

LIGHTING FIXTURE SCHEDULE									
SYMBOL	ITEM	TYPE	SIZE	LAMPS		FIXTURE VOLTAGE	INPUT WATTS	CATALOG NUMBER	ALTERNATE CATALOG NUMBER
				TYPE	COLOR				
	F1	GENERAL PURPOSE STRIPLIGHT	4'	LED	3500K	120	27	LITHONIA LIGHTING CSS-L48-AL03-MVOLT-SWW3-80CRI	APPROVED EQUAL – CONTRACTOR TO SUBMIT ANY SUBSTITUTION TO DESIGN TEAM FOR APPROVAL
	X1	COMBINATION EXIT SIGN/EGRESS FIXTURE	8"x16"	LED	NA	120	1.1	LITHONIA LIGHTING ECC-G-M6	APPROVED EQUAL – CONTRACTOR TO SUBMIT ANY SUBSTITUTION TO DESIGN TEAM FOR APPROVAL

SCHEDULE NOTES

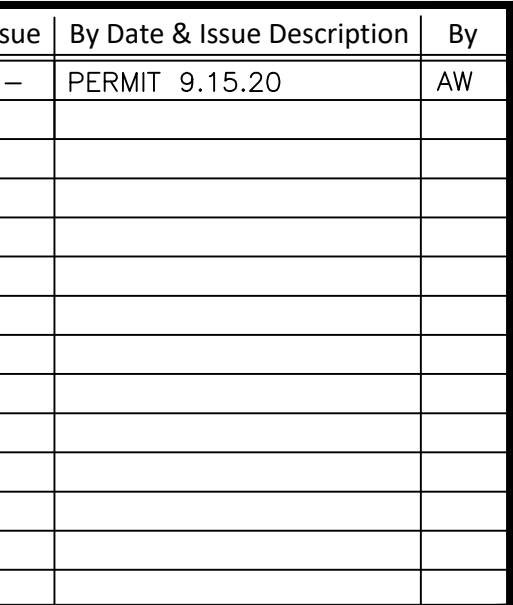
1.
- ALL LAMPS SHALL BE PROVIDED BY THE CONTRACTOR.
2.
- CONTRACTOR TO SUBMIT FIXTURE TYPES TO OWNER AND ENGINEER PRIOR TO PURCHASE AND INSTALLATION.

2 FIXTURE SCHEDULE

EXISTING																											
MOUNTING SURFACE				PANEL PP3										10,000		A.I.C. SYM											
208 /120		VOLTS		3		PHASE		4		WIRE		MAIN						100 A		BUS 100 A							
VOLT AMPS			DESCRIPTION										DESCRIPTION										VOLT AMPS				
Ø A	Ø B	Ø C																					Ø A	Ø B	Ø C		
250			(N)Lighting										Existing										200				
	2500		(N)Heater										Existing											1680			
		2500	-										-												1680		
(1)	540		(N)Recepts										Existing										1920				
(1)		540	(N)Recepts										-											1920			
(1)		1000	(N)TVs										Existing												1296		
			Space										-										1296				
			Space										-											384			
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56000 Cowboy Way
Clark, CO

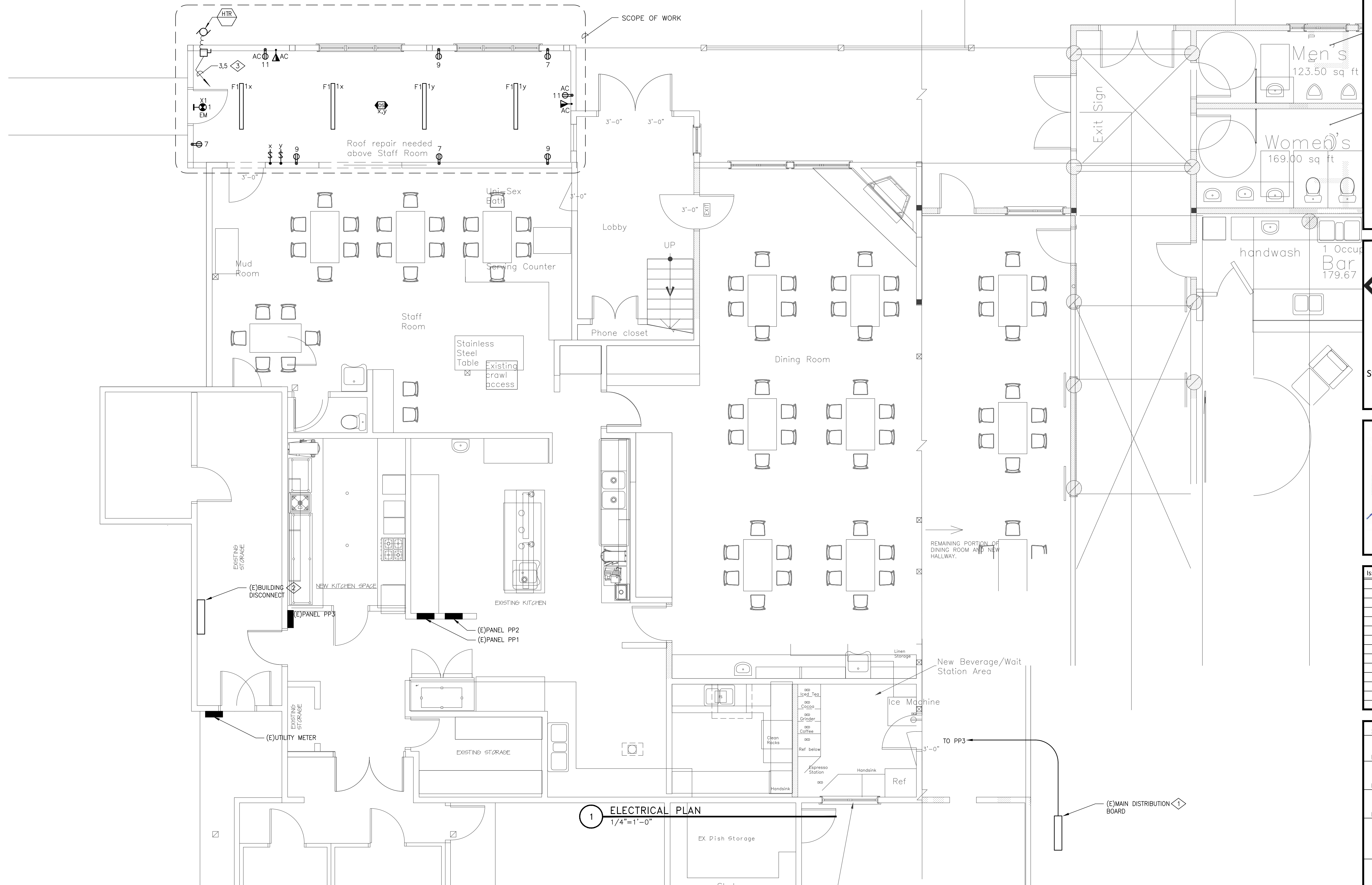
56000 Cowboy Way
Clark, CO



Scale:
24x36 1/4"=1'-0"
DescriptionELECTRICAL FLOOR PLAN
Project Name: VISTA VERDE
Project Number: 2019015
Sheet No.
E-3

1. ALL WORK SHOWN IS NEW UNLESS OTHERWISE NOTED.
2. PROVIDE TYPEWRITTEN DIRECTORIES REFLECTING ALL NEW WORK PERFORMED IN THIS PROJECT.
3. ALL WIRE SHALL BE #12 AWG MIN., 90 DEG. "C" IN 1/2"C - #12 AWG & #12 GND, UNLESS OTHERWISE NOTED.
4. VERIFY LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS IN THE FIELD.
5. ALL EQUIPMENT SHOWN IS CONNECTED TO PANEL PP3, UON.
6. ALL LIGHTING FIXTURES WITH THE "EM" DESIGNATION ARE TO BE CONNECTED TO AN EMERGENCY BATTERY FOR EGRESS LIGHTING

- 1 EXISTING FRONT MAIN DISTRIBUTION BOARD IS LOCATED ON EXTERIOR OF BUILDING NEAR MAIN ENTRANCE. VERIFY EXACT LOCATION IN THE FIELD.
- 2 EXISTING BACK MAIN SERVICE DISCONNECT IS LOCATED IN INTERIOR OF BUILDING NEAR BACK ENTRANCE.
- 3 VERIFY EXACT LOCATION OF HEATING UNIT WITH MECHANICAL DRAWINGS. PROVIDE WITH 1/2" - 2#10 AWG & #10 GND.



SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS

1) PART 1 GENERAL

a) POWER AND CONTROL WIRING

- i) Provide power system conduit and wiring to mechanical equipment. Controls system conduit and wiring for mechanical systems is included under Division 15. "Power" wiring includes line voltage wiring from distribution apparatus to disconnecting means provided or installed under this section, and from such disconnecting means to motors, and to terminal boxes of 'package' equipment. "Controls" wiring includes wiring, regardless of voltage, which provides start-stop control for mechanical equipment and/or which is used to monitor functions of mechanical systems. Where line voltage wiring is extended from a local disconnecting means to relays, thermostats, by-pass timers, starter coils or the like, or from mechanical control panels or motor control centers to control devices, such extensions are considered "control" wiring.

b) MOUNTING HEIGHTS

- i) Mounting heights and locations: verify the exact location of equipment with architect prior to installation. Wall mounted devices requiring operational access shall be mounted a minimum of 15 inches above finished floor to bottom of device and a maximum of 48 inches above finished floor to top of device. Visual alarms shall be mounted not less than 80 inches to the bottom or 96 inches to the top of the device.

c) REGULATORY REQUIREMENTS

- i) Conform to:

(1) NFPA-70 - National Electric Code.

- ii) Comply with the current applicable codes, ordinances, and regulations of the authority or authorities having jurisdiction, the Owner's insurance underwriter, and applicable base building standards.

- iii)When conflict exists between two or more governing codes, comply with the stricter requirement.

- iv)Obtain permits, and request inspections from authority having jurisdiction.

d) PROJECT/SITE CONDITIONS

- i) Install Work in locations shown on Drawings, unless prevented by Project conditions. Coordinate installation of work in available space with work furnished under other Divisions.

2) PRODUCTS

- a) Where manufacturer's model or series numbers are specified or shown, these indicate generally acceptable types required. Furnish products which comply with all requirements, as specified or shown.

- b) When more than one unit of the same class of equipment is required, provide units produced by a single manufacturer.

3) TESTS

- a) Furnish test equipment, facilities, and technical personnel required to perform field tests.

- b) At completion of job, check voltage at several points of utilization on the system. Energize all loads installed.

4) CLEANING

- a) Clean all fixtures and equipment at the completion of the project. Wipe clean exposed lighting fixture reflectors and trim pieces with a non-abrasive cloth just prior to occupancy.

5) RECORD DRAWINGS

- a) Upon completion of the Work, deliver to Architect and up-to-date set of "as-built" record drawings on a reproducible medium including AutoCAD.

6) DEMOLITION

- a) Remove, relocate, and reroute existing electrical equipment to facilitate new construction or remodeling work.

- b) Examine the site to observe and note existing conditions prior to submitting a bid.

- c) Schedule demolition in advance. Schedule work to avoid disruption of normal operations.

- d)Reconnect circuits serving equipment required to remain in service to other panelboards, motor control centers, or other appropriate distribution equipment. Provide additional panelboards, motor control centers, or other appropriate distribution equipment where there is insufficient available capacity in remaining existing equipment for reconnection.

- e) Remove existing conduit and wire back to panelboard, motor control center, or other distribution source.

- f) Where a circuit is interrupted by removal of a device or fixture from that circuit, provide additional conduit and wire to restore service to the remaining devices and fixtures on that circuit.

- g) Electrical equipment to be removed that is in good working order shall be carefully removed and offered to the Owner. Items rejected by the Owner shall be removed from the project site and properly disposed of.

SECTION 16100 - BASIC MATERIALS AND METHODS

1) PART 1 GENERAL

a) REFERENCES

- i) All equipment and installations shall meet or exceed minimum requirements of ADA, ANSI, ASTM, IEEE, IES, NEC, NEMA, NETA, NFPA, OSHA, SMACNA, UL, and the State Fire Marshal. Equipment shall be certified for use in the State of the project and shall meet the State energy code. Provide products and materials that are new, clean, free of defects, and free of damage and corrosion.

b) PERFORMANCE REQUIREMENTS

- i) Provide support system for equipment and conduit, including wiring, with a minimum safety factor of 4. For empty conduits, include weight of 4 type XHHW wires of maximum permissible size.

c) QUALITY ASSURANCE

- i) All equipment and installations shall meet or exceed minimum requirements of ADA, ANSI, ASTM, IEEE, IES, NEC, NEMA, NETA, NFPA, OSHA, SMACNA, UL, and the State Fire Marshal. Equipment shall be certified for use in the State of the project and shall meet the State energy code. Provide products and materials that are new, clean, free of defects, and free of damage and corrosion.

2) PART 2 PRODUCTS

a) CONDUIT

i) General

- (1) Exposed Dry and Damp Locations:

(a)Use electrical metallic tubing.

- (2) Concealed Locations:

(a)Furred, Ceiling Spaces and Stud Walls: Use electrical metallic tubing.

(b) Connections to Lighting Fixtures in Accessible Ceilings: Use flexible conduit.

- (3) Equipment Connections:

(a)Connections to Liquid-Handling Equipment in Dry Locations: Use liquid-tight flexible conduit.

(4) Equipment for Dry Systems in Dry Locations: Use flexible conduit.

ii) Electrical Metallic Tubing:

- (1) Continuous, seamless steel tubing, galvanized or sherardized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel, with steel, set screw or compression type fittings. Provide concrete type fittings where required.

- (2) Use for general purpose feeders and branch circuits.

iii)Flexible Steel Conduit:

- (1) Single strip, continuous, flexible interlocked double-wrapped steel, hot dip galvanized inside and out forming smooth internal wiring channel, with steel, compression type fittings.

- (2) Use in dry locations only, connections to lighting fixtures in suspended ceilings, connections to equipment installed above suspended ceilings, transformer connections, busway plug in units, and connections to equipment where vibration isolation is required, maximum length of 6 feet.

iv)Liquid Tight Flexible Steel Conduit:

- (1) Same as flexible steel conduit except with tough, inert, watertight plastic outer jacket. Fittings shall be cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings threaded to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon insulated throat.

- (2) Use same as flexible steel conduit in damp or wet locations and at motor connections.

b) BUILDING WIRE AND CABLE

- i) Provide wire with a minimum insulating rating of 600 volts, except for wire used in low voltage (below 50 volts) control or signal systems. The use of teflon (multi-conductor) for low tension systems may be permitted for fire alarm, signal and communication systems (voice and data) as approved on shop drawings by engineers and where permitted by local codes and union practice.

ii) Conductors

- (1) Electrical grade, annealed copper, and fabricated in accordance with ASTM standards. Minimum size number 12 AWG for branch circuits; number 14 AWG for control wiring.

- (2) Unless otherwise specified, all wires numbers 10 and smaller shall be solid.

- (3) All wires number 8 and larger shall be stranded in accordance with ASTM Class B stranding designations.

- (4) Control wires shall be stranded in accordance with ASTM Class B stranding designations.

- (5) Cables for low tension systems shall be multi-conductor, 16 gauge, color coded and insulated in armored cable assembly, with number of conductors as required.

- (6) All 600 volt wire and cables unless otherwise specified shall be single conductor suitable for use in wet and dry and locations.

iii)Connectors

- (1) Make connections, splices, taps and joints with solderless devices, mechanically and electrically secure. Protect exposed wires and connecting devices with electrical tape or insulation to provide insulation values not less than on conductor.

iv)Cables (No. 8 and Larger):

- (1) Use set screw or compression type connectors, taps and splices specifically designed for the particular connection. Insulate splice either by taping or by use of "Bakelite" covers designed to fit around splice.

v) Branch Circuit Wires (Number 10 and Smaller): Use any of the following types of terminals and connecting devices:

- (1) Hand Applied: Coiled, tapered, spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wired ends. Screw connector on by hand.

- (2) Tool Applied: Steel cap, with conduction and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the purpose. Specifically fitted plastic or rubber insulating cover wrap over each connector.

c) BOXES

- i) Pressed steel, galvanized or cadmium-plated, 4 inches minimum octagonal or square with galvanized cover or extension ring as required.

- ii) Back-to-back outlets in the same wall, or "through-wall" type boxes are not permitted. Provide 12 inch minimum spacing for outlets shown on opposite sides of a common wall. Provide acoustical potting compound on all outlet boxes.

d) WIRING DEVICES

- i) Switches and Receptacles: Arrow Hart, Hubbell, Leviton, Pass & Seymour, or Slater.

- ii) Wall Dimmers: Lutron.

- iii)Occupancy Sensors: Mytech, Novitas, or Watt Stopper.

iv)Floor Boxes and Fittings:

- (1) Poke through type: Wiremold Legrand.

- (2) Recessed flush floor box type: Steel City or Wiremold Legrand.

v) Plugstrip: Wiremold.

- vi)Device and cover plate colors shall be as selected by Architect.

e) SUPPORTS

- i) Support raceways on accepted types of wall brackets, specialty steel clips, or hangers, ceiling trapeze hangers, or malleable iron straps. Plumber's perforated straps are not permitted. Acceptable manufacturers' brackets or hangers are Kindorf, Ekan, Binkley, Multi-Frame, Power-Strut, or Unistrut. Do not suspend raceways or equipment from other raceways, steam, water, or other piping or ductwork, except as otherwise permitted. Provide independent and secure support methods.

f) PANELBOARDS

- i) Acceptable Manufacturers: Cutler-Hammer/Westinghouse, General Electric, Siemens, or Square D/Groupe Schneider.

- ii) AIC Rating: Branch panelboards and overcurrent protection devices shall have a minimum short circuit rating of 10,000 RMS symmetrical amperes minimum interrupting capacity (120/208V) or 14,000 RMS symmetrical amperes minimum interrupting capacity (277/480V).

- iii) AIC Rating: Distribution panelboards and overcurrent protection devices shall have a minimum short circuit rating of 42,000 RMS symmetrical amperes minimum interrupting capacity (120/208V) or 200,000 RMS symmetrical amperes minimum interrupting capacity (277/480V).

- iv)Enclosures: Corrosion resistant galvanized (zinc finished) sheet steel. Fronts shall be cold rolled steel, finish coated with ANSI G1 grey enamel over a rust inhibitor. Panel locks shall be keyed alike.

- v) Doors: One piece bolt on front with a lockable hinged door over the overcurrent protection devices.

- vi)Bus Bars: Silver plated aluminum or copper. Neutral bus shall be full size. Neutral bus shall be 200% rated when supplied from a double neutral feeder. Provide an equipment ground bus in each panelboard. In addition to the equipment ground bus, provide an isolated ground bus when supplied from a feeder which includes an isolated grounding conductor.

- vii) Overcurrent Protection Devices: Molded case circuit breakers for branch panelboards and 120/208V rated distribution panels, and fusible switch units for 277/480V rated distribution panels.

g) MOTOR STARTERS

- i) Acceptable Manufacturers: Eaton/Cutler-Hammer, General Electric, Siemens, or Square D/Groupe Schneider.

ii) Manual Motor Starters

- iii)Fractional Horsepower Manual Starter: General-purpose, Class A, manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, and toggle operator.

- iv)Voltage, Rating and Thermal Element: As required by motor controller.

- v) Enclosure: NEMA ICS 6; Type 1.

h) PULL LINE

- i) 1/8 inch diameter braided yellow polypropylene.

3) PART 3 EXECUTION

a) INSTALLATION

i) Conduit

- (1) Install conduit in accordance with NECA "Standard of Installation".
- (2) Do not combine individual homeruns into common conduit.
- (3) Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- (4) Arrange conduit to maintain headroom and present neat appearance.
- (5) Use conduit hubs to fasten conduit to cast boxes.
- (6) Provide insulated equipment ground conductor in flexible conduit.
- (7) Install conduit to preserve fire resistance rating of partitions and other elements.
- (8) Do not attach conduit to ceiling support wires.

ii) Building Wire and Cable

- (1) Use conductor not smaller than 12 AWG for power and lighting circuits.
- (2) Neatly train and lace wiring inside boxes, equipment, and panelboards.
- (3) Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- (4) Use hardened and tempered steel, tin-plated or stainless steel Belleville washer with slightly larger tin-plated mild steel flat washer for aluminum lugs.
- (5) Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 8 AWG and smaller.

iii)Boxes

- (1) Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- (2) Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- (3) Install boxes to preserve fire resistance rating of partitions and other elements; arrange boxes to meet regulatory requirements.
- (4) Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices to each other.
- (5) Do not use through-walls boxes or install flush mounting boxes back-to-back in walls; provide minimum 6 inch separation. Provide minimum 24 inches separation in acoustic rated walls.
- (6) Use stamped steel bridges in bar hanger assemblies to fasten flush mounting outlet box between studs.
- (7) Use adjustable steel channel fasteners for hung ceiling outlet box.
- (8) Do not fasten boxes to ceiling support wires.
- (9) Support steel metal boxes independently of conduit.
- (10) Use gang box where more than one device is mounted together, including floor boxes. Do not use sectional box.
- (11) Plaster Rings: Use for all concealed work; depth of rings as required to reach finished surfaces.
- (12) Coordinate trimming of openings for outlet boxes in partitions to achieve neat, closely-fitting openings.
- (13) Install knockout closure in unused box opening.

iv)Wiring Devices

- (1) Install devices plumb, level, and rigidly in place.
- (2) Install switches 2 inches to 8 inches from trim on the strike side.
- (3) Install decorative plates on switch, receptacle, and blank outlets in finished areas. Use multi-gang plates for multiple devices.
- (4) Connect wiring devices by wrapping conductor around screw terminal.

v) Supporting Devices

- (1) Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, beam clamps, steel ramset fasteners.
- (2) Use toggle bolts or hollow wall fasteners in plaster or gypsum board partitions and walls; sheet metal screws or spring steel bar retainer clips in sheet metal studs.
- (3) Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- (4) Do not use powder-actuated anchors without specific permission.
- (5) Do not drill structural steel members without specific permission.
- (6) Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under nuts.

vi)Electrical Identification

- (1) Provide wire markers on each conductor in panelboard gutters, pull boxes, and at load connection. Identify with branch circuit for power and lighting circuits, and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring. If more than one neutral conductor is present, mark each with related circuit numbers.
- (2) Color code all secondary branch circuit and feeder conductors as follows:
- (a)Four Wire, Three Phase, Grounded Wye System: For 120/208 volt systems, use one black, one red, one blue, one white (neutral). For 277/480 volt systems, use one brown, one orange, one yellow and one gray (neutral).
- (3) Use wire with insulation of required color. For sizes of wire, which may not be available in specified colors use self-adhesive wrap around, markers of solid colors to color code conductors.
- (4) Color code conductors at accessible locations.
- (5) Pull Rope Marking: Affix label identifying termination point at each end of pull rope.

vii) Disconnect Switches

- (1) Install disconnect switches shown mounted on walls at 4'-6" to centerline of switch.
- (2) Install disconnect switches shown on or adjacent to equipment on field fabricated galvanized steel frames.

viii) Panelboards

- (1) Provide filler plates for unused spaces in panelboards.
- (2) Provide typed circuit directory in plastic holder for each branch circuit panelboard.

ix)Motor Starters

- (1) Install motor control equipment in accordance with manufacturer's instructions.
- (2) Select and install heater elements in motor starters to match installed motor characteristics.

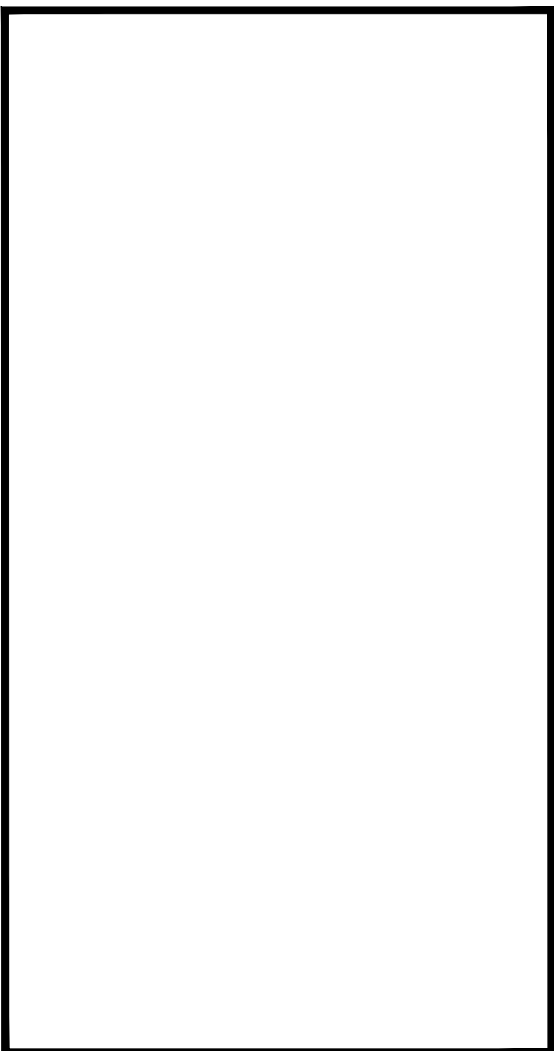
- x) Pull Line: Provide in each empty conduit except sleeves and nipples; leave 8 inches of slack at each outlet.

- xi)Firestopping: Provide firestopping around all pipes, conduits, sleeves, etc., which pass through rated walls, partitions and floors.

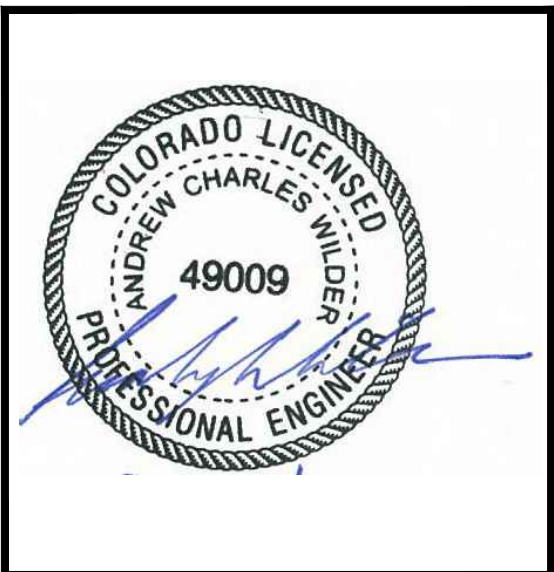
END OF SECTION

VISTA VERDE
LOUNGE
ADDITION

56000 Cowboy Way
Clark, CO



WILDER ENGINEERING LLC
Andrew Wilder PE
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Steamboat Springs, CO 80487
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E: andy@wilder-eng.com



Issue	By	Date & Issue Description	By
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Scale:
24x36_NTS
Description: SPECIFICATIONS
Project Name: VISTA VERDE
Project Number: 2019015
Sheet No.
E-4