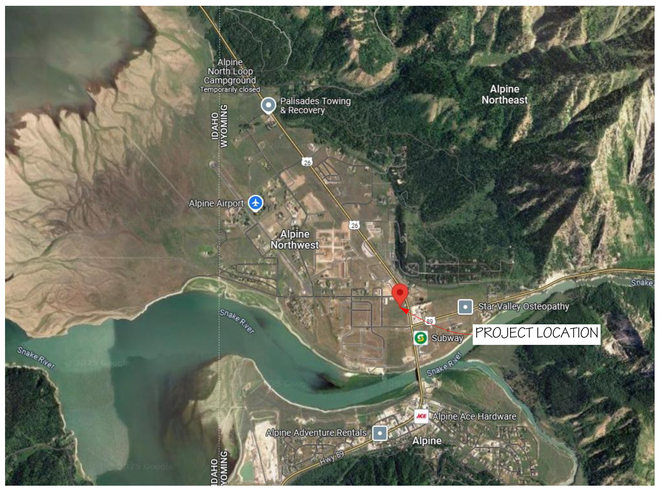
CODE REVIEW SUMMARY (2024 IBC CHAPTERS 3-6)

NEW CONSTRUCTION	PROPOSED OCCUPANCIES	CONSTRUCTION TYPE	ALLOWABLE BUILDING HEIGHT		ALLOWABLE STORIES ABOVE GRADE PLANE		ALLOWABLE AREA (PER FLOOR)		SEPARATION OF OCCUPANCIES	SEPERATION REQUIRED	SPRINKLER REQUIRED
			ALLOWED	PROPOSED/ EXISTING	ALLOWED	PROPOSED	ALLOWED*	PROPOSED/ EXISTING			
YES	BUSINESS B AND STORAGE S1 AND RESIDENTIAL R2	III-B	55'	APPROX. 37'	2	2	16,000 SQFT.	3,000 SQFT.	S1/B TO R2	1 HR	NFPA13R

NOTE: MOST RESTRICTIVE OF COMBINED LIMITATIONS SHOWN

AUTO SERVICE ELEVATED

AFFITTAMI LLC



VICINITY MAP
NOT TO SCALE

43.174119, -111.020047

FINISHED SQUARE FOOTAGE	
ID	AREA
MAIN LEVEL SHOP/ OFFICE	2,994
TENANT AREA 1	1,092
TENANT AREA 2	813
TENANT AREA 3	1,096
	5,995 ft²

UNFINISHED SQUARE FOOTAGE	
ID	AREA
EXTERIOR BALCONY	268
STORAGE LOFT OVER STORAGE	144
STORAGE LOFT OVER OFFICE	433
	845 ft²

LOCATION:	**ALPINE, WYOMING**
ROOF SNOW:	**96 PSF**
GROUND SNOW:	**137 PSF**
WIND SPEED:	**115 MPH**
EXPOSURE:	**C**
FROST DEPTH:	**36**
SEISMIC:	**D**
Ss	**1.09**
S1	**0.3**
SDS	**0.88**
SD1	**0.51**
REGULATION:	**IBC 2024**

INDEX OF SHEETS

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 37I820300004500
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
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Professional Engineer
RICHARD D. SEAMONS
13708
State
WYOMING

NOT FOR CONSTRUCTION

THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

COVER SHEET	DESCRIPTION	REVISION DATE

G-101

PLN# 25-01-009

CODE STUDY: AUTO SERVICE ELEVATED ALPINE

PROJECT: AUTO SERVICE ELEVATED ALPINE

LOCATION: ALPINE, WYOMING

CODE STUDY BY: BLAKE WALKER SOUTH FORK DESIGN

Basic Building Description

- **Construction Type:** IIIB
- **Sprinkler System:** NFPA 13R installed (IBC 903.3.1.2)
- **Area/Height Approach:** Uses separated by fire barriers; allowable area based on sum of ratios (IBC 508.4.2); height checked for each area (IBC 508.4.3).

Address Identification (IBC 502.1)

- Approved address identification required, visible from the street.
- **Characters:** Arabic numbers or letters, minimum 4 inches high, 0.5 inch wide.
- **Contrast:** Installed on a contrasting background.
- **Visibility:** If not visible from the public way due to private road access, a monument, pole, or other approved sign is required.
- Additional locations may be required by the fire official.

Site Description & Frontage Calculation (IBC 506.3.2, 202)

Side	Boundary	Distance to Boundary (ft)	Length of Perimeter (ft)	Accessible (Street/Fire Lane)?
North	Lot Line	41.0	60.0	Yes
East	Lot Line	47.0	50.0	No
South	Lot Line	25.0	60.0	No
West	Lot Line	53.0	50.0	No
		Total Perimeter:	**220.0**	

- **Perimeter Fronting Public Way/Accessible Space:** 60.0 ft
- **Basis for Frontage Increase:** Smallest open space >= 20 ft is 41.0 ft (North side).
- **Percent of Perimeter with >= 20 ft Open Space:** (60.0 / 220.0) = 27.3%
- **Allowable Area Increase due to Frontage:** 25.00% (IBC 506.3.3)

Building Height & Area Summary

Height (IBC 504.3, Table 504.3)

Parameter	Value	Status
Actual Height	37.17 ft	
Allowed Height	55.00 ft	**OK** (Actual height is within allowed)

Overall Area (IBC 502.1, 506)

Parameter	Value	Notes
Total Building Area	6,000.0 sq.ft	
Building Allowed Area	40,000.0 sq.ft	Includes 25% frontage increase (IBC 506.3)
Building Area Ratio	0.14	(5514 / 40000) - **OK**

- *Allowable area calculations based on Tables 504.3, 504.4, 506.2 and Section 506.*
- *Allowable stories based on Table 504.4 and Section 504.*
- *Uses separated by fire barriers (IBC 508.4); max floor area per use based on Table 504.4.*

Building Interior Analysis

2nd Floor Areas

Area	Occ. Group	Actual Area (sq.ft)	Allowed Area (sq.ft)	Area Ratio	Occupant Load	MinExit Req.	Exits Provided	Exit Status	Min. Width (in)	Width Prov. (in)	Width Status	Common Path (ft)	Max Travel (ft)	Actual Travel (ft)	Travel Status	Corridor?
Apartment 1	R2	1,023.00	20,000.00	0.05	5.1 (1)	1	1	**Inadequate**	1.02 (3)	36.00	OK	115.00 (4)	200.00 (5)	115.00	OK	No
Apartment 2	R2	769.00	20,000.00	0.04	3.8 (1)	1	1	**Inadequate**	0.77 (3)	36.00	OK	114.00 (4)	200.00 (5)	114.00	OK	No
Apartment 3	R2	1,023.00	20,000.00	0.05	5.1 (1)	1	1	**Inadequate**	1.02 (3)	36.00	OK	123.00 (4)	200.00 (5)	123.00	OK	No
2nd Floor Total	-	**2,815.00**	**20,000.00**	**0.14**	**14.1**	3	**3**	**OK**	**2.84 .2** (6)	**108.00**	**OK**	**123.00**	**200.00** (5)	**123.00**	**OK**	**No**

Notes for 2nd Floor Table: (1) Based on 200.0 sq.ft/occupant (IBC T 1004.5) (2) Based on IBC 1006.2.1 & Table 1006.2.1 (3) Based on IBC 1005.3.2 (Other egress components) (4) Common path of egress travel ok per IBC 1006.2.1 (5) Max exit access travel distance per IBC Table 1017.2 (6) Min Door Width = 2.8 in (1005.3.2), Min Stair Width = 4.2 in (1005.3.1)

- **Egress Doors:** Pivoted/side-hinged swinging type required (IBC 1010.1.2). May swing either direction within dwelling units (IBC 1010.1.2.1, Ex 4). Manually operated horizontal sliding doors allowed for occupant load <= 10 (Ex 9).
- **Exit Signs:** Required for exits/exit access doors (IBC 1013.1).

1st Floor Areas

Area	Occ. Group	Actual Area (sq.ft)	Allowed Area (sq.ft)	Area Ratio	Occupant Load	Min Exits Req.	Exits Provided	Exit Status	Min. Width (in)	Width Prov. (in)	Width Status	Common Path (ft)	Max Travel (ft)	Actual Travel (ft)	Travel Status	Corridor?
Office	B	324.00	23,750.00	0.01	2.2 (7)	1 (8)	1	OK	0.43 (3)	36.00	OK	10.00 (4)	200.00 (5)	32.00	OK	No
Shop	S1	2,278.00	21,875.00	0.10	39.6 (9)	2 (2)	2	OK	7.92 (3)	72.00	OK	114.00 (4)	200.00 (5)	114.00	OK	No
Storage	S1	97.00	21,875.00	0.00	1.0 (10)	1 (8)	2	OK	0.20 (3)	72.00	OK	16.50 (4)	200.00 (5)	38.00	OK	No
1st Floor Total	-	**2,699.00**	**22,084.30** (11)	**0.12**	**42.8**	2 (12)	**3**	**OK**	**8.6** (3)	**108.00**	**OK**	**16.50**	**200.00** (5)	**57.50**	**OK**	**No**

Notes for 1st Floor Table: (3) Based on IBC 1005.3.2 (Other egress components) (4) Common path of egress travel ok per IBC 1006.2.1 (5) Max exit access travel distance per IBC Table 1017.2 (7) Based on 150.0 sq.ft/occupant (IBC T 1004.5) (8) Based on IBC 1006.2 (9) Based on 57.5 sq.ft/occupant (IBC T 1004.5) (10) Based on 300.0 sq.ft/occupant (IBC T 1004.5) (11) Floor allowed area calculation per IBC 506. (12) Based on IBC 1006.3.3

- **Egress Doors:** Pivoted/side-hinged swinging type required (IBC 1010.1.2). May swing either direction (IBC 1010.1.2.1). Manually operated horizontal sliding doors allowed for occupant load <= 10 (Ex 9).
- **Exit Signs:** Not required for Office or Storage (IBC 1013.1). Required for Shop (IBC 1013.1). Not required for overall floor egress path (IBC 1013.1).

Egress Details & Requirements

(Note: Code references are from 2021 IBC unless noted otherwise)

Exit Width (1005)

- Calculation basis depends on component (Stairs: 1005.3.1; Other: 1005.3.2).
- Loss of one means of egress cannot reduce capacity by > 50% (1005.5).
- Minimum door width per 1010.1.1.

Egress Continuity & Separation

- Path of egress shall not be interrupted (1003.6).
- Where 2 exits required, minimum separation is 1/2 diagonal of area (measured straight line), with exceptions (1007.1.1).

Illumination (1008.2)

- Means of egress illuminated when space occupied (Exemption: Dwelling/sleeping units).
- Minimum 1 foot-candle at walking surface.
- Illumination required along exit discharge path to public way.
- Emergency power requirements per 1008.3.

Doors (1010)

- **Type:** Pivoted or side-hinged swinging required (1010.1.2).
  - *Exceptions:* Dwelling units (Ex 4), Occupant Load <= 10 (Manual sliding - Ex 9), Revolving (Ex 5), Compliant Horizontal Sliding (Ex 6), Power-operated (Ex 7).
- **Swing Direction:** Generally towards egress travel for Occupant Load >= 50, or in Group H. May swing either way in dwelling units (1010.1.2.1).
- **Landings:** Required on each side of door, same elevation (within 1/2" threshold difference) (1010.1.4, 1010.1.6). Width >= door/stair width. Length min 44" in direction of travel if load >= 50 (1010.1.5). Space between doors in series: 48" + swing width (1010.1.7).
- **Additional Doors:** Must comply with Section 1010 if provided for egress (1010.1).

Locks & Latches (1010.2)

- **General:** Readily openable from egress side without key/special knowledge/effort (1010.2). Single motion to unlatch (1010.2.1).
- **Prohibited:** Manual flush/surface bolts (1010.2.5), except inactive leaf of pair in storage/equipment room (Ex 2) or doors not required for egress in dwelling units (Ex 1).
- **Permitted in Dwelling/Sleeping Units (Load <= 10):** Night latch, deadbolt, security chain if openable from inside without key/tool (1010.2.4 #5, 1010.2.5 Ex 1).
- **Closets:** Must be openable from inside if they latch (1010.2.6).
- **Permitted Locking (where operation prevented):** Includes automatic flush bolts on pairs (inactive leaf has no knob/hardware) (1010.2.4 #4), fire doors after temp disables unlatching (1010.2.4 #6), roof access doors (1010.2.4 #7), certain court doors (1010.2.4 #8), dwelling/sleeping unit balconies/decks (1010.2.4 #9), small private office balconies/decks (1010.2.4 #10).

Stairways (1011)

Feature	Within Dwelling Units	Other Stairways	Code Ref (Other)
Min. Width	N/A	44 inches (36" if Occ Load < 50; 48" clear if accessible egress route)	1011.2, 1009.3.2
Max Riser Height	N/A	7 inches	1011.5.2
Min Riser Height	N/A	4 inches	1011.5.2
Min Tread Depth	N/A	11 inches	1011.5.2
Riser Type	May be open	Solid Required	1011.5.5.3
Max Variation	N/A	3/8 inch (per flight)	1011.5.4
Handrails	N/A	Both sides required	1011.11
Handrail Height	N/A	34-38 inches	1014.2
Handrail Grip	N/A	Type I: 1.25"-2" dia circ, or equiv. grasp	1014.3.1
Handrail Continuity	N/A	Continuous, no obstructions; Return/extend	1014.4, 1014.6
Headroom	N/A	80 inches min	1011.3
Under Stair Space	N/A	N/A	1011.7.3
Landings	N/A	Top & Bottom req'd; Dim=Width (48" max if straight run)	1011.6
Max Rise/Flight	N/A	12 feet	1011.8

Guards (1015, 1607.9)

- **Required:** Open sides of walking surfaces > 30" above floor/grade (1015.2).
- **Min Height:** 42 inches (Exceptions: 36" within dwelling units (Ex 1); 34-38" if top rail is stair handrail within dwelling unit (Ex 2)).
- **Strength:** Resist 50 plf top load, 200 lb concentrated load. Intermediate rails resist 50 psf over 1 sq.ft. (1607.9, ASCE 7 4.5.1).
- **Openings:** Block passage of 4" sphere (Exceptions: 4 3/8" sphere allowed between 36-42" height (Ex 1); 6" triangle at riser/tread/guard (Ex 2); 4 3/8" sphere on stair sides within dwelling units (Ex 6); 21" sphere in certain non-public areas (Ex 4)).

Emergency Escape and Rescue Openings (1031)

- **Required:** Group R-2 occupancies in stories with only one exit (where permitted by T1006.3.4(1)&(2)) (1031.2 #1).
- **Location:** Open directly to public way or yard/court opening to public way (1031.2).
- **Size:** Min 5.7 sq.ft clear area (5.0 sq.ft at grade floor); Min 24" clear height; Min 20" clear width (1031.3).
- **Height:** Bottom of opening max 44" above floor (1031.3.3).
- **Operation:** Operational from inside without keys/tools, including bars/grilles (1031.2.1).

Accessibility (IBC Chapter 11, ICC A117.1-2009)

General

- **Entrances:** At least 60% of public entrances accessible (1105.1). At least one accessible entrance to each tenant/dwelling/sleeping unit (1105.1.7).
- **Parking:** Accessible spaces per Table 1106.1 required if parking provided (1106.1). Additional rules for outpatient/rehab facilities (1106.3, 1106.4).
- **Route:** At least one accessible route connecting accessible levels (1104.4). Must coincide with general circulation path (1104.5).
- **Drinking Fountains:** Where provided, >=2 required: one for wheelchair users (<=36" spout height), one for standing persons (38-43" spout height), unless single unit meets both (1109.5.1). If >2 provided, >=50% accessible (1109.5.2). Spout location reqs (A117.1 602.5), min 4" flow height (A117.1 602.6).

Toilet Facilities (A117.1)

- **Turning Space:** 67" diameter or T-shaped space required (603.2.1, 304.3). Doors cannot swing into fixture clear floor space (exception for single use) (603.2.2).
- **Water Closet:** 16-18" centerline from adjacent side wall/partition (604.2). Seat height 17-19" (604.4).
  - *Clearance (No Compartment):* 60" min perpendicular to side wall, 56" min perpendicular to rear wall (604.3.1).
  - *Compartment:* 60" wide min; 56" deep min (wall hung) or 59" deep min (floor mount) (604.9.2.1).
- **Grab Bars:** 1.25-2" diameter, 1.5" space from wall (609.2, 609.3). Mounted 33-36" high (609.4). Side bar: 42" min length, start <=12" from rear wall, extend to 54" from rear wall (604.5.1). Rear bar: 24" min length (36" preferred), centered on WC (604.5.2).
- **Urinals:** Stall type or wall hung, rim <= 17" high (605.2).
- **Lavatories:** Rim <= 34" high (606.3). Pipes insulated/protected (606.6).
- **Sinks:** <= 11" deep (606.5).
- **Mirrors:** Bottom edge <= 40" above floor if over lav/sink/counter (603.3).

Additional Toilet Requirements (IBC 2902)

- Public facilities required for public utilization areas. Route cannot pass through kitchens/storage (2902.3, 2902.3.1).
- Cannot open directly into food prep areas (2902.3.2).
- Max travel distance 500 ft (2902.3.3). Directional signage required (2902.4.1).
- Multi-occupant room egress doors not lockable from inside (exception: family/assisted use) (2902.3.6).
- Separate facilities per sex generally required (exceptions for low occupant loads in specific occupancies, dwelling units, single-user rooms) (2902.2).
- Fixture location/partitions per IBC 2903.

Fire Resistance & Separation

Exterior Walls (IBC 705, Tables 601, 705.5, 705.8)

Side	Occ. Grp	Fire Sep. Dist (ft)	Bearing Wall Rating (hr)	Non-Bearing Wall Rating (hr) (Inside Face)	Parapet Req'd? (705.11)	Max Unprotected Openings (%)	Max Protected Openings (%)	Projections Limit (to FSD line)	Combustible Projections Limit (within 5 ft of FSD line)
North	R2, S1, B	41.0	2	0	Bearing: Yes; Non-Br: No (Ex 1)	No Limit	No Limit	Cannot extend closer than 40" (T705.2)	Must be noncombustible, 1-hr rated, T4HT, or FRT Wood (705.2.3)
East	R2, S1, B	47.0	2	0	Bearing: Yes; Non-Br: No (Ex 1)	No Limit	No Limit	Cannot extend closer than 40" (T705.2)	Must be noncombustible, 1-hr rated, T4HT, or FRT Wood (705.2.3)
South	R2, S1, B	25.0	2	0	Yes (or roof protection) (Ex 4)	70%	No Limit	Cannot extend closer than 40" (T705.2)	Must be noncombustible, 1-hr rated, T4HT, or FRT Wood (705.2.3)
West	R2, S1, B	53.0	2	0	Bearing: Yes; Non-Br: No (Ex 1)	No Limit	No Limit	Cannot extend closer than 40" (T705.2)	Must be noncombustible, 1-hr rated, T4HT, or FRT Wood (705.2.3)

Building Element Fire Resistance (Construction Type IIIB - Table 601)

Building Element	Min. Fire-Resistance Rating (Hours)	Material Notes
Exterior Walls	See Exterior Walls table above	-
Primary Structural Frame	0	Any material
Interior Bearing Walls	0	Any material
Interior Nonbearing Walls	0	Any material
Floor/Ceiling Assembly	0	Any material
Roof/Ceiling Assembly	0	Any material
Shaft Enclosure	1	Any material
Stairs	0	Any material

Occupancy Separation (IBC 508.4, Table 508.4)

Separation Between	Required Fire Barrier Rating (hr)	Required Opening Protection (hr) (Table 716.1(2))
R2 and S1	1	NA
R2 and B	1	NA

- *Accessory Occupancies:* No separation required if <= 10% of story area and within tabular limits (508.2.3, 508.2.4).

Incidental Use Separation (IBC Table 509.1)

Area	Separation Requirement
Furnace Room (>400k BTU/hr input)	1 hour OR Sprinkler System
Boiler Room (>15 psi & 10 hp)	1 hour
Refrigerant Machinery Room	1 hour OR Sprinkler System
Hydrogen Cut-off Room (not Group H)	2 hour
Incinerator Room	2 hour AND Sprinkler System
Paint Shop (not Group H)	2 hour OR 1 hour + Sprinkler System
Laundry Room > 100 sq.ft	1 hour OR Sprinkler System (*Note: Text lists 1 hour separately too - verify*)
Waste/Linen Collection Room > 100 sq.ft	1 hour OR Sprinkler System

Dwelling Unit Separation (IBC 420, 708)

- **Walls:** 1-hour fire partitions required (420.2, 708.3). Extend foundation/floor below to underside of floor/roof deck above (708.4). Supporting construction protection generally required (708.5).
- **Floors:** Horizontal assemblies required (420.3). Minimum 1-hour rating (Implied by Table 601/711 - confirm specific req.).

Smoke Barriers (IBC 709, 710)

- Required rating: 1 hour (709.3).
- Must be continuous membrane (wall-to-wall, floor-to-deck/slab above) (710.4).
- Opening requirements per 710.5.

Marking and Identification (IBC 703.5)

- Fire walls/barriers/partitions, smoke barriers/partitions require permanent identification in accessible concealed spaces (within 15ft of ends, max 30ft intervals).

Penetrations of Fire-Resistive Assemblies (IBC 714)

- **General:** Must use tested systems or approved firestop systems (714.4.1, 714.5.1).
- **Walls (Through):** Exceptions for certain steel/ferrous/copper pipes/conduits (714.4.1.2 Ex).
- **Walls (Membrane):** Same requirements. Exceptions for certain steel boxes (size/spacing limits), listed boxes, sprinkler escutcheons (714.4.2 Ex).
- **Floors/Roofs (Through):** Firestop rating >= 1 hr and >= floor rating (714.5.1.2). Exceptions for certain pipes/conduits through single concrete floor, tested outlet boxes (714.5.1.2 Ex).
- **Floors/Roofs (Membrane):** Same requirements. Exceptions for certain pipes/boxes through concrete/masonry, tested outlet boxes, sprinkler escutcheons (714.5.2 Ex).

Ducts and Air Transfer Openings (IBC 717)

- Dampers required where ducts penetrate fire walls, fire barriers, shaft enclosures, fire partitions, smoke barriers (717.5). Must be accessible (717.4).

Draftstopping (IBC 708.4.2)

- Required above/along fire partitions if they don't extend to deck/floor above.
- *Attic Exceptions:* Not needed if < 4 dwelling units (Ex 3); Divide space into <= 3000 sq.ft areas or above every 2 units (smaller prevails) (Ex 4). If corridor walls separate units, only needed above one corridor wall (Ex 2).
- *Floor/Ceiling Exceptions:* Similar exceptions apply if partition doesn't extend to floor above (Ex 2, Ex 3).

Fire Protection Systems

Automatic Sprinkler Systems (IBC 903)

- **Required Conditions:**
  - Fire areas containing Group R occupancy (903.2.8). *This applies to the apartments.*
- **Provided System:** NFPA 13R (per Basic Building Description section).

Fire Pumps (IBC 913)

- If provided, must be in room separated by 2-hour fire barrier (913.2.1).

Portable Fire Extinguishers (IBC 906)

- Required (906.1). Location per Table 906.1. Size/distribution per 906.3.
- **Dwelling Units:** Require min 1-A:10-B:C rated extinguisher each (906.1 Ex).

Fire Alarm & Detection Systems (IBC 907)

- **Manual Fire Alarm:** Required (activates occupant notification) (907.2.9.1). Exception may apply if units separated by 1-hr partitions and have direct exit to exterior.
- **Smoke Alarms (R-2 Occupancy - 907.2.11):**
  - *Locations:* Outside each sleeping area, inside each sleeping room, on all stories (including basement) (907.2.11.2).
  - *Placement Restrictions:* Avoid placement too close to cooking appliances (distance varies by type - ionization/photoelectric) or bathrooms (min 3 ft horizontally) unless necessary for required locations (907.2.11.3, 907.2.11.4).
  - *Interconnection:* Required if >1 alarm needed (907.2.11.5).
  - *Power:* Primary power from building wiring with battery backup (907.2.11.6).

Other Building Requirements

Roofing (IBC Chapter 15)

- **Class:** Class C or better required (Table 1505.1). Exception allows No. 1 cedar/redwood shakes/shingles.
- **Drainage:** Secondary (overflow) drains or scuppers required if water can be trapped by walls/parapets extending above roof (1502.2). Sized to prevent exceeding design load (1611.1). Scuppers min 4" opening (1502.3). Design per IPC Ch 11.

Light and Ventilation (IBC 1204, 1202)

- **Light:** Natural (min 8% floor area glazed) OR artificial (avg 10 fc at 30" AFF) required for occupied spaces (1204.1-1204.3). Adjoining room rules apply (1204.2.1).
- **Ventilation:** Natural (min 4% floor area openable area) OR mechanical (per IMC) required (1202.1, 1202.5). Adjoining room rules apply (1202.5.1.1). Below grade opening clearances (1202.5.1.2).
- **Bathing Rooms:** Mechanical ventilation required (1202.5.2.1).

Glazing (IBC 2406)

- **Safety Glazing Required in Hazardous Locations:**
  - Doors (swinging, sliding, bifold) (2406.4.1).
  - Adjacent to doors (within 24" arc, bottom edge < 60" AFF) (2406.4.2).
  - Large panels (>9 sq.ft, bottom < 18" AFF, top > 36" AFF, near walking surface) (2406.4.3).
  - Guards and railings (2406.4.4).
  - Near wet areas (hot tubs, pools, showers, etc., bottom < 60" AFF) (2406.4.5).
  - Near stairs/ramps/landings (bottom < 60" AFF) (2406.4.6).
  - Near bottom landing of stairs (specific conditions) (2406.4.7).
  - *Numerous exceptions apply - refer to code text.*

Wall and Ceiling Finishes (IBC Chapter 8, 1209)

- **Flame/Smoke:** Materials must meet Class requirements per Table 803.13. Textiles require Class A + sprinklers or meet specific criteria (803.5, 803.6). Expanded vinyl similar to textiles (803.7).
- **Toilet Rooms:** Floor: smooth, hard, nonabsorbent, extend 4" up wall (1209.2.1). Walls: similar surface up to 4' AFF within 2' of urinals/WCs (1209.2.2).

Ceiling Heights (IBC 1208.2)

- **Min Height:** 7' 6" for occupiable spaces, habitable spaces, corridors. 7' 0" permitted for bathrooms, toilet rooms, kitchens, storage, laundry.

Insulation (IBC 720, 2603)

- **Flame/Smoke:** Max flame spread 25, max smoke developed 450 (720.2, 720.3). Exception for facings behind finishes (720.2.1).
- **Foam Plastic:** Protection required per Chapter 26 (2603).

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13708
State of WYOMING

THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES RE-ENGINEERING IS REQUIRED.

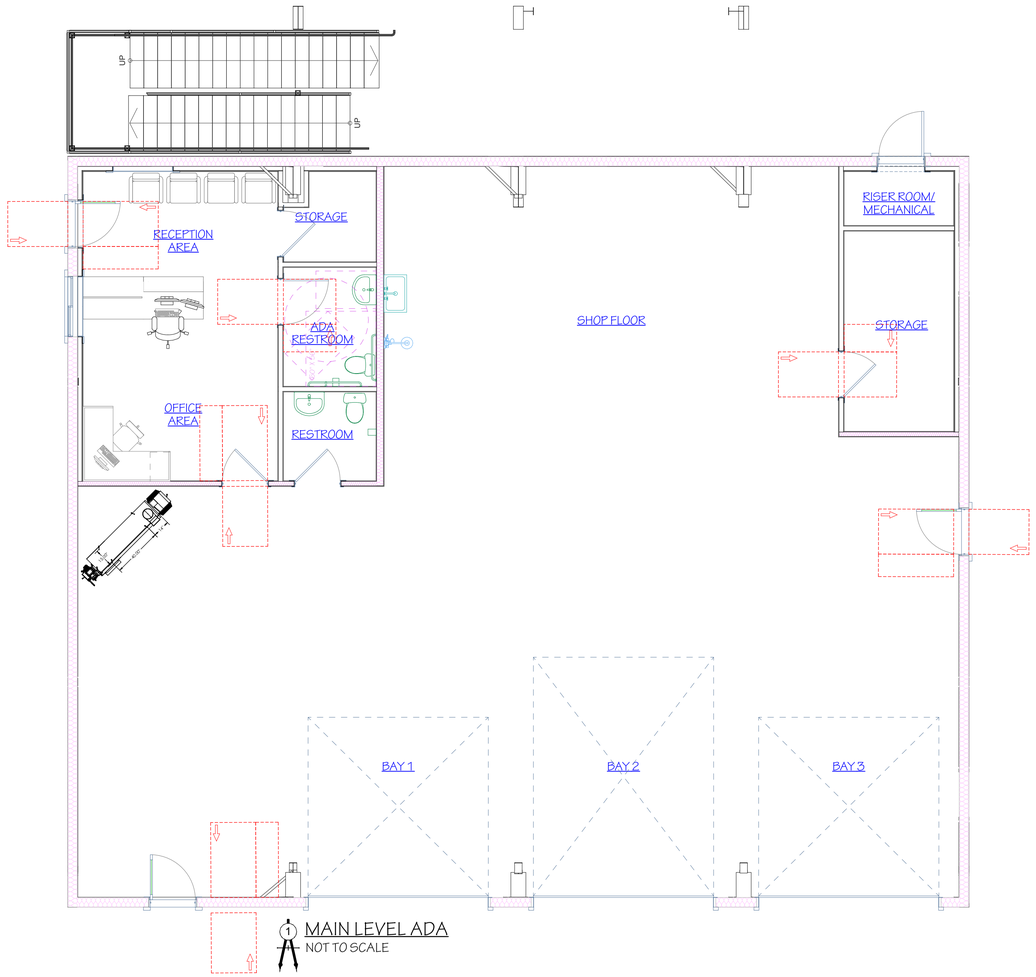
NOT FOR CONSTRUCTION

COMMERCIAL CODE SUMMARY

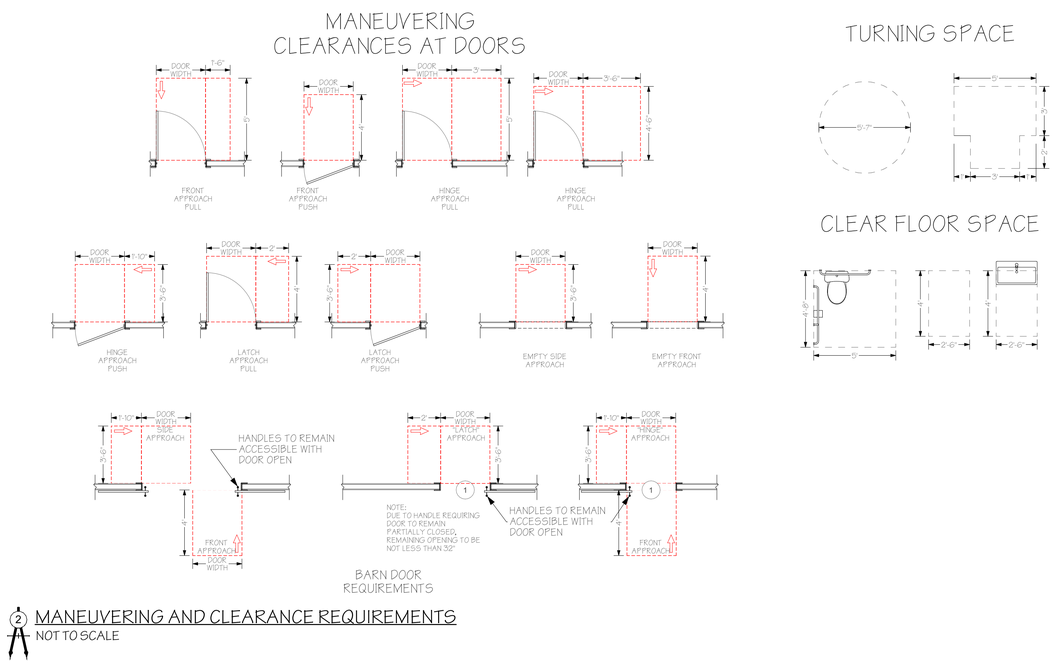
REVISION DATE	DESCRIPTION

G-102

PLN# 25-01-009



1 MAIN LEVEL ADA
NOT TO SCALE



2 MANEUVERING AND CLEARANCE REQUIREMENTS
NOT TO SCALE

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450 0
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
State of WYOMING
CONSTRUCTION

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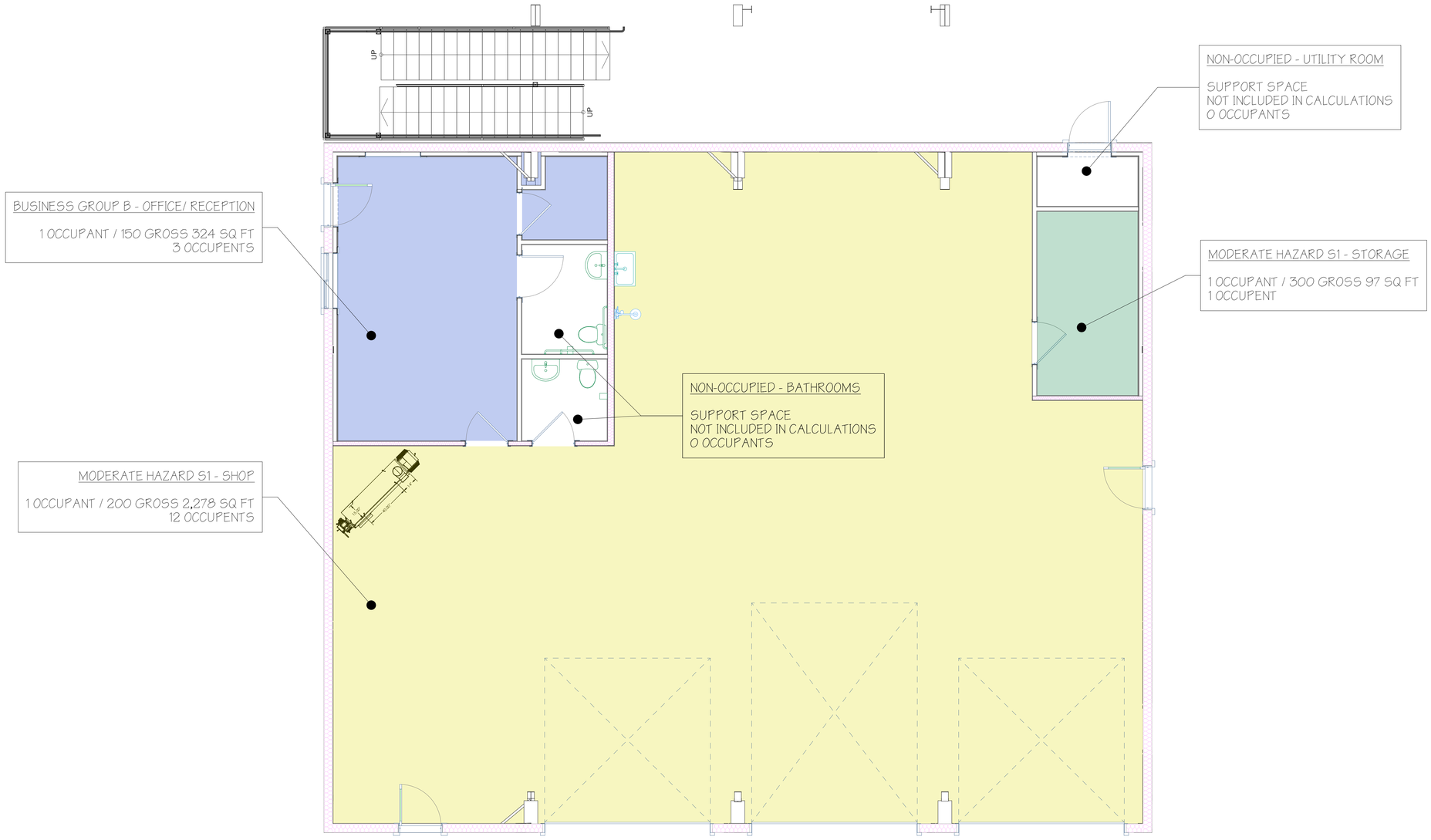
LIFE SAFETY - ADA MANEUVERING CLEARANCES

REVISION DATE	DESCRIPTION

G-103

PLN# 25-01-009



1 MAIN LEVEL OCCUPANCY
SCALE: 1/4" = 1'-0"

OCCUPANCY SUMMARY (2024 IBC 1004.5)

ROOM/ AREA LABEL	FUNCTION OF SPACE	NET OR GROSS	OCCUPANT LOAD FACTOR	AREA SQ FT	OCCUPANT LOAD
BUSINESS GROUP B - OFFICE/ RECEPTION	"BUSINESS AREAS"	GROSS	150	324	3
MODERATE HAZARD S1 - SHOP	"AUTOMOTIVE SHOP"	GROSS	200	2278	12
MODERATE HAZARD S1 - STORAGE	"STORAGE"	GROSS	300	97	1
RESIDENTIAL R2 - APARTMENT 1	"APARTMENT"	GROSS	200	1023	6
RESIDENTIAL R2 - APARTMENT 2	"APARTMENT"	GROSS	200	769	4
RESIDENTIAL R2 - APARTMENT 3	"APARTMENT"	GROSS	200	1023	6
			BUILDING TOTAL:		32

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
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Rexburg, ID 83440
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SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
CIVIL
Date
WYOMING

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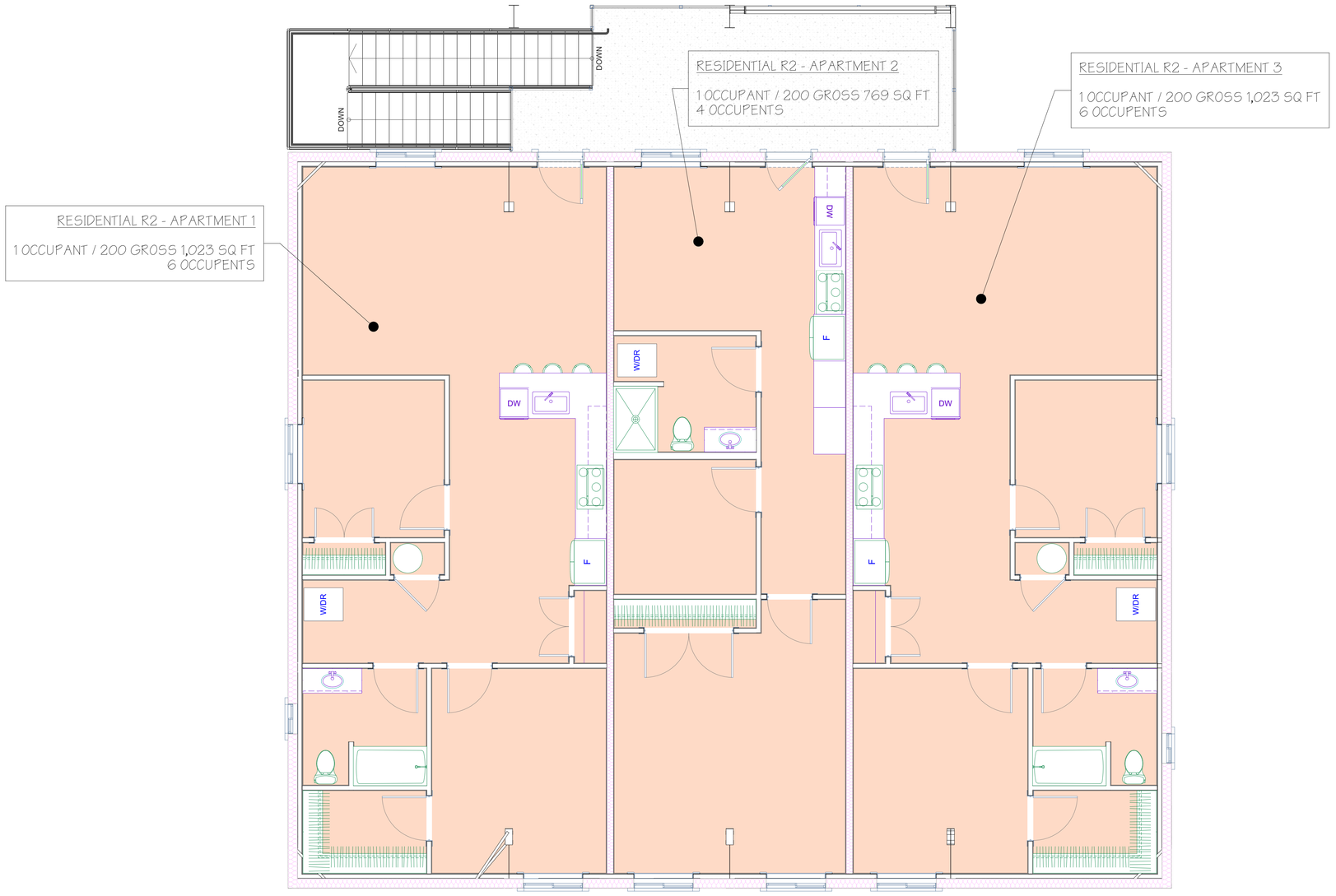
LIFE SAFETY - MAIN LEVEL OCCUPANCY

REVISION DATE	DESCRIPTION

G-104

PLN# 25-01-009



1 SECOND LEVEL OCCUPANCY
SCALE: 1/4" = 1'-0"

OCCUPANCY SUMMARY (2024 IBC 1004.5)

ROOM/ AREA LABEL	FUNCTION OF SPACE	NET OR GROSS	OCCUPANT LOAD FACTOR	AREA SQ FT	OCCUPANT LOAD
BUSINESS GROUP B - OFFICE/ RECEPTION	"BUSINESS AREAS"	GROSS	150	324	3
MODERATE HAZARD S1 - SHOP	"AUTOMOTIVE SHOP"	GROSS	200	2278	12
MODERATE HAZARD S1 - STORAGE	"STORAGE"	GROSS	300	97	1
RESIDENTIAL R2 - APARTMENT 1	"APARTMENT"	GROSS	200	1023	6
RESIDENTIAL R2 - APARTMENT 2	"APARTMENT"	GROSS	200	769	4
RESIDENTIAL R2 - APARTMENT 3	"APARTMENT"	GROSS	200	1023	6
			BUILDING TOTAL:		32

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE
KRESAN - AUTO SERVICE
ELEVATED
PARCEL NO: 3718203000450 0
ELK MEADOWS ADDITION LOT: 3

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Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CONSTRUCTION

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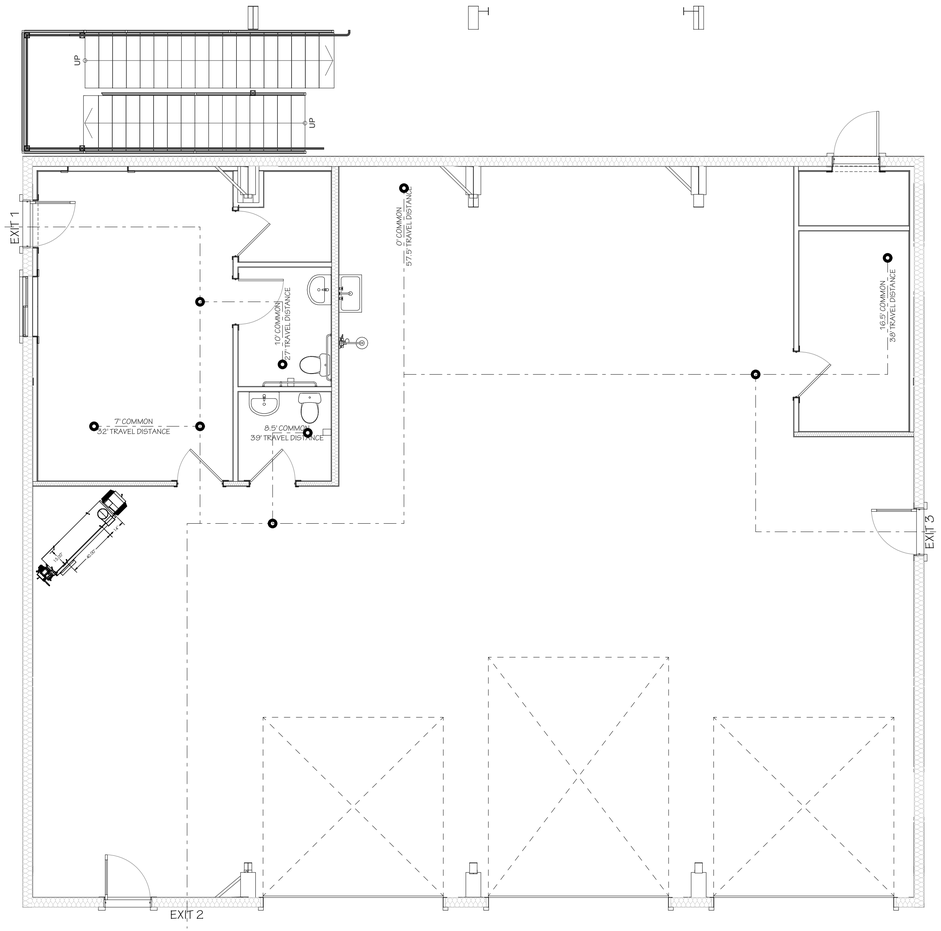
LIFE SAFETY -UPPER LEVEL OCCUPANCY

REVISION DATE	DESCRIPTION

G-105

PLN# 25-01-009



1 MAIN LEVEL EGRESS
NOT TO SCALE

EGRESS DISTANCE REQUIREMENTS	# OCCUPANTS SERVED	MAX ALLOWED	MAX PLANNED
MAXIMUM COMMON PATH OF EGRESS EXIT 1 (1006.2.1)	3	100' SPRINKLERED	7'
MAXIMUM COMMON PATH OF EGRESS EXIT 2 (1006.2.1)	12	100' SPRINKLERED	0'
MAXIMUM COMMON PATH OF EGRESS EXIT 3 (1006.2.1)	1	100' SPRINKLERED	16.5
MAXIMUM COMMON PATH OF EGRESS EXIT 4 (1006.2.1)	6	125' SPRINKLERED	115'
MAXIMUM COMMON PATH OF EGRESS EXIT 5 (1006.2.1)	4	125' SPRINKLERED	114'
MAXIMUM COMMON PATH OF EGRESS EXIT 6 (1006.2.1)	6	125' SPRINKLERED	123
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 1 (1017.2)	3	250' SPRINKLERED	32'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 2 (1017.2)	12	250' SPRINKLERED	57.5'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 3 (1017.2)	1	250' SPRINKLERED	38'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 4 (1017.2)	6	250' SPRINKLERED	115'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 5 (1017.2)	4	250' SPRINKLERED	114'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 6 (1017.2)	6	250' SPRINKLERED	123

EGRESS CAPACITY REQUIREMENTS	# OCCUPANTS SERVED	MIN REQUIRED (INCHES)	PLANNED MIN.
EXIT 1 (1005.3.2)	3	0.6	36"
EXIT 2 (1005.3.2)	12	2.4	36"
EXIT 3 (1005.3.2)	1	0.2	36"
EXIT 4 (1005.3.2)	6	1.2	36"
EXIT 5 (1005.3.2)	4	0.8	36"
EXIT 6 (1005.3.2)	6	1.2	36"

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

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SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
CIVIL CONSTRUCTION
State
WYOMING

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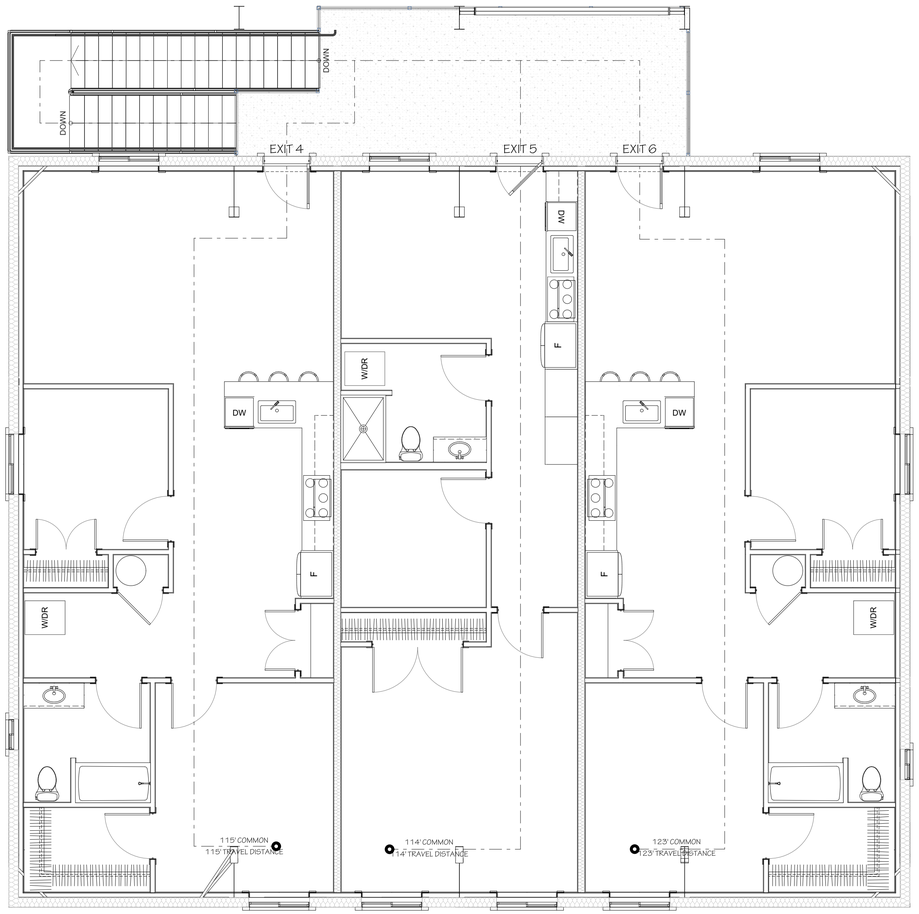
LIFE SAFETY - MAIN LEVEL EGRESS

REVISION DATE	DESCRIPTION

G-106

PLN# 25-01-009



1 SECOND LEVEL EGRESS
NOT TO SCALE

EGRESS DISTANCE REQUIREMENTS	# OCCUPANTS SERVED	MAX ALLOWED	MAX PLANNED
MAXIMUM COMMON PATH OF EGRESS EXIT 1 (1006.2.1)	3	100' SPRINKLERED	7'
MAXIMUM COMMON PATH OF EGRESS EXIT 2 (1006.2.1)	12	100' SPRINKLERED	0'
MAXIMUM COMMON PATH OF EGRESS EXIT 3 (1006.2.1)	1	100' SPRINKLERED	16.5
MAXIMUM COMMON PATH OF EGRESS EXIT 4 (1006.2.1)	6	125' SPRINKLERED	115'
MAXIMUM COMMON PATH OF EGRESS EXIT 5 (1006.2.1)	4	125' SPRINKLERED	114'
MAXIMUM COMMON PATH OF EGRESS EXIT 6 (1006.2.1)	6	125' SPRINKLERED	123
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 1 (1017.2)	3	250' SPRINKLERED	32'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 2 (1017.2)	12	250' SPRINKLERED	57.5'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 3 (1017.2)	1	250' SPRINKLERED	38'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 4 (1017.2)	6	250' SPRINKLERED	115'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 5 (1017.2)	4	250' SPRINKLERED	114'
MAXIMUM EXIT ACCESS TRAVEL DISTANCE EXIT 6 (1017.2)	6	250' SPRINKLERED	123

EGRESS CAPACITY REQUIREMENTS	# OCCUPANTS SERVED	MIN REQUIRED (INCHES)	PLANNED MIN.
EXIT 1 (1005.3.2)	3	0.6	36"
EXIT 2 (1005.3.2)	12	2.4	36"
EXIT 3 (1005.3.2)	1	0.2	36"
EXIT 4 (1005.3.2)	6	1.2	36"
EXIT 5 (1005.3.2)	4	0.8	36"
EXIT 6 (1005.3.2)	6	1.2	36"

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

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127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CERTIFICATION

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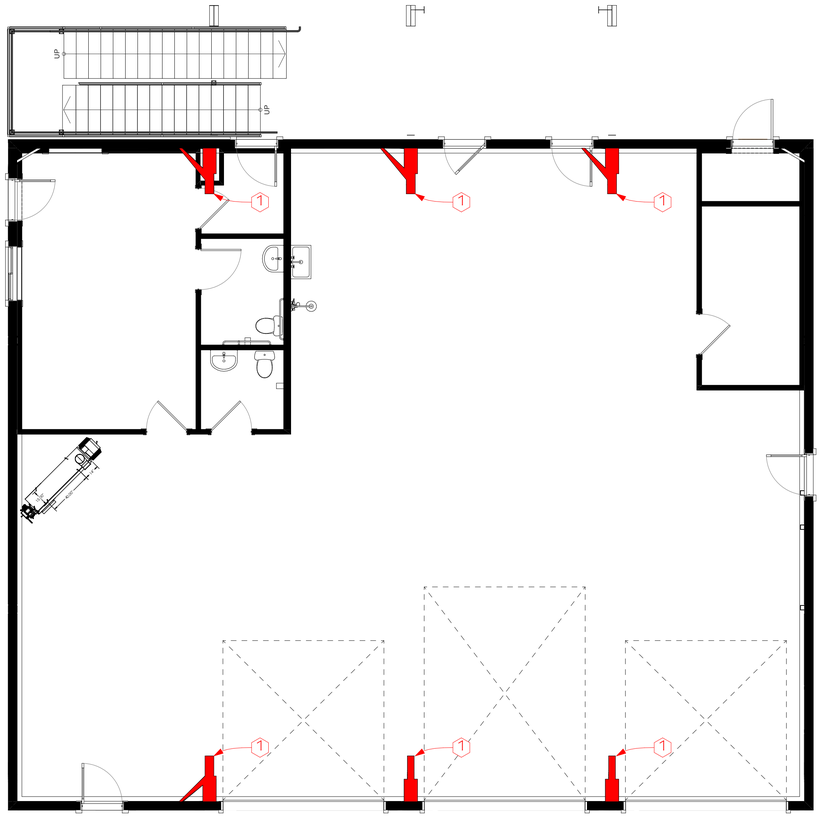
LIFE SAFETY - UPPER LEVEL EGRESS

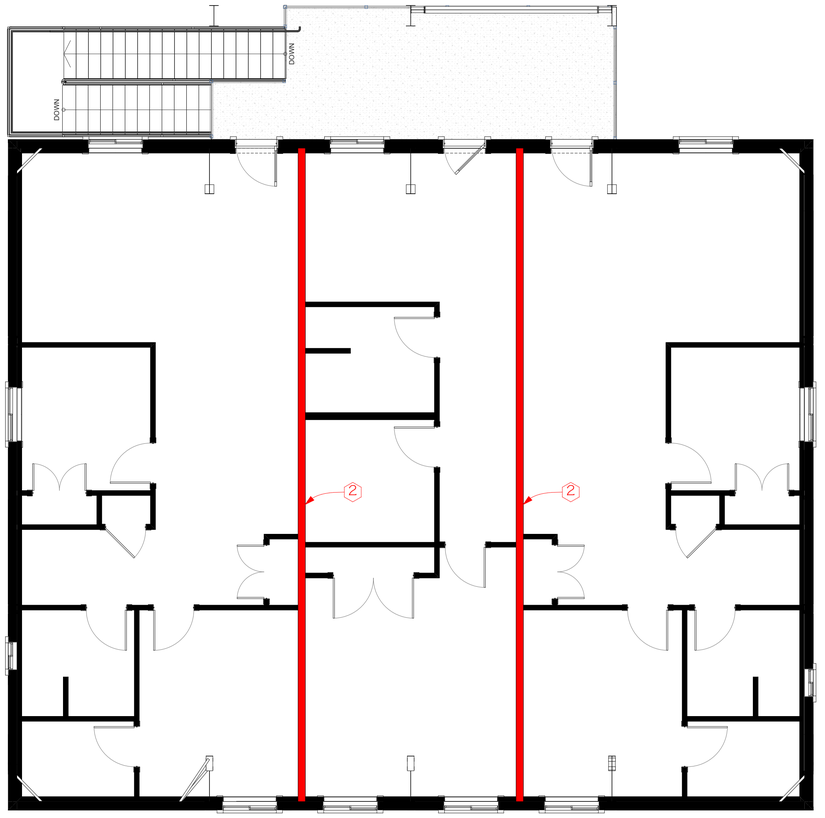
REVISION DATE	DESCRIPTION

G-107

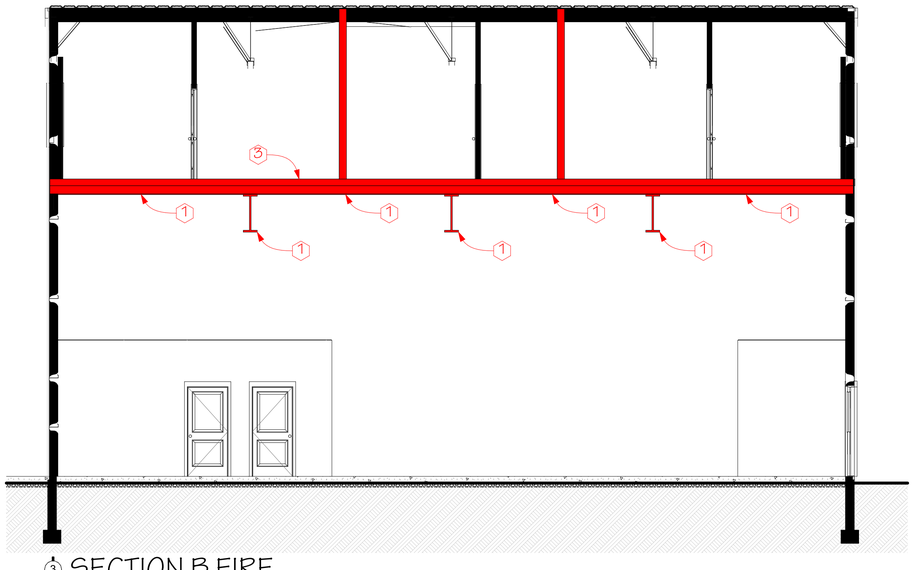
PLN# 25-01-009



1 MAIN LEVEL FIRE
SCALE: 3/16" = 1'-0"



2 UPPER LEVEL FIRE
SCALE: 3/16" = 1'-0"



3 SECTION B FIRE
SCALE: 3/16" = 1'-0"

FIRE KEYNOTES:

1. 1 HR FLOOR ASSEMBLY SUPPORTING CONSTRUCTION MUST BE PROTECTED PER 711.2.3 - 1 HR APPROVED INTUMESCENT COATING
2. 1 HR PARTITION WALL AS UNIT SEPARATION - UL U309 (FOR SOUND) SEE FOLLOWING PAGE FOR DETAILS
3. 1 HR HORIZONTAL ASSEMBLY PRESCRIPTIVE PER 721.1(3) - 1 3.5" THICKNESS W/ NO LESS THAN 3/4" COVERAGE OVER REINFORCEMENT

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CERTIFICATE OF AUTHORIZATION

THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES RENGINEERING IS REQUIRED.

LIFE SAFETY - FIRE KEY

REVISION DATE	DESCRIPTION

G-108

PLN# 25-01-009

FIRE PARTITION WALL NOTES: (SEPARATION BETWEEN UPPER FLOOR UNITS) 708

Fire partitions must be continuous from the top of the fire-resistance-rated floor assembly below to one of the following:

-The underside of the fire-resistance-rated floor or roof sheathing, deck, or slab above.

-The underside of a ceiling assembly with a fire-resistance rating equal to or greater than the partition.

-The underside of a non-rated ceiling, provided the partition is constructed to intersect with the underside of the fire-resistance-rated floor or roof assembly above.

Supporting Construction: Per Section 708.4.2, the supporting structural elements (e.g., columns, beams) for fire partitions must have a fire-resistance rating not less than that required for the fire partition itself.

Penetrations: Penetrations through fire partitions (e.g., for pipes, ducts, or electrical conduit) must be protected with approved firestop systems or devices to maintain the fire-resistance rating, as specified in Section 714 - Penetrations.

Joints: Fire-resistant joint systems in fire partitions must be protected to maintain the required fire-resistance rating, per Section 715 - Fire-Resistant Joint Systems.

GA FILE NO. WP 3246	PROPRIETARY*	1 HOUR FIRE	50 to 54 STC SOUND

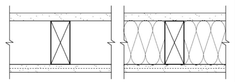
GYPSUM WALLBOARD, GYPSUM PANEL PRODUCT, WOOD STUDS

Fire Design:

One layer 5/8" proprietary gypsum board applied parallel to ONE SIDE of 2 x 4 wood studs 24" o.c. with 6d coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 7" o.c.

OPPOSITE SIDE: **One** layer 5/8" proprietary gypsum panel product applied parallel to studs with 6d coated nails, 1-7/8" long, 0.0915" shank, 1/4" heads, 7" o.c.

Joints staggered 24" on OPPOSITE SIDES. **(LOAD-BEARING)**



Thickness: 4-3/4" (Fire and Sound)
Approx. Weight: 7 psf (Fire and Sound)
Fire Test: UL R3660, 10CA25812, 8-17-10,
UL Design U309
Sound Test: OL 11-0616, 6-20-11

Sound Design:

Sound tested with screws 12" o.c. and 3-1/2" glass fiber insulation friction fit in stud space.

PROPRIETARY GYPSUM PANEL PRODUCT

CertainTeed Gypsum Inc. ..... 5/8" CertainTeed® Type X Gypsum Board
5/8" SilentFX® QuickCut™

EXCERPT FROM GA-600-2018 FIRE RESISTANCE AND SOUND CONTROL DESIGN MANUAL

② UL309 FIRE PARTITION
NOT TO SCALE

FLOOR HORIZONTAL ASSEMBLY NOTES: (SEPARATION BETWEEN UPPER FLOOR UNITS) - 711

Continuity (Section 711.2.2): Horizontal assemblies must be continuous without unprotected openings, penetrations, or joints that would compromise their fire-resistance rating, except as permitted by the code. They must extend:

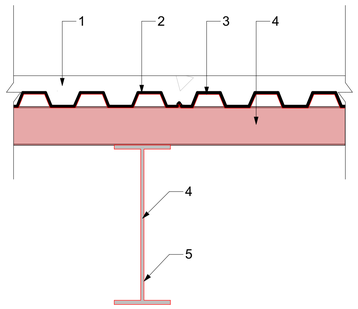
-From exterior wall to exterior wall, or to a fire wall, fire barrier, or other vertical fire-resistance-rated assembly that maintains the separation.

-Vertically through the assembly to maintain the fire-resistance rating, ensuring no gaps or unprotected interruptions.

Supporting Construction (Section 711.2.3): Structural elements (e.g., columns, beams, or walls) supporting a fire-resistance-rated horizontal assembly must have a fire-resistance rating not less than that required for the horizontal assembly itself.

Penetrations (Section 711.2.4 and Section 714): Penetrations through horizontal assemblies (e.g., for pipes, ducts, or electrical systems) must be protected with approved firestop systems, through-penetration firestop systems, or devices to maintain the fire-resistance rating, as specified in Section 714 - Penetrations.

Joints (Section 711.2.5 and Section 715): Joints in or between horizontal assemblies (e.g., expansion or construction joints) must be protected with fire-resistant joint systems to maintain the required fire-resistance rating, per Section 715 - Fire-Resistant Joint Systems.



HORIZONTAL FLOOR ASSEMBLY: 711.2

1 - SLAB PRESCRIPTIVE PER 721.1(3) - 1 3.5" THICKNESS W/ NO LESS THAN 3/4" COVERAGE OVER REINFORCEMENT
2 - B-DECKING
3 - COAT UNDERSIDE OF B-DECKING WITH APPROVED 1-HR INTUMESCENT COATING OR OTHER APPROVED
4 - STRUCTURAL FRAME
5 - COAT STRUCTURAL FRAME WITH APPROVED 1-HR INTUMESCENT COATING OR OTHER APPROVED
4 - PRIMARY STRUCTURAL FRAME
7 - COAT STRUCTURAL FRAME WITH APPROVED 1-HR INTUMESCENT COATING OR OTHER APPROVED

① HORIZONTAL FLOOR ASSEMBLY
NOT TO SCALE

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3

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SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CONSTRUCTION REVISION

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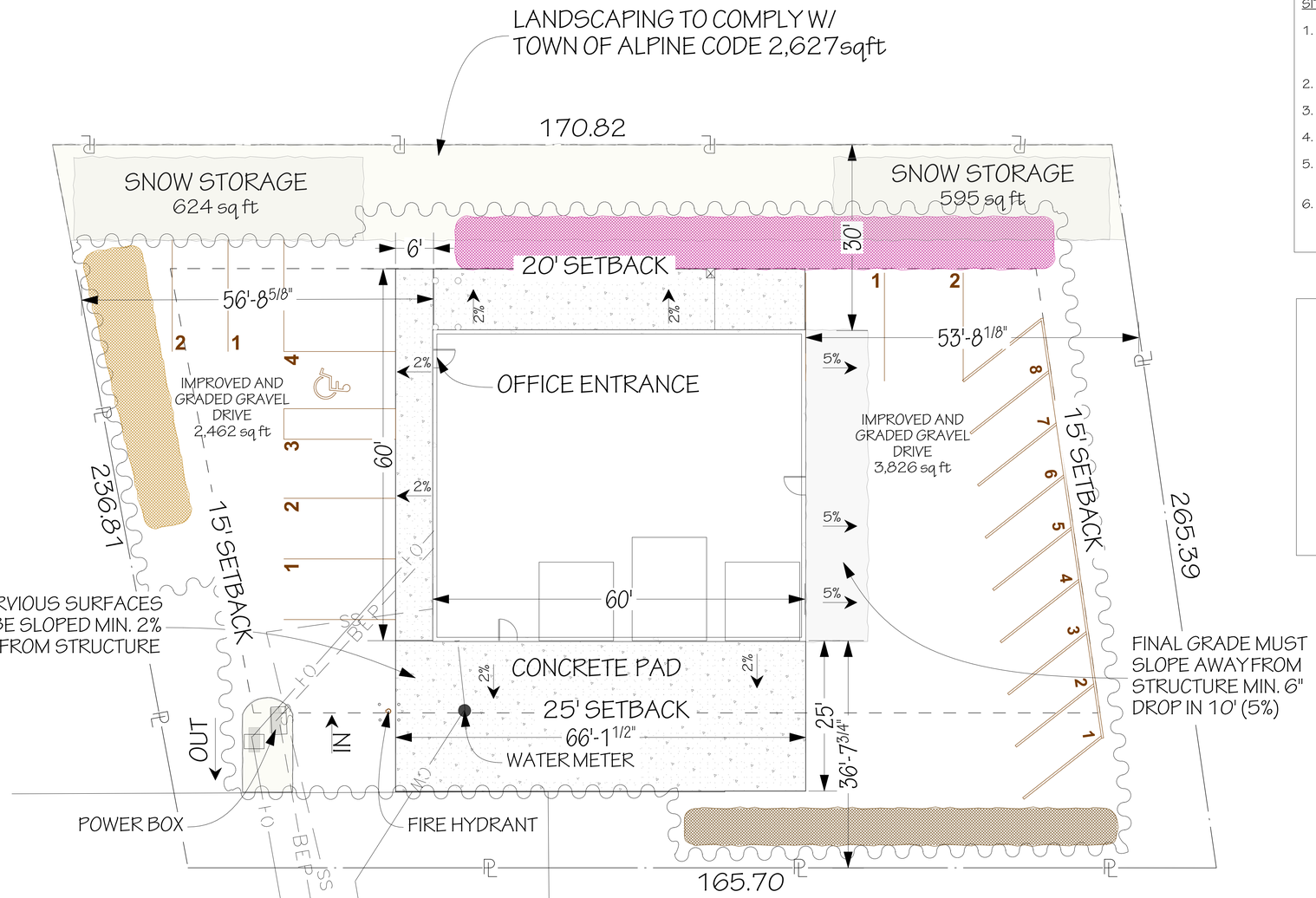
LIFE SAFETY - FIRE DETAIL

REVISION DATE	DESCRIPTION

G-109

PLN# 25-01-009



SITE PLAN

SCALE: 1" = 10'

SITE PLAN NOTE:

1. SOUTH FORK DESIGN GROUP DOES NOT PROVIDE SURVEYING, CIVIL ENGINEERING OR GEO TECHNICAL ENGINEERING. IT IS THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO ACQUIRE THESE SERVICES IF APPLICABLE. FINAL PLACEMENT OF STRUCTURE IS THE RESPONSIBILITY OF THE OWNER/CONTRACTOR.
2. U.N.O. THE SITE PLAN IS BASED ON MEASUREMENTS OBTAINED FROM PUBLIC RECORD DOCUMENTS OR GIS SYSTEM INFORMATION AND MAY NOT BE EXACT.
3. IT IS THE OWNERS/CONTRACTORS RESPONSIBILITY TO OBTAIN NECESSARY SURVEY DATA,INCLUDING TOPOGRAPHICAL INFORMATION
4. LOCATION OF UTILITIES SHOULD BE CONFIRMED BY THE CONTRACTOR PRIOR TO EXCAVATION
5. WHERE SEPTIC AND/OR FRESH WATER WELLS ARE NECESSARY, PERMITS AND LOCATION SHOULD BE OBTAINED FROM THE AUTHORITY HAVING JURISDICTION (TYPICALLY HEALTH DEPT)
6. INDICATED LOCATIONS OF SEPTIC, WELL, AND/OR UTILITIES ARE ASSUMED OR SUGGESTED AND SHOULD BE VERIFIED AND APPROVED BY THE OWNER/CONTRACTOR AND THE AUTHORITY HAVING JURISDICTION

LEGEND

- PROPERTY LINE
- EASEMENT BOUNDARY
- SET BACK
- BEP — ELECTRICAL POWER (BELOW GROUND)
- HO — DATA,FIBER,CABLE (BELOW GROUND)
- SS — CITY SANITARY SEWER (BELOW GROUND)
- S — SEPTIC SUPPLY & LEACH FIELD LINES (BELOW GROUND)
- CW — COLD WATER SUPPLY CITY OR WELL (BELOW GROUND)
- CENTERLINE OF ROAD
- EDGE OF ROAD
- AREA OF DISTURBANCE BOUNDARY
- LOCATION OF EXISTING TREES OR SHRUBBERY

OWNER:
AFFITTAMI LLC

PARCEL NUMBER:
371820300045O0

LOCATION:
ELK MEADOWS ADDITION
LOT: 3

ACRES:
0.45

LANDSCAPING:
3,024 sq ft
SNOW STARAGE:
1,219 sq ft
PARKING AREA:
6,288 sq ft

ZONE:
MRC MIXED RESIDENTAIL AND
COMMERCIAL DISTRICT

SETBACKS:
FRONT : 25'
SIDE: 15'
REAR: 20'
MAXIMUM BUILDING HEIGHT:
45'

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 371820300045O0
ELK MEADOWS ADDITION LOT: 3

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www.southforkdesign.com
208-852-6236

SHEET TITLE: SITE PLAN

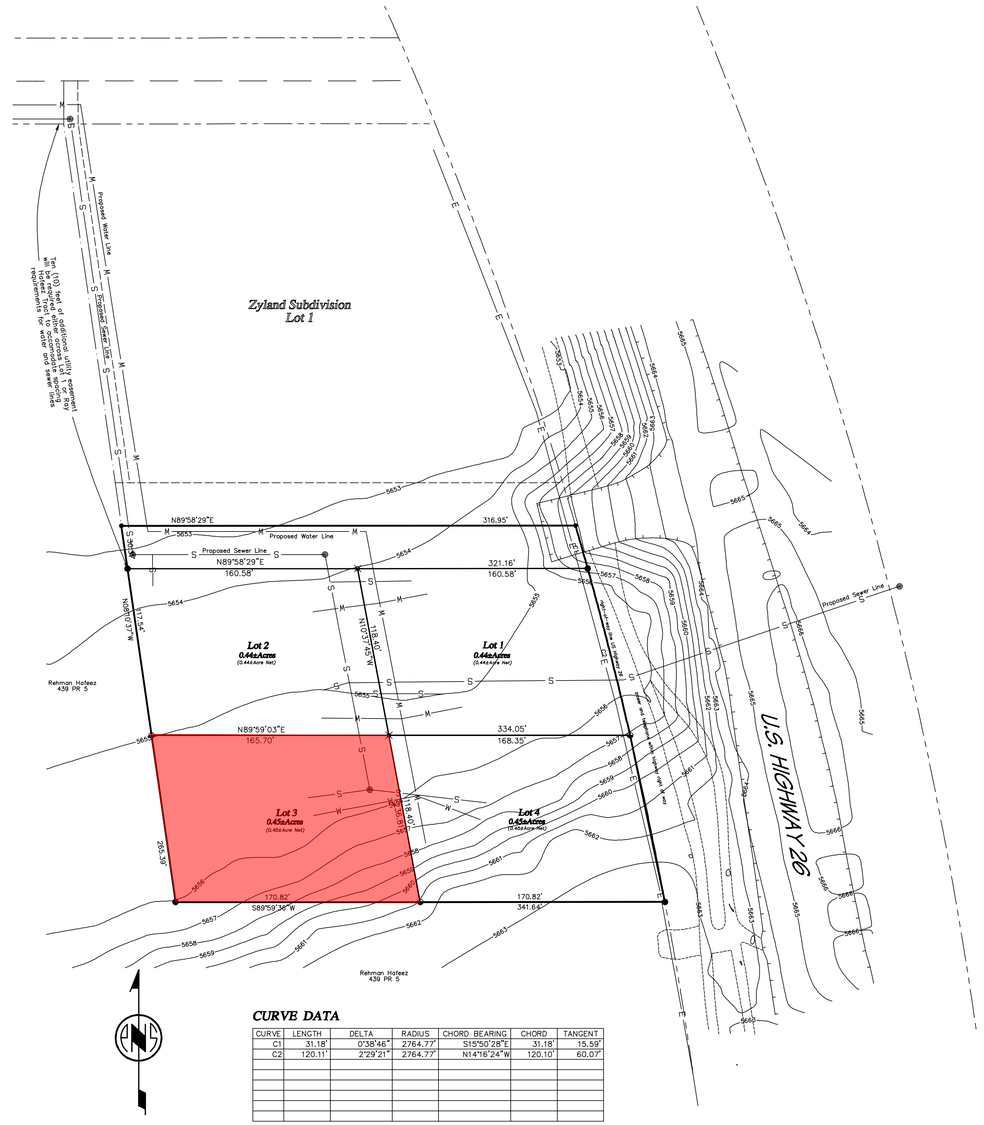
REVISION DATE	DESCRIPTION

C-101

PLN# 25-01-009

NOTE: THIS SURVEY WAS PERFORMED AND CREATED BY MARLOWE A. SCHERBEL.
IT IS PUT ON THIS PAGE FOR REFERENCE ONLY.
THIS PAGE IS NOT TO SCALE.

ELK MEADOWS ADDITION



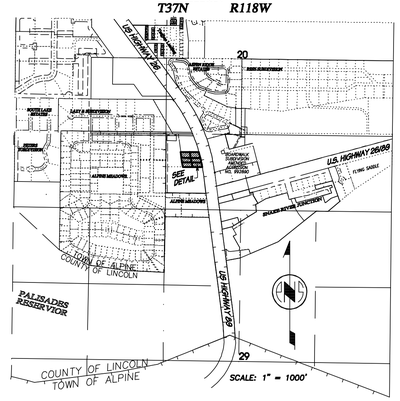
CURVE DATA

CURVE	LENGTH	DELTA	RADIUS	CHORD BEARING	CHORD	TANGENT
C1	31.18'	0°38'46"	2764.77'	S15°50'28"E	31.18'	15.59'
C2	120.11'	2°29'21"	2764.77'	N14°16'24"W	120.10'	60.07'

0' 40' 80' 120'
SCALE: 1" = 40'

PLOT DATE: 11 June 2021

LOCATION MAP
T37N R118W



CERTIFICATE OF OWNERS

STATE OF WYOMING }
ss.
COUNTY OF LINCOLN }

The undersigned hereby certify that the subdivision of part of the SE1/4SW1/4 of Section 20, T37N R118W, within the Incorporated Limits of the Town of Alpine, Lincoln County, Wyoming, as shown on this plat and more particularly described in the Certificate of Surveyor, is with the free consent and in accordance with the desires of the owner and proprietor of the described lands;

that the name of the addition shall be the ***ELK MEADOWS ADDITION*** to the Town of Alpine;

that they do hereby vacate Lot 2 of Zyland Subdivision of record in said Office with Accession No. 911635, in accordance with Section 34-12-106, Wyoming Statutes 2019, as amended, and respectfully request the Clerk of Lincoln County to so mark said plat in accordance with Section 34-12-110;

that utility easements shown hereon are hereby granted to Lower Valley Energy, Silver Star Telephone Company, Inc., and other public and private utilities to serve the lots of this addition;

that said addition is subject to any easements of record;

that Wyoming law does not recognize any riparian rights to the continued natural flow of a stream or river for persons living on the banks of a stream or river;

that all rights under and by virtue of the Homestead Exemption Laws of the State of Wyoming are hereby released;

Bugling Elk Properties, LLC

Signature obtained by separate Certificate of Owners
signature to be recorded concurrently herewith
John Lotshaw, Manager

CERTIFICATE OF ACCEPTANCE

STATE OF WYOMING }
ss.
COUNTY OF LINCOLN }

The foregoing ***ELK MEADOWS ADDITION*** to the Town of Alpine was approved at the regular meeting of the Alpine Town Council on the ___ day of _____ 2021, in accordance with Sections 15-1-415 and 34-12-102, 103, Wyoming Statutes, 2019, as amended.

Attest: Town of Alpine

Sharon Backus, Clerk — W. Kennis Lutz, Mayor

-ADVANCE PLAT-
SUBJECT TO CORRECTION AND APPROVAL

CERTIFICATE OF RECORDATION

This plat was filed for record in the Office of the Clerk of Lincoln County on this___ day of _____ 2021.

April Brunski, Clerk

CERTIFICATE OF SURVEYOR

STATE OF WYOMING }
ss.
COUNTY OF LINCOLN }

I, Marlowe A. Scherbel, of Afton, Wyoming, hereby certify that this plat was made from notes taken during an actual survey made by persons under my supervision during _____ 2020 and from records in the Office of the Clerk of Lincoln County and that it correctly represents ***ELK MEADOWS ADDITION***, described as follows;

That part of the SE1/4SW1/4 of Section 20, T37N R118W, Lincoln County, Wyoming, described as follows:

All of Lot 2 of Zyland Subdivision of record in said Office with Accession No. 911635;

Encompassing an area of 2.00 acres, more or less.

that said addition was accurately surveyed, that the parts thereof are accurately staked off and marked with appropriate metal monuments, including magnetic iron, and inscribed at least with the registration number of the Land Surveyor to profice source identification at all lot corners of the addition, and that their locations are correctly shown hereon;

that, to the best of my knowledge, it conforms with the municipal code of the Town of Alpine and to all applicable state statutes;

that the error of closure is not greater than one part in five-thousand.

Professional Land Surveyor
Marlowe A. Scherbel
5368
Date
WYOMING

The foregoing instrument was acknowledged before me by Marlow A. Scherbel this ___ day of _____ 2021.

Witness my hand and official seal.

Notary Public — My Commission expire

LEGEND

- ⊡ indicates a Corner Record filed or to be filed in the Office of the Clerk of Lincoln County.
- △ indicates a 6" x 6" concrete post with brass marker inscribed: "STATE HIGHWAY DEPT R.O.W. MARKER", with appropriate details, found.
- ● indicates a 5/8" x 24" steel reinforcing rod with a 2" aluminum cap inscribed: "SURVEYOR SCHERBEL LTD BIG PINEY WY PLS 5368" or "SURVEYOR SCHERBEL LTD AFTON WY PLS 5368", with appropriate details, found.
- • indicates a 3/8" X 12" steel spike, found.
- ◒ indicates a 5/8" x 24" steel reinforcing rod with a 2" aluminum cap inscribed: "SURVEYOR SCHERBEL LTD AFTON WY PLS 5368", with appropriate details, set this survey.
- ⊗ indicates a calculated point, no monument found or set.
- – – – – – – – – indicates an easement line.
- ——— – – ——— indicates a right-of-way line.

The Base Bearing for this survey is the north line of the S1/2SW1/4 of Section 20, T37N R118W, being N89°57'00"E.

Note;
Due to the rounding algorithms of automated computer drafting text, the sum of the parts of total distances may be 0.01' different from the total distance shown.

OWNERS:
Bugling Elk Properties, LLC
3315 S. Cow Camp
Jackson, Wy 83001

SURVEYOR:
Surveyor Scherbel, Ltd.
P.O. Box 725
Afton, Wyoming 83110
(307) 885-9319

LAND USE TABLE:

Total Number of Lots:	4
Average Lot Size:	0.50± Acres
Total Acres:	2.00± Acres
Use of Lots:	Commercial/Multi Family
Zoning:	Mixed Residential and Commercial

DATE:
July 2021

PRELIMINARY PLAT
ELK MEADOWS ADDITION
TO THE TOWN OF ALPINE WITHIN THE
SE1/4SW1/4 SECTION 20 T37N R118W
LINCOLN COUNTY, WYOMING

DATE: 2 April 2021
DRAWN BY: Kari F. Scherbel
CALCULATED BY: Kari F. Scherbel
CATEGORY/PROP: Town/Alpine/ElkMeadowsAdd
FIELD BOOK:
COMPUTER FILE: Elk Meadows Add.pro

SURVEYOR SCHERBEL, LTD.
PROFESSIONAL LAND SURVEYORS
BOX 96 BIG PINEY-MARBLETON, WYO. 83113 TEL 307-276-3347
BOX 725 AFTON, WYO. 83110 TEL 307-885-9318; ALPINE, WYO. 83128 TEL 307-885-9319
JACKSON, WYO. TEL 307-733-5363; LAVA, ID. TEL 208-776-5938; MONTPELIER, ID TEL 208-847-2800

REVISIONS:

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450 0
ELK MEADOWS ADDITION LOT: 3

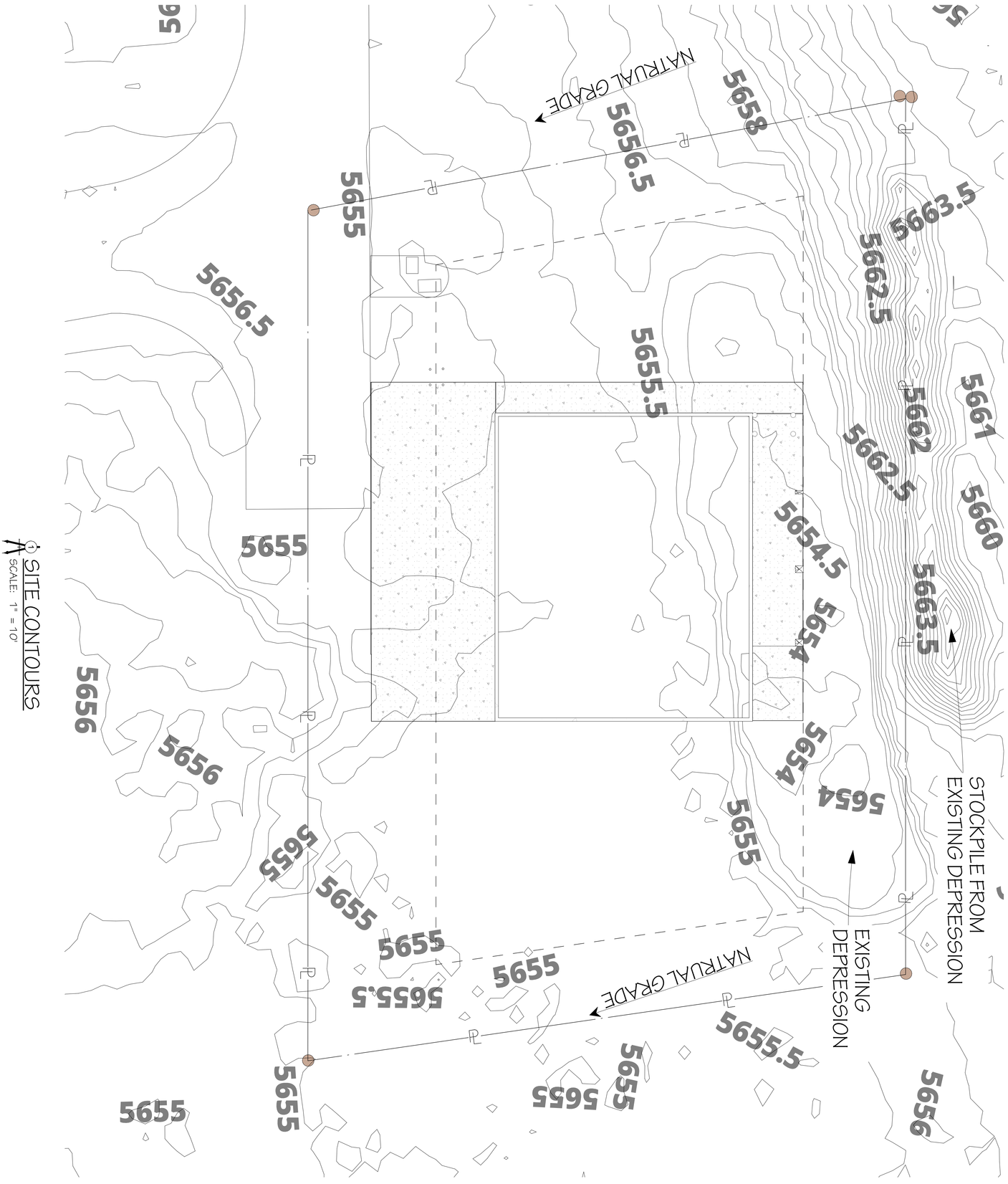
South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

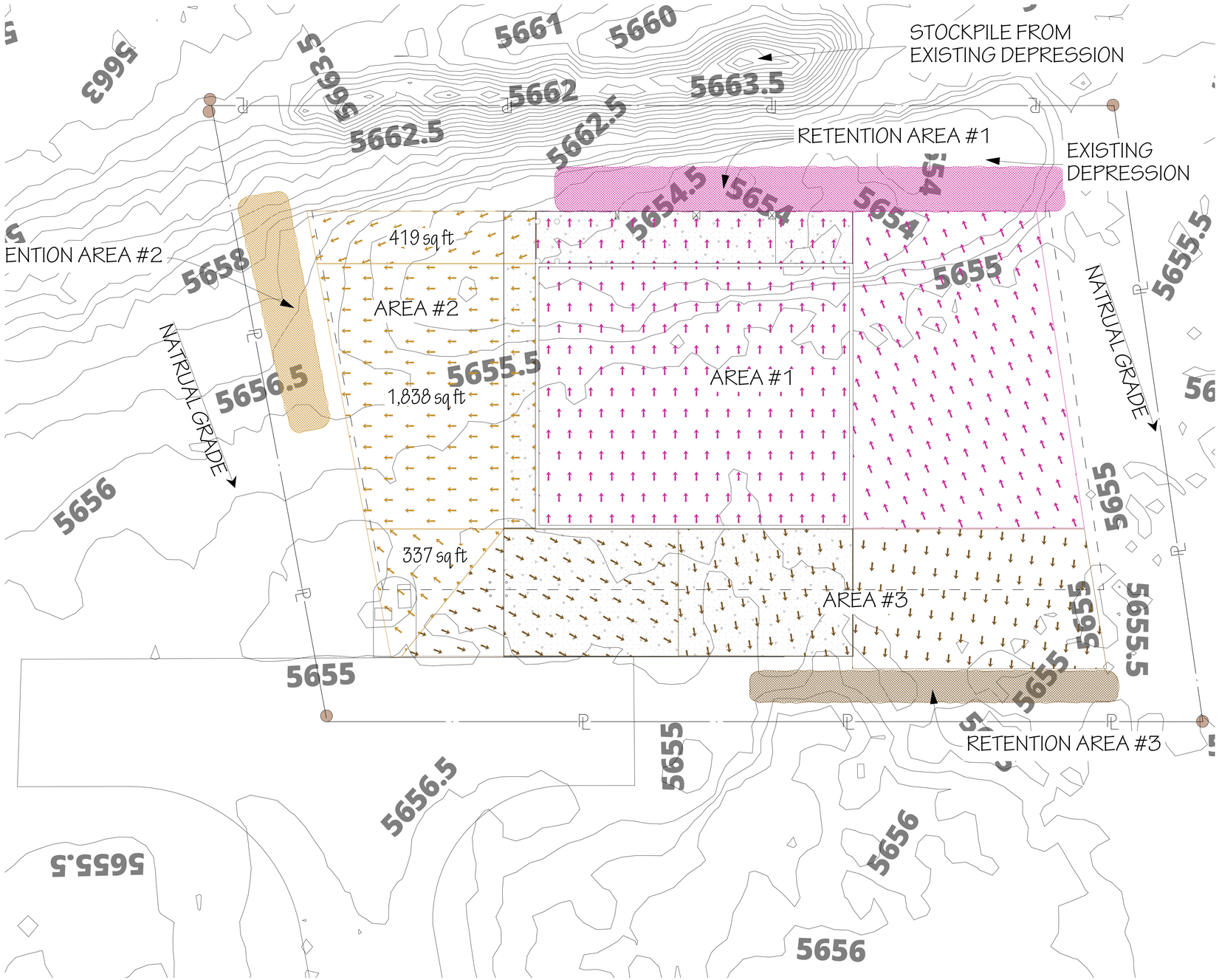
SHEET TITLE: RECORDED SURVEY
REVISION DATE | DESCRIPTION

C-102

PLN# 25-01-009



PLN# 25-01-009	C-103	SHEET TITLE: SITE CONTOURS REVISION DATE / DESCRIPTION	SOUTH FORK DESIGN	South Fork Design Group, LLC 127 E. Main St. Suite 111 Rexburg, ID 83440 www.southforkdesign.com 208-852-6236	AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED PARCEL NO: 37182030004500 ELK MEADOWS ADDITION LOT: 3	ENGINEER: RICHARD D SEAMONS EIT: #### DRAWN BY: BW CHK'D BY: #### PLOT DATE: 5/16/2025



4 SITE WATER RETENTION
SCALE: 1" = 10'

STORMWATER NARRATIVE:

THIS PLAN IS TO FULFILL THE REQUIREMENTS OF THE TETON COUNTY LAND AND DEVELOPMENT CODE, 2022 SECTION5-2-3. A DRAINAGE PLAN IS NEEDED DUE TO REQUIREMENTS LISTED IN THE TETON COUNTY LDC, 2022 5-2-3 B.

THIS PLAN IS DESIGNED TO MANAGE ONE HUNDRED PERCENT (100%) OF THE 95TH PERCENTILE RAINFALL EVENT ON SITE AND SHALL NOT BE ALLOWED TO DISCHARGE OFFSITE TO SURFACE WATERS.

1. THE 95TH PERCENTILE RAINFALL EVENT, ALSO KNOWN AS THE WATER QUALITY CAPTURE VOLUME (WQCV), FOR TETON COUNTY IS 0.65-INCHES FALLING OVER A 24-HOUR PERIOD BASED ON THE PERIOD OF RECORD FROM 1927 TO 1982 FOR THE DRIGGS RAIN GAUGE (USC00102676). THUS, 95% OR DAILY STORM EVENTS ARE ESTIMATED TO HAVE A DEPTH OF 0.65-INCHES OR LESS.
2. TOTAL RUNOFF VOLUME FROM A SITE SHOULD BE DETERMINED USING THE DIRECT DETERMINATION METHOD, WHICH TAKES INTO ACCOUNT RAINFALL, DEPRESSION STORAGE, AND INFILTRATION. THE HYDROLOGIC SOIL GROUP FROM THE SITE SHOULD BE USED TO DETERMINE ESTIMATED INFILTRATION ON THE SITE.
3. EXAMPLES OF STORMWATER FACILITIES THAT CAN BE USED TO MANAGE AND INFILTRATE THE WQCV INCLUDE BUT ARE NOT LIMITED TO, BIO-RETENTION AREAS, STORMWATER PLANTER BOXES, VEGETATED SWALES, INFILTRATION TRENCHES, INFILTRATION WELLS, PERMEABLE PAVEMENTS, CISTERNS ADN RAINWATER HARVESTING SYSTEMS, AND GREEN ROOFS.

NOTE:
THE RUNOFF FLOW RATE, VELOCITY, AND VOLUME POST-DEVELOPMENT SHALL BE EQUAL TO OR LESS THAN THE PRE-DEVELOPMENT RUNOFF FLOW RATE AND VOLUME FOR THE 10-YEAR AND 100-YEAR EVENT. IF THIS CONDITION CANNOT BE MET SPECIAL APPROVAL MUST BE OBTAINED BY THE COUNTY PUBLIC WORKS DIRECTOR, ADN THE APPLICATION MUST SHOW THAT ALL DOWNSTREAM FACILITIES ARE ADEQUATE TO CONVEY THE POST-DEVELOPMENT FLOWS.

RETENTION AREA FOR STORMWATER COLLECTION			
RETENTION AREA	AREA (FT^2)	DEPTH (IN)	VOLUME(FT^3)
AREA #1	806	5"	335.75
AREA #2	397	4"	132.33
AREA #3	415	5"	172.81

$$(collection\ area(ft^2) \times 0.65_{in}) \times \left(\frac{1_{ft}}{12_{in}}\right) = collected\ water\ volume(ft^3)$$

STORMWATER RUNOFF AREA	
RUNOFF AREA	SQ FT
AREA #1	5,972
AREA #2	2,594
AREA #3	3,036

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

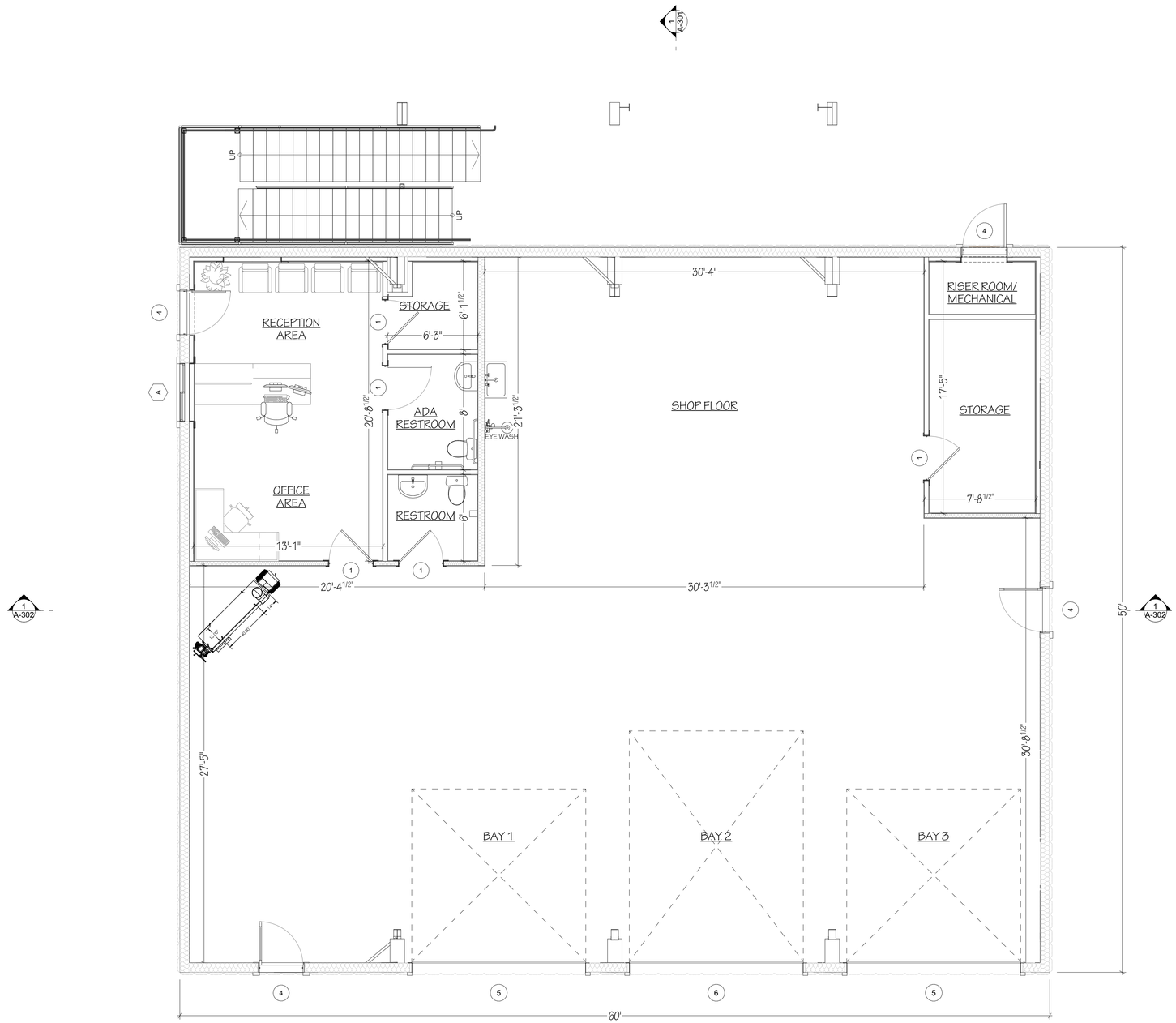
South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

SHEET TITLE: SITE STORMWATER
REVISION DATE | DESCRIPTION

C-104

PLN# 25-01-009



MAIN LEVEL PLAN

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

WINDOW SCHEDULE							
ID	TYPE	QTY	SIZE		HEAD HEIGHT	TEMPERED	NOTES
			W	HT			
A	TBD	1	4'	3'	6'-8"	---	
B	TBD	2	2'	2'	28'-10 1/2"	---	
C	TBD	9	4'	4'	28'-10 1/2"	---	

DOOR SCHEDULE						
ID	QTY	LOCATION	FIRE RATING	DOOR		NOTES
				W	HT	
1	18	Interior	---	3'	6'-8"	
2	4	Interior	---	4'	6'-8"	
3	1	Interior	---	6'	6'-8"	
4	7	Exterior	---	3'	6'-8"	
5	2	Exterior	---	12'	12'	
6	1	Exterior	---	12'	16'	

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED

PARCEL NO: 3718203000450 0
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer RICHARD D. SEAMONS 13708 Date CONSTRUCTION WYOMING

NOT FOR CONSTRUCTION

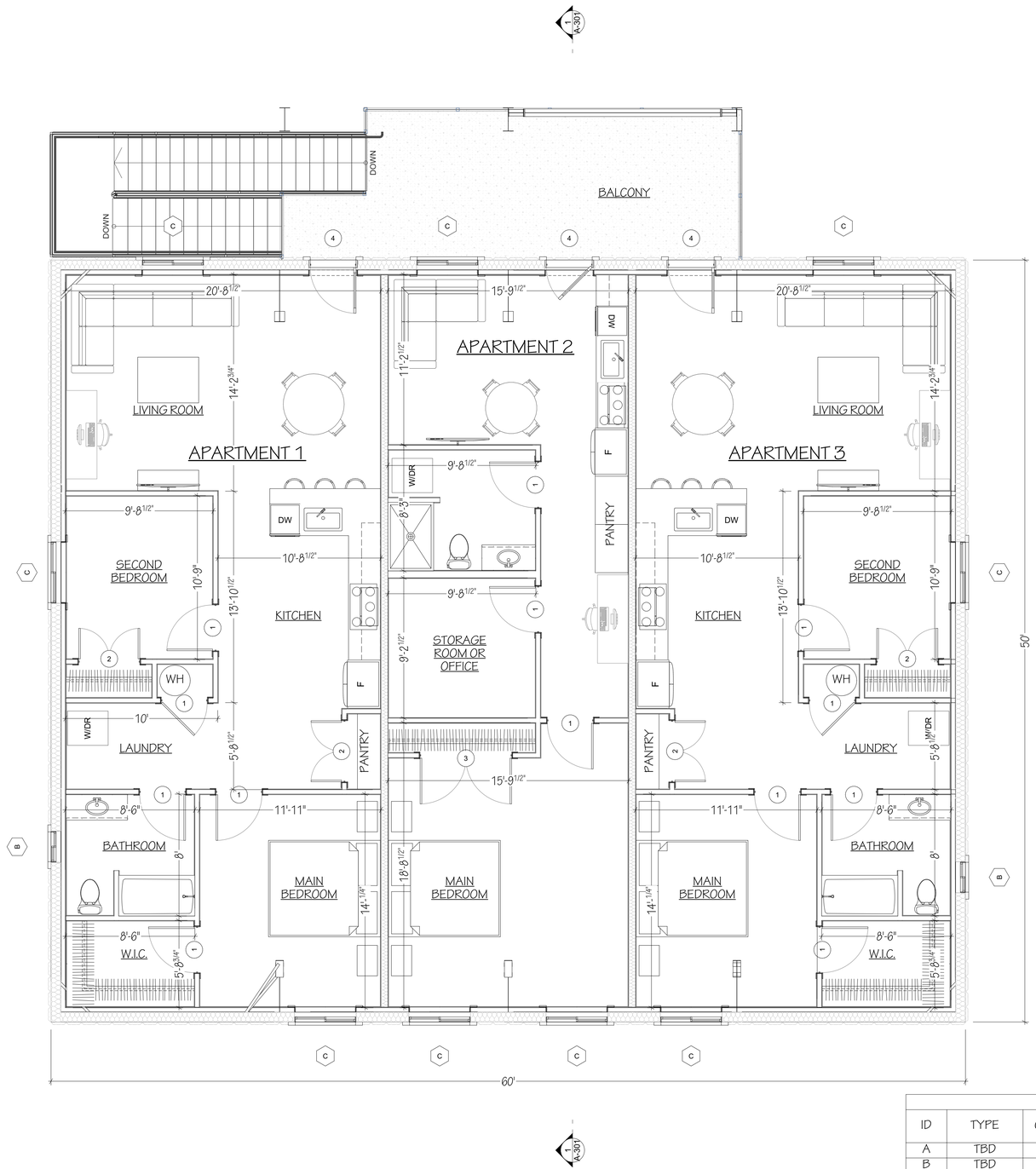
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

MAIN LEVEL

REVISION DATE	DESCRIPTION

A-101

PLN# 25-01-009



SECOND LEVEL PLAN

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

WINDOW SCHEDULE							
ID	TYPE	QTY	SIZE		HEAD HEIGHT	TEMPERED	NOTES
			W	HT			
A	TBD	1	4'	3'	6'-8"	---	
B	TBD	2	2'	2'	28'-10 1/2"	---	
C	TBD	9	4'	4'	28'-10 1/2"	---	

DOOR SCHEDULE						
ID	QTY	LOCATION	FIRE RATING	DOOR		NOTES
				W	HT	
1	18	Interior	---	3'	6'-8"	
2	4	Interior	---	4'	6'-8"	
3	1	Interior	---	6'	6'-8"	
4	7	Exterior	---	3'	6'-8"	
5	2	Exterior	---	12'	12'	
6	1	Exterior	---	12'	16'	

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CONSTRUCTION

THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED

SECOND LEVEL

REVISION DATE	DESCRIPTION

A-102

PLN# 25-01-009

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

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

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CIVIL STRUCTURAL MECHANICAL

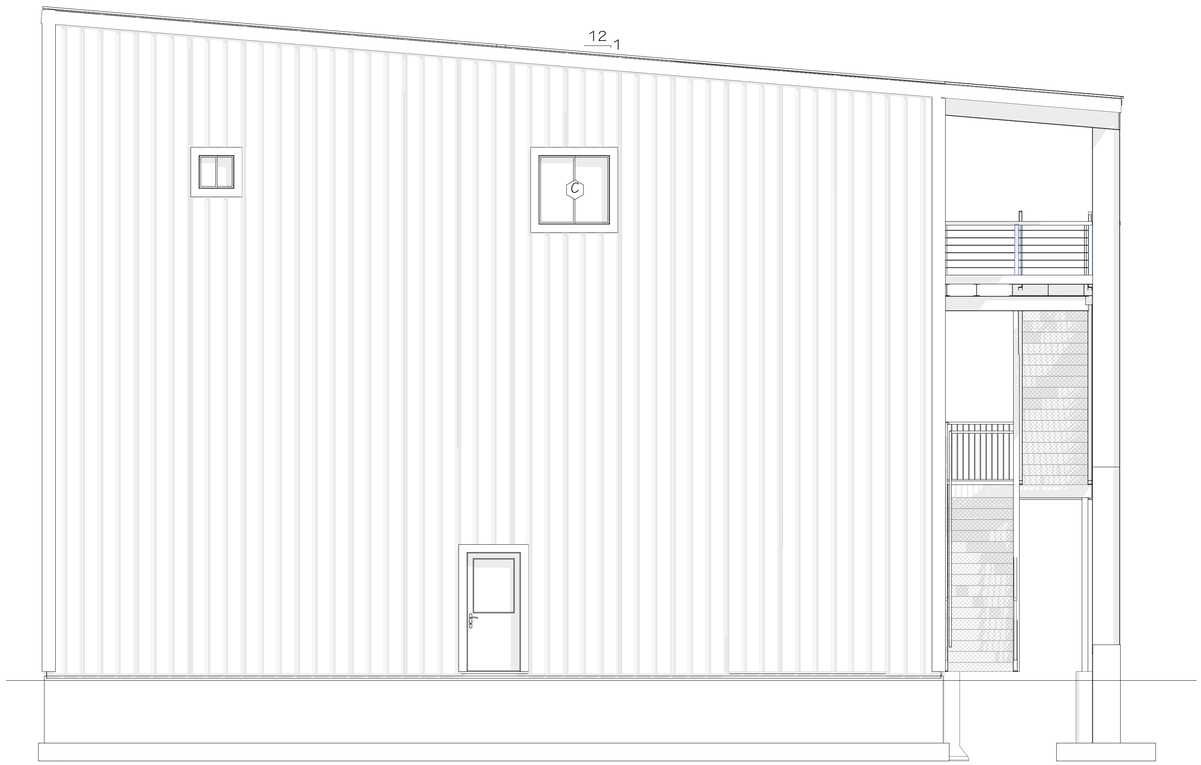
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES RE-ENGINEERING IS REQUIRED.

ELEVATIONS

REVISION DATE	DESCRIPTION

A-201

PLN# 25-01-009



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

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

ENGINEER:	RICHARD D SEAMONS
EIT:	####
DRAWN BY:	BW
CHK'D BY:	####
PLOT DATE:	5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED

PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CONSTRUCTION

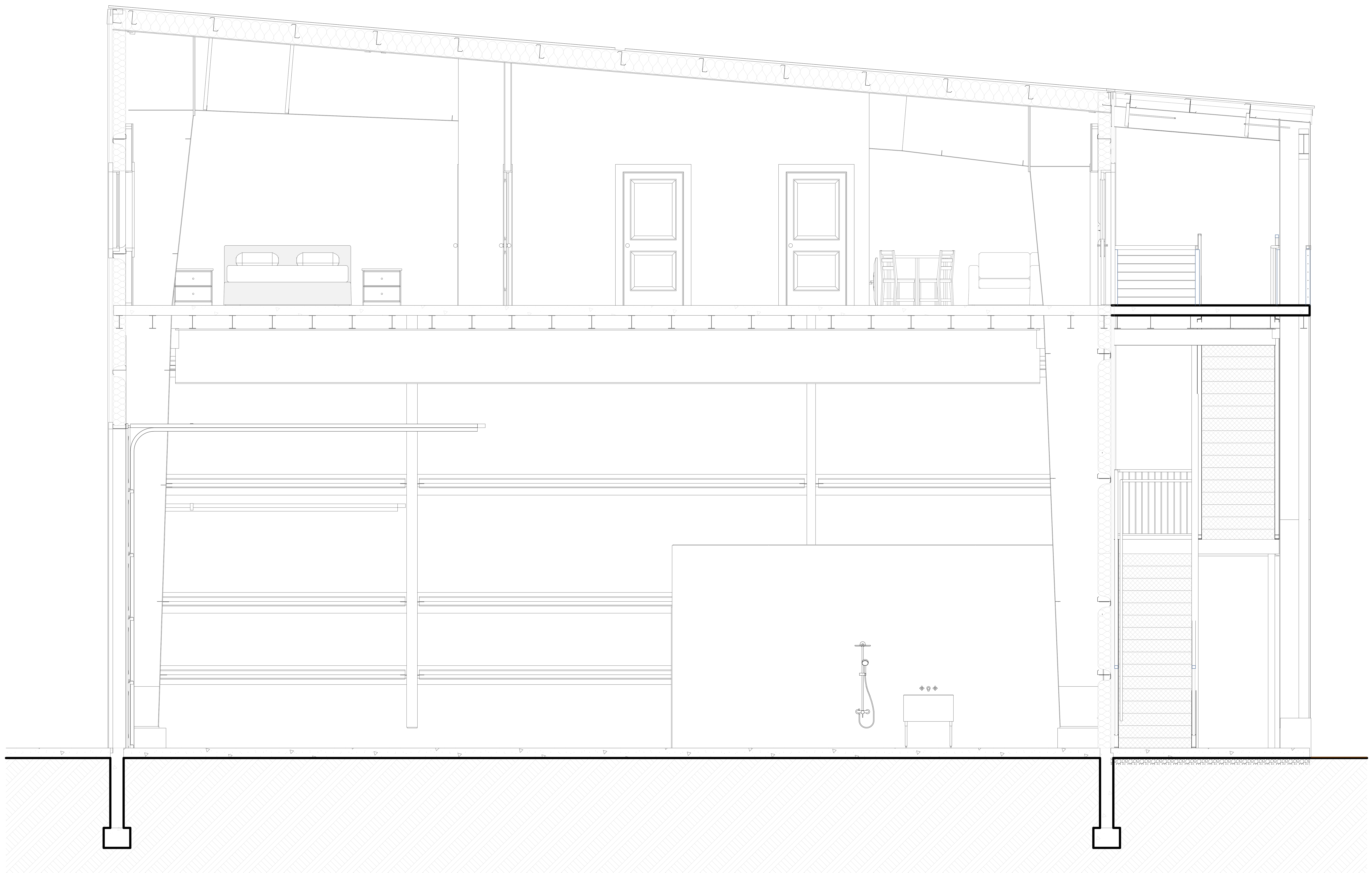
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES RE-ENGINEERING IS REQUIRED.

ELEVATIONS

REVISION DATE	DESCRIPTION

A-202

PLN# 25-01-009



SECTION A

SCALE: 3/8" = 1'-0"

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED

PARCEL NO: 37182030004500
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer RICHARD D. SEAMONS 13706 WYOMING

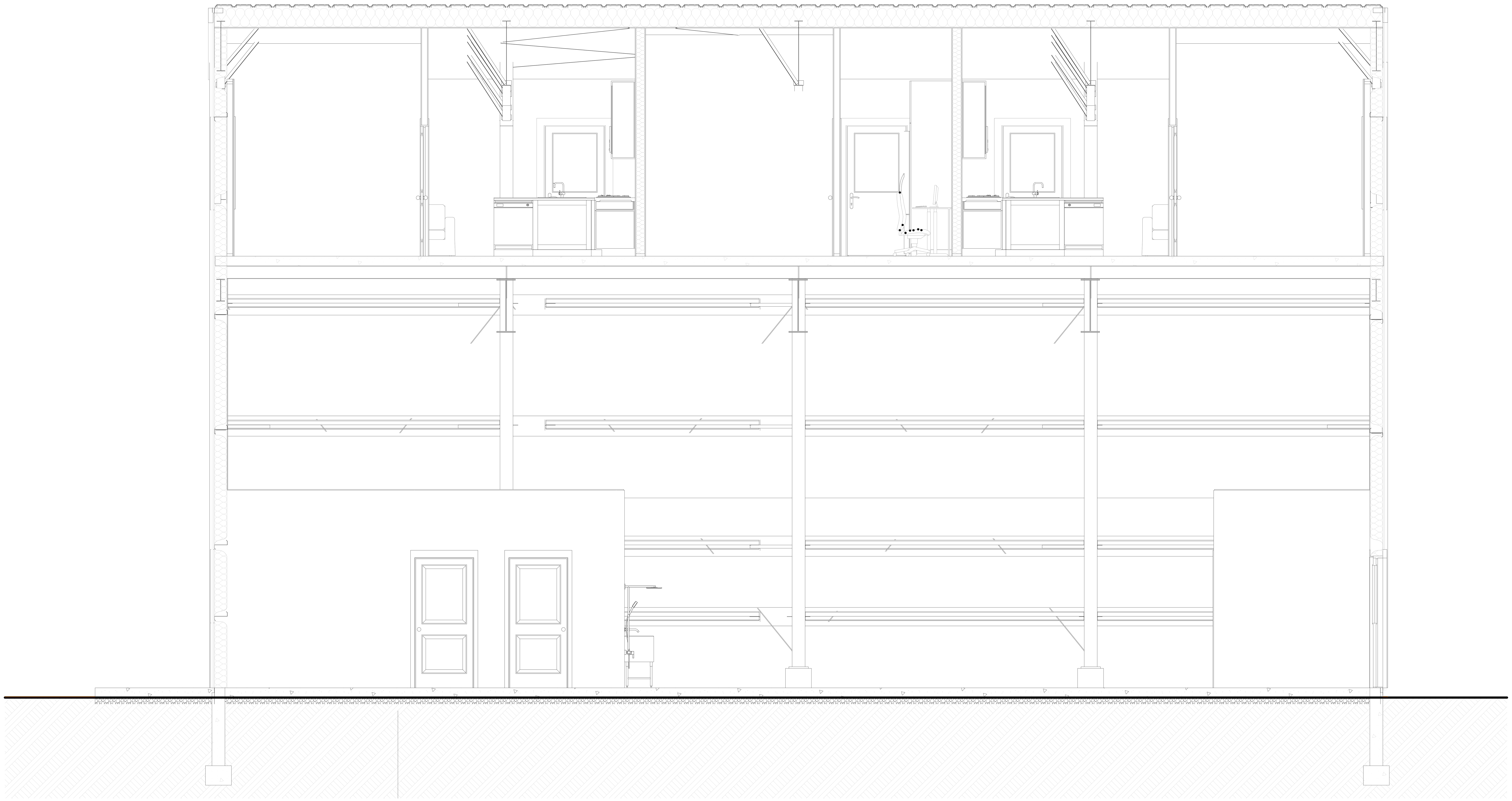
THESE PLANS ARE STAMPED/ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

SECTIONS

REVISION DATE	DESCRIPTION

A-301

PLN# 25-01-009



SECTION B
SCALE: 3/8" = 1'-0"

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED
PARCEL NO: 37182030004500
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer RICHARD D. SEAMONS 13700 WYOMING

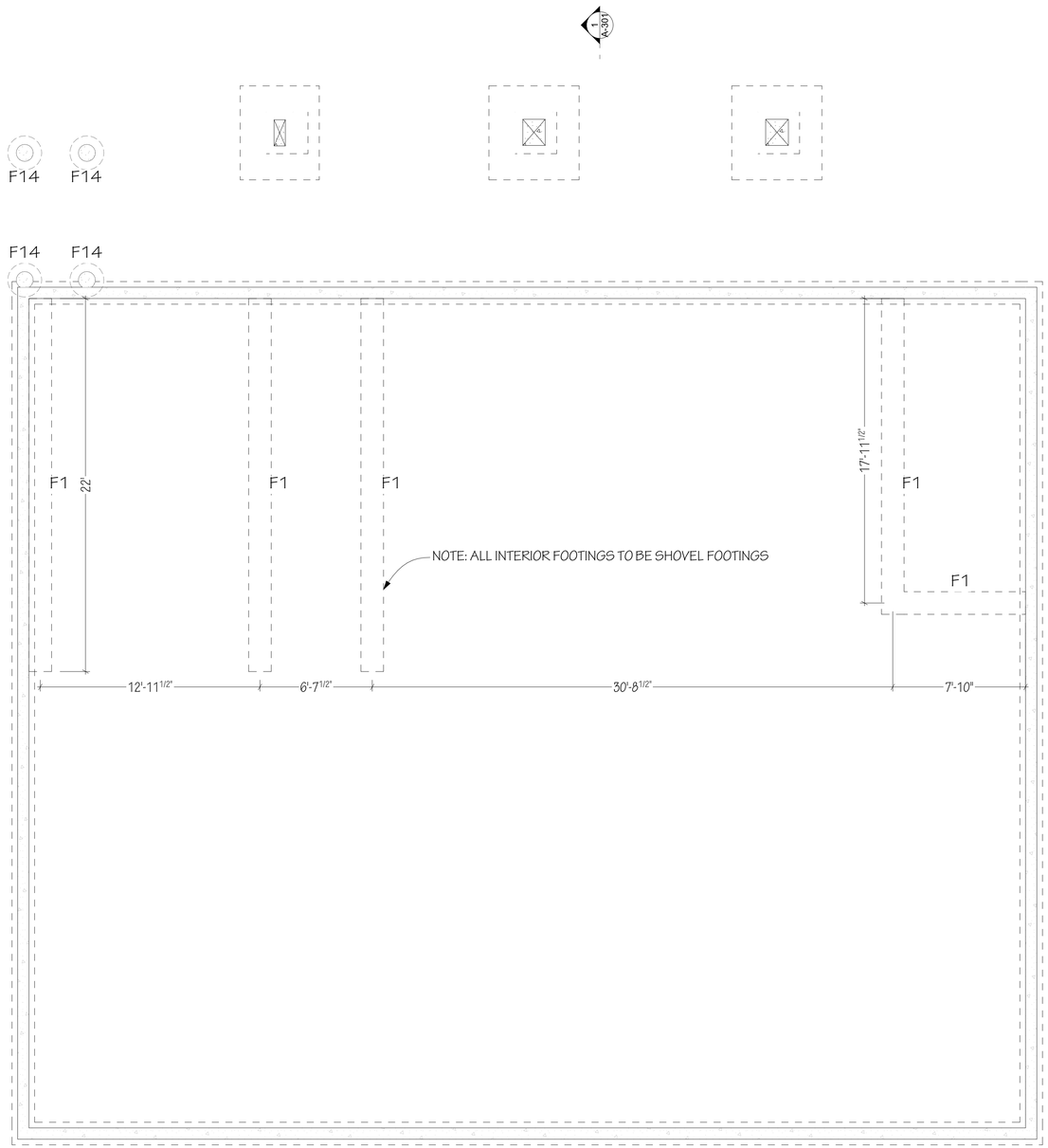
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

SECTIONS

REVISION DATE	DESCRIPTION

A-302

PLN# 25-01-009



FOOTING SCHEDULE					
ID	WIDTH	DEPTH	FOOTING TYPE	FOOTING REBAR	PIER (IF REQUIRED)
F1	16"	8"	CONTINUOUS FOOTING	(2) #4 BAR CONT.	---
F14	---	---	BIGFOOT 24	SEE PIER REBAR FOR SIZING	12" SONOTUBE (4) #4 BAR #3 TIES 8" O.C. W/ #3 TIES @ 3" O.C. IN TOP 12".

A-301

5 FOUNDATION PLAN

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

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED

PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
Date
WYOMING
CERTIFICATION

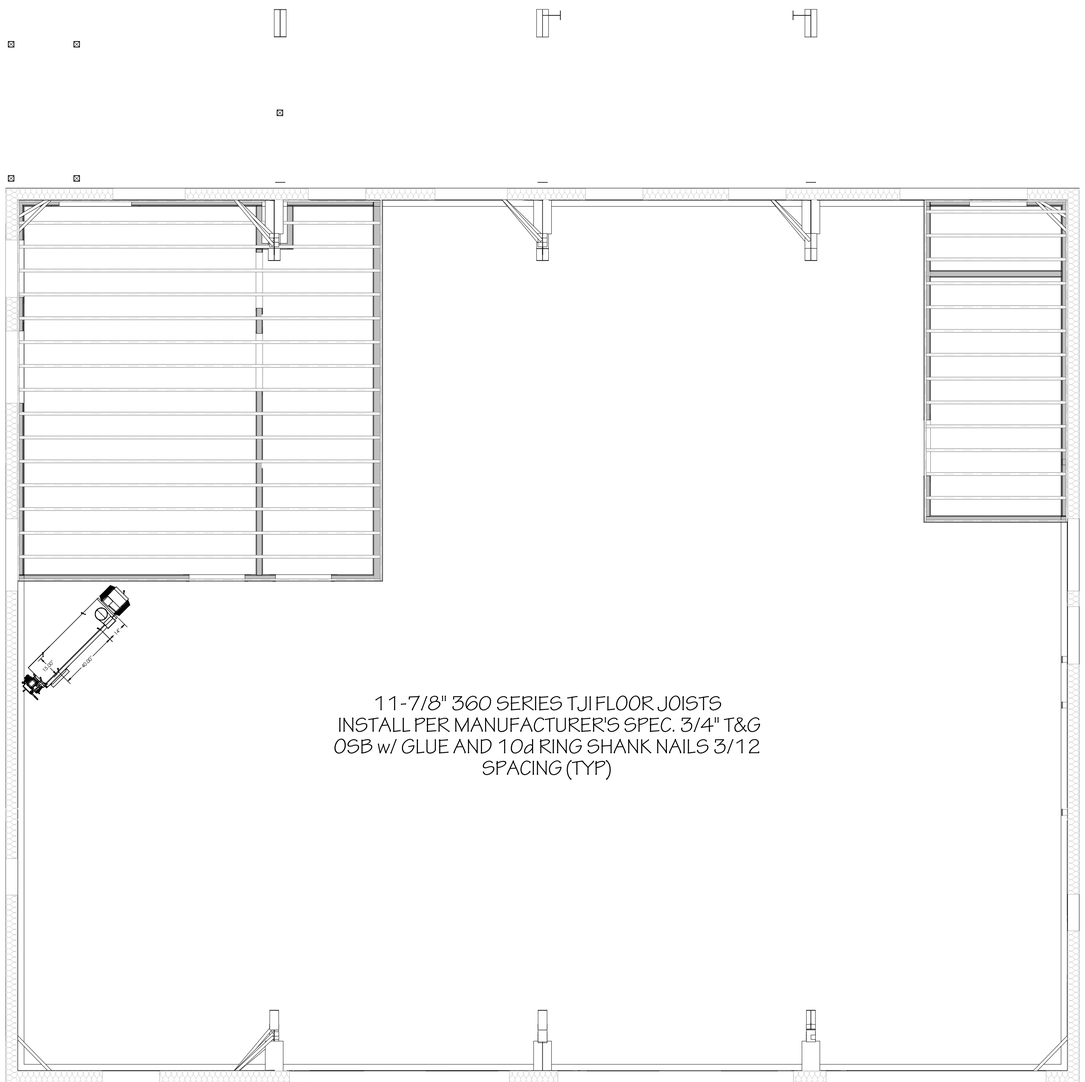
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES RE-ENGINEERING IS REQUIRED.

FOUNDATION

DESCRIPTION	REVISION DATE

S-101

PLN# 25-01-009



SECOND LEVEL STORAGE LOFT FRAMING

(2) SCALE: 1/4" = 1'-0"

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE KRESAN - AUTO SERVICE ELEVATED

PARCEL NO: 3718203000450 0
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

SOUTH FORK DESIGN

Professional Engineer
RICHARD D. SEAMONS
13708
State of WYOMING

NOT FOR CONSTRUCTION

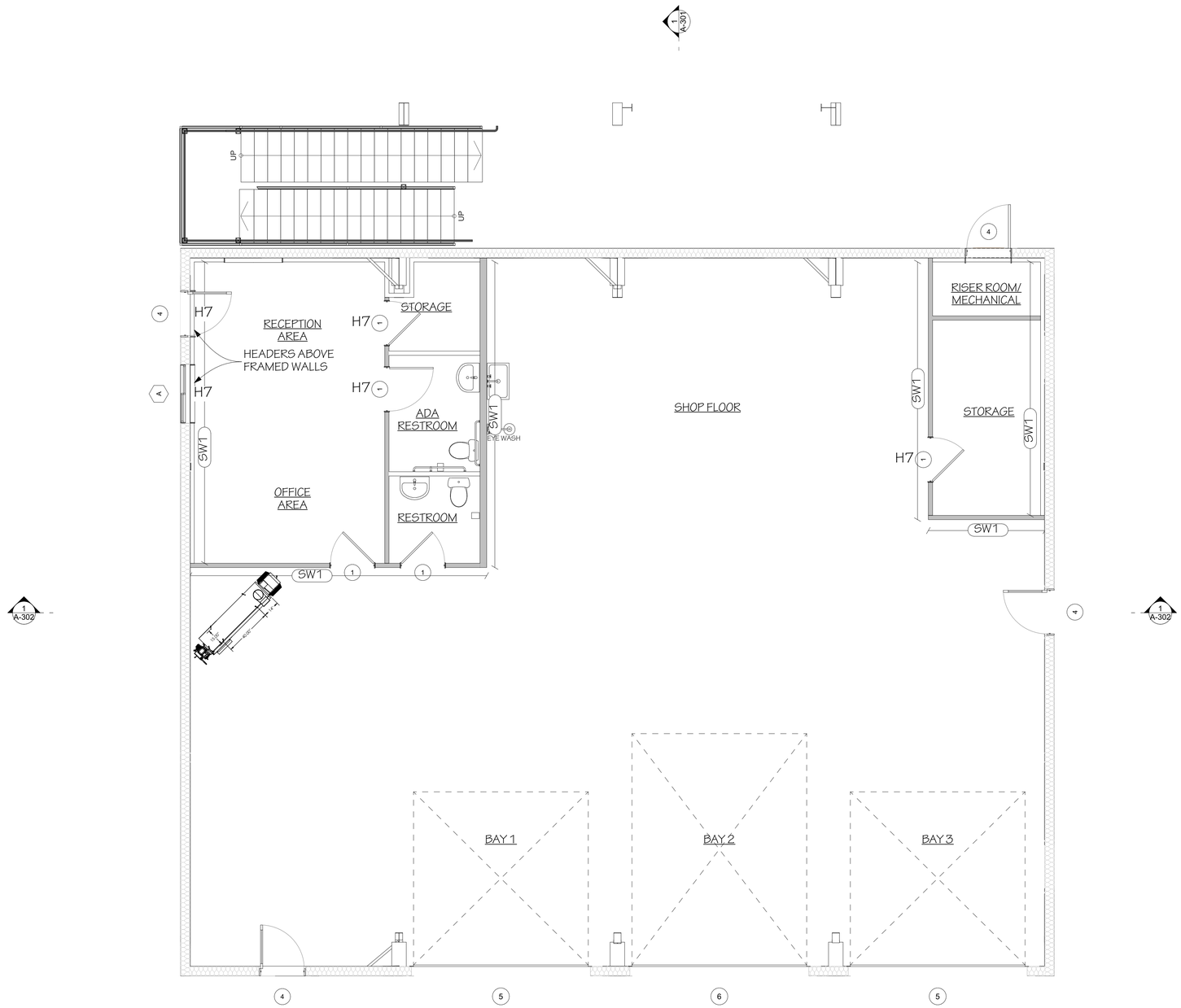
THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

STORAGE LOFT FRAMING

REVISION DATE	DESCRIPTION

S-201

PLN# 25-01-009



A-301

HEADERS			
ID	PLY	SIZE	NOTE
H7	2	2X8 SPF	

SHEAR WALL SCHEDULE		
ID	LOCATION	TYPE
SW1	INTERIOR	7/16" OSB W/ 8d @ 6" O.C. ALL PANEL EDGES & 12" O.C. FIELD (NO STAPLE OPTION)

4 MAIN LEVEL WALL FRAMING

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

ENGINEER: RICHARD D SEAMONS
EIT: ####
DRAWN BY: BW
CHK'D BY: ####
PLOT DATE: 5/16/2025

AFFITTAMI LLC - KATHERINE
KRESAN - AUTO SERVICE
ELEVATED
PARCEL NO: 3718203000450
ELK MEADOWS ADDITION LOT: 3

South Fork Design Group, LLC
127 E. Main St. Suite 111
Rexburg, ID 83440
www.southforkdesign.com
208-852-6236

Professional Engineer RICHARD D. SEAMONS 13708 Date WYOMING CONSTRUCTION

THESE PLANS ARE STAMPED/ ENGINEERED FOR THE LOCATION SPECIFIED. IF LOCATION CHANGES REENGINEERING IS REQUIRED.

WALL FRAMING

REVISION DATE	DESCRIPTION

S-301

PLN# 25-01-009

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	Auto Service Elevated
Location:	Alpine, Wyoming
Climate Zone:	7
Project Type:	New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Mechanical Systems List

Quantity System Type & Description

3 HEAT PUMPS (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 24 kBtu/h,
Proposed Efficiency = 12.50 HSPF2, Required Efficiency = 7.50 HSPF2
Cooling Mode: Capacity = 24 kBtu/h,
Proposed Efficiency = 17.90 SEER2, Required Efficiency = 14.30 SEER2
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 1 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 3 Supply, Constant Volume, 435 CFM, 0.1 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW
FAN 2 Supply, Constant Volume, 350 CFM, 0.1 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW
FAN 1 Supply, Constant Volume, 350 CFM, 0.1 motor nameplate hp, 0.00 fan energy index , fan exception: Fan array <= 5 total HP or <= 4.1 kW

1 UH-1 (Unknown w/ PerimeterSystem):
Heating: 1 each - Unit Heater, Oil, Capacity = 140 kBtu/h
Proposed Efficiency = 80.00% Ec, Required Efficiency: 80.00 % Ec
Fan System: FAN SYSTEM 2 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 4 Supply, Constant Volume, 1000 CFM, 1.0 motor nameplate hp, 0.00 fan energy index , fan exception: Single fan < 1 HP or < 0.89 kW

4 WALL HEATERS (Single Zone):
Heating: 1 each - Other, Electric, Capacity = 3 kBtu/h
No minimum efficiency requirement applies
Fan System: FAN SYSTEM 3 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 5 Supply, Constant Volume, 100 CFM, 0.1 motor nameplate hp, 0.00 fan energy index , fan exception: Single fan < 1 HP or < 0.89 kW

1 CEILING HEATER (Single Zone):
Heating: 1 each - Other, Electric, Capacity = 13 kBtu/h
No minimum efficiency requirement applies
Fan System: FAN SYSTEM 4 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 6 Supply, Constant Volume, 150 CFM, 0.1 motor nameplate hp, 0.00 fan energy index , fan exception: Single fan < 1 HP or < 0.89 kW

Quantity System Type & Description

3 Apartment Water Heaters:
Electric Storage Water Heater, Capacity: 30 gallons
No minimum efficiency requirement applies

1 Water Heater 1:
Electric Storage Water Heater, Capacity: 10 gallons
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Cailin Farris, P.E. — Name - Title
Cailin Farris — Signature
05/03/2025 — Date

HVAC SYMBOLS & ABBREVIATIONS

(NOT ALL SYMBOLS MAY BE USED)

- SUPPLY DIFFUSER (4-WAY U.N.O.)
- 2-WAY SUPPLY DIFFUSER
- RETURN GRILLES
- EXHAUST GRILLE
- SUPPLY AIR RISER
- RETURN AIR RISER
- EXHAUST AIR RISER
- FLEXIBLE DUCT (6'-0" MAX)
- 90° MITERED CORNER W/ TURNING VANES
- 45° BOOT FITTING W/ MANUAL VOLUME DAMPER
- MANUAL VOLUME DAMPER
- SQUARE-TO-ROUND TRANSTION

AFF	ABOVE FINISHED FLOOR
BDD	BACKDRAFT DAMPER
C.O.D.	CENTER OF DUCT
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
FD	FIRE DAMPER
LAT	LEAVING AIR TEMPERATURE
MD	MANUAL (VOLUME) DAMPER
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OA	OUTSIDE (VENTILATION) AIR
RA	RETURN AIR
S.S.	STAINLESS STEEL
SA	SUPPLY AIR
TA	TRANSFER AIR
U.N.O.	UNLESS NOTED OTHERWISE

- (T) THERMOSTAT
- (S) SWITCH
- FD — FIRE DAMPER
- FS — COMBINATION FIRE/SMOKE DAMPER (A)
- FSD — COMBINATION FIRE/SMOKE DAMPER WITH IN-DUCT SMOKE DETECTOR WITHIN 5'-0" OF DAMPER.
- M — MOTORIZED DAMPER
- C/N — CO/NO2 SENSOR

EQUIPMENT TAG

AHU 1 100
- AHU — EQUIPMENT TYPE
- 1 — EQUIPMENT TAG NUMBER
- 100 — ROOM NUMBER (IF APPLICABLE)

(A) THE SYSTEM SERVED BY THIS FIRE/SMOKE DAMPER INCLUDES A FULL COVERAGE SMOKE DETECTION SYSTEM WHICH WILL ACTIVATE THIS DAMPER TO CLOSE UPON THE PRESENCE OF SMOKE IN THE AREA SERVED BY THIS DUCT. PROVIDE IN-DUCT SMOKE DETECTOR WITHIN 5'-0" OF SMOKE DAMPER IF FULL COVERAGE SMOKE DETECTION SYSTEM IS NOT IN PLACE TO ACTIVATE DAMPER.

MECHANICAL GENERAL NOTES

A. ALL ROOF PENETRATIONS SHALL BE COMPLETED IN ACCORDANCE WITH ROOFING SYSTEM REQUIREMENTS AND ROOF MANUFACTURER'S INSTRUCTIONS. COORDINATE ALL WORK WITH ROOFING CONTRACTOR.

B. CONTRACTOR SHALL VERIFY EXACT HEIGHTS OF ALL CEILINGS PRIOR TO START OF WORK. SEE ARCHITECTURAL SHEETS FOR CEILING DETAILS AND CONSTRUCTION. COORDINATE EXACT DUCTWORK INSTALLATION WITH CEILING HEIGHTS AND STRUCTURE, AS REQUIRED.

C. SEE ELECTRICAL LIGHTING SHEETS FOR EXACT LOCATION OF ALL LIGHT FIXTURES. COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS WITH LIGHTING FIXTURES, AS REQUIRED.

D. INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE WHILE COORDINATING WITH ALL OTHER TRADES. OFFSET AND TRANSITION DUCTWORK BETWEEN AND BENEATH STRUCTURAL MEMBERS, WHERE REQUIRED. DROP BRANCH DUCTS DOWN TO DIFFUSERS AND GRILLES.

E. ALL DUCTWORK SHALL MEET SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", CURRENT EDITION. DUCT GAUGES, REINFORCEMENTS, METHODS OF CONNECTION, TRANSITIONS AND CONSTRUCTION WILL BE FIELD-VERIFIED, MEASURED AND INSPECTED FOR COMPLIANCE. DUCTWORK NOT MEETING SMACNA'S STANDARDS WILL BE REMOVED AND REPLACED AT CONTRACTOR'S EXPENSE. UNLESS OTHERWISE ADDRESSED IN THE SPECIFICATIONS, THE PRESSURE CLASSIFICATION FOR ALL DUCTWORK SHALL BE 2" WATER GAUGE POSITIVE OR NEGATIVE. CONTRACTOR SHALL VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTALS OR DUCT FABRICATION AND GIVE WRITTEN DOCUMENTATION OF COMPLIANCE IN ORIGINAL PRODUCT SUBMITTALS.

F. ALL EXPOSED DUCTWORK SHALL BE SHEET METAL ONLY. NO FLEX DUCT ALLOWED. FINAL CONNECTIONS TO DIFFUSERS, GRILLES AND REGISTERS SHALL BE SHEET METAL DUCT ONLY. SUPPORT DUCTWORK PER SMACNA AND CODE. FURNISH WITH PAINT-LOC FINISH OR PRIME FOR PAINTING.

G. ALL DIMENSIONS ARE LISTED IN INCHES UNLESS NOTED OTHERWISE. ALL DUCTWORK DIMENSIONS ARE INSIDE CLEAR.

H. HVAC CONTRACTOR SHALL FIELD-COORDINATE ALL CONDITIONS, UNIT LOCATIONS, OBSTRUCTIONS AND DUCTWORK INSTALLATION PRIOR TO DUCT FABRICATION. TRANSITION AND OFFSET DUCTWORK, AS REQUIRED, TO MAKE FIT IN CEILING SPACES AND FIELD CONDITIONS. DUCTWORK FABRICATED BY THE HVAC CONTRACTOR PRIOR TO FIELD COORDINATION AND CONFLICT RESOLUTION SHALL BE AT THE RESPONSIBILITY AND COST OF THE HVAC CONTRACTOR. OWNER SHALL NOT BE RESPONSIBLE FOR SHOP-FABRICATED DUCTWORK SIZED DIRECTLY FROM THE HVAC DRAWINGS.

I. DO NOT CUT, DRILL HOLES OR REMOVE ANY PORTION OF STRUCTURAL MEMBERS, BEAMS OR PURLINS. ROUTE ALL DUCTWORK, PIPING AND CONDUIT AROUND AND THROUGH STRUCTURAL MEMBERS AS REQUIRED. SEE STRUCTURAL DETAILS AND DRAWINGS FOR EXACT METHOD OF ATTACHING HANGERS TO BEAMS AND STRUCTURAL MEMBERS.

J. DO NOT ATTACH SCREWS, NAILS, HANGERS OR FASTENERS OF ANY TYPE TO ROOF DECK. SUPPORT ALL MECHANICAL EQUIPMENT FROM STRUCTURE AND CONTRACTOR-INSTALLED KICKERS ONLY. PROVIDE AND INSTALL INTERMEDIATE KICKERS BETWEEN PURLINS AS REQUIRED TO HANG EQUIPMENT AND SHEET METAL DUCTWORK.

K. ALL PLUMBING VENTS, EXHAUST OUTLETS AND GAS FLUES SHALL BE A MINIMUM OF 10'-0" FROM ANY AIR INTAKE INTO THE BUILDING, PER CODE.

L. ALL EQUIPMENT PLACEMENT SHALL COMPLY WITH THE MECHANICAL CODE LISTED IN THE BASIS OF DESIGN SCHEDULE.

M. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL PERMANENT ENGRAVED PLASTIC-LAMINATE SIGNS WITH MINIMUM 1"-TALL LETTERING AT ALL ROOFTOP UNITS, EXHAUST FANS AND HVAC EQUIPMENT LOCATIONS THROUGHOUT ENTIRE BUILDING AND ROOFTOP. MOUNT PERMANENTLY IN AN APPROPRIATE AND EFFECTIVE LOCATION, WITH UNIT DESIGNATION AND AREA SERVED SHOWN.

N. SUPPLY AND RETURN DUCTWORK FROM ROOFTOP UNITS TO BE INTERNALLY INSULATED A MINIMUM OF TEN FEET FOR SOUND ATTENUATION.

O. ALL BRANCH DUCTS OFF MAIN DUCT TO BE INSTALLED WITH 45° TIME-AND-A-HALF FITTING, RADIUS FITTING, OR SPIN-IN ONLY. NO STRAIGHT TAPS OR AIR SCOOPS ALLOWED, UNLESS NOTED OTHERWISE.

P. FLEXIBLE DUCT RUNS SHALL BE NO LONGER THAN 6'-0".

Q. BRANCH DUCTS TO SUPPLY DIFFUSERS SHALL BE THE SAME SIZE AS DIFFUSER INLET, UNLESS NOTED OTHERWISE.

R. INSTALL THERMOSTATS AT 48" A.F.F.

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
M0.0	MECHANICAL COVER SHEET
M0.1	MECHANICAL SCHEDULES
M0.2	MECHANICAL SPECIFICATIONS
M1.1	MECHANICAL PLAN - LEVEL 1
M1.2	MECHANICAL PLAN - LEVEL 2
M5.0	MECHANICAL DETAILS

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REV	DATE	DESCRIPTION

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Professional Engineer
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20093
Date 05/03/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

DESIGN: CWF	DATE: 5/5/25
APPROVED: CWF	5/5/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
MECHANICAL COVER SHEET

PROJECT NUMBER: 240139

DWG- M0.0

GAS-FIRED UNIT HEATER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	TYPE	SUPPLY FAN	HEATING		ELECTRICAL	REMARKS
					CFM	INPUT (MBH)	TEMP RISE (°F)	V/PH	
UH-1	ENERGY LOGIC	EL-140H	SHOP	WASTE OIL	1,000	140	100-120		

FAN SCHEDULE

SYMBOL	MANUFACTURER	MODEL	SERVES	TYPE	CFM	ESP (IN. W.C.)	ELECTRICAL			RPM	SONES	CONTROL	WEIGHT	REMARKS
							V/HZ.PH	HP (W)	FLA					
EF-1	GREENHECK	SP-A90	RESTROOM	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	LIGHTS	12	1-2
EF-2	GREENHECK	SP-A90	ADA RESTROOM	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	LIGHTS	12	1-2
EF-3	GREENHECK	SP-A90	STORAGE	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	CONTINUOUS	12	1-2
EF-4	GREENHECK	SE1-16-426	SHOP	DIRECT DRIVE SIDEWALL	1,700	0.1	208/1	1/2	4	1,061	5.6	CARBON MONOXIDE SENSOR	34	1
EF-1-1	GREENHECK	SP-A90	RESTROOM	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	LIGHTS	12	1-2
EF-2-1	GREENHECK	SP-A90	RESTROOM	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	LIGHTS	12	1-2
EF-3-1	GREENHECK	SP-A90	RESTROOM	DIRECT DRIVE CEILING	70	0.2	120/1	(11)	0.17	832	0.3	LIGHTS	12	1-2

1. PROVIDE WITH SOLID STATE SPEED CONTROLLER MOUNTED ON FAN HOUSING AND FACTORY BACKDRAFT DAMPER. BACKDRAFT DAMPER NOT REQUIRED FOR FANS THAT OPERATE CONTINUOUSLY.
2. PROVIDE WITH WALL EXHAUST CAP.

ENERGY RECOVERY VENTILATOR SCHEDULE

SYMBOL	MANUFACTURER	MODEL	FAN		EFFECTIVENESS			ELECTRICAL		
			CFM	ESP (IN. W.C.)	TOTAL (SUMMER)	TOTAL (WINTER)	SENSIBLE	FAN WATTS	MOCP	V/PH
ERV-1	PANASONIC	FV-06VE1	30	0.25	60%	70%	70%	39	15	120/1
ERV-1-1	PANASONIC	FV-06VE1	30	0.25	60%	70%	70%	39	15	120/1
ERV-2-1	PANASONIC	FV-06VE1	30	0.25	60%	70%	70%	39	15	120/1
ERV-3-1	PANASONIC	FV-06VE1	30	0.25	60%	70%	70%	39	15	120/1

ELECTRIC HEATER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	TYPE	CFM	ELECTRICAL		REMARKS
						V/PH	WATTS	
EH-1	QMARK	EFF	OFFICE	CEILING MOUNTED FAN-FORCED HEATER	150	208/1	4,000	2
EH-2	BERKO	GFR1000F	ADA RESTROOM	WALL HEATER	100	120/1	1,000	1
EH-3	BERKO	GFR1000F	FIRE RISER	WALL HEATER	100	120/1	1,000	1
EH-1-1	BERKO	GFR1000F	APARTMENT 1	WALL HEATER	100	120/1	1,000	2
EH-3-1	BERKO	GFR1000F	APARTMENT 3	WALL HEATER	100	120/1	1,000	2

1. PROVIDE WITH SURFACE-MOUNTING FRAME AND INTEGRAL SINGLE-POLE THERMOSTAT
2. PROVIDE WITH MOUNTING HARDWARE AND REMOTE THERMOSTAT.

FAN COIL SCHEDULE

SYMBOL	MANUFACTURER	MODEL	OUTDOOR UNIT TAG	SERVES	TYPE	NOMINAL TONS	MAX CFM	TOTAL COOLING CAPACITY	SENSIBLE COOLING CAPCITY	HEATING CAPACITY	CONDENSATE CONNECTION SIZE (IN)	WEIGHT (LBS)	REMARKS
FC-1-1	DAIKIN	CTXS07LVJU	HP-1	APARTMENT 1	WALL MOUNTED	0.5	350	28.8	18.0	13.0	5/8	20	1-5
FC-1-2	DAIKIN	CTXS07LVJU			WALL MOUNTED	0.5	350				5/8	20	1-5
FC-1-3	DAIKIN	FTXS12LVJU			WALL MOUNTED	1	435				5/8	22	1-5
FC-2-1	DAIKIN	CTXS07LVJU	HP-2	APARTMENT 2	WALL MOUNTED	0.5	350	28.8	18.0	13.0	5/8	20	1-5
FC-2-2	DAIKIN	CTXS07LVJU			WALL MOUNTED	0.5	350				5/8	20	1-5
FC-2-3	DAIKIN	FTXS12LVJU			WALL MOUNTED	1	435				5/8	22	1-5
FC-3-1	DAIKIN	CTXS07LVJU	HP-3	APARTMENT 3	WALL MOUNTED	0.5	350	28.8	18.0	13.0	5/8	20	1-5
FC-3-2	DAIKIN	CTXS07LVJU			WALL MOUNTED	0.5	350				5/8	20	1-5
FC-3-3	DAIKIN	FTXS12LVJU			WALL MOUNTED	1	435				5/8	22	1-5

1. RATED COOLING CAPACITY, IN MBH, BASED ON 80°F DB/67°F WB INDOOR CONDITIONAS AND 95°F AMBIENT. COOLING CAPACITY IS SHOWN AS A COMBINED TOTAL FOR THE ASSOCIATED HEAT PUMP.
2. RATED HEATING CAPACITY, IN MBH, BASED ON 70°F DB/60°F WB INDOOR CONDITIONS AND -13°F AMBIENT. HEATING CAPACITY IS SHOWN AS A COMBINED TOTAL FOR THE ASSOCIATED HEAT PUMP.
3. PROVIDE UNIT WITH REFRIGERANT. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT LINE SETS, SIZED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. PROVIDE WITH FACTORY WIRED THERMOSTAT.
5. PROVIDE WITH ASPEN PUMPS MINI BLANC CONDENSATE PUMP.

HEAT PUMP SCHEDULE

SYMBOL	MANUFACTURER	MODEL	SERVES	TYPE	NOMINAL TONS	ELECTRICAL		EFFICIENCY (1)		REMARKS
						V/HZ/PH	RLA	SEER (SEER 2)	HSPF	
HP-1-1	DAIKIN	3MXL24	APARTMENT 1	HEAT PUMP, AIR-COOLED	2	208/60/1	9.3	17.9	12.5	1-4
HP-2-1	DAIKIN	3MXL24	APARTMENT 2	HEAT PUMP, AIR-COOLED	2	208/60/1	9.3	17.9	12.5	1-4
HP-3-1	DAIKIN	3MXL24	APARTMENT 3	HEAT PUMP, AIR-COOLED	2	208/60/1	9.3	17.9	12.5	1-4

1. EFFICIENCY VALUES LISTED ARE BASED ON ARI CONDITIONS.
2. PIPING SIZED & INSTALLED PER MANUFACTURER'S REQUIREMENTS.
3. PROVIDE UNIT WITH HIGH PRESSURE SWITCH, LOW PRESSURE SWITCH, CRANKCASE HEATER, TIME-DELAY RELAY, AND CYCLE PROTECTOR.
4. CONDENSING UNIT TO SERVE MULTIPLE INDOOR UNITS. SEE FAN COIL SCHEDULE FOR MORE INFORMATION.

CEILING FAN SCHEDULE

SYMBOL	MANUFACTURER	MODEL	DIAMETER (FT)	TYPE	CLEARANCE (FT)		ELECTRICAL		RPM	CONTROL	WEIGHT	REMARKS
					ABOVE	SIDE	V/HZ.PH	MOCP				
CF-1	BIGASS FANS	POWERFOIL D	8	DIRECT DRIVE CEILING	4	2	208/1	10	200	VFD	212	1

1. PROVIDE WITH LED LIGHT KID MODEL 009769 5000K, WALL MOUNTED LOCKABLE SPEED CONTROLS AND FIRE SUPRESSION PANEL TIE-IN RELAY.

LOUVER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	SYSTEM	TYPE	FLOW (CFM)	SIZE		MIN. FREE AREA (FT2)	VELOCITY (FPM)	MOUNTING ELEVATION (IN) (3)	REMARKS
						WIDTH (IN)	HEIGHT (IN)				
L-1	GREENHECK	ESD-635	INTAKE	DRAINABLE FIXED BLADE	1,700	32	32	3.8	453	6	1,2

1. PROVIDE WITH FLANGED FRAME AND BIRDSCREEN. INSTALLED COMPLETE W/ SILL FLASHINGS TO SUIT WALL CONSTRUCTION. FACTORY PRIME COAT FINISH.
2. PROVIDE W/ 120V MOTORIZED DAMPER WITH END SWITCH.
3. MOUNT LOUVER WITH TOP OF LOUVER THIS DISTANCE BELOW THE CEILING. CONFIRM CEILING ELEVATION WITH ARCHITECTURAL PLANS.

REVISION HISTORY

REV	DATE	DESCRIPTION

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Date 05/03/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

DESIGN:	DATE:
CWF	5/5/25
APPROVED:	
CWF	5/5/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
MECHANICAL SCHEDULES

PROJECT NUMBER: 240139

DWG- M0.1

MECHANICAL SPECIFICATIONS

SECTION 15100 - MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

- 1.1 SCOPE
  - A. GENERAL:
    - 1. THE BIDDING REQUIREMENTS, CONTRACT REQUIREMENTS, AND THE GENERAL REQUIREMENTS (DIVISION 1) OF THESE SPECIFICATIONS SHALL GOVERN ALL PARTS OF THE WORK.
  - B. WORK INCLUDED:
    - 1. INSTALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE ACCOMPANYING PLANS. FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT TOGETHER WITH ALL INCIDENTAL ITEMS NOT SPECIFICALLY SHOWN OR SPECIFIED WHICH ARE REQUIRED BY GOOD PRACTICE TO PROVIDE THE COMPLETE MECHANICAL SYSTEMS AS DESCRIBED.
    - 2. THE HVAC CONTRACTOR(S) AND ALL SUB-TIER CONTRACTORS SHALL PROVIDE INSTALLED EQUIPMENT CUT SHEETS AND PURCHASE ORDERS REQUIRED FOR UTILITY REBATES.
  - C. COORDINATION AND SITE VISITS:
    - 1. THIS SECTION OF THE WORK REQUIRES EXAMINATION OF AND REFERENCE TO ALL ARCHITECTURAL, STRUCTURAL, UTILITY, AND ELECTRICAL DRAWINGS FOR CONSTRUCTION CONDITIONS THAT MAY AFFECT THE WORK. INSPECT THE BUILDING SITE AND EXISTING FACILITIES FOR VERIFICATION OF EXISTING CONDITIONS. BASE ALL MEASUREMENTS FROM ESTABLISHED BENCHMARKS. ANY DISCREPANCY BETWEEN ACTUAL MEASUREMENTS AND THOSE INDICATED, WHICH PREVENTS FOLLOWING GOOD PRACTICES OR THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, SHALL BE REPORTED TO THE ARCHITECT/ENGINEER, AND WORK HALTED UNTIL INSTRUCTIONS ARE RECEIVED FROM THE ARCHITECT/ENGINEER.
- 1.2 CODES, PERMITS, FEES
  - A. INSTALL ALL WORK IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS. OBTAIN ALL REQUIRED PERMITS; PAY ALL REQUIRED FEES INCLUDING UTILITY CONNECTIONS OR EXTENSIONS, IN CONNECTION WITH THIS PORTION OF THE CONSTRUCTION. OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR THE WORK.

PART 2 - PRODUCTS

- 2.1 MATERIALS AND WORKMANSHIP
  - A. MATERIALS:
    - 1. ALL MATERIALS AND EQUIPMENT SHALL BE OF FIRST QUALITY, NEW, FULL SIZE AND WEIGHT, STANDARD IN EVERY RESPECT, AND SUITABLE FOR THE SPACE REQUIRED. USE THE SAME MANUFACTURER FOR PRODUCTS OF SIMILAR CLASS OR SERVICE, SUCH AS VALVES, PUMPS, CONTROLS, AND AIR HANDLERS. PROTECT ALL MATERIALS AGAINST LOSS, THEFT, OR DAMAGE BEFORE AND AFTER INSTALLATION.
    - 2. FURNISH EQUIPMENT THAT WILL OPERATE UNDER ALL CONDITIONS OF LOAD WITHOUT ANY SOUND OR VIBRATION THAT IS OBJECTIONABLE IN THE OPINION OF THE ARCHITECT/ENGINEER. VIBRATION OR NOISE CONSIDERED OBJECTIONABLE WILL BE CORRECTED BY THE SUBCONTRACTOR AT HIS EXPENSE.
    - 3. FURNISH AND INSTALL ALL NECESSARY FOUNDATIONS, SUPPORTS, PADS, BASES, AND PIERS REQUIRED FOR ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT.
    - 4. PROVIDE ALL REQUIRED FIRE STOPPING AT PIPING AND DUCT PENETRATIONS OF FIRE-RATED WALLS, FLOORS, CEILINGS, AND ROOFS.
  - B. WORKMANSHIP:
    - 1. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER BY COMPETENT SPECIALISTS FOR EACH SUB TRADE. WORK SHALL BE INSTALLED TO THE SATISFACTION OF THE ARCHITECT/ENGINEER WITH UNSATISFACTORY WORK REMOVED AND REINSTALLED TO HIS SATISFACTION AT NO EXTRA COST TO THE OWNER.
    - 2. PROVIDE ALL CUTTING AND PATCHING NECESSARY TO INSTALL THE WORK SPECIFIED IN THIS SECTION. PATCHING SHALL MATCH ADJACENT SURFACES. NO STRUCTURAL MEMBERS SHALL BE CUT WITHOUT THE APPROVAL OF THE ARCHITECT/ENGINEER. PROVIDE ALL SLEEVES AND INSERTS REQUIRED BEFORE THE FLOORS AND WALLS ARE BUILT.
    - 3. LOCATE ALL EQUIPMENT THAT MUST BE SERVICED IN FULLY ACCESSIBLE POSITIONS. PROVIDE CLEARANCE FOR REMOVAL OF REPLACEMENT PARTS AND COMPONENTS, AND WITH NECESSARY COUPLINGS OR FLANGES TO REMOVE THE COMPONENT FOR MAINTENANCE.
- 2.2 SUBMITTALS AND SUBSTITUTIONS
  - A. SUBSTITUTIONS:
    - 1. MANUFACTURER'S TRADE NAMES AND CATALOG NUMBERS STATED HEREIN ARE INTENDED TO INDICATE THE QUALITY OF EQUIPMENT OR MATERIALS DESIRED. SUBSTITUTIONS ARE ACCEPTED BUT REQUIRE FINAL APPROVAL BY THE ENGINEER ON RECORD. FINAL APPROVAL IS TO BE BASED ON REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
    - 2. ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL NOT CAUSE ADDITIONAL COST TO THE OWNER OR ARCHITECT/ENGINEER. ANY REQUIRED CHANGES IN PIPING, DUCTWORK, ELECTRICAL, CONTROLS OR OTHERWISE DUE TO THE SUBSTITUTED EQUIPMENT SHALL BE PAID FOR BY THIS CONTRACTOR PROPOSING THE SUBSTITUTION.
  - B. SUBMITTALS:
    - 1. WITHIN THIRTY DAYS AFTER AWARD OF THIS CONTRACT, PROVIDE A COMPLETE LIST OF ALL MATERIALS AND EQUIPMENT PROPOSED FOR THIS PROJECT. LIST SHALL CONTAIN MAKE, TYPE, MANUFACTURER'S NAME, AND TRADE DESIGNATION OF ALL MATERIALS AND EQUIPMENT. SUBMITTAL SHALL ALSO INCLUDE MANUFACTURER'S COMPLETE SPECIFICATION FOR EACH ITEM, INCLUDING CAPACITIES, RATINGS, ETC., AND DIMENSIONS AS REQUIRED TO CHECK SPACE REQUIREMENTS. PROVIDE SIX PHYSICAL COPIES OR A DIGITAL COPY OF ALL SUBMITTALS. THE SCHEDULED EQUIPMENT IS THE BASIS OF DESIGN FOR CAPACITY, WEIGHTS, PHYSICAL SIZE, ETC. ALTERNATE MANUFACTURERS SHALL NOT EXCEED THE WEIGHT OR PHYSICAL SIZE. ANY CHANGES TO THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND CONTROL SYSTEMS DUE TO ALTERNATE MANUFACTURERS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SUPPLIER.
    - 2. APPROVAL OF SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM THE PLANS OR SPECIFICATIONS, UNLESS HE HAS, IN WRITING, CALLED THE ARCHITECT'S /ENGINEER'S ATTENTION TO DEVIATIONS AT THE TIME OF SUBMISSION, AND OBTAINED HIS WRITTEN APPROVAL. APPROVAL OF SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN SHOP DRAWINGS OR LITERATURE.
  - C. EQUIPMENT REQUIRING SUBMITTALS:
    - 1. ALL SCHEDULED EQUIPMENT
    - 2. GRILLES, REGISTERS, DIFFUSERS
    - 3. LOUVERS
    - 4. INSULATION
    - 5. FIRE AND COMBINATION FIRE/SMOKE DAMPERS
    - 6. FLEXIBLE DUCTWORK
    - 7. SPIRAL DUCTWORK

PART 3 - EXECUTION

- 3.1 ACCESSIBILITY & SAFETY
  - A. ACCESSIBILITY:
    - 1. ALL EQUIPMENT WHICH MUST BE SERVICED OR OPERATED SHALL BE LOCATED IN FULLY ACCESSIBLE POSITION. MINOR CHANGES FROM THE DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY. ALL CHANGES SHALL BE APPROVED PRIOR TO ACTUAL INSTALLATION.
    - 2. ACCESS PANELS SHALL BE PROVIDED IF REQUIRED FOR ACCESSIBILITY. SUBCONTRACTOR SHALL FURNISH THE REQUIRED PANELS TO THE GENERAL CONTRACTOR AND THE REQUIRED LOCATION FOR ALL ACCESS PANELS. PANELS SHALL BE INSTALLED BY THE GENERAL CONTRACTOR.
  - B. SAFETY:
    - 1. SUBCONTRACTOR SHALL PROVIDE GUARDS FOR ALL BELT DRIVES AND ROTATING MACHINERY. NO WATER PIPING SHALL RUN IMMEDIATELY OVER OR WITHIN A 3-FOOT PLAN VIEW CLEARANCE OF ANY ELECTRICAL PANEL OR MOTOR STARTER. WHERE PIPING MUST BE LOCATED WITHIN THESE ZONES, INSTALL PIPING INSIDE A CONDUIT TO PREVENT WATER ACCESS TO ELECTRICAL EQUIPMENT.
- 3.2 COORDINATION
  - A. COORDINATE ALL WORK WITH THE VARIOUS TRADES INVOLVED TO PROVIDE A COMPLETE AND SATISFACTORY INSTALLATION. THE EXACT DETAILS OF PIPING, DUCTWORK, AND EQUIPMENT ARE NOT SHOWN. NO ADDITIONAL COMPENSATION WILL BE MADE FOR OFFSETS OR RELOCATION REQUIRED IN COORDINATION WITH OTHER TRADES.
  - B. ALTERATIONS REQUIRED DUE TO IMPROPER SUPERVISION BY THE SUBCONTRACTOR SHALL BE MADE AT NO EXTRA COST, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
- 3.3 ELECTRICAL
  - A. ELECTRIC MOTORS REQUIRED FOR EQUIPMENT SPECIFIED IN THIS SECTION SHALL BE PROVIDED AND INSTALLED BY THIS SUBCONTRACTOR. MOTOR STARTERS, RELAYS, PILOT LIGHTS, ETC., ARE, IN GENERAL, TO BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
  - B. STARTERS, RELAYS, CONTROLS, DISCONNECTS, ETC., WHICH ARE FACTORY-ASSEMBLED INTO OR PROVIDED WITH (PER SCHEDULES)PACKAGED EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR UNDER THIS SECTION OF THE SPECIFICATIONS.
  - C. ALL MOTORS SHALL BE PROVIDED WITH ADEQUATE STARTING AND PROTECTIVE EQUIPMENT AS SPECIFIED OR REQUIRED. MOTOR CAPACITY SHALL BE SUFFICIENT TO OPERATE DRIVEN DEVICE UNDER ALL CONDITIONS OF OPERATION AND LOAD WITHOUT OVERLOAD. MINIMUM HORSEPOWER SHALL BE AS SPECIFIED.
- 3.4 IDENTIFICATION & CODING
  - A. PAINTING: ALL PAINTING OF MECHANICAL EQUIPMENT, ACCESSORIES, DUCTWORK, AND PIPING SHALL BE FURNISHED AND APPLIED UNDER THE ARCHITECTURAL SPECIFICATIONS. ALL PAINTING SHALL BE COMPLETED BEFORE ANY IDENTIFICATION MARKINGS ARE APPLIED.
  - B. EQUIPMENT:IDENTIFY ALL EQUIPMENT WITH A BLACK FORMICA LABEL, WITH WHITE REVEAL WHEN ENGRAVED. LETTERING TO BE 3/16-INCH HIGH MINIMUM. IN GENERAL, IDENTIFY EQUIPMENT AS TO AREA SERVED IN ADDITION TO THE TAG NUMBER OF THE EQUIPMENT AS TAKEN FROM THE PLANS.
- 3.5 TESTING
  - A. PIPING:
    - 1. PIPING SHALL BE TESTED BEFORE INSULATION HAS BEEN INSTALLED. DELICATE CONTROL MECHANISMS SHALL BE REMOVED DURING TESTS TO PREVENT SHOCK DAMAGE. THE USE OF CHEMICALS OR COMPOUNDS TO STOP LEAKS SHALL NOT BE PERMITTED.
  - B. SYSTEMS:
    - 1. ALL SYSTEMS SHALL BE TESTED AT THE COMPLETION OF THE BUILDING TO ESTABLISH THAT THE SYSTEMS OPERATE AS SPECIFIED AND REQUIRED. TESTING SHALL BE PERFORMED AFTER AIR BALANCING IS COMPLETED.
    - 2. ALL CONTROLS SHALL BE CALIBRATED ACCURATELY AND ALL EQUIPMENT SHALL BE ADJUSTED FOR SATISFACTORY OPERATION. EXCESSIVE VIBRATION OR NOISE FROM ANY SYSTEM SHALL BE CORRECTED.
    - 3. THE AIR CONDITIONING SYSTEM SHALL BE TESTED FOR SATISFACTORY OPERATION WHEN THE OUTSIDE AIR TEMPERATURE REACHES 60°F OR WARMER. ALL OTHER SYSTEMS SHALL BE TESTED AT BUILDING COMPLETION. ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ARCHITECT/ENGINEER OR HIS REPRESENTATIVE.
- 3.6 BALANCING
  - A. SCOPE:
    - 1. PRIOR TO FINAL ACCEPTANCE BY THE OWNERS, ALL AIR SYSTEMS SHALL BE BALANCED TO DELIVER THE QUANTITIES AS SPECIFIED OR DIRECTED. THE AIR BALANCE SHALL BE PERFORMED BY AN INDEPENDENT AGENCY SPECIALIZING IN TESTING, ADJUSTING, AND BALANCING, AND IS CERTIFIED BY THE TESTING, ADJUSTING, AND BALANCING BUREAU (TABB) AND/OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).
    - 2. BALANCE CONTRACTOR'S MAIN OFFICE SHALL BE LOCATED WITHIN 50 MILES FROM THE PROJECT SITE.
  - B. AIR BALANCING:
    - 1. BALANCING OF THE AIR SYSTEM SHALL CONSIST OF:
      - a. ADJUST ALL AIR VOLUMES, INCLUDING OUTSIDE AIR, TO THE QUANTITIES SHOWN, WITH ALLOWABLE VARIATION OF PLUS OR MINUS 10 PERCENT.
      - b. RECORD ALL SYSTEM, OUTSIDE AIR, ZONE, DIFFUSER, GRILLE, AND REGISTER C.F.M. USE VOLUME CONTROL DEVICES TO REGULATE AIR QUANTITIES ONLY TO THE EXTENT THAT ADJUSTMENTS DO NOT CREATE OBJECTIONABLE AIR MOTION OR SOUND LEVELS. BALANCING ENGINEER SHALL WORK WITH THE CONTRACTOR TO SET THE CFM QUANTITIES FOR ZONE DAMPERS OR ZONE DAMPER/HEATERS.
      - c. TEST AND RECORD ALL SYSTEM STATIC PRESSURES, INLET AND DISCHARGE, ON ALL PACKAGED UNITS, FANS, AND TERMINAL UNITS. VARY TOTAL SYSTEM AIR QUANTITIES BY ADJUSTMENT OF FAN SPEEDS. PROVIDE DRIVE CHANGES AS NECESSARY. VARY BRANCH AIR QUANTITIES BY DAMPER REGULATION.
      - d. TEST AND RECORD MOTOR FULL LOAD AMPS AND NAMEPLATE AMPS.
      - e. TEST AND RECORD ENTERING AND LEAVING TEMPERATURES AT ALL COILS.
      - f. ADJUST ALL AUTOMATICALLY OPERATED DAMPERS, IN COOPERATION WITH THE MECHANICAL CONTRACTOR, TO THE REQUIRED SETTINGS. ADJUST OUTSIDE AIR, RETURN AIR, AND EXHAUST DAMPERS FOR DESIGN CONDITIONS WITHIN SPECIFIED TOLERANCES. WHERE MODULATING DAMPERS OR ECONOMIZERS ARE PROVIDED, TAKE MEASUREMENTS AT FULL RETURN AIR, MINIMUM OUTSIDE AIR, AND 100 PERCENT OUTSIDE AIR MODE OF OPERATION.
      - g. ADJUST DIFFUSERS AND GRILLES FOR PROPER DEFLECTION, THROW, AND COVERAGE. ELIMINATE DRAFTS AND EXCESSIVE NOISE WHERE POSSIBLE.
      - h. MARK FINAL POSITIONS OF ALL BALANCE DAMPERS WITH A RED FELT PEN.
      - i. AIR SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH STANDARD PROCEDURES AND RECOGNIZED PRACTICES OF THE TABB OR NEBB.
  - C. QUALITY ASSURANCE:
    - 1. UPON REQUEST, THE BALANCING CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER OF RECORD OR HIS/HER REPRESENTATIVE, FLOW VERIFICATION FOR AT LEAST 10% OF THE BALANCED DEVICES AS SELECTED BY THE ENGINEER. IF MORE THAN 25% OF THE TESTED DEVICES DO NOT MEET THE DESIGNED OR BALANCE REPORT, THEN THE ENTIRE SYSTEM BALANCE MUST BE RE-BALANCED.
  - D. BALANCE REPORTS:
    - 1. SUBMIT FOUR PHYSICAL COPIES OR A DIGITAL COPY OF THE AIR SYSTEM BALANCE REPORT TO THE ARCHITECT/ENGINEER FOR EVALUATION AND APPROVAL. REPORTS SHALL BE ON TABB/SMACNA FORMS THAT INDICATE INFORMATION ADDRESSING EACH OF THE TESTING METHODS, READINGS, AND ADJUSTMENTS.
- 3.7 CLEANING & ADJUSTING
  - A. THOROUGHLY CLEAN ALL PARTS OF THE SYSTEM AT THE COMPLETION OF THE WORK. INSTALL NEW, CLEAN AIR FILTERS IN ALL SYSTEMS. ADJUST ALL DEVICES FOR PROPER OPERATION AND LUBRICATE ALL EQUIPMENT AS REQUIRED. REPAINT ANY PAINTED SURFACE THAT HAS BEEN DAMAGED.
- 3.8 PROJECT CLOSEOUT
  - A. OPERATIONS & MAINTENANCE (O & M) MANUAL: THE CONTRACTOR SHALL PROVIDE TWO COPIES OF AN OPERATIONS AND MAINTENANCE MANUAL AT LEAST THIRTY DAYS PRIOR TO COMPLETION OF WORK. THE MANUAL SHALL BE OF THE THREE RING BINDER TYPE, ENTITLED "OPERATIONS AND MAINTENANCE MANUAL", WITH THE JOB NAME AND YEAR OF COMPLETION ALSO INCLUDED. THE MANUAL SHALL INCLUDE, AS A MINIMUM:
    - 1. MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT, INCLUDING LUBRICATION REQUIREMENTS.
    - 2. EQUIPMENT SUPPLIERS NAMES, ADDRESSES, AND TELEPHONE NUMBERS.
    - 3. EQUIPMENT CATALOG CUTS, RATINGS TABLES, MODEL NUMBERS, SERIAL NUMBERS, AND ACCESSORIES.
    - 4. PARTS NUMBERS FOR ALL REPLACEABLE PARTS.
    - 5. AIR SYSTEMS BALANCE REPORT AS HEREINBEFORE SPECIFIED.
    - 6. FILTER CHART LISTING UNIT CALLOUT, SIZE OF FILTERS, AND QUANTITY OF FILTERS.
    - 7. GUARANTEE LETTER AS SPECIFIED BELOW.
    - 8. ANY ADDITIONAL INFORMATION REQUIRED TO ENABLE THE OWNER TO PROPERLY MAINTAIN THE BUILDING MECHANICAL SYSTEM.
  - B. MECHANICAL SYSTEM TRAINING PERIOD:
    - 1. AFTER THE MECHANICAL SYSTEM IS COMPLETELY INSTALLED AND OPERATIONAL, THE MECHANICAL CONTRACTOR SHALL PROVIDE A MINIMUM OF 8 HOURS TRAINING AND INSTRUCTION TIME FOR THE BUILDING OWNER OR HIS REPRESENTATIVE. DURING THIS PERIOD, THE CONTRACTOR SHALL INSTRUCT THE OWNER IN THE OPERATION AND MAINTENANCE OF ALL PARTS OF THE MECHANICAL SYSTEM, USING THE O & M MANUAL WHERE APPLICABLE.
  - C. AS-BUILT DRAWINGS:
    - 1. PROVIDE TWO SETS OF RED-LINED MECHANICAL DRAWINGS SHOWING THE WORK AS IT WAS ACTUALLY INSTALLED. THE DRAWINGS SHALL INDICATE ALL DEPARTURES FROM THE CONTRACT DRAWINGS, AND SHALL LOCATE ALL UNDERGROUND UTILITY LINES WITH DIMENSIONS FROM ESTABLISHED BUILDING LINES. MAKE ALL NOTATIONS NEAT AND LEGIBLE, WITH RED PEN OR MARKER. AT THE COMPLETION OF THE WORK, THESE AS-BUILT DRAWINGS SHALL BE SIGNED AND DATED BY THE MECHANICAL CONTRACTOR, AND RETURNED TO THE ARCHITECT/ENGINEER.
  - D. GUARANTEE:
    - 1. ALL WORK FURNISHED UNDER THIS SECTION SHALL BE GUARANTEED IN WRITING TO BE FREE FROM DEFECTIVE WORK OR MATERIALS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE CONTRACT. ALL REPAIRS OR REPLACEMENTS BECAUSE OF DEFECTIVE MATERIALS OR WORKMANSHIP OR NONCOMPLIANCE WITH CODE SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL FURNISH A LETTER INDICATING ABOVE GUARANTEE WITH SPACE FOR DATE OF ACCEPTANCE AND EXPIRATION OF GUARANTEE. LETTER SHALL BE INCLUDED IN O & M MANUAL.

END OF SECTION 15100

SECTION 15300 - HEATING, VENTILATING, AND AIR CONDITIONING

PART 1 - GENERAL

- 1.1 SCOPE
  - A. THIS SECTION COVERS THE WORK NECESSARY FOR THE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEM, COMPLETE. THE MECHANICAL GENERAL PROVISIONS, SECTION 15100, IS TO BE INCLUDED AS A PART OF THIS SECTION OF THE SPECIFICATIONS.
- 1.2 CODES & STANDARDS
  - A. THE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS LISTED BELOW, LATEST EDITIONS, AND THE CODES LISTED IN THE BASIS OF DESIGN SCHEDULE:
    - 1. AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS (ASHRAE)
    - 2. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
    - 3. SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA)

PART 2 - PRODUCTS

- 2.1 HVAC EQUIPMENT (INCLUDING FAN COILS, ROOFTOP UNITS, HEAT PUMPS, CONDENSING UNITS, ELECTRIC HEATERS, AND EXHAUST FANS)
  - A. SEE PLANS AND SCHEDULES FOR REQUIREMENTS.
- 2.2 GRILLES, REGISTERS, DIFFUSERS AND LOUVERS
  - A. SEE PLANS AND SCHEDULES FOR REQUIREMENTS.
- 2.3 AIR DISTRIBUTION
  - A. DUCTWORK:
    - 1. LOW PRESSURE DUCTWORK SHALL BE FABRICATED FROM GALVANIZED SHEET METAL, UNLESS OTHERWISE INDICATED. CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS, LATEST EDITION. ALL SHEET METAL DUCTWORK SHALL BE SEALED WITH MCGILL UNITED SHEET DUCT SEALER OR EQUAL, IN ACCORDANCE WITH THE ENERGY CODE LISTED THE BASIS OF DESIGN SCHEDULE. LOW PRESSURE DUCTWORK SHALL BE CONSTRUCTED TO THE FOLLOWING SMACNA STATIC PRESSURE STANDARDS:
      - a. SUPPLY AIR DUCTWORK = 2" W.G.
      - b. RETURN, EXHAUST, OUTSIDE AIR INTAKE DUCTWORK = 1" W.G.
    - 2. LOW PRESSURE DUCTWORK LOCATED IN EXPOSED CEILING AREAS, EXCEPT IN MECHANICAL ROOMS, SHALL BE SPIRAL-TYPE DUCTS WITH A "PAINT-GRIP" FINISH ON BOTH DUCTWORK AND ASSOCIATED FITTINGS THAT CAN BE PAINTED.
      - a. JOINTS: 0" TO 20" DIAMETER, INTERIOR SLIP COUPLING BEADED AT CENTER, FASTENED TO DUCT WITH SCREWS AND WITH SEALING COMPOUND APPLIED CONTINUOUSLY AROUND JOINT BEFORE ASSEMBLING AND AFTER FASTENING. SEALING COMPOUND SHALL BE APPLIED IN AN EVEN AND PROFESSIONAL MANNER.
      - b. JOINTS 22" - 72" DIAMETER, USE 3-PIECE, GASKETED, FLANGED JOINTS CONSISTING OF 2 INTERNAL FLANGES (WITH INTEGRAL MASTIC SEALANT) SPLIT TO ACCOMMODATE MINORDIFFERENCES IN DUCT DIAMETER, AND ONE EXTERNAL CLOSURE BAND DESIGNED TO COMPRESS GASKETING BETWEEN INTERNAL FLANGES. MANUFACTURER SHALL BE DUCTMATE, SPIRALMATE OR EQUAL.
      - c. ALL TAKEOFF OR BRANCH ENTRANCES SHALL BE BY MEANS OF FACTORY-FABRICATED FITTINGS. FIELD TAPS SHALL NOT BE ALLOWED.
    - 3. LOW PRESSURE DUCTWORK WHICH IS LOCATED IN MECHANICAL ROOMS SHALL BE FABRICATED FROM GALVANIZED SHEET METAL. CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS, LATEST EDITION.
    - 4. LOW OR MEDIUM PRESSURE, DOUBLE-WALL ACOUSTICALLY-INSULATED DUCTWORK SHALL HAVE A MINIMUM 1" INSULATION, PERFORATED METAL LINING & SHALL BE MCGILL ACOUSTI-K27, METALTEC, OR EQUAL.
    - 5. DUCTWORK PENETRATING PROTECTIVE ELEMENTS OF FIRE-RATED CORRIDOR WALLS, WITH NO OPENINGS INTO CORRIDOR, SHALL BE CONSTRUCTED OF MINIMUM 26 GAUGE GALVANIZED STEEL.
    - 6. EXTERIOR EXPOSED DUCTWORK SHALL BE FABRICATED FROM GALVANIZED SHEETS. ALL JOINTS AND SEAMS SHALL BE STANDING-SEAM TYPE WITH SEALING MASTIC TO PROVIDE WATERTIGHT CONSTRUCTION. ALL DUCTWORK SHALL BE EXTERNALLY INSULATED WITH RIGID, FOIL-FACED INSULATION. INSULATION SHALL BE TAPERED ON TOP TO CREATE A SLOPED SURFACE WITH NO FLAT SPOTS. ALL EXPOSED SURFACES SHALL BE WRAPPED WITH A SELF-ADHESIVE MEMBRANE CAPABLE OF 400% ELONGATION BY POLYGUARD OR EQUAL.
    - 7. FLEXIBLE DUCTS SHALL BE LISTED PER UL-181 STANDARD AS CLASS 1 FLEXIBLE AIR DUCT AND COMPLYING WITH NFPA STANDARDS 90A AND 90B. DUCTS SHALL BE INSULATED WITH A MINIMUM R-5 VALUE, AND SHALL HAVE A MAXIMUM VAPOR TRANSMISSION VALUE OF .05 PERMS. DUCTS SHALL BE FACTORY MADE WITH AND COMPOSED OF: A CPE LINER DUCT PERMANENTLY BONDED TO A COATED SPRING STEEL WIRE HELIX. DUCT SHALL BE GREENGUARD TESTED AND CERTIFIED, CARRY A TEN-YEAR WARRANTY FOR THE LABOR TO REPLACE THE DUCT SHOULD THERE BE A FACTORY DEFECT. LOW PERMEABILITY OUTER VAPOR BARRIER OF FIBERGLASS BIDIRECTIONAL REINFORCED METALIZED LAMINATE FILM SHALL COMPLETE THE COMPOSITE. PRESSURE RATING SHALL BE MINIMUM 4" W.G. POSITIVE AND 1" W.G. NEGATIVE. ATTACH TO DUCT TAKE-OFF AND TERMINAL UNIT WITH NYLON CLAMP OR TIE. BY THERMAFLEX, FLEXMASTER, OR APPROVED EQUAL.
  - B. DUCT ACCESSORIES:
    - 1. TURNING VANES SHALL BE INSTALLED IN RECTANGULAR OR SQUARE ELBOWS. VANES SHALL BE INSTALLED IN VANE SIDE RAILS. VANES SHALL BE DOUBLE-WALL VANES, AND BE FABRICATED AND INSTALLED PER SMACNA STANDARDS.
    - 2. MANUAL VOLUME DAMPERS SHALL BE FABRICATED FROM GALVANIZED STEEL IN ACCORDANCE WITH SMACNA STANDARDS. DAMPERS SHALL HAVE A CONTINUOUS GALVANIZED STEEL SHAFT, WITH DAMPER REGULATORS AND END BEARINGS. DAMPERS LOCATED ABOVE INACCESSIBLE CEILINGS (HARD CEILINGS) SHALL BE FURNISHED WITH CONCEALED CEILING DAMPER REGULATORS. DAMPERS SHALL BE PRESSURE-RATED EQUAL TO THE DESIGN DUCT PRESSURE RATING.
    - 3. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT ALL ROTATING FAN EQUIPMENT. CONNECTORS SHALL BE OF FIRE, WATER, AND WEATHER-RESISTANT MATERIAL.
    - 4. FIRE DAMPERS SHALL BE UL-LABELED WITH FRAME, LOCKING ASSEMBLY, ACCORDION STYLE FOLDED BLADES, AND FUSIBLE LINK. DAMPERS SHALL BE STYLE B WITH BLADES STORED OUTSIDE OF THE AIR STREAM. PROVIDE DUCT INSPECTION DOOR AT EACH FIRE DAMPER. MINIMUM SIZE SHALL BE 8" X 8". INSPECTION DOOR SHALL BE PROVIDED WITH A STEEL FRAME WITH GASKET AROUND PERIPHERY, AND A HINGED PANEL.
    - 5. COMBINATION SMOKE AND FIRE DAMPERS ARE TO BE FUSIBLE LINK TYPE WITH FACTORY SLEEVE AND ELECTRIC OPERATOR LOCATED EXTERIOR TO DUCT. 120V OPERATOR TO BE SPRING RETURN, FAIL CLOSED WITH 212 DEGREES F LINK AND UL LABEL. DAMPER TO BE FIRE-RATED TO A MINIMUM OF 1.5 HOURS AND SMOKE LEAKAGE RATED CLASS I OR II. PROVIDE DUCT INSPECTION DOOR AT EACH DAMPER. MINIMUM SIZE SHALL BE 8" X 8". INSPECTION DOOR SHALL BE PROVIDED WITH A STEEL FRAME WITH GASKET AROUND PERIPHERY, AND A HINGED PANEL.
- 2.4 PIPING SYSTEMS:
  - A. REFRIGERANT PIPING:
    - 1. REFRIGERANT PIPING SHALL BE TYPE L HARD-DRAWN COPPER, ASTM B280, WITH WROUGHT COPPER FITTINGS AND SILVALOY JOINTS.
    - 2. REFRIGERANT PIPING SHALL BE MANUFACTURER'S STANDARD LINE SETS, IN LENGTHS AS REQUIRED FOR PROPER INSTALLATION. COILING OF EXCESS TUBING WILL NOT BE ACCEPTABLE.
  - B. CONDENSATE DRAIN PIPING:
    - 1. SEE PLUMBING SPECIFICATIONS FOR REQUIREMENTS.
  - C. PIPE HANGERS AND SUPPORTS:
    - 1. SEE PLUMBING SPECIFICATIONS FOR HANGER AND SUPPORT REQUIREMENTS FOR PIPING SYSTEMS. SEE DRAWINGS FOR SEISMIC SUPPORT REQUIREMENTS FOR PIPING SYSTEMS.
- 2.5 INSULATION:
  - A. GENERAL:
    - 1. ALL INSULATION SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS, AS TESTED BY ASTM E-84, NFPA 255, AND UL 723, NOT EXCEEDING:
      - FLAME SPREAD 25
      - SMOKE DEVELOPED 50
  - B. DUCTWORK - EXTERNAL INSULATION:
    - 1. SEE DUCT INSULATION SCHEDULE FOR R-VALUES AND APPLICATION SCHEDULE.
    - 2. EXTERNAL DUCT INSULATION SHALL BE FLEXIBLE FIBERGLASS BLANKET-TYPE, FORMALDEHYDE-FREE DUCT WRAP.
    - 3. ALL JOINTS SHALL BE TAPED WITH UL-LISTED TAPE TO PROVIDE A CONTINUOUS VAPOR BARRIER.
    - 4. EXPOSED SUPPLY AND RETURN DUCTS IN CONDITIONED SPACES SHALL NOT BE EXTERNALLY INSULATED (EXCEPT IN MECHANICAL ROOMS OR WHERE INDICATED ON THE DRAWINGS).
  - C. DUCTWORK - INTERNAL LINER:
    - 1. LINER SHALL BE FLEXIBLE FIBERGLASS DUCT LINER. LINER SHALL BE ATTACHED WITH 100% COVERAGE OF MANUFACTURER'S RECOMMENDED ADHESIVE AND WELDED OR MECHANICALLY FASTENED GALVANIZED STEEL PINS. ALL EXPOSED EDGES OF LINER SHALL BE COATED WITH ADHESIVE. DUCT DIMENSIONS SHOWN ARE NET AIR SIDE FACE-TO-FACE OF DUCT LINER.
  - D. PIPING INSULATION - REFRIGERANT PIPING:
    - 1. INSULATION ON REFRIGERANT SUCTION PIPING SHALL BE ONE-PIECE PREFORMED FLEXIBLE FORMED PLASTIC TUBING WITH BUILT-IN CLOSED CELL VAPOR BARRIER. SEAL LAPS AND BUTT JOINTS WITH MOISTURE RESISTANT ADHESIVE TO PROVIDE A CONTINUOUS VAPOR SEAL. FURNISH 1/2" THICK INSULATION FOR 1½" AND SMALLER PIPE, AND 1" THICK INSULATION FOR PIPE LARGER THAN 1½". EXTERIOR INSULATION SHALL BE COATED WITH A WEATHER- AND UV-RESISTANT COATING AS RECOMMENDED BY INSULATION SUPPLIER. INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTU-INCH/HOUR-SQ. FT.-°F.
- 2.6 VIBRATION ISOLATION
  - A. GENERAL:
    - 1. ALL ROTATING EQUIPMENT AND APPURTENANCES CONNECTED TO ROTATING EQUIPMENT SHALL BE VIBRATION ISOLATED FROM THE SUPPORTING STRUCTURE. NO METAL TO METAL CONTACT WILL BE PERMITTED BETWEEN FIXED AND FLOATING PARTS. ALL METAL ISOLATORS EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. PIPING CONNECTED TO ROTATING EQUIPMENT SHALL BE HUNG WITH SPRING HANGERS FOR FIRST 50 PIPE DIAMETERS.
  - B. FLOOR-MOUNTED SPRING ISOLATORS:
    - 1. ISOLATORS SHALL BE FREE STANDING, LATERALLY STABLE, AND INCLUDE ACOUSTICAL FRICTION PADS AND LEVELING BOLTS. ISOLATORS SHALL HAVE A MINIMUM RATIO OF SPRING DIAMETER TO OPERATING SPRING HEIGHT OF 1.0 AND AN ADDITIONAL TRAVEL TO SOLID EQUAL TO 50% OF RATED DEFLECTION.
  - C. FLOOR-MOUNTED NEOPRENE PADS:
    - 1. ISOLATORS SHALL BE NEOPRENE WAFFLE, OR COMBINATION NEOPRENE AND CORK SANDWICH. PADS SHALL BE SIZED AND SELECTED AS PER MANUFACTURER'S LOADING REQUIREMENTS.
  - D. SPRING HANGERS:
    - 1. VIBRATION HANGER SHALL CONTAIN A SPRING AND DOUBLE-DEFLECTION NEOPRENE ELEMENT IN SERIES. SPRING SHALL HAVE A DIAMETER NOT LESS THAN 0.8 OF COMPRESSED OPERATING SPRING HEIGHT. SPRING SHALL HAVE A MINIMUM ADDITIONAL SPRING TRAVEL OF 50 PERCENT BETWEEN DESIGN HEIGHT AND SOLID HEIGHT. SPRING SHALL PERMIT A 15 DEGREE ANGULAR MISALIGNMENT WITHOUT RUBBING ON HANGER BOX.
- 2.7 SEISMIC SUPPORTS
  - A. ALL EQUIPMENT, DUCTWORK, AND PIPING SHALL BE SEISMICALLY SUPPORTED AS REQUIRED BY THE INTERNATIONAL BUILDING CODE, LATEST EDITION. SUPPORT DETAILS SHALL BE AS INDICATED ON THE DRAWINGS.
- 2.8 CONTROL SYSTEM
  - A. GENERAL:
    - 1. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERABLE CONTROL SYSTEM, INCLUDING EQUIPMENT, INSTALLATION, AND ACCESSORIES REQUIRED TO PERFORM THE REQUIRED CONTROL FUNCTIONS. ALL CONTROL CONDUIT AND WIRING SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. THERMOSTATS, SUB-BASE SWITCHES, REMOTE CONTROL DEVICES, ETC., SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR AND INSTALLED AND CONNECTED BY THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL FURNISH THE ELECTRICAL CONTRACTOR WITH WIRING DIAGRAMS FOR ALL MECHANICAL EQUIPMENT AND CONTROLS.
    - 2. THE CONTROL SYSTEM SHALL BE BASICALLY ELECTRIC, WITH SUPPLEMENTARY ELECTRONIC DEVICES AS REQUIRED.
  - B. CONTROL EQUIPMENT AND ACCESSORIES:
    - 1. DUCT SMOKE DETECTOR:
      - a. SMOKE DETECTOR SHALL BE PRODUCTS OF COMBUSTION DETECTOR AND SHALL BE UL LISTED. THE UNIT SHALL BE DESIGNED FOR DETECTION OF COMBUSTION GASES, FIRE, AND SMOKE IN AIR DUCTS IN COMPLIANCE WITH NFPA PAMPHLET 90A. THE SHEET METAL CONTRACTOR SHALL PROVIDE A MINIMUM 18"X18" HINGED ACCESS DOOR IN INACCESSIBLE CEILINGS FOR EACH DETECTOR THAT IS FURNISHED. THE SHEET METAL CONTRACTOR IS ALSO RESPONSIBLE FOR PROVIDING ALL NECESSARY TRANSITIONS IN THE DUCTWORK NECESSARY FOR MOUNTING OF THE DUCT DETECTOR.
    - 2. THERMOSTATS:
      - a. SEE MECHANICAL SCHEDULES FOR MODEL INFORMATION.
      - b. THERMOSTATS SHALL BE 7-DAY PROGRAMMABLE TYPE, WITH AUTOMATIC CHANGEOVER FROM HEATING TO COOLING, AND SHALL BE PROVIDED WITH AUXILIARY CONTACTS.
      - c. WHERE HUMIDITY SENSORS ARE INDICATED ON DRAWINGS, THERMOSTAT SHALL HAVE INTEGRAL HUMIDITY SENSING CAPABILITIES OR BE PROVIDED WITH SEPARATE HUMIDITY SENSOR.
      - d. THERMOSTATS IN PUBLIC AREAS SHALL BE PROVIDED WITH LOCKABLE COVERS.
      - e. THERMOSTATS INSTALLED ON EXTERIOR WALLS SHALL BE MOUNTED ON AN INSULATING BLOCK, OR ON FOAM INSULATION FILLED J-BOX.
      - f. ALL THERMOSTATS SHALL HAVE A MOUNTING HEIGHT OF 48 INCHES, TO THE CENTERLINE OF THE DEVICE, UNLESS OTHERWISE NOTED ON THE ELECTRICAL DRAWINGS.

PART 3 - EXECUTION

- 3.1 WORKMANSHIP
  - A. GENERAL:
    - 1. INSTALL ALL MATERIALS AND EQUIPMENT AS SHOWN AND IN STRICT ACCORDANCE WITH THE APPLICABLE CODES FOR THE STATE AND/OR CITY. PLANS DO NOT ATTEMPT TO SHOW EXACT DETAILS OF ALL PIPING AND DUCTWORK, AND NO EXTRA PAYMENT WILL BE ALLOWED FOR OFFSETS REQUIRED DUE TO OBSTRUCTIONS BY OTHER TRADES. ALL WORK SHALL BE DONE IN A NEAT AND ORDERLY FASHION AND LEFT IN A CONDITION SATISFACTORY TO THE ARCHITECT/ENGINEER.
  - B. INSULATION:
    - 1. ALL PIPING INSULATION SHALL BE APPLIED OVER CLEAN, DRY SURFACES AFTER SYSTEM HAS BEEN PRESSURE TESTED AND ANY LEAKS CORRECTED. FINISHED APPEARANCE OF ALL INSULATION SHALL BE SMOOTH AND CONTINUOUS. PROVIDE COAT OF INSULATING CEMENT WHERE NEEDED TO OBTAIN THIS RESULT.
    - 2. FLEXIBLE DUCT INSULATION SHALL BE SECURED TO DUCT SURFACE WITH 4-INCH WIDE BANDS OF ADHESIVE APPLIED ON MAXIMUM 18-INCH CENTERS. ADDITIONAL GALVANIZED TIE-WIRE SUPPORT SHALL BE FURNISHED AS REQUIRED AND RECOMMENDED BY THE INSULATION MANUFACTURER.
  - C. DIFFUSERS, REGISTERS AND GRILLES:
    - 1. ALL DIFFUSERS, GRILLES, AND REGISTERS SHALL BE INSTALLED TIGHT ON THEIR RESPECTIVE MOUNTING SURFACES AND SHALL BE ACCURATELY CENTERED ON CEILING TILE, RECESSES, WINDOWS, OR DOORS.
  - D. DUCTWORK:
    - 1. ALL SHEET METAL WORK SHALL BE DONE BY QUALIFIED, EXPERIENCED MECHANICS IN ACCORDANCE WITH THE REQUIREMENTS OF ASHRAE AND THE LATEST EDITION OF THE APPLICABLE SMACNA MANUAL. ALL DUCTWORK SHALL BE INSTALLED IN A NEAT AND ORDERLY MANNER, AND SHALL BE ADEQUATELY SUPPORTED TO PREVENT VIBRATION OR SAGGING. ALL SHEET METAL DUCTWORK SHALL BE SEALED WITH UNITED-SHEET METAL DUCT SEALER OR EQUAL.
    - 2. EXPOSED DUCTWORK THAT IS VISIBLY DAMAGED SHALL BE ROTATED SUCH THAT THE DAMAGE IS NOT VISIBLE OR REPLACED.
  - E. AIR CONDITIONING UNITS:
    - 1. UNITS SHALL BE INSTALLED APPROXIMATELY WHERE SHOWN ON THE PLANS TO PROVIDE ACCESS SPACE FOR FILTER CHANGING, MOTOR, DRIVE AND BEARING SERVICING, AND FAN SHAFT AND COIL REMOVING. UNIT SHALL NOT BE OPERATED UNTIL FILTERS ARE INSTALLED. ISOLATE SHEET METAL DUCTS FROM ALL FANS WITH FLEXIBLE CONNECTORS.
  - F. CONDENSING UNITS/HEAT PUMPS:
    - 1. UNITS LOCATED AT GRADE SHALL BE POSITIONED SUCH THAT THEY ARE BEYOND THE ROOF DRIP LINE. UNITS SHALL BE INSTALLED ON A 6 " CONCRETE PAD.
    - 2. UNITS LOCATED ON THE ROOF SHALL BE POSITIONED 10-FEET FROM ROOF EDGE. UNITS SHALL BE INSTALLED ON AN ISOLATION PAD OR EQUIPMENT RAILS.
  - G. FILTERS - PROVIDE AND INSTALL ONE CLEAN SET OF FILTERS FOR ALL AIR HANDLING EQUIPMENT UPON PROJECT COMPLETION.
  - H. PIPING:
    - 1. ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO ESTABLISHED BUILDING LINES.
    - 2. INSTALL PIPING SO AS TO ALLOW FOR EXPANSION. PIPING SUPPORTS MUST ALLOW FOR LINES TO EXPAND AND CONTRACT FREELY. WHERE PIPING RUNS EXCEED 100 FEET IN LENGTH, AN OFFSET OR EXPANSION LOOPS MUST BE INSTALLED IN THE MIDDLE OF THE PIPING RUN.
    - 3. INSTALL ALL VALVES WITH STEMS HORIZONTAL OR ABOVE.
    - 4. INSTALL AIR VENTS AT ALL HIGH POINTS.
    - 5. PROVIDE ALL PIPING WHICH PASSES THROUGH WALLS, FLOORS, OR CEILINGS WITH STANDARD WEIGHT PIPE SLEEVES.

END OF SECTION 15300

END OF MECHANICAL SPECIFICATIONS

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WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

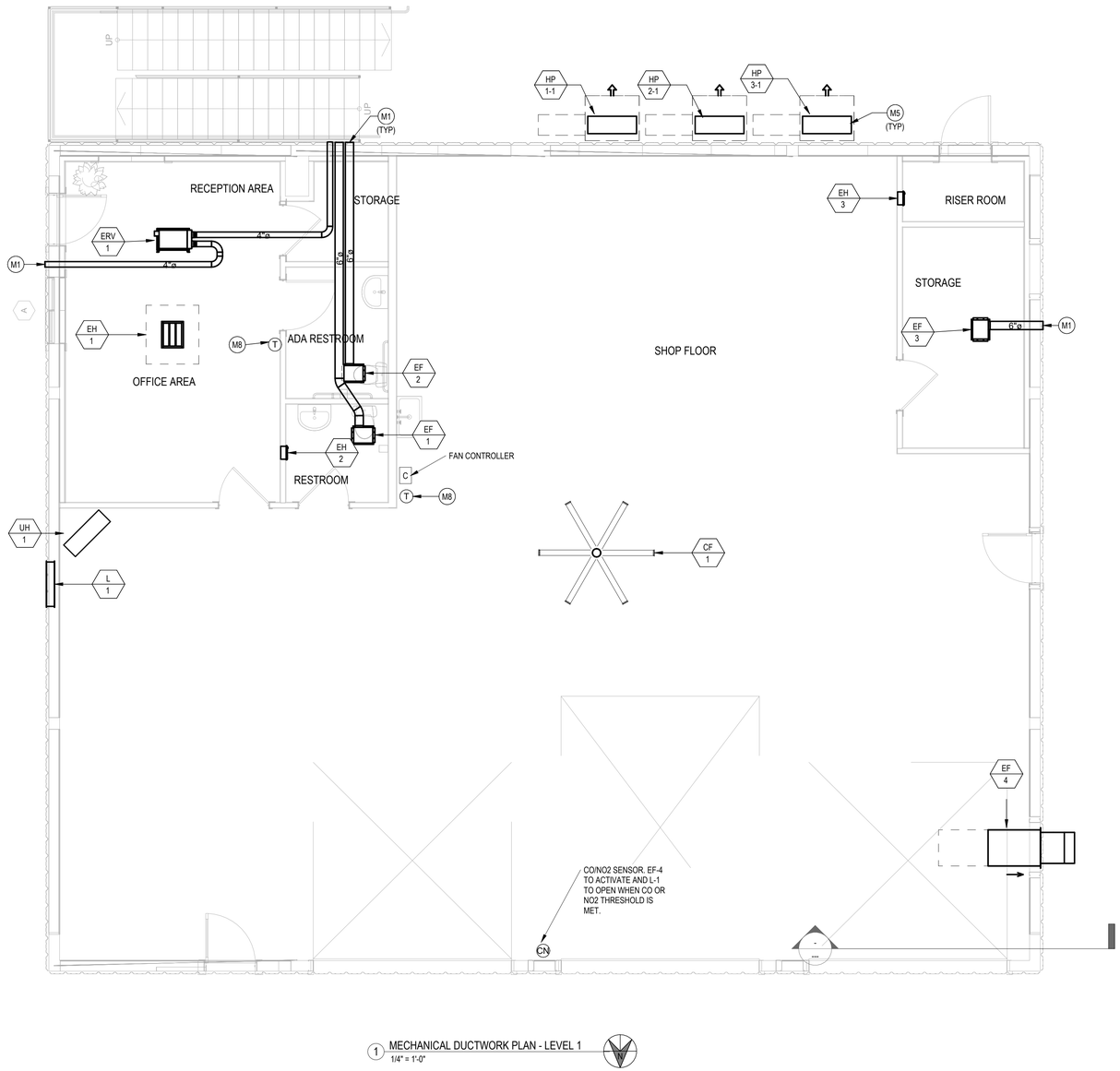
DESIGN:	DATE:
CWF	5/5/25
APPROVED:	
CWF	5/5/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 37182030004500
ELK MEADOWS ADDITION LOT: 3
MECHANICAL SPECIFICATIONS

PROJECT NUMBER: 240139

DWG: M0.2



1 MECHANICAL DUCTWORK PLAN - LEVEL 1
1/4" = 1'-0"

KEYNOTES

M1 TERMINATE DUCT AT WALL OR SOFFIT WITH APPROVED SCREENED CAP UNLESS NOTED OTHERWISE.

M5 INSTALL CONDENSERS ON CONCRETE EQUIPMENT PAD. MAINTAIN CLEARANCE PER MANUFACTURER'S RECOMMENDATION. AVOIDE ROOF DRIP LINE.

M8 THERMOSTAT TO BE LOCATED 48" A.F.F. VERIFY LOCATION WITH OWNER BEFORE INSTALLING.

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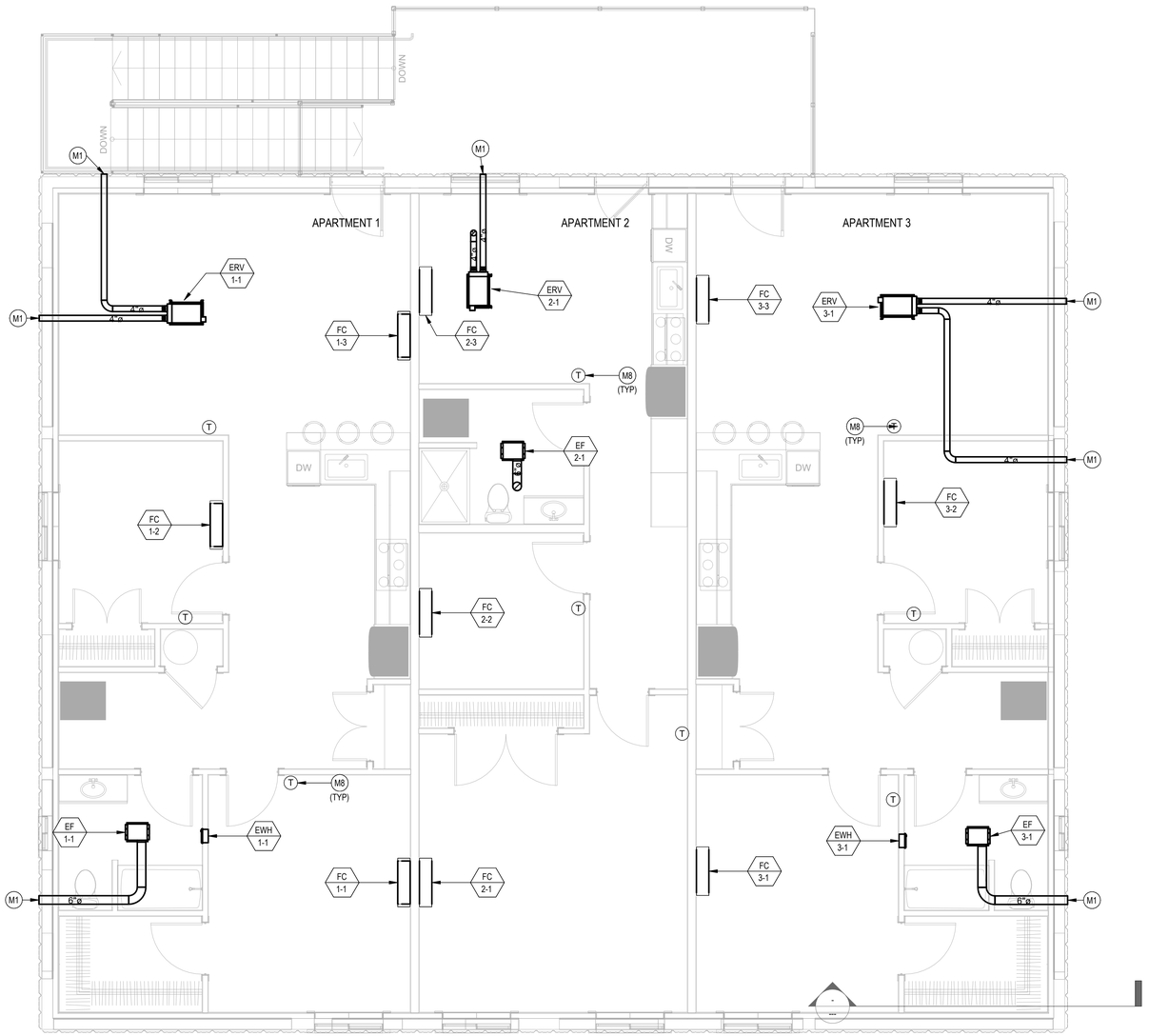
AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
MECHANICAL PLAN - LEVEL 1

PROJECT NUMBER: 240139

DWG- M1.1



1 MECHANICAL DUCTWORK PLAN - LEVEL 2
1/4" = 1'-0"

KEYNOTES

M1 TERMINATE DUCT AT WALL OR SOFFIT WITH APPROVED SCREENED CAP UNLESS NOTED OTHERWISE.

M8 THERMOSTAT TO BE LOCATED 48" A.F.F. VERIFY LOCATION WITH OWNER BEFORE INSTALLING.

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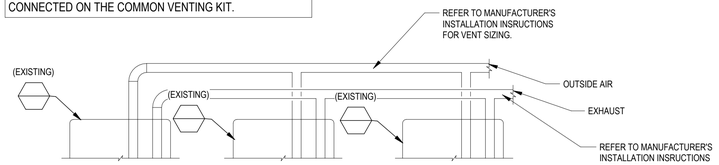
AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3
MECHANICAL PLAN - LEVEL 2

PROJECT NUMBER: 240139

DWG- M1.2

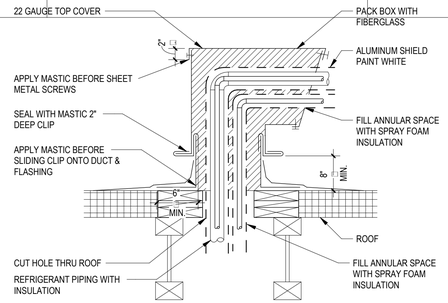
NO MORE THAN THREE WATER HEATERS MAY BE CONNECTED ON THE COMMON VENTING KIT.



1 WATER HEATER COMMON VENTING KIT DETAIL
NTS

3 OUT OF WALL COMBINATION FIRE SMOKE DAMPER
NTS

6 DUCTWORK CONSTRUCTION DETAILS
NTS



NOTE:
PAINT ALL EXPOSED SHEET METAL PARTS WITH WEATHER RESISTANT PAINT PER ARCH DRAWINGS.

5 ROOF JACK FOR PIPES THRU ROOF
NTS

2 FIRE SMOKE DAMPER DETAIL
NTS

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IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
MECHANICAL DETAILS

PROJECT NUMBER: 240139

DWG- M5.0

PLUMBING LEGEND

SYMBOLS	ABBREV.	DESCRIPTION
GW	GW	GREASE WASTE
W	W	WASTE
V	V	VENT
CW	CW	COLD WATER
HW	HW	HOT WATER
HWR	HWR	HOT WATER RETURN
CD	CD	CONDENSATE DRAIN
RD	RD	ROOF DRAIN
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	HD	HUB DRAIN
	RD	ROOF DRAIN
	VTR	VENT THROUGH ROOF
	HB	HOSE BIBB
	S.O.V.	SHUT OFF VALVE
	DCBP	DOUBLE CHECK BACKFLOW PROTECTION
		CIRCULATING PUMP
	FCO/COTG	FLOOR CLEANOUT OR CLEANOUT TO GRADE
	WCO	WALL CLEANOUT
		PIPE UP
		PIPE DOWN
		PIPE TEE DOWN
	A.F.F.	ABOVE FINISHED FLOOR
	B.F.F.	BELOW FINISHED FLOOR
	I.E.	INVERT ELEVATION
	T&P	TEMPERATURE AND PRESSURE

PLUMBING GENERAL NOTES

A. ALL WORK AND MATERIALS SHALL CONFORM TO THE THE CODES LISTED IN THE BASIS OF DESIGN AND ALL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
B. OBTAIN FIELD-APPROVAL FOR PLUMBING INSTALLATION FROM AUTHORITIES HAVING JURISDICTION.
C. NO WORK SHALL BE COVERED UP UNTIL IT HAS BEEN INSPECTED, TESTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
D. VERIFY LOCATION, SIZE, DEPTH AND AVAILABILITY OF ALL UTILITIES INCLUDING SEWER, WATER AND GAS PRIOR TO START OF ANY WORK
E. DRAWINGS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
F. ALL PLUMBING FIXTURE LOCATIONS (WATER CLOSETS, LAVATORIES, ETC.) ARE DIAGRAMMATIC. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS.
G. ALL PLUMBING FIXTURES AND EQUIPMENT SHALL HAVE ISOLATION VALVES ON WATER SUPPLY LINES. VALVES SHALL BE FULL PORT LINE SIZED UNLESS NOTED OTHERWISE.
H. PROVIDE ACCESS DOORS TO ALL CONCEALED VALVES, STRAINERS, TRAP PRIMERS, WATER HAMMER ARRESTORS, ETC.
I. PROVIDE FLOOR DRAINS AND FLOOR SINKS WITH AN APPROVED AUTOMATIC TRAP PRIMER WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.
J. CONTRACTOR SHALL PROVIDE CLEAN-OUTS WHERE SHOWN AND AS REQUIRED BY CODE. CLEAN-OUTS SHALL BE ACCESSIBLE.
K. UNDERGROUND PIPING SHALL BE LOCATED AWAY FROM BEARING FOOTINGS AND SHALL COMPLY WITH DETAILS ON STRUCTURAL DRAWINGS.
L. ALL PIPING IN FINISHED AREAS SHALL BE RUN CONCEALED UNLESS NOTED OTHERWISE ON DRAWINGS. EXPOSED PIPING, WHEN NOTED AS SUCH, SHALL BE RUN AS HIGH AS POSSIBLE AND TIGHT TO STRUCTURE.
M. ALL PIPING PENETRATING WALL, CEILING AND FLOOR SHALL BE ISOLATED FROM BUILDING STRUCTURES WITH RESILIENT SEALS.
N. ALL OPENINGS FOR PIPING THROUGH FIRE RATED ENCLOSURES SHALL BE CAULKED AS REQUIRED BY CODE TO MAINTAIN FIRE RATING.
O. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS PRIOR TO START OF WORK.
P. ALL EQUIPMENT SHALL BE U.L.-LISTED.
Q. BRING TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE ANY OMISSIONS OR CONFLICTS BETWEEN THE DRAWINGS AND SPECIFICATIONS BEFORE PROCEEDING WITH THE WORK.
R. CONTRACTOR TO PROVIDE ROUGH-INS AND FINAL CONNECTIONS FOR FIXTURES AND EQUIPMENT FURNISHED BY OTHERS.
S. NO VENT OUTLET SHALL TERMINATE CLOSER THAN FOUR FEET TO OR ONE FOOT ABOVE ANY DOOR, WINDOW OR GRAVITY AIR INTAKE, NOR CLOSER THAN TEN FEET TO OR LESS THAN THREE FEET ABOVE ANY FORCED OR MECHANICAL AIR INTAKE. VENT OUTLETS SHALL BE A MINIMUM OF TWO FEET FROM THE EDGE OF THE ROOF.
T. WASTE VENTS SHALL RISE VERTICALLY TO A POINT NOT LESS THAN 6" IN HEIGHT ABOVE THE FLOOD LEVEL RIM OF THE FIXTURE BEFORE BEING CONNECTED TO ANY OTHER VENT.
U. FAUCET AND PLUMBING FIXTURES SHALL BE OF THE WATER CONSERVATION TYPE.
V. ALL PIPE SHALL BE TIGHTLY SECURED TO THE STRUCTURE AND SHALL BE SUPPORTED PER CODE REQUIREMENTS.
W. ACCESSIBLE FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE CODE AND AUTHORITIES HAVING JURISDICTION.
X. ALL POTABLE WATER OUTLETS WITH HOSE ATTACHMENTS, SUCH AS HOSE BIBBS AND MOP SINKS, SHALL BE PROVIDED WITH A BACKFLOW/ANTI-SIPHON VALVES.
Y. ALL WASTE AND GREASE WASTE PIPING SHALL BE A MINIMUM 1/4" PER FOOT SLOPE, UNLESS OTHERWISE NOTED.
Z. DRAINAGE PIPING SERVING FIXTURES WHICH HAVE FLOOD WATER RIMS LOCATED BELOW THE ELEVATION OF THE NEXT UPSTREAM MANHOLE COVER OF THE SEWER SERVING SUCH DRAINAGE PIPING SHALL BE PROTECTED FROM BACKFLOW OF SEWAGE BY INSTALLING AN APPROVED BACKWATER VALVE.
AA. ALL DIMENSIONS SHOWN ARE IN INCHES UNLESS NOTED OTHERWISE.
BB. ALL ROOF PENETRATIONS SHALL BE SEALED WATER-TIGHT. ALL SEALING OF THE ROOF SHALL BE COMPLETED IN ACCORDANCE WITH ROOFING SYSTEM REQUIREMENTS AND ROOF MANUFACTURER'S WARRANTY. COORDINATE ALL NEW WORK WITH ROOFING CONTRACTOR.
CC. PLUMBER SHALL DISINFECT ALL NEW OR REPAIRED POTABLE WATER SYSTEMS PRIOR TO USE PER AUTHORITIES HAVING JURISDICTION.
DD. ALL WATER HEATERS SHALL BE SET AT 140°F, UNLESS NOTED OTHERWISE.
EE. INSULATION SHALL BE PROVIDED AT ALL HOT WATER AND HOT WATER RECIRCULATION PIPING AND THE FIRST 5' OF COLD WATER PIPING FROM THE WATER HEATER.
FF. ALL WATER PIPING DROPS ALONG EXTERIOR WALLS SHALL BE ROUTED DOWN WARM SIDE OF INSULATION.
GG RUN ALL WATER PIPING AS HIGH AS POSSIBLE IN CEILING SPACE OR TIGHT TO STRUCTURE UNLESS OTHERWISE NOTED.
HH. RUN ALL GAS PIPING ON ROOF UNLESS OTHERWISE NOTED. SUPPORT WITH MIRO BLOCK SUPPORTS.
II. FAN COIL CONDENSATE PIPING SHALL NOT DECREASE IN SIZE FROM THE DRAIN PAN CONNECTION TO THE PLACE OF CONDENSATE DISPOSAL. SEE MANUFACTURER SUBMITTAL FOR CONNECTION SIZE.

PLUMBING SHEET INDEX

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XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
PLUMBING COVER SHEET

PROJECT NUMBER: 240139
DWG- P0.0

FIXTURE SCHEDULE

SYMBOL	LOCATION	DESCRIPTION	MANUFACTURER & MODEL NUMBER	SANITARY CONNECTIONS (IN)		WATER CONNECTIONS (IN)		REMARKS
				WASTE	VENT	HOT	COLD	
BT-1	DWELLING UNITS	TUB / SHOWER	KOHLER K-837 OR K-838	2	2	1/2	1/2	LEFT OR RIGHT HAND CONFIGURATION BASED ON UNIT TYPE. CONTRACTOR SHALL BE RESPONSIBLE FOR COUNTING THE NUMBER OF REQUIRED LEFT AND RIGHT HAND DRAIN CONFIGURATIONS PRIOR TO ORDERING.
		TRIM / SPOUT / SHOWER HEAD	KOHLER K-TS27421-4					CHROME FINISH.
		MIXING VALVE	KOHLER K-8304-K					-
		DRAIN & OVERFLOW PROTECTION	WATCO 900-PPSF-0-CP					CHROME FINISH.
DW-1	DWELLING UNITS	DISHWASHER	GE PDT715SYNFS	-	-	1/2	-	-
HB-1	SEE PLANS	FROST-PROOF HOSE BIBB	WOODFORD B65	-	-	-	3/4	PROVIDE WITH ISOLATION VALVE AND VACUUM BREAKER.
IM-1	SEE PLANS	ICE MAKER OUTLET BOX	SIOUX CHIEF 696 SERIES	-	-	-	1/2	PROVIDE WITH NO-LEAD BRASS VALVES, HAMMER ARRESTER AND STANDARD FRAME PACK.
KS-1	DWELLING UNITS	DROP IN KITCHEN SINK	ELKAY DSE233223DFBG	2	2	1/2	1/2	PROVIDE WITH MXV-1.
		STRAINER	INCLUDED WITH UNIT					-
		FAUCET	INCLUDED WITH UNIT					-
		GARBAGE DISPOSAL	BADGER 500					1/2 HP / 120 V / 6.3 AMPS.
LAV-1	DWELLING UNITS	DROP IN LAVATORY SINK	KOHLER K-2196-4	2	2	1/2	1/2	WHITE FINISH. PROVIDE WITH MXV-1.
		FAUCET & DRAIN	KOHLER K-27389-4N					CHROME FINISH.
LAV-2	RESTROOMS	WALL HUNG LAVATORY SINK	KOHLER K-2007	2	2	1/2	1/2	WHITE FINISH. PROVIDE WITH MXV-1.
		FAUCET	CHICAGO FAUCET 116.606.AB.1					CHROME FINISH.
		STRAINER	KOHLER K-7129					CHROME FINISH.
		P-TRAP COVER	TRUEBROS EZ-102					-
		PLATE CARRIER	ZURN Z1224-2					-
MXV-1	SEE PLANS	4 PORT THERMOSTATIC MIXING VALVE	LEONARD 170D-LF	-	-	3/8	3/8	PROVIDE WITH CHECKSTOPS, OUTLET BALL VALVE AND DIAL THERMOMETER. SET TO 110°F DELIVERY TEMPERATURE.
PRV-1	SEE PLANS	PRESSURE REDUCING VALVE	WATTS LF223 SERIES	-	-	-	2	PRESSURE SET TO 80 PSI.
RPZ-1	SEE PLANS	REDUCED PRESSURE BACKFLOW PREVENTER	WATTS LF009	-	-	-	2	-
S-1	SEE PLANS	UTILITY SINK	ELKAY B1C18X18X	2	2	1/2	1/2	-
		FAUCET	ELKAY LK940BP03T4S					-
SH-1	SEE PLANS	SHOWER BASE	KOHLER K-8649	2	2	1/2	1/2	WHITE FINISH.
		DRAIN	KOHLER K-9132					CHROME FINISH.
		SHOWER KIT	KOHLER K-TS27420-4					CHROME FINISH.
		MIXING VALVE	KOHLER K-8304-K					-
WB-1	LAUNDRY ROOM	WASHING MACHINE OUTLET BOX	SIOUX CHIEF 696 SERIES	2	2	1/2	1/2	PROVIDE WITH NO-LEAD BRASS VALVES, HAMMER ARRESTER, STANDARD FRAME PACK AND DRAINAGE BOX.
WC-1	RESTROOMS	TANK TYPE WATER CLOSET	KOHLER K-31621-0	3	2	-	1/2	WHITE FINISH.
		SEAT	KOHLER K-20110-0					WHITE FINISH.
WC-2	RESTROOMS	TANK TYPE WATER CLOSET (ACCESSIBLE)	KOHLER K-3999-0	3	2	-	1/2	WHITE FINISH.
		SEAT	KOHLER K-20110-0					WHITE FINISH.

EXPANSION TANK SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	WATER CONNECTION (IN)	REMARKS
ET-1	AMTROL	ST-5-C	MECHANICAL ROOM	2.1	0.9	1/2	1
ET-2	AMTROL	ST-5-C	MECHANICAL ROOM	2.1	0.9	1/2	1
ET-3	AMTROL	ST-5-C	MECHANICAL ROOM	2.1	0.9	1/2	1
ET-4	AMTROL	ST-5-C	MECHANICAL ROOM	2.1	0.9	1/2	1

1. THE CHARGE PRESSURE SHALL BE SET TO THE STATIC PRESSURE OF THE SYSTEM WHERE THE EXPANSION TANK IS INSTALLED.

ELECTRIC WATER HEATER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	CAPACITY					ELECTRICAL REQUIREMENTS	REMARKS
				KW	TANK VOLUME (GAL)	RECOVERY RATE AT 90°F RISE (GPH)	LEAVING WATER TEMPERATURE (°F)	UEF	VOLTS/PHASE	
WH-1	AO SMITH	EJC-10	ADA RESTROOM	1.65	10	8	120	N/A	120/1	1-2
WH-2	AO SMITH	ENSB-30	MECHANICAL CLOSET	4.5	30	21	120	0.91	240/1	1-2
WH-3	AO SMITH	ENSB-30	MECHANICAL CLOSET	4.5	30	21	120	0.91	240/1	1-2
WH-4	AO SMITH	ENSB-30	MECHANICAL CLOSET	4.5	30	21	120	0.91	240/1	1-2

1. PROVIDE WITH SEISMIC STRAPS AND DRAIN PAN. ROUTE T&P PIPING TO NEAREST MOP SINK OR FLOOR DRAIN WITHOUT CROSSING A WALKWAY.
2. PROVIDE WITH EXPANSION TANK. SEE EXPANSION TANK SCHEDULE FOR EXACT MANUFACTURER AND MODEL.

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XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
PLUMBING SCHEDULES

PROJECT NUMBER: 240139

DWG- P0.1

PLUMBING SPECIFICATIONS

PLUMBING GENERAL PROVISIONS

PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. MATERIALS:

1. ALL MATERIALS AND EQUIPMENT SHALL BE OF FIRST QUALITY, NEW, FULL SIZE AND WEIGHT, STANDARD IN EVERY RESPECT, AND SUITABLE FOR THE SPACE REQUIRED. USE THE SAME MANUFACTURER FOR PRODUCTS OF SIMILAR CLASS OR SERVICE, SUCH AS VALVES, PUMPS, CONTROLS, AND AIR HANDLERS. PROTECT ALL MATERIALS AGAINST LOSS, THEFT, OR DAMAGE BEFORE AND AFTER INSTALLATION.
2. FURNISH EQUIPMENT THAT WILL OPERATE UNDER ALL CONDITIONS OF LOAD WITHOUT ANY SOUND OR VIBRATION THAT IS OBJECTIONABLE IN THE OPINION OF THE ARCHITECT/ENGINEER. VIBRATION OR NOISE CONSIDERED OBJECTIONABLE WILL BE CORRECTED BY THE SUBCONTRACTOR AT HIS EXPENSE.
3. FURNISH AND INSTALL ALL NECESSARY FOUNDATIONS, SUPPORTS, PADS, BASES, AND PIERS REQUIRED FOR ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT.
4. PROVIDE ALL REQUIRED FIRE STOPPING AT PIPING AND DUCT PENETRATIONS OF FIRE RATED WALLS, FLOORS, CEILINGS, AND ROOFS.

B. WORKMANSHIP:

1. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER BY COMPETENT SPECIALISTS FOR EACH SUB TRADE. WORK SHALL BE INSTALLED TO THE SATISFACTION OF THE ARCHITECT/ENGINEER WITH UNSATISFACTORY WORK REMOVED AND REINSTALLED TO HIS SATISFACTION AT NO EXTRA COST TO THE OWNER.
2. PROVIDE ALL CUTTING AND PATCHING NECESSARY TO INSTALL THE WORK SPECIFIED IN THIS SECTION. PATCHING SHALL MATCH ADJACENT SURFACES. NO STRUCTURAL MEMBERS SHALL BE CUT WITHOUT THE APPROVAL OF THE ARCHITECT/ENGINEER. PROVIDE ALL SLEEVES AND INSERTS REQUIRED BEFORE THE FLOORS AND WALLS ARE BUILT.
3. LOCATE ALL EQUIPMENT THAT MUST BE SERVICED IN FULLY ACCESSIBLE POSITIONS. PROVIDE CLEARANCE FOR REMOVAL OF REPLACEMENT PARTS AND COMPONENTS, AND WITH NECESSARY COUPLINGS OR FLANGES TO REMOVE THE COMPONENT FOR MAINTENANCE.

2.2 SUBMITTALS AND SUBSTITUTIONS

A. PREBID APPROVAL:

1. MANUFACTURER'S TRADE NAMES AND CATALOG NUMBERS STATED HEREIN ARE INTENDED TO INDICATE THE QUALITY OF EQUIPMENT OR MATERIALS DESIRED. ALL MANUFACTURERS NOT SPECIFICALLY LISTED REQUIRE PRIOR APPROVAL. SUBMIT CATALOG DATA, INCLUDING SPECIFICATIONS, OF THE PROPOSED EQUIPMENT TO THE ARCHITECT/ENGINEER FOR HIS APPROVAL AT LEAST 10 CALENDAR DAYS PRIOR TO BID OPENING. NOTICE OF SUCH APPROVALS WILL BE PUBLISHED IN AN ADDENDUM. APPROVAL OF LISTED ALTERNATE EQUIPMENT MANUFACTURERS IS FOR BIDDING ONLY. FINAL APPROVAL IS TO BE BASED ON REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.

B. SUBMITTALS:

1. WITHIN THIRTY DAYS AFTER AWARD OF THIS CONTRACT, PROVIDE A COMPLETE LIST OF ALL MATERIALS AND EQUIPMENT PROPOSED FOR THIS PROJECT. LIST SHALL CONTAIN MAKE, TYPE, MANUFACTURER'S NAME, AND TRADE DESIGNATION OF ALL MATERIALS AND EQUIPMENT. SUBMITTAL SHALL ALSO INCLUDE MANUFACTURER'S COMPLETE SPECIFICATION FOR EACH ITEM, INCLUDING CAPACITIES, RATINGS, ETC., AND DIMENSIONS AS REQUIRED TO CHECK SPACE REQUIREMENTS. PROVIDE SIX PHYSICAL COPIES OR A DIGITAL COPY OF ALL SUBMITTALS. THE SCHEDULED EQUIPMENT IS THE BASIS OF DESIGN FOR CAPACITY, WEIGHTS, PHYSICAL SIZE, ETC. ALTERNATE MANUFACTURERS SHALL NOT EXCEED THE WEIGHT OR PHYSICAL SIZE; ANY CHANGES TO THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND CONTROL SYSTEMS DUE TO ALTERNATE MANUFACTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SUPPLIER.
2. APPROVAL OF SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM THE PLANS OR SPECIFICATIONS, UNLESS HE HAS, IN WRITING, CALLED THE ARCHITECT'S ENGINEER'S ATTENTION TO DEVIATIONS AT THE TIME OF SUBMISSION, AND OBTAINED HIS WRITTEN APPROVAL. APPROVAL OF SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN SHOP DRAWINGS OR LITERATURE.

C. EQUIPMENT REQUIRING SUBMITTALS:

1. PLUMBING FIXTURES AND TRIM
2. CAST IRON SOIL PIPE

PART 3 - EXECUTION

3.1 ACCESSIBILITY & SAFETY

A. ACCESSIBILITY:

1. ALL EQUIPMENT WHICH MUST BE SERVICED OR OPERATED SHALL BE LOCATED IN FULL, ACCESSIBLE POSITION. MINOR CHANGES FROM THE DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY. ALL CHANGES SHALL BE APPROVED PRIOR TO ACTUAL INSTALLATION.
2. ACCESS PANELS SHALL BE PROVIDED IF REQUIRED FOR ACCESSIBILITY. SUBCONTRACTOR SHALL FURNISH THE REQUIRED PANELS TO THE GENERAL CONTRACTOR AND THE REQUIRED LOCATION FOR ALL ACCESS PANELS. PANELS SHALL BE INSTALLED BY THE GENERAL CONTRACTOR.

B. SAFETY:

1. SUBCONTRACTOR SHALL PROVIDE GUARDS FOR ALL BELT DRIVES AND ROTATING MACHINERY. NO WATER PIPING SHALL RUN IMMEDIATELY OVER OR WITHIN A 3-FOOT PLAN VIEW CLEARANCE OF ANY ELECTRICAL PANEL OR MOTOR STARTER. WHERE PIPING MUST BE LOCATED WITHIN THESE ZONES, INSTALL PIPING INSIDE A CONDUIT TO PREVENT WATER ACCESS TO ELECTRICAL EQUIPMENT.

3.2 COORDINATION

A. COORDINATE ALL WORK WITH THE VARIOUS TRADES INVOLVED TO PROVIDE A COMPLETE AND SATISFACTORY INSTALLATION. THE EXACT DETAILS OF PIPING, DUCTWORK, AND EQUIPMENT ARE NOT SHOWN. NO ADDITIONAL COMPENSATION WILL BE MADE FOR OFFSETS OR RELOCATION REQUIRED IN COORDINATION WITH OTHER TRADES.
B. ALTERATIONS REQUIRED DUE TO IMPROPER SUPERVISION BY THE SUBCONTRACTOR SHALL BE MADE AT NO EXTRA COST, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.

3.3 ELECTRICAL

A. ELECTRIC MOTORS REQUIRED FOR EQUIPMENT SPECIFIED IN THIS SECTION SHALL BE PROVIDED AND INSTALLED BY THIS SUBCONTRACTOR. MOTOR STARTERS, RELAYS, PILOT LIGHTS, ETC., ARE, IN GENERAL, TO BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
B. STARTERS, RELAYS, CONTROLS, DISCONNECTS, ETC., WHICH ARE FACTORY ASSEMBLED INTO OR PROVIDED WITH (PER SCHEDULES) PACKAGED EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR UNDER THIS SECTION OF THE SPECIFICATIONS.
C. ALL MOTORS SHALL BE PROVIDED WITH ADEQUATE STARTING AND PROTECTIVE EQUIPMENT AS SPECIFIED OR REQUIRED. MOTOR CAPACITY SHALL BE SUFFICIENT TO OPERATE DRIVEN DEVICE UNDER ALL CONDITIONS OF OPERATION AND LOAD WITHOUT OVERLOAD. MINIMUM HORSEPOWER SHALL BE AS SPECIFIED.

3.4 EXCAVATION & BACKFILL

A. EXCAVATE TRENCHES REQUIRED FOR UNDERGROUND PIPING TO PROPER ELEVATION AND GRADE. PROVIDE TRENCHES WITH SOLID BOTTOMS TO ALLOW SUPPORT OF PIPING ALONG ENTIRE LENGTH WITH EXCAVATION AT BELLS AS REQUIRED FOR JOINTING AND INSPECTION. PROVIDE REPAIRING OF FINISHED SURFACES, AND ALL REQUIRED SHORING, BRACING, PUMPING, AND PROTECTION FOR SAFETY OF PERSONS AND PROPERTY. OBSERVE ALL LOCAL OR STATE SAFETY CODES. VERIFY THAT ELEVATIONS OF EXISTING UTILITIES WILL ALLOW FOR PROPER GRADING OF PIPING CONNECTING TO EXISTING UTILITIES.

3.5 IDENTIFICATION & CODING

A. PIPING:

1. IDENTIFY ALL PIPING AS TO THE SERVICE OF THE PIPE AND THE DIRECTION OF FLOW. THE LETTERS SHALL BE ½-INCH HIGH ON PIPING 1-1/4 INCHES OR SMALLER, 3/4 INCH HIGH ON PIPING 1-1/2 TO TWO INCHES, 1-1/4 INCHES HIGH ON PIPING UP TO SIX INCHES, AND 2-1/2 INCHES HIGH ON 8 INCH PIPING OR LARGER. FLOW ARROWS SHALL BE AT LEAST SIX INCHES LONG. THE LETTERS AND FLOW ARROWS SHALL BE MADE BY PRECUT STENCILS OR OIL BASE PAINT, ONE INCH HIGH AND BLACK, OR FACTORY FABRICATED PLASTIC PIPE MARKERS. PIPING SHALL BE IDENTIFIED AT 25 FOOT MAXIMUM INTERVALS, ON LONG CONTINUOUS LINES; ADJACENT TO EACH ITEM OF EQUIPMENT; ON EACH RISER AND JUNCTION, AND ON BOTH SIDES OF ALL WALL AND FLOOR PENETRATIONS. UNDERGROUND PIPING SHALL BE IDENTIFIED WITH BRIGHT COLORED CONTINUOUSLY PRINTED PLASTIC TAPE OF NOT LESS THAN 6" WIDE BY 4 MIL THICK, MANUFACTURED FOR DIRECT BURIAL SERVICE. INSTALL DIRECTLY ABOVE ALL BURIED PIPE, 6 TO 8 INCHES BELOW FINISHED GRADE. ALL PIPING SHALL BE LABELED PER THE APPLICABLE PLUMBING CODE, LATEST EDITION.

B. VALVES:

1. REGARDLESS OF SIZE, ALL VALVES SHALL BE TAGGED WITH A NUMBERED BRASS TAG, 1-1/2 INCHES BY 3 INCHES MINIMUM IN SIZE AND 0.051 INCH THICK. A VALVE CHART INDICATING VALVE TAG NUMBER, LOCATION, SERVICE, AND NORMAL POSITION SHALL BE MOUNTED IN A SUITABLE FRAMED AND GLASSED COVER IN THE MAIN MECHANICAL ROOM OR AS DIRECTED. .

PLUMBING SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE

A. THIS SECTION COVERS THE WORK NECESSARY FOR THE PLUMBING SYSTEM, COMPLETE. THE PLUMBING GENERAL PROVISIONS ARE TO BE INCLUDED AS A PART OF THIS SECTION OF THE SPECIFICATIONS.

1.2 CODES

A. THE PLUMBING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE, LATEST EDITION, APPLICABLE FUEL GAS CODE, LATEST EDITION; AND ALL LOCAL AND STATE CODES.

1.3 FIXTURES & EQUIPMENT

A. GENERAL:

1. PLUMBING FIXTURES AND EQUIPMENT SHALL BE AS LISTED ON THE DRAWINGS. IN ADDITION TO THOSE SPECIFICALLY LISTED, THE FOLLOWING MANUFACTURERS ARE APPROVED FOR BIDDING ONLY. ALL OTHER MANUFACTURERS REQUIRE PRIOR APPROVAL. FINAL APPROVAL FOR INSTALLATION IS BASED ON SUBMITTAL DATA FURNISHED:
   a. TANK TYPE WATER CLOSETS: AMERICAN STANDARD, KOHLER, ELJER, TOTO, ZURN, AND SLOAN.
   b. FLUSH VALVE WATER CLOSETS: AMERICAN STANDARD, KOHLER, ELJER, TOTO, ZURN AND SLOAN.
   c. URINALS: AMERICAN STANDARD, KOHLER, TOTO, ZURN, AND SLOAN.
   d. VITREOUS CHINA SINKS: AMERICAN STANDARD, KOHLER, ELJER, ZURN, AND CRANE.
   e. STAINLESS STEEL SINKS: ELKAY, JUST, AND ADVANCE TABCO.
   f. FAUCETS: AMERICAN STANDARD, KOHLER, CHICAGO FAUCETS, DELTA, MOEN, GEBERIT, GERBER, CHG ENCORE SANIGUARD, ZURN AQUASPEC, SYMMON.
   g. VALVES AND TRIM: T&S BRASS, DEARBORN BRASS, BRASSCRAFT, PROFLO.
   h. FLUSH VALVES: SLOAN, DELANY, DELTA AND ZURN. MOEN (SENSOR-OPERATED ONLY).
   i. CARRIERS AND DRAINAGE PRODUCTS: JAY R. SMITH, JOSAM (BLUCHER-JOSAM), ZURN, WADE, WATTS, MIFAB, AND SIOUX CHIEF.
   j. TOILET SEATS: BEMIS, CHURCH, COMFORT SEATS, BENEKE, ZURN, AMERICAN STANDARD, KOHLER.
   k. MIXING VALVES: SYMMONDS, LEONARD, POWERS, WATTS, WILKINS.
   l. FIBERGLASS/ ACRYLIC FIXTURES: BEST BATH, INTERSAN, MAXX, FIAT, AQUATIC, AQUAGLASS.
   m. DRINKING FOUNTAINS/ ELECTRIC WATER COOLERS: HAWS, ACORN AQUA, OASIS, STERN WILLIAMS, HALSEY TAYLOR.
   n. SAFETY FIXTURES AND SAFETY MIXING VALVES: HAWS, GAURDIAN, ACORN, BRADLEY, CHICAGO FAUCETS, ENCON.
   o. TERRAZZO ACRYLIC WASHFOUNTAINS: BRADLEY, ACORN, INTERSAN.
   p. SERVICE SINKS: FIAT, ACORN, STERN WILLIAMS, AND MUSTEE.
   q. WATER HEATERS: RHEEM, A.O. SMITH, STATE, BRADFORD-WHITE, AMERICAN.
   r. BACKFLOW PREVENTERS: WATTS, WILKINS.
   s. HOSE BIBBS: JOSAM, ZURN, JR SMITH, AND WOODFORD.
2. PLUMBING FIXTURE STANDARDS: ALL PLUMBING FIXTURES SHALL MEET OR EXCEED ALL APPLICABLE CODES AND STANDARDS OF ANSI/ASSE.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES & TRIM

A. ALL PLUMBING FIXTURES SHALL BE PROVIDED COMPLETE WITH ALL REQUIRED TRIM FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL EXPOSED TRIM SHALL BE CHROME PLATED. ALL PIPING PENETRATIONS THROUGH FINISHED WALLS SHALL BE PROVIDED WITH CHROME ESCUTCHEONS. ALL PLUMBING FIXTURES SHALL BE CAULKED AND SEALED TO SURROUNDING SURFACES. ALL SINK TRAPS SHALL BE PROVIDED WITH A CLEAN OUT PLUG IN THE BOTTOM OF THE TRAP. INTERIOR EXPOSED PIPE, VALVES, AND FIXTURE TRIM, INCLUDING TRIM BEHIND ALL CASEWORK DOORS, SHALL BE CHROME PLATED. ALL FIXTURE STOP VALVES SHALL BE QUARTER-TURN BRASS BALL TYPE.

2.2 PIPING & FITTINGS

A. GENERAL:

1. UNDERGROUND SANITARY SEWER AND STORM DRAIN LINES SHALL BE INSTALLED AT 1/4" PER FOOT SLOPE, UNLESS OTHERWISE INDICATED. IF SUCH SLOPE IS NOT POSSIBLE DUE TO EXISTING INVERTS, APPROVAL SHALL BE OBTAINED FROM THE ARCHITECT/ENGINEER AND THE AUTHORITY HAVING JURISDICTION BEFORE ANY PIPING IS INSTALLED AT A LESSER SLOPE.
2. CONNECTIONS BETWEEN PIPING OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC WATERWAY FITTINGS OR UNIONS.
3. PROVIDE STANDARD MANUFACTURED WATER HAMMER ARRESTERS AT ALL FLUSH VALVES. SIZE AND LOCATE PER MANUFACTURERS RECOMMENDATIONS. PROVIDE ACCESS PANELS FOR ACCESS TO ALL WATER HAMMER ARRESTERS.

B. DOMESTIC HOT AND COLD WATER:

1. PIPING INSIDE BUILDING ABOVE SLAB OR ABOVE GRADE IN CRAWL SPACE SHALL BE ASTM B88, TYPE "L", HARD DRAWN COPPER. FITTINGS SHALL BE ANSI/ASME B16.23 CAST BRASS, OR ANSI/ASME B16.29 WROUGHT COPPER. JOINTS SHALL BE ANSI/ASTM B32 SOLDER, GRADE 95-5, LEAD FREE. THIS SECTION SHALL ALSO INCLUDE PEX AND PLASTIC FITTINGS APPROVED BY CODE.
2. PIPING UNDERGROUND WITHIN 5 FEET OF THE BUILDING LINE OR BELOW FLOOR SLAB, SMALLER THAN 4 INCHES, SHALL BE ASTM B88, TYPE "K", HARD DRAWN OR SOFT ANNEALED COPPER. FITTINGS SHALL BE ANSI/ASME B16.29 WROUGHT COPPER. JOINTS SHALL BE ANSI/ASTM B32 SOLDER, GRADE 95-5, LEAD FREE. UNDERGROUND COPPER OR PEX PIPING SHALL BE PROVIDED WITH A POLYETHYLENE JACKET, ANSI/AWWA C105, OR SHALL BE WRAPPED WITH DOUBLE LAYER, HALF-LAPPED, 10 MIL POLYETHYLENE TAPE.
   a. TRAP PRIMER PIPING (BELOW FLOOR OR CONCEALED ONLY) - 1/2" TYPE L HARD DRAWN COPPER, WRAPPED AS INDICATED ABOVE OR PEX PIPING AS APPROVED BY CODE.

C. SANITARY SEWER AND VENT:

1. PIPING AND FITTINGS SHALL BE SCHEDULE 40 PVC-DWV (CELLULAR CORE), PER ASTM F1488 AND ASTM F891, SOLVENT WELDED PER SOLVENT MANUFACTURERS INSTRUCTIONS, OR ABS SCHEDULE 40 PIPING AND FITTINGS PER EITHER ASTM D2661 OR ASTM F628 WITH SOLVENT CEMENT CONFORMING TO ASTM D2235. ALL SEWER RISERS (2 STORY OR MORE) SHALL BE SERVICE WEIGHT CAST IRON, NO-HUB, ASTM A74. ALL PIPING PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR CEILINGS, AND ALL PIPING LOCATED ABOVE CEILINGS USED AS RETURN AIR PLENUMS SHALL ALSO BE CAST IRON OR GALVANIZED STEEL, ASTM A53. UNDERGROUND PVC-DWV PIPING SHALL BE INSTALLED PER ASTM D-2321.
2. ALL SANITARY WASTE AND GREASE PIPING FOR COMMERCIAL TYPE KITCHENS SHALL BE CAST IRON CISPI 201, ASTM888 HUBLESS, WITH CAST IRON FITTINGS. JOINTS SHALL BE NEOPRENE GASKETS AND STAINLESS STEEL CLAMP-AND-SHEILD ASSEMBLIES AND SHALL CONFORM TO CISP 310 AND BE CERTIFIED BY NSF FOR COMPLIANCE. PIPE AND FITTINGS SHALL BE LISTED BY NSF INTERNATIONAL AND MANUFACTURED BY AB&I, CHARLOTTE, TYLER,NEWAGE CASTING, STAR, OR RECEIVE PRIOR APPROVAL. CAST IRON PIPING SHALL EXTEND DOWNSTREAM FROM THE KITCHEN TO THE MAIN BUILDING WASTE LINE, AND / OR, GREASE INTERCEPTOR.
3. ALL 90 DEGREE WASTE LINE ELBOWS SHALL BE PER THE LATEST ISSUE OF THE APPLICABLE PLUMBING CODE.
4. ALL EXPOSED VENT PIPING LOCATED IN OCCUPIED AREAS OR ROOMS, IS TO BE CAST IRON WITH CAST IRON FITTINGS.
5. CLEANOUTS SHALL BE PROVIDED AT EACH HORIZONTAL DRAINAGE PIPE AT ITS UPPER TERMINAL, AND EACH RUN OF PIPING WHICH IS MORE THAN 100 FEET, AND SHALL BE PROVIDED FOR EACH 100 FEET DEVELOPED LENGTH, OR FRACTION THEREOF OF SUCH PIPING. AN ADDITIONAL CLEAN OUT SHALL BE PROVIDED FOR EACH AGGREGATE HORIZONTAL CHANGE OF DIRECTION EXCEEDING ONE HUNDRED THIRTY-FIVE DEGREES, PER APPLICABLE PLUMBING CODE. THIS SHALL BE PROVIDED REGARDLESS OF WHAT IS SHOWN ON THE DRAWINGS.
6. ALL VENTS THROUGH ROOF (VTR'S) SHALL BE EXTENDED AT LEAST 1 FOOT ABOVE THE ROOF SURFACE, OR TO THE TOP OF THE CLOSEST ADJACENT PARAPET WALL, WHICHEVER IS GREATEST.

D. CONDENSATE DRAIN PIPING:

1. EXTERIOR TO BUILDING, OR LOCATED IN PLENUM: PIPING SHALL BE TYPE L HARD DRAWN COPPER, ASTM B88 WITH SOLDER JOINTS. COPPER PIPING SHALL NOT BE USED ON 90% CONDENSING TYPE EQUIPMENT.
2. INTERIOR: PIPING SHALL BY TYPE L HARD DRAWN COPPER, ASTM B88, WITH SOLDER JOINTS, GRADE 95TA, OR SHALL BE SCHEDULE 40 PVC. COPPER PIPING SHALL NOT BE USED ON 90% CONDENSING TYPE EQUIPMENT. PROVIDE A NEOPRENE OR RUBBER GASKET AT ALL COPPER PIPING SUPPORT HANGERS TO INHIBIT CORROSION.

E. HANGER AND SUPPORTS:

1. PIPE HANGERS SHALL BE PROVIDED TO ADEQUATELY SUPPORT ALL PIPING SYSTEMS. HANGERS SHALL BE VERTICALLY ADJUSTABLE TO PROVIDE FOR PROPER PITCH AND DRAINAGE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION OF THE PIPING SYSTEM. REFERENCE "GENERAL REGULATIONS" OF THE LATEST EDITION OF THE APPLICABLE PLUMBING CODE.
2. HANGERS FOR PIPE SIZES 1/2 TO 8 INCHES SHALL BE ADJUSTABLE CLEVIS TYPE, OR UNISTRUT SADDLES WITH ALL-THREAD HANGER ROD. TEAR DROP AND PLUMBERS TAPE HANGERS WILL REQUIRE APPROVAL FROM THE ENGINEERING TEAM.
3. VERTICAL PIPES SHALL BE SUPPORTED WITH STEEL RISER CLAMPS. SPACING INTERVAL REQUIREMENTS PER "GENERAL REGULATIONS" OF THE LATEST EDITION OF THE APPLICABLE PLUMBING CODE.
4. ALL INSULATED PIPING SHALL BE PROVIDED WITH MINIMUM 18 GAUGE GALVANIZED INSULATION SHIELDS, 12 INCHES LONG, AND OVERSIZED HANGERS. PIPE SIZES 2 INCHES AND OVER SHALL ALSO BE PROVIDED WITH 12 INCH LONG CALCIUM SILICATE INSULATING BLOCKS BETWEEN THE PIPING AND THE GALVANIZED INSULATION SHIELD.
5. PROVIDE HANGERS WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW.
6. PROVIDE HANGERS WITH MINIMUM 1-1/2 INCHES VERTICAL ADJUSTMENT.

2.3 INSULATION

A. GENERAL:

1. ALL INSULATION SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS, AS TESTED BY ASTM E-84, NFPA 255, AND UL 723, NOT EXCEEDING:
   - FLAME SPREAD 25
   - SMOKE DEVELOPED 50

B. PIPING:

1. ALL DOMESTIC, POTABLE & NON-POTABLE, HOT AND COLD WATER LINES AND RAIN DRAINS SHALL BE INSULATED WITH PREFORMED INSULATION.
   a. FIBERGLASS INSULATION WITH A VAPOR BARRIER JACKET. INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.28 BTU-INCH/HOUR-SQ. FT.-°F. LAPS AND BUTT JOINTS SHALL BE SEALED WITH PRESSURE SENSITIVE JOINT SEALING TAPE OF THE SAME FINISH AS THE INSULATION JACKET TO PROVIDE A CONTINUOUS VAPOR SEAL. FITTINGS AND VALVES SHALL BE INSULATED WITH PVC FITTING COVERS AND FIBERGLASS INSULATION INSERTS, OR WITH HYDRAULIC SETTING INSULATING CEMENT AND FOUR OUNCE CANVAS JACKET WITH VAPOR BARRIER ADHESIVE.
   b. ALTERNATE MATERIAL FOR CROSS-LINKED POLYETHYLENE TUBING (PEX), ONE PIECE PREFORMED FLEXIBLE ELASTOMERIC CLOSED CELL FOAM WITH BUILT-IN VAPOR BARRIER. SEAL LAPS AND BUTT JOINTS WITH MOISTURE RESISTANT ADHESIVE TO PROVIDE A CONTINUOUS VAPOR BARRIER. INSULATION SHALL HAVE A CONDUCTIVITY RATING NOT EXCEEDING 0.27 BTU-INCH/HOUR-SQ. FT.-°F.
2. INSULATION SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND CODE.
3. INSULATION SHALL BE CONTINUOUS THROUGH PENETRATIONS.
4. ALL INSULATION SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.

2.4 VALVES & STRAINERS

A. BALL VALVES:

1. VALVES 2-INCHES AND SMALLER SHALL BE CAST BRASS BODY, CHROME-PLATED BRASS BALL, TEFLON SEATS, AND LEVER HANDLE, 600 PSI CWP. VALVES SHALL COMPLY WITH MSS SP-110. VALVES OVER 2-INCHES SHALL BE DUCTILE IRON OR CAST STEEL BODY, CHROME PLATED STEEL BALL, TEFLON SEATS, AND LEVER HANDLE. VICTAULIC SERIES 726, ANVIL GRUVLOK, GRINNELL, OR SHURJOINT BALL VALVES ARE ACCEPTABLE IF GROOVED PIPING IS USED.

B. STRAINERS:

1. STRAINERS SHALL BE CAST STEEL BODY, Y-PATTERN, 20-MESH STAINLESS SCREEN.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. GENERAL:

1. INSTALL ALL PIPING, FIXTURES, EQUIPMENT, AND ACCESSORIES AS SHOWN, AND IN STRICT ACCORDANCE WITH THE PLUMBING LAWS, RULES, AND REGULATIONS OF THE STATE AND/OR CITY. ALL WORK SHALL BE DONE IN A NEAT AND ORDERLY FASHION, AND LEFT IN A CONDITION SATISFACTORY TO THE ARCHITECT/ENGINEER.

B. PIPING:

1. ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO ESTABLISHED BUILDING LINES.
2. INSTALL PIPING SO AS TO ALLOW FOR EXPANSION. PIPING SUPPORTS MUST ALLOW FOR LINES TO EXPAND AND CONTRACT FREELY. WHERE PIPING RUNS EXCEED 100 FEET IN LENGTH, AN OFFSET OR EXPANSION LOOPS MUST BE INSTALLED IN THE MIDDLE OF THE PIPING RUN.
3. WASTE AND VENT PIPING OCCURRING ABOVE FLOOR SLAB SHALL BE INSTALLED TRUE AND PLUMB. EXTEND VENTS AT LEAST 1 FOOT ABOVE ROOF, OR TO THE TOP OF THE CLOSEST ADJACENT PARAPET WALL, WHICHEVER IS GREATER, AND PROVIDE WATERTIGHT FLASHING SLEEVES. EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH PLUMBING GENERAL PROVISIONS OF THESE SPECIFICATIONS.

C. FIXTURES:

1. INSTALL FIXTURES TRUE AND PLUMB WITH BUILDING WALLS. CAULK ALL PLUMBING FIXTURES AT JOINTS ALONG WALLS, COUNTERTOPS, AND OTHER INTERSECTING SURFACES. LOCATE FIXTURES AS SHOWN AND PER MANUFACTURER'S INSTRUCTIONS. FURNISH ALL REQUIRED TRIM FOR FIXTURES TO PROVIDE A COMPLETE AND WORKABLE INSTALLATION.

3.2 TESTS

A. GENERAL:

1. ALL PIPING, FIXTURES, AND EQUIPMENT SHALL BE INSPECTED AND APPROVED BEFORE CONCEALING OR COVERING. ALL WORK SHALL BE TESTED AS REQUIRED BY THE PLUMBING GENERAL PROVISIONS SECTION OF THESE SPECIFICATIONS, AND SHALL BE LEAK PROOF BEFORE INSPECTION IS REQUESTED. ALL TESTS SHALL BE REPEATED IF REQUIRED BY THOSE MAKING THE INSPECTION.
2. ALL POTABLE WATER SYSTEMS SHALL BE FLUSHED AND DISINFECTED IN ACCORDANCE WITH PLUMBING GENERAL PROVISIONS SECTION OF THESE SPECIFICATIONS. FOLLOWING DISINFECTION, SYSTEM SHALL BE FLUSHED AND WATER SAMPLED TO SHOW COMPLIANCE WITH REQUIREMENTS OF PUBLIC HEALTH AUTHORITY HAVING JURISDICTION. IF TESTED WATER DOES NOT MEET REQUIREMENTS, DISINFECTING SHALL BE REPEATED UNTIL WATER QUALITY MEETS REQUIREMENTS.

B. FIXTURES AND EQUIPMENT:

1. FILL ALL PLUMBING FIXTURES WITH WATER AND CHECK FOR LEAKS OR RETARDED FLOW. REPAIR AS REQUIRED. ADJUST EACH PIECE OF PLUMBING EQUIPMENT AS REQUIRED TO INSURE PROPER FUNCTIONING. LEAVE ALL FIXTURES AND EQUIPMENT IN FIRST CLASS OPERATING CONDITION.
2. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL BACKFLOW DEVICES TO BE INSPECTED BY A CERTIFIED BACKFLOW TECHNICIAN BEFORE THE USE OF THE BUILDING POTABLE WATER SYSTEM.

3.3 OPERATION AND MAINTENANCE MANUAL

MANUALS SHALL LIST:

1. PROJECT NAME.
2. GENERAL CONTRACTOR, ADDRESS AND PHONE NUMBER.
3. MECHANICAL CONTRACTOR WITH ADDRESS AND PHONE NUMBER AND CONTACT PERSON.
4. MECHANICAL CONTRACTOR'S FOREMAN.
5. ALL SUPPLIER'S OF EQUIPMENT, THEIR ADDRESSES AND PHONE NUMBERS.
6. MANUFACTURER'S WARRANTIES.
7. CONTRACTOR WARRANTY LETTER.
8. EACH SECTION SHALL BE MARKED WITH A LABELED CARD STOCK TAB DIVIDER.
9. INCLUDE ALL START UP AND TESTING INFORMATION.

REVISION HISTORY

REV	DESCRIPTION	DATE

MECHANICAL ENGINEER
CAILIN FARRIS
(720) 319-1046
CAILIN@FARRISCONSULTANTS.COM

ELECTRICAL ENGINEER
MARK OWENS
(208) 709-3111
MOWENS@XLENGINEERING.NET

Farris Consultants, LLC
7004 S Donaway Ave., Meridian, ID 83642
www.farrisconsultants.com
(720)-319-1046

Professional Engineer
CAILIN FARRIS
20093
Date 05/03/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

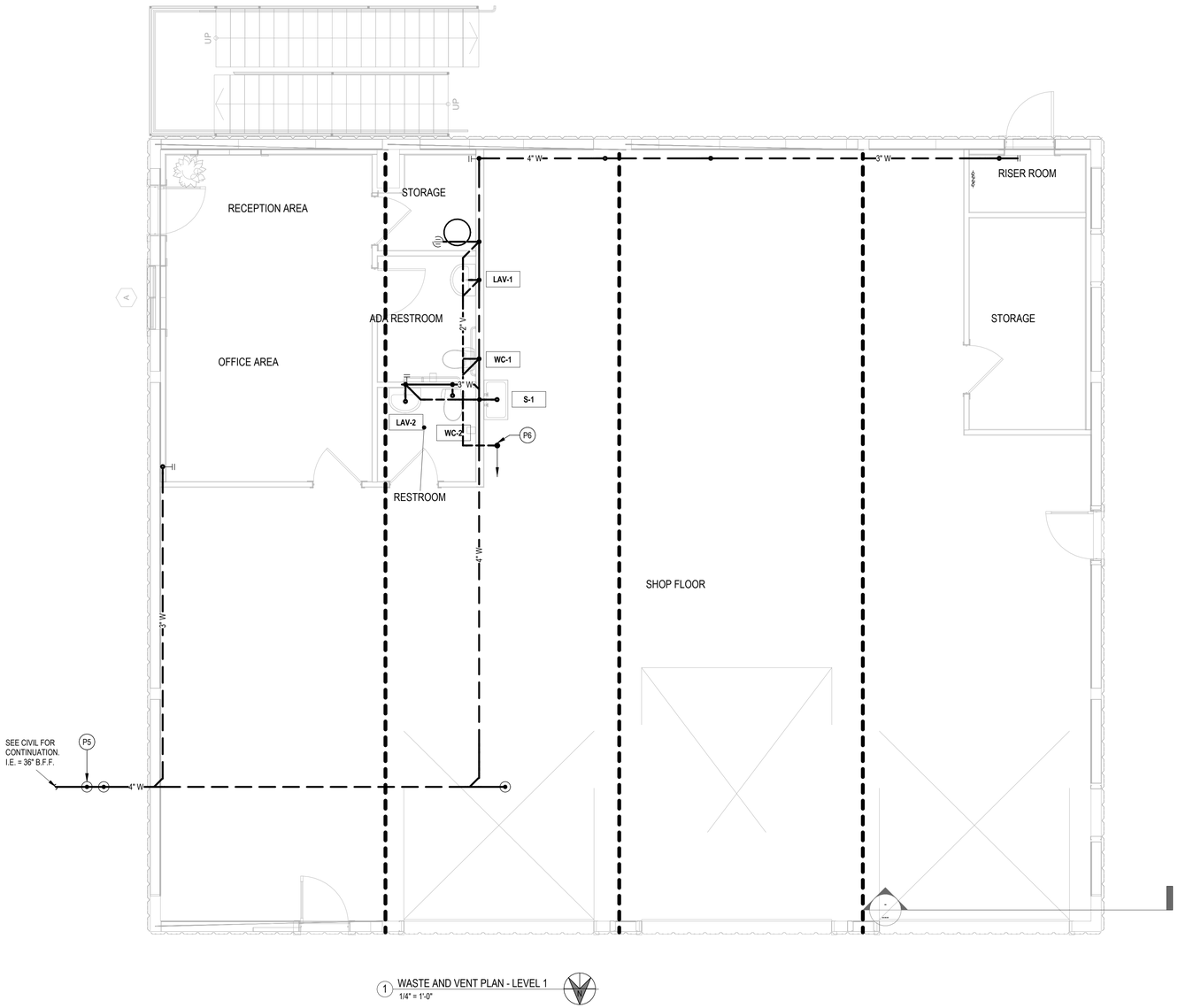
DESIGN:	DATE:
CWF	5/5/25
APPROVED:	
CWF	5/5/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
PLUMBING SPECIFICATIONS

PROJECT NUMBER: 240139

DWG- P0.2



1 WASTE AND VENT PLAN - LEVEL 1
1/4" = 1'-0"

KEYNOTES

P5 INSTALL TWO-WAY GRADE CLEANOUT AT LOW END OF BUILDING DRAIN. ROUTE SEWER LINE TO CONNECT TO SEPTIC SYSTEM. FIELD VERIFY SEPTIC SYSTEM REQUIREMENTS.

P6 ROUTE VENT UP THROUGH ROOF. VENT THROUGH ROOF SHALL BE A MINIMUM OF 3" IN DIAMETER FOR FROST CLOSURE PREVENTION. MAINTAIN MINIMUM 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.

REVISION HISTORY

REV	DATE	DESCRIPTION

MECHANICAL ENGINEER
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Professional Engineer
CAILIN FARRIS
20093
Date 05/03/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

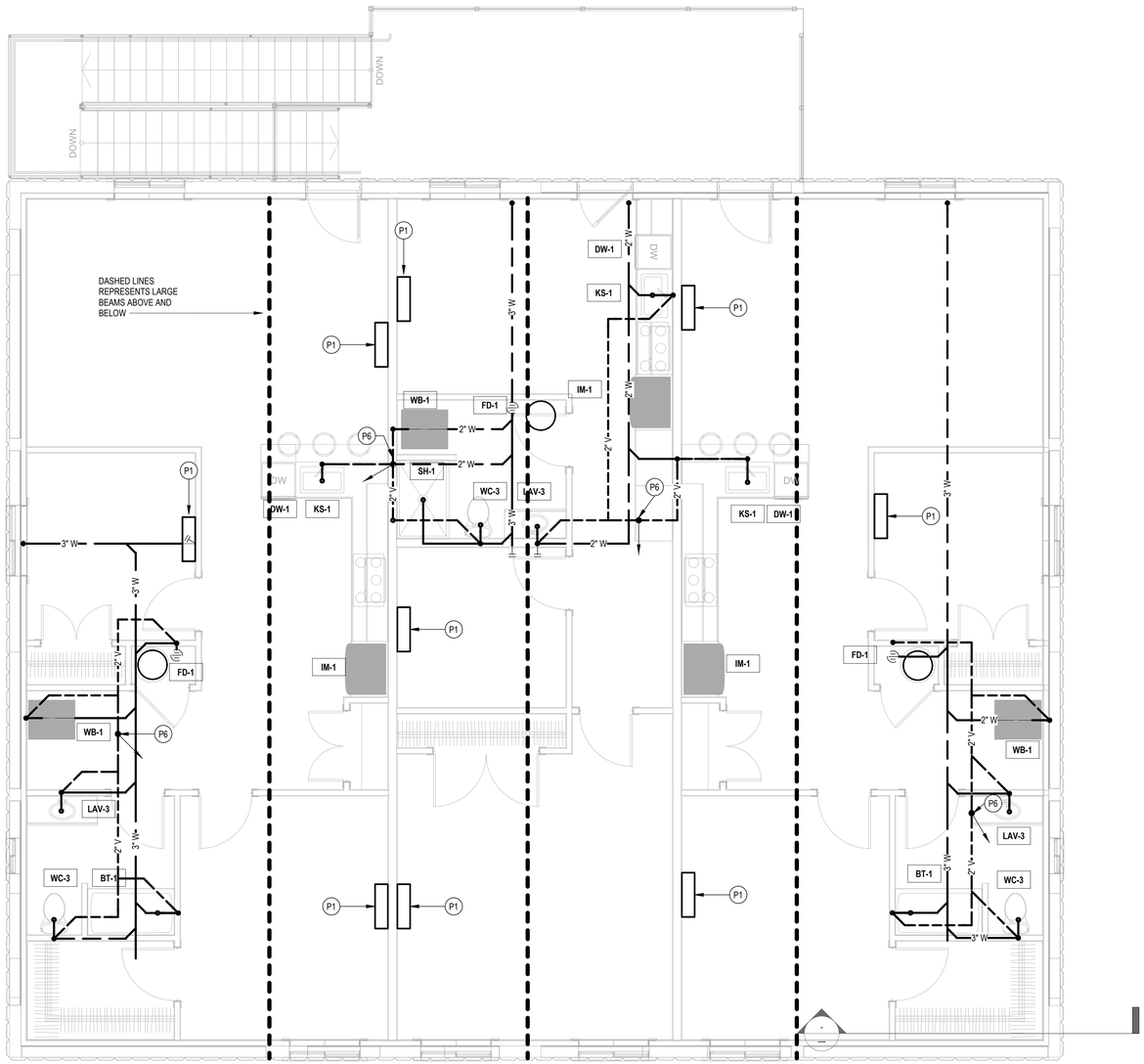
DESIGN:	DATE:
CWF	5/5/25
APPROVED:	
CWF	5/5/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEADOWS ADDITION LOT: 3
WASTE AND VENT PLAN - LEVEL 1

PROJECT NUMBER: 240139

DWG- P1.1



1 WASTE AND VENT PLAN - LEVEL 2
1/4" = 1'-0"

KEYNOTES

P1 ROUTE CONDENSATE TO NEAREST SANITARY SEWER DRAIN.

P6 ROUTE VENT UP THROUGH ROOF. VENT THROUGH ROOF SHALL BE A MINIMUM OF 3" IN DIAMETER FOR FROST CLOSURE PREVENTION. MAINTAIN MINIMUM 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.

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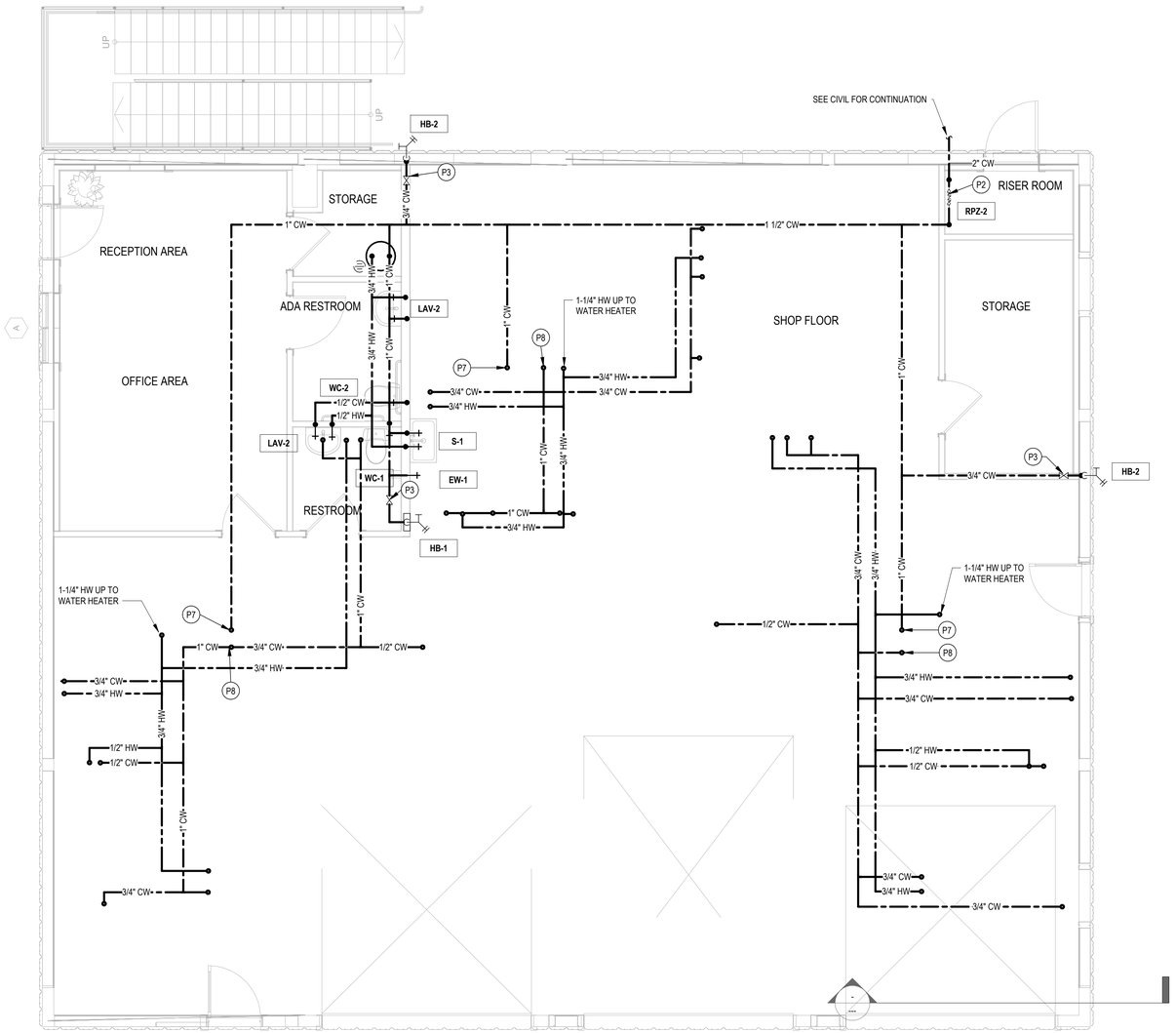
WASTE AND VENT PLAN - LEVEL 2

PROJECT NUMBER: 240139

DWG- P1.2



1 WATER AND GAS PLAN - LEVEL 1
1/4" = 1'-0"

KEYNOTES

P2 INSTALL BACKFLOW PREVENTER ON WALL WITH ACCESS FOR MAINTENANCE AND TESTING. FUNNEL DRAIN TO NEAREST SANITARY SEWER.

P3 PROVIDE SERVICE ISOLATION VALVE AND LABELED ACCESS FOR HOSE BIBB.

P7 COLD WATER TO GO UP TO SHUTOFF VALVE IN WALL. PROVIDE ACCESS PANEL.

P8 1" CW DOWN FROM ABOVE.

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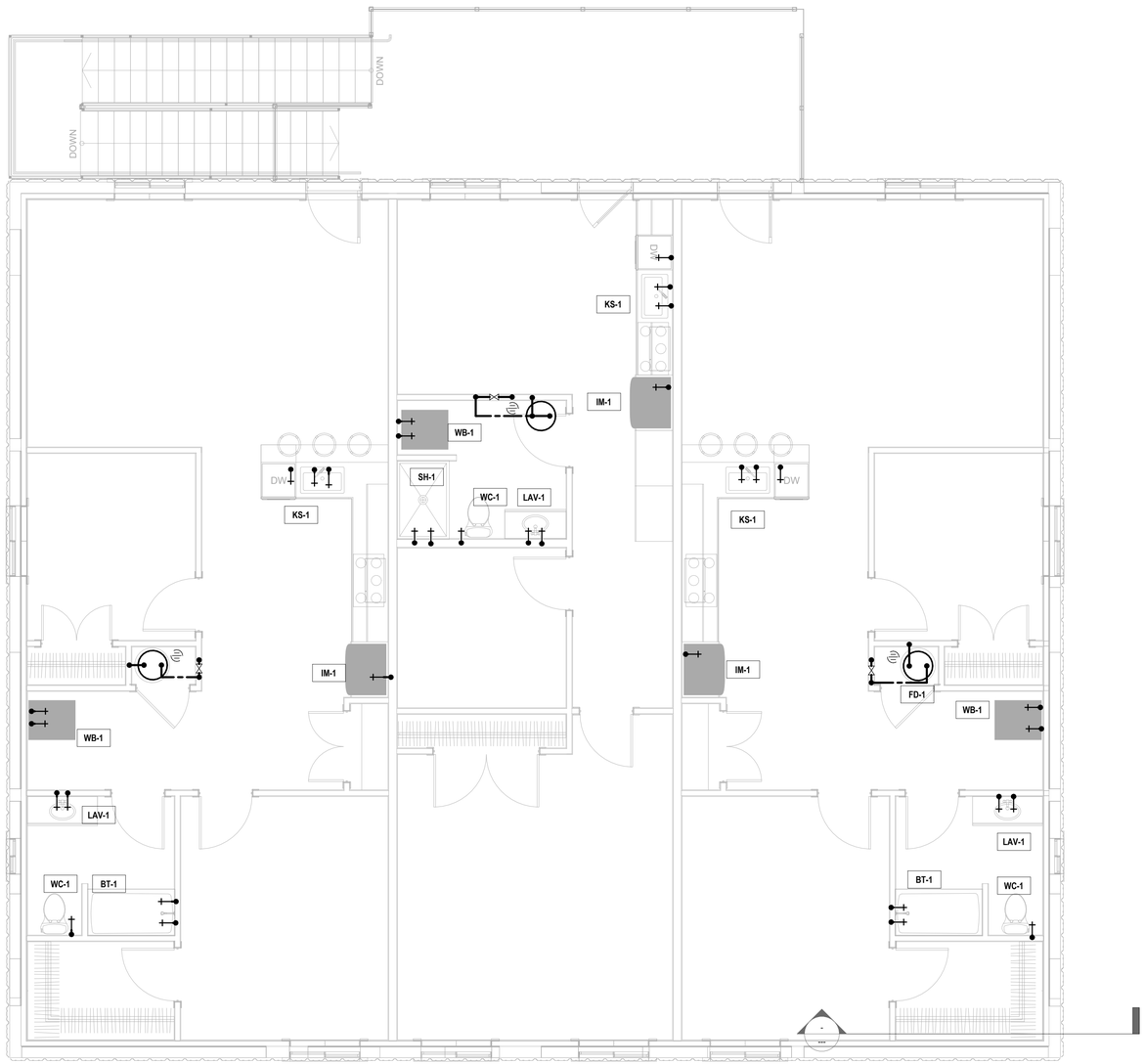
WATER AND GAS PLAN - LEVEL 1

PROJECT NUMBER: 240139

DWG- P2.1



1 WATER AND GAS PLAN - LEVEL 2
1/4" = 1'-0"

KEYNOTES

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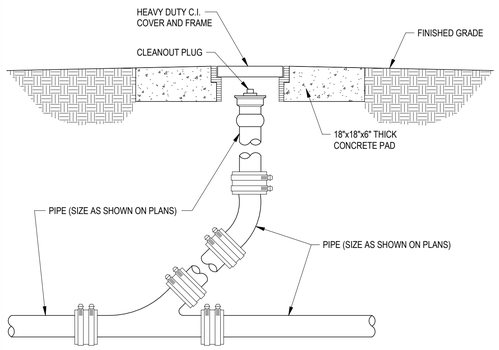
IDAHO FALLS, IDAHO

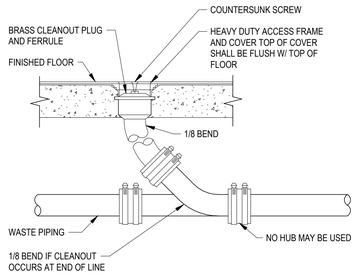
AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450O
ELK MEADOWS ADDITION LOT: 3
WATER AND GAS PLAN - LEVEL 2

PROJECT NUMBER: 240139

DWG- P2.2



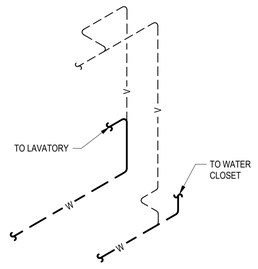
1 CLEANOUT TO GRADE DETAIL
NTS



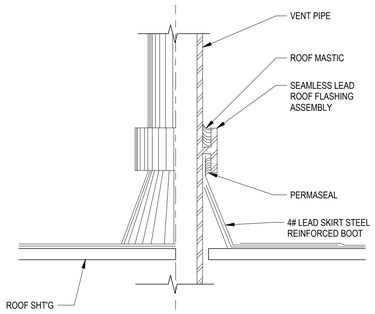
2 FLOOR CLEANOUT DETAIL
NTS

NOTES

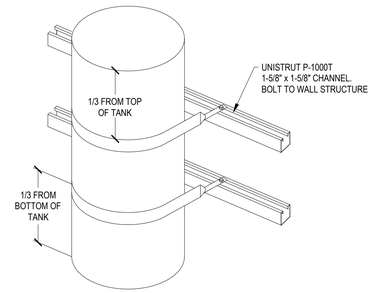
1. VENTS LESS THAN 6" ABOVE THE FLOOD-LEVEL RIM OF THE FIXTURE SHALL BE INSTALLED WITH APPROVED DRAINAGE FITTINGS AND MATERIAL AND SHALL GRADE TO THE DRAIN.



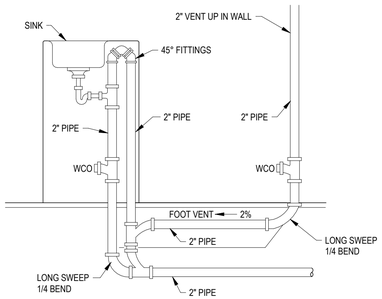
3 VENT PIPE RISER DETAIL
NTS



4 VENT THROUGH ROOF DETAIL
NTS



5 WATER HEATER SEISMIC BRACING DETAIL
NTS



6 ISLAND VENT DETAIL
NTS

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ELK MEADOWS ADDITION LOT: 3
PLUMBING DETAILS AND DIAGRAMS

PROJECT NUMBER: 240139

DWG- P5.0

SYMBOLS

	CONDUIT CONTINUATION
	CONDUIT CONCEALED IN WALL OR CEILING
E	CONDUIT EXISTING
	CONDUIT CONCEALED UNDERGROUND
	HOMERUN
	CONDUIT STUB DOWN
	STUB THROUGH
	CONDUIT STUB UP
J	JUNCTION BOX (NEW, EXISTING, DEMO)
	ELECTRICAL DISTRIBUTION PANELBOARD
	EQUIPMENT ENCLOSURE AS NOTED
	SIMPLEX RECEPTACLE
	DUPLEX RECEPTACLE (NEW, EXISTING, DEMO)
	DOUBLE DUPLEX RECEPTACLE
	OVER-COUNTER RECEPTACLE
	CONTROLLED RECEPTACLE
	GFCI RECEPTACLE
	GFCI OVER-COUNTER RECEPTACLE
	GFCI CONTROLLED RECEPTACLE
	WEATHERPROOF GFCI RECEPTACLE
	OVER-COUNTER WEATHERPROOF GFCI RECEPTACLE
	ISOLATED GROUND RECEPTACLE
	USB CHARGER/DUPLEX RECEPTACLE
	OVER-COUNTER USB CHARGER/DUPLEX RECEPTACLE
	CONTROLLED USB CHARGER/DUPLEX RECEPTACLE
	HORIZONTAL FACEPLATE
	FLOOR RECEPTCLES: FLUSH WITH COVER
A/V	FLUSH FLOOR BOX DUPLEX RECEPTACLE, COMM/DATA, A/V
	CEILING RECEPTACLE: FLUSH WITH CEILING
	SPECIAL ELECTRICAL CONNECTION: COORDINATE REQUIREMENTS WITH EQUIPMENT BEING SERVED

	EMERGENCY EXIT SIGN WITH BATTERY BACKUP: SHADED QUARTER OF SYMBOL INDICATES LIGHTED 'EXIT' ON THAT FACE ARROWS INDICATE LIGHTED DIRECTIONAL ARROW ON THAT FACE. CONNECT TO UNSWITCHED LOCAL LIGHTING CIRCUIT
	EMERGENCY LIGHTING (SURFACE, RECESSED) CONNECT TO UNSWITCHED LOCAL LIGHTING CIRCUIT
	FIXTURES WITH HALF-SHADING ARE EMERGENCY LIGHTS WITH BATTERY BACKUP. BATTERY BACKUP SHALL PROVIDE MINIMUM 1100 LUMENS PER FIXTURE FOR 90 MINUTES. EMERGENCY BATTERY UNIT SHALL BE CONNECTED TO UNSWITCHED LOCAL LIGHTING CIRCUIT. FIXTURES SHALL BE SWITCHED WITH ROOM LIGHTS. FIXTURES TO REMAIN ON AT LOSS OF POWER. FIXTURES WITH 'NL' SHALL BE EMERGENCY/NIGHT LIGHTS CONNECTED FOR 24 HOUR OPERATION.
	2X4 LIGHT FIXTURE
	2X2 LIGHT FIXTURE
	STRIP LIGHT FIXTURE
	PENDANT FIXTURE
	RECESSED DOWNLIGHT FIXTURE
	WALL SCONCE
	WALL MOUNTED FIXTURE
	RECESSED STEP FIXTURE
	BOLLARD FIXTURE
	POST TOP LIGHT FIXTURE, POLE, AND BASE
XX	LIGHT FIXTURE CALLOUT
	SWITCH 120/277 VOLT, 20 AMP
X	SWITCH X = 2 - DOUBLE POLE-DOUBLE THROW 3 - THREE-WAY 3 - FOUR-WAY D - DIMMER HP - HORSEPOWER RATED SWITCH WITH THERMAL OVERLOADS SIZED AS REQUIRED BY EQUIPMENT LABEL RATING K - KEY OPERATED OV - LOW VOLTAGE MOMENTARY OVERRIDE SWITCH OS - OCCUPANCY SENSOR PASSIVE INFRARED WALL SWITCH, WITH A 30 MINUTE TIME DELAY, PROVIDE WITH STAINLESS STEEL FACEPLATE P - NEON PILOT LIGHT L - LIGHTED SWITCH T - TIMER AS NOTED W - WIRELESS SWITCH WP - WEATHERPROOF
OS	CEILING OCCUPANCY SENSOR
DS	INTERIOR DAYLIGHT SENSOR
PC	EXTERIOR PHOTOCELL

	TELEPHONE TERMINAL BOARD (PLAN VIEW)
	SIGNAL OUTLETS SYSTEM NOTES: SYSTEMS ARE RACEWAY ONLY FOR THIS CONTRACTOR UON. 4" SQUARE BOX MINIMUM WITH SINGLE GANG MUD RING UON. 1" MINIMUM CONDUIT SIZE FROM BOX TO NEAREST ACCESSIBLE CEILING.
	(2) PORT RJ-45 DATA OUTLET WITH (2) HOMERUNS TO SERVER
M	MOTOR CONNECTION
	STARTER OR CONTACTOR: SIZE AS REQUIRED BY EQUIPMENT MANUFACTURER
	COMBINATION MOTOR STARTER/DISCONNECT: SIZE AS REQUIRED BY EQUIPMENT MANUFACTURER
	DISCONNECT SWITCH: SIZE AS REQUIRED BY EQUIPMENT MANUFACTURER F=FUSED, BLANK=UNFUSED
1 / 30 / 3	SWITCH/DISCONNECT CONFIGURATION DESIGNATION NUMBER OF POLES AMPERE RATING OF THE SWITCH NEMA CLASSIFICATION
T TS	THERMOSTAT OR TEMPERATURE SENSOR: SEE MECHANICAL DRAWINGS FOR LOCATIONS FURNISH AND INSTALL BACKBOX AND 1"C TO ABOVE ACCESSIBLE CEILING. COORDINATE INSTALLATION WITH MECHANICAL
SD	DUCT TYPE SMOKE DETECTOR: SEE MECHANICAL DRAWINGS FOR LOCATIONS VERIFY REQUIREMENTS WITH MECHANICAL AND FIRE PROTECTION FURNISH AND INSTALL ALL ELECTRICAL REQUIRED FOR COMPLETE OPERATIONAL SYSTEM
D	SMOKE DAMPER: SEE MECHANICAL DRAWINGS FOR LOCATIONS VERIFY REQUIREMENTS WITH MECHANICAL AND FIRE PROTECTION FURNISH AND INSTALL ALL ELECTRICAL REQUIRED FOR COMPLETE OPERATIONAL SYSTEM
SD	SMOKE/CO DETECTOR: KIDDE i12010SCO (OR APPROVED EQUIVALENT)
XX- XX	MECHANICAL EQUIPMENT CALLOUT
##	KEYED NOTES CALLOUT
1	REVISION DELTA

ELECTRICAL ABBREVIATIONS

#"C	SIZE OF TRADE SIZE CONDUIT. # = 1/2"C, 2"C.
#P	NUMBER OF POLES. # = 1P, 2P, ETC.
#W	NUMBER OF WIRES, # = 3W, 4W, ETC.
A	AMPERE
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ANN	ANNUNCIATOR
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CD	CANDELLA
CLG	CEILING
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
EWH	ELECTRIC WATER HEATER
F	FUSE
FACP	FIRE ALARM CONTROL PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HVAC	HEATING VENTILATION AND AIR CONDITIONING
I/O	INPUT / OUTPUT
IG	ISOLATED GROUND
INC	INCANDESCENT
J-BOX	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MIL
KO	KNOCK OUT
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LV	LOW VOLTAGE
MCC	MOTOR CONTROL CENTER
MDSB	MAIN DISTRIBUTION SWITCHBOARD
MFR	MANUFACTURER
MLO	MAIN LUG ONLY
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NESC	NATIONAL ELECTRICAL SAFETY CODE
NO	NORMALLY OPEN
NO.	NUMBER
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY - AS DEFINED BY OSHA
O.H.	OPPOSITE HAND - MIRRORED OR ROTATED LAYOUT
OC	OVER COUNTER TOP BACKSPLASH - COORDINATE INSTALLATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PF	POWER FACTOR
PH	PHASE
REV	REVISION
RTU	ROOF TOP UNIT
SPDT	SINGLE POLE, DOUBLE THROW
SPST	SINGLE POLE, SINGLE THROW
SST	SOFT START/STOP MOTOR STARTER
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTABLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLTAGE
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY MOTOR DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER SWITCH

DRAWING INDEX

GENERAL NOTES:

A. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE LOCALLY ADOPTED ELECTRICAL CODE, ALL LOCAL CODES, AND TO THE FULL ACCEPTANCE OF THE AUTHORITY HAVING JURISDICTION. WHENEVER THE REQUIREMENTS OF THE ELECTRICAL SPECIFICATIONS OR DRAWINGS EXCEED THOSE OF THE APPLICABLE CODES OR STANDARDS, THE REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS SHALL GOVERN.

B. BIDDERS SHALL VIEW THE SITE AND SHALL INCLUDE ALL COSTS INCURRED BY EXISTING CONDITIONS IN THE BID PROPOSAL. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WTIH ALL RELEVANT BID DOCUMENTS, BID FORMS AND SPECIFICATIONS. ANY INCREASED COST INCURRED DUE TO FAILURE TO BECOME FAMILIAR WITH THESE DOCUMENTS SHALL BE BORNE BY THE CONTRACTOR. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT, APPLIANCES, MATERIALS, TRANSPORTATION, FACILITIES AND SERVICES NECESSARY FOR AND/OR REASONABLY INCIDENTAL TO THE COMPLETION OF ALL ELECTRICAL WORK IN STRICT COMPLIANCE WITH THE DRAWINGS AND OTHER CONTRACT DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE NECESSARILY LIMITED TO, THE WORK SPECIFIED AND INDICATED ON DRAWINGS.

C. OBTAIN ALL PERMITS, COORDINATE, FURNISH, INSTALL, CONNECT AND TEST ALL ELECTRICAL EQUIPMENT REQUIRED FOR ALL THE SYSTEMS INSTALLED UNDER THIS CONTRACT TO INSURE COMPLETE AND FULLY OPERATIONAL SYSTEMS.

D. CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF AS-BUILT DRAWINGS. AS-BUILT SET OF DRAWINGS SHALL BE UPDATED DAILY AND SHALL DOCUMENT THE ACTUAL INSTALLED CONDITION OF THE ENTIRE ELECTRICAL INSTALLATION. AS-BUILT SET OF DRAWINGS SHALL BE AVAILABLE AT ALL TIMES ON THE SITE FOR INSPECTION BY CODE OFFICIALS, OWNER, ARCHITECT, AND ENGINEER.

E. PROPOSED MODIFICATIONS OF ENGINEERED ELECTRICAL DRAWINGS SHALL BE APPROVED BY ENGINEER OF RECORD PRIOR TO PROCEEDING WITH WORK. PROPOSED CHANGES SHALL COMPLY WITH ALL APPLICABLE CODES/JURISDICTION REQUIREMENTS. COST OF ANY ENGINEERING/REVIEW REQUIRED BY PROPOSED CHANGES SHALL BE BORNE BY ENTITY PROPOSING CHANGE.

F. DESIGN IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS TO DETERMINE STATUS OF ACTUAL CONDITIONS AS THEY RELATE TO THE SCOPE OF WORK AS SHOWN ON THESE PLANS.

G. COORDINATE ALL ELECTRICAL WORK WITH ALL OTHER TRADES.

H. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS OF ALL ELECTRICAL EQUIPMENT AND DEVICES WITH THE ARCHITECTURAL ELEVATIONS AND DETAILS PRIOR TO ROUGH-IN.

I. CONTRACTOR SHALL COORDINATE WITH WALL TYPES AND FURNISH AND INSTALL EXTENSION RINGS AS REQUIRED. (I.E. WALLS WITH TWO LAYERS OF GYP BOARD).

J. ALL MATERIALS AND EQUIPMENT FURNISHED TO THE PROJECT SHALL BE NEW AND SHALL BEAR THE LISTING LABEL OF A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), WHERE APPLICABLE.

K. ALL ELECTRICAL BOXES, FITTINGS AND CABINETS SHALL BE OF STEEL CONSTRUCTION, GALVANIZED OR POWDER COATED, NEMA 1 TYPE, UON.

L. ALL DEVICES (SWITCHES/RECEPTACLES/TELECOMMUNICATIONS) SHALL BE WHITE AND COVERPLATES SHALL BE WHITE, UON.

M. ALL CIRCUIT BREAKERS SUPPLYING MOTOR LOADS SHALL BE HACR RATED.

N. ALL ELECTRICAL DEVICES AND TERMINALS SHALL BE RATED 75°C MINIMUM.

O. ALL CONDUCTORS SHALL BE STRANDED COPPER, 600 VOLT RATED. INSULATION TYPE SHALL BE THHN/THWN, FULLY COLOR CODED WITH GAUGE, TYPE AND MANUFACTURER MARKED EVERY 24" ALONG. CONDUCTOR COLOR CODE SHALL BE AS FOLLOWS:

208Y/120 VOLT SYSTEM	480Y/277 VOLT SYSTEM
PHASE A - BLACK	PHASE A - BROWN
PHASE B - RED	PHASE B - ORANGE
PHASE C - BLUE	PHASE C - YELLOW
NEUTRAL - WHITE	NEUTRAL - GRAY
GROUND - GREEN	GROUND - GREEN

P. MINIMUM SIZE WIRE FOR POWER AND LIGHTING CIRCUITS SHALL BE #12 AWG, UON. CONDUCTOR SIZE SHALL BE CONTINUOUS THROUGHOUT THE ENTIRE LENGTH OF THE CIRCUIT.

Q. ALL CIRCUITS SHALL HAVE AN INDEPENDENT NEUTRAL CONDUCTOR. NO EDISON STYLE SHARED NEUTRAL CONDUCTORS ARE ALLOWED.

R. ALL CONDUITS SHALL CONTAIN A GROUND CONDUCTOR SIZED PER NEC.

S. ALL POWER AND LIGHTING CONDUCTORS SHALL BE ROUTED IN 3/4" CONDUIT MINIMUM. NO MC TYPE CABLE IS ALLOWED WITH THE EXCEPTION OF CEILING WHIPS 6' OR LESS.

T. CONDUIT AND WIRE FOR FEEDER OR BRANCH CIRCUITS SHALL NOT BE RUN ON OR ABOVE THE ROOF. ELECTRICAL SERVICES FOR ROOF MOUNTED EQUIPMENT ARE TO BE RUN IN A STRAIGHT LINE FROM THE ROOF PENETRATION TO THE ELECTRICAL CONNECTION FOR THE UNIT SERVED.

U. ROUTE ALL CONDUIT HOME RUNS TO PANELS OVERHEAD AND ABOVE ACCESSIBLE CEILINGS WHERE AVAILABLE.

V. INSTALL CONDUIT A MINIMUM OF 4" BELOW BOTTOM OF CONCRETE SLAB WHERE RUNNING UNDER FLOOR. ALL ELBOWS SHALL BE RIGID METAL CONDUIT OR INTERMEDIATE METAL CONDUIT.

W. ALL EQUIPMENT, SWITCHING DEVICES AND PANELS SHALL BE MOUNTED SO AS TO BE ACCESSIBLE AND SHALL BE MOUNTED PLUMB AND SQUARE WITH WALLS.

X. BOXES MOUNTED IN A COMMON WALL SHALL BE OFFSET A MINIMUM OF 12" OR MOUNTED IN ADJACENT STUD SPACES. BOXES MOUNTED BACK-TO-BACK ARE NOT ALLOWED.

Y. ALL ELECTRICAL EQUIPMENT, RACEWAY, FIXTURE AND DEVICE SUPPORTS SHALL BE CAPABLE OF SUSTAINING NOT LESS THAN FOUR (4) TIMES THE ULTIMATE WEIGHT OF THE OBJECT OR OBJECTS. FASTEN SUPPORTS TO THE BUILDING STRUCTURE. CONDUIT IS NOT PERMITTED TO BE SUPPORTED FROM THE CEILING FIXTURE WIRES.

Z. FURNISH AND INSTALL SAFETY WIRES AT ALL LIGHT FIXTURES INSTALLED IN A SUSPENDED CEILING.

AA. MOUNTING METHODS INDICATED AND REFERRED TO ARE MINIMUM CODE REQUIREMENTS. COMPLY WITH LOCAL CODES FOR ADDITIONAL SEISMIC RESTRAINTS.

BB. DEVICES AND RACEWAYS PENETRATING FIRE RATED WALLS AND FLOORS SHALL BE SEALED WITH FIRE RESISTIVE MATERIAL, COMPATIBLE WITH CONSTRUCTION PENETRATED, TO MAINTAIN RATING OF THE WALL. SEALANT SYSTEM SHALL BE A NRTL APPROVED SYSTEM AND INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

CC. FURNISH AND INSTALL A PULL CORD IN ALL EMPTY CONDUITS.

DD. MAKE ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.

EE. ALL CONDUCTORS IN ELECTRICAL PANELS, CABINETS AND EQUIPMENT SHALL BE NEATLY TRAINED AND LACED.

FF. CLEARLY LABEL ALL ACCESSIBLE CONDUIT STUBS WITH SYSTEM NAME AND LOCATION (ROOM NUMBER) WHERE THE OTHER END OF THE CONDUIT TERMINATES. USE INDELIBLE INK. THE LABELS SHALL BE LOCATED ON THE CONDUIT IN A POSITION THAT CAN BE EASILY READ BY THE OWNER IN THE FUTURE.

GG. ALL JUNCTION BOX COVERS WITH POWER WIRING SHALL HAVE THE PANEL AND CIRCUIT LABELED ON THE OUTSIDE SURFACE. ALL LABELS FOR EXPOSED JUNCTION BOXES IN "FINISHED AREAS" SHALL BE LABELED UTILIZING CLEAR SELF ADHESIVE LABELS PRODUCED BY A MECHANICAL LABELING MACHINE. LABELS FOR JUNCTION BOX COVERS IN CONCEALED LOCATIONS SHALL CONSIST OF THE INFORMATION BEING NEATLY HANDWRITTEN ON THE OUTSIDE SURFACE OF THE COVER WITH A PERMANENT STYLE MARKER. JUNCTION BOX COVERS FOR FIRE ALARM AND EMERGENCY SYSTEMS SHALL BE PAINTED RED AND LABELED "FA" FOR FIRE ALARM AND "E" FOR EMERGENCY.

HH. THE CONTRACTOR SHALL PROVIDE TYPED CIRCUIT PANEL DIRECTORIES FOR ALL PANELS THAT CONTAIN CIRCUITS IMPACTED BY THIS PROJECT. OLD DIRECTORIES SHALL BE RETAINED BEHIND THE NEW.

II. THE CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE GENERAL CONTRACTOR FOR APPROVAL BY ARCHITECT AND ENGINEER PRIOR TO ORDERING EQUIPMENT. SUBMITTALS SHALL CONSIST OF CATALOG CUT DESIGNATING PART NUMBERS TO BE SUPPLIED FOR EACH TYPE OF THE FOLLOWING: ELECTRICAL GEAR, LIGHT FIXTURES, BALLASTS, DRIVERS, LAMPS, DEVICES AND COVERPLATES.

REVISION HISTORY

REV	DATE	DESCRIPTION
0	5/7/25	RELEASED FOR PERMIT

MECHANICAL ENGINEER
CAILIN FARRIS
(720) 319-1046
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ELECTRICAL ENGINEER
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XL ENGINEERING
5257 WILD DUNES LN
IDAHO FALLS, ID 83404

Professional Engineer
MARK T. OWENS
15586
Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

DESIGN: MTO	DATE: 5/7/25
APPROVED: MTO	5/7/25

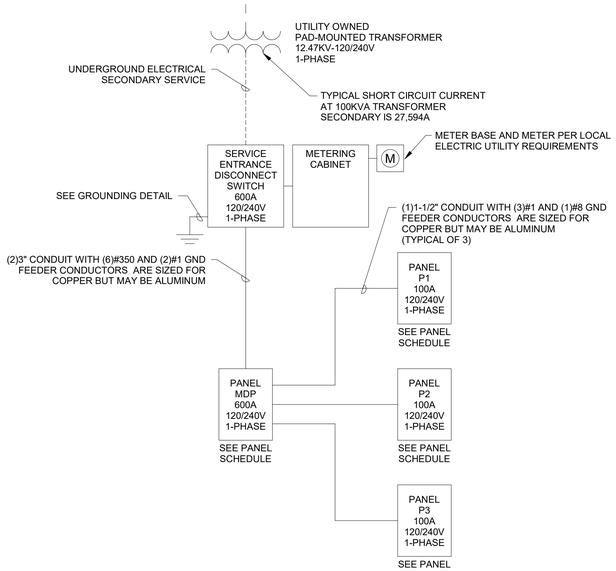
XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
ELECTRICAL SYMBOLS & ABBREV.

NORTH

PROJECT NUMBER: 25014

DWG- E00



NOTE: ALL CONDUCTORS ARE SIZED PER NEC TABLE 310.15(b)(16), COPPER, 75 DEG C TEMPERATURE RATING, THHW INSULATION 90 DEG C RATED CONDUCTORS MAY BE USED AS ALLOWED BY CODE

1 RISER DIAGRAM
NTS

Branch Panel: MDP

Location: SHOP FLOOR 6
Supply From:
Mounting: SURFACE
Enclosure: Type 1

Volts: 120/240
Phases: 1
Wires: 3

A.I.C. Rating:
Mains Type: MLO
Mains Rating: 600 A
MCB Rating: MLO

Notes:

CKT	Circuit Description	BRKR Type	BRKR AMPS	Poles	A		B		Poles	BRKR AMPS	BRKR Type	Circuit Description	CKT
1	P1		100 A	2	122.4	113.5			2	100 A		P2	2
3							119.8	112.1					4
5	P3		100 A	2	122.6	23.8			2	30 A		WELDING RECEPTACLE	6
7							119.8	23.8					8
9	COMPRESSOR RECEPTACLE		30 A	2	23.8	23.8			2	30 A		LIFT #1	10
11							23.8	23.8					12
13	CEILING FAN (CF-1)		15 A	2	8.0	4.0			2	15 A		EXHAUST FAN (EF-4)	14
15							8.0	4.0					16
17	WATER HEATER (WH-1)		20 A	1	13.8	16.7			2	25 A		ELECTRIC HEATER (EH-1)	18
19	ELECTRIC HEATER (EH-2)		20 A	1			8.3	16.7					20
21	ELECTRIC HEATER (EH-3)		20 A	1	8.3	4.6			1	20 A		UNIT HEATER	22
23	LIFT #2		30 A	2			23.8	23.8	2	30 A		LIFT #3	24
25					23.8	23.8							26
27	OVERHEAD DOOR #1		20 A	1			11.2	11.2	1	20 A		OVERHEAD DOOR #2	28
29	OVERHEAD DOOR #3		20 A	1	11.2	1.5			1	20 A		REC BLOCK HEATER #1	30
31	REC BLOCK HEATER #2		20 A	1			1.5	12.3	1	20 A		REC OFFICE	32
33	REC RESTROOMS		20 A	1	3.2	7.5			1	20 A		REC S SHOP	34
35	REC STORAGE		20 A	1			7.6	7.5	1	20 A		REC W SHOP	36
37	REC N SHOP		20 A	1	9.0	11.3			1	20 A		REC E SHOP	38
39	REC BAY #1		20 A	1			1.5	1.5	1	20 A		REC BAY #2	40
41	REC BAY #3		20 A	1	1.5	2.6			1	20 A		LIGHTING, OFFICE/STORAGE	42
43	SPARE	--	20 A	1			0.0	14.6	1	20 A		LIGHTING, SHOP	44
45	LIGHTING, EXTERIOR		20 A	1	2.3	0.0			1	20 A	--	SPARE	46
47	SPARE	--	20 A	1			0.0	0.0	1	20 A	--	SPARE	48
49	SPARE	--	20 A	1	0.0	0.0			1	20 A	--	SPARE	50
51	SPARE	--	20 A	1			0.0	0.0	1	20 A	--	SPARE	52
53	SPARE	--	20 A	1	0.0	0.0			1	20 A	--	SPARE	54
			Total Amps:		583 A		576 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	4032 VA	108.33%	4368 VA		
Receptacle	54450 VA	59.18%	32225 VA	**Total Conn. Load:**	139073 VA
Lighting	3301 VA	125.00%	4126 VA	**Total Est. Demand:**	118009 VA
Power	77290 VA	100.00%	77290 VA	**Total Conn.:**	579 A
				Total Est. Demand:	492 A

WY AUTO SHOP DWELLING UNIT (REPRESENTATIVE OF 3)
PARCEL NO: 37182030004500, ELK MEADOWS ADDITION LOT: 3
ALPINE, WY 83128

FEEDER AND SERVICE LOAD CALCULATIONS FOR DWELLING UNIT PER NEC ARTICLE 220.82

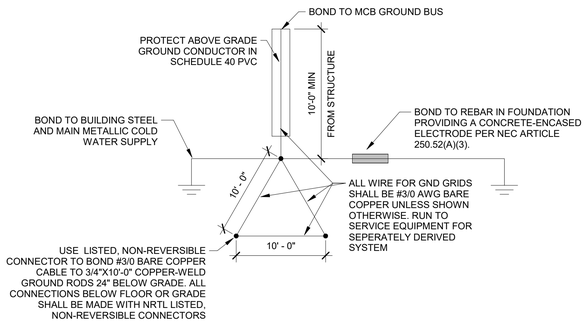
120/240 VOLT, 1-PHASE, 3-WIRE, > 100 AMPERES

AREA (SQUARE FOOTAGE)	1056	FT^2
AREA X 3 VA/SQ.FT FOR GENERAL LIGHTING AND RECEPTACLES	3168	VA
(2) SMALL APPLIANCE CIRCUITS AT (1,500 VA EACH)	3000	VA

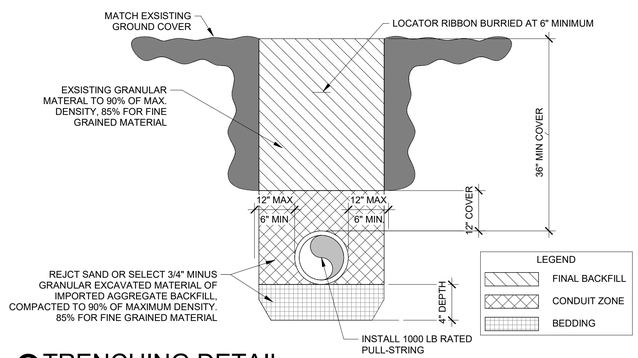
ITEM	VA	QTY	
ELECTRIC RANGE / OVEN AT:	8000	1	8000 VA
RANGE HOOD AT:	250	1	250 VA
MICROWAVE AT:	1250	1	1250 VA
ELECTRIC DRYER AT:	3400	1	3400 VA
CLOTHES WASHER AT:	180	1	180 VA
DISHWASHER AT:	1500	0	0 VA
REFERIGERATOR/FREEZER AT:	800	2	1600 VA
DISPOSER AT:	450	1	450 VA
WATER HEATER AT:	4500	2	9000 VA
			30298 VA
100% OF FIRST 10,000 VA			**10000 VA**
PLUS 40% OF BALANCE			**8119 VA**
			18119 VA

OTHER PERMANENTLY CONNECTED MOTORS			
ERV	39	1	39 VA
EF	11	1	11 VA

HEATING AND AIR CONDITIONING LOAD			
100% OF AIR CONDITIONING & COOLING			
N/A	0	0	0 VA
100% OF HEAT PUMPS			
HP & FCs	2232	1	2232 VA
65% OF ELECTRIC SPACE HEATING IF < 4 UNITS			
EH	1000	1	650 VA
40% OF ELECTRIC SPACE HEATING IF ≥ 4 UNITS			
N/A	0	0	0 VA
			21051 VA
CALCULATED FEEDER AND SERVICE LOAD = VA/240V			**88 A**
MINIMUM SERVICE SIZE			**100 A**



2 GROUNDING DETAIL
NTS



3 TRENCHING DETAIL
NTS

REVISION HISTORY

REV	DATE	DESCRIPTION
0	5/7/25	RELEASED FOR PERMIT

MECHANICAL ENGINEER
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Professional Engineer
MARK T. OWENS
15586
Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

DESIGN:	DATE:
MTO	5/7/25
APPROVED:	
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 37182030004500
ELK MEDOWS ADDITION LOT: 3
RISER, SCHED., LOAD CALCS & DETAILS

PROJECT NUMBER: 25014

DWG- E01

Lighting Fixture Schedule

Type	Count	Lamp	Description	Mounting	Manufacturer	Model	Voltage	Wattage	Comments
CF	1	LED	CEILING FAN LIGHT	PENDANT	BIG ASS FANS	POWERFOIL LED 009769 5000K	120 V	150 VA	SUPPLIED WITH FAN, NO SUBSTITUTIONS ALLOWED
D	66	LED	6" SLIM DOWNLIGHT	RECESSED	PREMIUM QUALITY	93091	120 V	15 VA	OR APPROVED EQUIVALENT
E	3	LED	EXIT/EGRESS COMBO	SURFACE - WALL	MULE	AL U X WW	120 V	3 VA	WITH 90 MINUTE BATTERY BACKUP OR APPROVED EQUIVALENT
HB	10	LED	HIGH BAY	SUSPENDED	DAY BRITE	FBY 18L 840 UNV LCA		133 VA	OR APPROVED EQUIVALENT
HBE	2	LED	HIGH BAY - EMERGENCY	SUSPENDED	DAY BRITE	FBY 18L 840 UNV LCA BSL10LST		133 VA	WITH 90 MINUTE BATTERY BACKUP OR APPROVED EQUIVALENT
S4	7	LED	4' STRIP	SURFACE - CEILING	DAY BRITE	FLP440L840 R UNV DIM	120 V	27 VA	OR APPROVED EQUIVALENT
S4E	1	LED	4' STRIP	SURFACE - CEILING	DAY BRITE	FLP440L840 R UNV DIM BSL10LST	120 V	27 VA	OR APPROVED EQUIVALENT
V2	5	LED	2' VANITY	SURFACE - WALL	LEDALITE	24C8LAGAH02NDEWNN	120 V	16 VA	OR APPROVED EQUIVALENT
W1	10	LED	EXTERIOR WALL CYLINDER - EMERGENCY	SURFACE - WALL	GARDCO	GCM A01 840 T4M UNV EC	120 V	10 VA	WITH 90 MINUTE BATTERY BACKUP OR APPROVED EQUIVALENT
W2	3	LED	EXTERIOR WALL PACK	SURFACE - WALL	DSSL	WSPEC60 50K BN T3M	120 V	60 VA	OR APPROVED EQUIVALENT

CONSTRUCTION NOTES:
1. PER IECC R404.1 - ALL PERMANENTLY INSTALLED LIGHTING FIXTURES, EXCLUDING KITCHEN APPLIANCE LIGHTING FIXTURES, SHALL CONTAIN ONLY HIGH-EFFICIENCY LIGHTING SOURCES.
2. PER IECC R404.2 - PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE CONTROLLED WITH EITHER DIMMER, AND OCCUPANT SENSOR CONTROL OR OTHER CONTROL THAT IS INSTALLED OR BUILT INTO THE FIXTURE. EXCEPTION: LIGHTING CONTROLS SHALL NOT BE REQUIRED FOR BATHROOMS, HALLWAYS, EXTERIOR LIGHTING FIXTURES, OR LIGHTING DESIGNED FOR SAFETY OR SECURITY.

Branch Panel: P1

Location: APARTMENT 1 9 | **Supply From:** MDP | **Mounting:** Recessed | **Enclosure:** Type 1
Volts: 120/240 | **Phases:** 1 | **Wires:** 3
A.I.C. Rating: | **Mains Type:** | **Mains Rating:** 100 A | **MCB Rating:**

Notes:

CKT	Circuit Description	BRKR Type	BRKR AMPS	Poles	A		B		Poles	BRKR AMPS	BRKR Type	Circuit Description	CKT
1	SMOKE/CO DETECTORS	AFCI	20 A	1	0.1	1.5			1	20 A	GFCI/AFCI	REC WASHER	2
3	REC LIVING	AFCI	20 A	1			9.3	3.1	1	20 A		REC BATHROOM	4
5	REC DISPOSER	GFCI/AFCI	20 A	1	3.8	7.5			1	20 A	AFCI	REC BEDROOM #1	6
7	REC LAUNDRY	GFCI/AFCI	20 A	1			6.0	6.7	1	20 A	GFCI/AFCI	REC REFRIGERATOR	8
9	ELECTRIC HEATER (EH-11)		20 A	1	8.3	2.9			1	20 A	AFCI	LIGHTING	10
11	REC KITCHEN COUNTER	AFCI	20 A	1			3.0	12.5	1	20 A	GFCI/AFCI	REC DISHWASHER	12
13	REC BEDROOM #2	AFCI	20 A	1	10.5	9.9			2	20 A		HEAT PUMP (HP-11)	14
15	DRYER	GFCI	30 A	2			14.2	9.9					16
17					14.2	18.8			2	30 A		WATER HEATER (WH-2)	18
19	RANGE	GFCI	50 A	2			33.3	18.8					20
21					33.3	11.7			1	20 A	GFCI/AFCI	MICROWAVE/HOOD	22
23	SPARE	--	20 A	1			0.0	3.0	1	20 A	AFCI	REC KITCHEN COUNTER	24
			Total Amps:		122 A		120 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	15870 VA	81.51%	12935 VA		
Lighting	346 VA	125.00%	433 VA	**Total Conn. Load:**	29063 VA
Power	12847 VA	100.00%	12847 VA	**Total Est. Demand:**	26215 VA
				Total Conn.:	121 A
				Total Est. Demand:	109 A

Branch Panel: P2

Location: APARTMENT 2 10 | **Supply From:** MDP | **Mounting:** Recessed | **Enclosure:** Type 1
Volts: 120/240 | **Phases:** 1 | **Wires:** 3
A.I.C. Rating: | **Mains Type:** | **Mains Rating:** 100 A | **MCB Rating:**

Notes:

CKT	Circuit Description	BRKR Type	BRKR AMPS	Poles	A		B		Poles	BRKR AMPS	BRKR Type	Circuit Description	CKT
1	SMOKE/CO DETECTORS	AFCI	20 A	1	0.1	11.7			1	20 A	GFCI/AFCI	MICROWAVE/HOOD	2
3	REC DISPOSER	GFCI/AFCI	20 A	1			3.8	6.0	1	20 A	AFCI	REC HALL	4
5	REC DISHWASHER	GFCI/AFCI	20 A	1	12.5	1.5			1	20 A	AFCI	REC KITCHEN COUNTER	6
7	REC REFRIGERATOR	GFCI/AFCI	20 A	1			6.7	9.0	1	20 A	AFCI	REC BEDROOM	8
9	HEAT PUMP (HP-21)		20 A	2	9.9	14.2			2	30 A	GFCI	REC DRYER	10
11							9.9	14.2					12
13	WATER HEATER (WH-3)		30 A	2	18.8	33.3			2	50 A	GFCI	RANGE	14
15							18.8	33.3					16
17	REC BATHROOM				20 A	1	3.1	2.1	1	20 A	AFCI	LIGHTING	18
19	REC WASHER	GFCI/AFCI	20 A	1			1.5	3.0	1	20 A	AFCI	REC KITCHEN COUNTER	20
21	REC KITCHEN/LIVING	AFCI	20 A	1	6.3	0.0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1			0.0	0.0	1	20 A	--	SPARE	24
			Total Amps:		113 A		112 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	14970 VA	83.40%	12485 VA		
Lighting	256 VA	125.00%	320 VA	**Total Conn. Load:**	27068 VA
Power	11842 VA	100.00%	11842 VA	**Total Est. Demand:**	24647 VA
				Total Conn.:	113 A
				Total Est. Demand:	103 A

Branch Panel: P3

Location: APARTMENT 3 11 | **Supply From:** MDP | **Mounting:** Recessed | **Enclosure:** Type 1
Volts: 120/240 | **Phases:** 1 | **Wires:** 3
A.I.C. Rating: | **Mains Type:** | **Mains Rating:** 100 A | **MCB Rating:**

Notes:

CKT	Circuit Description	BRKR Type	BRKR AMPS	Poles	A		B		Poles	BRKR AMPS	BRKR Type	Circuit Description	CKT
1	SMOKE/CO DETECTORS	AFCI	20 A	1	0.1	1.5			1	20 A	GFCI/AFCI	REC WASHER	2
3	REC LIVING	AFCI	20 A	1			9.3	3.1	1	20 A		REC BATHROOM	4
5	REC DISPOSER	GFCI/AFCI	20 A	1	3.8	7.5			1	20 A	AFCI	REC BEDROOM #1	6
7	REC LAUNDRY	GFCI/AFCI	20 A	1			6.0	6.7	1	20 A	GFCI/AFCI	REC REFRIGERATOR	8
9	ELECTRIC HEATER (EH-31)		20 A	1	8.3	3.0			1	20 A	AFCI	LIGHTING	10
11	REC KITCHEN COUNTER	AFCI	20 A	1			3.0	12.5	1	20 A	GFCI/AFCI	REC DISHWASHER	12
13	REC BEDROOM #2	AFCI	20 A	1	10.5	9.9			2	20 A		HEAT PUMP (HP-31)	14
15	REC DRYER	GFCI	20 A	2			14.2	9.9					16
17					14.2	18.8			2	30 A		WATER HEATER (WH-4)	18
19	RANGE	GFCI	50 A	2			33.3	18.8					20
21					33.3	11.7			1	20 A	GFCI/AFCI	MICROWAVE/HOOD	22
23	SPARE	--	20 A	1			0.0	3.0	1	20 A	AFCI	REC KITCHEN COUNTER	24
			Total Amps:		123 A		120 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	15870 VA	81.51%	12935 VA		
Lighting	361 VA	125.00%	451 VA	**Total Conn. Load:**	29078 VA
Power	12847 VA	100.00%	12847 VA	**Total Est. Demand:**	26233 VA
				Total Conn.:	121 A
				Total Est. Demand:	109 A

REVISION HISTORY

REV	DATE	DESCRIPTION
0	5/7/25	RELEASED FOR PERMIT

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IDAHO FALLS, ID 83404

Professional Engineer
MARK T. OWENS
15586
Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

DESIGN:	DATE:
MTO	5/7/25
APPROVED:	
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
LIGHTING AND PANEL SCHEDULES

PROJECT NUMBER: 25014
DWG- E02

COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: WY Auto Shop
Project Type: New Construction

Construction Site:
Parcel No.: 37182030004500, Elk Meadows Addition Lot: 3
Alpine, Wyoming 83128

Owner/Agent:

Designer/Contractor:

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Shop (Automotive Facility)	3000	0.75	2250
		Total Allowed Watts =	2250

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-Shop (Automotive Facility)				
LED: E: EXIT/EGRESS: LED Linear 8W:	1	3	2	6
LED: HB/HBE: HIGH BAY: LED Panel 80W:	2	12	134	1608
LED: S4/S4E: 4' STRIP: LED Linear 20W:	2	8	30	240
LED: V2: 2' VANITY: LED Linear 15W:	1	2	16	32
LED: D: 6" DOWNLIGHT: LED Panel 19W:	1	4	15	60
		Total Proposed Watts =		1946

Interior Lighting PASSES: Design 14% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

COM*check* Software Version COMcheckWeb

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: WY Auto Shop
Project Type: New Construction
Exterior Lighting Zone 2 (Light industrial area with limited nighttime use (LZ2))

Construction Site:
Parcel No.: 37182030004500, Elk Meadows Addition Lot: 3
Alpine, Wyoming 83128

Owner/Agent:

Designer/Contractor:

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
OH & Man Doors (Pedestrian and vehicular entrances and exits)	48 ft of	14	Yes	672
		Total Tradable Watts (a) =		672
		Total Allowed Watts =		672
		Total Allowed Supplemental Watts (b) =		400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
OH & Man Doors (Pedestrian and vehicular entrances and exits, 48 ft of door width): Tradable Wattage				
LED: W1: WALL PACK - MAN DOOR: LED Linear 11W:	1	7	10	70
LED: W2: WALL PACK - OVERHEAD DOOR: LED Panel 80W:	1	3	60	180
		Total Tradable Proposed Watts =		250

Exterior Lighting PASSES: Design 77% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
Section # & Req.ID	**Rough-In Electrical Inspection**	**Complies?**	**Comments/Assumptions**
C405.2.3.1 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2, C405.2.2.1 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.7 [EL28][1]	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.7 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9.1, C405.9.2 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.10 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.1.1 [EL30][2]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.11, C405.11.1 [EL31][2]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
Section # & Req.ID	**Final Inspection**	**Complies?**	**Comments/Assumptions**
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.5.1 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

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Professional Engineer
MARK T. OWENS
15586
State of WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

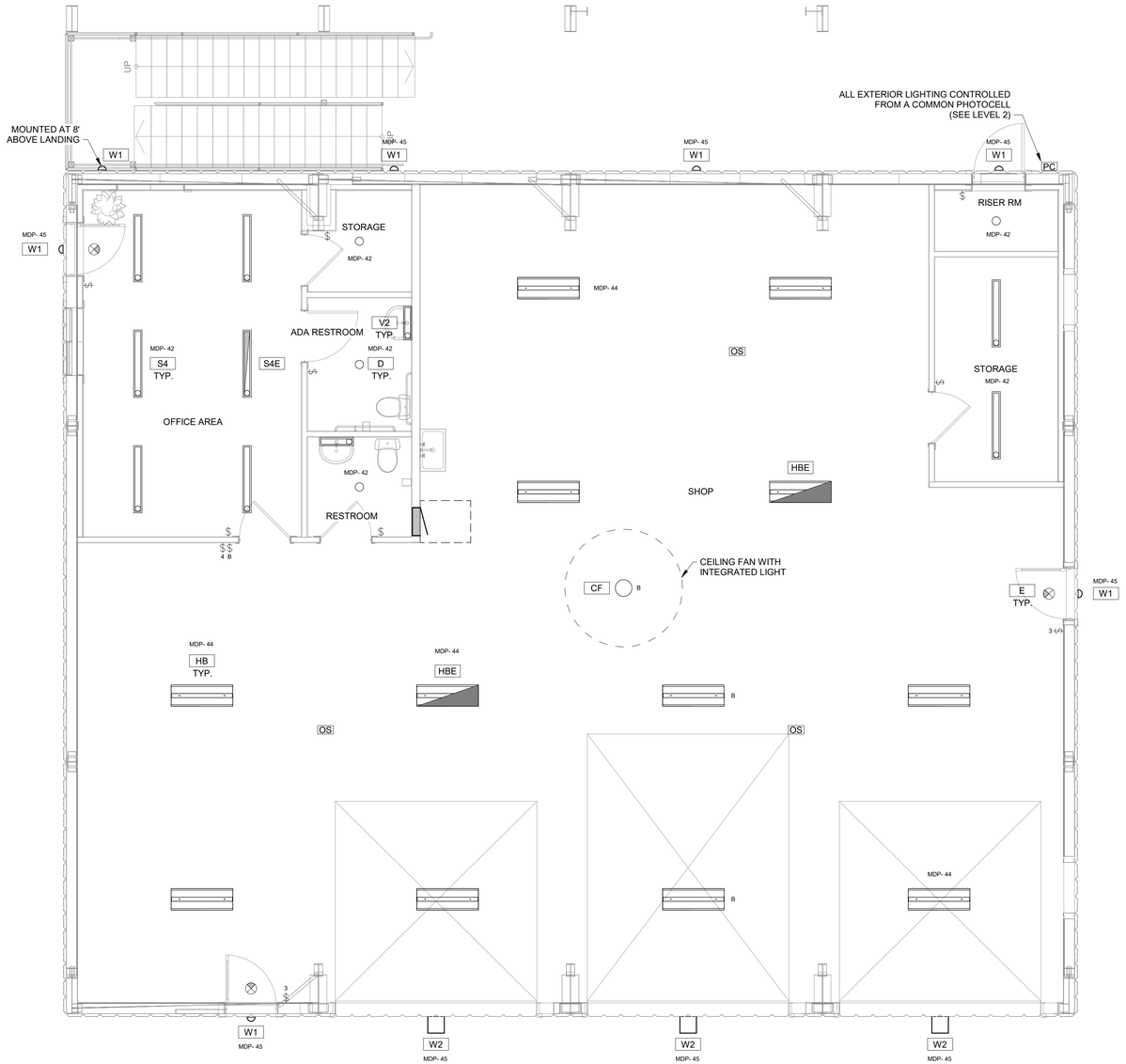
DESIGN:	DATE:
MTO	5/7/25
APPROVED:	
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 37182030004500
ELK MEDOWS ADDITION LOT: 3
ENERGY COMPLIANCE FORMS

PROJECT NUMBER: 25014

DWG- E03



1 LIGHTING PLAN - LEVEL 1
1/4" = 1'-0"

CONSTRUCTION NOTES:
1. PER IECC R404.1 - ALL PERMANENTLY INSTALLED LIGHTING FIXTURES, EXCLUDING KITCHEN APPLIANCE LIGHTING FIXTURES, SHALL CONTAIN ONLY HIGH-EFFICIENCY LIGHTING SOURCES.
2. PER IECC R404.2 - PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE CONTROLLED WITH EITHER DIMMER, AND OCCUPANT SENSOR CONTROL OR OTHER CONTROL THAT IS INSTALLED OR BUILT INTO THE FIXTURE. EXCEPTION: LIGHTING CONTROLS SHALL NOT BE REQUIRED FOR BATHROOMS, HALLWAYS, EXTERIOR LIGHTING FIXTURES, OR LIGHTING DESIGNED FOR SAFETY OR SECURITY.
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GENERAL NOTES

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B CONTRACTOR TO VERIFY EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION OF RELATED CIRCUIT. CIRCUIT(S) ARE TO BE SIZED AS REQUIRED BY LABEL RATING.

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D COORDINATE HOMERUN CIRCUIT NUMBERS WITH PANEL SCHEDULES.

E THIS PLAN DOES NOT REFLECT COMMUNICATION EQUIPMENT. COORDINATE WITH ARCHITECT FOR THE QUANTITY AND LOCATION OF RJ-45 PORTS. THE SERVER SHALL BE LOCATED NEAR THE ELECTRICAL SERVICE ENTRANCE. ALL RJ-45 PORTS SHALL BE CONNECTED TO THE SERVER VIA DEDICATED CAT. 6A ETHERNET CABLE. CONFIRM WITH THE ARCHITECT THAT TELEPHONE AND TV WILL BE INTERNET BASED AND THAT NO COAXIAL OR COPPER TELEPHONE WIRE IS NECESSARY.

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K INTERIOR LIGHTING IS CONTROLLED BY OCCUPANCY SENSOR OR DAYLIGHT SENSOR CONTROLS (SOME CEILING MOUNTED WIDE-AREA CONTROLS AND OTHERS WALL MOUNTED CONTROLS). A LOWER CASE LETTER "x" INDICATES THE ZONE OF CONTROL WHEN MORE THAN ONE CONTROLLER IS PRESENT IN A COMMON SPACE.

L OCCUPANT SENSOR CONTROL FUNCTION:

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L b BE MANUAL ON OR CONTROLLED TO AUTOMATICALLY TURN THE LIGHTING ON TO NOT MORE THAN 50 PERCENT POWER.

L c SHALL INCORPORATE MANUAL CONTROL TO ALLOW OCCUPANTS TO TURN LIGHTS OFF.

(#) KEYED NOTES

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Professional Engineer
MARK T. OWENS
15580
Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

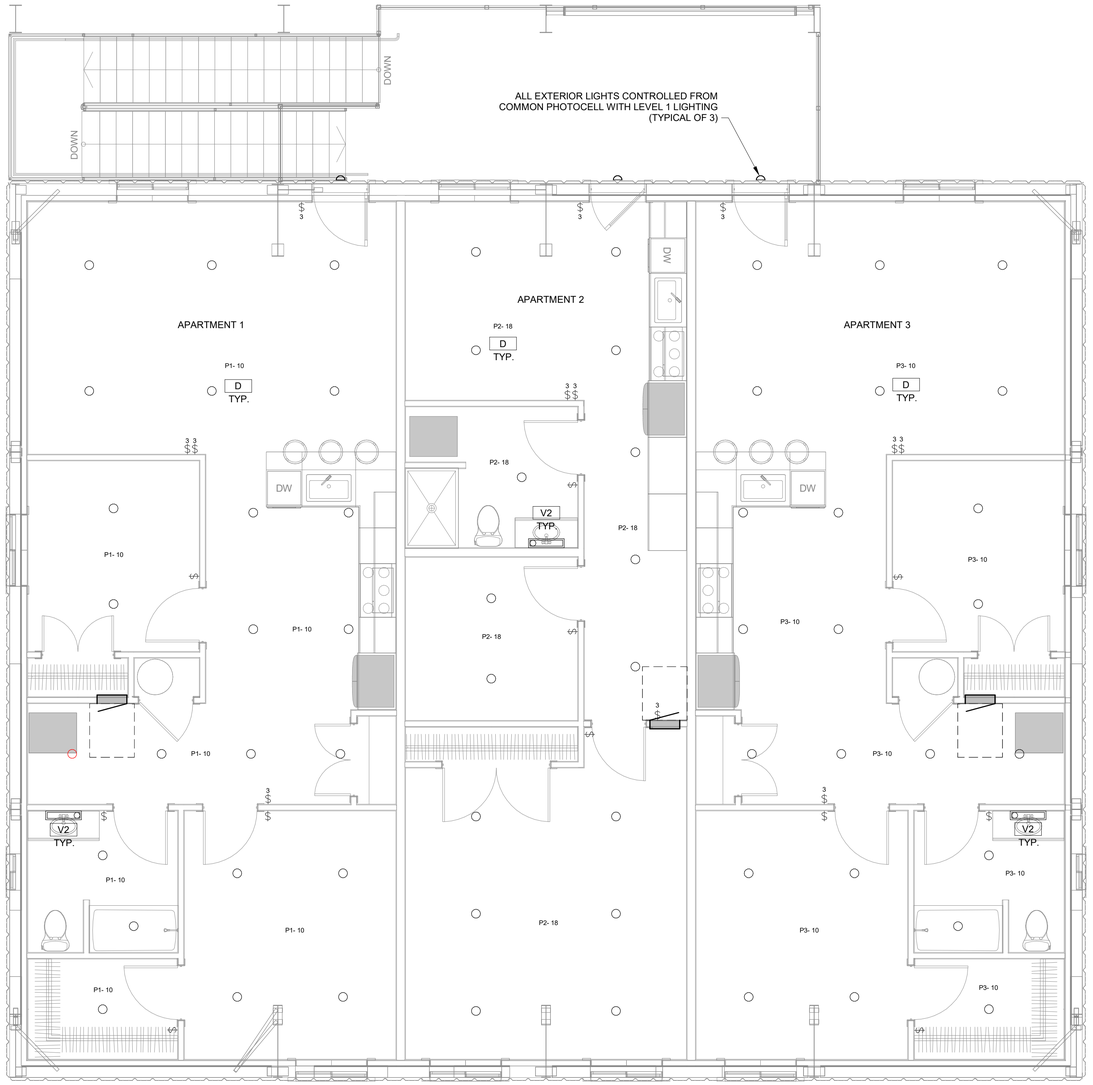
DESIGN:	DATE:
MTO	5/7/25
APPROVED:	
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450
ELK MEDOWS ADDITION LOT: 3
LIGHTING PLAN LEVEL 1

PROJECT NUMBER: 25014

DWG- E11



1 LIGHTING PLAN - LEVEL 2
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Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

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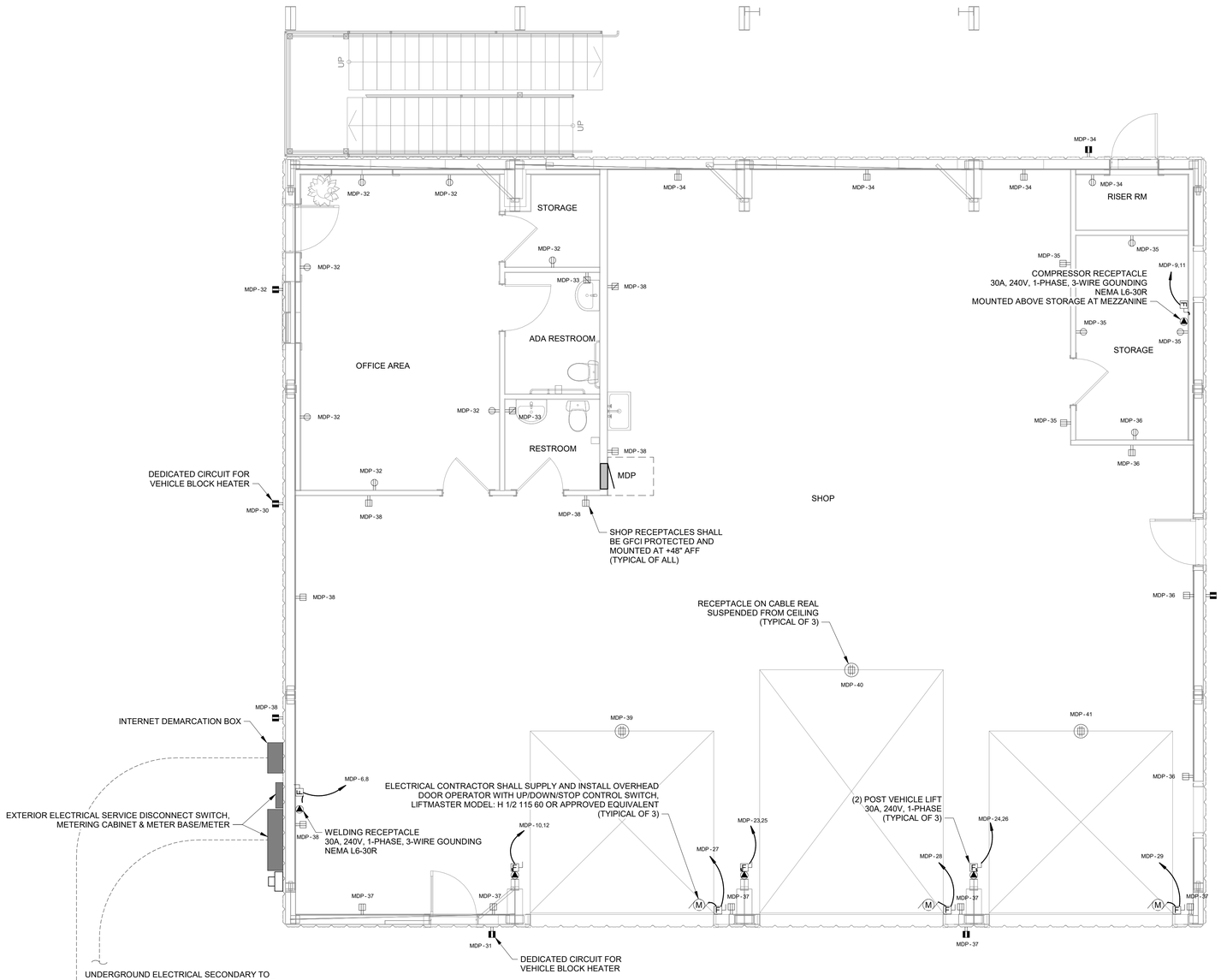
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
LIGHTING PLAN LEVEL 2

PROJECT NUMBER: 25014

DWG- E12



1 POWER PLAN - LEVEL 1
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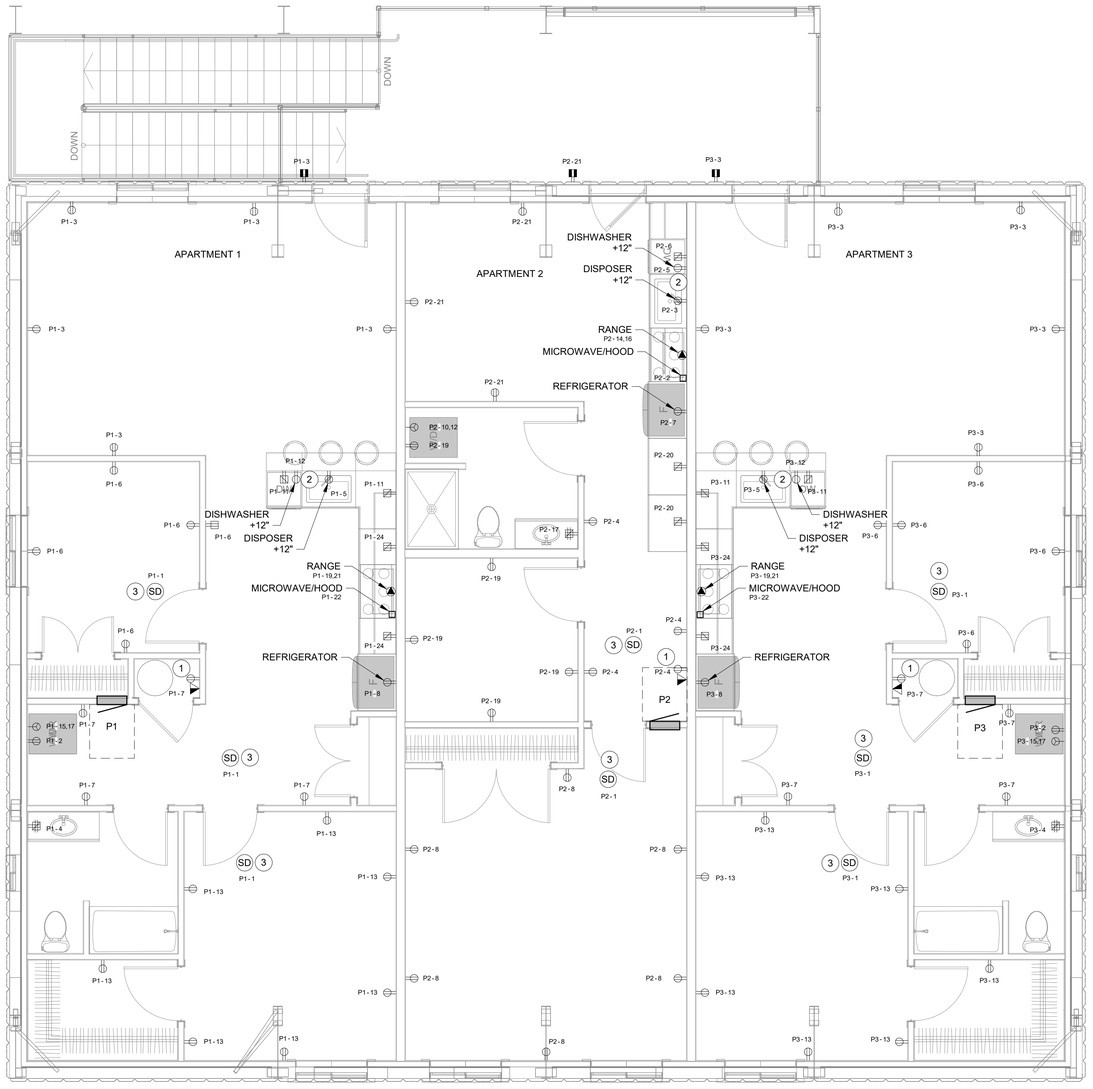
XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
POWER PLAN LEVEL 1

PROJECT NUMBER: 25014

DWG- E21



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I PROVIDE COMBINATION EXIT/EGRESS LIGHTING AS SHOWN. LIGHT BARS SHALL BE AIMED TO ILLUMINATE THE EGRESS PATH WITH ARROW/CHEVRON INDICATING THE DIRECTION TO THE EXIT.

J DAYLIGHT ZONE(S) ARE NOT REQUIRED TO HAVE DAYLIGHT-RESPONSIVE CONTROLS DUE TO AREA CONTAINING LESS THAN 150 TOTAL WATTS OF GENERAL LIGHTING PER IECC C405.2.3

K INTERIOR LIGHTING IS CONTROLLED BY OCCUPANCY SENSOR OR DAYLIGHT SENSOR CONTROLS (SOME CEILING MOUNTED WIDE-AREA CONTROLS AND OTHERS WALL MOUNTED CONTROLS). A LOWER CASE LETTER "x" INDICATES THE ZONE OF CONTROL WHEN MORE THAN ONE CONTROLLER IS PRESENT IN A COMMON SPACE.

L OCCUPANT SENSOR CONTROL FUNCTION:

L a AUTOMATICALLY TURN OFF LIGHTS WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.

L b BE MANUAL ON OR CONTROLLED TO AUTOMATICALLY TURN THE LIGHTING ON TO NOT MORE THAN 50 PERCENT POWER.

L c SHALL INCORPORATE MANUAL CONTROL TO ALLOW OCCUPANTS TO TURN LIGHTS OFF.

(#) KEYED NOTES

1 POWER RECEPTACLE AND DATA PORT (RJ-45 ETHERNET CONNECTOR) MOUNTED AT 60" FOR WIFI ROUTER.

2 RECEPTACLE FOR DISHWASHER SHOWN IN THIS LOCATION FOR ASSOCIATION WITH EQUIPMENT BUT MUST BE PHYSICALLY LOCATED IN ADJACENT COMPARTMENT.

3 ELECTRICAL CONTRACTOR SHALL INSTALL UL217 RATED COMBINATION SMOKE/CO DETECOTOR IN ALL SLEEPING/LIVING SPACES. DECTECTORS SHALL BE NETWORKED AND POWERED FROM A COMMON SOURCE.

CONSTRUCTION NOTES:
1. COORDINATE ANY PENETRATIONS FOR ELECTRICAL EQUIPMENT THROUGH FIRE BARRIERS WITH STRUCTURAL AND MECHANICAL SYSTEMS TO MINIMIZE PENETRATIONS.
2. ALL PENETRATIONS THROUGH FIRE BARRIERS SHALL BE PROPERLY SEALED TO MAINTAIN THE FIRE RATING OF THE BARRIER.
3. ALL ELECTRICAL EQUIPMENT INSTALLED IN A FIRE BARRIER SHALL BE FIRE RATED AND SEALED TO AN EQUIVALENT LEVEL AS THE FIRE BARRIER BEING PENETRATED.

REVISION HISTORY

REV	DATE	DESCRIPTION
0	5/7/25	RELEASED FOR PERMIT

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Professional Engineer
MARK T. OWENS
15580
Date: 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

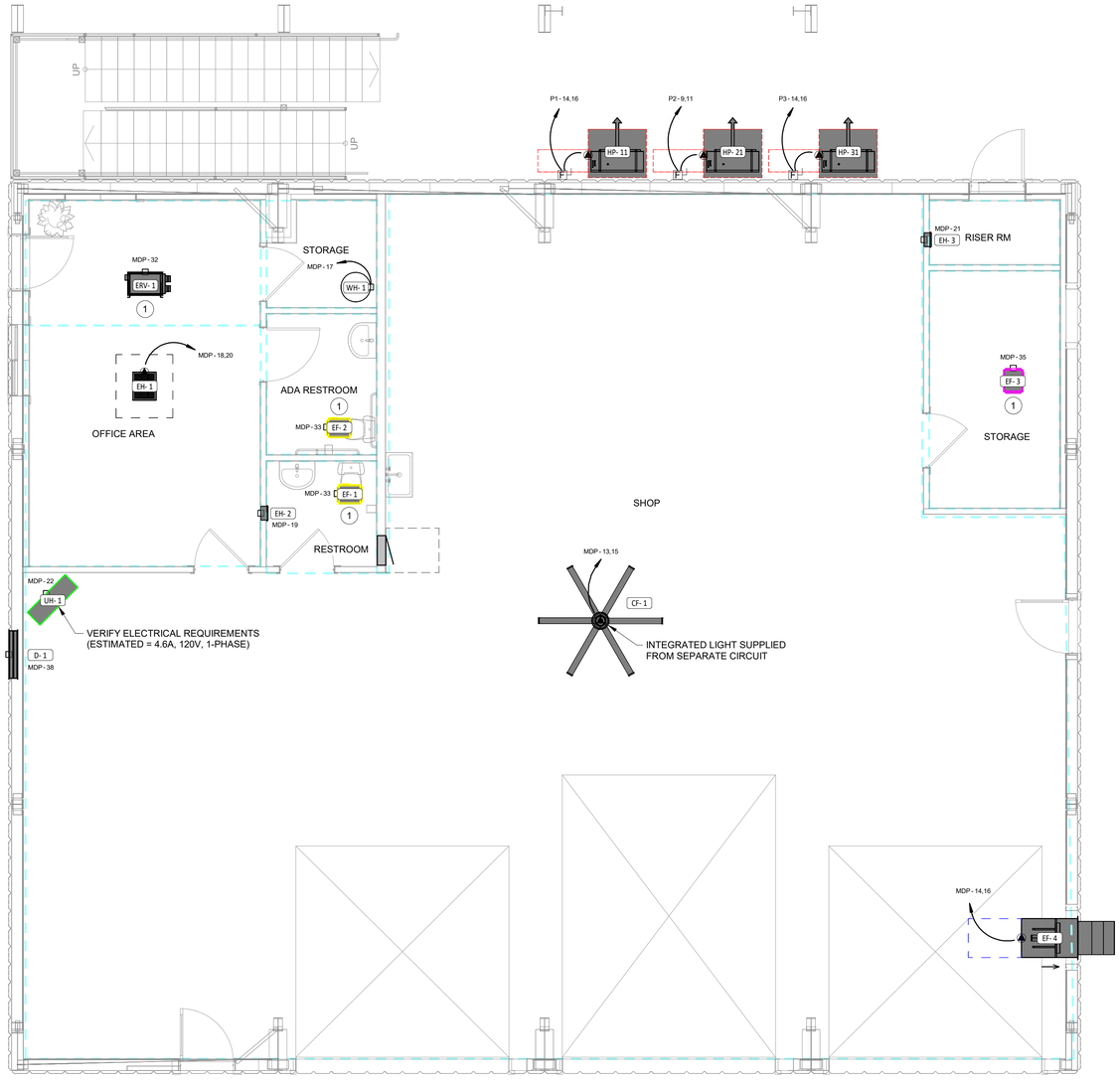
DESIGN: MTO	DATE: 5/7/25
APPROVED: MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203000450
ELK MEDOWS ADDITION LOT: 3
POWER PLAN LEVEL 2

PROJECT NUMBER: 25014

DWG- E22



1 MECHANICAL POWER PLAN - LEVEL 1
1/4" = 1'-0"

GENERAL NOTES

A ALL CONDUITS WITH CIRCUIT CONDUCTORS SHALL HAVE A COPPER EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC 250.

B CONTRACTOR TO VERIFY EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION OF RELATED CIRCUIT. CIRCUIT(S) ARE TO BE SIZED AS REQUIRED BY LABEL RATING.

C ELECTRICAL DEVICES NOTED WITH AN 'OC' SUBSCRIPT ARE TO BE MOUNTED ABOVE THE COUNTER BACK SPLASH. THE BOTTOM OF THE DEVICE COVERPLATE SHALL CLEAR THE TOP OF THE BACK SPLASH. COORDINATE THE MOUNTING HEIGHT WITH THE MILLWORK BEING INSTALLED.

D COORDINATE HOMERUN CIRCUIT NUMBERS WITH PANEL SCHEDULES.

E THIS PLAN DOES NOT REFLECT COMMUNICATION EQUIPMENT. COORDINATE WITH ARCHITECT FOR THE QUANTITY AND LOCATION OF RJ-45 PORTS. THE SERVER SHALL BE LOCATED NEAR THE ELECTRICAL SERVICE ENTRANCE. ALL RJ-45 PORTS SHALL BE CONNECTED TO THE SERVER VIA DEDICATED CAT. 6A ETHERNET CABLE. CONFIRM WITH THE ARCHITECT THAT TELEPHONE AND TV WILL BE INTERNET BASED AND THAT NO COAXIAL OR COPPER TELEPHONE WIRE IS NECESSARY.

F ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL TAMPER-RESISTANT (TR) RECEPTACLES IN ALL 15A AND 20A LOCATIONS PER NEC 406.12(1).

G ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL ARC-FAULT CIRCUIT-INTERRUPTER (AFCI) PROTECTION PER IN ALL 15A AND 20A LOCATIONS PER NEC 210.12(A).

H ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI OR GFI) PROTECTION PER NEC 210.08(A). ALL SINGLE-PHASE RECEPTACLES RATED 125-VOLT, 50 AMPS OR LESS AND THREE-PHASE RECEPACLES RATED 125-VOLT, 100 AMPS OR LESS SHALL BE GFCI PROTECTED. RECEPTACLES THAT ARE INACCESSIBLE ABOVE OR BEHIND APPLIANCES SHALL BE PROTECTED WITH GFCI PROTECTED CIRCUIT BREAKERS AT THE SOURCE PANEL.

I PROVIDE COMBINATION EXIT/EGRESS LIGHTING AS SHOWN. LIGHT BARS SHALL BE AIMED TO ILLUMINATE THE EGRESS PATH WITH ARROW/CHEVRON INDICATING THE DIRECTION TO THE EXIT.

J DAYLIGHT ZONE(S) ARE NOT REQUIRED TO HAVE DAYLIGHT-RESPONSIVE CONTROLS DUE TO AREA CONTAINING LESS THAN 150 TOTAL WATTS OF GENERAL LIGHTING PER IECC C405.2.3

K INTERIOR LIGHTING IS CONTROLLED BY OCCUPANCY SENSOR OR DAYLIGHT SENSOR CONTROLS (SOME CEILING MOUNTED WIDE-AREA CONTROLS AND OTHERS WALL MOUNTED CONTROLS). A LOWER CASE LETTER "x" INDICATES THE ZONE OF CONTROL WHEN MORE THAN ONE CONTROLLER IS PRESENT IN A COMMON SPACE.

L OCCUPANT SENSOR CONTROL FUNCTION:

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L b BE MANUAL ON OR CONTROLLED TO AUTOMATICALLY TURN THE LIGHTING ON TO NOT MORE THAN 50 PERCENT POWER.

L c SHALL INCORPORATE MANUAL CONTROL TO ALLOW OCCUPANTS TO TURN LIGHTS OFF.

(#) KEYED NOTES

1 CIRCUIT ALL EXHAUST FANS (EF) TO ADJACENT RECEPTACLE CIRCUIT. PROVIDE INDEPENDENT SWITCHING COORDINATED WITH THE LOCATION OF LIGHITNG SWITCHES.

CONSTRUCTION NOTES:
1. COORDINATE ANY PENETRATIONS FOR ELECTRICAL EQUIPMENT THROUGH FIRE BARRIERS WITH STRUCTURAL AND MECHANICAL SYSTEMS TO MINIMIZE PENETRATIONS.
2. ALL PENETRATIONS THROUGH FIRE BARRIERS SHALL BE PROPERLY SEALED TO MAINTAIN THE FIRE RATING OF THE BARRIER.
3. ALL ELECTRICAL EQUIPMENT INSTALLED IN A FIRE BARRIER SHALL BE FIRE RATED AND SEALED TO AN EQUIVALENT LEVEL AS THE FIRE BARRIER BEING PENETRATED.

REVISION HISTORY

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Professional Engineer
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Date 05/07/2025
WYOMING

NAME AND DATE FOR CURRENT RELEASE ONLY

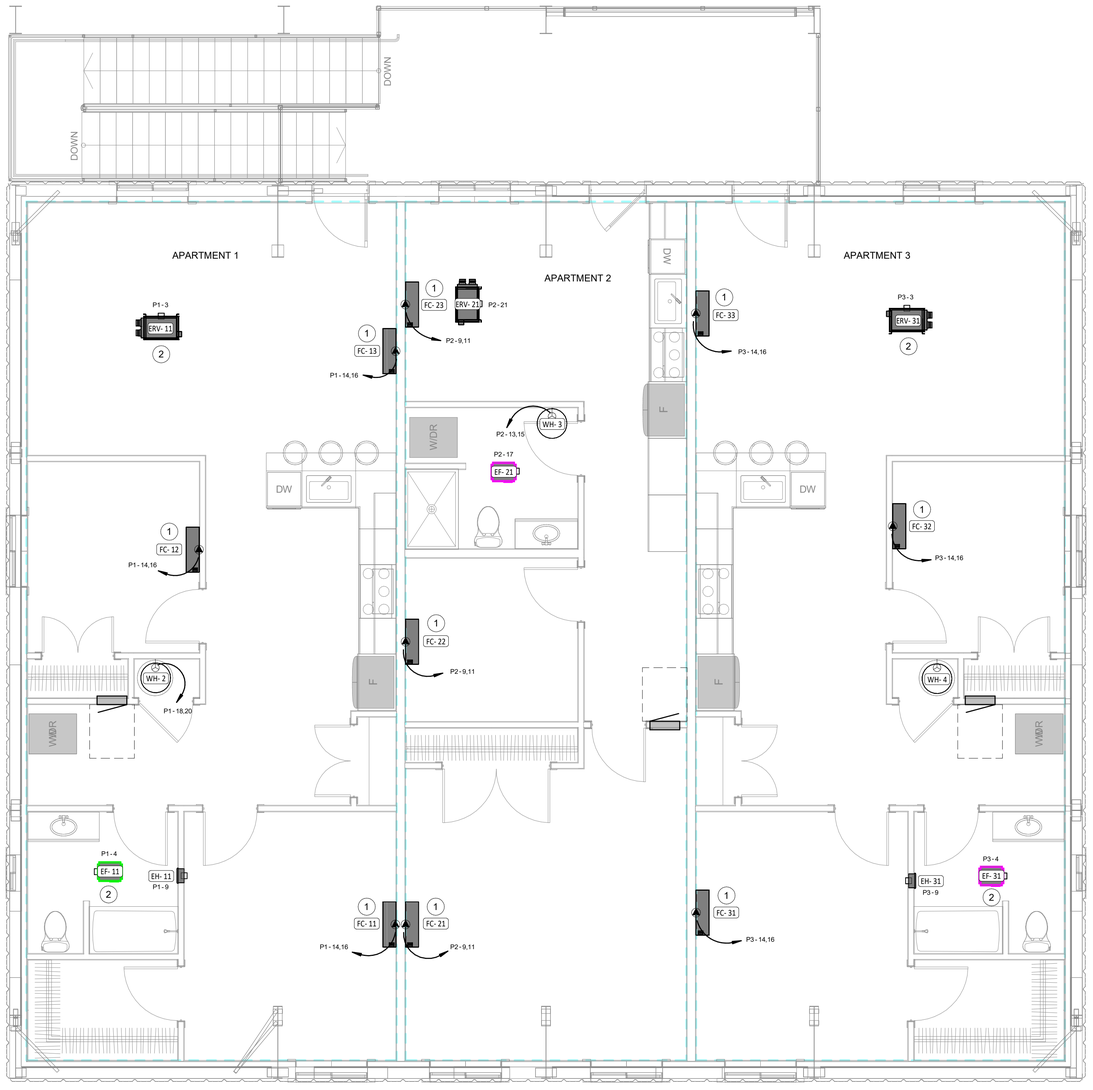
DESIGN:	DATE:
MTO	5/7/25
APPROVED:	
MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
MECHANICAL POWER PLAN LEVEL 1

PROJECT NUMBER: 25014

DWG- E31



1 MECHANICAL POWER PLAN - LEVEL 2
1/4" = 1'-0"

GENERAL NOTES

A	ALL CONDUITS WITH CIRCUIT CONDUCTORS SHALL HAVE A COPPER EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC 250.
B	CONTRACTOR TO VERIFY EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION OF RELATED CIRCUIT. CIRCUIT(S) ARE TO BE SIZED AS REQUIRED BY LABEL RATING.
C	ELECTRICAL DEVICES NOTED WITH AN 'OC' SUBSCRIPT ARE TO BE MOUNTED ABOVE THE COUNTER BACK SPLASH. THE BOTTOM OF THE DEVICE COVERPLATE SHALL CLEAR THE TOP OF THE BACK SPLASH. COORDINATE THE MOUNTING HEIGHT WITH THE MILLWORK BEING INSTALLED.
D	COORDINATE HOMERUN CIRCUIT NUMBERS WITH PANEL SCHEDULES.
E	THIS PLAN DOES NOT REFLECT COMMUNICATION EQUIPMENT. COORDINATE WITH ARCHITECT FOR THE QUANTITY AND LOCATION OF RJ-45 PORTS. THE SERVER SHALL BE LOCATED NEAR THE ELECTRICAL SERVICE ENTRANCE. ALL RJ-45 PORTS SHALL BE CONNECTED TO THE SERVER VIA DEDICATED CAT. 6A ETHERNET CABLE. CONFIRM WITH THE ARCHITECT THAT TELEPHONE AND TV WILL BE INTERNET BASED AND THAT NO COAXIAL OR COPPER TELEPHONE WIRE IS NECESSARY.
F	ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL TAMPER-RESISTANT (TR) RECEPTACLES IN ALL 15A AND 20A LOCATIONS PER NEC 406.12(1).
G	ELECTRICAL CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL ARC-FAULT CIRCUIT-INTERRUPTER (AFCI) PROTECTION PER IN ALL 15A AND 20A LOCATIONS PER NEC 210.12(A).
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I	PROVIDE COMBINATION EXIT/EGRESS LIGHTING AS SHOWN. LIGHT BARS SHALL BE AIMED TO ILLUMINATE THE EGRESS PATH WITH ARROW/CHEVRON INDICATING THE DIRECTION TO THE EXIT.
J	DAYLIGHT ZONE(S) ARE NOT REQUIRED TO HAVE DAYLIGHT-RESPONSIVE CONTROLS DUE TO AREA CONTAINING LESS THAN 150 TOTAL WATTS OF GENERAL LIGHTING PER IECC C405.2.3
K	INTERIOR LIGHTING IS CONTROLLED BY OCCUPANCY SENSOR OR DAYLIGHT SENSOR CONTROLS (SOME CEILING MOUNTED WIDE-AREA CONTROLS AND OTHERS WALL MOUNTED CONTROLS). A LOWER CASE LETTER "x" INDICATES THE ZONE OF CONTROL WHEN MORE THAN ONE CONTROLLER IS PRESENT IN A COMMON SPACE.
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L b	BE MANUAL ON OR CONTROLLED TO AUTOMATICALLY TURN THE LIGHTING ON TO NOT MORE THAN 50 PERCENT POWER.
L c	SHALL INCORPORATE MANUAL CONTROL TO ALLOW OCCUPANTS TO TURN LIGHTS OFF.

(#) KEYED NOTES

1	POWER FOR SPLIT SYSTEM FAN COIL UNITS (FCU) SUPPLIED FROM SPLIT SYSTEM HEAT PUMP (HP) OR SPLIT SYSTEM CONDENSING UNIT (CU). SEE MECHANICAL SHEETS/SCHEDULES FOR ASSOCIATION
2	CIRCUIT ALL EXHAUST FANS (EF) TO ADJACENT RECEPTACLE CIRCUIT. PROVIDE INDEPENDENT SWITCHING COORDINATED WITH THE LOCATION OF LIGHITNG SWITCHES.

CONSTRUCTION NOTES:
1. COORDINATE ANY PENETRATIONS FOR ELECTRICAL EQUIPMENT THROUGH FIRE BARRIERS WITH STRUCTURAL AND MECHANICAL SYSTEMS TO MINIMIZE PENETRATIONS.
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MTO	5/7/25

XL ENGINEERING
IDAHO FALLS, IDAHO

AUTO SERVICE ELEVATED
PARCEL NO: 3718203004500
ELK MEDOWS ADDITION LOT: 3
MECHANICAL POWER PLAN LEVEL 2

PROJECT NUMBER: 25014

DWG- E32