



SITE MAP

NO SCALE

CODE STUDY:

Applicable Codes:
2018 International Building Code, 2018 International Existing Building Code
2018 International Plumbing Code, 2018 International Mechanical Code
2017 National Electric Code, 2018 International Fire Code
2018 International Energy Conservation Code
ICC/ANSI a117.1-2009 Accessible and Useable Building and Facilities

Construction Type: Type V-B Without fire suppression (2018 IBC Tables 506.2 pg. 109-110)

Building area:
Building footprint = 2,538 S.F.
Second Floor = 2,598 S.F.

Occupancy Groups: (2018 IBC Sections 303 - 312 pg. 45-54)
B-Business (Kitchen(Not associated with a restaurant less than 2,500 s.f.)), Entry , office area Restrooms) = 2,313 Sq.Ft.
S-2 -Storage (Ground Floor, low hazard storage of dry goods related to catering business) = 225 Sq.Ft.
B-Business (Second Floor Office area) = 1,598 Sq.Ft.
S-2 -Storage (second Floor, low hazard storage of dry goods related to catering business) = 1,000 Sq.Ft.

Allowable Height and Area: (IBC 2018 Tables 504.4 and 506.2 pg. 106-110)
B- = 6,000 Sq. Ft. 2 Story
S2 - = 13,500 Sq.Ft. 2 Story

Allowable area modification is not required for this structure. No allowable areas are exceeded (IBC 2018 Tables 504.4 and 506.2 pg. 106-110)

Occupant Loads: (2018 IBC Table 1004.5 pg.259)
See occupancy map for occupant load areas and details

-Entry, Restrooms	=9
-Commercial Kitchen	= 7
-Flex Office Area	= 11
-Storage	= 2
Total Code Occupants = 30 Occupants	

Signage:
-Where required exit signs shall comply with 2018 IBC section 1013.1 pg. 281
-No doors are proposed to have a keyed lock from the interior side
-Restrooms shall be provided with signs that designate sex and be readily visible and located near the restroom entrance per 2018 IBC Section 2902.4 pg. 590
-Accessibility signage shall be provided per 2018 IBC Section 1111.1 pg. 319

Parking:
Accessible parking to be provided per 2018 IBC Table 1106.1 pg.308
2 accessible parking spaces will be provided per the included site plan



VICINITY MAP

NO SCALE

LEGAL DESCRIPTION:

PARCEL # 9424009701
LEGAL DESCRIPTION:LOT 1, AMD BEBO MRD S-76-87, BER

PROJECT DIRECTORY:

OWNER:
Attn: Lead Holding Company LLC
Jamie and Tiffany Degnan
619 E County Road 8,
Berthoud, CO. 80513
Phone: (970)-532-3663
Tiffany@BrooksideGardens.com

ELECTRICAL ENGINEER
John M Benson P.E.
Attn: John Benson
P.O. Box 916
Laport, CO 80535
Phone Office:970.482.3986
Phone Cell: 970-227-8809
E-mail: jbenonpe@yahoo.com

GENERAL CONTRACTOR:
4 B's Construction
Attn: Vance Bunker
1110 4th St.
Berthoud, CO. 80513
Phone: 303-775-8476
E-mail: vanceat4bs@msn.com

MECHANICAL ENGINEER
Integrated Mechanical
Attn: Josh Miller
320 Maple Street, Suite 110
Fort Collins CO 80521
Phone: 970-556-0570
E-mail: josh-m@int-mech.com

ARCHITECT:
Freeman Architects, P.C.
Attn: David Stranathan
2024 Blue Mesa Court
Loveland, CO 80538
Phone: (970) 667-3939
Fax: (970) 667-3940
E-mail: freemanarchts@aol.com

SHEET INDEX:

1. COVER

ARCHITECTURAL

2. A1 of 4	ACCESSIBILITY, EGRESS, OCCUPANCY
3. A2 of 4	FLOOR PLANS
4. A3 of 4	KITCHEN DETAILS
5. A4 of 4	ELEVATIONS

MECHANICAL / PLUMBING

6. MP 0.1 of 11	GENERAL NOTES
7. M 2.1 of 11	HVAC FLOOR PLAN
8. M 7.1 of 11	HVAC SCHEDULES
9. M 8.1 of 11	KITCHEN MECHANICAL EQUIP. SCHEDULES, DETAILS
10. M 8.2 of 11	KITCHEN MECHANICAL EQUIP. SCHEDULES, DETAILS
11. M 8.3 of 11	KITCHEN MECHANICAL EQUIP. SCHEDULES, DETAILS
12. M 8.4 of 11	KITCHEN MECHANICAL EQUIP. SCHEDULES, DETAILS
13. M 8.5 of 11	KITCHEN MECHANICAL EQUIP. SCHEDULES, DETAILS
14. P 1.1 of 11	PLUMBING WASTE AND VENT
15. P 2.1 of 11	PLUMBING WATER AND GAS PLAN
16. P 6.1 of 11	PLUMBING SCHEDULES AND DETAILS

ELECTRICAL

17. E1 of 3	COVER
18. E2 of 3	POWER PLAN
19. E3 of 3	LIGHTING PLAN
20. E4 of 4	SPECIFICATIONS

PROJECT NARRATIVE:

The owners of the Brookside Gardens Event center are proposing alterations to the existing barn structure located at the south side of the property. The alterations include changing the use of the building from an event center as listed in the previous building permit #18-09 to a business use for their catering kitchen and office facilities.

The kitchen is proposed to take up about half of the ground floor of the building and will be utilized to prepare food for catering events at this location and others. The kitchen includes sinks, ware-washing area, prep area, cooking area, refrigeration area, and dry food storage area.

The office area will consist of free standing furniture and requires no building alterations. One office area is on the ground floor and the majority of office area will be on the second floor. Some storage of low hazard items is also proposed on the second floor and ground floor. Low hazard items include excess silverware, plates, promotional items, metal, metal chairs and associated catering items. The entire second floor area is less than 3,000 square feet and complies with IBC 2018 chapter 11.

The building is already equipped with two restrooms on the ground floor that were constructed in 2009 under permit number 18-09. No additional restroom fixtures are proposed or required to meet fixture requirements based off of the occupant load. The existing men's restroom is proposed to be modified to provide a fully accessible shared restroom within this building, the existing woman's restroom is to remain without work. The restroom in this building will also be utilized during outdoor events and will be analyzed under a future permit for the event center.

Plumbing, mechanical, and electrical engineering are provided within this plan set.



FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
Loveland, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN	David	2-17-20						
		CHECKED	lf	3-9-20					
REVISIONS				David	3-9-20				

Construction Documents

COVER

ACCESSIBILITY NOTE: ALL AREAS OF THE GROUND FLOOR ARE FULLY ACCESSIBLE AND CONNECT TO ACCESSIBLE PARKING SPACES BY MEANS OF CONCRETE WALKWAYS, SMOOTH FLOOR SURFACES, 3' WIDE MINIMUM DOORWAYS WITH ADEQUATE CLEARANCES AT EACH SIDE. THE SECOND FLOOR IS PROPOSED TO BE UTILIZED FOR OFFICE AREAS AND GENERAL LOW HAZARD STORAGE. AN OFFICE AREA AND A STORAGE AREA ARE BOTH PROVIDED ON THE ACCESSIBLE LEVEL. THE NON-ACCESSIBLE SECOND FLOOR IS LESS THAN 3,000 S.F. OF FLOOR AREA INCLUDING THE DECK.

EXISTING ACCESSIBLE WALKWAY
CONNECTING TO ACCESSIBLE
PARKING SPACES. SEE SITE
ACCESSIBILITY PLAN ON THIS SHEET

EXISTING ACCESSIBLE
DOORWAY, NOT PART OF
EGRESS SYSTEM

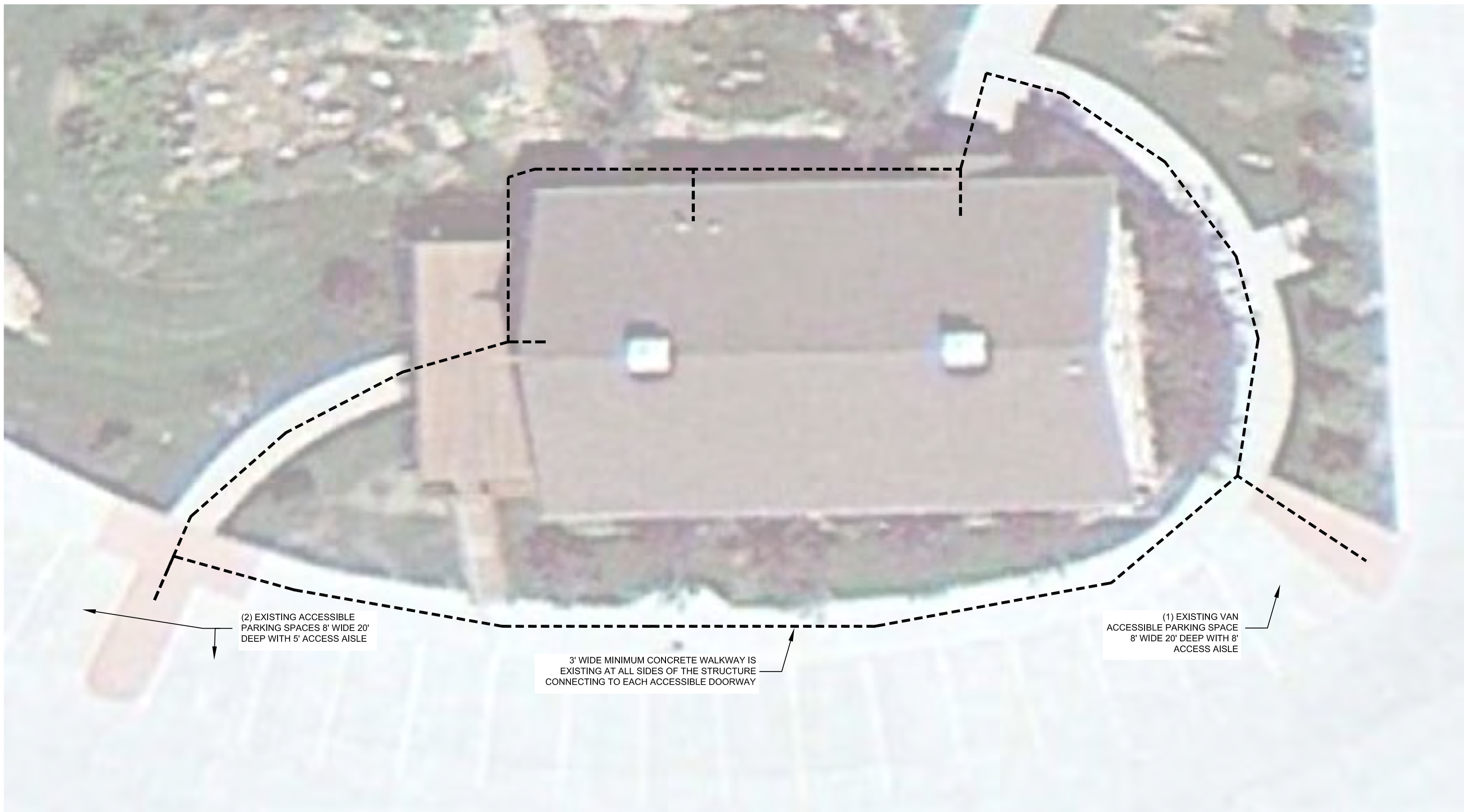
EXISTING
ACCESSIBLE
DOORWAY

EXISTING
ACCESSIBLE
DOORWAY

EXISTING ACCESSIBLE WALKWAY
CONNECTING TO ACCESSIBLE
PARKING SPACES. SEE SITE
ACCESSIBILITY PLAN ON THIS SHEET

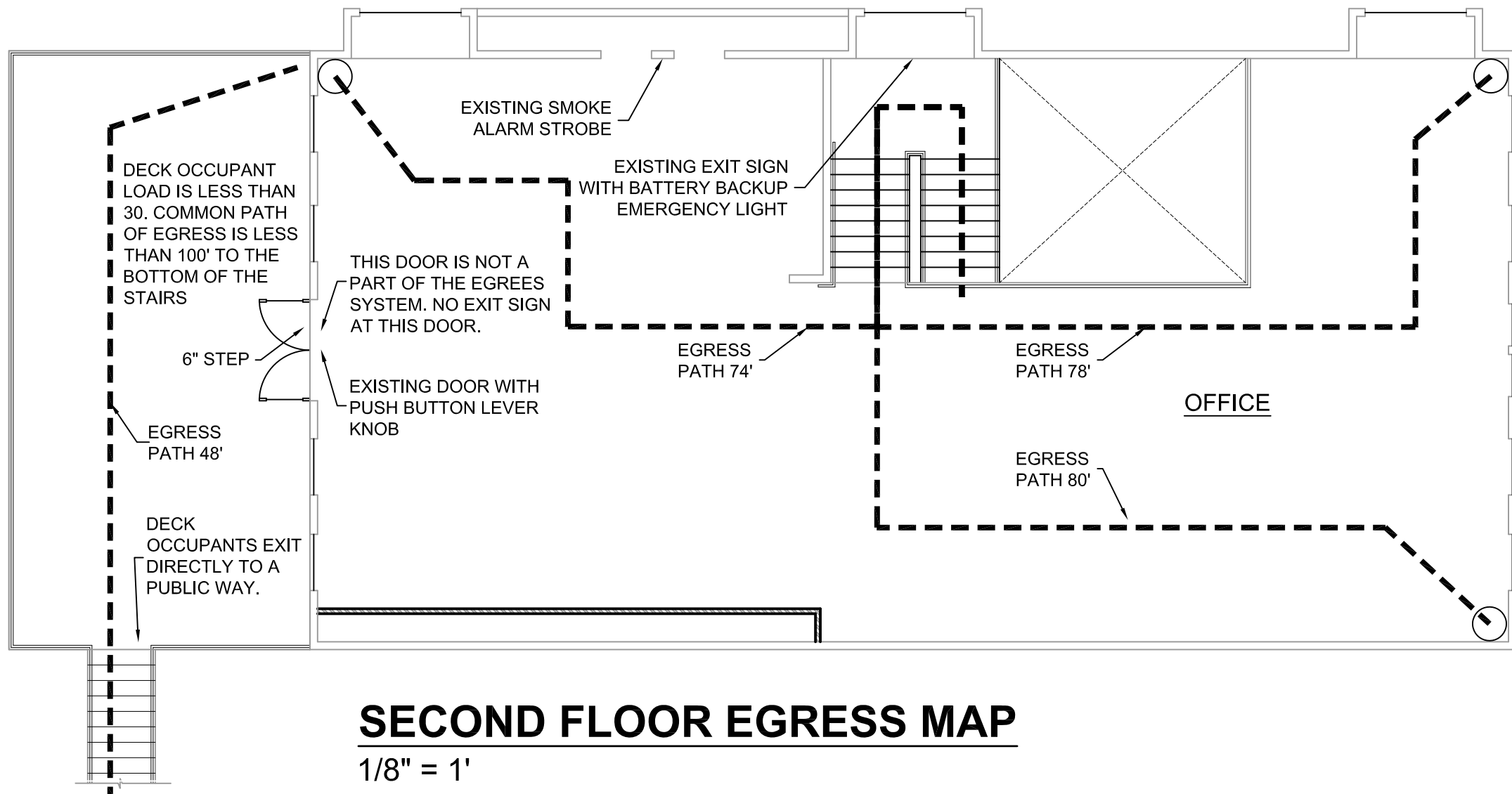
GROUND FLOOR ACCESSIBILITY MAP

1/8" = 1'



SITE ACCESSIBILITY MAP

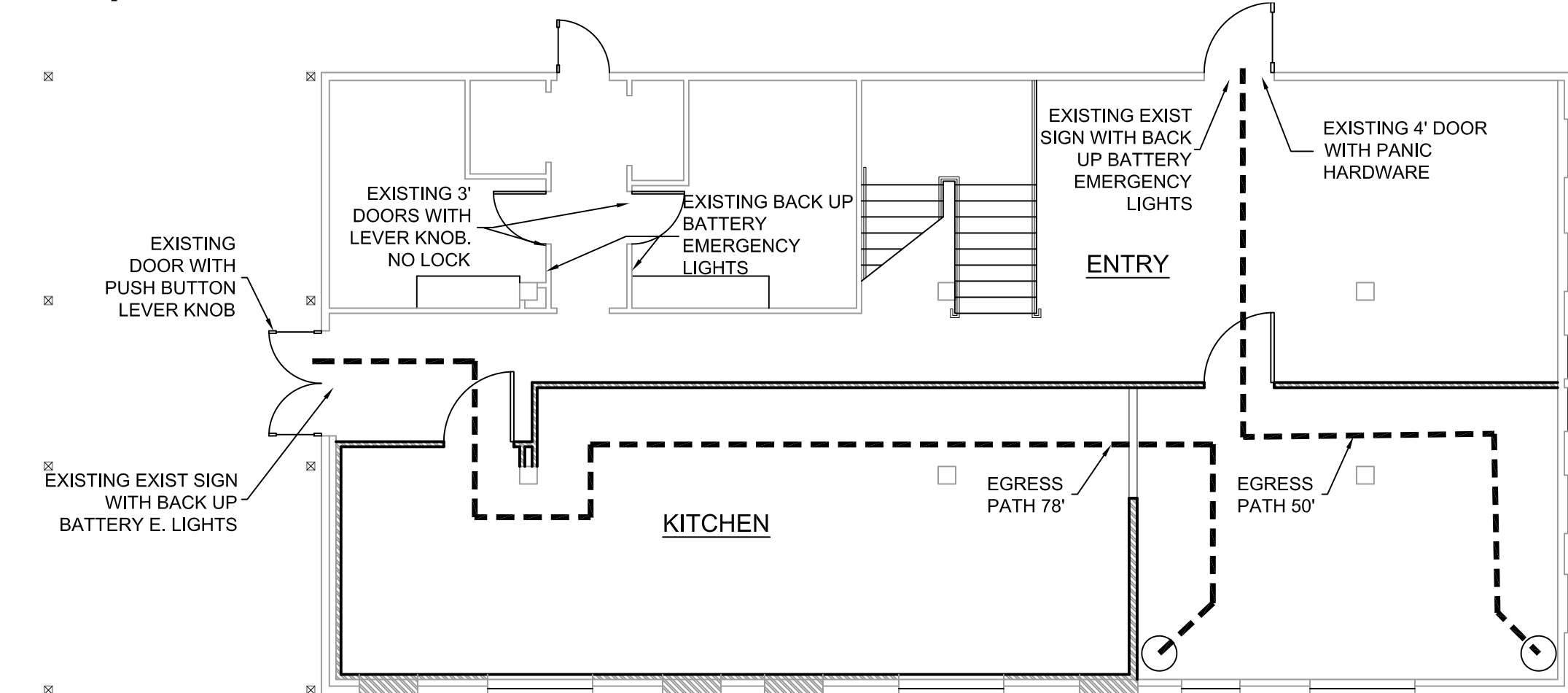
NOT TO SCALE



SECOND FLOOR EGRESS MAP

1/8" = 1'

SECOND FLOOR EGRESS NOTES:
-THE SECOND FLOOR HAS A SINGLE MEANS OF EGRESS VIA THE INTERIOR STAIRWAY. THE EXISTING STAIRS HAVE A TREAD DEPTH OF 11" AND A RISER HEIGHT OF 6-1/2".
-THE EXTERIOR DOORS ON THE WEST END OF THE BUILDING LEADING TO THE EXISTING DECK STRUCTURE ARE NOT PART OF THE EGRESS SYSTEM.
-OCCUPANTS ON THE DECK CAN EXIT DIRECTLY TO THE GROUND IN LESS THAN 100'. DECK OCCUPANTS DO NOT EXIT THROUGH THE BUILDING.
-ALL PATHWAYS FROM ANY POINT WITHIN THE SECOND FLOOR TO THE BOTTOM OF THE STAIRS ARE LESS THAN 100' LONG.
-THERE ARE LESS THAN 30 CODE OCCUPANTS WITHIN THE UPPER FLOOR AREA.
-A FIRE ALARM WITH STROBE LIGHT IS EXISTING WITHIN THE SECOND FLOOR. OWNER TO HIRE FIRE ALARM SPECIALIST TO VERIFY FIRE ALARM SYSTEM IS OPERATIONAL WITHIN ENTIRE BUILDING.
-AN ILLUMINATED EXIT SIGN IS EXISTING ABOVE THE STAIR LANDING AND EQUIPPED WITH BATTERY BACKUP EMERGENCY LIGHTING. OWNER OR GC TO VERIFY BATTERY IS CHARGING AND OPERATIONAL.

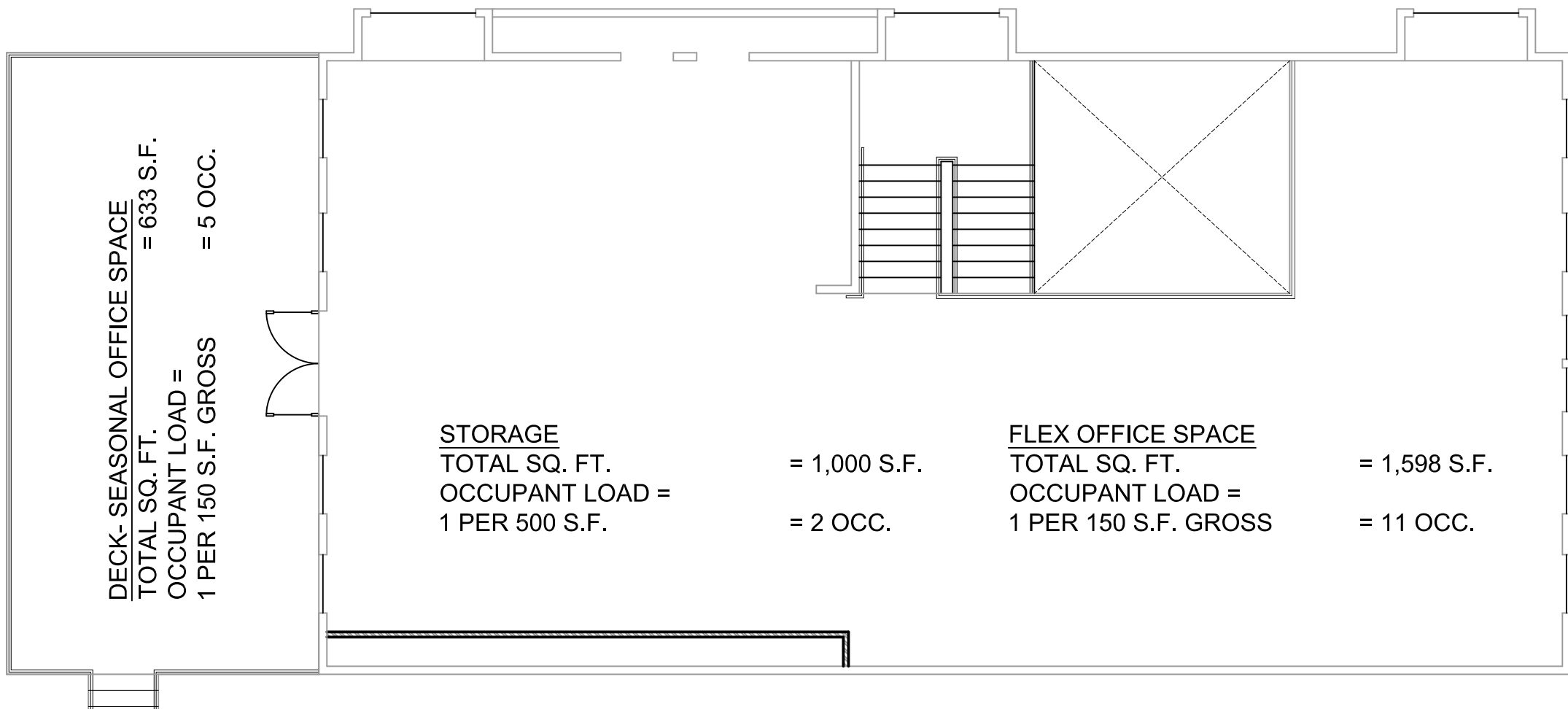


GROUND FLOOR EGRESS MAP

1/8" = 1'

GROUND FLOOR EGRESS NOTES:
-THE GROUND FLOOR HAS 2 ACCESSIBLE EGRESS DOORS. ONE IS 36" WIDE. ONE IS 48" WIDE.
EXIT DISTANCE FROM ALL AREAS IS LESS THAN 200'.
-ALL COMMON PATH EGRESS IS LESS THAN 100' WITH LESS THAN 30 OCCUPANTS.
-TWO SMOKE ALARMS ARE EXISTING WITHIN THE GROUND FLOOR. OWNER TO HIRE FIRE ALARM SPECIALIST TO VERIFY FIRE ALARM SYSTEM IS OPERATIONAL WITHIN ENTIRE BUILDING.
-AN ILLUMINATED EXIT SIGN IS EXISTING ABOVE EACH EGRESS DOOR AND EQUIPPED WITH BATTERY BACKUP EMERGENCY LIGHTING. OWNER OR GC TO VERIFY BATTERY IS CHARGING AND OPERATIONAL.

DECK AREA IS FOR OCCASIONAL USE BY EMPLOYEES. NO PUBLIC USE. NO EVENTS. PRIMARILY UN-USED

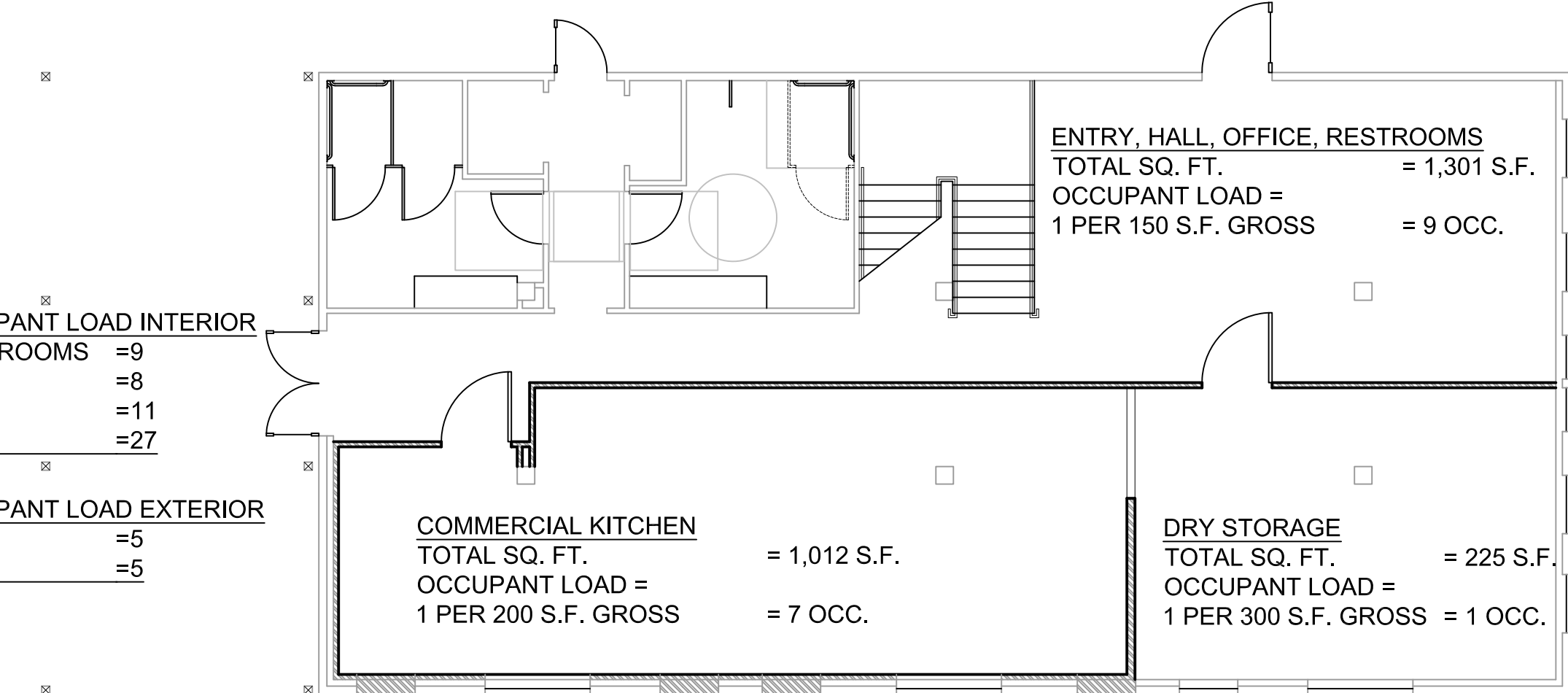


SECOND FLOOR OCCUPANCY MAP

1/8" = 1'

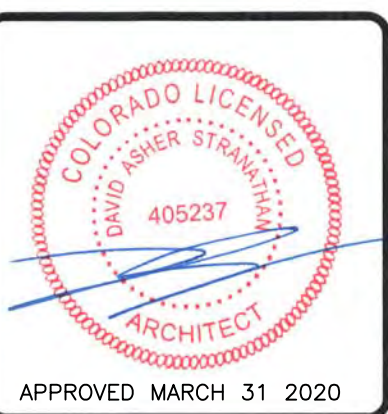
TOTAL OCCUPANT LOAD INTERIOR
ENTRY, RESTROOMS =9
KITCHEN =8
FLEX OFFICE =11
TOTAL =27

TOTAL OCCUPANT LOAD EXTERIOR
DECK =5
TOTAL =5



GROUND FLOOR OCCUPANCY MAP

1/8" = 1'



FREEMAN
ARCHITECTS
P.C.

2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

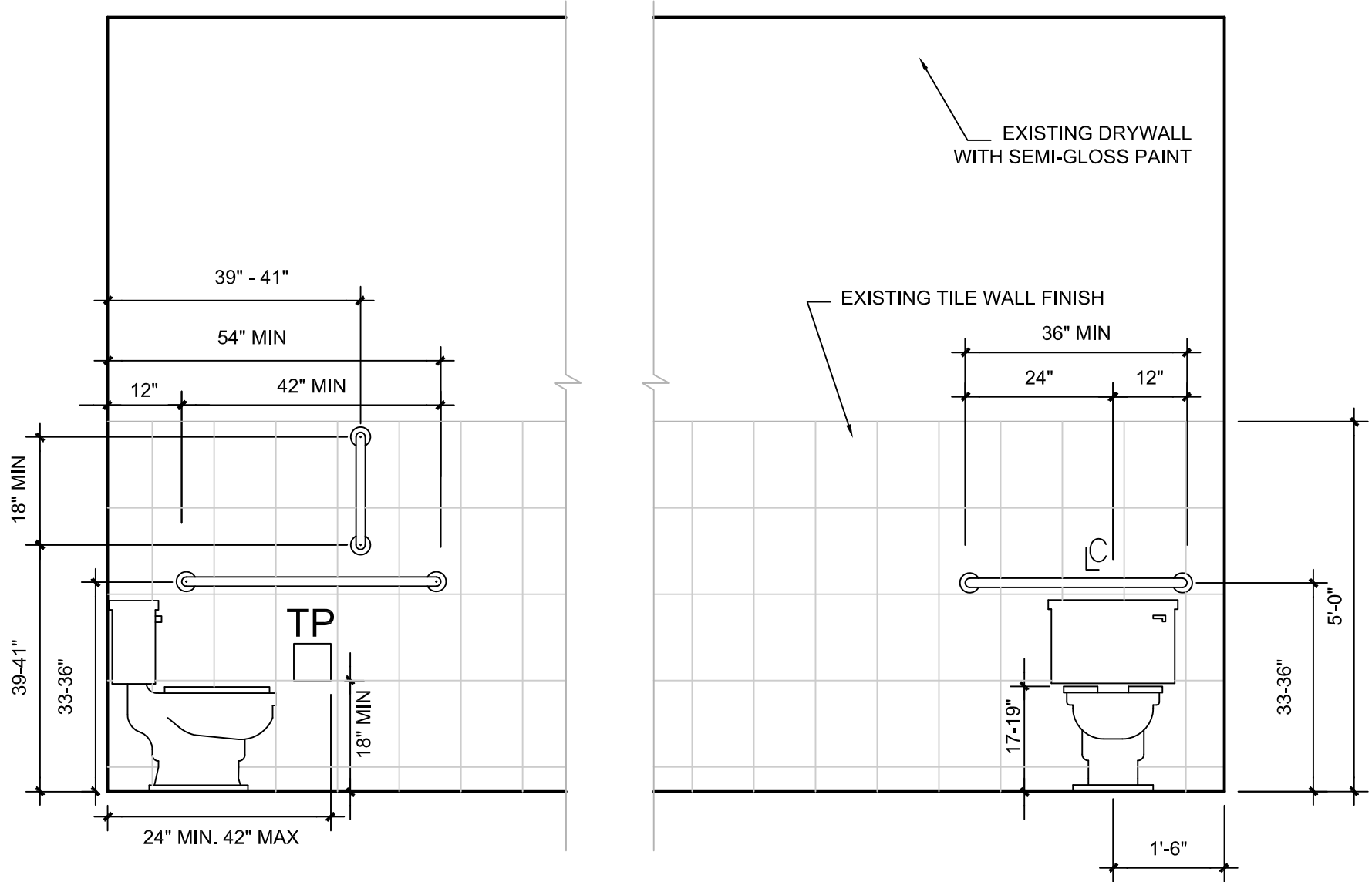
Brookside Gardens
Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	24-17-20	David	24-17-20	David	24-17-20
DRAWN	CHECKED	DATE	DATE	DATE	DATE
REVISIONS					

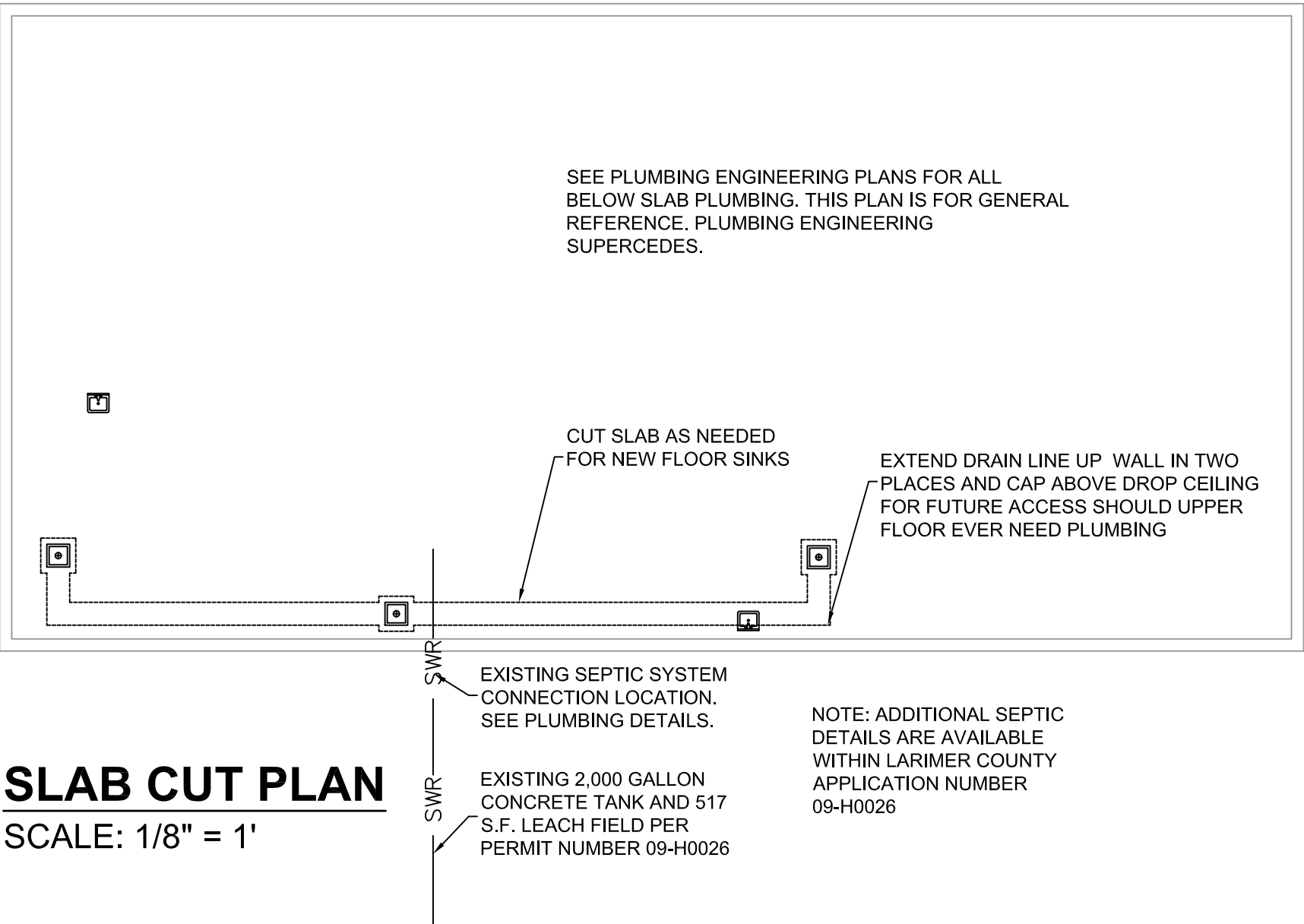
GENERAL NOTES:

- GENERAL:
All Finishes to be coordinated and verified with business owner.
- I. INTERIOR PARTITION WALLS
A. Partition walls to be 2X6 or 2x4 wood or metal studs @ 16" o.c.
B. verify wall finishes with owner. Provide durable cleanable wall surfaces within kitchen as required per health department. Re-use pine T&G at new hallway if possible.
C. provide 5/8" type X drywall on all walls within kitchen and cover with FRP finish material.
- II. PAINT
A. All exposed drywall to receive one coat PVA primer and two coats of latex paint, color -white unless owner requests otherwise.
- III. FLOOR COVERING
A. Exposed concrete to remain. Patch and repair as needed for plumbing. Apply sealant coat to new concrete and fill all joints with self leveling Silka Flex Joint caulking to provide continuous cleanable flooring surface.
- IV. ELECTRICAL SYSTEM
A. See electrical engineering for electrical improvements. New transformer is proposed to be set along the west property line. A new electric service will supply the buildings existing breaker panel along with a new breaker panel for the kitchen improvements.
- V. MECHANICAL SYSTEM
A. See mechanical engineering for mechanical improvements. A new make up air unit is proposed along with new exhaust air system within the kitchen. The existing heating and air conditioning system is to remain with minor alterations. Existing ground floor thermostat to be relocated within the kitchen area.
- VI. PLUMBING SYSTEM
A. See plumbing engineering for plumbing improvements. New plumbing is proposed for the new fixtures running to the existing septic system per the plumbing plans.
- VI. MISCELLANEOUS REQUIREMENTS
A. Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.
- VII. GENERAL NOTES
A. All other products are per plans and specifications. General Contractor is responsible for contacting the specified vendors for longer lead items and contracting with local distributors as needed.
B. All Voice/Data wiring and security systems will be handled by Business Owner under a separate contract.
D. Owner shall specify to general contractor any special requirements of electrical, mechanical, computer, or telephone systems.
E. Provide 10# ABC Fire Extinguishers and locate per Fire Marshal.



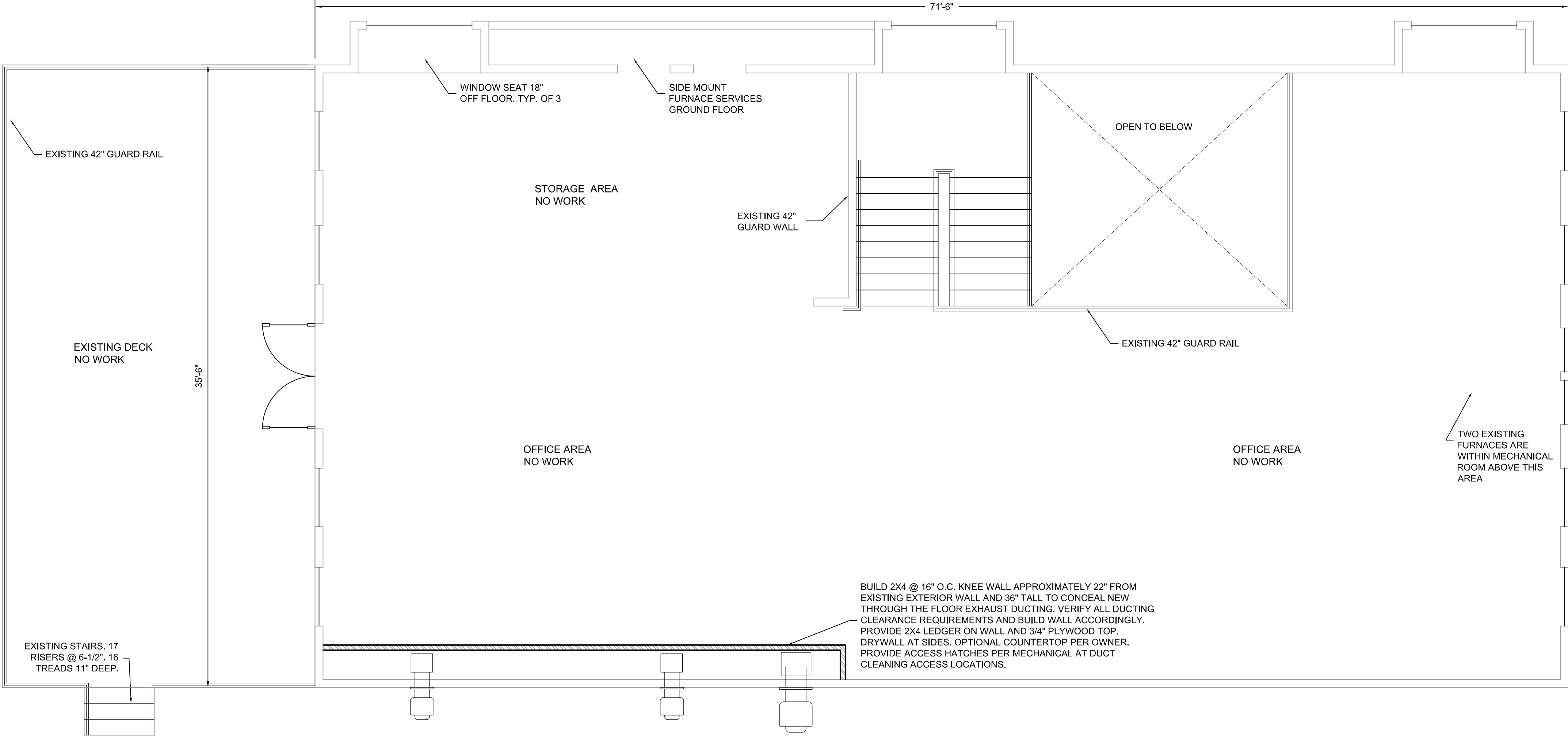
ACCESSIBLE TOILET GRAB BAR PLAN

SCALE: 1/2" = 1'



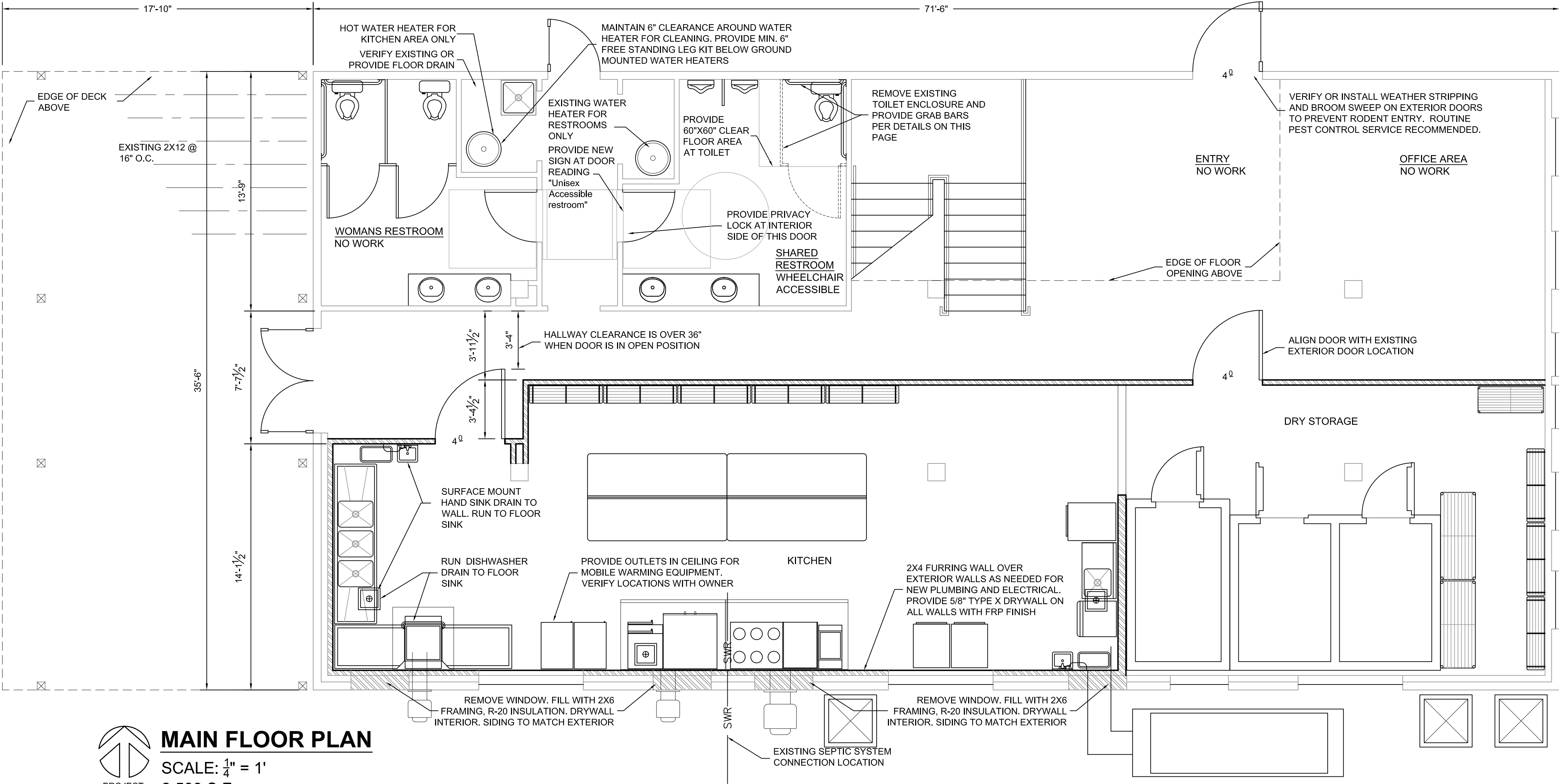
SLAB CUT PLAN

SCALE: 1/8" = 1'



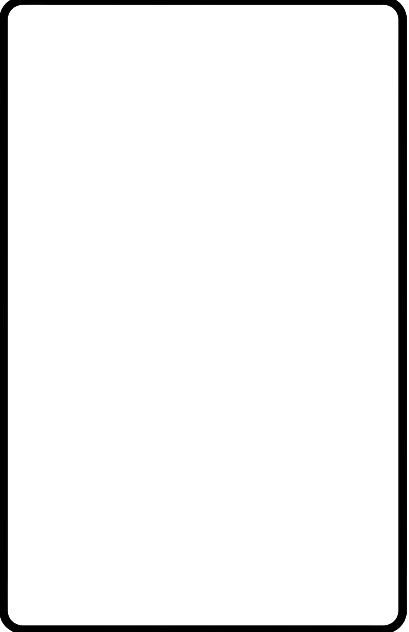
UPPER FLOOR PLAN

SCALE: 1/4" = 1'
2,598 S.F.



MAIN FLOOR PLAN

SCALE: 1/4" = 1'
2,538 S.F.



FREEMAN ARCHITECTS PC

2024 Blue Mesa Court 80538
LOVELAND, CO

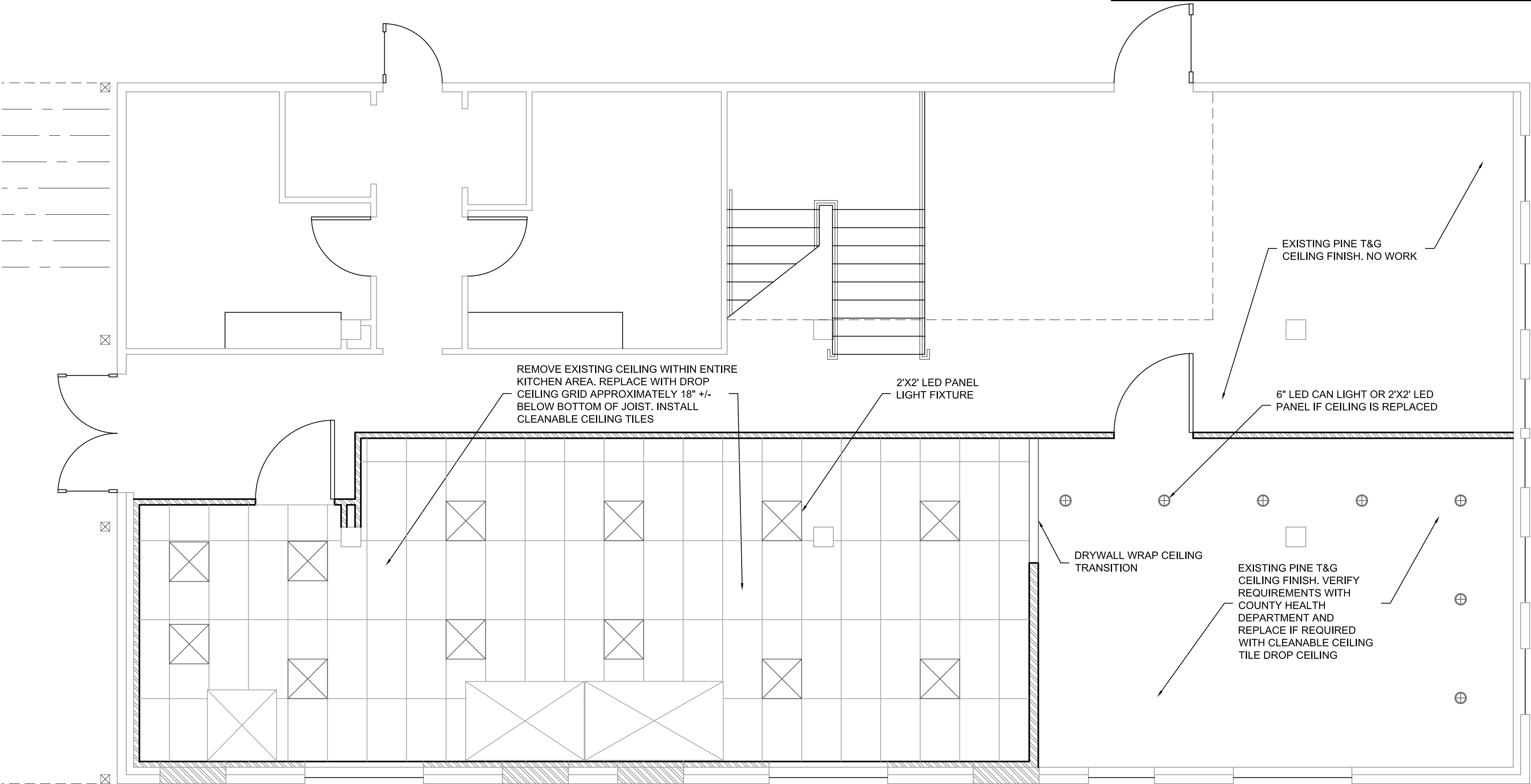
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN	DATE	CHECKED	DATE	REVISIONS	DATE	BY
		2-17-20		2-30-20			
				3-31-20			

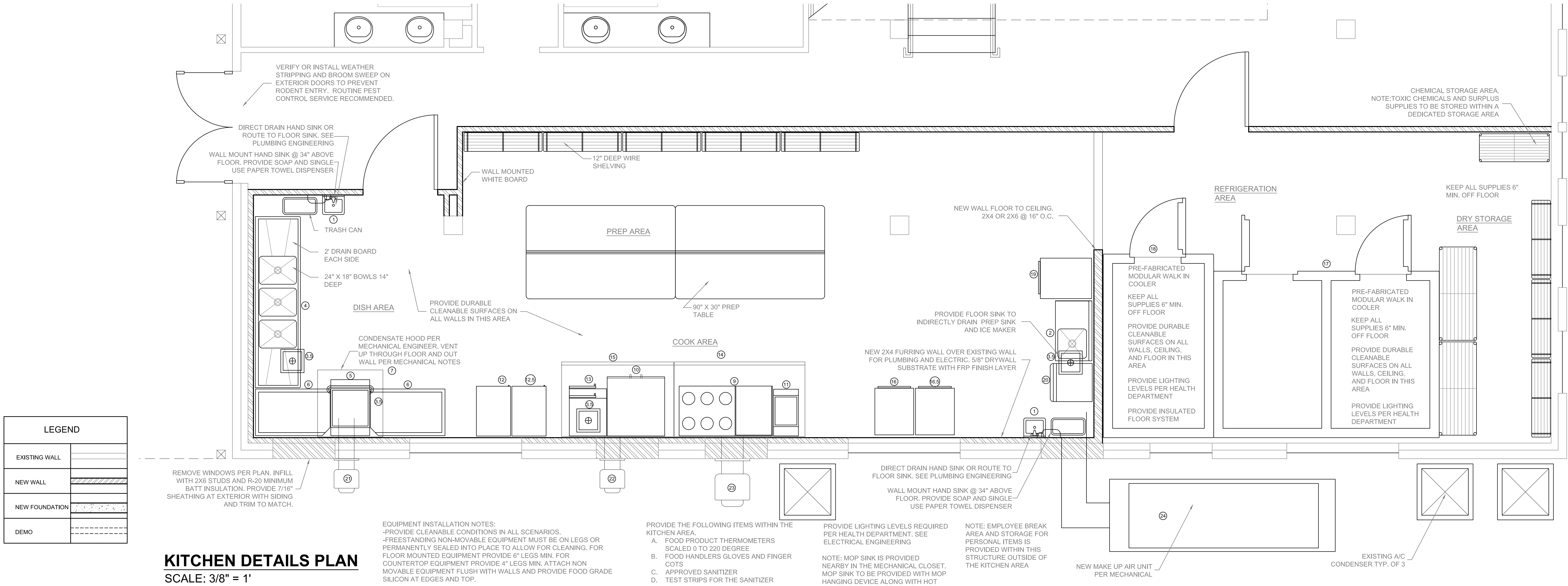
KITCHEN DETAILS



REFLECTED CEILING PLAN
SCALE: 1/4" = 1'

ITEM NUM.	ITEM DESCRIPTION	EQUIP. SIZE	MANUFACTURER	MODEL NUM.	QUANT.	MOUNTING	POWER
SINKS							
1	STAINLESS STEEL OR PORCELAIN HAND SINK	14"W x 10"D	BK Resources	BKHS-D-1410-P-6	2	WALL	--
2	VEGGIE PREP SINK	38.5" x 24"	BK Resources Model	BKS-1-24-14-24L	1	FLOOR	--
3	MOP SINK	24"x24"x14"D	NEW-FIAT	FIAT MSBID2424	1	FLOOR	--
3.5	FLOOR SINK	24"x24"x14"D	NEW-ZURN	Z1212	3	FLOOR	--
WARE WASHING							
4	3-COMPARTMENT SINK	110"Wx 29"	ALREADY OWN	NONE	1	FLOOR	--
5	DISH WASHER	24"W X 36" D	ALREADY OWN. BRAND- GLEAN FORCE	AF 3DS	1	FLOOR	
6	DISHWASHER OUT-FEED TABLES	48"W X 30"D	ALREADY OWN	NONE	2	FLOOR	
7	DISHWASHER CONDENSATE HOOD	48"W X 46"D	ALREADY OWN	-	1	FLOOR	
8	HOT WATER HEATERS	32" ROUND 5' T	PER MECHANICAL	SEE MECH SHEETS	2	FLOOR	
COOKING							
9	6 BURNER COOKTOP WITH 24" FLAT TOP	60"W x 32"D	VULCAN	SX 60F-6B24 GN	1	FLOOR	--
10	DOUBLE STACK CONVECTION OVEN	38"W x 37"D	BLODGETT	SHO 100 -G	1	FLOOR	
11	FRYER	16"W x 30"D	SUPERIOR	LG400-5	1	FLOOR	--
12	COOK AND HOLD UNIT	22"W x 32"D	ALREADY OWN. BRAND- ALTO SHAAM	1000 THTT	1	FLOOR	
12.5	COOK AND HOLD UNIT	22"W x 32"D	ALREADY OWN. BRAND- ALTO SHAAM		1	FLOOR	
13	STEAMER	24"W x 32"D	ALREADY OWN. - MARKET FORGE 9200 CTE		1	FLOOR	
14	TYPE 1 HOOD	110"W x 48"D	PER MECHANICAL PLANS		1		
15	CONDENSATE HOOD	58"W x 48"D	ALREADY OWN		1		
16	FOOD WARMER	25"W x 30"D	ALREADY OWN. BRAND- VULCAN		1		
16.5	FOOD WARMER	25"W x 30"D	ALREADY OWN. BRAND- HOT FOOD BOX INC		1		

ITEM NUM.	ITEM DESCRIPTION	EQUIP. SIZE	MANUFACTURER	MODEL NUM.	QUANT.	MOUNTING	POWER
REFRIGERATION / FREEZERS							
17	WALK-IN COOLER / FREEZER	12'-1"W x 8'-11"D	ALREADY OWN NORLAKE		1	FLOOR	
18	WALK-IN COOLER	5'-11" W X 9'-10"D	ALREADY OWN CCI		1	FLOOR	
19	FREE STANDING REFRIGERATOR	26"W x 33"D	ALREADY OWN		1	FLOOR	
20	ICE MACHINE	24.5"W x 27"D	ICE O MATIC		1	FLOOR	
EXHAUST / MAKE-UP AIR							
21	DISHWASHER EXHAUST AIR		PER MECHANICAL		1	WALL	SEE M SHEETS
22	STEAMER EXHAUST AIR		PER MECHANICAL		1	WALL	SEE M SHEETS
23	TYPE 1 HOOD EXHAUST AIR		PER MECHANICAL		1	WALL	SEE M SHEETS
24	MAKE-UP AIR UNIT		PER MECHANICAL		1	GROUND	SEE M SHEETS



KITCHEN DETAILS PLAN
SCALE: 3/8" = 1'



FREEMAN ARCHITECTS PC

2024 Blue Mesa Court 80538
LOVELAND, CO

(970) 667-3939
FAX: (970) 667-3940

**Brookside Gardens
Barn Remodel**

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	Dev 1	2-17-20
DRAWN	Dev 2	3-30-20
CHECKED	Dev 3	5-9-20
REVISIONS		

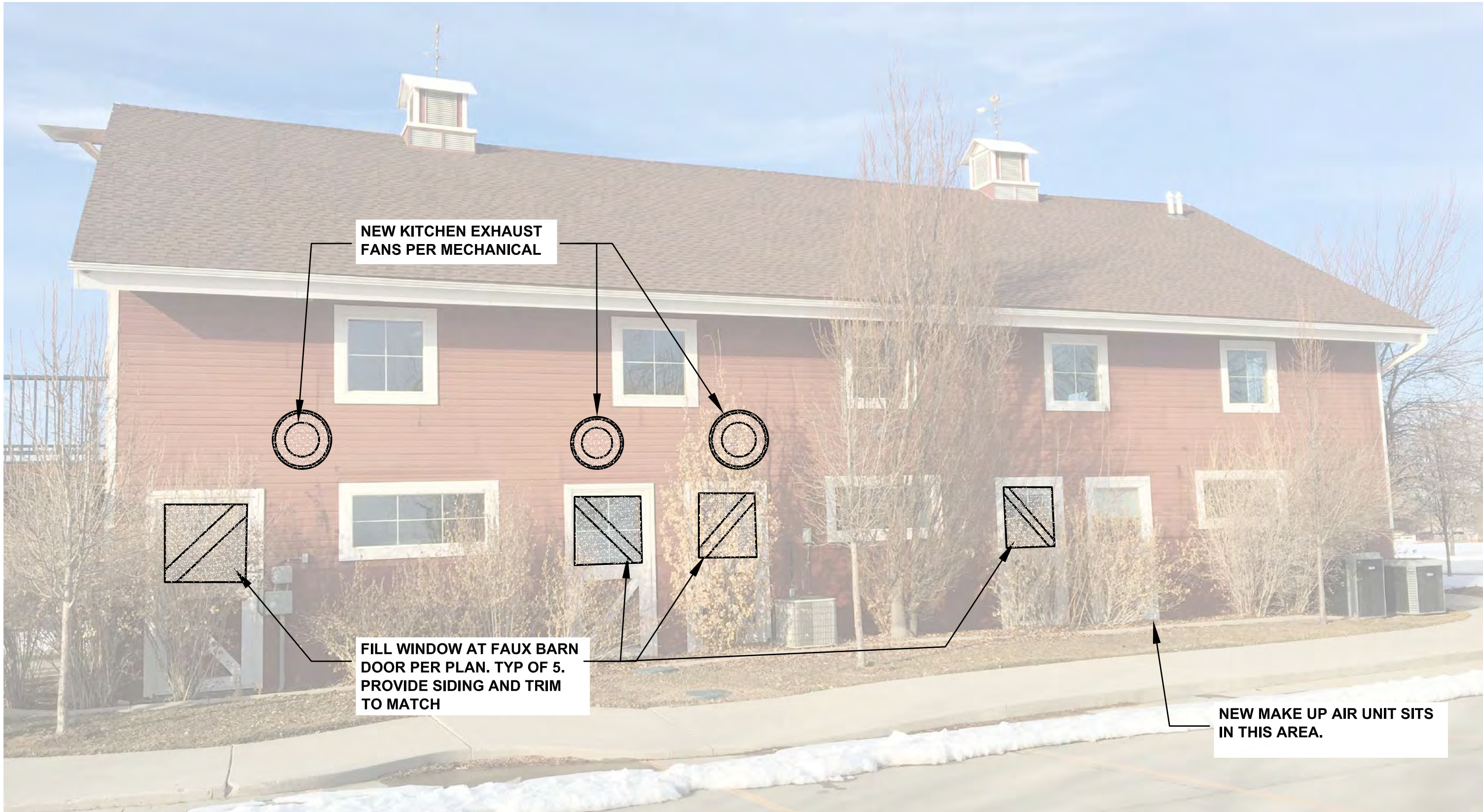
ELEVATIONS



NORTH ELEVATION
NOT TO SCALE
NO WORK PROPOSED



EAST ELEVATION
NOT TO SCALE
NO WORK PROPOSED



SOUTH ELEVATION
NOT TO SCALE



WEST ELEVATION
NOT TO SCALE
NO WORK PROPOSED

ELEVATION NOTES: PHOTOS OF THE EXISTING STRUCTURE ARE BEING SHOWN TO ACCURATELY DEPICT THE CURRENT CONDITIONS. CHANGES ARE PROPOSED TO THE SOUTH ELEVATION TO REMOVE 5 WINDOWS PER PLAN AND FILL WITH SIDING AND TRIM TO MATCH



FREEMAN
ARCHITECTS
PC

2024 Blue Mesa Court 80538
LOVELAND, CO

(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN	2-17-20
	CHECKED	3-20-20
REVISIONS	1	3-21-20
	2	
3		
4		

GENERAL MECHANICAL REQUIREMENTS:

CODES AND PERMITS

WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES, REGULATIONS AND ORDINANCES. PERMITS NECESSARY FOR PERFORMANCE OF WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR.

DRAWINGS AND COORDINATION

DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC IN NATURE, AND ARE NOT INTENDED TO BE SCALED FOR EXACT MEASUREMENTS NOR TO SERVE AS SHOP DRAWINGS. CHANGES FROM THE PLANS MADE WITHOUT CONSENT OF THE ENGINEER SHALL RELIEVE THE ENGINEER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARRIVING OUT OF SUCH CHANGES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHERE CONDITIONS REQUIRE REASONABLE CHANGES TO THOSE INDICATED ON THE DRAWINGS, MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. COORDINATE ALL WORK WITH OTHER TRADES.

WARRANTY

WORKMANSHIP, MATERIALS, EQUIPMENT AND PROPER OPERATION SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE FROM THE OWNER. INITIAL ACCEPTANCE OF WORK SHALL NOT WAIVE THIS GUARANTEE. THIS GUARANTEE SHALL NOT INCLUDE NORMAL MAINTENANCE REQUIRED BY THE OWNER AS DESCRIBED IN EQUIPMENT OPERATION AND MAINTENANCE MANUALS.

SUBMITTALS

CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER A MINIMUM OF (5) COPIES OF SUBMITTAL BROCHURES FOR REVIEW. PROVIDE INFORMATION ON ALL MAJOR EQUIPMENT AS LISTED ON DRAWING EQUIPMENT SCHEDULES, AS WELL AS VALVES, DUCTWORK ACCESSORIES AND TEMPERATURE CONTROL DIAGRAM AS APPLICABLE.

OPERATION AND MAINTENANCE MANUALS

CONTRACTOR SHALL FURNISH AT THE COMPLETION OF THE PROJECT (2) COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT/ENGINEER FOR REVIEW PRIOR TO TURNOVER TO OWNER. MANUALS TO BE BOUND AND INCLUDE INSTALLATION INSTRUCTIONS, REPLACEMENT PARTS LISTS AND MAINTENANCE INFORMATION ON ALL EQUIPMENT AS DESCRIBED IN THE SUBMITTALS SECTION. COMPLETED OPERATION AND MAINTENANCE MANUALS ARE TO BE FORWARDED TO THE OWNER WITHIN 90 DAYS AFTER OWNER BUILDING ACCEPTANCE.

PRODUCT SUBSTITUTIONS

MANUFACTURER MODEL NUMBERS LISTED ON THE DRAWINGS AND/OR SPECIFICATIONS ARE TO BE CONSIDERED AS THE BASIS OF DESIGN. WHERE TWO OR MORE ALTERNATE MANUFACTURERS OR MATERIALS ARE LISTED, THE CHOICE OF THESE SHALL BE OPTIONAL WITH THE CONTRACTOR. PRIOR TO THE AWARDING OF THE CONTRACT, CONTRACTOR MAY REQUEST A PROPOSED SUBSTITUTION OF MATERIALS IN WRITING TO THE ARCHITECT/ENGINEER NO LATER THAN SEVEN DAYS PRIOR TO THE RECEIPT OF BIDS. THE COST OF ANY CHANGES REQUIRED BY OTHER TRADES, INCLUDING A/E DESIGN, DUE TO THE USE OF EQUIPMENT AND/OR MATERIALS OTHER THAN THAT OF THE BASIS OF DESIGN SHALL BE PAID BY THE CONTRACTOR.

RECORD DRAWINGS

CONTRACTORS SHALL MAINTAIN A COMPLETE AND ACCURATE SET OF MARKED UP DRAWINGS SHOWING ACTUAL LOCATIONS OF INSTALLED WORK. THESE DRAWINGS ARE TO BE FORWARDED TO THE OWNER AS PART OF THE OPERATION AND MAINTENANCE MANUALS AT THE COMPLETION OF THE PROJECT.

ACCESS DOORS

PROVIDE ALL ACCESS DOORS/PANELS AS REQUIRED FOR ACCESS TO VALVES, DAMPERS, CONTROL DEVICES, FILTERS AND ANY OTHER ITEMS FOR WHICH ACCESS IS REQUIRED FOR EITHER OPERATION OR SERVICING. WHERE ACCESS DOORS ARE TO BE INSTALLED IN ASSEMBLIES REQUIRED TO HAVE A SPECIFIC FIRE RATING, ACCESS DOORS SHALL ALSO BE FIRE RATED.

PIPING AND DUCTWORK SEALANT THROUGH RATED ASSEMBLIES

PENETRATIONS SHALL BE SEALED AS REQUIRED IN ACCORDANCE WITH BUILDING AND MECHANICAL CODES TO RESIST THE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION IN ORDER TO MAINTAIN THE RESISTANCE RATING OF THE CONSTRUCTION BEING PENETRATED.

PROTECTION OF MATERIALS AND EQUIPMENT

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL WORK, MATERIALS, AND EQUIPMENT PROVIDED UNDER THIS SECTION. PIPE OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS TO PREVENT THE ENTRANCE OF DEBRIS DURING CONSTRUCTION. ALL DUCTWORK OPENINGS SHALL BE SEALED CLOSED DURING CONSTRUCTION.

EQUIPMENT AND PIPING IDENTIFICATION

PROVIDE EQUIPMENT LABELS FOR ALL MAJOR EQUIPMENT, INCLUDING BUT NOT LIMITED TO AIR HANDLING SYSTEMS, FANS, VAV BOXES, CONTROLS, DAMPERS, CONTROL VALVES AND PUMPS. PROVIDE PIPE MARKERS ON CW, HW AND HWC SYSTEMS. LABELS TO BE AT MAXIMUM 8 FEET APART, WITH FLOW DIRECTION INDICATED, AS APPLICABLE.

ADDITIONALLY, PROVIDE LABELING ON POTABLE WATER MANIFOLDS INDICATING PLUMBING FIXTURE SERVED BY THE OUTLET, AS APPLICABLE. LABELS SHALL BE AFFIXED OR ADHERED PERMANENTLY TO EQUIPMENT. EQUIPMENT INSTALLED INDOORS TO BE LABELED WITH EMBOSsing TAPE.

EQUIPMENT INSTALLED OUTDOORS TO BE LABELED WITH ENGRAVED PLASTIC LAMINATE SIGNS. PIPE MARKERS TO BE SELF-ADHESIVE, MANUFACTURED FOR SUCH PURPOSE.

STARTERS AND DISCONNECTS

EQUIPMENT STARTERS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. EQUIPMENT DISCONNECTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS. STARTERS SHALL BE NEMA TYPE, AND SHALL INCLUDE PHASE MONITORING FOR MOTORS 5 HP AND LARGER.

TESTING

TESTING SHALL BE PERFORMED ON THE FOLLOWING SYSTEMS SPECIFIED. ALL SYSTEMS LISTED MAY NOT BE INCLUDED IN PROJECT, REFER TO DRAWINGS FOR APPLICABLE SYSTEMS. SOIL, WASTE AND STORM DRAINAGE PIPING SHALL BE TESTED IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES.

DOMESTIC WATER PIPING SHALL BE TESTED AND PROVEN WATERTIGHT UNDER A PRESSURE NOT LESS THAN THE WORKING PRESSURE OF THE SYSTEM FOR A 24 HOUR PERIOD. DOMESTIC WATER PIPING SYSTEM SHALL BE CHLORINATED AND STERILIZED IN ACCORDANCE WITH REQUIREMENTS OF LOCAL JURISDICTION.

NATURAL GAS PIPING SHALL BE TESTED WITH AN AIR PRESSURE OF MINIMUM TWO TIMES THE DESIGN SYSTEM PRESSURE, BUT NO LESS THAN 3 PSIG, FOR A PERIOD OF 24 HOURS WITHOUT PRESSURE DROP.

BALANCING

SYSTEM BALANCING SHALL BE PERFORMED BY A CERTIFIED BALANCING CONTRACTOR. BALANCE ALL SYSTEMS INCLUDING AIRFLOW TO AND FROM ALL OPENINGS, AND PUMPED WATER SYSTEMS INCLUDING DOMESTIC WATER RECIRCULATION SYSTEMS AS APPLICABLE. MAKE ANY ADJUSTMENTS NECESSARY TO RESULT IN CONDITIONS INDICATED AND PROVIDE READJUSTMENTS TO ITEMS IN REPORT AS MAY BE REQUESTED BY ARCHITECT/ENGINEER. SUBMIT TWO COPIES OF TEST AND BALANCE REPORT FOR APPROVAL. FAN AND PUMP SYSTEMS TO BE BALANCED WITHIN PLUS OR MINUS 5 PERCENT OF LISTED VALUES. AIR INLETS AND OUTLETS TO BE BALANCED WITHIN PLUS 10 PERCENT OR MINUS 5 PERCENT OF LISTED VALUES. BALANCE REPORT TO INCLUDE:

- UNIT IDENTIFICATION
- MANUFACTURER AND NAMEPLATE DATA
- EQUIPMENT NAMEPLATE AMPERAGE AND ACTUAL AMPERAGE
- RPM (DESIGN AND ACTUAL)
- FAN CFM (DESIGN AND ACTUAL)
- FAN STATIC PRESSURE (DESIGN AND ACTUAL)
- PUMP GPM (DESIGN AND ACTUAL)
- PUMP DISCHARGE AND SUCTION PRESSURE
- REGISTER, GRILLE, DIFFUSER REFERENCE NUMBER AND LOCATION
- INLET/OUTLET CFM (DESIGN AND ACTUAL)
- FLOW DEVICE PRESSURE DROP, CFM OR GPM

A FINAL BALANCING REPORT SHALL BE PROVIDED TO THE OWNER AFTER COMPLETION OF THE PROJECT.


























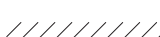

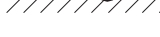

CLEANING

AT THE COMPLETION OF WORK, ALL FIXTURES AND EQUIPMENT SHALL BE THOROUGHLY CLEANED AND DELIVERED IN A CONDITION SATISFACTORY TO THE ARCHITECT. ALL FILTERS SHALL BE REPLACED WITH NEW PRIOR TO OWNER ACCEPTANCE OF THE BUILDING.





















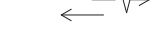

GENERAL PLUMBING NOTES:

- PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE CODES. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK. THE PLUMBING DESIGN IS BASED ON THE 2018 INTERNATIONAL PLUMBING CODE.
- WASTE AND VENT PIPING BELOW SLAB SHALL BE SCHEDULE 40, DWV, PVC, PLASTIC. FITTINGS SHALL BE PVC.
- WASTE AND VENT PIPING ABOVE SLAB SHALL BE SCHEDULE 40, DWV, PVC, PLASTIC. FITTINGS SHALL BE PVC.
- POTABLE WATER PIPING ABOVE GRADE SHALL BE TYPE L COPPER WITH SOLDERED COPPER FITTINGS AND NO LEAD SOLDER UNLESS NOTED OTHERWISE.
- CONTRACTOR OPTION: POTABLE WATER PIPING 2" AND SMALLER SHALL BE PEX-A TUBING MANUFACTURED BY UPONOR/WISBRO OR APPROVED EQUAL. FITTINGS SHALL BE EXPANSION TYPE WITH SECONDARY EXPANSION RING (NOT CRIMPED). CW SHALL BE RUN IN BLUE PIPE, HW AND HWC IN RED, OTHER SYSTEMS CLEAR. PIPING SHALL BE PROPERLY SUPPORTED USING PLENUM RATED GALVANIZED TROUGHS OR CHANNELS HUNG AT A MAXIMUM OF 8' INTERVALS. UNSUPPORTED PEX SHALL NOT EXCEED 32".
- POTABLE WATER VALVES SHALL BE FULL PORT, BALL TYPE.
- HANGERS FOR 2" AND SMALLER PIPE SHALL BE BAND TYPE, 2.5" AND LARGER SHALL BE CLEVIS TYPE. USE COPPER COATED TYPE ON COPPER PIPE.
- GAS PIPE 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL. FITTINGS SHALL BE MALLEABLE SCREW TYPE.
- INSTALL UNION, GAS COCK AND FULL SIZE 6" LONG DIRT LEG FOR ALL GAS FIRED EQUIPMENT.
- FURNISH AND INSTALL WATTS 9D-M2 0.75" BACKFLOW PREVENTION DEVICE FOR ICE MACHINES AND STEAMER EQUIPMENT. INSTALL 0.75" DRAIN AND TERMINATE TO FLOOR SINK WITH FULL AIR GAP.
- FURNISH AND INSTALL WATTS SD-3 LEAD FREE DUAL CHECK BACKFLOW PREVENTION DEVICE WITH AIR GAP FOR COFFEE URN AND TEA DISPENSERS.

PLUMBING LEGEND:

	CW	COLD WATER PIPING		BALL VALVE
	HW	HOT WATER PIPING		GATE VALVE
	HWC	HOT WATER CIRC.		GAS COCK
	TW	TEMPERED WATER		PRESS. RED. VALVE
	V	VENT PIPING		T & P RELIEF VALVE
	W	WASTE PIPING		SOLENOID VALVE
	GW	GREASE WASTE PIPING		BALANCE VALVE
	CD	CONDENSATE PIPING		CHECK VALVE
	G	NATURAL GAS PIPING		UNION
		PIPE ELBOW DOWN		FLOOR CLEANOUT
		PIPE ELBOW UP		GRADE CLEANOUT
		PIPE TEE UP		WALL CLEANOUT
		PIPE TEE DOWN		PIPE TO BE REMOVED
		PIPE CAP		I.E. INVERT ELEVATION
		PIPE CONTINUATION	(N)	NEW
(R)	RELOCATE		(E)	EXISTING

HVAC LEGEND:

	RECT DUCT (NEW SHADED/EXISTING UNSHADED)
	ROUND DUCT (NEW SHADED/EXISTING UNSHADED)
	RECT DUCT SIZE CHANGE
	RECT DUCT CHANGE TO ROUND
	RECT ELBOW UP (SUPPLY)
	RECT ELBOW UP (NON-SUPPLY)
	RECT ELBOW DOWN (SUPPLY)
	RECT ELBOW DOWN (NON-SUPPLY)
	ROUND ELBOW UP
	ROUND ELBOW DOWN
	RECT ELBOW W/ TURNING VANES
	ROUND ELBOW
	ROUND TAKE-OFF W/ DAMPER FROM RECT MAIN
	ROUND TAKE-OFF W/ DAMPER FROM ROUND MAIN
	RECT TAKE-OFF W/ DAMPER FROM RECT MAIN
	RECT TAKE-OFF W/ DAMPER FROM ROUND MAIN
	DIFFUSER WITH FLEX DUCT
	RETURN GRILLE (UNDUCTED)
	RETURN/EXHAUST GRILLE (DUCTED)
	AIRFLOW PATTERNS
	THERMOSTAT WITH ZONE TAG
	SENSOR WITH ZONE TAG

GENERAL HVAC NOTES:

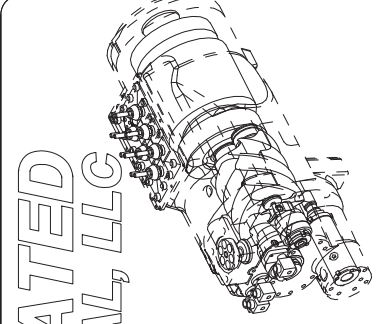
- MECHANICAL WORK SHALL COMPLY WITH ALL APPLICABLE CODES. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK. THE MECHANICAL DESIGN IS BASED ON THE 2018 INTERNATIONAL MECHANICAL CODE.
- ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL – CONSTRUCTION AND INSTALLATION SHALL CONFORM TO THE CURRENT EDITION OF SMACNA OR AS REQUIRED BY ALL APPLICABLE CODES.
- CONSTRUCT ALL SUPPLY AND RETURN DUCTWORK TO SMACNA 2" PRESSURE CLASS.
- CONSTRUCT ALL EXHAUST DUCTWORK TO SMACNA 1" PRESSURE CLASS.
- DIMENSIONS OF DUCTWORK SHOWN INDICATES CLEAR INSIDE DIMENSIONS – WHERE DUCT LINER IS TO BE ADDED, INCREASE THE SIZE OF SHEET METAL ACCORDINGLY.
- MAINTAIN A MINIMUM 10'-0" SEPARATION FROM OUTSIDE AIR INTAKES TO EXHAUST TERMINATIONS AND PLUMBING VENTS.
- MAINTAIN A MINIMUM 3'-0" SEPARATION FROM EXHAUST TERMINATIONS TO OPERABLE WINDOWS AND DOORS.
- WALL MOUNTED THERMOSTATS AND SENSORS SHALL BE INSTALLED 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. THERMOSTATS AND SENSORS LOCATED ON EXTERIOR WALL SURFACES SHALL BE PROVIDED WITH AN INSULATED SUB-BASE.
- TEMPORARY HEATING: THE PERMANENT HVAC SYSTEM MAY NOT BE UTILIZED FOR HEATING UNTIL ALL GYPSUM WORK IS COMPLETED AND HAS BEEN PAINTED. IF THE PERMANENT HVAC SYSTEM IS UTILIZED DURING CONSTRUCTION, ALL DUCT INTAKES SHALL BE COVERED WITH FILTER MEDIA (MERV-8 RATING). IF EXCESSIVE DUST OR DEBRIS HAS ENTERED THE SYSTEM THEN ALL COIL AND DUCT SURFACES SHALL BE CLEANED. NEW FILTERS ARE TO BE PROVIDED JUST PRIOR TO TURNOVER TO OWNER. TEMPORARY HEATING OF THE BUILDING PRIOR TO ANY USE OF THE PERMANENT HVAC SYSTEM SHALL BE THE RESPONSIBILITY OF THE G.C.
- DISHWASHER HOOD EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF ALUMINUM AND SEALED WATERTIGHT WITH SILICONE SEALANT.
- GREASE DUCTWORK (RECTANGULAR): DUCTWORK SHALL BE CONSTRUCTED OF STEEL OF NOT LESS THAN 16 GAUGE. JOINTS, SEAMS AND PENETRATIONS SHALL BE MADE WITH A CONTINUOUS LIQUID-TIGHT WELD OR BRAZE MADE ON THE EXTERNAL SURFACE OF THE DUCT SYSTEM. JOINTS, DUCT SLOPING AND CLEANOUTS SHALL BE IN ACCORDANCE WITH THE MECHANICAL CODE. PRIOR TO CONCEALMENT OF DUCT, A LEAKAGE TEST SHALL BE PERFORMED IN THE PRESENCE OF A CODE OFFICIAL.
- RECTANGULAR GREASE DUCTWORK INSULATION: PROVIDE TWO LAYERS OF BLANKET WRAP INSULATION WITH A MINIMUM NOMINAL THICKNESS OF 1.5" EACH, COMPOSED OF MINERAL WOOL FIBERS AND FIBERGLASS WITH A DENSITY OF 1.4 POUNDS PER SQUARE FOOT. BLANKET WRAP SHALL BE FULLY ENCAPSULATED WITH A POLYPROPYLENE/FOIL SCRIM. SYSTEM AND INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF ASTM E 2336, LOCAL BUILDING CODES AND AUTHORITY HAVING JURISDICTION. 3M FIRE BARRIER DUCT WRAP 15A OR APPROVED.

ENERGY CODE/INSULATION NOTES:

- THE MECHANICAL DESIGN IS BASED ON THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
- ALL SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE SEALED AIRTIGHT WITH DUCT SEALANT ALONG ALL SEAMS AND JOINTS.
- ALL CONCEALED ROUND SUPPLY DUCTWORK SHALL BE WRAPPED WITH 1.5" THICK FIBERGLASS INSULATION WITH FOIL SCRIM VAPOR BARRIER JACKET, MINIMUM R-6.
- ALL RECTANGULAR MAKE-UP AIR UNIT DUCTWORK INSTALLED INDOORS SHALL BE WRAPPED WITH 1.5" THICK FIBERGLASS INSULATION WITH FOIL SCRIM VAPOR BARRIER JACKET, MINIMUM R-6. NO DUCT LINER ALLOWED.
- ALL RECTANGULAR MAKE-UP AIR UNIT DUCTWORK INSTALLED OUTDOORS SHALL BE DOUBLE-WALL SHEET METAL DUCTWORK CONSTRUCTED WITH 2" THICK, R-12 INSULATION INNER LAYER. NO DUCT LINER ALLOWED.
- HOT WATER PIPING SHALL BE INSULATED USING FIBERGLASS INSULATION WITH ALL SERVICE JACKET HAVING MAXIMUM 'K' FACTOR OF 0.27. INSULATION THICKNESS SHALL BE 1".
- HOT WATER RECIRCULATION PIPING SHALL BE INSULATED FIBERGLASS INSULATION WITH ALL SERVICE JACKET HAVING MAXIMUM 'K' FACTOR OF 0.27. INSULATION THICKNESS SHALL BE 1".
- COLD WATER PIPING SHALL BE INSULATED USING FIBERGLASS INSULATION WITH ALL SERVICE JACKET HAVING MAXIMUM 'K' FACTOR OF 0.27. INSULATION THICKNESS SHALL BE 0.5".

MECHANICAL DRAWING INDEX

SHEET NUMBER	SHEET NAME
MP0.1	MECHANICAL GENERAL NOTES, LEGENDS AND DRAWING INDEX
M2.1	HVAC FLOOR PLAN
M7.1	HVAC SCHEDULES AND DETAILS
M8.1	KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS
M8.2	KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS
M8.3	KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS
M8.4	KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS
M8.5	KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS
P1.1	PLUMBING WASTE AND VENT PLAN
P2.1	PLUMBING WATER AND GAS PLAN
P6.1	PLUMBING SCHEDULES AND DETAILS



320 Maple St., Suite 110
Fort Collins, CO 80521
Phone: 970-556-0570
frank.dass@intmech.com

PREMAN
ARCHITECTS

Brookside Gardens
Barn Remodel

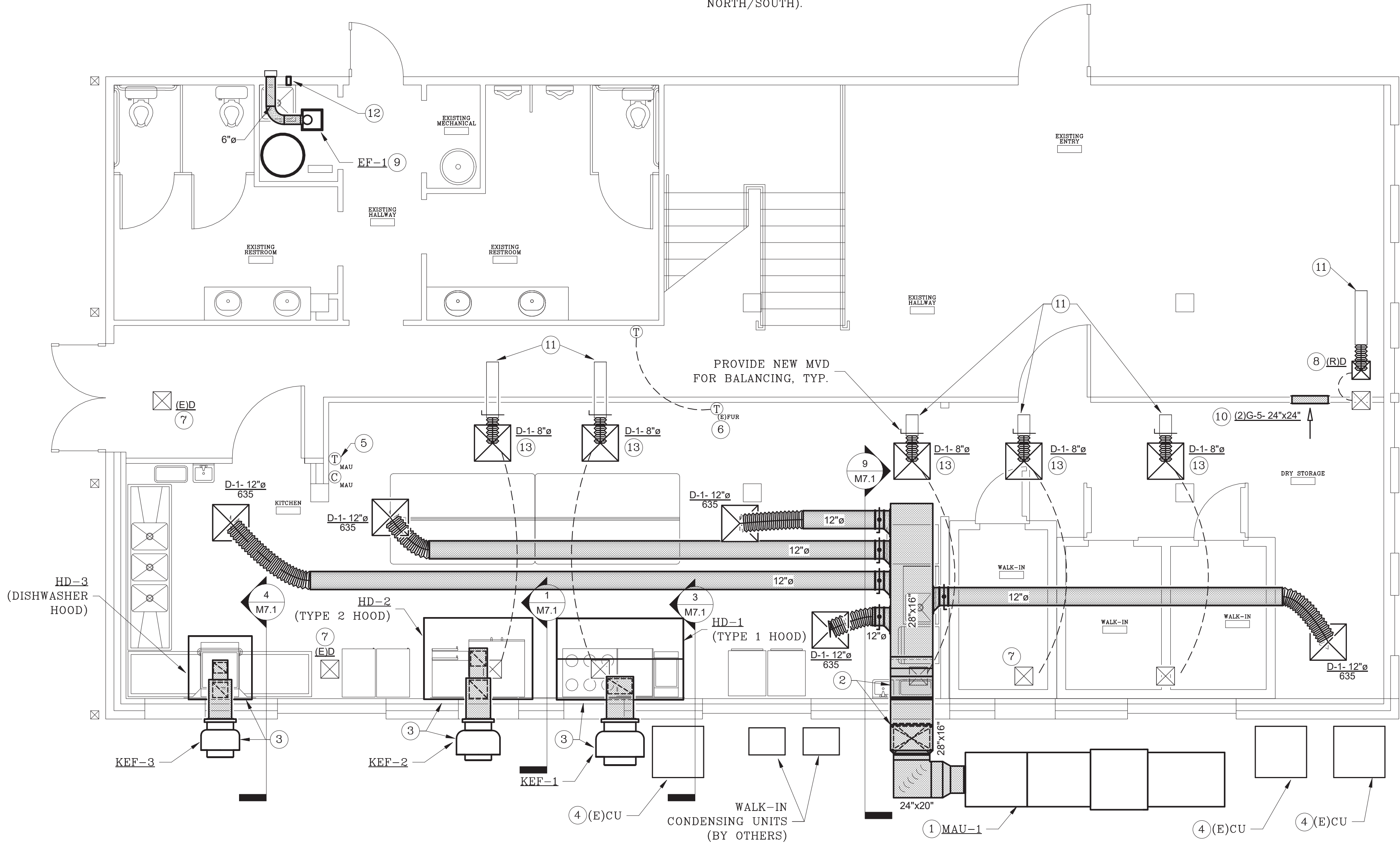
PROJECT NO.	DRAWN JKM	CHECKED GNG	REVISIONS	JOB NUMBER: 20-040

Construction Documents

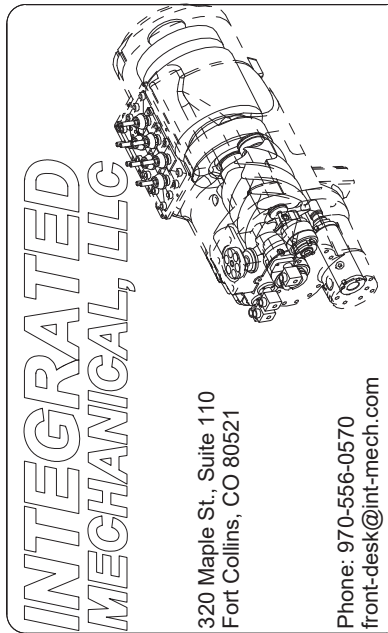
MP0.1

FLAG NOTES:

- 1 NEW GRADE MOUNTED MAKE-UP AIR UNIT TO BE INSTALLED ON CONCRETE LEVELING PAD. COORDINATE WITH GC FOR 3" THICK PAD TO BE INSTALLED AT MAU-1 INSTALLATION LOCATION. PAD SHALL EXTEND BEYOND THE FOOTPRINT OF THE MAU-1 CURB AND SUPPORT RAILS BY 3" IN ALL DIRECTIONS.
- 2 ROUTE DUCTWORK UP EXTERIOR SIDE OF WALL AND INTO SPACE TIGHT TO BOTTOM OF HEADER AT REMOVED AND INFILLED WINDOW LOCATION. REFER TO SECTION INDICATED FOR MORE INFORMATION.
- 3 KITCHEN HOOD AND EXHAUST FAN SYSTEM INSTALLED ABOVE OWNER PROVIDED EQUIPMENT. REFER TO THE SECTION INDICATED FOR MORE DETAILS ON DUCTWORK ROUTING, SIZING, AND INSTALLATION REQUIREMENTS.
- 4 EXISTING CONDENSING UNITS SHALL REMAIN AS-IS. SHOWN FOR REFERENCE ONLY.
- 5 LOCATION OF NEW MAU-1 CONTROLLER AND REMOTE T'STAT. COORDINATE INSTALLATION LOCATION WITH GC/OWNER.
- 6 MC TO RELOCATE EXISTING FURNACE T'STAT TO LOCATION SHOWN. PROVIDE COVER PLATE AT LOCATION OF REMOVED THERMOSTAT. GC SHALL PAINT COVER PER OWNER. MC TO PROVIDE NEW CONTROL WIRING FOR RELOCATION AS NECESSARY.
- 7 EXISTING SUPPLY AIR DIFFUSER TO REMAIN AS-IS. SHOWN FOR REFERENCE ONLY.
- 8 RELOCATE EXISTING SUPPLY AIR DIFFUSER AS INDICATED. MC TO DEMO AND REMOVE LENGTH OF SUPPLY DUCTWORK WITHIN CEILING JOIST SPACE ABOVE AS NECESSARY TO ALIGN WITH NEW INSTALLATION LOCATION. PROVIDE NEW FLEX DUCTWORK CONECTION MATCHING EXISTING DUCTWORK SIZE. LIMIT FLEX LENGTH TO MAX 3'-0" (DUCTWORK ASSUMED TO RUN WITHIN CEILING JOIST SPACE. FLOOR JOISTS ASSUMED TO RUN NORTH/SOUTH).
- 9 PROVIDE AND INSTALL EXHAUST FAN EXPOSED IN NEW JANITORS CLOSET. TERMINATE 6"Ø THROUGH EXTERIOR SIDEWALL WITH WALL CAP AND BIRD SCREEN. GC TO PAINT CAP PER OWNER/ARCHITECT.
- 10 PROVIDE (2)G-5-24"x24" GRILLES BACK-TO-BACK, LOW IN WALL FOR RETURN AIR PATH. BOTTOM OF GRILLE TO BE INSTALLED AT 0'-6" A.F.F. CENTRAL RETURN FOR (E)FUR IS LOCATED IN EXISTING ENTRY AREA.
- 11 EXISTING HORIZONTAL FURNACE IS LOCATED IN SECOND LEVEL MECHANICAL ROOM AND SHALL REMAIN AS-IS. NO REBALANCING IS REQUIRED AND THE ONLY MODIFICATIONS SHALL BE THE RELOCATION OF THE DIFFUSERS AS INDICATED.
- 12 MC TO DEMO EXISTING DRYER VENT IN THIS ROOM. COORDINATE WITH GC TO CAP AND SEAL WALL PENETRATION TO MATCH EXISTING.
- 13 MC TO TEST AND RECORD SUPPLY AIR FLOR VOLUME OF EXISTING DIFFUSER PRIOR TO REMOVAL. DEMO AND REMOVE LENGTH OF SUPPLY DUCTWORK WITHIN CEILING JOIST SPACE ABOVE AS NECESSARY TO ALIGN WITH NEW DIFFUSER INSTALLATION LOCATION. PROVIDE NEW FLEX DUCTWORK AND NEW LAY-IN CEILING DIFFUSER AS INDICATED. MC TO CONFIRM EXISTING DUCTWORK SIZE AND MATCH DIFFUSER SIZE PRIOR TO ORDERING. BALANCE NEW DIFFUSER TO TESTED AND RECORDED AIR FLOW AT COMPLETION OF WORK. LIMIT FLEX LENGTH TO MAX 3'-0" (DUCTWORK ASSUMED TO RUN WITHIN CEILING JOIST SPACE. FLOOR JOISTS ASSUMED TO RUN NORTH/SOUTH).



HVAC FLOOR PLAN



FREEMAN
ARCHITECTS

P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel

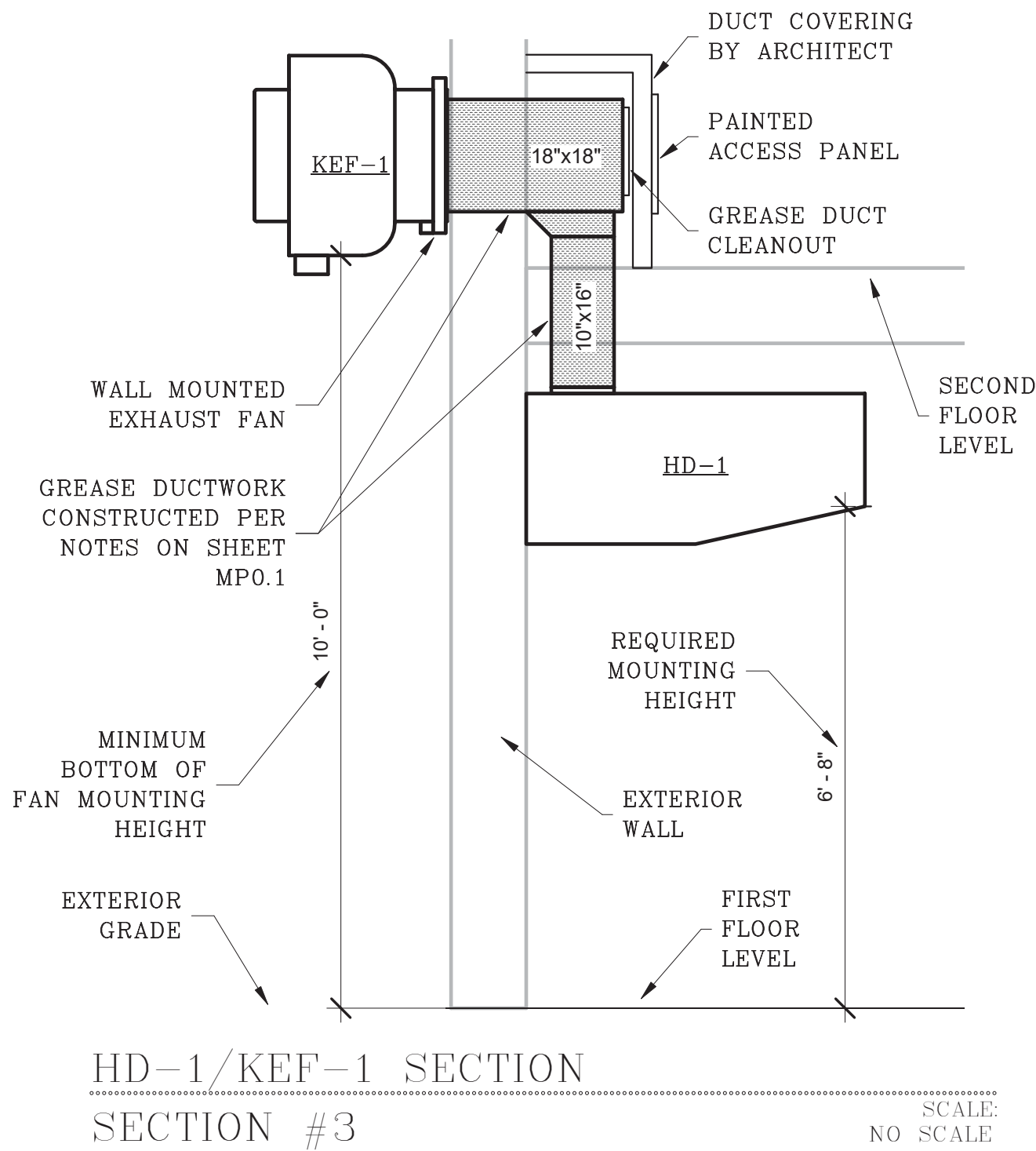
619 E. County Road 8
Berthoud, CO 80513

HVAC FLOOR PLAN

PROJECT NO.	DRAWN JKM	CHECKED GNG	09/25/20
REVISIONS			
JOB NUMBER:	20-040		

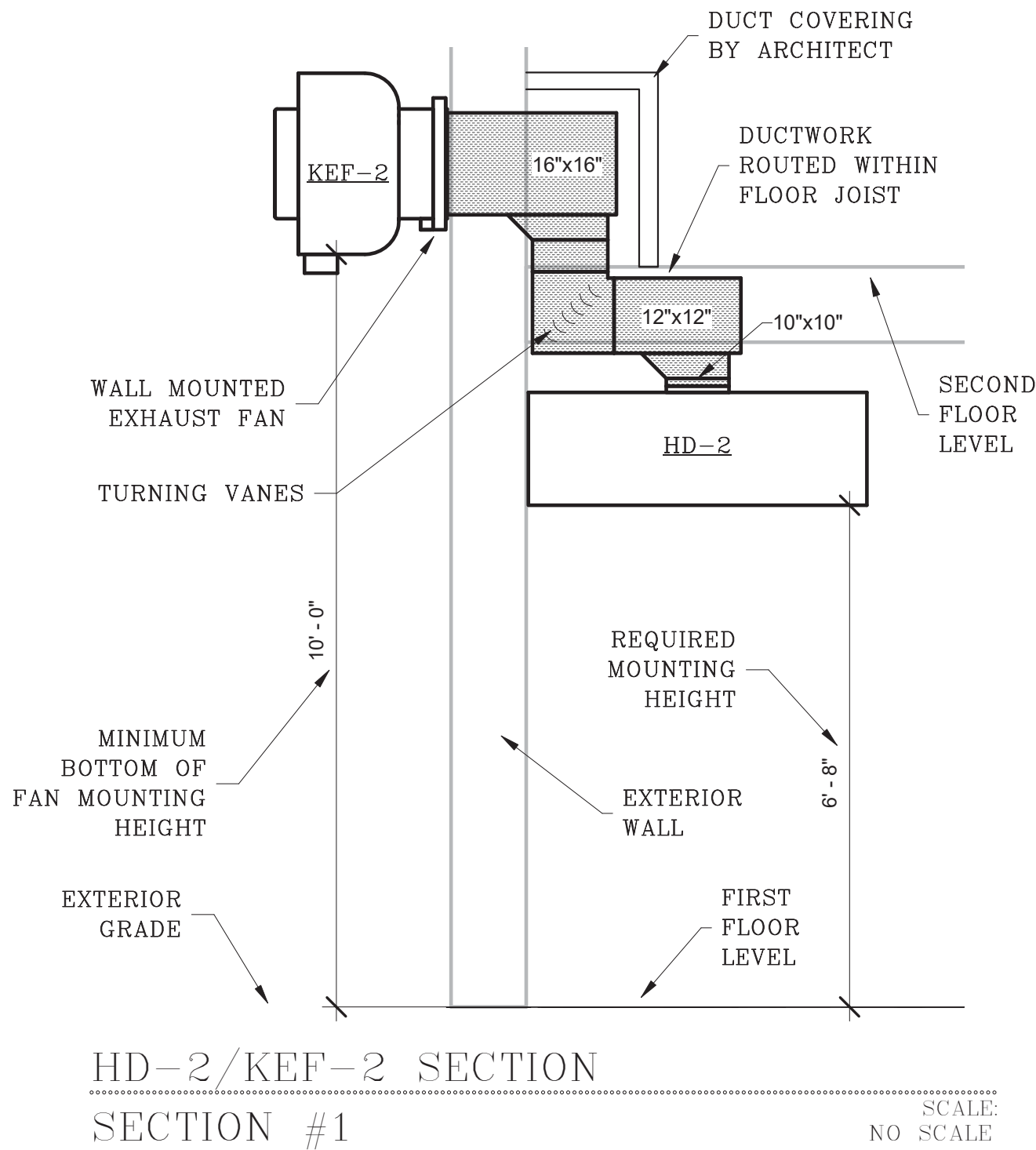
Construction Documents

M2.1



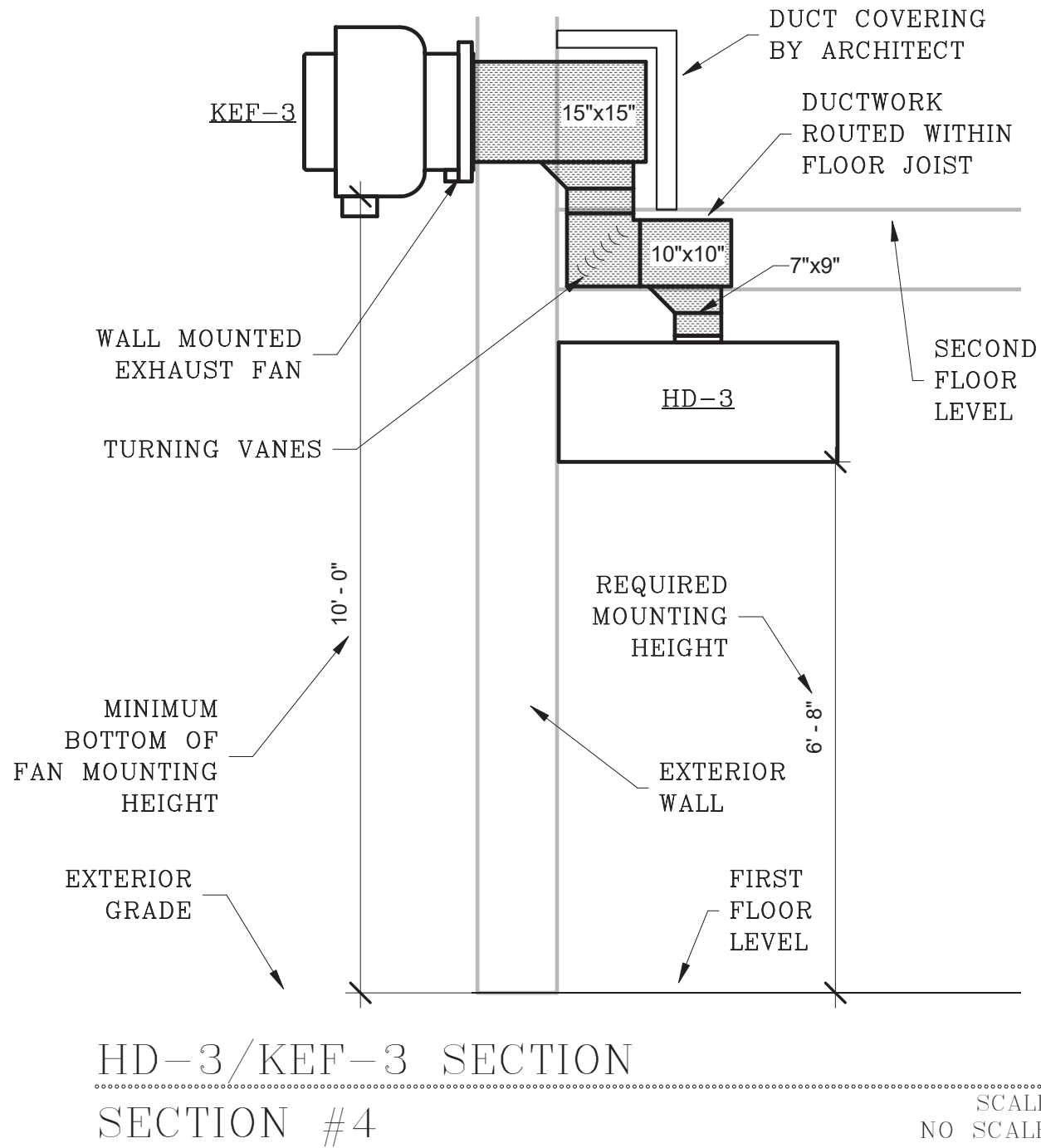
HD-1/KEF-1 SECTION
SECTION #3

SCALE:
NO SCALE



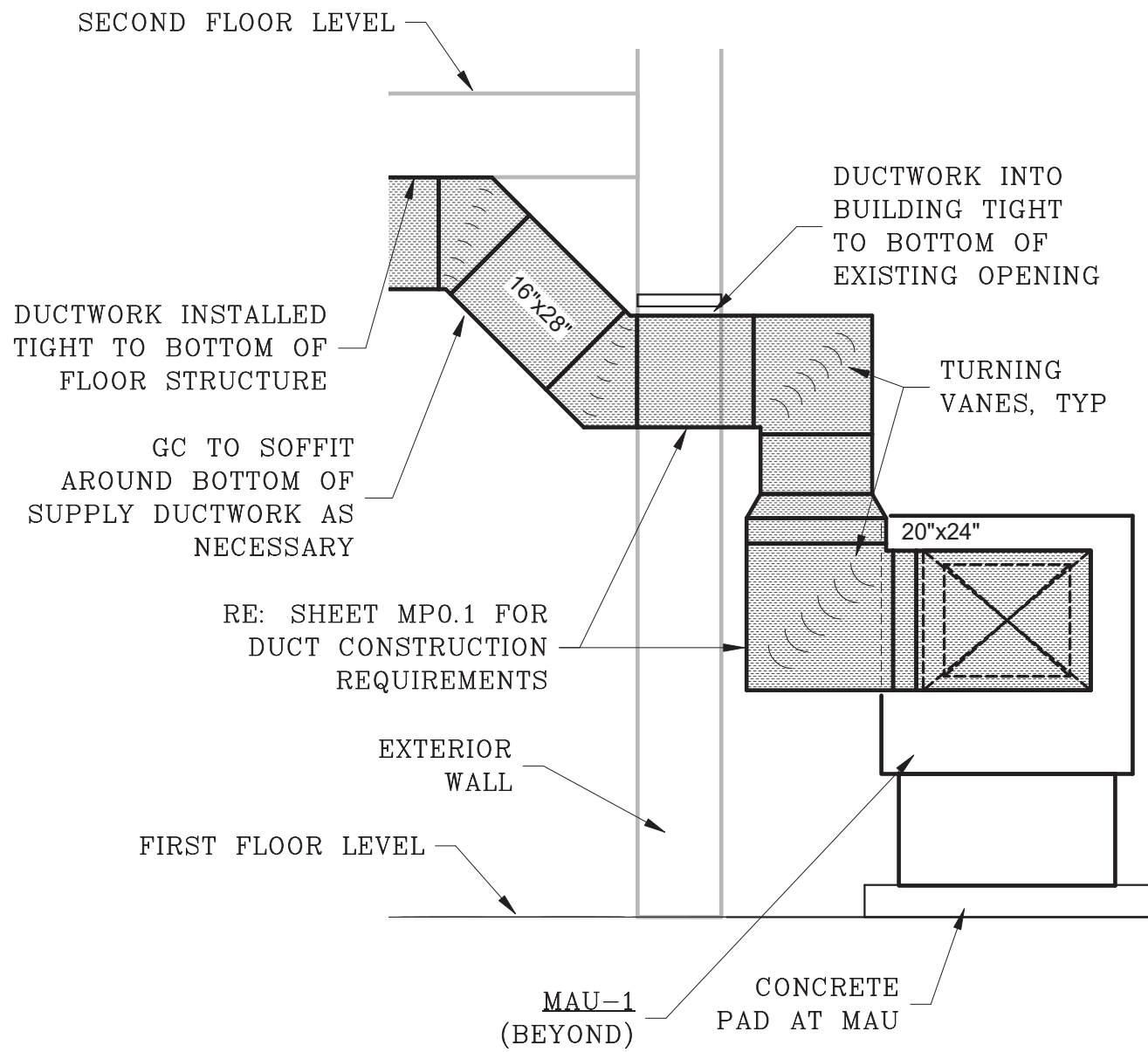
HD-2/KEF-2 SECTION
SECTION #1

SCALE:
NO SCALE



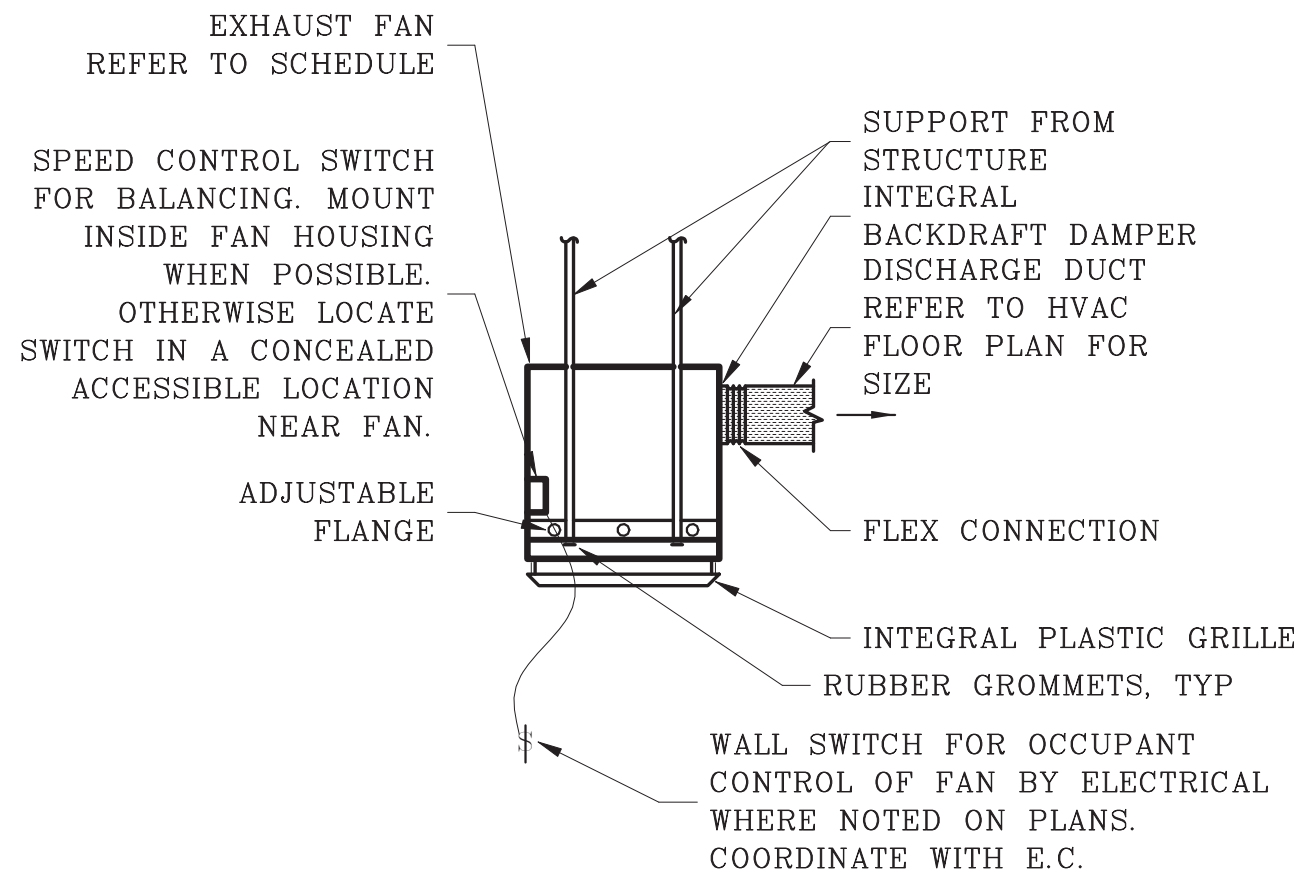
HD-3/KEF-3 SECTION
SECTION #4

SCALE:
NO SCALE



MAU-1 SECTION
SECTION #9

SCALE:
NO SCALE



CEILING EXHAUST FAN
DETAIL

SCALE:
NONE

OUTSIDE AIR VENTILATION SCHEDULE (BASED ON ASHRAE 62.1-2016)

ROOM	AREA [SF] [Az]	OCC DENSITY [#/1000SF]	NUMBER PEOPLE (Pz)	PEOPLE OA RATE [CFM/PERSON] (Rp)	AREA OA RATE [CFM/SF] (Ra)	BREATHING ZONE OA [CFM] (Vbz=Rp x Pz + RaxAz)	DISTRIBUTION EFFECTIVENESS (Ez)	OA INTAKE [CFM] (Vot=Vbz/Ez)	OA PROVIDED [CFM]	SYSTEM	REMARKS
KITCHEN	1,119	20	23	7.5	0.12	307	0.8	385	3,180	MAU-1	

KITCHEN AIR BALANCE: EXHAUST: KEF-1 = 1,750 CFM / KEF-2 900 CFM / KEF-3 525 CFM. TOTAL EXHAUST = 3,175 SUPPLY: MAU-1 = 3,180 CFM. TOTAL SUPPLY = 3,180
THE KITCHEN IS 5 CFM POSITIVE UNDER DESIGN OPERATION - CATERING KITCHEN, AND NO DINING ROOM.

EXHAUST FAN SCHEDULE

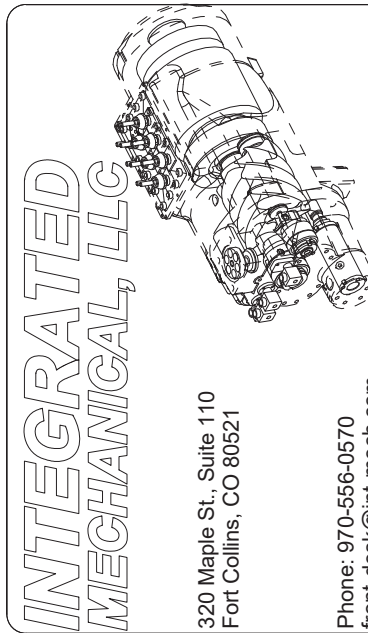
NUMBER	MAKE & MODEL NUMBER	TYPE	DUTY	CFM	FAN SPEED	EXT STATIC	MOTOR HP/W	SONES	DRIVE TYPE	SPEED CONTROL	GRILLE TYPE	HOUSING CONST	CONTROL	ELEC DATA	REMARKS
EF-1	COOK GC-146	CEILING CABINET	EXHAUST	50	795 RPM	0.25"	27 W	1.3	DIRECT	YES	PLASTIC	GALV	(A)	120/1	(1) (2)

(1) GRAVITY BACKDRAFT DAMPER (2) SPEED CONTROLLER MOUNTED AT FAN FOR PURPOSES OF BALANCING (A) CONTINUOUS OPERATION DURING OCCUPIED HOURS

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

APPROVED MANUFACTURERS: METALAIRE, KRUEGER

NUMBER	MAKE & MODEL NUMBER	DESCRIPTION	DUTY	COLOR	FRAME SIZE	NECK SIZE	FRAME TYPE	FRAME CONST	DAMPER	REMARKS
D-1	TITUS PAR	PERFORATED SUPPLY DIFFUSER	SUPPLY	WHITE	24/24	12"Ø	LAY-IN	STEEL	NO	LAY-IN CEILING, SUPPLY APPLICATION
D-2	TITUS OMNI-1	ARCHITECTURAL UNI-FLO DIFFUSER	SUPPLY	WHITE	24/24	SEE PLAN	SURFACE	STEEL	YES	WITH TRIM FRAME
D-3	TITUS OMNI-1	ARCHITECTURAL UNI-FLO DIFFUSER	SUPPLY	WHITE	12/12	SEE PLAN	SURFACE	STEEL	YES	WITH TRIM FRAME
D-4	TITUS 300RL-1	SIDEWALL SUPPLY DIFFUSER	SUPPLY	WHITE	SEE PLAN	SEE PLAN	SIDEWALL	STEEL	YES	
D-5	TITUS TDC-3	DIRECTIONAL DIFFUSER	SUPPLY	WHITE	24/24	SEE PLAN	LAY-IN	STEEL	NO	18x18 DUCT SIZE WITH ROUND NECK
D-6	TITUS TDC-1	DIRECTIONAL DIFFUSER	SUPPLY	WHITE	NECK + 6"	SEE PLAN	SURFACE	STEEL	NO	
G-1	TITUS PAR-3	PERFORATED FACE GRILLE	RETURN	WHITE	24/24	22/22	LAY-IN	STEEL	NO	
G-2	TITUS PAR-3	PERFORATED FACE GRILLE	RETURN	WHITE	24/12	22/10	LAY-IN	STEEL	NO	
G-3	TITUS 355RLF	LOUVERED FACE FILTER GRILLE	RETURN	WHITE	NECK + 4"	SEE PLAN	SURFACE	STEEL	NO	WITH 1" FILTER TO MATCH NECK SIZE
G-4	TITUS PAR-3	PERFORATED FACE GRILLE	RETURN	WHITE	24/12	22/10	SURFACE	STEEL	NO	WITH TRIM FRAME
G-5	TITUS 350RL-1	LOUVERED FACE GRILLE	RETURN	WHITE	SEE PLAN	SEE PLAN	SURFACE	STEEL	NO	
G-6	TITUS T-700L	LOUVERED FACE DOOR GRILLE	RETURN	WHITE	NECK + 2"	SEE PLAN	SURFACE	STEEL	NO	WITH AUXILIARY FRAME/TRIM
R-1	TITUS PAR-3	PERFORATED FACE REGISTER	RETURN/ EXHAUST	WHITE	24/24	22/22	LAY-IN	STEEL	YES	
R-2	TITUS PAR-3	PERFORATED FACE REGISTER	RETURN/ EXHAUST	WHITE	24/12	22/10	LAY-IN	STEEL	YES	
R-3	TITUS 8F-1	PERFORATED FACE REGISTER	RETURN/ EXHAUST	WHITE	24/24	22/22	SURFACE	ALUM	YES	
R-4	TITUS 8F-1	PERFORATED FACE REGISTER	RETURN/ EXHAUST	WHITE	12/12	10/10	SURFACE	ALUM	YES	
R-5	TITUS 350FL-1	LOUVERED FACE REGISTER	EXHAUST	WHITE	SEE PLAN	SEE PLAN	SURFACE	ALUM	YES	



FREEMAN
ARCHITECTS

P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel

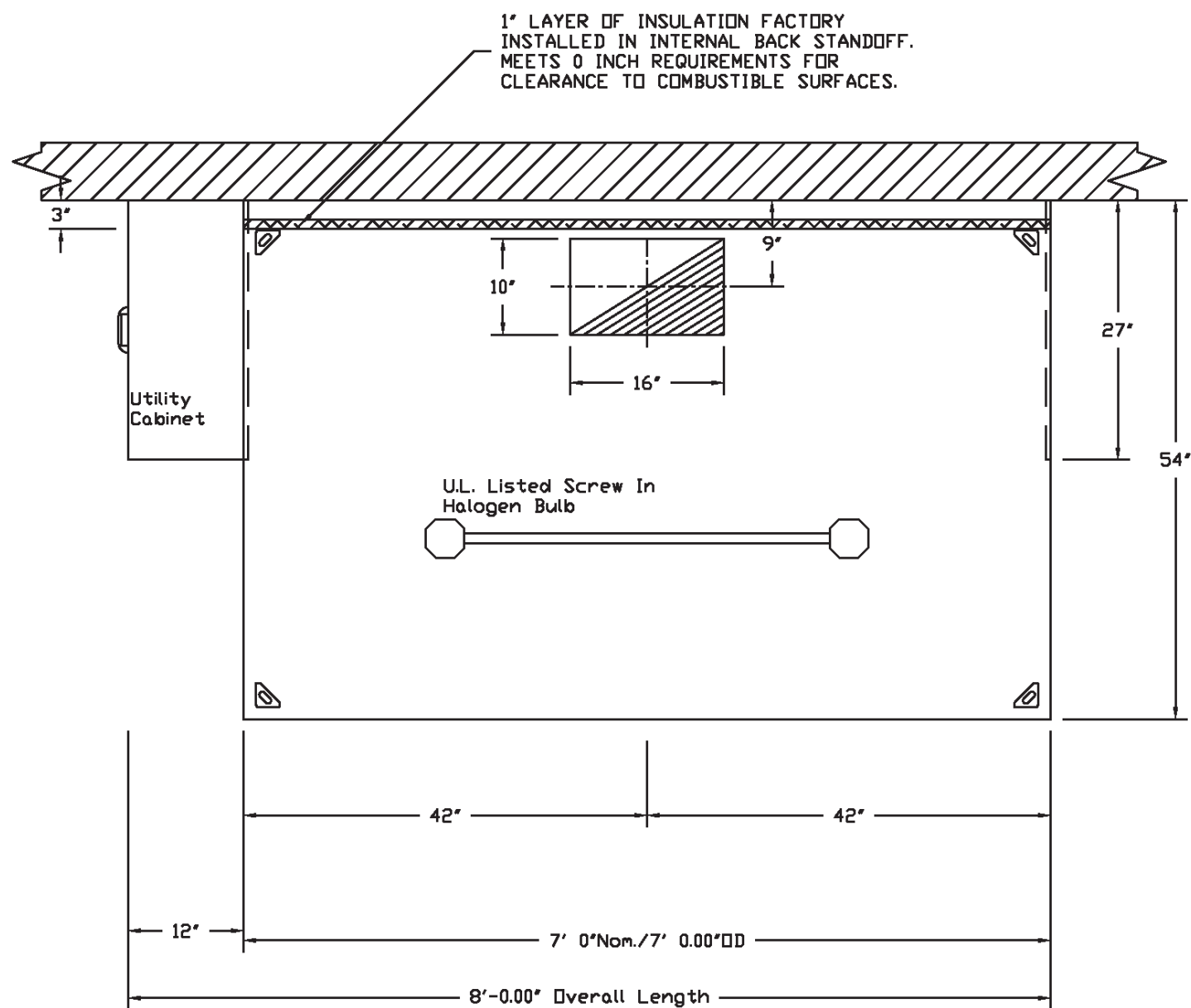
619 E. County Road 8
Berthoud, CO 80513

HVAC SCHEDULES AND DETAILS

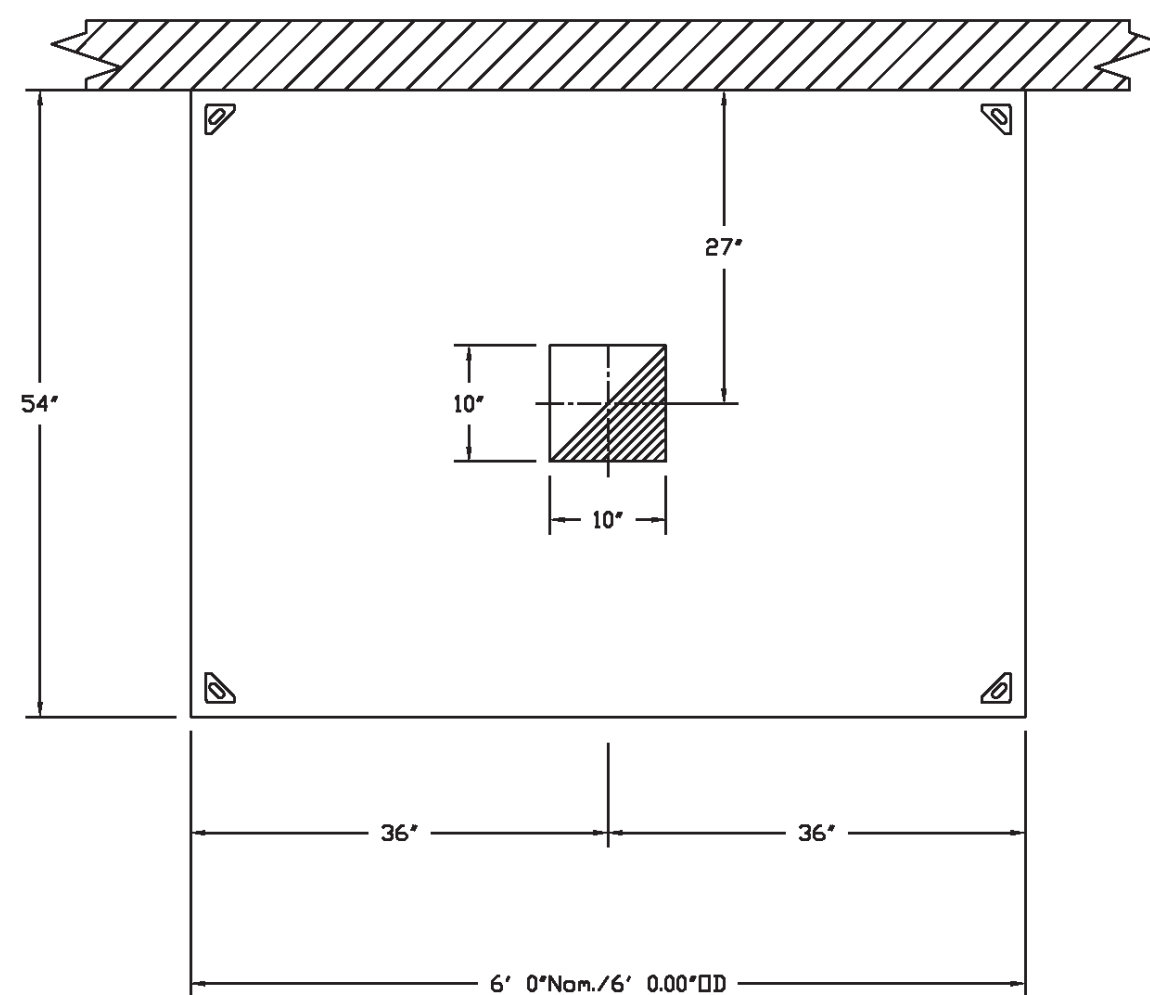
PROJECT NO.	DRAWN JKM	CHECKED GNG	09/25/20
REVISIONS			
JOB NUMBER:	20-040		

Construction Documents

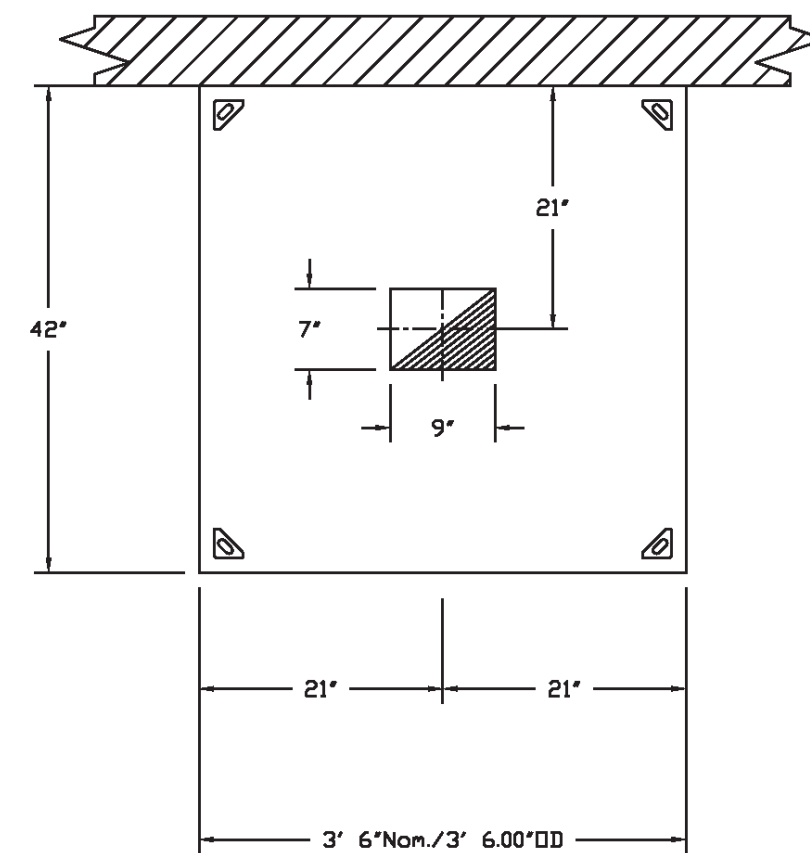
M7.1



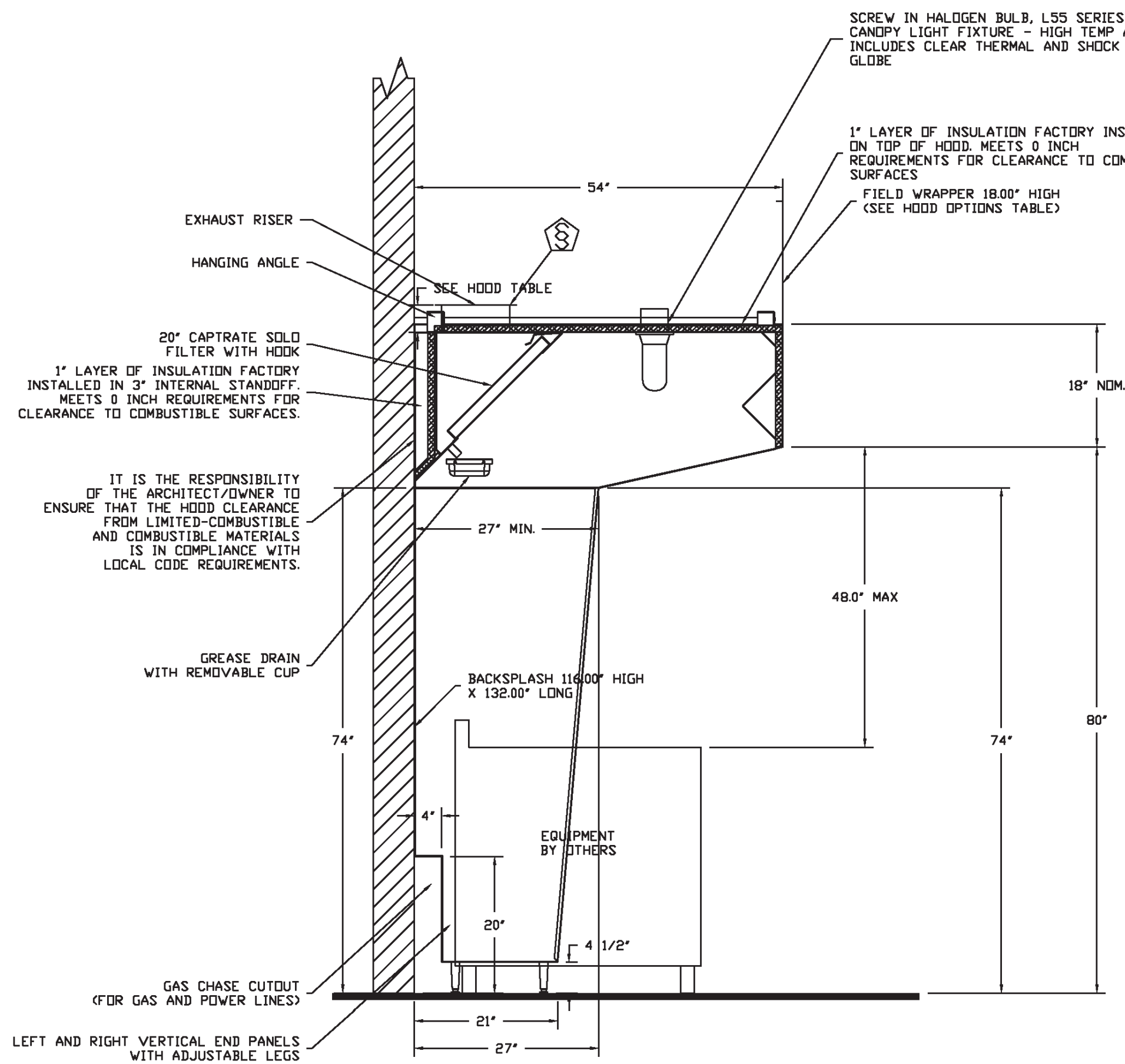
PLAN VIEW - Hood #1
7' 0.00" LONG 5418SND-2



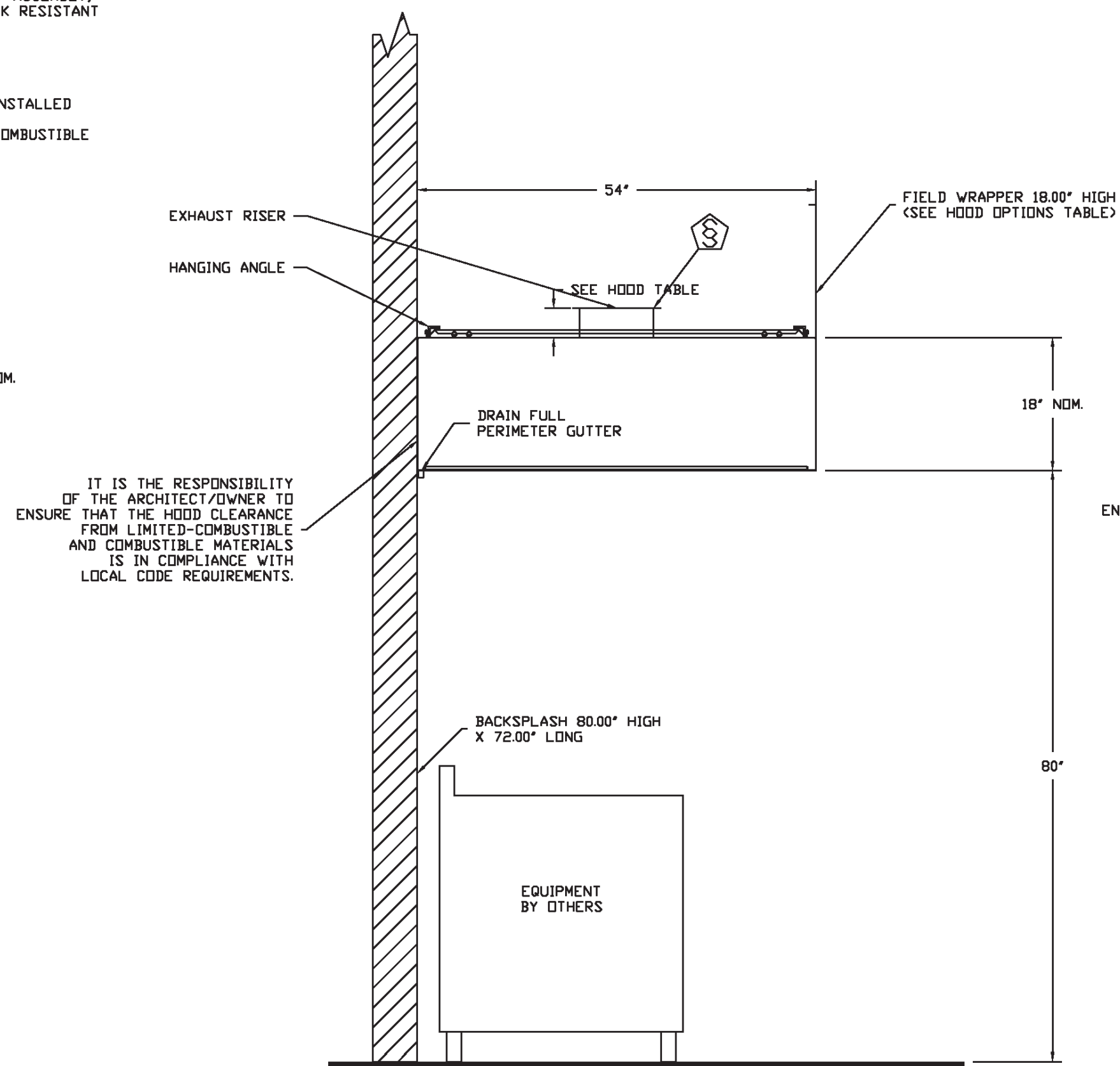
PLAN VIEW - Hood #2
6' 0.00" LONG 5418VHB-G



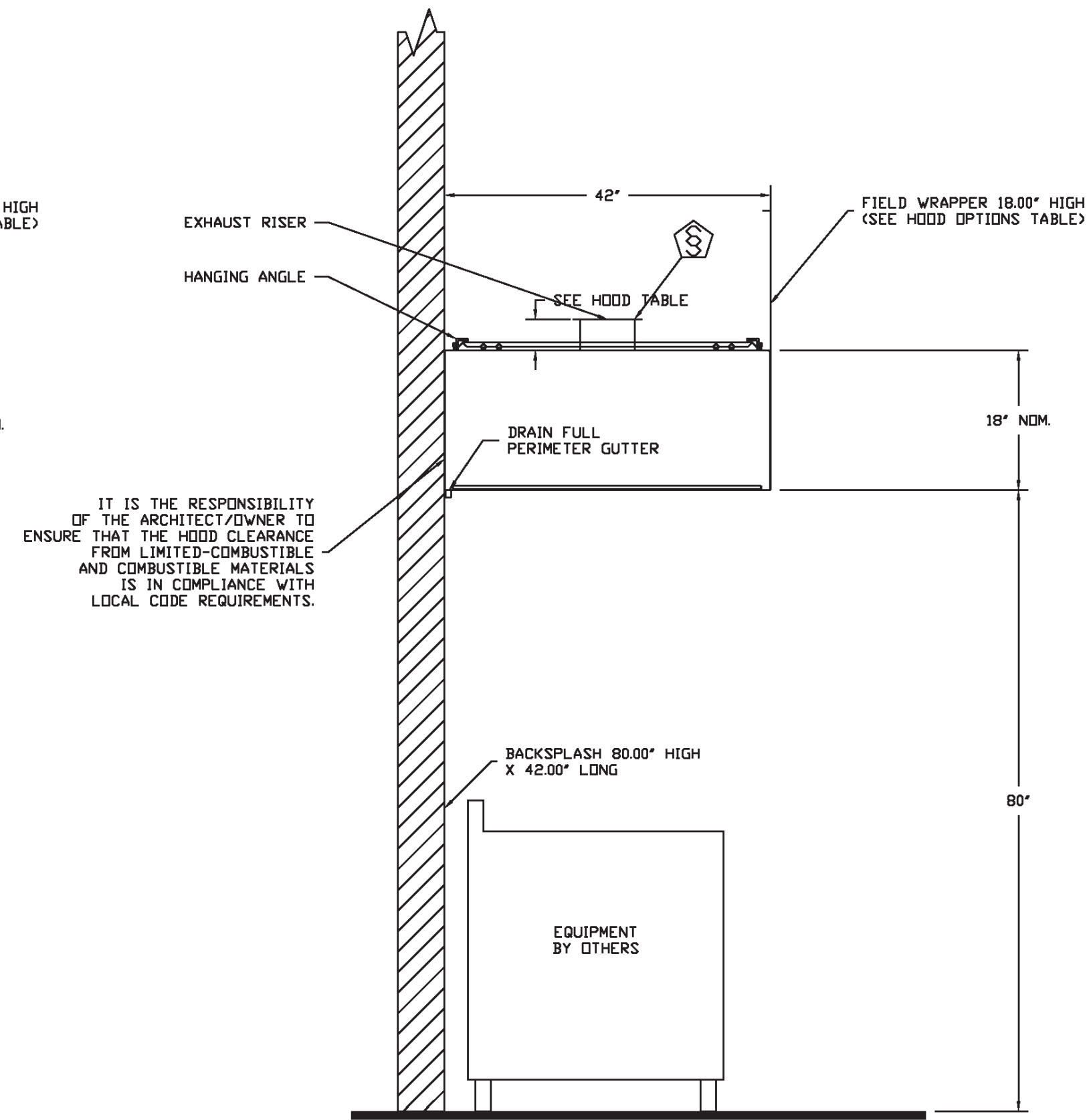
PLAN VIEW - Hood #3
3' 6.00" LONG 4218VHB-G



SECTION VIEW - MODEL 5418SND-2
HOOD - #1

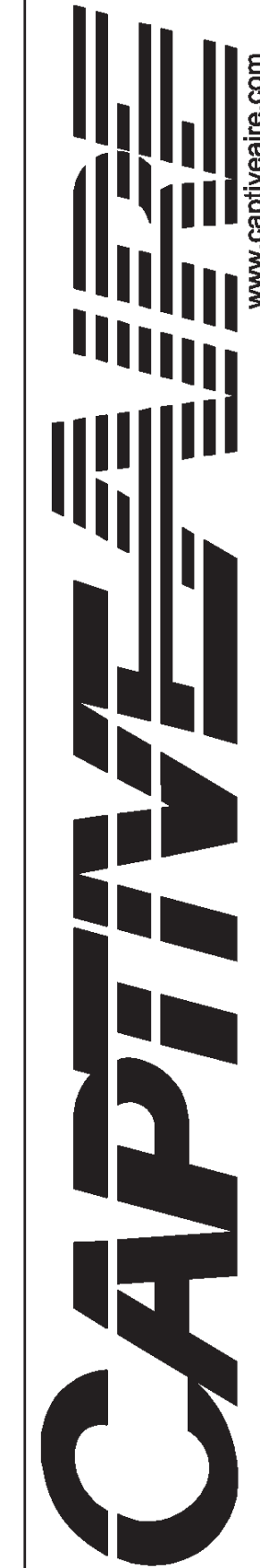


SECTION VIEW - MODEL 5418VHB-G
HOOD - #2



SECTION VIEW - MODEL 4218VHB-G
HOOD - #3

REVISIONS	
DESCRIPTION	DATE



KITCHEN MECHANICAL EQUIPMENT SCHEDULES AND DETAILS

Brookside Gardens - Berthoud, CO
BERTHOUD, CO, 80513

DATE: 3/16/2020

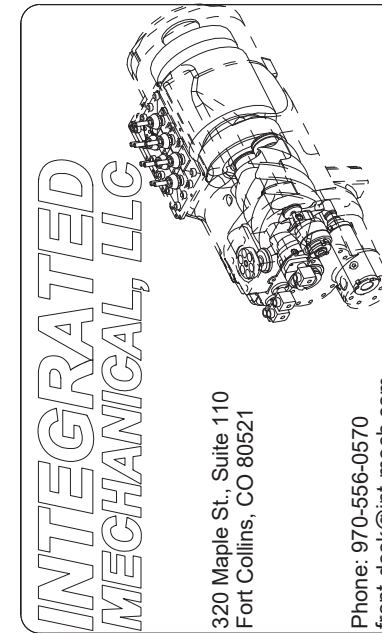
DWG.#:
4294019

DRAWN
BY:

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

MASTER DRAWING

SHEET NO.
2



FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN	CHECKED	REVISIONS	JOB NUMBER
	JKM	GMG		20-040

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1		DJ85HFA	1750	1.000	1429	1.000	0.4390	1	240	-	554 FPM	97	17.2
2		DJ50HFA	900	0.500	1435	0.500	0.2540	1	240	-	342 FPM	75	14.6
3		DJ33HFA	525	0.500	1346	0.333	0.1260	1	240	-	260 FPM	67	12.3

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	MCA	MDCP	EVAP FLOW RATE (Gal./Hr)	EVAP COOLER ENTERING DB TEMP.	EVAP COOLER ENTERING WB TEMP.	EVAP COOLER LEAVING DB TEMP.	EVAP COOLER LEAVING WB TEMP.	WEIGHT (LBS.)	SONES
4		A2-D.500-G15	G15-PB	A2-D.500	-	3180	0.500	967	2.000	1.6030	1	240	8.1	11.2A	15A	4.54	91.0°F	60.0°F	71.0°F	60.0°F	944	17.3

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
4		242808	223383	80 deg F	7 in. w.c. - 14 in. w.c.	Natural	92

FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1		1 - Grease Box
		1 - Through Wall Curb Mount Installation. Curb height must be minimum 9' taller than wall thickness for use with a hinge kit.
		1 - Wall Mount Construction for Fan
		1 - Ship Loose Disconnect For Remote Mount.
		1 - Hinge Kit - Ships Loose For Curb Supplied by Others
2		1 - ECM Wiring Package - PWM Signal from ECPMD3 Prewire (TELCO Motor), CCW Rotation
		1 - Through Wall Curb Mount Installation. Curb height must be minimum 9' taller than wall thickness for use with a hinge kit.
		1 - Wall Mount Construction for Fan
		1 - Ship Loose Disconnect For Remote Mount.
		1 - I 15-BDD Damper
3		1 - SCR-13 Bird Screen
		1 - ECM Wiring Package - PWM Signal from ECPMD3 Prewire (TELCO Motor), CCW Rotation
		1 - I 15-BDD Damper
		1 - SCR-11 Bird Screen
		1 - ECM Wiring Package - PWM Signal from ECPMD3 Prewire (TELCO Motor), CCW Rotation
4		1 - AC Interlock Relay - 24VAC Coil
		1 - Motorized Backdraft Damper for A2-D Housing
		1 - Low Fire Start
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, -5 to 15" wc
		1 - Freeze Protection Drain Kit for Evaporative Coolers

FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						
2			YES					
3			YES					
4					YES		YES	

NO.	ON FAN	WEIGHT	ITEM	SIZE	
1	# 1	66 LBS	Curb	23.000"W x 23.000"L x 26.000"H	16 Gauge
2	# 2	33 LBS	Curb	19.500"W x 19.500"L x 18.000"H	16 Gauge
3	# 3	33 LBS	Curb	19.500"W x 19.500"L x 18.000"H	16 Gauge
4	# 4	90 LBS	Curb	31.000"W x 79.000"L x 20.000"H	Insulated
	# 4		Rail	4.000"W x 4.000"L x 36.000"H	

Technical drawing of a hood and fan assembly. The drawing shows a top-down view of the hood and a side view of the fan. Dimensions are provided in feet and inches. The hood width is 31 7/8". The hood height is 30 1/2". The fan height is 23". The fan width is 14 7/8". The fan depth is 22 1/2". The fan is mounted on a base with a width of 24 3/4". A label "GREASE DRAIN" points to a component on the fan. A note indicates "DUCTWORK BETWEEN EXHAUST RISER ON HOOD AND FAN (BY OTHERS)".

31 7/8"

30 1/2"

23"

14 7/8"

22 1/2"

24 3/4"

GREASE DRAIN

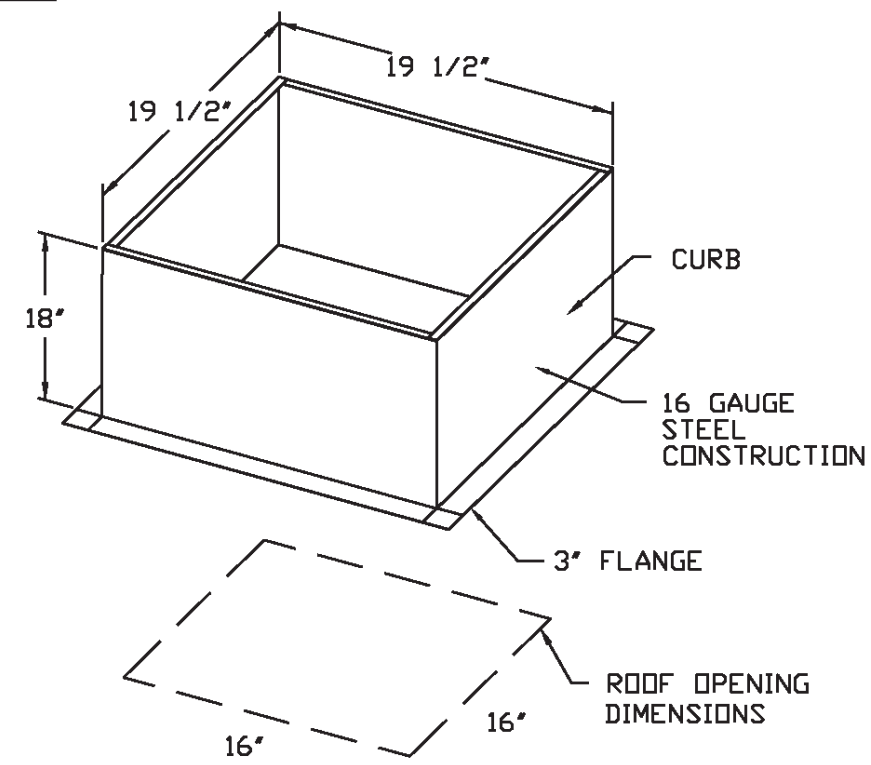
DUCTWORK BETWEEN
EXHAUST RISER ON HOOD
AND FAN (BY OTHERS)

GREASE BOX.
THROUGH WALL CURB MOUNT INSTALLATION.
CURB HEIGHT MUST BE MINIMUM 9" TALLER
THAN WALL THICKNESS FOR USE WITH A
HINGE KIT.
WALL MOUNT CONSTRUCTION FOR FAN.
SHIP LOOSE DISCONNECT FOR REMOTE
MOUNT.
HINGE KIT - SHIPS LOOSE FOR CURB
SUPPLIED BY OTHERS.
ECM WIRING PACKAGE - PWM SIGNAL FROM
ECMP03 PREWIRE (TELCO MOTOR), CCW
ROTATION.

[illegible]

THROUGH WALL CURB MOUNT INSTALLATION.
CURB HEIGHT MUST BE MINIMUM 9" TALLER
THAN WALL THICKNESS FOR USE WITH A
HINGE KIT.
WALL MOUNT CONSTRUCTION FOR FAN
SHIP LOOSE DISCONNECT FOR REMOTE
MOUNT.
I 15-BDD DAMPER.
SCR-13 BIRD SCREEN.
ECM WIRING PACKAGE - PWM SIGNAL FROM
ECMP03 PREWIRE (TELCO MOTOR), CCW
ROTATION.

2. 1 15-BDD DAMPER.
SCR-11 BIRD SCREEN.
ECM WIRING PACKAGE - PWM SIGNAL FROM
ECPM03 PREWIRE (TELCO MOTOR), CCW
ROTATION.

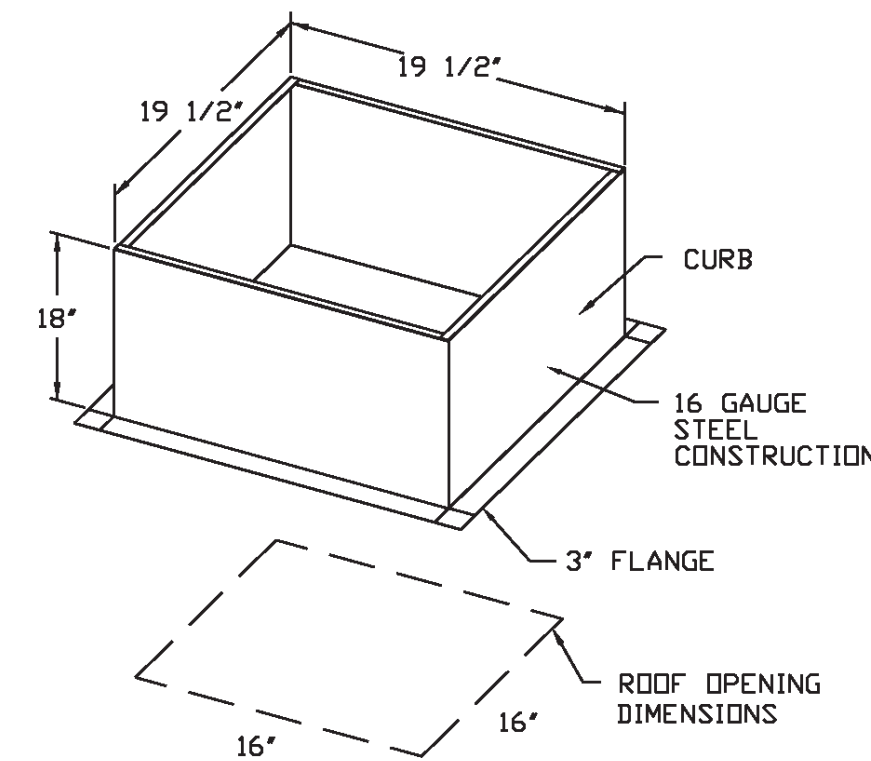


AIR FLOW

BACKDRAFT DAMPER

16'

(ROOF OPENING)



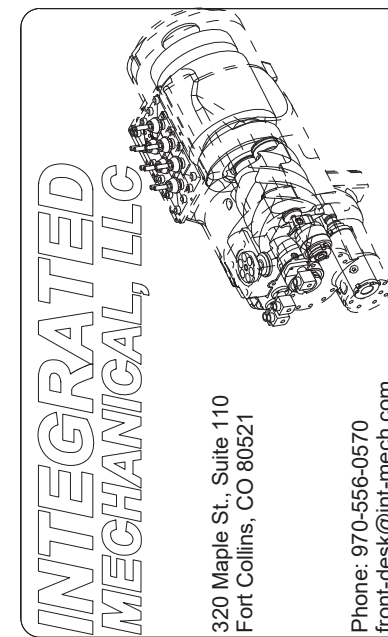
A cross-sectional diagram of a roof opening. A horizontal line represents the roof surface. Below it, a rectangular structure represents the backdraft damper. An arrow labeled "AIR FLOW" points upwards from the damper. The damper is shown in a closed position, with a label "BACKDRAFT DAMPER" pointing to it. Below the damper, a trapezoidal shape represents the roof opening, with a dimension line indicating a width of "16' (ROOF OPENING)".

REVISIONS		
	DESCRIPTION	DATE:
△		
△		
△		
△		



Brookside Gardens - Berthoud, CO
BERTHOUD, CO, 80513

SHEET NO.
3



FREEMAN
ARCHITECTS

2024 Blue Mesa Court 80538
LOVELAND, CO

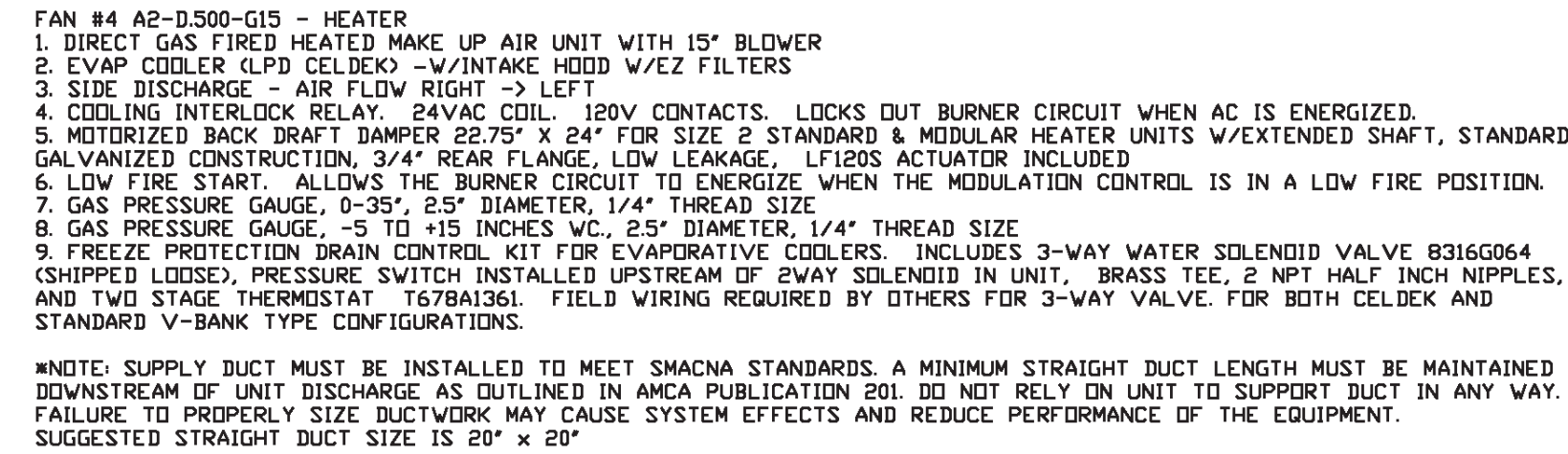
Brookside Gardens Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN	JWM	03/25/20
	CHECKED	GMS	
REVISIONS			
JOB NUMBER: 20-040			

Construction Documents

M8.3



```

WINTER TEMPERATURE = 0°F.  TEMP. RISE = 80°F.
BTUS CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUS AT ALTITUDE OF 0.0 ft. = 268844
INPUT BTUS AT ALTITUDE OF 0.0 ft. = 292222
OUTPUT BTUS AT ALTITUDE OF 5037 ft. = 22338
INPUT BTUS AT ALTITUDE OF 5037 ft. = 242807

```

REVISIONS	
DESCRIPTION	DATE:
△	
△	
△	
△	

CAPTIVE

www.captiveafr.com

Denver Office

7300 S Alton Way Building 5, Suite B, Centennial, CO, 80112 PHONE: (720) 570-0081 FAX: (919) 227-5998 EMAIL: reg426@captiveafr.com



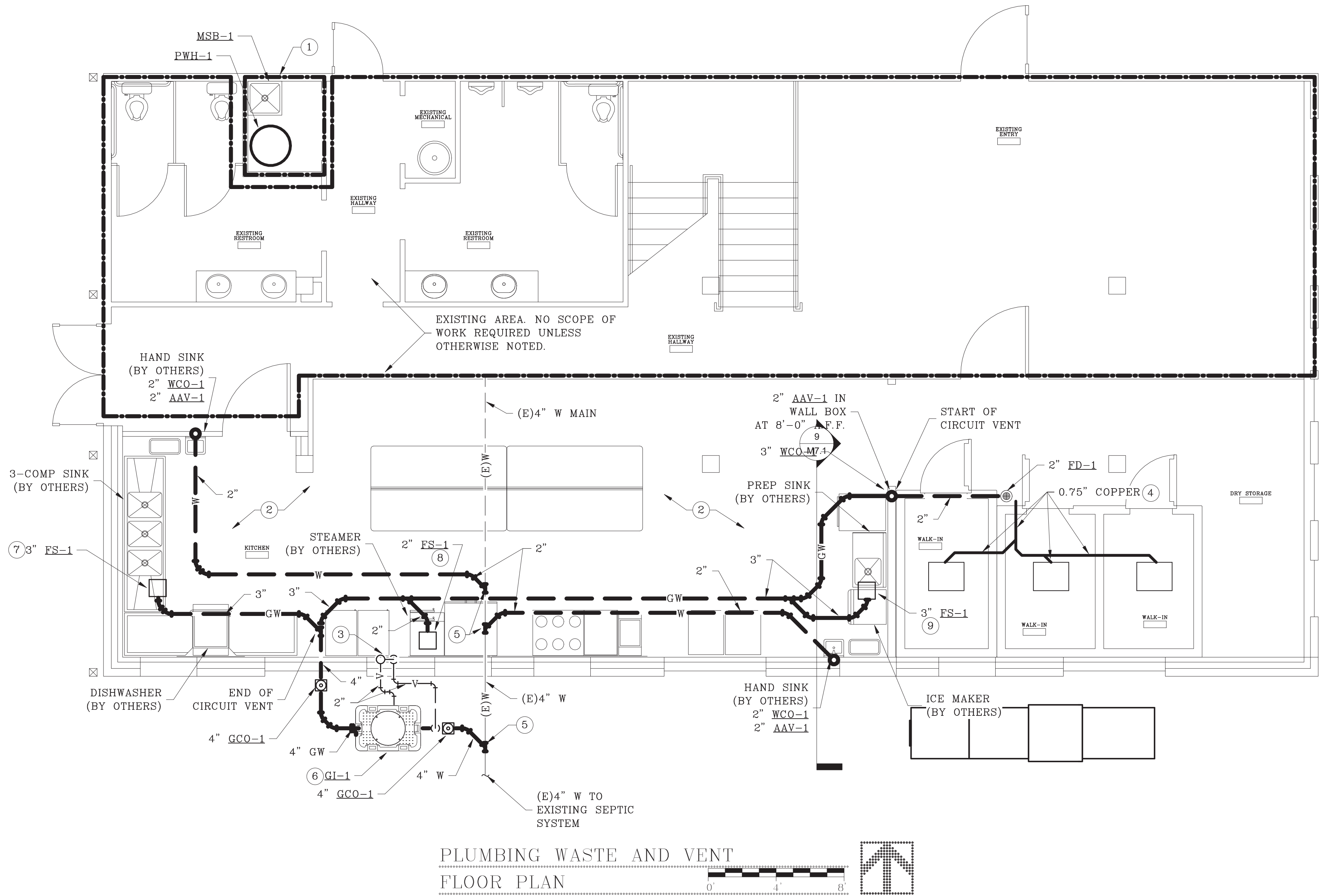

Brookside Gardens - Berthoud, CO
BERTHOUD, CO, 80513

DATE: 3/16/2020
DWG.#: 4294019
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING

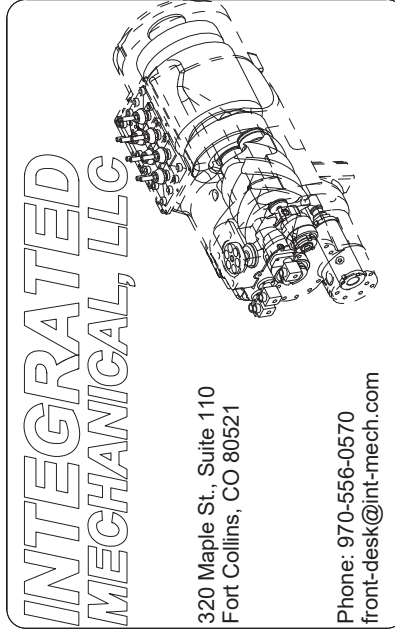
SHEET NO.

4

PROJECT NO.	DRAWN	JKM	03/25/20
	CHECKED	GMS	
REVISIONS			
JOB NUMBER: 20-040			



- FLAG NOTES:
- 1 REFER TO JANITOR CLOSET WASTE AND VENT ISOMETRIC ON SHEET P6.1 FOR WASTE AND VENT REQUIREMENTS IN THIS AREA.
 - 2 REFER TO KITCHEN WASTE AND VENT ISOMETRIC ON SHEET P6.1 FOR WASTE AND VENT WORK REQUIRED IN THE KITCHEN.
 - 3 (2)2" VENTS FROM GI-1 BELOW GRADE INTO BUILDING. COMBINE (2)2" VENTS INTO SINGLE 2" VENT ABOVE SLAB, AND CONTINUE UP THROUGH ROOF WITHIN WARM SIDE CAVITY OF EXTERIOR WALL. TERMINATE TO 3" VTR.
 - 4 PC TO ROUTE AND COMBINE 0.75" COPPER CONDENSATE DRAIN LINES FROM WALK-IN EVAPORATORS DOWN TO THIS FLOOR DRAIN WITH 2" AIR GAP. COORDINATE WITH GC TO PROVIDE HEAT TRACE AT ALL PIPING INSTALLED WITHIN A WALK-IN FREEZER.
 - 5 CONNECT TO EXISTING 4" WASTE MAIN IN THIS APPROXIMATE AREA. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND INVERT REQUIREMENTS.
 - 6 GREASE INTERCEPTOR INSTALLED WITHIN LANDSCAPING IN THIS APPROXIMATE AREA. COORDINATE EXACT INSTALLATION LOCATION WITH GC.
 - 7 ROUTE INDIRECT DRAINAGE FROM 3-COMP SINK AND DISHWASHER TO THIS FLOOR SINK.
 - 8 ROUTE INDIRECT DRAINAGE FROM STEAMER TO THIS FLOOR SINK
 - 9 ROUTE INDIRECT DRAINAGE FROM PREP SINK AND ICE MAKER TO THIS FLOOR SINK.



FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN JKM	CHECKED GMG	03/25/20
REVISIONS			
JOB NUMBER:	20-040		

GAS METER SYSTEM NOTES:

1. THE EXISTING GAS METER IS LOCATED ON THE NORTH SIDE OF THE MAIN ENTRY BUILDING AT THE NORTH SIDE OF THE PROPERTY. THE EXACT GAS DISTRIBUTION SYSTEM IS UNKNOWN TO THIS ENGINEER AND IS BURIED THROUGHOUT THE PROPERTY. THE TOTAL EXISTING GAS METER LOAD IS ALSO UNKNOWN TO THIS ENGINEER.
2. IMMEDIATELY UPON AWARD OF CONTRACT, CONTRACTOR SHALL COORDINATE WITH LOCAL GAS UTILITY SERVICE COMPANY TO INCREASE METER DELIVERY PRESSURE TO 2 P.S.I.
3. THE CONTRACTOR SHALL BE REQUIRED TO IDENTIFY AND REGULATE 2 P.S.I. GAS SUPPLY PRESSURE DOWN TO 7" W.C. AT ALL EXISTING PIECES OF GAS FIRED EQUIPMENT, INCLUDING SYSTEMS NOT INCLUDED ON THESE PLANS. CONTRACTOR OPTION TO REGULATE GAS PRESSURE OF MAINS THAT BRANCH FROM THE METER AND DO NOT SERVE THIS KITCHEN BUILDING AT THE METER, IN LIEU OF REGULATING AT INDIVIDUAL PIECES OF EQUIPMENT.
4. THE CONTRACTOR SHALL COORDINATE THE INCREASED GAS LOAD DEMAND OF THIS PROJECT SCOPE WITH THE GAS UTILITY COMPANY. REFER TO GAS METER LOAD SCHEDULE ON SHEET P6.1 FOR MORE INFORMATION.
5. THE GAS PIPING SYSTEM IS SIZED AND DESIGNED USING THE EQUATION 4-1 AND 4-2 OF THE 2018 IFGC, NOT THE TABLES. REFER TO GAS METER LOAD SCHEDULE ON SHEET P6.1 FOR VARIABLES USED IN THE CALCULATIONS.
6. THE FOLLOWING GAS PRESSURE REGULATORS ARE PROVIDED FOR SIZING COMPARISON ONLY, AND SHALL BE SIZED AND SELECTED BY THE CONTRACTOR.

GAS PRESSURE REGULATOR - MAXITROL 325-3L (1/2") - 140 MBH MAXIMUM LARGEST APPLIANCE, 250 MBH MAXIMUM TOTAL CAPACITY, 2 PSI INLET, 10" WC OUTLET, WITH 12A09 VENT LIMITER.

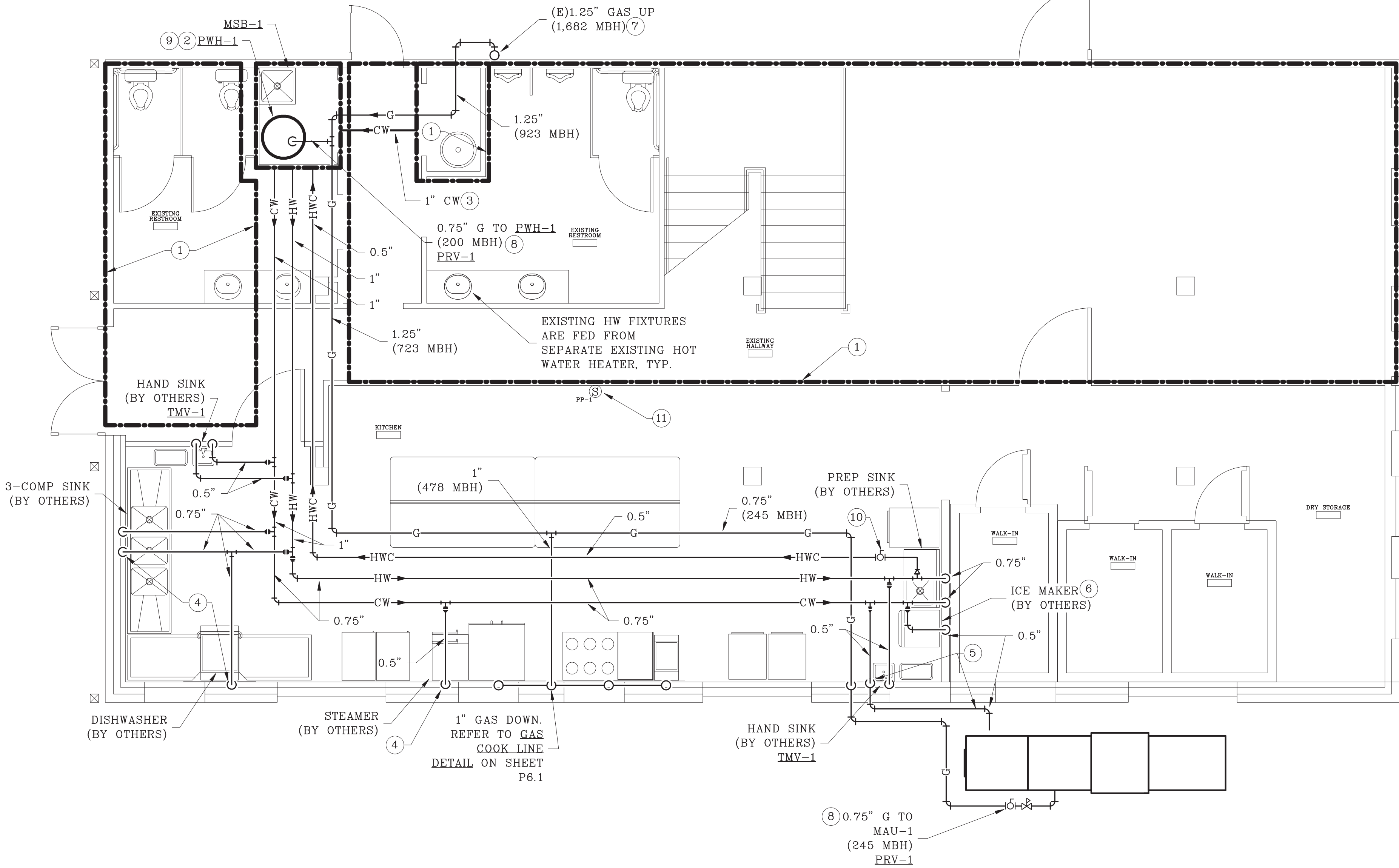
GAS PRESSURE REGULATOR - MAXITROL 325-5AL (3/4") - 425 MBH MAXIMUM LARGEST APPLIANCE, 600 MBH MAXIMUM TOTAL CAPACITY, 2 PSI INLET, 10" WC OUTLET, WITH 12A39 VENT LIMITER.

GAS PRESSURE REGULATOR - MAXITROL 325-5AL (1") - 425 MBH MAXIMUM LARGEST APPLIANCE, 600 MBH MAXIMUM TOTAL CAPACITY, 2 PSI INLET, 10" WC OUTLET, WITH 12A39 VENT LIMITER.

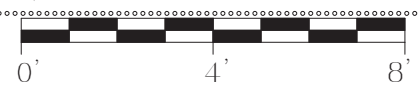
GAS PRESSURE REGULATOR - MAXITROL 325-7AL (1.25") - 1,250 MBH MAXIMUM LARGEST APPLIANCE, 1,250 MBH MAXIMUM TOTAL CAPACITY, 2 PSI INLET, 10" WC OUTLET. WITH VENT LIMITER WHEN INSTALLED INDOORS.

FLAG NOTES:

- ① THESE AREAS ARE EXISTING AND NOT IN SCOPE UNLESS OTHERWISE NOTED.
- ② REFER TO POTABLE WATER HEATER INSTALLATION DETAIL ON SHEET P6.1 FOR MORE INFORMATION ON SCOPE IN THIS ROOM.
- ③ CONNECT NEW 1" CW TO EXISTING 1" CW WITHIN THIS ENTRY ROOM, OR MECHANICAL ROOM LOCATED DIRECTLY ABOVE THIS SPACE. CONNECTION SHALL BE MADE DOWNSTREAM OF EXISTING BUILDING SHUT-OFF VALVE. CONTINUE NEW PIPE MAIN TO NEW MECHANICAL CLOSET AS INDICATED.
- ④ POTABLE WATER PIPING ROUTED DOWN ALONG EXTERIOR WALLS SHALL BE INSTALLED FULLY ON THE WARM SIDE OF THE BUILDING THERMAL ENVELOPE. DO NOT INSTALL PIPING WITHIN THE INSULATED EXTERIOR WALL.
- ⑤ 0.5" CW DOWN. BRANCH 0.5" CW TO HAND SINK, AND CONTINUE 0.5" DOWN TO 6" ABOVE GRADE AND ROUTE SUPPLY PIPING THROUGH WALL TO MAU-1 (BY OTHERS) EVAP COOLING SECTION. REFER TO GRADE MOUNTED EVAP FILL AND DRAIN INSTALLATION KIT DETAIL ON SHEET P6.1
- ⑥ CONNECT CW TO OWNER PROVIDED EQUIPMENT WITH BACKFLOW PREVENTION AS OUTLINED ON SHEET MP0.1.
- ⑦ CONNECT NEW 1.25" GAS TO EXISTING 1.25" GAS RISER IN THIS LOCATION, EXTERIOR TO BUILDING. ROUTE PIPE INTO BUILDING AND CONTINUE ROUTING AS INDICATED. EXPOSED GAS PIPING SHALL BE PAINTED TO MATCH BUILDING EXTERIOR. (MBH VALUE INDICATED IS TOTAL ASSUMED VALUE FOR THIS BUILDING, INCLUDING EXISTING EQUIPMENT)
- ⑧ CONNECT TO GAS FIRED EQUIPMENT WITH GAS RATED BALL VALVE, PRV-1 UNION AND FULL SIZED 6" DIRT LEG.
- ⑨ PC TO ROUTE 3"Ø PVC FLUE AND CA UP THROUGH VOID SPACE AT EXTERIOR WALL ON SECOND FLOOR AND TERMINATE UP THROUGH ROOF IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- ⑩ PROVIDE AND INSTALL ACCESSIBLE ISOLATION BALL VALVE AT THE START OF HOT WATER RECIRCULATION SYSTEM WHERE SHOWN.
- ⑪ LOCATION OF PP-1 MOTION START SENSOR.



PLUMBING WATER AND GAS
FLOOR PLAN

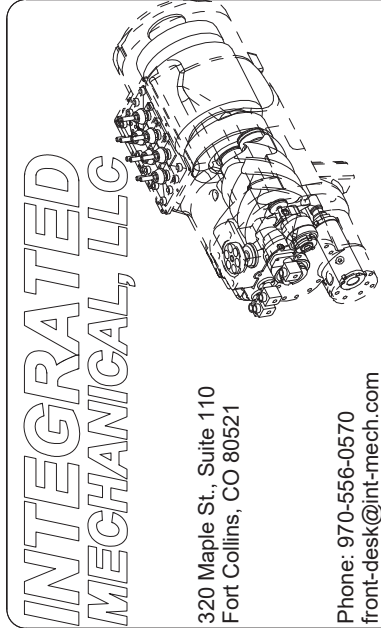


Brookside Gardens
Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN JKM	03/25/20
	CHECKED GNG	
REVISIONS		
JOB NUMBER: 20-040		

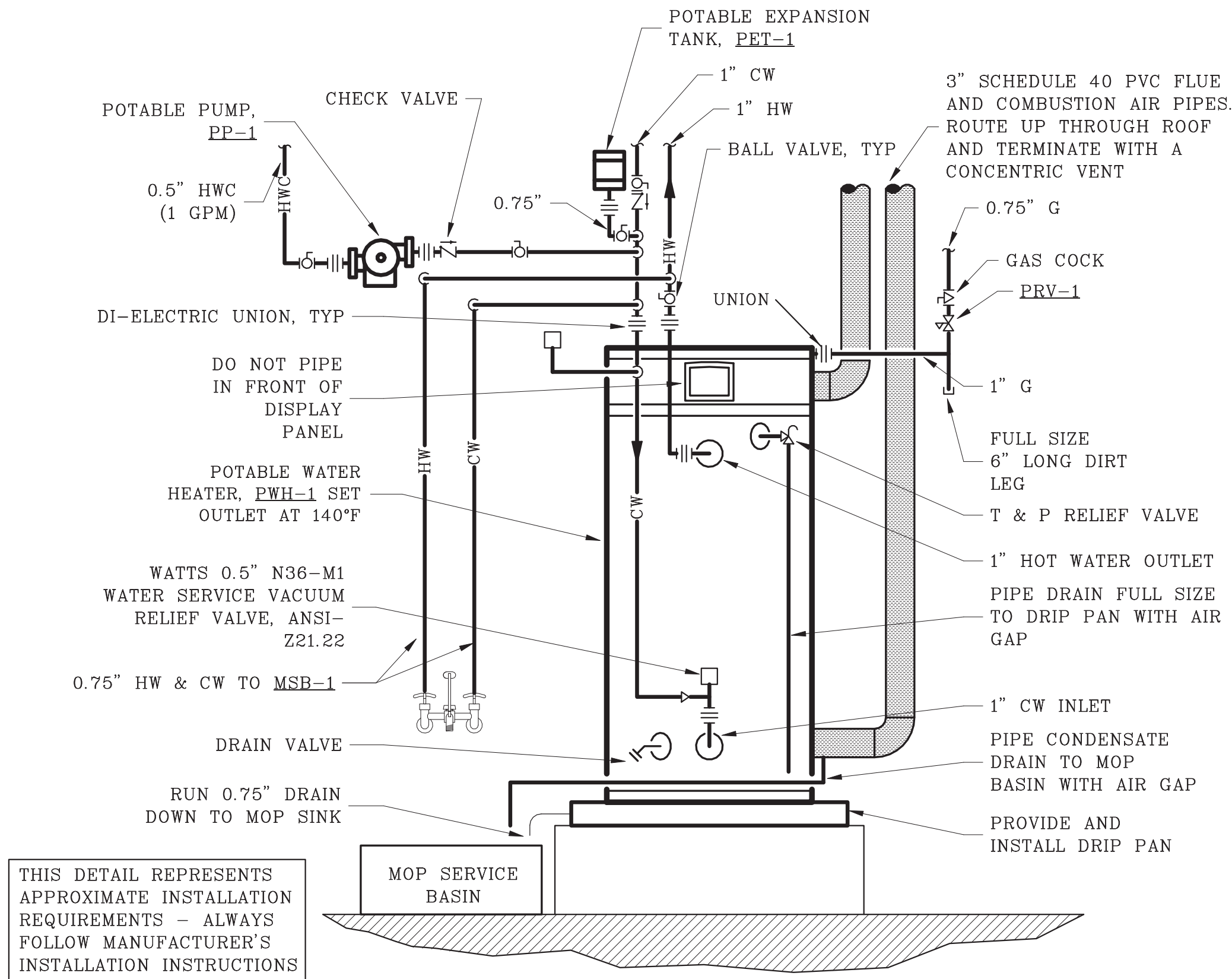
Construction Documents



320 Maple St, Suite 110
Fort Collins, CO 80521
Phone: 970-556-0570
tom@integratedmech.com

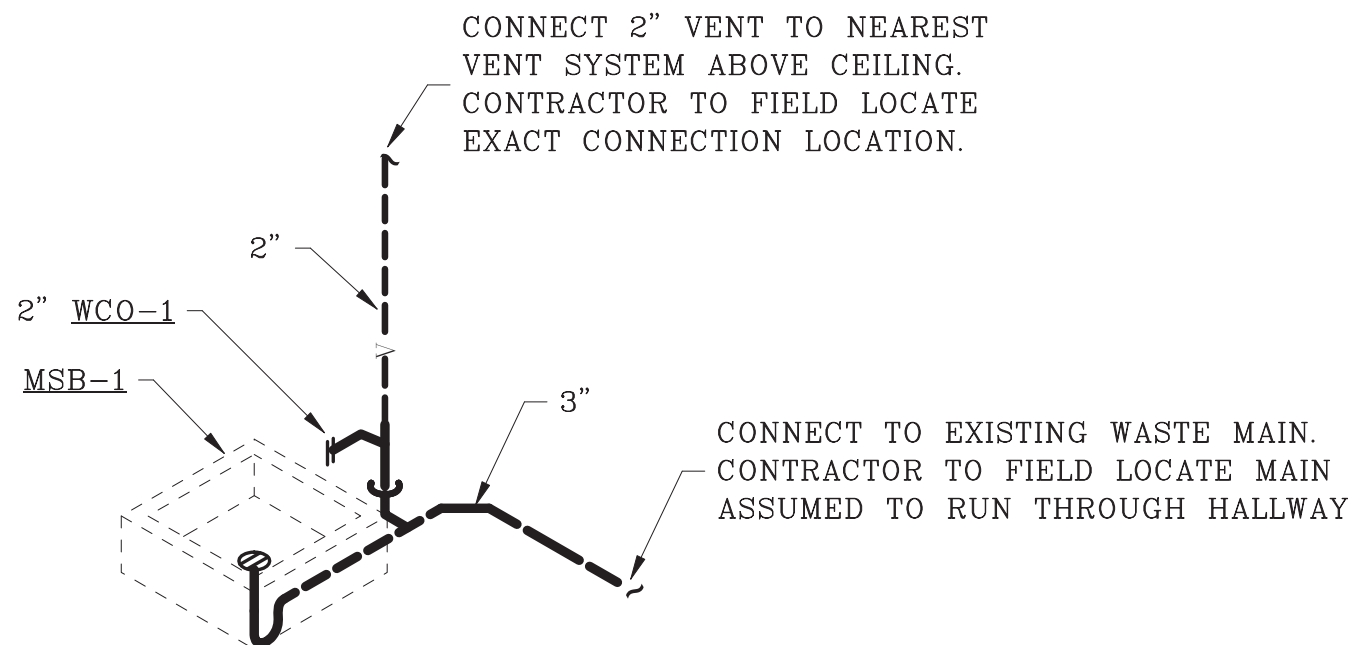
FREEMAN
ARCHITECTS

P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
FAX: (970) 667-3940



POTABLE WATER HEATER
INSTALLATION DETAIL

SCALE:
NONE



JANITOR CLOSET
WASTE & VENT ISOMETRIC

SCALE:
NONE

GI-1 SCHEDULE AND DETAIL GREASE INTERCEPTOR CALCULATIONS

Reference No. 16951

Step 1: Flow rate to grease interceptor

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

NAME	TYPE	DIMENSIONS	QTY	COIN	FLOW RATE
3-Comp	3 Compartment Sink	24" x 18" x 12" (3)	1	15,552	25.25 GPM
Dish	Door Type (Dishwasher)	N/A	1	2,310	5 GPM
Ice	Ice Machine (with drain)	N/A	1	N/A	0.5 GPM
Prep Sink	Prep Sink One Bowl	24" x 24" x 12"	1	6,912	11.22 GPM

Total 41.97 GPM

Step 2: Grease Production

Servings per day x Grease production value x Days between pump-outs = Grease output

Number of meals served per day: 150 - Engineer assumed weekly average.

Grease production value: 0.035 lbs per serving (Cafeteria - Full Serve: High / No flatware)

Days between pump-outs: 90 days

150 x 0.035 x 90 = 472.5 lbs of FOG

SCHIER MODEL	Description: Polyethylene Grease Interceptor
GB-75	Dimensions: Length: 46", Width: 32", Height: 38.5" Flow Rates/Grease Capacities: 75 GPM / 653.0 lbs Liquid Capacity: 125 gal



This unit is certified to ASME A13.1
Type I Class I (54-5480) and includes
an Internal Flow control. External flow
control with vent is not required.

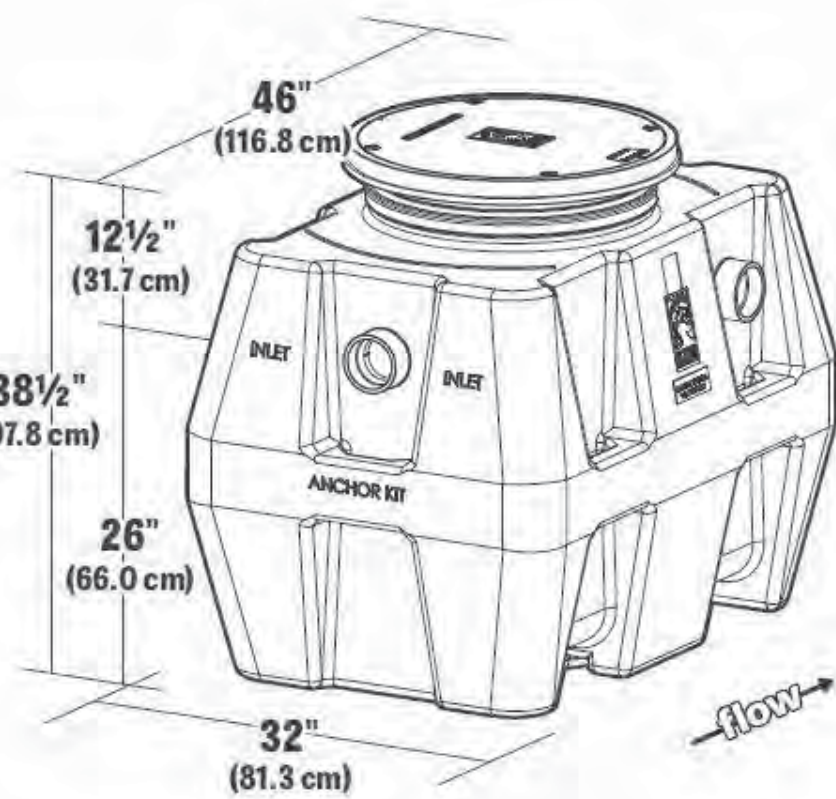
SUBMITTAL

Standard

Location: indoor/outdoor
Installation: above/below grade
Flow Rate: 75 GPM (4.7 L/s)
Grease Capacity: 653 lbs. (296.2 kg)
Removal Efficiency at the Rated Capacity: 90.8%
Liquid Capacity: 125 gal (472.1 L)
Weight: 130 lbs. (59.0 kg)
Connections: 4" (100 mm) plain end inlet/outlet
Cover: bolted gas/water tight composite with
16,000 lb. load rating

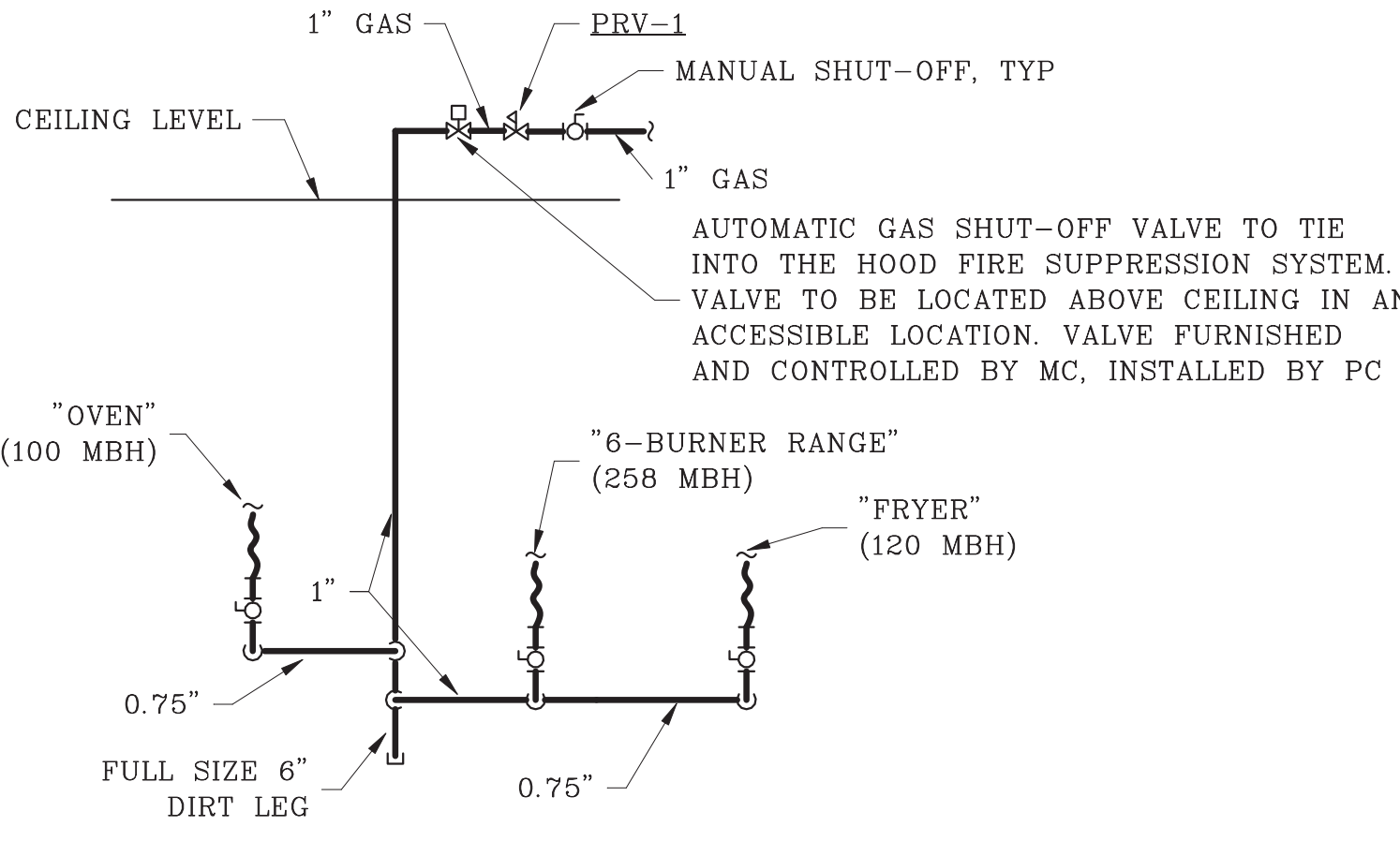
Options

- ☒ 4" MPT inlet/outlet
☐ 6" plain end inlet/outlet
☐ 6" MPT inlet/outlet (stainless steel)
☒ C24M: Pedestrian Rated
Covers - 2,000 lbs.
☐ C24HP: H2O load rated pickable
cast iron covers - 16,000 lbs.
☐ CC24: Integral membrane clamping
collar kit
- ☐ AK1: High Water Anchor Kit
☐ PP2: Pumpout Port
Field Cut Risers
☐ SR24 5" - 23"
☐ LR24 5" - 38"
☐ SR24 (x2) - 38" - 43"
☐ SR24 - LR24 - 43" - 58"
☐ LR24 (x2) - 58" - 72"



GRADE MOUNTED EVAP FILL & DRAIN KIT INSTALLATION DETAIL

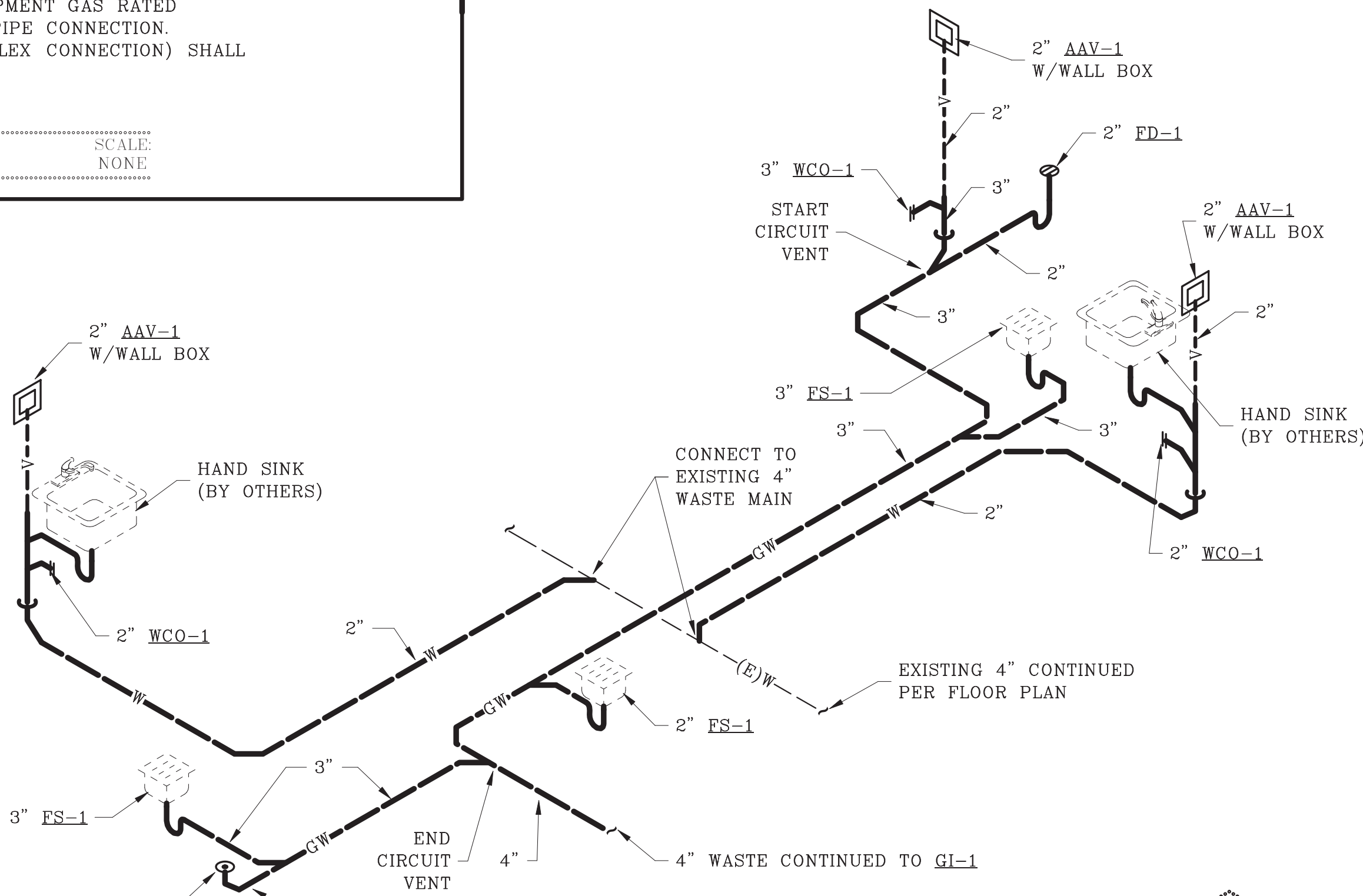
SCALE:
NO SCALE



- NOTE:
1) GAS PIPING SHALL BE INSTALLED AND CONCEALED WITHIN WALL. NO EXPOSED GAS PIPING ALLOWED UPSTREAM OF EQUIPMENT GAS RATED BALL VALVE SHUT-OFF AND GAS RATED FLEXIBLE PIPE CONNECTION.
2) EQUIPMENT BRANCH PIPING SIZE (SHUT-OFF AND FLEX CONNECTION) SHALL MATCH EQUIPMENT CONNECTION SIZE.

GAS COOK LINE DETAIL

SCALE:
NONE



KITCHEN
WASTE & VENT ISOMETRIC

SCALE:
NONE

PLUMBING FIXTURE SCHEDULE:

PWH-1 POTABLE WATER HEATER - STATE INDUSTRIES, SUP-100-199, TANK TYPE NATURAL GAS, 100 GALLON CAPACITY, 199 MBH INPUT, 228 GALLON PER HOUR RECOVERY AT 100°F RISE, HIGH-EFFICIENCY, POWERED DIRECT VENT, 3"Ø PVC FLUE AND CA, HOT SURFACE IGNITION, 120/60/1

PET-1 POTABLE EXPANSION TANK - WATTS PLT-12, IN-LINE, 4.5 GALLON TOTAL, 2.8 GALLON ACCEPTANCE, NSF APPROVED

ES-1 FLOOR SINK - ZURN Z-1900-K-2, CAST IRON BODY AND ACID RESISTING PORCELAIN ENAMEL INTERIOR, FLASHING FLANGE, SEDIMENT BUCKET, 1/2 GRATE - SEE PLAN FOR PIPE SIZE.

ED-1 FLOOR DRAIN - ZURN EZ1-PV, PVC DRAIN BODY, FLASHING COLLAR, 5" DIAMETER NICKEL BRONZE STRAINER, ADJUSTABLE HEAD HEIGHT, PROSET OR SURE SEAL FLEXIBLE ELASTOMERIC SELF-CLOSING TRAP SEAL - SEE PLAN FOR DRAIN SIZE

GCO-1 GRADE CLEANOUT - ZURN CO-PV3-DI, ADJUSTABLE HEIGHT PVC RISER, CAST IRON FRAME AND COVER, PVC BODY

ECO-1 FLOOR CLEANOUT - ZURN CO-PV3, PVC BODY, NICKEL BRONZE HEAD ASSEMBLY, ADJUSTABLE HEAD - SEE PLAN FOR PIPE SIZE

WCO-1 WALL CLEANOUT - ZURN Z-1469 COVER PLATE, POLISHED 304 STAINLESS STEEL, PVC PIPE CLEANOUT - SEE PLAN FOR PIPE SIZE

AAV-1 AIR ADMITTANCE VALVE - STUDOR MINI VENT 20301, PVC, WITH SCREEN, LIFETIME WARRANTY - SEE PLAN FOR PIPE SIZE

TMV-1 THERMOSTATIC MIXING VALVE - LEONARD 170A-LF, 0.375" INLET AND OUTLETS, MIN 0.25 GPM, MAX 3 GPM FLOW AT 20 PSI PRESSURE ADJUSTABILITY, CHECK STOPS, SET FOR 110°F DISCHARGE TEMPERATURE, ASSE 1070.

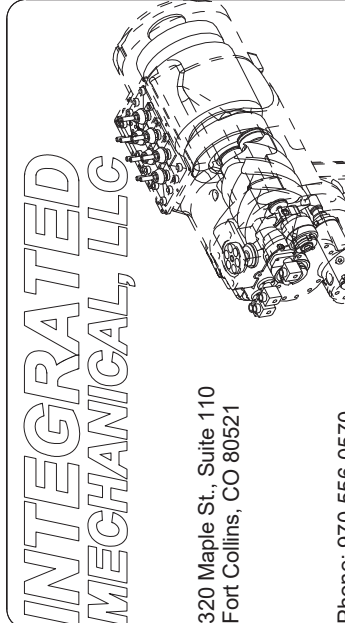
MSB-1 MOP SERVICE BASIN - FIAT MSB 2424, 24"x24" MOLDED O.D. PRECAST TERRAZZO BASIN, PVC DRAIN, STAINLESS DOME STRAINER, WITH ZURN Z-1996-SF SERVICE FAUCET

PP-1 POTABLE PUMP - TACO GENIE, 0011-CT, 5 GPM AT 14' TDH, 1/8 HP, 120/60/1, 0.75" UNION CONNECTIONS, ALL BRONZE CONSTRUCTION, WET ROTOR CIRCULATOR - WITH TACO 554-4 MOTION SENSOR STARTER KIT FOR AUTOMATIC MOTION DETECTION START, 104°F WATER TEMPERATURE SENSING OFF. MOTION SENSOR INSTALLED IN KITCHEN AS INDICATED ON PLANS, WITH FIELD SUPPLIED LOW VOLTAGE WIRING BY PLUMBING CONTRACTOR.

PRV-1 GAS PRESSURE REGULATOR - MAXITROL 325-5AL (3/4") - 425 MBH MAXIMUM LARGEST APPLIANCE, 600 MBH MAXIMUM TOTAL CAPACITY, 2 PSI INLET, 10" W.C. OUTLET, WITH 12A39 VENT LIMITER.

GAS METER LOAD SCHEDULE (NEW ADDITIONAL LOAD) (923 MBH LOAD / 2 PSI DELIVERY / 562' T.E.L.)

MAU-1	245 MBH	278 CFH
PWH-1	200 MBH	228 CFH
6-BURNER RANGE	258 MBH	294 CFH
CONVECTION OVEN	100 MBH	114 CFH
FRYER	120 MBH	137 CFH
TOTAL ADDITIONAL GAS LOAD	923 MBH	1,051 CFH



**FREEMAN
ARCHITECTS**

P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
Phone: (970) 667-3939
Fax: (970) 667-3940

**Brookside Gardens
Barn Remodel**

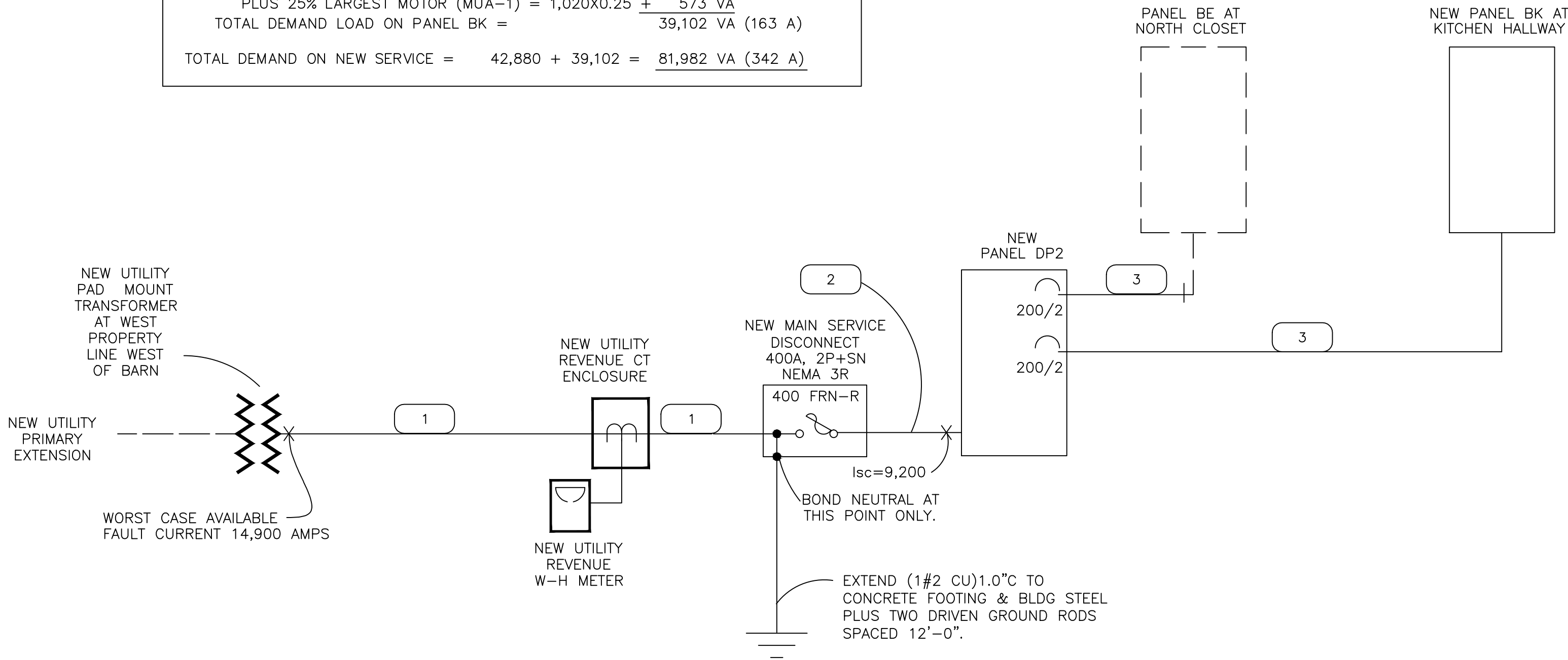
619 E. County Road 8
Berthoud, CO 80513

PLUMBING SCHEDULES AND DETAILS

PROJECT NO.	DRAWN JKM	CHECKED GNG	DATE 03/25/20
REVISIONS			
JOB NUMBER: 20-040			

Construction Documents
P6.1

DEMAND LOAD CALCULATIONS		
ESTIMATED EXISTING LOAD ON MAIN PANEL BE =	42,880 VA	
NEW PANEL BKM		
CONNECTED LOAD FROM PANEL SCHEDULE =	48,120 VA	
LESS 35% OF KITCHEN LOADS AS ALLOWED		
BY NEC 220.56 ON LOADS 5,10,12,12.5,13, 16,16.5		
28,132 VA X 0.35 DF =	- 9,846 VA	
PLUS 25% OF LIGHTING LOAD = 1,020 X0.25 DF +	255 VA	
PLUS 25% LARGEST MOTOR (MUA-1) = 1,020X0.25 +	573 VA	
TOTAL DEMAND LOAD ON PANEL BK =	39,102 VA (163 A)	
TOTAL DEMAND ON NEW SERVICE =	42,880 + 39,102 =	81,982 VA (342 A)



ELECTRICAL ONE-LINE DIAGRAM

SERVICE: 120/240 VOLT, 1-PHASE, 3-WIRE

PANEL SCHEDULE – PANEL BK								
CIRCUIT NUMBER	BREAKER TRIP	LOAD DESCRIPTION	LOAD V–A	PHASE	LOAD V–A	LOAD DESCRIPTION	BREAKER TRIP	CIRCUIT NUMBER
1	20/1	LIGHTING–KITCHEN, STORAGE	550	A	750	RECEPT – KITCH. C.O.+EF–1	20/1	2
3	20/1	LIGHTING – HOODS, WALK–INS	470	B	600	RECEPT – KITCHEN C.O.	20/1	4
5	20/1	SPARE	.	A	400	RECEPT – STORAGE C.O.	20/1	6
7	20/1	CONVECTION OVEN	720	B	1500	DOOR HEAT–WALK–IN FREEZE	20/1	8
9	40/2	COOK AND HOLD UNIT	3460	A	3200	DISHWASHER	30/1	10
11	.	.	3460	B	1680	COOK ANDF HOLD UNIT	20/1	12
13	30/1	FOOD WARMER	1990	A	360	FREE–STANDING REFRIGERATOR	15/1	14
15	30/1	FOOD WARMER	2160	B	900	ICE MACHINE	20/1	16
17	20/2	MAKE–UP AIR UNIT MUA–1	1350	A	1800	WALK–IN REFRIGERATOR	20/1	18
19	.	.	1350	B	2640.	WALK–IN FREEZER	30/1	20
21	15/2	DISHWASHER HOOD KEF–3	430	A	1800	WALK–IN COOLER	20/1	22
23	.	.	430	B	1500	FREEZER DOOR HEAT	20/1	24
25	15/2	STEAMER EXHAUST KEF–2	590	A	6120	STEAMER	70/2	26
27	.	.	590	B	6120		.	28
29	20/2	TYPE 1 HOOD KEF–1	990	A		SPARE	20/1	30
31	.	.	990	B		SPARE	20/1	32
33	.	.	.	A	.	.	.	34
35	.	.	.	B	.	.	.	36
37	.	.	.	A	.	.	.	38
39	.	.	.	B	.	.	.	40
TYPE			CONNECTED LOAD	A	23,990 VA	MAIN		
BREAKER MTG.				B	24,130 VA	MLO		
VOLT, PHASE						BUS		
WIRE				TOTAL	35,880 VA	MOUNTING		
LOAD CENTER						FLUSH		
PLUG–IN								
120/240V, 1 PH								
3								

FEEDER KEY

- 1 TWO PARALLEL (3#4/0 XHHW AL)2.0°C
- 2 TWO PARALLEL (3#4/0 XHHW AL & 1#2 CU GRD)2.0°C
- 3 (3#4/0 XHHW AL & 1#6 CU GRD)2.0°C

ONE-LINE DIAGRAM NOTES

1. NEW SERVICE EQUIPMENT INCLUDING THE CT CAN, REVENUE METER, MAIN DISCONNECT SWITCH, AND DISTRIBUTION PANEL DP IS TO BE LOCATED AT THE NORTHWEST EXTERIOR CORNER OF THE BARN BUILDING. EQUIPMENT ENCLOSURES SHALL BE RATED NEMA 3R

2. TO CONNECT THE EXISTING MAIN PANEL TO THE NEW SERVICE, INTERCEPT THE EXISTING MAIN UNDERGROUND FEEDER CONDUIT, REMOVE EXISTING FEEDER CONDUCTORS, AND PULL IN NEW FEEDER FROM THE NEW DISTRIBUTION PANEL AT THE MAIN SERVICE. REMOVE FEEDER CONNECTION FROM OLD FEED TO BARN BUILDING ON EXISTING SERVICE DP1 ON THE WEST SIDE OF THE MAIN BUILDING AND PULL CONDUCTORS FROM UNUSED PORTION OF OLD FEEDER CONDUIT IN BARN MAIN PANEL.

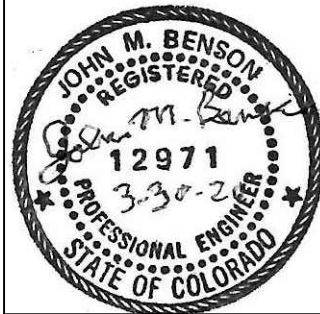
3. COORDINATE NEW SERVICE PROVISION AND INSTALLATION WITH XCEL ENERGY.

4. CHECK EXISTING PANELS AND MAIN DEVICES IN THE REMODEL BARN BUILDING FOR EXISTING NEUTRAL BOND AND REMOVE AS NEEDED TO FLOAT THE NEUTRAL IN THE ORIGINAL BARN SYSTEM. BOND THE NEUTRAL TO THE GROUNDING SYSTEM AT THE NEW MAIN SERVICE DISCONNECT AS SHOWN IN THE ONE-LINE DIAGRAM.

ELECTRICAL LEGEND

- BRANCH CIRCUIT HOMERUN. DESTINATION SHOWN. (CROSSHATCHES: SHORT=HOT; LONG=NEUTRAL; OPPOSITE=GROUND)
- SINGLE-POLE SWITCH
3 – THREE-WAY SWITCH
2 – TWO-POLE SWITCH
WP – WEATHERPROOF
a – SW CONTROLS FXTRS W/SAME DES
a – SW CONTROLS FXTRS W/SAME DES
OS – EQUIP WITH OCCUPANCY SENSOR
- GFCI – GROUND FAULT CIRCUIT INTERRUPTING
WP – WEATHERPROOF, WR-RATED DEVICE
42" – HEIGHT ABOVE FINISHED FLOOR (GRADE)
AC – ABOVE COUNTER
UC – UNDER COUNTER
TR – TAMPER RESISTANT PER NEC 406.12(C)
EWC – ELECTRIC WATER COOLER
- DOUBLE DUPLEX RECEPTACLE
- SPECIAL PURPOSE OUTLET
- JUNCTION BOX
- CONTROL STATION FOR OHD – INTERIOR
- THERMOSTAT – LINE VOLTAGE RATED
- BRANCH CIRCUIT PANELBOARD– NEMA 1 ENCLOSURE UNLESS OTHERWISE NOTED. REFER TO PANEL SCHEDULE FOR SIZE AND SPECIFICATION
- EQUIPMENT MOTOR
- TRANSFORMER, POLE OR PAD MOUNTED
- MANUAL MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION.
- DISCONNECT SWITCH
- FRACTIONAL HORSEPOWER MOTOR
- LOUVER-DAMPER MOTORIZED – INTERLOCK WITH FAN
- RECESSED LED LIGHT FIXTURE
A = FIXTURE TYPE (SEE SCHEDULE)
a = FIXTURE CONTROLLED BY SWITCH WITH SAME DESIGNATION (TYPICAL)
- SURFACE OR PENDANT MOUNTED LIGHT FIXTURE
- HIGH BAY LED LUMINAIREE
- WALL MOUNTED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- SURFACE MOUNTED LIGHT FIXTURE
- EXIT FIXTURE – PROVIDE ARROWS AS INDICATED
- EMERGENCY LIGHT FIXTURE
- MECHANICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
- EMERGENCY REMOTE LIGHTING HEAD
- POWER CABLE DESIGNATION
- ELECTRICAL FLAG NOTE

AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	NL	DENOTES CONNECTION AS NIGHT LIGHT
BFF	BELOW FINISHED FLOOR	EWC	ELECTRIC WATER COOLER
BFG	BELOW FINISHED GRADE	N	NEUTRAL
CKT	CIRCUIT	PC	PHOTOCELL
CT	CURRENT TRANSFORMER	OHD	OVERHEAD DOOR OPERATOR
G	GROUND	PVC	POLYVINYL CHLORIDE
GC	GROUNDING CONDUCTOR	SSRV	SOLID STATE REDUCED VOLT.
GRD	GROUNDING CONDUCTOR	UG	UNDERGROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPT	VFD	VARIABLE FREQUENCY DRIVE
GRC	GALVANIZED RIGID CONDUIT	XFMR	TRANSFORMER
HP	HORSEPOWER		
IC	INTERRUPTING CAPACITY		
C	CONDUIT		
AC	ABOVE COUNTER		
UC	UNDER COUNTER		



John M. Benson, PE
Consulting Electrical Engineer
P.O. Box 916 - Laporte, CO 80535
(970) 462-3986 OFFICE (970) 227-8809 CELL
jbenson@jgato.com

FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

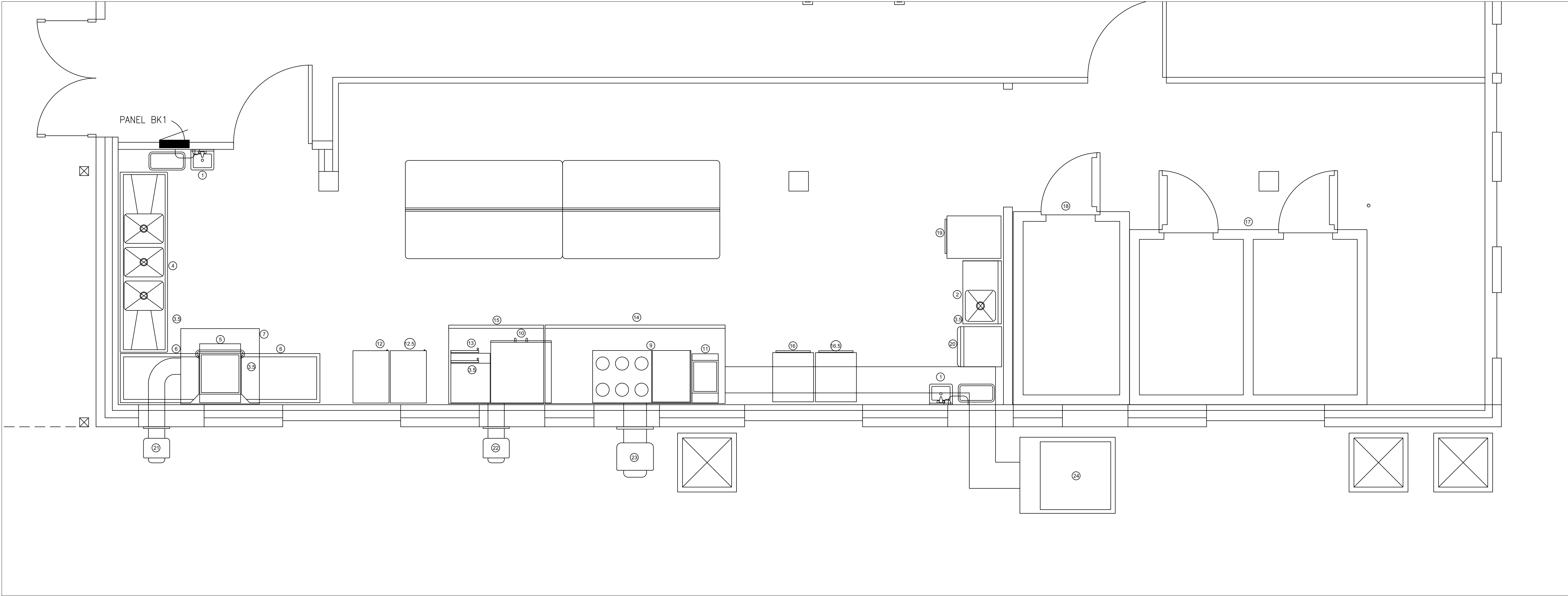
PROJECT NO.	David	2-17-20			
DRAWN	David	CHECKED	JP		
REVISIONS					

KITCHEN EQUIPMENT SCHEDULE

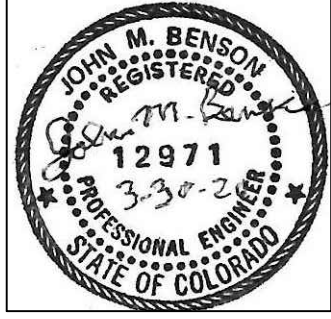
ITEM NUM.	ITEM DESCRIPTION	EQUIP. SIZE	MANUFACTURER	MODEL NUM.	QUANT.	MOUNTING	POWER	CIRCUIT BREAKER
5	DISH WASHER	24"W X 36" D	ALREADY OWN. BRAND- CLEAN FORCE	AF 3DS	1	FLOOR	120v -20amp	30/2
6	DISHWASHER OUT-FEED TABLES	48"W X 30"D	ALREADY OWN	NONE	2	FLOOR	--	
7	DISHWASHER CONDENSATE HOOD	48"W X 46"D	ALREADY OWN	-	1	FLOOR		
	COOKING							
9	6 BURNER COOKTOP WITH 24" FLAT TOP	60"W x 32"D	VULCAN	SX 60F-6B24 GN	1	FLOOR	--	
10	DOUBLE STACK CONVECTION OVEN	38"W x 37"D	BLODGETT	SHO 100 -G	1	FLOOR	120v -6amp	20/1
11	FRYER	16"W x 30"D	SUPERIOR	LG400-5	1	FLOOR	--	
12	COOK AND HOLD UNIT	22"W x 32"D	ALREADY OWN. BRAND- ALTO SHAAM	1000 THTT	1	FLOOR	240v -28.9amp	40/2
12.5	COOK AND HOLD UNIT	22"W x 32"D	ALREADY OWN. BRAND- ALTO SHAAM	VERIFY	1	FLOOR	120v -14amp	20/1
13	STEAMER	24"W x 32"D	ALREADY OWN. BRAND- MARKET FORGE	VERIFY	1	FLOOR	240v -51.6amp	70/2
14	TYPE 1 HOOD	110"W x 48"D	ALREADY OWN.	VERIFY	1		VERIFY	
15	CONDENSATE HOOD	58"W x 48"D	ALREADY OWN.	VERIFY	1		VERIFY	
16	FOOD WARMER	25"W x 30"D	ALREADY OWN. BRAND- VULCAN	VERIFY	1		120v -16.6amp	30/1
16.5	FOOD WARMER	25"W x 30"D	ALREADY OWN. BRAND- HOT FOOD BOX INC	VERIFY	1		120v -18amp	30/1
	REFRIGERATION / FREEZERS							
17	WALK-IN COOLER / FREEZER	12'-1"W x 8'-11"D	ALREADY OWN NORLAKE	VERIFY	1	FLOOR	FRIDGE 110v -15 amp FREEZER 120v -22 amp	20/1 20/1
18	WALK-IN COOLER	5'-11" W X 9'-10"D	ALREADY OWN CCI	VERIFY	1	FLOOR	120v -15 amp	20/1
19	FREE STANDING REFRIGERATOR	26"W x 33"D	ALREADY OWN	VERIFY	1	FLOOR	120v -3 amp	30/1
20	ICE MACHINE	24.5"W x 27"D	ICE O MATIC	16021280010451	1	FLOOR	120v -7.5 amp	20/1
	EXHAUST / MAKE-UP AIR							
21	DISHWASHER EXHAUST AIR, HVAC KEF-3				1	WALL	240V, 3.6 FLA	15/2
22	STEAMER EXHAUST AIR HVAC KEF-2				1	WALL	240V, 4.9 FLA	15/2
23	TYPE 1 HOOD EXHAUST AIR, HVAC KEF-1				1	WALL	240V, 8.0 FLA	20/2
24	MAKE-UP AIR UNIT, HVAC MUA-1				1	GROUND	240V, 11.2 MCA	20/2
	JANITOR EXHAUST FAN, HVAC EF-1		COOK	GC-146	1	CEILING	120v -1.5 amp	15/1

POWER PLAN NOTES

1. PROVIDE BRANCH CIRCUIT WIRING TO LOADS AS DEFINED ON THE EQUIPMENT SCHEDULE AND SHOWN IN PLAN. VERIFY ALL CIRCUIT PARAMETERS PRIOR TO START OF ROUGH-IN.
2. COORDINATE LOCATIONS OF ALL NON-EQUIPMENT RELATED CONVENIENCE OUTLETS WITH THE OWNER PRIOR TO START OF CONSTRUCTION.
3. PROVIDE INTEGRAL CLASS A GROUND FAULT CIRCUIT INTERRUPTION (GFCI) ON ALL 120 VOLT, 15 OR 20 AMPERE RECEPTACLES THAT ARE LOCATED WITHIN 6 FEET OF ANY WALL OR FLOOR MOUNT SINK OR OTHER OPEN WATER EQUIPMENT.
4. PROVIDE A 20 AMPERE, 120 VOLT WP GFCI SERVICE OUTLET NEAR THE MAKE-UP AIR UNIT AND CONNECT TO A CONVENIENCE OUTLET CIRCUIT.
5. PROVIDE RECEPTACLE AND MATCHING PLUG OR SAFETY DISCONNECT SWITCH AT EACH EQUIPMENT LOCATION. COORDINATE LOCATION AND CONFIGURATION PRIOR TO START OF CONSTRUCTION.
6. ALL CONDUITS ARE BE CONCEALED IN CEILING OR WALL CONSTRUCTION IN THE KITCHEN AND STORAGE AREAS.



POWER PLAN
SCALE: 3/8" = 1'



John M. Benson, PE
Consulting Electrical Engineer
P.O. BOX 916 - LAPORE, CO 80535
(970) 482-3986 OFFICE (970) 227-8809 CELL
jbensonpe@yahoo.com

FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

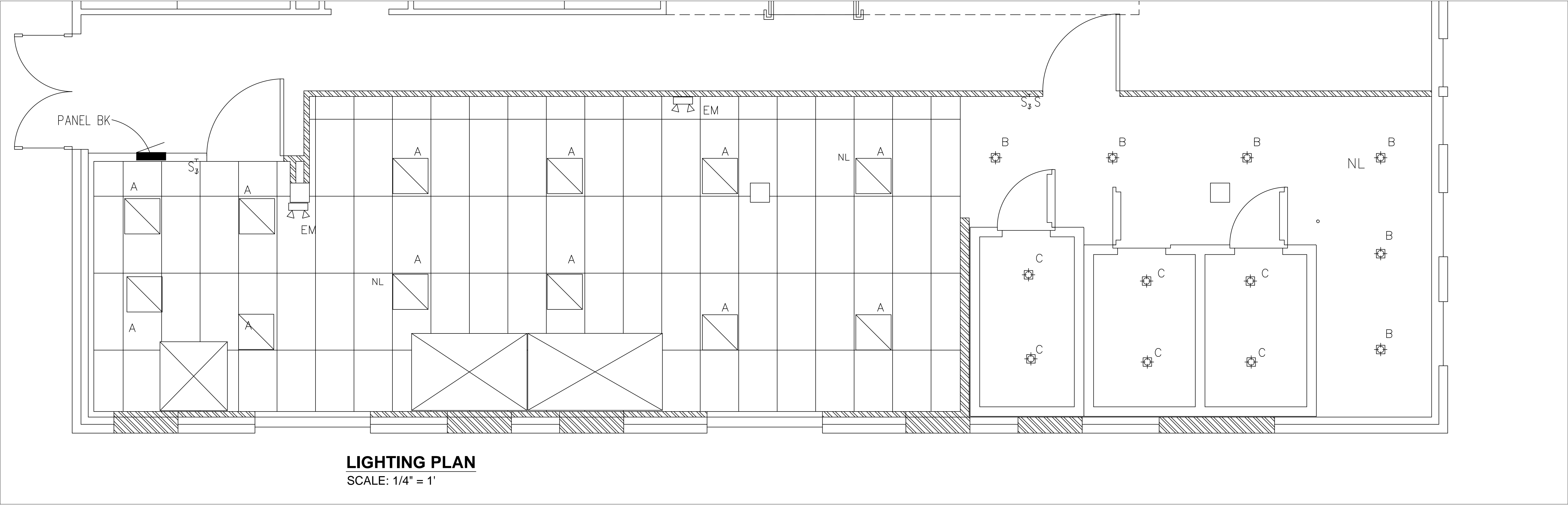
PROJECT NO.	David	2-17-25
DRAWN	David	
CHECKED	David	
REVISIONS	David	

LIGHTING FIXTURE SCHEDULE

TYPE A	CEILING RECESSED 2'X2' LED LUMINAIRE, WITH UNIVERSAL DRIVER. 4000K COLOR AND MINIMUM 2,500 LUMENS RATED OUTPUT IN A 0.125A" THICK FLUSH FROSTED ACRYLIC LENS SET IN A FLUSH WHITE ALUMINUM DOOR. TROFFER SHALL BE TRIPLE GASKETED (DOOR-TO-LENS, DOOR TO HOUSING, AND HOUSING-TO-GRID). FIXTURE SHALL BE HUBBELL LLT 22-40 ML G-FA A12F-E U G3.
TYPE B	RECESSED 4000K LED RECESSED DOWNLIGHT FIXTURE WITH SEMI-DIFFUSE CLEAR ALZAK REFLECTOR AND 1500 LUMEN MODULE AND WHITE PAINTED TRIM. EQUIP WITH BAR HANGERS FOR INSTALLATION N JOIST CEILING. EQUAL TO PRESCOLITE LF6SL-6LFSL 15L WT- B6.
TYPE C	SURFACE CEILING MOUNTED CEILING VAPORTIGHT WET LOCATION LUMINAIRE WITH 4000K LED SOURCE GLASS LENS ALUMINUM HOUSING/GUARD, EQUAL TO HUBBELL VBGL-FG.
TYPE EM	EMERGENCY BATTERY STANDBY HIGH OUTPUT EGRESS LUMINAIRE WITH TWO 2.0 WATT LED HEADS. MOUNT ON WALL AT CEILING, EXCEPT IN HIGH CEILING AREAS AT 10'-6" AFF. EQUAL TO DUAL-LITE EV4.

LIGHTING PLAN NOTES

1. ALL LIGHTING IN THE KITCHEN AND STORAGE CEILING AREAS SHALL BE CONNECTED TO ONE CIRCUIT (BK-1). THE LIGHTING EQUIPMENT FOR THE HOOD(S) AND WALK-IN EQUIPMENT LIGHTING SHALL BE CONNECTED TO A SEPARATE CIRCUIT (BK-3).
2. TYPE C FIXTURES IN COOLER AND FREEZER ARE SPECIFIED IN LIEU OF LIGHTING EQUIPMENT THAT MAY BE PROVIDED WITH THE EQUIPMENT PACKAGE.
3. SWITCH LIGHTING AT EACH DOOR INTO KITCHEN AREA WITH THREE WAY SWITCH, AS INDICATED. SINGLE POLE SWITCH AT THE EAST DOOR SHALL BE FOR THE LIGHTING IN THE STORAGE CEILING AREAS. LIGHTING CONTROL FOR THE COOLER AND FREEZER UNITS WILL BE SWITCH ON EQUIPMENT ANDPART OF THE EQUIPMENT PACKAGE.
4. CONNECT THE EM STANDBY LIGHTING UNITS TO THE NEAREST "NL" FIXTURE FOR OPERATION WITH THE NIGHT LIGHTING EQUIPMENT.



John M. Benson, PE
Consulting Electrical Engineer
P.O. BOX 916 - LAPORTE, CO 80535
(970) 482-3986 OFFICE (970) 227-8809 CELL
jbensonpe@yahoo.com

Brookside Gardens
Barn Remodel
619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	David	2-17-25
DRAWN	David	
CHECKED	David	
REVISIONS	David	

PART 1 – GENERAL

1.1 SYSTEM PARAMETERS

- A. Electrical systems required for this work includes labor, materials, equipment, and services necessary to complete installation of electrical work for the project, specified herein or required for a complete operable facility and not specifically described in other Sections of these Specifications. Among the items required whether shown in plan or not shall include (but are not limited to):
1. Service and distribution equipment shown on Drawings.
 2. Provide all branch circuit wiring from the new branch circuit panelboard for lighting, equipment, receptacles, motors, signal systems and other items.
 3. Luminaires, control switches, receptacles, relays, supports and other accessory items.
- B. Fees:
1. Pay fees levied by serving electric utility to provide service to this project.
 2. Obtain fees from serving electric utility prior to submitting a bid.
 3. Obtain and pay for electrical permits, plan review, and inspections from local authorities having jurisdiction (AHJs).

1.2 DEFINITIONS

- A. Provide: To furnish and install, complete and ready for the intended use.
- B. Furnish: Supply and deliver to the project site, ready for unpacking, assembly and installation.
- C. Install: Includes unloading, unpacking, assembling, erecting, installation, applying, finishing, protecting, cleaning and similar operations at the project site as required to complete items of work furnished by others.

1.3 SUBMITTALS

- A. Operation and Maintenance Documentation: Provide copies of certificates of code authority acceptance, test data, product data, guarantees, warranties, and the like.
- B. Shop Drawings: Provide shop drawings which include physical characteristics, electrical characteristics, device layout plans, wiring diagrams, and the like.
- C. Record Drawings: Show changes and deviations from the Drawings. Include written Addendum and change order items. Make changes to Drawings in a neat, clean, and legible manner.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of the National Electric Code (NEC), latest adopted version with amendments by local AHJs.
- B. Conform to latest adopted version of the Uniform Building Code (UBC) with amendments by local AHJs.
- C. Furnish products listed by Underwriters' Laboratories, Inc. (UL) or other testing firm acceptable to AHJs.
- D. Conform to requirements of the serving electric, and telephone utilities.

1.5 SEQUENCING AND SCHEDULING

- A. For the proper execution of the work cooperate with other crafts and contracts as needed.
- B. To avoid installation conflicts, thoroughly examine the complete set of Contract Documents. Resolve conflicts prior to installation.
- C. Prior to installation of feeders to equipment requiring electrical connections, examine the manufacturer's shop drawings, wiring diagrams, product data, and installation instructions. Verify that the electrical characteristics detailed in the Contract Documents are consistent with the electrical characteristics of the actual equipment being installed.

1.6 ELECTRIC SERVICE – EXISTING

- A. Voltage: 120/240 Volt 1–Phase 3–wire.
- B. Derived from new service transformer.
- C. Utility serving the site: XCEL Energy

1.7 CONDUCTOR TERMINATIONS

- A. Branch circuit: Solderless insulated pressure connectors on #8 AWG and smaller.
- B. Copper Conductors #8 and Larger: Solderless compression lug connectors.
- C. Aluminum Conductors (if allowed): Compression circumferential crimp with oxide inhibiting compound and made with crimp tool intended for lug used.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Provide new electrical materials of the type and quality detailed, listed by UL, bearing their label wherever standards have been established. Indicated brand names and catalog numbers are used to establish standards of performance and quality. The description of materials listed herein governs in the event that catalog numbers do not correspond to materials described herein.
- B. Include special features, finishes, accessories, and other requirements as described in the Contract Documents regardless of the item's listed catalog number.
- C. Provide incidentals not specifically mentioned herein or noted on Drawings, but needed to complete the system or systems, in a safe and satisfactory working condition.

2.2 RACEWAYS

- A. Galvanized Rigid Steel Conduit (GRC): Federal Specification WWC–581 and American National Standards Institute (ANSI) C80.1.
- B. Intermediate Metal Conduit (IMC): Federal Specification WWC–581.
- C. Electrical Metallic Tubing (EMT): Federal Specification WWC–563 and ANSI C80.3.
- D. Flexible Conduit: Flexible steel conduit. Federal Specification WWC–586.
- E. Flexible Conduit, PVC Coated Steel: PVC chemical resistant jacket.
- F. PVC: Class 40 heavy wall rigid PVC, Federal Specification WC1094A and National Electrical Manufacturer's Association (NEMA) TC–2.
- G. Conduit Fittings:
1. Bushings: Malleable iron with plastic insulator lining, 150C rated.
 2. Ground Bushings: Malleable iron with plastic insulating liner and 150C rated.
3. EMT Connectors and Couplings:
- a. Set Screw Type: Zinc plated steel, insulated throat connectors.
 - b. Compression Type: Zinc plated steel, insulated throat connectors, rointight up to 2–inch.

2.3 WIRES AND CABLES

- A. Copper, insulated to 600 volt. Conductors shall have minimum insulation rating of 75C. Insulation types THWN or XHHW. Install all conductors in an approved raceway system.
- B. Aluminum conductor with TYPE XHHW insulation allowed for sizes #4/0 and larger.

2.4 BOXES

- A. Luminaire Outlet: 4–inch octagonal box, 1–1/2–inches deep with 3/8–inch luminaire stud if required. Provide raised covers on bracket outlets and on ceiling outlets.
- B. Device Outlet: Minimum 4–inch square, minimum 1–1/2–inches deep. Single or 2–gang flush device raised covers. Raco Series 681 and 686 or Bowers.
- C. Multiple Devices: Three or more devices at common location. Install 1–piece gang boxes with 1–piece device cover, one device per gang.
- D. Weatherproof Outlet Boxes: Corrosion-resistant cast metal weatherproof outlet wiring boxes, of the type, waterproof cap suitably configured for each application, including face plate gasket, blank plugs shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring–hinged and corrosionproof fasteners and gray finish. Equipment extra–duty rated in–use cover.
- E. Junction and Pull Boxes: Galvanized sheet steel junction and pull boxes, with screw–on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.

2.5 WIRING DEVICES

- A. Color: As directed by Architect or Owner.
- B. Wall Switches: Toggle type, quiet acting, 20 amp, 120/277 volt, UL listed for motor loads up to 80 percent of rated amperage. Arrow–Hart 1221, Leviton 1221, Pass & Seymour 20ACI, Bryant 4901, Hubbell 1221.
- C. Pilot Light Switches: Lighted handle, toggle type, red, neon pilot lamp. Pilot lamp energized when load is energized. 20 amp/120 volt, Arrow–Hart 1991–PL, Leviton 1221–PL, Pass & Seymour 20ACI–PL, Bryant 4901–PL, Hubbell 1221–PL.
- D. Receptacles: Straight parallel blade 20 amp, 125 volt, 2–pole – 3 wire grounding. Arrow–Hart 5352, Leviton 5352, Pass & Seymour 5352, Bryant 5352, Hubbell 5352.
- E. Ground Fault Interrupter Receptacle: Integral GFI, 20 amp, 125VAC. Hubbell IG–5362, Arrow–Hart IG–5362, Leviton, Pass & Seymour, Bryant.
- F. Finish Plates: Smooth Nylon or polycarbonate; same color as device. Plastic plates not permitted.

2.6 SAFETY DISCONNECTS

- A. Toggle Type Disconnect Switches: 120 volt, 1–pole, 20 amp, 1 HP maximum. NEMA 1 enclosure for indoors, NEMA 3R enclosure for outdoors.
- B. Manual Motor Starters: Quick–make, quick–break. Thermal overload protection. Device labeled with maximum voltage, current and horsepower. Square–D Class 2510, Siemens, General Electric, or Cutler–Hammer/Westinghouse. Provide NEMA 1 enclosure for indoors, NEMA 3R enclosure for outdoors.
- C. Safety Switches: Heavy duty, fused type, dual rated, quick–make, quick–break with fuse rejection feature for use only with indicated fuse class. Provide NEMA 1 enclosure for indoors, NEMA 3R enclosure for outdoors. Main disconnects to be service rated. Manufacturers: Cutler–Hammer/Westinghouse, Square–D, or Siemens.

2.7 SUPPORTING DEVICES

- A. Hangers: Kindorf B–905–2A channel, H–119–D washer, C105 strap, 3/8–inch rod with ceiling flange.
- B. Pipe Straps: Two–hole galvanized or malleable iron.

2.8 ELECTRICAL IDENTIFICATION

- A. Engraved Labels: Melamine plastic laminate, white with black core, 1/16–inch thick, manufactured by Lomicaid. Engravers standard letter style, minimum 3/16–inch high letters. Drill or punch labels for mechanical fastening except where adhesive mounting is necessary because of substrate. Use self tapping stainless steel screws.
- B. Conductor Numbers: Manufacturers standard vinyl–cloth self–adhesive cable and conductor markers of the wraparound type.
- C. Branch Circuit Schedules: Provide branch circuit identification schedules, typewritten, clearly filled out, to identify load connected to each circuit and location of load.

3.1 BRANCH CIRCUIT PANELBOARDS

- A. Manufacturers: Siemens, Square–D, Cutler–Hammer, General Electric, or as approved.
- B. Standards: Comply with requirements of UL 891, NEMA PB1, PB2 and NEC 384 in construction of switchboards. Provide short circuit current rating (Integrated Equipment Rating, IER) for panelboards. Load centers construction is acceptable.
- C. Lugs: Compression type.
- D. Branch Circuit Panelboards:
1. Enclosure: Panelboards rated 600 amp or less provide maximum enclosure depth of 5–3/4–inches. Provide grey paint finish.
 2. Bussing: Aluminum bar with suitable electroplating (tin) for corrosion control at connection. Provide ground bar to accommodate specified terminal lugs.
 3. See Drawings for available fault current, minimum 10,000 amperes rms, symmetrical.
 4. Breakers: Bolt–on type.
 5. Cover: Hinged door, flush lift latch and lock, door–in–door with two keys per panel. Key branch circuit panelboards alike. Medium light grey finish suitable for field painting to match wall finish.

2.12 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers: One, two or three–pole bolt on, single handle common trip, rated 15 to 800 amp, as indicated on Drawings. Overcenter toggle–type mechanism, quick–make, quick–break action. Trip indication is by handle position. Calibrate for operation in 40C ambient temperature.

2.14 LUMINAIRES

- A. Luminaires: Refer to description and manufacturers in Luminaire Schedule.
- B. Where recessed luminaires are installed in cavities intended to be insulated, provide IC rated luminaires or other code approved installation.
- C. Recessed Luminaires: Frame compatible with the ceiling material installed at the particular luminaire location.

z 0.125–inch overall thickness, unless otherwise noted.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Drawings are diagrammatic with symbols representing electrical equipment, outlets, luminaires, and wiring. Examine the entire set of Drawings to avoid conflicts with other systems. Determine exact route and installation of electrical wiring and equipment with conditions of construction.
- B. Clarification:
1. The Drawings govern in matters of quantity, the Specification in matters of quality. In event of conflict on Drawings or in the Specifications, the greater quantity and the higher quality apply.
 2. Should the Electrical Documents indicate a condition conflicting with the governing codes and regulations, refrain from installing that portion of the work until clarified by Architect.

3.2 MOTORS/APPLIANCE/UTILIZATION BRANCH CIRCUIT WIRING

- A. Electrical Connections: Connect equipment, whether furnished by Owner or other Divisions of the Contract, electrically complete.
- B. Connect motor branch circuits complete from panel to motor as required by code and manner herein described.

3.3 INSTALLATION

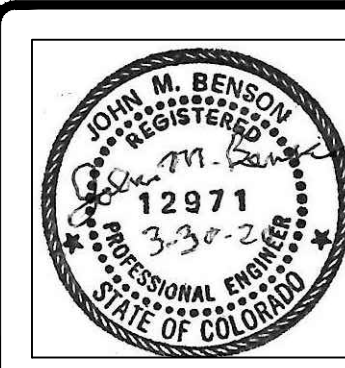
- A. Install electrical equipment complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer or Owner prior to start of rough–in of the electrical equipment.
- B. Noise Control: Do not place outlet boxes at opposite side of partitions or walls back to back. Do not place contactors, transformers, starters or similar noise producing devices on walls which are common to occupied spaces unless specifically called for on Drawings. Where such devices must be mounted on walls common to occupied spaces, mount or isolate in such a manner as to effectively prevent the transmission of their inherent noise to the occupied space.
- C. Conduit:
1. Conceal conduits. Exposed conduits are permitted only in the following areas: Mechanical rooms, electrical rooms or spaces where walls, ceilings and floors will not be covered with finished materials. Existing walls that are concrete or block construction and where specifically noted on the Drawings.
 2. Do not install conduits on surface of building exterior, across roof, on top of parapet walls, or across floors.
 3. Below Grade Conduit and Cables: Place a minimum 3–inch cover of sand or clean earth fill around the cable or conduit on a leveled trench bottom. Lay conduit on a smooth level trench bottom, so that contact is made for its entire length. Remove water from trench before electrical conduit is installed.
 4. Conduit Terminations: Provide conduits shown on Drawings which terminate without box, panel, cabinet or conduit fitting with conduit connector or bushing.
 5. Conduit Size: Minimum trade size 1/2–inch.
 6. Provide pull cord in empty conduits.
 7. Conduit Use Locations:
 - a. Underground: PVC.
 - b. Cast–in–Place Concrete, Masonry, Damp Locations and Subject to Mechanical Damage: GRC or IMC.
 - c. Dry, Protected: GRC, IMC, EMT.
 - d. Sharp Bends and Elbows: GRC, EMT use factory elbows.
 - e. Motors, recessed luminaires and equipment connections subject to movement or vibration, use flexible metallic conduit.
 - f. Motors and equipment connections subject to movement or vibration and subjected to the following conditions: exterior location, moist or humid atmosphere, water spray, oil or grease use PVC coated liquid tight flexible metallic conduit.
 8. Branch Circuits: Do not change the intent of the branch circuits or controls without approval. Homeruns for 20 amp branch circuits may be combined to a maximum of six conductors in a homerun. Apply derating factors as required by NEC 310. Increase conductor size as needed.
- D. Wires and Cables:
1. Conductor Installation: Install conductors with care to avoid damage to insulation. Do not apply greater tension on conductors than recommended by manufacturer during installation.
 2. Conductor Size and Quantity: Install no conductors smaller than 12AWG unless otherwise shown. Provide required conductors for a fully operable system.
 3. Aluminum conductor termination shall be by compression lug and anti–oxide compound. No bolted lug permitted. Lug to be installed by specially local equal to Hypress.

E. Boxes:

1. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.
2. Provide weatherproof outlets for locations exposed to weather or moisture.
3. Code Compliance: Comply with NEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to NEC 370, except as noted otherwise.
4. Mount Center of Outlet Boxes as Required by Americans With Disabilities Act (ADA), or Noted on Drawings, the Following Distance above the Floor:
 - a. Control Switches: 48–inches.
 - b. Receptacles: 18–inches.
 - c. Telecom Outlets: 18–inches.
 - d. Other Outlets: As indicated in other Sections of Specifications or as detailed on Drawings.

- F. Provide NEC–required disconnect switches whether specifically shown on Drawings or not. Provide disconnect switch at each motor location within 5–feet unless otherwise noted. Coordinate fuse ampere rating with installed equipment. Fuse ampere rating variance between original design information and installed equipment, size in accordance with Bussmann Fusetron 40C recommendations.
- G. Supporting Devices:
1. Safety factor of 4 required for every fastening device or support for electrical equipment installed. Support to withstand four times weight of equipment it supports. Bracing to comply with the Seismic Zone requirements.
 2. Provide vertical support members for equipment and luminaires, straight and parallel to building walls. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over furred or suspended ceilings.
- H. Electrical Identification:
1. Conductor Identification: Apply markers on each conductor for power, control, signaling and communications circuits.
 2. Provide an engraved label on each major unit of electrical equipment, including but not limited to the following items: Disconnect switches, relays, contactors, time switches, override switches, service disconnects, distribution switches, branch circuit panelboards, and central or master unit of each electrical system including communication/signal systems.
- I. Service and Distribution: Reuse existing service equipment and wiring in place. Provide feeder conductors from existing meter center to the new panel in the tenant space.
- J. Grounding:
1. Performance Requirements: Provide equipment grounding system to properly safeguard the equipment and personnel. Install equipment grounding such that metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, portable equipment and other conductive items in close proximity with electrical circuits operate continuously at ground potential and provide a low impedance path for possible ground fault currents.
 2. Raceway Grounding: Ground metallic raceway systems. Bond to ground terminal with code size jumper except where code size or larger grounding conductor is included with circuit, use grounding bushing with lay–in lug. Install ground bushings on metallic raceway terminations in pull boxes, panelboards and the like for circuits with overcurrent protection set at 60 amp and greater.
 3. Provide insulated equipment grounding conductor, code size minimum in all raceway systems.
 4. Motors, Equipment and Appliances: Install code size equipment grounding conductor from outlet box to (motor) equipment frame or manufacturer's designated ground terminal.
 5. Receptacles: Connect ground terminal of receptacle to equipment ground system by conductor bolted to outlet box. Self grounding nature of receptacle devices does not eliminate conductor bolted to outlet box.
- K. Panelboards:
1. Install equipment complete as directed by manufacturer's installation instructions.
 2. Install equipment in conformance with work space requirements of NEC 110–26. Locate equipment in rooms or spaces dedicated to such equipment, NEC 408–2. Coordinate with other Divisions of work.
 3. Flush Panels: Verify available recessing depth and coordinate wall framing with other Divisions. Provide one spare conduits from panel to accessible space above and below the panel. Maintain fire rating of wall.
- L. Fuses: For each class and ampere rating of fuse installed, provide 3 spare fuses.
- M. Lighting:
1. Install luminaire of types indicated where shown and at indicated heights; in accordance with manufacturer's written instructions and with recognized industry practices.
 2. Avoid interference with and provide clearance for equipment. Where the indicated locations for the luminaires conflict with the locations for equipment, change the locations for the luminaire as directed by Architect.
 3. Suspended Luminaires: Mounting heights indicate the clearances between the bottom of the luminaire and the finished floors.
 4. Support Luminaires: Anchor supports to the structural slab or to structural members within a partition, or above a suspended ceiling.
 5. Provide lighting indicated on Drawings with a luminaire of the type designated and appropriate for the location. Where outlet symbols appear on Drawings without a type designation provide a luminaire the same as those used in similar or like locations.

END OF DIVISION



John M. Benson, PE
Consulting Electrical Engineer
P.O. BOX 916 – LAPORE, CO 80535
(970) 482-9888 OFFICE (970) 227-8809 CELL
jbenson@jbpeco.com

FREEMAN
ARCHITECTS
P.C.
2024 Blue Mesa Court 80538
LOVELAND, CO
(970) 667-3939
FAX: (970) 667-3940

Brookside Gardens
Barn Remodel

619 E. County Road 8
Berthoud, CO 80513

PROJECT NO.	DRAWN CHECKED	DATE	2-17-20						
REVISIONS									

Construction Documents

SHEET **E4** OF 4