ELECTRICAL SPECIFICATIONS

1. Scope

The scope of the work covered herein consists of furnishing all labor, materials, necessary equipment and services to complete the Electrical Work and related work in full accordance as indicated on the drawings, as specified herein or both and subject to the terms and conditions of the Contract.

2. Codes, Rules, Permits, Fees

Electrical Contractor is generally responsible to insure all work, both old and new, complies with the NEC and any applicable local and state codes and ordinances.

3. Drawings

Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The Architectural drawings and details shall be examined for exact location of fixtures and equipment. Any conflict shall be immediately brought to the attention of the Architect or Engineer before proceeding with the work.

4. Shop Drawings

Materials or products specified herein and/or indicated on drawings by trade name, manufacturer's name or catalog number shall be provided as specified.

5. Cooperation With Other Trades

The Subcontractor shall give full cooperation to other trades and shall furnish in writing to the contractor, with copies to the Engineer, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay. Coordinate all conduit runs and equipment with other trades. Verify nameplate electrical data of actual equipment furnished by others before beginning installation.

6. Cutting, Patching, And Finishing

The Electrical Contractor shall do all cutting, drilling, etc. required for work under this section of the specifications, inside the building.

7. Excavation And Backfilling

The Subcontractor shall do all trench and pit excavating and backfilling required for work under this section of the specifications, inside and outside the building, all required shoring, bracing, pumping and all protection for safety of persons and property.

8. Material And Workmanship

All materials and apparatus required for the work shall be new unless indicated otherwise on the plans.

Electrical Contractor shall provide and install all electrical as shown, verifying all mounting heights and exact locations of all wall-mounted electrical devices with architect prior to rough-in.

Connections and junction boxes to equipment are diagrammatic. Verify exact location of connection to specific equipment and devices.

9. Panelboards

Panels shall be as manufactured by Square-D, G.E., ITE or equivalent of sizes, ratings, and requirements shown on the plans. Panels shall be of dead front construction. All bussing shall be as specified on panel schedules.

Multi-pole breakers shall have a single handle to trip all poles at once.

A laminated black plastic with white lettering plastic nameplates with the identification number as shown on the panel schedule shall be mounted on the outside of the door with sheet metal screws. Nameplate size shall be 3" wide X 1-1/2" high with 1/2" high engraving. Provide a completed circuit directory, typed and mounted in a clear plastic sleeve, on the interior of the panel door.

10. Grounding

Provide a complete grounding network for the entire electrical system to comply with NEC requirements.

All conduits shall have a ground wire installed. A conduit ground shall not be used.

Bond service entrance ground to building steel, metal water mains, made electrodes, etc.

11. Disconnect Switches

Equipment disconnect switches shall be Square-D, G.E., ITE or equivalent general duty, or heavy duty of the type and rating shown on the plans. Fuses shall be provided of the appropriate type and rating for the equipment to be served.

12. Miscellaneous Equipment

Switches - All general use lighting (SPST toggle with or without pilot) switches to be rated 20A, 120-277V, as manufactured by Leviton, Lutron, P & S, or equivalent. Coordinate color with Owner/Architect.

Receptacles - All general use duplex receptacles to be rated 20A, 120V as manufactured by Leviton, Lutron, P & S, or equivalent. Coordinate color with Owner/Architect.

Conductors - All conductors shall be rated 600V, copper, type THWN, XHHW/THHN. Where indicated aluminum conductors may be used and shall be type THHW/XHHW. Conductors of #8 AWG and larger shall be stranded.

Lighting fixtures - Lighting fixtures shall be as indicated on the fixture schedule or approved equals.

13. Conduit

Conduit shall be EMT, GRC, SCH. 40 PVC, SCH. 80 PVC, liquid tight metal flexible, or metal flexible.

GRC shall be used at exposed exterior locations. Flex shall be used for connection to all fixed equipment, except in damp or wet locations, where liquid tight metal flexible shall be used. EMT shall be used at all exposed interior locations. All remaining locations may use PVC.

Insulating bushings with double lock-nuts shall be used for entrance of 1-1/4" or larger into enclosures.

Sizes indicated are minimums, larger sizes may be used to facilitate wire pulls, etc.

14. Telephone System

Provide a 4' x 8' x 3/4" plywood backboard for telephone distribution. A driven ground rod shall be installed adjacent to the backboard. Install empty conduit(s) as indicated on the plans with pullwire installed for the telephone service entrance.

A 3/4" conduit shall be routed from all the telephone outlets to the ceiling space. Terminate conduit in ceiling space with a 90 degree bend and bushing at end of conduit. Extend conduit to nearest accessible ceiling space if no access to the ceiling space above the outlet is present. Provide a conduit path through all obstructions to the backboard.

15. Equipment Furnished By Others

Electrical Contractor shall provide conduit, wire and disconnect switches indicated on drawings, to connect electrical equipment supplied by others which shall include both new and relocation of existing equipment. All final electrical connections are to be by electrical contractor.

16. Record Drawings

The Contractor shall keep accurate records of actual construction including device locations and conduit runs if different from the plans.

The Contractor shall provide the owner with a reproducible set of plans of the complete electrical and fire alarm systems as installed. The scale on these drawings shall be no smaller than the scale used on the original plans.

17. Testing

Final tests shall be made only after the Engineer is satisfied that all work has been completed.

18. Final Acceptance

After testing, a final inspection shall be made by the Engineer and other authorized persons with the Electrical Contractor.

Final acceptance of the project shall not prejudice the Owner's right to require replacement and/or repair any defective work or materials.

LEGEND

OUTLETS

- DUPLEX RECEPTACLE (120 V)
- DEDICATED DUPLEX RECEPTACLE (120V)
- WEATHERPROOF RECEPTACLE
- GROUND FAULT RECEPTACLE
- ISOLATED GROUND RECEPTACLE
- DRINKING FOUNTAIN
- SWITCHED RECEPTACLE
- HALF SWITCHED RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- FLUSH FLOOR RECEPTACLE, DUPLEX
- SPECIAL EQUIPMENT RECEPTACLE
- LOCKING RECEPTACLE
- TELEPHONE OUTLET
- TELEPHONE OUTLET (W=WALL)
- FLUSH FLOOR TELEPHONE OUTLET
- DATA OUTLET
- VOICE/DATA OUTLET
- TELEPOWER POLE (T=telephone, P=power, C=computer)
- JUNCTION BOX
- WALL JUNCTION BOX
- PULL (JUNCTION) BOX
- UNDERFLOOR JUNCTION BOX

SWITCHES

- SINGLE-POLE SWITCH
- DOUBLE-POLE SWITCH
- THREE-WAY SWITCH
- FOUR-WAY SWITCH
- SWITCH WITH PILOT LIGHT
- COMB. SWITCH/DUPLEX RECEPTACLE
- LOW-VOLTAGE SWITCH
- LOCKING SWITCH
- DOOR OPERATED SWITCH
- KEY SWITCH
- WEATHERPROOF SWITCH
- TIME SWITCH
- DIMMER SWITCH (WATTAGE SHOWN)
- OCCUPANCY SENSOR
- LIGHT SENSOR

MECHANICAL

- MOTOR AND CONNECTION, HP SHOWN
- CEILING EXHAUST FAN
- WALL TYPE EXHAUST FAN, HP SHOWN
- PIPE HEAT TRACING
- ELECTRIC UNIT HEATER
- ELECTRIC BASEBOARD HEATER
- ELECTRIC CABINET HEATER
- WATER HEATER
- PADDLE FAN

SOUND and SIGNAL

- SPEAKER
- VOLUME CONTROL
- BUZZER
- CHIME
- TELEVISION ANTENNA OUTLET
- MICROPHONE OUTLET
- INTERCOM OUTLET
- NC NURSE CALL

FIXTURES

- SURFACE FLUOR. FIXTURE W/BOX
- RECESSED FLUORCENT FIXTURE
- FLUORECENT STRIP FIXTURE
- OTHER FLUORSCENT FIXTURE
- NIGHT LIGHT (on 24 hours)
- FIXTURE ON EMERGENCY CIRCUIT
- AVANTE LIGHT FIXTURE
- AVANTE LIGHT FIXTURE ON EMERGENCY CIRCUIT
- PARABOLIC LIGHT FIXTURE
- PRISMATIC LIGHT FIXTURE
- RECESSED DOWNLIGHT
- RECESSED DOWNLIGHT ON EMERGENCY
- RECESSED WALLWASHER
- WALL SCONCE LIGHT FIXTURE
- SPOTLIGHT (number of heads shown)
- KEYLESS LAMPHOLDER
- EXIT FIXTURE (arrows indicate directional arrows)
- EXIT FIXTURE, WALL MOUNTED
- INCANDESCENT WALL BRACKET
- INCANDESCENT CEILING MOUNTED
- TRACK LIGHT
- TRACK LIGHT FIXTURE
- STREET TYPE POLE FIXTURE
- POLE MTD. FIXTURE
- WALL MTD. FIXTURE
- WALLPACK FIXTURE
- SPECIAL PURPOSE FIXTURE
- H.I.D. CEILING FIXTURE
- EMERGENCY EGRESS LIGHT (number of heads shown)

CIRCUITRY and RACEWAYS

- CIRCUIT UP
- CIRCUIT DOWN
- 1,3 HOME RUN (with circuit numbers)
- END OF CONDUIT RUN
- END OF RUN, CAP AND STAKE
- "RUN CONTINUES" INDICATION
- WM WIREMOLD #500 Unless noted
- PM PLUGMOLD #V20GB612 Unless noted

DESIGNATIONS

- REVISION NOTE
- FLAG NOTE
- DETAIL NOTE
- FEEDER NUMBER
- UON UNLESS OTHERWISE NOTED
- C COMPUTER DESIGNATED OUTLET
- WP DEVICE DESIGNATED WEATHER PROOF
- AC DEVICE ABOVE COUNTER
- CLG DEVICE IN CEILING
- FLR DEVICE IN FLOOR
- AFF ABOVE FINISHED FLOOR

SERVICE and EQUIPMENT

- TRANSFORMER, PAD MOUNTED
- TRANSFORMER, DRY (KVA shown)
- DISCONNECT SWITCH (fuse size shown)
- NON-FUSED DISC. (switch size shown)
- MAGNETIC STARTER (BY DIV. 15 U.O.N.)
- COMB. STARTER (BY DIV. 15 U.O.N.)
- PANELBOARD, SURFACE MOUNTED
- PANELBOARD, FLUSH MOUNTED
- UTILITY METER, AS REQUIRED
- CURRENT TRANSFORMERS (with potential transformers where required)
- GENERATOR, KW SHOWN
- TELEPHONE TERMINAL BOARD
- TELEPHONE TERMINAL CABINET (surface unless otherwise noted)
- GROUND CONNECTION PER N.E.C.
- WIREWAY
- TRANSFER SWITCH
- CIRCUIT BREAKER

CONTROL

- THERMOSTAT (line voltage U.O.N. furnished by DIV. 15 U.O.N.)
- HUMIDISTAT (line voltage U.O.N. furnished by DIV. 15 U.O.N.)
- PHOTOCELL (voltage as required)
- TIME CLOCK (24 hour U.O.N.)
- PUSHBUTTON STATION (number of buttons indicated)
- LIGHTING CONTACTOR
- IRRIGATION CONTROLLER (120 volt 50va connection by /C)

FIRE ALARM-REFER TO FIRE ALARM DRAWINGS

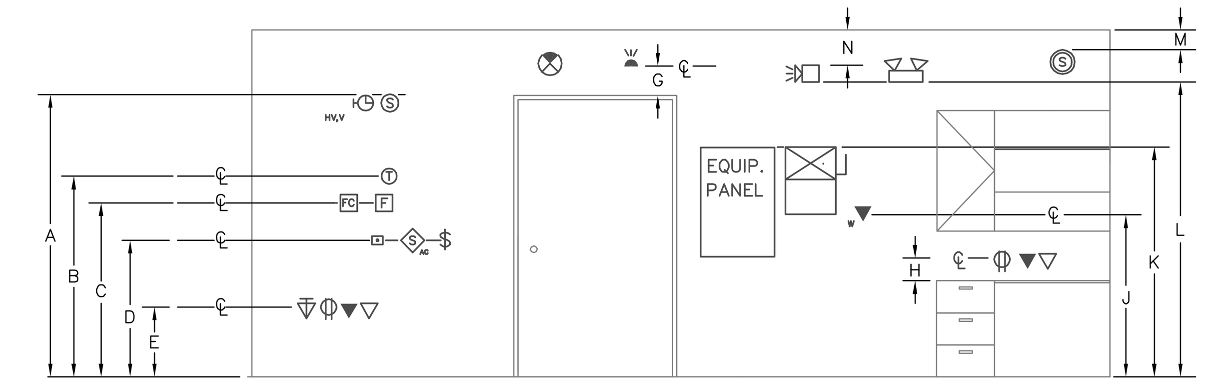
- SMOKE DETECTOR
- SMOKE DETECTOR
- DETECTOR, RATE OF RISE
- DUCT DETECTOR
- HORN
- HORN & LIGHT
- STROBE
- SPEAKER
- SPEAKER & LIGHT
- PULL STATION
- FACP FIRE ALARM CONTROL PANEL
- ANN ANNUNCIATOR PANEL
- REMOTE INDICATING LIGHT, WALL MTD.
- REMOTE INDICATING LIGHT, CLG. MTD.
- MAGNETIC DOOR HOLDER
- FIREFIGHTER COMMUNICATION JACK
- AUDIBLE SIGNAL
- FLOW SWITCH
- TAMPER SWITCH
- FIRE SMOKE DAMPER

MOUNTING HEIGHTS

KEY	HEIGHT	KEY	HEIGHT
A	80"	G	3"
B	48" MAX	H	8"A.C.
C	46" MAX	J	48" MAX
D	48" MAX	K	78" MAX
E	18" MIN	L	80"-96"
F	3" MIN	M	4" MIN
		N	6" MIN

NOTES:

1. CENTERLINE DIMENSIONS ARE TO CENTER OF DEVICE WITH TRIM. ADJUST BACKBOX LOCATION AS REQUIRED.
2. ALL MOUNTING HEIGHTS SHALL CONFORM TO THE LATEST EDITION OF THE AMERICANS WITH DISABILITIES ACT, (ADA).
3. DIMENSIONS APPLY UNLESS OTHERWISE NOTED ON DRAWING.



DEVICE MOUNTING HEIGHT DETAIL

NO SCALE

DRAWING INDEX

NUMBER	DRAWING TITLE	SCHEMATIC DESIGN 01/24/06	DESIGN DEVELOPMENT 04/20/06	PERMIT SET 06/15/06	RECORD DRAWING SET 01/14/08
E0.0	LEGEND, NOTES, INDEX AND CRITERIA	•	•	•	•
E1.00	ELECTRICAL SITE PLAN			•	•
E2.00	LEVEL BASEMENT - POWER PLAN	•	•	•	•
E2.01	LEVEL 1 - POWER PLAN	•	•	•	•
E2.02	LEVEL 2 - POWER PLAN	•	•	•	•
E2.03	LEVEL 3 - POWER PLAN	•	•	•	•
E2.04	LEVEL 4 - POWER PLAN	•	•	•	•

COORDINATION:
06/15/06 - ARCHITECTURAL DRAWING SET
06/15/06 - PLUMBING DRAWING SET
06/15/06 - MECHANICAL DRAWING SET

QWEST REQUIREMENTS TO BE CONFIRMED

CALL UTILITY NOTIFICATION CENTER OF COLORADO

1-800-922-1987

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

LUMINAIRE SCHEDULE

Tag	Lamps	Description	Manufacturer	Part No.	Voltage	Notes
C	F32W T-8	4', 2-Lamp Strip Fixture	Lithonia	C-232-120-GEB	120	
G	150W PSMH	Cut-Off Parking Garage Fixture	RUUD	QVO615-M-PD-20BZ	208	
GQ	150W PSMH	Cut-Off Parking Garage Fixture w/ Quartz Restrike	RUUD	QVO615-M-PD-20BZ-Q	208	
H	100W MH	Wall Mount Cut-Off Fixture	Lithonia	TWR1-100M-TB-LPI	208	
H2	100W MH	Decorative Wall Mount Cut-Off Fixture	Lithonia	WST-100M-WT-208-DDBT	208	
H3E	42W TRT	Decorative Wall Mount Cut-Off Fixture w/ Emergency Ballast	Lithonia	WST-42TRT-FT-208-ELDWC-DDBT	208	
K	100W	Vaportight Incandescant w/ Lamp Guard	Canlet	GIWF15G-GSC	120	
WE	32W CF	10" Square Fluorescent Wall/ceiling Mount Vandal Resistant	RUUD	SS0238-1EML	208	
EM		Dual Head Remote Emergency Lighting Unit w/ Thermal Heater	Siltron	SE20-TH	208	
X1/X2		LED Exit sign, double red face w/ batt.	Emergilite	LQM-SW3R-120/277-ELN	208	
X3		LED Exit sign, double red face w/ batt. Weatherproof	Lithonia	LVSW-1R-208-UM-ELN-WL	208	
AA	250W PSMH	Cut-Off Shoebox Fixture, 17' MH, Steel Pole	RUUD	VFT 2 6925-M / PS4S17C 2 BZ	208	
BB	250W PSMH	Cut-Off Shoebox Fixture, 20' MH, Steel Pole	RUUD	PR 2 632-M / PS4S20S 2 BZ	208	

Notes:
1. Dual Level Switching
2. One Ballast to be unswitched for emergency and night-lighting function.

MECHANICAL EQUIPMENT & MOTOR SCHEDULE

KEY	EQUIPMENT	CHARACTERISTICS HP	RLA/FLA	EFFC.	Watts	CIRCUIT PH	Volts	MCA	MOCP	PROTECTION Breaker	Switch	Fuse	Disconnect at unit	NOTES
GGEF-1	Exhaust Fan	10	32.2			3	208	40.3	60	60			NF	1
GGEF-2	Exhaust Fan		2.9		350	1	120	3.6	20	20			Snap Switch	3
GGTF-1	Transfer Fan		2.9		350	1	120	3.6	20	20			Snap Switch	2
GGEUH-1,2	Electric Unit Heater		15.9		3300	1	208	19.8	20	20			NF	
SP-1,2	Sump Pump		5.5			1	208	6.9	15	15			NF	

NOTES
1. Energized via CO Monitoring System, supplied by MC and installed by EC.
2. Controlled via line voltage thermostat supplied by MC and installed by EC.
3. Fan operates continuously.

PANEL SCHEDULE

PANEL	G	Job # 5060	
VOLTAGE	120/208	AIC AMPS	22,000
		BUSSING	AL
		NEUTRAL BUS	100% YES
		GROUND BUS	YES
RATED AMPS	400	MAIN LUG ONLY	400
PHASE / HERTZ	3/60	FEED	BOTTOM
		FEED THROUGH LUGS	NO
# OF CIRCUITS	60	MOUNTING	SURFACE
MANUFACTURER	SIEMENS	COVER TYPE	STANDARD
		FEED FROM	Utility
PANEL TYPE	PB	ISOLATED GND	NO

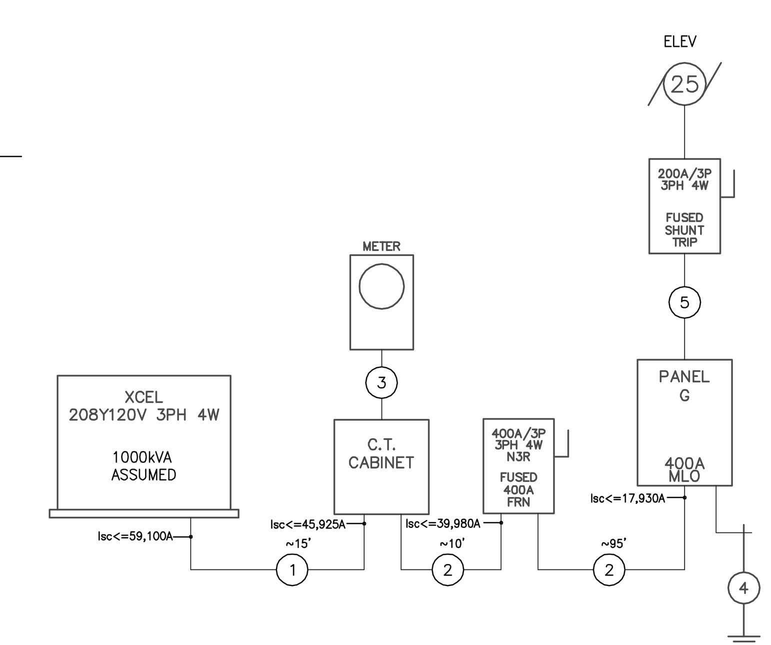
NOTE: "L" BREAKERS TO BE "LOCK ON"

CIR#	BKR	CIRCUIT DESCRIPTION	Cat.	WATTS	BKR TYPE	PH	BKR TYPE	WATTS	Cat.	CIRCUIT DESCRIPTION	BKR	CIR#
1	20A-1P	Lighting - Basement	L	720		A		900	R	Receptacles - Northeast	20A-1P	2
3	20A-1P	Lighting - Basement	L	720		B		900	R	Receptacles - Southwest	20A-1P	4
5	20A-1P	Lighting - Basement	L	720		C		250	R	Receptacles - Telephone Board	20A-1P	6
7	20A-1P	Lighting - Level 1	L	840		A		3,864	E	GGEF-1	60A-3P	8
9	20A-1P	Lighting - Level 1	L	960		B		3,864	E	"	"	10
11	20A-1P	Lighting - Level 2	L	720		C		3,864	E	"	"	12
13	20A-1P	Lighting - Level 2	L	480		A		3,864	E	Panel G1	60A-2P	14
15	20A-1P	Lighting - Level 3	L	720		B		3,864	E	"	"	16
17	20A-2P	Lighting - Level 4	L	1,680		C						18
19	"	"	L	1,680		A		250	E	CO Monitoring Panel	20A-1P	20
21	20A-1P	Lighting - Stairwells NE	L	600		B		1,650	H	GGEUH-2	20A-2P	22
23	20A-1P	Lighting - Stairwells SW	L	600		C		1,650	H	"	"	24
25	20A-2P	GGEUH-1	H	1,650		A		350	E	GGEF-2	20A-1P	26
27	"	"	H	1,650		B		400	L	Lighting - Level 2 Wall Mounts	20A-1P	28
29	20A-1P	GGTF-1	E	350		C		400	L	Lighting - Level 2 Wall Mounts	20A-1P	30
31	20A-1P	Elevator Cab Lighting	L	500		A		560	L	Lighting - Level 2/3 Wall Mounts	20A-1P	32
33	20A-1P	Elevator Machine Room - Ltg & Recep	L	240		B		560	L	Lighting - Level 2/3 Wall Mounts	20A-1P	34
35	20A-1P	Elevator Pit - Ltg & Recep	L	280		C		450	L	Lighting - Exterior	20A-1P	36
37	20A-1P	Fire Alarm Panel	E	250		A				Spare	20A-1P	38
39	20A-1P	Time Clock	E	250		B		750	E	Fire Protection Compressor	20A-2P	40
41	20A-1P	Sump Pump Elevator Pit	E	750		C		750	E	"	"	42
	200A-3P	Elevator	E	11,040		A						
	"	"	E	11,040		B						
	"	"	E	11,040		C						

Category	Connected	Demand Factor	Demand		Connected	Demand
R- Recept.	2,050	N.E.C. 220-13	2,050	LINE L1	26,948	27,359
L- Lighting	13,830	1.25	17,288	LINE L2	28,168	27,359
H- Heating	6,600	1	6,600	LINE L3	23,504	27,359
C- Cooling	0	1	0	LINE TOTAL	78,620	82,078
E- Equip.	56,140	1	56,140	DEMAND AMPERAGE:		
M- Misc.	0	1	0	82,078 / 1.732 / 208	228 Amps	
Total:	78,620		82,078			

FEEDER SCHEDULE

1. 2 SETS (4 - 250kCML AL) 2-1/2"C
2. 2 SETS (4 - 250kCML AL, #3G CU) 2-1/2"C
3. 3/4"C W/ PULL STRING
4. #2G CU TO UFER GROUND; #6G CU TO 5/8" CU CLAD GND ROD
5. (3 - #3/0 CU, #6G CU) 2"C



ONE-LINE DIAGRAM

NO SCALE

RECORD DRAWING ACCURATE AS OF:
RECORD DRAWING PREPARED BY: BRET'S ELECTRIC

RECORD DRAWINGS

OZ ARCHITECTURE
1820 Folsom Street
Boulder, Colorado 80302
phone 303.449.8900

NexCore GROUP

SRB CONSULTING ENGINEERING
MECHANICAL • ELECTRICAL • PLUMBING

BRET'S ELECTRIC LLC
THORNTON, CO
303-254-8810
www.bretselectric.com

GOLDEN GURA GARAGE

Jackson St.
Golden, Colorado

PROJ. NO. 15038.00
DRAWN: LNS/CW
CHECKED: LNS
CADD FILE: 5060 Schedules
DATE: 1-14-08
REVISIONS:
ADD. NO. 1 8.10.06
CITY REVIEW COMMENTS 7.28.06
ADD. NO. 2 9.27.06
REV 4 11.20.07

©OZ ARCHITECTURE

GURA GARAGE RECORD DRAWINGS NOTES, INDEX, SPECIFICATIONS & ONE-LINE DIAGRAM
SCALE: AS NOTED
SHEET NUMBER:

E0.0