).	9	0
		34 – 34 – A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT. RED COLOR.	1	0

NOTES
- FIELD PIPE DROPS AS SHOWN
  PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD–INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD–INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE–PIPED DROPS ARE SHIPPED LOOSE.
- FITTOP OF 24" DUCT EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

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

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

- DL–F NOZZLE PART NUMBER REPLACES 3070–3/8H–10–SS

JOB #: 5702408.
JOB NAME: HEARTLAND MARKET – LEE'S SUMMIT.

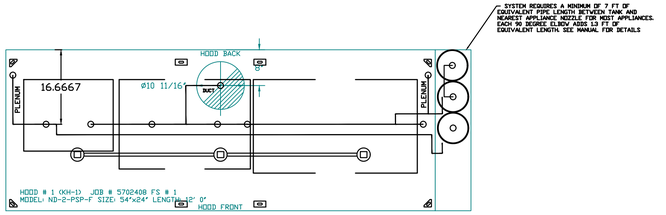
SYSTEM SIZE: TANK–SP–3 TOTAL FP REQUIRED: 46.
HOOD # 1 12' 0.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 16" DIA.
HOOD # 1 METAL BLOW–OFF CAPS INCLUDED.

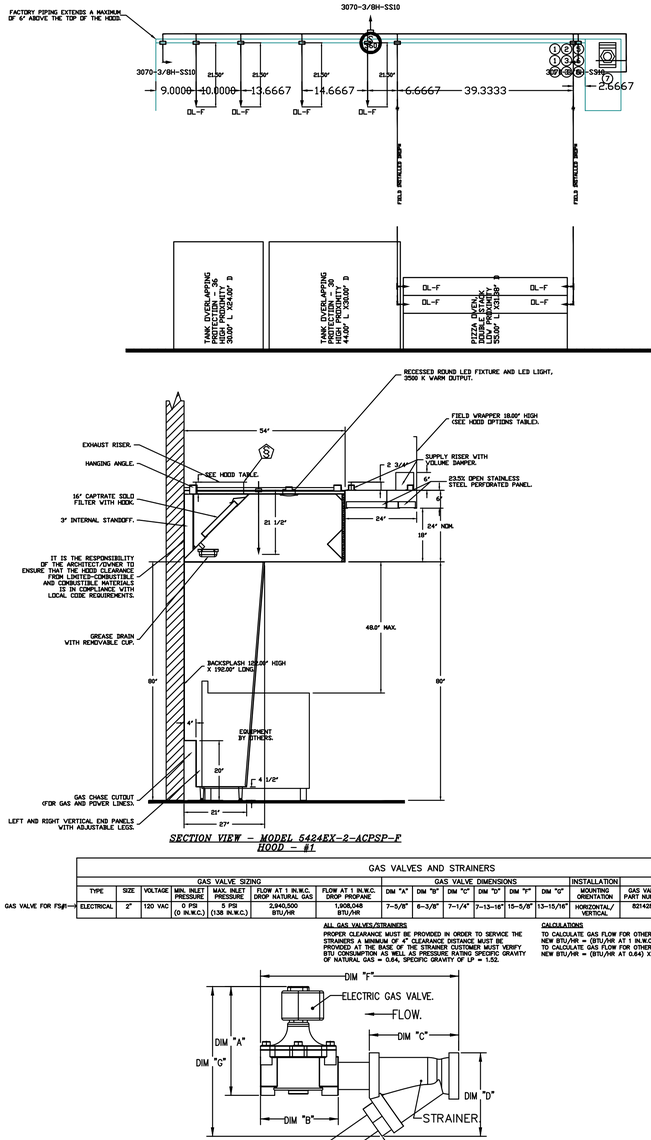
- HEAVY–DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT–DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

LEGEND – FIRE CABINET TANK SYSTEM

1 4 GALLON TANK.
2 PRIMARY ACTUATOR RELEASE.
3 SECONDARY ACTUATOR RELEASE.
4 PRESSURE SUPERVISION SWITCH.
5 PRIMARY HOSE ASSEMBLY.
6 SECONDARY HOSE ASSEMBLY.
7 REMOTE MANUAL ACTUATION DEVICE.

INCLUDES: FIELD INSTALLATION AND HOOKUP DURING NORMAL BUSINESS HOURS BY CERTIFIED INSTALLERS ONLY IN THE LOCATION NOTED ABOVE. TWO SITE VISITS ONLY (ONE VISIT TO SET PULL STATION & SYSTEM HOOKUP AND ONE VISIT FOR ONE TEST) ADDITIONAL VISITS WILL RESULT IN ADDITIONAL CHARGES). ONE MECHANICAL OR ELECTRICAL GAS VALVE PER SYSTEM AT A MAXIMUM SIZE OF 2", PERMIT, AND SYSTEM TEST.
EXCLUDES: UNION LABOR & PREVAILING WAGE (LABOR & WAGES WILL BE ADDED IF APPLICABLE), GAS VALVE INSTALLATION, ELECTRICAL HOOKUP AND CONNECTIONS, HANGING OF FIRE CABINET, SHUNT TRIP, HANDHELD EXTINGUISHER(S), ON–SITE RE–PIPING DUE TO EQUIPMENT LAYOUT CHANGES.





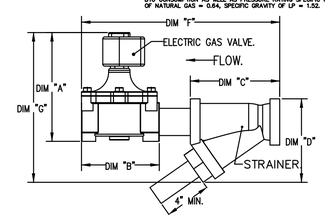
SECTION VIEW – MODEL 5424EX–2–ACPSP–F HOOD – #1

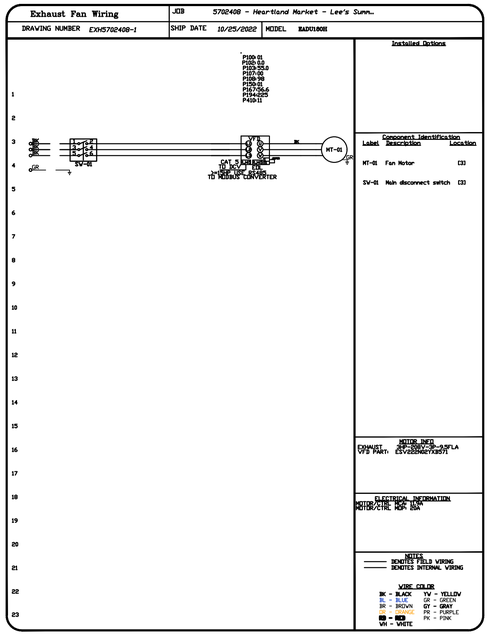
GAS VALVES AND STRAINERS

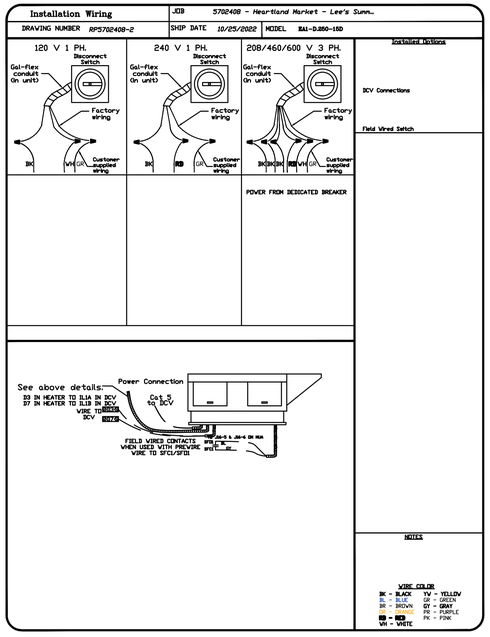
GAS VALVE FOR FS#1	GAS VALVE SIZING						GAS VALVE DIMENSIONS						INSTALLATION	PART NUMBERS			
	TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "F"	DIM "G"	MOUNTING ORIENTATION	GAS VALVE PART NUMBER	STRAINER PART NUMBER	GAS VALVE/STRAINER KIT
	ELECTRICAL	2"	120 VAC	0 PSI (0 IN.W.C.)	5 PSI (138 IN.W.C.)	2,940,500 BTU/HR	1,906,048 BTU/HR	7–5/8"	8–3/8"	7–1/4"	7–13–16"	15–5/8"	13–15/16"	HORIZONTAL/ VERTICAL	8214280	4417X68	(SC)EGVA2

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

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







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

PE COA #2009003629

10/14/24

STATE OF MISSOURI BRIAN A. QUISSELL NUMBER PE-2004000829 REGISTERED PROFESSIONAL ENGINEER

CAPTIVE-AIRE
Air Solutions
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH. 45246 PHONE: (513) 860-5555 EMAIL: reg120@econair.com
www.captiveaire.com

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

Heartland Market – Lee's Summit
LEES SUMMIT, MO, 64082

DATE: 10/25/2022
DWG.#: 5702408
DRAWN BY: michael.co
SCALE: 3/4" = 1'–0"
MASTER DRAWING
SHEET NO. 2

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

REVIEW SET
ISSUE DATE: 4–28–2023

REVISION:
1 RISER REV 3–15–2024
2 CITY COM. 10–14–2024

SHEET TITLE
HOOD DETAILS

M201

SHEET FILE LOCATION: N:\2022\22823\MECH\22823M.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL

EXHAUST FAN INFORMATION – JOB#5702408

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF-1	1	EADU180H	ECON-AIR	2400	1.800	1318	ODP,PREMIUM	3.000	1.5120	3	208	9.5	554 FPM	200	18.4

MUA FAN INFORMATION – JOB#5702408

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
2	MAU-1	1	EA1-D.250-15D	15MF-1-MOD	A1-D.250	1000	1920	0.500	2023	ODP,PREMIUM	2.000	1.2880	3	208	6.1	7.7A	15A	510	19.9

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2	MAU-1	142989	131550	66°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	EXHAUST FAN HEAT BAFFLE
		1	FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	UNIT MOUNTED VFD FOR USE WITH ECPM03
		1	VFD MOUNTING BRACKET FOR DU/DR 180 - 200
		1	2 YEAR PARTS WARRANTY
2	MAU-1	1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	MOTORIZED BACKDRAFT DAMPER FOR A1-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	LOW FIRE START
		1	SIZE 1 TEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	UNIT MOUNTED VFD FOR USE WITH ECPM03
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

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

CURB ASSEMBLIES

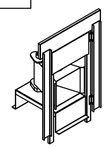
NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	41 LBS	CURB	26.500"W X 26.500"L X 20.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2	MAU-1	63 LBS	CURB	21.000"W X 71.000"L X 15.000"H ALONG WIDTH, RIGHT INSULATED.

FAN #2 EA1-D.250-15D - HEATER (MAU-1)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE.
6. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, TF8120S ACTUATOR INCLUDED.
7. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.
8. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
9. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 DIRECT DRIVE AHUS.
10. UNIT MOUNTED VFD FOR USE WITH ECPM03.
11. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
12. 2 YEAR PARTS WARRANTY

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 14" x 14".

SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 9°F. TEMP. RISE = 66°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 135380.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 147152.
OUTPUT BTUs AT ALTITUDE OF 792 FT. = 131550.
INPUT BTUs AT ALTITUDE OF 792 FT. = 142989.



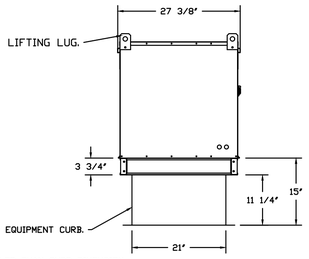
DIRECT FIRED (DF) PROFILE PLATE ASSEMBLY

DIRECT FIRED PROFILE PLATE SPECIFICATIONS:
DESCRIPTION:
DIRECT FIRED BURNERS SHALL HAVE PATENTED (US PATENT NO: US6629503B2), SELF-ADJUSTING PROFILE PLATES DESIGNED TO ENSURE PROPER AIR VELOCITY AND PRESSURE DROP ACROSS THE BURNER. PROFILE PLATES SHALL ALLOW BURNERS TO ACHIEVE CLEAN COMBUSTION BY LIMITING BY-PRODUCT LEVELS TO A MAXIMUM OF 59PPM OF CARBON MONOXIDE (CO), AND 0.5PPM OF NITROGEN DIOXIDE (NO2)DIRECT FIRED UNITS SHALL BE CONFIGURED WITH THE BLOWER MOUNTED DOWNSTREAM OF THE BURNER. THIS ARRANGEMENT WILL ENSURE A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE.

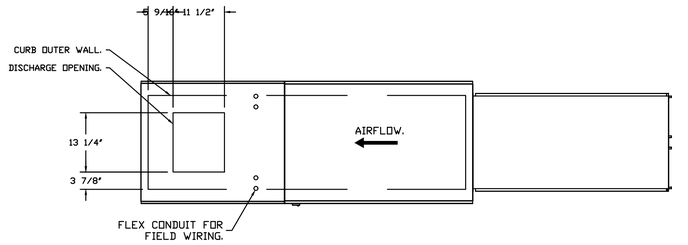
APPLICATION:
SPRING-LOADED BURNER PROFILE PLATES ARE ENGINEERED TO AUTOMATICALLY REACT TO THE MOMENTUM OF A FRESH AIR STREAM, WITHOUT THE NEED FOR ANY MOTORS OR ACTUATORS TO MECHANICALLY ADJUST THEM. WITH THIS FEATURE, ALL DF UNITS ARE DESIGNED FOR DEMAND CONTROL VENTILATION (DCV) REQUIREMENTS.

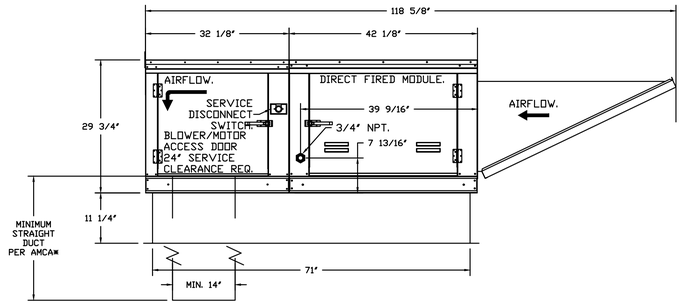
CERTIFICATIONS:
ALL PROFILE PLATE ASSEMBLIES SHALL BE INCLUDED IN THE DF UNIT'S ETL LISTING AND COMPLY WITH COMBINED SAFETY STANDARDS ANSI Z83.4 AND CSA 3.7 (NON-RECIRCULATING DF HEATERS) AND ANSI Z83.18 (RECIRCULATING DF HEATERS).

GENERAL CONSTRUCTION:
-PROFILE PLATES SHALL BE FORMED FROM G90 GALVANIZED STEEL.
-PROFILE PLATES SHALL VARY IN SIZE PER UNIT.
-PROFILE PLATES SHALL BE MOUNTED ALONG THE SAME PLANE AS THE DISCHARGE OF THE BURNER.
-DESIGN SHALL INCORPORATE PROPERLY TORQUED, PERMANENTLY MOUNTED SPRING HINGES.
-SPRING HINGES SHALL BE MADE FROM PLATED STEEL.

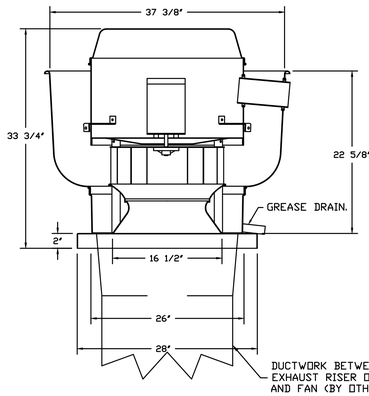


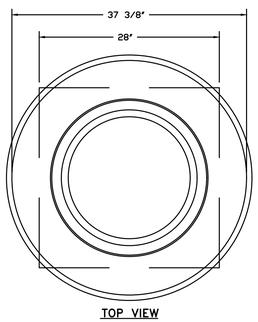
ROOF OPENING 2" SMALLER THAN CURB DIMENSION.



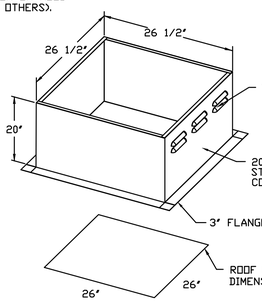


FAN #1 EADU180H - EXHAUST FAN (KEF-1)





TOP VIEW



FEATURES:
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

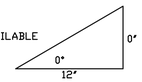
NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS
- GREASE BOX.
- EXHAUST FAN HEAT BAFFLE.
- FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS.
- UNIT MOUNTED VFD FOR USE WITH ECPM03.
- VFD MOUNTING BRACKET FOR DU/DR 180 - 200.
- 2 YEAR PARTS WARRANTY.

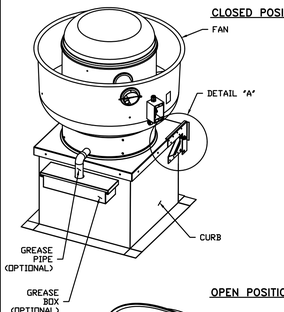
PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

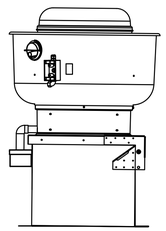
SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

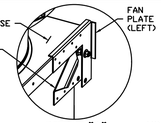


HINGE KIT INSTALLATION

CLOSED POSITION







DETAIL "A"

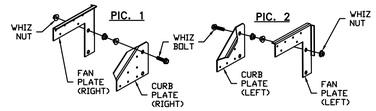
PARTS INCLUDED
2 - FAN PLATES (LEFT & RIGHT)
2 - CURB PLATES (LEFT & RIGHT)
2 - 3/8"-16 WHIZ BOLTS
6 - 3/8"-16 WHIZ NUTS

SHEET METAL SCREWS
24 - # 14 X 3/4" SCREWS

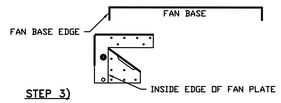
REV.#4 HINGEKIT 10/25/16

HINGE KIT FIELD INSTALLATION

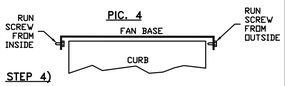
STEP 1)
ASSEMBLE FAN PLATE WITH CURB PLATE AS SHOWN ON PIC. 1 AND PIC. 2 (IF PARTS ARE NOT ASSEMBLED).



STEP 2)
SEE DETAIL "A" FOR POSITIONING FAN PLATE ON FAN BASE. LINE UP FAN BASE EDGE TO INSIDE EDGE OF FAN PLATE AS SHOWN ON PIC. 3.

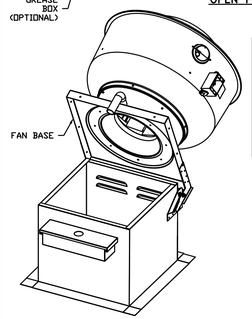


STEP 3)
SCREW THE FAN PLATE TO THE FAN BASE USING (12) # 14 X 3/4" LG. SHEET METAL SCREWS. NOTE: IF THE SCREWS HIT THE CURB, THEN RUN THE SCREWS FROM INSIDE THE FAN BASE. ALWAYS BE SURE THAT SCREWS DO NOT INTERFERE WITH CURB WHEN FAN SWINGS SEE PIC. 4.

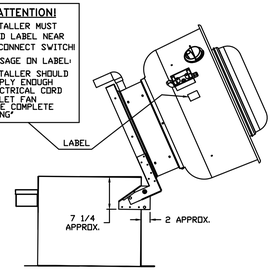


STEP 4)
SCREW THE CURB PLATE TO THE CURB USING (12) # 14 X 3/4" LG. SHEET METAL SCREWS. TIGHTEN NUT AND BOLT ASSEMBLY, ENSURE FAN SWINGS PROPERLY.

OPEN POSITION



ATTENTION!
INSTALLER MUST READ LABEL NEAR DISCONNECT SWITCH!
MESSAGE ON LABEL:
"INSTALLER SHOULD SUPPLY ENOUGH ELECTRICAL CORD TO LET FAN MAKE COMPLETE SWING"



REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		
5		

CAPTIVE-AIRE
Air Solutions
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH, 45246 PHONE: (513) 860-5555 EMAIL: reg120@ecomair.com
www.captiveaire.com

Heartland Market - Lee's Summit
LEES SUMMIT, MO, 64082

DATE: 10/25/2022
DWG.#: 5702408
DRAWN BY: michael.co
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 3

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

PE COA #2009003629

10/14/24
STATE OF MISSOURI
BRIAN A. QUISSELL
NUMBER PE-2004000829
REGISTERED PROFESSIONAL ENGINEER

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

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HOOD DETAILS

M202

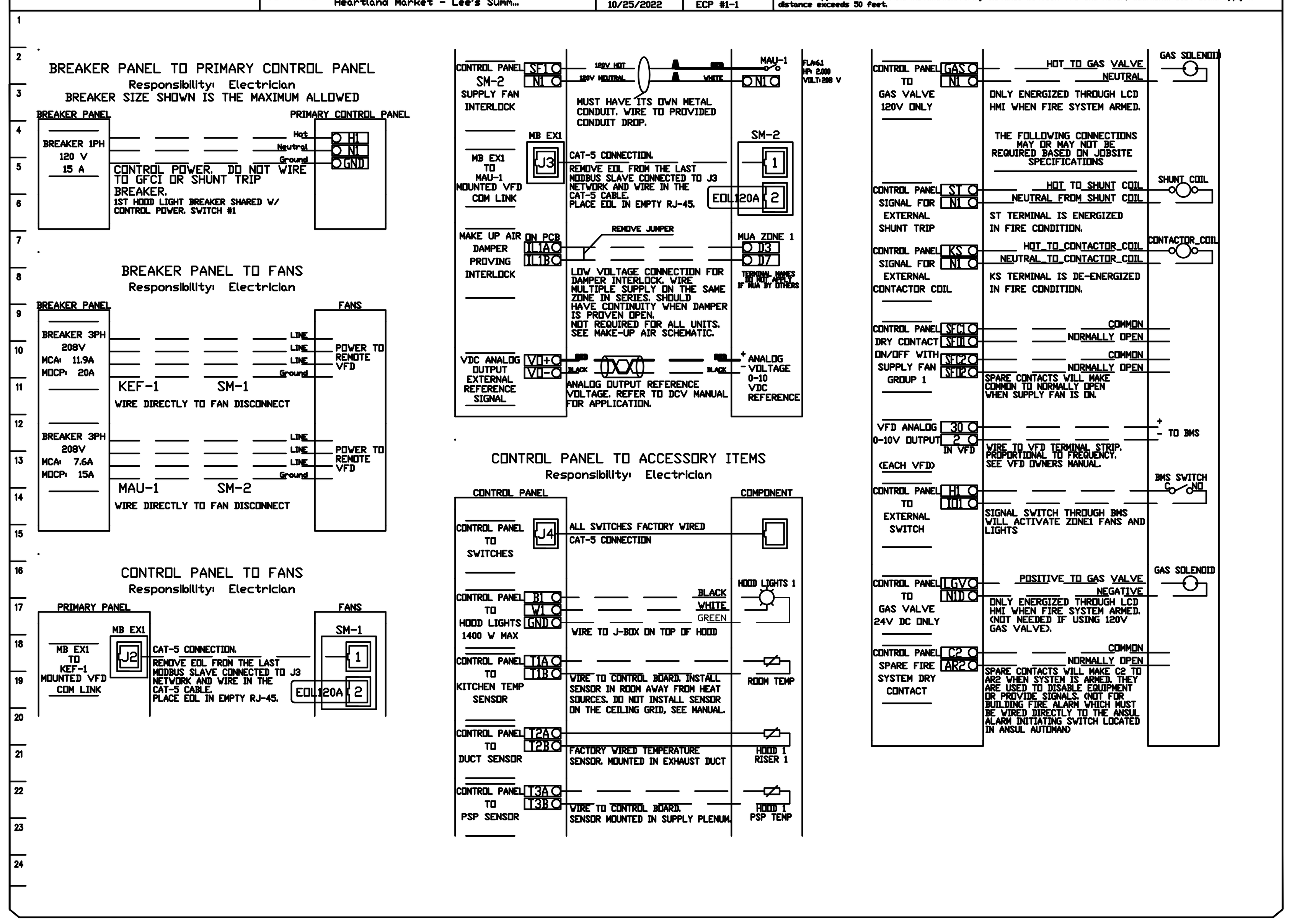
SHEET FILE LOCATION: N:\2022\22823\MECH\22823M.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL

ELECTRICAL PACKAGE – JOB#5702408

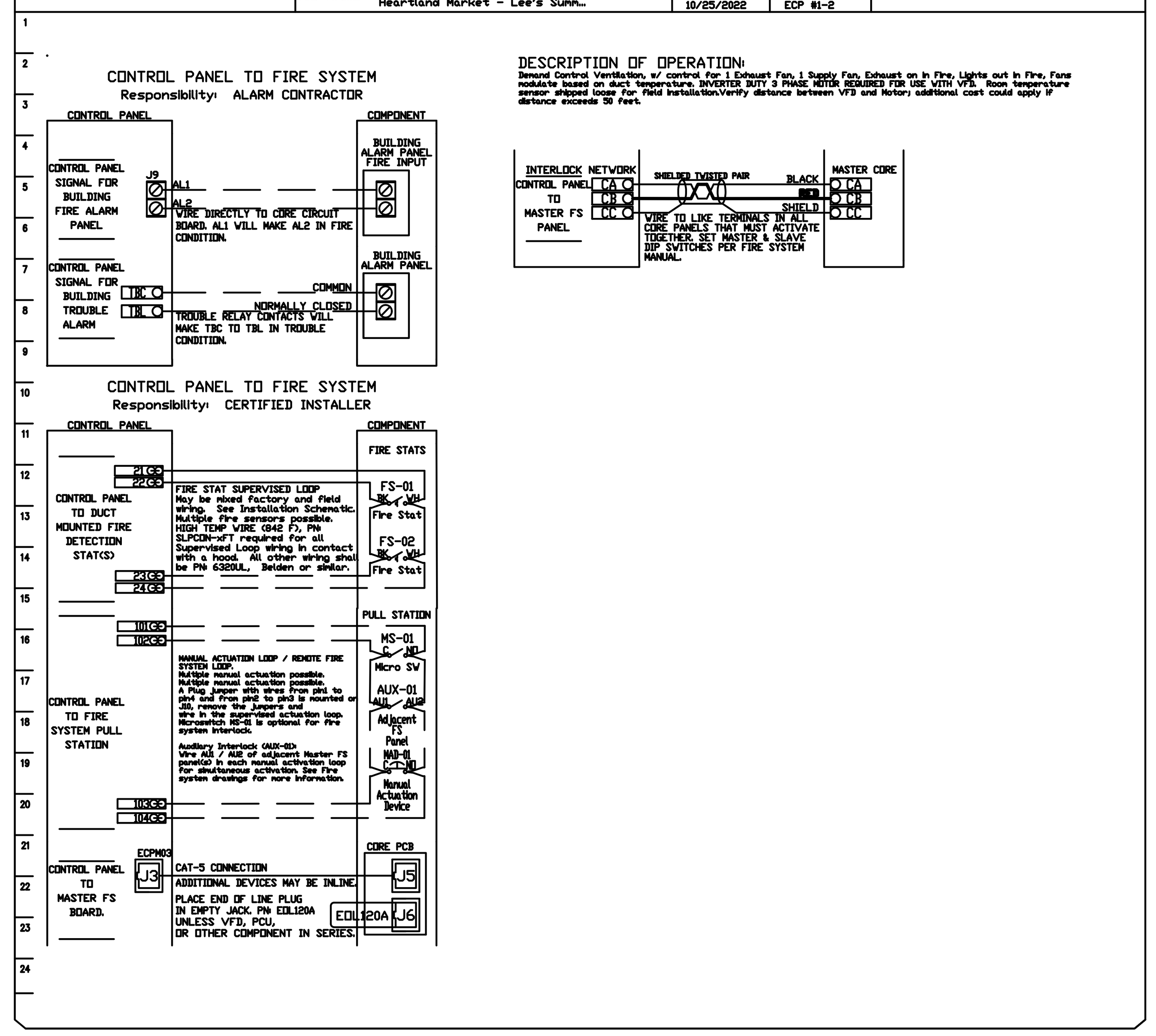
NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1	ECP-1	DCV-1111	UTILITY CABINET RIGHT	04 - UTILITY CABINET RIGHT	1 LIGHT	SMART CONTROLS DCV	KEF-1	EXHAUST	3	3.000	208	9.5
				HOOD # 1	1 FAN		MAU-1	SUPPLY	3	2.000	208	6.1

JOB NO 5702408 | MODEL NUMBER DCV-1111 | JOB NAME Heartland Market - Lee's Summ... | SCHEMATIC TYPE INSTALL | DATE 10/25/2022 | DWG NO ECP #1-1

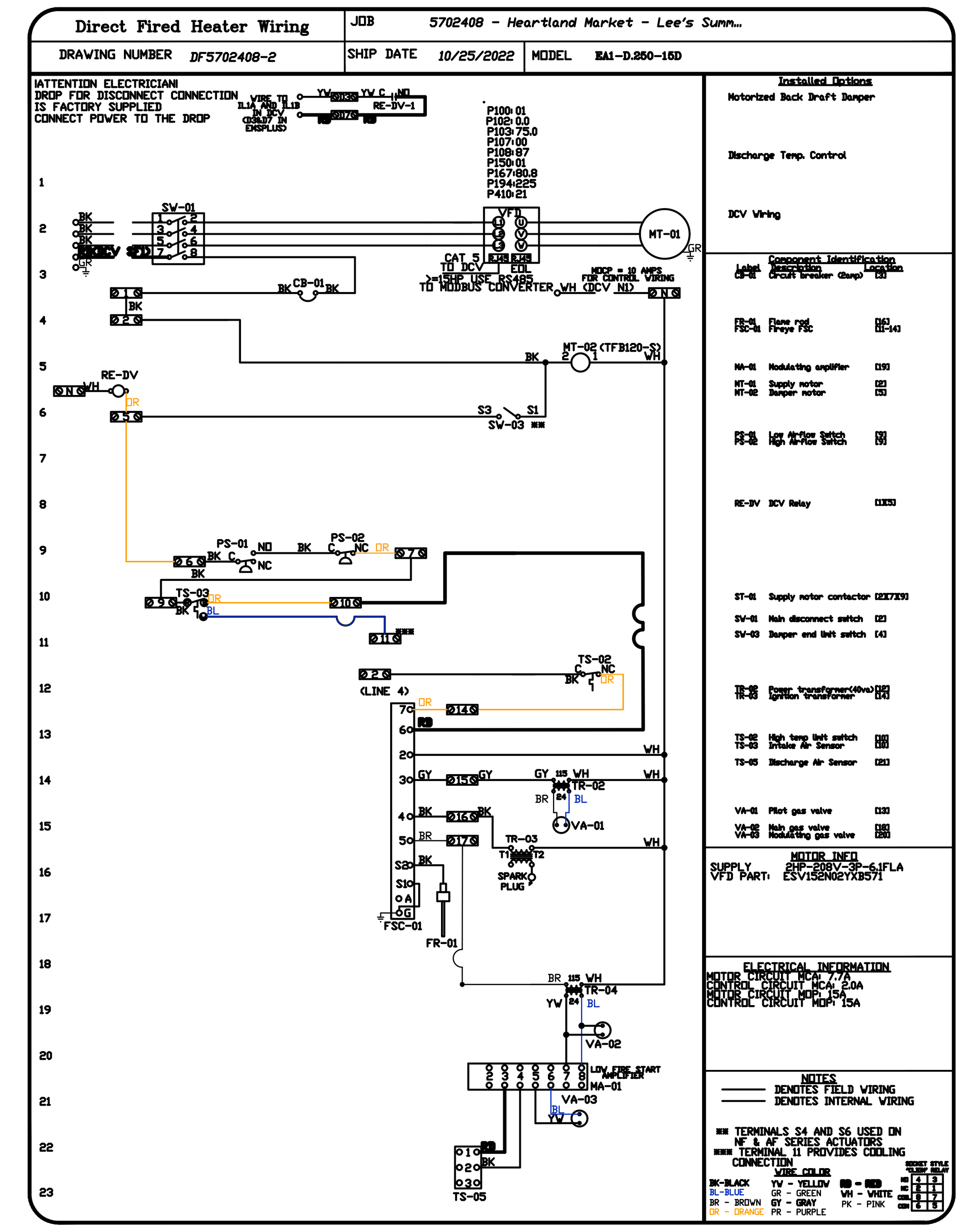
DESCRIPTION OF OPERATION: Demand Control Ventilation, w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation.Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.



JOB NO 5702408 | MODEL NUMBER DCV-1111 | JOB NAME Heartland Market - Lee's Summ... | SCHEMATIC TYPE INSTALL | DATE 10/25/2022 | DWG NO ECP #1-2



Direct Fired Heater Wiring



JOB NO 5702408 | MODEL NUMBER DCV-1111 | JOB NAME Heartland Market - Lee's Summ... | SCHEMATIC TYPE INSTALL | DATE 10/25/2022 | DWG NO ECP #1-3

DESCRIPTION OF OPERATION: Fire System #1 TANK FS - 4.0/4.0/4.0. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet with integral hood prewire panel.

TANK PROTECTION ELECTRICAL DETAIL

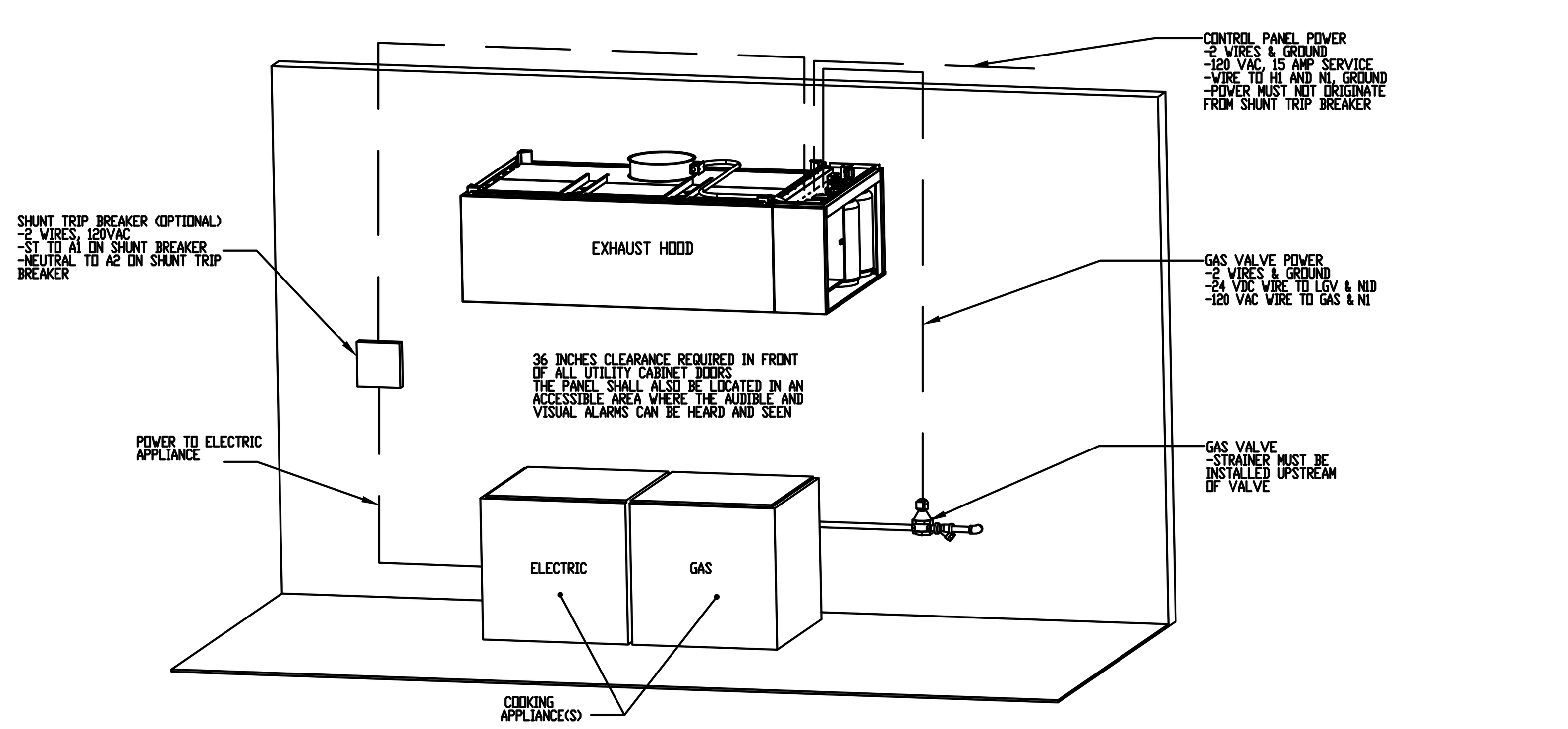
02/10/2021 Rev. 2

FS-1: MASTER

ELECTRICIAN:
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE ALL FANS PER INCLUDED SCHEMATIC
3. WIRE SHUNT TRIP BREAKER (OPTIONAL)
4. WIRE UDS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)
5. WIRE GAS VALVE

ELECTRICAL CONTRACTOR REQUIREMENT

ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & N1	BREAKER COIL (A1 & A2)	120 VAC	< 4 AMPS	ST TO A1 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & N1 + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
UDS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & N1	KTS & N1	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE 120VAC ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL
GAS VALVE	LGV & N1D (IF 24 VDC) GAS & N1 (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 1.0 AMPS	IF 24 VDC - 2 WIRES & GROUND, N1D TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC - 2 WIRES & GROUND GAS TO RED, N1 TO RED, AND GREEN TO GROUND



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

JOB NO 5702408 | MODEL NUMBER DCV-1111 | JOB NAME Heartland Market - Lee's Summ... | SCHEMATIC TYPE INSTALL | DATE 10/25/2022 | DWG NO ECP #1-4

DESCRIPTION OF OPERATION: Fire System #1 TANK FS - 4.0/4.0/4.0. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet with integral hood prewire panel.

TANK PROTECTION LOW-VOLTAGE DETAIL

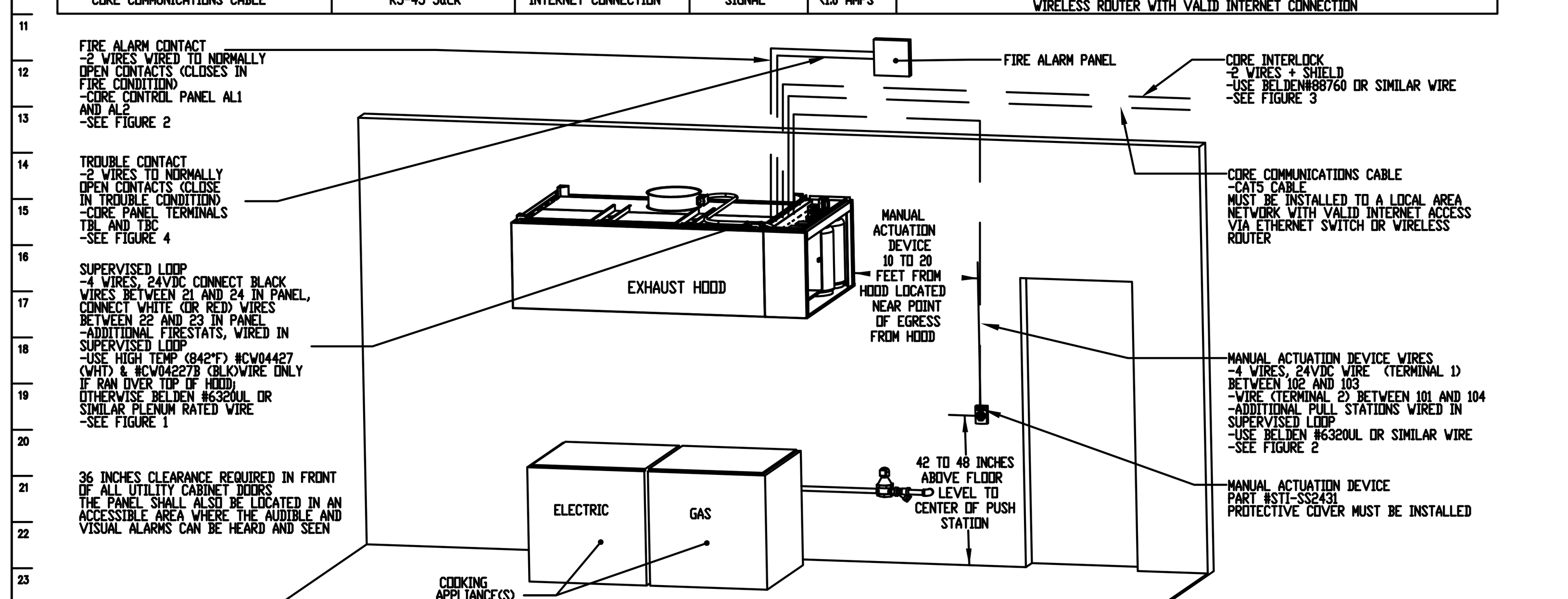
02/10/2021 Rev. 2

FS-1: MASTER

ALARM CONTRACTOR:
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. COMPLETE FINAL HOOKUP OF SYSTEM
3. VERIFY FINAL FIRE SYSTEM TEST

ALARM CONTRACTOR REQUIREMENT

ITEM	CONNECTION IN PANEL	CONNECTION ON DEVICE	VOLTAGE	AMPERAGE	COMMENTS
MANUAL ACTUATION DEVICE(S)	101 AND 104 102 AND 103	1 & 2	24 VDC	< 1.0 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104 JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED IF SURFACE MOUNTED, USE COVER EXTENSION STI-6531B
REMOTE FIRESTAT SENSOR(S)	21 AND 24 22 AND 23	BLACK AND WHITE	24 VDC	< 1.0 AMPS	WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24 HIGH TEMP (842°F) #CW04427 (WHT) & #CW04427B (BLK)WIRE OR SIMILAR ONLY IF RAN OVER TOP OF HOOD; OTHERWISE BELDEN #6320UL OR SIMILAR PLENUM RATED WIRE; SEE FIGURE 1
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCK(S)	ILA, ILB, ILC	ILA, ILB, ILC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM (1) ILA, TO CORE SYSTEM (2) ILA. CORE SYSTEM (1) ILB, TO CORE SYSTEM (2) ILB. CORE SYSTEM (1) ILC, TO CORE SYSTEM (2) ILC. USE BELDEN# 88760 OR SIMILAR WIRE
TROUBLE CONTACT	TBC, TBL, TOK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION	SIGNAL	<1.0 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION



ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

REVISIONS

DESCRIPTION	DATE

CAPTIVEAIRE Air Solutions
www.captiveaire.com
1329 East Kemper Rd., Ste. 4210, Cincinnati, OH, 45246 PHONE: (513) 860-5555 EMAIL: reg120@econair.com

Heartland Market - Lee's Summit
LEES SUMMIT, MO, 64082

DATE: 10/25/2022
DWG.#: 5702408
DRAWN BY: michael.co
SCALE: 1/2" = 1'-0"
MASTER DRAWING
SHEET NO. 4

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

PE COA #2009003629

10/14/24
STATE OF MISSOURI
BRIAN A. QUISSELL
NUMBER PE-2004000829
REGISTERED PROFESSIONAL ENGINEER

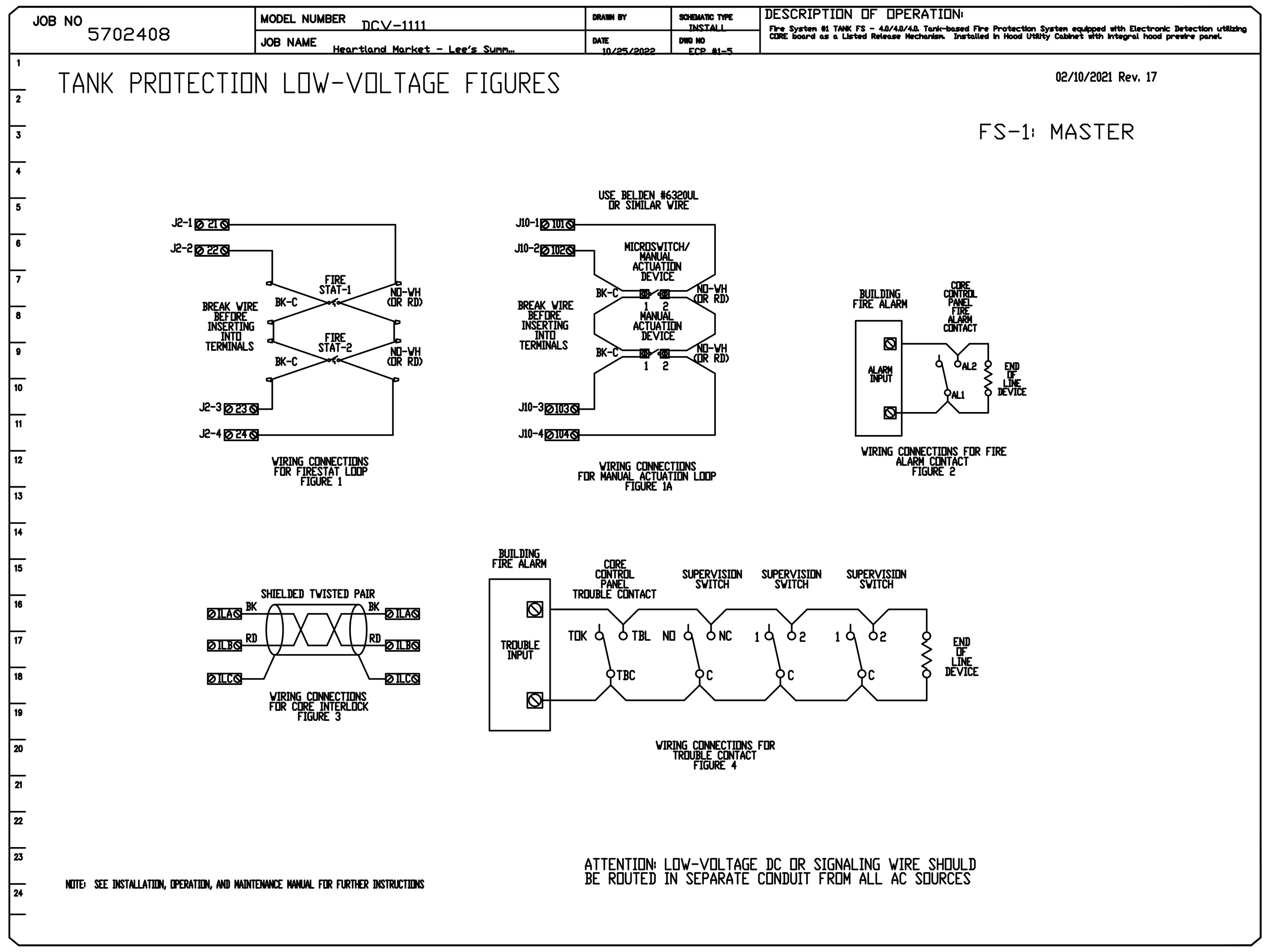
PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

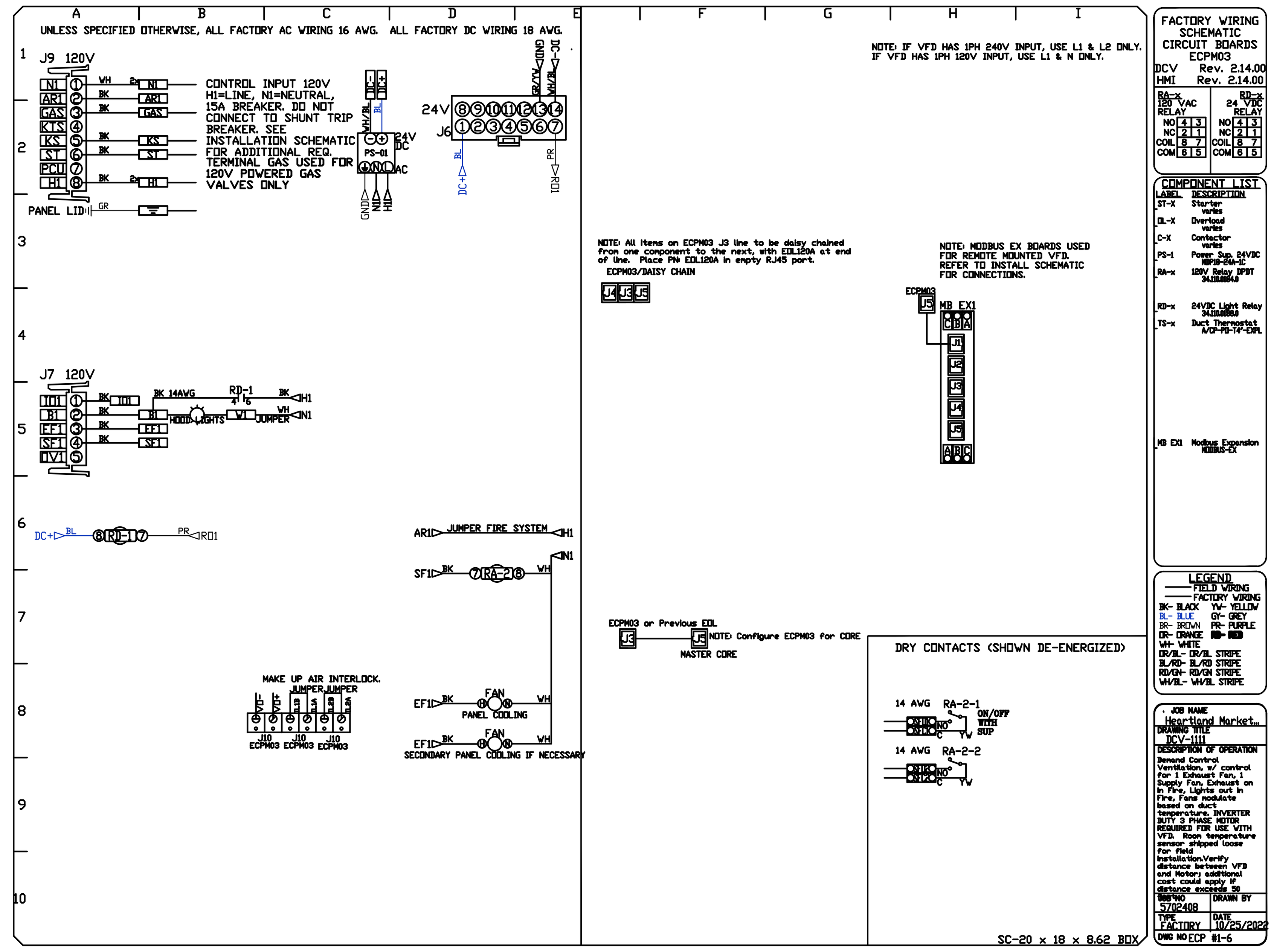
BC PROJECT #: 22823
REVIEW SET
ISSUE DATE: 4-28-2023
REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

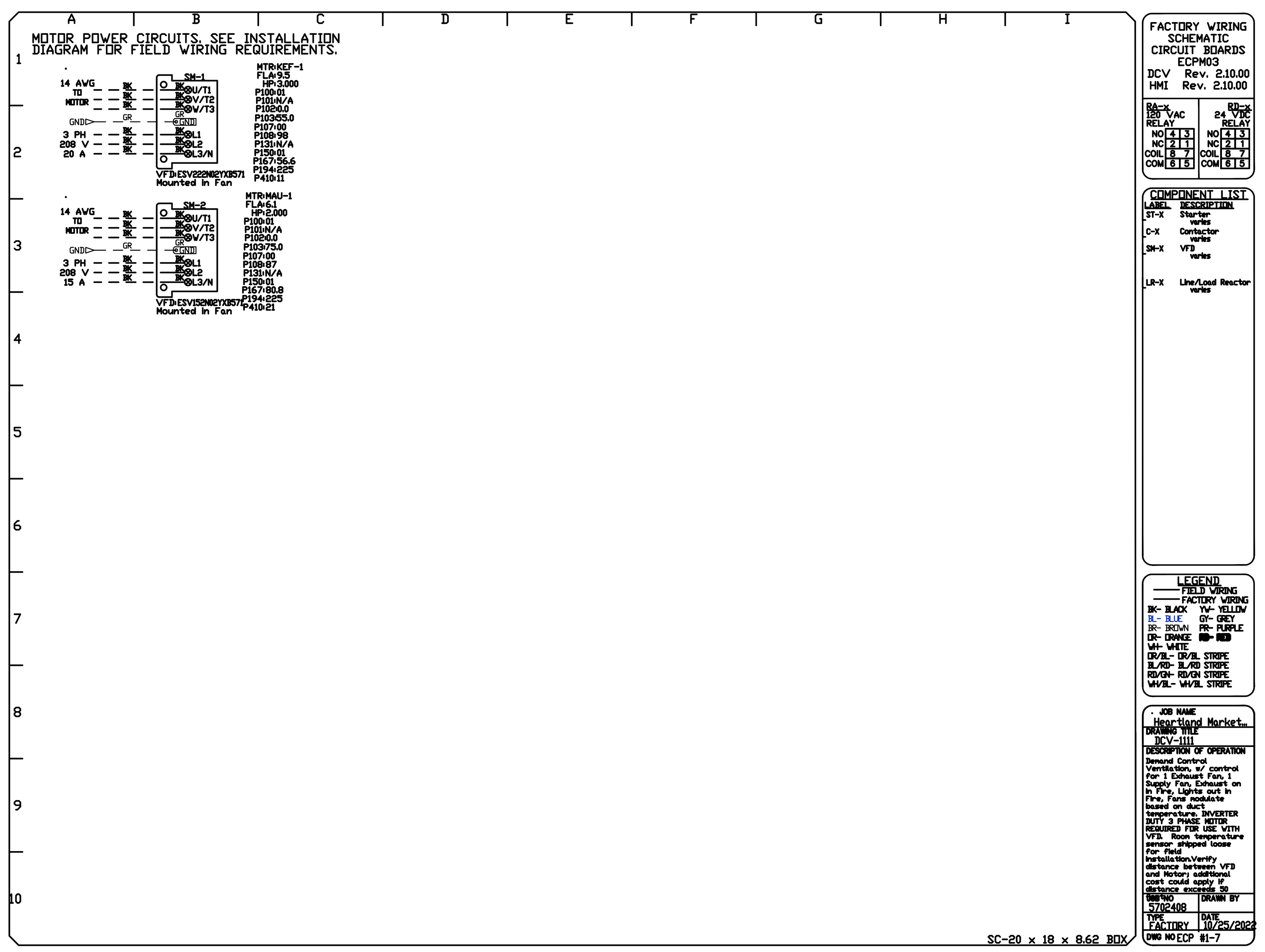
SHEET TITLE
HOOD DETAILS

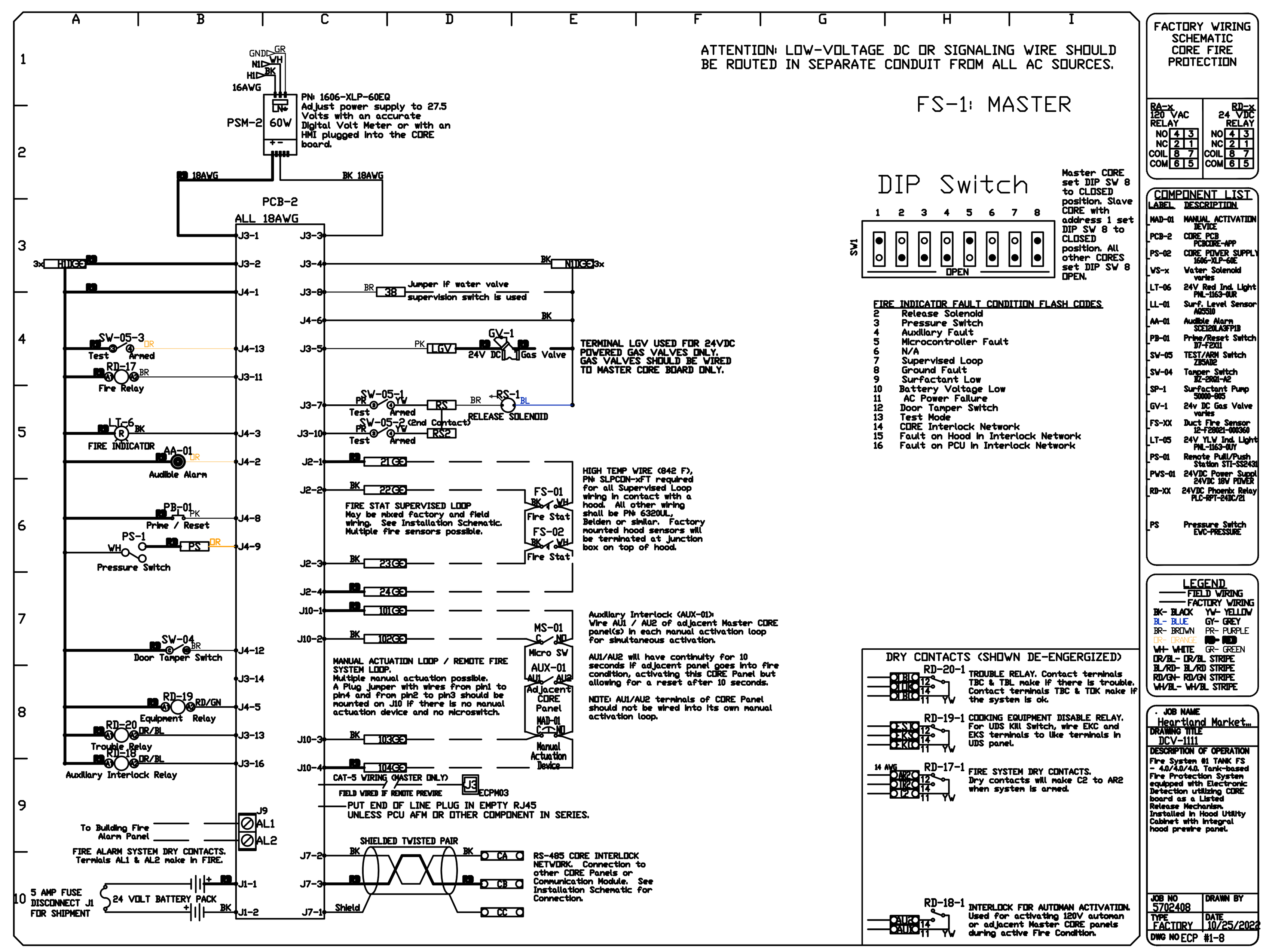
M203

SHEET FILE LOCATION: N:\2022\22823\MECH\22823M.DWG LAST SAVED: 10/11/2024 1:30 PM BY: SUNIL









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CAPTIVEAIRE Air Solutions

www.captiveaire.com

1329 East Kemper Rd., Ste. 4210, Cincinnati, OH, 45246 PHONE: (513) 860-5555 EMAIL: reg120@econair.com

Heartland Market - Lee's Summit
LEES SUMMIT, MO, 64082

DATE: 10/25/2022

DWG.#: 5702408

DRAWN BY: michael.co

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

MASTER DRAWING

SHEET NO. 5

BC ENGINEERS INCORPORATED
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PE COA #2009003629

10/14/24

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SHEET TITLE
HOOD DETAILS

M204

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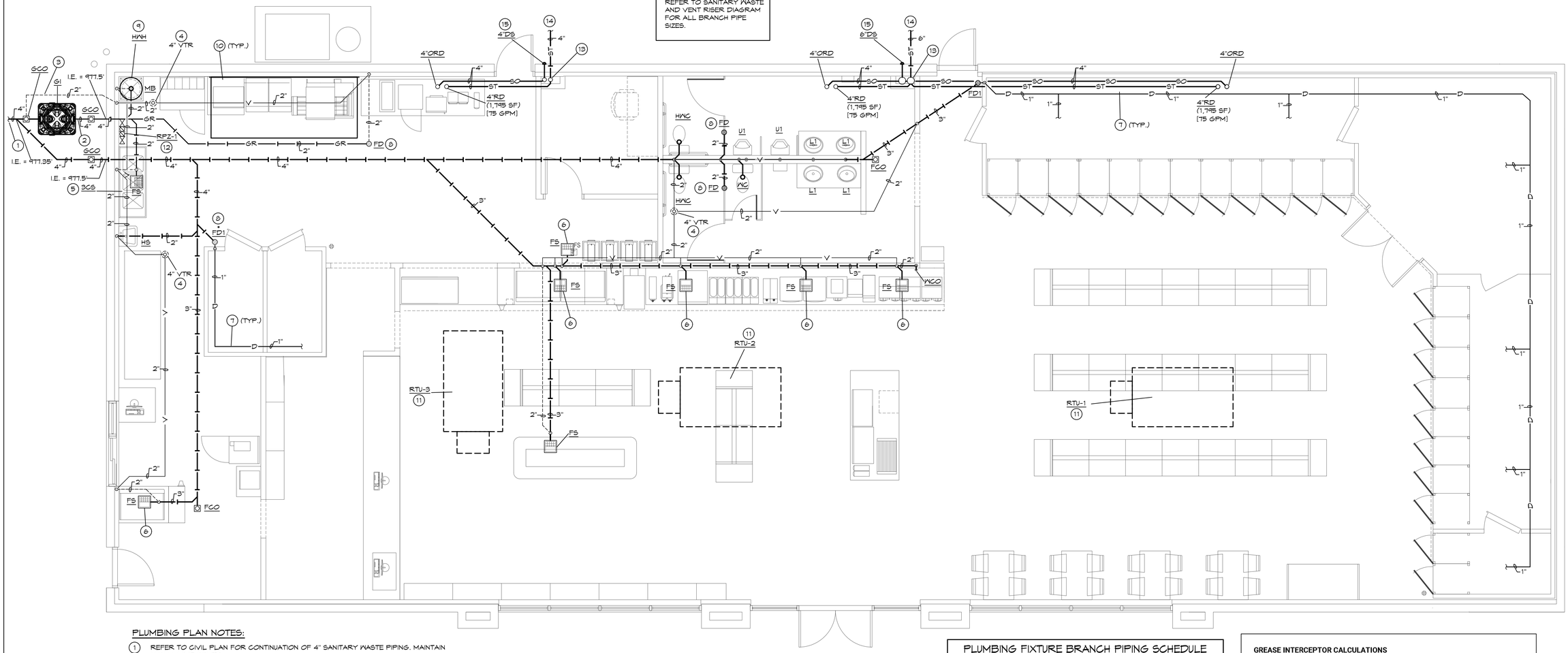
NOTE:
REFER TO SANITARY WASTE AND VENT RISER DIAGRAM FOR ALL BRANCH PIPE SIZES.



WASTE & VENT PLAN

NORTH

SCALE: 1/4" = 1'-0" FFE = 981.10'

PLUMBING PLAN NOTES:

1. REFER TO CIVIL PLAN FOR CONTINUATION OF 4" SANITARY WASTE PIPING. MAINTAIN MINIMUM 30" COVER.
2. ROUTE 4" GREASE PIPING OUTSIDE OF THE FOUNDATION WALL AND CONNECT TO GREASE INTERCEPTOR. MAINTAIN MINIMUM 30" COVER.
3. 2" VENT MINIMUM 24" BELOW GRADE.
4. LOCATION OF 4" VTR. VERIFY 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATION WEATHERTIGHT.
5. ROUTE (3) SEPARATE 1-½" DRAINS FROM 3-COMPARTMENT SINK TO FLOOR SINK WITH AIR GAPS. LOCATE FLOOR SINK IN AN ACCESSIBLE LOCATION.
6. ROUTE DRAIN FROM ICE MACHINE / COFFEE MACHINE & BEVERAGE DISPENSER TO FLOOR SINK WITH AIR GAP, AND PER THE MANUFACTURERS REQUIREMENTS. ROUTE CONDENSATE SEPARATELY TO FLOOR SINK.
7. PROVIDE 1" CONDENSATE DRAIN FROM THE WALK IN COOLER / FREEZER EVAPORATOR TO THE FLOOR SINK. DISCHARGE THROUGH AN AIR GAP. SLOPE CONDENSATE DRAIN A MINIMUM OF 1/4" PER FOOT. HOLD EXPOSED CONDENSATE DRAIN IN WALK IN COOLER AS HIGH AS POSSIBLE. COORDINATE WITH ELECTRICAL FOR HEAT TRACING IN FREEZER.
8. PROVIDE TRAP SEAL ON FLOOR DRAINS SUSCEPTIBLE TO DRYING OUT.
9. PROVIDE WATER HEATER T& P DRAIN PIPE. ROUTE DRAIN PIPE DOWN AND DISCHARGE TO MOP SINK.
10. NO COMBUSTIBLE MATERIALS WITHIN 18" OF TYPE I HOOD.
11. ROUTE 1" CONDENSATE DRAIN FROM ROOF TOP UNIT TO NEAREST ROOF DRAIN / SCUPPER AS REQUIRED AND AS DETAILED.
12. ROUTE DRAIN FROM RPZ BFP TO FLOOR SINK DRAIN WITH AN AIR GAP.
13. ROUTE STORM DRAIN PIPE DOWN TO BELOW FLOOR, PROVIDE CLEANOUT AT BASE OF RISER.
14. SEE CIVIL FOR CONTINUATION OF STORM DRAIN PIPING. MAINTAIN 30" COVER.
15. INSTALL DOWN SPOUT 18" ABOVE GRADE. SEAL PENETRATION WEATHER TIGHT.

PLUMBING GENERAL NOTES:

1. INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.
2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.
4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
5. PROVIDE 1" SCHEDULE 40 PVC CONDENSATE DRAIN PIPE FOR EACH ROOFTOP UNIT LAID DIRECTLY ON ROOF TO NEAREST ROOF DRAIN. PROVIDE WATER TRAP AND CLEAN OUTS AS DETAILED. SECURE PVC PIPE TO DRAIN WITH NYLON STRAP.
6. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
7. CONTRACTOR TO TEST WATER PRESSURE ON SITE AND PROVIDE PRESSURE REDUCING VALVE ON WATER SERVICE IF PRESSURE IS OVER 80 PSI.

PLUMBING FIXTURE BRANCH PIPING SCHEDULE

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

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

PLUMBING DRAINAGE CALCULATIONS

FIXTURE	QUANTITY	FU	TOTAL FU
WATER CLOSET	3	4	12
LAVATORIES	4	1	4
URINAL	2	4	8
HAND SINK	1	1	1
3 COMP. SINK	1	2	2
MOP SINK	1	2	2
FLOOR DRAIN	5	2	10
FLOOR SINK	7	2	14
TOTAL			53

VENT MAINS - 4"
WASTE MAIN - 4"

* = COMBINATION WASTE & VENT DRAIN

GREASE INTERCEPTOR CALCULATIONS

Reference No. 45226 Project Name: Heartland Market

Step 1: Flow rate to grease interceptor

Fixture flow rate: (cu in / 231) = gal x 0.75 / 2 min = 2 min flow rate

NAME	TYPE	DIMENSIONS	QTY	GUIN	FLOW RATE
3CS	3 Compartment Sink	21" x 21" x 14" (3)	1	18,522	30 GPM
FD	Floor Drain	N/A	1	N/A	N/A
MB	Mop Basin	24" x 24" x 10"	1	5,760	9.35 GPM
Total					**39.35 GPM**

Step 2: Grease Production

Number of Seats x 4 turns per seat x Grease Production Value x Days between pump-out = Grease output

Number of seats in facility: 16
Grease production value: 0.025 lbs per serving (Convenience Store: Medium / No flatware)
Days between pump-outs: 90 days

16 x 4 x 0.025 x 90 = 144 lbs of FOG

SCHIER MODEL	
GB-50	**Description:** Polyethylene Grease Interceptor **Dimensions:** Length: 37", Width: 32.25", Height: 28.5" **Flow Rates/Grease Capacities:** 50 GPM / 439.5 lbs **Liquid Capacity:** 65 gal

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SHEET TITLE
WASTE & VENT PLAN

P100

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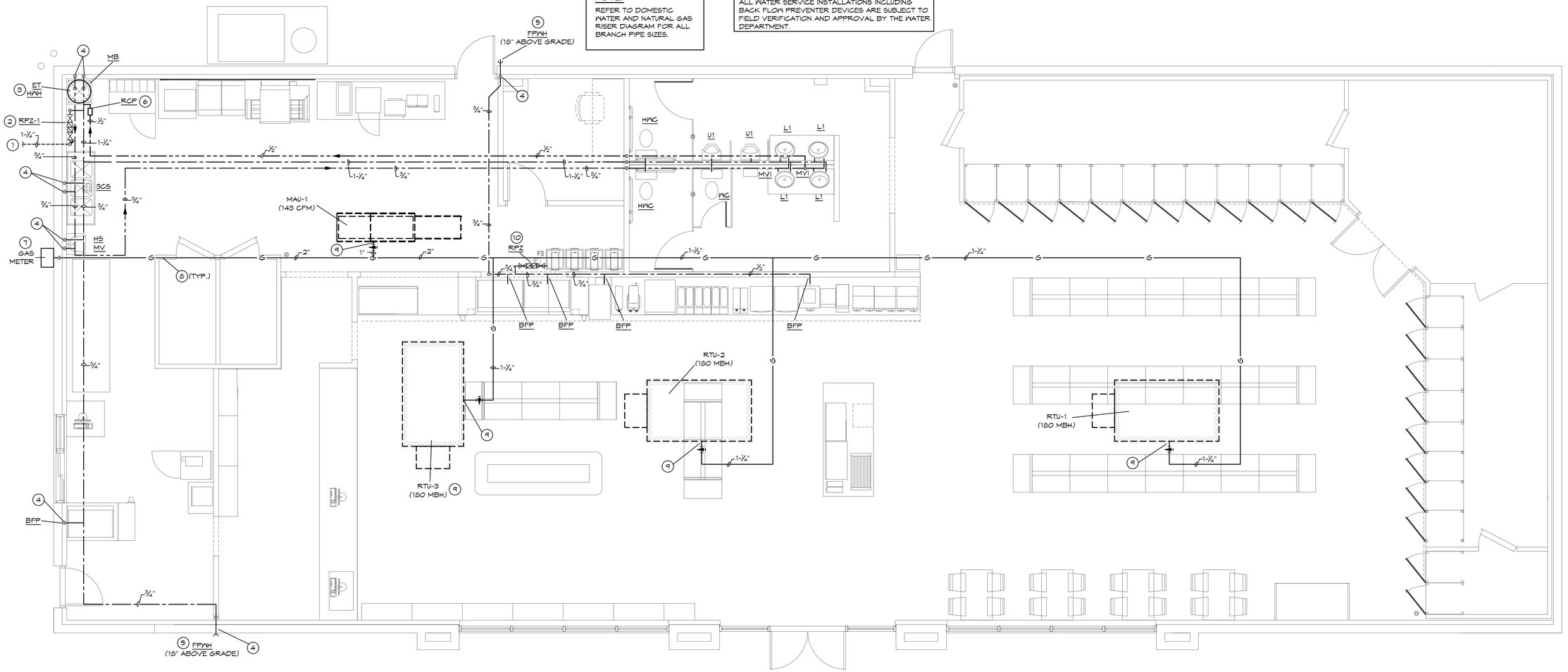

STORE - DOMESTIC WATER & NATURAL GAS PLAN

NORTH

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

PLUMBING PLAN NOTES:

1. REFER TO CIVIL PLAN FOR CONTINUATION OF DOMESTIC WATER LINE. MAINTAIN 48" MINIMUM COVER.
2. PROVIDE NEW DOMESTIC WATER LINE WITH SHUT OFF VALVE AND REDUCED PRESSURE ZONE BACKFLOW PREVENTER INSIDE OF THE BUILDING. INSTALL 24" A.F.F. & 6" FROM WALL. ROUTE DRAIN FROM RPZ BFP TO FLOOR SINK DRAIN WITH AN AIR GAP.
3. PROVIDE ELECTRIC WATER HEATER MOUNTED ABOVE MOP BASIN. MAKE HOT AND COLD WATER PIPING CONNECTIONS THROUGH DIELECTRIC UNIONS. PROVIDE AND INSTALL ALL HARDWARE AND APPURTENANCES FOR COMPLETE INSTALLATION PER APPLICABLE CODES AND MANUFACTURER'S RECOMMENDATIONS. PROVIDE THERMAL EXPANSION TANK.
4. ROUTE PIPING ON INTERIOR SIDE OF WALL FOR FREEZE PROTECTION.
5. ROUTE 3/4" CW DOWN TO FREEZE PROOF WALL HYDRANT MOUNTED AT 18" ABOVE GRADE. SEAL PENETRATION WEATHERTIGHT.
6. CONNECT HOT WATER RECIRC. PIPING BACK TO WATER HEATER AS REQUIRED. REFER TO RISER DIAGRAM FOR MORE INFORMATION.
7. COORDINATE WITH GAS COMPANY FOR INSTALLATION OF A METER WITH CAPACITY FOR 683 CFH @ 7" W.C. ROUTE PIPING UP INSIDE THE EXTERIOR WALL. ALL CONCEALED JOINTS ARE TO BE WELDED OR USE FITTINGS APPROVED FOR CONCEALED JOINTS. VERIFY ALL EQUIPMENT GAS CAPACITIES AND OPERATING PRESSURE PRIOR TO INSTALLATION OF ANY PIPING.
8. INSTALL GAS PIPING ON ROOF. SUPPORT AS REQUIRED AND AS DETAILED.
9. CONNECT GAS PIPING TO ROOF TOP UNIT AS DETAILED AND PER THE MANUFACTURERS INSTRUCTIONS.
10. PROVIDE RPZ BACK FLOW PREVENTER FOR CONNECTION TO FOUNTAIN SODA SYSTEM. NO COPPER PIPING IS ALLOWED DOWNSTREAM OF BACK FLOW PREVENTER TO CARBONATOR & SODA SYSTEM/

PLUMBING FIXTURE WATER COUNT

FIXTURE	QUANTITY	CW FU	CW TOTAL FU	HW FU	HW TOTAL FU	COMBINED FU	COMBINED TOTAL FU
WATER CLOSET	3	5	15	0	0	5	15
URINAL	2	5	10	0	0	5	10
LAVATORIES	4	1.5	6	1.5	6	2	8
HAND SINK	1	1.5	1.5	1.5	1.5	2	2
3 COMP SINK	1	2.25	2.25	2.25	2.25	3	3
MOP SINK	1	2.25	2.25	2.25	2.25	3	3
ICE & BEV. DISPENSER	3	0.5	1.5	0	0	0.5	1.5
COFFEE MACHINE	1	0.25	0.25	0	0	0.25	0.25
BLENDER	1	0.25	0.25	0	0	0.25	0.25
FP WALL HYDRANT	2	2.5	5	0	0	2.5	5
			44 FU		12 FU		48 FU

COLD WATER MAIN - 1-1/4"
HOT WATER MAIN - 3/4"

PEX PIPING REQUIREMENTS

PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE. IF PEX PIPING IS USED, INCREASE PEX PIPING ONE SIZE ABOVE LISTED SIZES AS REQUIRED TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER.

GAS DEMAND SCHEDULE

EQUIPMENT		GAS INPUT (BTUH)	
SN	ITEM	NEW	EXISTING
1	ROOF TOP UNIT -1	180,000	
2	ROOF TOP UNIT -2	180,000	
3	ROOF TOP UNIT -3	180,000	
4	MAKE UP AIR UNIT -1	143,000	
TOTAL BTU/HR		683,000	0
NEW TOTAL BTU/HR (EXISTING AND NEW)		683,000	
NEW TOTAL CFH (EXISTING AND NEW)		683	
MAXIMUM DEVELOPMENT LENGTH >		125FT	
MINIMUM SIZE OF GAS LINE REQUIRED		2" DIA.	

NOTE
GAS LINE SIZED AS PER TABLE 402.4(2) OF IFGC FOR PRESSURE OF 7" W.C AND SPECIFIC GRAVITY OF NATURAL GAS TO BE 0.6

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HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

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SHEET TITLE
WATER & GAS PLAN

P101

SHEET FILE LOCATION: N:\2022\22823PLBG\22823P.DWG LAST SAVED: 10/11/2024 1:24 PM BY: SJNIL

PLUMBING FIXTURE SCHEDULE:

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

WC — WATER CLOSET: TOTO, #CST744S, "DRAKE CLOSE COUPLED TOILET",1.6 GALLON FLUSH, ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE WITH LOCKING LID, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER.

U1 — URINAL, WALL HUNG: TOTO, #UT447.01, VITREOUS CHINA, WASH OUT, WALL HUNG URINAL WITH 3/4" TOP SPUD, #TMU1NNG-12 FLUSH VALVE, FLOOR MOUNTED FIXTURE SUPPORT. SET RIM HEIGHT PER ARCHITECTURAL DRAWINGS.

LI — HANDICAP LAVATORY, WALL HUNG: TOTO #LT301, 20"x 18", VITREOUS CHINA,FRONT OVERFLOW, DELTA #501 FAUCET WITH SINGLE METAL LEVER FAUCET,OFFSET GRID ELBOW DRAIN AND 1-1/4" TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT (MOUNTED PARALLEL WITH WALL), CHROME PLATED LOOSE KEY ANGLE STOPS AND RISERS, FLOOR MOUNTED CONCEALED ARM LAVATORY SUPPORT, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROVRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.

✱ HS — HAND SINK: ELKAY CHS-1716-C STAINLESS STEEL HAND SINK, 7" BACKSPLASH. FURNISHED COMPLETE WITH WALL HANGER, INTEGRAL SUPPORT BRACKETS, LK-499CHROME PLATED GOOSENECK SPOUT FAUCET WITH AERATOR, LK-8 DRAIN, LK-500 P-TRAP WITH CLEANOUT, WASTE ARM TO WALL, AND WALL FLANGE. PROVIDE CHROME PLATED ANGLE STOPS AND RISERS.

MB — MOP BASIN: FIAT, #MSB-2424, MOLDED STONE MOP BASIN, 2" DRAIN, 24"x 24" BASIN, VINYL BUMPER GUARD, STERN WILLIAMS #T-10-VB FAUCET, SPRING CHECKS, VACUUM BREAKER, INTEGRAL STOPS, WALL BRACE & PAIL HOOK, WALL BRACKET WITH 30" HOSE.

FD — FLOOR DRAIN: SIOUX CHIEF, #842, PVC FLOOR DRAIN WITH ADJUSTABLE TOP AND CAST BRASS STRAINER. PROVIDE WITH #2692 QUAD CLOSE TRAP SEAL DEVICE.

FD1 — FLOOR DRAIN: JR SMITH, #2005-F37, CAST IRON FLOOR DRAIN WITH RECESSED 6" NIKALOY STRAINER. PROVIDE WITH #2692 QUAD CLOSE TRAP SEAL DEVICE.

FS — FLOOR SINK: SIOUX CHIEF:, #861 SQUARE PVC FLOOR SINK WITH STAINLESS STEEL MESH DEBRIS SCREEN, PVC HALF OPEN STRAINER.

HWH — HOT WATER HEATER: HOT WATER HEATER: AO SMITH #DEL-40, 40 GALLON STORAGE, 208 VOLT, 1 PHASE, 8KW ELEMENT, NON SIMULTANEOUS, SINGLE ELEMENT OPERATION, 34 GALLON RECOVERY RATE, ASME TEMPERATURE AND PRESSURE RELIEF VALVE. PROVIDE HOLD RITE 50-SWHP-A WATER HEATER SHELF.

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

RCP — HOT WATER RECIRCULATING PUMP: BELL & GOSSETT, #SERIES NBF-10, 3 GPM @ 7 FT. HEAD, 1/12 HP, 120 VOLT, WITH HONEYWELL #L6006C1018 AQUASTAT & TACO #265-3 7 DAY DIGITAL TIMER, 120° - 125°F, ¾"Ø PIPE.

✱ SCS — 3-COMPARTMENT SINK: REGENCY 600S31014216 66" 16-GAUGE STAINLESS STEEL SINK, (3) 10"x14"x12" DEEP BOWLS, LEFT AND RIGHT 16" DRAINBOARDS. PROVIDE (3) 1-1/2" ROTARY OPERATED DRAINS WITH TAILPIECES, 2" WASTE MANIFOLD PIPING, CHROME PLATED ANGLE STOPS AND RISERS, WALL MOUNTED PRE RINSE FAUCET.

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

MV1 — MIXING VALVE: WATTS, LFMMV THERMOSTATIC CONTROLLED MIXING VALVE, LEAD FREE BRONZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL RESISTANT), SOLID WAX HYDRAULIC PRINCIPLE THERMOSTAT,INTEGRAL FILTER WASHERS AND CHECK VALVES ON HOT AND COLD INLETS.(SET TO 110°F) ASSE #1017,#1069,#1070

BFP — BACKFLOW PREVENTOR: WATTS #5D-3, DUAL CHECK VALVE WITH ATMOSPHERIC PORT & STRAINER FOR CARBONATED BEVERAGE MACHINES

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

RPZ-1
RPZ-2 — REDUCED ZONE PRESSURE BACKFLOW PREVENTOR: WATTS #LF009, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS WITH AN INTERMEDIATE RELIEF VALVE, AND BALL VALVE TEST COCKS. REQUIRED QUANTITY 2, ONE FOR DOMESTIC WATER LINE AND ONE FOR IRRIGATION SYSTEM. SEE PLAN FOR SIZES.

FPWH — FREEZEPROOF WALL HYDRANT: WOODFORD #17, 3/4" HOSE NOZZLE OUTLET, BRASS FACE, HANDWHEEL OPERATED, INTEGRAL VACUUM BREAKER.

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

GI — GREASE INTERCEPTOR: SCHIER MODEL #GB50, POLYETHYLENE GREASE INTERCEPTOR, 37" LENGTH, 32.25" WIDTH & 28.5" HEIGHT 50 GPM FLOW RATE, 439.5 lb. GREASE CAPACITY AND 65 GALLON LIQUID CAPACITY. PROVIDE ASSOCIATED PIPING PER CODE REQUIREMENTS. PROVIDE 4" INLET AND OUTLET, FIELD CUT RISER AND CAST IRON COVER.

RD — ROOF DRAIN: WATTS #RD-300-R, CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, AND DUCTILE IRON DOME.

ORD — OVERFLOW DRAIN: WATTS #RD300-W, CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, DUCTILE IRON DOME, AND 2" HIGH WATER DAM.

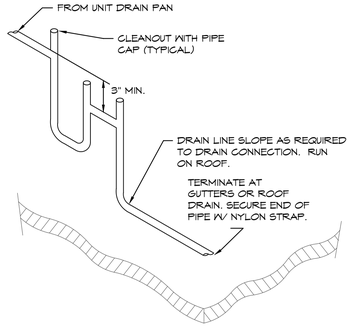
DS — DOWN SPOUT NOZZLE: WATTS #RD-40, CAST BRONZE, NICKEL BRONZE FINISH, WALL FLANGE.

FCO/WCO — VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL.
QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL.
CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL.
UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL.
WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.

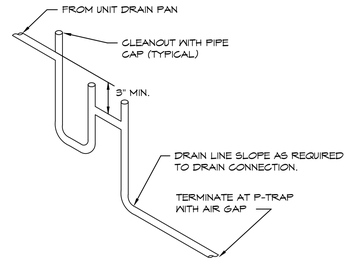
✱ COORDINATE WITH G.C. AND OWNER FOR EQUIPMENT THAT MAY BE PROVIDED BY OTHERS.

PLUMBING SYMBOLS

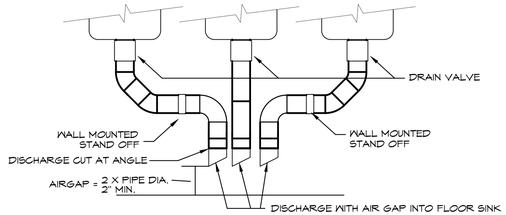
- SOIL AND WASTE PIPING BELOW FLOOR/GRADE
- SOIL AND WASTE PIPING ABOVE FLOOR/GRADE
- GREASE WASTE PIPING TO GREASE INTERCEPTOR
- SANITARY VENT PIPING ABOVE GRADE
- SANITARY VENT PIPING BELOW GRADE
- STORM PIPING BELOW FLOOR/GRADE
- STORM PIPING ABOVE FLOOR/GRADE
- STORM OVERFLOW PIPING ABOVE FLOOR/GRADE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



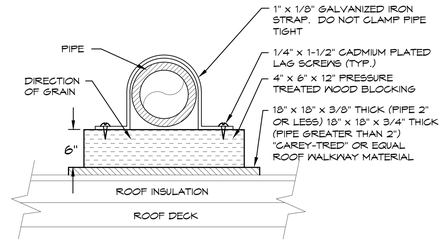
CONDENSATE DRAIN DETAIL (ROOF)
SCALE: NONE



CONDENSATE DRAIN DETAIL (INSIDE)
SCALE: NONE

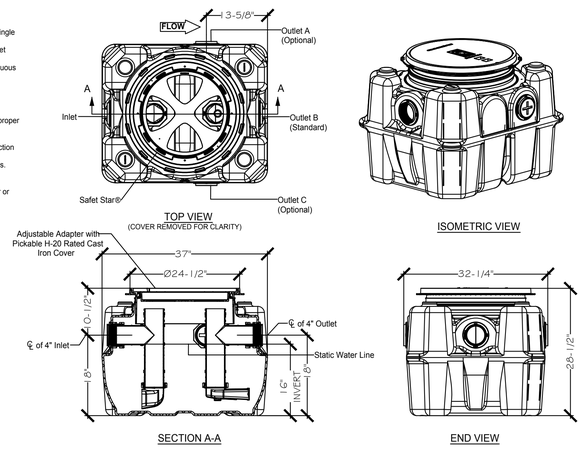


3-COMP (USED FOR FOOD PREP) DRAINAGE DETAIL
SCALE: NONE

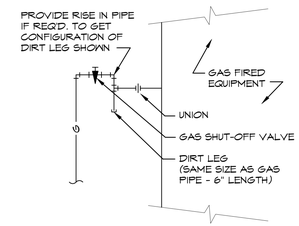


ROOF PIPE SUPPORT DETAIL
SCALE: NONE

Notes:
1. 4" FPT inlet/outlet with 4" plain end adapters, single inlet and triple outlet.
2. Unit weight - w/ cast iron cover: 148 lbs. (For wet weight add 542 lbs.)
3. Maximum operating temperature: 150° F continuous
4. Capacities - Liquid: 65 gal. Grease: 439.5 lbs. (60 gal.) @50 GPM Solids: 13 gal.
5. For gravity drainage applications only.
6. Do not use for pressure applications.
7. Cover placement allows full access to tank for proper maintenance.
8. Vent not required unless per local code.
9. Engineered inlet and outlet diffusers with inspection ports are removable to inspect / clean piping.
10. Integral air relief / Anti-siphon / Sampling access.
11. Adjustable cover adapter provides up to 4" of additional height.
12. Designed for below-grade, above-grade, indoor or outdoor installations.
13. Safety Star®, access restrictor built into cover adapter, prevents accidental entry to tank (450 lb rating).



GREASE INTERCEPTOR DETAIL
SCALE: NONE



GAS CONNECTION DETAIL
SCALE: NONE

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

PE COA #2009003629

10/14/24

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

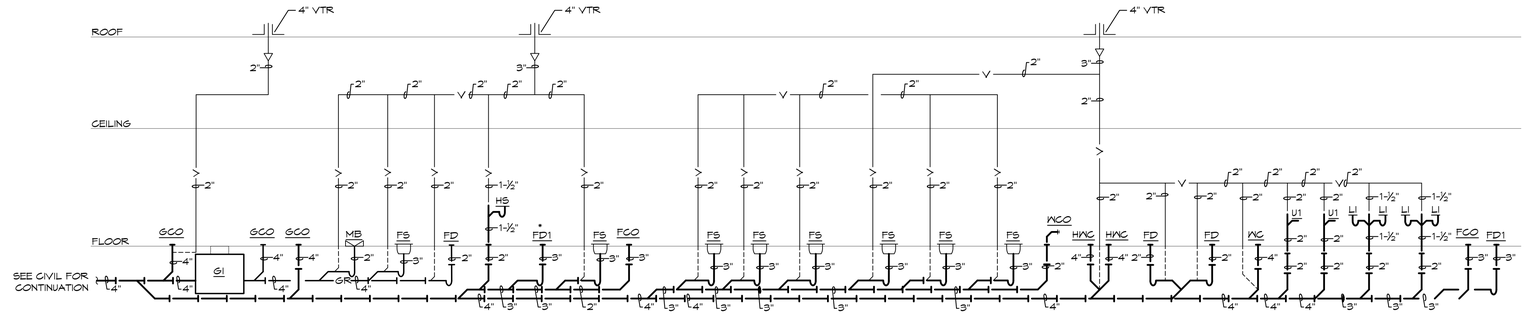
REVIEW SET
ISSUE DATE: 4-28-2023

REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

SHEET TITLE
PLUMBING SCHEDULE & DETAIL

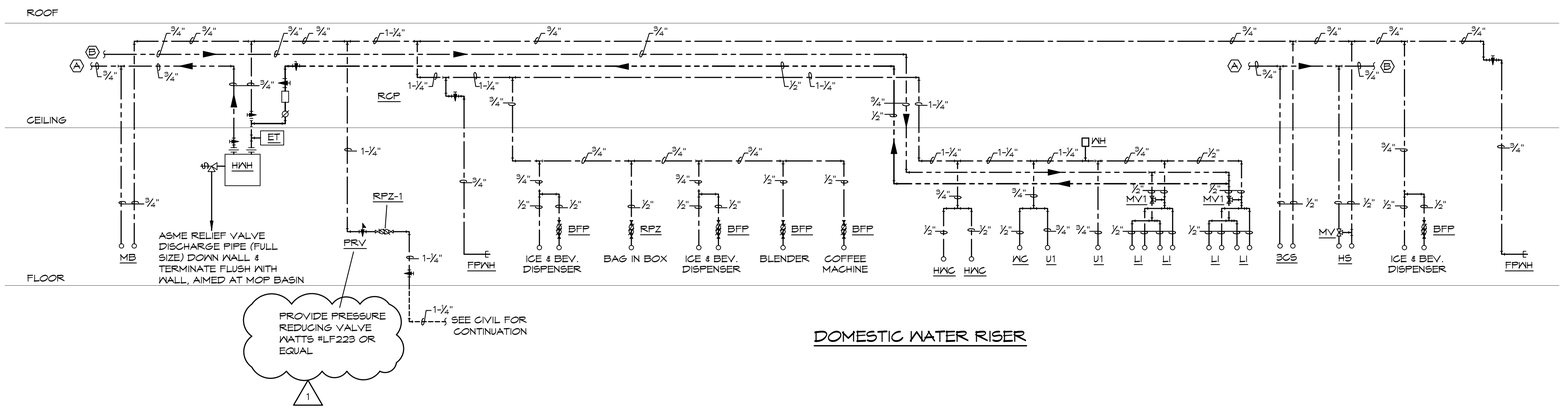
P200

SHEET FILE LOCATION: N:\2022\22823\PLBG\22823P.DWG LAST SAVED: 10/11/2024 1:29 PM BY: SUNIL

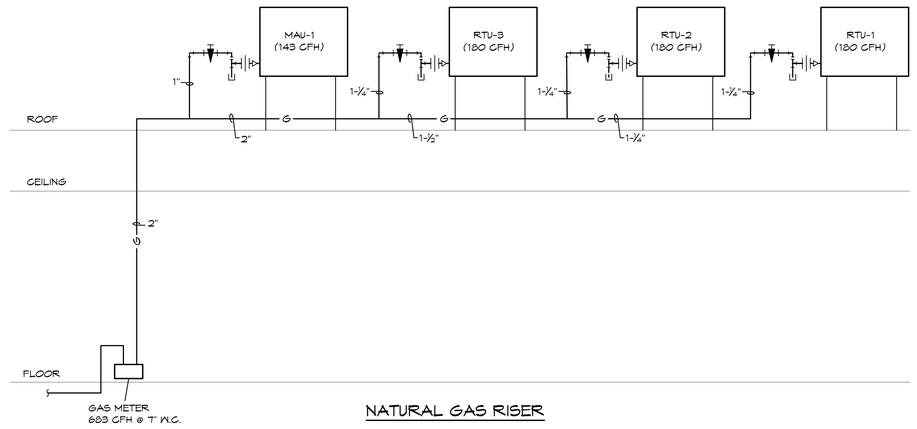


* = COMBINATION WASTE & VENT DRAIN

WASTE & VENT RISER



DOMESTIC WATER RISER



NATURAL GAS RISER

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

PE COA #2009003629

10/14/24

STATE OF MISSOURI
BRIAN A. QUISSELL
NUMBER PE-2004000829
REGISTERED PROFESSIONAL ENGINEER

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

REVIEW SET
ISSUE DATE: 4-28-2023

REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

SHEET TITLE
PLUMBING RISER DIAGRAMS

P201

SHEET FILE LOCATION: N:\2022\22823\PLBG\22823P.DWG LAST SAVED: 10/11/2024 1:24 PM BY: SUNIL

ELECTRICAL SPECIFICATIONS

1. GENERAL PROVISIONS:
   A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED.
   B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
   C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC), AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
   D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
   E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
   F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
   G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
2. OPERATION AND MAINTENANCE MANUALS:
   A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
   B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.
   C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.
3. MANUFACTURERS:
   A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
4. TESTING, AND BALANCING:
   A. ALL CIRCUITS SHALL BE TESTED FOR CONTINUITY, SHORTS, AND GROUNDS BEFORE CONNECTING TO THE PROPER PHASE AS DESIGNED TO BALANCE THE LOADING BETWEEN PHASES.
   B. POWER AND LIGHTING PANELS SHALL BE PROPERLY PHASED TO DISTRIBUTE THE LOAD AND SHALL BE CONNECTED AND ADJUSTED TO OPERATE AS SPECIFIED.
   C. ALL MOTORS AND SIMILAR EQUIPMENT SHALL BE CHECKED FOR PROPER PHASE ROTATION AND OPERATION.
5. RACEWAYS:
   A. CONDUIT INSIDE THE BUILDING SHALL BE METALLIC TUBING (EMT), BEARING THE UL LABEL, WITH COMPRESSION TYPE FITTINGS OR SCREW SET FITTINGS.
   B. CONDUIT EXPOSED TO THE WEATHER, INSTALLED UNDERGROUND, IN CONCRETE, OR USED FOR SERVICE ENTRANCE SHALL BE STANDARD RIGID CONDUIT (GALVANIZED) WITH THREADED FITTINGS.
   C. UNDERGROUND CONDUIT MAY BE POLYVINYL CHLORIDE WITH A DEFLECTION TEMPERATURE, UNDER LOAD AT 264 PSI, OF 70 DEGREES C, AND A TENSILE STRENGTH OF 5,200 PSI. JOINTS SHALL BE FLUSH SOLVENT WELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE EQUAL TO CARLON POWER AND COMMUNICATIONS DUCT TYPE DB (DIRECT BURIAL). CONDUIT AND FITTINGS SHALL BE PRODUCED BY THE SAME MANUFACTURER.
   D. FLEXIBLE METAL CONDUIT SHALL ONLY BE USED FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND LIGHT FIXTURES. MAXIMUM LENGTH SHALL BE 6'-0".
6. CONDUCTORS:
   A. WIRES SHALL BE CONTINUOUS WITHOUT SPLICES OR TAPS IN CONDUIT RUNS. ALL SPLICES SHALL BE MADE IN JUNCTION, PULL, OR OUTLET BOXES. ALL WIRE SHALL BE INSTALLED IN CONDUIT, RACEWAYS, OR OTHER PROTECTIVE COVER SANCTIONED BY CODES.
   B. CONDUCTORS FOR LIGHTING AND POWER SHALL BE COPPER, MINIMUM NO. 12 A.W.G., 600 VOLT.
   C. NO. 10 GAUGE AND SMALLER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), SOLID CONDUCTOR, UNLESS OTHERWISE INDICATED.
   D. NO. 8 GAUGE AND LARGER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED, UNLESS OTHERWISE INDICATED.
   E. SERVICE ENTRANCE AND PANEL FEEDER CONDUCTORS, NO. 3 GAUGE AND LARGER SHALL BE TYPE XHHW-2 (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED COPPER, UNLESS OTHERWISE INDICATED.
7. MC CABLE:
   A. MC CABLE SHALL CONSIST OF INTERLOCK ARMORED CABLE MADE OF THREE OR FOUR TYPE THHN SOLID (10 AWG AND LARGER MAY BE STRANDED) COPPER CONDUCTORS INSULATED WITH HEAT AND MOISTURE RESISTANT POLYVINYL CHLORIDE (PVC), WITH NYLON OR EQUIVALENT UL LISTED JACKET, PER UL STANDARD 83. THE THREE CONDUCTORS SHALL BE TWISTED TOGETHER WITH THE COPPER GROUNDING CONDUCTOR, SUITABLE FILLERS, AND WRAPPED IN BINDER TAPE. THE ASSEMBLY SHALL BE ARMORED WITH SPIRALLY WRAPPED INTERLOCKED ARMOR OR ALUMINUM OR GALVANIZED STEEL.
   B. CABLES SHALL BE TESTED IN ACCORDANCE WITH UL STANDARD 1569 FOR TYPE MC CABLE AND RATED AT 600 VOLTS, 90 DEG. C FOR DRY LOCATIONS AND 75 DEG. C FOR WET LOCATIONS.
8. WIRING DEVICES:
   A. WALL SWITCHES SHALL BE SPECIFICATION GRADE, QUIET TYPE, FLUSH TOGGLE SWITCH, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES.
      1) SINGLE POLE: HUBBELL #CS1221-X, OR EQUAL.
      2) THREE WAY: HUBBELL #CS1223-X, OR EQUAL.
   B. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX, GROUNDING, THREE-WIRE TYPE, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES. HUBBELL #CR5352-X, OR EQUAL.
   C. GROUND FAULT INTERRUPTER RECEPTACLES (GFI) SHALL BE HUBBELL #GF20-XL. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
   D. ISOLATED GROUND RECEPTACLES (IG) SHALL BE HUBBELL #CR5352IG, ORANGE COLOR. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
   E. RECEPTACLES OUTSIDE BUILDING AND WHERE NOTED AS WEATHERPROOF, SHALL BE LISTED WEATHER-RESISTANT HUBBELL #GFTR20-X OR EQUAL AND SHALL BE INSTALLED IN A WEATHERPROOF ENCLOSURE WHICH SHALL BE INTERMATIC #WP1010MC OR #WP1010HMC DIECAST METAL WEATHERPROOF RECEPTACLE COVER. COVER SHALL BE WEATHER PROOF RATED WHILE IN USE.
   F. EXTERIOR RECEPTACLES SHALL BE WEATHER RESISTANT TYPE PER NEC 2008. DEVICES SHALL BE HUBBELL #DR20WRTR, OR EQUAL.
   G. VERIFY DEVICES AND DEVICE COVERPLATES COLOR WITH ARCHITECT.
9. BOXES:
   A. HOT DIPPED GALVANIZED STEEL BOXES. PROVIDE TYPE TO SUIT CONDITIONS FOR INSTALLATION.
   B. ALL BOXES SHALL BE FLUSH MOUNTED, UNLESS INDICATED OTHERWISE.
10. PANELBOARDS:
   A. FURNISH AND INSTALL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE LISTED BY UL AND SO LABELED, AND SHALL BE FULLY RATED FOR THE VOLTAGE AND CURRENT CAPACITY INDICATED ON THE PANEL SCHEDULE. PANELBOARDS SHALL BE EQUAL TO GENERAL ELECTRIC TYPE AQ WITH BOLT IN TYPE BREAKERS. PANELBOARD LUGS SHALL BE RATED AT 75°C.
      1) CIRCUIT BREAKER INTERRUPTING CAPACITIES SHALL MEET OR EXCEED THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED AND AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT FROM LOCAL UTILITY.
   B. CIRCUIT BREAKERS SHALL MEET APPLICABLE PORTIONS OF UL STANDARD 489 AND NEMA AB-1. CIRCUIT BREAKERS SHALL BE BOLT-ON, GROUP MOUNTED, AMBIENT MAGNETIC, WITH COMMON TRIP, UL RATED TO CARRY 80% OF NAMEPLATE RATING CONTINUOUSLY IN FREE AIR AT 40° C. CIRCUIT BREAKERS SHALL BE TRIP INDICATING AND FULLY INTERCHANGEABLE WITHOUT DISTURBING ADJACENT UNITS. WIRE TERMINALS SHALL BE RATED 75 DEGREES C. THE OPERATING MECHANISM SHALL BE TRIP-FREE SO THAT CONTACTS CANNOT BE HELD CLOSED AGAINST ANY ABNORMAL OVERCURRENT OR SHORT CIRCUIT CONDITION.
      a) BREAKERS SHALL MEET APPLICABLE NEMA AND/OR UL SPECIFICATIONS.
   C. PANELBOARD BOXES SHALL BE GALVANIZED SHEET STEEL WITH AMPLE WIRING GUTTER SPACE IN ACCORDANCE WITH NEC. FRONTS SHALL BE OF SHEET STEEL PAINTED LIGHT GREY OVER A SUITABLE RUST INHIBITOR PRIMER. PANELBOARDS SHALL BE EQUIPPED WITH ONE PIECE DOOR, CYLINDER TUMBLER TYPE LOCK, DIRECTORY CARD-HOLDER AND QUARTER-TURN ADJUSTABLE TRIM CLAMPS.
   D. PANELBOARD INTERIORS SHALL CONSIST OF REINFORCED GALVANIZED SHEET STEEL FRAMES WITH ALUMINUM BUS BARS AND CIRCUIT BREAKERS, PROPERLY SUPPORTED TO PREVENT VIBRATIONS AND BREAKAGE IN HANDLING. BUS BARS SHALL BE SEQUENCE PHASED. PANELBOARD SHALL HAVE A FULL SIZED SOLID ALUMINUM NEUTRAL AND GROUND BUS.
   E. BUS BAR BRACING SHALL BE UL LISTED AS INDICATED ON DRAWINGS. ADDITIONAL BRACING SHALL BE PROVIDED AS REQUIRED TO MEET OR EXCEED INDICATED AVAILABLE FAULT CURRENTS.
   F. DIRECTORY CARDS SHALL BE COMPLETELY FILLED IN BY TYPEWRITER, LISTING CIRCUIT NUMBERS AND LOAD SERVED, INCLUDING EXISTING CIRCUITS. CIRCUIT BREAKERS SHALL BE IDENTIFIED BY CIRCUIT NUMBER LABELS AS HEREINBEFORE SPECIFIED.

ELECTRICAL SPECIFICATIONS (CONTINUED)

11. DISCONNECTS:
   A. DISCONNECTS SHALL BE EXTERNALLY OPERATED, QUICK-MAKE, QUICK-BREAK, SAFETY, WITH PROVISIONS FOR PAD LOCKING. FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS INDICATED.
   B. INDOOR SWITCHES SHALL BE NEMA 1 AND OUTDOOR SWITCHES SHALL BE NEMA 3R, UNLESS INDICATED OTHERWISE.
12. FUSES:
   A. FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING U.L. CLASS RK-1 FUSES WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE SILVER FOR RATINGS ABOVE 60 AMPERES.
   B. ALL OTHER FUSES SHALL BE U.L. CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM TIME-DELAY OF 10 SECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-CIRCUIT LINKS AND 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE COPPER.
13. LIGHT FIXTURES:
   A. WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIMUM OF 2 SUPPORT WIRES ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRUCTURE. SUPPORT WIRES SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED.
   B. FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWINGS. APPROVED LIGHTING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATHERPROOF WIRING IS REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.
   C. ALL FIXTURES SHALL CARRY UL AND ETL LABELS. ALL FLUORESCENT FIXTURE BALLASTS SHALL BE HIGH FREQUENCY ELECTRONIC BALLASTS WITH A 'TOTAL HARMONIC DISTORTION' OF LESS THAN 20%, REGARDLESS OF THE NUMBER OF LAMPS CONNECTED TO EACH BALLAST AND SHALL HAVE CBM LABEL. ALL FLUORESCENT FIXTURES INSTALLED SHALL INCORPORATE BALLAST PROTECTION. ALL FLUORESCENT BALLASTS SHALL HAVE AN AUDIBLE NOISE RATING OF CLASS A OR BETTER. ALL FLUORESCENT BALLASTS SHALL HAVE A STANDARD BALLAST FACTOR UNLESS SPECIFIED OTHERWISE.
   D. ALL FLUORESCENT LAMPS SHALL BE 3500 K COLOR TEMPERATURE WITH A MINIMUM COLOR RENDERING INDEX (CRI) OF 82 OR AS INDICATED ON LIGHT FIXTURE SCHEDULE.
14. SLEEVES:
   A. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK.
   B. INTERIOR PARTITIONS: 18 GAGE GALVANIZED STEEL, PACK BETWEEN CONDUIT AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
   C. ROOF: FROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WEATHERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
15. GROUNDING:
   A. GROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) 250, AND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE CONDUIT IS USED. PROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.
   B. BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).

ELECTRICAL GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
2. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM REGARDLESS OF CIRCUITING INDICATED.
3. ALL EXPOSED RACEWAYS SHALL BE IN EMT CONDUIT, MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
4. ELECTRICAL CONTRACTOR TO COORDINATE MANUFACTURER ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT BEING FURNISHED WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
5. ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
6. EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL PER NEC 200.4.
7. KITCHEN EQUIPMENT - VERIFY ALL ELECTRICAL REQUIREMENTS AND ROUGH-IN LOCATION PRIOR TO WORK.
8. ALL BRANCH CIRCUITS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 3% VOLTAGE DROP. ALL FEEDERS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 2% VOLTAGE DROP. E/C SHALL VERIFY WIRE SIZE INDICATED IS SUFFICIENT AND INCREASE CONDUCTOR SIZE AS REQUIRED BASED OFF ACTUAL INSTALLED LENGTH OF CONDUCTORS.
9. PROVIDE SEAL-OFF FITTINGS AT ALL COOLER/FREEZER PENETRATIONS.

ELECTRICAL SYMBOLS LIST

CIRCUITING & NOTES	
+48"	SPECIAL MOUNTING HEIGHT FOR ASSOCIATED DEVICE (CENTERLINE OF DEVICE)
GFI	GROUND FAULT CIRCUIT INTERRUPTER DEVICE
WP	WEATHERPROOF ENCLOSURE ON DEVICE
WR	WEATHERPROOF RESISTANT DEVICE
IG	ISOLATED GROUND DEVICE
EM	EMERGENCY BATTERY BACKUP
X	ELECTRICAL FLOOR PLAN NOTE WITH DESIGNATION
2 LP	CONDUIT CONCEALED WHERE POSSIBLE OR AS NOTED, ARROWS INDICATE HOME RUN TO PANEL. CIRCUIT NUMBERS INDICATED
	#12 WIRE IN CONDUIT, UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION
	GROUNDING CONDUCTOR, #12 WIRE UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION
	CONDUIT ROUTED UNDER FLOOR/GRADE
LIGHTING	
	EMERGENCY TWIN HEAD LIGHT FIXTURE
	EXIT LIGHT WITH DIRECTIONAL ARROWS INDICATED
A	FLUORESCENT STRIP FIXTURE WITH TYPE DESIGNATION
A	FLUORESCENT FIXTURE WITH TYPE DESIGNATION
A NL	NIGHT LIGHT, CONNECT TO UNSWITCHED CIRCUIT
A	CEILING OR RECESSED FIXTURE WITH TYPE DESIGNATION
A	WALL MOUNTED FIXTURE WITH TYPE DESIGNATION
POWER DEVICES	
	DUPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE
	FOURPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE
	TVSS SURGE SUPPRESSION RECEPTACLE
	DEVICE MOUNTED ABOVE COUNTER AND/OR SPLASH GUARD
	HEAVY DUTY OUTLET - NEMA CONFIGURATION SIZE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION
	PANEL BOARD, TOP OF BOX 6'-0" AFF
J	JUNCTION BOX
	NON-FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	MAGNETIC STARTER
M	MOTOR WITH DESIGNATION
	FLOOR BOX
CONTROLS	
S	SINGLE POLE WALL SWITCH, TOP OF BOX AT 48" AFF
S_P	SINGLE POLE WALL SWITCH WITH PILOT LIGHT, TOP OF BOX AT 48" AFF
S_O	INFRARED OCCUPANCY SENSOR, WATT STOPPER #PW-100, TOP OF BOX AT 48" AFF
S_m	MANUAL MOTOR STARTER WITH OVERLOADS
OS	DUAL TECHNOLOGY CEILING MOUNT OCCUPANCY SENSORS, WATTSTOPPER DT-300
PP	OCCUPANCY SENSOR POWER PACK, WATTSTOPPER BZ-150 OR EQUAL, PROVIDE LOW VOLTAGE WIRING TO OCCUPANCY SENSORS AND MOMENTARY SWITCHES
SMO	MOMENTARY SWITCH, TOP OF BOX AT 48" AFF
COMMUNICATIONS	
	DATA/TELEPHONE OUTLET WITH ¾" CONDUIT STUBBED UP TO ABOVE ACCESSIBLE CEILING, BOTTOM OF BOX AT 16", UNLESS NOTED OTHERWISE. PROVIDE WITH PULL STRING

LIGHT FIXTURE SCHEDULE

MARK NO.	MANUFACTURER & CATALOG NUMBER	VOLTS WATTS	LAMPS	DESCRIPTION	EQUIVALENT MANUFACTURERS
A	COLUMBIA LJT24-35-HLG-FS-A12125-EU	120 49	LED-INCL 5000 LUM 3500K	2'X4' LED TROFFER WITH ACRYLIC PRISMATIC LENS AND FIXED-OUTPUT DRIVER. 5000 LUMENS AT 3500K	WILLIAMS LITHONIA OR EQUAL
A EM	COLUMBIA LJT24-35-HLG-FS-A12125-EU ELL14	120 49	LED-INCL 5000 LUM 3500K	SAME AS ABOVE WITH EMERGENCY BATTERY PACK - 1400 LUMEN EM LIGHT	WILLIAMS LITHONIA OR EQUAL
B	COLUMBIA LXEM4-35-HL-RFA-EU	120 52	LED-INCL 5000 LUM 3500K	4' LED VAPOR-TIGHT FIXTURE WITH FROSTED ACRYLIC LENS AND FIXED-OUTPUT DRIVER. 5000 LUMENS AT 3500K	WILLIAMS LITHONIA OR EQUAL
BE	COLUMBIA LXEM4-35-HL-RFA-EU ELL14	120 52	LED-INCL 5000 LUM 3500K	SAME AS FIXTURE 'B' WITH EMERGENCY BACKUP	WILLIAMS LITHONIA OR EQUAL
F	METEOR LA6-60-40S-UNV-SPVS-60-60-BLK-STD	120 60	LED-INCL 6000 LUM 4000K	WALL MOUNTED UP/DOWN LIGHT, BLACK FINISH. WALL MOUNT AT 12'-0" AFF.	WILLIAMS LITHONIA OR EQUAL
F2	LSI XLGN S LED 9S GN EU BLK	120 41	LED-INCL	WALL MOUNTED LED AREA LIGHT, SYMMETRICAL OPTICS, BLACK FINISH. WALL MOUNT AT 12'-0" AFF	WILLIAMS LITHONIA OR EQUAL
G	LSI SCV LED 15L 5C UNV DIM 50 WHT	120 102	LED-INCL 15,000 LUM 5000K	LED PETROLEUM CANOPY LIGHT WITH SYMMETRICAL DISTRIBUTION. 15,000 LUMENS AT 5000K COLOR TEMPERATURE. VERIFY CANOPY CONSTRUCTION AND ORDER CORRECT FIXTURE MOUNTING AND TYPE BASED ON CANOPY BEING PROVIDED	--
S2	HUBBELL (2) RAR2-320L-110-4KT-2-UNV-ASQ-BLT-BC POLE: SSSH-25-50-B-2-BLT-B3	208 220	LED-INCL 30,000 LUM 4000K	POLE MOUNTED AREA LIGHT, TYPE 2 DISTRIBUTION MOUNTED ON 25' POLE WITH VIBRATION DAMPER AND 2' HIGH CONCRETE BASE	WILLIAMS LITHONIA OR EQUAL
S3	HUBBELL RAR2-320L-110-4KT-3-UNV-ASQ-BLT-BC POLE: SSSH-25-50-B-1-BLT-B3	208 110	LED-INCL 15,000 LUM 4000K	POLE MOUNTED AREA LIGHT, TYPE 3 DISTRIBUTION MOUNTED ON 25' POLE WITH VIBRATION DAMPER AND 2' HIGH CONCRETE BASE	WILLIAMS LITHONIA OR EQUAL
S4	HUBBELL RAR2-320L-110-4KT-4M-UNV-ASQ-BLT POLE: SSSH-25-50-B-1-BLT-B3	208 110	LED-INCL 15,000 LUM 4000K	POLE MOUNTED AREA LIGHT, TYPE 4M DISTRIBUTION MOUNTED ON 25' POLE WITH VIBRATION DAMPER AND 2' HIGH CONCRETE BASE	WILLIAMS LITHONIA OR EQUAL
E	DUAL-LITES EV2	120 1	INCL	EMERGENCY LIGHT WITH TWIN ADJUSTABLE 1 WATT LED HEADS AND SEALED LEAD CALCIUM BATTERY, MOUNT AT 7'-6"±, TO CLEAR OBSTACLES. (PROVIDES 1 FC AVG. ON 2'T CENTER FIXTURE SPACING)	SURE-LITES LITHONIA OR EQUAL
	DUAL-LITES EVG-U-R-W-D4 WITH EVO-D-X	120 5	INCL	COMBINATION EMERGENCY/EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, TWIN 6W EMERGENCY LIGHT HEADS, UNIVERSAL MOUNT, HIGH CAPACITY BATTERY BACKUP AND REMOTE TWIN HEAD OUTDOOR RATED FIXTURE	SURE-LITES LITHONIA OR EQUAL

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

PE COA #2009003629

10/14/2024

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

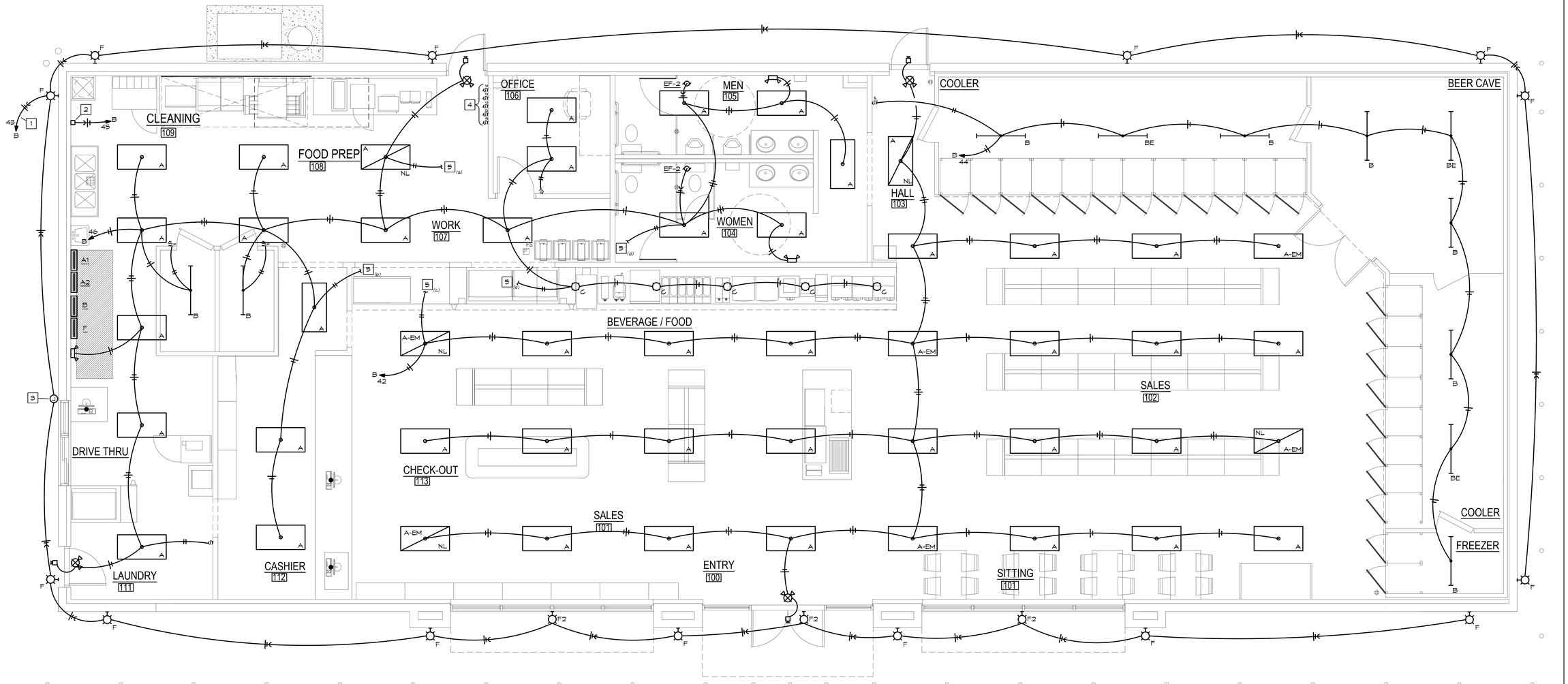
REVIEW SET
ISSUE DATE: 4-28-2023

REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

SHEET TITLE
ELECTRICAL SPECIFICATION

E000

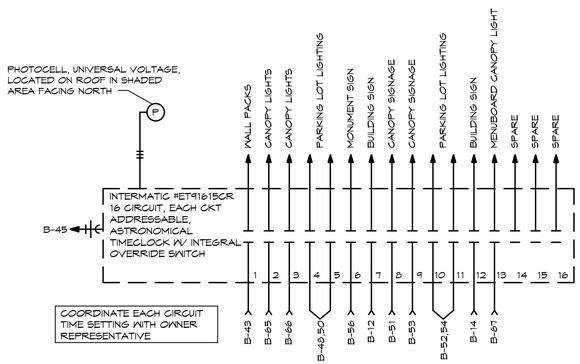
SHEET FILE LOCATION: N:\2022\22823\ELEC\22823E.DWG LAST SAVED: 10/11/2024 3:04 PM BY: PAUL



ELECTRICAL LIGHTING PLAN

NORTH

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



EXTERIOR LIGHTS/SIGNAGE CONTROL DIAGRAM

SCALE: NONE

LIGHTING PLAN NOTES:

1. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING CONTROL. SEE DETAIL, THIS SHEET.
2. LOCATION OF EXTERIOR LIGHTING CONTROLS. SEE DETAIL, SHEET THIS SHEET.
3. CONNECT TO LIGHTS PROVIDED WITH CANOPY, IF PROVIDED WITH OPTION. VERIFY ALL REQUIREMENTS WITH CANOPY SUPPLIER.
4. SWITCH BANK FOR INTERIOR LIGHTING CONTROLS.
5. ROUTE SWITCH LEG TO INDICATED SWITCH IN BANK. SEE PLAN NOTE #4.

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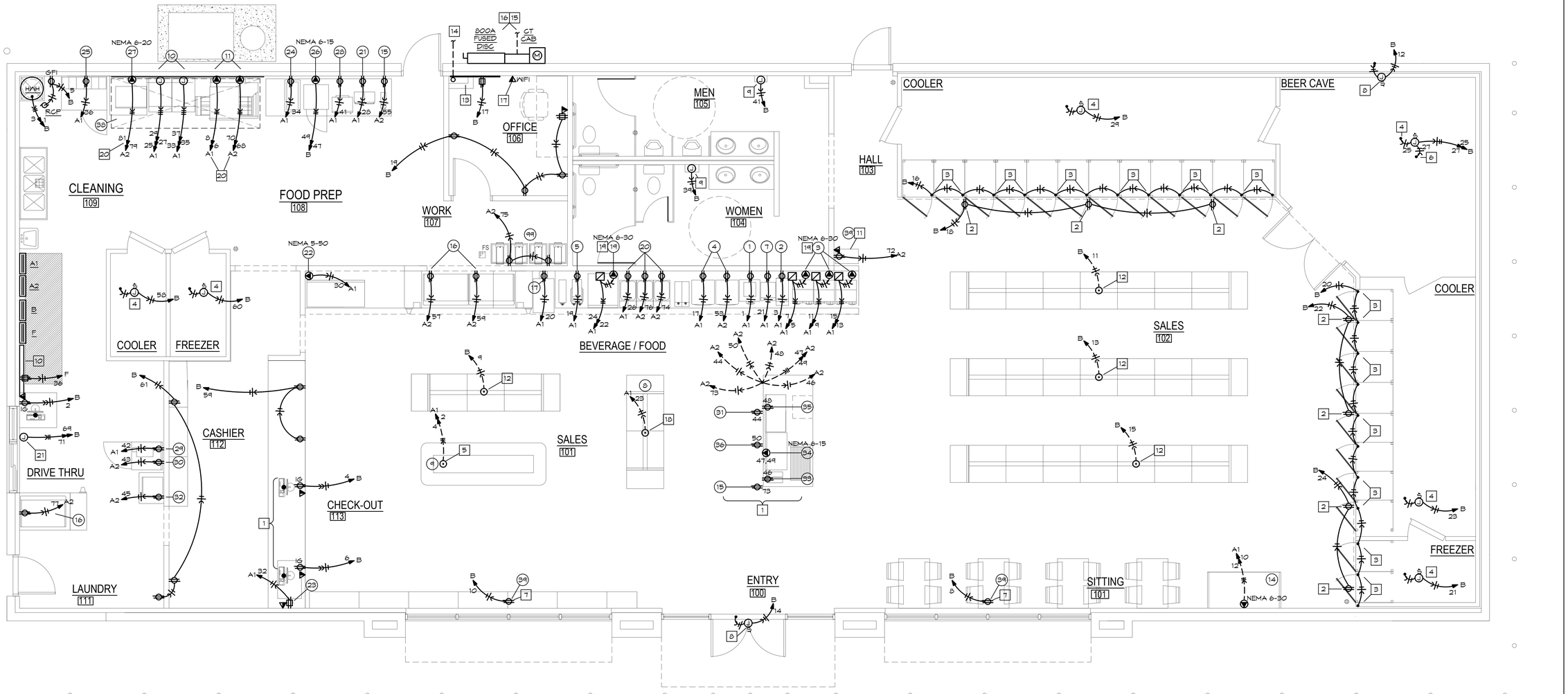
SHEET TITLE
ELECTRICAL LIGHTING PLAN

E101

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823ELEC.DWG LAST SAVED: 10/11/2024 3:09 PM BY: PAUL



POWER PLAN NOTES:

1. DEVICES MOUNTED IN CASEWORK - VERIFY EXACT LOCATIONS. ROUTE ALL WIRING CONCEALED.
2. RECEPTACLES MOUNTED IN COOLER SOFFIT WALL FOR DECORATIVE SIGNAGE.
3. CONNECT TO WALK-IN COOLER/FREEZER DOOR LIGHTS/HEATERS PER MANUFACTURER'S INSTRCUTIONS.
4. CONNECT TO WALK-IN COOLER/FREEZER EVAPORATOR PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATIONS AND ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER. PROVIDE CONTROL WIRING TO CONDENSING UNIT(S) PER MANUFACTURER'S INSTRUCTIONS.
5. POWER FOR OPEN AIR COOLER FLOOR BOX. VERIFY REQUIREMENTS WITH OWNER.
6. CONNECT TO EVAPORATOR CONDENSATE HEAT TRACE. VERIFY ALL REQUIREMENTS WITH EQUIPMENT SUPPLIER.
7. DUPLEX RECEPTACLE MOUNTED FLUSH IN CEILING ABOVE STOREFRONT WINDOW FOR DISPLAY SIGNAGE PER NEC.
8. JUNCTION BOX WITH TOGGLE DISCONNECT FOR POWER TO BUILDING SIGNAGE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH SIGNAGE VENDOR. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING CONTROLS. SEE EXTERIOR LIGHTING DETAIL ON SHEET E-101.
9. JUNCTION BOX FOR POWER TO ELECTRICAL HAND DRYER. VERIFY EXACT LOCATION AND REQUIREMENTS.
10. LOCATION OF FUEL SYSTEM RACEWAY, CONTROLS, TANK MONITORS, ETC. FIELD VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
11. RECEPTACLE FOR ATM MACHINE. VERIFY LOCATION AND OTHER REQUIREMENTS WITH OWNER. MOUNT POWER AND DATA RECEPTACLE AT +36" AFF.
12. POWER FOR MERCHANDIZE GONDOLA FLOOR BOX. VERIFY REQUIREMENTS WITH OWNER.
13. 4'X4'X3/4" PLYWOOD TELEPHONE BACKBOARD WITH SIEMENS #ECBG-5 GROUND BAR AND #6CU BOND TO BUILDING ELECTRODE SYSTEM.
14. PROVIDE (1) 4"C TO PROPERTY LINE FOR BUILDING TELEPHONE SERVICE. TERMINATE AT LOCATION DIRECTED BY LOCAL SERVICE PROVIDER. VERIFY ROUTING & DISTANCE. REFER TO CIVIL UTILITY DRAWINGS.
15. SECONDARY FEEDER TO TRANSFORMER. SEE RISER DIAGRAM SHEET E2, AND ELECTRICAL SITE PLAN SHEET E3.01.

ELECTRICAL POWER PLAN

NORTH

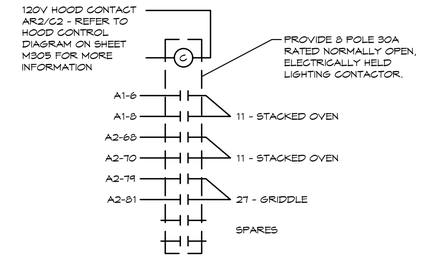
SCALE: 1/4" = 1'-0"

POWER PLAN NOTES:

16. CT CABINET, DISCONNECT S/N, AND METER MOUNTED ON BUILDING SEE ELECTRICAL SITE PLAN SHEET E3.01.
17. DATA DROP FOR WIRELESS ACCESS POINT - COORDINATE LOCATION WITH OWNER
18. POWER FOR DONUT CASE FLOOR BOX. VERIFY REQUIREMENTS WITH OWNER.
19. PROVIDE 7.5 KVA 208V:240V, 1 PH TRANSFORMER FOR COFFEE BREWER OR DRINK DISPENSER INDICATED. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
20. ROUTE CIRCUIT THROUGH HOOD SHUT-DOWN RELAY - SEE HOOD SHUT-DOWN RELAY DIAGRAM ON THIS SHEET.
21. PROVIDE JUNCTION BOX FOR HEATED AIR CURTAIN. CONNECT PER MANUFACTURER'S REQUIREMENTS. VERIFY EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.

EQUIPMENT SCHEDULE

NUMBER	DESCRIPTION	NUMBER	DESCRIPTION
1	COFFEE DISPENSER - SURE IMMERSION 312	22	HOT FOOD CASE (CHICKEN)
2	REFR LIQUID DISPENSER - KAN PAK	23	LOTTERY EQUIPMENT
3	COFFEE BREWER - BUNN SH DBC (240V, 1 PH)	24	COUNTER TOP WARMER
4	CAPPUCCINO DISPENSER - CURTIS	25	PIZZA PREP TABLE
5	ICED TEA BREWING SYSTEM - CURTIS	26	CONVECTION OVEN
7	COFFEE CREAMER AND SUGAR DISPENSER - BSG	27	COUNTER TOP GRIDDLE
8	DONUT CASE	28	MICROWAVE OVEN
9	FEDERAL SELF-SERVE ISLAND	29	WORKTOP FREEZER
10	FRYERS	30	COUNTERTOP BLENER
11	STACKED OVEN	31	MERCHANDIZER
14	SELF SERVE MERCHANDIZER	32	MERCHANDIZER
15	NACHO DISPENSER	33	HOT DOG ROLLER
16	ICE AND BEVERAGE DISPENSER	34	BUN WARMER
17	FRESH BLENDER	35	MICROWAVE
19	FROZEN BEVERAGE DISPENSER (240V, 1PH)	38	HOOD
20	FROZEN DRINK MACHINE	39	ATM
21	WAFFLE MAKER	99	BAG-N BOX



HOOD SHUT-DOWN DETAIL

SCALE: NONE

BC ENGINEERS INCORPORATED
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PE COA #2009003629

10/14/2024

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

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

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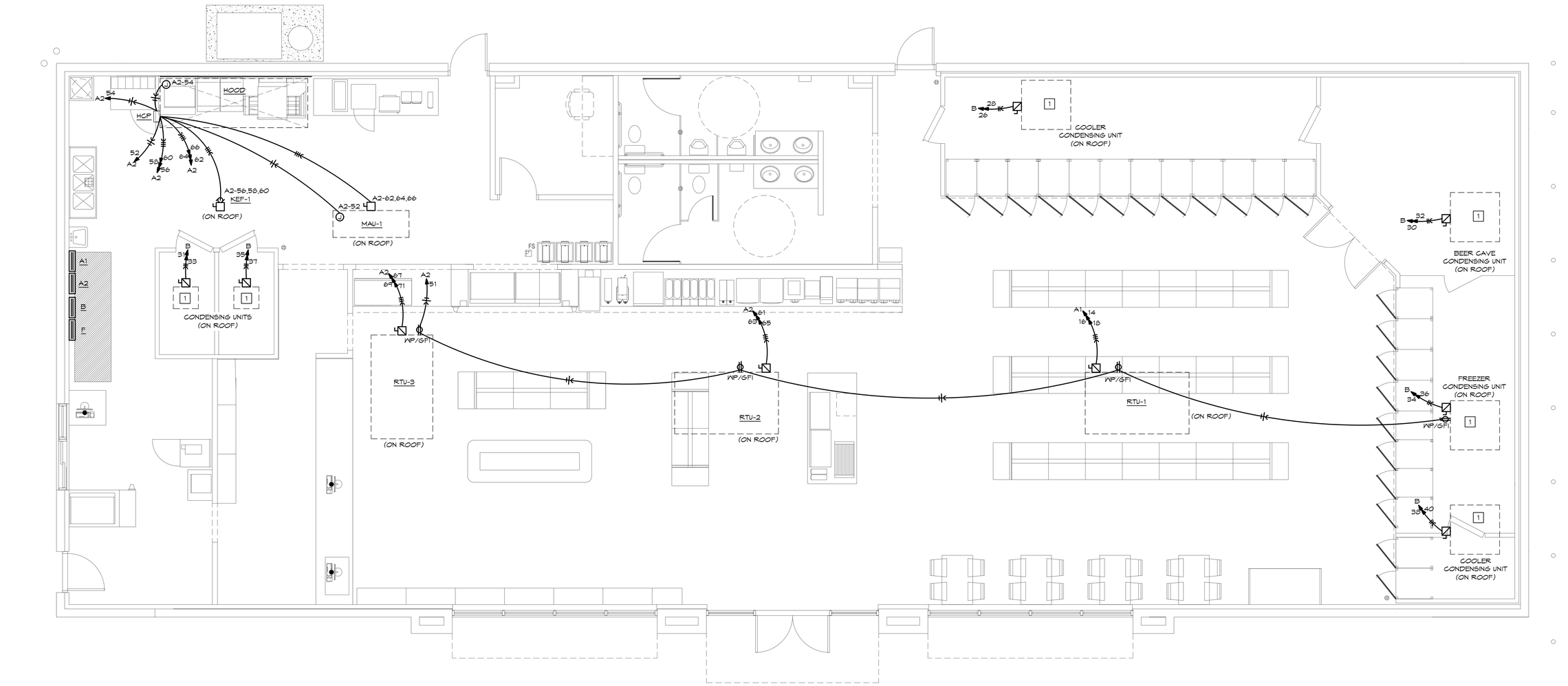
SHEET TITLE
ELECTRICAL POWER PLAN

E102

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823ELEDWG LAST SAVED: 10/11/2024 3:04 PM BY: PAUL



POWER PLAN NOTES:

1. CONNECT TO WALK-IN COOLER FREEZER CONDENSING UNIT(S) ON ROOF PER MANUFACTURER'S INSTRUCTIONS. VERIFY ALL REQUIREMENTS WITH EQUIPMENT SUPPLIER.

NORTH

MECHANICAL POWER PLAN

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

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

PE COA #2009003629

10/14/2024

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

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

REVIEW SET
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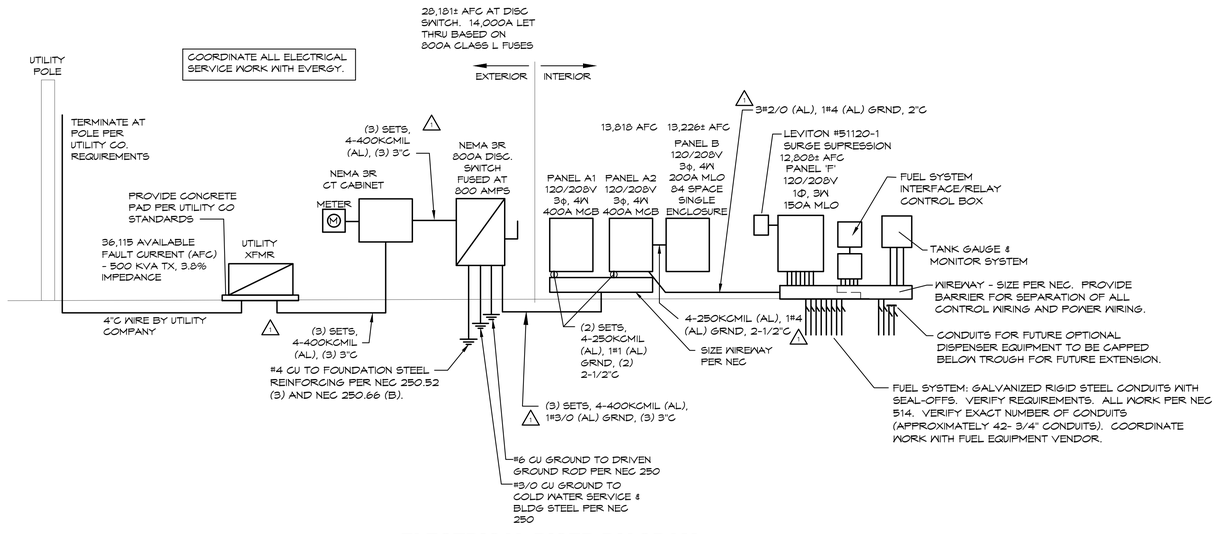
SHEET TITLE
MECHANICAL POWER PLAN

E103

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823ELEDWG LAST SAVED: 10/11/2024 3:04 PM BY: PAUL



ELECTRICAL RISER DIAGRAM

SCALE: NONE

ELECTRICAL RISER DIAGRAM

SCALE: NONE

BC ENGINEERS INCORPORATED
5720 Reeder
Shawnee, Ks. 66203
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PE COA #2009003629

10/14/2024

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

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

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SHEET TITLE
ELECTRICAL RISER DIAGRAM & FAULT CALCS

E201

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823E.DWG LAST SAVED: 10/11/2024 3:04 PM BY: PAUL

PANEL: A1		VOLTS: 120/208V			PH: 3Φ		WIRE: 4W	LOCATION:		WORK ROOM 104	MOUNTING: SURFACE				
BUS: 400A		MAIN: 400A MCB			IC: 22,000 RMS SYM AMPS						FEEDER: SEE RISER DIAGRAM				
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦC	ΦA	ΦB	ΦC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO
1	01 COFFEE SYSTEM [GF]	20	1	12	1,800			2,912			8	2	40	09 REFR ISLAND	2
3	02 REFRIG CREAMER [GF]	20	1	12		360			2,912						4
5	03 COFFEE BREWER	30	2	10			3,492			3,000	10	2	30	11 STACKED OVEN	6
7					3,492			3,000							8
9	03 COFFEE BREWER	30	2	10		3,492			2,080		10	2	30	14 REFR MERCHANIZER	10
11							3,492			2,080					12
13	03 COFFEE BREWER	30	2	10	3,492			5,020							14
15						3,492			5,020		6	3	50	RTU-1	16
17	04 CAPPUCCINO DISP [GF]	20	1	12			1,800			5,020					18
19	05 ICE TEA BREWER [GF]	20	1	12	1,656			1,920			12	1	20	17 FRESH BLENDER [GF]	20
21	07 CREAMER [GF]	20	1	12		50			3,492		10	2	30	19 FROZEN BEV DISPENSER	22
23	08 DONUT CASE	20	1	12			1,200			3,492					24
25					7,085			1,440			12	1	20	20 FROZEN DRINK MACH [GF]	26
27	10 FRYER	70	3	4		7,085			1,800		12	1	20	21 WAFFLE MAKER [GF]	28
29	[ST]						7,085			3,360	8	1	40	22 HOT CHICKEN CASE [GF]	30
31	(SHUNT TRIP SPACE)							180			12	1	20	23 LOTTERY EQUIPMENT	32
33						7,085			1,200		12	1	20	24 CTR TOP WARMER [GF]	34
35	10 FRYER	70	3	4			7,085			520	12	1	20	25 PIZZA PREP TABLE [GF]	36
37	[ST]				7,085			10,050			1/0	2	150	PANEL F	38
39	(SHUNT TRIP SPACE)								10,100						40
41	28 MICROWAVE [GF]	20	1	12			1,680			252	12	1	20	29 FREEZER [GF]	42
NOTES:					24,610	21,564	25,834	24,522	26,604	17,732					
(HL)-HANDLE LOCK, (ST)-SHUNT TRIP BRKR					49,132		48,188		49,366					TOTAL CONNECTED LOAD:	140,866 VA
(GF)-GFCI BRKR														NEC DEMAND LOAD:	103,448 VA
														DEMAND AMPS @ 208 VOLT / 3Φ:	288.53 A

PANEL: A2		VOLTS: 120/208V			PH: 3Φ		WIRE: 4W	LOCATION:		WORK ROOM 104	MOUNTING: SURFACE				
BUS: 400A		MAIN: 400A MCB			IC: 22,000 RMS SYM AMPS						FEEDER: SEE RISER DIAGRAM				
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦC	ΦA	ΦB	ΦC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO
43	30 BLENDER [GF]	20	1	12	1,800			1,800			12	1	20	31 SHELF MERCH [GF]	44
45	32 SELF MECH [GF]	20	1	12		864			1,320		12	1	20	33 HOT DOG ROLLER [GF]	46
47	34 BUN WARMER	15	2	12			100			1,546	12	1	20	35 MICROWAVE [GF]	48
49	[GF]				100			1,440			12	1	20	36 PIZZA WARMER [GF]	50
51	ROOFTOP REGS	20	1	12		720			800		12	1	20	MAU VFD	52
53	04 CAPPUCCINO DISP [GF]	20	1	12			1,800			250	12	1	20	HCP/HOOD LIGHTS	54
55	15 NACHO DISPENSER [GF]	20	1	12	300			1,141							56
57	16 BEV DISPENSER [GF]	20	1	12		800			1,141		12	3	15	KEF-1	58
59	16 BEV DISPENSER [GF]	20	1	12			800			1,141					60
61					5,020			733							62
63	RTU-2	50	3	6		5,020			733		12	3	15	MAU-1	64
65							5,020			733					66
67					5,850			3,000			10	2	30	11 STACKED OVEN	68
69	RTU-3	60	3	6		5,850			3,000						70
71							5,850			180	8	1	40	ATM MACHINE	72
73	NACHO DISPENSER [GF]	20	1	12	300			1,440			12	1	20	20 FROZEN DRINK MACH [GF]	74
75	BAG-N BOX [GF]	20	1	12		360			1,440		12	1	20	20 FROZEN DRINK MACH [GF]	76
77	16 BEV DISPENSER [GF]	20	1	12			800					1	20	SPARE	78
79	27 COUNTER TOP GRIDDLE	20	2	12	1,650			23,140							80
81						1,650			26,030		3/0	3	200	PANEL B	82
83	AIR MACHINE	20	1	12			800			27,130					84
NOTES:					15,020	15,264	15,170	32,694	34,464	31,030					
					47,714		48,128		48,200					TOTAL CONNECTED LOAD:	143,642 VA
(GF)-GFCI BRKR														NEC DEMAND LOAD:	129,484 VA
														DEMAND AMPS @ 208 VOLT / 3Φ:	359.41 A

PANEL: B		VOLTS: 120/208V			PH: 3Φ		WIRE: 4W	LOCATION:		WORK ROOM 104	MOUNTING: SURFACE				
BUS: 225A		MAIN: 200A MLO			IC: 22,000 RMS SYM AMPS						FEEDER: SEE RISER DIAGRAM				
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦC	ΦA	ΦB	ΦC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO
1	HOT WATER HEATER	30	2	10	2,500			180			12	1	20	POS	2
3						2,500			180		12	1	20	POS	4
5	REGIRG PUMP	20	1	12			600			180	12	1	20	POS	6
7	SPARE	20	1					1,000			12	1	20	SHOW WINDOW	8
9	FLOOR BOXES	20	1	12		540			1,000		12	1	20	SHOW WINDOW	10
11	FLOOR BOXES	20	1	12			540			1,000	12	1	20	BLDG SIGNAGE	12
13	FLOOR BOXES	20	1	12	540			1,000			12	1	20	BLDG SIGNAGE	14
15	FLOOR BOXES	20	1	12		540			500		12	1	20	COOLER DISPLAY CASE LTG	16
17	OFFICE REGS	20	1	12			360			540	12	1	20	DISPLAY CASE SIGNS	18
19	OFFICE REGS	20	1	12	900			500			12	1	20	COOLER DISPLAY CASE LTG	20
21	FREEZER EVAP	20	1	12		1,100			360		12	1	20	DISPLAY CASE SIGNS	22
23	COOLER EVAP	20	1	12			1,100			360	12	1	20	DISPLAY CASE SIGNS	24
25	BEER CAVE EVAP	20	1	12	1,100			2,150			10	2	30	COOLER COND UNIT	26
27	COND HEAT TRACE [GF]	20	1	12		1,100			2,150						28
29	COOLER EVAP	20	1	12			1,100			3,900	6	2	50	BEER CAVE COND UNIT	30
31	WALK-IN CONDENSING UNIT	15	2	12	800			3,900							32
33						800			3,900		6	2	50	FREEZER COND UNIT	34
35	WALK-IN CONDENSING UNIT	15	2	12			800			3,900					36
37					800			2,100			6	2	50	COOLER COND UNIT	38
39	HAND DRYER [HL]	20	1	12		1,000			2,100						40
41	HAND DRYER [HL]	20	1	12			1,000			1,050	8	1	20	SALES AREA LIGHTING	42
43	WALL PACK LTG	20	1	12	1,000			500			10	1	20	COOLER / FREEZER LTG	44
45	EXTERIOR LTG CONTROLS	20	1	12		250			1,340		10	1	20	BOH LITG	46
47	26 CTR TOP CONV OVEN	15	2	12			1,170			660	10	2	20	SITE LIGHTING	48
49					1,170			660							50
51	DISP CANOPY SIGN	20	1	8		1,200			770		10	2	20	SITE LIGHTING	52
53	DISP CANOPY SIGN	20	1	8			1,200			770					54
55	SPARE	20	1	10				1,200			10	1	20	BUILDING PYLON SIGN	56
57	SPARE	20	1	10					800		12	1	20	COOLER EVAP	58
59	CASHIER REGS	20	1	12			360			800	12	1	20	FREEZER EVAP	60
61	DISPLAY REGS	20	1	12	540							1	20	SPARE	62
63	MENUBOARD	20	1	12		1,000						1	20	SPARE	64
65	CANOPY LIGHTING	20	1	8			1,020			1,020	8	1	20	CANOPY LIGHTING	66
67	MENU CANOPY LIGHT	20	1	12	800									BUSSED SPACE	68
69	AIR CURTAIN	40	2	8		2,400								BUSSED SPACE	70
71							2,400							BUSSED SPACE	72
73	SPARE	20	1											BUSSED SPACE	74
75	SPARE	20	1											BUSSED SPACE	76
77	SPARE	20	1											BUSSED SPACE	78
79	SPARE	20	1											BUSSED SPACE	80
81	SPARE	20	1											BUSSED SPACE	82
83	SPARE	20	1											BUSSED SPACE	84
NOTES:					9,850	12,930	12,150	13,190	13,100	14,980					
(GF)-GFCI BRKR, , (HL)-HANDLE LOCK					23,140		26,030		27,130					TOTAL CONNECTED LOAD:	76,300 VA
(GP)-GFPE BRKR														NEC DEMAND LOAD:	71,368 VA
														DEMAND AMPS @ 208 VOLT / 3Φ:	198.10 A

PANEL: F		VOLTS: 120/208V			PH: 1Φ		3W	LOCATION:		WRK RM 104	MOUNTING: SURFACE				
BUS: 225A		MAIN: 150A MLO			IC: 22,000 RMS SYM AMPS						FEEDER: SEE RISER DIAGRAM				
CKT	DESCRIPTION	AMPS	POLE	WIRE	ΦA	ΦB	ΦA	ΦB	WIRE	POLE	AMPS	DESCRIPTION	CKT NO		
1	DISPENSER #1	20	1	12	1,000		1,500		12	2	20	FUEL PUMP #1	2		
3	(SWITCHED NEUTRAL BRKR)							1,500					4		
5	DISPENSER #2	20	1	12	1,000		1,500		12	2	20	FUEL PUMP #2	6		
7	(SWITCHED NEUTRAL BRKR)							1,500					8		
9	DISPENSER #3	20	1	12	1,000		1,500		12	2	20	FUEL PUMP #3	10		
11	(SWITCHED NEUTRAL BRKR)							1,500					12		
13	DISPENSER #4	20	1	12	1,000		1,500		12	2	20	FUEL PUMP #4	14		
15	(SWITCHED NEUTRAL BRKR)							1,500					16		
17	SPARE	20	1						12	1	20	SPARE	18		
19	SPARE	20	1					1,000	12	1	20	DISPENSER #5	20		
21	SPARE	20	1						12	1	20	(SWITCHED NEUTRAL BRKR)	22		
23	SPARE	20	1					1,000	12	1	20	DISPENSER #6	24		
25	SPARE	20	1						12	1	20	(SWITCHED NEUTRAL BRKR)	26		
27	SPARE	20	1					1,000	12	1	20	DISPENSER #7	28		
29	SPARE	20	1						12	1	20	(SWITCHED NEUTRAL BRKR)	30		
31	SPARE	20	1					1,000	12	1	20	DISPENSER #8	32		
33	TV56	30	2	10	50				12	1	20	(SWITCHED NEUTRAL BRKR	34		
35						50		50	12	1	20	TANK MONITOR SYSTEM	36		
NOTES:					4,050	50	6,000	10,050							
					10,050							TOTAL CONNECTED LOAD:	20,150 VA		
												NEC DEMAND LOAD:	20,150 VA		
												DEMAND AMPS @ 208 VOLT / 1Φ:	96.88 A		

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

PE COA #2009003629

10/14/2024

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

PROJECT FOR:
HEARTLAND MARKET
LEE'S SUMMIT, MISSOURI

BC PROJECT #: 22823

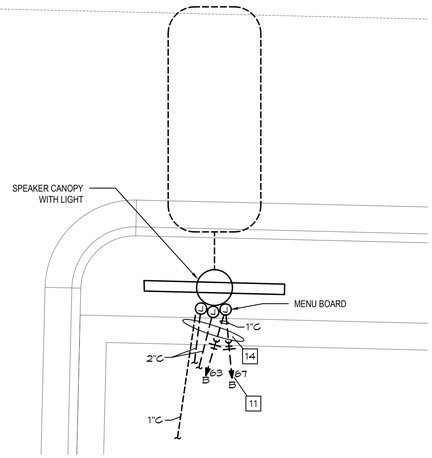
REVIEW SET
ISSUE DATE: 4-28-2023

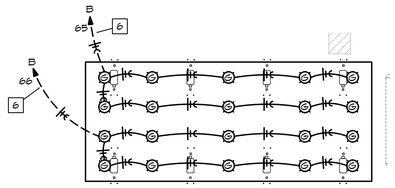
REVISION:
1 RISER REV 3-15-2024
2 CITY COM. 10-14-2024

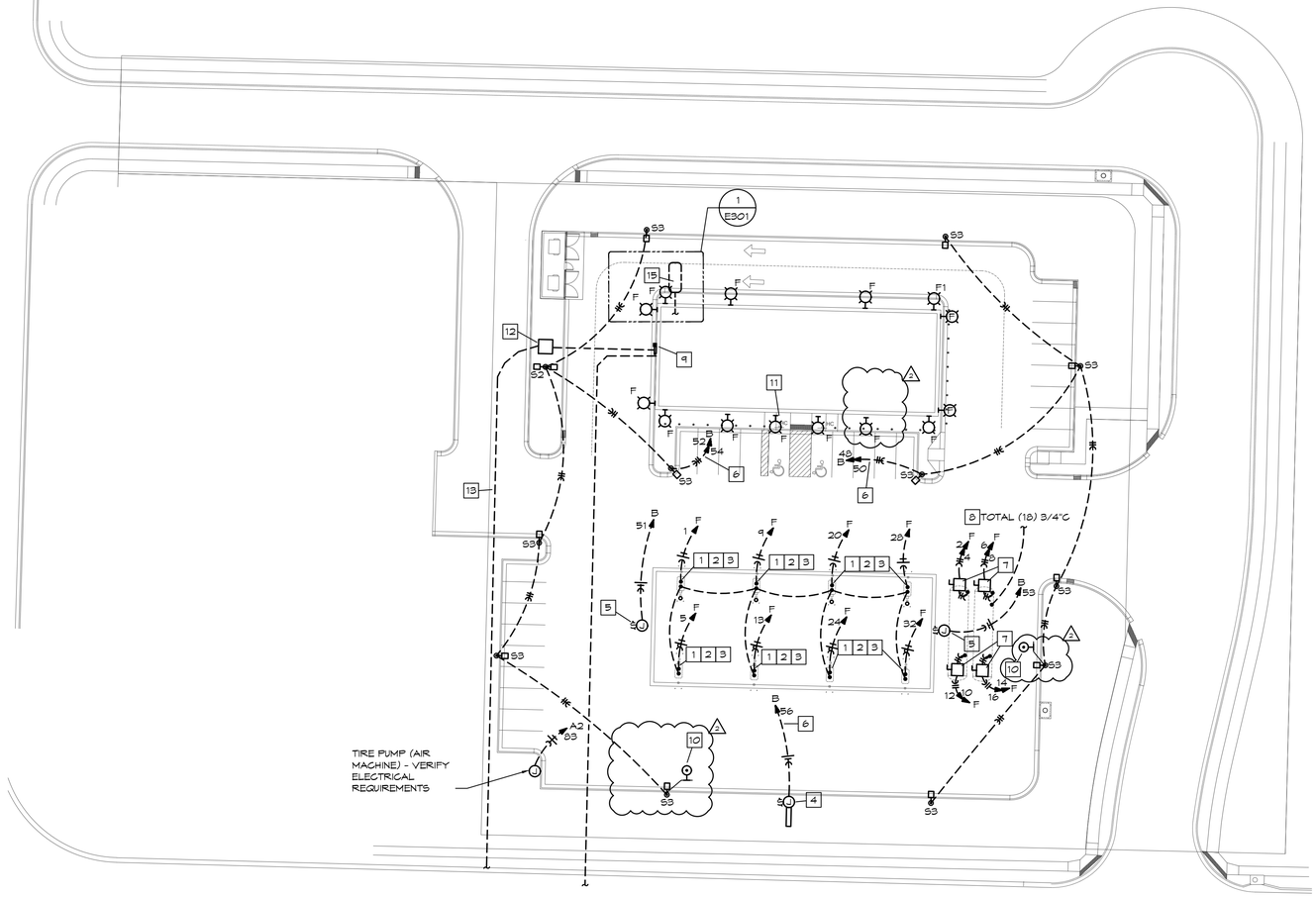
SHEET TITLE
ELECTRICAL SCHEDULES

E202

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823E.DWG LAST SAVED: 10/11/2024 3:04 PM BY: PAUL







1
E301
D/T MENUBOARD
SCALE: 1/4" = 1'-0"

NORTH
CANOPY LIGHTING PLAN
SCALE: 1" = 30'

ELECTRICAL PLAN NOTES:

1. 3/4"C FOR POWER CONNECTION TO DISPENSER (8 TOTAL.) VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
2. 3/4"C FOR INTERCOM CONNECTION DISPENSER (8 TOTAL.) VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
3. 3/4"C FOR VEEDER ROOT CONDUCTORS FOR SUMP SENSOR (8 TOTAL.) VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
4. CONNECT TO MONUMENT SIGN PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENTS. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING CONTACTOR. SEE EXTERIOR LIGHTING DIAGRAM SHEET E-101
5. CONNECT TO CANOPY SIGN PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENTS. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING CONTACTOR. SEE EXTERIOR LIGHTING DIAGRAM SHEET E-101
6. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING CONTACTOR IN 1"C FOR EACH CIRCUIT. SEE EXTERIOR LIGHTING DIAGRAM SHEET E-101
7. 3/4"C FOR POWER TO EACH STP MOTOR (4 TOTAL). VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
8. (18) TOTAL 3/4"C FOR VEEDER ROOT CONDUCTORS. VERIFY ALL REQUIREMENTS WITH FUEL SYSTEM SUPPLIER.
9. BUILDING MOUNTED ELECTRICAL SERVICE EQUIPMENT. SEE RISER DIAGRAM, SHEET E-201.
10. PROVIDE RED PUSHBUTTON TYPE SWITCH TO PROVIDE MASTER EMERGENCY SHUTOFF OF FUEL DISPENSING STATIONS. PROVIDE SIGN ADJACENT TO SWITCH INDICATING PURPOSE. EMERGENCY SWITCH AND ALL COMPONENTS SHALL BE IN ACCORDANCE WITH NEC 514. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN, (EMERGENCY STOP MUST BE GREATER THAN 20 FT AND LESS THAN 100 FT FROM DISPENSERS.) (1) 3/4"C FROM TANK AREA TO PUSHBUTTON LOCATION FOR CONDUCTORS, TWO REQUIRED. (2)
11. PROPOSED LOCATION OF KNOX BOX / KEY BOX. VERIFY LOCATION WITH FIRE MARSHAL.
12. COORDINATE PLACEMENT OF PRIMARY AND SECONDARY CONDUITS, PAD FOR UTILITY TRANSFORMER, AND MOUNTING OF METERS AND CT CABINETS WITH EVERGY.
13. TO EXISTING PRIMARY ELECTRICAL SERVICE. VERIFY WITH CIVIL PLANS EXACT LOCATION.
14. (1) 2" CONDUIT FOR SPEAKER/MIC, (1) 2"C FOR HDMI, (1) 1"C FOR POWER. VERIFY LOCATION OF DIGITAL MENUBOARD WITH OWNER.
15. DIRECT BURIAL LOOP FOR DRIVE-THRU. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER'S INSTRUCTIONS - LIKE THOSE FROM THE HOWARD COMPANY (WWW.HOWARDCOMPANY.COM.)

NORTH
ELECTRICAL SITE PLAN
SCALE: 1" = 30'

POLE FOUNDATION DETAIL
SCALE: NONE

SHEET FILE LOCATION: N:\2022\22823\ELEC\22823E.DWG LAST SAVED: 10/11/2024 3:09 PM BY: PAUL

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PE COA #2009003629

10/14/2024

DARIN T. SEIDEL
NUMBER
PE-2009030047

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ELECTRICAL SITE PLAN

E301