

Wade's Dairy

Milkhouse Upgrade & Bottling Addition

5475 West 1400 North Warren, Utah 84404

Parcel# 150200014

Applicants:

Permanent Structures:

Last Cow, LLC.

5545 W 1400 N

Warren, Utah 84404

Tenant Finishes:

Wade's Dairy

5249 W 1400 N

Warren, Utah 84404

Project Address:

5475 W 1400 N

Warren, Utah 84404

Lot Area:

5.63 ACRES

All work to reflect local agriculture structure building codes.

Lot without individual septic system.
Plans reflect future septic system addition.
Employees to use portable toilet during business hours.

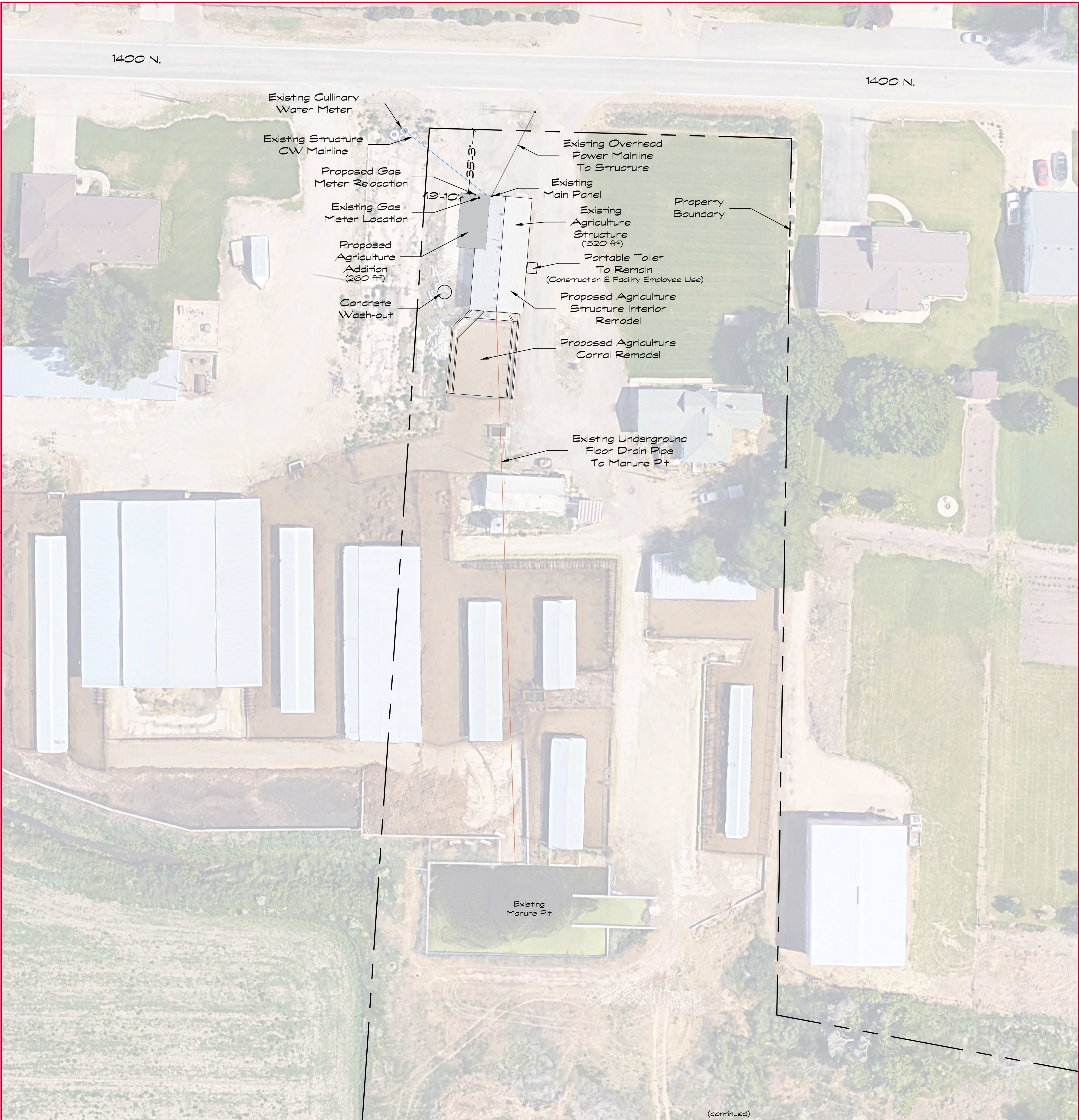
Culinary water to be provided by Warren Water District.

Existing electric, gas and land based telephone service located on the lot.

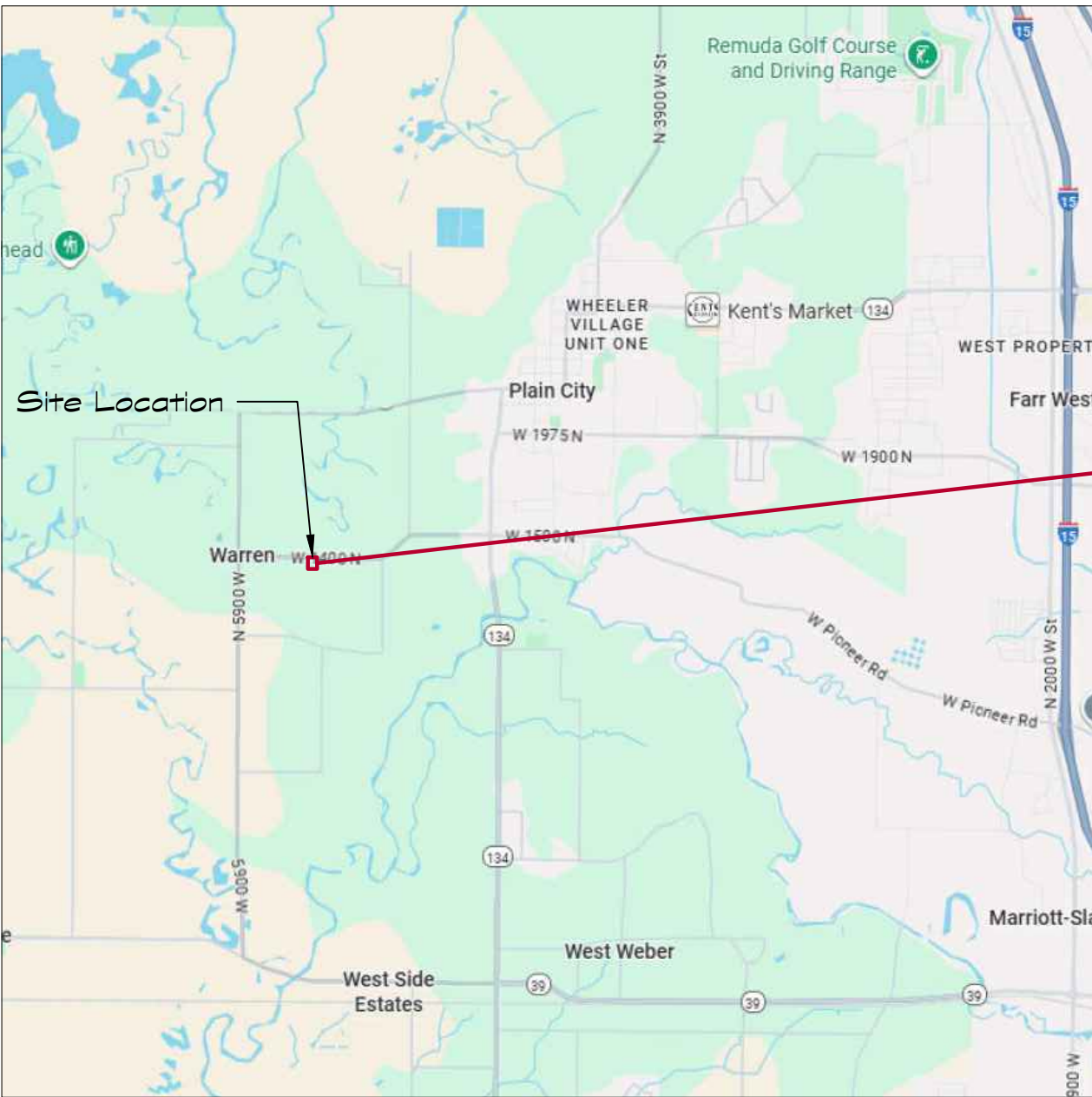
Lot Owner to be responsible for any cost of new connection to services.

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Vicinity Map



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Wade's Dairy
Milkling Parlor & Bottling
5475 West 1400 North
Warren, Utah 84404
Cover Sheet & Plot Plan

DATE					
NO.	REVISIONS				
DRAWN BY Josh Smith					
DATE 10/27/25					
SHEET Cover Sheet & Plot Plan					
SCALE 1/32" = 1'					
C100 1 OF 14					

Introduction:

This drawing set consists of plans for the renovation and construction of the Wade Dairy facility at 5475 W. 1400 N. Weber County, Utah.

The company will be providing dairy cow milk production and bottling in the facility.

Their hours of operation will be determined by cow milking schedules and the timeframe need for bottling daily worker count of 1-5 individuals.

Milk and milk products produced on site for retail to be distributed to the retail location of Wade's Dairy.

This facility will be built and furnished to meet the requirements for dairy production.

This facility will be supplied with on-site city water, a on-site wastewater septic system, propane gas, and 2 phase electricity.

There will be an addition attached at the side of the facility to shelter compressors, vacuums and tanks called the equipment room. This will have a double walk-through door to the rear for ease of equipment loading, staging and installing.

Requirements:

All work and materials used in the processes to construct this facility must comply with but not limited to the following codes, laws and requirements:

- 2021 International Building Code (IBC)
- 2021 International Fuel Gas Code (IFGC)
- 2021 International Mechanical Code (IMC)
- 2021 International Property Maintenance Code (IPMC)
- National Fire Protection Association (NFPA) 101
- Life Safety Code 202

Utah Department Of Agriculture Requirements For Pasutrized Milk Ordinance: Grade A Farm Construction.

Utah Dairy Act

Utah Rule R70-330-4

Utah Food Safety Rule.

General Notes:

Compliance with codes, rules, regulations, and ordinances governing the work shall be made and enforced by the general contractor.

General contractor shall verify all existing conditions and dimensions prior to construction.

Note that all written dimensions take precedence over scale.

Manufacturer's specifications for installation of materials shall be followed.

Workmanship throughout shall be of the best quality of the trade involved and the general contractor shall coordinate the work of the various trades to expedite the job in a smooth and continuous process.

Foundation Notes:

Drainage tiles, gravel or crushed stone drains, or mechanical means into an approved drainage materials shall be installed at or below the area to be protected and shall discharge by gravity perforated pipe or other approved systems or system.

Concrete footings required under all foundation walls, bearing walls and posts.

General Concrete Notes:

Walls, foundations and other concrete not exposed to the weather = 2,500 psi.

Interior slabs on grade, except garage floor slabs = 2,500 psi.

Foundation exterior walls exposed to the weather = 3,000 psi.

Porches,slabs, and steps exposed to the weather = 3,500 psi.

Emergency floor drains at water heaters, laundries, garages, etc. req. a trap seal primer or deep seal trap. IPC Sec. 1002.4.1.

All exterior doors shall have a floor or landing on each side of the door. The floor or landing at a door shall not be more than 1.5 inches lower than the top of the threshold. If the door is not a req. exit door the landing shall not exceeded 8' from top of threshold.

All landings shall be not less than 36" wide, measured in the direction of travel.

Concrete Floor Slab:

A 6-mil polyethylene or approved vapor retarder with joints lapped not less than 6" shall be placed between the concrete floor slab and the base course or the prepared sub-grade where no base course exists.

Exception: The vapor retarder is not required for the following:

- 1) Garages, utility buildings and other unheated accessory structures.
- 2) For unheated storage rooms having an area of less than 10 sq. ft.
- 3) Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
- 4) Where approved by the building official, based on site conditions.

Framing Notes:

Bottom plate anchor bolts shall be 3/8"x5" wedge bolts with a 3"x3"x1/4" washer at each bolt, if slotted washer is used. add cut washer.

Wall Dbl top plates shall be 2x min. and shall lap 36" min. at all splices with (12) 16d nails staggered each side of splice.

Where plates do not lap, provide CS 16X32 strap to splice plates, align wall stud with plate joints.

Attach (2) ply headers together with (3)16d at 12" o.c. [(2) 1gd ok for 2x6 headers]. Use (3) 16d at 12" o.c. each side for (3) ply headers. Use (4) 16d at (2) and (3) ply headers when header height is greater than 11". attach (4) ply headers together with (2) "through bolts at16" o.c. or (2) SDS 1/4"x 6" screws at 16"o.c. each side of header.

Wall Sheathing: 7/16" APA rated OSB. See plan.

Provide edge nailing at all supported and blocked panel edges 6" o.c. and field nail all wall studs 12" o.c. with 2" galvanized ring shank nails and as per details.

Bathroom Notes:

A mechanical ventilation system shall be req. The ventilation rates shall be 50 cfm, for continuous ventilation.

Toilet, bath and shower areas to be finished with a nonabsorbent surface in accordance with IRC R307.

Mechanical General Notes:

Mechanical contractor to provide combustion air to furnace area in accordance with local natural gas specifications.

Combustion air to be brought into building from outside. 2-ducts provided, placed at 12'

Combustion air shall be supplied by two (2) vertical openings, each with 1 sq. in. per 4,000 BTU/h of the total inputting rating of all appliances within the space.

OR Combustion air shall be supplied by two (2) horizontal openings, each with 1 sq. n. per 3,000 BTU/h of the total input rating of all appliances within the space.

One opening must be in the top 12' of room IRC G2407.6.2

Water heaters shall be anchored or strapped in the upper one-third and in the lower one-third of the appliance to resist a horizontal force equal to one-third of the operating weight of the water heater, acting n any horizontal direction, or in accordance with the appliance manufacture's recommendations. P2801.7 4-IRC P2801.7

The mechanical room shall be enclosed, sealed and insulated in accordance with IECC N102.4.4

Appliance Anchorage:

Water heaters shall be anchored or strapped to resist horiz. movement.

Strapping shall be at points within the upper one-third and lower one-third of the appliance's horiz.dimensions.

At the lower point, the strapping shall maintain a min. distance of 4 inches above the controls.

Appliances In Attics:

Attics containing appliances requiring access shall have an opening and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches high and 22 inches wide and not more then 20 feet long when measured along the centerline of the passageway from the opening to the appliance.

The passageway shall have 'continuous solid' flooring in accordance with chapter 5 not less then 24 inches wide.

A level service space at least 30 inches deep and 30 inches wide shall be present along all sides of the appliance where access is required the clear access opening dimensions shall be a minimum of 20 inches by 30 inches, where such dimensions are large enough to allow removal of the largest appliance. I.R.C. M1305.1.3

Supply/Return Insulation:

Supply and return air ducts shall be insulated to a min. of r-8 when located outside of the thermal envelope (unconditioned attics). IECC 403.2

Gas Piping:

Gas piping shall not be installed in or through a ducted supply, return, exhaust, clothes chute, chimney, or elevator shaft.

Gas piping shall not penetrate building foundation walls at any point below grade (IRC G2413.6)

Appliances shall not be located in bathrooms, storage rooms or a space that opens into such rooms. See exceptions (IRC G2406.2).

Gas piping installed underground beneath buildings is prohibited except where the piping is encased in a conduit. Such conduit shall extend not less then 4' outside the building, shall be vented above grade to the outdoors and shall be installed so as to prevent the entrance of water or insects. (IRCG2415.14)

Fire Protection:

Provide 5/8" type 'x'gyp board with a minimum of level 1 finish, on all the ceilings of interior framing.

All beams and structural members shall be protected with 5/8" gyp. board in below attic area.

Fire blocking at stud cavities that are greater than 8'; all flue's, chases and dropped ceilings.

Exhaust Systems:

Dryer exhaust systems shall convey the moisture to the outdoors and shall terminate on the outside of the building.

Screens shall not be installed at the duct terminal.

Ducts shall have a back draft damper.

The max. length of clothes dryer exhaust duct shall not exceed 25 feet from the dryer location to the wall or roof termination.

The max. length of the ducts shall be reduced 2.5 feet for each 45 degree bend and 5 feet for each 90 degree bend. Metal ducting shall be sealed and secured every 12 feet.

Dryer Duct:

Dryer duct shall terminate outdoors and shall not exceed a total combined horizontal and vertical length of 35'.

Maximum length of duct shall be reduced 2-1/2' for each 45' bend or 5' for each 90 bend.

Duct shall be a min. nominal size of 4" I.R.C.M502.4.4

Energy Notes:

IECC R402.2.4- The attic access door from the conditioned space to unconditioned space shall be weather stripped and insulated to a level equivalent to the insulation on the surrounding surfaces.

Condensate Disposal:

Condensate from all cooling coils or evaporators shall be conveyed from the drain pan outlet to an approved place of disposal.

Condensate shall not discharge into a street, alley or other areas so as to cause a nuisance. I.R.C. M1411.3

A secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping.

Drain piping shall be a minimum of 3/4" nominal size. I.R.C.M1411.3.1

HVAC Outlet:

A 125-volt, single-phase, 15- or 20-amp rated receptacle outlet shall be installed at an accessible location for the servicing of heating, air-conditioning and refrigeration equipment. The receptacle shall be located on the same level and within 25 feet (7620 mm) of the heating, air-conditioning and refrigeration equipment. The receptacle outlet shall not be connected to the load side of the HVAC equipment disconnecting means. (E3q01.12)

Temperature Limitations:

Where two or more non-metallic sheathed cables are installed together in the same space without maintaining space between them and where the opening they are installed in is filled with caulking, foam insulations, or other types of insulation, the conductors must be rated as required by IRC E3705.4.4.

Small Appliance Receptacles:

All 125V 15-20 AMP receptacles installed inside or outside of facility shall be listed as tamper resistant.

Draft Stopping:

In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draft stops shall be installed so that the area of the concealed space does not exceed 1,000 square feet (92.9 m2). R302.12

Draft stopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draft stopping shall be provided in floor/ceiling assemblies under the following circumstances: open-web or perforated members.

Insulation:

Building thermal envelope insulation:

Building insulation and vapor barrier will be included in the structure package and installed during the siding process.

Blown or sprayed ceiling insulation:

The thickness of blown in or sprayed ceiling insulation (fiberglass or cellulose) shall be written in inches on markers that are installed at least one for every 300 ft2 throughout the attic space. The markers shall be affixed to the joists and marked with the minimum initial installed thickness with a minimum of 1 inch high. Each marker shall face the attic access opening.

Certificates:

Permanent certificates shall be posted in the mechanical room near the electrical distribution panel.

One certificate shall be completed by the insulation contractor. The certificate shall list the predominant R- values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces, and U-factors for fenestration.

The second certificate shall be completed by the mechanical contractor. The certificate shall list the type and efficiency of heating, cooling and service water heating equipment.

Fire Warning Systems:

Multiple station smoke alarms shall be installed interconnected in such a manner that the actuation will activate all alarms in the entire facility.

Carbon Monoxide Alarms:

Carbon Monoxide detectors shall be listed and comply with U.L. 2034 and shall be installed in accordance with provisions of this code and NFPA 720.

All alarm devices shall be interconnected. The alarm shall be clearly audible in all rooms over all background noises with all intervening doors closed.

Recessed Lighting:

Recessed lighting installed in the building envelope shall be IC rated and sealed to the interior finish. IRC N102.4.5

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Milking Parlor & Bottling

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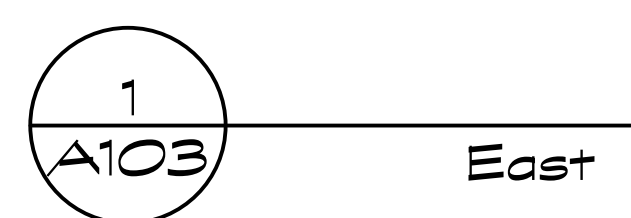
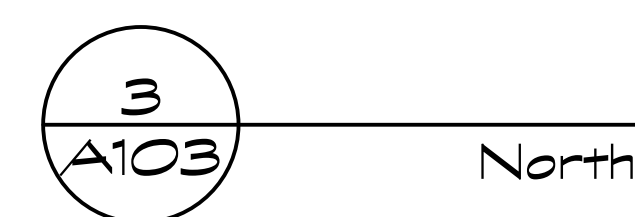
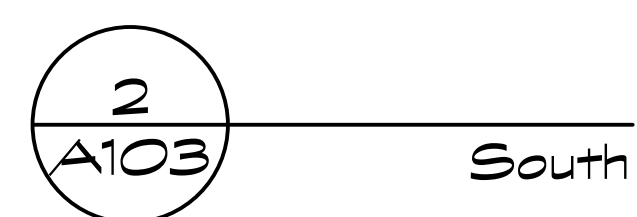
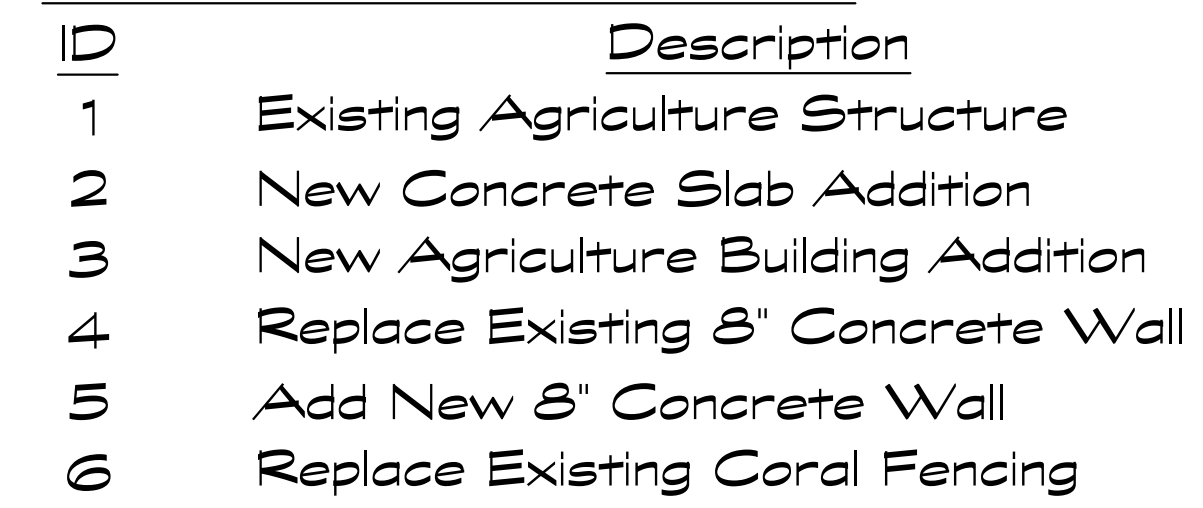
Project Notes

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DATE	10/27/25				
SHEET	Project Notes				
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A100

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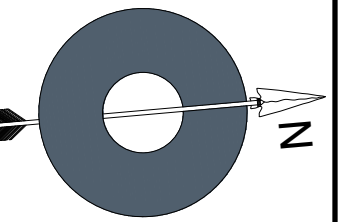
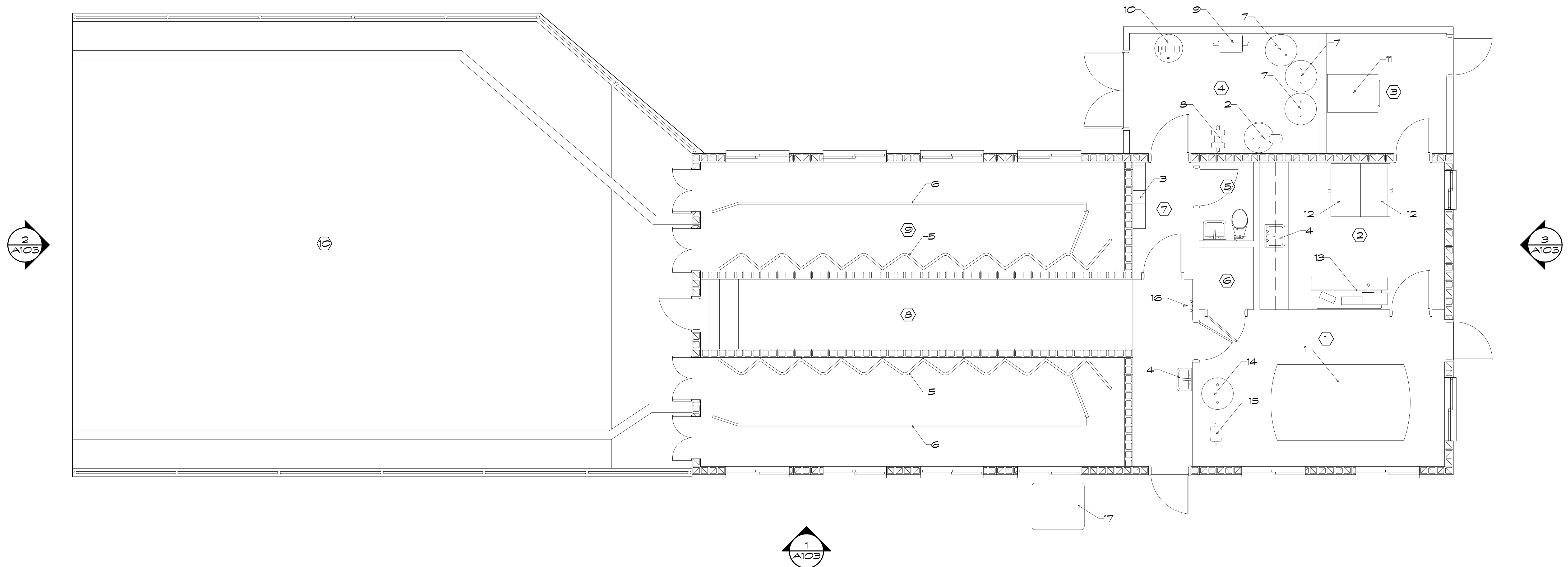
A100



Restroom to be roughed-in. Finish will be future after septic system is installed.

Room ID	Room Description	Ceiling Height	Wall Finishes	Ceiling Finishes
①	Tank/ Inspection Room	9'-6"	PVC/ CMU	PVC
②	Filling Room	9'-6"	PVC	PVC
③	Bottle Wash Room	8' Vault	PVC	PVC
④	Equipment Room	8' Vault	PVC	PVC
⑤	Restroom (future)	9'-6"	PVC	PVC
⑥	Storage	9'-6"	PVC	PVC
⑦	Locker Room	9'-6"	PVC	PVC
⑧	Milking Pit	10'	CMU	PVC
⑨	Cow Stand	7'-6"	CMU	PVC
⑩	Holding Pen	Open	Concrete	Open

Equip ID	Equipment Description
1	Milk Tank
2	Water Heater
3	Employee Lockers
4	Hand Sink
5	Cow Stand
6	Brisket Bar
7	Water Storage Tank
8	Vacuum Pump
9	Air Dryer
10	Air Compressor
11	Bottle Washer
12	Cooler
13	Bottle Filler
14	Receiver Jar
15	Transfer Pump
16	H/C Hose Bib
17	Portable Toilet (employee use)



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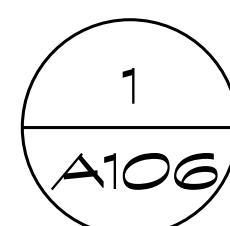
Floor Plan

Floor Plan

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<i>Josh Smith</i>									
DATE									
10/27/25									
SHEET									
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1/4" = 1'									

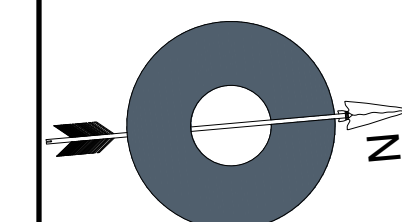
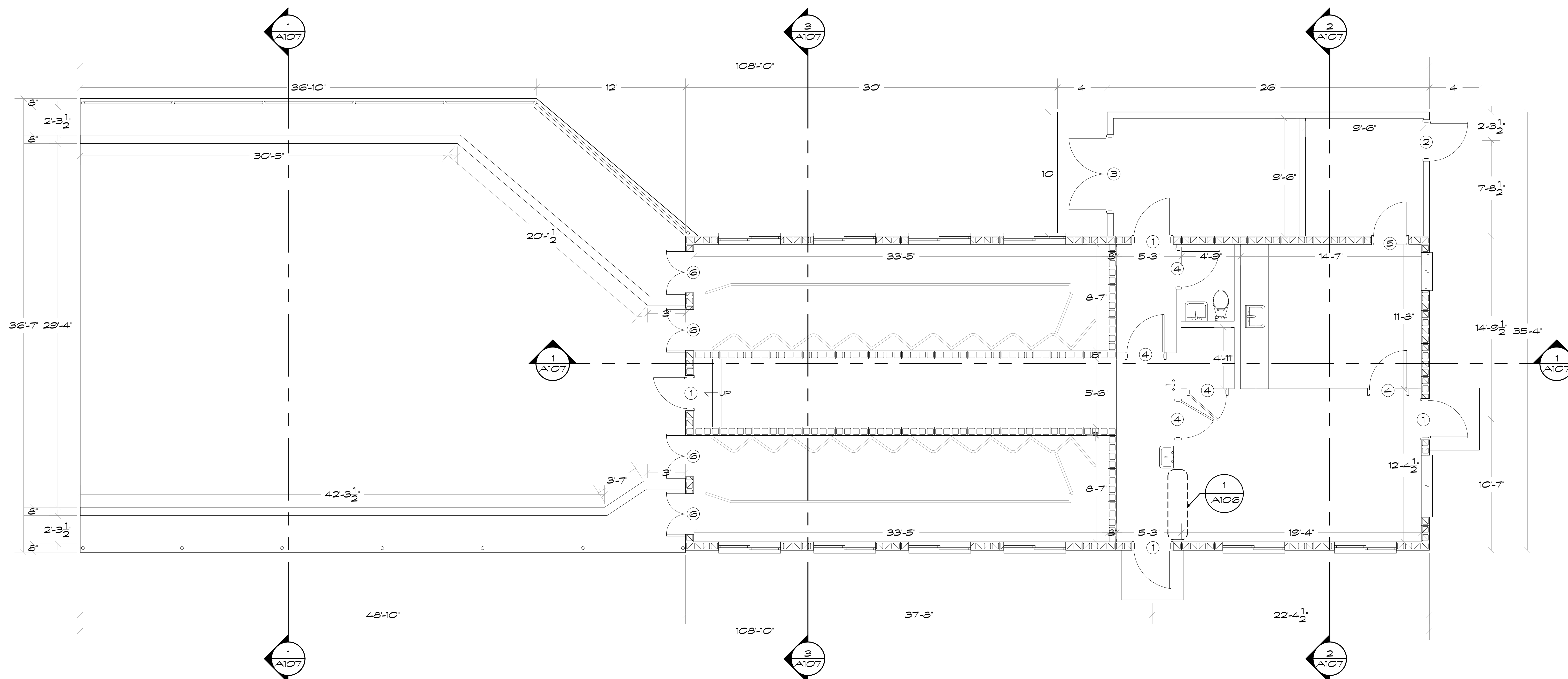
A104
5 OF 14

All Rooms Containing PVC Paneling Detailed
On Sheet A104 To Follow This Process.



Door ID	Door Description	Door Size
1	Insulated Metal Personnel Door	3'0x6'8
2	Insulated Metal Personnel Door	3'4x6'8
3	Double Insulated Metal Personnel Door	6'0x7'0
4	Fiberglass Interior door	3'0x6'8
5	Insulated Metal Personnel Door	2'8x6'8
6	Double Ins. Metal Barn Door (others)	3'4x6'8

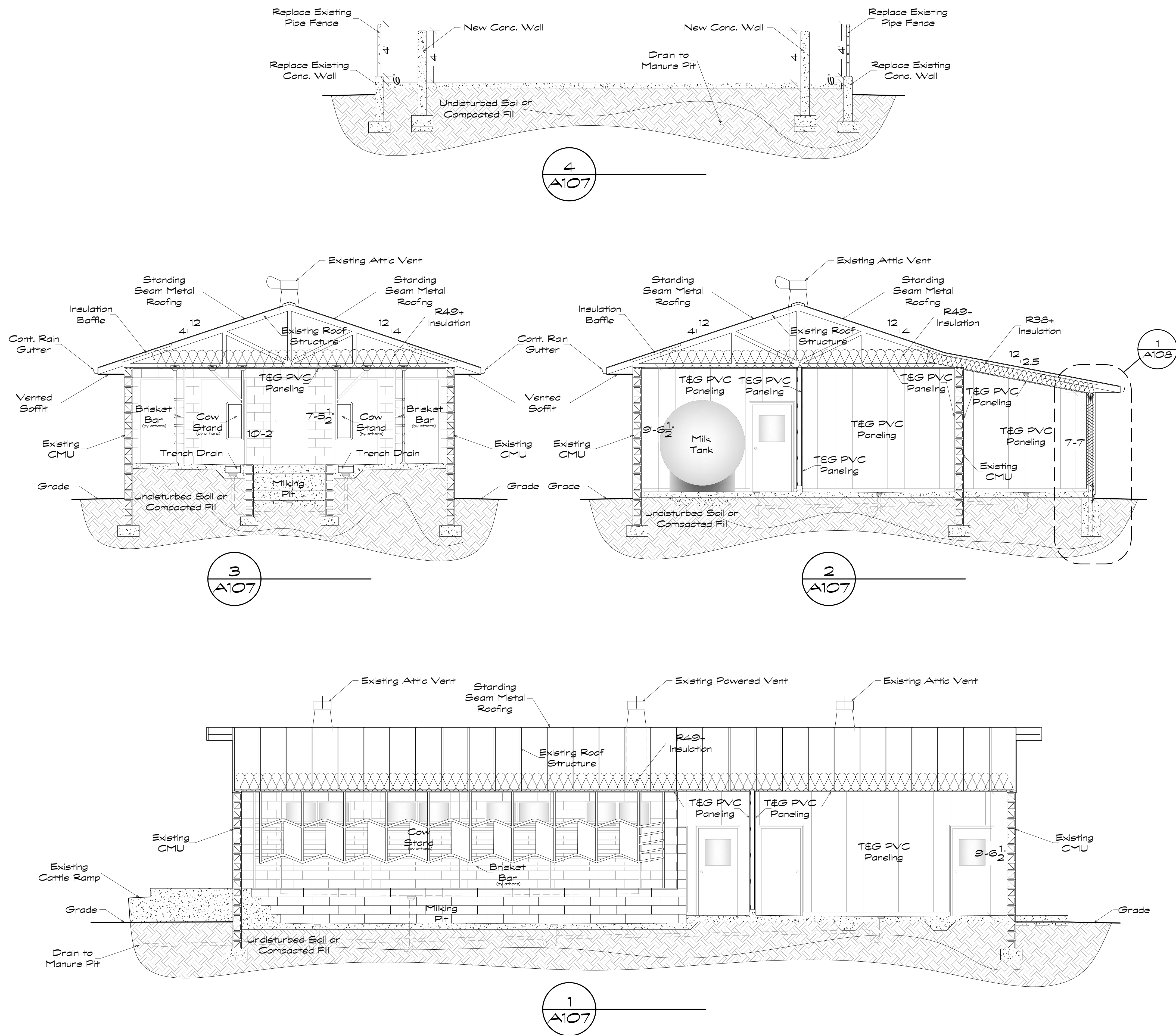
1. All framing and blocking to be dimensional lumber douglas fir #2 or better unless called otherwise.
2. All walls with cinder block finishes labeled on A104, to be faced with a food grade tile or substrate impervious to livestock.
3. All Exterior doors shall be air tight and impervious to insects.



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Layout Plan

NO.	REVISIONS	DATE						
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DATE			10/27/25					
SHEET			Layout Plan					
SCALE			1/4" = 1'					

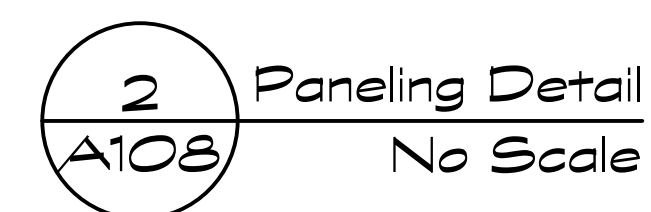
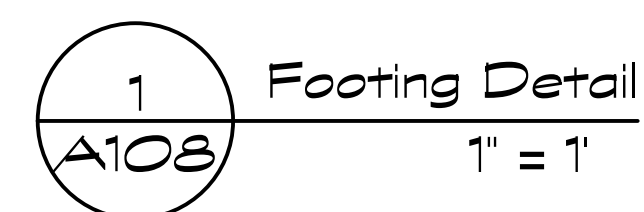


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Sections

NO.	REVISIONS	DATE

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Sections
SCALE
1/4" = 1'

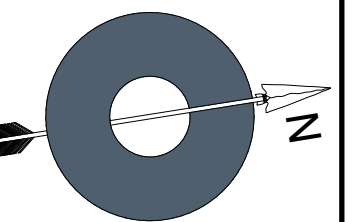
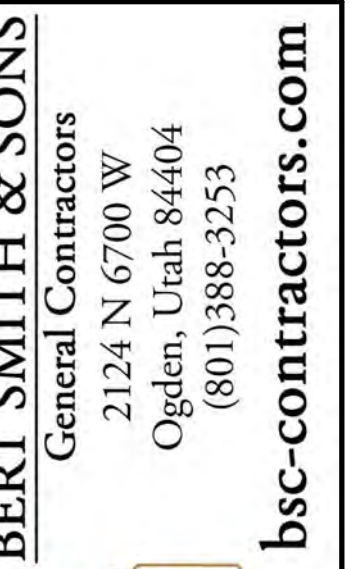
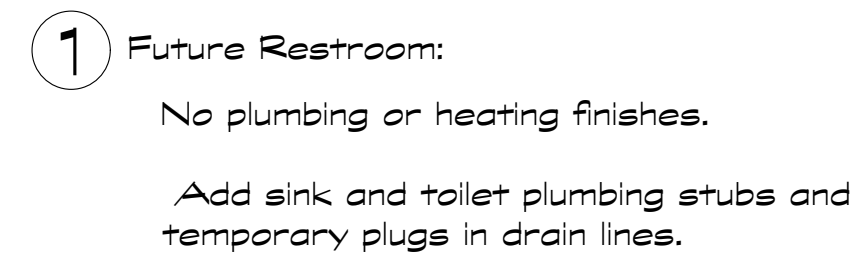
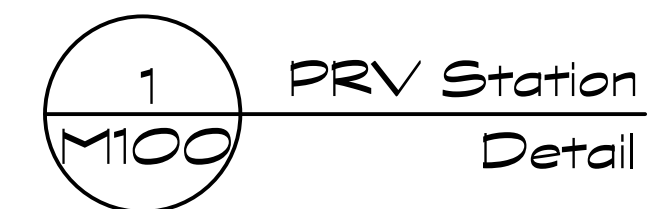


PLUMBING SYMBOL LEGEND \ ABBREVIATIONS				
	FD	FLOOR DRAIN		CHECK VALVE
	FOO	FLOOR CLEAN OUT		BALANCE VALVE
	WCO	WALL CLEAN OUT		VENT THROUGH ROOF
		DOMESTIC COLD WATER (DOW)		WHA WATER HAMMER ARRESTOR
		DOMESTIC HOT WATER (DHW)		A.D. ACCESS DOOR
		GAS LINE		A.F.F. ABOVE FINISHED FLOOR
		WASTE (W)		WH WALL HYDRANT
		VENT (V)		HB HOSE BIBB
		DROP IN PIPE		MV MIXING VALVE
		RISE IN PIPE		ELBOW IN PIPE
		TEE IN PIPE		GAS SHUTOFF VALVE
		GAS PRESSURE REGULATOR		BALL VALVE
		PIPE CAP		VALVE IN DROP
		UNION		

PLUMBING FIXTURE SCHEDULE							
SYMBOL	DESCRIPTION	COLD	HOT	TRAP	WASTE	VENT	REMARKS
P-1	Hand Sink, Wall mounted w/faucet	1/2"	1/2"	1-1/2"	2"	2"	Stubbed for future restroom
P-2	Water Closet	1"		INT.	3"	2"	Stubbed for future septic system
P-3	Countertop Sink, w/faucet	1/2"	1/2"	1-1/2"	2"	2"	
P-4	Hand Sink, Wall mounted w/faucet	1/2"	1/2"	1-1/2"	2"	2"	
	Floor Drain, 6" diameter grate				2-4"	2"	
	Trench Drain, 14" grate			4"	4"		

GENERAL FIXTURE NOTES:

1. THE PLUMBING CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF ALL PLUMBING EQUIPMENT AND THE RELATED ROUGH IN LOCATIONS WITH THE MECHANICAL AND ARCHITECTURAL PLANS AND SPECIFICATIONS. PROVIDE ALL ACCESSORIES AND OPTIONS REQUIRED TO PROVIDE THE OWNER A COMPLETELY FUNCTIONAL PLUMBING SYSTEM.
2. ALL WALL HUNG PLUMBING FIXTURES SHALL BE SUPPORTED BY FLOOR MOUNTED CARRIERS (WADE, SMITH, JOSAM, MIFAB, OR WATTS) CARRIERS SHALL BE CONSTRUCTED UTILIZING ALL METAL COMPONENTS WITH SUPPORT FEET SECURELY ANCHORED TO FLOOR STRUCTURE. FIXTURE ARMS SHALL SUPPORT FIXTURE INDEPENDENT FROM WALL STRUCTURE.
3. EACH INDIVIDUAL FIXTURE SUPPLY SHALL BE PROVIDED WITH A CHROME-PLATED QUARTER TURN STOP VALVE BRASSCAST MODEL K10R, OR ENGINEER APPROVED EQUAL.
4. FIXTURES AND ACCESSORIES SHALL BE AS SCHEDULED. EACH ITEM SHALL BE COMPLETE WITH CHROME-PLATED BRASS TRIM.
5. ADA COMPLIANT FIXTURES SHALL BE INSTALLED WITH PRE-FORMED INSULATION AND PROTECTIVE COVERS ON P-TRAPS AND STOPS. COVERS TO BE MANUFACTURED BY BUCKROOS OR TRUFIRO.
6. CAULK ALL FIXTURES TO THE WALL OR FLOOR WITH APPLICABLE SILICONE COMPOUND. UTILIZE MULTIPLE BEADS TO FILL GAPS AND FINISH TO SMOOTH, FILLETED EDGE. USE APPROPRIATE TOOLS TO PROVIDE PROFESSIONAL APPEARANCE.
7. ALL PLUMBING SHALL BE INSTALLED TO CONFORM TO THE LATEST ADOPTED EDITION OF THE INTERNATIONAL PLUMBING CODE INCLUDING LOCAL AMENDMENTS. CONSULT AUTHORITIES HAVING JURISDICTION.
8. ALL SINKS AND LAVATOIRES WHERE HAND WASHING IS ANTICIPATED (FIXTURES P-2) SHALL BE PROTECTED WITH ASSE 1070 APPROVED TEMPERING VALVES PER DETAIL 7/P-000.



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Mechanical Plan

DATE									
DRAWN BY									
Josh Smith									
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SHEET									
Mechanical Plan									
SCALE									
1/4" = 1'									

M100
10 OF 14

GENERAL CONDITIONS

CODES AND PERMITS, AUTHORITIES HAVING JURISDICTION:
 2015 International Mechanical Code - (with Utah amendments)
 2015 International Building Code – (with Utah amendments)
 2015 International Plumbing Code – (with Utah amendments)
 2015 International Energy Conservation Code – (with Utah amendments)
 SMACNA Duct Design Standards
 Locally enforced NFPA Codes
 Local Fuel Utility Regulations
 Local Power Utility Regulations
 American Gas Association
 ASTM B31.1 Piping

C. During construction, verify the dimensions governing the mechanical work at the building. No extra compensation shall be claimed or allowed because of differences between actual dimensions and those indicated on the drawings. Examine adjoining work on which mechanical work is dependent for perfect efficiency, and report any work of other trades which must be corrected. No waiver of responsibility for defective work shall be claimed nor allowed due to failure to report unfavorable conditions affecting the mechanical work.

- A. Coordination between trades may result in periodic needs to adjust the installation from that indicated, but in no case shall the intended function be compromised.
- B. The Contractor may perceive some work methods which differ from those specified which could save time and effort. These may be presented to the Architect with a breakdown of possible cost savings for review. Implement only with authorization.
- C. Materials substitutions will generally be covered in a review process prior to bidding. After bidding, substitutions shall be proposed only on the basis of definitive cost accounting and implemented only with authorization.

A. All equipment and materials shall be new, and shall be the standard products of manufacturers regularly engaged in the production of plumbing, heating, ventilating and air conditioning equipment, and shall be the manufacturer's latest design. Specific equipment shown in schedules on drawings and specified herein is to be the basis for the Contractor's bid. Provisions for substitute equipment are outlined in the General Conditions. All materials shall be produced by manufacturing plants located in the United States of America.

B. Furnish and install all major items of equipment specified in the equipment schedules on the drawings complete with all accessories normally supplied with catalog items listed, and all other accessories necessary for a complete and satisfactory installation.

VALVES:

A. Ball Valves: Copper piping, 2-1/2" and Smaller: 475 psig WOG @ 250°F, bronze construction, soldered ends for 3/4" and smaller, threaded ends for 1" and larger, glass Reinforced PolyTetraFluoroEthylene (RPTFE) seal providing bubbletight leakage performance at 100 psig air pressure under dry, full port stainless steel ball. Operate with flow in either direction. Suitable for throttling and tight shut-off. Lever or tee handle as required.

1. Manufacturers & Models: Provide ball valves from one of the manufacturers and model numbers listed below.

- (1) Apollo 77-140
- (2) Watts FBV-SS (up to 2")
- (3) Nibco T-580-70-66 (up to 1")
- (4) Crane/Stockham 283-BR-R-66

A. Flexible Fiberglass Ductwork Insulation: ASTM C 553, Type I - resilient, flexible; Class B-1 - 0.65 lbs/ft³; Class B-2 - 0.75 lbs/ft³; Class B-3 - 1.0 lbs/ft³; Class B-4 - 1.5 lbs/ft³; Class B-5 - 2.0 lbs/ft³; Class B-6 - 3.0 lbs/ft³; Type II - flexible; Class F-1 - 4.5 lbs/ft³; Type III - semirigid; Class F-2 - 4.5 lbs/ft³.

A. Domestic Water Pipe:

1. Pipe Sizes 4" and Smaller: Copper tubing. Conform to ASTM B88, Type L, hard temper, copper tube; ASME B16.22 streamlined pattern wrought-copper fittings, with soldered joints using 95-5 tin antimony solder or non-lead bearing solders such as "Silvabrite."

A. Sanitary Soil Drain, Waste and Vent Piping:

1. Piping and Fittings: Schedule 40 PVC pipe and fittings conforming to the requirements of ASTM D 2665. Pipe and fittings shall be produced domestically as supplied by Spears, or Charlotte Pipe and Fittings.

NATURAL GAS PIPING:

- A. Building Distribution Piping:
1. Pipe Size 2" and Smaller: Black steel pipe; Schedule 40; malleable-iron threaded fittings (exposed), welded fittings and joints (concealed).
- B. Gas Cocks:
1. Gas Cocks 2" and Smaller: 150 psi non-shock WOG, bronze straightway cock, flat or square head, threaded ends.
 2. Manufacturer: Subject to compliance with requirements, provide gas cocks of one of the following:
 - a. DeZurik Corp.
 - b. Jenkins Bros.
 - c. Lukenheimer Co.
 - d. NIBCO, Inc.
 - e. Powell (The Wm.) Co.
 - f. Rockwell International; Flow Control Div.
 - g. Stockham Valves and Fittings.
 - h. Walworth Co.
- C. Pressure Regulating Valves:
1. General: Provide single stage, steel jacketed, corrosion-resistant gas pressure regulators; with atmospheric vent, elevation compensator; with threaded ends for 2" and smaller, flanged ends for 2-1/2" and larger; for inlet and outlet gas pressures, specific gravity, and volume flow indicated.

A. Standards: All duct fabrications shall comply with standards and techniques detailed by SMACNA "Duct Construction Manuals" for the appropriate pressure class, with the ASHRAE Handbook, 1988 edition, Chapter 1, Duct Construction, and with the contract drawing details.

B. Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lockforming quality, with G 90 zinc coating in accordance with ASTM A 525; mill phosphatized for exposed locations.

A. **Fittings:** Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Fabricate elbows utilizing inside and outside elbows with a constant radius equal to the duct width; or, if outside radiused elbows are not possible, fabricate elbows with an inside square outside round and include turning vanes in the first 1/3 of elbow. Maintain duct width throughout run on inside square and outside radiused elbows. Limit angular turns to 30° for contracting turns and 20° for expanding turns.

B. **Accessories:** Fabricate duct accessories installed during fabrication to the greatest extent possible. Refer to Division-15 section "Duct Accessories" for accessory requirements.

C. **Fabricate** ductwork with duct liner in each section of duct where indicated. Laminate

D. Offset, transition, adapt ductwork to structural obstacles and work of other trades in coordinated effort. Layout work to avoid conflict with piping, etc. With review of conditions, teardrop around conflicting piping, lights, etc., all at no added cost to the owner.

A. Rectangular ductwork for use on supply systems up to 2" maximum duct static press and 2000 fpm maximum duct velocity shall be constructed of galvanized steel using construction for nominal 3" SMACNA rated systems. Seal all transverse and longitudinal joints with water based duct sealer NO EXCEPTIONS.

B. Use radiused elbows, or square inside radiused outside elbows with single thickness turning vanes in the first 1/3 where space restrictions prohibit fully radiused elbows. 45° high efficiency tapping takeoffs with separate downstream balance dampers.

C. Duct dimensions are inside clear. Increase for acoustical lining.

A. General: Provide miscellaneous materials and products of types and sizes indicated where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.

B. Runout Fittings: Runout fittings shall be used to make round to rectangular duct connections. Use 45° time and a half square to round fittings. Provide with locking quadrant dampers where balance is involved. Provide with insulation guard where indicated and duct is involved.

C. Duct Sealing Compound: Duct sealing compound shall be 3M brand number EC-75/Duro-Dyne S-2. This material shall be used in making up duct joints or in water proofing, caulking plenums, etc.

D. Acoustical Lining: Acoustical lining in ducts shall be 1" thick, 1-1/2 pound density, coated, flexible glass fiber type, set in adhesive and impaled on weld studs spaced no more than 12" on centers and secured with lock washers. Airstream surface faced w/ black coated metal. Acoustical lining shall completely line the ducts. Lining shall be fire and smoke hazard rating not exceeding 20-50-50. Owens-Corning, Johns-Manvy Certainteed.

1. All joints, edges and/or surface breaks in the coating of the acoustical lining shall be pointed up to a smooth surface with adhesive.

E. Duct Liner Adhesive: Comply with ASTM C 916 "Specifications for Adhesives and Duct Thermal Insulation".

F. Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards Article S2.11.

G. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

NO.		REVISIONS		DATE	

DRAWN BY	Josh Smith
DATE	10/27/25
SHEET	Mechanical Notes
SCALE	

M101
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Mechanical Notes

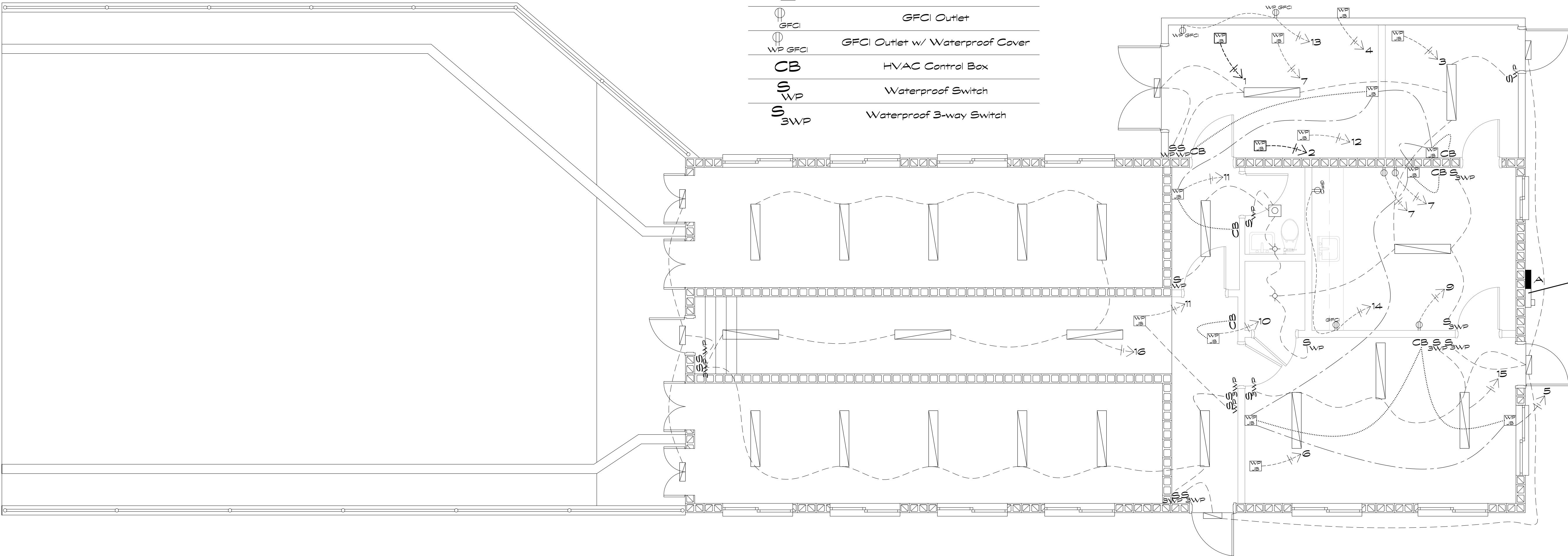
SERVICE ENTRANCE & FEEDER CONDUIT-CONDUCTOR SCHEDULE					
TYPE	CONDUCTOR QUAN. SIZE	COND SIZE	AMP	INSUL- ATION	
20	2 10	3/4	30	THHN, THWN, XHHW	
30	3				
40	4				
28	2 8		40		
38	3	1			
48	4				
26	2 6		55		
36	3				
46	4	1 1/4			
34	3 4		70		
44	4				
33	3 3		85		
43	4				
31	3 1	1 1/2	110		
41	4	2			
30	3 1/0		150		
40	4				
32	3 2/0		175		
42	4				
33	3 3/0		200		
43	4	2 1/2			
34	3 4/0		230		
44	4				
32	3 250		255		
42	4	3			
33	3 350		310		
43	4				
35	3 500	3 1/2	380		
45	4				

PROVIDE GROUND IN ALL CONDUITS PER N.E.C. SIZE
ACCORDING TO SERVICE OR EQUIPMENT GROUNDING
TABLES, DEPENDING ON USE. EACH PARALLEL
CONDUIT TO INCLUDED FULL SIZE GROUND.

PANEL <u>A</u>		☒ NEW	TYPE <u>Meter/Main Combo</u>	<u>3</u> Ø <u>4</u> WIRE <u>208Y/120</u> VOLTS	LOCATION		MOUNTING												
		☐ EXISTING	REMARKS			Exterior	☐ flush	☒ surface											
☒ Bolt on breakers							<u>225</u> amp. main												
☒ Isolated ground bus							☐ lugs ☒ breaker												
No.	BRKR A P	CIRCUIT DESCRIPTION				L	O	M	Wire	CIRC. LOAD	PHASE A B C	CIRC. LOAD	Wire	L	O	M	CIRCUIT DESCRIPTION	BRKR A P	No.
1																			2
3	60	3	Air Compressor						1	8/3	20.75	6.905	6.905					30	3
5												3.187	3.187						4
7																			6
9	30	3	Bottle Washer						1	8/3	7.926	2.642	2.642						8
11												3.328	3.328						10
13	50	1	VRF Condenser						1	8/2	6.656	3.328	3.328	6.656	8/3		1		12
15												0.071	0.071						14
17	15	1	Air Drier						1	12/2	0.071	0.071	0.345	0.345	6.620	8/3	1		16
19												0.460	0.460						18
21	20	1	Chiller 1						1	12/2	0.460	0.460		1.265	1.265	12/2	1		20
23														1.840	1.840	12/2	1		22
25	20	1	Chiller 2						1	12/2	1.840	1.840							24
27														1.725	1.150	12/2	1		26
29	20	1	Bottling Machine						2	12/2	1.725			1.725					28
31																			30
33	20	1	Bottling Rm Outlets																32
35																			34
37																			36
39																			38
41																			40
																			42
											</								

SYMBOL DESCRIPTION

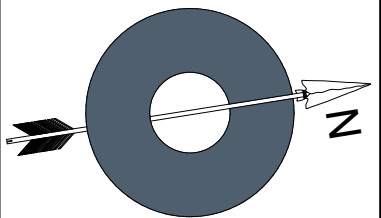
	4ft 60w Vapor Tight LED Light
	Outdoor Above Door 60w LED Light
	Standard Light Fixture
	Restroom Exhaust Fan
	Waterproof Junction Box
	GFCI Outlet
	GFCI Outlet w/ Waterproof Cover
	HVAC Control Box
	Waterproof Switch
	Waterproof 3-way Switch



Circuit Schedule

#	Circuit	Brand	Model	Phase	Volts	Amps	HP
1	Air Compressor	Marathon Globetrotter	E256T17D5327	3	230 / 460	52 / 26	20
2	Vacuum Pump	Westinghouse	AEHEBG	3	230 / 460	24 / 12	10
3	Bottle Washer	Aquatech		3	208	22	
4	VRF Condenser			1	208 / 230	32	
5	Head Units			2	208 / 230	16	
6	Transfer Pump	TechTop	WX3ALTF56C2BD1	1	230 / 460	3 / 1.5	1
7	Air Drier	Hankison	HHL_40	1	85 - 264	.62 / .38	
8	Chiller1	Aobosi	SC-1060FA	1	115	4	
9	Chiller2	Aobosi	SC-1060FA	1	115	4	
10	Bottling Machine			1	115	16	
11	Unit Heater			1	115	11	
12	Vent Fan			1	115	16	
13	Water Heater			1	115	10	
14	Equipment Rm GFI			1	115	15	
15	Bottling Rm GFI			1	115	15	
16	North Lighting			1	115	15	
17	South Lighting			1	115	15	

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Wade's Dairy
Milking Parlor & Bottling
5475 West 1400 North
Warren, Utah 84404
Electrical Plan

NO		REVISIONS		DATE	
DRAWN BY Josh Smith					
DATE 10/27/25					
SHEET Electrical Plan					
SCALE 1/4" = 1'					

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12 OF 14

SECTION 26 0001 – ELECTRICAL GENERAL PROVISIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions) and Division One apply to the work specified in this Section.
- B. This Section 260001 is a part of all other Sections of this Division 26.
- C. It is understood that Division 26 shall govern and be the direct responsibility of the Electrical Contractor, who shall comply with the specifications and the accompanying drawings to describe and provide for the furnishings, delivering, installing, testing and placing in satisfactory and successful operation all equipment, materials, devices, and necessary appurtenances to provide a complete electrical system for lighting, power and auxiliaries; together with such other equipment and devices furnished and installed under other contracts which shall be wired and connected under this contract.
- D. If a discrepancy occurs between the equipment supplied and the intent or function of the equipment, catalog numbers, discontinued products, drawings, specifications, etc., the Contractor shall bring this to the attention of the Architect or Engineer in writing prior to bidding. Failure to report any conflict does not relieve the Contractor from meeting the intent of the contract documents nor shall it change the contract cost. It shall further be understood that if the contractor is unable to interpret any part of the plans and specifications, or should he find discrepancies therein, he shall call attention of the facts to the Architect prior to bid date. The Architect will issue additional instructions to Bidders before the project is bid.

- E. State Licensed Contractor – All contractors shall have a current state contracting license for the trade engaged in.

1.2 DESCRIPTION OF WORK

- F. The work covered by these specifications consists of furnishing all labor, materials, equipment, supervision and service necessary for the proper completion of all electrical work shown on the drawings and hereinafter specified. Items shown or described in either the drawings or specifications and/or all items necessary to make the electrical system complete and workable shall be understood to form a part of the work.
- G. The main items of work are enumerated below. The work shall include but is not necessarily limited to the following items:
1. Lighting, convenience and power outlets.
 2. Light fixtures, lamps and associated equipment.
 3. Power service and distribution.
 4. Connection of motors, appliances and owner-furnished equipment.
 5. Connections to equipment not supplied in this contract.
- H. Work and materials not included under this Division:
6. Supply of heating and ventilation control equipment unless noted on the electrical drawings. See mechanical drawings for division 26 requirements.

I. Auxiliary Systems

7. Fire Alarm System

1.3 VISITING SITE

- J. Visit the site during the bidding period to determine existing conditions that will affect the electrical and other work as it pertains to the construction of this structure. All costs arising from site conditions and/or preparation shall be included in the base bid. No additional charges will be allowed due to inadequate site inspection.

1.4 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

- K. At the time of bidding, contractor shall familiarize himself with the drawings and specifications of this project. Any questions, misunderstandings, conflicts, deletions, etc. shall be submitted to the Architect in writing for clarifications prior to issuance of the final addendum and bidding of the project. After signing the contract, the contractor shall meet the intent, purpose, and function of the contract documents, and any costs of materials, labor, and equipment arising therefrom, to make each system complete and operable, shall be paid by the contractor, which shall not result in any change in contract cost.
- L. At the time of bidding, the electrical contractor shall be responsible to coordinate with the general contractor regarding any references to other divisions or trades on the electrical drawings or specifications.

1.5 DRAWING INTERPRETATION

- M. The electrical contractor shall refer to the architectural and/or mechanical drawings for exact placement of all electrical equipment. The electrical drawings unless specifically dimensioned are to be considered diagrammatic and are not to be scaled for placement of equipment.

1.6 CODES-REGULATIONS AND PERMITS

- N. In the installation of this work, comply in every way with the requirements of the rules, ordinances and rules of the State and National Board of Fire Underwriters, the National Electrical Code, and the laws and regulations of local ordinances.
- O. If a conflict occurs between these rules and this specification, the rules are to govern. Accept this condition upon submitting bid, and no extra charge will be allowed after the electrical contract is awarded. This shall not be construed as relieving the Contractor from complying with any requirements of the plans or specifications which may be in excess of requirements of the heretofore mentioned rules and not contrary to same. All materials and equipment installed, including lighting fixtures, shall have been tested and approved by Underwriter's Laboratory and shall be so labeled.
- P. All fees shall be included in the contract price. The Contractor shall furnish a certificate of approval to the Architect from the Inspection Authority at completion of the work.

1.7 SUPERVISION

- Q. Supervision shall be such, how a good mechanical appearance and conform to the best electrical construction practices. A competent superintendent shall be in charge of the work at all times. Any person employed and found incompetent shall be removed at once and replaced by someone satisfactory when requested by the Architect. All work shall be carried out under the direction of the Architect to fulfill the true intent and meaning of the drawings and specifications. Only licensed master or journeyman craftsmen may be engaged in this project, except apprentice electricians may be used on not more than a 1:1 ratio with the total number of master or journeyman electricians.

1.8 FIELD DESIGN CHANGES

- R. No field changes, additions, or deletions shall be made without written approval.

1.9 SHOP DRAWINGS

- S. Current net line drawings must be on site at all times.
- T. It is understood that, before the manufacture or installation of any equipment under this contract is carried forward, shop drawings of such work shall be submitted for review. It is the responsibility of the electrical contractor to check the shop drawings for detailed compliance with the contract documents. Prior to submitting the drawings for review, verify that all dimensions, contract document requirements, ballast voltages, and connection at job site have been checked. The electrical contractor shall indicate any corrections to the shop drawings or any exceptions to the contract document requirements, by notation on the shop drawings and by cover letter. IF THIS IS NOT DONE THE DRAWINGS WILL BE RETURNED. At least eight (8) catalog sheets or shop drawings shall be submitted in ample time, no work being executed until each review has been completed.

- V. Verification of Contract Document Requirements. The Electrical Contractor shall be required to furnish shop drawings with the contract document requirements high-lighted to verify they have been checked. Items to be high-lighted include, but are not limited to:

19. Electrical Panels

- a. Panel number or designation
- b. Panel type
- c. Phase
- d. Voltage
- e. Flush or surface
- f. Main lug trips
- g. Main breaker trips
- h. Fault current capacity
- i. Branch circuit breakers

19. Lighting fixtures: Items on the shop drawings that correlate to all items shown on the fixture schedule

- j. All items in catalog number
- k. Fixture mounting
- l. Lamp type

- W. The review of shop drawings by the contractor is only to determine if they are in general compliance with the information given in the contract documents, and serves to determine the contractors understanding of the design concept. If some errors are detected but others are overlooked during the review this does not grant the contractor permission to proceed in error. Regardless of any information contained in the shop drawings, the requirements of the contract documents must be followed and are not waived or superseded in any way by the shop drawing review.
- X. The following shop drawings are required within 20 days after signing of the contract.
20. Panelboards
 21. Disconnects
 22. Lighting fixtures (coordinate with ceiling contractor)
 23. Wiring Devices

- Y. One month after the contract is signed, bind and numerically index four (4) complete sets of all shop drawings and submit to the mechanical contractor for inclusion in the operation and maintenance manual. Each unit type shall have its own individual catalog sheet giving characteristics, data, dimensions, catalog numbers and parts lists. (Example: If two items of equipment A & B appear on the same sheet, an individual sheet shall be provided for each unit specified.) The manual shall be numerically indexed with an index sheet explaining the contents of each section.

1.10 GUARANTEE

- Z. The entire electrical system installed under this contract shall be left in proper working order and be in compliance with the drawings, specifications and/or authorized changes to the satisfaction of the Owner's Representative. Without additional charge, replace any work or materials which develop defects, except from ordinary wear and tear, within one year from the date of final acceptance. Exception: Incandescent and fluorescent lamps which shall be guaranteed for a period of two months from acceptance of the installation by the Owner or his agent. A written guarantee covering the above provisions shall be signed and delivered to the Architect after the project has final acceptance by the inspecting Authority.

PART 2 – PRODUCTS

2.1 SPECIFIED PRODUCTS

- AA. The contractors under this division shall thoroughly familiarize themselves with all specified products and their application relating to their work. Any objections to the use of any specified product shall be submitted to the architect in writing prior to bidding.
- AB. MATERIALS AND WORKMANSHIP
- AA. All materials and equipment furnished and installed shall be of high quality, new, and meet the standards of NEMA, IPCA, ILS, UL, NPA, IBC, UOHA, NEC, and shall bear their label wherever standards have been established and label service is thereby denoted. Where materials and equipment are specified by manufacturer's name, the type and quality required is thereby denoted. The Architect shall be afforded every facility, deemed necessary to inspect and examine the materials and apparatus being installed to prove their quality, skill and competency of workmanship.

2.3 SUBSTITUTIONS

- AC. The equipment specified carries brand names and catalog numbers and shall be interpreted as establishing a standard of quality unless otherwise noted. Substitutions will be considered if a duplicate written application (2 copies) is at the office of the Architect and Engineer at least four (4) working days prior to issue of the final addendum. The application shall include the following: 1) A statement declaring the equipment proposed is equal to that specified by having the same physical characteristics and dimensions and meet the drawings layout and structural conditions as well as load requirements.

- 2) The specified and submitted catalog numbers of the equipment under consideration; 3) A pictorial and specification brochure.
- AD. Any conflict arising from the use of substituted equipment shall be the responsibility of the contractor, who shall bear all costs required to make the equipment comply with the intent of the plans and specifications.
- AE. At the option of the Architect, samples may be required for non-standard or substituted items before installation during construction.

- AF. No materials or apparatus shall be substituted after the bid opening except where the equipment manufacturer has been discontinued or delivery becomes a problem, then written approval of the Architect is required.
- AG. Bidding – only equipment specified in the contract documents and/or approved by an addendum will be used in the base bid.

PART 3 – EXECUTION

3.1 PROCESS AND COORDINATION OF WORK

- AH. The electrical work shall be laid out in advance of construction to eliminate unnecessary cutting, drilling, channelling, etc. Where such cutting and drilling, or channelling becomes necessary for proper installation, perform with care, use skilled mechanics of the trades involved, repair damage to building and equipment at no additional cost to the Owner. Cutting work of other trades shall be done only with the consent of the General Contractor. Cutting of structural members shall be done only with the approval of the Architect.
- AI. Cooperate with other trades to coordinate locations of electrical outlets and apparatus.
- AJ. Before any electrical panels, disconnects & motor starters or their associated feeders are installed, the electrical contractor shall be responsible to inform all other trades on the job of the requirements of NEC 110-25. If any conflicts are noted he shall notify the architect immediately, along with notification in writing. No additional cost, to the job under the electrical contract, will be allowed for relocating electrical panels after installation.

- AK. Perform for other trades the electrical wiring and connections for all devices or apparatus where not specified herein or indicated on the drawings. Consult the Architectural and Mechanical drawings to avoid the location of switches, outlets and other equipment from being hidden behind doors, cabinets, counters, heating equipment, etc. Buried electrical devices and/or connections shall be relocated as directed, at no additional cost to the Owner.
- AL. Where conduit, outlets or apparatus is to be cast in concrete or masonry, it must be located and secured by a journeyman or foreman prior to the point of installation. He shall check the locations of the electrical items before and after the concrete and masonry installation and shall relocate displaced items.

- AM. No changes shall be made in the design or location of apparatus unless specifically approved in writing.

3.2 DRAWINGS

- AN. Architectural and Mechanical drawings are a part of the electrical work insofar as they apply, as if referred to in full.
- AO. Since the drawings of floor and ceiling installation are made at small scale, outlets, devices, equipment, etc., are indicated only in their approximate location, unless dimensioned, locate outlets and apparatus symmetrically on floors, walls and ceilings where not such locations are specifically indicated. Do not scale the drawings, but refer to the architectural and mechanical drawings and dimensions.

3.3 EQUIPMENT CONNECTIONS

- AQ. Provide the materials and make the electrical connections to all equipment having electrical requirements as indicated in the Architectural and/or Mechanical section of the specifications and drawings. This includes Owner furnished equipment.

3.4 CLEAN-UP

- AR. Clean up all equipment, conduit, fittings, packing cartons and other debris that is a direct result of the installation of the equipment under this contract.

3.5 STORAGE AND PROTECTION OF MATERIALS

- AS. Provide storage space for storage of materials and apparatus and assume complete responsibility for all losses due to any cause whatsoever. In no case shall storage interfere with traffic conditions in any public thoroughfare or constitute a hazard to persons or property. Protect completed work, work underway, and apparatus against loss or damage.

3.6 EXCAVATION AND BACKFILLING

- AT. Do all excavating and backfilling required for installation of any and all parts of the work. Work shall be done according to other applicable Divisions of this specification.
- AU. Perform excavation in a manner to protect walls, footings and other structural members from being disturbed or damaged in any way.

3.7 DEMOLITION

- AV. This Contractor shall be responsible for block-outs or demolition work pertaining to the installation of the electrical system.
- AZ. Seal around all electrical equipment penetrating outside walls, roofs, unheated spaces, air plenums, etc., with Dow Corning Silicone RTV foam.

- BA. Seal around all electrical equipment penetrating fire walls with a noncombustible sealer approved for the purpose.

- BB. See drawings for demotion notes of existing electrical systems.

3.8 COMPLETION OF WORK AND TESTS

- BC. Before any underground service entrance circuits or feeder circuits are energized, make megger ground tests on the conductors. Record the readings along with ambient temperature and moisture conditions and submit to the Architect.
- BD. Submit with a letter of guarantee a record of all voltage reading and amp meter reading on all feeders and motors. If there are any abnormal conditions, they shall be brought to the attention of the Architect in writing as a part of this submittal.

END OF SECTION 26 0001

SECTION 26 0050 – BASIC MATERIALS AND METHODS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- BE. All wiring shall be run concealed, except at surface mounted panels and apparatus – See raceways for type of materials and additional information. All wiring shall be run in conduit unless specifically noted otherwise.
- BF. All branch circuit splices, taps, fixture connections, etc., shall be made with an approved pressure connector or wire nuts such as Ideal Spring type. Platelets at each outlet or device box shall be 6 inches long.
- BG. Labeling: Engraved black formula w/white core labels, 1/16" thick shall be bolted on the interior and the exterior of branch panels (panel name and voltage) and the exterior of disconnect switches, motor controls, major J-boxes (power and auxiliary), push buttons, thermal switches, time switches and similar equipment. The labels shall be 1/4" high engraved letters, such as 1-1/2" HP FAN, F-1, PANEL – A.

- BH. The phase of each feeder conductor shall be color coded at each end in panels and junction boxes.
- BI. The Contractor is responsible for all demolition, patching and repair of finished interior surfaces pertaining to the installation of this particular phase of work. All surfaces shall be finished (Painted, Etc.) to match the adjacent materials, finishes and color. Work shall be done by professional tradesmen on the job.

- BJ. Hard surfaces: Whenever demolition or excavation is required for installation of the electrical system, it shall be the responsibility of this contractor to make repairs and/or replacements of hard finish surfaces such as concrete, asphalt, etc.
- BK. The method of patching and repair should follow good construction practices and all finished surfaces shall match materials and finish wherein the demolition occurred. Coordinate with other Divisions for patching requirements.

END OF SECTION 26 0050

SECTION 26 0070 – ELECTRICAL CONNECTIONS FOR EQUIPMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- BL. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- BM. This section is a Division-26 Basic Materials and Methods section, and is part of each Division-26 section making reference to conductors and cables specified herein.
- BN. Types of conductors and cables in this section include the following:
1. Copper conductors (600V)
 2. Power Service and Distribution
 3. Feeders
 4. Branch Circuits

- 1.3 QUALITY ASSURANCE
- XC. Comply with NEC as applicable to construction and installation of electrical conductors and cable. Comply with UL standards and provide electrical conductors and cables which have been UL-listed and labeled.
- XD. Comply with applicable portions of NEMA/ASTM Cable Engineers Association standards pertaining to materials, construction and testing of conductors and cable.
- ZE. Comply with applicable portions of ANSI/IEEE standards pertaining to construction of conductors and cable.

1.4 SUBMITTALS

- AA. Product Data: Submit manufacturer's data on electrical wire, cable and connectors.
- AB. COPPER CONDUCTORS (600V): insulation types THHN, THWN, XHHW as required by application.
- AC. Provide factory-fabricated conductors of sizes, ratings, materials, and types indicated for each service. Where not indicated provide proper selection to comply with project's installation requirements and NEC standards.

- AD. Provide color and coding of conductors as follows:
15. Wire sizes of #10 and smaller shall be factory colored throughout. Larger conductors shall be identified with a minimum of 6" of color wrapped tape at junction boxes and termination.

16. Switch legs and travelers shall be colors other than those listed above.
- AE. Unless more stringent requirements are noted on the drawings, provide #10 conductors for branch circuits for which the distance from panelboard to furthest outlet is more than 75' for 120 volt, or more than 140' for 277 volt circuits.

PART 3 – EXECUTION

3.1 INSTALLATION

- AF. General: Install electrical conductors and cables as indicated, in compliance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standards of Installation", and in accordance with recognized industry practices.
- AG. Coordinate installation work with electrical roadway and equipment installation work, as necessary for proper interface.
- AH. Use pulling compound or lubricant, where necessary; compounds must not deteriorate conductor or insulation.

- AI. Keep conductor splices to minimum.
- AJ. Install splices and types which have mechanical strength and insulation rating equivalent-or-better than conductor.
- AK. Use splice and tap connectors which are compatible with conductor material.

3.2 FIELD QUALITY CONTROL

- AL. Prior to energization, test cable and wire for continuity of circuitry, and also for short circuits. Correct malfunctions when detected.
- AM. Subsequent to wire and cable connections, energize circuitry and demonstrate functioning in accordance with requirements.
- AN. Subsequent to a full sized ground wire in all parallel conductors per NEC 250-122.

END OF SECTION 26 0070

SECTION 26 0135 – ELECTRICAL BOXES AND FITTINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- AO. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- AP. This section is a Division-26 Basic Materials and Methods section, and is a part of each Division-26 section making reference to electrical wiring boxes and fittings specified herein. See Section 26010, Raceways, for additional requirements.
- 1.2 DESCRIPTION OF WORK
- AR. Extent of electrical box connection for equipment includes final electrical connection of all equipment having electrical requirements. Make final connections for all owner furnished equipment. See other applicable portions of specification for building temperature control wiring requirements.

- BQ. Refer to Division-23 sections for motor starters and controls furnished integrally with equipment; not work of this section.
- BR. Refer to Division-23 section for control system wiring not work of this section.
- BS. Refer to sections of other Divisions for specific individual equipment power requirements.

1.3 QUALITY ASSURANCE

- BT. NEC Compliance: Comply with applicable portions of NEC as to type products used and installation of electrical power connections.
- BU. UL-Labels: Provide electrical connection products and materials which have been UL-listed and labeled.

PART 2 – PRODUCTS

2.1 GENERAL

- BE. For each electrical connection indicated, provide complete assembly of materials, including but not necessarily limited to, raceways, conductors, cords, cord caps, wiring devices, pressure connectors, terminal (lug)s, electrical insulating tape, heat-shrinkable insulating tubing, cable ties, addressable wire nuts, and other items and accessories as needed to complete splices, terminations, and connections as required. See Section 26010, Conduit Raceways, Section 26040, Wiring Devices, and Section 26020, Wire and Cables for additional requirements. Provide final connections for equipment consistent with the following:
30. Permanently installed fixed equipment – flexible seal-tite conduit from branch circuit terminal equipment, or raceway, to equipment, control cabinet, terminal junction box or wiring terminals. Totally enclose all wiring in raceway.
31. Movable and/or portable equipment – wiring device, cord cap, and multi-conductor cord suitable for the equipment and in accordance with NEC requirements (Article 400). Provide 5 foot cords for washers, dryers, ranges and disposals.
32. Other methods as required by the National Electrical Code and/or as required by special equipment of field conditions.

- BU. All electrical equipment for power connections required for operation of mechanical equipment not furnished as an integral part of that equipment shall be furnished and installed under Division 26.

PART 3 – EXECUTION

3.1 INSTALLATION OF ELECTRICAL CONNECTIONS

- BV. Make electrical connections in accordance with connector manufacturer's written instructions and with recognized industry practices, and complying with requirements of NEC and NECA's "Standard of Installation" to ensure that products fulfill requirements.
- BW. Connect electrical power supply conductors to equipment conductors in accordance with equipment manufacturer's written instructions and wiring diagrams.

- BX. Coordinate installation of electrical connections for equipment with equipment installation work.
- BY. Verify all electrical loads (voltage phase, full load amperes, number and point of connections, minimum circuit ampacity, etc.) for equipment furnished under other Divisions of this specification, by reviewing respective shop drawings furnished

- under each division. Meet with each subcontractor furnishing equipment requiring electrical service and review equipment electrical characteristics. Report any variances from electrical characteristics noted on the electrical drawings to Architect before proceeding with rough-in work.

- BZ. Obtain and review the equipment shop drawings to determine particular final connection requirements before rough-in begins for each equipment item.
- CA. Location of disconnect switches as shown on the drawings is approximate. Electrical contractor is responsible for proper location for required code clearances.

- CB. Electrical contractor to verify motor sizes with mechanical before ordering overhead heaters for starters.
- CC. Refer to Section 26020, Conductors, for identification of electrical power supply conductor terminations.

END OF SECTION 26 0135

SECTION 26 0140 – CONDUIT RACEWAYS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- AA. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- AB. This section is a Division-26 Basic Materials and Methods section, and is part of each Division-26 section making reference to electrical raceways and specified herein.
- 1.2 DESCRIPTION OF WORK
- AC. Extent of raceways is indicated by drawings and schedules.
- AD. Types of raceways in this section include the following:
1. Rigid Metal Conduit (RMC) may be used where allowed by code
 2. Electrical Metallic Tubing
 3. Flexible Steel Conduit
 4. Liquid-tight Flexible Steel Conduit
 5. Rigid Metal Conduit
 6. Plastic Rigid Conduit

1.3 QUALITY ASSURANCE

- AE. Manufacturers: Firms regularly engaged in manufacture of raceway systems of types and sizes required, whose products have been in satisfactory use in similar service for not less than three (3) years.
- AF. Standards: Comply with applicable portions of NEMA standards pertaining to raceways. Comply with applicable portions of UL safety standards pertaining to electrical raceway systems, and provide products and components which have been UL-listed and labeled. Comply with NEC requirements as applicable to construction and installation of raceway systems.

G. Submittals: Not required.

PART 2 – PRODUCTS

- AG. Provide and install raceways for the electrical system as shown on the plans, or as required by NEC. The raceways shall be concealed except at surface mounted panels and/or apparatus and open truss ceilings. Minimum conduit size is 3/4".
- AH. Acceptable raceways (metallic conduit to be galvanized):
1. Galvanized Rigid Conduit (GRC) – may be used in all locations. When installed in earth, cover with one layer of scratch wrap.

7. Electrical Metallic Tubing (EMT) – may be used in indoor, dry locations not subject to damage, not in contact with earth, and not embedded in the concrete floor slab (slab on earth grade only). EMT shall not be used outdoors.
8. Plastic Rigid Conduit (PVC) – PVC schedule 40 may be used underground, or below concrete. (See ground conductors).

- All bends greater than 30 degrees shall be GRC. (This includes rising up through the floor). All connections to concrete or structure shall be a minimum of 16" of GRC at the end of the PVC run. All conduits passing horizontally through concrete shall be GRC for 5' before and after passing through the concrete (not applicable to stub up through floor slab). All underfloor conduits shall be run below the concrete slab.

9. Flexible Steel Conduit: 1/2" minimum used for indoor final connections to equipment.
10. Liquid Tight Flexible Steel Conduit: 1/2" minimum used for outdoor final connections to equipment.

PART 3 – EXECUTION

- JA. All exposed conduit shall be installed parallel with or at right angles to the building structure lines. Raceways above ceilings in accessible attics shall be considered as exposed installations.
- K. All branch circuit conduit runs shall be installed concealed in walls and ceilings. Conduit installation in existing walls that requires cutting and patching shall have patch and finish work done under the Division 26 contract. All work shall be done by the professional finish subcontractor on the job and shall subcontract the work under the Division 26 subcontractor.

- L. When installing conduit, all cuts shall be smooth and square with the run and inside and outside burrs removed. Conduit joints in concrete or in the earth shall be made water tight with compound seal.
- M. Install accessible junction boxes or conduits in conduit runs as required by NEC, and at 100 ft. intervals on long runs. Each junction box shall be supported independent of the conduit. Support vertical conductor runs per NEC 300-19.

- N. The open ends of conduit shall be capped to keep out debris until the project is complete.
- O. All mechanical exterior equipment shall be connected with vinyl covered flexible conduit with accompanying grounding conductor.

- P. Pull a mandrel and snub through all conduit before installing conductors.
- Q. All empty conduit shall be left with a 200-lb. nylon pull cord installed.
- R. 3/8" steel flex may be used for single connections to recessed light fixtures.

END OF SECTION 26 0140

SECTION 26 0120 – CONDUITORS AND CABLES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- S. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- T. This section is a Division-26 Basic Materials and Methods section, and is part of each Division-26 section making reference to conductors and cables specified herein.
- 1.2 DESCRIPTION OF WORK
- U. Extent of electrical conductor and electrical cable work is indicated by drawings and schedules.
- V. Types of conductors and cables in this section include the following:
1. Copper conductors (600V)
 2. Power Service and Distribution
 3. Feeders
 4. Branch Circuits

- 1.3 QUALITY ASSURANCE
- XC. Comply with NEC as applicable to construction and installation of electrical conductors and cable. Comply with UL standards and provide electrical conductors and cables which have been UL-listed and labeled.
- XD. Comply with applicable portions of NEMA/ASTM Cable Engineers Association standards pertaining to materials, construction and testing of conductors and cable.
- ZE. Comply with applicable portions of ANSI/IEEE standards pertaining to construction of conductors and cable.

1.4 SUBMITTALS

- AA. Product Data: Submit manufacturer's data on electrical wire, cable and connectors.
- AB. COPPER CONDUCTORS (600V): insulation types THHN, THWN, XHHW as required by application.
- AC. Provide factory-fabricated conductors of sizes, ratings, materials, and types indicated for each service. Where not indicated provide proper selection to comply with project's installation requirements and NEC standards.

- AD. Provide color and coding of conductors as follows:
15. Wire sizes of #10 and smaller shall be factory colored throughout. Larger conductors shall be identified with a minimum of 6" of color wrapped tape at junction boxes and termination.

16. Switch legs and travelers shall be colors other than those listed above.
- AE. Unless more stringent requirements are noted on the drawings, provide #10 conductors for branch circuits for which the distance from panelboard to furthest outlet is more than 75' for 120 volt, or more than 140' for 277 volt circuits.

PART 3 – EXECUTION

3.1 INSTALLATION

- AF. General: Install electrical conductors and cables as indicated, in compliance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standards of Installation", and in accordance with recognized industry practices.
- AG. Coordinate installation work with electrical roadway and equipment installation work, as necessary for proper interface.
- AH. Use pulling compound or lubricant, where necessary; compounds must not deteriorate conductor or insulation.

- AI. Keep conductor splices to minimum.
- AJ. Install splices and types which have mechanical strength and insulation rating equivalent-or-better than conductor.
- AK. Use splice and tap connectors which are compatible with conductor material.

- 3.2 FIELD QUALITY CONTROL
- AL. Prior to energization, test cable and wire for continuity of circuitry, and also for short circuits. Correct malfunctions when detected.
- AM. Subsequent to wire and cable connections, energize circuitry and demonstrate functioning in accordance with requirements.
- AN. Subsequent to a full sized ground wire in all parallel conductors per NEC 250-122.

END OF SECTION 26 0120

SECTION 26 0135 – ELECTRICAL BOXES AND FITTINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- AO. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- AP. This section is a Division-26 Basic Materials and Methods section, and is a part of each Division-26 section making reference to electrical wiring boxes and fittings specified herein. See Section 26010, Raceways, for additional requirements.
- 1.2 DESCRIPTION OF WORK
- AR. Extent of electrical box and electrical fitting work is indicated by drawings and schedules.
- AS. Types of electrical boxes and fittings in this section include the following:
1. Outlet boxes
 2. Junction boxes
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