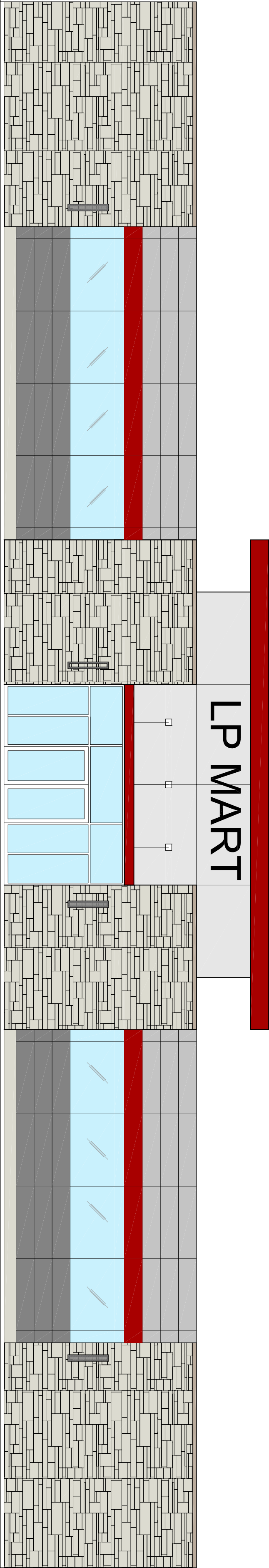


LION PETROLEUM CONVENIENCE STORE

HAMBLEEN PLAZA LEE'S SUMMIT, MISSOURI

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS & INSPECTIONS REQUIRED FOR CERTIFICATE OF OCCUPANCY.
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF FEDERAL, STATE, AND LOCAL CODES, LAWS, RULES, & REGULATIONS OF ALL LEGALLY CONSTITUTED PUBLIC AUTHORITIES HAVING JURISDICTION IN CASE OF CONFLICT BETWEEN REQUIREMENTS, THE MOST RESTRICTIVE SHALL APPLY.
- THE CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY SHORING AND BRACING AND BRACING IS REQUIRED UNTIL NEW STRUCTURAL MEMBERS ARE PERMANENTLY INSTALLED. WHETHER INDICATED ON THE DRAWINGS OR NOT, IF THE CONTRACTOR IS UNSURE WHETHER OR NOT TO PROVIDE TEMPORARY SHORING AND BRACING HE SHALL ASK THE ARCHITECT OR STRUCTURAL ENGINEER IN WRITING PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND CRITICAL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK AND SHALL NOTIFY OWNER & ARCHITECT OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH WORK. HIS VERIFICATION SHALL INCLUDE BUT NOT LIMITED TO LOCATION OF NEIGHBORING BUILDINGS, LINES OF SUPPORT LOCATIONS, OR ANCHOR BOLTS, HOLD DOWNS, EXISTING SITE CONDITIONS AND UTILITIES PRIOR TO ORDERING MATERIALS.
- CONTRACTOR TO VERIFY FIT & FINISH REQUIREMENTS FOR ALL PROJECT COMPONENTS WITH OWNER PRIOR TO ORDERING MATERIALS. REPORT CONFLICTING INFORMATION TO OWNER PRIOR TO PROCEEDING WITH WORK.
- CONTRACTOR SHALL DISPOSE OF ALL DEVIATION & CONSTRUCTION DEBRIS AS REQUIRED BY FEDERAL, STATE, AND LOCAL ORDINANCES.
- THE GENERAL CONTRACTOR SHALL ENSURE THAT ALL MATERIALS & REQUIREMENTS BY CODE ARE TESTED BY INDEPENDENT LABORATORIES AND THAT RESULTS ARE FURNISHED TO LOCAL BUILDING AUTHORITIES, OWNER, AND THE PROJECT CONSULTANTS IF REQUESTED.
- CONTRACTOR SHALL STENCIL LABEL ON ALL RATED WALLS IN CONCEALED AREAS THE FOLLOWING: FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS.
- BY THE USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER REPRESENTS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS AND THAT THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT IS COMPLETE.
- CONTRACTOR SHALL COORDINATE THE WORK WITH ALL OTHER CONTRACTORS FURNISHING THE USABLE MATERIALS, AND ALL WORK SO THAT THE WORK AS A WHOLE SHALL BE EXECUTED AND COMPLETED WITHOUT CONFLICTS. THE OWNER AND HIS CONSULTANTS SHALL NOT BE RESPONSIBLE FOR HOW THE WORK IS PERFORMED. SAFETY AND NEGLIGENT ACTS OR OMISSIONS BY THE GENERAL CONTRACTOR OR THE SUBCONTRACTORS ON THE JOB.
- CONTRACTOR SHALL COORDINATE THE REQUIREMENTS OF ANY AND ALL DRAWINGS INCLUDING ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER & ARCHITECT PRIOR TO ANY WORK.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACCURATELY INTERFERE WITH THE DIMENSIONS OF ALL EQUIPMENT INCLUDED IN THIS PROJECT SO THAT PREPARATIONS CAN BE MADE TO PROVIDE ENTRY INTO THE FACILITY WITH SUFFICIENT CLEARANCE, AND TO ENSURE THAT ADEQUATE FLOOR SPACE IS AVAILABLE.
- CONTRACTOR SHALL VERIFY GRADE DRAWINGS, LOCATIONS FOR ALL PARTITIONS, WALLS, CEILING, ETC. WILL BE DETERMINED BY DIMENSIONS ON THE DRAWINGS. ANY SUCH DIMENSIONS MISSING FROM THE PLANS MUST BE BROUGHT TO THE ATTENTION OF THE OWNER & ARCHITECT IMMEDIATELY. ALL DIMENSIONS TO FACE OF STUD UNLESS OTHERWISE NOTED. CLEAR DIMENSIONS FINISH TO FINISH DIMENSIONS.
- THE CONTRACTOR SHALL ADHERE TO THE DRAWINGS AND SPECIFICATIONS. SHOULD ANY ERROR OR INCONSISTENCY APPEAR REGARDING THE TRUE MEANING AND/OR INTENT OF THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL IMMEDIATELY REPORT SAME TO THE ARCHITECT WHO WILL MAKE ANY NECESSARY CLARIFICATION, INTERPRETATION, OR REVISION AS REQUIRED.
- IF THE CONTRACTOR DISCOVERS AN ERROR OR INCONSISTENCY AND PROCEEDS WITH WORK WITHOUT NOTIFYING THE OWNER & ARCHITECT OF ANY SUCH DISCREPANCIES, HE SHALL ASSUME ALL CHARGES AND MAKE ANY CHANGES TO HIS WORK UNDER NECESSARY BY HIS FAILURE TO OBSERVE AND/OR REPORT THE CONDITION.
- IF THE INTENT OF THE DRAWINGS & SPECIFICATIONS ARE UNCLEAR, THE CONTRACTOR SHALL ASK THE ARCHITECT FOR CLARIFICATION PRIOR TO PROCEEDING WITH WORK. IN THE EVENT OF A WRITTEN REQUEST FOR INFORMATION, THE ARCHITECT SHALL THEN RESPOND IN WRITING TO ALL APPROPRIATE PARTIES.
- CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION OF WORK MATERIALS, FINISHES, ETC. IN LEASED SPACE FROM LOSS, DAMAGE, FIRE, THEFT, ETC.
- WHEREVER THE TERM "EQUAL" IS USED, IT SHALL MEAN EQUAL PRODUCT AS APPROVED IN WRITING BY ARCHITECT.
- IF THE CONTRACTOR PROVIDES A MATERIAL OR EQUIPMENT SUBSTITUTION HE SHALL PROVIDE ALL APPROPRIATE DOCUMENTATION AND INFORMATION REQUIRED FOR THE ARCHITECT TO DETERMINE WHETHER OR NOT THE SUBSTITUTION IS EQUAL TO THE SPECIFICATION. ANY CHANGES TO THE DESIGN AFTER ISSUANCE OF A BUILDING PERMIT SHALL BE SUBMITTED TO THE RESIDING BUILDING AGENCY FOR APPROVAL BY THE GENERAL CONTRACTOR.
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY MINIMAL FINISHING REQUIRED TO CARRY SHELF, HANGING, AND VANDAL LOADS, RAILINGS, ETC. AS PER PLANS AND CODES.
- PROVIDE SILICONE SEALANT AT ALL JOINTS AND INTERFACES OF ALL CONTRACTOR'S EQUIPMENT, WALLS, WINDOWS AND DOOR OPENINGS.
- PROJECT SHALL BE LEFT CLEANED AND POLISHED AFTER COMPLETION OF WORK.
- THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL FOOD SERVICE EQUIPMENT AND COORDINATE LOCATION OF FLOOR SINKS, FLOOR DRAINS, SLOTTED, LAB DISPOSITIONS AND RAISED CURBS, ELECTRICAL AND PLUMBING SUBS, QJIS, AND ALL OTHER WORK UNDER HIS SCOPE OF RESPONSIBILITY RELATED TO THE EQUIPMENT. REFER TO OWNER'S FOOD SERVICE EQUIPMENT SCHEDULE FOR SPECIFIC REQUIREMENTS & REFERENCES. EQUIPMENT DRAWINGS ARE INCLUDED FOR REFERENCE ONLY. ACTUAL SHOP DRAWINGS FOR THE SPECIFIC PROJECT MAY VARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL WORK WITH THE REQUIREMENTS OF THE SUPPLIERS FOR THE MATERIALS REPRESENTED BY SHOP DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR RECEIVING, UNLOADING, UNCRATING, INSTALLATION AND MAKE-UP OF ALL FOOD SERVICE EQUIPMENT AND OTHER OWNER FURNISHED ITEMS AND DISPOSING OF ALL CARTONS.
- CONTRACTOR SHALL REFER TO THESE DOCUMENTS, AS WELL AS SPECIFICATIONS, FOR IDENTIFICATION OF ALL OWNER SUPPLIED ITEMS. CONTRACTOR SHALL VERIFY WITH OWNER PRIOR TO ORDERING WHICH ITEMS THE OWNER SHALL SUPPLY. ALL ITEMS NOT FURNISHED AS OWNER SUPPLIED ARE TO BE SUPPLIED BY THE CONTRACTOR. UNLESS NOTED OTHERWISE, ALL ITEMS ARE TO BE INSTALLED BY GENERAL CONTRACTOR.
- MINIMUM FIVE FREEDOM CLASSIFICATION OF INTERIOR FINISHES SHALL CONFORM TO THE BUILDING CODE AND LOCAL GOVERNING BUILDING CODES/ORDINANCES.
- CONTRACTOR SHALL CONTACT THE LOCAL FIRE MARSHAL, AND PROVIDE AND INSTALL FIRE EXTINGUISHERS PER THE FIRE MARSHAL'S DIRECTION, INCLUDING, TYPE, QUANTITY, AND LOCATION, AS A MINIMUM. CONTRACTOR SHALL PROVIDE FIVE EXTINGUISHERS HAVING A RATING OF 7-A-B-20 FOR EVERY 3,000 SQ. FT. OF FLOOR AREA, AND TRAVEL DISTANCE TO AN EXTINGUISHER SHALL NOT EXCEED 75 FEET.
- FOR CONSTRUCTION DETAILS NOT SHOWN, USE THE MANUFACTURER'S STANDARD DETAILS OR APPROVED SHOP DRAWINGS/DATA SHEETS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- DOCUMENTS MARKED "BID DOCUMENTS" SHALL NOT BE USED FOR CONSTRUCTION.
- POST OCCUPANT LOAD SCHEDULED IN SPECIFICATIONS PER LOCAL GOVERNING AGENCY REQUIREMENTS.
- SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT WHO SHALL REVIEW THEM AND PROVIDE A NOTATION INDICATING THAT DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. THESE SUBMITTAL ITEMS MUST THEN BE SUBMITTED TO THE BUILDING OFFICIAL. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL. DEFERRED SUBMITTALS ARE AS FOLLOWS:



CODE BLOCK

BUILDING CODE	
208 INTERNATIONAL BUILDING CODE	
208 INTERNATIONAL MECHANICAL CODE	
208 NATIONAL ELECTRICAL CODE	
208 NATIONAL PLUMBING CODE	
208 INTERNATIONAL ENERGY CONSERVATION CODE	
UNIFIED DEVELOPMENT ORDINANCE SECTION 6.310	
GAS STATION CANOPY USE GROUP:	
CONSTRUCTION TYPE:	- UTILITY "U"
	- TYPE 2B
BUILDING USE GROUP:	- MERCANTILE "M"
CONSTRUCTION TYPE:	- TYPE 2B
FIRE PROTECTION:	- NON-SPRINKLERED
PROPOSED BUILDING AREA (G-STORY)	
AREA ALLOWED	- 6080 SF
CAR LIFT	- 1500 SF
	- 110 SF
OCCUPANCY LOAD PER 1000L2:	
MAIN AREA	M 3300/30 SF PER OCC
COOLERS AND STORAGE	M 1600/200 SF PER OCC
TOTAL	12 OCCUPANTS
TOTAL EXIT DOOR WIDTH PER 1000L2:	
	12 X 0.2 22.4' / 108'



PROJECT DIRECTORY

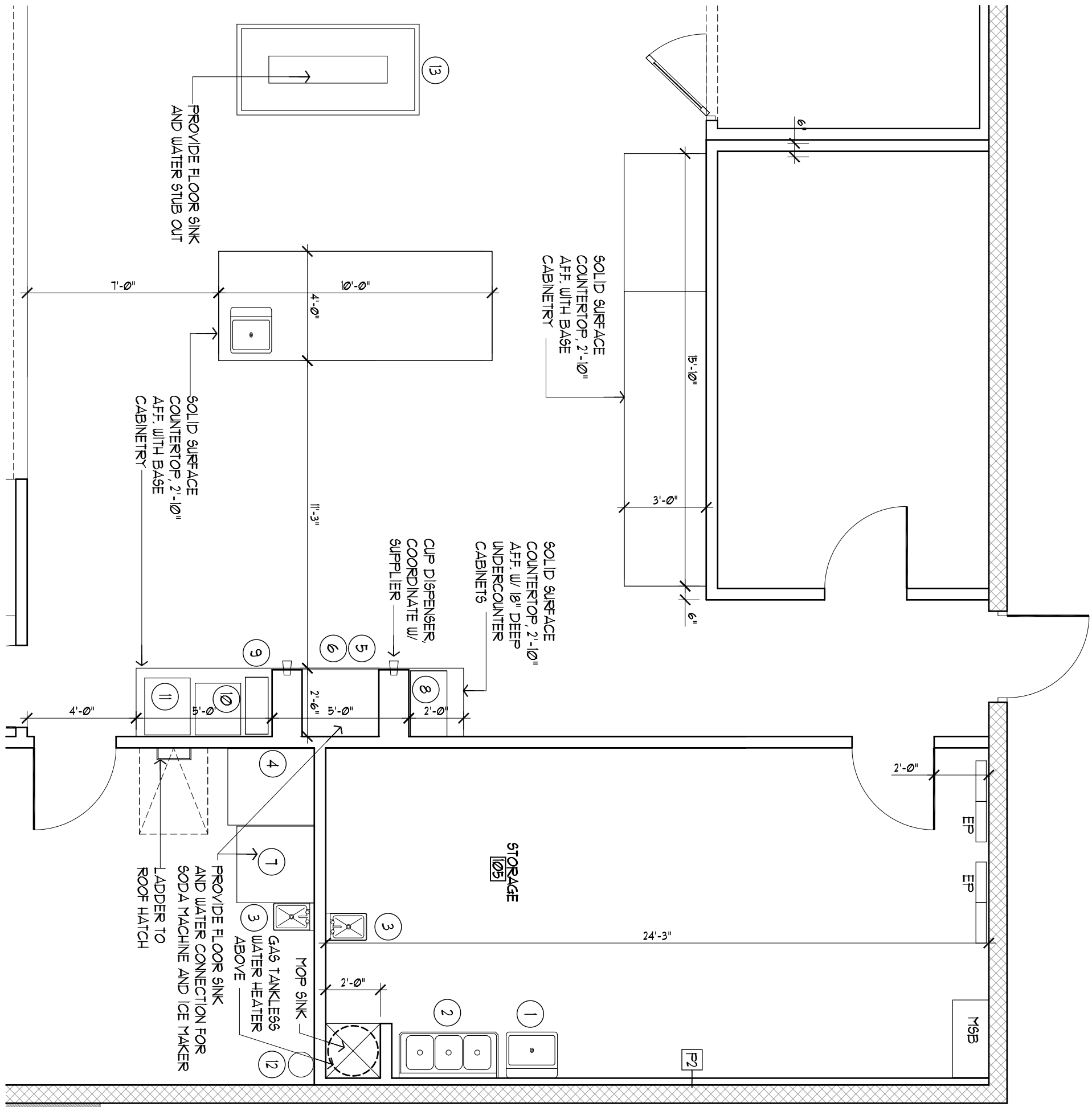
OWNER
LION PETROLEUM INC 4931 LINCOLN BLVD ST. LOUIS, MO 63108 PHONE: (314) 892-1110 EMAIL: main@lionpetro.com
ARCHITECTS
RAMSDELL & ARCHITECTS 200 S. CENTRAL AVE. SUITE 203 ST. LOUIS, MO 63105 PHONE: (314) 593-6661 FAX: (314) 593-1310 EMAIL: info@ramsdellandarchitects.com CONTACT: SALLY RAMSDELL
CIVIL ENGINEERS
■
STRUCTURAL ENGINEERS
SALPITI ENGINEERING GROUP LLC 1018 FAIRMARK LINE ST. LOUIS, MO 63146 PHONE: (314) 586-6699 FAX: (314) 584-5822 EMAIL: info@salpitieng.com CONTACT: DAVID SALPITI
MEP ENGINEERS
JOAN ZEKND PE CONSULTING ENGINEERS 1716 WHITE ROAD CHESTERFIELD, MO 63017 PHONE: (314) 878-2250 FAX: (314) 878-2250 CONTACT: JOAN ZEKND

LIST OF DRAWINGS

SHEET	DESCRIPTION
A-1	FLOOR PLAN, UNFURNISHED PLAN, RESTROOM ELEVATIONS
A-2	RC PLAN, ROOF PLAN, DETAILS
A-3	EXTERIOR ELEVATIONS, SCHEDULES
A-4	BUILDING SECTIONS, WALL SECTIONS
A-5	WALL SECTIONS
A-6	
B-1	GENERAL NOTES & TYPICAL DETAILS
B-2	FOUNDATION PLAN
B-3	ROOF DETAILS
B-4	ROOF FINISHING PLAN
B-5	
E-1	ELECTRICAL POWER PLAN
E-2	ELECTRICAL LIGHTING SCHEDULE
E-3	ELECTRICAL TYPICAL DETAILS
E-4	ELECTRICAL TYPICAL DETAILS
E-5	ELECTRICAL POWER BOARD SCHEDULE
E-6	ELECTRICAL SPECIFICATIONS
M-1	HVAC PLAN
M-2	HVAC SCHEDULES
M-3	MECHANICAL DETAILS
M-4	MECHANICAL DETAILS
M-5	MECHANICAL SPECIFICATION
P-1	PLUMBING PLAN
P-2	PLUMBING SCHEDULES
P-3	PLUMBING DETAILS
P-4	PLUMBING SPECIFICATIONS
S-1	SITE LIGHTING

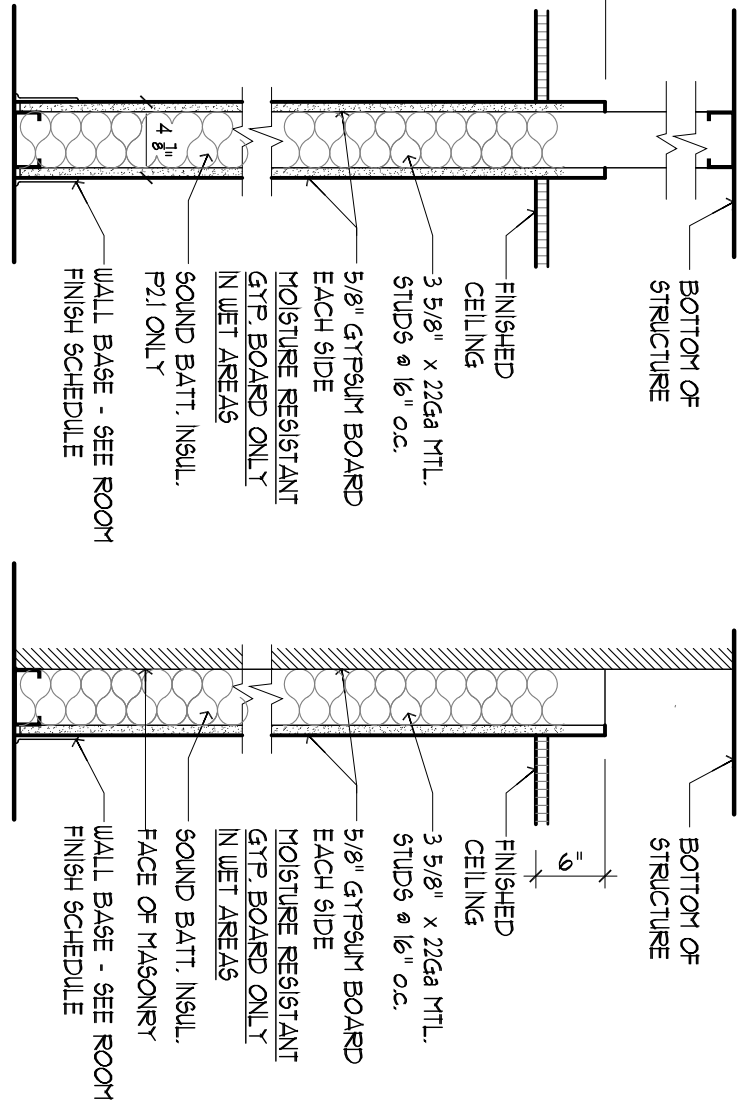
KITCHEN EQUIPMENT

- 1 PREP SINK
- 2 64" 3-COMPARTMENT SINK WITH GREASE TRAP BELOW
- 3 HAND SINK
- 4 BAG N BOX
- 5 SODA MACHINE
- 6 ICE MAKER
- 7 ICE MAKER + BIN
- 8 SLUSH PIPERS
- 9 BIN SINGLE SCOT- HEAT
- 10 BINN SURE INTERIOR
- 11 CURTIS CAPPACINO
- 12 CO2 TANK COORDINATE W/ SODA MACHINE SUPPLIER
- 13 OPEN AIR MERCHANDISER

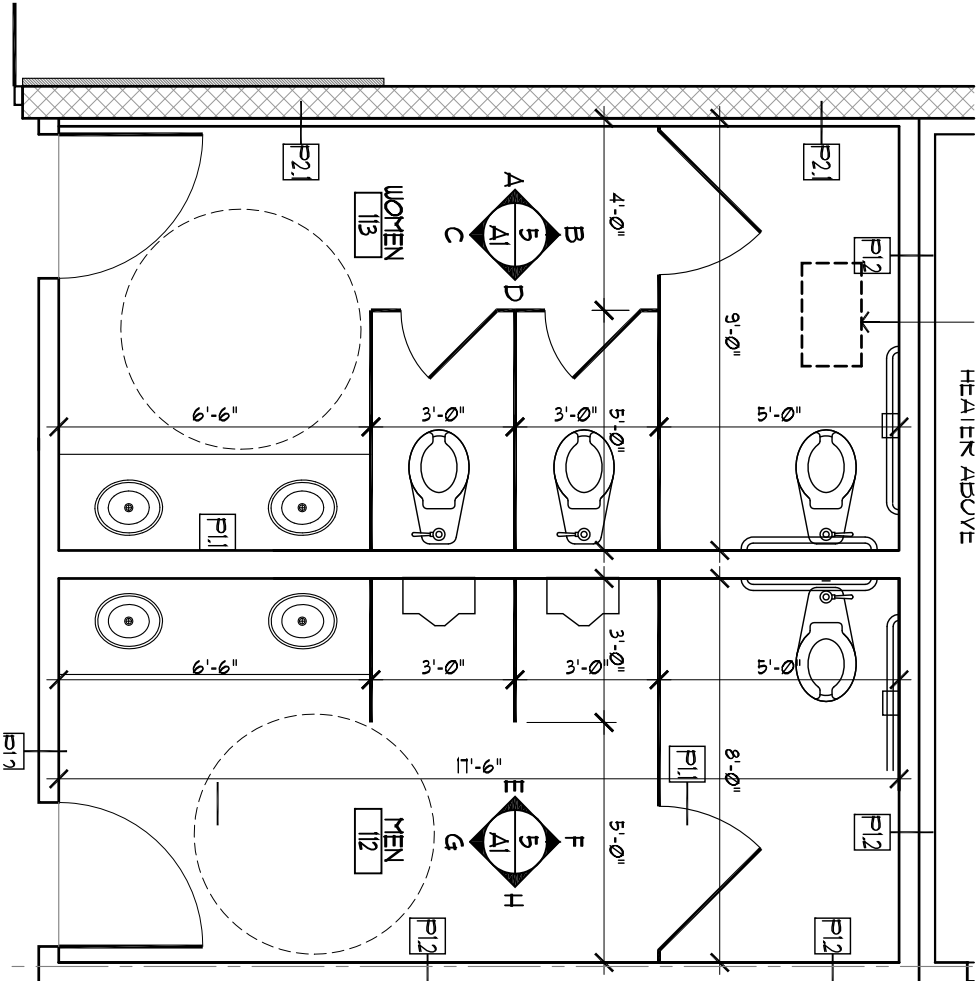


3 ENLARGED KITCHEN PLAN
SCALE: 1/4" = 1'-0"

COOLER AND FREEZER TO COMPLY WITH SECTION 1602.4.15, IBC 2015
SHALL HAVE A THICKNESS THAT DOES NOT EXCEED 2".
IF THE THICKNESS OF THE COOLER OR FREEZER IS MORE
THAN 2" IT SHALL BE COVERED BY METAL FACING NOT
LESS THAN 0.0023 INCH THICK ALUMINUM OR CORROSION
RESISTANT STEEL, HAVING MINIMUM BASE METAL
THICKNESS OF 0.006 INCH.

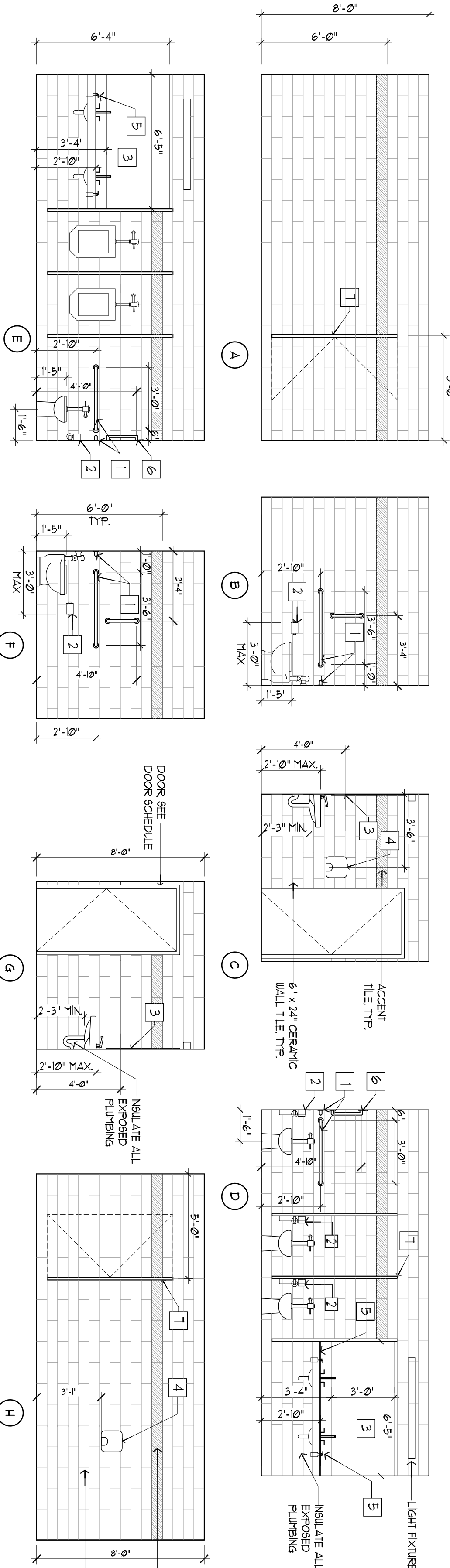


6 PARTITION TYPES
SCALE: 1" = 1'-0"

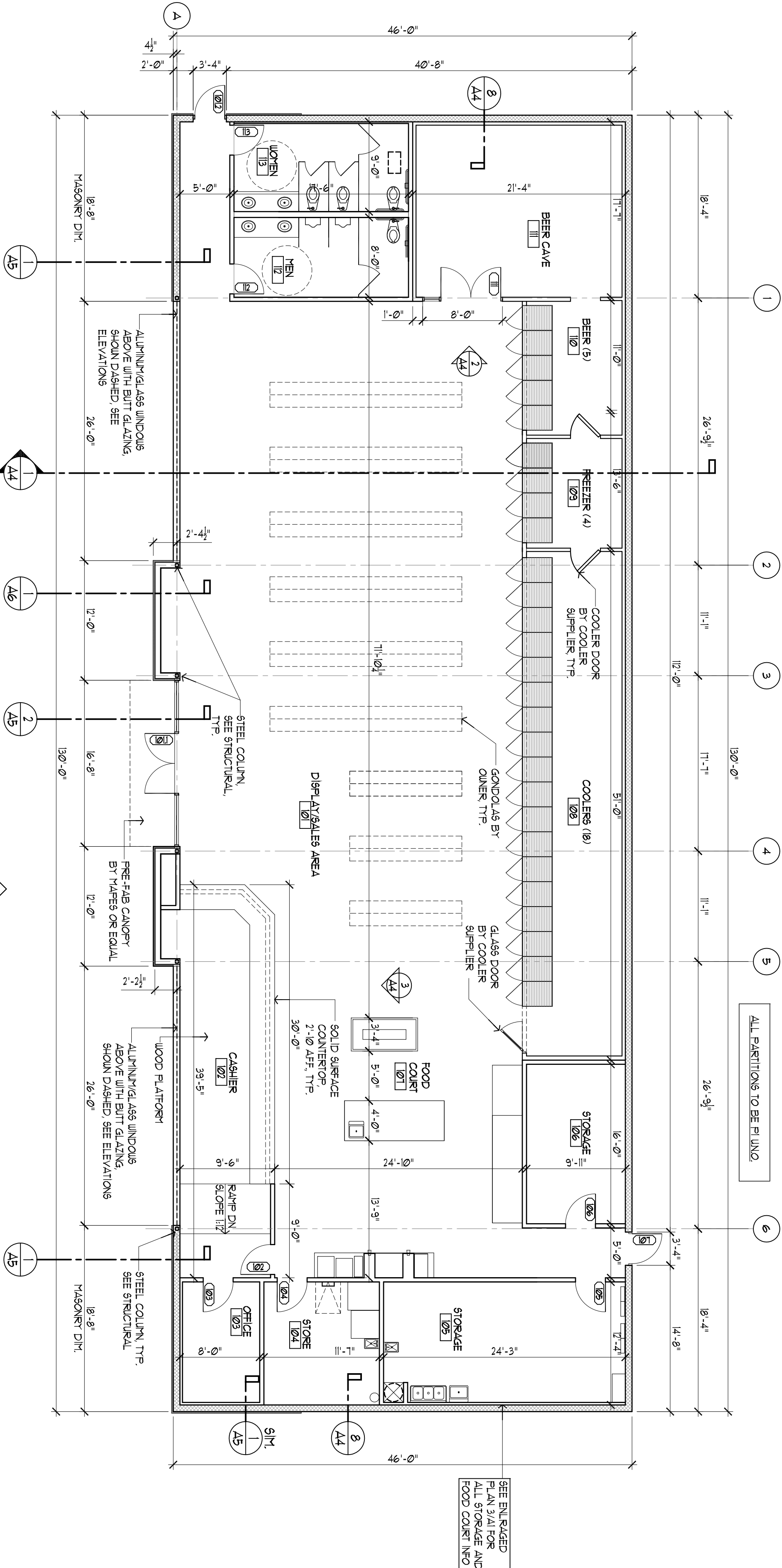


NO.	DESCRIPTION	MANUFACTURER
1	10" DIA. STAINLESS STEEL, GRAB BAR (HANDICAP HEIGHT 34" AFF.)	DOMINICK P-4200
2	DOUBLE NOZZLE TOILET PAPER DISPENSER	DOMINICK P-4200
3	14" DIA. STAINLESS STEEL, GRAB BAR (HORIZONTAL, ANTI-DAMPEN)	DOMINICK P-4200
4	EXHAUST FAN, DOWN	EXCEL DRYER X-10
5	WALL MOUNTED TOWEL DISPENSER	DOMINICK P-4200
6	10" DIA. STAINLESS STEEL, VERTICAL, GRAB BAR 36" TALL	DOMINICK P-4200
7	RESTROOM, COIN-OPERATED (SEE ELEVATIONS)	DOMINICK

4 ENLARGED RESTROOMS PLAN
SCALE: 1/4" = 1'-0"



5 RESTROOMS ELEVATIONS
SCALE: 1/4" = 1'-0"



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

RANGWALA ARCHITECTS
ARCHITECTURE SITE PLANNING

201 S. CENTRAL AVE, SUITE #203, ST. LOUIS, MO-63105
(314) 863-6661 FAX (314) 863-3718



LEE'S SUMMIT, MISSOURI

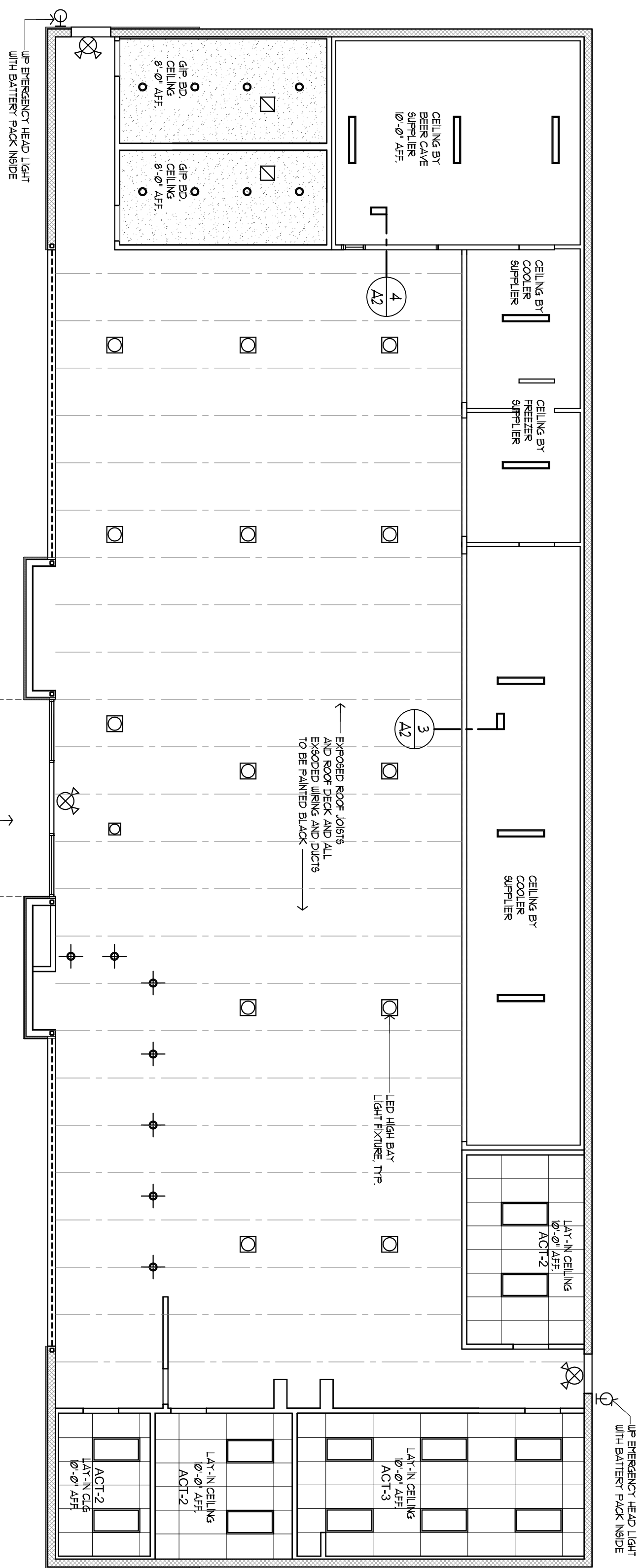
PROPOSED:
CONVENIENCE STORE
HAMBLÉN PLAZA

Revisions
1. 11-28-22

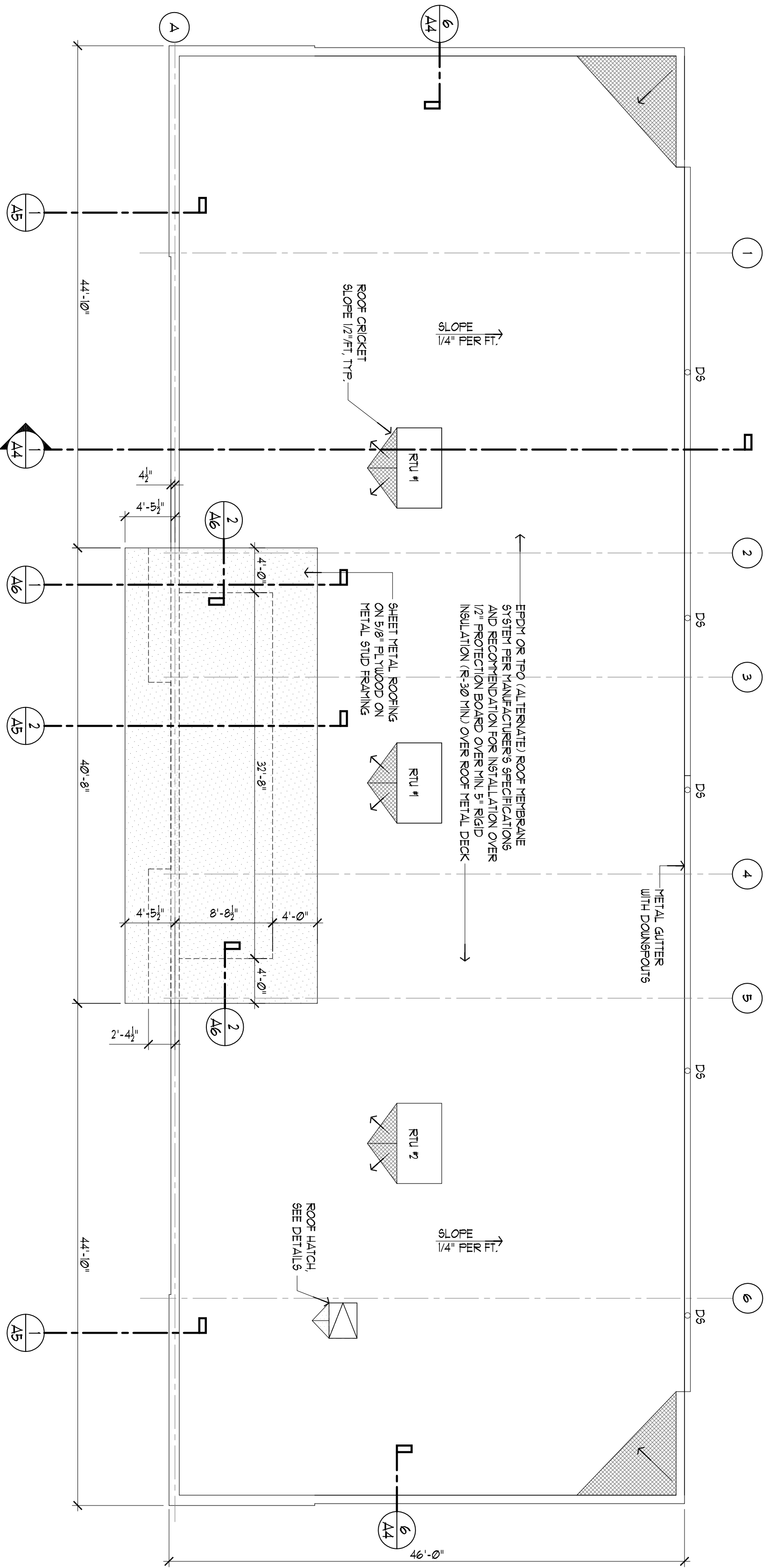
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Enlarged Plans
Schedules
Drawn By:
EC

A-1

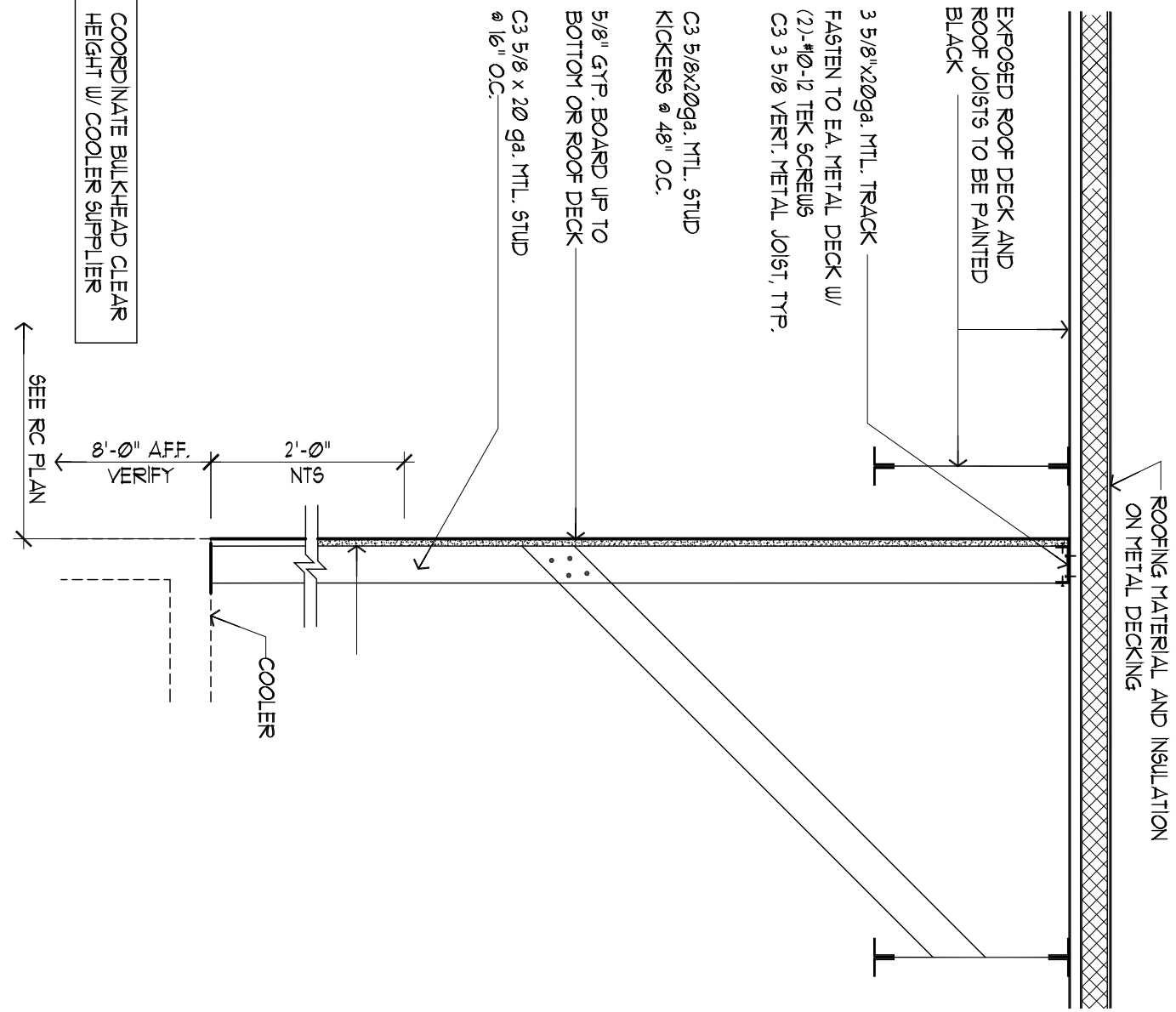
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Project Number:



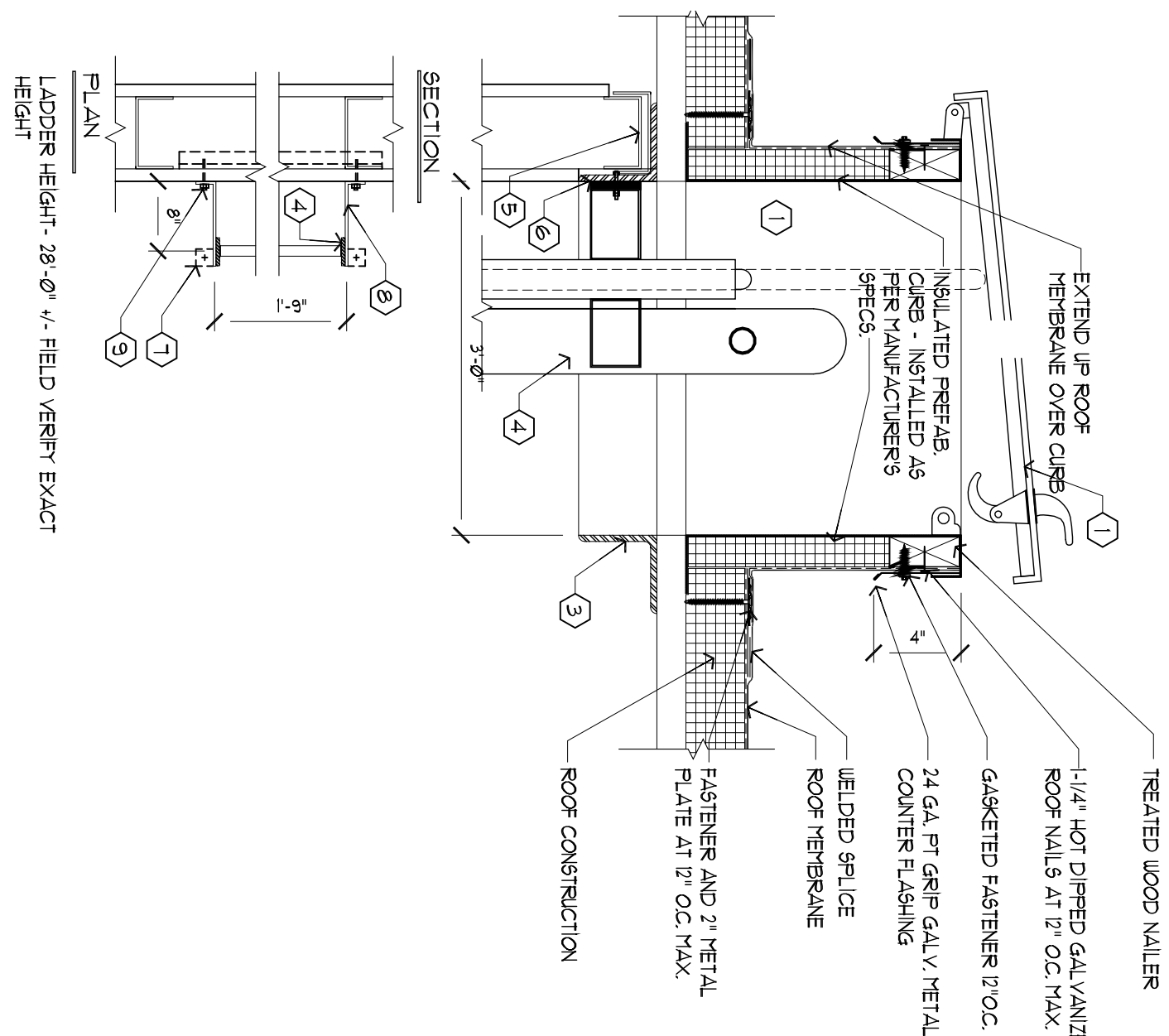
1 REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"



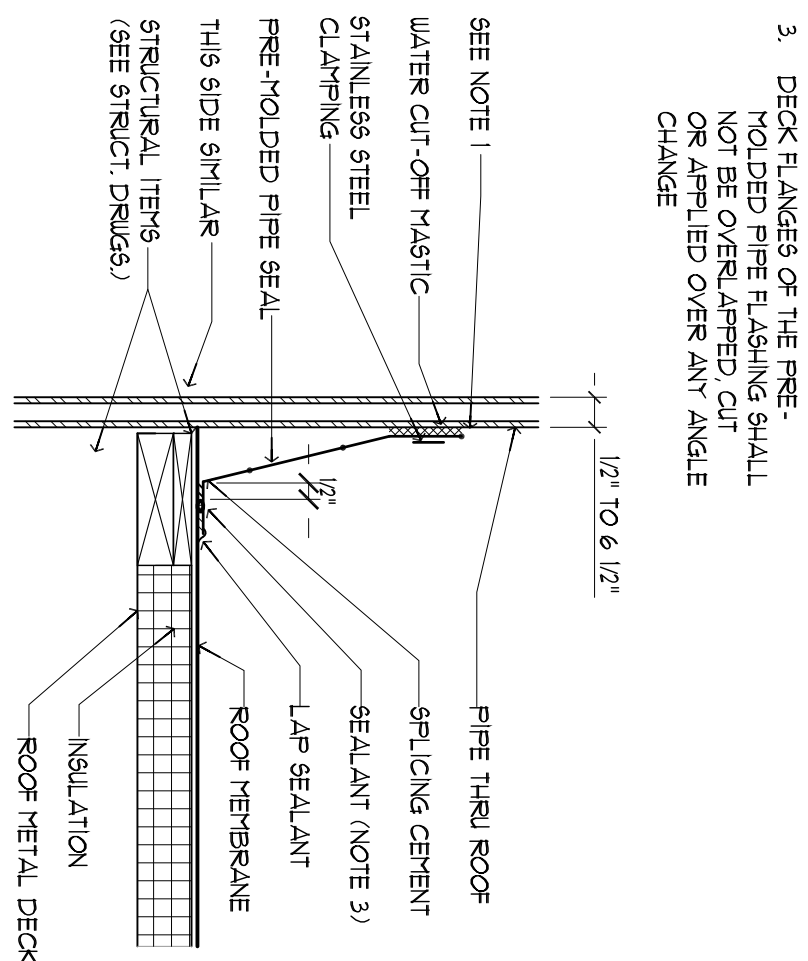
2 ROOF PLAN
SCALE: 1/8" = 1'-0"



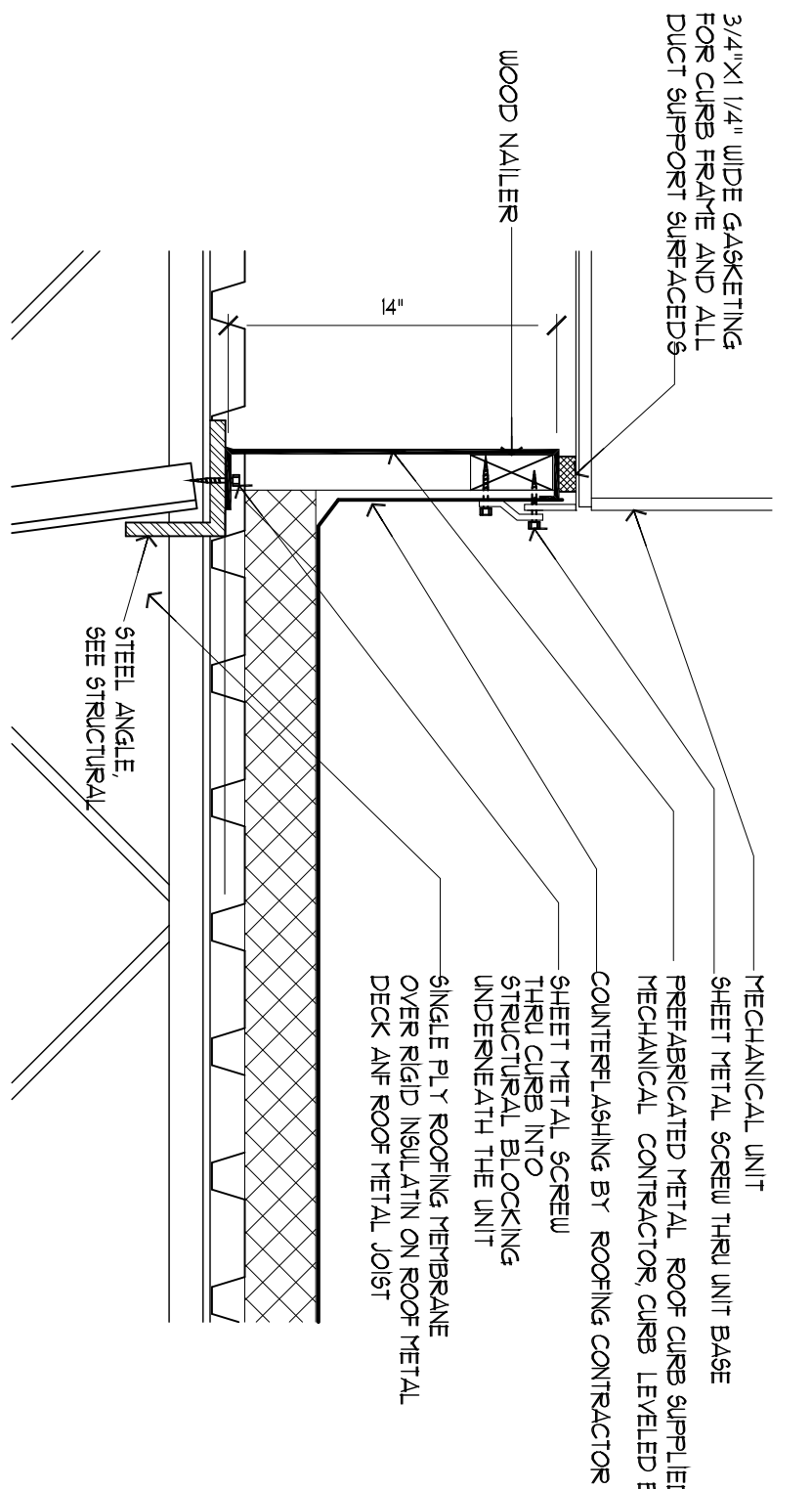
3 CEILING DETAIL
SCALE: 3/4" = 1'-0"



4 ROOF HATCH DETAIL
SCALE: 1 1/2" = 1'-0"



5 PIPE PENETRATION DETAIL
SCALE: 1 1/2" = 1'-0"



6 RTU CURB DETAIL
SCALE: 1 1/2" = 1'-0"

KEYED NOTES

1. 1/4" HOT DIP GALVANIZED ROOF WALLS AT 17" O.C. MAX.
2. 1/4" GAL. FLAT STEEL BARE SIDE RAILS, 11-13/8" X 1-1/2" X 3/8" GAL. THEAD (SEE SPEC. AS REQUIRED) WELDED TO RAILS 40" CENTERS.
3. 1/4" X 3/4" X 1/4" ANGLE EXTEND AND SECURE WELDED TO BUILDING ROOF STRUCTURE AS REQUIRED.
4. 1/4" X 3/4" X 1/4" ANGLE EXTEND AND SECURE WELDED TO BUILDING ROOF STRUCTURE AS REQUIRED.
5. PROVIDE SLIP TRACK CONNECTION AT ALL WALLS THAT ATTACH TO THE DECK.
6. PROVIDE BLOTTED VERTICAL CONNECTION TO ALLOW FOR 1" MIN. ROOF DEFLECTION. THE BOLTS ARE TO BE FINGER TIGHT AND DOUBLE NUTTED.
7. PROVIDE 2-1/2" X 2-1/2" X 3/16" WELDED CLIP ANGLES SECURED TO CONCRETE FLOOR WITH 1/2" X 2-3/4" WEDGE NUT HEAD OR TOLLY ANCHOR BOLTS.
8. PROVIDE 2-1/2" X 3/8" EAT STEEL BARE BRACKETS AT MAX 4'-0" CENTERS, WELD TO SIDE RAILS, WELD TOP TO STEEL ANGLE FRAME.
9. AT METAL STUD WALLS PROVIDE 1-1/2" OR STEEL REINFORCING CHANNELS WITH WELDED 3/8" THRU BOLTS TO RECEIVE BRACKETS. CUT STUD FLANGES TO RECEIVE REINFORCING CHANNEL. AT HANGAR FASTEN BRACKETS WITH 3/8" X 2-3/4" NUT HEAD OR TOLLY ANCHOR BOLTS.

- NOTES:
1. PRE-MOLDED PIPE SEAL MUST HAVE INTACT RIB AT TOP EDGE REGARDLESS OF PIPE DIA.
 2. AFTER 7" N-SEAM SEALANT 1/4" FROM INSIDE EDGE OF PIPE SEAL FLANGE.
 3. DECK FLANGES OF THE PRE-MOLDED PIPE SEALING SHALL NOT OVERLAP FLASHING SHALL OR APPLIED OVER ANY ANGLE CHANGE.

Date: 08-31-22

Project Number:

Sheet Number

A-2

Sheet Title:
Roof Plan & Details
RC Plan and details

Drawn By:

EC

PROPOSED:

CONVENIENCE STORE

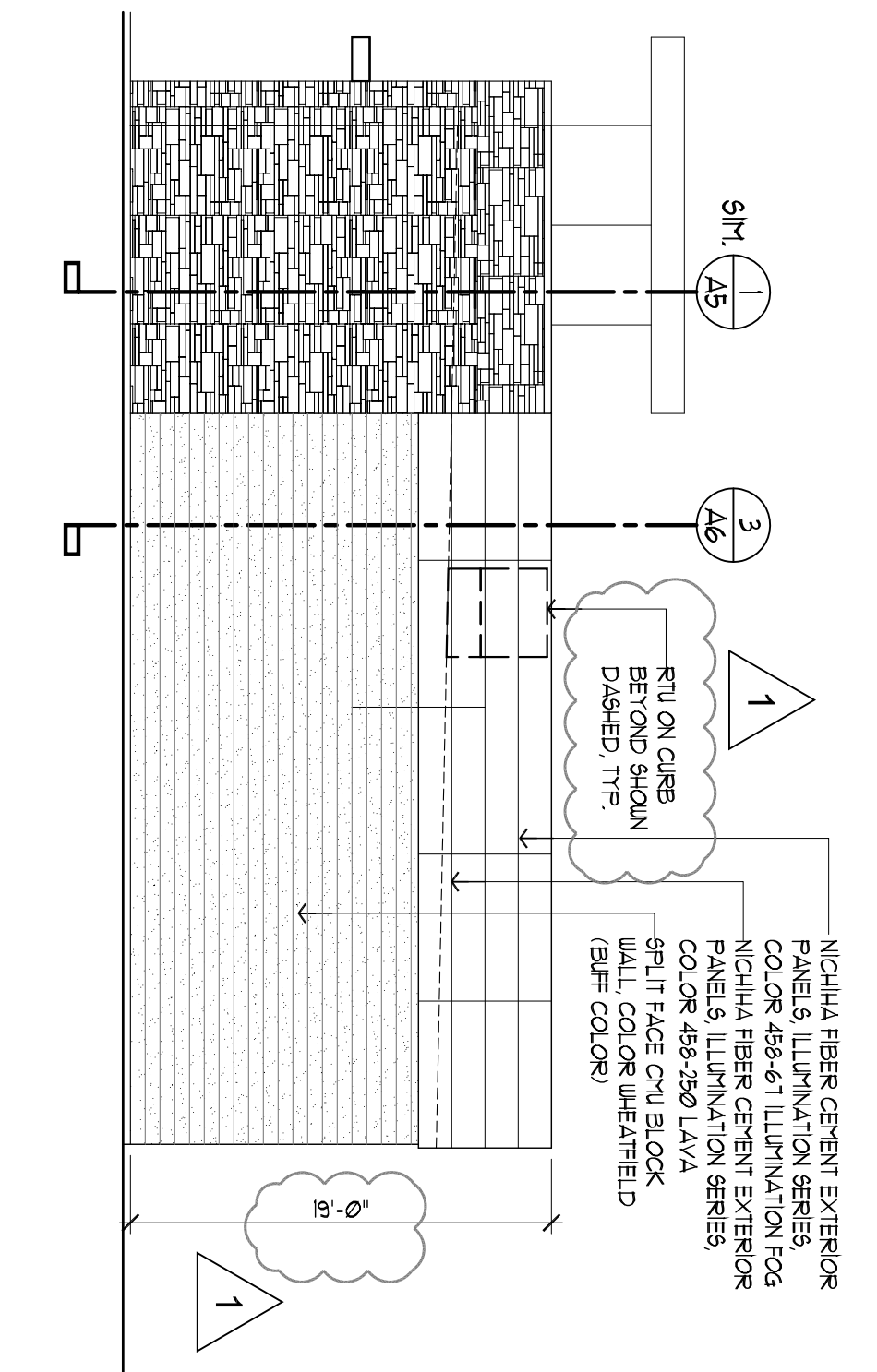
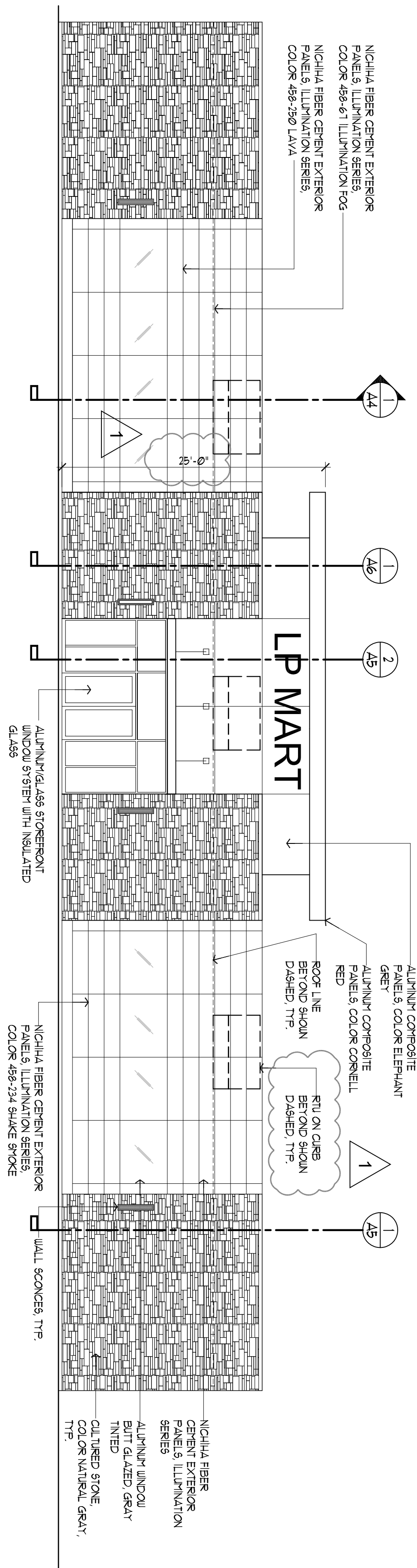
HAMBLÉN PLAZA

LEE'S SUMMIT, MISSOURI

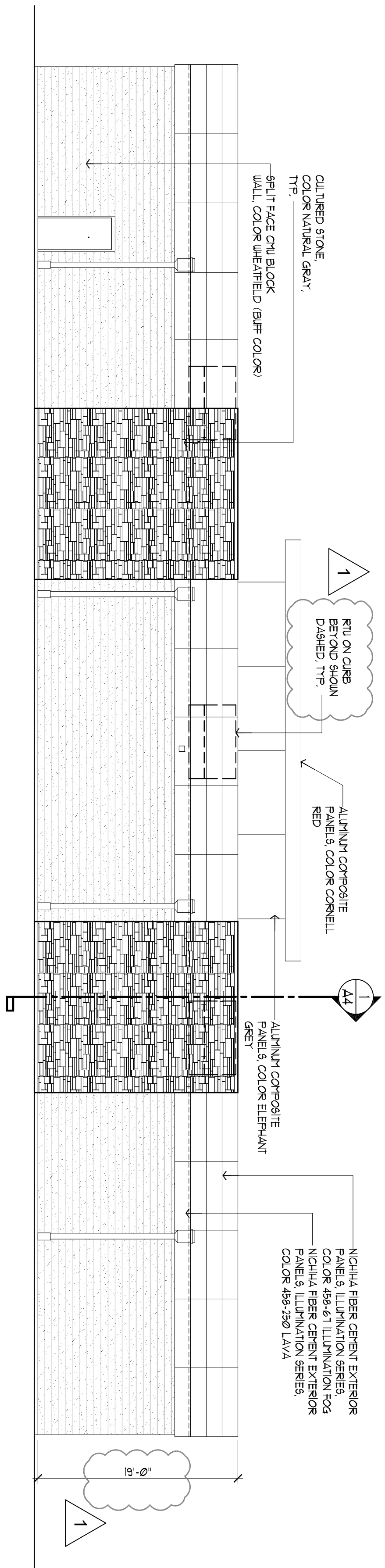


RANGWALA ARCHITECTS
ARCHITECTURE SITE PLANNING

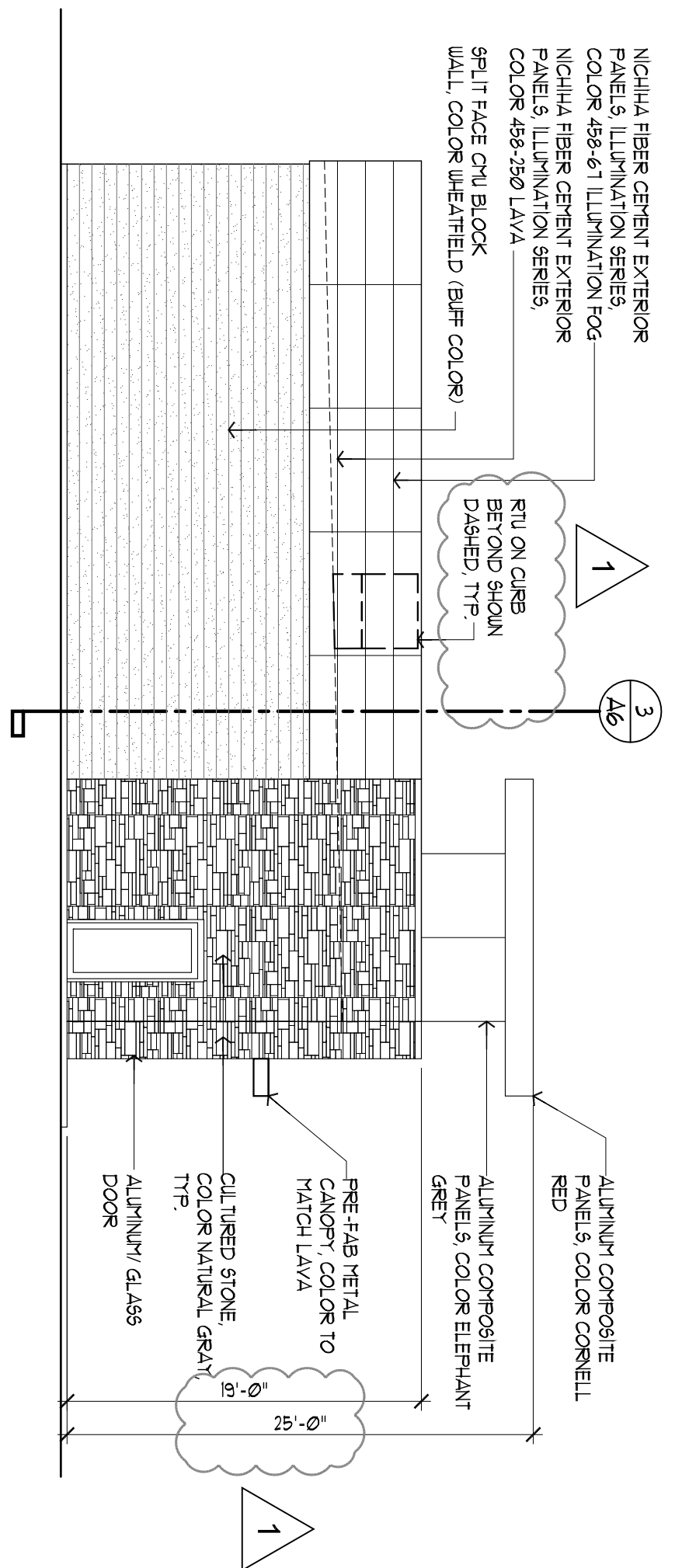
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(314) 863-6661 FAX (314) 863-3718



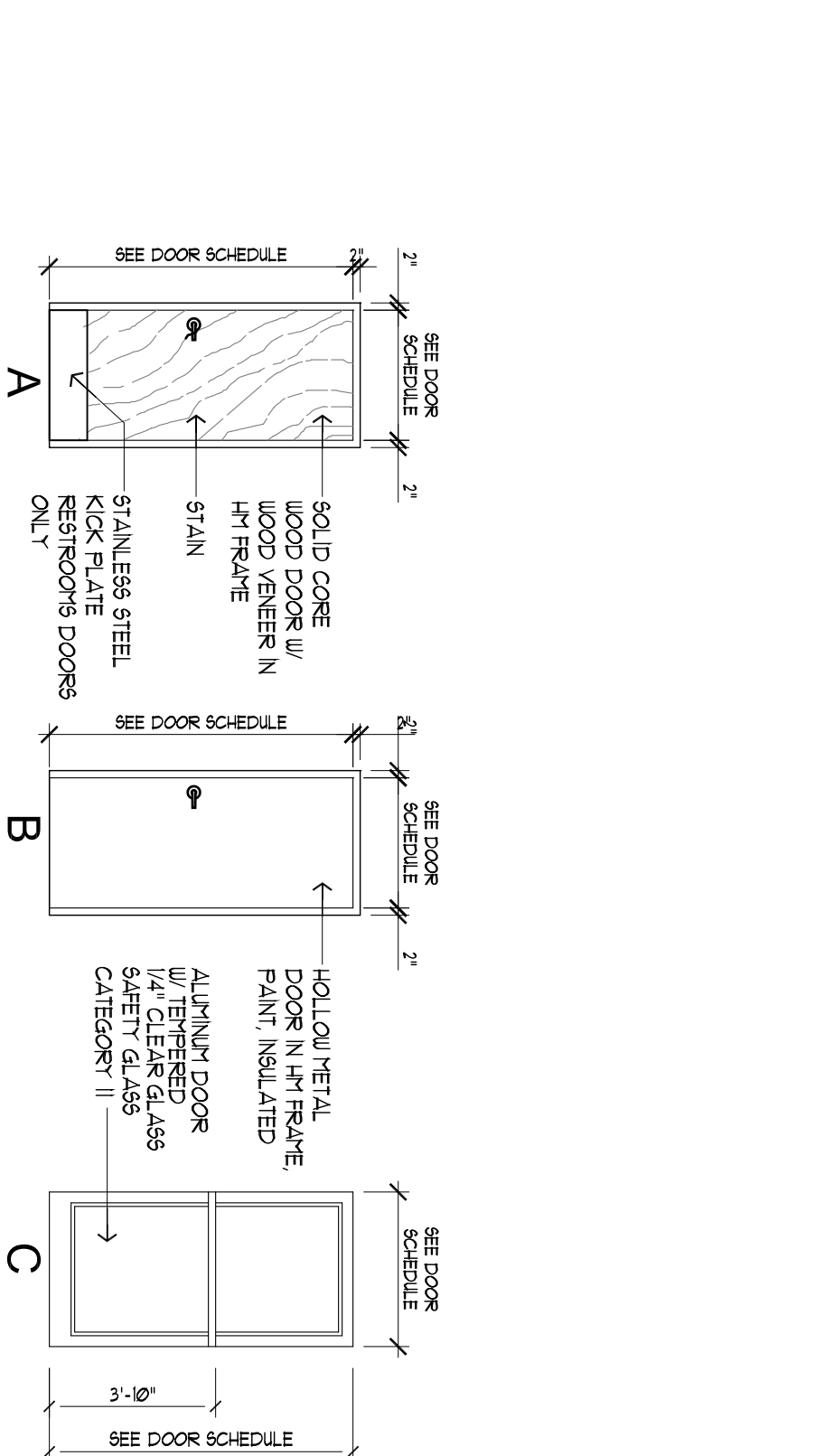
WEST ELEVATION



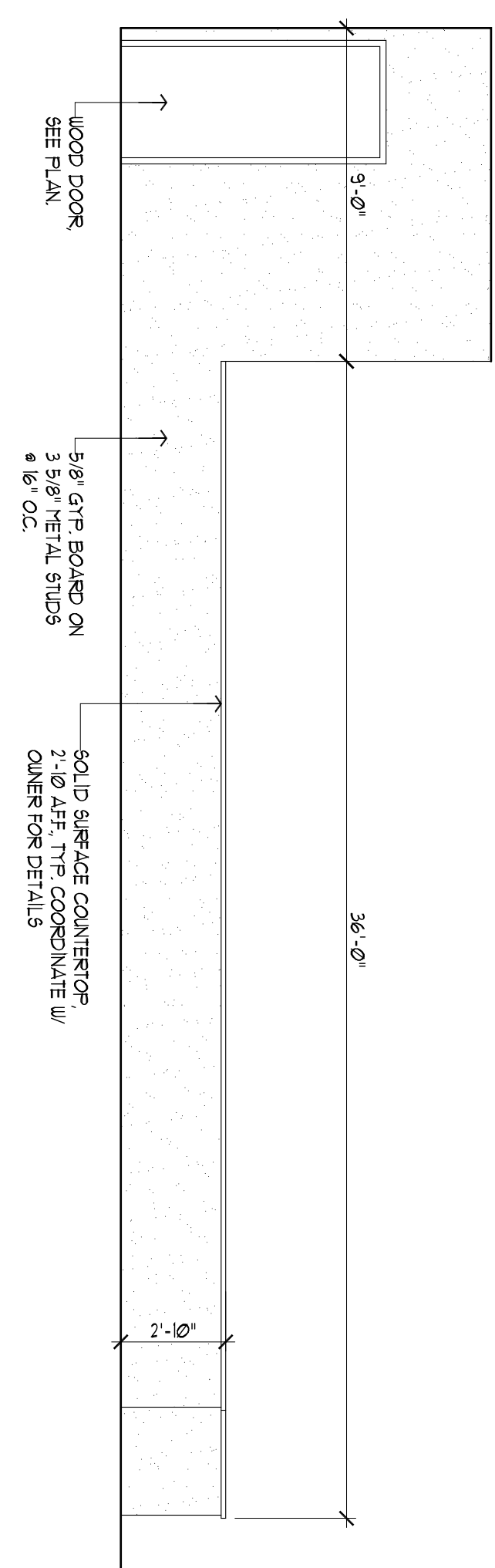
SOUTH ELEVATION



EAST ELEVATION



5
A3
SCALE: 1/4" = 1'-0"



DOOR NO.	DOOR			TYPE	FRAME TYPE	HARDWARE GROUP	REMARKS
	SIZE	MATERIAL	RATING				
I01	PAIR 3'-0" X 1'-0"	ALUMINUM		C	AL	1	
I02	3'-0" X 1'-0"	ALUMINUM		C	HM	1	
I03	3'-0" X 1'-0"	WOOD		A	HM	2	
I04	3'-0" X 1'-0"	WOOD		A	HM	2	
I05	3'-0" X 1'-0"	WOOD		A	HM	3	
I06	3'-0" X 1'-0"	WOOD		A	HM	3	
I07	3'-0" X 1'-0"	HOLLOW METAL		B	HM	5	
I08	NOT USED						
I09	NOT USED						
I10	NOT USED						
III	PAIR 3'-0" X 1'-0"	ALUMINUM		C	AL	1	
I12	3'-0" X 1'-0"	WOOD		A	HM	4	
I13	3'-0" X 1'-0"	WOOD		A	HM	4	
I14	4'-0" X 1'-0"	HOLLOW METAL		B	HM	2	
I15	4'-0" X 1'-0"	HOLLOW METAL		B	HM	2	

DOOR HARDWARE

[illegible]

NO.	NAME	FLOOR	BASE	WALLS					CEILING	
				N	E	S	W	MATERIAL	HEIGHT	
101	DIGITAL-SALES AREA	STAINED CONCRETE	VB	DUP	DUP	DUP	DUP	EXP. ROOF STRUCT.	10'-0"	
102	CASHIER	LVT ON HD FLATROST	VB	DUP	DUP	DUP	DUP	ACT-1	10'-0"	
103	OFFICE	STAINED CONCRETE	VB	DUP	DUP	DUP	DUP	ACT-1	10'-0"	
104	STORE	STAINED CONCRETE	VB	CHU	DUP	DUP	DUP	ACT-2	10'-0"	
105	KITCHEN	STAINED CONCRETE	VB	FRE	FRE	FRE	FRE	ACT-3	10'-0"	
106	STORE	STAINED CONCRETE	VB	CHU	DUP	DUP	DUP	ACT-2	10'-0"	
107	FOOD COURT	STAINED CONCRETE	VB	DUP	DUP	DUP	DUP	DUP	10'-0"	
108	COOLERS	SEALD	VB	DUP	DUP	DUP	CHU	BY COOLER SUPPLIER		
109	FREEZER	SEALD	VB	DUP	DUP	DUP	CHU	BY COOLER SUPPLIER		
110	BEER COOLERS	SEALD	VB	DUP	DUP	DUP	CHU	BY COOLER SUPPLIER		
III	BEER CAVE	CONCRETE	VB	DUP	DUP	DUP	CHU	BY COOLER SUPPLIER		
111	MEN	STAINED CONCRETE	CT	DUP	CT	CT	DUP	DUP	9'-0"	
113	WOMEN	STAINED CONCRETE	CT	CT	DUP	CT	DUP	DUP	9'-0"	

DUP-	EXPOSED POLYMER PAINT
CHL-	EXPOSED PAINTED CONCRETE BLOCK
GLZ-	GLAZING
CR-	CERAMIC TILE
CONC-	EXPOSED REINFORCED CONCRETE
VB-	4" VENTIL. BLADE
FRP-	FIBER REINFORCED PANEL
SRP-	FLAT REINFORCED PANEL, AT WOOD LOCATION
AD-1	2" X 2" W/ 1/8" SQUARE GRID, (177) 833 ARS/830NG
AD-2	2" X 2" W/ 1/8" SQUARE GRID, (177) 833 ARS/830NG
AD-3	2" X 4" W/ 1/8" GRID - CLASSIC COATED TILES
AD-4	2" X 4" W/ 1/8" GRID - CLASSIC COATED TILES

DOOR TYPES AND SCHEDULE

Sheet Title: Exterior Elevations Building Section Interior Elevations Drawn By: EC	Sheet Number A 2
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PROPOSED:

CONVENIENCE STORE

HAMBLLEN PLAZA

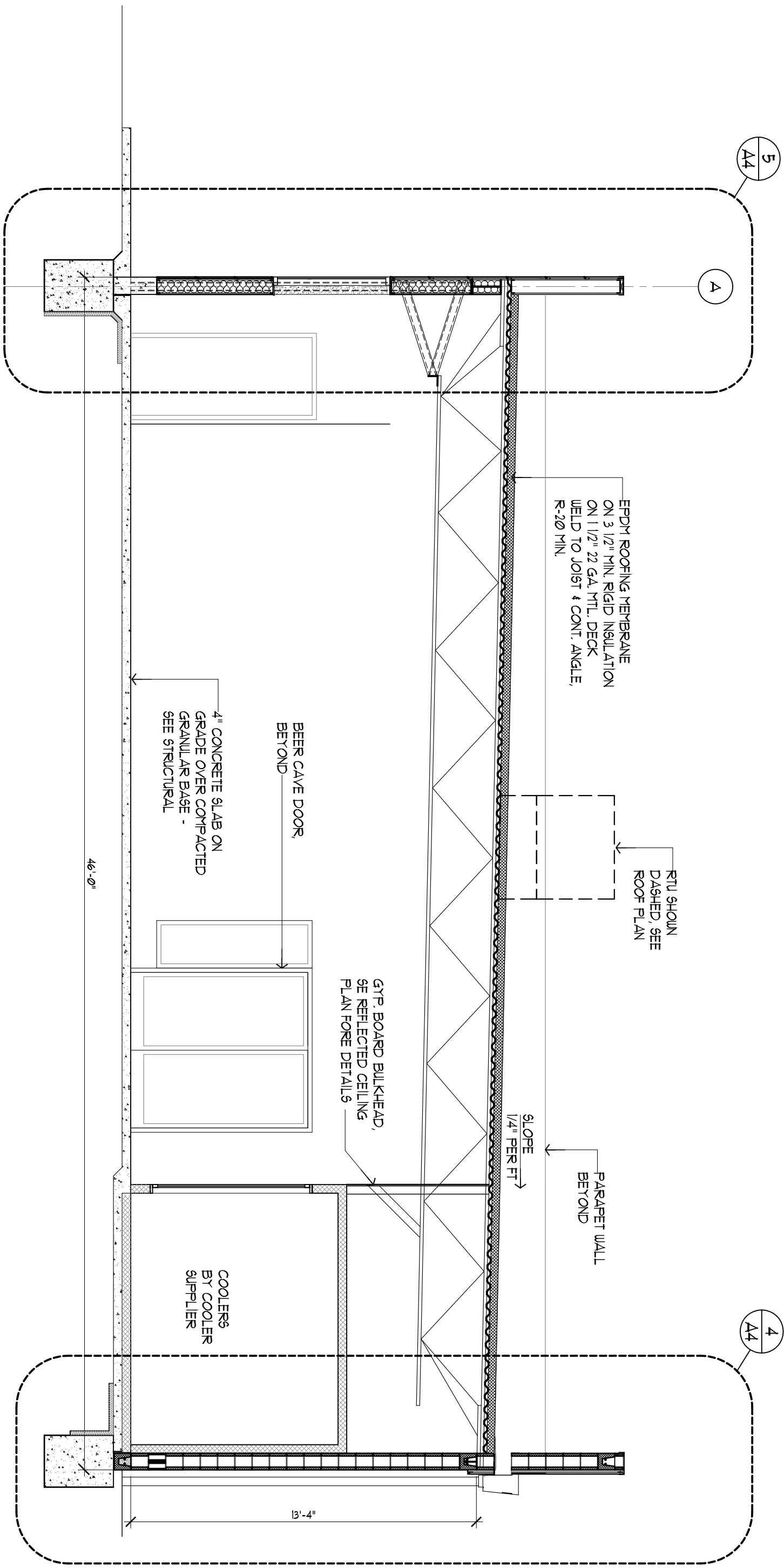
LEE'S SUMMIT, MISSOURI



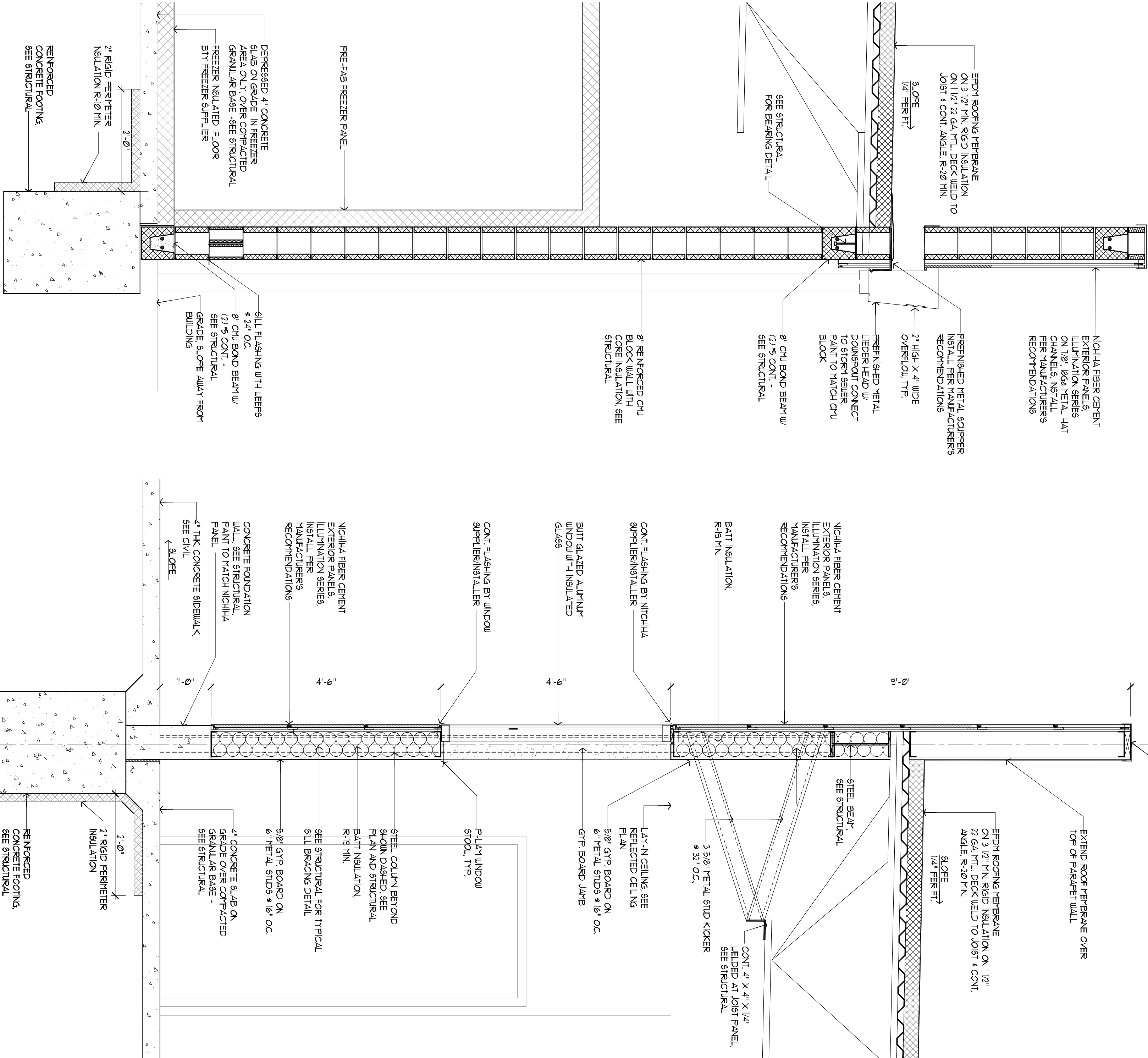
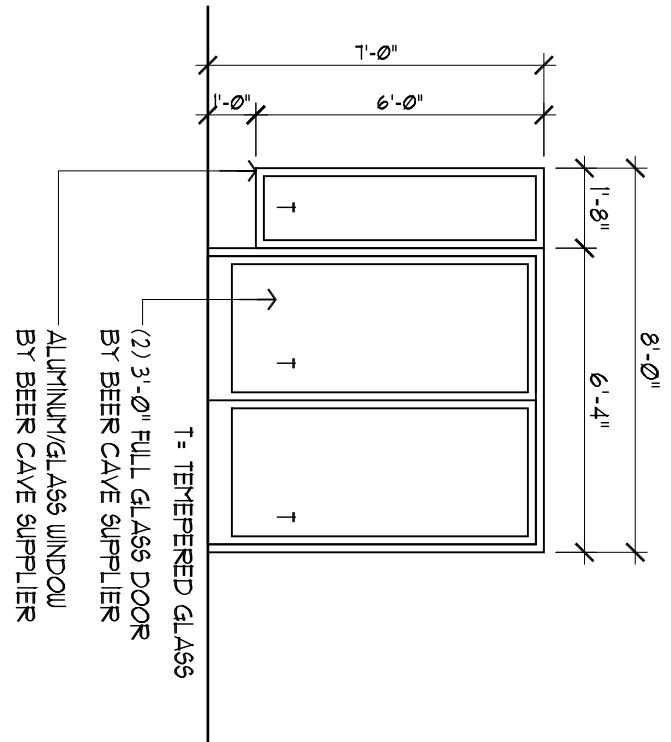
RANGWALA ARCHITECTS

ARCHITECTURE SITE PLANNING

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(314) 863-6661 FAX (314) 863-3718



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



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

5 WALL SECTION
SCALE: 3/4" = 1'-0"

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LEE'S SUMMIT, MISSOURI

PROPOSED:
CONVENIENCE STORE
HAMBLÉN PLAZA

Revisions
1. 11-28-22

Sheet Title:
Building Section
Interior Elevations
Drawn By:
EC

Sheet Number

A-4

Date:08-31-22
Project Number:



Date:08-31-22
Project Number:

1. EXPANSION ANCHORS TO BE HILTI KWIK BOLT III, SIMPSON WEDGE-ALL, OR APPROVED EQUAL.
2. INSTALLER OF EXPANSION ANCHOR SHALL BE CERTIFIED BY ANCHOR MANUFACTURER FOR PROPER INSTALLATION REQUIREMENTS AND PROCEDURES.

CONCRETE SCREW ANCHORS

1. CONCRETE SCREW ANCHORS TO BE HILTI HUS-H, SIMPSON TITEN HD, OR APPROVED EQUAL.

1. ADHESIVE SET STEEL ANCHORS TO BE

2. INSTALLER OF CHEMICAL ANCHORS SHALL BE CERTIFIED BY ANCHOR MANUFACTURER FOR PROPER INSTALLATION REQUIREMENTS AND PROCEDURES.



Notes:



N.13



N.T.



N.T.S.



A.1.5.



1



N.I.S

N.I.

N.T.S.

NOT

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L



ARCHITECTURE SITE PLANNING

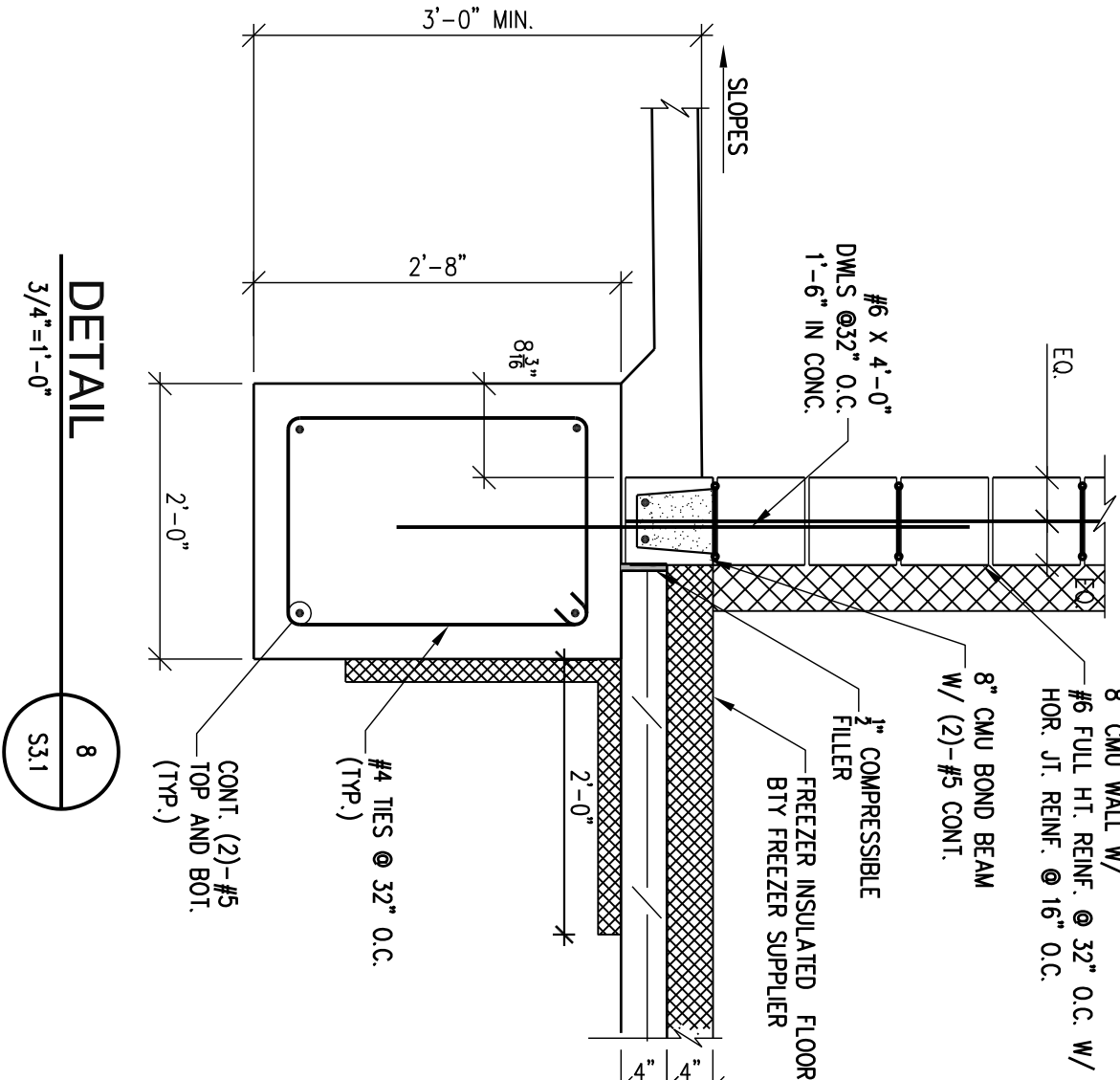
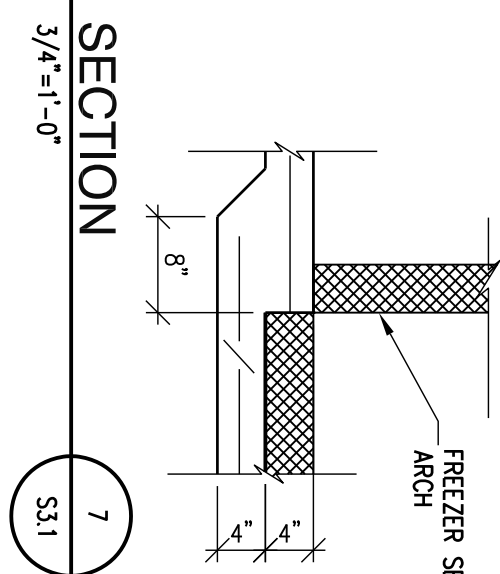
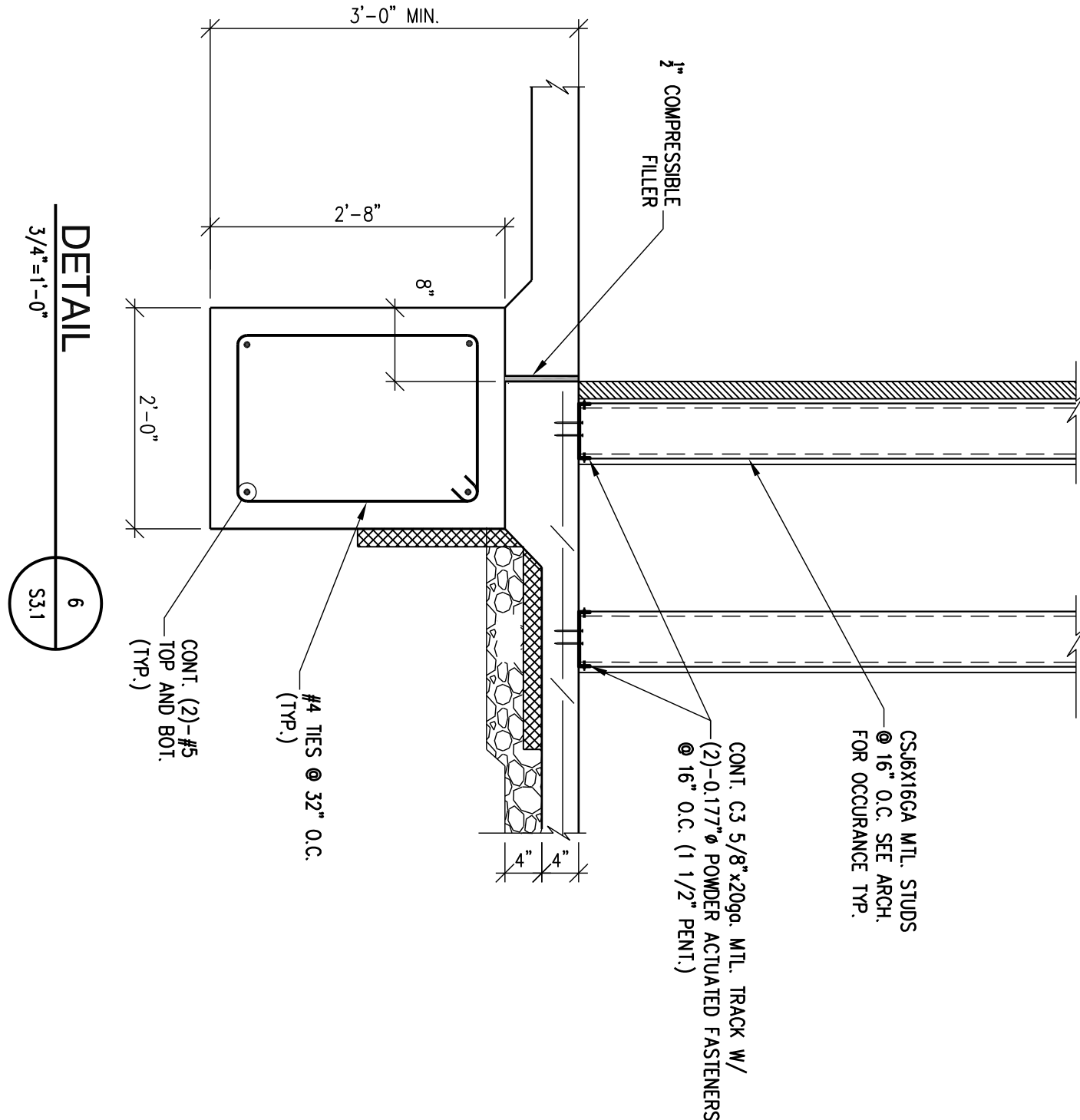
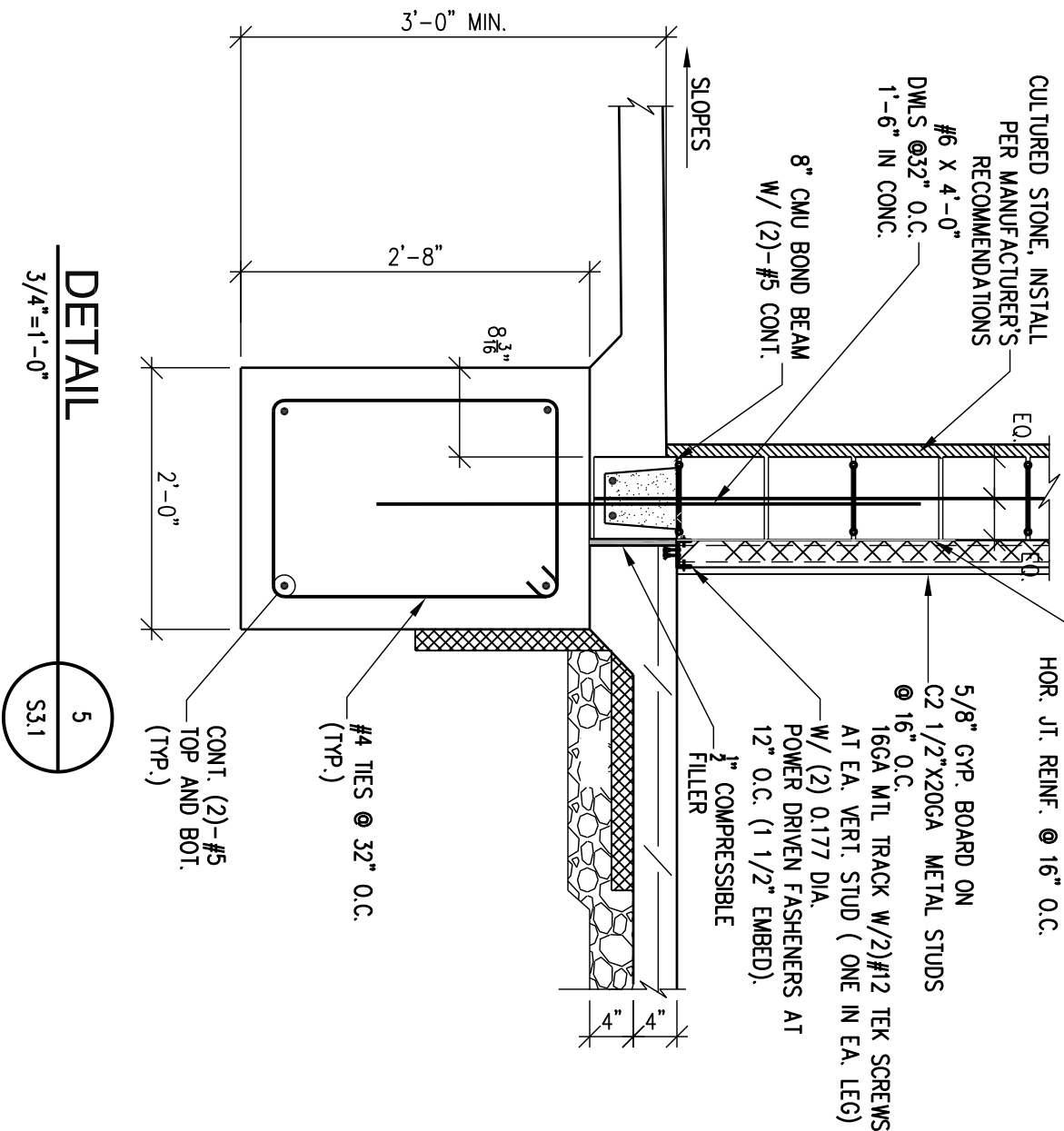
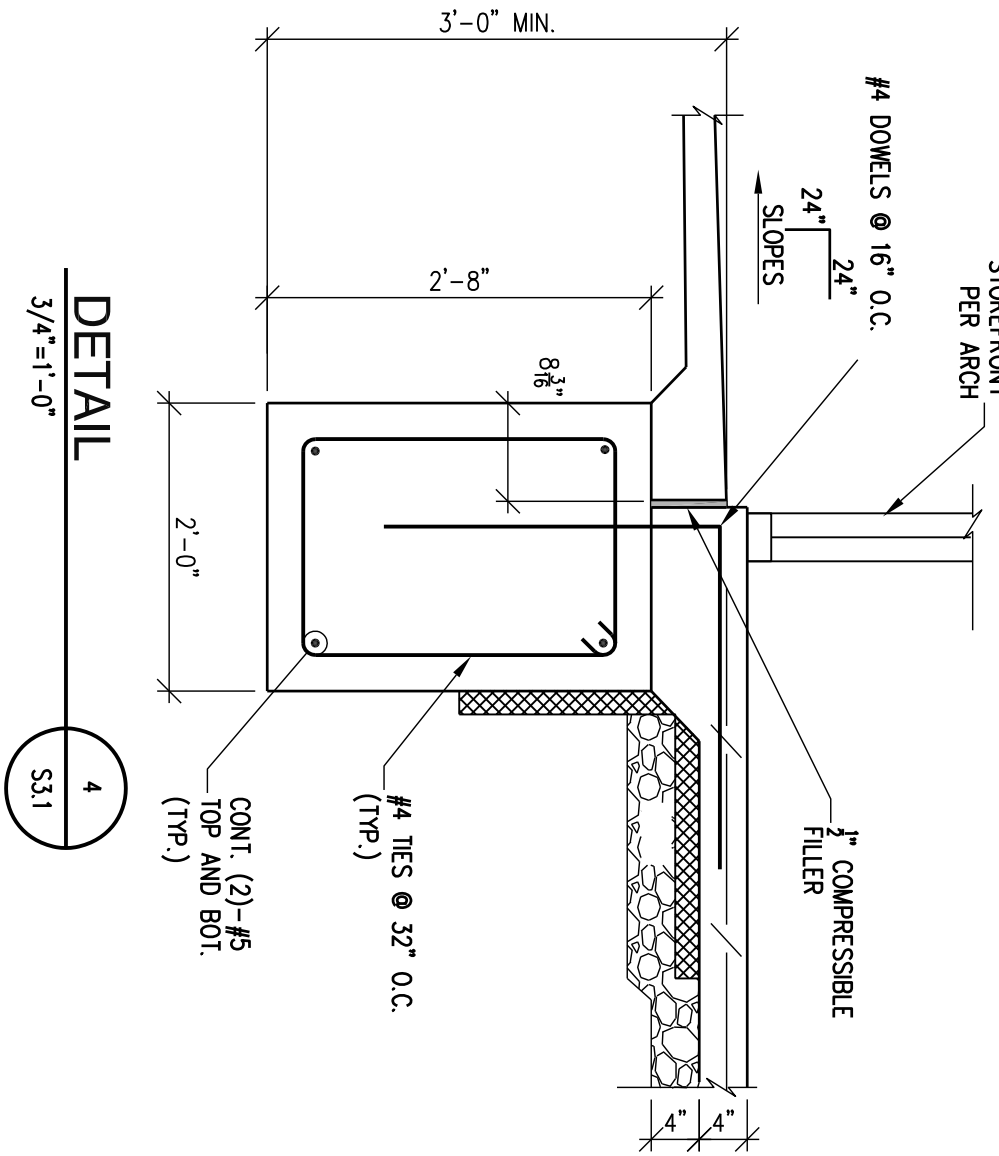
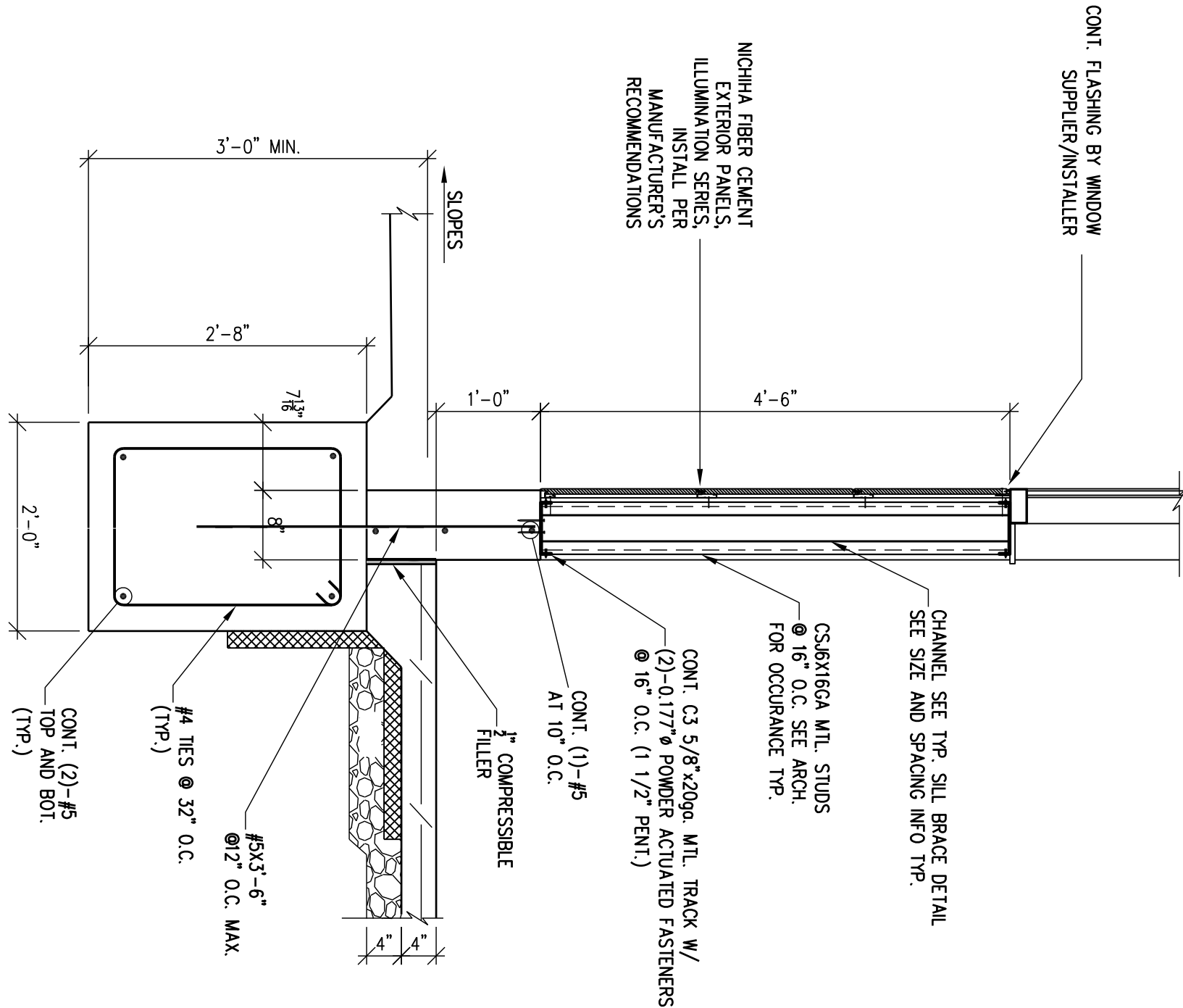
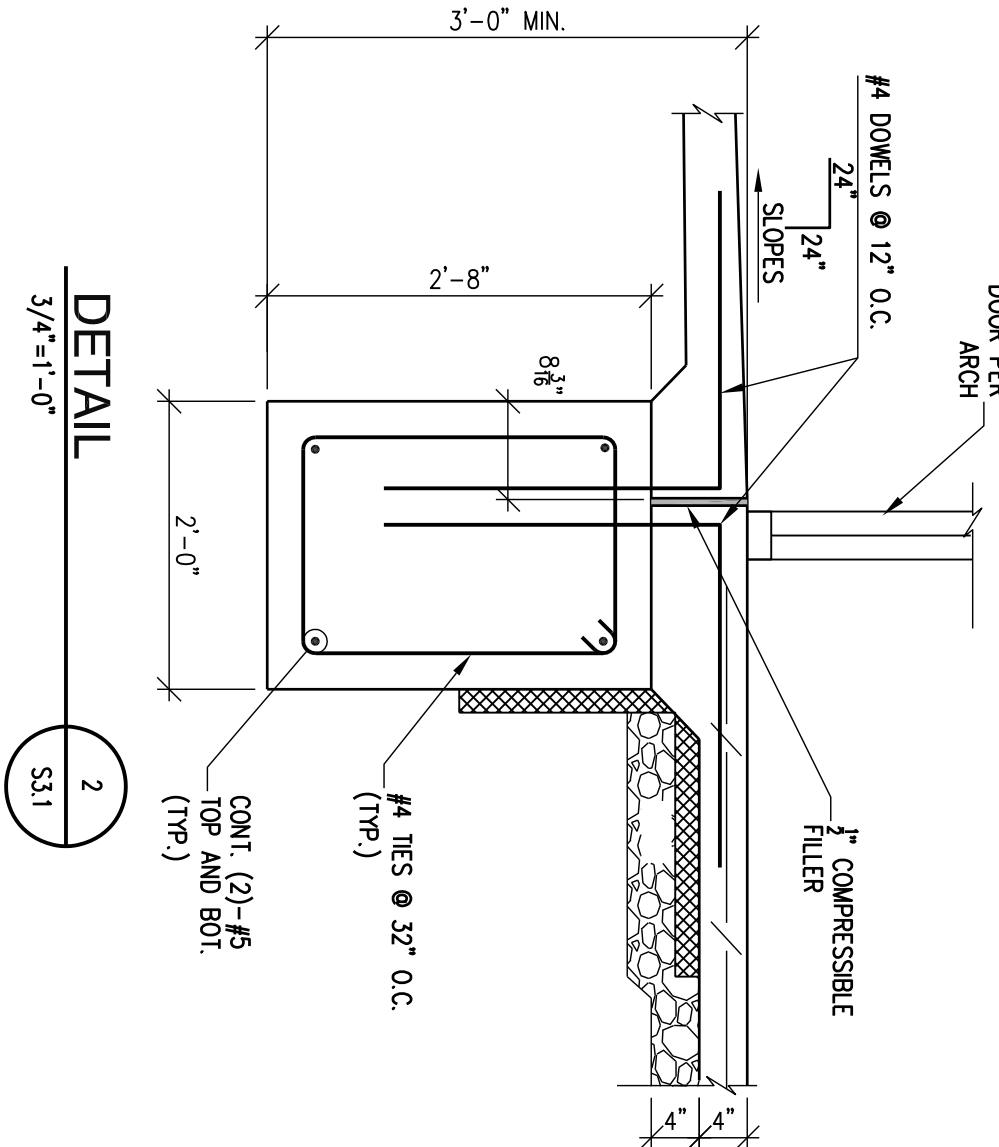
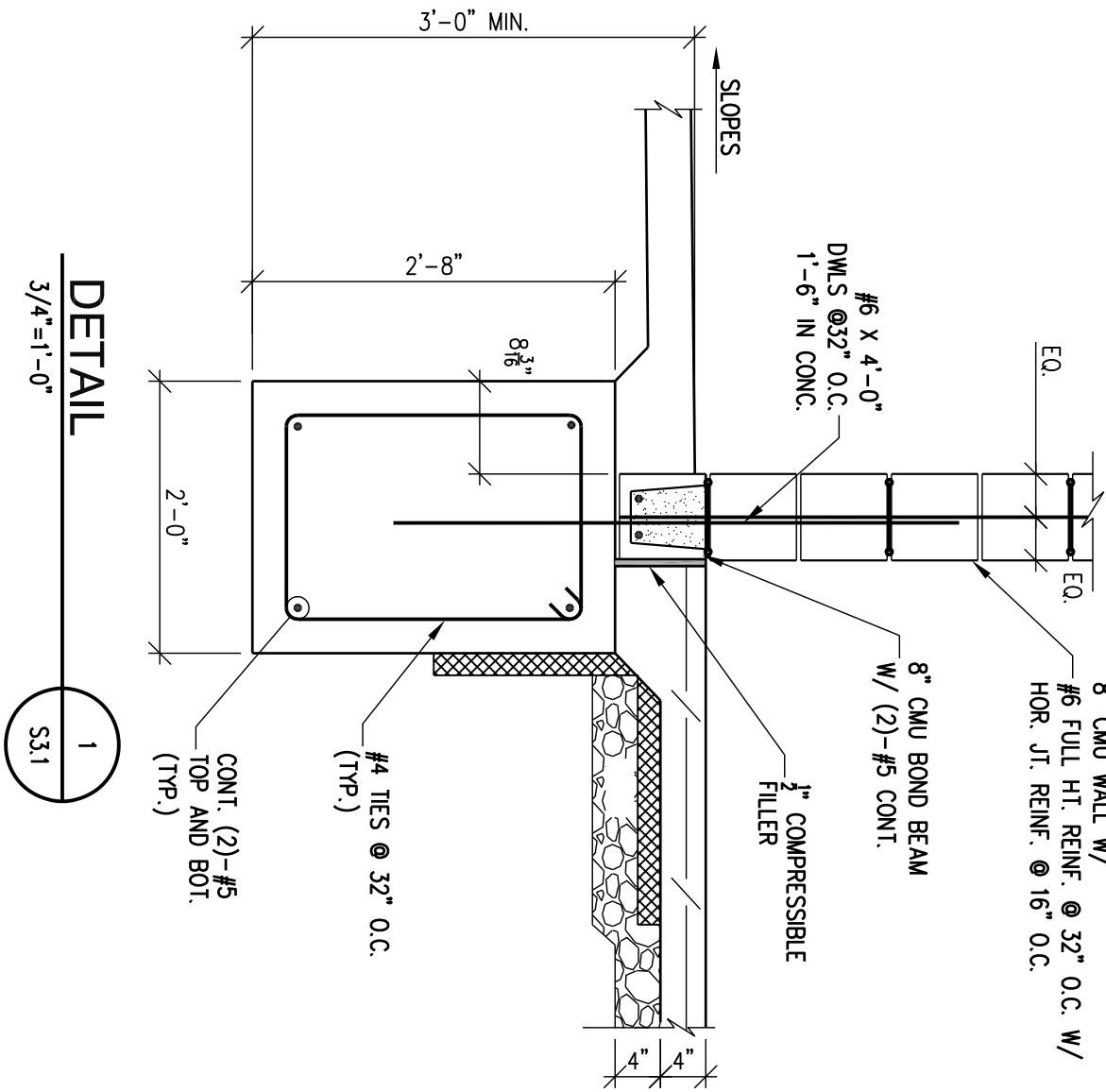
201 S. CENTRAL AVE, SUITE #203
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Dra

She

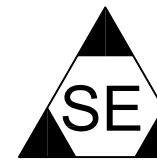
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NOTE: CONTRACTORS TO COMPLY WITH ALL GOVERNING REGULATIONS AND REQUIREMENTS INCLUDING OSHA REGULATIONS 29 CFR PART 1926 FOR CONSTRUCTION INDUSTRY.

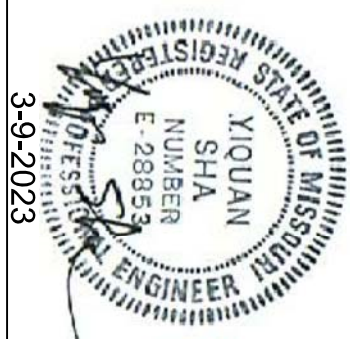
NOTE: THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING TECHNIQUES OF FABRICATION AND SAFETY AT THE CONSTRUCTION SITE. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF ALL TEMPORARY SHORING, BRACING, BOLTING, WELDING, LUGS, SEAT ANGLES, ETC. TO SAFELY CONSTRUCT THE PROJECT. THE CONTRACTOR IS TO COORDINATE BETWEEN ARCHITECTURAL, STRUCTURAL AND OTHER DISCIPLINES' DRAWINGS AND TO BRING ANY DISCREPANCY TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO GOING AHEAD WITH CONSTRUCTION OF THAT SECTION.



SUMMIT ENGINEERING GROUP LLC
STRUCTURAL ENGINEERS
12118 Fairpark Lane
St. Louis, MO 63146
Ph: 314-325-4899 Fax: 314-594-9922
Email: eng@summit-engg.com

RANGWALA ARCHITECTS
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LEE'S SUMMIT, MISSOURI

PROPOSED:
CONVENIENCE STORE

HAMBLÉN PLAZA

Revisions
A. 3/1/19 APPENDIX#1
B. 8/21/19 APPENDIX#5

Sheet Title:
FOUNDATION
DETAILS
Drawn By:

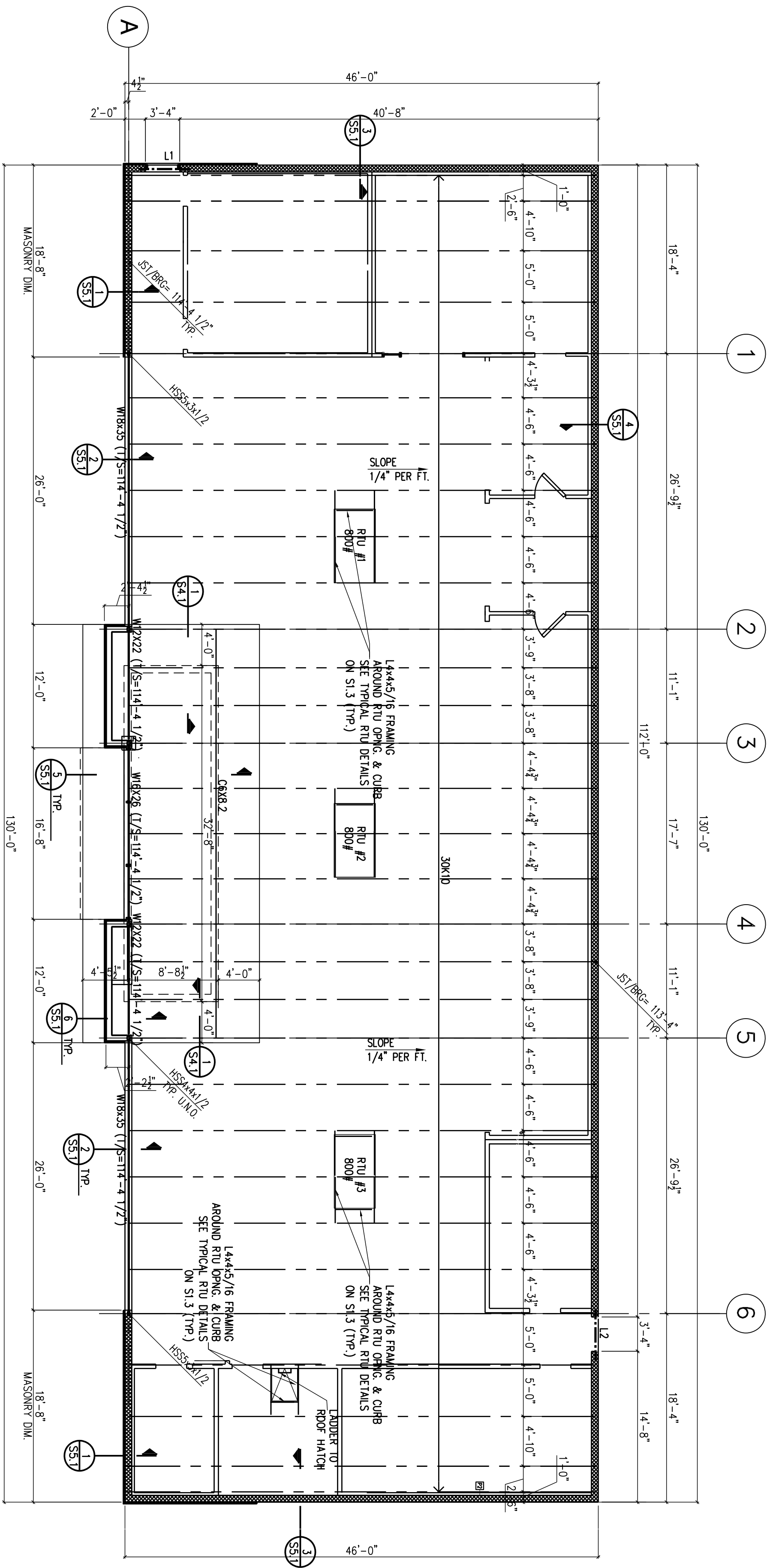
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Sheet Number

S3.1

NOTE: THE STRUCTURAL DRAWINGS ARE NOT A SET OF STAND-ALONE CONSTRUCTION DOCUMENTS. THESE STRUCTURAL DRAWINGS MUST ONLY BE USED IN CONJUNCTION WITH ARCHITECTURAL AND OTHER RELATED DISCIPLINES DRAWINGS. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND CO-ORDINATE BETWEEN THE STRUCTURAL, ARCHITECTURAL, AND OTHER DISCIPLINES DRAWINGS. ANY DISCREPANCY BETWEEN THE DRAWINGS MUST BE BROUGHT TO THE ARCHITECT AND ENGINEERS ATTENTION FOR RESOLUTION PRIOR TO FABRICATION OR CONSTRUCTING THAT PORTION OF THE STRUCTURE.

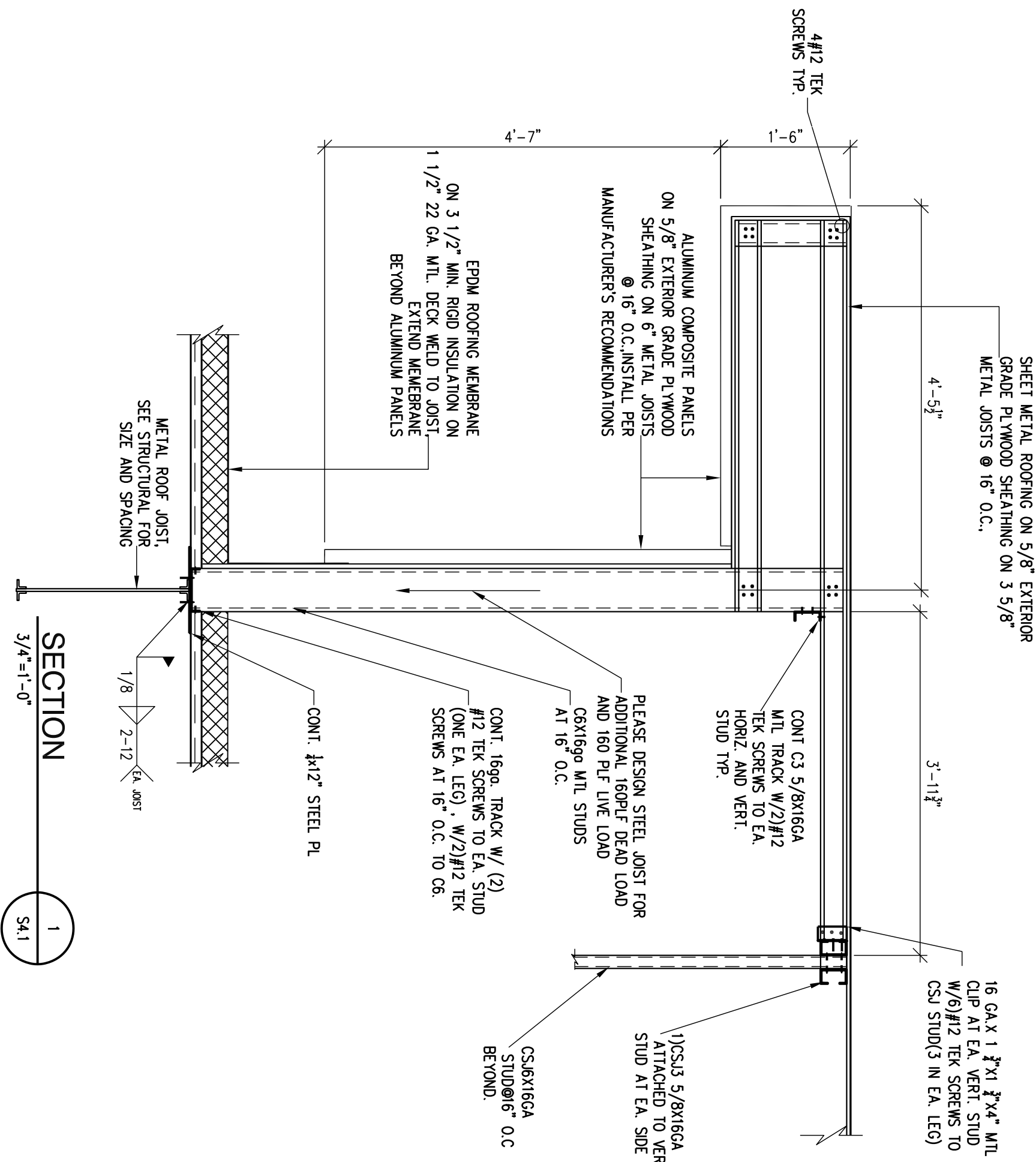
Date: 3-9-2023
Project Number: 22032



ROOF FRAMING PLAN

1. ROOF CONSTRUCTION: 1 1/2\"/>
2. TOP OF STRUCTURAL STEEL ELEVATION IS REFERENCED FROM FINISHED FLOOR ELEVATION = 100'-0\"/>
3. FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWINGS S1.1 TO S1.3.
4. PROVIDE VERTICAL CONTROL JOINTS IN MASONRY WALLS AT 20'-0\"/>
5. THE CONCENTRATED LOADS FROM MECHANICAL UNITS AND ROOF SPRENS ARE NOT INCLUDED IN THE SIZE CALLOUT FOR THE JOISTS. THE JOIST MANUFACTURER SHALL DESIGN THE JOISTS APPLYING THESE LOADS IN ADDITION TO THE SIZE CALLOUT. GENERAL CONTRACTOR TO COORDINATE THE WEIGHTS AND LOCATIONS OF THE MECHANICAL UNITS WITH THE MECHANICAL CONTRACTOR.
6. COORDINATE ROOF OPENINGS AND ANGLE FRAMING LOCATIONS WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR. PROVIDE STEEL ANGLE FRAME UNDER ALL ROOF TOP UNITS AND AROUND ALL ROOF OPENINGS. STRUCTURAL DRAWINGS DO NOT REFLECT ALL ROOF TOP UNITS AND OPENING REQUIREMENTS. SEE MECHANICAL DRAWINGS FOR ALL MECHANICAL INFORMATION.
7. PROVIDE STRUT END JOIST AT EACH COLUMN WHERE JOIST OCCUR SEE TYPICAL DETAIL.
8. JOIST MANUFACTURER TO DESIGN JOIST FOR THE UPLIFT LOAD INDICATED IN GENERAL NOTES.

LINTEL SCHEDULE		
MARK	SIZE	DESCRIPTION
L1	2) 8\"/>	
L2	3) 8\"/>	



NOTE: CONTRACTORS TO COMPLY WITH ALL GOVERNING REGULATIONS AND REQUIREMENTS INCLUDING OSHA REGULATIONS 29 CFR PART 1926 FOR CONSTRUCTION INDUSTRY.

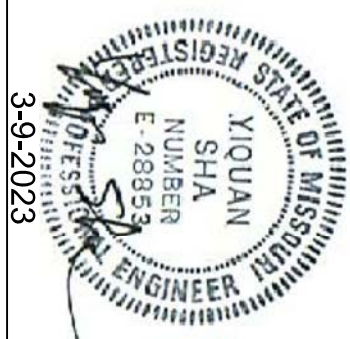
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LEE'S SUMMIT, MISSOURI

PROPOSED:
CONVENIENCE STORE
HAMBLEN PLAZA

Revisions

Sheet Title:

ROOF PLAN

Drawn By:

DS

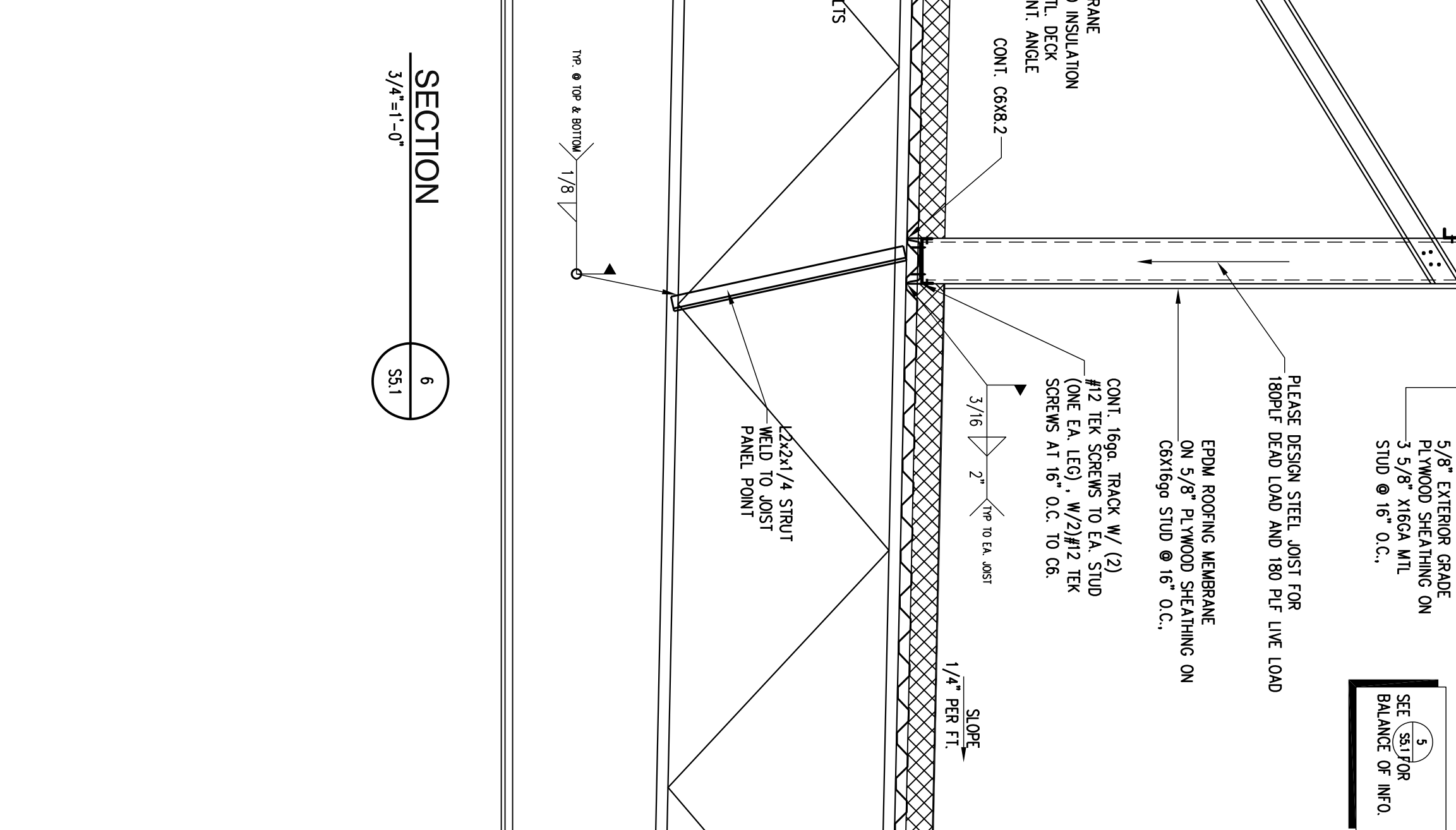
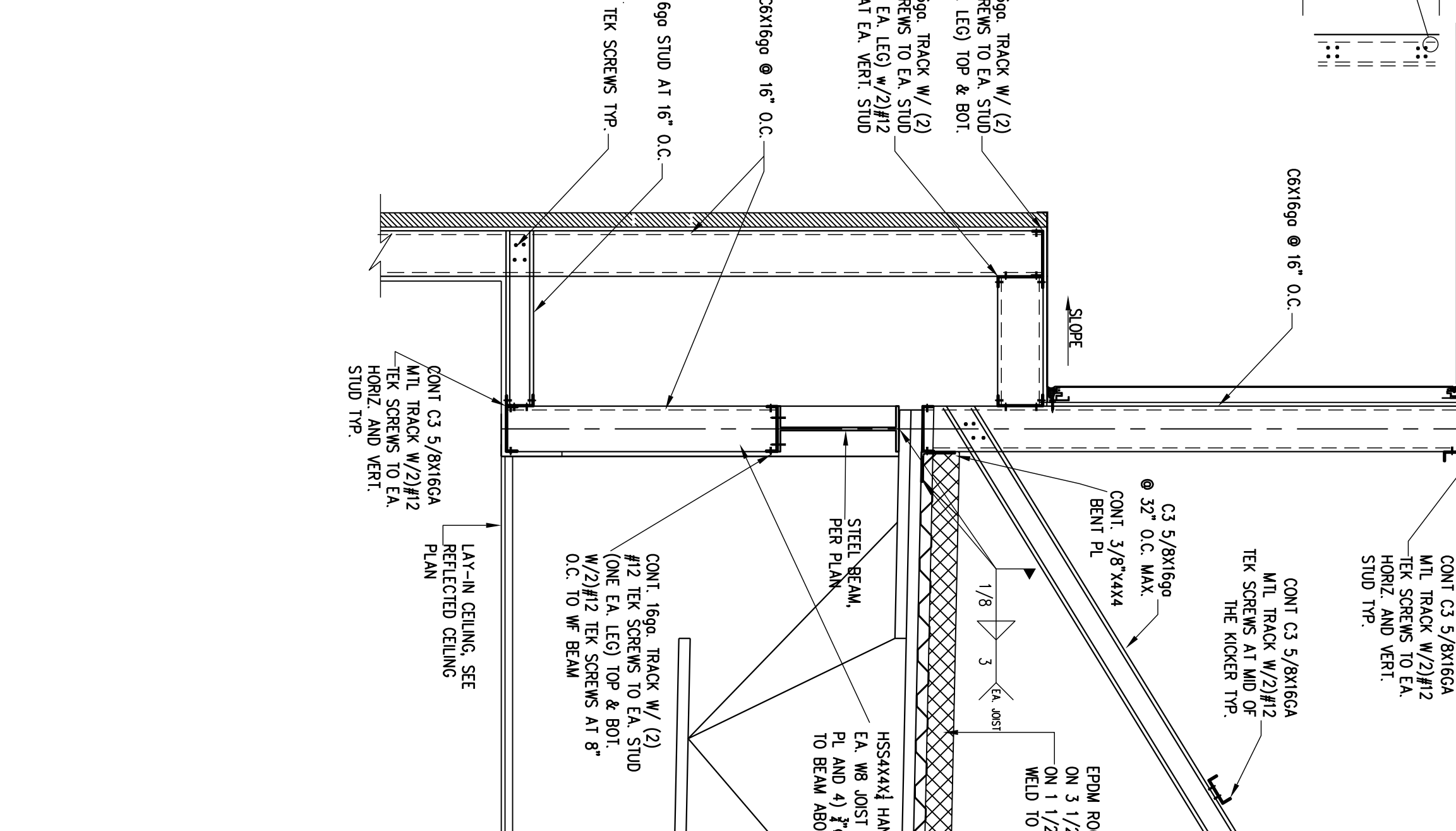
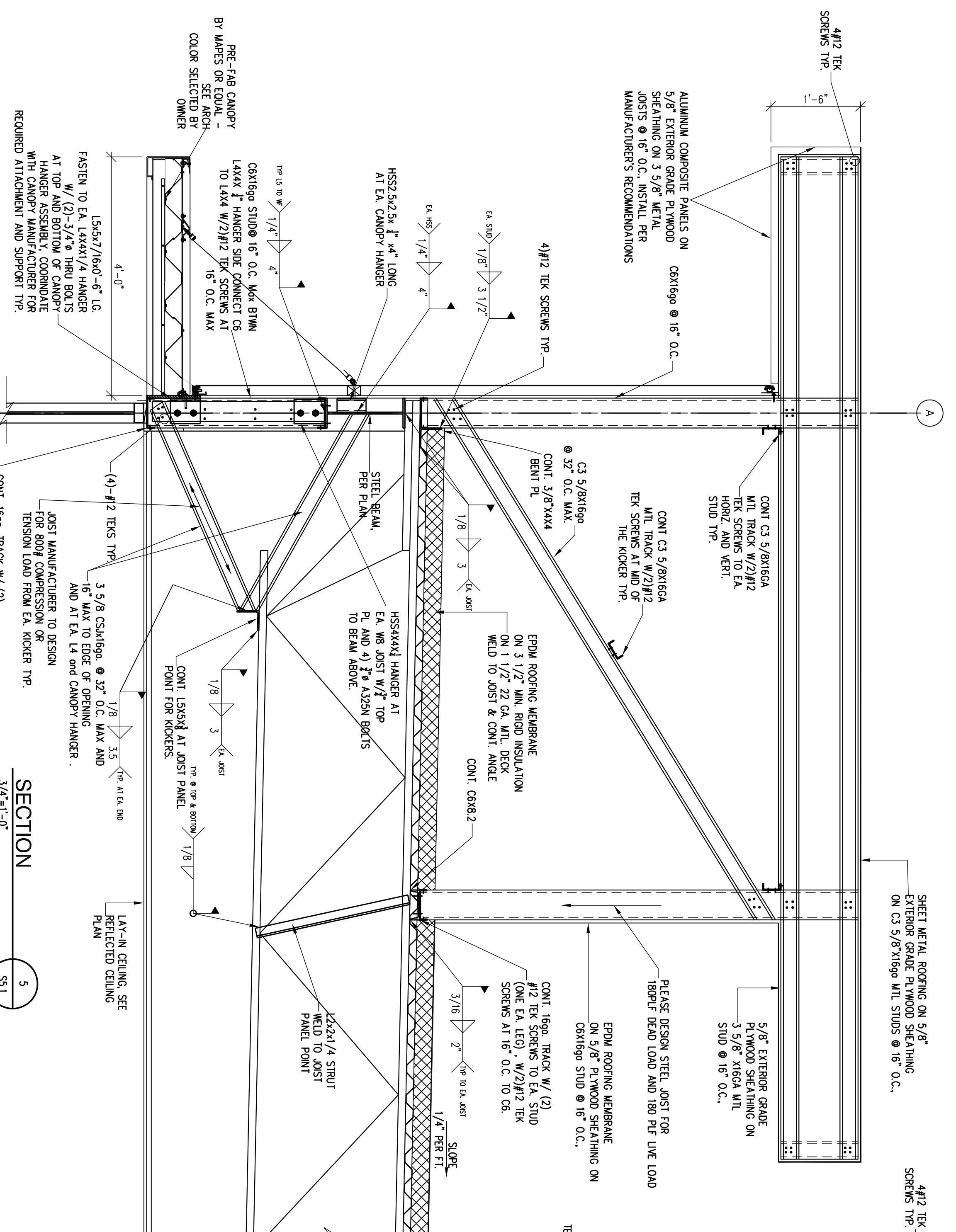
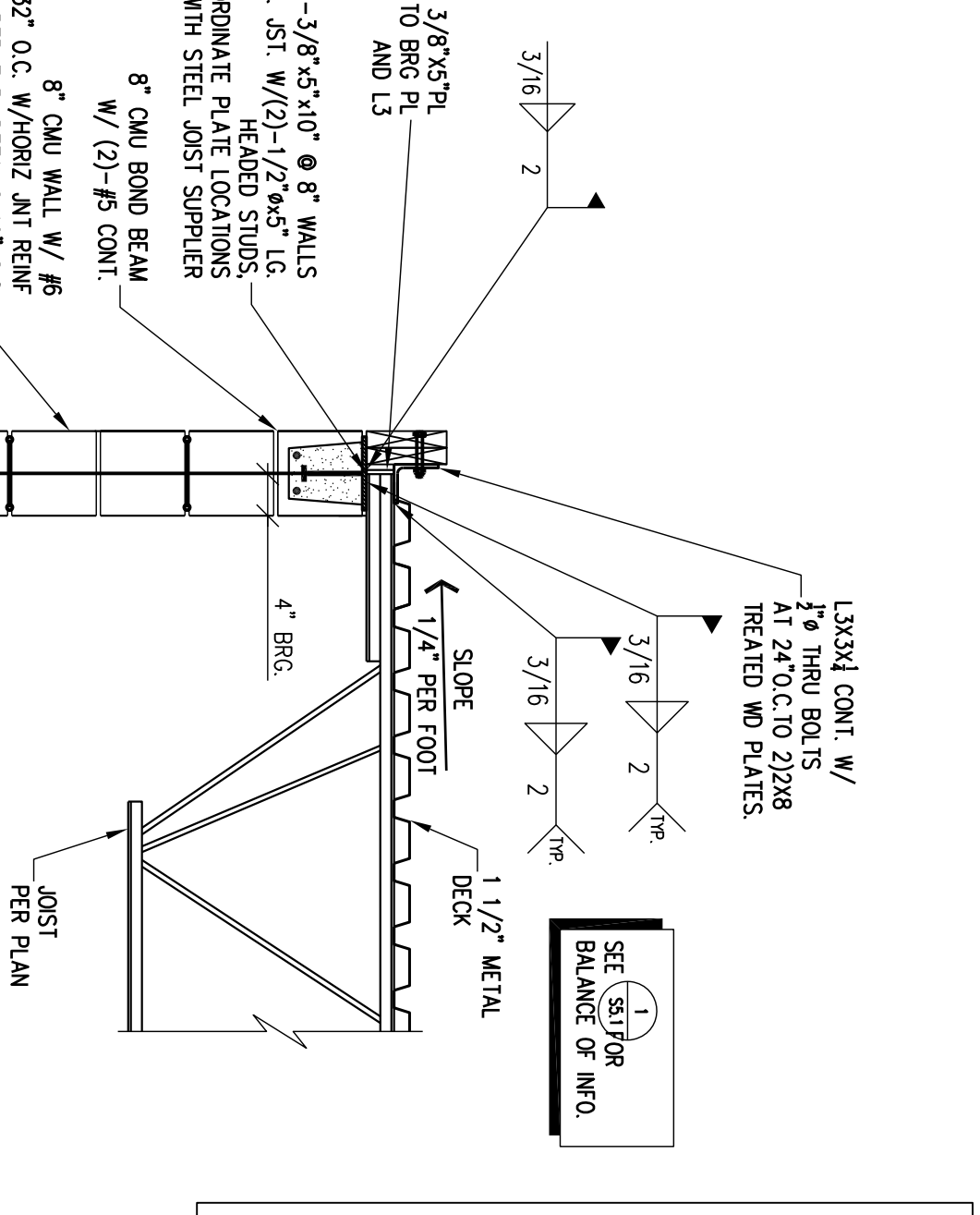
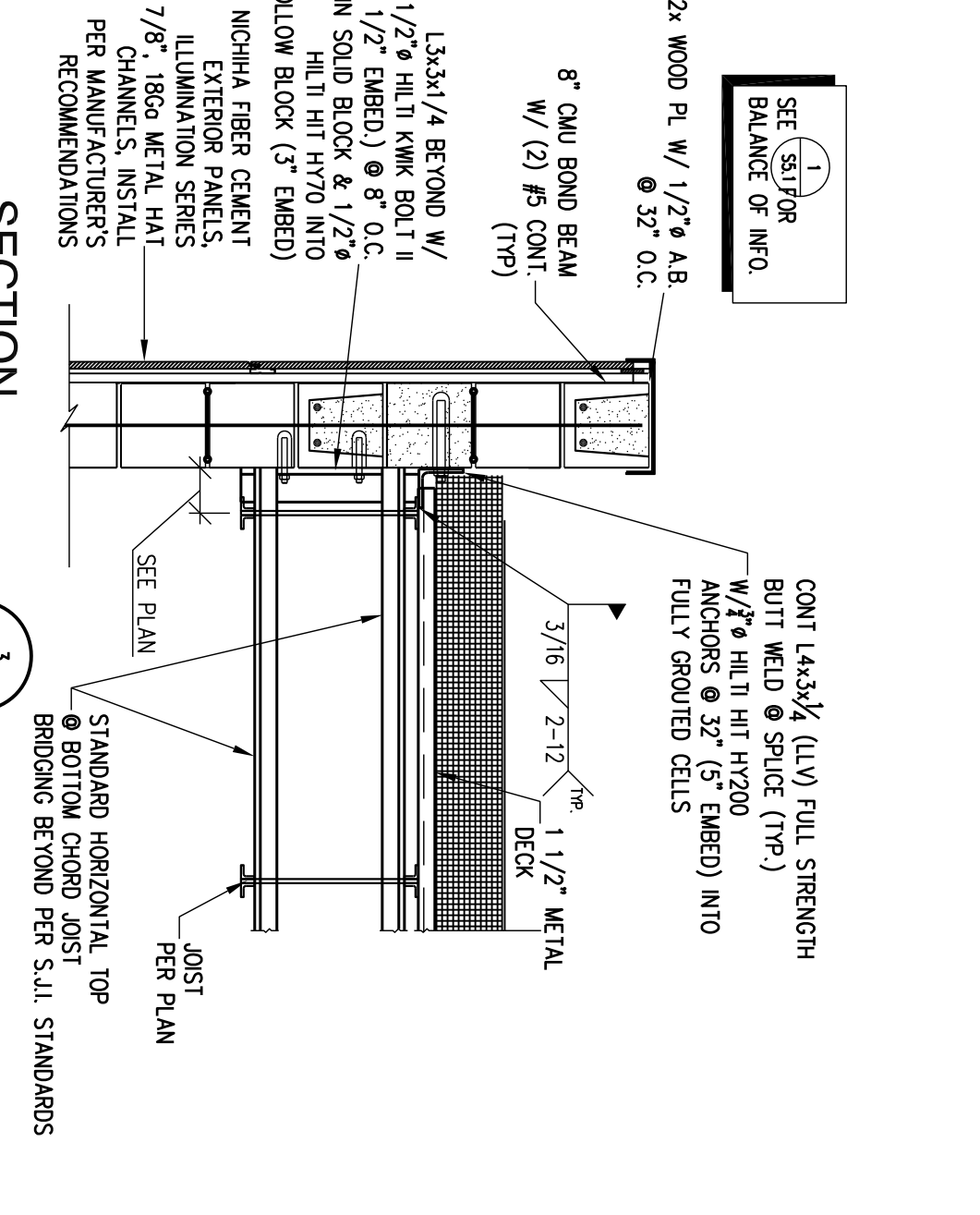
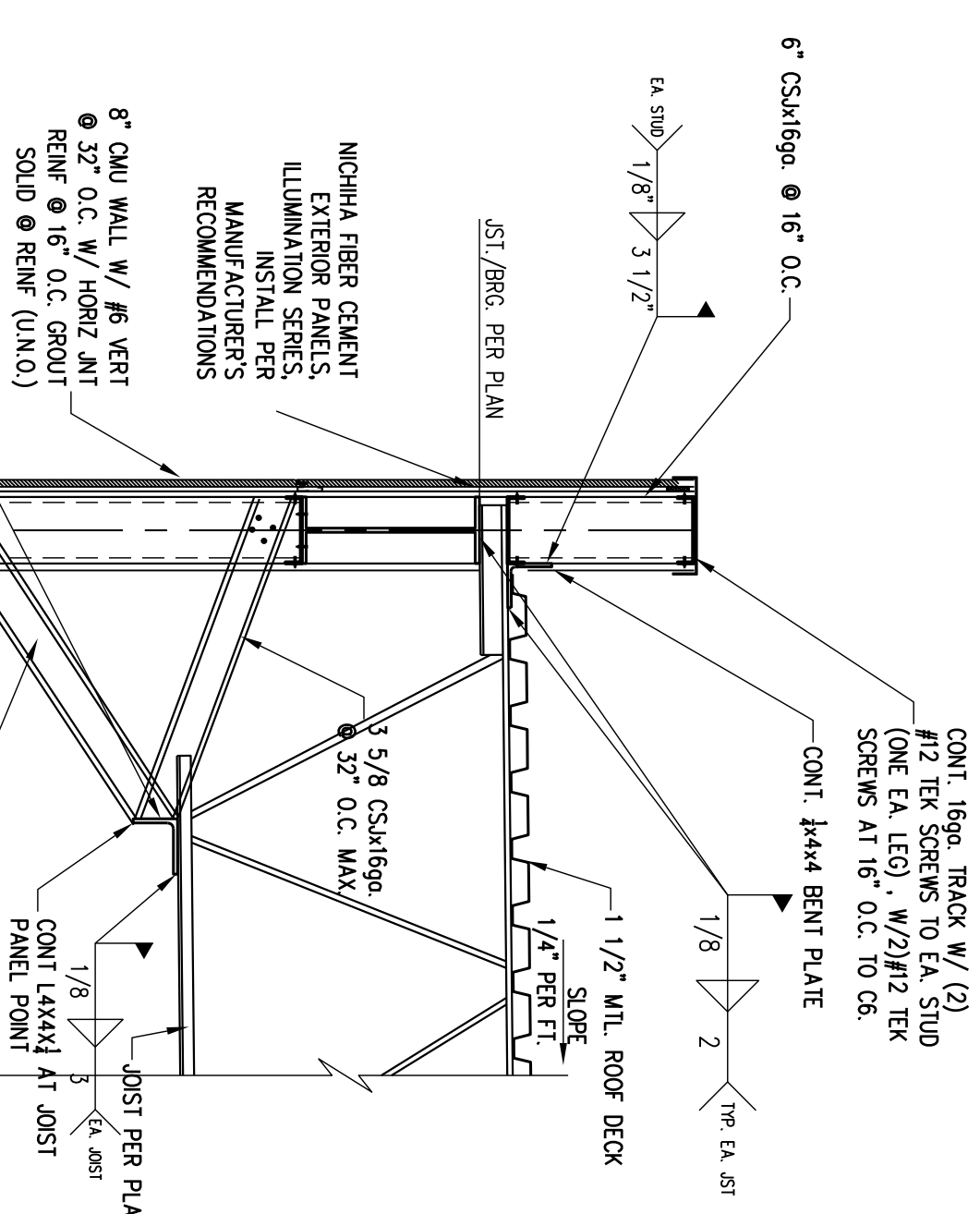
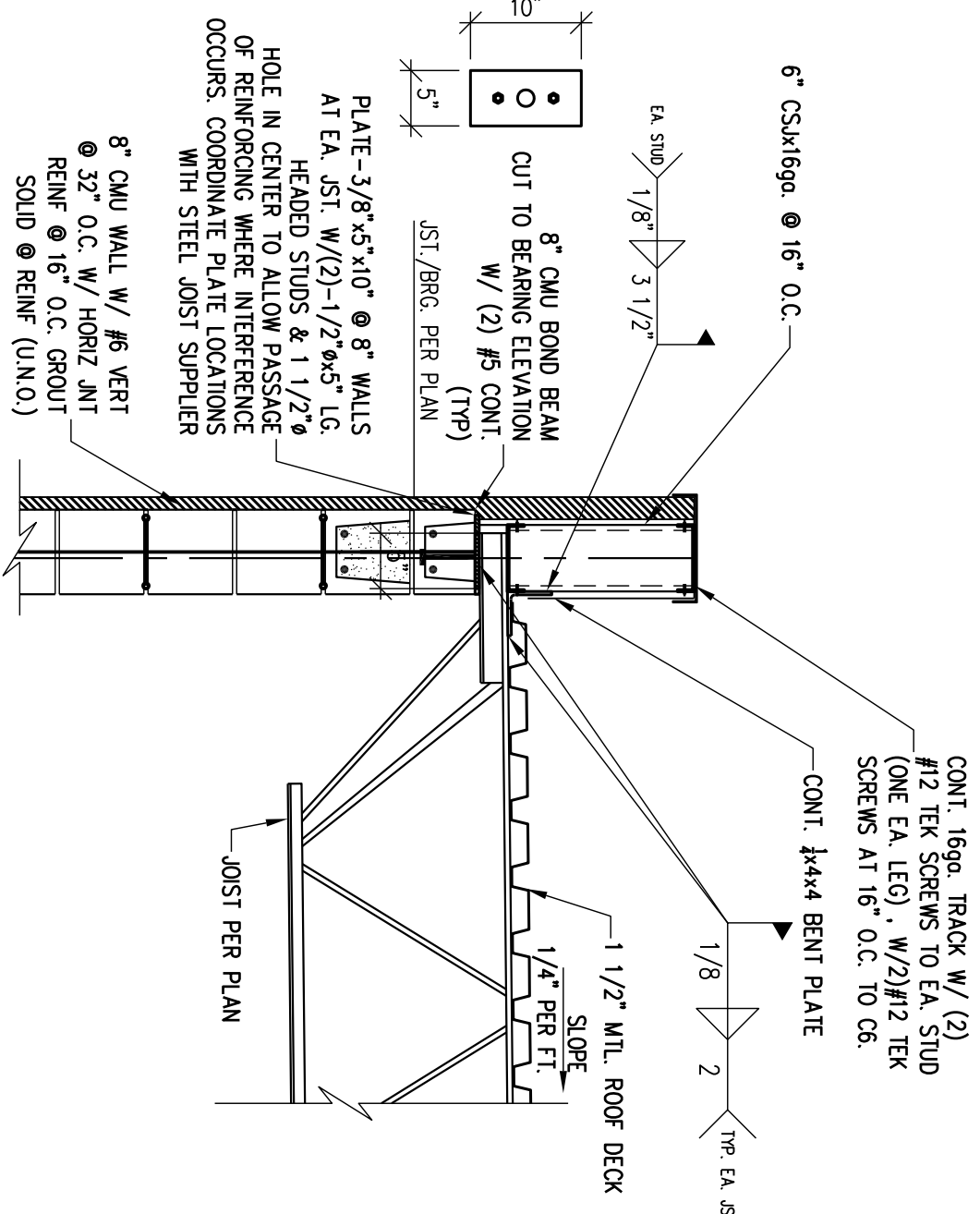
Sheet Number

S4.1

Date: 3-9-2023

Project Number: 22032

NOTE: THE STRUCTURAL DRAWINGS ARE NOT A SET OF STAND-ALONE CONSTRUCTION DOCUMENTS. THESE STRUCTURAL DRAWINGS MUST ONLY BE USED IN CONJUNCTION WITH ARCHITECTURAL AND OTHER RELATED DISCIPLINES DRAWINGS. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND CO-ORDINATE BETWEEN THE STRUCTURAL, ARCHITECTURAL, AND OTHER DISCIPLINES DRAWINGS. ANY DISCREPANCY BETWEEN THE DRAWINGS MUST BE BROUGHT TO THE ARCHITECT AND ENGINEERS ATTENTION FOR RESOLUTION PRIOR TO FABRICATION OR CONSTRUCTING THAT PORTION OF THE STRUCTURE.



NOTES:
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NOTES:
CONTRACTORS TO COMPLY WITH ALL GOVERNING REGULATIONS AND REQUIREMENTS INCLUDING OSHA REGULATIONS 29 CFR PART 1926 FOR CONSTRUCTION INDUSTRY.

NOTES:
THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING TECHNIQUES OF FABRICATION AND SAFETY AT THE CONSTRUCTION SITE. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF ALL TEMPORARY SHORING, BRACING, BOLTING, WELDING, LUGS, SEAT ANGLES, ETC. TO SAFELY CONSTRUCT THE PROJECT. THE CONTRACTOR IS TO COORDINATE BETWEEN ARCHITECTURAL, STRUCTURAL AND OTHER DISCIPLINES' DRAWINGS AND TO BRING ANY DISCREPANCY TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO GOING AHEAD WITH CONSTRUCTION OF THAT SECTION.

Sheet Title:
**ROOF
DETAILS**

Sheet Number
S5.1

Date: 3-9-2023
Project Number: 22023

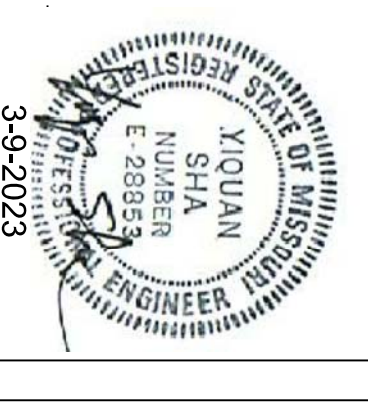
PROPOSED:
CONVENIENCE STORE

HAMBLÉN PLAZA

LEE'S SUMMIT, MISSOURI

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H AND P EQUIPMENT

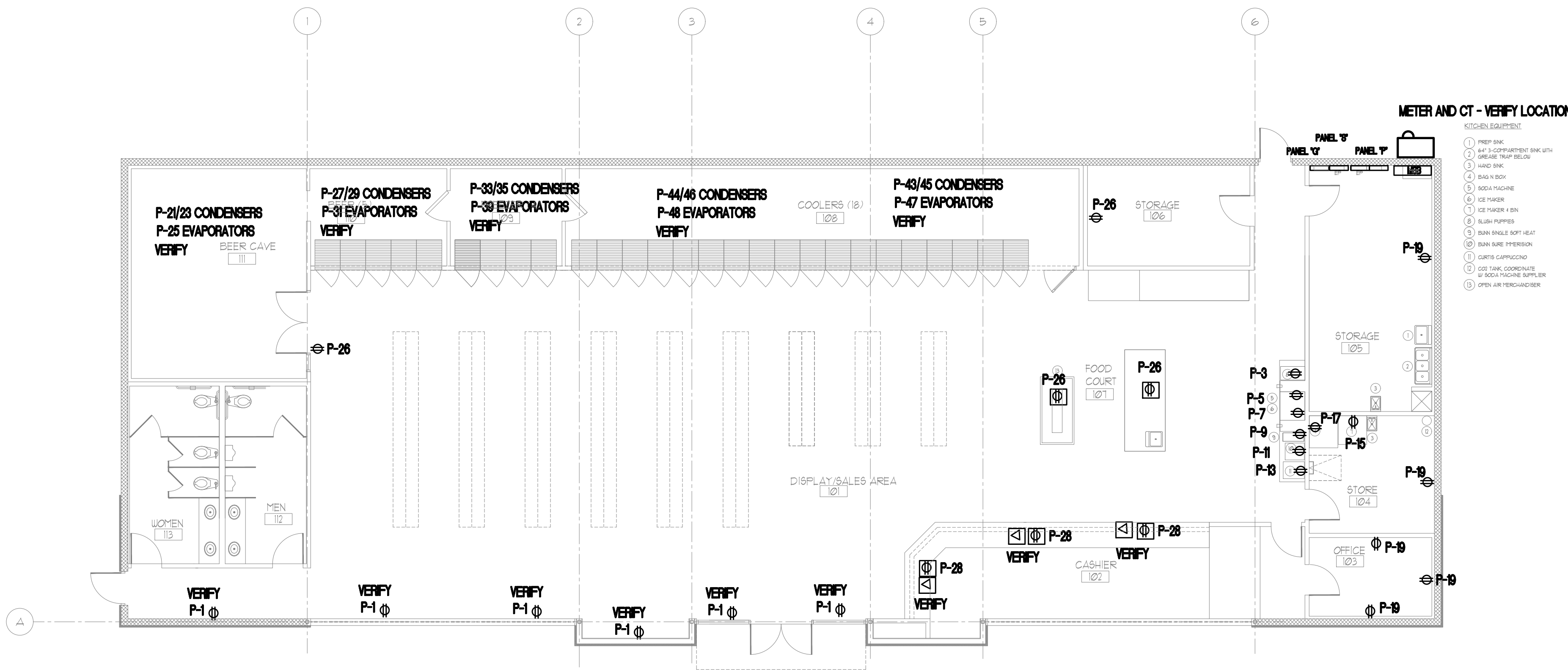
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P-2/4/6
60A/NF/WP/3P DISC

RTU-2
P-8/10/12
60A/NF/WP/3P DISC

RTU-3
P-14/16/18
60A/NF/WP/3P DISC

DWH-1
P-20
60A/NF/WP/1P DISC

DWH-2
P-22/24
100A/NF/WP/3P DISC



GENERAL NOTES: ELECTRICAL PLANS

- A. ALL WORK SHALL BE IN COMPLETE CONFORMANCE WITH THE LATEST APPLICABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND NFPA 70 LIFE SAFETY CODES AT MINIMUM, WHETHER EXPLICITLY SHOWN OTHERWISE OR NOT.
- B. THESE PLANS ARE ACCOMPANIED BY SPECIFICATIONS.
- C. ALL CONDUCTORS ARE COPPER AND ARE ROUTED IN CONDUIT.
- D. PRODUCE A PLAN FOR SUBMISSION IN COORDINATION WITH THE SPRINKLER, HVAC AND PLUMBING CONTRACTORS TO COORDINATE ROUTING AND PLACEMENT OF DEVICES, ANGULARITIES, FIXTURES, CONDUIT, ETC., SO THAT NO COORDINATION PROBLEMS OCCUR. THIS SHALL BE DONE PRIOR TO INITIATION OF ANY WORK.
- E. REFER TO ARCHITECTURAL PLANS FOR CEILING HEIGHTS, WALL CONSTRUCTION AND LOCATIONS OF VISIBLE OBJECTS ON THE EXTERIOR OF THE BUILDING.

- F. FOR ADDITIONAL INFORMATION AND FOR EXACT POINT OF CONNECTIONS OF ROUGH-IN POINTS TO EQUIPMENT, SEE BOTH THE EQUIPMENT CUT SHEETS AS WELL AS THE ARCHITECTURAL PLANS AND SPECIFICATIONS. VERIFY ALL ELEVATIONS AS WELL AS EXACT REQUIRED LOCATIONS OF ELECTRICAL CONNECTIONS AND CONN. EQUIP. PRIOR TO INITIATING ANY WORK, BECAUSE ALL ELEVATIONS ARE APPROX.
- G. BE RESPONSIBLE NOT ONLY FOR THE ROUGH-IN POINTS REQUIRED AS SHOWN GENERALLY HEREIN, BUT ALSO FOR FINAL CONNECTION TO ALL EQUIPMENT AND THE FINISHING AND INSTALLING OF MATERIALS AND LABOR FOR SUCH AS REQUIRED TO MAKE FULLY FUNCTIONAL.
- H. PROVIDE CONNECTIONS TO ALL EQUIPMENT AS RECOMMENDED BY THE MANUFACTURER. IF EQUIPMENT COMES WITH A CORD AND PLUG, PROVIDE MATCHING RECEPTACLE IN REQUIRED JUNCTION BOX. EXACT LOCATIONS OF OUTLETS FOR ALL EQUIPMENT SHALL BE AS DIRECTED BY SUPPLIERS SHOP DRAWINGS.
- I. PROVIDE PLUG AND CORD FOR ALL EQUIPMENT NOT SHIPPED WITH A PLUG AND CORD BUT REQUIRES CONNECTION TO A RECEPTACLE. PLUG AND CORD SHALL BE APPROPRIATE NEMA TYPE, UL LISTED AND SIZED TO HANDLE THE LOAD PER THE NEC.
- J. ALL FLEXIBLE CONDUIT SHALL BE LIQUID TIGHT CONDUIT

ELECTRICAL SYMBOLS:

- DUPLEX RECEPTACLE - MOUNT AT 9" AFF TO BOTTOM OF BOX UNLESS OTHERWISE NOTED.
- DOUBLE DUPLEX RECEPTACLE ("QUADRAPLEX")
- SPECIAL PURPOSE RECEPTACLE
- TELEPHONE JACK - PROVIDE & INSTALL CONDUIT & J-BOX AS REQ'D. TO CEILING WITH PULL WIRE.
- SINGLE POLE, SINGLE LEVER SWITCH AT 40" AFF UNO.
- 2 X 3 JUNCTION BOX - MTD. AS SHOWN
- INDICATES DROP IN WALL FROM CEILING
- CONDUIT ABOVE CEILING OR IN WALLS
- FLEXIBLE CONDUIT BELOW FLOOR OR COUNTER
- CONDUCTORS (| IS NEUTRAL, | IS HOT, | IS GROUND)

FEEDER SCHEDULE

1 PHASE BRANCH CIRCUIT WIRE SIZE (2P CIRCUITS) (UNLESS NOTED OTHERWISE)

30 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 2/0, 110 GND IN 1/2" C.
40 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 2/0, 110 GND IN 3/4" C.
60 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 3/0, 118 GND IN 1" C.
100 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 3/0, 118 GND IN 1 1/2" C.
150 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 3-1/0 WITH #2 GND IN 1 1/2" C.

3 PHASE BRANCH CIRCUIT WIRE SIZE (UNLESS NOTED OTHERWISE)

200 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4-1/0 WITH #2 GND IN 2" C.
100 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 118 GND IN 1 1/2" C.
75 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 118 GND IN 1 1/4" C.
70 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 118 GND IN 1 1/4" C.
60 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 118 GND IN 1" C.
45 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 110 GND IN 1" C.
40 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 110 GND IN 1" C.
30 AMPERE BRANCH CIRCUIT FEEDERS SHALL BE 4/0, 110 GND IN 3/4" C.

POWER PLAN

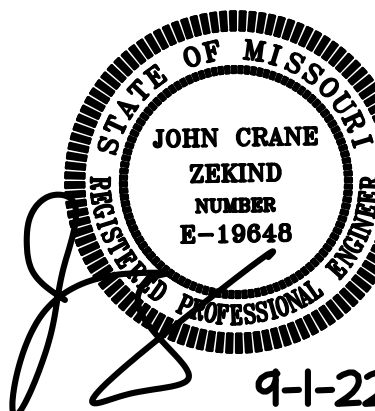
SCALE: 1/8" = 1'-0"

Graphic Scale:
0 4 8

METER AND CT - VERIFY LOCATION

KITCHEN EQUIPMENT

1. REFR. UNIT
2. 6" 3-COMPARTMENT SINK WITH
DISPOSER (TYP. SINK)
3. HAND SINK
4. SINK WITH
5. SODA MACHINE
6. ICE MAKER
7. ICE MAKER X 8 IN
8. SODA DISPENSER
9. SINK SINGLE SINK UNIT
10. SINK SINK DISPENSER
11. CUPBOARD CUPBOARD
12. CUPBOARD CUPBOARD
13. CUPBOARD CUPBOARD
14. OPEN AIR REFRIGERATOR



9-1-22

SERVICE STATION AND
CONVENIENCE STORE

LEE SUMMIT, MO

John C. Zekind, PE
CONSULTING ENGINEERS
1278 WHITE ROAD
CHESTERFIELD, MO, 63017
314-878-2290

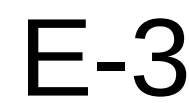
Project Number: _____
Issued For: ☐ Review ☐ Permit ☐ Bidding ☐ Construction
9-1-22

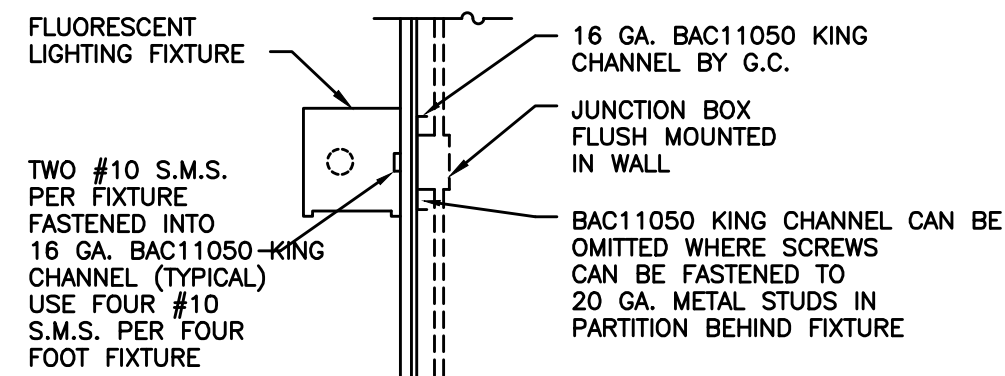
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E-1



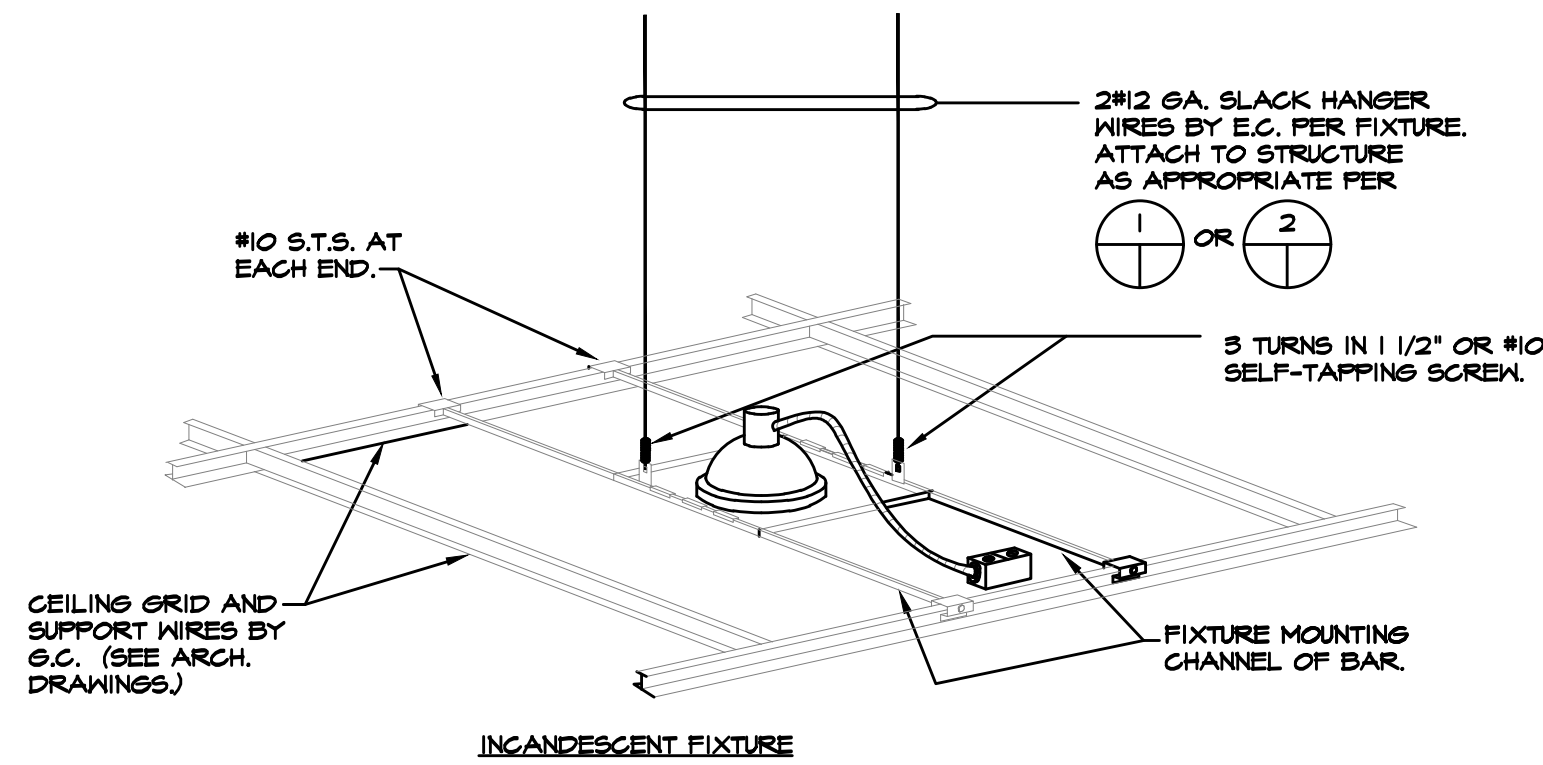
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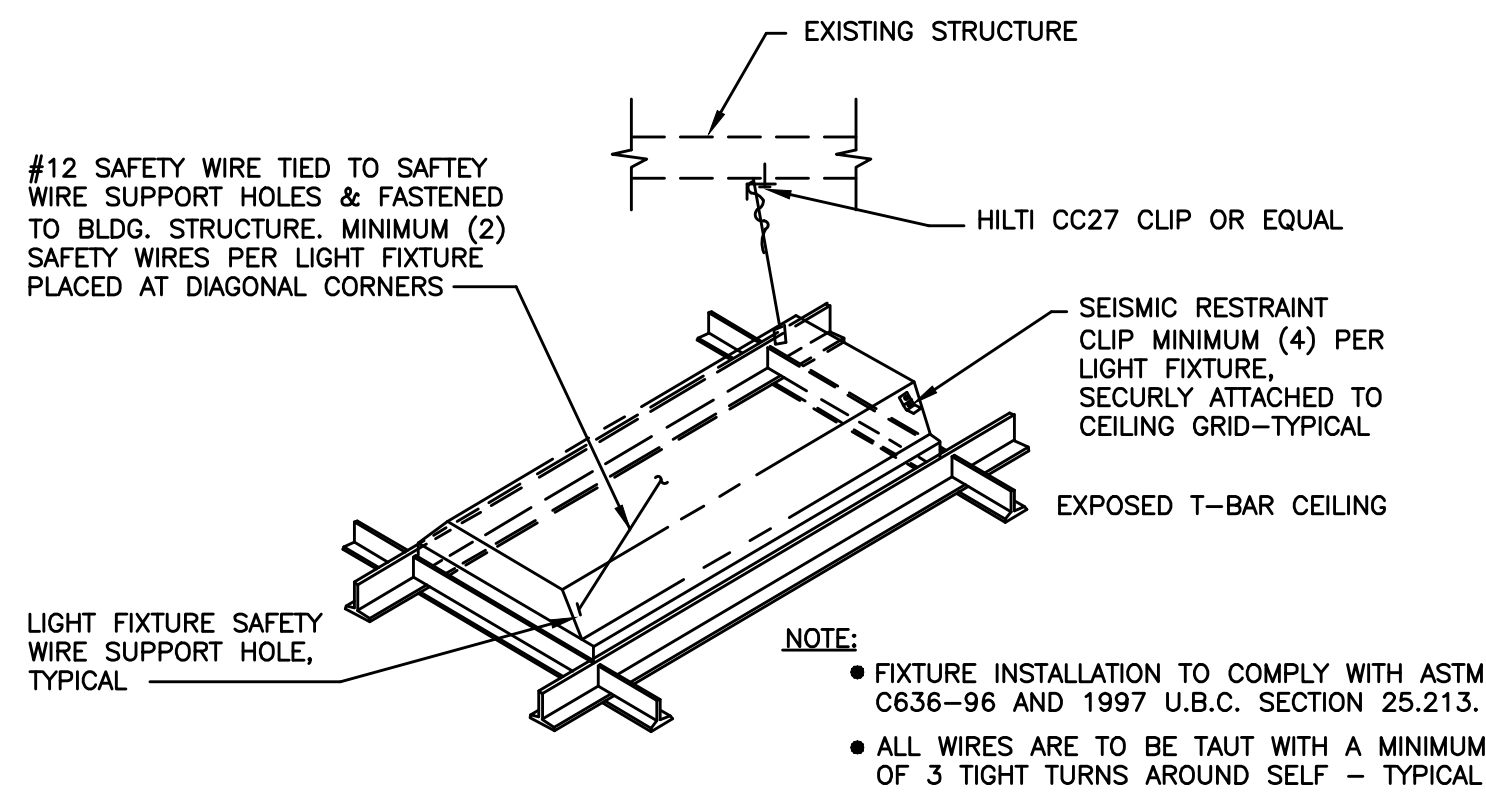
WALL MOUNTED FLUORESCENT
FIXTURE DETAIL

NO SCALE



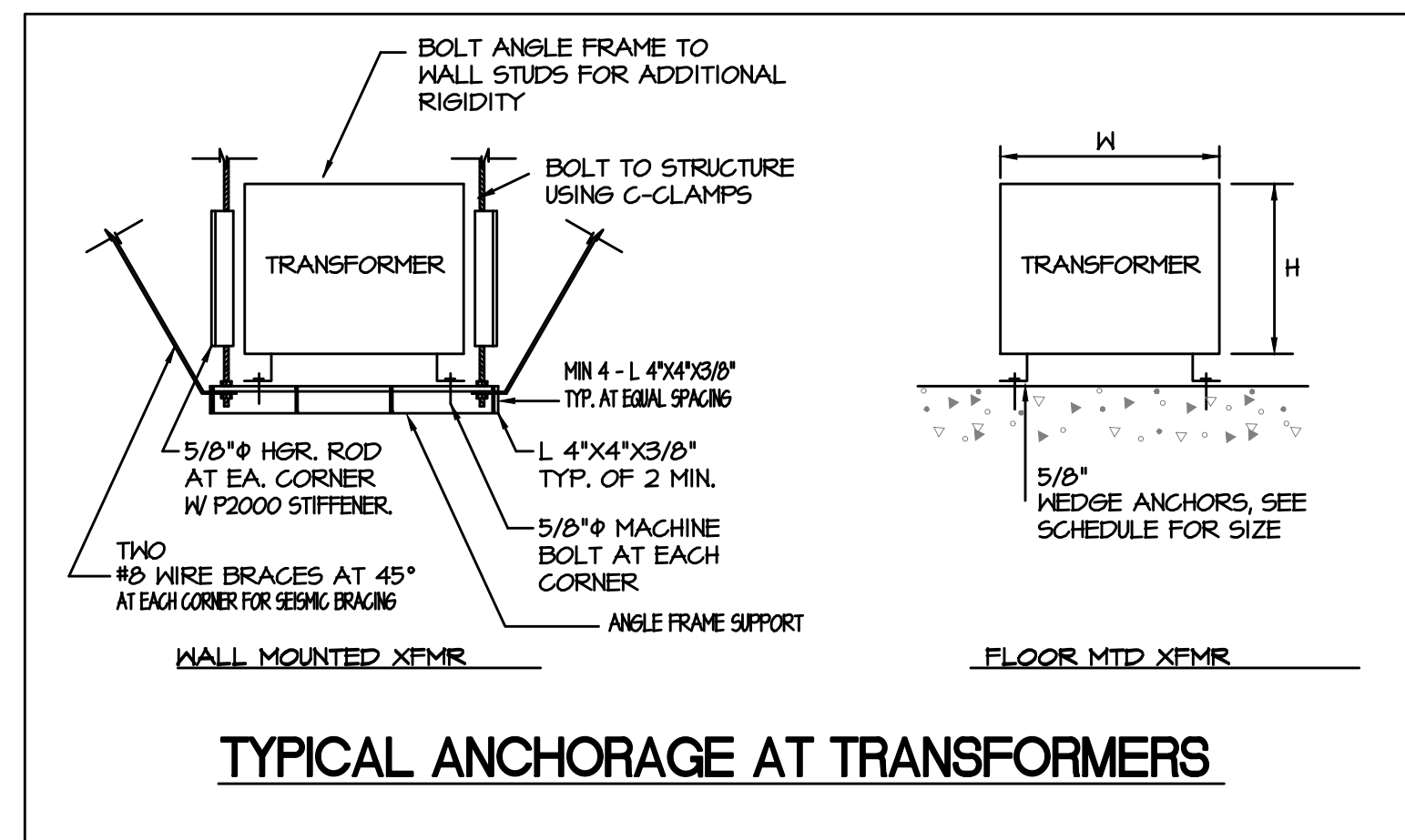
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NO SCALE

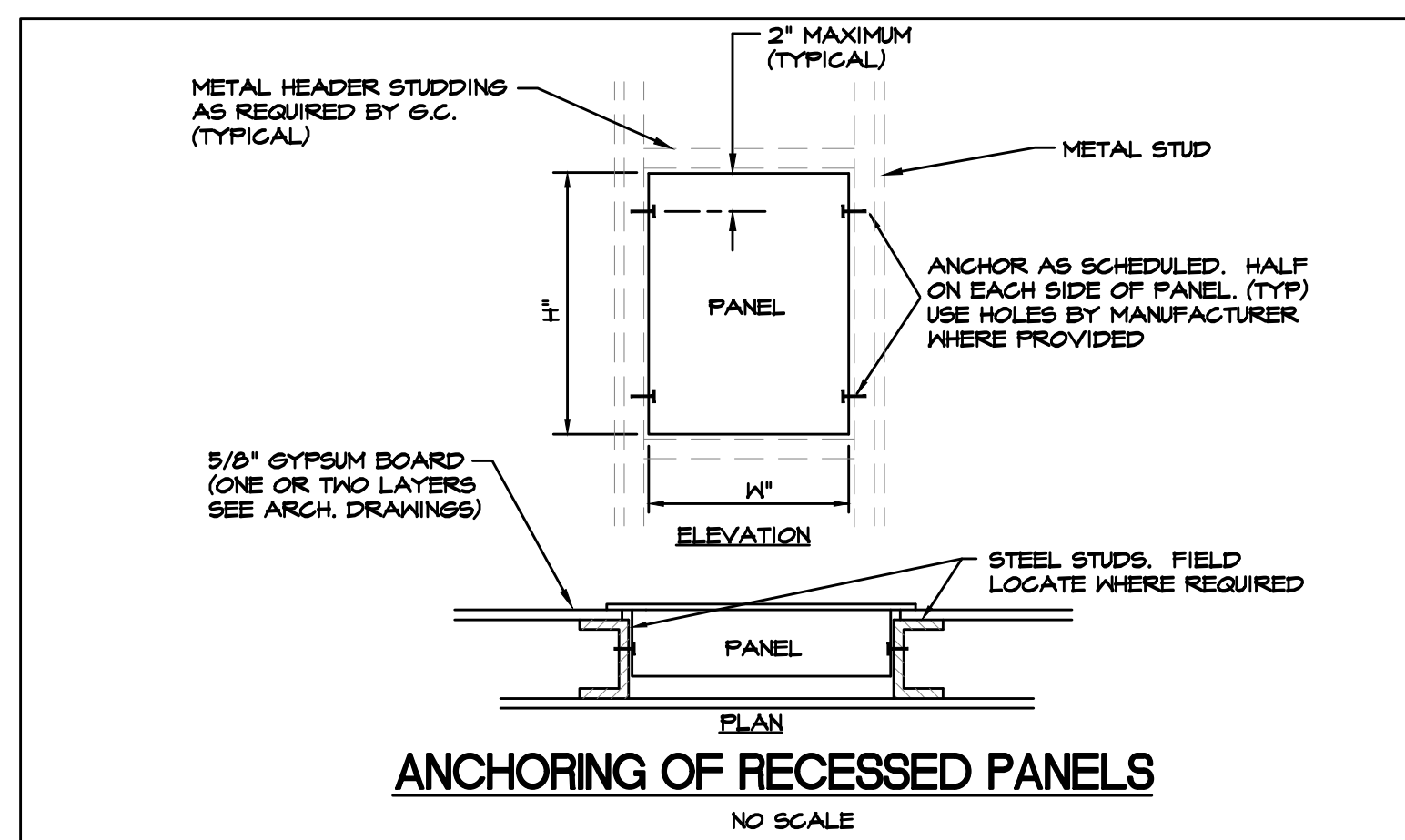


RECESSED LIGHTING FIXTURE SUPPORT DETAIL

NOT TO SCALE

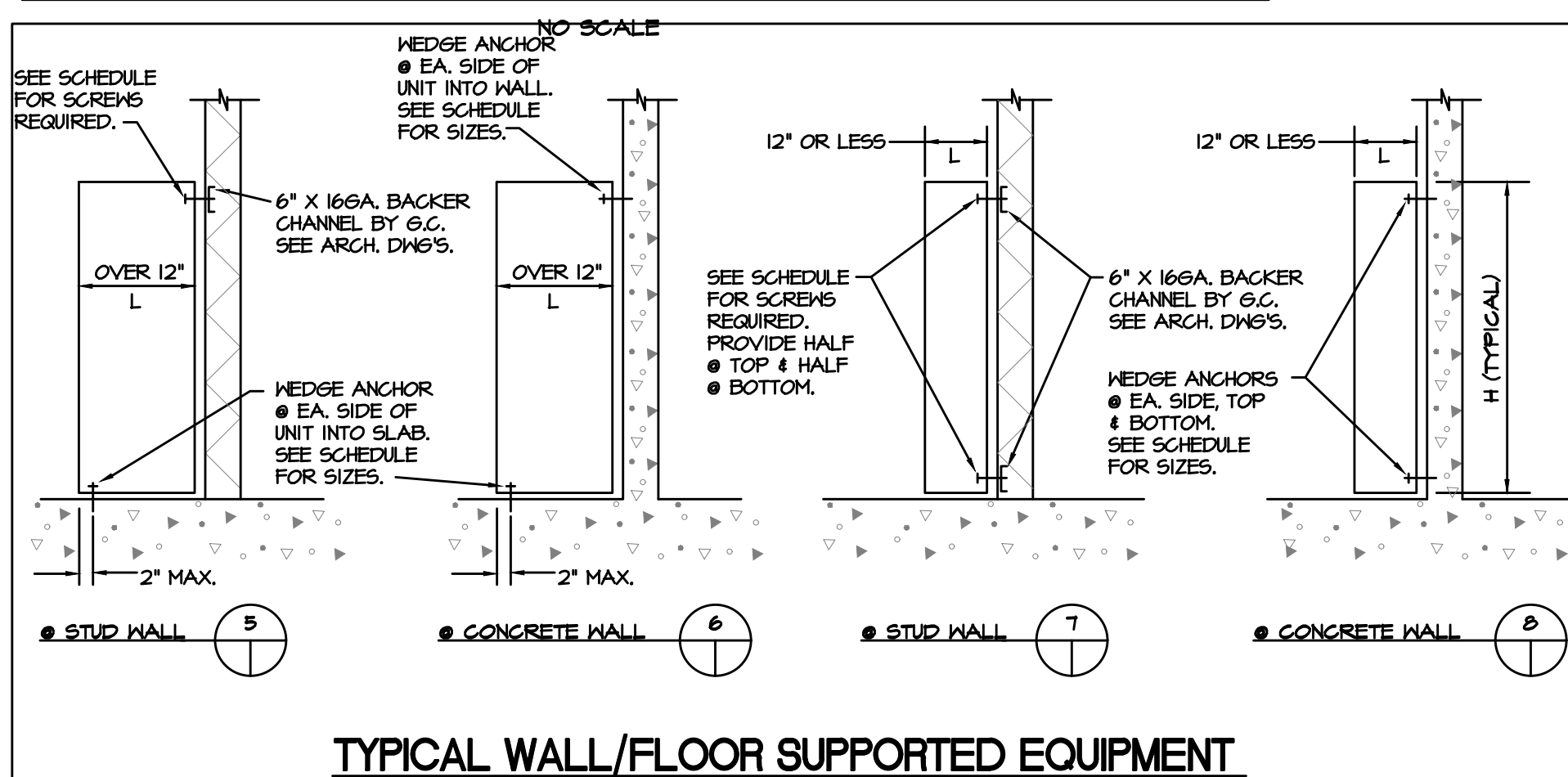


TYPICAL ANCHORAGE AT TRANSFORMERS



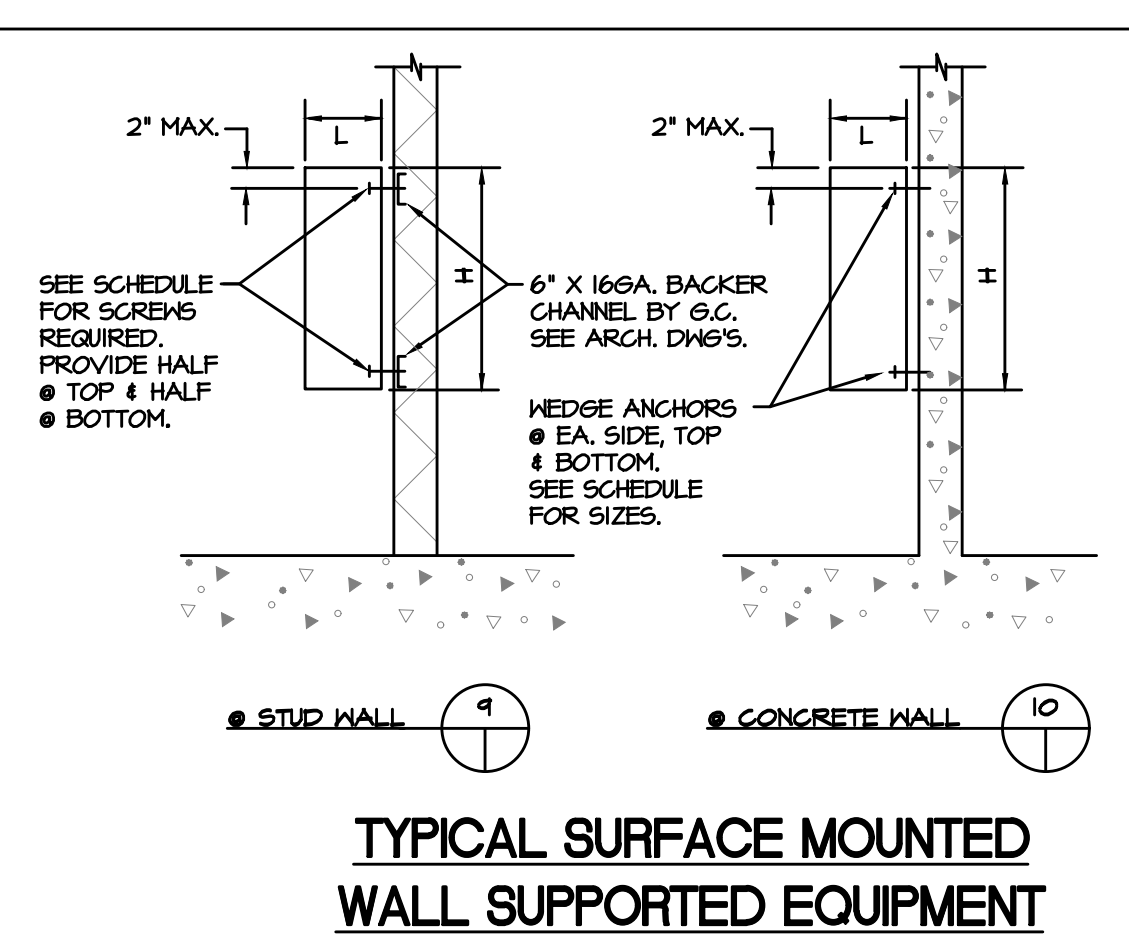
ANCHORING OF RECESSED PANELS

NO SCALE



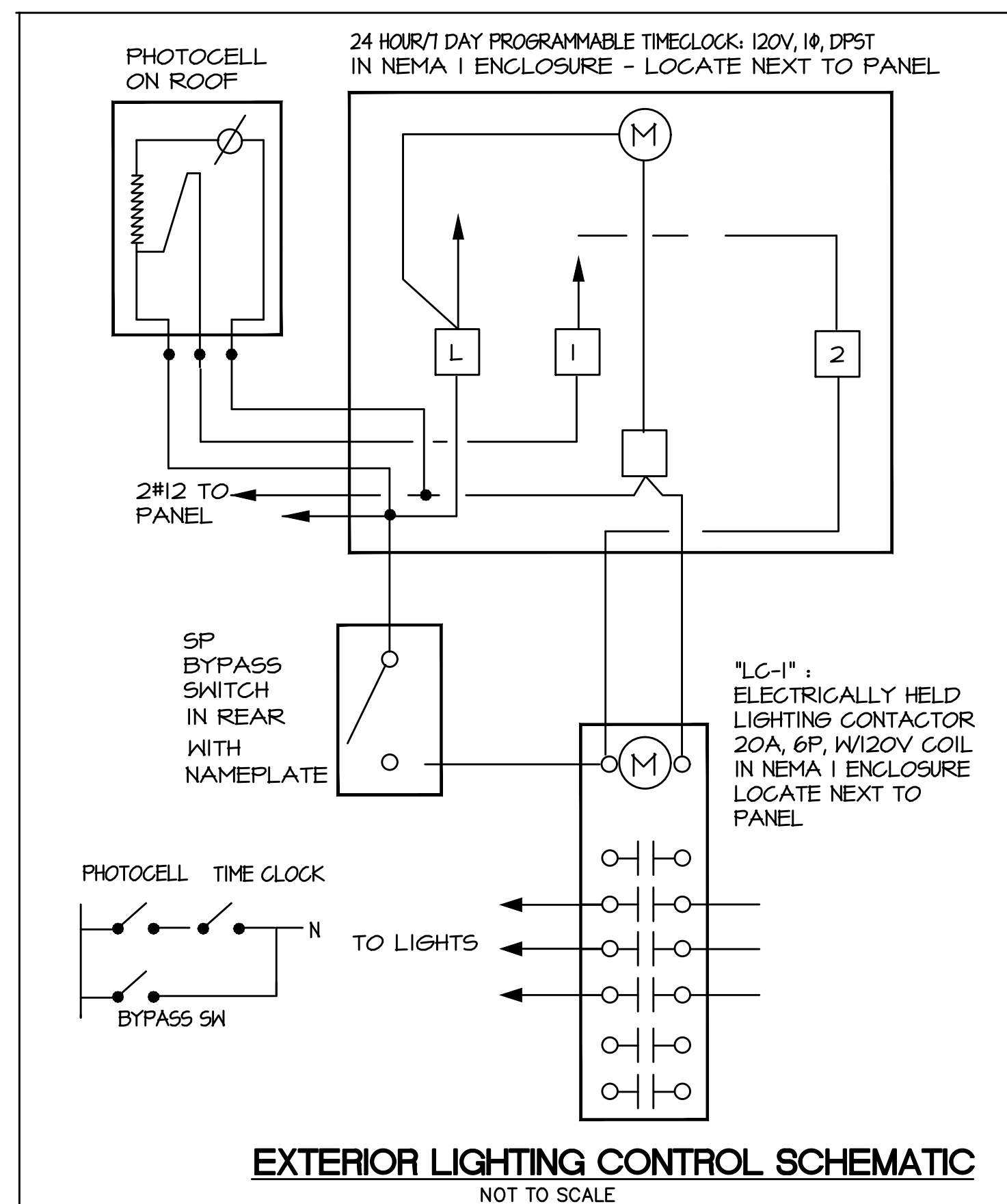
TYPICAL WALL/FLOOR SUPPORTED EQUIPMENT

NO SCALE



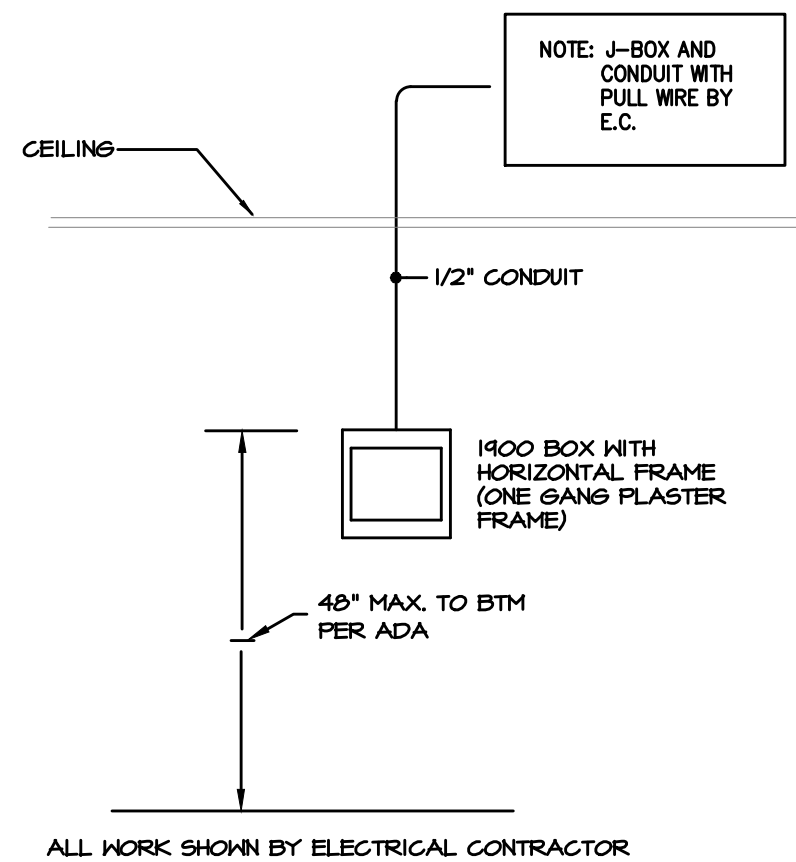
TYPICAL SURFACE MOUNTED
WALL SUPPORTED EQUIPMENT

NO SCALE



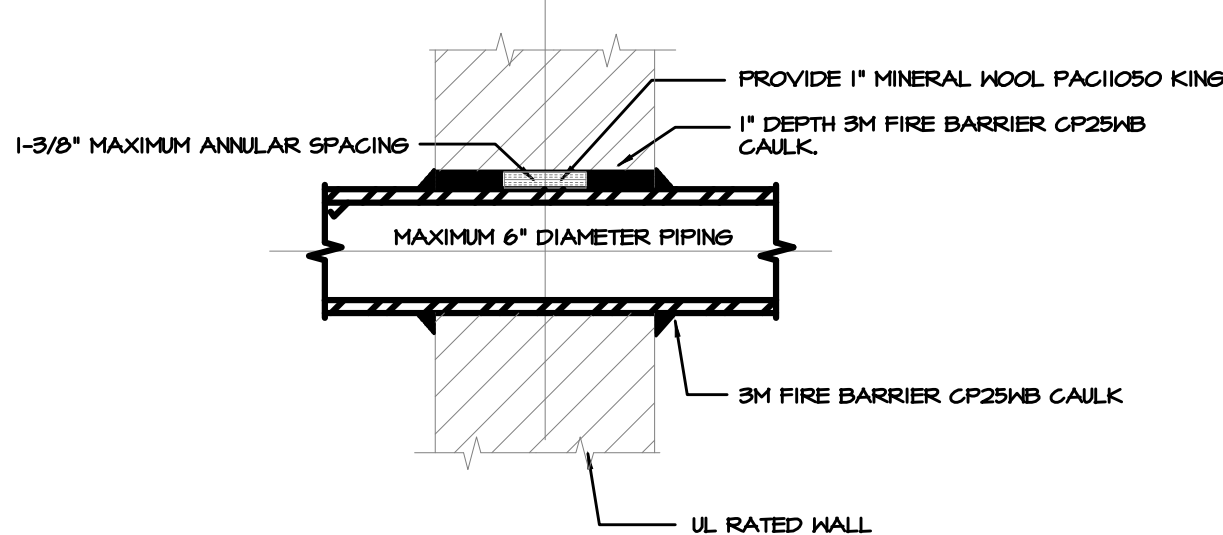
EXTERIOR LIGHTING CONTROL SCHEMATIC

NOT TO SCALE



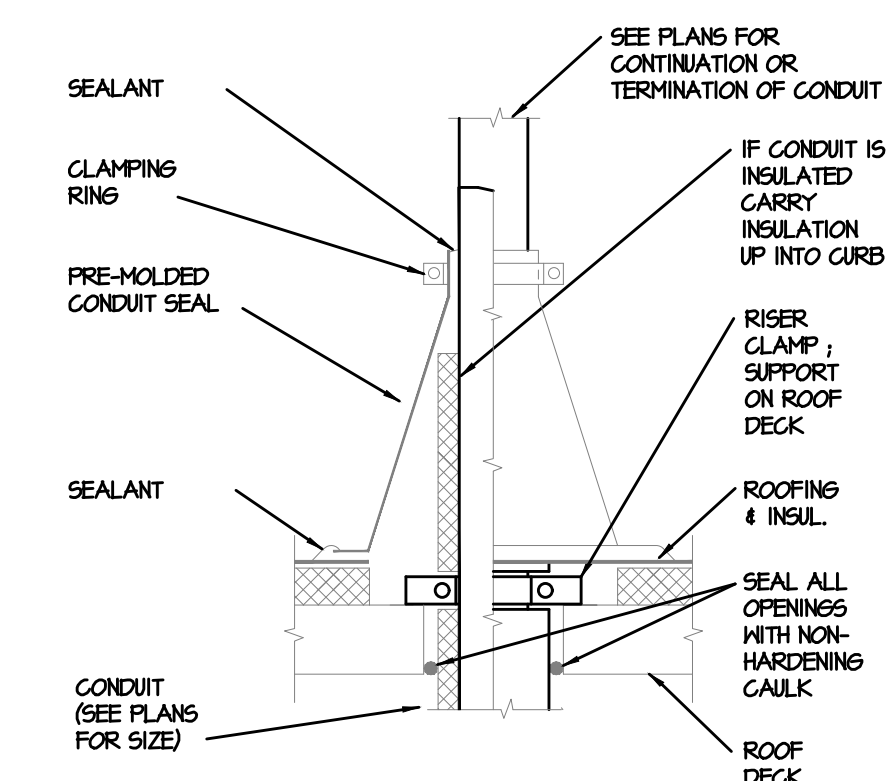
TYPICAL ADA THERMOSTAT

ALL WORK SHOWN BY ELECTRICAL CONTRACTOR



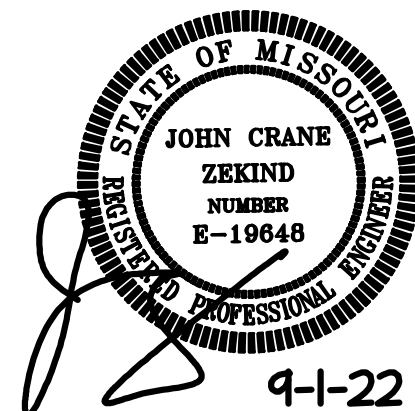
FIRE/SMOKE WALL CONDUIT PENETRATION

NOT TO SCALE



CONDUIT THRU ROOF

NO SCALE



SERVICE STATION AND
CONVENIENCE STORE

LEE SUMMIT, MO

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1276 WHITE ROAD
CHESTERFIELD, MO, 63017
314-878-2290

Project Number:
Issued For: ☐ Review ☐ Pricing ☐ Permit ☐ Bidding ☐ Construction

Sheet Number:

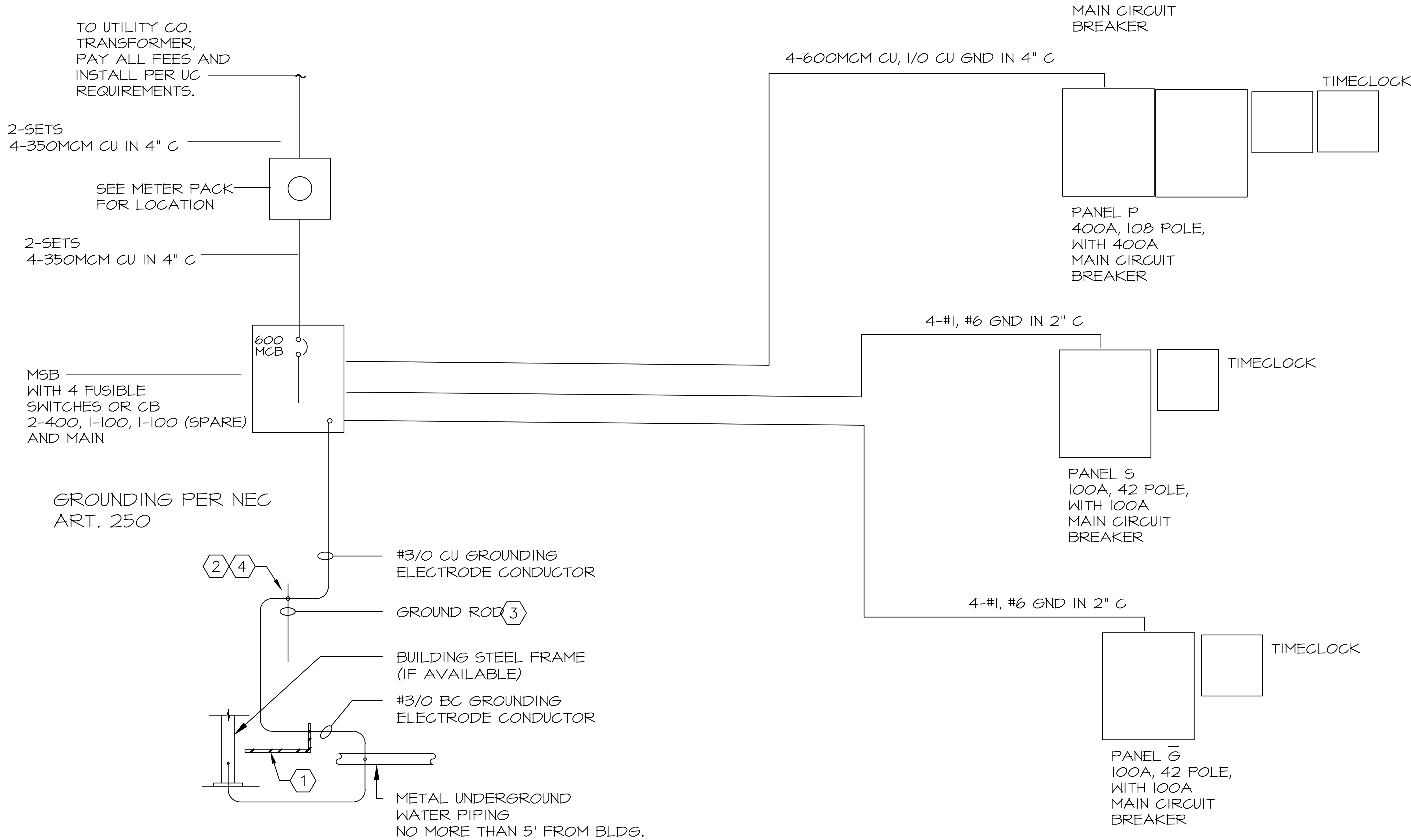
E-4

POWER KEY NOTES

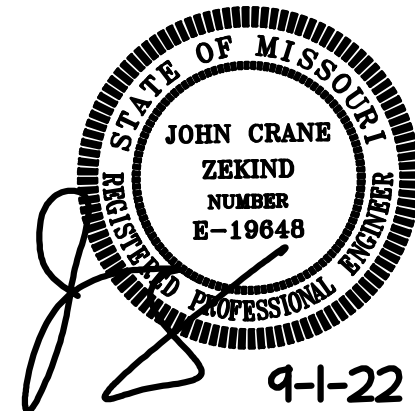
1. CONCRETE ENCASED (UFER) GROUNDING ELECTRODES SHALL CONSIST OF AT LEAST 20 FEET OF ONE OR MORE STEEL REINFORCING BARS OR RODS OF NOT LESS THAN 1/2 INCH DIAMETER, OR CONSISTING OF AT LEAST 20 FEET OF BARE COPPER CONDUCTORS NOT SMALLER THAN #2/0 AWG, ENGAGED BY AT LEAST 2 INCHES OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH.
2. CONNECT GROUNDING WIRE DIRECTLY TO GROUND ROD. MINIMIZE CONDUCTOR RIGHT ANGLE BENDS. MAXIMUM LENGTH OF CONDUCTOR SHALL BE 10 FEET.
3. GROUND RODS (IF NEEDED) SHALL BE 3/4" DIA. X 10' LONG COPPERWELD. RESISTANCE TO GROUND MUST BE 25 OHMS OR LESS.
4. GROUNDING ELECTRODE CONNECTIONS SHALL BE MADE WITH A UL LISTED AND APPROVED BOLTED PRESSURE OR COMPRESSION TYPE CONNECTOR.

GENERAL NOTES:

- A. ALL SERVICE EQUIPMENT, INCLUDING METER & CURRENT TRANSFORMER CABINET, TERMINATION BOXES, DISCONNECT SWITCHES, AND MAIN CIRCUIT BREAKERS SHALL BE RATED FOR THE MAXIMUM AVAILABLE SHORT CIRCUIT CURRENT AS DETERMINED BY THE SERVING UTILITY CO.
- B. #2/0 GROUNDING ELECTRODE CONDUCTOR TO BUILDING STEEL FRAME, COLD WATER AND GAS PIPE, INTERIOR METAL PIPING, AND CONCRETE ENCASED ELECTRODE (UFER GROUND).
- C. ALL CONDUCTORS SHALL BE COPPER TYPE THHN/THWN OR XHHW.
- D. ALL POWER WIRING INDICATED IS TO BE PROVIDED BY THE CONTRACTOR.



RISER SCHEMATIC



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E-5

PANELBOARD SCHEDULE																	
PANEL "P"																	
120/208V, 3 PHASE, 4 WIRE																	
400 AMPERE BUSS																	
400 AMPERE MAIN																	
25KAIC																	
LOAD	LOAD (kVA)			CB		CKT	CKT		CB	LOAD (kVA)			LOAD				
DESCRIPTION	LIGHTS	POWER	MECH.	A	P	NO.	PH	NO.	P	A	LIGHTS	POWER	MECH.	DESCRIPTION			
RECEPTACLES		1		20	1	1	A	2						4.0			
SLUSH		1		20	1	3	B	4	3	60				4.0	RTU		
SODA		1		20	1	5	C	6						4.0	(VERIFY CB/OC WITH MC)		
ICE		1		20	1	7	A	8						4.0			
SOFT HEAT		1		20	1	9	B	10	3	60				4.0	RTU		
IMMERSSION		1		20	1	11	C	12						4.0	(VERIFY CB/OC WITH MC)		
CAPPUCCINO		1		20	1	13	A	14						5.0			
BAG N BOX		1		20	1	15	B	16	3	60				5.0	RTU		
ICE		1		20	1	17	C	18						5.0	(VERIFY CB/OC WITH MC)		
REC		1		20	1	19	A	20	1	40		4		DWH-1 (VERIFY)			
WALK IN CONDENSERS		1		20	2	21	B	22	1	90		9		DWH-2(VERIFY)			
		1				23	C	24				9					
WALK IN EVAP, ETC		1		20	1	25	A	26	1	20		1		RECEPTACLES			
WALK IN CONDENSERS		1		20	1	27	B	28	1	20		1		RECEPTACLES			
		1		20	1	29	C	30	1	20	0.6			LIGHTS			
WALK IN EVAP, ETC		1		20	1	31	A	32	1	20	1.4			LIGHTS			
WALK IN CONDENSERS		1		20	1	33	B	34	1	20	1.4			LIGHTS			
		1		20	1	35	C	36	1	20	1.1			COOLER LIGHTS - VERIFY			
WALK IN EVAP, ETC		1		20	1	37	A	38	1	20	1.2			LIGHTS			
				20	1	39	B	40	1	20	0.6			LIGHTS			
				20	1	41	C	42	1	20	0.4			EMEXT ON LOCK ON CB			
0.0 19.0 0.0 TOTAL CONNECTED 6.7 24.0 39.0																	
LOAD CALCULATIONS:																	
LOAD	CONN.	DEMAND	DEMAND	DEMAND													
DESCRIPTION:	DEMAND	FACTOR:	LOAD:	AMPERE:													
LIGHTING:	6.7	1.00	6.7	18.598	A	CALCULATED DEMAND:		88.7	246.2								
POWER <10kVA:	10.0	1.00	10.0	27.758	A	SPARE CAPACITY:		55.4	153.8								
POWER <10kVA:	33.0	1.00	33.0	91.602	A	PERCENTAGE SPARE:		38%									
MECHANICAL EQUIPMENT	39.0	1.00	39.0	108.26	A	TOTAL PANEL CAPACITY:		144.1									400.0
CALCULATED DEMAND:	88.7		88.7	246.21	A	144 kVAx 1000		FEEDER/CIRCUIT CAPACITY:									
208 VAC x 1.732 = 400 AMPERE RATING																	

ADD ANOTHER 12 POLE SECTION TO PANEL "P"
P-44/46, P48, 43/45, 47 FOR FREEZER COOLERS - VERIFY

PANELBOARD SCHEDULE																
PANEL "G"																
120/208V, 3 PHASE, 4 WIRE																
100 AMPERE BUSS																
100 AMPERE MAIN																
25KAIC																
LOAD	LOAD (kVA)			CB		CKT		CB		LOAD (kVA)			LOAD			
DESCRIPTION	LIGHTS	POWER	MECH.	A	P	NO.	PH	NO.	P	A	LIGHTS	POWER	MECH.	DESCRIPTION		
GAS PUMP		1		20	1	1	A	2	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	3	B	4	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	5	C	6	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	7	A	8	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	9	B	10	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	11	C	12	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	13	A	14	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	15	B	16	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	17	C	18	1	20		0.6		CONTROL/COMM. CCTS		
GAS PUMP		1		20	1	19	A	20	1	20		0.6		CONTROL/COMM. CCTS		
DIESEL PUMP		1		20	1	21	B	22	1	20		0.6		CONTROL/COMM. CCTS		
DIESEL PUMP		1		20	1	23	C	24	1	20		0.6		CONTROL/COMM. CCTS		
SPARE				20	1	25	A	26	1	20				SPARE		
SPARE				20	1	27	B	28	1	20				SPARE		
SPARE				20	1	29	C	30	1	20				SPARE		
SPARE				20	1	31	A	32	1	20				SPARE		
SPARE				20	1	33	B	34	1	20				SPARE		
SPARE				20	1	35	C	36	1	20				SPARE		
SPARE				20	1	37	A	38	1	20				SPARE		
SPARE				20	1	39	B	40	1	20				SPARE		
SPARE				20	1	41	C	42	1	20				SPARE		
0.0 12.0 0.0 TOTAL CONNECTED 0.0 7.2 0.0																
LOAD CALCULATIONS:																
LOAD	CONN.	DEMAND	DEMAND	DEMAND												
DESCRIPTION:	DEMAND	FACTOR:	LOAD:	AMPERE:												
LIGHTING:	0.0	1.00	0.0	0	A	CALCULATED DEMAND:		19.2	53.3							
POWER <10kVA	10.0	1.00	10.0	27.758	A	SPARE CAPACITY:		16.8	46.7							
POWER <10kVA	9.2	1.00	9.2	25.537	A	PERCENTAGE SPARE:		47%								
MECHANICAL EQUIPMENT	0.0	1.00	0.0	0	A	TOTAL PANEL CAPACITY:		36.0	100.0							
CALCULATED DEMAND:	19.2		19.2	53.295	A	36 kVA x 1000		FEEDER/CIRCUIT CAPACITY:								
208 VAC x 1.732 = 100 AMPERE RATING																

S-28/30 60A AIR COMPRESSOR VERIFY
S-32/34 30A VACUUM STATION VERIFY

S-18/20 30 CHARGING STATION VERIFY

S-22/24 30 CHARGING STATION VERIFY

S-24/26 30 CHARGING STATION VERIFY

PANELBOARD SCHEDULE																
PANEL "S"																
120/208V, 3 PHASE, 4 WIRE																
100 AMPERE BUSS																
100 AMPERE MAIN																
25KAIC																
LOAD	LOAD (kVA)			CB		CKT	CKT		CB	LOAD (kVA)			LOAD			
DESCRIPTION	LIGHTS	POWER	MECH.	A	P	NO.	PH	NO.	P	A	LIGHTS	POWER	MECH.	DESCRIPTION		
SIGN LIGHTING	1.0			20	2	1	A	2	1	20	1			CANOPY LIGHTS		
	1.0					3	B	4	1	20	1			CANOPY LIGHTS		
SIGN LIGHTING	1.0			20	2	5	C	6	1	20	1			CANOPY LIGHTS		
	1.0					7	A	8	1	20	1			CANOPY LIGHTS		
SIGN LIGHTING	1.0			20	2	9	B	10	1	20	1			WALL PACKS		
	1.0					11	C	12	1	20	1			WALL PACKS		
				20	1	13	A	14	1	20	1			WALL PACKS		
				20	1	15	B	16	1	20	1			WALL PACKS		
				20	1	17	C	18	1	20				SPARE		
MONUMENT SIGNS	1.0			20	1	19	A	20	1	20				SPARE		
MONUMENT SIGNS	1.0			20	1	21	B	22	1	20				SPARE		
SPARE				20	1	23	C	24	1	20				SPARE		
SPARE				20	1	25	A	26	1	20				SPARE		
SPARE				20	1	27	B	28	1	20				SPARE		
SPARE				20	1	29	C	30	1	20				SPARE		
SPARE				20	1	31	A	32	1	20				SPARE		
SPARE				20	1	33	B	34	1	20				SPARE		
SPARE				20	1	35	C	36	1	20				SPARE		
SPARE				20	1	37	A	38	1	20				SPARE		
SPARE				20	1	39	B	40	1	20				SPARE		
SPARE				20	1	41	C	42	1	20				SPARE		
LOAD CALCULATIONS:											8.0	0.0	0.0	TOTAL CONNECTED		
LOAD	CONN.	DEMAND	DEMAND	DEMAND												
DESCRIPTION:	DEMAND	FACTOR:	LOAD:	AMPERE:								KVA	AMPS			
LIGHTING:	16.0	1.00	16.0	44.413	A	CALCULATED DEMAND:					16.0	44.4				
POWER <10kVA:	0.0	1.00	0.0	0	A	SPARE CAPACITY:					20.0	55.6				
POWER <10kVA:	0.0	1.00	0.0	0	A	PERCENTAGE SPARE:					56%					
MECHANICAL EQUIPMENT	0.0	1.00	0.0	0	A	TOTAL PANEL CAPACITY:					36.0	100.0				
CALCULATED DEMAND:	16.0		16.0	44.413	A	36 kVA x 1000					FEEDER/CIRCUIT CAPACITY:					
											208 VAC x 1.732 =					
											100 AMPERE RATING					

ELECTRICAL SPECIFICATION

I. PART I - GENERAL

- 1.01 ROUTING OF CONDUCTORS AND CONDUIT, LOCATION OF EQUIPMENT, APPARATUS, FIXTURES AND OTHER DEVICES ARE SHOWN ON PLANS FOR GENERAL GUIDANCE. THIS CONTRACTOR SHALL COORDINATE WORK WITH THE OTHER CONTRACTORS AND SHALL PROVIDE NECESSARY DETAILING IN ROUTING AND ITEM LOCATIONS, AS FAR AS IS FROM THOSE SHOWN, AS NECESSARY TO PROVIDE OPERATING SYSTEMS AS SPECIFIED OR IMPLIED WITHOUT INTERFERENCE AND PURSUANT TO THESE REQUIREMENTS AT NO ADDITIONAL COST.
- 1.02 PRIOR TO SUBMITTING HIS QUOTATION FOR WORK UNDER THIS PROJECT, THIS CONTRACTOR SHALL VISIT THE SITE TO EXAMINE ALL CONDITIONS RELATED TO WORK AND TO AGREE IN WRITING WITH THESE CONDITIONS. THE SUBMISSION OF THE PROPOSAL SHALL BE CONSIDERED EVIDENCE THAT THE CONTRACTOR HAS VISITED THE SITE. NO EXTRA PAYMENTS WILL BE ALLOWED THIS CONTRACTOR ON ACCOUNT OF CLAIMS FOR EXTRA WORK MADE NECESSARY BY HIS FAILURE TO VISIT THE SITE.
- 1.03 ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, ALL LOCAL ORDINANCES AND LOCAL TRADE PRACTICES.

2. PART II - MATERIALS

2.01 CONDUIT

- A. ALL CONDUITS SHALL BE NOT DIPPED OR ELECTRO-GALVANIZED STEEL, UNLESS OTHERWISE NOTED. MINIMUM SIZE CONDUIT SHALL BE 1/2" MINIMUM SIZE CONDUIT UNDERGROUND OR IN CONCRETE OR MASONRY SHALL BE 3/4". ALL RIGID CONDUIT SHALL BE THREADED TYPE, FITTINGS SHALL BE THREADED TYPE, SET SCREW TYPE WILL NOT BE ACCEPTED.
- B. STEEL CONDUIT - HEAVY WALL - "HEAVY WALL" GALVANIZED RIGID METALLIC CONDUIT (BRAC) SHALL BE USED IN THE FLOOR SLAB FOR ALL FEEDERS AND FOR INSTALLATION IN CONCRETE OR IN HOT LOCATIONS OR WHERE THE RACEWAY MAY BE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL INJURY. COUPLINGS SHALL BE SEALED WITH WATERPROOF SEALING COMPOUND.
- C. RIGID STEEL CONDUIT (BRAC) - FULL HEIGHT STEEL PIPE OF STANDARD PIPE DIMENSIONS, THREADED. CONDUIT SHALL HAVE GALVANIZED COATING APPLIED TO BOTH INSIDE AND OUTSIDE SURFACES, INCLUDING THE THREADS. CONDUIT SHALL BE THREADED 3/4" BACK FROM END OF PIPE SO THAT NO THREAD WILL BE EXPOSED. NOT DIPPED GALVANIZED CONDUIT WRAPPED WITH PLYMOUTH PLYWRAP 20 1462 PIPE WRAPPING TAPE SHALL BE USED FOR UNDERGROUND DIRECT BURIAL. NOT DIPPED GALVANIZED CONDUIT SHALL BE USED FOR UNDERGROUND CONCRETE ENCASED, OR WHERE EXPOSED TO WEATHER.
- D. "THIN WALL" GALVANIZED ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED IN WALLS AND CEILINGS ONLY. APPROVED COMPRESSION TYPE COUPLINGS WILL BE PERMITTED. FLEXIBLE METALLIC CONDUIT MAY BE USED ON SHORT FINAL CONNECTIONS TO MOTORS AND LIGHTING FIXTURES.
- E. ELECTRIC METALLIC TUBING (EMT) - THREADLESS THIN WALL CONDUIT GALVANIZED OR ZINC METALLIZED (INSIDE AND OUTSIDE) MAY BE USED FOR BRANCH CIRCUIT CONDUCTORS UP TO SIZE 1/0 MAXIMUM IN EXPOSED DRY LOCATIONS, HANG CEILINGS, HOLLOW BLOCK WALLS AND IN FINISHED SPACES.
- F. FLEXIBLE STEEL CONDUIT. USE 1/2" MINIMUM EXCEPT WHERE NOTED OTHERWISE. FLEXIBLE CONDUIT SHALL BE USED FOR THE FOLLOWING APPLICATION ONLY:
- A. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, MAXIMUM LENGTH 10'.
- B. FOR FINAL CONNECTION TO MORTAR OUTLETS ON VIBRATING EQUIPMENT.
- C. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE, MINIMUM 4', MAXIMUM 6' LENGTH.
- D. FOR SHORT CONNECTIONS AS APPROVED BY THE ENGINEER.
- E. FOR EXPANSION JOINT COUPLINGS.
- F. FOR WEATHERPROOF INSTALLATIONS WITH PLYMOUTH SHEATHINGS, SIMILAR TO AMERICAN METAL HOSE "SEALTITE" TYPE "N" OR EQUAL.
- G. FLEXIBLE STEEL CONDUIT. SINGLE STRIP TYPE, MINIMUM SIZE 1/2", EXCEPT AS NOTED, GALVANIZED, MAXIMUM RESISTANCE OF ARMOR IS 0.045 PER 1000 FEET. CONDUIT SHALL BE AS MANUFACTURED BY AMCONDA OR APPROVED EQUAL.
- H. POLYVINYL CHLORIDE CONDUIT (PVC)

WHERE APPROVED BY LOCAL AND STATE CODE AUTHORITIES FOR THE UNDERGROUND INSTALLATION, POLYVINYL CHLORIDE (PVC) CONDUIT SHALL BE SCHEDULE 40, 90 DEGREES C, LISTED, ALL JOINTS SHALL BE SOLVENT WELDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.

I. GROUNDING

1. GROUND WIRES SHALL BE RUN IN EACH CONDUIT AND SIZED PER ARTICLE 250-45 OF THE NEC. GROUND WIRES SHALL BE TERMINATED TO THE METALLIC ENCLOSURES OF THE PANELS, DISCONNECTS, TRANSFORMERS, MAIN SWITCHBOARD AND OUTLET BOXES.
2. ALL PROVISIONS OF ARTICLES 341, 250 AND 300-22 OF THE NEC SHALL BE STRICTLY ADHERED TO, ALL LOCAL AND STATE CODES SHALL APPLY.

2.02 CONDUCTORS

TYPE - ALL WIRING SHALL BE "COPPER" AND COMPLY WITH THE LATEST SPECIFICATIONS OF THE NEC. WIRE AND CABLE SHALL BE NEW, SHALL HAVE SIZE, TYPE OF INSULATION, VOLTAGE RATING, AND MANUFACTURERS NAME PERMANENTLY MARKED ON OUTER COVERING AT REGULAR INTERVALS. ALL WIRING SHALL BE IN CONDUIT, UNLESS OTHERWISE INDICATED.

UNLESS OTHERWISE CALLED FOR, THE INSULATION OF CABLES AND WIRES SHALL BE AS FOLLOWS: CONDUCTORS #0 OR SMALLER BE SOLID, CONDUCTORS #0 AND LARGER SHALL BE STRANDED.

APPLICATIONS	TYPES OF WIRES AND CABLES
FEEDERS TO PANELBOARDS.	TYPE THN-75 DEGREES C
BRANCH CIRCUITS FOR SIZES #6 AND LARGER.	TYPE THN-75 DEGREES C
BRANCH CIRCUITS FOR SIZES SMALLER THAN #6.	TYPE THHN/THAN 75 DEGREES C/90 DEGREES C
FEEDERS AND BRANCH CIRCUITS BELOW GRADE OR OUTSIDE BUILDING SMALLER THAN #6.	TYPE THN-75 DEGREES C
FIXTURE WIRING	TYPE THN-90 DEGREES C

COLOR CODING OF CONDUCTORS

- A. ALL BRANCH CIRCUITS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC AND SHALL BE:
- | 120/240 VOLT | 277/480 VOLT |
|--------------|--------------|
| BLACK | PHASE A |
| RED | PHASE B |
| BLUE | PHASE C |
| WHITE | NEUTRAL |
- * MAY BE WHITE WITH TRACER.
- B. GROUNDING CONDUCTOR (ALL SYSTEMS) - GREEN
- C. SWITCHED LEG - PURPLE
- D. DUMMY LEGS OF 3-WAY SWITCHES - PINK

2.02 TRANSFORMERS

DRY TYPE TRANSFORMERS SHALL BE TWO WINDING, TOTALLY ENCLOSED, SELF COOLED, LOW AMPLIFIABLE SOUND LEVEL, OF THE SIZE AND ELECTRICAL CHARACTERISTICS AS SCHEDULED. TRANSFORMERS 25 KVA AND UNDER SHALL HAVE A UL RATING LIMITING SYSTEM TEMPERATURE TO 80 DEGREES C, 30 KVA AND ABOVE SHALL HAVE UL RATING LIMITING TEMPERATURE TO 90 DEGREES C, BOTH WITH RESPECT TO A 40 DEGREES C AMBIENT, MAXIMUM ACCESSIBLE SOUND LEVEL FOR ALL KVA, RATING SHALL NOT EXCEED 46 DECIBELS. TRANSFORMERS SHALL HAVE A MINIMUM 10 PERCENT OVERLOAD CAPACITY AT RATED VOLTAGE. ENCLOSURE SHALL BE FINISHED WITH LIFTING BRACKETS DESIGNED TO FACILITATE HANDLING AND INSTALLATION. VENTILATING OPENINGS SHALL BE DESIGNED IN A MANNER TO PREVENT ACCESS TO LIVE PARTS. USE FLEXIBLE CONDUIT, 2 (2) IN MINIMUM LENGTH, FOR CONNECTIONS TO TRANSFORMER CASE. MAKE CONDUIT CONNECTIONS TO SIDE PANEL OF ENCLOSURE. - HARRY TRANSFORMERS ON VIBRATION ISOLATING PADS SUITABLE FOR ISOLATING THE TRANSFORMER NOISE FROM THE BUILDING STRUCTURE. PROVIDE SEISMIC RESTRAINTS.

2.04 PANELS

LIGHTING PANELBOARDS SHALL BE CIRCUIT BREAKER, DEAD-FRONT TYPE IN ACCORDANCE WITH ILL. STANDARDS FOR PANELBOARDS AND STANDARD FOR CABINETS AND BOXES AND SHALL BE SO LABELED/PROVIDE A MINIMUM OF ONE (1) 3/4" CONDUIT STUBBED OUT OF EACH RECESSED PANELBOARD TO ABOVE THE CEILING (DEPENDENT ON AREA) SERVING BY PANEL FOR EVERY THREE (3) SPACES OR SPACES. PANEL DIRECTORIES SHALL BE TYPED AND FILLED OUT BY ELECTRICAL CONTRACTOR AFTER TESTING PHASE BALANCING AND CHECKOUT. TWO AND THREE POLE BREAKERS SHALL BE FURNISHED WHERE CALLED FOR. HANDLE TIES WILL NOT BE ACCEPTED. PANELBOARD BISSING SHALL BE ELECTRICAL GRADE CORNER. ALL BREAKERS SHALL BE BOLT-ON TYPE TWO AND THREE POLE BREAKERS SHALL HAVE COMMON TRIP. BOXES SHALL BE COMMERCIAL, HOT GALVANIZED SHEET STEEL, 1/4 GAUGE MINIMUM. IDENTIFY PANELS WITH ENGRAVED LAMINATED WAREPLATES INDICATING THE PANEL IDENTIFICATION AND PANEL VOLTAGE.

2.04 BOXES

OUTLET AND SWITCH BOXES. FURNISH OUTLETS AND BOXES WHERE REQUIRED BY PLANS, EQUIPMENT REQUIREMENTS, OR CODE. RECORD ALL LOCATIONS AND MOUNTING HEIGHTS OF ALL OUTLET, PULL AND JUNCTION BOXES. ALL OUTLET AND SWITCH BOXES SHALL BE NEG. APPROVED TYPE, SIZED TO PROVIDE AMPLE SPACE FOR WIRES, DEVICES, CONDUCTORS, AND GROUNDING WIRES, WHERE SPACE IS AVAILABLE. ALL FEED THROUGH BOXES SHALL BE MINIMUM 4" SQUARE BY 1 1/2" DEEP. BOXES SHALL BE SET BACK TO ALLOW THE INSTALLATION OF A SQUARE OUT AND BASED ADAPTER RING, DEPTH OF BASED PORTION SHALL MATCH THE WALL CONSTRUCTION. WHEN MORE THAN ONE WIRING DEVICE (SWITCHES AND RECEPTACLES) IS SHOWN ON THE SAME LOCATION, GANG BOXES SHALL BE USED. WHERE ANY DEVICE IS INSTALLED WITH EXPOSED CONDUIT, THE OUTLET BOX SHALL BE TYPE "N". PROVIDE A BLANK COVER FOR EACH OUTLET BOX TO BE PROVIDED WITH LIGHT FIXTURE OR OTHER DEVICE.

FLOOR BOXES. PLUGS AND TRIM SHALL BE BRASS. OUTLET BOX SHALL BE CAST IRON OR STAMPED STEEL. OUTLETS SHALL BE INSTALLED SO THAT THE TOP OPENING WILL BE FLUSH WITH FINISHED FLOOR. THE ELECTRICAL CONTRACTOR SHALL GROUT AROUND OUTLETS AS REQUIRED. SHALL BE INSTALLED IN ALL CARPETED AREAS AFTER CARPET IS IN PLACE.

PULL AND JUNCTION BOXES. PULL AND JUNCTION BOXES ARE NOT COMPLETELY SHOWN ON PLANS. THEY SHALL BE INSTALLED WHERE REQUIRED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE. ALL BOXES SHALL BE CONSTRUCTED OF MINIMUM NO. 14 GAUGE NOT-DIPPED GALVANIZED STEEL, CAST OR SHEET ALUMINUM WITH SCHEDULED OR WELDED COVER. FASTENERS SHALL BE BRASS OR ZINC COATED STEEL. WHERE EXPOSED TO WEATHER, MOISTURE-TIGHT GASKET SHALL BE PROVIDED. ELECTRICAL BOXES WITH UNHUNG KNOCKOUTS SHALL BE FLANGED. ALL BOXES SHALL BE OF ADEQUATE SIZE WITHOUT THE USE OF EXTENSION BOXES.

2.5 DISCONNECT SWITCHES

DISCONNECT SWITCHES FOR SINGLE AND THREE PHASE LOADS OVER 1000 WATTS OR 1/2 HORSEPOWER SHALL BE HORSEPOWER RATED, HEAVY DUTY TYPE, QUICK-MAKE, QUICK-BREAK, AS MANUFACTURED BY ITC, CHALLENGER, SQUARE D, GENERAL ELECTRIC, WESTINGHOUSE OR OTHER ENGINEER APPROVED EQUAL. SWITCHES EXPOSED TO WEATHER SHALL BE NEMA 3R.

2.6 WAREPLATES AND LABELS

- WAREPLATES
- A. WAREPLATES SHALL BE 4" X 1" X 1/8" THICK WHITE CORE, BLACK PAZE PLASTIC WITH ENGRAVED LETTERS. ATTACHMENT TO EQUIPMENT SHALL BE DONE BY MEANS OF SCREWS.
- B. WAREPLATES SHALL BE USED FOR ALL MAJOR EQUIPMENT SUCH AS SWITCHBOARDS, MOTOR PANELBOARDS, MOTOR CONTROL CENTERS, UNIT SUBSTATIONS, TRANSFORMERS, PANELBOARDS (LIGHTING POWER AND AUXILIARY) ON EACH SWITCH AND STARTER IN EACH PANELBOARD AND MOTOR CONTROL CENTER, DISCONNECT SWITCHES, RELAYS, LOOSE MOUNTED MOTOR STARTERS, AND ON CONTROL PANELS SERVING FIRE ALARM, SECURITY AND PUBLIC ADDRESS SYSTEM AND MOTOR CIRCUITS.
- LABELS
- A. LABELS (STENCILS) SHALL BE BRADY OR NEULINE AND SHALL BE COLOR CODED IN ACCORDANCE WITH ASA E-24-S-1 "SAFETY COLOR CODE" TO INCLUDE SYSTEM VOLTAGES, ABBREVIATIONS OF SERVICE, ETC., FOR EXAMPLE: ABOVE, TELEPHONE, SECURITY, INTERCOM, EMERGENCY, 120/240V, ETC.

2.7 TIMECLOCKS

TIMECLOCKS SHALL BE 24 HOUR, 1 DAY WITH BATTERY BACKUP. EACH DAY SHALL HAVE MINIMUM OF 2 ON AND 2 OFF PERIODS. TIMECLOCK SHALL HAVE MANUAL OVERSIDE SWITCH. TIMECLOCK SHALL BE LOCATED IN NEPA ENCLOSURE. TIMECLOCK SHALL BE BY YORK, PARAGON OR EQUAL.

2.8 LOW VOLTAGE WIRING

ALL SPECIAL SYSTEM LOW VOLTAGE WIRING SHALL BE IN CONDUIT.

PART III EXECUTION

31. ALL WORK SHALL BE IN COMPLETE ACCORDANCE WITH THE NEC, AND ALL APPLICABLE CODES. WHETHER EXPLICITLY SHOWN OR NOT, ALL PANELS SHALL HAVE IDENTIFICATION DIRECTORIES, AND ALL CIRCUITS SHALL BE TAGGED. ALL SYSTEMS SHALL BE GUARANTEED FOR 1 YEAR AFTER OWNERS WRITTEN ACCEPTANCE. PROPERLY GROUND ALL SYSTEMS AND BALANCE PHASES. IF REQUIRED INCREASE BRANCH CIRCUIT SIZES TO REDUCE VOLTAGE DROP. ALL WORK SHALL BE COORDINATED WITH THE LANDLORDS CONTRACTOR TO ASSURE A FULLY FUNCTIONAL AND COMPLETE SYSTEM.

3.2 CONDUIT TYPES

INDOOR EXPOSED OR CONCEALED AREAS - USE EMT FOR SIZES UP TO 4", USE BRAC (GALVANIZED RIGID METAL CONDUIT) FOR 6" AND ABOVE, UNLESS OTHERWISE NOTED AND BRAC, WHERE EXPOSED TO PHYSICAL DAMAGE AND WHERE SUBJECT TO MOISTURE AND DETEIORATION. - BURIED IN CONCRETE FLOOR SLAB SYSTEM - BRAC, WITH RUST RESISTANT WRAP AND SHALL BE COVERED WITH A MINIMUM OF 2" CONCRETE ABOVE CONDUIT, INSTALLED BELOW CONCRETE SLAB (SERVICE ENTRANCE) - BRAC, WRAP ENCASED IN CONCRETE ENVELOPE. CONCRETE ENVELOPE SHALL BE MINIMUM 3" AROUND CONDUIT. INSTALLED BELOW CONCRETE SLAB FEEDERS OR BRANCH CIRCUITS - BRAC, STEEL WITH RUST RESISTANT WRAP NOT ENCASED. ALL UNDERGROUND BRAC, STEEL CONDUIT NOT ENCASED IN CONCRETE SHALL BE WRAPPED WITH PIPE WRAPPING TAPE, SCOTCH-RAV #1 OR PLYMOUTH-BISHOP PLYWRAP-207 TAPE TO COVER CONDUIT AND FITTINGS, INSTALLED OUTSIDE OF BUILDING (ABOVE GRADE) - BRAC, WHEN EXPOSED TO WEATHER. ALL EXPOSED THREADS SHALL BE FIELD PAINTED WITH RUSTPROOF PRIMER BY EACH CONTRACTOR. FLEXIBLE METAL RACEWAYS SHALL BE USED FOR CONNECTION TO ALL MOTORIZED EQUIPMENT, TRANSFORMERS AND EQUIPMENT SUBJECT TO VIBRATION, ADJUSTMENTS AND/OR MOVEMENT AND TO CONTROL EQUIPMENT REQUIRING PIPING CONNECTIONS. RACEWAYS SHALL BE AS MANUFACTURED BY AMCONDA OR APPROVED EQUAL.

3.3 CONDUIT INSTALLATION

A COMPLETE CONTINUOUS RACEWAY SHALL BE PROVIDED FOR FILLING AND INSTALLING OF WIRES. ALL WIRING SHALL BE RUN IN RACEWAYS UNLESS OTHERWISE INDICATED. ALL CONDUIT MUST BE REARED AFTER CUTTING. CONDUITS SHALL BE CUT SQUARE, REAMED TO FULL SIZE, SHOULDERED WITHOUT BITTING AND COUPLINGS OR FITTINGS. THE THREAD SHALL BE OF STANDARD LENGTH AND DIAMETER REQUIRED FOR THE SIZE OF CONDUIT. USE ONA DON APPROVED TYPE OF GRAPHITE BEARING THREAD LUBRICANT SHALL BE USED IN MAKING UP THREADS. WHERE CONDUITS ARE CUT IN THE FIELD, USE A STANDARD CUTTING DIE WITH 3/4" TAPER PER FOOT. RUNNING THREADS WILL NOT BE ACCEPTABLE. CONDUITS SHALL HAVE A SMOOTH INTERIOR SURFACE FREE OF OBSTRUCTIONS, SHALL BE CAPPED WITH APPROVED CONDUIT SEALS DURING CONSTRUCTION PERIOD, SHALL BE UNIFORMLY SLOPED TO ELIMINATE TRAPPED CONDENSATION AND SHALL BE THOROUGHLY CLEANED AND DRY BEFORE FILLING ANY WIRE. CONDUIT INSTALLATION SHALL CLEAR ALL HOT PIPES SUCH AS HOT WATER, ETC., NOT LESS THAN 6" ALL CONDUITS IN FINISHED AREAS SHALL BE CONCEALED, UNLESS OTHERWISE INDICATED ON THE PLANS. CONDUITS IN EQUIPMENT ROOM AND UNFINISHED STORAGE AREAS MAY BE EXPOSED. ALL EXPOSED CONDUIT SHALL BE INSTALLED PERPENDICULAR OR PARALLEL TO BUILDING LINES. BURNINGS SHALL BE USED WHERE CONDUITS ENTER PANELBOARDS. ALL BURNINGS SHALL BE OF INSULATED TYPE WITH PROVISIO FOR GROUNDINGS AS TYPE "B" MADE BY OZ. GENEXY OR APPROVED EQUAL. CONCEALED CONDUITS INSTALLED ABOVE SUSPENDED CEILING SHALL BE RUN CLOSE TO THE UNDERSIDE OF CONSTRUCTION ABOVE, AND SHALL BE COORDINATED WITH THE OTHER SUBCONTRACTORS SO AS TO ALLOW ROOM FOR RUNNING DUCTS AND PIPING. PROVIDE FLEXIBLE CONDUIT CONNECTION AS REQUIRED BY NEC. FOR ALL RECESSED LIGHTING FIXTURES, FLEXIBLE CONDUIT CONNECTION SHALL

OPEN END OF CONDUITS SHALL BE CAPPED WITH CAP DURING ROUGHING-IN TO PREVENT THE ACCUMULATION OF DIRT AND MOISTURE CONDENSATION IN THE CONDUIT. SUPPORT FOR CONDUIT 1" AND SMALLER SHALL BE 12" X 1/2" HOLE PIPE STRAPS SPACED AT NOT TO EXCEED 8'-0" INTERVALS AND WITHIN 18" OF AN OUTLET BOX, JUNCTION BOX, PULL BOX, OR TERMINAL CABINET. SUPPORT FOR CONDUIT LARGER THAN 1" SHALL BE 2 HOLE PIPE STRAPS. WHERE THE CONDUIT RING ARE GROUNDED, CONDUIT TRAVELERS SUPPORTED ON 3/8" DIAMETER RODS, MINIMUM SHALL BE USED. FASTENING DEVICES TO UNDERSIDE OF ROOF DECK SHALL NOT BE PERMITTED. ALL SUSPENDED AND/OR FASTENING DEVICES SHALL BE SUSPENDED FROM STRUCTURE ABOVE WITH APPROPRIATE STRUCTURAL STEEL SUPPORT OR ANGLE IRON. FULL WIRES - A CONTINUOUS 1/2" HANG GALVANIZED IRON FULL WIRE OR 1/8" POLYPROPYLENE LINE EXTENDING FROM JUNCTION BOX TO JUNCTION BOX SHALL BE INSTALLED IN ALL DRYFT JOINTS, AND SHALL BE TAPPED TO SHOW TERMINAL POINTS AND LENGTH OF RING. JOINTS IN CONDUIT INSTALLED IN CONCRETE OR MASONRY SHALL BE MADE TIGHT AND SHALL ENGAGE NOT LESS THAN FIVE THREADS. CONDUIT IN CONCRETE SHALL BE PLACED SO THAT NO PORTION OF THE CONDUIT OR COUPLINGS ARE EXPOSED AND AT A SUFFICIENT DEPTH TO PREVENT CRACKING OR SPALLING CONNECTIONS TO WIRING ENCLOSURES. CONDUITS SHALL BE SECURED TO OUTLET BOXES OR WIRING ENCLOSURES WITH DOUBLE LOCK NUTS AND BURNINGS. WHERE CONDUIT BOXES WITH THREADED NUTS ARE USED, CONDUIT SHALL ENGAGE AT LEAST FIVE THREADS IN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (90 DEGREE TOTAL) SHALL BE MADE IN CONDUIT RUN BETWEEN OUTLETS, PULL BOXES, JUNCTION BOXES OR PANELS. RUNS OVER 100' SHALL HAVE PULL

3.4 CONDUCTORS

ALL BRANCH CIRCUITS SHALL BE A MINIMUM #2 WIRE. 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET SHALL BE A MINIMUM #2. 240 VOLT OR 277 VOLT BRANCH CIRCUITS LONGER THAN 200 FEET SHALL BE A MINIMUM #4. CONTROL WIRING SHALL BE A MINIMUM #14 WIRE UNLESS NOTED OTHERWISE. CODE APPROVED PRESSURE TYPE CONNECTORS SUCH AS "IDEAL NING-NUT" MAY BE USED FOR SIZES #0 AND SMALLER. TERMINALS, TAPS AND SPLICES IN WIRE #0 AND LARGER SHALL BE MADE WITH SOLDERLESS COMPRESSION TYPE CONNECTORS. ALL JOINTS OR SPLICES SHALL BE WRAPPED WITH INSULATION TAPE SO THAT THE INSULATION OF THE JOINT, ETC., SHALL NOT BE LESS THAN INSULATION OF THE WIRE. ALL BRANCH CIRCUITS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC. NO CONDUCTORS OR CABLES SHALL BE INSTALLED IN RACEWAYS UNTIL THE RACEWAY SYSTEM HAS BEEN COMPLETED. WHEN INSTALLING CONDUCTORS, THE ELC SHALL EXERCISE THE CARE TO PREVENT DAMAGE TO CONDUCTOR OR INSULATION. ALL FEEDER CABLES SHALL BE CONTINUOUS FROM ORIGINAL TO PANEL OR EQUIPMENT TERMINATION WITHOUT RUNNING SPLICES IN INTERMEDIATE PULL OR SPLICE BOXES. WHERE TAPS AND/OR SPLICES ARE NECESSARY AND APPROVED, THEY SHALL BE MADE IN APPROVED SPLICE BOXES WITH SUITABLE COMPRESSION TYPE CONNECTORS AS NOTED HEREIN. ALL BRANCH CIRCUIT CABLE TERMINATIONS, TAPS AND SPLICES #0 AND SMALLER SHALL BE MADE WITH SOLDERLESS SPRING TYPE CONNECTORS SUCH AS "SCOTCHLOK" OR MINIMITY COMPRESSION TYPE CONNECTORS. ARE REQUIRED ON BRANCH CIRCUIT AND FEEDER CABLES #6 AND LARGER SHALL BE OF THE TYPE AS MANUFACTURED BY THE BRAND COMPANY AND SHALL BE INSTALLED WITH APPROVED HYDRAULIC TOOLS TO ASSURE A PERMANENT MECHANICALLY SECURE HIGH CONDUCTIVITY JOINT. ALL UNBLENDED SPLICES, JOINTS AND FREE ENDS OF CONDUCTORS SHALL BE COVERED WITH RUBBER AND FRICTION TAPE OR HIGH-DIELECTRIC POLYVINYL CHLORIDE SCOTCH 33 ELECTRICAL TAPE. INSULATION VALUE TO BE SAME AS WIRE INSULATION. WHERE CONDUCTORS ARE CONNECTED TO METALLIC SURFACES, THE COATED SURFACES OF THE METAL SHALL BE CLEANED TO THE BARE METAL BEFORE INSTALLING THE CONNECTOR. LAGGER COATING OF ALL CONDUCTORS SHALL BE INSTALLED WHEN PANEL COVERS ARE REMOVED OR SWITCH DOORS ARE OPEN, THE CONDUCTOR SIZE SHALL BE EASILY READ.

3.5 INSTALLATION OF PANELS

SET PANELS COMPLETELY LEVEL AND PLUMB. MEASURE STEADY STATE LOAD CURRENTS AT EACH PANELBOARD FEEDER. SHOULD THE DIFFERENCE AT ANY PANELBOARD BETWEEN PHASES EXCEED 20 PERCENT, REARRANGE CIRCUITS IN THE PANELBOARD TO BALANCE THE PHASE LOADS WITHIN 20 PERCENT.

3.5 INSTALLATION OF BOXES

INSTALL ELECTRICAL BOXES AS SHOWN ON DRAWINGS, AND AS REQUIRED FOR SPLICES, TAPS, WIRE PULLING, EQUIPMENT CONNECTIONS AND COMPLIANCE WITH REGULATORY REQUIREMENTS. INSTALL ELECTRICAL BOXES TO MAINTAIN HEADROOM AND TO PRESENT NEAT APPEARANCE. INSTALL PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS AND UNFINISHED AREAS ONLY. INACCESSIBLE CEILING AREAS. INSTALL OUTLET AND JUNCTION BOXES NO MORE THAN 6 INCHES (60 MM) FROM CEILING ACCESS PANEL OR FROM REMOVABLE RECESSED LUMINAIRE. INSTALL BOXES TO PRESERVE FIRE RESISTANCE RATING OF PARTITIONS AND OTHER ELEMENTS, USING MATERIALS AND METHODS UNDER THE OTHER PROVISIONS OF THIS SPECIFICATION. ALIGN ADJACENT WALL-MOUNTED OUTLET BOXES FOR SWITCHES, THERMOSTATS AND SIMILAR DEVICES WITH EACH OTHER. USE FLUSH MOUNTING OUTLET BOXES IN FINISHED AREAS. SECURE FLUSH MOUNTING BOX TO INTERIOR WALL AND PARTITION STUDS. ACCURATELY POSITION TO ALLOW FOR SURFACE FINISH THICKNESS. USE STAMPED STEEL BRIDGES TO FASTEN FLUSH MOUNTING OUTLET BOX BETWEEN STUDS. INSTALL FLUSH MOUNTING BOX WITHOUT DAMAGING WALL INSULATION OR REDUCING ITS EFFECTIVENESS. USE ADJUSTABLE STEEL CHANNEL FASTENERS FOR HANG CEILING OUTLET BOX. DO NOT FASTEN BOXES TO CEILING SUPPORT WIRES. SUPPORT BOXES INDEPENDENTLY OF CONDUIT. WHERE DRAWINGS SHOW BACK-TO-BACK WIRING DEVICES, THE DEVICES ON OPPOSITE SIDE OF THE WALL SHALL BE OFFSET A MINIMUM OF 24" SO THAT EACH DEVICE WILL BE INSTALLED IN SEPARATE BOXES TO AVOID SOUND TRANSMISSION BETWEEN ADJACENT ROOMS. THROUGH-THE-WALL BOXES SHALL NOT BE USED.

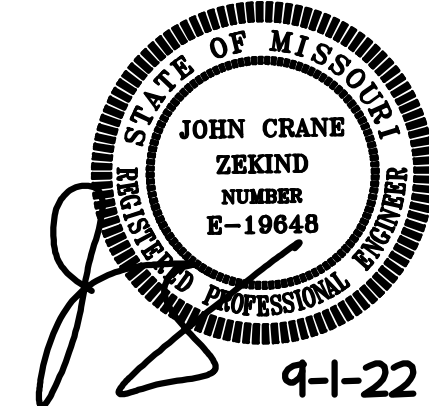
COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPLASHES AND FOR KITCHEN EQUIPMENT.

VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH DRAWINGS OF INTERIOR DETAILS AND FINISH AND EQUIPMENT CUT SHEETS. IN CENTERING OUTLETS AND LOCATING BOXES, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HANG PANELS AND THE LIKE AND CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.

3.6 INSTALLATION OF TRANSFORMERS

TRANSFORMERS SHALL BE FLOOR MOUNTED WITH CLEARANCES PER SECTION 450 OF NEC.

END OF SECTION



9-1-22

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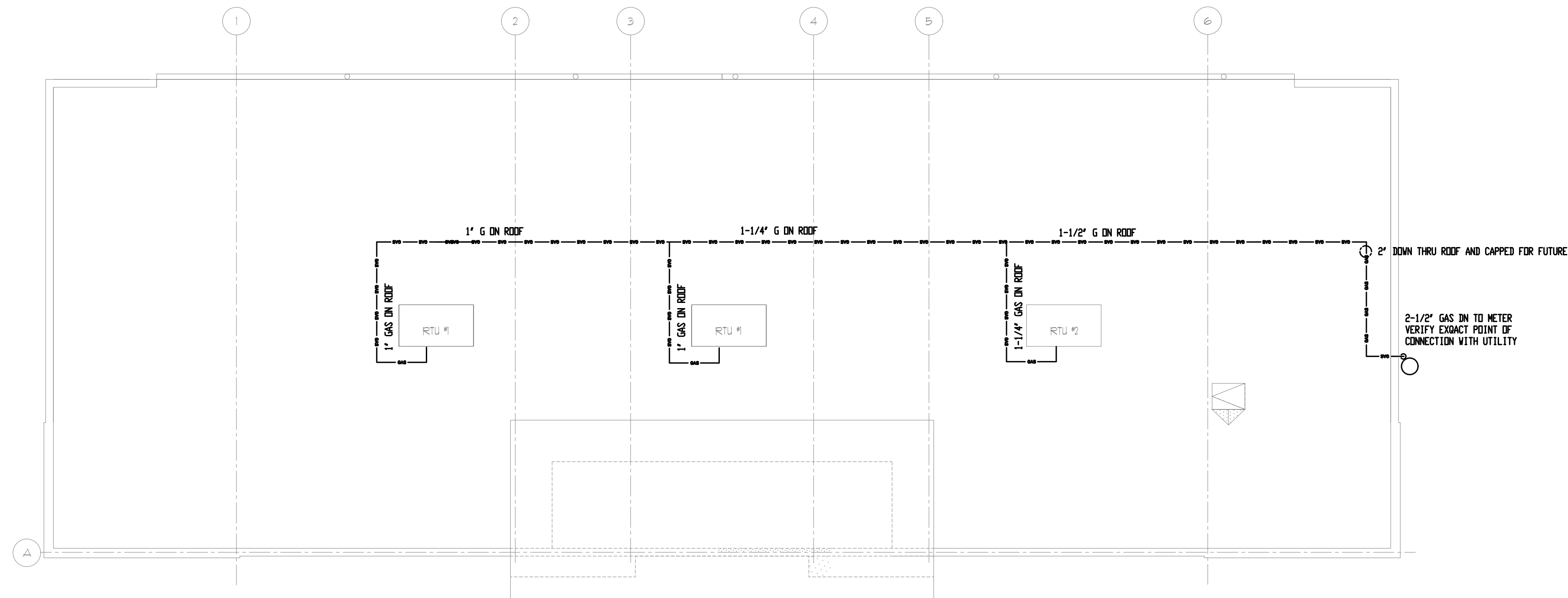
LEE SUMMIT, MO

John C. Zekind, PE
CONSULTING ENGINEERS
1276 WHITE ROAD
CHESTERFIELD, MO, 63017
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E-7



H.V.A.C. ROOF PLAN

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

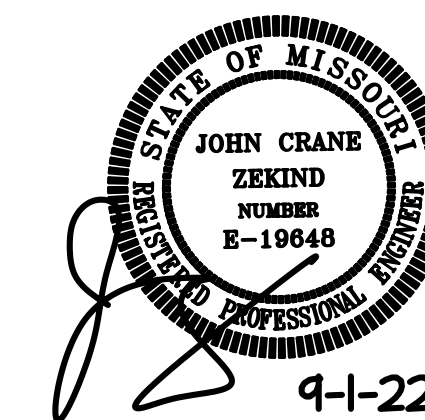
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0 4' 8'

SYMBOL LEGEND

	THERMOSTAT 'A' REPRESENTS UNIT NO.
	EQUIPMENT DESIGNATION "KEY" SEE THIS SHEET FOR APPROPRIATE SCHEDULES
	SUPPLY AIR DEVICE - FOR ACTUAL SIZE SEE AIR DEVICE SCHEDULE SHEET THIS SHEET. SEE SCHEDULE FOR NECK AND DUCT RUNOUT SIZE.
	EXHAUST OR RETURN AIR DEVICE FOR ACTUAL SIZE SEE AIR DEVICE SCHEDULE SHEET THIS SHEET. SEE SCHEDULE FOR NECK AND DUCT RUNOUT SIZE.
	EXISTING DUCT
	ROUND DUCTWORK
	RECTANGULAR DUCT
	VOLUME DAMPER
	TYPICAL CONTROL WIRING BETWEEN THERMOSTAT AND RTU OR TERMINAL.

HYAC GENERAL NOTES:

- ALL WORK SHALL BE IN COMPLETE COMPLIANCE WITH LOCAL MECHANICAL CODE, N.E.C., NFPA, AND ALL LOCAL AND APPLICABLE JURISDICTIONAL AUTHORITIES.
- REFER TO ARCHITECTURAL PLANS FOR EXACT WALL AND FLOOR AND CEILING ELEVATIONS, TYPES AND APPLICABLE BUILDING CONSTRAINTS.
- COORDINATE WITH PLUMBING, & ELECTRICAL CONTRACTORS FOR ROUTING OF SYSTEMS CONCEALED IN CEILINGS, WALLS AND FLOORS, CHASES AND ATTIC. AVAILABLE ROOM ABOVE THE CEILING IS EXTREMELY TIGHT.
- VERIFY CONCEALED SYSTEMS BEFORE INITIATING ANY WORK.
- VISIT THE SITE PRIOR TO SUBMISSION OF BID TO VERIFY EXISTING CONDITIONS. ANY CONDITIONS NOT IN COMPLIANCE WITH THE INTENT OF THE CONSTRUCTION DOCUMENTS, APPLICABLE CODES ETC., SHALL BE NOTED AND INCLUDED IN THIS CONTRACTOR'S BID.
- ALL DIMENSIONS ARE INSIDE AIR STREAM. TRANSITION TO MEET CEILING SPACE AS REQUIRED.
- NOT ALL VD ARE SHOWN. REFER TO SCHEMATICS FOR SPIN IN DETAILS ON ALL VD.
- VERIFY ALL EQ. CONNECTIONS AND TRANSITION AS REQUIRED.
- ALL DUCTWORK FABRICATED TO SMACNA STANDARDS.



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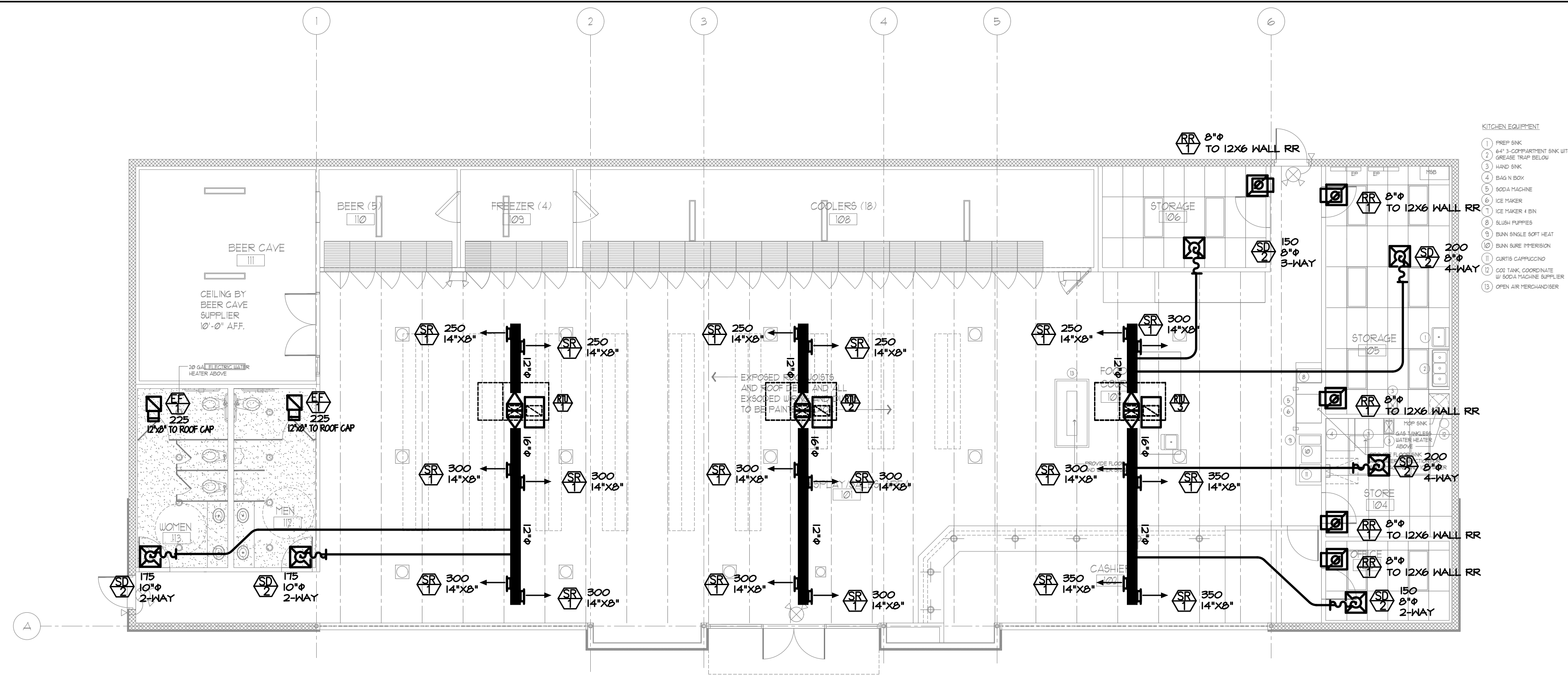
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M-1.1

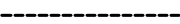


HVAC PLAN

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

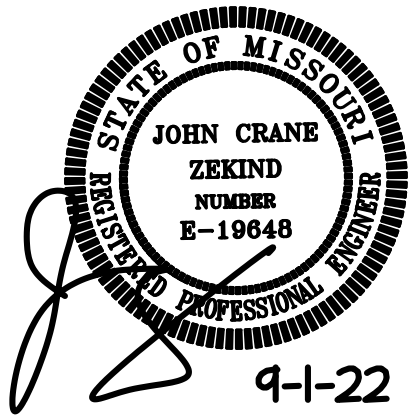
Graphic Scale:
0 4' 8'

SYMBOL LEGEND

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-  EQUIPMENT DESIGNATION "KEY" SEE THIS SHEET FOR APPROPRIATE SCHEDULES
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-  EXISTING DUCT
-  ROUND DUCTWORK
-  RECTANGULAR DUCT
-  VOLUME DAMPER
-  TYPICAL CONTROL WIRING BETWEEN THERMOSTAT AND RTU OR TERMINAL.

HVAC GENERAL NOTES:

- A. ALL WORK SHALL BE IN COMPLETE COMPLIANCE WITH LOCAL MECHANICAL CODE, N.E.C., NFPA, AND ALL LOCAL AND APPLICABLE JURISDICTIONAL AUTHORITIES.
- B. REFER TO ARCHITECTURAL PLANS FOR EXACT WALL AND FLOOR AND CEILING ELEVATIONS, TYPES AND APPLICABLE BUILDING CONSTRAINTS.
- C. COORDINATE WITH PLUMBING, & ELECTRICAL CONTRACTORS FOR ROUTING OF SYSTEMS CONCEALED IN CEILINGS, WALLS AND FLOORS, CHASES AND ATTIC. AVAILABLE ROOM ABOVE THE CEILING IS EXTREMELY TIGHT.
- D. VERIFY CONCEALED SYSTEMS BEFORE INITIATING ANY WORK.
- E. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO VERIFY EXISTING CONDITIONS. ANY CONDITIONS NOT IN COMPLIANCE WITH THE INTENT OF THE CONSTRUCTION DOCUMENTS, APPLICABLE CODES ETC., SHALL BE NOTED AND INCLUDED IN THIS CONTRACTOR'S BID.
- F. ALL DIMENSIONS ARE INSIDE AIR STREAM. TRANSITION TO MEET CEILING SPACE AS REQUIRED.
- G. NOT ALL VD ARE SHOWN. REFER TO SCHEMATICS FOR SPIN IN DETAILS ON ALL VD.
- H. VERIFY ALL EQ. CONNECTIONS AND TRANSITION AS REQUIRED.
- I. ALL DUCTWORK FABRICATED TO SMACNA STANDARDS.



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EXHAUST FAN SCHEDULE										
MARK	MFGR.	MODEL No.	CFM	S.P.	HP	RPM	SONES	LOCATION	ELECTRICAL	REMARKS
EF-1	GREENHECK		225	.125	130W		LESS THAN 12	CEILING	120V,1Φ	

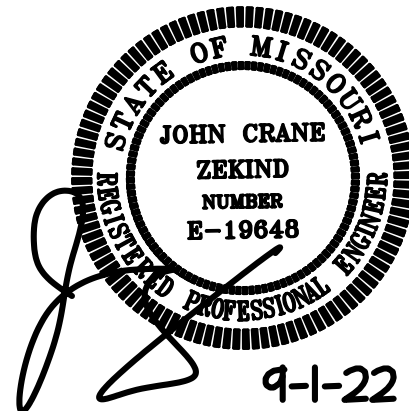
ALL POWER AND CONTROL WIRING BY THE ELECTRICAL CONTRACTOR.

AIR DEVICE (DIFFUSERS, REGISTERS, GRILLES) SCHEDULE													
MARK	MFGR.	MODEL No	CFM	NECK SIZE	PANEL SIZE	FRAME STYLE	FINISH	THROW • 100 FPM	AIR PATTERN	MTG.	△ P	NC	ROUND DUCT CONNECT SIZE
SR-1	TITUS	DL	VARIES	VARIES	VARIES	VARIES	OFF-WHITE	--	VARIES	DUCT	--	--	N.A.
RR-1	TITUS	TXR	VARIES	VARIES	VARIES	VARIES	OFF-WHITE	--	VARIES	CLG	--	--	N.A.
SD-1	TITUS	TMS	VARIES	VARIES	VARIES	VARIES	OFF-WHITE	--	VARIES	CLG	--	--	N.A.

SD-2 IS ACUTHERM HEATING AND COOLING CONTROL DIFFUSER

PACKAGED ROOFTOP UNIT SCHEDULE													
MARK	MFGR.	MODEL NO.	WT.	COOLING CAPACITY			FAN				HEATING CAPACITY	ELEC	REMARKS
				SEN	LAT	TOTAL	CFM	ESP	HP	RPM			
RTU-1	NEW 5 TON RTU		800	50	10	60	2000	.6"	1/2	LOW	100 MBH	208V, 3ϕ	①②③④ OA=330 CFM
RTU-2	NEW 5 TON RTU		800	50	10	60	2000	.6"	1/2	LOW	100 MBH	208V, 3ϕ	①②③④ OA=330 CFM
RTU-3	NEW 7.5 TON RTU		1200	60	12	72	3000	.6"	1/2	LOW	150 MBH	208V, 3ϕ	①②③④ OA=330 CFM

- ① WITH HUMIDITY AND CAPACITY CONTROL OPT
- ② BTU/HR @ ARI COND. VERIFY S.A. CFM PER PLANS. VERIFY OA FROM PLANS
- ③ WITH ECONOMIZER AND SMOKE DETECTOR PER IMC/NFPA
ALL POWER AND CONTROL WIRING BY THE ELECTRICAL CONTRACTOR.
VERIFY CFM ON PLANS
- ④ SENSORS IN RA FOR CONTROL IN OFFICE.



4-1-22

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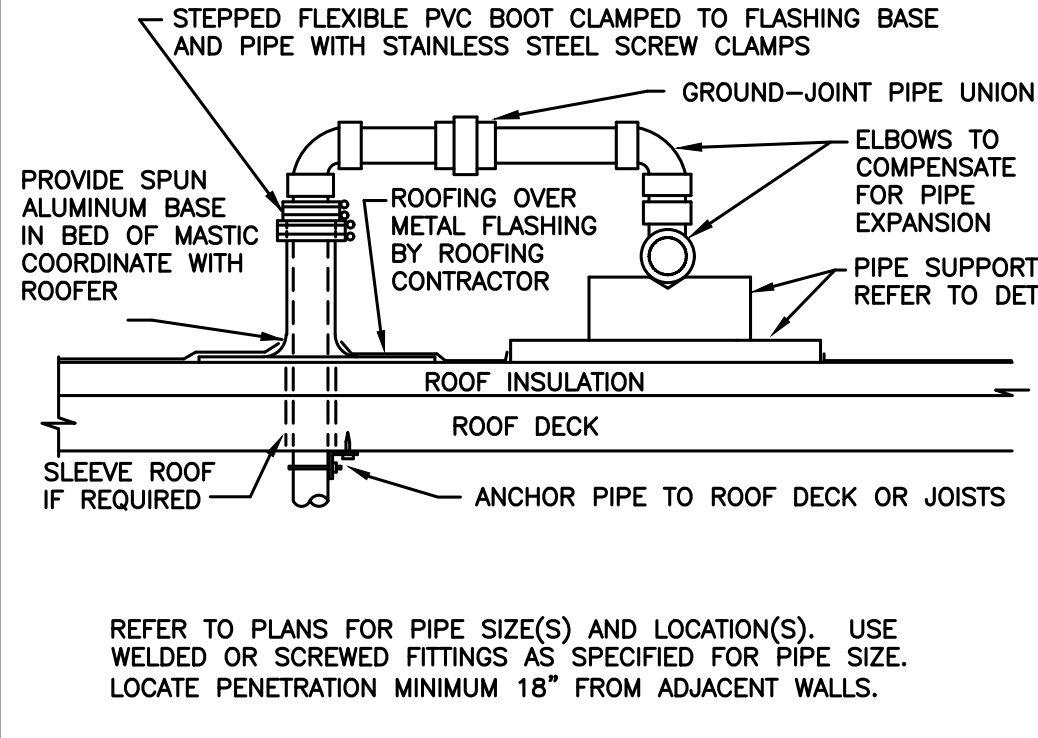
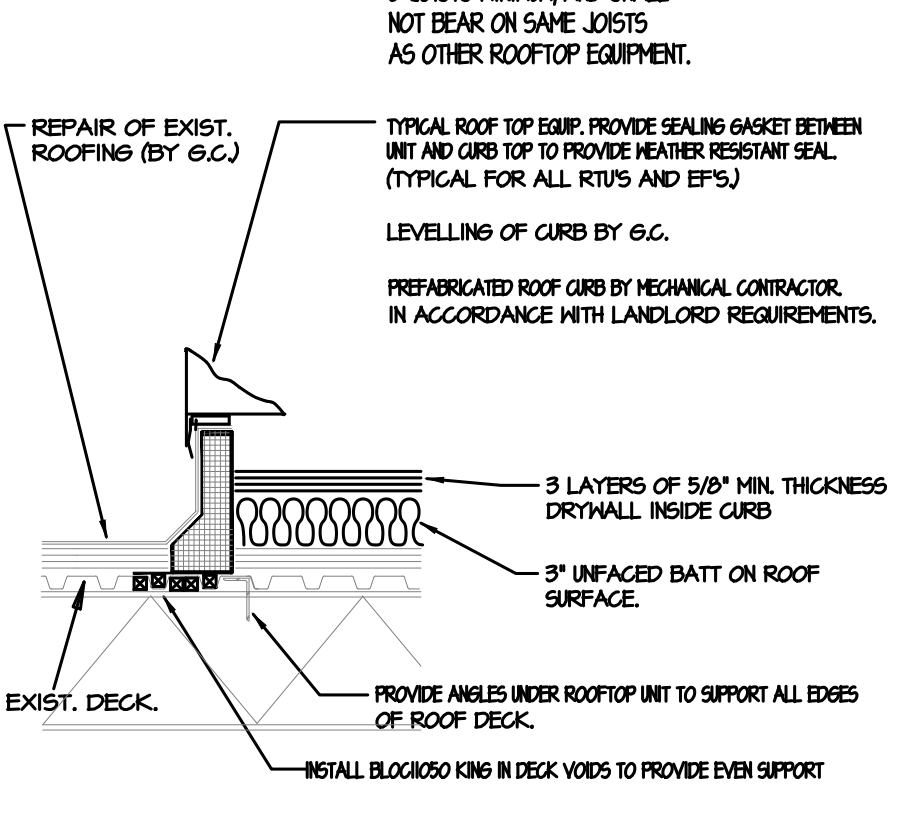
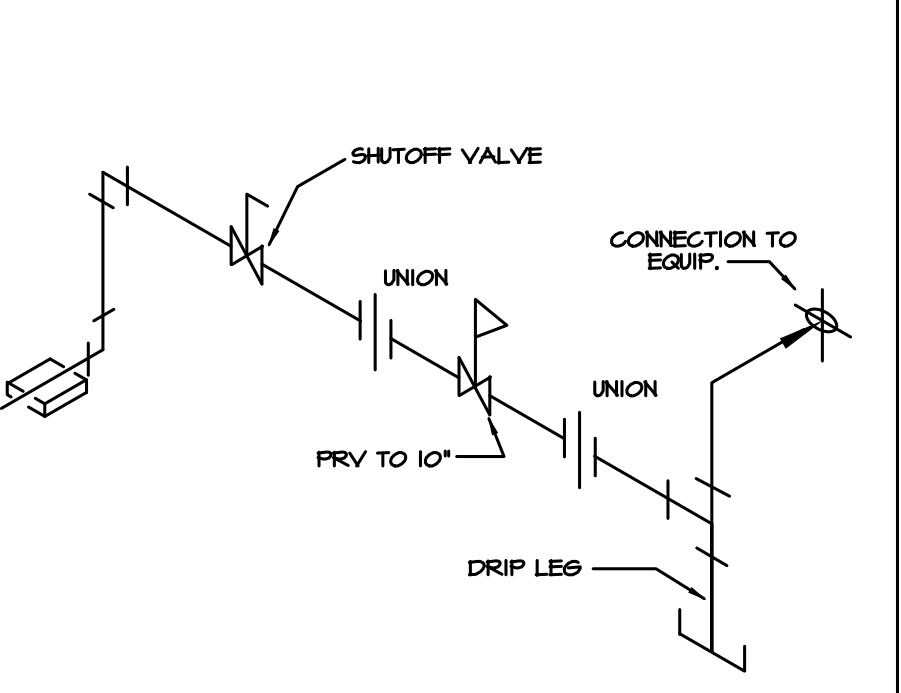
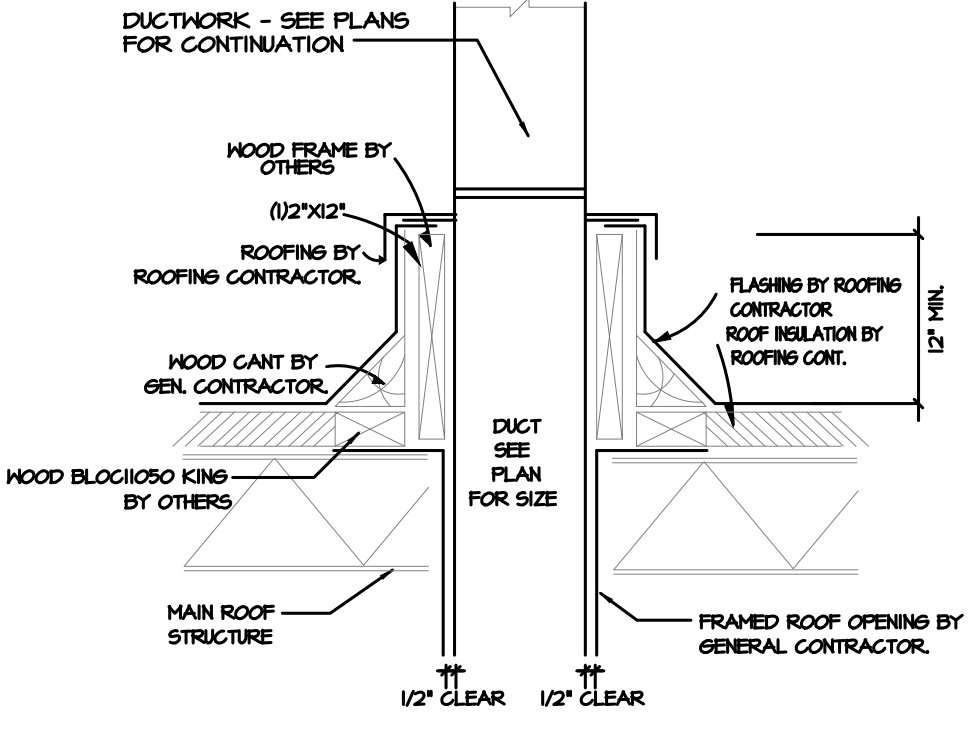
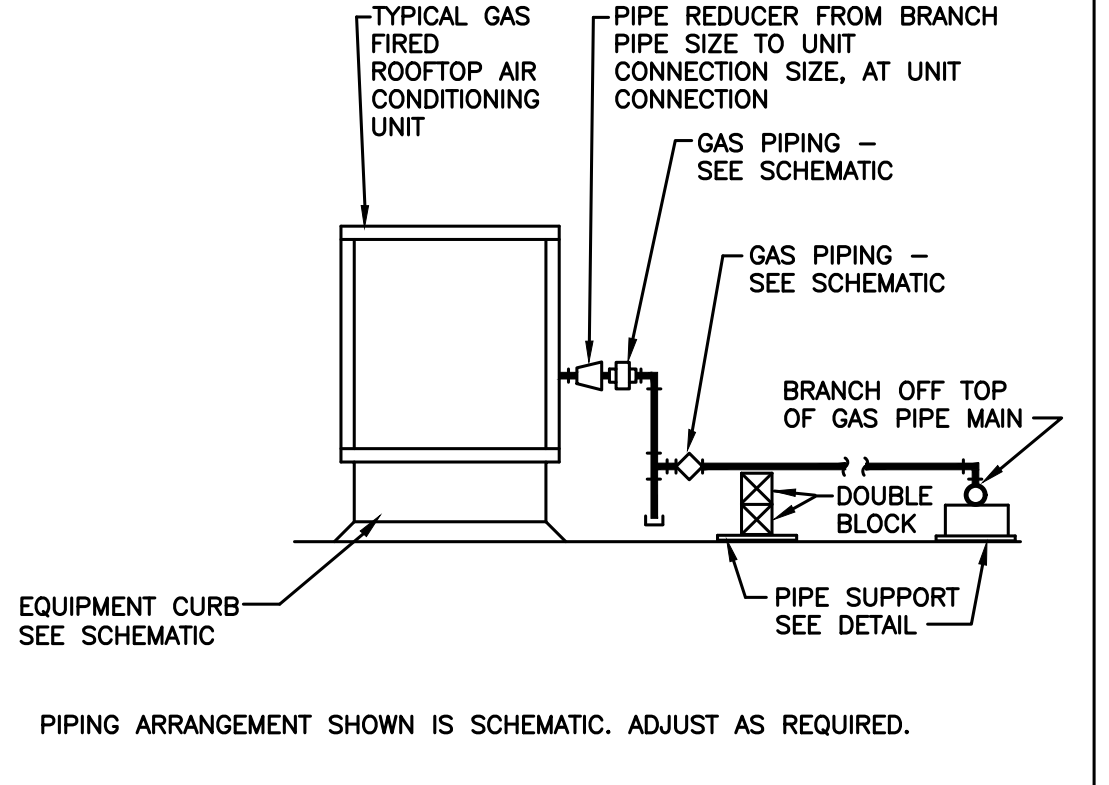
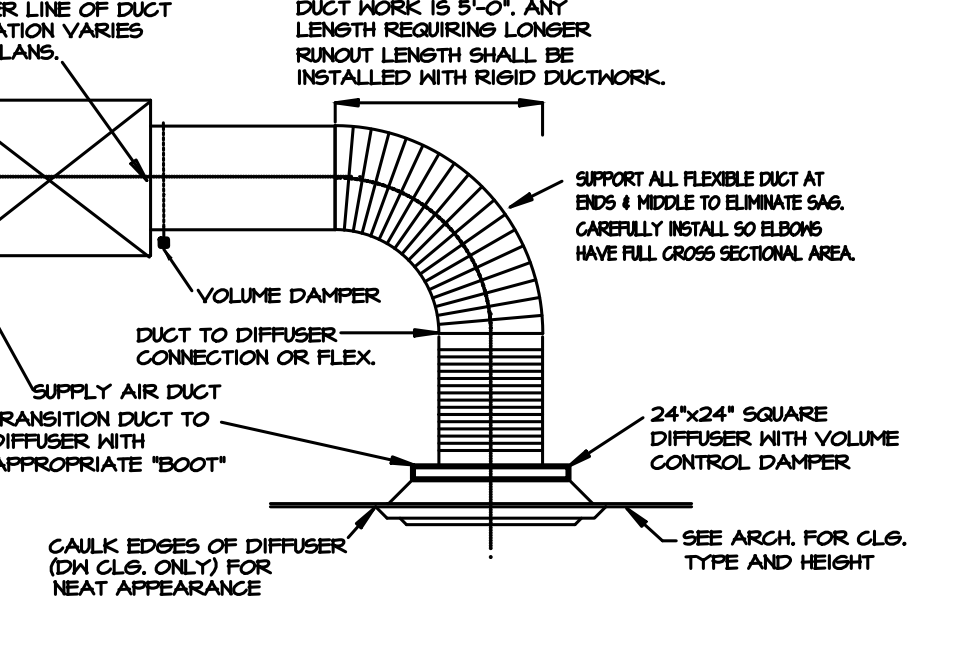
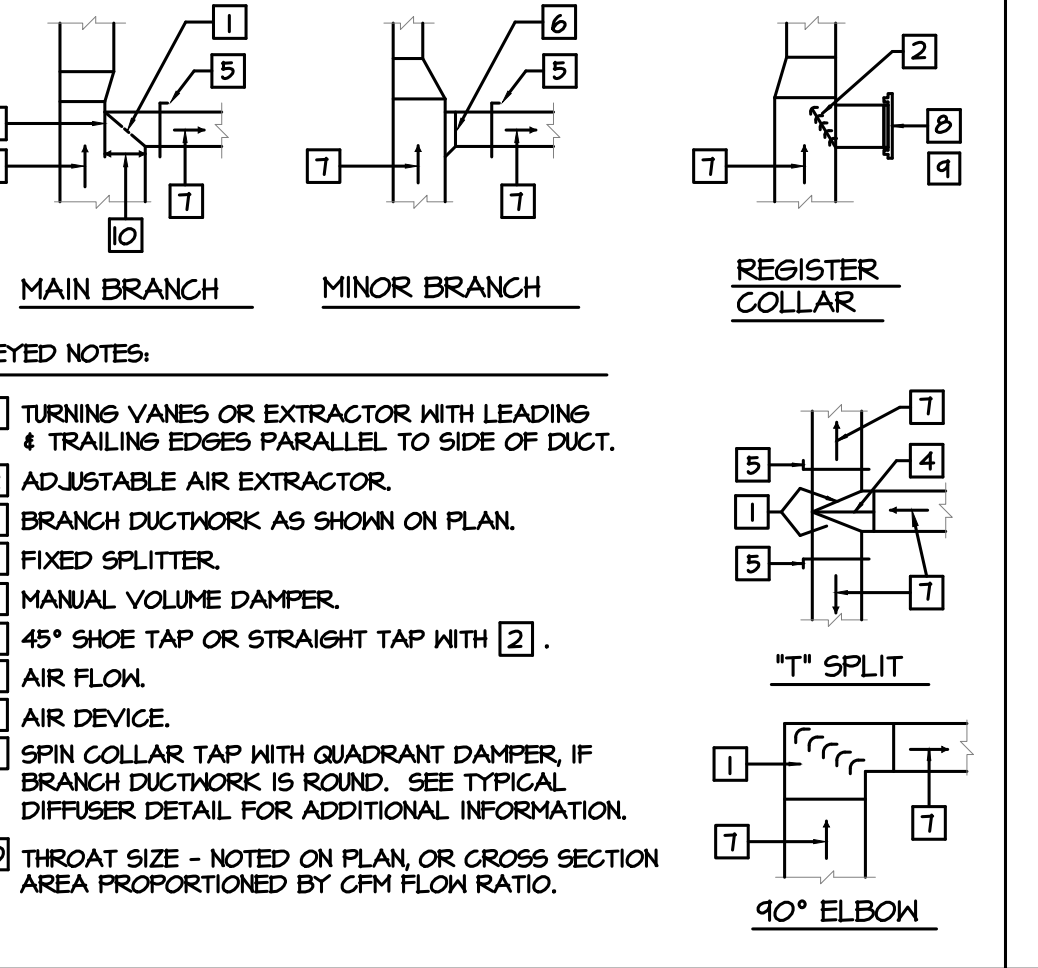
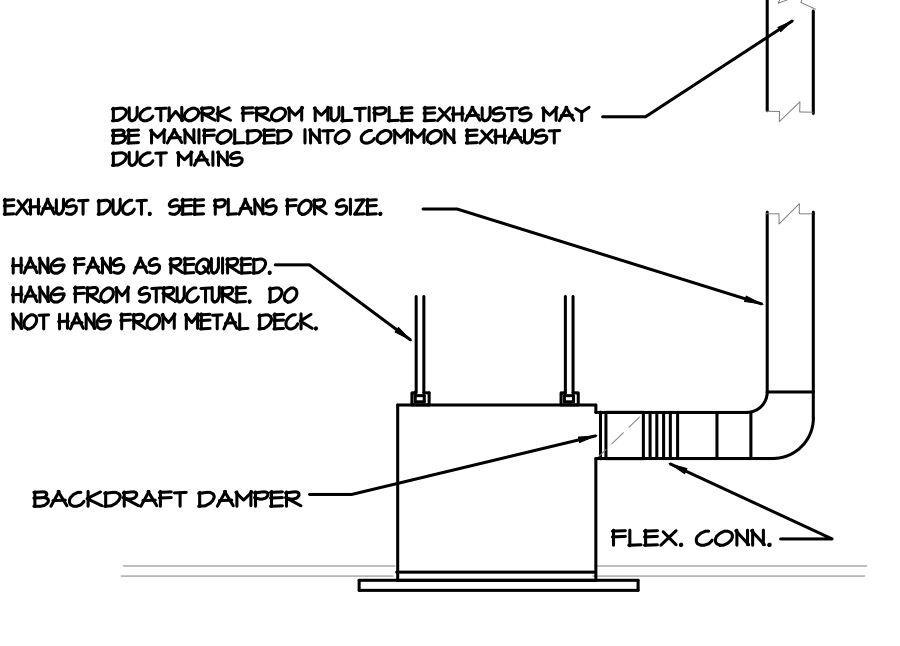
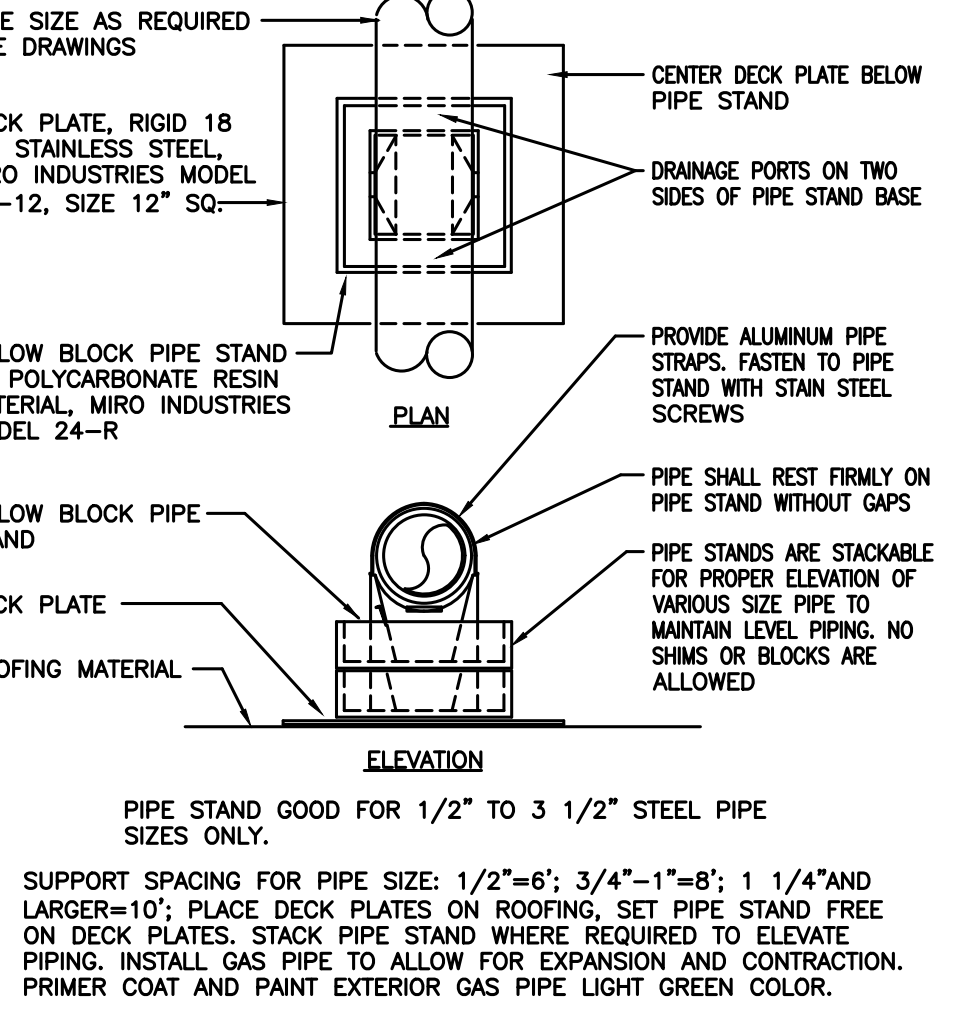
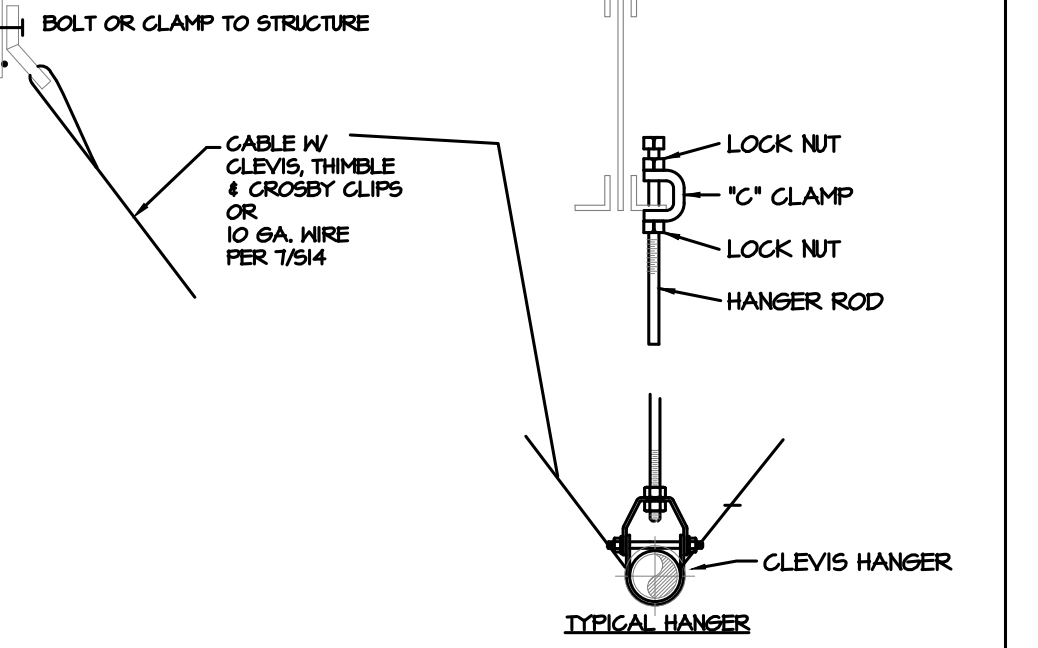
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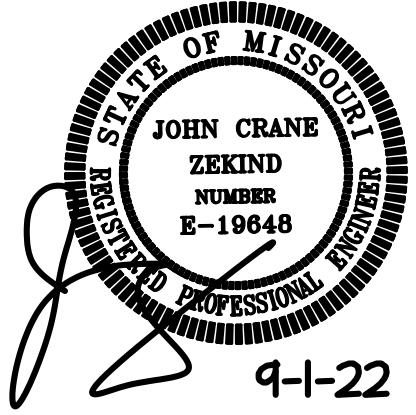
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	 STEPPED FLEXIBLE PVC BOOT CLAMPED TO FLASHING BASE AND PIPE WITH STAINLESS STEEL SCREW CLAMPS GROUND-JOINT PIPE UNION ELBOWS TO COMPENSATE FOR PIPE EXPANSION PIPE SUPPORT REFER TO DETAIL ROOFING OVER METAL FLASHING BY ROOFING CONTRACTOR PROVIDE SPUN ALUMINUM BASE IN BED OF MASTIC COORDINATE WITH ROOFER ROOF INSULATION ROOF DECK SLEEVE ROOF IF REQUIRED ANCHOR PIPE TO ROOF DECK OR JOISTS 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.	 NOTE: RTU'S SHALL ALWAYS SPAN 3 JOISTS MINIMUM AND SHALL NOT BEAR ON SAME JOISTS AS OTHER ROOFTOP EQUIPMENT. REPAIR OF EXIST. ROOFING (BY G.C.) TYPICAL ROOF TOP EQUIP. PROVIDE SEALING GASKET BETWEEN UNIT AND CURB TOP TO PROVIDE WEATHER RESISTANT SEAL. (TYPICAL FOR ALL RTU'S AND ETS'S) LEVELLING OF CURB BY G.C. PREFABRICATED ROOF CURB BY MECHANICAL CONTRACTOR, IN ACCORDANCE WITH LANDLORD REQUIREMENTS. 3 LAYERS OF 5/8" MIN. THICKNESS DRYWALL INSIDE CURB 3" UNFACED BATT ON ROOF SURFACE. PROVIDE ANGLES UNDER ROOFTOP UNIT TO SUPPORT ALL EDGES OF ROOF DECK. EXIST. DECK INSTALL BLOCK/250 KING IN DECK VOIDS TO PROVIDE EVEN SUPPORT	 SHUTOFF VALVE UNION CONNECTION TO EQUIP. PRV TO 10" UNION DRIP LEG	
	TYPICAL GAS PIPING THRU ROOF SCHEMATIC	TYPICAL CURB SCHEMATIC	TYPICAL GAS CONNECTION SCHEMATIC	
 DUCTWORK - SEE PLANS FOR CONTINUATION HOOD FRAME BY OTHERS ROOFING BY ROOFING CONTRACTOR HOOD CANT BY GEN. CONTRACTOR HOOD BLOCK/250 KING BY OTHERS MAIN ROOF STRUCTURE 1/2" CLEAR 1/2" CLEAR DUCT SEE PLAN FOR SIZE FLASHING BY ROOFING CONTRACTOR ROOF INSULATION BY ROOFING CONT. 12" MIN. FRAMED ROOF OPENING BY GENERAL CONTRACTOR	 TYPICAL GAS FIRED ROOFTOP AIR CONDITIONING UNIT PIPE REDUCER FROM BRANCH PIPE SIZE TO UNIT CONNECTION SIZE, AT UNIT CONNECTION GAS PIPING - SEE SCHEMATIC GAS PIPING - SEE SCHEMATIC BRANCH OFF TOP OF GAS PIPE MAIN DOUBLE BLOCK PIPE SUPPORT SEE DETAIL EQUIPMENT CURB SEE SCHEMATIC PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED.	 CENTER LINE OF DUCT ELEVATION VARIES SEE PLANS MAXIMUM LENGTH OF FLEX DUCT WORK IS 8'-0". ANY LENGTH REQUIRING LONGER RUNOUT LENGTH SHALL BE INSTALLED WITH RIGID DUCTWORK. SUPPORT ALL FLEXIBLE DUCT AT ENDS & MIDDLE TO ELIMINATE SAG. CAREFULLY INSTALL SO ELBOWS HAVE FULL CROSS SECTIONAL AREA. VOLUME DAMPER DUCT TO DIFFUSER CONNECTION OR FLEX SUPPLY AIR DUCT TRANSITION DUCT TO DIFFUSER WITH APPROPRIATE "BOOT" 24"x24" SQUARE DIFFUSER WITH VOLUME CONTROL DAMPER SEE ARCH. FOR CLG. TYPE AND HEIGHT CAULK EDGES OF DIFFUSER (OWN CLG. ONLY) FOR NEAT APPEARANCE	 MAIN BRANCH MINOR BRANCH REGISTER COLLAR KEYED NOTES: - TURNING VANES OR EXTRACTOR WITH LEADING & TRAILING EDGES PARALLEL TO SIDE OF DUCT. - ADJUSTABLE AIR EXTRACTOR. - BRANCH DUCTWORK AS SHOWN ON PLAN. - FIXED SPLITTER. - MANUAL VOLUME DAMPER. 45° SHOE TAP OR STRAIGHT TAP WITH [2]. - AIR FLOW. - AIR DEVICE. - SPIN COLLAR TAP WITH QUADRANT DAMPER, IF BRANCH DUCTWORK IS ROUND. SEE TYPICAL DIFFUSER DETAIL FOR ADDITIONAL INFORMATION. - THROAT SIZE - NOTED ON PLAN, OR CROSS SECTION AREA PROPORTIONED BY CFM FLOW RATIO. "T" SPLIT 90° ELBOW	 DUCTWORK FROM MULTIPLE EXHAUSTS MAY BE MANIFOLDED INTO COMMON EXHAUST DUCT MAINS EXHAUST DUCT. SEE PLANS FOR SIZE. HANG FANS AS REQUIRED. HANG FROM STRUCTURE. DO NOT HANG FROM METAL DECK. BACKDRAFT DAMPER FLEX. CONN.
TYPICAL DUCT THRU ROOF	TYPICAL MAU/RTU PIPING CONNECTION SCHEMATIC	TYPICAL DUCT DIFFUSER CONNECTIONS	TYPICAL DUCTWORK SCHEMATICS	CEILING FAN
		 PIPE SIZE AS REQUIRED SEE DRAWINGS DECK PLATE, RIGID 18 GA. STAINLESS STEEL, MIRO INDUSTRIES MODEL DP-12, SIZE 12" SQ. PILLLOW BLOCK PIPE STAND OF POLYCARBONATE RESIN MATERIAL, MIRO INDUSTRIES MODEL 24-R PILLLOW BLOCK PIPE STAND DECK PLATE ROOFING MATERIAL CENTER DECK PLATE BELOW PIPE STAND DRAINAGE PORTS ON TWO SIDES OF PIPE STAND BASE PROVIDE ALUMINUM PIPE STRAPS, FASTEN TO PIPE STAND WITH STAIN STEEL SCREWS PIPE SHALL REST FIRMLY ON PIPE STAND WITHOUT GAPS PIPE STANDS ARE STACKABLE FOR PROPER ELEVATION OF VARIOUS SIZE PIPE TO MAINTAIN LEVEL PIPING. NO SHIMS OR BLOCKS ARE ALLOWED PIPE STAND GOOD FOR 1/2" TO 3 1/2" STEEL PIPE SIZES ONLY. SUPPORT SPACING FOR PIPE SIZE: 1/2"-6"; 3/4"-1"-8"; 1 1/4" AND LARGER-10"; PLACE DECK PLATES ON ROOFING. SET PIPE STAND FREE ON DECK PLATES. STACK PIPE STAND WHERE REQUIRED TO ELEVATE PIPING. INSTALL GAS PIPE TO ALLOW FOR EXPANSION AND CONTRACTION. PRIMER COAT AND PAINT EXTERIOR GAS PIPE LIGHT GREEN COLOR.	 BOLT OR CLAMP TO STRUCTURE CABLE W/ CLEVIS THIMBLE & CROSBY CLIPS OR 10 GA. WIRE PER 7/54 LOCK NUT "C" CLAMP LOCK NUT HANGER ROD CLEVIS HANGER TYPICAL HANGER	
		TYPICAL GAS PIPING ON ROOF	TYPICAL SEISMIC DETAIL FOR PIPING	



4-1-22

SERVICE STATION AND CONVENIENCE STORE	
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Project Number:	
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Sheet Number:	M-3

HVAC SPECIFICATION

1. PART 1 - GENERAL

1.01 GENERAL

REFER TO "DIVISION NO. 1 GENERAL REQUIREMENTS", AS WELL AS GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND SPECIAL CONDITIONS OF THE CONSTRUCTION CONTRACT FOR PROVISIONS WHICH MAY APPLY TO THE WORK UNDER THIS SECTION.

1.02 PLANS AND SPECIFICATIONS

PLANS AND SPECIFICATIONS ARE TO BE CONSIDERED AS MUTUALLY COMPLEMENTARY, AND REQUIREMENTS OF ONE SHALL BE CONSIDERED AS REQUIREMENTS OF BOTH. IF CONFLICTING REQUIREMENTS ARE SHOWN, THE MOST RESTRICTIVE REQUIREMENT SHALL APPLY AS ASCERTAINED BY THE ARCHITECT/ENGINEER. INFORMATION GIVEN HEREIN AND ON PLANS IS AS COMPLETE AND AS ACCURATE AS COULD BE SECURED AT THE TIME OF PREPARATION OF THIS DESIGN, BUT COMPLETE AND TIMELY ACCURACY CANNOT BE GUARANTEED. ROUTING OF DUCTWORK, PIPING CIRCUITS AND LOCATION OF EQUIPMENT, APPARATUS, FIXTURES AND OTHER DEVICES ARE SHOWN ON PLANS FOR GENERAL GUIDANCE. COORDINATE WORK WITH OTHER CONTRACTORS AND PROVIDE ANY NECESSARY DEVIATIONS IN ROUTING (AS FAR AS 10' FROM THOSE SHOWN) TO PROVIDE SYSTEMS AS SPECIFIED OR IMPLIED, WITHOUT INTERFERENCE, PURSUANT TO THESE REQUIREMENTS AND AT NO COST TO THE OWNER, ARCHITECT OR ENGINEER.

1.03 COORDINATION

CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS AND INCLUDE IN THE COST OF THIS BID ALL WORK NORMALLY CLAIMED BY THE TRADES UNDER YOUR CONTRACT. COORDINATE WORK WITH THE WORK OF OTHER CONTRACTORS AND SHALL DETERMINE THAT THE WORK INSTALLED WILL NOT INTERFERE WITH THE WORK OF OTHER CONTRACTORS. IF WORK IS INSTALLED WHICH DOES INTERFERE, IT SHALL BE CORRECTED AT NO COST TO THE OWNER. OCCUPATION OF SPACE BY ANY CONTRACTOR DOES NOT GIVE HIM RIGHT OF PRIORITY TO THE SPACE. ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH GOVERNING CODES, UTILITY STANDARDS, LOCAL PRACTICES AND MANUFACTURER'S PUBLISHED STANDARDS. IF ANY PORTION OF THE WORK SPECIFIED OR SHOWN ON THE DRAWINGS IS CONTRARY TO THE ABOVE, THE CONTRACTOR SHALL BE REQUIRED TO BRING THE MATTER TO THE ATTENTION OF THE ARCHITECT/ENGINEER (OWNER'S REPRESENTATIVE) PRIOR TO ROUGH-IN FOR CLARIFICATION OR REVISION. IT IS ASSUMED THAT THE CONTRACTOR HAS A SPECIAL KNOWLEDGE OF LOCAL CODES, PRACTICES AND STANDARDS. BECAUSE OF HIS SPECIAL KNOWLEDGE, HE SHALL BE HELD RESPONSIBLE FOR REPLACEMENT OF IMPROPER INSTALLATIONS WHICH HAVE NOT BEEN CALLED TO THE ATTENTION OF ARCHITECT/ENGINEER.

1.04 PERMITS, LICENSES, INSPECTIONS AND TAXES

PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS HE OBTAINS IN CONNECTION WITH HIS WORK AND SHALL COMPLY WITH ALL LAWS, ORDINANCES, ETC. IF THE PLANS AND/OR SPECIFICATIONS ARE AT A VARIANCE THEREWITH, NOTIFY THE ENGINEER IN WRITING BEFORE THE WORK IS PERFORMED. IF THE CONTRACTOR, WITHOUT NOTICE, SHALL DO ANY WORK CONTRARY TO ANY LAW, ORDINANCE, RULE OR REGULATION HE SHALL BE HELD RESPONSIBLE FOR ANY SUCH VIOLATION AND ALL COSTS ARISING THEREFROM SHALL BE BORNE BY HIM, INCLUDE ANY LOCAL, FEDERAL AND STATE TAXES IN YOUR BID.

1.05 BID AND SUBSTITUTES

A. ALL BIDS SHALL BE BASED STRICTLY ON THE BASIS OF THE DRAWINGS AND SPECIFICATIONS. ANY REQUESTS FOR SUBSTITUTIONS SHALL BE INCLUDED AS A VOLUNTARY ALTERNATE. A COMPLETE DESCRIPTION OUTLINING THE VOLUNTARY ALTERNATE SHALL BE INCLUDED WITH A LISTING OF A COST ADD OR COST DEDUCT TO THE BASE BID. OWNER SHALL GIVE FINAL APPROVAL ON ALL VOLUNTARY ALTERNATES.

B. MEET THE RESPONSIBILITY OF COORDINATION WITH OTHER TRADES, ANY CHARGES INCURRED IN ELECTRICAL, HVAC, FIRE PROTECTION, GENERAL CONTRACTS, ETC., WHICH RESULT FROM EQUIPMENT SUBSTITUTION. ANY ADDITIONAL COSTS INVOLVED, DUE TO SUBSTITUTIONS, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR PROPOSING THE SUBSTITUTION.

1.06 SHOP DRAWINGS

SUBMIT FOR REVIEW SIX (6) COPIES OF SHOP DRAWINGS AND DESCRIPTIVE LITERATURE OF EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. DRAWINGS SHALL STATE CAPACITIES, SIZES AND ALL INFORMATION SHOWN IN SCHEDULES ON PLANS AS A MINIMUM OF ALL EQUIPMENT.

1.07 OPERATION AND MAINTENANCE MANUALS AND INSTRUCTIONS

PRIOR TO FINAL PAYMENT, THREE (3) SETS OF OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE ARCHITECT/ENGINEER FOR SUBMITTAL TO THE OWNER.

1.08 RECORD DRAWINGS

AS BUILT REPRODUCIBLE DRAWINGS ARE TO BE SUBMITTED TO ARCHITECT/ENGINEER FOR REVIEW, PRIOR TO THE TIME OF REQUEST FOR FINAL PAYMENT.

1.09 WORKMANSHIP AND MATERIALS

ALL WORK SHALL BE PERFORMED IN A MANNER ACCEPTABLE TO THE ENGINEER, ARCHITECT AND THE OWNER, BY PROPERLY TRAINED, SUPERVISED AND EXPERIENCED PERSONNEL USING NEW AND CLEAN MATERIALS, SUPPLIES, EQUIPMENT, HARDWARE AND FIXTURES.

1.04 PROTECTION OF EQUIPMENT AND WORK

EQUIPMENT, FIXTURES AND TRIM SHALL BE PROTECTED AGAINST DAMAGE DUE TO BUILDING MATERIALS, ACID, TOOLS AND EQUIPMENT OR ANY CAUSES INCIDENTAL TO CONSTRUCTION. THE FINISHED SURFACE OF EACH PIECE OF EQUIPMENT AND FIXTURE SHALL BE COVERED WITH BUILDING PAPER OR SIMILAR PROTECTION. ALL EQUIPMENT DAMAGED BY ANY CAUSE AND ANY TRIM WITH MARRED OR SCRATCHED FINISH SHALL BE REPLACED AT NO COST TO THE OWNER. THE EQUIPMENT AND EQUIPMENT TRIM PROTECTION SHALL BE REMOVED AT THE COMPLETION OF CONSTRUCTION.

1.10 TEMPORARY FACILITIES

FURNISH, INSTALL AND KEEP IN PROPER REPAIR ALL TEMPORARY POWER, LIGHTING AND OTHER FACILITIES REQUIRED FOR HIS CONSTRUCTION PURPOSES. AFTER PERMANENT FACILITIES ARE INSTALLED, THIS CONTRACTOR SHALL REMOVE ALL TEMPORARY FACILITIES ASSOCIATED WITH HIS CONSTRUCTION WORK OR PURPOSE.

1.11 MATERIAL AND EQUIPMENT HANDLING AND STORAGE

IT IS RECOGNIZED THAT SPACE AT THE PROJECT FOR STORAGE OF MATERIALS AND PRODUCTS IS LIMITED. COORDINATE THE DELIVERIES OF THE MATERIALS AND PRODUCTS WITH THE SCHEDULING AND SEQUENCING OF THE WORK SO THAT STORAGE REQUIREMENTS AT THE PROJECT ARE MINIMIZED. IN GENERAL, DO NOT DELIVER INDIVIDUAL ITEMS OF EQUIPMENT TO THE PROJECT SUBSTANTIALLY AHEAD OF THE TIME OF INSTALLATION.

1.12 MAINTENANCE OF WORK AREAS

DURING THE PROJECT, MAINTAIN WORK AREA IN AN ORGANIZED MANNER, DO NOT ALLOW DEBRIS TO ACCUMULATE AND STORE EQUIPMENT, TOOLS AND SUPPLIES IN A MANNER WHICH SHALL NOT CAUSE INTERFERENCE WITH THE ACTIVITIES OF OTHERS ENGAGED ON THIS PROJECT.

1.13 GUARANTEE

THE CONTRACTOR SHALL, BY ACCEPTING THESE PLANS AND SPECIFICATIONS AND SIGNING THE CONTRACT, SHALL GUARANTEE THE FOLLOWING:

ALL EQUIPMENT, ACCESSORIES AND MATERIALS FURNISHED BY HIM FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP. IF ANY EQUIPMENT FAILS, DOES NOT OPERATE SATISFACTORILY OR SHOWS UNDESIRABLE WEAR, THE CONTRACTOR WILL BE NOTIFIED AND WILL BE REQUIRED TO REMEDY THE DEFECT IMMEDIATELY AT HIS OWN EXPENSE.

2. MATERIALS

2.01 FURNISH AND INSTALL GALVANIZED STEEL DUCTWORK AND SHEET METAL WORK AS SHOWN ON PLANS AND INDICATED HEREIN. UNLESS OTHERWISE SHOWN OR INDICATED, ALL DUCTWORK SHALL BE INSTALLED IN COMPLETE CONFORMANCE WITH SMACNA AS A MINIMUM (P-2 PRESSURE RANGE). ALL SPLY AND RETAIN AIR DUCTWORK SHALL HAVE 1/2" LINER. ALL MATERIALS USED SHALL MEET 2550 FLAME/SMOKE RATINGS.

2.02 VOLUME DAMPERS

- A. ON RIGID BRANCH TAKEOFFS TO ROUND FLEXIBLE DUCTWORK, PROVIDE BUTTERFLY TYPE VOLUME DAMPERS WITH INTEGRAL EXTRACTORS. SHAFTS SHALL BE MOUNTED PARALLEL TO THE GROUND, AND REGULATOR TO OPERATE DAMPER SHALL BE MOUNTED OUTSIDE DUCTWORK INSULATION TO BE COMPLETELY ACCESSIBLE.
- B. IN RIGID ROUND DUCTWORK PROVIDE BUTTERFLY TYPE DAMPER WITH REGULATOR MOUNTED OUTSIDE DUCTWORK, AND SHAFT PARALLEL TO GROUND.
- C. IN RECTANGULAR DUCTWORK PROVIDE OPPOSED BLADE VOLUME DAMPERS WITH REGULATOR MOUNTED OUTSIDE DUCTWORK INSULATION AND SHAFT PARALLEL TO GROUND.

2.03 FLEXIBLE CONNECTIONS SHALL BE VENTIGLASS (OR EQUAL BY EXELON OR DUKODYNE) HEAVY GLASS FABRIC, DOUBLE COATED OF NEOPRENE OF APPROXIMATELY 50 OZ. PER SQUARE YARD, PROVIDED WITH 3/8" WIDE 24 GAUGE METAL MOUNTING STRIPS ATTACHED TO EACH EDGE AND SHALL BE SUITABLE FOR EACH PRESSURE CLASS OF DUCTWORK INVOLVED.

2.04 TURNING VANES: ALL CHANGES IN DIRECTION IN DUCTWORK GREATER THAN 45 DEGREES SHALL BE MADE WITH TURNING VANES. TURNING VANES SHALL BE FACTORY MANUFACTURED PRODUCTS - CONTRACTOR FABRICATED TURNING VANES SHALL NOT BE ALLOWED.

2.05 ROOFTOP UNITS

THE UNITS ARE TO BE COMPLETE IN ALL RESPECTS WITH ALL STANDARD EQUIPMENT INCLUDING FILTERS, ELECTRIC HEATING COIL, INDOOR DX COIL, INDOOR FAN, REQUIRED SAFETIES, AND OTHER NECESSARY REFRIGERATION AND TEMPERATURE CONTROLS. UNITS SHALL BE SUPPLIED WITH FILTER TRUCK AND FILTERS. ALL UNITS SHALL INCLUDE PRESSURE SWITCHES, LOSS OF CHARGE PROTECTION, COIL FREEZE PROTECTION, UNITS SHALL BE BY YORK, CARRIER OR TRANE.

2.06 GAS PIPING

GAS PIPING SHALL BE SCH 40 BLACK STEEL WITH WROUGHT THREADED JOINTS. GAS PIPING SHALL BE PAINTED ON EXTERIOR WITH RUST RESISTANT PAINT.

2.07 CONTROLS

PROVIDE HEATING COOLING THERMOSTAT WITH 24 HOUR-7 DAY PROGRAMMING AND BATTERY BACKUP INTEGRAL.

PART 3 - EXECUTION

3.01 DUCTWORK INSTALLATION

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 THE SHORTEST ROUTE SERVING THE BUILDING AND ITS EQUIPMENT. ROUTING OF DUCTWORK SHALL BE IN SUCH A MANNER TO CAUSE MINIMUM INTERFERENCE WITH CONSTRUCTION. ALL DUCTWORK SHALL BE SUBSTANTIALLY AND NEATLY SUPPORTED ON HEAVY IRON STRAP OR TRAPEZE HANGERS WITH BEAM CLAMPS RIVETED OR BOLTED TO DUCTS PROPERLY ANCHORED TO BUILDING CONSTRUCTION SO HORIZONTAL DUCTS ARE WITHOUT SAG OR SHAY, VERTICAL ARE WITHOUT BUCKLE AND ALL ARE FREE FROM THE POSSIBILITY OF DEFORMATION COLLAPSE OR VIBRATION. ALL DUCT AND FITTINGS SHALL BE SEALED WITH DUCT SEALER.

3.02 INSTALLATION ROOFTOP UNITS

INSTALL ROOFTOP UNITS WHERE SHOWN IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS, AND RECOGNIZED INDUSTRY PRACTICES, TO INSURE THAT UNITS COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK, ROOF DECKING KING, PIPING AND ELECTRICAL WORK, AS NECESSARY.

3.03 TESTING AND BALANCING

ALL TESTING AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH AABC STANDARDS. BALANCE ALL AIR DEVICES TO WITHIN 10% OF DESIGN RATED FLOW AND COMPILE ALL T & B DATA IN REPORT. PROVIDE 6 COPIES IN BINDER TO OWNER UPON COMPLETION.

END OF SECTION

HVAC LOAD CALCULATIONS

OUTSIDE AIR CALCULATIONS

JOB: C STORE - LEE SUMMITT

AREA	SF	IMC CATEGORY	IMC PEOPLE DENSITY	R(P) R(S)	PEOPLE PER IMC	CALC. OA CFM PER CODE	CALC. OA WITH E(Z) FACTOR	OA USED FOR LOADS
SALES	4350	RETAIL	15	7.5	0.06	65.25	750.375	937.96875
FREEZER COOLER	1350	NON OCCUPIED STORAGE SPACE						0
	5700							940

NOTE: OA CALCULATED BASED UPON E(Z) OF .8 FROM TABLE 403.3.1.2

E&I7.5c66f

ZONE DESIGN COOLING LOAD SUMMARY

Location : LEE SUMMITT, MD 08-31-22
Prepared By : E20-II HVAC Design 6100190202
Carrier Hourly Analysis Program Page 1 of 2

***** CALCULATION DATA

Zone Name : LEE SUMMITT Calc Time: Aug 1400h
Job Name : BLOCK Amb db/wb: 95.4/ 79.9 F
Space Name: LEE SUMMITT C STORE

***** LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (BTU/hr)	LATENT (BTU/hr)
SOLAR LOAD	22,001	0
GLASS TRANSMISSION	3,557	0
WALL TRANSMISSION	12,536	0
ROOF TRANSMISSION	14,242	0
PARTITION TRANSMISSION	0	0
LIGHTING (11,400 W TOTAL)	30,606	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (47.00 PEOPLE TOTAL)	7,946	5,640
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	1,462	2,195
PULLDOWN/WARM-UP	0	0
COOLING SAFETY LOAD	9,235	783
SUB-TOTALS	101,584	8,618
NET VENTILATION LOAD (940 CFM)	24,107	36,190
SUPPLY FAN LOAD (BHP= 2.8)	7,164	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	0	0

TOTAL COOLING LOADS 132,855 44,808

***** COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	79.3/ 66.3 deg F
COIL LEAVING AIR TEMP. (DB/WB)	=	55.7/ 55.2 deg F
COIL SENSIBLE LOAD	=	132,855 BTU/hr
COIL TOTAL LOAD	=	177,663 BTU/hr
COOLING SUPPLY AIR TEMPERATURE	=	57.0 deg F
TOTAL COOLING CFM (actual)	=	5,369 CFM
TOTAL COOLING CFM (std. air)	=	5,226 CFM
RESULTING ROOM REL. HUMIDITY	=	50.6 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	54.5 deg F
REHEAT REQUIRED	=	0 BTU/hr

***** GENERAL INFORMATION:

TOTAL COOLING LOAD	=	14.81 Tons
TOTAL FLOOR AREA	=	365.00 sqft/Tons
OVERALL U-FACTOR	=	0.091 BTU/hr/sqft/F
COOLING CFM/sqft	=	0.94 CFM/sqft

***** ZONE DESIGN COOLING LOAD SUMMARY

Location : LEE SUMMITT, MD 08-31-22
Prepared By : E20-II HVAC Design 6100190202
Carrier Hourly Analysis Program Page 2 of 2

***** CALCULATION DATA

Zone Name : LEE SUMMITT Calc Time: Aug 1400h
Job Name : BLOCK Amb db/wb: 95.4/ 79.9 F
Space Name: LEE SUMMITT C STORE

***** WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqft)	TRANSMISSION (BTU/hr)	SOLAR LOAD (BTU/hr)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	300	3,120	20,094
SW	0	218	0
W	21	0	1,538
NW	0	0	0
N	21	218	369
H	0	0	0
WALL LOADS: NE	0	0	-
E	900	2,451	-
SE	0	0	-
S	2,600	5,645	-
SW	0	0	-
W	900	1,291	-
NW	0	0	-
N	2,600	3,150	-

***** ZONE DESIGN HEATING LOAD SUMMARY

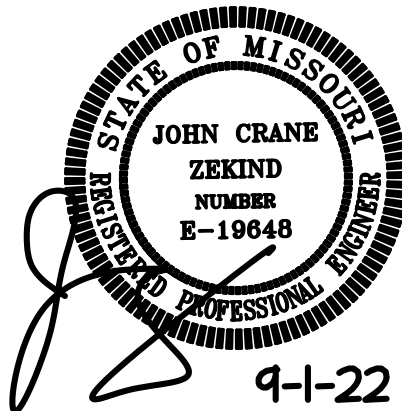
Location : LEE SUMMITT, MD 08-31-22
Prepared By : E20-II HVAC Design 6100190202
Carrier Hourly Analysis Program Page 1 of 1

***** CALCULATION DATA

Zone Name : LEE SUMMITT Calc Time: Winter design
Job Name : BLOCK Amb db : 2.0 F
Space Name: LEE SUMMITT C STORE

***** LOAD COMPONENT

LOAD COMPONENT	LOAD (BTU/hr)
WALL TRANSMISSION	38,080
ROOF TRANSMISSION	31,008
GLASS TRANSMISSION	11,628
TRANSMISSION DUCTS TO UNCOND. SPACES	0
INFILTRATION LOSS	4,074
SLAB FLOOR	23,625
HEATING SAFETY BTU/hr	10,841
SUB-TOTAL	119,256
NET VENTILATION LOSS	67,183
TOTAL HEATING LOAD	186,439
HEATING SUPPLY CFM	2,837 CFM
HEATING SUPPLY AIR TEMPERATURE	110.0 deg F
HEATING VENTILATION AIR CFM	940 CFM
HEATING THERMOSTAT SETPOINT TEMP	70.0 deg F



9-1-22

SERVICE STATION AND CONVENIENCE STORE

LEE SUMMITT, MO

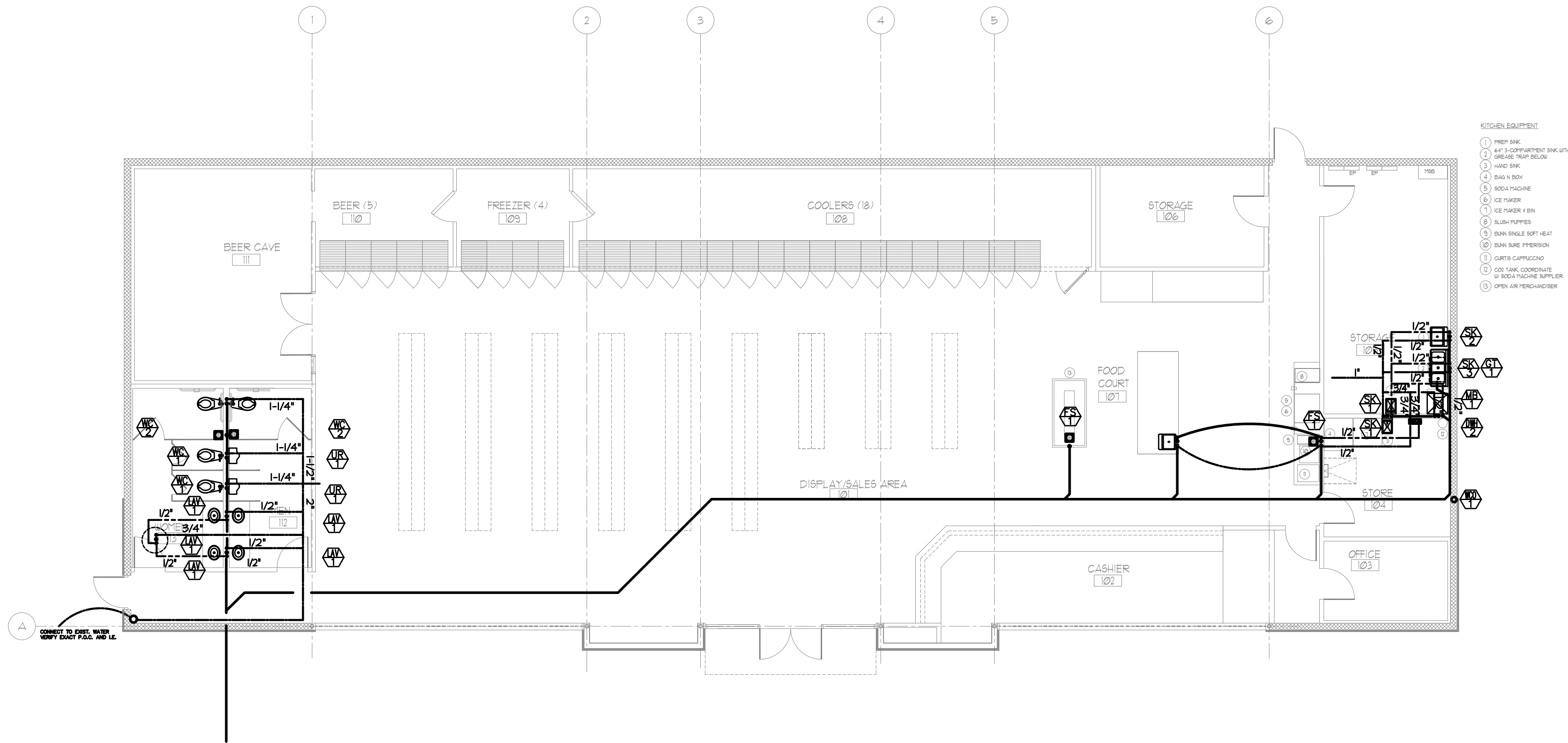
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314-878-2290

Project Number:
Issued For: ☐ Review ☐ Pricing ☐ Permit ☐ Bidding ☐ Construction
9-1-22

Sheet Number:

M-5

IF REQUIRED BY LOCAL AUTHORITY, PROVIDE SEPERATE SANITARY TO SAMPLING MANHOLE ON EXTERIOR



PLUMBING FIXTURE CONNECTION SCHEDULE							
MARK	M	V	HW	CW	T	CARRIER	REMARKS
FD-1	3"	2"	-	-	-	-	
FS-1	3"	2"			3"	-	
HD-1	3"	2"			3"	-	
LAV-1	1-1/4"	1-1/4"	1/2"	1/2"	1-1/4"	BY MFG.	
MB-1	3"	2"	1/2"	1/2"	3"	-	
SK-1,3	3"	2"	1/2"	1/2"	2"	-	
SK-2	3" ID		1/2"	1/2"		-	
UR-1	3"	2"	-	3/4"	-	-	
WC-1,2	4"	2"	-	1"	-	-	

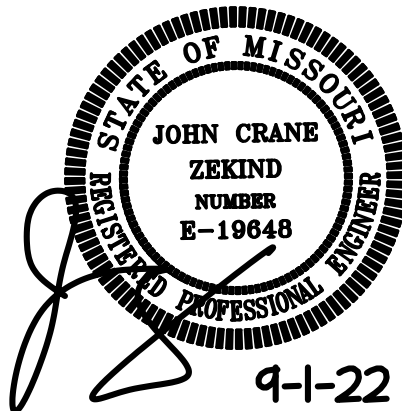
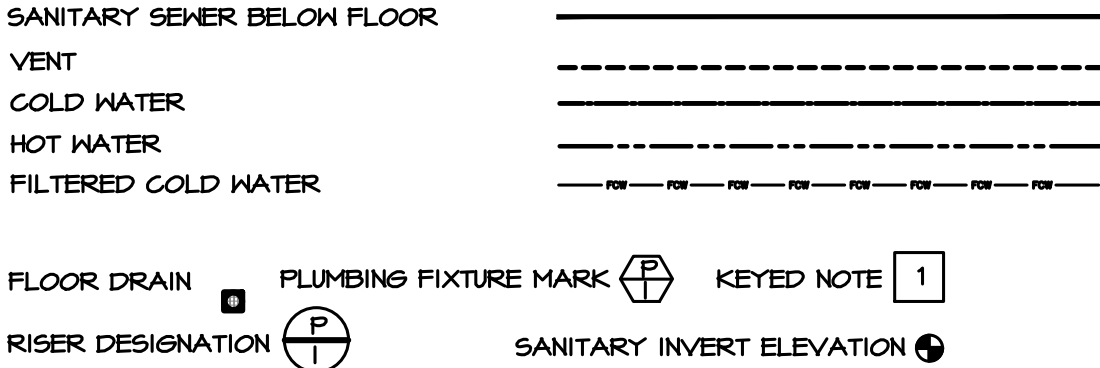
PLUMBING PLAN
SCALE: 1/8" = 1'-0"
Graphic Scale:
0 4 8

GENERAL NOTES:

- A. ALL WORK SHALL BE IN COMPLETE COMPLIANCE WITH STATE PLUMBING CODES/AMENDMENTS, NFPA, ALL LOCAL & APPLICABLE JURISDICTIONAL AUTHORITIES.
- B. REFER TO ARCHITECTURAL PLANS FOR EXACT HALL AND FLOOR ELEVATIONS, TYPES AND APPLICABLE BUILDING CONSTRAINTS.
- C. COORDINATE WITH THE ELECTRICAL, THE FIXTURE AND THE HVAC CONTRACTORS FOR ROUTING OF SYSTEMS CONCEALED IN CEILINGS, WALLS, CHASES, ATTIC, AND FLOORS. AVAILABLE ROOM ABOVE THE CEILING IS TIGHT IN MANY CASES DEVELOP A RERUN PLAN WITH ALL OTHER SUB CONTRACTORS AND PROVIDE A SUBMISSION OF SUCH FOR REVIEW PRIOR TO INITIATING ANY WORK.
- D. VERIFY INVERT ELEVATIONS BEFORE INITIATING ANY WORK.
- E. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO VERIFY EXISTING CONDITIONS. ANY CONDITIONS NOT IN COMPLIANCE WITH THE INTENT OF THE CONSTRUCTION DOCUMENTS, OR APPLICABLE CODES, ETC., SHALL BE NOTED AND INCLUDED IN THIS CONTRACTOR'S BID.
- F. COORDINATE EXACT PIPE SIZES WITH AVAILABLE HALL FURRING DIMENSIONS PRIOR TO ROUGH-IN.
- G. SANITARY SHALL HAVE A 1/4" PER FOOT SLOPE - VERIFY WITH CIVIL PLANS.

- H. THESE PLANS ARE ACCOMPANIED BY SPECIFICATIONS.
- I. BE RESPONSIBLE NOT ONLY FOR THE ROUGH-IN POINTS REQUIRED AS SHOWN GENERALLY HEREIN, BUT ALSO FOR FINAL CONNECTION TO ALL EQUIPMENT AND THE FURNISHING AND INSTALLING OF MATERIALS AND LABOR FOR SUCH AS REQUIRED TO MAKE FULLY FUNCTIONAL.
- J. SEE ARCHITECTURAL PLANS FOR EXACT FIXTURE LAYOUT.
- K. REVIEW CAREFULLY AND FULLY ALL LITERATURE ON EQUIPMENT TO BE FURNISHED BY OTHERS. INSTALL ALL REQUIRED TRIM AND ACCESSORIES TO PROVIDE A FULLY FUNCTIONING SYSTEM (FOR EXAMPLE, TRAPS, SHUTOFFS, ESCUTCHEONS, FLEX CONNECTORS, JACOBS, TRIPS, VACUUM BREAKERS, TRAP PRIMERS, ETC.).
- L. PROVIDE SHUTOFF VALVES WITH UNIONS (DIELECTRIC WHERE REQUIRED) ON ALL CONNECTIONS TO EQUIPMENT IN FULLY ACCESSIBLE LOCATIONS. ALSO PROVIDE SHUTOFF VALVES ON EACH DISTINCT BRANCH WATER LINE.
- M. ALL PIPING SHALL BE CONCEALED IN WALLS/FLOORS OR ABOVE CEILINGS UNLESS EXPLICITLY NOTED OTHERWISE.

PLUMBING SYMBOLS



SERVICE STATION AND
CONVENIENCE STORE

LEE SUMMIT, MO

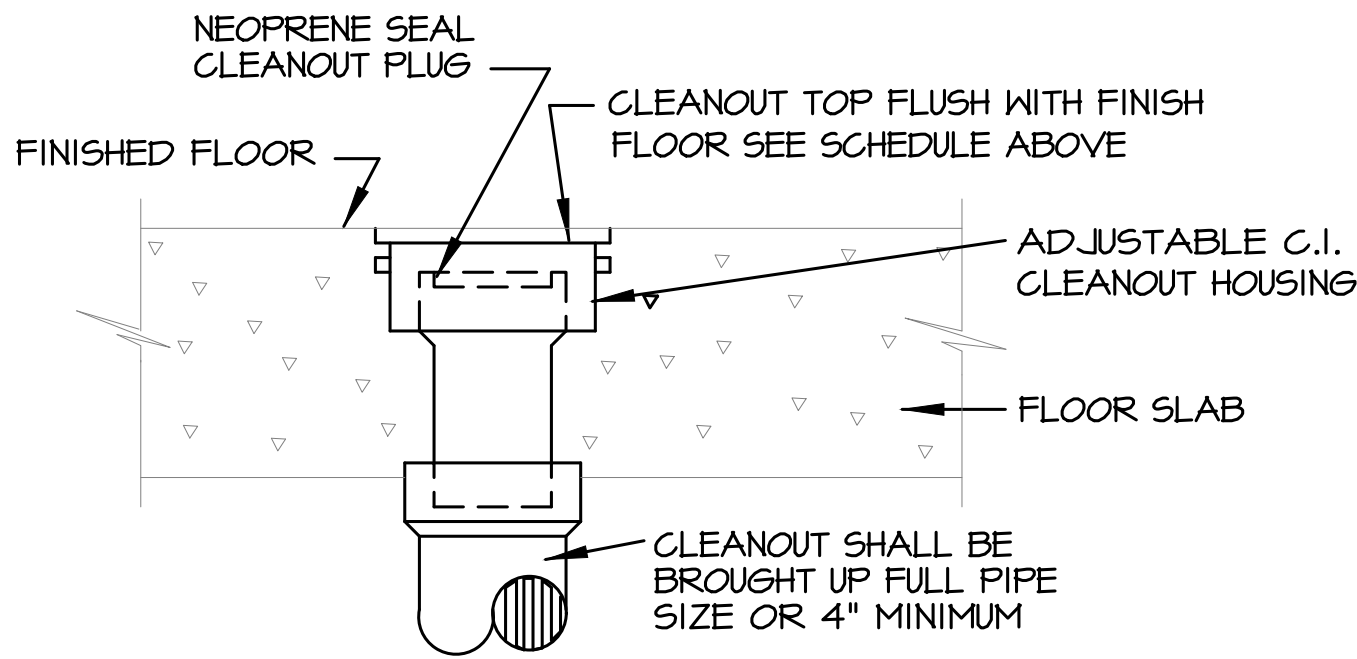
John C. Zekind, PE
CONSULTING ENGINEERS
1278 WHITE ROAD
CHESTERFIELD, MO, 63017
314-878-2290

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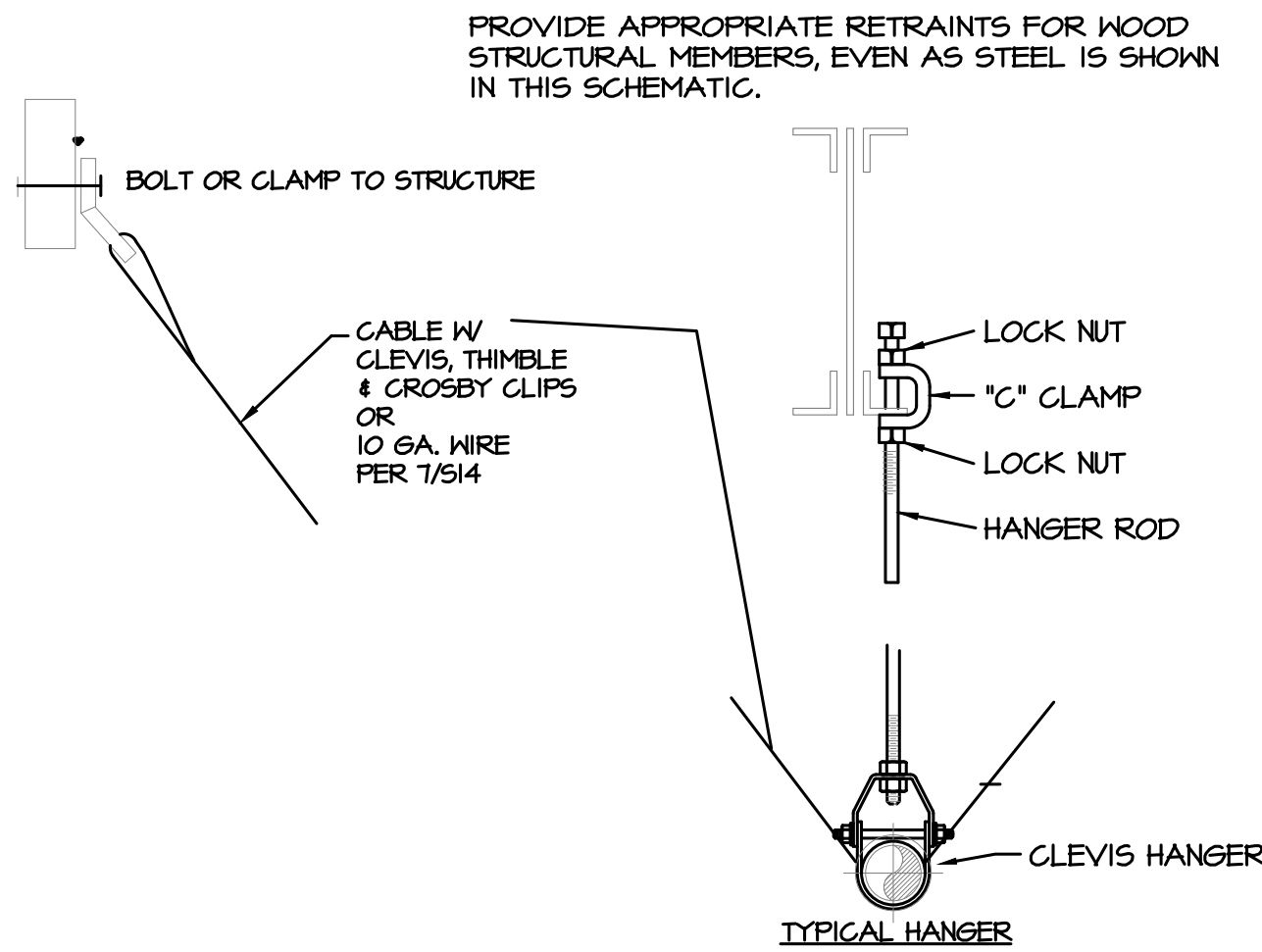
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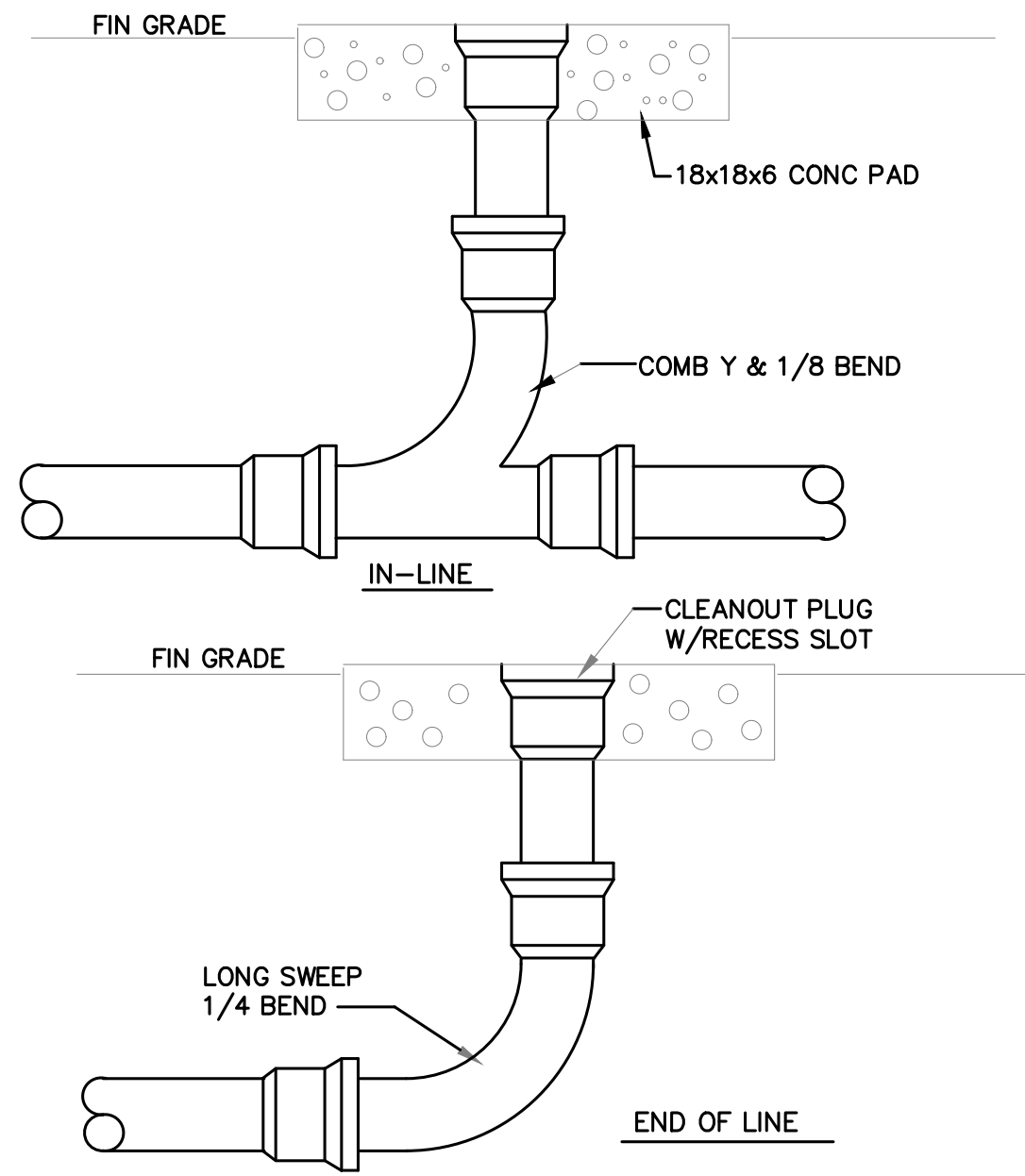
FLOOR CLEANOUT SCHEDULE		
FLOOR TYPE	CLEANOUT TYPE	TOP MATERIAL
UNFINISHED	ROUND	CAST-IRON
V.A.T.	SQUARE-TILETOP	NICKEL BRONZE
QUARRY TILE	SQUARE-TILETOP	NICKEL BRONZE
CERAMIC TILE	SQUARE TERRAZO	TILE



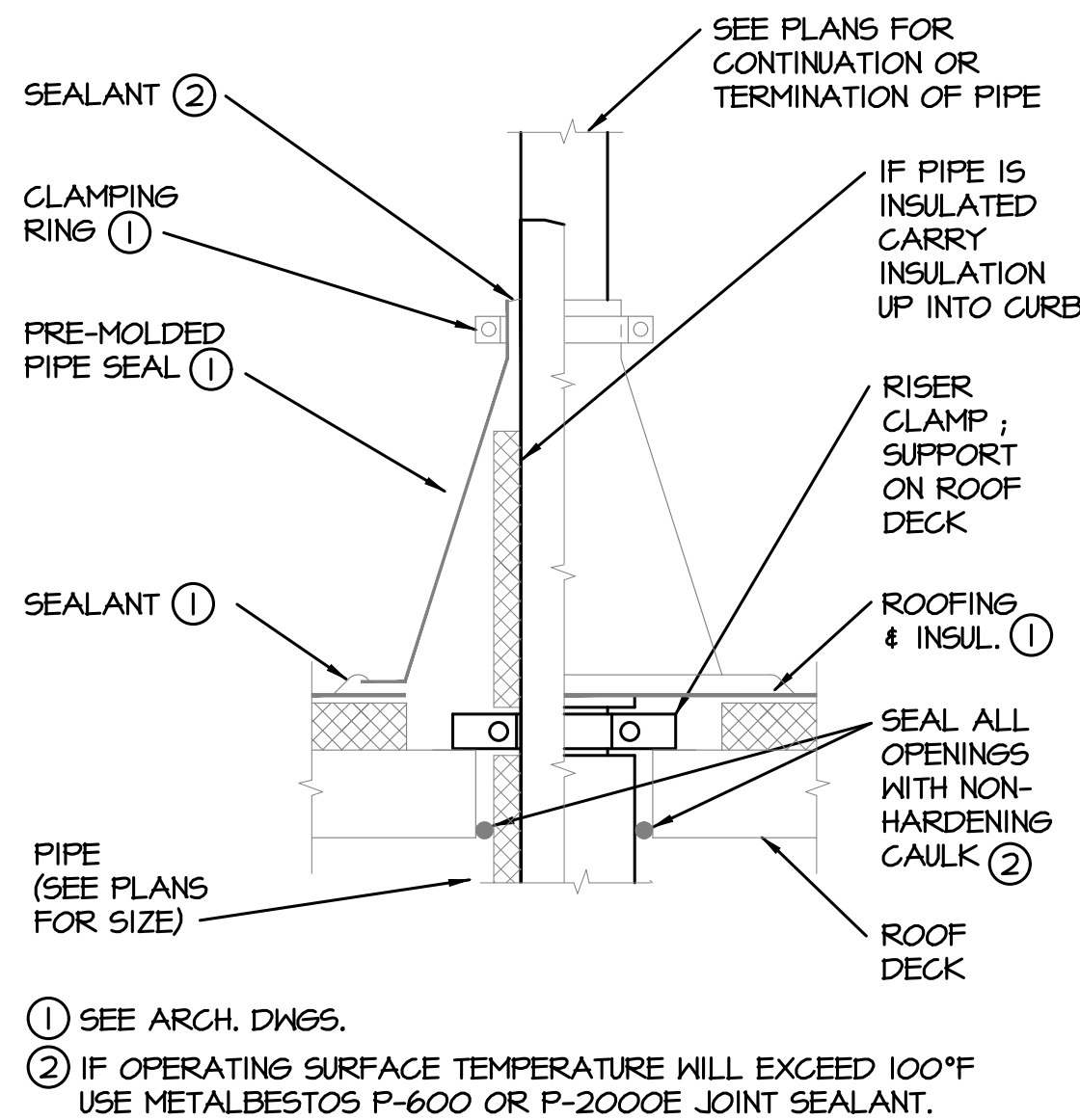
FLOOR CLEANOUT SCHEMATIC
NOT TO SCALE



TYPICAL SEISMIC DETAIL FOR PIPING
NOT TO SCALE

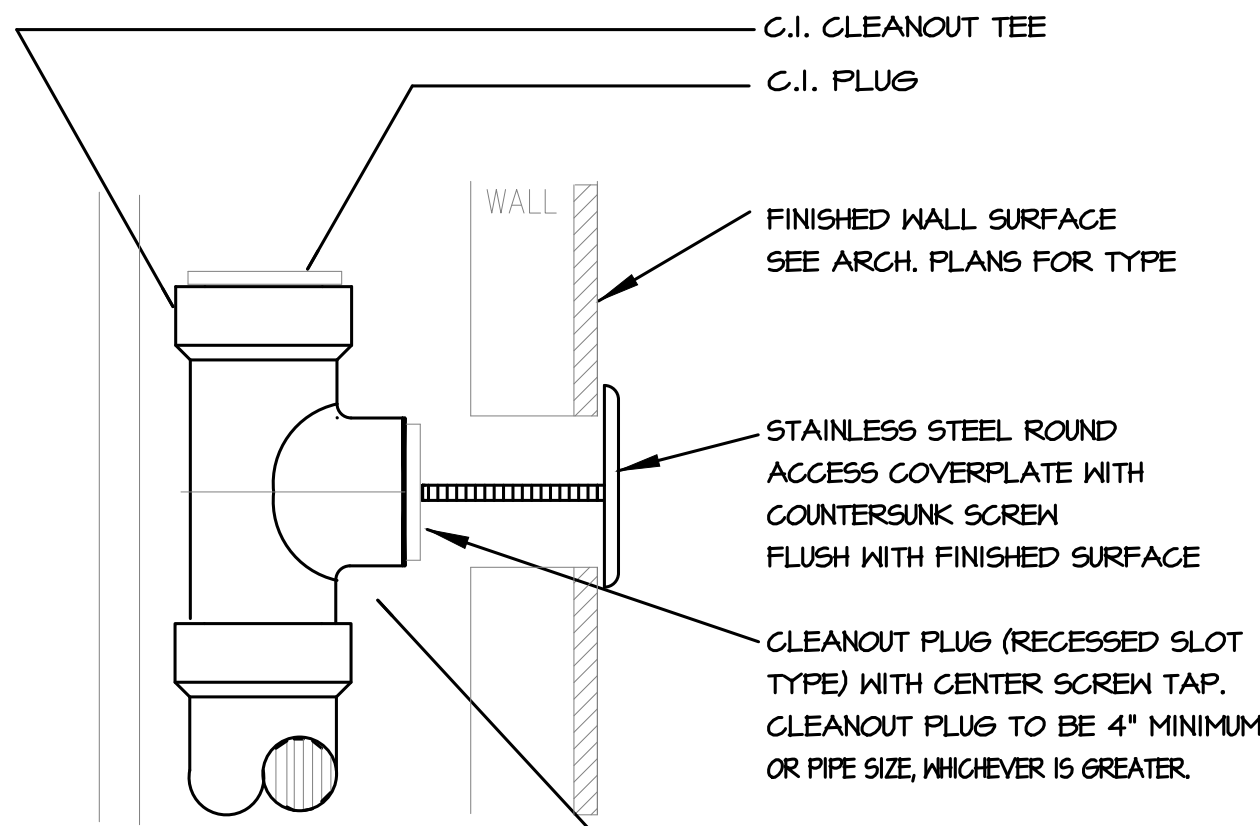


SITE CLEANOUT SCHEMATIC
NOT TO SCALE



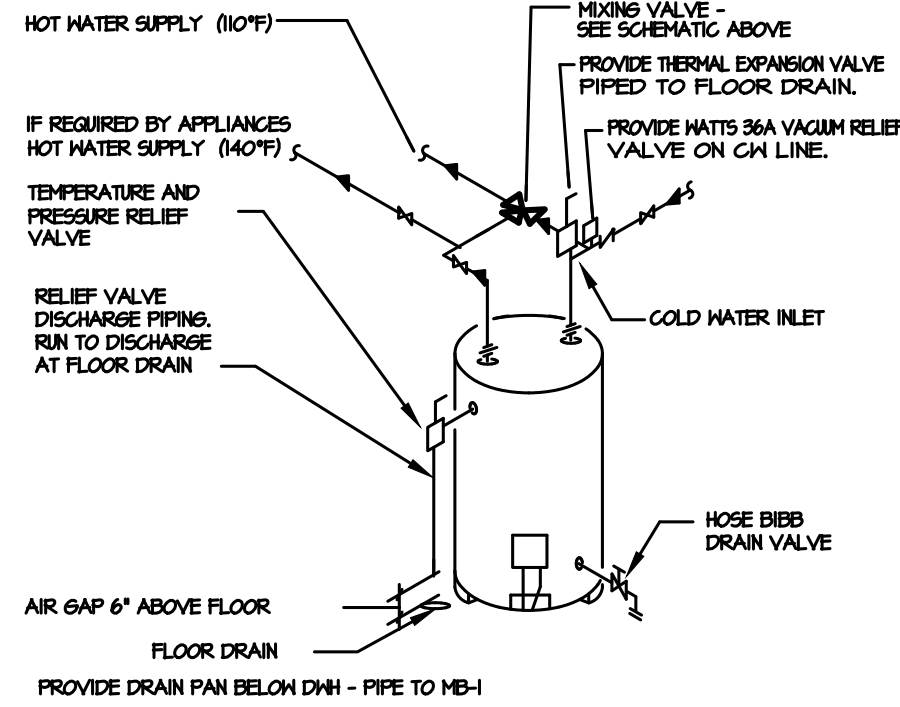
- ① SEE ARCH. DWGS.
② IF OPERATING SURFACE TEMPERATURE WILL EXCEED 100°F USE METALBESTOS P-600 OR P-2000E JOINT SEALANT.

TYPICAL PIPE THRU ROOF SCHEMATIC
NOT TO SCALE

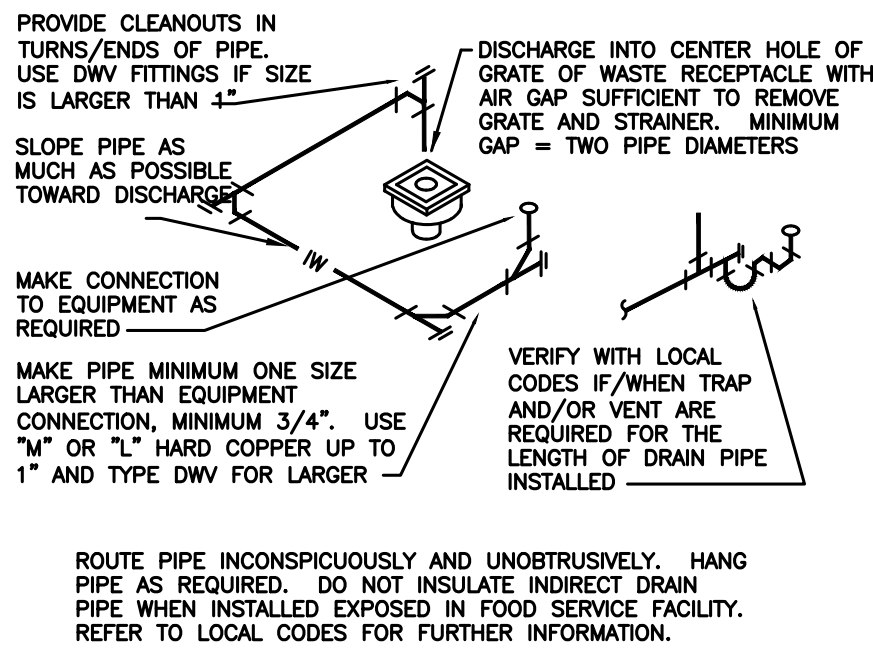


WALL CLEANOUT SCHEMATIC
NOT TO SCALE

SIMILAR FOR INSTANANEOUS WATER HEATER

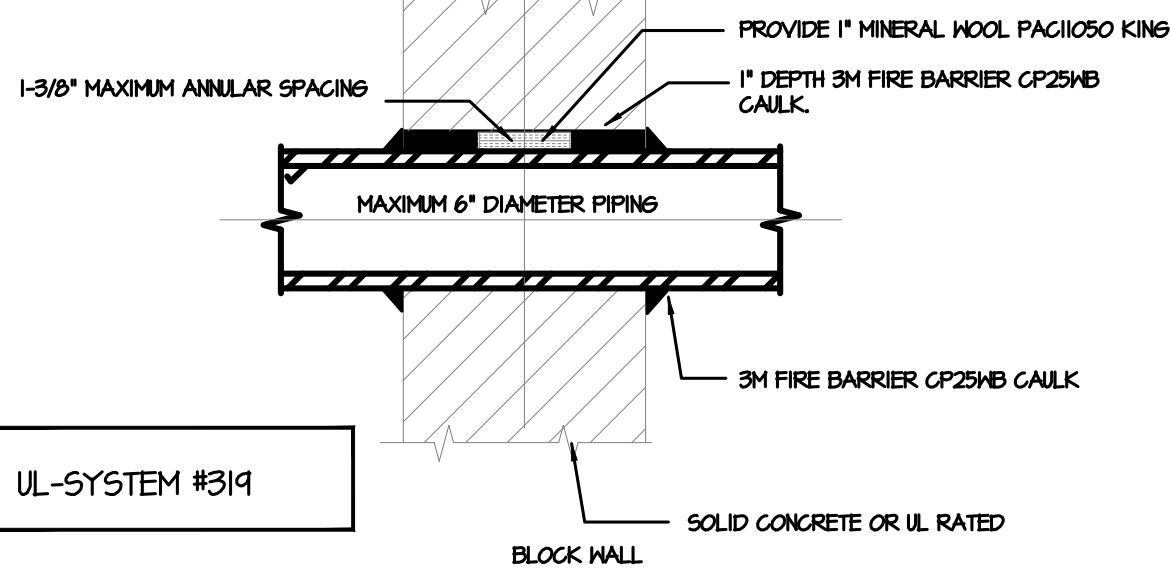


SINGLE WATER HEATER PIPING SCHEMATIC
NOT TO SCALE

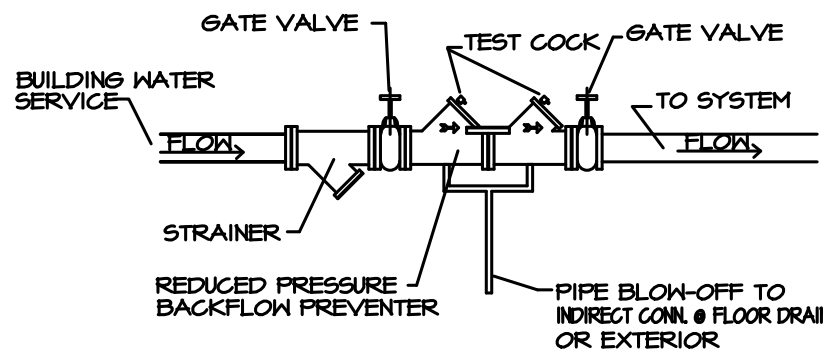


INDIRECT DRAIN SCHEMATIC
NOT TO SCALE

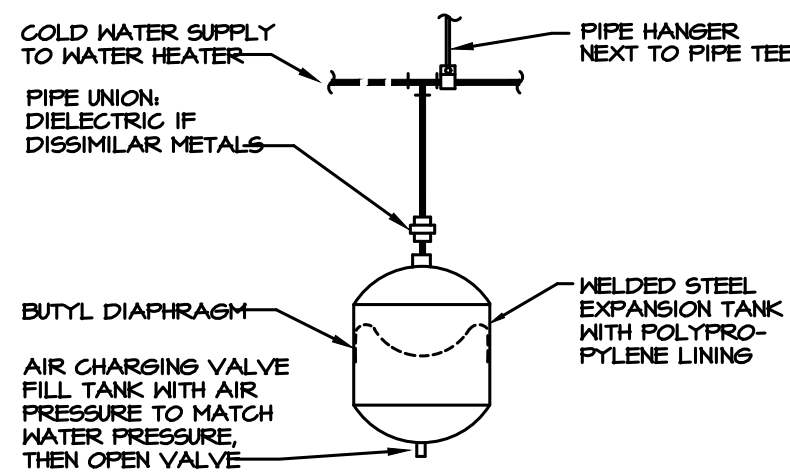
FOR 4 HOUR WALLS
USE SYSTEM 233 OR 234



FIRE RATED WALL PENETRATION SCHEMATIC
NOT TO SCALE



BACKFLOW PREVENTER SCHEMATIC
NOT TO SCALE



PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. MAKE PIPE SAME SIZE AS TANK FITTING. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED.

EXPANSION TANK INSTALLATION SHALL OCCUR ONLY WHEN THERE IS A BACK FLOW PREVENTION DEVICE INSTALLED WITHIN THE TENANT SPACE WATER SYSTEM OR BUILDING WATER SYSTEM. FIELD VERIFY BACKFLOW PREVENTION DEVICE.

DOMESTIC EXPANSION TANK SCHEMATIC
NOT TO SCALE

6-18-20 REVISIONS

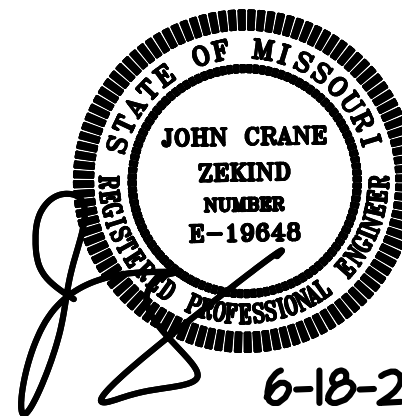
GAS MART SERVICE STATION AND
CONVENIENCE STORE

11050 RIVERVIEW DRIVE
ST. LOUIS, MO

John C. Zekind, PE
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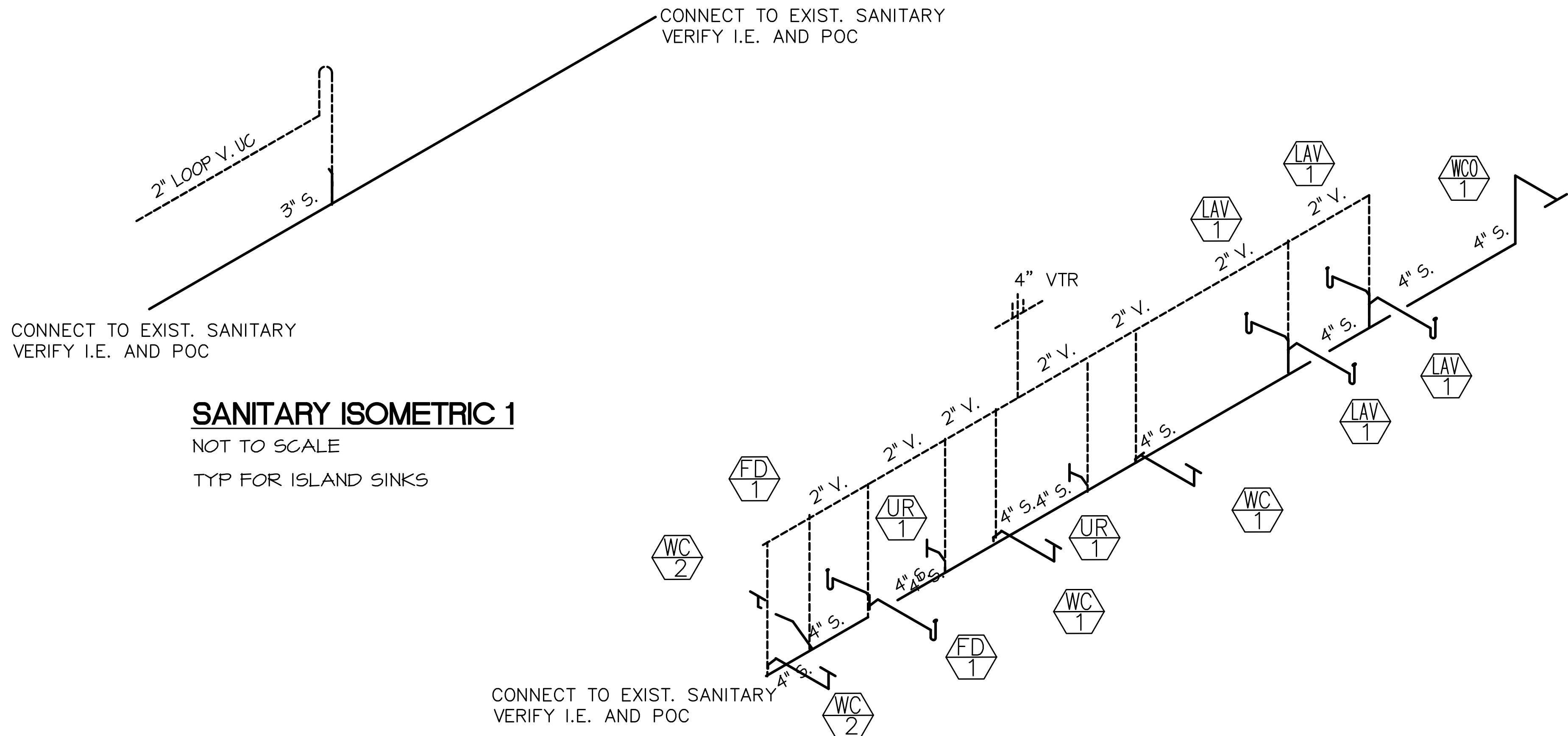
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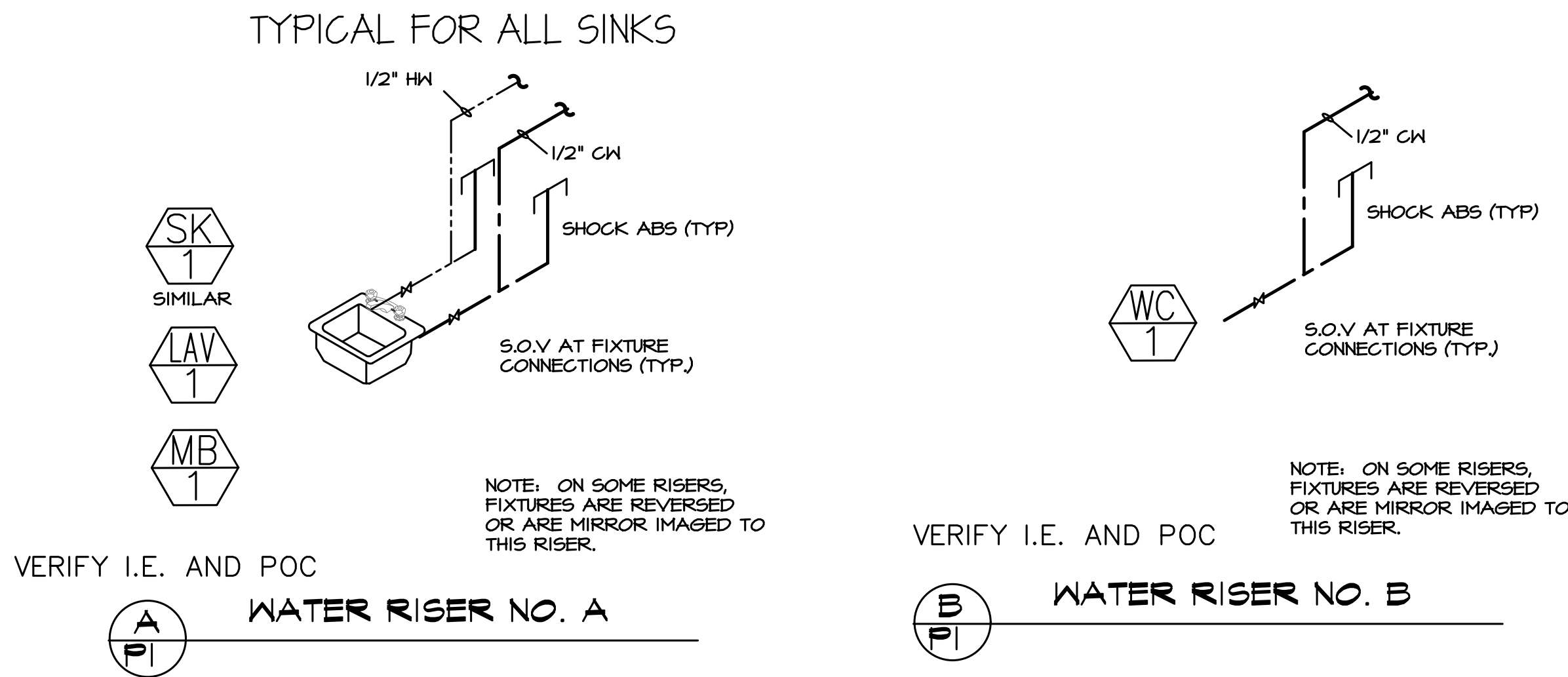
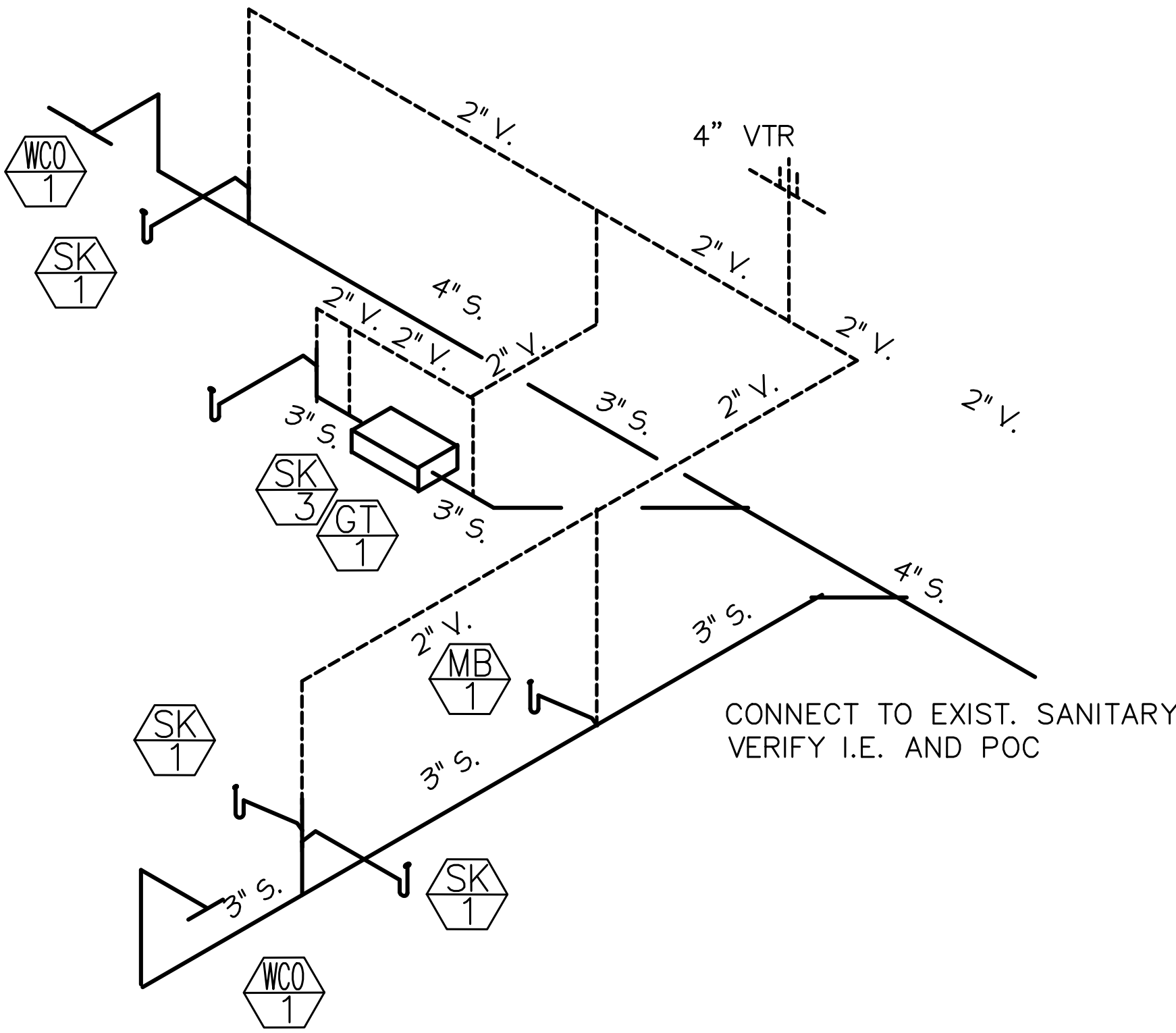
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P-2

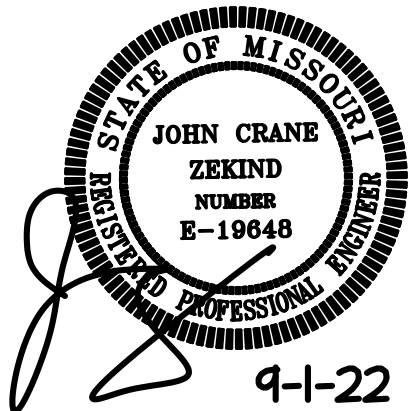
IF REQUIRED BY LOCAL AUTHORITY, PROVIDE SEPERATE SANITARY TO SAMPLING MANHOLE ON EXTERIOR



SANITARY ISOMETRIC 2
NOT TO SCALE



CONNECT TO EXIST. SANITARY
VERIFY EXACT P.O.C. AND
I.E. — IF I.E. IS NOT DEEP ENOUGH
ROUTE SANITARY TO EXTERIOR
AND ROUTE TO DEEPER EXT.
MAIN AS REQUIRED.



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LEE SUMMIT, MO

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P-3

PLUMBING SPECIFICATION

I. PART 1 - GENERAL

- 1.01 GENERAL
- REFER TO "DIVISION NO. 1 GENERAL REQUIREMENTS", AS WELL AS GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND SPECIAL CONDITIONS OF THE CONSTRUCTION CONTRACT FOR PROVISIONS WHICH MAY APPLY TO THE WORK UNDER THIS SECTION.
- 1.02 PLANS AND SPECIFICATIONS
- PLANS AND SPECIFICATIONS ARE TO BE CONSIDERED AS MUTUALLY COMPLEMENTARY, AND REQUIREMENTS OF ONE SHALL BE CONSIDERED AS REQUIREMENTS OF BOTH. IF CONFLICTING REQUIREMENTS ARE SHOWN, THE MOST RESTRICTIVE REQUIREMENT SHALL APPLY AS ASCERTAINED BY THE ARCHITECT/ENGINEER. BUT INFORMATION GIVEN HEREIN AND ON PLANS IS AS COMPLETE AND AS ACCURATE AS COULD BE SECURED AT THE TIME OF PREPARATION OF THIS DESIGN, BUT COMPLETE AND TIMELY ACCURACY CANNOT BE GUARANTEED. ROUTING OF CIRCUITS AND LOCATION OF EQUIPMENT, APPARATUS, ~~FIXTURES~~ AND OTHER DEVICES ARE SHOWN ON PLANS FOR GENERAL GUIDANCE. COORDINATE WORK WITH OTHER CONTRACTORS AND PROVIDE ANY NECESSARY DEVIATIONS IN ROUTING (AS FAR AS 10' FROM THOSE SHOWN) TO PROVIDE SYSTEMS AS SPECIFIED OR IMPLIED, WITHOUT INTERFERENCE, PURSUANT TO THESE REQUIREMENTS AND AT NO COST TO THE OWNER, ARCHITECT OR ENGINEER.
- 1.03 COORDINATION
- CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS AND INCLUDE IN THE COST OF THIS BID ALL WORK NORMALLY CLAIMED BY THE TRADES UNDER YOUR CONTRACT. COORDINATE WORK WITH THE WORK OF OTHER CONTRACTORS AND SHALL DETERMINE THAT THE WORK INSTALLED WILL NOT INTERFERE WITH THE WORK OF OTHER CONTRACTORS. IF WORK IS INSTALLED WHICH DOES INTERFERE, IT SHALL BE CORRECTED AT NO COST TO THE OWNER. OCCUPATION OF SPACE BY ANY CONTRACTOR DOES NOT GIVE HIM RIGHT OF PRIORITY TO THE SPACE. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH GOVERNING CODES, UTILITY STANDARDS, LOCAL PRACTICES AND MANUFACTURER'S PUBLISHED STANDARDS. IF ANY PORTION OF THE WORK SPECIFIED OR SHOWN ON THE DRAWINGS IS CONTRARY TO THE ABOVE, THE CONTRACTOR SHALL BE REQUIRED TO BRING THE MATTER TO THE ATTENTION OF THE ARCHITECT/ENGINEER (OWNER'S REPRESENTATIVE) PRIOR TO BEGINNING WORK FOR CLARIFICATION OR REVISION. IT IS ASSUMED THAT THE CONTRACTOR HAS A SPECIAL KNOWLEDGE OF LOCAL CODES, PRACTICES AND STANDARDS. BECAUSE OF HIS SPECIAL KNOWLEDGE, HE SHALL BE HELD RESPONSIBLE FOR REPLACEMENT OF IMPROPER INSTALLATIONS WHICH HAVE NOT BEEN CALLED TO THE ATTENTION OF ARCHITECT/ENGINEER.
- 1.04 PERMITS, LICENSES, INSPECTIONS AND TAXES
- PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS HE OBTAINS IN CONJUNCTION WITH HIS WORK AND SHALL COMPLY WITH ALL LAWS, ORDINANCES, ETC. IF THE PLANS AND/OR SPECIFICATIONS ARE AT A VARIANCE THEREWITH, NOTIFY THE ENGINEER IN WRITING BEFORE THE WORK IS PERFORMED. IF THE CONTRACTOR, WITHOUT NOTICE, SHALL DO ANY WORK CONTRARY TO ANY LAW, ORDINANCE, RULE OR REGULATION, HE SHALL BE HELD RESPONSIBLE FOR ANY SUCH VIOLATION AND ALL COSTS ARISING THEREFROM SHALL BE BORNE BY HIM, INCLUDE ANY LOCAL, FEDERAL AND STATE TAXES IN YOUR BID.
- 1.05 BID AND SUBSTITUTES
- A. ALL BIDS SHALL BE BASED STRICTLY ON THE BASIS OF THE DRAWINGS AND SPECIFICATIONS. ANY REQUESTS FOR SUBSTITUTIONS SHALL BE INCLUDED AS A VOLUNTARY ALTERNATE. A COMPLETE DESCRIPTION OUTLINING THE VOLUNTARY ALTERNATE SHALL BE INCLUDED WITH A LISTING OF A COST ADD OR COST DEDUCT TO THE BASE BID. OWNER SHALL GIVE FINAL APPROVAL ON ALL VOLUNTARY ALTERNATES.
- B. MEET THE RESPONSIBILITY OF COORDINATION WITH OTHER TRADES; ANY CHARGES INCURRED IN PLUMBING, HVAC, FIRE PROTECTION, GENERAL CONTRACTS, ETC., WHICH RESULT FROM EQUIPMENT SUBSTITUTION. ANY ADDITIONAL COSTS INVOLVED, DUE TO SUBSTITUTIONS, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR PROPOSING THE SUBSTITUTION.
- 1.06 SHOP DRAWINGS
- SEMIT FOR REVIEW SIX (6) COPIES OF SHOP DRAWINGS AND DESCRIPTIVE LITERATURE OF EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. DRAWINGS SHALL STATE CAPACITIES, SIZES AND ALL INFORMATION SHOWN IN SCHEDULES ON PLANS AS A MINIMUM OF ALL EQUIPMENT.
- 1.07 OPERATION AND MAINTENANCE MANUALS AND INSTRUCTIONS
- PRIOR TO FINAL PAYMENT, THREE (3) SETS OF OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE ARCHITECT/ENGINEER FOR SUBMITTAL TO THE OWNER.
- 1.07 RECORD DRAWINGS
- AS BUILT REPRODUCIBLE DRAWINGS ARE TO BE SUBMITTED TO ARCHITECT/ENGINEER FOR REVIEW PRIOR TO THE TIME OF REQUEST FOR FINAL PAYMENT.
- 1.08 WORKMANSHIP AND MATERIALS
- ALL WORK SHALL BE PERFORMED IN A MANNER ACCEPTABLE TO THE ENGINEER, ARCHITECT AND THE OWNER, BY PROPERLY TRAINED, SUPERVISED AND EXPERIENCED PERSONNEL USING NEW AND CLEAN MATERIALS, SUPPLIES, EQUIPMENT, HARDWARE AND FIXTURES.
- 1.09 PROTECTION OF EQUIPMENT AND WORK
- EQUIPMENT, FIXTURES AND TRIM SHALL BE PROTECTED AGAINST DAMAGE DUE TO BUILDING MATERIALS, ACID, TOOLS AND EQUIPMENT OR ANY CAUSES INCIDENTAL TO CONSTRUCTION. THE FINISHED SURFACE OF EACH PIECE OF EQUIPMENT AND FIXTURE SHALL BE COVERED WITH BUILDING PAPER OR SIMILAR PROTECTION. ALL EQUIPMENT DAMAGED BY ANY CAUSE AND ANY TRIM WITH MARRED OR SCRATCHED FINISH SHALL BE REPLACED AT NO COST TO THE OWNER. THE EQUIPMENT AND EQUIPMENT TRIM PROTECTION SHALL BE REMOVED AT THE COMPLETION OF CONSTRUCTION.
- 1.10 TEMPORARY FACILITIES
- FURNISH, INSTALL AND KEEP IN PROPER REPAIR ALL TEMPORARY POWER, LIGHTING AND OTHER FACILITIES REQUIRED FOR HIS CONSTRUCTION PURPOSES. AFTER PERMANENT FACILITIES ARE INSTALLED, THIS CONTRACTOR SHALL REMOVE ALL TEMPORARY FACILITIES ASSOCIATED WITH HIS CONSTRUCTION WORK OR PURPOSE.
- MATERIAL AND EQUIPMENT HANDLING AND STORAGE
- IT IS RECOGNIZED THAT SPACE AT THE PROJECT FOR STORAGE OF MATERIALS AND PRODUCTS IS LIMITED. COORDINATE THE DELIVERIES OF THE MATERIALS AND PRODUCTS WITH THE SCHEDULING AND SEQUENCING OF THE WORK SO THAT STORAGE REQUIREMENTS AT THE PROJECT ARE MINIMIZED. IN GENERAL, DO NOT DELIVER INDIVIDUAL ITEMS OF EQUIPMENT TO THE PROJECT SUBSTANTIALLY AHEAD OF THE TIME OF INSTALLATION.

1.12 MAINTENANCE OF WORK AREAS

DURING THE PROJECT, MAINTAIN WORK AREA IN AN ORGANIZED MANNER, DO NOT ALLOW DEBRIS TO ACCUMULATE AND STORE EQUIPMENT, TOOLS AND SUPPLIES IN A MANNER WHICH SHALL NOT CAUSE INTERFERENCE WITH THE ACTIVITIES OF OTHERS ENGAGED ON THIS PROJECT.

1.13 GUARANTEE

THE CONTRACTOR SHALL, BY ACCEPTING THESE PLANS AND SPECIFICATIONS AND SIGNING THE CONTRACT, SHALL GUARANTEE THE FOLLOWING:

ALL EQUIPMENT, ACCESSORIES AND MATERIALS FURNISHED BY HIM FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP. IF ANY EQUIPMENT FAILS, DOES NOT OPERATE SATISFACTORILY OR SHOWS UNDESIRED WEAR, THE CONTRACTOR WILL BE NOTIFIED AND WILL BE REQUIRED TO REMEDY THE DEFECT IMMEDIATELY AT HIS OWN EXPENSE.

2. MATERIALS

2.01 DOMESTIC WATER PIPING SHALL BE TYPE 1/2" COPPER WITH THROUGH FITTINGS AND LEAD FREE SOLDER. HANGERS FOR DOMESTIC WATER PIPING SHALL BE EQUAL TO FEE # WAGON FIGURE 800 (FOR INSULATED PIPING) AND FIGURE 500 (FOR NON-INSULATED PIPING).

2.02 SOIL AND WASTE PIPING SHALL BE SERVICE WEIGHT CAST IRON WITH BELL AND SPIGOT JOINTS, EXCEPT USE DWN PVC WHERE CODE ALLOWS.

2.03 VALVES

A. SHUTOFF VALVES SHALL BE EITHER GATE VALVES (50 LB.) (STOCKHAM B-105, CRANE 428VB, POMELL 2700) OR BALL VALVES (STOCKHAM 521ERRT, CRANE 430TRF, OR JAMESBURY A-II-TT211).

2.04 PLUMBING SPECIALTIES

A. AIR CHAMBERS TO BE CONSTRUCTED OF TYPE 1/2" COPPER. AIR CHAMBERS TO BE ONE SIZE LARGER THAN SUPPLY, 18" LONG, PROPERLY CAPPED, AND RIGIDLY SUPPORTED. AT CONTRACTOR'S OPTION, FACTORY FABRICATED CHAMBERS WITH EQUAL VOLUME, MAY BE USED IN PLACE OF PIPE CHAMBERS. APPROVED MANUFACTURERS: NIBCO, HOLYERNE, MADE, AMTROL.

B. PLUMBING FIXTURES SHALL BE BY ELKAY OR EQUAL.

3. PART 3 - EXECUTION

3.01 GENERAL

A. ALL PLUMBING FIXTURES, EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN COMPLETE ACCORDANCE WITH LATEST APPLICABLE EDITION OF THE GOVERNING JURISDICTIONAL PLUMBING CODE.

3.02 INSTALLATION OF DOMESTIC WATER PIPING

A. RUN LEVEL AS HIGH AS POSSIBLE IN BUILDING STRUCTURE, INSTALL HANGERS FOR ALLOWING FOR EXPANSION AND CONTRACTION, AND ANCHOR WHERE REQUIRED. SEPARATE HOT AND COLD PIPES, 6" MINIMUM. INSTALL 3/4" HOSE END DRAIN VALVE AT LOW POINTS. INSTALL GATE VALVE AT EACH PLUMBING FIXTURE OR GROUP OF FIXTURES, AND AT EACH POINT OF CONNECTION TO EQUIPMENT. ALLOW ACCESS TO EQUIPMENT, FOR SERVICING OF PUMPS OR EQUIPMENT WITH DRAINING SYSTEM. INSTALL 1/2" AIR-MAFLEX OR RUBATEX (R-28) ON ALL DOMESTIC WATER PIPING EXCEPT THAT WHICH IS ENCLOSED IN A CHASE.

3.03 INSTALLATION OF SOIL, WASTE AND VENT PIPING

A. PIPING SHALL BE INSTALLED WITH A SLOPE OF AT LEAST 1/4" PER FOOT IN THE DIRECTION OF THE FLOW FOR DRAINS, AND AGAINST GAS FLOW FOR VENTS.

B. EACH FIXTURE AND PIECE OF EQUIPMENT REQUIRING CONNECTION TO THE DRAINAGE SYSTEM, EXCEPT FIXTURES WITH CONTINUOUS WASTE, SHALL BE EQUIPPED WITH A TRAP. EACH TRAP SHALL BE PLACED AS NEAR TO THE FIXTURE AS POSSIBLE AND NO FIXTURE SHALL BE DOUBLE TRAPPED. TRAPS SHALL BE CAST IRON.

3.04 INSTALLATION OF VALVES

A. LOCATE VALVES SO AS TO BE ACCESSIBLE AND SO THAT SEPARATE SUPPORT CAN BE PROVIDED WHEN NECESSARY. INSTALL VALVES WITH STEMS POINTED UP. DO NOT INSTALL BRONZE VALVES AND VALVE COMPONENTS IN DIRECT CONTACT WITH STEEL, UNLESS BRONZE AND STEEL ARE SEPARATED BY A DIELECTRIC INSULATOR.

3.05 INSTALLATION OF FIXTURES AND PLUMBING SPECIALTIES

A. INSTALL AIR CHAMBERS FULL THREE SIZE AND A MINIMUM OF 18" LONG AT EACH FIXTURE.

B. IN ADDITION TO VALVE LOCATIONS SHOWN ON PLANS, VALVES SHALL BE INSTALLED ON EACH MAIN AND EACH BRANCH OF THE MAINS, EACH PIECE OF EQUIPMENT, FIXTURE OR FIXTURE GROUP. ALL ITEMS REQUIRING WATER SUPPLY SHALL BE SEPARATELY VALVED. ALL VALVES SHALL BE LOCATED AS TO BE EASILY ACCESSIBLE.

3.07 PLUMBING TESTING AND STERILIZATION

A. TEST DRAINAGE VENT INSIDE CONDUCTOR PIPING BEFORE FIXTURE OR DRAINS ARE INSTALLED, BY CAPPING OR PLUGGING THE OPENINGS AND FILLING THE ENTIRE SYSTEM WITH WATER AND ALLOWING IT TO STAND THIS FILLED FOR ONE HOUR. IF TESTED IN SECTIONS, THE SYSTEM SHALL BE SUBJECTED TO NOT LESS THAN 10 FOOT HEAD.

B. TEST DOMESTIC WATER SUPPLY PIPING, BEFORE FIXTURES OR FAUCETS ARE CONNECTED, BY CAPPING OR PLUGGING THE OPENINGS, CONNECTING A TESTING PUMP, FILLING THE SYSTEM WITH WATER AND APPLYING A HYDROSTATIC PRESSURE TEST.

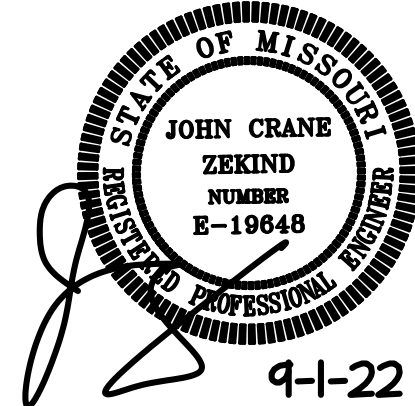
C. TEST ALL WATER PIPING, UNDER A HYDROSTATIC PRESSURE OF 50 PERCENT IN EXCESS OF THE MAXIMUM WORKING PRESSURE THAT THE SECTION OF PIPING WILL REQUIRE TO CARRY, BUT NOT LESS THAN 100 PSI. TEST PRESSURE SHALL BE HELD FOR A MINIMUM OF 4 HOURS AND SHOWN TO BE TIGHT BEFORE THE COVERING IS APPLIED.

D. AFTER PRESSURE TESTS HAVE BEEN MADE, THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE THOROUGHLY FLUSHED WITH WATER UNTIL ALL ENTRAINED DIRT AND RUST HAVE BEEN REMOVED, AND SHALL BE STERILIZED BY CALORIMATING. THE CALORIMANT SHALL BE A DOSAGE OF NOT LESS THAN 50 PARTS PER MILLION AND SHALL BE INTRODUCED INTO THE SYSTEM IN AN APPROVED MANNER. THE TREATED WATER SHALL BE RETAINED IN THE PIPE LONG ENOUGH TO DESTROY ALL NON-SPORE FORMING BACTERIA, EXCEPT WHERE A SHORTER PERIOD IS APPROVED. THE RETENTION TIME SHALL BE AT LEAST 24 HOURS AND SHALL PRODUCE NOT LESS THAN 10 P.P.M. OF CHLORINE AT THE EXTREME END OF THE SYSTEM AT THE END OF THE RETENTION PERIOD.

END OF SECTION

PLUMBING FIXTURE SCHEDULE

DHW-1: DOMESTIC WATER HEATER 30 GALLON 4 KM, 120V DHW-2: INSTANTANEOUS DOMESTIC WATER HEATER 18 KM, 208 V, 1 PHASE DHW HAVE 150 PSI WORKING PRESSURE, AND BE EQUIPPED WITH A MAGNESIUM ANODE. CONTROLS SHALL INCLUDE A THERMOSTAT AND A HIGH TEMPERATURE CUTOFF. THE JACKET SHALL PROVIDE FULL SIZE CONTROL COMPARTMENTS FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH THE FRONT PANEL OPENINGS AND ENCLOSE THE TANK WITH POLYURETHANE FOAM INSULATION. INSTALL TEMPERATURE/PRESSURE RELIEF VALVE, PROVIDED WITH UNIT. THE DISCHARGE SHALL BE PIPED TO THE SAFE PAN WITH MIN. 2" AIR GAP. HEATER SHALL HAVE A THREE YEAR WARRANTY AS OUTLINED IN WRITTEN WARRANTY.	LAV-1: WALL HUNG LAVATORY - ADA TYPE CRANE ADA WALL MOUNTED LAVATORY #1-165 VITREOUS CHINA, SELF RIMMING WITH AM STD 150010 CENTERSET 6000E6X FAUCET WITH 118ST BLADES, WITH FIGURE 455 GRID DRAIN, BRASSCRAFT RM12A SUPPLIES WITH STOPS, DEARBORN CHROME PLATED P-TRAP # 100-1, TRUEBRO LAV-GUARD TRAP WRAP.
DW-1: DISHWASHER DISHWASHER BY KITCHEN EQ. CONTRACTOR	MB-1 MOP BASIN FIAT MEB-24X24, 24X24" MOLDED STONNE MOP BASIN FAUCET WITH VB AND MOP HOOK, 56 RIM GUARDS GRID DRAIN, BRASSCRAFT RM12A SUPPLIES WITH STOPS,
FD-1: FLOOR DRAIN. MATTS FD-100A, 3" WITH NICKEL BRONZE STRAINER.	SK-123: SINKS SINKS BY KITCHEN EQUIPMENT CONTRACTOR
FS-1: FLOOR SINK FLOOR SINK - JOSAM MODEL 44312-3-31 - WITH HALF GRATE AND ALUMINUM SEDIMENT BUCKET. BODY SHALL BE CAST IRON WITH ACID RESISTANT INTERIOR AND NON-TRAFFIC TOP, 2" DISCHARGE.	UR-1: URINAL - ADA TYPE AMERICAN STANDARD CADET WITH PHOTOELECTRIC FLUSH VALVE. VITREOUS CHINA, WALL SPD BRASS CRAFT RM12A SUPPLY WITH STOP.
FCO-1: FLOOR CLEANOUT FLOOR CLEANOUT, MATTS CO-200-R FLOOR CLEANOUT WITH ROUND NICKEL BRASS TOP.	WC-1: WATER CLOSET - NON ADA TYPE WC-1: WATER CLOSET - ADA TYPE AMERICAN STANDARD CADET TANK TYPE VITREOUS CHINA ELONGATED BOWL WITH BOWL TANK, BATHMASTER BT521 OPEN FRONT SEAT, BRASS CRAFT RM12A SUPPLY WITH STOP.
GD-1: GARBAGE DISPOSER GARBAGE DISPOSER BY KITCHEN EQUIPMENT CONTRACTOR	
GT-1: GREASE TRAP GREASE TRAP - 1000 GAL PRECAST EXTERIOR FLUSH WITH SITE	
HD-1: HUB DRAIN FLOOR DRAIN WITH FUNNEL	



9-1-22

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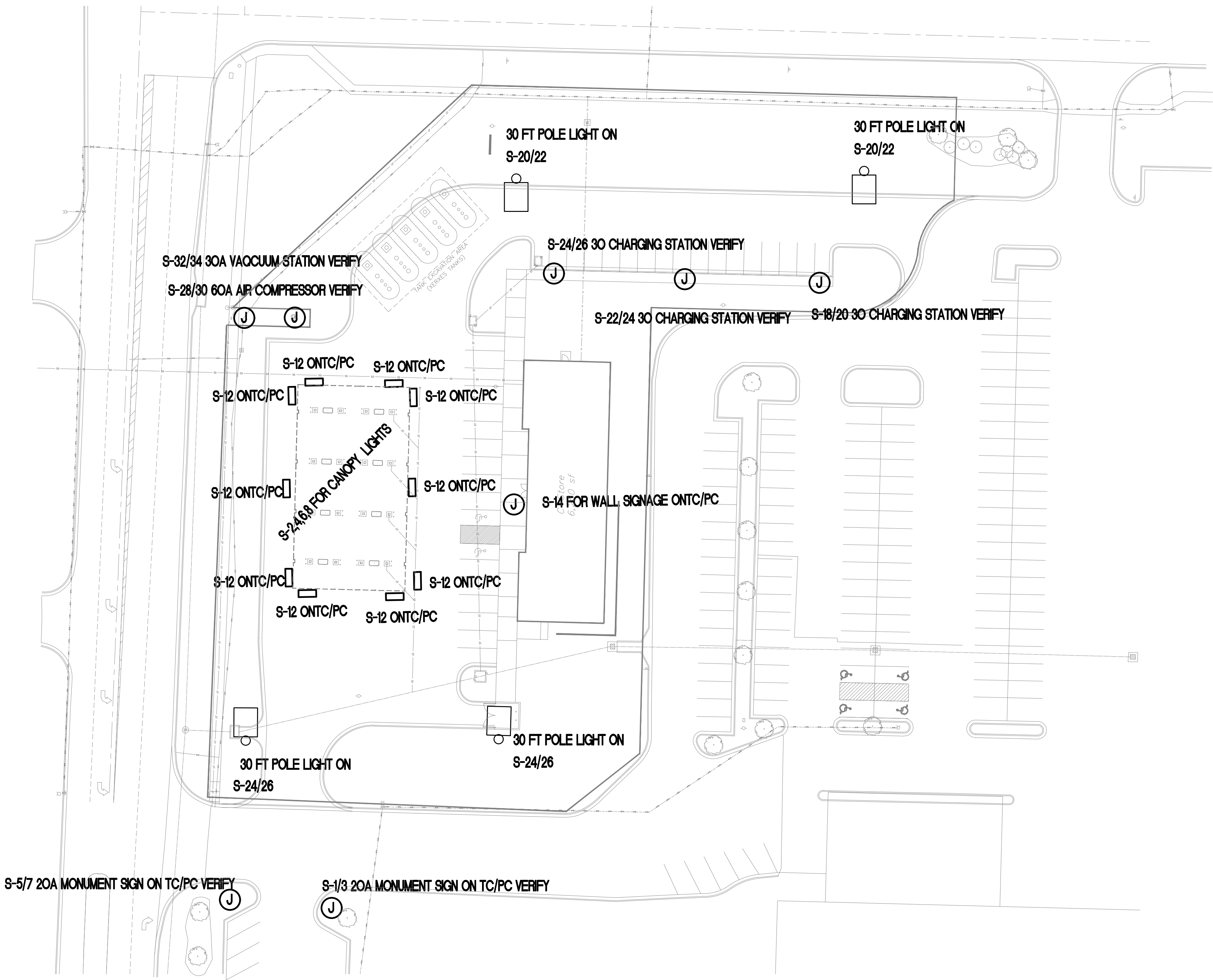
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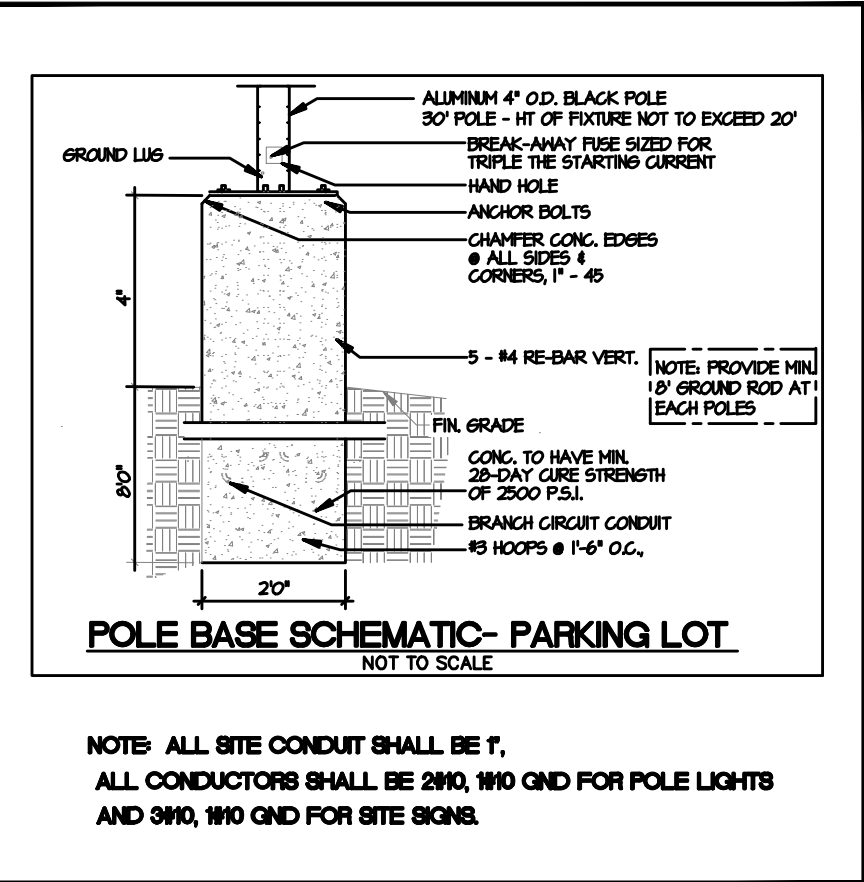
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P-4

REMOVE EXISTING POLES AND LIGHTS AND TERMINATE AT EXISTING SITE PANEL



LUMINAIRE SCHEDULE							
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens LLF Watts
			CSX2 LED 4 30B53040K MVOLT SR3	CSX2 WITH 4 LIGHT ENGINEER: 530mA DRIVERS: 400K LED'S TYPE III OPTICS SCALED FROM LTL20971	LED	CSX2_LED_4 30B530_40K_ MVOLT_SR3 45	Absolute 1.00 222



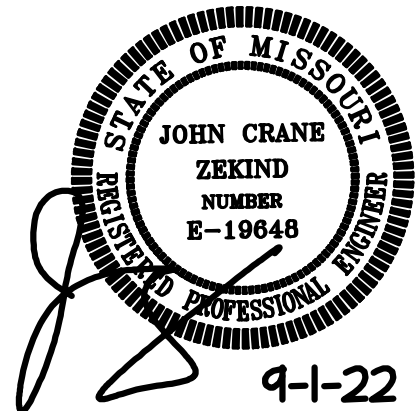
PROVIDE 2 CCTS S-19/21
FOR EXTERIOR PYLON SIGNS

PROVIDE 1-1\" C WITH PULL WIRE FOR COMM. FOR EACH PUMP
AND 1-1\" C WITH PULL WIRE FOR TANK

PROVIDE 3 CIRCUITS FOR CANOPY LIGHTS ON TC AND PANEL S
PROVIDE 1 CIRCUITS FOR DIESEL CANOPY LIGHTS ON TC AND PANEL S

PROVIDE 1 CIRCUIT FOR EACH PUMP TO PANEL G FOR POWER
PROVIDE 1 CIRCUIT FOR EACH PUMP TO PANEL G FOR COMM.

SITE LIGHTING PLAN, - SCALE 1" = 32'



SERVICE STATION AND
CONVENIENCE STORE

LEE SUMMIT, MO
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CONSULTING ENGINEERS
1276 WHITE ROAD
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