



State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Department of Administrative Services

KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON
Director

ADDENDUM #2

Date: September 11, 2007

To: Contractors

From: Wayne Smith, Project Manager, DFCM

Reference: Building 5030 Dining Hall Remodel/Addition – Camp Williams
Utah National Guard – Riverton, Utah
DFCM Project No. 06296480

Subject: **Addendum No. 2**

Pages	Addendum	1	page
	Revised Project Schedule	1	page
	<u>Architects Addendum</u>	<u>51</u>	<u>pages</u>
	Total	53	pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

- 1.1 **SCHEDULE CHANGES** – There has been a change to the Project Schedule. The bid date has been moved to **Tuesday, September 18, 2007 at 3:00 PM3**
- 1.2 **GENERAL** – Harris & Associates – Clarifications and Specifications.
- 1.3 **NOTICE - In order to expedite this contract it is necessary that all bidders submit their subcontractor lists with their sealed bids.**

**Division of Facilities Construction and Management**

**Stage II
PROJECT SCHEDULE – REVISED
PER ADDENDUM NO. 2 ISSUED SEPTEMBER 11, 2007**

PROJECT NAME: BUILDING 5030 DINING HALL REMODEL/ADDITION - CAMP WILLIAMS UTAH NATIONAL GUARD – RIVERTON, UTAH				
DFCM PROJECT #: 06296480				
Event	Day	Date	Time	Place
Stage II Bidding Documents Available	Monday	August 27, 2007	4:00 PM	DFCM 4110 State Office Building SLC, UT and the DFCM web site*
Mandatory Pre-bid Site Meeting	Thursday	August 30, 2007	9:00 AM	Building 1190 Camp Williams 17800 South Redwood Road Riverton, UT
Deadline for Submitting Questions	Friday	September 7, 2007	4:00 PM	Wayne Smith – DFCM E-mail wfsmith@utah.gov Fax 538-3267
Addendum Deadline (exception for bid delays)	Tuesday	September 11, 2007	2:00 PM	DFCM web site*
Prime Contractors Turn in Bid, Bid Bond, and Subcontractors List	Tuesday	September 18, 2007	3:00 PM	DFCM 4110 State Office Building SLC, UT
Substantial Completion Date	Monday	June 2, 2008		

* NOTE: DFCM's web site address is <http://dfcm.utah.gov>

ADDENDUM #2

Utah National Guard
Bldg. 503 Mess Hall
Camp W.G. Williams, Utah

ARCHITECTURAL ADDENDUM ITEMS

SPECIFICATION SECTION 033000

2.6 A, 1. Available Products: Add the following:

- d. Vipor -VaporCheck 16-mil

SPECIFICATION SECTION 075419

2.1 A1 Add the following to approved manufactures

- d. Versico
- e. GAF

SPECIFICATION SECTION 087100

2.4 B, 1 Available Manufactures:

Add the following: d. Hager 3400 Series – Grade 1

2.6 F Available Manufactures:

Add the following: 4. Hager 4500 Series – Grade 1

2.8 D Available Manufactures:

Add the following: 4. Hager 5100 Series – Grade 1

2.12 E Available Manufactures:

Add the following: 4. Hager

2.13 D Available Manufactures:

Add the following: 4. Hager

SPECIFICATION SECTION 114000

Item #1 Revise header on all sheets in this section to be the same as all other section. Wrong header was accidentally put on this section.

SHEET AE109

Item #1: Add the following general note to sheet AE109.

1. PROVIDE 22" X 30" ACCESS TO ALL PARTS OF THE ATTIC, BOTH NEW AND EXISTING. COORDINATE LOCATION WITH ARCHITECT.

SHEET AE402

Item #1 Revise reference in note at bottom of detail 2/AE402 from 3/AE601 to 3/AE502

Item #2 Add the following general note to Sheet AE402.

1. PROVIDE VAPOR RETARDER UNDER ALL NEW INTERIOR CONCRETE SLABS

MECHANICAL ADDENDUM ITEMS

SHEET - MD101

Add the following to Keyed Note #1: "EXISTING HOOD FIRE SUPPRESSION SYTSTEM SHALL REMAIN."

SHEET - M101

1. Delete General Notes 6, 7, & 8. Refer to specifications for diffuser, grilles and registers to be used in the different types of ceilings.

SHEET - P401

1. Locate water header on west wall of Mech Rm 104 in lieu of the east wall.
2. Route water and gas piping in mechanical room so piping does not run over electrical panel on the east wall.

SPECIFICATIONS

SECTION - 22 4200 Plumbing Fixtures

1. Delete Section. See attached section for plumbing fixtures.

PRIOR APPROVALS

The following manufacturers, trade names and products are allowed to bid on a name brand only basis with the provision that they completely satisfy all and every requirement of the drawings, specifications and all addenda shall conform to the design, quality and standards specified, established and required for the complete and satisfactory installation and performance of the building and all its respective parts.

Item

Manufacturer

Registers, Grilles & Ceiling Diffusers	Carnes
Exhaust Fans	Broan, Carnes
Manual Volume Dampers	Greenheck
Flex Duct	Hart & Cooley
HET's	Hercules
Duct Furnaces	Sterling, Reznor
Direct Evap Coolers	Ares, Champion
Split System AC Units	Daiken AC

SHEET PD101

Item #1 Relocate lavatory in Unisex RR 120 and cap piping as indicated and replace sheet PD101 with attached PD101

SHEET P101

Item #1 Reinstall lavatory in Unisex RR 120 as indicated and replace sheet P101 with attached P101.

ELECTRICAL ADDENDUM ITEMS

SPECIFICATIONS

1. Section 283111 Digital, Addressable Fire Alarm System added. See attachment.
2. Section 271500 – approved cable type shall be Commscope – refer to updated Utah National Guard Communications Standard UT-G6-C.
3. Section 261200 Medium-Voltage Transformers added. See attachment.

DRAWINGS

Replace all electrical drawings with the attached sheets. A description of the changes on each sheet are described below:

EE001

4. Fire alarm device callouts updated to include bell.

EE502

5. One-line diagram updated.
6. Main circuit breaker to be electronic trip.
7. Provide 120kA per phase TVSS on main service entrance gear.

EE504

8. Sheet revised to include new communications standard.

ED101

9. Remove all fire alarm equipment and devices
10. Mechanical equipment shown to be removed.

EL101

11. Change fixture OC-99 to OC-26.

EL601

12. Change fixture OC-99 to OC-26.
13. Prior approved equal EOC-32: DECO #D444-42C-EB-SCBA-EMB
14. Prior approved equal OC-26: DECO #D444-100M-DT-SCBA

EP101

15. Outlets added in Salad Prep. Rm. 117

16. Existing equipment on the salad bar that is being relocated is to be circuited to their respective existing circuits in Panel "A".
17. Verify all newly shown and previously shown mechanical equipment and connection requirements. Various mechanical units have been modified/added.
18. Rooftop equipment to be shown on new sheet EP102

EP102

19. New sheet added.
20. Rooftop equipment shown on the roof. Verify all newly shown and previously shown mechanical equipment and connection requirements. Various mechanical units have been modified/added.
21. Heat trace ice melt added in roof gutters and downspouts.

EP601

22. Panel schedules for reference added for existing panels.
23. Panel schedules updated.
24. Equipment schedule moved to EP602.

EP602

25. Equipment schedule updated.

FA101 and FA601

26. Fire alarm system to be all new addressable system. The new system shall be monitored by the fire alarm system at the Guard Shack (Simplex panel).
27. Contractor shall be responsible for connection wiring to Guard Shack fire alarm panel. Field verify requirements prior to bid.

End of Addendum.

SECTION 22 4200 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. All pertinent sections of Division 15, Mechanical General Requirements are a part of the work described in this section. Division 1 is a part of this and all other sections of these specifications.

1.2 SCOPE OF WORK:

- A. This work shall include all plumbing fixtures required for the complete plumbing system.
- B. A complete rainwater system.
- C. All electrical wiring not specified in other sections but required for a complete operation system, shall be work of this section.

1.3 CODES AND STANDARDS:

- A. All work included in the scope of this specification shall conform to the latest adopted versions of applicable codes and standards, including the following:

- International Plumbing Code, 2006 (IPC)
 - International Building Code, 2006

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
 - 1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities" Public Law 90-480, "Architectural Barriers Act";

- and Public Law 101-336, "Americans with Disabilities Act"; about plumbing fixtures for people with disabilities.
- D. Regulatory Requirements: Comply with requirements in U.S. Architectural & Transportation Barriers Compliance Board's "Uniform Federal Accessibility Standards (UFAS), 1985-494-187" about plumbing fixtures for people with disabilities.
 - E. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
 - F. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
 - G. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
 - H. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
 - 1. Atmospheric Vacuum Breakers: ASSE 1001.
 - 2. Brass and Copper Supplies: ASME A112.18.1M.
 - 3. Manual-Operation Flushometers: ASSE 1037.
 - 4. Plastic Tubular Fittings and Piping: ASTM F 409.
 - 5. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.
 - 6. Tubular Brass Drainage Fittings and Piping: ASME A112.18.1M.
 - I. Comply with the following applicable standards and other requirements specified for miscellaneous components:
 - 1. Floor Drains: ASME A112.21.1M.
 - 2. Grab Bars: ASTM F 446.
 - 3. Hose-Coupling Threads: ASME B1.20.7.
 - 4. Hot-Water Dispensers: ASSE 1023 and UL 499.
 - 5. Off-Floor Fixture Supports: ASME A112.6.1M.
 - 6. Pipe Threads: ASME B1.20.1.
 - 7. Plastic Shower Receptors: ANSI Z124.2.
 - 8. Plastic Toilet Seats: ANSI Z124.5.
 - 9. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.5 SUBMITTALS:

- A. Submit product data in accordance with Division 1 and Section 15050. Submit the following:

Piping
Valves
Plumbing Fixtures and Accessories
Water Hammer Arrestors

Pressure Reducing Valves
Reduced Pressure Backflow Preventors
Sterilization Contractor

1.6 TESTS:

- A. Defective Work: If inspection or tests show defects, such defective work or material shall be replaced or corrected and inspection and tests shall be repeated. All repairs to piping shall be made with new materials. No caulking or screwed joints or holes will be acceptable.
- B. All defects in material and workmanship which appear during the test shall be promptly remedied and the test shall be reapplied.
- C. Enclosed Piping: Any piping which is to be insulated, placed within the construction, or otherwise concealed shall be carefully tested before being permanently enclosed.
- D. Test Instruments: All testing shall be performed in the presence of the Architect and his Mechanical Engineer and shall meet with their approval. Instruments required for making the tests shall be provided by this Contractor. Relief valves set to avoid excessive pressure during testing shall be provided.
- E. Required Adjustments: Before final acceptance of the piping system as a whole, this Contractor shall make all required adjustments, including controls, flush valves, etc., and shall place the entire piping system in a perfect operating condition. At the completion of the work, this Contractor shall furnish the Architect with all certificates of inspection.

1.7 GENERAL REQUIREMENTS:

A. Existing Lines:

- 1. Any utility line uncovered during construction that is not clearly defined on the drawings shall be immediately brought to the attention of the Architect and Owner. The Owner and Architect will subsequently inform the Contractor what should be done. A change order shall be initiated in accordance with the General Conditions for such occurrences. Relocation of any existing piping shall be done with the same material and fittings as the original installation. Damaged or removed insulation shall be repaired and/or replaced.

B. Vents:

- 1. The entire system shall be properly vented to atmosphere and all gases shall be discharged at points not less than 14 inches above the roof line. Each fixture shall be back-vented on the discharge side of safe water seal and arranged for free passage of all gases to atmosphere. Vent lines are to be offset, if necessary, so that they will not pierce the roof at points closer than 5 feet 0 inches from the edge of the roof, except where shown otherwise on the drawings.

C. Cleanouts:

1. Full size cleanouts shall be installed at the base of each soil waste or rainwater stack and at the end of each horizontal run of sanitary piping. All other cleanouts shall be installed where shown on the drawings and where required by State, local, or National Plumbing Codes.
2. Cleanouts shall have cast-iron bodies with threaded brass screw plugs. They shall be the full size of the pipe line in which they are installed, up to and including 4 inches. All cleanouts shall be installed in locations easily accessible for rodding. Where stacks or other piping is concealed, cleanouts shall be installed above the floor with extensions made to the finished wall surface. Cleanouts in walls shall be J. R. Smith 4402 with countersunk plugs and round stainless steel access covers. In floors, J. R. Smith 4023 square top cleanouts with countersunk plugs and round scoriated polished nickel bronze access covers with frames shall be used.
3. Cleanouts shall be J. R. Smith, Zurn, Wade, or Josam. J. R. Smith references are used herein.
4. The cleanouts bodies provided in finished floors shall be of the type which allows flooring to be added, i.e. Carpet, Tile or Wood to fit within the manufactured ring and still be flush with the floor.

D. Traps:

1. Each fixture and appliance installed in the work and discharging water into the sewer or house drainage system shall have a seal trap arranged in connection with a complete venting system and shall be installed so that all gases shall pass freely to the atmosphere with no pressure or siphon condition on the water seal. Each fixture shall have a water seal of not less than (2) inches and not more than (4) inches except where a deeper seal is found necessary by the Administrative Authority for special conditions. Fixtures connected to acid waste piping shall be acid waste type.

E. Flashing and Sleeves:

1. Furnish and install on each pipe passing through the roof a Stoneman Stormtite four pound seamless lead flashing assembly extending horizontally not less than 12-inches all around. Flashing to have steel reinforced conical boot and counter-flashed with a hooded cast iron counter-flashing. Seal the neck of the flashing to the pipe with permaseal waterproofing compound and secure the counter-flashing to the pipe with vandal proof screws. Fill the top annular space of counter-flashing with epoxy compound. Alternate using open top models of all pipes. See specification Section 15100.
2. Sleeves for pipes passing through walls, floors or ceilings shall be as specified in Section 15060.

F. Roof, Floor and Cleanout Pans:

1. Roof drains, floor drains and cleanouts shall have 4-pound lead sheet pans 30 inches square or as noted. Roof flashing members shall be placed into position but the final installation shall be made by the Roofer under supervision of this section. Floor drains with clamping collars shall be complete with pan. Provide code approved pans for showers.

G. Burying Pipe:

1. Outside pipe placed underground is to be buried a minimum of 4 feet to prevent freezing. All backfill shall be mechanically compacted to meet the density requirements set forth in Division

H. Courses of Water Pipes:

1. Water pipes shall not be exposed in finished rooms except where noted on plans or as permitted by the Architect, except the finished brass supplies that are a part of the fixture trimmings. Pipes are to be run in tunnel, furred ceiling and walls, and behind or under cabinets as shown.

I. Sewer Location:

1. Where the location of the sewer is not clearly defined by dimension on the drawings, it shall not be closer than 10 feet horizontally to a water main or service line, except where the bottom of the water pipe will be at least 12 inches above the top of the sewer pipe, where they shall cross each other at neat 90-degree angles. Verification of existing sewer main elevations shall be made prior to connection or installation of any new lines. Should installation at the minimum required slope be attainable at the connection points shown, the Architect shall be immediately notified before installation of the line possible.

J. Piping Layouts:

1. Layout of piping shown on drawings is in a general sense diagrammatic as to the exact location of piping. It is to be understood by the Contractor that unforeseen conditions and obstacles at the site may not permit the running of piping as scaled from the drawings, but changes shall not be made without the written permission of the Architect. The Plumbing Contractor shall check toilet room details as shown on the Architectural drawings. He shall check the grade of a waste line with a transit before installing the pipe.
2. See the Plumbing Fixture Schedule and Lab Equipment Schedule on plans for the sizing of connecting lines to each fixture.

K. Floor Drains:

1. Exposed surfaces of floor drains, unless otherwise noted, shall be finished in nickel bronze. Floor waterproofing materials shall be securely anchored in the clamping ring of the floor drain. Floor drain strainers in ceramic tile floors shall be square. The tops of all drains shall be set flush with the finished floor level except where floors are warped to drains, where these shall be set flush. The

Contractor shall consult with the trades responsible for adjacent work before establishing final finish elevations. Openings shall be core drilled.

L. Waste and Vent System:

1. A complete plumbing waste and vent system shall be furnished and installed for soil and acid waste. It shall be installed in strict compliance with the International Plumbing Code. It shall be incorporated into the space constraints in the building.

M. Connections to Equipment:

1. The Plumbing Contractor shall rough in all utility lines to the cabinets, tables, hoods, and terminate utilities with shutoff valve and waste and vent lines with caps. All such rough-ins shall be labeled. Plumbing contractor shall supply all stops and supply tubing, as well as P-traps to complete the installation. Final connections to be by the Plumbing Contractor.
2. The cabinet supplier shall provide complete roughing in drawings showing the exact location of all stub-ups in floors and walls. It shall be the responsibility of the Plumbing Contractor to install all sleeves through walls and floors and to make all final connections. Piping through floors shall be sleeved, caulked, and flashed water tight to prevent leakage should a leak occur.

1.8 EQUIPMENT AND INSTALLATION:

A. Pressure-Reducing Valve (Water):

B. Pilot Operated PRV: (Building main PRV station)

1. Pilot operated pressure-reducing valves of the sizes and capacities where shown on the drawings shall be furnished and installed to provide desired downstream pressure regardless of a changing flow or varying inlet pressure. Each valve shall be complete with gate valve, integral strainer, epoxy coated valve seats, pressure gauge, and union upstream of the valve, and a pressure gauge and gate valve downstream of the valve. Pressure-reducing valves shall be Watts U58 for 2" and smaller, Watts ACV 115 for 2" and larger or equal of Clay Valve, Watson, McDaniel or Mueller.

C. Direct-Acting PRV: (Sub System PRV Stations)

1. Single-seated pressure-reducing valves of the sizes and capacities shown on the drawings shall be furnished and installed. Each valve shall be complete with gate valve, strainer, pressure gauge, and union upstream of the valve, and a pressure gauge and gate valve downstream of the valve. A globe valve in a bypass line shall be installed around the reducing station.
2. Install PRV with integral bypass to relieve hot water pressure. Do not put check valve in cold water line.

3. Pressure-reducing valves shall be Watson, Clay Valve, McDaniel Style B, Charles Bailey, Boylston or Watts.

D. Backflow Preventers:

1. Reduced pressure principle assemblies shall be tested, approved and listed by the Foundation for Cross-Connection Control and Hydraulic Research. Backflow Preventers shall be Watts, or Febco.
2. Backflow preventers shall be located no more than 4 feet above finished floor, or as required to allow for maintenance and testing. Provide adequate floor supports so that no undue strain is placed upon connected piping.

E. Vacuum Breakers:

1. All water outlets with hose ends where backflow is possible and where required by code shall be complete with vacuum breakers. Where vacuum breaker is not specified with fixture trim, the breaker shall be installed in the supply line to the fixture. Vacuum breakers in the supply line shall be Pressure Vacuum breaker by Watts.
2. Atmospheric vacuum breakers shall be of chrome-plated brass, or specified finish, and shall be FEBCO or Watts. Vacuum breaker shall be in accordance with American society of Sanitary Engineers (ASSE) Standard 1011 and shall be capable of being drained if located where freezing is possible.
3. Pressure type vacuum breakers shall be Febco or Watts.

F. Access Panels:

1. Access panels shall be installed over all concealed valves, cleanout, and any other concealed equipment that may require access for operation, maintenance, and repair. Access box locations shall be verified with the Architect prior to installation.

Tile Walls: J.R. Smith, Zurn, Wad, Josam or Watts, chrome plated
Ceilings: J.R. Smith, Zurn, Wade, Josam or Watts, bonderized and primed.

1.9 STERILIZATION:

- A. After the entire system is completed and tested for pressure, and just before the building is ready to be occupied, this Contractor shall sterilize the system as follows: After the mains are flushed, a water and chlorine solution concentrated to 250 ppm shall be introduced. The treated water and chlorine solution shall be retained for not less than 24 hours. All valves, faucets, etc. shall be opened and closed during this time before final flushing out of the system. Flush system with clean water until the chlorine content is less than 0.2 PPM. The water system will not be accepted until a negative bacteriological test is made on water taken from the systems.

1.10 COORDINATION

- A. Coordinate roughing-in and final plumbing fixture locations, and verify that fixtures can be installed to comply with original design and referenced standards.

PART 2 - PRODUCTS:

2.1 MANUFACTURERS

- A. List of manufacturers and their products or manufacturers only, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified in other Part 2 articles or approved equal.

2.2 PLUMBING FIXTURES:

- A. This Contractor shall furnish and install all fixtures shown on the drawings or specified hereinafter, shall make all parts complete, and shall leave the entire system in perfect working order. He shall clean and adjust all fixtures before leaving the job. Any damaged or cracked fixtures shall be replaced at the Contractor's expense.
- B. The fixtures shall be all new and complete as shown or described in catalog or as required for the work. The fixtures shall include accessible loose key compression stops above the floor in supplies to all fixtures and cast brass P-traps unless otherwise shown. Trim for all fixtures shall be chrome plated and all trim shall match in design. All exposed piping in occupied spaces shall be chrome plated. Supply faucets shall have renewable seats and barrels.
- C. Floor drains and floor sinks shall be furnished with clamping collars where a waterproof membrane is provided. Membranes will be required for all drains installed above occupied spaces. See architectural drawings for additional locations of membranes. Use 40 mil pvc liner or 4# lead.

PART 3 - FIXTURE SCHEDULE

3.1 FIXTURE SCHEDULE

WC-1 ADA Water Closet: Kohler K-4368 Highcliff vitreous china floor mounted elongated toilet with 2-1/4" passageway, 1-1/2" top spud, bolt caps; Sloan 111 1.6 gallons per flush. Install actuator on wide side of fixture.

**UTAH NATIONAL GUARD
BUILDING 503 MESS HALL REMODEL
CAMP W.G. WILLIAMS**

**DFCM PROJECT NO.:
06296480**

WC-2 Water Closet: Kohler K-4350 Wellcome vitreous china floor mounted elongated toilet with 2-1/4" passageway, 1-1/2" top spud and bolt caps; Sloan 111 flush valve 1.6 gallons per flush.

U-1 Urinal: Kohler K-5016-ET Dexter vitreous china, wall hung elongated urinal with 3/4" top spud; Sloan 186-1.0 flush valve, 1.0 gallons per flush.

L-1 Lavatory: Kohler K-2196 Pennington self rimming vitreous china oval lavatory with 4" faucet centers; K-7715 open grid strainer; Chicago 802-CP lavatory faucet with 4" faucet centers, lever handles and vandal resistant aerator. Provide angle stops and chrome plated copper supplies and 17 ga. Cast brass, chrome plated "P" trap.

SS-2 Service Sink: Kohler K-6710 Whitby enameled cast iron corner service sink; K-8940 coated wire rim guard; K-9146 strainer; 3" cast iron "P" trap; Chicago 897-CP combination service sink fitting with vacuum breaker, 3/4" hose thread and pail hook on spout, wrist blade handles, wall brace and 1/2" female union inlets with integral stops. Polished chrome plated finish. Provide 5'-0" of 3/8" diameter white rubber hose on spout outlet and chrome plated wall hook.

FD-1 Floor Drain: Smith figure 2010-BP cast iron body and flashing collar with square nickel bronze adjustable strainer head with secured square hole grate and trap primer connection.

FD-2 Floor Drain: Smith figure 2110-NB medium duty floor drain; cast iron body and flashing collar with nickel bronze grate.

FS-1 Floor Sink: Smith figure 3100 cast iron flanged receptor with acid resistant interior coating, nickel bronze rim and secured grate and aluminum dome bottom strainer. Coordinate grate configuration with Kitchen Equipment drawings.

END OF SECTION 22 4200

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KEYED NOTES

- 1 EXISTING FIXTURES TO REMAIN. CONNECT TO EXISTING DHW & DCW LINES ABOVE CEILING.
- 2 CONNECT TO EXISTING 1 1/2" 25 PSI GAS LINE. FIELD VERIFY EXACT SIZE AND LOCATION.
- 3 NEW ROOTS SERIES B3 ROTARY GAS METER MODEL SM775 4500 CFH.
- 4 25 PSI TO 4 OUNCE GAS PRESSURE REGULATOR, 4500 CFH.
- 5 SENSING SHUT OFF VALVE.
- 6 GAS LINE UP TO ROOFTOP AC UNIT.
- 7 WATER LINE UP TO EVAP COOLER ON ROOF.
- 8 GAS LINE UP TO DUCT FURNACE ON ROOF.
- 9 CONNECT TO EXISTING 4" WASTE LINE. FIELD VERIFY EXACT SIZE, LOCATION AND ELEVATION OF EXISTING PIPING.
- 10 CONNECT TO EXISTING 6" WATER LINE. FIELD VERIFY EXACT SIZE, LOCATION AND ELEVATION OF EXISTING LINE.
- 11 PROVIDE NEW 1 1/2" COMPOUND WATER METER IN CONCRETE METER BOX.
- 12 RUN NEW PIPING IN CHASE CONSTRUCTED AROUND BEAM ARCHITECTURAL.
- 13 PROVIDE SHUT OFF VALVE AND DRAIN FOR EVAP COOLER SUPPLY ON WALL. PIPE DRAIN TO SERVICE SINK.
- 14 DROP DHW, DCW AND GAS LINES DOWN WALL. EXTEND TO FIXTURES AND EQUIPMENT BELOW COUNTERTOP.
- 15 INSTALL GAS SHUT OFF VALVE PROVIDED WITH HOOD FIRE PROTECTION SYSTEM.
- 16 REINSTALL EXISTING WALL HINGE LAVATORY. PROVIDE NEW WALL HANGER PLATE AND FAUCET TYPICAL TO L-1 LAVATORY FAUCET.

GENERAL NOTES

1. PROVIDE ALL REQUIRED CONNECTIONS TO NEW PLUMBING FIXTURES AND OWNER PROVIDED EQUIPMENT. ALL FIXTURES ARE NEW UNLESS NOTED OTHERWISE. DOOR/KITCHEN WITH KITCHEN EQUIPMENT. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH LOCAL AND CURRENT PLUMBING CODES.



Utah National Guard
 BLDG 503 MESS HALL REMODEL
 CAMP W/G WILLIAMS
 UTAH

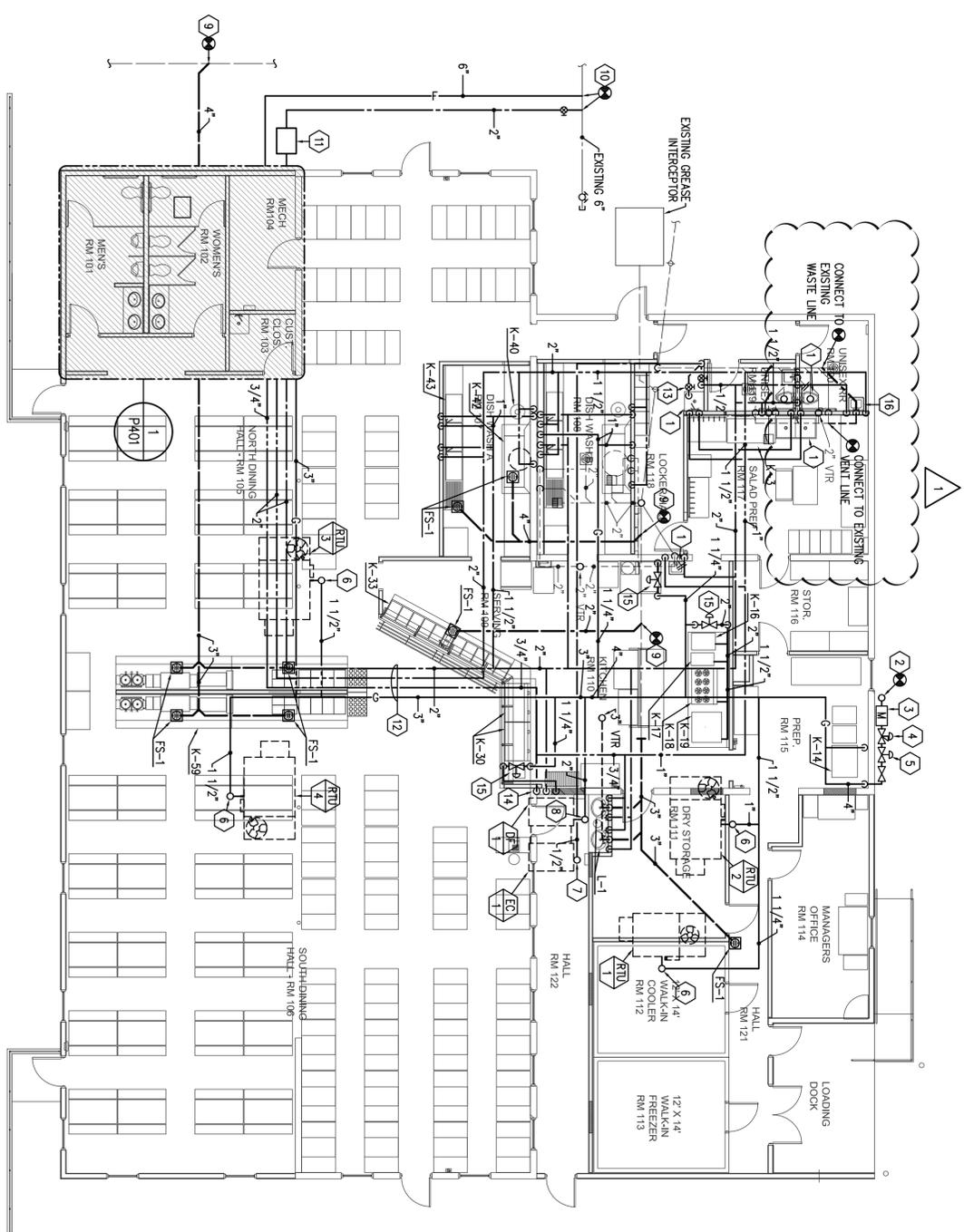
PLUMBING PLAN

REVISIONS DATE BY DESCRIPTION

8.30.07 MECHANICAL ADDENDUM #1

DESIGNED BY GR
 CHECKED BY BB

PROJECT NO. 092996480
 DATE AUG 22, 2007
 DRAWING NO. P101



PLUMBING PLAN
 SCALE: 1/8" = 1'-0"
 P101

18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
A	B	C	D	E	F	G	H	I	J	K	L							

SECTION 261200 - MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of transformers with medium-voltage primaries:
 - 1. Pad-mounted, liquid-filled transformers.

1.3 DEFINITIONS

- A. NETA ATS: Acceptance Testing Specification.

1.4 SUBMITTALS

- A. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, location of each field connection, and performance for each type and size of transformer indicated.
- B. Manufacturer Seismic Qualification Certification: Submit certification that transformer assembly and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems" Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Qualification Data: For testing agency.
- D. Source quality-control test reports.
- E. Field quality-control test reports.

- F. Follow-up service reports.
- G. Operation and Maintenance Data: For transformer and accessories to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of transformers and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with IEEE C2.
- E. Comply with ANSI C57.12.10, ANSI C57.12.28, IEEE C57.12.70, and IEEE C57.12.80.
- F. Comply with NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store transformers protected from weather and so condensation will not form on or in units. Provide temporary heating according to manufacturer's written instructions.

1.7 PROJECT CONDITIONS

- A. Service Conditions: IEEE C37.121, usual service conditions except for the following:
 - 1. Exposure to significant solar radiation.
 - 2. Altitudes above **4600 feet (1402 m)**.
 - 3. Ambient temperatures from -20-degrees F to 110-degrees F.

1.8 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1.
 - 2. Cooper Industries; Cooper Power Systems Division.
 - 3. Cutler-Hammer.
 - 4. Federal Pacific Transformer Company; Division of Electro-Mechanical Corp.
 - 5. GE Electrical Distribution & Control.
 - 6. Siemens Energy & Automation, Inc.
 - 7. Uptegraff, R. E. Mfg. Co.
 - 8. Virginia Transformer Corp.

2.2 PAD-MOUNTED, LIQUID-FILLED TRANSFORMERS

- A. Description: ANSI C57.12.13, IEEE C57.12.00, pad-mounted, 2-winding transformers.
- B. Insulating Liquid: Less flammable, edible-seed-oil based, and UL listed as complying with NFPA 70 requirements for fire point of not less than 300 deg C when tested according to ASTM D 92. Liquid shall be biodegradable and nontoxic.
- C. Insulation Temperature Rise: 55 deg C when operated at rated kVA output in a 40 deg C ambient temperature. Transformer shall be rated to operate at rated kilovolt ampere in an average ambient temperature of 30 deg C over 24 hours with a maximum ambient temperature of 40 deg C without loss of service life expectancy.
- D. Basic Impulse Level: 95 kV.
- E. Full-Capacity Voltage Taps: Four 2.5 percent taps, 2 above and 2 below rated high voltage; with externally operable tap changer for de-energized use and with position indicator and padlock hasp.
- F. High-Voltage Switch: 200 A, make-and-latch rating of 10-kA RMS, symmetrical, arranged for loop feed with 3-phase, 4-position, gang-operated, load-break switch that is oil immersed in transformer tank with hook-stick operating handle in primary compartment.
- G. Primary Fuses: 150-kV fuse assembly with fuses complying with IEEE C37.47.
 - 1.
 - 2. Bay-O-Net liquid-immersed fuses in series with liquid-immersed current-limiting fuses. Bay-O-Net fuses shall be externally replaceable without opening transformer tank.

- H. Surge Arresters: Distribution class, one for each primary phase; complying with IEEE C62.11 and NEMA LA 1; support from tank wall within high-voltage compartment. Transformers shall have three arresters for loop-feed circuits.
- I. High-Voltage Terminations and Equipment: Live front with externally clamped porcelain bushings and cable connectors suitable for terminating primary cable.
- J. Accessories:
 - 1. Drain Valve: 1 inch (25 mm), with sampling device.
 - 2. Dial-type thermometer.
 - 3. Liquid-level gage.
 - 4. Pressure-vacuum gage.
 - 5. Pressure Relief Device: Self-sealing with an indicator.
 - 6. Mounting provisions for low-voltage current transformers.
 - 7. Mounting provisions for low-voltage potential transformers.
 - 8. Busway terminal connection at low-voltage compartment.
 - 9. Alarm contacts for gages and thermometer listed above.

2.3 IDENTIFICATION DEVICES

- A. Nameplates: Engraved, laminated-plastic or metal nameplate for each transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 26 Section "Identification for Electrical Systems."

2.4 SOURCE QUALITY CONTROL

- A. Factory Tests: Perform design and routine tests according to standards specified for components. Conduct transformer tests according to IEEE C57.12.90.
- B. Factory Tests: Perform the following factory-certified tests on each transformer:
 - 1. Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.
 - 2. Ratios on rated-voltage connection and on tap extreme connections.
 - 3. Polarity and phase relation on rated-voltage connection.
 - 4. No-load loss at rated voltage on rated-voltage connection.
 - 5. Excitation current at rated voltage on rated-voltage connection.
 - 6. Impedance and load loss at rated current on rated-voltage connection and on tap extreme connections.
 - 7. Applied potential.
 - 8. Induced potential.
 - 9. Temperature Test: If transformer is supplied with auxiliary cooling equipment to provide more than one rating, test at lowest kilovolt-ampere Class OA or Class AA rating and highest kilovolt-ampere Class OA/FA or Class AA/FA rating.
 - a. Temperature test is not required if record of temperature test on an essentially duplicate unit is available.
 - 10. Owner will witness all required factory tests. Notify Architect at least 14 days before date of tests and indicate their approximate duration.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for medium-voltage transformers.
- B. Examine roughing-in of conduits and grounding systems to verify the following:
 - 1. Wiring entries comply with layout requirements.
 - 2. Entries are within conduit-entry tolerances specified by manufacturer and no feeders will have to cross section barriers to reach load or line lugs.
- C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
- D. Verify that ground connections are in place and that requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install transformers on concrete bases.
 - 1. Anchor transformers to concrete bases according to manufacturer's written instructions, seismic codes at Project, and requirements in Division 26 Section "Hangers and Supports for Electrical Systems."
 - 2. Construct concrete bases of dimensions indicated, but not less than **4 inches (100 mm)** larger in both directions than supported unit and **4 inches (100 mm)** high.
 - 3. Use **3000-psi (20.7-MPa)**, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."
 - 4. Install dowel rods to connect concrete bases to concrete floor. Unless otherwise indicated, install dowel rods on **18-inch (450-mm)** centers around full perimeter of base.
 - 5. Install epoxy-coated anchor bolts, for supported equipment, that extend through concrete base and anchor into structural concrete floor.
 - 6. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 7. Tack-weld or bolt transformers to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.
- B. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.

3.3 IDENTIFICATION

- A. Identify field-installed wiring and components and provide warning signs as specified in Division 26 Section "Identification for Electrical Systems."

3.4 CONNECTIONS

- A. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. After installing transformers but before primary is energized, verify that grounding system at substation is tested at specified value or less.
 - 2. After installing transformers and after electrical circuitry has been energized, test for compliance with requirements.
 - 3. Perform visual and mechanical inspection and electrical test stated in NETA ATS. Certify compliance with test parameters.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.
- D. Test Reports: Prepare written reports to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective actions taken to achieve compliance with requirements.

3.6 FOLLOW-UP SERVICE

- A. Voltage Monitoring and Adjusting: If requested by Owner, perform the following voltage monitoring after Substantial Completion but not more than six months after Final Acceptance:
 - 1. During a period of normal load cycles as evaluated by Owner, perform seven days of three-phase voltage recording at secondary terminals of each transformer. Use voltmeters with calibration traceable to National Institute of Science and Technology standards and with a chart speed of not less than **1 inch (25 mm)** per hour. Voltage unbalance greater than 1 percent between phases, or

- deviation of any phase voltage from nominal value by more than plus or minus 5 percent during test period, is unacceptable.
2. Corrective Actions: If test results are unacceptable, perform the following corrective actions, as appropriate:
 - a. Adjust transformer taps.
 - b. Prepare written request for voltage adjustment by electric utility.
 3. Retests: After corrective actions have been performed, repeat monitoring until satisfactory results are obtained.
 4. Report: Prepare written report covering monitoring and corrective actions performed.

END OF SECTION 261200

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 1. Fire-alarm control unit.
 2. Manual fire-alarm boxes.
 3. System smoke detectors.
 4. Heat detectors.
 5. Notification appliances.
 6. Remote annunciator.
 7. Addressable interface device.
 8. Digital alarm communicator transmitter.

1.3 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

1.4 SYSTEM DESCRIPTION

- A. Noncoded addressable system, with automatic sensitivity control of certain smoke detectors and multiplexed signal transmission, dedicated to fire-alarm service only.

1.5 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.6 SUBMITTALS

- A. General Submittal Requirements:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
 2. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design.
 - b. NICET-certified fire-alarm technician, Level III minimum.
 - c. Licensed or certified by authorities having jurisdiction.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
 2. Include voltage drop calculations for notification appliance circuits.
 3. Include battery-size calculations.
 4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
 5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
 6. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.
 7. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.
- D. Qualification Data: For qualified Installer.
- E. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
3. Record copy of site-specific software.
4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
 - a. Frequency of testing of installed components.
 - b. Frequency of inspection of installed components.
 - c. Requirements and recommendations related to results of maintenance.
 - d. Manufacturer's user training manuals.
5. Manufacturer's required maintenance related to system warranty requirements.
6. Abbreviated operating instructions for mounting at fire-alarm control unit.
7. Copy of NFPA 25.

H. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On magnetic media or compact disk, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.
- B. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

1.8 SEQUENCING AND SCHEDULING

- A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.
- B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.9 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning with Substantial Completion, provide software support for two years.
- C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
 - 1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1.
 - 2. Fire Lite Alarms; a Honeywell company.
 - 3. Silent Knight; a Honeywell company.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:
 - 1. Manual stations.
 - 2. Heat detectors.
 - 3. Smoke detectors.
 - 4. Duct smoke detectors.
 - 5. Automatic sprinkler system water flow.
 - 6. Fire-extinguishing system operation.
- B. Fire-alarm signal shall initiate the following actions:
 - 1. Continuously operate alarm notification appliances.
 - 2. Identify alarm at fire-alarm control unit and remote annunciators.
 - 3. Transmit an alarm signal to the remote alarm receiving station. Receiving station is located in a Simplex fire alarm panel at the Guard Shack at the entry to the base.
 - 4. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
 - 5. Close smoke dampers in air ducts of designated air-conditioning duct systems.
 - 6. Activate emergency shutoffs for gas and fuel supplies.
 - 7. Record events in the system memory.

- C. Supervisory signal initiation shall be by one or more of the following devices and actions:
- D. System trouble signal initiation shall be by one or more of the following devices and actions:
 - 1. Open circuits, shorts, and grounds in designated circuits.
 - 2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
 - 3. Loss of primary power at fire-alarm control unit.
 - 4. Ground or a single break in fire-alarm control unit internal circuits.
 - 5. Abnormal ac voltage at fire-alarm control unit.
 - 6. Break in standby battery circuitry.
 - 7. Failure of battery charging.
 - 8. Abnormal position of any switch at fire-alarm control unit or annunciator.
- E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators. Record the event on system printer.

2.3 FIRE-ALARM CONTROL UNIT

- A. General Requirements for Fire-Alarm Control Unit:
 - 1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
 - a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
 - b. Include a real-time clock for time annotation of events on the event recorder and printer.
 - 2. Addressable initiation devices that communicate device identity and status.
 - a. Smoke sensors shall additionally communicate sensitivity setting and allow for adjustment of sensitivity at fire-alarm control unit.
 - b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.
 - 3. Addressable control circuits for operation of mechanical equipment.
- B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.
 - 1. Annunciator and Display: Liquid-crystal type, 2 line(s) of 40 characters, minimum.
 - 2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.
- C. Circuits:
 - 1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class A.

- a. Initiating Device Circuits: Style E.
 - b. Notification Appliance Circuits: Style Z.
 - c. Signaling Line Circuits: Style 7.
 - d. Install no more than 50 addressable devices on each signaling line circuit.
2. Serial Interfaces: Two RS-232 ports for printers.
- D. Smoke-Alarm Verification:
1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.
 2. Activate an NRTL-listed and -approved "alarm-verification" sequence at fire-alarm control unit and detector.
 3. Record events by the system printer.
 4. Sound general alarm if the alarm is verified.
 5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.
- E. Notification Appliance Circuit: Operation shall sound in a temporal pattern.
- F. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.
- G. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.
- H. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals shall be powered by 24-V dc source.
1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
- I. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
1. Batteries: Sealed lead calcium.
- J. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.
- 2.4 MANUAL FIRE-ALARM BOXES
- A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.
3. Weatherproof Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.5 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be four-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
 - a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F (8 or 11 deg C) per minute.
 - b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F (57 or 68 deg C).
 - c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.

- b. Device type.
- c. Present average value.
- d. Present sensitivity selected.
- e. Sensor range (normal, dirty, etc.).
3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

2.6 HEAT DETECTORS

- A. General Requirements for Heat Detectors: Comply with UL 521.
- B. Heat Detector, Combination Type: Actuated by either a fixed temperature of **135 deg F (57 deg C)** or a rate of rise that exceeds **15 deg F (8 deg C)** per minute unless otherwise indicated.
 1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
 2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
- C. Continuous Linear Heat-Detector System:
 1. Detector Cable: Rated detection temperature **155 deg F (68 deg C)**. NRTL listed for "regular" service and a standard environment. Cable includes two steel actuator wires twisted together with spring pressure, wrapped with protective tape, and finished with PVC outer sheath. Each actuator wire is insulated with heat-sensitive material that reacts with heat to allow the cable twist pressure to short-circuit wires at the location of elevated temperature.
 2. Control Unit: Two-zone or multizone unit as indicated. Provide same system power supply, supervision, and alarm features as specified for fire-alarm control unit.
 3. Signals to Fire-Alarm Control Unit: Any type of local system trouble shall be reported to fire-alarm control unit as a composite "trouble" signal. Alarms on each detection zone shall be individually reported to central fire-alarm control unit as separately identified zones.
 4. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.7 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Individually addressed, connected to a signaling line circuit, equipped for mounting as indicated and with screw terminals for system connections.
- B. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
- C. Chimes, Low-Level Output: Vibrating type, 75-dBA minimum rated output.
- D. Chimes, High-Level Output: Vibrating type, 81-dBA minimum rated output.
- E. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured **10 feet (3 m)** from the horn, using the coded signal prescribed in UL 464 test protocol.
- F. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum **1-inch- (25-mm-)** high letters on the lens.
 1. Rated Light Output:
 - a.
 - b. 15/30/75/110 cd, selectable in the field.
 2. Mounting: Wall mounted unless otherwise indicated.
 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 4. Flashing shall be in a temporal pattern, synchronized with other units.
 5. Strobe Leads: Factory connected to screw terminals.
 6. Mounting Faceplate: Factory finished, red.

2.8 REMOTE ANNUNCIATOR

- A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.
 1. Mounting: Surface cabinet, NEMA 250, Type 1.
- B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.9 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

2.10 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.

- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
 - 1. Verification that both telephone lines are available.
 - 2. Programming device.
 - 3. LED display.
 - 4. Manual test report function and manual transmission clear indication.
 - 5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following:
 - 1. Address of the alarm-initiating device.
 - 2. Address of the supervisory signal.
 - 3. Address of the trouble-initiating device.
 - 4. Loss of ac supply or loss of power.
 - 5. Low battery.
 - 6. Abnormal test signal.
 - 7. Communication bus failure.
- E. Secondary Power: Integral rechargeable battery and automatic charger.
- F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Equipment Mounting: Install fire-alarm control unit on finished floor with tops of cabinets not more than **72 inches (1830 mm)** above the finished floor.
 - 1. Comply with requirements for seismic-restraint devices specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 - 2. Comply with requirements for seismic-restraint devices specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.
 - 1.

2. Connect new equipment to existing monitoring equipment at the supervising station. Supervising station is a Simplex fire alarm control panel located at the base Guard Shack.
 3. Expand, modify, and supplement existing monitoring equipment as necessary to extend existing monitoring functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
- D. Smoke- or Heat-Detector Spacing:
1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
 2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
 3. Smooth ceiling spacing shall not exceed **30 feet (9 m)**.
 4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A in NFPA 72.
 5. HVAC: Locate detectors not closer than **3 feet (1 m)** from air-supply diffuser or return-air opening.
 6. Lighting Fixtures: Locate detectors not closer than **12 inches (300 mm)** from any part of a lighting fixture.
- E. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.
- F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.
- G. Audible Alarm-Indicating Devices: Install not less than **6 inches (150 mm)** below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- H. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least **6 inches (150 mm)** below the ceiling.
- I. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- J. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than **72 inches (1830 mm)** above the finished floor.
- K. Annunciator: Install with top of panel not more than **72 inches (1830 mm)** above the finished floor.
- 3.2 CONNECTIONS
- A. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than **3 feet (1 m)** from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Smoke dampers in air ducts of designated air-conditioning duct systems.
2. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
3. Supervisory connections at valve supervisory switches.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- B. Install framed instructions in a location visible from fire-alarm control unit.

3.4 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by authorities having jurisdiction.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
 - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
 2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 4. Test audible appliances for the private operating mode according to manufacturer's written instructions.

5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
- E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
 - F. Fire-alarm system will be considered defective if it does not pass tests and inspections.
 - G. Prepare test and inspection reports.
 - H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
 - I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION 283111

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GENERAL ELECTRICAL NOTES

- 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.
- 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.
 - THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.
 - 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.
 - 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.
- 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.
- 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.
- REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.



Utah National Guard
BLDG. 503 MESS HALL REMODEL
CAMP W.G. WILLIAMS
UTAH

SHEET TITLE

Sym Legend & Sheet Index

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			

DRAWN BY: _____ CHECKED BY: _____

PROJECT NO: _____ DRAWING NO: _____

DATE: _____

E001

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

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

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....

SYMBOL LEGEND

SYMBOL	DESCRIPTION
FIRE ALARM	
	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.
	SMOKE DAMPER.
	FIRE AND SMOKE DAMPER.

ELECTRICAL SHEET INDEX

SHEET NO	SHEET TITLE
EE001	SYMBOL LEGEND & SHEET INDEX
EE501	TYPICAL MOUNTING HEIGHT DETAILS
EE502	DETAILS & ONE-LINE DIAGRAM
EE503	DETAILS
EE504	DETAILS
ES101	EXISTING ELECTRICAL SITE PLAN
ES102	ELECTRICAL SITE PLAN
ED101	DEMOLITION PLAN
EP101	POWER PLAN
EP102	ROOF POWER PLAN
EP601	MECHANICAL EQUIPMENT/PANEL SCHEDULES
EP602	KITCHEN EQUIPMENT SCHEDULES
EL101	LIGHTING PLAN
EL601	LIGHTING FIXTURE SCHEDULE
FA101	FIRE ALARM PLAN
FA601	FIRE ALARM RISER

SYMBOL LEGEND

NOTE: ALL DEFINITIONS MAY NOT BE USED.

SYMBOL	DESCRIPTION
WIRING DEVICES	
	RECEPTACLE, DUPLEX: NEMA 5-20R.
	RECEPTACLE, DUPLEX, ABOVE COUNTER: NEMA 5-20R.
	RECEPTACLE, DUPLEX, CEILING: NEMA 5-20R.
	RECEPTACLE, DUPLEX, DEDICATED CIRCUIT: NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER: NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, WEATHERPROOF: NEMA 5-20R.
	RECEPTACLE, QUADRUPLEX: NEMA 5-20R.
	RECEPTACLE, SPECIAL PURPOSE. PROVIDE RECEPTACLE TO MATCH EQUIPMENT PLUG.
	SWITCH, DIMMER.
	SWITCH, SINGLE POLE ("X" INDICATES FIXTURES CONTROLLED).
	SWITCH, THREE-WAY ("X" INDICATES FIXTURES CONTROLLED).
	SWITCH, FOUR-WAY ("X" INDICATES FIXTURES CONTROLLED).
ELECTRICAL POWER AND DISTRIBUTION	
	CIRCUIT BREAKER, MOLDED CASE (ONE-LINE DIAGRAM).
	MOTOR.
	TRANSFORMER (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN LUGS ONLY. BUS SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN AND SUB FEED CIRCUIT BREAKER (ONE-LINE DIAGRAM).
	PANELBOARD WITH SUB FEED LUGS (ONE-LINE DIAGRAM).
	CT CABINET PER UTILITY'S REQUIREMENTS (ONE-LINE DIAGRAM).
	METER.
	DISCONNECT SWITCH, FUSED.
	DISCONNECT SWITCH, UNFUSED.
	STARTER, COMBINATION WITH DISCONNECT SWITCH.
	STARTER OR MOTOR CONTROLLER.
	PANELBOARD CABINET, SURFACE MOUNTED, 1 SECTION.
	PANELBOARD CABINET, SURFACE MOUNTED, 2 SECTION.
	SWITCH, TOGGLE MOTOR STARTER WITH OVERLOAD PROTECTION.
FIRE ALARM	
	FIRE SYSTEM ANNUNCIATOR.
	FIRE ALARM CONTROL PANEL, SEMI-RECESSED.
	CONTROL MODULE.
	MONITOR MODULE.
	FIRE ALARM MANUAL PULL STATION.
	SHUT DOWN RELAY: INSTALL RELAY IN CONTROL CIRCUIT OF EQUIPMENT TO BE CONTROLLED IN THE EVENT OF A FIRE.
	DETECTOR, SMOKE.
	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE.
	DETECTOR, HEAT.
	STROBE. SUBSCRIPT INDICATES CANDELA RATING.
	ALARM, HORN/SPEAKER, WEATHERPROOF.
	ALARM, HORN/STROBE, ONE ASSEMBLY. SUBSCRIPT INDICATES CANDELA RATING.
	BELL (GONG).

SYMBOL LEGEND

NOTE: ALL DEFINITIONS MAY NOT BE USED.

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501 INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ELEVATION OR SECTION INDICATOR, INTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ROOM OR SPACE NUMBER.
	KEYNOTE INDICATOR.
	REVISION INDICATOR.
	EQUIPMENT INDICATOR.
	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING.
	BREAK, ROUND.
	NEW LINE: MEDIUM LINE.
	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
	EXISTING TO REMAIN LINE: THIN LINE.
	DEMOLITION LINE: DASHED, MEDIUM LINE.
WIRING METHODS	
	WIRING.
	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 SECTION 16120.
	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 SECTION 16120.
	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.
	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
	JUNCTION BOX.
LIGHTING (REFER TO FIXTURE SCHEDULE FOR SYMBOLS)	
	FIXTURE IDENTIFICATION: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
	FIXTURE IDENTIFICATION, EMERGENCY WITH BATTERY PACK, CONNECTED TO GENERATOR AS INDICATED: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
	EMERGENCY.
	NIGHT LIGHT: DO NOT SWITCH.
	EGRESS DIRECTION ARROW.
LIGHTING CONTROL	
	OCCUPANCY SENSOR, DUAL TECHNOLOGY, CEILING.
	OCCUPANCY SENSOR, DUAL TECHNOLOGY, WALL.
	OCCUPANCY SENSOR, ULTRASONIC, CEILING.
	PHOTOCCELL.
	TIME CLOCK.
	OCCUPANCY SENSOR, SWITCH PACK.
STRUCTURED CABLING	
	TELEPHONE, WALL MOUNTED: WALL PHONE.
	OUTLET, BUILDING STANDARD COMBINATION TELEPHONE/DATA COMMUNICATION.
	TELEPHONE TERMINAL BOARD, FIRE TREATED PLYWOOD PAINTED.



CONSULTANT INFORMATION

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GENERAL SHEET NOTES

- DETERMINE MOUNTING HEIGHTS OF ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE FOLLOWING ORDER OF PRIORITY:
 - ELEVATIONS (ARCHITECTURAL, ELECTRICAL, MECHANICAL, ETC)
 - EQUIPMENT SHOP DRAWINGS.
 - FIELD INSTRUCTIONS.
- LOCATE RECEPTACLES SERVING THE SAME TYPE OF USE AT A UNIFORM HEIGHT UNLESS DIRECTED OTHERWISE.
- 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.
- MOUNT RECEPTACLE BOXES FOR SWITCHES AND RECEPTACLES WITH LONG AXIS OF THE DEVICE VERTICAL UNLESS OTHERWISE INDICATED.
- SET BOXES WITH PLASTER RINGS FLUSH WITH FINISHED SURFACE.
- LOCATE BOX COVERS OR DEVICE PLATES SO THEY WILL NOT SPAN DIFFERENT TYPES OF BUILDING FINISHES EITHER VERTICALLY OR HORIZONTALLY.
- VERIFY ALL DOOR CONDITIONS ON ARCHITECTURAL DRAWINGS PRIOR TO INSTALLING SWITCHES.
- LOCATE WIRING DEVICES WHICH ARE ADJACENT AND ARE COMPATIBLE VOLTAGES IN ONE PLATE.

SHEET KEYNOTES

- LOCATE RECEPTACLES BEHIND DRINKING FOUNTAINS.
- REFER TO ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF OUTLETS.
- 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.
- LOCATE SMOKE DETECTOR ANYWHERE IN SHADED AREA.
- LOCATE AT BOTTOM OF BEAMS IF EITHER D/H < .1 OR W/H < .4; OTHERWISE, LOCATE IN BEAM POCKET.



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UTAH

SHEET TITLE

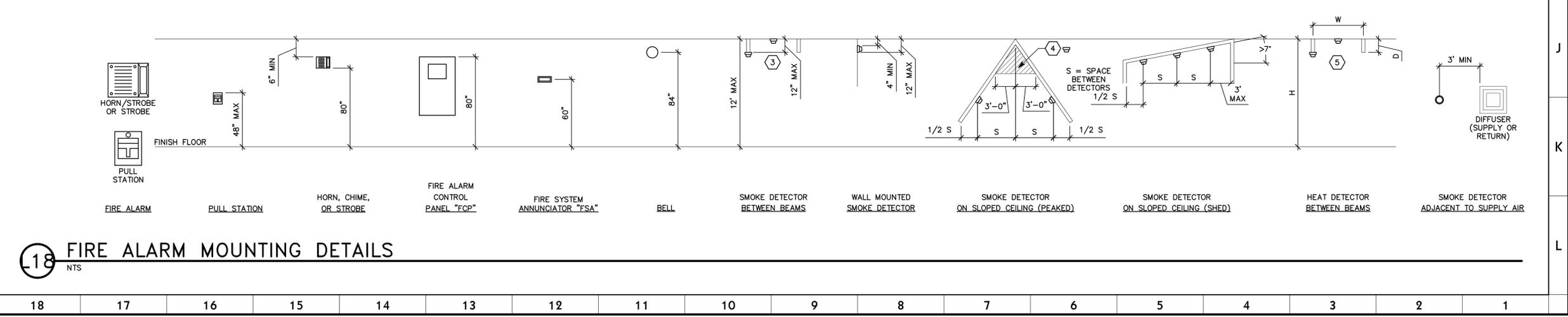
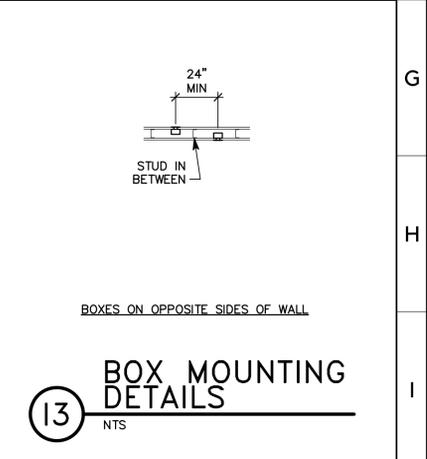
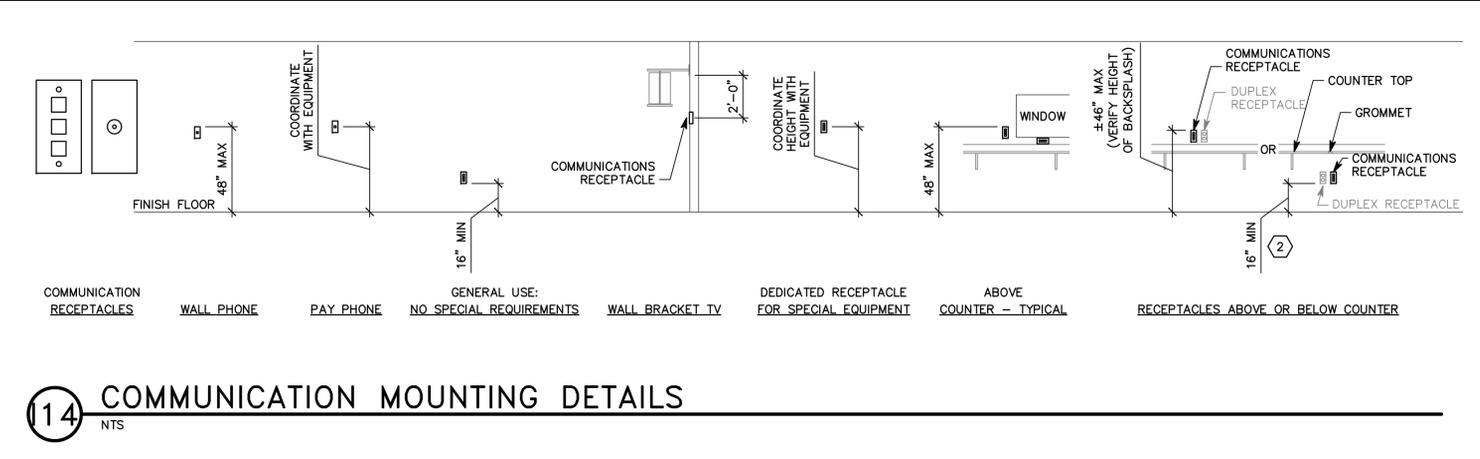
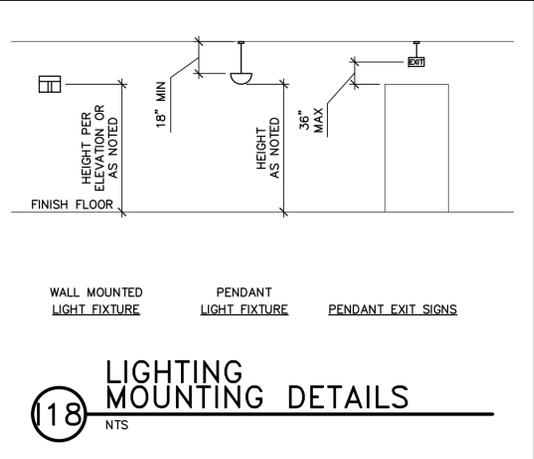
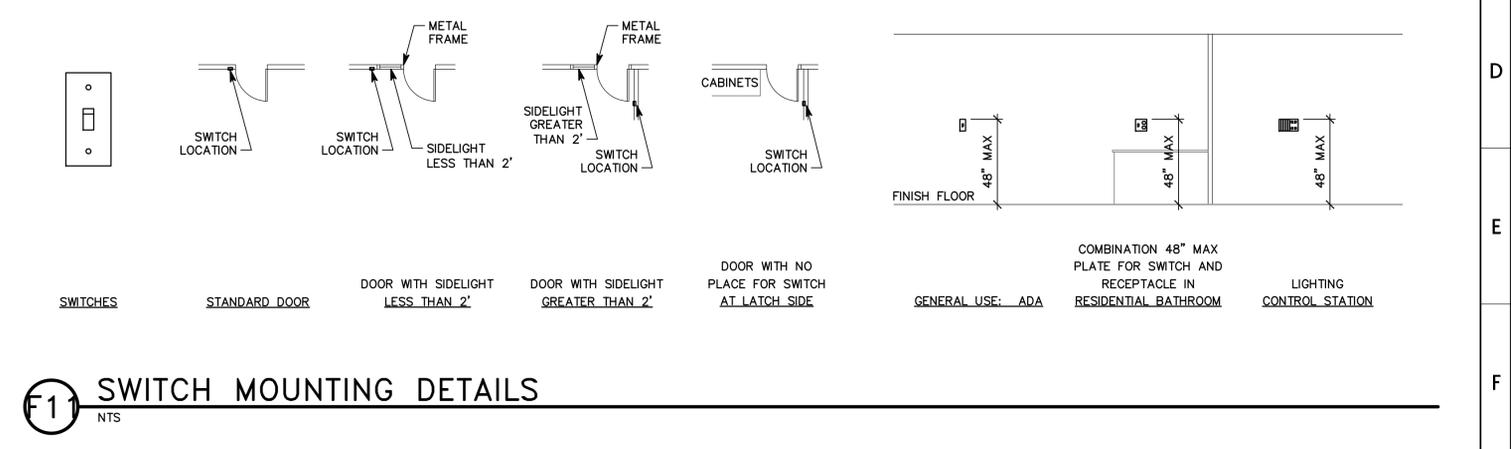
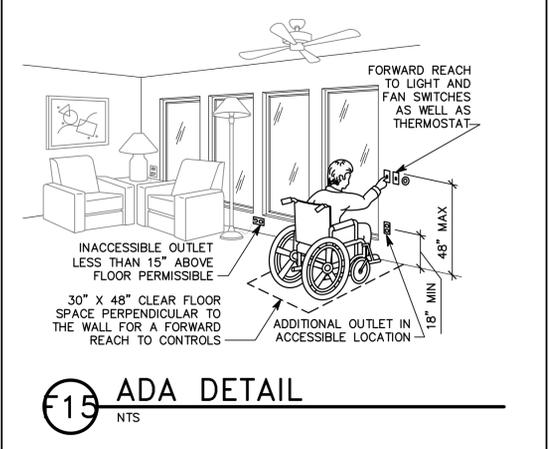
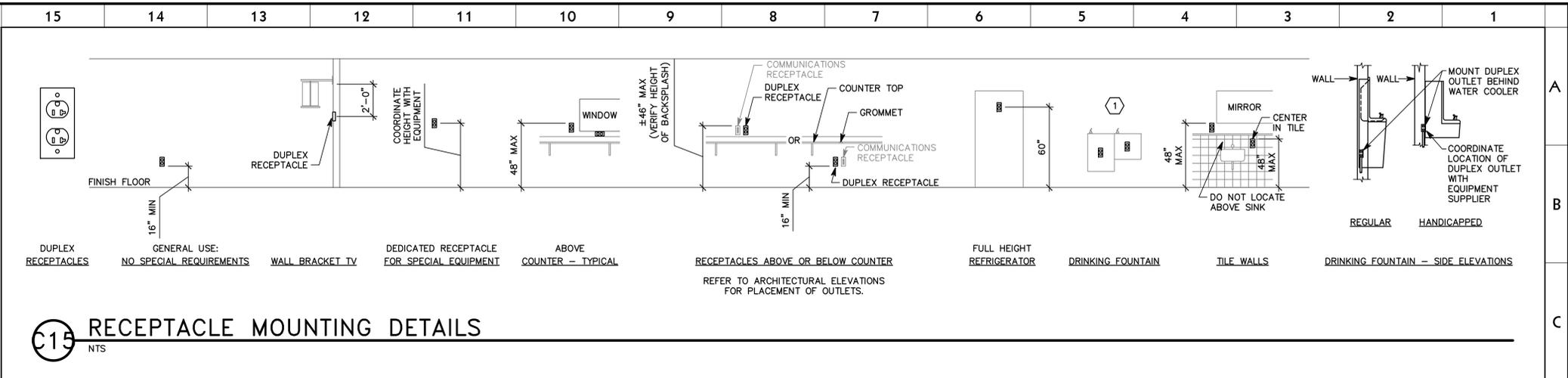
Typ Mount Height Details

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PROJECT NO: 06296480 DRAWING NO: EE501

DATE: AUG 22, 2007



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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.

CONDUCTOR AND CONDUIT SCHEDULE

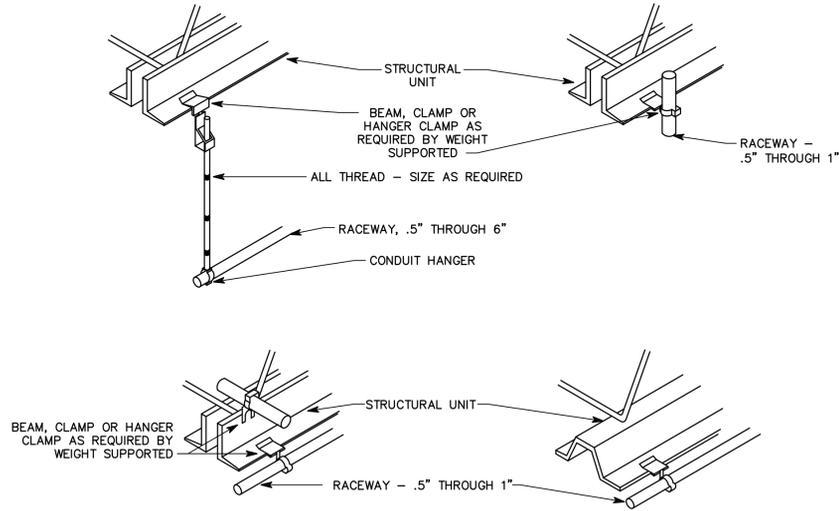
SCHEDULE NUMBER (E.G.) 5_{IG}

SUBSCRIPT (NOTE 5)

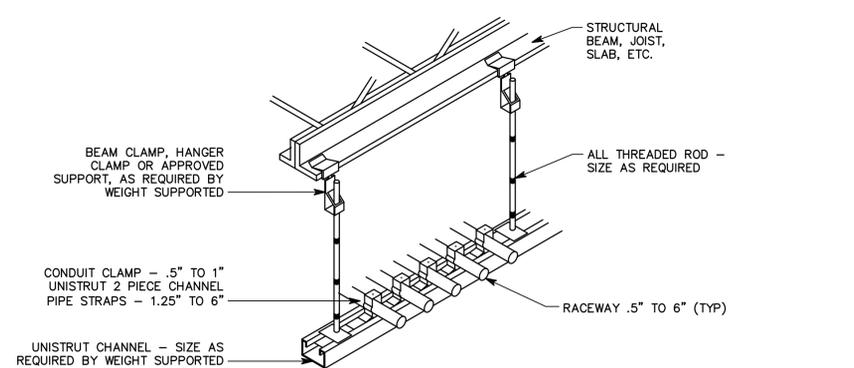
SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	CONDUCTOR(NOTE 1) SIZE	IG	SE	NOTES
1	20	.75	2	12	12	12	8 2
2	20	.75	3	12	12	12	8 2,3
3	20	.75	4	12	12	12	8 2,3
4	30	.75	2	10	10	10	8 2
5	30	.75	3	10	10	10	8 2
6	30	.75	4	10	10	10	8 2
7	40	1	2	8	10	8	6 2
8	40	1	3	8	10	8	6 2
9	40	1	4	8	10	8	6 2
10	55	1	2	6	10	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. WHEN SYMBOL SUBSCRIPT INDICATES "IG", INCLUDE "IG" OR INSULATED GROUND CONDUCTOR SCHEDULED ALONG WITH GROUND OR EQUIPMENT GROUND CONDUCTOR. WHEN SYMBOL SUBSCRIPT INDICATES "SE", SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEMS.
 6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

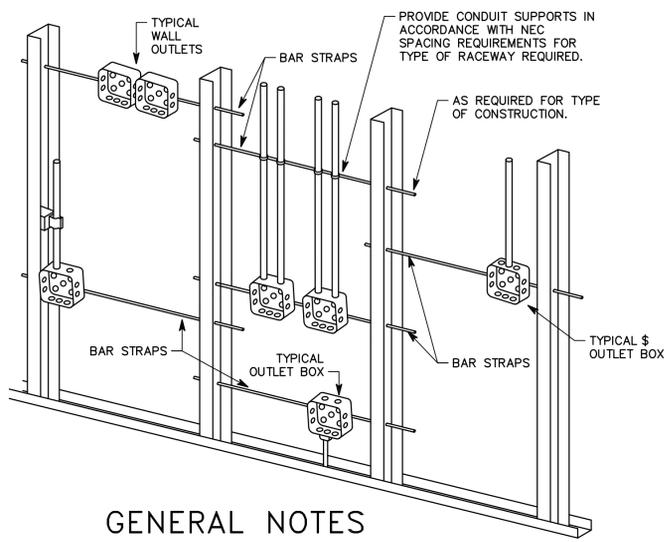
NOTE: THE WIRE SHALL NOT BE USED AS A COMPONENT OF ANY RACEWAY HANGER SYSTEM.



F18 TYPICAL RACEWAY SUPPORT METHODS DETAIL NTS



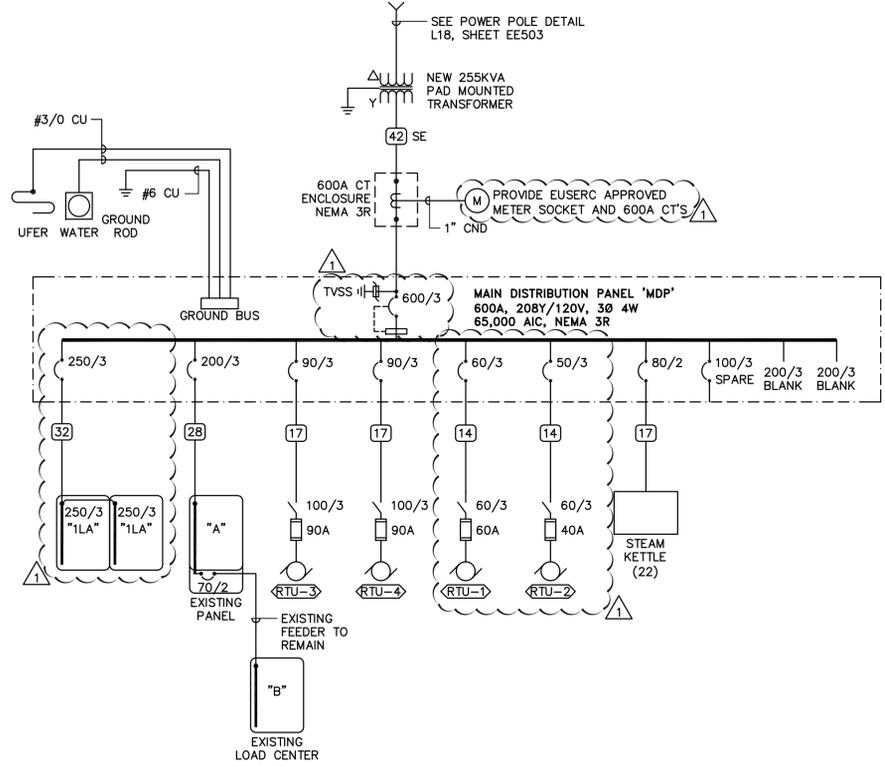
F11 TYPICAL CONDUIT RACK DETAIL NTS



GENERAL 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 MINIMUM 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.

L18 TYPICAL ROUGH-IN REQUIREMENTS DETAIL NTS



L11 ONE-LINE DIAGRAM NTS

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SHEET TITLE: Details & One-Line Diagram

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PROJECT NO: 06296480 DRAWING NO: EE502
DATE: AUG 22, 2007

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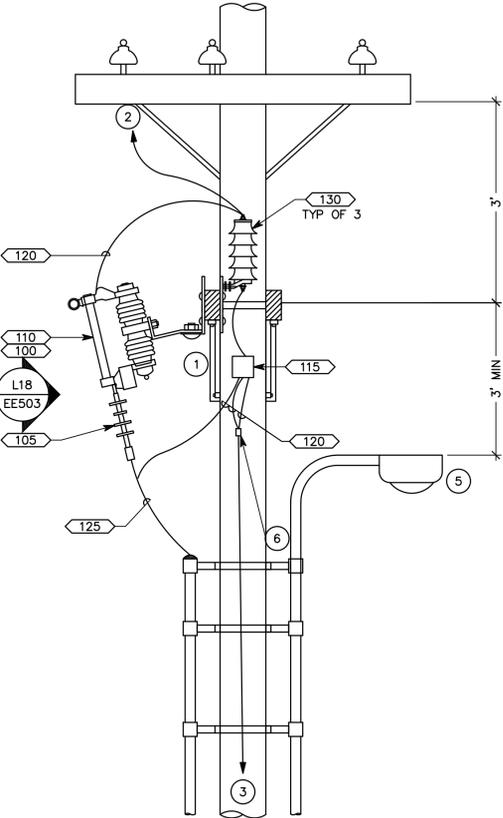
1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.

- NOTES**
1. PROVIDE ALL HARDWARE NECESSARY TO INSTALL NEW EQUIPMENT.
 2. INSTALLATION OF NEW EQUIPMENT WILL REQUIRE WORKING NEAR ENERGIZED LINES OR COORDINATING A POWER OUTAGE WITH CAMP WILLIAMS.
- DETAIL NOTES**
1. PROVIDE NEW V-BRACE AND CROSS ARM TO MATCH EXISTING.
 2. TO HOT LINE CLAMP. TYPICAL OF THREE.
 3. TO 3/4"x10" GROUND ROD AT BASE OF POLE. SECURE GROUND CONDUCTOR TO POLE WITH "U" NAILS.
 4. TO NEW OR EXISTING HOT LINE CLAMP FOR NEUTRAL.
 5. EXISTING STREET LIGHT TO REMAIN.
 6. HARDWARE FOR EXISTING NEUTRAL CONDUCTOR TO REMAIN.

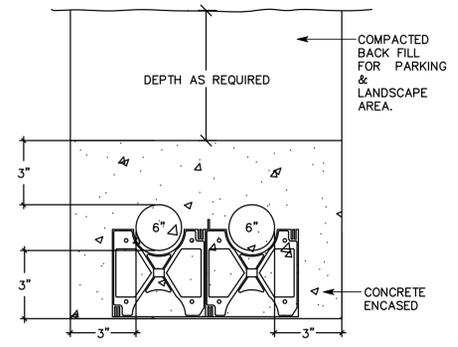
12.5 KV EQUIPMENT LIST

EQUIP NO	QTY.	DESCRIPTION	MANUFACTURER	CATALOG NO.
100	3	SURGE ARRESTER / TYPE 'L' FUSED CUTOUT COMBINATION 15 KV, 110 KV BIL, 10,600 ASIC, EXPENDABLE CAP, FUSED CUTOUT WITH 100 A FUSE HOLDER, & ULTRASIL NORMAL-DUTY VARIGAP, 9 KV SURGE ARRESTER	COOPER	L4BAP1A002COA
105	3	15 KV SHIELDED POWER CABLE TERMINATION KIT TYPE JPT	JOSLYN	JPT15C1-S03
110	3	5 A FUSE LINK FOR 15 KV FUSED CUTOUT STANDARD SPEED TCC-123-6	S&C	64005
115	AS REQ'D	BRONZE PARALLEL CONNECTOR - SPLIT BOLT TYPE C, FOR #2 SOLID COPPER	ANDERSON	C-2
120	AS REQ'D	# 2 AWG, SOLID, HARD DRAWN COPPER CONDUCTOR	TBD	TBD
125	AS REQ'D	15 KV SHIELDED POWER CABLE, TYPE MV-105, #2 AWG, 133% INSULATION, EP-INSULATION W/PVC JACKET.	OKONITE	115-23-3111
130	EXIST	EXISTING SURGE ARRESTER TO BE RELOCATED.	N/A	N/A
135	4	HOT LINE CLAMP, SIZE DETERMINED BY CONTRACTOR TO MATCH SIZE AND TYPE OF EXISTING OH CONDUCTOR	TBD	TBD
140	3	600 V CURRENT TRANSFORMER, 400:5 RATIO, 10 KV BIL, ANSI METERING ACCURACY B0.1, WITH MOUNTING FEET	ABB	7524A75603
145	1	CURRENT TRANSFORMER METER BASE, AUTO BYPASS, NEMA 3R	MILBANK	UC7237
150	1	LEXAN COVER FOR METER BASE SOCKET OPENING	EKSTROM INDUSTRIES	16112
155	1	KWH/ DEMAND METER		(SEE SPEC SECTION 16320)

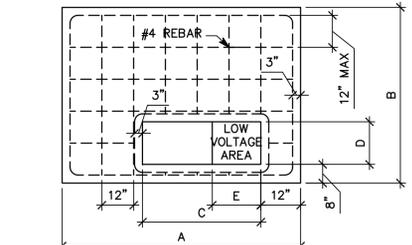
NOTES:
TBD = TO BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT REQUIREMENTS AND AS PER THE SPECIFICATIONS.



F8 POWER POLE SIDE VIEW

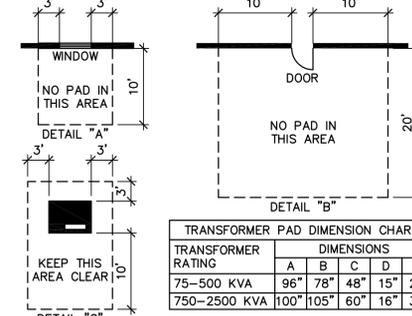
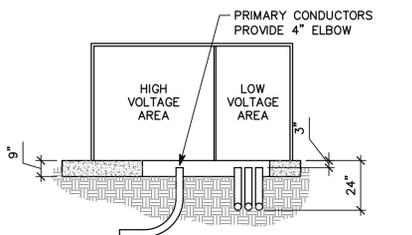


F18 DUCT BANK DETAIL



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. BARRIERS. IF THE TRANSFORMER PAD IS TO BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC, (PARKING LOTS, DRIVEWAYS, ETC) CONTACT CAMP WILLIAMS FOR PROTECTIVE BARRIER REQUIREMENTS.
7. 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.

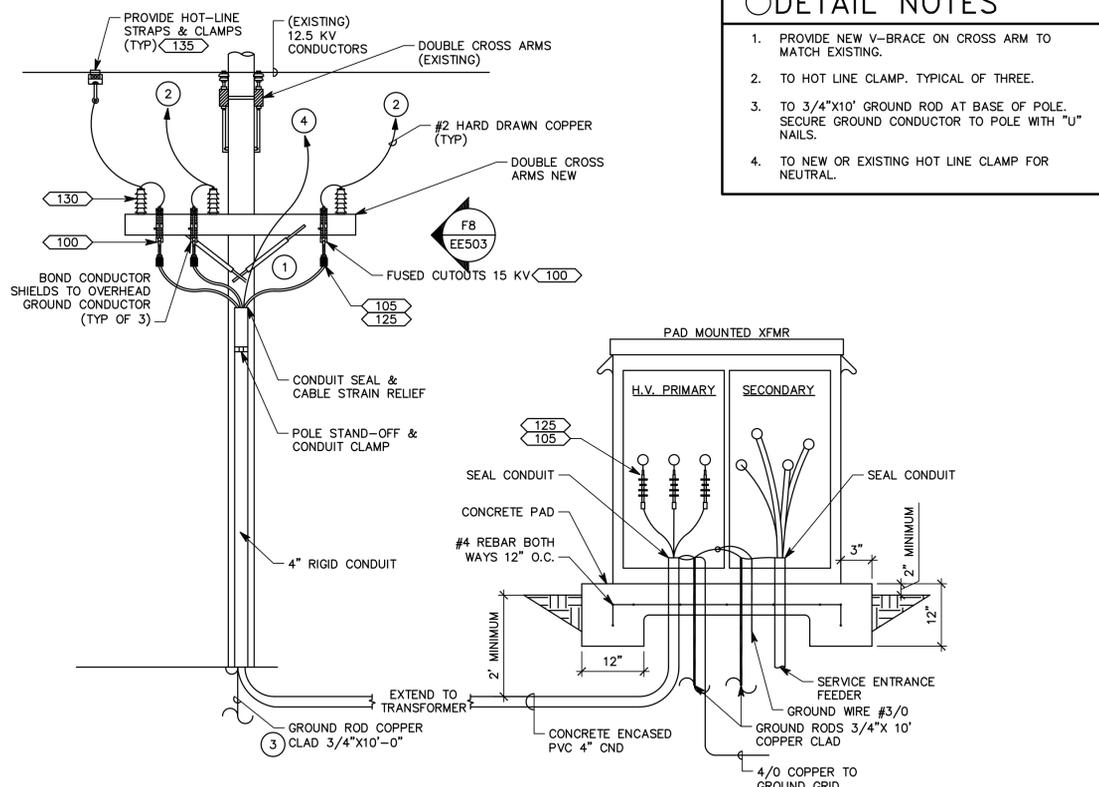


TRANSFORMER PAD DIMENSION CHART

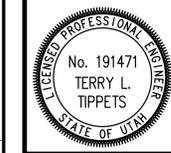
TRANSFORMER RATING	DIMENSIONS				
	A	B	C	D	E
75-500 KVA	96"	78"	48"	15"	20"
750-2500 KVA	100"	105"	60"	16"	30"

L9 TRANSFORMER PAD DETAIL

- DETAIL NOTES**
1. PROVIDE NEW V-BRACE ON CROSS ARM TO MATCH EXISTING.
 2. TO HOT LINE CLAMP. TYPICAL OF THREE.
 3. TO 3/4"x10" GROUND ROD AT BASE OF POLE. SECURE GROUND CONDUCTOR TO POLE WITH "U" NAILS.
 4. TO NEW OR EXISTING HOT LINE CLAMP FOR NEUTRAL.



L18 POWER POLE DETAIL



SHEET TITLE

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Utah National Guard
BLDG. 503 MESS HALL REMODEL
CAMP W.G. WILLIAMS
UTAH

STATE OF UTAH
LICENSED PROFESSIONAL ENGINEER
No. 191471
TERRY L. TIPPETS

**TELECOMMUNICATIONS CABLING
- GENERAL NOTES**

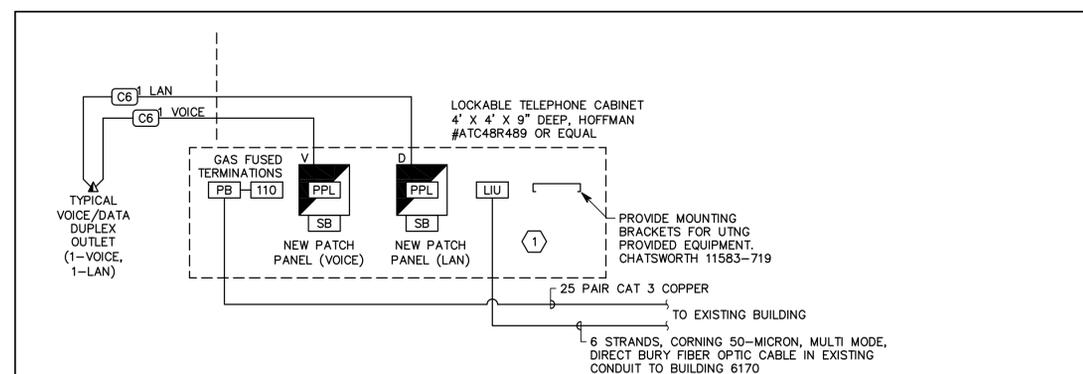
1. ALL WORK SHALL BE IN COMPLIANCE WITH UTNG STANDARD UT-G6-C.
2. ALL WORK SHALL BE COORDINATED WITH MIKE HANSEN (523-4118) (UTNG).

SHEET KEYNOTES

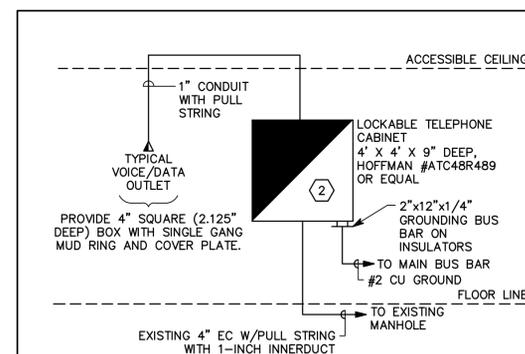
1. CONTRACTOR SHALL PROVIDE A ELEVATION LAYOUT DRAWING OF THE INSIDE OF THE COMMUNICATIONS CABINET INDICATING THE EQUIPMENT TO BE INSTALLED TO MIKE HANSEN (UTNG) FOR COORDINATION. COORDINATE REQUIREMENTS FOR UTNG PROVIDED EQUIPMENT AND INCLUDE THAT EQUIPMENT IN THE ELEVATION DRAWING.
2. PROVIDE AND MOUNT A 4' X 4' X 0.75" FIRE RESISTANT PLYWOOD BACKBOARD IN THE BACK OF THE CABINET. TRIM THE EDGES OF THE PLYWOOD TO FIT IN THE BOX. PAINT THE PLYWOOD AS DIRECTED BY UTNG.
3. CONTRACTOR SHALL VERIFY ALL EQUIPMENT WITH UTAH NATIONAL GUARD TO COMPLY WITH LATEST STANDARD FOR A SEIMON CERTIFIED SYSTEM.

TELEPHONE/DATA EQUIPMENT/CABLE LIST

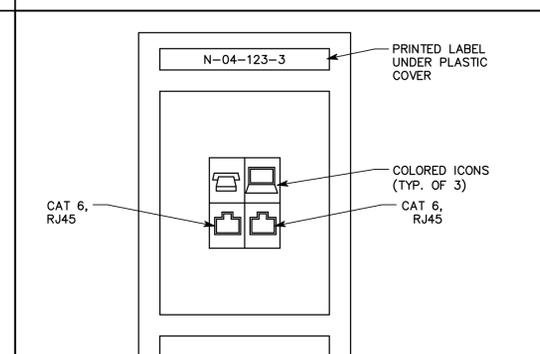
SYMBOL	ITEM DESCRIPTION	MANUFACTURERS
X [C6] VOICE	VOICE CABLING, CATEGORY 6	COMMSCOPE CAT 6 BLUE #75N4 ('X' INDICATES QUANTITY)
X [C6] DATA	DATA CABLING, CATEGORY 6	COMMSCOPE CAT 6 YELLOW #75N4 ('X' INDICATES QUANTITY)
[PPL]	PATCH PANEL	SIEMON HD-689-D
[V]	BLUE METAL BACKBOARD (VOICE)	M183-B1 (VAR)
[D]	YELLOW METAL BACKBOARD (DATA)	M183-B5 (VAR)
[SB]	FULL SPOOL BOARDS	M187-B1 (VAR)
[W]	WORK STATION OUTLET (1-LAN, 1-VOICE)	SIEMON CT-C6-C6-02 (ANGLED JACK) SIEMON CT2-FP-02 (FACEPLATE)
[PB]	PROTECTION BLOCKS	MARCONI R66P25QC
[LIU]	RACK MOUNTED LIU	SIEMON RACK MOUNT LIU FCP2-RACK



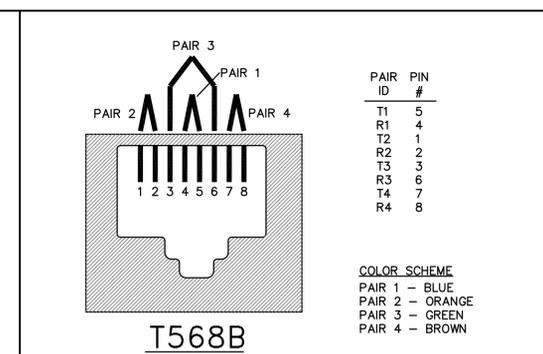
18 TELECOMMUNICATIONS CABLING RISER DIAGRAM



L12 VOICE/DATA RACEWAY RISER DIAGRAM



L8 TYPICAL VOICE/DATA PLATE DETAIL



L4 RJ45 WIRING DETAIL

Details

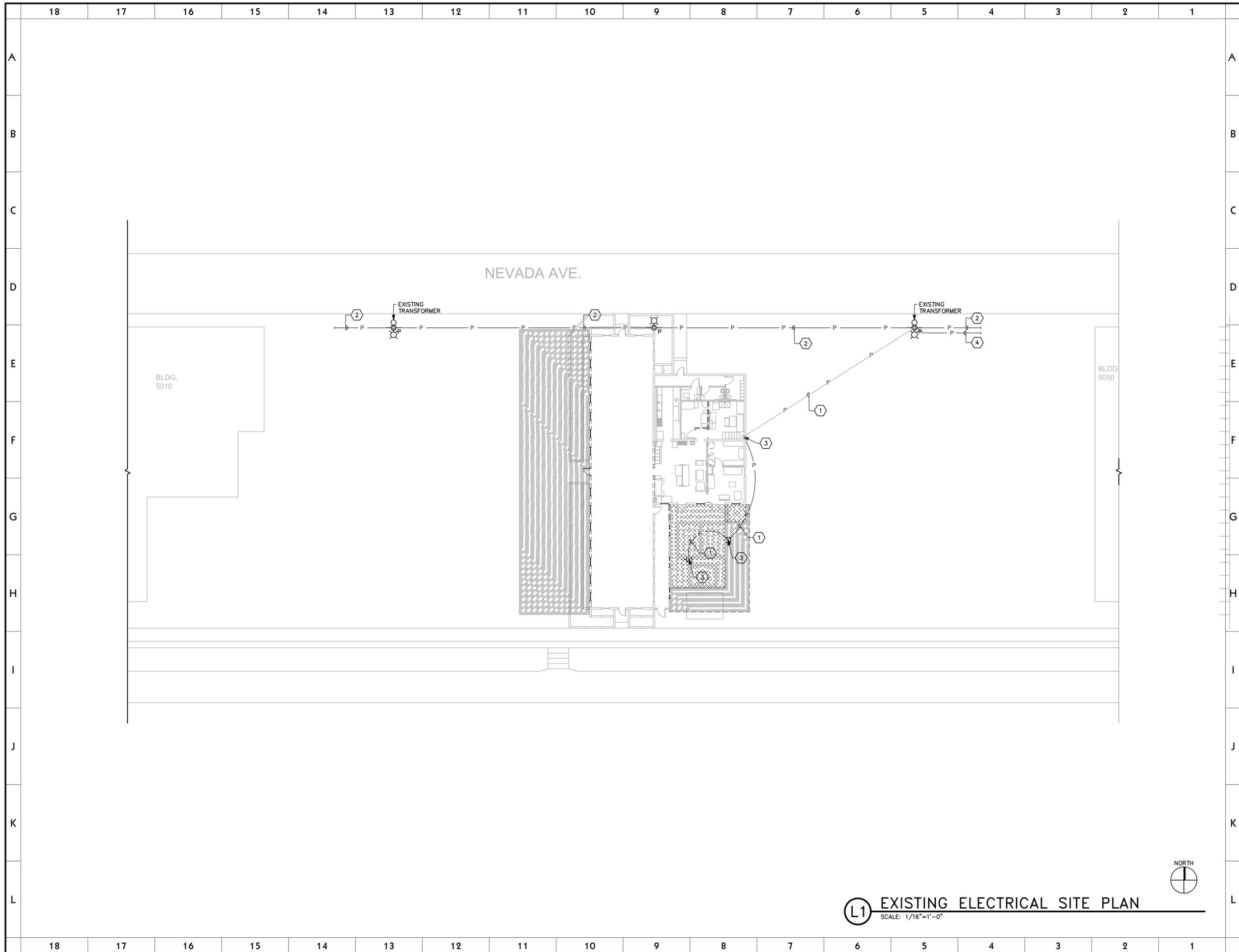
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DATE: AUG 22, 2007

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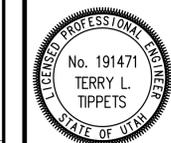


CONSULTANT INFORMATION

175 South Main Street, Suite 300
 Salt Lake City, Utah 84111
 801-328-5151
 800-678-7077
 FAX 801-328-5155
 www.spectrum-engineers.com

SHEET KEYNOTES

1. EXISTING OVERHEAD SECONDARY FEEDER CONDUCTORS TO BE REMOVED.
2. EXISTING OVERHEAD PRIMARY LINE TO REMAIN.
3. EXISTING WEATHER HEAD TO BE REMOVED.
4. EXISTING OVERHEAD SECONDARY LINE TO REMAIN.



Utah National Guard
 BLDG. 503 MESS HALL REMODEL
 CAMP W.G. WILLIAMS
 UTAH

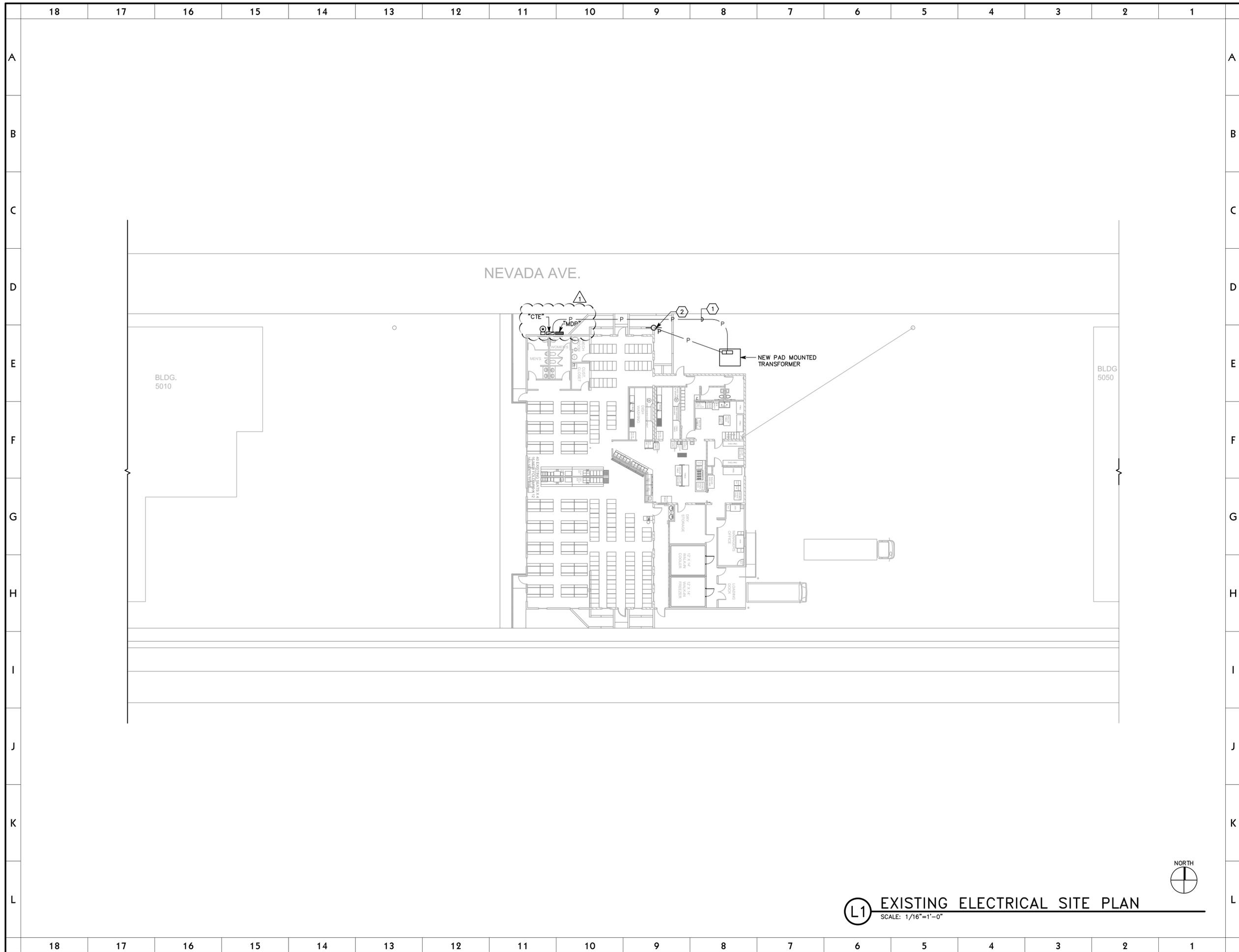
SHEET TITLE			
Existing Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			

DRAWN BY	PSS	CHECKED BY	DLA
PROJECT NO.	06296480	DRAWING NO.	ES101
DATE	AUG 22, 2007		

L1 EXISTING ELECTRICAL SITE PLAN
 SCALE: 1/16"=1'-0"

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File Name: P:\2007\20070044\Drawings\Sheet\44ES-102.dwg Last Plotted: 2007/09/10 @ 4:46 PM By: pss

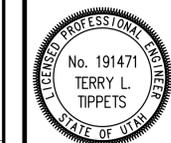


L1 EXISTING ELECTRICAL SITE PLAN
SCALE: 1/16"=1'-0"

Harris & Associates
265 East 100 South Suite 350
Salt Lake City, Utah 84111-1604
Ph (801) 521-8564 Fax (801) 365-2938

CONSULTANT INFORMATION
175 South Main Street, Suite 300
Salt Lake City, Utah 84111
801-328-5151
800-678-7077
FAX 801-328-5155
www.spectrum-engineers.com

- SHEET KEYNOTES**
1. PROVIDE NEW UNDERGROUND POWER FEEDERS TO BUILDING.
 2. EXTEND CONDUIT AND CONDUCTORS UP EXISTING POLE TO EXISTING TRANSFORMER LOCATION. FIELD VERIFY.



Utah National Guard
BLDG. 503 MESS HALL REMODEL
CAMP W.G. WILLIAMS
UTAH

SHEET TITLE			
Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			

DRAWN BY	PSS	CHECKED BY	DLA
PROJECT NO.	06296480	DRAWING NO.	ES102
DATE	AUG 22, 2007		

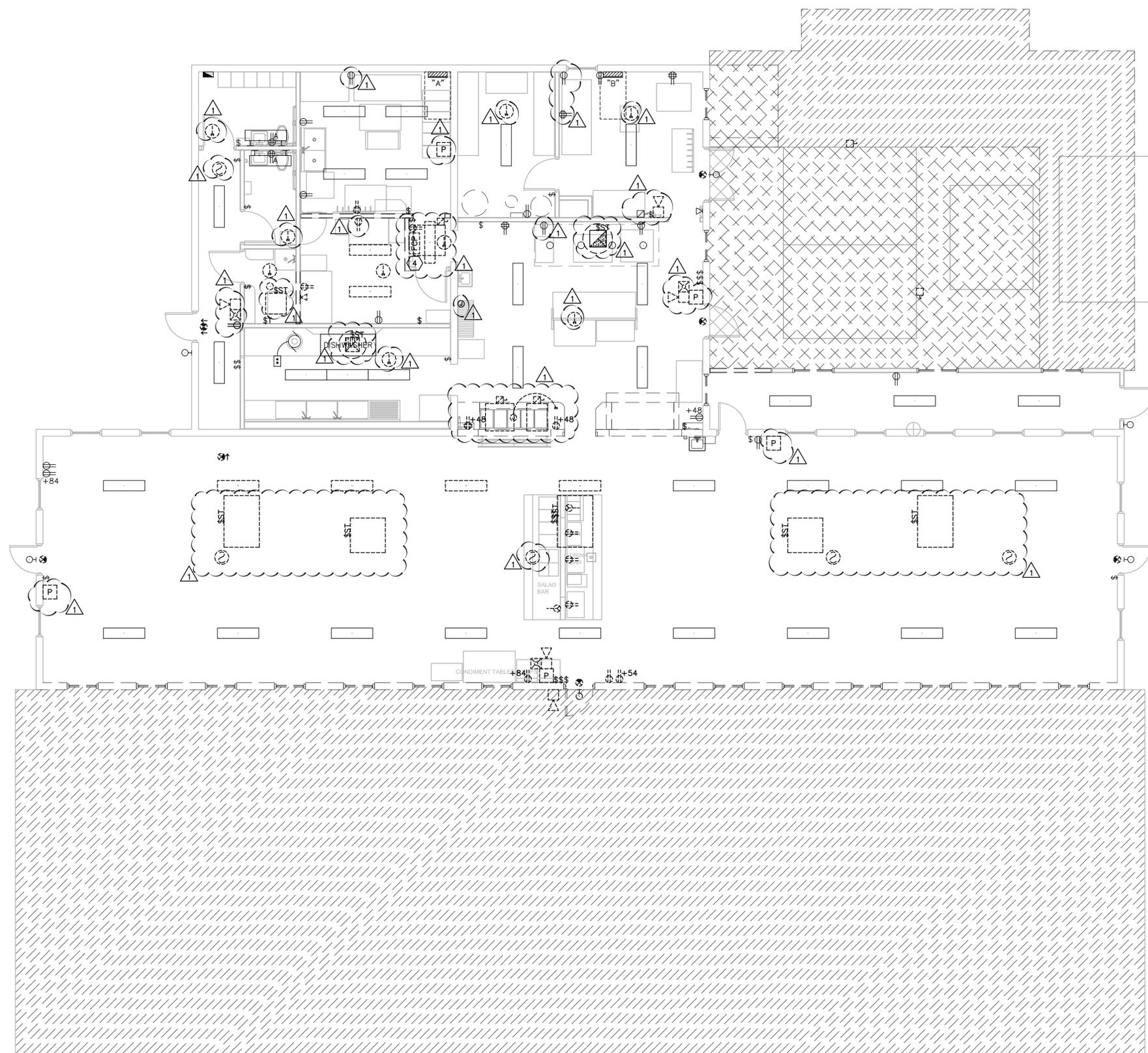
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File Name: P:\2007\20070044\Drawings\Sheet\44ED-101.dwg Last Plotted: 2007/09/10 @ 4:50 PM By: pss

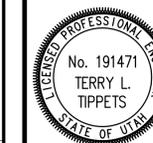


SHEET KEYNOTES

1. CONNECT TO EXISTING KITCHEN LIGHTING CIRCUIT.
2. CONNECT TO EXISTING LIGHTING CIRCUIT SERVING THIS AREA.
3. CONNECT THROUGH TIMECLOCK AND PHOTOCELL. PHOTOCELL ENABLE/TIMECLOCK OFF.
4. EXISTING FIRE ALARM SYSTEM DEVICES TO BE REMOVED AND REPLACED. FIRE ALARM CONTROL PANEL AND DIALER TO BE RELOCATED. SEE FIRE ALARM SHEETS.



L1 DEMOLITION PLAN
 SCALE: 3/16"=1'-0"



Demolition Plan

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			

DRAWN BY	PSS	CHECKED BY	DLA
PROJECT NO.	06296480	DRAWING NO.	ED101
DATE	AUG 22, 2007		

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 175 South Main Street, Suite 300
 Salt Lake City, Utah 84111
 801-328-5151
 800-678-7077
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 www.spectrum-engineers.com



GENERAL SHEET NOTES

1. ALL DEVICES SHOWN SHALL BE NEW. ALL EXISTING DEVICES SHALL REMAIN UNLESS OTHERWISE NOTED ON THIS DRAWINGS OR ON THE DEMOLITION DRAWINGS.

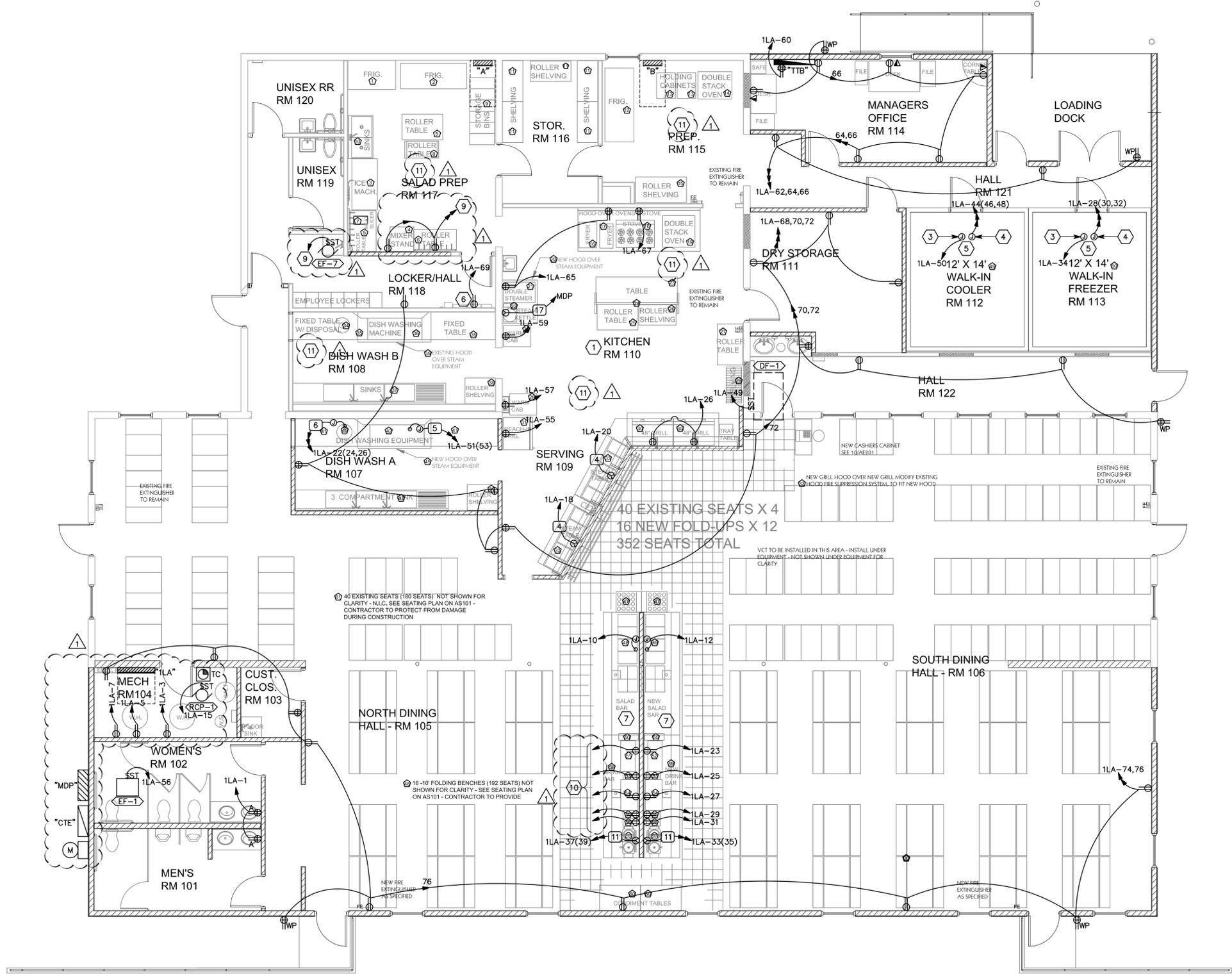
SHEET KEYNOTES

1. ALL EXISTING NON-GFI RECEPTACLES IN THIS ROOM SHALL BE REPLACED WITH GFI DEVICES TO COMPLY WITH NEC 210.8(B).
2. PROVIDE ELECTRICAL CONNECTIONS TO HOOD FOR INTEGRAL LIGHTS, RECEPTACLES AND CONTROLS AS REQUIRED BY HOOD MANUFACTURER'S PUBLISHED DATA. COORDINATE WITH HOOD INSTALLER.
3. PROVIDE CONNECTION TO LIGHTING AND RECEPTACLE OUTLETS INTEGRAL TO WALK-IN EQUIPMENT.
4. PROVIDE CONNECTION TO COOLING COMPRESSORS, ETC. PER WALK-IN EQUIPMENT MANUFACTURER'S PUBLISHED DATA.
5. COORDINATE REQUIREMENTS FOR ALL CONNECTIONS TO WALK-IN EQUIPMENT WITH WALK-IN EQUIPMENT INSTALLER.
6. PROVIDE OUTLET FOR RELOCATED TIME CLOCK COORDINATE MOUNTING HEIGHT WITH OWNER.
7. COORDINATE DEVICE LOCATIONS AND EXACT REQUIREMENT WITH KITCHEN EQUIPMENT INSTALLER.
8. PROVIDE CONNECTION TO NEW DISHWASHING EQUIPMENT. VERIFY REQUIREMENTS.
9. CONNECT TO SPARE 20A/1P CIRCUIT BREAKERS IN EXISTING PANEL "A".
10. CONNECT TO EXISTING BREAKERS IN EXISTING PANEL "A" SERVING EXISTING SALAD BAR EQUIPMENT.
11. KITCHEN EQUIPMENT IN THIS AREA MAY BE REPLACED WITH NEW EQUIVALENT EQUIPMENT BY THE OWNER WITHIN THE PROJECT BUDGET. COORDINATE WITH THE OWNER DURING CONSTRUCTION TO VERIFY THAT THE NEW EQUIPMENT INSTALLED CAN BE POWERED FROM THE EXISTING OUTLETS/DISCONNECTS RESPECTIVELY.



Utah National Guard
 BLDG. 503 MESS HALL REMODEL
 CAMP W.G. WILLIAMS
 UTAH

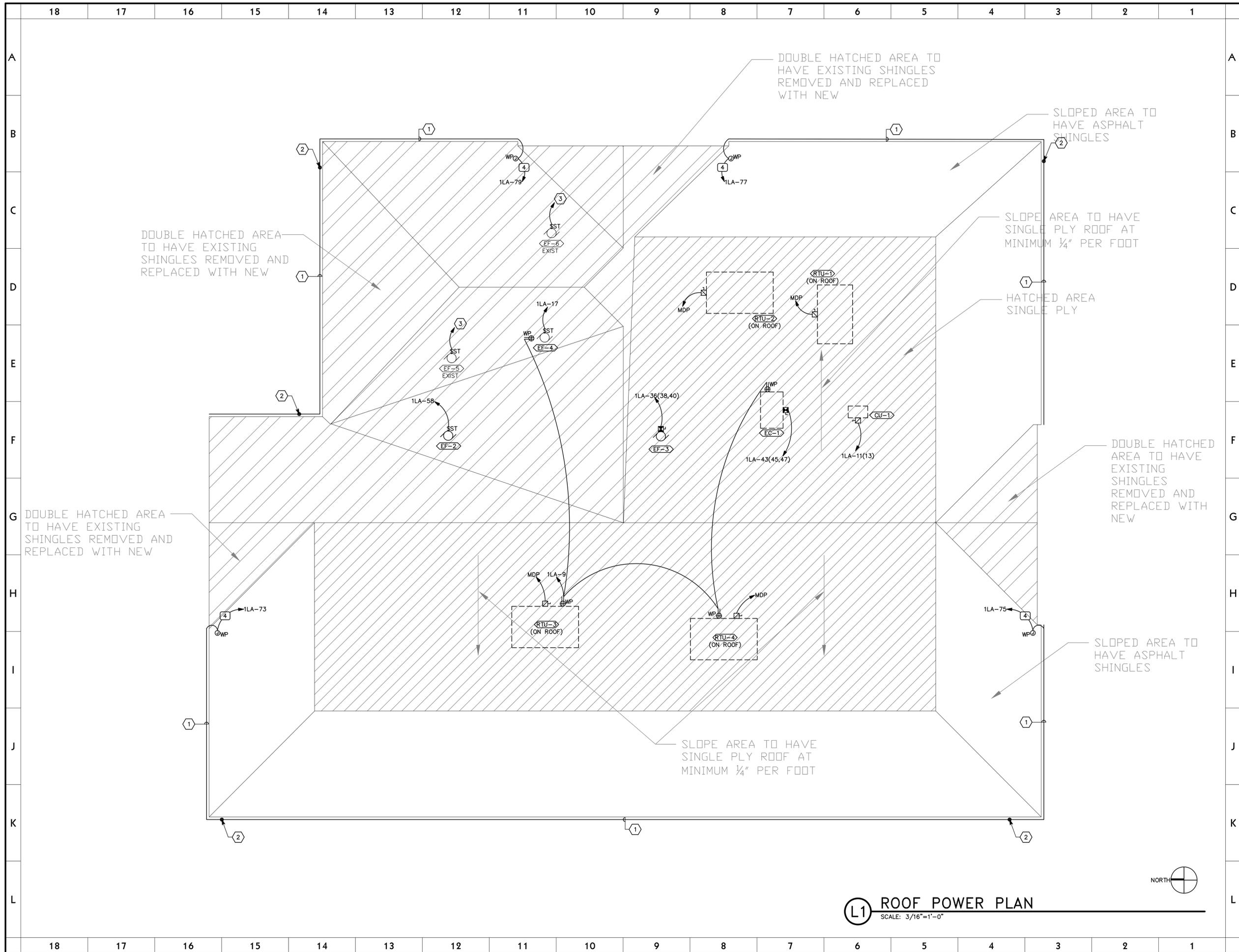
SHEET TITLE			
Power Plan			
REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			
DRAWN BY	PSS	CHECKED BY	DLA
PROJECT NO.	06296480	DRAWING NO.	
DATE	AUG 22, 2007		
			EP101



L1 POWER PLAN
 SCALE: 3/16"=1'-0"

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SPECTRUM ENGINEERS

GENERAL SHEET NOTES

1. PROVIDE AIR TEMPERATURE PROBE FOR THERMOSTATIC CONTROL OF ICE MELT. RAYCHEM #AMC-1A OR EQUAL IN CHROMALOX, POSTORIA OR NELSON. PROVIDE NUMBER OF SENSORS AS RECOMMENDED BY MANUFACTURER'S PUBLISHED DATA WITH A MINIMUM OF (2) SENSORS.

SHEET KEYNOTES

1. PROVIDE SELF-REGULATING HEAT TRACE FOR ICE MELT SYSTEM IN GUTTERS AND DOWNSPOUTS PER MANUFACTURER'S PUBLISHED DATA. RAYCHEM GM-1XT WITH 32F STARTUP TEMPERATURE OR EQUAL IN CHROMALOX, POSTORIA OR NELSON.
2. PROVIDE ICE MELT IN THE ENTIRE LENGTH OF THE DOWNSPOUT PER MANUFACTURER'S PUBLISHED INSTRUCTIONS. COORDINATE ACTUAL LOCATION AND LENGTH OF DOWNSPOUT WITH RAIN GUTTER INSTALLER.
3. EXTEND CONDUIT AND CONDUCTORS AND RECONNECT TO EXISTING CIRCUIT BREAKER. FIELD VERIFY CONDITIONS.

NO. 191471
 TERRY L. TIPPETS
 LICENSED PROFESSIONAL ENGINEER
 STATE OF UTAH

Utah National Guard
 BLDG. 503 MESS HALL REMODEL
 CAMP W.G. WILLIAMS
 UTAH

SHEET TITLE
Roof Power Plan

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
△			
△			

DRAWN BY: PSS CHECKED BY: DLA

PROJECT NO: 06296480 DRAWING NO: EP102

DATE: AUG 22, 2007

L1 ROOF POWER PLAN
 SCALE: 3/16"=1'-0"

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18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

EXISTING PANEL "A" (FOR REFERENCE ONLY)

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		200 AMPERE MAIN LUGS		OUTSIDE		FLUSH									
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS																	
CKT NO	AMP	POLE	LOAD (kVA)	DESCRIPTION	LCL kVA	PHASE LOAD	LCL kVA	DESCRIPTION	LOAD (kVA)	OCF	CKT NO						
1	20	1		SERVING ISLAND	0.0	0.0	0.0	SWAMP COOLER DINING HALL		20	1						
3	20	1		SERVING ISLAND	0.0	0.0	0.0	SWAMP COOLER DINING HALL		20	1						
5	20	1		SERVING ISLAND	0.0	0.0	0.0	VENT HOOD KITCHEN		25	1						
7	20	1		SERVING ISLAND	0.0	0.0	0.0	PREP ROOM OUTLETS		20	1						
9	20	1		SERVING ISLAND	0.0	0.0	0.0	OUTLETS OFFICE		20	1						
11	20	1		BLUE WIRE IN ISLAND	0.0	0.0	0.0	OUTLETS RESTRM EF FAN		20	1						
13	25	1		TOASTER ON ISLAND	0.0	0.0	0.0	FURNACE IN FURNACE ROOM		20	1						
15	20	1		SERVING ISLAND	0.0	0.0	0.0	PANEL "B"	0.0	0.0	70						
17	20	1		FIRE PANEL	0.0	0.0	0.0	VENT HOOD KITCHEN	0.0	0.0	20						
19	30	3		DISHWASHER	0.0	0.0	0.0	VENT HOOD KITCHEN	0.0	0.0	20						
21	-	-		-----	0.0	0.0	0.0	-----	-----	-----	22						
23	-	-		-----	0.0	0.0	0.0	-----	-----	-----	22						
25	20	1		ICE MACHINE	0.0	0.0	0.0	WATER HEATER		20	1						
27	20	1		SPARE	0.0	0.0	0.0	LIGHTS OFFICE/PREP ROOM		20	1						
29	30	2		VENT HOOD OVER GRILL	0.0	0.0	0.0	EXIT LIGHT NORTH HALL		20	1						
31	-	-		-----	0.0	0.0	0.0	LIGHTS DISH/N. HALL/FURN RM		20	1						
33	20	1		SWAMP COOLER OFFICE	0.0	0.0	0.0	POTATO PEELER		20	1						
35	25	1		VENT HOOD DISHWASHING	0.0	0.0	0.0	PREP ROOM EAST WALL		20	1						
37	15	3		DISPOSAL	0.0	0.0	0.0	STACK OVEN L. RECEIPT		20	1						
39	-	-		-----	0.0	0.0	0.0	STACK OVEN R. RECEIPT		20	1						
41	-	-		-----	0.0	0.0	0.0	BLANK		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														

EXISTING PANEL "B" (FOR REFERENCE ONLY)

VOLTS/PHASE/WIRE:		PANEL SIZE & TYPE:		MAIN SIZE & TYPE:		LOCATION:		CABINET:		NOTES:							
120/208 V, 1 PH 3 WIRE		LOAD CENTER		70 AMPERE MAIN LUG		OUTSIDE		SURFACE		22,000 AIC							
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS																	
CKT NO	AMP	POLE	LOAD (kVA)	DESCRIPTION	LCL kVA	PHASE LOAD	LCL kVA	DESCRIPTION	LOAD (kVA)	OCF	CKT NO						
1	20	1		LIGHTS DINING HALL	0.0	0.0	0.0	LIGHTS KITCHEN		20	1						
3	20	1		LIGHTS DINING HALL	0.0	0.0	0.0	DINING HALL E. WALL S. END		20	1						
5	20	1		BELOW BKR BOX IN S. STOR	0.0	0.0	0.0	OVEN CONVECTION TOP		20	1						
7	20	1		DINING HALL NORTH WALL	0.0	0.0	0.0	DINING HALL WEST DOOR		20	1						
9	20	1		KITCHEN W. WALL NORTH END	0.0	0.0	0.0	KITCHEN S. WALL		20	1						
11	20	1		KITCHEN W. DOOR	0.0	0.0	0.0	FURNACE DINING HALL S.		20	1						
13	20	1		OVEN CONVECTION BOTTOM	0.0	0.0	0.0	FURNACE DINING HALL CENTER		20	1						
15	20	2		REFER. S. STOR	0.0	0.0	0.0	FURNACE DINING HALL NORTH		20	1						
17	-	-		-----	0.0	0.0	0.0	COFFEE MACHINE		30	2						
19	25	2		STEAM TABLE	0.0	0.0	0.0	-----		20	1						
21	-	-		-----	0.0	0.0	0.0	BLANK		1	22						
23	-	-		-----	0.0	0.0	0.0	BLANK		1	24						
TOTALS:					kVA PER PHASE	0	0	0	CONNECTED TOTAL kVA	0							
					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														

MAIN DISTRIBUTION PANELBOARD "MDP"

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		600 AMPERE MAIN BKR		OUTSIDE		FLUSH		65,000 AIC, NEMA 3R							
ACCESSORIES: IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR																	
CKT NO	AMP	POLE	LOAD (kVA)	PANEL / EQUIPMENT	LCL kVA	PHASE LOAD	LCL kVA	PANEL / EQUIPMENT	LOAD (kVA)	OCF	CKT NO						
1	250	3	2.8	0.8	22.3			EXISTING PANEL A	0.0	0.0	200						
-	-	-	3.0	1.2	20.4				0.0	0.0	-						
-	-	-	1.7	0.8	21.3				0.0	0.0	-						
3	60	3		6.1	RTU-1	6.1	14.4	8.3	8.3	90	3						
-	-	-		6.1	-----	6.1	14.4	8.3	8.3	-	-						
-	-	-		6.1	-----	6.1	14.4	8.3	8.3	-	-						
5	50	3		3.5	RTU-2	3.5	11.8	8.3	8.3	90	3						
-	-	-		3.5	-----	3.5	11.8	8.3	8.3	-	-						
-	-	-		3.5	-----	3.5	11.8	8.3	8.3	-	-						
7	100	3			SPARE	0.0	0.0	0.0	0.0	200	3						
-	-	-			-----	0.0	0.0	0.0	0.0	-	-						
-	-	-			-----	0.0	0.0	0.0	0.0	-	-						
9	80	2		6.0	STEAM KETTLE (22)	6.0	6.0	0.0	0.0	100	3						
-	-	-		6.0	-----	6.0	6.0	0.0	0.0	-	-						
-	-	-			SPARE	0.0	0.0	0.0	0.0	-	-						
TOTALS:					CONNECTED kVA PER PHASE	58	57	50	CONNECTED TOTAL kVA	165							
					CONNECTED AMPS PER PHASE	484	473	417	CONNECTED AVERAGE AMPS PER PHASE	458							
NEC DIVERSIFIED LOAD CALCULATIONS																	
LIGHTING 8kVA @125% =			9 kVA			ALL OTHER LOADS @100% =			155 kVA			DIVERSIFIED TOTAL kVA =			167		
RECEPTACLES 3kVA @100% =			3 kVA			25% OF LARGEST MOTOR =			0 kVA			AVERAGE AMPS PER PHASE =			463		
REMAINDER 0kVA @ 50% =			0 kVA														

PANEL "1LA"

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		250 AMPERE MAIN LUGS		OUTSIDE		FLUSH		22,000 AIC	
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS											
CKT NO	AMP	POLE	LOAD (kVA)	DESCRIPTION	LCL kVA	PHASE LOAD	LCL kVA	DESCRIPTION	LOAD (kVA)	OCF	CKT NO
1	20	1	0.4	RESROOMS	0.4	1.3	1.1	NEW DINING	0.9	20	1
3	20	1	0.5	WATER HEATER	0.5	1.1	0.8	RESTROOMS	0.6	20	1
5	20	1	0.5	WATER SOFTENER	0.5	1.2	0.9	OFFICES	0.7	20	1
7	20	1	0.5	WATER HEATER	0.5	1.0	0.6	EXT. BUILDING LTS	0.5	20	1
9	20	1	0.6	ROOFTOP OUTLETS	0.6	1.6	1.3	SALAD BAR (48)	1.0	20	1
11	30	2	1.8	CU-1	1.8	2.8	1.3	SALAD BAR (49)	1.0	20	1
13	-	-	1.8	-----	1.8	2.8	1.3	SALAD BAR	1.0	20	1
15	20	1	0.5	RCP-1	0.5	1.5	1.3	SALAD BAR	1.0	20	1
17	20	1	0.8	EF-4	0.8	3.2	2.4	STEAM TABLE (33)	2.4	30	1
19	20	1		SPARE	0.0	2.4	2.4	STEAM TABLE (33)	2.4	30	1
21	20	1		SPARE	0.0	2.0	2.0	GARBAGE DISPOSAL (40)	2.0	30	3
23	20	1	0.3	MILK (82)	0.3	2.3	2.0	-----	2.0	-	24
25	20	1	0.3	JUICE (53)	0.3	2.3	2.0	-----	2.0	-	26
27	20	1	0.3	PEPSI (54)	0.3	1.6	1.3	WALK-IN FREEZER COND	1.3	20	3
29	20	1	0.3	COCOA (55)	0.3	1.6	1.3	-----	1.3	-	30
31	20	1	0.3	COFFEE (56)	0.3	1.6	1.3	-----	1.3	-	32
33	50	2	3.5	COFFEE URN (57)	3.5	4.3	0.9	WALK-IN FREEZER AUX	0.4	0.4	20
35	-	-	3.5	-----	3.5	4.3	0.8	EF-3	0.8	20	1
37	50	2	3.5	COFFEE URN (57)	3.5	4.3	0.8	-----	0.8	20	1
39	-	-	3.5	-----	3.5	4.3	0.8	-----	0.8	20	1
41	20	1	0.5	FIRE ALARM RELAYS	0.5	0.5	0.0	SPARE	0.0	20	1
43	20	3	0.8	EC-1	0.8	1.6	0.8	WALK-IN COOLER COND	0.8	20	3
45	-	-	0.8	-----	0.8	1.6	0.8	-----	0.8	-	46
47	-	-	0.8	-----	0.8	1.6	0.8	-----	0.8	-	48
49	20	1	1.3	DF-1	1.3	2.1	0.9	WALK-IN COOLER AUX	0.4	0.4	20
51	30	2	2.1	DISHWASHER	2.1	2.1	0.0	SPARE	0.0	20	1
53	-	-	2.1	-----	2.1	2.1	0.0	SPARE	0.0	20	1
55	20	1	0.5	REACH-IN FRIDGE	0.5	1.1	0.6	EF-1	0.6	20	1
57	20	1	1.6	HOLDING CABINET	1.6	2.5	0.9	EF-2	0.9	20	1
59	20	1	1.6	HOLDING CABINET	1.6	2.0	0.4	TTB	0.4	20	1
61	20	1		SPARE	0.0	0.0	0.0	HALL 121		20	1
63	20	1		FRYER (17)	0.0	0.0	0.0	MANAGER 114		20	1
65	20	1	0.3	DOUBLE STEAMER (21)	0.3	0.3	0.0	MANAGER 114		20	1
67	20	1	1.8	STOVE (18)	1.8	1.8	0.0	DRY STORAGE 111		20	1
69	20	1	0.2	TIME CLOCK	0.2	0.2	0.0	HALL 122		20	1
71	20	1	0.4	HOOD AUX	0.4	0.9	0.0	DISH WASH/SERVING		20	1
73	*30	1	1.8	ICE MELT HEAT TRACE	1.8	1.8	0.0	SOUTH DINING		20	1
75	*30	1	1.8	ICE MELT HEAT TRACE	1.8	1.8	0.0	SOUTH DINING		20	1
77	*30	1	1.8	ICE MELT HEAT TRACE	1.8	1.8	0.0	SPARE		20	1
79											

GENERAL SHEET NOTES

- CONNECT EXIT SIGNS IN EXISTING LOCATIONS TO EXISTING UNSWITCHED CIRCUIT. CONNECT EXIT SIGNS IN NEW LOCATIONS TO NEAREST UNSWITCHED CIRCUIT.

- SHEET KEYNOTES**
- CONNECT TO EXISTING KITCHEN LIGHTING CIRCUIT.
 - CONNECT TO EXISTING LIGHTING CIRCUIT SERVING THIS AREA.
 - CONNECT THROUGH TIMECLOCK AND PHOTOCCELL. PHOTOCCELL ENABLE/TIMECLOCK OFF.
 - ALIGN NEW LIGHTS WITH EXISTING LIGHTS LAYOUT IN EXISTING EATING AREA TYPICAL.
 - CONNECT TO EXISTING DINING ROOM LIGHTS.

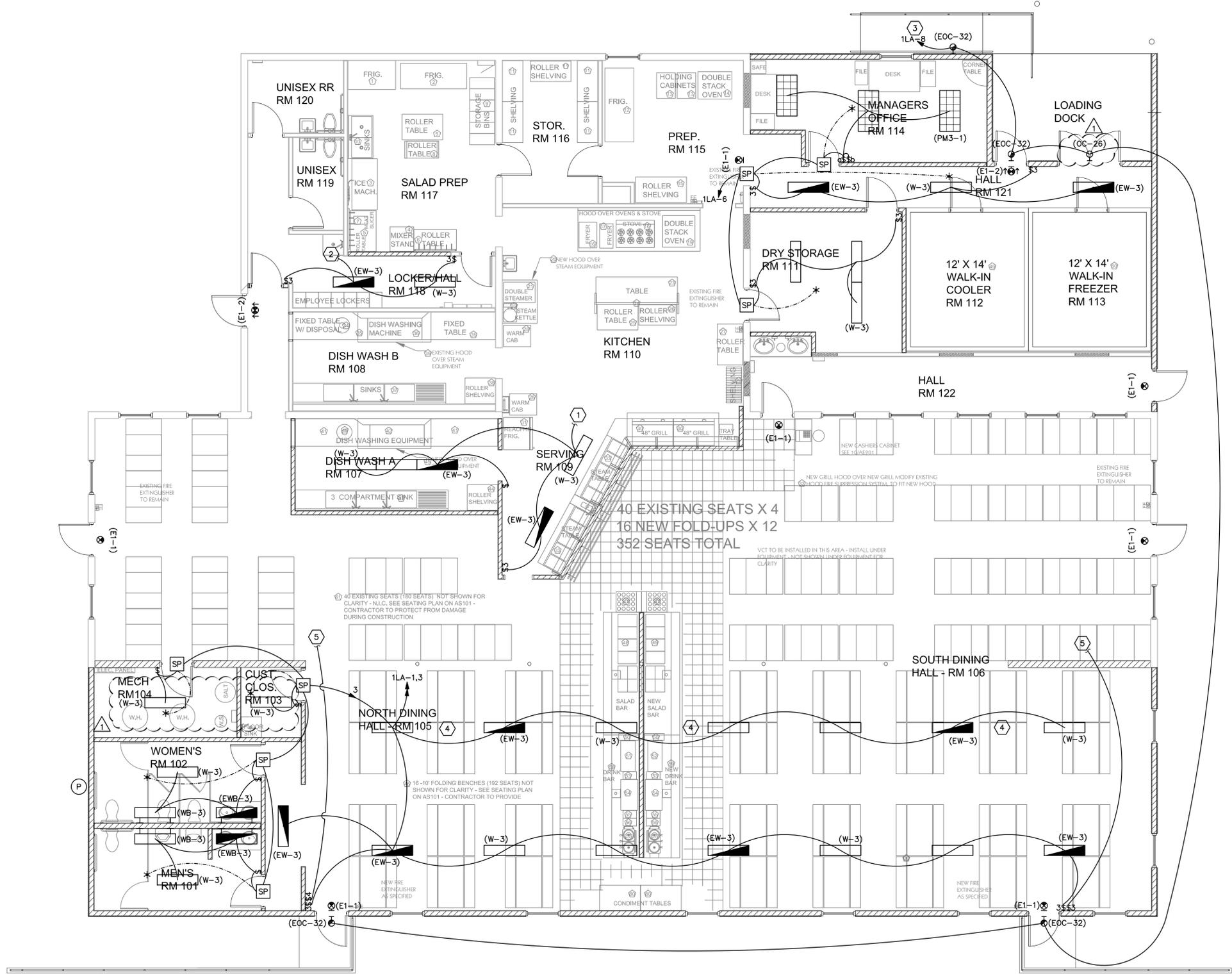


SHEET TITLE
Lighting Plan

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
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DRAWN BY: PSS CHECKED BY: DLA
 PROJECT NO: 06296480 DRAWING NO:
 DATE: AUG 22, 2007

EL101



L1 LIGHTING PLAN
 SCALE: 3/16"=1'-0"

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CONSULTANT INFORMATION

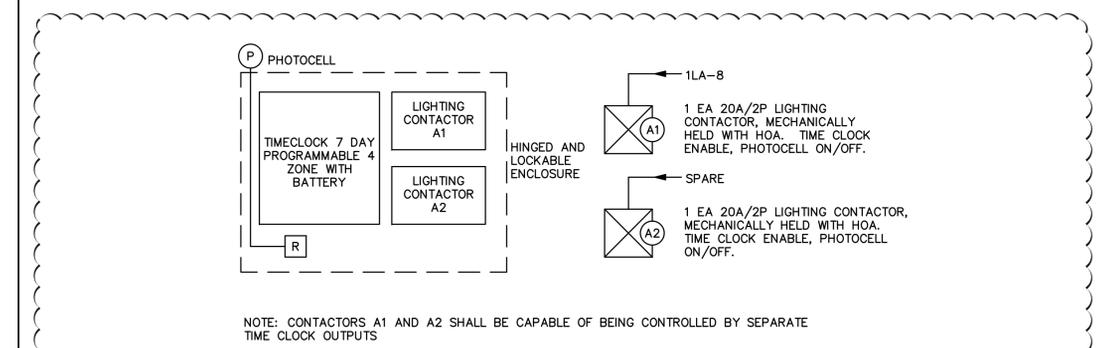
175 South Main Street, Suite 300
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 800-678-7077
 FAX 801-328-5155
 www.spectrum-engineers.com



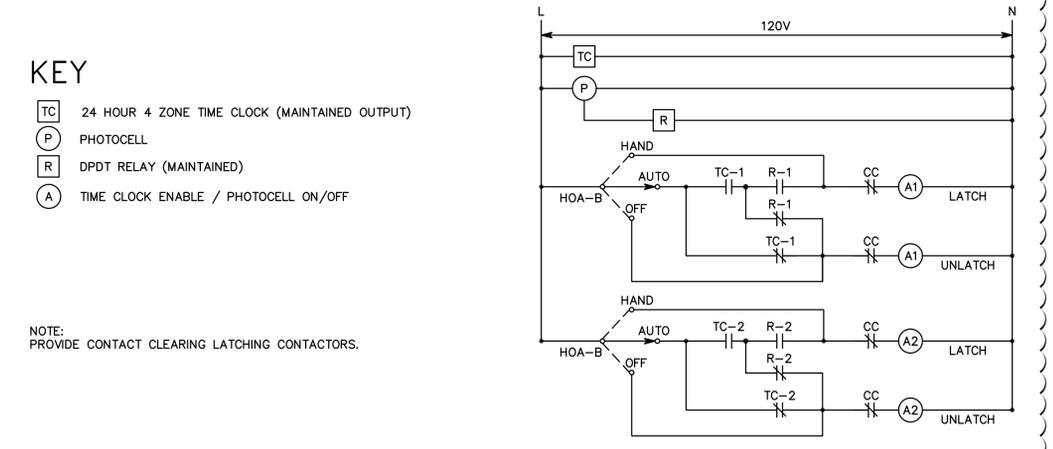
LIGHTING FIXTURE SCHEDULE

NOTE TO BIDDERS: COMPLY WITH SECTIONS 16511, 16521, AND 16570 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.

SYMBOL MARK	FIXTURE CHARACTERISTICS BODY / AIR / MOUNTING / DOOR	LAMP	WATTS	VOLTS	MANUFACTURER CATALOG NUMBER	NOTES
E	E PREFIX INDICATES THAT FIXTURE IS PROVIDED WITH AN EMERGENCY BATTERY PACK TO PROVIDE POWER TO ANY 2, 3, 4 OR 8 FOOT FLOURESCENT LAMP COMPATIBLE WITH ALL STANDARD AND ELECTRONIC BALLASTS; COMPLETELY SELF-CONTAINED TO PROVIDE 90 MINUTES OF EMERGENCY POWER TO FIXTURE BALLAST; MINIMUM LIGHT OUTPUT FOR TYPICAL 4' LAMP SHALL BE 1100 LUMENS OR HIGHER; UNIVERSAL TRANSFORMER FOR 120 OR 277 VOLTS; LOW VOLTAGE PROTECTION, COMBINATION TEST SWITCH AND AC "ON" INDICATOR; 10 YEAR PRO-RATA WARRANTY; INSTALL TEST SWITCH IN A MANNER THAT REQUIRES NO DISASSEMBLY FOR TESTING.					
E	EMERGENCY BATTERY PACK.		120/277V3W		IOTA BODINE LITHONIA PRESCOLITE EELP CHLORIDE LIGHTOLIER SIDELITE	I-80 B50 PS-1400 EFPS-5 EB1400 (CONTRACTOR INSTALLED) CFP841 FBP50 S60F
E1	EXIT SIGN: THERMOPLASTIC HOUSING; UNIVERSAL MOUNTING; UNIVERSAL ARROWS PER PLANS; EMERGENCY BATTERY PACK WITH 10 YEAR PRO-RATA WARRANTY; LED, DIFFUSE LENS PANEL; GREEN LETTERS ON WHITE BACKGROUND. MUST MEET NFPA ILLUMINATION STANDARDS.					
E1-1	SINGLE FACE:	LED	1W	120/277V	MCPHILBEN DUAL-LITE EELP LITHONIA SURE-LITES DAY-BRITE CHLORIDE LIGHTOLIER	CXXL-1-GW LXSGWE XE 1 GW EM LQM S W 1 G 120/277 ELN LPX70DGG CXL-1-GW-EM SLN1GW LTN1GW
E1-2	DUAL FACE:	LED	2W	120/277V	DUAL-LITE EELP LITHONIA SURE-LITES DAY-BRITE CHLORIDE LIGHTOLIER MCPHILBEN	LXUGWE XE 2 GW EM LQM S W 3 G 120/277 ELN LPX70DGG CXL-3-GW-EM SLN2GW LTN2GW CXXL-3-GW
OC	WALL PACK: ADJUSTABLE CUT OFF; FULL PERIMETER GASKETING; WET LOCATION; STAINLESS STEEL HINGES AND LATCHES; PROJECTING LENS; HFP BALLAST; SEE ELEVATION FOR MOUNTING HEIGHT, COLOR AS SPECIFIED BY ARCHITECT.					
OC-26	100 PSMH, RECESSED J BOX. WIDE THROW, SQUARE, DECORATIVE	100PSMH	130W	277/120V	MCPHILBEN LSI LITHONIA LUMARK	101-WT-100MH-XX GBWS-3-100MH-F-MT-XX-NO WST 100M WT TB MHIP-T-100-MT-XX
OC-32	CF42, RECESSED J BOX. MEDIUM THROW, SQUARE, DECORATIVE. REMOTE EMERGENCY BATTERY PACK.	CF42	50W	277/120V	MCPHILBEN LSI LITHONIA LUMARK	T01MT-42TRF-CBA-DT-EM GBWS-FTM-42CFL-F-120/277-XX-NO-EM WST 42TRT MD MVOLT-EM PLIP-T-42-MT-XX-EM GBWS FTM 42CFL F UE XXX W/LAMP-EM
PM3	PARABOLIC LOUVER FIXTURES WITH 3" LOUVERS IN PLASTIC PROTECTORS AND FULL DEPTH REFLECTOR; SIZE AS NOTED; PROGRAM START ELECTRONIC BALLASTS PER SPECS; T8 LAMPS; ONE BALLAST PER FIXTURE UNLESS NOTED FOR SWITCHING; HINGED AND LATCHED DOOR; LOW IRRIDESCENT LOUVER FINISH, VERTICAL GRAIN DIE STAMPED LOUVERS; TWO FORMED BALLAST COVERS; MAX 1300 CD/M2 ABOVE 45 DEGREES.					
PM3-1	2X4, 18 CELL SURFACE MOUNT; SEMI-SPECULAR SILVER, 3 LAMP.	3-F32T8	90W	277/120V	LITHONIA DAYBRITE METALUX COLUMBIA LSI	2PM3X-332-18LD-MVOLT-1/3TUBRHP 2S3P332-36SL-UNV-1/3EB-SPEC 2EP3MX-332S36I-UNV-PROGRAM START P224332SM-LD36S-3EB8-120/277 PROG SN2P18 332 SSO10PRS UE DPB2S18LP332-U-03P
W	LOW PROFILE WRAPAROUND: SURFACE MOUNTED SUITABLE FOR MOUNTING ON LOW DENSITY CEILING WITH 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	NARROW BODY WRAPAROUND; 2-LAMP, APPROX; 3" X 10" X 48".	2-F32T8	65W	277/120V	LITHONIA DAYBRITE METALUX LIGHTOLIER LSI	LB232-MVOLT-TUBPHP CAN232-UNV-1/2-EB-SPEC WS-232A-UNV-PROGRAM START WA232-U-SOP PR 232 SSO10PRS UE WC4-232-EBPS120/277
W-5	WIDE BODY WRAPAROUND; 3-LAMP, APPROX; 3" X 16" X 48".	3-F32T8	95W	277/120V	LITHONIA DAYBRITE METALUX LIGHTOLIER LSI	LB332-1/3MVOLT-TUBPHP CAW332-UNV-1/3-EB-SPEC WSA-332A-UNV-PROGRAM START WB332-U-03P PR 332 SSO10PRS UE WCW4-332-3EBPS120/277
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-3	2-LAMP, WALL MOUNT 48", ONLY; ACRYLIC INJECTION MOLDED PRISMATIC DIFFUSER.	2-F32T8	65W	277/120V	DAYBRITE LIGHTOLIER METALUX L.A.L. COLUMBIA LITHONIA LSI	CD232W-UNV-1/2-EB-SPEC CW232-WB-U-SOP BI-232-UNV-PROGRAM START BSQ100-2-4R-INJ-WHT-T8EB-120/277-UPS WAL4-232-EBPS120/277 WP 232 DO MVOLT-TUBPHP WB 232 SSO10PRS UE



116 LIGHTING CONTROL DIAGRAM



116 TYPICAL LIGHTING CONTROL SCHEMATIC

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Utah National Guard
 BLDG. 503 MESS HALL REMODEL
 CAMP W.G. WILLIAMS
 UTAH

STATE OF UTAH
 LICENSED PROFESSIONAL ENGINEER
 No. 191471
 TERRY L. TIPPETS

SHEET TITLE
Lighting Fixture Schedule

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
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DRAWN BY: PSS CHECKED BY: DLA
 PROJECT NO: 06296480 DRAWING NO:
 DATE: AUG 22, 2007

EL601

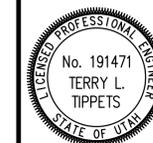
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GENERAL SHEET NOTES

1. CONNECT ALL NEW DEVICES/EQUIPMENT TO EXISTING FIRE ALARM PANEL. PROVIDE NAC EXTENDER PANELS AS REQUIRED.
2. ALL WIRING, CONDUCTORS, AND EQUIPMENT SHALL BE COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM EQUIPMENT. FIELD VERIFY ALL CONDITIONS PRIOR TO BID.
3. ALL FIRE ALARM CIRCUITS SHALL BE SINGLE CONDUCTORS IN RACEWAY.
4. ALL DEVICES SHOWN EXCEPT THE FIRE ALARM CONTROL PANEL SHALL BE NEW.
5. ALL NEW WIRING & RACEWAYS SHALL BE PROVIDED FOR FIRE ALARM SYSTEM DEVICES AND EQUIPMENT.

SHEET KEYNOTES

1. PROVIDE MONITOR MODULE AND RELAY FOR MONITORING THE HOOD FIRE EXTINGUISHING SYSTEM.
2. RELOCATED FIRE ALARM CONTROL PANEL. EXTEND ALL EXISTING CIRCUITS AS REQUIRED TO NEW LOCATION.
3. EXTEND EXISTING POWER FOR FCP TO NEW LOCATION. FIELD VERIFY REQUIREMENTS.
4. EXTEND CONDUIT DOWN TO NEW MANUAL PULL STATION AT ADA HEIGHT.
5. PROVIDE FIRE ALARM BELL AND HORN/STROBE DIRECTLY ABOVE THE FIRE DEPARTMENT CONNECTION (FDC) POINT.

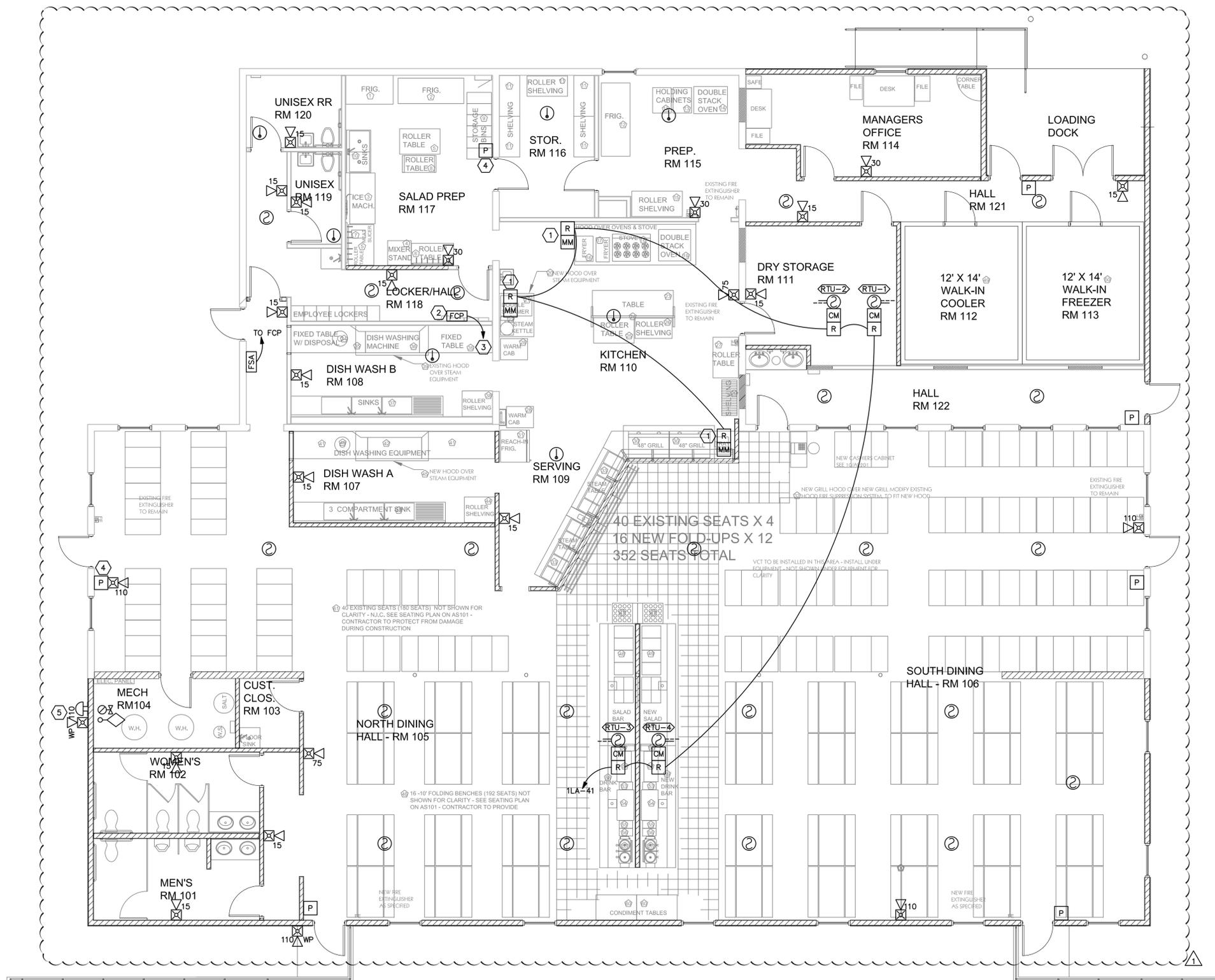


SHEET TITLE
Fire Alarm Plan

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
△			
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DRAWN BY: PSS CHECKED BY: DLA
 PROJECT NO: 06296480 DRAWING NO:
 DATE: AUG 22, 2007

FA101



L1 FIRE ALARM PLAN
 SCALE: 3/16"=1'-0"

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GENERAL SHEET NOTES

- 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.
- 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.
- 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.
- FLOW AND TAMPER CONFIGURATION BASED UPON FIRE SPRINKLER DESIGN CONCEPT. FIELD VERIFY ACTUAL REQUIREMENTS. INCLUDE ANY ADDITIONAL MONITOR MODULES REQUIRED BY ACTUAL DESIGN REQUIREMENTS.
- 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.
- PROVIDE POWER SUPPLY CAPACITY AS REQUIRED FOR DOOR HOLD OPENS SHOWN.
- BATTERY CAPACITY TO BE ADEQUATE TO OPERATE 15 MINUTES AFTER 24 HOURS PLUS 25% SPARE CAPACITY.
- VFD REQUIRES TWO RELAYS, ONE FOR SMOKE CONTROL, ONE SPARE.
- RUN SPARE LOOPS IN SAME CONDUIT. DO NOT EXCEED 40% AREA FILL OF CONDUITS.
- 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.
- 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.
- PROVIDE MANUAL PULL STATIONS IN BOILER ROOMS AND KITCHENS.
- PROVIDE ONE YEAR OFF SITE MONITORING INCLUDING ALL INTERFACE DEVICES AND MONITORING CHARGES. COORDINATE WITH BUILDING OWNER'S OFF SITE MONITORING COMPANY.
- LOCATE SMOKE DETECTORS MINIMUM 3' FROM AIR SUPPLY AND RETURN LOUVERS.
- PROVIDE SYNCHRONIZED STROBES THROUGHOUT FACILITY. PROVIDE SYNCHRONIZATION MODULES PER MANUFACTURER'S REQUIREMENTS. INCLUDE ADDITIONAL WIRING, IF REQUIRED.
- INITIATING AND INDICATING LOOPS SHALL NOT SERVE AN AREA OF GREATER THAN 22,500 SQUARE FEET. PROVIDE ADDITIONAL LOOPS FOR AREAS LARGER THAN THIS.
- ALL OUTPUT DEVICES ARE DESIGNED ON SYSTEMS WITH 2 AMP POWER SUPPLY.
- HORN/STROBE BASED ON 120 MILLIAMPS, DOOR HOLDERS BASED ON 70 MILLIAMPS.
- INSTALL DUCT DETECTORS PER NFPA 72 REQUIREMENTS AND PROVIDE ADDITIONAL DUCT DETECTORS DEPENDING UPON FINAL DUCT ARRANGEMENT.

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Utah National Guard
 BLDG. 503 MESS HALL REMODEL
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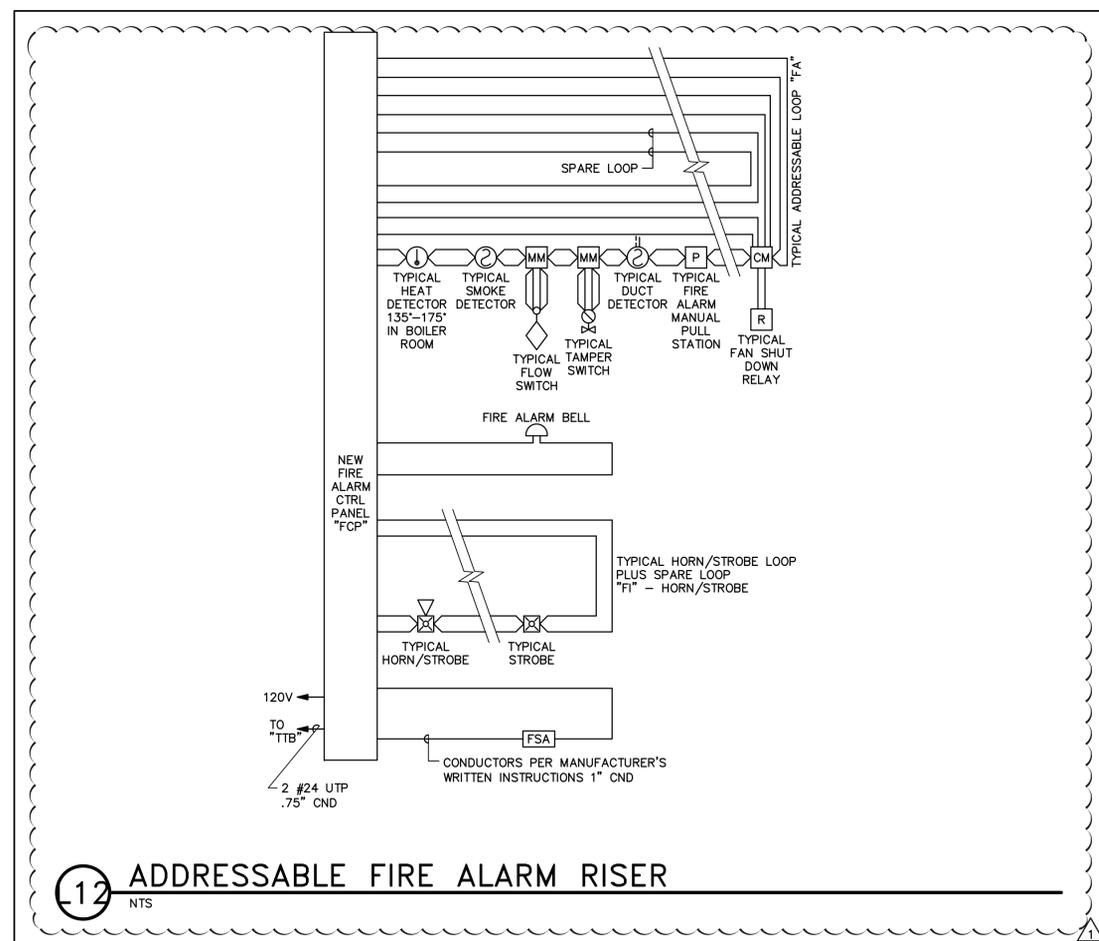
SHEET TITLE
Fire Alarm Riser

REVISIONS	DATE	BY	DESCRIPTION
△	9/10/07		ADDENDUM
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DRAWN BY: **PSS** CHECKED BY: **DLA**

PROJECT NO: **06296480** DRAWING NO: **FA601**

DATE: **AUG 22, 2007**



12 ADDRESSABLE FIRE ALARM RISER
 NTS

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 SPEAKERS	#12 THWN	#10 THWN		
	#16 TSP	#16 TSP	#14 TSP	#14 TSP

NOTIFICATION SCHEDULE

SYMBOL	STROBE SIZE	COVERAGE	AVERAGE CURRENT	MAXIMUM PER CIRCUIT ALONE
☒◁15	15 CD	20'x20'	.085A	17
☒◁30	30 CD	30'x30'	.135A	11
☒◁75	75 CD	40'x40'	.200A	7
☒◁110	110 CD	50'x50'	.225A	6

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