ADDENDUM NO. 4

DATE: May 23, 2016

TO: ALL PRIME BIDDERS

FROM: David R. Barlew Architects Inc.
714 Cherry Street
Chattanooga, Tennessee 37405

PROJECT:
UTILITY SHED CONVERSION PROJECT
COOLIDGE PARK
CITY OF CHATTANOOGA, TENNESSEE
CONTRACT NO.: R-15-005-201

THE CONTRACT DOCUMENTS FOR THE ABOVE-REFERENCED PROJECT ARE SUPPLEMENTED AND MODIFIED AS DESCRIBED BELOW:

Changes to the Drawings:

1. Sheet M-1 – HVAC Plan: replace sheet with attached revised sheet
2. Sheet P-1 – Plumbing Plan: replace sheet with attached revised sheet
3. Sheet E-2 – Power & Lighting Plan: replace sheet with attached revised sheet

End of Addendum #4

May 9, 2016

/s/ Justin C. Holland, Administrator
City of Chattanooga
Department of Public Works

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

TAG	INDOOR UNIT: SA CFM	OA CFM	ESP IN.WG	SA FAN HP	DX–COOLING COIL: TOTAL MBH	SENS. MBH	EAT °F db/wb	LAT °F db/wb	GAS HEAT OUTPUT (MBH)	ELEC CHAR V/ø/HZ	BASIS OF DESIGN	OUTDOOR UNIT: TAG	SEER	ELEC CHAR V/ø/HZ	BASIS OF DESIGN	NOTES
AH–1	525	100	0.50	0.5	16.7	12.1	80/67	58/56	16	115/1/60	TRANE TUH1B040A9H21	CU–1	15.0	208/230–1–60	TRANE 4TTR4018L1000	①②③④⑤⑥⑦⑧⑨⑩

① ESP INCLUDES DUCTWORK & GRILLES ONLY.
② 1" PLEATED FILTERS
③ INSTALLED HORIZONTALLY. TOP DISCHARGE. SIDE RETURN. (SEE PLAN)
④ PROVIDE REFRIGERANT PIPING WITH ALL REQUIRED ACCESSORIES FOR A COMPLETE WORKING SYSTEM
⑤ MOUNT CONDENSING UNIT ON CONCRETE PAD. COORDINATE WITH ARCHITECTURAL PLAN.
⑥ REFRIGERANT R–410A
⑦ PROVIDE PROGRAMMABLE T'STAT. COORDINATE LOCATION WITH OWNER.
⑧ PROVIDE DISCONNECT PER MANUFACTURER AND PER CODE. COORDINATE WITH ELECTRICAL..
⑨ PROVIDE HIGH EFFICIENCY CASED COIL (FOR TRANE, MODEL # 4TXCB003DS3HC)
⑩ PROVIDE EQUIPMENT CLEARANCE PER MANUFACTURER.

SEQUENCE OF OPERATION

1. ALL AC UNITS SHALL BE CONTROLLED BY A PROGRAMMABLE, AUTO CHANGEOVER THERMOSTAT WITH SUBBASE (ONE PER UNIT). T'STAT SHALL BE ABLE TO PROVIDE OCCUPIED/UNOCCUPIED MODES OF OPERATION.
2. DURING THE OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE OPENED, AND THE COMPRESSOR OR ELECTRIC HEAT SHALL BE CYCLED TO MAINTAIN THE SPACE TEMPERATURE – 75°F COOLING; 70°F HEATING.
3. DURING THE UNOCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE CLOSED. THE ELECTRIC HEAT SHALL BE ENERGIZED TO MAINTAIN THE NIGHT SET BACK TEMPERATURE SETTING – 55° F ADJUSTABLE.

DIFFUSER, GRILLE & REGISTER SCHEDULE

TAG	SERVICE	TYPE	CFM RANGE	NECK SIZE	THROW	PATTERN	NC	PD IN.WG	BASIS OF DESIGN	NOTES
Ⓐ	SUPPLY	SQUARE – 24X24 ALUMINUM	SEE PLANS	SEE PLANS	8'	4 WAY	25	0.1	TITUS TMS–AA	①②③
Ⓑ	SUPPLY	SPIRAL GRILLE ALUMINUM	SEE PLANS	SEE PLANS	8'	2 WAY	25	0.1	TITUS S300FL	②③④
①	RETURN/EXHAUST	EGGCRATE 1/2x1/2x1/2 GRID	SEE PLANS	SEE PLANS	---	---	25	0.05	TITUS 50F	②③

① ROUND NECK. ADJUSTABLE OPPOSED BLADE DAMPER.
② PROVIDE MOUNTING FRAME FOR EACH AIR DISTRIBUTION DEVICE TO MATCH THE SPECIFIC CEILING/WALL/DUCTWORK REQUIREMENT
③ COORDINATE FINISH AND LOCATION WITH OWNER/ARCHITECT.
④ PROVIDE AIR SCOOP DAMPER/EXTRACTOR.

HVAC SPECIFICATIONS

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE MECHANICAL SYSTEM IS PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES AND CONTROLS. CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT WITH OTHER TRADES PRIOR TO PURCHASING ANY NEW EQUIPMENT.
2. IF ANY SYSTEM MUST BE REPLACED, TRANE AIR CONDITIONING SYSTEM OR EQUIVALENT IS ACCEPTABLE. SEE SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE SCHEDULE.
3. DUCTWORK SHALL BE GALVANIZED STEEL FABRICATED PER SMACNA STANDARDS. VOLUME DAMPERS SHALL BE INSTALLED AT ALL DUCT BRANCHES AND DIFFUSER TAKE OFFS TO BE ABLE TO BALANCE THE AIR SYSTEM. DUCT SHALL BE HUNG WITH 1" WIDE DUCT STRAPS.

DEMOLITION NOTES

1. SCOPE OF WORK: DEMO DEVICES PER PLAN. COORDINATE WITH ARCHITECTURAL PLANS AND OWNER.
2. ALL DEMOLITION WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL ORDINANCES AND CODES, ALL LIFE–SAFETY CODES AND WITH ALL INDUSTRY STANDARDS PERTAINING TO THIS TYPE OF WORK.
3. THE CONTRACTOR SHALL INSPECT THE BUILDING PRIOR TO THE START OF ANY WORK, & SHALL FIELD VERIFY ALL EXISTING CONDITIONS.
4. SALVAGE SHALL BECOME THE PROPERTY OF THE OWNER, UNLESS OTHERWISE NOTED IN THE PLANS.
5. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES AND THE PUBLIC FROM DAMAGE OR INJURY AT ALL TIMES DURING THE DEMOLITION PHASE.

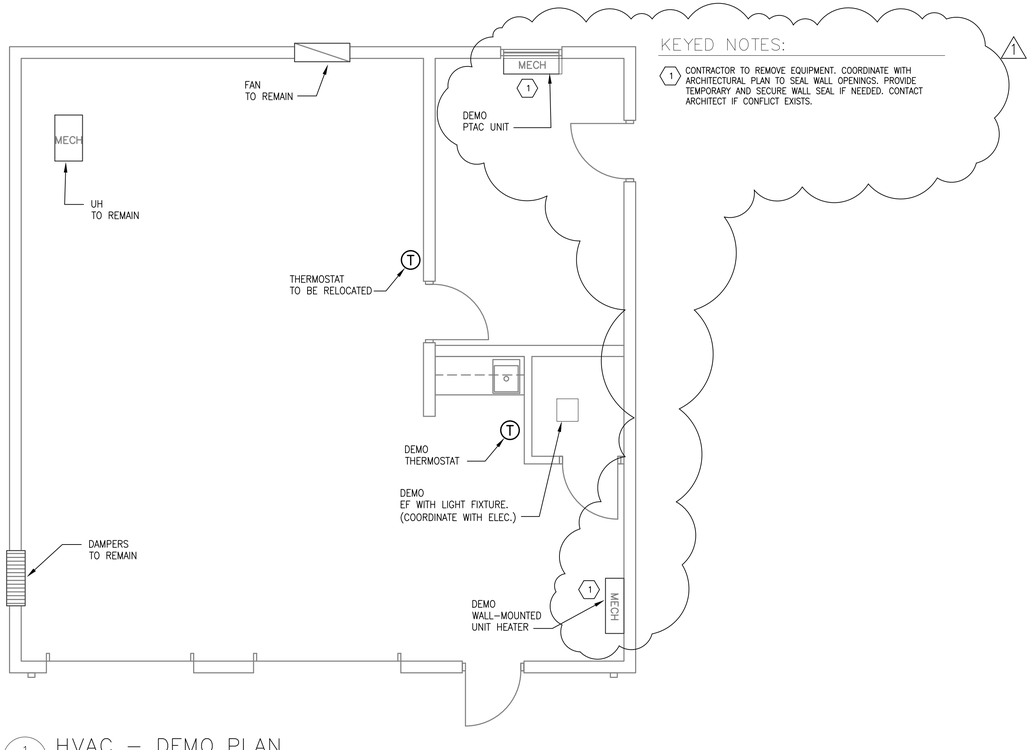
GENERAL NOTES

1. ALL MECHANICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE (2012 ED.) AND THE LOCAL AMENDMENTS.
2. CONTRACTOR SHALL COORDINATE MECHANICAL WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION AND INSTALLATION. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, AIR DISTRIBUTION DEVICES, ETC.
3. COORDINATE THE SIZE OF ALL WALL OPENINGS, ROOF OPENINGS AND EQUIPMENT PADS WITH ACTUAL EQUIPMENT PURCHASED. ALL MECHANICAL ITEMS EXTENDING THRU EXTERIOR WALLS & ROOF SHALL BE FLASHED AND COUNTER FLASHED.
4. ALL DUCTWORK SIZES ARE INSIDE CLEAR FREE AREA AND SHALL BE INCREASED WHERE REQUIRED TO INCLUDE INTERNAL INSULATION.
5. MOTOR STARTERS AND DISCONNECTS SHALL BE FURNISHED UNDER DIVISION 15 AND INSTALLED BY THE ELECTRICAL CONTRACTOR. COORDINATE SIZE, VOLTAGE AND TYPE OF ALL HVAC EQUIPMENT WITH ELECTRICAL CONTRACTOR PRIOR TO PURCHASING.
6. CONTRACTOR SHALL NOTE THAT THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT INDICATE ALL OFFSETS, TRANSITIONS, OR OTHER APPURTENANCES REQUIRED FOR A COMPLETE HVAC SYSTEM. PROVIDE ALL EQUIPMENT NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION, READY AND SUITABLE FOR THE OWNER'S USE.
7. CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING, THERMOSTATS, CONTROL TRANSFORMERS, DAMPERS, DAMPER OPERATORS ETC... NECESSARY TO ACHIEVE PROPER OPERATION OF SYSTEMS.
8. LOCATE ALL SPACE CONTROL INSTRUMENTS 4'–6" ABOVE FINISHED FLOOR FROM BOTTOM OF DEVICE.
9. ALL PIPING AND DUCTWORK SHALL RUN CONTINUOUSLY THRU FLOORS, ROOFS AND PARTITIONS.
10. CONTRACTOR SHALL PROVIDE & INSTALL ALL MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL ITEMS.
11. CONTRACTOR SHALL COORDINATE MECHANICAL WORK WITH OTHER TRADES TO MINIMIZE INTERFERENCES. WHERE CONFLICTS EXIST, REQUEST INFORMATION.
12. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID. WHERE CONFLICTS OR DISCREPANCIES EXIST, REQUEST INFORMATION.
13. CONTRACTOR SHALL INSTALL FIRE DAMPERS PER CODE WHERE SHOWN ON PLANS AND IN ALL FIRE PARTITIONS.
14. ROUTE FULL SIZE CONDENSATE DRAINS WITH ALL NECESSARY TRAPS FROM INDOOR AIR HANDLER(S) THROUGH EXTERIOR WALL AND SPILL ON GRADE.

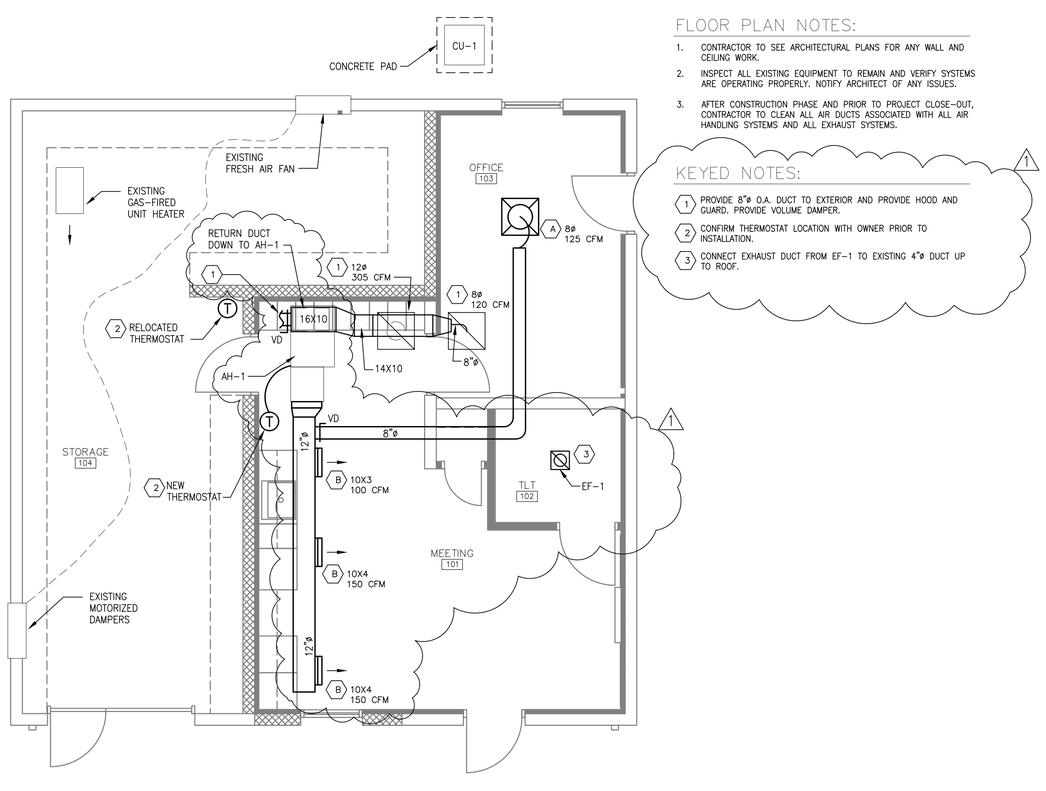
EXHAUST FAN SCHEDULE

TAG	SERVICE	TYPE	CFM	ESP IN.WG	HP/ WATTS	DRIVE	RPM	SONES	ELEC CHAR V/ø/HZ	BASIS OF DESIGN	NOTES
EF–1	TOILET ROOM	CLG–CENT	75	0.25	50W	DIRECT	950	1.6	120/1/60	GREENHECK SP–A110	①②③④⑤⑥

① BACKDRAFT DAMPER
② UNIT MOUNTED DISCONNECT & STARTER
③ SOLID STATE SPEED CONTROLER
④ WHITE CLG GRILLE
⑤ INTERLOCK FAN WITH LIGHT SWITCH.
⑥ PROVIDE FAN WITH LIGHT FIXTURE. COORDINATE WITH ARCHITECTURAL PLANS.



1 M–1 HVAC – DEMO PLAN
SCALE: 1/4"=1'–0"



2 M–1 HVAC – NEW WORK PLAN
SCALE: 1/4"=1'–0"

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REVISIONS
1 05/23/16 REV PER COMMENTS

COOLIDGE PARK SHED RENOVATION
COOLIDGE PARK
CHATTANOOGA, TN 37405
CITY OF CHATTANOOGA
CHATTANOOGA, TENNESSEE

Dwight E. Beasley REGISTERED PROFESSIONAL ENGINEER STATE OF TENNESSEE 24741 AGRICULTURE COMMERCE
04/15/2016

PROJECT NO.	DISK FILE NO.
1521	1521A1
DRAWN: TLS	CHECKED: DEB

ISSUED FOR CONSTRUCTION
N.F.C.
DATE

DRAWING NAME
HVAC PLAN

SHEET NO.
M–1

PLUMBING GENERAL NOTES

1. ALL PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES, ADA REQUIREMENTS, AND AUTHORITY HAVING JURISDICTION. THE 2012 INTERNATIONAL PLUMBING CODE.
2. ALL PLUMBING WORK SHALL BE COORDINATED AND VERIFIED FOR ANY INTERFERENCE WITH ALL DISCIPLINES, BEFORE FABRICATION AND INSTALLATION.
3. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAKE FINAL CONNECTIONS TO ALL FIXTURES DESIGNATED ON THE ARCHITECTURAL AND PLUMBING DRAWINGS.
4. ANY FIXTURES DAMAGE DUE TO THE CONTRACTORS NEGLECT WILL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
5. ALL ABOVE GROUND HORIZONTAL PIPING LOCATED IN AREAS PROVIDED WITH SUSPENDED CEILING SHALL BE INSTALLED ABOVE SUCH CEILING UNLESS OTHERWISE NOTED.
6. PLUMBING SUPPORTS AND HANGERS SHALL BE COORDINATED WITH THE STRUCTURE. ALL SLEEVES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALLATION. EXACT LOCATION OF CORES THROUGH BEAMS SHALL BE COORDINATED W/ STRUCTURAL ENGINEER PRIOR TO CORING BEAMS.
7. ALL PLUMBING FIXTURES AND EQUIPMENT CONNECTED TO THE SANITARY SYSTEM SHALL BE PROVIDED WITH TRAPS AND CLEANOUTS. EXPOSED PIPING SHALL BE CHROME PLATED.
8. NOT USED.
9. PROVIDE AND INSTALL WATER HAMMER ARRESTORS PER MANUFACTURER'S INSTRUCTIONS AND PDI STANDARD 201.
10. CONTRACTOR SHALL PROVIDE SHUT-OFF VALVES FOR EACH PIECE OF EQUIPMENT, FIXTURE AND TOILET GROUP OR ROOM.
11. ALL EXPOSED PIPING SHALL BE RUN TIGHT TO STRUCTURE AND PERPENDICULAR/PARALLEL TO BUILDING BEAMS AND STRUCTURE.
12. REFER TO ARCHITECTURAL DRAWINGS FOR QUANTITY AND LOCATIONS OF PLUMBING FIXTURES, AND PROVIDE PLUMBING TO ALL FIXTURES SHOWN.
13. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ACCESS PANELS IN ALL NON-ACCESSIBLE CEILINGS AND AT WALLS AS REQUIRED FOR VALVES, CLEANOUTS, WATER HAMMER ARRESTORS ETC... PANELS, SIZED AS REQUIRED FOR ADEQUATE ACCESS, SHALL BE NO SMALLER THAN 12"x12". COORDINATE STYLE, COLOR AND FINISH OF EACH WITH THE ARCHITECT.
14. NOT USED.
15. CONTRACTOR SHALL COORDINATE ALL UNDERGROUND SANITARY PIPING W/ EXISTING FOOTING/FOUNDATION.

PLUMBING SPECIFICATIONS:

1. SANITARY PIPING, UNDERGROUND, SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD JOINTS MEETING ASTM D-1785 AND ASTM D-2665. SANITARY PIPING, ABOVE GROUND, SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD JOINTS MEETING ASTM D-1785 AND ASTM D-2665.
2. ABOVE GROUND DOMESTIC WATER PIPING SHALL BE TYPE L, HARD DRAWN COPPER TUBING, ASTM B88, WITH SOLDERED JOINTS, ANSI B16.22. UNDERGROUND WATER PIPING SHALL BE TYPE K, HARD DRAWN COPPER TUBING, SOLDERED JOINTS, ANSI B16.22. ALL DOMESTIC WATER SERVICE AND SUPPLY PIPING SHALL BE DISINFECTED WITH CHLORINE BEFORE IT IS PLACED INTO OPERATION. CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION THAT THE SYSTEM WAS DISINFECTED. CERTIFICATION SHALL INCLUDE DATE OF DISINFECTION, NAME OF OPERATOR, TIMES OF DISINFECTION PERIOD, MAXIMUM CHLORINE LEVEL AND RESIDUAL CHLORINE LEVEL. CPVC OR PEX PIPING IS ACCEPTABLE.
3. DOMESTIC WATER SHALL BE INSULATED WITH ONE PIECE FIBROUS GLASS, WITH FACTORY APPLIED ALUMINUM FOIL AND VAPOR BARRIER JACKET. AVERAGE THERMAL CONDUCTIVITY 0.23 BTU/IN. INSULATION THICNESS SHALL BE 1". INSULATE ALL HORIZONTAL STORM PIPING AND UNDER BODY OF ROOF DRAINS WITH 1" FIBERGLASS BLANKET INSULATION.
4. PIPE HANGERS FOR DOMESTIC WATER PIPING SHALL BE GRINNELL #CT-65, COPPER PLATED STEEL. SUSPEND PIPING FROM STELL BEAM AND JOISTS WITH ADJUSTABLE BEAM CLAMPS AND RODS.

DEMOLITION NOTES:

1. SCOPE OF WORK: DEMO EXISTING PLUMBING AS SHOWN ON PLANS. COORDINATE AND VERIFY FOR ANY INTERFERENCE AND /OR CONFLICTS WITH ALL DISCIPLINES, BEFORE DEMO.
2. ALL DEMOLITION WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL ORDINANCES AND CODES, ALL LIFE-SAFETY CODES AND WITH ALL INDUSTRY STANDARDS PERTAINING TO THIS TYPE OF WORK.
3. THE CONTRACTOR SHALL INSPECT THE BUILDING PRIOR TO THE START OF ANY WORK, & SHALL FIELD VERIFY ALL EXISTING CONDITIONS.
4. SALVAGE SHALL BECOME THE PROPERTY OF THE OWNER, UNLESS OTHERWISE NOTED IN THE PLANS.
5. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES AND THE PUBLIC FROM DAMAGE OR INJURY AT ALL TIMES DURING THE DEMOLITION PHASE.

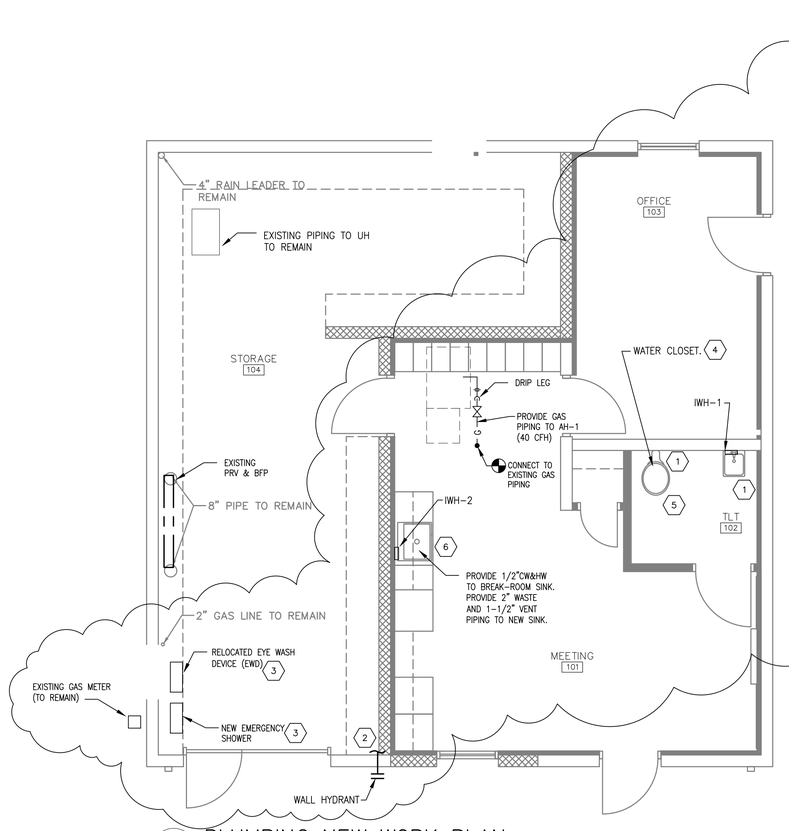
NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING WATER, WASTE AND VENT PIPING INCLUDING INVERT ELEVATIONS OF EXISTING SANITARY PRIOR TO START WORK. CONTACT THE ENGINEER IF ANY CONFLICT EXISTS. (EXISTING WATER PIPING IS NOT SHOWN BUT WATER PIPING EXISTS.)
2. CONTRACTOR SHALL SEE GENERAL NOTES (THIS SHEET).

KEYED NOTES

1. EXISTING INTERIOR HOSE BIBB. SEE NEW WORK PLAN.
2. EXISTING EWD TO BE RELOCATED. COORDINATE WITH ARCHITECTURAL PLAN AND OWNER. RELOCATE PIPING.
3. CONTRACTOR SHALL DEMOLISH EXISTING GAS PIPING TO THIS DEVICE ONLY. CUT AND CAP. DO NOT DEMO ANY GAS PIPING TO GAS-FIRED DEVICES TO REMAIN IN USE. SEE NEW WORK PLAN. CONTACT ENGINEER IF ANY CONFLICT EXISTS.
4. CONTRACTOR SHALL DEMOLISH EXISTING PIPING TO THIS FIXTURE ONLY. DEMO WATER PIPING TO THIS FIXTURE ONLY. CUT AND CAP. DEMO SANITARY AND VENT PIPING TO THIS FIXTURE ONLY. CUT AND CAP VENT PIPING IF CONNECTED TO THIS FIXTURE ONLY. RECONNECT AND/OR LEAVE ACTIVE ALL ACTIVE VENT PIPING IN WALL AND ABOVE CEILING AS NEEDED FOR CONTINUED USE WITH EXISTING TO REMAIN AND NEW WORK. CUT AND CAP SANITARY PIPING FLUSH WITH FLOOR LEVEL; AND RECONNECT ALL ACTIVE SANITARY PIPING BELOW GRADE AS NEEDED FOR CONTINUED USE WITH EXISTING TO REMAIN AND NEW WORK. COORDINATE ALL PLUMBING DEMO WORK WITH NEW PLUMBING WORK AND ARCHITECTURAL PLANS. CONTACT ENGINEER IF ANY CONFLICT EXISTS.
5. CONTRACTOR SHALL REMOVE EXISTING PLUMBING FIXTURE. DO NOT DEMO. STORE FOR NEW WORK. COORDINATE WITH ARCHITECTURAL PLANS. CONTACT ENGINEER IF ANY CONFLICT EXISTS.

1 P-1 PLUMBING DEMO PLAN
SCALE: 1/4" = 1' - 0"



NOTES

1. CONTRACTOR SHALL FIELD VERIFY SIZE AND LOCATION OF WATER PIPING PRIOR TO START WORK. CONTACT THE ENGINEER IF ANY CONFLICT EXISTS PRIOR TO STARTING WORK.
2. CONTRACTOR SHALL FIELD VERIFY SIZE AND LOCATION OF EXISTING WASTE AND VENT PIPING INCLUDING INVERT ELEVATION OF EXISTING SANITARY PRIOR TO START WORK. CONTACT THE ENGINEER IF ANY CONFLICTS.
3. ALL PLUMBING FIXTURES SHALL BE INSTALLED WITH INDIVIDUAL SHUT OFF VALVES.
4. CONTRACTOR SHALL INSULATE ALL HOT WATER AND COLD WATER PIPING.
5. CONTRACTOR SHALL INSTALL NEW IWH-1 (INSTANTANEOUS WATER HEATER) BENEATH RESTROOM LAVATORY AND INSTALL NEW IWH-2 BENEATH BREAK-ROOM SINK. (BOTH IWH'S: MODEL EEMAX SP48)
6. CONTRACTOR SHALL SEE P-0 FOR GENERAL NOTES.

KEYED NOTES

1. ADA COMPLIANT FIXTURE: CONTRACTOR SHALL VERIFY EXISTING FIXTURE IS ADA COMPLIANT. CONTACT ARCHITECT IF CONFLICT EXISTS.
2. CONTRACTOR SHALL RELOCATE WATER LINE TO EXTERIOR. PROVIDE FREEZE-PROTECTED WALL HYDRANT.
3. CONTRACTOR TO COORDINATE WITH OWNER AND ARCHITECTURAL PLANS FOR LOCATION OF THIS FIXTURE. PROVIDE COLD WATER PIPING PER MANUFACTURER AND CONNECT TO MAIN INCOMING WATER PIPING DOWNSTREAM OF EXISTING BFP AND SHUT-OFF-VALVE.
4. CONTRACTOR SHALL REINSTALL PLUMBING FIXTURE. COORDINATE WITH THE ARCHITECTURAL PLANS.
5. CONTRACTOR SHALL COORDINATE CUTTING OF FLOOR AND PATCHING/REPLACEMENT OF FLOOR WITH THE ARCHITECTURAL PLANS AND/OR THE ARCHITECT.
6. CONTRACTOR SHALL PROVIDE BREAK-ROOM SINK. SEE ARCHITECTURAL PLAN FOR MANUFACTURER AND MODEL DATA. IF CONFLICT EXISTS, CONTACT ARCHITECT.

2 P-1 PLUMBING NEW WORK PLAN
SCALE: 1/4" = 1' - 0"

REVISIONS
1 05/23/16 REV PER COMMENTS

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CHATTANOOGA, TENNESSEE

Dwight E. Easley
REGISTERED PROFESSIONAL ENGINEER
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COMMERCE
TENNESSEE
06/15/2016

PROJECT NO.	DISK FILE NO.
1521	1521A1
DRAWN	CHECKED
TLS	DEB

ISSUED FOR CONSTRUCTION
N.F.C.
DATE

DRAWING NAME
PLUMBING PLAN

SHEET NO.
P-1

ABBREVIATIONS: NOTE: NOT ALL SYMBOLS USED

AFF	ABOVE FINISHED FLOOR	FLUOR	FLUORESCENT	NFSS	NON–FUSIBLE SAFETY SWITCH
AFG	ABOVE FINISHED GRADE	FLA	FULL LOAD AMPERES	NTS	NOT TO SCALE
ACCU	AIR COOL CONDENSER UNIT	FSS	FUSIBLE SAFETY SWITCH	O.C.	ON CENTER
AHU	AIR HANDLING UNIT	GND	GROUND	PNL	PANEL
AL	ALUMINUM	GFI	GROUND FAULT INTERRUTPER	P	POLE
AMP A	AMPERE	HH	HANDHOLE	PP	POWER POLE
AWG	ANERICAN WIRE GAUGE	HID	HIGH INTENSITY DISCHARGE	PB	PULL BOX
ATS	AUTOMATIC TRANSFER SWITCH	HPF	HIGH POWER FACTOR	REC	RECEPTACLE
BKBD	BACKBOARD	HP	HORSEPOWER	REQ'D	REQUIRED
CB	CIRCUIT BREAKER	INCAND	INCANDESCENT	RGS	RIGID GALVANIZED STEEL CONDUIT
CAT CKT	CATALOG CIRCUIT	IMC	INTERMEDIATE METAL CONDUIT	RTU	ROOF TOP UNIT
C	CONDUIT	IWH	INSTANT WATER HEATER	SN	SOLID NETRAL
DN	DOWN	HWH	HOT WATER HEATER	SWBD	SWITCHBOARD
DWG	DRAWING	JB	JUNCTION BOX	SWGR	SWITCHGEAR
EMT	ELECTRICAL METALLIC TUBING	KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY	TEL	TELEPHONE
EWC	ELECTRIC WATER COOLER	KW	KILOWATT	TWU	THRU–THE–WALL UNIT
EMER	EMERGENCY	KVA	KILOVOLT AMPERE	XFMR	TRANSFORMER
EMPTY	CONDUIT	LTG	LIGHTING	U.G.	UNDERGROUND
EQUIP	EQUIPMENT	MCB	MAIN CIRCUIT BREAKER	UON	UNLESS OTHERWISE NOTED
EF	EXHAUST FAN	N	NEUTRAL	UH	UNIT HEATER
EXIST	EXISTING	MH	MANHOLE	V	VOLT(S)
FA	FIRE ALARM	MT	MOUNT	WP	WEATHERPROOF
FACP	FIRE ALARM CONTROL PANEL	MTD	MOUNTED	W	WIRE
		MTG	MOUNTING	W/	WITH
		NEC	NATIONAL ELECTRIC CODE		
		NIC	NOT IN CONTRACT		

LEGEND

- PANELBOARD, 208/120V, 3 PHASE, 4 WIRE. FLUSH OR SURFACE MOUNTED AS NOTED ON PANEL SCHEDULE, TOP OF PANEL 6'–0" AFF.
- SINGLE RECEPTACLE, MOUNT 18" AFF, U.O.N. AND AS DETAILED ON ARCHITECTURAL ELEVATIONS.
- DUPLEX RECEPTACLE, MOUNT 18" AFF, U.O.N. AND AS DETAILED ON ARCHITECTURAL ELEVATIONS. "CTR"= 4" ABOVE COUNTERTOP HEIGHT
- GFI GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE, MOUNT 6" ABVOVE COUNTER OR TABLE TOP U.O.N. AND AS DETAILED ON ARCHITECTURAL ELEVATIONS.
- DUPLEX RECEPTACLE, MOUNTED IN CEILING OR ABOVE CEILING TO SUPPORT OR STRUCTURE
- DOUBLE DUPLEX RECEPTACLE, MT. 12" AFF U.O.N. AND AS DETAILED ON ARCHITECTURAL ELEVATIONS.
- SPECIAL RECEPTACLE AS NOTED, MOUNTING HEIGHT AS NOTED.

COORDINATE INSTALLATION WITH OTHER TRADES AND THE N.E.C. ARTICLE 384

SEE SPECIFICATIONS FOR RATING AND GRADE, U.O.N.

- #HP SEALTITE CONNECTION TO MOTOR, HP SIZE & TYPE AS NOTED.
- NON–FUSED SAFETY SWITCH, SIZE & TYPE AS NOTED.
- FUSED SAFETY SWITCH, SIZE & TYPE AS NOTED.
- WALL OR CEILING MOUNTED JUNCTION BOX.
- CODE SIZE, COPPER, SERVICE ENTRANCE OR EQUIPMENT GROUND.
- A FLUORESCENT LIGHT FIXTURE, "A" DENOTES FIXTURE TYPE, VARIFY EXACT LOCATION OF FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- FLUORESCENT LIGHT FIXTURE, "A" DENOTES FIXTURE TYPE, VARIFY EXACT LOCATION OF FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLANS. 90MINUTE BATTERY BACKUP SUPPLIED
- SELF–CONTAINED EMERGENCY LIGHTING BATTERY UNIT.
- X X EXIT LIGHT, WALL OR CEILING MOUNTED. PROVIDE FOR DIRECTIONAL ARROWS AS SHOWN AND/OR REQUIRED. EXIT LIGHTS SHALL BE CIRCUITED TO THE NEAREST NORMAL UNSWITCHED CIRCUIT.
- FLUORESCENT OR H.I.D. LIGHT FIXTURE, WALL OR RECESSED.
- FLUORESCENT STRIP FIXTURE

SEE SPECIFICATIONS AND FIXTURE SCHEDULE

- P PHOTOELECTRIC CONTROL, MOUNT ON RGS CONDUIT 6" ABOVE ROOF, FACE NORTH COORDINATE ROOF PENETRATION WITH ARCHITECT.
- S SINGLE POLE TOGGLE SWITCH, MT. 48" AFF U.O.N.
- D SINGLE POLE DIMMER SWITCH, MT. 48" AFF U.O.N.
- S'3 THREE–WAY TOGGLE SWITCH, MT. 48" AFF U.O.N.
- S'4 FOUR–WAY TOGGLE SWITCH, MT. 48" AFF U.O.N.
- S'MC SWITCH WITH OCCUPANCY SENSOR, MT. 48" AFF U.O.N. CEILING MOUNTED OCCUPANCY SENSOR
- S_M SINGLE POLE TOGGLE SWITCH WITH DIMMER, MT. 48" AFF U.O.N.

- TELEPHONE OUTLET, 4"SQ. BOX W/SINGLE GANG RISE, MOUNT 18" AFF, VARIFY EXACT LOCATION WITH OWNER. STUB 3/4" BUSHED CONDUIT INTO CEILING SPACE. "W"– DENOTES WALL PHONE, MOUNT 52" AFF "C"– DENOTES COUNTER MOUNTED, MT. 6" ABOVE COUNTER AND/OR AS DETAILED ON ARCHITECTURAL ELEVATIONS.
- DATA/TEL OUTLET, 4" SQ. BOX WITH SINGLE GANG RISE, 3/4" CONDUIT STUBBED UP ABOVE CEILING. ON ARCHITECTURAL ELEVATIONS. COORDINATE COVER–PLATE WITH OWNER.~6" ABOVE COUNTER AND/OR AS DETAILED
- SMOKE DETECTOR, LOCAL W/AUDIBLE AND STROBE. 120V W/BATTERY BACKUP.

ELECTRICAL NOTES:

1. NOT USED.
2. COORDINATE TEL/DATA INSTALLATION W/VENDOR.
3. REFER TO LIGHTING PLAN FOR SWITCH LOCATIONS AND CONNECTIONS, IF NOT SHOWN REQUEST INFORMATION FROM DESIGN ENGINEER.
4. COORDINATE WORK WITH OTHER TRADES TO MINIMIZE INTERFERENCES. WHERE CONFLICTS EXIST, REQUEST INFORMATION FROM DESIGN ENGINEER.
5. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONNECTION OF ALL ELECTRICAL EQUIPMENT, WHETHER FURNISHED IN HIS CONTRACT, BY OWNER, OR OTHER. COORDINATE WITH ALL PARTIES INVOLVED.
6. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, PRIOR TO BID. WHERE CONFLICTS WITH PLANS EXIST, REQUEST INSTRUCTIONS FROM DESIGN ENGINEER.

16010 – BASIC ELECTRICAL REQUIREMENTS

1.1 QUALITY ASSURANCE

A. ALL ELECTRICAL COMPONENTS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES:

1. THE NATIONAL ELECTRICAL CODE (NPFA–70), 2011 EDITION.
2. THE INTERNATIONAL BUILDING CODE, 2012 EDITION.
3. MUNICIPAL ORDINANCES GOVERNING ELECTRICAL WORK.

B. ALL MATERIALS SHALL BE NEW AND SHALL CONFORM TO STANDARDS WHERE SUCH HAVE BEEN ESTABLISHED FOR THE PARTICULAR MATERIAL. ALL UL LISTED EQUIPMENT SHALL BEAR THE UL LABEL. MATERIALS OF THE SAME TYPE SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. WORKMANSHIP AND NEW MATERIALS SHALL BE FULLY GUARANTEED FOR A PERIOD OF ONE YEAR AFTER DATE OF ACCEPTANCE.

1.2 PERMITS

A. OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK INVOLVED AND PAY ALL CHARGES INCIDENT THERETO. DELIVER TO THE OWNER ALL CERTIFICATES OF INSPECTION.

1.3 DRAWINGS

A. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT. COORDINATE INSTALLATION OF EQUIPMENT WITH ALL OTHER TRADES. DO NOT SCALE DRAWINGS FOR CONNECTION LOCATIONS.

1.4 MECHANICAL SYSTEM INTERFACE

A. CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL SERVICE. ALL CONTROL WIRING FOR PLUMBING AND HVAC EQUIPMENT SHALL BE INSTALLED BY MECHANICAL CONTRACTOR. POWER WIRING TO ALL MOTORS AND MOTOR CONTROLLERS AND BETWEEN MOTORS AND CONTROLLERS SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR .

1.6 CLEANING AND PAINTING

A. REMOVE ALL OIL, DIRT, GREASE AND FOREIGN MATERIALS FROM ALL RACEWAYS, FITTINGS, BOXES, PANELBOARD TRIMS AND CABINETS TO PROVIDE A CLEAN SURFACE FOR PAINTING. TOUCH–UP SCRATCHED OR MARRED SURFACES ON ALL EQUIPMENT.

1.8 SITE INVESTIGATION

A. PRIOR TO SUBMITTING BIDS FOR THE PROJECT, VISIT THE SITE OF THE WORK TO BECOME AWARE OF EXISTING CONDITIONS WHICH MAY EFFECT THE COST OF THE PROJECT. WHERE WORK REQUIRES EXTENSION, RELOCATION, RECONNECTIONS OR MODIFICATIONS TO EXISTING SYSTEMS, THE EXISTING EQUIPMENT OR SYSTEMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, WITH THE EXCEPTION OF THE WORK UNDER THIS CONTRACT, BEFORE THE COMPLETION OF THIS PROJECT.

B. VERIFY ALL SECONDARY SERVICE VOLTAGES.

1.9 RECORD DRAWINGS

A. UPON COMPLETION OF PROJECT, PROVIDE FULL SIZE PRINTS INDICATING ALL MODIFICATIONS TO THE CONTRACT DOCUMENTS.

END OF SECTION

16100 – BASIC MATERIALS

2.1 RACEWAYS

A. THE FOLLOWING SPECIFICATIONS AND STANDARDS ARE INCORPORATED INTO AND BECOME A PART OF THIS SPECIFICATION:

1. UNDERWRITER'S LABORATORY, INC. PUBLICATIONS 1, 6, 467, 651, 797, 1242.
2. AMERICAN NATIONAL STANDARDS INSTITUTE C–80.1, C–80.3.

B. RACEWAY IS REQUIRED FOR ALL WIRING, UNLESS SPECIFICALLY INDICATED OR SPECIFIED OTHERWISE. THE MINIMUM SIZE OF CONDUIT SHALL BE 1/2" FOR LIGHTING AND 3/4" FOR POWER BRANCH CIRCUITS, BUT SHALL NOT BE LESS THAN SIZE INDICATED ON THE DRAWINGS OR REQUIRED BY THE NEC.

C. METAL CLAD CABLE, TYPE MC CAN BE USED WHERE ALLOWED PER CODE. CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) EXCEPT FOR THE FOLLOWING CONDITIONS. ROMEX (NM) IS ACCEPTABLE.

1. USE FLEXIBLE CONDUIT FOR CONNECTIONS TO MOTORS, FLUSH MOUNTED LIGHTING FIXTURES, AND ALL VIBRATING EQUIPMENT.

A. LENGTH SHALL NOT EXCEED 18', EXCEPT LENGTHS UP TO 6'–0" MAY BE USED FOR LIGHTING FIXTURES.
B. MAINTAIN GROUND CONTINUITY THROUGH FLEXIBLE CONDUIT WITH A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR.

2. CONDUITS SUBJECT TO PHYSICAL ABUSE SHALL BE GRS FOR HEIGHTS LESS THAN 10' ABOVE FINISHED FLOOR.

D. ALL CONDUIT SUPPORT PARTS AND HARDWARE SHALL BE HOT–DIPPED GALVANIZED. CONDUIT STRAPS SHALL BE SINGLE HOLE CAST METAL TYPE OR TWO HOLE GALVANIZED METAL TYPE. CONDUIT SUPPORT CHANNELS SHALL BE 1–1/2" X 1–1/2" – 14 GAUGE CHANNEL, WITH 1/4" THREADED STEEL RODS USED FOR SUSPENSION. WIRE OR CHAIN IS NOT ACCEPTABLE FOR RODS USED FOR SUSPENSION. WIRE OR CHAIN IS NOT ACCEPTABLE FOR CONDUIT HANGERS. INDIVIDUAL CONDUIT HANGERS SHALL BE GALVANIZED SPRING STEEL SPECIFICALLY DESIGNED FOR THE PURPOSE. INDIVIDUAL CONDUIT STRAPS ON METAL STUDS SHALL BE SPRING STEEL. TIE WRAPS ARE NOT ACCEPTABLE.

E. FASTEN CONDUIT SUPPORT DEVICES TO STRUCTURE WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION ANCHORS ON SOLID MASONRY OR CONCRETE, AND MACHINE BOLTS OR CLAMPS ON STEEL. NAILS ARE NOT ACCEPTABLE.

F. CONDUIT SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO WALLS, CEILINGS AND STRUCTURAL MEMBERS. SUPPORT BRANCH CIRCUIT CONDUITS AT INTERVALS NOT EXCEEDING 10 FEET, AND WITHIN 3 FEET OF EACH BOX OR CHANGE OF DIRECTION. PROVIDE AN EXPANSION AND DEFLECTION COUPLING WHERE CONDUITS CROSS A BUILDING EXPANSION JOINT. SEAL AROUND ALL PENETRATIONS OF WALLS, FLOORS AND CEILINGS WITH DOW CORNING SILICONE RTV FOAM OR 3M FIRE BARRIER COMPOUNDS. MAINTAIN RACEWAY CLEARANCES OF 3" CROSSING HOT PIPING AND 12" PARALLELING. SEE ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION.

G. MULTI–OUTLET ASSEMBLIES SHALL BE A TWO–PIECE RACEWAY CONSTRUCTED OF STEEL, GRAY FINISH, .040" WALL THICKNESS. REFER TO DESCRIPTION IN ELECTRICAL LEGEND.

2.2 WIRES AND CABLES

A. THE FOLLOWING SPECIFICATIONS AND STANDARDS ARE INCORPORATED INTO AND BECOME A PART OF THIS SPECIFICATION:

1. UNDERWRITER'S LABORATORIES, INC. PUBLICATIONS 44, 83, 486, 493.
2. INSULATED CABLE ENGINEERS ASSOCIATION STANDARDS S–61–402, S–66–524.
3. NATIONAL ELECTRICAL MANUFACTURER'S STANDARDS WC–5, WC–7.

B. CONDUCTORS SHALL BE ELECTRICALLY CONTINUOUS AND FREE FROM SHORT CIRCUITS OR GROUNDS. ALL OPEN, SHORTED, OR GROUNDED CONDUCTORS AND ANY WITH DAMAGED INSULATION SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL FREE FROM DEFECTS.

C. CONDUCTOR SIZE SHALL BE MINIMUM OF NO. 12 AWG, UNLESS A LARGER SIZE IS REQUIRED BY THE DRAWINGS OR THE NEC. INSULATION VOLTAGE LEVEL RATING SHALL BE 600 VOLTS. ALL WIRE AND CABLE SHALL BEAR THE UL LABEL.

D. CONDUCTORS NO. 10 AND SMALLER SHALL BE SOLID COPPER, 75 DEGREES C. TYPE THWN/THHN. CONDUCTORS SIZE #10 THROUGH #2 SHALL BE STRANDED COPPER, 75 DEGREES C. TYPE THWN/THHN; >= #1 SHALL BE XHHW–2. FIXTURE WIRE SHALL BE NO. 16 AWG SILICONE RUBBER INSULATED, STRANDED FIXTURE WIRE TYPE SFF–2 OR NO. 16 THERMOPLASTIC NYLON JACKETED STRANDED FIXTURE WIRE TYPE TFFN.

E. COLOR CODE ALL CONDUCTORS. NO. 10 AND SMALLER SHALL HAVE SOLID COLOR COMPOUND OR COATING. NO. 8 AND LARGER SHALL HAVE SOLID COLOR COMPOUND OR COLORED PHASE TAPE; TAPE SHALL BE INSTALLED ON CONDUCTORS IN EVERY BOX, TERMINATION POINT, CABINET OR ENCLOSURE. CODING SHALL BE AS FOLLOWS:

1. 240/120 VOLT SINGLE PHASE FOUR WIRE WYE SYSTEM: PHASE A–BLACK, PHASE B–RED, PHASE C–BLUE, NEUTRAL–WHITE.
2. GROUNDING CONDUCTORS SHALL BE GREEN OR GREEN TRACED.

F. MAINTAIN PHASE ROTATION ESTABLISHED PER NEC AT SERVICE EQUIPMENT THROUGHOUT ENTIRE PROJECT.

G. GROUP AND LACE WITH NYLON TIE STRAPS ALL CONDUCTORS WITHIN ENCLOSURES. MAKE SPLICES IN CONDUCTORS ONLY WITHIN JUNCTION BOXES, WIRING TROUGHS, OR OTHER NEC APPROVED ENCLOSURES. DO NOT SPLICE CONDUCTORS IN PULL BOXES, SWITCHBOARDS, PANELBOARDS, SAFETY SWITCHES, OR MOTOR CONTROL ENCLOSURES. IDENTIFY EACH CONDUCTOR AS TO CIRCUIT CONNECTION IN ALL BOXES AND ENCLOSURES.

H. TERMINATE STRANDED CONDUCTORS NO. 10 AWG AND SMALLER WITH CRIMP–TYPE LUG OR STUD. CRIMP TERMINAL SHALL BE THE CONFIGURATION TYPE SUITABLE FOR THERMAL POINT.

I. TORQUE EACH TERMINAL CONNECTION TO THE MANUFACTURER'S RECOMMENDED TORQUE VALUE. A CALIBRATED TORQUING TOOL SHALL BE USED TO INSURE PROPER TORQUE APPLICATION.

2.3 WIRING DEVICES

A. PRODUCTS OF ARROW HART DIV.; COOPER INDUSTRIES; HUBBELL, INC.; LEVITON MFG. CO., INC.; WHICH COMPLY WITH THESE SPECIFICATIONS ARE ACCEPTABLE.

B. RECEPTACLES: COMPLY WITH UL STANDARD 498, "ELECTRICAL ATTACHMENT PLUGS AND RECEPTACLES", HEAVY DUTY GRADE.

C. GROUND–FAULT CIRCUIT INTERRUPTER (GFCI) RECEPTACLES: UL STANDARD 943, "GROUND FAULT CIRCUIT INTERRUPTERS", END–OF–LINE TYPE, WITH INTEGRAL NEMA 5–20R DUPLEX RECEPTACLE. DESIGN UNITS FOR INSTALLATION IN A 2–3/4 INCH DEEP BOX WITHOUT AN ADAPTER. PROVIDE GFCI RECEPTACLES WITHIN 6' OF WATER SOURCE.

D. SWITCHES: SINGLE POLE, 20 AMP 277 VOLT HUBBELL 1221, WHITE IN COLOR.

E. PROVIDE BONDING JUMPER FROM DEVICE GROUND SCREW TO SELF TAPPING SCREW SECURED TO METALLIC BOX. ALSO CONNECT TO GROUNDING CONDUCTOR. MOUNT DEVICES PLUMB AND SQUARE.

F. PROTECT DEVICES DURING PAINTING.

G. GROUP ADJACENT SWITCHES UNDER SINGLE, MULTI–GANG WALL PLATES. PROVIDE BARRIER BETWEEN 120 AND 277 VOLT CIRCUITS.

H. DEVICE PLATES SHALL BE WHITE IN COLOR.

I. INSTALL WALL SWITCHES ON THE STRIKE SIDE OF DOORS.

J. MOUNTING HEIGHTS INDICATED ON THE DRAWINGS ARE TO THE CENTER OF THE DEVICE.

2.4 BOXES

A. THE FOLLOWING SPECIFICATIONS AND STANDARDS ARE INCORPORATED INTO AND BECAME A PART OF THIS SPECIFICATION:

1. UNDERWRITER'S LABORATORIES, INC. PUBLICATIONS 50, 467, 514.

B. BOXES SHALL BE HOT–DIPPED GALVANIZED STEEL SHEET METAL, UNLESS RUSTPROOF CAST METAL IS SPECIFIED OR REQUIRED BY THE NEC.

C. DIMENSIONS OF PULL AND JUNCTION BOXES SHALL NOT BE LESS THAN THOSE REQUIRED BY THE NEC FOR THE NUMBER, SIZE, AND POSITION OF CONDUCTORS ENTERING THE BOX. WOOD SUPPORTS WITHIN PULL BOXES ARE NOT ACCEPTABLE. PROVIDE BOX COVERS FOR ALL BOXES.

D. ALL BOXES SHALL BE COMPLETELY ACCESSIBLE AS REQUIRED BY THE NEC. PROVIDE ACCESS PANELS IN ALL NON–ACCESSIBLE SPACES TO PERMIT ACCESS TO BOXES. PROVIDE AN OUTLET BOX FOR EACH LIGHTING FIXTURE OR AS INDICATED ON THE DRAWINGS AND FOR EACH DEVICE. BOX SIZES SHALL BE INCREASED FROM THOSE OUTLINED ABOVE IF REQUIRED BY ARTICLE 730 OF THE NEC.

E. SUPPORT EVERY BOX FROM STRUCTURE. SECURE TO HOLLOW MASONRY WITH TOGGLE BOLTS, METAL WITH SHEET METAL SCREWS, SOLID MASONRY OR CONCRETE WITH EXPANSION ANCHORS, METAL STUDS WITH SPRING STEEL CLAMPS AND STRUCTURE WITH THREADED STEEL RODS WHEN SUSPENDED. SET OUTLET BOXES FOR FLUSH MOUNTED DEVICES TO WITHIN 1/8" OF FINISHED WALLS; SPACERS OR SHIMS BETWEEN BOX AND DEVICE ARE NOT ACCEPTABLE. SUPPORT OUTLET BOXES OF SURFACE MOUNTED INCANDESCENT LIGHTING FIXTURES BY LIGHT WEIGHT CHANNEL SPANNING BETWEEN AND MOUNTED TO MAIN CEILING SUPPORT MEMBER, ATTACHED BY GALVANIZED TIE WIRE OR NYLON TIE STRAPS.

F. MARK JUNCTION BOX COVERS WITH PERMANENT MARKER TO SHOW PANEL NAME AND CIRCUIT NUMBER OF CONDUCTORS INSIDE BOX. PAINT OUTLET AND JUNCTION BOXES SUPPORTING THE FIRE ALARM SYSTEM RED. IDENTIFY FIRE ALARM CONDUITS WITH A 1" WIDE RED BAND, 10'–0" ON CENTER.

G. OUTLET BOXES FOR USE IN EXPOSED WIRING SYSTEMS SHALL BE CAST "FS" TYPE.

2.5 SUPPORTING DEVICES

A. PROVIDE AND INSTALL SUPPORTING DEVICES WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS, DESIGN, AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED STANDARDS AND AS REQUIRED FOR COMPLETE INSTALLATION.

B. COORDINATE WITH OTHER ELECTRICAL WORK, INCLUDING RACEWAY AND WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF SUPPORTING DEVICES. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE ONLY. TORQUE SLEEVE SEAL NUTS, COMPLYING WITH MANUFACTURER'S RECOMMENDED VALUES. ENSURE THAT SEALING GROMMETS EXPAND TO FORM WATER–TIGHT SEAL.

2.7 IDENTIFICATION

A. RELABEL MODIFIED PANELBOARD SCHEDULES WITH INFORMATION RELATED TO THIS PROJECT.

END OF SECTION

16400 – DISTRIBUTION EQUIPMENT

4.5 GROUNDING SYSTEMS

A. EQUIPMENT GROUNDING SYSTEM SHALL BE ESTABLISHED WITH EQUIPMENT GROUND CONDUCTORS. THE USE OF METALLIC RACEWAYS FOR EQUIPMENT GROUNDING IS NOT ACCEPTABLE. UNLESS INDICATED OTHERWISE, PROVIDE EQUIPMENT GROUND THE SAME SIZE AS PHASE CONDUCTORS.

B. THE FOLLOWING SPECIFICATIONS AND STANDARDS ARE INCORPORATED INTO AND BECOME A PART OF THIS SPECIFICATION:

1. UNDERWRITER'S LABORATORIES, INC. PUBLICATIONS 44, 83, 467, 486, 493.
2. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION STANDARDS WC–5, WC–7.

C. EACH RECEPTACLE AND SWITCH DEVICE SHALL BE FURNISHED WITH A GROUNDING SCREW CONNECTED TO THE METALLIC DEVICE FRAME. PROVIDE A CONDUCTOR TERMINATION GROUNDING LUG BONDED TO THE ENCLOSURE OF EACH TRANSFORMER, MOTOR CONTROLLER, AND DISCONNECT SWITCH.

D. GROUND ALL NON–CURRENT CARRYING PARTS OF THE ELECTRICAL SYSTEM, I.E., WIREWAYS, EQUIPMENT ENCLOSURES AND FRAMES, JUNCTION AND OUTLET BOXES, MACHINE FRAMES, CABLE TRAYS AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS.

E. GROUNDING CONDUCTORS FOR BRANCH CIRCUITS ARE NOT SHOWN ON THE DRAWINGS; HOWEVER, GROUNDING CONDUCTORS SHALL BE PROVIDED IN ALL BRANCH CIRCUIT RACEWAYS AND CABLES, INCLUDING FLEXIBLE CONDUIT. GROUNDING CONDUCTORS SHALL BE THE SAME AWG SIZE AS BRANCH CIRCUIT CONDUCTORS UNLESS OTHERWISE NOTED.

F. EQUIPMENT GROUNDING CONDUCTORS SHALL TERMINATE ON PANELBOARD, SWITCHBOARD, OR MOTOR CONTROL CENTER GROUNDING BUS ONLY. DO NOT TERMINATE ON NEUTRAL BUS.

END OF SECTION

16500 – LIGHTING SYSTEM

5.1 LAMPS

A. PRODUCTS OF NORTH AMERICAN PHILIPS, SYLVANIA, OR GE, WHICH COMPLY WITH THESE SPECIFICATIONS ARE ACCEPTABLE.

B. PROVIDE LAMPS FOR ALL LIGHTING FIXTURES AS SPECIFIED IN THE FIXTURE SCHEDULE.

C. ALL FLUORESCENT LAMPS SHALL HAVE A COLOR TEMPERATURE OF 3500 DEGREE KELVIN AND A CRI OF 82.

5.2 INTERIOR LIGHTING FIXTURES

A. ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS, AND BEAR A UL LABEL. ALL FIXTURES INSTALLED IN DAMP OR WET LOCATIONS SHALL BE UL LISTED AND LABELED FOR THAT APPLICATION. FIXTURES INSTALLED IN FIRE RATED CEILINGS SHALL PRESERVE THE FIRE RATING OF THE CEILING.

16500 – LIGHTING SYSTEM

B. FLUORESCENT FIXTURES SHALL NOT BE MANUFACTURED WITH LESS THAN CODE GAUGE STEEL. HINGED DOORS SHALL BE GASKETED ON ALL SIDES TO PREVENT LIGHT LEAKS. WHERE FIXTURES ARE SPECIFIED WITH A PRISMATIC PLASTIC LENS, THE LENS SHALL BE MANUFACTURED WITH UV STABILIZED VIRGIN ACRYLIC. THE LENS SHALL NOT BE LESS THAN 0.125 INCH NOMINAL THICKNESS. BALLASTS FOR FLUORESCENT LAMPS SHALL BE ELECTRONIC TYPE, CBM CERTIFIED WITH LESS THAN 10 PERCENT TOTAL HARMONIC DISTORTION AND RATED FOR OPERATION ON VOLTAGES AS REQUIRED BY FIXTURE CIRCUITING. ALL BALLASTS OPERATION ON VOLTAGES AS REQUIRED BY FIXTURE CIRCUITING. ALL BALLASTS SHALL BE CLASS "P" AND SHALL BE MOUNTED WITHIN THE FIXTURE IN SUCH A MANNER AS NOT TO EXCEED UL TEMPERATURE LIMITATIONS. BALLASTS SHALL HAVE A SOUND RATING OF "A". PROVIDE BALLASTED FIXTURES WITH IN–LINE INTERNALLY MOUNTED FUSES / QUICK DISCONNECTS. ACCEPTABLE MANUFACTURERS ARE MAGNETEK, MOTOROLA, VALMONT, ADVANCE AND OSRAM.

C. LIGHTING FIXTURES SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDED MOUNTING METHODS AND THE PROVISIONS OF THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE ARCHITECTURAL PLANS AND SPECIFICATIONS TO VERIFY THE MOUNTING COMPATIBILITY OF THE LIGHTING FIXTURES WITH THE CEILING TYPE BEFORE FIXTURES ARE RELEASED FOR ORDERING. PROVIDE CEILING COMPATIBLE FIXTURES IN ALL CASES REGARDLESS OF THE CATALOG NUMBER ON THE DRAWINGS. RECESSED FIXTURES SHALL BE INSTALLED WITHOUT VISIBLE CRACKS OR LIGHT LEAKS BETWEEN CEILING AND FIXTURE TRIM.

D. SAFETY CHAINS OR CLIPS SHALL BE INSTALLED ON ALL SUSPENDED OR GRID CEILING TYPE FIXTURES. ALL FIXTURES SHALL BE CLEANED AND FREE OF FINGER PRINTS PRIOR TO FINAL ACCEPTANCE. SEE DETAILS FOR ADDITIONAL INFORMATION.

E. FLUORESCENT FIXTURES FLUSH MOUNTED IN EXPOSED TEE CEILINGS SHALL BE ATTACHED TO THE MAIN RUNNERS AT EACH END WITH CLIPS INTENDED FOR THAT PURPOSE. FLUORESCENT FIXTURES FLUSH MOUNTED IN CONCEALED SUSPENSION TYPE CEILING OR IN PLASTER, STUCCO OR SHEETROCK CEILINGS SHALL BE SUPPORTED BY ADJUSTABLE BRACKETS, INTEGRAL WITH THE FIXTURE, RESTING ON SUPPORT CHANNELS OF THE CEILING SUSPENSION SYSTEM. SURFACE MOUNTED FLUORESCENT FIXTURES SHALL BE SUPPORTED BY LIGHT WEIGHT CHANNEL ATTACHED TO TWO MEMBERS OF THE CEILING SUSPENSION SYSTEM. PENDANT MOUNTED FLUORESCENT FIXTURES SHALL BE ATTACHED TO CEILING SUSPENSION SYSTEM OR STRUCTURE BY PENDANTS, HANGAR RODS OR CONDUITS.

G. EMERGENCY FLUORESCENT POWER SUPPLY UNIT. CONFORM TO UL 924. UNIT SHALL BE INTERNAL TYPE, MODULAR, BATTERY INVERTER, FACTORY MOUNTED WITHIN FIXTURE BODY. PROVIDE TEST SWITCH AND LED INDICATOR LIGHT. BATTERY SHALL BE SEALED, MAINTENANCE–FREE, NICKEL CADMIUM TYPE WITH MINIMUM 10 YEAR NOMINAL LIFE. CHARGER SHALL BE FULLY AUTOMATIC, SOLID STATE, CONSTANT CURRENT TYPE. RELAY SHALL OPERATE (2)LAMPS WHEN SUPPLY CIRCUIT VOLTAGE DROPS TO 80 PERCENT OF NOMINAL VOLTAGE OR BELOW. BATTERY SHALL AUTOMATICALLY RECHARGE WHEN POWER IS RESTORED. PROVIDE UNIT CAPABLE OF SWITCHING WHERE INDICATED.

END OF SECTION

REVISIONS

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COOLIDGE PARK SHED
COOLIDGE PARK
CHATTANOOGA, TN 37405

CITY OF CHATTANOOGA
CHATTANOOGA, TENNESSEE

Dwight E. Bradley
REGISTERED ARCHITECT XVI
STATE OF TENNESSEE
04/15/2016

PROJECT NO.	DISK FILE NO.
1521	1521A1
DRAWN	CHECKED
TLS	DEB

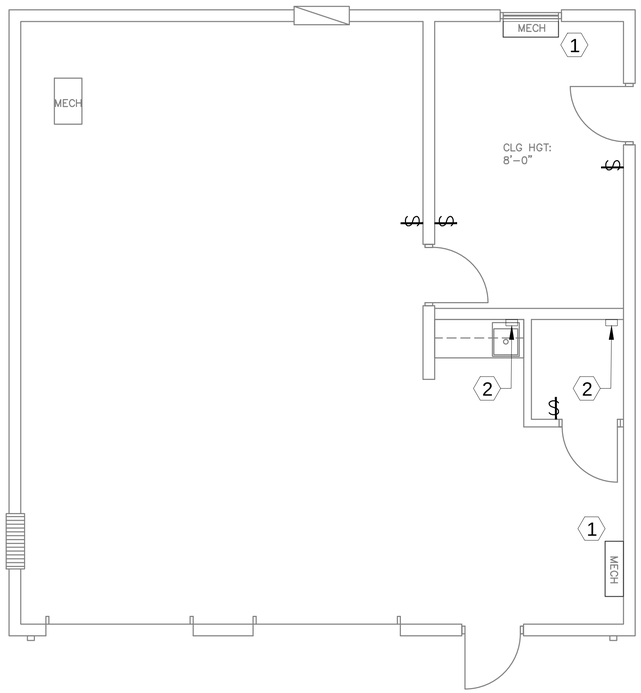
ISSUED FOR CONSTRUCTION
N.F.C.
DATE

DRAWING NAME
ELECTRICAL SPECS

SHEET NO.
E–0

DEMO NOTES
1. REMOVE WIRING BACK TO SOURCE AND CAP CONDUIT.

KEY NOTES
1. DEMO CIRCUITRY TO HVAC EQUIPMENT
2. DEMO CIRCUITRY TO INSTANTANEOUS WATER HEATER



1 / E-1 ELECTRICAL DEMO PLAN
SCALE: 1/4" = 1' - 0"

REVISIONS

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COOLIDGE PARK SHED RENOVATION
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CHATTANOOGA, TENNESSEE

Dwight E. Barlew
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04/15/2016

PROJECT NO.	DISK FILE NO.
1521	1521A1
DRAWN: TLS	CHECKED: DEB

ISSUED FOR CONSTRUCTION
N.F.C.
DATE

DRAWING NAME
ELEC DEMO PLAN

SHEET NO.
E-1

EXISTING PANEL M

MAINS: 150 MCB **VOLTAGE:** 208/120 **WIRE:** 4 **MOUNTING:** SURFACE
BUS: 225 A **PHASE:** 3 **AIC:** 10 kA **ENCLOSURE:** NEMA 1

CKT #	TRIP POLE	LOAD TYPE	DESCRIPTION	CONNECTED LOAD KVA kVA	PH A	PH B	PH C	kVA	DESCRIPTION	LOAD TYPE	TRIP POLE	CKT #
1	20/1	A	EXISTING LIGHTING	0.6	1.0			0.4	EXISTING LOAD	B	20/1	2
3	**20**	**C**	**CU-1**	**1.4**		1.8		0.4	EXISTING LOAD	B	20/1	4
5	**2**	**C**	↓	**1.4**			1.8	0.4	EXISTING LOAD	B	20/1	6
7	**15**	**C**	**AH-1**	**0.5**	0.8			0.4	EXISTING LOAD	B	20/1	8
9	**2**	**C**	↓	**0.5**		0.8		0.4	EXISTING LOAD	B	20/1	10
11	20/1	D	EXISTING UH	1.5			1.9	0.4	EXISTING LOAD	B	20/1	12
13	20/1	**B**	**RECEPTACLE, SE CORNER**	**0.7**	1.1			**0.4**	**RECEPTACLE, NE CORNER**	**B**	20/1	14
15	20/1	**B**	**RECEPTACLE, OFFICE, PLUS**	**0.8**		1.0		**0.2**	**RECEPTACLE, BREAKROOM**	**B**	20/1	16
17	**20**	**C**	**IWH-1**	**2.1**			2.1		SPARE		20/1	18
19	**2**	**C**	↓	**2.1**	2.1				SPARE		20/1	20
21	**20**	**C**	**IWH-2**	**2.1**		2.1			SPARE		20/1	22
23	**2**	**C**	↓	**2.1**			2.1		SPARE		20/1	24
25	20/1	**B**	**MICROWAVE**	**1.2**	1.2				SPARE		20/1	26
27	20/1	**B**	**MICROWAVE**	**1.2**		1.2			SPARE		20/1	28
29	20/1		SPARE						SPARE		20/1	30
31	20/1		SPARE						SPARE		20/1	32
33	20/1		SPARE						SPARE		20/1	34
35	20/1		SPARE						SPARE		20/1	36
37	20/1		SPARE						SPARE		20/1	38
39	20/1		SPARE						SPARE		20/1	40
41	20/1		SPARE						SPARE		20/1	42

Panel Load Analysis

Load Type	Description	Conn. KVA	Demand KVA	2011 NEC Reference
A	Lighting	0.6	0.8	Per NEC Table 220.42
B	Receptacles	6.6	6.6	Per NEC Table 220.44
C	Air-Conditioning	12.2	13.3	Per NEC Article 440.4
D	Heating	1.5	1.9	Per NEC Article 220.51

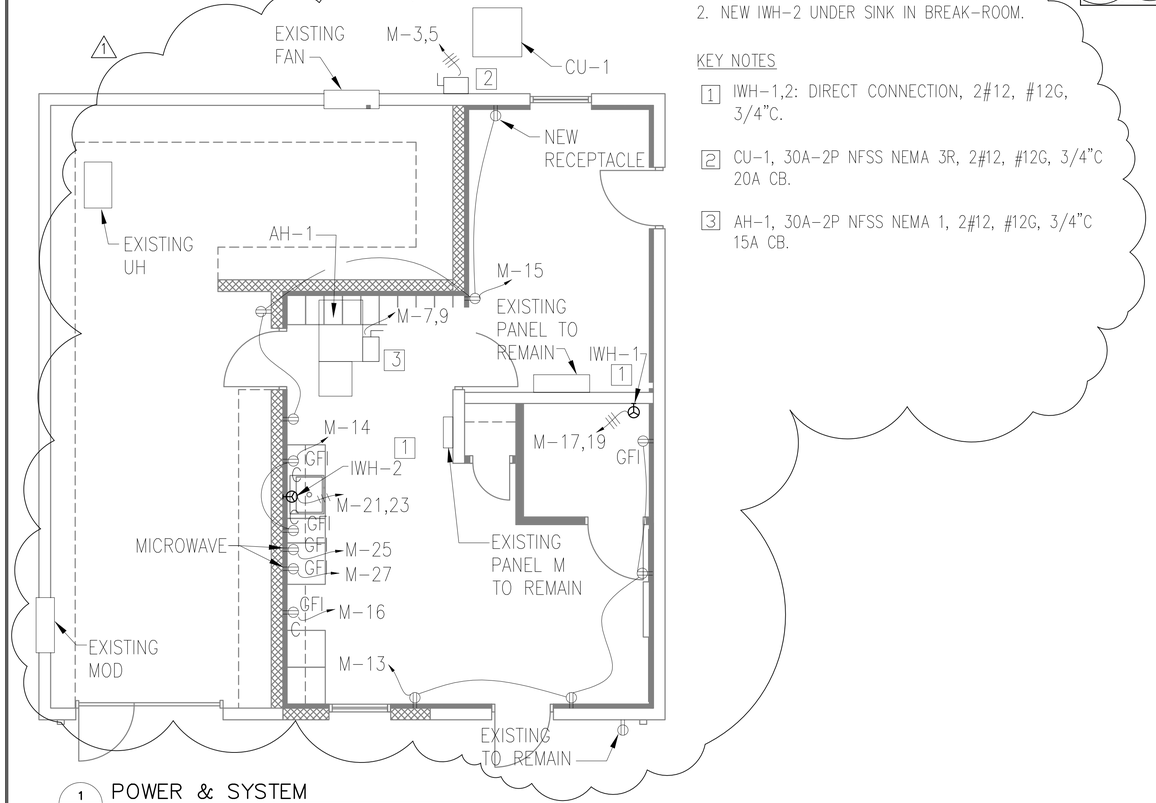
Load Type	Description	Conn. KVA	Demand KVA	2005 NEC Reference
E	Kitchen Equipment			Per NEC Table 220.56
F	Motor			Per NEC Table 430.22
G	Other			
H	Subpanels			

Phase A Connected Load	6.2		
Phase B Connected Load	6.9	TOTAL CONNECTED LOAD:	**21.0 KVA**
Phase C Connected Load	7.9	TOTAL DEMAND LOAD:	**22.6 KVA**

LOCATION: BREAKROOM

GENERAL NOTES
1. NEW IWH-1 UNDER RESTROOM SINK.
2. NEW IWH-2 UNDER SINK IN BREAK-ROOM.

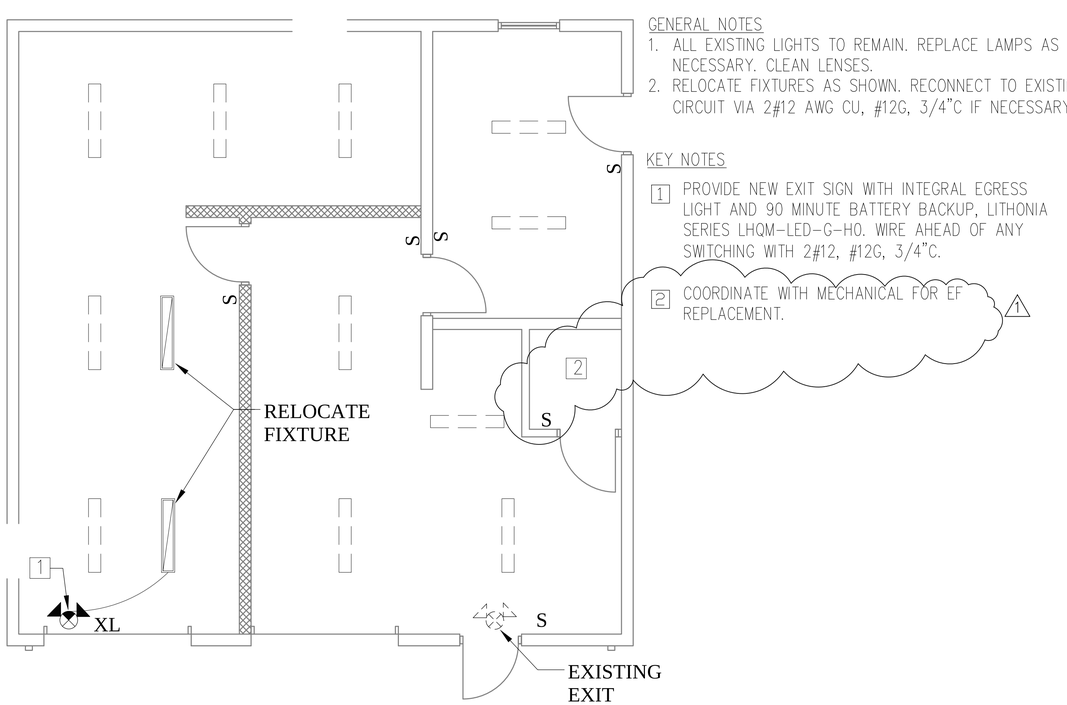
KEY NOTES
1. IWH-1,2: DIRECT CONNECTION, 2#12, #12G, 3/4"C.
2. CU-1, 30A-2P NFSS NEMA 3R, 2#12, #12G, 3/4"C 20A CB.
3. AH-1, 30A-2P NFSS NEMA 1, 2#12, #12G, 3/4"C 15A CB.



1 E-2 POWER & SYSTEM
SCALE: 1/4" = 1' - 0"

GENERAL NOTES
1. ALL EXISTING LIGHTS TO REMAIN. REPLACE LAMPS AS NECESSARY. CLEAN LENSES.
2. RELOCATE FIXTURES AS SHOWN. RECONNECT TO EXISTING CIRCUIT VIA 2#12 AWG CU, #12G, 3/4"C IF NECESSARY.

KEY NOTES
1. PROVIDE NEW EXIT SIGN WITH INTEGRAL EGRESS LIGHT AND 90 MINUTE BATTERY BACKUP, LITHONIA SERIES LHQM-LED-G-HO. WIRE AHEAD OF ANY SWITCHING WITH 2#12, #12G, 3/4"C.
2. COORDINATE WITH MECHANICAL FOR EF REPLACEMENT.



2 E-2 LIGHTING PLAN
SCALE: 1/4" = 1' - 0"

REVISIONS
1 05/23/16 REV PER COMMENTS

DAVID BARLEW ARCHITECTS, INC.
714 CHERRY ST. • CHATTANOOGA, TN • 37402 • (423) 756-7577

COOLIDGE PARK SHED RENOVATION
COOLIDGE PARK
CHATTANOOGA, TN 37405
CITY OF CHATTANOOGA
CHATTANOOGA, TENNESSEE

Dwight E. Barlew REGISTERED ARCHITECT STATE OF TENNESSEE 04/15/2016

PROJECT NO.	DISK FILE NO.
1521	1521A1
DRAWN	CHECKED
TLS	DEB

ISSUED FOR CONSTRUCTION
N.F.C.
DATE

DRAWING NAME
POWER & LIGHTING

SHEET NO.
E-2