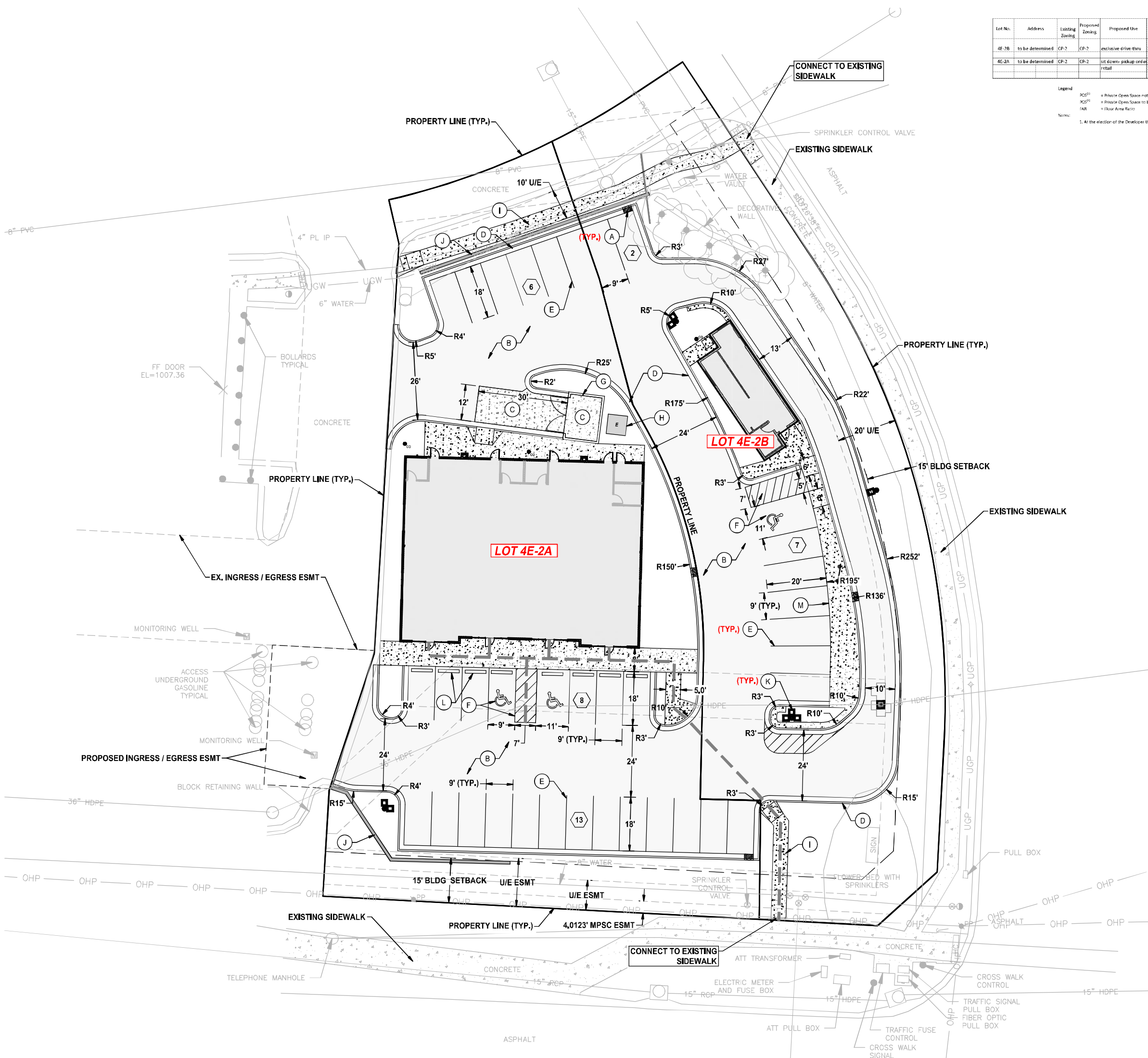
SITE DATA:

Lot No.	Address	Existing Zoning	Proposed Zoning	Proposed Use	Anticiapted Schedule	Land Area (sf) Gross	R/W	POS(1)	POS(2)	Parkland	Net	Proposed Building Area (sf)	No. Stories	FAR	Parking Data: Criteria Used	as compared to UDO	required parking	provided parking	Impervious Area: Acreage Impervious / % Impervious
4E-2B	to be determined	CP-2	CP-2	exclusive drive-thru	2023-2024	20,371.00	0.000	0.000	0.000	0.000	20,371.00	680	1	0.03	2/1000 + 1/employee at max shift	parking for employees only	3.0	10.0	0.46 AC / 36%
4E-2A	to be determined	CP-2	CP-2	sit down- pickup order	2023-2025							1,080	1	n/a	14/1000	meets UDO	15.1	15.0	
				retail	2023-2025							3,800	1	n/a	5/1000	meets UDO	19.0	12.0	
						24,695.00	0.000	0.000	0.000	0.000	24,695.00	4,880	1	0.20					0.33 AC / 35%
					totals	45,066.00											37.1	37.0	

Legend
- POS(1) = Private Open Space not intended to be counted toward parkland dedication
- POS(2) = Private Open Space to be counted toward parkland dedication
- FAR = Floor Area Ratio

Notes:
1. At the election of the Developer the units may be FOR SALE or FOR RENT/LEASE.

Special Parking Notes:
1. UDO parking ratios
   - drive thru/sit down 14/1000
   - drive thru only 2/1000 + 1/employee at max shift
   - office 4/1000
   - retail 5/1000
2. Parking is shared per Development Covenants & Conditions



NORTH

LEGEND:

- ADA PEDESTRIAN ROUTE
- (6) PARKING STALL COUNTS

KEY LEGEND

- (A) CURB INLET (RE: UTILITY PROFILES)
- (B) CONCRETE PAVEMENT
- (C) HEAVY DUTY CONCRETE
- (D) CG-1 CURB & GUTTER (RE: SPOT ELEVATION PLANS)
- (E) PARKING STRIPING - 4" YELLOW
- (F) STRIPING - (RE: ADA ACCESSIBLE STRIPING LAYOUT)
- (G) TRASH ENCLOSURE (RE: ARCH)
- (H) ELECTRICAL TRANSFORMER
- (I) PROPOSED 5' CONCRETE SIDEWALK
- (J) SEGMENTAL BLOCK WALL
- (K) LIGHT POLE (RE: MEP)
- (L) CONCRETE WHEEL STOP
- (M) INTEGRAL SIDEWALK / CURB

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH SUPERSTAR HOLDINGS, LLC. FOR ANY TENANT - SPECIFIC SIGNAGE, MENU BOARDS, CLEARANCE POSTS, ETC. NOT AVAILABLE TO CIVIL ENGINEER AT TIME OF SITE DESIGN.
2. CONTRACTOR SHALL REVIEW LANDLORD WORK ORDER LETTER PRIOR TO BEGINNING CONSTRUCTION.

BY	REVISION	DATE
RC/ACA	FOR REVIEW	2-17-23

20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

AGC Engineers, INC.
405 S. Leonard St., Suite D
Liberty, Missouri 64068
816.781.4200
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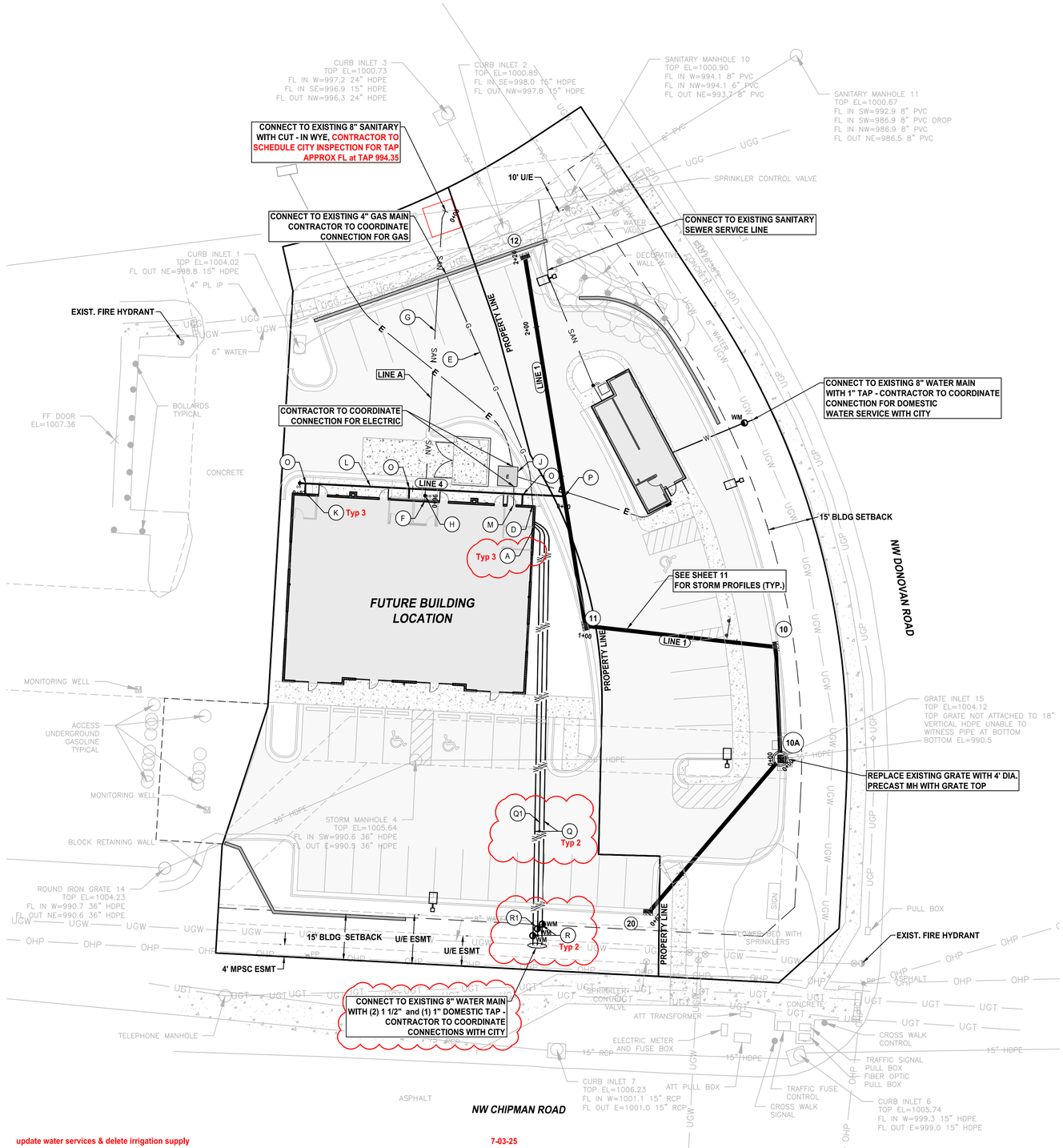
www.agcengineers.com

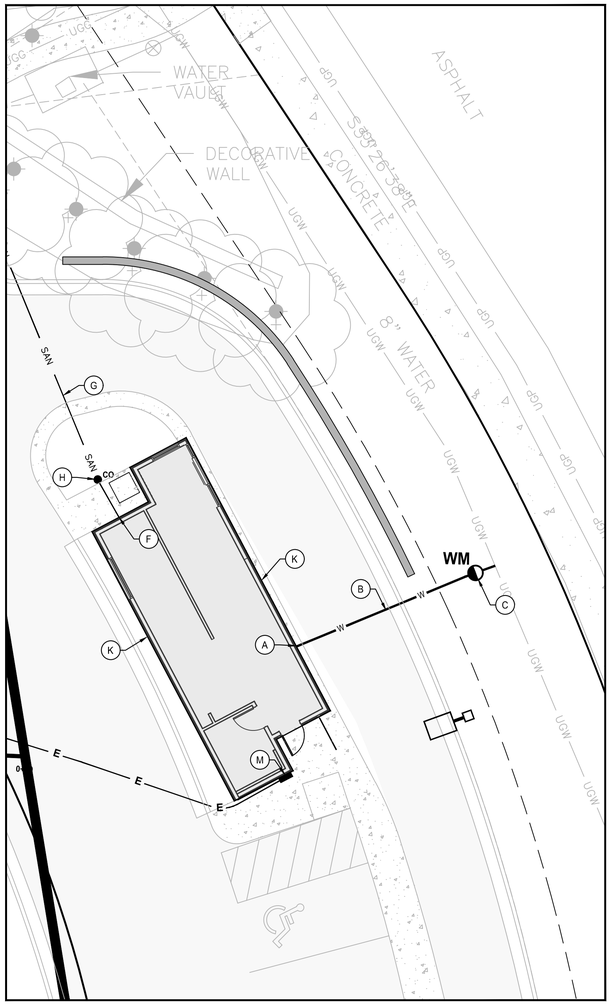
STATE OF MISSOURI
RONALD L. COWGER
NUMBER PE-29705
PROFESSIONAL ENGINEER
2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
SITE PLAN

4





(IN FEET)
1 inch = 10 ft.

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH SUPERSTAR HOLDINGS, LLC PRIOR TO BEGINNING UNDERGROUND UTILITIES TO VERIFY SPECIFIC TENANT REQUIREMENTS SUCH AS DOMESTIC WATER, WATER METER AND FIRE LINE SIZES, CONDUITS TO / FROM MESSAGE BOARDS, AND GROUND LOOP DETECTION SYSTEMS.

2. SANITARY SEWER CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN INCHES (18") BETWEEN THE OUTSIDE BOTTOM OF THE WATER MAIN AND THE OUTSIDE TOP OF THE SANITARY SEWER. MAINTAIN EIGHTEEN INCHES (18") MINIMUM SEPARATION FROM THE TOP OF THE SANITARY SEWER TO THE BOTTOM OF THE WATER MAIN. WHEN WATER LINE GOES UNDER A SANITARY SEWER THEN THE SANITARY SEWER SHOULD BE PRESSURE RATED PIPE OR ENCASED IN CONCRETE.

KEY LEGEND

- (A) DOMESTIC WATER ENTRY (RE: MEP)
- (B) 1" SOFT "K" COPPER SERVICE LINE DOMESTIC WATER LINE (CONFIRM WITH MEP PRIOR TO INSTALLATION)
- (C) 1" WATER METER AND METER PIT
- (D) GAS ENTRY (RE: MEP)
- (E) GAS LINE (RE: SPIRE OR MEP FOR GAS SIZE AND MATERIAL)
- (F) SANITARY SEWER ENTRY (RE: MEP)
- (G) 4" PVC (SDR-26) SANITARY SEWER LINE DIRECTIONAL BORE (2% MIN. SLOPE).
- (H) CLEANOUT
- (I) PHONE / DATA SERVICE ENTRY (RE: ARCH)
- (J) ELECTRICAL TRANSFORMER (RE: MEP)
- (K) DOWNSPOUT (RE: ARCH) (SEE DOWNSPOUT DRAIN DETAIL)
- (L) 6" HDPE DOWNSPOUT STORM LINE
- (M) ELECTRICAL ENTRY
- (N) ~~4" IRRIGATION METER AND LINE~~
- (O) 6" X 6" WYE CONNECTION
- (P) 6" X 15" WYE CONNECTION
- (Q) 1 1/2" SOFT "K" COPPER SERVICE LINE DOMESTIC WATER LINE (CONFIRM WITH MEP PRIOR TO INSTALLATION)
- (Q1) 1" SOFT "K" COPPER SERVICE LINE DOMESTIC WATER LINE (CONFIRM WITH MEP PRIOR TO INSTALLATION)
- (R) 1 1/2" WATER METER AND METER PIT
- (R1) 1" WATER METER AND METER PIT

NORTH

(IN FEET)
1 inch = 20 ft.

BY	REVISION	DATE
RC	update water services & delete irrigation supply	7-03-25
RC	update sanitary for new building on Lot 4E-2A	6-23-25
RC/ACA	REVISED STORM SEWER	12-14-23
ACA	REVISED WATER SERVICE LINE	10-18-23
RC/ACA	AGC INTERNAL QC	9-20-23
RC/ACA	REVISED PER CITY COMMENTS	3-27-23
RC/ACA	FOR REVIEW	2-17-23

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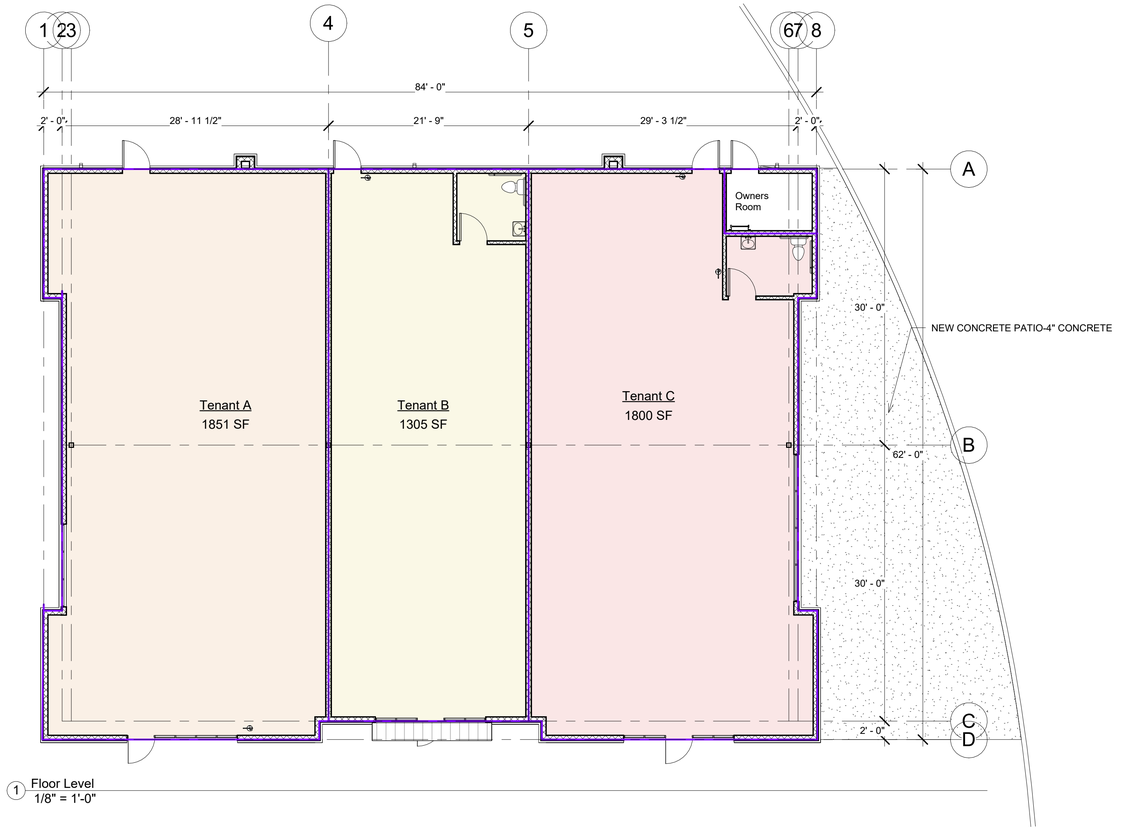
STATE OF MISSOURI
RONALD L. COWSER
PLUMBER
PE-29705
7-3-25
PROFESSIONAL ENGINEER

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
UTILITY PLAN

10



1 Floor Level
1/8" = 1'-0"

scharhag
HERMAN A. SCHARHAG COMPANY, ARCHITECTS
6247 Brookside Blvd, #204 Kansas City, Mo 64113
Phone: 816-656-5055 Scharhagarch@gmail.com

NEW BUILDING FOR

SUMMIT ORCHARDS

410 NW CHIPMAN ROAD

J.Jeffry Schroeder Mo. Licence A-4226
Herman Scharhag Co., Arch. Cert. of Authority A-22

STATE OF MISSOURI
J. JEFFRY SCHROEDER
NUMBER A-4226
5/30/25
REGISTERED ARCHITECT

No.	Description	Date
	Revision Schedule	

Area Plan

Project number	2491
Date	05.30.2025

A100

Scale 1/8" = 1'-0"

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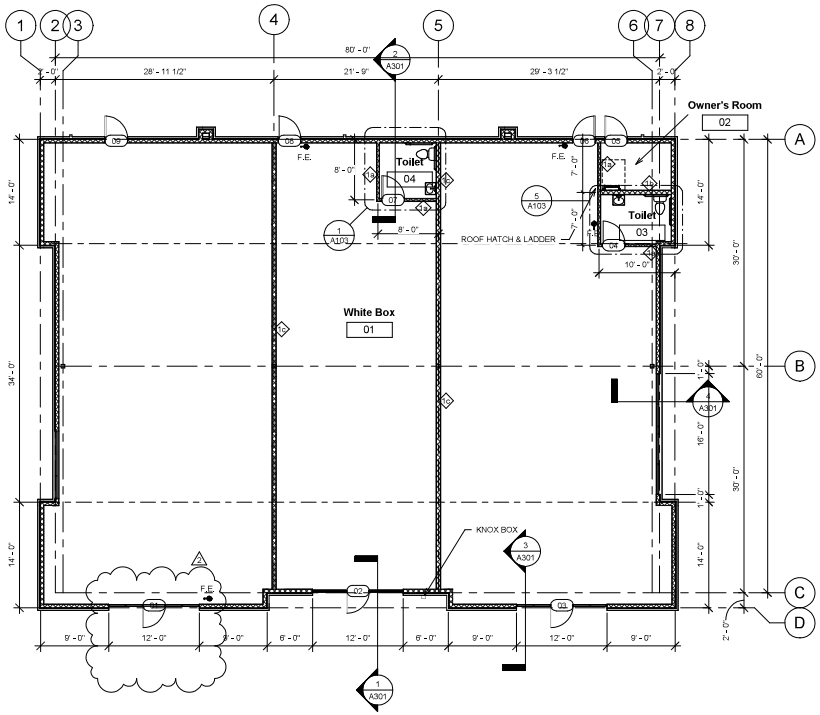

1 Floor Plan
1/8" = 1'-0"

BUILDING CODE SUMMARY

APPLICABLE CODES
2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FIRE CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2017 NATIONAL ELECTRICAL CODE
2017 ICC/ANSI A117.1

SUMMARY OF WORK
NEW SHELL SPEC BUILDING. NO C.O. IS REQUESTED WITH THIS SUBMITTAL. SEPARATE TENANT FINISH PLANS WILL BE SUBMITTED FOR EACH SPACE AT A LATER DATE.

FIRE SUPPRESSION SUMMARY
NONE

OCCUPANCY CLASSIFICATION
M (RETAIL) & B (OFFICE)
PER 2018 IBC SECT. 303.1.1, SMALL TENANTS WILL QUALIFY AS GROUP 'B' OCCUPANCY.

TYPE OF CONSTRUCTION
V-B, NON - SPRINKLED

FLOOR AREA
BUILDING AREA: 4,956 SQ.FT.

OCCUPANT LOAD
TO BE DETERMINED

EXITS REQUIRED
TO BE DETERMINED

EXITS PROVIDED
TWO PER SPACE

TOILET FACILITIES REQUIRED
TO BE DETERMINED

TOILET FACILITIES PROVIDED
ONE UNISEX TOILET PER SPACE (ADA

DEFERRED SUBMITTALS TO BE COMPLETED BY OTHERS
ROOF TRUSS PLANS (PLANS BY SUBCONTRACTOR)

INTERIOR FINISH REQUIREMENTS
FLOOR FINISHES: CLASS I or CLASS II
WALL FINISHES: CLASS A (non-sprinkled)
CEILING FINISHES: CLASS A (non-sprinkled)

EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.

PREMISES SHALL BE IDENTIFIED ON ALL EXTERIOR DOORS. WITH NUMBERS AND/OR LETTERS. EACH CHARACTER SHALL BE NOT LESS THAN 6" HIGH WITH A MINIMUM STROKE WIDTH OF 1.0" INCHES. THEY SHOULD BE INSTALLED ON A CONTRASTING BACKGROUND. STREET FACING DOORS SHALL HAVE ADDRESSES THAT ARE PLAINLY LEGIBLE AND VISIBLE FROM THE STREET FRONTING THE PROPERTY. ADDRESS NUMBERS AND/OR LETTERS SHALL BE ARABIC NUMBERS OR ALPHABETIC LETTERS.

scharhag
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NEW BUILDING FOR
SUMMIT ORCHARDS
410 NW CHIPMAN ROAD

Lathy Schroeder Mo. License A-2226
Herman Scharhag Co., Arch. Corp. of Authority A-22

No.	Description	Date
2	Owner change	6.5
1		

Revision Schedule

Floor Plan

Project number 2491
Date 05.30.2025

A101

Scale 1/8" = 1'-0"

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Door Schedule					
Number	Family	Type	hardware type	Door type	Frame Type
01	Storefront Entry Single	3'.0" x 7'.0"		AL	AL
02	Storefront Entry Single	3'.0" x 7'.0"		AL	AL
03	Storefront Entry Single	3'.0" x 7'.0"		AL	AL
04	Single-Flush	3 x 7 Toilet	Latchset w/ lever handles, strike plate, 1 1/2 pair hinges, closer	WD	HM
05	Single-Flush	3 x7 Exterior	Lockset w/ lever handles, strike plate, 1 1/2 pair hinges, closer, drip cap, gasketing, bottom sweep	HM	HM
06	Single-Flush	3 x7 Exterior	Lockset w/ lever handles, strike plate, 1 1/2 pair hinges, closer, drip cap, gasketing, bottom sweep	HM	HM
07	Single-Flush	3 x 7 Toilet	Latchset w/ lever handles, strike plate, 1 1/2 pair hinges, closer	WD	HM
08	Single-Flush	3 x7 Exterior	Lockset w/ lever handles, strike plate, 1 1/2 pair hinges, closer, drip cap, gasketing, bottom sweep	HM	HM
09	Single-Flush	3 x7 Exterior	Lockset w/ lever handles, strike plate, 1 1/2 pair hinges, closer, drip cap, gasketing, bottom sweep	HM	HM

HM = 16 GA. HOLLOW METAL, PAINTED
WD = SOLID CORE RED OAK, STAINED
AL = ANODIZED ALUMINUM
IRP = IMPACT RESISTANT PLASTIC

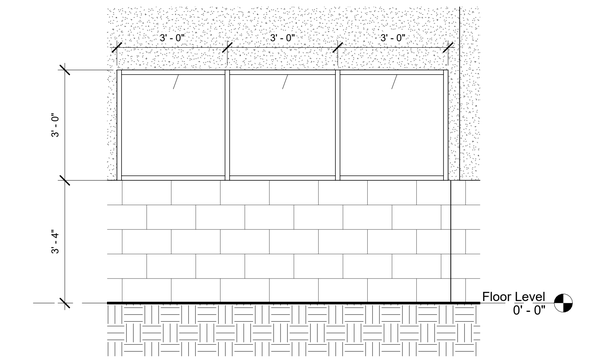
HARDWARE SHALL BE MEDIUM DUTY COMMERCIAL GRADE. DOOR HARDWARE SHALL CONSIST OF BUTTS, LATCHSET OR LOCKSET, SILENCERS, SMOKE GASKETING FOR RATED DOORS, CLOSERS WHERE NOTED, PANIC DEVICES WHERE NOTED. EXTERIOR DOORS SHALL ALSO HAVE THRESHOLD, WEATHERSTRIPPING, SWEEP AND KEYED LOCK. CONTRACTOR SHALL COORDINATE ALL LATCH/LOCK FUNCTIONS AND KEYING OF LOCKS WITH OWNER. MAX. THRESHOLD = 1/2". ALL HARDWARE TO BE LEVER TYPE OR PUSH/PULL. ALL DOORS IN EGRESS PATHWAYS SHALL BE FREE TURNING FOR EXITING. ALL EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. FURTHER, ALL EGRESS DOORS FROM ROOMS AND EXTERIOR EGRESS DOORS, FOR GROUP A AND GROUP E OCCUPANCIES SHALL NOT HAVE A LOCK OR LATCH OTHER THAN PANIC HARDWARE. ALL DOOR THRESHOLDS SHALL BE A MAX. OF ½ " ABOVE FLOOR LEVEL AND BOTH SIDES SHALL BE BEVELED AT A SLOPE OF 1:2. SCHLAGE OR EQUAL STANDARD DUTY HARDWARE (SATIN CHROME) WITH LEVERS.

GLASS IN DOORS AND SIDELIGHTS SHALL BE SAFETY GLASS PER IBC SEC. 2406.1

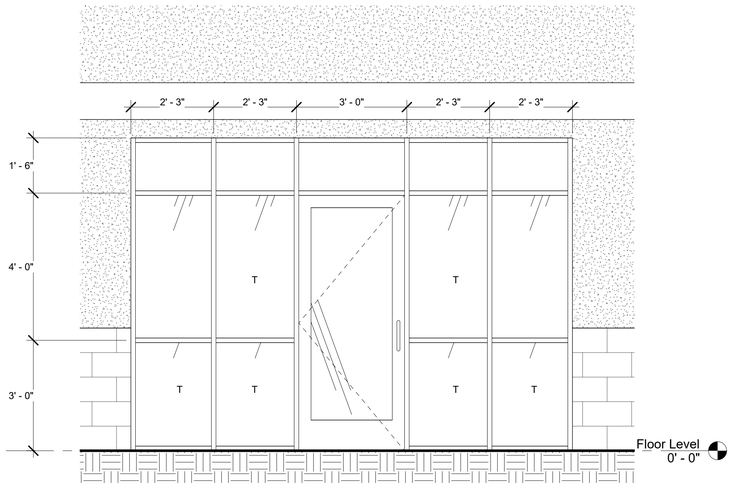
Wall Schedule			
Type Mark	Type	Type Comments	Function
1a	Interior Partition - Wood Stud	2x4 Wood studs @ 16" o.c. w/ 3 1/2" batt insulation and (1) layer 5/8" gyp. board each side. To 10'.0" aff	Interior
1b	Interior Partition -wet wall	2x6 Wood studs at 16" o.c. w/ 6" fiberglass batt insulation and (1) layer 5/8" gyp. board each side. To 10'.0" aff	Interior
1c	Interior Partition -Demising	6" 20 ga. metal studs at 16" o.c. w/ 6" fiberglass batt insulation and (1) layer 5/8" gyp. board each side. To roof deck with slip track.	Interior

Room Schedule					
Number	Name	Base Finish	Wall Finish	Floor Finish	Ceiling Finish
01	White Box	None	Painted gyp. b'd	Concrete	None
02	Owner's Room	None	Painted gyp. b'd	Concrete	2x4 Suspended Acoustical
03	Toilet	6" rubber cove	Epoxy Paint	LVT	2x4 Suspended Acoustical
04	Toilet	6" rubber cove	Epoxy Paint	LVT	2x4 Suspended Acoustical
05	Toilet	6" rubber cove	Epoxy Paint	LVT	2x4 Suspended Acoustical
06	Toilet	6" rubber cove	Epoxy Paint	Concrete	2x4 Suspended Acoustical

CEILING HEIGHT TO BE 9'.0" AFF

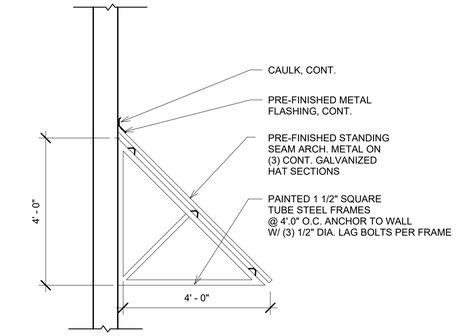


1 Window Elevation
1/2" = 1'-0"



T = TEMPERED GLASS

2 Entry Detail
1/2" = 1'-0"



3 Awning detail
1/2" = 1'-0"

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Phone: 816-656-5055 Scharhagarch@gmail.com

NEW BUILDING FOR
SUMMIT ORCHARDS
410 NW CHIPMAN ROAD

J.Jeffry Schroeder Mo. Licence A-4226
Herman Scharhag Co., Arch. Cert. of Authority A-22

STATE OF MISSOURI
J. JEFFREY SCHROEDER
NUMBER A-4226
5/30/25
REGISTERED ARCHITECT

No.	Description	Date
1		

Revision Schedule

Architectural Details

Project number 2491
Date 05.30.2025

A102

Scale As indicated

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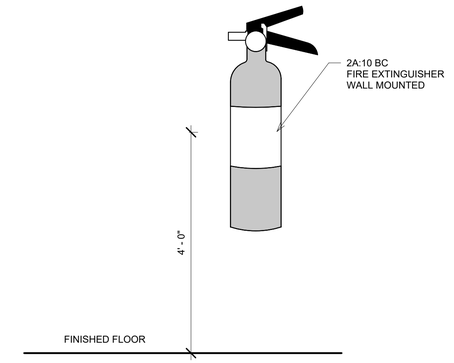
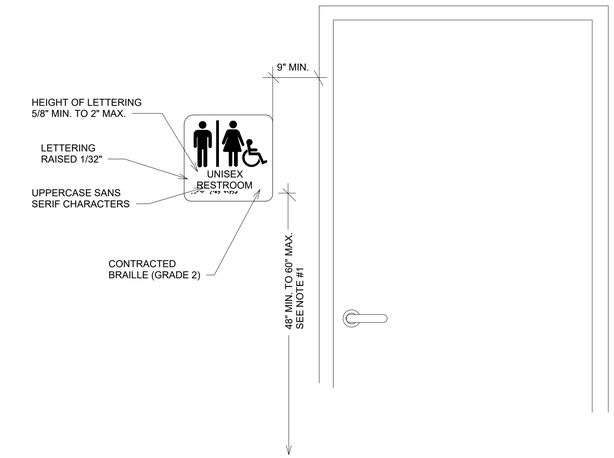
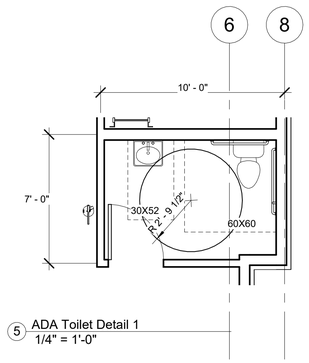


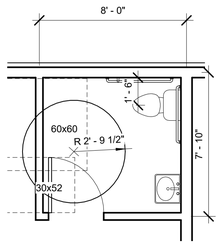
3 Fire Extinguisher Detail
3/4" = 1'-0"



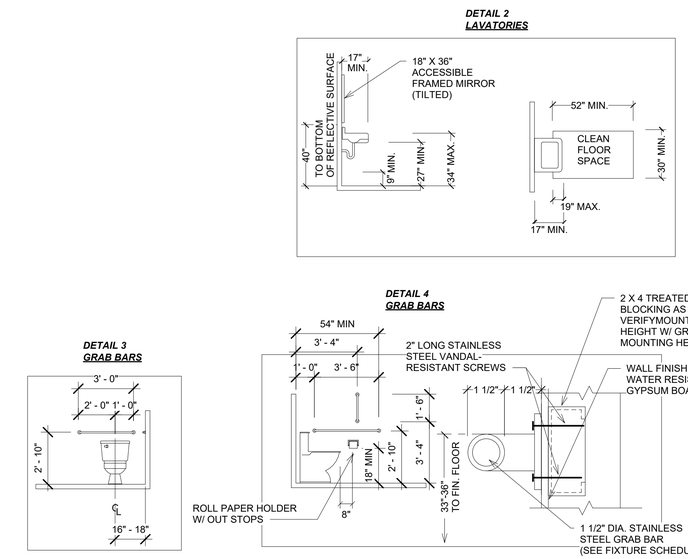
4 Unisex Handicapped toilet door detail
1/32" = 1'-0"



5 ADA Toilet Detail 1
1/4" = 1'-0"



1 ADA Toilet Detail 3
1/4" = 1'-0"



2 ADA Toilet Details 2017
1/4" = 1'-0"

SANITARY FACILITIES

ICC/ANSI A117.1-2017

1.	***GENERAL*-PROVIDE SUFFICIENT SPACE IN THE BATHROOM FOR A WHEELCHAIR MEASURING 30" WIDE X 48" LONG TO ENTER THE ROOM AND PERMIT THE DOOR TO CLOSE. THERE SHALL BE ROOM FOR A 67" DIA. TURNING CIRCLE AS SHOWN ON PLAN. THE WATER CLOSET SHALL BE LOCATED IN A SPACE WHICH PROVIDES A 60" WIDE CLEAR SPACE FROM A FIXTURE OR A WALL AT ONE SIDE AND 60" OF CLEAR SPACE IN FRONT OF THE WATER CLOSET.**
2.	***DOORS*-SANITARY FACILITY DOORS SHALL HAVE AN AUTOMATIC CLOSING DEVICE & BE 3'.0" WIDE**
3.	***GRAB BARS*- GRAB BARS SHALL BE AS PER DETAIL 3 & 4 AND SHALL BE CAPABLE OF CARRYING 250 LBS PER FT.**
4.	***LAVATORY* - LAVATORY HEIGHTS AND CLEARANCES SHALL COMPLY WITH DETAIL 2. INSULATE HOT WATER AND DRAIN PIPES UNDER LAVATORIES. NO SHARP OR ABRASIVE SURFACES ARE ALLOWED UNDER LAVATORIES. FAUCET CONTROLS AND OPERATING MECHANISMS ARE REQUIRED TO BE OPERABLE WITH ONE HAND AND CAN NOT REQUIRE GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS IS NOT TO EXCEED 5 LB. LEVER-OPERATED, PUSH-TYPE, AND ELECTRONICALLY CONTROLLED MECHANISMS ARE EXAMPLES OF ACCEPTABLE DESIGNS. SELF-CLOSING VALVES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.**
5.	***ACCESSORIES* - IF MIRRORS, PAPER TOWEL, SANITARY NAPKIN, WASTE RECEPTACLES AND SIMILAR DISPENSING AND DISPOSAL FIXTURES ARE PROVIDED, AT LEAST ONE OF EACH TYPE IS TO BE LOCATED WITH BOTTOM MAX. 40 INCHES ABOVE THE FLOOR.**
6.	***FINISHES* - FLOOR FINISH SHALL BE VCT WITH 6" RUBBER COVE BASE. WALL FINISHES WILL BE EPOXY PAINT**
7.	***URINAL* - IF PROVIDED, URINAL LIP SHALL BE MAX. 17" ABOVE FLOOR WITH A CLEAR SPACE OF 30" WIDE X 52" IN FRONT OF URINAL.**

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NEW BUILDING FOR

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Herman Scharhag Co., Arch. Cert. of Authority A-22

STATE OF MISSOURI
J. JEFFRY SCHROEDER
NUMBER A-4226
5/30/25
REGISTERED ARCHITECT

No.	Description	Date
	Revision Schedule	

Architectural Details

Project number	2491
Date	05.30.2025

A103

Scale: As indicated

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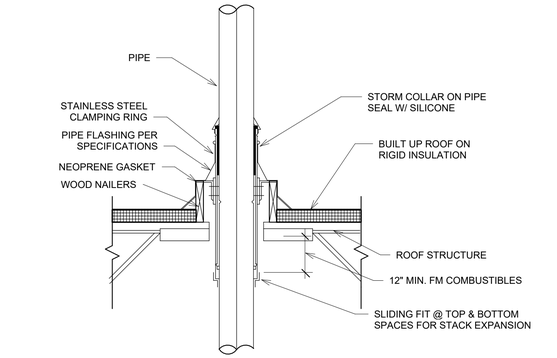
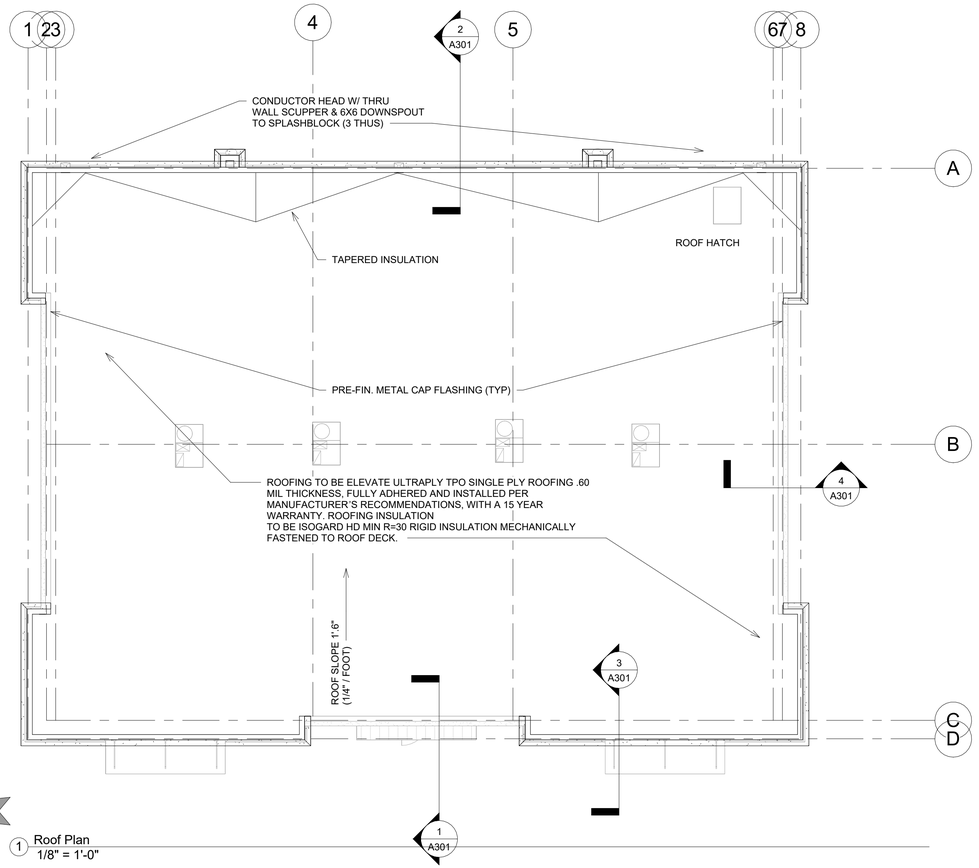
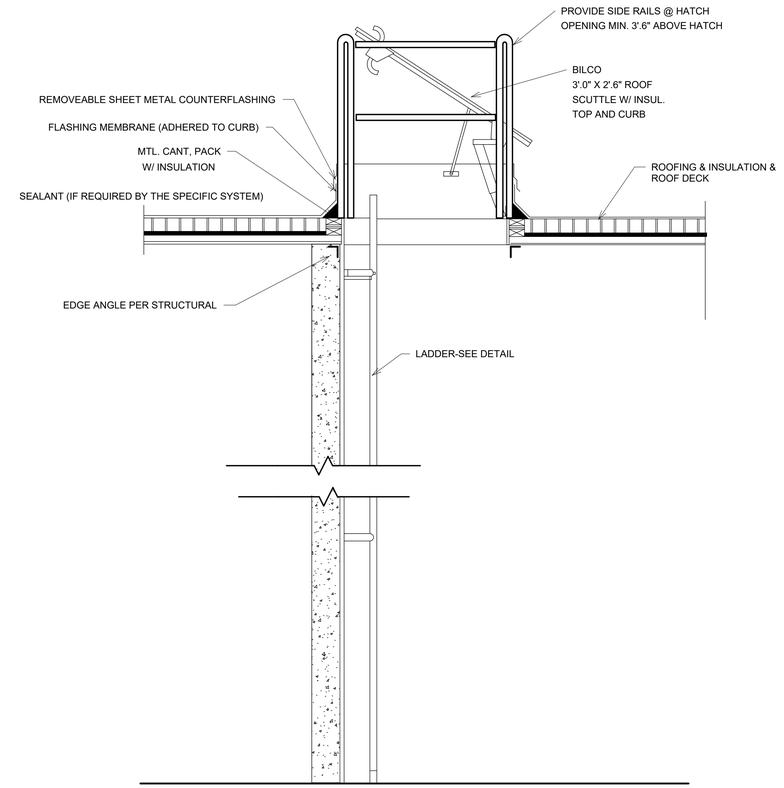


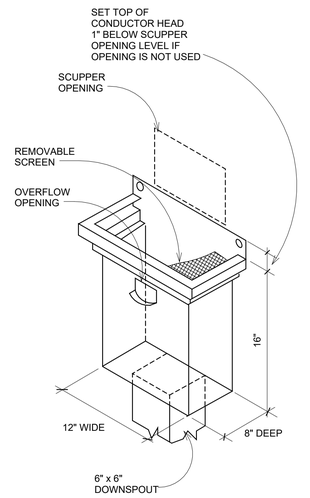
4 Pipe penetration
1" = 1'-0"



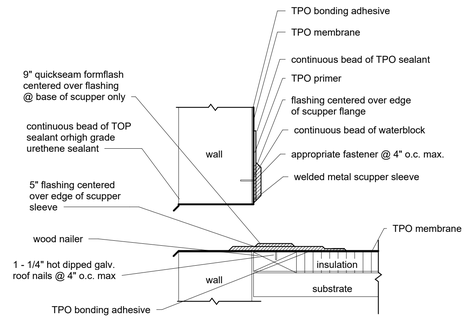
1 Roof Plan
1/8" = 1'-0"



2 Roof hatch w/ guard rail
1" = 1'-0"



SCUPPER DETAIL AT PARAPET WALL
NOT TO SCALE



NOTE:
CONDUCTOR HEADS AND DOWNSPOUTS SHOULD BE FABRICATED OF 24 GA. PRE-FINISHED METAL

3 Scupper detail
1/2" = 1'-0"

scharhag
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Herman Scharhag Co., Arch. Cert. of Authority A-22

STATE OF MISSOURI
J. JEFFREY SCHROEDER
NUMBER A-4226
5/30/25
REGISTERED ARCHITECT

No.	Description	Date
	Revision Schedule	

Roof Plan

Project number 2491
Date 05.30.2025

A104

Scale As indicated

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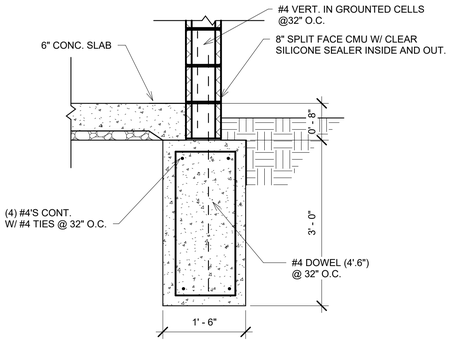
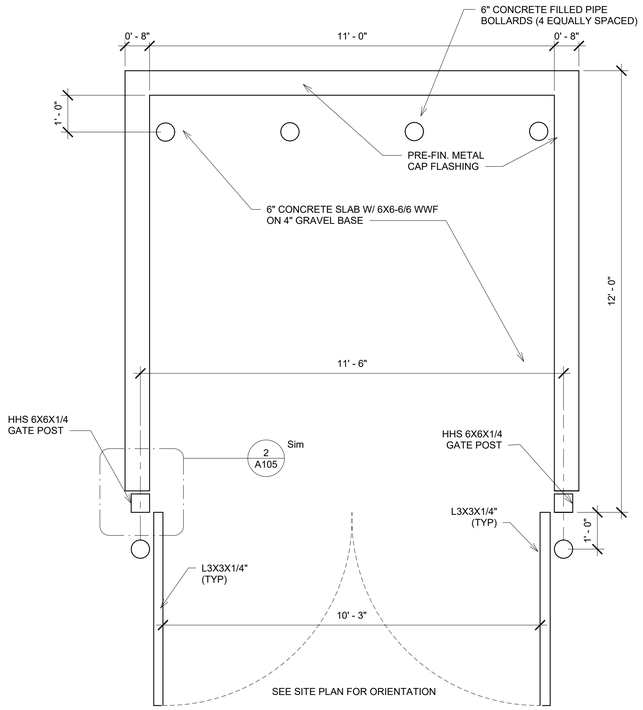
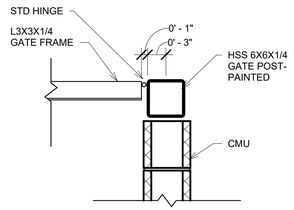


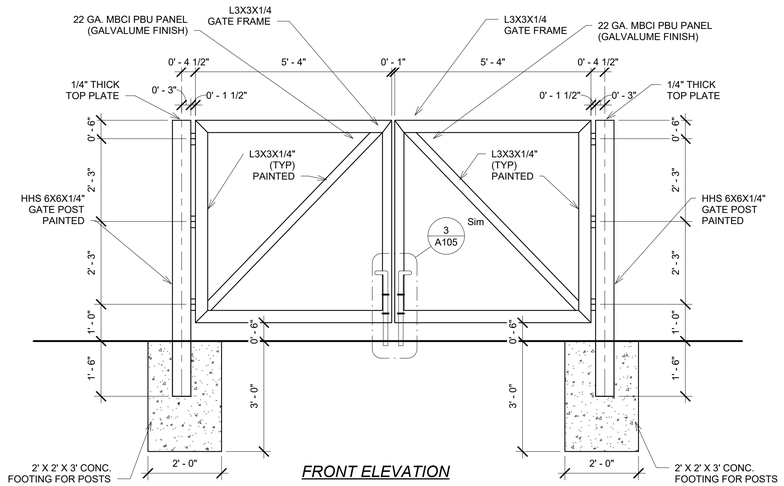
4 Trash Dumpster Detail Wall Section
3/4" = 1'-0"



PLAN VIEW



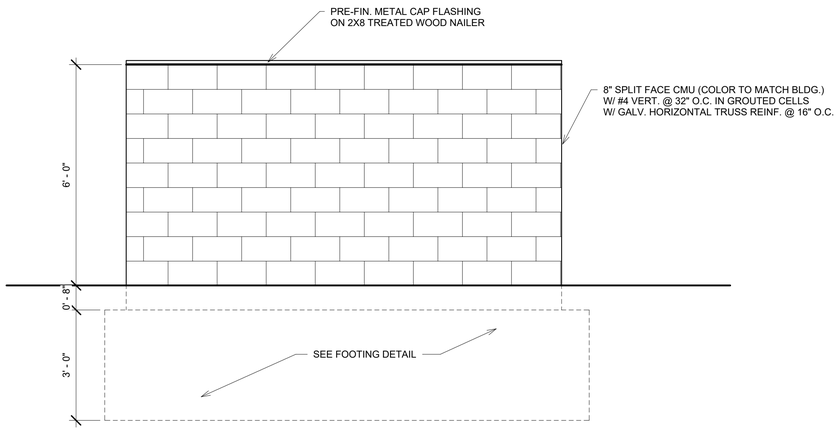
2 Hinge Detail Plan 12x11
1" = 1'-0"



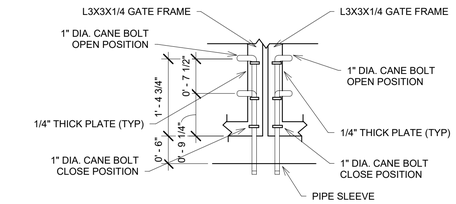
FRONT ELEVATION

ALL STEEL TO BE PAINTED
ALL CMU TO BE RECEIVE CLEAR SILICONE SEALANT @ EXTERIOR

1 Trash Dumpster Detail 11x12
1/2" = 1'-0"



SIDE ELEVATION



3 Trash Dumpster Detail - Hinge Detail
3/4" = 1'-0"

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NEW BUILDING FOR
SUMMIT ORCHARDS
410 NW CHIPMAN ROAD

J.Jeffry Schroeder Mo. Licence A-4226
Herman Scharhag Co., Arch. Cert. of Authority A-22

STATE OF MISSOURI
JEFFREY SCHROEDER
NUMBER A-4226
REGISTERED ARCHITECT
5/30/25

No.	Description	Date
	Revision Schedule	

Trash Dumpster Details- 11x12

Project number	2491
Date	05.30.2025

A105

Scale As indicated

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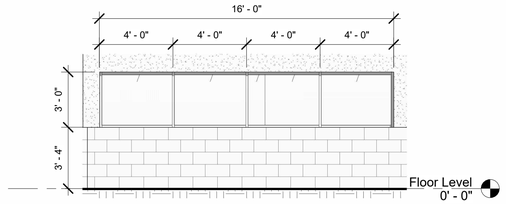
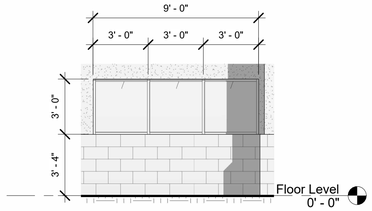
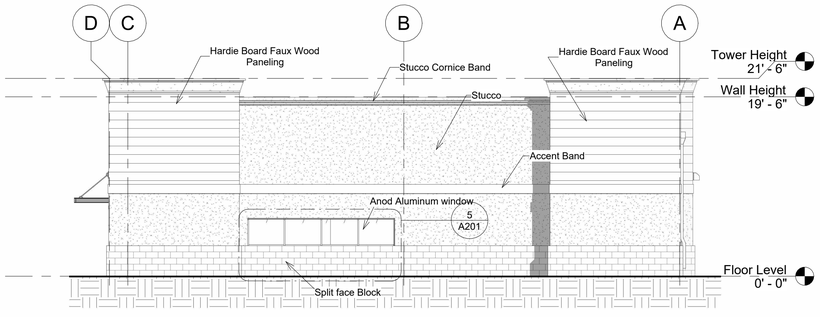


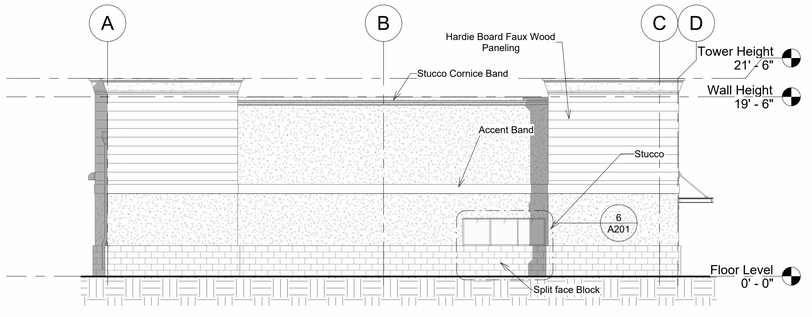
5 East - Callout 1
1/4" = 1'-0"



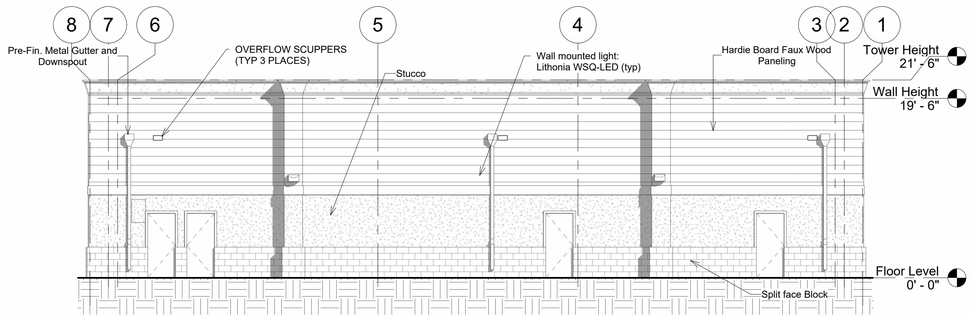
6 West - Callout 1
1/4" = 1'-0"



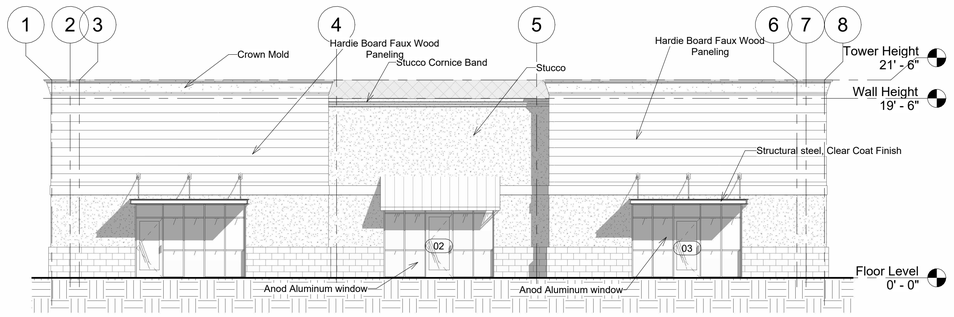
1 East
1/8" = 1'-0"



4 West
1/8" = 1'-0"



2 North
1/8" = 1'-0"



3 South
1/8" = 1'-0"

PROVIDE CLEAR SILICONE SEALER FOR BRICK

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NEW BUILDING FOR
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410 NW CHIPMAN ROAD

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STATE OF MISSOURI
JEFFREY SCHROEDER
NUMBER A-4226
REGISTERED ARCHITECT
5/30/25

No.	Description	Date
1		

Revision Schedule

Elevations

Project number 2491
Date 05.30.2025

A201

Scale As indicated

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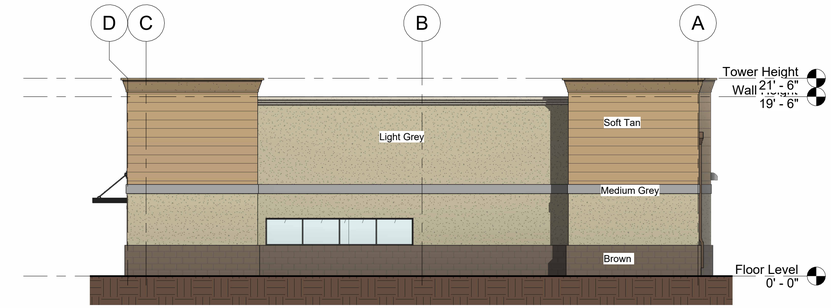
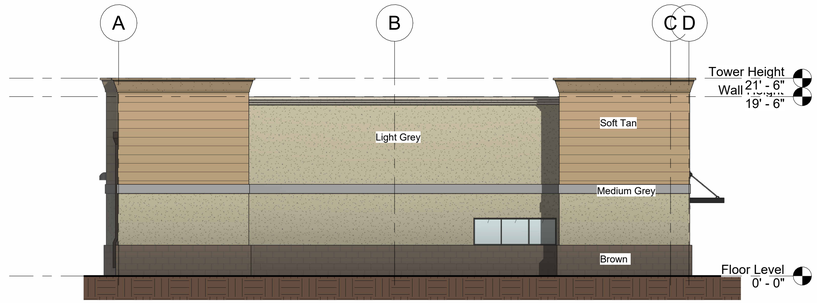
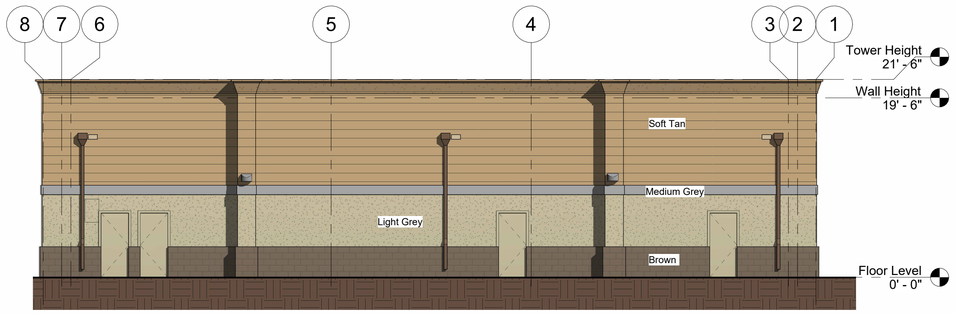


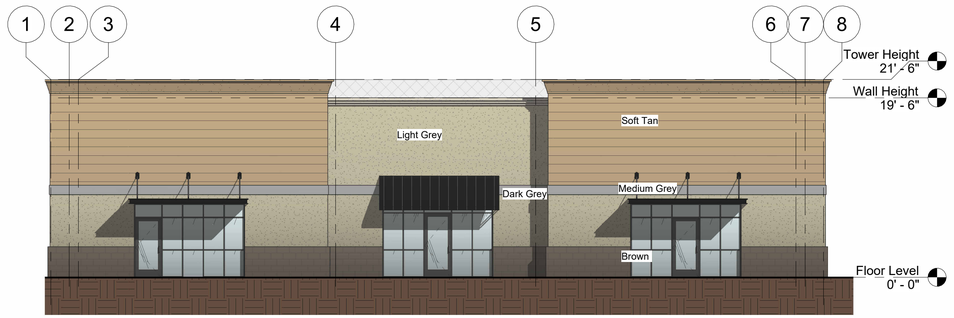
1 East Color
1/8" = 1'-0"



4 West Color
1/8" = 1'-0"



2 North Color
1/8" = 1'-0"



3 South Color
1/8" = 1'-0"

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NEW BUILDING FOR

SUMMIT ORCHARDS

410 NW CHIPMAN ROAD

J Jeffry Schroeder Mo. Licence A-4226
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STATE OF MISSOURI
J JEFFRY SCHROEDER
NUMBER A-4226
5/30/25
REGISTERED ARCHITECT

No.	Description	Date
1		

Revision Schedule

Colored Elevations

Project number	2491
Date	05.30.2025

A202

Scale 1/8" = 1'-0"

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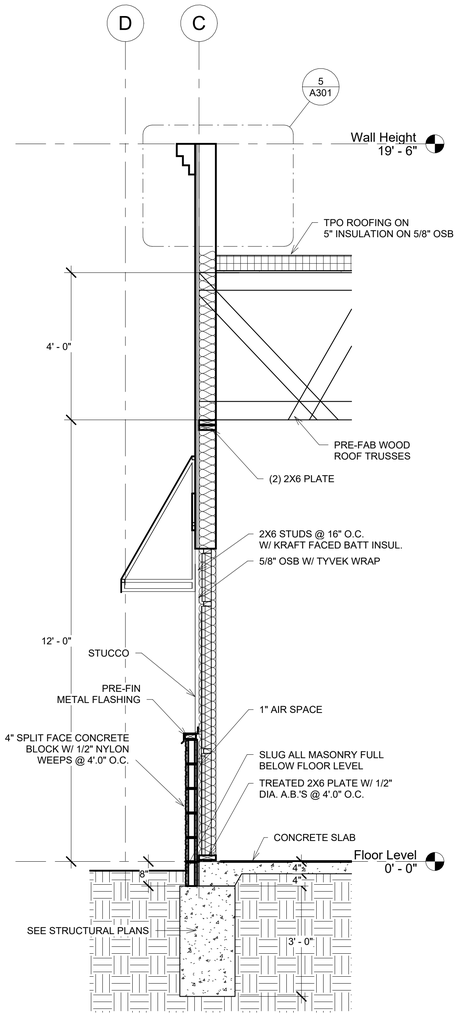
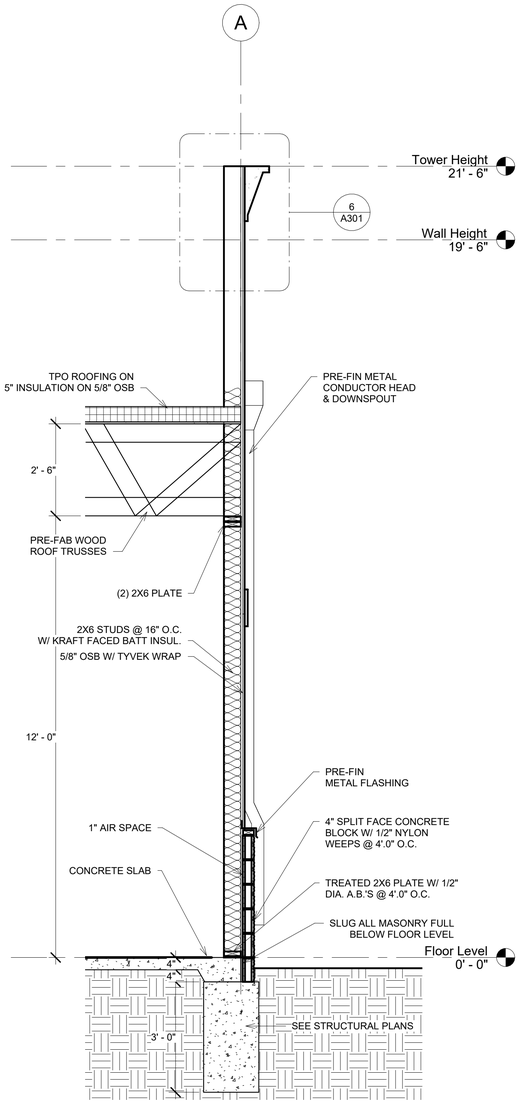
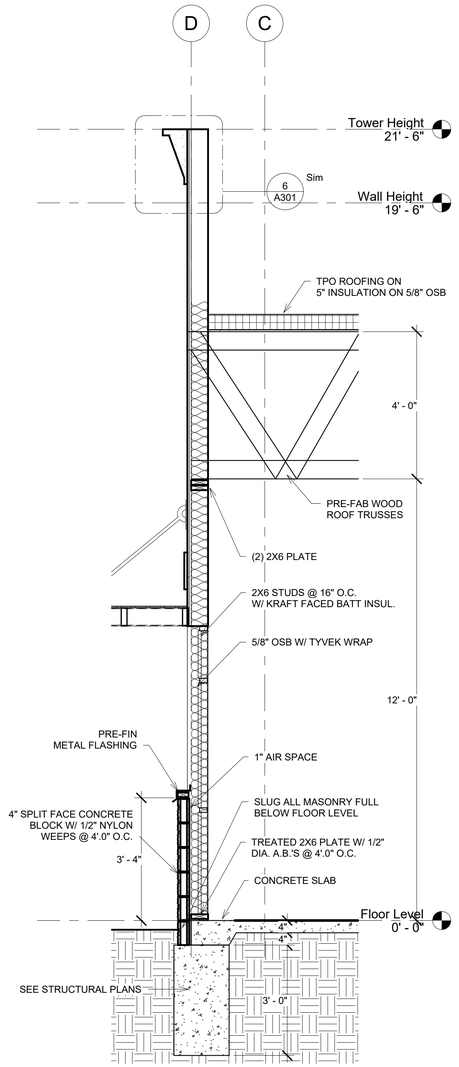
PROVIDE CLEAR SILICONE SEALANT ON ALL SPLIT FACE BLOCK



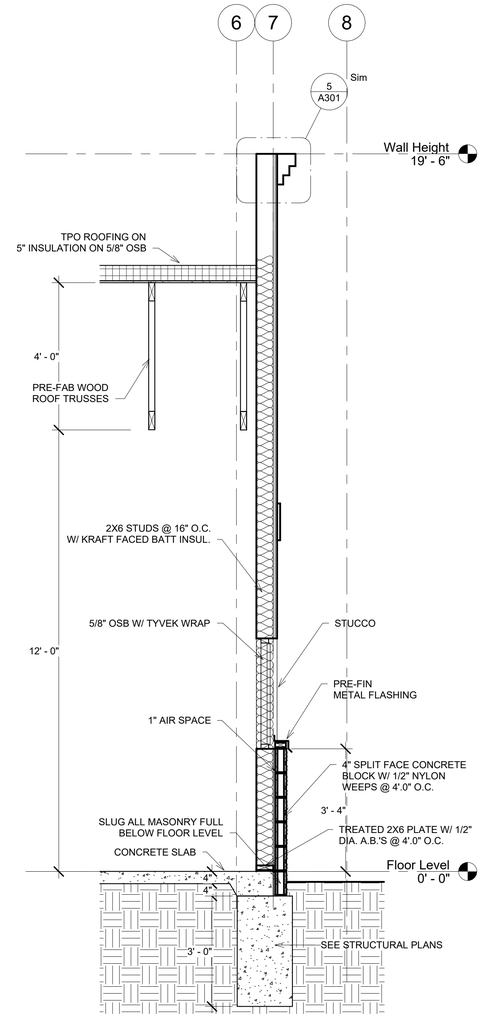
1 Section 1
1/2" = 1'-0"



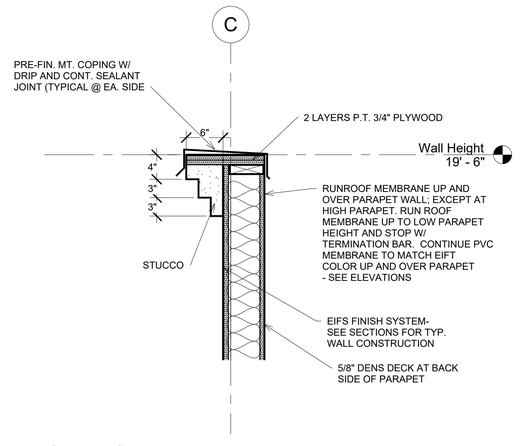
2 Section 2
1/2" = 1'-0"



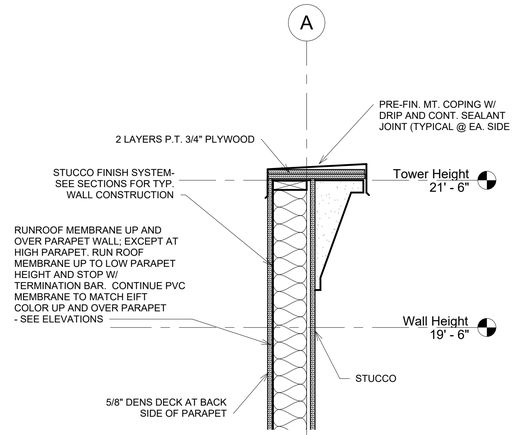
3 Section 3
1/2" = 1'-0"



4 Section 4
1/2" = 1'-0"



5 Section 1 - Callout 1
1" = 1'-0"



6 Section 2 - Callout 1
1" = 1'-0"

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NEW BUILDING FOR

SUMMIT ORCHARDS

410 NW CHIPMAN ROAD

J.Jeffry Schroeder Mo. Licence A-4226
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STATE OF MISSOURI
J. JEFFREY SCHROEDER
NUMBER A-4226
REGISTERED ARCHITECT
5/30/25

No.	Description	Date
	Revision Schedule	

Wall Sections

Project number	2491
Date	05.30.2025

A301

Scale: As indicated

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GENERAL NOTES

A. GENERAL

1. These notes shall be read in conjunction with the Specifications and the Drawings. In the event of a conflict, notify the Architect for clarification.
2. Before executing anything herein shown, examine actual job conditions.Report any discrepancy, dimensional or otherwise, between architectural and structural Drawings and any other error, omission, or difficulty affecting the work to the Architect and to the Structural Engineer for review.
3. The Owner or his Representative reserves the right to inspect any material, fabrication, or workmanship at any time in field or shop for conformance to the Specifications and Drawings.
4. All details and sections are intended to be typical and shall be construed to apply to any similar situation elsewhere, except where a different detail is shown.

B. DESIGN

1. Codes, specifications and standards (latest editions, U.N.O.)
   a. All design and construction shall conform to the International Building Code (currently adopted edition) as amended and adopted by the City of jurisdiction.
   b. All construction shall comply with the provisions of the following codes,specifications and standards, except where noted to the contrary on drawings and specifications or where more stringent requirements are specified or shown:
      ACI 117 "Standard Specifications for Tolerance for Concrete Construction and Materials"
      ACI 301 "Specifications for Structural Concrete for Buildings"
      ACI 318 "Building Code Requirements for Reinforced Concrete"
      ACI 530 "Building Code Requirements for Masonry Structures"
      AISC "Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings"
      SDI "Steel Deck Manual for Floor Decks and Roof Decks"
      AWS D1.1 "Structural Welding Code - Steel "
2. Design Loads:
   a. Roof - Snow (incl. rain on snow)
      - Pf = 20 psf
      - Ce = 1.00
      - I = 1.00
      - Ct = 1.00
   b. Wind
      - Basic Wind Speed = 115 mph
      - I = 1.00
      - Wind Exposure B
      - Internal Pressure Coefficient = 0.3
   d. Floor Live Load - Office 50 psf
      - Entrances (exits), stairs 100 psf
      - Light Storage 125 psf
      - Heavy storage 250 psf
   e. Canopy Roof Design Dead Loads:
      - Roof Panels 30 psf
      - Steel Framing 5 psf
      - Roofing 5 psf
      Total 40 psf
3. Foundations are designed for the following net allowable bearing capacities:
   a. Isolated Footings: 2 ksf
   b. Continuous Footings: 2 ksf
4. Foundations and retaining walls have been designed for an equivalent fluid pressure of 100 pcf.

C. CONCRETE

1. Concrete used in the Work shall have the following minimum 28-day ultimate compressive strengths:
   a. Columns 4000 psi
   b. Retaining walls, slabs on grade, and footings 4000 psi
   c. Framed slabs 4000 psi
2. Air entrain all exterior concrete (admixture: ASTM C 260).
3. Do not use calcium chloride admixtures under any circumstances.
4. Reinforcing bars: ASTM A 615 Specifications, Grade 60, deformed. Bend bars cold.
5. Welded wire fabric (WWF): ASTM A 185.
6. Maintain minimum concrete coverage for reinforcing as indicated, unless noted otherwise. Reference details 17/S1.0 and 18/S1.0 for placement of reinforcement in typical framed slabs.
   a. 3 in. clear where concrete is deposited directly against earth.
   b. 2 in. clear where concrete is exposed to earth or weather but poured against forms for bars larger than #5.
   c. 1-1/2 in. clear where concrete is exposed to earth or weather, but poured against forms for bars #5 or smaller.
   d. 3/4 in. clear for slabs and walls formed above grade not exposed to weather.
   e. 1-1/2 in. clear for beam and columns formed above grade and not exposed to weather.
7. Lap all bars at splices in accordance with ACI 318, unless specifically noted otherwise.
8. Top and bottom bars in continuous grade beams shall run continuous through multiple spans, where possible. Otherwise, top bars shall splice within the middle 1/3 span and bottom bars shall splice over supports.
9. Pour columns, walls, and pilasters to be monolithic.
10. All concrete walls shall be properly braced and held in line until supporting slabs or floors are in place.
11. All bar steel and WWF shall be properly supported and held accurately in place as recommended by the Concrete Reinforcing Steel Institute, except that maximum spacing of any bar or mesh support shall be 3 feet.
    a. Support top slab bars with continuous high chairs.
    b. Support beam bars on heavy beam bolsters.
    c. Support footing and grade beam bottom reinforcing on concrete bricks, concrete blocks, or mounds of poured concrete.
    d. Support WWF in slab-on-grade properly at the mid-depth of the slab.Hooking and pulling up mesh after concrete has started to take its initial set is prohibited.
    e. Supports for reinforcement for exposed-to-view concrete surfaces shall have legs that are in contact with forms plastic protected (CRSI, Class 1) or stainless steel (CRSI, Class 2).
12. Where slabs-on-grade make an abrupt change in direction, such as at doors and corners or ends of walls, provide 2-#4 by 4 feet across the reentrant corner.
13. Provide the following minimum concrete cover for fire rating:

Interior load bearing walls and columns	2 hrs	1 1/2" cover
Concrete beams	2 hrs	1/2" cover
Concrete joists	2 hrs	1 1/2" cover
Floor slab	2 hrs	3/4" cover

D. MASONRY

1. Concrete masonry units (CMU): ASTM C 90, lightweight units (105 pcf or less), with the minimum net area compressive strength of 2200 psi.
2. Mortar: Portland cement and lime, and proportioned in accordance with ASTM C 270 for the following types:
   Type N - for all walls above grade
   Type S - for all walls below grade, in contact with earth
3. f'm = 1500 psi.
4. Provide mortar bed on webs between grouted cells and hollow cells.
5. Grout: ASTM C 476, 3000 psi minimum 28-day compressive strength.
6. Grout all vertical cells and spaces containing reinforcing bars (as detailed) bond beams, and lintels.
7. Vertically reinforce walls as shown on drawings. However, if not indicated on the drawing, reinforce wall as indicated below, at each corner, at ends of 48 inches horizontally throughout the wall, of walls, each side of control joints and openings, and at a maximum spacing unless noted otherwise.
   8" or 6" wall #6
   12" or 10" wall (2) #6
8. Horizontally provide continuous bond beam with 2 #5 minimum for 12" or 10" CMU; 1 #5 minimum for 8" or 6" CMU at floor/roof, near midheight (10'-0 maximum spacing) and top of wall, unless noted otherwise. Provide #5 corner bar for each horizontal bond beam corners.
9. Place reinforcement prior to grouting. Hold vertical reinforcement in position with rebar positioner.
10. Provide horizontal joint reinforcement as indicated on the drawings and specifications, at a minimum provide at 16"o.c.
11. Lap joint reinforcement a minimum of 12 in.
12. In no case shall shores and forms at lintels be removed until it is certain that the masonry has hardened sufficiently to carry its own weight and all other reasonable temporary loads that may be placed on it during construction.
13. Do not wet concrete masonry units.
14. Do not use calcium chloride.
15. Do not use masonry cement.
16. Keep masonry walls shored during construction until the roof deck and floor slabs are in place to provide lateral stability.

E. STEEL

1. Qualifications for Welding Work:
   a. Perform all welding by a certified welder.
   b. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
   c. Provide certifications that welders to be employed in work have satisfactorily passed AWS qualification tests within previous 12 months.
   d. If recertification of welders is required, retesting will be Contractor's responsibility.
2. Erector must examine areas and conditions under which structural steel work is to be installed, and notify Contractor in writing of conditions detrimental to proper and timely completion of Work.Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Erector.
3. Submit shop drawings prepared under supervision of a registered professional engineer,including complete details and schedules for fabrication and assembly of structural steel members procedures and diagrams.Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size,length, and type of each weld. Show size and type of bolt for all bolted connections.
4. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.
5. Paragraph 4.2.1 of the (AISC) "Code of Standard Practice for Steel Buildings and Bridges" is hereby modified by deletion of the following sentence: "This approval constitutes the owner's acceptance of all responsibility for the design adequacy of any detail configuration of connections developed by the fabricator as a part of his preparation of these shop drawings."
6. If required cut edges of backing strips, extension bars, or run-off plates flush with edge of abutting parts.
7. Where framing members and/or connections for steel stairs are not indicated on either structural or architectural drawings, Design the members and/or connections and submit calculations or supporting data to verify their adequacy.A live load of 125 psf shall be used in the design. Fully detail stair connections, including attachments to supporting members.
8. Structural steel: ASTM A 572 - wide flange sections, ASTM A 36 - angles,channels, and plates, ASTM A 501 - pipes, and ASTM A 500, Grade B - tubes.
9. High Strength Bolts (steel-to-steel connections): ASTM A 325N, with twist-off load indicator type heads.
10. Anchor bolts: ASTM A 307, sizes indicated are based on preliminary reactions and spacing.
11. Welded connections: AWS Standards and Specifications using E70xx electrodes, unless noted otherwise.
12. Expansion Bolts: Stud type expansion anchors...(Hilti Kwik Bolt II).
13. Injection Adhesive: Hilti Dowelling Anchor (HY-150); Rawl/Sika Foil-Fast;Ramset/Redhead Epcon Ceramic 6.
14. Drill holes for anchors using a bit incapable of cutting steel. Do not cut existing concrete reinforcing steel. If, while drilling, reinforcing steel is encountered, notify the Structural Engineer for approval of new location. Cleaned and patch the abandoned hole grout.
15. Ends of beams which have copes to the extent that allowable shear or bending stress of steel is exceeded shall have web plates of sufficient size welded to the beam to reduce such stresses.
16. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
17. Do not flame cut holes or enlarge holes by burning.
18. Set structural frames accurately to lines and elevations indicated.Align and adjust various members forming apart of a complete frame or structure before permanently fastening.Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
19. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy line to achieve proper alignment of structure as erection proceds.
20. Clean bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base plates.
21. Grout plates are prohibited. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims. but if protruding, cut off flush with edge of base plate prior to packing with grout.
22. Nonshrink grout: CRD-621 Type A, premixed, nonmetallic, noncorrosive, nonstaining.
23. Provide open-web joists (K-series), longspan joists (LH-series), and joist girders as indicated on the Drawings and in accordance with specifications of SJI.
   a. Weld K-series joists to supporting steel with 1/8 in. fillet welds in. long, each side, u.n.o.
   b. Weld LH-series joists to supporting steel with 1/4 in. fillet welds 2 in. long, each side, u.n.o.
   c. Bolt joists at or nearest a column to supporting steel in conformance with O.S.H.A.with erection bolts.
   d. Provide continuous horizontal bridging for joists (u.n.o.) and bottom chord braces for joist girders as required by SJI,except where the net uplift loading requires additional bridging.
   e. Provide horizontal bridging to resist 10psf uplift for main roof at service building and main building penthouse.
   f. Extend bottom cord to brace beam bottom flange at mid-span of beams in service building.
24. Form deck: 9/16 in.galvanized deck with the following minimum properties:
   Minimum thickness 0.0295
   Moment of Inertia 0.024 in ^4
   Section Modulus 0.070 in ^3
25. Composite floor deck: 1-1/2 in. galvanized deck with the following minimum properties:
   Minimum thickness 0.0358
   Moment of Inertia 0.195 in ^4
   Section Modulus 0.240 in ^3
26. Roof deck: 1-1/2" painted wide rib deck with the following minimum properties:
   Minimum thickness 0.358
   Moment of Inertia 0.212 in ^4
   Section Modulus 0.234 in ^3
27. Roof deck shall be welded to supports to resist a net uplift of 20 PSF.
28. Provide 2-1/2" x 2-1/2" x 1/4" angles as required to support deck at columns, ends of beams, around openings, etc. Except as noted otherwise.
29. Provide 1,500 # misc. steel for use by Engineer, as needed.

E. EPOXY AND MECHANICAL ANCHORS

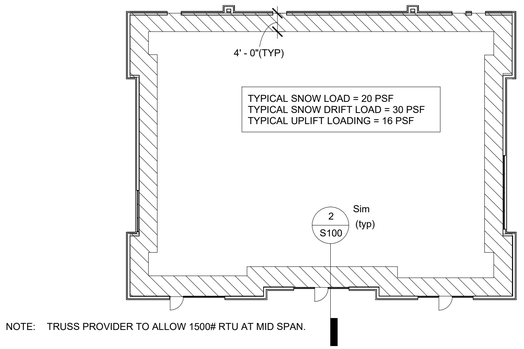
1. For concrete, grouted CMU, and solid masonry use Hilti HIT HY 150 two-part hybrid adhesive. For hollow CMU and masonry use Hilti HIT HY20 two-part hybrid adhesive with screen tubes. Equivalent adhesives may be used with prior written approval by the Structural Engineer.
2. Thoroughly clean holes with nylon brush and pressurized air per manufacturers instructions.
3. Drill holes to the embedment depths indicated on the drawings. If no depths are indicated, use 9 bolt or bar diameters with HY150 and 12 bolt diameters for HY 20.
4. "Wedge" or "Expansion" anchors shall be Hilti Kwik bolt II expansion anchors. Embed anchor 7 bolt diameters unless noted otherwise. Equivalent anchors may be substituted with prior written approval of the Structural Engineer.

F. METAL STUDS

1. Install cold-formed metal studs per drawings and manufacturer's recommendations. See Structural Plan for sizes and gauges.

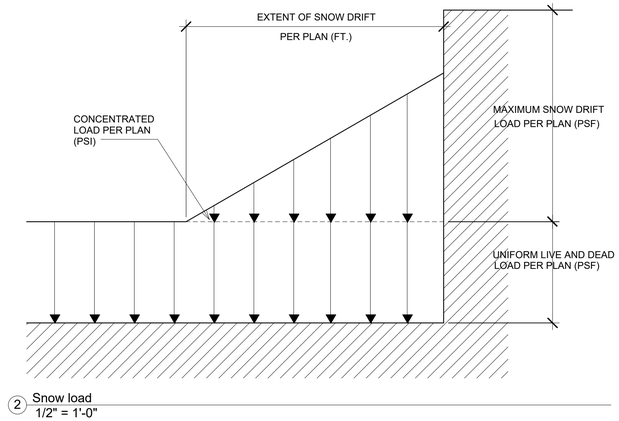
G. CONSTRUCTION

1. See architectural and mechanical requirements for embedded items not shown herein and to verify size and location of all openings.
2. Coordinate the sizes and locations of all miscellaneous metal items required for mechanical and electrical.
3. Requirements for embedded items, sleeves, block outs, duct openings,etc., in the concrete frame shall be submitted (plans and details) to the structural engineer for approval at least two weeks prior to the proposed date of casting concrete. No such items, other than those shown, shall be provided in the structure without the approval of the structural engineer.
4. Provide adequate shoring or bracing during construction to resist forces such as wind and unbalanced loading due to construction.
5. Field verify the location and depth (or height) of all utilities prior to beginning construction in order to provide adequate clearances and to insure noninterruption of service.



NOTE: TRUSS PROVIDER TO ALLOW 1500# RTU AT MID SPAN.

3 Snow Load Plan
1/16" = 1'-0"



2 Snow load
1/2" = 1'-0"

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NEW BUILDING FOR
SUMMIT ORCHARDS
410 NW CHIPMAN ROAD

JOSEPH A. TOWNS MO. LIC. E 22017
LORAC DESIGN GROUP
CERT. OF AUTHORITY E-2005032846-D

STATE OF MISSOURI
JOSEPH ALAN TOWNS
NUMBER E-22017
REGISTERED PROFESSIONAL ENGINEER

No.	Description	Date
	Revision Schedule	

Structural Notes

Project number 2491
Date 05.30.2025

S100

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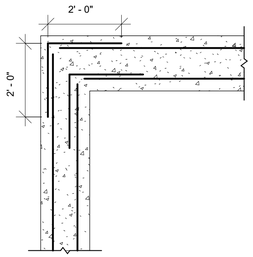
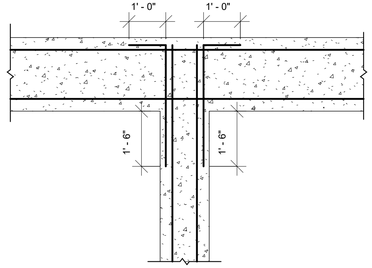
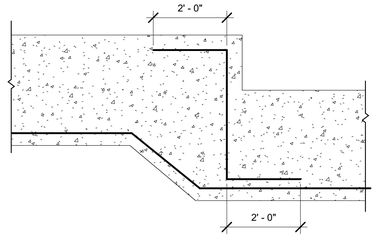


CORNER



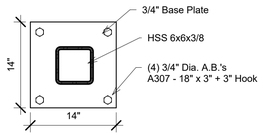
INTERSECTION



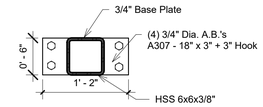
FOOTING STEP

5 Typical Footing Detail
1/2" = 1'-0"

Structural Foundation Schedule		
Type Mark	Type	Type Comments
A	8'x 8' x 2'.0" deep	(7) #6's each way
B	4' x 4' x 3'.0" deep	(5) #5's each way at T &B w/ (1) #6 vert. @ each corner
C	Bearing Footing	2'.0" w x 3'.0" deep w2/ (4) #5's cont. & #3 ties # 36" O.C. w/ #5 dowel 3' x 3' into slab @ 36" O.C.

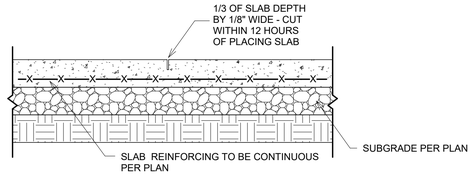


BASE PLATE 'A'

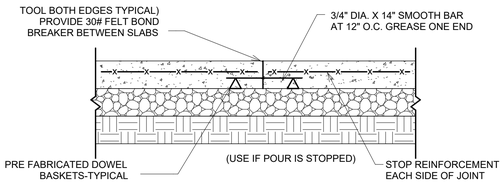


BASE PLATE 'B'

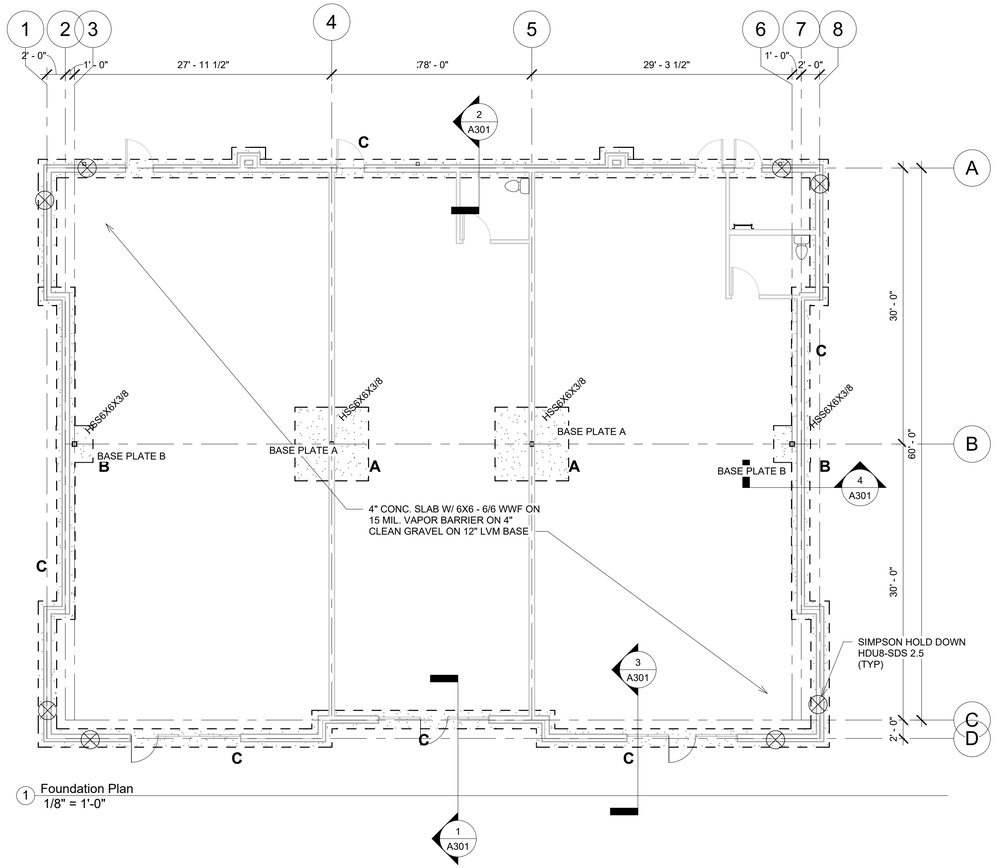
2 Base Plate Details
1" = 1'-0"



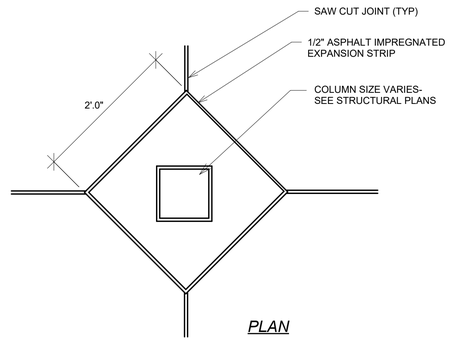
CONTROL JOINT DETAIL



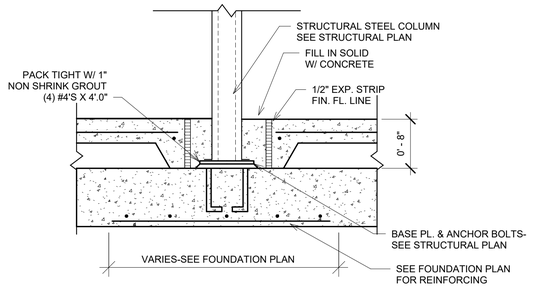
3 Sawcut Floor Slab
3/4" = 1'-0"



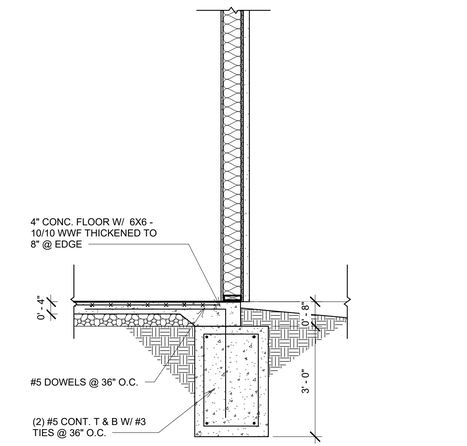
1 Foundation Plan
1/8" = 1'-0"



PLAN



4 Column Detail
1" = 1'-0"



6 Footing type 'C'
1/2" = 1'-0"

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NEW BUILDING FOR
SUMMIT ORCHARDS
410 NW CHIPMAN ROAD

JOSEPH A. TOWNS MO. LIC. E 22017
LORAC DESIGN GROUP
CERT. OF AUTHORITY E-2005032846-D

STATE OF MISSOURI
JOSEPH ALAN TOWNS
NUMBER E-22017
REGISTERED PROFESSIONAL ENGINEER

No.	Description	Date
1		

Revision Schedule

Foundation

Project number 2491
Date 05.30.2025

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TRUSSES TO BEAR AT 12'-0" AFF
TRUSSES TO BE 4'-0" DEEP AT NORTH WALL
TRUSSES TO BE 2'-0" DEEP AT SOUTH WALL

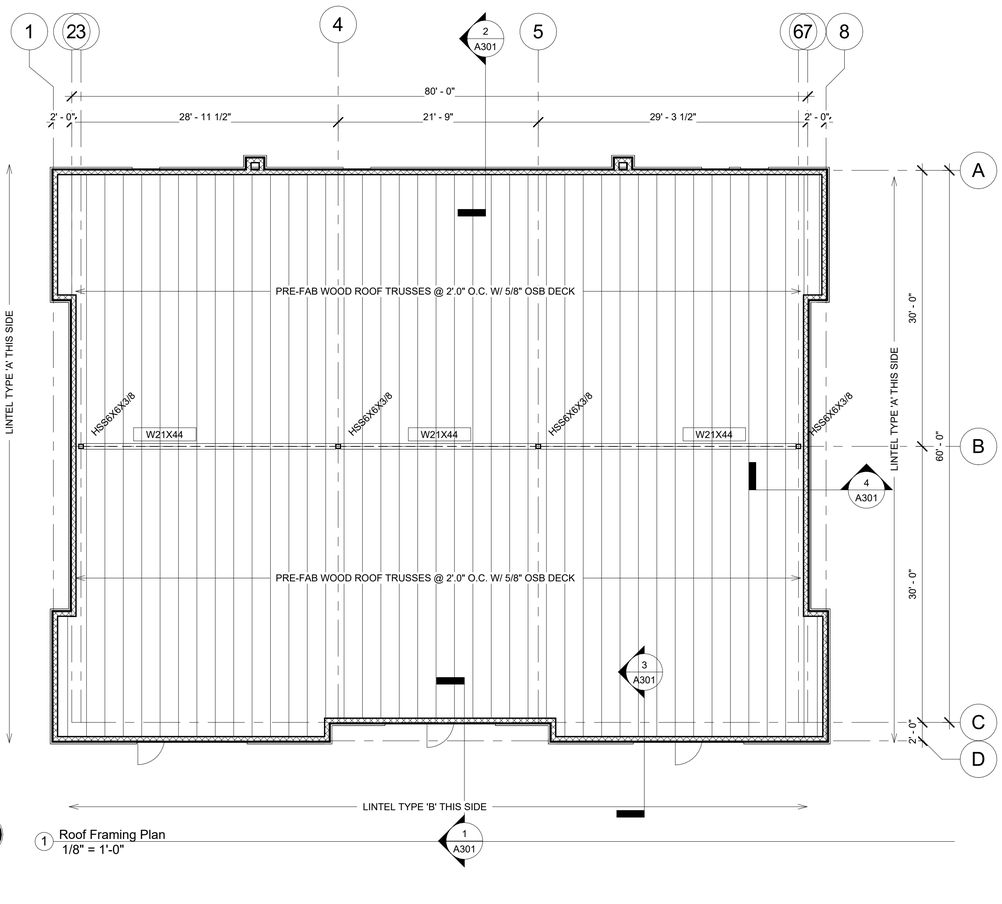
LINTEL SCHEDULE

LINTEL TYPE 'A'	THREE 2X12'S
LINTEL TYPE 'B'	W14X26

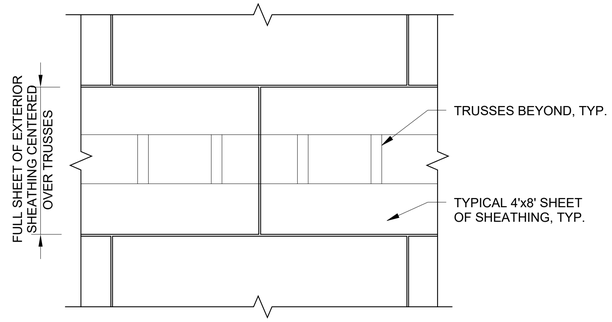
PROVIDE (4) 2X6'S BEARING AT EACH END OF LINTELS

STRUCTURAL NOTES

1. TRUSS MANUFACTURER TO FURNISH ALL HOLD DOWNS AND CLIPS FOR WOOD TRUSSES
2. PROVIDE HEAVY DUTY CLIPS AT ALL PANEL EDGES PERPENDICULAR TO TRUSSES AT 2'-0" O.C. STAGGER END OF PANELS AND GAP ALL PANELS 1/16" AT ALL EDGES
3. PROVIDE SIMPSON H1 HOLD DOWN CLIPS FOR EACH TRUSS
4. ROOF SHEATHING TO BE 5/8" EXTERIOR APA PLYWOOD, NAILED WITH 10d NAILS AT 6" O.C. ALL AROUND PLYWOOD EDGES (BLOCKING AS REQUIRED) AND ALL AROUND ROOF PERIMETER WITH 10d NAILS AT 6" O.C. AT ALL INTERMEDIATE SUPPORTS
5. BRACING DESIGN BY TRUSS MANUFACTURER
6. TRUSS MANUFACTURER TO PROVIDE DESIGN DRAWINGS AND CALCULATIONS AND LAYOUT PLAN, SEALED BY REGISTERED ENGINEER, FOR REVIEW, AND FOR APPROVAL BY THE CITY
7. WALL SHEATHING TO BE 5/8" OSB, NAILED WITH 8d NAILS AT 6" O.C. AT ALL STUDS AND FULL PERIMETER OF EACH PLYWOOD SHEET (BLOCKING AS REQUIRED) AND ALL AROUND PERIMETER OF WALL AND AROUND ALL OPENINGS
8. SEE ARCHITECTURAL SHEETS FOR ALL OPENING HEIGHTS AND WIDTHS
9. ALL DOOR AND WINDOW OPENINGS TO BE SUPPORTED BY MIN. (3) 2X12 LINTEL ABOVE OPENING, BEARING ON (2) STUDS AT EACH SIDE
10. ALL STEEL LINTEL BEAMS TO BE SUPPORTED BY (4) 2X STUDS AT EACH END

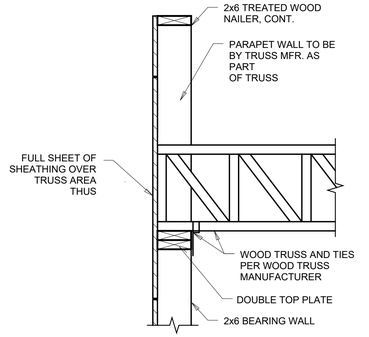


1 Roof Framing Plan
1/8" = 1'-0"



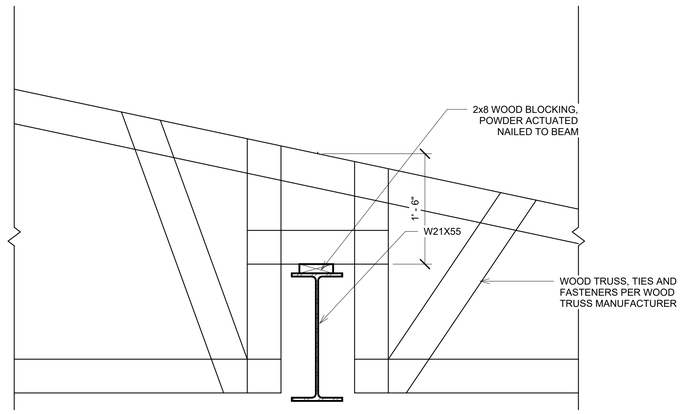
NOTE: ALL EXTERIOR SHEATHING TO HAVE NAILS @ 4" O.C. AROUND EDGE AND 6" O.C. INFIELD.

5 Typical Exterior sheathing wood
1/2" = 1'-0"



NOTE: FOR TYPICAL SHEATHING DETAIL RE: 1/S001

3 typical section at truss bearing wood
1" = 1'-0"



NOTE: TRUSS ATTACHMENT TO BE SIMPSON H1 CLIPS

4 typical section at truss bearing 2 wood
1" = 1'-0"

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NEW BUILDING FOR
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410 NW CHIPMAN ROAD

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STATE OF MISSOURI
JOSEPH ALAN TOWNS
NUMBER E-22017
REGISTERED PROFESSIONAL ENGINEER

No.	Description	Date
	Revision Schedule	

Framing

Project number 2491
Date 05.30.2025

S102

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SPECIFICATIONS

GENERAL

1. FOR ITEMS NOT COVERED BY THIS SPECIFICATION, REFER TO LATEST VERSION OF MASTERSPEC FOR REQUIREMENTS.
2. COORDINATION OF WORK: THE MECHANICAL CONTRACTOR SHALL PLAN ALL WORK SUCH THAT IT PROCEEDS WITH A MINIMUM OF INTERFERENCE WITH OTHER TRADES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE INSTALLATION OF HIS WORK WITH LIGHTING PLANS, REFLECTED CEILING PLANS, STRUCTURAL, AND ALL OTHER TRADES. THE INSTALLATION OF ALL EQUIPMENT, DEVICES AND MATERIALS REQUIRING ACCESS SHALL BE MADE IN SUCH A MANNER AS TO MAKE THE EQUIPMENT, DEVICES AND MATERIALS READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIRS.
3. SUBSTITUTIONS FOR MATERIAL SPECIFIED: MATERIAL AND ITEMS OF EQUIPMENT FURNISHED MUST MEET THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AS TO QUALITY, PERFORMANCE, SUITABILITY, AND APPEARANCE. THIS IS AN "OR EQUAL" SPECIFICATION. ALTERNATE MATERIALS AND EQUIPMENT MAY BE SUPPLIED SIMILAR OR EQUAL TO THE PRODUCT OF THE MANUFACTURER SPECIFIED, GIVEN PRIOR APPROVAL OF THE DESIGN ENGINEER, AND SHALL BE SUPPLIED AT NO ADDITIONAL COST.
4. ALL MATERIALS SHALL BE NEW, UNUSED, AND THE BEST OF THEIR RESPECTIVE KINDS AND FREE OF DEFECTS.
5. DRAWINGS ARE DIAGRAMMATIC ONLY, INTENDING TO SHOW GENERAL ROUTING AND LOCATIONS OF THE WORK AND ARE NOT INTENDED TO BE RIGID IN SPECIFIC DETAIL.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXAMINING THE SITE IN RELATION TO THEIR WORK PRIOR TO INSTALLATION. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR LACK OF COORDINATION DURING THE COURSE OF THIS CONTRACT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL MEASUREMENTS AT THE SITE.
8. ALL WORK, INCLUDING INSIDE OF HVAC DUCTS, AND EQUIPMENT WITHIN THE CONTRACT AREA FURNISHED AND INSTALLED UNDER THE CONTRACT SHALL BE CLEANED TO THE SATISIFACTION OF THE OWNER PRIOR TO TURNING OVER TO THE OWNER.
9. CONNECT NEW WORK TO EXISTING IN A NEAT AND WORKMAN LIKE MANNER.
10. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, CONDUIT, AND EQUIPMENT.
11. NO PIPING SHALL BE INSTALLED ABOVE ELECTRICAL PANELS.
12. CONTRACTOR TO TEST WATER PRESSURE ON SITE. PROVIDE PRESSURE REDUCING VALVE ON WATER SERVICE IF PRESSURE IS ABOVE 80 PSI. IF PRESSURE IS BELOW 40 PSI, CONSULT WITH ENGINEER BEFORE CONTINUING WORK.

MECHANICAL

13. GENERAL:
    A. CODES AND PERMITS: ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL AND STATE CODES AND UTILITY COMPANY REGULATIONS. ALL FEES AND PERMITS SHALL BE PAID FOR BY THE CONTRACTOR.
    B. WORKMANSHIP: ALL MATERIALS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE OF THE INDUSTRY.
    C. PROVIDE ACCESS PANELS IN HARD CEILINGS BELOW EQUIPMENT THAT REQUIRES ACCESS.
    D. FIELD VERIFY AVAILABLE SPACE ABOVE CEILING BEFORE FABRICATION AND INSTALLATION OF DUCTWORK.
13. DUCTWORK:
    A. MATERIAL: ALL DUCTS SHALL BE GALVANIZED STEEL. DUCT GAUGE AND BRACING SHALL CONFORM TO NFPA 90A AND SMACNA - HVAC DUCT CONSTRUCTION STANDARDS: METAL AND FLEXIBLE.
    B. MINIMUM SHEET METAL THICKNESS SHALL BE 26 GA.
    C. ALL DUCT JOINTS SHALL BE SEALED USING DUCT SEALANT AS MANUFACTURED BY UNITED SHEET METAL, OR EQUAL. ALL DUCTWORK SHALL BE FABRICATED FOR 2-INCH WATER GAGE PRESSURE CLASS.
    D. STRAP HANGERS SHALL NOT BE LESS THAN 1" WIDE BY 22 GAUGE, ON SIX (6) FOOT CENTERS AND ATTACHED TO THE SIDE OF THE DUCT WITH SHEET METAL SCREWS. INSULATED FLEXIBLE DUCT MAY BE USED FOR LOW PRESSURE RUNOUTS TO INDIVIDUAL DIFFUSERS IN LENGTHS NOT TO EXCEED 5' FOR EACH DIFFUSER. SEAL ALL SHEET METAL SCREW PENETRATIONS.
    E. PROVIDE FLEXIBLE CONNECTION BETWEEN ALL FAN POWERED EQUIPMENT AND CONNECTING DUCTWORK.
    F. DUCTWORK SUPPORT MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE GALVANIZED STEEL FASTENERS, ANCHORS, RODS, STRAPS, WIRE ROPE, TRIM AND ANGLES FOR SUPPORT OF DUCTWORK. SUPPORT ALL DUCTWORK FROM THE STRUCTURE ONLY. DO NOT SUPPORT FROM DECK.
    G. PROVIDE BALANCING DAMPERS IN TAKEOFFS WHERE SPECIFIC FLOW RATES ARE SHOWN.
14. DUCT INSULATION:
    A. SUPPLY AIR/OUTSIDE AIR:
        - EXTERNALLY INSULATE WITH FIBERGLASS DUCT WRAP UNLESS INDICATED OTHERWISE ON THE DRAWINGS. INSULATION SHALL BE 1-1/2" THICK WITH CONTINUOUS VAPOR BARRIER JACKET WITH SEALED JOINTS, OR MORE STRINGENT IF REQUIRED PER CODE.
    B. RETURN AIR:
        - INTERNALLY LINED INSULATION, MINIMUM 1" THICK. DUCTWORK DIMENSIONS ON PLANS REFLECT FREE AREA. INCREASE DUCT DIMENSIONS AS REQUIRED TO ACCOMMODATE INTERNAL INSULATION.
    C. ALL INSULATION, JOINING MATERIALS, SEALER, ETC. SHALL HAVE A U.L. FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPMENT RATING OF NOT MORE THAN 50.
15. MECHANICAL PIPING:
    A. PROVIDE CONDENSATE PIPING FOR ALL COOLING COILS. ROUTE PIPING TO NEAREST DRAIN AND TERMINATE WITH AIR GAP. PROVIDE CONDENSATE PUMP WHEN GRAVITY DRAIN IS NOT SUFFICIENT. PROVIDE INSULATION ON CONDENSATE PIPING A MIN. OF 10' DOWNSTREAM OF COOLING COIL.
    B. PIPE INSULATION SHALL COMPLY WITH IECC SECTION C403.12.3.
    C. HOT/CHILLED/CONDENSATE WATER PIPING
        - PVC, SCHEDULE 40, SOLVENT JOINT, UNLESS ROUTED IN RETURN AIR PLENUM
        - TYPE "L" COPPER WITH WROUGHT-COPPER SOLDER-JOINT FITTINGS AND SOLDERED JOINTS.

PLUMBING

16. GENERAL:
    A. CODES AND PERMITS: ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL AND STATE CODES AND UTILITY COMPANY REGULATIONS. ALL FEES AND PERMITS SHALL BE PAID FOR BY THE CONTRACTOR.
    B. PROVIDE TEMPERATURE CONTROLS TO LIMIT HOT WATER TEMPERATURE TO 110F FOR LAVATORIES.
    C. INSTALL HEAT TRAPS AT DOMESTIC WATER HEATER.
    D. SUPPORT NEW PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING.
    E. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR.
    F. INSTALL PIPING AS HIGH AS POSSIBLE.
    G. PROVIDE STOP VALVES ON HOT/COLD WATER BRANCH PIPING.
    H. PROVIDE WATER HAMMER ARRESTORS AND ASSOCIATED ACCESS PANELS AT ALL FAST CLOSING VALVES.
17. WORKMANSHIP: ALL MATERIALS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE OF THE INDUSTRY.
18. PIPING:
    A. DOMESTIC WATER PIPING (ABOVE GROUND)
        - PEX PLASTIC PIPING AND FITTINGS, UNLESS ROUTED IN RETURN AIR PLENUM
        - TYPE "L" COPPER WITH WROUGHT-COPPER SOLDER-JOINT FITTINGS AND SOLDERED JOINTS.
    B. DOMESTIC WATER PIPING (BELOW GROUND)
        - TYPE "K" COPPER UNDERGROUND WITH NO JOINTS
    C. STORM/WASTE/VENT PIPING (ABOVE GROUND)
        - PVC, SCHEDULE 40, SOLVENT JOINT, UNLESS ROUTED IN RETURN AIR PLENUM OR WASTE TEMP ABOVE 140F
        - SERVICE WEIGHT CAST IRON, HUB AND SPIGOT FITTINGS
        - SERVICE WEIGHT CAST IRON WITH NO-NUB FITTINGS AND NEOPRENE GASKETS
    D. STORM/WASTE/VENT PIPING OPTIONS (BELOW GROUND)
        - PVC, SCHEDULE 40, SOLVENT JOINT, UNLESS WASTE TEMP ABOVE 140F
        - SERVICE WEIGHT CAST IRON, HUB AND SPIGOT FITTINGS
        - SERVICE WEIGHT CAST IRON WITH NO-NUB FITTINGS AND NEOPRENE GASKETS
    E. NATURAL GAS PIPING OPTIONS
        - SCHEDULE 40 BLACK STEEL WITH MALEABLE FITTINGS. PAINT EXTERIOR PIPING PER CODE.
    F. PIPE INSULATION: HOT AND COLD DOMESTIC WATER PIPING EXCEPT THAT EXPOSED AT FIXTURES SHALL BE INSULATED WITH 4-PCF DENSITY PRE-FORMED FIBERGLASS PIPE INSULATION WITH FIRE-RESISTIVE, ASJ VAPOR BARRIER JACKET AND SELF-ADHERING AND SELF-SEALING OVERLAPPING FLAP. INSULATION THICKNESS SHALL BE 1" FOR PIPES UP TO 1-1/4"Ø AND 1-1/2" THICK FOR PIPES 1-1/2"Ø AND LARGER. PIPE INSULATION SHALL COMPLY WITH IECC SECTION C404.4.
19. FIXTURES: SHALL BE OF MANUFACTURER INDICATED ON PLANS OR APPROVED EQUAL. ALL FIXTURES SHALL BE FURNISHED WITH EITHER CHROME PLATED SUPPLIES AND STOP VALVES OR INTEGRAL STOPS. ALL EXPOSED TRAPS SHALL BE CHROME PLATED.

LEGEND

SYMBOL	DESCRIPTION
	DEMOLITION
	THROTTLING VALVE
	BALANCING VALVE
	AUTOMATIC FLOW CONTROL VALVE
	ELBOW DOWN
	ELBOW UP
	TEE DOWN
	TEE UP
	ELBOW
	UNION
	CAP
FCO	FLOOR CLEANOUT
GCO	GRADE CLEANOUT
FDO FS	FLOOR DRAIN/SINK
WCO	WALL CLEAN OUT
	COLD WATER
	HOT WATER
	WASTE PIPING
	VENT
	POINT OF CONNECTION NEW TO EXISTING
	SPIN-IN FITTING WITH BALANCING DAMPER (ROUND TO RECTANGULAR)
	FLEXIBLE DUCTWORK
	MANUAL BALANCING DAMPER
12x12	RECTANGULAR DUCT DIMENSIONS (1ST FIGURE – SIDE SHOWN)
12"ø	ROUND DUCT DIMENSIONS
	RETURN/EXHAUST/OUTSIDE AIR
	DIFFUSER WITH FLEXIBLE DUCT CONNECTION
1	KEYNOTE
EQP 1	EQUIPMENT TAG
S	SUPPLY GRILLE CALLOUT WITH FLOW RATE
R	RETURN GRILLE CALLOUT
T	THERMOSTAT/TEMPERATURE SENSOR

GENERAL NOTES

1. THE FOLLOWING NOTES APPLY TO MECHANICAL & PLUMBING DRAWINGS TO THE EXTENT APPLICABLE.
2. NOT ALL DUCTWORK, OFFSETS, PIPING, EQUIPMENT, AND ACCESSORIES ARE SHOWN ON PLANS. REFER TO ALL PLANS, SECTION, DETAILS, SCHEDULES, CONTROLS AND SPECIFICATIONS FOR COMPLETE SYSTEM REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE ALL REQUIRED OFFSETS, TRANSITIONS, AND FITTINGS FOR DUCTWORK AND PIPING TO COMPLETE THE SYSTEMS.
4. MANY AREAS OF CONSTRUCTION WILL BE VERY CONGESTED. INSTALLATION OF MATERIALS AND EQUIPMENT SHALL BE COORDINATED WITH ALL OTHER TRADES AND EXISTING CONDITIONS TO ENSURE THAT THERE IS ADEQUATE ROOM FOR ALL OTHER MATERIALS AND EQUIPMENT TO BE INSTALLED UNDER THIS CONTRACT. INSTALLATION OF MATERIALS AND EQUIPMENT WHICH DOES NOT ALLOW FOR INSTALLATION OF REMAINING MATERIALS AND EQUIPMENT WILL BE REMOVED AND RELOCATED AT NO COST TO THE OWNER OR DESIGN TEAM.
5. COORDINATE LOCATION OF ALL DUCTWORK, PIPING, EQUIPMENT, DIFFUSERS AND GRILLES, AND PENETRATIONS WITH ALL OTHER TRADES. BEFORE FABRICATION OR INSTALLATION.
6. DUCT SIZES SHOWN REPRESENT CLEAR INSIDE DIMENSIONS.
7. ALL RECTANGULAR DUCT ELBOWS SHALL INCLUDE TURNING VANES.
8. UNLESS NOTED OTHERWISE, DIFFUSER/GRILLE/REGISTER NECK SIZE SHOWN ON DRAWING INDICATES SIZE OF DUCT TO DIFFUSER/REGISTER/GRILLE.
9. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE ORDERING MATERIALS OR PERFORMING WORK. DEVIATIONS FROM CONDITIONS SHOWN ON PLANS SHALL BE REPORTED TO THE A/E AND A RESOLUTION SHALL BE FOUND BEFORE BEGINNING ASSOCIATED WORK. SITE CONDITIONS DIFFERING FROM THOSE SHOWN ON THESE PLANS WILL NOT GENERALLY BE CONSIDERED A BASIS FOR CONTRACT MODIFICATIONS AS THE CONTRACTOR SHALL TAKE INTO ACCOUNT WORST CASE SITE CONDITIONS.
10. UNLESS INDICATED OTHERWISE, BRANCH DUCTWORK TO TERMINAL UNIT SHALL BE SAME SIZE AS TERMINAL UNIT INLET.
11. PROVIDE RETURN BOOT AT ALL UNDUCTED LAY-IN RETURN GRILLES.
12. ALL PENETRATIONS THROUGH FIRE/SMOKE RATED CONSTRUCTION SHALL BE SEALED TO MEET THE REQUIREMENTS OF THE FIRE RATING. PROVIDE FIRE AND/OR SMOKE DAMPERS AT PENETRATIONS PER CODE.
13. VOLUME DAMPERS LOCATED ABOVE HARD CEILINGS SHALL BE INSTALLED WITH CONCEALED DAMPER REGULATOR WITH COVER PLATE.
14. COORDINATE FINAL LOCATION OF PLUMBING FIXTURES WITH ARCHITECTURAL DRAWINGS & GENERAL CONTRACTOR.
15. COORDINATE ROUTING OF DUCTWORK AND PIPING WITH ELECTRICAL EQUIPMENT. DO NOT ROUTE DUCTWORK AND PIPING DIRECTLY OVER THE TOP OF ELECTRICAL PANELBOARDS AND SWITCHBOARDS.
16. PRODUCTS LISTED ON THE SCHEDULE SHEETS ARE TO BE CONSIDERED BASIS OF DESIGN. OTHER MATERIALS MAY BE ALLOWED AS SUBSTITUTIONS PROVIDED THEY MEET OR EXCEED ALL PERFORMANCE/SPECIFICATION CHARACTERISTICS AND RECEIVE APPROVAL FROM THE DESIGN ENGINEER.
17. SCHEDULED VALUES ARE FOR 1000 FT. ELEVATION.
18. NATURAL GAS SHALL BE THE FUEL FOR ALL GAS EQUIPMENT.
19. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES.
20. ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10' FROM EDGE OF ROOF.
21. LOCATE DUCTWORK AND PIPING AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS, TRANSFORMERS, AND OTHER ELECTRICAL EQUIPMENT.
22. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
23. MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE, VISUAL INSPECTION OR HAND OPERATION. WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS.
24. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
25. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.
26. PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT, PLUMBING FIXTURES, AND DIFFUSERS.
27. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS AS REQUIRED.
28. PROVIDE FLEXIBLE CONNECTIONS FOR DUCTWORK CONNECTED TO FANS.
29. LOCATIONS OF ITEMS SHOWN ON DRAWINGS ARE APPROXIMATE. DO NOT SCALE DRAWINGS.
30. PROVIDE VIBRATION ISOLATION TO ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
31. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FEET.
32. THERMOSTATS TO BE LOCATED 48" ABOVE FLOOR.
33. PROVIDE MANUAL VOLUME DAMPERS AND BELL-MOUTH SPIN-IN FITTING FOR ALL DIFFUSER TAKEOFFS FROM MAIN DUCT.
34. SLEEVE AND SEAL EXTERIOR WALL AND ROOF PENETRATIONS TO A WEATHER TIGHT CONDITION. SLEEVE AND SEAL INTERIOR FLOOR PENETRATIONS TO A WATER TIGHT CONDITION.
35. INSTALL MAINS AS HIGH AS POSSIBLE. MANUAL AIR VENTS SHALL BE PROVIDED AT ALL PIPING HIGH POINTS AND END OF PIPING LOOPS. PROVIDE REMOVABLE INSULATION PLUG.
36. ALL PIPING SHALL BE INSTALLED TO FACILITATE COIL REMOVAL, FILTER REPLACEMENT AND OPENING OF ACCESS PANELS.
37. PROVIDE 4" HOUSEKEEPING PAD FOR FLOOR/GRADE MOUNTED EQUIPMENT.
38. PROVIDE ALUMINUM DUCTWORK/GRILLES IN HIGH-HUMIDITY AREAS.

MECHANICAL FLOOR PLAN

SCALE: 1/8" = 1'-0" (36"x24" SHEET)

MECHANICAL KEYNOTES

1. ROUTE DUCT DOWN FROM ROOFTOP UNIT AND TERMINATE OPEN BELOW ROOF. PROVIDE TEMPORARY CAP FOR OPENING.
2. ROUTE EXHAUST DUCT UP THRU ROOF AND TERMINATE WITH GREENHECK KCC-7 ROOF CAP AND INSECT SCREEN. TERMINATE A MIN. 10' FROM OUTSIDE AIR INTAKES.

GENERAL MECHANICAL NOTES

A. CONTRACTOR SHALL INSPECT SITE THOROUGHLY TO FAMILIARIZE THEMSELVES WITH THE AREA OF WORK. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING.
B. COORDINATE DUCTWORK INSTALLATION WITH PLUMBING, ELECTRICAL, FIRE PROTECTION, AND STRUCTURAL CONDITIONS. DUCTWORK LOCATION SHALL TAKE PRECEDENCE OVER PLUMBING/HYDRONIC/FIRE PROTECTION PIPING AND ELECTRICAL CONDUIT/CABLE TRAY.
C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND WORKING SYSTEM.
D. PROVIDE ACCESS PANELS FOR ACCESS TO DAMPERS, ACTUATORS, VALVES, ETC., WHERE LOCATED ABOVE HARD CEILINGS.
E. OUTSIDE AIR OPENINGS SHALL TERMINATE A MIN. OF 10' FROM ALL BUILDING EXHAUST, PLUMBING VENTS, OR OTHER CONTAMINANT SOURCES.

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SUMMIT ORCHARDS

LEES SUMMIT, MO

STATE OF MISSOURI
DANNY VanDOREN
NUMBER PE-2007002846
2-24-25
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PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE TYPE	MINIMUM CONNECTION SIZE			
		WASTE	VENT	DCW	DHW
WC1	WATER CLOSET (ADA)	4"	2"	1/2"	-

1. KOHLER CIMARRON MODEL K-3609
   A. FLUSH TANK
   B. FLOOR MOUNTED
   C. ELONGATED BOWL
   D. VITREOUS CHINA
   E. 1.28 GALLON FLUSH
   F. COLOR WHITE
2. KOHLER LUSTRA TOILET SEAT
   A. ELONGATED
   B. OPEN FRONT
   C. SOLID PLASTIC
   D. HEAVY DUTY
   E. COLOR WHITE
   F. TOILET SEAT COVER
3. CONTRACTOR SHALL FURNISH AND INSTALL FIXTURE PER CURRENT ADA REQUIREMENTS

L1	LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"

1. AMERICAN STANDARD LUCERNE 0355.12
   A. 20"x18"
   B. WALL HUNG
   C. VITREOUS CHINA
   D. COLOR WHITE
   E. OVERFLOW DRAIN
   F. WALL CARRIER
2. SLOAN OPTIMA EBF-650
   A. BATTERY OPERATED SENSOR
   B. CHROME PLATED
   C. 0.5 GPM AERATOR
   D. THERMOSTATIC MIXING VALVE
3. TRUEBRO "LAV SHIELD"

FURNISH & INSTALL PER ADA REQUIREMENTS COMPLETE WITH SOLID BRASS STOPS/STEMS AND CHLORAMINE-CHLORINE RESISTANT WASHERS AND BRAIDED STAINLESS STEEL CONNECTORS. CAST BRASS SOLID TOP OPEN GRID P.O. PLUG WITH 6" 17 GAUGE TAILPIECE WITH CAST BRASS LOCKNUT. HEAVY CAST BRASS ADJUSTABLE P-TRAP W/ 17 GA TUBULAR WALL BEND & BRASS SLIP NUTS. (ALL BRASS MATERIALS SHALL BE CHROME PLATED)

WH	WALL HYDRANT	-	-	3/4"	-

1. WOODFORD B65
   A. 3/4" LOOSE KEY FREEZELESS HYDRANT
   B. INTEGRAL ANTI-SIPHON VACUUM BREAKER-BACKFLOW PREVENTER
   C. 3/4" HOSE THREAD OUTLET
   D. ALUMINUM BOX AND DOOR
   E. LOOSE KEY FOR HYDRANT OPERATION
   F. CONTRACTOR TO VERIFY WALL THICKNESS PRIOR TO ORDERING WALL HYDRANT.

BFP3	BACKFLOW PREV.	-	-	1"	-

1. WATTS LF909
   A. 1" FOR DOMESTIC WATER ENTRY
   B. CAST COPPER SILICON BODY
   C. CAST COPPER SILICON TEST COCKS
   D. BRONZE STRAINER
   E. SILICON RUBBER DISCS
   F. MODEL 919AG AIR GAP FITTING
   G. PROVIDE DRAIN PIPE FROM AIR GAP FITTING TO FLOOR DRAIN WITH 1" AIR GAP AT FLOOR DRAIN.

BFP1/2	BACKFLOW PREVENTER	-	-	1-1/2"	-

1. WATTS LF909
   A. 1-1/2" FOR DOMESTIC WATER ENTRY
   B. CAST COPPER SILICON BODY
   C. CAST COPPER SILICON TEST COCKS
   D. BRONZE STRAINER
   E. SILICON RUBBER DISCS
   F. MODEL 919AG AIR GAP FITTING
   G. PROVIDE DRAIN PIPE FROM AIR GAP FITTING TO FLOOR DRAIN WITH 1" AIR GAP AT FLOOR DRAIN.

MARK	FIXTURE TYPE	MINIMUM CONNECTION SIZE			
		WASTE	VENT	DCW	DHW
WCO	WALL CLEANOUT	-	-	-	-

1. J.R. SMITH 4472T-U
   A. CAST BRONZE PLUG
   B. STAINLESS STEEL COVER
   C. VANDAL PROOF SCREW
   D. CLEANOUT TEE
   E. COUNTERSUNK PLUG

FCO	FLOOR CLEANOUT	-	-	-	-

1. J.R. SMITH 4000 SERIES
   A. CAST IRON CONSTRUCTION
   B. INTERNAL TAPER BRONZE PLUG
   C. CAST IRON OR NICKEL BRONZE TOP

PROVIDE SPECIFIC MODEL TO MATCH ASSOCIATED FLOOR TYPE.

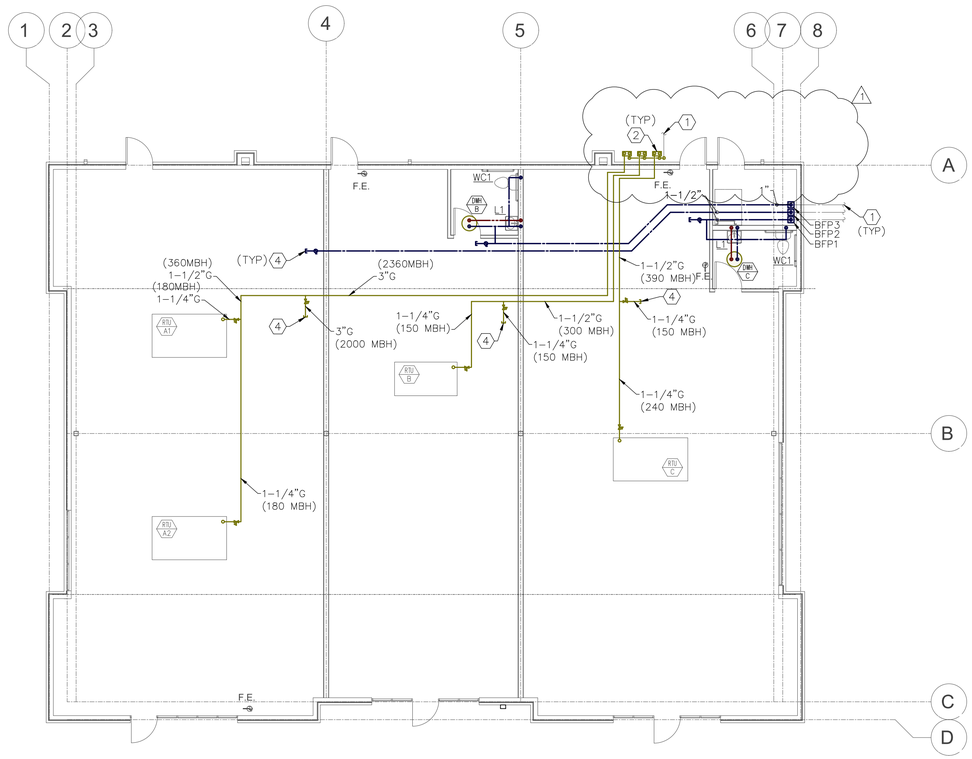
GCO	GRADE CLEANOUT	-	-	-	-

1. J.R. SMITH 4880-U
   A. CAST IRON CONSTRUCTION
   B. SCORIATED CAST IRON COVER
   C. VANDAL PROOF SCREWS

FD	FLOOR DRAIN	2"	-	-	-

1. J.R. SMITH 2005-A-NB
   A. CAST IRON CONSTRUCTION
   B. TWO PIECE BODY WITH FLANGE
   C. NICKEL BRONZE ROUND STRAINER
   D. INVERTABLE NON-PUNCTURING FLASHING COLLAR

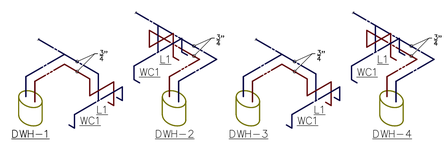
PROVIDE WITH RECTORSEAL SURESEAL SS2009V WATERLESS INLINE DRAIN TRAP SEAL.



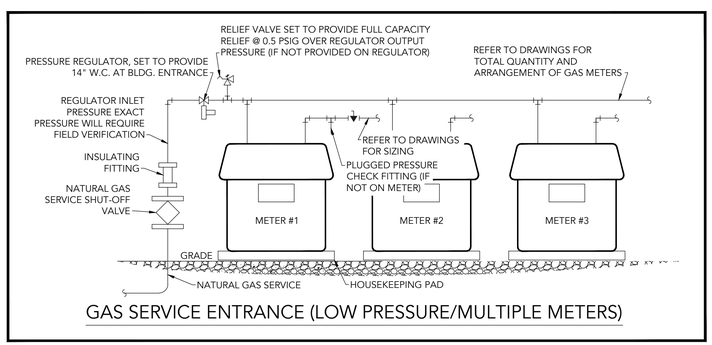
PLUMBING FLOOR PLAN

N

0' 10' SCALE: 1/8" = 1'-0" (36"x24" SHEET)



PLUMBING RISER



GAS SERVICE ENTRANCE (LOW PRESSURE/MULTIPLE METERS)

PLUMBING KEYNOTES

1. REFER TO CIVIL PLANS FOR CONTINUATION.
2. NEW LOW PRESSURE GAS METER. REFER TO NATURAL GAS DETAIL FOR ADDITIONAL INFORMATION.
3. REFER TO IRRIGATION PLANS FOR CONTINUATION.
4. PROVIDE SHUT-OFF VALVE AND CAP FOR FUTURE CONNECTION.

GENERAL PLUMBING NOTES

A. LOCATIONS, SIZES, AND QUANTITIES OF EXISTING EQUIPMENT AND PIPING ARE ESTIMATED, FIELD VERIFY EXACT LOCATIONS, SIZES, AND QUANTITIES BEFORE COMMENCING WORK. DEVIATIONS FROM CONDITIONS SHOWN ON THESE PLANS SHALL BE REPORTED TO THE ARCHITECT AND ENGINEER.
B. PLUMBING INSTALLATIONS SHALL CONFORM TO LOCAL CODES.
C. CONSULT WITH OWNER FOR CONNECTIONS TO ANY OWNER FURNISHED EQUIPMENT.
D. PROVIDE WATER HAMMER ARRESTORS ON ALL RUNS WITH QUICK CLOSING VALVES. PROVIDE ACCESS PANELS FOR ALL VALVES AND WATER HAMMER ARRESTORS.
E. PROVIDE BALL VALVE FOR ISOLATION OF ALL DOMESTIC WATER BRANCH LINES UNLESS OTHERWISE NOTED.
F. SEE RISER DIAGRAMS FOR PIPE SIZING.

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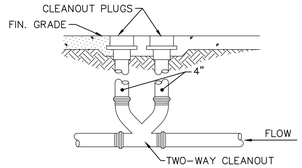
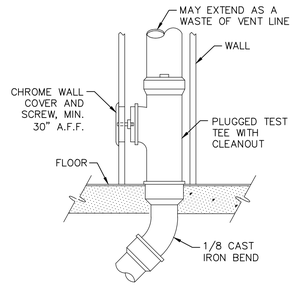
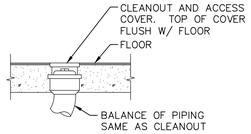


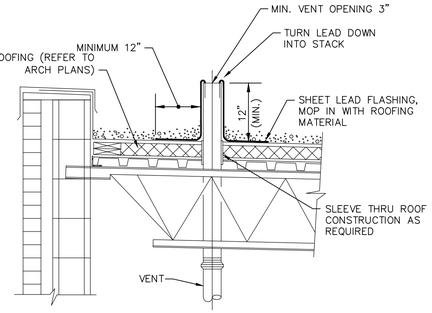
2-WAY GRADE CLEANOUT (GCO)



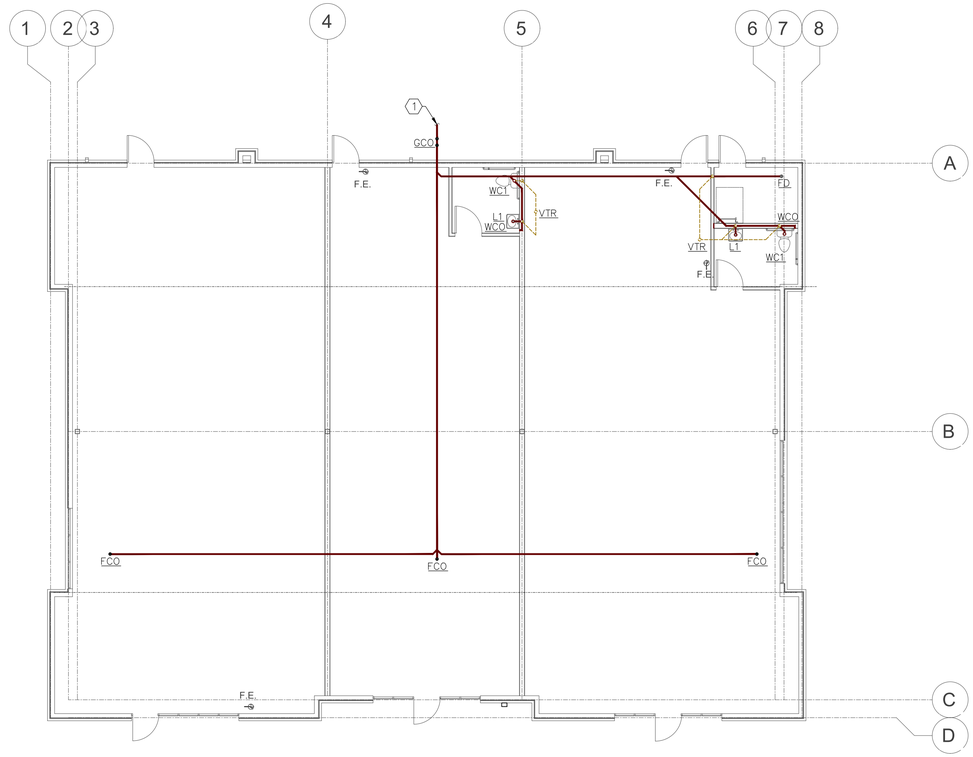
WALL CLEANOUT (WCO)



FLOOR CLEANOUT (FCO)

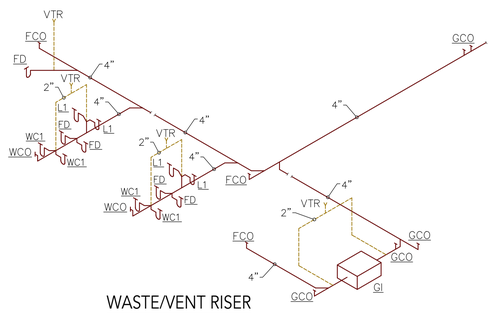


VENT THRU ROOF DETAIL



WASTE/VENT FLOOR PLAN

SCALE: 1/8" = 1'-0" (36"x24" SHEET)



WASTE/VENT RISER

WASTE/VENT KEYNOTES

1. REFER TO CIVIL PLANS FOR CONTINUATION.

GENERAL WASTE/VENT NOTES

A. CONTRACTOR SHALL INSPECT SITE THOROUGHLY TO FAMILIARIZE THEMSELVES WITH THE AREA OF WORK. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO PRICING.
B. ABOVE-GRADE WASTE PIPE SHALL BE RUN AT 2% GRADE. BELOW-GRADE WASTE PIPE SHALL BE RUN AT 1% GRADE UNLESS NOTED OTHERWISE OR DICTATED BY CODE.
C. ALL CONDENSATE DRAIN PIPE SHALL BE RUN AT 1% GRADE.
D. ROUTE ALL PIPING INTENDED FOR ABOVE CEILING LEVEL INSTALLATION AS HIGH AS POSSIBLE. COORDINATE ROUTING WITH OTHER TRADES. SLOPED PIPING ELEVATIONS TAKE PRIORITY OVER ALL OTHER SYSTEMS AND TRADES.
E. FIELD VERIFY LOCATION AND INVERTS OF SITE UTILITIES PRIOR TO INSTALLATION.
F. PLUMBING VENTS SHALL TERMINATE A MIN. 10' FROM ALL OUTSIDE AIR INTAKES (OR EXTENDED A MIN. 3' ABOVE INTAKE).
G. PROVIDE DRAIN TEMPERING VALVE FOR ANY WASTE WATER ABOVE 150°F.
H. SEE RISER DIAGRAMS FOR PIPE SIZING.

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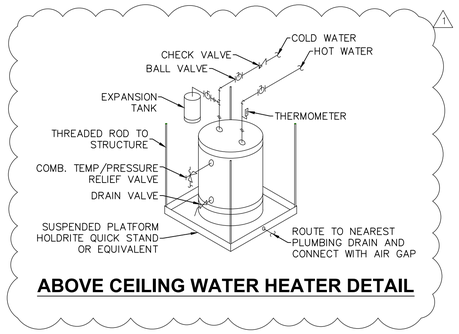
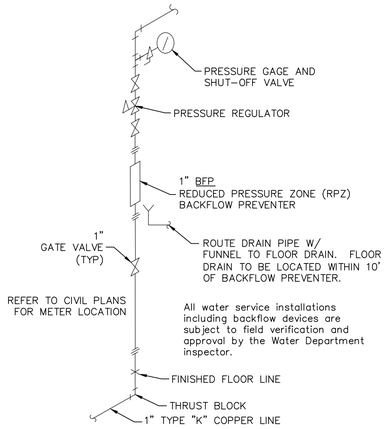
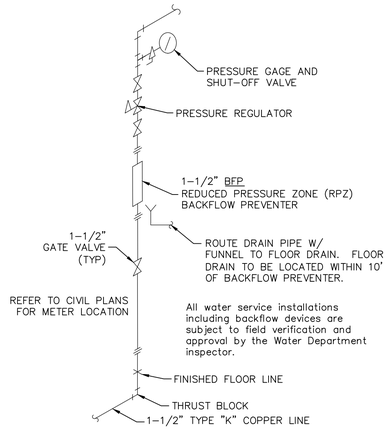


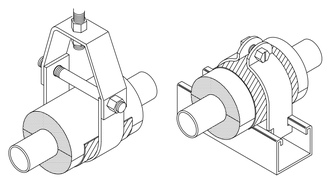
ABOVE CEILING WATER HEATER DETAIL



WATER SERVICE ENTRANCE DETAIL (1" ENTRANCE)

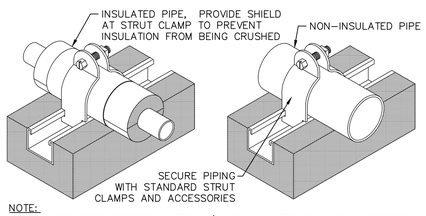


WATER SERVICE ENTRANCE DETAIL (1-1/2" ENTRANCE)



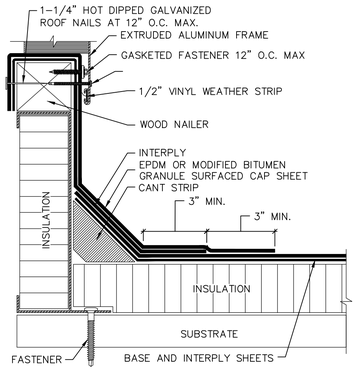
PROVIDE AND INSTALL B-LINE OR APPROVED EQUAL, HYDROUS CALCIUM SILICATE INSULATION WITH PRE-GALVANIZED STEEL JACKET AT HANGER, STRUT MOUNTED CLAMP, AND PIPE SUPPORT LOCATIONS.

PIPE SUPPORT INSULATION DETAILS

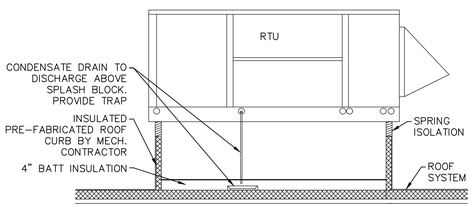


NOTE:
INSTALL PIPE PIER SUPPORT EVERY 15' AND AT EVERY CHANGE IN DIRECTION. DO NOT SECURE TO ROOF. THE SUPPORT SHALL REST FREELY ON THE ROOF. SIZE EACH SUPPORT PER MANUFACTURER'S RECOMMENDATIONS.

ROOF PIPE SUPPORT DETAIL



ROOFTOP UNIT CURB DETAIL



ROOFTOP UNIT DETAIL

ROOFTOP UNIT SCHEDULE

MARK	TOTAL CFM	OA CFM	ESP (IN)	COOLING CAP. (MBH)			HEATING CAP. (MBH)		MIN EER/SEER	ELECTRICAL DATA				WEIGHT (LBS)	MANUFACTURER & MODEL NO.	REMARKS
				EAT (F) DB/WB	TOTAL	SENSIBLE	INPUT	OUTPUT		VOLTAGE	HP	MCA	MOCP			
RTU-A1	3000	600	0.75	80/67	93.0	74.4	180	146	12.3/15.7	208/3	3.75	43	50	1440	LENNOX LGT092	1,2,3,4,5,6,7,8,10,12,14
RTU-A2	3000	600	0.75	80/67	93.0	74.4	180	146	12.3/15.7	208/3	3.75	43	50	1440	LENNOX LGT092	1,2,3,4,5,6,7,8,10,12,14
RTU-B	2000	400	0.75	80/67	60.9	48.7	150	121	12.7/17.1	208/3	1.5	28	40	1070	LENNOX LGT060	1,2,3,4,5,6,7,8,12
RTU-C	5000	1000	0.75	80/67	141.0	112.8	240	194	10.8/14.6	208/3	3.75	64	80	1440	LENNOX LGT150	1,2,3,4,5,6,7,8,10,12,14

1. LISTED CAPACITIES AT 1000 FT ELEVATION, AND 95°F AMBIENT TEMPERATURE.
2. FURNISH WITH FACTORY INSTALLED DISCONNECT SWITCH.
3. REFRIGERANT TYPE R410A.
4. LISTED WEIGHT INCLUDES ROOF CURB.
5. PROVIDE NEW PROGRAMMABLE THERMOSTAT.
6. PROVIDE WITH HAIL GUARDS.
7. PROVIDE WITH HOT GAS REHEAT HUMIDITY CONTROL.
8. PROVIDE ECONOMIZER WITH DRY BULB CONTROL AND POWERED RELIEF.
9. PROVIDE ECONOMIZER WITH DRY BULB CONTROL AND BAROMETRIC RELIEF.
10. PROVIDE DEMAND CONTROL VENTILATION CONTROLS. LISTED MAX OA CFM IS SHALL BE UPPER SETPOINT, WHILE NOT IN ECONOMIZER, WHEN CO2 LEVELS ARE AT 800PPM OR HIGHER.
11. PROVIDE WITH UV-C LAMP OR GPS PLASMA AIR PURIFIER.
12. PROVIDE SMOKE DETECTORS IN SUPPLY AND RETURN DUCTWORK. DETECTOR IS TO BE PRE-WIRED TO SHUTDOWN THE FAN MOTOR UPON ACTIVATION. COORDINATE ANY REQUIRED INTERLOCKS AND INTERFACE WITH THE BUILDING FIRE ALARM SYSTEM. PROVIDE ALL REQUIRED SERVICE ACCESS TO NEW SMOKE DETECTOR PER CODE.
13. CONNECT TO EXISTING ELECTRICAL CONNECTION. FIELD VERIFY THAT CIRCUIT BREAKER AND BRANCH CIRCUIT CONDUCTOR SIZE ARE SUFFICIENT FOR NEW UNIT OR UPGRADE AS REQUIRED.
14. PROVIDE VARIABLE FAN SPEED THAT IS AUTOMATICALLY CONTROLLED BY HEATING/COOLING DEMAND.

EXHAUST FAN SCHEDULE

MARK	TYPE	MAKE & MODEL	CFM	E.S.P. (IN. WC.)	MAX SONES	DRIVE	ELEC. CHAR.		REMARKS
							VOLTAGE	HP	
EF-B/C	CEILING	GREENHECK SP-A110	75	0.3	8	DIRECT	120/1	17.6 W	1,2,3,4,5

1. LISTED CAPACITIES AT SEA LEVEL.
2. PROVIDE WITH FACTORY MOUNTED DISCONNECT SWITCH.
3. FAN SHALL BE INTERLOCKED WITH LIGHT SWITCH.
4. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
5. PROVIDE WITH 7"Ø ROOF CAP, GREENHECK RCC-7 OR EQUIVALENT, WITH CURB AND INSECT SCREEN.

WATER HEATER (ELECTRIC)

MARK	MAKE & MODEL	HTG. INPUT (KW)	RECOVERY @90F (GPH)	TEMP. RISE (F)	STORAGE (GAL)	ELECTRICAL	REMARKS
DWH-B	AO SMITH - EJC6	3	8	90	6	240V	1,2,3,4,5
DWH-C	AO SMITH - EJC6	3	8	90	6	240V	1,2,3,4,5

1. PROVDE DISCONNECT SWITCH.
2. PROVIDE WITH HEAT TRAP FITTINGS ON COLD AND HOT WATER PIPING CONNECTIONS.
3. FURNISH WITH AMTROL MODEL ST-12 THERMAL EXPANSION TANK, ET-1.
4. PROVIDE T&P VALVE.
5. SET WATER HEATER OUTLET TEMPERATURE AT 110°F.

ELECTRIC UNIT HEATER SCHEDULE

MARK	MOUNTING	MFR.	MODEL	CFM	CAPACITY (KW)	ELECTRICAL		REMARKS
						VOLTAGE	AMPS	
UH-1	UNIT HEATER	MARKEL	F1F5103N	400	3.3	208/1	15.9	1,2,3

1. FURNISH WITH INTEGRAL THERMOSTAT.
2. FURNISH WITH FACTORY MOUNTED DISCONNECT SWITCH.
3. FURNISH WITH WALL/CEILING BRACKET.

Ventilation Spreadsheet (2018 IMC Table 403.3)

Zone	Room	Use/Classification	Area	People	CFM/ Person	CFM/ SF	Ventilation Effectiveness	OA
Tenant A	Tenant Space	Dining Rooms	1072	36	7.5	0.18	80%	463
	Tenant Space	Kitchen	700	6	7.5	0.12	80%	129
							Outdoor Air Required	592
							Outdoor Air Provided	2200
Tenant B	Tenant Space	Retail Sales	1249	19	7.5	0.12	80%	290
							Outdoor Air Required	290
							Outdoor Air Provided	440
Tenant C	Tenant Space	Retail Sales	1793	27	7.5	0.12	80%	417
							Outdoor Air Required	417
							Outdoor Air Provided	440

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MO Cert. of Authority - LC1388064

NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

STATE OF MISSOURI
DANNY VanDOREN
NUMBER PE-2007002846
2-24-25
PROFESSIONAL ENGINEER

No.	Description	Date
	Revision Schedule	
1	7-2-25 REVISION	

Project number 2491
Date 05.08.2025

MP200

SPECIFICATIONS

GENERAL

1. FOR ITEMS NOT COVERED BY THIS SPECIFICATION, REFER TO LATEST VERSION OF MASTERSPEC FOR REQUIREMENTS.
2. COORDINATION OF WORK: THE ELECTRICAL CONTRACTOR SHALL PLAN ALL WORK SUCH THAT IT PROCEEDS WITH A MINIMUM OF INTERFERENCE WITH OTHER TRADES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE INSTALLATION OF WORK WITH LIGHTING PLANS, REFLECTED CEILING PLANS, STRUCTURAL, AND ALL OTHER TRADES. THE INSTALLATION OF ALL EQUIPMENT, DEVICES AND MATERIALS REQUIRING ACCESS SHALL BE MADE IN SUCH A MANNER AS TO MAKE THE EQUIPMENT, DEVICES AND MATERIALS READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIRS.
3. SUBSTITUTIONS FOR MATERIAL SPECIFIED: MATERIAL AND ITEMS OF EQUIPMENT FURNISHED MUST MEET THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AS TO QUALITY, PERFORMANCE, SUITABILITY, AND APPEARANCE. THIS IS AN "OR EQUAL" SPECIFICATION. ALTERNATE MATERIALS AND EQUIPMENT MAY BE SUPPLIED SIMILAR OR EQUAL TO THE PRODUCT OF THE MANUFACTURER SPECIFIED, GIVEN PRIOR APPROVAL OF THE DESIGN ENGINEER, AND SHALL BE SUPPLIED AT NO ADDITIONAL COST.
4. ALL MATERIALS SHALL BE NEW, UNUSED, AND THE BEST OF THEIR RESPECTIVE KINDS AND FREE OF DEFECTS.
5. DRAWINGS ARE DIAGRAMMATIC ONLY, INTENDING TO SHOW GENERAL ROUTING AND LOCATIONS OF THE WORK AND ARE NOT INTENDED TO BE RIGID IN SPECIFIC DETAIL.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXAMINING THE SITE IN RELATION TO THEIR WORK PRIOR TO INSTALLATION. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR LACK OF COORDINATION DURING THE COURSE OF THIS CONTRACT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL MEASUREMENTS AT THE SITE.
8. ALL WORK WITHIN THE CONTRACT AREA FURNISHED AND INSTALLED UNDER THE CONTRACT SHALL BE CLEANED TO THE SATISFACTION OF THE OWNER PRIOR TO TURNING OVER TO THE OWNER.
9. CONNECT NEW WORK TO EXISTING IN A NEAT AND WORKMAN LIKE MANNER.
10. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, CONDUIT, AND EQUIPMENT.

ELECTRICAL

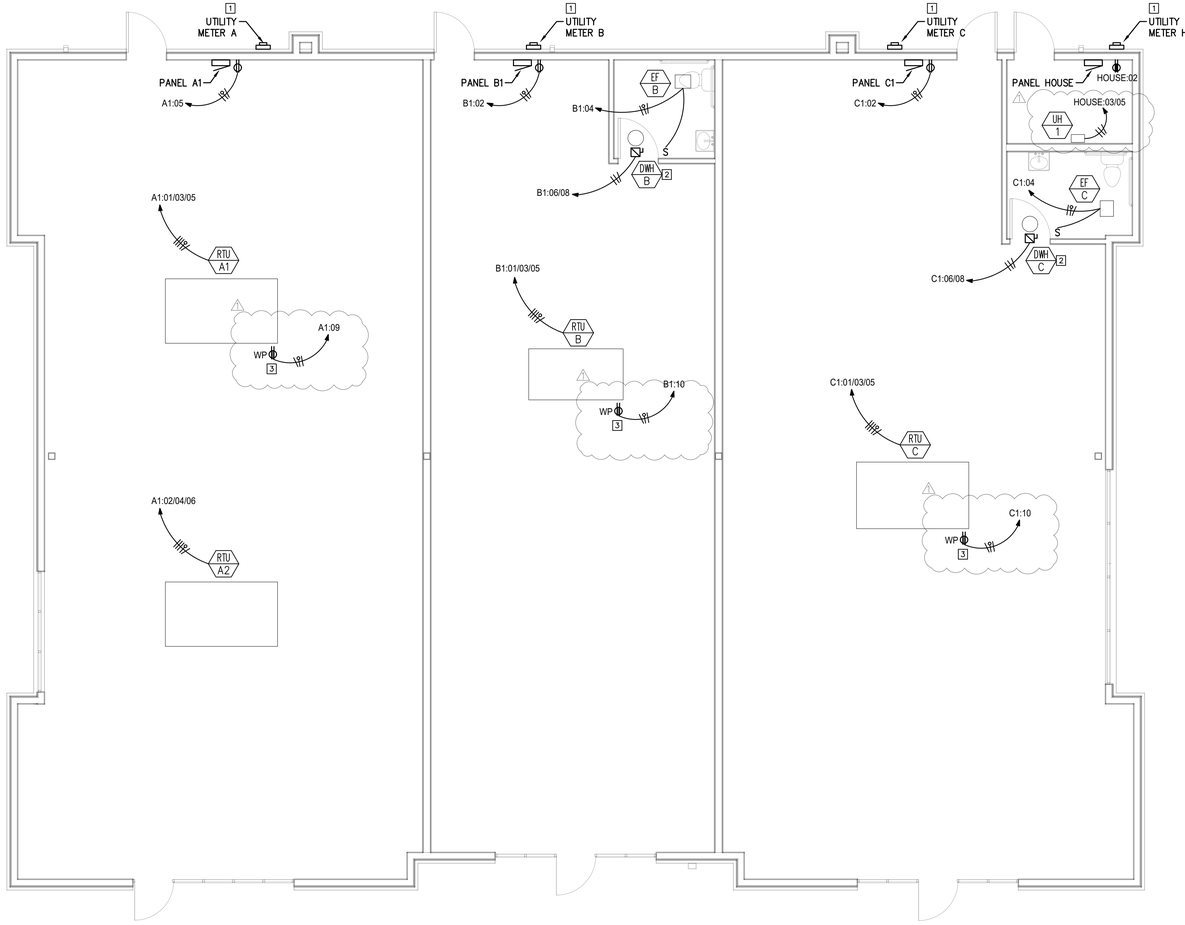
1. GENERAL:
   - A. CODES AND PERMITS: ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL AND STATE CODES AND UTILITY COMPANY REGULATIONS. ALL FEES AND PERMITS SHALL BE PAID FOR BY THE CONTRACTOR.
   - B. WORKMANSHIP: ALL MATERIALS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE OF THE INDUSTRY.
   - C. PROVIDE ACCESS PANELS IN HARD CEILINGS BELOW EQUIPMENT THAT REQUIRES ACCESS.
   - D. FIELD VERIFY AVAILABLE SPACE ABOVE CEILING BEFORE FABRICATION AND INSTALLATION OF DUCTWORK.
   - E. REFER TO ARCHITECTURAL PLANS AND INTERIOR ELEVATIONS FOR FINAL RECEPTACLE AND DEVICE PLACEMENT. COORDINATE ALL RECEPTACLE MOUNTING LOCATIONS WITH FIXTURES, APPLIANCES, FURNITURE, CABINETRY, AND OTHER EQUIPMENT PRIOR TO ROUGH-IN.
   - F. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR CIRCUIT, DISCONNECT, AND CONDUCTORS FOR MECHANICAL EQUIPMENT.
   - G. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR FIELD COORDINATING THE LOCATION OF ELECTRICAL EQUIPMENT, JUNCTION BOXES, DISCONNECTS, ETC. EC SHALL BE RESPONSIBLE FOR COORDINATION AND THE ROUTING OF FEEDERS, AND BRANCH CIRCUITS. COORDINATE POWER CONNECTIONS FOR OWNER-PROVIDED EQUIPMENT AND APPLIANCES, AND ALL OTHER EQUIPMENT PROVIDED BY OTHER DIVISIONS WITH SUBMITTAL DATA CUT SHEETS, WIRING DIAGRAMS, AND MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
   - H. FIELD COORDINATE FINAL LOCATIONS OF EQUIPMENT AND POWER CONNECTIONS WITH GENERAL CONTRACTOR AND OTHER DIVISIONS/CONTRACTORS PRIOR TO ROUGH-IN.
   - I. PROVIDE READILY ACCESSIBLE GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR RECEPTACLES FOR APPLIANCES LISTED AND IN LOCATIONS REQUIRED IN NEC 210.8.
   - J. ELECTRICAL CONTRACTOR SHALL SIZE BRANCH CIRCUIT WIRING TO ACCOMMODATE FOR VOLTAGE DROP.
2. LIGHTING:
   - A. CIRCUIT ALL EMERGENCY LIGHTING AND EXIT SIGNS TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF LOCAL SWITCH LEG.
   - B. LIGHT FIXTURES THAT APPEAR TO BE CENTERED IN A SPACE OR CEILING PANEL SHALL BE CENTERED UNLESS OTHERWISE NOTED.
   - C. CONTRACTOR IS RESPONSIBLE FOR PROVIDING MOUNTING HARDWARE AND TRIMS REQUIRED FOR INSTALLING ALL LIGHT FIXTURES.
   - D. VERIFY ALL CEILING FINISHES, CEILING TYPES, AND CEILING THICKNESS PRIOR TO FINAL FIXTURE PURCHASE AND PROCUREMENT.
   - E. ALL CONDUIT SHALL BE CONCEALED IN WALLS, FLOOR SLAB, OR ABOVE CEILING, WHERE POSSIBLE. ROUTE CONDUIT AS CLOSE TO STRUCTURAL SLAB OR DECK AS POSSIBLE, AND SUPPORT CONDUIT AND JUNCTION BOXES DIRECTLY FROM THE STRUCTURAL SLAB, DECK OR FRAMING PROVIDED FOR THAT PURPOSE.
   - F. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF ALL EXPOSED CONDUIT WITH ARCHITECT PRIOR TO ROUGH-IN.
   - G. REFER TO ARCHITECTURAL AND INTERIORS PACKAGE FOR FIXTURE INSTALLATION REQUIREMENTS, INCLUDING MOUNTING HEIGHTS AND MILLWORK DETAILS.
   - H. INTERRUPT POWER SUPPLY TO DEMONSTRATE PROPER OPERATION OF ALL EMERGENCY LIGHTING PRIOR TO JOB COMPLETION.
   - I. ALL DIMMED LIGHTING CIRCUITS ARE TO RECEIVE DEDICATED NEUTRALS. DO NOT SHARE NEUTRALS ON DIMMED LIGHTING CIRCUITS.
   - J. CONTRACTOR TO PROVIDE OWNER WITH A COMPLETE LISTING OF ALL LAMPS UTILIZED ON THE PROJECT INCLUDING MANUFACTURER AND CATALOG INFORMATION. PROVIDE A SUGGESTED SOURCE, INCLUDING CONTACT NAME AND PHONE NUMBER, FOR RE-ORDERING.
   - K. ALL LIGHT SWITCHES SHALL BE SPECIFICATION GRADE, QUIET OPERATION RATED 120/277VOLT, 20 AMPS, UNLESS OTHERWISE NOTED.
   - L. ALL CONCEALED FIXTURES AND ASSOCIATED WIRING MUST BE CONCEALED FROM VIEW.
   - M. FOR TRACK LIGHTING FIXTURES AND LINEAR LED SYSTEMS, ELECTRICAL CONTRACTOR MUST PROVIDE ALL NECESSARY COMPONENTS FOR A FULLY FUNCTIONING SYSTEM.
   - N. EXIT SIGNS SHALL HAVE INTEGRAL EMERGENCY BATTERY BACK-UP.
   - O. PROVIDE LUMINAIRES SHOWN WITH EM INDICATOR WITH EMERGENCY BATTERY BALLASTS/DRIVERS.
   - P. EMERGENCY LUMINAIRES SHALL SENSE UNSWITCHED POWER TO THE SPACE AND OPERATE AUTOMATICALLY UPON LOSS OF NORMAL POWER.
   - Q. ALL EMERGENCY LUMINAIRES SHALL HAVE ONE (1) 90 MINUTE EMERGENCY BALLAST.
   - R. ALL EMERGENCY LUMINAIRES SHALL HAVE INTEGRAL TEST SWITCHES AND VISIBLE INDICATING LIGHTS. CONNECT THE EMERGENCY BATTERY BALLAST TO THE UN-SWITCHED LEG OF THE LIGHTING CIRCUIT INDICATED.

LEGEND

SYMBOL	DESCRIPTION
	DEMOLITION
	20 AMP, 120V, NEMA 5-20R, DUPLEX RECEPTACLE
	20 AMP, 120V, NEMA 5-20R, QUAD RECEPTACLE
	20 AMP, 120V, GFCI RECEPTACLE
	50 AMP, 240V, SIMPLEX RECEPTACLE
	20 AMP, 120V, DEDICATED DUPLEX RECEPTACLE
	UTILITY METER
	DISCONNECT SWITCH, NON-FUSED, 250V, U.N.O.
	FUSED DISCONNECT, SEE NOTATION
J	JUNCTION BOX, WALL MOUNTED
J	JUNCTION BOX, CEILING MOUNTED
T	TRANSFORMER
	SURFACE MOUNTED ELECTRICAL PANEL
	RECESSED ELECTRICAL PANEL
	SURFACE-MOUNTED DOWNLIGHT
	WALL-MOUNTED LUMINAIRE
	EXIT SIGN. DIRECTIONAL ARROWS SHOW DIRECTION
	EMERGENCY LIGHT FIXTURE
OS	CEILING-MOUNTED OCCUPANCY SENSOR
S	SINGLE POLE SWITCH
S_3	THREE WAY SWITCH
S_{OS}	SWITCH: OCCUPANCY SENSOR
S_D	SWITCH: COMPATIBLE DIMMER
	2' X 4' LUMINAIRE, DIAGONAL INDICATES EM FUNCTION
A 40W b	LUMINAIRE TYPE (REFERENCE LUMINAIRE SCHEDULE) WATTAGE, IF SHOWN, REFERENCES ADJUSTABLE OUTPUT LOWER CASE ID, IF SHOWN, REF. WALL SWITCH/CONTROL
ID BUS RATING	SLD: ELECTRICAL PANEL
	SLD: TRANSFORMER, RATING AS SHOWN
M	SLD: METER
	SLD: CURRENT TRANSFORMER
3P 200A	SLD: SWITCH, RATING AS SHOWN
3P 200A	SLD: CIRCUIT BREAKER, RATING AS SHOWN
	SLD: SAFETY SWITCH, NON-FUSED, 250V, U.N.O.
	SLD: FUSED DISCONNECT
EQP 1	EQUIPMENT TAG
XX: YY	CIRCUIT HOMERUN – PANEL NAME: CIRCUIT NUMBER
	CONDUIT AND WIRE CONCEALED U.N.O.
	CONDUIT AND WIRE BELOW GRADE
	STRAIGHT HASH MARKS: CURRENT-CARRYING CONDUCTORS EMPTY DOT: GROUNDED CONDUCTOR (NEUTRAL) ANGLED HASH: EQUIPMENT GROUNDING CONDUCTOR
1	KEY NOTE DESIGNATOR
	CONTINUED, BUT NOT SHOWN

GENERAL NOTES

1. THE FOLLOWING NOTES APPLY TO ELECTRICAL DRAWINGS TO THE EXTENT APPLICABLE.
2. NOT ALL CONDUCTORS, CONDUIT, EQUIPMENT, AND ACCESSORIES ARE SHOWN ON PLANS. REFER TO ALL PLANS, SECTION, DETAILS, SCHEDULES, AND SPECIFICATIONS FOR COMPLETE SYSTEM REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE ALL REQUIRED OFFSETS, TRANSITIONS, AND FITTINGS TO COMPLETE THE SYSTEMS.
4. MANY AREAS OF CONSTRUCTION WILL BE VERY CONGESTED. INSTALLATION OF MATERIALS AND EQUIPMENT SHALL BE COORDINATED WITH ALL OTHER TRADES AND EXISTING CONDITIONS TO ENSURE THAT THERE IS ADEQUATE ROOM FOR ALL OTHER MATERIALS AND EQUIPMENT TO BE INSTALLED UNDER THIS CONTRACT. INSTALLATION OF MATERIALS AND EQUIPMENT WHICH DOES NOT ALLOW FOR INSTALLATION OF REMAINING MATERIALS AND EQUIPMENT WILL BE REMOVED AND RELOCATED AT NO COST TO THE OWNER OR DESIGN TEAM.
5. COORDINATE LOCATION OF ALL CONDUIT, EQUIPMENT, LUMINAIRES, SWITCHES, AND ACCESSORIES WITH ALL OTHER TRADES BEFORE FABRICATION OR INSTALLATION.
6. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE ORDERING MATERIALS OR PERFORMING WORK. DEVIATIONS FROM CONDITIONS SHOWN ON PLANS SHALL BE REPORTED TO THE A/E AND A RESOLUTION SHALL BE FOUND BEFORE BEGINNING ASSOCIATED WORK. SITE CONDITIONS DIFFERING FROM THOSE SHOWN ON THESE PLANS WILL NOT GENERALLY BE CONSIDERED A BASIS FOR CONTRACT MODIFICATIONS AS THE CONTRACTOR SHALL TAKE INTO ACCOUNT WORST CASE SITE CONDITIONS.\,\
7. UNLESS INDICATED OTHERWISE, BRANCH CIRCUITS ARE SINGLE-POLE, 120V, 20A.
8. ALL PENETRATIONS THROUGH FIRE/SMOKE RATED CONSTRUCTION SHALL BE SEALED TO MEET THE REQUIREMENTS OF THE FIRE RATING. PROVIDE FIRE AND/OR SMOKE DAMPERS AT PENETRATIONS PER CODE.
9. PRODUCTS LISTED ON THE SCHEDULE SHEETS ARE TO BE CONSIDERED BASIS OF DESIGN. OTHER MATERIALS MAY BE ALLOWED AS SUBSTITUTIONS PROVIDED THEY MEET OR EXCEED ALL PERFORMANCE/SPECIFICATION CHARACTERISTICS AND RECEIVE APPROVAL FROM THE DESIGN ENGINEER.
10. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES.
11. ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10' FROM EDGE OF ROOF.
12. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
13. MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE, VISUAL INSPECTION OR HAND OPERATION. WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS.
14. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
15. INSTALL EXPOSED PIPING AND CONDUIT AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.
16. PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT.
17. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS AS REQUIRED.
18. PROVIDE LIQUIDTITE OR FLEXIBLE METAL CONDUIT FOR CIRCUITS CONNECTED TO VIBRATING EQUIPMENT.
19. LOCATIONS OF ITEMS SHOWN ON DRAWINGS ARE APPROXIMATE. DO NOT SCALE DRAWINGS.
21. RUNS OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6 FEET.
22. HVAC CIRCUITS SHALL PENETRATE THE ROOF INSIDE THE EQUIPMENT CURB IF POSSIBLE.
23. SLEEVE AND SEAL EXTERIOR WALL AND ROOF PENETRATIONS TO A WEATHER TIGHT CONDITION. SLEEVE AND SEAL INTERIOR FLOOR PENETRATIONS TO A WATER TIGHT CONDITION.
24. PROVIDE 4" HOUSEKEEPING PAD FOR FLOOR/GRADE MOUNTED EQUIPMENT.



N ELECTRICAL FLOOR PLAN

SCALE: 3/16" = 1'-0" (36"x24" SHEET)

ELECTRICAL POWER KEYNOTES

1. CONSULT LOCAL UTILITY FOR METER CAN REQUIREMENTS.
2. DWH AND DISCONNECT MOUNTED OVERHEAD.
3. INSTALL WEATHERPROOF GFCI RECEPTACLE FOR HVAC EQUIPMENT MAINTENANCE PER NEC 210.63.

GENERAL POWER NOTES

A. CONTRACTOR SHALL INSPECT SITE THOROUGHLY TO FAMILIARIZE THEMSELVES WITH THE AREA OF WORK. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE GC/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING.

B. COORDINATE EQUIPMENT INSTALLATION WITH PLUMBING, MECHANICAL, FIRE PROTECTION, AND STRUCTURAL CONDITIONS. DUCTWORK AND REFRIGERATION LINE LOCATIONS SHALL TAKE PRECEDENCE OVER ELECTRICAL CONDUIT/CABLE TRAYS.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND WORKING SYSTEM.

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NEW BUILDING FOR

SUMMIT ORCHARDS

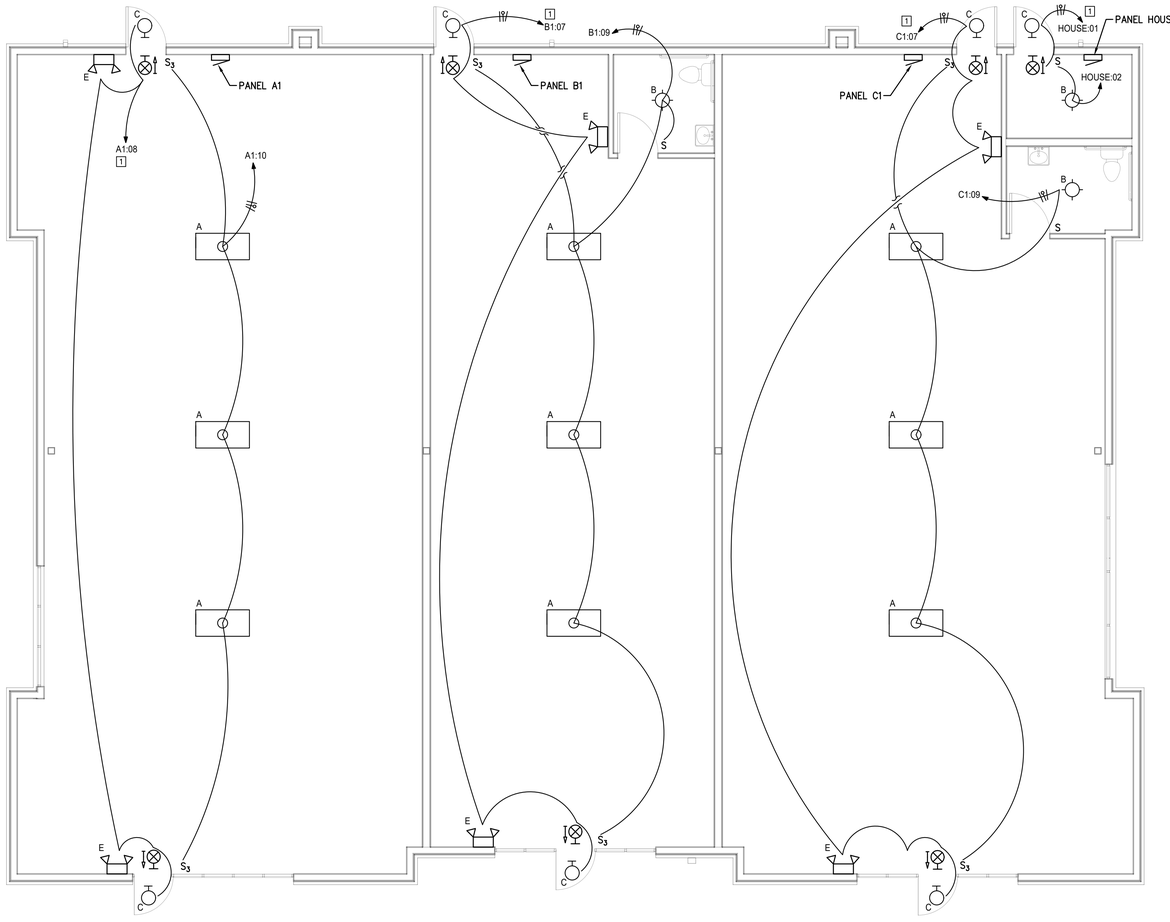
LEES SUMMIT, MO

STATE OF MISSOURI
NICHOLAS PEDERSEN
7/8/2025
NUMBER PE-2013019095
PROFESSIONAL ENGINEER

No.	Description	Date
	Revision Schedule	
⚠	7-2-25 REVISION	

Project number	2491
Date	05.08.2025

E101



LIGHTING PLAN

SCALE: 3/16" = 1'-0" (36"x24" SHEET)

LIGHTING KEYNOTES

1. INSTALL AS UNSWITCHED CIRCUIT FOR EXIT AND EMERGENCY LIGHTING. EXTERIOR DOOR EGRESS LIGHTING TO BE CONTROLLED BY PHOTOCELL.

GENERAL LIGHTING NOTES

A. CONTRACTOR SHALL INSPECT SITE THOROUGHLY TO FAMILIARIZE THEMSELVES WITH THE AREA OF WORK. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE GC/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING.

B. COORDINATE EQUIPMENT INSTALLATION WITH PLUMBING, MECHANICAL, FIRE PROTECTION, AND STRUCTURAL CONDITIONS. DUCTWORK AND REFRIGERATION LINE LOCATIONS SHALL TAKE PRECEDENCE OVER ELECTRICAL CONDUIT/CABLE TRAYS.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND WORKING SYSTEM.

LIGHTING SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	LUMENS	WATTS	CCT	REQUIRED ACCESSORIES
A	2X4' RECESSED LED - HIGH OUTPUT	RAB	EZPANFA2X4/D10	6,104	50W	4000K	NONE
B	SURFACE-MOUNT CEILING LIGHT	RAB	CRVFAS-11R-16-9CCT-120-W	1,150	16W	4000K	NONE
C	EXTERIOR DOOR LIGHT	INVUE	*ENT-SA1A-740-U-T4FT-BZ-EBP/BPC	1,924	20.1W	4000K	EBP = BATTERY PACK; BPC = PHOTOCELL
E	EMERGENCY LIGHT	ISOLITE	ELP-6V100-WH-MB-2-L66	N/A	100W	N/A	MR16 LAMP
X	RED LED EXIT SIGN	DUAL-LITE	EVEURWE	N/A	2.01W	N/A	NONE

*INCLUDES BUTTON-TYPE PHOTOCELL AND BATTERY PACK. SUBSTITUTIONS REQUIRE INTEGRAL PHOTOCELL AND BATTERY PACK.

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Project number 2491
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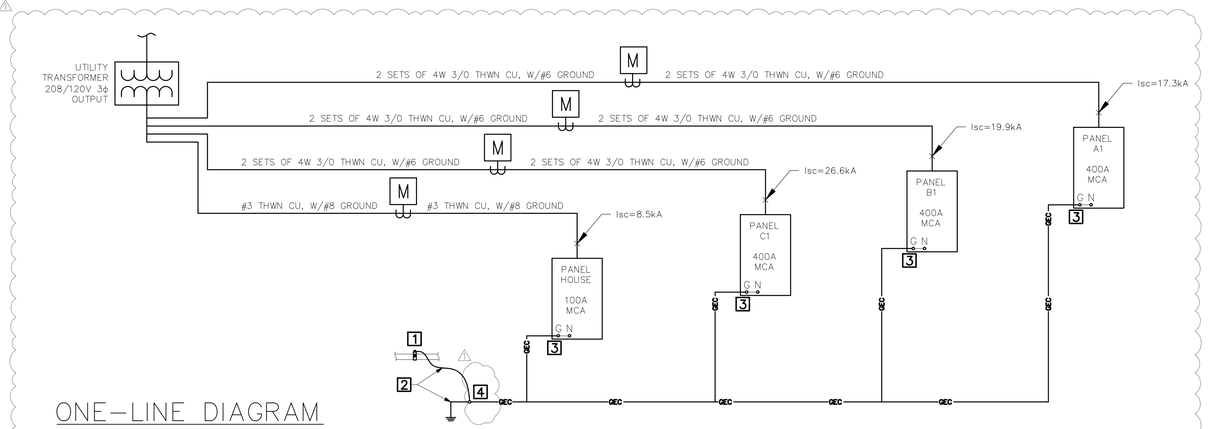
E201



ONE-LINE DIAGRAM

NO SCALE

ELECTRICAL KEYNOTES

1. BOND TO METAL WATER PIPING PER NEC 250.104
2. GROUNDED CONDUCTORS SHALL BE #3AWG OR LARGER
3. BOND NEUTRAL TO GROUND AT THIS LOCATION
4. BOND ALL STRUCTURAL STEEL, METAL IN-GROUND SUPPORT STRUCTURES, AND OTHER GROUNDING ELECTRODES PRESENT IN THE BUILDING ACCORDING TO NEC 250.50.

GENERAL ELECTRICAL NOTES

A. CONTRACTOR SHALL INSPECT SITE THOROUGHLY TO FAMILIARIZE THEMSELVES WITH THE AREA OF WORK. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING.
B. COORDINATE ELECTRICAL INSTALLATION WITH PLUMBING, MECHANICAL, FIRE PROTECTION, AND STRUCTURAL CONDITIONS.
C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND WORKING SYSTEM.

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PANEL: A1

SUPPLIED FROM: UTILITY | VOLTS/PHASE: 208Y/120V, 3PH, 4W + G | LOCATION: UNIT A
BUS RATING: 400A MCB | FAULT CURRENT (Isc): | SERVES: GENERAL POWER
MAIN SIZE/PHASE: 400A-3P | MIN AIC RATING: | ENCL.: NEMA 1

CKT	DESCRIPTION	CB AMP	P	VOLTSAMPS/PHASE A	B	C	A	B	C	P	CB AMP	DESCRIPTION	CKT
1	RTU-A1	50	3	4,744			4,744			3	50	RTU-A2	2
3	---				4,744			4,744				---	4
5	---					4,744			4,744			---	6
7	RECEPTACLE	20	1	180			142			1	20	EMERGENCY LIGHTING	8
9	ROOFTOP MAINT. RECPT.	20	1		180			150		1	20	AMBIENT LIGHTING	10
11	SPACE	0	1			0			0	1	0	SPACE	12
13	SPACE	0	1	0			0			1	0	SPACE	14
15	SPACE	0	1		0			0		1	0	SPACE	16
17	SPACE	0	1			0			0	1	0	SPACE	18
19	SPACE	0	1	0			0			1	0	SPACE	20
21	SPACE	0	1		0			0		1	0	SPACE	22
23	SPACE	0	1			0			0	1	0	SPACE	24
25	SPACE	0	1	0			0			1	0	SPACE	26
27	SPACE	0	1		0			0		1	0	SPACE	28
29	SPACE	0	1			0			0	1	0	SPACE	30
31	SPACE	0	1	0			0			1	0	SPACE	32
33	SPACE	0	1		0			0		1	0	SPACE	34
35	SPACE	0	1			0			0	1	0	SPACE	36
37	SPACE	0	1	0			0			1	0	SPACE	38
39	SPACE	0	1		0			0		1	0	SPACE	40
41	SPACE	0	1			0			0	1	0	SPACE	42
	SUBTOTAL			4,924	4,924	4,744	4,886	4,894	4,744	SUBTOTAL			

TOTAL PHASE A - VA:	9,809	LOAD TYPE	CONN. VA	DF	LOAD TYPE	CONN. VA	DF
AMPS:	27	COOLING	28,461	1.00	REFRIGERATION	0	1.00
TOTAL PHASE B - VA:	9,817	HEATING	0	1.00	SIGN/DISPLAY	0	1.25
AMPS:	27	LIGHTING	292	1.25	KITCHEN	0	1.00
TOTAL PHASE C - VA:	9,487	RECEPTACLES	360	1.00/0.50	EXISTING	0	1.00
AMPS:	26	MOTORS	0	1.00	LARGE MOTOR	0	1.25
TOTAL PNLBRD - VA:	29,113	SUPP HEAT	0	1.00	SHOW WINDOW	0	1.25
CALCULATED AMPS:	**81**	MISC EQUIP	0	1.00	LTG TRACK	0	1.25

TOTAL DEMAND
29,186 VA
81 A

PANEL: B1

SUPPLIED FROM: UTILITY | VOLTS/PHASE: 208Y/120V, 3PH, 4W + G | LOCATION: UNIT B
BUS RATING: 400A MCB | FAULT CURRENT (Isc): | SERVES: GENERAL POWER
MAIN SIZE/PHASE: 400A-3P | MIN AIC RATING: | ENCL.: NEMA 1

CKT	DESCRIPTION	CB AMP	P	VOLTSAMPS/PHASE A	B	C	A	B	C	P	CB AMP	DESCRIPTION	CKT
1	RTU-B	40	3	2,906			180			1	20	RECEPTACLE	2
3	---				2,906			18		1	15	EXHAUST FAN EF-B	4
5	---					2,906			1,500	2	20	WATER HEATER DHW-B	6
7	EMERGENCY LIGHTING	20	1	142			1,500					---	8
9	AMBIENT LIGHTING	20	1		166			180		1	20	ROOFTOP MAINT. RECPT.	10
11	SPACE	0	1			0			0	1	0	SPACE	12
13	SPACE	0	1	0			0			1	0	SPACE	14
15	SPACE	0	1		0			0		1	0	SPACE	16
17	SPACE	0	1			0			0	1	0	SPACE	18
19	SPACE	0	1	0			0			1	0	SPACE	20
21	SPACE	0	1		0			0		1	0	SPACE	22
23	SPACE	0	1			0			0	1	0	SPACE	24
25	SPACE	0	1	0			0			1	0	SPACE	26
27	SPACE	0	1		0			0		1	0	SPACE	28
29	SPACE	0	1			0			0	1	0	SPACE	30
31	SPACE	0	1	0			0			1	0	SPACE	32
33	SPACE	0	1		0			0		1	0	SPACE	34
35	SPACE	0	1			0			0	1	0	SPACE	36
37	SPACE	0	1	0			0			1	0	SPACE	38
39	SPACE	0	1		0			0		1	0	SPACE	40
41	SPACE	0	1			0			0	1	0	SPACE	42
	SUBTOTAL			3,048	3,072	2,906	1,680	198	1,500	SUBTOTAL			

TOTAL PHASE A - VA:	4,728	LOAD TYPE	CONN. VA	DF	LOAD TYPE	CONN. VA	DF
AMPS:	13	COOLING	8,718	1.00	REFRIGERATION	0	1.00
TOTAL PHASE B - VA:	3,270	HEATING	0	1.00	SIGN/DISPLAY	0	1.25
AMPS:	9	LIGHTING	308	1.25	KITCHEN	0	1.00
TOTAL PHASE C - VA:	4,406	RECEPTACLES	360	1.00/0.50	EXISTING	0	1.00
AMPS:	12	MOTORS	0	1.00	LARGE MOTOR	0	1.25
TOTAL PNLBRD - VA:	12,404	SUPP HEAT	0	1.00	SHOW WINDOW	0	1.25
CALCULATED AMPS:	**34**	MISC EQUIP	3,018	1.00	LTG TRACK	0	1.25

TOTAL DEMAND
12,481 VA
35 A

PANEL: C1

SUPPLIED FROM: UTILITY | VOLTS/PHASE: 208Y/120V, 3PH, 4W + G | LOCATION: UNIT A
BUS RATING: 400A MCB | FAULT CURRENT (Isc): | SERVES: GENERAL POWER
MAIN SIZE/PHASE: 400A-3P | MIN AIC RATING: | ENCL.: NEMA 1

CKT	DESCRIPTION	CB AMP	P	VOLTSAMPS/PHASE A	B	C	A	B	C	P	CB AMP	DESCRIPTION	CKT
1	RTU-C	80	3	6,521			180			1	20	RECEPTACLE	2
3	---				6,521			18		1	15	EXHAUST FAN EF-C	4
5	---					6,521			1,500	2	20	WATER HEATER DWH-C	6
7	EMERGENCY LIGHTING	20	1	142			1,500					---	8
9	AMBIENT LIGHTING	20	1		166			180		1	20	ROOFTOP MAINT. RECPT.	10
11	SPACE	0	1			0			0	1	0	SPACE	12
13	SPACE	0	1	0			0			1	0	SPACE	14
15	SPACE	0	1		0			0		1	0	SPACE	16
17	SPACE	0	1			0			0	1	0	SPACE	18
19	SPACE	0	1	0			0			1	0	SPACE	20
21	SPACE	0	1		0			0		1	0	SPACE	22
23	SPACE	0	1			0			0	1	0	SPACE	24
25	SPACE	0	1	0			0			1	0	SPACE	26
27	SPACE	0	1		0			0		1	0	SPACE	28
29	SPACE	0	1			0			0	1	0	SPACE	30
31	SPACE	0	1	0			0			1	0	SPACE	32
33	SPACE	0	1		0			0		1	0	SPACE	34
35	SPACE	0	1			0			0	1	0	SPACE	36
37	SPACE	0	1	0			0			1	0	SPACE	38
39	SPACE	0	1		0			0		1	0	SPACE	40
41	SPACE	0	1			0			0	1	0	SPACE	42
	SUBTOTAL			6,663	6,687	6,521	1,680	198	1,500	SUBTOTAL			

TOTAL PHASE A - VA:	8,343	LOAD TYPE	CONN. VA	DF	LOAD TYPE	CONN. VA	DF
AMPS:	23	COOLING	19,562	1.00	REFRIGERATION	0	1.00
TOTAL PHASE B - VA:	6,884	HEATING	0	1.00	SIGN/DISPLAY	0	1.25
AMPS:	19	LIGHTING	308	1.25	KITCHEN	0	1.00
TOTAL PHASE C - VA:	8,021	RECEPTACLES	360	1.00/0.50	EXISTING	0	1.00
AMPS:	22	MOTORS	0	1.00	LARGE MOTOR	0	1.25
TOTAL PNLBRD - VA:	23,248	SUPP HEAT	0	1.00	SHOW WINDOW	0	1.25
CALCULATED AMPS:	**65**	MISC EQUIP	3,018	1.00	LTG TRACK	0	1.25

TOTAL DEMAND
23,325 VA
65 A

SHORT-CIRCUIT FAULT CALCULATIONS

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance.

The following calculations are based on the "Point-by-Point" method where:

ISC(2) = ISC(1) x M(1) — M = 1/(1+f)

Where:
ISC(1) - short circuit current at fault point 1
ISC(2) - short circuit current at fault point 2

Feeder: f(3Φ) = 1.732 x L x Isc / C x E
Feeder: f(1Φ) = 2 x L x Isc / C x E
XFMR: f(3Φ) = Ip(sca) x Vp x 1.732 x %Z / 100,000 x kVA
XFMR: f(1Φ) = Ip(sca) x Vp x %Z / 100,000 x kVA
Is(sca) = Vp x M x Ip(sca) / Vs

L - Length of Conductor
E - Line to line volts
C - "C" Factor from Bussman table where "C" = 1 / impedance per lineal foot
Ip - Primary short circuit current
Vp - Primary voltage
Is - Secondary short circuit current
Vs - Secondary voltage

Feeder Types:
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, HI - High Impedence Busway, TX - Transformer

Fault Point (F#)	Bus/Feeder Description	Source (Fault Pnt)	Phase	Source Isc (Amps)	FEEDER Circuit Type	Material CU or AL	Wires # / Φ	Bus/Wire Size		Conductor C Value	Busway C Value	L-L Volts E	Circuit Lenth L (ft)	Load Power Factor (PF)	Circuit Load A	CONDUCTOR Resistance R	Reactance X	Conductor Impedence Z / Φ	TRANSFORMER Type	kVA	Z	Sec. Voltage V sec	f	M	FAULT CURRENT Isc	Isc sym RMS	Fault Point (F#)
0	Utility Service Point	∞	3	-	TX							208	-	-	833	-	-	-	-	300	1.11	208Y/120V, 3PH	-	90.01	74,952	74,952	0
1	To Panel A1	0	3	74,952	M	CU	2	Set(s) of	#3/0	12844	N/A	208	137	0.9	81	0.000079	0.000052	0.45103	-	N/A	N/A	N/A	3.329	0.23	17,315	17,315	1
2	To Panel B1	0	3	74,952	M	CU	2	Set(s) of	#3/0	12844	N/A	208	114	0.9	34	0.000079	0.000052	0.45103	-	N/A	N/A	N/A	2.770	0.27	19,882	19,882	2
3	To Panel C1	0	3	74,952	M	CU	2	Set(s) of	#3/0	12844	N/A	208	75	0.9	64	0.000079	0.000052	0.45103	-	N/A	N/A	N/A	1.822	0.35	26,557	26,557	3
4	To Panel HOUSE	0	3	74,952	M	CU	1	Set(s) of	#3	4774	N/A	208	60	0.9	13.98	0.00025	0.000059	0.45103	-	N/A	N/A	N/A	7.844	0.11	8,475	8,475	4

PANEL: HOUSE

SUPPLIED FROM: DP2 | VOLTS/PHASE: 120/240V, 1PH, 3W + G | LOCATION: OWNER'S ROOM
BUS RATING: 100A MCB | FAULT CURRENT (Isc): 32.6kA | SERVES: GENERAL POWER
MAIN SIZE 100A-1P | MIN AIC RATING: 35kA | ENCL.: NEMA 1

CKT	DESCRIPTION	CB AMP	P	VA/PHASE A	B	A	B	P	CB AMP		CKT
1	EMERGENCY LIGHTING	20	1	22		16		1	20	AMBIENT LIGHTING	2
3	HEATER: UH-1	20	2		1,654		0	1	0	SPACE	4
5	---			1,654		0		1	0	SPACE	6
7	SPACE	0	1		0		0	1	0	SPACE	8
9	SPACE	0	1	0		0		1	0	SPACE	10
11	SPACE	0	1		0		0	1	0	SPACE	12
13	SPACE	0	1	0		0		1	0	SPACE	14
15	SPACE	0	1		0		0	1	0	SPACE	16
	SUBTOTAL			1,676	1,654	16	0	SUBTOTAL			

TOTAL PHASE A - VA:	1,692	LOAD	CONN VA	DF	LOAD	CONN VA	DF
AMPS:	7	COOLING	0	1.00	REFRIGERATION	0	1.00
TOTAL PHASE B - VA:	1,654	HEATING	0	1.00	SIGN/DISPLAY	0	1.25
AMPS:	7	LIGHTING	38	1.25	KITCHEN	0	1.00
		RECEPTACLES	0	00/0.50	EXISTING	0	1.00
TOTAL DEMAND		MOTORS	0	1.00	LARGE MOTOR	0	1.25
TOTAL PNL - VA:	3,345	**3,355 VA**	SUPP HEAT	0	1.00	SHOW WINDOW	0	1.25
CONNECTED AMPS:	**13.94**	**14 A**	MISC EQUIP	3,307	1.00	LTG TRACK	0	1.25

NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

STATE OF MISSOURI
NICHOLAS PEDERSEN
NUMBER PE-2013019095
PROFESSIONAL ENGINEER
7/30/2025

No.	Description	Date
	Revision Schedule	

7-2-25 REVISION

Project number 2491
Date 05.08.2025

E500