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ABBREVIATIONS

ø	ROUND OR DIAMETER	LBS	POUNDS
AD	ACCESS DOOR	LWT	LEAVING WATER TEMPERATURE
AF	AIRFOIL	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	THOUSAND BRITISH THERMAL UNITS/HOUR
ALT	ALTERNATE	MECH	MECHANICAL
BI	BACKWARD INCLINED	MIN	MINIMUM
BOD	BOTTOM OF DUCT	NC	NOISE CRITERIA OR NORMALLY CLOSED
BOP	BOTTOM OF PIPE	NIC	NOT IN CONTRACT
BTU/H	BRITISH THERMAL UNITS PER HOUR	NO	NUMBER
CAP	CAPACITY	NOM	NOMINAL
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
CV	CONSTANT VOLUME	OA	OUTSIDE AIR
DB	DRY BULB	OBD	OPPOSED BLADE DAMPER
DN	DOWN	OD	OVERFLOW DRAIN
DIA	DIAMETER	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
DCW	DOMESTIC COLD WATER	OFOI	OWNER FURNISHED, OWNER INSTALLED
DHW	DOMESTIC HOT WATER	PD	PRESSURE DROP
DHWC	DOMESTIC HOT WATER CIRC.	POC	POINT OF CONNECTION
DSN	DOWN SPOUT NOZZLE	PRV	PRESSURE REDUCING VALVE
DW	DISHWASHER	PSI	POUNDS PER SQUARE INCH
(E)	EXISTING	PSIG	POUNDS PER SQUARE INCH GAUGE
EA	EXHAUST AIR	RA	RETURN AIR
EAT	ENTERING AIR TEMPERATURE	RAD	RADIUS
EFF	EFFICIENCY	RD	ROOF DRAIN
ELEV	ELEVATION	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
ENCL	ENCLOSURE	SA	SUPPLY AIR
ESP	EXTERNAL STATIC PRESSURE	SEN	SENSIBLE
ET	EXPANSION TANK	SIM	SIMILAR
EWC	ELECTRIC WATER COOLER	SL	SEA LEVEL
EWT	ENTERING WATER TEMPERATURE	SP	STATIC PRESSURE
FCO	FLOOR CLEANOUT	SQ.FT	SQUARE FEET
FD	FLOOR DRAIN	SS	SERVICE SINK OR STAINLESS STEEL
FO	FLAT OVAL	TOD	TOP OF DUCT
FPM	FEET PER MINUTE	TSP	TOTAL STATIC PRESSURE
FS	FLOOR SINK	TYP.	TYPICAL
FT	FEET	U	URINAL
FV	FACE VELOCITY	VAV	VARIABLE AIR VOLUME
GA	GAUGE	VD	VOLUME DAMPER
GAL	GALLON	VFD	VARIABLE FREQUENCY DRIVE
GD	GARAGE DRAIN	VOL	VOLUME
GPM	GALLONS PER MINUTE	VTR	VENT THROUGH ROOF
HP	HORSEPOWER	W/	WITH
HR	HOUR	W/O	WITHOUT
HT	HEIGHT	WB	WET BULB
IN	INCH	WC	WATER CLOSET
INWC	INCHES OF WATER COLUMN	MVD	MANUAL VOLUME DAMPER
INWG	INCHES OF WATER GAUGE	WCO	WALL CLEANOUT
L	LAVATORY OR LOUVER	WPD	WATER PRESSURE DROP
LAT	LEAVING AIR TEMPERATURE	WT	WEIGHT

MECHANICAL GENERAL NOTES

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLAN FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC. CLOSELY COORDINATE NEW MECHANICAL WITH ALL NEW AND EXISTING MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL MEMBERS. DUCTWORK AND PIPE ROUTING IS APPROXIMATE, DIAGRAMMATIC AND IS NOT TO BE SCALED. PROVIDE ALTERNATE ROUTING, OFFSETS AND TRANSITIONS AS REQUIRED FOR COORDINATION OF ALL WORK WITHOUT ADDITIONAL COST TO THE OWNER.
2. FIELD VERIFY ALL MECHANICAL AND PLUMBING ITEMS PRIOR TO COMMENCING NEW WORK. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH EXISTING CONDITIONS.
3. ALL MECHANICAL WORK SHALL BE COORDINATED WITH THE WORK PERFORMED UNDER OTHER DIVISIONS TO AVOID INTERFERENCE.
4. DO NOT SHUT-OFF/PUT OUT SERVICE ANY SYSTEMS/SERVICES WITHOUT FIRST COORDINATING ALL DOWNTIME WITH THE OWNER'S PERSONNEL.
5. DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS.
6. COORDINATE ALL FIRE SPRINKLER, DIFFUSER AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN AND ELECTRICAL DRAWINGS.
7. ALL PIPING INSULATION SHALL RUN CONTINUOUSLY THROUGH FLOOR, WALLS, AND PARTITIONS.
8. ALL PIPING SHALL BE SUPPORTED ADJACENT TO EQUIPMENT, TO PREVENT WEIGHT OF PIPING BEING PLACED ON EQUIPMENT.
9. DUCT INTERIORS VISIBLE THROUGH REGISTERS, GRILLES, AND DIFFUSERS SHALL BE FLAT BLACK.

MECHANICAL LEGEND

NOTE: ALL ITEMS MAY NOT APPEAR ON DRAWINGS

GATE VALVE
OS & Y PATTERN GATE VALVE
BALL VALVE
BUTTERFLY VALVE
MOTORIZED VALVE OPERATOR
GAS COCK
PLUG VALVE
CHECK VALVE (SWING OR LIFT AS REQ'D)
SOLENOID VALVE
AUTOMATIC CONTROL VALVE (2-WAY)
AUTOMATIC CONTROL VALVE (3-WAY)
PRESSURE REDUCING VALVE
P & T RELIEF VALVE
AIR VENT (AUTOMATIC)
CURB COCK
THERMAL EXPANSION VALVE
STRAINER
CALIBRATED BALANCE VALVE
VENTURI FLOW METER
REDUCER
PET COCK OR GAUGE COCK
PRESSURE GAUGE W/GAUGE COCK
THERMOMETER
TEMPERATURE & PRESSURE TEST PLUG
IN-LINE PUMP
FLOW SWITCH
AQUASTAT
TEMPERATURE SENSING WELL
HOSE BIBB OR SILLCOCK
YARD HYDRANT
FLOOR DRAIN
FLOOR SINK
MANHOLE
WALL CLEANOUT
FLOOR OR GRADE CLEANOUT
GRADE CLEANOUT W/ CONCRETE PAD
VENT THROUGH ROOF
POST TYPE FDC CONNECTION
WALL TYPE FDC CONNECTION
FIRE HOSE CABINET
FIRE DEPT. HORN & LIGHT
EXPANSION JOINT
FLEXIBLE PIPE CONNECTION
REDUCED PRESSURE BACKFLOW PREVENTER — RPBP
DIRECTION OF FLOW
ELBOW DOWN
ELBOW UP
PIPE CAP
TEE DOWN
UNION
DOMESTIC COLD WATER
DOMESTIC HOT WATER
DOMESTIC HOT WATER CIRC.
TEMPERED WATER — TW
SANITARY (PLBG) VENT
SANITARY SEWER ABOVE GRADE
SANITARY SEWER BELOW GRADE
GREASE WASTE ABOVE GRADE — GW
GREASE WASTE BELOW GRADE — GW
DRAIN — D
ROOF DRAIN — RD
OVERFLOW DRAIN — OD
STORM DRAIN ABOVE GRADE — SD
STORM DRAIN BELOW GRADE — SD
FIRE SERVICE — F
NATURAL GAS — G
PROPANE — P
COMPRESSED AIR — CA
INDUSTRIAL WATER (NON-POTABLE) — IW
DEIONIZED WATER — DI
DEIONIZED WATER RETURN — DIR
INDUSTRIAL WATER — IW
INDUSTRIAL COLD WATER — ICW
INDUSTRIAL HOT WATER — IHW

PROCESS COOLING WATER SUPPLY (LAB) — PCWS
PROCESS COOLING WATER RETURN (LAB) — PCWR
INDUSTRIAL COLD WATER — ICW
INDUSTRIAL HOT WATER — IHW
INDUSTRIAL HOT WATER CIRC. — IHWR
LABORATORY VACUUM — LV
LABORATORY GAS — LG
REVERSE OSMOSIS — RO
HEAT TRACING
CHILLED GLYCOL SUPPLY — CHGS
CHILLED GLYCOL RETURN — PHGR
CHILLED WATER SUPPLY — CHS
CHILLED WATER RETURN — CHR
CONDENSER WATER SUPPLY — CS
CONDENSER WATER RETURN — CR
HEATING WATER SUPPLY — HWS
HEATING WATER RETURN — HWR
HEATING CLYCOL SUPPLY — HGS
HEATING GLYCOL RETURN — HGR
HEAT RECOVERY COOLING SUPPLY — HRS
HEAT RECOVERY COOLING RETURN — HRR
PROCESS COOLING SUPPLY — PCS
PROCESS COOLING RETURN — PCR
STEAM — S
STEAM CONDENSATE RETURN — SCR
WATER TREATMENT — WT
FUEL OIL SUPPLY — FOS
FUEL OIL RETURN — FOR
REFRIGERANT LIQUID — RL
REFRIGERANT SUCTION — RS
HOT GAS — HG
HOT GAS BYPASS — HGBP
DUCT SIZE (IN), FIRST FIGURE IS SIDE SHOWN — 18/12
BURIED OR UNDERFLOOR DUCT
DUCT W/ ACOUSTICAL LINING
FLEXIBLE DUCT (HELICAL)
SPIN-IN FITTING W/ MVD
FLEXIBLE DUCT CONNECTION
SUPPLY SLOT DIFFUSER
SUPPLY DIFFUSER
RETURN GRILLE
RADIAL SUPPLY DIFFUSERS
RETURN AIR DUCT SECTION
RETURN AIR DUCT UP
RETURN AIR DUCT DOWN
SUPPLY AIR DUCT SECTION
SUPPLY AIR DUCT UP
SUPPLY AIR DUCT DOWN
EXHAUST AIR DUCT SECTION
EXHAUST AIR DUCT UP
EXHAUST AIR DUCT DOWN
ACCESS PANEL
MANUAL VOLUME DAMPER — G
GRAVITY BACKDRAFT DAMPER — M
MOTORIZED DAMPER — F
AIR FLOW STATION
FIRE DAMPER — F
SMOKE DAMPER — S
COMBINATION FIRE/SMOKE DAMPER — FS
DUCT TRANSITION
TEE W/ 45° ENTRY
WYE W/ 45° ENTRY
THERMOSTAT OR TEMP SENSOR — T
HUMIDISTAT OR HUMIDITY SENSOR — H
CARBON MONOXIDE SENSOR — C
CARBON DIOXIDE SENSOR — CO2
NITROGEN DIOXIDE SENSOR — N
POINT OF REMOVAL FROM EXISTING
POINT OF CONNECTION TO EXISTING
DETAIL TAG — DETAIL NO. / DRAWING NO.
KEYED NOTE — NOTE NO.
SECTION CUT LINE — SECTION NO. / DRAWING NO.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	
CHECKED BY:	RLH
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

MECHANICAL LEGEND, SYMBOLS & ABBREVIATIONS

CONSTRUCTION DOCUMENTS

MH001

Generated by COM*check-Web* Software

Mechanical Compliance Certificate

2009 IECC

Section 1: Project Information

Project Type: **New Construction**
Project Title : UVU Pope Science Laboratory Teaching Building

Construction Site:	Owner/Agent:	Designer/Contractor:
UVU Orem, Utah	Utah Valley University Orem, Utah	Roger Hamlet Colvin Engineering Associates 244 West 300 North, Suite 200 Salt Lake City, Utah 84103 (801) 322-2400 rhamlet@cea-ut.com

Section 2: General Information

Building Location (for weather data): **Orem, Utah**
Climate Zone: **5b**

Section 3: Mechanical Systems List

Quantity	System Type & Description
1	HVAC System: Heating: Hydronic or Steam Coil, Hot Water, Capacity 1373 kBtu/h / Cooling: Hydronic Coil, Capacity 4261 kBtu/h / Multiple-Zone
1	HVAC System: Cooling: Field-Assembled DX System, Capacity 43000 kBtu/h, Efficiency: 13.00 , Air-Cooled Condenser / Single Zone
1	Plant: Cooling: Water Chiller, Capacity 1200 tons, Condenser Water-Cooled, Efficiency: 0.53 , Standard Centrifugal Chiller: leaving chilled water temperature = 44.0 deg. F, entering condenser water temperature = 85.0, condenser flow rate = 3 gpm/ton, with Propeller or Axial Fan Cooling Tower
1	Plant: Heating: Hot Water Boiler, Capacity 16000 kBtu/h, Gas, Efficiency: 89.50
	Note that heating and chilled water and domestic hot water for this building are provided from two existing central plants: Two chillers, one cooling tower, and four boilers are being added to the central plants as part of this project.

Section 4: Requirements Checklist

Requirements Specific To: HVAC System :

- ☑ 1. Minimum one temperature control device per zone
- ☑ 2. Leak testing >3 per in. static pressure - report submitted showing CL <6.0
- ☑ 3. Discharge dampers prohibited with fan motors >10 hp
- ☑ 4. Balancing and pressure test connections on all hydronic terminal devices
- ☑ 5. Systems serving more than one zone must be VAV systems
  - Exception: Where pressure relationships must be maintained
  - Exception: Zones or supply air systems with at least 75% of reheating/recooling energy site recovered or site solar
  - Exception: Zones with humidity requirements for special processes
  - Exception: Zones with cfm <300 and flow rate <10% of total design flow rate
  - Exception: Outside air needed to meet IMC Chapter 4

- ☑ 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
- ☑ 10. Hot water pipe insulation: 1.5 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Chilled water/refrigerant/brine pipe insulation: 1.5 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
  - Exception: Piping within HVAC equipment.
  - Exception: Fluid temperatures between 55 and 105 degrees F.
  - Exception: Fluid not heated or cooled with renewable energy.
  - Exception: Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).
  - Exception: Runouts <4 ft in length.
- ☑ 11. Operation and maintenance manual provided to building owner
- ☑ 12. Thermostatic controls have 5 degrees F deadband
  - Exception: Thermostats requiring manual changeover between heating and cooling
  - Exception: Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.
- ☑ 13. Hot water distribution systems >=300 kBtu/h must have one of the following: a) controls that reset supply water temperature by 25% of supply/return delta T b) mechanical or electrical adjustable-speed pump drive(s) c) two-way valves at all heating coils d) multiple-stage pumps e) other system controls that reduce pump flow by at least 50% based on load - calculations required
- ☑ 14. Chilled water distribution systems >=300 kBtu/h must have one of the following: a) controls that reset supply water temperature by 25% of supply/return delta T b) mechanical or electrical adjustable-speed pump drive(s) c) two-way valves at all heating coils d) multiple-stage pumps e) other system controls that reduce pump flow by at least 50% based on load - calculations required
- ☑ 15. Balancing devices provided in accordance with IMC (2006) 603.17

N.A. 16. Demand control ventilation (DCV) present for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor airflow greater than 3000 cfm.
  - Exception: Systems with heat recovery. System includes heat recovery: Laboratory ventilation rates must be maintained.
  - Exception: Multiple-zone systems without DDC of individual zones communicating with a central control panel.
  - Exception: Systems with a design outdoor airflow less than 1200 cfm.
  - Exception: Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.

- ☑ 17. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings
  - Exception: Gravity dampers acceptable in buildings <3 stories
  - Exception: Gravity dampers acceptable in systems with outside or exhaust air flow rates less than 300 cfm where dampers are interlocked with fan

N.A. 18. Stair and elevator shaft vents are equipped with motorized dampers Not required by code for low-rise, and not I or R occupancy.

- ☑ 19. Automatic controls for freeze protection systems present
- ☑ 20. Three-pipe systems not used
- ☑ 21. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted

Section 5: 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 2009 IECC requirements in COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

Roger Hamlet, P.E.		03-31-2010
Name – Title	Signature	Date

2. The specified heating and/or cooling equipment is covered by ASHRAE 90.1 Code and must meet the following minimum efficiency: Rooftop Package Unit: 9.7 EER (9.4 IPLV)
3. Fans with motors >10 hp may not be equipped with discharge dampers.
4. Cooling systems must not use hot gas bypass or other evaporator pressure control unless the equipment is designed with multiple steps (or continuous) capacity modulation.
5. For cooling systems > 240 kBtu/h, maximum hot gas bypass capacity must be no more than 25% of total cooling capacity.

Requirements Specific To: Plant :

1. The specified heating and/or cooling equipment is covered by ASHRAE 90.1 Code and must meet the following minimum efficiency: Chiller: 0.570 kW/ton (0.539 IPLV) or (0.590 kW/ton,0.400 IPLV)
2. Closed-circuit cooling tower has either an automatic bypass valve for condenser water loop or lower leakage positive closure dampers.
3. Open-circuit cooling tower has automatic bypass valve for condenser water loop.
4. Open-circuit cooling tower with heat exchanger must have automatic shut-off controls for cooling tower.
5. New equipment of this type must have a performance rating of 38.2 gpm/hp in accordance with CTI ATC-105 and CTI STD-201.
6. Each fan motor of 7.5 hp or larger in a separate piece of heat rejection equipment must have the capability to operate that fan at two-thirds of full speed or less, and must have controls that automatically change the fan speed to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.
7. Hot gas bypass or other evaporator pressure controls must be used on cooling equipment with multiple step or continuous capacity unloading. The maximum amount of hot gas bypass must be 50% of total capacity if <=240 kBtu/h and 25% of total capacity if >240 kBtu/h. Unitary packaged systems <=90 kBtu/h are exempted from this requirement.

Requirements Specific To: Plant :

1. The specified heating and/or cooling equipment is covered by the ASHRAE 90.1 Code and must meet the following minimum efficiency: Boiler Combustion Efficiency 80% Ec
2. The specified heating equipment is covered by Federal minimum efficiency requirements. New equipment of this type can be assumed to meet or exceed ASHRAE 90.1 Code requirements for equipment efficiency. Used equipment must meet 80% Et @ maximum capacity.
3. Systems with multiple boilers have automatic controls capable of sequencing the operation of the boilers.
4. Hydronic heating systems comprised of a single boiler and >500 kBtu/h input design capacity include either a multistaged or modulating burner.

supply and exhaust hoods, vents, and ventilators must be equipped with motorized dampers that will automatically shut when the spaces served are not in use.
  - Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade.
  - Exception: Ventilation systems serving unconditioned spaces.

19. All freeze protection systems, including self-regulating heat tracing, must include automatic controls capable of shutting off the systems when outside air temperatures are above 40 degrees F or when the conditions of the protected fluid will prevent freezing. Snow and ice-melting systems must include automatic controls capable of shutting off the systems when the pavement temperature is above 50 degrees F and no precipitation is falling, and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40 degrees F.
20. Hydronic systems that use a common return system for both hot water and chilled water must not be used.
21. Individual fan systems with a design supply air capacity of 5000 cfm or greater and minimum outside air supply of 70 percent or greater of the supply air capacity must have an energy recovery system with at least a 50 percent effectiveness. Where cooling with outdoor air is required there is a means to bypass or control the energy recovery system to permit cooling with outdoor air.
  - Exception: Hazardous exhaust systems, commercial kitchen and clothes dryer exhaust systems that the International Mechanical Code prohibits the use of energy recovery systems.
  - Exception: Systems serving spaces that are heated and not cooled to less than 60 degrees F.
  - Exception: Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
  - Exception: Heating systems in climates with less than 3600 HDD.
  - Exception: Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64 degrees F.
  - Exception: Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
  - Exception: Laboratory fume hood exhaust systems that have either a variable air volume system capable of reducing exhaust and makeup air volume to 50 percent or less of design values or, a separate make up air supply meeting the following makeup air requirements: a) at least 75 percent of exhaust flow rate, b) heated to no more than 2 degrees F below room setpoint temperature, c) cooled to no lower than 3 degrees F above room setpoint temperature, d) no humidification added, e) no simultaneous heating and cooling.

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- ☑ 6. Single-duct VAV terminals reduce primary air before reheating
- ☑ 7. Fan equipped with electrical variable-speed drive
- ☑ 8. Separate hot and cold water supply and returns
- ☑ 9. Multiple boilers must have automatic controls that sequence operation with load
- ☑ 10. Single boiler >500 kBtu/h input capacity must have a multistaged or modulating burner

N.A. 11. Two-pipe changeover heating/cooling controls must have: a) 15 degrees F deadband where boiler and chiller can not operate, b) allow operation in either heating or cooling for at least 4 hrs. and c) prevent difference between heating and cooling set points greater than 30 degrees F – Two-pipe changeover system not used on this project.

- ☑ 12. Controls capable of resetting supply air temp (SAT) by 25% of SAT-room temp difference
  - Exception: Systems that prevent reheating, recooling or mixing of heated and cooled supply air
  - Exception: Seventy five percent of the energy for reheating is from site-recovered or site solar energy sources.
  - Exception: Zones with peak supply air quantities of 300 cfm (142 L/s) or less.
- ☑ 13. Total VAV fan nameplate motor horsepower <= 1.5 hp/1000 cfm

N.A. 14. Hot gas bypass limited to 25% of total cooling capacity – No hot gas bypass on systems.

Requirements Specific To: HVAC System :

- ☑ 1. Specified equipment consists of field-assembled components - efficiency documentation provided

N.A. 2. Equipment minimum efficiency: Rooftop Package Unit: 9.7 EER (9.4 IPLV) – No rooftop units used.

- ☑ 3. Discharge dampers prohibited with fan motors >10 hp
- ☐ 4. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation

N.A. 5. Hot gas bypass limited to 25% of total cooling capacity - No hot gas bypass on systems.

Requirements Specific To: Plant :

- ☑ 1. Equipment minimum efficiency: Chiller: 0.570 kW/ton (0.539 IPLV) or (0.590 kW/ton,0.400 IPLV)

N.A. 2. Closed-circuit cooling tower has: a) automatic bypass valve for condenser water loop or b) lower leakage positive closure dampers – Closed circuit fluid cooler not used.

- ☑ 3. Open-circuit cooling tower has automatic bypass valve for condenser water loop

N.A. 4. Open-circuit cooling tower with heat exchanger must have automatic shut-off controls for cooling tower – No heat exchanger.

- ☑ 5. Cooling tower performance >38.2 gpm/hp
- ☑ 6. Air cooled condenser and cooling tower fan motors > 7.5 HP equipped with multiple-speed motors or single speed motors and variable speed drives
- ☑ 7. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation

Requirements Specific To: Plant :

- ☑ 1. Equipment minimum efficiency: Boiler Combustion Efficiency 80% Ec
- ☑ 2. Newly purchased heating equipment meets the efficiency requirements - used equipment must meet 80% Et @ maximum capacity
- ☑ 3. Systems with multiple boilers have automatic controls capable of sequencing boiler operation
- ☑ 4. Hydronic heating systems comprised of a single boiler and >500 kBtu/h input design capacity include either a multistaged or modulating burner

Generic Requirements: Must be met by all systems to which the requirement is applicable:

- ☑ 1. Plant equipment and system capacity no greater than needed to meet loads
  - Exception: Standby equipment automatically off when primary system is operating
  - Exception: Multiple units controlled to sequence operation as a function of load
- ☑ 2. Minimum one temperature control device per system
- ☑ 3. Minimum one humidity control device per installed humidification/dehumidification system
- ☑ 4. Load calculations per ASHRAE/ACCA Standard 183
- ☑ 5. Automatic Controls: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup
  - Exception: Continuously operating zones
  - Exception: 2 kW demand or less, submit calculations
- ☑ 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
- ☑ 7. R-5 supply and return air duct insulation in unconditioned spaces R-8 supply and return air duct insulation outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly
  - Exception: Ducts located within equipment
  - Exception: Ducts with interior and exterior temperature difference not exceeding 15 degrees F.
  - Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification
- ☑ 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment

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Mechanical Requirements Description

2009 IECC

The following list provides more detailed descriptions of the requirements in Section 4 of the Mechanical Compliance Certificate.

Requirements Specific To: HVAC System :

1. Each zone of a multiple-zone system must have its own temperature control device.
2. The specified distribution system is designed to operate at static pressure over 3 in. water column. The system must be leak tested in accordance with SMACNA standards. The contractor or engineer must submit a report to the enforcing jurisdiction documenting that a minimum of 25% of all duct surfaces have been tested and that tested ducts have a SMACNA rated air leakage class of <6.0.
3. Fans with motors >10 hp may not be equipped with discharge dampers.
4. Hydronic heating and cooling coils must be equipped with a way to pressure test connections and measure and balance water flow and pressure.
   - Exception: VAV controls are not required for zones where at least 75% of the reheating and recooling energy is made available through the use of site-recovered or site solar energy. These zones must be called out in the construction documents for easy identification during field inspection.
5. The specified multiple-zone system is equipped with single-duct VAV terminals. These terminals must be equipped with dampers, air valves, or other means to reduce the supply of primary supply air to a minimum prior to reheating.
6. Fans over 10 hp on a variable-flow system must have electrical variable-speed drives.
7. Fan system terminal units must have separate hot and cold water supply and return piping.
8. Multiple packaged boilers must have automatic controls capable of sequencing the operation of the boilers.
9. A single boiler with >500 kBtu/h input capacity must have a multistaged or modulating burner.
10. Two-pipe changeover heating/cooling controls must: a) allow a deadband between changeover from one mode (heating/cooling) to the other of at least 15 degrees F outside temperatures b) allow operation in one mode (heating/cooling) for at least 4 hours before changing over to the other mode c) allow heating and cooling supply temperatures at the changeover point to be no more than 30 degrees F apart.
11. Automatic controls capable of resetting supply-air temperature (within a range of 25 percent of the difference between supply-air and design air temperature) in response to building loads or outdoor air temperature exist on systems serving multiple zones.
    - Exception: Systems that prevent reheating, recooling or mixing of heated and cooled supply air
    - Exception: Seventy five percent of the energy for reheating is from site-recovered or site solar energy sources.
    - Exception: Zones with peak supply air quantities of 300 cfm (142 L/s) or less.
12. Total VAV fan nameplate motor horsepower <= 1.5 hp/1000 cfm
    - Exception: Hospital and laboratory systems that utilize flow control devices on exhaust and/or return.
    - Exception: Individual exhaust fans with motor nameplate horsepower of 1 hp or less.
    - Exception: Fans exhausting air from fume hoods.
13. For each fan, the selected fan motor must be no larger than the first available motor size greater than the brake hp. The fan brake hp must be indicated on the design documents to allow for compliance verification by the code official.
    - Exception: For fans less than 6 brake hp, where the first available motor larger than the brake hp has a nameplate rating within 50% of the brake hp, the next larger nameplate motor size may be selected.
    - Exception: For fans 6 brake hp and larger, where the first available motor larger than the brake hp has a nameplate rating with 30% of the brake hp, the next larger nameplate motor size may be selected.
14. For cooling systems > 240 kBtu/h, maximum hot gas bypass capacity must be no more than 25% of total cooling capacity.

Requirements Specific To: HVAC System :

1. The specified cooling system consists of field-assembled components. Documentation must be submitted showing the system meets ASHRAE 90.1 Code equipment efficiency requirements for a comparable package equipment type and capacity range.

the duct or plenum does not exceed 15 degrees F.
  - Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification.

8. Mechanical fasteners and seals, mastics, or gaskets must be used when connecting ducts to fans and other air distribution equipment, including multiple-zone terminal units.
9. All joints, longitudinal and transverse seams, and connections in ductwork must be securely sealed using weldments; mechanical fasteners with seals, gaskets, or mastics; mesh and mastic sealing systems; or tapes. Tapes and mastics must be listed and labeled in accordance with UL 181A and shall be marked '181A-P' for pressure sensitive tape, '181A-M' for mastic or '181A-H' for heat-sensitive tape. Tapes and mastics used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked '181B-FX' for pressure-sensitive tape or '181B-M' for mastic. Unlisted duct tape is not permitted as a sealant on any metal ducts.
10. All pipes serving space-conditioning systems must be insulated as follows: Hot water piping for heating systems: 1 1/2 in. for pipes <=1 1/2-in. nominal diameter, 2 in. for pipes >1 1/2-in. nominal diameter. Chilled water, refrigerant, and brine piping systems: 1 1/2 in. insulation for pipes <=1 1/2-in. nominal diameter, 1 1/2 in. insulation for pipes >1 1/2-in. nominal diameter. Steam piping: 1 1/2 in. insulation for pipes <=1 1/2-in. nominal diameter, 3 in. insulation for pipes >1 1/2-in. nominal diameter.
    - Exception: Pipe insulation is not required for factory-installed piping within HVAC equipment.
    - Exception: Pipe insulation is not required for piping that conveys fluids having a design operating temperature range between 55 degrees F and 105 degrees F.
    - Exception: Pipe insulation is not required for piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.
    - Exception: Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).
    - Exception: Pipe insulation is not required for runout piping not exceeding 4 ft in length and 1 in. in diameter between the control valve and HVAC coil.
11. Operation and maintenance documentation must be provided to the owner that includes at least the following information: a) equipment capacity (input and output) and required maintenance actions b) equipment operation and maintenance manuals c) HVAC system control maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions; desired or field-determined set points must be permanently recorded on control drawings, at control devices, or, for digital control systems, in programming comments d) complete narrative of how each system is intended to operate.
12. Thermostats controlling both heating and cooling must be capable of maintaining a 5 degrees F deadband (a range of temperature where no heating or cooling is provided).
    - Exception: Deadband capability is not required if the thermostat does not have automatic changeover capability between heating and cooling.
    - Exception: Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.
13. Hot water space-heating systems with a capacity exceeding 300 kBtu/h supplying heated water to comfort conditioning systems must include controls that automatically reset supply water temperatures by representative building loads (including return water temperature) or by outside air temperature.
    - Exception: Where the supply temperature reset controls cannot be implemented without causing improper operation of heating, cooling, humidification, or dehumidification systems.
    - Exception: Hydronic systems that use variable flow to reduce pumping energy.
14. Chilled water space-cooling systems with a capacity exceeding 300 kBtu/h supplying chilled water for comfort conditioning systems must include controls that automatically reset supply water temperatures by representative building loads (including return water temperature) or by outside air temperature.
    - Exception: Where the supply temperature reset controls cannot be implemented without causing improper operation of heating, cooling, humidification, or dehumidification systems.
    - Exception: Hydronic systems that use variable flow to reduce pumping energy.
15. Balancing devices provided in accordance with IMC (2006) 603.17.
16. Demand control ventilation (DCV) required for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor airflow greater than 3000 cfm.
    - Exception: Systems with heat recovery.
    - Exception: Multiple-zone systems without DDC of individual zones communicating with a central control panel.
    - Exception: Systems with a design outdoor airflow less than 1200 cfm.
    - Exception: Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.
17. Outdoor air supply and exhaust systems must have motorized dampers that automatically shut when the systems or spaces served are not in use. Dampers must be capable of automatically shutting off during preoccupancy building warm-up, cool-down, and setback, except when ventilation reduces energy costs (e.g., night purge) or when ventilation must be supplied to meet code requirements. Both outdoor air supply and exhaust air dampers must have a maximum leakage rate of 3 cfm/ft2 at 1.0 in w.g. when tested in accordance with AMCA Standard 500.
    - Exception: Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height.
    - Exception: Systems with a design outside air intake or exhaust capacity of 300 cfm (140 L/s) or less that are equipped with motor operated dampers that open and close when the unit is energized and de-energized, respectively.
18. Stair and elevator shaft vents must be equipped with motorized dampers capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems. All gravity outdoor air

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
STATE OF UTAH

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
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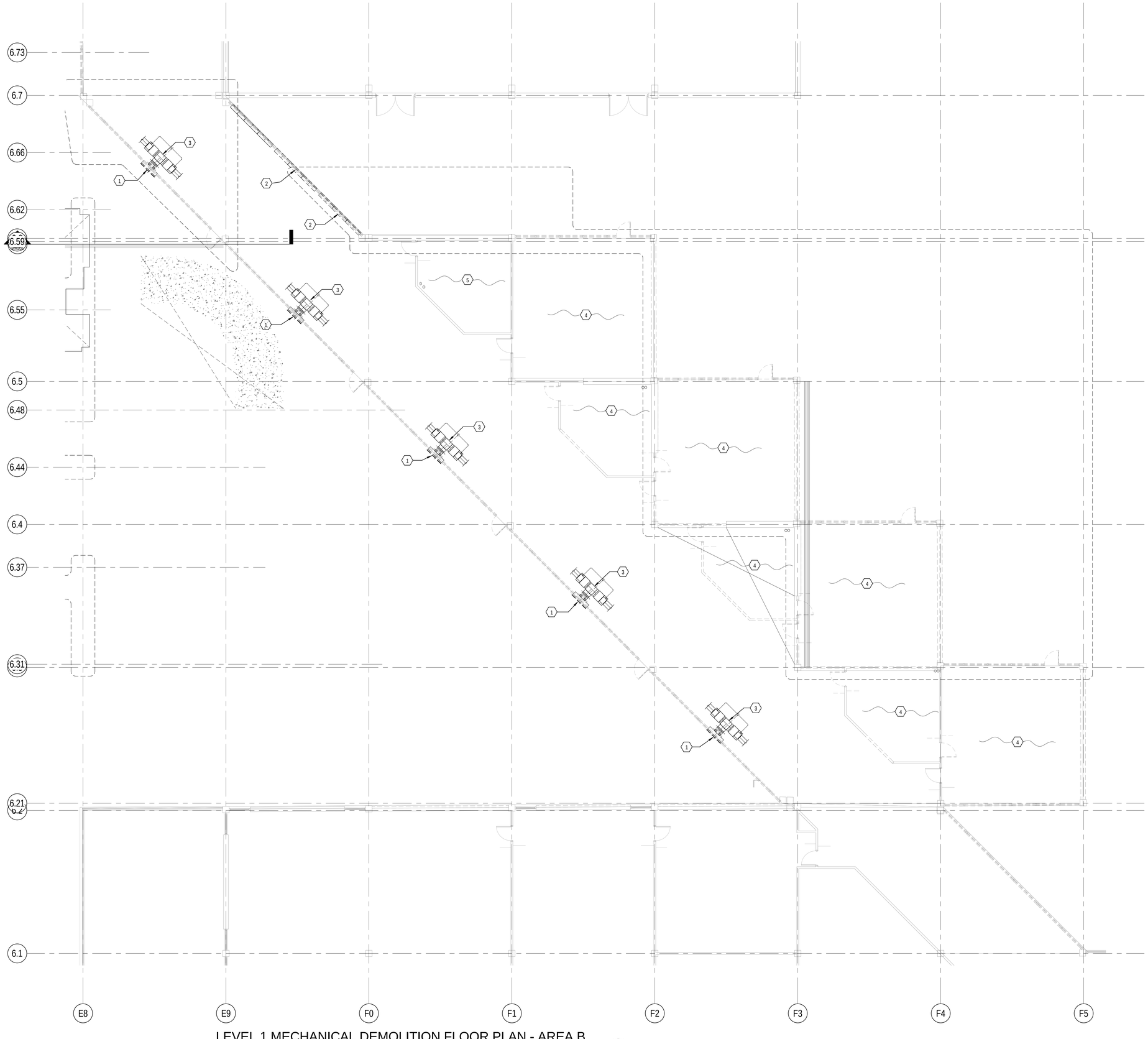
ISSUED DATE:	05.07.2010

MECHANICAL COMCHECK

CONSTRUCTION DOCUMENTS

MH002



KEYED NOTES

1. DEMOLISH OUTSIDE AIR DAMPER, LOUVER, DUCT WORK AND ASSOCIATED CONTROLS. SEE ARCHITECTURAL FOR WALL PATCH. CAP DUCT AND SET DAMPER TO 100% RETURN AIR.
2. DEMOLISH LOUVER, OUTSIDE AIR DAMPER, AND ASSOCIATED CONTROLS. SEE ARCHITECTURAL FOR WALL PATCH.
3. FAN COIL UNITS AND ASSOCIATED DISTRIBUTION DUCTWORK ARE EXISTING TO REMAIN.
4. DEMOLISH VAV BOXES AND ALL ASSOCIATED DUCTWORK AND CONTROLS. DEMOLISH FLOOR GRILLES, ABANDON BURIED DUCTWORK. SEE ARCHITECTURAL FOR FLOOR PATCH.
5. DEMOLISH ALL MECHANICAL EQUIPMENT, INCLUDING AIR HANDLERS, PUMPS, FANS, DUCTS, AND LOUVERS. SEE ARCHITECTURAL FOR WALL AND FLOOR PATCH.

1 LEVEL 1 MECHANICAL DEMOLITION FLOOR PLAN - AREA B

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

6' 0' 4' 8' 12' 16'

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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
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LEVEL 1 MECHANICAL DEMOLITION PLAN - AREA B

CONSTRUCTION DOCUMENTS

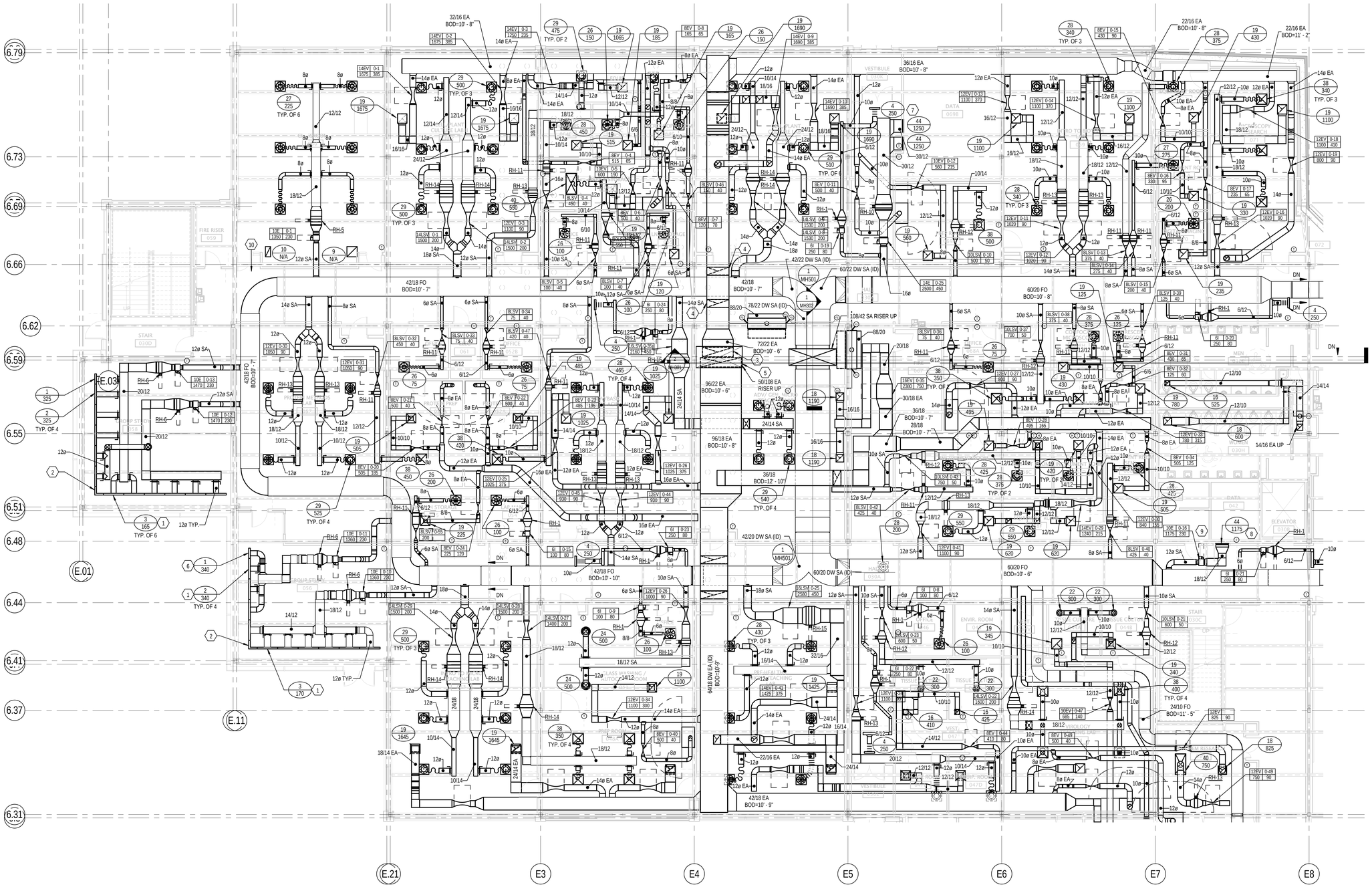
MD102B

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

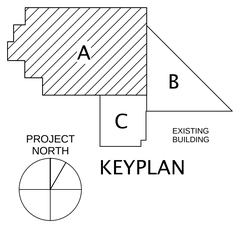
LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



KEYPLAN

1 LEVEL 0 MECHANICAL FLOOR PLAN - AREA A

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

6' 0' 4' 8' 12' 16'

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

KEYED NOTES

1. DIRECT SLOT DOWN TO BLANKET EXTERIOR WINDOW.
2. PROVIDE FAUX LINEAR DIFFUSER AND MITERED CORNER TO MATCH FUNCTIONAL LINEAR DIFFUSERS.
3. INSTALL 72/18 BRANCH LAB EXHAUST DUCT IN RISER IN A SUB DUCT CONFIGURATION. BRANCH DUCT MUST RISE UP A MINIMUM OF 22" INSIDE MAIN EXHAUST RISER.
4. RISE UP AT THIS LOCATION TO CLEAR 48/18 MEDIUM PRESSURE DUCT.
5. INSTALL 96/22 BRANCH EXHAUST DUCT IN RISER IN A SUB DUCT CONFIGURATION. BRANCH DUCT MUST RISE UP A MINIMUM OF 22" INSIDE MAIN EXHAUST RISER.
6. DIRECT EXTERIOR SLOT DOWN TO BLANKET WINDOW.DIRECT INTERIOR SLOT HORIZONTAL INTO ROOM FOR SURFACE EFFECT ACROSS CEILING.
7. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "G" PER DETAIL 4 ON SHEET MH505.
8. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "F" PER DETAIL 4 ON SHEET MH505.
9. PROVIDE TRANSFER AIR INTO ELECTRICAL ROOM FROM BELOW HALLWAY CEILING WITH A TRANSFER DUCT AND GRILLE SIZE"A" PER DETAIL 5 ON SHEET MH505. TRANSFER WARM AIR FROM ELECTRICAL ROOM TO PLENUM ABOVE HALLWAY CEILING WITH A DUCT SIZE "A" PER DETAIL 4 ON SHEET MH505. LOCATE BOTH DUCTS ABOVE THE DOOR.
10. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "F" PER DETAIL 4 ON MH501.
11. MAINTAIN MINIMUM DISTANCE FROM WALL TO PROVIDE CLEARANCE FOR DUCT PASSAGE THROUGH STRUCTURAL BRACE FRAMING ALONG GRIDLINE 6.3. SEE BRACED FRAME ELEVATION CI SF201.

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800 West University Parkway
Orem, Utah 84058

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LEVEL 0 MECHANICAL FLOOR PLAN - AREA A

CONSTRUCTION DOCUMENTS

MH101A

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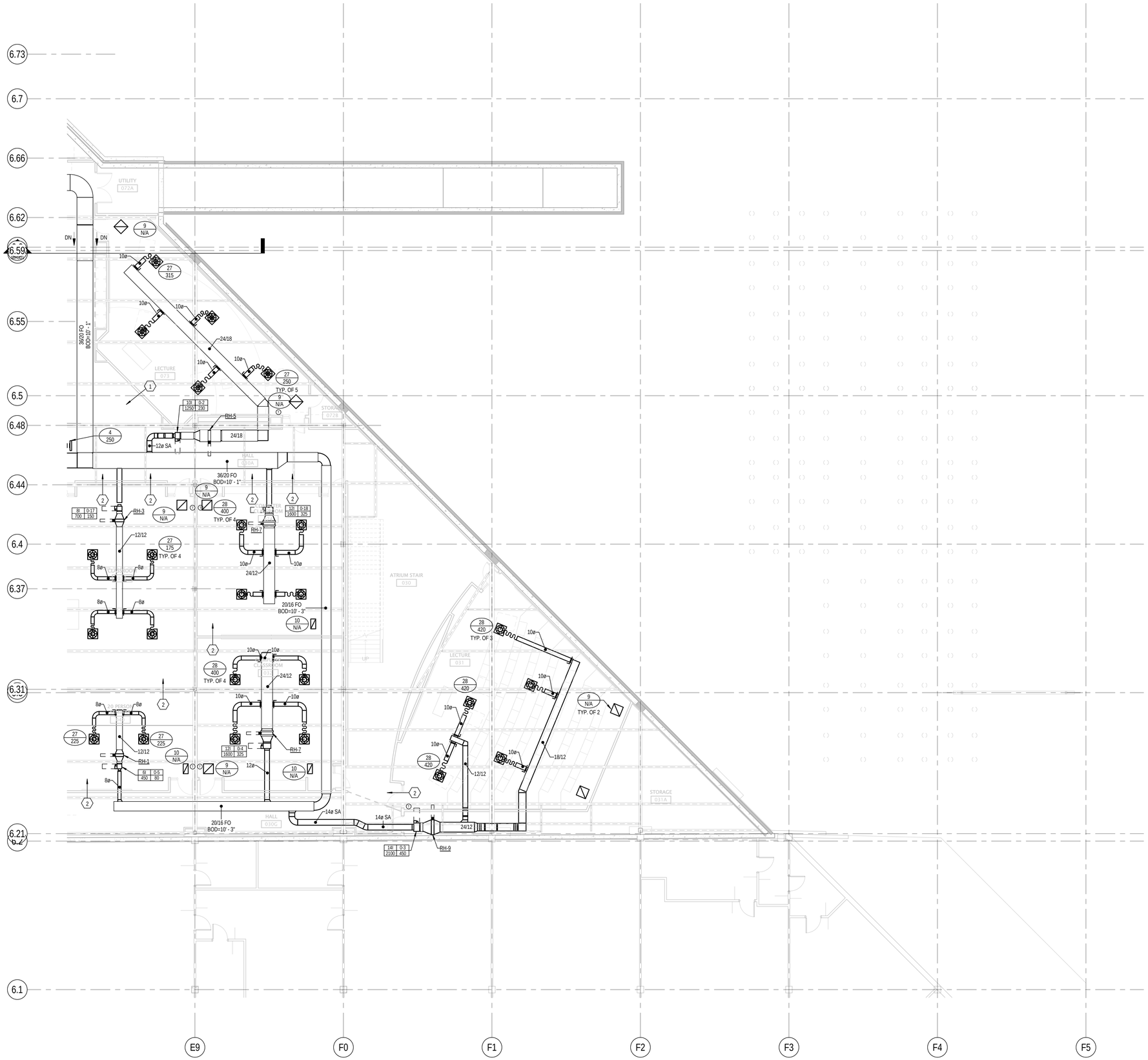


1 LEVEL 0 MECHANICAL FLOOR PLAN - AREA B

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

KEYED NOTES

1. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "F" PER DETAIL 4 ON MH501.
2. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "G" PER DETAIL 4 ON MH501.

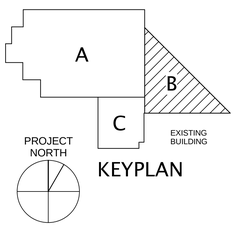
GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 0 MECHANICAL FLOOR PLAN - AREA B

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KEYED NOTES

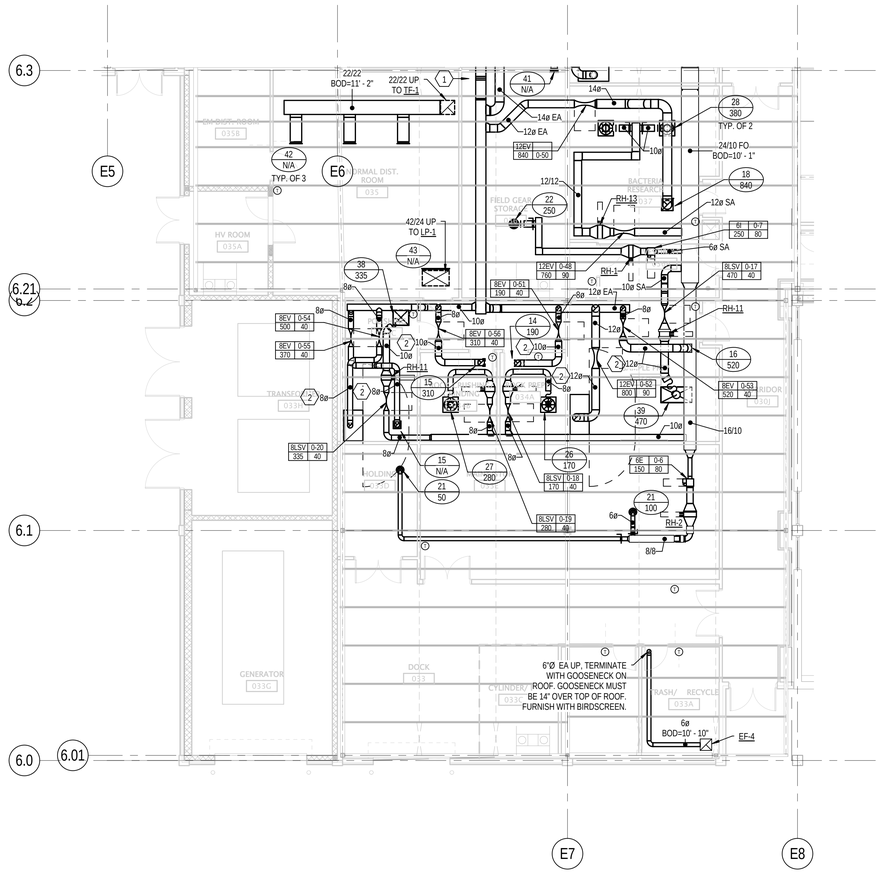
1. MAINTAIN MINIMUM DISTANCE FROM WALL TO PROVIDE CLEARANCE FOR DUCT PASSAGE THROUGH STRUCTURAL BRACE FRAMING ALONG GRIDLINE 6.3. SEE BRACED FRAME ELEVATION CI SF201.
2. ROUTE DUCT THROUGH JOIST WEB.

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

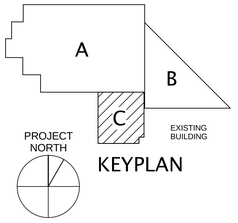
C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.



1 LEVEL 0 MECHANICAL FLOOR PLAN - AREA C

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

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
STATE of UTAH

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 0 MECHANICAL FLOOR PLAN - AREA C

CONSTRUCTION DOCUMENTS

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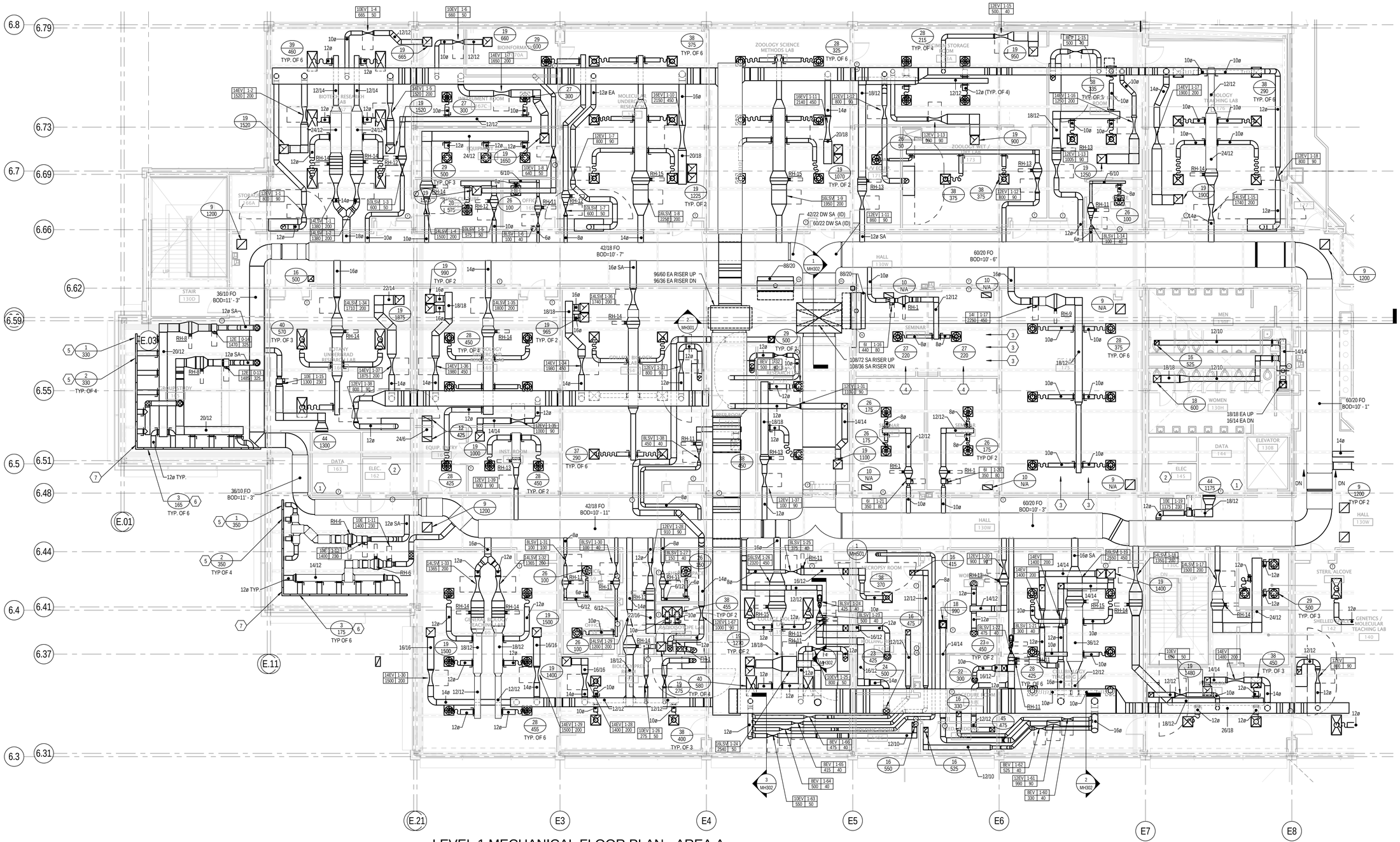

LEVEL 1 MECHANICAL FLOOR PLAN - AREA A

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

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

KEYED NOTES

1. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "F" PER DETAIL 4 ON SHEET MH505.
2. PROVIDE TRANSFER AIR INTO ELECTRICAL ROOM FROM BELOW HALLWAY CEILING WITH A TRANSFER DUCT AND GRILLE SIZE"A" PER DETAIL 5 ON SHEET MH505. TRANSFER WARM AIR FROM ELECTRICAL ROOM TO PLENUM ABOVE HALLWAY CEILING WITH A DUCT SIZE "A" PER DETAIL 4 ON SHEET MH505. LOCATE BOTH DUCTS ABOVE THE DOOR.
3. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "G" PER DETAIL 4 ON MH501.
4. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "B" PER DETAIL 4 ON MH501.
5. AIM EXTERIOR SLOT DOWN TO BLANKET WINDOW AND AIM INTERIOR SLOT HORIZONTAL INTO ROOM FOR SURFACE EFFECT ACROSS CEILING.
6. AIM SLOT DOWN TO BLANKET EXTERIOR WINDOW.
7. FAUX LINEAR DIFFUSER AND MITERED CORNER TO MATCH FUNCTIONAL LINEAR DIFFUSERS.

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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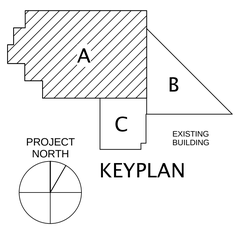

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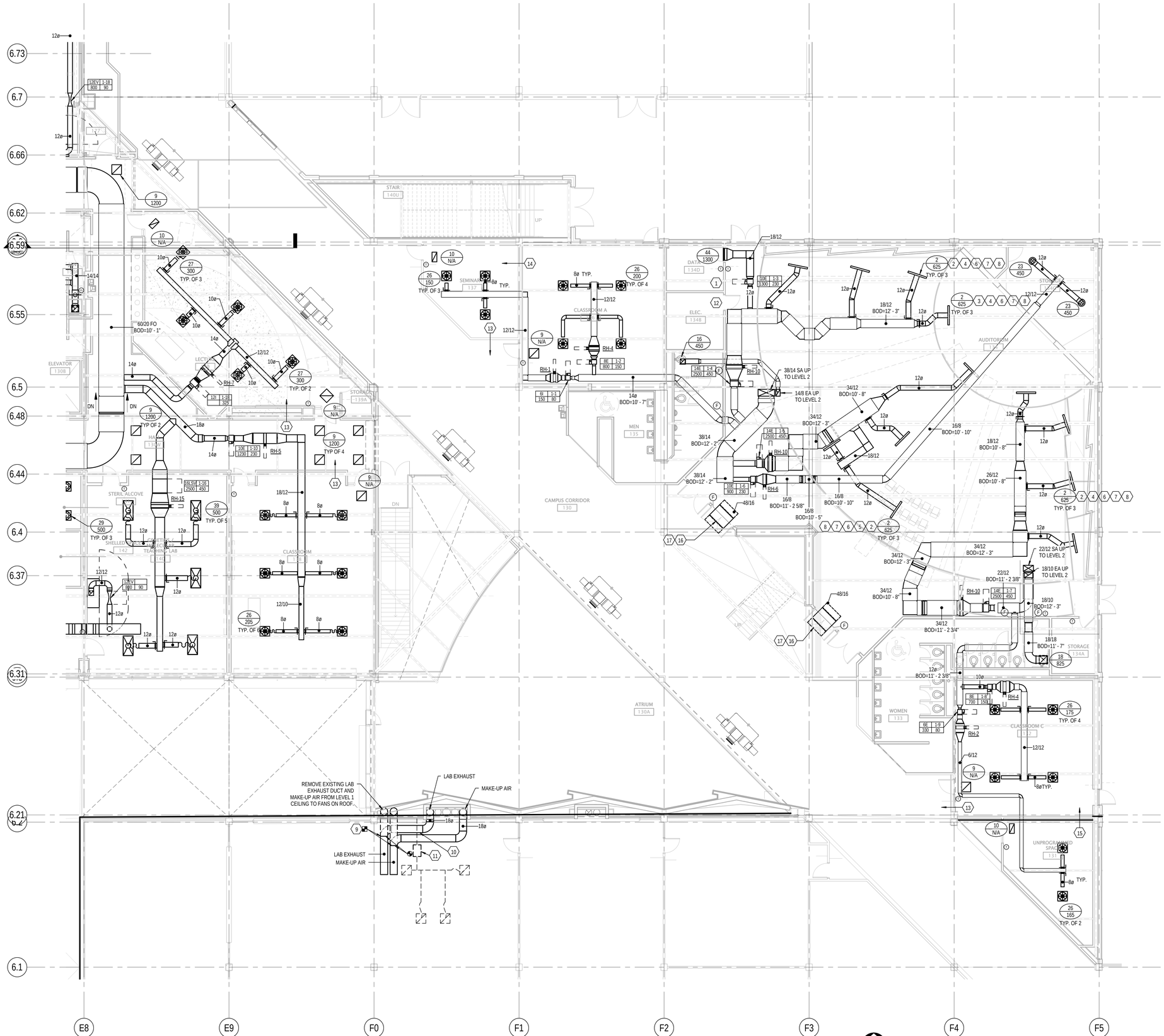
LEVEL 1 MECHANICAL FLOOR PLAN - AREA A

CONSTRUCTION DOCUMENTS

MH102A



LEVEL 1 MECHANICAL FLOOR PLAN - AREA B

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

KEYED NOTES

1. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "F" PER DETAIL 4 ON SHEET MH505.
2. MATCH DIFFUSER SLOPE TO CEILING CLOUD SLOPE. PLACE BOTTOM OF DIFFUSER 1" BELOW BOTTOM OF CLOUD.
3. PLACE DIFFUSER 1" BELOW BOTTOM OF CLOUD AND LEVEL WITH FRONT OF CLOUD.
4. AIM BOTH SLOTS HORIZONTALLY TOWARDS INTERIOR OF ROOM.
5. AIM BOTH SLOTS HORIZONTALLY IN OPPOSITE DIRECTIONS.
6. INSERT BALANCING DAMPER FOR EACH DIFFUSER TAKE-OFF IN ACCESSIBLE LOCATION THAT IS NOT COMPLETELY BLOCKED BY THE CEILING CLOUD. BALANCING DAMPER SHALL BE NO CLOSER THAN 24" FROM PLENUM BOX CONNECTION.
7. PROVIDE ACOUSTIC LINING BETWEEN DAMPER AND AIR DEVICE.
8. NO FLEX DUCT SHALL BE ALLOWED. ALL BRANCHES SHALL BE HARD DUCTED.
9. REMOVE EXISTING LAB EXHAUST DUCT AND MAKE-UP AIR DUCT FROM POINT ABOVE CEILING INSIDE EXISTING POPE BUILDING UP TO THE EXISTING LAB EXHAUST FANS ON ROOF. ROUTE NEW DUCTWORK FROM POINT OF DISCONNECTION TO EXISTING FANS ON ROOF. NEW LAB EXHAUST DUCTWORK TO BE 316 STAINLESS STEEL WITH WELD JOINTS. NEW MAKE-UP AIR DUCT TO BE GALVANIZED.
10. NEW ROUTING FOR 18"Ø DUCTS TO EXISTING FANS ON ROOF.
11. REMOVE EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK AND CEILING GRILLES. ALSO REMOVE ASSOCIATED LOUVER IN EXTERIOR WALL. PATCH HOLES IN WALL.
12. PROVIDE TRANSFER AIR INTO ELECTRICAL ROOM FROM BELOW HALLWAY CEILING WITH A TRANSFER DUCT AND GRILLE SIZE"A" PER DETAIL 5 ON SHEET MH505. TRANSFER WARM AIR FROM ELECTRICAL ROOM TO PLENUM ABOVE HALLWAY CEILING WITH A DUCT SIZE "A" PER DETAIL 4 ON SHEET MH505. LOCATE BOTH DUCTS ABOVE THE DOOR.
13. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "F" PER DETAIL 4 ON MH501.
14. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "E" PER DETAIL 4 ON MH501.
15. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "B" PER DETAIL 4 ON MH501.
16. PROVIDE (PLENUM/PLENUM) TRANSFER DUCT PER DETAIL 4 ON MH501 WITH DUCT DIMENSIONS 48"x16". INCLUDE FULL SIZE OPENINGS.
17. PROVIDE FIRE DAMPER IN TRANSFER AIR DUCT.

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

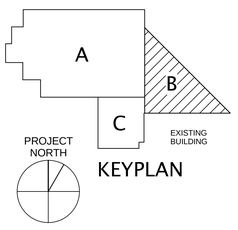
REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	-
CHECKED BY:	RLH
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

LEVEL 1 MECHANICAL FLOOR PLAN - AREA B

CONSTRUCTION DOCUMENTS

MH102B

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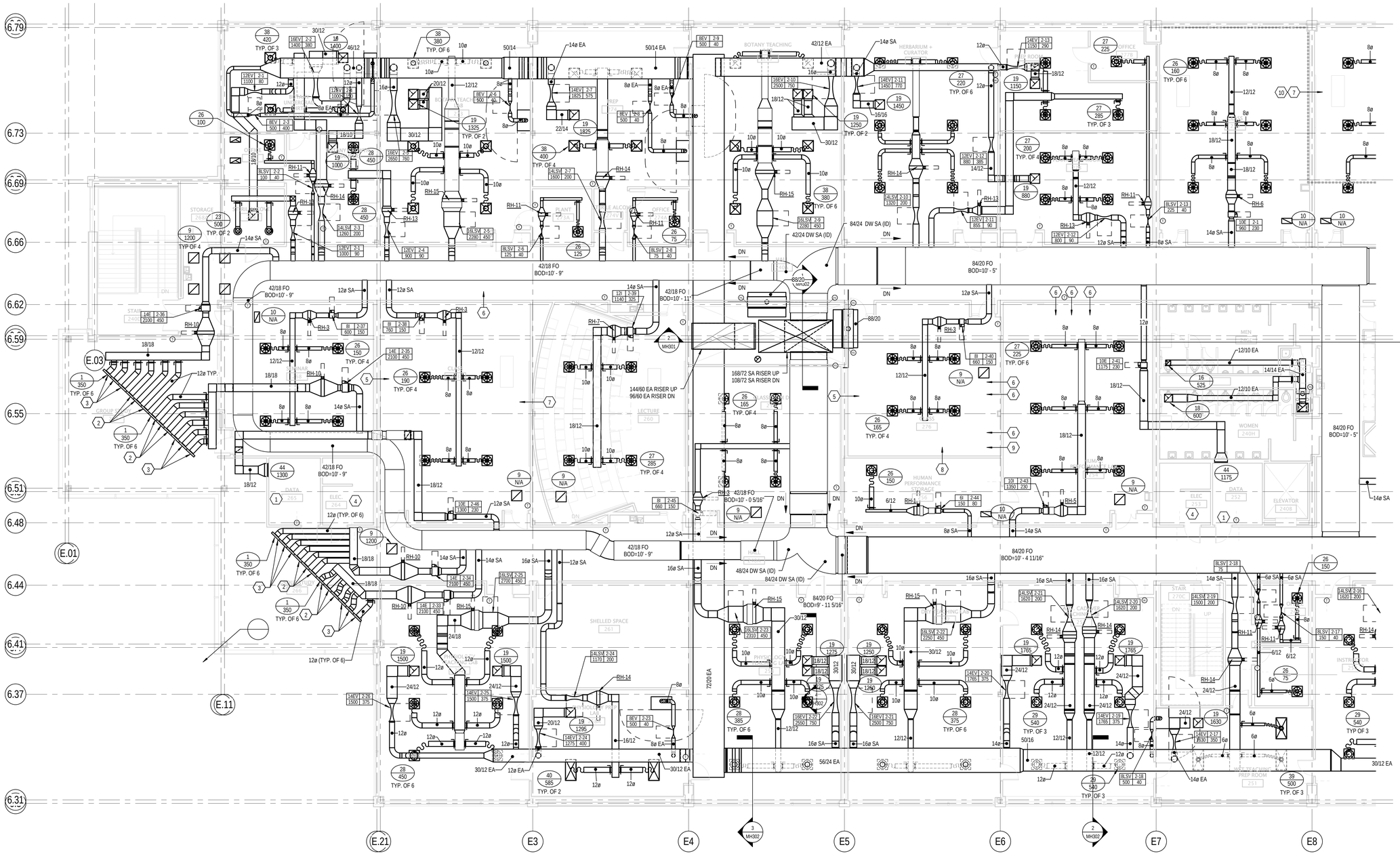
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



1 LEVEL 2 MECHANICAL FLOOR PLAN - AREA A

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

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

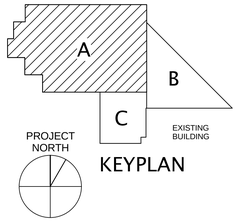
B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

KEYED NOTES

1. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "F" PER DETAIL 4 ON SHEET MH505.
2. AIM SLOTS HORIZONTALLY TOWARD EXTERIOR.
3. AIM SLOT CLOSEST TO WINDOW TOWARDS THE EXTERIOR. AIM SLOT FURTHEST AWAY FROM WINDOWS TOWARD THE INTERIOR SPACE.
4. PROVIDE TRANSFER AIR INTO ELECTRICAL ROOM FROM BELOW HALLWAY CEILING WITH A TRANSFER DUCT AND GRILLE SIZE"A" PER DETAIL 5 ON SHEET MH505. TRANSFER WARM AIR FROM ELECTRICAL ROOM TO PLENUM ABOVE HALLWAY CEILING WITH A DUCT SIZE "A" PER DETAIL 4 ON SHEET MH505. LOCATE BOTH DUCTS ABOVE THE DOOR.
5. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "D" PER DETAIL 4 ON MH501.
6. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "G" PER DETAIL 4 ON MH501.
7. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "F" PER DETAIL 4 ON MH501.
8. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "A" PER DETAIL 4 ON MH501.
9. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "B" PER DETAIL 4 ON MH501.
10. PROVIDE FIRE DAMPER IN TRANSFER AIR DUCT.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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LEVEL 2 MECHANICAL FLOOR PLAN - AREA A

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MH103A

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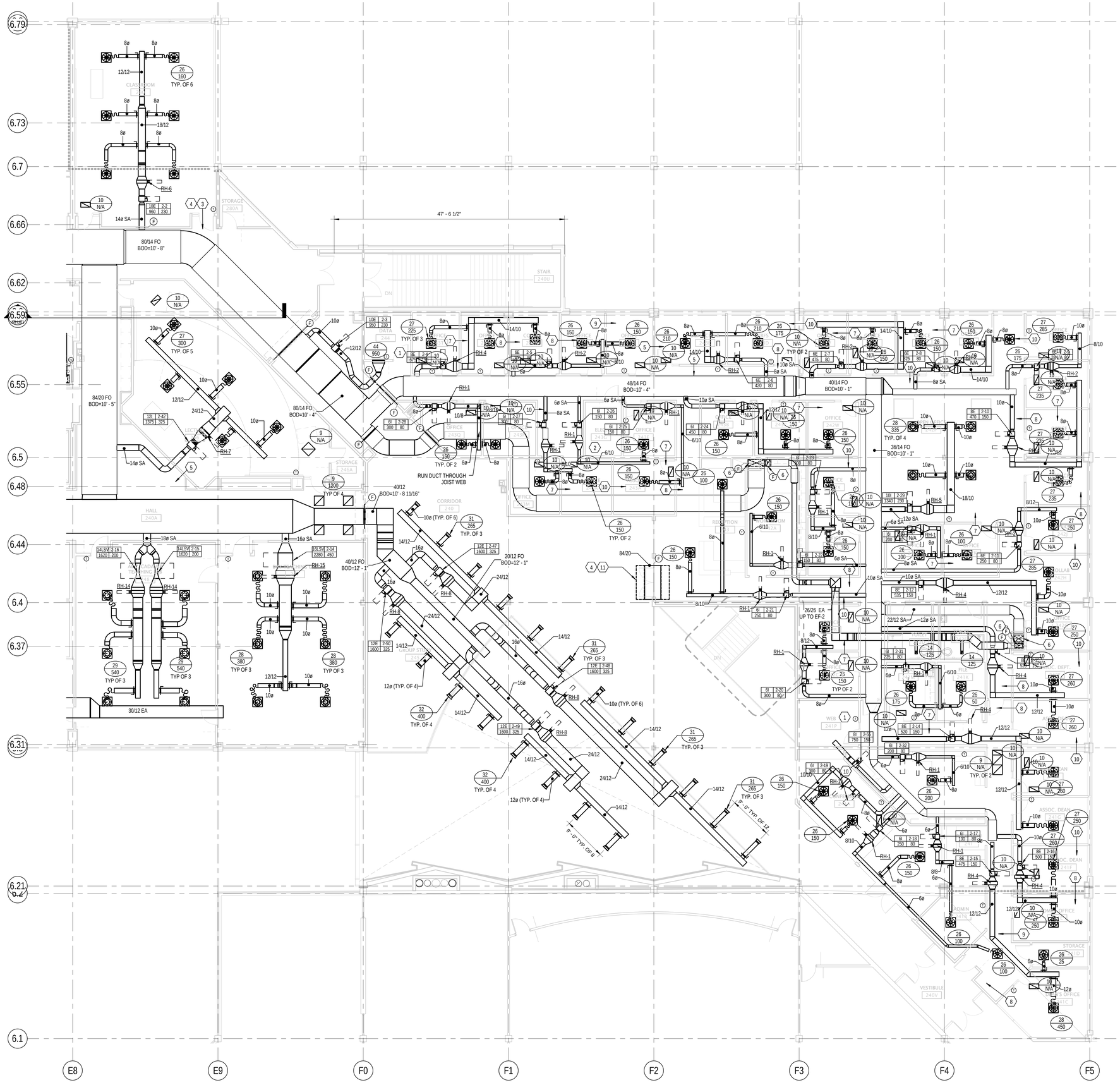

KEYED NOTES

1. PROVIDE RETURN AIR PATH FROM DATA ROOM INTO HALLWAY WITH TRANSFER DUCT AND GRILLE SIZE "F" PER DETAIL 4 ON SHEET MH505.
2. PROVIDE TRANSFER AIR INTO ELECTRICAL ROOM FROM BELOW HALLWAY CEILING WITH A TRANSFER DUCT AND GRILLE SIZE"A" PER DETAIL 5 ON SHEET MH505. TRANSFER WARM AIR FROM ELECTRICAL ROOM TO PLENUM ABOVE HALLWAY CEILING WITH A DUCT SIZE "A" PER DETAIL 4 ON SHEET MH505. LOCATE BOTH DUCTS ABOVE THE DOOR.
3. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "G" PER DETAIL 4 ON MH501.
4. PROVIDE FIRE DAMPER IN TRANSFER AIR DUCT.
5. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "F" PER DETAIL 4 ON MH501.
6. COORDINATE WITH ARCHITECTURAL TO PROVIDE ACCESS DOORS TO HORIZONTAL FIREDAMPERS.
7. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "A" PER DETAIL 4 ON MH501.
8. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "D" PER DETAIL 4 ON MH501.
9. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "E" PER DETAIL 4 ON MH501.
10. PROVIDE (PLENUM/PLENUM) TRANSFER AIR DUCT SIZE "B" PER DETAIL 4 ON MH501.
11. PROVIDE (PLENUM/PLENUM) TRANSFER DUCT PER DETAIL 4 ON MH501 WITH DUCT DIMENSIONS 84"x22". INCLUDE FULL SIZE OPENINGS.

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

1 LEVEL 2 MECHANICAL FLOOR PLAN - AREA B

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

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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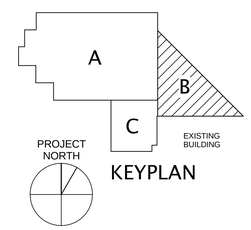

KEYPLAN

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Division of Facilities Construction and Management

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LEVEL 2 MECHANICAL FLOOR PLAN - AREA B

CONSTRUCTION DOCUMENTS

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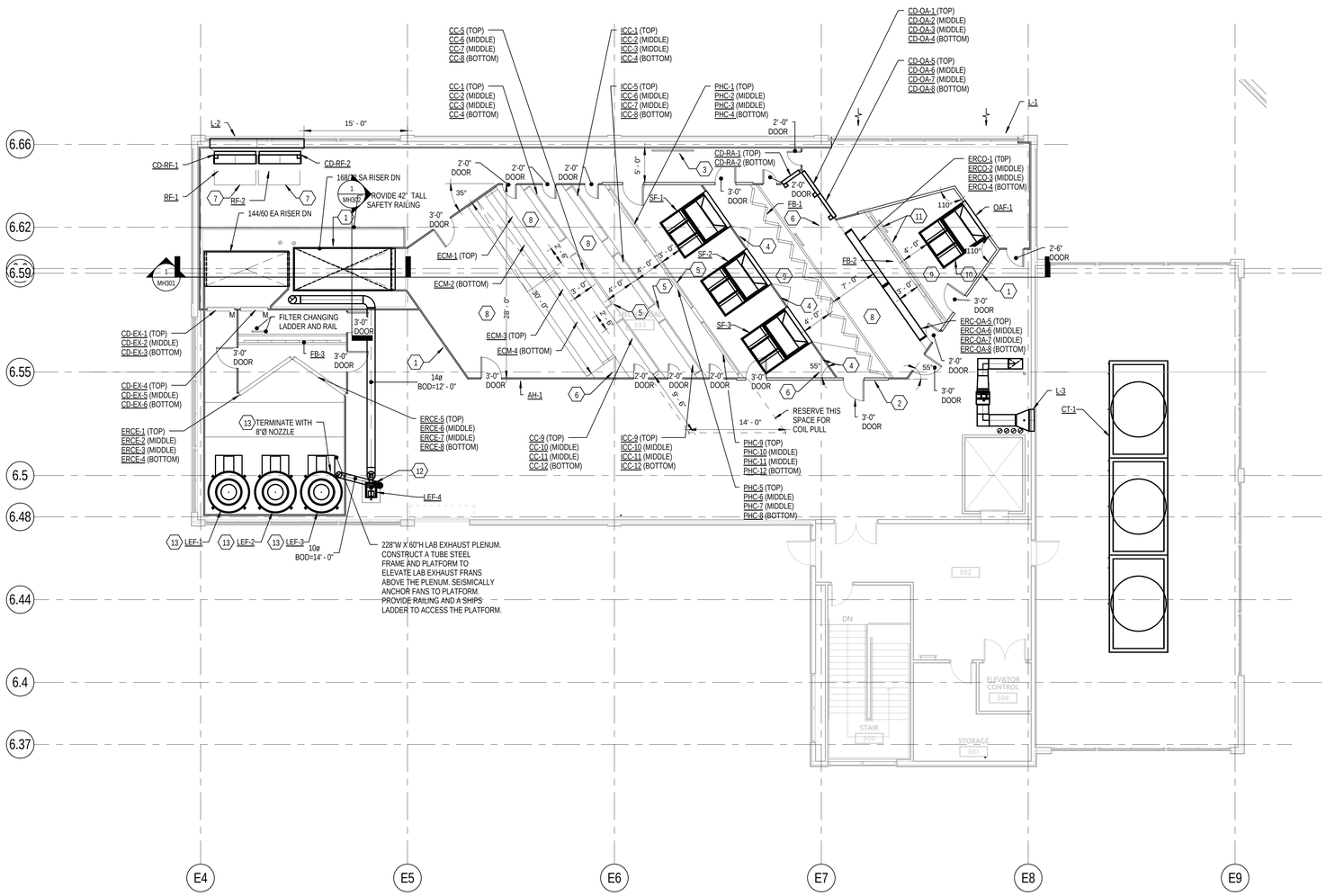

1 ENLARGED PENTHOUSE MECHANICAL PLAN

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

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. 2" STANDING SEAM, SINGLE WALL, SHEET METAL PANELS. LINE INSIDE OF PANELS WITH 2" THICK ACOUSTICAL PLENUM INSULATION. SUPPORT 2" AIR HANDLER UNIT WALLS WITH A CONCRETE CURB 8" WIDE BY 6" HIGH.
2. 4" DOUBLE WALL, PERFORATED SHEET METAL INTERIOR LINER, INSULATED, SHEET METAL PANELS. CEILING OF SAME CONSTRUCTION. CONSTRUCTION TYPE BEGINS 6" UPSTREAM OF FILTER BANK AND CONTINUES UNTIL 6" DOWNSTREAM OF PREHEAT COILS. SUPPORT 4" AIR HANDLER UNIT PANEL WALLS WITH A CONCRETE CURB 8" WIDE BY 6" HIGH.
3. PROVIDE A SINGLE BLANK-OFF PLATE WITH HANDLES, WHICH CAN BE MANUALLY PLACED ACROSS THE INLET OF A FAN THAT HAS FAILED, ALLOWING THE OTHER FANS TO CONTINUE OPERATION WITHOUT SHORT-CIRCUITING AIR. PLATE TO BE FASTENED ACROSS THE FAN INLET BY MEANS OF METAL STUDS PROTRUDING FROM FAN PLENUM WALL THAT PASS THROUGH HOLES IN ALL FOUR CORNERS OF THE PLATE. WING NUTS CAN BE USED TO HOLD THE PLATE IN PLACE. STORE PLATE ON AIR HANDLER WALL.
4. PROVIDE PRESSURE RELIEF DOORS IN FAN SEPTUM WALL, AS REQUIRED BY SPECIFICATION SECTION 233300. INSTALL ABOVE HEIGHT OF FAN INLETS.
5. POUR 6" HIGH CONCRETE CURBS TO SUPPORT COILS. CURBS SHALL BE 4" WIDER THAN THE GIVEN COIL IT SUPPORTS.
6. COORDINATE CLOSELY WITH STRUCTURAL ELEMENTS. ESPECIALLY VERTICAL MEMBERS, WHEN LOCATING MECHANICAL EQUIPMENT AND CONSTRUCTING THE AIR HANDLER CASING. THIS IS ALSO NECESSARY AS IT APPLIES TO LAYING OUT AND POURING THE SUPPORT CURBS AND HOUSEKEEPING PADS.
7. PROVIDE TUBE STEEL FRAME TO SUPPORT RELIEF FANS FROM PENTHOUSE FLOOR. SUPPORTS SHALL NOT INHIBIT ACCESS TO FANS FOR MAINTENANCE.
8. CEILING OF AIR HANDLER IN THIS SECTION SHALL BE PANELS. LINE INSIDE OF PANELS WITH 2" THICK ACOUSTICAL PLENUM INSULATION. CONSTRUCTION IS SIMILAR TO WALLS IN THIS SECTION. TOP OF AIR HANDLER CEILING = 16'-0" ABOVE FINISHED FLOOR.
9. CEILING OF AIR HANDLER IN THIS SECTION SHALL BE 4" DOUBLE WALL, PERFORATED SHEET METAL INTERIOR, INSULATED, SHEET METAL PANELS. CONSTRUCTION IS SIMILAR TO WALLS IN THIS SECTION. TOP OF AIR HANDLER CEILING = 17'-0" ABOVE FINISHED PENTHOUSE FLOOR TO PROVIDE A MINIMUM OF 1'-0" CLEAR BELOW PENTHOUSE ROOF STRUCTURE.
10. PROVIDE 6" HIGH CONCRETE HOUSEKEEPING PADS UNDER AIR HANDLER FANS. DIMENSIONS OF PADS SHALL BE 6" LARGER IN EACH DIRECTION FROM WHERE VIBRATION/SEISMIC ISOLATORS ARE ANCHORED TO PAD.
11. FILTER CHANGING LADDER AND RAIL.
12. INSTALL FAN ON INERTIA BASE, PROVIDE HOUSEKEEPING PAD.
13. EXHAUST STACK FROM OUTLET OF FAN TO TERMINATION ABOVE ROOF TO BE INSTALLED USING 304 STAINLESS STEEL WITH BRUSHED FINISH AND WELDED JOINTS.

GENERAL NOTES

A. DOUBLE-WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANLER AH-1, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, TO THE FAR END OF THE PAIR-OF-PANTS FITTING ABOVE EACH HALLWAY. TRANSITION TO FLAT-OVAL MEDIUM PRESSURE DUCT IS SINGLE-WALL.

B. SEE GENERAL NOTES ON MH001.

C. PROVIDE SOUND BOOT PER DETAIL 6 ON MH501 FOR ALL RETURN GRILLES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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PENTHOUSE MECHANICAL PLAN

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MH104

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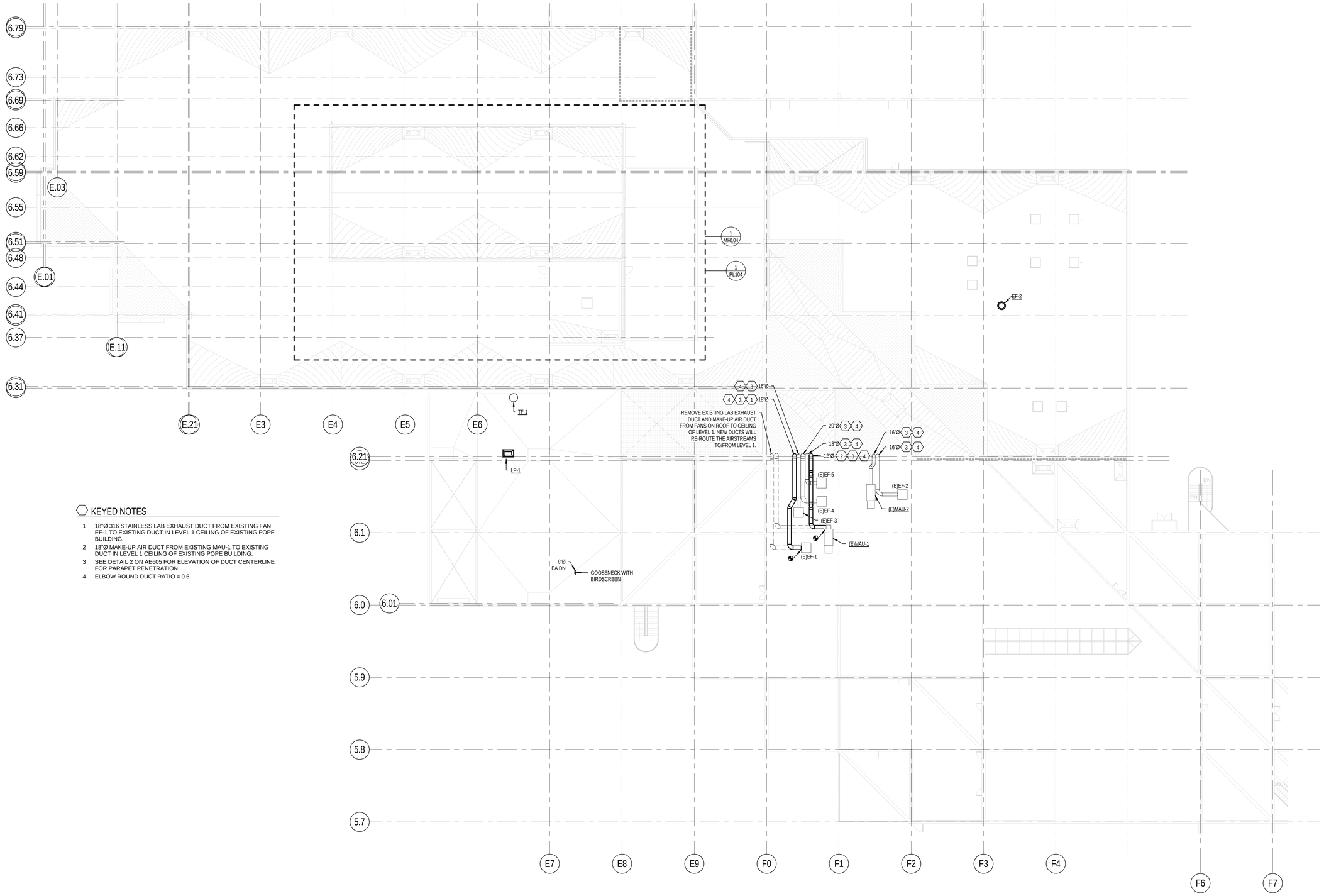

KEYED NOTES

1. 18"Ø 316 STAINLESS LAB EXHAUST DUCT FROM EXISTING FAN EF-1 TO EXISTING DUCT IN LEVEL 1 CEILING OF EXISTING POPE BUILDING.
2. 18"Ø MAKE-UP AIR DUCT FROM EXISTING MAU-1 TO EXISTING DUCT IN LEVEL 1 CEILING OF EXISTING POPE BUILDING.
3. SEE DETAIL 2 ON AE605 FOR ELEVATION OF DUCT CENTERLINE FOR PARAPET PENETRATION.
4. ELBOW ROUND DUCT RATIO = 0.6.

1 MECHANICAL ROOF PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

PROJECT NORTH

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MECHANICAL ROOF PLAN

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MH105

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
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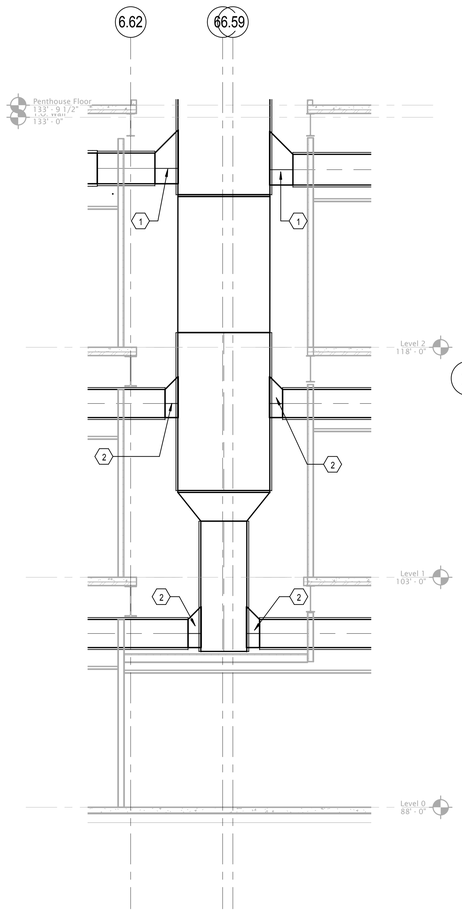
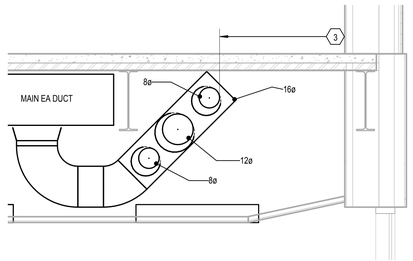
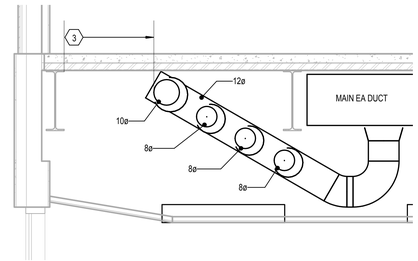


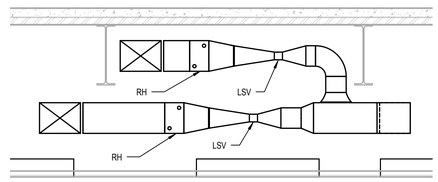
1 HIGH EFFICIENCY TAKE-OFFS FROM RISER
SCALE: 1/4" = 1'-0"



2 VIVARIUM EXHAUST VALVE MANIFOLD #1
SCALE: 1/2" = 1'-0"



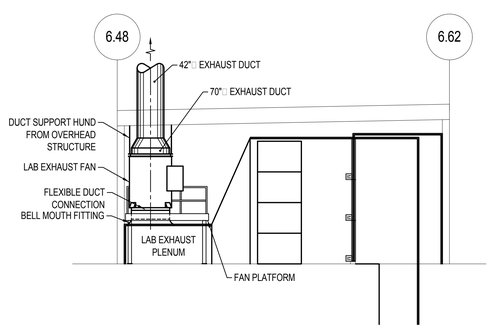
3 VIVARIUM EXHAUST VALVE MANIFOLD #2
SCALE: 1/2" = 1'-0"



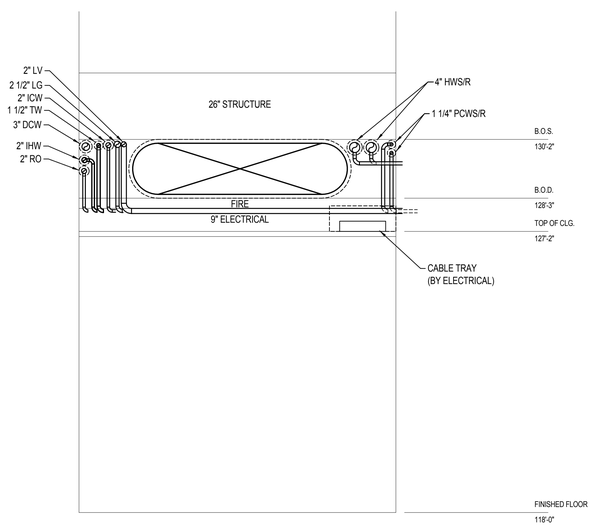
4 VIVARIUM SUPPLY VALVE DETAIL
SCALE: NONE

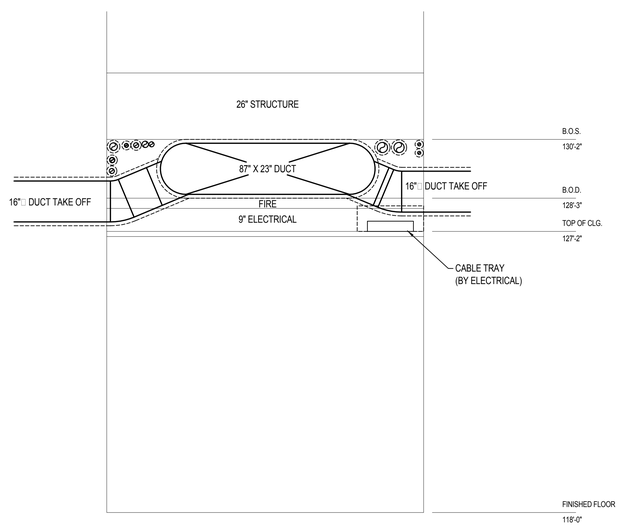
KEYED NOTES

1 TRANSITION FROM 84"x42" TO 84"x24" AT A 45° ANGLE.
2 TRANSITION FROM 78"x32" TO 78"x22" AT A 45° ANGLE.
3 MAINTAIN A MINIMUM OF 3'-0" FOR MAINTENANCE OF LABORATORY EXHAUST VALVES.



6 LOOKING WEST @ GRIDLINE E4.2
SCALE: NONE





5 TYPICAL HALLWAY SECTION
SCALE: NONE

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MECHANICAL SECTIONS

CONSTRUCTION DOCUMENTS

MH302

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
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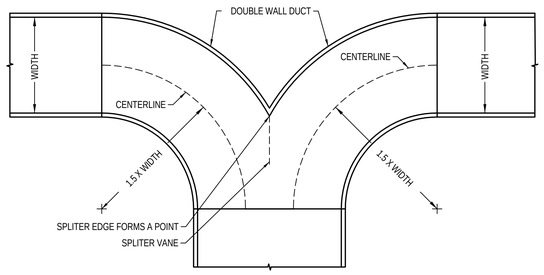
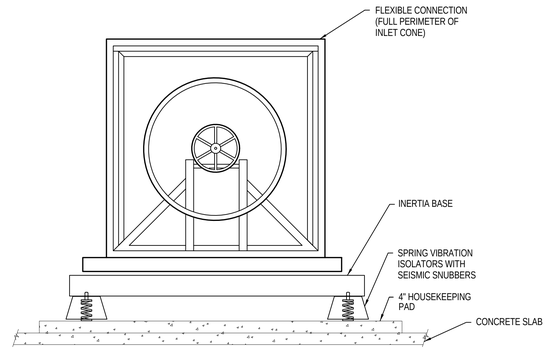


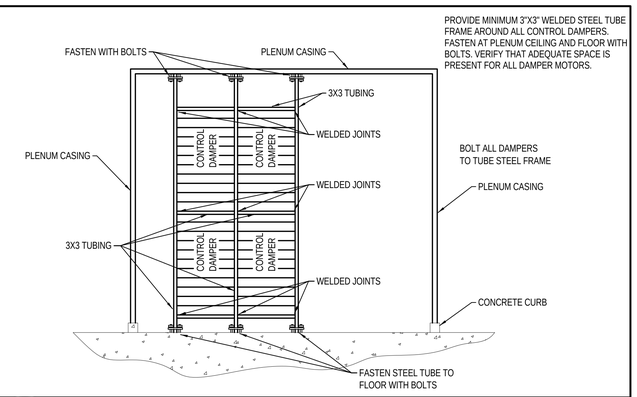
1 DOUBLE WALL DUCT PAIR-OF-PANTS FITTING

NO SCALE



2 PLENUM FAN INSTALLATION DETAIL

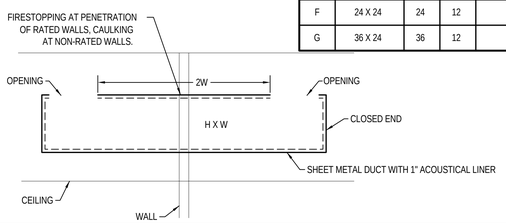
NO SCALE



3 CONTROL DAMPER MOUNTING FRAME IN PLENUM WALL

NO SCALE

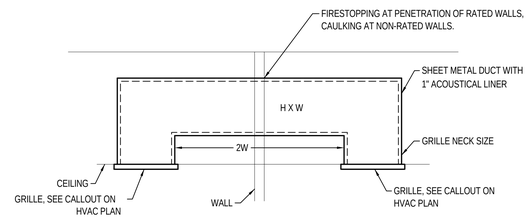
SIZE	OPENING (INXIN)	W (IN)	H (IN)	MAX. TRANSFER (CFM)	APPROX. ΔP (INWC)
A	12 X 6	12	6	230	0.02
B	12 X 12	12	6	380	0.02
C	24 X 6	24	6	400	0.02
D	24 X 12	24	6	680	0.02
E	24 X 12	24	12	920	0.02
F	24 X 24	24	12	1500	0.02
G	36 X 24	36	12	2500	0.02



4 TRANSFER AIR DUCT (PLENUM/PLENUM)

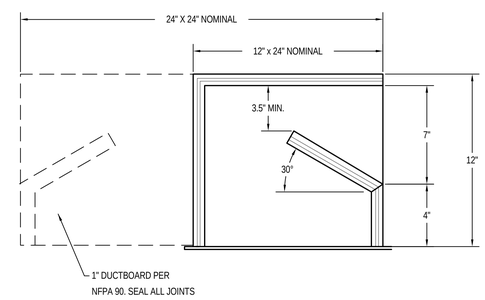
NO SCALE

SIZE	GRILLE NECK (INXIN)	W (IN)	H (IN)	MAX. TRANSFER (CFM)	APPROX. ΔP (INWC)
A	22 X 10	22	6	300	0.05
B	22 X 22	22	12	650	0.05



5 TRANSFER AIR DUCT (GRILLE/GRILLE)

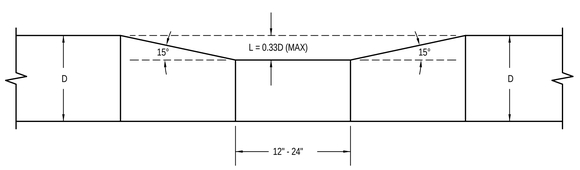
NO SCALE



TYPICAL OF ALL RETURN AIR GRILLES

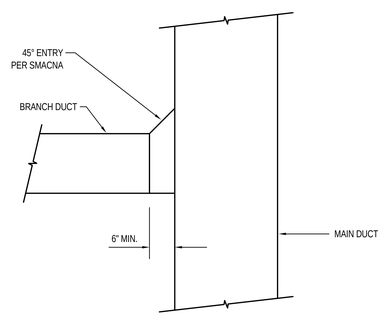
6 RETURN AIR GRILLE DUCTBOARD SOUND BOOT DETAIL

NO SCALE



7 TYPICAL DUCT SLICE DETAIL

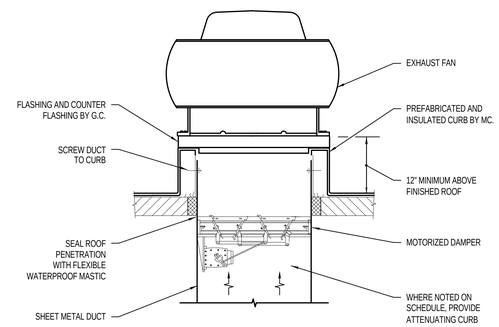
NO SCALE



8 TYPICAL DUCT TAKEOFF DETAIL

NO SCALE

233300/15900



9 ROOF MOUNTED EXHAUST CURB DETAIL

NO SCALE

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	BEM
CHECKED BY:	RLH
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

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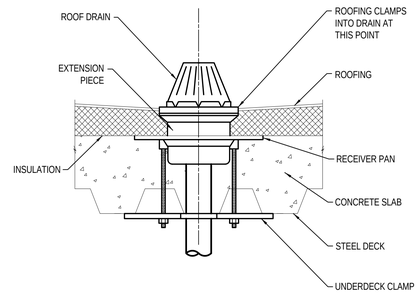
GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

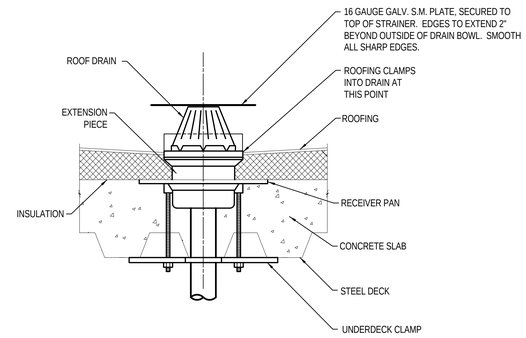
REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



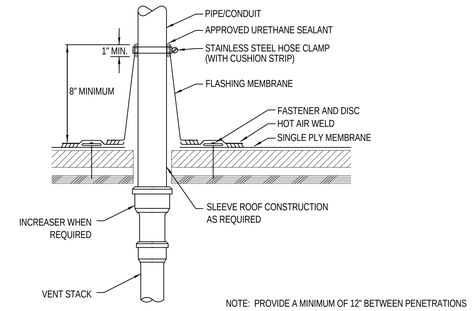
1 ROOF DRAIN DETAIL

NO SCALE



2 OVERFLOW ROOF DRAIN WITH HOOD DETAIL

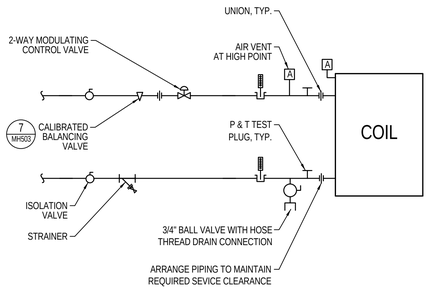
NO SCALE



NOTE: PROVIDE A MINIMUM OF 12" BETWEEN PENETRATIONS AND/OR ADJACENT FLASHINGS.

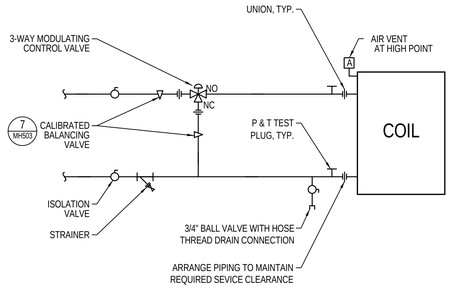
3 VENT THROUGH ROOF DETAIL

NO SCALE



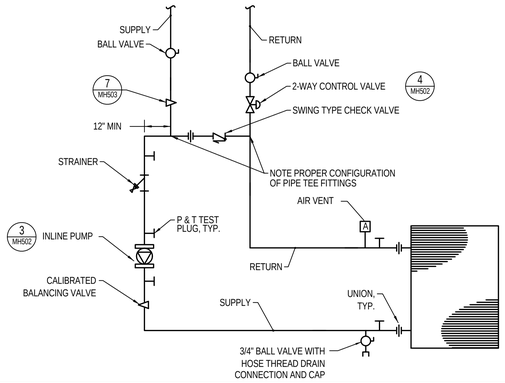
4 COIL PIPING DIAGRAM (2-WAY VALVE)

NO SCALE



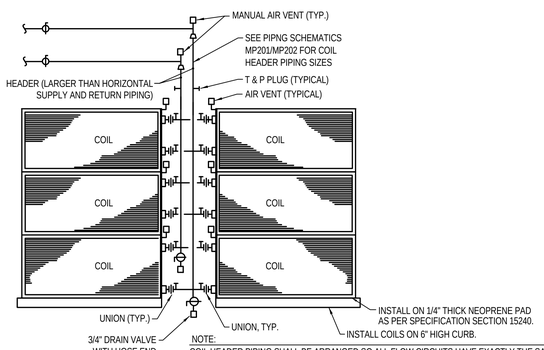
5 COIL PIPING DIAGRAM (3-WAY VALVE)

NO SCALE



6 PUMPED COIL CONNECTION SCHEMATIC

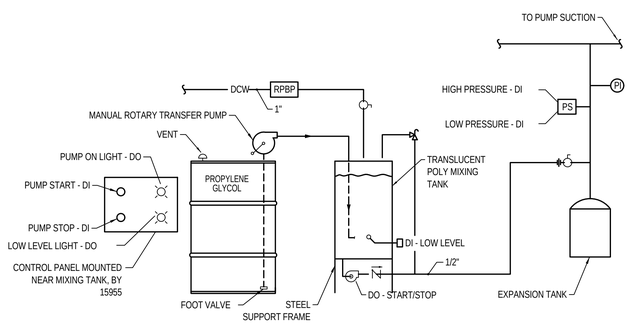
NO SCALE



NOTE:
COIL HEADER PIPING SHALL BE ARRANGED SO ALL FLOW CIRCUITS HAVE EXACTLY THE SAME NUMBER OF ELBOWS AND TEES FROM HEADER THROUGH COIL AND BACK TO HEADER. LOCATE CONTROL VALVE AND CIRCUIT SETTER OUTSIDE THE AIR HANDLER.

7 COIL BANK CONNECTION DETAIL

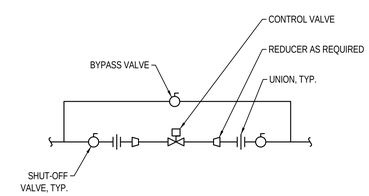
NO SCALE



CONTROL SEQUENCE: ADJUSTABLE LOW PRESSURE SWITCH SHALL INITIATE A SOFTWARE ALARM THROUGH THE DDC CONTROL SYSTEM. MOMENTARY PUSH BUTTON SHALL START MAKE-UP PUMP, PUMP SHALL BE STOPPED BY ADJUSTABLE HIGH PRESSURE SWITCH OR MOMENTARY PUSH BUTTON STOP SWITCH. FLOAT SWITCH IN MIXING TANK SHALL INITIATE A SOFTWARE ALARM AND TURN ON AN INDICATOR LIGHT ON THE PUMP CONTROL PANEL, WHEN LEVEL DROPS BELOW 1/4 FULL.

8 GLYCOL MAKE-UP SYSTEM DETAIL - DDC CONTROLS

NO SCALE



9 CONTROL VALVE INSTALLATION

NO SCALE

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

MECHANICAL DETAILS

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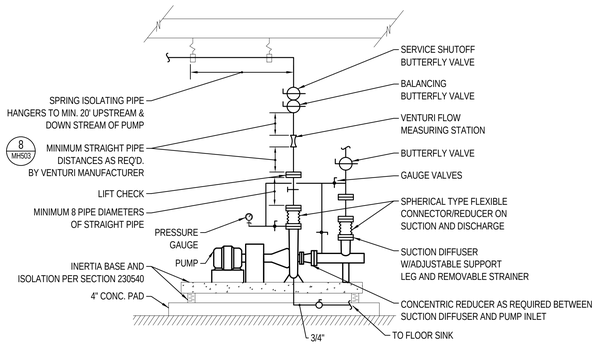
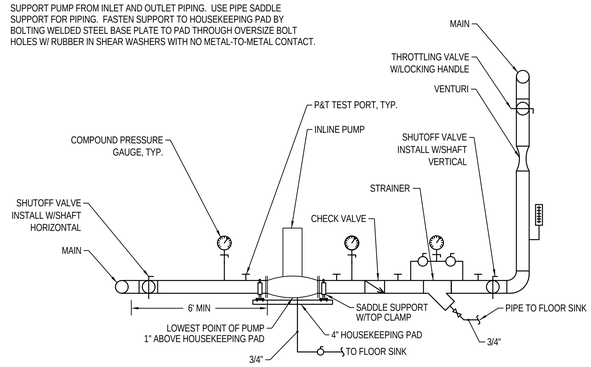


1 BASE MOUNTED PUMP INSTALLATION DETAIL W/INERTIA BASE

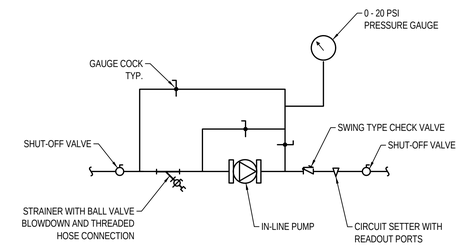
NO SCALE

SUPPORT PUMP FROM INLET AND OUTLET PIPING. USE PIPE SADDLE SUPPORT FOR PIPING. FASTEN SUPPORT TO HOUSEKEEPING PAD BY BOLTING WELDED STEEL BASE PLATE TO PAD THROUGH OVERSIZE BOLT HOLES W/ RUBBER IN SHEAR WASHERS WITH NO METAL-TO-METAL CONTACT.



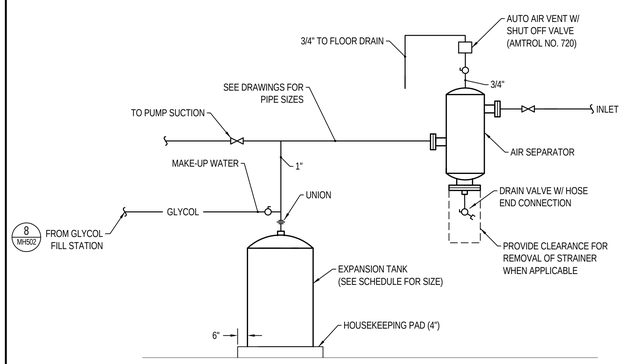
2 IN-LINE CONDENSER WATER PUMP DETAIL

NO SCALE



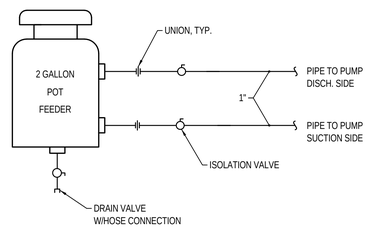
3 IN-LINE PUMP PIPING DETAIL

NO SCALE



4 AIR SEPARATOR/EXPANSION TANK PIPING DETAIL

NO SCALE

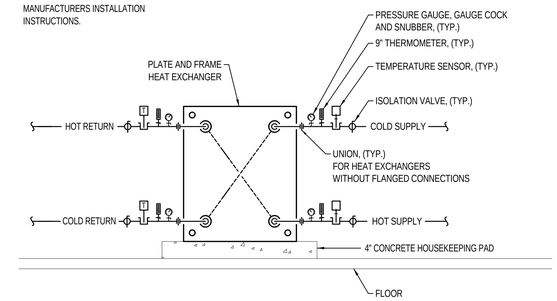


5 CHEMICAL POT FEEDER PIPING DETAIL

NO SCALE

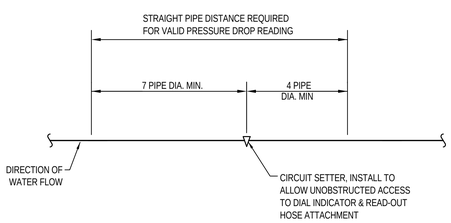
NOTE:

VERIFY PIPING CONNECTIONS WITH MANUFACTURERS INSTALLATION INSTRUCTIONS.



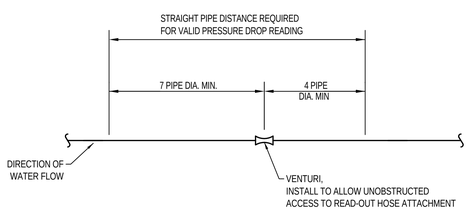
6 PLATE AND FRAME HEAT EXCHANGER DETAIL

NO SCALE



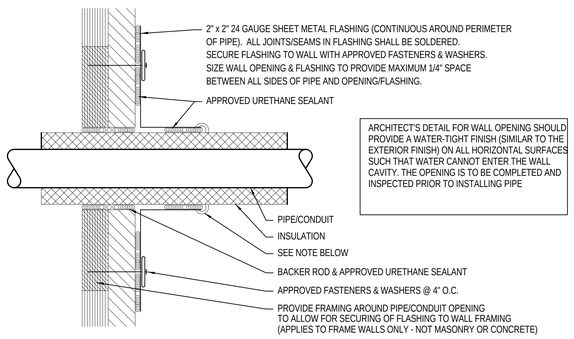
7 CIRCUIT SETTER DETAIL

NO SCALE



8 VENTURI INSTALLATION DETAIL

NO SCALE



NOTE: ALSO SEAL JOINT BETWEEN FLASHING AND PIPE WITH EXTERIOR WEATHER-PROOFING SEALANT. SEALANT SHALL BE DESIGN POLYMERICS DP-1020 FIBER-REINFORCED DUCT SEALANT. APPLY SEALANT IN STRICT CONFORMANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

9 PIPE SLEEVE FOR INSULATED PIPE THRU WALL

NO SCALE

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
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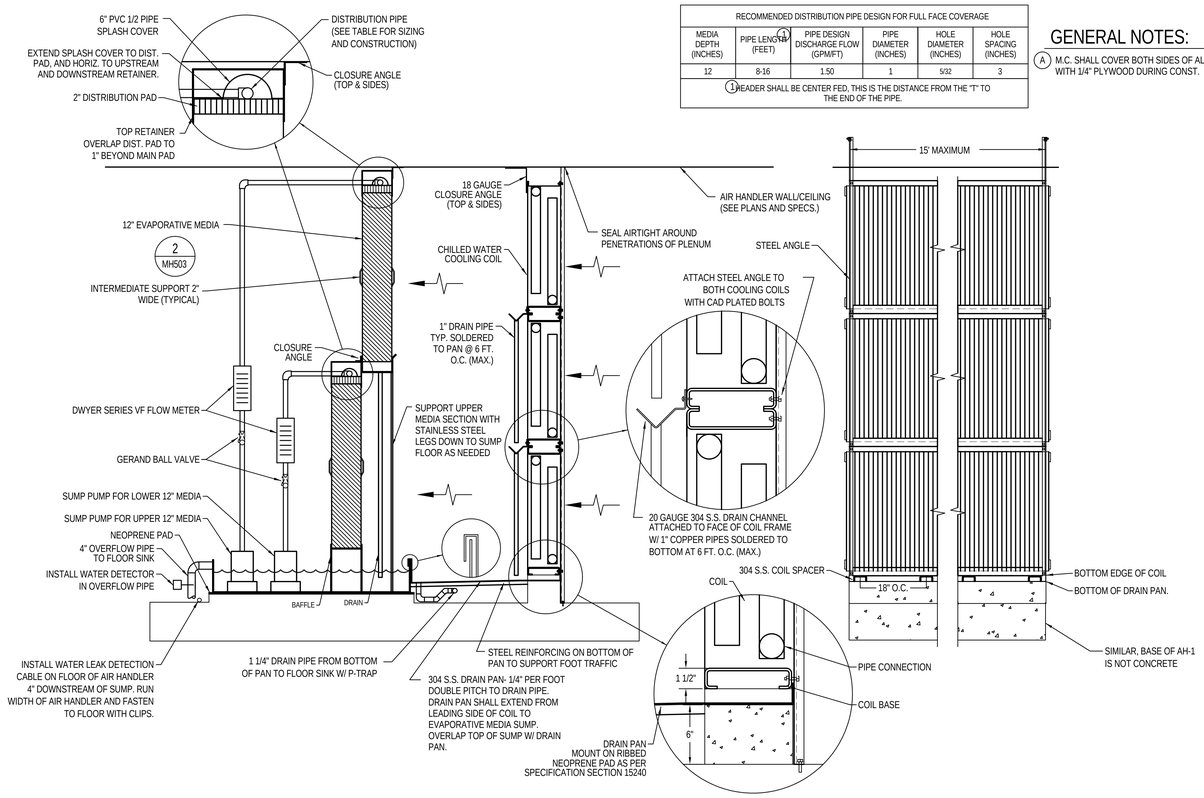


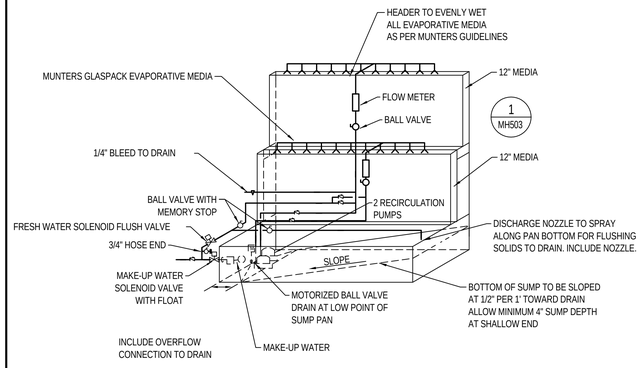
RECOMMENDED DISTRIBUTION PIPE DESIGN FOR FULL FACE COVERAGE					
MEDIA DEPTH (INCHES)	PIPE LENGTH (FEET) 1	PIPE DESIGN DISCHARGE FLOW (GPM/FT)	PIPE DIAMETER (INCHES)	HOLE DIAMETER (INCHES)	HOLE SPACING (INCHES)
12	8-16	1.50	1	5/32	3
1 HEADER SHALL BE CENTER FED, THIS IS THE DISTANCE FROM THE "T" TO THE END OF THE PIPE.					

GENERAL NOTES:

A M.C. SHALL COVER BOTH SIDES OF ALL COILS WITH 1/4" PLYWOOD DURING CONST.

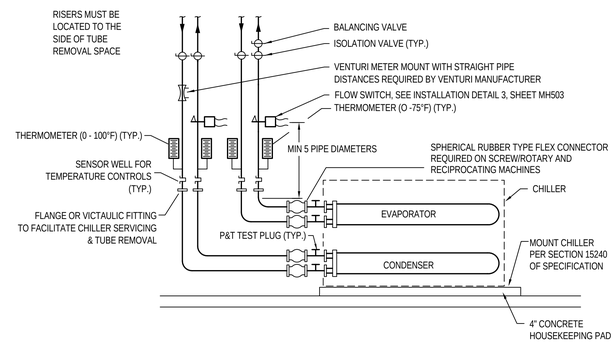
1 COOLING COIL AND EVAPORATIVE COOLER DETAIL

NO SCALE



2 PIPING OF DIRECT EVAPORATIVE COOLER

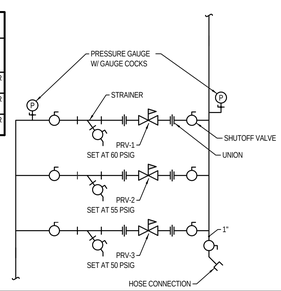
NO SCALE



3 CHILLER PIPING DETAIL

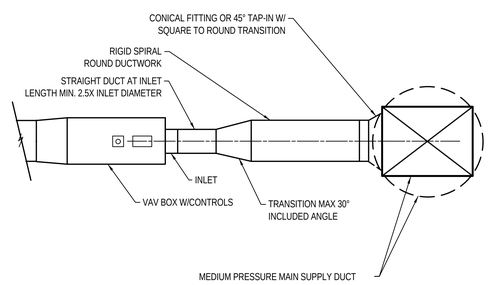
NO SCALE

PRV SCHEDULE			
PLAN CODE	SIZE	MAX GPM @ 10 PSI ΔP	MANUFACTURER & MODEL NO
PRV-1	4"	230	WATTS REGULATOR SERIES 127W
PRV-2	1 1/2"	80	WATTS REGULATOR SERIES 223S
PRV-3	1"	29	WATTS REGULATOR SERIES 223S



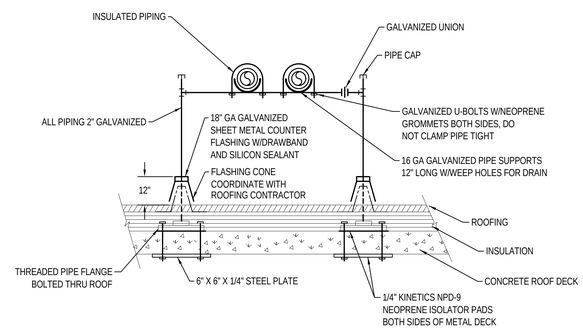
4 PRV STATION DETAIL

NO SCALE



5 TYPICAL MEDIUM PRESSURE TAKE-OFF VAV DETAIL

NO SCALE



6 ROOF TOP PIPE SUPPORT DETAIL

NO SCALE

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

REVISIONS:

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
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LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
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244 West 300 North Suite 200
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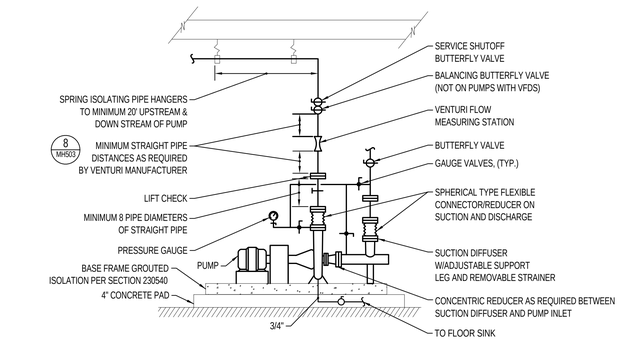
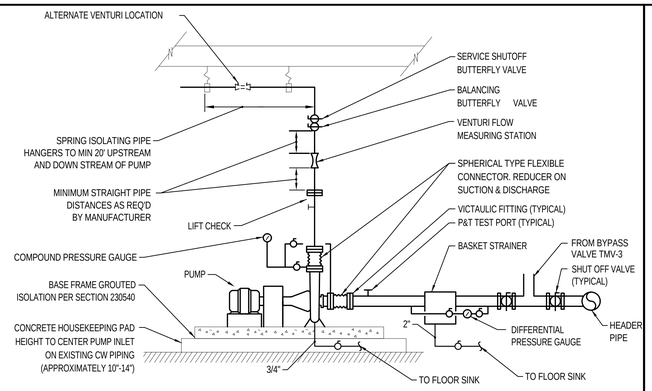


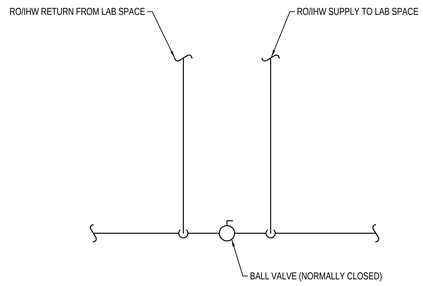
1 BASE MOUNTED PUMP: SLAB-ON-GRADE

NO SCALE



2 CONDENSER WATER PUMP DETAIL - UPPER PLANT

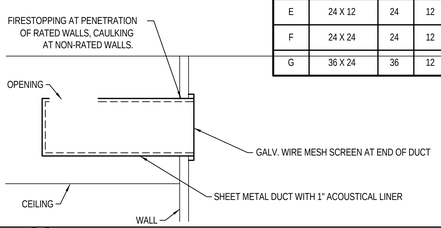
NO SCALE



3 RO/IHW TYPICAL VALVE AT LAB TAKE OFFS

NO SCALE

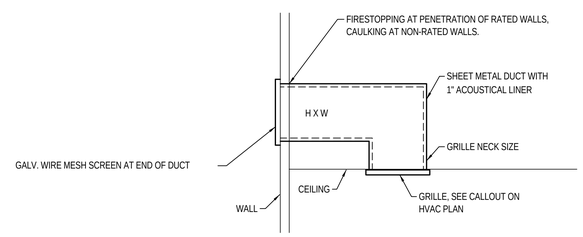
SIZE	OPENING (INXIN)	W (IN)	H (IN)	MAX. TRANSFER (CFM)	APPROX. ⚠ (INWC)
A	12 X 6	12	6	230	0.02
B	12 X 12	12	6	380	0.02
C	24 X 6	24	6	400	0.02
D	24 X 12	24	6	680	0.02
E	24 X 12	24	12	920	0.02
F	24 X 24	24	12	1500	0.02
G	36 X 24	36	12	2500	0.02



4 TRANSFER AIR DUCT (PLENUM/WALL)

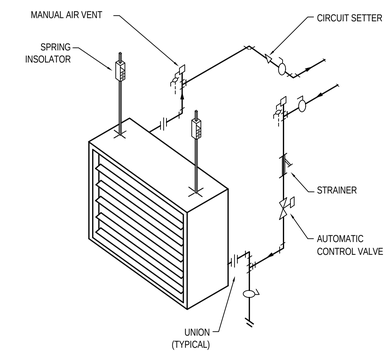
NO SCALE

SIZE	GRILLE NECK (INXIN)	W (IN)	H (IN)	MAX. TRANSFER (CFM)	APPROX. ⚠ (INWC)
A	22 X 10	22	6	300	0.05
B	22 X 22	22	12	650	0.05



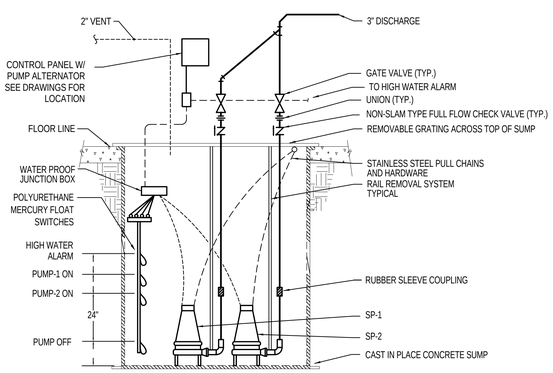
5 TRANSFER AIR DUCT (GRILLE/GRILLE)

NO SCALE



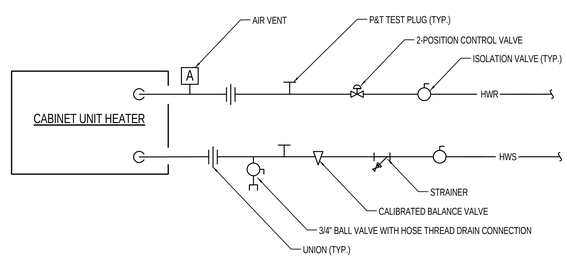
6 UNIT HEATER PIPING DETAIL

NO SCALE



7 DUPLEX SUMP PUMP DETAIL

NO SCALE



8 CABINET UNIT HEATER PIPING SCHEMATIC

NO SCALE

9

NO SCALE

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DRAWN BY:	Author
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DFCM PROJECT NO.:	09020790
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ISSUED DATE:	05.07.2010

MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

MH505

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CONTROL DAMPER SCHEDULE (CD)

PLAN CODE	SERVICE	TYPE	AIR FLOW VOLUME (CFM)	DIMENSIONS WIDTH (IN)	DIMENSIONS HEIGHT (IN)	MAX FACE VELOCITY (FPM)	METHOD OF CONTROL	BLADE ORIENTATION	MANUFACTURER & MODEL NO
CD-OA-1	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-2	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-3	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-4	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-5	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-6	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-7	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-8	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	23,625	48	48	1,475	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-9	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	34,340	52	48	1,485	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-10	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	34,340	52	48	1,485	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-OA-11	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	34,340	52	48	1,485	DDC/AIRFLOW SETPOINT	PARALLEL UP	RUSKIN CD60
CD-RA-1	AH-1 RETURN AIR	MOTORIZED/ MODULATING	18,900	36	52	1,450	DDC/AIRFLOW SETPOINT	PARALLEL DOWN	RUSKIN CD60
CD-RA-2	AH-1 RETURN AIR	MOTORIZED/ MODULATING	18,900	36	52	1,450	DDC/AIRFLOW SETPOINT	PARALLEL DOWN	RUSKIN CD60
CD-EX-1	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-EX-2	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-EX-3	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-EX-4	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-EX-5	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-EX-6	LAB EXHAUST SYSTEM	MOTORIZED/ MODULATING	34,340	52	64	1,485	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-RF-1	BULDING RELIEF SYSTEM	MOTORIZED/ MODULATING	25,000	72	72	700	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60
CD-RF-2	BUILDING RELIEF SYSTEM	MOTORIZED/ MODULATING	25,000	72	72	700	DDC/AIRFLOW SETPOINT	OPPOSED BLADE	RUSKIN CD60

(1) PROVIDE EMERGENCY POWER TO DAMPER ACTUATOR.
(2) PROVIDE END SWITCHES ON DAMPER.

EXPANSION TANK SCHEDULE (ET)

PLAN CODE	SYSTEM SERVED	WATER TEMP (°F)	% GLYCOL	TANK VOL (GAL)	ACCEPTANCE VOL (GAL)	PRE-CHARGE (PSI)	MAX DIMENSIONS DIA (IN)	MAX DIMENSIONS HEIGHT (IN)	MAX DIMENSIONS OPERATING WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
ET-1	AH-1 CHILLED COILS	48	25	44.5	22.6	10	24	28	520	AMTROL AX-80V	1" NPT SYSTEM CONNECTION
ET-2	AH-1 HEATING COILS	110	40	44.5	22.6	10	24	28	520	AMTROL AX-80V	1" NPT SYSTEM CONNECTION
ET-3	LAB VENTILATION HEAT RECOVERY	95	40	44.5	22.6	10	24	28	520	AMTROL AX-80V	1" NPT SYSTEM CONNECTION
ET-4	LAB PROCESS COOLING LOOP	48	NONE	44.5	22.6	10	24	28	520	AMTROL AX-80V	1" NPT SYSTEM CONNECTION

AIR SEPARATOR (AS)

PLAN CODE	SYSTEM SERVED	CONNECTION SIZE	MAX GPM	PD (FT)	MAXIMUM DIMENSIONS DIA	MAXIMUM DIMENSIONS HEIGHT	MAXIMUM DIMENSIONS FLANGE TO FLANGE (IN)	DRY WT (LBS)	MAX OPER WT (LBS)	MANUFACTURER & MODEL NO
AS-1	AH-1 CHILLED COILS	10"	815	.5	20	46.9	37.5	490	890	SPIROVENT SENIOR
AS-2	AH-1 PREHEAT COILS	8"	550	.5	16	39.4	33.6	271	471	SPIROVENT SENIOR
AS-3	LAB HEAT RECOVERY COILS	6"	286	.5	12.8	30.3	27.7	145	245	SPIROVENT SENIOR
AS-4	LAB PROCESS COOLING	2 1/2"	66	.5	6.3	18.5	15.8	31	45	SPIROVENT SENIOR

FIELD ERECTED INDOOR AIR HANDLER SCHEDULE (AH)

PLAN CODE	AREAS SERVED	TOTAL SUPPLY CFM	TOTAL RELIEF CFM	FILTER BANK	SUPPLY FANS	PREHEAT COILS	INDIRECT EVAPORATIVE COOLING COILS	CHILLED WATER COOLING COILS	DIRECT EVAP COOLER	RELIEF FANS	MAX OUTSIDE DIMENSIONS (FT-IN) LENGTH	MAX OUTSIDE DIMENSIONS (FT-IN) WIDTH	MAX OUTSIDE DIMENSIONS (FT-IN) HEIGHT	MAX WEIGHT (LBS)	REMARKS
AH-1	LEVEL 0 LEVEL 1 LEVEL 2	176,000	50,000	FB-1 FB-2	SF-1 SF-2 SF-3	PHC-1 THROUGH PHC-12	ICC-1 THROUGH ICC-12	CC-1 THROUGH CC-12	ECM-1 THROUGH ECM-4	RF-1 RF-2	92'-0"	34'-0"	17'-0"	100,000	FIELD ERECTED INDOOR AIR HANDLER

FILTER BANK (FB)

PLAN CODE	ASHRAE 52 EFFICIENCY	FILTER SIZE (IN) HEIGHT	FILTER SIZE (IN) WIDTH	FILTER SIZE (IN) THICK	NUMBER OF FILTERS	RACK CONFIGURATION	MAX INITIAL PD (IN WC)	MAX FACE VELOCITY (FPM)	MANUFACTURER & MODEL NO
FB-1	MERV 13 (80-85%)	24	24	2	160	ANGLE	0.14	300	FLANDERS PRE PLEAT M13

SUPPLY AIR FAN SCHEDULE (SF)

PLAN CODE	SYSTEM SERVED	TYPE	CFM @ ELEV	TSP @ ELEV (INWC)	FAN RPM	MOTOR (1) HP	MOTOR (1) BHP	MOTOR (1) EFF %	MOTOR (1) RPM	MOTOR (1) VOLTAGE/ PHASE	OCTAVE BAND / HZ	SOUND PERFORMANCE DATA 1 / 63	2 / 125	3 / 250	4 / 500	5 / 1K	6 / 2K	7 / 4K	8 / 8K	AIR VOLUME CONTROL	METHOD OF CONTROL	FAN DIAMETER (IN)	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
SF-1 SF-2 SF-3	AH-1	DIRECT DRIVE AIR FOIL PLENUM	63,000	7.0	878	150	89.4	95.8	1,200	460/3	INLET	109	111	102	97	94	90	85	81	ATC/VFD	ATC SYSTEM/ DUCT STATIC	60	20,000 (2)	COOK 600PLC	PROVIDE WITH INLET SAFETY SCREEN, INERTIA BASE
											OUTLET	114	114	108	103	98	93	89	85						

(1) 150 HP MOTOR REQUIRED FOR SECOND OPERATING POINT (94,500 CFM, 7.0" TSP, 138 BHP, 1,022 RPM). PROVIDE MOTOR WITH NEMA MG1, PART 31 RATING.
(2) INCLUDES WEIGHT OF INERTIA BASE.

PREHEAT COIL SCHEDULE (PHC)

PLAN CODE	SYSTEM SERVED	CFM (ALT)	CAPACITY (MBH)	AIR SIDE EAT (°F)	AIR SIDE LAT (°F)	AIR SIDE MAX FACE VELOCITY (FPM)	AIR SIDE MAX PD (IN WC)	WATER SIDE EWT / LWT (°F)	WATER SIDE GPM	WATER SIDE MAX PD (FT HD)	WATER SIDE PPG %	ROWS	MAX FINS PER INCH	PASSES	FINNED AREA SIZE (IN) FIN WIDTH	FINNED AREA SIZE (IN) FIN HEIGHT	FINNED AREA SIZE (IN) DEPTH	MANUFACTURER & MODEL NO	REMARKS
PHC-1 THROUGH PHC-12	AH-1	8,584	304	25	60.5	264	0.05	98/83.1	44.2	8.6	40	2	8	4	108"	43.5"	5"	TEMTROL 5WC-4-43.5x108x2-8AL	MAX 1.5" CHANNEL AROUND FINNED AREA ON ALL SIDES

INDIRECT EVAPORATIVE COOLING COIL SCHEDULE (ICC)

PLAN CODE	SYSTEM SERVED	CFM (ALT) (1)	CAPACITY (MBH) SENS MBH	CAPACITY (MBH) TOTAL MBH	AIR SIDE EAT (°F) db/wb	AIR SIDE LAT (°F) db/wb	AIR SIDE MAX FACE VELOCITY (FPM)	AIR SIDE MAX PD (IN WC)	WATER SIDE EWT/ LWT (°F)	WATER SIDE GPM	WATER SIDE MAX PD (FT HD)	WATER SIDE PPG %	ROWS	FINS PER INCH	PASSES	FINNED AREA SIZE (IN) FIN WIDTH	FINNED AREA SIZE (IN) FIN HEIGHT	FINNED AREA SIZE (IN) DEPTH	MANUFACTURER & MODEL NO	REMARKS
ICC-1 THROUGH ICC-12	AH-1	15,920	403.9	403.9	98/63.3	68.6/53.4	488	0.52	66/72.5	125	12	NONE	8	8	6	108"	43.5"	13"	TEMTROL 5WC-6-43.5x108x8-8AL	MAX 1.5" CHANNEL AROUND FINNED AREA ON ALL SIDES

(1) AIRFLOW AT DESIGN DRYBULB CONDITIONS ENTERING COIL, RESULTS IN 162,000 CFM LEAVING THE AIR HANDLER

CHILLED WATER COOLING COIL SCHEDULE (CC)

PLAN CODE	SYSTEM SERVED	CFM (ALT) (1)	CAPACITY MBH SENS MBH	CAPACITY MBH TOTAL MBH	AIR SIDE EAT (°F) db/wb	AIR SIDE LAT (°F) db/wb	AIR SIDE MAX FACE VELOCITY (FPM)	AIR SIDE MAX PD (IN WC)	WATER SIDE EWT / LWT (°F)	WATER SIDE GPM	WATER SIDE MAX PD (FT HD)	WATER SIDE PPG %	ROWS	FINS PER INCH	PASSES	FINNED AREA SIZE FIN WIDTH	FINNED AREA SIZE FIN HEIGHT	FINNED AREA SIZE DEPTH	MANUFACTURER & MODEL NO	REMARKS
CC-1 THROUGH CC-12	AH-1	15,420	229.1	312.8	71.6/ 62.5	55.0/ 54.9	473	0.65	49/61	54	59	25	8	8	18	108"	43.5"	13"	TEMTROL 5WC-18-43.5x108x8-8AL	MAX 1.5" CHANNEL AROUND FINNED AREA ON ALL SIDES

(1) AIRFLOW AT DESIGN WETBULB CONDITIONS ENTERING COIL, RESULTS IN 162,000 CFM OF SUPPLY AIR LEAVING THE AIR HANDLER

EVAPORATIVE COOLING MEDIA SCHEDULE (ECM)

PLAN CODE	SYSTEM SERVED	AIR WASHER CFM (ALT)	AIR WASHER MAX AIR VELOCITY (FPM)	AIR WASHER MAX AIR PD (INWC)	AIR WASHER MEDIA THICKNESS (IN)	AIR WASHER COOLING EFFECTIVENESS	AIR WASHER PUMP GPM	AIR WASHER HP	AIR WASHER VOLTAGE/ PHASE	INDIVIDUAL MEDIA SIZE (IN) MIN WIDTH	INDIVIDUAL MEDIA SIZE (IN) MIN DEPTH	INDIVIDUAL MEDIA SIZE (IN) HEIGHT	OVERALL UNIT SIZE (IN) MIN WIDTH	OVERALL UNIT SIZE (IN) MAX DEPTH	OVERALL UNIT SIZE (IN) MAX HEIGHT	REMARKS
ECM-1 THROUGH ECM-4	AH-1	45,050	540	0.28	12	90%	27 PER PUMP	1/3	120/1	174	12	69	360	60	188 (INCLUDES SUMP)	MUNTERS GLASDEK MEDIA WITH TUF-EDG, TWO PUMPS PER UNIT

RELIEF FAN SCHEDULE (RF)

PLAN CODE	SYSTEM SERVED	TYPE	CFM @ ELEV	TSP @ ELEV (INWC)	FAN RPM	MOTOR HP	MOTOR BHP	MOTOR EFF %	MOTOR RPM	MOTOR VOLTAGE/ PHASE	OCTAVE BAND / HZ	SOUND PERFORMANCE DATA 1 / 63	2 / 125	3 / 250	4 / 500	5 / 1K	6 / 2K	7 / 4K	8 / 8K	AIR VOLUME CONTROL	METHOD OF CONTROL	FAN DIAMETER (IN)	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
RF-1 RF-2	AH-1	DIRECT DRIVE EXTRUDED PROPELLER	25,000	1.0	675	10	7.6	91.7	900	460/3	OUTLET	99	99	94	91	89	86	81	80	ATC/VFD	ATC SYSTEM/ DUCT STATIC	60	1,250	COOK 60EW620B	PROVIDE WITH INLET AND FAN SAFETY SCREENS

LOUVER SCHEDULE (L)

PLAN CODE	CFM	MAX. VELOCITY FPM	MIN. FREE AREA SQ FT	MAX DIMENSIONS (W x H) (IN)	MANUFACTURER & MODEL NO
L-1	189,000	820	231	324 X 168 (1)	RUSKIN ELF6375DX
L-2	50,000	872	57	162 X 84 (1)	RUSKIN ELF6375DX
L-3	3,375	850	4	36 X 36 (1)	RUSKIN ELF6375DX

(1) PROVIDE REQUIRED HARDWARE FOR A CONTINUOUS, SEAMLESS, EXTERIOR APPEARANCE

COOLING TOWER SCHEDULE FOR CT-1

PLAN CODE CT-1	SYSTEM SERVED	FLOW RATE (GPM) (1)	FLOW RATE PER CELL (GPM)	TOTAL HEAT REJECTED (MBH)(1)	EWT (°F)	LWT (°F)	OSA WB (°F)	NO OF CELLS	ELECTRICAL - PER CELL MOTOR HP	ELECTRICAL - PER CELL CONTROL	ELECTRICAL - PER CELL SUMP HEATERS (KW)	ELECTRICAL - PER CELL VOLTAGE/ PHASE	MAXIMUM DIMENSIONS (1) LENGTH (IN)	MAXIMUM DIMENSIONS (1) WIDTH (IN)	MAXIMUM DIMENSIONS (1) HEIGHT (IN)	MAXIMUM OPERATING WEIGHT (LBS) (1)	MANUFACTURER & MODEL NO
CELL-1 CELL-2 CELL-3	AH-1	1,500	500	4,875	72.5	66	63	3	25	VFD	2 @ 5KW	460/3	509	102	175	37,000	EVAPCO AT-39-742

(1)DATA COMBINED FOR ALL 3 CELLS

JOB SITE ELEVATION = 4,700 FT
JOB SITE PRESSURE = 12.37 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

ALL MOTORS TO BE NEMA PREMIUM EFFICIENCY

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY: JMN
CHECKED BY: RLH
DFCM PROJECT NO.: 09020790
GSBS PROJECT NO.: 2009.053.02
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MECHANICAL SCHEDULES

MH601

RE-HEAT COIL SCHEDULE (RH)

PLAN CODE	VAV BOX SERVED	CFM @ ELEV.	MBH	FV (FPM)	AIR SIDE EAT/LAT (°F)	AIR SIDE MAX AIR PD (IN WC)	WATER SIDE EWT/LWT (°F)	WATER SIDE GPM	WATER SIDE MAX PD (F0.)	COIL FACE MAX DIMENSIONS (H" x W")	ROWS/ FINS PER IN	MANUFACTURER & MODEL NO.
RH-1	6I	360	11.6	247	54/88	0.1	100/85	1.6	2.4	10.5 x 20	3/10	TEMTROL 5WC-20-10.5X20X3-10AL
RH-2	6E	500	16.7	343	54/88	0.18	100/85	2.3	6.0	10.5 x 20	4/9	TEMTROL 5WC-28-10.5X20X4-9AL
RH-3	8I	450	14.8	246	54/88	0.1	100/85	2.0	4.4	12 x 22	3/10	TEMTROL 5WC-24-12X22X3-10AL
RH-4	8E	800	29.5	416	54/88	0.28	100/85	4.0	3.3	12 x 26	4/10	TEMTROL 5WC16-12X26X4-10AL
RH-5	10I	700	22.5	216	54/88	0.07	100/85	3.1	0.8	18 x 26	3/10	TEMTROL 5WC-12-18X26X3-10AL
RH-6	10E	1400	46.9	431	54/88	0.3	100/85	6.4	11.1	18 x 26	4/10	TEMTROL 5WC-24-18X26X4-10AL
RH-7	12I	900	29.3	258	54/88	0.1	100/85	4.0	3.8	18 x 28	3/10	TEMTROL 5WC-18-18X28X3-10AL
RH-8	12E	1600	52.7	427	54/88	0.3	100/85	7.1	5.0	18 x 30	4/10	TEMTROL 5WC-16-18X30X4-10AL
RH-9	14I	1250	40.5	257	54/88	0.1	100/85	5.5	2.9	19.5 x 36	3/10	TEMTROL 5WC-12-19.5X36X3-10AL
RH-10	14E	2500	83.3	429	54/88	0.3	100/85	11.2	7.4	21 x 40	4/10	TEMTROL 5WC-14-21X40X4-10AL
RH-11	8LSV	530	17.8	398	54/88	0.3	100/85	2.4	6.7	12 x 16	4/10	TEMTROL 5WC-32-12X16X4-10AL
RH-12	10LSV	750	24.4	400	54/88	0.3	100/85	3.3	2.3	13.5 x 20	4/10	TEMTROL 5WC-18-13.5X20X4-10AL
RH-13	12LSV	1100	36.2	437	54/88	0.3	100/85	4.9	5.8	16.5 x 22	4/10	TEMTROL 5WC-22-16.5X22X4-10AL
RH-14	14LSV	1900	61.6	439	54/88	0.3	100/85	8.3	3.5	19.5 x 32	4/10	TEMTROL 5WC-12-19.5X32X4-10AL
RH-15	3-12LSV	2700	88.6	393	54/88	0.3	100/85	12.0	9.5	22.5 x 44	4/9	TEMTROL 5WC-14-22.5X44X4-9AL

LABORATORY VENTURI SUPPLY VALVE (SV)

PLAN CODE — VALVE NO.
MAX CFM — MIN CFM

PLAN CODE	INLET SIZE (IN)	MIN/MAX INLET SP (IN WC)	MAXIMUM AIRFLOW CFM	MAX SP DROP @ MAX AIRFLOW (IN WC)	MIN. CONTROL AIRFLOW CFM	USE WITH REHEAT COIL (*)	MAX dBA RADIATED @ 1.5" WC	MANUFACTURER/ MODEL	COMMENTS
8LSV	8"	0.6/3.0	530	0.6	40	RH-11	39	PHOENIX ACCEL II MAV	FACTORY INSULATED
10LSV	10"	0.6/3.0	750	0.6	50	RH-12	45	PHOENIX ACCEL II MAV	FACTORY INSULATED
12LSV	12"	0.6/3.0	1,100	0.6	90	RH-13	47	PHOENIX ACCEL II MAV	FACTORY INSULATED
14LSV	14"	0.6/3.0	1,900	0.6	200	RH-14	58	PHOENIX ACCEL II MAV	FACTORY INSULATED
16LSV	30" x 15"	0.6/3.0	2,700	0.6	450	RH-15	45	PHOENIX ACCEL II MAV	FACTORY INSULATED, THREE 12" VALVES IN FACTORY ASSEMBLY

(*) REHEAT COILS PROVIDED BY DIVISION 232113 CONTRACTOR

LABORATORY VENTURI EXHAUST VALVE (EV)

PLAN CODE — VALVE NO.
MAX CFM — MIN CFM

PLAN CODE	INLET SIZE (IN)	MIN/MAX INLET SP (IN WC)	MAXIMUM AIRFLOW CFM	MAX SP DROP @ MAX AIRFLOW (IN WC)	MIN. CONTROL AIRFLOW CFM	MAX dBA RADIATED @ 1.5" WC	MANUFACTURER/ MODEL	COMMENTS
8EV	8"	0.6/3.0	530	0.6	40	39	PHOENIX ACCEL II EXV	-
10EV	10"	0.6/3.0	750	0.6	50	45	PHOENIX ACCEL II EXV	-
12EV	12"	0.6/3.0	1,100	0.6	90	47	PHOENIX ACCEL II EXV	-
14EV	14"	0.6/3.0	1,900	0.6	200	58	PHOENIX ACCEL II EXV	-
16EV	30" x 15"	0.6/3.0	2,700	0.6	450	45	PHOENIX ACCEL II EXV	THREE 12" VALVES IN FACTORY ASSEMBLY

IN-LINE SOLIDS SEPARATOR (ISS)

PLAN CODE	SYSTEM	FLOW (GPM)	PUMP HEAD (PSI)	INLET/ OUTLET	PUMPS AMPS	PUMPS VOLTAGE/ PHASE	PUMPS HP	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
ISS-1	AH-1 COND WATER	78	23	2"/ 1 1/2"	4.3	460/3	1	300	GRISSWOLD CSS-150	PURGE FUNCTION (1) (2)

(1) CONTROL OF PURGE FUNCTION TO BE BY INTERLOCK BETWEEN ISS CONTROLLER (BY DIVISION 15548) AND MOTORIZED BALL VALVE (BY 15548 CONTRACTOR). VALVE WILL BE INSTALLED AT PURGE OUTLET OF ISS AND WIRED TO THE DDC CONTROL SYSTEM BY THE DIVISION 15955 CONTRACTOR.

(2) INCLUDE FULLY OPERATIONAL CONTROL PANEL MOUNTED ON ISS SKID. PANEL SHALL INCLUDE MOTOR STARTER, H-O-A SWITCH, DISCONNECTS, AND DRY CONTACT FOR USE BY DDC SYSTEM TO INDICATE ERROR STATUS.

OUTSIDE AIR INJECTION FAN (OAF)

PLAN CODE	SYSTEM SERVED	TYPE	CFM @ ELEV	TSP @ ELEV (IN WC)	FAN RPM	MOTOR HP	MOTOR BHP	MOTOR EFF %	MOTOR RPM	MOTOR VOLTAGE/ PHASE	OCTAVE BAND / HZ	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1K	6 / 2K	7 / 4K	8 / 8K	AIR VOLUME CONTROL	METHOD OF CONTROL	FAN DIAMETER (IN)	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
OAF-1	OUTSIDE AIR	DIRECT DRIVE AIR FOIL PLENUM	103,000	2.0	841	75	70	95	900	460/3	INLET	96	113	102	99	99	97	92	88	ATC/VFD	ATC SYSTEM/ DUCT STATIC	60	20,000 (1)	COOK 600PLC	PROVIDE WITH INLET SAFETY SCREEN, INERTIA BASE
											OUTLET	103	115	108	105	104	102	98	93						

(1) INCLUDES WEIGHT OF INERTIA BASE.

FILTER BANK (FB)

PLAN CODE	ASHRAE 52 EFFICIENCY	FILTER SIZE (IN) HEIGHT	FILTER SIZE (IN) WIDTH	FILTER SIZE (IN) THICK	NO OF FILTERS	RACK CONFIGURATION	MAX INITIAL PD (IN WC)	MAX FACE VELOCITY (FPM)	MANUFACTURER & MODEL NO
FB-2	MERV 13 (80-85%)	24	24	2	72	FLAT	0.18	360	FLANDERS PRE PLEAT M13
FB-3	MERV 13 (80-85%)	24	24	2	56	FLAT	0.24	460	FLANDERS PRE PLEAT M13

ENERGY RECOVERY COIL SCHEDULE (ERC)

PLAN CODE	SYSTEM SERVED	CFM (ALT)	TOTAL MBH	AIR SIDE EAT (°F)	AIR SIDE LAT (°F)	AIR SIDE MAX FACE VELOCITY (FPM)	AIR SIDE MAX PD (IN WC)	WATER SIDE EWT / LWT (°F)	WATER SIDE GPM	WATER SIDE MAX PD (FT HD)	WATER SIDE PPG %	ROWS	MAX FINS PER INCH	PASSES	FINNED AREA SIZE (IN) FIN WIDTH	FINNED AREA SIZE (IN) FIN HEIGHT	FINNED AREA SIZE (IN) DEPTH	MANUFACTURER & MODEL NO	REMARKS
ERCO-1 THROUGH ERCO-8	OUTSIDE AIR/ LAB EXHAUST	12,875	2,616	6	30.5	374	0.4	59.4/30.0	24	18	40	8	10	18	114	43.5	13	TEMTROL 5WC-18-43.5x114x8-10AL	MAX 1.5" CHANNEL AROUND FINNED AREA ON ALL SIDES
ERCE-1 THROUGH ERCE-8	OUTSIDE AIR/ LAB EXHAUST	12,875	2,612	72	48	355	0.47	30.0/59.4	24	18.5	40	8	11	18	120	43.5	13	TEMTROL 5WC-18-43.5x120x8-11AL	MAX 1.5" CHANNEL AROUND FINNED AREA ON ALL SIDES

LAB EXHAUST FAN (LEF)

PLAN CODE	SYSTEM SERVED	TYPE	CFM @ ELEV	TSP @ ELEV (IN WC)	FAN RPM	MOTOR (1) HP	MOTOR (1) BHP	MOTOR (1) EFF %	MOTOR (1) RPM	MOTOR (1) VOLTAGE/ PHASE	OCTAVE BAND / HZ	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1K	6 / 2K	7 / 4K	8 / 8K	AIR VOLUME CONTROL	METHOD OF CONTROL	FAN DIAMETER (IN)	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
LEF-1 LEF-2 LEF-3	LAB EXHAUST	BELT DRIVE MIXED FLOW	34,340	4.5	828	60	35	95.0	1,200	460/3	INLET	94	95	92	90	85	81	78	74	ATC/VFD	ATC SYSTEM/ DUCT STATIC	49	5,500	COOK 490QMX-HP	PROVIDE WITH INLET AND OUTLET FLEXIBLE CONNECTIONS
											OUTLET	99	98	95	93	89	84	84	84						

(1) 50 HP MOTOR REQUIRED FOR SECOND OPERATING POINT (103,000 CFM, 4.5" TSP, 50 BHP, 932 RPM). PROVIDE MOTOR WITH NEMA MG1, PART 31 RATING.
PROVIDE FANS LEF-1 AND LEF-2 WITH BACK-UP POWER.

VAV

PLAN CODE — BOX NO.
MAX COOLING CFM — MIN COOLING CFM

PLAN CODE	INLET SIZE (IN)	DESIGN INLET SP (IN WC)	MAX COOLING AIR FLOW (CFM)	MAX HEATING AIR FLOW (CFM)	MAX NC	MIN CONTROL (CFM)	MAX SP DROP (IN WC COOLING)	USE WITH REHEAT COIL
6I	6	1.0	500	360	34	80	0.22	RH-1
6E	6	1.0	500	500	34	80	0.22	RH-2
8I	8	1.0	900	450	33	150	0.05	RH-3
8E	8	1.0	800	800	33	150	0.05	RH-4
10I	10	1.0	1400	700	34	230	0.05	RH-5
10E	10	1.0	1400	1400	34	230	0.05	RH-6
12I	12	1.0	1600	900	34	325	0.05	RH-7
12E	12	1.0	1600	1600	34	325	0.05	RH-8
14I	14	1.0	2500	1250	35	450	0.07	RH-9
14E	14	1.0	2500	2500	35	450	0.07	RH-10

PUMP SCHEDULE (P)

PLAN CODE	TYPE	SYSTEM SERVED	FLOW (GPM)	PRESSURE (FT)	MAX BHP	FLUID	MOTOR TYPE	MOTOR SIZE (HP)	MOTOR SPEED (RPM)	MOTOR VOLTAGE & PHASE	MOTOR VFD	PUMP & MOTOR WT (LBS)	MANUFACTURER & MODEL	REMARKS
P-1	IN-LINE	CONDENSER WATER	1,500	58	29	WATER	PREMIUM	40	1,800	460/3	NO	1,000	B&G SERIES 80 8x8x9-1/2	INSTALL AS CLOSE TO FLOOR AS POSSIBLE
P-2	IN-LINE	CONDENSER WATER	1,500	58	29	WATER	PREMIUM	40	1,800	460/3	NO	1,000	B&G SERIES 80 8x8x9-1/2	INSTALL AS CLOSE TO FLOOR AS POSSIBLE
P-3	BASE MOUNTED	BUILDING CHILLED SYSTEM	650	70	14	WATER	PREMIUM	20	1,800	460/3	YES	2,400 (W/INERTIA BASE)	B&G SERIES 1510 4BC	PROVIDE WITH INERTIA BASE
P-4	BASE MOUNTED	AH-1 CHILLED COILS	648	100	22	25% PPG	PREMIUM	25	1,800	460/3	NO	2,800 (W/INERTIA BASE)	B&G SERIES 1510 4E	PROVIDE WITH INERTIA BASE
P-5	BASE MOUNTED	BUILDING HEATING SYSTEM	830	80	22.7	WATER	PREMIUM	25	3,600	460/3	YES	2,300 (W/INERTIA BASE)	B&G SERIES 1510 4AC	PROVIDE WITH INERTIA BASE
P-6	BASE MOUNTED	BUILDING HEATING SYSTEM	830	80	22.7	WATER	PREMIUM	25	3,600	460/3	YES	2,300 (W/INERTIA BASE)	B&G SERIES 1510 4AC	PROVIDE WITH INERTIA BASE
P-7	BASE MOUNTED	AH-1 PREHEAT COILS	530	40	6.9	40% PPG	PREMIUM	7.5	1,800	460/3	NO	1,900 (W/INERTIA BASE)	B&G SERIES 1510 4BC	PROVIDE WITH INERTIA BASE
P-8	BASE MOUNTED	AH-1 PREHEAT COILS	530	40	6.9	40% PPG	PREMIUM	7.5	1,800	460/3	NO	1,900 (W/INERTIA BASE)	B&G SERIES 1510 4BC	PROVIDE WITH INERTIA BASE
P-9	BASE MOUNTED	LAB EXHAUST HEAT RECOVERY	240	70	5.8	40% PPG	PREMIUM	7.5	1,800	460/3	NO	1,700 (W/INERTIA BASE)	B&G SERIES 1510 2-1/2 BB	PROVIDE WITH INERTIA BASE
P-10	BASE MOUNTED	LAB EXHAUST HEAT RECOVERY	240	70	5.8	40% PPG	PREMIUM	7.5	1,800	460/3	NO	1,700 (W/INERTIA BASE)	B&G SERIES 1510 2-1/2 BB	PROVIDE WITH INERTIA BASE
P-11	IN-LINE	CHILLED HX-4	40	60	1.3	WATER	PREMIUM	1.5	3,600	460/3	YES	100	B&G SERIES 90 1-1/4 AA	SUSPEND FROM OVERHEAD STRUCTURE
P-12	IN-LINE	PROCESS COOLING	40	75	1.5	WATER	PREMIUM	2	3,600	460/3	YES	100	B&G SERIES 90 1-1/4 AA	SUSPEND FROM OVERHEAD STRUCTURE

EXHAUST FAN SCHEDULE (EF)

PLAN CODE	AREA SERVED	TYPE	CFM @ ELEV.	ESP (@ ELEV.)	FAN RPM	MOTOR B.H.P.	MOTOR H.P.	MOTOR EFFICIENCY %	MOTOR VOLTAGE & PHASE	SONES	DAMPER (GRAVITY OR MOTOR)	METHOD OF CONTROL	OPENING SIZE	MAX. OPERATING WT. (LBS.)	MANUFACTURER / MODEL	REMARKS
EF-1	AREA A TOILETS	INLINE CENTRIFUGAL	3375	1.5	2038	1.75	2.0	PREMIUM	460/3	31	MOTORIZED	ATC	20 X 20	150	COOK 150 SQN-B	-
EF-2	AREA B TOILETS	UPBLAST CENTRIFUGAL	1425	1.2	1634	.52	.75	PREMIUM	460/3	16	MOTORIZED	ATC	25 X 25	100	COOK ACRU-XP 180RX6B	-
EF-3	TRASH/RECYCLE 033A	CEILING FAN	150	0.5	1300	FRAC	FRAC	PREMIUM	220/1	4.7	GRAVITY	CONTINUOUS	6" □	16	COOK GC-164	-
LEF-4	RADIOISOTOPE LAB 156	RADIAL CENTRIFUGAL	1000	6.3	3508	1.89	3	PREMIUM	460/3	38	NONE	CONTINUOUS	7" □	279	COOK 70-MHA-SD	PROVIDE W/STANDBY POWER, DRAIN, PHENOLIC COATED INTERNAL SURFACES, AND CERMAMIC BEARINGS.

ALL MOTORS TO BE NEMA PREMIUM EFFICIENCY

JOB SITE ELEVATION = 4,700 FT
JOB SITE PRESSURE = 12.37 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY: Author
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ISSUED DATE: 05.07.2010

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

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HEAT EXCHANGER SCHEDULE (HX)

PLAN CODE	SYSTEM SERVED	HOT WATER SIDE				COLD WATER SIDE					FOULING RESISTANCE	MAX DIMENSIONS LxWxH (IN)	MAX WEIGHT (LBS)	TYPE	MANUFACTURER & MODEL NO
		GPM	EWT/LWT (°F)	MAX PD (FT)	% GLYCOL	CAP (MBH)	EWT/LWT (°F)	GPM	MAX PD (FT)	% GLYCOL					
HX-1	AH-1 COOLING COILS	650	60.7/49	11.1	25	3,660	48/59.7	630	10.3	NONE	NONE	104x26x110	7,000	PLATE AND FRAME	ITT P110-390-TLA
HX-2	AH-1 PREHEAT COILS	480	100/85	19.4	NONE	3,600	82/97	530	23.1	40	0.0005	58x26x110	5,400	PLATE AND FRAME	ITT P110-155-TMTL59
HX-3	LAB PROCESS COOLING LOOP	40	64/52	4.0	NONE	240	48/60	40	4.0	NONE	0.0005	30x14x48	500	PLATE AND FRAME	ITT P20A-54-TLA

TRANSFER FAN SCHEDULE (TF)

PLAN CODE	AREA SERVED	TYPE	CFM @ ELEV	ESP (INWC)	FAN RPM	MOTOR			MAX dBA	DAMPER (GRAVITY OR MOTOR)	METHOD OF CONTROL	MAX OPERATING WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
						HP	EFFICIENCY %	VOLTAGE/ PHASE						
TF-1	ELECTRICAL ROOM 035	CENTRIFUGAL UPBLAST	2,700	0.5	942	0.75	PREMIUM	120/1	61	GRAVITY	THERMOSTAT	190	COOK ACRU-D 180R10D	PROVIDE WITH FACTORY WIRED SPEED CONTROLLER

UNIT HEATER SCHEDULE (UH) HORIZONTAL BLOW

PLAN CODE	CFM @ ELEV.	HEATING CAP. (MBH) (LOW SPD)	GPM	WPD (FT)	EWT/LWT (°F)	EAT (°F)	MOTOR		MOUNTING	MANUFACTURER & MODEL NO.	REMARKS
							HP	VOLTAGE & PHASE			
UH-1	1,900	20.4	3	0.1	100/85	60	1/3	115/1	(2)	TRANE UHSA-120-W2	HORIZONTAL BLOW
UH-2	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-3	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-4	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-5	2,900	34.7	4.8	0.1	100/85	60	1/3	115/1	(2)	TRANE UHSA-204-W2	HORIZONTAL BLOW
UH-6	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-7	1,900	20.4	3	0.1	100/85	60	1/3	115/1	(2)	TRANE UHSA-120-W2	HORIZONTAL BLOW
UH-8	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-9	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-10	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-11	380	4.2	0.6	0.1	100/85	60	160 W	115/1	(2)	TRANE UHSA-024-W2	HORIZONTAL BLOW
UH-12	1,900	20.4	3	0.1	100/85	60	1/3	115/1	(2)	TRANE UHSA-120-W2	HORIZONTAL BLOW
UH-13	1,900	20.4	3	0.1	100/85	60	1/3	115/1	(2)	TRANE UHSA-120-W2	HORIZONTAL BLOW

(2) HANG FROM CEILING OR ROOF STRUCTURE.

DX COOLING-ONLY FAN COIL UNIT (DXFC) (1)

PLAN CODE	SYSTEM SERVED	CFM (ALT)	CAPACITY		FACE VELOCITY (FPM)	ESP AIR PD (INWC)	AIR SIDE		REFRIGERANT TYPE	ROWS	FINS PER INCH	SIZE (IN)				BLOWER HP	VOLTAGE/ PHASE	MANUFACTURER & MODEL NO	REMARKS
			SENS MBH	TOTAL MBH			EAT (°F) DB/WB	LAT (°F) DB/WB				LENGTH	WIDTH	HEIGHT	OPERATING WT (LBS)				
DXFC-1	ELEVATOR EQUIP ROOM	1,750	43.01	43.01	483	-	80/62	53.8/53	R-410A	4	14	49	38	24	410	1	460/3	CARRIER 39LA03	HORIZONTAL INSTALLATION OVERHEAD. PROVIDE WITH FACTORY MOUNTED STARTER, DISCONNECT, AND SINGLE POINT ELECTRICAL CONNECTION

(1) PROVIDE EMERGENCY POWER TO DXFC-1.

AIR COOLED CONDENSING UNIT SCHEDULE (ACCU) (1)

PLAN CODE	SYSTEM SERVED	NET COOLING MBH	AMBIENT TEMP (°F)	REFRIGERANT TYPE	NUMBER OF COMPRESSORS	ELECTRICAL			ARI MIN SEER/EER	MANUFACTURER & MODEL NO	MAX ALLOWABLE SIZE (IN)				REMARKS
						VOLTAGE/ PHASE	MCA	MOCP (AMPS)			LENGTH	WIDTH	HEIGHT	OPERATING WEIGHT (LBS)	
ACCU-1	ELEVATOR EQUIPMENT ROOM/DXFC-1	43.01	105	R-410A	1	460/3	8.6	15	13	CARRIER 38HDR048	45	20	44	340	INCLUDE LOW AMBIENT KIT, UNIT INSTALLED WITH DX FAN COIL/EVAPORATOR AT LOW POINT

(1) PROVIDE EMERGENCY POWER TO ACCU-1.

ELECTRIC UNIT HEATER SCHEDULE (EUH)

PLAN CODE	ELECTRICAL				CFM (ALT.)	MOUNTING	EAT (°F)	MANUFACTURER & MODEL NO.	REMARKS
	TOTAL KW	NO. OF STEPS	VOLTAGE & PHASE	FAN H.P.					
EUH-1	2.6	1	277/1	1/30	360	OVERHEAD BRACKET	60	CHROMALOX HVH-02-71-00	HORIZONTAL DISCHARGE
EUH-2	2.6	1	277/1	1/30	360	OVERHEAD BRACKET	60	CHROMALOX HVH-02-71-00	HORIZONTAL DISCHARGE

VARIABLE FREQUENCY DRIVE SCHEDULE (VFD)

PLAN CODE	SERVICE	DRIVE TYPE	BYPASS	ALTITUDE (FT)	MAX AMBIENT TEMPERATURE (°F)	CONTROL OF VFD			CONTROL SYS INTERFACE	REMARKS
						METHOD	MAXIMUM RESPONSE TIME	CONTROLLER INPUT		
VFD-1	SUPPLY FAN SF-1	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-2	SUPPLY FAN SF-2	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-3	SUPPLY FAN SF-3	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-4	RELIEF FAN RF-1	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-5	RELIEF FAN RF-2	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-6	CT-1 CELL 1	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	AH-1 LAT	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-7	CT-1 CELL-2	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	AH-1 LAT	LON	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-8	CT-1 CELL-3	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	AH-1 LAT	LON	KEYPAD, LOCKING DISCONNECT
VFD-9	PUMP P-3	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	KEYPAD, LOCKING DISCONNECT
VFD-10	PUMP P-5	PULSE WIDTH MODULATION	NONE	4,400	105	MANUAL	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	KEYPAD, LOCKING DISCONNECT
VFD-11	PUMP P-6	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	KEYPAD, LOCKING DISCONNECT
VFD-12	PUMP P-11	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	KEYPAD, LOCKING DISCONNECT
VFD-13	PUMP P-12	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DIFFERENTIAL PRESSURE	LON	KEYPAD, LOCKING DISCONNECT
VFD-14	FAN OAF-1	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	AIRFLOW MEASURING STATION	LON	KEYPAD, LOCKING DISCONNECT
VFD-15	LAB EXHAUST LEF-1	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	KEYPAD, LOCKING DISCONNECT
VFD-16	LAB EXHAUST LEF-2	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	KEYPAD, LOCKING DISCONNECT
VFD-17	LAB EXHAUST LEF-3	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	KEYPAD, LOCKING DISCONNECT
VFD-18	LAB EXHAUST LEF-4	PULSE WIDTH MODULATION	NONE	4,400	105	ATC	<150 MILLISECONDS	DUCT STATIC	LON	KEYPAD, LOCKING DISCONNECT

CABINET UNIT HEATER SCHEDULE (CUH)

PLAN CODE	CFM @ ELEV.	MIN. HEATING CAP. (MBH) (LOW SPD)	GPM	MAX. WPD (FT)	EWT/LWT (°F)	EAT (°F)	MOTOR		MOUNTING	CONFIGURATION	MAX. DIMENSIONS FACE/CABINET W X H X D (IN)	MANUFACTURER & MODEL NO	REMARKS
							HP	VOLTAGE & PHASE					
CUH-1	600	8.1	1.2	0.4	100/85	70	1/20	120/1	RECESSED	INVERTED FLOW	63 X 30/ 57 X 27 X 10	TRANE MODEL "N" SIZE 06	CABINET RECESSED INTO WALL, FLUSH FACE, INVERTED FLOW
CUH-2	600	8.1	1.2	0.4	100/85	70	1/20	120/1	RECESSED	INVERTED FLOW	63 X 30/ 57 X 27 X 10	TRANE MODEL "N" SIZE 06	CABINET RECESSED INTO WALL, FLUSH FACE, INVERTED FLOW

BAG-IN/BAG-OUT FILTER HOUSING (FH)

PLAN CODE	ASHRAE 52 EFFICIENCY	FILTER SIZE (IN)			NO OF FILTERS	MAX INITIAL PD (INWC)	MAX INITIAL PD (INWC)	MAX FACE VELOCITY (FPM)	MANUFACTURER & MODEL NO	REMARKS
		HEIGHT	WIDTH	THICK						
FH-1	PRE-FILTER MERV 8 (30%)	24	24	2	1	0.22	0.22	250	FLANDERS HOUSING: CSC BF SERIES PREFILTER AND ADSORBER: BF1-1H1W-2GG16-304-D3 HEPA: BF1-1H1W-GGF-304-D3	VERTICAL INSTALLATION WITH AIR ENTERING AT BOTTOM, LEAVING AT TOP.. INCLUDE 12" DIAMETER BUBBLE-TIGHT DAMPERS DBTM-FB-304-12 AT INLET AND OUTLET.
	CARBON ADSORBER -	24	24	16-3/4	1	0.32	0.32			
	FINAL FILTER MERV 14 (95%)	24	24	12	1	0.32	0.32			

JOB SITE ELEVATION = 4,700 FT
JOB SITE PRESSURE = 12.37 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

ALL MOTORS TO BE NEMA PREMIUM EFFICIENCY

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY: -
CHECKED BY: RLH
DFCM PROJECT NO.: 09020790
GSBS PROJECT NO.: 2009.053.02
ISSUED DATE: 05.07.2010

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

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AIR DEVICE SCHEDULE

PLAN CODE — GRILLE CFM

PLAN CODE	TYPE & DUTY	FACE SIZE	NECK SIZE	CEILING TYPE (2)	MAX. CFM	MAX. T.P. (IN. W.C.)	N.C. LEVEL MAX	MIN. THROW (FT) (T50)	MANUFACTURER & MODEL NO.	REMARKS
1	LINEAR-SUPPLY	24"L	12"□	MATCH CEILING	380	0.111	16	28	TITUS FL-30	2 @ 3" SLOT
2	LINEAR-SUPPLY	48"L	12"□	MATCH CEILING	630	0.076	19 (3)	36	TITUS FL-30	2 @ 3" SLOT
3	LINEAR-SUPPLY	48"L	10"□	MATCH CEILING	200	0.031	10	200	TITUS FL-30	1 @ 3" SLOT
4	LINEAR-SUPPLY	24"L	10"□	MATCH CEILING	320	0.11	35	15	TEMP0 L.D.	4 @ 1" SLOT
9	PERFORATED RETURN	24" X 24"	22" X 22"	MATCH CEILING	1200	0.05	17	-	TITUS PAR	-
10	PERFORATED RETURN	24" X 12"	22"X 10"	MATCH CEILING	600	0.06	10	-	TITUS PAR	-
12	PERFORATED EXHAUST GRILLE	24" X 12	22" x 10"	MATCH CEILING	600	0.06	-	-	TITUS PAR	-
14	PERFORATED EXHAUST GRILLE	10" X 10"	8" X 8"	MATCH CEILING	225	0.12	12	-	TITUS 8F	-
15	PERFORATED EXHAUST GRILLE	12" X 12"	10" X 10"	MATCH CEILING	360	0.12	14	-	TITUS 8F	-
16	PERFORATED EXHAUST GRILLE	14" X 14"	12" X 12"	MATCH CEILING	550	0.12	16	-	TITUS 8F	-
18	PERFORATED EXHAUST GRILLE	20" X 20"	18"X 18"	MATCH CEILING	1250	0.12	17	-	TITUS 8F	-
19	PERFORATED EXHAUST GRILLE	24" X 24"	22" X 22"	MATCH CEILING	1900	0.12	21	-	TITUS 8F	-
21	RADIAL BLADE DIFFUSER	12"□	8"□	SURFACE	210	0.14	29	8 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
22	RADIAL BLADE DIFFUSER	15"□	10"□	SURFACE	330	0.14	29	10 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
23	RADIAL BLADE DIFFUSER	18"□	12"□	SURFACE	470	0.14	30	12 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
24	RADIAL BLADE DIFFUSER	21"□	14"□	SURFACE	640	0.14	30	14 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
26	RADIAL BLADE DIFFUSER	24" X 24"	8"□	GRID	210	0.14	29	8 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
27	RADIAL BLADE DIFFUSER	24" X 24"	10"□	GRID	330	0.14	29	10 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
28	RADIAL BLADE DIFFUSER	24" X 24"	12"□	GRID	470	0.14	30	12 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
29	RADIAL BLADE DIFFUSER	24" X 24"	14"□	GRID	640	0.14	30	14 (1)	AIR DIFFUSION PRODUCTS, INC. DNR	-
30	BALL DIFFUSER	10"□	8"□	-	209	0.18	24	25	AIR CONCEPTS APLD-RR	-
31	BALL DIFFUSER	12"□	10"□	-	331	0.18	28	32	AIR CONCEPTS APLD-RR	-
32	BALL DIFFUSER	14"□	12"□	-	471	0.17	30	42	AIR CONCEPTS APLD-RR	-
33	RADIAL AIR DIFFUSER	24" X 24"	8"□	MATCH CEILING	300	0.080	29	6	TITUS TRITEC	2-WAY
34	RADIAL AIR DIFFUSER	24" X 24"	10"□	MATCH CEILING	475	0.093	31	7	TITUS TRITEC	2-WAY
35	RADIAL AIR DIFFUSER	24" X 48"	10"□	MATCH CEILING	500	0.097	26	9	TITUS TRICTEC	2-WAY
36	RADIAL AIR DIFFUSER	24" X 48"	12"□	MATCH CEILING	650	0.092	24	7	TITIUS TRITEC	2-WAY
37	RADIAL AIR DIFFUSER	24" X 24"	8"□	MATCH CEILING	325	0.094	29	4	TITUS TRITEC	1-WAY
38	RADIAL AIR DIFFUSER	24" X 24"	10"□	MATCH CEILING	450	0.081	28	7	TITUS TRITEC	1-WAY
39	RADIAL AIR DIFFUSER	24" X 48"	10"□	MATCH CEILING	500	0.092	24	3	TITUS TRITEC	1-WAY
40	RADIAL AIR DIFFUSER	24" X 48"	12"□	MATCH CEILING	750	0.114	31	5	TITUS TRITEC	1-WAY
41	SIDEWALL RETURN GRILLE	-	12" X 8"	DUCT MOUNTED	285	0.051	10	5	TITUS 350L	-
42	SIDEWALL RETURN GRILLE	-	18" X 16"	DUCT MOUNTED	900	0.046	19	-	TITUS 350L	-
43	SIDEWALL RETURN GRILLE	-	42" X 24"	DUCT MOUNTED	2700	0.029	20	-	TITUS 350L	-
44	SIDEWALL SUPPLY GRILLE	-	30" X 12"	DUCT MOUNTED	1375	0.022	26	-	TITUS 300FL	-
45	SIDEWALL SUPPLY GRILLE	-	12" X 12"	DUCT MOUNTED	525	0.022	22	-	TITUS 300FL	-

(1) RECOMMENDED MIN. DISTANCE BETWEEN DIFFUSERS IN 9' CEILING.
(2) VERIFY FRAME TYPE OF ALL AIR DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN BEFORE ORDERING.
(3) PROVIDE ACOUSTICALLY LINED PLENUM.

JOB SITE ELEVATION = 4,700 FT
JOB SITE PRESSURE = 12.37 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

ALL MOTORS TO BE NEMA PREMIUM EFFICIENCY

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

MH604

POPE AIRFLOW TABLE FOR ROOMS SERVED BY LAB VALVES

ROOM NUMBER	ROOM NAME	ROOM VOLUME CF	AIRCUITY YES/NO	AIRCUITY MINIMUM ACH	RFD OCCUPIED ACH	RFD UNNOCUPIED ACH	DESIGN SUPPLY AIRFLOW CFM	DESIGN EXHAUST AIRFLOW CFM	DESIGN SUPPLY EXHAUST OFFSET CFM
62	CELL/PLANT CULTURE LAB II	11528	Y	2	6	4	3000	3350	350
064D	EQUIP	2538	Y	2	6	4	950	1065	115
064E	GROWTH CHAMBERS	969	N	NA	6	4	450	515	65
030H	Space	945	N	NA	6	4	150	185	35
064B	MICROSCOPY ROOM	969	N	NA	6	4	150	165	15
064A	PREP & STORAGE	2812	Y	2	6	4	550	610	60
65	LN2 STORAGE	999	N	NA	6	4	100	120	20
66	CELL/PLANT CULTURE LAB I	11611	Y	2	6	4	3060	3380	320
069A	PREP ROOM	3209	Y	2	6	4	500	560	60
69	INTRO TO BIOTECH LAB	11024	Y	2	6	4	2040	2200	160
071B	EQUIPMENT ROOM	1285	N	NA	6	4	375	430	55
071A	INSTRUMENT ROOM	1396	N	NA	6	4	275	330	55
70	DIGITAL IMAGING	981	N	NA	6	4	200	235	35
71	MICROSCOPY RESEARCH	6161	Y	2	6	4	1020	1100	80
34	SAMPLE PREP	4424	Y	2	6	4	470	520	50
034A	ROCK PREP	947	N	NA	6	4	170	190	20
034B	ROCK CRUSHING/ GRINDING	1099	N	NA	6	4	280	310	30
034C	POLISHING	1631	N	NA	6	4	335	370	35
48	PRE-HEALTH / MICRO TEACHING LAB	11251	Y	2	6	4	2580	2850	270
51	GLASS WASHING / AUTOCLAVE ROOM	4527	Y	2	6	4	1000	1100	100
048A	PREP ROOM	5501	Y	2	6	4	1400	1570	170
53	INTRO TO MICRO TEACHING LAB	11241	Y	2	6	4	3000	3290	290
57	PROTEIN METHODS LAB	11066	Y	2	6	4	2100	2320	220
057B	OFFICE	1159	N	NA	NA	NA	75	TRANSFER	
057A	PROTEIN PREP	2764	Y	2	6	4	450	505	55
55	BIOTECH STORAGE	1795	N	NA	6	4	200	225	25
052B	OFFICE	1161	N	NA	NA	NA	75	TRANSFER	
052A	PROTEIN PREP	2903	Y	2	6	4	420	485	65
52	ADV/BASIC NUCLEIC ACID LAB	11333	Y	2	6	4	1860	2050	190
49	ADV/ GEN. MICRO TEACHING LAB	11295	Y	2	6	4	2080	2380	300
068A	OFFICE	1159	N	NA	NA	NA	75	TRANSFER	
68	EM PREP/ ENTRY	4714	Y	2	6	4	700	780	80
068H	CONFOCAL MICROSCOPY	977	N	NA	6	4	375	430	55
068G	FLOURESCENT MICROSCOPE	930	N	NA	6	4	125	125	0
068E	INSTRUMENT ROOM (SEM)	1871	N	NA	6	4	425	505	80
068D	INSTRUMENT ROOM	1150	N	NA	6	4	375	420	45
068C	INSTRUMENT ROOM	1148	N	NA	6	4	375	420	45
068B	INSTRUMENT ROOM (TEM)	2466	Y	2	6	4	425	495	70
068F	EQUIPMENT ROOM	3272	Y	2	6	4	1100	1240	140
044A	TISSUE CULTURE	1023	N	NA	6	4	300	345	45
044B	TISSUE CULTURE	1021	N	NA	6	4	300	340	40
39	BIOCHEM RESEARCH	3581	Y	2	6	4	750	825	75
37	BACTERIA RESEARCH	3521	Y	2	6	4	760	840	80
44	VIROLOGY TEACHING LAB	8244	Y	2	NA	NA	1600	1775	175
047B	STORAGE ROOM	1140	N	NA	6	4	500	550	50
047D	EQUIP. ROOM	1168	N	NA	NA	NA	600	660	60
047A	TISSUE CULTURE	1150	N	NA	6	4	300	410	110
047C	TISSUE CULTURE	1176	N	NA	6	4	300	425	125
167	BIOTECH RESEARCH LAB	11351	Y	2	6	4	2760	3040	280
167C	INSTRUMENT ROOM	3836	Y	2	6	4	600	660	60
070A	BIOINFORMATICS	1737	N	NA	NA	NA	600	660	60
167B	EQUIPMENT ROOM	2837	Y	2	6	4	1500	1650	150
167A	TISSUE CULTURE	1823	N	NA	6	4	575	640	65
170	MOLECULAR UNDERGRAD RESEARCH	11535	Y	2	6	4	2250	2450	200
171	ZOOLOGY SCIENCE METHODS LAB	11279	Y	2	6	4	1950	2140	190
173A	SPECIMEN STORAGE ROOM	7509	Y	2	6	4	860	950	90
173	ZOOLOGY WET / DRY LAB	5802	Y	2	6	4	750	900	150
174	ZOOLOGY PREP ROOM	6024	Y	2	6	4	1005	1250	245
174A	OFFICE	1159	N	NA	NA	NA	100	TRANSFER	
176	ZOOLOGY TEACHING LAB	10187	Y	2	6	4	1740	1900	160
140	GENETICS / MOLECULAR TEACHING LAB	11256	Y	2	6	4	2500	2800	300
143	PREP ROOM	5107	Y	2	6	4	1130	1480	350
141	STERIL ALCOVE	1140	N	NA	10	4	1500		
147	CELL BIOLOGY TEACHING LAB	11311	Y	2	6	4	2550	2800	250
148F	WORK ROOM	1905	N	NA	12	6	900	990	90
148E	PROCEDURE ROOM	1256	N	NA	12	6	300	330	30
148D	FEED/ BEDDING	937	N	NA	12	6	475	525	50
148C	HOLDING ROOM #2	1486	N	NA	12	6	500	550	50
148B	HOLDING ROOM #1	1805	N	NA	12	6	425	475	50
148A	NECROPSY ROOM	1671	N	NA	12	6	375	415	40
152	COLLEGE BIOLOGY I LAB	11247	Y	2	6	4	2320	2540	220
157	BIOLOGY PREP ROOM	5499	Y	2	6	4	1200	1400	200
156	RADIOISOTOPE LAB	1018	N	NA	6	4	910	1000	90
159	OFFICE	1155	N	NA	NA	NA	100	TRANSFER	
158	OFFICE	1171	N	NA	NA	NA	100	TRANSFER	
160	GENERAL BIOLOGY TEACHING LAB	11203	Y	2	6	4	2730	3000	270
166	BOTANY UNDERGRAD RESEARCH LAB	7875	Y	2	6	4	1710	1875	165
169	PHYSIOLOGY UNDERGRAD RESEARCH LAB	7800	Y	2	6	4	1800	1980	180
161	EQUIP. ENTRY	1452	N	NA	6	4	425	TRANSFER	
161A	INST. ROOM	2484	Y	2	6	4	900	1000	100
154	COLLEGE BIOLOGY II LAB	11562	Y	2	6	4	1740	1930	190
153	PREP ROOM	2965	Y	2	6	4	450	500	50
151	ZOOLOGY RESEARCH LAB	5231	Y	2	6	4	1000	1100	100
271	BOTANY UNDERGRAD (DIRTY)	5692	Y	2	6	4	1260	1400	140
270	OFFICE	1113	N	NA	NA	NA	100	TRANSFER	
269	STERIL ALCOVE	1215	N	NA	10	4	1000	1100	100
272	BOTANY GROWTH CHAMBERS	2206	N	NA	6	4	900	1000	100
273	BOTANY TEACHING LAB	11354	Y	2	6	4	2280	2650	370
274	PREP	8563	Y	2	6	4	1600	1825	225
273A	PLANT	1161	N	NA	6	4	125	TRANSFER	
274A	OFFICE	1168	N	NA	NA	NA	75	TRANSFER	
275	BOTANY TEACHING LAB	11278	Y	2	6	4	2280	2500	220
277	HERBARIUM + CURATOR	11574	Y	2	6	4	1320	1450	130
277A	PREP ROOM	4267	Y	2	6	4	855	1150	295
277B	OFFICE	1110	N	NA	NA	NA	225	TRANSFER	
278	PLANT TEAM ROOM	5771	Y	2	6	4	800	880	80
274V	STERILE ALCOVE	489	N	NA	NA	NA	0	TRANSFER	
247	DRY TEACHING LAB	11905	Y	2	6	4	2280	2500	220
248	ADV. CADAVER TEACHING LAB	11284	Y	6	15	6	3240	3530	290
251	WET TEACHING PREP ROOM	5108	Y	2	15	6	1500	1650	150
249	OFFICE	1152	N	NA	NA	NA	150	TRANSFER	
250	INSTRUCTOR	1138	N	NA	NA	NA	75	TRANSFER	
255	ADV. CADAVER TEACHING LAB	11131	Y	6	15	6	3240	3530	290
257	DRY TEACHING LAB	11494	Y	2	6	4	2250	2500	250
258	PHYSIOLOGY TEACHING LAB	11251	Y	2	6	4	2310	2550	240
258A	PHYSILOGY PREP LAB	5867	Y	2	6	4	1170	1275	105
262	PHYSIOLOGY TEACHING LAB	11203	Y	2	6	4	2700	3000	300

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

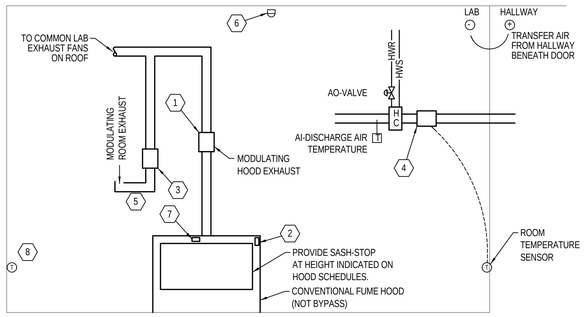
Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

LABORATORY AIRFLOW DATA

CONSTRUCTION DOCUMENTS

MH801



KEYED NOTES

1. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN FUME HOOD EXHAUST DUCT. VALVE TO BE CONTROLLED BY ONE PHOENIX 630 SERIES FUME HOOD MONITOR. PROVIDE WITH ALL NECESSARY CONTROLLERS.
2. MOUNT PHOENIX 630 SERIES FUME HOOD MONITOR IN FACE OF FUME HOOD AND INSTALL SASH POSITION SENSOR.
3. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN GENERAL ROOM EXHAUST DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS.
4. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN SUPPLY AIR DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS. NOTE THAT REHEAT COIL IS NOT PART OF THE CELERIS AIR VALVE, AND WILL BE PROVIDED BY THE DIVISION 232113 CONTRACTOR.
5. AIR SAMPLE INLET FOR AIRCUITY AIR MONITORING SYSTEM TO SAMPLE AIR FROM THE GENERAL ROOM EXHAUST DUCT. ROUTE AIR SAMPLE TUBING BACK TO AIR MONITORING DEVICE.
6. MONITOR DEDICATED DRY CONTACT ON OCCUPANT SENSOR CONTROLLER IN ROOM TO DETERMINE IF ROOM IS OCCUPIED OR UNOCCUPIED. OCCUPANCY STATUS IS USED TO DETERMINE THE SPACE TEMPERATURE SETPOINT AND MINIMUM ALLOWABLE AIR EXCHANGE RATE IN THE LAB. OCCUPANT SENSOR TO BE PROVIDED BY THE DIVISION 26 CONTRACTOR.
7. PHOENIX ZPS 200 SERIES ZONE PRESENCE SENSOR MOUNTED ON FUME HOOD.
8. MANUAL PUSH-BUTTON TO INDEX ROOM TO DESIGN AIRFLOW RATE FOR 15 MINUTES. LOCATE NEXT TO DOOR.

DESIGN INTENT

A) THE LABORATORY VENTILATION AND TEMPERATURE CONTROLS OPERATE IN THREE MODES: OCCUPIED, OCCUPIED STANDBY, AND UNOCCUPIED.
- OCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS. CONTROLS SATISFY OCCUPIED SPACE TEMPERATURE SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE.
- OCCUPIED STANDBY MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY STANDBY SPACE TEMPERATURE OCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS ROOM OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.
- UNOCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED UNOCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY SPACE TEMPERATURE UNOCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO UNOCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.

B) MINIMUM VENTILATION RATE IS EQUAL TO VALUES INDICATED IN TABLES ON SHEET MH801. AIRCUITY SYSTEM INCREASES AND DECREASES MINIMUM VENTILATION RATE BASED ON MATERIALS DETECTED IN THE AIR. IN THE EVENT THE AIRCUITY SYSTEM IS NOT PART OF THE PROJECT, MINIMUM VENTILATION RATES ARE FIXED VALUES DEPENDING ON MODES AS DESCRIBED ABOVE IN PARAGRAPH A.

C) THE LAB VENTILATION SYSTEM SHALL EXHAUST MORE AIR FROM THE LAB THAN IS SUPPLIED, BASED ON A CONSTANT OFFSET AS INDICATED ON SHEET MH801. THIS CONSTANT OFFSET SHALL BE MAINTAINED IN ALL THREE MODES DESCRIBED ABOVE IN PARAGRAPH A.

D) SUPPLY AIR FLOW RATES SHALL MODULATE TO SATISFY SPACE TEMPERATURE SETPOINT, AND GENERAL ROOM EXHAUST VALVE SHALL MODULATE TO MAINTAIN SUPPLY/EXHAUST OFFSET BASED ON SUPPLY AIR FLOW RATE AND EXHAUST RATE FROM FUME HOOD.

E) IF SPACE TEMPERATURE EXCEEDS SETPOINT, SUPPLY AIR VALVE SHALL MODULATE AIRFLOW TO SATISFY SPACE TEMPERATURE SETPOINT. IF SPACE TEMPERATURE IS BELOW COOLING SETPOINT, VALVE MODULATES TO MINIMUM VENTILATION RATE. IF SPACE TEMPERATURE CONTINUES TO DROP BELOW SPACE HEATING SETPOINT, SIMULTANEOUSLY MODULATE REHEAT COIL VALVE AND SUPPLY AIR VALVE TO SATISFY SPACE TEMPERATURE SETPOINT. REVERSE SEQUENCE IF SPACE TEMPERATURE EXCEEDS SETPOINT.

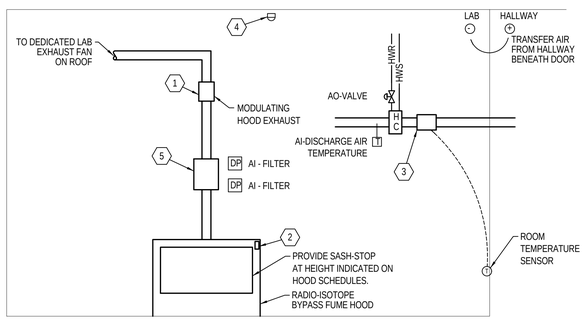
F) FUME HOOD EXHAUST VALVE SHALL MODULATE AIRFLOW TO MAINTAIN A FACE VELOCITY OF 100 FEET PER MINUTE (+/-5%) ACROSS FUME HOOD SASH OPENING AT ALL TIMES THE HOOD ZONE PRESENCE SENSOR DETECTS PEOPLE AT THE HOOD. FACE VELOCITY CAN BE REDUCED TO 80 FEET PER MINUTE IF NO PEOPLE ARE DETECTED AT THE HOOD DURING UNOCCUPIED MODE.

G) FUME HOOD MONITOR SHALL GENERATE A LOCAL AUDIBLE ALARM IF SASH IS RAISED ABOVE SASH STOP HEIGHT.

H) MANUAL PUSH-BUTTOM AT DOOR INDEXES PHOENIX VALVES TO DESIGN AIRFLOW RATE FOR 15 MINUTES WHEN PUSHED.

I) INADEQUATE DIFFERENTIAL PRESSURE ACROSS PHOENIX VALVES RESULTS IN AN ALARM ON CONTROL SYSTEM.

1 FUME HOOD LAB CONTROLS



KEYED NOTES

1. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN FUME HOOD EXHAUST DUCT. VALVE TO MODULATE POSITION TO MAINTAIN 100 FPM FACE VELOCITY AT BYPASS HOOD. PROVIDE WITH ALL NECESSARY CONTROLLERS.
2. MOUNT ANAMOMETER-BASED FUME HOOD MONITOR IN FACE OF FUME HOOD AND INSTALL SASH POSITION SENSOR. SYSTEM MUST INDICATE FACE VELOCITY AT BYPASS HOOD.
3. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN SUPPLY AIR DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS. NOTE THAT REHEAT COIL IS NOT PART OF THE CELERIS AIR VALVE, AND WILL BE PROVIDED BY THE DIVISION 232113 CONTRACTOR.
4. MONITOR DEDICATED DRY CONTACT ON OCCUPANT SENSOR CONTROLLER IN ROOM TO DETERMINE IF ROOM IS OCCUPIED OR UNOCCUPIED. OCCUPANCY STATUS IS USED TO DETERMINE THE SPACE TEMPERATURE SETPOINT. THIS ROOM OPERATES AT A CONSTANT VENTILATION RATE. OCCUPANT SENSOR TO BE PROVIDED BY THE DIVISION 26 CONTRACTOR.
5. MONITOR DIFFERENTIAL PRESSURE ACROSS EACH FILTER BANK. TOTAL OF TWO FILTER BANKS.

DESIGN INTENT

A) THE AIRFLOW THROUGH THE BYPASS HOOD IN THIS ROOM IS CONSTANT. THE HOOD EXHAUST RATE EXCEEDS THE AMOUNT OF SUPPLY AIR REQUIRED TO HEAT AND COOL THE ROOM, SO THE SUPPLY AIR RATE TO THE ROOM IS CONSTANT DURING ALL OCCUPIED AND UNOCCUPIED MODES. THE AIRCUITY SYSTEM DOES NOT MONITOR THIS ROOM.

B) LABORATORY TEMPERATURE CONTROLS OPERATE IN THREE MODES: OCCUPIED, OCCUPIED STANDBY, AND UNOCCUPIED.
- OCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS. CONTROLS SATISFY OCCUPIED SPACE TEMPERATURE SETPOINT.
- OCCUPIED STANDBY MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY STANDBY SPACE TEMPERATURE SETPOINT. MODE INDEXES TO OCCUPIED AS SOON AS ROOM OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.
- UNOCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED UNOCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY SPACE TEMPERATURE UNOCCUPIED SETPOINT. MODE INDEXES TO OCCUPIED AS SOON AS OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.

B) THE LAB VENTILATION SYSTEM SHALL EXHAUST MORE AIR FROM THE LAB THAN IS SUPPLIED, BASED ON A CONSTANT OFFSET AS INDICATED ON SHEET MH801. THIS CONSTANT OFFSET SHALL BE MAINTAINED IN ALL THREE MODES DESCRIBED ABOVE IN PARAGRAPH A.

C) THE REHEAT COIL CONTROL VALVE SHALL MODULATE TO SATISFY SPACE TEMPERATURE SETPOINT.

D) FUME HOOD EXHAUST VALVE SHALL MODULATE AIRFLOW TO MAINTAIN A FACE VELOCITY OF 100 FEET PER MINUTE (+/-5%) ACROSS FUME HOOD SASH OPENING AT ALL TIMES. THE AMOUNT OF AIR ACROSS THE BYPASS OPENING IS NOT LINEARLY PROPORTIONAL TO SASH POSITION, SO THE ANAMOMETER-STYLE FUME HOOD MONITOR IS USED TO CONTROL VALVE POSITION TO MAINTAIN FACE VELOCITY.

E) FUME HOOD MONITOR SHALL GENERATE A LOCAL AUDIBLE ALARM IF SASH IS RAISED ABOVE SASH STOP HEIGHT.

F) MONITOR PRESSURE DROP ACROSS PRE-FILTER AND ACROSS HEPA FILTER WITH A DIFFERENTIAL PRESSURE SENSOR PER FILTER BANK. GENERATE A FILTER CHANGE ALARM WHEN DIFFERENTIAL PRESSURE EXCEEDS SETPOINT.

G) INADEQUATE DIFFERENTIAL PRESSURE ACROSS PHOENIX VALVES RESULTS IN AN ALARM ON CONTROL SYSTEM.

2 RADIO ISOTOP LAB CONTROLS

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LAB CONTROLS

CONSTRUCTION DOCUMENTS

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
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244 West 300 North Suite 200
Salt Lake City, Utah 84103
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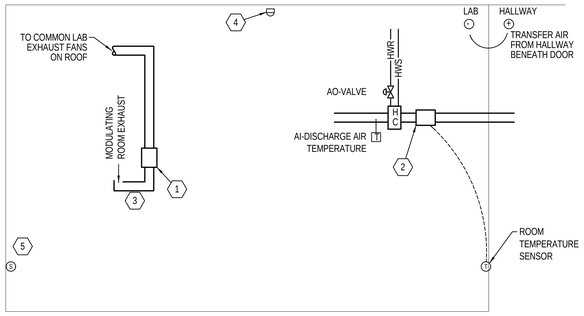


KEYED NOTES

1. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN GENERAL ROOM EXHAUST DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS.
2. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN SUPPLY AIR DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS. NOTE THAT REHEAT COIL IS NOT PART OF THE CELERIS AIR VALVE, AND WILL BE PROVIDED BY THE DIVISION 232113 CONTRACTOR.
3. AIR SAMPLE INLET FOR AIRCUITY AIR MONITORING SYSTEM TO SAMPLE AIR FROM THE GENERAL ROOM EXHAUST DUCT. ROUTE AIR SAMPLE TUBING BACK TO AIR MONITORING DEVICE.
4. MONITOR DEDICATED DRY CONTACT ON OCCUPANT SENSOR CONTROLLER IN ROOM TO DETERMINE IF ROOM IS OCCUPIED OR UNOCCUPIED. OCCUPANCY STATUS IS USED TO DETERMINE THE SPACE TEMPERATURE SETPOINT AND MINIMUM ALLOWABLE AIR EXCHANGE RATE IN THE LAB. OCCUPANT SENSOR TO BE PROVIDED BY THE DIVISION 26 CONTRACTOR.
5. MANUAL PUSH-BUTTON TO INDEX ROOM TO DESIGN AIRFLOW RATE FOR 15 MINUTES. LOCATE NEXT TO DOOR.

DESIGN INTENT

A) THE LABORATORY VENTILATION AND TEMPERATURE CONTROLS OPERATE IN THREE MODES: OCCUPIED, OCCUPIED STANDBY, AND UNOCCUPIED.
- OCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS. CONTROLS SATISFY OCCUPIED SPACE TEMPERATURE SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE.
- OCCUPIED STANDBY MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY STANDBY SPACE TEMPERATURE OCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS ROOM OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.
- UNOCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED UNOCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY SPACE TEMPERATURE UNOCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO UNOCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.

B) MINIMUM VENTILATION RATE IS EQUAL TO VALUES INDICATED IN TABLES ON SHEET MH801. AIRCUITY SYSTEM INCREASES AND DECREASES MINIMUM VENTILATION RATE BASED ON MATERIALS DETECTED IN THE AIR. IN THE EVENT THE AIRCUITY SYSTEM IS NOT PART OF THE PROJECT, MINIMUM VENTILATION RATES ARE FIXED VALUES DEPENDING ON MODES AS DESCRIBED ABOVE IN PARAGRAPH A.

C) THE LAB VENTILATION SYSTEM SHALL EXHAUST MORE AIR FROM THE LAB THAN IS SUPPLIED, BASED ON A CONSTANT OFFSET AS INDICATED ON SHEET MH801. THIS CONSTANT OFFSET SHALL BE MAINTAINED IN ALL THREE MODES DESCRIBED ABOVE IN PARAGRAPH A.

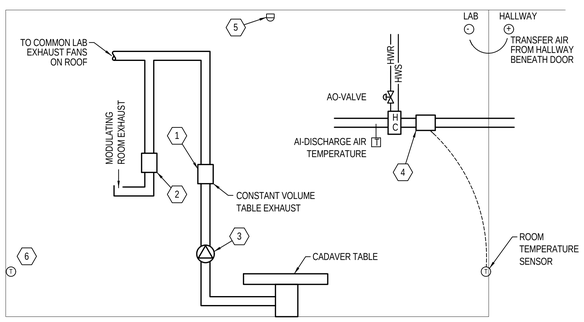
D) SUPPLY AIR FLOW RATES SHALL MODULATE TO SATISFY SPACE TEMPERATURE SETPOINT, AND GENERAL ROOM EXHAUST VALVE SHALL MODULATE TO MAINTAIN SUPPLY/EXHAUST OFFSET BASED ON SUPPLY AIR FLOW RATE.

E) IF SPACE TEMPERATURE EXCEEDS SETPOINT, SUPPLY AIR VALVE SHALL MODULATE AIRFLOW TO SATISFY SPACE TEMPERATURE SETPOINT. IF SPACE TEMPERATURE IS BELOW COOLING SETPOINT, VALVE MODULATES TO MINIMUM VENTILATION RATE. IF SPACE TEMPERATURE CONTINUES TO DROP BELOW SPACE HEATING SETPOINT, SIMULTANEOUSLY MODULATE REHEAT COIL VALVE AND SUPPLY AIR VALVE TO SATISFY SPACE TEMPERATURE SETPOINT. REVERSE SEQUENCE IF SPACE TEMPERATURE EXCEEDS SETPOINT.

F) MANUAL PUSH-BUTTOM AT DOOR INDEXES PHOENIX VALVES TO DESIGN AIRFLOW RATE FOR 15 MINUTES WHEN PUSHED.

G) INADEQUATE DIFFERENTIAL PRESSURE ACROSS PHOENIX VALVES RESULTS IN AN ALARM ON THE CONTROL SYSTEM.

1 LAB (WITHOUT HOOD) CONTROLS



KEYED NOTES

1. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN EXHAUST DUCT THAT SERVES THREE CADAVER TABLES. VALVE TO MODULATE POSITION TO MAINTAIN 1,500 CFM EXHAUST FLOW RATE. PROVIDE WITH ALL NECESSARY CONTROLLERS.
2. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN GENERAL ROOM EXHAUST DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS.
3. CONSTANT SPEED BOOSTER FAN OPERATES WHEN ROOM IS OCCUPIED. PROVIDE NECESSARY CONTACTORS.
4. PHOENIX CELERIS ACCEL II ELECTRONIC AIRFLOW CONTROL VALVE IN SUPPLY AIR DUCT. PROVIDE WITH ALL NECESSARY CONTROLLERS. NOTE THAT REHEAT COIL IS NOT PART OF THE CELERIS AIR VALVE, AND WILL BE PROVIDED BY THE DIVISION 232113 CONTRACTOR.
5. MONITOR DEDICATED DRY CONTACT ON OCCUPANT SENSOR CONTROLLER IN ROOM TO DETERMINE IF ROOM IS OCCUPIED OR UNOCCUPIED. OCCUPANCY STATUS IS USED TO DETERMINE THE SPACE TEMPERATURE SETPOINT AND WHEN TO START BOOSTER FANS IN TABLE EXHAUST DUCTS. OCCUPANT SENSOR TO BE PROVIDED BY THE DIVISION 26 CONTRACTOR.
6. MANUAL PUSH-BUTTON TO INDEX ROOM TO DESIGN AIRLOW RATE FOR 15 MINUTES. LOCATE NEXT TO DOOR.

DESIGN INTENT

A) THE CADAVER ROOM VENTILATION AND TEMPERATURE CONTROLS OPERATE IN THREE MODES: OCCUPIED, OCCUPIED STANDBY, AND UNOCCUPIED.
- OCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS. CONTROLS SATISFY OCCUPIED SPACE TEMPERATURE SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE.
- OCCUPIED STANDBY MODE IS DEFINED AS OCCURRING DURING PROGRAMMED OCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY STANDBY SPACE TEMPERATURE OCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO OCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS ROOM OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.
- UNOCCUPIED MODE IS DEFINED AS OCCURRING DURING PROGRAMMED UNOCCUPIED PERIOD AND NO OCCUPANTS ARE DETECTED BY THE DIVISION 26 MOTION SENSORS FOR A PERIOD OF 15 MINUTES. CONTROLS SATISFY SPACE TEMPERATURE UNOCCUPIED SETPOINT, AND MINIMUM VENTILATION RATE IS EQUAL TO UNOCCUPIED VALUE. MODE INDEXES TO OCCUPIED AS SOON AS OCCUPANTS ARE DETECTED BY DIVISION 26 MOTION SENSORS.

B) MINIMUM VENTILATION RATE IS EQUAL TO VALUES INDICATED IN TABLES ON SHEET MH801. THE AIRCUITY SYSTEM DOES NOT MONITOR AIR QUALITY IN THIS ROOM.

C) THE LAB VENTILATION SYSTEM SHALL EXHAUST MORE AIR FROM THE LAB THAN IS SUPPLIED, BASED ON A CONSTANT OFFSET AS INDICATED ON SHEET MH801. THIS CONSTANT OFFSET SHALL BE MAINTAINED IN ALL THREE MODES DESCRIBED ABOVE IN PARAGRAPH A.

D) SUPPLY AIR FLOW RATES SHALL MODULATE TO SATISFY SPACE TEMPERATURE SETPOINT, AND GENERAL ROOM EXHAUST VALVE SHALL MODULATE TO MAINTAIN SUPPLY/EXHAUST OFFSET BASED ON SUPPLY AIR FLOW RATE.

E) IF SPACE TEMPERATURE EXCEEDS SETPOINT, SUPPLY AIR VALVE SHALL MODULATE AIRFLOW TO SATISFY SPACE TEMPERATURE SETPOINT. IF SPACE TEMPERATURE IS BELOW COOLING SETPOINT, VALVE MODULATES TO MINIMUM VENTILATION RATE. IF SPACE TEMPERATURE CONTINUES TO DROP BELOW SPACE HEATING SETPOINT, SIMULTANEOUSLY MODULATE REHEAT COIL VALVE AND SUPPLY AIR VALVE TO SATISFY SPACE TEMPERATURE SETPOINT. REVERSE SEQUENCE IF SPACE TEMPERATURE EXCEEDS SETPOINT.

F) DURING OCCUPIED PERIODS, THE BOOSTER FAN IN THE TABLE EXHAUST DUCT SHALL OPERATE. BOOSTER FAN SHALL TURN OFF WHEN ROOM IS NOT OCCUPIED.

G) MANUAL PUSH-BUTTOM AT DOOR INDEXES PHOENIX VALVES TO DESIGN AIRFLOW RATE FOR 15 MINUTES WHEN PUSHED.

H) INADEQUATE DIFFERENTIAL PRESSURE ACROSS PHOENIX VALVES RESULTS IN AN ALARM ON THE CONTROL SYSTEM.

2 CADAVER ROOM CONTROLS

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800 West University Parkway
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LAB CONTROLS

CONSTRUCTION DOCUMENTS

MI202

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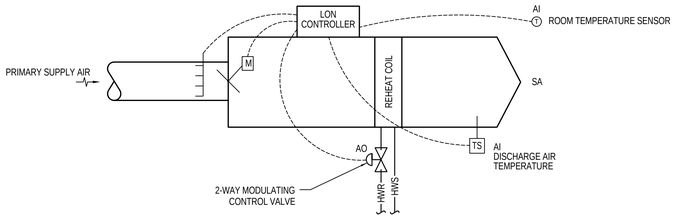
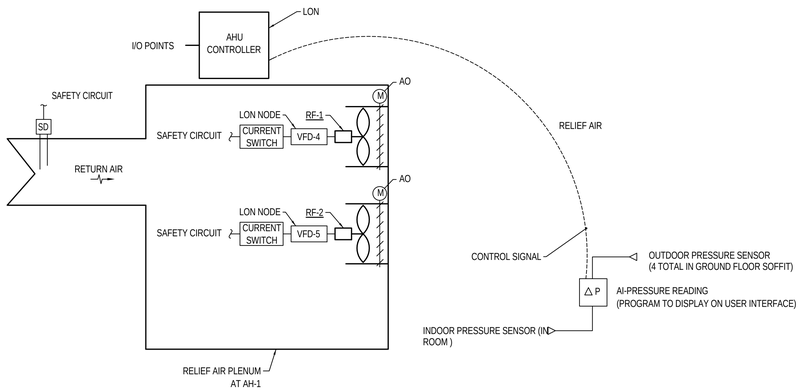
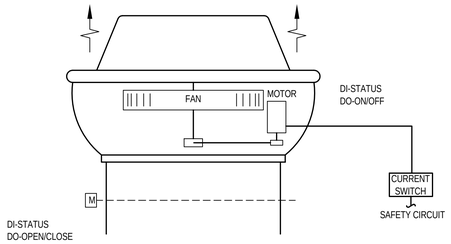


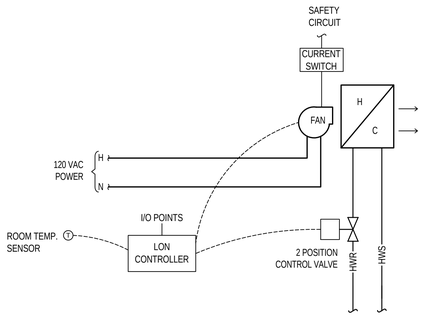
VAV REHEAT CONTROL DIAGRAM



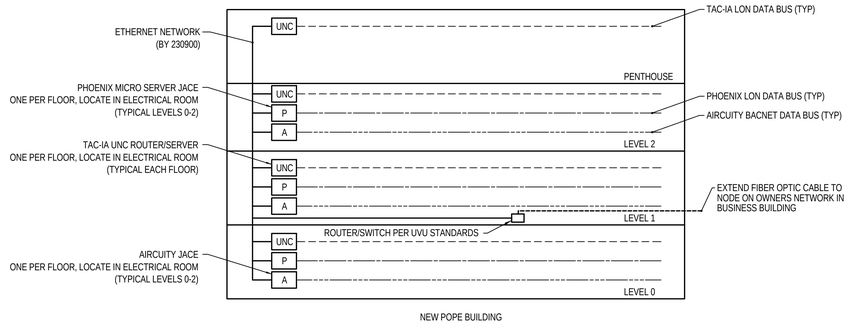
RELIEF FAN/ BUILDING PRESSURE CONTROL DIAGRAM



EXHAUST FAN CONTROL SCHEMATIC



UNIT HEATER/CABINET UNIT HEATER CONTROL DIAGRAM



BUILDING CONTROL SYSTEM NETWORK SCHEMATIC

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
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MECHANICAL CONTROL SCHEMATICS

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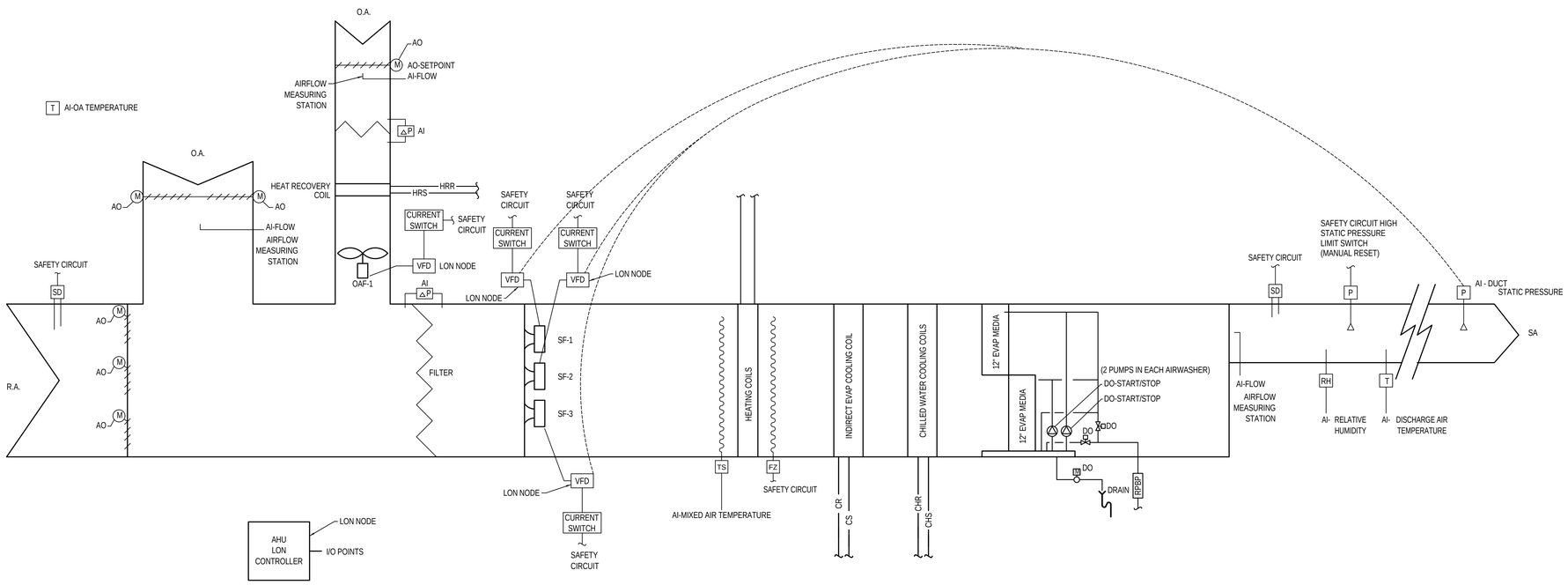
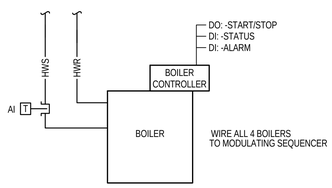
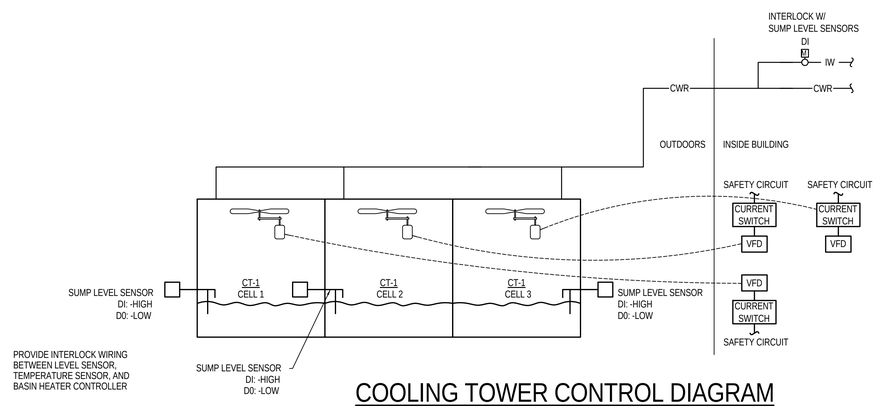


AIR HANDLER AH-1 CONTROL DIAGRAM



BOILER CONTROL DIAGRAM



COOLING TOWER CONTROL DIAGRAM

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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800 West University Parkway
Orem, Utah 84058

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
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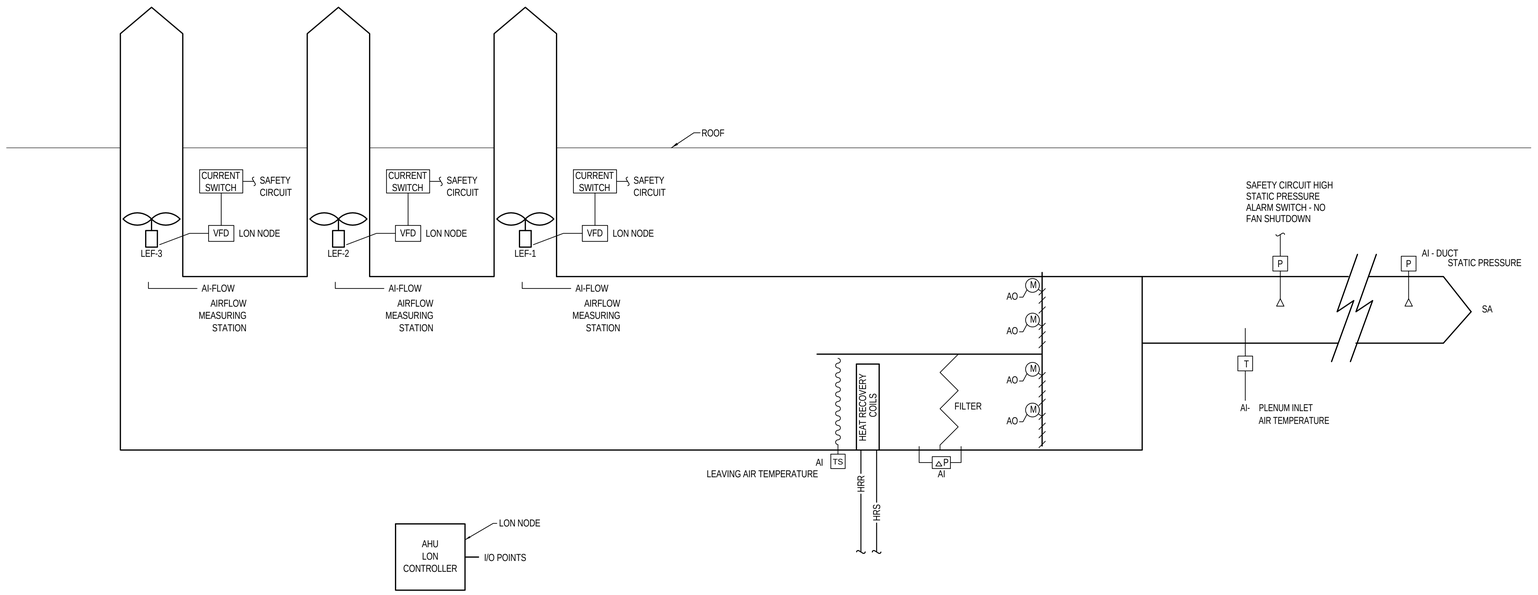
Phone: (801) 322-2400 / Fax: (801) 322-2416



LAB EXHAUST CONTROL DIAGRAM

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MECHANICAL CONTROL SCHEMATICS

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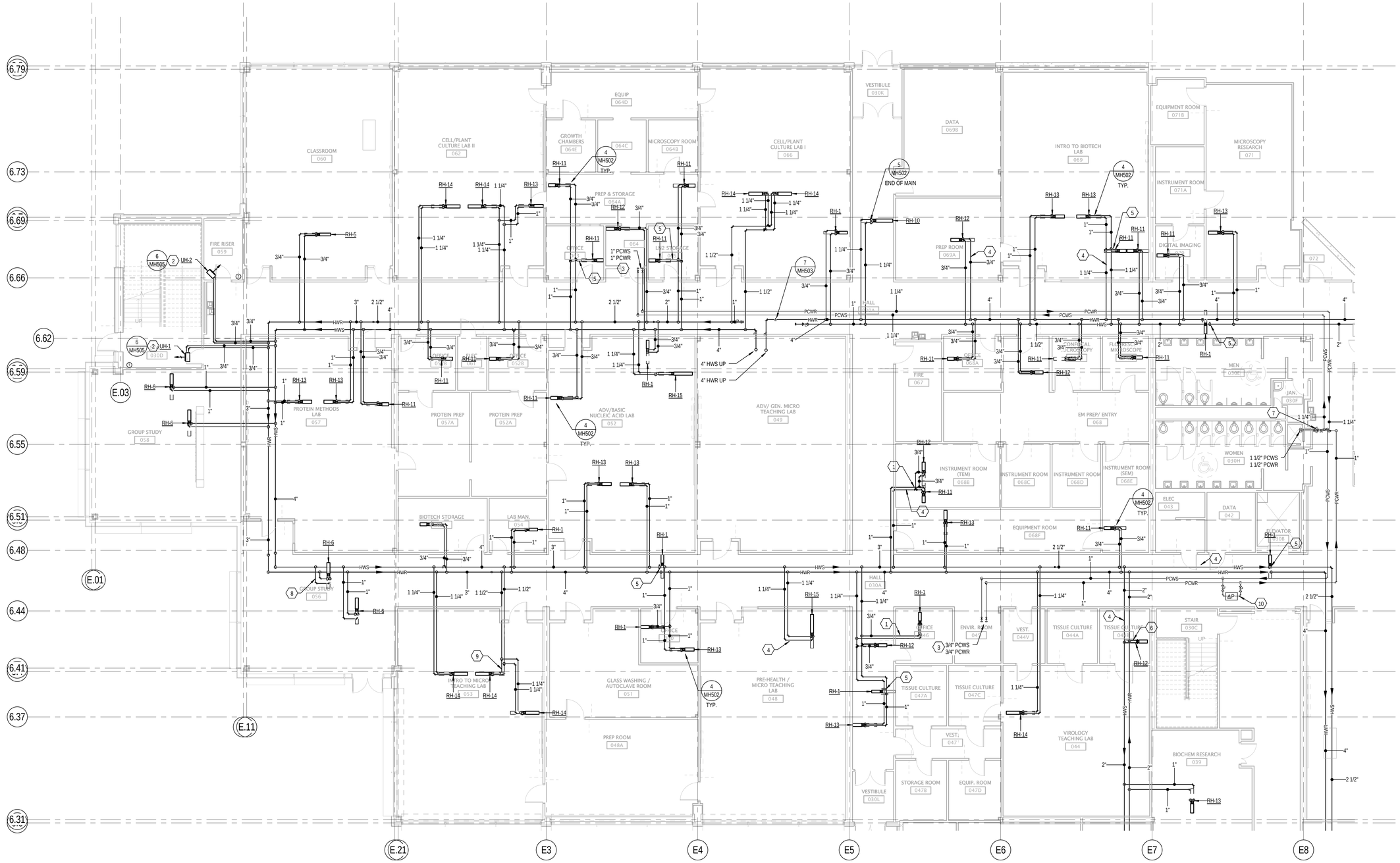

1 LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA A

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

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

KEYED NOTES

1 ROUTE HOT WATER SUPPLY AND RETURN PIPE UP HIGH, ABOVE CONTROLS MAINTENANCE/CLEARANCE SPACE FOR VAV BOX OR LAB SUPPLY AIR VALVE.
2 INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STURCTURE.
3 DROP PROCESS PIPING TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES.
4 MAINTENANCE CLEARANCE AREA. CONTROLS FOR VAV BOX OR AIRFLOW CONTROL VALVE TO BE INSTALLED ON THIS SIDE OF BOX. COORDINATE WITH ALL TRADES TO ENSURE ALL CONDUIT, PIPIING, AND DUCTWORK ARTE INSTALLED OUTSIDE THIS AREA OR ABOVE AIRFLOW CONTROL VALVE.
5 PROVIDE 3/4" HEATING WATER SUPPLY AND RETURN TO COIL.
6 PROVIDE 3/4" HEATING WATER PIPING CONNECTION TO COILS.
7 ISOLATION VALVES AND CIRCUIT SETTER.
8 PROVIDE 1" HEATING WATER SUPPLY AND RETURN TO COIL.
9 PROVIDE 1 1/4" HEATING WATER SUPPLY AND RETURN TO COIL.
10 INSTALL PROCESS WATER DIFFERENTIAL PRESSURE SENSOR AT THIS LOCATION.

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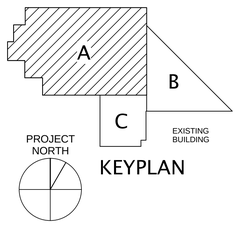
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



KEYPLAN

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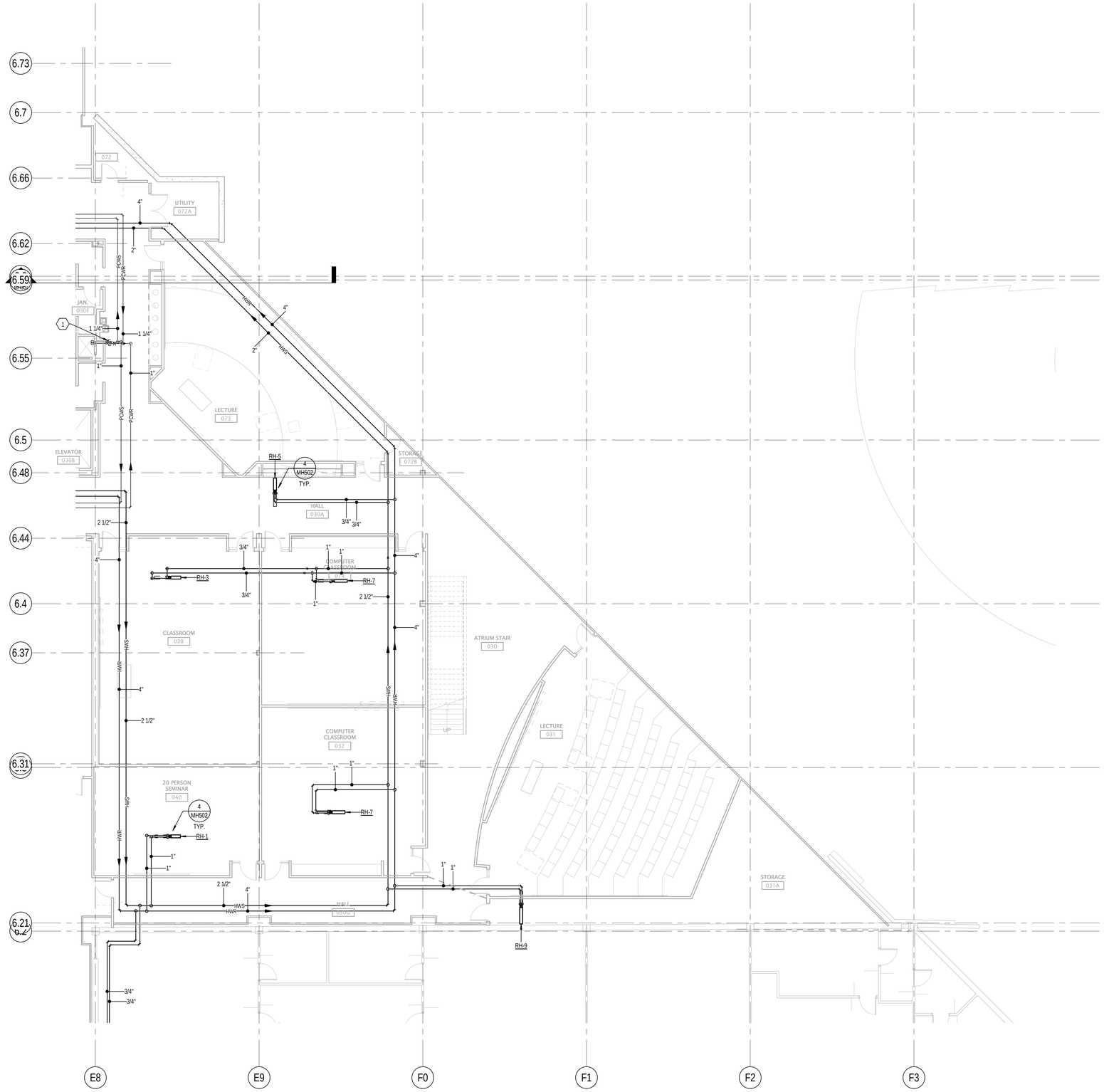
LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA A

CONSTRUCTION DOCUMENTS

MP101A



1 LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA B

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

KEYED NOTES

1 ISOLATION VALVES AND CIRCUIT SETTER.
2 PROVIDE 3/4" HEATING WATER SUPPLY AND RETURN TO COIL.

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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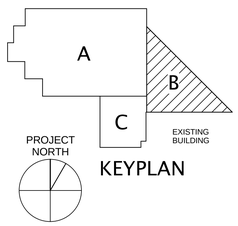

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LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA B

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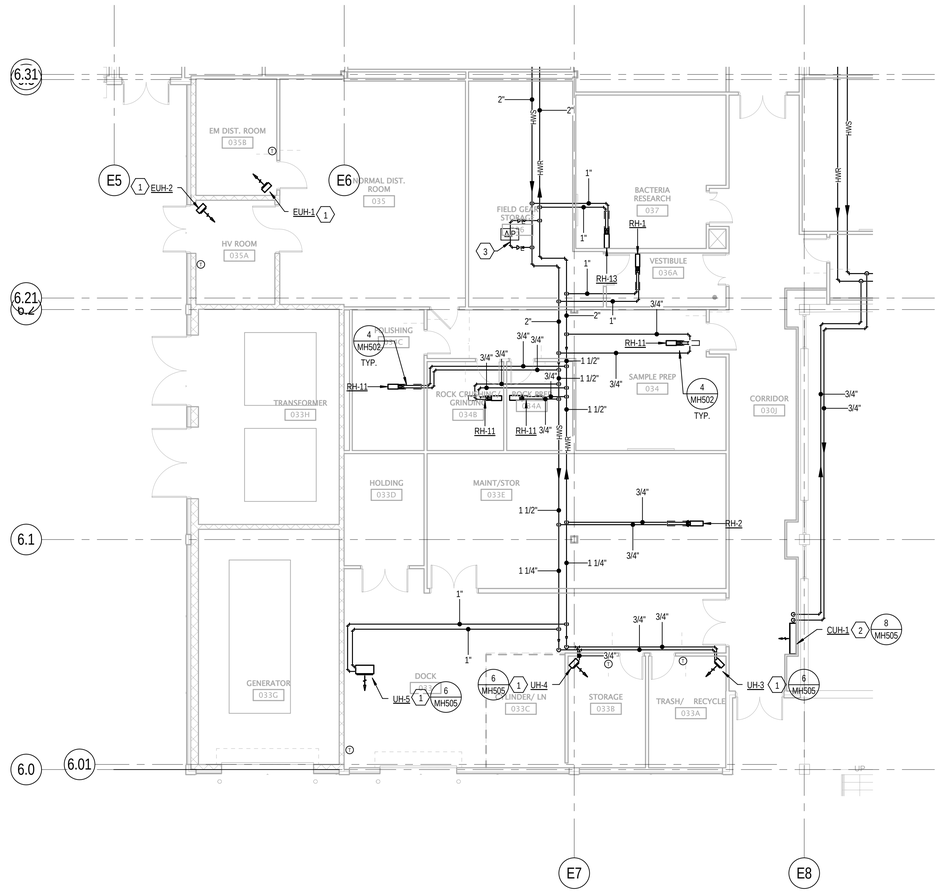
KEYED NOTES

1. INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STURCTURE.
2. INSTALL CABINET UNIT HEATER RECESSED INTO WALL WITH BOTTOM OF HEATER FACE 8" AFF. COORDINATE CAVITY IN GYP BOARD WALL WITH GENERAL CONTACTOR.
3. INSTALL HEATING WATER DIFFERENTIAL PRESSURE SENSOR AT THIS LOCATION.

GENERAL NOTES

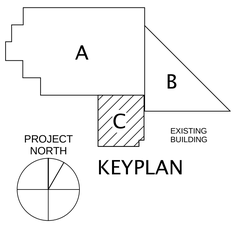
A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.



1 LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA C

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

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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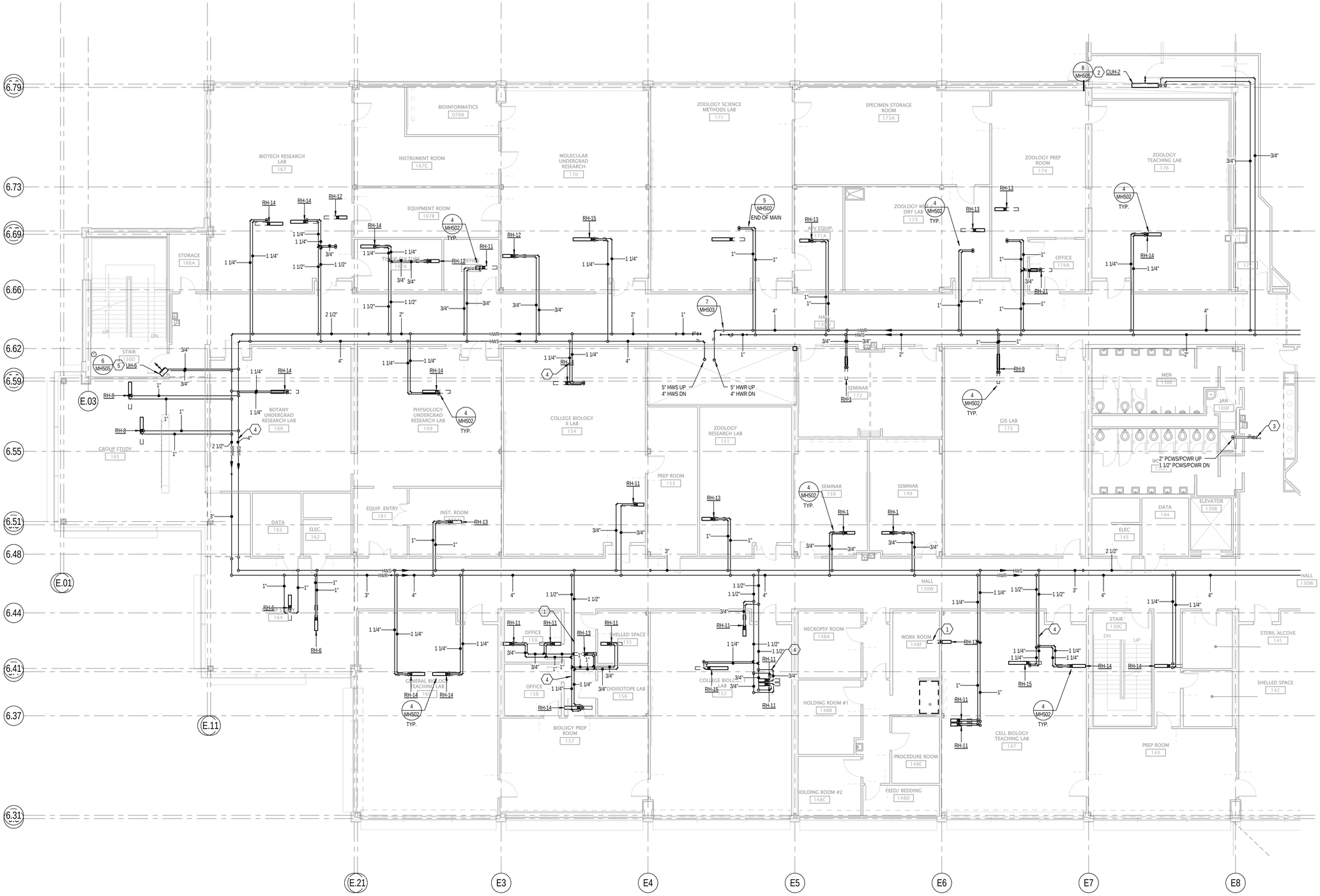
LEVEL 0 MECHANICAL PIPING FLOOR PLAN - AREA C

CONSTRUCTION DOCUMENTS

MP101C



1 LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA A

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

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

KEYED NOTES

1. ROUTE HOT WATER SUPPLY AND RETURN PIPE UP HIGH, ABOVE CONTROLS MAINTENANCE/CLEARANCE SPACE FOR VAV BOX OR LAB SUPPLY AIR VALVE.
2. INSTALL CABINET UNIT HEATER RECESSED INTO WALL WITH BOTTOM OF HEATER FACE 8" AFF. COORDINATE CAVITY IN GYP BOARD WALL WITH GENERAL CONTACTOR.
3. VALVE AND CAP 1 1/2" PROCESS COOLING WATER STUB OUTS FOR FUTURE CONNECTION.
4. MAINTENANCE CLEARANCE AREA. CONTROLS FOR VAV BOX OR AIRFLOW CONTROL VALVE TO BE INSTALLED ON THIS SIDE OF BOX. COORDINATE WITH ALL TRADES TO ENSURE ALL CONDUIT, PIPIING, AND DUCTWORK ARTE INSTALLED OUTSIDE THIS AREA OR ABOVE AIRFLOW CONTROL VALVE.
5. INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STURCTURE.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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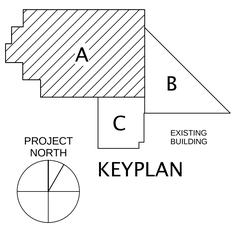

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Orem, Utah 84058

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LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA A

CONSTRUCTION DOCUMENTS

MP102A

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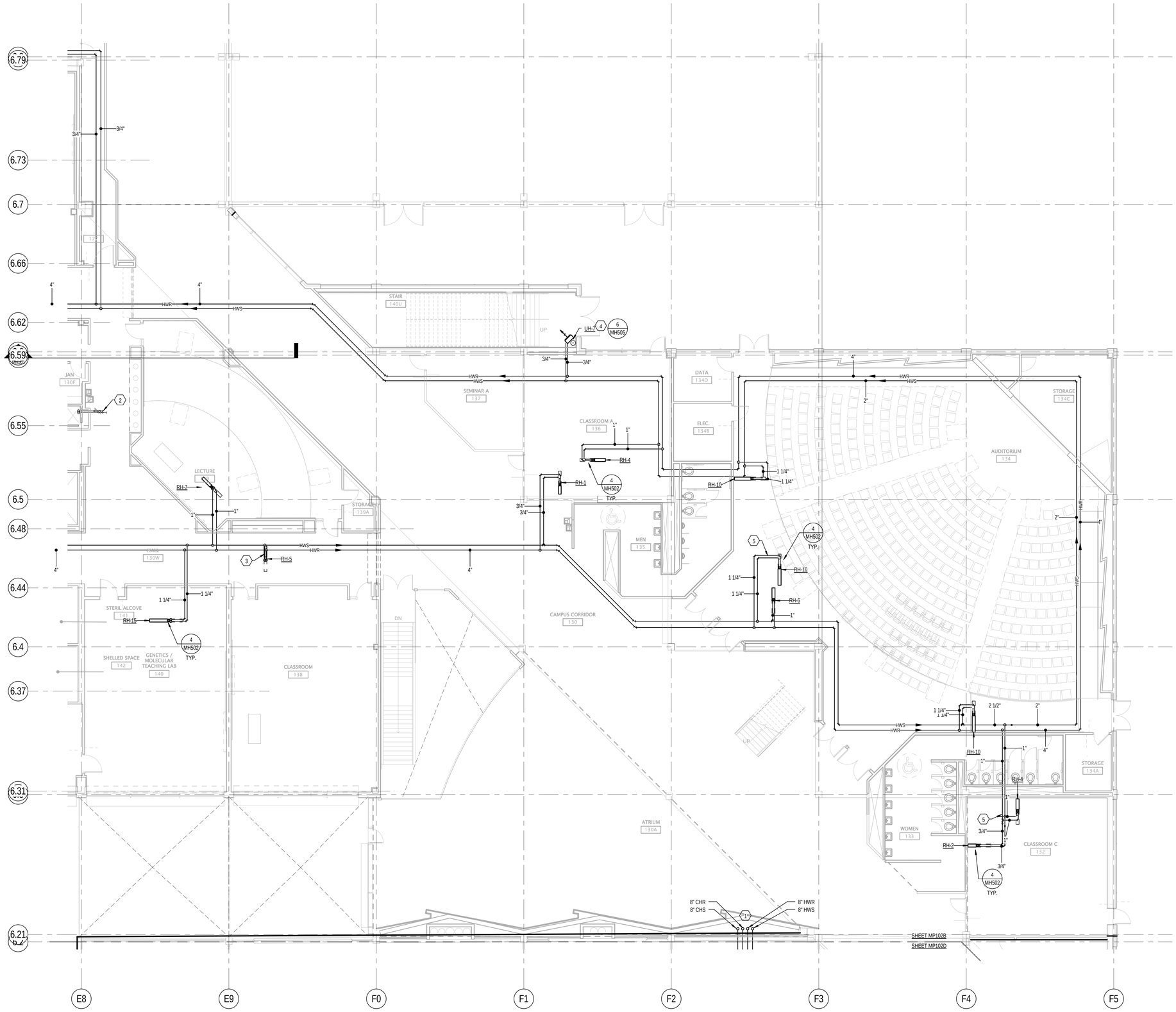


LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA B

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

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. PIPES TO RISE AGAINST EXISTING WALL OF OLD POPE SCIENCE BUILDING, AND WILL BE CONCEALED BEHIND NEW WALL TO THE NORTH.
2. VALVE AND CAP 1 1/2" PROCESS COOLING WATER STUB OUTS FOR FUTURE CONNECTION.
3. PROVIDE 3/4" HEATING WATER SUPPLY AND RETURN TO COIL.
4. INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STURCTURE.
5. MAINTENANCE CLEARANCE AREA. CONTROLS FOR VAV BOX OR AIRFLOW CONTROL VALVE TO BE INSTALLED ON THIS SIDE OF BOX. COORDINATE WITH ALL TRADES TO ENSURE ALL CONDUIT, PIPIING, AND DUCTWORK ARTE INSTALLED OUTSIDE THIS AREA OR ABOVE AIRFLOW CONTROL VALVE.

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

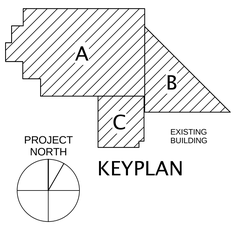
REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



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LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA B

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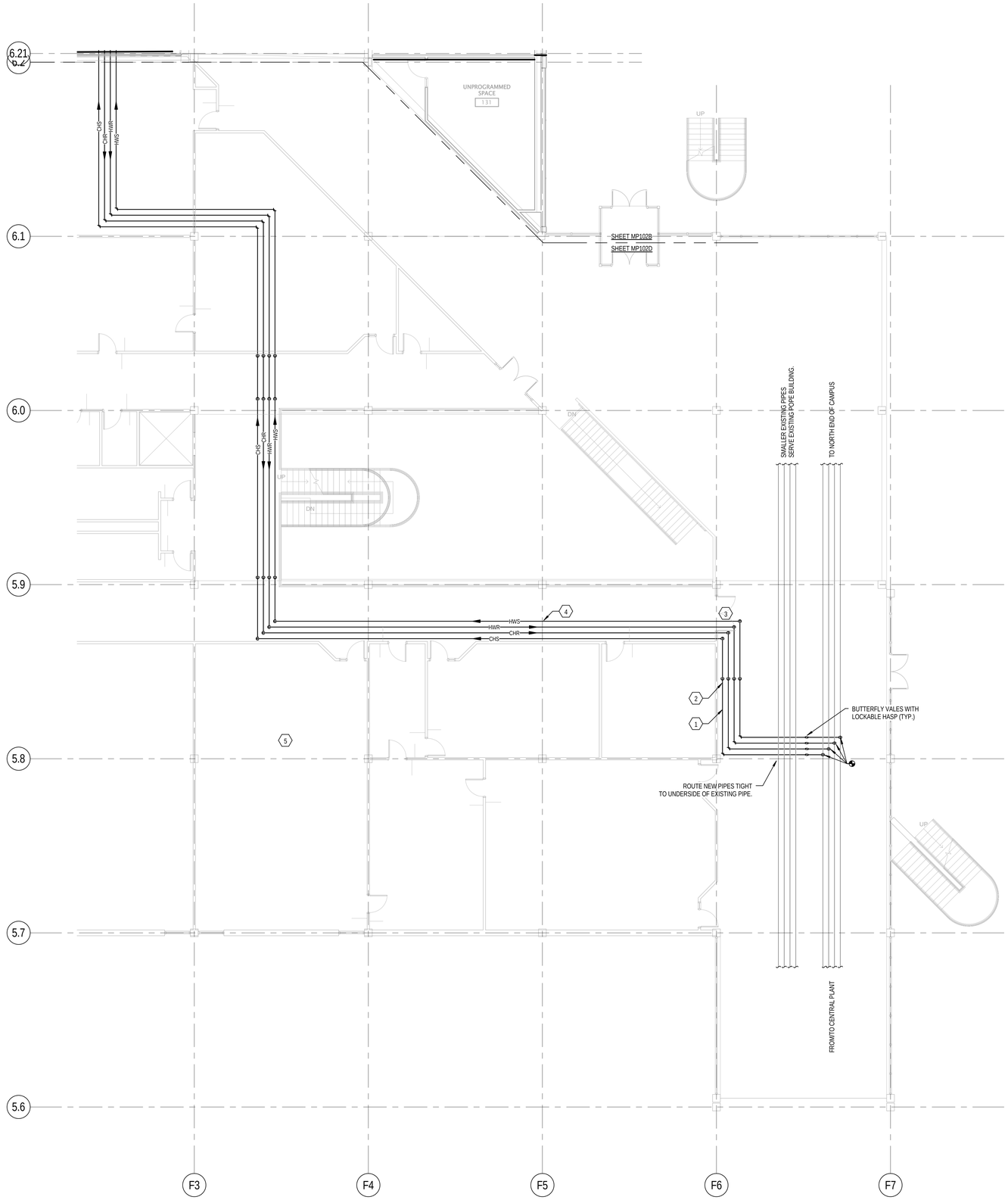

1 LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA D

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

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. ROUTE PIPES BENEATH DUCTWORK. DO NOT ROUTE BENEATH THE EXISTING FAN COIL UNIT.
2. OFFSET PIPING UP ABOVE EXISTING BUS DUCT.
3. ROUTE PIPE BELOW EXISTING CABLE TRAY AND ABOVE CLERESTORY AT DOORWAY INTO EXISTING POPE SCIENCE BUILDING. RISE UP ABOVE DUCTWORK ONCE PIPES ARE INSIDE THE EXISTING BUILDING.
4. OFFSET PIPES DOWN SO TOP OF INSULATED PIPE IS 1" BELOW CONCRETE BEAM. CONTINUE ROUTING PIPE TO THE WEST AT THIS LOCATION.
5. OFFSET PIPES AT 45° ANGLE BETWEEN EXISTING DUCT AND CABLE TRAY. PENETRATE WALL WITH PIPES AT ELEVATION BETWEEN TOP OF WALL-MOUNTED LIGHTS AND BOTTOM OF CABLE TRAY. CUT WOOD TRIM ON LIGHT FIXTURE AS NECESSARY - SEE NEARBY DUCT PENETRATIONS THAT REQUIRED LIGHT FIXTURE TO BE CUT.

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	JN
CHECKED BY:	RLH
DFCM PROJECT NO.:	09020790
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LEVEL 1 MECHANICAL PIPING FLOOR PLAN - AREA D

CONSTRUCTION DOCUMENTS

MP102D

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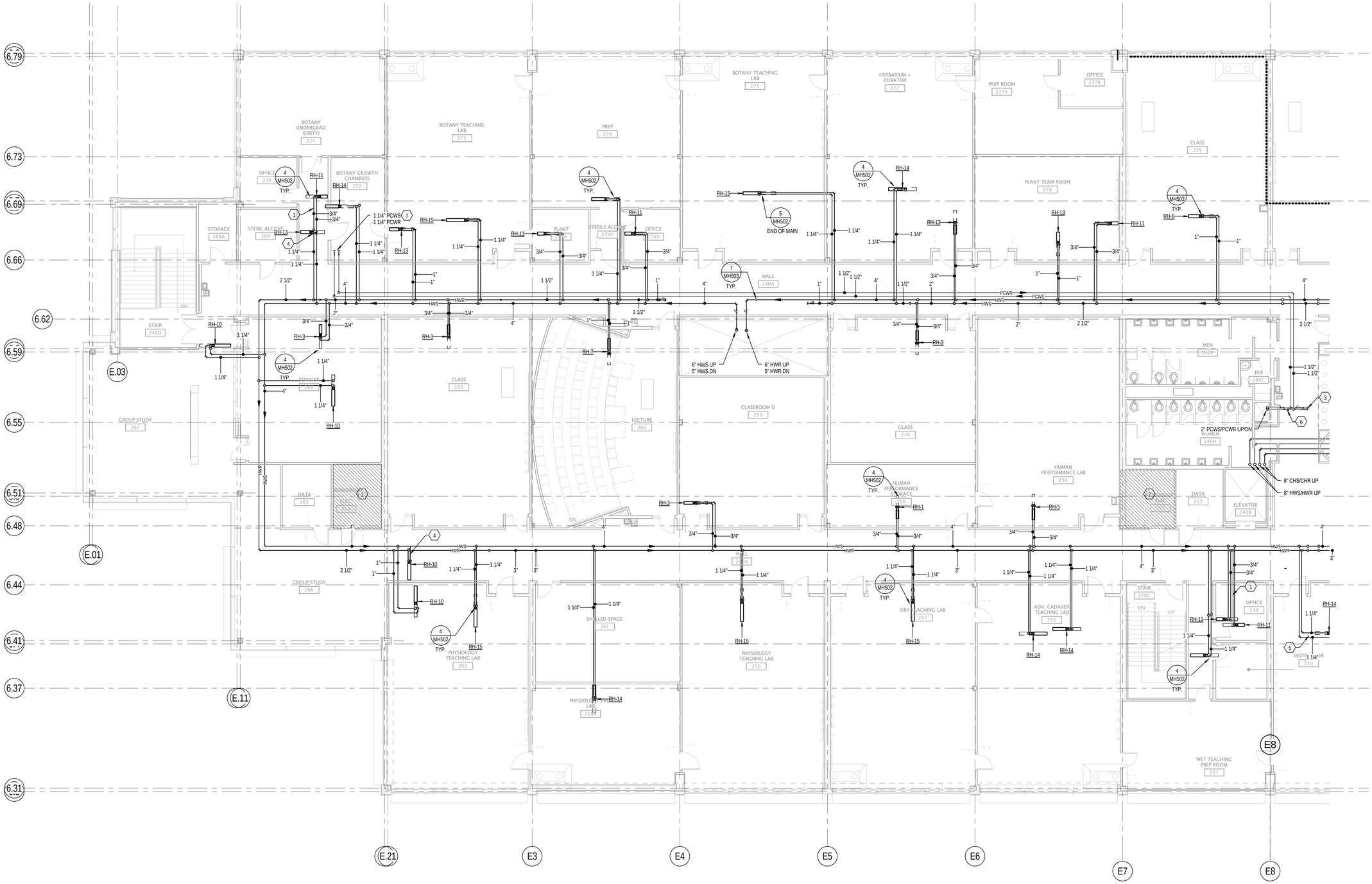
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



1 LEVEL 2 MECHANICAL PIPING FLOOR PLAN - AREA A

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

6' 0' 4' 8' 12' 16'

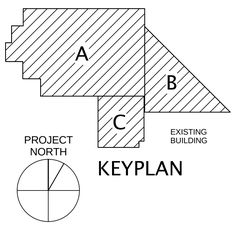
GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

KEYED NOTES

1. ROUTE HOT WATER SUPPLY AND RETURN PIPE UP HIGH, ABOVE CONTROLS MAINTENANCE/CLEARANCE SPACE FOR VAV BOX OR LAB SUPPLY AIR VALVE.
2. DO NOT ROUTE ANY PIPING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
3. VALVE AND CAP 1 1/2" PROCESS COOLING WATER STUB OUTS FOR FUTURE CONNECTION.
4. PROVIDE 1" HEATING WATER SUPPLY AND RETURN TO COIL.
5. MAINTENANCE CLEARANCE AREA. CONTROLS FOR VAV BOX OR AIRFLOW CONTROL VALVE TO BE INSTALLED ON THIS SIDE OF BOX. COORDINATE WITH ALL TRADES TO ENSURE ALL CONDUIT, PIPIING, AND DUCTWORK ARTE INSTALLED OUTSIDE THIS AREA OR ABOVE AIRFLOW CONTROL VALVE.
6. ISOLATION VALVES AND CIRCUIT SETTER.
7. DROP PROCESS PIPING TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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LEVEL 2 MECHANICAL PIPING FLOOR PLAN - AREA A

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MP103A

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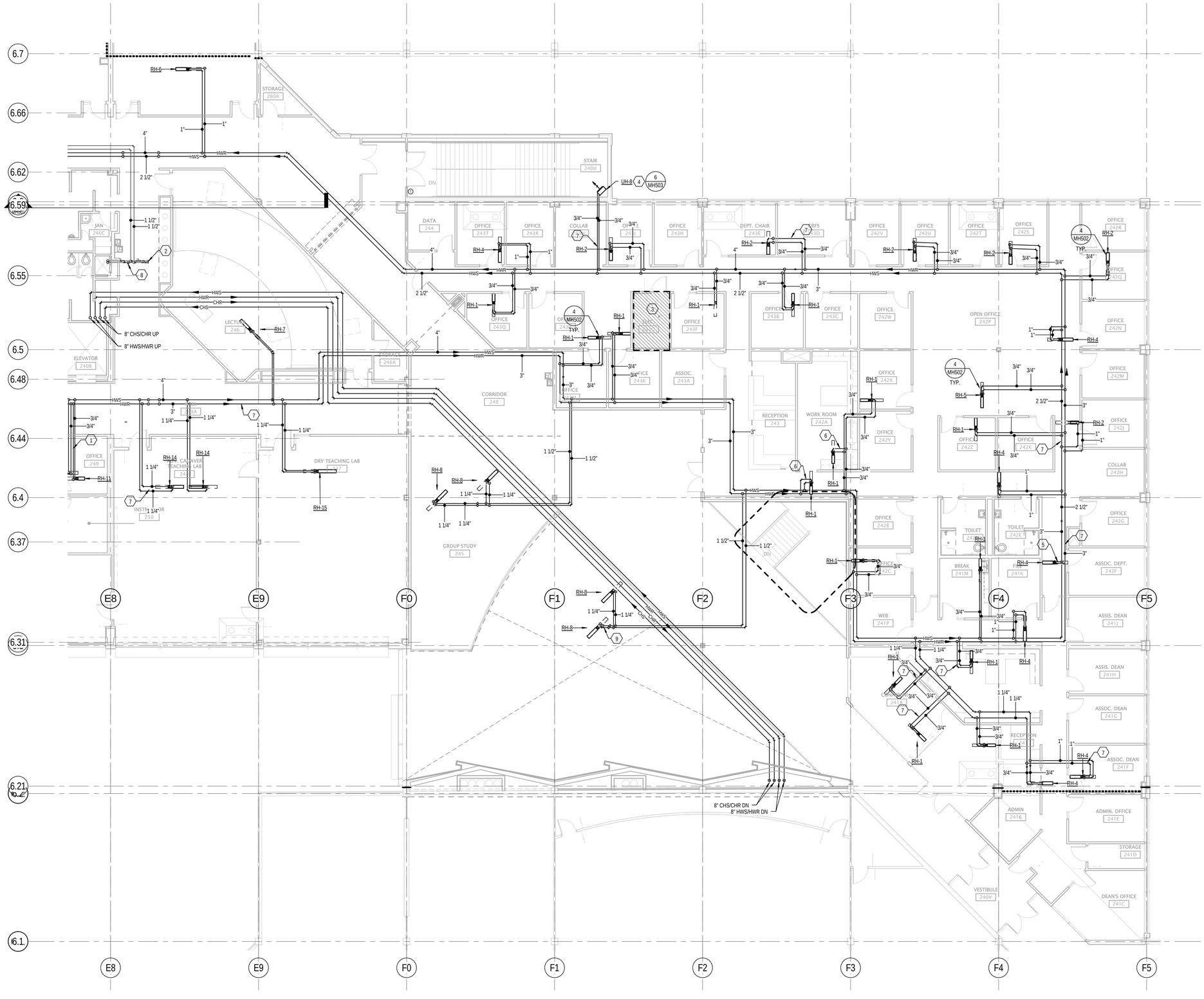


LEVEL 2 MECHANICAL PIPING FLOOR PLAN - AREA B

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

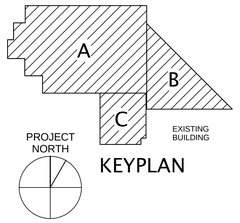
KEYED NOTES

1. ROUTE HOT WATER SUPPLY AND RETURN PIPE UP HIGH, ABOVE CONTROLS MAINTENANCE/CLEARANCE SPACE FOR VAV BOX OR LAB SUPPLY AIR VALVE.
2. VALVE AND CAP 1 1/2" PROCESS COOLING WATER STUB OUTS FOR FUTURE CONNECTION.
3. DO NOT ROUTE ANY PIPING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
4. INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STURCTURE.
5. PROVIDE 1" HEATING WATER SUPPLY AND RETURN TO COIL.
6. PROVIDE 3/4" HEATING WATER SUPPLY AND RETURN TO COIL.
7. MAINTENANCE CLEARANCE AREA. CONTROLS FOR VAV BOX OR AIRFLOW CONTROL VALVE TO BE INSTALLED ON THIS SIDE OF BOX. COORDINATE WITH ALL TRADES TO ENSURE ALL CONDUIT, PIPIING, AND DUCTWORK ARTE INSTALLED OUTSIDE THIS AREA OR ABOVE AIRFLOW CONTROL VALVE.
8. ISOLATION VALVES AND CIRCUIT SETTER.
9. PROVIDE 1 1/4" HEATING WATER SUPPLY AND RETURN TO COIL.

GENERAL NOTES

A. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.
B. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



KEYPLAN

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 2 MECHANICAL PIPING FLOOR PLAN - AREA B

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MP103B

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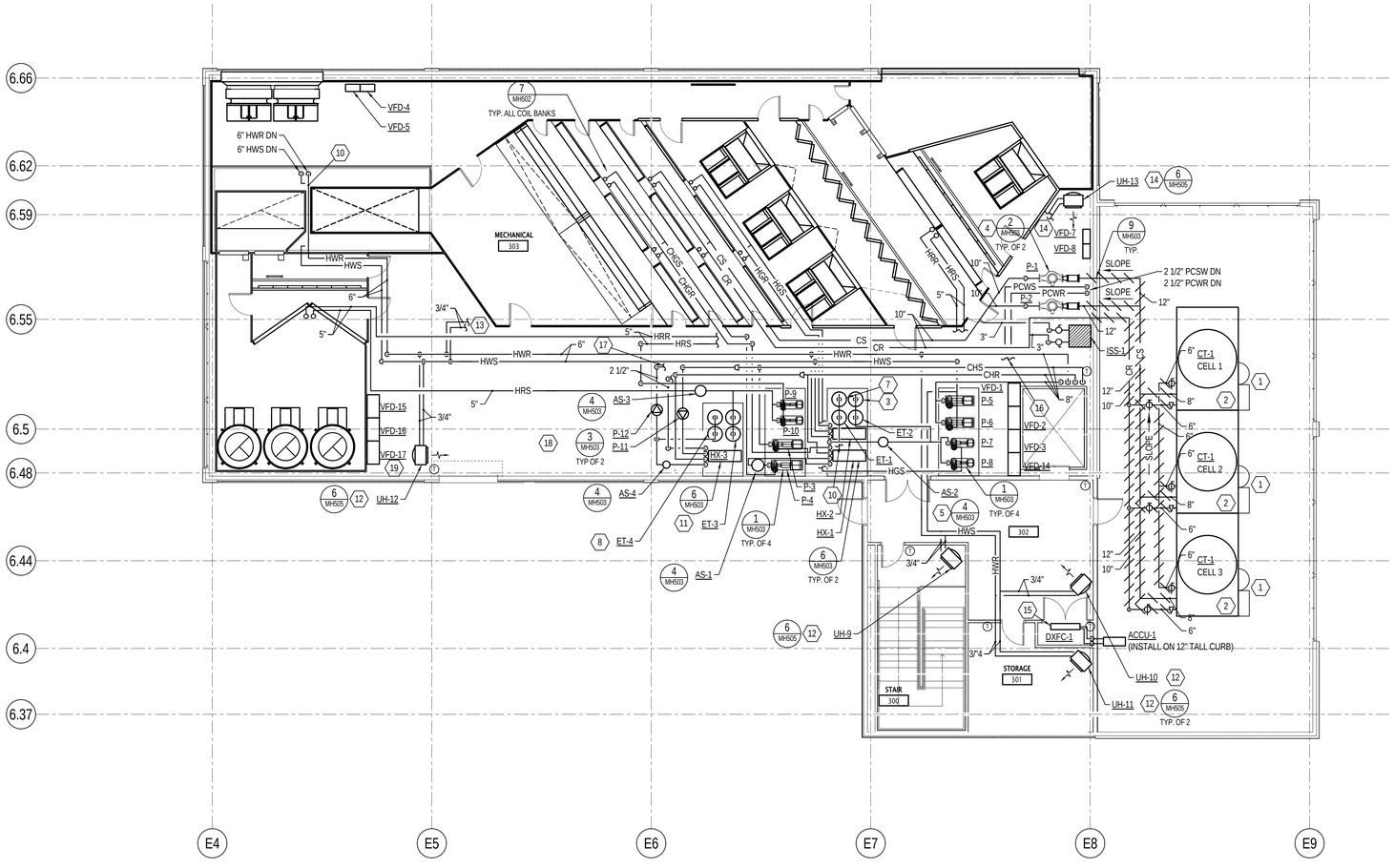
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



1 PENTHOUSE MECHANICAL PIPING PLAN

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

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. LADDER, SAFETY CAGE, AND PLATFORM ON SIDE OF TOWER DO NOT EXTEND ABOVE TOP OF TOWER.
2. COORDINATE WITH STEEL DETAILER SO SUPPORT STEEL BENEATH TOWER RESULTS IN INSTALLED HEIGHT OF TOWER SUCH THAT TOP OF TOWER IS FLUSH WITH TOP OF SCREEN WALL.
3. GLYCOL MAKE-UP SYSTEM, 40% PPG. SEE DETAIL 8/MH502.
4. PROVIDE A 2" SYSTEM DRAIN FROM THE 12" PIPE AT THE INLET TO PUMPS P-1 AND P-2 TO THE NEAREST FLOOR SINK. INCLUDE A 2" BALL VALVE IN EACH 2" DRAIN LINE.
5. INSTALL AS-2 HIGH OVERHEAD AND HX-2 ON PENTHOUSE FLOOR.
6. 1" LINE TO ET-2.
7. GLYCOL MAKE-UP SYSTEM, 25% PPG. SEE DETAIL 8/MH502.
8. MAKE-UP TANK FOR PROCESS COOLING SYSTEM LOCATED NEXT TO ET-4. SAME AS GLYCOL MAKE-UP SYSTEM, BUT CONTAINS CLOSED-LOOP HVAC SOLUTION AND CHEMICALS/INHIBITORS, BUT NO GLYCOL. THIS SYSTEM ALLOWS FOR MANUAL MAKE-UP OF HVAC SOLUTION WHEN SYSTEM FLUID IS LOST FROM SYSTEM AT THE PROCESS EQUIPMENT. SIMILAR TO DETAIL 8/MH502.
9. INSTALL P-12 PER DETAIL 3/MH503.
10. TO SUCTION PIPE OF P-4, JUST DOWNSTREAM OF AS-1.
11. GLYCOL MAKE-UP SYSTEM NEXT TO ET-3, 40% PPG. SEE DETAIL 8/MH502.
12. INSTALL UNIT HEATER TIGHT TO UNDERSIDE OF OVERHEAD STRUCTURE.
13. 3/4" HWS AND HWR LINES TO UNIT HEATER AT EAST END OF PENTHOUSE.
14. CONTINUATION OF 3/4" HWS AND HWR LINES IDENTIFIED IN KEYED NOTE 13.
15. INSTALL DXFC-1 ON WALL ABOVE DOORS INTO ROOM. COORDINATE EXACT INSTALLATION LOCATION WITH ELEVATOR EQUIPMENT CONTRACTOR. PUMP CONDENSATE FROM FAN COIL TO NEAREST FLOOR SINK IN MECHANICAL ROOM WITH 3/4" DRAIN LINE.
16. 2 1/2" PROCESS COOLING LINES TO HX-3.
17. CONTINUATION OF 2 1/2" PROCESS COOLING LINES IDENTIFIED IN KEYED NOTE 16.
18. LEAVE AREA CLEAR FOR MOTOR CONTROL CENTER. COORDINATE WITH DIVISION 26.
19. SPACE FOR CONTROL SYSTEM PANELS.

GENERAL NOTES

A. CONTINUOUSLY SLOPE ALL CONDENSER WATER SUPPLY PIPING BETWEEN TOWERS AND PUMPS P-1/P-2 IN THE DIRECTION OF FLOW.

B. HEAT TRACE, INSULATE, AND JACKET ALL OUTDOOR CONDENSER WATER LINES.

C. SEE PIPE SIZES AND ADDITIONAL PIPING REQUIREMENTS ON PIPING SCHEMATICS MP201 AND MP202.

D. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL HEAT EXCHANGERS SO UNITS CAN BE EASILY MAINTAINED.

E. LOCATE VFDS FOR PUMPS AT NORTH END OF HOUSEKEEPING PADS ON UNISTRUT STANDS OR ON HOUSEKEEPING PADS IF UNITS ARE VERY LARGE. DO NOT ROUTE PIPING ABOVE VFDS.

F. PROVIDE 1/4 SCALE COORDINATION DRAWING SHOWING ALL SHEET METAL, HVAC AND PLUMBING PIIPNG, FIRE SPRINKLER PIPING AND ALL ELCETRICAL IN PENTHOUSE. DO NOT ROUTE PIPING ABOVE ELECTRICAL PANELS OR VFD'S.

G. SEE DEVICE SCHEDULES FOR WATER FLOW RATES TO ALL COILS.

H. SEE ADDITIONAL GENERAL NOTES ON SHEET MH001.

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PENTHOUSE MEHCANICAL PIPING PLAN

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MP104

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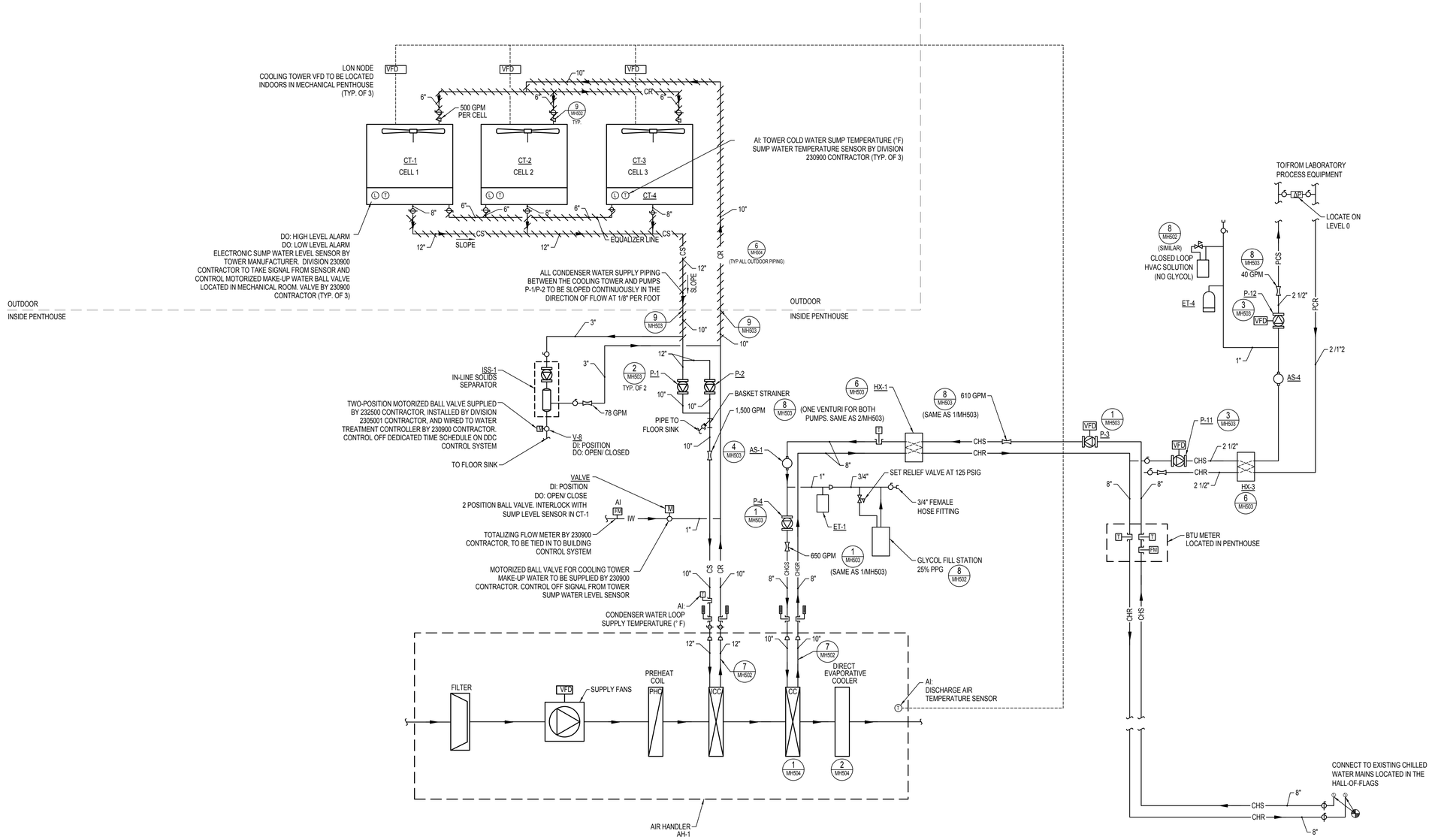
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



1 CHILLED/CONDENSER WATER SCHEMATIC
SCALE: NONE

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CHILLED/CONDENSER WATER SCHEMATIC

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MP201

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
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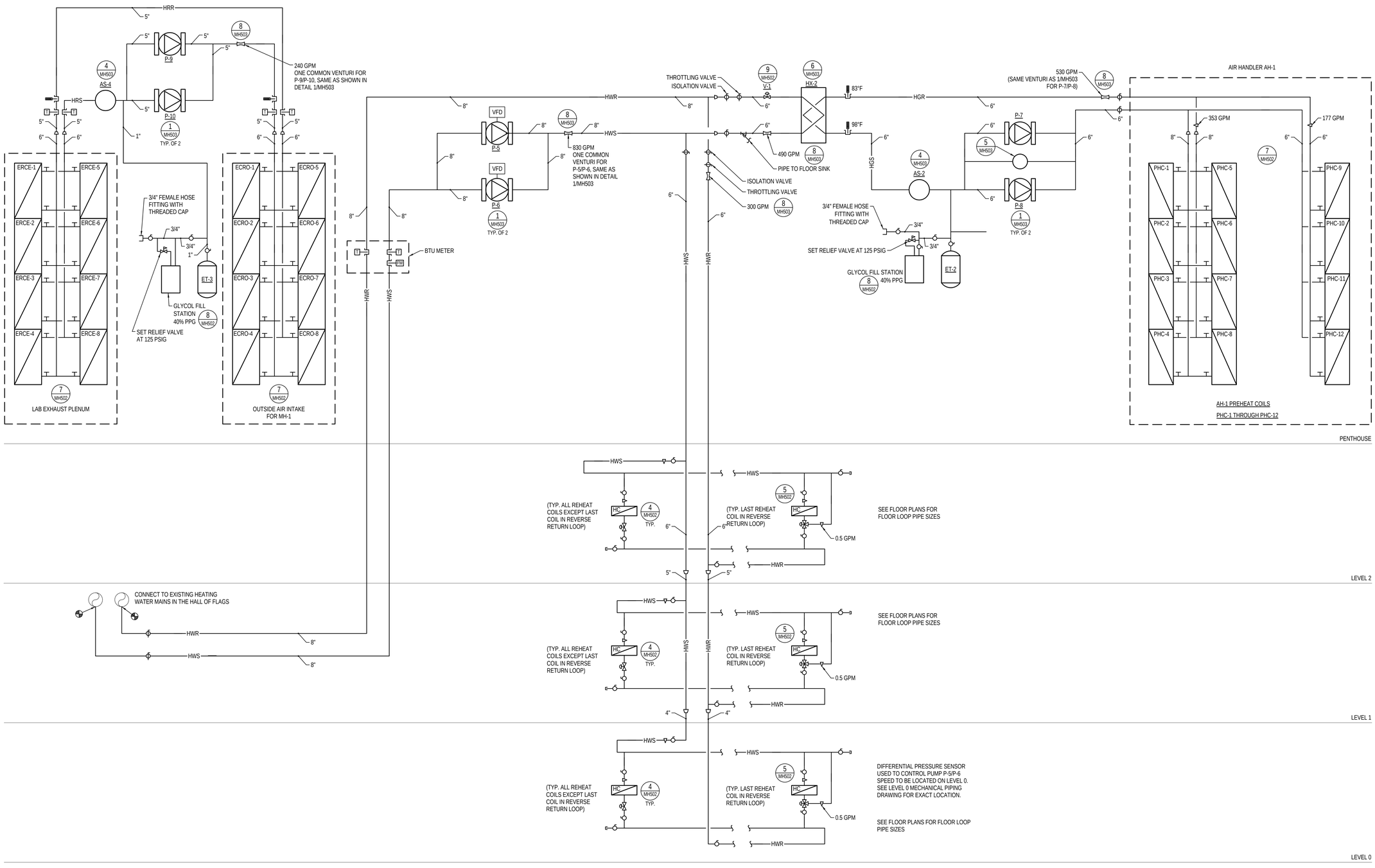

1 HEATING WATER PIPING SCHEMATIC
SCALE: NONE

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HEATING WATER PIPING SCHEMATIC

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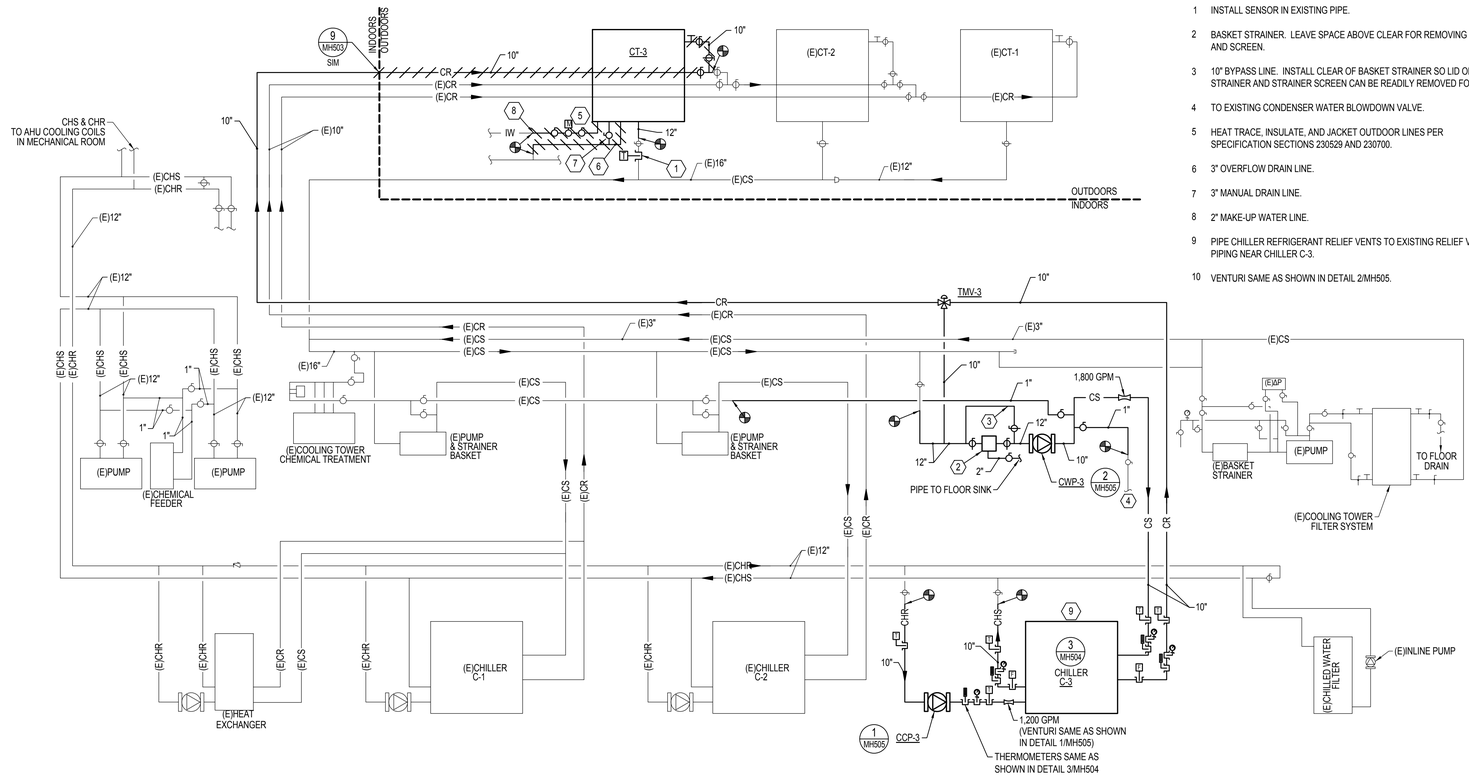
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



KEYED NOTES

1. INSTALL SENSOR IN EXISTING PIPE.
2. BASKET STRAINER. LEAVE SPACE ABOVE CLEAR FOR REMOVING LID AND SCREEN.
3. 10" BYPASS LINE. INSTALL CLEAR OF BASKET STRAINER SO LID OF STRAINER AND STRAINER SCREEN CAN BE READILY REMOVED FOR MAINTENANCE.
4. TO EXISTING CONDENSER WATER BLOWDOWN VALVE.
5. HEAT TRACE, INSULATE, AND JACKET OUTDOOR LINES PER SPECIFICATION SECTIONS 230529 AND 230700.
6. 3" OVERFLOW DRAIN LINE.
7. 3" MANUAL DRAIN LINE.
8. 2" MAKE-UP WATER LINE.
9. PIPE CHILLER REFRIGERANT RELIEF VENTS TO EXISTING RELIEF VENT PIPING NEAR CHILLER C-3.
10. VENTURI SAME AS SHOWN IN DETAIL 2/MH505.

1 UPPER PLANT PIPING SCHEMATIC

SCALE: NONE

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Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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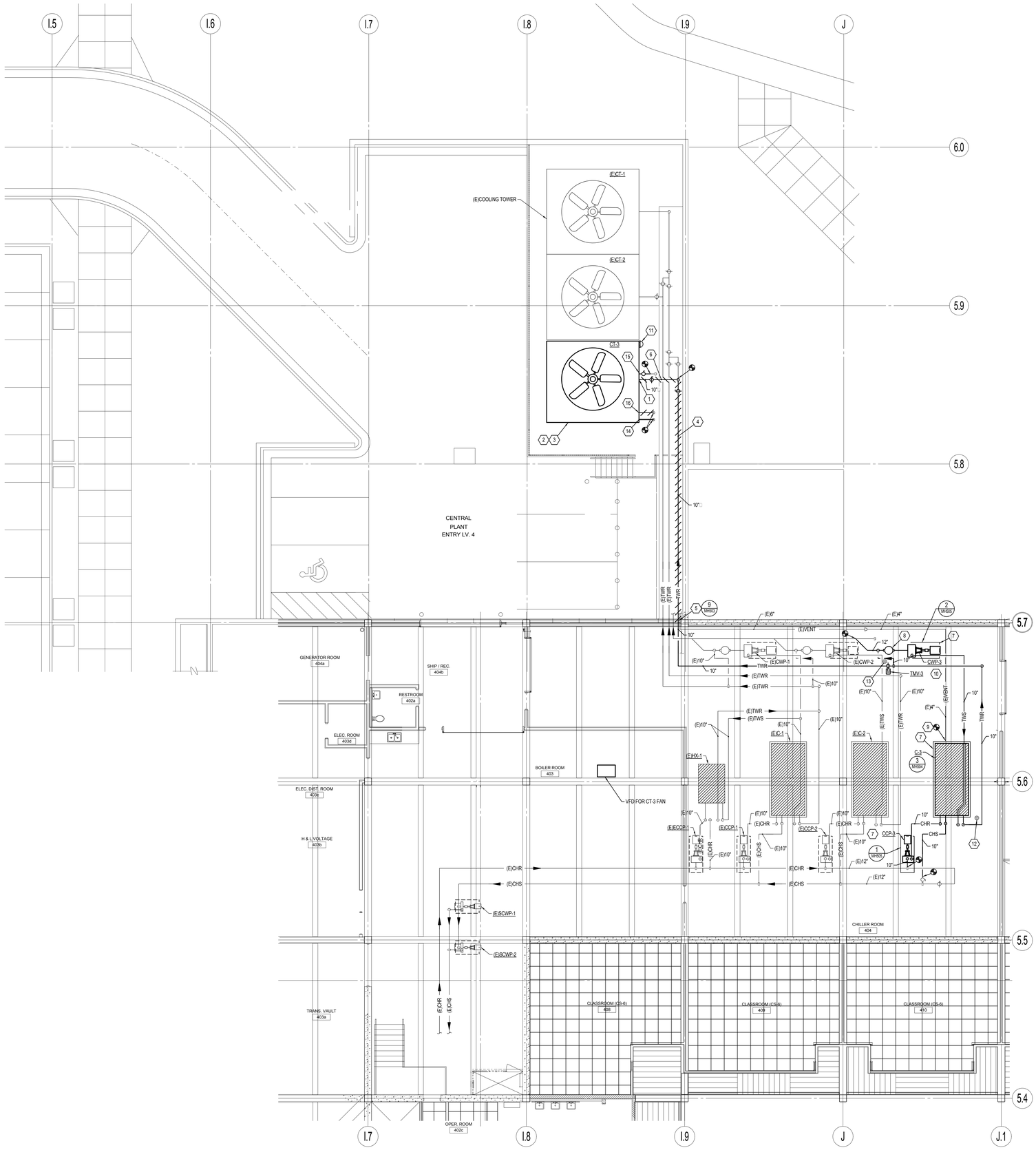
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

UPPER PLANT PIPING SCHEMATIC

CONSTRUCTION DOCUMENTS

MP251



1 ENLARGED UPPER PLANT PLAN

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

KEYED NOTES

1. PROVIDE 12" TOWER WATER SUPPLY (TWS) DOWN TO EXISTING TOWER WATER SUPPLY VALVE AND PIPE LOCATED INSIDE EXISTING CONCRETE VAULT. NEW 12 TOWER WATER SUPPLY LINE IS BELOW THE 10" TOWER WATER SUPPLY LINE TO TOWER CT-3, AND IS NOT SHOWN FOR CLARITY.
2. INSTALL NEW COOLING TOWER UPON EXISTING PERIMETER FOOTING. CT-3 DIMENSIONS SHALL MATCH THE DIMENSIONS OF THE EXISTING PERIMETER FOOTING.
3. INSTALL CT-3 SO TOP OF TOWER IS AT SAME ELEVATION AS THE TOP OF EXISTING COOLING TOWERS CT-1/CT-2.
4. INSTALL 10" TOWER WATER RETURN (TWR) LINE ON EXISTING BRACKET, NEXT TO TWO EXISTING TOWER WATER RETURN LINES, WHERE ROUTED OUTDOORS ALONG EXISTING RETAINING WALL.
5. 10" TOWER WATER RETURN LINE PENETRATES INSULATED METAL PANEL AT THIS LOCATION. EXTEND HEAT TRACE, INSULATION, AND METAL JACKET 24" BEYOND INSULATED PANEL INSIDE MECHANICAL ROOM.
6. PROVIDE PIPE SUPPORT AS NECESSARY BETWEEN TOWER AND WALL.
7. INSTALL CHILLER AND PUMPS ON 4" TALL CONCRETE HOUSEKEEPING PAD.
8. INSTALL NO PIPING ABOVE BASKET STRAINER THAT COULD INTERFERE WITH REMOVING LID AND STRAINER FOR CLEANING.
9. PIPE CHILLER RELIEF VENTS TO EXISTING 4" RELIEF/VENT LINE. USE BRAIDED STEEL FLEX CONNECTORS AT CHILLER.
10. CONDENSER WATER BYPASS VALVE TMV-3 IS A 3-WAY VALVE, WITH THE BYPASS PORT NOT SHOWN ON THE FLOOR PLAN BECAUSE IT IS IN THE VERTICAL TOWER BYPASS LINE BELOW THE CONDENSER WATER PIPE.
11. LADDER AND SAFETY CAGE TO ACCESS TOP OF TOWER CT-3.
12. ROUTE DRAINS FROM NEW CHILLER TO EXISTING FLOOR DRAIN.
13. ROUTE DRAINS FROM NEW PUMP AND STRAINER TO EXISTING FLOOR DRAIN.
14. ROUTE 3" OVERFLOW PIPE FROM TOWER TO EXISTING WASTE PIPE AT GRADE LEVEL.
15. 3" TOWER DRAIN LINE TO CONNECT TO EXISTING DRAIN LINE INSIDE EXISTING CONCRETE VAULT FOR CONDENSER WATER VALVE.
16. HEAT TRACE 2" MAKE-UP WATER LINE. PROVIDE LINE-SIZED 2-POSITION MOTORIZED BALL VALVE IN LINE, AND CONTROL OFF COLD WATER BASIN WATER LEVEL FLOAT INSIDE TOWER.

GENERAL NOTES

A. HEAT TRACE AND INSULATE ALL TOWER WATER PIPING LOCATED OUTDOORS AND INSIDE UNHEATED VAULTS. PROVIDE A PROTECTIVE ALUMINUM JACKET OVER ALL HEAT TRACED PIPES.

B. INSTALLED ELEVATION OF NEW PIPING TO MATCH EXISTING PIPING SERVING EXISTING COOLING TOWERS, CHILLERS, AND PUMPS.

C. SEE PIPING SCHEMATIC ON SHEET MP251 FOR ADDITIONAL REQUIREMENTS.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
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ENLARGED UPPER PLANT PIPING PLAN

CONSTRUCTION DOCUMENTS

MP451

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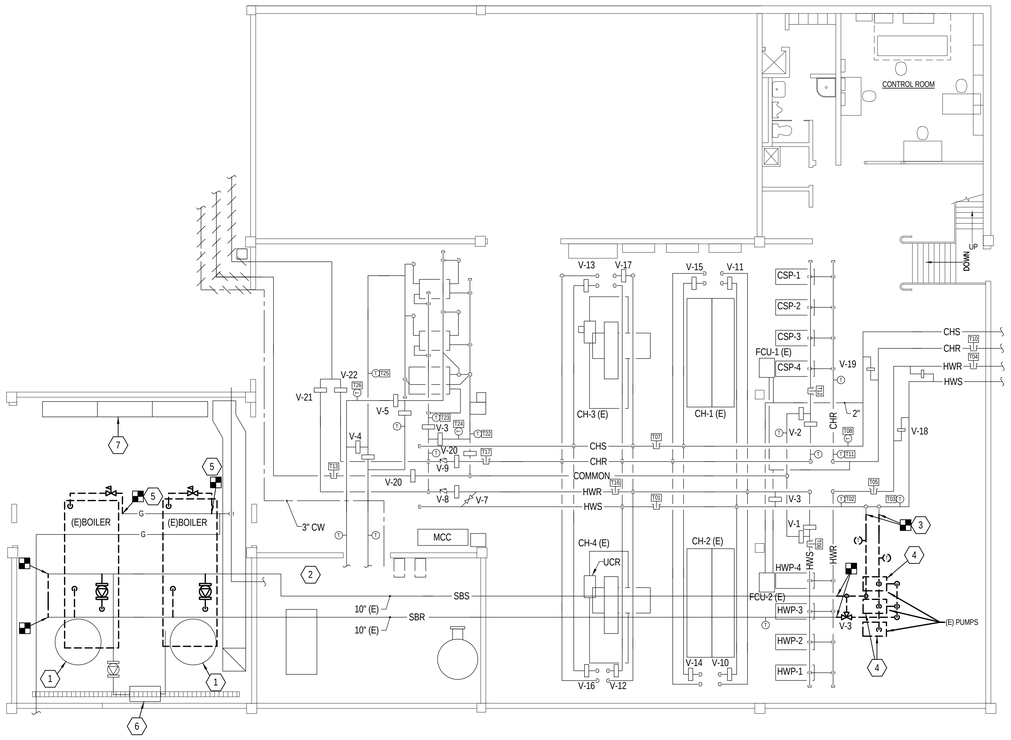
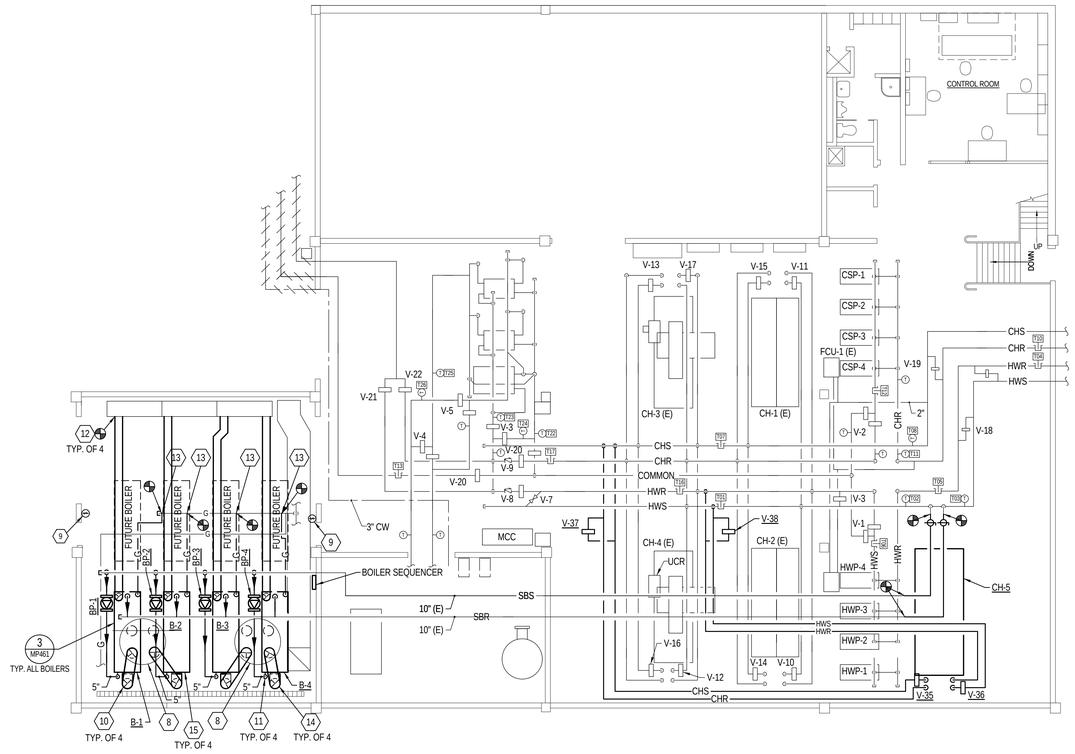
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com



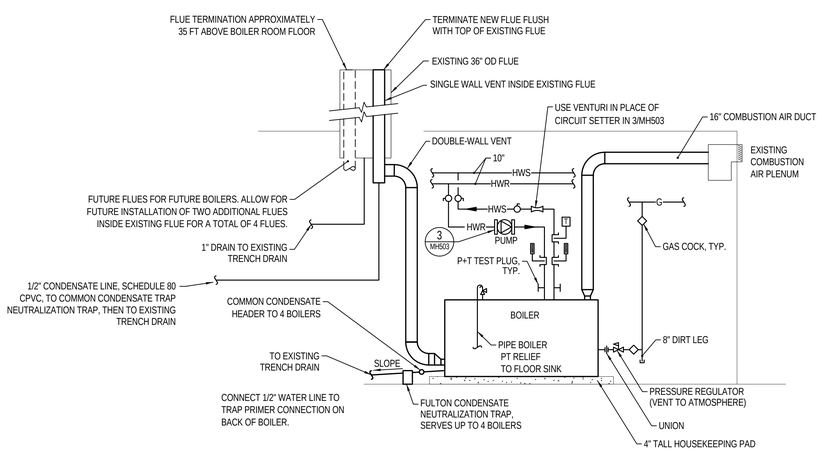
1 LOWER PLANT DEMOLITION PLAN

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



2 LOWER PLANT PLAN

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



3 BOILER DETAIL

SCALE: NONE

KEYED NOTES

1. BOILER FLUE FROM BOILER UP TO VERTICAL ROUND FLUE. VERTICAL ROUND FLUE TO REMAIN.
2. TWO EXISTING PIPING THAT CONNECTED THE DOMESTIC HOT WATER HEATERS TO THE HEATING BOILER PIPING SHALL BE CAPPED INSIDE THE WATER HEATER ROOM.
3. CAP BRANCH LINES AS NEAR TO MAINS AS POSSIBLE.
4. REMOVE HOUSEKEEPING PADS BENEATH PUMPS.
5. REMOVE BRANCH NATURAL GAS PIPING AND REGULATORS TO EXISTING BOILERS.
6. EXISTING UNIT HEATER AND ASSOCIATED PUMP AND PIPING TO REMAIN.
7. THREE EXISTING 18"X60" COMBUSTION AIR DUCTS EXTEND FROM CEILING DOWN TO WITHIN 12" OF FLOOR. REMOVE BOTTOM PORTION OF EACH DUCT AT EXISTING FLANGE APPROX. 13'-10" ABOVE FLOOR AND CAP BOTTOM OF DUCT WITH SHEET METAL CAP. ALSO CLOSE COMBUSTION AIR OPENING INTO ROOM AT TOP OF EACH DUCT WITH SHEET METAL CAP. EXISTING DUCT OPENING TO OUTDOORS TO REMAIN.
8. CAP BOTTOM OF EXISTING ROUND BOILER FLUE (APPROXIMATELY 36" DIAMETER) WITH GALVANIZED SHEET METAL PAN. INSULATE BOTTOM OF PAN WITH 1" FIBERGLASS INSULATION BOARD. PROVIDE A DRAIN IN BOTTOM OF PAN AND ROUTE TO FLOOR DRAIN WITH 1" GALVANIZED STEEL OR TYPE M HARD DRAWN COPPER PIPE. NEW BOILER FLUES WILL PENETRATE THIS PAN-SEAL PENETRATIONS WATER-TIGHT.
9. PROVIDE EMERGENCY SHUTDOWN SWITCH FOR BOILERS AT DOOR.
10. TRANSITION FROM 14" BOILER FLUE CONNECTION PORT ON BACK OF BOILER TO 16" FLUE MATERIAL WITH ECCENTRIC TRANSITION THAT ALLOWS CONDENSATE TO FLOW BACK INTO BOILER. ROUTE 16" FLUE INSIDE EXISTING FLUE THAT WAS USED BY OLD BOILERS, AND TERMINATE FLUSH WITH TOP OF EXISTING FLUE, APPROXIMATELY 41 FEET ABOVE F BOILER ROOM FLOOR. POSITION NEW FLUES INSIDE EXISTING FLUE TO ALLOW FOR INSTALLATION OF 2 FLUES NOW, AND TWO ADDITIONAL FLUES OF SAME SIZE IN FUTURE.
11. ROUTE 1" CONDENSATE DRAIN FROM BACK OF BOILER, THROUGH CONDENSATE NEUTRALIZATION TRAP (2 BOILERS SERVED BY ONE TRAP), AND DISCHARGE IN EXISTING TRENCH DRAIN. USE SCHEDULE 80 CPVC PIPE.
12. 16" COMBUSTION AIR DUCT TO BOILER. TRANSITION TO BOILER AIR INLET DIAMETER AT BOILER.
13. PIPE GAS FROM EXISTING 5LB LINE TO EACH BOILER. INCLUDE REGULATOR, GAS COCKS, AND DIRT LEG. VENT REGULATOR TO ATMOSPHERE THROUGH NORTH WALL OF BOILER ROOM. TERMINATE VENT LINE WITH ELBOW POINTING DOWN AND AN INSECT SCREEN ACROSS END OF PIPE. USE GALVANIZED PIPE AND SCREEN OUTSIDE BUILDING. PIPE SIZE TO MATCH VENT OUTLET ON REG.
14. PROVIDE DOUBLE-WALL VENT MATERIAL INSIDE BOILER ROOM, AND SINGLE-WALL MATERIAL WHERE ROUTED INSIDE THE LARGE EXISTING VERTICAL VENT. INCLUDE A SINGLE-WALL T AT BASE OF SINGLE WALL RISER. DRAIN BOTTOM OF T TO A COMMON CONDENSATE NEUTRALIZATION TRAP (SHARED BY ALL 4 BOILERS) AND PIPE TO EXISTING TRENCH DRAIN. USE SCHEDULE 80 CPVC PIPE FOR DRAIN.
15. $1\frac{1}{2}$"WATER LINE TO WATER CONNECTION ON BOILER. WATER

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LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
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LOWER PLANT PLAN

CONSTRUCTION DOCUMENTS

MP461

WATER-COOLED CHILLER SCHEDULE (C)

PLAN CODE	LOCATION	CAPACITY (TONS)	COMPRESSOR TYPE (NO.)	MAX. NPLV	MAX. KW/TON	EVAPORATOR (WATER)					CONDENSER (WATER)					ELECTRICAL		MAX. DIMENSIONS			MAX. OPERATING WT. (LBS)	VIBRATION ISOLATION	MANUFACTURER & MODEL NO.	REMARKS
						EWT (°F)	LWT (°F)	GPM	MAX P.D. (FT.)	FOULING FACTOR	EWT (°F)	LWT (°F)	GPM	MAX P.D. (FT.)	FOULING FACTOR	MCA	VOLTAGE & PHASE	LENGTH	WIDTH	HEIGHT				
C-3	UPPER PLANT	600	CENTRIFUGAL	0.473	0.533	57	45	1,200	12.2	0.0005	80	90	1,800	15.4	0.001	591	460/3	168	83	110	30,000	RESTRAINED SPRING	YORK YKGQEXP8-CRGS	COOLING-ONLY CHILLER, R-134A REFRIGERANT

HEAT RECOVERY CHILLER SCHEDULE (C)

PLAN CODE	LOCATION	CAPACITY (TONS)	COMPRESSOR TYPE (NO.)	MAX. NPLV	MAX. KW/TON	EVAPORATOR (WATER) (1)					CONDENSER (WATER) (1)					ELECTRICAL			MAX. DIMENSIONS			MAX. OPERATING WT. (LBS)	VIBRATION ISOLATION	MANUFACTURER & MODEL NO.	REMARKS
						EWT (°F) COOL/ HEAT	LWT (°F) COOL/ HEAT	GPM COOL/ HEAT	MAX P.D. (FT.)	FOULING FACTOR	EWT (°F) COOL/ HEAT	LWT (°F) COOL/ HEAT	GPM COOL/ HEAT	MAX P.D. (FT.)	FOULING FACTOR	MAX RLA	MAX MCA	VOLTAGE & PHASE	LENGTH	WIDTH	HEIGHT				
CH-5	LOWER PLANT	600	CENTRIFUGAL	0.390	0.453	60/ 73	43/ 60	850/ 1107	13 (HEAT)	0.0001	80/ 95	90/ 110	1640/ 1112	22.1 (COOLING)	0.0005	400	509	480/3	204	103	115	32,000	RESTRAINED SPRING	TRANE CVHF0570	HEAT RECOVERY CHILLER, R-123 REFRIGERANT

(1) CONDENSER AND EVAPORATOR VALUES ARE GIVEN FOR THE CHILLER OPERATING IN BOTH FULL HEATING MODE AND FULL COOLING MODE.

COOLING TOWER SCHEDULE (CT)

PLAN CODE	LOCATION	FLOW RATE (GPM)	MIN. FLOW RATE (GPM)	TOTAL HEAT REJECTED (MBH)	EWT (°F)	LWT (°F)	OSA wb (°F)	NO. OF CELLS	ELECTRICAL					MAXIMUM DIMENSIONS			MAX. OPERATING WEIGHT (LBS)	MANUFACTURER	REMARKS
									MAX BHP	MOTOR HP	CONTROL	SUMP HEATERS (KW)	VOLTAGE/ PHASE	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)			
CT-3	UPPER PLANT	1,800	1,800	9,000	90	80	70	1	37	40	VFD	12 (1)	480/3	204	204	312	-	TOWER ENGINEERING	CERAMIC TOWER, MATCH DIMENSIONS OF ONE EXISTING TOWER CELL CT-1/CT-2

(1) PROVIDE SUMP HEATERS WITH BACK-UP POWER.

CONTROL VALVE SCHEDULE

PLAN CODE	LOCATION	SYSTEM SERVED	VALVE TYPE	FLOW GPM	PRESSURE DROP (PSI)	SIZE (IN.)	ACTUATOR	REMARKS
TMV-3	UPPER PLANT	C-3 CONDENSER	2-POSITION 3-WAY BUTTERFLY	1,800	< 1	10	ELECTRIC	LINE-SIZED
V-35	LOWER PLANT	CH-5 EVAPORATOR	2-POSITION 2-WAY BUTTERFLY	1,100	< 1	8	ELECTRIC	LINE-SIZED
V-36	LOWER PLANT	CH-5 CONDENSER	2-POSITION 2-WAY BUTTERFLY	1,600	< 1	10	ELECTRIC	LINE-SIZED
V-37	LOWER PLANT	CH-5 HEATING PIPING	MODULATING 3-WAY BUTTERFLY	1,100	< 1	8	ELECTRIC	LINE-SIZED
V-38	LOWER PLANT	CH-5 CHILLED PIPING	MODULATING 3-WAY BUTTERFLY	1,600	< 1	10	ELECTRIC	LINE-SIZED

PUMP SCHEDULE

PLAN CODE	TYPE	LOCATION	SYSTEM SERVED	FLOW (GPM)	PRESSURE (FT)	MAX. BHP	FLUID	MOTOR					MAX PUMP & MOTOR WT. (LBS)	MANUFACTURER & SERIES	REMARKS
								EFFICIENCY	SIZE (HP)	SPEED (RPM)	VOLTAGE & PHASE	VFD			
CCP-3	BASE MOUNTED	UPPER PLANT	CHILLER C-3	1,200	35	12.4	WATER	PREMIUM	15	1150	480/3	NO	1,020	B&G 1510 6E	-
CWP-3	BASE MOUNTED	UPPER PLANT	CHILLER C-3	1,800	55	30.4	WATER	PREMIUM	40	1770	480/3	NO	1,200	B&G 1510 6BC	-
BP-1	IN-LINE	LOWER PLANT	BOILER B-1	240	26	2.3	WATER	PREMIUM	3	1770	480/3	NO	280	B&G SERIES 80 4x4x7	SUSPEND FROM OVERHEAD STRUCTURE
BP-2	IN-LINE	LOWER PLANT	BOILER B-2	240	26	2.3	WATER	PREMIUM	3	1770	480/3	NO	280	B&G SERIES 80 4x4x7	SUSPEND FROM OVERHEAD STRUCTURE
BP-3	IN-LINE	LOWER PLANT	BOILER B-3	240	26	2.3	WATER	PREMIUM	3	1770	480/3	NO	280	B&G SERIES 80 4x4x7	SUSPEND FROM OVERHEAD STRUCTURE
BP-4	IN-LINE	LOWER PLANT	BOILER B-4	240	26	2.3	WATER	PREMIUM	3	1770	480/3	NO	280	B&G SERIES 80 4x4x7	SUSPEND FROM OVERHEAD STRUCTURE

FORCED DRAFT CONDENSING BOILER SCHEDULE (B)

PLAN CODE	MBH CAPACITY			ASME PRESS. RATING (PSI)	OPERATING PRESSURE	MIN. EFFICIENCY % (*)	FLUE CATEGORY	FLUE SIZE	GPM	PRESS. DROP (FT.HD.)	MAX. SIZE				ELECTRICAL		MIN. GAS PRESSURE (IN. W.C.)	MAKE & MODEL	REMARKS
	OUTPUT @ 4400 FT.	OUTPUT @ SEA LEVEL	INPUT @ SEA LEVEL								LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	OPERATING WT.(LBS)	FLA	VOLTAGE & PHASE			
B-1	3,560	3,560	4,000	150	80	90	IV	14"	450	9	126	41	88	9,000	9.3	460/3	11	FULTON VANTAGE 4000	CONDENSING BOILER, 89% EFFICIENT BASED ON FULL-FIRING RATE AND 100 RETURN WATER TEMPERATURE
B-2	3,560	3,560	4,000	150	80	90	IV	14"	450	9	126	41	88	9,000	9.3	460/3	11	FULTON VANTAGE 4000	CONDENSING BOILER, 89% EFFICIENT BASED ON FULL-FIRING RATE AND 100 RETURN WATER TEMPERATURE
B-3	3,560	3,560	4,000	150	80	90	IV	14"	450	9	126	41	88	9,000	9.3	460/3	11	FULTON VANTAGE 4000	CONDENSING BOILER, 89% EFFICIENT BASED ON FULL-FIRING RATE AND 100 RETURN WATER TEMPERATURE
B-4	3,560	3,560	4,000	150	80	90	IV	14"	450	9	126	41	88	9,000	9.3	460/3	11	FULTON VANTAGE 4000	CONDENSING BOILER, 89% EFFICIENT BASED ON FULL-FIRING RATE AND 100 RETURN WATER TEMPERATURE

NATURAL GAS PRESSURE REGULATOR

PLAN CODE	SERVES	INLET PRESSURE (PSIG)	OUTLET PRESSURE (IN. W.C.)	PROJECT LOAD (MBH)	REMARKS
REG-1	BOILER B-1	5	11	4,000,000	VENT RELIEF TO ATMOSPHERE
REG-2	BOILER B-2	5	11	4,000,000	VENT RELIEF TO ATMOSPHERE
REG-3	BOILER B-3	5	11	4,000,000	VENT RELIEF TO ATMOSPHERE
REG-4	BOILER B-4	5	11	4,000,000	VENT RELIEF TO ATMOSPHERE

JOB SITE ELEVATION = 4,500 FT
JOB SITE PRESSURE = 12.32 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

ALL MOTORS TO BE PREMIUM EFFICIENCY

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
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LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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CHECKED BY:	Checker
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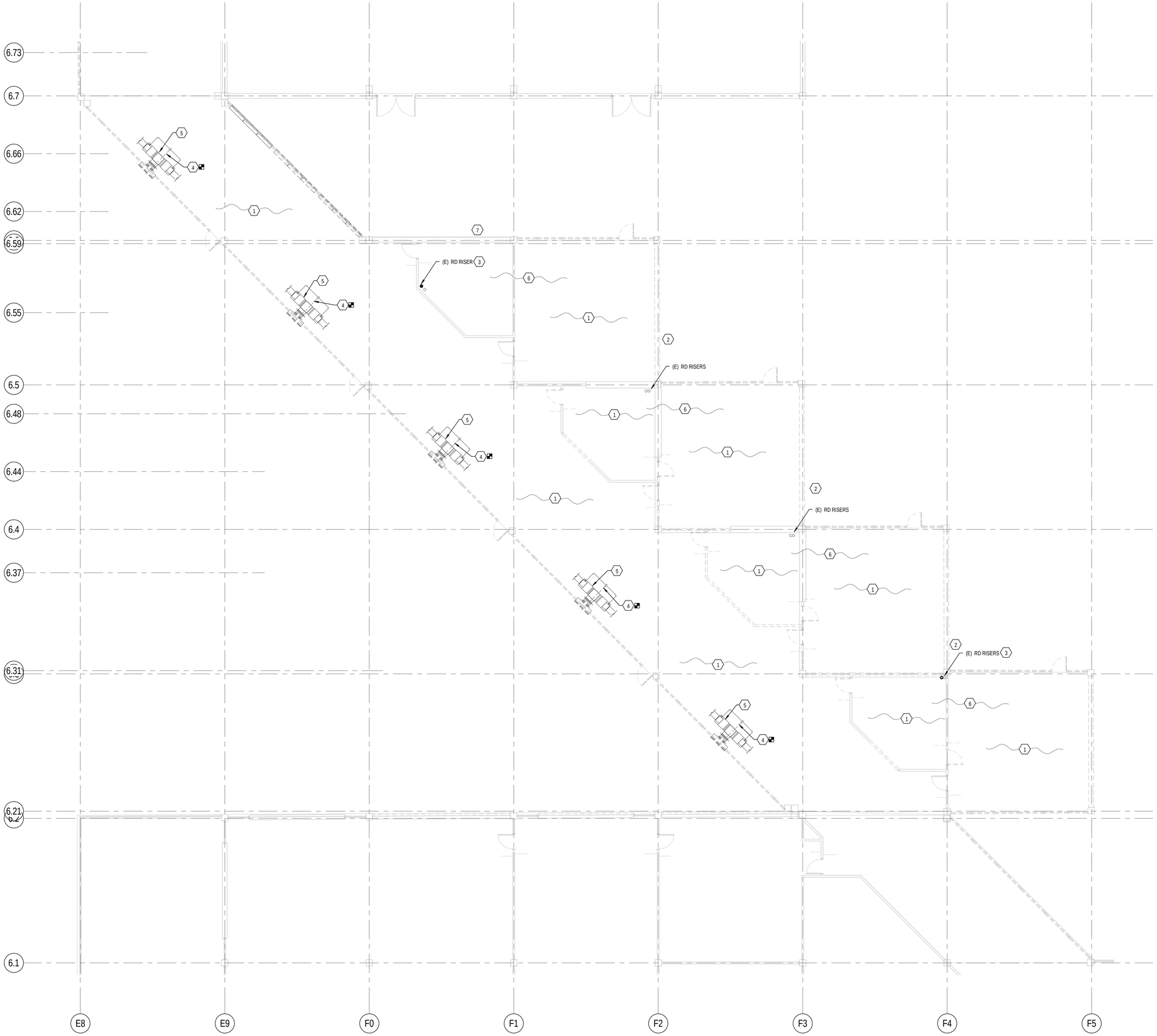
MECHANICAL PLANT SCHEDULES

CONSTRUCTION DOCUMENTS

MP651



1 LEVEL 1 PLUMBING DEMOLITION FLOOR PLAN - AREA B

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

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. DEMOLISH ROOF DRAINS AND ASSOCIATED PIPING, INCLUDING RISERS, UNLESS OTHERWISE NOTED. ABANDON BURIED PIPE. SEE ARCHITECTURAL FOR FLOOR PATCH.
2. DEMOLISH DOWN SPOUT NOZZLE AND ASSOCIATED PIPING. SEE ARCHITECTURAL FOR WALL PATCH.
3. DEMOLISH OVERFLOW DRAIN RISER. PRIMARY ROOF DRAIN RISER TO REMAIN FOR REUSE.
4. DEMOLISH EXISTING CONDENSATE DRAIN THROUGH WALL, BACK TO APPROXIMATE LOCATION SHOWN. SEE PL102B FOR NEW PIPE ROUTING. SEE ARCHITECTURAL FOR WALL PATCH.
5. FAN COIL UNITS ARE EXISTING AND SHALL REMAIN.
6. REMOVE WATER PIPING BACK TO ISOLATION VALVES AT MAINS IN CONCOURSE. REMOVE WASTE AND VENT PIPING. CAP AND ABANDON WASTE PIPING BELOW FLOOR. SEE ARCHITECTURAL FOR FLOOR OR WALL PATCH.
7. DEMOLISH SILL COCK AND CAP PIPE ABOVE CEILING. SEE ARCHITECTURAL FOR WALL PATCH.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 1 PLUMBING DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

PD102B

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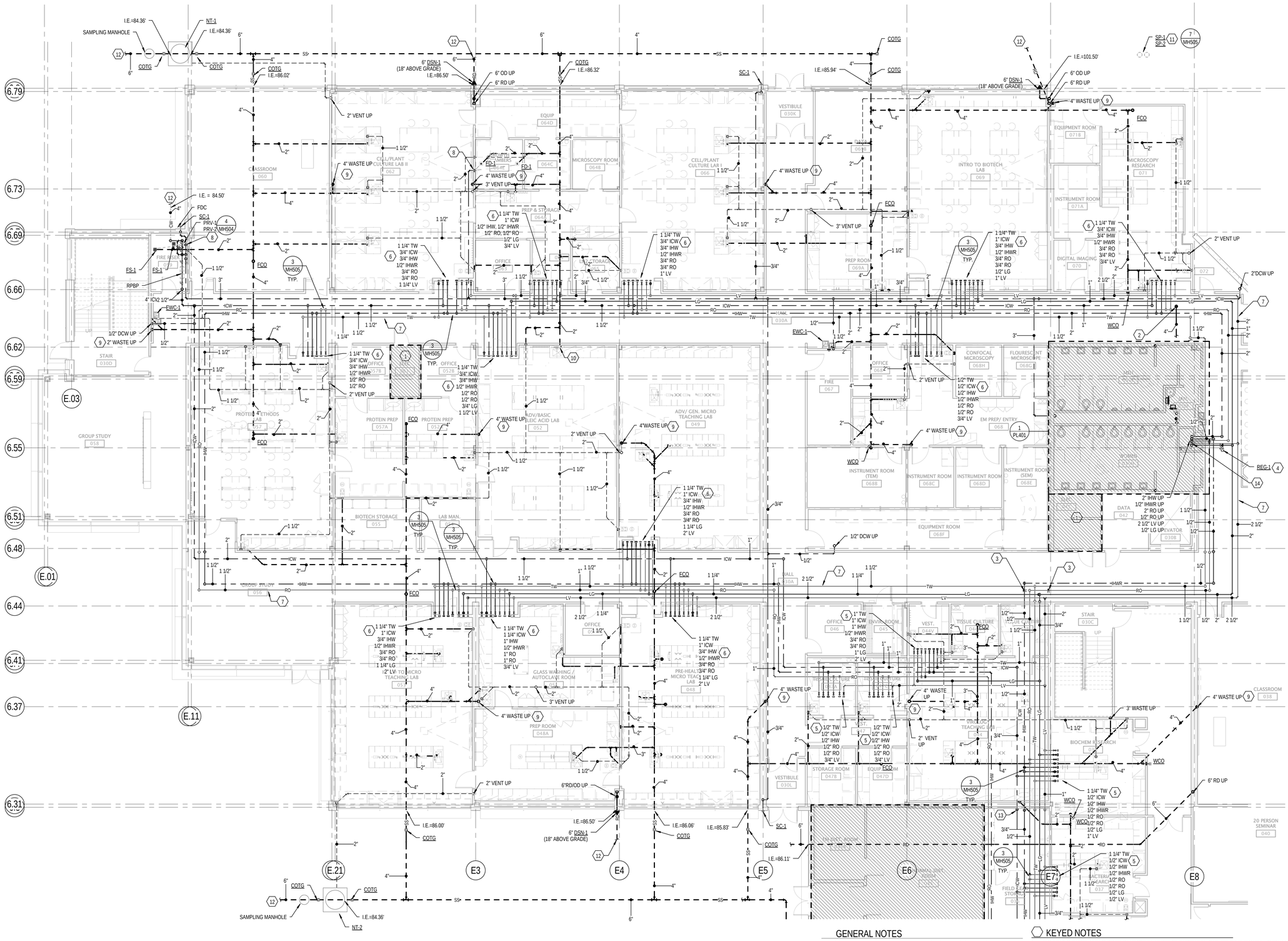


1 LEVEL 0 PLUMBING FLOOR PLAN - AREA A

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

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

KEYED NOTES

1. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
2. DROP WASTE PIPE DOWN IN TUNNEL FOR UTILITY CONNECTION. COORDINATE CONNECTION LOCATION WITH SITE UTILITY CONTRACTOR. SEE CIVIL DRAWINGS.
3. PROVIDE CIRCUIT SETTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM. SEE DETAIL 7/MH503.
4. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.
5. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS.
6. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. TYPICAL ALL LAB SPACES.
7. PIPING IN CORRIDOR SHALL BE STACKED ON ONE SIDE OF SUPPLY AIR DUCT. SEE SECTION 5/MH302 FOR COORDINATION WITH ALL OTHER DISCIPLINES. PIPING SHOWN SIDE BY SIDE ON THIS SHEET FOR CLARIFICATION.
8. PROVIDE ELECTRONIC TRAP PRIMER. ROUTE TO FLOOR DRAIN/FLOOR SINK.
9. PROVIDE CLEANOUT AT THE BASE OF ALL WASTE STACKS. TYPICAL.
10. PROVIDE CLEANOUT BELOW SINK.
11. SUMP PUMPS IN TUNNEL. LOCATE CONTROL PANEL ON WALL OF TUNNEL. CONNECT 3" DISCHARGE LINE TO 10" WASTE PIPE IN TUNNEL. COORDINATE WITH SITE UTILITY CONTRACTOR.
12. SEE SITE UTILITY DRAWINGS FOR CONTINUATION.
13. OFFSET PIPE BELOW BEAM. FIELD COORDINATE.
14. PROVIDE 2 1/2" DRIP LEG AT BASE OF LAB VACUUM RISER. EXTEND TO THE NORTH OUT OF SHAFT INTO JANITORS CLOSET AND TRANSITION TO VERTICAL. INSTALL ONE ISOLATION BALL VALVE IN VERTICAL PIPE, THEN A SECOND BALL VALVE BELOW. TRANSITION TO 3/4" HOSE FITTING AFTER LAST 2 1/2" BALL VALVE . SLOPE ALL PIPE TOWARDS HOSE FITTING.

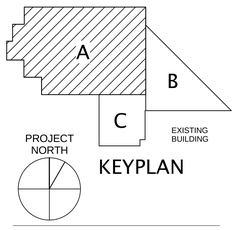
GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



KEYPLAN

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Division of Facilities Construction and Management

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LEVEL 0 PLUMBING FLOOR PLAN - AREA A

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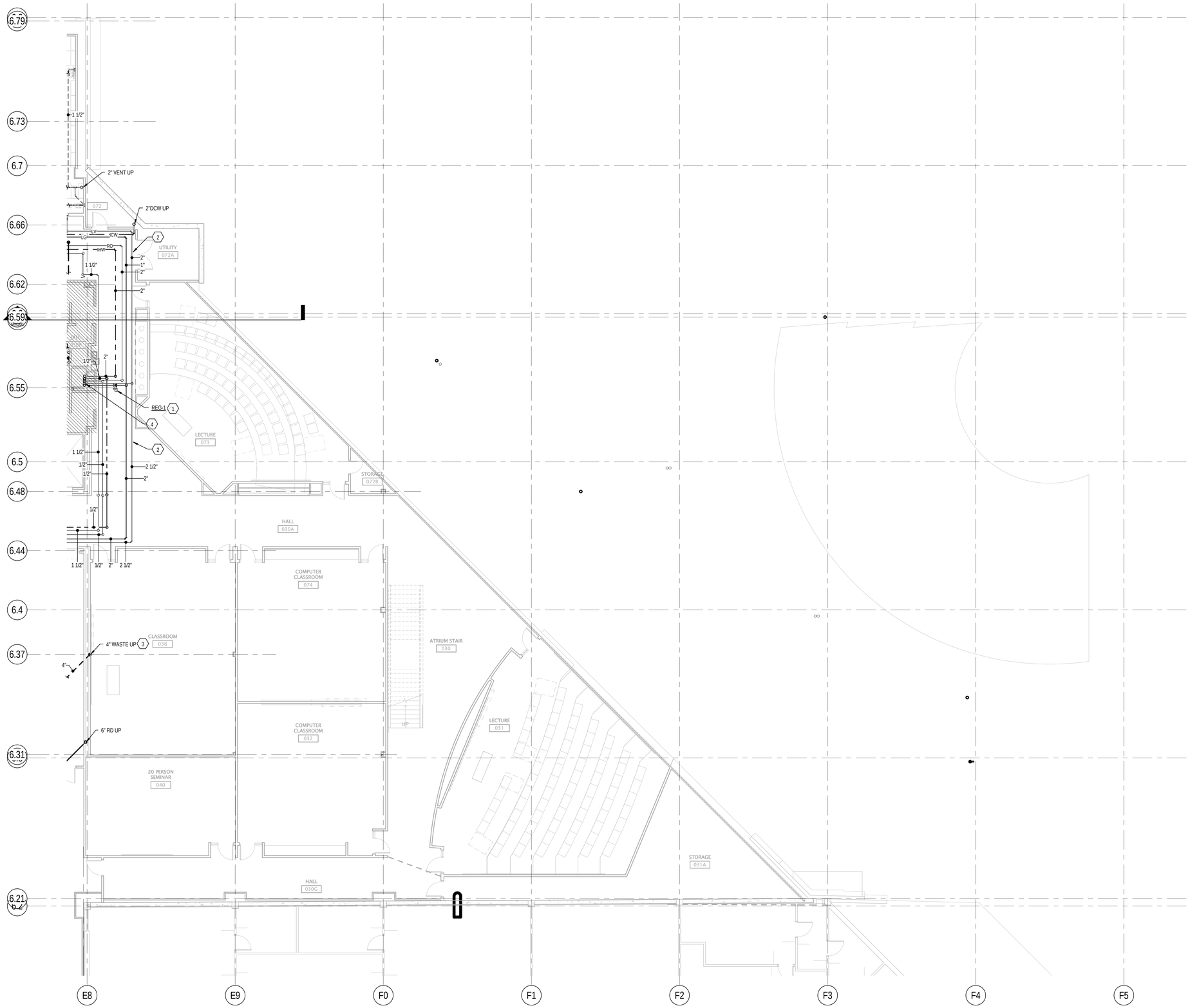


KEYED NOTES

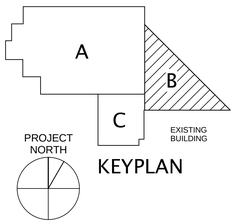
1. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.
2. PIPING IN CORRIDOR SHALL BE STACKED ON ONE SIDE OF SUPPLY AIR DUCT. SEE SECTION 5/MH302 FOR COORDINATION WITH ALL OTHER DISCIPLINES. PIPING SHOWN SIDE BY SIDE ON THIS SHEET FOR CLARIFICATION.
3. PROVIDE CLEANOUT AT THE BASE OF ALL WASTE STACKS. TYPICAL.
4. PROVIDE 2 1/2" DRIP LEG AT BASE OF LAB VACUUM RISER. EXTEND TO THE NORTH OUT OF SHAFT INTO JANITORS CLOSET AND TRANSITION TO VERTICAL. INSTALL ONE ISOLATION BALL VALVE IN VERTICAL PIPE. THEN A SECOND BALL VALVE BELOW. TRANSITION TO 3/4" HOSE FITTING AFTER LAST 2 1/2" BALL VALVE . SLOPE ALL PIPE TOWARDS HOSE FITTING.

1 LEVEL 0 PLUMBING FLOOR PLAN - AREA B

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

6' 0' 4' 8' 12' 16'

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 0 PLUMBING FLOOR PLAN - AREA B

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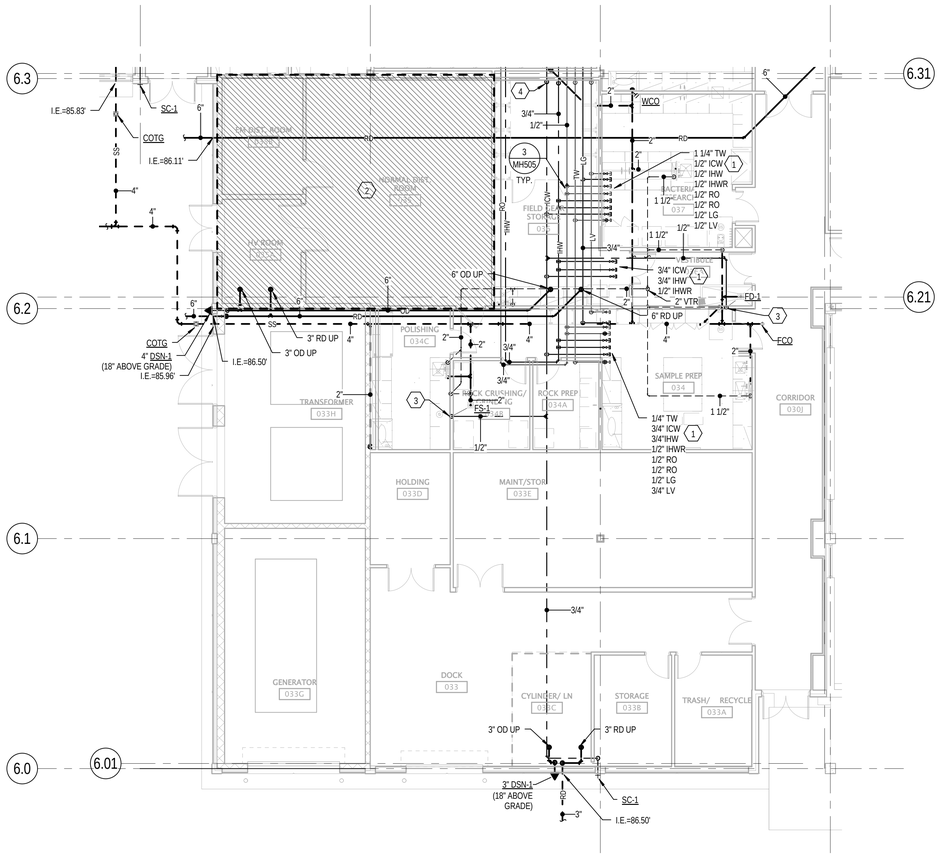


1 LEVEL 0 PLUMBING FLOOR PLAN - AREA C

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

6' 0' 4' 8' 12' 16'

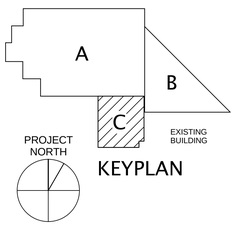
KEYED NOTES

1. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS.
2. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
3. PROVIDE ELECTRONIC TRAP PRIMER. ROUTE TO FLOOR DRAIN/FLOOR SINK.
4. OFFSET PIPE BELOW BEAM. FIELD COORDINATE.

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5964406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 0 PLUMBING FLOOR PLAN - AREA C

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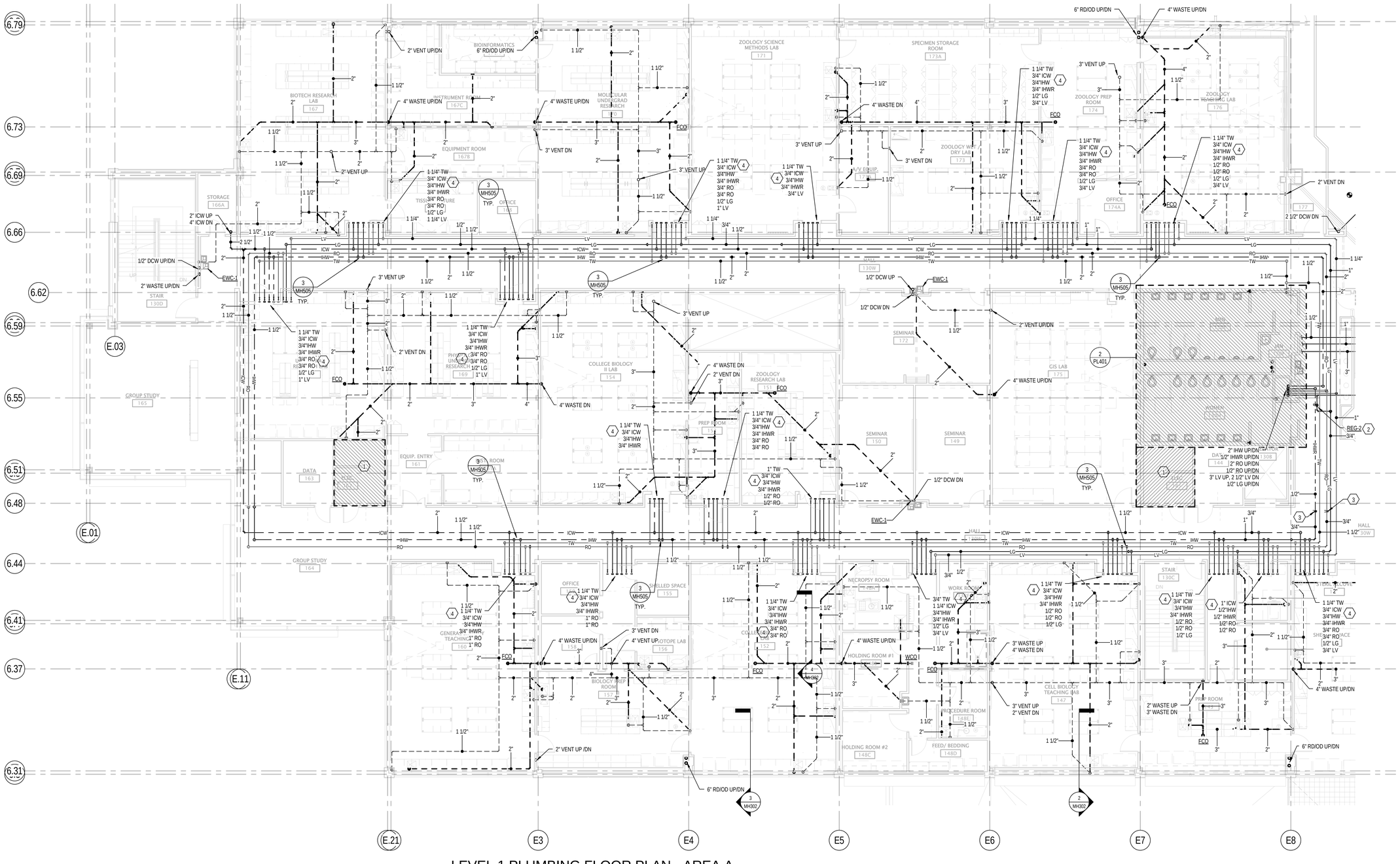
GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



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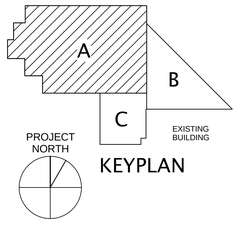

KEYPLAN

LEVEL 1 PLUMBING FLOOR PLAN - AREA A

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

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

KEYED NOTES

1. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
2. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.
3. PROVIDE CIRCUIT SETTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM. SEE DETAIL 7/MH503.
4. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. TYPICAL ALL LAB SPACES.
5. CONNECT TO EXISTING CONDENSATE DRAIN FROM FAN COIL UNITS.

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Orem, Utah 84058

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LEVEL 1 PLUMBING FLOOR PLAN - AREA A

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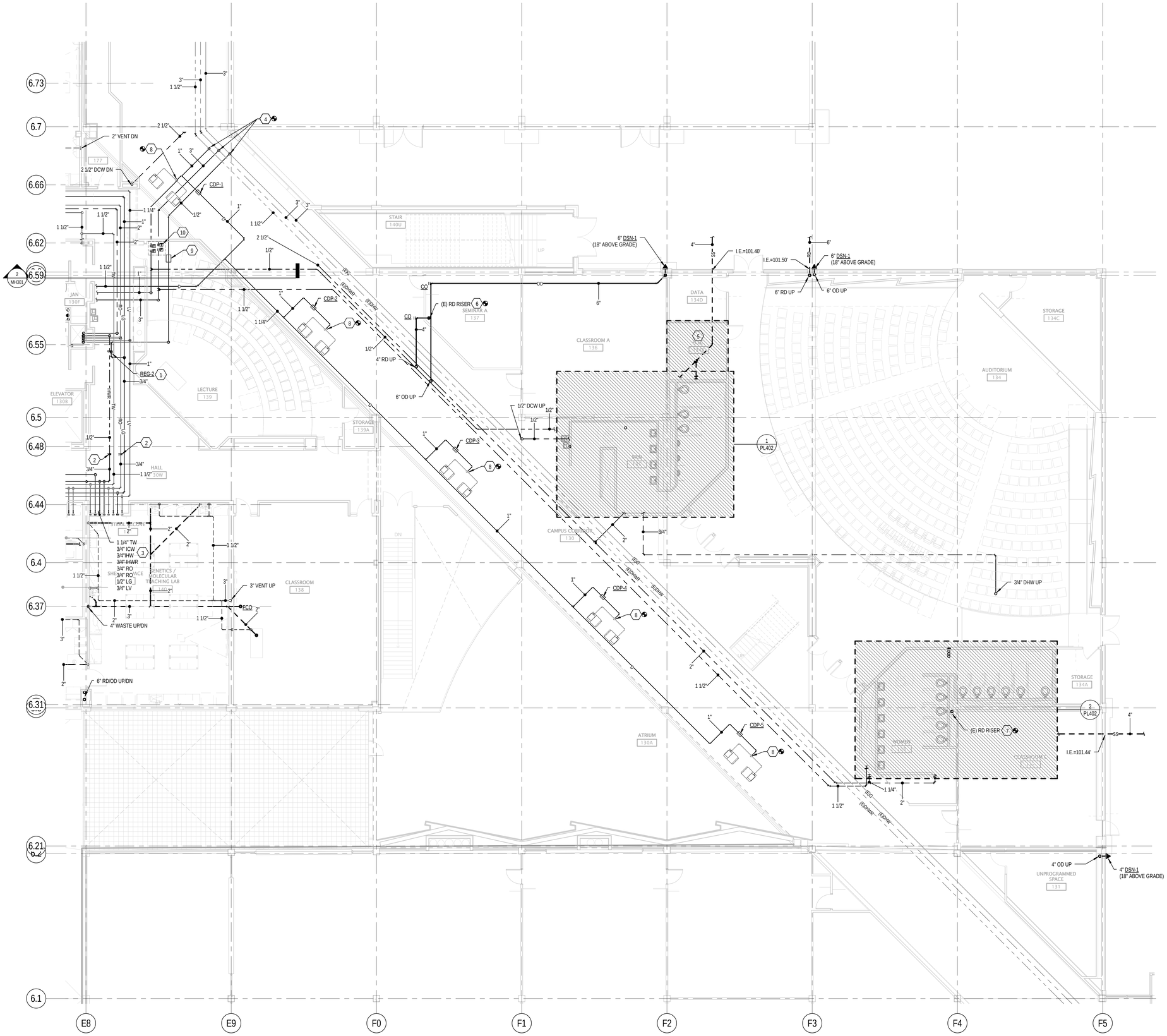


1 LEVEL 1 PLUMBING FLOOR PLAN - AREA B

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

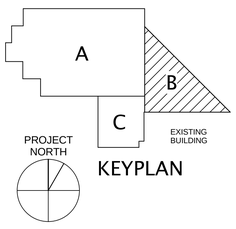
KEYED NOTES

1. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.
2. PROVIDE CIRCUIT SETTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM. SEE DETAIL 7/MH503.
3. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. TYPICAL ALL LAB SPACES.
4. CONNECT TO EXISTING UTILITIES IN CONCOURSE. FIELD VERIFY LOCATION.
5. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
6. CONNECT TO EXISTING ROOF DRAIN RISER.
7. CONNECT NEW ROOF DRAIN FROM ABOVE TO EXISTING RISER.
8. CONNECT TO EXISTING CONDENSATE DRAIN FROM FAN COIL UNITS.
9. INSTALL TENANT GAS METER IN GAS LINE. INTERLOCK WITH 230900 CONTROL SYSTEM.
10. INSTALL FLOW METERS AND TEMPERATURE SENSORS IN DOMESTIC HOT WATER AND HOT WATER CIRCULATING LINES. INTERLOCK WITH 230900 CONTROL SYSTEM.

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



KEYPLAN

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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LEVEL 1 PLUMBING FLOOR PLAN - AREA B

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P 801.521.8600
F 801.521.7915
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LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

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244 West 300 North Suite 200
Salt Lake City, Utah 84103
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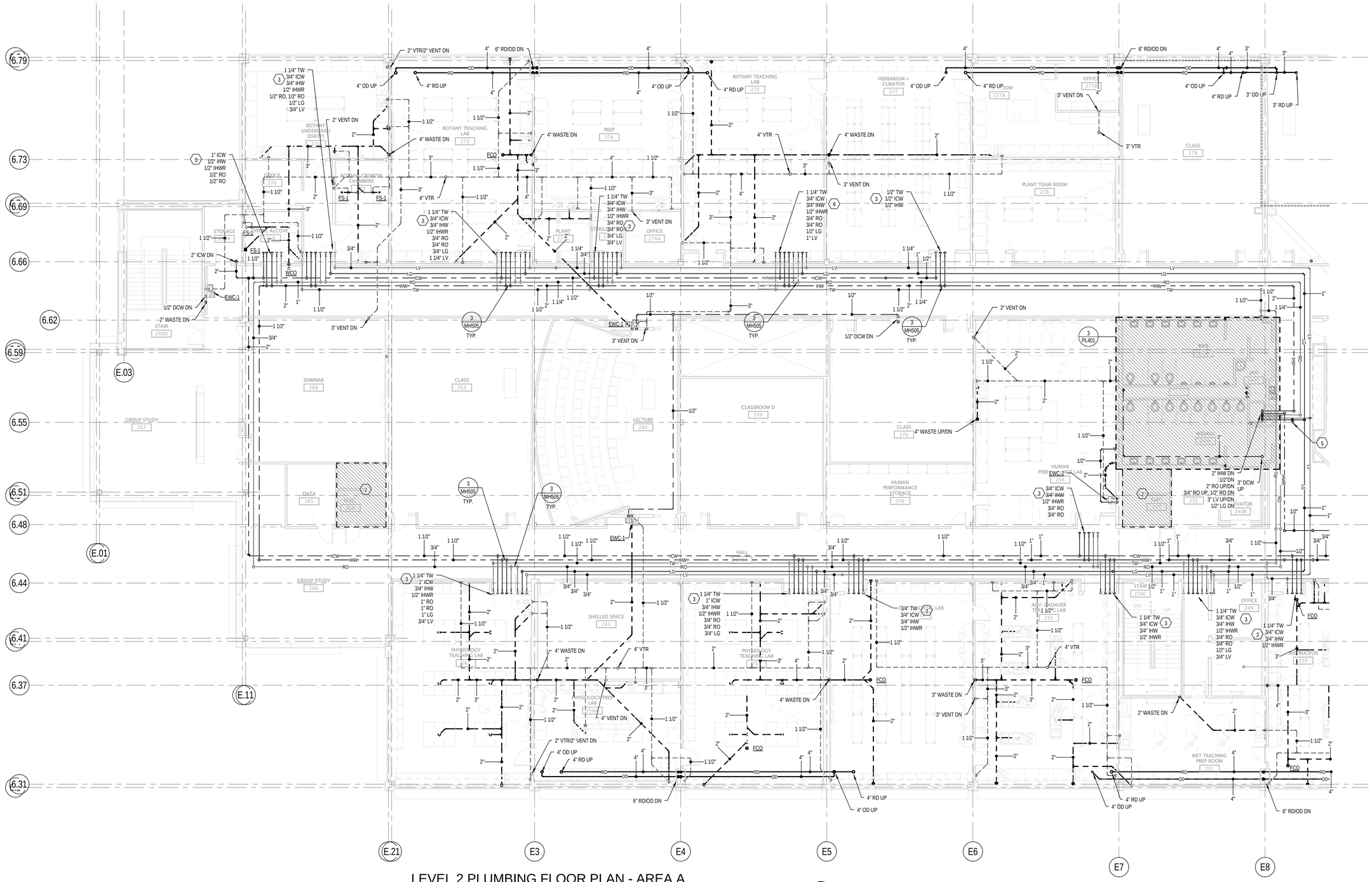


1 LEVEL 2 PLUMBING FLOOR PLAN - AREA A

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

6' 0' 4' 8' 12' 16'

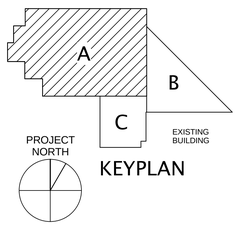
GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

KEYED NOTES

1. DROP WASTE PIPE DOWN IN TUNNEL FOR UTILITY CONNECTION. COORDINATE CONNECTION LOCATION WITH SITE UTILITY CONTRACTOR. SEE CIVIL DRAWINGS.
2. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
3. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. TYPICAL ALL LAB SPACES.
4. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS.
5. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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LEVEL 2 PLUMBING FLOOR PLAN - AREA A

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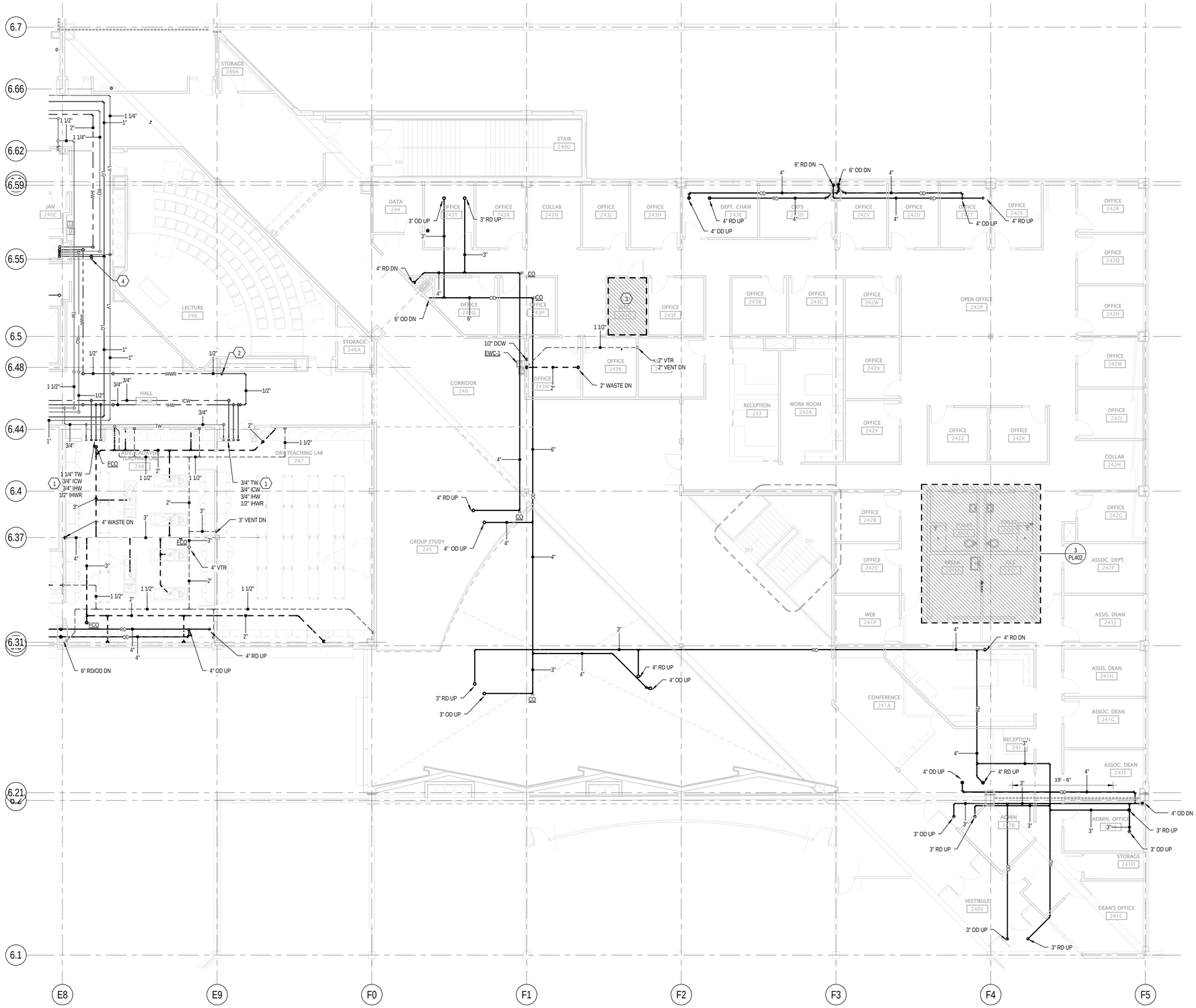


1 LEVEL 2 PLUMBING FLOOR PLAN - AREA B

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

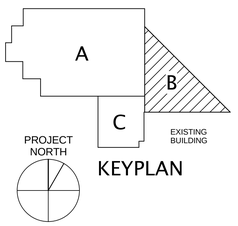
KEYED NOTES

1. DROP LAB UTILITIES TO JUST ABOVE CEILING SPACE FOR EASY ACCESS. CAP AND VALVE STUB OUTS FOR CONTINUATION AS SHOWN ON LABORATORY DRAWINGS. STUB OUTS SHOULD BE LOCATED ABOVE THE DOOR TO THE LAB IN WHICH THEY SERVE. UNLESS SHOWN OTHERWISE. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS. COORDINATE LAB UTILITY LOCATIONS WITH LAB DRAWINGS. COORDINATE LOCATIONS WITH ALL OTHER DISCIPLINES. TYPICAL ALL LAB SPACES.
2. PROVIDE CIRCUIT SETTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM. SEE DETAIL 7/MH503.
3. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
4. PROVIDE NATURAL GAS PRESSURE REGULATOR. VENT TO ATMOSPHERE AS NECESSARY.

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.



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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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LEVEL 2 PLUMBING FLOOR PLAN - AREA B

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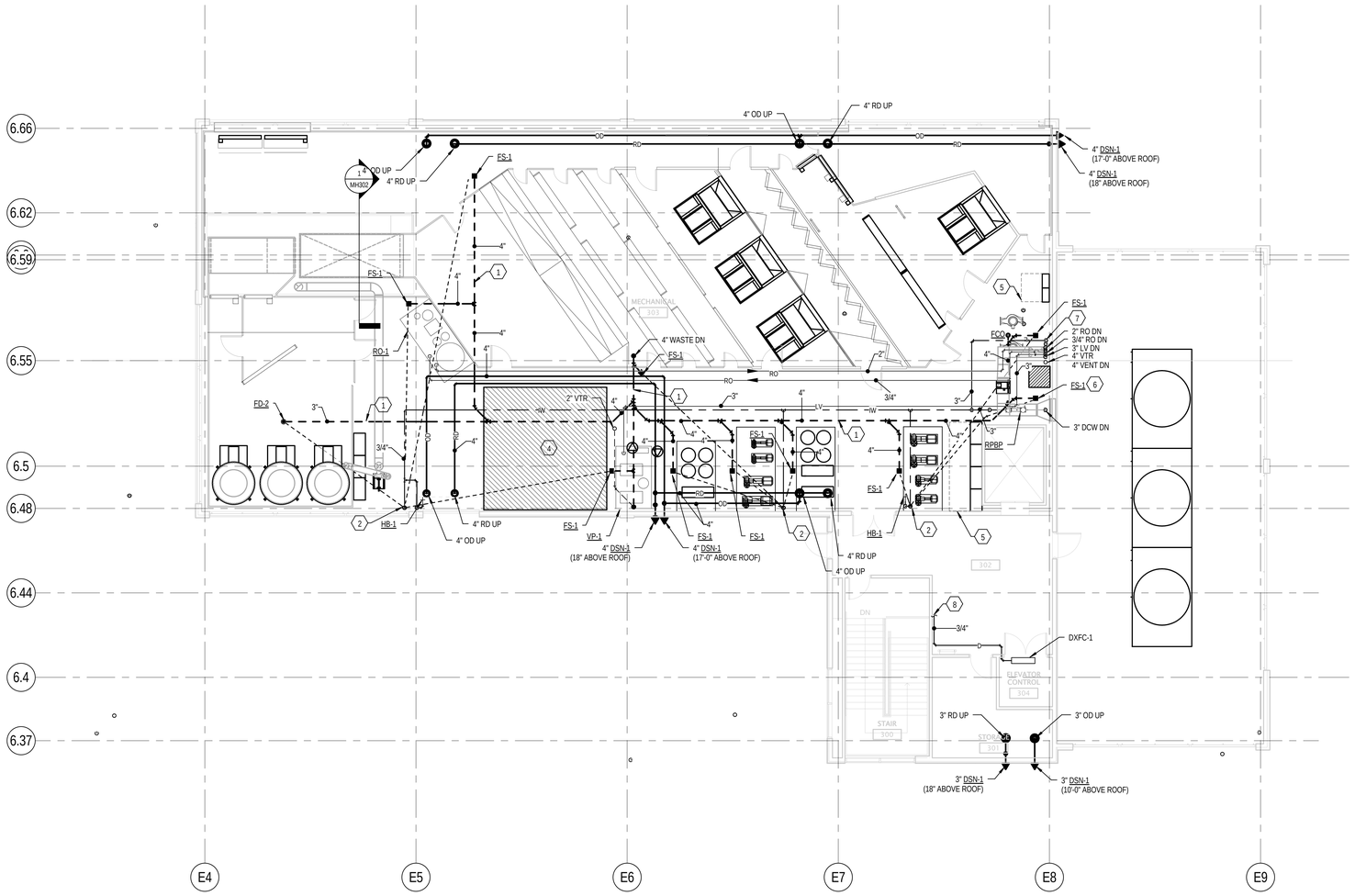
KEYED NOTES

1. COMBINATION WASTE AND VENT.
2. PROVIDE ELECTRONIC TRAP PRIMER. ROUTE TO FLOOR DRAIN/FLOOR SINK.
3. ?
4. DO NOT ROUTE ANY PIPING/PLUMBING OVER ELECTRICAL EQUIPMENT/ROOM. TYPICAL.
5. DO NOT ROUTE ANY PIPING OVER VFD'S OR CLEARANCE AREA.
6. PROVIDE 2" DRAIN LINE FROM ISS-1 TO FLOOR SINK. INSTALL MOTORIZED BALL VALVE IN LINE. VALVE FURNISHED BY WATER TREATMENT CONTRACTOR.
7. 3" INDUSTRIAL WATER. ROUTE 2" LINE TO INLET OF CONDENSER WATER PUMPS TO PROVIDE MAKE-UP FOR COOLING TOWERS. ROUTE 1" LINE TO EVAPORATIVE MEDIA IN AIR HANDLER. COORDINATE TIE-IN LOCATIONS WITH MECHANICAL PIPING AND HVAC PLANS.
8. ROUTE PUMPED CONDENSATE FROM DX FAN COIL UNIT DXFC-1 TO FLOOR SINK IN MECHANICAL ROOM IN 3/4" LINE.



1 ENLARGED PENTHOUSE PLUMBING PLAN/ROOF PLAN

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

6' 0' 4' 8' 12' 16'

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
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GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

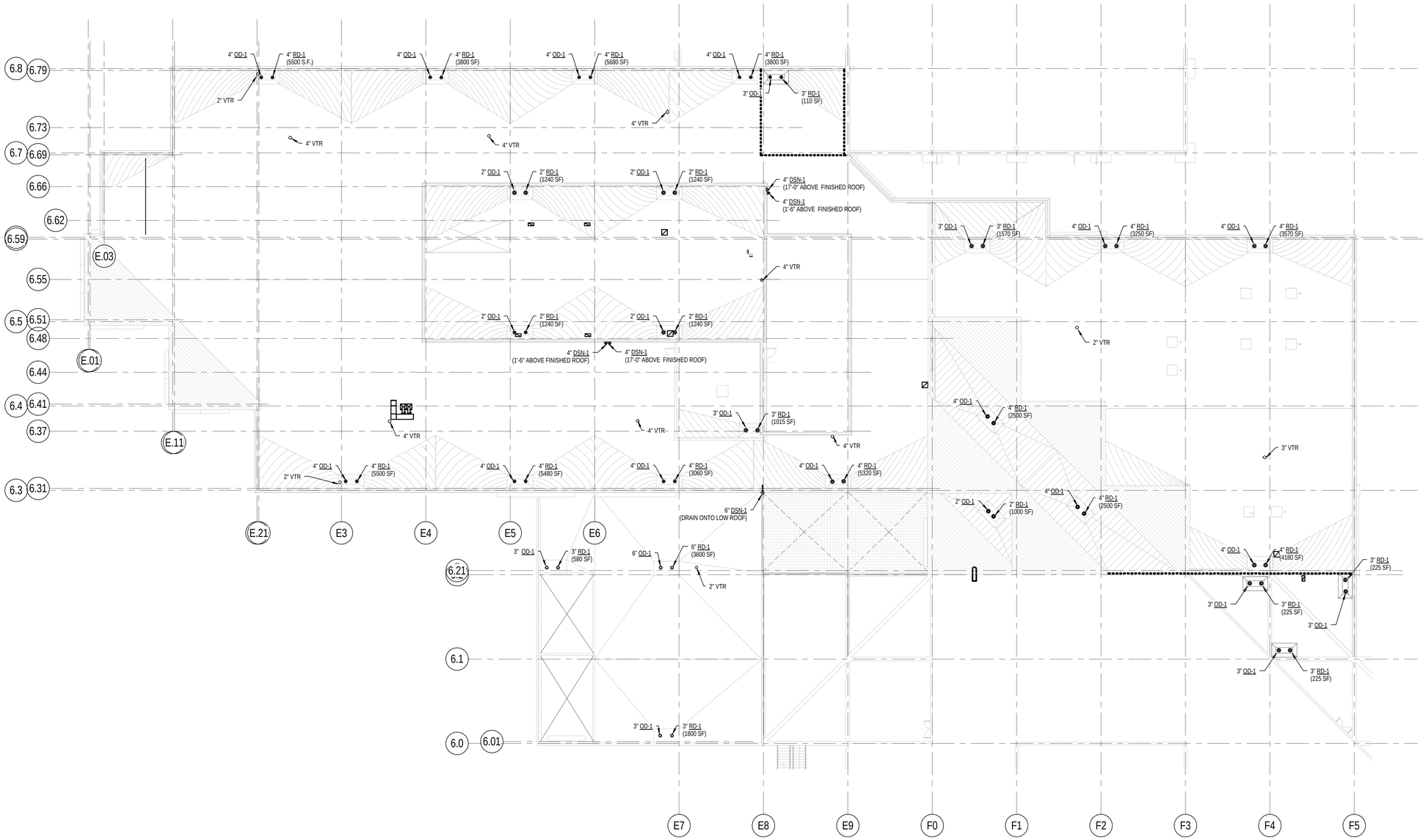
PENTHOUSE PLUMBING PLAN

CONSTRUCTION DOCUMENTS

PL104

KEYED NOTES

1 ?
2 ?



1 PLUMBING ROOF PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7915

www.gsbsarchitects.com

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Salt Lake City, Utah 84103
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PLUMBING ROOF PLAN

CONSTRUCTION DOCUMENTS

PL105

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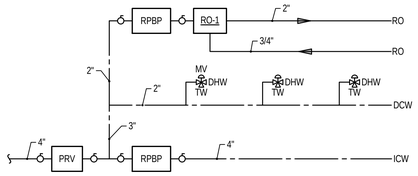
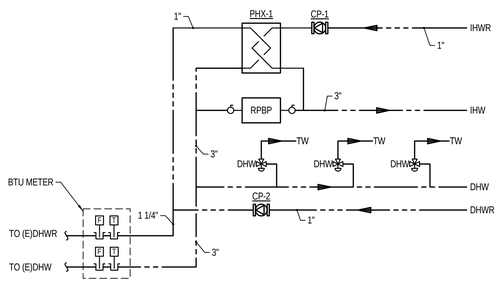


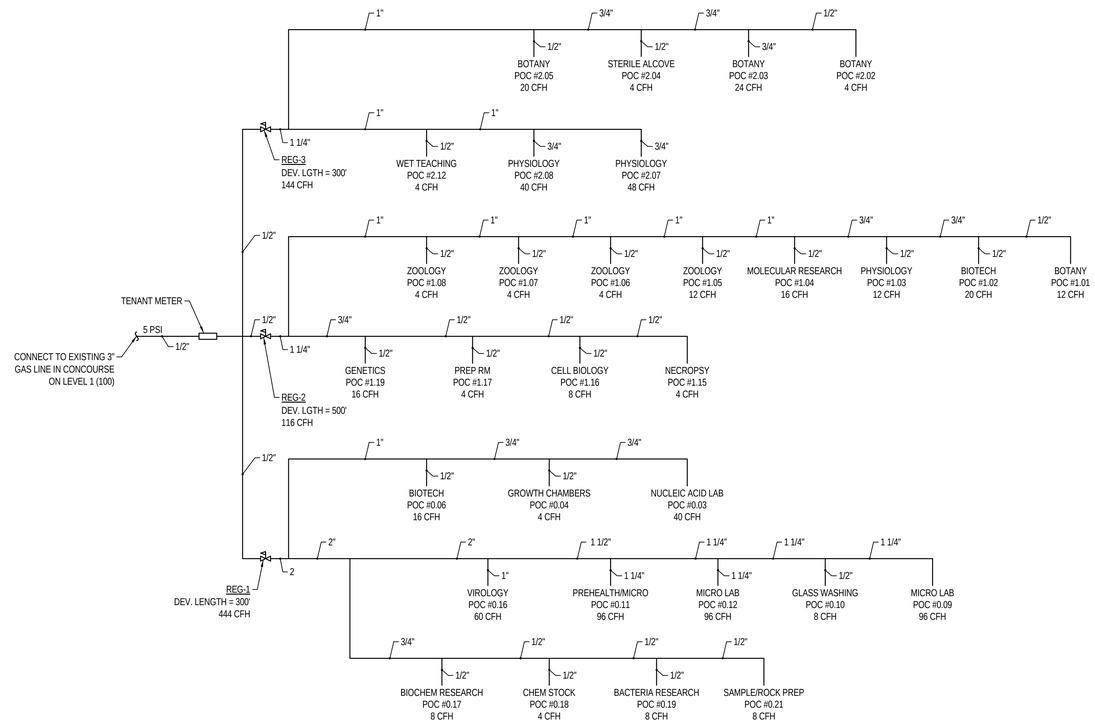
1 INDUSTRIAL/DOMESTIC COLD WATER SCHEMATIC

SCALE: NONE



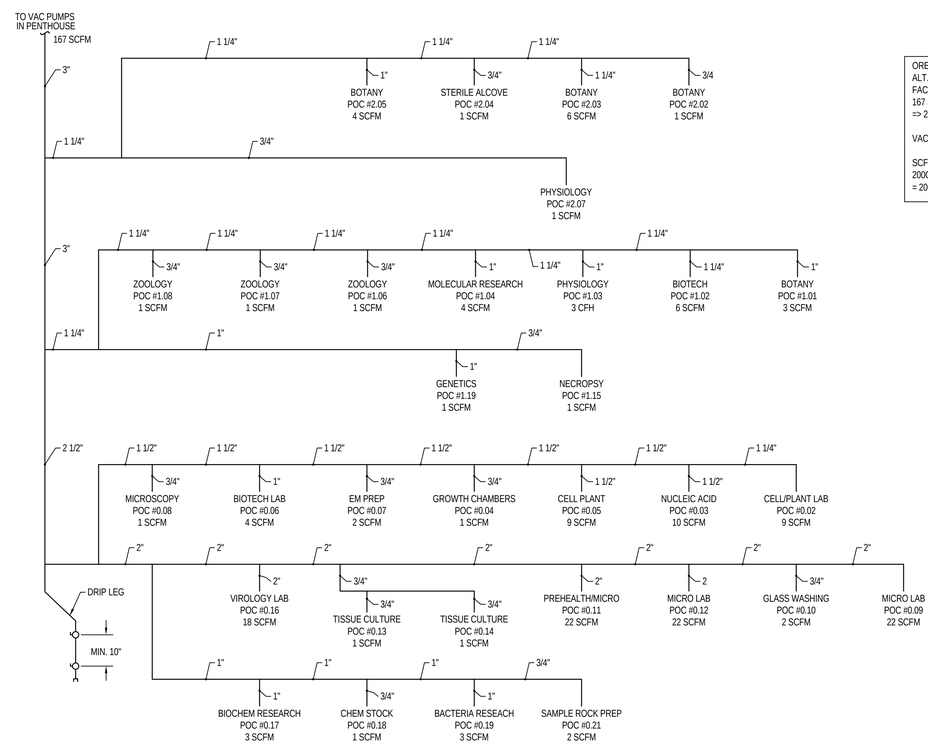
2 INDUSTRIAL/DOMESTIC HOT WATER SCHEMATIC

SCALE: NONE



3 LABORATORY GAS SCHEMATIC

SCALE: NONE



OREM ELEV = 4700'
ALT. CORRECTION
FACTOR = 1.20
167 SCFM * 1.20 = 200.4 SCFM
=> 200 SCFM

VACUUM LEVEL = 19-21" Hg

SCFM TO ACFM
200CFM @ 21" Hg
= 200 * 3.33 = 666 ACFM

4 LABORATORY VACUUM SYSTEM SCHEMATIC

SCALE: NONE

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SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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LICENSED PROFESSIONAL ENGINEER
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REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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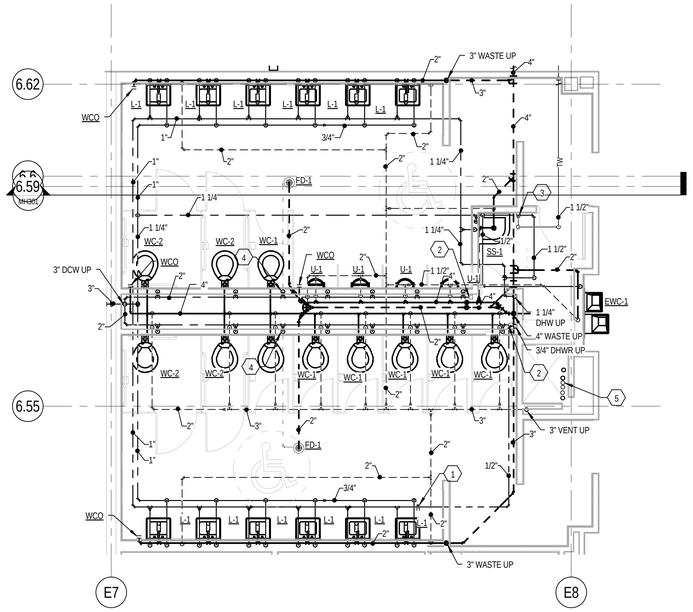
PLUMBING SCHEMATICS

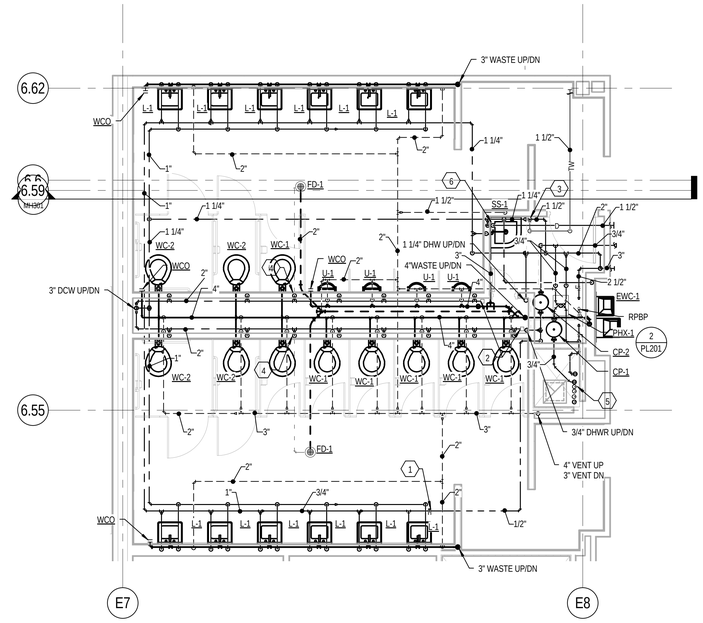
CONSTRUCTION DOCUMENTS

PL201



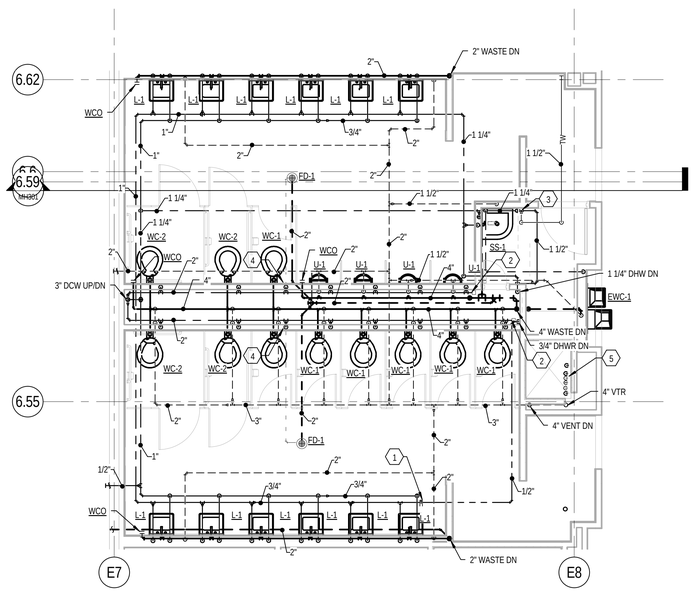
ENLARGED LEVEL 0 RESTROOM PLUMBING PLAN - AREA A

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



ENLARGED LEVEL 1 RESTROOM PLUMBING PLAN - AREA A

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



ENLARGED LEVEL 2 RESTROOM PLUMBING PLAN - AREA A

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

KEYED NOTES

1. PROVIDE CIRCUIT SETTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM. SEE DETAIL 7/MH503.
2. PROVIDE WATER HAMMER ARRESTOR IN ACCESSIBLE AREA IN PLUMBING CHASE.
3. PROVIDE MIXING VALVE FOR TEMPERED LAB WATER. SET AT 105 DEG. F.
4. PROVIDE TRAP PRIMER AT FLUSH VALVE. ROUTE TO FLOOR DRAIN/FLOOR SINK.
5. PLUMBING RISERS IN SHAFT. SEE 1/8" SCALE PLANS FOR SIZES.
6. DROP 1 1/2" CONDENSATE DRAIN TO SERVICE SINK. PROVIDE AIR GAP AS REQUIRED.

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

GSBS ARCHITECTS
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SALT LAKE CITY, UT 84101
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F 801.521.7915
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Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

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800 West University Parkway
Orem, Utah 84058

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ENLARGED PLUMBING PLANS

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PL401

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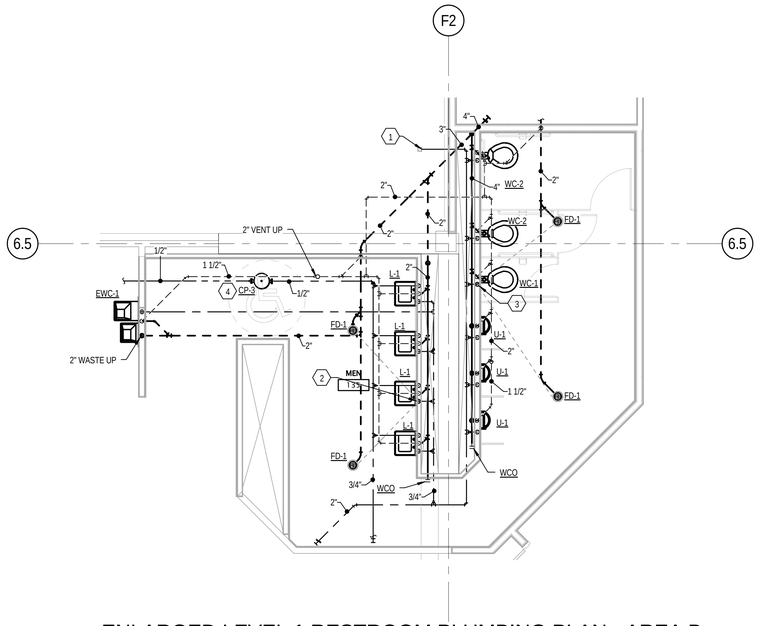
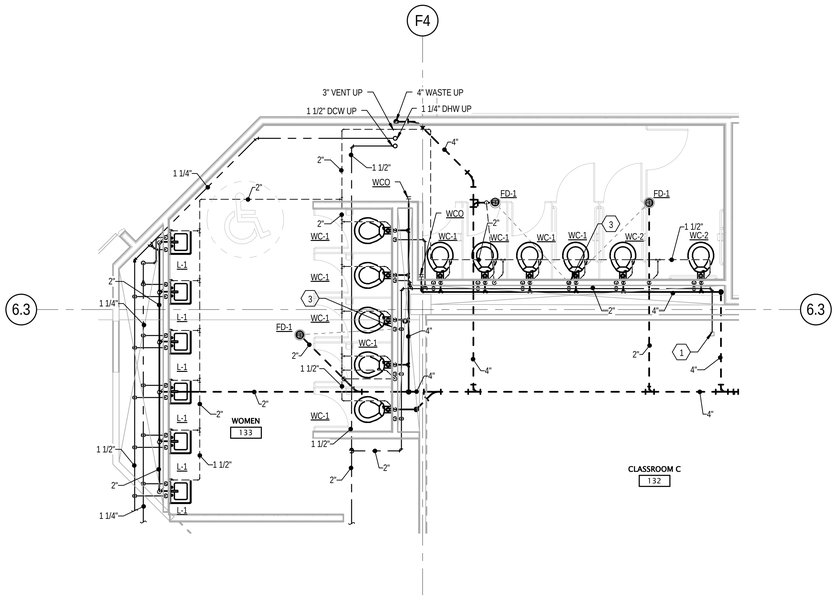


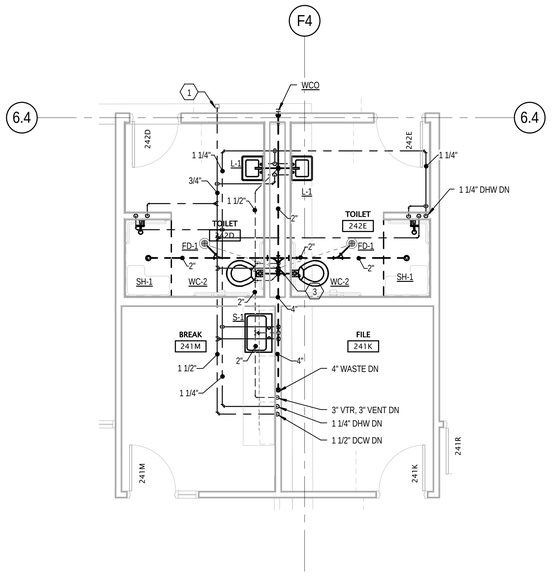
1 ENLARGED LEVEL 1 RESTROOM PLUMBING PLAN - AREA B

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



2 ENLARGED LEVEL 1 RESTROOM PLUMBING PLAN- AREA B

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



3 ENLARGED LEVEL 2 RESTROOM PLUMBING PLAN - AREA B

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

KEYED NOTES

1. PROVIDE WATER HAMMER ARRESTOR ABOVE ACCESSIBLE CEILING.
2. PROVIDE ELECTRONIC TRAP PRIMER BELOW LAVATORY. ROUTE TO FLOOR DRAIN/FLOOR SINK.
3. PROVIDE TRAP PRIMER AT FLUSH VALVE. ROUTE TO FLOOR DRAIN/FLOOR SINK.
4. LOCATE CIRCULATION PUMP ABOVE CEILING. PROVIDE ACCESS DOOR.

GENERAL NOTES

A. COORDINATE WASTE AND VENT ROUGH IN LOCATIONS WITH LAB PLUMBING DRAWINGS.
B. COORDINATE PIPING WITH ELECTRICAL PLANS. DO NOT ROUTE ANY PIPING OVER ELECTRICAL PANELS.
C. SEE SHEET MH001 FOR ADDITIONAL GENERAL NOTES.
D. RO WATER PIPING FROM MAINS IN HALLWAY INTO INDIVIDUAL ROOMS TO INCLUDE A BYPASS VALVE PER DETAIL 5, SHEET MH505.
E. INSTALL ALL FLOOR MOUNTED EQUIPMENT UPIN 4" TALL HOUSEKEEPING PAD.
F. COORDINATE ALL PLUMBING WITH ALL OTHER DISCIPLINES.

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/ELECTRICAL/ LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
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244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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ENLARGED PLUMBING PLANS

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PL402

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VACUUM SYSTEM SCHEDULE (VP)

PLAN CODE	TYPE	DUTY	DISPLACEMENT (CFM/PUMP)	NOMINAL PUMPING SPEED (ACFM/PUMP)	END PRESSURE ("Hg/TORR)	TANK (GAL)	MOTOR SIZE (HP)	MOTOR FLA	MOTOR VOLTAGE & PHASE	DIMENSIONS (IN) L	DIMENSIONS (IN) W	DIMENSIONS (IN) H	WEIGHT (LBS)	SYSTEM MANUFACTURER & MODEL NO.	PUMP MANUFACTURER & MODEL NO.
VP-1	DUPLEX	LAB VACUUM	330	305	29.3/15	200	(2) 15	(2) 21	460/3	101	78	89	3550	BUSH THED-2-LAB-400	BUSH RC 0400

1. DUPLEX PUMP SYSTEM WITH VERTICAL RECEIVER MOUNTED ON A SKID. COMPLETE VACUUM SYSTEM INCLUDING CONTROLS. PUMPS IN HORIZONTAL ARRANGEMENT THAT ALLOW FOR FUTURE EXPANSION TO TRIPLEX OR QUADRUPLEX SYSTEM.
2. EACH PUMP.

REVERSE OSMOSIS SYSTEM (RO)

PLAN CODE	NOMINAL CAPCITY (GPD)	APPROXIMATE RECOVERY (%)	MOTOR SIZE (HP)	MOTOR FLA	MOTOR VOLTAGE & PHASE	DIMENSIONS (IN) L	DIMENSIONS (IN) W	DIMENSIONS (IN) H	WEIGHT (LBS)	MANUFACTURER & MODEL NO	DESCRIPTION
RO-1	5,800	60	1	10.4	208/1	132	60	75	-	CULLIGAN AP-3	UNIT SHALL CONSIST OF WATER SOFTENER, BRINE TANK, RO UNIT WITH 2 D.I. TANKS, REPRESSURE PUMP, FINAL FILTER AND A 500 GALLON STORAGE TANK.

SUMP PUMP SCHEDULE (SP)

PLAN CODE	PUMP FLOW (GPM)	PUMP HEAD (FT)	PUMP CONFIGURATION	PUMP MAKE/MODEL	MOTOR VOLTAGE/ PHASE	MOTOR SIZE (HP)	REMARKS
SP-1A SP-1B	50	18.5	DUPLEX SUBMERSIBLE GRAY WATER SUMP PUMP	WEIL 1413	460/3 1750 RPM	3/4	FURNISH WITH #8136 PER-WIRED DUPLEX CONTROL PANEL. NEMA 4X WITH REMOTE MONITOR MODEL 8302. FURNISH WITH MODEL #8230 TETHERED FLOAT SWITCHES. FURNISH WITH MODEL 8251 NEMA-6P JUNCTION BOX.

NATURAL GAS PRESSURE REGULATOR SCHEDULE

PLAN CODE	AREA SERVED	INLET PRESURE (PSIG)	OUTLET PRESURE (OZ/SQ IN)	LOAD (BTU/H)	GAS DELIVERY (CFH)	REMARKS
REG-1	LEVEL 0	5	4	395,160	444	SPRING LOADED, VENT LIMITING
REG-2	LEVEL 1	5	4	103,240	116	SPRING LOADED, VENT LIMITING
REG-3	LEVEL 0	5	4	128,160	144	SPRING LOADED, VENT LIMITING

PLUMBING HEAT EXCHANGER SCHEDULE (PHX)

PLAN CODE	SYSTEM SERVED	HOT WATER SIDE GPM	HOT WATER SIDE EWT LWT °F	HOT WATER SIDE P.D. (FT.)	COLD WATER SIDE EWT LWT °F	COLD WATER SIDE GPM	COLD WATER SIDE P.D. (FT.)	TYPE	MANUFACTURER & MODEL NO.
PHX-1	LABORATORY INDUSTRIAL HOT WATER	1.5	110/95	1	93/108	1.5	1	DOUBLE WALL BRAZED PLATE	BELL & GOSSETT BPDW415-101

CIRCULATOR PUMP SCHEDULE (CP)

PLAN CODE	TYPE	DUTY	FLOW (GPM)	PRESSURE (FT)	FLUID	MOTOR LOAD (BHP)	MOTOR SIZE (HP)	MOTOR EFF. (%)	MOTOR VOLTAGE & PHASE	PUMP & MOTOR WT. (LBS)	MANUFACTURER & MODEL NO.	REMARKS
CP-1	INLINE	LABORATORY INDUSTRIAL HOT WATER	1.5	10	WATER	FRAC.	FRAC.	PREM.	115/1	20	GRUNDFOS UP15-18B5	-
CP-2	INLINE	DOMESTIC HOT WATER	1.5	10	WATER	FRAC.	FRAC.	PREM.	115/1	20	GRUNDFOS UP15-18B5	-
CP-3	INLINE	DOMESTIC HOT WATER	1.5	10	WATER	FRAC.	FRAC.	PREM.	115/1	20	GRUNDFOS UP15-18B5	-

ACID NEUTRALIZATION TANK SCHEDULE (NT)

PLAN CODE	AREA SERVED	TYPE	NEUTRALIZATION TANK CAPACITIES (GAL) / DIMENSIONS: CARRIER TANK	NEUTRALIZATION TANK CAPACITIES (GAL) / DIMENSIONS: CONTAINMENT TANK	MANUFACTURER & MODEL NO	DESCRIPTION
NT-1	NORTH LAB WASTE	DOUBLE WALL TANK	180 / 36"DIA X 42"H	360 / 48"DIA X 48"H	ORION STYLE 5	DOUBLE WALL MOLDED TANK, VIRGIN POLYETHYLENE/POLYPROPYLENE RESIN, FIBERGLASS WRAP (FRP). PROVIDE STANDARD DOMED COVER FOR BOTH CARRIER AND CONTAINMENT TANKS WITH 12" GAMMA PLUS EASY THREADED ACCESS BOLTED TOP, REINFORCING ANCHOR FLANGES (RAF), EXTENSIONS AS REQUIRED, 60"X60" WHEEL LOADING TRAP DOOR JD4H20. PROVIDE LEAK DETECTION MONTITOR.
NT-2	SOUTH LAB WASTE	DOUBLE WALL TANK	180 / 36"DIA X 42"H	360 / 48"DIA X 48"H	ORION STYLE 5	DOUBLE WALL MOLDED TANK, VIRGIN POLYETHYLENE/POLYPROPYLENE RESIN, FIBERGLASS WRAP (FRP). PROVIDE STANDARD DOMED COVER FOR BOTH CARRIER AND CONTAINMENT TANKS WITH 12" GAMMA PLUS EASY THREADED ACCESS BOLTED TOP, REINFORCING ANCHOR FLANGES (RAF), EXTENSIONS AS REQUIRED, 60"X60" WHEEL LOADING TRAP DOOR JD4H20. PROVIDE LEAK DETECTION MONTITOR.

CONDENSATE PUMP SCHEDULE (CDP)

PLAN CODE	UNIT SERVED	TYPE	FLOW (GPM)	PRESSURE (FT)	FLUID	TANK CAPACITY (GAL)	ELECTRICAL SIZE (A)	ELECTRICAL VOLTAGE/ PHASE	PUMP & MOTOR WT (LBS)	MANUFACTURER & MODEL NO
CDP-1 THRU CDP-5	EXISTING FAN COIL	CONDENSATE REMOVAL	0.4	15	WATER	0.5	1.5	115/1	5.2	LITTLE GIANT CURP-20ULS

PLUMBING FIXTURE SCHEDULE

PLAN CODE	DESCRIPTION	CONNECTION SIZE DCW	DHW	TEMPERED	WASTE	VENT	STORM	REMARKS
WC-1	WATER CLOSET- WALL MOUNTED	1"	-	-	4"	2"	-	KOHLER MODEL K-4330 "KINGSTON" WALL MOUNTED WATER CLOSET. WATER CLOSET SHALL BE PROVIDED WITH A SIPHON JET OPERATING SYSTEM AND AN ELONGATED BOWL. PROVIDE WITH KOHLER MODEL K-4670-SA LUSTRA ELONGATED OPEN FRONT ANTI-MICROBIAL SOLID PLASTIC TOILET SEAT WITH SELF-SUSTAINING CHECK HINGE. WATER CLOSET AND TOILET SEAT TO BE COLOR WHITE. PROVIDE WATER CLOSET WITH WALL CARRIER (VERTICAL OR HORIZONTAL) AND MOEN MODEL 8310 LOW CONSUMPTION (1.6 GPF) FLUSHOMETER VALVE, WITH BUMPER ON ANGLE STOP. OR EQUAL.
WC-2	WATER CLOSET- WALL MOUNTED (ADA COMPLIANT)	1"	-	-	4"	2"	-	KOHLER MODEL K-4330 "KINGSTON" WALL MOUNTED WATER CLOSET. WATER CLOSET SHALL BE PROVIDED WITH A SIPHON JET OPERATING SYSTEM AND AN ELONGATED BOWL. PROVIDE WITH KOHLER MODEL K-4670-SA LUSTRA ELONGATED OPEN FRONT ANTI-MICROBIAL SOLID PLASTIC TOILET SEAT WITH SELF-SUSTAINING CHECK HINGE. WATER CLOSET AND TOILET SEAT TO BE COLOR WHITE. PROVIDE WATER CLOSET WITH WALL CARRIER (VERTICAL OR HORIZONTAL) AND MOEN MODEL 8310 LOW CONSUMPTION (1.6 GPF) FLUSHOMETER VALVE, WITH BUMPER ON ANGLE STOP AND TRAP PRIMER. WATER CLOSET TO BE INSTALLED AT ADA APPROVED FLOOR TO RIM HEIGHT. OR EQUAL.
U-1	URINAL - WALL MOUNTED (ADA COMPLIANT)	3/4"	-	-	2"	1 1/2"	-	KOHLER MODEL K-4960-ET "BARDON" WALL MOUNTED URINAL. URINAL SHALL BE OF VITREOUS CHINA CONSTRUCTION, COLOR WHITE, AND SHALL BE PROVIDED WITH A BLOWOUT OPERATING SYSTEM. URINAL SHALL BE PROVIDED WITH MOEN MODEL 8315 (0.5 GPF) FLUSH VALVE WITH ADJUSTABLE SENSOR EYES , ANTI-BACKSPLASH WALL, 14" ELONGATED RIM. WALL HANGERS. REMOVABLE BEEHIVE STRAINER, AND THREE COMPLETE SETS OF SPARE BATTERIES. ADDITIONALLY, PROVIDE CARRIER WALL SUPPORT SYSTEM. URINAL SHALL BE INSTALLED AT ADA COMPLIANT FLOOR TO RIM HEIGHT. ENTIRE INSTALLATION SHALL BE ADA COMPLIANT. OR EQUAL.
L-1	LAVATORY - SELF RIMMING (ADA COMPLIANT)	-	-	1/2"	1 1/2"	1 1/2"	-	KOHLER MODEL K-1728 "CHESAPEAKE" WALL MOUNTED THREE HOLE DRILLING LAVATORY WITH OVERFLOW. LAVATORY SHALL BE OF VITREOUS CHINA CONSTRUCTION, AND COLOR WHITE. LAVATORY IS TO BE PROVIDED WITH MOEN MODEL 8433 WITH PIVOT ACTION SINGLE LEVER HANDLE, ADJUSTABLE TEMPERATURE LIMIT STOP, 0.5 GPM AERATOR. WILKINS MODEL 1070 THERMOSTIC MIXING VALVE. BRASSCRAFT MODEL KTSR19-C 1/4 TURN BALL STOP WITH LOOSE KEY AND BRAIDED STAINLESS STEEL SUPPLY HOSES. KOHLER MODEL K-8998 1 1/4" CAST BRASS P-TRAP, AND K-7715 LAVATORY DRAIN WITH 1 1/4" DIAMETER TAILPIECE. ADDITIONALLY PROVIDE ADA COMPLIANT SUPPLY AND DRAIN INSULATION KIT TO ENSURE THAT ENTIRE INSTALLATION SHALL BE ADA COMPLIANT. OR EQUAL.
S-1	SINK-SINGLE COMPARTMENT (ADA COMPLIANT)	1/2"	1/2"	-	1 1/2"	1 1/2"	-	MOEN MODEL 22131 21"x16"x5.5" DEEP SINGLE BOWL 20 GUAGE STAINLESS STEEL SINK, FULLY ADA COMPLIANT. SINK SHALL BE PROVIDED WITH THREE HOLE FAUCET DRILLING ON FOUR INCH CENTERS. SINK BOWL TO BE FULLY SOUND DEADENED. PROVIDE WITH MOEN MODEL 14750 DRAIN/STRAINER. BRASSCRAFT MODEL KTSR19-C 1/4-TURN LOOSE KEY STOP WITH BRAIDED STAINLESS STEEL SUPPLY HOSES FOR HOT AND COLD WATER CONNECTIONS AND KOHLER MODEL K-9000 1-1/2" CAST BRASS P-TRAP. PROVIDE WITH MOEN MODEL 8289 TWO-HANDLE KITCHEN FAUCET WITH GOOSENECK SWING SPOUT AND 5" ADA COMPLIANT BRASS WRIST BLADE STYLE HANDLES, 2.0 GPM AERATOR MAXIMUM. PROVIDE FAUCET FOR THREE HOLE DRILLING ON FOUR INCH CENTERS. OR EQUAL
SS-1	SERVICE SINK - FLOOR MOUNTED	3/4"	3/4"	-	3"	1 1/2"	-	KOHLER MODEL K-6710 "WHITBY" 28"x28" FLOOR MOUNTED SERVICE SINK FOR CORNER INSTALLATIONS. SERVICE SINK SHALL BE OF CAST IRON CONSTRUCTION WITH WHITE ENAMELED FINISH. SINK SHALL BE PROVIDED WITH COATED WIRE RIM GUARD MODEL K-8940 AND 3" I.P.S. STRAINER MODEL K-9146. SERVICE SINK SHALL ALSO BE PROVIDED WITH CHICAGO FAUCETS MODEL 540-LD-897S-WXF WITH 8" CENTERS, VACUUM BREAKER SPOUT, 369, HANDLES, POLISHED CHROME PLATE EXTERIOR FINISH, WALL FLANGE, AND PAIL HOOK WITH WALL SUPPORT. OR EQUAL.
EWC-1	BI-LEVEL, SURFACE MOUNT ELECTRIC WATER COOLER	1/2"	-	-	2"	1 1/2"	-	ACORN AQUA MODEL A112100F, GRANITE POWDER COATED CABINET FINISH.
EWC-2	SINGLE-LEVEL, SURFACE MOUNT ELECTRIC WATER COOLER	1/2"	-	-	2"	1 1/2"	-	ACORN AQUA MODEL A111100F, GRANITE POWDER COATED CABINET FINISH.
FD-1	FLOOR DRAIN	-	-	-	2"	1 1/2"	-	J.R. SMITH MANUFACTURING COMPANY FIG. 2005Y-CP DUCO CAST IRON FLOOR DRAIN. DRAIN TO BE PROVIDED WITH ROUND CHROME PLATED NICKEL BRONZE STRAINER HEAD, TRAP PRIMER CONNECTION. SEE PLANS FOR OUTLET SIZE. STRAINER HEAD MUST BE HEEL PROOF. OR EQUAL.
FD-2	FLOOR DRAIN (MECHANICAL ROOM USE)	-	-	-	4"	2"	-	JAY R. SMITH MANUFACTURING COMPANY FIG. 2120Y-B-P050-M-XP DUCO CAST IRON FLOOR DRAIN. DRAIN TO BE PROVIDED WITH 4" OUTLET, DUCTILE IRON GRATE, TRAP PRIMER CONNECTION, AND CLOSURE PLUG. OR EQUAL.
FS-1	FLOOR SINK (MECHANICAL ROOM USE)	-	-	-	4"	2"	-	JAY R. SMITH MANUFACTURING COMPANY FIG. 3150-Y-ASB SQUARE FLOOR SINK. FLOOR SINK SHALL BE OF CAST IRON CONSTRUCTION WITH ENAMEL INTERIOR FINISH, MINIMUM INTERIOR DIMENSIONS OF 12"x12"x8"D. PROVIDE WITH TRAP PRIMER CONNECTION AND HEAVY DUTY NICKEL BRONZE HALF GRATE. OR EQUAL.
RD-1	ROOF DRAIN - PRIMARY	-	-	-	-	-	SEE PLANS	JAY R. SMITH MANUFACTURING COMPANY FIG. 1015Y-E-R-C-CID-U LARGE GENERAL PURPOSE ROOF DRAIN WITH ADJUSTABLE EXTENSION. ROOF DRAIN SHALL BE PROVIDED WITH DUCO CAST IRON BODY WITH ADJUSTABE EXTENSION SLEEVE, REVERSIBLE COLLAR, COMBINED FLASHING CLAMP AND GRAVEL STOP, CAST IRON DOME - FACTORY PAINTED BLACK, SUMP RECEIVER, UNDERDECK CLAMP AND VANDAL PROOF SECURITY SCREWS, OR EQUAL.
OD-1	ROOF DRAIN - SECONDARY	-	-	-	-	-	SEE PLANS	JAY R. SMITH MANUFACTURING COMPANY FIG. 1080Y-R-C-CID-U LARGE GENERAL PURPOSE ROOF DRAIN W/ADJUSTABLE EXTENSION. PROVIDE W/DUCO CAST IRON BODY FLASHING CLAMP W/GRAVEL STOP, 2" CAST IRON WATER DAM, CAST IRON DOME, UNDERDECK CLAMP, SUMP RECEIVER, VANDAL PROOF SECURITY SCREWS, OR EQUAL. DAM AND DOME FACTORY PAINTED BLACK.
DSN-1	DOWNSPOUT NOZZLE - SECONDARY	-	-	-	-	-	SEE PLANS	JAY R. SMITH MANUFACTURING COMPANY FIG. 1770-BS BRONZE DOWNSPOUT NOZZLE WITH BIRD SCREEN. OR EQUAL. ROUGH BRASS FINISH
HB-1	HOSE BIBB - WALL MOUNTED (INDOOR FINISHED AREA USE)	3/4"	-	-	-	-	-	WOODFORD MANUFACTURING CO. MODEL 26 WALL MOUNTED BACKFLOW PROTECTED WALL FAUCET. HOSE BIBB TO BE PROVIDED WITH LOOSE KEY SHUTOFF, 3/4" INLET AND 3/4" MALE HOSE THREAD OUTLET. EXTERIOR FINISH TO BE POLISHED CHROME. OR EQUAL.
HB-2	HOSE BIBB - WALL MOUNTED (INDOOR UNFINISHED AREA USE)	3/4"	-	-	-	-	-	WOODFORD MANUFACTURING CO. MODEL 26 WALL MOUNTED BACKFLOW PROTECTED WALL FAUCET. HOSE BIBB TO BE PROVIDED WITH LOOSE KEY SHUTOFF, 3/4" INLET AND 3/4" MALE HOSE THREAD OUTLET. EXTERIOR FINISH TO BE BRASS. OR EQUAL.
SC-1	SILLCOCK (OUTDOOR FREEZEPROOF USE)	3/4"	-	-	-	-	-	WOODFORD MANUFACTURING CO. MODEL B65-BR (OR EQUAL) WALL MOUNTED, CONCEALED BOX TYPE, ANTI-SIPHON AUTOMATIC DRAINING FREEZELESS WALL HYDRANT. WALL HYDRANT SHALL BE PROVIDED WITH LOOSE KEE SHUTOFF, 3/4" INLET AND 3/4" MALE HOSE THREAD OUTLET. EXTERIOR FINISH SHALL BE ROUGH BRASS.
SH-1	SHOWER SYSTEM WITH HANDSPRAY	1/2"	1/2"	-	2"	1 1/2"	-	KOHLER "RITE-TEMP" MODEL K-304 PRESSURE BALANCING VALVE, KOHLER "MASTERSHOWER" MODEL K-T9492 VALVE TRIM WITH LEVER HANDLE, KOHLER "MASTERSHOWER" HANDSHOWER MODEL K-8501, KOHLER "MASTERSHOWER" MODEL K-8516 SLIDEBAR WITH HOSE. WILKINS MODEL 1070 THERMOSTIC MIXING VALVE. ENTIRE INSTALLATION SHALL BE ADA COMPLIANT. OR EQUAL.

JOB SITE ELEVATION = 4,700 FT
JOB SITE PRESSURE = 12.37 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION

ALL MOTORS TO BE PREMIUM EFFICIENCY

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER NO. 5954406 Roger Lee. Hamlet JR. State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY: Author
CHECKED BY: Checker
DFCM PROJECT NO.: 09020790
GSBS PROJECT NO.: 2009.053.02
ISSUED DATE: 05.07.2010

PLUMBING SCHEDULES

CONSTRUCTION DOCUMENTS

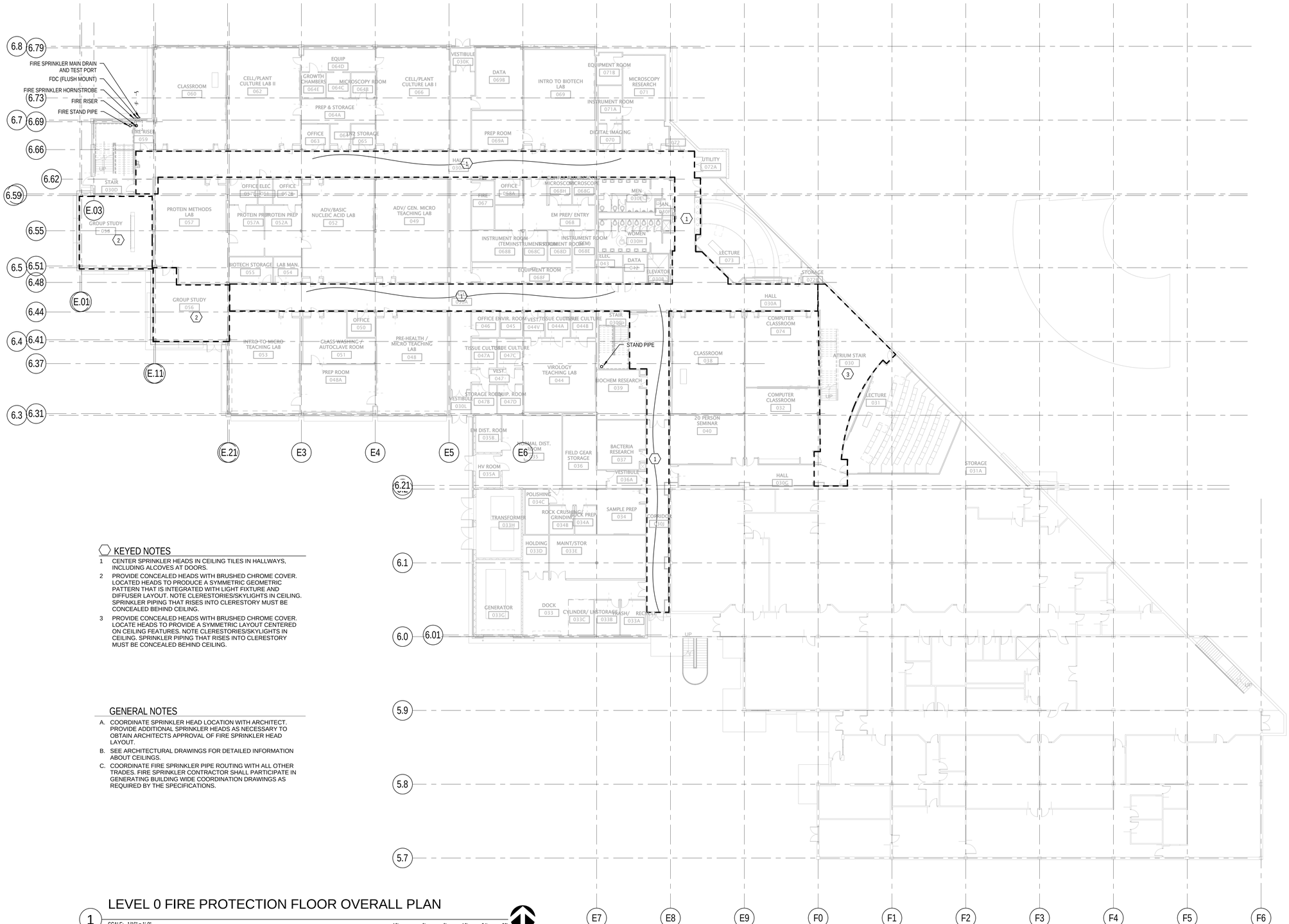
PL601

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7915
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5964406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



KEYED NOTES

1. CENTER SPRINKLER HEADS IN CEILING TILES IN HALLWAYS, INCLUDING ALCOVES AT DOORS.
2. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATED HEADS TO PRODUCE A SYMMETRIC GEOMETRIC PATTERN THAT IS INTEGRATED WITH LIGHT FIXTURE AND DIFFUSER LAYOUT. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.
3. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATE HEADS TO PROVIDE A SYMMETRIC LAYOUT CENTERED ON CEILING FEATURES. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.

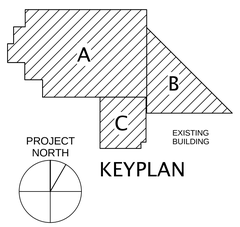
GENERAL NOTES

A. COORDINATE SPRINKLER HEAD LOCATION WITH ARCHITECT. PROVIDE ADDITIONAL SPRINKLER HEADS AS NECESSARY TO OBTAIN ARCHITECTS APPROVAL OF FIRE SPRINKLER HEAD LAYOUT.
B. SEE ARCHITECTURAL DRAWINGS FOR DETAILED INFORMATION ABOUT CEILINGS.
C. COORDINATE FIRE SPRINKLER PIPE ROUTING WITH ALL OTHER TRADES. FIRE SPRINKLER CONTRACTOR SHALL PARTICIPATE IN GENERATING BUILDING WIDE COORDINATION DRAWINGS AS REQUIRED BY THE SPECIFICATIONS.

1 LEVEL 0 FIRE PROTECTION FLOOR OVERALL PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	-
CHECKED BY:	RLH
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.053.02
ISSUED DATE:	05.07.2010

LEVEL 0 FIRE PROTECTION FLOOR PLAN

CONSTRUCTION DOCUMENTS

FP101

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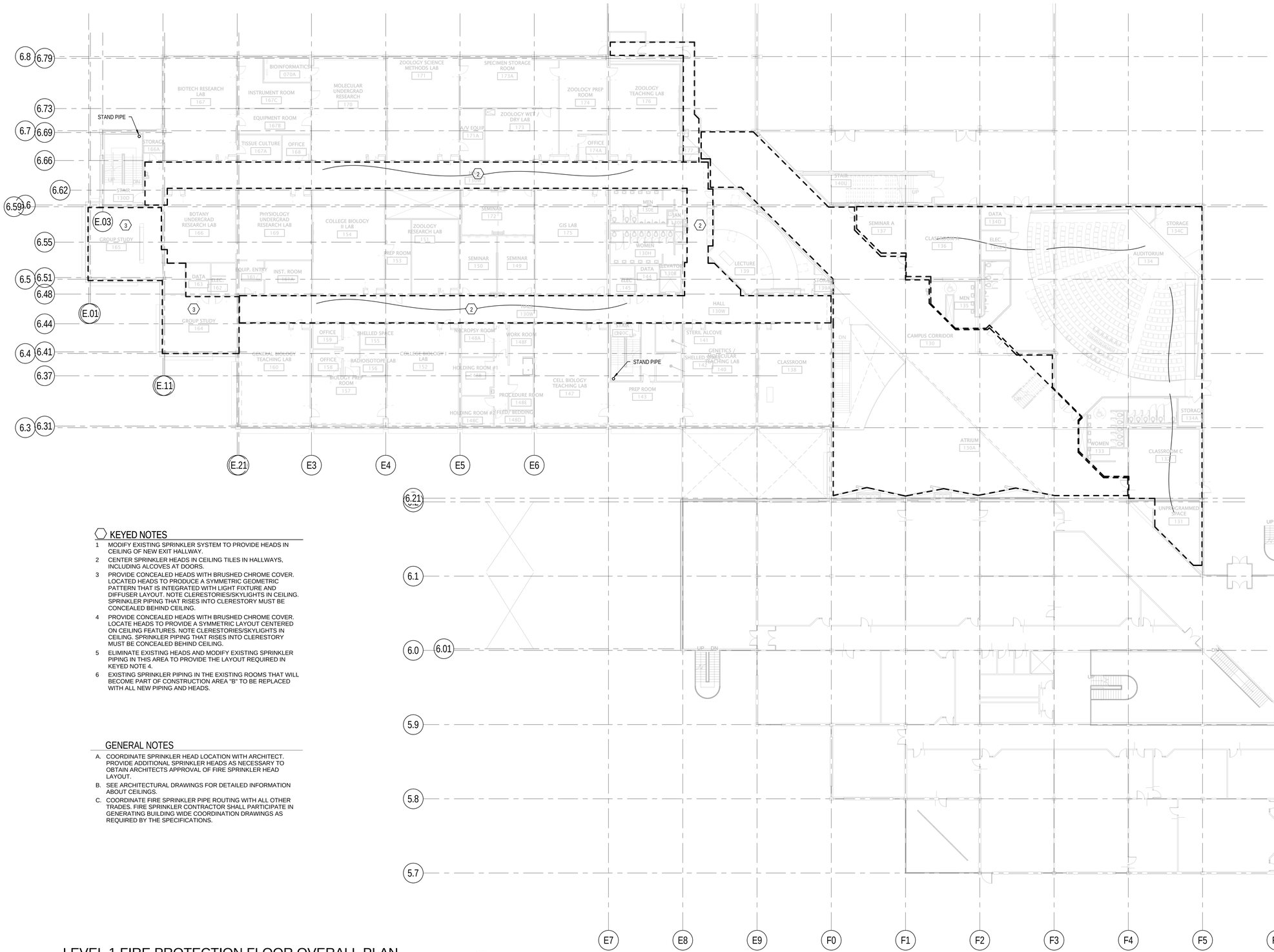


KEYED NOTES

1. MODIFY EXISTING SPRINKLER SYSTEM TO PROVIDE HEADS IN CEILING OF NEW EXIT HALLWAY.
2. CENTER SPRINKLER HEADS IN CEILING TILES IN HALLWAYS, INCLUDING ALCOVES AT DOORS.
3. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATED HEADS TO PRODUCE A SYMMETRIC GEOMETRIC PATTERN THAT IS INTEGRATED WITH LIGHT FIXTURE AND DIFFUSER LAYOUT. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.
4. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATE HEADS TO PROVIDE A SYMMETRIC LAYOUT CENTERED ON CEILING FEATURES. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.
5. ELIMINATE EXISTING HEADS AND MODIFY EXISTING SPRINKLER PIPING IN THIS AREA TO PROVIDE THE LAYOUT REQUIRED IN KEYED NOTE 4.
6. EXISTING SPRINKLER PIPING IN THE EXISTING ROOMS THAT WILL BECOME PART OF CONSTRUCTION AREA "B" TO BE REPLACED WITH ALL NEW PIPING AND HEADS.

GENERAL NOTES

A. COORDINATE SPRINKLER HEAD LOCATION WITH ARCHITECT. PROVIDE ADDITIONAL SPRINKLER HEADS AS NECESSARY TO OBTAIN ARCHITECTS APPROVAL OF FIRE SPRINKLER HEAD LAYOUT.

B. SEE ARCHITECTURAL DRAWINGS FOR DETAILED INFORMATION ABOUT CEILINGS.

C. COORDINATE FIRE SPRINKLER PIPE ROUTING WITH ALL OTHER TRADES. FIRE SPRINKLER CONTRACTOR SHALL PARTICIPATE IN GENERATING BUILDING WIDE COORDINATION DRAWINGS AS REQUIRED BY THE SPECIFICATIONS.

1 LEVEL 1 FIRE PROTECTION FLOOR OVERALL PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

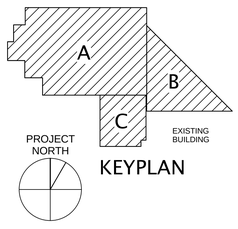
P 801.521.8600
F 801.521.7915

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
STATE OF UTAH

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



KEYPLAN

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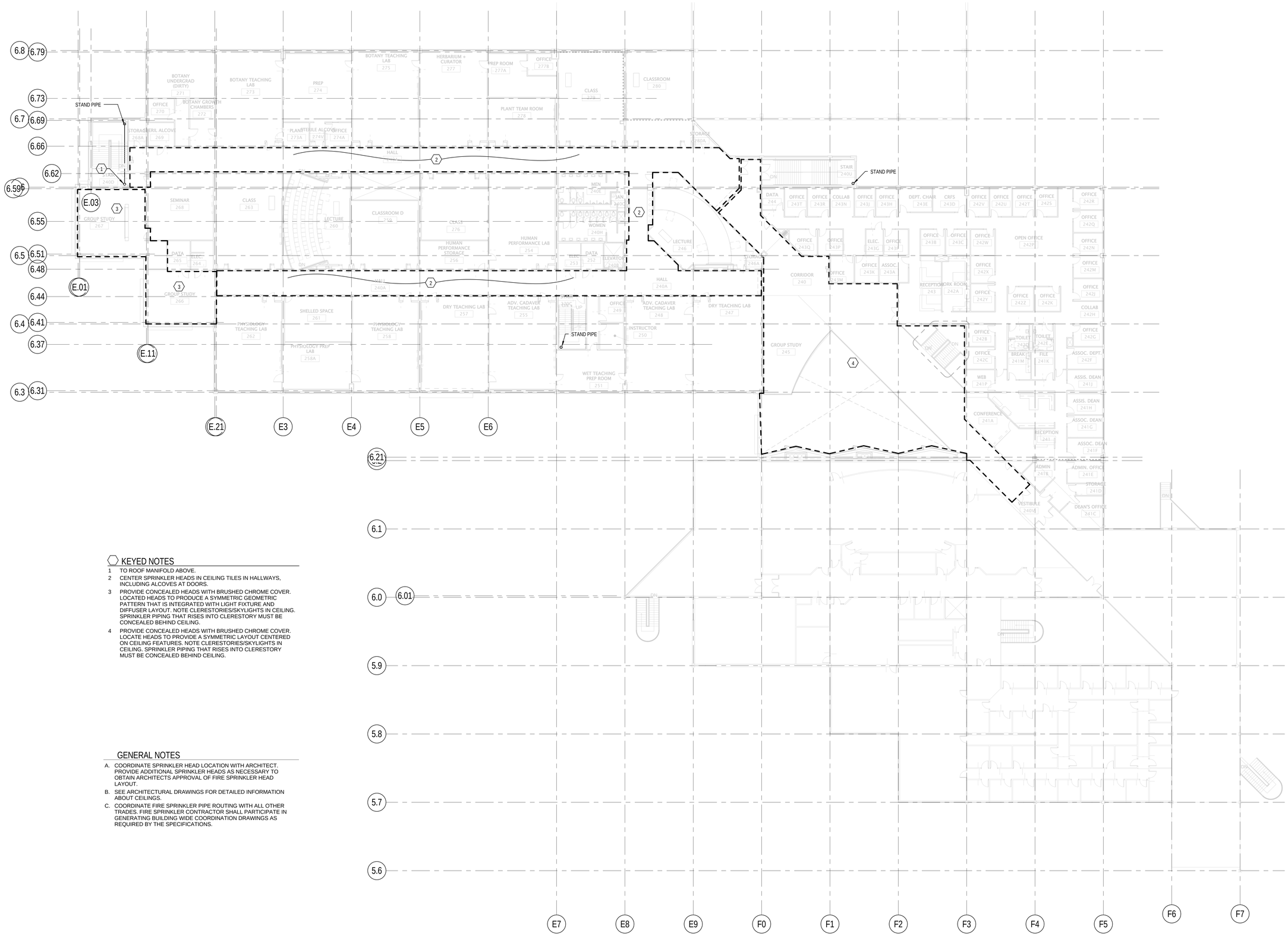
LEVEL 1 FIRE PROTECTION FLOOR PLAN

CONSTRUCTION DOCUMENTS

FP102



KEYED NOTES

1. TO ROOF MANIFOLD ABOVE.
2. CENTER SPRINKLER HEADS IN CEILING TILES IN HALLWAYS, INCLUDING ALCOVES AT DOORS.
3. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATED HEADS TO PRODUCE A SYMMETRIC GEOMETRIC PATTERN THAT IS INTEGRATED WITH LIGHT FIXTURE AND DIFFUSER LAYOUT. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.
4. PROVIDE CONCEALED HEADS WITH BRUSHED CHROME COVER. LOCATE HEADS TO PROVIDE A SYMMETRIC LAYOUT CENTERED ON CEILING FEATURES. NOTE CLERESTORIES/SKYLIGHTS IN CEILING. SPRINKLER PIPING THAT RISES INTO CLERESTORY MUST BE CONCEALED BEHIND CEILING.

GENERAL NOTES

A. COORDINATE SPRINKLER HEAD LOCATION WITH ARCHITECT. PROVIDE ADDITIONAL SPRINKLER HEADS AS NECESSARY TO OBTAIN ARCHITECTS APPROVAL OF FIRE SPRINKLER HEAD LAYOUT.

B. SEE ARCHITECTURAL DRAWINGS FOR DETAILED INFORMATION ABOUT CEILINGS.

C. COORDINATE FIRE SPRINKLER PIPE ROUTING WITH ALL OTHER TRADES. FIRE SPRINKLER CONTRACTOR SHALL PARTICIPATE IN GENERATING BUILDING WIDE COORDINATION DRAWINGS AS REQUIRED BY THE SPECIFICATIONS.

1 LEVEL 2 FIRE PROTECTION FLOOR OVERALL PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

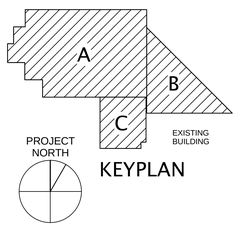
P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
STATE OF UTAH

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416



KEYPLAN

Utah Valley University New Science Building

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Orem, Utah 84058

Division of Facilities Construction and Management

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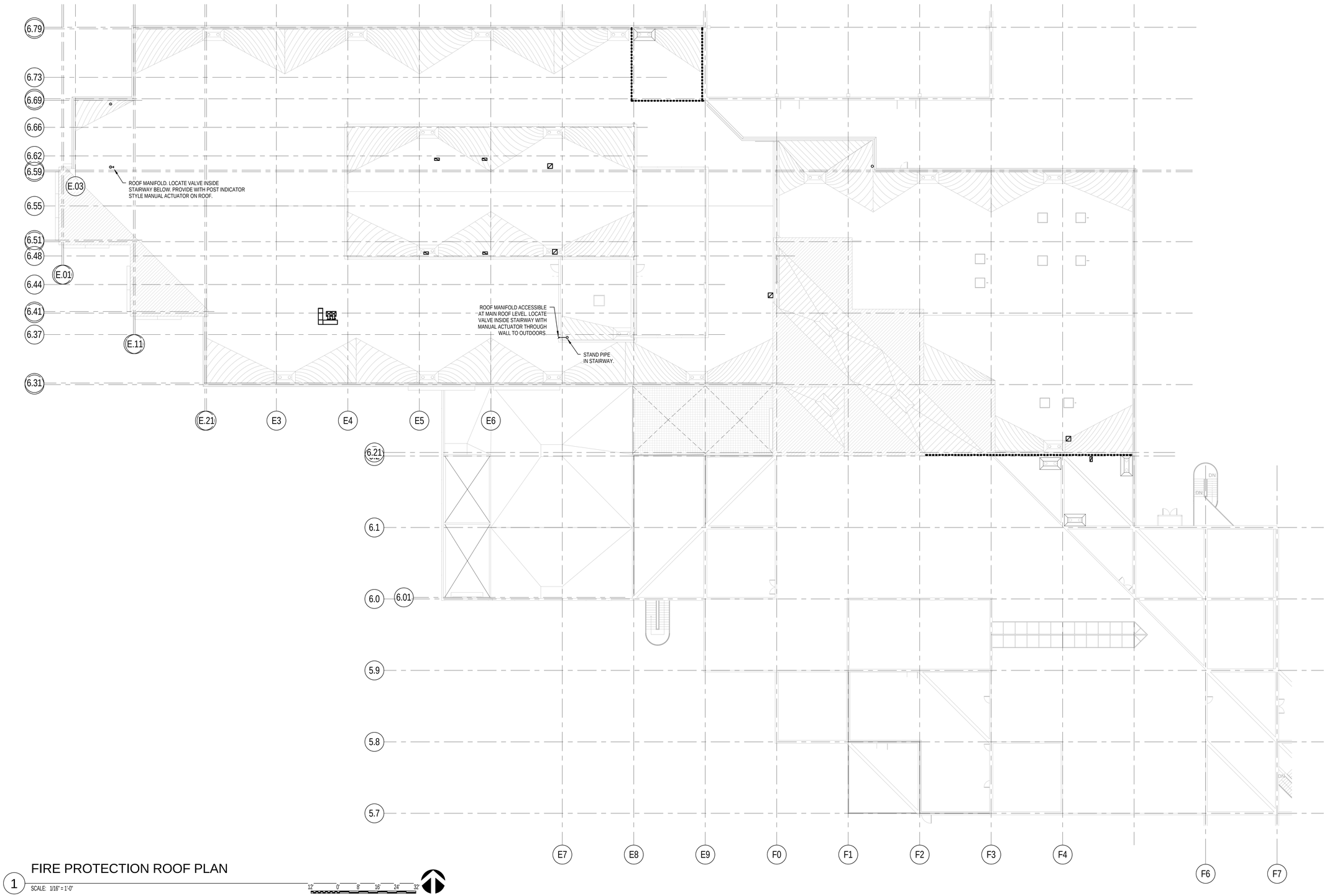
LEVEL 2 FIRE PROTECTION FLOOR PLAN

CONSTRUCTION DOCUMENTS

FP103



1 FIRE PROTECTION ROOF PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
NO. 5954406
Roger Lee. Hamlet JR.
State of Utah

REVISIONS:

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
Salt Lake City, Utah 84103
Phone: (801) 322-2400 / Fax: (801) 322-2416

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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ROOF FIRE PROTECTION PLAN

CONSTRUCTION DOCUMENTS

FP104

GENERAL NOTES

1. CONTRACTOR SHALL CAREFULLY EXAMINE ALL DRAWINGS AND SPECIFICATIONS TO PROPERLY DETERMINE SCOPE OF WORK.
2. CONTRACTOR SHALL FIELD VERIFY CONDITIONS AT ALL POINTS OF CONNECTION PRIOR TO INSTALLATION.
3. DIVISION 22 SCOPE OF WORK INCLUDES THE INSTALLATION OF ALL SERVICE FITTINGS AND PIPING AS INDICATED ON FIXTURE & EQUIPMENT SCHEDULES AND AS SHOWN ON LF- & LP- DRAWINGS. (LABORATORY SERVICE FITTINGS FURNISHED BY DIVISION 11)
4. CONFORM TO ALL APPLICABLE LOCAL, STATE, FEDERAL AND HEALTH AUTHORITY CODES.
5. ALL PIPING SHOWN ON DRAWINGS IS DIAGRAMMATIC. ADDITIONAL OFFSETS, WHICH MAY BE REQUIRED, IN WASTE & VENT RISERS OR IN BELOW BENCH SERVICE PIPING SHALL BE PROVIDED UNDER DIVISION 22.
6. PIPE LINES ENTERING LABORATORIES ARE SHOWN WITH WIDE SEPARATION FOR CLEAR IDENTIFICATION PURPOSES ONLY. MAINTAIN A TIGHT AND ORDERLY GROUPING OF PIPES WITHIN EACH LABORATORY. LOCATION, ROUTING AND SUPPORT OF LABORATORY PIPING SHALL BE COORDINATED WITH THE INSTALLED EQUIPMENT, OVERHEAD SERVICE CARRIERS, PIPE DROP ENCLOSURES, BUILDING STRUCTURAL ELEMENTS, DUCTWORK, ELECTRICAL CONDUITS, POWER PANELS AND LIGHT FIXTURES.
7. ALL EXPOSED TO VIEW PIPING SHALL BE INSTALLED WITH SPECIAL CARE GIVEN TO UNIFORM SPACING AND NEAT APPEARANCE. PAINT TO MATCH ROOM FINISH PROVIDED UNDER DIVISION 9.
8. PIPING, DRAINAGE AND VENT SYSTEMS TO BE INSTALLED IN ACCORDANCE WITH APPLICABLE PLUMBING CODES AND LOCAL REGULATIONS.
9. VALVES AND CAPS AT POINTS OF CONNECTION ARE SHOWN ON LP-SERIES DRAWINGS FOR COORDINATION ONLY, REFER TO PL-SERIES DRAWINGS FOR LOCATION AND SIZES.
10. PROVIDE REDUCERS ON POINT OF CONNECTION WHERE SIZES SHOWN ON PL-SERIES DRAWINGS ARE LARGER THAN INDICATED ON LP-SERIES DRAWINGS. PROVIDE ADAPTERS/REDUCERS WHERE NECESSARY FOR CONNECTION TO PIPING SERVICES OR WASTE LINES.
11. INSTALL WATER HAMMER ARRESTORS ON LINES SERVING FIXTURES OR EQUIPMENT WITH QUICK CLOSING VALVES.
12. PROVIDE VALVED AND CAPPED CONNECTIONS WHERE "ROUGH-IN ONLY" OR "FUTURE SERVICES" ARE INDICATED ON DRAWINGS.
13. PIPE SIZES ARE INDICATED ON THESE DRAWINGS BY MEANS OF THE POINT OF CONNECTION, SERVICE DROP, FITTING STATION AND FIXTURE & EQUIPMENT CONNECTION SCHEDULES.

    THE FOLLOWING GUIDELINES SHALL GOVERN THE PIPE SIZES:

    A. THE POINT OF CONNECTION SCHEDULE INDICATES PIPE SIZE ENTERING EACH LABORATORY. THE SIZE SHALL EXTEND UNDIMINISHED UP TO THE LAST TEE BRANCH OF THE CEILING DISTRIBUTION PIPING.

    B. WHERE SERVICE DROPS ARE INDICATED, THE SERVICE DROP SCHEDULE SHALL GOVERN THE DROP AS WELL AS EACH ASSOCIATED BRANCH. THESE SERVICES SHALL EXTEND TO BELOW BENCH AND RUN HORIZONTALLY UNDIMINISHED IN SIZE UP TO THE LAST TEE SERVICING DIFFERENT FITTINGS.

    C. THE FIXTURE, SERVICE FITTING & EQUIPMENT CONNECTION SCHEDULE SHALL INDICATE THE SIZE FOR THE FINAL SECTION OF PIPING.
14. FITTINGS ON LP-SERIES DRAWINGS ARE SYMBOLIC ONLY. REFER TO LF-SERIES DRAWINGS FOR ACTUAL FITTINGS, LOCATIONS AND ARRANGEMENTS.
15. REFER TO THE LABORATORY PLUMBING DETAILS FOR TYPICAL PIPE ROUTING BELOW AND WITHIN THE CASEWORK. THE QUANTITY, SIZE AND MATERIAL OF PIPE WILL VARY IN ACCORDANCE WITH THE TYPE OF SERVICES. INSTALL IN ACCORDANCE WITH THE PIPING ARRANGEMENT AND ORIENTATION SHOWN ON PLANS.
16. FITTING/FIXTURE INLET SIZE MAY VARY. PROVIDE APPROPRIATE CONNECTORS.
17. FLOOR DRAINS AND FLOOR SINKS ARE SHOWN ON LABORATORY PLUMBING PLANS FOR GENERAL LOCATION AND REFERENCE ONLY. BUILDING PLUMBING DRAWINGS INDICATE ACTUAL LOCATION, SIZE AND TYPE OF DEVICE.
18. TEST ALL VALVES, SERVICE FITTINGS, EMERGENCY SHOWERS, EYEWASHES AND DRENCH HOSES PER SPECS TO ENSURE PROPER OPERATION.
19. INSULATE PIPING IN ACCORDANCE WITH DIVISION 22 SPECIFICATIONS. INSULATION TO INCORPORATE ENTIRE LENGTH OF PIPE FROM POINT OF CONNECTION TO POINT OF USE.
20. PROVIDE STAINLESS STEEL ESCUTCHEON PLATES FOR ALL EXPOSED PIPE PENETRATIONS IN WALLS AND CEILINGS.
21. PROVIDE MINIMUM SIZE OF 2" LABORATORY WASTE & 1-1/2" VENT RISER WHERE (W) LABORATORY WASTE POINTS OF CONNECTION SYMBOL IS INDICATED ON DRAWINGS. WASTE PENETRATIONS AT LABORATORY SINKS & CUPSINKS MAY REQUIRE OFFSET TO AVOID STRUCTURAL BEAMS AND JOISTS. REFER TO DETAIL #6/LP-301.
22. ALL PLUMBING VENTS SHALL EXTEND SIX INCHES ABOVE FLOOD LEVEL RIM OF FIXTURE SERVED BEFORE CHANGING FROM VERTICAL TO A HORIZONTAL POSITION.
23. REFRIGERANT PIPING, INSULATION, AND DRAIN PAN CONDENSATE LINE BY CONTROLLED ENVIRONMENTAL ROOM MANUFACTURER.
24. REFERENCES TO LP DETAILS ARE SHOWN FOR SPECIFIC CONDITIONS ON THE LP FLOOR PLAN DRAWINGS. REFER ALSO TO GENERAL NOTES AND PLAN SYMBOL LEGEND FOR MISCELLANEOUS DETAILS.
25. PROVIDE CLEANOUTS IN ACCORDANCE WITH UNIFORM PLUMBING CODE OR LOCAL, STATE, FEDERAL AND HEALTH AUTHORITY. COORDINATE CLEANOUT ACCESS LOCATIONS WITH LABORATORY CASEWORK INSTALLATION.
26. CONNECTIONS TO EYEWASHES AND/OR DRENCH HOSES TO BE PROTECTED BY BACK FLOW PREVENTERS INSTALLED ACCORDING TO UNIFORM PLUMBING CODE AND ACCEPTED BY THE AUTHORITY HAVING JURISDICTION.
27. EMERGENCY SHOWERS, EYEWASHES AND DRENCH HOSES ARE FURNISHED UNDER DIVISION 11. INSTALL THESE DEVICES AS DETAILED AND SHOWN ON PLANS. CONNECT TO TEPID WATER SUPPLY WITHOUT ISOLATION VALVES.
28. PROVIDE BACKFLOW PREVENTERS ON EQUIPMENT CONNECTIONS TO POTABLE WATER AS REQUIRED BY CODE AND ACCEPTED BY LOCAL AUTHORITY.
29. SEAL ALL PIPING PENETRATIONS THROUGH RATED WALLS WITH UL APPROVED SYSTEM. SEE ARCHITECHTURAL & PLUMBING DETAILS.

PIPING LEGEND

PIPING/ABBREVIATION	DESCRIPTION
CA	COMPRESSED AIR (100 psig)
CA50	COMPRESSED AIR (50 psig)
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
LG	LABORATORY GAS
LV	LABORATORY VACUUM
LW	LABORATORY WASTE
LWV	LABORATORY WASTE VENT
PCWS	PROCESS COOLING WATER SUPPLY
PCWR	PROCESS COOLING WATER RETURN
RO	REVERSE OSMOSIS WATER
SG1	SPECIAL GAS 1
SG2	SPECIAL GAS 2
TW	TEPID WATER

FIXTURE, SERVICE FITTING AND EQUIPMENT LEGEND

SKA
- DESIGNATES LABORATORY SINK(FURNISHED UNDER DIVISION 11 - U.O.N. REFER TO PLANS)
- DESIGNATES TYPES OF PLUMBING SERVICES REQUIRED AT SINK, REFER TO FIXTURE CONNECTION SCHEDULE-LP-001

CSA
- DESIGNATES CUP SINK(FURNISHED UNDER DIVISION 11 - U.O.N. REFER TO PLANS)
- DESIGNATES TYPES OF PLUMBING SERVICES REQUIRED AT CUPSINK, REFER TO FIXTURE CONNECTION SCHEDULE-LP-001

SF1
- DESIGNATES SERVICE FITTING STATION (FURNISHED UNDER DIVISION 11 - U.O.N. REFER TO PLANS)
- DESIGNATES TYPES OF PLUMBING SERVICES REQUIRED, REFER TO SERVICE FITTING SCHEDULE-LP-001

EQ1
- DESIGNATES EQUIPMENT STATION (FURNISHED UNDER DIVISION 11 AND/OR OFOI. REFER TO PLANS)
- DESIGNATES TYPES OF PLUMBING SERVICES REQUIRED, REFER TO EQUIPMENT CONNECTION SCHEDULE-LP-001

PLAN SYMBOL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	SK*	LABORATORY SINK (PROVIDED UNDER DIVISION 11)
	CS*	CUP SINK (PROVIDED UNDER DIVISION 11)
		PIPE DROP ENCLOSURE (PROVIDED UNDER DIVISION 11). FOR PIPING LAYOUT WITHIN PIPE DROP REFER TO DETAILS #4 & #5/LP-301.
		P-TRAP & TRAP ARM
		SAFETY SHOWER/EYEWASH UNIT (PROVIDED UNDER DIVISION 11)
EW		SAFETY SHOWER/RECESSED EYEWASH UNIT (PROVIDED UNDER DIVISION 11)
	FD	FLOOR DRAIN (SHOWN FOR COORDINATION PURPOSES ONLY. REFER TO PL-SERIES DRAWINGS.)
	FS	FLOOR SINK (SHOWN FOR COORDINATION PURPOSES ONLY. REFER TO PL-SERIES DRAWINGS.)
		PIPING BELOW BENCH
		PIPING BELOW FLOOR
		PIPE CAPPED
		PIPE ELBOW UP (OR) TEE UP & DOWN
		PIPE ELBOW DOWN
		PIPE TEE & ELBOW UP
		PIPE TEE & ELBOW DOWN
W		POINT OF CONNECTION TO 2" LABORATORY WASTE @ 6"A.F.F. & 1-1/2" LABORATORY WASTE VENT RISE @ 6"A.F.C. - U.O.N. (REFER TO PL-SERIES DRAWINGS FOR CONTINUATION)
V		POINT OF CONNECTION TO 1-1/2" LABORATORY WASTE VENT RISE @ 6"A.F.C. (U.O.N.) (REFER TO PL-SERIES DRAWINGS FOR CONTINUATION)
IW		POINT OF CONNECTION TO 2" LABORATORY WASTE VERTICAL FIXTURE DRAIN @ 6"A.F.F. (ISLAND FIXTURE WASTE) (REFER TO PL-SERIES DRAWINGS FOR CONTINUATION)
IV		POINT OF CONNECTION TO 1-1/2" LABORATORY WASTE VERTICAL FIXTURE VENT @ 6"A.F.F. (ISLAND FIXTURE VENT) (REFER TO PL-SERIES DRAWINGS FOR CONTINUATION)
		POINT OF CONNECTION TO VALVED AND CAPPED SERVICES (VALVES AND CAP PROVIDED UNDER DIVISION 22 PL-SERIES DRAWINGS)
1		POINT OF CONNECTION NUMBER - COORDINATES PLAN WITH POINT OF CONNECTION SCHEDULE
1		SERVICE DROP NUMBER - COORDINATES PLAN WITH SERVICE DROP SCHEDULE
DETAIL NUMBER / DRAWING NUMBER		DETAIL REFERENCE BUBBLE COORDINATES PLAN WITH DETAIL SHEETS
		CYLINDER MANIFOLD
	DH	DRENCH HOSE (EYEWASH)- TEPID WATER (FITTING FURNISHED UNDER DIVISION 11 & INSTALLED UNDER DIVISION 22)
		LABORATORY GAS SHUTOFF VALVE BOX
		EQUIPMENT VALVE BOX
		PRESSURE REDUCING VALVE
	A.F.F.	ABOVE FINISHED FLOOR
	A.F.C.	ABOVE FINISHED CEILING
	SIM.	SIMILAR
	TYP.	TYPICAL
	U.O.N.	UNLESS OTHERWISE NOTED

SHEETS INDEX

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FIXTURE CONNECTION SCHEDULE

PIPE SIZE IN INCHES

FIXTURE/FITTING NO.	TW@DH	ICW	IHW	RO	LG	LA	LV	PCWS	PCWR	SG	LW(P-TRAP)
SKA		1/2	1/2								1 1/2
SKB	1/2	1/2	1/2								1 1/2
SKC		1/2	1/2	1/2							1 1/2
SKD	1/2	1/2	1/2	1/2							1 1/2
SKE		3/4	3/4								1 1/2
CSA		1/2									1 1/2
CSB		1/2					3/4				1 1/2
CSC		1/2			1/2		3/4				1 1/2
CSD		1/2			1/2						1 1/2

NOTES:
1. BUILDING RO WATER LOOP TO EACH FIXTURE PER PL-SERIES DRAWINGS.
2. CONNECTION TO SERVICE PER LP-SERIES DRAWINGS.
3. ALL SERVICES TO FUME HOOD TO BE PRE-PIPED TO SINGLE POINT OF CONNECTION BY DIV. 11. REFER TO LF PLANS.

SERVICE FITTING SCHEDULE

PIPE SIZE IN INCHES

SERVICE FITTING NO.	TW	ICW	IHW	RO	LG	LA	LV	PCWS	PCWR	SG1	SG2
SF1	1 1/4										
SF2				1/2							
SF3							3/4				
SF4					1/2		3/4				
SF5								3/4	3/4		
SF6		3/4	3/4								
SF7					1/2		1				
SF8										1/2	1/2
SF9					1/2						
SF10		1/2	1/2								
SF11										1/2	

EQUIPMENT CONNECTION SCHEDULE

PIPE SIZE IN INCHES

EQUIPMENT NO.	TW	ICW	IHW	RO	LG	LA	LV	CA	PCWS	PCWR	SG1	SG1	SG
EQ1 (ICE MACHINE)		1/2											
EQ2 (AUTOCLAVE, 20x20x38)		1	1/2										
EQ3 (GLASSWARE WASHER/DRYER)		1	1	1				1/2					
EQ4 (CONDENSING UNIT)									3/4	3/4			
EQ5 (U/C WASHER)		3/4	3/4	1/2									

NOTES:
1. BUILDING RO WATER LOOP TO EACH EQUIPMENT PER PL-SERIES DRAWINGS.
2. CONNECTION TO SERVICE PER LP-SERIES DRAWINGS.

SERVICE DROP SCHEDULE

PIPE SIZE IN INCHES

DROP NUMBER NO.	TW	ICW	IHW	IHWR	RO	LG	LA	LV	CA	PCWS	PCWR	SG1	SG2	SG
1						1/2		1						
2		1/2				1/2		3/4						
3	1/2	1/2	1/2			1/2		3/4						
4		1/2						3/4						
5		1	3/4	1/2	*	1 1/4		2						
6		3/4	1/2		*	3/4		1 1/4						
7		1/2	1/2		*	1/2		3/4						
8		3/4				3/4		1 1/4						
9						1/2								
10		3/4	3/4											
11	1/2	1/2	1/2		*	1/2		3/4						
12	1	3/4	3/4	1/2	*	1		2						
13	3/4	3/4	3/4			3/4		1 1/4						
14	1/2	1/2	1/2		*	3/4		1 1/4						
15		3/4	3/4		*									
16						1/2		3/4						
17	1/2	1/2	1/2		*									
18												1/2	1/2	
19	1/2	1/2	1/2											
20	3/4	3/4	3/4											
21	1/2	3/4	3/4											
22		1	1/2											
23	1/2	1/2	1/2			1/2								
24	3/4	3/4	3/4	1/2	*	1/2								
25	1/2	3/4	3/4		*									
26		1/2	1/2		*	1/2								
27	1/2	1/2	1/2		*	1/2		1						
28	3/4	3/4	3/4		*									
29	1/2	1	1/2		*	1								
30		1/2				1/2								
31	1/2	1	1/2			3/4								
32		1	1	1/2	*	1 1/4		2						
33		3/4	3/4		*	3/4		1 1/2						
34	1/2	1/2	1/2		*	1/2								
35		3/4	3/4			3/4		1 1/2						
36		1 1/4	1 1/4	1/2										

* BUILDING RO WATER SIZE

NOTES:
1. BUILDING RO WATER LOOP TO EACH SERVICE DROP PER PL-SERIES DRAWINGS.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 - 297 - 0159
FAX 619 - 294 - 4901

REGISTERED PROFESSIONAL ENGINEER
No. 6846681-2202
PAUL LEMASTRE
STATE OF UTAH
5/7/10

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING
GEN. NOTES, SYMBOLS, LEGENDS & SCHEDULES

CONSTRUCTION DOCUMENTS

LP-001

PIPING POINT OF CONNECTION SCHEDULE

ROOM NAME	ROOM NO.	POC NO.		TW	ICW	IHW	IHWR	RO	LG	LV	PCWS	PCWR
				GPM	GPM	GPM	GPM	GPM	sCFH	sCFM	GPM	GPM
LEVEL 0												
PROTEIN METHODS LAB / PROTEIN PREP	057 / 057A	0.01	DESIGN FLOW	20	5	5		2				
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*				
CELL/PLANT CULTURE LAB 2	062	0.02	DESIGN FLOW	20	3	3		3		9		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*		1 1/4		
AVANCED/BASIC NUCLEIC ACID LAB / PREP RM.	052 / 052A	0.03	DESIGN FLOW	20	3	3		1	40	10		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	3/4	1 1/2		
PREP & STORAGE / GROWTH CHAMBERS	064 / 064A / 064E	0.04	DESIGN FLOW	20	2	1.5		2	4	1	6	6
			PIPE SIZE (IN)	1 1/4	1/2	1/2	1/2	*	1/2	3/4	1	1
CELL/PLANT CULTURE LAB 1	066	0.05	DESIGN FLOW	20	3	3		3		9		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*		1 1/4		
INTRO TO BIOTECH LAB / PREP RM	069 / 069A	0.06	DESIGN FLOW	20	7	6		3	16	4		
			PIPE SIZE (IN)	1 1/4	1	3/4	1/2	*	1/2	1		
EM PREP/ENTRY	068	0.07	DESIGN FLOW	20	2	1.5		2		2		
			PIPE SIZE (IN)	1 1/4	1/2	1/2	1/2	*		3/4		
MICROSCOPY RESEARCH	071	0.08	DESIGN FLOW	20	3	3		3		1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*		3/4		
INTRO TO MICRO TEACHING LAB	053	0.09	DESIGN FLOW	20	14	3		3	96	22		
			PIPE SIZE (IN)	1 1/4	1	3/4	1/2	*	1 1/4	2		
GLASS WASHING AUTOCLAVE ROOM / MICROBIOLOGY PREP RM	051 / 048A	0.10	DESIGN FLOW	20	22	8		16	8	2		
			PIPE SIZE (IN)	1 1/4	1 1/4	1	1/2	*	1/2	3/4		
PRE-HEALTH/MICRO TEACHING LAB	048	0.11	DESIGN FLOW	20	14	10		3	96	22		
			PIPE SIZE (IN)	1 1/4	1	1	1/2	*	1 1/4	2		
ADVANCED / GENERAL MICRO TEACHING LAB	049	0.12	DESIGN FLOW	20	14	3		3	96	22		
			PIPE SIZE (IN)	1 1/4	1	3/4	1/2	*	1 1/4	2		
TISSURE CULTURE	047A	0.13	DESIGN FLOW	3	1.5	1.5		1		1		
			PIPE SIZE (IN)	1/2	1/2	1/2		*		3/4		
TISSURE CULTURE	047C	0.14	DESIGN FLOW	3	1.5	1.5		1		1		
			PIPE SIZE (IN)	1/2	1/2	1/2		*		3/4		
ENVIR. ROOM	045	0.15	DESIGN FLOW								3	3
			PIPE SIZE (IN)								3/4	3/4
VIROLOGY TEACHING LAB / TISSUE CULTURE / VEST	044V / 044 / 044A / 044B	0.16	DESIGN FLOW	20	7	7		5	60	18		
			PIPE SIZE (IN)	1 1/4	1	1	1/2	*	1	2		
BIOCHEM RESEARCH	039	0.17	DESIGN FLOW	20	2	1.5		1	8	3		
			PIPE SIZE (IN)	1 1/4	1/2	1/2		*	1/2	1		
BACTERIA RESEARCH	037	0.18	DESIGN FLOW	20	1.5	1.5		1	8	3		
			PIPE SIZE (IN)	1 1/4	1/2	1/2		*	1/2	1		
FIELD STORAGE ROOM	036	0.19	DESIGN FLOW		3	3						
			PIPE SIZE (IN)		3/4	3/4	1/2					
SAMPLE PREP / ROCK PREP / POLISHING	034 / 034A / 034C	0.20	DESIGN FLOW	20	5	3		2	8	2		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		
LEVEL 1												
BOTANY U.G. RESEARCH LAB	166	1.01	DESIGN FLOW	20	4	3		3	12	3		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	1		
BIOTECH U.G. RESEARCH LAB / TISSUE CULTURE / EQUIPMENT ROOM	167 / 167A / 167B	1.02	DESIGN FLOW	20	6	6		5	20	6		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	1 1/4		
PHYSIOLOGY U.G. RESEARCH LAB	169	1.03	DESIGN FLOW	20	5	5		6	12	3		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	1		
MOLECULAR U.G. RESEARCH LAB	170	1.04	DESIGN FLOW	20	3	3		2	16	4		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	1		
ZOOLOGY SCIENCE METHODS LAB	171	1.05	DESIGN FLOW	20	3	3			12			
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2		1/2			
ZOOLOGY WET/DRY LAB	173	1.06	DESIGN FLOW	20	5	5			4	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2		1/2	3/4		
ZOOLOGY PREP ROOM	174	1.07	DESIGN FLOW	20	5	5		3	4	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		
ZOOLOGY TEACHING LAB	176	1.08	DESIGN FLOW	20	4	4		1	4	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		
GENERAL BIOLOGY TEACHING LAB	160	1.09	DESIGN FLOW	20	5	5		2				
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*				
RADIOISOTOPE / BIOLOGY PREP RM	156 / 157	1.10	DESIGN FLOW	20	6	6		7				
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*				
COLLEGE BIOLOGY II LAB	154	1.11	DESIGN FLOW	20	5	5						
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2					
PREP ROOM	153	1.12	DESIGN FLOW	20	4	4		5				
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*				
ZOOLOGY U.G. REASEARCH LAB	151	1.13	DESIGN FLOW	3	3	3		1				
			PIPE SIZE (IN)	1/2	3/4	3/4	1/2	*				
COLLEGE BIOLOGY I LAB	152	1.14	DESIGN FLOW	20	5	5		4				
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*				
NECROPSY / WORK ROOM / PROCEDURE RM	148A / 148F / 148E	1.15	DESIGN FLOW	3	18	5			4	1		
			PIPE SIZE (IN)	1/2	1 1/4	3/4	1/2		1/2	3/4		
CELL BIOLOGY TEACHING LAB	147	1.16	DESIGN FLOW	20	3	3		1	8			
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2			
PREP ROOM	143	1.17	DESIGN FLOW	20	5	5		6	4			
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2			
STERIL ALCOVE	141	1.18	DESIGN FLOW		15	2		1				
			PIPE SIZE (IN)		1	1/2		*				
GENETICS/MOLECULAR TEACHING LAB	140	1.19	DESIGN FLOW	20	5	5		4	16	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		

PIPING POINT OF CONNECTION SCHEDULE

ROOM NAME	ROOM NO.	POC NO.		TW	ICW	IHW	IHWR	RO	LG	LV	PCWS	PCWR
				GPM	GPM	GPM	GPM	GPM	sCFH	sCFM	GPM	GPM
LEVEL 2												
STERIL ALCOVE	269	2.01	DESIGN FLOW		15	2		1				
			PIPE SIZE (IN)		1	1/2		*				
BOTANY GOWTH CHAMBERS / BOTANY U.G.(DIRTY)	271 / 272	2.02	DESIGN FLOW	20	6	6		2	4	1	12	12
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4	1 1/4	1 1/4
BOTANY TEACHING LAB	273	2.03	DESIGN FLOW	20	4	3		3	24	6		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	3/4	1 1/4		
STERILE ALCOVE / PREP	274 / 274V	2.04	DESIGN FLOW	20	5	5		2	4	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		
BOTANY TEACHING LAB	275	2.05	DESIGN FLOW	20	3	3		2	16	4		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	1		
HERBARIUM CURATOR / PREP ROOM	277 / 277A	2.06	DESIGN FLOW		1.5	1.5						
			PIPE SIZE (IN)		1/2	1/2	1/2					
PHYSIOLOGY TEACHING LAB / PHYSIOLOGY PREP LAB	262 / 258A	2.07	DESIGN FLOW	20	10	6		8	48	1		
			PIPE SIZE (IN)	1 1/4	1	3/4	1/2	*	1	3/4		
PHYSIOLOGY TEACHING LAB	258	2.08	DESIGN FLOW	20	8	3		2	40			
			PIPE SIZE (IN)	1 1/4	1	3/4	1/2	*	3/4			
DRY TEACHING LAB	257	2.09	DESIGN FLOW	6	3	3						
			PIPE SIZE (IN)	3/4	3/4	3/4	1/2					
ADVANCED CADAVER TEACHING LAB #1	255	2.10	DESIGN FLOW	20	16	16						
			PIPE SIZE (IN)	1 1/4	1 1/4	1 1/4	1/2					
HUMAN PERFORMANCE LAB	254	2.11	DESIGN FLOW		3	3						
			PIPE SIZE (IN)		3/4	3/4	1/2					
WET TEACHING PREP. RM	251	2.12	DESIGN FLOW	20	3	3		2	4	1		
			PIPE SIZE (IN)	1 1/4	3/4	3/4	1/2	*	1/2	3/4		
ADVANCED CADAVER TEACHING LAB #2	248	2.13	DESIGN FLOW	20	16	16						
			PIPE SIZE (IN)	1 1/4	1 1/4	1 1/4	1/2					
DRY TEACHING LAB	247	2.14	DESIGN FLOW	6	3	3						
			PIPE SIZE (IN)	3/4	3/4	3/4	1/2					

NOTES:

1. FLOW RATES REPRESENT DESIGN PEAK LABORATORY LOADS USED FOR PIPE SIZING AT POC.
2. TW- TEPID WATER FOR SAFETY SHOWER/EYEWASH SIZED FOR INSTANTANEOUS/INCIDENTAL USE.
3. * PROVIDE MINIMUM 3 fps CIRCULATION VELOCITY IN LABORATORY RO LOOP. SYSTEM STATIC PRESSURE SHOULD NOT EXCEED 60 psig. VALVED SERVICE CONNECTION PER LP SCHEDULES AND DETAILS.
4. COMPRESSED AIR DISTRIBUTED AT 100 psig TO LABORATORY POC. PROVIDE PRESSURE REGULATORS AS SHOWN ON PLANS FOR LOWER PRESSURE SERVICES.
5 IHWR CIRCULATED INSIDE LABORATORY AS SHOWN ON PLANS. DESIGN FLOW PER "PL" SERIES DRAWINGS.
6. IHW HARDNESS SHOULD NOT TO EXCEED 120 MG/L (PPM) TO LABORATORY EQUIPMENT.
7. SG GASES PIPED FROM CYLINDER MANIFOLD.

ESTIMATED RO WATER CONSUMPTION AND PEAK LOAD		
	GAL	GPM
RO WATER HOURLY CONSUMPTION	250	
RO WATER 4-HOUR CONSUMPTION	1000	
RO WATER PEAK FLOW RATE		26

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

REGISTERED PROFESSIONAL ENGINEER
No. 6845681-2202
PAUL D. LEMESTRE
STATE OF UTAH

5/7/10

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

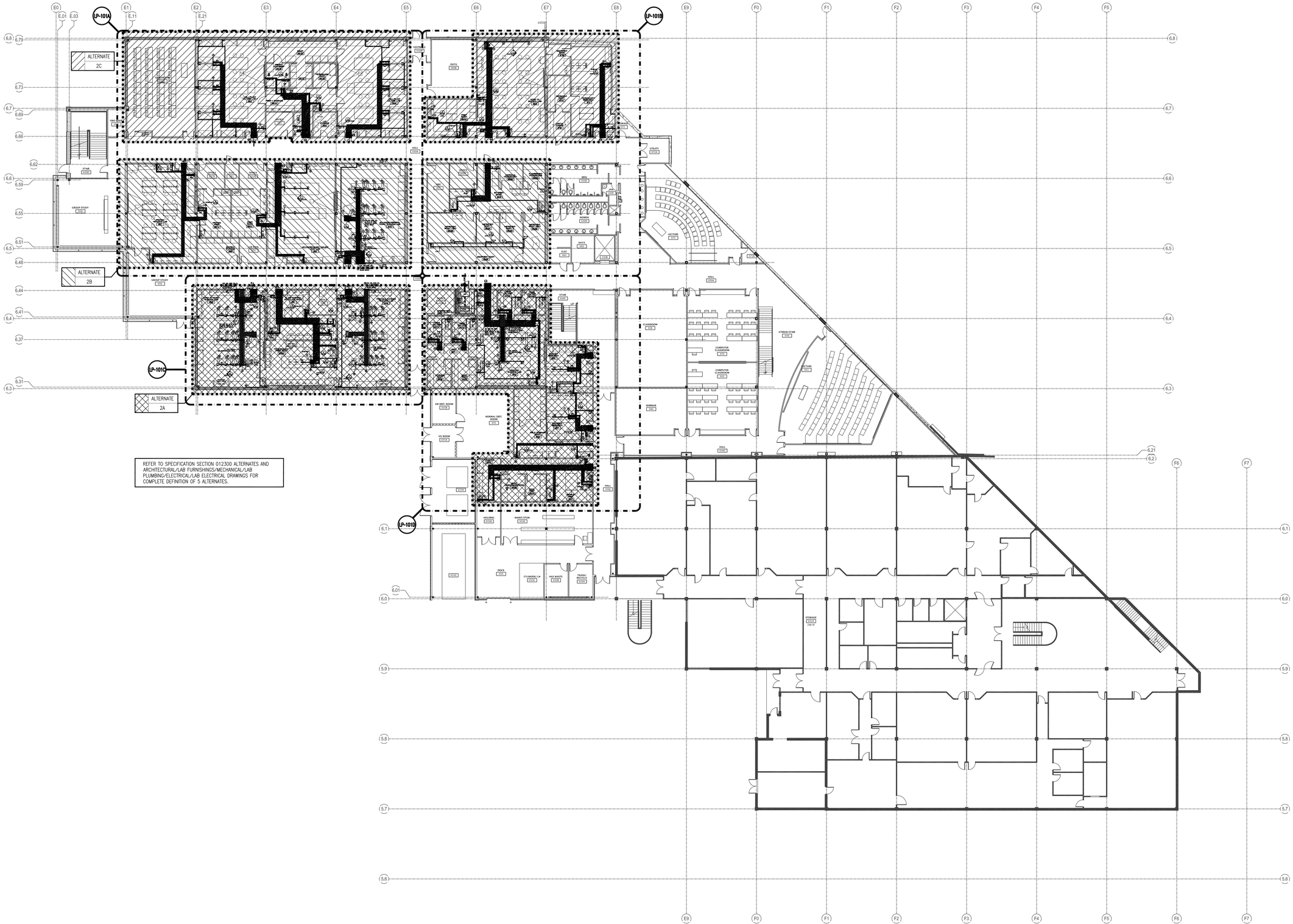
Division of Facilities Construction and Management

DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING POINT O CONNECTION SCHEDULE

CONSTRUCTION DOCUMENTS

LP-002



1 LP-101 **LEVEL 0 FLOOR PLAN**

1/16" = 1'-0"

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

REGISTERED PROFESSIONAL ENGINEER
Lic. No. 6845681-2202
PAUL D. LEMESTRE, P.E.
STATE OF UTAH

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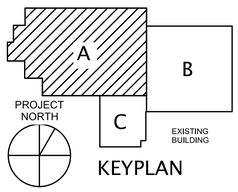

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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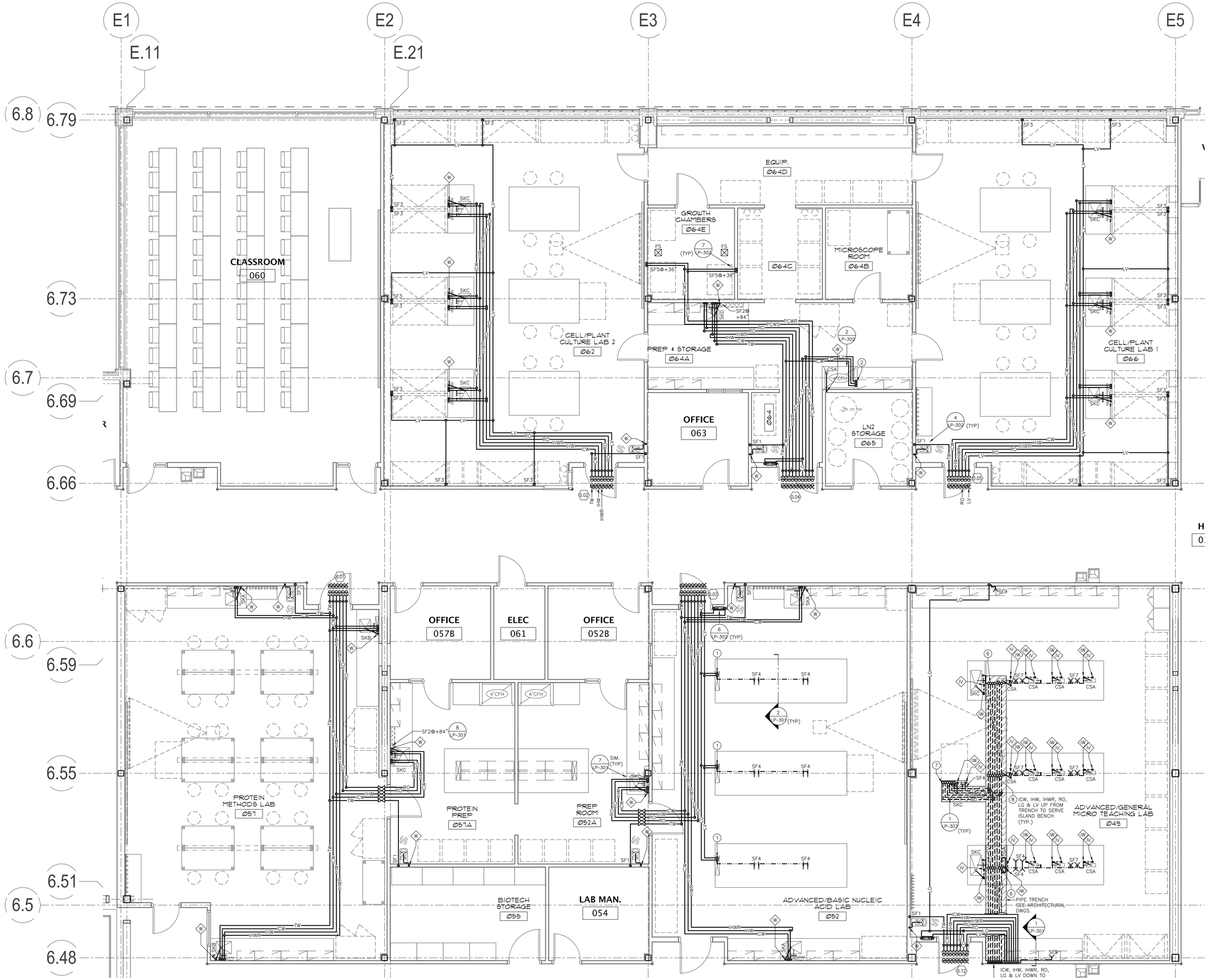
LAB PLUMBING LEVEL 0 FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-101



1 LP-101A

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

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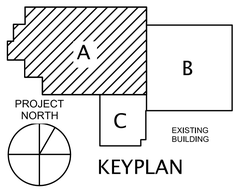
STATE OF UTAH

5/7/10



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

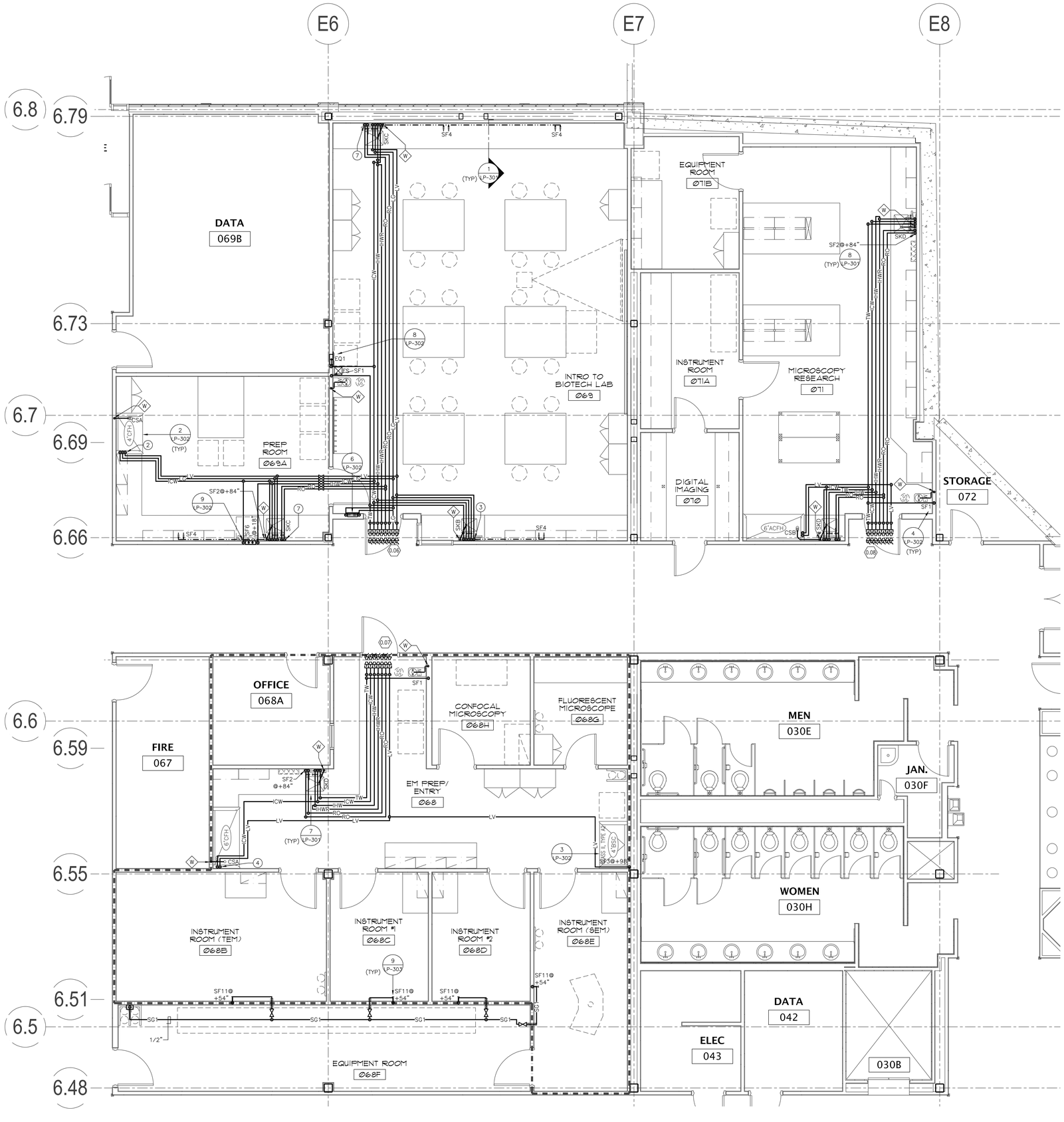
Division of Facilities Construction and Management

DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-101A



1
LP-101B

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

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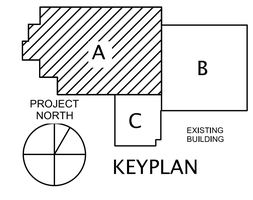

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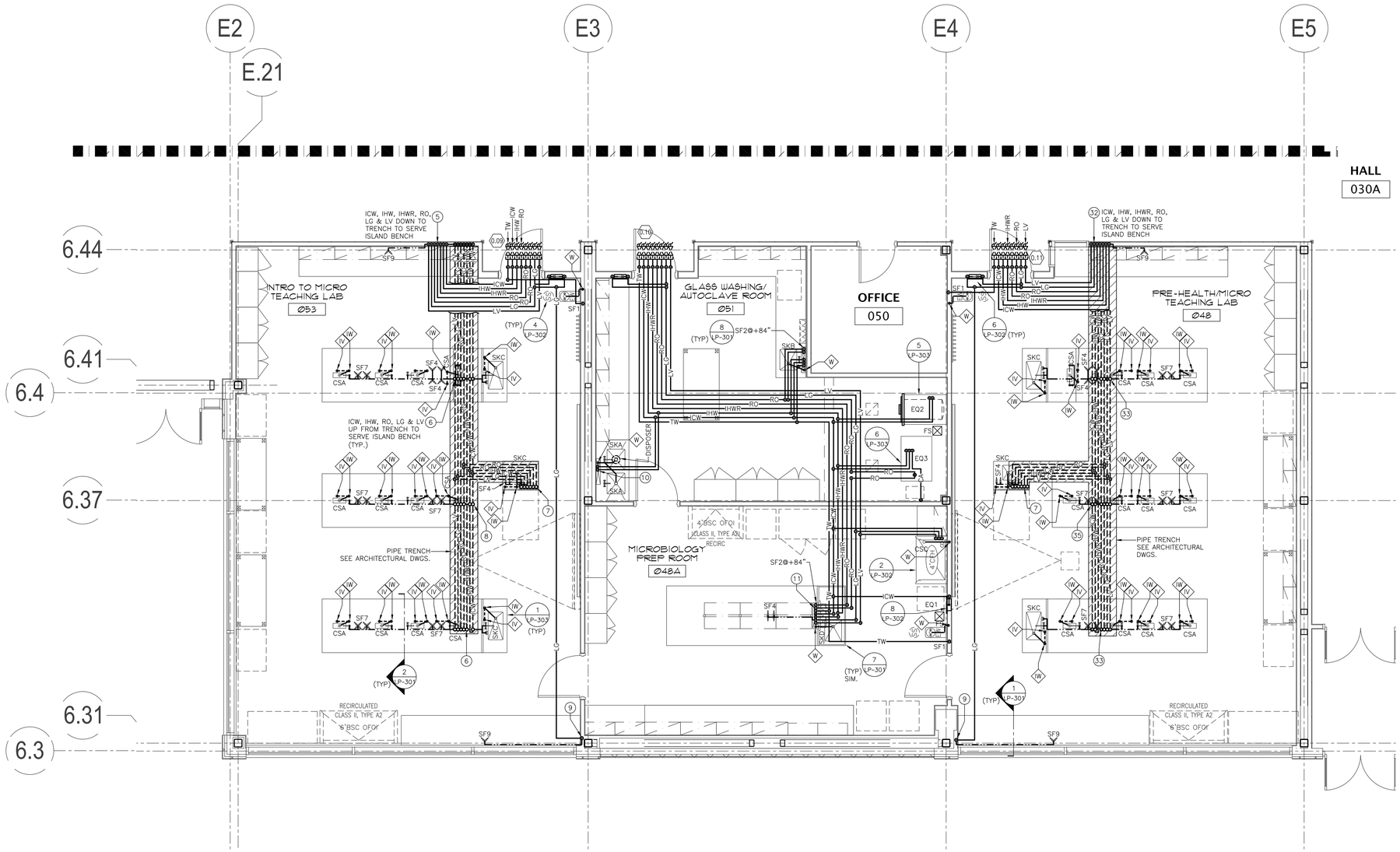
LAB PLUMBING
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-101B



1 LP-101C

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

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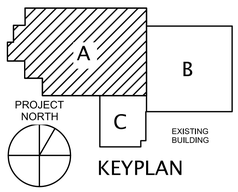

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LAB PLUMBING
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-101C

1 LP-101D

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

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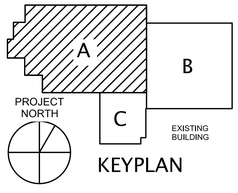

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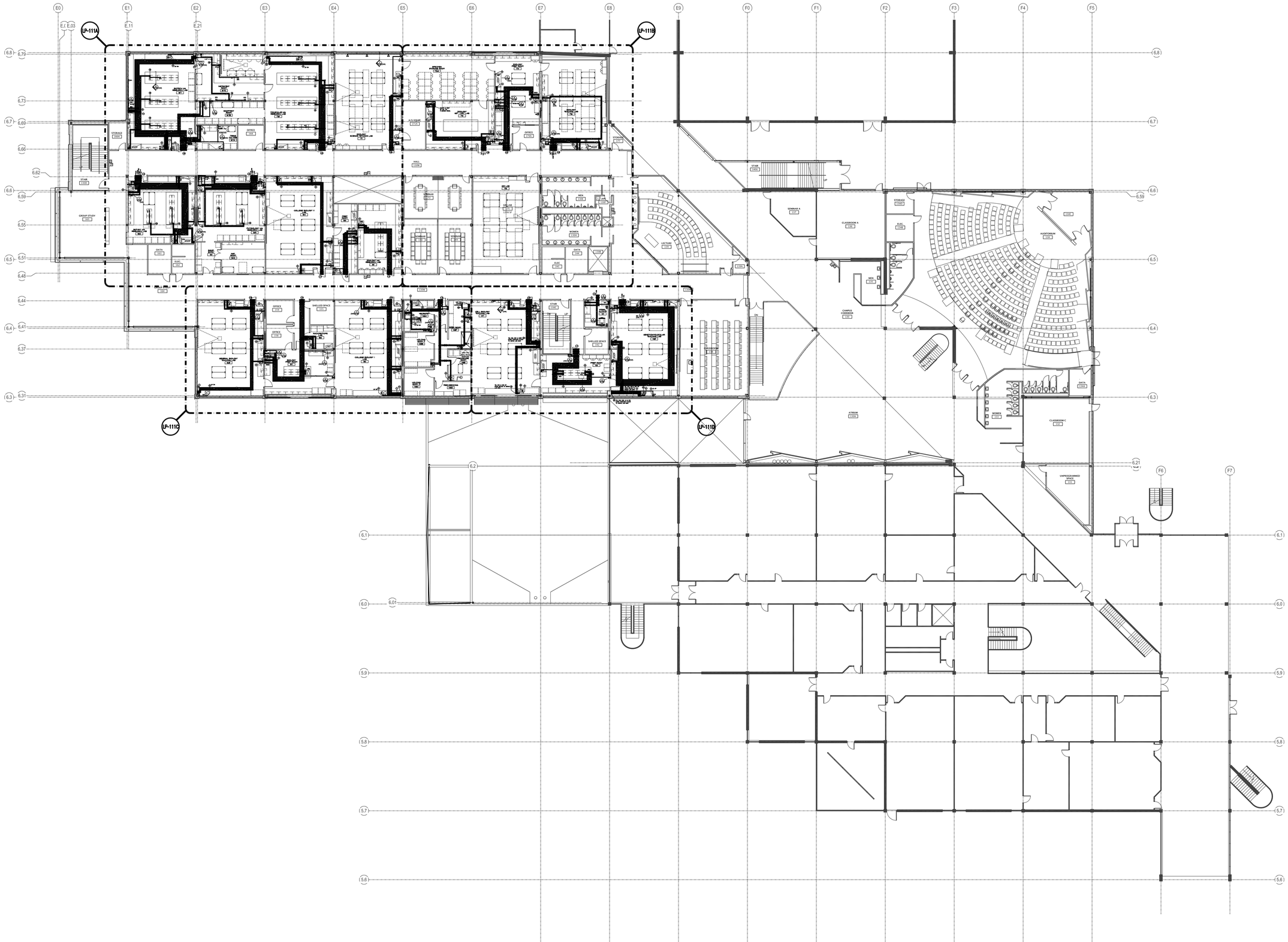
LAB PLUMBING
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-101D



1
LP-111

LEVEL 1 FLOOR PLAN

1/16" = 1'-0"

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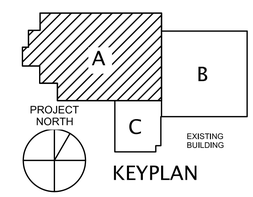

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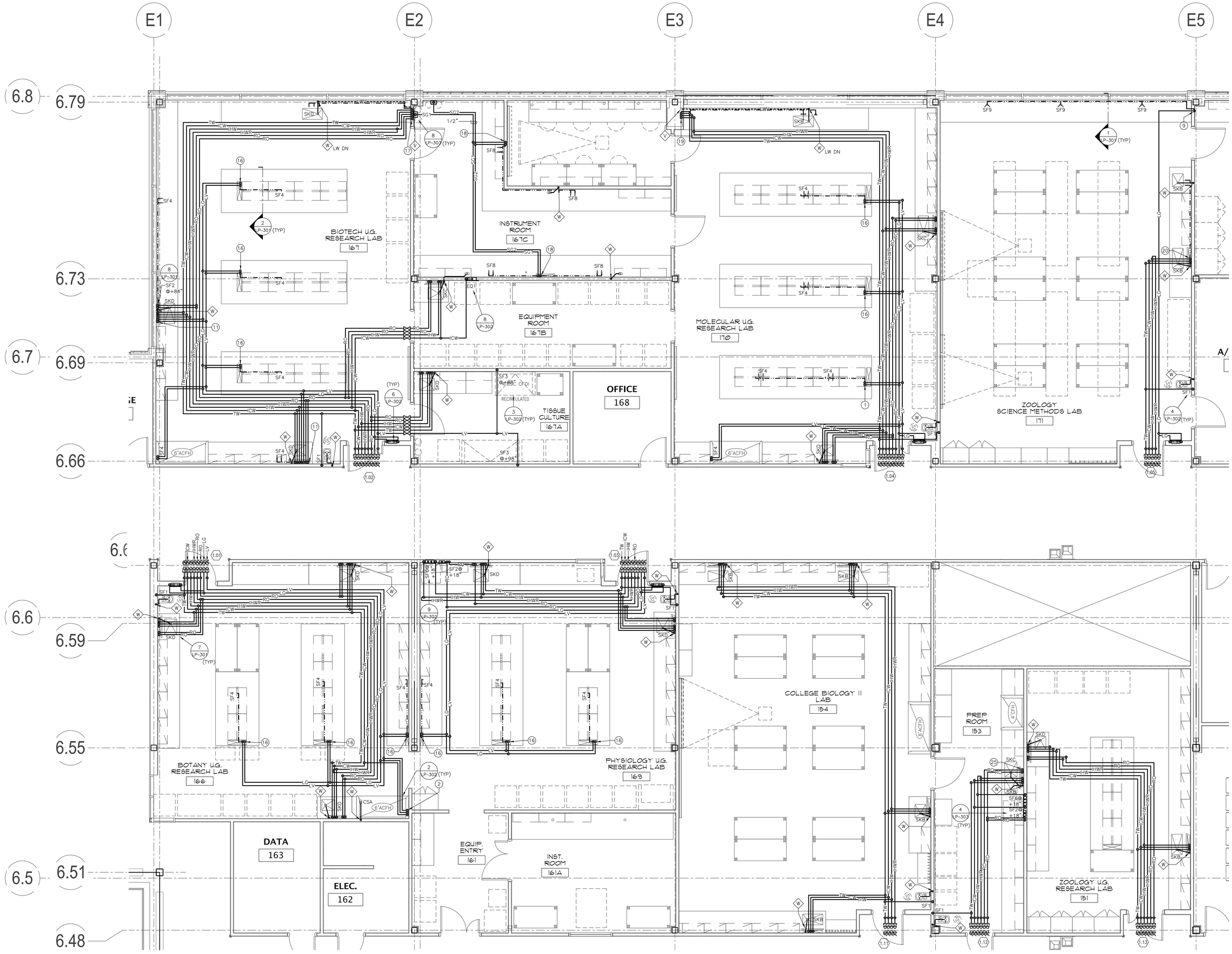
LAB PLUMBING
LEVEL 1
FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-111



1 LP-111A **LEVEL 1 PARTIAL FLOOR PLAN**

1/4" = 1'-0"

0 1' 2' 4' 8'

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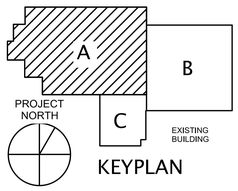

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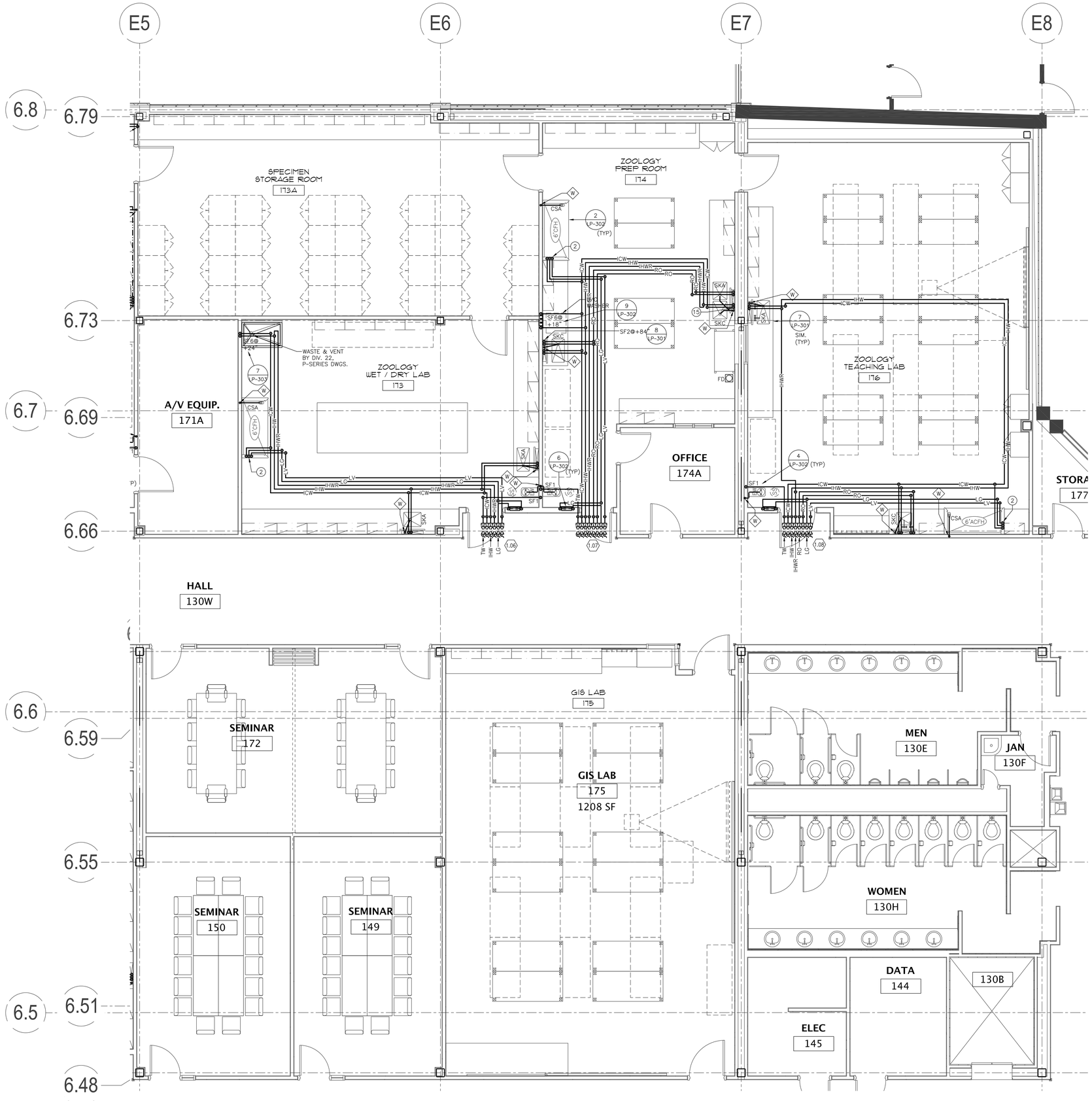
LAB PLUMBING
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-111A



1
LP-111B

LEVEL 1 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

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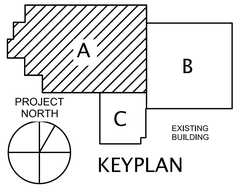

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LAB PLUMBING
LEVEL 1
PARTIAL FLOOR PLAN

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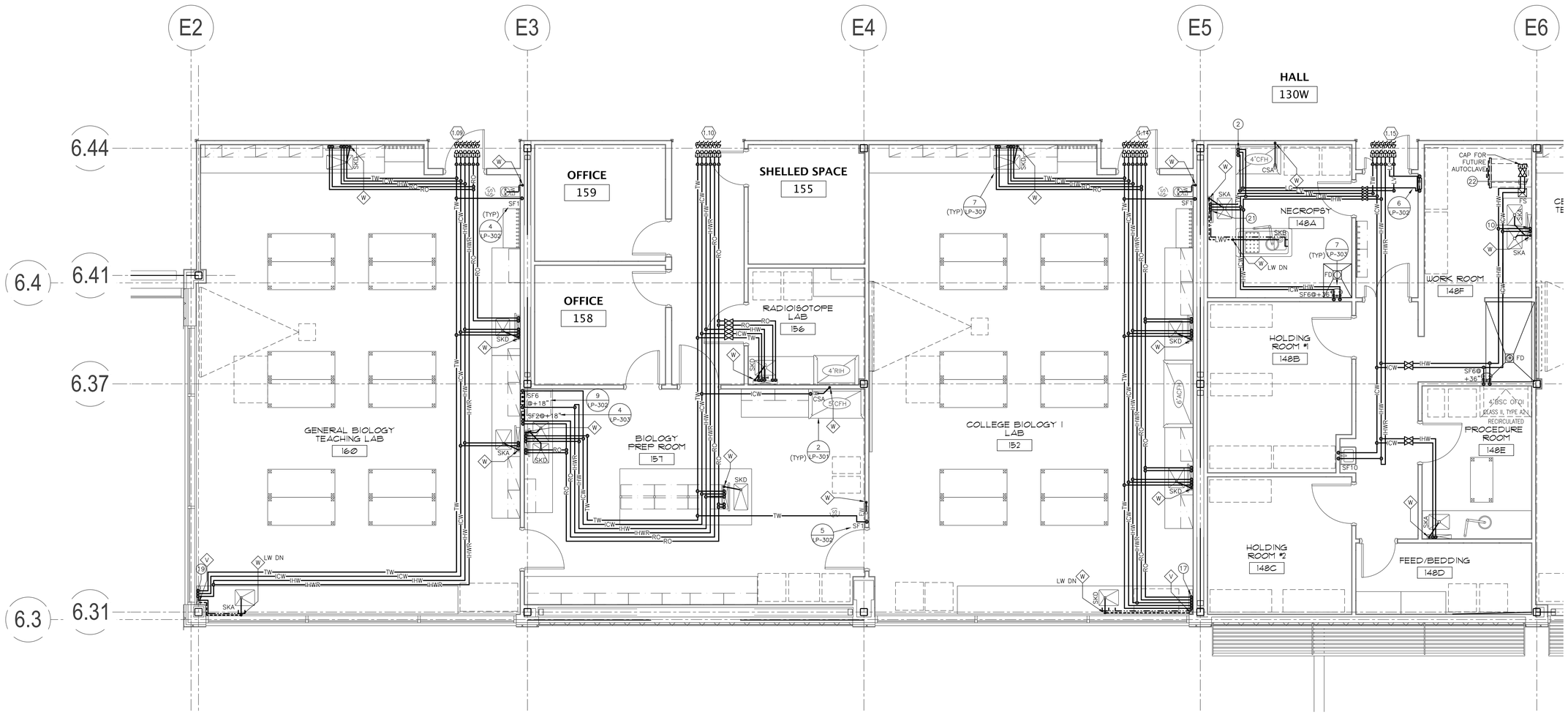
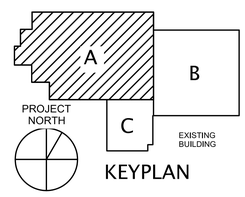


1 LP-111C **LEVEL 1 PARTIAL FLOOR PLAN**
1/4" = 1'-0"
0 1' 2' 4' 8'



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LAB PLUMBING LEVEL 1 PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

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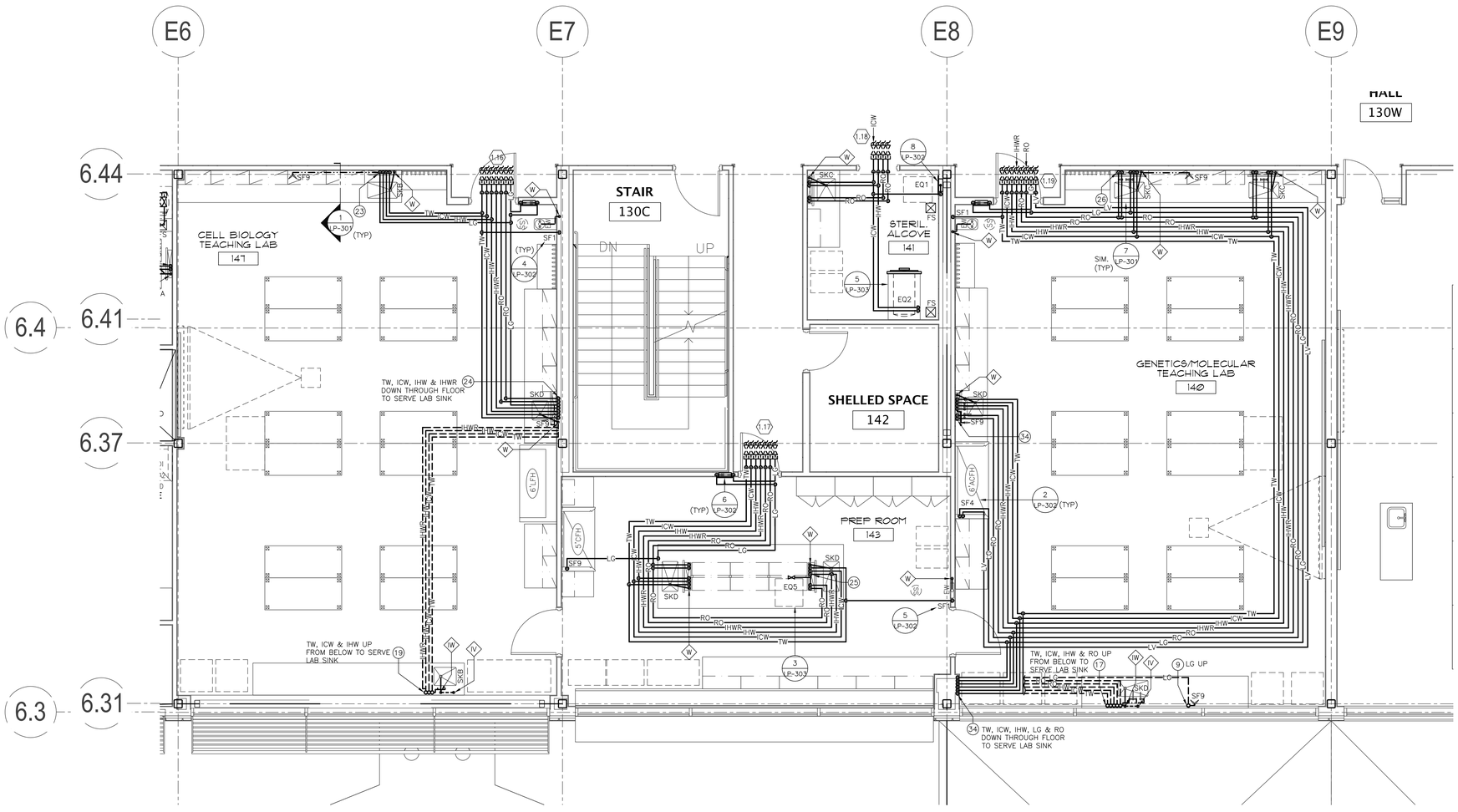
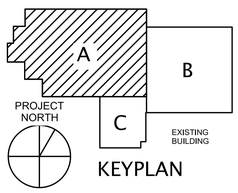
5/7/10





Utah Valley University New Science Building

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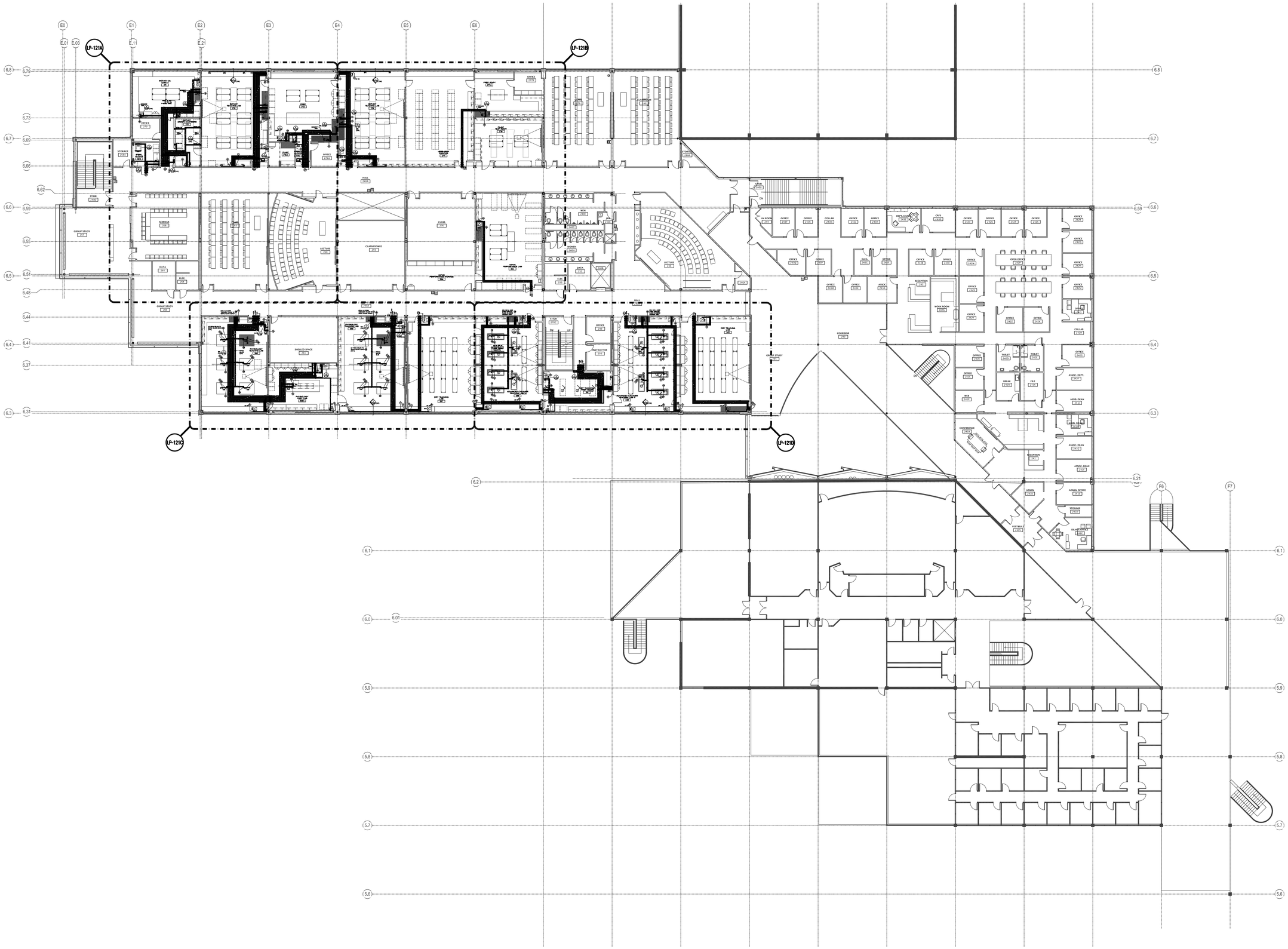
ISSUED DATE:	05.07.2010

LAB PLUMBING
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-111D

1 / LP-111D LEVEL 1 PARTIAL FLOOR PLAN
1/4" = 1'-0"
0 1' 2' 4' 8'



1
LP-121

LEVEL 2 FLOOR PLAN

1/16" = 1'-0"

0 2' 4' 8' 16'

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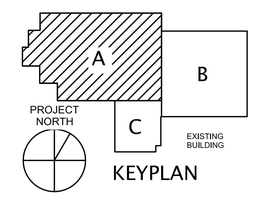
5/7/10



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LAB PLUMBING
LEVEL 2
FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-121

1 LP-121A **LEVEL 2 PARTIAL FLOOR PLAN**

1/4" = 1'-0" 0 1' 2' 4' 8'

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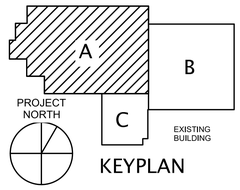

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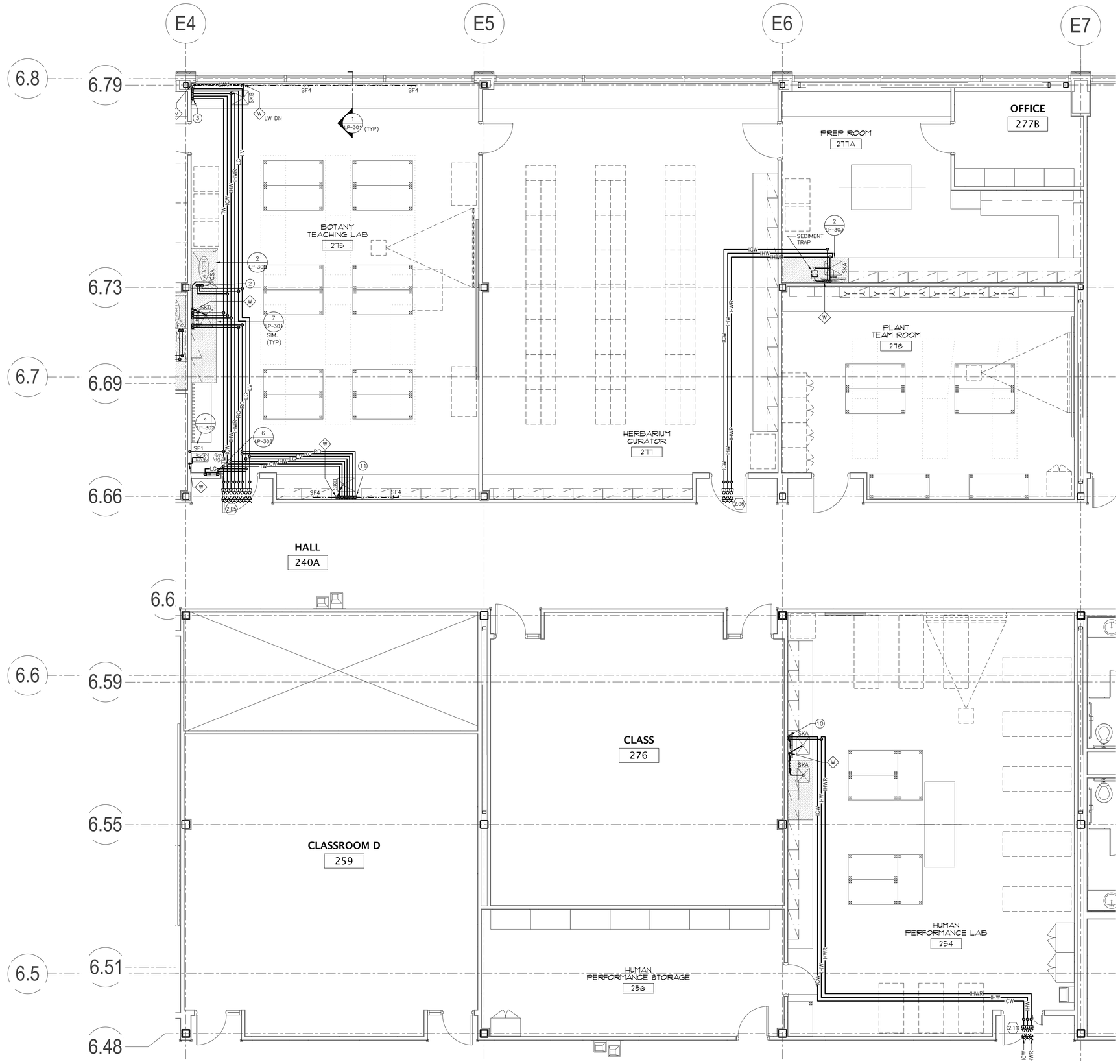
LAB PLUMBING
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-121A



1 LP-121B **LEVEL 2 PARTIAL FLOOR PLAN**

1/4" = 1'-0" 0 1' 2' 4' 8'

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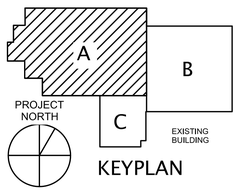

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LAB PLUMBING LEVEL 2 PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-121B

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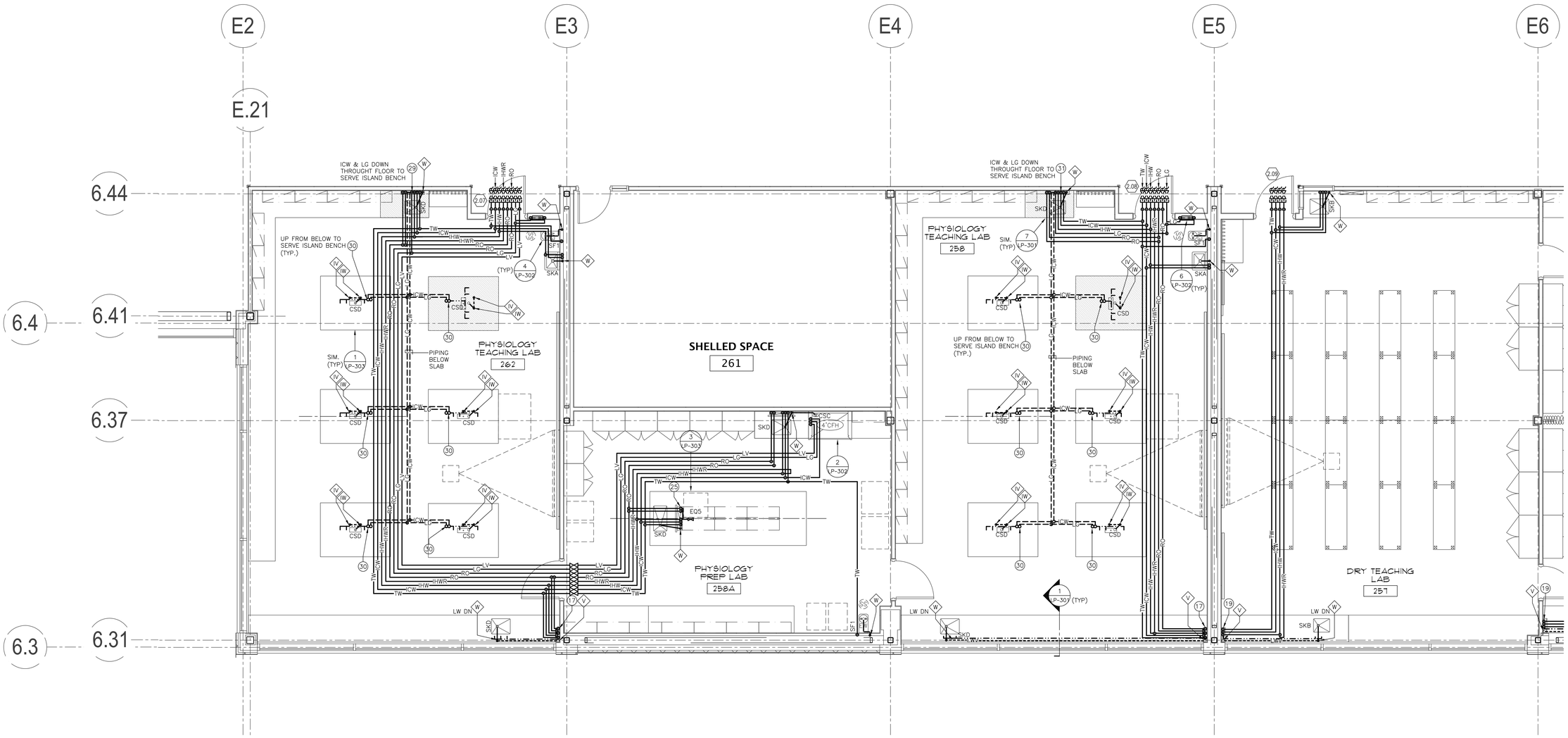

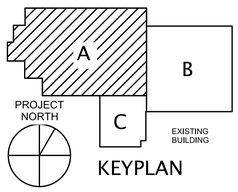

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LAB PLUMBING
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LP-121C

1 / LP-121C LEVEL 2 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

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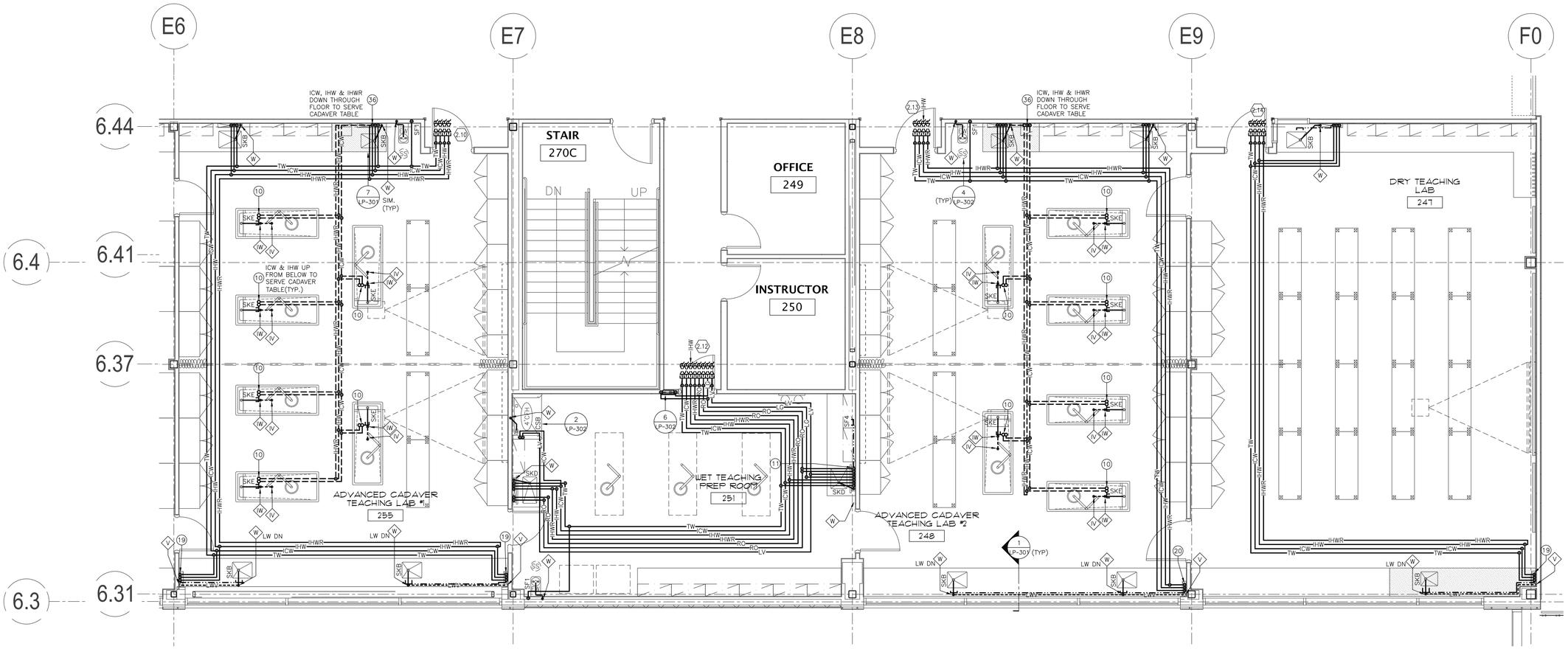

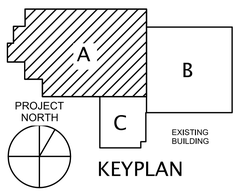

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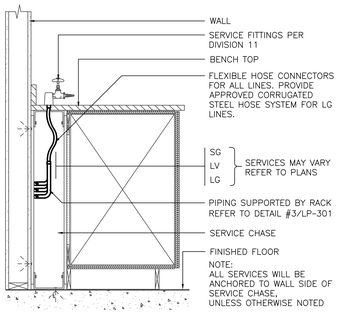
LAB PLUMBING
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

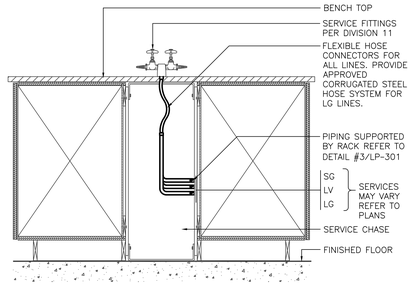
LP-121D

1 / LP-121D LEVEL 2 PARTIAL FLOOR PLAN

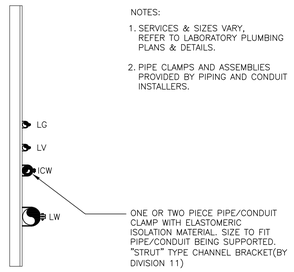
1/4" = 1'-0" 0 1' 2' 4' 8'



TYPICAL WALL BENCH SECTION 1"=1'-0" (1)



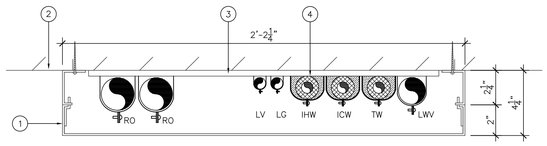
TYPICAL ISLAND BENCH SECTION 1"=1'-0" (2)



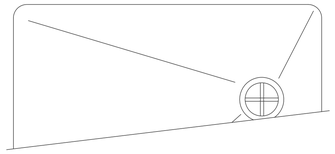
NOTES:

1. SERVICES & SIZES VARY, REFER TO LABORATORY PLUMBING PLANS & DETAILS.
2. PIPE CLAMPS AND ASSEMBLIES PROVIDED BY PIPING AND CONDUIT INSTALLERS.

BELOW BENCH SUPPORT RACK NTS (3)



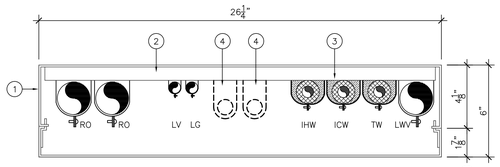
WALL BENCH CONDITION



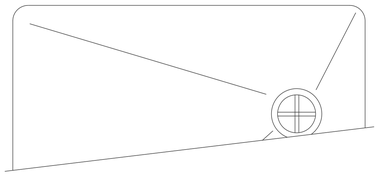
1. PIPE DROP ENCLOSURE PER DIVISION 11
2. WALL
3. "STRUT" TYPE BRACKET ANCHORED TO WALL
4. ONE OR TWO PIECE PIPE/CONDUIT CLAMP WITH ELASTOMERIC ISOLATION MATERIAL. SIZE TO FIT PIPE/CONDUIT BEING SUPPORTED.

NOTES:
1. SERVICES AND ARRANGEMENT MAY VARY REFER TO LABORATORY PLUMBING PLANS
2. COORDINATE PIPING INSTALLATION WITH DIVISION 11 SHOP SUBMITTALS

TYPICAL WALL PIPE DROP ENCLOSURE 3"=1'-0" (4)



ISLAND BENCH CONDITION



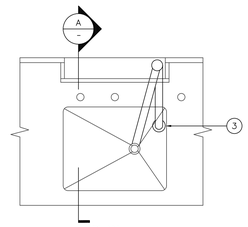
1. PIPE DROP ENCLOSURE PER DIVISION 11
2. "STRUT" TYPE BRACKET PER DIVISION 11
3. ONE OR TWO PIECE PIPE/CONDUIT CLAMP WITH ELASTOMERIC ISOLATION MATERIAL. SIZE TO FIT PIPE/CONDUIT BEING SUPPORTED.
4. RESERVED SPACE FOR DIVISION 26

NOTES:
1. SERVICES AND ARRANGEMENT MAY VARY REFER TO LABORATORY PLUMBING PLANS
2. COORDINATE PIPING INSTALLATION WITH DIVISION 11 SHOP SUBMITTALS

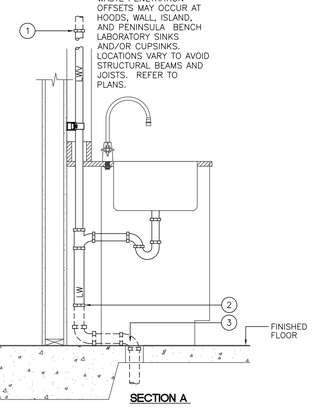
TYPICAL ISLAND PIPE DROP ENCLOSURE 3"=1'-0" (5)

1. POINT OF CONNECTION TO 1-1/2" LABORATORY WASTE VENT AT 6" ABOVE FINISHED CEILING REFER TO PL* SERIES DRAWINGS
2. POINT OF CONNECTION TO 2" LABORATORY WASTE AT 6" ABOVE FINISHED FLOOR, REFER TO PL* SERIES DRAWINGS
3. LABORATORY WASTE OFFSET, MAINTAINED WITHIN TOE KICK SPACE OF BASE CABINET REFER TO PL* SERIES DRAWINGS FOR CONTINUATION

NOTE:
WASTE PENETRATION OFFSETS MAY OCCUR AT HOODS, WALL, ISLAND, AND PENINSULA BENCH LABORATORY SINKS AND/OR CUPSINKS. LOCATIONS VARY TO AVOID STRUCTURAL BEAMS AND JOISTS. REFER TO PLANS.

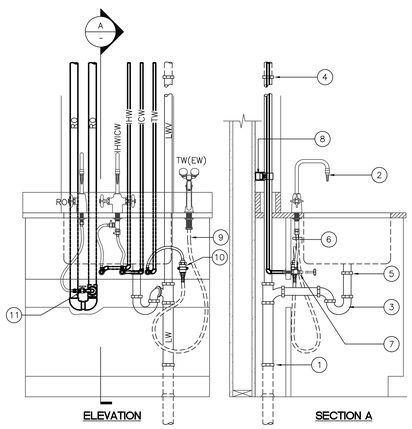


PLAN



SECTION A

TYPICAL WASTE OFFSET AT SINK LOCATIONS 1"=1'-0" (6)

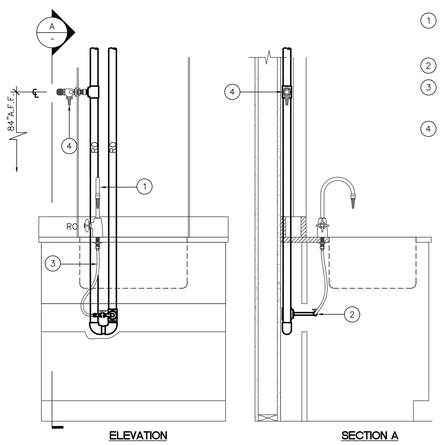


ELEVATION SECTION A

1. POINT OF CONNECTION TO 2" LABORATORY WASTE AT 6" ABOVE FINISHED FLOOR, REFER TO PL* SERIES DRAWINGS
2. SERVICE FITTINGS AS SHOWN ON LF-SERIES DRAWINGS. REFER TO FIXTURE CONNECTION SCHEDULE DRAWING LP-001
3. 1-1/2 "P" TRAP
4. POINT OF CONNECTION TO 1-1/2" LABORATORY WASTE VENT AT 6" ABOVE FINISHED CEILING REFER TO P.* SERIES DRAWINGS
5. LABORATORY WASTE POINT OF CONNECTION TO SINK TAILPIECE
6. 1/2" DIAMETER FLEXIBLE CONNECTORS
7. SHUT-OFF VALVE WITH KEY & ESCUTCHEON PLATE ATTACH TO BACK BOARD(TYP.)
8. "STRUT" TYPE BRACKET ANCHORED TO WALL
9. 8 FT. HIGH PRESSURE REINFORCED PVC HOSE
10. BACK FLOW PREVENTER, CLAMPED ON THE BACK BOARD BY DIV. 22
11. 1/2" RO BALL VALVE BY DIV 22

NOTES:
1. SERVICES MAY VARY, REFER TO PLANS & SCHEDULES
2. REFER TO DETAIL #8/LP-301 FOR RO VERTICAL PIPING LOOP AT LABORATORY SINK

TYPICAL PIPING AT LABORATORY SINK 1"=1'-0" (7)

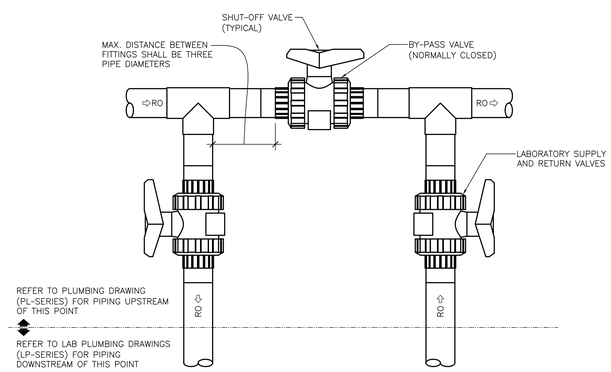


ELEVATION SECTION A

1. SERVICE FITTING AS SHOWN ON LF-SERIES DRAWINGS. REFER TO SCHEDULE DRAWING LP-001
2. RO SHUT OFF VALVE
3. CONNECTION TO RO SERVICE MINIMIZE DEAD LEG
4. SERVICE FITTING MOUNTED ON FIXED SIDE OF PIPE DROP ENCLOSURE BY DIVISION 11(REFER TO PLANS FOR LOCATIONS)

NOTE:
FLOOR RO LOOP DROPPED IN PIPE DROP ENCLOSURE PER DIV. 22 PL-SERIES DRAWINGS.

RO – VERTICAL PIPING LOOP AT LABORATORY SINK NTS (8)



RO WATER SUPPLY VALVES AT POC NTS (9)

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

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STATE OF UTAH
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Utah Valley University New Science Building

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Orem, Utah 84058

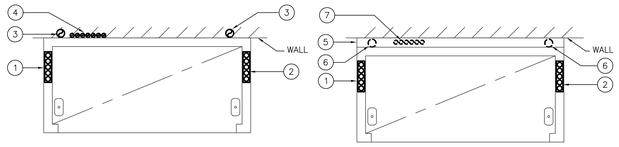
Division of Facilities Construction and Management

DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING DETAILS

CONSTRUCTION DOCUMENTS

LP-301



HOOD PLAN VIEW

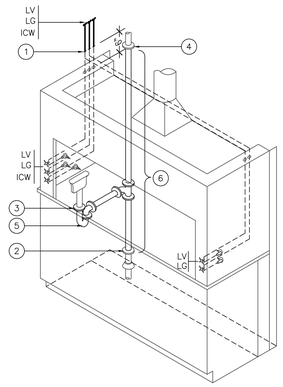
HOOD PLAN VIEW W/ 3" CHASE SPACE

1. POINT OF CONNECTION TO PREPIPED WET & DRY SERVICE SUPPLIES TO HOOD ON LEFT SIDE. SERVICES MAY VARY, REFER TO PLANS FOR TYPES.
2. PREPIPED WET & DRY SERVICE SUPPLIES ON RIGHT SIDE OF HOOD TO SINGLE POINT OF CONNECTIONS ON LEFT SIDE OF HOOD. SERVICES MAY VARY, REFER TO PLANS FOR TYPES.
3. LABORATORY WASTE AND VENT RISER LOCATED WITHIN WALL.
4. PIPED SERVICES LOCATED IN WALL TO FEED ADJACENT BENCH SERVICE FITTINGS. REFER TO PLANS FOR WHERE OCCURS.
5. 3" FILLER PANEL/CHASE PROVIDED PER DIVISION 11. REFER TO LF PLANS FOR LOCATIONS.
6. LOCATION OF LABORATORY WASTE AND VENT RISER LOCATED BEHIND HOOD IN 3" CHASE. REFER TO PLANS FOR WHERE OCCURS.
7. PIPED SERVICES BEHIND HOOD IN 3" CHASE TO FEED ADJACENT BENCH SERVICE FITTINGS. REFER TO PLANS FOR WHERE OCCURS.

NOTE:
WASTE PENETRATION LOCATIONS MAY REQUIRE OFFSET TO AVOID STRUCTURAL BEAMS, REFER TO PL-SERIES DRAWINGS.

TYPICAL PIPING AT CHEMICAL FUME HOOD – PLAN

NTS (1)

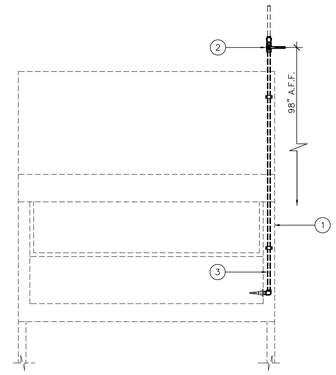


1. POINT OF CONNECTION TO PRE PIPED HOOD SERVICES.
2. POINT OF CONNECTION TO 2" LABORATORY WASTE AT 6" ABOVE FINISHED FLOOR. REFER TO PL* SERIES DRAWINGS.
3. POINT OF CONNECTION TO CUP SINK TAILPIECE.
4. POINT OF CONNECTION TO 1-1/2" LABORATORY VENT @ 6" ABOVE FINISHED CEILING.
5. 1-1/2" P-TRAP.
6. LABORATORY WASTE AND VENT RISER BEHIND HOOD IN 3" CHASE OR IN WALL. REFER TO PLANS FOR LOCATIONS.

NOTES:
1. SERVICES MAY VARY, REFER TO PLANS.
2. REFER TO SCHEDULES FOR PIPE SIZES. REFER ALSO TO DETAIL #1/LP-001.
3. PIPING SHOWN DASHED IS PART OF PRE PIPED FUME HOOD PER DIVISION 11.
4. PIPING SHOWN SOLID TO BE PROVIDED UNDER DIVISION 22.

TYPICAL PIPING AT CHEMICAL FUME HOOD W/ CUPSINK

NTS (2)



ELEVATION

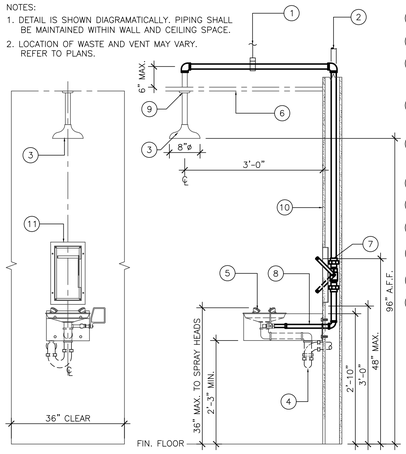
1. BIOLOGICAL SAFETY CABINET.
2. BSC WALL MOUNTED POINT OF CONNECTION SHUT-OFF VALVE
3. PIPING WITHIN BIOLOGICAL SAFETY CABINET CHASE TO SERVICE FITTING

NOTES:
1. NUMBER OF SERVICES MAY VARY, REFER TO PLANS.
2. OFOI BSC MAY NOT BE PRE-PIPED.

PIPING WITH SHUT-OFF VALVES AT BSC

NTS (3)

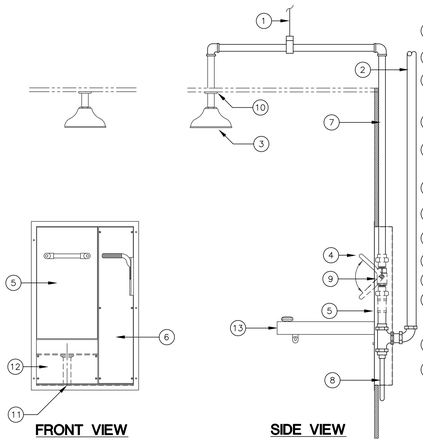
NOTES:
1. DETAIL IS SHOWN DIAGRAMATICALLY. PIPING SHALL BE MAINTAINED WITHIN WALL AND CEILING SPACE.
2. LOCATION OF WASTE AND VENT MAY VARY. REFER TO PLANS.



1. SINGLE PIPE HANGER TO STRUCTURE ABOVE
2. 1-1/4" TW SUPPLY
3. SAFETY SHOWER SUPPLIED UNDER DIVISION 11
4. 1-1/2" P-TRAP CONNECTED TO WASTE AND VENT SYSTEM PROVIDE P-TRAP COVER.
5. EYE/FACE WASH W/ BOWL AT WALL SUPPLIED UNDER DIVISION 11
6. FINISHED CEILING
7. 1" IPS UNION
8. 1/2" TW SUPPLY TO EYEWASH
9. POLISHED CHROME PLATED BRASS ESCUTCHEON
10. WALL
11. ST. STL. ACTUATING ARM FOR SAFETY SHOWER SUPPLIED UNDER DIVISION 11

SAFTETY SHOWER/EYEWASH BOWL UNIT

NTS (4)



FRONT VIEW

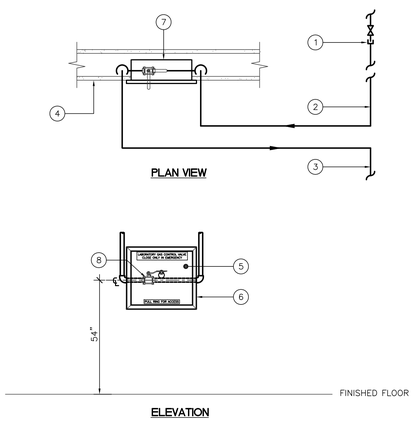
SIDE VIEW

1. SINGLE PIPE HANGER TO STRUCTURE ABOVE
2. 1-1/4" TW SUPPLY
3. SAFETY SHOWER SUPPLIED PER DIVISION 11 INSTALLED PER DIVISION 22
4. ACTUATING ARM FOR SAFETY SHOWER
5. RECESSED EYEWASH AT WALL SUPPLIED PER DIVISION 11 INSTALLED PER DIVISION 22
6. REMOVABLE SHOWER VALVE ACCESS PANEL
7. 1" TW SUPPLY TO SAFETY SHOWER
8. 1/2" TW SUPPLY TO EYEWASH
9. INSTANT ACTION BALL VALVE
10. ESCUTCHEON
11. EYEWASH DRAIN TAIL PIECE CONNECTED TO WASTE AND VENT SYSTEM. PROVIDE ACCESS PANEL FOR P-TRAP.
12. REMOVABLE DRAIN ACCESS PANEL
13. DRAIN PAN

NOTE:
DETAIL IS SHOWN DIAGRAMATICALLY. PIPING SHALL BE MAINTAINED WITHIN WALL AND CEILING SPACE.

PIPING AT SAFETY SHOWER/RECESSED EYEWASH UNIT

NTS (5)



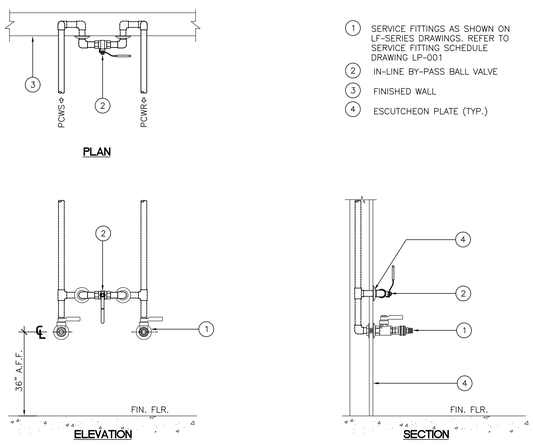
PLAN VIEW

ELEVATION

1. LABORATORY GAS POINT OF CONNECTION
2. LABORATORY GAS DISTRIBUTION FROM POINT OF CONNECTION
3. GAS DISTRIBUTION PIPING TO LABORATORY SERVICES (REFER TO PLANS FOR ROUTING)
4. FINISHED WALL
5. OPAQUE PLASTIC WINDOW WITH PULL-OUT RING MOUNTED TO CENTER. PROVIDE SILKSCREEN WINDOW MARKINGS.
6. MITERED WALL BOARD FRAME(ANODIZED ALUMINUM)
7. 18 GAUGE STEEL VALVE BOX, BAKED WHITE ENAMEL FINISH, 12"x12"x4" DEEP
8. 3-PIECE, BRASS BALL VALVE WITH BRASS TRIM AND THREADED ENDS. UL LISTED AND AGA/CGA CERTIFIED FOR NATURAL GAS SERVICE.

PIPING AT GAS VALVE BOX

NTS (6)



PLAN

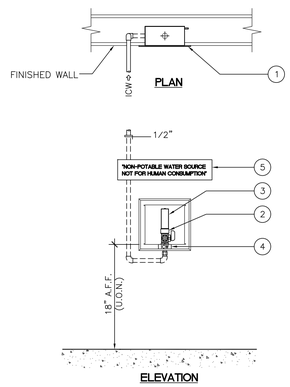
ELEVATION

SECTION

1. SERVICE FITTINGS AS SHOWN ON LF-SERIES DRAWINGS. REFER TO SERVICE FITTING SCHEDULE DRAWING LP-001
2. IN-LINE BY-PASS BALL VALVE
3. FINISHED WALL
4. ESCUTCHEON PLATE (TYP.)

PCWS/PCWR AT WALL

NTS (7)



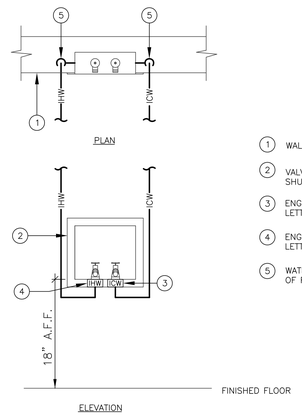
PLAN

ELEVATION

1. ICE MAKER HOOK-UP BOX
2. 1/2" FIP INLET x 1/4"OD OUTLET COMPRESSION ANGLE VALVE SUPPLY CONNECTION IS 1/2" NPT.
3. WATER HAMMER ARRESTER AS PART OF ICE MAKER BOX ASSEMBLY.
4. ENGRAVED PLASTIC LABEL. WHITE LETTERING ON GREEN LABEL.
5. ENGRAVED PLASTIC LABEL. BLACK LETTERING ON YELLOW LABEL.

EQUIPMENT VALVE BOX

NTS (8)



PLAN

ELEVATION

1. WALL
2. VALVE BOX W/ 3/4" ICW & 3/4" IHW SHUT-OFF VALVES
3. ENGRAVED PLASTIC LABEL. WHITE LETTERING ON GREEN LABEL
4. ENGRAVED PLASTIC LABEL. WHITE LETTERING ON RED LABEL
5. WATER HAMMER ARRESTER AT TOP OF RISER

IHW / ICW VALVE BOX

NTS (9)

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

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Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

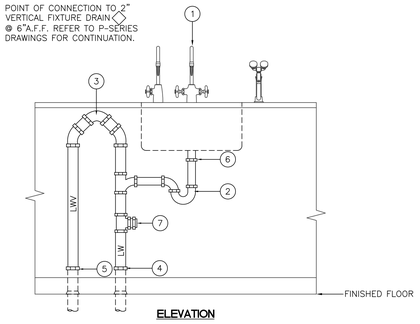
DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING DETAILS

CONSTRUCTION DOCUMENTS

LP-302

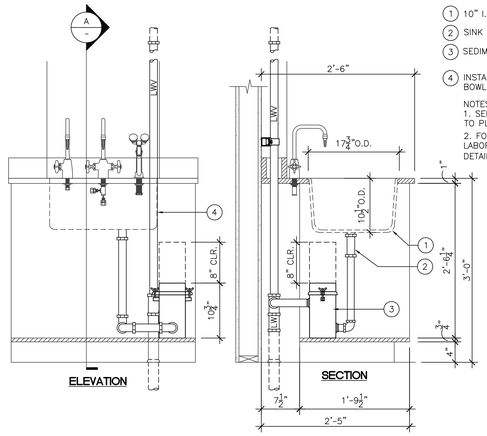
1. SERVICE FITTINGS AS SHOWN ON LF-SERIES DRAWINGS. FOR TYPICAL PIPING AT LABORATORY SINKS REFER DETAIL #7/LP-001
2. 1-1/2" "P" TRAP
3. RETURN BEND COMPOSED OF A 45°(0.79 rad), A 90°(1.6rad), AND A 45°(0.79 rad) FITTING.
4. POINT OF CONNECTION TO 2" VERTICAL FIXTURE DRAIN @ 6"A.F.F. REFER TO P-SERIES DRAWINGS FOR CONTINUATION.
5. POINT OF CONNECTION TO 1-1/2" VERTICAL FIXTURE VENT @ 6"A.F.F. REFER TO P-SERIES DRAWINGS FOR CONTINUATION.
6. LABORATORY WASTE POINT OF CONNECTION TO SINK TAILPIECE
7. CLEANOUT



ELEVATION

ISLAND WASTE AND VENT PIPING

NTS (1)



ELEVATION

SECTION

1. 10" I.D. DEEP SINK
2. SINK TAIL PIECE
3. SEDIMENT TRAP
4. INSTALL TO SIDE OF SINK BOWL EDGE

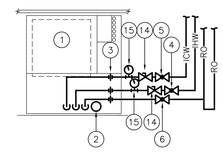
NOTES:
1. SERVICES MAY VARY, REFER TO PLANS & SCHEDULES
2. FOR TYPICAL PIPING AT LABORATORY SINKS, REFER TO DETAIL #7/LP-301

TYPICAL PIPING @ SINK WITH SEDIMENT TRAP

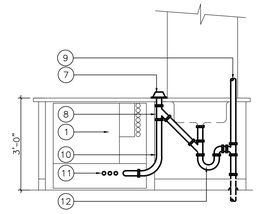
NTS (2)

1. UNDERCOUNTER GLASSWARE WASHER
2. WASTE.
3. PIPE UNION (TYP.)
4. IHW ISOLATION VALVE (BALL VALVE)
5. ICW ISOLATION VALVE (BALL VALVE)
6. RO SUPPLY W/ BALL VALVE (WHERE OCCURS, REFER TO PLANS FOR LOCATIONS)
7. AIR GAP IF REQUIRED (COORDINATE INSTALLATION W/ DIVISION 11 SHOP SUBMITTALS)
8. WYE TAILPIECE
9. LABORATORY WASTE VENT
10. FLEX HOSE BY MANUFACTURER
11. SUPPLIES TO WASHER
12. 1 1/2" P-TRAP
14. WATER PRESSURE REGULATOR
15. WATER GAUGE

NOTES:
1. REFER TO LABORATORY PLUMBING PLANS FOR ADDITIONAL SINK RELATED PIPING
2. COORDINATE W/ EQUIPMENT SUBMITTAL



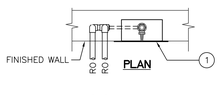
ELEVATION – SUPPLY PIPING



ELEVATION – WASTE PIPING

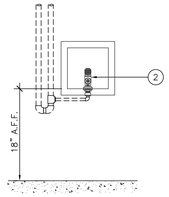
PIPING AT UNDERCOUNTER WASHER

NTS (3)

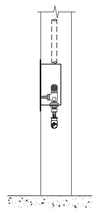


PLAN

1. RO HOOK-UP BOX
2. PURE WATER SERVICE FITTING MOUNTED ON INSIDE OF RECESSED VALVE BOX. 3/8" IPS FEMALE OUTLET. SUPPLY CONNECTION IS 1/2" NPT.



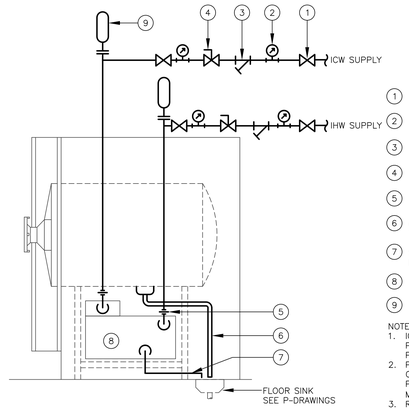
ELEVATION



SIDE

RO VALVE BOX

NTS (4)

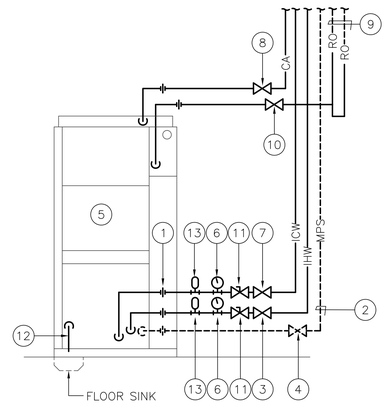


1. SHUT-OFF VALVE (TYPICAL)
2. PRESSURE GAUGE (TYPICAL)
3. STRAINER (TYPICAL)
4. PRESSURE REGULATOR (TYPICAL)
5. UNION (TYPICAL)
6. CHAMBER DRAIN. ROUTE TO FLOOR SINK
7. STEAM GENERATOR DRAIN. ROUTE TO FLOOR SINK
8. INTEGRAL STEAM GENERATOR
9. WATER HAMMER ARRESTER

NOTES:
1. ICW & IHW SOURCE SUPPLIES PROVIDED FROM BACK FLOW PROTECTED WATER SYSTEM.
2. PIPE SIZES, SERVICES AND LOCATIONS OF CONNECTIONS MAY VARY. REFER TO PLANS, SCHEDULES AND MANUFACTURER'S REQUIREMENTS.
3. ROUTE STEAM RELIEF VALVES TO FLOOR SINK.

PIPING AT AUTOCLAVE

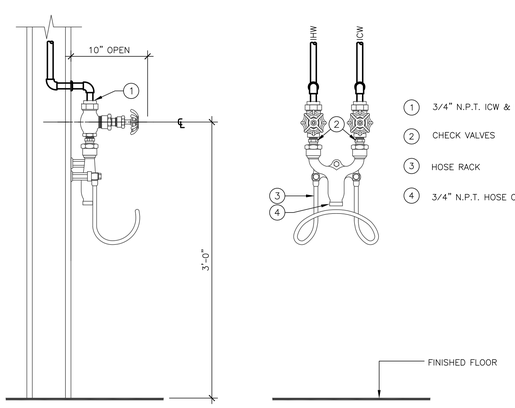
NTS (5)



1. PIPE UNION (TYPICAL)
2. STEAM PIPING BY DIVISION 22. REFER TO PL-SERIES DWG FOR CONTINUATION
3. IHW ISOLATION VALVE
4. STEAM SUPPLY W/ ISOLATION VALVE
5. GLASSWARE WASHER
6. WATER GAUGE
7. ICW ISOLATION VALVE
8. CA SUPPLY W/ ISOLATION VALVE
9. DEIONIZED PIPING LOOP BY DIV. 22. REFER TO PL-SERIES DWG FOR CONTINUATION
10. DEIONIZED SUPPLY W/ ISOLATION VALVE
11. WATER PRESSURE REGULATOR
12. DRAIN TO FLOOR SINK. REFER TO LP AND PLUMBING PLANS
13. WATER HAMMER ARRESTER

PIPING AT TALL GLASSWARE WASHER

NTS (6)



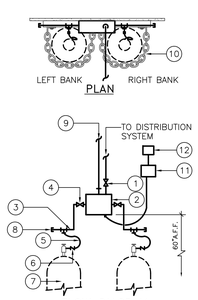
SIDE

ELEVATION

1. 3/4" N.P.T. ICW & IHW SUPPLY
2. CHECK VALVES
3. HOSE RACK
4. 3/4" N.P.T. HOSE CONNECTION

PIPING AT HOSE STATION

NTS (7)



PLAN

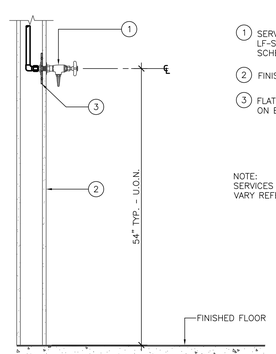
FLOW DIAGRAM

1. SYSTEM SHUT-OFF VALVE
2. PRESSURE REDUCING/CHANGE-OVER REGULATOR SYSTEM
3. HIGH PRESSURE HEADER
4. BANK SHUT-OFF VALVE
5. PIGTAIL
6. CHECK VALVE
7. GAS CYLINDERS OFOI
8. GAS TIGHT SEALED PLUG
9. 1"ø VENT CONNECTED TO LABORATORY EXHAUST DUCTWORK
10. CYLINDER RESTRAINT BY DIV. 11
11. POWER SOURCE (IF REQUIRED)
12. ANNUNCIATOR

NOTES:
1. NOT ALL MANIFOLD COMPONENTS ARE SHOWN. REFER TO DIVISION 22 SPECIFICATIONS.
2. PROVIDE MOUNTING/BRACKETING HARDWARE FOR AFFIXING UNIT TO WALL.
3. NUMBER OF CYLINDERS MAY VARY, REFER TO PLANS.

CYLINDER MANIFOLD AT (2) CYLINDER RESTRAINTS

NTS (8)



SECTION

1. SERVICE FITTINGS AS SHOWN ON LF-SERIES DRAWINGS. REFER TO SCHEDULE DRAWING LP-001
2. FINISHED WALL
3. FLAT BRACKET, SOLDER PIPE ON BRACKET

NOTE:
SERVICES & ARRANGEMENTS MAY VARY REFER TO PLANS & SCHEDULES

PIPING AT WALL MOUNTED FITTING

NTS (9)

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

REGISTERED PROFESSIONAL ENGINEER
No. 6845681-2202
PAUL D. LEMESTRE
STATE OF UTAH
5/7/10

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	RI
CHECKED BY:	DS
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB PLUMBING DETAILS

CONSTRUCTION DOCUMENTS

LP-303

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

1P	SINGLE POLE
1PH	SINGLE-PHASE
1WAY	ONE-WAY
2/C	TWO-CONDUCTOR
2WAY	TWO-WAY
3/C	THREE-CONDUCTOR
3PH	THREE-PHASE
3WAY	THREE-WAY
4OUT	QUADRUPLE RECEPTACLE OUTLET
4PDT	FOUR-POLE DOUBLE THROW
4PST	FOUR-POLE SINGLE THROW
4W	FOUR-WIRE
4WAY	FOUR-WAY
A	ABOVE COUNTER
AC	ARMORED CABLE
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ALUM	ALUMINUM
AMPE	AMPERE
ANN	ANNUNCIATOR
AP	ACCESS POINT (WIRELESS DATA)
AR	AS REQUIRED
ASC	AMPS SHORT CIRCUIT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAGE
BB XFMR	BUCK-BOOST TRANSFORMER
C	CEILING MOUNTED
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCBA	CUSTOM COLOR AS SELECTED BY ARCHITECT
CCTV	CLOSED CIRCUIT TELEVISION
CFBA	CUSTOM FINISH AS SELECTED BY ARCHITECT
CF/CI	CONTRACTOR FURNISHED/ CONTRACTOR INSTALLED
CF/OI	CONTRACTOR FURNISHED/ OWNER INSTALLED
CKT	CIRCUIT
CM	CONSTRUCTION MANAGER
CND	CONDUIT
CO	CONVENIENCE OUTLET
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CTV	CABLE TELEVISION
CU	COPPER
dBA	UNIT OF SOUND LEVEL
DPDT	DOUBLE POLE DOUBLE THROW
DS	DISCONNECT SWITCH
EA	EACH
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NONMETALLIC TUBING
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
EX	EXISTING
F	FURNITURE MOUNTED
FA	FIRE ALARM
FCP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FMC	FLEXIBLE METALCONDUIT
FOB	FREIGHT ON BOARD
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GROUND
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HD	HEAVY DUTY
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IN/IS	INSULATED/ISOLATED
I/O	INPUT/OUTPUT
IR	INFRARED
J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
kVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
kWh	KILOWATT HOUR
LED	LIGHT EMITTING DIODE
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LTG	LIGHTING
LV	LOW VOLTAGE
MATV	MASTER ANTENNA TELEVISION SYSTEM
MAX	MAXIMUM
MC	METAL CLAD
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTION
MDP	MAIN DISTRIBUTION PANEL
MG	MOTOR GENERATOR
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFC	NATIONAL FIRE CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OCP	OVER CURRENT PROTECTION
OF/CI	OWNER FURNISHED/ CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED/ OWNER INSTALLED
OFP	OBTAIN FROM PLANS
OH DR	OVERHEAD (COILING) DOOR
OL	OVERLOAD
PB	PUSHBUTTON
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PT	POTENTIAL TRANSFORMER
PTZ	PAN/TILT/ZOOM
QTY	QUANTITY
R	REMOVE
RCP	REFLECTED CEILING PLAN
RMC	RIGID METAL CONDUIT
RNC	RIGID NONMETALLIC CONDUIT
RPM	REVOLUTIONS PER MINUTE
RR	REMOVE AND RELOCATE
SCA	SHORT CIRCUIT AMPS
SCBA	STANDARD COLOR AS SELECTED BY ARCHITECT
SF	SQUARE FOOT (FEET)
SFBA	STANDARD FINISH AS SELECTED BY ARCHITECT
SPDT	SINGLE POLE, DOUBLE THROW
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
S/S	START/STOP
ST	SINGLE THROW
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TL	TWIST LOCK
TP	TELEPHONE POLE
TP	TWISTED PAIR
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UF	UNDERFLOOR
UGND	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPERE
VFC/VFD	VARIABLE FREQUENCY MOTOR CONTROLLER
W/	WITH
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER

DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

TECHNOLOGY SYSTEMS: THE TERM "TECHNOLOGY SYSTEMS" IS USED TO DESCRIBE ALL LOW VOLTAGE SYSTEMS GENERALLY REFERRED TO AS "SPECIAL SYSTEMS". THESE SYSTEMS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO ALL SYSTEMS WHICH UTILIZE VOLTAGES OF LESS THAN 71 VOLTS SUCH AS SOUND SYSTEMS, VIDEO SYSTEMS, TV SYSTEMS, SECURITY SYSTEMS, VOICE AND DATA CABLING SYSTEMS, ETC...

ELECTRICAL SHEET INDEX

EE-001	SHEET INDEX, ABBREVIATIONS, AND GENERAL NOTES
EE-002	SYMBOLS LEGEND
EE-501	DETAILS
EE-502	DETAILS
EE-601	GROUNDING RISER DIAGRAM
EE-701	TYPICAL MOUNTING HEIGHT DETAILS
ES-101	CAMPUS ELECTRICAL PLAN
ES-101A	ENLARGED PARTIAL ELECTRICAL SITE PLAN
ES-101B	ENLARGED PARTIAL ELECTRICAL SITE PLAN
ES-102	SITE ELECTRICAL DEMOLITION PLAN
ES-103	SITE ELECTRICAL PLAN
ES-401	TUNNEL ELECTRICAL PLAN
ES-501	SITE ELECTRICAL DETAILS
ED-101	LEVEL 0 ELECTRICAL DEMOLITION PLAN
ED-102	LEVEL 1 ELECTRICAL DEMOLITION PLAN
ED-103	LEVEL 2 ELECTRICAL DEMOLITION PLAN
EP-101A	LEVEL 0 POWER PLAN - AREA A
EP-101B	LEVEL 0 POWER PLAN - AREA B
EP-101C	LEVEL 0 POWER PLAN - AREA C
EP-102A	LEVEL 1 POWER PLAN - AREA A
EP-102B	LEVEL 1 POWER PLAN - AREA B
EP-103A	LEVEL 2 POWER PLAN - AREA A
EP-103B	LEVEL 2 POWER PLAN - AREA B
EP-104	OVERALL ROOF POWER PLAN
EP-104A	PENTHOUSE POWER PLAN
EP-151	ENLARGED UPPER CENTRAL PLANT ELECTRICAL PLAN
EP-161	LOWER CENTRAL PLANT ELECTRICAL PLANS
EP-401	ENLARGED PARTIAL POWER PLANS
EP-601	POWER ONE-LINE DIAGRAM - MEDIUM VOLTAGE
EP-602	POWER ONE-LINE DIAGRAM - 277/480V NORMAL POWER
EP-603	POWER ONE-LINE DIAGRAM - 120/280V NORMAL POWER
EP-604	POWER ONE-LINE DIAGRAM - EMERGENCY/STANDBY POWER
EP-605	EQUIPMENT SCHEDULE
EP-606	PANEL SCHEDULES
EP-607	PANEL SCHEDULES
EP-608	PANEL SCHEDULES
EP-609	PANEL SCHEDULES
EP-610	PANEL SCHEDULES
EP-651	UPPER PLANT POWER ONE-LINE DIAGRAM
EP-661	LOWER PLANT POWER ONE-LINE DIAGRAM
EP-671	SCHEDULES - CENTRAL PLANT
EL-101A	LEVEL 0 LIGHTING PLAN - AREA A
EL-101B	LEVEL 0 LIGHTING PLAN - AREA B
EL-101C	LEVEL 0 LIGHTING PLAN - AREA C
EL-102A	LEVEL 1 LIGHTING PLAN - AREA A
EL-102B	LEVEL 1 LIGHTING PLAN - AREA B
EL-103A	LEVEL 2 LIGHTING PLAN - AREA A
EL-103B	LEVEL 2 LIGHTING PLAN - AREA B
EL-104	PENTHOUSE LIGHTING PLAN
EL-501	NETWORKED LIGHTING CONTROL DETAILS
EL-502	LIGHTING CONTROL DETAILS
EL-601	LIGHTING FIXTURE SCHEDULE
ET-101A	LEVEL 0 TELECOMMUNICATIONS PLAN - AREA A
ET-101B	LEVEL 0 TELECOMMUNICATIONS PLAN - AREA B
ET-101C	LEVEL 0 TELECOMMUNICATIONS PLAN - AREA C
ET-102A	LEVEL 1 TELECOMMUNICATIONS PLAN - AREA A
ET-102B	LEVEL 1 TELECOMMUNICATIONS PLAN - AREA B
ET-103A	LEVEL 2 TELECOMMUNICATIONS PLAN - AREA A
ET-103B	LEVEL 2 TELECOMMUNICATIONS PLAN - AREA B
ET-401	ENLARGED TELECOMMUNICATIONS PLANS
ET-402	ENLARGED TELECOMMUNICATIONS PLANS
ET-601	TELECOMMUNICATIONS ROUGH-IN SCHEDULE, DETAILS AND DIAGRAMS
EY-101A	LEVEL 0 SECURITY PLAN - AREA A
EY-101B	LEVEL 0 SECURITY PLAN - AREA B
EY-101C	LEVEL 0 SECURITY PLAN - AREA C
EY-102A	LEVEL 1 SECURITY PLAN - AREA A
EY-102B	LEVEL 1 SECURITY PLAN - AREA B
EY-103A	LEVEL 2 SECURITY PLAN - AREA A
EY-103B	LEVEL 2 SECURITY PLAN - AREA B
EY-104	PENTHOUSE SECURITY PLAN
EY-601	SECURITY SYSTEMS DETAILS AND DIAGRAMS
EY-602	SECURITY SYSTEMS SCHEDULES
EJ-101A	LEVEL 0 AUDIO-VIDEO PLAN - AREA A
EJ-101B	LEVEL 0 AUDIO-VIDEO PLAN - AREA B
EJ-101C	LEVEL 0 AUDIO-VIDEO PLAN - AREA C
EJ-102A	LEVEL 1 AUDIO-VIDEO PLAN - AREA A
EJ-102B	LEVEL 1 AUDIO-VIDEO PLAN - AREA B
EJ-103A	LEVEL 2 AUDIO-VIDEO PLAN - AREA A
EJ-103B	LEVEL 2 AUDIO-VIDEO PLAN - AREA B
EJ-601	AV SYSTEMS ROUGH-IN EQUIPMENT LIST, NOTES, AND DETAILS
EJ-602	AV SYSTEMS ROUGH-IN RISER DIAGRAMS
FA-101A	LEVEL 0 FIRE ALARM PLAN - AREA A
FA-101B	LEVEL 0 FIRE ALARM PLAN - AREA B
FA-101C	LEVEL 0 FIRE ALARM PLAN - AREA C
FA-102A	LEVEL 1 FIRE ALARM PLAN - AREA A
FA-102B	LEVEL 1 FIRE ALARM PLAN - AREA B
FA-103A	LEVEL 2 FIRE ALARM PLAN - AREA A
FA-103B	LEVEL 2 FIRE ALARM PLAN - AREA B
FA-104	PENTHOUSE FIRE ALARM PLAN
FA-601	FIRE ALARM RISER DIAGRAM AND MATRIX
TT-001	TELECOMMUNICATIONS EQUIPMENT LIST AND NOTES
TT-501	TELECOMMUNICATIONS DETAILS
TT-601	TELECOMMUNICATIONS RISER DIAGRAMS

GENERAL ELECTRICAL NOTES

1. CLARIFICATION METHODS: AT THE TIME OF BIDDING, BIDDERS SHALL FAMILIARIZE THEMSELVES WITH THE DRAWINGS AND SPECIFICATIONS. ANY QUESTIONS, MISUNDERSTANDINGS, CONFLICTS, DELETIONS, DISCONTINUED PRODUCTS, CATALOG NUMBER DISCREPANCIES, DISCREPANCIES BETWEEN THE EQUIPMENT SUPPLIED AND THE INTENT OR FUNCTION OF THE EQUIPMENT, ETC, SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER IN WRITING FOR CLARIFICATION PRIOR TO ISSUANCE OF THE FINAL ADDENDUM AND BIDDING OF THE PROJECT. WHERE DISCREPANCIES OR MULTIPLE INTERPRETATIONS OCCUR, THE MOST STRINGENT (WHICH IS GENERALLY RECOGNIZED AS THE MOST COSTLY) THAT MEETS THE INTENT OF THE DOCUMENTS SHALL BE ENFORCED.
2. OWNER FURNISHED ITEMS: THE OWNER WILL FURNISH MATERIAL AND EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS TO BE INCORPORATED INTO THE WORK. THESE ITEMS ARE ASSIGNED TO THE INSTALLER AND COSTS FOR RECEIVING, HANDLING, STORAGE, IF REQUIRED, AND INSTALLATION ARE INCLUDED IN THE CONTRACT SUM.

A. THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.

B. THE OWNER WILL ARRANGE AND PAY FOR DELIVERY OF OWNER FURNISHED ITEMS FREIGHT ON BOARD JOB SITE AND THE INSTALLER WILL INSPECT DELIVERIES FOR DAMAGE. IF OWNER FURNISHED ITEMS ARE DAMAGED, DEFECTIVE OR MISSING, DOCUMENT DAMAGED ITEMS WITH THE TRANSPORT COMPANY AND THE OWNER WILL ARRANGE FOR REPLACEMENT. THE OWNER WILL ALSO ARRANGE FOR MANUFACTURER'S FIELD SERVICES, AND THE DELIVERY OF MANUFACTURER'S WARRANTIES AND BONDS TO THE INSTALLER.

C. THE INSTALLER IS RESPONSIBLE FOR DESIGNATING THE DELIVERY DATES OF OWNER FURNISHED ITEMS AND FOR RECEIVING, UNLOADING AND HANDLING OWNER FURNISHED ITEMS AT THE SITE. THE INSTALLER IS RESPONSIBLE FOR PROTECTING OWNER FURNISHED ITEMS FROM DAMAGE, INCLUDING DAMAGE FROM EXPOSURE TO THE ELEMENTS, AND TO REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF HIS OPERATIONS.

3. EXPOSED STRUCTURE AREAS (EXCLUDING MECHANICAL, ELECTRICAL, AND COMMUNICATION SPACES): INSTALL RACEWAYS BETWEEN DECK AND STRUCTURE WHEREVER POSSIBLE IN EXPOSED STRUCTURE CEILING AREAS. ROUTE RACEWAYS IN CONCEALED AREAS WHEREVER POSSIBLE. REFER ALL CONDITIONS WHERE RACEWAYS MUST BE INSTALLED WHICH CANNOT COMPLY WITH THESE REQUIREMENTS TO THE ARCHITECT.
4. SUBMITTALS: PROVIDE SUBMITTALS IN THREE RING BINDERS WITH JOB NAME, SUBCONTRACTOR, AND VOLUME ON THE BINDING. PREPARE TABS FOR EACH SPECIFICATION SECTION REQUIRING SUBMITTALS. PREPARE INDEX OF EQUIPMENT SUBMITTED IN EACH TAB.
5. REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
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SHEET INDEX, ABBREVIATIONS, AND GENERAL NOTES
CONSTRUCTION DOCUMENTS

EE-001

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SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
A5 / E-501	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501 INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
A5 / E-201	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
A5 / E-201	ELEVATION OR SECTION INDICATOR, INTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
100	ROOM OR SPACE NUMBER.
1	KEYNOTE INDICATOR.
1	REVISION INDICATOR.
CU-1	EQUIPMENT INDICATOR.
	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING.
	BREAK, ROUND.
MATCH LINE SEE XX/X-XXX	MATCH LINE INDICATOR: CENTER, EXTRA WIDE LINE.
WIRING METHODS	
	WIRING.
	WIRING TURNED UP OR TOWARDS OBSERVER.
	WIRING TURNED DOWN OR AWAY FROM OBSERVER.
A-1,3,5	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL SPECIFICATIONS.
1 A-1,3,5	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. NUMBER IN BOX REFERS TO THE CONDUCTOR AND CONDUIT SCHEDULE. FOR BRANCH WIRING USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL SPECIFICATIONS.
EQ	MECHANCIAL EQUIPMENT CONDUIT AND CONDUCTOR. REFER TO EQUIPMENT SCHEDULE FOR CONDUIT AND CONDUCTOR SIZES.
A-1,3,5	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. SMALL CROSS LINES INDICATE NUMBER OF CONDUCTORS OR CABLES. LARGER CROSS LINE INDICATES EQUIPMENT GROUND. WAVY CROSS LINE INDICATES INSULATED/ ISOLATED GROUND. FOR BRANCH WIRING, CROSS LINES INDICATE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL SPECIFICATIONS.
	FLEXIBLE WIRING.
— X —	WIRING AND/OR RACEWAY: THIN LINE. WHERE "X" = : CATV = CABLE TELEVISION CCTV = CLOSED CIRCUIT TELEVISION FA = FIRE ALARM FO = FIBER OPTICS I = INTERCOM NC = NURSE CALL P = POWER RC = RIGID CONDUIT S = SOUND T = TELEPHONE TV = TELEVISION OTHERS AS NOTED IN OTHER SCHEDULES. RACEWAYS AND WIRING SHALL BE SIZED AS SHOWN AND/OR SPECIFIED.
	LOW VOLTAGE WIRING: DIVIDE, MEDIUM LINE.
	CONDUIT STUB. DIMENSION RECORD DRAWINGS AND MARK.
1	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
J	JUNCTION BOX.
J SC	JUNCTION BOX, SYSTEMS FURNITURE COMMUNICATION CONNECTION.
J SP	JUNCTION BOX, SYSTEMS FURNITURE POWER CONNECTION.
PB	PULL BOX.
C C	CABLE TRAY ABOVE ACCESSIBLE CEILING.
W W	WIREWAY.
	EARTH GROUND (ONE-LINE DIAGRAM).
J C	JUNCTION BOX, CEILING.
	LADDER RACK.
WIRING DEVICES	
	RECEPTACLE, DUPLEX: NEMA 5-20R.
A	RECEPTACLE, DUPLEX, ABOVE COUNTER: NEMA 5-20R.
C	RECEPTACLE, DUPLEX, CEILING: NEMA 5-20R.
DF	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, DRINKING FOUNTAIN: CONCEAL WATER COOLER RECEPTACLE BEHIND WATER COOLER. SEE MECHANICAL/PLUMBING SHOP DRAWINGS FOR INSTALLATION REQUIREMENTS.
IG	RECEPTACLE, DUPLEX, ISOLATED GROUND: NEMA 5-20R.
W	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, WET LABEL, "WEATHERPROOF IN USE": NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER: NEMA 5-20R.
WP	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, WEATHERPROOF: NEMA 5-20R.
	RECEPTACLE, QUADRAPLEX: NEMA 5-20R.
	RECEPTACLE, SPECIAL PURPOSE. PROVIDE RECEPTACLE TO MATCH EQUIPMENT PLUG.
	RECEPTACLE, SPECIAL PURPOSE ON EMERGENCY POWER. PROVIDE RECEPTACLE TO MATCH EQUIPMENT PLUG.
	MULTI-OUTLET ASSEMBLY: NEMA 5-20R.
D	DROP CORD. SEE DETAIL.
T	THERMOSTAT.
FB#	FLUSH FLOOR BOX. "#" SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE IN THE ELECTRICAL SPECIFICATIONS FOR CONFIGURATION AND DEVICES.
PP#	POWER POLE. "#" SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE IN THE ELECTRICAL SPECIFICATIONS FOR CONFIGURATION AND DEVICES.
PT#	FLUSH FIRE RATED POKE THRU. "#" SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE IN THE ELECTRICAL SPECIFICATIONS FOR CONFIGURATION AND DEVICES.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	SWITCH, DIMMER.
X $	SWITCH, SINGLE POLE ("X" INDICATES FIXTURES CONTROLLED).
X $2	SWITCH, DOUBLE POLE ("X" INDICATES FIXTURES CONTROLLED).
X $3	SWITCH, THREE-WAY ("X" INDICATES FIXTURES CONTROLLED).
X $4	SWITCH, FOUR-WAY ("X" INDICATES FIXTURES CONTROLLED).
$K	SWITCH, KEY OPERATED.
$M	SWITCH, MOMENTARY.
$P	SWITCH, PILOT LIGHT.
$T	SWITCH, TIMER OPERATED.
T	RECEPTACLE, DUPLEX, TAMPER RESISTANT: NEMA 5-20R.
SITE ELECTRICAL AND COMMUNICATIONS UTILITIES	
3ØUP	ELECTRIC LINE: THIN LINE. 1Ø = SINGLE PHASE, 2Ø = 2-PHASE, 3Ø = 3-PHASE, O = OVERHEAD, U = UNDERGROUND, P = PRIMARY, S = SECONDARY
	UTILITY POLE.
C	UTILITY, COMMUNICATIONS MANHOLE.
E	UTILITY, ELECTRICAL MANHOLE.
T	UTILITY, TELEPHONE MANHOLE.
T	TRANSFORMER.
LIGHTING (REFER TO FIXTURE SCHEDULE FOR SYMBOLS)	
(W-3)	FIXTURE IDENTIFICATION: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
(W-3)	FIXTURE IDENTIFICATION, EMERGENCY WITH BATTERY PACK, CONNECTED TO GENERATOR AS INDICATED: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
EM	EMERGENCY.
NL	NIGHT LIGHT: DO NOT SWITCH.
↑	EGRESS DIRECTION ARROW.
LV	LOW VOLTAGE LIGHTING TRANSFORMER.
LIGHTING CONTROL	
	OCCUPANCY SENSOR, DUAL TECHNOLOGY, OMNI-DIRECTIONAL, CEILING.
	OCCUPANCY SENSOR, DUAL TECHNOLOGY, WALL.
	OCCUPANCY SENSOR, DUAL TECHNOLOGY, DIRECTIONAL.
U	OCCUPANCY SENSOR, ULTRASONIC, OMNI-DIRECTIONAL, CEILING.
R	OCCUPANCY SENSOR CONTROL RELAY.
P	PHOTOCELL.
STRUCTURED CABLING	
X	TELEPHONE, WALL MOUNTED ("X" INDICATES QUANTITY OF CABLES).
P	TELEPHONE, WALL MOUNTED: PAY PHONE.
W	TELEPHONE, WALL MOUNTED: WALL PHONE.
X	OUTLET, DATA COMMUNICATION ("X" INDICATES QUANTITY OF CABLES).
	OUTLET, BUILDING STANDARD COMBINATION TELEPHONE/ DATA COMMUNICATION.
	TELEPHONE TERMINAL BOARD, FIRE TREATED PLYWOOD PAINTED.
	LAN RACK, FLOOR STANDING.
D	DATA CABLE, CATEGORY 5 (ONE-LINE DIAGRAM).
V	VOICE CABLE, CATEGORY 3 (ONE-LINE DIAGRAM).
ELECTRICAL POWER AND DISTRIBUTION	
	FUSE WITH RATING (ONE-LINE DIAGRAM).
	DISCONNECT, FUSED (ONE-LINE DIAGRAM).
	DISCONNECT, NONFUSED (ONE-LINE DIAGRAM).
	DISCONNECT WITH FUSE AND MOTOR STARTER COMBINATION (ONE-LINE DIAGRAM).
	OVERLOAD RELAY (ONE-LINE DIAGRAM).
	STARTER (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOLDED CASE (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOLDED CASE WITH SHUNT TRIP (ONE-LINE DIAGRAM).
MCP	CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTION (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, SOLID STATE (ONE-LINE DIAGRAM).
GFP	CIRCUIT BREAKER, SOLID STATE WITH GROUND FAULT PROTECTION (ONE-LINE DIAGRAM).
	MOTOR.
	HEATER, ELECTRIC RESISTANCE.
	TRANSFORMER (ONE-LINE DIAGRAM).
	TRANSFORMER, CURRENT (ONE-LINE DIAGRAM).

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	WYE CONNECTION (ONE-LINE DIAGRAM).
"1H"	PANELBOARD (ONE-LINE DIAGRAM).
225/3 "1H"	PANELBOARD WITH MAIN LUGS ONLY. BUS SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
225/3 "1H"	PANELBOARD WITH MAIN CIRCUIT BREAKER. SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
225/3 "1H" 60/3	PANELBOARD WITH MAIN AND SUB FEED CIRCUIT BREAKER (ONE-LINE DIAGRAM).
225/3 "1H" 25/3	PANELBOARD WITH MAIN LUGS ONLY AND SURGE PROTECTION WITH CIRCUIT BREAKER (ONE-LINE DIAGRAM).
225/3 "1H" 225/3 "1H"	PANELBOARD WITH SUB FEED LUGS (ONE-LINE DIAGRAM).
225/3 "1H" "1H"	PANELBOARD WITH CIRCUIT BREAKER AND SUB FEED LUGS (ONE-LINE DIAGRAM).
	TRANSITION CABINET (ONE-LINE DIAGRAM).
	CT CABINET PER UTILITY'S REQUIREMENTS (ONE-LINE DIAGRAM).
	TRANSFER SWITCH (ONE-LINE DIAGRAM).
DMM	DIGITAL MULTIMETER (ONE-LINE DIAGRAM).
	SERVICE ENTRANCE SURGE PROTECTION (ONE-LINE DIAGRAM).
G	GENERATOR, ANNUNCIATOR (ONE-LINE DIAGRAM).
G	GENERATOR, POWER (ONE-LINE DIAGRAM).
M	METER.
VFC VFD	VARIABLE FREQUENCY MOTOR CONTROLLER (ONE-LINE DIAGRAM).
	DISCONNECT SWITCH, FUSED.
	DISCONNECT SWITCH, UNFUSED.
	STARTER, COMBINATION WITH DISCONNECT SWITCH.
	STARTER OR MOTOR CONTROLLER.
	PUSHBUTTON.
	PUSHBUTTONS, MOTOR CONTROL.
	PANELBOARD CABINET, FLUSH MOUNTED.
	PANELBOARD CABINET, SURFACE MOUNTED, 1 SECTION.
	PANELBOARD CABINET, SURFACE MOUNTED, 2 SECTION.
DP#	DISTRIBUTION PANEL OR SWITCHBOARD.
LP	LIGHTING RELAY, CONTACTOR PANEL, OR DIMMING ENCLOSURE.
	LIGHTING CONTROL STATION.
	DIMMING ENTRY STATION OR CONTROL STATION, FLUSH MOUNTED.
	CENTRAL PROCESSOR UNIT.
$ST	SWITCH, TOGGLE MOTOR STARTER WITH OVERLOAD PROTECTION.
75	TRANSFORMER: NUMBER INDICATES kVA.
B B	BUSWAY.
	RELAY CONTACT, NORMALLY CLOSED (ONE-LINE DIAGRAM).
	RELAY CONTACT, NORMALLY OPEN (ONE-LINE DIAGRAM).
	PUSHBUTTON, NORMALLY CLOSED (ONE-LINE DIAGRAM).
	PUSHBUTTON, NORMALLY OPEN (ONE-LINE DIAGRAM).
	SWITCH, MULTIPOSITION (ONE-LINE DIAGRAM).
	SWITCH, SINGLE BREAK (ONE-LINE DIAGRAM).
	SPECIALIZED TRANSFER SWITCH (ONE-LINE DIAGRAM).
HC	ACCESSIBLE DOOR ENTRY PUSH PLATE OPERATOR.
	CIRCUIT BREAKER, DRAW OUT (ONE-LINE DIAGRAM).
FIRE ALARM	
FSA	FIRE SYSTEM ANNUNCIATOR.
FCP	FIRE ALARM CONTROL PANEL, SEMI-RECESSED.
FPS	FIRE ALARM NOTIFICATION POWER SUPPLY.
FTR	FIRE ALARM TRANSPONDER OR TRANSMITTER.
HVA	SMOKE CONTROL PANEL.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
C	AUTOMATIC DOOR CLOSERS: DOOR CLOSERS SHALL BE FURNISHED WITH DOOR HARDWARE AND CONNECTED TO BY FIRE ALARM INSTALLERS.
CM	CONTROL MODULE.
MM	MONITOR MODULE.
P	FIRE ALARM MANUAL PULL STATION.
R	SHUT DOWN RELAY: INSTALL RELAY IN CONTROL CIRCUIT OF EQUIPMENT TO BE CONTROLLED IN THE EVENT OF A FIRE.
	MAGNETIC DOOR HOLDER.
	DETECTOR, SMOKE.
BR	DETECTOR, SMOKE, BEAM RECEIVER.
BT	DETECTOR, SMOKE, BEAM TRANSMITTER.
E	DETECTOR, SMOKE, ELEVATOR RECALL DESIGNATION.
	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE.
	DETECTOR, HEAT.
	INDICATOR LAMP.
75	STROBE. SUBSCRIPT INDICATES CANDELA RATING.
WP	ALARM, HORN/SPEAKER, WEATHERPROOF.
75	WALL SPEAKER, EVACUATION, COMBINATION STROBE. SUBSCRIPT INDICATES CANDELA RATING.
75	ALARM, SPEAKER/STROBE, ONE ASSEMBLY, CEILING MOUNTED. SUBSCRIPT INDICATES CANDELA RATING.
	CEILING SPEAKER, EVACUATION.
	DETECTOR, FLOW SWITCH: FLOW SWITCHES SHALL BE PROVIDED AND INSTALLED WITH FIRE SPRINKLER SYSTEM AND SHALL BE CONNECTED TO LOCATIONS SHOWN ON THE FIRE SPRINKLER SHOP DRAWINGS.
	DETECTOR, TAMPER SWITCH WITH VALVE: TAMPER SWITCHES SHALL BE PROVIDED AND INSTALLED WITH FIRE SPRINKLER SYSTEM AND SHALL BE CONNECTED TO LOCATIONS SHOWN ON THE FIRE SPRINKLER SHOP DRAWINGS.
SD	SMOKE DAMPER.
FSD	FIRE AND SMOKE DAMPER.
TECHNOLOGY SYSTEMS	
X	TECHNOLOGY SYSTEM CABLE. SEE SPECIFIC JOB EQUIPMENT LIST FOR APPLICABLE DESIGNATIONS. EXAMPLES: C = CONTROL CABLE G = GROUND CABLE, 10 AWG, 1 CONDUCTOR, GREEN INSULATED L = LINE LEVEL CABLE M = MICROPHONE CABLE S = SPEAKER CABLE, 70 VOLT SYSTEM Z = SPEAKER CABLE, 8 OHM SYSTEM
S #	SPEAKER, CEILING MOUNTED.
S #	SPEAKER, WALL MOUNTED.
	EQUIPMENT CABINET.
	SCREEN, PROJECTION, CEILING MOUNTED.
	PROJECTOR, CEILING MOUNTED.
M	MICROPHONE INPUT.
V	VOLUME CONTROL.
M	VIDEO MONITOR.
CP#	CONNECTION PANEL.
CLOCK	
C	CLOCK.
SECURITY	
X	SECURITY CABLE. SEE EQUIPMENT SCHEDULE FOR CABLE TYPE.
ACC	ACCESS CONTROL HEADEND EQUIPMENT.
CTR	SECURITY CONTROL PANEL.
SEC	INTRUSION DETECTION HEADEND EQUIPMENT.
#1	CARD ACCESS DOOR TYPE #1 OR AS NOTED. SEE SCHEDULE.
CR	CARD READER.
ER	EXIT REQUEST.
RL	REMOTE DOOR RELEASE BUTTON.
	SENSOR, GLASS BREAK.
IC	INTERCOM STATION.
IRU	DUAL TECHNOLOGY PASSIVE INFRARED SENSOR AND ULTRASONIC MOTION DETECTOR.
IR	PASSIVE INFRARED SENSOR.
P	PANIC DURESS SWITCH.
AP	ANNUNCIATOR PANEL.
CCTV	
P	CCTV CABLE, POWER.
V	CCTV CABLE, VIDEO SIGNAL.
CCTV	CCTV HEADEND EQUIPMENT.
M	CCTV MONITOR.
	CCTV CAMERA/ENCLOSURE WITH LENS, TYPICAL. SEE SCHEDULE.
PTZ	CCTV CAMERA WITH PAN, TILT AND ZOOM.
360°	PANNING CAMERA TRANSVERSE ANGLE.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
TV DISTRIBUTION	
T	TV DISTRIBUTION CABLE, INDIVIDUAL DROPS.
TR	TV DISTRIBUTION CABLE, TRUNK.
CMB	COMBINER.
DC	DIRECTIONAL COUPLER.
DA	DISTRIBUTION AMPLIFIER (ONE-LINE DIAGRAM).
SPL	SPLITTER (ONE-LINE DIAGRAM).
	TV OUTLET.
	SATELLITE ANTENNA.
	TV ANTENNA (ONE-LINE DIAGRAM).
	TERMINATOR, 75 OHM (TV DISTRIBUTION).

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-98-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

SYMBOLS LEGEND

CONSTRUCTION DOCUMENTS

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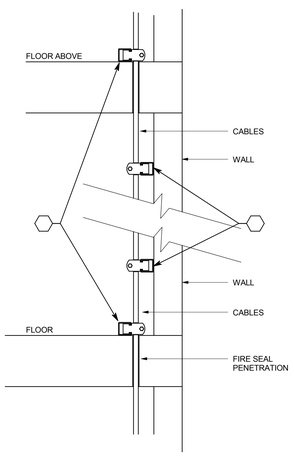
7 SEISMIC WIRE ROPE/CABLEJ BRACING

SCALE: N.T.S.

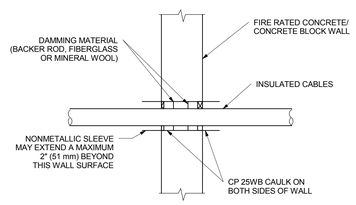
6 TYPICAL FIRE STOP FOR CABLES/CONDUIT THROUGH CONCRETE FLOORING

SCALE: N.T.S.



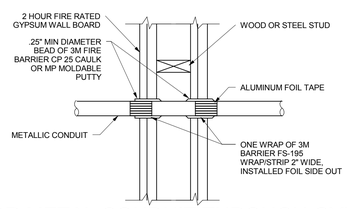
1 CABLE SUPPORT DETAIL

SCALE: N.T.S.



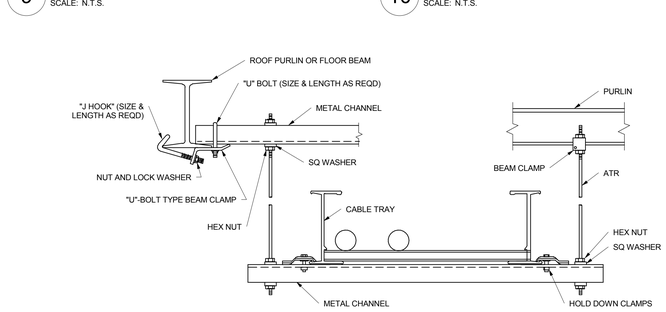
4 TYPICAL FIRE STOP FOR CABLES/CONDUIT THROUGH CONCRETE WALLS

SCALE: N.T.S.



2 FIRE STOP FOR METAL CONDUIT THROUGH GYPSUM WALL BOARD

SCALE: N.T.S.



8 TYPICAL INDOOR CABLE TRAY MOUNTING DETAIL

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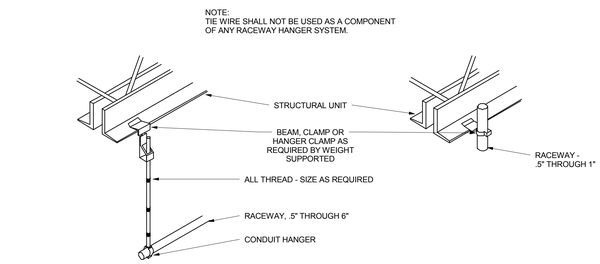

5 TYPICAL RACEWAY SUPPORT METHODS DETAIL

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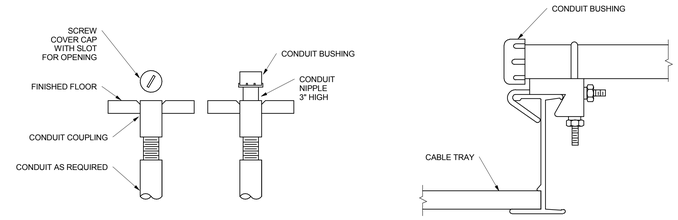
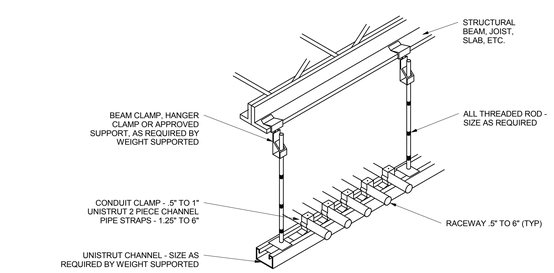


9 CONDUIT IN FLOOR SLAB DETAIL

SCALE: N.T.S.

10 CONDUIT TO TRAY ADAPTER

SCALE: N.T.S.



3 TYPICAL CONDUIT RACK DETAIL

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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DETAILS

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
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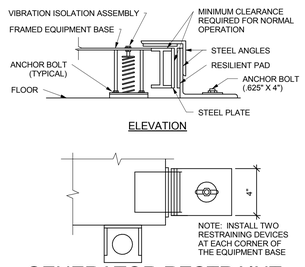

5 GENERATOR RESTRAINT DETAIL

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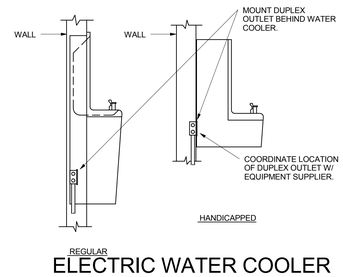

6 ELECTRIC WATER COOLER DETAIL

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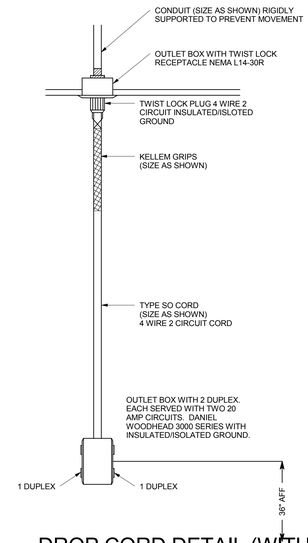
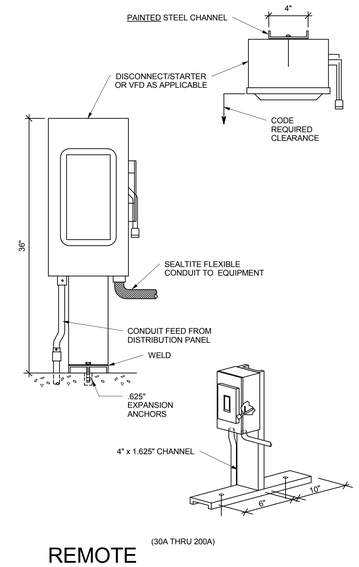


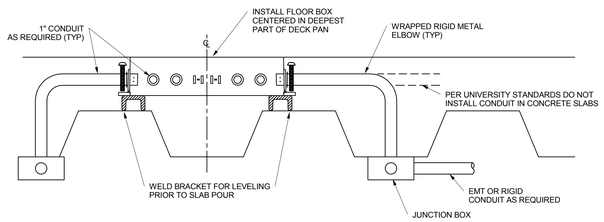
7 DROP CORD DETAIL (WITH OUTLET BOX)

SCALE: N.T.S.



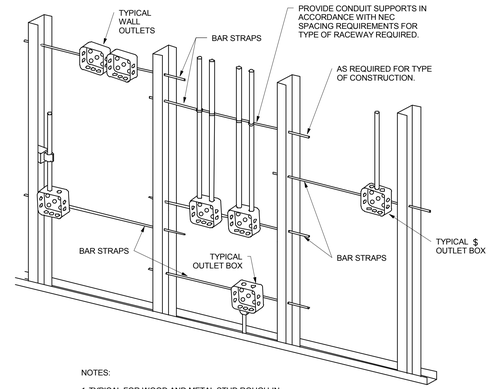
8 REMOTE DISCONNECT/STARTER

SCALE: N.T.S.



4 TYPICAL FLOOR BOX IN CONCRETE SLAB

SCALE: N.T.S.

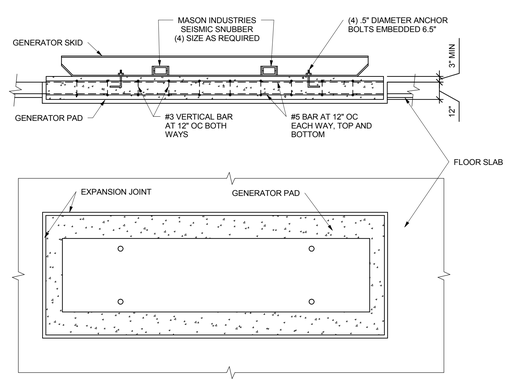


NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.
2. PLASTER RINGS NOT SHOWN.
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH IBC 711.3.2 EXCEPTION 1, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE IN A RATED FIRE SEPARATION WALL MUST BE SEPARATED BY A MINIMUN OF 24" HORIZONTAL DISTANCE.
5. IN NON-RATED WALLS, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY 16" FOR SOUND ATTENUATION.

3 TYPICAL ROUGH-IN REQUIREMENTS DETAIL

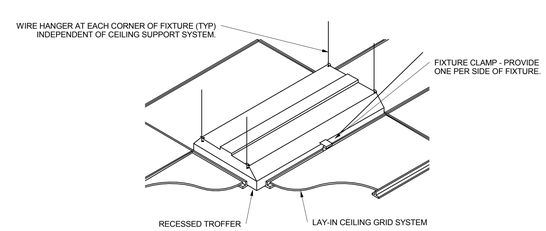
SCALE: N.T.S.



NOTE:
ELECTRICAL CONTRACTOR SHALL FURNISH GENERAL CONTRACTOR WITH GENERATOR PAD DIMENSIONS SO THAT BLOCK WILL BE MADE FOR GENERATOR PAD. GENERATOR PAD SHALL BE SEPARATE FROM BUILDING FLOOR SLAB TO PROVIDE PROPER VIBRATION ISOLATION.

1 GENERATOR PAD DETAIL

SCALE: N.T.S.



2 RECESSED FIXTURE MOUNTING DETAIL

SCALE: N.T.S.

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DETAILS

CONSTRUCTION DOCUMENTS

EE-502

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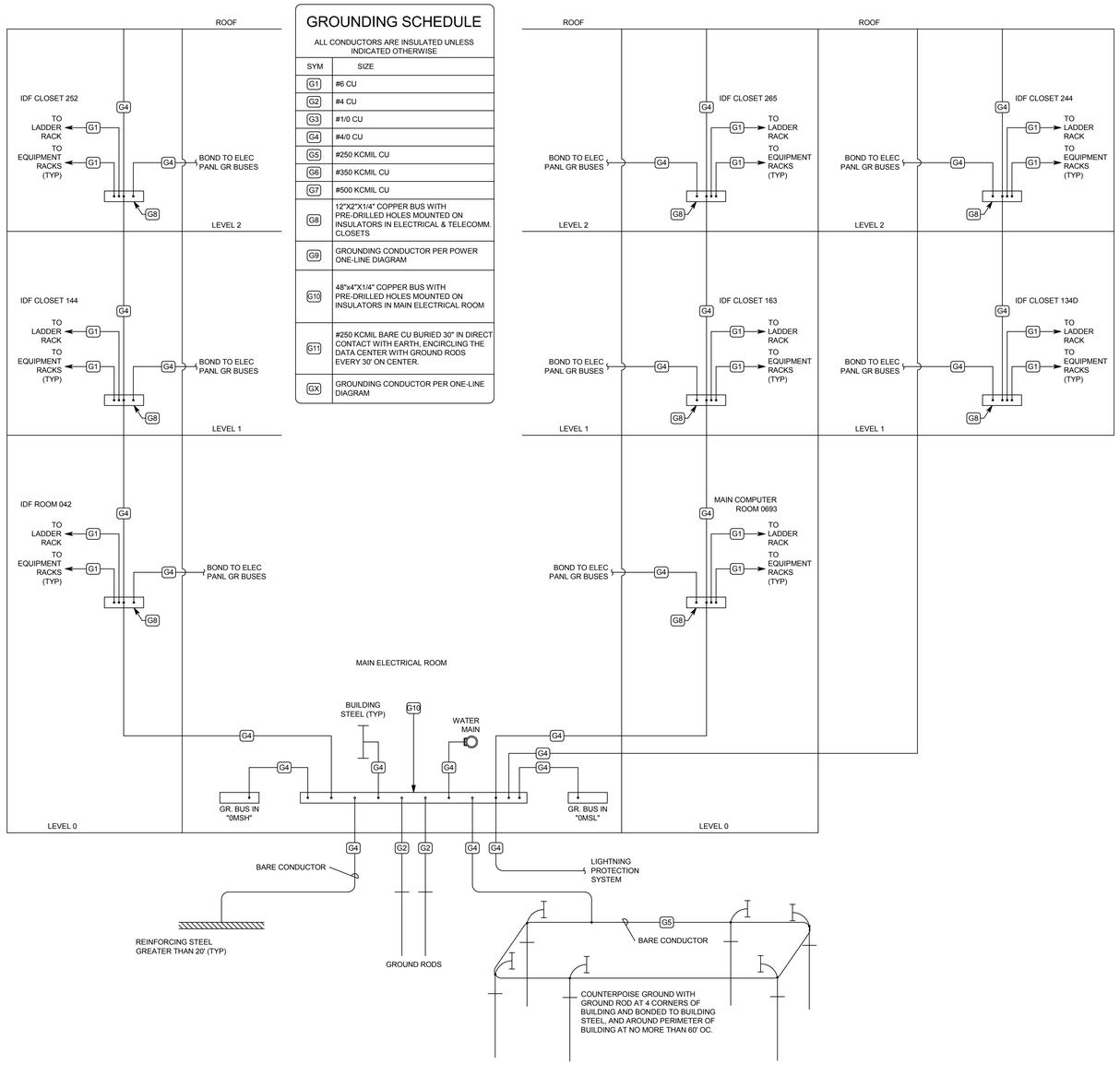

GROUNDING SCHEDULE

ALL CONDUCTORS ARE INSULATED UNLESS INDICATED OTHERWISE

SYM	SIZE
G1	#6 CU
G2	#4 CU
G3	#1/0 CU
G4	#4/0 CU
G5	#250 KCMIL CU
G6	#350 KCMIL CU
G7	#500 KCMIL CU
G8	12"X2"X1/4" COPPER BUS WITH PRE-DRILLED HOLES MOUNTED ON INSULATORS IN ELECTRICAL & TELECOMM. CLOSETS
G9	GROUNDING CONDUCTOR PER POWER ONE-LINE DIAGRAM
G10	48"x4"X1/4" COPPER BUS WITH PRE-DRILLED HOLES MOUNTED ON INSULATORS IN MAIN ELECTRICAL ROOM
G11	#250 KCMIL BARE CU BURIED 30" IN DIRECT CONTACT WITH EARTH, ENCIRCLING THE DATA CENTER WITH GROUND RODS EVERY 30' ON CENTER.
GX	GROUNDING CONDUCTOR PER ONE-LINE DIAGRAM

1 GROUNDING RISER DIAGRAM

SCALE: N.T.S.

GENERAL DETAIL NOTES

1. REFER TO ONE-LINES, PLANS, AND SPECIFICATIONS FOR ADDITIONAL GROUNDING REQUIREMENTS.
2. BOND SPECIFIED GROUND CONDUCTOR TO INDIVIDUAL EQUIPMENT RACKS.
3. GROUND TELECOMMUNICATIONS EQUIPMENT ACCORDING TO ANSI/TIA/EIA 607-A.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH

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REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

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GROUNDING RISER DIAGRAM

CONSTRUCTION DOCUMENTS

EE-601

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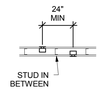
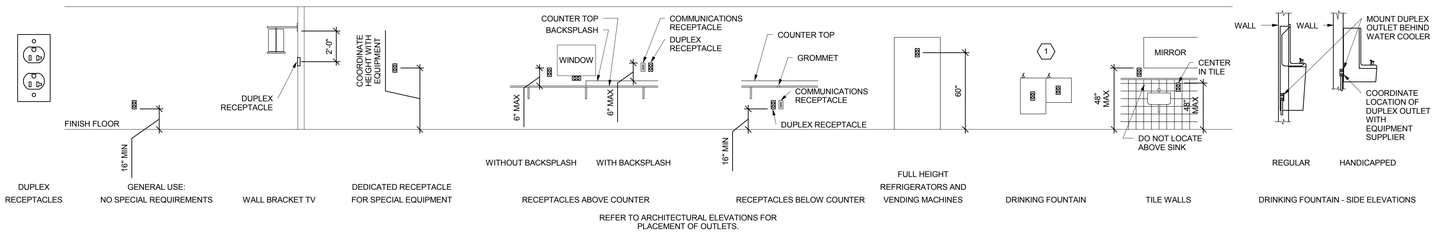


BOXES ON OPPOSITE SIDES OF WALL

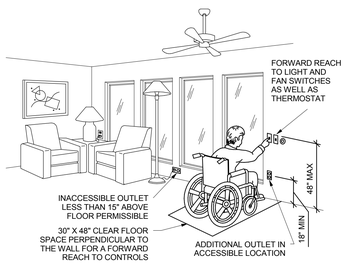
E5 BOX MOUNTING DETAILS

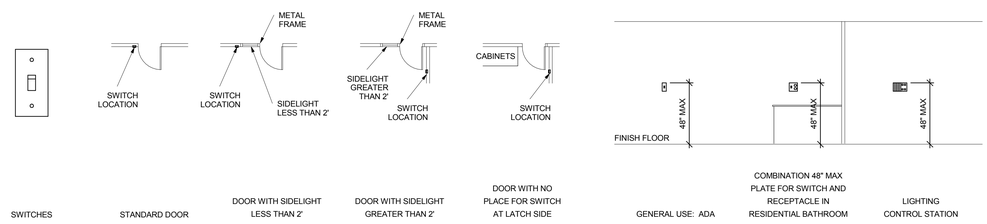
SCALE: N.T.S.



7 RECEPTACLE MOUNTING DETAILS

SCALE: N.T.S.



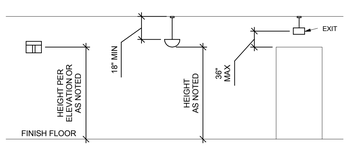


C1 ADA DETAIL

SCALE: N.T.S.

C2 SWITCH MOUNTING DETAILS

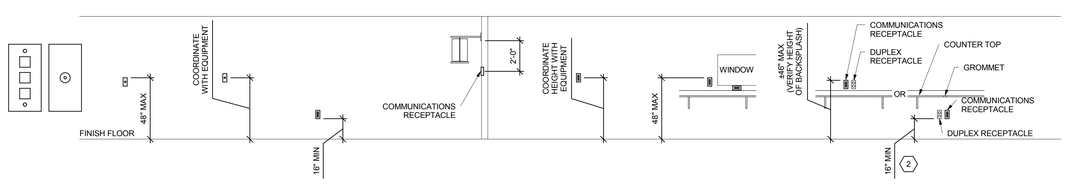
SCALE: N.T.S.



WALL MOUNTED LIGHT FIXTURE

PENDANT LIGHT FIXTURE

PENDANT EXIT SIGNS



COMMUNICATION RECEPTACLES

WALL PHONE

PAY PHONE

GENERAL USE: NO SPECIAL REQUIREMENTS

WALL BRACKET TV

DEDICATED RECEPTACLE FOR SPECIAL EQUIPMENT

ABOVE COUNTER - TYPICAL

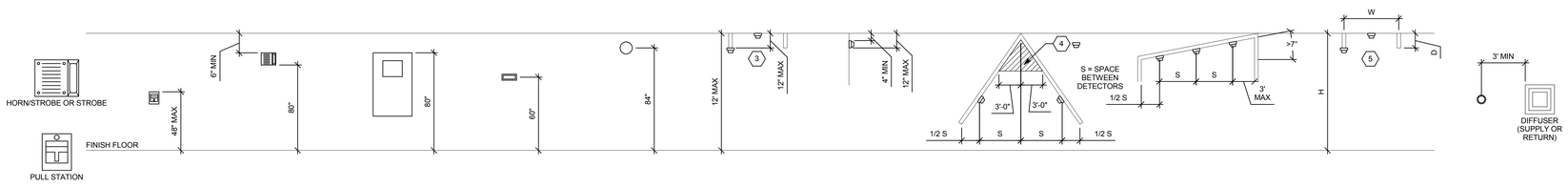
RECEPTACLES ABOVE OR BELOW COUNTER

B1 LIGHTING MOUNTING DETAILS

SCALE: N.T.S.

B2 COMMUNICATIONS MOUNTING DETAILS

SCALE: N.T.S.



FIRE ALARM

PULL STATION

HORN, CHIME, OR STROBE

FIRE ALARM CONTROL PANEL "FCP"

FIRE SYSTEM ANNUNCIATOR "FSA"

BELL

SMOKE DETECTOR BETWEEN BEAMS

WALL MOUNTED SMOKE DETECTOR

SMOKE DETECTOR ON SLOPED CEILING (PEAKED)

SMOKE DETECTOR ON SLOPED CEILING (SHED)

HEAT DETECTOR BETWEEN BEAMS

SMOKE DETECTOR ADJACENT TO SUPPLY AIR

A1 FIRE ALARM MOUNTING DETAILS

SCALE: N.T.S.

GENERAL SHEET NOTES

1. DETERMINE MOUNTING HEIGHTS OF ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE FOLLOWING ORDER OF PRIORITY:
   1 - ELEVATIONS (ARCHITECTURAL, ELECTRICAL, MECHANICAL, ETC).
   2 - EQUIPMENT SHOP DRAWINGS.
   3 - FIELD INSTRUCTIONS.
2. LOCATE RECEPTACLES SERVING THE SAME TYPE OF USE AT A UNIFORM HEIGHT UNLESS DIRECTED OTHERWISE.
3. MECHANICAL, ELECTRICAL, AND COMMUNICATION ROOMS: COORDINATE LOCATION OF LIGHTING AND POWER RECEPTACLES WITH EQUIPMENT, PIPING, AND DUCTWORK. DO NOT INSTALL RECEPTACLES BEHIND EQUIPMENT OR WHERE OTHERWISE INACCESSIBLE. POSITION LIGHTING REGARDLESS OF WHERE SHOWN ON DRAWING TO PROVIDE PROPER ILLUMINATION.
4. MOUNT RECEPTACLE BOXES FOR SWITCHES AND RECEPTACLES WITH LONG AXIS OF THE DEVICE VERTICAL UNLESS OTHERWISE INDICATED.
5. SET BOXES WITH PLASTER RINGS FLUSH WITH FINISHED SURFACE.
6. LOCATE BOX COVERS OR DEVICE PLATES SO THEY WILL NOT SPAN DIFFERENT TYPES OF BUILDING FINISHES EITHER VERTICALLY OR HORIZONTALLY.
7. VERIFY ALL DOOR CONDITIONS ON ARCHITECTURAL DRAWINGS PRIOR TO INSTALLING SWITCHES.
8. LOCATE WIREING DEVICES WHICH ARE ADJACENT AND ARE COMPATIBLE VOLTAGES IN ONE PLATE.

SHEET KEYNOTES

1. LOCATE RECEPTACLES BEHIND DRINKING FOUNTAINS.
2. REFER TO ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF OUTLETS.
3. LOCATE AT BOTTOM OF BEAMS (OR JOISTS) OR AT CEILING. (REDUCE SPACING BY .5 PERPENDICULAR TO BEAM OR JOIST DIRECTION.) FOR OTHER CONDITIONS, REFER TO NFPA 72.
4. LOCATE SMOKE DETECTOR ANYWHERE IN SHADED AREA.
5. LOCATE AT BOTTOM OF BEAMS IF EITHER D/H < .1 OR W/H < .4; OTHERWISE, LOCATE IN BEAM POCKET.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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TYPICAL MOUNTING HEIGHT DETAILS

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EE-701

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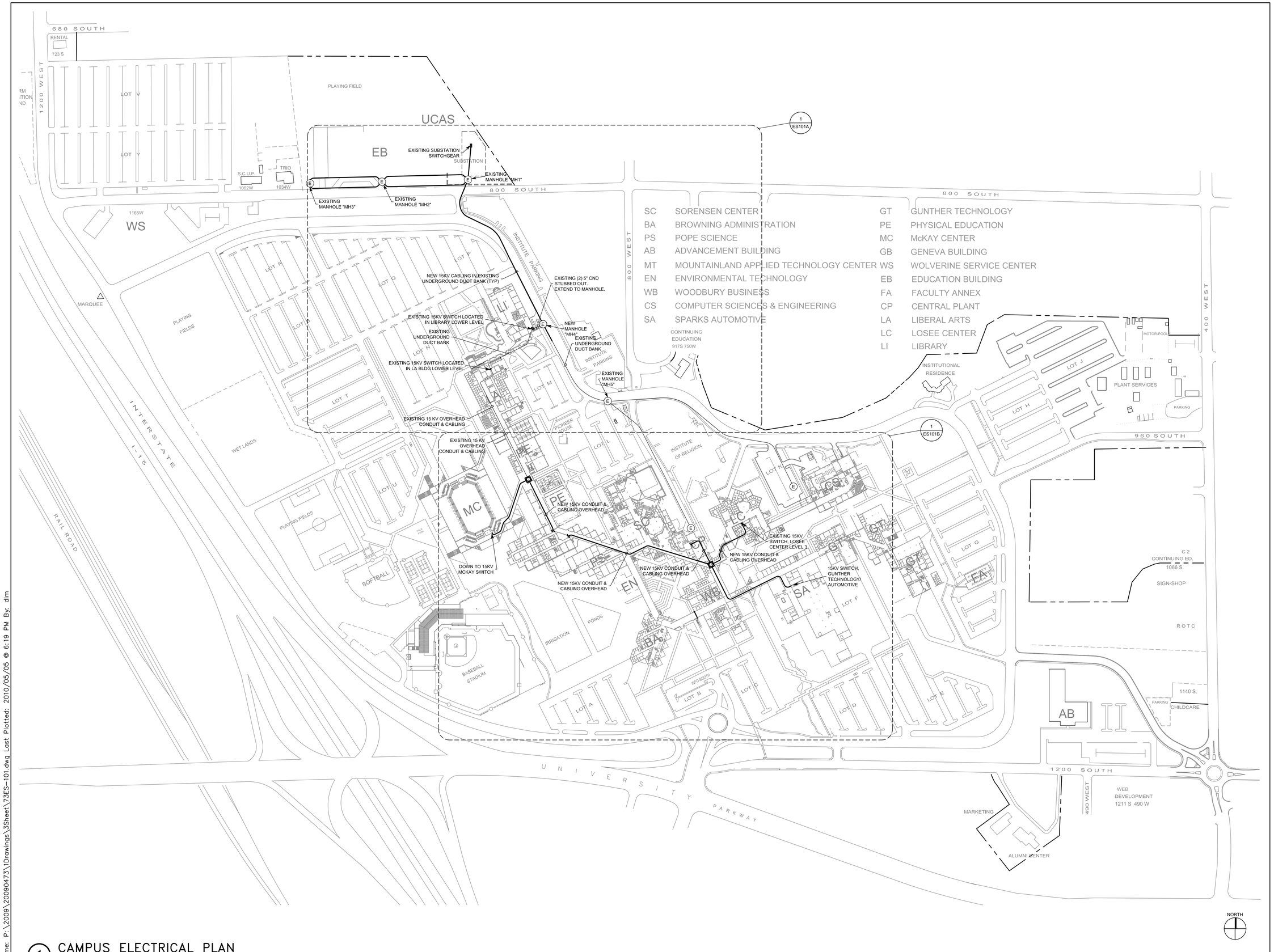

1 CAMPUS ELECTRICAL PLAN

SCALE: 1"=160'

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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CAMPUS ELECTRICAL PLAN

CONSTRUCTION DOCUMENTS

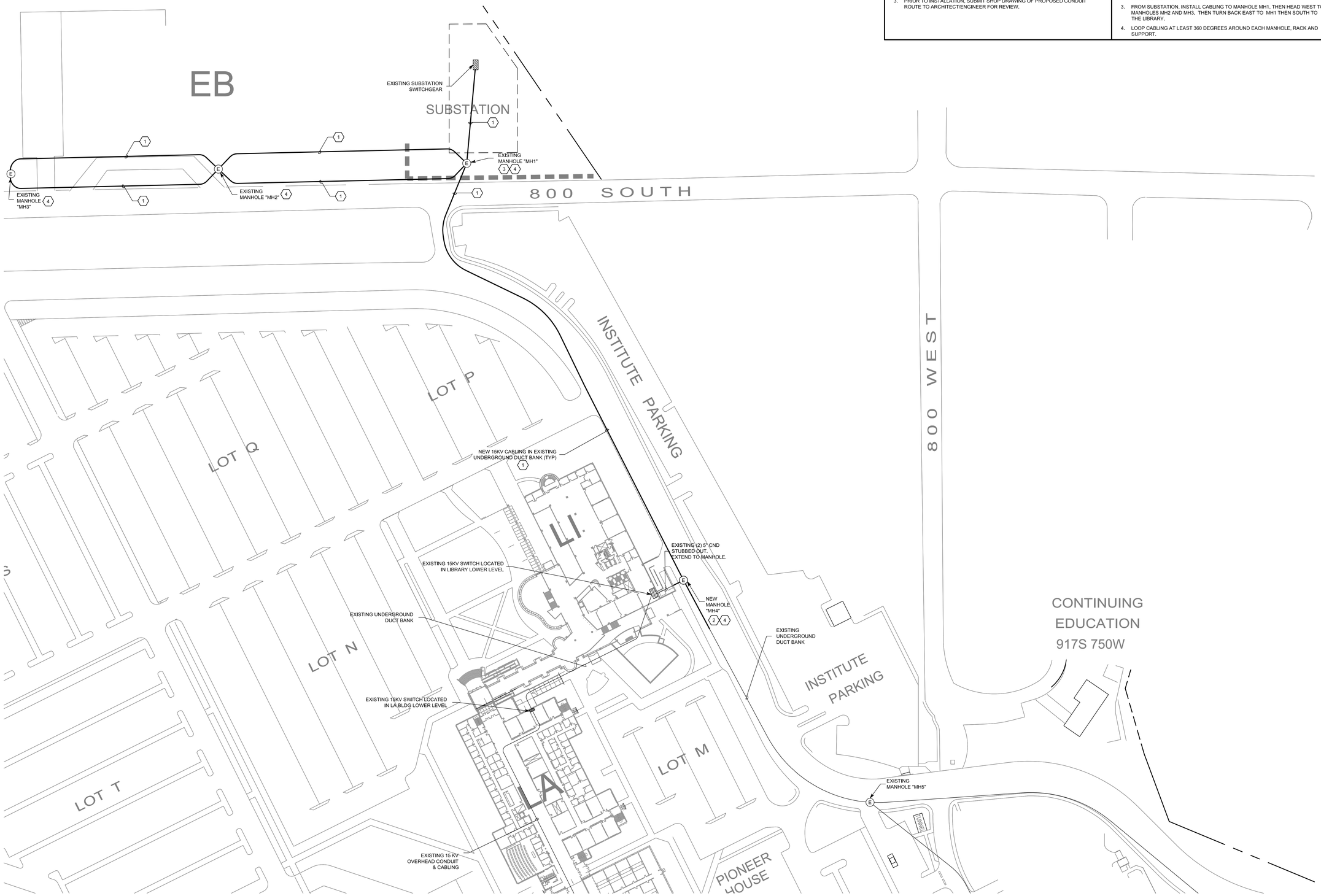
ES-101

GENERAL SHEET NOTES

1. PRIOR TO BID, VISIT SITE TO REVIEW AND VERIFY EXISTING CONDITIONS RELATING TO MV CABLE AND CONDUIT INSTALLATION. FOR INDOOR INSTALLATIONS, ALL REQUIRED BENDS, OFFSETS, VERTICAL AND HORIZONTAL TRANSITIONS, AND PULL BOXES ARE NOT SHOWN. THESE ITEMS SHALL BE FIELD VERIFIED AND INCLUDED IN THE BID.
2. INSTALL INDOOR CONDUIT AS HIGH AS POSSIBLE ABOVE CONCOURSE AREAS, IN ACCESSIBLE CEILING SPACES.
3. PRIOR TO INSTALLATION, SUBMIT SHOP DRAWING OF PROPOSED CONDUIT ROUTE TO ARCHITECT/ENGINEER FOR REVIEW.

SHEET KEYNOTES

1. NEW CABLING IN EXISTING 5" CND UNDERGROUND DUCT BANK: 3 # 4/0 15 KV EPR CU, 1 # 4/0 THWN-2GR FROM SUBSTATION TO NEW MANHOLE AT LIBRARY BUILDING.
2. PROVIDE NEW MANHOLE NEAR LIBRARY BUILDING AND INTERCEPT EXISTING (4) 5" CND POWER DUCT BANK (TWO SPARE CONDUITS, TWO WITH EXISTING CABLING) AND TURN SPARE CONDUITS INTO MANHOLE, THEN BACK OUT TO TIE INTO EXISTING SPARE IN DUCT BANK. ALSO INTERCEPT AND EXTEND (2) 5" CND FROM LIBRARY 15 KV SWITCH INTO MANHOLE.
3. FROM SUBSTATION, INSTALL CABLING TO MANHOLE MH1, THEN HEAD WEST TO MANHOLES MH2 AND MH3. THEN TURN BACK EAST TO MH1 THEN SOUTH TO THE LIBRARY.
4. LOOP CABLING AT LEAST 360 DEGREES AROUND EACH MANHOLE, RACK AND SUPPORT.



1 ENLARGED PARTIAL ELECTRICAL SITE PLAN - AREA A

SCALE: 1"=60'

0 40' 80' 160'

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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SPECTRUM ENGINEERS
324 S. State St., Suite 400
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801-328-5151
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ENLARGED PARTIAL ELECTRICAL SITE PLAN - AREA A

CONSTRUCTION DOCUMENTS

ES-101A

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GENERAL SHEET NOTES

1. PRIOR TO BID, VISIT SITE TO REVIEW AND VERIFY EXISTING CONDITIONS RELATING TO MV CABLE AND CONDUIT INSTALLATION. FOR INDOOR INSTALLATIONS, ALL REQUIRED BENDS, OFFSETS, VERTICAL AND HORIZONTAL TRANSITIONS, AND PULL BOXES ARE NOT SHOWN. THESE ITEMS SHALL BE FIELD VERIFIED AND INCLUDED IN THE BID.
2. INSTALL INDOOR CONDUIT AS HIGH AS POSSIBLE ABOVE CONCOURSE AREAS, IN ACCESSIBLE CEILING SPACES.
3. PRIOR TO INSTALLATION, SUBMIT SHOP DRAWING OF PROPOSED CONDUIT ROUTE TO ARCHITECT/ENGINEER FOR REVIEW.

SHEET KEYNOTES

1. APPROXIMATE AREA WHERE EXISTING CONDUIT FROM MCKAY EVENTS CENTER WILL BE SPLICED AND TIED INTO NEW CONDUIT TOWARDS NEW POPE SCIENCE BUILDING (REFER TO ONE-LINE DIAGRAM, SHEET EP-601.
2. NEW 15 KV CABLING IN NEW CONDUIT, INSTALLED OVERHEAD IN CONCOURSE: 3 #4/0 15 KV EPR CU, 1 #4/0 THWN-2GR IN 4" RIGID METAL CND.
3. CONTINUE OVERHEAD CONDUIT AND CABLING TO/FROM NEW 15 KV SWITCH IN NEW POPE SCIENCE BUILDING - LOWER LEVEL.
4. APPROXIMATE AREA WHERE EXISTING CONDUIT BETWEEN LOWER CENTRAL PLANT AND GUNTHER TECHNOLOGY (AUTO) WILL BE INTERCEPTED; CONDUIT FROM GUNTHER TECH. WILL BE SPLICED AND CONTINUED TO LOSEE CENTER SWITCH; CONDUIT FROM CENTRAL PLANT WILL BE CONNECTED WITH NEW TO NEW POPE SCIENCE. WITH NEW CABLING FROM CENTRAL PLANT TO NEW POPE SCIENCE (REFER TO ONE-LINE DIAGRAM, SHEET EP-601).
5. NEW 15 KV CABLING IN EXISTING OVERHEAD CONDUIT: 3 #4/0 15 KV EPP CU, 1 #4/0 THW.
6. GREENHOUSE LAB MDF FOR VOICE-DATA.

1 ENLARGED PARTIAL ELECTRICAL SITE PLAN - AREA B

SCALE: 1"=60'

0 40' 80' 160'

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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ENLARGED PARTIAL ELECTRICAL SITE PLAN - AREA B

CONSTRUCTION DOCUMENTS

ES-101B

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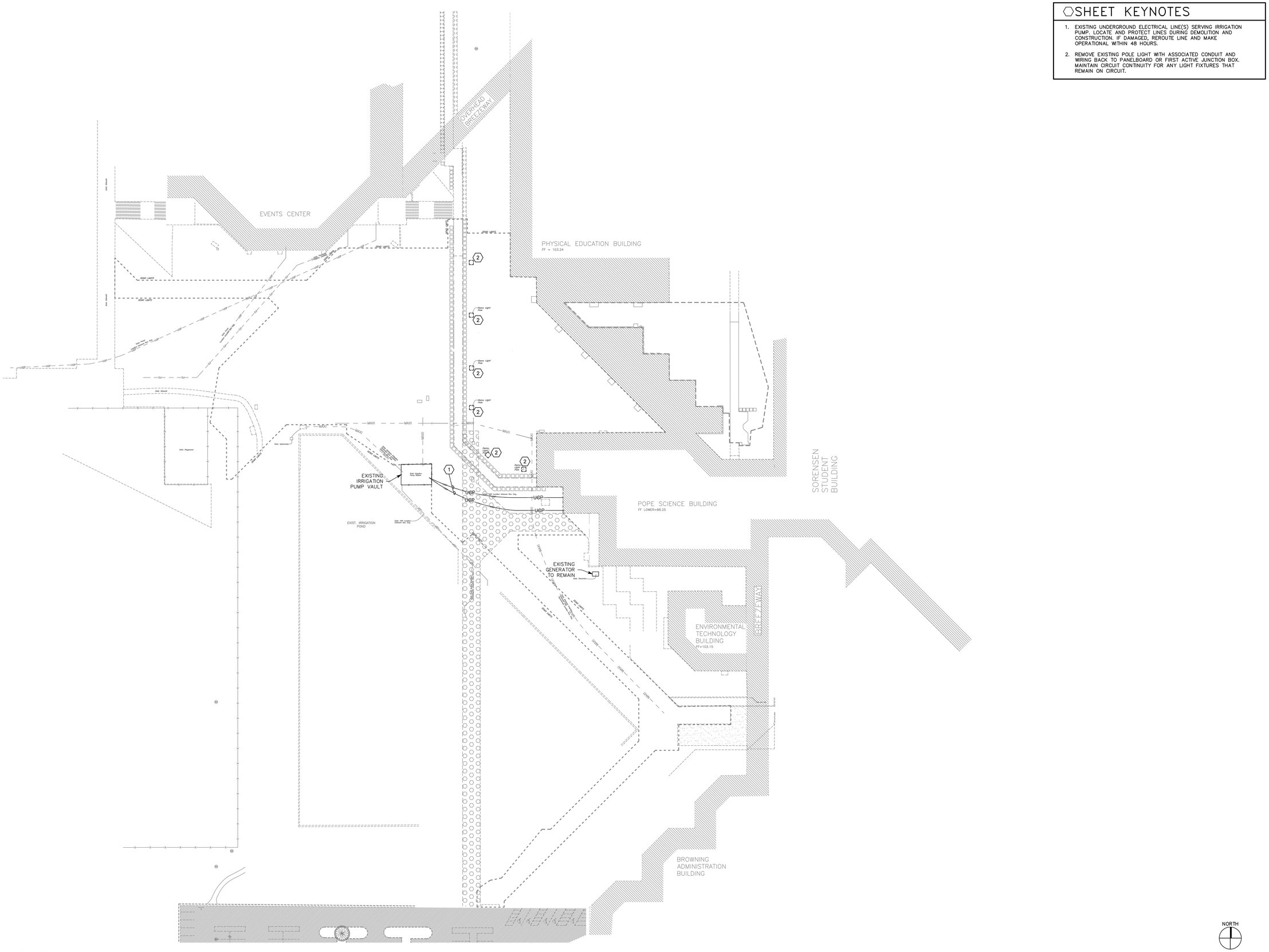

1 SITE ELECTRICAL DEMOLITION PLAN
SCALE: 1"=40'-0"

0 20' 40' 80'

SHEET KEYNOTES

1. EXISTING UNDERGROUND ELECTRICAL LINE(S) SERVING IRRIGATION PUMP. LOCATE AND PROTECT LINES DURING DEMOLITION AND CONSTRUCTION. IF DAMAGED, REROUTE LINE AND MAKE OPERATIONAL WITHIN 48 HOURS.
2. REMOVE EXISTING POLE LIGHT WITH ASSOCIATED CONDUIT AND WIRING BACK TO PANELBOARD OR FIRST ACTIVE JUNCTION BOX. MAINTAIN CIRCUIT CONTINUITY FOR ANY LIGHT FIXTURES THAT REMAIN ON CIRCUIT.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
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SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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SITE ELECTRICAL DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

ES-102

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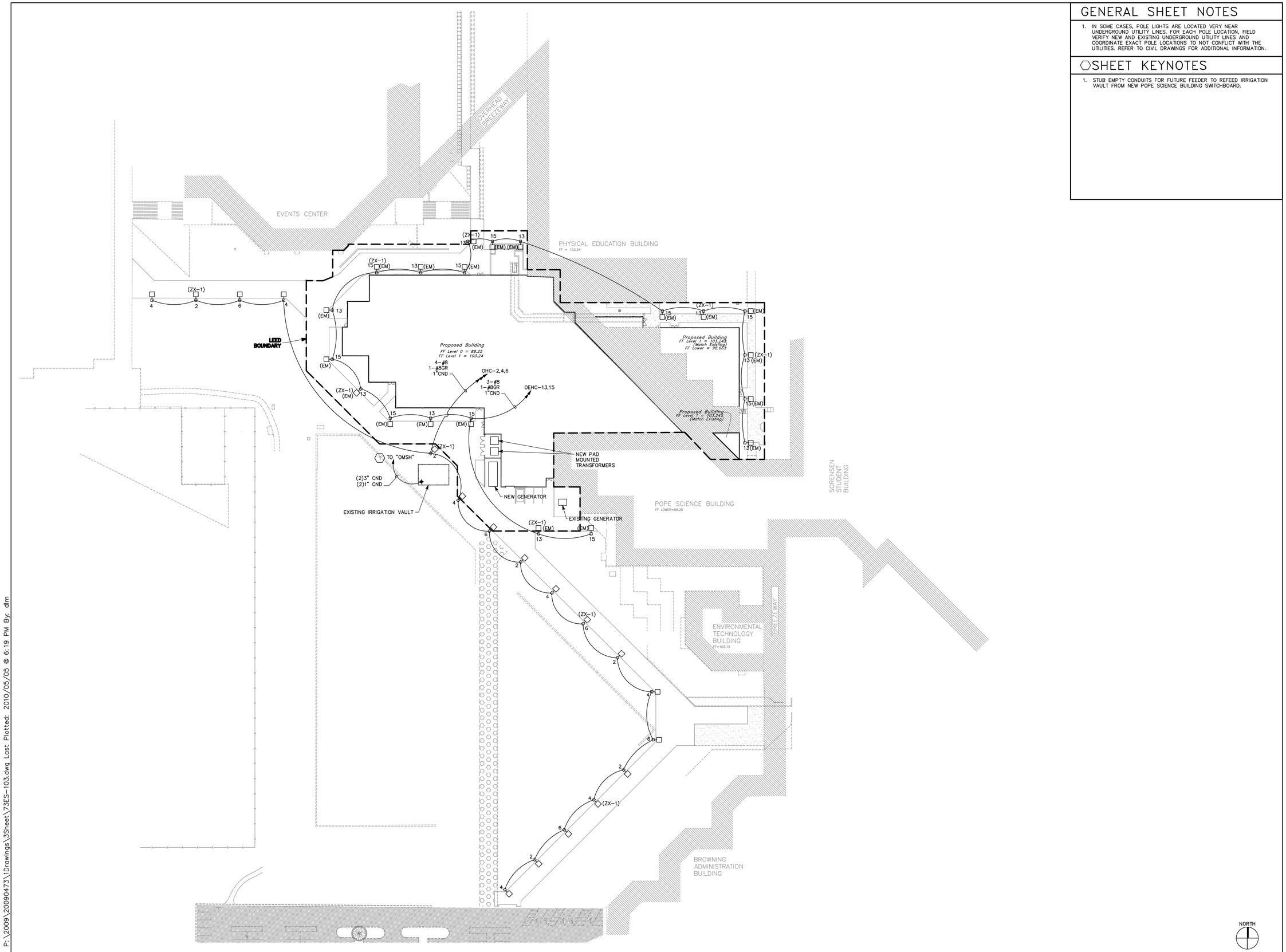
GENERAL SHEET NOTES

1. IN SOME CASES, POLE LIGHTS ARE LOCATED VERY NEAR UNDERGROUND UTILITY LINES. FOR EACH POLE LOCATION, FIELD VERIFY NEW AND EXISTING UNDERGROUND UTILITY LINES AND COORDINATE EXACT POLE LOCATIONS TO NOT CONFLICT WITH THE UTILITIES. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.

⬡SHEET KEYNOTES

1. STUB EMPTY CONDUITS FOR FUTURE FEEDER TO REFEED IRRIGATION VAULT FROM NEW POPE SCIENCE BUILDING SWITCHBOARD.



1 SITE ELECTRICAL PLAN
SCALE" 1"=40'-0"

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
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STATE OF UTAH
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SITE ELECTRICAL PLAN

CONSTRUCTION DOCUMENTS

ES-103

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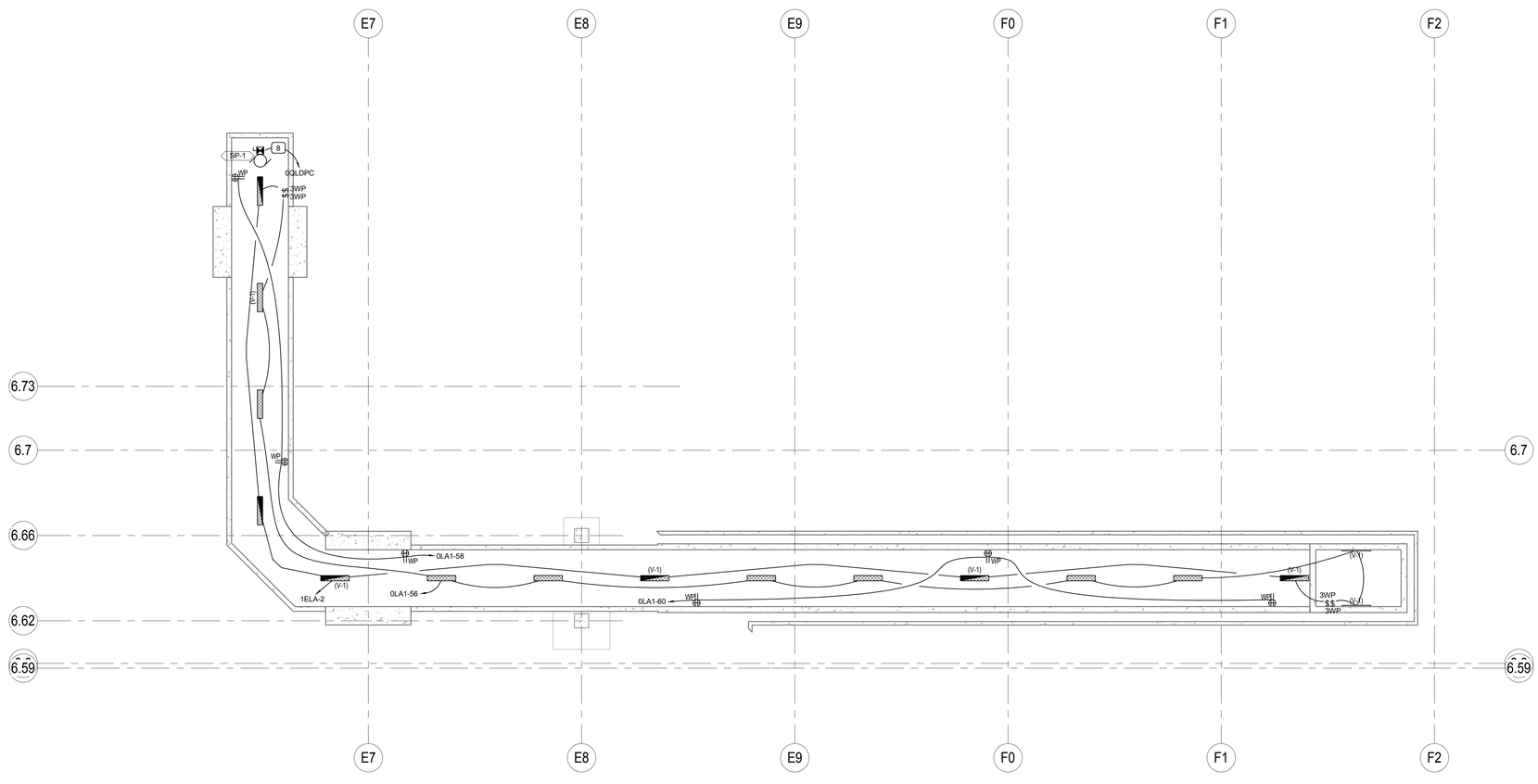
GENERAL SHEET NOTES

1. COORDINATE EXACT LOCATIONS OF LIGHT SWITCHES SO THAT THEY ARE ACCESSIBLE AT THE ENTRANCES TO TUNNEL AND NOT BLOCKED BY TUNNEL PIPING.
2. COORDINATE EXACT LOCATIONS OF OUTLETS AND LIGHT FIXTURES SO THAT THEY ARE ACCESSIBLE AND NOT BLOCKED BY TUNNEL PIPING.



1 TUNNEL ELECTRICAL PLAN

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

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

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800-678-7077
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TUNNEL ELECTRICAL PLAN

CONSTRUCTION DOCUMENTS

ES-401

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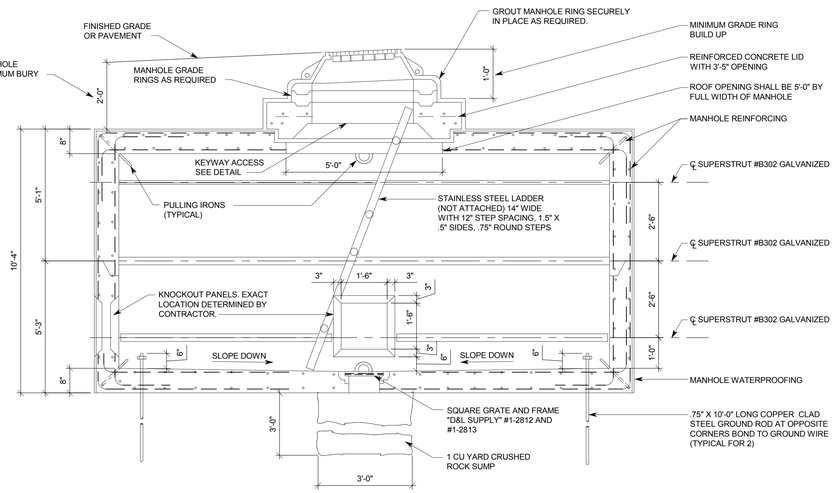
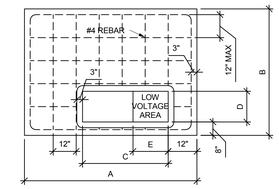
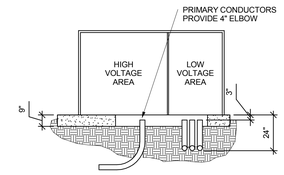
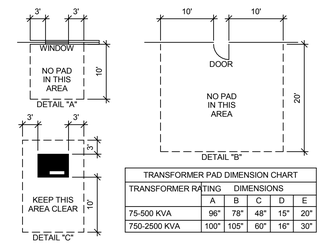


1 TYPICAL MANHOLE SECTION: 6' X 8' X 10'H

NTS







TRANSFORMER PAD DIMENSION CHART					
TRANSFORMER RATING	DIMENSIONS				
	A	B	C	D	E
75-500 KVA	96"	78"	48"	15"	20"
750-2500 KVA	100"	105"	60"	16"	30"

6 TRANSFORMER PAD DETAIL

SCALE: N.T.S.

CONTRACTOR GENERAL NOTES:

1 SITE PREPARATION. ALL SOIL BENEATH THE PAD SITE MUST BE COMPACTED AND LEVEL PRIOR TO SETTING OR POURING THE PAD TO PREVENT SETTLING.

2 CONCRETE. STEEL REINFORCEMENT SHALL BE #4 BARS, PLACED ACCORDING TO THE DRAWING. THE PAD MUST BE POURED AT LEAST SEVEN FULL DAYS PRIOR TO SETTING THE TRANSFORMER. THE FINISHED SURFACE MUST BE COMPLETELY FLAT AND LEVEL. SEE STANDARD 73 036 FOR CONCRETE SPECIFICATIONS.

3 PREFABRICATION. THE PAD MAY EITHER BE CONSTRUCTED ON THE SITE OR PREFABRICATED ACCORDING TO SPECIFICATIONS.

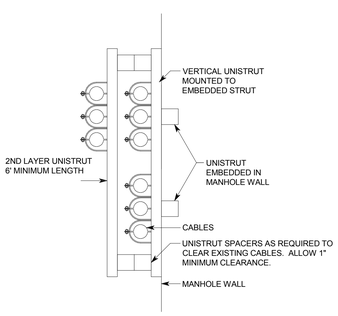
4 CONDUIT WINDOW LAYOUT. LOW VOLTAGE CONDUITS SHALL BE FORMED AS TIGHTLY AS POSSIBLE AGAINST THE RIGHT SIDE OF THE OPENING AND SHALL IN NO CASE EXTEND FURTHER THAN 20" FROM THE RIGHT SIDE OF THE CONDUIT WINDOW ON THE SMALL PAD OR 30" ON THE LARGE PAD. NO MORE THAN 8 CONDUITS WILL BE USED ON THE LOW VOLTAGE SIDE (NOT INCLUDING THE METERING CONDUIT). DO NOT PUT ANY CONCRETE IN OR UNDER THE CONDUIT WINDOW. USE SOIL TO SEPARATE CONDUITS. BELL ENDS ARE REQUIRED FOR ALL METAL CONDUIT, BUT NOT FOR PLASTIC CONDUIT.

5 CLEARANCES. THE FRONT OF THE PAD SHOULD ALWAYS FACE AWAY FROM ADJACENT STRUCTURES AND BE FREE OF OBSTRUCTIONS. AT LEAST 3 FEET MUST SEPARATE THE EDGES OF THE PAD FROM ANY ADJACENT STRUCTURE. THE EDGES OF THE PAD MUST BE AT LEAST 10 FEET FROM ANY COMBUSTIBLE STRUCTURE. IF AN ADJACENT STRUCTURE HAS ANY OVERHANG OR EAVE WITHIN 27 VERTICAL FEET OF THE TOP OF THE PAD, CLEARANCES MUST BE MEASURED FROM THE OUTSIDE OF THE OVERHANG. THE PAD MUST NOT BE PLACED IN AN AREA 10 FEET IN LINE WITH OR 3 FEET TO EITHER SIDE OF ANY WINDOW IN AN ADJACENT STRUCTURE (SEE DETAIL "A"). CLEARANCE FOR A DOOR MUST BE 20 FEET IN LINE WITH IT AND 10 FEET ON THE SIDES (SEE DETAIL "B"). PADS MUST NOT BE PLACED WITHIN 15 FEET OF ANY VALVE OR WITHIN 20 FEET OF ANY PLUMBING OR STORAGE FACILITY CONTAINING FLAMMABLE MATERIAL. NO WALLS, FENCES, OR ANY OTHER OBSTRUCTIONS WILL BE PLACED WITHIN 3 FEET OF THE SIDES OR BACK OF THE PAD, OR WITHIN 10 FEET OF THE FRONT OF THE PAD (SEE DETAIL "C"). THE AREA IN FRONT OF THE PAD MUST HAVE 10 FEET OF CLEAR, LEVEL WORKING AREA FOR MAINTENANCE OF THE TRANSFORMER. THE PAD MAY NOT BE PLACED IN LINE WITH AN AIR INTAKE WITHIN 32 VERTICAL FEET OF THE SURFACE PAD. ALSO VERTICALLY, IT MUST NOT BE PLACED WITHIN 12 FEET OF A DOOR OR WINDOW.

6 IF THE TRANSFORMER WILL NOT COVER THE CABLE OPENINGS ON THESE STANDARD PADS, SEAL THE SIDES OF THE CABLE OPENING TO FIT THE TRANSFORMER USING SAKRETE OR COMPARABLE.

NOTES:

1. PROVIDE SECOND UNISTRUT LAYER IN ALL EXISTING MANHOLES. MOUNT CABLES IN MANHOLES VERTICALLY ON UNISTRUTS.
2. PROVIDE "CUSH-A-CLAMP" CABLE CLAMPS.

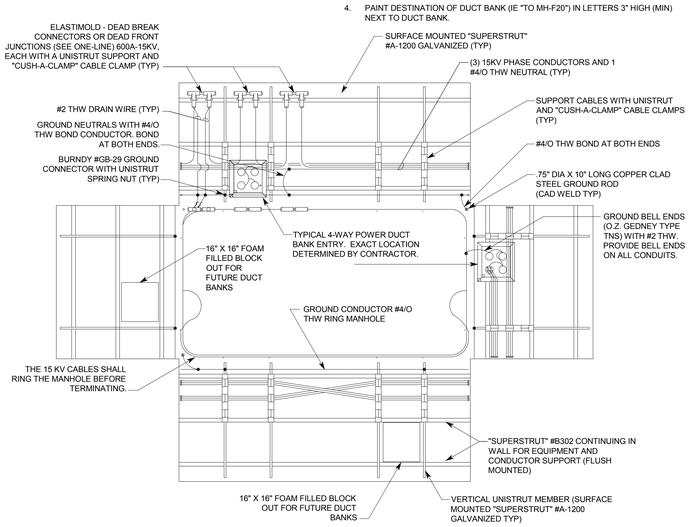


2 CABLE SUPPORT DETAIL

NTS

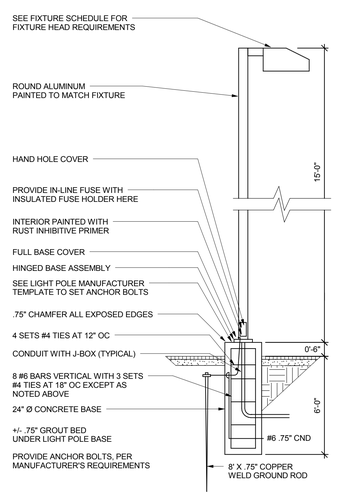
NOTES:

1. ALL CONDUCTORS SHALL BE FIRE PROOFED WITH 3M FIRE PROOFING TAPE AND HELD IN PLACE WITH FIBERGLASS RESISTANT TAPE.
2. ALL CONDUCTORS ON HORIZONTAL SUPPORTS. SEE DETAIL.
3. NO CAD WELDS IN MANHOLES.
4. PAINT DESTINATION OF DUCT BANK (IE "TO MH-F20") IN LETTERS 3" HIGH (MIN) NEXT TO DUCT BANK.



3 TYPICAL EXPLODED VIEW OF MANHOLE: 6' X 8' X 10'H

NTS

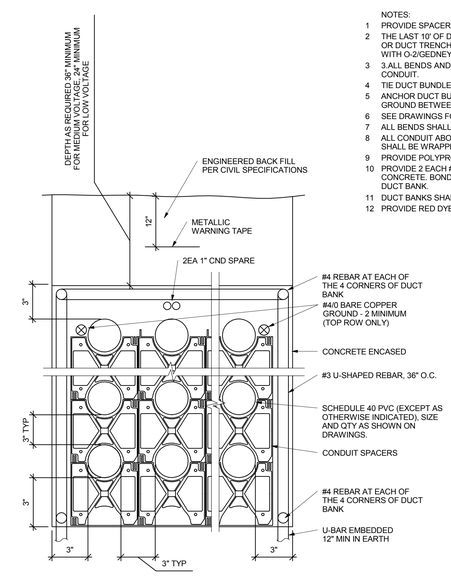


4 WALKWAY LIGHT POLE BASE DETAIL

SCALE: N.T.S.

NOTES:

1 PROVIDE SPACERS APPROVED FOR SIZE OF CONDUIT PROVIDED.
2 THE LAST 10' OF DUCTS ENTERING MANHOLE, PULL BOX, TUNNEL, BUILDING OR DUCT TRENCH SHALL BE WRAPPED RIGID GALVANIZED STEEL CONDUIT WITH O-Z/GEDNEY BELL ENDS.
3 3.ALL BENDS AND OFFSETS SHALL BE WRAPPED RIGID GALVANIZED STEEL CONDUIT.
4 TIE DUCT BUNDLES WITH PLASTIC TAPE. DO NOT USE METAL WIRE.
5 ANCHOR DUCT BUNDLES DOWN WITH #3 OR LARGER REBAR DRIVEN INTO GROUND BETWEEN DUCTS.
6 SEE DRAWINGS FOR SIZE AND NUMBER OF CONDUITS IN DUCT BANK.
7 ALL BENDS SHALL BE LARGE RADIUS.
8 ALL CONDUIT ABOVE GROUND, ALL BENDS AND FIRST 10' BELOW GROUND SHALL BE WRAPPED RMC. CONDUIT BELOW GROUND MAY BE PVC.
9 PROVIDE POLYPROPYLENE PULL ROPE IN EMPTY CONDUITS.
10 PROVIDE 2 EACH #4/O COPPER GROUND CONDUCTORS IN DUCT BANK CONCRETE. BOND CONDUCTORS TO GROUND SYSTEM AT EACH END OF DUCT BANK.
11 DUCT BANKS SHALL HAVE A MINIMUM SLOPE OF 4" PER 100 FEET.
12 PROVIDE RED DYE IN CONCRETE.



5 TYPICAL CONDUIT DUCT BANK DETAIL

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324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

REVISIONS:

Utah Valley University New Science Building

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SITE ELECTRICAL DETAILS

CONSTRUCTION DOCUMENTS

ES-501

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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

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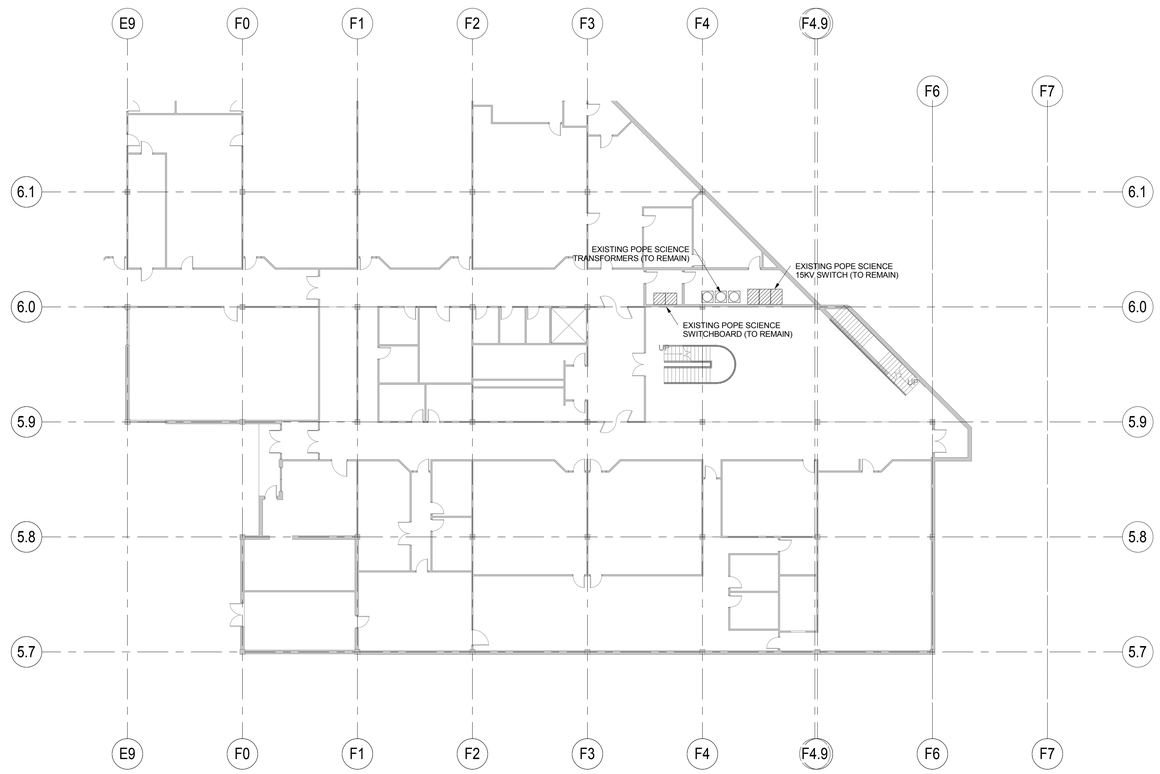

1 LEVEL 0 ELECTRICAL DEMOLITION PLAN
SCALE: 1/16" = 1'-0"

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LEVEL 0 ELECTRICAL DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

ED-101

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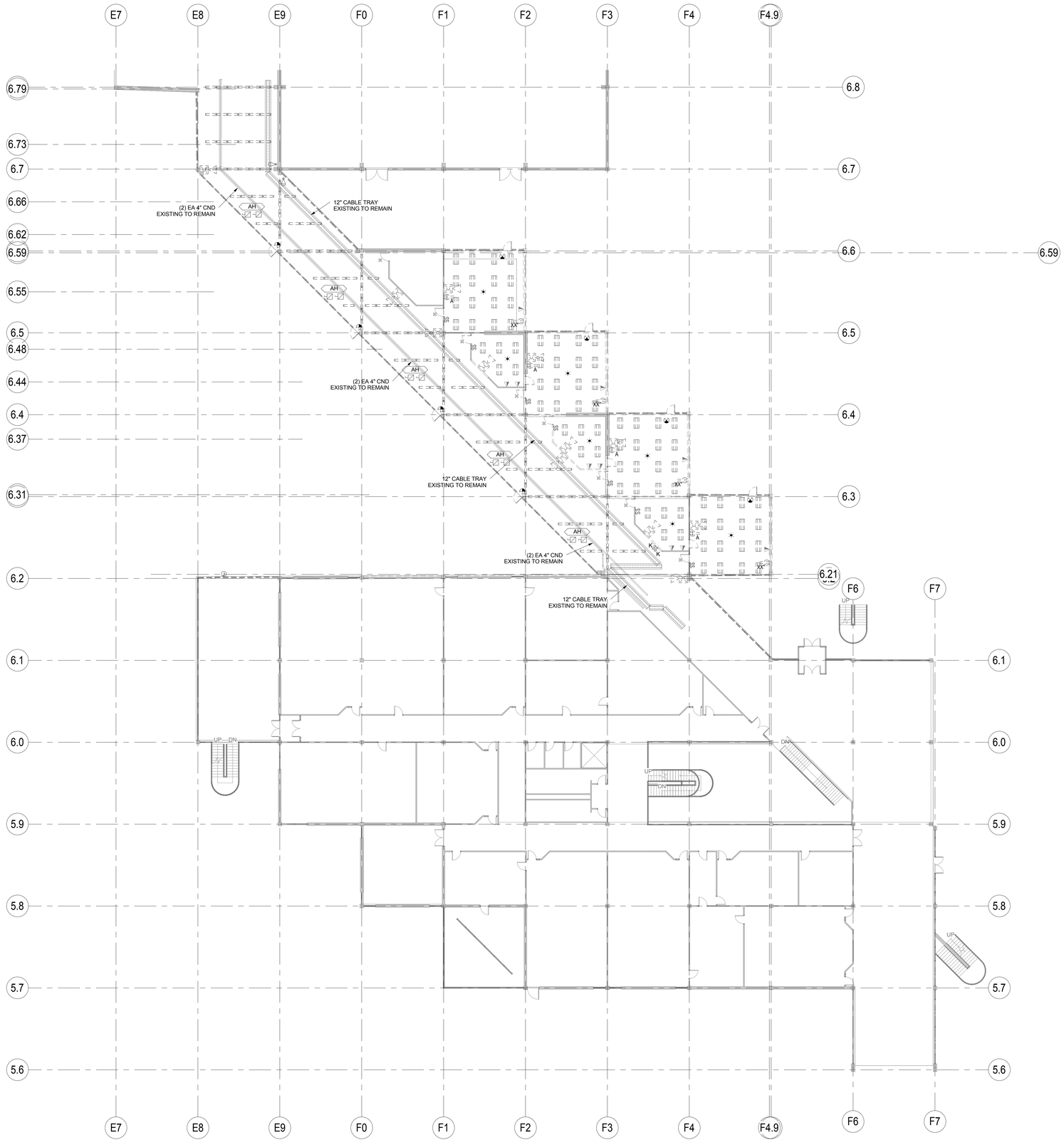

1 LEVEL 1 ELECTRICAL DEMOLITION PLAN

SCALE: 1/16" = 1'-0"

GENERAL SHEET NOTES

1 PRIOR TO SUBMITTING BID, VISIT THE SITE AND FIELD VERIFY THE EXTENT OF ELECTRICAL DEMOLITION WORK TO MEET THE INTENT OF THE BID DOCUMENTS AND INCLUDE ALL COSTS IN BID. ALL ELECTRICAL ITEMS TO BE DEMOLISHED MAY NOT SHOWN AND FIELD VERIFICATION IS REQUIRED. REFER ALSO TO ARCHITECTURAL AND MECHANICAL DEMOLITIONS DRAWINGS FOR EXTENT OF DEMOLITION REQUIRED.

2 PRIOR TO REMOVAL OF ANY ELECTRICAL EQUIPMENT OR WIRING, FIELD VERIFY THAT THE EQUIPMENT OR WIRING IS INACTIVE OR NO LONGER IN USE. WHERE EQUIPMENT OR WIRING IS STILL IN USE, IDENTIFY IT AND BRING IT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.

3 DE-ENERGIZE ALL EQUIPMENT OR WIRING TO BE REMOVED PRIOR TO REMOVAL.

4 COORDINATE DEMOLITION SEQUENCE WITH THE GENERAL CONTRACTOR AND LEAVE EQUIPMENT OPERATIONAL AS NEEDED FOR TEMPORARY POWER OR OTHER USES FOR THE DEMOLITION/CONSTRUCTION ACTIVITIES. AT COMPLETION, REMOVE ALL EQUIPMENT AND WIRING THAT WAS USED FOR TEMPORARY SERVICES AND IS INTENDED FOR DEMOLITION.

5 UNLESS OTHERWISE INDICATED, REMOVE ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT IN DEMOLITION AREA THAT ARE SHOWN DASHED. REMOVE ASSOCIATE CONDUIT AND WIRING BACK TO PANELBOARD OF ORIGINATION OR FIRST ACTIVE JUNCTION BOX. SYSTEMATICALLY CHECK EACH DISTRIBUTION AND BRANCH PANELBOARD CIRCUIT TO VERIFY THAT EACH BREAKER (OR SWITCH) NO LONGER HAS ANY ACTIVE, CONNECTED LOADS. DISCONNECT AND REMOVE THE WIRING. TURN OFF THE BREAKER AND LABEL IT AS "SPARE". ANY REMAINING ACTIVE LOADS SHALL BE LABELED AT THE PANELBOARD AS TO WHAT LOAD IS SERVED.

6 MAINTAIN CIRCUIT INTEGRITY FOR DEVICES OR FIXTURES THAT REMAIN, BUT ARE ON CIRCUITS THAT WERE PARTIALLY DEMOLISHED OR ABANDONED AS A RESULT OF THE DEMOLITION. RECONNECT TO CIRCUITS IN PANELBOARDS THAT REMAIN.

7 REMOVE ALL DEVICES, RACEWAYS AND WIRING FROM WALLS TO BE REMOVED. WHERE ACTIVE RACEWAYS OCCUR IN WALLS OR CEILINGS TO BE REMOVED, REROUTE THE RACEWAY WITH ASSOCIATED WIRING TO KEEP THE CIRCUIT OPERATIONAL.

8 REMOVE THE FIRE ALARM DEVICES IN THE DEMOLITION AREA WITH ASSOCIATED CONDUIT AND WIRING. PRIOR TO DOING THIS, TRACE THE FIRE ALARM CIRCUITS FOR DEVICES THAT REMAIN OUTSIDE OF THE DEMOLITION AREA AND RE-CIRCUIT THE DEVICES SUCH THAT THE CLASS "A" WIRING LOOPS ARE MAINTAINED. TEST THE FIRE ALARM SYSTEM AND AFFECTED DEVICES WHEN THIS IS COMPLETE TO ENSURE OPERATION. THE EXISTING FIRE ALARM SYSTEM AND DEVICES THAT REMAIN SHALL REMAIN ACTIVE THROUGHOUT THE PROJECT.

9 REMOVE ALL ABANDONED RACEWAYS, CONDUIT, WIRING AND CABLING WHETHER ABANDONED PREVIOUS TO THIS PROJECT OR AS A RESULT OF THIS PROJECT. ENSURE THAT THERE ARE NO ACTIVE CONDUCTORS OR EQUIPMENT THAT COULD BE A HAZARD.

10 REFER TO MECHANICAL DEMOLITION PLANS OR NOTES AND PROVIDE ELECTRICAL DEMOLITION WORK NECESSARY FOR THE MECHANICAL DEMOLITION. COORDINATE EXTENT OF THIS WORK WITH THE MECHANICAL DEMOLITION CONTRACTOR.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

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324 S. State St., Suite 400
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800-678-7077
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LEVEL 1 ELECTRICAL DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

ED-102

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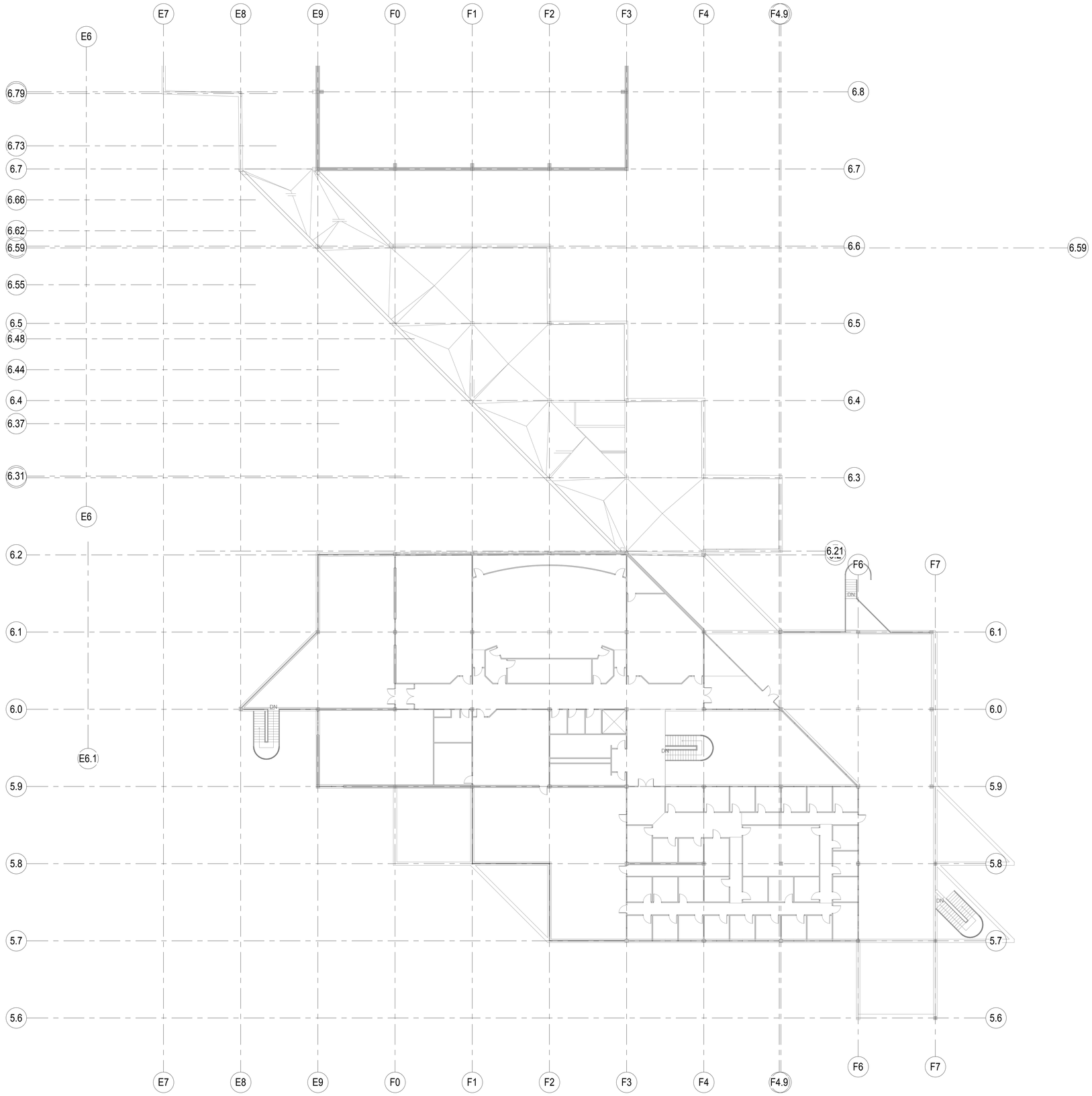

1 LEVEL 2 ELECTRICAL DEMOLITION PLAN

SCALE: 1/16" = 1'-0"

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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No. 181563
DAVID E. WESEMANN
STATE OF UTAH

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REVISIONS:

SPECTRUM ENGINEERS

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Salt Lake City, UT 84111
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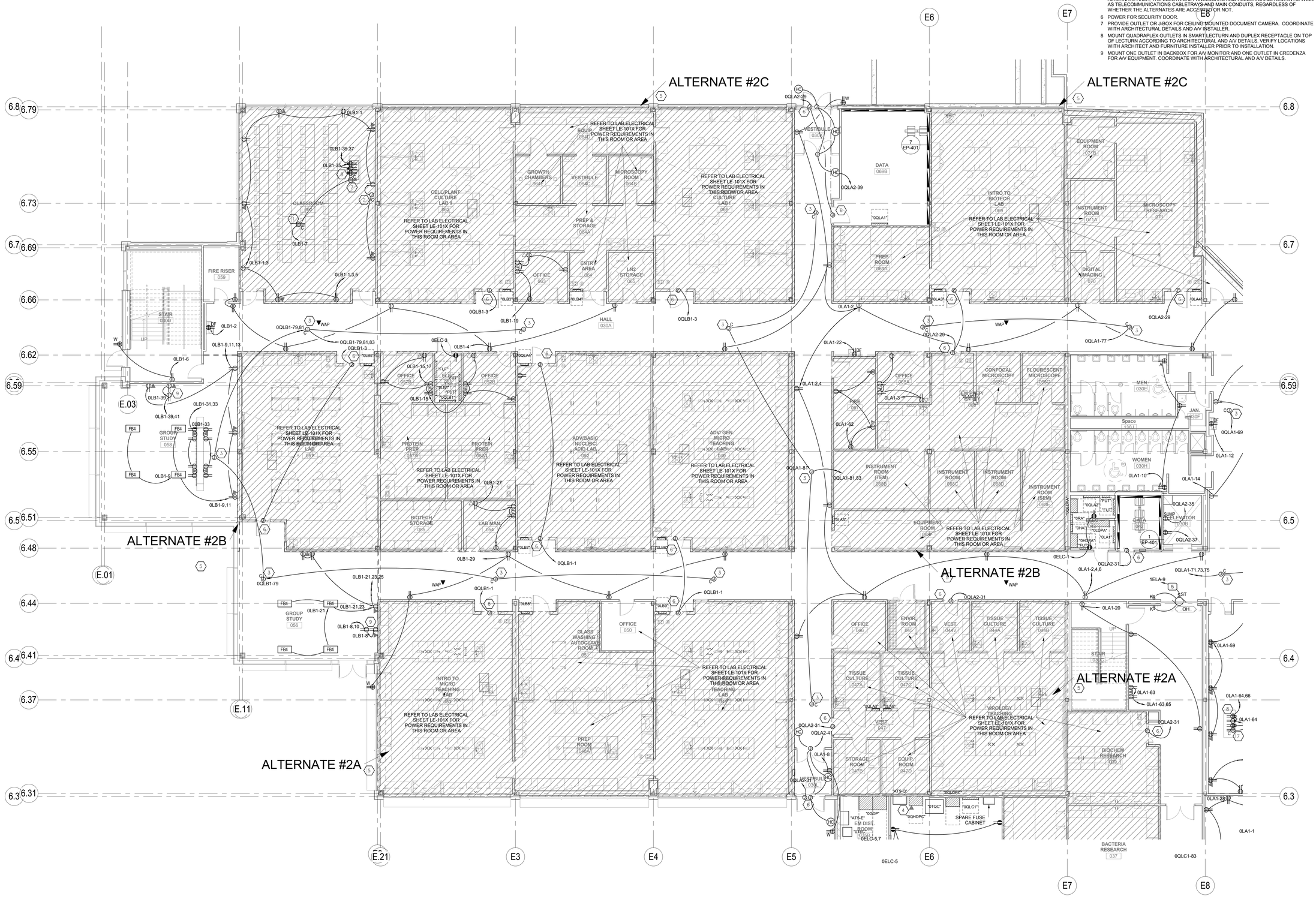
LEVEL 2 ELECTRICAL DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

ED-103

SHEET KEYNOTES

1. PROVIDE FLUSH CEILING OUTLET FOR A/V PROJECTOR. COORDINATE EXACT LOCATION WITH A/V INSTALLER. RIGIDLY SUPPORT OUTLET INDEPENDENT OF CEILING SYSTEM.
2. PROVIDE ELECTRICAL CONNECTIONS TO MOTORIZED SCREEN WITH ALL POWER AND CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MOUNT CONTROL SWITCH IN LOCATION APPROVED BY ARCHITECT. INTERFACE WITH A/V CONTROLS PWER A/V DRAWINGS.
3. JUNCTION BOX IN CEILING FOR BMS CONTROL TRANSFORMER. COORDINATE QUANTITIES AND LOCATIONS WITH BMS INSTALLER AND MAKE FINAL CONNECTIONS.
4. PROVIDE DATA DROPS AND CONNECTIONS TO DIGITAL METERING ETHERNET CONNECTIONS. OBTAIN IP ADDRESS FROM UVU IT DEPT. FOR PROGRAMMING INTO CENTRAL METER NETWORK.
5. BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
6. POWER FOR SECURITY DOOR.
7. PROVIDE OUTLET OR J-BOX FOR CEILING MOUNTED DOCUMENT CAMERA. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
8. MOUNT QUADRAPLEX OUTLETS IN SMART LECTURN AND DUPLEX RECEPTACLE ON TOP OF LECTURN ACCORDING TO ARCHITECTURAL AND A/V DETAILS. VERIFY LOCATIONS WITH ARCHITECT AND FURNITURE INSTALLER PRIOR TO INSTALLATION.
9. MOUNT ONE OUTLET IN BACKBOX FOR A/V MONITOR AND ONE OUTLET IN CREDENZA FOR A/V EQUIPMENT. COORDINATE WITH ARCHITECTURAL AND A/V DETAILS.



1 LEVEL 0 POWER PLAN - AREA A

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

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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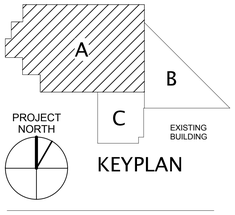

KEYPLAN

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LEVEL 0 POWER PLAN - AREA A

CONSTRUCTION DOCUMENTS

EP-101A

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SHEET KEYNOTES

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3 JUNCTION BOX IN CEILING FOR BMS CONTROL TRANSFORMER. COORDINATE QUANTITIES AND LOCATIONS WITH BMS INSTALLER AND MAKE FINAL CONNECTIONS.
4 POWER FOR SECURITY DOOR.
5 PROVIDE OUTLET OR J-BOX FOR CEILING MOUNTED DOCUMENT CAMERA. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
6 MOUNT QUADRAPLEX OUTLETS IN SMART LECTURN AND DUPLEX RECEPTACLE ON TOP OF LECTURN ACCORDING TO ARCHITECTURAL AND A/V DETAILS. VERIFY LOCATIONS WITH ARCHITECT AND FURNITURE INSTALLER PRIOR TO INSTALLATION.

1 LEVEL 0 POWER PLAN - AREA B
SCALE: 1/8" = 1'-0"

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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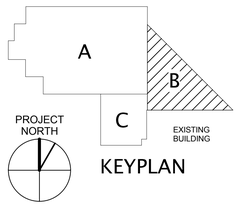

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LEVEL 0 POWER PLAN - AREA B

CONSTRUCTION DOCUMENTS

EP-101B

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SHEET KEYNOTES

1. PROVIDE ELECTRICAL CONNECTIONS TO MOTORIZED SCREEN WITH ALL POWER AND CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MOUNT CONTROL SWITCH IN LOCATION APPROVED BY ARCHITECT. INTERFACE WITH A/V CONTROLS PWER A/V DRAWINGS.
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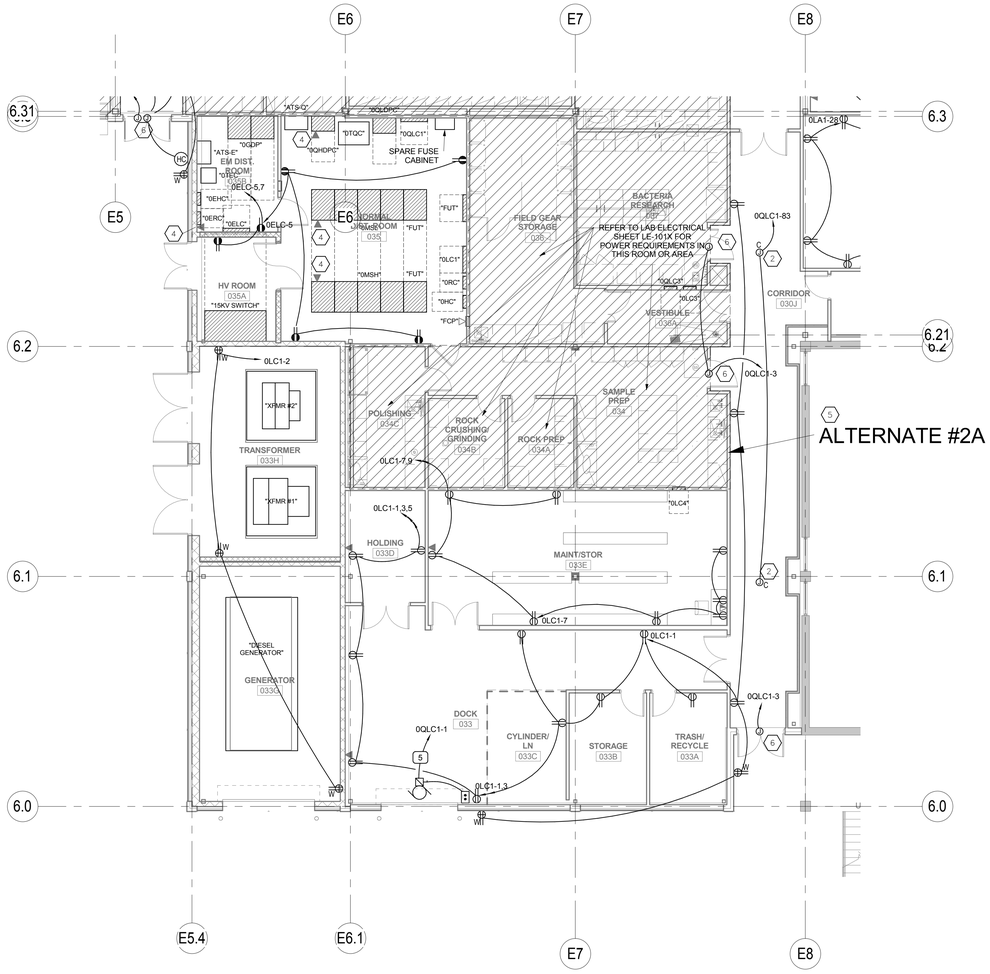
6. POWER FOR SECURITY DOOR.



1 LEVEL 0 POWER PLAN - AREA C

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

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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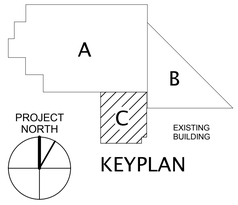

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LEVEL 0 POWER PLAN - AREA C

CONSTRUCTION DOCUMENTS

EP-101C

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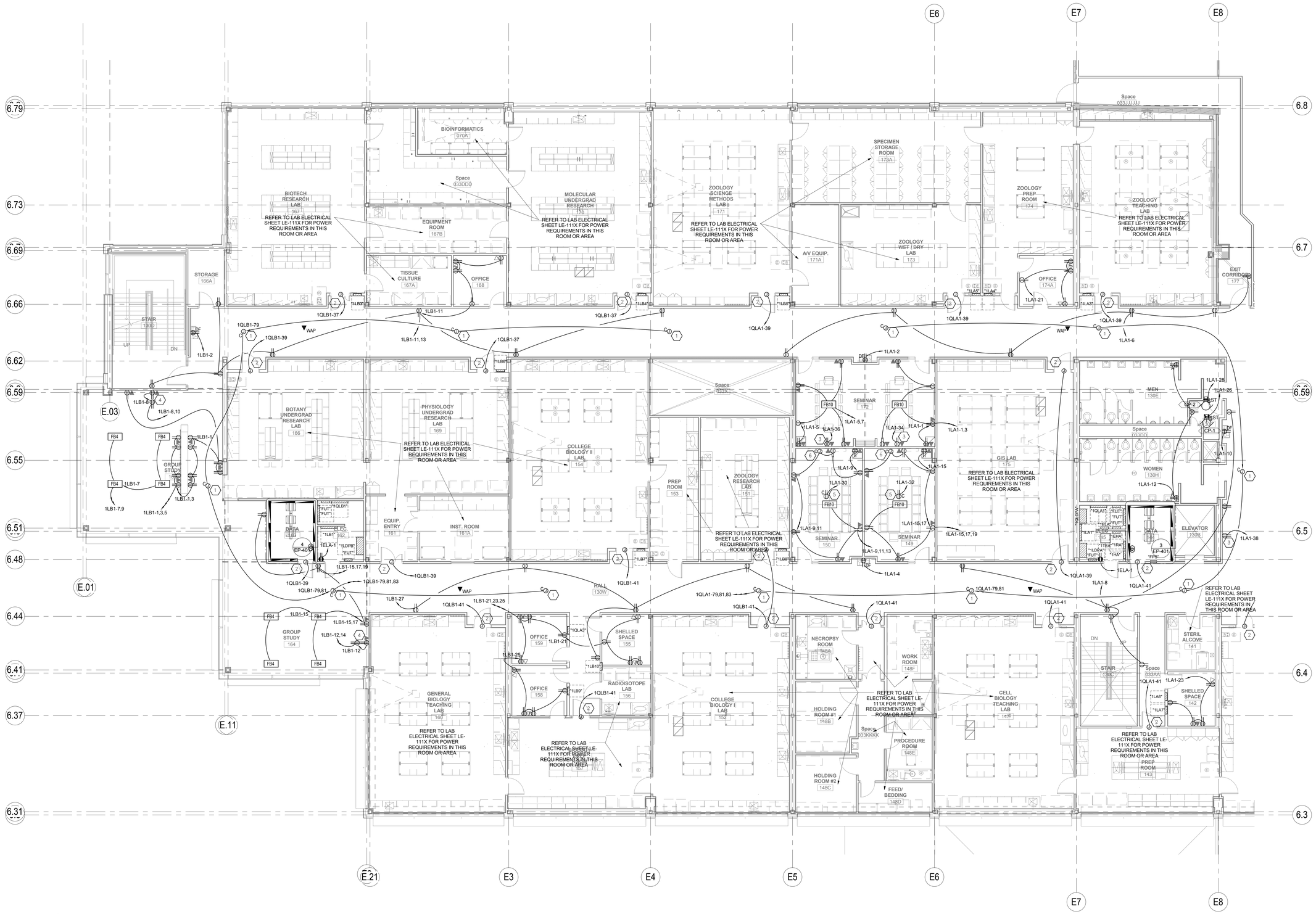
SHEET KEYNOTES

1. JUNCTION BOX IN CEILING FOR BMS CONTROL TRANSFORMER. COORDINATE QUANTITIES AND LOCATIONS WITH BMS INSTALLER AND MAKE FINAL CONNECTIONS.
2. POWER FOR SECURITY DOOR.
3. PROVIDE OUTLET OR J-BOX FOR A/V MONITOR DEPENDING ON ACTUAL FIELD CONDITIONS. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
4. MOUNT ONE OUTLET IN BACKBOX FOR A/V MONITOR AND ONE OUTLET IN CREDENZA FOR A/V EQUIPMENT. COORDINATE WITH ARCHITECTURAL AND A/V DETAILS.
5. PROVIDE FLUSH CEILING OUTLET FOR A/V PROJECTOR. COORDINATE EXACT LOCATION WITH A/V INSTALLER. RIGIDLY SUPPORT OUTLET INDEPENDENT OF CEILING SYSTEM.
6. PROVIDE ELECTRICAL CONNECTIONS TO MOTORIZED SCREEN WITH ALL POWER AND CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MOUNT CONTROL SWITCH IN LOCATION APPROVED BY ARCHITECT. INTERFACE WITH A/V CONTROLS PWER A/V DRAWINGS.



1 LEVEL 1 POWER PLAN - AREA A

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

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

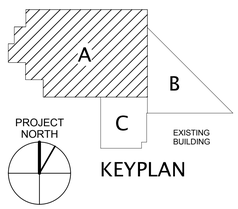
LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
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LEVEL 1 POWER PLAN - AREA A

CONSTRUCTION DOCUMENTS

EP-102A

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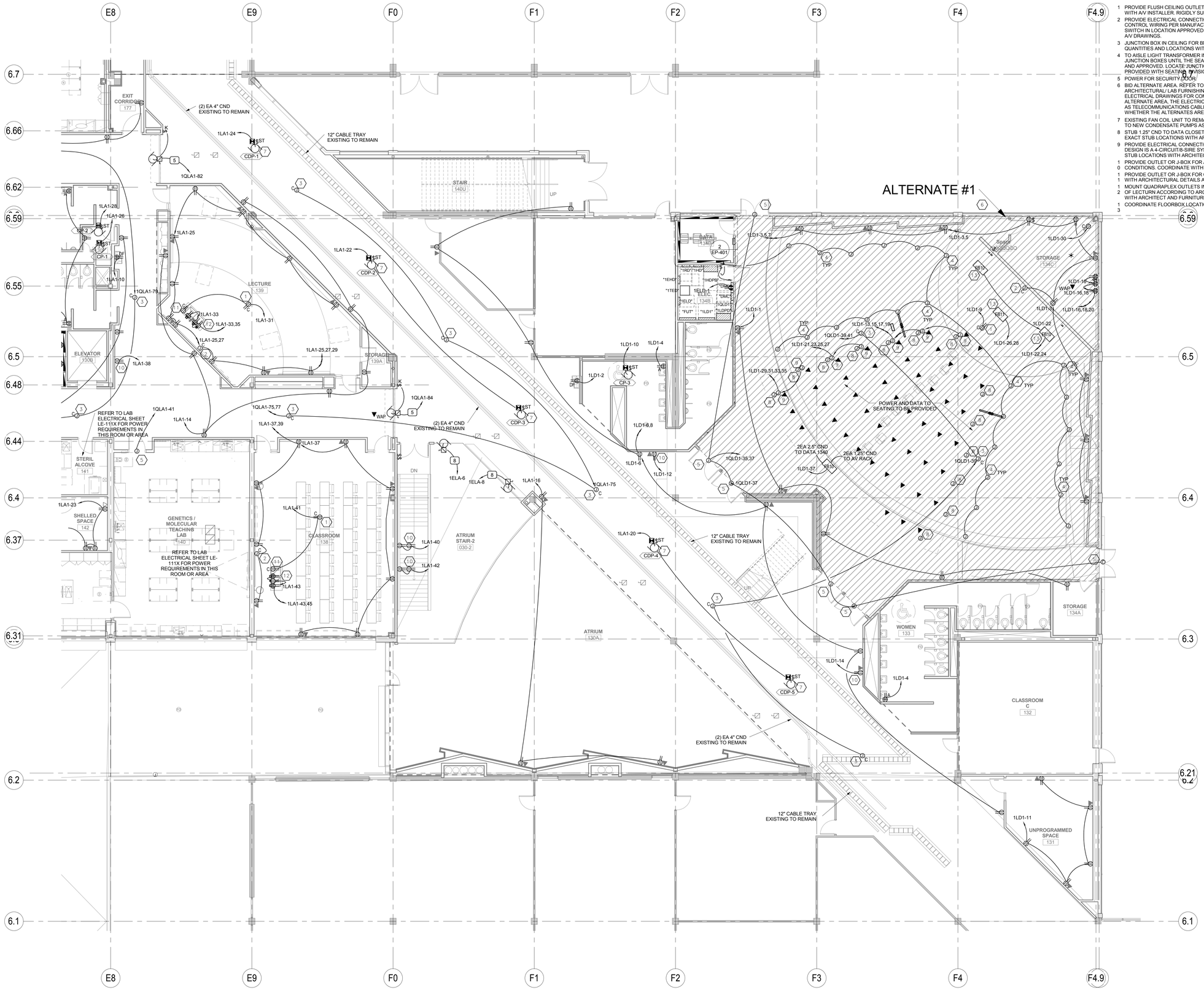

1 LEVEL 1 POWER PLAN - AREA B

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

SHEET KEYNOTES

1 PROVIDE FLUSH CEILING OUTLET FOR A/V PROJECTOR. COORDINATE EXACT LOCATION WITH A/V INSTALLER. RIGIDLY SUPPORT OUTLET INDEPENDENT OF CEILING SYSTEM.
2 PROVIDE ELECTRICAL CONNECTIONS TO MOTORIZED SCREEN WITH ALL POWER AND CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS. MOUNT CONTROL SWITCH IN LOCATION APPROVED BY ARCHITECT. INTERFACE WITH A/V CONTROLS PWER A/V DRAWINGS.
3 JUNCTION BOX IN CEILING FOR BMS CONTROL TRANSFORMER. COORDINATE QUANTITIES AND LOCATIONS WITH BMS INSTALLER AND MAKE FINAL CONNECTIONS.
4 TO ASLE LIGHT TRANSFORMER IN ELECTRICAL ROOM. DO NOT LOCATE THESE JUNCTION BOXES UNTIL THE SEATING FEILD DIMENSIONS AND SUBMITTAL IS RECIEVED AND APPROVED. LOCATE JUNCTION BOX FLUSH IN FLOOR TO FEILD ISLE LIGHT PROVIDED WITH SEATING. DIVISION 26 TO DO ALL FIELD WIRING.
5 POWER FOR SECURITY DOOR.
6 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
7 EXISTING FAN COIL UNIT TO REMAIN WITH ASSOCIATED CIRCUITING. PROVIDE POWER TO NEW CONDENSATE PUMPS AS INDICATED.
8 STUB 1.25" CND TO DATA CLOSET FOR DATA CABLING IN THIS ROW OF SEATS. VERIFY EXACT STUB LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.
9 PROVIDE ELECTRICAL CONNECTIONS TO POWERED SYSTEMS FURNITURE. BASIS OF DESIGN IS A 4-CIRCUIT8-SIRE SYSTEM. VERIFY ELECTRICAL REQUIREMENTS AND EXACT STUB LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.
10 PROVIDE OUTLET OR J-BOX FOR A/V MONITOR DEPENDING ON ACTUAL FIELD CONDITIONS. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
11 PROVIDE OUTLET OR J-BOX FOR CEILING MOUNTED DOCUMENT CAMERA. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
12 MOUNT QUADRAPLEX OUTLETS IN SMART LECTURN AND DUPLEX RECEPTACLE ON TOP OF LECTURN ACCORDING TO ARCHITECTURAL AND A/V DETAILS. VERIFY LOCATIONS WITH ARCHITECT AND FURNITURE INSTALLER PRIOR TO INSTALLATION.
13 COORDINATE FLOORBOX LOCATIONS WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
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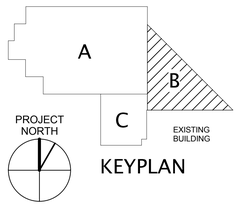

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
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DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
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LEVEL 1 POWER PLAN - AREA B

CONSTRUCTION DOCUMENTS

EP-102B

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SHEET KEYNOTES

1. PROVIDE FLUSH CEILING OUTLET FOR A/V PROJECTOR. COORDINATE EXACT LOCATION WITH A/V INSTALLER. RIGIDLY SUPPORT OUTLET INDEPENDENT OF CEILING SYSTEM.
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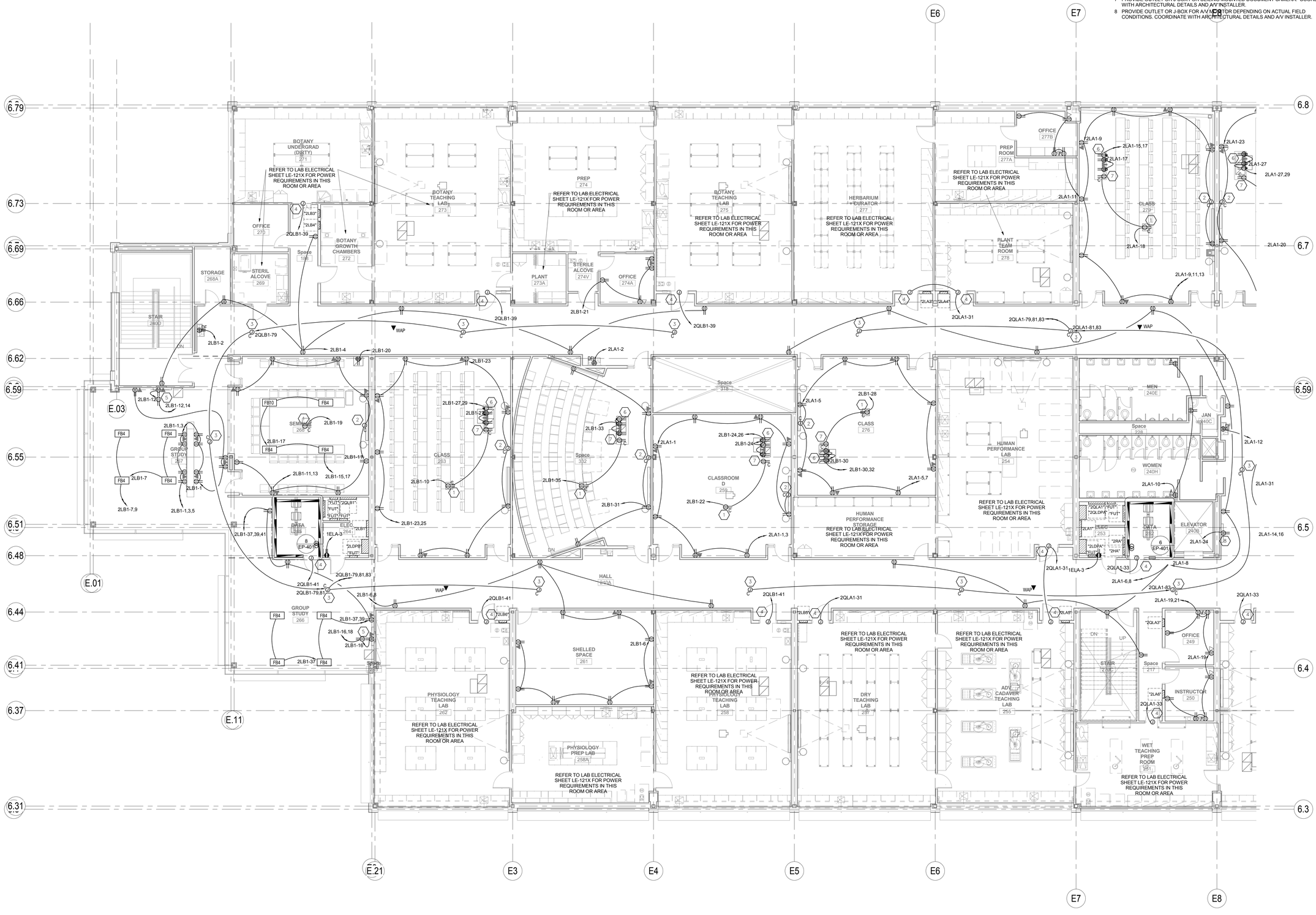
4. POWER FOR SECURITY DOOR.
5. MOUNT ONE OUTLET IN BACKBOX FOR A/V MONITOR AND ONE OUTLET IN CREDENZA FOR A/V EQUIPMENT. COORDINATE WITH ARCHITECTURAL AND A/V DETAILS.
6. MOUNT QUADRAPLEX OUTLETS IN SMART LECTURN AND DUPLEX RECEPTACLE ON TOP OF LECTURN ACCORDING TO ARCHITECTURAL AND A/V DETAILS. VERIFY LOCATIONS WITH ARCHITECT AND FURNITURE INSTALLER PRIOR TO INSTALLATION.
7. PROVIDE OUTLET OR J-BOX FOR CEILING MOUNTED DOCUMENT CAMERA. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
8. PROVIDE OUTLET OR J-BOX FOR A/V MONITOR DEPENDING ON ACTUAL FIELD CONDITIONS. COORDINATE WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.



1 LEVEL 2 POWER PLAN - AREA A

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

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
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801-328-5151
fax: 801-328-5155
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A B C

PROJECT NORTH

EXISTING BUILDING

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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GSBS PROJECT NO.:	2009.115.00
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LEVEL 2 POWER PLAN - AREA A

CONSTRUCTION DOCUMENTS

EP-103A

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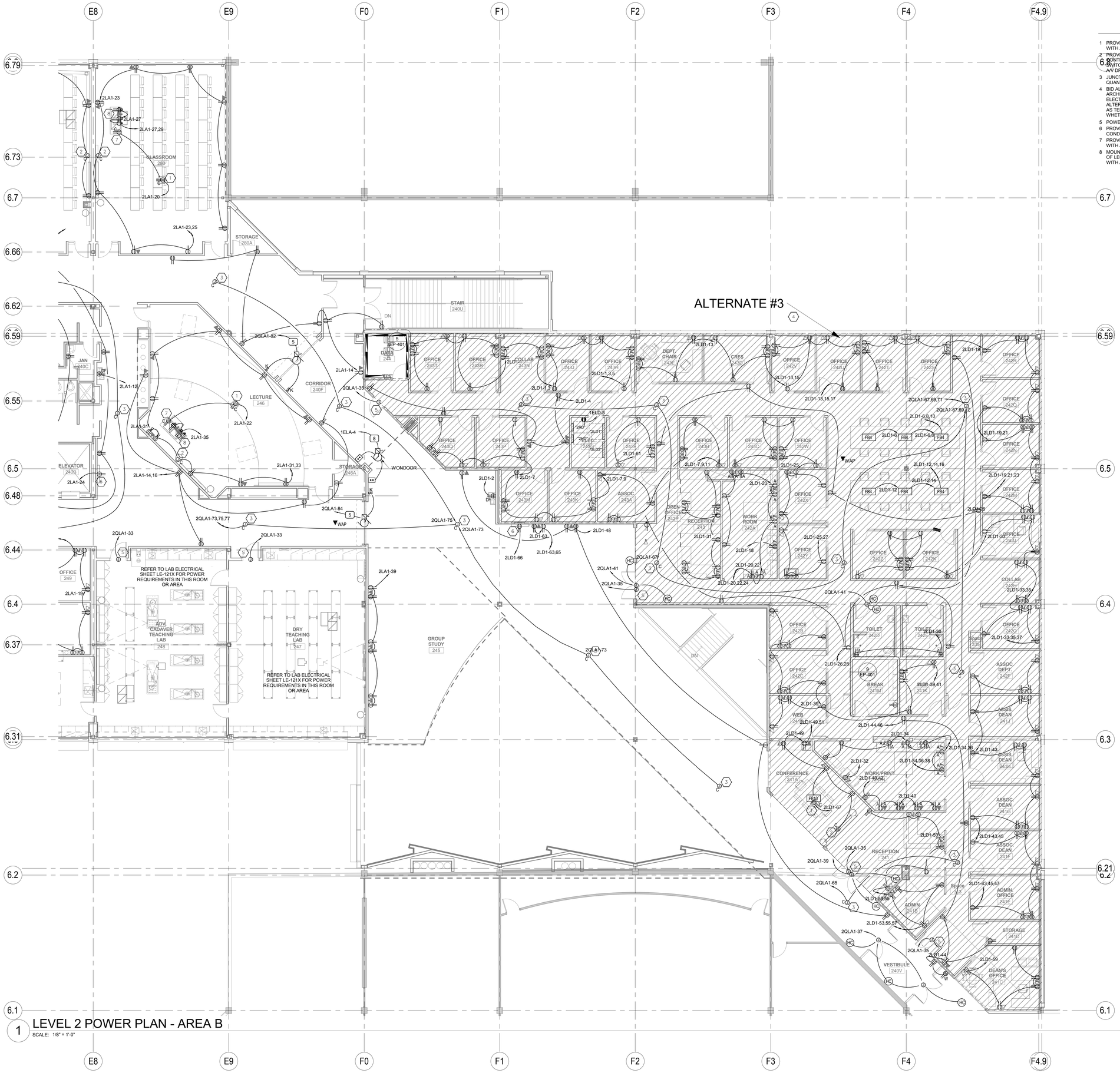

1 LEVEL 2 POWER PLAN - AREA B

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

SHEET KEYNOTES

1. PROVIDE FLUSH CEILING OUTLET FOR A/V PROJECTOR. COORDINATE EXACT LOCATION WITH A/V INSTALLER. RIGIDLY SUPPORT OUTLET INDEPENDENT OF CEILING SYSTEM.
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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
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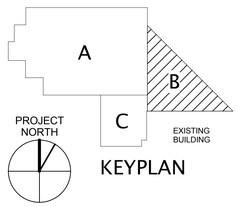

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LEVEL 2 POWER PLAN - AREA B

CONSTRUCTION DOCUMENTS

EP-103B

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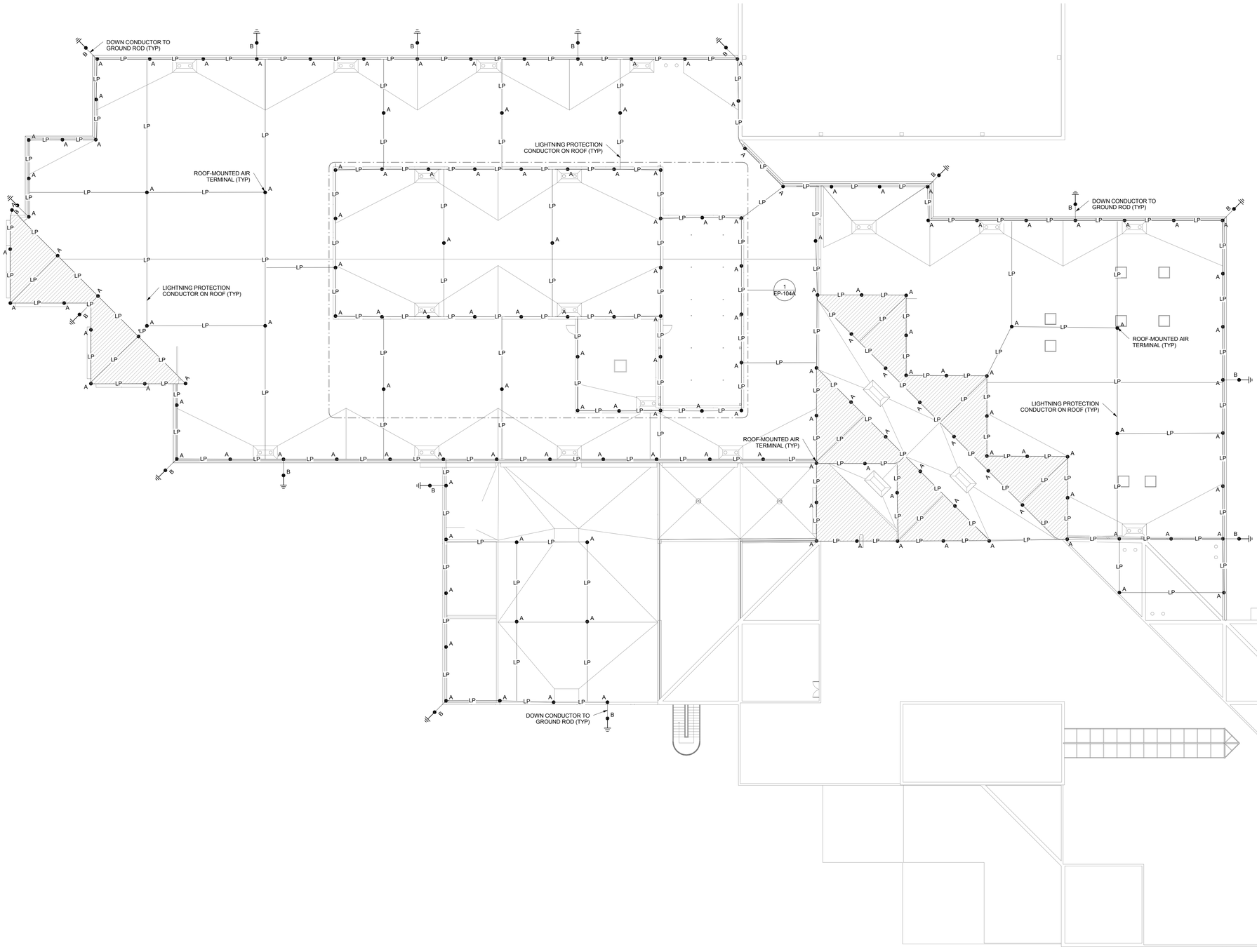

1 OVERALL ROOF POWER PLAN
SCALE: 1/16" = 1'-0"

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P 801.521.8600
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www.gsbsarchitects.com

No. 181563
DAVID E. WESEMANN
LICENSED PROFESSIONAL ENGINEER
STATE OF UTAH
05-07-2010

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OVERALL ROOF POWER PLAN

CONSTRUCTION DOCUMENTS

EP-104

SHEET KEYNOTES

1 CIRCUIT TO MCC THROUGH VFD. SEE ONE-LINE DIAGRAM.
2 J-BOXES FOR CONTROL DAMPERS. COORDINATE WITH MECHANICAL INSTALLER.
3 VIBRATION CUT-OUT SWITCH.
4 AIR FLOW MONITORING STATION.
5 WATER TREATMENT SYSTEM.
6 PROVIDE CONNECTIONS TO HEAT TRACE COORDINATE WITH MECHANICAL INSTALLER. CONNECT TO 20A GFI CB'S WITH 30mA TRIP.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

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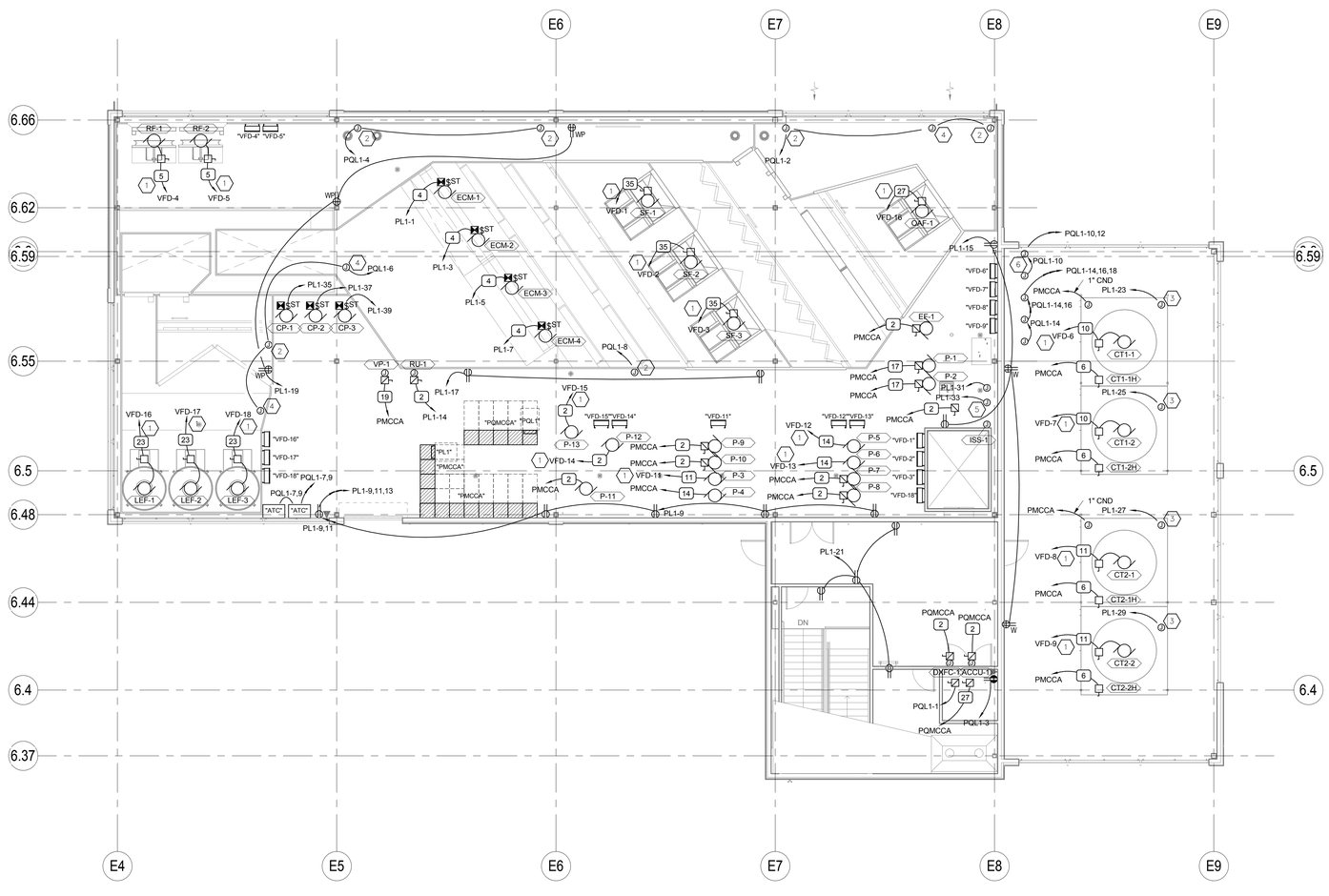

1 PENTHOUSE POWER PLAN
SCALE: 1/8" = 1'-0"

Utah Valley University New Science Building

800 West University Parkway
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PENTHOUSE POWER PLAN

CONSTRUCTION DOCUMENTS

EP-104A

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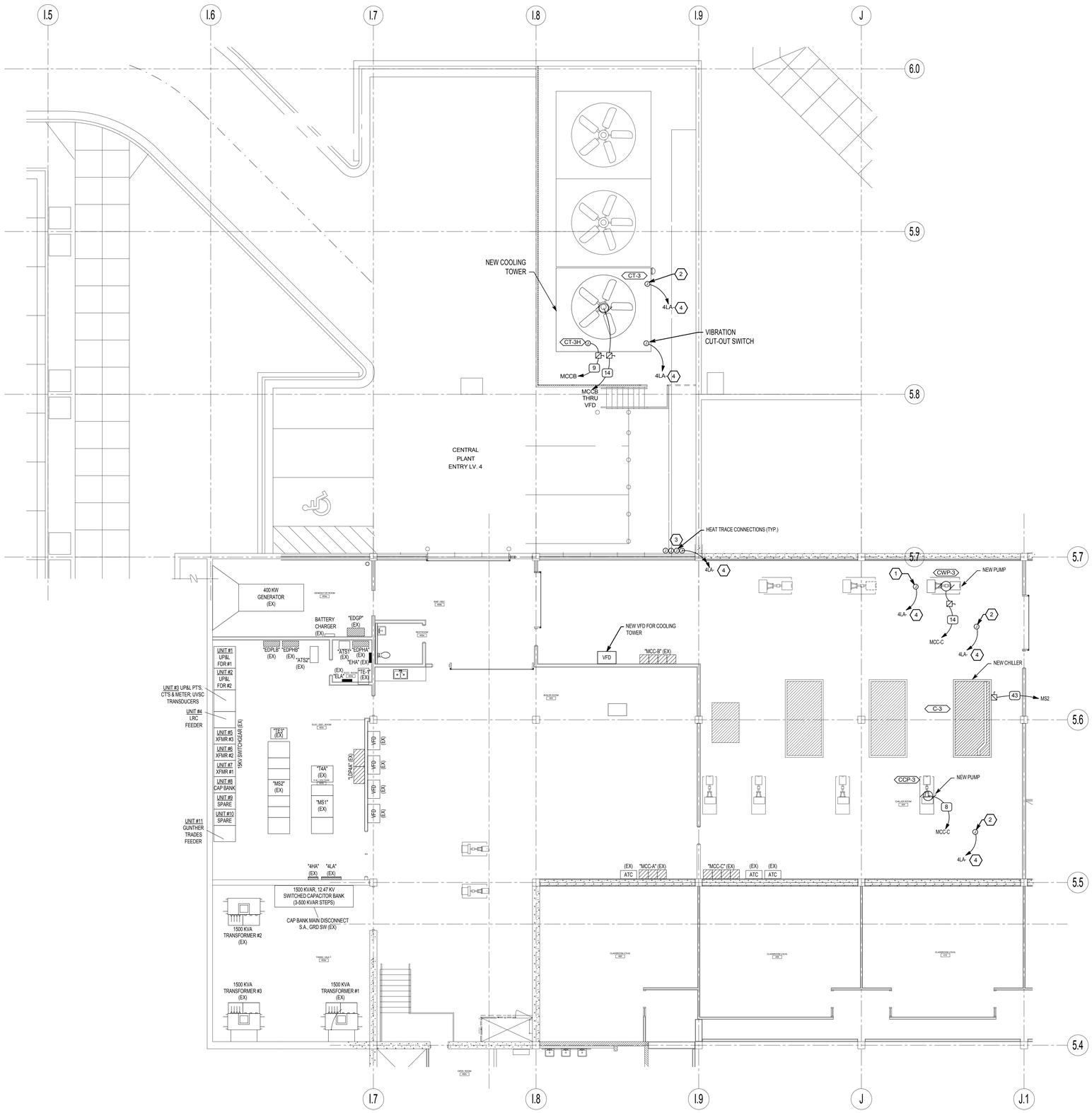
SHEET KEYNOTES

1. PROVIDE CONNECTIONS TO CONTROL VALVE.
2. J-BOX FOR CONTROL POWER.
3. PROVIDE CONNECTIONS TO HEAT TRACE. COORDINATE WITH MECHANICAL INSTALLER. PROVIDE 20A/IP GFI CBS WITH 30mA TTP FOR EACH HEAT TRACE CIRCUIT.
4. PROVIDE NEW 20A/IP CIRCUIT BREAKER IN EXISTING 120/208V PANELBOARD TO ACCOMMODATE NEW CIRCUITS INDICATED. CIRCUIT TO AVAILABLE SPACES AND MARK ACTUAL CIRCUIT NUMBER ON RECORD DRAWINGS.



1 ENLARGED UPPER CENTRAL PLANT ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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ENLARGED UPPER CENTRAL PLANT ELECTRICAL PLAN

CONSTRUCTION DOCUMENTS

EP-151

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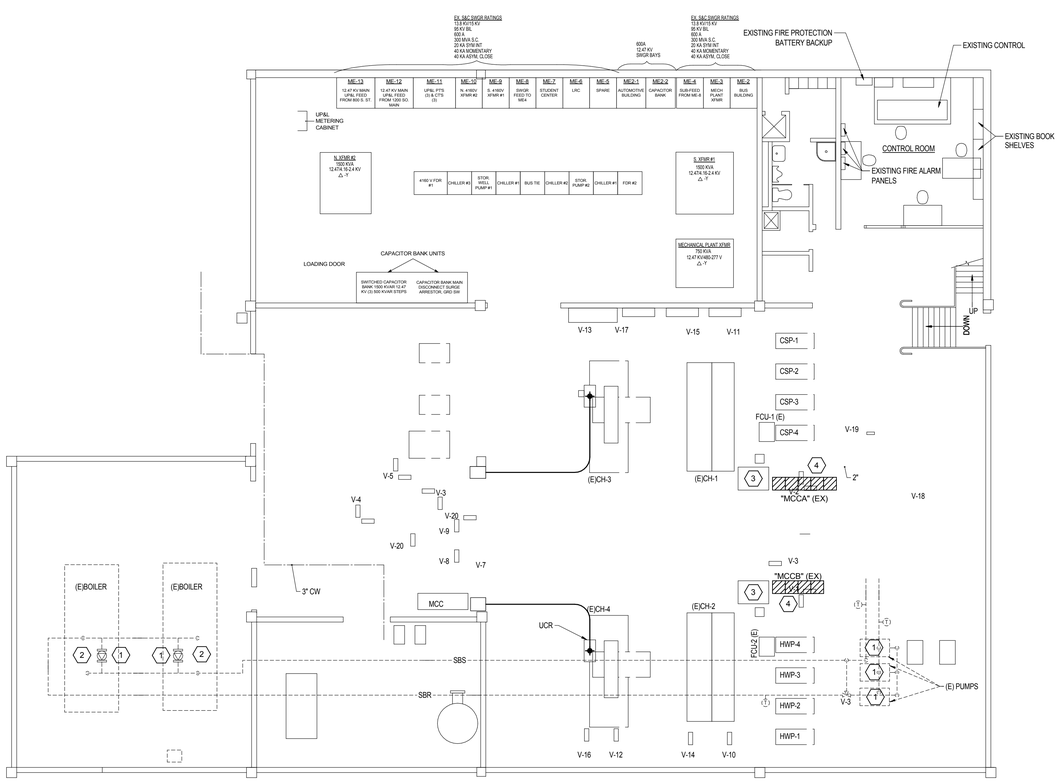
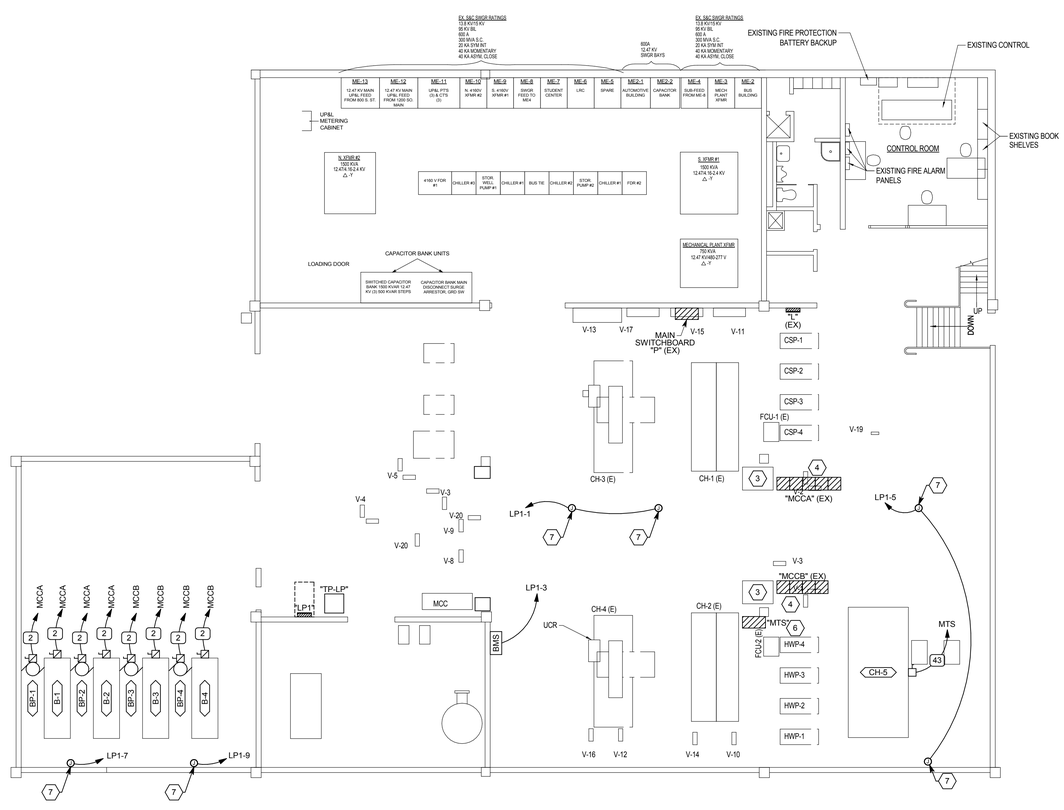
SHEET KEYNOTES

1. DISCONNECT AND REMOVE CONDUIT AND WIRING ASSOCIATED WITH PUMPS TO BE REMOVED.
2. DISCONNECT AND REMOVE CONDUIT AND WIRING ASSOCIATED WITH BOILERS TO BE REMOVED.
3. EXISTING 4160-480Y, 500KVA TRANSFORMER TO REMAIN.
4. EXISTING MOTOR CONTROL CENTER TO REMAIN.
5. EXISTING 4160V CHILLER DISCONNECT TO REMAIN.
6. NEW SWITCHBOARD TO TRANSFER 480V POWER TO EITHER EXISTING CHILLER #2, OR NEW CHILLER #5.
7. PROVIDE 120V FOR CONTROL POWER AND VALVE ACTUATORS. COORDINATE WITH MECHANICAL INSTALLER.



EXISTING PLAN



NEW PLAN

1 LOWER CENTRAL PLANT ELECTRICAL PLANS

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

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LOWER CENTRAL PLANT ELECTRICAL PLANS

CONSTRUCTION DOCUMENTS

EP-161

SHEET KEYNOTES

1 MOUNT OUTLETS ABOVE DATA RACKS. COORDINATE WITH UVU I.T. AND VOICE/DATA INSTALLERS FOR EXACT LOCATIONS.

2 PROVIDE ELECTRICAL CONNECTIONS TO SECURITY EQUIPMENT. COORDINATE LOCATION WITH SECURITY INSTALLER.

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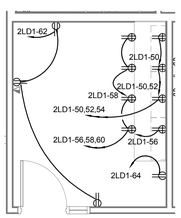
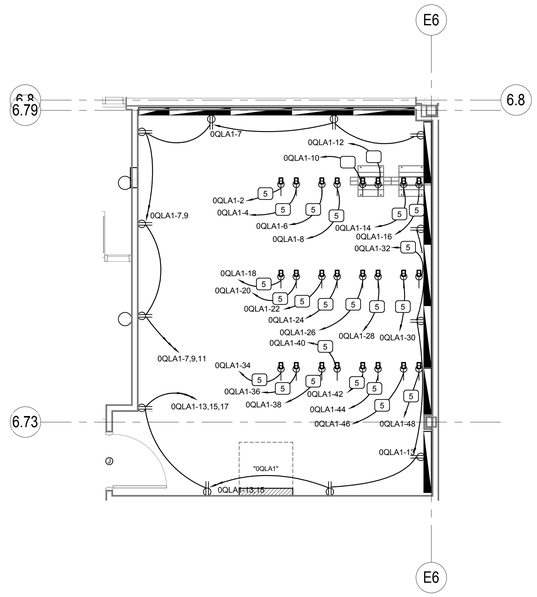
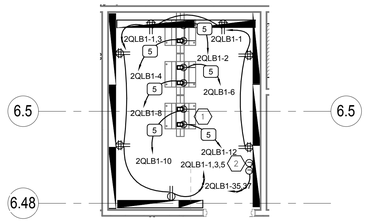


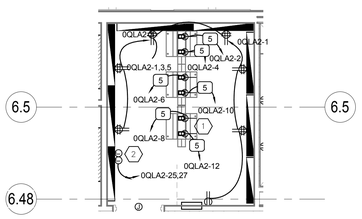
9 ENLARGED POWER PLAN - BREAKROOM 241M
SCALE: 1/4" = 1'-0"



7 ENLARGED POWER PLAN - DATA 069B
SCALE: 1/4" = 1'-0"



8 ENLARGED POWER PLAN - DATA 265
SCALE: 1/4" = 1'-0"



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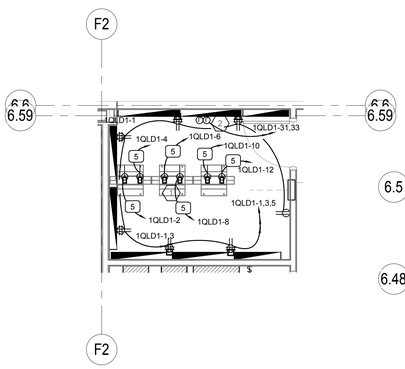
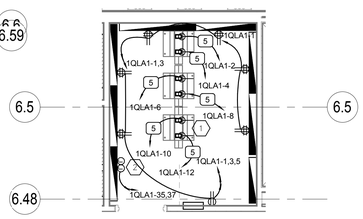
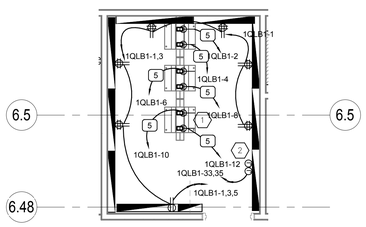
SCALE: 1/4" = 1'-0"



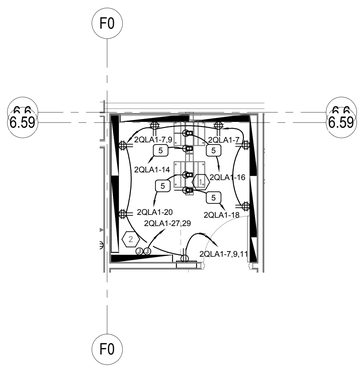
2 ENLARGED POWER PLAN - DATA 134A
SCALE: 1/4" = 1'-0"



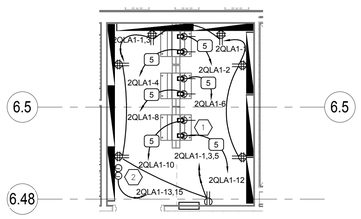
3 ENLARGED POWER PLAN - DATA 144
SCALE: 1/4" = 1'-0"



4 ENLARGED POWER PLAN - DATA 163
SCALE: 1/4" = 1'-0"



5 ENLARGED POWER PLAN - DATA 244
SCALE: 1/4" = 1'-0"



6 ENLARGED POWER PLAN - DATA 252
SCALE: 1/4" = 1'-0"

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

ENLARGED PARTIAL POWER PLANS

CONSTRUCTION DOCUMENTS

EP-401

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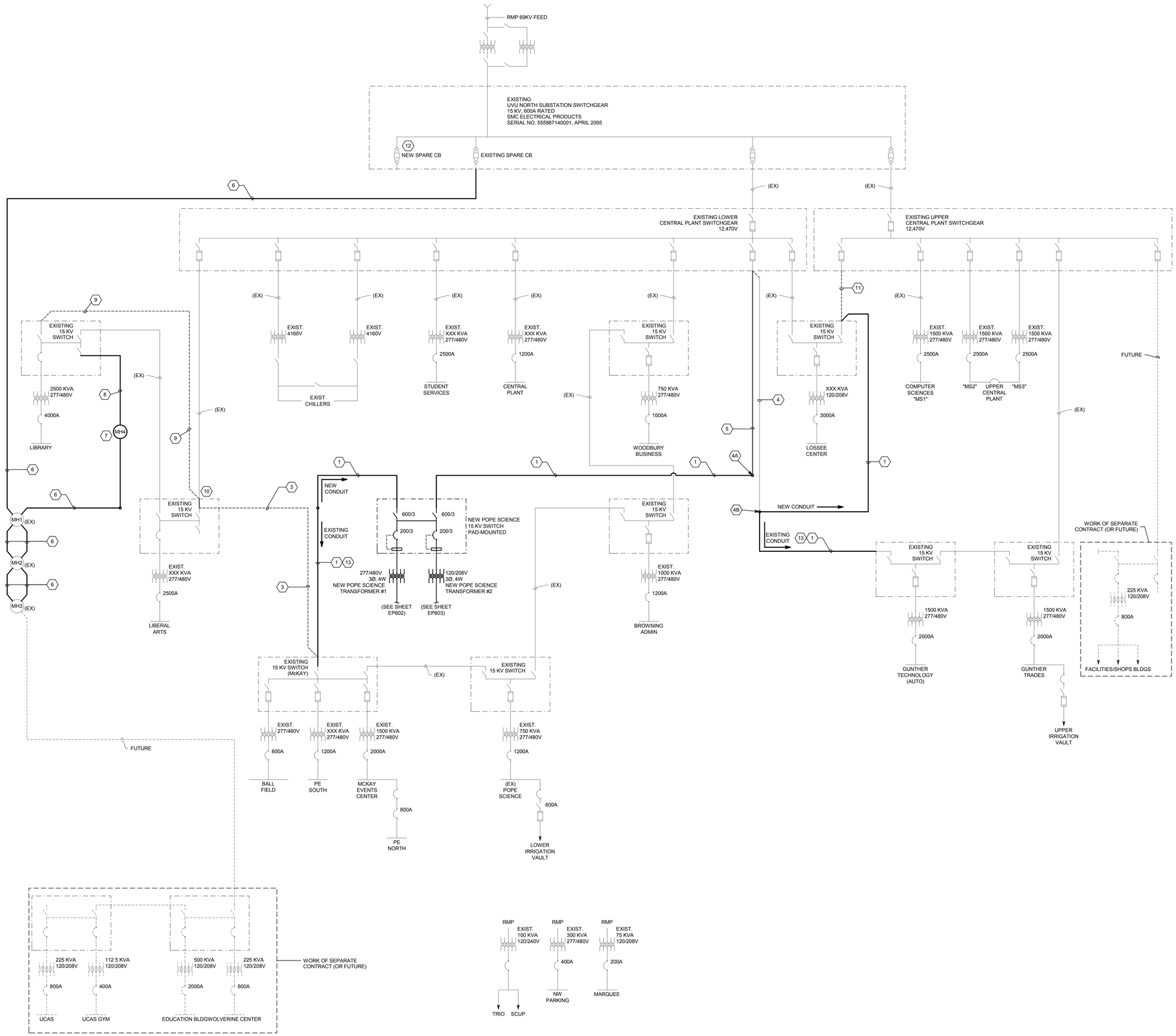

1 POWER ONE-LINE DIAGRAM - MEDIUM VOLTAGE

SCALE: N.T.S.

GENERAL SHEET NOTES

1. PRIOR TO BID, VISIT SITE TO REVIEW AND VERIFY EXISTING CONDITIONS RELATING TO MV CABLE AND CONDUIT INSTALLATION. FOR INDOOR INSTALLATIONS, ALL REQUIRED BENDS, OFFSETS, VERTICAL AND HORIZONTAL TRANSITIONS, AND PULL BOXES ARE NOT SHOWN. THESE ITEMS SHALL BE FIELD VERIFIED AND INCLUDED IN THE BID.
2. INSTALL INDOOR CONDUIT AS HIGH AS POSSIBLE ABOVE CONCOURSE AREAS, IN ACCESSIBLE CEILING SPACES.
3. PRIOR TO INSTALLATION, SUBMIT SHOP DRAWING OF PROPOSED CONDUIT ROUTE TO ARCHITECT/ENGINEER FOR REVIEW.
4. PROVIDE OVERCURRENT PROTECTIVE DEVICE STUDY WITH RECOMMENDED TRIP SETTINGS TO ENGINEER, PER SPECIFICATION SECTION 260573.
5. LABEL ALL CONDUIT THAT BECOMES SPARE AS A RESULT OF THIS WORK AS "SPARE CONDUIT" AT END POINTS, J-BOXES, AND 20' INTERVALS.

SHEET KEYNOTES

1. NEW 15 KV CABLING IN NEW CONDUIT, INSTALLED OVERHEAD IN CONCOURSE: 3 #4/0 15 KV EPR CU, 1 #4/0 THWN-2GR IN 4" RIGID METAL CND.
2. EXISTING 15 KV CABLING AND CONDUIT TO REMAIN.
3. REMOVE EXISTING 15 KV CABLING FROM LIBERAL ARTS BUILDING BACK TO MCKAY EVENTS CENTER. INTERCEPT THIS EXISTING OVERHEAD CONDUIT FOR CABLING FROM NEW POPE SCIENCE BUILDING.
4. OVERHEAD CODUIT AND CABLING FROM LOWER PLANT 15 KV GEAR CURRENTLY SERVING GUNTHER TECHNOLOGY (AUTO): REMOVE CABLING FROM CENTRAL PLANT BACK TO GUNTHER TECHNOLOGY.

4A. INTERCEPT EXISTING CONDUIT FROM CENTRAL PLAN IN CONCOURSE TO SERVE THE NEW OVERHEAD FEEDER FROM CENTRAL PLANT TO NEW POPE SCIENCE.

4B. INTERCEPT CONDUIT FROM GUNTHER TRADES (AUTO) IN CONCOURSE NEAR CENTRAL PLANT, AND EXTEND CONDUIT INTO LOSSEE CENTER SWITCH. PROVIDE ALL NEW CABLING AS INDICATED.

5. NEW CABLING IN EXISTING OVERHEAD CONDUIT: 3 # 4/0 15 KV EPR CU, 1 # 4/0 THWN-2GR IN 4" RIGID METAL CND (CONDUIT IS EXISTING ONLY FROM CENTRAL PLANT TO ADJACENT CONCOURSE, THEN NEW CONDUIT IS REQUIRED PER NOTE 4A).
6. NEW CABLING IN EXISTING 5" CND UNDERGROUND DUCT BANK: 3 # 4/0 15 KV EPR CU, 1 # 4/0 THWN-2GR FROM SUBSTATION TO NEW MANHOLE AT LIBRARY BUILDING.
7. PROVIDE NEW MANHOLE NEAR LIBRARY BUILDING AND INTERCEPT EXISTING (4) 5" CND POWER DUCT BANK (TWO SPARE CONDUITS, TWO WITH EXISTING CABLING) AND TURN SPARE CONDUITS INTO MANHOLE, THEN BACK OUT TO TIE INTO EXISTING SPARE IN DUCT BANK. ALSO INTERCEPT AND EXTEND (2) 5" CND FROM LIBRARY 15 KV SWITCH INTO MANHOLE.
8. NEW CABLING IN UNDERGROUND DUCT BANK FROM MANHOLE TO LIBRARY SWITCH: 3 # 4/0 15 KV EPR CU, 1 # 4/0 THWN-2GR, IN 5" CND.
9. DISCONNECT CABLING FROM CENTRAL PLANT TO LIBRARY AT THE LIBRARY SWITCH. PULL CABLING BACK TO LIBERAL ARTS.
10. SPLICE/RECONNECT CABLING FROM CENTRAL PLANT TO LIBERAL ARTS SWITCH.
11. DISCONNECT LOSSEE CENTER FROM UPPER CENTRAL PLANT AND CONNECT TO GUNTHER TECHNOLOGY AS INDICATED. REMOVE CABLING FROM UPPER CENTRAL PLANT TO LOSSEE CENTER. TAG CONDUIT AS "SPARE CONDUIT" IN EACH ROOM AND AT 40' INTERVALS THROUGH CONCOURSE.
12. PROVIDE NEW SPARE CB IN SUBSTATION SWITCHGEAR TO MATCH EXISTING CIRCUIT BREAKERS. SMC SWITCH-VAC CIRCUIT BREAKER, 15KV, 600A, 12,000A/C, SHUNT TRIP, VISUAL DISCONNECT W/ GROUNDING BAR, PART # 5221-62XA3-MBU.
13. PORTIONS OF EXISTING CONDUIT MAY BE REUSED FOR NEW CABLING.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

POWER ONE-LINE DIAGRAM - MEDIUM VOLTAGE

CONSTRUCTION DOCUMENTS

EP-601

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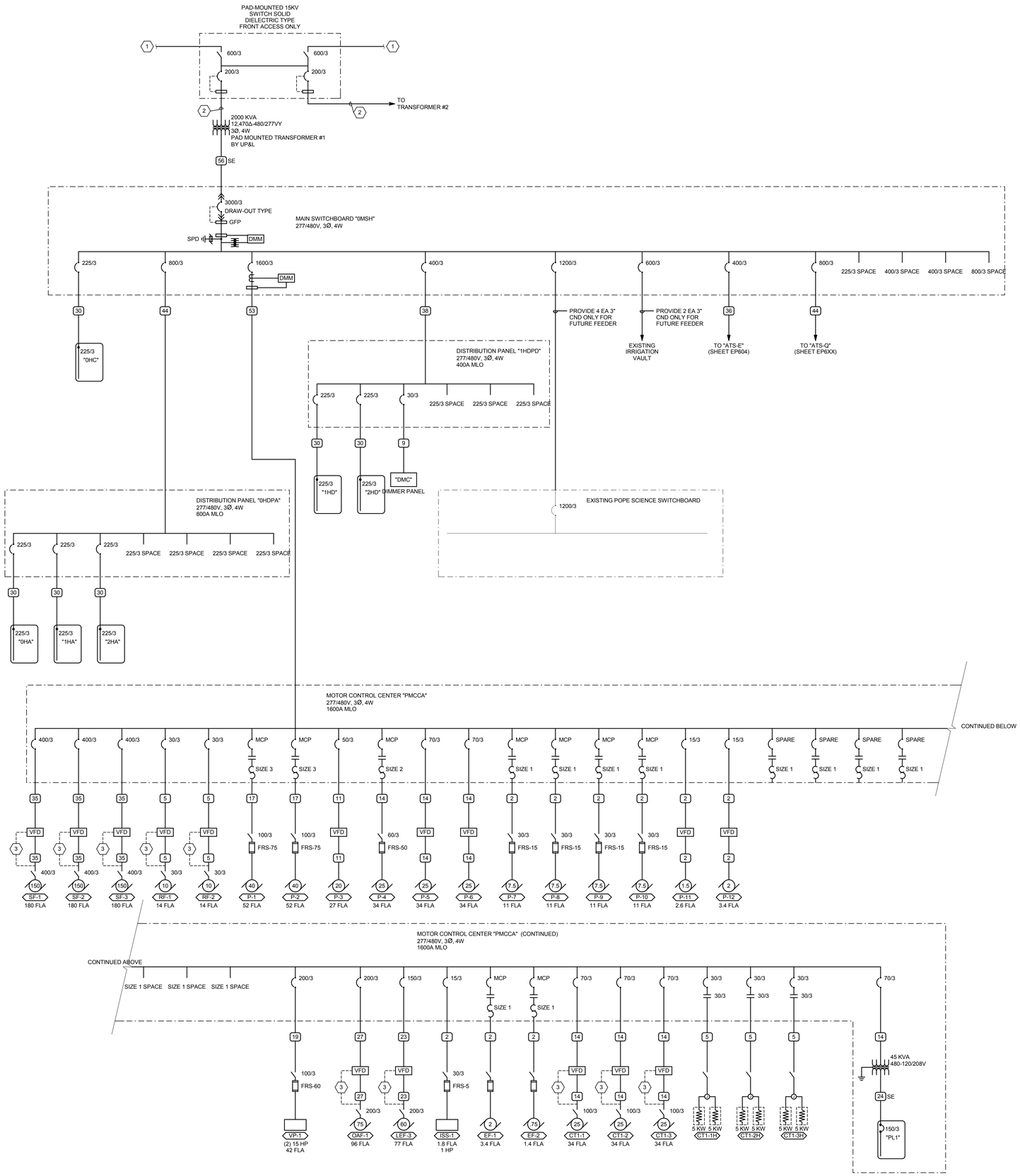

1 POWER ONE-LINE DIAGRAM - 277/480V NORMAL POWER

SCALE: N.T.S.

FAULT CURRENT TABLE

BUS	FAULT CURRENT
0EHC	51,824 SCA
0ELC	1,423 SCA
0HA	43,138 SCA
0HC	58,497 SCA
0HDPA	43,921 SCA
0LA1	40,334 SCA
0LA3	18,238 SCA
0LA4	17,406 SCA
0LA5	16,289 SCA
0LA6	16,289 SCA
0LB1	16,702 SCA
0LB3	14,344 SCA
0LB4	14,077 SCA
0LB5	14,344 SCA
0LB6	16,702 SCA
0LB7	24,634 SCA
0LB8	21,904 SCA
0LC1	46,670 SCA
0LC2	25,089 SCA
0LDPA	42,236 SCA
0MSH	61,784 SCA
0MSL	54,918 SCA
0QHDPC	56,260 SCA
0QLA1	11,181 SCA
0QLA3	7,818 SCA
0QLA4	5,990 SCA
0QLB1	5,634 SCA
0QLC1	12,891 SCA
0QLDPA	11,331 SCA
0QLDPC	13,924 SCA
1EHA	16,649 SCA
1EHD	7,281 SCA
1ELA	1,413 SCA
1ELD	1,353 SCA
1HA	38,480 SCA
1HD	22,001 SCA
1HDPD	22,261 SCA
1LA1	13,788 SCA
1LA3	9,719 SCA
1LA4	9,366 SCA
1LA5	9,366 SCA
1LA6	11,425 SCA
1LB1	31,834 SCA
1LB10	16,003 SCA
1LB3	16,702 SCA
1LB4	12,558 SCA
1LB5	10,762 SCA
1LB6	17,463 SCA
1LB7	15,054 SCA
1LB8	11,773 SCA
1LB9	16,003 SCA
1LD1	14,721 SCA
1LDPA	14,025 SCA
1QLA1	10,756 SCA
1QLA3	6,196 SCA
1QLB1	5,521 SCA
1QLD1	5,402 SCA
1QLDPA	10,895 SCA
2HA	33,984 SCA
2HD	20,442 SCA
2LA1	13,788 SCA
2LA3	9,037 SCA
2LA4	9,144 SCA
2LA6	10,948 SCA
2LB1	29,949 SCA
2LB3	13,712 SCA
2LB4	14,226 SCA
2LB5	10,934 SCA
2LB6	24,209 SCA
2LD1	13,380 SCA
2LD2	13,380 SCA
2LDPA	14,025 SCA
2LDPB	31,044 SCA
2QLA1	8,598 SCA
2QLA3	7,494 SCA
2QLB1	4,685 SCA
2QLDPA	8,688 SCA
4LA5	12,505 SCA
ATSE	54,422 SCA
ATSQ	56,725 SCA
GENERATOR	53,171 SCA
PQLA	1,878 SCA
PQMCCA	34,882 SCA

PROVIDE FULLY RATED CIRCUIT BREAKERS IN PANELBOARDS FOR THE FAULT CURRENT SHOWN. SERIES RATINGS WITH NEXT LEVEL UPSTREAM OVERCURRENT PROTECTIVE DEVICES ARE PERMITTED SUBJECT TO FACTORY UL DOCUMENTATION OF SERIES RATING SUBMITTED TO ENGINEER. IF DEVICE OR EQUIPMENT FAULT CURRENT RATING IS NOT SHOWN, ASSUME 100,000 AIC.

GENERAL SHEET NOTES

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.
4. ALL 120/208V PANELBOARDS SHALL BE PROVIDED WITH 200% NEUTRAL AMPACITY AND LUG CAPACITY.

⬡SHEET KEYNOTES

1. CONTINUE 15 KV LOOP. SEE SHEET EP601.
2. 3 #4/0 15KV EPR CU, 1 #4/0 THWN CU, 4" CND.
3. PROVIDE QUICK-BREAK/SLOW-MAKE AUXILIARY CONTACTS IN DISCONNECT SWITCH AND INTERLOCK WITH VFD TO DISENGAGE VFD WHEN DISCONNECT IS IN OFF POSITION.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
**
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

CONDUCTOR AND CONDUIT SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. SYMBOL SUBSCRIPTS:
   "IG": INCLUDE IG (INSULATED/ISOLATED GROUND CONDUCTOR) SCHEDULED ALONG WITH THE GROUND OR EQUIPMENT GROUND CONDUCTOR.
   "SE": SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN, WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEM.
   "2N": INCLUDE TWO NEUTRAL CONDUCTORS, SIZED AS SCHEDULED FOR PHASE AND NEUTRAL CONDUCTORS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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ISSUED DATE:	05.07.2010

POWER ONE-LINE DIAGRAM - 277/480V NORMAL POWER

CONSTRUCTION DOCUMENTS

EP-602

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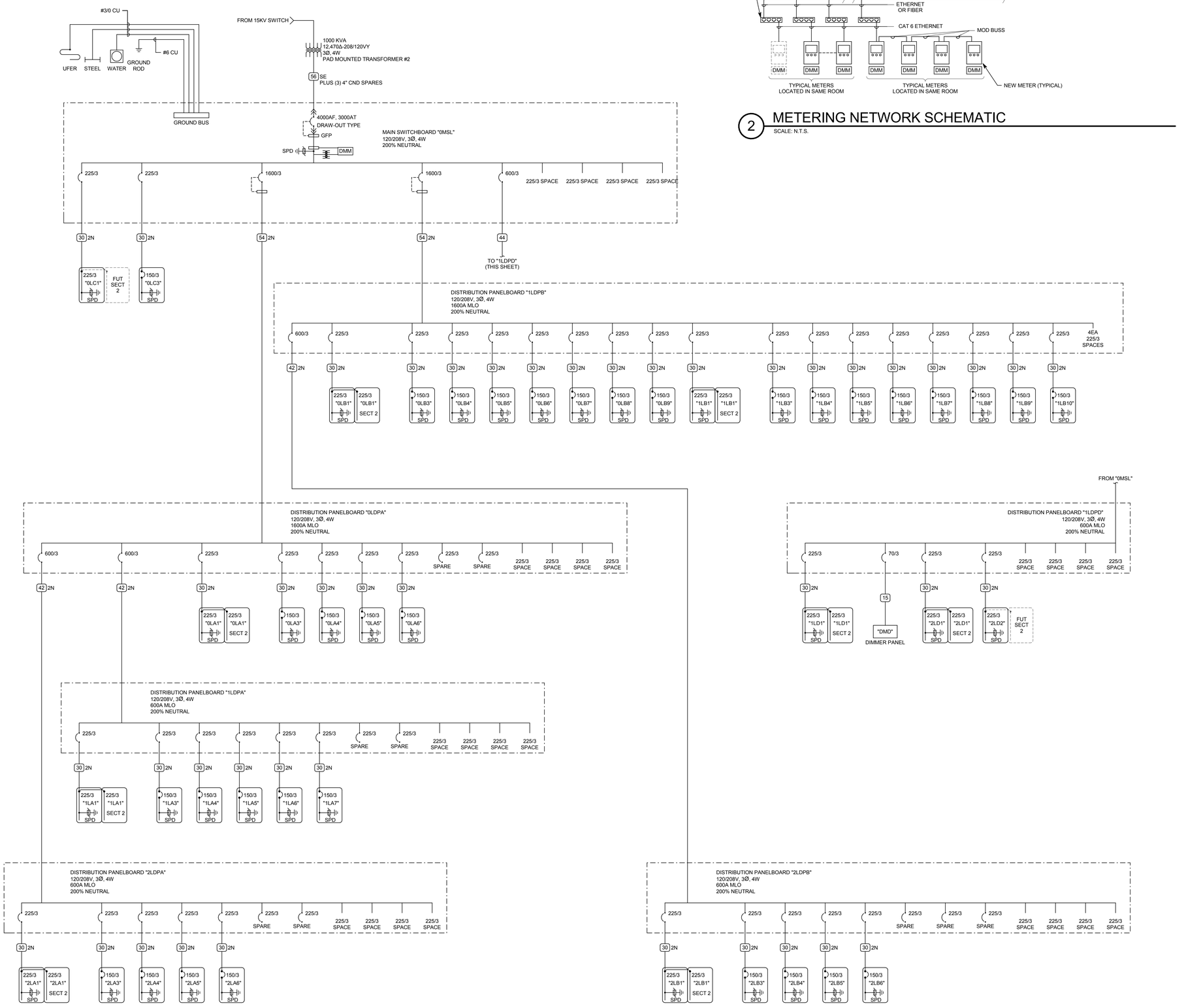
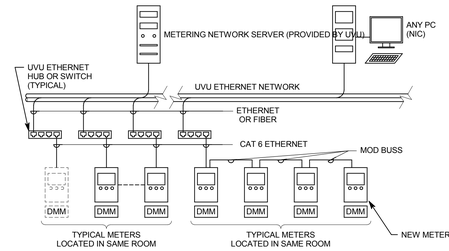


1 POWER ONE-LINE DIAGRAM - 120/208V NORMAL POWER

SCALE: N.T.S.



2 METERING NETWORK SCHEMATIC

SCALE: N.T.S.

NOTES:
1. REFER TO POWER ONE-LINE DIAGRAMS FOR METER LOCATIONS AND QUANTITIES.
2. ETHERNET CABLING SHALL BE PROVIDED PER DIVISION 27 SPECIFICATIONS.
3. MOD BUSS CABLING SHALL BE PROVIDED BY THIS CONTRACTOR.
4. REFER TO SECTION 260913 FOR METER REQUIREMENTS

GENERAL SHEET NOTES

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.
4. ALL 120/208V PANELBOARDS SHALL BE PROVIDED WITH 200% NEUTRAL AMPACITY AND LUG CAPACITY.

SHEET KEYNOTES

1. CONTINUE 15 KV LOOP. SEE SHEET EP601.
2. 3 #4/0 15KV EPR CU, 1 #4/0 THWN CU, 4" CND.

CONDUCTOR AND CONDUIT SCHEDULE

(E.G.) 5 IG

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1)			IG	SE	NOTES
			QTY	SIZE	G			
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

CONDUCTOR AND CONDUIT SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. SYMBOL SUBSCRIPTS:
   "IG": INCLUDE IG (INSULATED/ISOLATED GROUND CONDUCTOR) SCHEDULED ALONG WITH THE GROUND OR EQUIPMENT GROUND CONDUCTOR.

   "SE": SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN, WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEM.

   "2N": INCLUDE TWO NEUTRAL CONDUCTORS, SIZED AS SCHEDULED FOR PHASE AND NEUTRAL CONDUCTORS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.15.00
ISSUED DATE:	05.07.2010

POWER ONE-LINE DIAGRAM - 120/280V NORMAL POWER

CONSTRUCTION DOCUMENTS

EP-603

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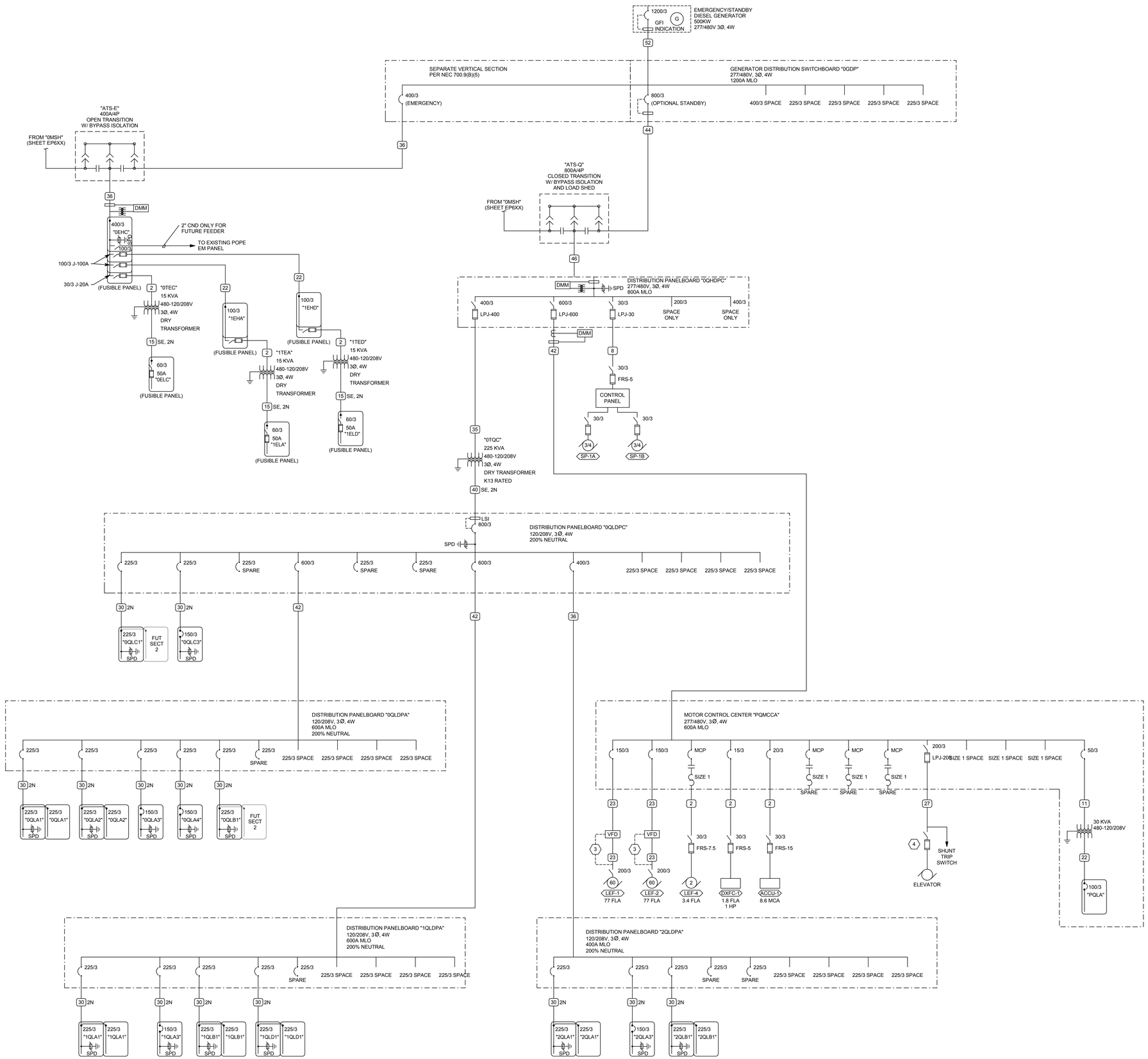

1 POWER ONE-LINE DIAGRAM - EMERGENCY/STANDBY POWER

SCALE: N.T.S.

GENERAL SHEET NOTES

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.
4. ALL 120/208V PANELBOARDS SHALL BE PROVIDED WITH 200% NEUTRAL AMPACITY AND LUG CAPACITY.

⬡SHEET KEYNOTES

1. CONTINUE 15 KV LOOP. SEE SHEET EP601.
2. 3 #4/0 15KV EPR CU, 1 #4/0 THWN CU, 4" CND.
3. PROVIDE QUICK-BREAK/SLOW-MAKE AUXILIARY CONTACTS IN DISCONNECT SWITCH AND INTERLOCK WITH VFD TO DISENGAGE VFD WHEN DISCONNECT IS IN OFF POSITION.
4. PROVIDE FUSIBLE SHUNT-TRIP SWITCH FOR ELEVATOR DISCONNECT, INTERLOCKED WITH FIRE ALARM SYSTEM. BUSMANN TYPE "PS" SWITCH WITH ALL REQUIRED ACCESSORIES FOR ELEVATOR AND FIRE ALARM CONNECTIONS. VERIFY FUSE SIZE WITH ELEVATOR MANUFACTURER.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

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800 West University Parkway
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GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

POWER ONE-LINE DIAGRAM - EMERGENCY/STANDBY POWER
CONSTRUCTION DOCUMENTS

EP-604

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EQUIPMENT SCHEDULE - POPE SCIENCE BUILDING

MARK	QTY	ITEM DESCRIPTION	LOAD DATA							WIRE AND CONDUIT SIZE	OVERCURRENT PROTECTION			DISCONNECT			STARTER DATA														NOTES	MARK
			HP	kW	MCA	FLA	VOLT	PH	Hz		FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	SIZE	SPEED	CTRL VOLT	SELECTOR SWITCH	PUSH BUTTON	PILOT LAMP	NORMALLY OPEN CONTACTS	NORMALLY CLOSED CONTACTS	PHASE FAILURE RELAY	SCHEMATIC REFERENCE	REMOTE CTRL		
ACCU-1		AIR COOLED CONDENSING UNIT			8.6		480	3	60	3 #12, #12 GR 0.75" C	E	20A/3P CB	MCC	E	30A/3P FRS-15	ADJ. TO EQUIP.	Q														NOTE 1,2	ACCU-1
CDP-1		COND. PUMP				1.5	120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CDP-1
CDP-2		COND. PUMP				1.5	120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CDP-2
CDP-3		COND. PUMP				1.5	120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CDP-3
CDP-4		COND. PUMP				1.5	120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CDP-4
CDP-5		COND. PUMP				1.5	120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CDP-5
CP-1		CIRC. PUMP					120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CP-1
CP-2		CIRC. PUMP					120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CP-2
CP-3		CIRC. PUMP					120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					CP-3
CT1-1		COOLING TOWER	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	70A/3P CB	MCC	E	100A/3P NF	ADJ. TO EQUIP.	Q	VFD													NOTE 5,6	CT1-1
CT1-2		COOLING TOWER	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	70A/3P CB	MCC	E	100A/3P NF	ADJ. TO EQUIP.	Q	VFD													NOTE 5,6	CT1-2
CT1-3		COOLING TOWER	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	70A/3P CB	MCC	E	100A/3P NF	ADJ. TO EQUIP.	Q	VFD													NOTE 5,6	CT1-3
CT1-1H		COOLING TOWER HEATER		(2)5	15		480	3	60	3 #10, #10 GR 0.75"C EACH	E	30A/3P CB	MCC	E	30A/3P NF	ADJ. TO EQUIP.	E	30/3 contactor														CT1-1H
CT1-2H		COOLING TOWER HEATER		(2)5	15		480	3	60	3 #10, #10 GR 0.75"C EACH	E	30A/3P CB	MCC	E	30A/3P NF	ADJ. TO EQUIP.	E	30/3 contactor														CT1-2H
CT1-3H		COOLING TOWER HEATER		(2)5	15		480	3	60	3 #10, #10 GR 0.75"C EACH	E	30A/3P CB	MCC	E	30A/3P NF	ADJ. TO EQUIP.	E	30/3 contactor														CT1-3H
CUH-1 & CUH-2		CABINET UNIT HEATER					120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	Q															CUH-1 & CUH-2
DXFC-1		DX FAN COIL U NIT	1			1.8	480	3	60	3 #12, #12 GR 0.75"C	E	15A/3P CB	MCC	E	30A/3P FRS-5	ADJ. TO EQUIP.	Q														NOTE 1,2	DXFC-1
EF-1		EXHAUST FAN	2			3.4	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				EF-1
EF-2		EXHAUST FAN	0.75			1.4	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				EF-2
EF-3		EXHAUST FAN	fract.				120	1	60	2 #12, #12 GR 0.75"C	E	20A/1P CB	MCC	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R,G	2	2					EF-3
ECM-1		EVAPORATIVE MEDIA	1/3			7.2	120	1	60	2 #10, #10 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					ECM-1
ECM-2		EVAPORATIVE MEDIA	1/3			7.2	120	1	60	2 #10, #10 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					ECM-2
ECM-3		EVAPORATIVE MEDIA	1/3			7.2	120	1	60	2 #10, #10 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					ECM-3
ECM-4		EVAPORATIVE MEDIA	1/3			7.2	120	1	60	2 #10, #10 GR 0.75"C	E	20A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R	2	2					ECM-4
EUH-1 & EUH-2		ELECTRIC UNIT HEATER	.03	2.6		11	277	1	60	2 #12, #12 GR 0.75"C	E	20A/3P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	Q															EUH-1 & EUH-2
ISS-1		SOLIDS SEPARATOR	1			1.8	480	3	60	3 #12, #12 GR 0.75"C	E	15A/3P CB	MCC	E	30A/3P FRS-5	ADJ. TO EQUIP.	Q															ISS-1
LEF-1		LAB EXHAUST FAN	60			77	480	3	60	3 #1/0, 1 #6 GR 2" C	E	150A/3P CB	MCC	E	200A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 2,5,6	LEF-1
LEF-2		LAB EXHAUST FAN	60			77	480	3	60	3 #1/0, 1 #6 GR 2" C	E	150A/3P CB	MCC	E	200A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 2,5,6	LEF-2
LEF-3		LAB EXHAUST FAN	60			77	480	3	60	3 #1/0, 1 #6 GR 2" C	E	150A/3P CB	MCC	E	200A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	LEF-3
LEF-4		EXHAUST FAN	2			3.4	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				NOTE 2	LEF-4
OAF-1		OUTSIDE AIR FAN	75			96	480	3	60	3 #3/0, 1 #6 GR 2" C	E	200A/3P CB	MCC	E	200A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	OAF-1
P-1		PUMP	40			52	480	3	60	3 #3, 1 #8 GR 1.25" C	E	MCP	MCC	E	100A/3P FRS-75	ADJ. TO EQUIP.	E	FVNR	MCC	3			HOA		R,G	2	2	YES					P-1
P-2		PUMP	40			52	480	3	60	3 #3, 1 #8 GR 1.25" C	E	MCP	MCC	E	100A/3P FRS-75	ADJ. TO EQUIP.	E	FVNR	MCC	3			HOA		R,G	2	2	YES					P-2
P-3		PUMP	20			27	480	3	60	3 #6, 1 #10 GR 1" C	E	50A/3P CB	MCC	E	VFD	ADJ. TO EQUIP.	E	VFD														NOTE 6	P-3
P-4		PUMP	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	MCP	MCC	E	60A/3P FRS-50	ADJ. TO EQUIP.	E	FVNR	MCC	2			HOA		R,G	2	2	YES					P-4
P-5		PUMP	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	70A/3P CB	MCC	Q	VFD	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 6	P-5
P-6		PUMP	25			34	480	3	60	3 #4, 1 #8 GR 1.25" C	E	70A/3P CB	MCC	Q	VFD	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 6	P-6
P-7		PUMP	7.5			11	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-15	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES					P-7
P-8		PUMP	7.5			11	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-15	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES					P-8
P-9		PUMP	7.5			11	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-15	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES					P-9
P-10		PUMP	7.5			11	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-15	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES					P-10
P-11		PUMP	1.5			2.6	480	3	60	3 #12, #12 GR 0.75"C	E	15A/3P CB	MCC	Q	VFD	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 6	P-11
P-12		PUMP	2			3.4	480	3	60	3 #12, #12 GR 0.75"C	E	15A/3P CB	MCC	Q	VFD	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 6	P-12
RF-1		RELIEF FAN	10			14	480	3	60	3 #10, #10 GR 0.75"C EACH	E	30A/3P CB	MCC	E	30A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	RF-1
RF-2		RELIEF FAN	10			14	480	3	60	3 #10, #10 GR 0.75"C EACH	E	30A/3P CB	MCC	E	30A/3P NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	RF-2
RO-1		REVERSE OSMOSIS SYSTEM	1			10.4	208	1	60	2#12, #12 GR 0.75"C EACH	E	20A/2P CB	PANEL	E	30A/2P NF	ADJ. TO EQUIP.	Q															RO-1
SF-1		SUPPLY FAN	150			180	480	3	60	3 #500 kCMIL, 1 #3 GR 3.5" CND	E	400A/3P CB	MCC	E	400/3 NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	SF-1
SF-2		SUPPLY FAN	150			180	480	3	60	3 #500 kCMIL, 1 #3 GR 3.5" CND	E	400A/3P CB	MCC	E	400/3 NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	SF-2
SF-3		SUPPLY FAN	150			180	480	3	60	3 #500 kCMIL, 1 #3 GR 3.5" CND	E	400A/3P CB	MCC	E	400/3 NF	ADJ. TO EQUIP.	Q	VFD	ADJ. TO EQUIP.													NOTE 5,6	SF-3
SP-1A SP-1B		SUBMERSIBLE PUMP DUPLEX PACKAGE	0.75			1.4	480	3	60	3 #12, #12 GR 0.75"C	E	15A/3P CB	PANEL	E	30A/3P FRS-5	ADJ. TO EQUIP.	Q														NOTE 2	SP-1A SP-1B
TF-1		TRANSFER FAN	0.75			13.8	120	1	60	2#10, #10 GR 0.75"C EACH	E	30A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	E	FVNR	ADJ. TO EQUIP.	0			HOA		R,G	2	2					TF-1
UH-1 thru UH-13		UNIT HEATER	frac.				120	1	60	2 #12, #12 GR 0.75"C	E	15A/1P CB	PANEL	E	THERMAL SWITCH	ADJ. TO EQUIP.	Q															UH-1 thru UH-13
VP-1		VACUUM SYSTEM	(2) 15			42	480	3	60	3 #2, 1 #6 GR 1.5" CND	E	100A/3P CB	MCC	E	100A/3P FRS-60	ADJ. TO EQUIP.	Q														NOTE 7	VP-1

NOTES LEGEND:

1. PROVIDE INTERCONNECT WIRING BETWEEN INDOOR AND OUTDOOR UNITS
2. PROVIDE EMERGENCY/STANDBY POWER TO UNIT.
3. PROVIDE 0.75" CONDUIT WITH INTERCONNECT WIRING BETWEEN INDOOR AND OUTDOOR UNIT.
4. INSTALL CONTROLS AND PROVIDE CONTROL CONDUIT AND WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS
5. PROVIDE QUICK-BREAK/SLOW-MAKE AUXILIARY CONTACTS IN DISCONNECT SWITCH AND INTERLOCK WITH VFD TO DISENGAGE VFD WHEN DISCONNECT IS IN OFF POSITION.
6. VFD'S ARE FURNISHED BY THE MECHANICAL INSTALLER PER THE REQUIREMENTS OF SPECIFICATION SECTION 262923.
7. CONDUIT, WIRE AND SWITCH IS OVERSIZED FOR FUTURE EXPANSION OF PUMP SYSTEM. PROVIDE FUSE SIZE BASED ON INITIAL PACKAGE NAMEPLATE TO ENSURE PROTECTION OF EQUIPMENT.

EQUIPMENT SCHEDULE KEY

E	DIVISION 16
Q	FURNISHED WITH THE EQUIPMENT
*	COORDINATE WITH THE DIVISION 15 TEMPERATURE CONTROL INSTALLER
**	AUTOMATIC CONTROL WIRING BY DIVISION 15

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
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REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

EQUIPMENT SCHEDULE

CONSTRUCTION DOCUMENTS

EP-605

5/5/2010 5:57:09 PM C:\Users\dlm\Documents\SD473 Elec UVU Pope_DLM.rvt

PANEL "0LA1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.8	PWR: SEMINAR 040 PROJ.	0.8	1.2			0.4	CO: VESTIBULE		0.4		20	1	2
3	20	1		0.8		CO: OFFICE 068A	0.8		2.0		1.2	CO: HALLWAYS		1.2		20	1	4
5	20	1		0.9		CO: LECTURE 073	0.9			2.3	1.4	CO: HALLWAYS		1.4		20	1	6
7	20	1		0.8		CO: LECTURE 073	0.8	1.2			0.4	CO: VESTIBULE		0.4		20	1	8
9	20	1		0.8		CO: LECTURE 073	0.8		1.4		0.6	CO: BATHROOMS		0.6		20	1	10
11	20	1		0.4		CO: COMP. CLASS 074	0.4			0.9	0.5	PWR: DF			0.5	20	1	12
13	20	1		0.4		CO: COMP. CLASS 074	0.4	1.2			0.8	CO: HALLWAYS		0.8		20	1	14
15	20	1		0.4		CO: COMP. CLASS 074	0.4		2.0		1.6	CO: STORAGE 031A		1.6		20	1	16
17	20	1		0.5		CO: COMP. CLASS 074	0.5			2.1	1.6	CO: ATRIUM STAIR 030		1.6		20	1	18
19	20	1		0.4		CO: COMP. CLASS 074	0.4	1.0			0.6	CO: STAIR		0.6		20	1	20
21	20	1		0.4		CO: COMP. CLASS 074	0.4		0.9		0.5	PWR: DF			0.5	20	1	22
23	20	1		0.4		CO: COMP. CLASS 074	0.4			0.4	0.0	SPARE				20	1	24
25	20	1		0.4		CO: COMP. CLASS 074	0.4	1.2			0.8	CO: SEMINAR 040		0.8		20	1	26
27	20	1		0.4		CO: COMP. CLASS 074	0.4		1.3		0.9	CO: SEMINAR 040		0.9		20	1	28
29	20	1			0.8	PWR: COMP. CLASS 074 PROJ.	0.8			1.2	0.4	CO: LECTURE 073 A/V		0.4		20	1	30
31	20	1		0.4		CO: SEMINAR 040	0.4	0.8			0.4	CO: LECTURE 073 A/V		0.4		20	1	32
33	20	1		0.4		CO: SEMINAR 040	0.4		1.2		0.8	PWR: LECTURE 073 PROJ.			0.8	20	1	34
35	20	1		0.4		CO: SEMINAR 040	0.4			1.2	0.8	PWR: SEMINAR 040 PROJ.			0.8	20	1	36
37	20	1		0.5		CO: SEMINAR 040	0.5	0.9			0.4	CO: SEMINAR 040		0.4		20	1	38
39	20	1		0.4		CO: SEMINAR 040	0.4		0.8		0.4	CO: SEMINAR 040		0.4		20	1	40
41	20	1		0.4		CO: SEMINAR 040	0.4			0.8	0.4	CO: SEMINAR 040		0.4		20	1	42
43	20	1		0.7		CO: LECTURE 031	0.7	1.5			1.0	LTG: LABS UC	0.8			20	1	44
45	20	1		0.8		CO: LECTURE 031	0.8		1.5		0.9	LTG: LABS UC	0.7			20	1	46
47	20	1		0.8		CO: LECTURE 031	0.8			1.0	0.3	LTG: LECTURE 073 DMA	0.2			20	1	48
49	20	1			0.8	PWR: LECTURE 031 PROJ.	0.8	1.0			0.3	LTG: LECTURE 031 DMB	0.2			20	1	50
51	20	1			0.8	PWR: CLASSROOM 038 PROJ.	0.8		1.2		0.4	CO: LECTURE 031 A/V		0.4		20	1	52
53	20	1		0.8		CO: CLASSROOM 038	0.8			1.2	0.4	CO: LECTURE 031 A/V		0.4		20	1	54
55	20	1		0.8		CO: CLASSROOM 038	0.8	1.8			1.3	TUNNEL LIGHTS	1.0			20	1	56
57	20	1		0.9		CO: CLASSROOM 038	0.9		1.5		0.6	TUNNEL OUTLETS		0.6		20	1	58
59	20	1		0.8		CO: CLASSROOM 038	0.8			1.4	0.6	TUNNEL OUTLETS		0.6		20	1	60
61	20	1		0.8		CO: CLASSROOM 038	0.8	1.6			0.8	CO: FIRE ROOM 067		0.8		20	1	62
63	20	1			1.0	PWR: VENDING	1.0		1.6		0.6	CO: CLASSROOM 038 A/V		0.6		20	1	64
65	20	1			1.0	PWR: VENDING	1.0			1.4	0.4	CO: CLASSROOM 038 A/V		0.4		20	1	66
67	20	1		0.6		CO: CLASSROOM 074 A/V	0.6	1.2			0.6	CO: CLASSROOM 032 A/V		0.6		20	1	68
69	20	1		0.4		CO: CLASSROOM 074 A/V	0.4		0.8		0.4	CO: CLASSROOM 032 A/V		0.4		20	1	70
71	20	1		0.4		CO: SEMINAR 040 A/V	0.4			0.4	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 15 16 14 — CONNECTED TOTAL kVA 45
CONNECTED AMPS PER PHASE 122 135 119 — CONNECTED AVERAGE AMPS PER PHASE 125

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 3kVA @125% = 4 kVA — ALL OTHER LOADS @100% = 8 kVA — DIVERSIFIED TOTAL kVA = 34
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 93
REMAINDER 24kVA @ 50% = 12 kVA

PANEL "0QLA1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	2
3	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	4
5	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	6
7	20	1		0.4		CO: DATA 069B	0.4	0.9			0.5	PWR: DATA 069B RACK			0.5	20	1	8
9	20	1		0.4		CO: DATA 069B	0.4		0.9		0.5	PWR: DATA 069B RACK			0.5	20	1	10
11	20	1		0.4		CO: DATA 069B	0.4			0.9	0.5	PWR: DATA 069B RACK			0.5	20	1	12
13	20	1		0.4		CO: DATA 069B	0.4	0.9			0.5	PWR: DATA 069B RACK			0.5	20	1	14
15	20	1		0.4		CO: DATA 069B	0.4		0.9		0.5	PWR: DATA 069B RACK			0.5	20	1	16
17	20	1		0.4		CO: DATA 069B	0.4			0.9	0.5	PWR: DATA 069B RACK			0.5	20	1	18
19	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	20
21	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	22
23	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	24
25	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	26
27	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	28
29	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	30
31	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	32
33	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	34
35	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	36
37	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	38
39	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	40
41	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	42
43	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 069B RACK			0.5	20	1	44
45	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 069B RACK			0.5	20	1	46
47	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 069B RACK			0.5	20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1			0.5	PWR: BMS TXFR	0.5		0.5		0.0	SPARE				20	1	70
71	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	72
73	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE				20	1	74
75	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE				20	1	76
77	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	78
79	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE				20	1	80
81	20	1			0.5	PWR: BMS TXFR	0.5		0.5		0.0	SPARE				20	1	82
83	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 7 7 8 — CONNECTED TOTAL kVA 21
CONNECTED AMPS PER PHASE 57 57 65 — CONNECTED AVERAGE AMPS PER PHASE 59

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 19 kVA — DIVERSIFIED TOTAL kVA = 21
RECEPTACLES 2kVA @100% = 2 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 59
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0QLA2"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, SUBFEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1		1.0		CO: DATA 042	1.0	1.5			0.5	PWR: DATA 042 RACK			0.5	20	1	2
3	20	1		0.8		CO: DATA 042	0.8		1.3		0.5	PWR: DATA 042 RACK			0.5	20	1	4
5	20	1		0.8		CO: DATA 042	0.8			1.3	0.5	PWR: DATA 042 RACK			0.5	20	1	6
7	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 042 RACK			0.5	20	1	8
9	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 042 RACK			0.5	20	1	10
11	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 042 RACK			0.5	20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1			1.0	PWR: DATA 042 SECURITY	1.0	1.0			0.0	SPARE				20	1	26
27	20	1			1.0	PWR: DATA 042 SECURITY	1.0		1.0		0.0	SPARE				20	1	28
29	20	1			1.0	PWR: SECURITY DOOR	1.0			1.0	0.0	SPARE				20	1	30
31	20	1			1.0	PWR: SECURITY DOOR	1.0	1.0			0.0	SPARE				20	1	32
33	20	1	0.1			LTG: ELEV. PIT	0.1		0.1		0.0	SPARE				20	1	34
35	20	1			1.0	PWR: ELEV. PIT SUMP	1.0			1.0	0.0	SPARE				20	1	36
37	20	1		0.2		CO: ELEV. PIT	0.2	0.2			0.0	SPARE				20	1	38
39	20	1			1.0	PWR: HC DOORS	1.0		1.0		0.0	SPARE				20	1	40
41	20	1			1.0	PWR: HC DOORS	1.0			1.0	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 4 4 5 — CONNECTED TOTAL kVA 13
CONNECTED AMPS PER PHASE 35 32 40 — CONNECTED AVERAGE AMPS PER PHASE 36

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 10 kVA — DIVERSIFIED TOTAL kVA = 13
RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 36
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1		0.6	0.1	CO: CLASSROOM 060	0.7	1.2			0.5	PWR: DF			0.5	20	1	2
3	20	1		0.8		CO: CLASSROOM 060	0.8		2.0		1.2	CO: HALL 030A		1.2		20	1	4
5	20	1		0.6		CO: CLASSROOM 060	0.6			1.0	0.4	CO: STAIR 030D		0.4		20	1	6
7	20	1			0.8	PWR: CLASSROOM 060 PROJ.	0.8	1.3			0.5	PWR: GROUP STUDY MON			0.5	20	1	8
9	20	1		0.4		CO: GROUP STUDY 058 FB	0.4		0.6		0.2	CO: GROUP STUDY 056 A/V		0.2		20	1	10
11	20	1		0.4		CO: GROUP STUDY 058 FB	0.4			0.4	0.0	SPARE				20	1	12
13	20	1		0.8		CO: GROUP STUDY 058	0.8	0.8			0.0	SPARE				20	1	14
15	20	1		0.8		CO: OFFICE 052B	0.8		0.8		0.0	SPARE				20	1	16
17	20	1		0.8		CO: OFFICE 057B	0.8			0.8	0.0	SPARE				20	1	18
19	20	1		0.8		CO: LN2 STORAGE 065	0.8	0.8			0.0	SPARE				20	1	20
21	20	1		0.8		CO: OFFICE 063	0.8		0.8		0.0	SPARE				20	1	22
23	20	1		0.4		CO: GROUP STUDY 056 FB	0.4			0.4	0.0	SPARE				20	1	24
25	20	1		1.2		CO: HALLWAY	1.2	1.2			0.0	SPARE				20	1	26
27	20	1		0.8		CO: LAB MAN. 054	0.8		0.8		0.0	SPARE				20	1	28
29	20	1		0.8		CO: OFFICE 050	0.8			0.8	0.0	SPARE				20	1	30
31	20	1		0.8		CO: GROUP STUDY 058	0.8	0.8			0.0	SPARE				20	1	32
33	20	1		0.8		CO: GROUP STUDY 058	0.8		0.8		0.0	SPARE				20	1	34
35	20	1		0.6		CO: CLASSROOM 060 A.V	0.6			0.6	0.0	SPARE				20	1	36
37	20	1		0.4		CO: CLASSROOM 060 A.V	0.4	0.4			0.0	SPARE				20	1	38
39	20	1			0.5	PWR: GROUP STUDY MON	0.5		0.5		0.0	SPARE				20	1	40
41	20	1		0.2		CO: GROUP STUDY 058 A/V	0.2			0.2	0.0	SPARE				20	1	42
43	20	1	1.0			LTG: LABS UC	1.3	1.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 8 6 4 — CONNECTED TOTAL kVA 18
CONNECTED AMPS PER PHASE 63 53 35 — CONNECTED AVERAGE AMPS PER PHASE 50

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 1kVA @125% = 1 kVA — ALL OTHER LOADS @100% = 2 kVA — DIVERSIFIED TOTAL kVA = 16
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 44
REMAINDER 5kVA @ 50% = 2 kVA

PANEL "0QLB1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, SUBFEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	PWR: SECURITY DOOR	1.0	1.0			0.0	SPARE				20	1	2
3	20	1			0.4	PWR: SECURITY DOOR	0.4		0.4		0.0	SPARE				20	1	4
5	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 1 0 0 — CONNECTED TOTAL kVA 1
CONNECTED AMPS PER PHASE 8 3 0 — CONNECTED AVERAGE AMPS PER PHASE 4

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 1 kVA — DIVERSIFIED TOTAL kVA = 1
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 4
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0ELC"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 50 AMPERE FUSIBLE SWITCH | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1		0.4		CO: ELEC. 043	0.4	1.4			1.0	FA: FCP			1.0	20	1	2
3	20	1		0.2		CO: ELEC. 061	0.2		0.2		0.0	SPARE				20	1	4
5	20	1		0.4		CO: ELEC. 035	0.4			0.4	0.0	SPARE				20	1	6
7	20	1		0.4		CO: ELEC. 035	0.4	0.4			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 2 0 0 — CONNECTED TOTAL kVA 2
CONNECTED AMPS PER PHASE 15 2 3 — CONNECTED AVERAGE AMPS PER PHASE 7

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 1 kVA — DIVERSIFIED TOTAL kVA = 2
RECEPTACLES 1kVA @100% = 1 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 7
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LC1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1		0.8		CO: CORRIDOR	0.8	1.2			0.4	CO: WP OUTLETS		0.4		20	1	2
3	20	1		0.8		CO: DOCK 33	0.8		1.2		0.4	PWR: DOOR CLOSERS			0.4	20	1	4
5	20	1		0.8		CO: DOCK 33	0.8			0.8	0.0	SPARE				20	1	6
7	20	1		0.6		CO: MAINT/STOR 033E	0.6	0.6			0.0	SPARE				20	1	8
9	20	1		0.8		CO: MAINT/STOR 033E	0.8		0.8		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 2 2 1 — CONNECTED TOTAL kVA 5
CONNECTED AMPS PER PHASE 15 17 7 — CONNECTED AVERAGE AMPS PER PHASE 13

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 0 kVA — DIVERSIFIED TOTAL kVA = 5
RECEPTACLES 4kVA @100% = 4 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 13
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0QLC1"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 225 AMPERE MAIN LUGS | LOCATION: | CABINET: | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.5	PWR: DOCK 033 SEC. DOOR	0.5	0.5			0.0	SPARE				20	1	2
3	20	1			0.6	PWR: SECURITY DOOR	0.6		0.6		0.0	SPARE				20	1	4
5	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 1 1 1 — CONNECTED TOTAL kVA 2
CONNECTED AMPS PER PHASE 4 5 8 — CONNECTED AVERAGE AMPS PER PHASE 6

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 2 kVA — DIVERSIFIED TOTAL kVA = 2
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 6
REMAINDER 0kVA @ 50% = 0 kVA

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
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REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

EP-606

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PANEL "1LA1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.4		CO: SEMINAR 172 A/V	0.4	0.9			0.5	PWR: DF			0.5	20	1	2
3	20	1		1.0		CO: SEMINAR 172	1.0		1.5		0.5	PWR: DF			0.5	20	1	4
5	20	1		0.4		CO: SEMINAR 172 A/V	0.4			1.6	1.2	CO: HALL 130W		1.2		20	1	6
7	20	1		1.0		CO: SEMINAR 172	1.0	2.2			1.2	CO: HALL		1.2		20	1	8
9	20	1		0.4		CO: SEMINAR 150 A/V	0.4		0.9		0.5	PWR: DF			0.5	20	1	10
11	20	1		0.6		CO: SEMINAR 150	0.6			1.2	0.6	CO: RESTROOMS		0.6		20	1	12
13	20	1		0.6		CO: SEMINAR 150	0.6	1.8			1.2	CO: HALL		1.2		20	1	14
15	20	1		0.4		CO: SEMINAR 149 A/V	0.4		1.0		0.6	CO: ATRIUM 130A		0.6		20	1	16
17	20	1		0.6		CO: SEMINAR 149	0.6			0.7	0.1	LTG: UC LIGHTS	0.1			20	1	18
19	20	1		0.6		CO: SEMINAR 149	0.6	1.1			0.5	CONDENSATE PUMPS			0.5	20	1	20
21	20	1		0.8		CO: OFFICE 174A	0.8		1.3		0.5	CONDENSATE PUMPS			0.5	20	1	22
23	20	1		0.8		CO: SHELLED SPACE 142	0.8			1.0	0.2	CONDENSATE PUMPS			0.2	20	1	24
25	20	1		0.8		CO: LECTURE 139	0.8	1.0			0.2	CIRC PUMP CP-1			0.2	20	1	26
27	20	1		0.8		CO: LECTURE 139	0.8		1.0		0.2	CIRC PUMP CP-2			0.2	20	1	28
29	20	1		0.7		CO: LECTURE 139	0.7			1.5	0.8	PWR: SEMINAR 150 PROJ.			0.8	20	1	30
31	20	1			0.8	PWR: LECTURE 139 PROJ.	0.8	1.6			0.8	PWR: SEMINAR 149 PROJ.			0.8	20	1	32
33	20	1		0.4		CO: LECTURE 139 A/V	0.4		0.9		0.5	PWR: SEMINAR 172 MON.			0.5	20	1	34
35	20	1		0.4		CO: LECTURE 139 A/V	0.4			0.9	0.5	PWR: SEMINAR 172 MON.			0.5	20	1	36
37	20	1		1.0		CO: CLASSROOM 138	1.0	1.5			0.5	PWR: A/V MONITOR			0.5	20	1	38
39	20	1		0.9		CO: CLASSROOM 138	0.9		1.9		1.0	PWR: A/V MONITORS			1.0	20	1	40
41	20	1			0.8	PWR: CLASSROOM 138 PROJ.	0.8			1.8	1.0	PWR: A/V MONITORS			1.0	20	1	42
43	20	1		0.6		CO: CLASSROOM 130 A/V	0.6	0.6			0.0	SPARE				20	1	44
45	20	1		0.4		CO: CLASSROOM 130 A/V	0.4		0.4		0.0	SPARE				20	1	46
47	20	1			0.2	PWR: DOOR CLOSERS	0.2			0.2	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84
TOTALS:						CONNECTED kVA PER PHASE		11	9	9			CONNECTED TOTAL kVA				28	
						CONNECTED AMPS PER PHASE		89	74	74			CONNECTED AVERAGE AMPS PER PHASE				79	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 10 kVA — DIVERSIFIED TOTAL kVA = 24

RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 67

REMAINDER 8kVA @ 50% = 4 kVA

PANEL "1QLA1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: DATA 144	0.8	1.3			0.5	PWR: DATA 144 RACK			0.5	20	1	2
3	20	1		0.8		CO: DATA 144	0.8		1.3		0.5	PWR: DATA 144 RACK			0.5	20	1	4
5	20	1		1.0		CO: DATA 144	1.0			1.5	0.5	PWR: DATA 144 RACK			0.5	20	1	6
7	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 144 RACK			0.5	20	1	8
9	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 144 RACK			0.5	20	1	10
11	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 144 RACK			0.5	20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1			1.0	PWR: DATA 144 SECURITY	1.0			1.0	0.0	SPARE				20	1	36
37	20	1			1.0	PWR: DATA 144 SECURITY	1.0	1.0			0.0	SPARE				20	1	38
39	20	1			1.0	PWR: SECURITY DOORS	1.0		1.0		0.0	SPARE				20	1	40
41	20	1			0.8	PWR: SECURITY DOORS	0.8			0.8	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE				20	1	76
77	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	78
79	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE				20	1	80
81	20	1			1.0	PWR: BMS TXFR	1.0		1.5		0.5	PWR: OH SEC. DOOR			0.5	20	1	82
83	20	1			1.0	PWR: BMS TXFR	1.0			1.5	0.5	PWR: OH SEC. DOOR			0.5	20	1	84
TOTALS:						CONNECTED kVA PER PHASE		4	5	6			CONNECTED TOTAL kVA				15	
						CONNECTED AMPS PER PHASE		32	44	53			CONNECTED AVERAGE AMPS PER PHASE				43	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 13 kVA — DIVERSIFIED TOTAL kVA = 15

RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 43

REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1ELA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	50 AMPERE FUSIBLE SWITCH			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.4		CO: ELEC. ROOMS (1ST)	0.4	0.8			0.5	TUNNEL LIGHTS	0.4			20	1	2
3	20	1		0.4		CO: ELEC. ROOMS (2ND)	0.4		1.4		1.0	WONDOOR - 2ND FL			1.0	20	1	4
5	20	1			0.2	FA ALARM BELL	0.2			1.2	1.0	WONDOOR - 1ST FL			1.0	20	1	6
7	20	1			0.4	FA DOOR CLOSERS 2ND FL	0.4	1.4			1.0	WONDOOR - 1ST FL			1.0	20	1	8
9	20	1			1.0	OH DOOR	1.0		1.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1			0.5	FA: FPS L2	0.5	0.5			0.0	SPARE				20	1	32
33	20	1			0.5	FA: FPS L1	0.5		0.5		0.0	SPARE				20	1	34
35	20	1			0.5	FA: FPS L0	0.5			0.5	0.0	SPARE				20	1	36
37	20	1			0.9	FA: SMOKE DAMPERS L2	0.9	0.9			0.0	SPARE				20	1	38
39	20	1			0.9	FA: SMOKE DAMPERS L1	0.9		0.9		0.0	SPARE				20	1	40
41	20	1			0.9	FA: SMOKE DAMPERS L0	0.9			0.9	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		4	4	3			CONNECTED TOTAL kVA				10	
						CONNECTED AMPS PER PHASE		30	32	22			CONNECTED AVERAGE AMPS PER PHASE				28	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% = 1 kVA — ALL OTHER LOADS @100% = 9 kVA — DIVERSIFIED TOTAL kVA = 10

RECEPTACLES 1kVA @100% = 1 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 28

REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1LB1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: GROUP STUDY 165	0.8	1.6			0.8	PWR: DF			0.8	20	1	2
3	20	1		0.8		CO: GROUP STUDY 165	0.8		1.2		0.5	LTG: UC LIGHTS	0.4			20	1	4
5	20	1		0.8		CO: GROUP STUDY 165	0.8			1.8	1.3	LTG: UC LIGHTS	1.0			20	1	6
7	20	1		0.8		CO: GROUP STUDY 165 FB	0.8	1.3			0.5	PWR: GROUP STUDY 165 MON			0.5	20	1	8
9	20	1		0.8		CO: GROUP STUDY 165 FB	0.8		1.0		0.2	CO: GROUP STUDY 165 A/V		0.2		20	1	10
11	20	1		0.8		CO: OFFICE 168	0.8			1.3	0.5	PWR: GROUP STUDY 164 MON			0.5	20	1	12
13	20	1		1.4		CO: HALL 130W	1.4	1.6			0.2	CO: GROUP STUDY 164 A/V		0.2		20	1	14
15	20	1		0.8		CO: GROUP STUDY 164 FB	0.8		0.8		0.0	SPARE				20	1	16
17	20	1		0.8		CO: GROUP STUDY 164 FB	0.8			0.8	0.0	SPARE				20	1	18
19	20	1		0.8		CO: GROUP STUDY 164	0.8	0.8			0.0	SPARE				20	1	20
21	20	1		0.8		CO: SHELLED SPACE 155	0.8		0.8		0.0	SPARE				20	1	22
23	20	1		0.8		CO: OFFICE 159	0.8			0.8	0.0	SPARE				20	1	24
25	20	1		0.8		CO: OFFICE 158	0.8	0.8			0.0	SPARE				20	1	26
27	20	1		1.2		CO: HALL 130W	1.2		1.2		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84
TOTALS:						CONNECTED kVA PER PHASE		6	5	5			CONNECTED TOTAL kVA				16	
						CONNECTED AMPS PER PHASE		51	42	39			CONNECTED AVERAGE AMPS PER PHASE				44	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 1kVA @125% = 2 kVA — ALL OTHER LOADS @100% = 2 kVA — DIVERSIFIED TOTAL kVA = 15

RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 41

REMAINDER 3kVA @ 50% = 1 kVA

PANEL "1QLB1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: DATA 163	0.8	1.8			1.0	PWR: DATA 163 RACKS			1.0	20	1	2
3	20	1		0.8		CO: DATA 163	0.8		1.8		1.0	PWR: DATA 163 RACKS			1.0	20	1	4
5	20	1		1.0		CO: DATA 163	1.0			2.0	1.0	PWR: DATA 163 RACKS			1.0	20	1	6
7	20	1				SPARE	0.0	1.0			1.0	PWR: DATA 163 RACKS			1.0	20	1	8
9	20	1				SPARE	0.0		1.0		1.0	PWR: DATA 163 RACKS			1.0	20	1	10
11	20	1				SPARE	0.0			1.0	1.0	PWR: DATA 163 RACKS			1.0	20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1			1.0	PWR: DATA 163 SECURITY	1.0		1.0		0.0	SPARE				20	1	34
35	20	1			1.0	PWR: DATA 163 SECURITY	1.0			1.0	0.0	SPARE				20	1	36
37	20	1			0.6	PWR: SECURITY DOOR	0.6	0.6			0.0	SPARE				20	1	38
39	20	1			0.6	PWR: SECURITY DOOR	0.6		0.6		0.0	SPARE				20	1	40
41	20	1			1.0	PWR: SECURITY DOOR	1.0			1.0	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE				20	1	80
81	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE				20	1	82
83	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	84
TOTALS:						CONNECTED kVA PER PHASE		4	5	6			CONNECTED TOTAL kVA				16	
						CONNECTED AMPS PER PHASE		37	45	50			CONNECTED AVERAGE AMPS PER PHASE				44	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 13 kVA — DIVERSIFIED TOTAL kVA = 16

RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 44

REMAINDER 0kVA @ 50% = 0 kVA

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

No. 181563
DAVID E. WESEMANN
LICENSED PROFESSIONAL ENGINEER
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

EP-607

5/5/2010 5:57:14 PM C:\Users\dlm\Documents\90473 Elec UVU Pope_DLM.rvt

PANEL "1LD1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)		OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA	LTG	CO	PWR	AMP	POLE	NO
1	20	1		1.2		CO: AUDITORIUM	1.2	1.7		0.5	PWR: DF		0.5	20	1	2
3	20	1		0.6		CO: AUDITORIUM	0.6		1.0	0.4	CO: RESTROOMS	0.4		20	1	4
5	20	1		0.8		CO: SPACE 030P	0.8		1.0	0.2	PUMP CP-3		0.2	20	1	6
7	20	1		0.6		CO: AUDITORIUM	0.6	1.2		0.6	CO: MAIN CORRIDOR	0.6		20	1	8
9	20	1			0.8	PWR: AUDITORIUM PROJ.	0.8		1.6	0.8	CO: MAIN CORRIDOR	0.8		20	1	10
11	20	1	1.0			CO: SPACE 131	1.0			1.5	0.5	PWR: A/V MONITOR		0.5	20	1	12
13	20	1	0.8			CO: FURNITURE	0.8	1.3			0.5	PWR: A/V MONITOR		0.5	20	1	14
15	20	1	0.8			CO: FURNITURE	0.8		1.2		0.4	CO: A/V RACK	0.4		20	1	16
17	20	1	0.8			CO: FURNITURE	0.8			1.2	0.4	CO: A/V RACK	0.4		20	1	18
19	20	1	0.8			CO: FURNITURE	0.8	1.2			0.4	CO: A/V RACK	0.4		20	1	20
21	20	1	0.9			CO: FURNITURE	0.9		1.1		0.2	CO: FB	0.2		20	1	22
23	20	1	0.9			CO: FURNITURE	0.9			1.1	0.2	CO: FB	0.2		20	1	24
25	20	1	0.9			CO: FURNITURE	0.9	1.1			0.2	CO: FB	0.2		20	1	26
27	20	1	0.9			CO: FURNITURE	0.9		1.1		0.2	CO: FB	0.2		20	1	28
29	20	1	1.0			CO: FURNITURE	1.0			1.8	0.8	PWR: REAR PROJECTOR		0.8	20	1	30
31	20	1	1.0			CO: FURNITURE	1.0	2.6			1.6	PWR: DOOR CLOSERS		1.6	20	1	32
33	20	1	1.0			CO: FURNITURE	1.0		1.0		0.0	SPARE			20	1	34
35	20	1	1.0			CO: FURNITURE	1.0			1.0	0.0	SPARE			20	1	36
37	20	1	0.4			CO: MIXER FB	0.4	0.4			0.0	SPARE			20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	84

TOTALS:
CONNECTED kVA PER PHASE 10 7 8 — CONNECTED TOTAL kVA 24
CONNECTED AMPS PER PHASE 79 58 63 — CONNECTED AVERAGE AMPS PER PHASE 67

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 5 kVA — DIVERSIFIED TOTAL kVA = 20
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 54
REMAINDER 9kVA @ 50% = 5 kVA

PANEL "1QLD1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)		OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA	LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: DATA 134A	0.8	1.3		0.5	PWR: DATA 134A RACK		0.5	20	1	2
3	20	1		0.8		CO: DATA 134A	0.8		1.3	0.5	PWR: DATA 134A RACK		0.5	20	1	4
5	20	1		1.0		CO: DATA 134A	1.0		1.5	0.5	PWR: DATA 134A RACK		0.5	20	1	6
7	20	1				SPARE	0.0	0.5		0.5	PWR: DATA 134A RACK		0.5	20	1	8
9	20	1				SPARE	0.0		0.5	0.5	PWR: DATA 134A RACK		0.5	20	1	10
11	20	1				SPARE	0.0		0.5	0.5	PWR: DATA 134A RACK		0.5	20	1	12
13	20	1				SPARE	0.0	0.0		0.0	SPARE			20	1	14
15	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	16
17	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	18
19	20	1				SPARE	0.0	0.0		0.0	SPARE			20	1	20
21	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	22
23	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	24
25	20	1				SPARE	0.0	0.0		0.0	SPARE			20	1	26
27	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	28
29	20	1				SPARE	0.0		0.0	0.0	SPARE			20	1	30
31	20	1			1.0	PWR: DATA 134A SECURITY	1.0	1.0		0.0	SPARE			20	1	32
33	20	1			1.0	PWR: DATA 134A SECURITY	1.0		1.0	0.0	SPARE			20	1	34
35	20	1			0.6	PWR: SECURITY DOOR	0.6		0.6	0.0	SPARE			20	1	36
37	20	1			0.6	PWR: SECURITY DOOR	0.6	0.6		0.0	SPARE			20	1	38
39	20	1			1.0	PWR: BMS TXFR	1.0		1.0	0.0	SPARE			20	1	40
41	20	1			1.0	PWR: BMS TXFR	1.0		1.0	0.0	SPARE			20	1	42

TOTALS:
CONNECTED kVA PER PHASE 3 4 4 — CONNECTED TOTAL kVA 11
CONNECTED AMPS PER PHASE 28 32 30 — CONNECTED AVERAGE AMPS PER PHASE 30

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 8 kVA — DIVERSIFIED TOTAL kVA = 11
RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 30
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1ELD"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	50 AMPERE FUSIBLE SWITCH			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)		OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA	LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.2		CO: ELEC. 134B	0.2	0.7		0.5	FA: FPS L1			0.5	20	1	2
3	20	1		0.2		CO: ELEC. 243G	0.2		0.6	0.4	FA: SMOKE DAMPERS L1			0.4	20	1	4
5	20	1				SPARE	0.0			0.5	FA: FPS L2			0.5	20	1	6
7	20	1				SPARE	0.0	0.2		0.2	FA: SMOKE DAMPERS L2			0.2	20	1	8
9	20	1				SPARE	0.0		0.0	0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	42

TOTALS:
CONNECTED kVA PER PHASE 1 1 1 — CONNECTED TOTAL kVA 2
CONNECTED AMPS PER PHASE 8 5 4 — CONNECTED AVERAGE AMPS PER PHASE 6

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 2 kVA — DIVERSIFIED TOTAL kVA = 2
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 6
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "2LA1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)		OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA	LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: CLASSROOM D 259	0.8	1.3		0.5	PWR: DF		0.5	20	1	2
3	20	1		0.8		CO: CLASSROOM D 259	0.8		0.8	0.0	SPARE			20	1	4
5	20	1		0.8		CO: CLASS 276	0.8		1.8	1.0	CO: HALL	1.0		20	1	6
7	20	1		0.8		CO: CLASS 276	0.8	2.0		1.2	CO: HALL	1.2		20	1	8
9	20	1		0.9		CO: CLASS 279	0.9		1.5	0.6	CO: RESTROOMS	0.6		20	1	10
11	20	1		0.8		CO: OFFICE 277B	0.8		1.3	0.5	PWR: DF		0.5	20	1	12
13	20	1		1.0		CO: CLASS 279	1.0	2.0		1.0	CO: HALL	1.0		20	1	14
15	20	1		0.4		CO: CLASS 279 A/V	0.4		1.6	1.2	CO: HALL	1.2		20	1	16
17	20	1		0.4		CO: CLASS 279 A/V	0.4			1.2	0.8	PWR: CLASS 279 PROJ.		0.8	20	1	18
19	20	1		0.8		CO: OFFICE 250	0.8	1.6			0.8	PWR: CLASSROOM 280 PROJ.		0.8	20	1	20
21	20	1		0.8		CO: OFFICE 249	0.8		1.6		0.8	PWR: LECTURE 246 PROJ.		0.8	20	1	22
23	20	1		1.0		CO: CLASSROOM 280	1.0			1.5	0.5	CO: A/V MONITOR		0.5	20	1	24
25	20	1		0.9		CO: CLASSROOM 280	0.9	1.1			0.2	PWR: DOOR CLOSER		0.2	20	1	26
27	20	1		0.4		PWR: CLASSROOM 280 PROJ.	0.4		0.4		0.0	SPARE			20	1	28
29	20	1		0.4		CO: CLASSROOM 280 A/V	0.4			0.4	0.0	SPARE			20	1	30
31	20	1		1.0		CO: LECTURE 246	1.0	1.0			0.0	SPARE			20	1	32
33	20	1		1.1		CO: LECTURE 246	1.1		1.1		0.0	SPARE			20	1	34
35	20	1		0.4		CO: LECTURE 246 A/V	0.4			0.4	0.0	SPARE			20	1	36
37	20	1		0.1		CO: LECTURE 246 A/V	0.1	0.1			0.0	SPARE			20	1	38
39	20	1		1.2		CO: GROUP STUDY 245	1.2		1.2		0.0	SPARE			20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	84

TOTALS:
CONNECTED kVA PER PHASE 9 8 7 — CONNECTED TOTAL kVA 24
CONNECTED AMPS PER PHASE 76 68 55 — CONNECTED AVERAGE AMPS PER PHASE 66

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 4 kVA — DIVERSIFIED TOTAL kVA = 19
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 53
REMAINDER 10kVA @ 50% = 5 kVA

PANEL "2QLA1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)		OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA	LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: DATA 252	0.8	1.3		0.5	PWR: DATA 252 RACK		0.5	20	1	2
3	20	1		0.8		CO: DATA 252	0.8		1.3	0.5	PWR: DATA 252 RACK		0.5	20	1	4
5	20	1		1.0		CO: DATA 252	1.0		1.5	0.5	PWR: DATA 252 RACK		0.5	20	1	6
7	20	1		0.8		CO: DATA 244	0.8	1.3		0.5	PWR: DATA 252 RACK		0.5	20	1	8
9	20	1		0.8		CO: DATA 244	0.8		1.3	0.5	PWR: DATA 252 RACK		0.5	20	1	10
11	20	1		1.0		CO: DATA 244	1.0		1.5	0.5	PWR: DATA 252 RACK		0.5	20	1	12
13	20	1				SPARE	0.0	0.5		0.5	PWR: DATA 244 RACK		0.5	20	1	14
15	20	1				SPARE	0.0		0.5	0.5	PWR: DATA 244 RACK		0.5	20	1	16
17	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 244 RACK		0.5	20	1	18
19	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 244 RACK		0.5	20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	22
23	20	1			1.0	PWR: DATA 252 SECURITY	1.0			1.0	0.0	SPARE			20	1	24
25	20	1			1.0	PWR: DATA 252 SECURITY	1.0	1.0			0.0	SPARE			20	1	26
27	20	1			1.0	PWR: DATA 244 SECURITY	1.0		1.0		0.0	SPARE			20	1	28
29	20	1			1.0	PWR: DATA 244 SECURITY	1.0			1.0	0.0	SPARE			20	1	30
31	20	1			1.0	PWR: SECURITY DOOR	1.0	1.0			0.0	SPARE			20	1	32
33	20	1			0.8	PWR: SECURITY DOOR	0.8		0.8		0.0	SPARE			20	1	34
35	20	1			0.8	PWR: SECURITY DOOR	0.8			0.8	0.0	SPARE			20	1	36
37	20	1			1.0	PWR: HC DOOR	1.0	1.0			0.0	SPARE			20	1	38
39	20	1			0.5	PWR: HC DOOR	0.5		0.5		0.0	SPARE			20	1	40
41	20	1			1.0	PWR: HC DOOR	1.0			1.0	0.0	SPARE			20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE			20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE			20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE			20	1	64
65	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE			20	1	66
67	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE			20	1	68
69	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE			20	1	70
71	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE			20	1	72
73	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE			20	1	74
75	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE			20	1	76
77	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE			20	1	78
79	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE			20	1	80
81	20	1			1.0	PWR: BMS TXFR	1.0		1.5		0.5	PWR: OH SEC DOOR			0.5	20	1	82
83	20	1			1.0	PWR: BMS TXFR	1.0			1.5	0.5	PWR: OH SEC DOOR			0.5	20	1	84

TOTALS:
CONNECTED kVA PER PHASE 10 9 12 — CONNECTED TOTAL kVA 30
CONNECTED AMPS PER PHASE 80 74 98 — CONNECTED AVERAGE AMPS PER PHASE 84

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 25 kVA — DIVERSIFIED TOTAL kVA = 30
RECEPTACLES 5kVA @100% = 5 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 84
REMAINDER 0kVA @ 50% = 0 kVA

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

EP-608

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PANEL "2LB1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: GROUP STUDY 267	0.8	1.6			0.8	PWR: DF			0.8	20	1	2
3	20	1		0.8		CO: GROUP STUDY 267	0.8		2.0		1.2	CO: HALL 240A-1		1.2		20	1	4
5	20	1		0.8		CO: GROUP STUDY 267	0.8			1.8	1.0	CO: SHELLED SPACE 261		1.0		20	1	6
7	20	1		0.8		CO: GROUP STUDY 267 FB	0.8	2.0			1.2	CO: HALL		1.2		20	1	8
9	20	1		0.8		CO: GROUP STUDY 267 FB	0.8		1.6		0.8	PWR: CLASS 263 PROJ.			0.8	20	1	10
11	20	1		0.9		CO: SEMINAR 268	0.9			1.4	0.5	PWR: GROUP STUDY 267 MON.			0.5	20	1	12
13	20	1		0.8		CO: SEMINAR 268	0.8	1.0			0.2	CO: GROUP STUDY 267 A/V		0.2		20	1	14
15	20	1		0.8		CO: SEMINAR 268 FB	0.8		1.3		0.5	PWR: GROUP STUDY 267 MON.			0.5	20	1	16
17	20	1		0.8		CO: SEMINAR 268 FB	0.8			1.0	0.2	CO: GROUP STUDY 267 A/V		0.2		20	1	18
19	20	1			0.8	PWR: SEMINAR 268 PROJ.	0.8	1.2			0.4	CO: SEMINAR 268		0.4		20	1	20
21	20	1		0.8		CO: OFFICE 274A	0.8		1.6		0.8	PWR: CLASS D 259 PROJ.			0.8	20	1	22
23	20	1		0.9		CO: CLASS 263	0.9			1.5	0.6	CO: CLASS D 259 A/V		0.6		20	1	24
25	20	1		1.0		CO: CLASS 263	1.0	1.4			0.4	CO: CLASS D 259 A/V		0.4		20	1	26
27	20	1		0.6		CO: CLASS 263 A/V	0.6		1.4		0.8	PWR: CLASS 276 PROJ.			0.8	20	1	28
29	20	1		0.4		CO: CLASS 263 A/V	0.4			1.0	0.6	CO: CLASS 276 A/V		0.6		20	1	30
31	20	1		1.0		CO: LECTURE 260	1.0	1.4			0.4	CO: CLASS 276 A/V		0.4		20	1	32
33	20	1		0.8		CO: LECTURE 260 A/V	0.8		0.8		0.0	SPARE				20	1	34
35	20	1			0.8	PWR: LECTURE 260 PROJ.	0.8			0.8	0.0	SPARE				20	1	36
37	20	1		0.8		CO: GROUP STUDY 266 FB	0.8	0.8			0.0	SPARE				20	1	38
39	20	1		0.8		CO: GROUP STUDY 266 FB	0.8		0.8		0.0	SPARE				20	1	40
41	20	1		0.8		CO: GROUP STUDY 266	0.8			0.8	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 9 10 8 — CONNECTED TOTAL kVA 27
CONNECTED AMPS PER PHASE 78 79 69 — CONNECTED AVERAGE AMPS PER PHASE 76

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 6 kVA — DIVERSIFIED TOTAL kVA = 22
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 60
REMAINDER 11kVA @ 50% = 6 kVA

PANEL "2QLB1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		0.8		CO: DATA 265	0.8	1.3			0.5	PWR: DATA 265 RACK			0.5	20	1	2
3	20	1		0.8		CO: DATA 265	0.8		1.3		0.5	PWR: DATA 265 RACK			0.5	20	1	4
5	20	1		1.0		CO: DATA 265	1.0			1.5	0.5	PWR: DATA 265 RACK			0.5	20	1	6
7	20	1				SPARE	0.0	0.5			0.5	PWR: DATA 265 RACK			0.5	20	1	8
9	20	1				SPARE	0.0		0.5		0.5	PWR: DATA 265 RACK			0.5	20	1	10
11	20	1				SPARE	0.0			0.5	0.5	PWR: DATA 265 RACK			0.5	20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1			1.0	PWR: DATA 265 SECURITY	1.0			1.0	0.0	SPARE				20	1	36
37	20	1			1.0	PWR: DATA 265 SECURITY	1.0	1.0			0.0	SPARE				20	1	38
39	20	1			0.6	PWR: SECURITY DOOR	0.6		0.6		0.0	SPARE				20	1	40
41	20	1			0.6	PWR: SECURITY DOOR	0.6			0.6	0.0	SPARE				20	1	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1			1.0	PWR: BMS TXFR	1.0	1.0			0.0	SPARE				20	1	80
81	20	1			1.0	PWR: BMS TXFR	1.0		1.0		0.0	SPARE				20	1	82
83	20	1			1.0	PWR: BMS TXFR	1.0			1.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 4 3 5 — CONNECTED TOTAL kVA 12
CONNECTED AMPS PER PHASE 32 28 38 — CONNECTED AVERAGE AMPS PER PHASE 33

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 9 kVA — DIVERSIFIED TOTAL kVA = 12
RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 33
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "2LD1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1		1.6		CO: OFFICES 243T, 243R	1.6	2.1			0.5	PWR: DF			0.5	20	1	2
3	20	1		0.8		CO: COLLAB 243N	0.8		2.0		1.2	CO: CORRIDOR		1.2		20	1	4
5	20	1		1.6		CO: OFFICES 243J, 243H	1.6			2.0	0.4	CO: COMP. AREA FB		0.4		20	1	6
7	20	1		1.6		CO: OFFICES 243Q, 243P	1.6	2.0			0.4	CO: COMP. AREA FB		0.4		20	1	8
9	20	1		1.6		CO: OFFICES 243M, 243K	1.6		2.0		0.4	CO: COMP. AREA FB		0.4		20	1	10
11	20	1		1.6		CO: OFFICES 243A, 243B	1.6			2.0	0.4	CO: COMP. AREA FB		0.4		20	1	12
13	20	1		0.8		CO: DEPT. CHAIR 243E	0.8	1.2			0.4	CO: COMP. AREA FB		0.4		20	1	14
15	20	1		0.8		CO: CRFS 243D	0.8		1.2		0.4	CO: COMP. AREA FB		0.4		20	1	16
17	20	1		1.6		CO: OFFICES 242V, 242U	1.6			2.6	1.0	PWR: WORK RM. 242A COPY			1.0	20	1	18
19	20	1		1.6		CO: OFFICES 242T, 242S	1.6	2.4			0.8	CO: WORK RM. 242A		0.8		20	1	20
21	20	1		1.6		CO: OFFICES 242R, 242Q	1.6		2.2		0.6	CO: WORK RM. 242A		0.6		20	1	22
23	20	1		1.6		CO: OFFICES 242N, 242M	1.6			2.0	0.4	CO: WORK RM. 242A		0.4		20	1	24
25	20	1		1.6		CO: OFFICES 243C, 242W	1.6	2.6			1.0	CO: CORRIDOR		1.0		20	1	26
27	20	1		1.6		CO: OFFICES 242X, 242Y	1.6		2.6		1.0	CO: CORRIDOR		1.0		20	1	28
29	20	1		1.0		CO: RECEPTION 243	1.0			1.4	0.4	CO: RESTROOMS 242D, 242E		0.4		20	1	30
31	20	1		1.0		CO: RECEPTION 243	1.0	2.0			1.0	PWR: WORK/PRINT 241N COPY			1.0	20	1	32
33	20	1		1.6		CO: OFFICES 242Z, 242K	1.6		2.2		0.6	CO: WORK/PRINT 241N		0.6		20	1	34
35	20	1		1.2		CO: OFFICES 242J, 242H	1.2			1.6	0.4	CO: WORK/PRINT 241N		0.4		20	1	36
37	20	1		1.2		CO: OFFICES 242H, 242G	1.2	1.6			0.4	CO: WORK/PRINT 241N		0.4		20	1	38
39	20	1		1.6		CO: OFFICES 242B, 242C	1.6		2.0		0.4	CO: WORK/PRINT 241N		0.4		20	1	40
41	20	1		1.6		CO: OFFICES 241P, 241K	1.6			2.2	0.6	CO: WORK/PRINT 241N		0.6		20	1	42
43	20	1		1.6		CO: OFFICES 241J, 241K	1.6	2.0			0.4	CO: VESTIBULE 240V		0.4		20	1	44
45	20	1		1.6		CO: OFFICES 241H, 241G	1.6		2.6		1.0	CO: CORRIDOR		1.0		20	1	46
47	20	1		1.6		CO: OFFICES 241F, 241E	1.6			2.2	0.6	CO: MAIN CORRIDOR		0.6		20	1	48
49	20	1		0.8		CO: CONFERENCE 241A	0.8	1.0			0.2	CO: BREAK 241M		0.2		20	1	50
51	20	1		0.4		CO: CONFERENCE 241A A/V	0.4		0.6		0.2	CO: BREAK 241M		0.2		20	1	52
53	20	1		0.6		CO: RECEPTION 241	0.6			0.8	0.2	CO: BREAK 241M		0.2		20	1	54
55	20	1		0.8		CO: RECEPTION 241	0.8	1.0			0.2	CO: BREAK 241M		0.2		20	1	56
57	20	1		0.8		CO: ADMIN 241B	0.8		1.2		0.4	CO: BREAK 241M		0.4		20	1	58
59	20	1		1.0		CO: DEAN'S OFFICE 241C	1.0			1.4	0.4	CO: BREAK 241M		0.4		20	1	60
61	20	1		0.8		CO: OFFICE 243F	0.8	1.4			0.6	CO: BREAK 241M		0.6		20	1	62
63	20	1			1.0	PWR: VENDING	1.0		1.8		0.8	PWR: BREAK 241M FRIDGE			0.8	20	1	64
65	20	1			1.0	PWR: VENDING	1.0			1.5	0.5	PWR: A/V MONITOR			0.5	20	1	66
67	20	1			0.8	PWR: CONF. 241A PROJ.	0.8	0.8			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS: CONNECTED kVA PER PHASE 20 20 20 — CONNECTED TOTAL kVA 60
CONNECTED AMPS PER PHASE 168 170 164 — CONNECTED AVERAGE AMPS PER PHASE 167

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 7 kVA — DIVERSIFIED TOTAL kVA = 38
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 107
REMAINDER 44kVA @ 50% = 22 kVA

PANEL "2LD2"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	2
3	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	4
5	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 0 0 0 — CONNECTED TOTAL kVA 0
CONNECTED AMPS PER PHASE 0 0 0 — CONNECTED AVERAGE AMPS PER PHASE 0

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 0 kVA — DIVERSIFIED TOTAL kVA = 0
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 0
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "PL1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1			0.8	EVAP MEDIA ECM-1	0.8	1.5			0.9	AIR HANDLER LIGHTS	0.7			20	1	2
3	20	1			0.8	EVAP MEDIA ECM-2	0.8		1.2		0.5	AIR HANDLER LIGHTS	0.4			20	1	4
5	20	1			0.8	EVAP MEDIA ECM-3	0.8			1.6	1.0	AIR HANDLER LIGHTS	0.8			20	1	6
7	20	1			0.8	EVAP MEDIA ECM-4	0.8	1.9			1.4	AIR HANDLER LIGHTS	1.1			20	1	8
9	20	1		0.4		PENTHOUSE OUTLETS	0.4		0.9		0.6	PENTHOUSE LIGHTS	0.5			20	1	10
11	20	1		0.4		PENTHOUSE OUTLETS	0.4			1.6	1.5	PENTHOUSE LIGHTS	1.2			20	1	12
13	20	1		0.2		PENTHOUSE OUTLETS	0.2	1.3			1.1	REVERSE OSMOSIS SYS			1.1	20	2	14
15	20	1		0.6		PENTHOUSE OUTLETS	0.6		1.7		1.1	-			1.1	-	-	16
17	20	1		0.4		PENTHOUSE OUTLETS	0.4			0.4	0.0	SPARE				20	1	18
19	20	1		0.6		PENTHOUSE OUTLETS	0.6	0.6			0.0	SPARE				20	1	20
21	20	1		0.8		PENTHOUSE OUTLETS	0.8		0.8		0.0	SPARE				20	1	22
23	20	1			0.5	COOLING TOWER 120V PWR	0.5			0.5	0.0	SPARE				20	1	24
25	20	1			0.5	COOLING TOWER 120V PWR	0.5	0.5			0.0	SPARE				20	1	26
27	20	1			0.5	COOLING TOWER 120V PWR	0.5		0.5		0.0	SPARE				20	1	28
29	20	1			0.5	COOLING TOWER 120V PWR	0.5			0.5	0.0	SPARE				20	1	30
31	20	1			0.5	WATER TREATEMENT	0.5	0.5			0.0	SPARE				20	1	32
33	20	1			0.5	CONTROL PWR	0.5		0.5		0.0	SPARE				20	1	34
35	20	1			0.1	CIRC PUMP	0.1			0.1	0.0	SPARE				20	1	36
37	20	1			0.1	CIRC PUMP	0.1	0.1			0.0	SPARE				20	1	38
39	20	1			0.1	CIRC PUMP	0.1		0.1		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 6 6 5 — CONNECTED TOTAL kVA 17
CONNECTED AMPS PER PHASE 53 48 39 — CONNECTED AVERAGE AMPS PER PHASE 47

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 5kVA @125% = 6 kVA — ALL OTHER LOADS @100% = 9 kVA — DIVERSIFIED TOTAL kVA = 18
RECEPTACLES 3kVA @100% = 3 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 50
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "PQL1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN CB			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1			1.5	ELEVATOR CAR	1.5	2.5			1.0	PENTHOUSE CONTROL PWR			1.0	20	1	2
3	20	1		0.2		ELEVATOR RM OUTLET	0.2		1.2		1.0	PENTHOUSE CONTROL PWR			1.0	20	1	4
5	20	1	0.2			ELEVATOR RM LIGHT	0.3			1.2	1.0	PENTHOUSE CONTROL PWR			1.0	20	1	6
7	20	1			0.5	ATC PANELS	0.5	1.0			0.5	PENTHOUSE CONTROL PWR			0.5	20	1	8
9	20	1			0.5	ATC PANELS	0.5		1.0		0.5	HEAT TRACE (30 mA GFI)			0.5	20	1GF	10
11	20	1				SPARE	0.0			0.5	0.5	HEAT TRACE (30 mA GFI)			0.5	20	1GF	12
13	20	1				SPARE	0.0	0.5			0.5	HEAT TRACE (30 mA GFI)			0.5	20	1GF	14
15	20	1				SPARE	0.0		0.5		0.5	HEAT TRACE (30 mA GFI)			0.5	20	1GF	16
17	20	1				SPARE	0.0			0.5	0.5	HEAT TRACE (30 mA GFI)			0.5	21	1GF	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 4 3 2 — CONNECTED TOTAL kVA 9
CONNECTED AMPS PER PHASE 33 23 18 — CONNECTED AVERAGE AMPS PER PHASE 25

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA — ALL OTHER LOADS @100% = 9 kVA — DIVERSIFIED TOTAL kVA = 9
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 25
REMAINDER 0kVA @ 50% = 0 kVA

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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801-328-5151
fax: 801-328-5155
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800 West University Parkway
Orem, Utah 84058

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ISSUED DATE:	05.07.2010

PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

EP-609

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PANEL "0HA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	1.8			LTG: CORRIDORS	2.3	12.1			10.3	GLASS WASH: AUTOCLAVE			10.3	50	3	2
3	20	1	2.6			LTG: CORRIDORS	3.2		12.9		10.3	-			10.3	-	-	4
5	20	1	2.2			LTG: CORRIDORS	2.8			12.5	10.3	-			10.3	-	-	6
7	20	1	1.3			LTG: CLASSROOM 060	1.6	8.7			7.4	GLASS WASH: WASHER			7.4	40	3	8
9	20	1	2.1			LTG: LAB II 062	2.6		9.5		7.4	-			7.4	-	-	10
11	20	1	2.1			LTG: LAB I 066	2.7			9.5	7.4	-			7.4	-	-	12
13	20	1	1.7			LTG: BIOTECH LAB 069	2.1	1.7			0.0	SPARE				20	1	14
15	20	1	1.6			LTG: MICROSCOPY RES. 071	2.1		1.6		0.0	SPARE				20	1	16
17	20	1	2.1			LTG: PROTEIN LAB 057	2.6			2.1	0.0	SPARE				20	1	18
19	20	1	2.1			LTG: NUCLEIC ACID LAB 052	2.7	2.1			0.0	SPARE				20	1	20
21	20	1	1.8			LTG: MICRO LAB 049	2.3		1.8		0.0	SPARE				20	1	22
23	20	1	3.0			LTG: RESTROOM AREA	3.7			3.0	0.0	SPARE				20	1	24
25	20	1	2.0			LTG: MICRO LAB 053	2.5	2.0			0.0	SPARE				20	1	26
27	20	1	1.8			LTG: MICRO LAB 048	2.3		1.8		0.0	SPARE				20	1	28
29	20	1	2.6			LTG: VIROLOGY LAB 044	3.2			2.6	0.0	SPARE				20	1	30
31	20	1	1.4			LTG: LECTURE 073 DMA	1.8	1.4			0.0	SPARE				20	1	32
33	20	1	2.2			LTG: LECTURE 031 DMB	2.7		2.2		0.0	SPARE				20	1	34
35	20	1	2.0			LTG: LABS	2.5			2.0	0.0	SPARE				20	1	36
37	20	1	2.1			LTG: COMP. CLASS 032, 074	2.6	2.1			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 30 30 32 — CONNECTED TOTAL kVA 92
CONNECTED AMPS PER PHASE 109 108 114 — CONNECTED AVERAGE AMPS PER PHASE 110

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 38kVA @125% = 48 kVA — ALL OTHER LOADS @100% = 53 kVA — DIVERSIFIED TOTAL kVA = 101
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 122
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0HC"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	2.5			LTG: LAB/ELEC RM	3.1	3.7			1.5	LTG: EXT. POLE	1.2			20	1	2
3	20	1	1.8			LTG: LOADING DOCK	2.2		3.0		1.5	LTG: EXT POLE	1.2			20	1	4
5	20	1				SPARE	0.0			1.2	1.5	LTG: EXT POLE	1.2			20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 4 3 1 — CONNECTED TOTAL kVA 8
CONNECTED AMPS PER PHASE 13 11 4 — CONNECTED AVERAGE AMPS PER PHASE 9

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 8kVA @125% = 10 kVA — ALL OTHER LOADS @100% = 0 kVA — DIVERSIFIED TOTAL kVA = 10
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 12
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0EHC"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	400 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, FUISBLE PANELBOARD

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	3	0.0	0.8	1.0	PANEL "0ELC"	1.8	10.0			9.5	PANEL "1EHA"	5.0	0.4	2.8	100	3	2
3	-	-	0.0	0.2	0.0	thru TXFR "0TEC"	0.2		8.5		9.7	-	5.5	0.4	2.4	-	-	4
5	-	-	0.0	0.4	0.0	-	0.4			6.8	7.3	-	3.8	0.0	2.6	-	-	6
7	100	3	2.1	0.2	0.7	PANEL "1EHD"	3.5	4.4			1.5	LTG: STAIR 030D		1.5		20	1	8
9	-	-	1.8	0.2	0.4	-	2.8		3.1		0.8	LTG: S. STAIR		0.8		20	1	10
11	-	-	1.8	0.0	0.5	-	2.7			3.1	0.8	LTG: EXT. EM		0.8		20	1	12
13	20	1	0.8			OUTDOOR EM POLE LTG	1.0	2.5			1.7	LTG: S. EM		1.7		20	1	14
15	20	1	0.8			OUTDOOR EM POLE LTG	1.0		2.4		1.6	LTG: W. EM		1.6		20	1	16
17	20	1				SPARE	0.0			1.7	1.7	LTG: N. EM		1.7		20	1	18
19	20	1				SPARE	0.0	1.5			1.5	LTG: E. EM		1.5		20	1	20
21	20	1				SPARE	0.0		1.7		1.7	LTG: SW EM		1.7		20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 18 16 12 — CONNECTED TOTAL kVA 46
CONNECTED AMPS PER PHASE 67 57 42 — CONNECTED AVERAGE AMPS PER PHASE 55

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 21kVA @125% = 27 kVA — ALL OTHER LOADS @100% = 10 kVA — DIVERSIFIED TOTAL kVA = 49
RECEPTACLES 10kVA @100% = 10 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 59
REMAINDER 4kVA @ 50% = 2 kVA

PANEL "1HA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	2.5			LTG: CORRIDORS	3.2	12.8			10.3	VIVARIUM: AUTOCLAVE			10.3	50	3	2
3	20	1	3.0			LTG: CORRIDORS	3.7		13.3		10.3	-			10.3	-	-	4
5	20	1	2.0			LTG: MAIN CORRIDOR	2.5			12.3	10.3	-			10.3	-	-	6
7	20	1	2.0			LTG: MAIN CORRIDOR	2.4	12.3			10.3	STER ALCOVE: AUTOCLAVE			10.3	50	3	8
9	20	1	2.0			LTG: LAB 167	2.5		12.3		10.3	-			10.3	-	-	10
11	20	1	2.0			LTG: LAB 170	2.5			12.3	10.3	-			10.3	-	-	12
13	20	1	2.1			LTG: LAB 171	2.6	2.1			0.0	SPARE				20	1	14
15	20	1	1.6			LTG: ZOO PREP 174	2.0		1.6		0.0	SPARE				20	1	16
17	20	1	2.6			LTG: NE LAB AND RR	3.2			2.6	0.0	SPARE				20	1	18
19	20	1	2.1			LTG: GIS LAB 175	2.6	2.1			0.0	SPARE				20	1	20
21	20	1	0.5			LTG: DMEX	0.7		0.5		0.0	SPARE				20	1	22
23	20	1	2.3			LTG: LABS 151, 154	2.9			2.3	0.0	SPARE				20	1	24
25	20	1	2.5			LTG: LABS 166, 169	3.2	2.5			0.0	SPARE				20	1	26
27	20	1	2.1			LTG: LAB 160	2.6		2.1		0.0	SPARE				20	1	28
29	20	1	1.8			LTG: LAB 152	2.3			1.8	0.0	SPARE				20	1	30
31	20	1	1.4			LTG: CLEANROOMS	1.8	1.4			0.0	SPARE				20	1	32
33	20	1	2.1			LTG: LAB 147	2.6		2.1		0.0	SPARE				20	1	34
35	20	1	1.6			LTG: LAB 140	2.0			1.6	0.0	SPARE				20	1	36
37	20	1	2.3			LTG: CLASSROOM 138	2.9	2.3			0.0	SPARE				20	1	38
39	20	1	1.6			LTG: DMF	2.0		1.6		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 35 33 33 — CONNECTED TOTAL kVA 102
CONNECTED AMPS PER PHASE 128 121 119 — CONNECTED AVERAGE AMPS PER PHASE 123

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 40kVA @125% = 50 kVA — ALL OTHER LOADS @100% = 62 kVA — DIVERSIFIED TOTAL kVA = 112
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 135
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1HD"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	2.1			LTG: RESTROOMS	2.6	2.1			0.0	SPARE				20	1	2
3	20	1	1.5			CLASSROOM LTG	1.9		1.5		0.0	SPARE				20	1	4
5	20	1	1.5			CLASSROOM LTG	1.9			1.5	0.0	SPARE				20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 2 1 1 — CONNECTED TOTAL kVA 5
CONNECTED AMPS PER PHASE 8 5 5 — CONNECTED AVERAGE AMPS PER PHASE 6

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 5kVA @125% = 6 kVA — ALL OTHER LOADS @100% = 0 kVA — DIVERSIFIED TOTAL kVA = 6
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 8
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1EHA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	30	3	0.4	0.4	2.8	PANEL "1ELA"	3.7	5.2			2.0	LTG: 1NW EM	1.6			20	1	2
3	-	-	0.0	0.4	2.4	thru TXFR "1TEA"	2.8		4.8		2.5	LTG: 1N EM	2.0			20	1	4
5	-	-	0.0	0.0	2.6	-	2.6			4.5	2.3	LTG: 1S EM	1.9			20	1	6
7	20	1				SPARE	0.0	1.6			1.9	LTG: 1E EM	1.6			20	1	8
9	20	1				SPARE	0.0		1.9		2.3	LTG: 2NW EM	1.9			20	1	10
11	20	1				SPARE	0.0			1.9	2.4	LTG: 2N EM	1.9			20	1	12
13	20	1				SPARE	0.0	1.4			1.8	LTG: 2S EM	1.4			20	1	14
15	20	1				SPARE	0.0		1.7		2.1	LTG: 2E EM	1.7			20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 8 8 6 — CONNECTED TOTAL kVA 23
CONNECTED AMPS PER PHASE 30 30 23 — CONNECTED AVERAGE AMPS PER PHASE 28

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 14kVA @125% = 18 kVA — ALL OTHER LOADS @100% = 8 kVA — DIVERSIFIED TOTAL kVA = 26
RECEPTACLES 1kVA @100% = 1 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 32
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "1EHD"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	30	3	0.0	0.2	0.7	PANEL "1ELD"	0.9	1.5			0.7	LTG: STAIR 140U	0.6			20	1	2
3	-	-	0.0	0.2	0.4	thru TXFR "1TED"	0.6		1.4		1.0	LTG: RESTROOMS, ELEC. RM	0.8			20	1	4
5	-	-	0.0	0.0	0.5	-	0.5			2.3	2.2	LTG: 2ND OFFICE	1.8			20	1	6
7	20	1	0.3			OUTDOOR EM LTG	0.4	1.5			1.5	LTG: EM LED	1.2			20	1	8
9	20	1				SPARE	0.0		1.0		1.3	LTG: EM LED	1.0			20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 3 2 2 — CONNECTED TOTAL kVA 8
CONNECTED AMPS PER PHASE 11 9 8 — CONNECTED AVERAGE AMPS PER PHASE 9

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 6kVA @125% = 7 kVA — ALL OTHER LOADS @100% = 2 kVA — DIVERSIFIED TOTAL kVA = 9
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 11
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "2HA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	2.2			LTG: CORRIDORS	2.7	12.5			10.3	STER ALCOVE: AUTOCLAVE			10.3	50	3	2
3	20	1	2.7			LTG: CORRIDORS	3.3		13.0		10.3	-			10.3	-	-	4
5	20	1	2.4			LTG: N. LAB	3.0			12.7	10.3	-			10.3	-	-	6
7	20	1	2.8			LTG: N. LAB	3.5	3.2			0.5	PENTHOUSE OUTDOOR LTG	0.4			20	1	8
9	20	1	2.0			LTG: N. LAB	2.5		2.0		0.0	SPARE				20	1	10
11	20	1	1.9			LTG: N. LAB	2.4			1.9	0.0	SPARE				20	1	12
13	20	1	1.4			LTG: N. LAB	1.7	1.4			0.0	SPARE				20	1	14
15	20	1	1.0			LTG: DMG	1.3		1.0		0.0	SPARE				20	1	16
17	20	1	2.2			LTG: CENTRAL LAB	2.8			2.2	0.0	SPARE				20	1	18
19	20	1	1.2			LTG: DMH	1.6	1.2			0.0	SPARE				20	1	20
21	20	1	2.5			LTG: CENTRAL LAB	3.1		2.5		0.0	SPARE				20	1	22
23	20	1	1.3			LTG: RESTROOMS	1.6			1.3	0.0	SPARE				20	1	24
25	20	1	2.1			LTG: S. LAB	2.6	2.1			0.0	SPARE				20	1	26
27	20	1	2.1			LTG: S. LAB	2.6		2.1		0.0	SPARE				20	1	28
29	20	1	1.3			LTG: S. LAB	1.6			1.3	0.0	SPARE				20	1	30
31	20	1	1.6			LTG: S. LAB	2.0	1.6			0.0	SPARE				20	1	32
33	20	1	1.4			LTG: S. LAB	1.7		1.4		0.0	SPARE				20	1	34
35	20	1	1.6			LTG: DMJ	2.0			1.6	0.0	SPARE				20	1	36
37	20	1	2.1			LTG: S. LAB	2.6	2.1			0.0	SPARE				20	1	38
39	20	1	0.4			LTG: STUDY AREAS	0.5		0.4		0.0	SPARE				20	1	40
41	20	1	0.6			LTG: ART WALL	0.7			0.6	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 24 22 22 — CONNECTED TOTAL kVA 68
CONNECTED AMPS PER PHASE 86 81 78 — CONNECTED AVERAGE AMPS PER PHASE 82

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 37kVA @125% = 46 kVA — ALL OTHER LOADS @100% = 31 kVA — DIVERSIFIED TOTAL kVA = 77
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 93
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "2HD"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
277/480 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1	1.2			LTG: CORRIDORS	1.5	3.7			3.1	LTG: OFFICES	2.5			20	1	2
3	20	1	2.2			LTG: CORRIDORS	2.7		5.0		3.6	LTG: OFFICES	2.8			20	1	4
5	20	1	2.2			LTG: ATRIUM PENDANTS	2.7			4.9	3.4	LTG: OFFICES	2.7			20	1	6
7	20	1	1.9			LTG: ATRIUM PENDANTS	2.4	1.9			0.0	SPARE				20	1	8
9	20	1	0.6			LTG: VERTICAL LEDS	0.8		0.6		0.0	SPARE				20	1	10
11	20	1	0.3			LTG: COLOR LEDS	0.4			0.3	0.0	SPARE				20	1	12
13	20	1	3.1			LTG: OFFICE CORRIDORS	3.9	3.1			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE 9 6 5 — CONNECTED TOTAL kVA 20
CONNECTED AMPS PER PHASE 31 20 19 — CONNECTED AVERAGE AMPS PER PHASE 23

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 20kVA @125% = 24 kVA — ALL OTHER LOADS @100% = 0 kVA — DIVERSIFIED TOTAL kVA = 24
RECEPTACLES 0kVA @100% = 0 kVA — 25% OF LARGEST MOTOR = 0 kVA — AVERAGE AMPS PER PHASE = 29
REMAINDER 0kVA @ 50% = 0 kVA

REFER TO SHEETS LE-201 THROUGH LE-203
FOR ADDITIONAL PANEL SCHEDULES

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

EP-610

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SHEET KEYNOTES

1. CLOUDED AREAS INDICATE NEW WORK. ALL OTHER EQUIPMENT SHOWN IS EXISTING TO REMAIN.
2. PROVIDE NEW CIRCUIT BREAKER IN EXISTING SWITCHBOARD OR MCC, WITH MINIMUM 65 KAIC RATING.
3. PROVIDE NEW COMBINATION STARTER/MOTOR CIRCUIT PROTECTOR IN EXISTING MCC, WITH MINIMUM 65 KAIC RATING.
4. EXISTING SPARE CIRCUIT BREAKER.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4

CONDUCTOR AND CONDUIT SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. SYMBOL SUBSCRIPTS:
   "IG": INCLUDE IG (INSULATED/ISOLATED GROUND CONDUCTOR) SCHEDULED ALONG WITH THE GROUND OR EQUIPMENT GROUND CONDUCTOR.
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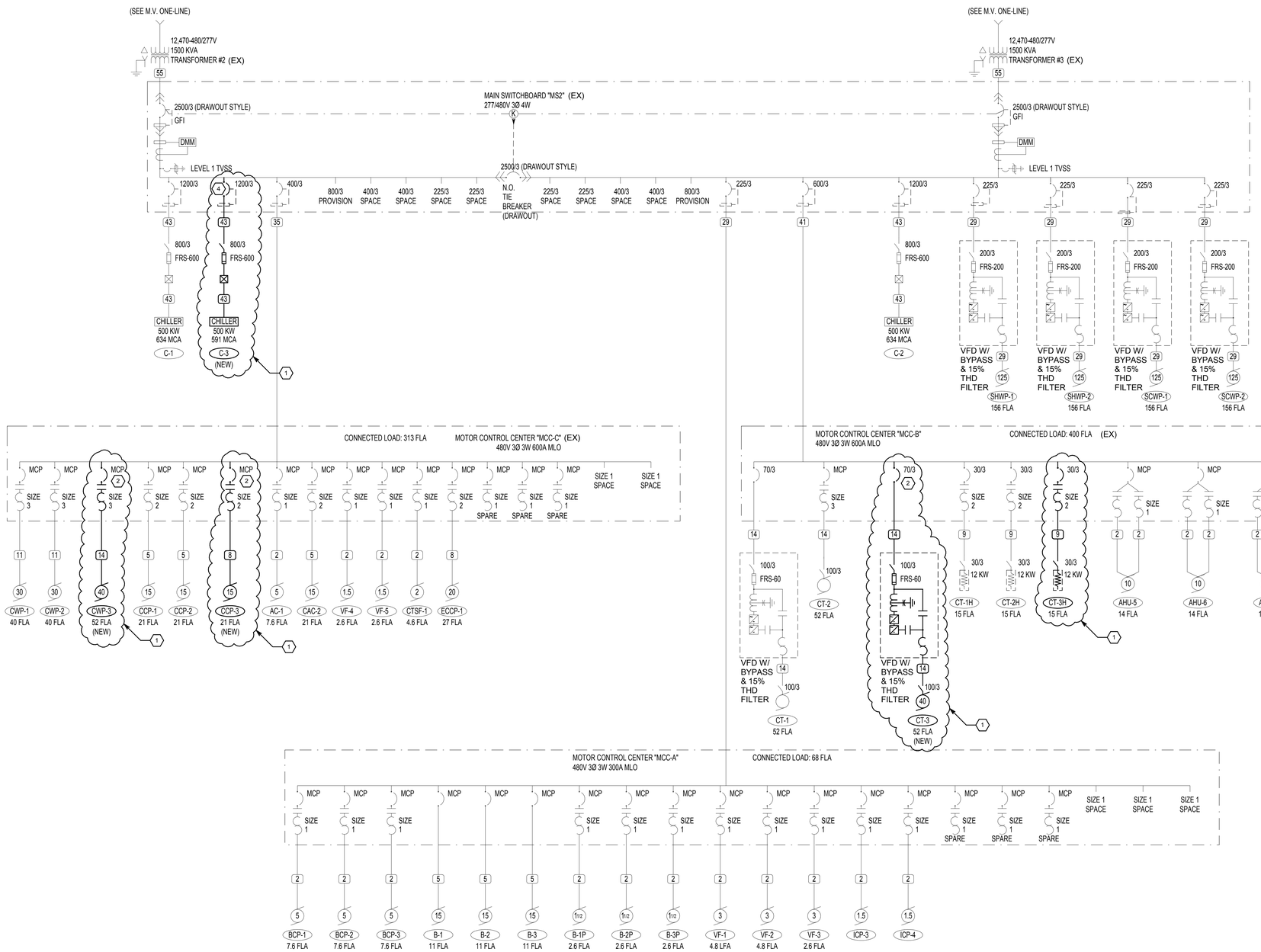

1 UPPER PLANT POWER ONE-LINE DIAGRAM
SCALE: N.T.S.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
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800-678-7077
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Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

UPPER PLANT POWER ONE-LINE DIAGRAM

CONSTRUCTION DOCUMENTS

EP-651

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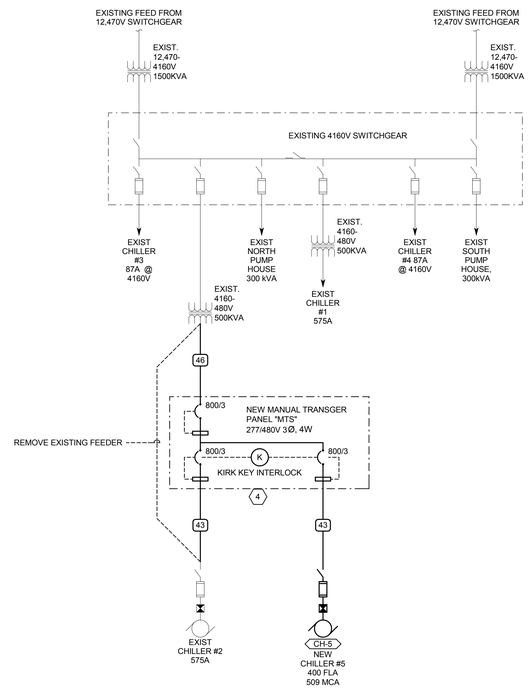

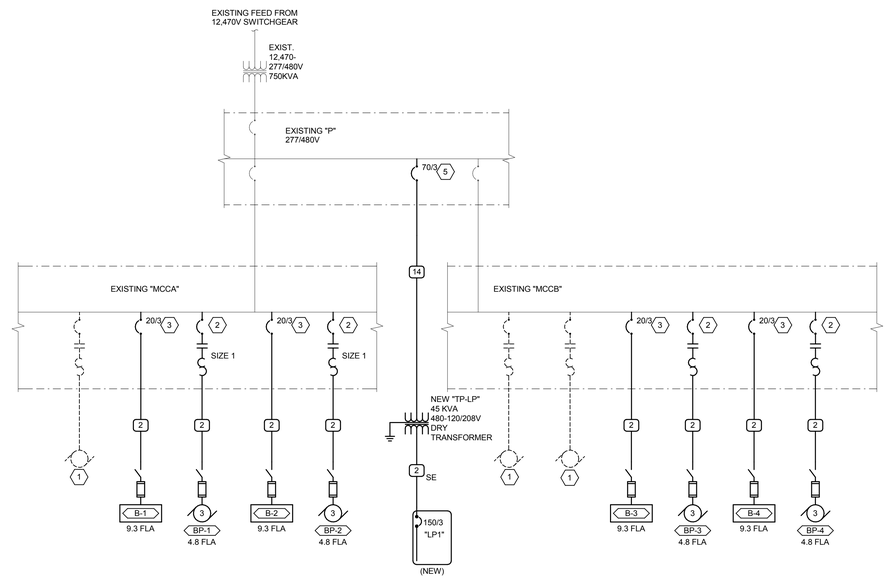

SHEET KEYNOTES

1. DISCONNECT AND REMOVE CONDUIT AND WIRING ASSOCIATED WITH PUMPS TO BE REMOVED.
2. PROVIDE NEW STARTERS IN EXISTING MCC TO ACCOMMODATE NEW PUMP FEEDS, WITH MINIMUM 65 KAIC RATING.
3. PROVIDE NEW CIRCUIT BREAKERS IN EXISTING MCC TO ACCOMMODATE NEW PUMP FEEDS, WITH MINIMUM 65 KAIC RATING.
4. KEY INTERLOCK TO ALLOW ONLY ONE BRANCH CB TO BE CLOSED AT A TIME.
5. PROVIDE NEW CIRCUIT BREAKER IN EXISTING PANEL, RATED AT 65 KAIC.

CONDUCTOR AND CONDUIT SCHEDULE

** — SCHEDULE NUMBER; SUBSCRIPT (NOTE 5)

(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

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1 LOWER PLANT POWER ONE-LINE DIAGRAM
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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
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LOWER PLANT POWER ONE-LINE DIAGRAM

CONSTRUCTION DOCUMENTS

EP-661

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EQUIPMENT SCHEDULE - CENTRAL PLANTS

MARK	QTY	ITEM DESCRIPTION	LOAD DATA							WIRE AND CONDUIT SIZE	OVERCURRENT PROTECTION			DISCONNECT			STARTER DATA														NOTES	MARK
			HP	kW	MCA	FLA	VOLT	PH	Hz		FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	SIZE	SPEED	CTRL VOLT	SELECTOR SWITCH	PUSH BUTTON	PILOT LAMP	NORMALLY OPEN CONTACTS	NORMALLY CLOSED CONTACTS	PHASE FAILURE RELAY	SCHEMATIC REFERENCE	REMOTE CTRL		
B-1		BOILER (lower plant)				9.3	480	3	60	3 #12, #12 GR 0.75"C	E	20A/3P CB	MCC	E	30A/3P FRS-15	ADJ TO EQUIP	Q															B-1
B-2		BOILER (lower plant)				9.3	480	3	60	3 #12, #12 GR 0.75"C	E	20A/3P CB	MCC	E	30A/3P FRS-15	ADJ TO EQUIP	Q															B-2
B-3		BOILER (lower plant)				9.3	480	3	60	3 #12, #12 GR 0.75"C	E	20A/3P CB	MCC	E	30A/3P FRS-15	ADJ TO EQUIP	Q															B-3
B-4		BOILER (lower plant)				9.3	480	3	60	3 #12, #12 GR 0.75"C	E	20A/3P CB	MCC	E	30A/3P FRS-15	ADJ TO EQUIP	Q															B-4
C-3		CHILLER (upper plant)			591		480	3	60	2 EA{3 #500 Kcmil, 1#1/0 G} 2 EA{3.5" C}	E	1200A/3P CB	SWBD	E	800/3 FRS-600	ADJ TO EQUIP	Q															C-3
CH-5		CHILLER (lower plant)			509	400	480	3	60	2 EA{3 #500 Kcmil, 1#1/0 G} 2 EA{3.5" C}	E	800A/3P CB	SWBD	E	600/3 FRS-600	ADJ TO EQUIP	Q															CH-5
CT-3		COOLING TOWER (upper plant)	40			52	480	3	60	3 #4, 1 #8 G 1.25" C	E	70A/3P CB	MCC	E	VFD	ADJ TO EQUIP	E	VFD													NOTE 1	CT-3
CT-3H		COOLING TOWER HEATER					480	3	60																							CT-3H
		PUMPS																														
CCP-3		PUMP	15			21	480	3	60	3 #8, 1 #10 GR 1" C	E	MCP	MCC	E	30A/3P FRS-30	ADJ. TO EQUIP.	E	FVNR	MCC	2			HOA		R,G	2	2	YES				CCP-3
CWP-3		PUMP	40			52	480	3	60	3 #4, 1 #8 GR 1.25" C	E	MCP	MCC	E	100A/3P FRS-65	ADJ. TO EQUIP.	E	FVNR	MCC	3			HOA		R,G	2	2	YES				CWP-3
BP-1		PUMP	3			4.8	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-7.5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				BP-1
BP-2		PUMP	3			4.8	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-7.5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				BP-2
BP-3		PUMP	3			4.8	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-7.5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				BP-3
BP-4		PUMP	3			4.8	480	3	60	3 #12, #12 GR 0.75"C	E	MCP	MCC	E	30A/3P FRS-7.5	ADJ. TO EQUIP.	E	FVNR	MCC	1			HOA		R,G	2	2	YES				BP-4

NOTES LEGEND:

1. VFD'S ARE FURNISHED BY THE MECHANICAL INSTALLER PER THE REQUIREMENTS OF SPECIFICATION SECTION 262923.

EQUIPMENT SCHEDULE KEY

E	DIVISION 16
Q	FURNISHED WITH THE EQUIPMENT
*	COORDINATE WITH THE DIVISION 15 TEMPERATURE CONTROL INSTALLER
**	AUTOMATIC CONTROL WIRING BY DIVISION 15

PANEL "LP1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150 AMPERE MAIN CB		SURFACE	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL, SURGE PROTECTIVE DEVICE

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1			0.5	CONTROL POWER	0.5	0.5			0.0	SPARE				20	1	2
3	20	1			0.5	CONTROL POWER	0.5		0.5		0.0	SPARE				20	1	4
5	20	1			0.5	CONTROL POWER	0.5			0.5	0.0	SPARE				20	1	6
7	20	1			0.5	CONTROL POWER	0.5	0.5			0.0	SPARE				20	1	8
9	20	1			0.5	CONTROL POWER	0.5		0.5		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		1	1	1		CONNECTED TOTAL kVA				3		
						CONNECTED AMPS PER PHASE		8	8	4		CONNECTED AVERAGE AMPS PER PHASE				7		

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	3 kVA	DIVERSIFIED TOTAL kVA =	3
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	7
REMAINDER 0kVA @ 50% =	0 kVA				

GSBS ARCHITECTS

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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No. 181563
DAVID E. WESEMANN
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ISSUED DATE:	05.07.2010

SCHEDULES - CENTRAL PLANT

CONSTRUCTION DOCUMENTS

EP-671

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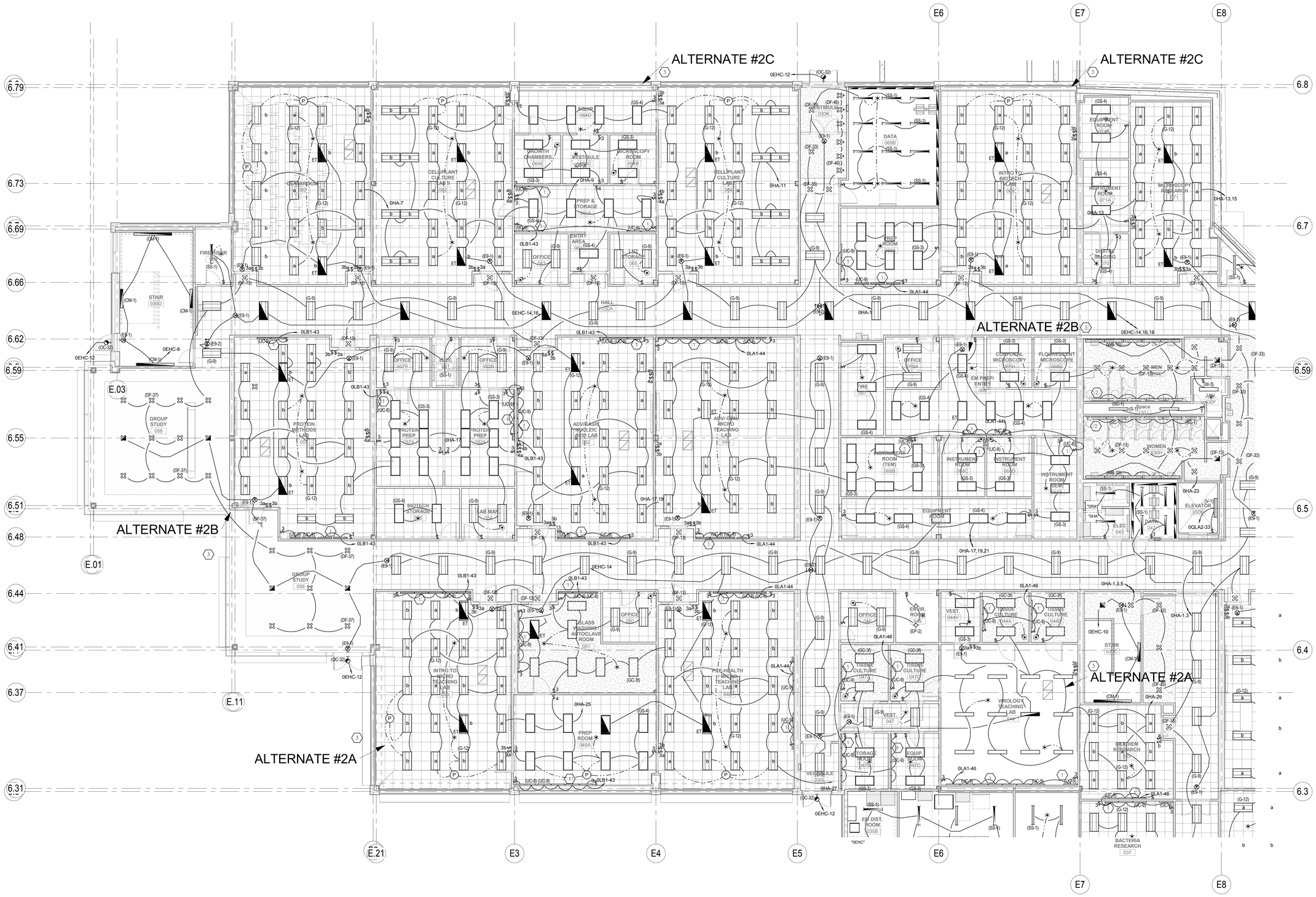
SHEET KEYNOTES

1. MOUNT UNDERCABINET LIGHTS TO UNDERSIDE OF UPPER CABINETS THAT ARE NOT-ADJUSTABLE. COORDINATE WITH MILLWORK AND/OR LAB FURNITURE INSTALLER.
2. MOUNT FIXTURES IN ARCHITECTURAL COVE. REFER TO ARCHITECTURAL DETAILS AND FIELD VERIFY COVE DIMENSIONS.
3. BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 LIGHTING PLAN - AREA A

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

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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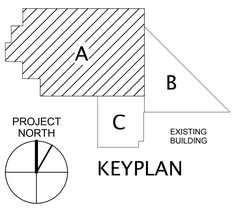

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LEVEL 0 LIGHTING PLAN - AREA A

CONSTRUCTION DOCUMENTS

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SHEET KEYNOTES

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SALT LAKE CITY, UT 84101
P 801.521.8600
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No. 181563
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REVISIONS:

1 LEVEL 0 LIGHTING PLAN - AREA B
SCALE: 1/8" = 1'-0"

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324 S. State St., Suite 400
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800-678-7077
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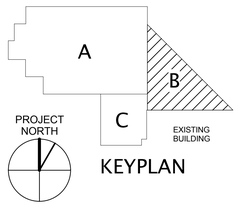

KEYPLAN

Utah Valley University New Science Building

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LEVEL 0 LIGHTING PLAN - AREA B

CONSTRUCTION DOCUMENTS

EL-101B

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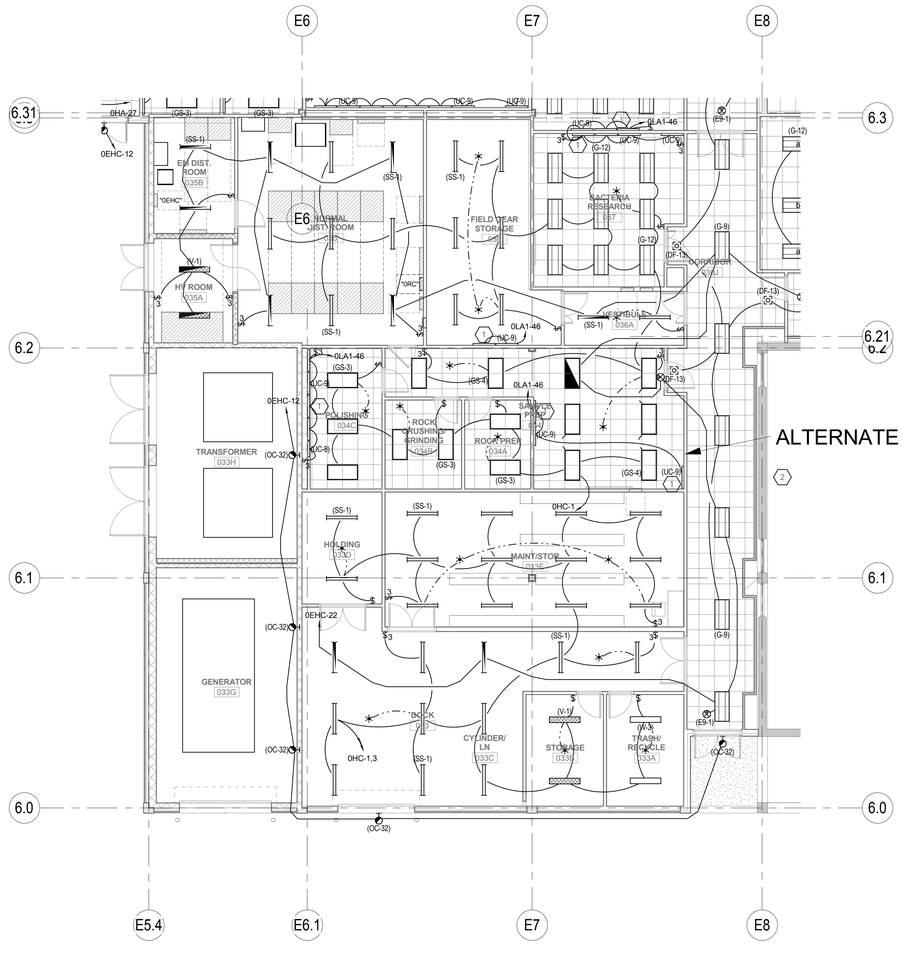
SHEET KEYNOTES

1 MOUNT UNDERCABINET LIGHTS TO UNDERSIDE OF UPPER CABINETS THAT ARE NOT-ADJUSTABLE. COORDINATE WITH MILLWORK AND/OR LAB FURNITURE INSTALLER.

2 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 LIGHTING PLAN - AREA C

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

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

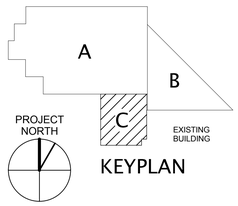
No. 181563
DAVID E. WESEMANN
LICENSED PROFESSIONAL ENGINEER
STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LEVEL 0 LIGHTING PLAN - AREA C

CONSTRUCTION DOCUMENTS

EL-101C

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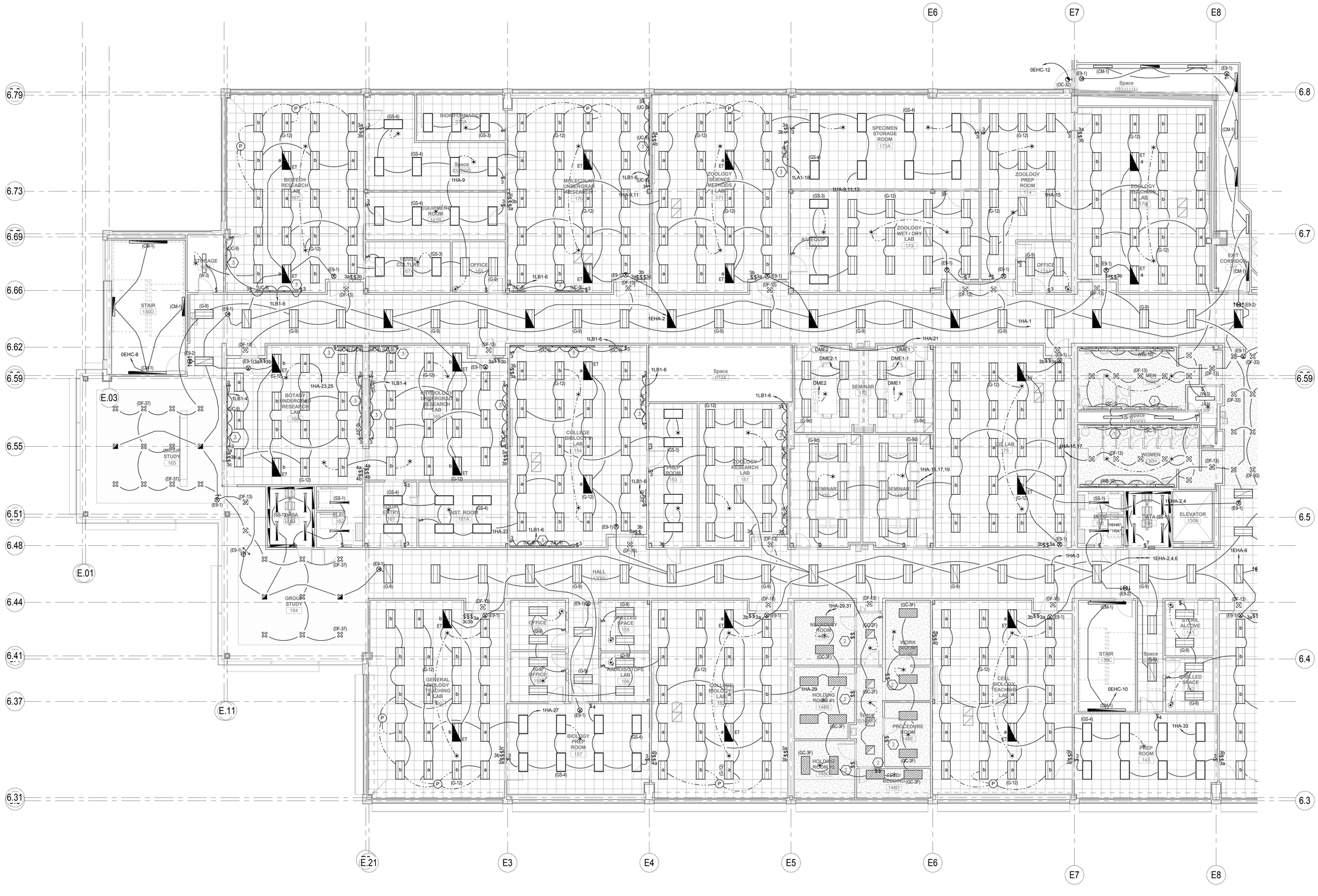
SHEET KEYNOTES

1. MOUNT FIXTURES IN ARCHITECTURAL COVE. REFER TO ARCHITECTURAL DETAILS AND FIELD VERIFY COVE DIMENSIONS.
2. PROVIDE DUAL-LEVEL SWITCHING IN EACH FIXTURE IN ROOM. SWITCH ON INBOARD LAMP SEPARATE FROM OUTBOARD LAMPS.
3. MOUNT UNDERCABINET LIGHTS TO UNDERSIDE OF UPPER CABINETS THAT ARE NOT-ADJUSTABLE. COORDINATE WITH MILLWORK AND/OR LAB FURNITURE INSTALLER.



1 LEVEL 1 LIGHTING PLAN - AREA A

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

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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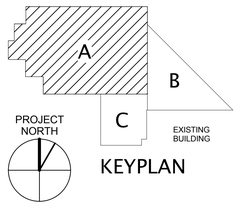

KEYPLAN

Utah Valley University New Science Building

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LEVEL 1 LIGHTING PLAN - AREA A

CONSTRUCTION DOCUMENTS

EL-102A

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SHEET KEYNOTES

1. MOUNT FIXTURES IN ARCHITECTURAL COVE. REFER TO ARCHITECTURAL DETAILS AND FIELD VERIFY COVE DIMENSIONS.
2. TO AISLE LIGHT TRANSIFORMER IN ELECTRICAL ROOM. DO NOT LOCATE THESE JUNCTION BOXES UNTIL THE SEATING FEILD DIMENSIONS AND SUBMITTAL IS RECIEVED AND APPROVED. LOCATE JUNCTION BOX FLUSH IN FLOOR TO FEILD ISLE LIGHT PROVIDED WITH SEATING. DIVISION 26 TO DO ALL FIELD WIRING.
3. BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.

1 LEVEL 1 LIGHTING PLAN - AREA B

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

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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STATE OF UTAH
05-07-2010

REVISIONS:

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801-328-5151
fax: 801-328-5155
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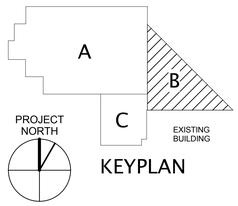

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
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Division of Facilities Construction and Management

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LEVEL 1 LIGHTING PLAN - AREA B

CONSTRUCTION DOCUMENTS

EL-102B

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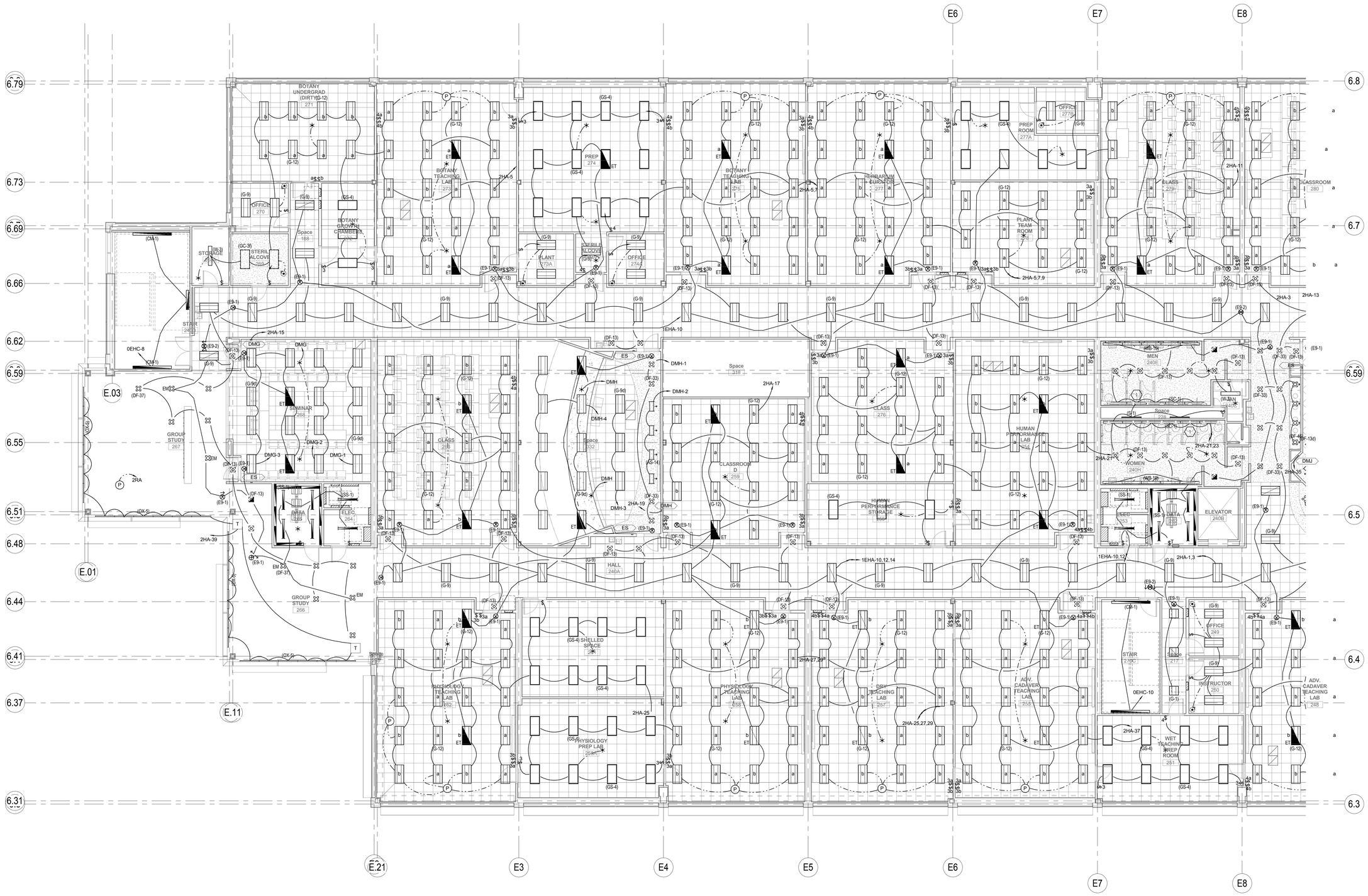
SHEET KEYNOTES

1 MOUNT FIXTURES IN ARCHITECTURAL COVE. REFER TO ARCHITECTURAL DETAILS AND FIELD VERIFY COVE DIMENSIONS.



1 LEVEL 2 LIGHTING PLAN - AREA A

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

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375 WEST 200 SOUTH
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P 801.521.8600
F 801.521.7913

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LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

05-07-2010

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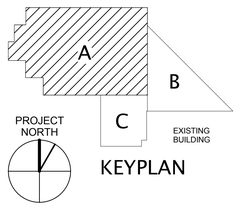

KEYPLAN

Utah Valley University New Science Building

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Division of Facilities Construction and Management

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GSBS PROJECT NO.:	2009.115.00
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LEVEL 2 LIGHTING PLAN - AREA A

CONSTRUCTION DOCUMENTS

EL-103A

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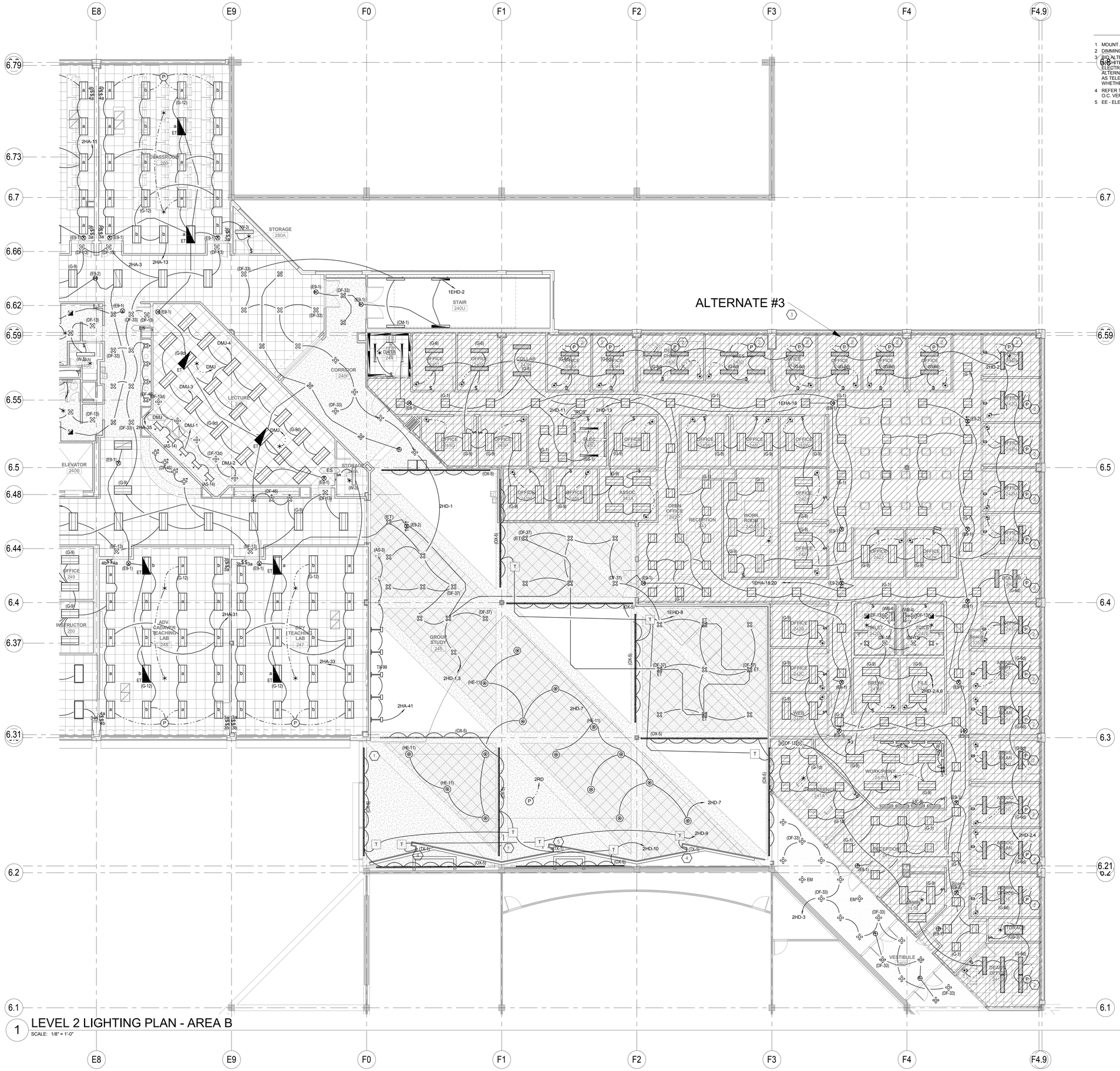

1 LEVEL 2 LIGHTING PLAN - AREA B

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

SHEET KEYNOTES

1 MOUNT AT BOTTOM OF CLERESTORY WINDOWS IN SPACE PROVIDED.
2 DIMMING PHOTOCELL TO DIRECTLY CONTROL DIMMING BALLASTS IN ROOM.
3 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
4 REFER TO ARCHITECTURAL ELEVATIONS TO LOCATE LED SPOT LIGHTIS AT REVEALS, 3" O.C. VERTICALLY IN SLOTS.
5 EE - ELECTRICAL ELEMENTS

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
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800-678-7077
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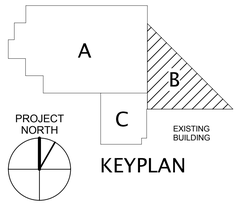

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
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LEVEL 2 LIGHTING PLAN - AREA B

CONSTRUCTION DOCUMENTS

EL-103B

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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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LICENSED PROFESSIONAL ENGINEER
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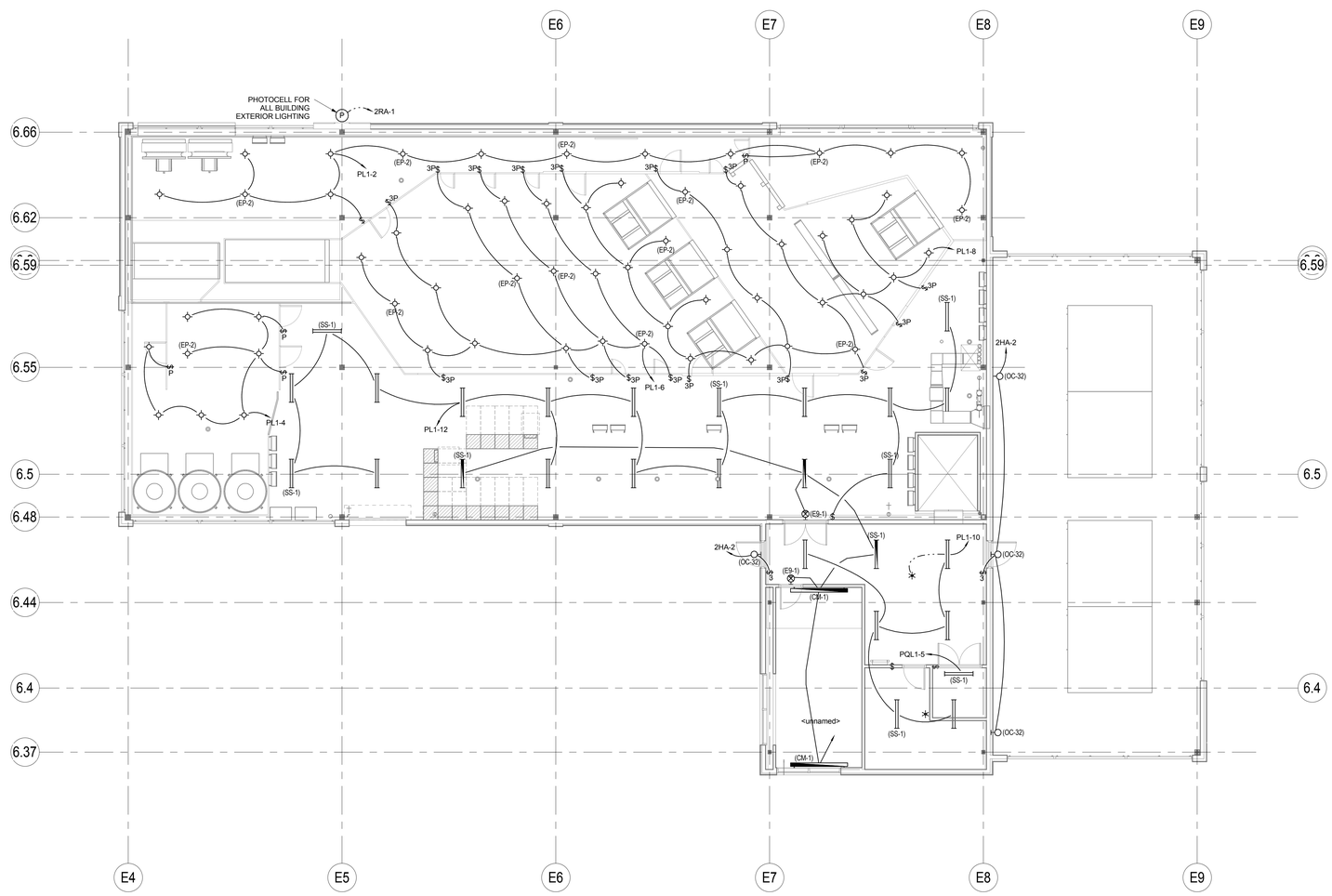

1 PENTHOUSE LIGHTING PLAN
SCALE: 1/8" = 1'-0"

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
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PENTHOUSE LIGHTING PLAN

CONSTRUCTION DOCUMENTS

EL-104

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RELAY PANEL SCHEDULE

RELAY CABINET: "0RA"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	0HA-1	A		CORRIDORS
2	0HA-3	A		CORRIDORS
3	0HA-5	A		CORRIDORS
4				SPARE RELAY
5				SPARE RELAY
6				SPARE RELAY
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY
EMERGENCY POWER BARRIER				
17				SPARE RELAY
18				SPARE RELAY
19				SPARE RELAY
20				SPARE RELAY
21				SPARE RELAY
22				SPARE RELAY
23				SPARE RELAY
24				SPARE RELAY

RELAY PANEL SCHEDULE

RELAY CABINET: "0RC"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	0HC-2	O1	4	SPARE RELAY
2	0HC-4	O2	5	SPARE RELAY
3	0HC-6	O2	5	SPARE RELAY
4				SPARE RELAY
5				SPARE RELAY
6				SPARE RELAY
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY

RELAY PANEL SCHEDULE

RELAY CABINET: "0ERC"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	0EHC-13	O1-EM	4	OUTDOOR EM POLE LTG
2	0EHC-15	O2-EM	5	OUTDOOR EM POLE LTG
3	0EHC-8			STAIR 030D
4	0EHC-10			S. STAIR
5	0EHC-12			EXT. EM
6	0EHC-14			S. EM
7	0EHC-16			W. EM
8	0EHC-18			N. EM
9	0EHC-20			E. EM
10	0EHC-22			SW. EM
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY

RELAY PANEL SCHEDULE

RELAY CABINET: "1RA"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	1HA-1	A	1	BLDG CORRIDOR
2	1HA-3	A	1	BLDG CORRIDOR
3	1HA-5	B	1	MAIN CORRIDOR
4	1HA-7	B	1	MAIN CORRIDOR
5				SPARE RELAY
6				SPARE RELAY
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY
EMERGENCY POWER BARRIER				
17	1EHA-2			1NW EM
18	1EHA-4			1N EM
19	1EHA-6			1S EM
20	1EHA-8			1E EM
21	1EHA-10			2NW EM
22	1EHA-12			2N EM
23	1EHA-14			2S EM
24	1EHA-16			2E EM

RELAY PANEL SCHEDULE

RELAY CABINET: "1RD"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1				SPARE RELAY
2				SPARE RELAY
3				SPARE RELAY
4				SPARE RELAY
5				SPARE RELAY
6				SPARE RELAY
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY
EMERGENCY POWER BARRIER				
17	1EHD-7			OUTDOOR EM LTG
18	1EHD-2			STAIR 140U EM
19	1EHD-4			RESTROOMS, ELEC.
20	1EHD-6			2ND FL. OFFICES
21	1EHD-8			LED EM
22	1EHD-10			LED EM
23				SPARE RELAY
24				SPARE RELAY

RELAY PANEL SCHEDULE

RELAY CABINET: "2RA"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	2HA-1	A	1	BLDG CORRIDOR
2	2HA-3	A	1	BLDG CORRIDOR
3	2HA-39	A-D	2	STUDY AREAS
4	2HA-41	A		ART WALL
5				SPARE RELAY
6				SPARE RELAY
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY
EMERGENCY POWER BARRIER				
17				SPARE RELAY
18				SPARE RELAY
19				SPARE RELAY
20				SPARE RELAY
21				SPARE RELAY
22				SPARE RELAY
23				SPARE RELAY
24				SPARE RELAY

RELAY PANEL SCHEDULE

RELAY CABINET: "2RD"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	2HD-1			BLDG CORRIDORS
2	2HD-3			BLDG CORRIDORS
3	2HD-5			ATRIUM PENDANTS
4	2HD-7			ATRIUM PENDANTS
5	2HD-9			VERTICAL LEDS
6	2HD-13			OFFICE CORRIDOR
7				SPARE RELAY
8				SPARE RELAY
9				SPARE RELAY
10				SPARE RELAY
11				SPARE RELAY
12				SPARE RELAY
13				SPARE RELAY
14				SPARE RELAY
15				SPARE RELAY
16				SPARE RELAY
EMERGENCY POWER BARRIER				
17				SPARE RELAY
18				SPARE RELAY
19				SPARE RELAY
20				SPARE RELAY
21				SPARE RELAY
22				SPARE RELAY
23				SPARE RELAY
24				SPARE RELAY

LIGHTING CONTROL GROUPS

A	BUILDING COMMON AREAS
B	CAMPUS COMMON AREAS
O1	OUTDOOR NIGHT LIGHTS
O2	OUTDOOR LIGHTS
	SUFFIXES
- D	INDOOR DAYLIGHTING AREA (WITH DESIRED FOOT CANDLE LEVEL TO BE MAINTAINED)
- EM	EMERGENCY LIGHT

LIGHTING CONTROL METHODS

1	ON/OFF WITH OCCUPIED/UNOCCUPIED MODE, BASED ON BMS TIMECLOCK CONTROL
2	OCCUPIED TIMES: INDOOR PHOTCELL ON/OFF UNOCCUPIED TIMES: ALWAYS OFF
3	ON/OFF WITH LOCAL WALL STATION ONLY SWEEP OFF AT UNOCCUPIED TIME
4	ON/OFF WITH EXTERIOR PHOTOCELL
5	ON/OFF W/EXTERIOR PHOTOCELL ENABLE/DISABLE WITH BMS TIMECLOCK
6	ALWAYS ON (NIGHT LIGHT)
	SUFFIXES
-E	Emergency lighting control: on/off on time schedule different than other adjacent fixtures in group to allow night-light operation for a longer period of time for safe egress out of the building; all indoor emergency fixtures shall all turn on upon activation of any and all wall station override stations in the building, and always be on upon power failure.
-WSX	WALL STATION OVERRIDE OR ON/OFF; "X" = SPECIFIC WALL STATION WITH CONTORL

DIMMING SCHEDULE

UVU POPE SCIENCE BUILDING

Panel ID: DMC | Location: 134 C | Page 1 | Main CB: None | JOB # 20090473 | 4/22/2010

Mount: WALL | Feeder: 3P4W 4 #6 THHN | 277 / 480 VOLTS

Accessories: Locking Door, Circuit Directory, Panel ID Tag, Ground Bar, Control Decoder, Individual Neutrals, digital controller, network interface

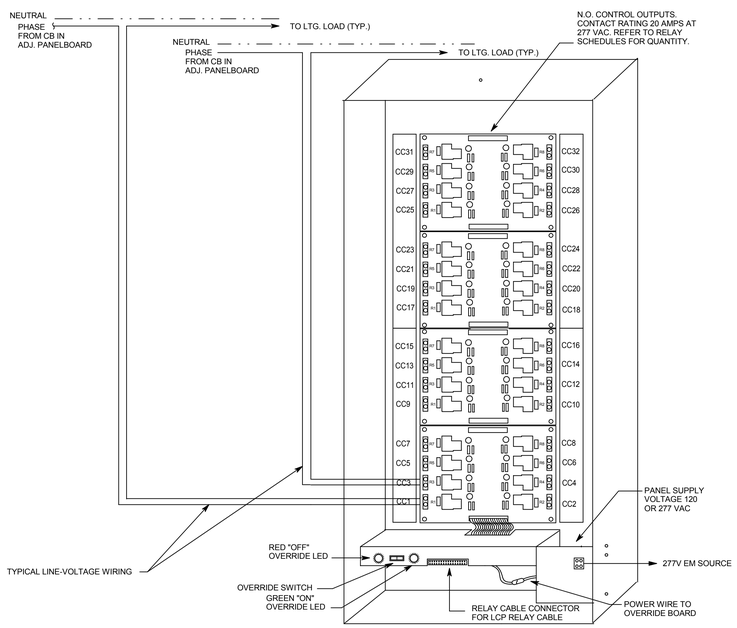
Slot No.	Type	Amps	Control Pole	Control C#	Load Lighting	Load Outlets	ID	Location	Total Watts	Panel Loading A	Panel Loading B	Panel Loading C	Total Watts	Location	ID	Load Outlets	Load Lighting	Control C#	Control Pole	Amps	Type	Slot No.
1	Dimmer	20	1	A 1	1596	0	DMC 1	ENTRY	1995	2755			760	SIDE DLTS	DMC 2	0	608	A 2	1	20	Dimmer	2
3	Dimmer	20	1	A 3	480	0	DMC 3	PANELS	600		1170		570	PLATFORM	DMC 4	0	456	A 4	1	20	Dimmer	4
5	Dimmer	20	1	A 5	600	0	DMC 5	WT BRD	750			5690	4940	DN LTS	DMC 6	0	3952	A 6	1	20	Dimmer	6
7	Dimmer	20	1	A 7	1000	0	DMC 7	AISLE DNLTS	1250	2500			1250	SPARE	DMC 8	0	1000	A	1	20	Dimmer	8
9	Dimmer	20	1	A	1000	0	DMC 9	SPARE	1250		2500		1250	SPARE	DMC 10	0	1000	A	1	20	Dimmer	10
11	Constant	20			1000	0	ET-EM	SPARE	1250			2500	1250	SPARE	DMC 12	0	1000			20	Constant	12
		100%								Total A	Total B	Total C								Lighting Diversity	125%	
									Watts	2,755	1,170	5,690										
								STARTING ADDRESS DMX 1	Amps	10	4	21										

DIMMERS SHOWN ARE FOR FLUORESCENT DIMMING BALLASTS. EMERGENCY SENSING LEAD TO TRANSFER DEVICES REQUIRED.

PANEL DM CONTROL SCHEDULE

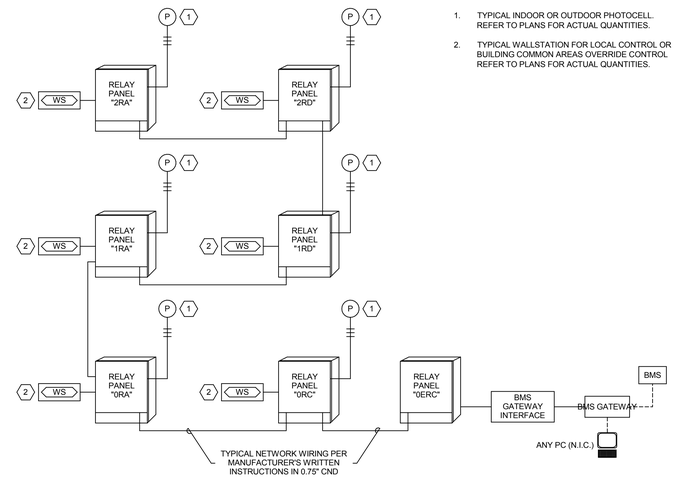
UVU POPE SCIENCE BUILDING AUDITORIUM

Control Channel	Dimmer #	Description
A 1	DMC 1	Entry Downlights
A 2	DMC 2	Side Aisle Downlights
A 3	DMC 3	Side Walls
A 4	DMC 4	Platform Downlights
A 5	DMC 5	Whiteboard
A 6	DMC 6	Room Recessed Downlights
A 7	DMC 7	Pendant Downlights
A 8	DMD 1	Spotlight 1
A 9	DMD 2	Spotlight 2
A 10	DMD 3	Spotlight 3
A 11	DMD 4	Spotlight 4
A 12	DMD 5	Spotlight 5
A 13	DMD 6	Spotlight 6
A 14	DMD 7	Spotlight 7
A 15	DMD 8	Spotlight 8



1 TYPICAL RELAY PANEL WIRING DETAIL

SCALE: N.T.S.

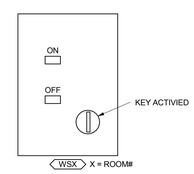


5 NETWORK LIGHTING CONTROL SYSTEM SCHEMATIC

SCALE: N.T.S.

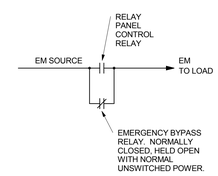
DETAIL KEYNOTES

1. TYPICAL INDOOR OR OUTDOOR PHOTOCELL. REFER TO PLANS FOR ACTUAL QUANTITIES.
2. TYPICAL WALLSTATION FOR LOCAL CONTROL OR BUILDING COMMON AREAS OVERRIDE CONTROL REFER TO PLANS FOR ACTUAL QUANTITIES.



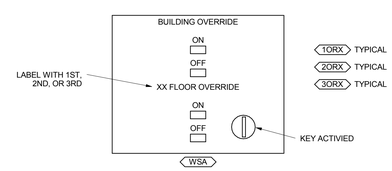
3 TYPICAL WALL STATION - LOCK CONTROL

SCALE: N.T.S.



4 EMERGENCY RELAY SCHEMATIC

SCALE: N.T.S.



2 TYPICAL COMMON AREA WALL STATION OVERRIDE SWITCH

SCALE: N.T.S.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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No. 181563
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STATE OF UTAH

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324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.15.00
ISSUED DATE:	05.07.2010

NETWORKED LIGHTING CONTROL DETAILS

CONSTRUCTION DOCUMENTS

EL-501

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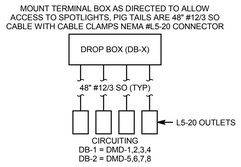
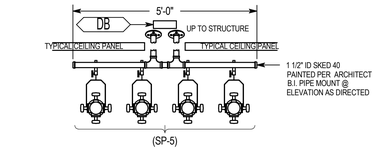
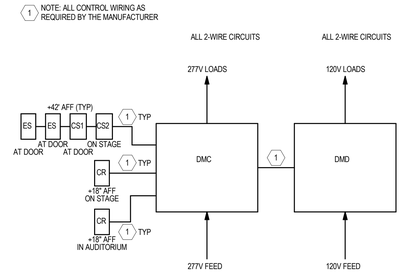


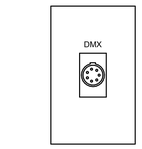
11 TORM DROP BOX
SCALE: N.T.S.



10 CEILING PIPE DETAIL
SCALE: N.T.S.



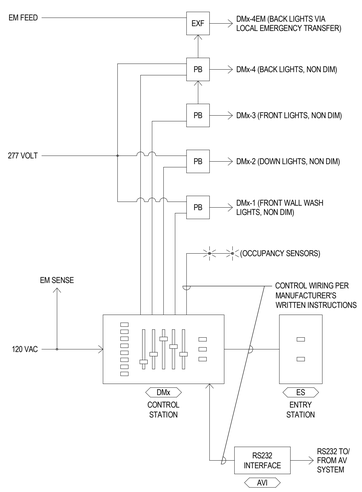
8 AUDITORIUM DIMMING ONE-LINE DIAGRAM
SCALE: N.T.S.



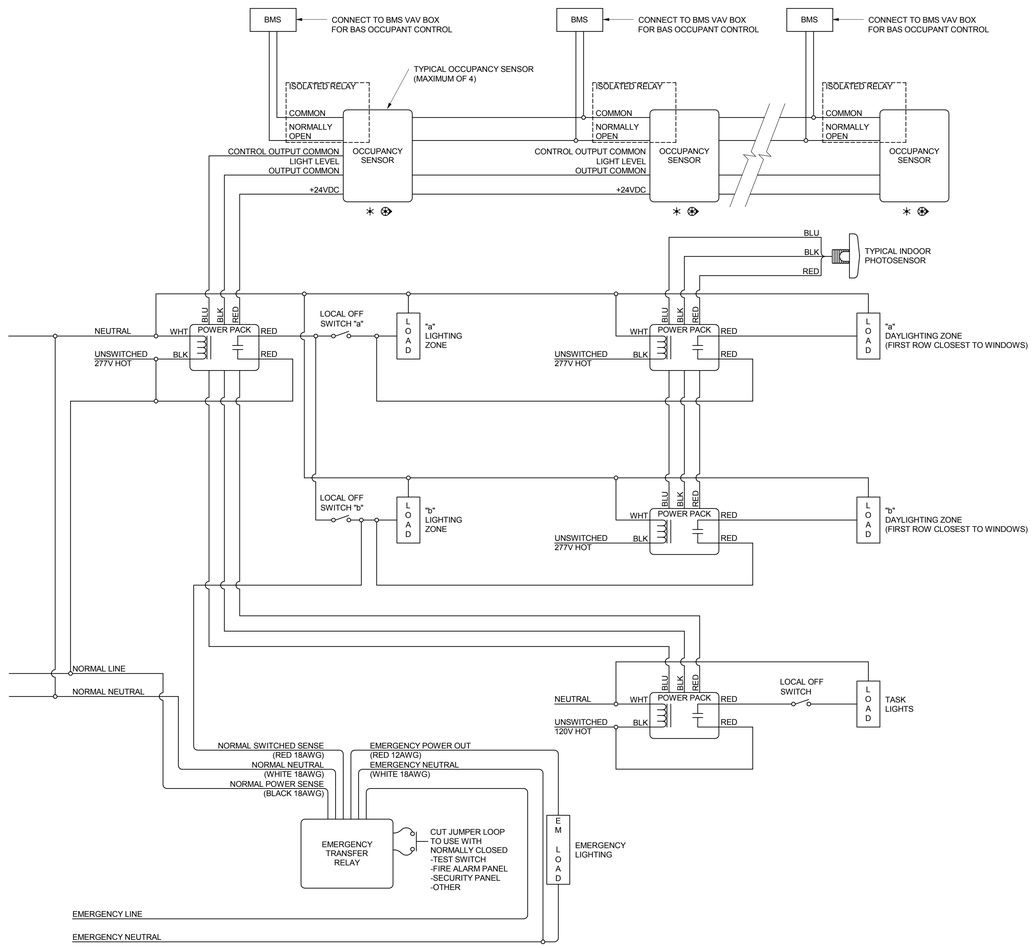
MOUNT AT +18" AFF
0.75" CONDUIT TO "DM".
FILL WITH CONTROL WIRING AS REQUIRED.

CR

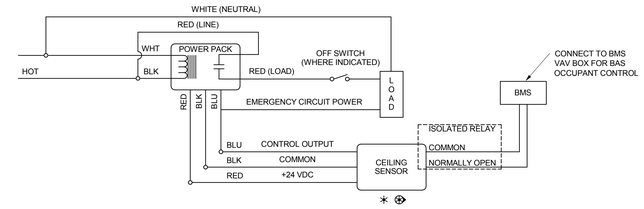
9 CONTROL RECEPTACLE
SCALE: N.T.S.



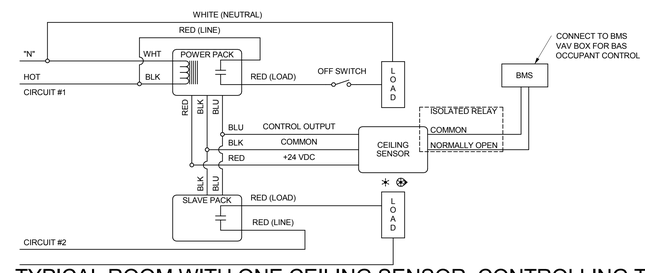
12 TYPICAL ONE ROOM LIGHTING CONTROL SCHEMATIC
SCALE: N.T.S.



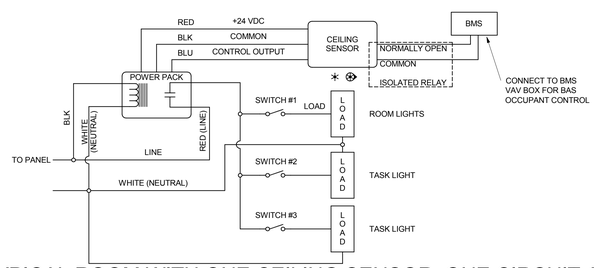
4 TYPICAL ROOM WITH MULTIPLE SENSORS, MULTIPLE CIRCUITS AND SWITCH LOADS, WITH DAYLIGHTING CONTROL & EMERGENCY TRANSFER RELAY
SCALE: N.T.S.



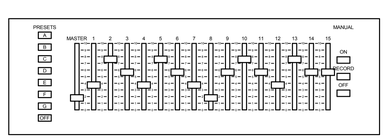
TYPICAL ROOM WITH ONE CEILING SENSOR, WITH OR WITHOUT WALL SWITCH
7
SCALE: N.T.S.



TYPICAL ROOM WITH ONE CEILING SENSOR, CONTROLLING TWO CIRCUITS
6
SCALE: N.T.S.



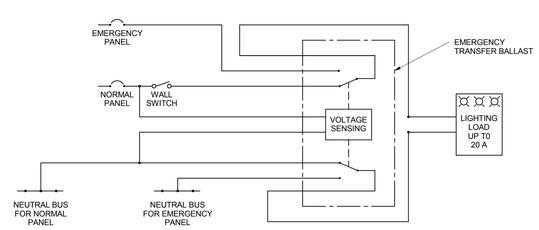
TYPICAL ROOM WITH ONE CEILING SENSOR, ONE CIRCUIT AND MULTIPLE SWITCHED LOADS
5
SCALE: N.T.S.



TOUCH SCREEN OR R/L PUSH BUTTONS WITH INDICATORS ARE ACCEPTABLE.
SILKSCREEN AS SHOWN ON SCHEDULE.
MOUNT AT +42" AFF.
0.75" CONDUIT TO "DM". FILL WITH CONTROL WIRING AS REQUIRED.

CS1 CS2

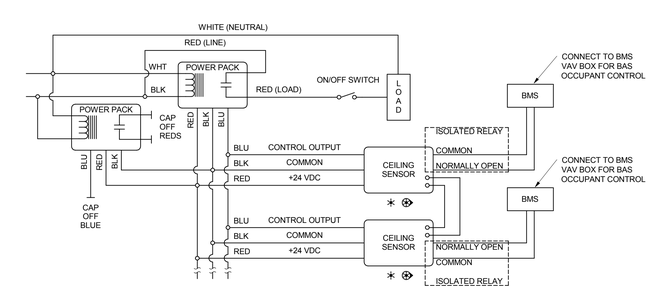
1 12-ZONE CONTROL STATION
SCALE: N.T.S.



NORMAL OPERATION
LIGHTING LOAD CONTROLLED BY LOCAL SWITCHING MEANS.

EMERGENCY OPERATION
LIGHTING LOAD IS INDEPENDENT OF LOCAL SWITCHING MEANS.

2 EMERGENCY LIGHTING TRANSFER DEVICE DETAIL
SCALE: N.T.S.



3 TYPICAL ROOM WITH MULTIPLE CEILING SENSORS
SCALE: N.T.S.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LIGHTING CONTROL DETAILS

CONSTRUCTION DOCUMENTS

EL-502

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LIGHTING FIXTURE SCHEDULE

UVU POPE SCIENCE

NOTE TO BIDDERS: COMPLY WITH THE LIGHTING SECTIONS OF THE SPECIFICATIONS.
REFER TO SPECIFICATIONS FOR IMPORTANT TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES, BALLASTS, AND LAMPS. THE CATALOG NUMBERS LISTED BELOW HAVE BEEN CAREFULLY PREPARED TO ASSIST BIDDERS IN SELECTING PRODUCTS TO ACHIEVE THE DESIGN CONCEPT, HOWEVER, PRIOR TO BIDDING, EACH MANUFACTURER SHALL COMPARE THE CATALOG NUMBERS SHOWN WITH THE DESCRIPTION AND REQUIREMENTS ON THE DRAWINGS, AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES. SPECIFICALLY INCLUDED IN THIS EVALUATION SHALL BE THE VERIFYING OF PROPER MOUNTING KITS OR ACCESSORIES TO FACILITATE INSTALLATION AS SHOWN AT EACH LOCATION ON THE DRAWINGS. NO ALLOWANCE OR REDRESS WILL BE ALLOWED FOR DISCREPANCIES THAT WERE NOT REPORTED TO THE ARCHITECT/ENGINEER IN TIME FOR CORRECTION OR CLARIFICATION BEFORE THE BID. THE REPORTING OF ANY AMBIGUITY IS THE RESPONSIBILITY OF THE BIDDER. PROVIDE UNIT PRICES AND FIXTURE BRAND SELECTED FOR ADD/DELETE CHANGES FOR EACH FIXTURE TYPES SHOWN WITHIN 48 BUSINESS HOURS OF THE BID DATE. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY DISQUALIFY THE PRODUCTS AND EMPOWER THE ENGINEER TO DETERMINE FAIR VALUE FOR FIXTURE AND INSTALLATION CHANGES, WITHOUT FURTHER INPUT FROM THE CONTRACTOR OR INSTALLER. SUBMITTAL PACKAGE SHALL INCLUDE LAMP MANUFACTURER AND CATALOG NUMBER ON EACH FIXTURE SHEET. ON ALL PENDANT MOUNTED FIXTURES, PROVIDE A SECOND SET OF PENDANTS, OF A DIFFERENT LENGTH, AS DIRECTED BY THE ARCHITECT/ENGINEER, PROVIDED AND INSTALLED AT NO ADDITIONAL CHARGE. ALL FIXTURES SHALL BE APPROVED BY UL OR ANOTHER ACCEPTABLE TESTING LAB FOR THE PURPOSE INTENDED AND WITH THE LAMP AND BALLAST PROPOSED. CONTRACTOR ALLOWANCE PRICES ARE ACCURATE WHEN THIS JOB WAS SPECIFIED, CONTRACTOR AND ELECTRICAL DISTRIBUTOR SHALL VERIFY THIS ALLOWANCE AND REPORT ANY PROBLEMS TO THE ENGINEER BEFORE THE BID. ALLOWANCE PRICE MAY OR MAY NOT INCLUDE LAMP(S) OR FREIGHT AS NOTED, AND DO NOT INCLUDE ANY TAXES. UNIVERSAL VOLTAGE (120/277) BALLASTS REQUIRED UNLESS NOTED OTHERWISE. DIMENSION SEQUENCE = (LENGTH X WIDTH X DEPTH) IN INCHES.

LINEAR FLUORESCENT FIXTURES MARKED "HIGH EFFICIENCY" USE 32 WATT 3100 INITIAL LUMEN LAMPS WITH .77 BALLAST FACTOR ELECTRONIC BALLAST.
LAMPS: OSI "XPS" SERIES, PHILIPS "ADV" SERIES, GE "T8 ULTRA HIGH LUMEN",
BALLASTS; ADVANCE "IOP" SERIES, OSI " PROSTART PSX", GE ULTRASTART SERIES.

SYMBOL	MARK	FIXTURE CHARACTERISTICS BODY / AIR / MOUNTING / DOOR LENS/LOUVER/REFLECTOR/OTHER	LAMP	WATTS	VOLTS	MANUFACTURER	CATALOG NUMBER
	AS	WALL WASH LIGHT ASYMMETRIC OPTICS, ALUMINUM REFLECTOR; WHITE PAINTED FINISH; MOUNTING AS SHOWN; MUST FIT ALL MOUNTING CONDITIONS INCLUDING DIAGIONALLY ON TILE CEILING					
	AS-2	ADJUSTABLE WALL WASH	1CF42	36w	277V	WINONA	P1-LS-CFM42-LSRH-SGW-SB
		SEMI-RECESSED CEILING MOUNT	RE835			PINNACLE	PS-CF42-SI-UNV-1C-W-B
		EXTERNAL STRAIGHT BLADE				SPI LIGHTING	EIS9461 FT 1F42MOD XXX PTXX
		LOUVER, WHITE 14" OVERALL LENGTH					
	AS-3	ADJUSTABLE WALL WASH	2CF42	80W	277V	WINONA	P1-LS-CFM242-LSRH-SGW-SB
		SEMI-RECESSED CEILING MOUNT	RE835			PINNACLE	PLS-2CF42-SI-UNV-1C-W-B
		EXTERNAL STRAIGHT BLADE				ELLIPTIPAR	F114-H242-E-02-2-00-AE-DV4-000-WHT BLADE
		LOUVER, WHITE				SPI LIGHTING	EIS9433 FT 2F42 XXX PTXX LV2 MOD-SEMI RECESSED
	AS-4D	2' COMPACT FLUORESCENT,	1-CF55	65W	277/120V	INSIGHT	TS587-02-120/277-P.S.-X-VS (IB)-DIM
		24" PENDANT MOUNT.	RE835			ELLIPTIPAR	F126-L155X-02-X-VO-VCX02-24"0-DIM
		AT ELEVATION TO CLEAR SCREEN				EXCELINE	ELE54BXWHMIB6-PENDANT-DIM
		2 WIRE DIMMING BALLAST				SPI	EXI 4863 WHT SM DIM(IB)
						LAM	ZAA24-ST24"-I-55BX-SGW-V-DT-DIM
						WINONA	P2-LS-124FT55-120/277V-LS8-SGW-DIM
	AS-14	SEMI-RECESSED ADJUSTABLE	1-CF-A42	50W	277/120V	PINNACLE	P-CF42-SI-UNV-1C-W
		WALL WASH FIXTURE; APPROX.	RE841			WINONA	P1-LS-CFM142-LSRU-SGW-X-STD
		12" X 8"				ELLIPTIPAR	F204-H142-T02-UNV-00-0
						SPI LIGHTING	EIS9461 FT 1F42MOD XXX PTXX
	CM	STEEL LINEAR FIXTURES: LENGTHS AND CONFIGURATIONS SHOWN ON THE DRAWINGS; LAMPS FOUR FOOT WHERE POSSIBLE; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; INTERNAL CONCEALED FASTENERS; COLOR AS NOTED AND/OR APPROVED BY ARCHITECT; ORIENT FIXTURE ACCORDING TO ARCHITECTS/ ENGINEER'S INSTRUCTIONS. SWIVEL STEM MOUNT UNLESS NOTED OTHERWISE. INSTALL LEVEL AND STRAIGHT WITH INVISIBLE SPLICES. PROVIDE ALL REQUIRED HANGERS, SPLICERS, END CAPS, JOINTS, FEEDS, ETC., FOR A COMPLETE INSTALLATION, WHITE LOUVER FINISH.					
	CM-1	6"X 6 1/2" PROFILE,	2-F32T8	50W/4'	277/120V	LITECONTROL	W-ID-66N24T8K19-CWM-PST8-120/277
		WALL MOUNT, OPEN UP,	RE841			MARK	66W-DI-232T8-ET8PRS-UNIV-K19-MW-4'
		K19 LENS DOWN, INDIRECT/DIRECT,				NEORAY	88/2T8-S22-4-120/277PSEB
		4' MODULE.				PRUDENTIAL	P 60 D5 M5 2 04 T8 PROG START P19A UNIVOLT
		HIGH EFFICIENCY				PMC	S66-DIA-W-2/OCT-4-K19-WHT-EBSPEC-12/27
						LIGHTOLIER	SQ624BWL-UNV-PSX
						NATIONAL	S66-ID/D-232OCT-A-W-UEB-CBA
	CM-40	6"X 6 1/2" PROFILE, 2-LAMP,	2-F32T8	48W/4'	277/120V	LITECONTROL	PD-66N-24T8-PWW-CBA(CWM)-TW-SP-ELB-V
		STEM MOUNT, SEMI-SPECULAR	RE841			LIGHTOLIER	SQ624DPS-UNV-PSX
		LOUVERED DOWNLIGHT,	3100 LU			NEORAY	83DP-2T8-ST-4-UNV-SPEB-SI-S72
		4' MODULE 16' ASSEMBLY				PMC	S66-D-SP2T8-16-WB-WHT-UNV-SPEB
		HIGH EFFICIENCY BALLAST.				PRUDENTIAL	P-60-2T8-04'-SPL-SCBA-D1-SC-UNV-XX-X1-C1
	CM-41	6"X 6 1/2" PROFILE, 2-LAMP,	2-F32T8	48W/4'	277/120V	LITECONTROL	SD-66N-24T8-PWW-CBA(CWM)TWSPELBV-FLANGE
		RECESSED FLANGE MOUNT,	RE841			LIGHTOLIER	SQ624DFS(W) UNV
		SPECULAR LOUVERED DOWN,	3100 LU			NEORAY	83R-2T8-ST-4-UNV-SPEB-SI-S72
		4' MODULE 16' ASSEMBLY				PMC	S66-R-FL2T8-16-WB-WHT-UNV-SPEB
		HIGH EFFICIENCY BALLAST.				PRUDENTAL	P63 2T8 04 SPL SC UNV XXB CR BF.77
	CM-42	6"X 6 1/2" PROFILE, 2-LAMP,	2-F32T8	48W/4'	277/120V	LITECONTROL	SD-66N-24T8-PWW-CBA(CWM)TWSPELBV-GRID
		RECESSED GRID MOUNT,	RE841			LIGHTOLIER	SQ624DFS(W) UNV
		SPECULAR LOUVERED DOWN,	3100 LU			NEORAY	83R-2T8-ST-4-UNV-SPEB-SI-S72
		4' MODULE 16' ASSEMBLY				PMC	S66-R-G2T8-16-WB-WHT-UNV-SPEB
		HIGH EFFICIENCY BALLAST.				PRUDENTAL	P63 2T8 04 SPL SC UNV XXB CR BF.77
	DF	FLUORESCENT DOWNLIGHT; THERMALLY PROTECTED HOUSING: TO ACCOMMODATE MULTIPLE TRIMS AND REFLECTOR ASSEMBLIES FOR LAMPS AS LISTED BELOW; ELECTRONIC BALLASTS; LOW IRIDESCENT REFLECTOR FINISH (EVEN IF NOT SHOWN IN CATALOG #); SELF FLANGING TRIM UNLESS NOTED.					
	DF-13	RECESSED DOWNLIGHT; VERTICAL,	1-CF-A26	30W	277/120V	PORTFOLIO	C6032E-6051LI (12 X 11-1/2 X 9-1/2)
		6" APERTURE, 26W CF-AMALGAM	RE841			INFINITY	PV60 126T-EB (GX24Q-3) 277 BH
		LAMP, CLEAR.					(16-1/4 X 12 X 9-5/8)
						LIGHTOLIER	8021CCLW/6132BU (12-3/4 X 10 X 9-3/8)
						LITHONIA	AFV 26TRT 6AR MVOLT
							(15-13/16 X 12-15/16 X 10-7/8)
						OMEGA	S626QPL-U-T6-CS (11-11/16 X 11-7/16 X 11-3/8)
						PRESCOLITE	CFQ626EB-STF602 (15-3/8 X 14-3/8 X 11-5/16)
	DF-13d	RECESSED DOWNLIGHT; VERTICAL,	1-CF-A26	30W	277/120V	PORTFOLIO	C6032E-6051LI (12 X 11-1/2 X 9-1/2)
		6" APERTURE, 26W CF-AMALGAM	RE841			INFINITY	PV60 126T-EB (GX24Q-3) 277 BH
		LAMP, CLEAR.					(16-1/4 X 12 X 9-5/8)
		WITH DIMMABLE BALLAST				LIGHTOLIER	8021CCLW/6132BU (12-3/4 X 10 X 9-3/8)
						LITHONIA	AFV 26TRT 6AR MVOLT
	DF-13w	RECESSED DOWNLIGHT; VERTICAL,	1-CF-A26	30W	277/120V	PORTFOLIO	C6032-EDR26-6051L1
		6" APERTURE, WALL WASH	RE841			EDISON PRICE	TRPV 26/6 WW XXX
		26W CF-AMALGAM LAMP, CLEAR				LIGHTOLIER	8021WWCCLW-S6132BU
		WITH SPECIAL LABEL				GOTHAM	AFVW 26TRT 6AR MVOLT WRL26
						OMEGA	S626PLT-U-T6WW-CS
						PRESCOLITE	LF6CFV32EBMW26 6CFVWW
	DF-33	RECESSED DOWNLIGHT;7-8"	1-CF-A32	50W	277/120V	PORTFOLIO	C7132E-7151LI
		APERTURE, HORIZONTAL,	RE835			KIRLIN	RR80712-43(32)-97
		32W CF-AMALGAM LAMP, CLEAR.				LIGHTOLIER	8037CLW/7132BU
						EDISON PRICE	TRPH 132/8 XXX
						OMEGA	OM8-1H-32PLT-CS-120/277
						PRESCOLITE	CFT832HEB-STF802H
						HUBBELL	D9132-120/277V-9ARW
	DF-37	RECESSED DOWNLIGHT;	2-CF-A32	76W	277/120V	LIGHTOLIER	8039 CLP-8242HU
		8 3/4" APERTURE, HORIZONTAL,	RE841			PRESCOLITE	CFT932HEB-STF902H
		2-32W CF-AMALGAM LAMPS,				PORTFOLIO	C8242E-8351L1
		CLEAR.				EDISON PRICE	TRPH 132/8 XXX
	DF-37d	RECESSED DOWNLIGHT;	2-CF-A32	90W	277V	LIGHTOLIER	8039 CLP-8242 MK10-
		8 3/4" APERTURE, HORIZONTAL,	RE841			PRESCOLITE	CFT932HEBXDM-STF902H
		2-32W CF-AMALGAM LAMPS,				PORTFOLIO	C8242EDIM -8351L DIM
		CLEAR.				EDISON PRICE	TRPH 132/8 XXX -DIM
		2 WIRE DIMMING BALLAST					
	DF-46	RECESSED WALL WASHER;	1-CF-A32	50W	277/120V	PORTFOLIO	C7142E-7111LI (13 X 11-1/2 X 6-1/2)
		6-7" APERTURE, HORIZONTAL	RE841			INFINITY	PH60 142T-EB (GX24Q-4) WW 277 BH
		LAMP, 1-42W CF-AMALGAM					(16-1/4 X 12 X 5-1/4)
		LAMP, CLEAR CONE.				LIGHTOLIER	8087CLW/7142BU (15 X 12-3/4 X 7-3/4)
						LITHONIA	AFW 1/42TRT 6AR MVOLT
							(15-7/8 X 13-5/8 X 7-1/4)
						PRESCOLITE	CFT632HEB-STF602HWW
							(16-1/4 X 14-7/16 X 6-1/4)
						OMEGA	S61H42PLT-U-T61H-WW-CS
							(11-11/16 X 11-7/16 X 5-3/4)
	DF-47	RECESSED DOWNLIGHT;SHOWER	1-CF-A32	50W	277/120V	OMEGA	OM61H32PLTSRD-SWR
		LIGHT TRIM, 9" APERTURE,	RE841				(24-13/16 X 14-1/2 X 6-3/16)
		HORIZONTAL, 32W CF-AMALGAM				INFINITY	PVSL68 132T-EB (GX24Q-3) 277 BH
		LAMP. GASKET.					(16-1/4 X 14-7/16 X 7-7/8)
						LIGHTOLIER	8097CWHW/7132BU (15 X 12-3/4 X 6-1/2)
						HALO	C7132-1E-7180LI-120 (14 X 13-5/16 X 8)
						PRESCOLITE	CFT832HEB-WTT2F (16-1/4 X 14-7/16 X 7-1/8)
						LITHONIA	LGF-132TRT9 RW DOLGSGT MVOLT
							(17-3/4 X 17-1/4 X 8-5/8)
	DF-48	RECESSED DOWNLIGHT;SHOWER	1-CF-A42	50W	277/120V	HALO	C7142-1E-7180LI-120
		LIGHT TRIM, 9" APERTURE,	RE835			HUBBELL	D9142-120/277V-912W
		HORIZONTAL, 42W CF-AMALGAM				PRESCOLITE	CFT842HEB-WTT2F
		LAMP.				LITHONIA	LGF-142TRT9 RW DOLGSGT MVOLT
						LIGHTOLIER	8097CWHW/7142BU
	E9	EXIT SIGN: METAL HOUSING; CEILING MOUNT, SEE DRAWINGS; ARROWS PER PLANS; LED LAMPS;EMERGENCY BATTERY PACK WITH 10 YEAR PRO-RATA WARRANTY; SELF-TESTING; EDGE LIGHTED CLEAR LENS; GREEN LETTERS ON CLEAR BACKGROUND. MUST MEET NFPA ILLUMINATION STANDARDS. UNITS SHOWN ARE CEILING MOUNT MODELS. CONTRACTOR TO PROVIDE MATCHING WALL MOUNTED UNITS WHERE REQUIRED.					
	E9-1	SINGLE FACE:	LED	20W	120/277V	DUAL-LITE	CVER1GNE
						EELP	EDG 1 GC W EM
						LITHONIA	LRP W 1 GC XX 120/277 ELN
						ISOLITE	EDGL-EM-S-S-G-BK (BLACK HOUSING)
						HIGH-LITES	LEDBPRXF0-2-GC-SX
						CHLORIDE	STELX-X-1-SC-X
						LIGHTOLIER	LEEC1GCX
	E9-2	DUAL FACE:	LED	20W	120/277V	DUAL-LITE	CVER2GNE
						EELP	EDG 2 GC W EM
						LITHONIA	LRP W 2 GMR XX 120/277 ELN
						ISOLITE	EDGL-EM-D-S-GM-BK (BLACK HOUSING)
						HIGH-LITES	LEDBPRXFO-3-GW-SX
						CHLORIDE	STELX-X-2-SC-X
						LIGHTOLIER	LEEC2GC7
	EP	ELEVATOR PIT LIGHTS: COMPACT FLUORESCENT VAPORTIGHT; COPPER-FREE CAST ALUMINUM BODY AND GUARD; CAST ADAPTERS FOR MOUNTING AS NOTED, CLEAR TEMPERED GLASS GLOBE, U.L. LISTED FOR USE IN WET LOCATIONS.					
	EP-1	WALL ARM MOUNT ON FLUSH	1-CF32A	40W	120-277	SPERO	VW15-41-G-VB32-CF
		OR RECESSED OUTLET BOX.	RE841			D'AC	D1010-1F32-UEB-SCBA
						EXCELINE	RLW32HFLCGC1
						RIG-A-LITE	VP-WB-1-32-F-MT
						DAYBRITE	VFN-32-C-U-W-PG
						GUTH	VPW-32T
						TMS	69-X-F-WF-32-UNV-G-GSC
						ARK	AVW31 120
	EP-2	SURFACE MOUNT ON FLUSH	1-CF32A	40W	120-277	SPERO	VS15-41-G-VB32-CF
		OR RECESSED OUTLET BOX.	RE841			D'AC	D8010-1F32-UEB-SCBA
						EXCELINE	RLW32HFLCGC6
						RIG-A-LITE	VP-C-1-32-F-MT
						DAYBRITE	VFN-32-C-U-C-PG
						GUTH	VPC-32T
						TMS	69-X-F-CF-32-UNV-G-GSC
						ARK	AVB31 119
	ET	TRANSFER DEVICE FOR FLUORESCENT BALLASTS, LOCATE ON FIRST EMERGENCY FIXTURE IN ROOM PER CIRCUIT TO TRANSFER EMERGENCY PORTION OF CIRCUIT TO EMERGENCY FEED, CONNECT TO NORMAL SIDE FOR SENSING, AND TO BOTH NORMAL FEED AND EMERGENCY CIRCUIT. USE 2 POLE FOR NORMAL CIRCUITS AND 3 POLES FOR DIMMED CIRCUITS.					
		CIRCUIT LEVEL TRANSFER DEVICE				BODINE	GEN-20
		20A MIN RATING				NINE24inc	BLTC-X
						LIGHTGUARD	LIGHTSTAR SERIES
						CHLORIDE	LIGHTSTAR SERIES
						IOTA	ETS
						DUALITE	ATSD20
						SIDE-LITE	SB20
	FC	COMPACT FLUORESCENT CYLINDER DOWNLIGHTS; CEILING, PENDANT OR WALL BRACKET MOUNTING AS INDICATED WHERE CEILING IS SLOPED PROVIDE SWIVEL ADAPTER; PROVIDE BALLASTS AS SHOWN; FINISH AS SPECIFIED BY ARCHITECT.					
	FC-11	PENDANT MOUNT 8" DIA.,	CF32	50W	277/120V	PRESCOLITE	CF8P42TEBCR EB CR XX 120/277
		45 DEGREE SWIVEL CANOPY,	RE841			ATLANTIC	PV832-XX
		ALUMINUM HOUSING, ELECTRONIC				LITHONIA	CFV9-42TRT-8AR-MVOLT-CRS
		BALLAST.				INFINITY	PVC90-142T-PM-UNIVERSAL EB
						KIRLIN	SR80933-97-PM
						LIGHTOLIER	CS7142VUCCLFACSA36
						OMEGA	OM8-42PLT-PC-CSFF-U
	FC-11d	PENDANT MOUNT 8" DIA.,	CF32	50W	277V	PRESCOLITE	CF8P42TEBCR EB CR XX MX DIM
		45 DEGREE SWIVEL CANOPY,	RE841			ATLANTIC	PV832-XX-DIM
		ALUMINUM HOUSING, ELECTRONIC				LITHONIA	CFV9-42TRT-8AR-DIM-CRS
		BALLAST.				INFINITY	PVC90-142T-PM-MX DIM
		2 WIRE DIMMING BALLAST				KIRLIN	SR80933-97-PM-DIM
		MOUNT ATELEVATION AS DIRECTED				LIGHTOLIER	CS7142VUCCLFACSA36-DIM
						OMEGA	OM8-42PLT-PC-CSFF-U-DIM
	G	INDIRECT TROFFERS: RECESSED FOR LAY-IN GRID; HINGED FLUSH STEEL DOOR WITH LATCH; EARTHQUAKE CLIPS, PROGRAM START ELECTRONIC BALLASTS; LONG COMPACT FLUORESCENT LAMPS; ONE BALLAST PER FIXTURE, 100-10% DIMMING BALLAST WHERE SHOWN.					
	G-1	2X2, 2-LAMP.	2-T524	50W	277/120V	LIGHTOLIER	QHE2GPFOP2FT
		CENTER BASKET , PERFORATED	RE841			FOCAL POINT	FLU-22-B-2T5-S-UNV-PS-WH
		GRID MOUNTED				DAYBRITE	2AVG2CF40-PMW-UNV-SPEB
						LIGHTOLIER	CFS2GPF224-UNV-PG
	G-1D	SAME AS G-1, WITH DIMMABLE BALLAST				LITECONTROL	GDTD22C-22T5HO-CWM-ELB
						HEWILLIAMS	DIG-S22-224T5H-WPR-EB2-UNV
						LITHONIA	2AVG2CF40MDR120SPEBPS
						COLUMBIA	STR22-224G-MPO-11EPU
	G-6	1X4, 2-LAMP.	2-F32T8	50W	277/120V	DAYBRITE	1ST-G-232-D-UNV-EB-PRGRMSTART-.77
		FLAT CENTER; ACRYLIC LENS	RE841			PINNACLE	CJ14A-2T8-GX-UNV-1C-W-PRGRMSTART-.77
		HIGH PERFORMANCE (80% - 85%				LEDALITE	3314-D1-ST-T232-S-1-UNV-E (.77BF)
		FIXTURE EFFICIENCY)				AXIS	DIA14-VL-T8-2-X-UNV-E-1-TB.77
		PREMIUM EFFICIENCY LAMPS/BALLAST;					
		MUST SUBMIT PHOTOMETRIC REPORT					
		FOR APPROVAL.					
	G-6D	SAME AS G-1, WITH DIMMABLE BALLAST					
		4-WIRE TYPE TO DIM DIRECTLY WITH PHOTOCELL					
	G-8	2X4, 3-LAMP. CENTER BASKET;	3-T8	75W	277/120V	METALUX	2RDI-332RP-SPECEB-ER81
		PROVIDE 2 BALLASTS FOR	RE841			PRUDENTIAL	CL6038-24-440BX-X1-UNIVOLT-PROGRAM START
		DUAL-LEVEL SWITCHING;				LITECONTROL	G-D-TD24C-34T8-CWM-TW-ELB-HE
		PREMIUM EFFICIENCY				LSI	2LLGC 332T8 SSO10PS RPW UE
		LAMP/BALLAST COMBINATION				LITHONIA	T2AVG 2CF40 MDR SMD MVOLT TUBRHP
						DAYBRITE	2AVG332-PMW-UNV-1/21EB.77
						LIGHTOLIER	CFS2GPF332-UNV-SO-OSR/PSX
	G-9	2X4, 2-LAMP. CENTER BASKET	2-F32T8	50W	277/120V	METALUX	2RDI-232RP-SPECEB-ER81
		PREMIUM EFFICIENCY	RE841			PRUDENTIAL	CL6038-24-440BX-X1-UNIVOLT-PROGRAM START
		LAMP/BALLAST COMBINATION				LITECONTROL	G-D-TD24C-24T8-CWM-TW-ELB-HE
						LSI	2LLGS 232T8 SSO10PS RPW UE
	G-9d	SAME FIXTURE WITH DIMMING BALLAST				LITHONIA	T2AVG 2T8 MDR SMD MVOLT TUBRHP
						DAYBRITE	2AVG232-PMW-UNV-1/21EB.77
						LIGHTOLIER	CFS2GPF232-UNV-SO-OSR/PSX
	G-12	2X4, 2-LAMP; FLAT CENTER,	2-F32T8	50W	277/120V	LIGHTOLIER	SKS2GPK232UNV-PROGRAM START-0.77BF
		ANGLED SIDES, ACRYLIC LENS;	RE841			FINELITE	HPR-1-2X4-DCO-2T8-UNV-XX-XX-PS-0.77BF
		HIGH PERFORMANCE (80% - 85%				LEDALITE	3324-D1-ST-T232-S-XX-UNV-PRGRM-.77
		FIXTURE EFFICIENCY)				AXIS	DIA24-VL-T8-2-UNV-E-1-TB.77
		PREMIUM EFFICIENCY LAMPS/BALLAST;					
		MUST SUBMIT PHOTOMETRIC REPORT					
		FOR APPROVAL.					
	GC	CLEAN ROOM TROFFERS: GASKETED AND CAULKED SUITABLE FOR WET LOCATION AND HOSE-DOWN APPLICATIONS, CLASS 10,000 AND 100,000 CLEAN ROOM APPLICATIONS; RECESSED FOR LAY-IN OR HARD CEILINGS AS INDICATED; 0.156" ACRYLIC LENS; EARTHQUAKE CLIPS; MAX 5" DEEP; SPECIFICATION GRADE; PROGRAM START ELECTRONIC BALLASTS, T8 LAMPS					
	GC-2F	2X2, 1-LAMP, FLANGE MOUNT	3-F17T8	60W	120/277V	LITHONIA	2SRT-F-317-FW-A12156V-MVOLT-PRGRM-.77
			RE841			LA LIGHTING	FCR700-3-2R-FAW-A12156V-M2-3T8EB-UNV
						GUTH	K1-22-3F17-F-6-A12.156-EB-.77
						FAILSAFE	CFF-24-317-UNV-IK12.156-EB81-BF.77
	GC-3	2X4, 3-LAMP, LAY-IN	3-F32T8	71W	120/277V	LITHONIA	2SRT-G-332-FAW-A12156V-MVOLT-PRGRM-.77
		HIGH EFFICIENCY BALLAST.	RE841			LA LIGHTING	GCR620-3-4R-FAW-A12156V-M2-3T8EB-UNV-
			3100 LU			GUTH	K1-24-3F32-G-6-A12.156-EB-.77
						FAILSAFE	CFG-24-332-UNV-IK12.156-EB81-BF.77
	GC-3F	2X4, 3-LAMP, FLANGE-MOUNT	3-F32T8	71W	120/277V	LITHONIA	2SRT-F-332-FW-A12156V-MVOLT-PRGRM-.77
		HIGH EFFICIENCY BALLAST.	RE841			LA LIGHTING	FCR700-3-4R-FAW-A12156V-M2-3T8EB-UNV-
		2 BALLASTS FOR DUAL-LEVEL	3100 LU			GUTH	K1-24-3F32-F-6-A12.156-EB-.77
		SWITCHING.				FAILSAFE	CFF-24-332-UNV-IK12.156-EB81-BF.77
	GS	TROFFERS: RECESSED FOR LAY-IN GRID; STATIC; HINGED AND LATCHED STEEL DOOR; .125 ACRYLIC PRISMATIC LENS, MINIMUN 1/8"; EARTHQUAKE CLIPS; MAX 5" DEEP; SPECIFICATION GRADE; PROGRAM START ELECTRONIC BALLASTS, T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.					
	GS-3	2X4, 2 LAMP.	2-F32T8	48W	277/120V	LITHONIA	2 SP8G 232 A12125 MVOLT TUBRHP (4-1/2" DEPTH)
		HIGH EFFICIENCY BALLAST.	RE841			METALUX	2GP-232A125-UNV-EB81-PROGRAM START
			3100 LU				(3-3/4" DEPTH)
						DAYBRITE	2DPG232-FS21-UNV-1/2EB-SPEC (4-3/8" DEPTH)
						LSI	LA125 232 SD SSO10PS UE (4" DEPTH)
						LIGHTOLIER	XT2GVI232-UNV-SOP (3-5/8" DEPTH)
						COLUMBIA	ST824-232G-FSA12.125-EB8LHPRUNV
							(3-3/4" DEPTH)
	GS-4	2X4, 3 LAMP.	3-F32T8	71W	277/120V	LITHONIA	2 SP8G 332 A12125 1/3 MVOLT TUBRHP
		HIGH EFFICIENCY BALLAST.	RE841				(4-1/2" DEPTH)
			3100 LU			METALUX	2GP-332A125-UNV-EB81-PROGRAM START
							(3-3/4" DEPTH)
						DAYBRITE	2DPG332-FS21-UNV-1/3EB-SPEC (4-3/8" DEPTH)
						COLUMBIA	ST824-332G-FSA12.125-3EB8LHPRUNV
							(3-3/4" DEPTH)
						LIGHTOLIER	XT2GVI332-UNV-03P (3-5/8" DEPTH)
						LSI	LA125 332 SD SSO10PS UE (4" DEPTH)
	HE	RECESSED HID DOWNLIGHTS: ELLIPSOIDAL REFLECTORS; HIGH POWER FACTOR BALLASTS; BOTTOM ACCESS REQUIRED; PREMIUM SILENT PACK BALLASTS; FUSED; PROVIDE TEMPERED GLASS SHIELD FOR METAL HALIDE AND OTHER LAMPS THAT REQUIRE END OF LIFE PROTECTION; COATED LAMPS ONLY.					
	HE-11	8 3/4" APERTURE; CLEAR	MH 200	270W	277/120V	LIGHTOLIER	EL8 CLW-EL8B 20HB
		ALZAK REFLECTOR; OPEN	4000K			KURT VERSEN	R7332/200WED28-SG-R2
		DOWNLIGHT.				KIRLIN	HRR-08033
		ELECTRONIC BALLAST					
		MEDIUM DISTRIBUTION					
		MUST MATCH DF37 APERTURE					
	OC	WALL PACK: ADJUSTABLE CUT OFF; FULL PERIMETER GASKETING: WET LOCATION; STAINLESS STEEL HINGES AND LATCHES; PROJECTING LENS; HPF BALLAST; SEE ELEVATION FOR MOUNTING HEIGHT, COLOR AS SPECIFIED BY ARCHITECT.					
	OC-32	LED, ARCHITECTURAL STYLE	54-LED	87 W	277/120V	EXCELINE	GS308U-CBA-054-6K-H3
		WITH ROUNDED TOP; FULL	6K			HUBBELL	RTP-50L8-5K-WT-BL
		CUT-OFF; TYPE 3 DISTRIBUTION				MCGRAW	ISW-A02-LED-E1-BL3-CBA-7060
		RECESSED J BOX.				GARDCO	121-CWL-FT-50LA-NW-UNIV-CBA
	OJ	RECESSED WALL STEP AND WALK LIGHTS; 3- 4 1/2" RECESSING DEPTH; WELDED STEEL HOUSING; DIECAST LOUVERED FACEPLATES; FACEPLATES FINISHED IN TEXTURED FINISH PER ARCHITECT, FULLY GASKETED; WET LABEL; TYPES AND WATTAGES AS INDICATED.					
	OJ-1	LED STEPLIGHT FOR	LED	.25W	120V	P&S	TMHWL-LOUVCC/SB771
		AUDITORIUM					
		STAINLESS STEEL LOUVERS					
	OJ-2	LED STEPLIGHT FOR	LED	10W	277V	ZANTEEN	L33110100/3 3500K
		ATRIUM STAIRWAY				BEGA	2095LED
						FC LIGHTING	FCSL550 120-277V LED-5W CBA
	OX	LOW VOLTAGE TUBE LIGHTS: POLYCARBONATE TUBE; UV STABILIZED; 24 V LAMPS; REMOTE TRANSFORMER, SEE DRAWINGS.					
	OX-5	10W LOW VOLTAGE STRIPLIGHT	LED	3W FT	24VDC	IO LIGHTING	05V -I-3K-90-100-CBA-24VDIM SERIES
	OX-5.4	SURFACE MOUNTED, WITH	3000K			INSIGHT	TC6-30K-60-Cex-XX-2-CBA
	OX-5.8	REFLECTOR, VERIFY EXACT					
	Module	LENGTHS PER CONSTRUCTION					
	Length	CONDITIONS PRIOR TO RELEASE					
		REMOTE POWERSUPPLY, DIMMABLE					
	S	FLUORESCENT STRIP LIGHT: STEEL CONSTRUCTION; WHITE PAINTED FINISH; SUITABLE FOR MOUNTING ON LOW DENSITY CEILINGS; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.					
	S-1	4', 1-LAMP.	1-F32T8	40W	277/120V	LITHONIA	C132-MVOLT-TUBRHP-WG
		WITH WIRE GUARD	RE835			LIGHTOLIER	SW132-U-SOP-WG
		HIGH EFFICIENCY				METALUX	SS-132-UNV-PROGRAM START-WG
						DAYBRITE	T132-UNV-EB-SPEC-WG
						HUBBELL	S132UPS-WG
						COLUMBIA	CS4-132-EB8120/277 PROG-WG
	S-3	4', 2-LAMP.	2-F32T8	50W	277/120V	LITHONIA	C232-MVOLT-TUBRHP
		HIGH EFFICIENCY	RE841			LIGHTOLIER	SW232-U-SOP
						METALUX	SS-232-UNV-PROGRAM START
						HEWILLIAMS	76-4-232-EB8PX2*OS-UNV
						DAYBRITE	T232-UNV-1/2-EB-SPEC
						HUBBELL	C232UPS
						COLUMBIA	CS4-232-EB8120/277 PROG
	SC	STAGGERED STRIP LIGHT: STEEL STRIP; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE; UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS. SUITABLE FOR MOUNTING ON LOW DENSITY CEILINGS; PRIOR TO ORDERING FIXTURES VERIFY COVE OR VALENCE DIMENSIONS FOR SUITABLE SHIELDING AND SIZE.					
	SC-1	4', 1-LAMP.	1-F32T8	25W	277/120V	LITHONIA	SS132-MVOLT-TUBRHP
		HIGH EFFICIENCY BALLAST.	RE841			LIGHTOLIER	STG-132-U-SOP
			3100 LU			METALUX	SSL-132-UNV-PROGRAM START
						LSI	STG 132 SSO10PRS UE
						COLUMBIA	SS4-132-EB8120/277 PROG
						DAYBRITE	SS132-UNV-EB-SPEC
	SC-2	4', 2-LAMP.	2-F32T8	50W	277/120V	LITHONIA	SS232-MVOLT-TUBRHP
		HIGH EFFICIENCY BALLAST.	RE841			LIGHTOLIER	STG-232-U-SOP
			3100 LU			METALUX	SSL-232-UNV-PROGRAM START
						LSI	STG 232 SSO10PS UE
						COLUMBIA	SS4-232-EB8120/277 PROG
						DAYBRITE	SS232-UNV-1/2-EB-SPEC
	SC-3	2', 2-LAMP.	2-F17T8	35W	277/120V	LITHONIA	SS217-MVOLT-TUBRHP
		HIGH EFFICIENCY BALLAST.	RE841			LIGHTOLIER	STG-217-U-SOP
						METALUX	SSL-217-UNV-PROGRAM START
						LSI	STG 217 SSO10PRS UE
						COLUMBIA	SS2-217-EB8120/277 PROG
						DAYBRITE	SS217-UNV-1/2-EB-SPEC
	SS	GENERAL PURPOSE INDUSTRIAL: WHITE ENAMEL, NONAPERTURED REFLECTOR; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE; UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS, STEM MOUNTED WITH TONG HANGERS.					
	SS-1	4', 2 LAMP.	2-F32T8	48W	277/120V	LITHONIA	EJ232-MVOLT-TUBRHP-THUN
		HIGH EFFICIENCY BALLAST.	RE841			LIGHTOLIER	KWS232-U-SOP
			3100 LU			METALUX	IC-232-UNV-PROGRAM START
						LSI	F22 232 SSO10PRS CH-12 UE
						COLUMBIA	CSR4-232-EB8120/277 PROG-CSTH
						DAYBRITE	IS232-UNV-1/2-EB-SPEC
	SP	STAGE SPOTLIGHTS: SHEET STEEL AND CAST STEEL OR ALUMINIUM, OR MOLDED HIGH TEMPERATURE PLASTIC. EACH LIGHTING INSTRUMENT WITH CLEAR HEAT TREATED LENS AS SPECIFIED, 3 WIRE LEADS WITH CONNECTOR INSTALLED TO MATCH DISTRIBUTION OUTLETS, PIPE CLAMP, SAFETY CABLE, COLOR FRAME, LENS ACCESSORY IF SPECIFIED. INSTALL LAMP, VERIFY ALIGNMENT, AND INSTALL STAGE SPOTLIGHT AS DIRECTED IN FIELD. TUNGSTEN HALOGEN LAMPS IDENTIFIED BY ANSI CODE. (USE APPROVED MANUFACTURER ONLY. MAY BE PROVIDED BY A THEATRICAL DEALER OR DIMMING EQUIPMENT MANUFACTURER, AS A RESELLER USING THEIR CATALOG #.) PROVIDE LAMP AS REQUIRED TO FIT INSTRUMENT PROVIDED, BY GE, SYLVANIA, PHILLIPS, THORN, OR OSRAM, AND AS RECOMMENDED BY THE FIXTURE MANUFACTURER.					
	SP-5	ELLIPSOIDAL SPOTLIGHT;	FLK GLC	575W	120V	ALTMAN	360Q-6X12
		6" X 12" LENS SYSTEM,	FLK HPL			STRAND LIGHTING	1133X
		30 DEGREE BEAM ANGLE				COLORTRAN	650-03X
		(COSINE). TWIST LOCK CAP				ETC	426-C
	TX	DECORATIVE LUMINAIRE AS DECSRIBED. APPEARANCE IS CRITICAL APPROVAL REQUIRED					
	TX-1	WOOD WALL LED MEDALLION	LED	.5W	24VDC	BEGA	12x 8688 / 580 (1-per SLOT)
		12 REQUIRED PER VERTICAL SLOT					
		STAINLESS STEEL FACEPLATE					
		COUNTER SUNK HOLE REQUIRED					
	TX-99	INDIVIDUAL WALL BRACKET	CMH 70T6	85W	277V	PINNACLE	PS-M70G-YI-277-1C-W-B/BRACKET
		ADJUSTABLE ART LIGHT	RE830			WINONA	P1-MS-MH70-MS10-SGW-SB/BRACKET
		LOUVER, INTEGRAL BALLAST				ELLIPTIPAR	M106-070G-E-02-2-LOUVER-VCQ-02-30-0
		30" EXTENSION AND DIAGIONAL SUPPORT BRACKET					
	UC	UNDERCABINET LIGHT: LOW PROFILE X 5 1/4"DEEP X LENGTH AS NOTED; ACRYLIC DIFFUSER.					
	UC-8	24 1/2" LONG; PREMIUM T5	F16T5	10W	120V	ALKCO	SFHP-116/BW/RSW
		LAMP; W/ROCKER SWITCH;				LIGHTOLIER	TSF-1-14-W-UNV-PG-BPR
		ASSYMETRIC PRISMATIC LENS				METALUX	SFCL-2-08T5-EB-UNV
	UC-9	34 1/2" LONG; PREMIUM T5	F21T5	25W	120V	ALKCO	SFHP-121/BW/RSW
		LAMP; W/ROCKER SWITCH;				LIGHTOLIER	TSF-1-21-W-UNV-PG-BPR
		ASSYMETRIC PRISMATIC LENS				METALUX	SFCL-0813T5-EB-UNV
	V	VANDAL RESISTANT SURFACE MOUNTED LIGHTING: .125" INJECTION MOLDED POLYCARBONATE LENS; IMPACT RESISTANT; UV STABILIZED; ALL METAL PARTS ARE ENCLOSED; GASKETED; VANDAL RESISTANT STAINLESS STEEL SCREWS; SECURED MOUNTING; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS.					
	V-1	4', 2-LAMP WITH PRISMATIC	2-F32T8	48W	277/120V	KENALL	N1048-C-232SB1-120/277
		LENS; 51" X 9 1/2" X	RE841			FAIL-SAFE	FPS-232-UNV-PROGRAM START
		3 1/2", 16 GAUGE STEEL.	3100 LU			LUMINAIRE	LVP-751-232-EBPS-120
		HIGH EFFICIENCY BALLAST.				NEW STAR	51C-124-U-T8PROGRAM
						LA LIGHTING	WSE500-2-4R-DL-T8EB-UNV
						CD LIGHTING	VSL-24-232-UNV-EB
						HOLCOR	HSP2-2/32T8-120-TX-UNIVOLT-PROGRAM START
	W	LOW PROFILE WRAPAROUND: SURFACE MOUNTED SUITABLE FOR MOUNTING ON LOW DENSITY CEILINGS WRAPAROUND ACRYLIC PRISMATIC DIFFUSER; WHITE ENAMEL ENDPLATES; MINIMUM CU OF 70 @ 80/50/20 AND RCR=1; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.					
	W-3	MEDIUM BODY WRAPAROUND;	2-F32T8	65W	277/120V	LITHONIA	LB232-MVOLT-TUBPHP
		2-LAMP, APPROX; 3" X 10"	RE841			DAYBRITE	CAN232-UNV-1/2-EB-SPEC
		X 48".	3100 LU			METALUX	WS-232A-UNV-PROGRAM START
		HIGH EFFICIENCY				LIGHTOLIER	WA232-U-SOP
						LSI	PR 232 SSO10PRS UE
						COLUMBIA	WC4-232-EBPS120/277
	W-11	NARROW BODY WRAPAROUND;	2-F32T8	65W	277/120V	LITHONIA	VWC-232-ACR-MVOLT
		2-LAMP, APPROX; 5" X 5"	RE841			DAYBRITE	CAN232-UNV-1/2-EB-SPEC
		X 48" ; PENDANT MOUNTED	3100 LU			METALUX	WS-232A-UNV-PROGRAM START
		HIGH EFFICIENCY				LIGHTOLIER	WA232-U-SOP
						LSI	PR 232 SSO10PRS UE
						COLUMBIA	WC4-232-EBPS120/277
	WB	WALL MOUNTED FLUORESCENT LOCATED ABOVE WALL ELEMENT (MIRROR/WHITEBOARD, ETC.): AS INDICATED ON DRAWINGS; WITH ACRYLIC INJECTION MOLDED; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.					
	WB-10	WALL MOUNTED FLUORESCENT	2-F32T8	50W	277/120V	CORELITE	TW-SB-2T8-1C-UNV-SU-WA-XX
		UPLIGHT WITH LOUVERED	RE841			PINNACLE	EX4B-P-O-T8-1/1-4-WA-UNV-XC-W
		DOWNLIGHT; RECTANGULAR				LINEAR	SP27-B-2T8-UNV-NS-WMT-CBA-PSB10-.77
		CROSS SECTION: 3" X 7"					
		4' MODULE; HIGH EFFICIENCY					
	ZX	LIGHT POLES: TOTALLY ENCLOSED RAINTIGHT, DUST-TIGHT AND CORROSION RESISTANT; POLE AS SHOWN IN DETAIL WITH HANDHOLE, COVER, BOLT COVER, AND BASE; PAINTED (COLOR TO BE SELECTED BY ARCHITECT / ENGINEER WHICH MAY DIFFER FROM CATALOG NUMBER SHOWN). MTB= 120,208,240,277 VOLT MULTI-TAP BALLAST. ALL BALLASTS HPF. ARM MOUNT. HORIZONTAL LAMP, SEGMENTED OPTICS.					
	ZX-1	LOW-PROFILE CONTEMPORARY	(60) 1W LED	75W	277V		
		SINGLE-HEAD FIXTURE, ARM-	LAMPS INCL				
		MOUNTED; DIE-CAST ALUMINUM;	3500K				Contractor Allowance: $1,866 (including pole)
		FULL-CUTOFF OPTICS; LED LAMPS					
		TYPE 3 DISTRIBUTION;					
		HINGED POLE BASE ASSEMBLY.					

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375 WEST 200 SOUTH
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P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
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Division of Facilities Construction and Management

THE GREAT SEAL OF THE STATE OF UTAH 1896

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CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LIGHTING FIXTURE SCHEDULE

CONSTRUCTION DOCUMENTS

EL-601

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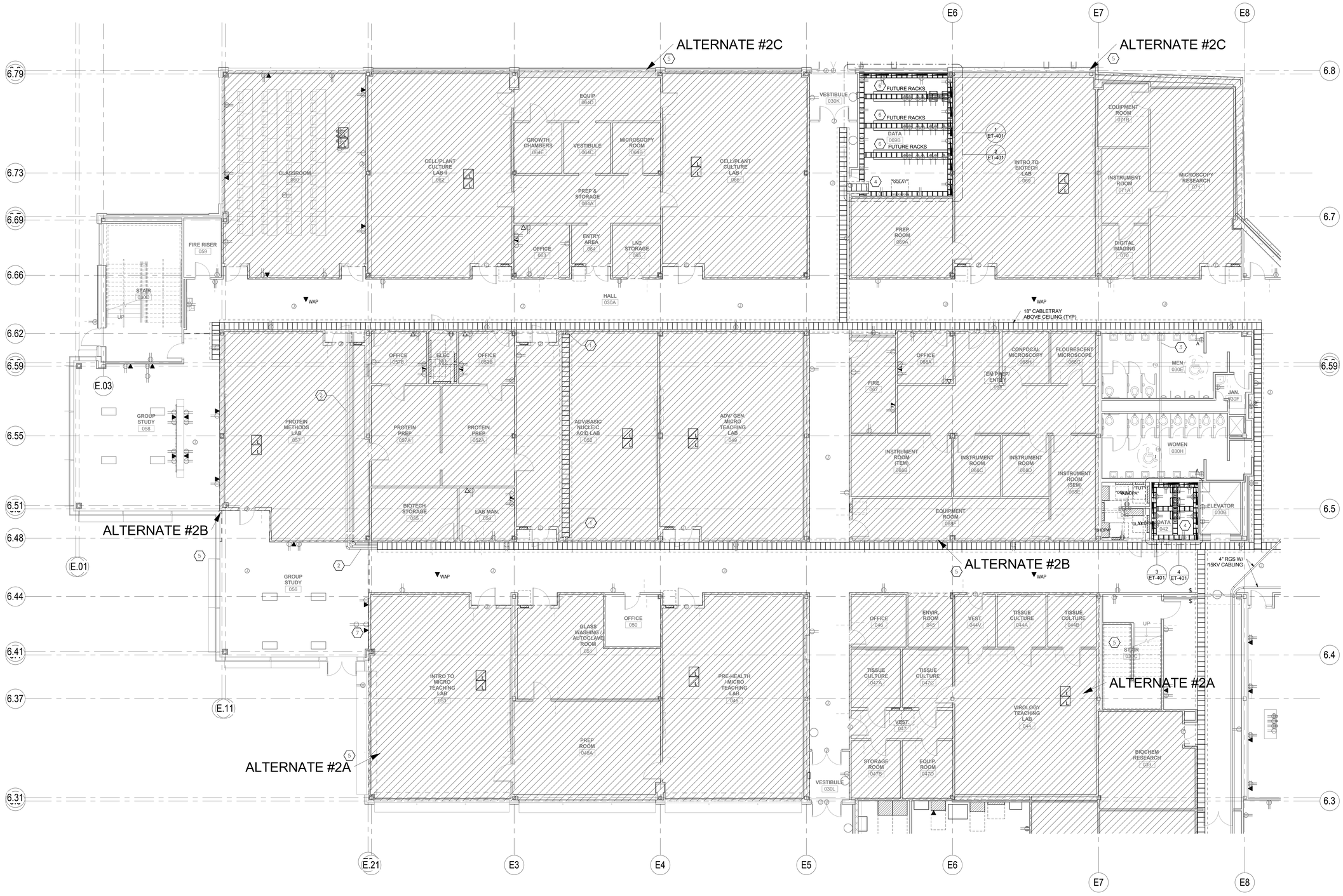
TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 2 EACH, 4" CONDUITS.
2 3 EACH, 4" CONDUIT FROM DATA 163 ABOVE TO CABLE TRAY.
3 1 EACH, 4" CONDUIT FROM DATA 642 TO CABLE TRAY.
4 STUB TRAY INTO ROOM.
5 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
6 FUTURE SERVER RACKS FURNISHED AND INSTALLED BY OWNER.
7 MOUNT BEHIND FLAT PANEL. SEE DETAIL EJ601.



1 LEVEL 0 TELECOMMUNICATIONS PLAN - AREA A
SCALE: 1/8" = 1'-0"

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375 WEST 200 SOUTH
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P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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KEYPLAN

Utah Valley University New Science Building

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LEVEL 0 TELECOMMUNICATIONS PLAN - AREA A
CONSTRUCTION DOCUMENTS

ET-101A

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TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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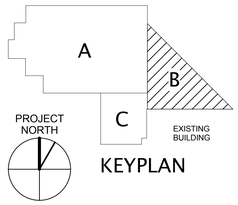
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

1 LEVEL 0 TELECOMMUNICATIONS PLAN - AREA B
SCALE: 1/8" = 1'-0"



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
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LEVEL 0 TELECOMMUNICATIONS PLAN - AREA B CONSTRUCTION DOCUMENTS

ET-101B

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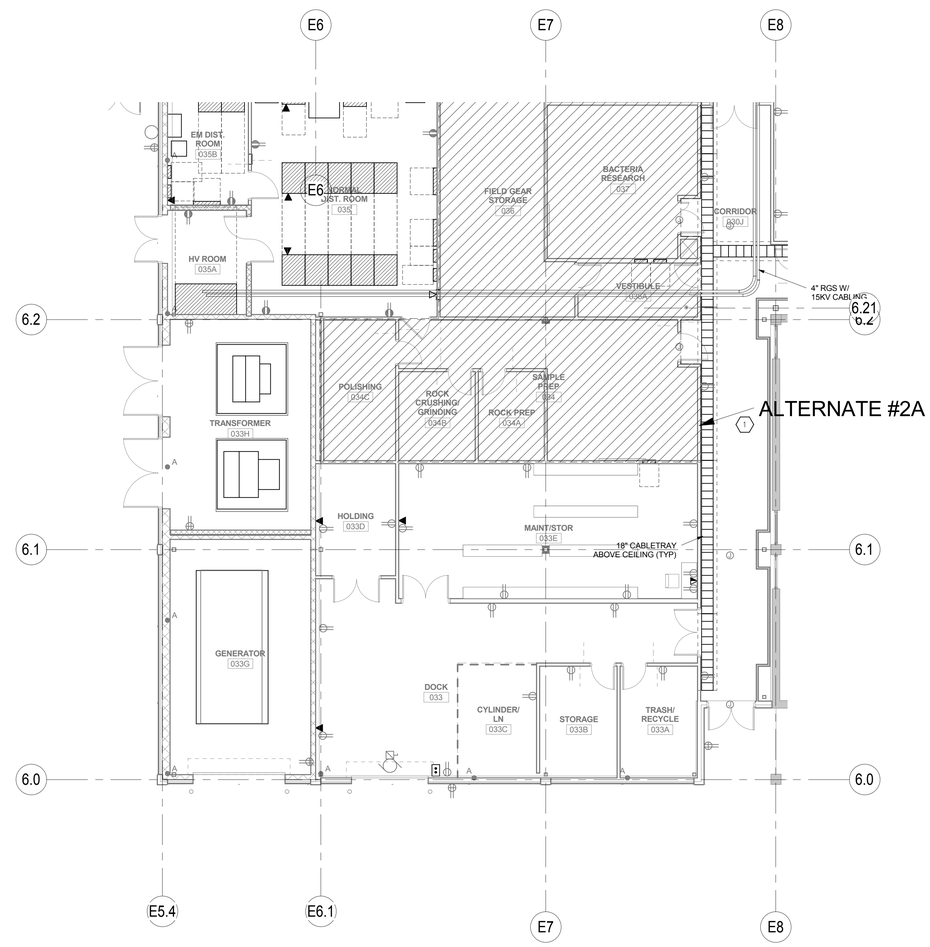
TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 TELECOMMUNICATIONS PLAN - AREA C
SCALE: 1/8" = 1'-0"

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
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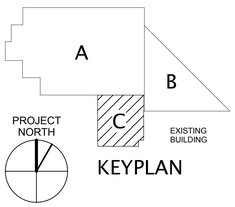

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LEVEL 0 TELECOMMUNICATIONS PLAN - AREA C CONSTRUCTION DOCUMENTS

ET-101C

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TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 1 EACH, 4" CONDUIT FROM DATA 042 TO CABLE TRAY.
2 STUB TRAY INTO ROOM.
3 2 EACH, 4" CONDUITS.
4 4 EACH, 4" CONDUITS.

1 LEVEL 1 TELECOMMUNICATIONS PLAN - AREA A
SCALE: 1/8" = 1'-0"

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

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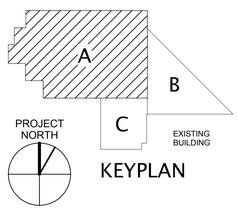

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LEVEL 1 TELECOMMUNICATIONS PLAN - AREA A CONSTRUCTION DOCUMENTS

ET-102A

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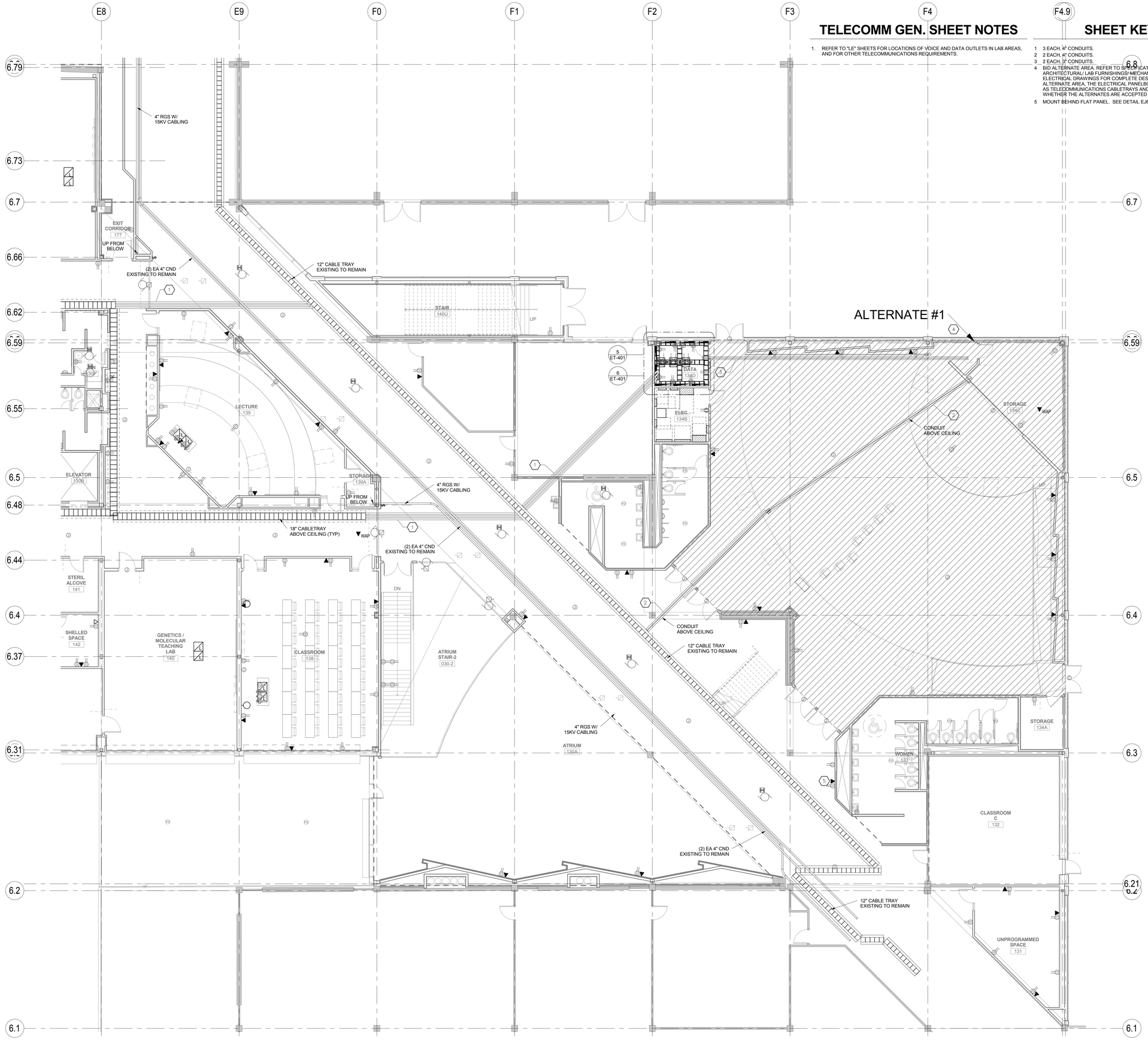
TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 3 EACH, 4" CONDUITS.
2 2 EACH, 4" CONDUITS.
3 2 EACH, 3" CONDUITS.
4 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
5 MOUNT BEHIND FLAT PANEL. SEE DETAIL EJ601.



1 LEVEL 1 TELECOMMUNICATIONS PLAN - AREA B
SCALE: 1/8" = 1'-0"

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SPECTRUM ENGINEERS
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801-328-5151
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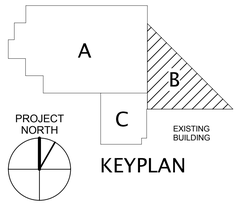

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LEVEL 1 TELECOMMUNICATIONS PLAN - AREA B CONSTRUCTION DOCUMENTS

ET-102B

TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 1 EACH, 4" CONDUIT FROM DATA 042 TO CABLE TRAY.
2 STUB TRAY INTO ROOM.
3 2 EACH, 4" CONDUITS.
4 3 EACH, 4" CONDUITS.

1 LEVEL 2 TELECOMMUNICATIONS PLAN - AREA A
SCALE: 1/8" = 1'-0"

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SPECTRUM ENGINEERS
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800-678-7077
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LEVEL 2 TELECOMMUNICATIONS PLAN - AREA A
CONSTRUCTION DOCUMENTS

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TELECOMM GEN. SHEET NOTES

1. REFER TO "LE" SHEETS FOR LOCATIONS OF VOICE AND DATA OUTLETS IN LAB AREAS, AND FOR OTHER TELECOMMUNICATIONS REQUIREMENTS.

SHEET KEYNOTES

1 3 EACH, 4" CONDUITS.
2 STUB TRAY INTO ROOM.
3 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.

1 LEVEL 2 TELECOMMUNICATIONS PLAN - AREA B
SCALE: 1/8" = 1'-0"

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F 801.521.7913
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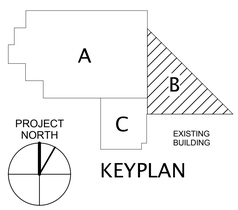

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LEVEL 2 TELECOMMUNICATIONS PLAN - AREA B CONSTRUCTION DOCUMENTS

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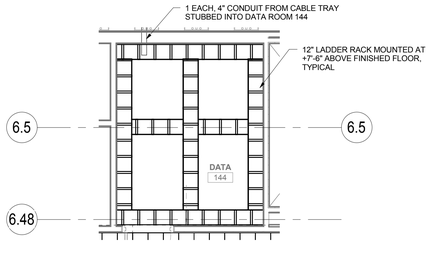
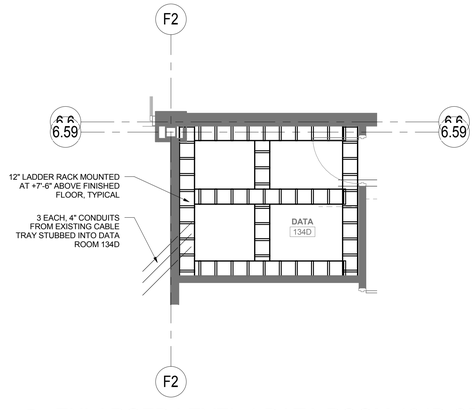
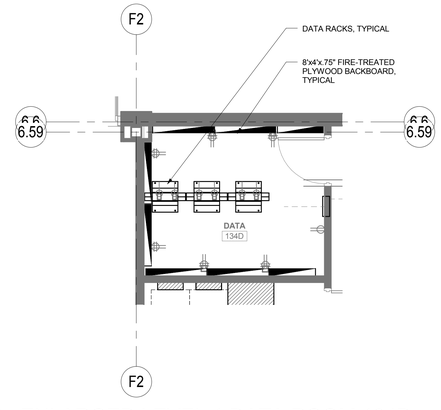


10 ENLARGED LEVEL 1 DATA ROOM 144 CEILING PLAN
SCALE: N.T.S.



6 ENLARGED LEVEL 1 DATA ROOM 134D CEILING PLAN
SCALE: N.T.S.



5 ENLARGED LEVEL 1 DATA ROOM 134D
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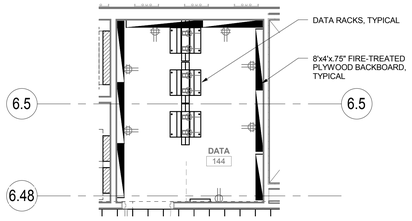

9 ENLARGED LEVEL 1 DATA ROOM 144
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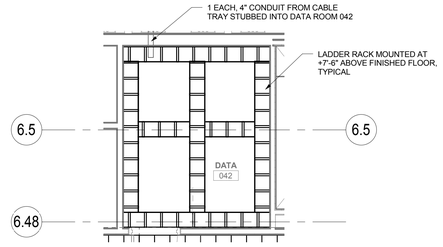

4 ENLARGED LEVEL 0 DATA ROOM 042 CEILING PLAN
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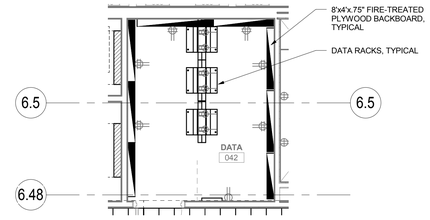

3 ENLARGED LEVEL 0 DATA ROOM 042
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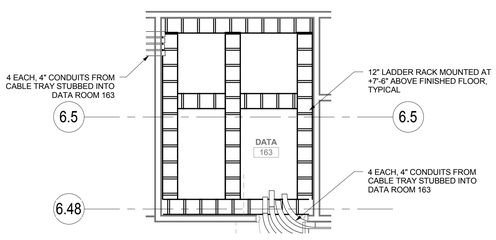
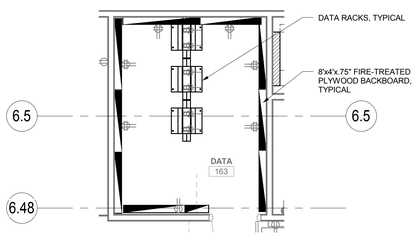
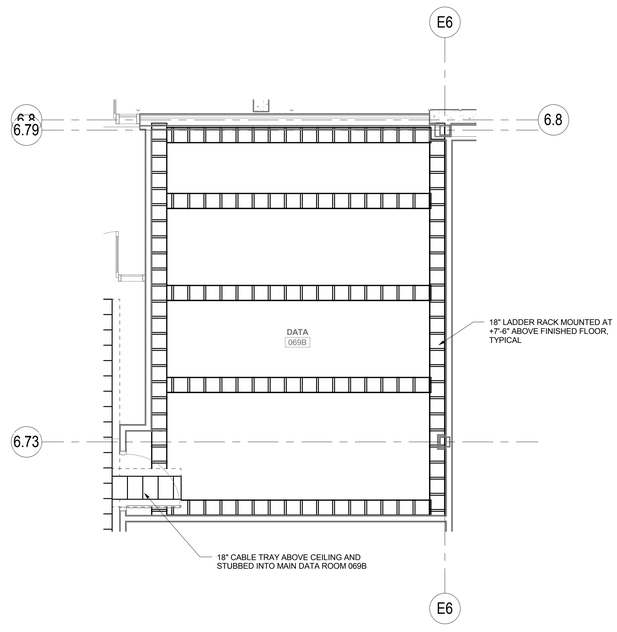


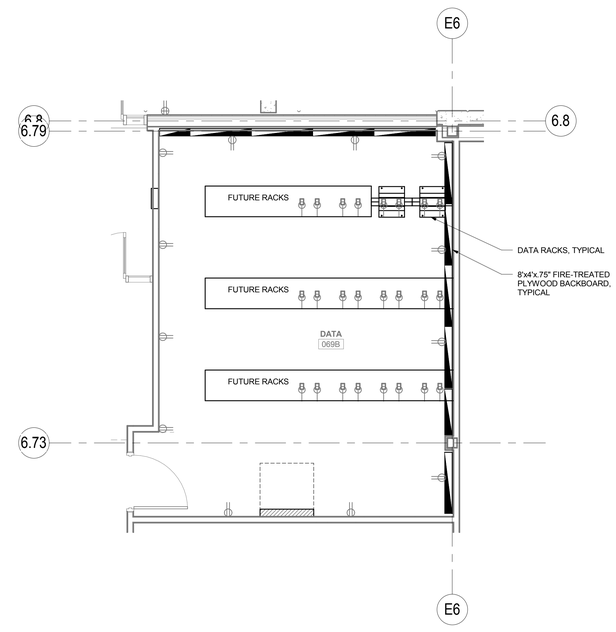
8 ENLARGED LEVEL 1 DATA ROOM 163 CEILING PLAN
SCALE: N.T.S.



7 ENLARGED LEVEL 1 DATA ROOM 163
SCALE: N.T.S.



2 ENLARGED LEVEL 0 MAIN DATA ROOM 069B CEILING PLAN
SCALE: N.T.S.



1 ENLARGED LEVEL 0 MAIN DATA ROOM 069B
SCALE: 1/4" = 1'-0"

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P 801.521.8600
F 801.521.7913

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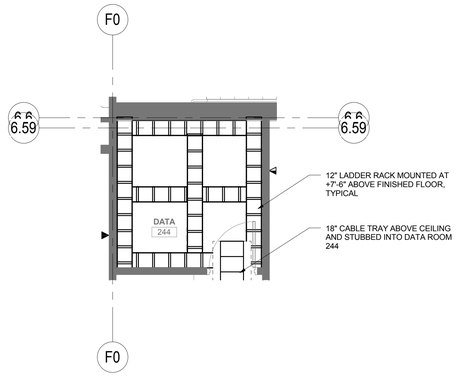
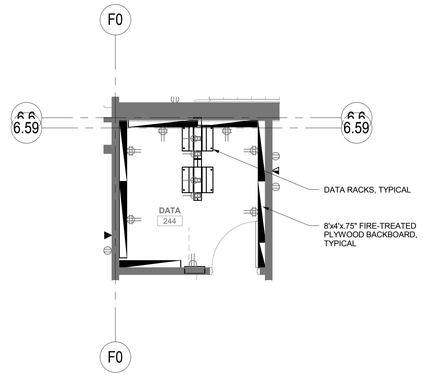


6 ENLARGED LEVEL 2 DATA ROOM 244 CEILING PLAN
SCALE: N.T.S.



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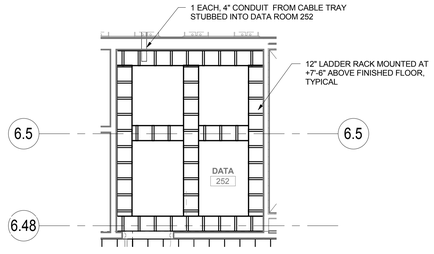
SCALE: N.T.S.



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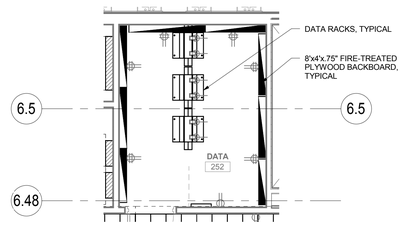
SCALE: N.T.S.



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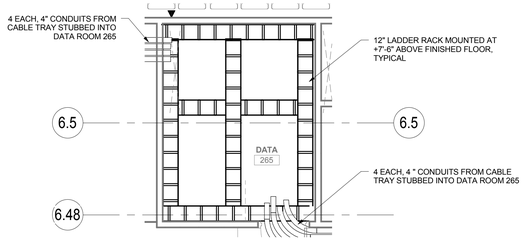
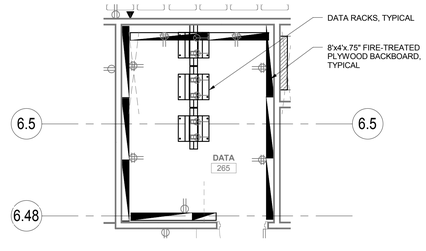


2 ENLARGED LEVEL 2 DATA ROOM 265 CEILING PLAN
SCALE: N.T.S.



1 ENLARGED LEVEL 2 DATA ROOM 265
SCALE: N.T.S.

Utah Valley University New Science Building

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Division of Facilities Construction and Management

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ENLARGED TELECOMMUNICATIONS PLANS
CONSTRUCTION DOCUMENTS

ET-402

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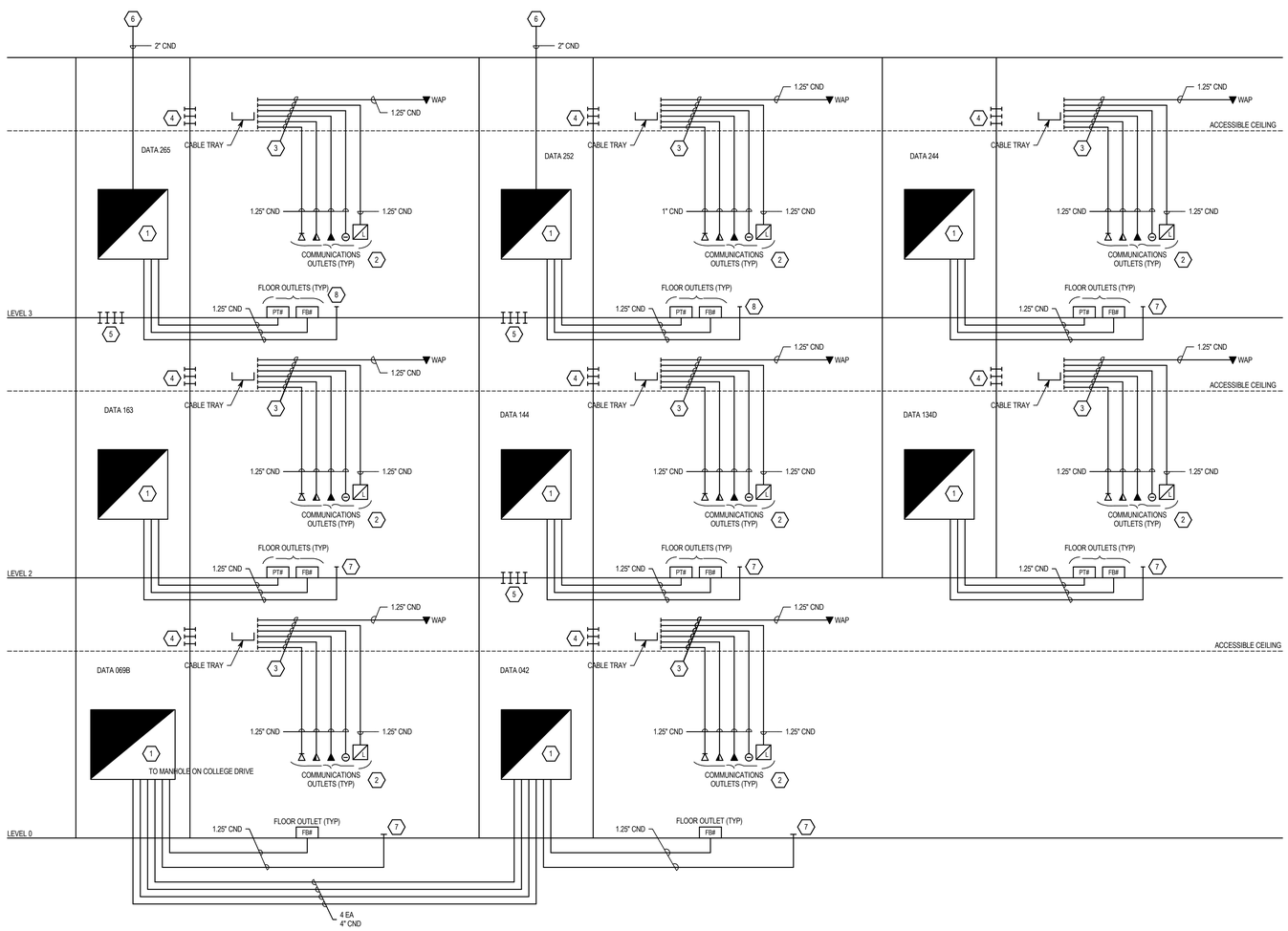
VOICE-DATA ROUGH-IN SCHEDULE

ELECTRONIC SYSTEMS: REFER TO DIVISION 26 SPECIFICATIONS AND WIRING DEVICE SCHEDULES FOR INSTALLATION REQUIREMENTS. MOUNTING HEIGHTS SHOWN ARE TYPICAL HEIGHTS. REFER TO DRAWINGS, ARCHITECTURAL ELEVATIONS, DRAWINGS AND SPECIFICATIONS FOR ACTUAL MOUNTING HEIGHTS.

SYMBOL	MOUNTING	DESCRIPTION	ROUGH-IN MATERIALS
▽	WALL	FUTURE DATA	4-11/16" SQUARE, DEEP JUNCTION BOX WITH DOUBLE GANG MUD RING MOUNT AT ELECTRICAL OUTLET HEIGHT OR AS NOTED
▽W	WALL	WALL PHONE OUTLET	4-11/16" SQUARE, DEEP JUNCTION BOX WITH SINGLE GANG MUD RING MOUNT AT ELECTRICAL SWITCH HEIGHT OR AS NOTED
▽(A)	WALL	VOICE DATA OUTLET	4-11/16" SQUARE, DEEP JUNCTION BOX WITH DOUBLE GANG MUD RING MOUNT AT ELECTRICAL OUTLET HEIGHT OR AS NOTED
▼(A)	WALL	DATA OUTLET	4-11/16" SQUARE, DEEP JUNCTION BOX WITH DOUBLE GANG MUD RING. MOUNT AT ELECTRICAL OUTLET HEIGHT OR AS NOTED.
▼WAP	ABOVE ACCESSIBLE ABOVE	DATA OUTLET, WIRELESS	4-11/16" SQUARE, DEEP JUNCTION BOX WITH DOUBLE GANG MUD RING. MOUNT AT ELECTRICAL OUTLET HEIGHT OR AS NOTED.
	FLOOR	OPEN RAIL DATA EQUIPMENT RACK	FURNISHED AND INSTALLED BY DATA CONTRACTOR
	WALL	TELEPHONE BOARD	.75"x4'x8' PLYWOOD, FIREPROOFED, PAINTED WHITE
FB#	FLOOR	FLOOR BOX	SEE EP SHEETS
PT#	FLOOR	POKE THRU	SEE EP SHEETS
	FLOOR	AV LECTERN RACK	4-11/16" SQUARE, DEEP JUNCTION BOX WITH DOUBLE GANG MUD RING.

"A" INDICATES ABOVE COUNTER MOUNTING



A1 TELECOMMUNICATIONS RACEWAY RISER DIAGRAM
NTS

GENERAL SHEET NOTES

1. WELL IN ADVANCE OF INSTALLATION, COORDINATE WORK WITH ALL OTHER TRADES SO THAT ELECTRICAL EQUIPMENT, OR ITS INTENDED USE, IS NOT OBSTRUCTED BY EQUIPMENT BEING PROVIDED BY OTHER DIVISIONS.
2. ALL VOICE/DATA SYSTEMS CABLE IS TO BE INSTALLED INSIDE MINIMUM 1.25" CONDUIT. STUB CONDUIT FROM JUNCTION BOX LOCATION TO CABLE MANAGEMENT SYSTEM SPECIFIED FOR ACCESSIBLE CEILING.
3. WHERE DEVICES ARE LOCATED IN SPLIT-FACE BLOCK, COORDINATE WITH MASON INSTALLER SO THAT DEVICE IS LOCATED ON A SMOOTH, FLAT PORTION OF THE BLOCK ALLOWING THE COVER PLATE TO BE TIGHT AND FLUSH AGAINST SURFACE.
4. VOICE-DATA ROUGH IN CONDUIT SHALL COMPLY WITH ANSI/TIA/EIA 569-A WHICH INCLUDES, BUT IS NOT LIMITED TO, REQUIREMENT THAT ALL CONDUIT SHALL HAVE NO MORE THAN TWO 90° BENDS.
5. COMPLY WITH UVU MASTER CABLE SPECIFICATIONS.
16. REFER TO LE SHEETS FOR ADDITION ROUGH-IN REQUIREMENTS IN LAB AREAS. NOTE LAB DRAWINGS SHOW OPEN TRIANGLE FOR DATA, AND SOLID TRIANGLE FOR VOICE.

⬡SHEET KEYNOTES

1. PROVIDE 0.75" THICK X 8" HIGH FIRE-TREATED, PAINTED PLYWOOD ON ALL WALLS OF COMMUNICATIONS ROOMS.
2. PROVIDE DEEP 4-11/16" SQUARE BOX WITH DOUBLE GANG MUD RING AND COVER PLATE.
3. STUB CONDUITS ALL THE WAY TO CABLE TRAY. PROVIDE INSULATED THROATS. WHERE CABLE TRAYS ARE NOT PROVIDED, OR WHERE CEILINGS ARE INACCESSIBLE, THEN STUB CONDUITS ALL THE WAY TO TELECOMM ROOM.
4. STUB 4 EA 4" CND SLEEVES THROUGH WALL ABOVE CEILING INTO COMMUNICATIONS ROOM.
5. PROVIDE 4" CND SLEEVES BETWEEN FLOORS. FIRE STOP AFTER CABLING INSTALLATION IS COMPLETE.
6. STUB CONDUITS TO ROOF. PROVIDE FLASHING AND CAP.
7. PROVIDE STUB TO FURNITURE WITH DATA DROPS. PROVIDE 1 EACH MINIMUM FOR EACH 4 DROPS IN FURNITURE.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

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800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

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TELECOMMUNICATIONS ROUGH-IN SCHEDULE, DETAILS AND DIAGRAMS CONSTRUCTION DOCUMENTS

ET-601

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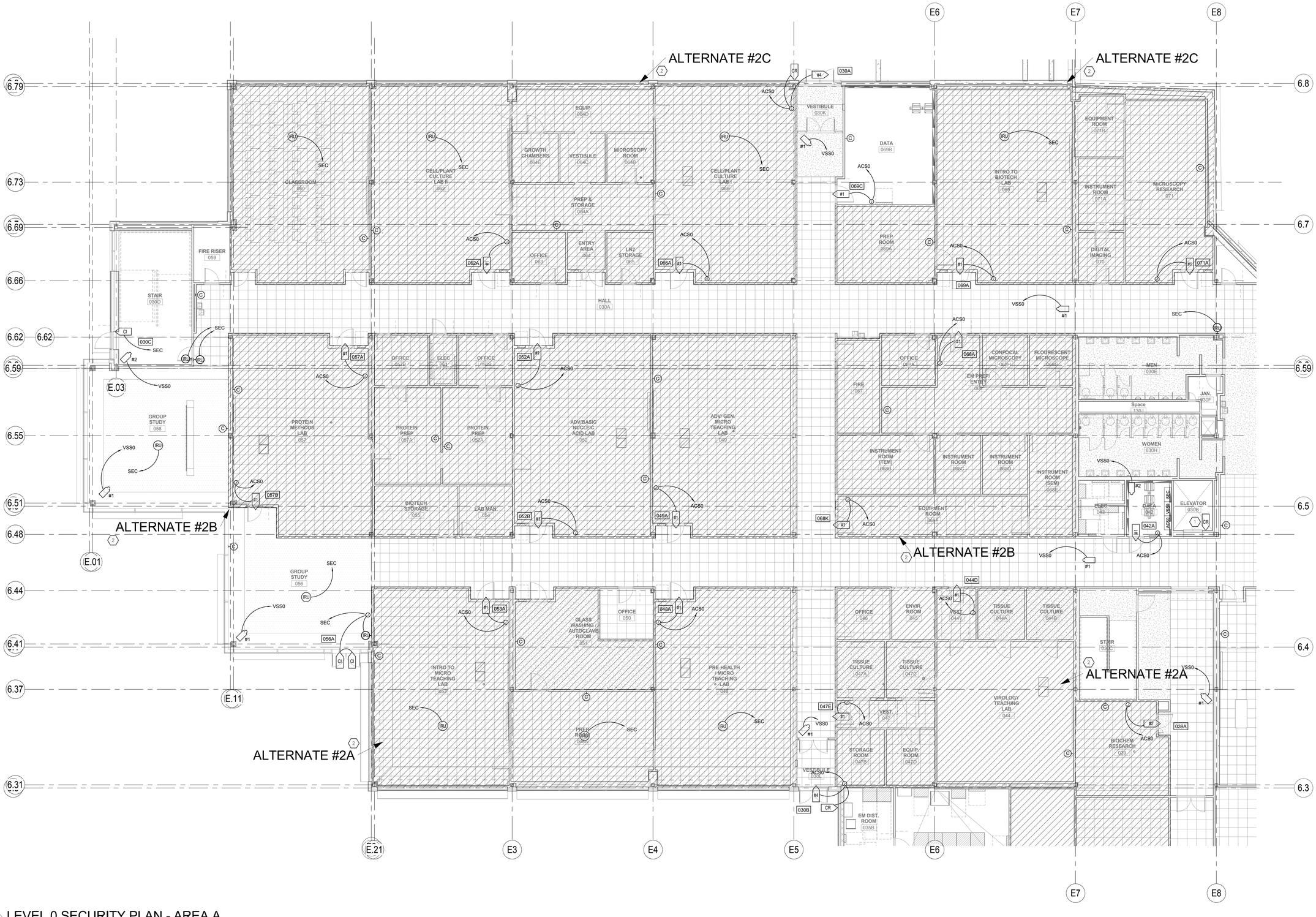
SHEET KEYNOTES

1 THIS CARD READER SHALL BE INSTALLED INSIDE ELEVATOR CAB FOR FLOOR RESTRICTION TO PENTHOUSE.

2 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 SECURITY PLAN - AREA A

SCALE: N.T.S.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

No. 181563 DAVID E. WESEMANN STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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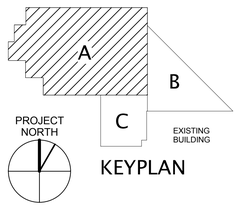

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LEVEL 0 SECURITY PLAN - AREA A

CONSTRUCTION DOCUMENTS

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SHEET KEYNOTES

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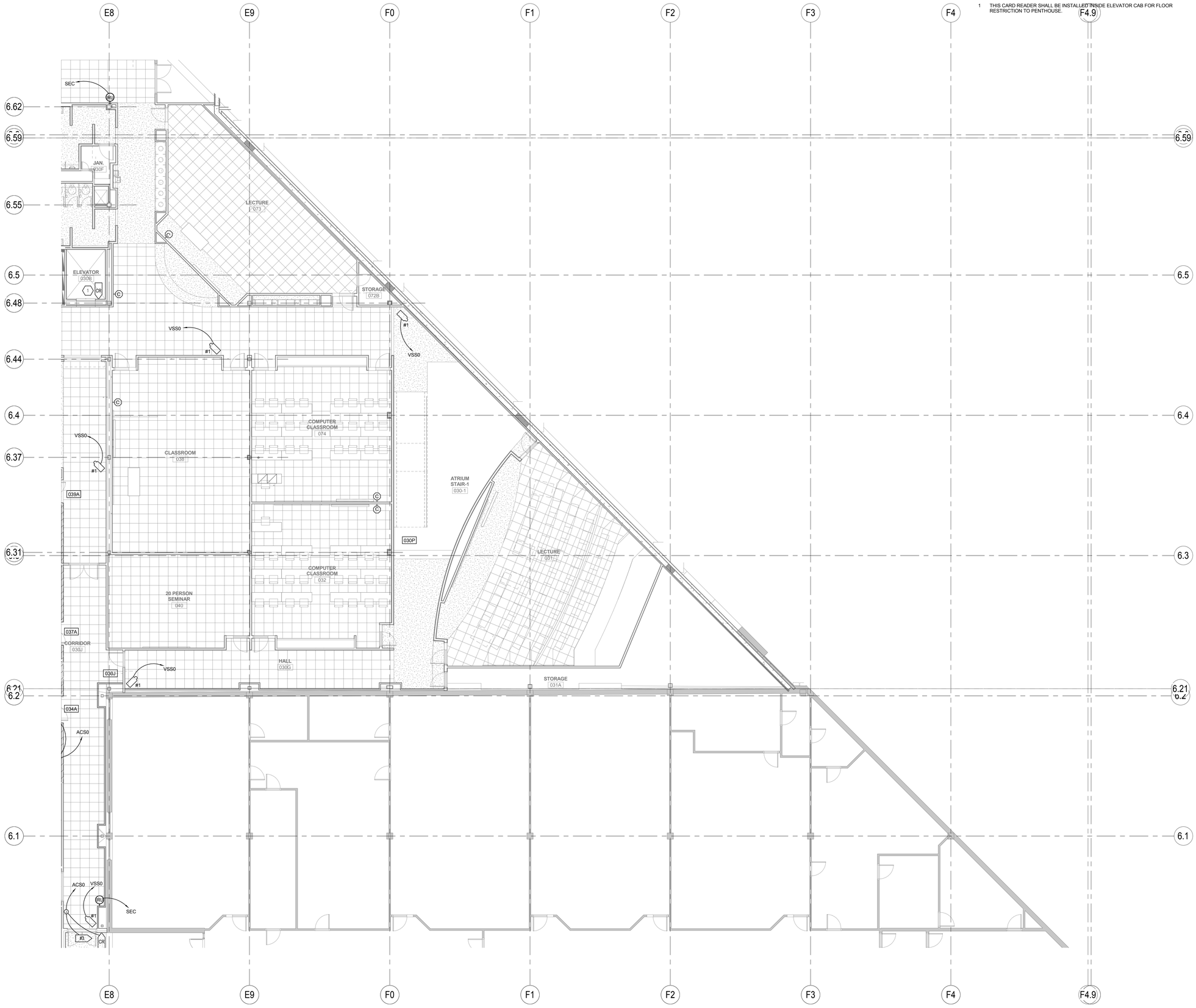

1 LEVEL 0 SECURITY PLAN - AREA B

SCALE: N.T.S.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

No. 181563
DAVID E. WESEMANN
STATE OF UTAH
LICENSED PROFESSIONAL ENGINEER
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
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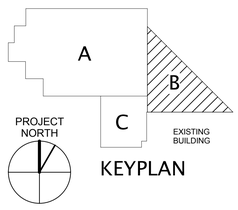

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LEVEL 0 SECURITY PLAN - AREA B

CONSTRUCTION DOCUMENTS

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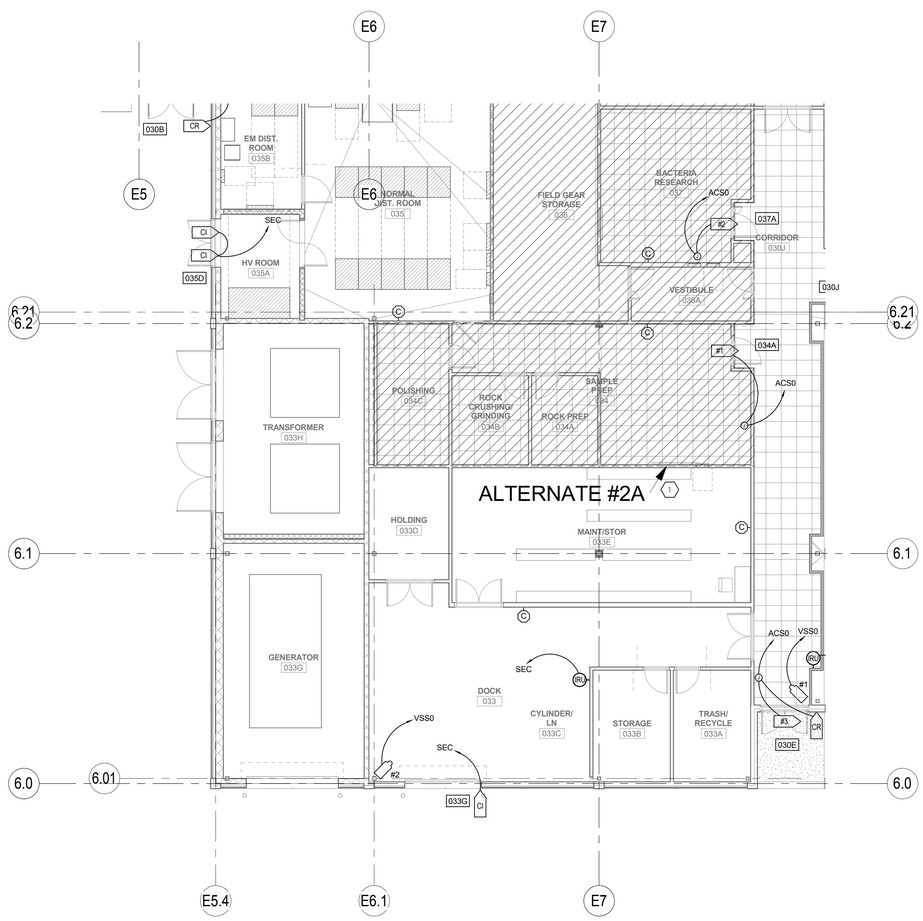
SHEET KEYNOTES

1 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 SECURITY PLAN - AREA C

SCALE: N.T.S.

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LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

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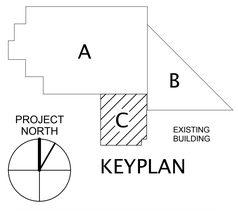

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LEVEL 0 SECURITY PLAN - AREA C

CONSTRUCTION DOCUMENTS

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DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
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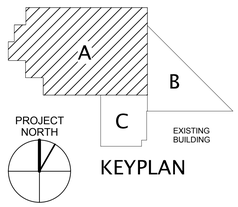
1 LEVEL 1 SECURITY PLAN - AREA A
SCALE: N.T.S.



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LEVEL 1 SECURITY PLAN - AREA A

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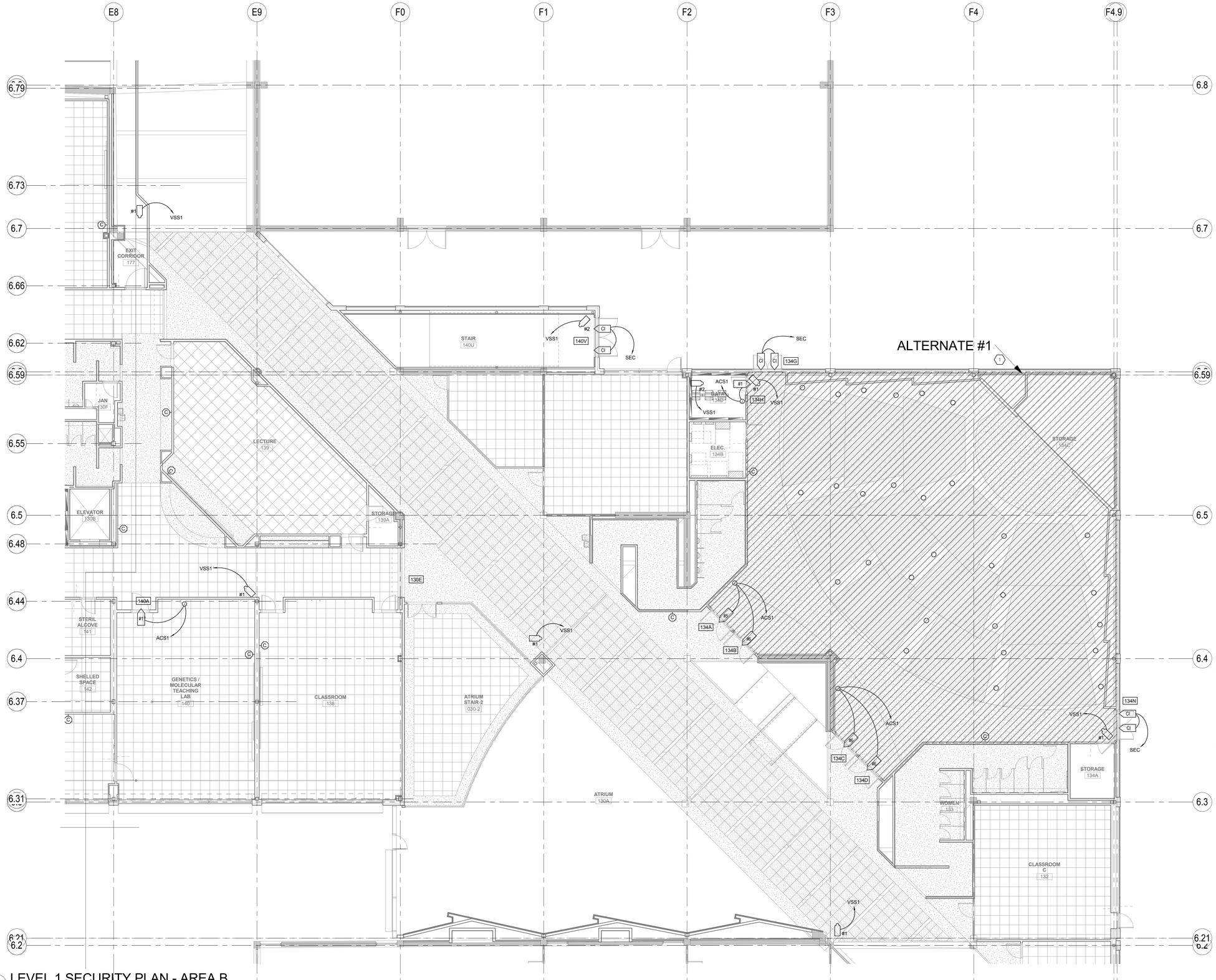
1 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 1 SECURITY PLAN - AREA B

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F 801.521.7913

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No. 181563
DAVID E. WESEMANN
STATE OF UTAH
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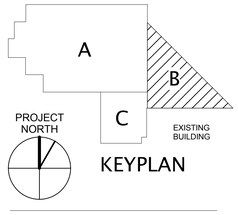

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LEVEL 1 SECURITY PLAN - AREA B

CONSTRUCTION DOCUMENTS

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SHEET KEYNOTES

1 THIS PAN/TILT/ZOOM CAMERA SHALL BE PEDESTAL MOUNTED AT THE ROOF LEVEL.

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P 801.521.8600
F 801.521.7913

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No. 181563 DAVID E. WESEMANN
STATE OF UTAH
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REVISIONS:

SPECTRUM ENGINEERS

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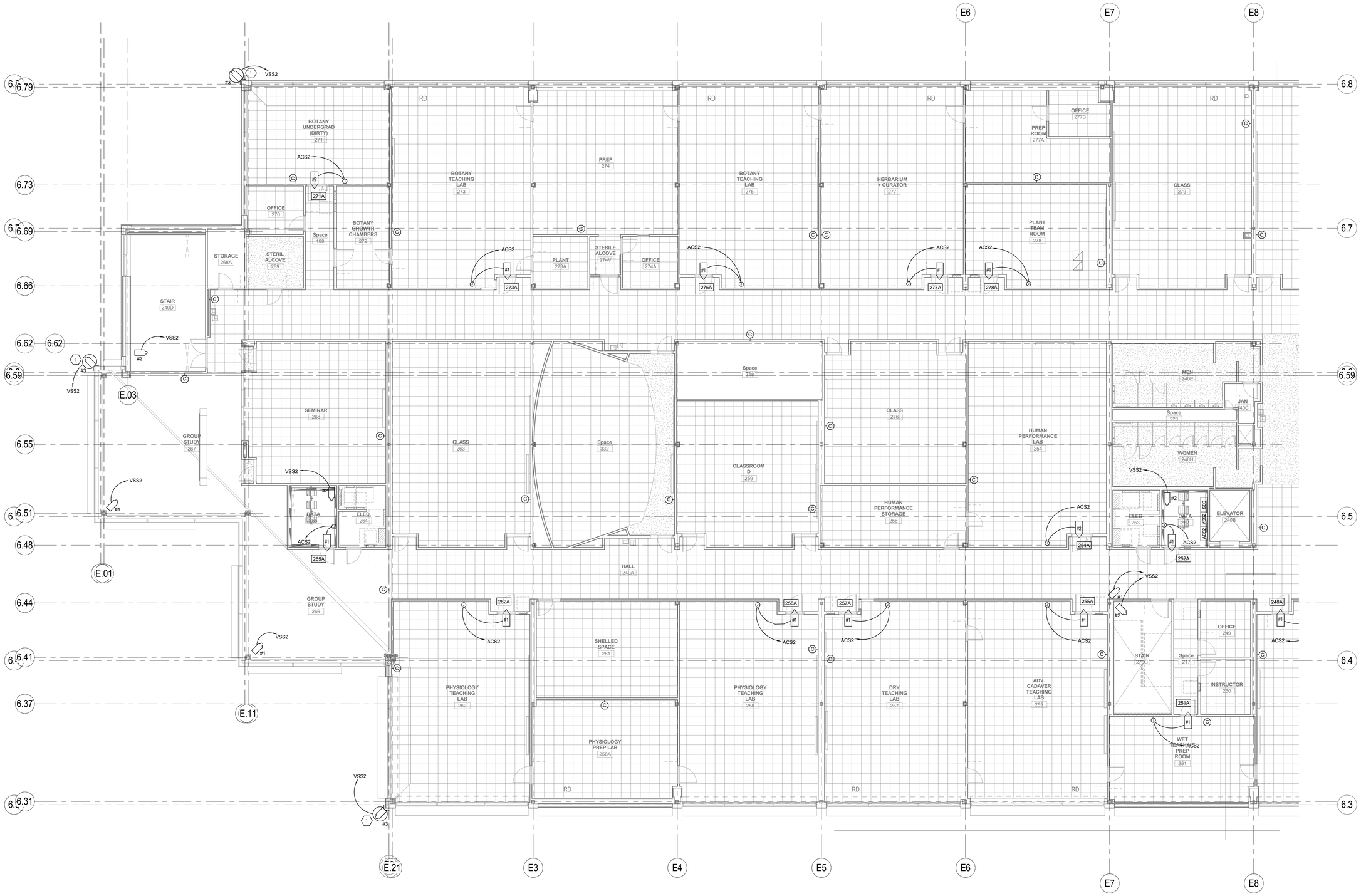
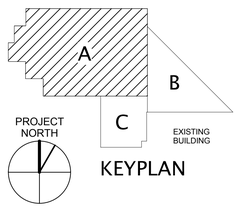


1 LEVEL 2 SECURITY PLAN - AREA A
SCALE: N.T.S.



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LEVEL 2 SECURITY PLAN - AREA A

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SHEET KEYNOTES

1 THIS PAN/TILT/ZOOM CAMERA SHALL BE PEDESTAL MOUNTED AT THE ROOF LEVEL.

2 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARDS AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.

1 LEVEL 2 SECURITY PLAN - AREA B

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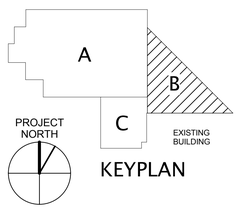

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LEVEL 2 SECURITY PLAN - AREA B

CONSTRUCTION DOCUMENTS

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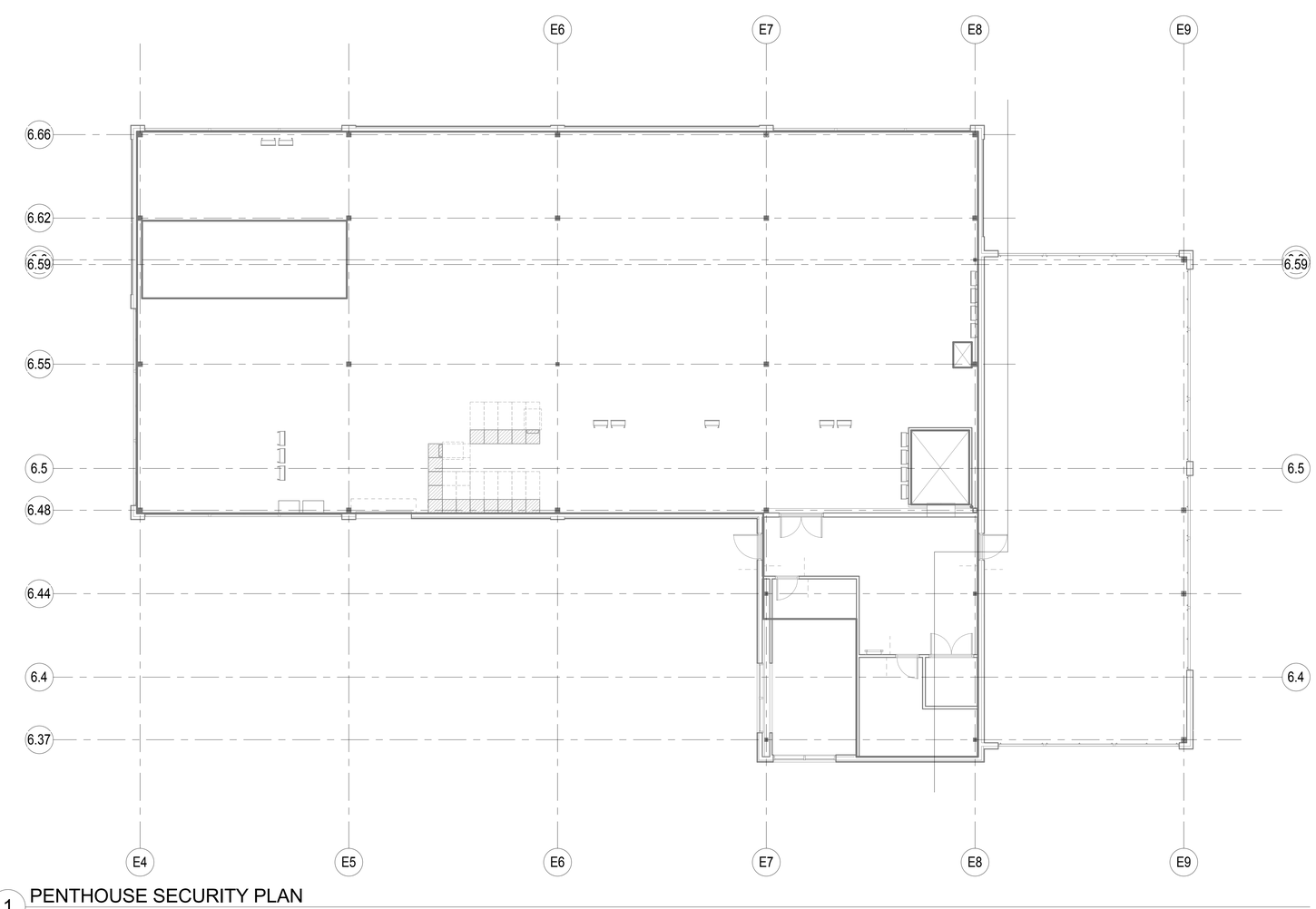

1 PENTHOUSE SECURITY PLAN

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No. 181563
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STATE OF UTAH

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REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
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PENTHOUSE SECURITY PLAN

CONSTRUCTION DOCUMENTS

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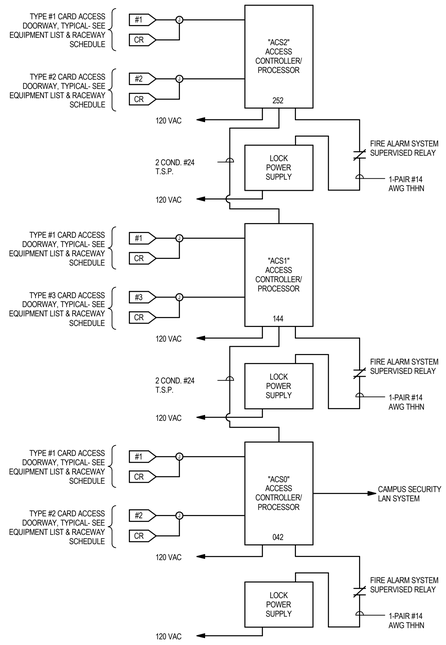
SECURITY SYSTEM NOTES

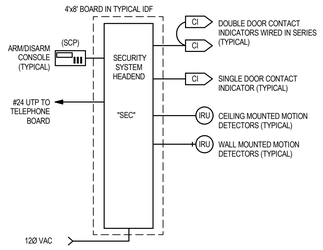
1. PROVIDE RACEWAY AND EQUIPMENT AS INDICATED FOR CARD ACCESS DOOR TYPE INDICATED. REFER TO SECTION 281300 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE CONCEALED .75" C TYPICAL FOR LINES SHOWN TO DEVICE BOXES ON PROTECTED SIDE AND UNPROTECTED SIDE ELEVATIONS.
3. CONFIRM CORRECT CARD ACCESS DOOR RACEWAY, LOCK VOLTAGE, AND EXIT SWITCH CURRENT RATING (2 AMPS MIN.) WITH DIV. 8 FURNISHED CARD ACCESS DOOR HARDWARE PER DIV. 8 DOOR HARDWARE SUBMITTALS.
4. POWER SUPPLIES FOR ELECTRIC LATCH RETRACTION EXIT HARDWARE FOR FIRE ALARM CONTROL BY DIV. 8.
5. LOCATE CARD READER BOX AS INDICATED ON FLOOR PLANS. RACEWAY AND BOXES BY DIV. 28. REFER TO 281300 FOR CARD ACCESS SYSTEM REQUIREMENTS.
6. 4 SQ. J-BOX ON PROTECTED SIDE OF DOORWAY (SIDE OPPOSITE OF CARD READER) ABOVE ACCESSIBLE CEILING OR IN OTHER ACCESSIBLE LOCATION.
7. ELECTRIC LOCKING HARDWARE (MAG LOCKS, ELECTRIC STRIKES, POWER TRANSFER HINGES, ETC.) BY DIV 8. REVIEW DOOR HARDWARE FURNISHED AND VERIFY LOCK VOLTAGES AND OPERATIONAL FUNCTIONALITY OF LOCKS. CONTACT ENGINEER WITH QUESTIONS OR CONCERNS.



NOTES:

1. ACCESS CONTROL SYSTEM BASED UPON MULTIPLE CARD READERS PER ACCESS CONTROLLER/PROCESSOR. ALTERNATE CONFIGURATIONS ACCEPTABLE PROVIDED CONTRACTOR ALLOWS FOR ANY INCREASED WIRING OR EQUIPMENT AND PROVIDES SUBMITTAL DRAWINGS SHOWING NEW CONFIGURATION.
2. ACCESS CONTROLLER "ACS" INDICATED SHALL INCLUDE ANY ISOLATION MODULES, BUFFER MODULES, EXTERNAL POWER SUPPLIES, INPUT/OUTPUT MODULES, OR FORMAT CONVERTER MODULES (NOT SHOWN) REQUIRED TO SUPPORT CARD READER OR KEYPAD TYPES INDICATED, FOR COMPLETE AND FUNCTIONING CARD READER AND DOOR CONTROL.
3. PROVIDE SEPARATE WIRE PAIRS FOR REQUEST TO EXIT AND DOOR CONTACT INDICATOR, FROM ACCESS DOOR TO ACCESS CONTROLLER "ACS" PANEL. SINGLE PAIR, FROM ACCESS DOOR TO CONTROLLER PANEL, FOR REQUEST TO EXIT AND DOOR CONTACT INDICATOR, NOT ACCEPTABLE.
4. REQUEST TO EXIT AND DOOR CONTACT INDICATOR CIRCUITS SHALL BE SUPERVISED FOR OPEN CIRCUIT OR SHORT CIRCUIT FAULTS BETWEEN THE DEVICE CONTACTS AND ACCESS CONTROLLER.

2 CARD ACCESS SYSTEM RISER DIAGRAM
NTS



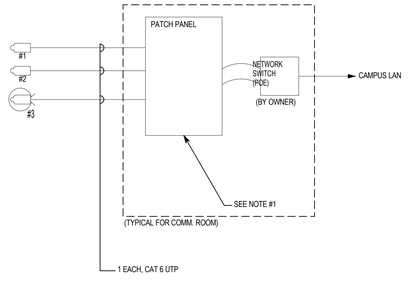
NOTE:

PROVIDE SECURITY SYSTEMS WITH DEVICES AS INDICATED ON DRAWINGS. REFER TO SECTION 281600 AND SECURITY EQUIPMENT LIST FOR ACCEPTABLE TYPES.

4 INTRUSION DETECTION SYSTEM DIAGRAM
NTS

NOTES:

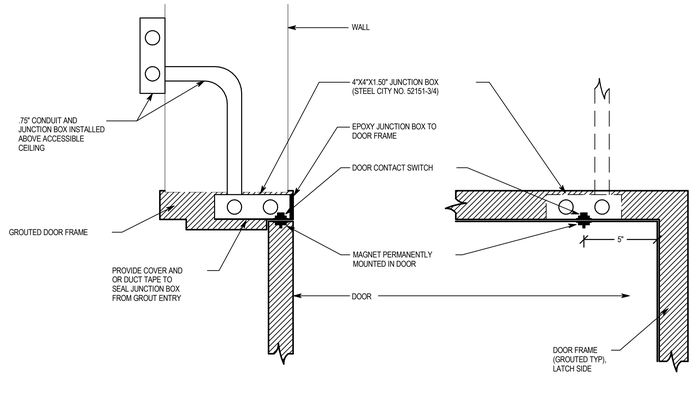
1. PATCH PANEL FOR VIDEO SURVEILLANCE CABLING SHALL BE A SEPARATE PANEL FROM REST OF LAN SYSTEM.
2. CABLE, PATCH PANEL, TERMINATION, AND TESTING BSHALL BE BY STRUCTURED CABLING CONTRACTOR.



3 VIDEO SURVEILLANCE SYSTEM DIAGRAM– TYPICAL COMM. ROOM FOR EACH FLOOR
NTS

NOTES:

1. DRILL .125" HOLE TO INDICATE SWITCH LOCATION AND IDENTIFY WHERE JUNCTION BOX IS.
2. THE INTENT OF THIS DETAIL IS TO PROVIDE A GROUT-FREE ENVIRONMENT FOR, AND EASIER CABLE ACCESS TO, THE CONTACT SWITCH LOCATION. SUBMIT METHOD OF PROVIDING GROUT FREE ENVIRONMENT DURING SUBMITTAL PROCESS. ADDRESS ANY QUESTIONS TO THE ENGINEER.
3. PRIOR TO ANY ROUGH-IN MEET WITH SCHOOL DISTRICT PERSONEL TO CONFIRM ROUGH-IN.



1 DOOR CONTACT SWITCH DETAILS
NTS

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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SECURITY SYSTEMS DETAILS AND DIAGRAMS

CONSTRUCTION DOCUMENTS

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SECURITY SYSTEM EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING *	ROUGH-IN	QTY	ACCEPTABLE TYPES
CR	CARD READER	40"	4SQ W/ 1G RING	OFP	SEE SECTION 281300
#	CARD ACCESS DOOR TYPE, TYPICAL. REFER TO CARD ACCESS DOOR TYPE SCHEDULE.	SEE SCHEDULE	SEE SCHEDULE	OFP	REFER TO CARD ACCESS DOOR TYPE SCHEDULE & SECTION 281300
CI	DOOR MONITOR - CONTACT INDICATOR	SEE SCHEDULE	SEE SCHEDULE	OFP	SEE SECTION 281600
	CCTV CAMERA/ENCLOSURE TYPE. TYPICAL. REFER TO CCTV CAMERA/ENCLOSURE TYPE SCHEDULE.	SEE SCHEDULE	SEE SCHEDULE	OFP	SEE CCTV CAMERA/ENCLOSURE TYPE SCHEDULE AND SECTION 282300
ACS	ACCESS CONTROLLERS & PWR SUPPLIES	72"	4"x4" GUTTER & STUBS A/R	A/R	SEE SECTION 281300
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER "TVSS"	AS NOTED	A/R	A/R	SEE SECTION 281300
SEC	INTRUSION DETECTION PANEL	72"	4"x4" GUTTER & STUBS A/R	OFP	SEE SECTION 281600
IRU	360° CEILING MOUNTED INTRUSION DETECTION MOTION DETECTOR	CEILING	4-0 BOX	OFP	SEE SECTION 281600
IRU	WALL MOUNTED INTRUSION DETECTION MOTION DETECTOR	90"	4SQ W/ 1G RING	OFP	SEE SECTION 281600
	MISC. CABLES.	AS NOTED	AS NOTED	OFP	AS NOTED AND PER MANUFACTURER'S WRITTEN INSTRUCTIONS

* COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL ELEVATIONS BEFORE INSTALLATION.

VSS CAMERA/ENCLOSURE TYPE SCHEDULE

CAMERA TYPE NUMBER	SYMBOL	DESCRIPTION	INCLUDES
TYPE 1	#1 VSS	INTERIOR CAMERA - FIXED DOME (CEILING MOUNTED UNLESS J-BOX SHOWN)	* IP CAMERA / DOME ENCLOSURE * PATCH CABLE CONNECTION TO DATA OUTLET
TYPE 2	#2 VSS	INTERIOR CAMERA - FIXED DOME (WALL MOUNTED). PROVIDE SEMI-FLUSH, UNLESS NOTED OTHERWISE	* IP CAMERA / DOME ENCLOSURE * PATCH CABLE CONNECTION TO DATA OUTLET
TYPE 3	#3 VSS	EXTERIOR CAMERA - PAN/TILT/ZOOM. PEDESTAL MOUNTED AT ROOF LEVEL	* IP CAMERA / DOME ENCLOSURE * ENVIRONMENTAL DOME ENCLOSURE * PATCH CABLE CONNECTION TO DATA OUTLET

ABBREVIATIONS

DBL	=	DOUBLE
DIR	=	DIRECTION
HDWR	=	HARDWARE
C	=	CONDUIT
4SQ	=	FOUR SQUARE
W/	=	WITH
1G	=	1 GANG
PWR	=	POWER
ACC	=	ACCESSIBLE
OCC	=	OCCUPANCY
TYP	=	TYPICAL
L/PS	=	LOCK POWER SUPPLY
CR	=	CARD READER
CI	=	DOOR CONTACT INDICATOR
EPT	=	ELECTRIC POWER TRANSFER
ES	=	ELECTRIC STRIKE
PH	=	PANIC HARDWARE
EML	=	ELECTROMAGNETIC LOCK
KS	=	KEY SWITCH
ACS	=	ACCESS CONTROL SYSTEM
EL	=	ELECTRIC LOCKSET
MD	=	MOTION DETECTOR
TLC	=	TIME/SYSTEM LOCK CONTROL
ELC	=	EMERGENCY LOCK CONTROL
IDS	=	INTRUSION DETECTION SYSTEM

NOTES

1. PROVIDE RACEWAY AND EQUIPMENT AS INDICATED FOR CARD ACCESS DOOR TYPE INDICATED. REFER TO SECTION 281300 AND CARD ACCESS AUTO-DOOR AND LOCK CONTROL DETAILS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE CONCEALED .75" C TYPICAL FOR LINES SHOWN TO DEVICE BOXES ON PROTECTED SIDE AND UNPROTECTED SIDE ELEVATIONS.
3. CONFIRM CORRECT CARD ACCESS DOOR RACEWAY, LOCK VOLTAGE, AND EXIT SWITCH CURRENT RATING (2 AMPS MIN.) WITH DIV. 8 FURNISHED CARD ACCESS DOOR HARDWARE PER DIV. 8 DOOR HARDWARE SUBMITTALS.
4. POWER SUPPLIES FOR ELECTRIC LATCH RETRACTION EXIT HARDWARE FOR FIRE ALARM CONTROL BY DIV. 8.
5. LOCATE CARD READER BOX AS INDICATED ON FLOOR PLANS. RACEWAY AND BOXES BY DIV. 26. REFER TO 281300 FOR CARD ACCESS SYSTEM REQUIREMENTS.
6. DOUBLE 4SQ J-BOX ON PROTECTED SIDE OF DOORWAY (SIDE OPPOSITE OF CARD READER) ABOVE ACCESSIBLE CEILING OR IN OTHER ACCESSIBLE LOCATION. PROVIDE COVER FOR J-BOX.
7. ELECTRIC LOCKING HARDWARE (MAG LOCKS, ELECTRIC STRIKES, POWER TRANSFER HINGES, ETC.) BY DIV 8. REVIEW DOOR HARDWARE FURNISHED AND VERIFY LOCK VOLTAGES AND OPERATIONAL FUNCTIONALITY OF LOCKS. CONTACT ENGINEER WITH QUESTIONS OR CONCERNS.

CARD ACCESS DOOR TYPE SCHEDULE

DOOR TYPE #	SYMBOL	DESCRIPTION	PROTECTED SIDE ELEVATION	UNPROTECTED SIDE ELEVATION	LOCK TYPE(S)	INCLUDES:
TYPE 1:	TO ACS #1 HARDWARE SETS (11, 12, 13, 15, 28, 30, 31, 32)	SINGLE DOOR, 1 CARD READER MOUNTED ON DOOR (FREE EGRESS).	4SQ J-BOX ABOVE ACC CEILING .75" C (TYP) POWER TRANSFER 4SQ BOX W/1G RING AND COVER CONTACT INDICATOR 1G BOX IN FRAME	ELECTRONIC LOCK	ELECTRONIC LOCK	SECURITY CONTRACTOR PROVIDES: • L/PS HARDWARE CONTRACTOR PROVIDES: • EL, CR, EPT, CI LOCK CONTROLLED BY: • CR SPECIAL NOTES: • L/PS-6A @ 24V
TYPE 2:	TO ACS #2 HARDWARE SETS (16, 33)	DOUBLE DOOR (UNEQUAL PAIR), 1 CARD READER MOUNTED ON DOOR.	.75" C (TYP) DBL 4SQ J-BOX ABOVE ACC CEILING TRANSFER HINGE 1G BOX IN FRAME .75" C (TYP) CONTACT INDICATOR, 1G BOX IN FRAME	ELECTRONIC LOCK	ELECTRONIC LOCK	SECURITY CONTRACTOR PROVIDES: • L/PS HARDWARE CONTRACTOR PROVIDES: • EL, CR, EPT, CI LOCK CONTROLLED BY: • CR SPECIAL NOTES: • L/PS-6A @ 24V
TYPE 3:	CR TO ACS #2 HARDWARE SETS (04, AL-01)	DOUBLE DOOR, 1 CARD READER (FREE EGRESS). SEE ARCHITECTURAL DRAWINGS FOR EXACT CARD READER MOUNTING LOCATION.	4SQ J-BOX ABOVE ACC CEILING CONTACT INDICATORS 1G BOXES IN FRAME .75" C (TYP) ELECTRIFED EXIT HARDWARE POWER TRANSFER 1G BOXES IN FRAME		ELECTRIFIED EXIT HARDWARE	SECURITY CONTRACTOR PROVIDES: HARDWARE CONTRACTOR PROVIDES: • PH(2), EPT(2), L/PS, CI(2), CR LOCK CONTROLLED BY: • TLC, CR
TYPE 4:	CR TO ACS #2 HARDWARE SET (AL-02)	DOUBLE DOOR, 1 CARD READER, AUTO ASSISTED SEE ARCHITECTURAL DRAWINGS FOR EXACT CARD READER AND ACTUATOR MOUNTING LOCATIONS.	AUTO 4SQ J-BOX ABOVE ACC CEILING CONTACT INDICATORS 1G BOXES IN FRAME .75" C (TYP) ELECTRIFIED EXIT HARDWARE POWER TRANSFER 1G BOXES IN FRAME		ELECTRIFIED EXIT HARDWARE	SECURITY CONTRACTOR PROVIDES: HARDWARE CONTRACTOR PROVIDES: • PH(2), EPT(2), L/PS, CI(2), CR LOCK CONTROLLED BY: • TLC , CR SPECIAL NOTES: • INTERFACE WITH AUTO ASSISTED DOOR OPENER (ADA)
TYPE 5:	TO ACS #2 CR KS HARDWARE SET (09)	DOUBLE DOOR, 1 CARD READER, KEY SWITCH FOR DOGGING	4SQ J-BOX ABOVE ACC CEILING .75" C (TYP) KEY SWITCH 4SQ BOX W/1G RING CONTACT INDICATORS 1G BOXES IN FRAME 40" POWER TRANSFER HINGES 1G BOXES IN FRAME (EGRESS SIDE) ELECTRIFIED PANIC HARDWARE	4SQ J-BOX ABOVE ACC CEILING .75" C (TYP) CARD READER 4SQ BOX W/1G RING 40"	ELECTRIFIED PANIC HARDWARE	SECURITY CONTRACTOR PROVIDES: HARDWARE CONTRACTOR PROVIDES: • PH(2), EPT(2), CI(2), CR, KS LOCK CONTROLLED BY: • CR, KS SPECIAL NOTES: • ELECTRONICALLY DOGGED BY KEY SWITCH • INTERFACE WITH FIRE ALARM
TYPE 6:	TO ACS #2 HARDWARE SET (10)	DOUBLE DOOR, ELECTRONICALLY DOGGED	4SQ J-BOX ABOVE ACC CEILING .75" C (TYP) CONTACT INDICATORS 1G BOXES IN FRAME TRANSFER HINGES 1G BOXES IN FRAME (EGRESS SIDE) ELECTRIFIED PANIC HARDWARE		ELECTRIFIED PANIC HARDWARE	SECURITY CONTRACTOR PROVIDES: HARDWARE CONTRACTOR PROVIDES: • PH(2), EPT(2), CI(2) LOCK CONTROLLED BY: • KEY SWITCH ON DOOR TYPE 5

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

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SECURITY SYSTEMS SCHEDULES

CONSTRUCTION DOCUMENTS

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SHEET KEYNOTES

1. BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.
2. MOUNT CABINET 'C' UNDER FLAT PANEL MONITOR.
3. MEDIA DIGITAL DISPLAY LOCATION.

1 LEVEL 0 AUDIO-VIDEO PLAN - AREA A
SCALE: 1/8" = 1'-0"

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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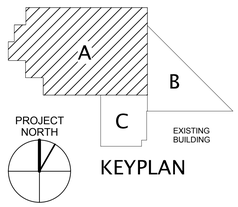

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LEVEL 0 AUDIO-VIDEO PLAN - AREA A

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SHEET KEYNOTES

1 LEVEL 0 AUDIO-VIDEO PLAN - AREA B

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

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P 801.521.8600
F 801.521.7913

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REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
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801-328-5151
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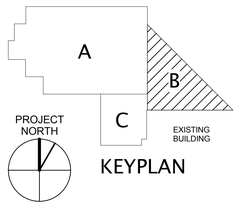

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LEVEL 0 AUDIO-VIDEO PLAN - AREA B

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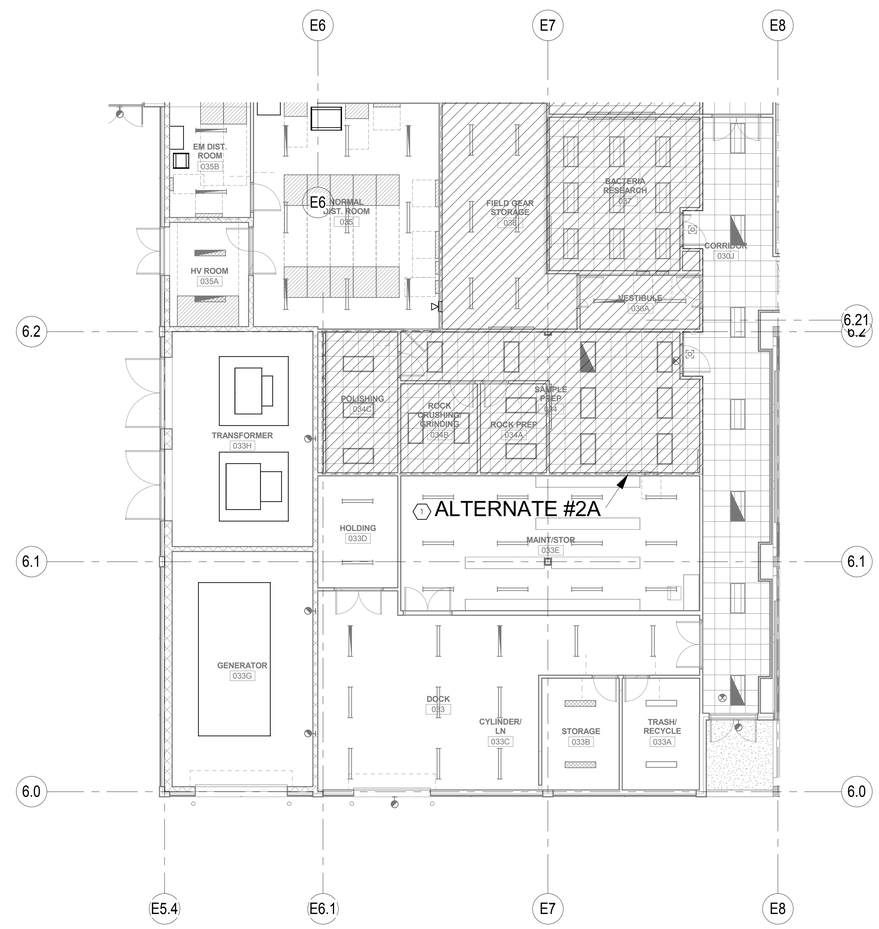

1 LEVEL 0 AUDIO-VIDEO PLAN - AREA C
SCALE: N.T.S.

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SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
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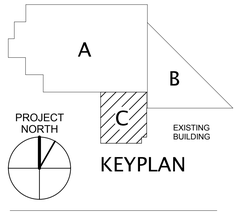

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1 MOUNT CABINET 'C' UNDER FLAT PANEL MONITOR.
2 MEDIA DIGITAL DISPLAY LOCATION.
3 INTERACTIVE DIGITAL DISPLAY LOCATION.

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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No. 181563
DAVID E. WESEMANN
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324 S. State St., Suite 400
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800-678-7077
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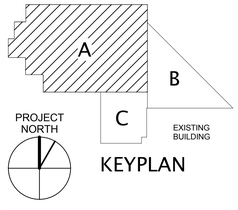
1 LEVEL 1 AUDIO-VIDEO PLAN - AREA A
SCALE: N.T.S.



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LEVEL 1 AUDIO-VIDEO PLAN - AREA A

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2 INTERACTIVE DIGITAL DISPLAY LOCATION.

3 LARGE PROJECTION SCREEN LOCATED ON WALL FOR FULL-TIME MEDIA DISPLAY.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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STATE OF UTAH

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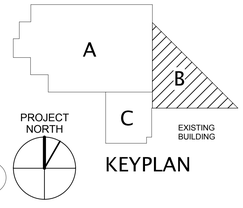
1 LEVEL 1 AUDIO-VIDEO PLAN - AREA B

SCALE: N.T.S.



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SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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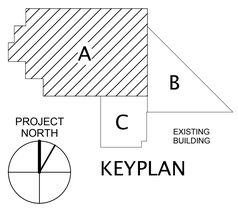
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	DEW
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LEVEL 2 AUDIO-VIDEO PLAN - AREA A

CONSTRUCTION DOCUMENTS

EJ-103A

SHEET KEYNOTES

1 BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.

2 INTERACTIVE DIGITAL DISPLAY LOCATION.

1 LEVEL 2 AUDIO-VIDEO PLAN - AREA B

SCALE: N.T.S.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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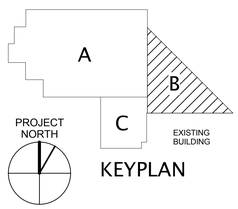

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LEVEL 2 AUDIO-VIDEO PLAN - AREA B

CONSTRUCTION DOCUMENTS

EJ-103B

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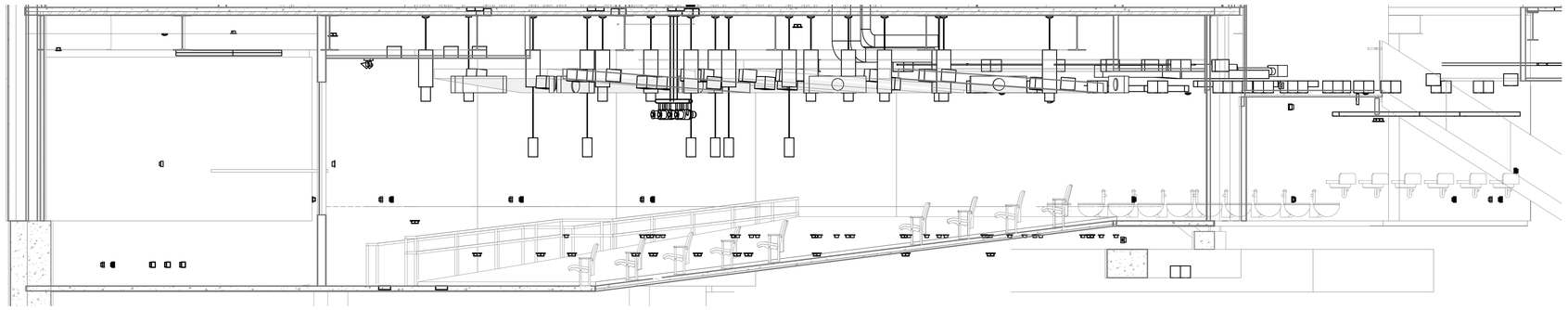
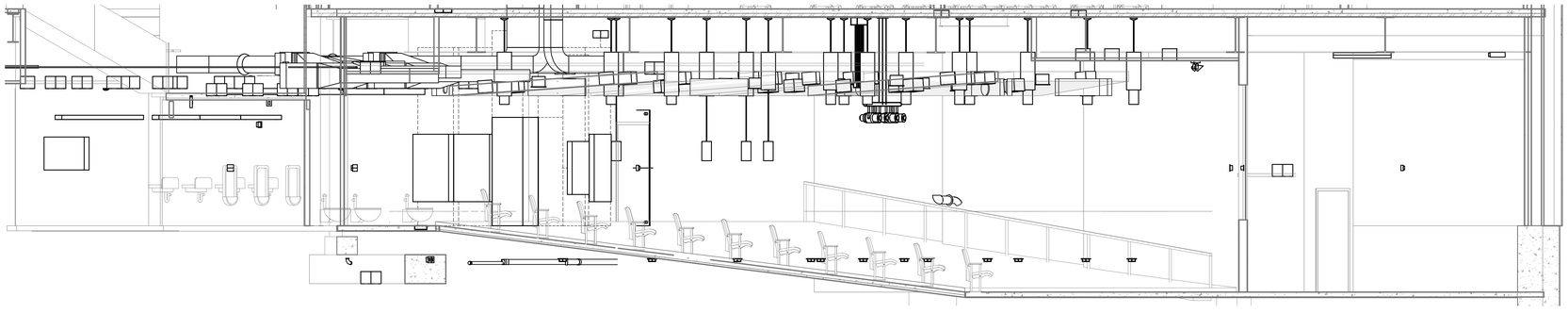
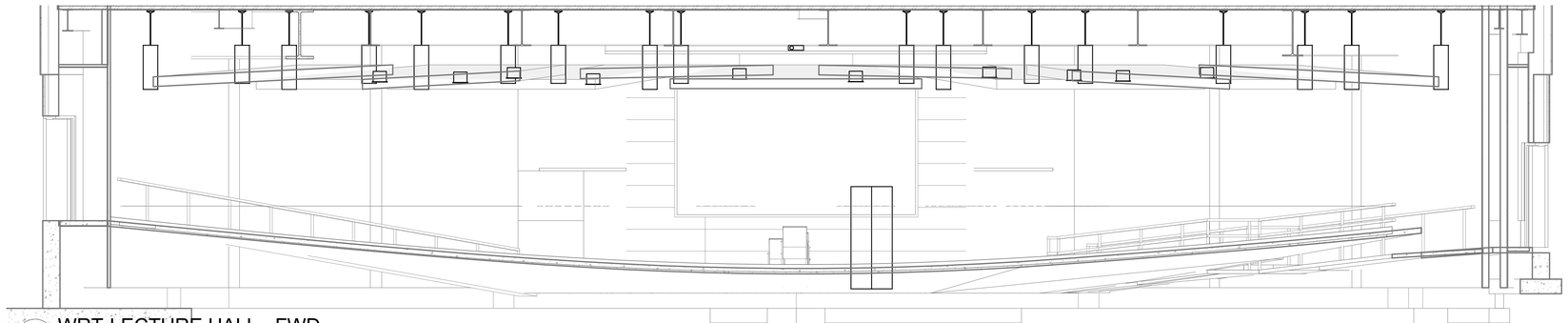


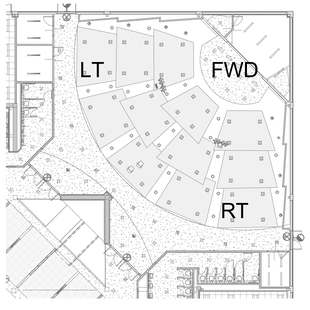
3 WRT-LECTURE HALL - RT
SCALE: 1/4" = 1'-0"



2 WRT-LECTURE HALL - LT
SCALE: 1/4" = 1'-0"



1 WRT-LECTURE HALL - FWD
SCALE: 1/4" = 1'-0"



4 Key
SCALE: N.T.S.

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LECTURE SECTIONS

CONSTRUCTION DOCUMENTS

EJ-201

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AV ROUGH-IN EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	SPECIAL INSTRUCTIONS
M	MEDIA JUNCTION BOX 24" X 24" X 6", W/SCREW ON COVER	ABOVE FINISHED CEILING, FRONT WALL	
S	SPEAKER JUNCTION BOX, 4" SQUARE W/ 1 GANG MUD RING	FLUSH IN WALL, APPROXIMATELY 12" BELOW FINISHED CEILING, 24" FROM SIDE WALL UNLESS OTHERWISE NOTED	CONFIRM LOCATION W/ ARCHITECTURAL ELEVATIONS. COORDINATE W/ PROJECTION SCREEN PRIOR TO INSTALLATION
	PROJECTOR JUNCTION BOX, 4" X 4" X 4"	ABOVE FINISHED CEILING, COORDINATE LOCATION W/ DISPLAY DEVICE SCHEDULE	LOCATE PERPENDICULAR TO CENTER OF PROJECTION SCREEN
CDC	DOCUMENT CAMERA JUNCTION BOX, 4" SQUARE W/ 2 GANG MUD RING	ABOVE FINISHED CEILING	LOCATE DIRECTLY ABOVE LECTERN. CONFIRM EXACT LOCATION W/TRAVIS TASKER PRIOR TO INSTALLAITON
SCR	PROJECTION SCREEN CONTROL JUNCTION BOX, 4" SQUARE W/ 1 GANG MUD RING	FLUSH IN WALL AT ELECTRICAL SWITCH HEIGHT	
F	FLAT PANEL MONITOR JUNCTION BOX, CHIEF PAC 501	FLUSH IN WALL AT APPROXIMATELY 63" AFF EXCEPT WHERE NOTED	
CP	JUNCTION BOX, 4-11/16" SQUARE, DEEP W/2 GANG MUD RING	AT ELECTRICAL OUTLET HEIGHT UNLESS OTHERWISE NOTED	
S	SPEAKER ENCLOSURE, MANUFACTURER: MODEL #: ATLAS SOUND FA97-6 W/FA81-6 OR FA-TR6	FLUSH IN FINISHED CEILING	
1	EQUIPMENT RACK #1, NO REQUIREMENT	FLOOR	MIDDLE ATLANTIC SR-40-32/FD-40 BY AV INSTALLER
2	EQUIPMENT RACK #2, 12" X 12" JUNCTION BOX, 3" DEEP	FLOOR/WALL AT 24" AFF	
L	LECTERN, STUB CONDUIT INTO BASE 2" ABOVE FINISHED FLOOR	FLOOR	VERIFY EXACT LOCATION OF ALL LECTERNS PRIOR TO INSTALLATION. STUB CONDUIT IN REAR SECTION OF MILLWORK
	LADDER RACK, 12", CHATSWORTH 10250-712 SERIES WITH SPLICE KITS, FOOT KIT, TRIANGLE BRACKETS, END CAPS AND ALL ACCESSORIES	SEE NOTES ON EJ-101A	PROVIDE ALL REQUIRED MOUNTING ACCESSORIES TO COMPLY WITH MOUNTING DETAILS
WC	WALL CONTROLLER, 3 GANG, JUNCTION BOX	FLUSH IN WALL AT ELECTRICAL SWITCH HEIGHT	
	PROJECTION SCREEN, DA-LITE TENSIONED VANTAGE ELECTROL W/LOW VOLTAGE CONTROL AND 12" BLACK DROP	FLUSH IN FINISHED CEILING	SEE PROJECTION SCREEN SCHEDULE
F4	FLAT PANEL ARRAY OF 4, CHIEF PAC 50	SEE DETAIL	VERIFY WITH ARCHITECTURAL ELEVATIONS

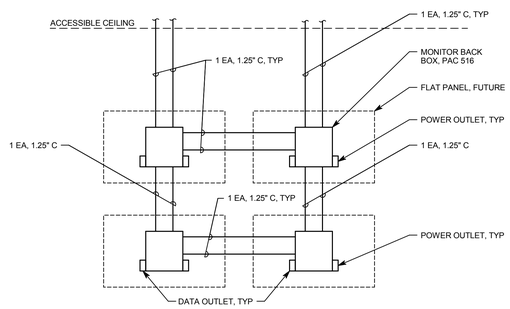
UVU NEW SCIENCE BLDG - PROJECTION SCREEN SCHEDULE

ROOM NAME	ROOM #	CEILING HEIGHT	PROJECTED IMAGE HEIGHT	PROJECTED IMAGE WIDTH	ASPECT RATIO	COMMENTS
LECTURE	031	10'-0"	65"	116"	16:9	
COMPUTER CLASSROOM	032	10'-0"	65"	116"	16:9	
PRE-HEALTH / MICRO TEACHING LAB	048	9'-6"	65"	116"	16:9	
ADV/ GEN. MICRO TEACHING LAB	049	9'-6"	65"	116"	16:9	
ADV/BASIC NUCLEIC ACID LAB	052	9'-6"	65"	116"	16:9	
VIROLOGY TEACHING LAB	044	9'-6"	65"	116"	16:9	
CLASSROOM	038	9'-6"	65"	116"	16:9	
SEMINAR	020	9'-6"	65"	116"	16:9	
INTRO TO MICRO TEACHING LAB	053	9'-6"	65"	116"	16:9	
PROTEIN METHODS LAB	057	9'-6"	65"	116"	16:9	
CLASSROOM	060	9'-6"	65"	116"	16:9	
CELL/PLANT CULTURE LAB II	062	9'-6"	65"	116"	16:9	
CELL/PLANT CULTURE LAB I	066	9'-6"	65"	116"	16:9	
INTRO TO BIOTECH LAB	069	9'-6"	65"	116"	16:9	
LECTURE	073	9'-0"	65"	116"	16:9	
COMPUTER CLASSROOM	074	10'-0"	65"	116"	16:9	
AUDITORIUM	134			144"	16:9	
CLASSROOM	138	9'-6"	65"	116"	16:9	
LECTURE	139	9'-6"	65"	116"	16:9	
GENETICS / MOLECULAR TEACHING LAB	140	9'-6"	65"	116"	16:9	
CELL BIOLOGY TEACHING LAB	147	9'-6"	65"	116"	16:9	
SEMINAR	149	9'-6"	65"	116"	16:9	
SEMINAR	150	9'-6"	65"	116"	16:9	
COLLEGE BIOLOGY I LAB	152	9'-6"	65"	116"	16:9	
COLLEGE BIOLOGY II LAB	154	9'-6"	65"	116"	16:9	
GENERAL BIOLOGY TEACHING LAB	160	9'-6"	65"	116"	16:9	
MOLECULAR UNDERGRAD RESEARCH	170	9'-6"	65"	116"	16:9	
ZOOLOGY SCIENCE METHODS LAB	171	9'-6"	65"	116"	16:9	TWO SCREENS IN ONE EXPANDABLE ROOM
GIS LAB	175	9'-6"	65"	116"	16:9	
ZOOLOGY TEACHING LAB	176	9'-6"	65"	116"	16:9	
DRY TEACHING LAB	247	9'-6"	65"	116"	16:9	
ADV. CADAVER TEACHING LAB	248	9'-6"	65"	116"	16:9	TWO SCREENS IN ONE ROOM
HUMAN PERFORMANCE LAB	254	9'-6"	65"	116"	16:9	
ADV. CADAVER TEACHING LAB	255	9'-6"	65"	116"	16:9	TWO SCREENS IN ONE ROOM
DRY TEACHING LAB	257	9'-6"	65"	116"	16:9	
PHYSIOLOGY TEACHING LAB	258	9'-6"	65"	116"	16:9	
CLASSROOM D	259				16:9	
PHYSIOLOGY TEACHING LAB	262	9'-6"	65"	116"	16:9	
CLASS	263	9'-6"	65"	116"	16:9	
SEMINAR	268	9'-6"	65"	116"	16:9	
BOTANY TEACHING LAB	273				16:9	
BOTANY TEACHING LAB	275				16:9	
CLASS	276				16:9	
CLASS	279				16:9	
CLASSROOM	280				16:9	
CONF	241A	9'-6"	65"	116"	16:9	
LECTURE	249	9'-6"	65"	116"	16:9	
PLANT TEAM	278	9'-6"	65"	116"	16:9	
SPACE	332	9'-6"	65"	116"	16:9	

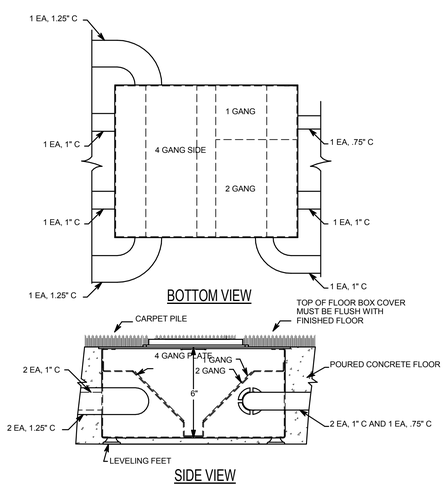
* VERIFY THE THROW DISTANCE WITH TRAVIS TASKER @ UVSC PRIOR TO INSTALLATION.

GENERAL AV ROUGH-IN NOTES

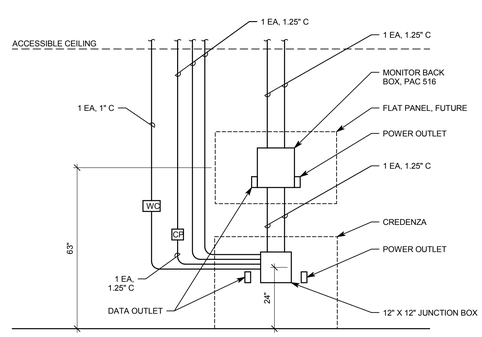
1. INSTALL ALL CONDUIT IN A CONCEALED FASHION. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED.
2. MAINTAIN MAXIMUM SEPARATION BETWEEN A/V SYSTEM CONDUIT AND ALL POWER CONDUIT.
3. INSTALL NYLON PULL STRINGS IN ALL A/V SYSTEM CONDUIT.
4. SUPPORT THE ENTIRE WEIGHT OF ALL SPEAKER ENCLOSURES FROM THE BUILDING STRUCTURE.
5. IF THE BOXES, ENCLOSURES, & CABINETS SPECIFIED ARE NOT PROVIDED FROM THE MANUFACTURER WITH THE REQUIRED KNOCK OUTS FOR THE SPECIFIED CONDUIT, FIELD CUT ALL REQUIRED KNOCK OUTS TO TERMINATE THE QUANTITY AND SIZES OF THE SPECIFIED CONDUITS.
6. THE ROUGH-IN LOCATIONS FOR PROJECTORS (P) SHOWN ON THE FLOOR PLAN DRAWINGS ARE APPROXIMATE. REFER TO THE DISPLAY DEVICE SCHEDULE FOR ACTUAL PROJECTION DISTANCES. LOCATE ROUGH-IN FOR PROJECTORS IN COMPLIANCE WITH THE DISPLAY DEVICE SCHEDULE.
7. VERIFY THE MOUNTING HEIGHT OF ALL FLAT PANEL MONITOR POWER OUTLETS AND SIGNAL JUNCTION BOXES WITH TRAVIS TASKER AT UVSC PRIOR TO INSTALLATION
8. COMPLY WITH ALL SPECIFICATIONS THAT ARE IN THE UVSC MASTER CABLING SPECS DOCUMENTS.
9. REFER TO LAB SHEETS FOR ADDITIONAL REQUIREMENTS.



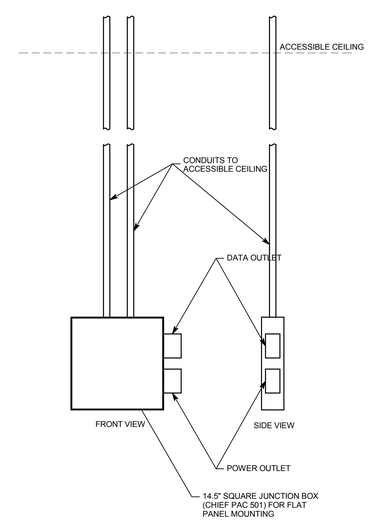
5 MONITOR ARRAY DETAIL
NTS
F4



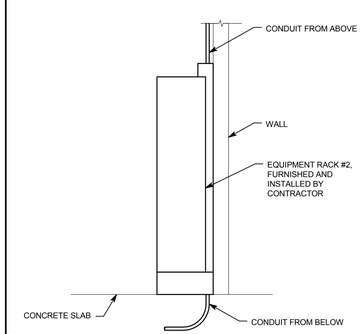
4 FLOOR BOX 10 DETAIL
NTS



3 GROUP STUDY FLAT PANEL WALL ELEVATION AND CONDUIT RISER DIAGRAM
NTS
TYPICAL OF 056, 068, 164, 165, 266, 267



2 FLAT PANEL MOUNTING DETAIL
NTS
F



1 EQUIPMENT RACK MOUNTING DETAIL
NTS

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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AV SYSTEMS ROUGH-IN EQUIPMENT LIST, NOTES, AND DETAILS
CONSTRUCTION DOCUMENTS

EJ-601

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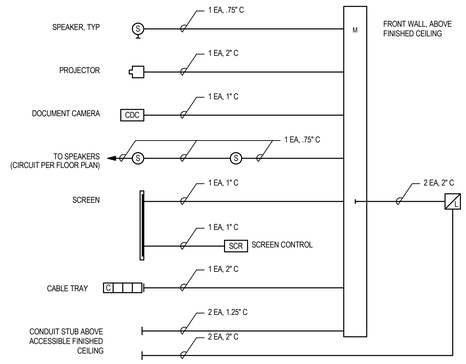
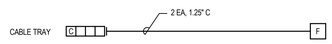


2 LECTURE AND CLASSROOM AV SYSTEMS DIAGRAM

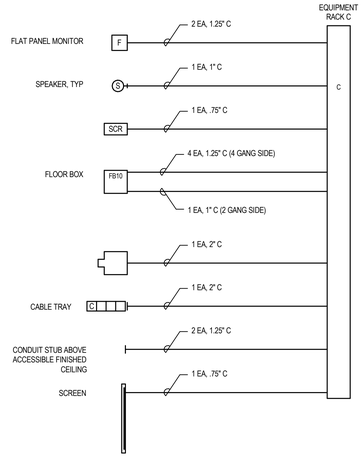
NTS

(044,048,049,052,053,057,060,062,066,069,032,074,038,073,031,138,139,140,147,152,154,160,170,171,175,176,247,248,254,255,257,258,259,262,263,273,275,276,279,280,249,278,332)



4 BUILDING WIDE DISPLAY SYSTEM AV SYSTEMS DIAGRAM

NTS

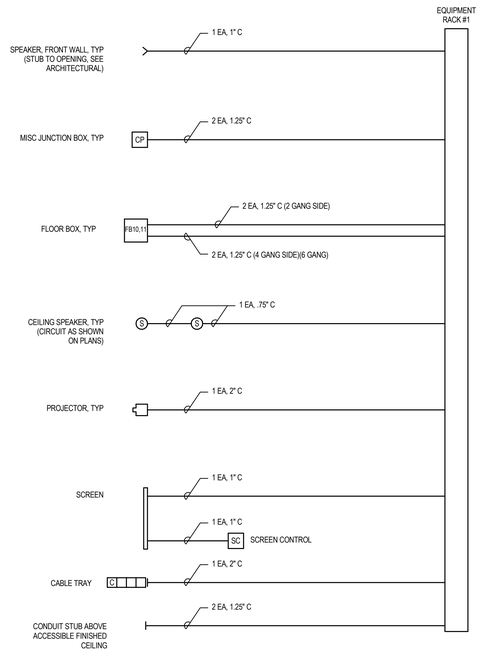


NOTE: ALL DEVICES ARE IN EACH ROOM.

3 CONFERENCE SEMINAR ROOMS AV SYSTEMS DIAGRAM

NTS

020, 070A, 172, 150, 149, 241A, 268



1 LECTURE HALL AV SYSTEMS DIAGRAM

NTS

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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AV SYSTEMS ROUGH-IN RISER DIAGRAMS

CONSTRUCTION DOCUMENTS

EJ-602

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GEN. FIRE ALARM SHEET NOTES

1. COORDINATE SPEAKER/STROBE PLACEMENT WITH LAB FURNISHINGS, CABINETS AND EQUIPMENT SO THAT HORN STROBES ARE NOT COVERED OR OBSTRUCTED FROM VIEW.
2. REFER TO FIRE SPRINKLER SHOP DRAWINGS FOR FLOW AND TAMPER SWITCH LOCATIONS AND PROVIDE FIRE ALARM CONNECTIONS TO EACH.
3. REFER TO MECHANICAL PLANS FOR QUANTITY AND LOCATIONS OF SMOKE DAMPERS AND PROVIDE POWER AND FIRE ALARM CONNECTIONS TO EACH.

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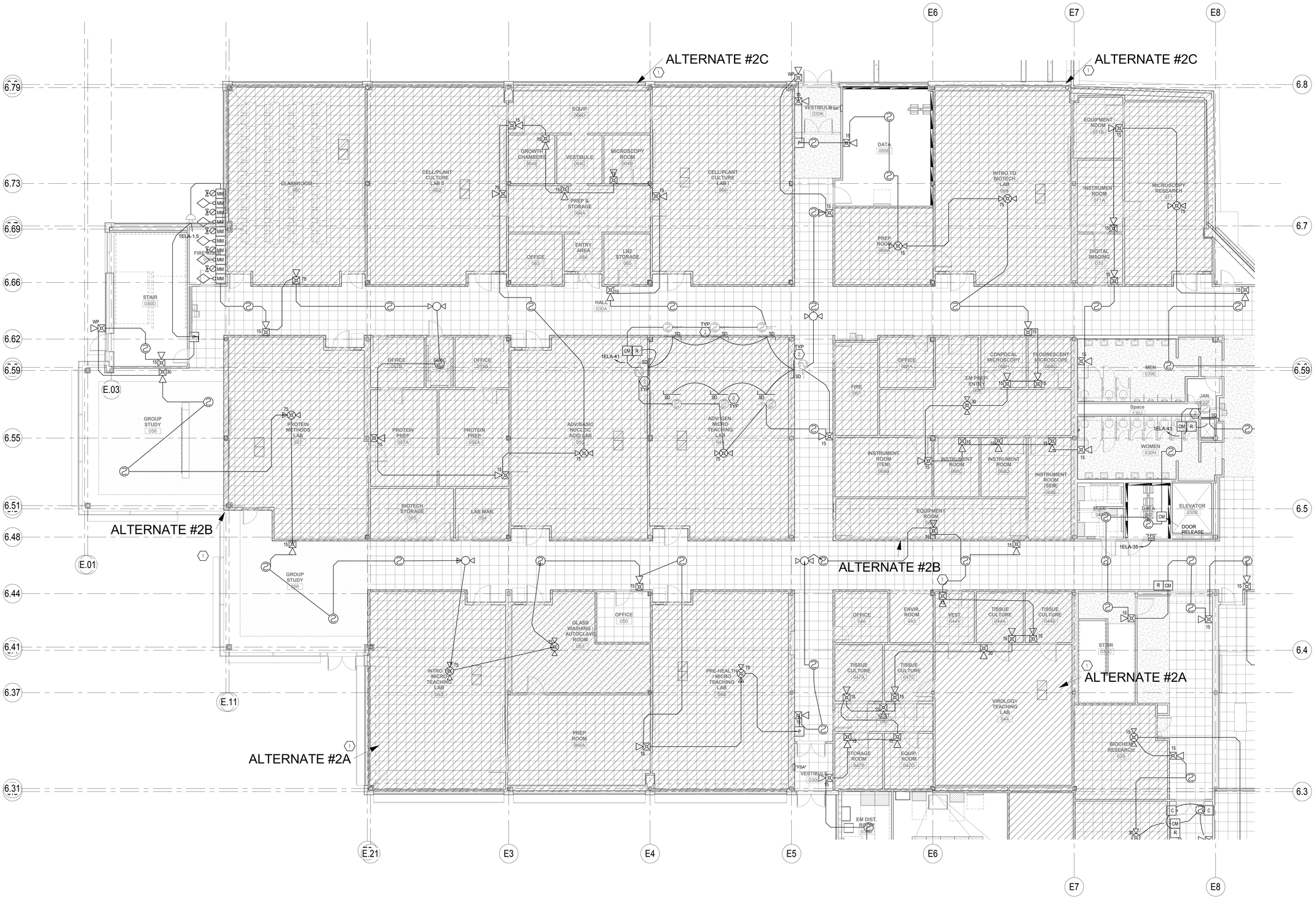
2. DUCT DETECTORS AT RETURN AIR OPENINGS TO SHAFT ON EACH FLOOR. ALTERNATIVELY, SPOT-TYPE DETECTORS MAY BE USED AT 24' O.C. ACROSS OPENINGS. COORDINATE INSTALLATION WITH MECHANICAL INSTALLER TO MEET NFPA AND IMC REQUIREMENTS.



1 LEVEL 0 FIRE ALARM PLAN - AREA A

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

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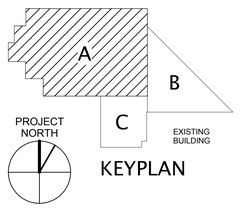

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LEVEL 0 FIRE ALARM PLAN - AREA A

CONSTRUCTION DOCUMENTS

FA-101A

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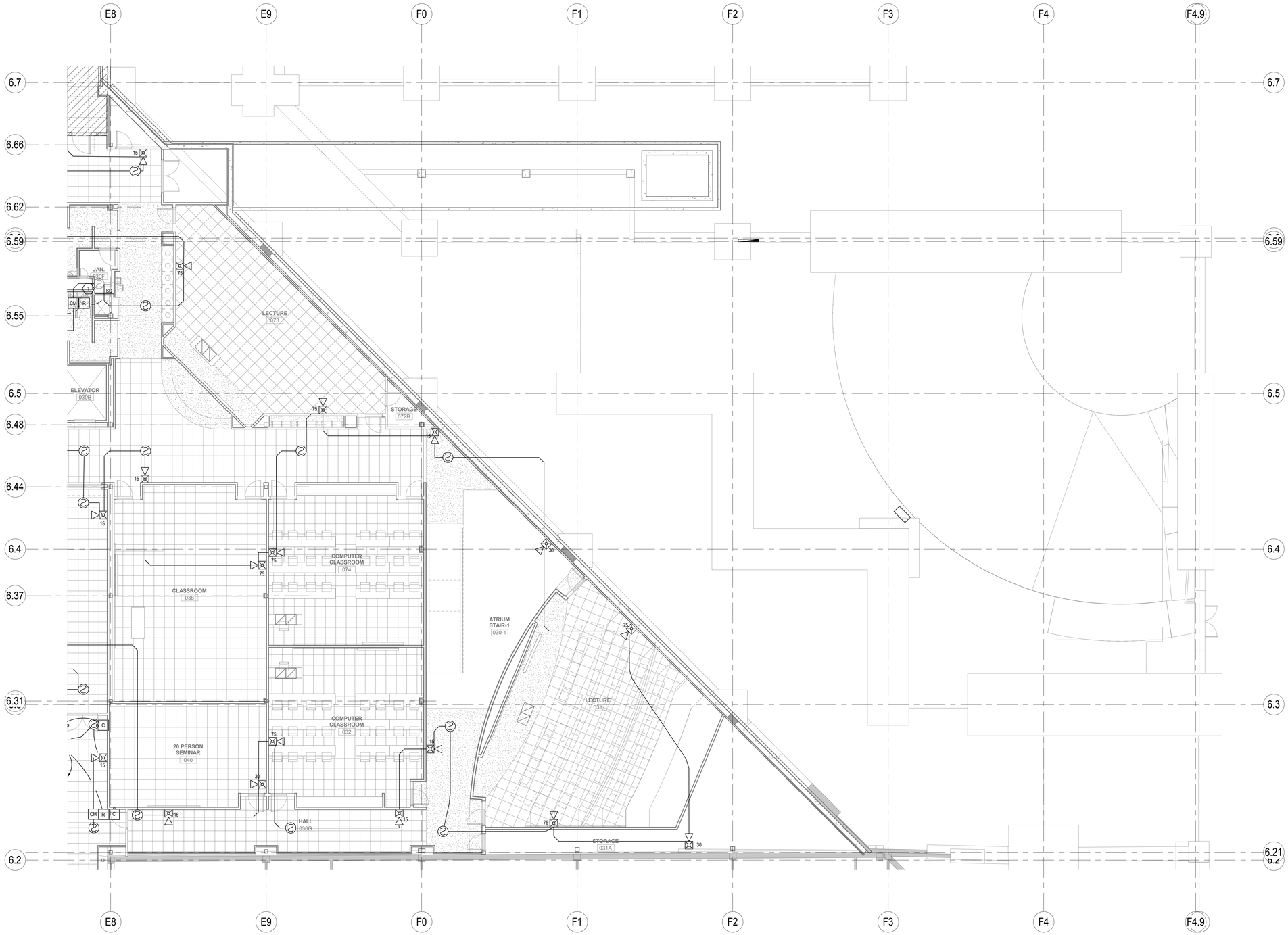

1 LEVEL 0 FIRE ALARM PLAN - AREA B
SCALE: 1/8" = 1'-0"

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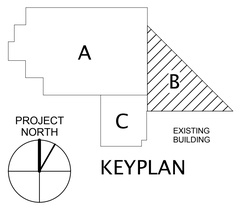
REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	Author
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LEVEL 0 FIRE ALARM PLAN - AREA B

CONSTRUCTION DOCUMENTS

FA-101B

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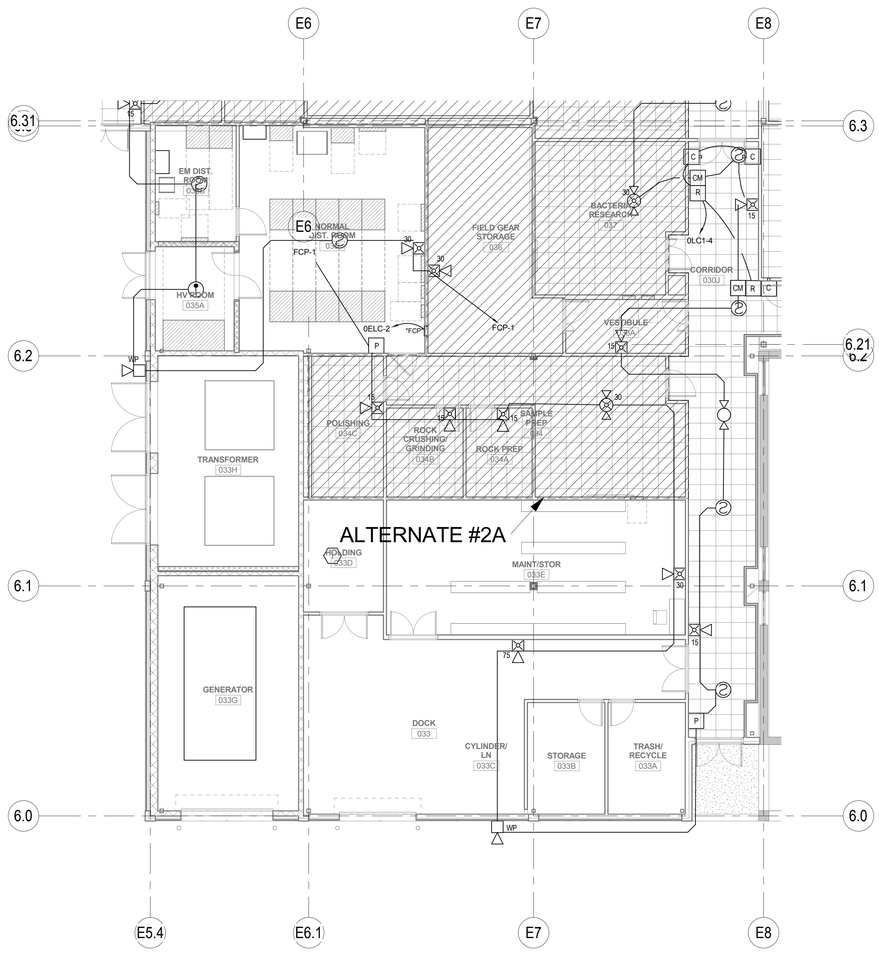
GEN. FIRE ALARM SHEET NOTES

1. COORDINATE SPEAKER/STROBE PLACEMENT WITH LAB FURNISHINGS, CABINETS AND EQUIPMENT SO THAT HORN STROBES ARE NOT COVERED OR OBSTRUCTED FROM VIEW.
2. REFER TO FIRE SPRINKLER SHOP DRAWINGS FOR FLOW AND TAMPER SWITCH LOCATIONS AND PROVIDE FIRE ALARM CONNECTIONS TO EACH.
3. REFER TO MECHANICAL PLANS FOR QUANTITY AND LOCATIONS OF SMOKE DAMPERS AND PROVIDE POWER AND FIRE ALARM CONNECTIONS TO EACH.

SHEET KEYNOTES

1. BID ALTERNATE AREA. REFER TO SPECIFICATION SECTION 01234 ALTERNATES AND ARCHITECTURAL/ LAB FURNISHINGS/ MECHANICAL/ PLUMBING/ ELECTRICAL/ AND LAB ELECTRICAL DRAWINGS FOR COMPLETE DESCRIPTION OF ALTERNATES. IN EACH ALTERNATE AREA, THE ELECTRICAL PANELBOARD AND FEEDER SHALL REMAIN AS WELL AS TELECOMMUNICATIONS CABLETRAYS AND MAIN CONDUITS, REGARDLESS OF WHETHER THE ALTERNATES ARE ACCEPTED OR NOT.



1 LEVEL 0 FIRE ALARM PLAN - AREA C

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

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

05-07-2010

REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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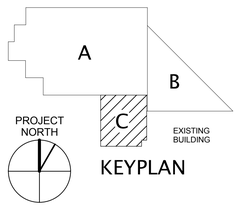

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Division of Facilities Construction and Management

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LEVEL 0 FIRE ALARM PLAN - AREA C

CONSTRUCTION DOCUMENTS

FA-101C

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GEN. FIRE ALARM SHEET NOTES

1. COORDINATE SPEAKER/STROBE PLACEMENT WITH LAB FURNISHINGS, CABINETS AND EQUIPMENT SO THAT HORN STROBES ARE NOT COVERED OR OBSTRUCTED FROM VIEW.
2. REFER TO FIRE SPRINKLER SHOP DRAWINGS FOR FLOW AND TAMPER SWITCH LOCATIONS AND PROVIDE FIRE ALARM CONNECTIONS TO EACH.
3. REFER TO MECHANICAL PLANS FOR QUANTITY AND LOCATIONS OF SMOKE DAMPERS AND PROVIDE POWER AND FIRE ALARM CONNECTIONS TO EACH.

SHEET KEYNOTES

1. DUCT DETECTORS AT RETURN AIR OPENINGS TO SHAFT ON EACH FLOOR. ALTERNATIVELY, SPOT-TYPE DETECTORS MAY BE USED AT 24' O.C. ACROSS OPENINGS. COORDINATE INSTALLATION WITH MECHANICAL INSTALLER TO MEET NFPA AND IMC REQUIREMENTS.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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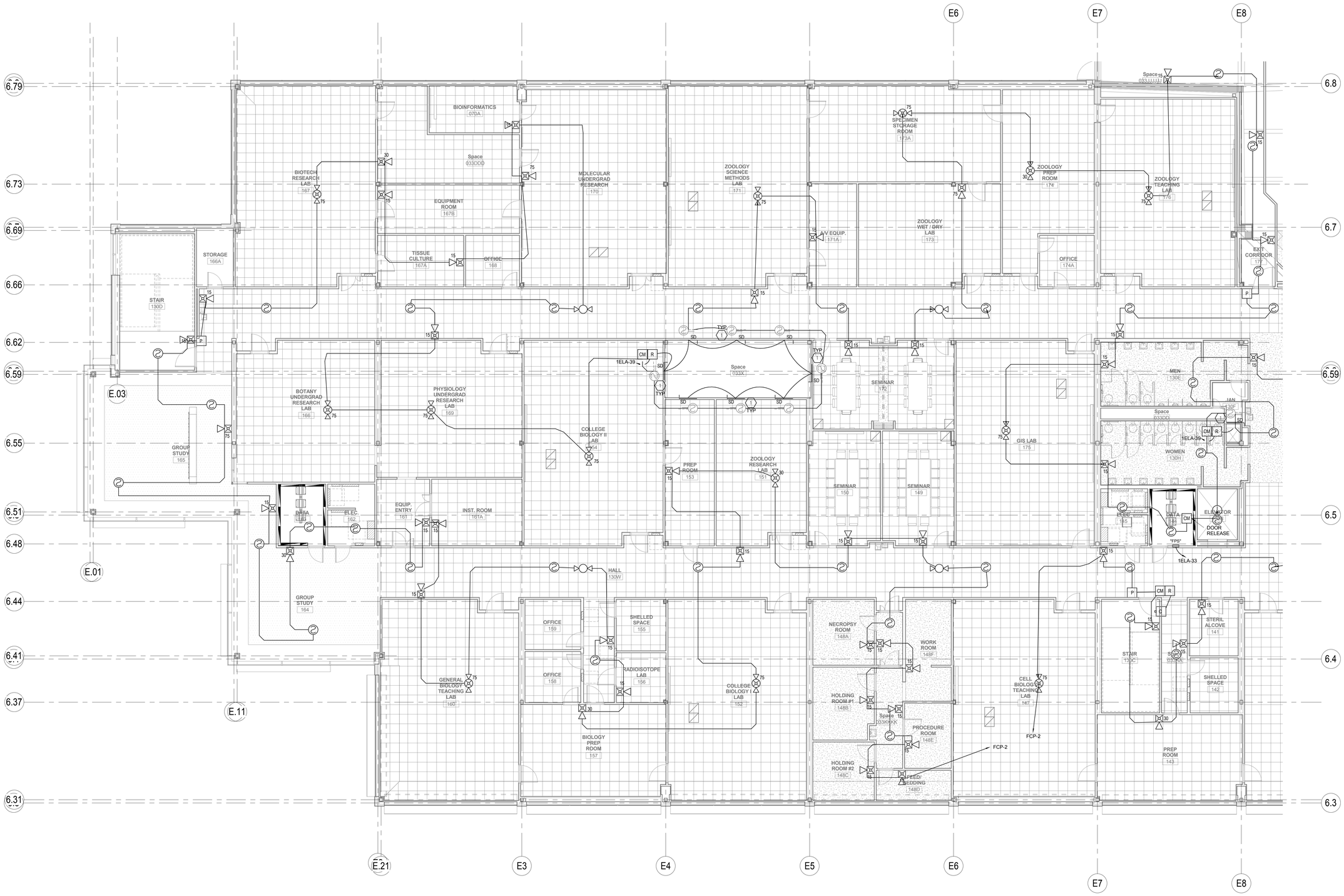

1 LEVEL 1 FIRE ALARM PLAN - AREA A
SCALE: 1/8" = 1'-0"

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324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
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A B C
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EXISTING BUILDING
KEYPLAN

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Orem, Utah 84058

Division of Facilities Construction and Management

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LEVEL 1 FIRE ALARM PLAN - AREA A

CONSTRUCTION DOCUMENTS

FA-102A

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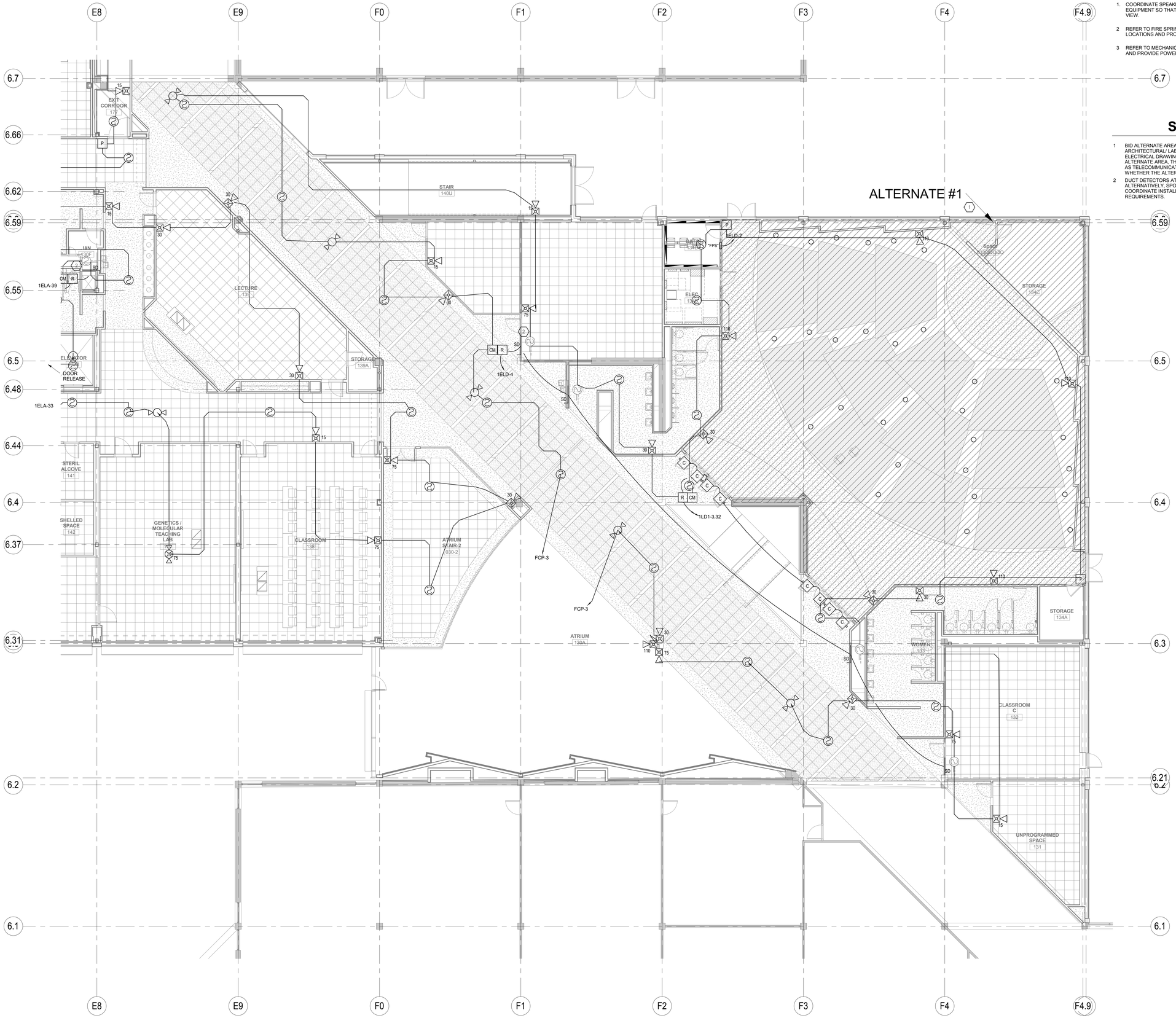

1 LEVEL 1 FIRE ALARM PLAN - AREA B

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

GEN. FIRE ALARM SHEET NOTES

1. COORDINATE SPEAKER/STROBE PLACEMENT WITH LAB FURNISHINGS, CABINETS AND EQUIPMENT SO THAT HORN STROBES ARE NOT COVERED OR OBSTRUCTED FROM VIEW.
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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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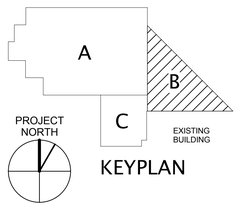

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LEVEL 1 FIRE ALARM PLAN - AREA B

CONSTRUCTION DOCUMENTS

FA-102B

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GEN. FIRE ALARM SHEET NOTES

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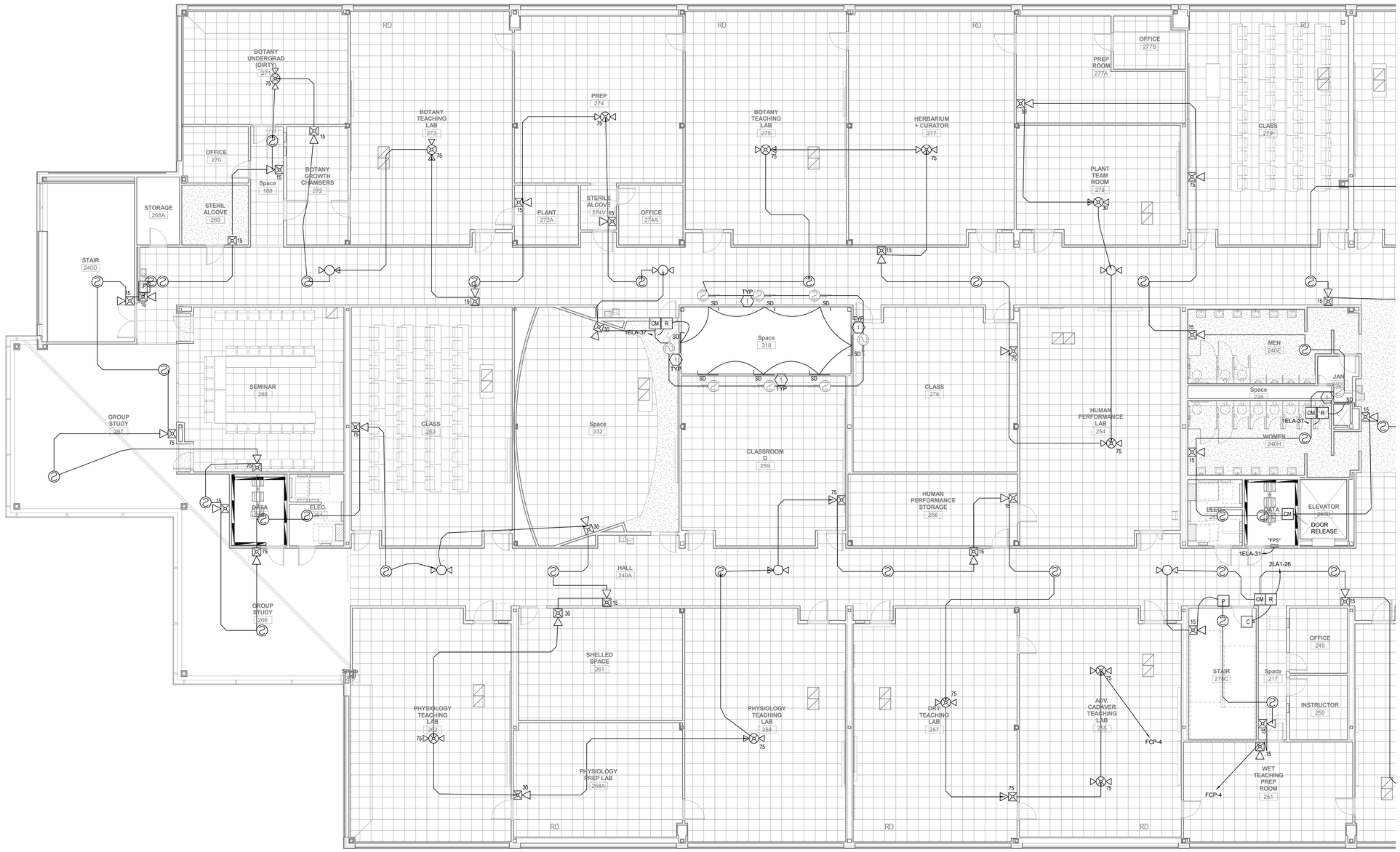

1 LEVEL 2 FIRE ALARM PLAN - AREA A

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

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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801-328-5151
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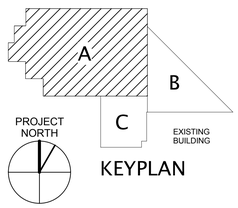

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LEVEL 2 FIRE ALARM PLAN - AREA A

CONSTRUCTION DOCUMENTS

FA-103A

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GEN. FIRE ALARM SHEET NOTES

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3. SMOKE DETECTOR IN SKYLIGHT WALL.
4. ACTIVATE WONDOOR UPON FIRE ALARM ACTIVATION.

1 LEVEL 2 FIRE ALARM PLAN - AREA B

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

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

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SPECTRUM ENGINEERS

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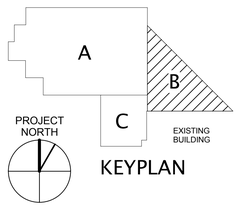

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LEVEL 2 FIRE ALARM PLAN - AREA B

CONSTRUCTION DOCUMENTS

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GEN. FIRE ALARM SHEET NOTES

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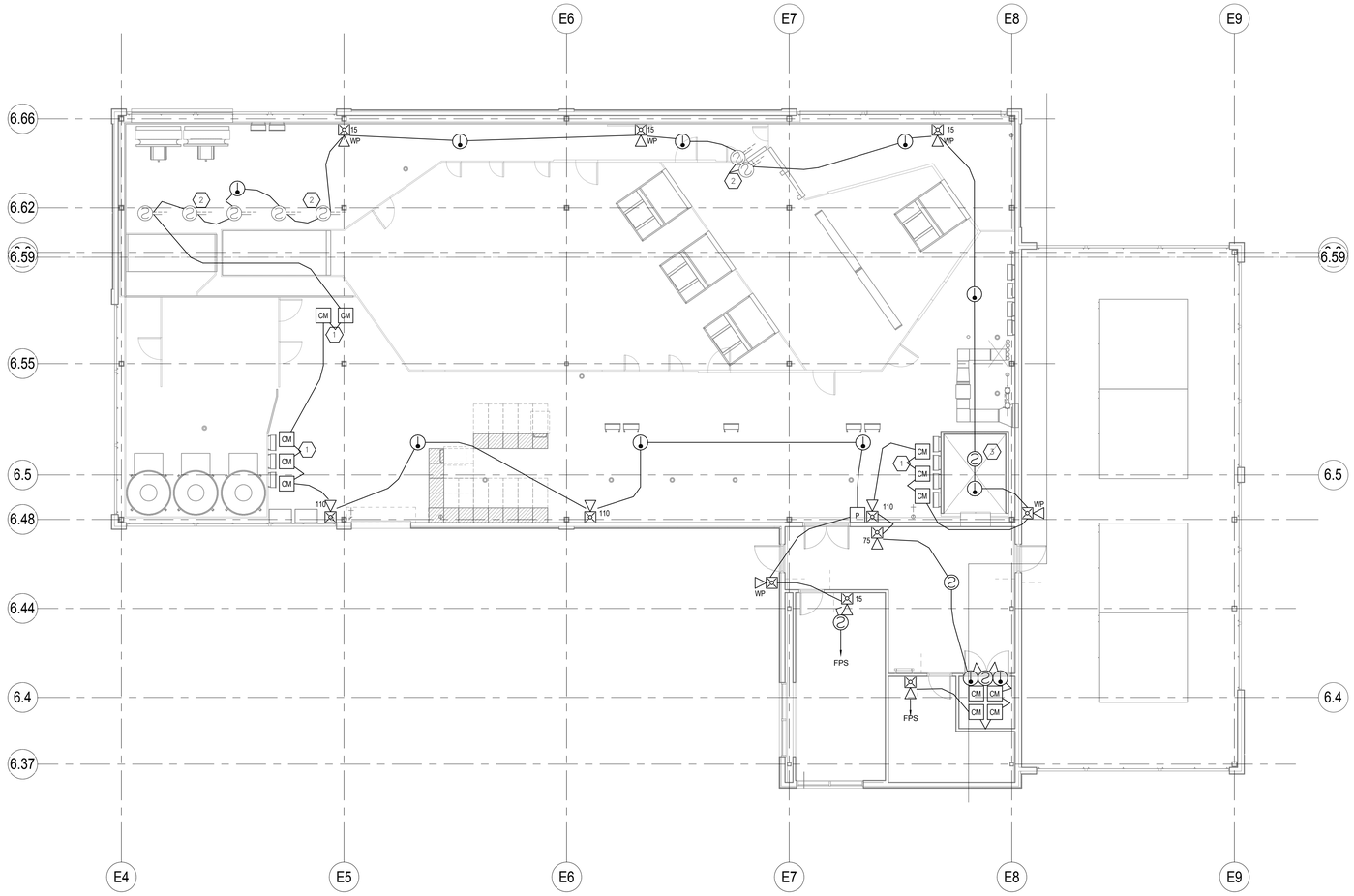
SHEET KEYNOTES

1. FAN SHUTDOWN RELAYS. PROVIDE UNIQUE SHUTDOWN SIGNAL FOR EACH FAN GROUP.
2. DUCT DETECTORS AT RETURN AIR OPENINGS TO SHAFT ON EACH FLOOR. ALTERNATIVELY, SPOT-TYPE DETECTORS MAY BE USED AT 24" O.C. ACROSS OPENINGS. COORDINATE INSTALLATION WITH MECHANICAL INSTALLER TO MEET NFPA AND IMC REQUIREMENTS.
3. SMOKE AND HEAT DETECTOR IN ELEVATOR SHAFT IF ELEVATOR SHAFT IS SPRINKLED. COORDINATE WITH FIRE SPRINKLER INSTALLER, ELECTRICAL INSPECTOR AND FIRE MARSHAL REQUIREMENTS.



1 PENTHOUSE FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH
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REVISIONS:

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
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fax: 801-328-5155
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PENTHOUSE FIRE ALARM PLAN

CONSTRUCTION DOCUMENTS

FA-104

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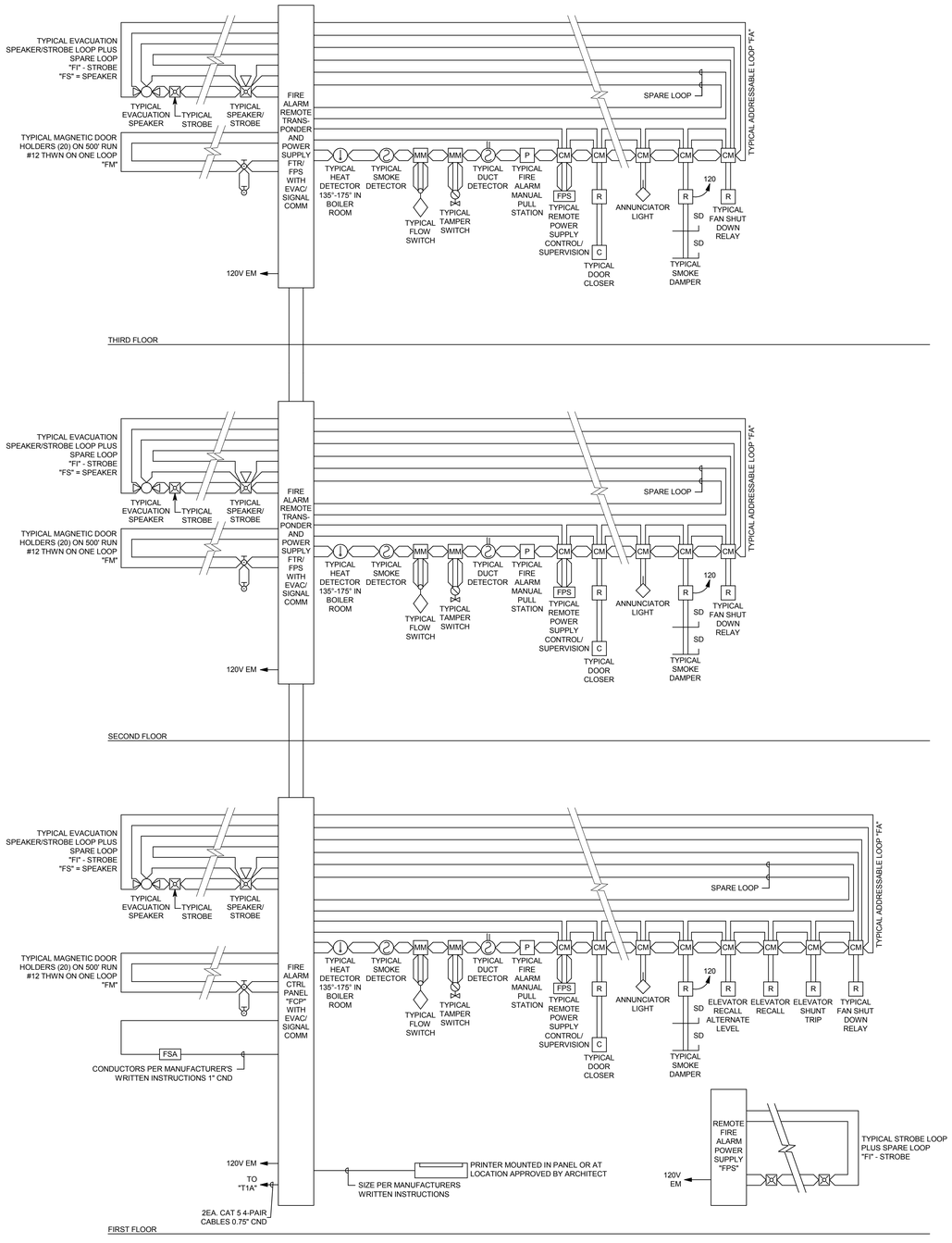


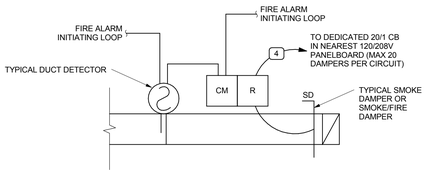
1 FIRE ALARM RISER DIAGRAM

SCALE: N.T.S.

		OUTPUT DEVICES													
FIRE ALARM INPUT/OUTPUT MATRIX		GENERAL ALARM	DOOR HOLDER/CLOSERS	ELEVATOR RECALL MAIN LEVEL	ELEVATOR RECALL ALTERNATE LEVEL	FAN SHUTDOWN	SMOKE DAMPER	LEVEL 0 ELEVATOR DOORS HOLD OPENS	LEVEL 1 ELEVATOR DOORS HOLD OPENS	LEVEL 2 ELEVATOR DOORS HOLD OPENS	ELEVATOR SHUNT TRIP	TROUBLE ALARM	ACTIVATE SMOKE CONTROL FAN		NOTES
INITIATING DEVICES	ZONE														
1	MAIN FLOW	o	o			o	o	o	o	o			o		
2	MAIN TAMPER											o			
3	LEVEL 0 FLOW	o	o			o	o	o	o	o			o		
4	LEVEL 0 TAMPER														
5	LEVEL 1 FLOW	o	o			o	o	o	o	o			o		
6	LEVEL 1 TAMPER														
7	LEVEL 2 FLOW	o	o			o	o	o	o	o			o		
8	LEVEL 2 TAMPER														
9	LEVEL 0 INITIATING LOOP	o	o			o	o	o	o	o					
10	LEVEL 0 ELEVATOR DETECTOR	o	o		o	o	o	o	o	o					
11	LEVEL 0 DUCT DETECTOR	o	o			o	o	o	o	o					
12	LEVEL 1 INITIATING LOOP	o	o			o	o	o	o	o					
13	LEVEL 1 ELEVATOR DETECTOR	o	o	o		o	o	o	o	o					
14	LEVEL 1 DUCT DETECTOR	o	o			o	o	o	o	o					
15	LEVEL 2 INITIATING LOOP	o	o			o	o	o	o	o					
16	LEVEL 2 ELEVATOR DETECTOR	o	o	o		o	o	o	o	o					
17	LEVEL 2 DUCT DETECTOR	o	o			o	o	o	o	o					
18	ELEVATOR MACHINE ROOM SMOKE DETECTORS	o	o	o		o	o	o	o	o					
19	ELEVATOR SPRINKLER HEAT DETECTORS										o	o			RECALL ELEVATORS FIRST
20	ATRIUM SMOKE DETECTORS	o	o										o		

WIRING SCHEDULE

FUNCTION	< 500'	< 1000'	1000'-3000'	> 3000'
ADDRESSABLE LOOP	#18 TSP	#18 TSP	#16 TSP	#14 TSP
POWER LOOP	#14 THWN	#14 THWN	#12 THWN	#10 THWN
SPARE LOOP	#14 THWN	#14 THWN	#12 THWN	#10 THWN
STROBE HORNS	#14 THWN	#14 THWN	#12 THWN	#10 THWN
MAGNETIC DOOR HOLDER	#12 THWN	#10 THWN		
SPEAKERS	#16 TSP	#16 TSP	#14 TSP	#14 TSP



NOTES:

1. FOR EACH SMOKE DAMPER SHOWN ON PLANS, PROVIDE ALL DEVICES AND WIRING PER THIS DETAIL. THESE ARE NOT SHOWN ON PLANS FOR LEGIBILITY PURPOSES.

2. DUCT DETECTOR WITHIN 5' OF EVERY SMOKE DAMPER TO CLOSE DAMPER UPON ACTIVATION PER IMC REQUIREMENTS.

3. VERIFY QUANTITY AND LOCATIONS OF ALL SMOKE DAMPERS WITH THE DIV. 15 INSTALLER.

4. PROVIDE ONE CONTROL MODULE PER SMOKE DAMPER, UNLESS THE REQUIRED CONTROL SEQUENCE ALLOWS GROUPING OF DAMPERS, IN WHICH CASE EACH GROUPING OF DAMPERS MAY SHARE ONE CONTROL MODULE.

2 TYPICAL SMOKE DAMPER FIRE ALARM DETAIL

SCALE: N.T.S.

GENERAL SHEET NOTES

1. PLANS ARE BASED UPON 99 MONITOR AND CONTROL DEVICES PER ADDRESSABLE LOOP. OTHER CONFIGURATIONS ARE ACCEPTABLE SUBJECT TO CONTRACTOR ALLOWING FOR INCREASED WIRING REQUIREMENTS AND SUBMITTAL DRAWINGS SHOWING NEW WIRING CONFIGURATION. MAXIMUM INITIAL DEVICES PER LOOP SHALL NOT EXCEED 75% MAXIMUM ALLOWABLE.

2. PLANS ARE BASED UPON THE WIRING SCHEDULE SHOWN. WHERE MANUFACTURER'S REQUIREMENTS EXCEED REQUIREMENTS SHOWN, INCLUDE ADDITIONAL ASSOCIATED COSTS AND SUBMITTAL DRAWINGS INDICATING NEW WIRING CONFIGURATION.

3. PLANS ARE BASED UPON 2 AMPS AT 24 VDC, NOT TO EXCEED 75% (1.50 AMPS AVAILABLE). POWER SUPPLY CAPACITY PER NOTIFICATION CIRCUIT. NOTIFICATION DEVICE LOADS ARE BASED UPON NOTIFICATION DEVICE SCHEDULE SHOWN. INCLUDE ADDITIONAL ASSOCIATED COSTS FOR INCREASED WIRING AND POWER SUPPLY CAPACITY IF LOADS OF ACTUAL DEVICES PROVIDED EXCEED CIRCUIT CAPACITY, OR IF LOAD OUTPUT OF ACTUAL POWER SUPPLIES PROVIDED IS SIZED DIFFERENTLY. PROVIDE SUBMITTAL DRAWINGS SHOWING NEW WIRING CONFIGURATION.

4. FLOW AND TAMPER CONFIGURATION BASED UPON FIRE SPRINKLER DESIGN CONCEPT. FIELD VERIFY ACTUAL REQUIREMENTS. INCLUDE ANY ADDITIONAL MONITOR MODULES REQUIRED BY ACTUAL DESIGN REQUIREMENTS.

5. HEAT DETECTORS WHEN INSTALLED IN ELEVATOR SHAFTS OR MECHANICAL ROOMS FOR ELEVATOR SHUT DOWN SHALL HAVE HEAT DETECTOR WITH LOWER RESPONSE TIME INDEX THAN SPRINKLER HEAD.

6. PROVIDE POWER SUPPLY CAPACITY AS REQUIRED FOR DOOR HOLD OPENS SHOWN.

7. BATTERY CAPACITY TO BE ADEQUATE TO OPERATE 15 MINUTES AFTER 24 HOURS PLUS 25% SPARE CAPACITY.

8. VFD REQUIRES TWO RELAYS, ONE FOR SMOKE CONTROL, ONE SPARE.

9. RUN SPARE LOOPS IN SAME CONDUIT. DO NOT EXCEED 40% AREA FILL OF CONDUITS.

10. PROVIDE DUCT DETECTORS FOR SUPPLY AND RETURN AIR SYSTEMS OVER 2000 CFM. INSTALL DUCT DETECTORS PER NFPA 72 REQUIREMENTS AND PROVIDE ADDITIONAL DUCT DETECTORS DEPENDING UPON FINAL DUCT ARRANGEMENT.

11. PROVIDE DUCT DETECTOR AT EACH FLOOR, PRIOR TO CONNECTION TO A COMMON RETURN AND PRIOR TO RECIRCULATING OR FRESH AIR INLET IN AIR RETURN SYSTEMS OVER 15,000 CFM CAPACITY AND SERVING MORE THAN ONE STORY.

12. PROVIDE MANUAL PULL STATIONS IN BOILER ROOMS AND KITCHENS.

13. PROVIDE ONE YEAR OFF SITE MONITORING INCLUDING ALL INTERFACE DEVICES AND MONITORING CHARGES. COORDINATE WITH BUILDING OWNER'S OFF SITE MONITORING COMPANY.

14. LOCATE SMOKE DETECTORS MINIMUM 3' FROM AIR SUPPLY AND RETURN LOUVERS.

15. PROVIDE SYNCHRONIZED STROBES THROUGHOUT FACILITY. PROVIDE SYNCHRONIZATION MODULES PER MANUFACTURER'S REQUIREMENTS. INCLUDE ADDITIONAL WIRING, IF REQUIRED.

16. INITIATING AND INDICATING LOOPS SHALL NOT SERVE AN AREA OF GREATER THAN 22,500 SQUARE FEET. PROVIDE ADDITIONAL LOOPS FOR AREAS LARGER THAN THIS.

17. ALL OUTPUT DEVICES ARE DESIGNED ON SYSTEMS WITH 2 AMP POWER SUPPLY.

18. HORN/STROBE BASED ON 120 MILLIAMPS, DOOR HOLDERS BASED ON 70 MILLIAMPS.

19. INSTALL DUCT DETECTORS PER NFPA 72 REQUIREMENTS AND PROVIDE ADDITIONAL DUCT DETECTORS DEPENDING UPON FINAL DUCT ARRANGEMENT.

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Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	DLM
CHECKED BY:	Checker
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

FIRE ALARM RISER DIAGRAM AND MATRIX

CONSTRUCTION DOCUMENTS

FA-601

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VOICE-DATA/TV DIST. EQUIPMENT/CABLE LIST

THE ITEMS INDICATED BELOW SHALL NOT BE CONSTRUED AS A "BILL OF MATERIALS". THIS LIST IDENTIFIES ITEMS OF SIGNIFICANCE USED DURING THE DESIGN OF THE CABLING INSTALLATION. WHERE THE ITEMS INDICATED ARE ONE PORTION OF AN ASSEMBLY, THE ENTIRE ASSEMBLY SHALL BE PROVIDED UNLESS SPECIFIED OTHERWISE. PROVIDE ALL MISCELLANEOUS HARDWARE AND SUPPORTS WHICH MAY NOT BE LISTED HERE, FOR A COMPLETE INSTALLATION. COMPARE CATALOG NUMBERS WITH DESCRIPTIONS AND NOTIFY ENGINEER OF DISCREPANCIES PRIOR TO BID. IF CATALOG NUMBERS DO NOT MATCH DESCRIPTIONS, THE DESCRIPTIONS TAKE PRECEDENCE. PROVIDE COMPLETE SUBMITTAL FOR APPROVAL PRIOR TO PURCHASING ANY EQUIPMENT OR CABLE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

SYMBOL	DESCRIPTION	ACCEPTABLE TYPES
	CATEGORY 3 RISER RATED CABLE	SEE SPECIFICATIONS
FOS	OUTSIDE PLANT SM 96 STRAND FIBER	SEE SPECIFICATIONS
FOM	OUTSIDE PLANT MM 48 STRAND FIBER, 50 MICRON	SEE SPECIFICATIONS
F	24 STRAND MM /24 STRAND SM HYBRID FIBER	SEE SPECIFICATIONS
FPP	FIBER OPTIC PATCH PANEL - 96 PORT, BLACK, (QUANTITIES OF PORTS AS REQUIRED +25%)	SIEMON FCP3-DWR
	6 PORT DUPLEX SC FIBER PANEL CARD, BLACK	SIEMON RIC-SCO6-1
	BLANK FIBER PANEL CARD, BLACK	SIEMON RIC-BCMC
D(#)	STATION CABLE, DATA-CATEGORY 6A, WHITE, DATA.	SEE SPECIFICATIONS
V(#)	STATION CABLE, VOICE-CATEGORY 5e, BLUE, VOICE.	SEE SPECIFICATIONS
FS	SERVER ROOM FIBER, 12 STRAND MM/12 STRAND, SINGLE MODE	SEE SPECIFICATIONS
W	VOICE OUTLET, WALL PHONE SINGLE GANG BEZEL	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON CT SERIES
	CATEGORY 5e JACK-VOICE, USDC RJ-14C, BLUE	SIEMON MX3-F-03-01
	DATA OUTLET DOUBLE GANG BEZEL	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (2), WHITE	SIEMON 10GMX-02
WAP	DATA OUTLET DOUBLE GANG BEZEL (CEILING MOUNTED)	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (1), PURPLE	SIEMON 10GMX-02
	VOICE/DATA OUTLET DOUBLE GANG BEZEL	SIEMON MAX 10GMX-FP-D-08-02
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (2), WHITE	SIEMON 10GMX-02
	CATEGORY 5e JACK-VOICE (2), BLUE	SIEMON MX3-F-03-01
	DATA OUTLET FOR SURVEILLANCE CAMERA (SEE 'EY' SHEETS) DOUBLE GANG BEZEL	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (1), WHITE	SIEMON 10GMX-02
L	DATA OUTLET FOR LECTERN DOUBLE GANG BEZEL	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (8), WHITE	SIEMON 10GMX-02
C	DATA OUTLET FOR CABINET (SEE 'EJ' SHEETS) DOUBLE GANG BEZEL	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (8), WHITE	SIEMON 10GMX-02
M	DATA OUTLET FOR MEDIA JUNCTION BOX (SEE 'EJ' SHEETS) DOUBLE GANG BEZEL (C = CEILING MOUNTED)	SIEMON MAX SERIES
	BEZEL INSERTS, ANGLED	SIEMON MAX SERIES
	CATEGORY 6A JACK-DATA (6), WHITE	SIEMON 10GMX-02
	TELEPHONE BOARD, 8' HIGH, FIRE TREATED, PAINTED WHITE	
	COPPER CATEGORY 6A PATCH CABLES	SIEMON MAX
	CAT5 J-HOOKS	CADDY CAT32Z34
	CABLE RUNWAY-12", BLACK	CHATSWORTH 10250-712
	CABLE RUNWAY-18", BLACK	CHATSWORTH 10250-718
	CABLE RUNWAY RADIUS DROP, BLACK	CHATSWORTH 12100-712
	BUTT SPLICE KIT, BLACK	CHATSWORTH 11301-001
	JUNCTION SPLICE KIT, BLACK	CHATSWORTH 11302-001
	ADJ. JUNCTION SPLICE KIT, BLACK	CHATSWORTH 10616-001
	FOOT KIT, BLACK	CHATSWORTH 11309-701
	3" CHANNEL RACK TO RUNWAY, BLACK	CHATSWORTH 10595-712
	TRIANGLE BRACKETS 12", BLACK	CHATSWORTH
	EQUIPMENT RACK, OPEN FRAME 19", BLACK	SEE SPECIFICATIONS
	EQUIPMENT RACK POWER STRIP, 20A	SIEMONS RSP04
DPP	PATCH PANEL, DATA, 48 PORT W/ CAT 6A INSERT (QUANTITIES OF PORTS AS REQUIRED +25%)	SIEMON 10GX-PNL-48W/ 10GMX-F02
VWM	VERTICAL WIRE MANAGERS, BLACK, SIDE & CENTER	SIEMON RS-CNL3 SIEMON CS-CNL
HWM	HORIZONTAL WIRE MANAGERS, BLACK, 2 RU	SIEMON WM 143-5/WM 144-5
	COPPER CATEGORY 5e PATCH CABLES	SEE SPECIFICATIONS
	CAT5 J-HOOKS	CADDY CAT32Z34
	FIBER CONNECTOR, SC	SEE SPECIFICATIONS
	FIBER OPTIC PATCH CABLES, MULTI-MODE, LC TO LC	SEE SPECIFICATIONS
	1" INNERDUCT-PVC	SEE SPECIFICATIONS
	1.25" INNERDUCT-PVC	SEE SPECIFICATIONS
	1" INNERDUCT-PLENUM RATED	SEE SPECIFICATIONS
	1.25" INNERDUCT-PLENUM RATED	SEE SPECIFICATIONS
	200 PAIR - 66 PUNCH DOWN BLOCK, IVORY PAIR STATION. PRE-WIRED (RISER AND DEMARK FIELD 126)	SIEMON S110-AB-200
	CABLE MANAGER	SIEMON S110-A2-RMS
	100 PAIR - 66 PUNCH DOWN BLOCK, IVORY PAIR STATION. PRE-WIRED (RISER AND DEMARK FIELD 126)	SIEMON S110-A13-100
	CABLE MANAGER	SIEMON S110-A1-RMS
	WIRE MANAGEMENT JUMPER THROUGH	SIEMON S110-A2
T	TV CABLE, RG-6	SEE SPECIFICATIONS
TR	TV TRUNK CABLE, RG-11	SEE SPECIFICATIONS
DA	TV DISTRIBUTION AMPLIFIER	SEE SPECIFICATIONS
SP	TV DISTRIBUTION SPLITTER	SEE SPECIFICATIONS

NOTE: ALL RACKS, LADDER, PATCH PANELS, AND ACCESSORIES SHALL BE BLACK IN COLOR.

VOICE-DATA STRUCTURED CABLING SYSTEM NOTES

1. REFER TO EJ, EP, EY, AND ET SERIES SHEETS FOR VOICE/DATA OUTLET QUANTITIES AND LOCATIONS.
2. PROVIDE PLENUM RATED CABLE IN ALL AIR PLENUMS. IF A PLENUM RATED CABLE IS NOT SPECIFIED, PROVIDE THE PLENUM RATED EQUIVALENT TO THE SPECIFIED CABLE.
3. ALL CABLE, REGARDLESS OF LENGTH, INSTALLED UNDER THIS CONTRACT ARE TO BE LABELED.
4. THE EQUIPMENT LABELING IDENTIFIED ON DETAILS IN THESE DRAWINGS ARE EXAMPLES ONLY OF THE ACTUAL LABELING WHICH IS REQUIRED AS PART OF THIS CONTRACT. PRIOR TO FABRICATION, SUBMIT THE NOMENCLATURE FOR ALL LABELS TO THE OWNER FOR REVIEW. THIS REQUIREMENT INCLUDES BUT IS NOT LIMITED TO ALL CABLE LABELING, AND ALL EQUIPMENT LABELING.
5. FOR EVERY CABLE PULL SPECIFIED, COIL 5' OF EXCESS CABLE AT THE AT THE CLOSET END, NEATLY COIL AND LABEL.
6. UNLESS OTHERWISE NOTED, INSTALL ALL CABLE INSIDE RACEWAY SYSTEMS. WHERE RACEWAY SYSTEMS HAVE NOT BEEN PROVIDED OR SPECIFIED, INSTALL CABLE THROUGH THE SPECIFIED "CADDIE" CLIPS INSTALLED ABOVE ACCESSIBLE CEILINGS AT THE MINIMUM INTERVALS IDENTIFIED IN THE SPECIFICATIONS. SUPPORT "CADDIE" CLIPS DIRECTLY FROM THE BUILDING STRUCTURE, NOT FROM OTHER BUILDING SYSTEM SUPPORT WIRES OR CABLE.
7. GROUND ALL EQUIPMENT RACKS AS DETAILED. COORDINATE GROUNDING WITH ELECTRICAL CONTRACTOR.
8. IF CABLE/CONDUIT EXTENDS THROUGH LAY IN CEILING TILE, FRAME PENETRATION LOCATION WITH T-BAR GRID, CUT TILE AND FINISH NEW OPENINGS WITH T-BAR. CUT CONDUIT FLUSH WITH TILE.
9. ALL CABLE, FIBER, AND UTP TO TERMINATED ON BOTH ENDS.
10. COORDINATE RACK LAYOUTS WITH OWNER PRIOR TO INSTALLATION.
11. ALL FIBER BUNDLES ARE TO BE TERMINATED IN INDIVIDUAL RACK INTERCONNECT CENTER.
12. WELL IN ADVANCE OF INSTALLATION, COORDINATE WORK WITH ALL OTHER TRADES SO THAT ELECTRICAL EQUIPMENT, OR ITS INTENDED USE, IS NOT OBSTRUCTED BY EQUIPMENT BEING PROVIDED BY OTHER DIVISIONS.
13. ALL VOICE/DATA SYSTEMS CABLE IS TO BE INSTALLED INSIDE MINIMUM 1" CONDUIT. STUB CONDUIT FROM JUNCTION BOX LOCATION TO CABLE MANAGEMENT SYSTEM SPECIFIED FOR ACCESSIBLE CEILING.
14. INSTALL ALL ELECTRONIC SYSTEMS EQUIPMENT IN COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, SEISMIC CODES, AND INDUSTRY WIDE ACCEPTED PRACTICES. SUPPORT EQUIPMENT WEIGHT FROM BUILDING STRUCTURE. DURING THE SUBMITTAL PROCESS, PROVIDE SHOP DRAWINGS WHICH DETAIL PROPOSED MOUNTING FOR ALL SUCH EQUIPMENT.
15. COMPLY WITH UVU MASTER CABLE SPECIFICATIONS.
16. REFER TO LAB DRAWINGS FOR ADDITIONAL VOICE-DATA LOCATIONS. NOTE LAB DRAWINGS SHOW OPEN TRIANGLE FOR DATA, AND SOLID TRIANGLE FOR VOICE.

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

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REVISIONS:

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

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TELECOMMUNICATIONS EQUIPMENT LIST AND NOTES

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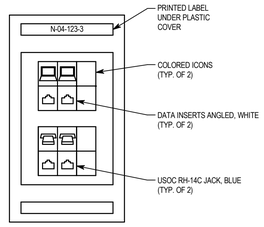
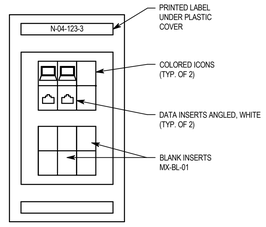


16 TYPICAL VOICE–DATA OUTLET DETAIL

NTS



15 TYPICAL DATA OUTELT DETAIL

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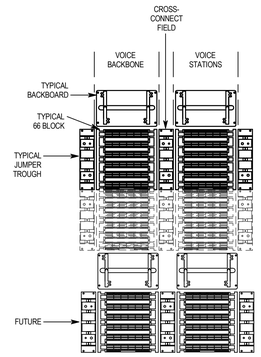

12 TYPICAL 110 BLOCK ELEVATION

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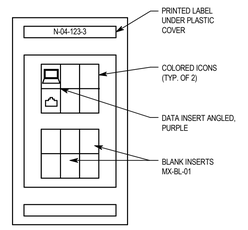

14 TYPICAL DATA WIRELESS ACCESS OUTLET DETAIL

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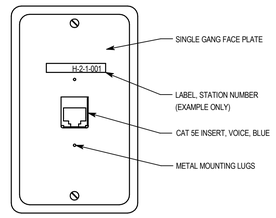
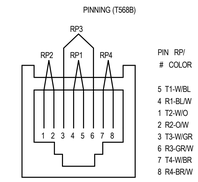
WAP



11 TYPICAL VOICE OUTLET DETAIL

NTS

W



9 CAT 6A PINNING WIRING DETAIL

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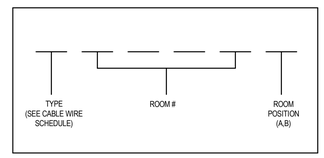
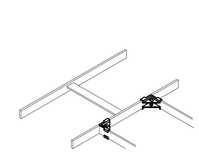


NOTES:

1. ALL CABLE/WIRE, REGARDLESS OF LENGTH, SHALL BE LABELED WITH A UNIQUE IDENTIFYING CODE. LABEL SHALL BE PERMANENT AND SHALL BE MACHINE PRINTED (NOT HAND PRINTED). SUBMIT PROPOSED LABEL MATERIAL FOR APPROVAL.
2. PRIOR TO LABEL CREATION, SUBMIT FOR APPROVAL PROPOSED ROOM NUMBER SCHEME FOR CABLE LABELS.

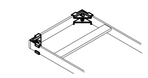
8 TYPICAL CABLE LABEL DETAIL

NTS



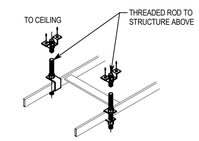
7 CABLE RUNWAY SPLICE DETAIL

NTS



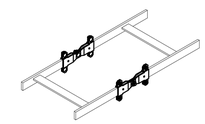
5 CABLE RUNWAY END CLOSING DETAIL

NTS



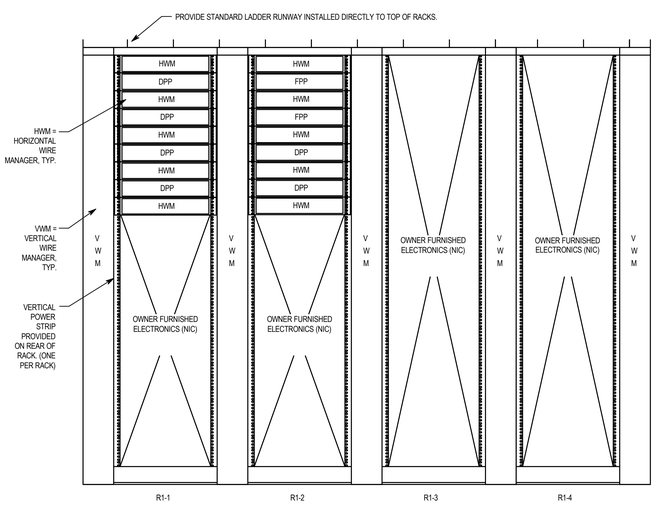
4 OVERHEAD SUPPORT DETAIL

NTS



3 SWIVEL SPLICE KIT FOR ELEVATION TRANSITION

NTS



NOTES:

1. RACK LAYOUTS ARE FOR COORDINATION PURPOSES. ALL FINAL RACK LAYOUTS ARE TO BE COORDINATED WITH UVSC PERSONNEL.
2. PROVIDE ALL WIRE MANAGEMENT ACCESSORIES SHOWN.
3. NUMBER OF PATCH PANELS WILL DEPEND ON ROOM.

13 TYPICAL RACK ELEVATIONS

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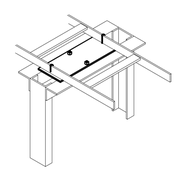
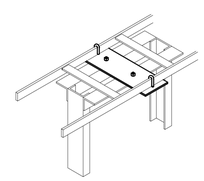


PERPENDICULAR MOUNTING



PARALLEL MOUNTING

10 3" CHANNEL RACK–TO–RUNWAY MOUNT

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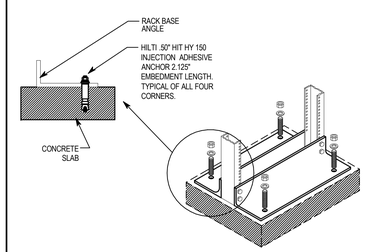

6 EQUIPMENT RACK ANCHORAGE DETAIL

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2 TRIANGLE BRACKET DETAIL

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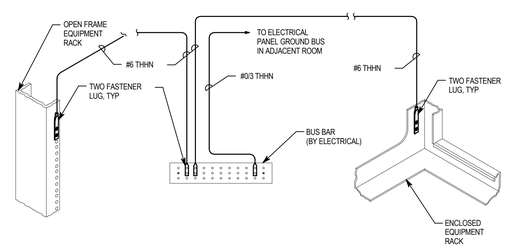

1 TYPICAL RACK GROUNDING DETAIL

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH

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REVISIONS:

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TELECOMMUNICATIONS DETAILS

CONSTRUCTION DOCUMENTS

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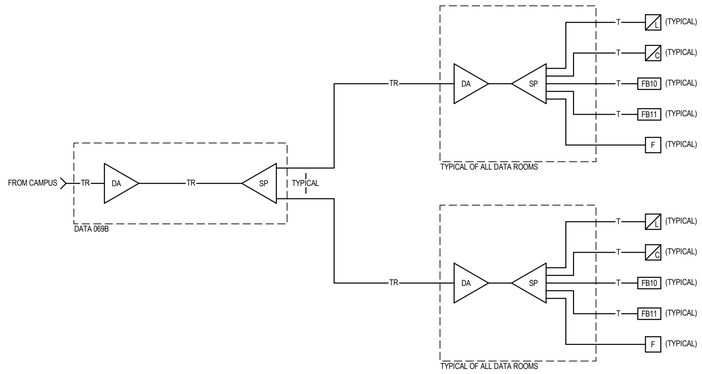

2 TV DISTRIBUTION RISER DIAGRAM

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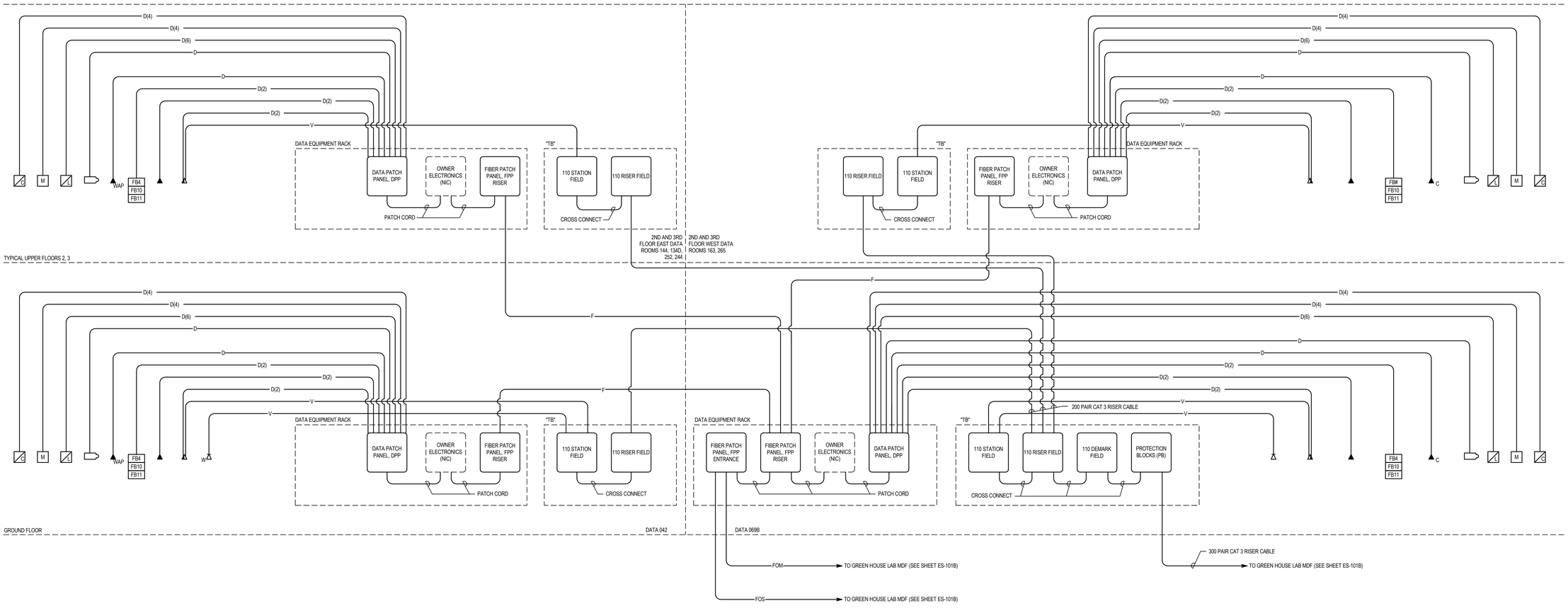

1 VOICE–DATA SYSTEM RISER DIAGRAM

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GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

www.gsbsarchitects.com

No. 181563
DAVID E. WESEMANN
STATE OF UTAH
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TELECOMMUNICATIONS RISER DIAGRAMS

CONSTRUCTION DOCUMENTS

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POWER SYMBOLS AND DESCRIPTIONS

- DUPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: WHITE, COVERPLATE: STAINLESS STEEL
- RD — DUPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. CONNECTED TO STANDBY POWER SYSTEM. DEVICE: RED, COVERPLATE: STAINLESS STEEL
- P — DEDICATED 20A RATED DUPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: GREY, COVERPLATE: STAINLESS STEEL
- GFI — GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: WHITE, COVERPLATE: STAINLESS STEEL
- WP — WEATHER PROOF DUPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO.
- R-30R — SPECIALTY OUTLET, VERIFY NEMA CONFIGURATION AS NOTED ON PLANS MTD 18" AFF TO CENTER, UNO.
- FOURPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: WHITE, COVERPLATE: STAINLESS STEEL
- P — DEDICATED 20A RATED FOURPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: GREY, COVERPLATE: STAINLESS STEEL
- SURFACE MOUNTED FOURPLEX RECEPTACLE MTD 18" AFF TO CENTER, UNO. DEVICE: WHITE, COVERPLATE: STAINLESS STEEL
- DUPLEX RECEPTACLE, IN RECESSED FIRE RATED FLOOR BOX.
- FOURPLEX RECEPTACLE, IN RECESSED FIRE RATED FLOOR BOX.
- CEILING OR ROOF MOUNTED RECEPTACLE
- PANELBOARD FLUSH MOUNTED
- PANELBOARD SURFACE MOUNTED
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- FVNR COMBINATION MOTOR STARTER, H-O-A, AUXILARY CONTACTS, CPT, PILOT LIGHTS, NEMA ENCLOSURE AS REQUIRED, WITH FUSED DISCONNECT SWITCH.
- FVNR MOTOR STARTER WITH OVERLOADS, H-O-A, AUXILARY CONTACTS, CPT, PILOT LIGHTS, NEMA ENCLOSURE AS REQUIRED.
- JUNCTION BOX, WALL MOUNTED.
- JUNCTION BOX, SURFACE MOUNTED, CONCEALED.
- JUNCTION BOX, FLUSH FLOOR MOUNTED, ON FIRE RATED POKE-THRU.
- JUNCTION BOX, FLUSH FLOOR MOUNTED.
- PP — POWER POLE AND JUNCTION BOX IN CEILING SPACE.
- CLOCK OUTLET, MOUNTED 96" A.F.F., U.O.N.
- CONCEALED EMT CONDUIT WITH THHN WIRE 2#12AWG + 1#12AWG GREEN GROUND, 3/4"C MINIMUM.
- CONCEALED EMT CONDUIT WITH THHN WIRE 3#12AWG + 1#12AWG GREEN GROUND, 3/4"C MINIMUM.
- #10 — CONCEALED EMT CONDUIT WITH THHN WIRE 3#10AWG + 1#12AWG GREEN GROUND, 3/4"C MINIMUM.
- G — CONCEALED EMT CONDUIT WITH THHN WIRE 4#12AWG + 1#12AWG GREEN GROUND, 3/4"C MINIMUM.
- #10N — INDICATES (1)#10AWG NEUTRAL
- UNDERGROUND CONDUIT AND WIRE, 3/4"PVC MIN.
- HOMERUN
- HATCHED CONDUIT AND WIRE TO BE REMOVED
- INDICATES CONDUIT STUB-UP OR STUB-OUT LOCATION.
- WW — WIREWAY, WIREMOLD AL4520 SERIES OR EQUAL, 43" A.F.F. TO UNDERSIDE OF THE RACEWAY, UNO.

SIGNAL SYMBOLS AND DESCRIPTIONS

- DEVICES SHOWN FOR REFERENCE ONLY. COORDINATE EXACT LOCATIONS, DEVICE QUANTITIES AND TYPES WITH DATA WORK. PROVIDE AND INSTALL BLANK LOW VOLTAGE COVER PLATES AT ALL RACEWAY LOCATIONS.
- TELEPHONE OUTLET WITH TRIM RING, PULLSTRING TO ACCESSIBLE CEILING SPACE. COORDINATE WITH DATA WORK.
- CEILING MOUNTED DATA OUTLET. COORDINATE WITH DATA WORK.
- TELECOMMUNICATION OUTLET IN RECESSED FIRE RATED FLOOR BOX. COORDINATE WITH DATA WORK.
- C — TELECOMMUNICATIONS CONDUIT ONLY, 1-1/4"C.O. U.N.O.

TELECOMMUNICATIONS SYSTEM STANDARDS

- ALL CABLING AND ASSOCIATED COMPONENTS SHALL COMPLY WITH ANSI/TIA/EIA-568-A.
- ALL CONDUIT AND PATHWAYS SHALL COMPLY WITH ANSI/TIA/EIA-569-A.
- ALL GROUNDING AND BONDING SHALL COMPLY WITH ANSI/TIA/EIA-607.

ELECTROMAGNETIC FIELDS (EMF)

ALL ELECTRIC DEVICES GENERATE AND ARE SUSCEPTIBLE TO EMF. SENSITIVE DEVICES (CRT'S, COMPUTERS, MAGNETIC MEDIA, ETC.) SHALL BE PLACED TO MINIMIZE EXPOSURE FROM STRONG EMF SOURCES (TRANSFORMERS, SWITCHGEAR, FEEDERS, ETC.).

THE FOLLOWING TABLE SHALL BE USED AS A GUIDE AND SHALL BE SUPERSEDED BY ACTUAL FIELD MEASUREMENTS.

SOURCE	RECOMMENDED RADIAL DISTANCE		
AMPACITY	10 mGauss	5 mGauss	1 mGauss
100	1.25'	1.75'	4'
225	2'	2.75'	6'
400	2.5'	4'	8'
800	4'	6'	12'
1200	5'	7'	16'
1600	6'	8'	20'
2000	7'	10'	22'
3000	9'	13'	28'
4000	11'	15'	35'

ABBREVIATIONS AND DESCRIPTIONS

A	AMPERES
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AIC	AMPERES INTERRUPTING CAPACITY
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AF	AMP FRAME/AMP FUSE
ABV	ABOVE
AL	ALUMINUM
ARCH	ARCHITECTURAL
AS	AMP SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
B/G	BELOW GRADE
BKBD	BACKBOARD
BEL	BELOW
C	CONDUIT WITH WIRE
CATV	CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CB	CIRCUIT BREAKER
CLG	CEILING
CLF	CURENT LIMITING FUSE
CLR	CLEAR
CO	CONDUIT ONLY WITH NYLON PULLCORD
COAX	COAXIAL CABLE
CONC	CONCRETE
CONN	CONNECT OR CONNECTION
CONT	CONTINUATION
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
CT	CURRENT TRANSFORMER
CW	COLD WATER
D	DEDICATED OUTLET
DC	DIRECT CURRENT
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DL	DAMP LOCATION
DB	DISTRIBUTION SWITCHBOARD
DWGS	DRAWINGS
EA	EACH
EB	90-MINUTE BATTERY CONNECTED TO UNIT
EC	ELECTRICAL CONTRACTOR
EDF	ELECTRICAL DRINKING FOUNTAIN
EG	CONNECTED TO EMERGENCY GENERATOR
EF	EXHAUST FAN
EI	CONNECTED TO EMERGENCY INVERTER
ELECT	ELECTRICAL
ELEV	ELEVATION/ELEVATOR
EMER, EM	EMERGENCY
EMT	ELECTRO-METALLIC TUBING
EQUIP	EQUIPMENT
EXIST, EX	EXISTING
F	DEGREES FAHRENHEIT
FA	FIRE ALARM
FFE	FINISH FLOOR ELEVATION
FIN	FINISH OR FINISHED
FIXT	FIXTURE
FLUOR	FLUORESCENT
FT.	FEET OR FOOT
FTG	FOOTING
FVNR	FULL VOLTAGE NON-REVERSING
G	GROUND BUS OR WIRE
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GG	GREEN GROUND
GND	GROUND
H	HORIZONTAL
HAZMAT	HAZARDOUS MATERIAL
HR	HOUR
HP	HORSEPOWER
HOA	HAND-OFF-AUTOMATIC
HT	HEIGHT
HTR	HEATER
HZ	HERTZ
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
J-BOX	JUNCTION BOX
KS	KNEE SPACE
KVA	KILO-VOLTAMPERE
KW	KILO-WATT
KWH	KILO-WATT-HOUR
LBS	POUNDS
LF	LINEAL FEET
LOC	LOCATION
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
MH	MOUNTING HEIGHT
MANUF	MANUFACTURER
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTION
MECH	MECHANICAL
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
NO	NORMALLY OPEN
OC	ON CENTER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
PB	PULLBOX
PC	PHOTOCELL CONTROL
PCTC	PHOTOCELL/TIMECLOCK CONTROL
PE	PNEUMATIC-ELECTRIC
PH	PHASE
PIV	POST INDICATING VALVE
PL	PILOT LIGHT
PLBG	PLUMBING
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
PP	POWER POLE
PS	POWER SENTRY EMERGENCY BATTERY UNIT
Q	FIXTURE WITH QUARTZ RESTRIKE
QTY	QUANTITY
REC	RECESSED
RECEPT	RECEPTACLE
REF	REFRIGERATOR
REQ	REQUIREMENTS
RGS	RIGID GALVANIZED STEEL
RM	ROOM
SB	STANDBY
SD	SMOKE DETECTOR
SPEC	SPECIFICATION
SQ FT	SQUARE FEET OR SQUARE FOOT
STRUCT	STRUCTURAL
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TEMP	TEMPERATURE OR TEMPORARY
TV	TELEVISION
TEL, TELE	TELEPHONE
TC	TIMECLOCK
TRANSF	TRANSFORMER
TYP	TYPICAL
UGPS	UNDERGROUND PULL SECTION
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VA	VOLTAMPERE
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
WH	WATER HEATER
WP	WEATHER PROOF
WT	WEIGHT
X	EXISTING
XFMR	TRANSFORMER
XL	EXISTING TO BE RELOCATED
XN	NEW LOCATION OF RELOCATED FIXTURE
XR	EXISTING TO BE REMOVED

LUMINAIRE SCHEDULE

TYPE	SYMBOL	VOLTS	WATTAGE	LAMPS	FIXTURE DESCRIPTION	MANUFACTURER	CATALOG #
LF1		120V	20	(2)8W T5	PENDANT MOUNT EDGE LIT 'IN-USE' LIGHT. DETERMINE PENDANT LENGTH REQUIREMENT IN THE FIELD AND VERIFY WITH RFD.	LIGHTECH	LS-9056-F-S1

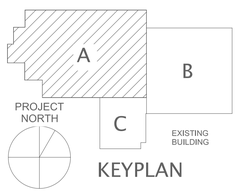
GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 297 0159
FAX 619 294 4901

REGISTERED PROFESSIONAL ENGINEER
171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL NOTE SHEET

CONSTRUCTION DOCUMENTS

LE-001

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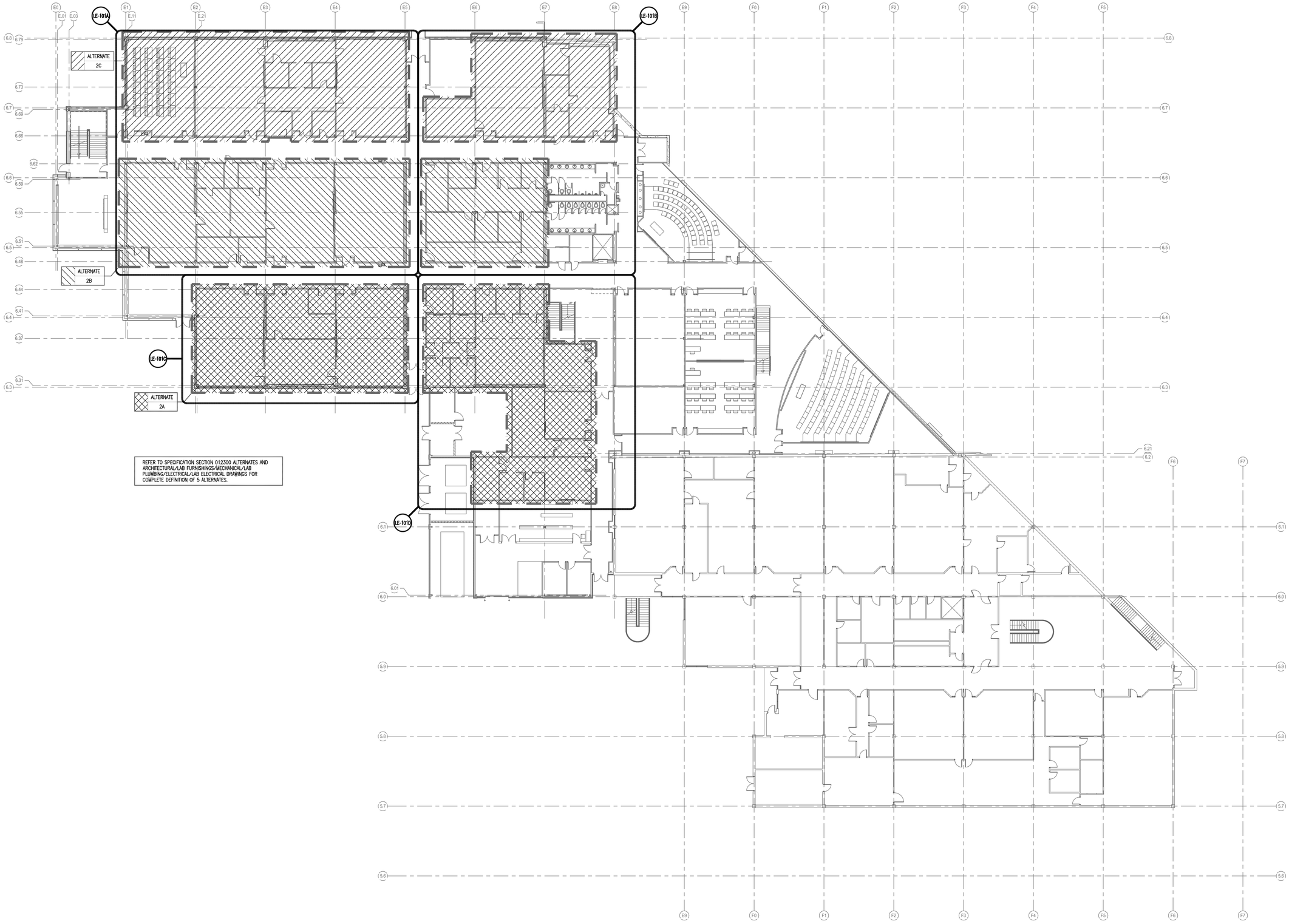

REFER TO SPECIFICATION SECTION 012300 ALTERNATES AND ARCHITECTURAL/LAB FURNISHINGS/MECHANICAL/LAB PLUMBING/ELECTRICAL/LAB ELECTRICAL DRAWINGS FOR COMPLETE DEFINITION OF 5 ALTERNATES.

1 / LE-101 **LEVEL 0 FLOOR PLAN**

1/16" = 1'-0"

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

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171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
Electrical
STATE OF UTAH

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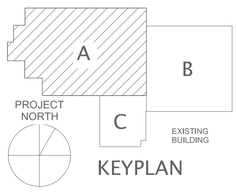

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LAB ELECTRICAL LEVEL 0 FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-101

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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

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171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

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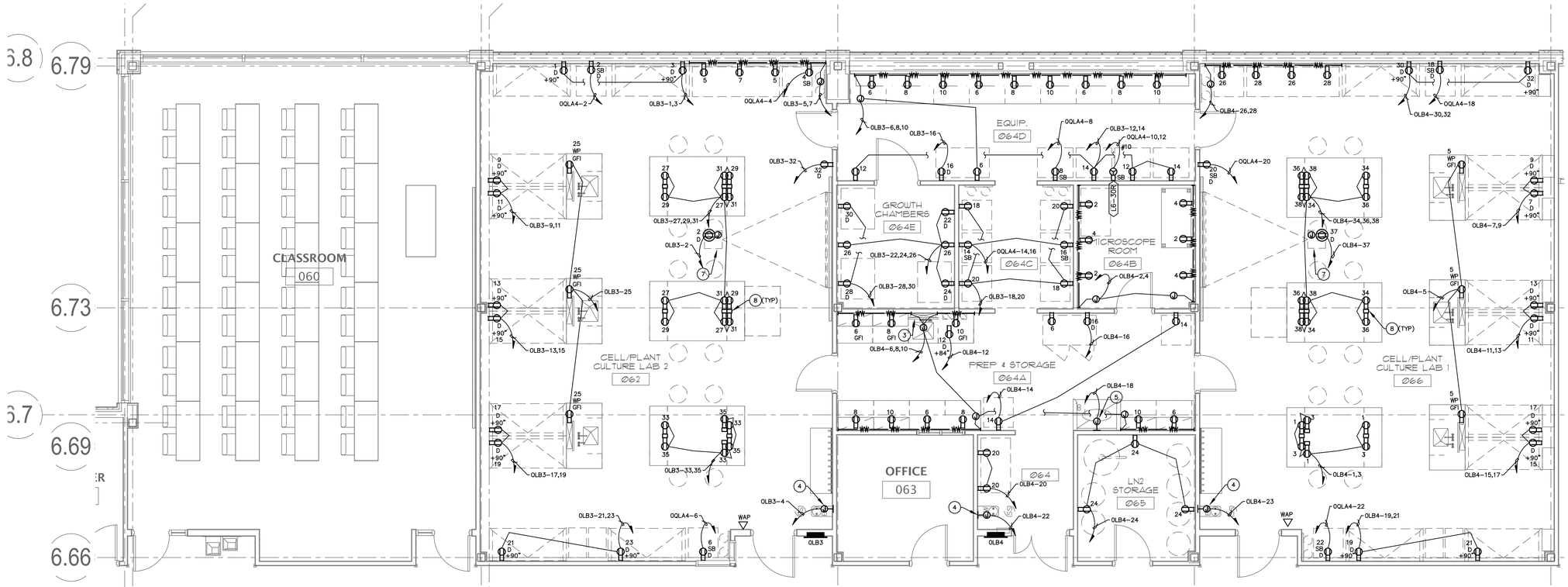
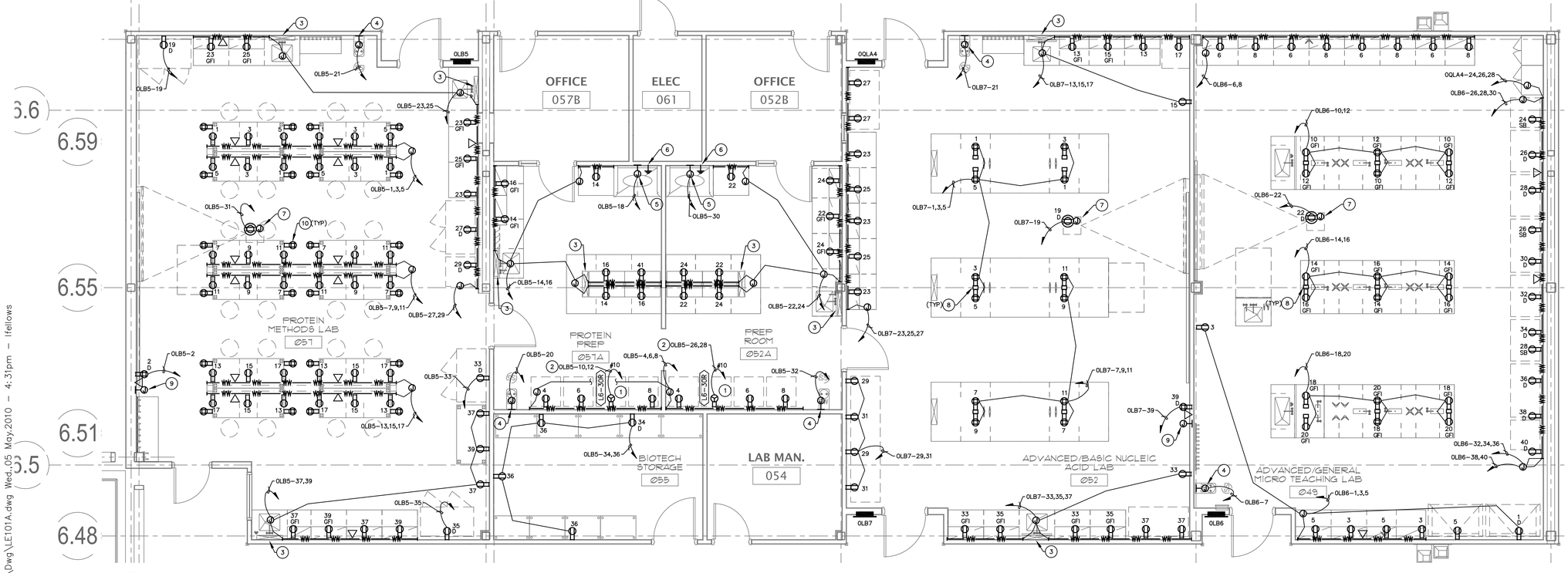


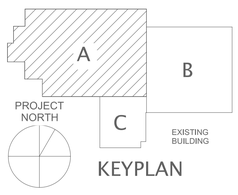


KEY NOTES:

1. MOUNT RECEPTACLE IN WIREWAY.
2. ROUTE HOMERUN THROUGH WIREWAY.
3. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
4. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
5. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
6. PROVIDE GROUNDING OF CABINET OR RIG TABLE AS PER PLANS. PROVIDE CONNECTION PER MANUFACTURER'S RECOMENDATIONS AND NEC REQUIREMENTS.
7. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
8. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
9. PROVIDE J-BOX FOR AV USE. SEE PROJECT ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
10. PROVIDE AND INSTALL J-BOX AND RECEPTACLE TO MOVEABLE TABLE. PROVIDE AND INSTALL S.O. CORD (8' MIN.) AND PLUG (5-20P). SEE DETAIL 2/LE302.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.



KEYPLAN

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800 West University Parkway
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Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-101A

1 / LE-101A

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

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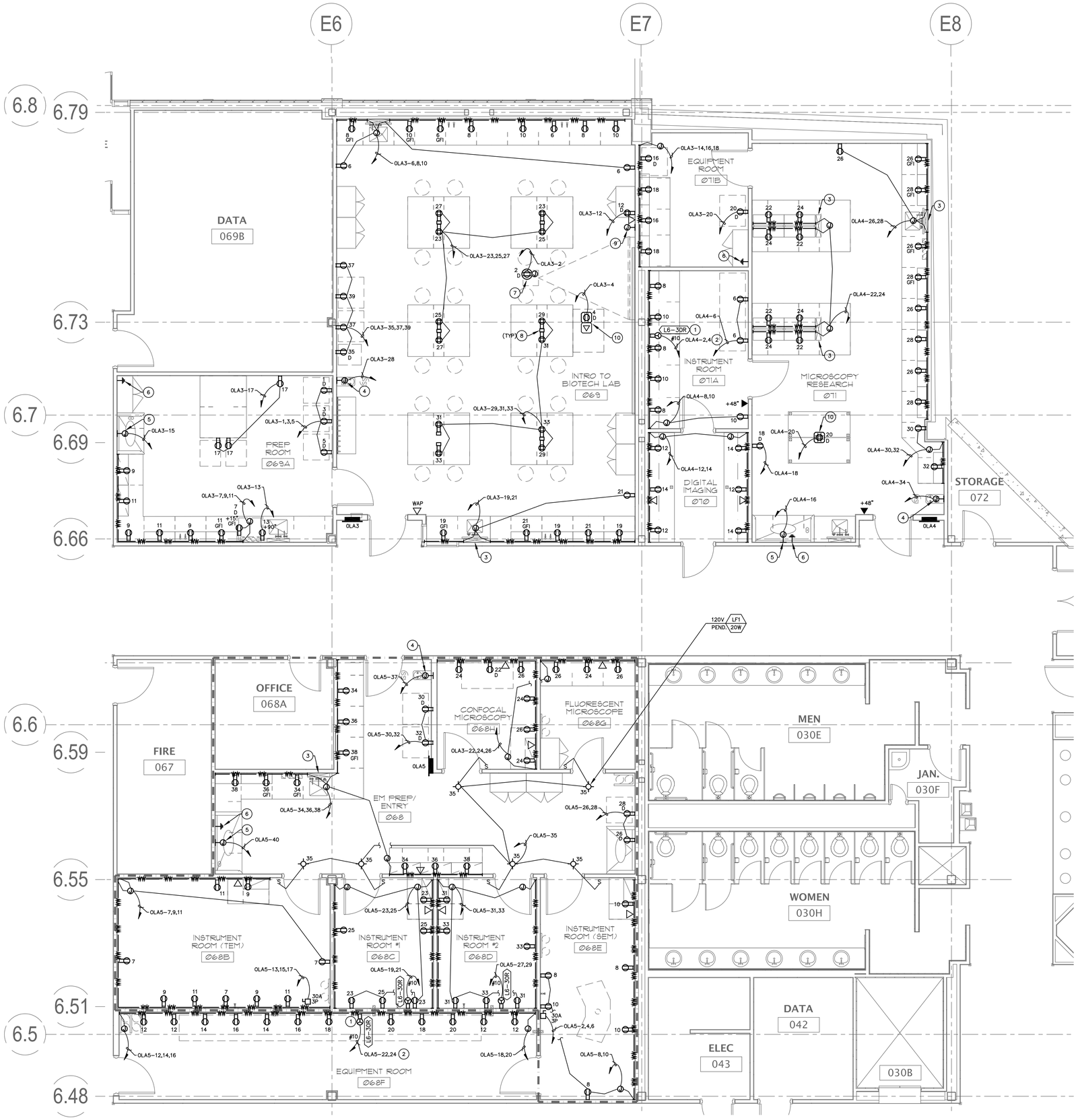

1 LE-101B **LEVEL 0 PARTIAL FLOOR PLAN**

1/4" = 1'-0"

0 1' 2' 4' 8'

KEY NOTES:

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8. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
9. PROVIDE J-BOX FOR AV USE. SEE PROJECT ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
10. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 297 0159
FAX 619 294 4901

REGISTERED PROFESSIONAL ENGINEER
171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
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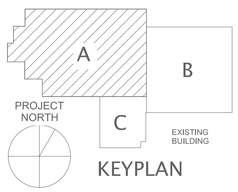

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CHECKED BY:	JC
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GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-101B

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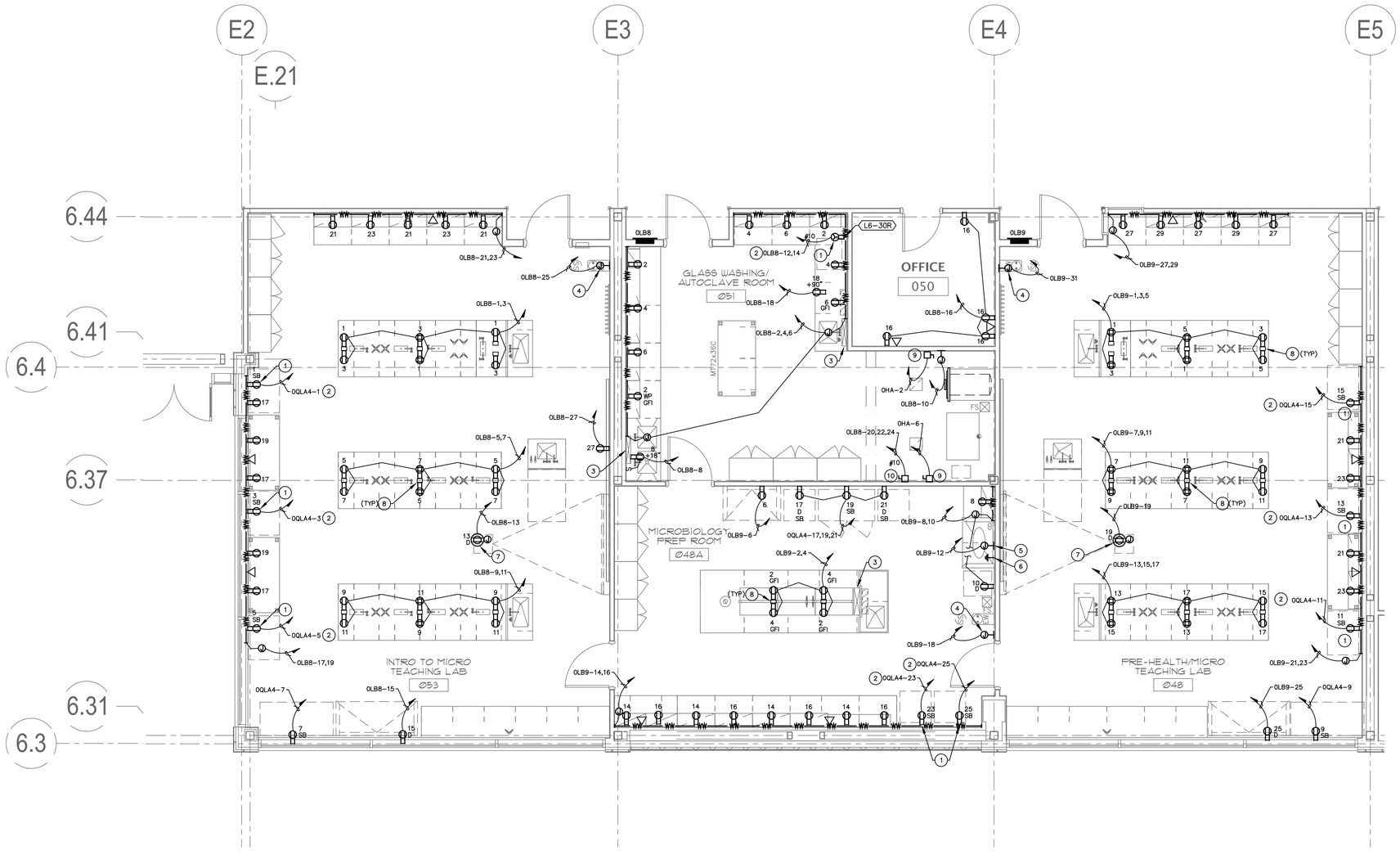

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7. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
8. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
9. PROVIDE AND INSTALL NEMA 3R 60A 3P FUSED DISCONNECT FOR LABORATORY EQUIPMENT. COORDINATE REQUIREMENTS AND FEED LOCATION WITH EQUIPMENT INSTALLER.
10. PROVIDE AND INSTALL NEMA 3R 30A 3P FUSED DISCONNECT FOR FUTURE OWNER FURNISHED, OWNER INSTALLED AIR COMPRESSOR.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
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1 / LE-101C **LEVEL 0 PARTIAL FLOOR PLAN**

1/4" = 1'-0" 0 1' 2' 4' 8'

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
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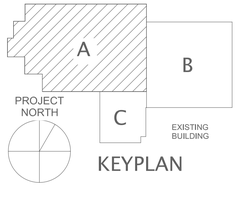

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LAB ELECTRICAL
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-101C

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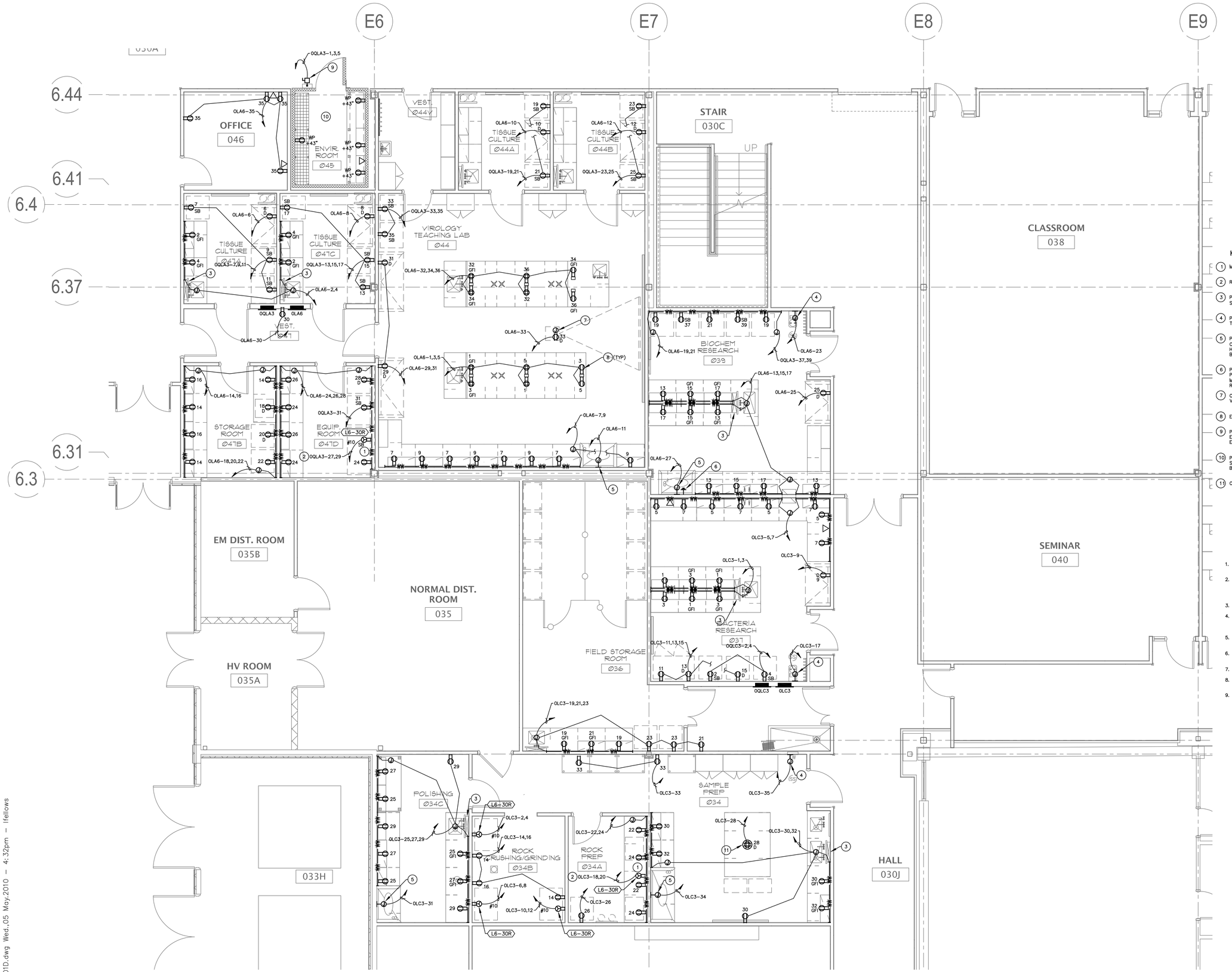

1 LE-101D

LEVEL 0 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

KEY NOTES:

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4. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
5. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
6. PROVIDE GROUNDING OF CABINET OR RIG TABLE AS PER PLANS. PROVIDE CONNECTION PER MANUFACTURER'S RECOMENDATIONS AND NEC REQUIREMENTS.
7. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
8. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
9. PROVIDE NEMA 1 30A 3P FUSED DISCONNECT FOR ENVIR. ROOM CONTROLS. COORDINATE UNIT FEED WITH EQUIPMENT INSTALLER.
10. POWER RECEPTACLES AND DATA/COMM OUTLETS SHOWN IN ENVIR. ROOM TO BE PROVIDED AND WIRED BY ENVIR. ROOM MANUFACTURER.
11. CEILING MOUNTED RETRACTABLE POWER CORD.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 297 0159
FAX 619 294 4901

REGISTERED PROFESSIONAL ENGINEER
171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
Electrical
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
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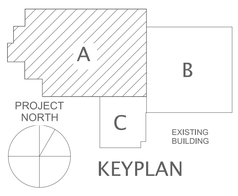

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 0
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-101D

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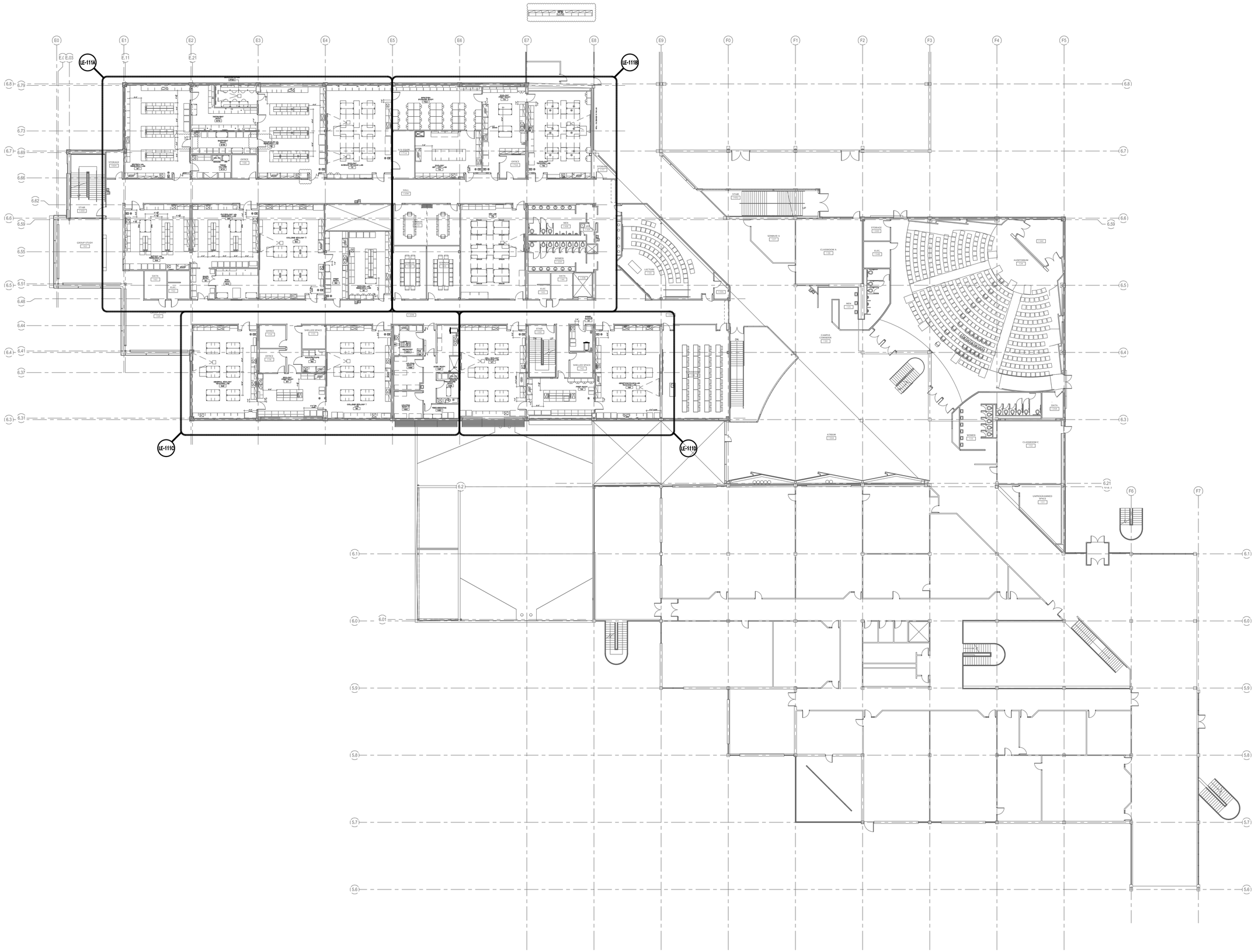

1
LE-111

LEVEL 1 FLOOR PLAN

1/16" = 1'-0"

0 2' 4' 8' 16'

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375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

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RFD
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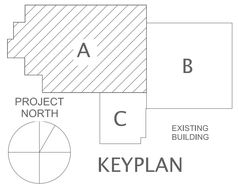

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Division of Facilities Construction and Management

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LAB ELECTRICAL
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-111

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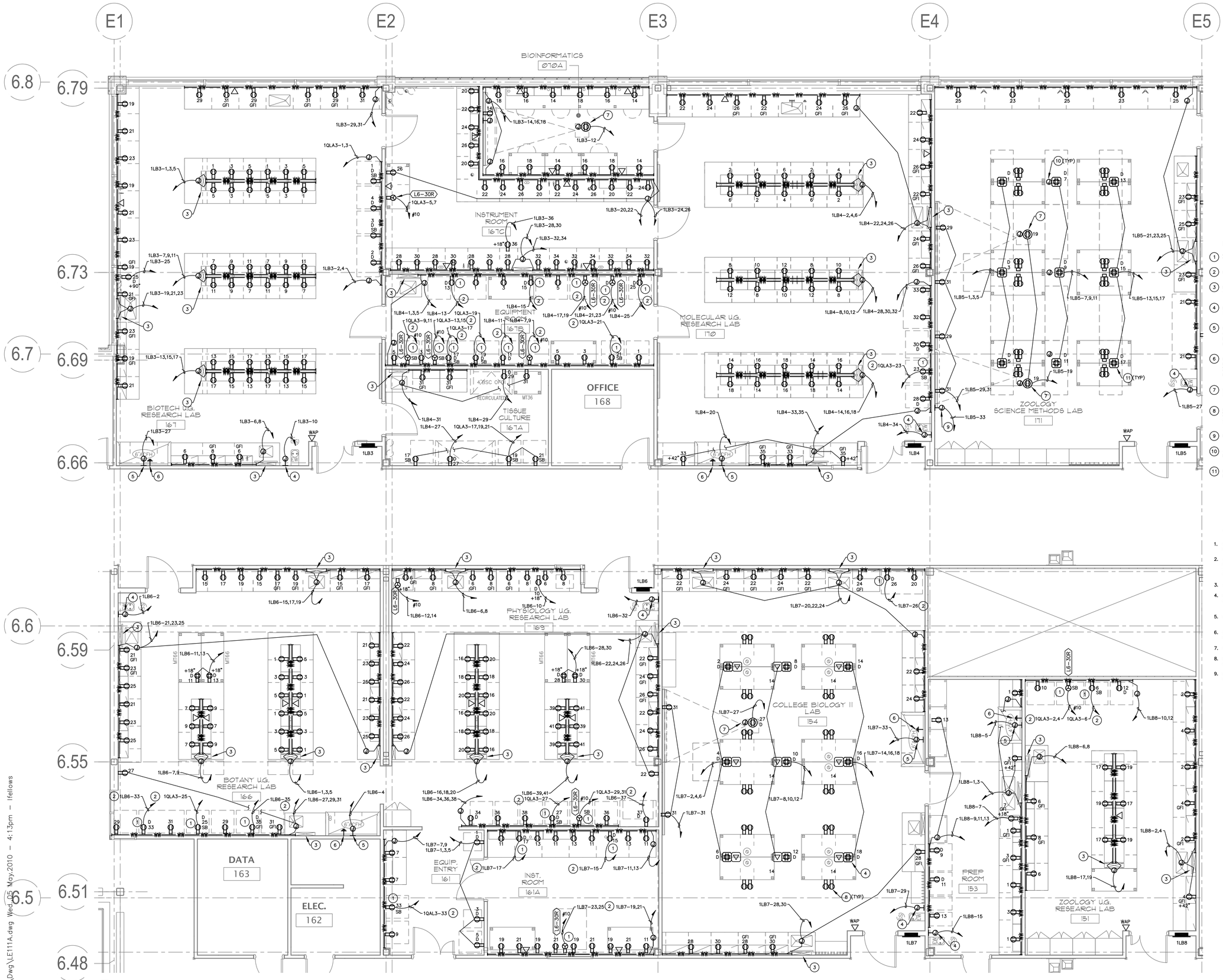

1 LE-111A **LEVEL 1 PARTIAL FLOOR PLAN**

1/4" = 1'-0" 0 1' 2' 4' 8'

KEY NOTES:

1. MOUNT RECEPTACLE IN WIREWAY.
2. ROUTE HOMERUN THROUGH WIREWAY.
3. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
4. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
5. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
6. PROVIDE GROUNDING OF CABINET OR RIG TABLE AS PER PLANS. PROVIDE CONNECTION PER MANUFACTURER'S RECOMENDATIONS AND NEC REQUIREMENTS.
7. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
8. PROVIDE AND INSTALL J-BOX AND RECEPTACLE TO MOVEABLE TABLE. PROVIDE AND INSTALL S.O. CORD (8' MIN.) AND PLUG (5-20P). SEE DETAIL 2/LE302.
9. PROVIDE J-BOX AND CONNECTION TO SMARTBOARD.
10. J-BOX FOR MICROPHONE AT CEILING, TYPICAL AT 3 LOCATIONS.
11. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
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GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
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RFD
RESEARCH FACILITIES DESIGN
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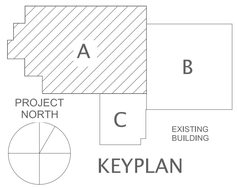

KEYPLAN

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Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-111A

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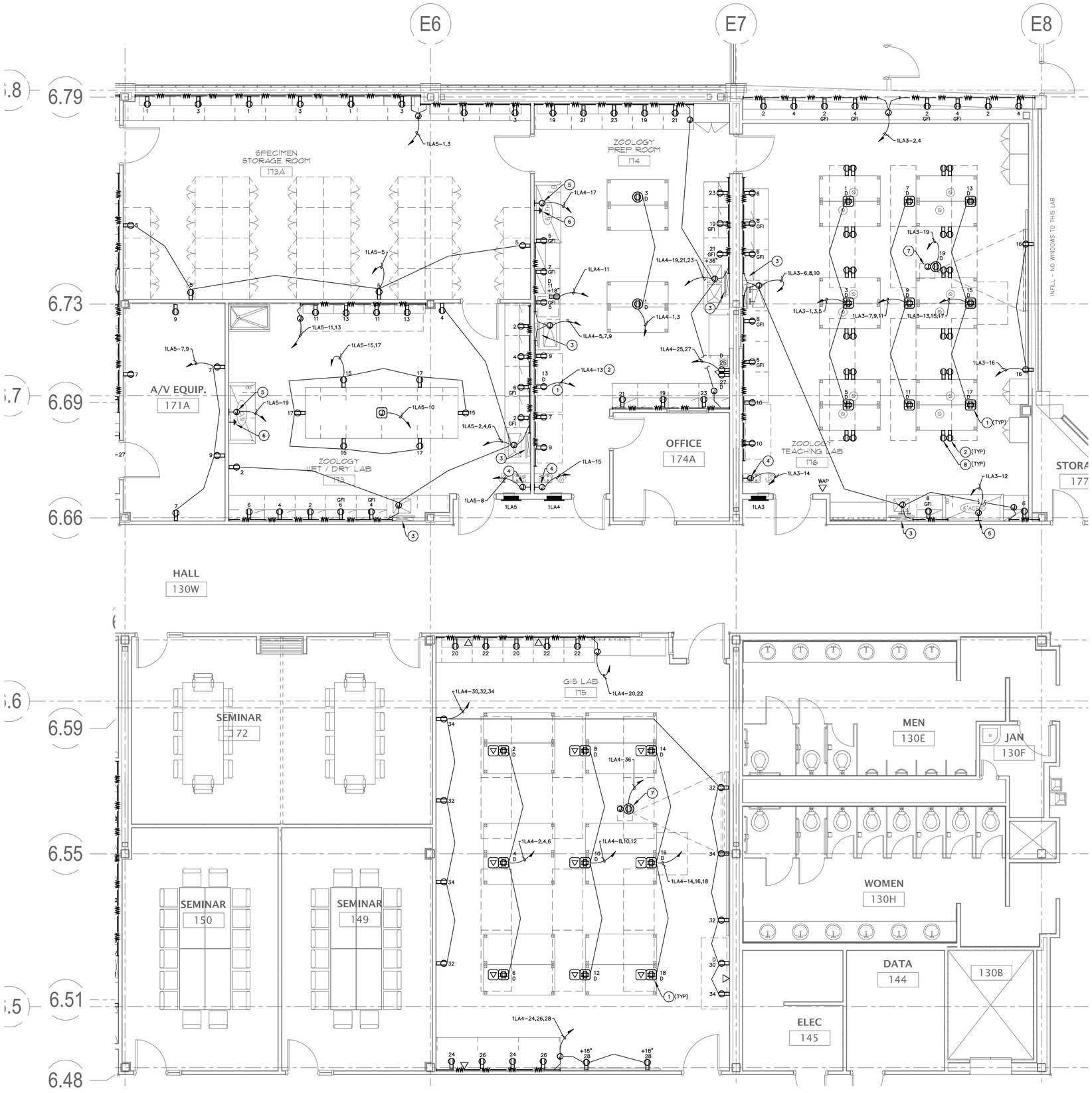

1 LE-111B **LEVEL 1 PARTIAL FLOOR PLAN**

1/4" = 1'-0"

0 1' 2' 4' 8'

KEY NOTES:

1. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.
2. PROVIDE AND INSTALL J-BOX AND RECEPTACLE TO MOVEABLE TABLE. PROVIDE AND INSTALL S.O. CORD (8' MIN.) AND PLUG (5-20P). SEE DETAIL 2/LE302.
3. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
4. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
5. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
6. PROVIDE GROUNDING OF CABINET OR RIG TABLE AS PER PLANS. PROVIDE CONNECTION PER MANUFACTURER'S RECOMENDATIONS AND NEC REQUIREMENTS.
7. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
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7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
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GSBS ARCHITECTS
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REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
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171614-2202
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Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

MICHAEL WALL ENGINEERING
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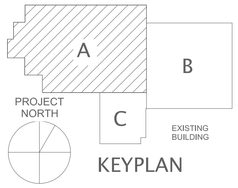

KEYPLAN

Utah Valley University New Science Building

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Division of Facilities Construction and Management

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ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-111B

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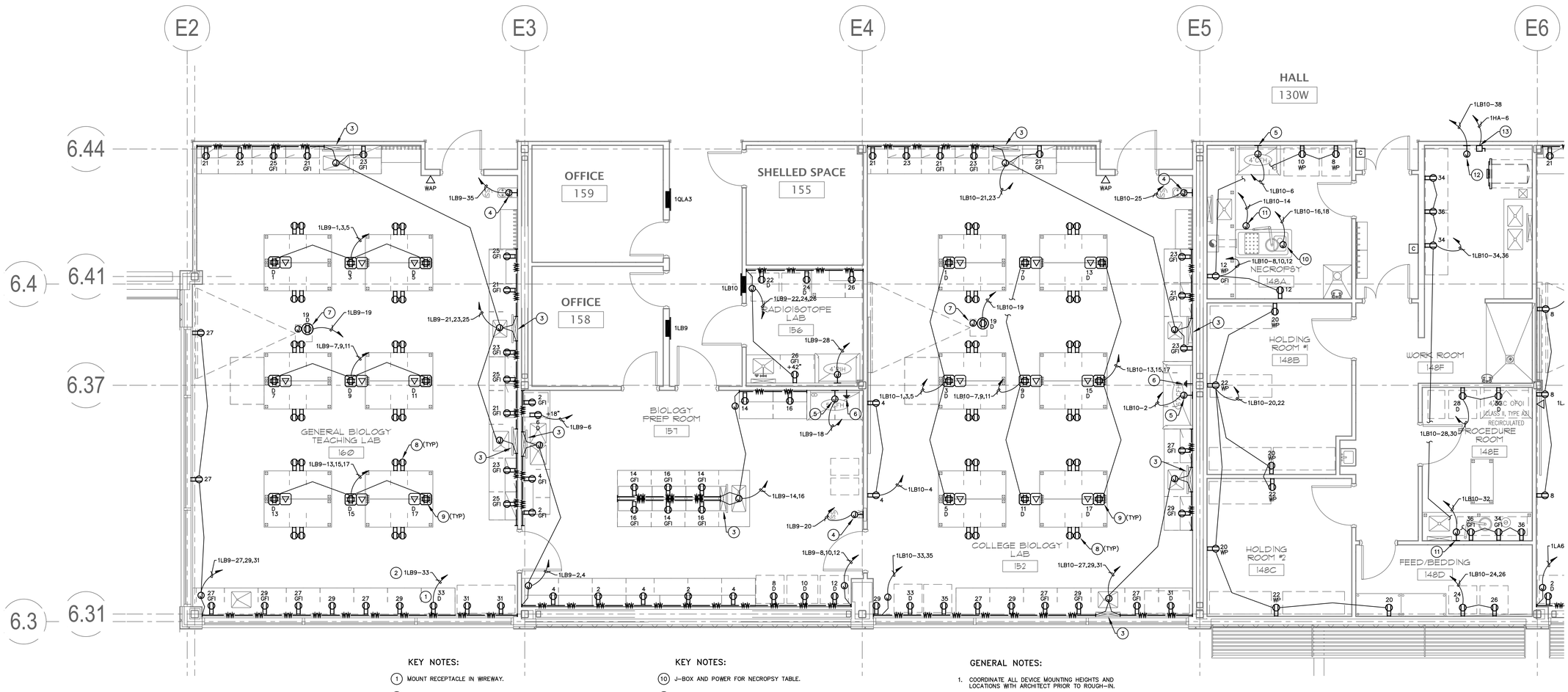

KEY NOTES:

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9. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.

KEY NOTES:

10. J-BOX AND POWER FOR NECROPSY TABLE.
11. J-BOX AND POWER FOR EXAM LIGHT.
12. J-BOX AND POWER FOR AUTOCLAVE CONTROLS.
13. PROVIDE AND INSTALL NEMA 3R 60A 3P FUSED DISCONNECT FOR LABORATORY EQUIPMENT. COORDINATE REQUIREMENTS AND FEED LOCATION WITH EQUIPMENT INSTALLER.

GENERAL NOTES:

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9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.

1 / LE-111C LEVEL 1 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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REVISIONS:

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RESEARCH FACILITIES DESIGN
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171614-2202
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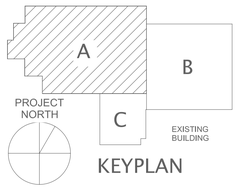

KEYPLAN

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Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	CADD
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DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-111C

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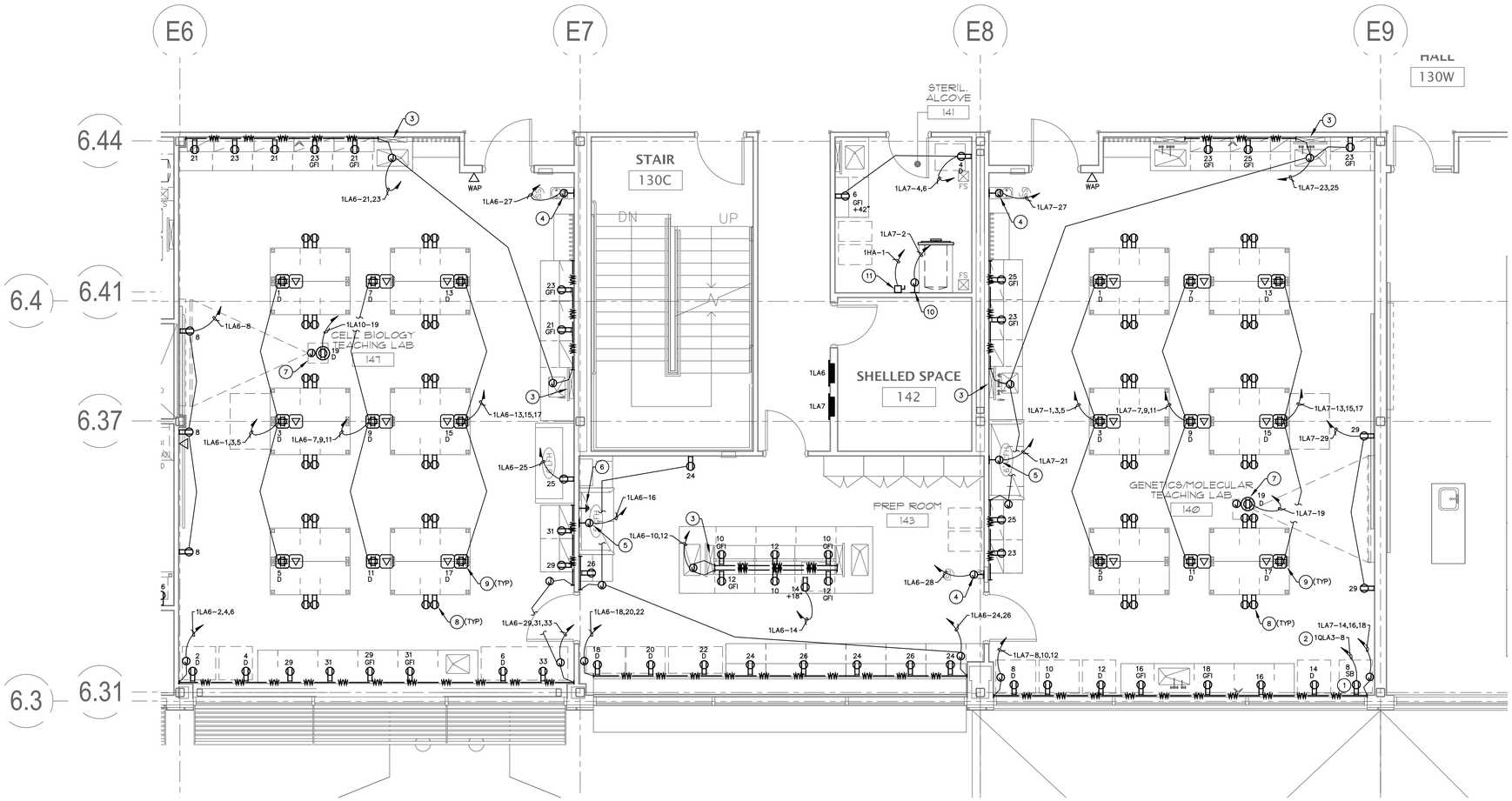

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1 / LE-111D

LEVEL 1 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

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F 801.521.7913
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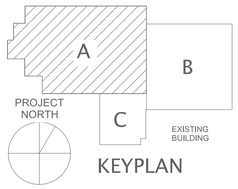

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LAB ELECTRICAL
LEVEL 1
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-111D

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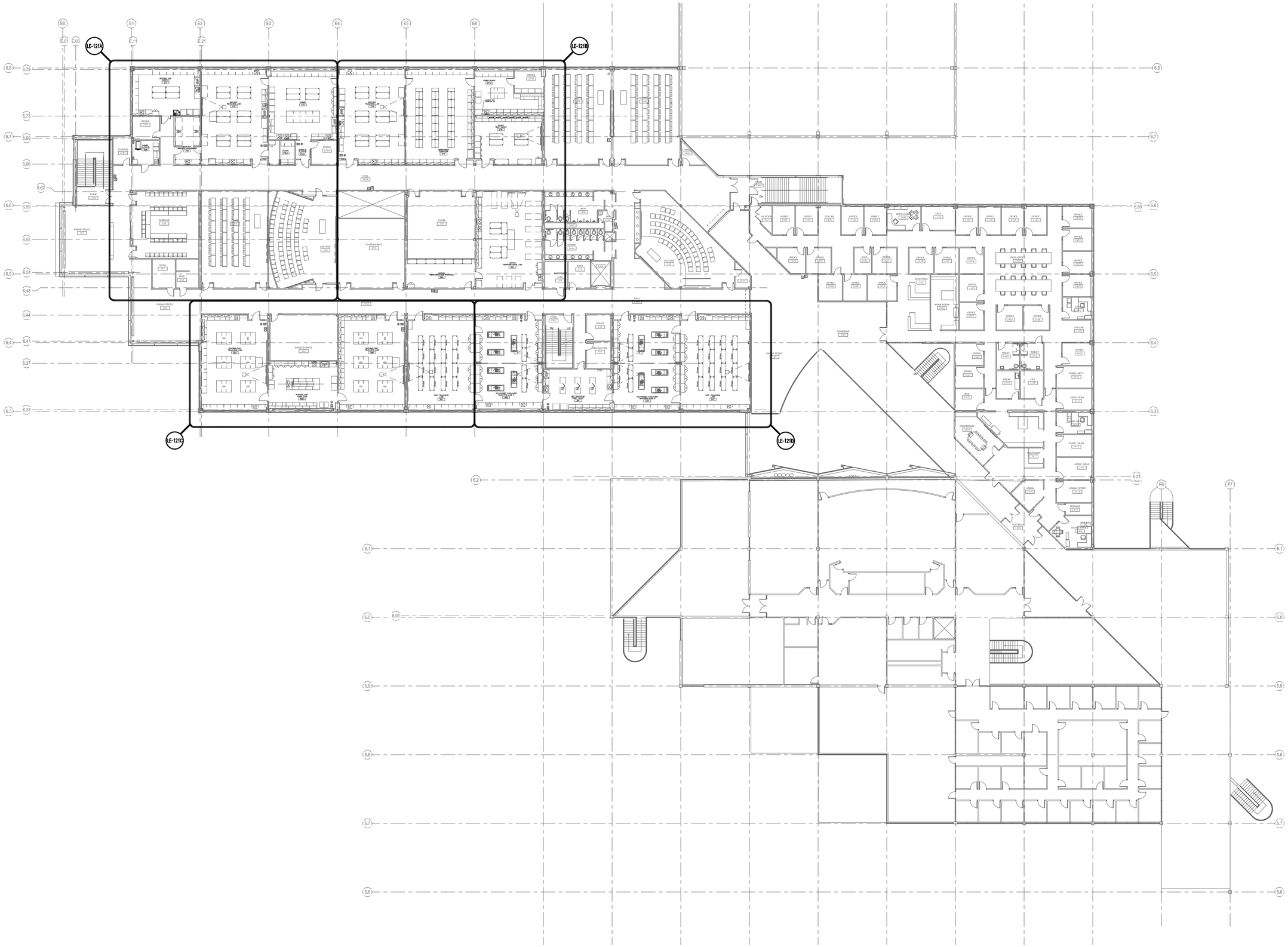

1 / LE-121

LEVEL 2 FLOOR PLAN

1/16" = 1'-0"

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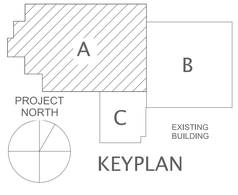

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LEVEL 2
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CONSTRUCTION DOCUMENTS

LE-121

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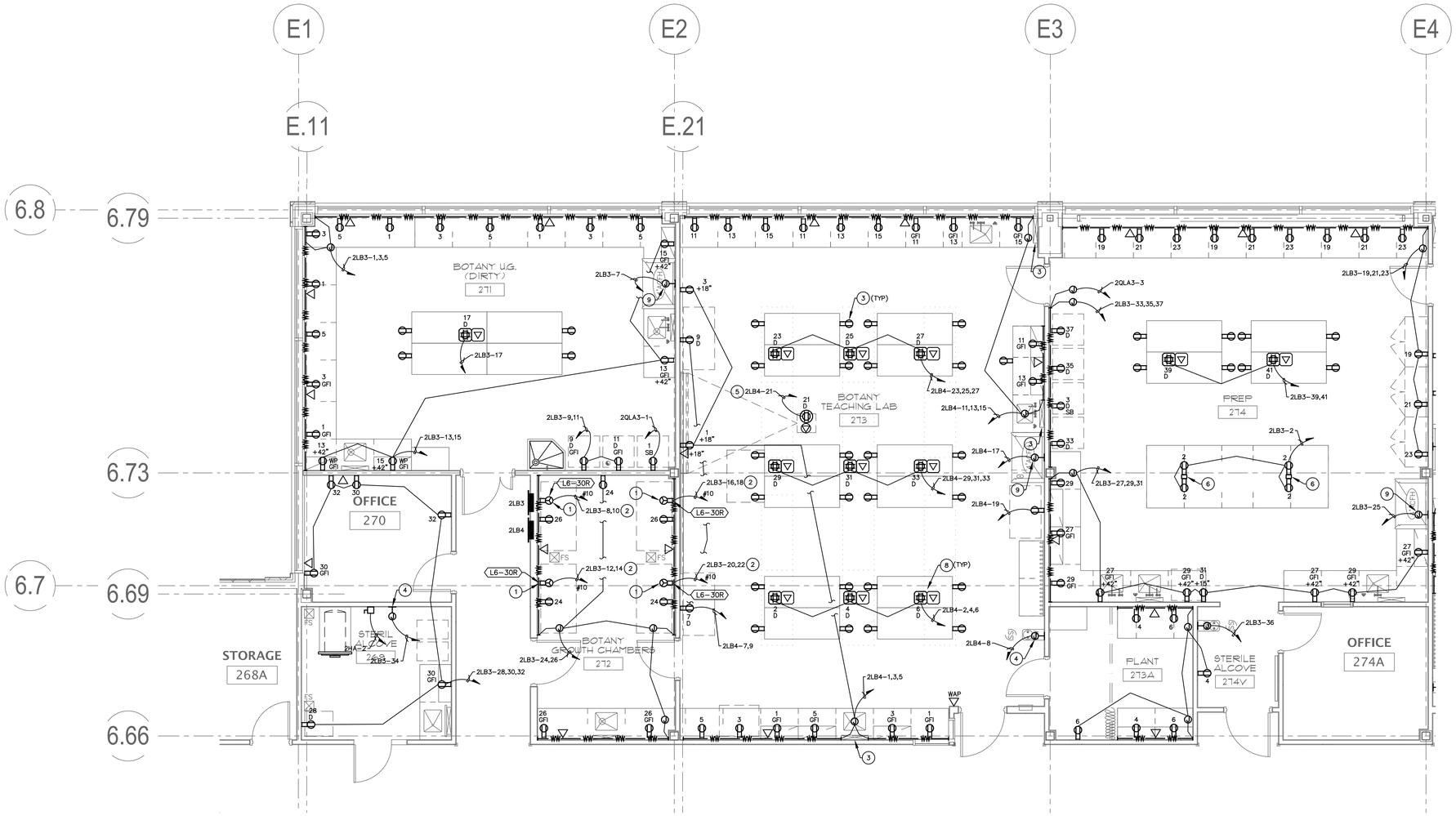


KEY NOTES:

1. MOUNT RECEPTACLE IN WIREWAY.
2. ROUTE HOMERUN THROUGH WIREWAY.
3. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
4. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
5. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
6. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
7. PROVIDE AND INSTALL J-BOX AND RECEPTACLE TO MOVEABLE TABLE. PROVIDE AND INSTALL S.O. CORD (8' MIN.) AND PLUG (5-20P). SEE DETAIL 2/LE302.
8. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.
9. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
10. PROVIDE AND INSTALL NEMA 3R 60A 3P FUSED DISCONNECT FOR LABORATORY EQUIPMENT. COORDINATE REQUIREMENTS AND FEED LOCATION WITH EQUIPMENT INSTALLER.

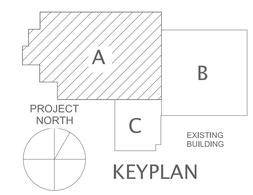
GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.

1 / LE-121A

LEVEL 2 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'



KEYPLAN

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 297 0159
FAX 619 294 4901

REGISTERED PROFESSIONAL ENGINEER
171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-121A

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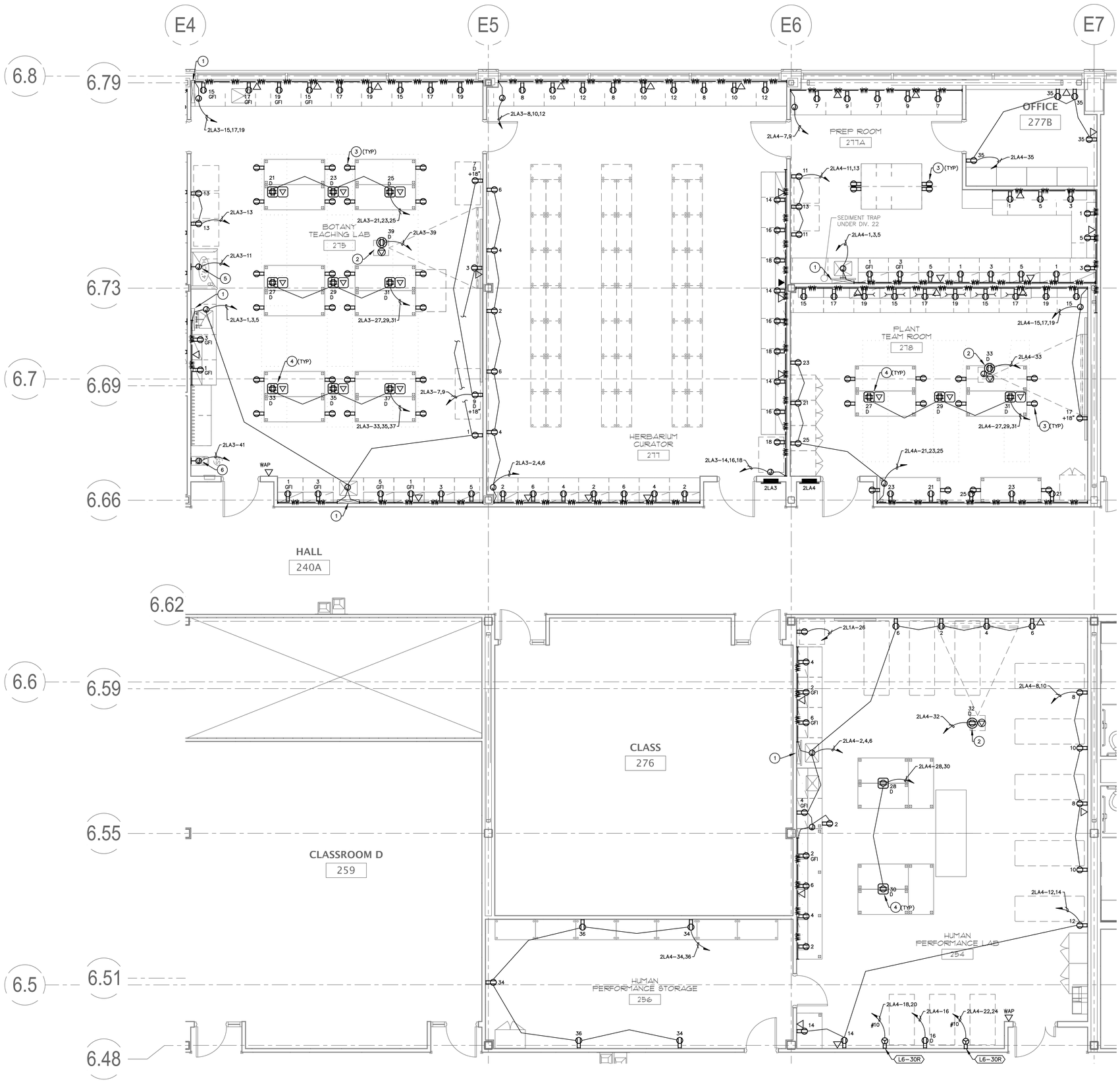

1 LE-121B

LEVEL 2 PARTIAL FLOOR PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

KEY NOTES:

1. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
2. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
3. PROVIDE AND INSTALL J-BOX AND RECEPTACLE TO MOVEABLE TABLE. PROVIDE AND INSTALL S.O. CORD (8' MIN.) AND PLUG (5-20P). SEE DETAIL 2/LE302.
4. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.
5. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
6. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.

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SALT LAKE CITY, UT 84101
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F 801.521.7913
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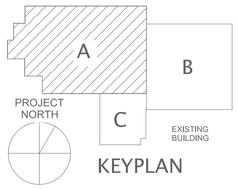

KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
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Division of Facilities Construction and Management

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CHECKED BY:	JC
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GSBS PROJECT NO.:	2009.115.00
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LAB ELECTRICAL
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-121B

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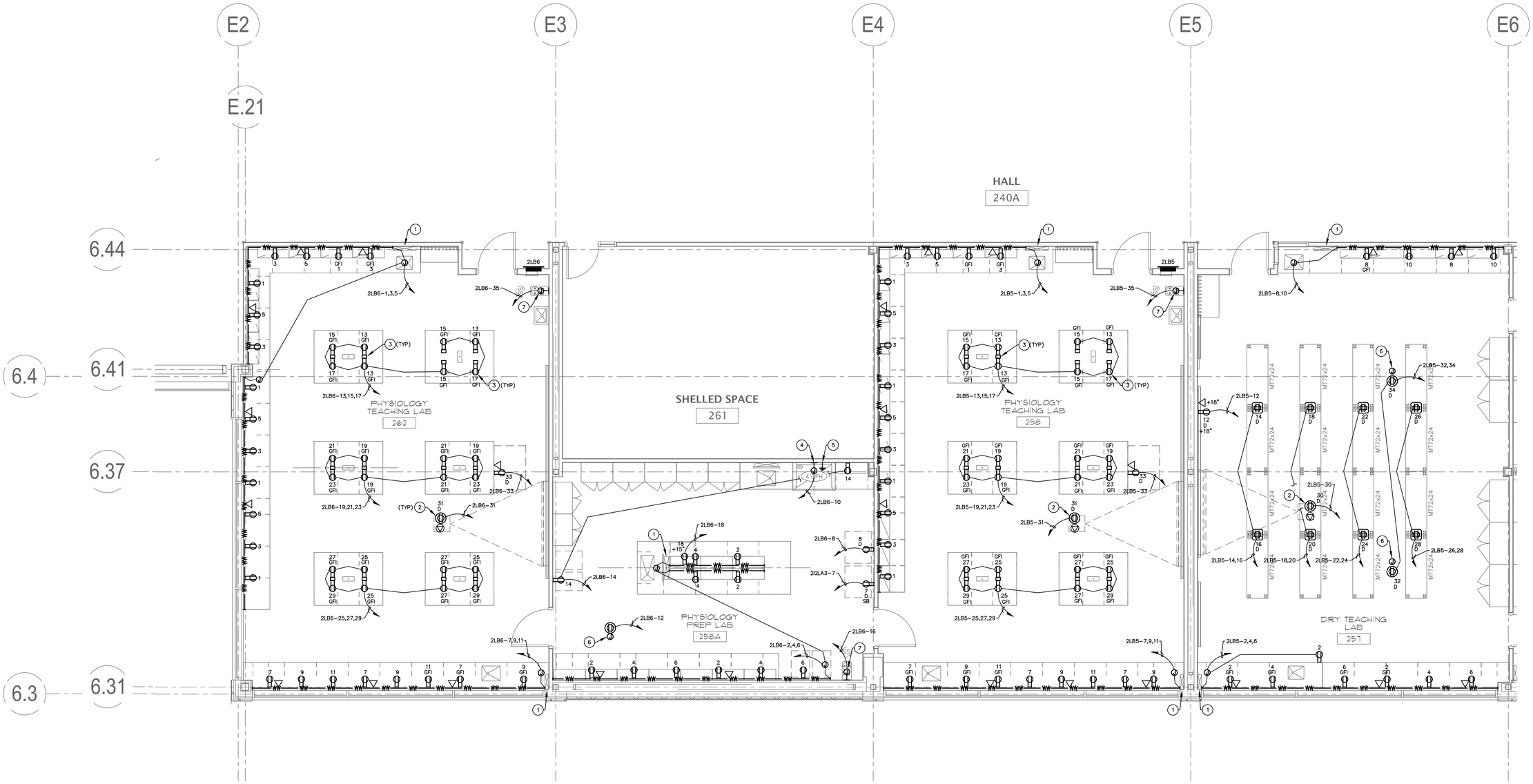

KEY NOTES:

1. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
2. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
3. ELECTRICAL PEDESTAL, SEE DETAIL 4/LE302.
4. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
5. PROVIDE GROUNDING OF CABINET OR RIG TABLE AS PER PLANS. PROVIDE CONNECTION PER MANUFACTURER'S RECOMENDATIONS AND NEC REQUIREMENTS.
6. PROVIDE J-BOX FOR AV USE. SEE PROJECT ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
7. PROVIDE J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
8. PROVIDE AND INSTALL RECESSED FLOORBOX, WIREMOLD RFB4 SERIES.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
3. ALL OUTLETS WITHIN 6'-0" OF SINK TO BE GFI.
4. PROVIDE (1) 1 1/4" C.O. FROM EACH WALL, FLOOR, OR WIREWAY MOUNTED TELE/DATA OUTLET TO ACCESSIBLE CEILING.
5. PROVIDE A MINIMUM OF (1) 1 1/4" C.O. FROM EACH TELE/DATA SECTION OF DUAL CHANNEL WIREWAY.
6. COORDINATE ALL FLOOR BOX LOCATIONS WITH LF DRAWINGS PRIOR TO ROUGH-IN.
7. FOR WIREWAY DETAILS SEE 1 THRU 5/LE301.
8. PROVIDE (1) 1" C.O. FROM EACH PEDESTAL TELE/DATA OUTLET TO ACCESSIBLE CEILING.
9. PROVIDE INDEPENDENT HOT AND NEUTRAL CONDUCTORS FOR EACH RECEPTACLE CIRCUIT IN A HOMERUN.

1 / LE-121C

LEVEL 2 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

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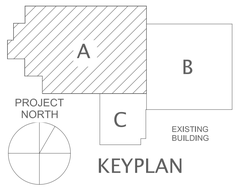

KEYPLAN

Utah Valley University New Science Building

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Division of Facilities Construction and Management

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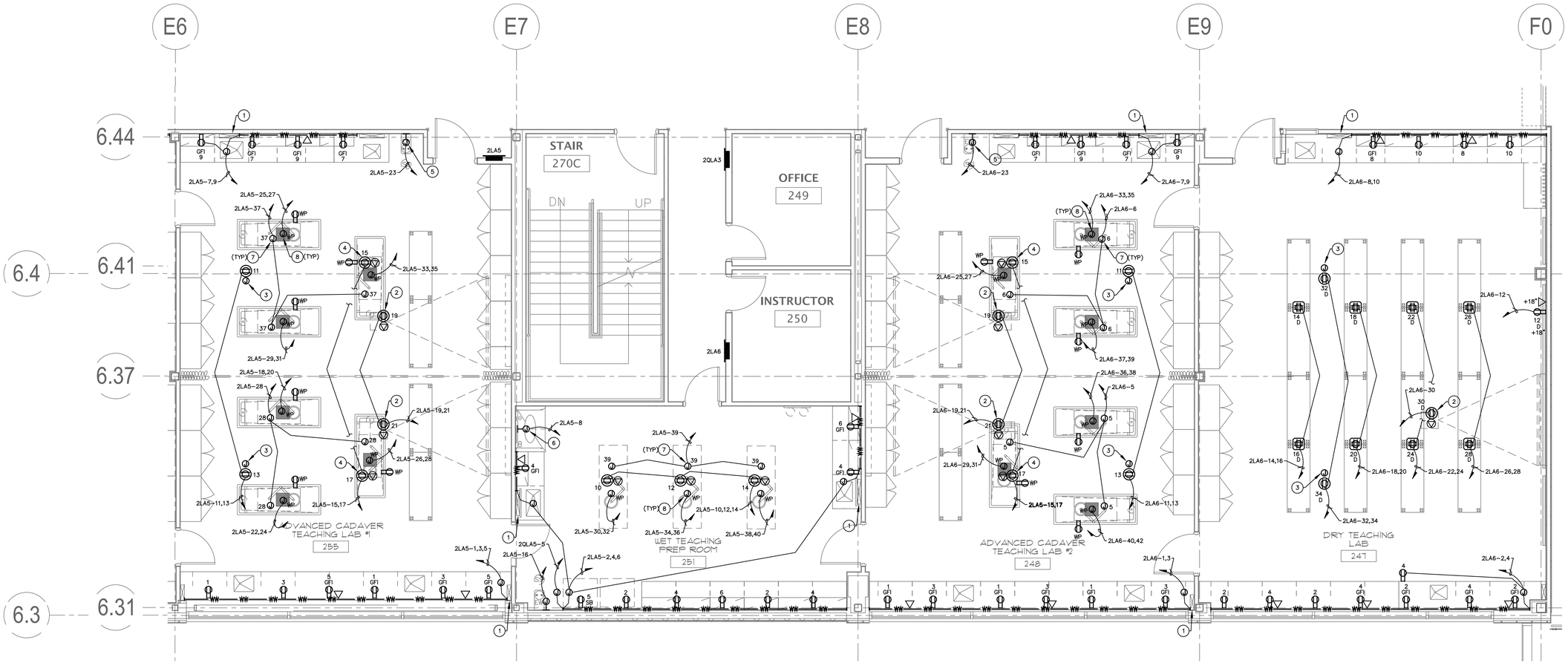
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-121C

Z:\Proj09\09253\Dwg\LE121C.dwg Wed,.05 May,2010 - 4:16pm - lfellows



KEY NOTES:

1. PIPEDROP, UTILIZE FOR CONCEALMENT OF CONDUIT. SEE DETAIL 6/LE301 AND 1/LE302.
2. CEILING MOUNT PROJECTOR. PROVIDE RECEPTACLE, VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
3. PROVIDE J-BOX FOR AV USE. SEE PROJECT ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
4. PROVIDE CEILING MOUNTED POWER AND DATA FOR EQUIPMENT USE. VERIFY LOCATION AND MOUNTING WITH ARCHITECTURAL.
5. PROVIDE AND INSTALL J-BOX AND 120V CONNECTION TO SAFETY SHOWER ALARM.
6. PROVIDE J-BOX AND CONNECTION AT TOP OF CHEMICAL FUME HOOD AT +96". VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL AND LF DRAWINGS BEFORE ROUGH-IN.
7. PROVIDE J-BOX AND 120V CONNECTION TO EXAM LIGHT.
8. PROVIDE WEATHERPROOF J-BOX AND 120V CONNECTION FROM BELOW FINISHED FLOOR TO CADAVER TABLE. COORDINATE REQUIREMENTS AND CONNECTION WITH EQUIPMENT INSTALLER. SEE LAB FURNITURE PLANS FOR MORE INFORMATION.

GENERAL NOTES:

1. COORDINATE ALL DEVICE MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
2. AT ISLAND BENCHES WITHOUT PIPEDROP STUB ELECTRICAL FROM BELOW FLOOR UP INTO PIPE CHASE. SEE LF DETAIL FOR LOCATION AND DIMENSIONS OF PIPE CHASE.
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1 / LE-121D

LEVEL 2 PARTIAL FLOOR PLAN

1/4" = 1'-0" 0 1' 2' 4' 8'

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SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
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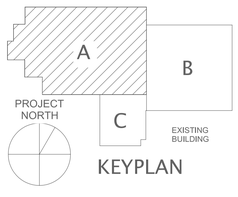

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LAB ELECTRICAL
LEVEL 2
PARTIAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

LE-121D

Z:\Proj09\09253\Dwg\LE121D.dwg Wed,05 May,2010 – 4:16pm – lfellows

PANEL "0LC3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.5	WW 037	0.5	2.3			1.8	ROCK SAW 034B			1.8	30	2	2
3	20	1			0.5	WW 037	0.5		2.3		1.8	-----			1.8	-	-	4
5	20	1			0.7	WW 037	0.7			2.5	1.8	ROCK SAW 034B			1.8	30	2	6
7	20	1			0.7	WW 037	0.7	2.5			1.8	-----			1.8	-	-	8
9	20	1			0.8	BSC. 037	0.8		2.6		1.8	ROCK SAW 034B			1.8	30	2	10
11	20	1			0.2	REC. 037	0.2			2.0	1.8	-----			1.8	-	-	12
13	20	1			1.0	DELI REF. 037	1.0	1.4			0.4	REC. 064B			0.4	20	1	14
15	20	1			1.0	REF. 037	1.0		1.2		0.2	REC. 064B			0.2	20	1	16
17	20	1			0.2	SFTY SHR 037	0.2			2.0	1.8	EQ. 034A			1.8	30	2	18
19	20	1			0.4	WW 036	0.4	2.2			1.8	-----			1.8	-	-	20
21	20	1			0.4	WW 036	0.4		0.7		0.4	WW 034A			0.4	20	1	22
23	20	1			1.0	EQ. SPACE 036	1.0			1.4	0.4	WW 034A			0.4	20	1	24
25	20	1			0.5	WW 034C	0.5	1.0			0.5	EQ. SPACE 034A			0.5	20	1	26
27	20	1			0.5	WW 034C	0.5		1.5		1.0	RET. PWR CORD 034			1.0	20	1	28
29	20	1			0.5	WW 034C	0.5			1.1	0.5	WW 034A			0.5	20	1	30
31	20	1			1.0	CFH 034C	1.0	1.4			0.4	WW 034A			0.4	20	1	32
33	20	1			0.4	REC. 034	0.4		1.4		1.0	CFH 034			1.0	20	1	34
35	20	1			0.2	SFTY SHR 034	0.2			0.2	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		11	10	9		CONNECTED TOTAL kVA				30		
						CONNECTED AMPS PER PHASE		90	81	76		CONNECTED AVERAGE AMPS PER PHASE				82		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 30 kVA | DIVERSIFIED TOTAL kVA = 30
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 82
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB6"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	DED REC 049	1.0	1.0			0.0	SPARE				20	1	2
3	20	1			0.5	WW 049	0.5		0.5		0.0	SPARE				20	1	4
5	20	1			0.5	WW 049	0.5			1.2	0.7	WW 049			0.7	20	1	6
7	20	1			0.2	SFTY SHR 049	0.2	0.9			0.7	WW 049			0.7	20	1	8
9	20	1				SPARE	0.0		0.7		0.7	PEDESTALS 049			0.7	20	1	10
11	20	1				SPARE	0.0			0.7	0.7	PEDESTALS 049			0.7	20	1	12
13	20	1				SPARE	0.0	0.7			0.7	PEDESTALS 049			0.7	20	1	14
15	20	1				SPARE	0.0		0.7		0.7	PEDESTALS 049			0.7	20	1	16
17	20	1				SPARE	0.0			0.7	0.7	PEDESTALS 049			0.7	20	1	18
19	20	1				SPARE	0.0	0.7			0.7	PEDESTALS 049			0.7	20	1	20
21	20	1				SPARE	0.0		1.0		1.0	PROJ. 049			1.0	20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	1.0			1.0	INCUB. 049			1.0	20	1	26
27	20	1				SPARE	0.0		1.0		1.0	INCUB. 049			1.0	20	1	28
29	20	1				SPARE	0.0			1.0	1.0	REF 049			1.0	20	1	30
31	20	1				SPARE	0.0	1.0			1.0	INCUB. 049			1.0	20	1	32
33	20	1				SPARE	0.0		1.0		1.0	INCUB. 049			1.0	20	1	34
35	20	1				SPARE	0.0			1.0	1.0	REF 049			1.0	20	1	36
37	20	1				SPARE	0.0	1.0			1.0	REF 049			1.0	20	1	38
39	20	1				SPARE	0.0		1.0		1.0	FRZR 049			1.0	20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		6	6	5		CONNECTED TOTAL kVA				17		
						CONNECTED AMPS PER PHASE		53	49	39		CONNECTED AVERAGE AMPS PER PHASE				47		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 17 kVA | DIVERSIFIED TOTAL kVA = 17
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 47
REMAINDER 0kVA @ 50% = 0 kVA

PANEL OLA6

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	PEDESTAL 044	0.7	1.1			0.4	WW 047A, C			0.4	20	1	2
3	20	1			0.5	PEDESTAL 044	0.5		0.9		0.4	WW 047A, C			0.4	20	1	4
5	20	1			0.5	PEDESTAL 044	0.5			1.3	0.8	BSC 047A			0.8	20	1	6
7	20	1			0.7	WW 044	0.7	1.5			0.8	BSC 047C			0.8	20	1	8
9	20	1			0.7	WW 044	0.7		1.5		0.8	BSC 044A			0.8	20	1	10
11	20	1			1.0	CFH 044	1.0			1.8	0.8	BSC 044B			0.8	20	1	12
13	20	1			0.7	WW 039	0.7	1.2			0.5	WW 047B			0.5	20	1	14
15	20	1			0.5	WW 039	0.5		0.9		0.4	WW 047B			0.4	20	1	16
17	20	1			0.5	WW 039	0.5			1.5	1.0	AUTOCLAVE 047B			1.0	20	1	18
19	20	1			1.0	EQ. SPACE 039	1.0	2.0			1.0	EQ. 047B			1.0	20	1	20
21	20	1			0.5	EQ. SPACE 039	0.5		1.0		0.5	EQ. SPACE 047B			0.5	20	1	22
23	20	1			0.2	SFTY SHR 039	0.2			0.7	0.5	WW 047D			0.5	20	1	24
25	20	1			0.8	BSC 039	0.8	1.2			0.4	WW 047D			0.4	20	1	26
27	20	1			1.0	CFH 039	1.0		1.8		0.8	EQ. 047D			0.8	20	1	28
29	20	1			0.8	BSC 044	0.8			1.0	0.2	REC. 047			0.2	20	1	30
31	20	1			0.8	BSC 044	0.8	1.5			0.7	PEDESTAL 044			0.7	20	1	32
33	20	1			1.0	PROJ 044	1.0		1.5		0.5	PEDESTAL 044			0.5	20	1	34
35	20	1			0.7	REC 046	0.7			1.2	0.5	PEDESTAL 044			0.5	20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		9	8	8		CONNECTED TOTAL kVA				24		
						CONNECTED AMPS PER PHASE		71	63	63		CONNECTED AVERAGE AMPS PER PHASE				66		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 24 kVA | DIVERSIFIED TOTAL kVA = 24
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 66
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "OLA3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	INC 069A	1.0	2.0			1.0	PROJ. 069			1.0	20	1	2
3	20	1			1.0	FRZR 069A	1.0		2.0		1.0	FLOORBOX 069			1.0	20	1	4
5	20	1			1.0	REF 069A	1.0			1.5	0.5	WW 069			0.5	20	1	6
7	20	1			1.0	GLASSWSHR 069A	1.0	1.5			0.5	WW 069			0.5	20	1	8
9	20	1			0.5	WW 069A	0.5		1.2		0.7	WW 069			0.7	20	1	10
11	20	1			0.5	WW 069A	0.5			1.5	1.0	SMART BOX 069			1.0	20	1	12
13	20	1			1.0	PURIF. 069A	1.0	2.0			1.0	EQ. 071B			1.0	20	1	14
15	20	1			1.0	CFH 069A	1.0		1.5		0.5	EQ. SPACE 071B			0.5	20	1	16
17	20	1			0.5	REC 069A	0.5			1.2	0.7	WW 071B			0.7	20	1	18
19	20	1			0.5	WW 069	0.5	1.5			1.0	TISSUE PROC 071B			1.0	20	1	20
21	20	1			0.5	WW 069	0.5		1.5		1.0	EQ.			1.0	20	1	22
23	20	1			0.7	PEDESTAL 069	0.7			1.4	0.7	WW 068H			0.7	20	1	24
25	20	1			0.7	PEDESTAL 069	0.7	1.4			0.7	WW 068H			0.7	20	1	26
27	20	1			0.7	PEDESTAL 069	0.7		0.9		0.2	SFTY. SHR. 069			0.2	20	1	28
29	20	1			0.7	PEDESTAL 069	0.7			0.7	0.0	SPARE				20	1	30
31	20	1			0.7	PEDESTAL 069	0.7	0.7			0.0	SPARE				20	1	32
33	20	1			0.7	PEDESTAL 069	0.7		0.7		0.0	SPARE				20	1	34
35	20	1			1.0	ICE 069	1.0			1.0	0.0	SPARE				20	1	36
37	20	1			1.0	EQ. SPACE 069	1.0	1.0			0.0	SPARE				20	1	38
39	20	1			0.5	EQ. SPACE 069	0.5		0.5		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		10	8	7		CONNECTED TOTAL kVA				26		
						CONNECTED AMPS PER PHASE		85	70	62		CONNECTED AVERAGE AMPS PER PHASE				72		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 26 kVA | DIVERSIFIED TOTAL kVA = 26
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 72
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0QLA3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	3			1.2	ENVIR RM CNTRL A713	1.2	1.2			0.0	SPARE				20	1	2
3	-	-			1.2	- - - - -	1.2		1.2		0.0	SPARE				20	1	4
5	-	-			1.2	- - - - -	1.2			1.2	0.0	SPARE				20	1	6
7	20	1			1.0	INCUB A120	1.0	1.0			0.0	SPARE				20	1	8
9	20	1			1.0	REF A120	1.0		1.0		0.0	SPARE				20	1	10
11	20	1			1.0	FRZR A120	1.0			1.0	0.0	SPARE				20	1	12
13	20	1			1.0	INCUB A120	1.0	1.0			0.0	SPARE				20	1	14
15	20	1			1.0	REF A120	1.0		1.0		0.0	SPARE				20	1	16
17	20	1			1.0	FRZR A120	1.0			1.0	0.0	SPARE				20	1	18
19	20	1			1.0	INCUB	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			1.0	REF	1.0		1.0		0.0	SPARE				20	1	22
23	20	1			1.0	INCUB	1.0			1.0	0.0	SPARE				20	1	24
25	20	1			1.0	REF	1.0	1.0			0.0	SPARE				20	1	26
27	30	2			1.8	EQ.	1.8		1.8		0.0	SPARE				20	1	28
29	-	-			1.8	- - - - -	1.8			1.8	0.0	SPARE				20	1	30
31	20	1			1.0	EQ.	1.0	1.0			0.0	SPARE				20	1	32
33	20	1			1.0	FRZR A708	1.0		1.0		0.0	SPARE				20	1	34
35	20	1			1.0	INCUB A708	1.0			1.0	0.0	SPARE				20	1	36
37	20	1			1.0	EQ.	1.0	1.0			0.0	SPARE				20	1	38
39	20	1			1.0	EQ.	1.0		1.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		7	8	7		CONNECTED TOTAL kVA				22		
						CONNECTED AMPS PER PHASE		60	67	58		CONNECTED AVERAGE AMPS PER PHASE				62		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 22 kVA | DIVERSIFIED TOTAL kVA = 22
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 62
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB7"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	PEDESTALS 052	0.7	0.7			0.0	SPARE				20	1	2
3	20	1			0.7	PEDESTALS 052	0.7		0.7		0.0	SPARE				20	1	4
5	20	1			0.7	PEDESTALS 052	0.7			0.7	0.0	SPARE				20	1	6
7	20	1			0.7	PEDESTALS 052	0.7	0.7			0.0	SPARE				20	1	8
9	20	1			0.7	PEDESTALS 052	0.7		0.7		0.0	SPARE				20	1	10
11	20	1			0.7	PEDESTALS 052	0.7			0.7	0.0	SPARE				20	1	12
13	20	1			0.4	WW 052	0.4	0.4			0.0	SPARE				20	1	14
15	20	1			0.4	WW 052	0.4		0.4		0.0	SPARE				20	1	16
17	20	1			0.5	EQ. SPACE 052	0.5			0.5	0.0	SPARE				20	1	18
19	20	1			1.0	PROJ. 052	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			0.2	SFTY SHR 052	0.2		0.2		0.0	SPARE				20	1	22
23	20	1			0.5	WW 052	0.5			0.5	0.0	SPARE				20	1	24
25	20	1			0.4	WW 052	0.4	0.4			0.0	SPARE				20	1	26
27	20	1			1.0	EQ. SPACE 052	1.0		1.0		0.0	SPARE				20	1	28
29	20	1			1.0	EQ. SPACE 052	1.0			1.0	0.0	SPARE				20	1	30
31	20	1			1.0	EQ. SPACE 052	1.0	1.0			0.0	SPARE				20	1	32
33	20	1			0.5	WW 052	0.5		0.5		0.0	SPARE				20	1	34
35	20	1			0.4	WW 052	0.4			0.4	0.0	SPARE				20	1	36
37	20	1			1.0	EQ. SPACE 052	1.0	1.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		5	4	4		CONNECTED TOTAL kVA				13		
						CONNECTED AMPS PER PHASE		43	29	32		CONNECTED AVERAGE AMPS PER PHASE				35		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 13 kVA | DIVERSIFIED TOTAL kVA = 13
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 35
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "OLB3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.8	BSC 062	0.8	1.8			1.0	PROJ. 062			1.0	20	1	2
3	20	1			0.8	BSC 062	0.8		1.0		0.2	SFTY SHR 062			0.2	20	1	4
5	20	1			1.0	EQ. SPACE 062	1.0			1.7	0.7	WW 064D			0.7	20	1	6
7	20	1			0.5	EQ. SPACE 062	0.5	1.0			0.5	WW 064D			0.5	20	1	8
9	20	1			0.8	BSC 062	0.8		1.3		0.5	WW 064D			0.5	20	1	10
11	20	1			0.8	BSC 062	0.8			1.8	1.0	EQ. SPACE 064D			1.0	20	1	12
13	20	1			0.8	BSC 062	0.8	1.8			1.0	EQ. SPACE 064D			1.0	20	1	14
15	20	1			0.8	BSC 062	0.8		1.8		1.0	REF. 064D			1.0	20	1	16
17	20	1			0.8	BSC 062	0.8			1.8	1.0	EQ. SPACE 064D			1.0	20	1	18
19	20	1			0.8	BSC 062	0.8	1.8			1.0	EQ. SPACE 064D			1.0	20	1	20
21	20	1			0.8	BSC 062	0.8		1.8		1.0	DED. REC 064E			1.0	20	1	22
23	20	1			0.8	BSC 062	0.8			1.8	1.0	GRWTH CHMBR 064E			1.0	20	1	24
25	20	1			0.5	REC. 062	0.5	0.9			0.4	REC 064E			0.4	20	1	26
27	20	1			0.7	PEDESTAL 062	0.7		1.7		1.0	GRWTH CHMBR 064E			1.0	20	1	28
29	20	1			0.7	PEDESTAL 062	0.7			1.7	1.0	GRWTH CHMBR 064E			1.0	20	1	30
31	20	1			0.7	PEDESTAL 062	0.7	1.7			1.0	DED REC. 062			1.0	20	1	32
33	20	1			0.5	PEDESTAL 062	0.5		0.5		0.0	SPARE				20	1	34
35	20	1			0.5	PEDESTAL 062	0.5			0.5	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		9	8	9		CONNECTED TOTAL kVA				26		
						CONNECTED AMPS PER PHASE		75	68	78		CONNECTED AVERAGE AMPS PER PHASE				73		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 26 kVA | DIVERSIFIED TOTAL kVA = 26
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 73
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "OLA4"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1				SPARE	0.0	1.8			1.8	EQ. 071A			1.8	30	2	2
3	20	1				SPARE	0.0		1.8		1.8	-----			1.8	-	-	4
5	20	1				SPARE	0.0			1.0	1.0	EQ. SPACE 071A			1.0	20	1	6
7	20	1				SPARE	0.0	0.5			0.5	WW 071A			0.5	20	1	8
9	20	1				SPARE	0.0		0.5		0.5	WW 071A			0.5	20	1	10
11	20	1				SPARE	0.0			0.5	0.5	WW 070			0.5	20	1	12
13	20	1				SPARE	0.0	0.5			0.5	WW 070			0.5	20	1	14
15	20	1				SPARE	0.0		1.0		1.0	CFH 071			1.0	20	1	16
17	20	1				SPARE	0.0			1.0	1.0	DED REC 071			1.0	20	1	18
19	20	1				SPARE	0.0	1.0			1.0	FLOORBOX 071			1.0	20	1	20
21	20	1				SPARE	0.0		0.7		0.7	WW 071			0.7	20	1	22
23	20	1				SPARE	0.0			0.7	0.7	WW 071			0.7	20	1	24
25	20	1				SPARE	0.0	0.5			0.5	WW 071			0.5	20	1	26
27	20	1				SPARE	0.0		0.5		0.5	WW 071			0.5	20	1	28
29	20	1				SPARE	0.0			0.7	0.7	WW 071			0.7	20	1	30
31	20	1				SPARE	0.0	0.7			0.7	WW 071			0.7	20	1	32
33	20	1				SPARE	0.0		0.2		0.2	SFTY SHR 071			0.2	20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		5	5	4		CONNECTED TOTAL kVA				14		
						CONNECTED AMPS PER PHASE		42	39	33		CONNECTED AVERAGE AMPS PER PHASE				38		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 14 kVA | DIVERSIFIED TOTAL kVA = 14
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 38
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0QLA4"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	INC. 053	1.0	2.0			1.0	INCUB. A113			1.0	20	1	2
3	20	1			1.0	INC. 053	1.0		2.0		1.0	INCUB. A113			1.0	20	1	4
5	20	1			1.0	INC. 053	1.0			2.0	1.0	INCUB. A113			1.0	20	1	6
7	20	1			1.0	DELI REF. 053	1.0	2.0			1.0	EQ. SPACE A111			1.0	20	1	8
9	20	1			1.0	DELI REF. 048	1.0		2.8		1.8	EQ. A111			1.8	30	2	10
11	20	1			1.0	INCUB. 048	1.0			2.8	1.8	-----			1.8	-	-	12
13	20	1			1.0	INCUB. 048	1.0	2.0			1.0	EQ. SPACE A111			1.0	20	1	14
15	20	1			1.0	INCUB. 048	1.0		2.0		1.0	EQ. SPACE A111			1.0	20	1	16
17	20	1			1.0	INC. 048A	1.0			2.0	1.0	INCUB. A107			1.0	20	1	18
19	20	1			1.0	DELI REF. 048A	1.0	2.0			1.0	INCUB. A107			1.0	20	1	20
21	20	1			1.0	INC. 048A	1.0		2.0		1.0	INCUB. A107			1.0	20	1	22
23	20	1			1.0	REF. 048A	1.0			2.0	1.0	REF. A701			1.0	20	1	24
25	20	1			1.0	FRZR. 048A	1.0	2.0			1.0	REF. A701			1.0	20	1	26
27	20	1				SPARE	0.0		1.0		1.0	EQ.			1.0	20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		10	10	9		CONNECTED TOTAL kVA				29		
						CONNECTED AMPS PER PHASE		83	82	73		CONNECTED AVERAGE AMPS PER PHASE				79		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 29 kVA | DIVERSIFIED TOTAL kVA = 29
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 79
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB8"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	PEDESTALS 053	0.7	1.3			0.5	WW 051			0.5	20	1	2
3	20	1			0.7	PEDESTALS 053	0.7		1.3		0.5	WW 051			0.5	20	1	4
5	20	1			0.7	PEDESTALS 053	0.7			1.3	0.5	WW 051			0.5	20	1	6
7	20	1			0.7	PEDESTALS 053	0.7	1.7			1.0	GARB DISP. 051			1.0	20	1	8
9	20	1			0.7	PEDESTALS 053	0.7		1.9		1.1	AUTOCLAVE CNTRL 057			1.1	20	1	10
11	20	1			0.7	PEDESTALS 053	0.7			2.5	1.8	AUTO 051			1.8	30	2	12
13	20	1			1.0	PROJ. 053	1.0	2.8			1.8	-----			1.8	-	-	14
15	20	1			0.8	BSC 053	0.8		1.5		0.7	REC. 050			0.7	20	1	16
17	20	1			0.5	WW 053	0.5			1.5	1.0	PURIF. 051			1.0	20	1	18
19	20	1			0.4	WW 053	0.4	0.4			0.0	FIT. AIR COMP.				30	3	20
21	20	1			0.5	WW 053	0.5		0.5		0.0	-----				-	-	22
23	20	1			0.4	WW 053	0.4			0.4	0.0	-----				-	-	24
25	20	1			0.5	SFTY SHR 053	0.5	0.5			0.0	SPARE				20	1	26
27	20	1			0.2	REC 053	0.2		0.2		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		7	5	6		CONNECTED TOTAL kVA				18		
						CONNECTED AMPS PER PHASE		56	45	47		CONNECTED AVERAGE AMPS PER PHASE				49		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 18 kVA | DIVERSIFIED TOTAL kVA = 18
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 49
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "OLB4"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.5	PEDESTALS 066	0.5	1.0			0.5	WW 064B			0.5	20	1	2
3	20	1			0.5	PEDESTALS 066	0.5		1.0		0.5	WW 064B			0.5	20	1	4
5	20	1			0.5	REC 066	0.5			1.2	0.7	WW 064A			0.7	20	1	6
7	20	1			0.8	BSC 066	0.8	1.3			0.5	WW 064A			0.5	20	1	8
9	20	1			0.8	BSC 066	0.8		1.3		0.5	WW 064A			0.5	20	1	10
11	20	1			0.8	BSC 066	0.8			1.8	1.0	PURIF 064A			1.0	20	1	12
13	20	1			0.8	BSC 066	0.8	1.8			1.0	EQ. SPACE 064A			1.0	20	1	14
15	20	1			0.8	BSC 066	0.8		1.8		1.0	REF. 064A			1.0	20	1	16
17	20	1			0.8	BSC 066	0.8			1.8	1.0	CFH 064A			1.0	20	1	18
19	20	1			0.8	BSC 066	0.8	1.8			1.0	EQ. SPACE 064A			1.0	20	1	20
21	20	1			0.8	BSC 066	0.8		1.0		0.2	SFTY SHR 064A			0.2	20	1	22
23	20	1			0.2	SFTY SHR 066	0.2			0.7	0.5	REC. 065			0.5	20	1	24
25	20	1				SPARE	0.0	0.4			0.4	WW 066			0.4	20	1	26
27	20	1				SPARE	0.0		0.4		0.4	WW 066			0.4	20	1	28
29	20	1				SPARE	0.0			1.0	1.0	BSC 066			1.0	20	1	30
31	20	1				SPARE	0.0	1.0			1.0	BSC 066			1.0	20	1	32
33	20	1				SPARE	0.0		0.7		0.7	PEDESTALS 066			0.7	20	1	34
35	20	1				SPARE	0.0			0.7	0.7	PEDESTALS 066			0.7	20	1	36
37	20	1			1.0	PROJECTOR 066	1.0	1.7			0.7	PEDESTALS 066			0.7	20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		9	6	7		CONNECTED TOTAL kVA				22		
						CONNECTED AMPS PER PHASE		75	52	60		CONNECTED AVERAGE AMPS PER PHASE				62		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 22 kVA | DIVERSIFIED TOTAL kVA = 22
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 62
REMAINDER 0kVA @ 50% = 0 kVA

PANEL OLA5

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1				SPARE	0.0	1.2			1.2	EQ. 068E			1.2	30	3	2
3	20	1				SPARE	0.0		1.2		1.2	-----			1.2	-	-	4
5	20	1				SPARE	0.0			1.2	1.2	-----			1.2	-	-	6
7	20	1			0.5	WW 068B	0.5	1.0			0.5	WW 068E			0.5	20	1	8
9	20	1			0.5	WW 068B	0.5		1.0		0.5	WW 068E			0.5	20	1	10
11	20	1			0.5	WW 068B	0.5			1.2	0.7	WW 068F			0.7	20	1	12
13	30	3			1.2	EQ. 068B	1.2	2.2			1.0	EQ. SPACE 068F			1.0	20	1	14
15	-	-			1.2	-----	1.2		2.2		1.0	EQ. SPACE 068F			1.0	20	1	16
17	-	-			1.2	-----	1.2			2.2	1.0	EQ. SPACE 068F			1.0	20	1	18
19	30	2			1.8	EQ. 068C	1.8	2.8			1.0	EQ. SPACE 068F			1.0	20	1	20
21	-	-			1.8	-----	1.8		3.6		1.8	EQ. 068F			1.8	30	2	22
23	20	1			0.5	WW 068C	0.5			2.3	1.8	-----			1.8	-	-	24
25	20	1			0.5	WW 068C	0.5	1.3			0.8	BSC 068			0.8	20	1	26
27	30	2			1.8	EQ. 068D	1.8		2.8		1.0	INCUB 068			1.0	20	1	28
29	-	-			1.8	-----	1.8			2.8	1.0	REF 068			1.0	20	1	30
31	20	1			0.5	WW 068D	0.5	1.5			1.0	FRZR 068			1.0	20	1	32
33	20	1			0.5	WW 068D	0.5		1.0		0.5	WW 068			0.5	20	1	34
35	20	1			0.1	WARN LTS 068	0.1			0.6	0.5	WW 068			0.5	20	1	36
37	20	1			0.2	SFTY SHR 068	0.1	0.7			0.5	WW 068			0.5	20	1	38
39	20	1				SPARE	0.2		1.0		1.0	CFH 068			1.0	20	1	40
41	20	1				SPARE	0.2			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		11	13	10		CONNECTED TOTAL kVA				34		
						CONNECTED AMPS PER PHASE		90	107	86		CONNECTED AVERAGE AMPS PER PHASE				94		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 34 kVA | DIVERSIFIED TOTAL kVA = 34
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 94
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0QLC3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1				SPARE	0.0	1.0			1.0	INCUB 037			1.0	20	1	2
3	20	1				SPARE	0.0		1.0		1.0	FRZR 037			1.0	20	1	4
5	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	6
7	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		1	1	0		CONNECTED TOTAL kVA				2		
						CONNECTED AMPS PER PHASE		8	8	0		CONNECTED AVERAGE AMPS PER PHASE				6		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 2 kVA | DIVERSIFIED TOTAL kVA = 2
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 6
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB9"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	PEDESTALS 048	0.7	1.1			0.4	PEDESTALS 048A			0.4	20	1	2
3	20	1			0.7	PEDESTALS 048	0.7		1.1		0.4	PEDESTALS 048A			0.4	20	1	4
5	20	1			0.7	PEDESTALS 048	0.7			1.5	0.8	BSC 048A			0.8	20	1	6
7	20	1			0.7	PEDESTALS 048	0.7	0.9			0.2	WW 048A			0.2	20	1	8
9	20	1			0.7	PEDESTALS 048	0.7		1.7		1.0	ICE 048A			1.0	20	1	10
11	20	1			0.7	PEDESTALS 048	0.7			1.7	1.0	CFH 048A			1.0	20	1	12
13	20	1			0.7	PEDESTALS 048	0.7	1.4			0.7	WW 048A			0.7	20	1	14
15	20	1			0.7	PEDESTALS 048	0.7		1.4		0.7	WW 048A			0.7	20	1	16
17	20	1			0.7	PEDESTALS 048	0.7			0.9	0.2	SFTY SHR 048A			0.2	20	1	18
19	20	1			1.0	PROJ. 048	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			0.4	WW 048	0.4		0.4		0.0	SPARE				20	1	22
23	20	1			0.4	WW 048	0.4			0.4	0.0	SPARE				20	1	24
25	20	1			0.8	BSC 048	0.8	0.8			0.0	SPARE				20	1	26
27	20	1			0.5	WW 048	0.5		0.5		0.0	SPARE				20	1	28
29	20	1			0.4	WW 048	0.4			0.4	0.0	SPARE				20	1	30
31	20	1			0.2	SFTY SHR 048	0.2	0.2			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		5	5	5		CONNECTED TOTAL kVA				15		
						CONNECTED AMPS PER PHASE		45	43	41		CONNECTED AVERAGE AMPS PER PHASE				43		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 15 kVA | DIVERSIFIED TOTAL kVA = 15
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 43
REMAINDER 0kVA @ 50% = 0 kVA

PANEL "0LB5"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	DESCRIPTION	LCL kVA	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	LCL kVA	DESCRIPTION	LOAD (kVA) LTG	LOAD (kVA) CO	LOAD (kVA) PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 057	0.7	1.7			1.0	SMART BOX 057			1.0	20	1	2
3	20	1			0.7	WW 057	0.7		1.7		1.0	EQ. SPACE 057A / 052A			1.0	20	1	4
5	20	1			0.7	WW 057	0.7			1.7	1.0	EQ. SPACE 057A / 052A			1.0	20	1	6
7	20	1			0.7	WW 057	0.7	1.7			1.0	EQ. SPACE 057A / 052A			1.0	20	1	8
9	20	1			0.7	WW 057	0.7		2.5		1.8	EQ. 057A			1.8	30	2	10
11	20	1			0.7	WW 057	0.7			2.5	1.8	-----			1.8	-	-	12
13	20	1			0.7	WW 057	0.7	1.4			0.7	WW 057A			0.7	20	1	14
15	20	1			0.7	WW 057	0.7		1.2		0.5	WW 057A			0.5	20	1	16
17	20	1			0.7	WW 057	0.7			1.7	1.0	CFH 057A			1.0	20	1	18
19	20	1			1.0	REF. 057	1.0	1.2			0.2	SFTY SHR 057A			0.2	20	1	20
21	20	1			0.2	SFTY SHR 057	0.2		0.9		0.7	WW 052A			0.7	20	1	22
23	20	1			0.5	WW 057	0.5			1.2	0.7	WW 052A			0.7	20	1	24
25	20	1			0.4	WW 057	0.4	2.2			1.8	EQ. 052A			1.8	30	2	26
27	20	1			1.0	REF. 057	1.0		2.8		1.8	-----			1.8	-	-	28
29	20	1			1.0	FRZR. 057	1.0			2.0	1.0	CFH 052A			1.0	20	1	30
31	20	1			1.0	PROJ 057	1.0	1.2			0.2	SFTY SHR 052A			0.2	20	1	32
33	20	1			1.0	REF 057	1.0		2.0		1.0	DED. REC. 055			1.0	20	1	34
35	20	1			1.0	REF. 057	1.0			1.5	0.5	REC. 055			0.5	20	1	36
37	20	1			0.7	WW 057	0.7	0.7			0.0	SPARE				20	1	38
39	20	1			0.5	WW 057	0.5		0.5		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		10	12	11		CONNECTED TOTAL kVA				32		
						CONNECTED AMPS PER PHASE		84	97	88		CONNECTED AVERAGE AMPS PER PHASE				90		

NEC DIVERSIFIED LOAD CALCULATIONS
LIGHTING 0kVA @125% = 0 kVA | ALL OTHER LOADS @100% = 32 kVA | DIVERSIFIED TOTAL kVA = 32
RECEPTACLES 0kVA @100% = 0 kVA | 25% OF LARGEST MOTOR = 0 kVA | AVERAGE AMPS PER PHASE = 90
REMAINDER 0kVA @ 50% = 0 kVA

0LC3	0LB6	0LA6	0LA3
0QLA3	0LB7	0LB3	0LA4
0QLA4	0LB8	0LB4	0LA5
0QLC3	0LB9	0LB5	

PANEL SCHEDULES

Z:\Proj09\09253\Dwg\LE201.dwg Wed.,05 May.2010 - 4:18pm - lfellows

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

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Exp. 3/31/2011
ELECTRICAL
STATE OF UTAH

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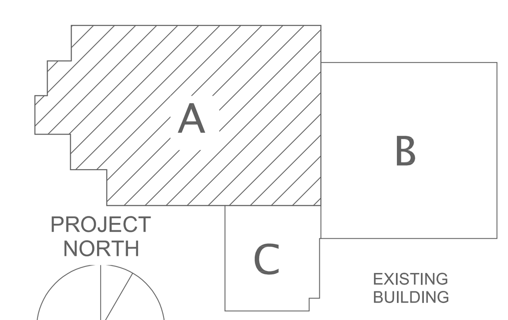
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

THE GREAT SEAL OF THE STATE OF UTAH 1896

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

LE-201

PANEL "1LB9"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	FLOORBOX 160	0.7	1.4			0.7	WW 157			0.7	20	1	2
3	20	1			0.7	FLOORBOX 160	0.7		1.4		0.7	WW 157			0.7	20	1	4
5	20	1			0.7	FLOORBOX 160	0.7			1.7	1.0	UC GLASSWSH 157			1.0	20	1	6
7	20	1			0.7	FLOORBOX 160	0.7	1.7			1.0	REF 157			1.0	20	1	8
9	20	1			0.7	FLOORBOX 160	0.7		1.7		1.0	FRZR 157			1.0	20	1	10
11	20	1			0.7	FLOORBOX 160	0.7			1.7	1.0	EQ. 157			1.0	20	1	12
13	20	1			0.7	FLOORBOX 160	0.7	1.4			0.7	WW 157			0.7	20	1	14
15	20	1			0.7	FLOORBOX 160	0.7		1.4		0.7	WW 157			0.7	20	1	16
17	20	1			0.7	FLOORBOX 160	0.7			1.7	1.0	CFH 157			1.0	20	1	18
19	20	1			1.0	PROJ. 160	1.0	1.2			0.2	SFTY SHR 157			0.2	20	1	20
21	20	1			0.7	WW 160	0.7		1.7		1.0	REF. 156			1.0	20	1	22
23	20	1			0.7	WW 160	0.7			1.7	1.0	FRZR 156			1.0	20	1	24
25	20	1			0.7	WW 160	0.7	1.1			0.4	REC 156			0.4	20	1	26
27	20	1			0.7	WW 160	0.7		1.7		1.0	RIH 156			1.0	20	1	28
29	20	1			0.7	WW 160	0.7			0.7	0.0	SPARE				20	1	30
31	20	1			1.0	EQ. SPACE 160	1.0	1.0			0.0	SPARE				20	1	32
33	20	1			1.0	AQUARIA 160	1.0		1.0		0.0	SPARE				20	1	34
35	20	1			0.2	SFTY SHR 160	0.2			0.2	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **8** **9** **8** — CONNECTED TOTAL kVA **25**
CONNECTED AMPS PER PHASE **66** **75** **65** — CONNECTED AVERAGE AMPS PER PHASE **69**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**25** kVA	DIVERSIFIED TOTAL kVA =	**25**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**69**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB5"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	FLOORBOX 171	1.0	1.0			0.0	SPARE				20	1	2
3	20	1			1.0	FLOORBOX 171	1.0		1.0		0.0	SPARE				20	1	4
5	20	1			1.0	FLOORBOX 171	1.0			1.0	0.0	SPARE				20	1	6
7	20	1			1.0	FLOORBOX 171	1.0	1.0			0.0	SPARE				20	1	8
9	20	1			1.0	FLOORBOX 171	1.0		1.0		0.0	SPARE				20	1	10
11	20	1			1.0	FLOORBOX 171	1.0			1.0	0.0	SPARE				20	1	12
13	20	1			1.0	FLOORBOX 171	1.0	1.0			0.0	SPARE				20	1	14
15	20	1			1.0	FLOORBOX 171	1.0		1.0		0.0	SPARE				20	1	16
17	20	1			1.0	FLOORBOX 171	1.0			1.0	0.0	SPARE				20	1	18
19	20	1			1.0	PROJ. 171	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			1.0	EQ. SPACE 171	1.0		1.0		0.0	SPARE				20	1	22
23	20	1			0.7	WW 171	0.7			0.7	0.0	SPARE				20	1	24
25	20	1			0.7	WW 171	0.7	0.7			0.0	SPARE				20	1	26
27	20	1			0.2	SFTY SHR 171	0.2		0.2		0.0	SPARE				20	1	28
29	20	1			0.4	REC. 171	0.4			0.4	0.0	SPARE				20	1	30
31	20	1			0.4	REC. 171	0.4	0.4			0.0	SPARE				20	1	32
33	20	1			1.0	SMART BOARD	1.0		1.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **5** **5** **4** — CONNECTED TOTAL kVA **14**
CONNECTED AMPS PER PHASE **42** **43** **34** — CONNECTED AVERAGE AMPS PER PHASE **40**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**14** kVA	DIVERSIFIED TOTAL kVA =	**14**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**40**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LA6"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	FLOORBOX 147	0.7	1.7			1.0	REF. 147			1.0	20	1	2
3	20	1			0.7	FLOORBOX 147	0.7		1.7		1.0	FRZR 147			1.0	20	1	4
5	20	1			0.7	FLOORBOX 147	0.7			1.7	1.0	EQ. 147			1.0	20	1	6
7	20	1			0.7	FLOORBOX 147	0.7	1.3			0.5	REC. 147			0.5	20	1	8
9	20	1			0.7	FLOORBOX 147	0.7		1.3		0.5	WW 143			0.5	20	1	10
11	20	1			0.7	FLOORBOX 147	0.7			1.3	0.5	WW 143			0.5	20	1	12
13	20	1			0.7	FLOORBOX 147	0.7	1.7			1.0	UC GLASSWSH 143			1.0	20	1	14
15	20	1			0.7	FLOORBOX 147	0.7		1.7		1.0	CFH 143			1.0	20	1	16
17	20	1			0.7	FLOORBOX 147	0.7			1.7	1.0	REF. 143			1.0	20	1	18
19	20	1			1.0	PROJ. 147	1.0	2.0			1.0	FRZR 143			1.0	20	1	20
21	20	1			0.7	WW 147	0.7		1.7		1.0	EQ. 143			1.0	20	1	22
23	20	1			0.5	WW 147	0.5			1.3	0.7	WW 143			0.7	20	1	24
25	20	1			1.0	LFH 147	1.0	1.5			0.5	WW 143			0.5	20	1	26
27	20	1			0.2	SFTY SHR 147	0.2		0.4		0.2	SFTY SHR 143			0.2	20	1	28
29	20	1			0.5	WW 147	0.5			0.5	0.0	SPARE				20	1	30
31	20	1			0.5	WW 147	0.5	0.5			0.0	SPARE				20	1	32
33	20	1			0.5	EQ. SPACE 147	0.5		0.5		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **9** **7** **7** — CONNECTED TOTAL kVA **23**
CONNECTED AMPS PER PHASE **73** **61** **54** — CONNECTED AVERAGE AMPS PER PHASE **63**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**23** kVA	DIVERSIFIED TOTAL kVA =	**23**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**63**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LA3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	FLOORBOX 176	0.7	1.4			0.7	WW 176			0.7	20	1	2
3	20	1			0.7	FLOORBOX 176	0.7		1.4		0.7	WW 176			0.7	20	1	4
5	20	1			0.7	FLOORBOX 176	0.7			1.4	0.7	WW 176			0.7	20	1	6
7	20	1			0.7	FLOORBOX 176	0.7	1.3			0.5	WW 176			0.5	20	1	8
9	20	1			0.7	FLOORBOX 176	0.7		1.7		1.0	EQ. SPACE 176			1.0	20	1	10
11	20	1			0.7	FLOORBOX 176	0.7			1.7	1.0	ACFH 176			1.0	20	1	12
13	20	1			0.7	FLOORBOX 176	0.7	0.9			0.2	SFTY SHR 176			0.2	20	1	14
15	20	1			0.7	FLOORBOX 176	0.7		1.1		0.4	REC. 176			0.4	20	1	16
17	20	1			0.7	FLOORBOX 176	0.7			0.7	0.0	SPARE				20	1	18
19	20	1			1.0	PROJ. 176	1.0	1.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **5** **4** **4** — CONNECTED TOTAL kVA **13**
CONNECTED AMPS PER PHASE **39** **35** **32** — CONNECTED AVERAGE AMPS PER PHASE **35**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**13** kVA	DIVERSIFIED TOTAL kVA =	**13**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**35**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB10"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	FLOORBOX 152	0.7	1.7			1.0	CFH 152			1.0	20	1	2
3	20	1			0.7	FLOORBOX 152	0.7		1.1		0.4	REC. 152			0.4	20	1	4
5	20	1			0.7	FLOORBOX 152	0.7			1.7	1.0	CFH 148A			1.0	20	1	6
7	20	1			0.7	FLOORBOX 152	0.7	1.7			1.0	REF. 148A			1.0	20	1	8
9	20	1			0.7	FLOORBOX 152	0.7		1.2		0.5	EQ. SPACE 148A			0.5	20	1	10
11	20	1			0.7	FLOORBOX 152	0.7			1.1	0.4	REC. 148A			0.4	20	1	12
13	20	1			0.7	FLOORBOX 152	0.7	1.7			1.0	EXAM LIGHT 148A			1.0	20	1	14
15	20	1			0.7	FLOORBOX 152	0.7		1.7		1.0	NECROPSY TABLE 148A			1.0	20	1	16
17	20	1			0.7	FLOORBOX 152	0.7			1.7	1.0	NECROPSY TABLE 148A			1.0	20	1	18
19	20	1			1.0	PROJ. 152	1.0	1.7			0.7	REC 148B/148C/148D			0.7	20	1	20
21	20	1			0.7	WW 152	0.7		1.3		0.5	REC 148B/148C			0.5	20	1	22
23	20	1			0.7	WW 152	0.7			1.7	1.0	REF 148D			1.0	20	1	24
25	20	1			0.2	SFTY SHR 152	0.2	0.7			0.5	EQ. SPACE 148D			0.5	20	1	26
27	20	1			0.7	WW 152	0.7		1.7		1.0	REF. 148E			1.0	20	1	28
29	20	1			0.7	WW 152	0.7			1.5	0.8	BSC 148E			0.8	20	1	30
31	20	1			1.0	AQUARIA 152	1.0	2.0			1.0	EXAM LIGHT 148E			1.0	20	1	32
33	20	1			1.0	EQ. 152	1.0		1.5		0.5	REC 148E/148F			0.5	20	1	34
35	20	1			0.5	EQ. SPACE 152	0.5			1.0	0.5	REC 148E/148F			0.5	20	1	36
37	20	1				SPARE	0.0	1.1			1.1	AUTOCLAVE CNTRL 148F			1.1	20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **11** **9** **9** — CONNECTED TOTAL kVA **28**
CONNECTED AMPS PER PHASE **89** **71** **73** — CONNECTED AVERAGE AMPS PER PHASE **78**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**28** kVA	DIVERSIFIED TOTAL kVA =	**28**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**78**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB6"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 166	0.7	0.9			0.2	SFTY SHR 166			0.2	20	1	2
3	20	1			0.7	WW 166	0.7		1.7		1.0	CFH 166			1.0	20	1	4
5	20	1			0.7	WW 166	0.7			1.4	0.7	WW 169			0.7	20	1	6
7	20	1			0.5	WW 166	0.5	1.3			0.7	WW 169			0.7	20	1	8
9	20	1			0.5	WW 166	0.5		1.5		1.0	EQ. 169			1.0	20	1	10
11	20	1			1.0	DED REC 166	1.0			2.8	1.8	EQ. 169			1.8	30	2	12
13	20	1			1.0	DED REC 166	1.0	2.8			1.8	- - - - -			1.8	-	-	14
15	20	1			0.5	WW 166	0.5		1.3		0.7	WW 169			0.7	20	1	16
17	20	1			0.5	WW 166	0.5			1.3	0.7	WW 169			0.7	20	1	18
19	20	1			0.4	WW 166	0.4	1.1			0.7	WW 169			0.7	20	1	20
21	20	1			0.7	WW 166	0.7		1.4		0.7	WW 169			0.7	20	1	22
23	20	1			0.7	WW 166	0.7			1.4	0.7	WW 169			0.7	20	1	24
25	20	1			0.7	WW 166	0.7	1.4			0.7	WW 169			0.7	20	1	26
27	20	1			0.2	REC. 166	0.2		1.2		1.0	DED REC. 169			1.0	20	1	28
29	20	1			1.0	EQ. SPACE 166	1.0			2.0	1.0	DED REC. 169			1.0	20	1	30
31	20	1			1.0	EQ. SPACE 166	1.0	1.2			0.2	SFTY SHR 169			0.2	20	1	32
33	20	1			1.0	GROWTH CHAMBER 166	1.0		2.0		1.0	EQ. 169			1.0	20	1	34
35	20	1			1.0	EQ. 166	1.0			2.0	1.0	EQ. SPACE			1.0	20	1	36
37	20	1			1.0	LFH 166	1.0	1.5			0.5	EQ. SPACE			0.5	20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **10** **9** **11** — CONNECTED TOTAL kVA **30**
CONNECTED AMPS PER PHASE **85** **76** **91** — CONNECTED AVERAGE AMPS PER PHASE **84**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**30** kVA	DIVERSIFIED TOTAL kVA =	**30**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**84**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LA7"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	FLOORBOX 140	0.7	1.9			1.1	AUTOCLAVE CNTRL 141			1.1	20	1	2
3	20	1			0.7	FLOORBOX 140	0.7		1.7		1.0	ICE 141			1.0	20	1	4
5	20	1			0.7	FLOORBOX 140	0.7			0.9	0.2	REC 141			0.2	20	1	6
7	20	1			0.7	FLOORBOX 140	0.7	1.7			1.0	FRZR 140			1.0	20	1	8
9	20	1			0.7	FLOORBOX 140	0.7		1.7		1.0	FRZR 140			1.0	20	1	10
11	20	1			0.7	FLOORBOX 140	0.7			1.7	1.0	REF 140			1.0	20	1	12
13	20	1			0.7	FLOORBOX 140	0.7	1.7			1.0	INCUB. 140			1.0	20	1	14
15	20	1			0.7	FLOORBOX 140	0.7		1.1		0.4	WW 140			0.4	20	1	16
17	20	1			0.7	FLOORBOX 140	0.7			0.9	0.2	WW 140			0.2	20	1	18
19	20	1			1.0	PROJ. 140	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			1.0	CFH 140	1.0		1.0		0.0	SPARE				20	1	22
23	20	1			0.7	WW 140	0.7			0.7	0.0	SPARE				20	1	24
25	20	1			0.5	WW 140	0.5	0.5			0.0	SPARE				20	1	26
27	20	1			0.2	SFTY SHR 140	0.2		0.2		0.0	SPARE				20	1	28
29	20	1			0.4	REC. 140	0.4			0.4	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **7** **6** **5** — CONNECTED TOTAL kVA **17**
CONNECTED AMPS PER PHASE **57** **48** **38** — CONNECTED AVERAGE AMPS PER PHASE **48**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**17** kVA	DIVERSIFIED TOTAL kVA =	**17**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**48**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LA4"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	EQ. 174	1.0	1.7			0.7	FLOORBOX 175			0.7	20	1	2
3	20	1			1.0	EQ. 174	1.0		1.7		0.7	FLOORBOX 175			0.7	20	1	4
5	20	1			0.4	WW 174	0.4			1.1	0.7	FLOORBOX 175			0.7	20	1	6
7	20	1			0.4	WW 174	0.4	1.1			0.7	FLOORBOX 175			0.7	20	1	8
9	20	1			1.0	EQ. SPACE 174	1.0		1.7		0.7	FLOORBOX 175			0.7	20	1	10
11	20	1			1.0	UC GLASSWSH 174	1.0			1.7	0.7	FLOORBOX 175			0.7	20	1	12
13	20	1			1.0	EQ. 174	1.0	1.7			0.7	FLOORBOX 175			0.7	20	1	14
15	20	1			0.2	SFTY SHR 174	0.2		0.9		0.7	FLOORBOX 175			0.7	20	1	16
17	20	1			1.0	CFH 174	1.0			1.7	0.7	FLOORBOX 175			0.7	20	1	18
19	20	1			0.7	WW 174	0.7	1.3			0.5	WW 175			0.5	20	1	20
21	20	1			0.7	WW 174	0.7		1.1		0.4	WW 175			0.4	20	1	22
23	20	1			0.5	WW 174	0.5			0.9	0.4	WW 175			0.4	20	1	24
25	20	1			1.0	EQ. 174	1.0	1.4			0.4	WW 175			0.4	20	1	26
27	20	1			1.0	EQ. 174	1.0		1.4		0.4	REC. 175			0.4	20	1	28
29	20	1				SPARE	0.0			1.0	1.0	PLOTTER 175			1.0	20	1	30
31	20	1				SPARE	0.0	0.7			0.7	REC. 175			0.7	20	1	32
33	20	1				SPARE	0.0		0.7		0.7	REC. 175			0.7	20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **8** **8** **6** — CONNECTED TOTAL kVA **22**
CONNECTED AMPS PER PHASE **66** **63** **54** — CONNECTED AVERAGE AMPS PER PHASE **61**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**22** kVA	DIVERSIFIED TOTAL kVA =	**22**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**61**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1QLA3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	FRZR 167	1.0	2.8			1.8	FRZR 151			1.8	30	2	2
3	20	1			1.0	REF. 167	1.0		2.8		1.8	- - - - -			1.8	-	-	4
5	30	2			1.8	EQ. 070A	1.8			2.8	1.0	FRZR 151			1.0	20	1	6
7	-	-			1.8	- - - - -	1.8	2.8			1.0	INCUB. 140			1.0	20	1	8
9	30	2			1.8	EQ. 167B	1.8		1.8		0.0	SPARE				20	1	10
11	-	-			1.8	- - - - -	1.8			1.8	0.0	SPARE				20	1	12
13	30	2			1.8	EQ. 167B	1.8	1.8			0.0	SPARE				20	1	14
15	-	-			1.8	- - - - -	1.8		1.8		0.0	SPARE				20	1	16
17	20	1			1.0	INCUB. 167A	1.0			1.0	0.0	SPARE				20	1	18
19	20	1			1.0	REF. 167A	1.0	1.0			0.0	SPARE				20	1	20
21	20	1			1.0	FRZR 167A	1.0		1.0		0.0	SPARE				20	1	22
23	20	1			1.0	FRZR 170	1.0			1.0	0.0	SPARE				20	1	24
25	20	1			1.0	EQ. 166	1.0	1.0			0.0	SPARE				20	1	26
27	20	1			1.0	EQ. 169	1.0		1.0		0.0	SPARE				20	1	28
29	30	2			1.8	EQ. 169	1.8			1.8	0.0	SPARE				20	1	30
31	-	-			1.8	- - - - -	1.8	1.8			0.0	SPARE				20	1	32
33	20	1			1.0	EQ. 161	1.0		1.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **11** **9** **8** — CONNECTED TOTAL kVA **29**
CONNECTED AMPS PER PHASE **93** **78** **70** — CONNECTED AVERAGE AMPS PER PHASE **81**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**29** kVA	DIVERSIFIED TOTAL kVA =	**29**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**80**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB7"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	N2 GEN. 161	1.0	1.7			0.7	FLOORBOX 154			0.7	20	1	2
3	20	1			1.0	UPS 161	1.0		1.7		0.7	FLOORBOX 154			0.7	20	1	4
5	20	1			1.0	POWER FILTER 161	1.0			1.7	0.7	FLOORBOX 154			0.7	20	1	6
7	20	1			0.4	WW 161	0.4	1.1			0.7	FLOORBOX 154			0.7	20	1	8
9	20	1			0.5	EQ. SPACE 161	0.5		1.2		0.7	FLOORBOX 154			0.7	20	1	10
11	20	1			0.7	WW 161A	0.7			1.4	0.7	FLOORBOX 154			0.7	20	1	12
13	20	1			0.5	WW 161A	0.5	1.3			0.7	FLOORBOX 154			0.7	20	1	14
15	20	1			1.0	EQ. 161A	1.0		1.7		0.7	FLOORBOX 154			0.7	20	1	16
17	20	1			1.0	EQ. 161A	1.0			1.7	0.7	FLOORBOX 154			0.7	20	1	18
19	20	1			0.9	WW 161A	0.9	1.4			0.5	EQ. SPACE 154			0.5	20	1	20
21	20	1			0.7	WW 161A	0.7		1.4		0.7	WW 154			0.7	20	1	22
23	30	2			1.8	MASS SPEC 161A	1.8			2.5	0.7	WW 154			0.7	20	1	24
25	-	-			1.8	- - - - -	1.8	2.8			1.0	EQ. 154			1.0	20	1	26
27	20	1			1.0	PROJ. 154	1.0		1.5		0.5	WW 154			0.5	20	1	28
29	20	1			0.2	SFTY SHR 154	0.2			0.6	0.4	WW 154			0.4	20	1	30
31	20	1			0.4	REC. 154	0.4	0.4			0.0	SPARE				20	1	32
33	20	1			1.0	ACFH 154	1.0		1.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **9** **9** **8** — CONNECTED TOTAL kVA **25**
CONNECTED AMPS PER PHASE **72** **72** **66** — CONNECTED AVERAGE AMPS PER PHASE **70**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**25** kVA	DIVERSIFIED TOTAL kVA =	**25**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**70**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB3"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 167	0.7	1.7			1.0	DELI REF 167			1.0	20	1	2
3	20	1			0.7	WW 167	0.7		1.7		1.0	FRZR 167			1.0	20	1	4
5	20	1			0.7	WW 167	0.7			1.1	0.4	WW 167			0.4	20	1	6
7	20	1			0.7	WW 167	0.7	0.9			0.2	WW 167			0.2	20	1	8
9	20	1			0.7	WW 167	0.7		0.9		0.2	SFTY SHR 167			0.2	20	1	10
11	20	1			0.7	WW 167	0.7			1.7	1.0	PROJ. 070A			1.0	20	1	12
13	20	1			0.7	WW 167	0.7	1.6			0.9	WW 070A			0.9	20	1	14
15	20	1			0.7	WW 167	0.7		1.4		0.7	WW 070A			0.7	20	1	16
17	20	1			0.7	WW 167	0.7			1.4	0.7	WW 070A			0.7	20	1	18
19	20	1			0.7	WW 167	0.7	1.4			0.7	WW 167C			0.7	20	1	20
21	20	1			0.7	WW 167	0.7		1.4		0.7	WW 167C			0.7	20	1	22
23	20	1			0.7	WW 167	0.7			1.4	0.7	WW 167C			0.7	20	1	24
25	20	1			1.0	PURIF. 167	1.0	1.7			0.7	WW 167C			0.7	20	1	26
27	20	1			1.0	CFH 167	1.0		1.7		0.7	WW 167C			0.7	20	1	28
29	20	1			0.5	WW 167	0.5			1.1	0.5	WW 167C			0.5	20	1	30
31	20	1			0.5	WW 167	0.5	1.3			0.7	WW 167C			0.7	20	1	32
33	20	1				SPARE	0.0		0.5		0.5	WW 167C			0.5	20	1	34
35	20	1				SPARE	0.0			1.0	1.0	VP 167C			1.0	20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **9** **8** **8** — CONNECTED TOTAL kVA **24**
CONNECTED AMPS PER PHASE **72** **65** **65** — CONNECTED AVERAGE AMPS PER PHASE **67**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**24** kVA	DIVERSIFIED TOTAL kVA =	**24**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**67**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LA5"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 173A	0.7	1.4			0.7	WW 173			0.7	20	1	2
3	20	1			0.7	WW 173A	0.7		1.4		0.7	WW 173			0.7	20	1	4
5	20	1			0.7	REC 173A	0.7			1.3	0.5	WW 173			0.5	20	1	6
7	20	1			0.4	REC. 171A	0.4	0.6			0.2	SFTY SHR 173			0.2	20	1	8
9	20	1			0.4	REC. 171A	0.5		1.4		1.0	EQ. 173			1.0	20	1	10
11	20	1			1.0	EQ. SPACE 173	1.0			1.0	0.0	SPARE				20	1	12
13	20	1			1.0	EQ. SPACE 173	1.0	1.0			0.0	SPARE				20	1	14
15	20	1			0.5	BENCH 173	0.5		0.5		0.0	SPARE				20	1	16
17	20	1			0.5	BENCH 173	0.5			0.5	0.0	SPARE				20	1	18
19	20	1			1.0	CFH 173	1.0	1.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **4** **3** **3** — CONNECTED TOTAL kVA **10**
CONNECTED AMPS PER PHASE **33** **28** **23** — CONNECTED AVERAGE AMPS PER PHASE **28**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**10** kVA	DIVERSIFIED TOTAL kVA =	**10**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**28**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB8"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 153	0.7	1.3			0.5	WW 151			0.5	20	1	2
3	20	1			0.5	WW 153	0.5		1.1		0.5	WW 151			0.5	20	1	4
5	20	1			1.0	CFH 153	1.0			1.4	0.4	WW 151			0.4	20	1	6
7	20	1			1.0	UC GLASSWSH. 153	1.0	1.2			0.2	WW 151			0.2	20	1	8
9	20	1			1.0	FRZR 153	1.0		1.5		0.5	EQ. SPACE 151			0.5	20	1	10
11	20	1			1.0	REF 153	1.0			2.0	1.0	REF. 151			1.0	20	1	12
13	20	1			0.5	EQ. SPACE 153	0.5	0.5			0.0	SPARE				20	1	14
15	20	1			0.2	SFTY SHR. 153	0.2		0.2		0.0	SPARE				20	1	16
17	20	1			0.5	WW 151	0.5			0.5	0.0	SPARE				20	1	18
19	20	1			0.5	WW 151	0.5	0.5			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **3** **3** **4** — CONNECTED TOTAL kVA **10**
CONNECTED AMPS PER PHASE **29** **23** **33** — CONNECTED AVERAGE AMPS PER PHASE **28**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**10** kVA	DIVERSIFIED TOTAL kVA =	**10**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**28**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "1LB4"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	150A AMPERE MAIN CB		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	EQ. SPACE 167B	1.0	1.7			0.7	WW 170			0.7	20	1	2
3	20	1			0.5	WW 167B	0.5		1.3		0.7	WW 170			0.7	20	1	4
5	20	1			0.5	WW 167B	0.5			1.3	0.7	WW 170			0.7	20	1	6
7	30	2			1.8	EQ. 167B	1.8	2.5			0.7	WW 170			0.7	20	1	8
9	-	-			1.8	- - - - -	1.8		2.5		0.7	WW 170			0.7	20	1	10
11	20	1			1.0	EQ. 167B	1.0			1.7	0.7	WW 170			0.7	20	1	12
13	20	1			1.0	ICE 167B	1.0	1.7			0.7	WW 170			0.7	20	1	14
15	20	1			1.0	INC/SHAKER 167B	1.0		1.7		0.7	WW 170			0.7	20	1	16
17	30	2			1.8	ULTRA CENT. 167B	1.8			2.5	0.7	WW 170			0.7	20	1	18
19	-	-			1.8	- - - - -	1.8	2.8			1.0	CFH 170			1.0	20	1	20
21	30	2			1.8	CENT 167B	1.8		2.5		0.7	WW 170			0.7	20	1	22
23	-	-			1.8	- - - - -	1.8			2.5	0.7	WW 170			0.7	20	1	24
25	20	1			1.0	EQ. 167B	1.0	1.7			0.7	WW 170			0.7	20	1	26
27	20	1			0.8	BSC 167A	0.8		1.8		1.0	REF. 170			1.0	20	1	28
29	20	1			0.8	BSC 167A	0.8			1.8	1.0	REF. 170			1.0	20	1	30
31	20	1			0.5	WW 167A	0.5	1.5			1.0	DELI REF. 170			1.0	20	1	32
33	20	1			0.5	WW 170	0.5		0.7		0.2	SFTY SHR 170			0.2	20	1	34
35	20	1			0.4	WW 170	0.4			0.4	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42

TOTALS: CONNECTED kVA PER PHASE **12** **11** **10** — CONNECTED TOTAL kVA **33**
CONNECTED AMPS PER PHASE **100** **88** **85** — CONNECTED AVERAGE AMPS PER PHASE **91**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**33** kVA	DIVERSIFIED TOTAL kVA =	**33**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**91**
REMAINDER 0kVA @ 50% =	**0** kVA				

1LB9	1LB5	1LA6	1LA3
1LB10	1LB6	1LA7	1LA4
1QLA3	1LB7	1LB3	1LA5
	1LB8	1LB4	

PANEL SCHEDULES

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

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MICHAEL E. WALL
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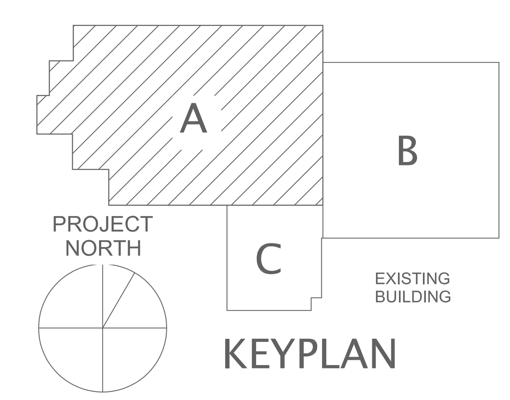
ELECTRICAL
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

THE GREAT SEAL OF THE STATE OF UTAH 1896

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

LE-202

Z:\Proj09\09253\Dwg\LE202.dwg Wed.,05 May.2010 — 4:19pm — lfellows

PANEL 2LB6

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.9	WW 262	0.9	1.6			0.7	WW 258A			0.7	20	1	2
3	20	1			0.9	WW 262	0.9		1.6		0.7	WW 258A			0.7	20	1	4
5	20	1			0.7	WW 262	0.7			1.3	0.5	WW 258A			0.5	20	1	6
7	20	1			0.5	WW 262	0.5	1.5			1.0	REFRIG. 258A			1.0	20	1	8
9	20	1			0.4	WW 262	0.4		1.4		1.0	CFH			1.0	20	1	10
11	20	1			0.4	WW 262	0.4			1.4	1.0	AV. REC. 258A			1.0	20	1	12
13	20	1			0.5	PEDESTAL 262	0.5	1.0			0.5	CART SPACE 258A			0.5	20	1	14
15	20	1			0.5	PEDESTAL 262	0.5		0.7		0.2	SFTY. SHR.			0.2	20	1	16
17	20	1			0.4	PEDESTAL 262	0.4			0.4	0.0	SPARE				20	1	18
19	20	1			0.5	PEDESTAL 262	0.5	0.5			0.0	SPARE				20	1	20
21	20	1			0.5	PEDESTAL 262	0.5		0.5		0.0	SPARE				20	1	22
23	20	1			0.4	PEDESTAL 262	0.4			0.4	0.0	SPARE				20	1	24
25	20	1			0.5	PEDESTAL 262	0.5	0.5			0.0	SPARE				20	1	26
27	20	1			0.5	PEDESTAL 262	0.5		0.5		0.0	SPARE				20	1	28
29	20	1			0.4	PEDESTAL 262	0.4			0.4	0.0	SPARE				20	1	30
31	20	1			1.0	PROJ. 262	1.0	1.0			0.0	SPARE				20	1	32
33	20	1			1.0	AV REC. 262	1.0		1.0		0.0	SPARE				20	1	34
35	20	1			0.2	SFTY. SHR. 262	0.2			0.2	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		6	6	4		CONNECTED TOTAL kVA			16			
						CONNECTED AMPS PER PHASE		52	48	33		CONNECTED AVERAGE AMPS PER PHASE			44			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	16 kVA	DIVERSIFIED TOTAL kVA =	16
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	44
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL 2LA6

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.5	WW 248	0.5	1.3			0.7	WW 247			0.7	20	1	2
3	20	1			0.5	WW 248	0.5		1.3		0.7	WW 247			0.7	20	1	4
5	20	1			1.2	EXAM LIGHTS 248	1.2			2.4	1.2	EXAM LIGHTS 248			1.2	20	1	6
7	20	1			0.4	WW 248	0.4	0.7			0.4	WW 247			0.4	20	1	8
9	20	1			0.4	WW 248	0.4		0.7		0.4	WW 247			0.4	20	1	10
11	20	1			1.0	AV REC. 248	1.0			2.0	1.0	DED. REC. 247			1.0	20	1	12
13	20	1			1.0	AV REC. 248	1.0	1.7			0.7	FLOORBOX 247			0.7	20	1	14
15	20	1			1.0	EQ. REC. 248	1.0		1.7		0.7	FLOORBOX 247			0.7	20	1	16
17	20	1			1.0	EQ. REC. 248	1.0			1.7	0.7	FLOORBOX 247			0.7	20	1	18
19	20	1			1.0	PROJ. 248	1.0	1.7			0.7	FLOORBOX 247			0.7	20	1	20
21	20	1			1.0	PROJ. 248	1.0		1.7		0.7	FLOORBOX 247			0.7	20	1	22
23	20	1			0.2	SFTY. SHR. 248	0.2			0.9	0.7	FLOORBOX 247			0.7	20	1	24
25	20	1			1.0	CADAVER TABLE 248	1.0	1.7			0.7	FLOORBOX 247			0.7	20	1	26
27	20	1			1.0	CADAVER TABLE 248	1.0		1.7		0.7	FLOORBOX 247			0.7	20	1	28
29	20	1			1.0	CADAVER TABLE 248	1.0			2.0	1.0	PROJ. 247			1.0	20	1	30
31	20	1			1.0	CADAVER TABLE 248	1.0	2.0			1.0	EQ. REC. 247			1.0	20	1	32
33	20	1			1.0	CADAVER TABLE 248	1.0		2.0		1.0	EQ. REC. 247			1.0	20	1	34
35	20	1			1.0	CADAVER TABLE 248	1.0			2.0	1.0	CADAVER TABLE 248			1.0	20	1	36
37	20	1			1.0	CADAVER TABLE 248	1.0	2.0			1.0	CADAVER TABLE 248			1.0	20	1	38
39	20	1			1.0	CADAVER TABLE 248	1.0		2.0		1.0	CADAVER TABLE 248			1.0	20	1	40
41	20	1				SPARE	0.0			1.0	1.0	CADAVER TABLE 248			1.0	20	1	42
TOTALS:						CONNECTED kVA PER PHASE		11	11	12		CONNECTED TOTAL kVA			34			
						CONNECTED AMPS PER PHASE		93	93	100		CONNECTED AVERAGE AMPS PER PHASE			95			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	34 kVA	DIVERSIFIED TOTAL kVA =	34
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	95
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL "2LA3"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 275	0.7	1.5			0.7	WW / REC. 277			0.7	20	1	2
3	20	1			0.7	WW 275	0.7		1.5		0.7	WW / REC. 277			0.7	20	1	4
5	20	1			0.4	WW 275	0.4			1.1	0.7	WW / REC. 277			0.7	20	1	6
7	20	1			1.0	PLANT RACK 275	1.0	1.5			0.5	WW 277			0.5	20	1	8
9	20	1			1.0	PLANT RACK 275	1.0		1.5		0.5	WW 277			0.5	20	1	10
11	20	1			1.0	ACFH 275	1.0			1.5	0.5	WW 277			0.5	20	1	12
13	20	1			1.0	EQ. SPACE 275	1.0	1.5			0.5	WW 277			0.5	20	1	14
15	20	1			0.5	WW 275	0.5		1.1		0.5	WW 277			0.5	20	1	16
17	20	1			0.5	WW 275	0.5			1.1	0.5	WW 277			0.5	20	1	18
19	20	1			0.5	WW 275	0.5	0.5			0.0	SPARE				20	1	20
21	20	1			0.7	FLOORBOX 275	0.7		0.7		0.0	SPARE				20	1	22
23	20	1			0.7	FLOORBOX 275	0.7			0.7	0.0	SPARE				20	1	24
25	20	1			0.7	FLOORBOX 275	0.7	0.7			0.0	SPARE				20	1	26
27	20	1			0.7	FLOORBOX 275	0.7		0.7		0.0	SPARE				20	1	28
29	20	1			0.7	FLOORBOX 275	0.7			0.7	0.0	SPARE				20	1	30
31	20	1			0.7	FLOORBOX 275	0.7	0.7			0.0	SPARE				20	1	32
33	20	1			0.7	FLOORBOX 275	0.7		0.7		0.0	SPARE				20	1	34
35	20	1			0.7	FLOORBOX 275	0.7			0.7	0.0	SPARE				20	1	36
37	20	1			0.7	FLOORBOX 275	0.7	0.7			0.0	SPARE				20	1	38
39	20	1			1.0	PROJ. 275	1.0		1.0		0.0	SPARE				20	1	40
41	20	1			0.2	SFTY. SHR. 275	0.2			0.2	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		7	7	6		CONNECTED TOTAL kVA			21			
						CONNECTED AMPS PER PHASE		60	60	51		CONNECTED AVERAGE AMPS PER PHASE			57			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	21 kVA	DIVERSIFIED TOTAL kVA =	21
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	57
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL "2QLA3"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			1.0	FREEZER 271	1.0	1.0			0.0	SPARE				20	1	2
3	20	1			1.0	FREEZER 274	1.0		1.0		0.0	SPARE				20	1	4
5	20	1			1.0	FREEZER 251	1.0			1.0	0.0	SPARE				20	1	6
7	20	1			1.0	FREEZER 258A	1.0	1.0			0.0	SPARE				20	1	8
9	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	10
11	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	12
13	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	14
15	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		2	1	1		CONNECTED TOTAL kVA			4			
						CONNECTED AMPS PER PHASE		17	8	8		CONNECTED AVERAGE AMPS PER PHASE			11			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	4 kVA	DIVERSIFIED TOTAL kVA =	4
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	11
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL "2LB3"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.7	WW 271	0.7	1.4			0.7	PEDESTAL 274			0.7	20	1	2
3	20	1			0.7	WW 271	0.7		1.3		0.5	WW / REC 273A			0.5	20	1	4
5	20	1			0.7	WW 271	0.7			1.3	0.5	WW / 273A			0.5	20	1	6
7	20	1			1.0	ACFH 271	1.0	2.8			1.8	EQ. 272			1.8	30	2	8
9	20	1			1.0	REFRIG. 271	1.0		2.8		1.8	-----			1.8	-	-	10
11	20	1			1.0	OVEN 271	1.0			2.8	1.8	EQ. 272			1.8	30	2	12
13	20	1			0.4	REC. 271	0.4	2.2			1.8	-----			1.8	-	-	14
15	20	1			0.4	REC. 271	0.4		2.2		1.8	EQ. 272			1.8	30	2	16
17	20	1			0.4	FLOORBOX 271	0.4			2.2	1.8	-----			1.8	-	-	18
19	20	1			0.7	WW 274	0.7	2.5			1.8	EQ. 272			1.8	30	2	20
21	20	1			0.7	WW 274	0.7		2.5		1.8	-----			1.8	-	-	22
23	20	1			0.7	WW 274	0.7			1.4	0.7	WW 272			0.7	20	1	24
25	20	1			1.0	ACFH 274	1.0	1.5			0.5	WW 272			0.5	20	1	26
27	20	1			0.7	WW / REC 274	0.7		1.7		1.0	ICE MACHINE 269			1.0	20	1	28
29	20	1			0.7	WW / REC 274	0.7			1.3	0.5	REC. 269 & 270			0.5	20	1	30
31	20	1			1.0	GLASS WASHER 274	1.0	1.4			0.4	REC. 269 & 270			0.4	20	1	32
33	20	1			1.0	REFRIG. 274	1.0		2.0		1.0	J-BOX 269			1.0	20	1	34
35	20	1			1.0	CART 274	1.0			1.2	0.2	SFTY. SHR. 274V			0.2	20	1	36
37	20	1			1.0	CART 274	1.0	1.0			0.0	SPARE				20	1	38
39	20	1			0.7	FLOORBOX 274	0.7		0.7		0.0	SPARE				20	1	40
41	20	1			0.7	FLOORBOX 274	0.7			0.7	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		13	13	11		CONNECTED TOTAL kVA			37			
						CONNECTED AMPS PER PHASE		107	110	90		CONNECTED AVERAGE AMPS PER PHASE			102			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	37 kVA	DIVERSIFIED TOTAL kVA =	37
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	102
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL "2LA4"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS, 200% NEUTRAL

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.9	WW 277A	0.9	1.6			0.7	WW / REC 254			0.7	20	1	2
3	20	1			0.7	WW 277A	0.7		1.4		0.7	WW / REC 254			0.7	20	1	4
5	20	1			0.7	WW 277A	0.7			1.4	0.7	WW / REC 254			0.7	20	1	6
7	20	1			0.5	WW 277A	0.5	1.5			1.0	STATIONARY CYCLE 254			1.0	20	1	8
9	20	1			0.4	WW 277A	0.4		1.4		1.0	STATIONARY CYCLE 254			1.0	20	1	10
11	20	1			1.0	EQ. SPACE 277A	1.0			1.5	0.5	STATIONARY CYCLE 254			0.5	20	1	12
13	20	1			0.5	EQ. SPACE 277A	0.5	0.9			0.4	REC. 254			0.4	20	1	14
15	20	1			0.7	WW 278	0.7		1.7		1.0	REC. 254			1.0	20	1	16
17	20	1			0.7	WW 278	0.7			2.5	1.8	TREADMILL 254			1.8	30	2	18
19	20	1			0.5	WW 278	0.5	2.3			1.8	-----			1.8	-	-	20
21	20	1			0.5	WW / REC 278	0.5		2.3		1.8	TREADMILL 254			1.8	30	2	22
23	20	1			0.5	WW / REC 278	0.5			2.3	1.8	-----			1.8	-	-	24
25	20	1			0.4	WW / REC 278	0.4	1.4			1.0	REFRIG. 254			1.0	20	1	26
27	20	1			0.7	FLOORBOX 278	0.7		1.4		0.7	FLOORBOX 254			0.7	20	1	28
29	20	1			0.7	FLOORBOX 278	0.7			1.4	0.7	FLOORBOX 254			0.7	20	1	30
31	20	1			0.7	FLOORBOX 278	0.7	1.7			1.0	PROJ. 254			1.0	20	1	32
33	20	1			1.0	PROJ. 278	1.0		1.5		0.5	REC. 256			0.5	20	1	34
35	20	1			0.7	OFFICE 277B	0.7			1.1	0.4	REC. 256			0.4	20	1	36
37	20	1			0.2	TASK LIGHT 278	0.2	0.2			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		10	10	10		CONNECTED TOTAL kVA			30			
						CONNECTED AMPS PER PHASE		80	82	86		CONNECTED AVERAGE AMPS PER PHASE			83			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	30 kVA	DIVERSIFIED TOTAL kVA =	30
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	83
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL "2LB4"

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.5	WW 273	0.5	1.3			0.7	FLOORBOX 273			0.7	20	1	2
3	20	1			0.5	WW 273	0.5		1.3		0.7	FLOORBOX 273			0.7	20	1	4
5	20	1			0.4	WW 273	0.4			1.1	0.7	FLOORBOX 273			0.7	20	1	6
7	20	1			1.0	PLANT RACK 273	1.0	1.2			0.2	SFTY. SHR. 273			0.2	20	1	8
9	20	1			1.0	PLANT RACK 273	1.0		1.0		0.0	SPARE				20	1	10
11	20	1			0.7	WW 273	0.7			0.7	0.0	SPARE				20	1	12
13	20	1			0.7	WW 273	0.7	0.7			0.0	SPARE				20	1	14
15	20	1			0.5	WW 273	0.5		0.5		0.0	SPARE				20	1	16
17	20	1			1.0	ACFH 273	1.0			1.0	0.0	SPARE				20	1	18
19	20	1			0.5	EQ. SPACE 273	0.5	0.5			0.0	SPARE				20	1	20
21	20	1			1.0	PROJ. 273	1.0		1.0		0.0	SPARE				20	1	22
23	20	1			0.7	FLOORBOX 273	0.7			0.7	0.0	SPARE				20	1	24
25	20	1			0.7	FLOORBOX 273	0.7	0.7			0.0	SPARE				20	1	26
27	20	1			0.7	FLOORBOX 273	0.7		0.7		0.0	SPARE				20	1	28
29	20	1			0.7	FLOORBOX 273	0.7			0.7	0.0	SPARE				20	1	30
31	20	1			0.7	FLOORBOX 273	0.7	0.7			0.0	SPARE				20	1	32
33	20	1			0.7	FLOORBOX 273	0.7		0.7		0.0	SPARE				20	1	34
35	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		5	5	4		CONNECTED TOTAL kVA			15			
						CONNECTED AMPS PER PHASE		43	44	35		CONNECTED AVERAGE AMPS PER PHASE			41			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	15 kVA	DIVERSIFIED TOTAL kVA =	15
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	41
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL 2LA5

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.4	WW 255	0.4	1.4			1.0	REFRIG. 251			1.0	20	1	2
3	20	1			0.4	WW 255	0.4		1.1		0.7	WW 251			0.7	20	1	4
5	20	1			0.4	WW 255	0.4			0.9	0.5	WW 251			0.5	20	1	6
7	20	1			0.4	WW 255	0.4	1.4			1.0	CFH 251			1.0	20	1	8
9	20	1			0.4	WW 255	0.4		1.4		1.0	EQ. REC. 251			1.0	20	1	10
11	20	1			1.0	AV REC. 255	1.0			2.0	1.0	EQ. REC. 251			1.0	20	1	12
13	20	1			1.0	AV REC. 255	1.0	2.0			1.0	EQ. REC. 251			1.0	20	1	14
15	20	1			1.0	EQ. REC. 255	1.0		1.2		0.2	SFTY SHR 251			0.2	20	1	16
17	20	1			1.0	EQ. REC. 255	1.0			2.0	1.0	CADAVER TABLE 255			1.0	20	1	18
19	20	1			1.0	PROJ. REC. 255	1.0	2.0			1.0	CADAVER TABLE 255			1.0	20	1	20
21	20	1			1.0	PROJ. REC. 255	1.0		2.0		1.0	CADAVER TABLE 255			1.0	20	1	22
23	20	1			0.2	SFTY. SHR. 255	0.2			1.2	1.0	CADAVER TABLE 255			1.0	20	1	24
25	20	1			1.0	CADAVER TABLE 255	1.0	2.0			1.0	CADAVER TABLE 255			1.0	20	1	26
27	20	1			1.0	CADAVER TABLE 255	1.0		2.0		1.0	CADAVER TABLE 255			1.0	20	1	28
29	20	1			1.0	CADAVER TABLE 255	1.0			2.0	1.0	CADAVER TABLE 251			1.0	20	1	30
31	20	1			1.0	CADAVER TABLE 255	1.0	2.0			1.0	CADAVER TABLE 251			1.0	20	1	32
33	20	1			1.0	CADAVER TABLE 255	1.0		2.0		1.0	CADAVER TABLE 251			1.0	20	1	34
35	20	1			1.0	CADAVER TABLE 255	1.0			2.0	1.0	CADAVER TABLE 251			1.0	20	1	36
37	20	1			1.2	EXAM LIGHTS 255	1.2	2.2			1.0	CADAVER TABLE 251			1.0	20	1	38
39	20	1			1.2	EXAM LIGHTS 251	1.2		2.2		1.0	CADAVER TABLE 251			1.0	20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		13	12	10		CONNECTED TOTAL kVA			35			
						CONNECTED AMPS PER PHASE		108	99	84		CONNECTED AVERAGE AMPS PER PHASE			97			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	35 kVA	DIVERSIFIED TOTAL kVA =	35
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	97
REMAINDER 0kVA @ 50% =	0 kVA				

PANEL 2LB5

VOLTS/PHASE/WIRE: 120/208 V, 3 PH 4 WIRE | PANEL SIZE & TYPE: 22" W x 6" D, BOLT-ON | MAIN SIZE & TYPE: 150A AMPERE MAIN CB | LOCATION: | CABINET: FLUSH | NOTES:

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION,GR BAR, INS GR BAR, THRU-FEED LUGS, 200% NEUTRAL,SURGE PROTECTIVE DEVICE

CKT NO	OCP AMP	OCP POLE	LTG	CO	PWR	DESCRIPTION	LCL kVA	A	B	C	LCL kVA	DESCRIPTION	LTG	CO	PWR	OCP AMP	OCP POLE	CKT NO
1	20	1			0.9	WW 258	0.9	1.3			0.4	WW 257			0.4	20	1	2
3	20	1			0.9	WW 258	0.9		1.3		0.4	WW 257			0.4	20	1	4
5	20	1			0.7	WW 258	0.7			1.1	0.4	WW 257			0.4	20	1	6
7	20	1			0.5	WW 258	0.5	0.9			0.4	WW 257			0.4	20	1	8
9	20	1			0.5	WW 258	0.5		0.9		0.4	WW 257			0.4	20	1	10
11	20	1			0.4	WW 258	0.4			1.4	1.0	DED. REC. 257			1.0	20	1	12
13	20	1			0.5	PEDESTAL 258	0.5	1.3			0.7	FLOORBOX 257			0.7	20	1	14
15	20	1			0.5	PEDESTAL 258	0.5		1.3		0.7	FLOORBOX 257			0.7	20	1	16
17	20	1			0.4	PEDESTAL 258	0.4			1.1	0.7	FLOORBOX 257			0.7	20	1	18
19	20	1			0.5	PEDESTAL 258	0.5	1.3			0.7	FLOORBOX 257			0.7	20	1	20
21	20	1			0.5	PEDESTAL 258	0.5		1.3		0.7	FLOORBOX 257			0.7	20	1	22
23	20	1			0.4	PEDESTAL 258	0.4			1.1	0.7	FLOORBOX 257			0.7	20	1	24
25	20	1			0.5	PEDESTAL 258	0.5	1.3			0.7	FLOORBOX 257			0.7	20	1	26
27	20	1			0.5	PEDESTAL 258	0.5		1.3		0.7	FLOORBOX 257			0.7	20	1	28
29	20	1			0.4	PEDESTAL 258	0.4			1.4	1.0	PROJ. 257			1.0	20	1	30
31	20	1			1.0	PROJ. 258	1.0	2.0			1.0	AV REC. 257			1.0	20	1	32
33	20	1			1.0	AV REC. 258	1.0		2.0		1.0	AV REC. 257			1.0	20	1	34
35	20	1			0.2	SFTY SHR 258	0.2			0.2	0.0	SPARE				20	1	36
37	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	38
39	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	40
41	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	42
TOTALS:						CONNECTED kVA PER PHASE		8	8	6		CONNECTED TOTAL kVA			22			
						CONNECTED AMPS PER PHASE		66	66	51		CONNECTED AVERAGE AMPS PER PHASE			61			

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	22 kVA	DIVERSIFIED TOTAL kVA =	22
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	61
REMAINDER 0kVA @ 50% =	0 kVA				

	2LB6	2LA6	2LA3
	2QLA3	2LB3	2LA4
		2LB4	2LA5
		2LB5	

PANEL SCHEDULES

Z:\Proj09\09253\Dwg\LE203.dwg Wed.,05 May.2010 - 4:22pm - lfellows

GSBS ARCHITECTS

375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101

P 801.521.8600
F 801.521.7913

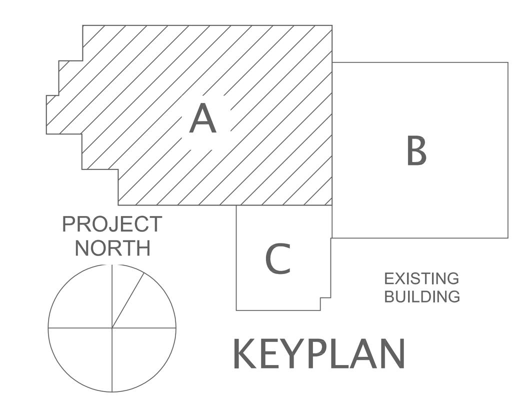
www.gsbsarchitects.com

REVISIONS:

RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

REGISTERED PROFESSIONAL ENGINEER 171614-2202 MICHAEL E. WALL Exp. 3/31/2011 ELECTRICAL STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

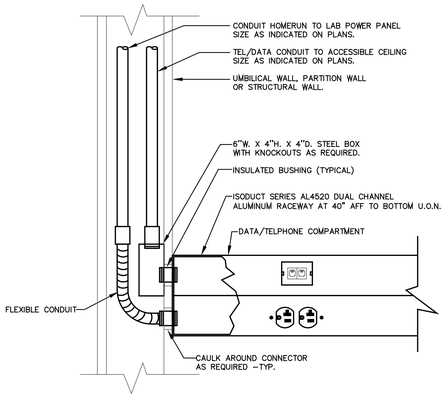
THE GREAT SEAL OF THE STATE OF UTAH 1896

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL PANEL SCHEDULES

CONSTRUCTION DOCUMENTS

LE-203

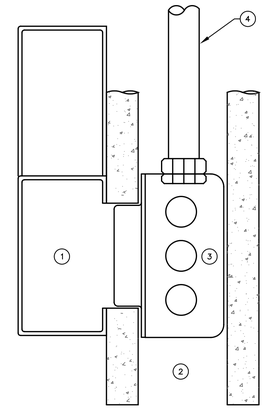


GENERAL NOTES:

1. SEE "I" DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

5 WALL MTD. RACEWAY WITH END FEED ENTRY

NO SCALE



KEY NOTES:

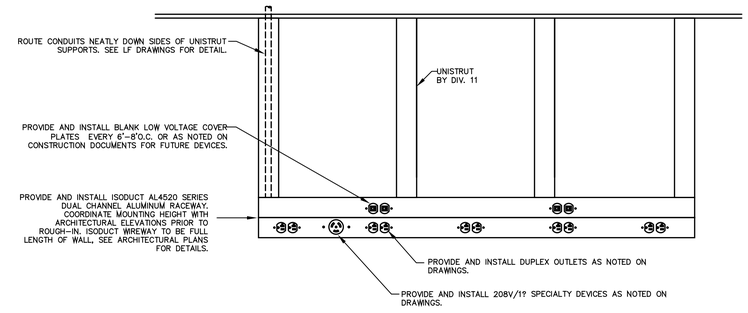
1. TYPICAL WALL-MOUNTED WIREWAY. WIREMOLD ISODUCT AL4520 SERIES CUT OUT IN RACEWAY TO BE DEBURRED AND SMOOTH (POWER BELOW, TEL/DATA ABOVE).
2. INTERSTITIAL SPACE IN WALL.
3. J-BOX MOUNTED TO STRUCTURE WITH WALL. (4S DEEP FOR POWER, 4 11/16 FOR TEL/DATA).
4. CONDUIT TO POWER PANEL (TO ACCESSIBLE CEILING FOR TEL/DATA LOCATION SIZE FOR CAT 5).

GENERAL NOTES:

1. SIMILAR CONFIGURATION FOR TEL/DATA COMPARTMENT.
2. SEE "I" DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

3 WALL ENTRY TO RACEWAY

NO SCALE 16110-17



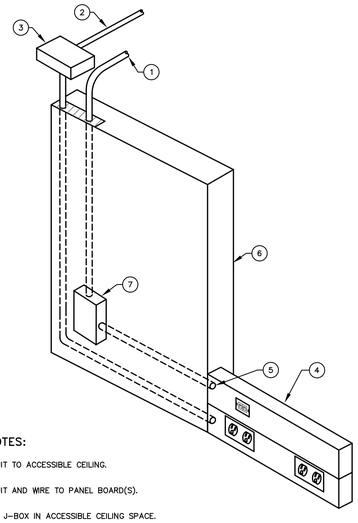
GRAPHICAL REPRESENTATION

GENERAL NOTES:

1. MOUNT TO UNISTRUT OVERHEAD SERVICE CARRIER. SEE LF DRAWINGS FOR MORE INFORMATION.

1 SCHEMATIC WIREWAY DETAIL AT OVERHEAD SERVICE CARRIER LOCATIONS

NO SCALE 16050-02



KEY NOTES:

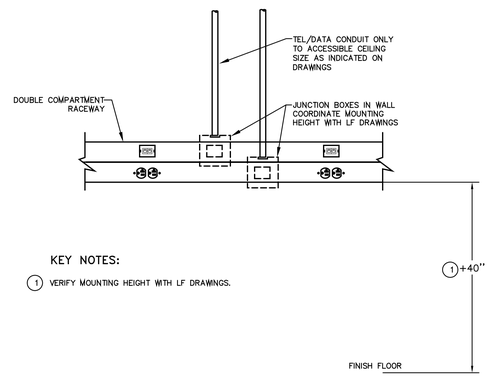
1. EMT CONDUIT TO ACCESSIBLE CEILING.
2. EMT CONDUIT AND WIRE TO PANEL BOARD(S).
3. 4" SQUARE J-BOX IN ACCESSIBLE CEILING SPACE.
4. MULTI-OUTLET WIREWAY ISODUCT AL4520 SERIES MOUNTED ON BENCH PER ARCHITECTURAL REQUIREMENTS. WIREWAY SECTIONS SHALL BE INDIVIDUAL PIECES PER WORKSTATION AND SHALL FIT TIGHT AT EACH END PER ARCHITECTURAL REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.
5. 1-1/4" CONDUIT CONNECTION BETWEEN WIREWAY SECTIONS THROUGH CASEWORK RISER.
6. PIPE DROP UTILITY CHASE WITH REMOVABLE COVER.
7. CODE SIZE J-BOX INSIDE ACCESSIBLE PIPE DROP (EIA/TIA STANDARDS FOR TELE/DATA BOX).

GENERAL NOTES:

1. SEE "I" DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

6 SCHEMATIC ELECTRICAL SERVICE FROM WALL MOUNTED PIPE DROP

NO SCALE 16060-08



KEY NOTES:

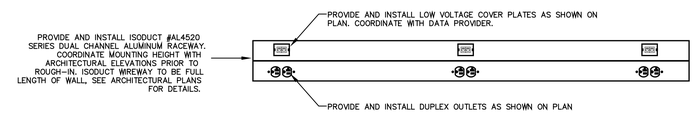
1. VERIFY MOUNTING HEIGHT WITH LF DRAWINGS.

GENERAL NOTES:

1. SEE "I" DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

4 DOUBLE COMPARTMENT RACEWAY FEED

NO SCALE



GRAPHICAL REPRESENTATION

2 SCHEMATIC WIREWAY DETAIL AT SHELF LOCATIONS

NO SCALE 16110-20

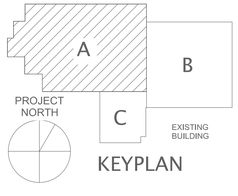
GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
TEL 619 · 297 · 0159
FAX 619 · 294 · 4901

REGISTERED PROFESSIONAL ENGINEER
171614-2202
MICHAEL E. WALL
Exp. 3/31/2011
Electrical
STATE OF UTAH

MICHAEL WALL ENGINEERING
858-638-0600
858-638-0640 (fax)
www.mwalleng.com
4115 Sorrento Valley Blvd.
San Diego, CA 92121
REGISTERED ELECTRICAL ENGINEERS



KEYPLAN

Utah Valley University New Science Building

800 West University Parkway
Orem, Utah 84058

Division of Facilities Construction and Management

DRAWN BY:	CADD
CHECKED BY:	JC
DFCM PROJECT NO.:	09020790
GSBS PROJECT NO.:	2009.115.00
ISSUED DATE:	05.07.2010

LAB ELECTRICAL DETAIL SHEET

CONSTRUCTION DOCUMENTS

LE-301

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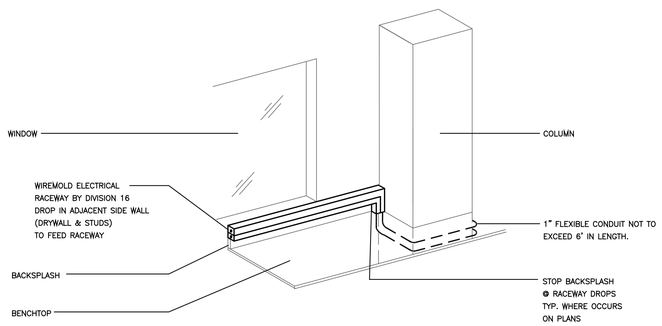
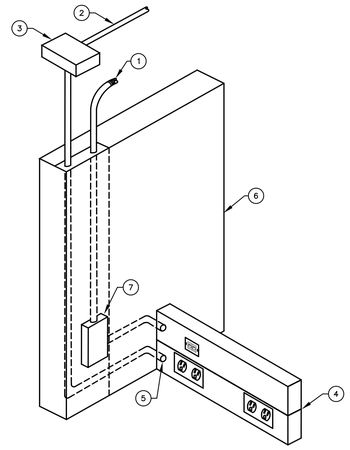


3 TYPICAL RACEWAY ACCESS @ PERIMETER CONC. WALL

NO SCALE



KEY NOTES:

1. EMT CONDUIT TO ACCESSIBLE CEILING.
2. EMT CONDUIT AND WIRE TO PANEL BOARD(S).
3. 4" SQUARE J-BOX IN ACCESSIBLE CEILING SPACE.
4. MULTI-OUTLET WIREWAY. ISODUCT AL4520 SERIES MOUNTED ON BENCH PER ARCHITECTURAL REQUIREMENTS. WIREWAY SECTIONS SHALL BE INDIVIDUAL PIECES PER WORKSTATION AND SHALL FIT TIGHT AT EACH END PER ARCHITECTURAL REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.
5. 3/4" NIPPLE CONNECTION BETWEEN WIREWAY SECTIONS THROUGH CASEWORK RISER.
6. PIPE DROP UTILITY CHASE WITH REMOVABLE COVER.
7. CODE SIZE J-BOX INSIDE ACCESSIBLE PIPE DROP (EIA/TIA STANDARDS FOR TELE/DATA BOX).

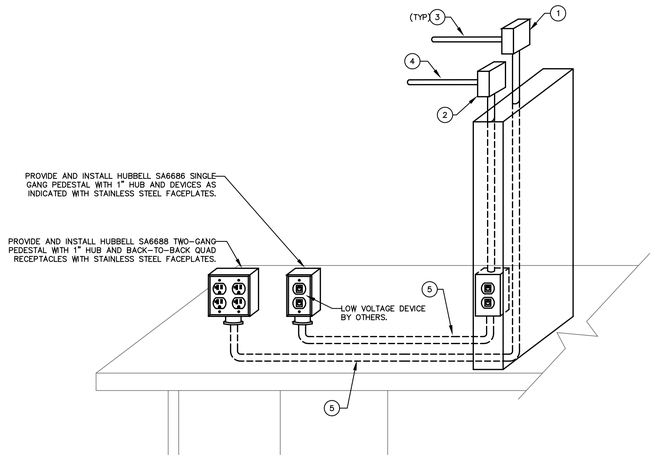
GENERAL NOTES:

1. SEE 'I' DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

1 SCHEMATIC ELECTRICAL SERVICE FROM ISLAND MOUNTED PIPE DROP

NO SCALE

16060-09



NOTE THAT SOME ISLAND BENCH LOCATIONS DO NOT HAVE PIPE DROPS OR ABOVE-BENCH STRUCTURE FOR CONDUIT FEEDS, AND MUST BE FED FROM BELOW. VERIFY ISLAND BENCH CONFIGURATION WITH LF SERIES PLANS AND SPECIFICATIONS TO IDENTIFY CONDUIT PATH REQUIREMENTS.

KEY NOTES:

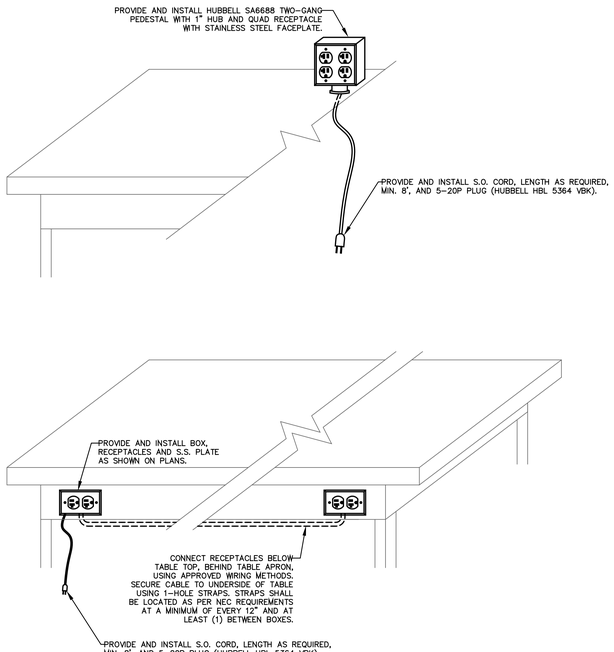
1. 4" SQUARE J-BOX IN ACCESSIBLE CEILING SPACE.
2. 4-11/16" J-BOX IN ACCESSIBLE CEILING SPACE.
3. EMT CONDUIT AND WIRE TO PANEL BOARD AS PER PLANS.
4. 1-1/4" EMT CONDUIT PER TELE/DATA LOCATION TO CABLE TRAY IN CORRIDOR.
5. ROUTE CONDUIT THROUGH CHASE IN MILLWORK.

GENERAL NOTES:

1. SEE 'I' DRAWINGS FOR ADDITIONAL TEL/DATA REQUIREMENTS.

4 LAB BENCH PEDESTAL DETAIL

NO SCALE



GENERAL NOTES:

1. THERE SHALL BE ONLY (1) CORD PER TABLE.

2 LAB BENCH DETAIL

NO SCALE

GSBS ARCHITECTS
375 WEST 200 SOUTH
SALT LAKE CITY, UT 84101
P 801.521.8600
F 801.521.7913
www.gsbsarchitects.com

REVISIONS:

RFD
RESEARCH FACILITIES DESIGN
3965 Fifth Avenue, Suite 400
San Diego, California 92103
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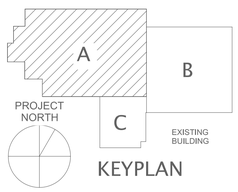

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LAB ELECTRICAL DETAIL SHEET

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LE-302

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