

THE REMODELING OF THE OU PICKERINGTON CENTER FOR FAIRFIELD COUNTY COMMISSIONERS:

THE FAIRFIELD CENTER

MCMULLEN ENGINEERING CO, INC.

MECHANICAL AND ELECTRICAL ENGINEERS

South State Street, Westerville, Ohio 43081

South State Street, Westerville, Ohio 43081

FAX:614-895-9450

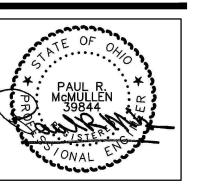
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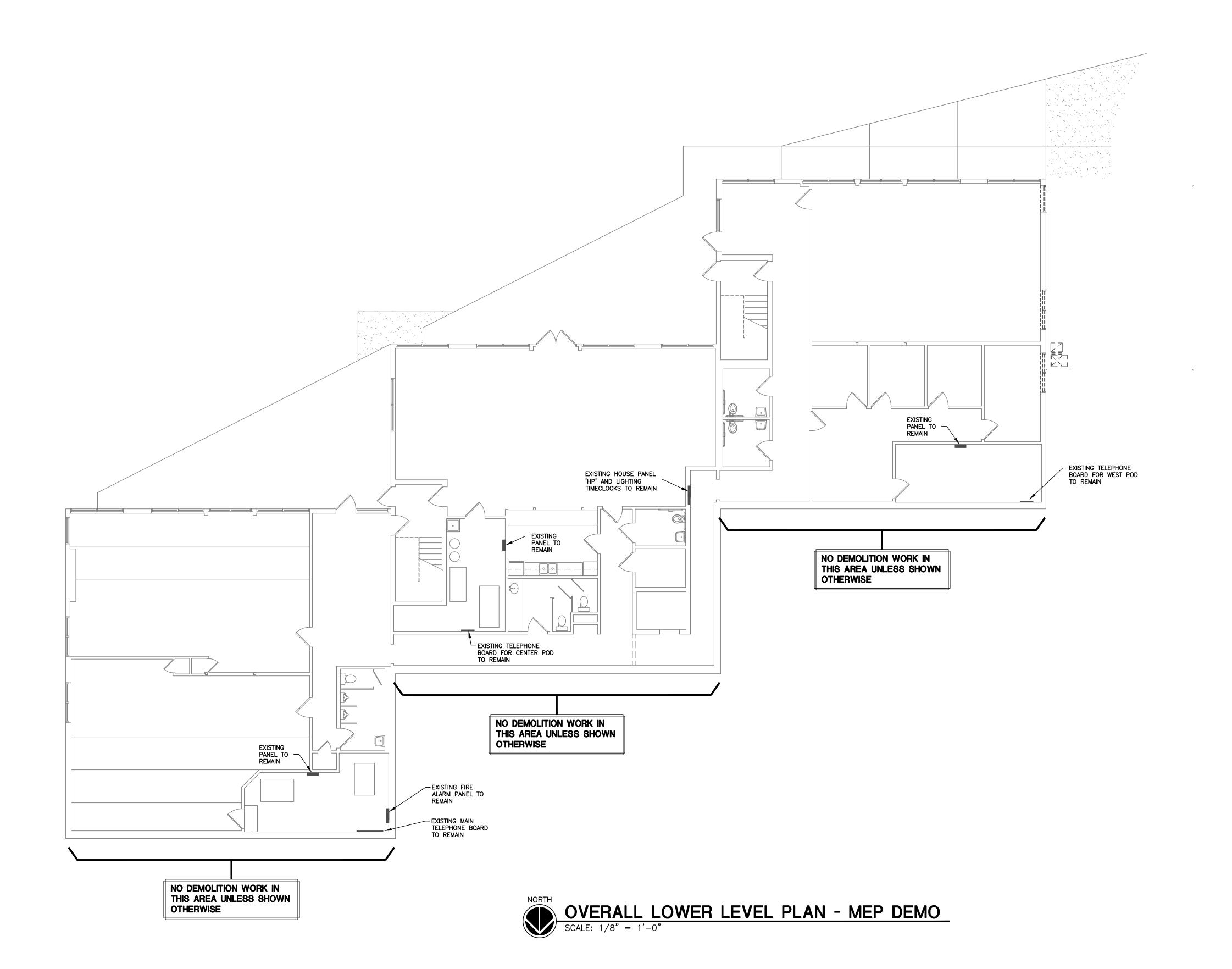
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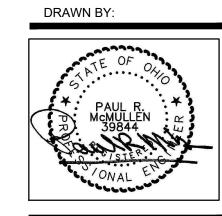
SITE PLAN ELECTRICAL



THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS:

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OVERALL LOWER LEVEL PLAN -MEP DEMOLITION DRAWING NUMBER

NO DEMOLITION WORK IN

OTHERWISE

THIS AREA UNLESS SHOWN

EXISTING BASEBOARD -HEATER TO BE DEMOLISHED.

SEE ARCHITECTURAL SHEETS FOR ADDITIONAL DEMOLITION **INFORMATION**

OVERALL UPPER LEVEL PLAN - MEP DEMOLITION

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

ELECT DEMO LEGEND

EXISTING LIGHT SWITCH LOCATION TO REMAIN. REMOVE DEVICE.

EXISTING RECEPTACLE LOCATION TO REMAIN. REMOVE DEVICE.

EXISTING

CODED NOTE

ELECT DEMO GENERAL NOTES

- REMOVE ALL UNUSED WIRING FROM DEMO'D DEVICES, LIGHTS AND EQUIPMENT BACK TO SOURCE.
- REMOVE ALL UNUSED AND EXPOSED CONDUITS IN AREA OF DEMOLITION.
- CODED NOTES WILL GENERALLY DESCRIBE DEMO WORK. PLAN MAY NOT SHOW ALL RECEPTACLES, PHONE/DATA OUTLETS OR EQUIPMENT CONNECTIONS THAT ARE TO BE REMOVED.
- D. SEE FIRE ALARM SHEET FA2.1 FOR DEMOLITION/RELOCATION OF FIRE ALARM DEVICES.
- MAINTAIN EXISTING CIRCUITS TO EXTERIOR LIGHTS AND RECEPTACLES.
- REMOVE EXISTING SECURITY SYSTEM KEYPAD AND DEVICES IN CENTER AND WEST PODS, BOTH UPPER LEVEL AND LOWER LEVEL. REMOVE WIRING. TURN OVER TO OWNER.
- G. TURN OVER TO OWNER ALL EQUIPMENT THEY WISH TO SALVAGE.

○ ELECT DEMO CODED NOTES

- ED1. REMOVE ALL LIGHTS, EXIT AND EMERGENCY LIGHTS IN DEMO AREA..
- ED2. REMOVE ALL RECEPTACLES, TV, TELEPHONE AND DATA OUTLETS IN WALLS BEING DEMO'D.
- REMOVE ALL RECEPTACLES, TV, TELEPHONE AND DATA OUTLETS IN WALLS TO REMAIN UNLESS DEVICE IS SHOWN TO REMAIN.
- ED4. REMOVE CONNECTION TO EXHAUST FAN BEING DEMO'D.

○ PLUMBING DEMO CODED NOTES

- REMOVE EXISTING PLUMBING FIXTURES WITHIN BATHROOM DEMO AREA. REMOVE ALL PIPING AND CAP AT MAIN SOURCE..
- PD2. REMOVE EXISTING WATER COOLER WITHIN DEMO AREA. REMOVE ALL PIPING AND CAP AT MAIN SOURCE..
- MD1. EXISTING SUPPLY AIR PLENUM TO REMAIN. PATCH AND SEAL AS REQUIRED.
- MD3. EXISTING SUPPLY AIR PLENUM TO REMAIN UP TILL THIS POINT.

MECH DEMO CODED NOTES

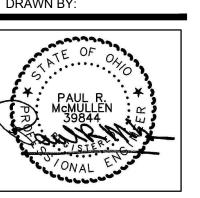
- MD2. DEMOLISH EXISTING DIFFUSERS AND BRANCH DUCTS CONNECTING DIFFUSERS BACK TO MAIN SUPPLY AIR PLENUM.
- MD4. BATHROOM EXHAUST FANS AND ASSOCIATED EXHAUST DUCT TO REMAIN.

ISSUE MARK DATE 5-5-22

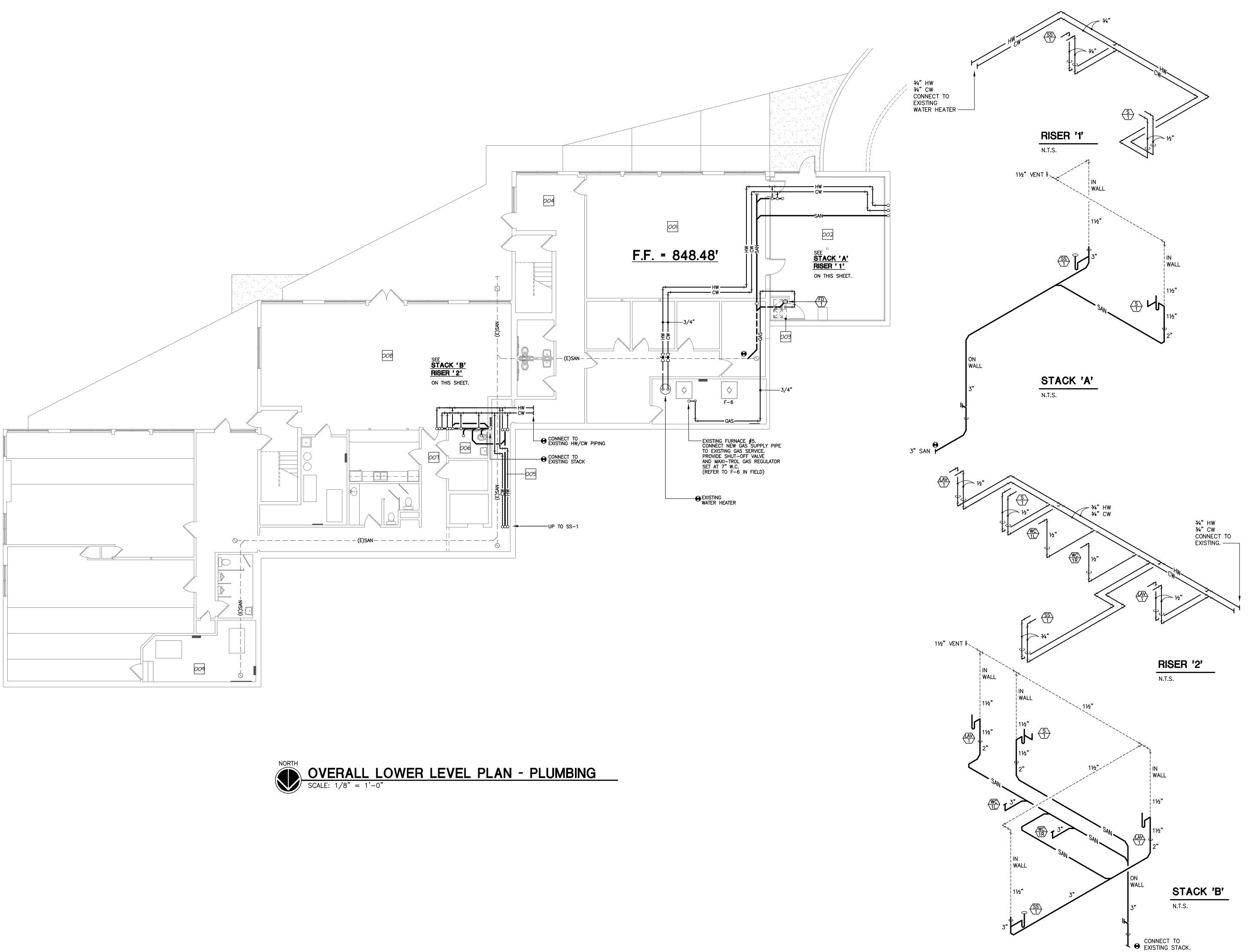
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DRAWN BY:



OVERALL UPPER LEVEL PLAN -MEP DEMOLITION



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PAUL R.

McMULLEN
39844

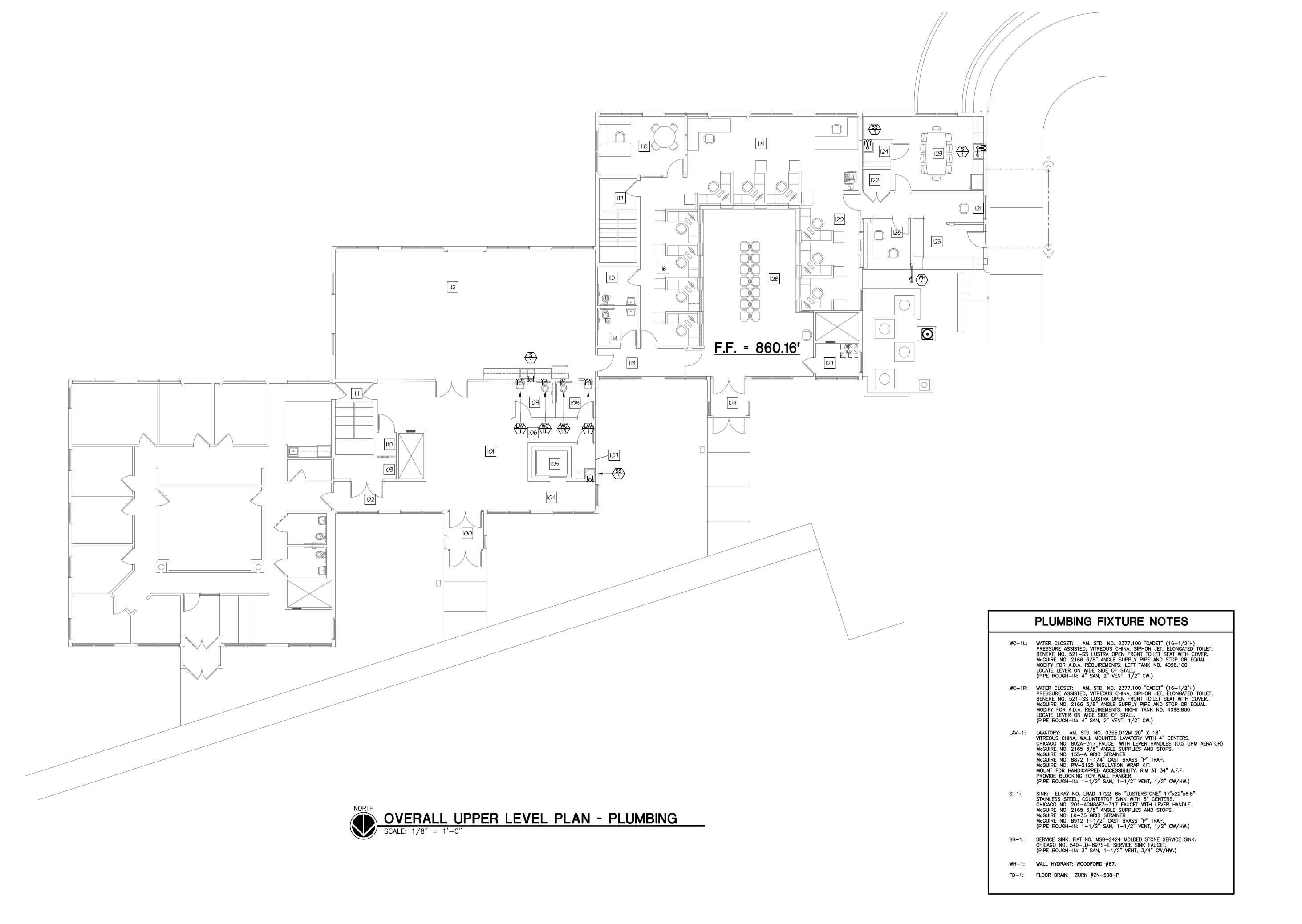
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PAUL R.

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OVERALL LOWER
LEVEL PLAN —
PLUMBING

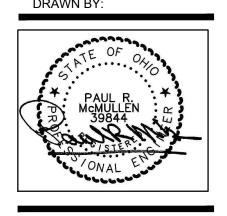
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OVERALL UPPER LEVEL PLAN -PLUMBING

B. Furnish all materials, labor, tools, transportation, incidentals and appurtenances to complete in every detail and leave in working order all items of work called for herein or shown on accompanying drawings. Include any minor items of work necessary to provide complete and fully operative systems whether specifically shown or not.

C. Codes and Standards: Comply with all Local and State building codes, Life Safety Code, National Fire Protection Association (NFPA), applicable utility company requirements and applicable Federal requirements.

D. Permits, fees, inspection and tests: Obtain and pay for all required permits, fees, inspections and tests. File drawings necessary to obtain permits, schedule necessary inspections and tests. Submit Certificates of Inspection and approval upon completion of the work

E. Material and equipment installed under this Contract shall be new, undeteriorated, and of a quality not less than the minimum specified. All equipment shall be certified, listed and labeled by UL. Work must be performed by Licensed Contractors as required by Local and State Codes.

F. Drawings are schematic and show approximate locations and extend of work. Exact locations and extents must be coordinate with other contractors and verified in the field. Coordination of the of the final fabrication drawings and final coordination of the installation in the field is the Contractor's responsibility. It is not intended that drawings indicate all necessary offsets, and it shall be the work of this Contractors to make the installation in such a manner as to conform to structure, avoid obstructions, preserve headroom and keep openings and passageways clear. Significant deviations from Drawings must be approved by the Architect. The Architect reserves the right to make minor changes in location which do not require additional labor, material or contract time up to the time of roughing—in without additional

G. If a conflict occurs between the Drawings and Specifications, the Contractor shall immediately call it to the attention of the Architect, who will determine which interpretation shall take precedence.

H. Guarantee all work executed under this Contract to be free from defective and/or materials. Should any defects develop within a period of one (1) year after final acceptance has been made, correct them and repair any damage that resulted from same at no additional cost.

. Submit six (6) copies of shop drawings, product data and samples as required under Division 1, and as listed in these specifications and noted on drawings.

J. Record Documents: Maintain a record set of prints showing exact location of and depth of bury for all below grade piping. Location notation shall be from foundation wall, center line of column, etc. Depth notation shall be from final finished floor elevation. Record addendum and change order items and deviations made from bid documents. Drawings shall be clean and undamaged, and shall not be used for any purpose other than recording deviations from working drawings and exact locations of concealed work. Maintain drawings at the job site and current for weekly inspection. Upon completion of work, deliver these drawings to Architect.

K. Certificates: Submit certificates of inspection and sterilization.

L. Operation and maintenance manuals: Submit two (2) bound copies of operation and maintenance manuals, 8 1/2 X 11? in three ring hard back binders. Submit: Title page with job information; Title page with contractor information; Equipment/fixture cuts; Warranties.

M. Personnel Instruction: After placing systems in operation, thoroughly instruct designated Owner's personnel on operation and maintenance of all equipment

N. Comply with applicable Section of Division 1 for product delivery, storage and nandling procedures and requirements.

O. Locate existing utilities prior to beginning work. Reroute or replace existing utilities where necessary to permit installation of work. Provide adequate means of protection during work operations. Repair existing utilities damaged during work operations to the satisfaction of Utility Owner and at Contractor's

P. The Drawings and Specifications are based on the requirements and layouts of the equipment of the Design Base Manufacturers. Design coordination of equipment with the building and with other Trades has been made for these specific models and manufacturers of equipment. Whenever the Contractor furnishes equipment or material other than the Design Base Manufacturer specified, he is responsible for the cost and coordination of all modifications required not only for his work, but also for the work of all other Trades

Q. Comply with applicable Section of Division 1 for specific requirements, and methods for temporary facilities and controls.

R. Do all excavating and backfilling required for execution of this work. Dig excavations to exact grade and depth. Provide adequate shoring or sheet piling to prevent caving or endangering workers, work of others, or existing

1. No pipe shall be laid in water. Furnish pumping equipment, power, temporary connections, etc., and pump to remove ground or casual water.

2. All piping shall be laid on firm undisturbed subgrade with minimum 6" pipe bedding. Should excavation be extended to below required elevation. backfill to proper elevation with compacted shot sand.

3. Fill immediately around pipes and to an elevation of 1'-0" above the top of pipes with shot sand, lightly vibrated, unless noted otherwise on the drawings. Encase piping in concrete if noted on the drawings.

4. Fill remaining trench with pit run gravel.

5. Patch all concrete and/or paved areas cut by excavating and refinish to match adjacent surfaces.

6. Protect all trenches with suitable barricades and bridges. Adequately protect trenches with signs or flags during the day and with lights at

7. Determine the locations of all existing underground utilities and protect same from damage. Damage to any utility shall be promptly replaced or repaired to the full satisfaction of Utility Company. All costs for repair of damage to such services shall be paid by Contractor causing the damage.

8. Remove surplus earth from premises or dispose of it on premises as directed by the Architect.

S. Avoid cutting of concrete, masonry and other new work by use of sleeves and inserts. Inform the General Contractor of the locations of all sleeves and inserts required and deliver sleeves and inserts to the General Contractor for installation. Perform cutting and patching when required for installation of new work in existing construction. Cut holes through concrete, brick, tiles, etc., when necessary by rotary core drilling. Methods and procedures shall be acceptable to the Architect. Patching shall match adjacent materials and shall be accomplished only by tradesman skilled in the respective craft

T. Upon completion of work, all material, fixtures and equipment furnished in this Contract shall be thoroughly cleaned of dirt, stickers, grease, rust, oil and other foreign matter. Prepare for finish painting, where painting is specified.

U. Protect equipment and materials during construction from damage from water, dirt, welding and cutting, spatters, paint droppings, etc. by use of shields and drop cloths. Repair or replace as directed any materials damaged during construction operations. Protect floors from soiling and damage caused b chips and cutting oil. Cover all site stored motors, bearings, fans, pumps, etc. Protect from soiling and water and weather damage. All materials or equipment stored outside shall be elevated and protectively covered.

V. All new potable water lines shall be sterilized with chlorine. Sterilization shall provide complete coverage for the entire system.

Piping shall be tested according to the following schedule:

Line	Test Pressure Medium	Minimum	Test Time Minimum	Notes
Sanitary, Sto Vent	rm	Per Loc	al Codes	
Hot & Cold Water	Water	125 lbs.	6 Hrs.	No Drop
Gas	Nitrogen	50 lbs.	24 Hrs.	No Drop

SECTION 15015 DEMOLITION

> A. Coordinate the extent of required demolition for the Mechanical work with the General Contractor. Contractors shall visit the site prior to their Bid to fully familiarize themselves with the extent of this demolition. Reference other sections of these specifications for additional requirements. Schedule shutdown and reworking of all systems with Architect and General Contractor. Report discrepancies between drawings and actual conditions to Architect

B. Coordinate removal of existing equipment with General Contractor. All equipment and material removed and not chosen by Owner for salvage shall become the property of the Contractor and be disposed of by him.

C. The removal of equipment shall be done with care so as not to affect the structure or cause excessive patching. The removal of equipment shall be complete and include all piping rough-ins, electrical connections, pipe hangers

SECTION 15130 SLEEVES

A. This Contractor shall furnish sleeves for his work to the General Contractor. who installs where directed by this Contractor. Furnish schedule #40 black steel sleeves for all round pipe openings through new masonry construction and all fire-rated walls and floors. Furnish galvanized sheet metal and/or plastic sleeves for all piping passing through wood stud/gypsum board walls and floors/ceilings. Do not install sleeves through concrete joists, beam columns, or other structural members except where specifically indicated or approved by the Architect and Structural Engineer.

SECTION 15135 FIRESTOPPING

A. Furnish and install firestopping for all mechanical penetrations through ceilings and through fire rates assemblies. Assemblies include, but not limited to, fire rated walls. floors, floor/ceiling and roof assemblies. Provide firestopping materials that are currently classified with UL as Fill, Void, or Cavity Materials? and Through Penetration Firestop System.? Provide firestoppin materials that have been tested in accordance with ASTM E 814 and UL 1479. All firestopping materials shall be labeled with ASTM E 814 number.

B. Furnish manufacturers literature detailing installation instructions for each type of fire barrier penetrated. Firestopping materials by Dow Corning, 3M, Hilti or Metacaulk are acceptable.

PIPE HANGERS AND ATTACHMENTS SECTION 15140

A. Furnish and install pipe hangers and attachments for all piping and piping system components. Furnish and install supplementary channels, plates, etc., where required between building structural members. Provide dielectric protection between dissimilar metals, such as copper to steel. Provide blocking and supports at pipe rough—ins to fixtures and equipment.

. All supports and parts shall conform to the latest requirements of the ASA Code for Pressure Piping B31.1 and MSS Standard Practice SP-69. Supports and parts shall have a stress safety factor of 5. Hanger and attachments which are used in fire protection systems shall be UL or FM listed for the

Products are based on Grinnell Figure numbers unless otherwise noted. Optional manufacturers: Modern Pipe Supports, PHD, M-CO or Uni-Strut.

D. Supports for suspended, horizontal piping:

<u>Pipe</u>	2" and <u>Smaller</u>	2-1/2" and <u>Larger</u>
Copper, uninsulated	Fig. CT-99	Fig. CT-65
Copper, insulated	Fig. 260 w/shield	Fig. 260 w/shield
Steel, uninsulated	Fig. 97	Fig. 260
Steel, insulated	Fig. 260 w/shield	Fig. 260 w/shield

E. Supports for roof piping:

. 3/4 inch to 2 inch diameter: Equal to Miro Model 02, PVC base. 2. 2-1/2 inch to 4 inch diameter pipe: Equal to Miro Model 24-R, PVC base, nylon roller on teflon base.

F. Supports for vertical piping:

<u>Attachment</u> Fig. CT-121 - riser clamp Copper, floor support Steel, floor support Fig. 261 - riser clamp

G. Supports for wet areas or exterior: 1. Use nonferrous, galvanized steel, plated steel or plastic coated steel supports and hangers in kitchens, locker rooms, shower rooms, and in

H. Supports for pipe rough-ins:

Pipe brackets: Holdrite pipe brackets, copper plated, secured to wall and/or chase framing. If galvanized brackets are used or piping is installed in metal stud walls, plastic isolation inserts shall be installed

Insulation protection shields:

. Half—round galvanized metal shields with radius formed to fit the insulation and 12" long. Use 18" long shields for all pipes greater

Do not hang pipe from other pipe. In chase spaces, provide additional pipe stands and framing for attachment of pipe brackets and piping. Use correct size hangers. Increase hanger size to allow for increased diameter of line caused by pipe covering. Double nut, ping or spot weld all hanger support

K. Support horizontal piping according to the following schedule:

Size	<u>Steel</u>	<u>Copper</u>	<u>Diameter</u>
3/4" and smaller	7'	5'	3/8"
1"	8'	6'	3/8"
1-1/2", 2"	10'	8'	3/8"
2-1/2", 3"	11'	9'	3 ['] /8"
4"	12'	10'	1/2"
6" and larger	12'	12'	3/4"

Horizontal DWV Plastic Piping: At branch connections, at each change of direction and 4-foot maximum intervals. 2. Vertical DWV Piping: At branch connections, at each change of direction,

at each floor, mid-story and provide additional supports as necessary to maintain piping alignment at the base. 3. Cast Iron Piping: Horizontal — at intervals not in excess of the standard

lengths of pipe. 4. Cast Iron Piping: Vertical — 20 foot maximum intervals, base and at each floor.

5. Fire Protection Piping: Locate and space per NFPA requirements.

Install wall brackets where required. Provide pipe guides and anchors as required to properly control pope movement. Method to suit job conditions. Support piping at pumps and equipment from floor, structure or walls, so that piping weight is not supported by pumps or by equipment. Note: Provide additional hangers at couplings elbows, valves, equipment, etc., to prevent excessive stress or distortion to piping or connected equipment.

M. Install half-round galvanized sheet metal insulation shields on all insulated piping at hangers.

SECTION 15150 ACCESS DOORS

A. This Contractor shall furnish access doors for his work to the General Contractor, who installs where directed by this Contractor. Access panels shall be installed at plumbing valves and pipe specialties which are located above drywall ceilings or located in an inaccessible area or chase.

B. All access panels specified herein shall be provided by a single manufacturer to assure single source responsibility for the proper performance of materials used. Access panels, when not specifically specified, shall be as specified in DSC-214M, 16 gauge frame with 14 gauge door, or approved equal.

SECTION 15190MECHANICAL IDENTIFICATION

A. Provide pipe markers for all exposed piping in equipment rooms, accessible chases, and piping mains above accessible ceilings for maintenance operations.

B. Pipe markers, valve tags Brady, Seton, or Brimar Industries are acceptable 3/4" thru 5-7/8" outside diameter: Setmark opti-code roll form markers. 6" and larger: Setmark ultra—mark roll form markers.

Provide flow direction and pipe service markers on all piping, at each valve, wall, branch, riser and at 20 foot intervals. Markers shall be readable from floor. Letters shall be minimum 1" high.

D. Gas piping located in Mechanical Room, exterior of building and gas connection to rooftop units shall be cleaned of rust and painted with Rustoleum primer paint. Finish painting of gas piping in Mechanical Room and at rooftop units shall be painted yellow. Finish painting of gas piping on exterior of building or piping exposed in finished areas shall be painted to match surface.

SECTION 15250 MECHANICAL INSULATION

A. Furnish all labor, equipment, materials, and accessories necessary for the installation of all mechanical insulation. Insulate the following plumbing

1. Cold water piping. 2. Hot water piping.

3. Hot water return piping.

B. Where new piping connects to existing piping, new insulation systems shall match existing, (unless noted otherwise). Report any discrepancies to

C. All insulation shall have composite (insulation, jacket, and adhesive) fire and smoke hazard ratings as tested under procedure ASTM E-84. NFPA 255. or UL 723, and not exceed:

Flame spread: 25. 2. Smoke developed: 50.

D. Pipe insulation shall meet or exceed the requirements of OBC. Mechanical Code Section 604.

Water piping in building below floor slab shall be insulated with Armstrong AP or equal elastomatic thermal insulation. Insulation shall be 1/2" thick. All joints shall be permanently sealed with Armstrona 510 adhesive or equal. Fittings shall be covered with miter-cut pieces of pipe insulation sealed as

Water piping, and/or storm piping in building above floor slab shall be insulated with one piece fiberglass sectional insulation (K=0.23 at 75 degrees F.) with factory applied white reinforced kraft/foil vapor barrier jacket. Insulation shall be minimum 1/2" thick. Longitudinal jacket laps and butt joints shall be self-sealing using 3" wide lap strips. Insulation jacket and adhesive shall have a minimum fire/smoke rating development of 25/50 in accordance with ASTM-E-84, NFPA 225 and U.L. 723. Insulation shall be one of the following:

Johns Manville "Micro-Lok". 2. Owens/Corning "Fiberglass 25 ASJ/SSL-11".

3. Certainteed "Fiberglass 500 degree Snap-On".

manufacturers by Brocar, Skal + Gard or Truebro.

a. Fittings shall be insulated with pre-molded fiberglass inserts with molded

PVC jacket stapled and taped. G. Handicapped accessible lavatory "P" trap and angle supply pipes and stops shall be insulated with trap wrap protective by McGuire. This shall apply to all

wheelchair access. Abrasion resistant exterior cover shall be smooth and have

lavatories which have open space below lavatory and/or countertop for

1/8" wall minimum wall thickness. Fasteners shall be concealed. Equal

SECTION 15400 PLUMBING SHOP DRAWINGS

A. Submit six (6) copies of shop drawings for review of the following equipment. Submittals shall include, but not limited to the following:

Insulation Floor Drains Roof Drains Cleanouts

Plumbing Fixtures

B. Check, sign and approve all shop drawings. Drawings not signed and approved by the Contractor will be returned.

SECTION 15410 DOMESTIC WATER DISTRIBUTION SYSTEM

A. Furnish and install a complete water piping system for the building as shown on the drawings and as required for a complete installation. Connect to

B. Piping and Pipe Insulation — refer to Section 15420.

C. Piping Specialties - refer to Section 15430. D. Domestic water meter shall be as required by the local utility company.

fixtures. Valves to be located where shown on drawings. If located above an inaccessible ceiling, provide steel access panel as specified.

F. Provide shock arrestors on HW and CW supply pipes to each group of fixtures. Size and location to be per manufacturer's requirements. If located above inaccessible ceiling, provide steel access panel as specified.

SECTION 15411 SOIL DRAINAGE AND VENT SYSTEM

A. Furnish and install a complete soil waste piping system for the buildings as shown on drawings and as required for a complete installation. Connect to building sanitary sewer.

B. Furnish and install a complete system of vents for the sanitary system. including branch vents, vent stack, extension through roof and roof flashing.

C. Soil Waste Pipe — refer to Section 15420.

D. Vent Pipe - refer to Section 15420.

E. Piping Specialties - Refer to Section 15430.

Cleanouts shall be based on Zurn as scheduled on drawings. Provide cleanouts of 4" size for pipes 4" and larger, and full size for pipes smaller than 4". Equal cleanouts as manufactured by Wade, Watts, J.R. Smith, Jonespec or Josam.

G. Floor drains and hub drains shall be based on Zurn as scheduled on drawings. Equal drains as manufactured by Wade, Watts, J. R. Smith,

H. Collect waste from all plumbing fixtures, drains and equipment and extend as shown on drawings. Make connections to all fixtures, drains, equipment and Owner furnished equipment.

Install a cleanout at base of each soil stack and install others as shown on drawings or required by Code. Install in floor or wall, and terminate with ferrule and cleanout plug. Provide access panels of size to give adequate space for cleanouts. Encase outside cleanouts in concrete. Tops of all floor cleanouts shall be flush with finished floor (this includes tiled areas). Provide carpet markers where installed in carpeted areas.

K. Trap each fixture with an approved trap, as near fixture as possible or built integral therewith. Certain fixtures are indicated to have indirect connections.

Vent fixtures as shown on drawings. Collect vents and extend through roof, terminating 24" above roof. Install 3" or 4" vent pipe where it passes through roof as shown. All vent extensions shall be installed to insure leakproof installation. Installation to be in strict compliance with requirements of roofing system manufacturer. Coordinate with General

M. Provide flashing clamp device and flash all drains not directly on grade with a 4 lb. sheet lead flashing, extending a minimum of 18" in all directions

N. Pitch soil and waste piping as follows: 3" and smaller: 1/4" per ft. 1/8" per ft. 4" and larger: 1/4" per ft. Grease waste:

beyond clamping ring.

P. Minimum soil waste pipe size is 2 inches for underground waste piping.

SECTION 15415 NATURAL GAS SYSTEM A. Furnish and install a complete gas piping system for the building as shown

on drawings and as required for a complete installation.

B. Perform all work as required by Code and the local Gas Utility.

C. Gas piping — refer to Section 15420.

D. Piping Specialties - refer to Section 15430.

E. The complete installation shall be in strict accordance with the requirements of the Local Gas Utility to include piping, tests and installation procedures.

F. Provide ags meter set as required by Local Gas Utility. Set ags regulator at gas meter to deliver no more than 7" W.C.

G. Make final connections to all equipment requiring same. Provide valves, unions and 6" dirt leas in pipe lines at connection to all equipment.

H. Provide gas pressure regulators on gas—fired fixtures and pieces of equipment where required. Coordinate with Equipment Supplier and field conditions. Install vents from interior pressure regulators on gas—fired equipment and from sleeves, where required. Extend line through outside wall above grade, sleeve and caulk, turn pipe down, terminate with approved vent

J. Gas piping system shall be installed per N.F.P.A. #54 and Local Gas Company

SECTION 15420 PIPE AND FITTINGS

A. Provide all piping and fittings for soil waste, vent, storm, hot and cold water, and natural gas as shown on drawinas.

B. Insulate the following piping.

1. All cold water piping. 2. All hot water piping.

3. All hot water return piping.

C. Refer to Section 15250 for insulation.

D. Soil waste, vent and storm piping inside building and to a point 5'-0''outside buildina:

1. Schedule #40 (PVC) poly vinyl chloride drain waste and vent pipe and fittings (ASTM D-2665) and (ASTM D-1785). Pipe to be joined by solvent cement per the manufacturer's requirements and installed per (ASTM D-2564) and (ASTM D-2665).

E. Soil waste and storm piping 5'-0" beyond building:

1. SDR-35 (PVC) poly vinyl chloride type PSM, gravity drain, gasketed sewer pipe and fittings (ASTM D-3034) and (ASTM D-1785).

F. Pipe and fittings shall be by same manufacturer.

G. Hot and Cold Water Pipe — in building above slab:

1. Type "L" hard drawn copper tubing (ASTM-B42) with wrought copper solder fittings (ANSI-B16.22) and 95/5 tin/antimony solder.

H. Hot and Cold Water Pipe — in building below slabs

1. Type "K" soft drawn copper tubing (ASTM-B42) with wrought copper soldered fittings (ANSI-B16.22) and silver solder. (No fittings below

J. Gas pipe — in building above slab.

(ANSI B31.1) or threaded malleable iron fittings (ANSI B16.3). All gas piping 2" and larger shall be welded. SECTION 15430 PIPING SPECIALTIES

A. Furnish and install all unions, nipples, valves, supporting members, and all

1. Schedule #40 black steel piping (ASTM-A120) with welded steel fittings

other specialties specified herein or noted on drawings and as required to provide complete and operating piping system.

B. Nipples: 1. Same weight and material as pipe with which they are used

. Copper Pipe — wrought copper union with copper to copper joint and solder end type equal to Grinnell Fig. #9102.

2. Black Steel Pipe - A.A.R. malleable iron union with bronze to iron ground joint equal to Grinell Fig. #571. 3. Dielectric fittings shall be equal to clear flow waterway. Style 47. meeting the requirements of ASTM F-492-77 with an electro-zinc plated casing

with chemically inert, NSF/FDA listed dielectric thermoplastic lining.

As manufactured by Nibco-Scott. Equal manufacturers by Apollo, Crane, Grinnell, Homestead, Jenkins, Keystone, Milwaukee, Powell, Stockham or Watts. All valves to be by same manufacturer. 3" and larger valves

a. Gate Valve (2" and smaller) — bronze gate valve with solid wedge, rising stem, screw-in bonnet, 200 lb. W.O.G., equal to Nibco type T-111 or S-111.

b. Check Valve (2" and smaller) — bronze horizontal swing check valve. regrinding type, Y-pattern, renewable discs, 200 lbs. W.O.G., equal to Nibco type T-413 or S-413.

c. Ball valves - bronze two piece, 400 lb. W.O.G. equal to Nibco Type d. Drain Valves — equal to "7" above with full sized drain line extended

to nearest floor drain and with 2" air gap. e. Lubricated plug valves (gas) — cast semi—steel short pattern with stem seal of reinforced teflon equal to Homestead.

E. Balancing valve — shall be Bell & Gossett "circuit setter", bronze body, brass ball construction with glass and carbon filled TFE seat rings. Equal valves by Armstrong "CBV" or Sarco Balance Master.

F. Wall and Floor Plates — Install chrome plated plates at all pipe penetrations

in finished areas. Install galvanized steel plates at all pipe penetrations in

unfinished areas. Plates must completely cover pipe sleeve and be sized for

pipe opening required. G. Shock Arrestors — Hydro—pneumatic type as manufactured by Wade, Zurn,

J.R. Smith Co., Precision Plumbing Products or Sioux Chief. Thermometers — adjustable angle, red reading, mercury type thermometers with thermometer well, 3-1/2" stem, 1-1/2" extended neck, 9" scale and quaranteed 1% accuracy and a temperature range in accordance with related work. Thermometers based on Weiss. Equal manufacturers by Trerice,

Gauges -4-1/2" dial pressure gauge with a gauge cock, and having 1% accuracy. Gauges shall be pressure or compound as required and shall be as manufactured by Weiss, Trerice or Ashcroft.

K. Aquastats adjustable surface mounted type as manufactured by Honeywell, Powers, Barber or Coleman.

L. Install unions at piping connections to all pieces of equipment, valves, and M. Install valves where indicated on the drawings and where necessary for proper operation and maintenance of systems. Isolation valves shall be

installed on supply piping to each group of fixtures. O. Install all plumbing specialties per manufacturer's instructions.

bibbs where shown on the drawings.

S. Install other specialties where noted on the drawings.

Weksler or Ashcroft.

P. All products of the same type shall be by the same manufacturer.

Q. Install arrestors in hot and cold water piping to each bank of fixtures and where shown on the drawings. Coordinate access panels as required with General contractor. Size and install per manufacturer's requirements based

R. Install thermometers, pressure gauges, aquastats, wall hydrants, and hose

SECTION 15445 PLUMBING FIXTURES AND TRIM

A. Furnish and install all plumbing fixtures scheduled on the drawings and specified herein. Furnish complete with all trim and accessories.

B. Provide rough—in and final connection to Owner furnished equipment and

Kitchen equipment as noted on the drawings and specified herein.

C. Fixtures and trim are based on the following

1. Plumbing fixtures based on American Standard. Equal quality fixtures by Kohler, Crane and Eljer are acceptable.

2. Shower enclosures are based on Aquarius. Equal quality showers by Aqua-Bath or Clarion are acceptable

3. Sinks are based on Elkay. Equal quality sinks by Just or Moen are

4. Service sinks are based on Fiat. Equal quality basins by Cutler or Stern-Williams are acceptable.

5. Electric water coolers are based on Oasis. Equality coolers by Haws, Halsey Taylor or Sunroc-Western are acceptable.

6. Water closet seats are based on Beneke. Equal quality fixtures by Bemis, Church, Olsonite or Sperzel are acceptable.

7. Flush valves are based on Sloan. Equal quality valves by Delany or Zurn are acceptable 8. Plumbing fixture faucets are based on Zurn. Equal quality faucets by

American Standard, Kohler, Crane, Eljer, Chicago, Ghroe American, Delta, Moen, Speakman, T & S Brass or Valley faucets are acceptable.

9. Plumbing shower faucets are based on Symmons. Equal quality faucets by Leonard, Lawler or Powers. 10. Plumbing fixture brass is based on McGuire. Equality brass by Kohler,

D. Fixtures, faucets, drains, cleanouts, trim and equipment shall be by the same manufacturers unless otherwise noted.

E. Trim shall be chromium plated. Fixtures shall be white unless otherwise

Crane, E.B.C., Eljer, Eastman, and Frost are acceptable

F. All exposed piping shall be chromium plated.

G. All pipes penetrating walls shall have chromium plated escutcheons H. Field verify installation requirements of all fixtures and Owner furnished equipment. Provide all required valves and piping. Coordinate installation of all equipment with Architect.

Provide backing for all wall hung fixtures and faucets.

Valve all hot and cold water supplies to each fixture and each group of fixtures. Adjust all valves and test all fixtures for proper operation

Valves shall be chrome plated with chrome supply tubes. L. Valve all hot and cold water pipe rough—ins to kitchen equipment with 1/4

O. After water piping system is flushed, remove all strainers and aerators and

P. Caulk all wall and floor mounted fixtures with silicone. Color to be selected

K. Valve all hot and cold water pipe rough—ins to plumbing fixtures as specified.

M. All exposed piping to fixtures shall be chrome plated unless noted otherwise. N. Adjust shower valves to deliver a maximum of 110

turn ball valves and rigid copper supply tubes.

clean thoroughly.

by Architect

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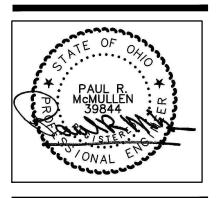
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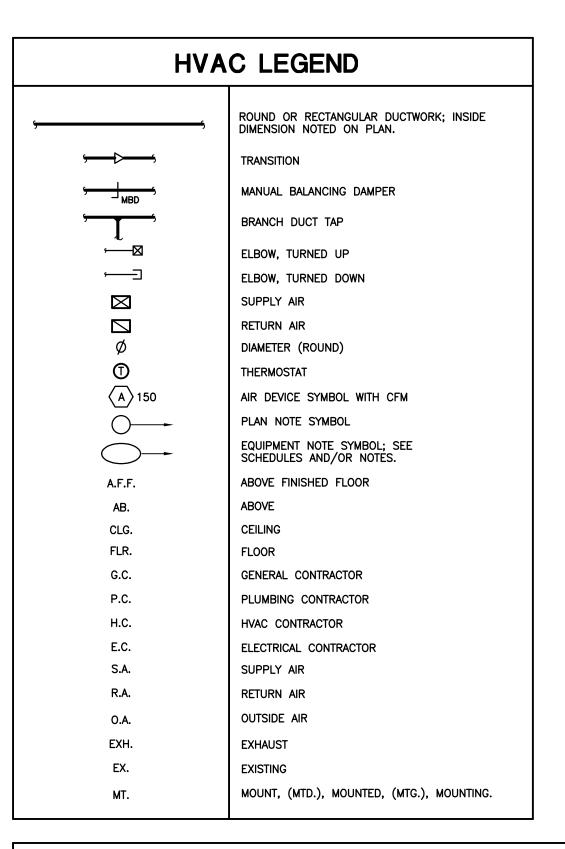
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SPECIFICATIONS

PLUMBING



HVAC GENERAL NOTES

- A. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND GENERAL
- B. ALL DUCT SIZES ARE INSIDE DIMENSIONS. COMPENSATE FOR IDUCTBOARD THICKNESS
- C. ALL BUILDING PENETRATIONS OF PIPES, DUCTS, CONDUITS, LOUVERS, ETC., SHALL BE SLEEVED AND SEALED AIR AND WATER TIGHT.
- D. ALL THERMOSTAT LOCATIONS TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT.
- E. ALL PENETRATIONS OF FIRE-RATED WALLS SHALL BE SEALED, AND SHALL BE FIRESTOPPED AND FIRE DAMPERED AS NOTED ON THE DRAWINGS.
- F. PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE CODES, RULES, AND REGULATIONS OF LOCAL, STATE AND FEDERAL AUTHORITIES OF JURISDICTION.
- COORDINATE ALL EQUIPMENT AND DUCT RUNS WITH STRUCTURE, LIGHTS,
- H. COORDINATE EXACT LOCATION OF ALL AIR DEVICES WITH LIGHTING PLAN AND REFLECTED CEILING PLAN.

CEILING, CONDUIT, PIPING, AND OTHER EQUIPMENT.

- J. TYPICALLY, DUCTWORK SHALL RUN CONCEALED ABOVE THE DROPPED CEILING (BETWEEN TRUSSES AND THROUGH TRUSS GAPS). WHERE NOTED ON PLANS, DUCTWORK SHALL BE ROUTED BETWEEN FLOORS.
- K. BALANCE SYSTEMS TO CFM'S NOTED ON PLANS.
- L. RECTANGULAR DUCTWORK SHALL BE GALV. SHEET METAL. ALL FITTINGS (ELBOWS, TEES, ETC.) SHALL BE INSULATED SHEET METAL. ROUND BRANCH DUCTS SHALL BE GALV. SHEET METAL WITH SHORT RUNS OF INSULATED FLEXIBLE DUCTWORK NEAR THE DIFFUSER (MAX 5'). INSULATE WITH WRAP INSULATION WITH FOIL VAPOR BARRIER (R-VALUES PER CODE).
- M. EXHAUST DUCTWORK SHALL BE UN-LINED/UN-INSULATED SHEET METAL.
- N. DUCT AND PIPE LAYOUTS ARE SCHEMATIC. FIELD COORDINATE ALL DUCT RUNS (PRIOR TO DUCT FABRICATION). EXTRAS WILL NOT BE AWARDED FOR DUCT REVISIONS CAUSED BY LACK OF COORDINATION.
- O. HORIZONTAL RUNS OF CONDENSATE PIPING SHALL SLOPE 1/2" PER 6'-0" TOWARDS TERMINATION.
- P. ALL SHOP DRAWING SUBMITTALS SHALL BE FACTORY REPRESENTATIVE EQUIPMENT SUBMITTALS, THAT INCLUDE (BUT ARE NOT LIMITED TO) ALL DATA, AND LISTED ACCESSORIES, SHOWN IN SCHEDULES, NOTES, SPECIFICATIONS, ETC. SUBMITTALS SHALL INCLUDE ANY NON-LISTED APPURTENANCES REQUIRED FOR PROPER OPERATION. MARKED-UP CATALOG CUTS ARE NOT ACCEPTABLE, AND THE CONTRACTOR WILL BE NOTIFIED THAT SUBMITTALS HAVE BEEN DISCARDED WITHOUT ENGINEER REVIEW OR STAMPS.

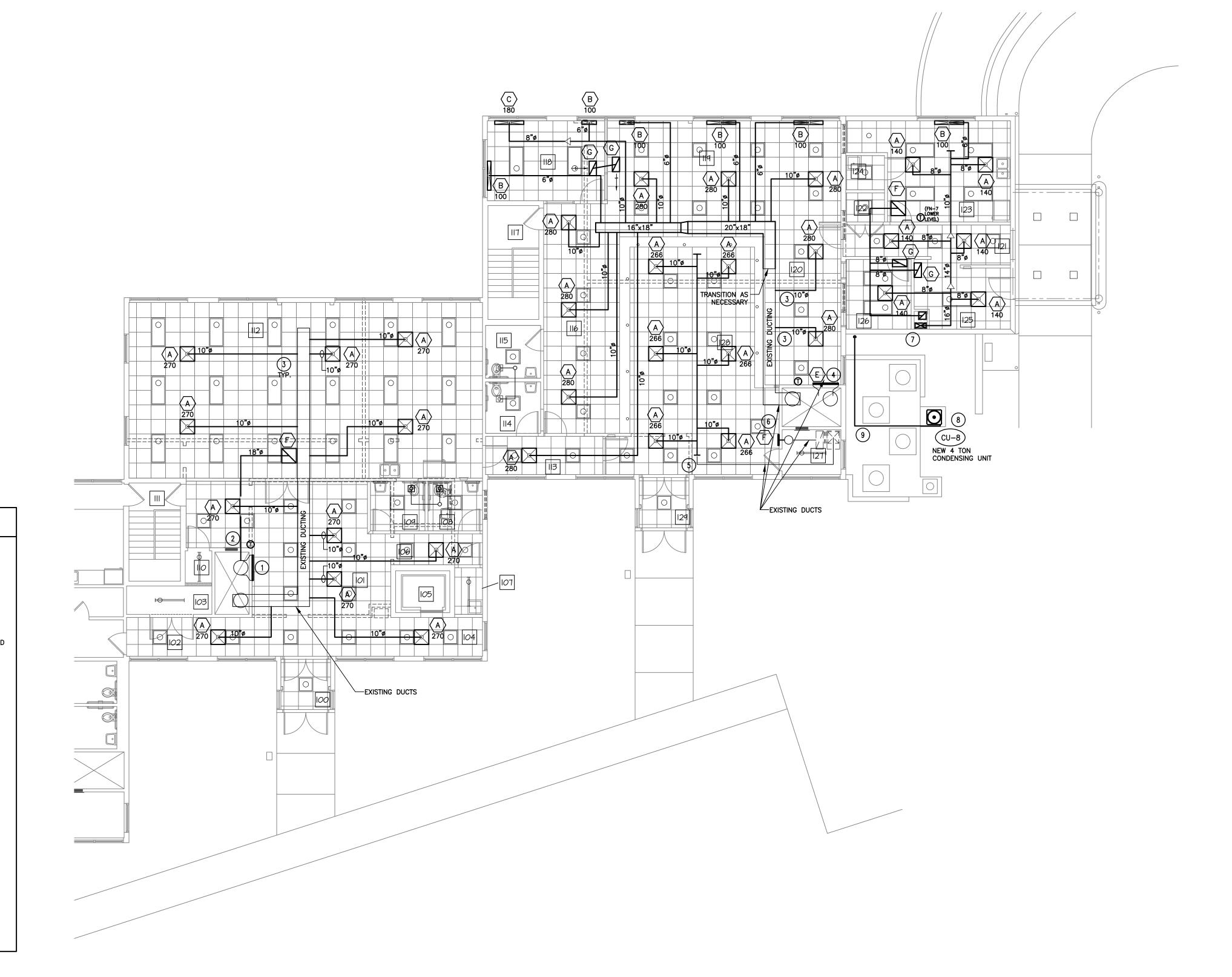
HVAC CODED NOTES

EXISTING RETURN AIR GRILLE MOUNTED HIGH ON WALL. CLEAN AND SERVICE THE GRILLE.

- 2. ROUTE RETURN AIR DUCT ABOVE CEILING. PENETRATE INTO CHASE AND CONNECT TO EXISTING RETURN AIR DUCT.
- 3. EXISTING SUPPLY AIR PLENUM TO BE REUSED. PATCH AND SEAL ALL DEMOLISHED BRANCH DUCT CONNECTION POINTS AND CONNECT NEW DUCTS TO DIFFUSERS AS REQUIRED. REUSE EXISTING CONNECTIONS ONLY IF DUCT SIZES
- 4. NEW RETURN AIR GRILLE MOUNTED HIGH ON WALL. PREVIOUS RETURN AIR DUCT PENETRATED CHASE ABOVE DROPPED CEILING LEVEL. CAP EXISTING RETURN AIR DUCT BELOW DROPPED CEILING LEVEL.
- 5. TRANSITION FROM EXISTING DUCT TO NEW DUCT AT THIS LOCATION.

ARE AN EXACT MATCH.

- 6. NEW RETURN AIR GRILLE MOUNTED LOW ON WELL. CONNECT TO EXISTING RETURN AIR DUCT.
- 7. NEW SUPPLY AND RETURN AIR DUCTS ROUTED THROUGH CHASE TO NEW FAN COIL UNIT ON LOWER LEVEL.
- 8. NEW CONDENSING UNIT FOR FAN COIL UNIT (FC-7) LOCATED ON LOWER LEVEL. CONDENSING UNIT MOUNTED ON NEW CONCRETE PAD (BY GC).
- 9. ROUTE REFRIGERANT LINES FROM NEW CONDENSING UNIT ALONG WALL TO NEW BUILDING ADDITION CORNER.

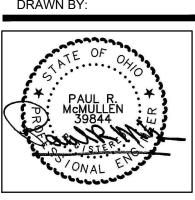




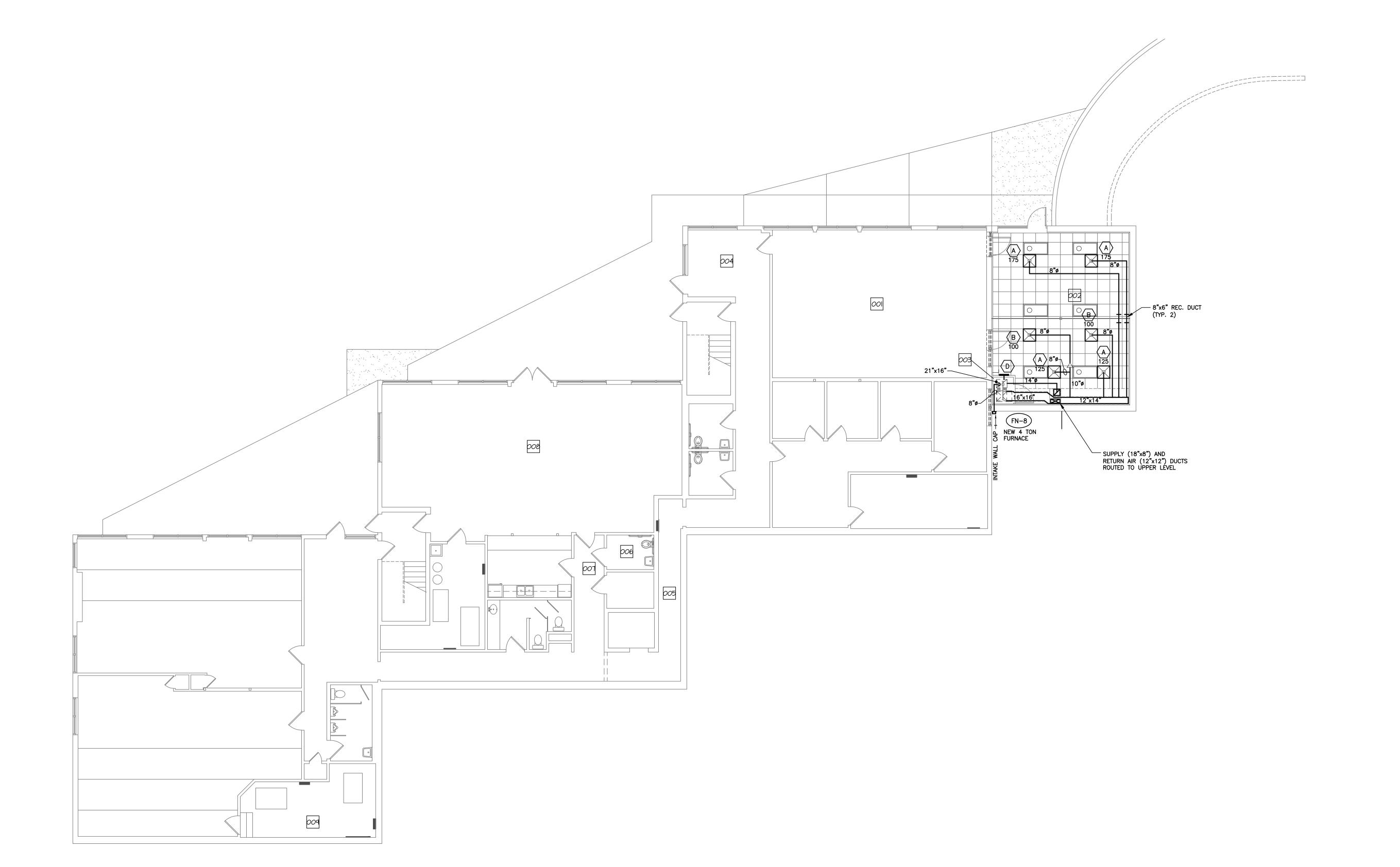
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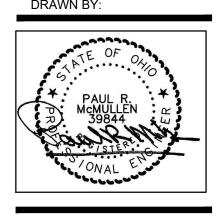


LEVEL PLAN -HVAC





THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS: THE FAIRFIELD CENTER FOR THE



OVERALL LOWER LEVEL PLAN — HVAC

MECHANICAL SPECIFICATIONS

BASIC HVAC REQUIREMENTS

- A. Refer to Instructions to Bidders, General Conditions, Supplementary Conditions, and the Sections of Division 1: General Requirements for specific requirements, responsibilities and methods relating to the Mechanical work.
- B. Furnish all materials, labor, tools, transportation, incidentals and appurtenances to complete in every detail and leave in working order all items of work called for herein or shown on accompanying drawings. Include any minor items of work necessary to provide complete and fully operative systems whether specifically shown or not.
- Comply with all Local and State building codes, Life Safety Code, National Fire Protection Association (NFPA), applicable utility company requirements and applicable Federal requirements.
- D. Obtain and pay for all required permits, fees, inspections and tests. File drawings necessary to obtain permits, schedule necessary inspections and tests. Submit Certificates of Inspection and approval upon completion of
- Material and equipment installed under this Contract shall be new, un-deteriorated, and of a quality not less than the minimum specified All equipment shall be certified, listed and labeled by UL. Work must be performed by Licensed Contractors as required by Local and State Codes Contractors shall be certified by approving agencies for all work required
- Drawings are schematic and show approximate locations of work. Exact locations of equipment must be coordinate with other contractors and verified in the field. It is not intended that drawings indicate all necessary offsets, and it shall be the work of this Contractor to make the installation in such a manner as to conform to structure, avoid obstructions, preserve headroom and keep openings and passageways clear Significant deviations from Drawings must be approved by the Architect. The Architect reserves the right to make minor changes up to the time of roughing—in without additional cost.
- G. If a conflict occurs between the Drawings and Specifications, the Contractor shall immediately call it to the attention of the Architect, who will determine which interpretation shall take precedence.
- Guarantee all work executed under this Contract to be free from defective workmanship and/or materials. Should any defects develop within a period of one (1) year after final acceptance has been made. correct them and repair any damage that resulted from same at no additional cost
- Submit six (6) copies of shop drawings, product data and samples as required under Division 1, and as listed in these specifications.
- Maintain a record set of prints showing exact location of all work. Record addendum and change order items, and any deviations made from bid documents. Drawings shall be clean and undamaged, and shall not be used for any purpose other than recording deviations from working drawings and exact locations of concealed work. Maintain drawings at the job site and current for weekly inspection. Upon completion of work, deliver these drawings to Architect.
- K. Submit two (2) bound copies of operation and maintenance manuals, 8-1/2" X 11" in three ring hard back binders. Format as follows: Title page: Title of Project, Address, Date of Submittal, Name and Address of Contractor, Name of Architect, Name of Engineer. Second page: Index of manual contents/A tabbed section for each specification section with a list of all equipment furnished under that section together with suppliers' names and addresses and a copy of each approved shop drawing. Also provide the following in each section as applicable: description of systems, operating instructions, maintenance and lubrication instructions, servicing instructions, manufacturer's information and parts lists, including sources of supply, equipment warranties, control diagrams, wiring diagrams, routine and 24 hour emergency information: name, address and telephone number of servicing agency, include names of personnel to be contacted for service arrangements.
- After placing systems in operation, thoroughly instruct designated Owner's personnel on operation and maintenance of all equipment and systems. Provide a minimum of (8) hours total instruction: location of equipment and explanation of function, reference to operating instruction manuals for record and clarity coordination of written and verbal instructions so that each is understood by personnel, explanation of control system, including panel, Specify maintenance performed by Owner.
- M. Comply with applicable Section of Division 1 for product delivery, storage and handling procedures and requirements.
- N. Locate existing utilities prior to beginning work. Reroute or replace existing utilities where necessary to permit installation of work. Should uncharted or incorrectly charted piping or other utilities be encountered during work operations, notify the Architect immediately for procedure directions. Cooperate with utility companies in maintaining active services and facilities in operation.
- Whenever the Contractor furnishes equipment or material other than the Design Base Manufacturer specified, he is responsible for the cost and coordination of all modifications required not only for his work, but also for the work of all other Trades affected.
- Contractor may submit substitutes of his choice, without prior approval, on the "Substitution Sheet" included in the Bid Schedule. Such substitutes will not form basis of award and may be considered only after selection of lowest bidder furnishing "Base Design" as specified.
- Q. Avoid cutting of concrete, masonry and other new work, by coordination and use of sleeves and inserts. Inform the General Contractor of the locations of all sleeves and inserts required and deliver sleeves and inserts to the General Contractor for installation. Perform cutting and patching when required for installation of new work in existing construction. Cut holes through concrete, brick, tiles etc., when necessary by rotary core drilling. Patching shall match adjacent materials and shall be accomplished only by tradesmen skilled in the respective craft required
- R. Cutting of reinforced concrete and precast structural concrete prohibited unless approved by Structural Engineer. Cutting and drilling, when approved, shall be by the General Contractor.
- S. Upon completion of work, all material and equipment furnished in this Contract shall be thoroughly cleaned of dirt, stickers, grease, rust, oil and other foreign matter. Prepare for finish painting, where painting is specified. Clean galvanized ductwork in exposed areas with diluted acetic acid. Finish painting of piping and equipment installed under this Contract is included under Division 9 except as noted. HVAC Contractor shall spot prime factory finished equipment which has rusted or been damaged with zinc chromate primer. Repaint entire item matching oriainal color.

- Protect surface, equipment, and materials during construction from damage from water, dirt, welding and cutting, spatters paint droppings, etc. Repair or replace as directed any materials damaged during construction operations. All materials or equipment stored outside shall be elevated and protectively covered. Materials and equipment sensitive to weather or construction conditions shall be stored inside. Where necessary, sensitive equipment shall be stored in a heated area. Damaged equipment or materials must immediately be repaired or replaced by this Contractor, to the satisfaction of the Architect and at no additional cost to the Owner.
- Electrical Contractor to provide conduit and wiring for devices as indicated on Electrical Drawings and in Specifications. Any additional wiring required for equipment shall to be the responsibility of this Contractor. All wiring to be installed in metal conduit and to comply with latest edition of National Flectric Code, NFPA 70, and with the Electrical Division of these Specifications, Division 16. Furnish to the Electrical Contractor approved wiring diagrams required for equipment furnished. This Contractor will be responsible for the successful operation of systems.

MECHANICAL DEMOLITION

- Coordinate the extent of required demolition for the HVAC work with the General Contractor. Contractors shall visit the site prior to their Bid to fully familiarize themselves with the extent of this demolition. Schedule shutdown and reworking of all systems with Architect and General Contractor. Report discrepancies between drawings and actual conditions to Architect immediately.
- Coordinate removal of existing equipment with General Contractor. All equipment and material removed and not chosen by Owner for salvage shall become the property of the Contractor and be disposed of by him.
- The removal of equipment shall be done with care so as not to affect the structure or cause excessive patching. The removal of equipment shall be complete and include all piping roughins, electrical connections, pipe hangers and supports.

15020 HVAC SHOP DRAWINGS

- Submit six (6) copies of shop drawings for review of the following equipment. Submittals shall include, but not limited to the following:
 - Air Cooled Condensing Units
 - Furnace / Air Handler Units Exhaust Fans
 - Insulation Air Devices
 - Temperature Controls Air Balance Report
- Check, sign and approve all shop drawings. Drawings not signed and approved by the Contractor will be returned.
- Submit shop drawings for all items of equipment, piping, and insulation for review before construction. Prepare required drawings at sufficient scale to clearly show details of construction, physical dimensions and related work of others. Review of shop drawings shall not relieve the Contractor of responsibility for accuracy of shop drawings or of full requirements of the Contract drawings.

- This Contractor shall furnish 12 ga. sheet metal sleeves for all wall and floor openings required for his work. The General Contractor shall install all sleeves. Do not install sleeves through concrete joists, beam columns, or other structural members except where specifically indicated or approved by the Architect and Structural Engineer.
- Furnish sleeves sized to provide an annular space of 1/2" between the passing pipe or pipe insulation. Sleeves shall be cut flush with each surface, except where clamping flanges are use. In rated firewalls, fire partitions, smoke stops and floors, fill annular space around pipe with fire stopping materials as specified in Section 15135. In sleeves through exterior wall, pack annular space with insulating material, seal and make waterproof. Seal off all spaces around rectangular ducts through walls with sheet metal collars

FIRESTOPPING

. Furnish and install firestopping for all mechanical penetrations through floors, and through fire rated assemblies. Provide firestopping materials at are currently classified with UL as "Fill, Void, or Cavity Materials," and "Through Penetration Firestop Systems." Provide firestopping materials that have been tested in accordance with ASTM E 814 and UL 1479. All firestopping materials shall be labeled with ASTM E814 number. Install all firestopping materials in accordance with manufacturer's

15190 MECHANICAL IDENTIFICATION

- Provide pipe markers for all exposed piping in equipment rooms, accessible chases, and piping mains above accessible ceilings for maintenance operations. Provide equipment identification for all major items of mechanical equipment.
- Pipe markers and valve tags by Brady, Seton, or Brimar Industries are acceptable: 3/4" thru 5-7/8" outside diameter: Setmark opti-code roll form markers, 6" and larger: Setmark ultra—mark roll form markers.
- Identification shall be the same as that shown on Contract Drawings. i.e., F-1, AHU-1, BC-1, CU-1, etc. Letter height shall be 2-1/2" and shall be readable from standing position on the floor, or from roof

15241 MECHANICAL SOUND AND VIBRATION CONTROL

A. Furnish and install ceiling spring isolators for all suspended fans, all vibration isolation materials specified herein shall be provided by a single manufacturer to assure single source responsibility for the proper performance of materials used. Vibration isolation materials are based on Peabody Noise Control, or equal by Mason.

15250 MECHANICAL INSULATION

- Furnish all labor, equipment, materials, and accessories necessary for the installation of all mechanical insulation. Insulate the following heating and cooling systems.
- Refrigerant piping
- Outside air ductwork Air conditioning supply and return ducts

- 3. All insulation shall have composite (insulation, jacket, and adhesive) fire and smoke hazard ratings as tested under procedure ASTM E-84, NFPA 255, or UL 723, and not exceed: Flame spread: 25, Smoke developed: 50. Insulation shall meet or exceed the requirements of OBC. Mechanical Code. Section 604 and ASHRAF 90.1—1—1999
- Concealed ducts: Fiberglass duct wrap insulation, 1-1/2" thick, 3/4pound density (K = 0.28) with aluminum foil facing. R-5 minimum. Optional manufacturers include:
- Certainteed type 75 with FSK facing. Johns Manville "Microlite" with FSK facing.

Owens-Corning type 75 with FRK-25 facing.

D. Exterior Pipes And Ducts: Expanded closed cell, flexible elastomeric insulation (K = 0.27 at 75 degrees F) furnished in 3/4" thick sheet or tube form. Insulation shall be equal to Armstrong "Armaflex". R-8 minimum (multiple layers if required.) All seams and butt joints shall be sealed with adhesive and finished with 2 coats of a vinyl-lacquered Armaflex finish.

15530 REFRIGERANT PIPING

- Furnish and install complete refrigerant piping systems from outdoor condensing units to indoor evaporator. The requirements of this Section shall apply to field installed refrigerant piping systems. See other sections for pre-manufactured refrigerant piping kits.
- . All refrigeration piping shall be installed by experienced workmen in accordance with established practices and the best practice of the trade All refrigerant piping practices shall be in accordance with latest requirements of Clean air Act. Refrigerants shall not be vented into the
- Piping shall be Type L-ACR clean, deoxidized, hard copper tubing with solder joint wrought copper fittings. Solder shall be: "Silfos" or
- . Ream ends of all tubing and clean prior to installing. Installation shall be straight and free from kinks or restrictions. Slope horizontal runs toward compressor 1/16" per foot wherever possible.
- Joints shall be made in the following manner: all joints shall be brazed with the exception of unions at coils. Brazed joints shall be made with silver solder, with suitable flux, sil-fos, or phoson 15. Dry nitrogen gas shall flow through the piping at a pressure of 1/2 p.s.i.g. (to prevent copper oxidation) while brazing.
- Pressure test at 250 psi with dry nitrogen and test joints as required by local codes. Bleed nitrogen and test at all joints again with R-410A and nitrogen using a halogen detector. Hold test pressure for 6 hours and confirm a tight system. Evacuation shall be performed with ambient temperatures above 60 degrees F with system evacuated per manufacturer's recommendations. After evacuation and testing, the system shall then be charged with the required amount of refrigerant and placed into operation.

CONDENSING UNITS

- A. Furnish and install air cooled condensing units where shown on drawings. Refer to air cooled condensing units schedule on drawings, for model number, capacity, and electrical characteristics. Units shall be UL listed. Units shall also be certified and rated in accordance with ARI Standard 210. Provide 5 - year compressor warranties.
- Air cooled condensing units are based on Carrier. Optional manufacturers: Bryant, Lennox, Trane, York, or McQuay. Packaged air cooled condensing units complete with compressors, refrigerant circuits, condenser coil, direct drive propeller fans, motors, and fan guards. Temperature and current—sensitive motor overloads, internal spring isolators, sound mufflers, and high and low pressure cutout devices. Each refrigerant circuit shall include an integral subcooling circuit, filter drier, and liquid line and suction line service valves with gauge ports.
- For units with dual compressors two separate and independent refrigeration circuits shall be provided.
- D. As noted on drawings, furnish hot gas by-pass with accessory components as required.
- Rippled aluminum fins bonded to seamless copper tubing. Two independent refrigerant circuits with separate subcooling circuits and cumulators standard. Factory tested at 450 psig air pressure under water. Vacuum dehydrated.
- Vertical discharge, direct—drive fans, statically and dynamically balanced, with steel blades and zinc-plated steel hubs. Weather-protected motors with permanently lubricated ball bearings, built—in current and thermal overload protection, and weathertight slinger over shaft.
- Unit shall have factory assembled and mounted control panel containing fan contactors, fan cycling thermostats, compressor interlock and 24-volt control power transformer.
- Install condensing units per manufacturer's installation instructions. Set roof mounted condensing units on equipment support rails, spanning a minimum of two roof joists.

SPLIT SYSTEM HVAC EQUIPMENT

- . Furnish and install split system HVAC equipment where shown on the drawings. Refer to schedules on drawings for model numbers, capacities, and electrical characteristics. Provide 5-year compressor warranties and 20-year heat exchanger warranties.
- Condensing units shall be complete with a hermetically sealed compressor mounted to unit with rubber mounts, direct drive condenser fans with vertical discharge, aluminum finned condenser coils bonded to copper tubes with coil guards, heavy gauge galvanized steel cabinet with steel base channels. Unit to have high and low pressure switches and all other controls for complete operation.
- C. Furnish and install filters and 7 day programmable thermostats.
- Furnish and install precharged refrigeration line sets or field fabricated piping (ACR dehydrated and sealed) sized per manufacturer's recommendations. Insulate suction line with 1/2" Armaflex and seal all joints and seams. Provide required refrigeration charge, pressure test and leak test. Furnish and install PVC drain lines from units and extend to floor drain with 2" air gap. Insulate with 1/2" Armaflex.

- Install all units as recommended by manufacturer and per their installation manual and listing. Refer to details and notes on drawings. Support all piping at 4'-0" intervals with vibration isolation. Do not operate furnaces without filters in place. Install one set of clean filters at time of building turn-over to Owner. Turn one set of clean filters over to Owner. If units are operated during construction, provide filter protection at return air inlets. Provide factory representative at time of furnace start-ups and during instruction to Owner.
- Furnish and install fan coil units as shown on drawings. Unit capacities shall be certified under the Room Fan-Coil Air Conditioner Certification Program and rated in accordance with ARI Standard 440-89. Units shall be tested and rated in accordance with ARI Standard ANSI-S1.32 for sound. Units shall comply with National Electric Code.
- Horizontal and vertical blower coil units shall be Carrier or equal, complete with cooling coils, forward curved and factory balanced blower wheels, direct or belt drive, motors with overload protection, adjustable motor pulleys, 3/4" thick 1-1/2 pound density insulation for complete unit, 2" thick throw—away filters, unit mounted controls, and unit access
- Install all units in accordance with manufacturer's installation instructions. Install wall mounted control for all vertical stacked fan coil units, horizontal fan coil units, and blower coil units. Install flexible duct connections at inlet and outlet of horizontal fan coil units and blower coil units. Coordinate locations and sizes of exterior wall openings for vertical fan coil units. Furnish all wall louvers to the General Contractor for installation

15860 EXHAUST AND SUPPLY FANS

- . Furnish and install roof and ceiling mounted fans as noted on the drawings and specified herein. Furnish prefabricated insulated roof curbs compatible with equipment furnished.
- . Ceiling / wall mounted fans shall be Broan as scheduled on the drawings or equal by Greenheck, Penn, Jenco-Fan or ACME. Fans shall have insulated housings, integral plastic grille, disconnect, back draft damper, motor with thermal overload protection, and be furnished with controls as specified in exhaust fan schedule.
- Coordinate location of all equipment with Architect in field. Bolt or weld all roof mounted equipment to curbs. Coordinate electrical requirements of all fans with Electrical Contractor. All roof openings and curb mounting for fans shall be by the General Contractor. All roof patching and flashing shall be by the Roofing Contractor.

AIR DISTRIBUTION 15890

- . Furnish and install a complete air distribution system for the heating, ventilating and air conditioning systems and exhaust systems for the building as shown on the drawings and as herein specified. Include cleaning, testing, balancing and adjusting the air systems for proper air circulation to each area of the building. Submit complete duct lay-out shop drawing prior to start of construction
- . Ductwork shall meet the requirements of: SMACNA HVAC Duct Construction Standards, Metal and Flexible, NFPA 90A Standard for the Installation of Air Conditioning and Ventilating Systems, and OBC Mechanical Code, Chapter 6. Ductwork liner shall meet NFPA 90A and 90B Life Safety Standards and conform to the requirements of ASTM
- Rectangular ducts shall be constructed and reinforced per SMACNA Duct Construction Standards, Section I. All ductwork shall be sealed in accordance with S.M.A.C.N.A. HVAC Duct Construction Standards (Seal Class C) by experienced personnel. Pressure sensitive tape shall not be used as the primary sealant for duct systems operating greater than
- Furnish and install duct wrap for all concealed rectangular supply and return ducts. Duct lining shall be fireproof, Underwriters' approved, and conform to latest requirements of NFPA. Duct sizes shown on drawings are inside clear dimensions for air flow.
- Flexible ducts shall comply with NFPA requirements, Pamphlet 90A and shall be Class 1, UL listed with flame spread rating of 25 or less and smoke developed rating of 50 or less. Duct shall be a factory fabricated assembly composed of: an inner duct of woven and coated polyester fabric providing an air seal which is permanently, mechanically bonded to corrosion resistant coated steel wire helix and 1" thick fiber glass insulation blanket and low permeability outer vapor barrier of fiber alass reinforced metalized film laminate.
- Flexible duct connections shall be Duro-Dyne "Thermafab" or equal (UL listed). Flexible connectors shall be pre-assembled with 24 gauge, 3-inch wide metal edges on both sides of the fabric secured by means of double lock seam. Install at all duct connections to motorized equipment.
- G. Single blade and multi-blade dampers: Galvanized steel dampers with locking quadrant operators and linkage per SMACNA Fig's. 2-14 and 2-15. Maximum single blade size: 12" high x 18" wide. Spin-in taps: Galvanized steel construction with 45 degree extractor and locking auadrant operator.
- All ductwork shall be constructed, joined, braced and supported in accordance with the latest Standards of SMACNA. All duct runs shall be coordinated with building conditions (structural, piping, etc.) and work by other contractors. Provide off-sets or duct size modifications as required for clearance. All changes must be approved by the Architect prior to installation. Run all ductwork concealed in finished areas.
- When making connections to existing ductwork, report to Architect any dissimilar duct or insulation types. Do not connect single wall duct to double wall duct, lined duct to wrapped duct etc., unless otherwise

AIR DEVICES AND LOUVERS

- A. Furnish and install air devices and louvers as noted on the drawings or specified herein. Diffusers, registers and grilles shall be by Titus as scheduled on the drawings or equal by Anemostat, Metalaire, Tuttle & Bailey, Carnes, Krueger, Nailor, or Price. All devices shall mount flush in the ceiling or as noted on the drawings. All devices shall have a factory baked enamel finish as scheduled on the drawings. Finish shall be selected by Architect.
- Verify final locations of air devices as shown on the drawings with Architect or architectural reflected ceiling plan. Support air devices in suspended ceilings by the use of independent hangers. Air devices designed for lay-in type ceilings may be supported by the ceiling grid system. Use flexible ducts when making duct connections to lay-in outlets. Louvers shall be furnished to the General Contractor with mounting sleeve for installation. This Contractor shall locate opening for General Contractor with approval by Architect.

BAS CONTROLS AND INSTALLATION

- A. The existing county-wide BAS employs the use of Niagara AX Supervisor software running on a network server in the county's IT data center rack located at the Fairfield County Courthouse. The supervisor is the primary engineering Operator Workstation used for basic operator interface functions as well as advanced supervisory functions, programming functions, GUI development functions, and other engineering functions related to the BAS. The Niagara AX Communications framework utilizes FOX/ OBIX TCP / IP protocol at the enterprise level to allow communications between the Niggara AX Supervisor and Niagara AX based BC's located throughout the county's buildings. Local communications networks utilizing BACnet MS/TP protocols at the building level allow communication between the BC's and the CPC's/ASC's within each of the buildings.
- B. The BAAS architectural design for this building is an extension of the existing Niggara AX Framework with new BACnet MS/TP protocol communications networks as specified herein and shown on the associated project drawings. The system is modular in nature and permits expansion of both capacity and functionality through the addition of BC's, ASC's, sensors, actuators, etc.
- The BAS extension consists of new stand-alone direct digital controller (DDC) and associated sensors and controlled devices, communicating to the existing central server. New DDC panels
- 1. Building Controllers (BC) New BC's shall be provided by the owner as a complete preconfigured panel ready for installation as
- shown on associated project drawings. 2. Custom Programmable Controllers (CPC) — New CPC's shall be provided by the owner as a complete preconfigured panel ready for installation as shown on the associated project drawings. New Panels shall be provided for each Air Handling Unit RTU-1 through
- 3. Application Specific Controllers (ASC) New ASC's for the HVAC Zone Damper Units shall be provided by the HVAC contractor. Packaged controls provided as part of an associated piece of HVAC equipment will be integral to that equipment. Any associated field mounted components (sensors, interface cards, etc.) that are shipped loose shall be installed under this contract
- All field mounted devices, including but not limited to, all sensors, actuators, remote relays, etc. shall be provided and installed under this contract as shown on the associated project drawings, unless noted otherwise. This includes the rough-in of these devices.
- E. Provide all labor and incidental material for a complete installation o thermowells, flow switches, humidity sensors, and static pressure sensing devices in the ducts or air handling units.

Install the system as recommended by the Manufacturer, using only

- equipment recommended or acceptable to the Manufacturer. The contractor shall also conform to the Owner's IT standards for all wiring / cabling and connection details and shall comply with NFPA G. Provide IP drops as required to the main building control panel. The
- owner shall provide the IP address(es) for the BAS to utilize the H. The Building Level Communication Network (BLCN) shall originate at

the main building controller and be routed as shown on the drawings

- Furnish the following as required for installation by the HVAC Contractor.
- Control valves, flow switches, temperature sensor wells. Gauge taps, flow meters.
- Electric motorized control dampers. Exceptions: Dampers supplied as part of air handling units. H. Furnish the following as required for installation by the Electrical
- 1. Wiring of power feeds through all disconnect starters and variable speed controllers to electric motors.
- 2. Wiring of any remote start-stop switches and manual or automatic motor speed control devices not furnished by the BAS Contractor. 3. Rough—in, installation, and 120 Volt power wiring of all BAS control

The following will be provided by the Owner.

1. Main Building Controller

- 2. Air Handling Unit Control Panels (1 total, FN-8) J. Submit the six (6) copies of the following data/information for approval
- before work shall begin. Complete sequence of operation.

 Complete 24 and 120 volt point—to—point wiring diagrams showing all temperature controls, start—stop arrangement for each piece of
- equipment, equipment interlocks, wiring terminal numbers and any special connection information required for properly controlling the mechanical equipment. 3. Control system CAD generated drawings including all pertinent data
- to provide a functional operating system. Valve and damper schedules showing size, configuration, capacity and location of all equipment. 5. Data sheets for all hardware and software control components.

6. A description of the installation materials including conduit, wire,

- 7. Thermostat/sensor locations. 8. Computer panel locations.
- K. The system controller shall have ample memory to support its operating system, database, and programming requirements.
- L. The system controllers shall have the capability of being remotely monitored over the BACnet system. Additional capabilities shall include automatically dialing out alarms, gathering alarms, reports and logs, programming and downloading databases.
- M. All programming required for operation shall be memory resident and shall be retained in permanent memory. Optional battery backup for a minimum of 72 hours is also acceptable.
- N. The controller shall continually check the status of all processor and memory circuits. If a failure is detected, the controller shall:
- Assume a predetermined failure mode. Emit an alarm.
- Display card failure identification. O. Coordinate the work in this section with all other trades.
- Assist balancing sub-contractor and hvac contractor as needed for air balancing. Assist electrical Contractor during fire/smoke control system

TEMPERATURE CONTROL

- A. Furnish and install all temperature controls and safety devices as noted on the drawings or specified herein. Design and installation work noted in Part 2 shall be by Temperature Control Contractor normally engaged in this type of work. The control system is intended to cover the automatic control of all heating, ventilating, and air conditioning equipment.
- B. The Control Contractor shall guarantee the control system installed under this section of the specification to be free from defects in workmanship and material under normal use and provide service for a period of one year after acceptance of the building. Any defects in workmanship or material during this time shall be corrected by the Control Contractor at no charge to the Owner.
- After completion of the installation, the control contractor shall completely adjust all control equipment provided under this contract and place the system in operation.
- All controls shall be programmable and adjustable unless noted otherwise and be by Honeywell, Johnson Control, Barber Colman, Robert Shaw or unit manufacturer. Thermostatic control devices shall be capable of setback to 55 degrees F (heating) and 85 degrees F (cooling). Automatic changeover devices shall have a 5 degree dead band.
- E. Toilet exhaust fans shall be furnished and installed by Heating Contractor for wiring by Electrical Contractor (to room lights).
- Other controls, sensors and safety devices shall be as required for intended function, required by code, and compatible with other controls.
- Damper motors shall be line or low voltage as required and by Honeywell
- The temperature controls shall be capable of performing the following
- 1. During occupied hours the supply air blower shall run continuously, with the heating or cooling cycling on and off per
- 2. During un-occupied hours the supply air blower shall cycle on and off with the heating or cooling per the signals of the

the signals of the thermostat.

3. Thermostat setpoints shall be determined by the tenant (with code minimum heating setpoint which maintains 68 degrees F at 36" above floor.)

AIR BALANCING

thermostat.

- Balance shall include all air systems. Balance shall be performed by an independent contractor certified by the Associated Air Balance Council or National Environmental Balancing Bureau. Acceptable contractors must be listed in the latest directory of the certifying agency. Furnish all tools, equipment, connections and labor necessary for testing and balancing all
- All air systems shall be put in operation and mechanical adjustments to equipment shall be made to insure proper functioning. Adjust drives to run at proper speeds to deliver required amount of air. Balance all air supply, return and exhaust systems to quantities specified and balance systems to maintain uniform temperature throughout each space, free of objectionable draft. Lock volume dampers in position. Test all motor operated dampers and valves for proper operation.
- Adjust system controls so each component performs and delivers its capacity. Record balance readings and test data, and submit three (3) copies of test results to Architect for approval. Testing and balancing shall be performed in complete accordance with certifying agency's
- After all equipment and systems have been tested, adjusted and balanced, demonstrate to the Owner and Architect that heating and ventilating systems are operating and performing to meet requirements of this Contract. The demonstration shall include all areas of building for "spot-check" of air quantities, velocity, temperature and operation and performance of equipment and controls. Air quantities at individual registers or diffusers shall be adjusted to within 10% of quantities shown on the Drawings and total air quantity handled by each system to within 5% of the quantity shown or specified. Report shall include starter element size and rating for each motor.

A. Include in the space provided in the Bid Documents, the amount to be added or deducted for providing the HVAC work shown on the drawings.

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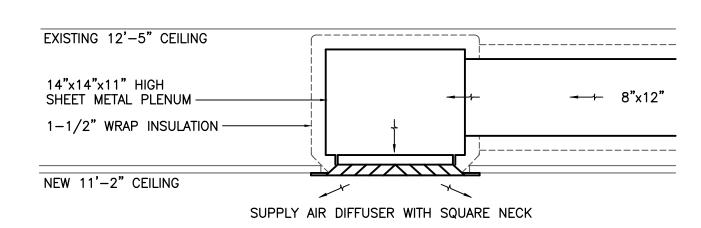
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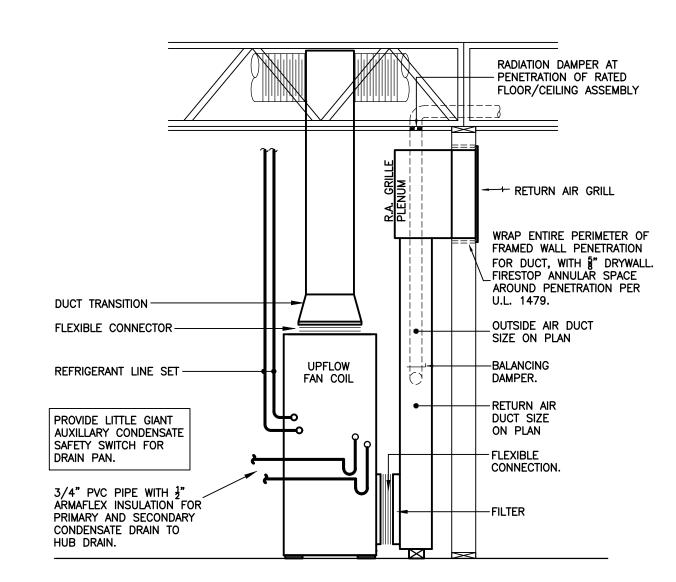
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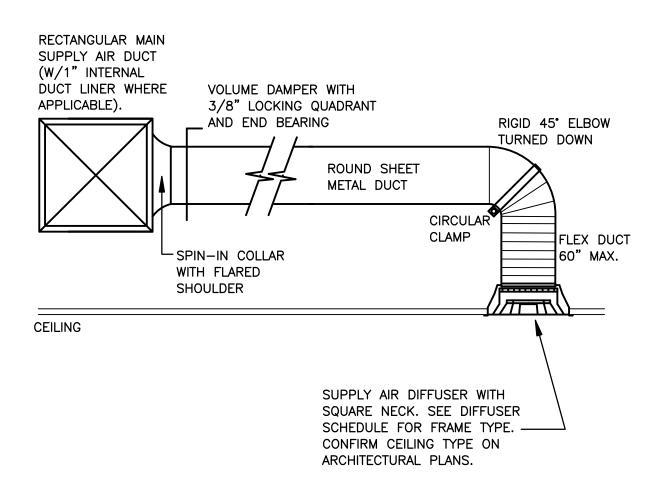
MECHANICAL SPECIFICATIONS



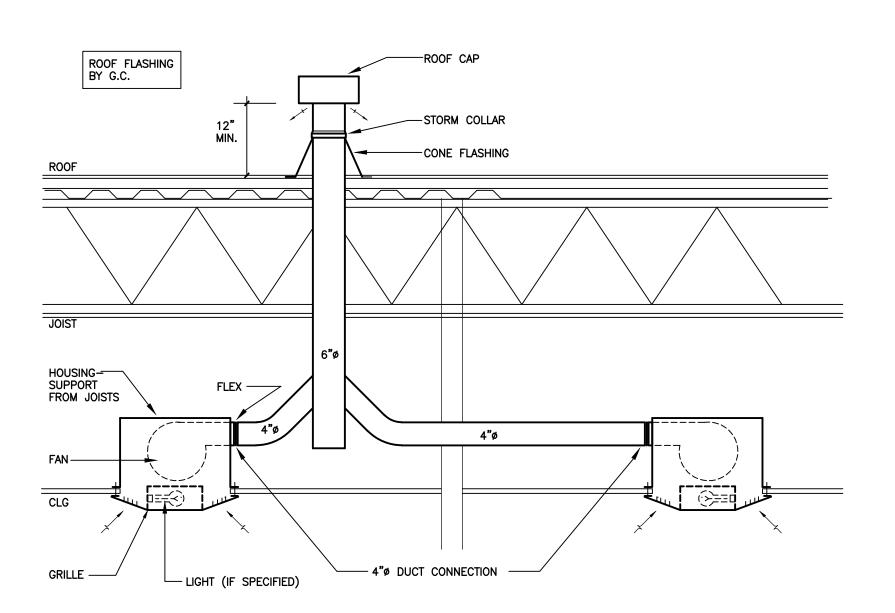
DIFFUSER PLENUM/DUCT CONNECTION DETAIL H3.1 / 1/2" = 1'-0"











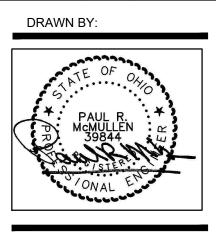
3 MULTIPLE CEILING FAN DETAIL H3.1 NTS

THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS:

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DETAILS — HVAC
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HVAC DUCTWORK NOTES

A. SHEET METAL DUCTS THAT PENETRATE FIRE RATED HORIZONTAL ASSEMBLIES SHALL BE AS FOLLOWS:

ROUND DUCTS AND ENCLOSED RECTANGULAR DUCTS:

14" OR LESS = 0.0157" MIN. THICKNESS GALVANIZED (28 GAGE EQUIVALENT)

0.0175 ALUMINUM

16" AND 18" = 0.0187" MIN. THICKNESS GALVANIZED (26 GAGE EQUIVALENT) 0.018 ALUMINUM

20" OR OVER = 0.0236" MIN. THICKNESS GALVANIZED (26 GAGE EQUIVALENT)

0.023 ALUMINUM

EXPOSED RECTANGULAR DUCTS:

14" OR LESS = 0.0157" MIN. THICKNESS GALVANIZED (28 GAGE EQUIVALENT)

0.0175 ALUMINUM

OVER 14" = 0.0187" MIN. THICKNESS GALVANIZED (26 GAGE EQUIVALENT)

0.018 ALUMINUM

CLOTHES DRYER VENT DUCTS: 14" OR LESS = 26 GAUGE GALVANIZED STEEL

B. ALL PENETRATION OF RATED HORIZONTAL ASSEMBLIES SHALL BE FIRE-STOPPED.

EQUIVALENT DUCT SIZES

AS REQUIRED BY FIELD CONDITIONS (APPLIES TO ROUND—TO RECTANGULAR AND RECT. TO RECT.), THE HVAC CONTRACTOR SHALL HAVE THE OPTION OF USING EQUIVALENT DUCT SIZES IN LIEU OF SIZES SHOWN ON PLAN.

6" ROUND 12x3, 8x4, 6x5

14" ROUND 26x7, 22x8, 18x10, 14x12

16" ROUND 30x8, 24x10, 18x12, 16x14

18" ROUND 30x10, 24x12, 20x14, 18x16

20" ROUND 38x10, 30x12, 26x14, 22x16, 20x18

22" ROUND 36x12, 30x14, 26x16, 24x18, 20x20

24" ROUND 46x12, 36x14, 32x16, 28x18, 24x20, 22x22

26" ROUND 46x14, 38x16, 34x18, 30x20, 26x22, 24x24

	OUTSIDE AIR REQUIREMENTS (Per ASHRAE 2010)													
	CDACE VENTUATION	FLOOR AREA	OCCUPANCY	OCCUPANCY	OUTSIDE AIR	VENTILATION RATE	OUTSIDE AIR VENTILATION	SYSTEM PLAN	SUPPLY AIR	OUTSIDE AIR				
SPACE DESCRIPTION	SPACE VENTILATION CLASSIFICATION			(NO. OF PEOPLE)	BY AREA (CFM/SQ.FT)	BY OCCUPANCY (CFM/PERSON)	(CFM)	DESIGNATION	(CFM)	INTAKE (CFM)				
UPPER LVL—SEATING 128	MAIN ENTRY LOBBY	618	30/1000	19	0.06	5	132							
UPPER LVL-HALLWAY 113	HALLWAY	63	-	-	0.06	-	4	FN-3	3000	325				
UPPER LVL-TELLERS 116/119/120	OFFICE	1110	5/1000	6	0.06	5	97	(EXISTING)		020				
UPPER LVL-UNISEX RR 114	SEX RR 114 RESTROOM 54							50 1 FN-7 (EXISTING)						
UPPER LVL-UNISEX RR 115	RESTROOM	55	-	-	-	-	50 1] ` '						
UPPER LVL-OFFICE 118	OFFICE	177	5/1000	1	0.06	5	16							
						TOTAL	249/0.8 = 312							
UPPER LVL-CONFERENCE 123	OFFICE-CONF.	261	50/1000	13	.06	5	81							
UPPER LVL-CLOSET 124	STORAGE	25	-	-	0.06	-	2							
UPPER LVL-CLOSET 122	STORAGE	21	_	_	0.06	-	2	FN-8	1600	225				
UPPER LVL-ENTRY 121/125	HALLWAY	226	-	-	0.06	_	14]						
UPPER LVL-OFFICE 126	OFFICE	89	5/1000	1	0.06	5	11							
LOWER LVL-OFFICE 002	OFFICE	625	5/1000	4	0.06	5	58							
						TOTAL	168/0.8=210							

ALL OUTDOOR AIR INTAKE DUCTS SHALL BE EQUIPPED WITH DAMPERS THAT CLOSE WHEN THE SYSTEM IS NOT OPERATING:
-SYSTEMS WITH OUTDOOR AIR INTAKE OF 300 CFM OR LESS SHALL BE EQUIPPED WITH GRAVITY DAMPERS.
-SYSTEMS WITH OUTDOOR AIR INTAKE OF MORE THAN 300 CFM SHALL BE EQUIPPED WITH 24 VOLT MOTORIZED DAMPERS INTERCONNECTED WITH THE BLOWER MOTOR SO THAT THE DAMPER OPENS WHEN THE BLOWER IS RUNNING, AND CLOSES WHEN THE BLOWERS IF OFF.

1) BATHROOM EXHAUST REQUIREMENTS: 50CFM PER TOILET / URINAL

			FUR	NACE)LING)IL				CON	DENSI	ng Uni	T			
C) (1 1 D O I	BOL CARRIER CFM (E.S.P. BLC	BLOWER	HE	AT. CAP.	MBH	ELI	ECTRI	CAL	CARRIER	<u></u>	TYPE	E SYMBOL	CARRIER	COOL. C	AP. MBH	Ε	LECTRICA	\L	SEER	NOTEC		
SYMBOL	MODEL #	CFM (W/COIL) BLOWER	INPUT	OUTPUT	AFUE	V./ф	МСА	МОСР		S.P. TYPE	TYPE		MODEL #	TOTAL	SENS.	V/ \$	MCA	REC.BRKR.		NOTES		
FN-8	59TN3A100S17 UPFLOW	1600	0.75"	1/2	100	93	93	120/1	19.2	20	CAPVP4824	0.29"	UP FLOW	CU-8	24ACB348A	44.5	33.5	208/1	26.2	40	13.3	1 THRU 9
1) FUF	RNISH & INSTALL FAC	CTORY RE	COMMEN	DED EXPA	ANSION V	ALVE.		<u> </u>	1	4)	MOUNT INDO	DR UNIT	ON VIBRA	ATION PAD.		7)	FURN	IISH & II	NSTALL F	PRE-MANUF	ACTURE	AND INSULATED
2) FUF	RNISH WITH AIR FILTE	R AND F	RACK KIT,	AND TW	O SETS (OF 2" FIL	LTERS.			5)	FURNISH UNI	T WITH T	IMED-OF	F CONTROL.				JIREMENT		T. (SIZE PE	K MANU	JFACTURER
3) FUF	RNISH & INSTALL PVO	C COMBU	ISTION PII	PING, ANI	D					6)	PROGRAMMAE THERMOSTAT	LE 7-DA	Y NIGHT-	-SETBACK		8)	BACn	et MS/T	P INTERF	ACE FOR E	BAS CON	TROL SYSTEM

	AIR DEVICE SCHEDULE														
SYMBOL	FACE SIZE	NECK SIZE	TITUS MODEL NO.	TOTAL CFM	MOUNTING SURFACE	AIR PATTERN	NOTES								
A	24"x24"	10 " ø	TMSA	AS NOTED	T-BAR	4-WAY	1–3								
B	24"x24"	6 " ø	TMSA	AS NOTED	T-BAR	4-WAY	1–3								
©	4', 1 SLOT, 1.5"	8 " ø	FL-15	50/FT	DRYWALL	SLOT	1–3								
(a)	16"x16"	14"x14"	350-R	800 MAX	DRYWALL	RETURN	1,4								
E	38"x26"	36"x24"	350-R	2900	DRYWALL	RETURN	1,4								
F	24"x24"	22"x22"	350-R	1600	T-BAR	RETURN	1,3								
G	24"x12"	22"x10"	350-R	850 T-BAR		RETURN	1,3								

FINISH TO BE SELECTED BY ARCHITECT.
 FURNISH NECK MOUNTED OPP. BLADE DAMPER.

FRAME TO BE COMPATIBLE WITH STD. T-BAR CEILING. FRAME TO BE COMPATIBLE WITH PLASTER, DRYWALL, OR OTHER SURFACE MOUNTINGS.

						FAN	SCHE	DULE						
SYMBOL	BOL MANUF. & MODEL # CFM ESP POWER RPM DRIVE ELECTRICAL WALL OR ROOF OPENING DUTY DAMPER NOTES													
EF-1	BROAN # 670	50	0.25"	26 WATTS	NA	DIRECT	120/1	6"ø ROOF CAP (EXISTING)	TOILET RM.	INTEGRAL	1,2,4			

1) INTEGRAL DISCONNECT, BACKDRAFT DAMPER, AND PLASTIC GRILLE.

2) FACTORY UNIT MOUNTED VARIABLE SPEED CONTROLLER TO SET CFM.

4) WIRED BY E.C. TO LIGHTS.

5) WIRED BY E.C. TO PILOT SWITCH

8) FACTORY HANGER KIT WITH VIBR. ISOLATORS

6) WIRED BY H.C. TO CARBON MONOXIDE SENSORS

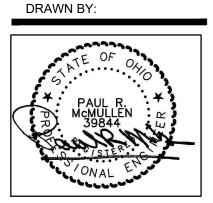
7) INTEGRAL WALL SLEEVE, GRAVITY DAMPER, & OSHA CHGE. 3) WIRED BY E.C. TO RUN CONTINUALLY.

9) FACTORY 10"x5" WALL CAP

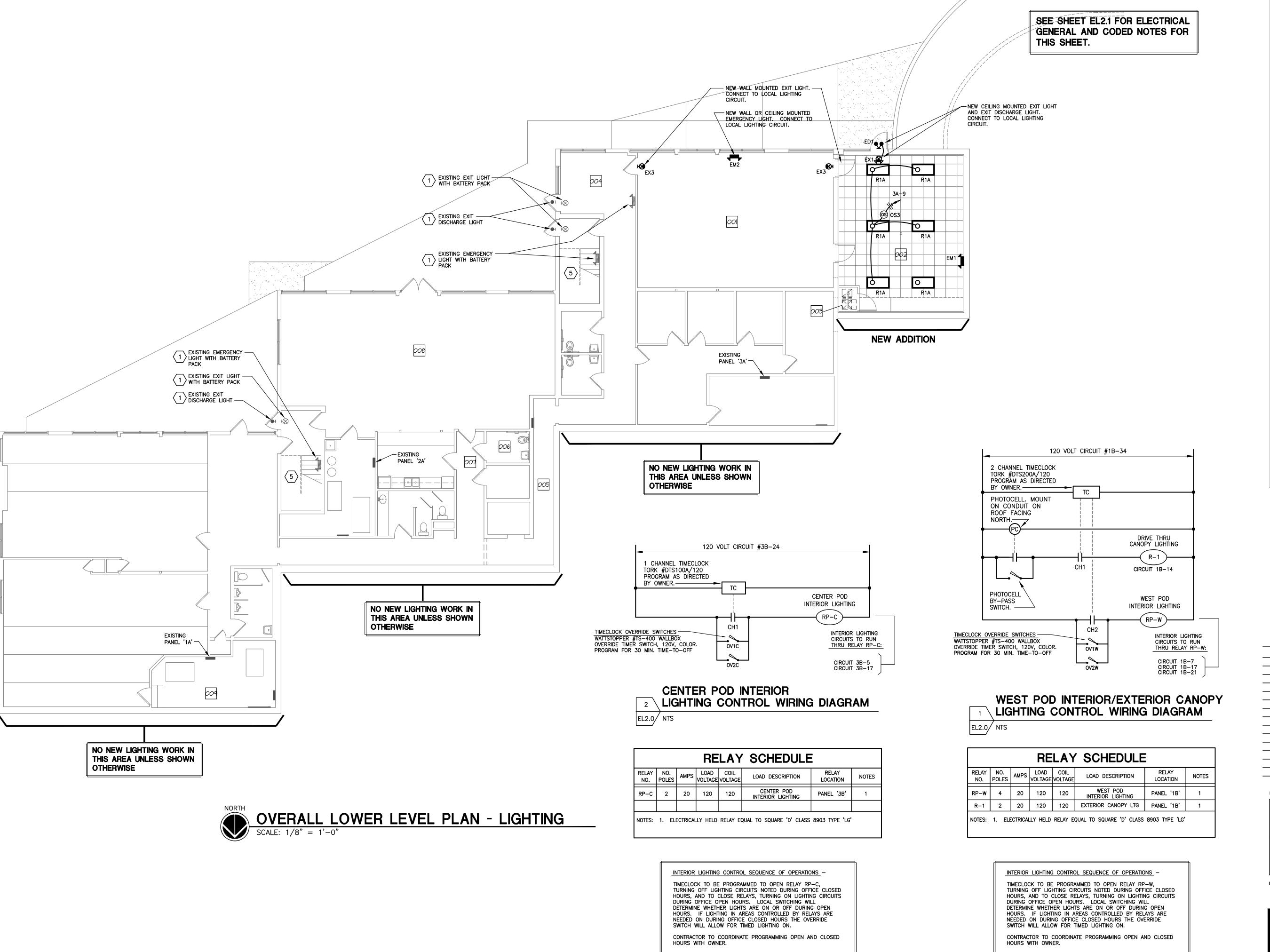
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THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS:

THE FAIRFIELD CENTER FOR THE 12941, 12943 & 12945 STONECREEK DRIVE PICKERINGTON, OHIO 43147



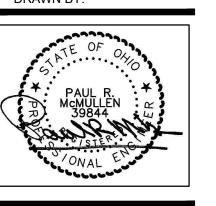
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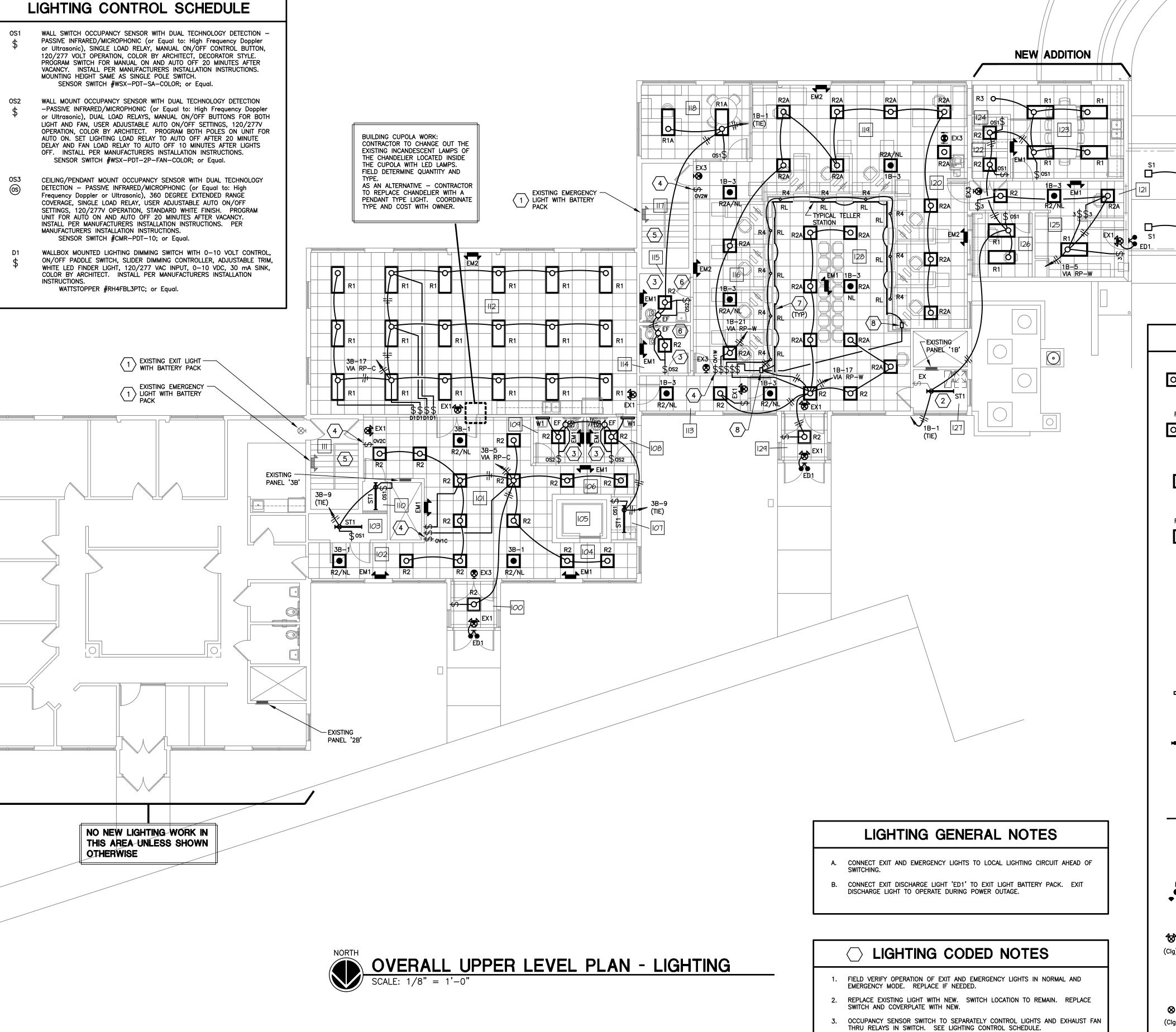
THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS: Ш

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DRAWN BY:



OVERALL LOWER LEVEL PLAN -LIGHTING



LIGHT FIXTURE SCHEDULE

2'x4' RECESSED MOUNT LAY-IN GRID EDGE-LIT FLAT PANEL LED LIGHT FIXTURE WITH 4000 LUMEN, 3500°K, 80 CRI LIGHT ENGINE, SATIN WHITE LITHONIA #EPANL-2X4-4000LM-80CRI-35K-MIN10-ZT-MVOLT;

2'x4' RECESSED MOUNT LAY-IN GRID EDGE-LIT FLAT PANEL LED LIGHT FIXTURE WITH 6000 LUMEN, 3500°K, 80 CRI LIGHT ENGINE, SATIN WHITE ACRYLIC DIFFUSER LENS, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING (MIN. 10%), WHITE FINISH, (50 WATTS). LITHONIA #EPANL-2X4-6000LM-80CRI-35K-MIN10-ZT-MVOLT;

2'x2' RECESSED MOUNT LAY-IN GRID EDGE-LIT FLAT PANEL LED LIGHT FIXTURE WITH 2000 LUMEN, 3500°K, 80 CRI LIGHT ENGINE, SATIN WHITE

2'x2' RECESSED MOUNT LAY-IN GRID EDGE-LIT FLAT PANEL LED LIGHT FIXTURE WITH 3400 LUMEN, 3500°K, 80 CRI LIGHT ENGINE, SATIN WHITE ACRYLIC DIFFUSER LENS, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING (MIN. 10%), WHITE FINISH, (30 WATTS). LITHONIA #EPANL-2X2-3400LM-80CRI-35K-MIN10-ZT-MVOLT;

FIXTURE WITH 1000 LUMEN, 3500°K, 90 CRI LIGHT ENGINE, ACRYLIC DIFFUSER, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING CAPABILITY (MIN. 10%), STANDARD WHITE FINISH, WET LOCATION BATED (13 WATES) RATED, (13 WATTS).

2" DIAMETER RECESSED OPEN DOWNLIGHT, 500 LUMEN, 3500K, CLEAR OPEN SEMI-SPECULAR REFLECTOR, 50 DEGREE BEAM ANGLE, 120 VOLT, 0-10 VOLT DIMMING BALLAST, 5.6 WATTS.

24" WALL MOUNT SQUARE VANITY LED LIGHT FIXTURE WITH 1302 LUMEN. 3000°K, 90+ CRI LIGHT ENGINE, WHITE ACRYLIC DIFFUSER, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER, BRUSHED NICKEL FINISH, (10 WATTS). SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT. LITHONIA #FMVTSL-24IN-MVOLT-30K-90CRI-BN; or Equal.

SURFACE MOUNTED EXTERIOR LED CANOPY LIGHT WITH 4000 LUMENS, DARK BRONZE HOUSING, ACRYLIC LENS, 4000K, 120 VOLT, 27 WATTS. LITHONIA #CNY-LED-P0-40K-MVOLT-DDB or equal

SURFACE MOUNTED 24 VOLT LED TAPE LIGHT WITH SLIM (SL) MOUNTING CHANNEL, FROSTED COVER LENS, 233 LUMENS PER FOOT, CUT POINTS EVERY 2", 36 LED CHIPS/FOOT, 2700K, 2.93 WATTS PER FOOT, 24 VOLT, TWO 90 WATT LED DRIVERS, TERMINAL BLOCK CONNECTORS, 120 VOLT INPUT, MOUNTING TAPE AND CLIPS.

> DIODE LED #DI-24V-BLBSC2-27-480 INCH (LED TAPE) #DI-DM-MW-24V90W-0-10V-LPL (DRIVER) WITH "ALL ACCESSORIES FOR A COMPLETÈ INSTÁLLATION.

(2) 1.0 WATT 3.6/6/9.6/12 VOLT (AUTO-SENSING) LED LAMPS, SEALED ÀND GASKETED THERMOPLASTIC SQUARE HEADS, ADJUSTABLE KNUCKLE, GREY FINISH, WET LOCATION RATING. LITHONIA #ERE-GY-T-SQ-WP; or Equal.

4. INTERIOR LIGHTING TIMECLOCK/RELAY OVERRIDE SWITCH. SEE LIGHTING CONTROL

7. CONCEALED LED TAPE LIGHT UNDER COUNTER FRONT LIP TO DIRECT LIGHT DOWN

WALL TOWARDS FLOOR. SEE ARCHITECTURAL DETAILS FOR LOCATION. RUN

WIRING HORIZONTALLY FROM TELLER STATION TO TELLER STATION CONCEALED

5. EXISTING LIGHTS IN STAIRS TO REMAIN. CLEAN AND RELAMP. MAINTAIN

8. LED DRIVER FOR 'RL' LIGHTS. MOUNT ABOVE CEILING. BOTH 'RL' LIGHT

WIRING DIAGRAMS. PROVIDE LABEL TO INDICATE USE.

DRIVERS TO BE CONTROLLED BY SAME SWITCH.

EXISTING CIRCUITRY.

BELOW FRONT COUNTER.

6. EXISTING CEILING IN ROOM TO REMAIN.

UNIVERSAL MOUNT EMERGENCY EXIT SIGN LIGHT FIXTURE WITH WHITE (Cig) (Wall) BATTERY PACK, 120/277 VOLT INPUT (0.75 WATTS). NOTE DIRECTIONAL

LITHONIA #LHQM-LED-R-HO; or Equal.

UNIVERSAL MOUNT EMERGENCY LIGHT FIXTURE WITH (2) ADJUSTABLE HEADS WITH 1.2 WATT LED LAMPS (220 TOTAL DELIVERED LUMENS), WHITE THERMOPLASTIC HOUSING, SEALED NICKEL-CADMIUM BATTERÝ PACK, 120/277 VOLT INPUT (1.1 WATTS). WALL MOUNT AT 7'-6" AFF, UNLESS OTHERWISE NOTED. LITHONIA #ELM2L; or Equal.

UNIVERSAL MOUNT EMERGENCY LIGHT FIXTURE WITH (2) ADJUSTABLE HEADS WITH 3.3 WATT LED LAMPS (640 TOTAL DELIVERED LUMENS), WHITE THERMOPLASTIC HOUSING, SEALED NICKEL-CADMIUM BATTERY PACK, 120/277 VOLT INPUT (3.2 WATTS). WALL MOUNT AT 7'-6" AFF, UNLESS OTHERWISE NOTED. LITHONIA #ELM4L; or Equal.

ACRYLIC DIFFUSER LENS, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING (MIN. 10%), WHITE FINISH, (38 WATTS).

ACRYLIC DIFFUSER LENS, MULTI-VOLT (120/277 VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING (MIN. 10%), WHITE FINISH, (19 WATTS). LITHONIA #EPANL-2X2-2000LM-80CRI-35K-MIN10-ZT-MVOLT;

7" DIAMETER SEMI-RECESSED ULTRA-LOW PROFILE MOUNT LED LIGHT JUNO #JSF-7IN-10LM-35K-90CRI-MVOLT-ZT-WH: or Equal

INSTALLATION TO BE THE 1000 LUMEN AND BELOW INSTALL-FROM-BELOW

LITHONIA GOTHAM #ICO2-35/05-AR-LSS-500-MVOLT-UG2

4' SURFACE MOUNT LED STRIPLIGHT WITH 3000 LUMEN, 3500°K, 80 CRI LIGHT ENGINE, DROPPED DIFFUSE ACRYLIC LENS, MULTI-VOLT (120/277

VOLT) ELECTRONIC DRIVER WITH 0-10V DIMMING, WHITE FINISH, (30 LITHONIA #ZL1D-L48-3000LM-FST-MVOLT-35K-80CRI; or Equal.

UNIVERSAL MOUNT DOUBLE-HEADED EXIT DISCHARGE LIGHT FIXTURE WITH

UNIVERSAL MOUNT COMBINATION EXIT AND EMERGENCY LIGHT FIXTURE WITH (2) ADJUSTABLE HEADS WITH 1.5 WATT 9.6 VOLT LED LAMPS, LED BACKLIT RED LETTERING, WHITE THERMOPLASTIC HOUSING, (2) FACE, (1)
(CIg) (Wall) BACK PLATE, CANOPY, HIGH-OUTPUT SEALED NICKEL-CADMIUM BATTERY PACK (FOR 3 WATTS OF REMOTE CAPACITY AT 9.6 VOLTS), 120/277 VOLT INPUT (4.3 WATTS). NOTE DIRECTIONAL ARROWS ON PLAN, IF

THERMOPLASTIC HOUSING, (2) FACE, (1) BACK PLATE, CANOPY, RED STENCILED LETTERS BACKLIT WITH LED LAMPS, SEALED NICKEL—CADMIUM

ARROWS ON PLAN, IF SHOWN. LITHONIA #LQM-S-W-3-R-120/277-EL-N; or Equal.

> OVERALL UPPER LEVEL PLAN -LIGHTING

FOR

PICKERINGTON CENTER ONERS:

THEOU

9 9 9 9

ISSUE

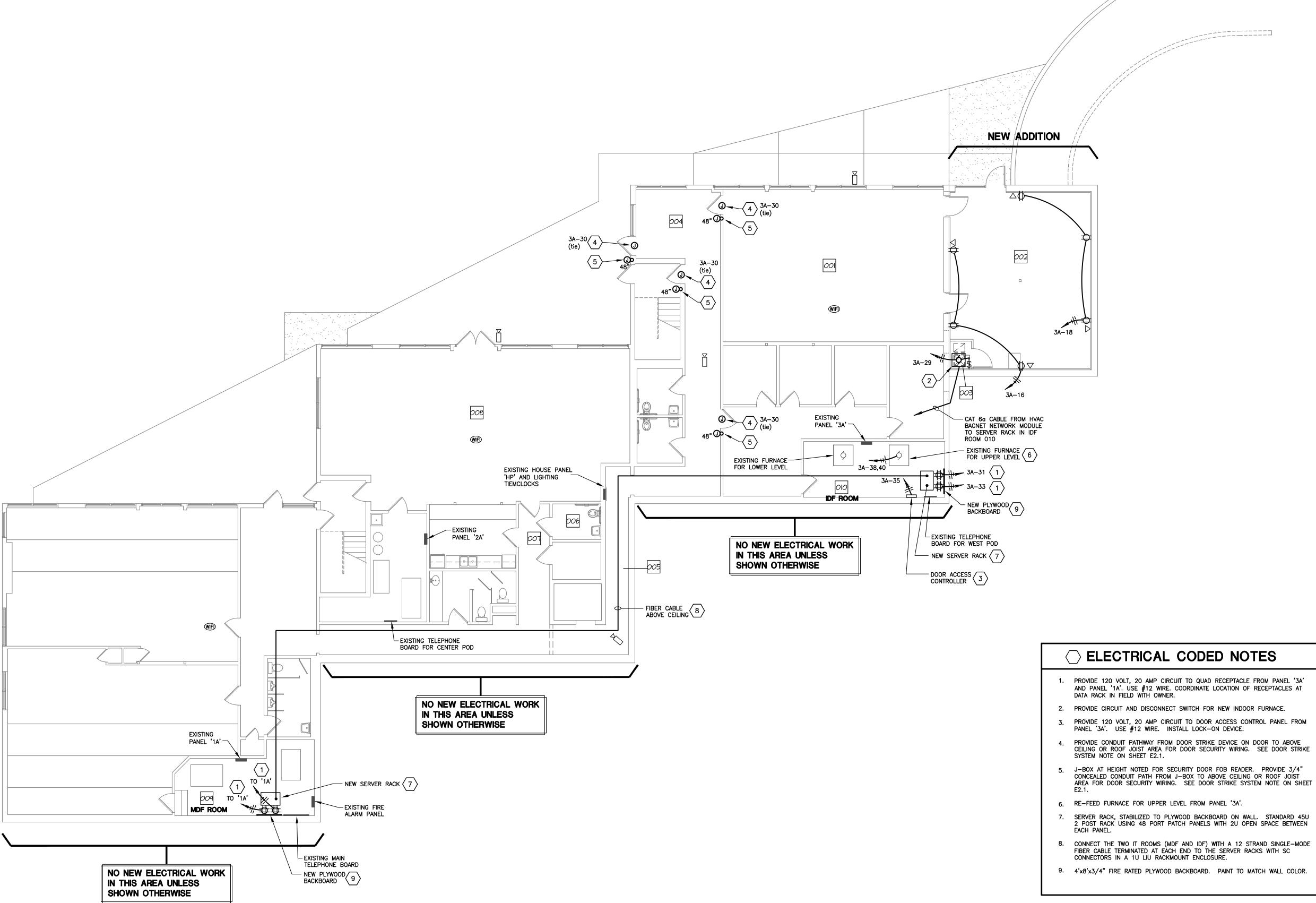
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DRAWN BY:

MARK DATE

5-5-22

REMODELING (REIELD COUNTY IF FAIR)



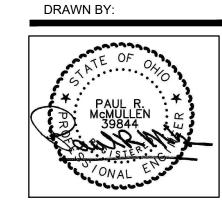
○ ELECTRICAL CODED NOTES

- PROVIDE 120 VOLT, 20 AMP CIRCUIT TO QUAD RECEPTACLE FROM PANEL '3A' AND PANEL '1A'. USE #12 WIRE. COORDINATE LOCATION OF RECEPTACLES AT
- PROVIDE CIRCUIT AND DISCONNECT SWITCH FOR NEW INDOOR FURNACE.
- PROVIDE CONDUIT PATHWAY FROM DOOR STRIKE DEVICE ON DOOR TO ABOVE CEILING OR ROOF JOIST AREA FOR DOOR SECURITY WIRING. SEE DOOR STRIKE
- 5. J-BOX AT HEIGHT NOTED FOR SECURITY DOOR FOB READER. PROVIDE 3/4" CONCEALED CONDUIT PATH FROM J-BOX TO ABOVE CEILING OR ROOF JOIST
- SERVER RACK, STABILIZED TO PLYWOOD BACKBOARD ON WALL. STANDARD 45U 2 POST RACK USING 48 PORT PATCH PANELS WITH 2U OPEN SPACE BETWEEN EACH PANEL.
- 8. CONNECT THE TWO IT ROOMS (MDF AND IDF) WITH A 12 STRAND SINGLE-MODE FIBER CABLE TERMINATED AT EACH END TO THE SERVER RACKS WITH SC
- 9. 4'x8'x3/4" FIRE RATED PLYWOOD BACKBOARD. PAINT TO MATCH WALL COLOR.

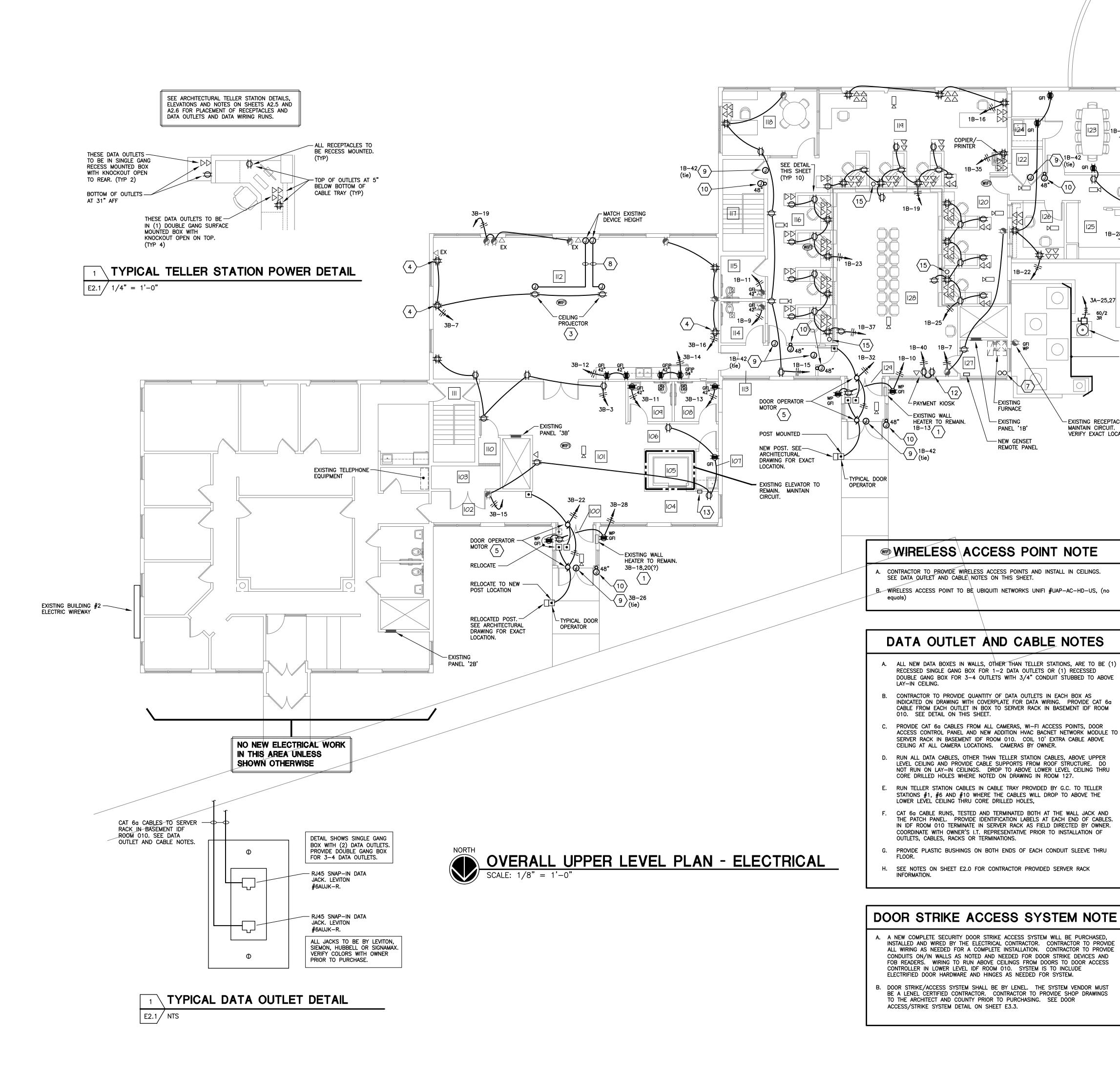


THE REMODELING OF THE OU PICKERINGTON CENTER FOR THE FAIRFIELD COUNTY COMMISSIONERS:

ISSUE MARK DATE 5-5-22



OVERALL LOWER LEVEL PLAN -ELECTRICAL



ELECTRICAL GENERAL NOTES

REPLACE RECEPTACLES THAT ARE SHOWN AS EXISTING TO REMAIN WITH NEW

- REFRIGERATOR

NEW CONDENSING UNIT \langle 2 \rangle

- EXISTING CONDENSING 14 UNITS TO REMAIN.

- EXISTING RECEPTACLE OUTSIDE. MAINTAIN CIRCUIT. FIELD VERIFY EXACT LOCATION.

FURNACE

— EXISTING PANEL '1B'

- NEW GENSET

REMOTE PANEL

3A - 32,34,36

B. ALL NEW RECEPTACLES, BACKBOXES FOR DOOR OPERATOR PUSHBUTTONS, FOB

> ELECTRICAL CODED NOTES

- 2. PROVIDE CIRCUIT AND DISCONNECT SWITCH FOR HVAC UNIT.
- 3. INSTALL RECEPTACLE IN CEILING WITH FACE DOWN FOR PROJECTOR. FIELD COORDINATE EXACT PLACEMENT WITH OWNER/PROJECTOR INSTALLER.
- 4. REPLACE EXISTING DUPLEX RECEPTACLE WITH QUAD RECEPTACLE.
- 5. PROVIDE CIRCUIT TO DOOR OPERATOR MOTOR. WIRE DOOR CONTROLS PROVIDED
- COORDINATE EXACT LOCATION OF RECEPTACLE WITH CABINETRY TO PLACE BEHIND DISHWASHER. CIRCUIT FED FROM GFI BREAKER.
- CORE DRILL OPENINGS THRU CONCRETE FLOOR BY G.C. CONDUITS TO BE 6" ABOVE UPPER LEVEL FLOOR AND STUBBED DOWN 12" BELOW FLOOR INTO CEILING SPACE OF LOWER LEVEL. AFTER DATA CABLES ARE FULLY INSTALLED PROVIDE FIRE STOP MATERIAL IN CONDUITS BETWEEN FLOORS.
- FOR DATA CABLES. FACE J-BOX AT PROJECTOR FACE DOWN IN CEILING. PROVIDE BLANK COVERPLATE AT J-BOXES AT EACH END.
- 10. J-BOX AT HEIGHT NOTED FOR SECURITY DOOR FOB READER. PROVIDE 3/4" CONCEALED CONDUIT PATH FROM J-BOX TO ABOVE CEILING OR ROOF JOIST AREA FOR DOOR SECURITY WIRING. SEE DOOR STRIKE SYSTEM NOTE.
- 11. COORDINATE EXACT LOCATION OF MICROWAVE RECEPTACLE WITH CABINETRY AND ARCHITECTURAL ELEVATIONS TO CONCEAL BEHIND MICROWAVE. CIRCUIT FED FROM GFI BREAKER.
- NUMBER' MACHINE.
- RECESSED BOX. SEE ELECTRIC RISER DIAGRAM AND WIRING DIAGRAM ON SHEET E3.0. MOUNT LIGHT AT 60" AFF.
- FROM PANEL '3A'. CIRCUIT NUMBER AS SHOWN.
- 15. DATA CABLES FOR TELLER STATIONS TO DROP TO LOWER LEVEL AT THIS LOCATION THRU G,C, PROVIDED CORE DRILL HOLES. PROVIDE (1) 3" EMT CONDUIT SLEEVE. CONDUITS TO BE 8" ABOVE UPPER LEVEL FLOOR AND

BETWEEN FLOORS. SEE ARCHITECTURAL DRAWING A2.5 FOR EXACT LOCATION

DEVICE AND COVERPLATES. STANDARD RECEPTACLE OR GFI TYPE IF NOTED.

READERS, ETC ON EXTERIOR WALLS OF BUILDING SHALL HAVE THE CONDUIT RUN FROM INSIDE THE BUILDING TO THE OUTLET. NO EXTERIOR EXPOSED CONDUITS ARE ACCEPTABLE.

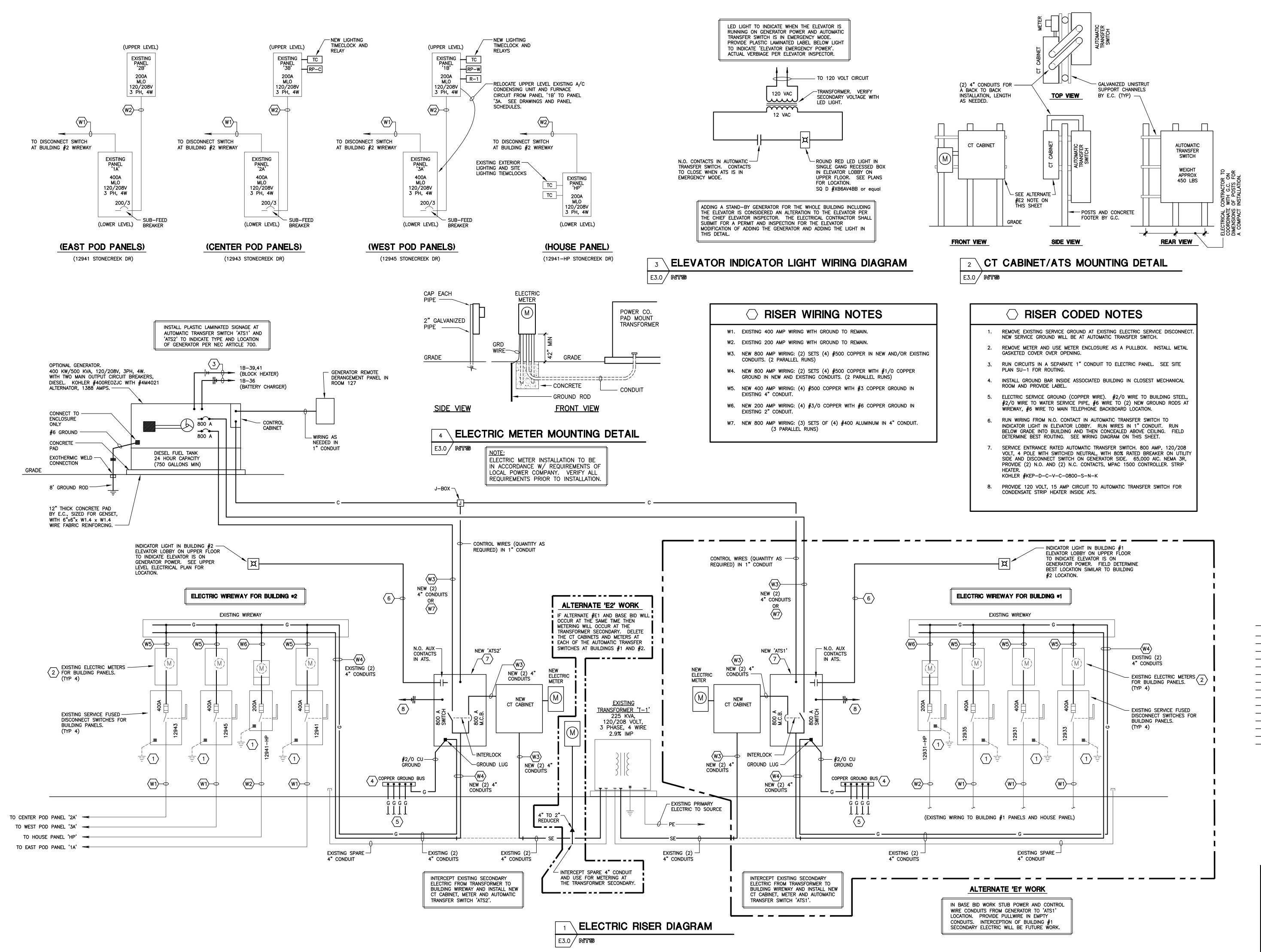
- MAINTAIN CIRCUIT TO ELECTRIC HEATER. CLEAN INSIDE AND OUTSIDE.

- 7. (2) 4" EMT CONDUITS THRU FLOOR FOR DATA WIRING ACCESS TO LOWER LEVEL.
- 8. 1-1/4" CONDUIT ABOVE CEILING FROM PROJECTOR LOCATION TO WALL J-BOX
- PROVIDE CONDUIT PATHWAY FROM DOOR STRIKE DEVICE ON DOOR TO ABOVE CEILING OR ROOF JOIST AREA FOR DOOR SECURITY WIRING. SEE DOOR STRIKE
- 12. RECEPTACLE ABOVE THE WINDOW OR IN CEILING FACING DOWN FOR THE 'TAKE A
- 13. INDICATOR LIGHT THAT ELEVATOR IS ON GENERATOR POWER. MOUNT IN
- 14. FIELD VERIFY CONDENSING UNIT FOR WEST POD UPPER LEVEL AND RE-FEED
- STUBBED DOWN 12" BELOW FLOOR INTO CEILING SPACE OF LOWER LEVEL. AFTER DATA CABLES ARE FULLY INSTALLED PROVIDE FIRE STOP MATERIAL IN CONDUITS

PICKERINGTON CENTER FOR ONERS: THE REMODELING FAIRFIELD COUNT

ISSUE MARK DATE BID 5-5-22 DRAWN BY:

LEVEL PLAN -ELECTRICAL



THE REMODELING OF THE OU PICKERINGTON CENTERINELD COUNTY COMMISSIONERS:

THE FAIRFIELD CENTER

FOR

ENTER

MCMULLEN ENGINEERING CO., INC.

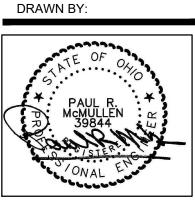
MECHANICAL AND ELECTRICAL ENGINEERS

0 South State Street, Westerville, Ohio 43081
4-895-9408 FAX:614-895-9450

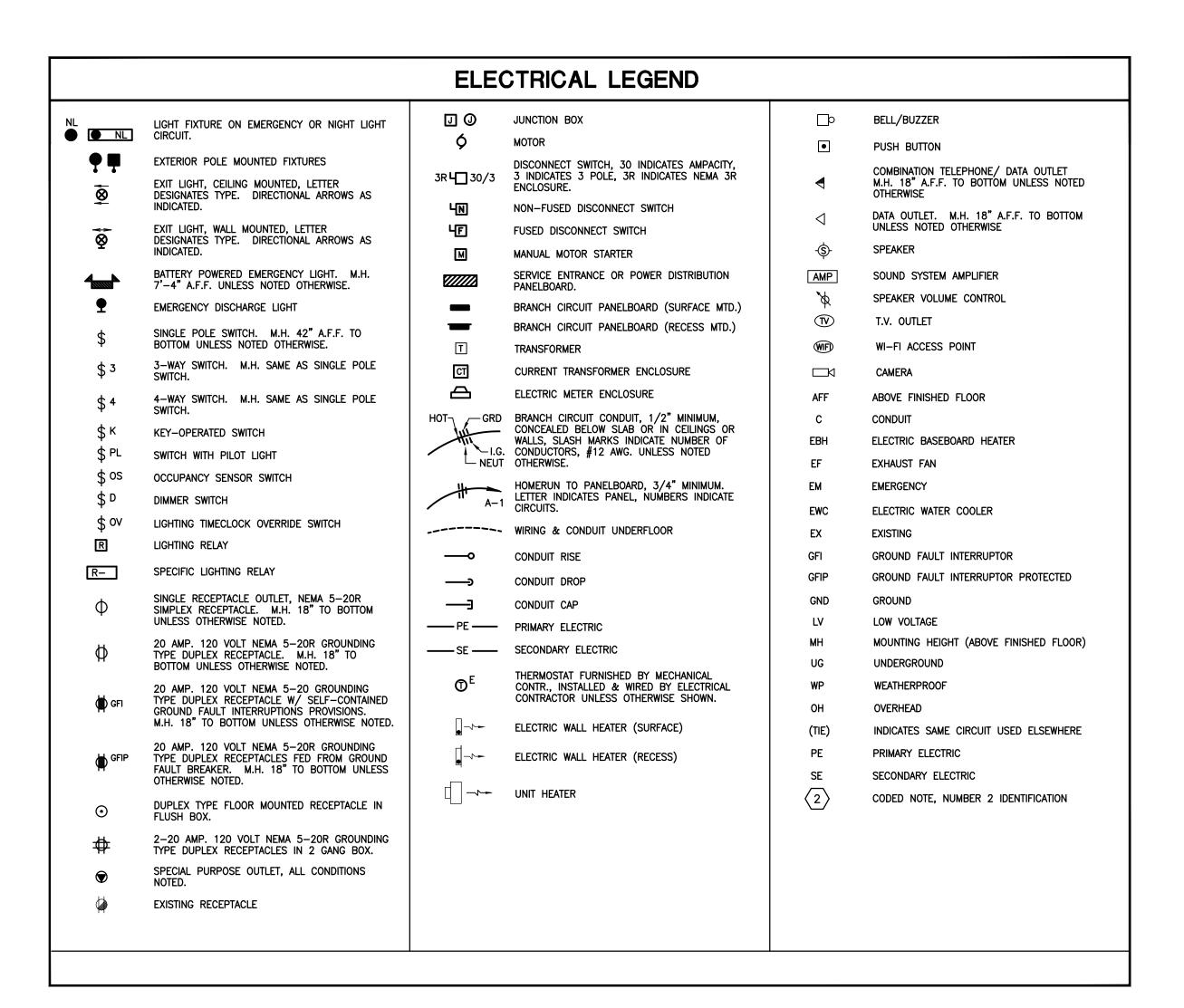
Mail: meci@mcmulleneng.com

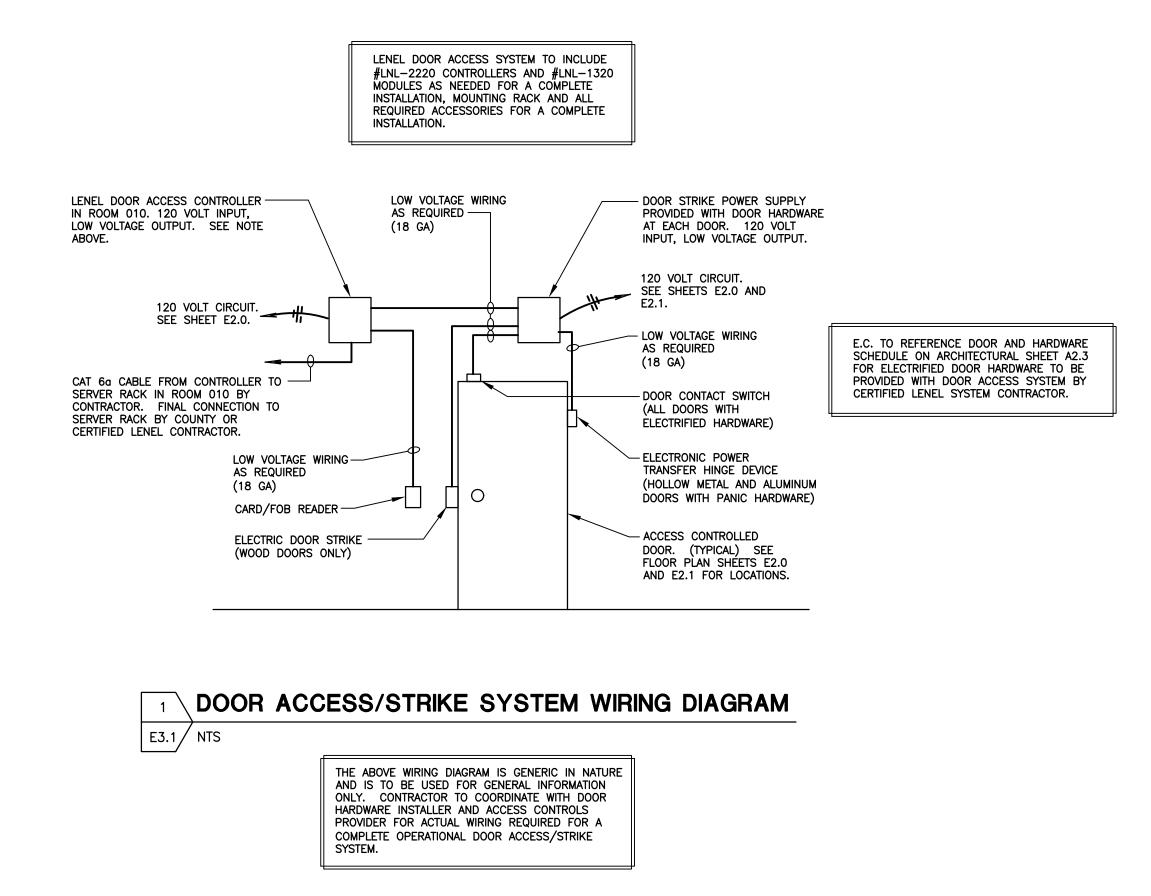
ISSUE MARK DATE
BID 5-5-22

DRAWN BY:



ELECTRICAL RISER AND DETAILS





(EXISTING PANEL)

	PAN	EL:	MAIN BREAKER	NO		200	_ A	MF	٥.,		AIC	MOUNTING	RECESS	ED .	_		
	3	3В	MAIN LUGS ONLY	YES		120	/	20	80	VOLTS		LOCATION	VIIDDLE POD	UPPE	<u> </u>		
	TYP	E:	SOLID NEUTRAL		_	3 P l	H., 4	ł W	(IRE	, 60 HZ		FED FROM	PA NEL :	2A	_		
	EXIS	STING	GROUND BUS			* = GFI I	3RE	EA K	ŒR			** = WITH 'LOCK-ON'					
	CKT No.					CKT. KW		В	SE C	CKT. KW	WIRE	LOA	D	BKR	CKT No.		
	1	20/1	NIGHTLIGHTS		12	0.2	Х			4.4					2		
	3	20/1	RCPT - CONF NORTH		12	1.2		Х		4.4	EX	AC		50/3	4		
	5	20/1	(RP-C) LTS LOBBY		12	0.3			Х	4.4					6		
	7	20/1	RCPT - CONF EAST		12	1.0	Х			1.4	ΕX	FURNACE		20/2	8		
NEW	9	20/1	LTS - RR/STOR		12	0.3		Х		1.4		I OKIVACE		20/2	10		
NEW —	11	20/1	RCPT - RESTROOM		12	0.2			Х	0.4	12	RCPT - CONF/BR	REAK	20/1	12		
	13	20/1	RCPT - RESTROOM		12	0.2	Х			0.8	12	* RCPT - CONF/E	REAK	20/1	14	-	— NEW
	15	20/1	RCPT - NORTH		12	1.0		Х		1.0	12	RCPT - CONF WE	EST .	20/1	16		
	17	20/1	(RP-C) LTS CONF		12	0.7			Х	0.5	ΕX	HEATER		30/2	18		
	19	20/1	RCPT - CONF SOUTH		12	0.6	Х			0.5				30/2	20		
	21	20/1	ATTIC FANS		EX	0.5		Х		0.6	EX	FRONT DOOR O	PERATOR	20/1	22		
	23	20/1	ATTIC FANS		EX	0.5		П	Х	0.1	12	LTG TIMECLOCK	. (1)	20/1	24		
	25	20/1	ATTIC FANS		EX	0.5	Х			0.1	12	** DOOR SECURI	TY (1)	20/1	26	-	— NEW
	27		SPACE					Х		0.6	12	RCPT - VESTIBU	LE (1)	20/1	28		
	29		SPACE						Х			SPACE			30		
	31		SPACE				Х					SPACE			32		
	33		SPACE					Х				SPACE			34		
	35		SPACE						Х			SPACE			36		
	37		SPACE				Х					SPACE			38		
	39 SF		SPACE					Х				SPACE			40		
	41		SPACE					П	Х			SPACE			42		

(LOAD SUMMARY OF PANEL '3B')

NOTES: 1. PROVIDE NEW CIRCUIT BREAKER FOR CIRCUIT.

SUMMARY OF CONNECTED LOAD IN KW													
TYPE OF LOAD													
DESCRIPTION OF LOAD	LTG	RCPT	MOTOR	ELEC HTG	COOLING	KITCHEN	WATER	COMPUTER	REFRIG	MISC		TOTAL	
	LIG	NOFT	WOTOK	LLLCTIIG	COOLING	APPL*	HTR	COMPOTER	KLIKIG				
PANEL 3B	1.6	7.0	1.5	1.0	16.0					0.7		27.8	
LARGEST MOTOR LOAD	=	x 25% =											
TOTAL CONNECTED KW	1.6	7.0	1.5	1.0	16.0					0.7		27.8	
DEMAND FACTOR	125%	**	***	GRE/	GREATEST		100%	100%	100%	100%	100%		
N.E.C. DIVERSIFIED KW	2.0	7.0	1.5		16.0					0.7		27.2	
MINIMU	MAIN :	SWITCH	SIZE	= 1000	xKW/(VOLTA	GE x SC	RT(PHA	SE)) =	7	75	AMPS	

(EXISTING PANEL)

	PAN	EL:	MAIN BREAKER NO		400	Α	MP.,		AIC	MOUNTING SURFA	CE		
	3	BA	MAIN LUGS ONLY YES	.	120	/	208	VOLTS		LOCATION WEST BAS	EMENT		
	TYP	<u>:</u>	SOLID NEUTRAL		3 PI-	l., 4	WIRE	, 60 HZ	HZ FED FROM WIREWAY				
	EXIS	STING	GROUND BUS		* = GFI E	3RE/	A KER	<u> </u>		** = WITH 'LOCK-ON'			
	CKT No.	BKR	LOAD	WIRE	CKT. KW	PH	ASE B C	СКТ.	WIRE	LOAD	СКТ		
	1	30/2	WATER HEATER	ΕX	2.3	Х	x	4.4	EX	AC UNIT - LOWER LEVEL 50/3		2	
	5	20/1	RCPT - RM 003	ΕX	1.0		+	4.4				6	
	7	20/1	LTS - RM 003	ΕX	1.0	Х		1.4				8	
NEW	9	20/1	LTS - ADDITION	12	0.3		x	1.4	EX	FURNACE - LOWER LEVEL		10	
	11	20/1	RCPT - AT PANEL	ΕX	0.2		X	0.2	EX	RESTROOM GFCI	20/1	12	
	13	20/1	RCPT - WEST GFI	EX	0.2	Х		0.2	EX	RESTROOM GFCI	20/1	14	
	15	20/1	LTS - RM 002 D	ΕX	1.5		Х	0.6	12	RCPT - ADDITION	20/1	16	
	17	20/1	HALLWAY & RM 002/EM/EX	ΕX	1.0		Х	0.6	12	RCPT - ADDITION		18	NEW
	19	20/1	BASEBOARD HEATER	ΕX	1.5	Х		1.0	EX	RCPT - 002, 043		20	
	21	20/1	RCPT - 002 D	ΕX	1.2		X	1.0	EX	RCPT - 002C	20/1	22	
_	23	20/1	RCPT - 002 B 002 A	ΕX	1.2		X	0.5	EX	POLE BARN GARAGE	60/2	24	
	25	40/2	NEW ADDITION COND UNIT	8	2.3	Х	_	0.5				26	
NEW —	27		(HACR BRKR) (1)		2.3		<u> </u>			SPACE		28	
	29		NEW ADDITION FURN (1)	12	1.2		X		12	** DOOR SECURITY (1)	20/1	30	— NEW
	31		RCPT - SERVER RACK (1)	12	0.4	Х		4.4				32	
	33		RCPT - SERVER RACK (1)	12	0.4		×	4.4	8	AC UNIT - UPPER LEVEL (1)	50/3		
L	35	20/1	DOOR CONTROL PANEL (1)	12	0.2		X	4.4				36	RELOCATED CIRCUIT
	37		SPACE			Х		1.4	12	FURNACE - UPPER LEVEL (1)	20/2	38	
	39		SPACE				X .	1.4				40	
	41		SPACE				X			SPACE		42	

PANEL '3A' HAS 200 AMP/3 POLE SUBFEED BREAKER FOR PANEL '1B'.

(LOAD SUMMARY OF PANEL '3A')

		SL	JMMAR'	Y OF CC	NNECT	ED LOA	AD IN K	W					
TYPE OF LOAD													
DESCRIPTION OF LOAD	LTG	RCPT	MOTOR	ELEC HTG	COOLING	KITCHEN APPL*	WATER HTR	COMPUTER	REFRIG	MISC		TOTAI	
PANEL 3A	4.8	8.2		1.5	37.8		4.6			0.3		57.2	
LARGEST MOTOR LOAD	=	x 25% =	•		•		•			•		•	
TOTAL CONNECTED KW	4.8	8.2		1.5	37.8		4.6			0.3		57.2	
DEMAND FACTOR	125%	**	***	GRE/	ATEST	100%	100%	100%	100%	100%	100%		
N.E.C. DIVERSIFIED KW	6.0	8.2			37.8		4.6			0.3		56.9	
MINIMU	M MAIN	SWITCH	SIZE	= 1000	xKW/(VOLTA	GE x SC	RT(PHA	SE)) =	1.	58	AMPS	

(EXISTING PANEL)

	PAN	PANEL: MAIN BREAKER		_	200	_ Α	MF	D.,		AIC	MOUNTING	RECESS	ED	-		
	1	В	MAIN LUGS ONLY YES		120	120 / 208 VOLTS LOCATION V					WEST POD	UPPER				
	TYPE	<u>:</u>	SOLID NEUTRAL		3 PH	H., 4	١W	/IRE,	60 HZ		FED FROM	PNL 3A	4			
	EXIS	STING	GROUND BUS		* = GFI I	3RE	Αŀ	(ER			** = WITH 'LOCK	-ON'				
	CKT No.	BKR	LOAD W		CKT. PHASE CKT.			WIRE	LOA	D	BKR	CKT No.				
	1	20/1	LTS - RR/OFFICE	12	0.6	Х	_				SPARE (1)		20/1	2		
	3	20/1	NIGHTLIGHTS	12	0.2		Х				SPARE(1)		20/1	4		
EW —	5	20/1	(RP-W) LTS - ADDITION	12	0.1			Х			SPARE (1)		20/1	6	- NEW	
	7	20/1	RCPT - WEST	12	1.0	Х					SPARE (1)		20/1	8		
	9	20/1	RCPT - RESTROOM	12	0.2		Х		0.6	12	RCPT - VESTIBL	ILE (1)	20/1	10		
	11	20/1	RCPT - RESTROOM	12	0.2			Х	1.2	ΕX	FURNACE		20/1	12		
	13	20/1	ENTRY HEATER		1.0	Х			0.2	12	(R-1) CANOPY I	LIGHTS	20/1	14	\	
	15	20/1	RCPT - EAST	12	1.2		Х		1.2	12	RCPT - SOUTH \	VALL	20/1	16	_ NEW	
	17	20/1	(RP-W) LTS - CENTER	12	0.3			Х	2.3	EX	WATER HEATER	.	30/2	18	_	
EW —	19	20/1	RCPT - SOUTH TELLER (1)	12	1.2	Х			2.3		W/ (TEI (TEI (TEI (TEI (TEI (TEI (TEI (TEI		30/2	20		
	21	20/1	(RP-W) LTS - TELLER (1)	12	0.4		Х		1.2	12	RCPT - ADDITIO	N (1)	20/1	22		
	23	20/1	RCPT - EAST TELLER (1)	12	0.8			Х	0.4	12	RCPT - BREAK F	ROOM (1)	20/1	20/1 24		
	25	20/1	RCPT - WEST TELLER (1)	12	1.2	Х			0.8	12	* RCPT- BREAK	ROOM (1)	20/1	26		
	27	20/2	AC UNIT	ΕX	2.1		Х		1.0	12	RCPT - ADDITIO	N (1)	20/1	28		
	29	30/2	IAC OINIT		2.1			Х	1.2	12	* RCPT - DISHW	ASHER (1)	20/1	30		
	31	20/1	SPARE			Х			1.2	12	DOOR OPERATO	OR (1)	20/1	32	- NEW	
	33	20/1	FURNACE	ΕX	1.2		Х		0.1	12	LTG TIMECLOCK	(1)	20/1	34		
	35	20/1	RCPT - PRINTER/COPIER (1)	12	1.0			Х	0.1	12	GEN BATT CHA	RGER (1)	20/1	36		
_,,	37	20/1	RCPT - EAST TELLER (1)	12	0.8	Х			1.0	12	* RCPT - MICRO	NAVE(1)	20/1	38		
EW —	39	30/2	GENSET BLOCK HEATER (1)	10	1.5		Х		0.5	12	RCPT - PAYMEN	IT KIOSK (1)	20/1	40		
	41	30/2	GLINGET BLOCK HEATER (1)	10	1.5			Х	0.2	12	** SECURITY DO	ORS (1)	20/1	42		

(LOAD SUMMARY OF PANEL '1B')

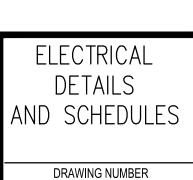
SUMMARY OF CONNECTED LOAD IN KW												
TYPE OF LOAD												
DESCRIPTION OF LOAD	LTG RCPT MOTOR		ELEC HTG	COOLING	KITCHEN APPL*	WATER HTR	COMPUTER	REFRIG	MISC		TOTAL	
PANEL 1B	1.9	15.5	1.2	4.0	6.6		4.6			0.3		34.1
LARGEST MOTOR LOAD	=	x 25% =										
TOTAL CONNECTED KW	1.9	15.5	1.2	4.0	6.6		4.6			0.3		34.1
DEMAND FACTOR	125%	**	***	GRE4	TEST	100%	100%	100%	100%	100%	100%	
N.E.C. DIVERSIFIED KW	2.4	12.8	1.2		6.6		4.6			0.3		27.8
MINIMUM MAIN SWITCH SIZE = $1000 \times KW / (VOLTAGE \times SQRT(PHASE)) = 77$									AMPS			

ENTER $\overline{\mathbf{S}}$ TON Ш PICKERINGT IONERS: CENT ШΞ P() COUNTY PAINTY COUNTY 0 REM FIEL THELL 回民

FOR

ISSUE	MARK	DATE
BID		5-5-22

DRAWN BY:



GENERAL ELECTRICAL PROVISIONS

- A. Provide electrical work as shown and specified. Furnish all material and labor to complete and leave in working order all items of work indicated, including any minor items of work necessary to provide a complete and fully operative lighting and electrical system.
- B. This contractor shall file all drawings, pay all fees, and obtain all permits and certificates of inspection relative to his work. Perform all work in accordance with applicable local and state codes and ordinances, including the regulations of the following: Americans with Disabilities Act.
- State Building Code. National Electric Code.
- 4. Local building codes and ordinances.
- C. The following industry standards, specifications are also minimum requirements: 1. The National Electrical Manufacturer's Association Standards (NEMA). 2. The Manufacturer's Recommendation.
- 3. Underwriter Laboratories Incorporated Standards (UL).

4. American National Standards Institute (ANSI).

- D. Test all parts of electrical systems for proper ground operation and provides system free from short circuits. Meager test all feeders and branch circuits of electrical systems. 2. Test, adjust and balance all equipment and systems for proper
- E. All materials and equipment shall be new and of a quality specified. Workmanship shall conform to standards of best practice and all labor employed shall be competent to do work required.
- F. Prior to submitting a bid, visit the site of the proposed construction to become thoroughly acquainted with existing utilities, working conditions, etc. Allowance will not be made for non-compliance with this condition
- G. Keep the premises free from accumulation of waste material, or rubbish caused by employees or work under this Division of the specification. At the completion of the work, remove all surplus materials, tools, etc., and leave the premises 'broom-clean'. Remove all temporary wiring upon
- H. After completion of work, marked-up "as-built" drawings shall be prepared and delivered to Owner. Accurately record location of all below
- I. Upon completion of project, prepare and submit to the Architect for final distribution to the Owner, two (2) copies of an Electrical Operation and Maintenance Manual in a hard cover binder. Contents of manual shall consist of final shop drawings of panelboards and electrical equipment; one set of manufacturer's original commercially printed catalog data sheets of lighting fixtures and devices; part lists; safety, maintenance and operation instructions; and final list of electrical materials installed, listing manufacturer, catalog number, and local supplier of replacement and spare parts for each item.
- J. Guarantee work executed under this Contract to be free from defective workmanship and/or materials. Should any defects develop within a period of one (1) year after final acceptance has been made, correct them and repair any damage that resulted from same at no expense whatsoever to Owner.
- K. Submit for approval manufacturer's drawings and/or catalog cuts (six copies) for all lighting fixtures, switches, panelboards, and wiring devices. Review and stamp prior to submittal.
- L. The drawings indicate the general arrangement and locations of the electrical work. Data presented on these drawings are as accurate as planning can determine, but field verification of all dimensions, locations, levels, etc., to suit field conditions is required. Review all architectural structural and mechanical drawings and adjust all work to meet the requirements of conditions shown. The architectural drawings shall take precedence over all other drawings. Discrepancies between different plans, or between drawings and specifications, or regulations and codes governing the installation shall be brought to the attention of the Architect in writing before the date of bid opening. If discrepancies are adjustments will be made after contract award. Field measure and confirm mounting heights and location of electrical equipment with respect to counters, mechanical equipment, etc. Do not scale distances off the electrical drawings; use actual building dimensions.
- M. In all cases switches controlling lighting are to be located on the strike side of doors or as shown on drawings. Location indicated for switches and outlets are approximate. Owner may make minor relocations at no
- N. Should structural elements prevent running of conduits, installation of outlets or cabinets as shown on the drawings, the necessary minor change, as determined by the Architect, shall be permitted.
- O. Perform coring, cutting, chopping, fitting, repairing and finishing of the work necessary for the installation of the equipment of this Section. However, no cutting of the work of other trades or of any structural member shall be done without the consent of the Architect. Properly fill seal, fireproof and waterproof all openings, sleeves, and holes in slabs. Furnish and install all required sleeves and inserts.
- P. Cooperate with other trade so that installation of electrical outlets and equipment will be properly coordinated. Check conduit, fixture, and other equipment locations with the other trades to avoid conflict with the piping, ductwork, steel, piping, beams, or other obstructions.
- Q. During construction, protect all electrical equipment and materials from construction debris, moisture absorption and metallic corrosion.
- R. Carefully check the locations of the outlet boxes and determine that they have not been disturbed during the installation of material of other
- S. Provide Micarta nameplates to identify panelboards, disconnect switches, starters, and other major equipment.
- 1. Provide all required cutting and patching required to install new work. Cutting shall be by saw cut or core drill. Seal all wall penetrations

ELECTRICAL DEMOLITION (PARTIAL)

the premises by this Contractor.

- A. The Electrical Contractor shall remove existing electrical equipment as indicated. This equipment shall in general include:
- Selected lighting fixtures. Selected receptacles and appliance connections. Concealed conduit in walls or floors that are removed.
- Surface runs of conduit and wireway if wiring has been removed.
- Conduits concealed by construction may be abandoned in place, but
- B. All equipment that is required to be relocated as defined in General Conditions shall have all existing wiring conditions tagged and diagrammed prior to removal such that the equipment can be reconnected without requiring a wiring diagram from the Owner.
- C. This Contractor shall visit site prior to his bid to fully familiarize himself with the extent of demolition
- D. For all equipment requiring temporary relocation and as listed in Section 01100 of the Specification, provide temporary extension of electrical circuit for proper operation of equipment.
- E. Relocate electrical equipment as noted on plans. Take special care during removal not to damage equipment.
- F. Turn over to Owner, all equipment he wishes to salvage. All other removed equipment shall become the property of and be removed from
- G. If practical, the Contractor may reuse any of the existing conduit and raceway if reused in same location. He shall not relocate existing conduit and continuity of ground. Plug all unused conduit openings in raceway. DO NOT reuse existing wire or cable that was removed.

- d. Any existing conduits and raceway stubbed out of floors or walls that are not reused shall be cut off flush and sealed in such a manner so as to prevent moisture penetration.
- The removal of equipment shall be done with care so as not to affect the structure or cause excessive patching.

ELECTRICAL SERVICE SYSTEM

Electric service is existing 120/208 volt, 3 phase, 4 wire and is to

TELEPHONE SERVICE SYSTEM

A. Telephone service is existing and is to remain.

FIRE STOPPING

- A. Furnish and install firestopping for all conduit penetrations through fire rated assemblies. Assemblies include, but not limited to, fire rated walls, floors, floor/ceiling and roof assemblies.
- B. Firestopping materials shall be classified with UL as "Fill, Void, or Cavity Materials," and "Through Penetration Firestop Systems".
- Firestopping materials shall have been tested in accordance with ASTM E 814 and UL 1479. All firestopping materials shall be labeled with ASTM
- Firestopping materials by Dow Corning, 3M, Hilti, Metacaulk or Nelson Firestop are acceptable.

16150 ELECTRICAL DISTRIBUTION

- Extend electric circuit to all equipment requiring power.
- Safety switches shall be heavy duty type, 600 or 250 volt, with number of poles required. Safety switches for air conditioning use shall be of the non- fusible type. Switch size shall be as required by code and as indicated on the drawings. Where outside the building, the switches shall be rain tight type NEMA 3R. All switches shall be lockable. As manufactured by Square D, ITE, General Electric or Cutler Hammer.
- The electric panel branch breakers shall be molded case, quick-make, quick—break, with thermal magnetic trip and permanently bolted to bus bars. Short circuit ratings shall be minimum 10,000 amps, RMS system for 208 volt system, unless otherwise stated on the drawings. Only full rated ACB's permitted, no duplex. Breakers to be 1, 2, or 3 pole as listed on the drawinas.
- . Multiple pole breakers must be the common trip type. NO TIE HANDLES PERMITTED WITH SINGLE POLE BREAKERS.
- Provide and install Ground Fault Interrupter (GFI) circuit breakers as required and shown on the drawings. GFI breakers shall provide personnel protection from ground faults of 5 MA or greater as well as normal circuit protection. Breaker shall be self testing type.
- All circuit breakers serving refrigeration, A/C and/or ventilation equipment such as rooftop units, condensing units or air handling units shall be 'HACR' rated.

CONDUIT

- Rigid Galvanized Steel (RGS) may be used in all areas. Intermediate Metallic Conduit (IMC) may be used in indoor locations. Use electrical Metallic Tubing (EMT) in indoor locations not in contact with earth, not in concrete slabs or concrete walls and not subject to damage. Use flexible steel conduit not exceeding 36" for indoor final connections to mechanical equipment and not exceeding 72" for recessed removable fluorescent light fixtures. Use liquid-tight flexible steel conduit not exceeding 36" for outdoor final connections to equipment or in kitchens and wet locations. Use PVC schedule 40 conduit for below grade
- Where the conduit enters outlet boxes, fixtures or cabinets, firmly fasten by double locknuts and bushings. Firmly fasten conduit to the building construction. Run exposed conduits parallel to the building lines, supported by appropriate hangers (Unistrut, T&B or Appleton) from structure. Support conduits on 5 foot intervals and within 3 feet of any box or fitting. Do not support conduits from ceiling, piping, ceiling supports, ductwork, or other conduits.
- Conduit connectors shall be double locknut type. UL listed and labeled, with set-screw or compression fittings.
- . Conduit sizes shall be as required by code and as indicated or specified herein. Minimum conduit size 1/2"
- All empty conduit systems shall have 200 lb. test pull cord to facilitate installation of future wire.
- Conceal conduits and outlets within the building structure; except that conduits may be run exposed in certain areas as indicated on the drawinas. Run conduit shown to be installed in cabinets, and casework directed by Architect.

OUTLET, PULL AND JUNCTION BOXES

- Each switch, light, receptacle or other outlets shall be provided with a code gauge, galvanized steel outlet box. Junction and pull boxes shall be code gauge, galvanized steel. Outlet boxes shall be of the one piece. knockout type, in general 4" square with plaster ring. Plaster rings shall be set to provide not more than 1/8" from wall surface to ring. In no case shall plaster ring project beyond surface of wall. Single gang rings similar to Steel City 52020 shall be used for boxes in unfinished brick. #180 boxes may be used for unfinished masonry flush wall outlets. Center all outlet boxes in block course.
- Boxes installed in poured cement floors shall be flush type cast iron with watertight gasketed covers, gray metallic finish. Where boxes are installed in floors with tile or carpet floor covering, covers shall be of the recessed type to accommodate the floor covering.
- Boxes installed for the alarm, computer, security, and telephone system shall be provided with appropriate coverplates.

16220

- A. Unless otherwise specified, all wire shall be stranded Type THHN, THWN or XHHW copper. Service and panel feeder wiring 100 Amps or larger shall be copper or aluminum as noted on drawings. The wires shall be color-coded. Unless otherwise required by local ordinances, ground wires shall be green, neutral wires shall be white and phase wires shall be black (Phase A), red (Phase B), or blue (Phase C) for 120/208 volt. Conductors shall be minimum #12 AWG unless otherwise indicated.
- . Do not install conductors until conduit system is complete. Use Mineralac #100 or equivalent as a lubricant to facilitate the installation of the conductors in the conduit system.
- All 1 phase branch circuits shall consist of 1 phase conductor and 1 neutral (120V) or 2 phase conductors (208V). All 3 phase branch circuits shall consist of 3 phase conductors. When two or three single phase circuits are shown to be combined, these circuits may share a single neutral. For isolated ground receptacles, provide one isolated ground conductor per circuit.
- Install a green equipment wire in each panel feeder or branch circuit. Conduit and raceway systems shall not be used for equipment grounding
- Grounding shall be in accordance with the latest edition of the National Flectric Code. Article 250.
- Wire all motors to conform with manufacturers' recommendations and with applicable codes. Provide necessary material, including wire, conduit, fittings. etc., required to connect motor. Motors, controls, etc., shall be furnished by the supplier of the driven equipment. Verify equipment location and sizes with the trade supplying the motor before installing the conduit or outlets.

Provide all starters unless indicated as furnished by others. Starters shall be combination fused disconnect type with on/off switch (HOA if required), control transformer, overloads, indicating lights, 2 aux reversible contacts. Manual starts shall have on/off (HOA if required) switch, overload indicating light.

METAL CLAD CABLE

an insulated around.

- The Contractor, at his option, may use metal clad cable type "MC" (no BX or Type AC acceptable) for branch circuits when following conditions
- are met: Approved by local code jurisdiction. Maximum 20 AMP branch circuits.
- 3. #12 or #10 stranded copper conductors with THHN insulation including
- 4. Installed concealed above ceilings or in interior walls in dry locations only. (Exposed 'MC' cable will not be allowed.) 5. Installed in strict compliance with latest edition of National Electric Code and as described herein
- Metal clad cable shall be interlocking or continuous galvanized steel or aluminum sheath type with continuous ground wire (using sheath as ground is unacceptable), #12 or #10 stranded copper conductor, 600 volt THHN insulation rated at 90°C, UL labeled.
- 1. UL 83, 1479, 1569 and 1581.
- 2. Shall meet all applicable OSHA and HUD requirements. Shall be UL rated for installation in environmental air handling space. 4. Shall be rated for 3-hour firewall penetration.
- Connectors shall be those specifically designed for use with MC cable (Romex and BX connectors are not acceptable).
- 'MC' cable shall be installed in strict compliance with all applicable articles of the National Electric Code and as described herein.
- 'MC' cable shall be installed in a neat and orderly manner, perpendicular and parallel to building lines.
- Cable shall be installed in building concealed above ceiling or in interior walls only. No exposed 'MC' cable will be allowed.
- In any room, including mechanical, electrical, service rooms, stairwells etc., where wiring cannot be concealed, it must be installed in conduit.
- Where 'MC' cable is installed in accessible attic spaces and run across the top of joists, studs or rafters, the cable shall be protected by guard strips in accordance with the National Electric Code. Guard strips are not required if the 'MC' cable is installed parallel to the side rafters,
- Where 'MC' cable is installed above accessible ceilings, the cable must be supported at code required intervals.
- 'MC' cable may be supported from conduit supports or provide independent support wires from structure with clips to secure cable. Clips shall be designed and manufactured for this use.
- 'MC' cable shall not be supported from conduits, piping, ductwork, ceiling arid wires, etc.
- M. DO NOT allow 'MC' cable to lay on ceiling grid system or be in contact with any piping or ductwork.
- DO NOT expose 'MC' cable on wall at surface mounted panelboard. Where 'MC' cable is used for homerun circuit(s) to a surface mounted panelboard, one of the two following methods shall be used and shall be consistent throughout the building.
- 1. Provide 'EMT' conduits from panelboard to above ceiling. Install 'MC' cable in these conduits from above ceiling to panel. 2. Provide wire in 'EMT' conduit from panel to above ceiling, extend to first splice point in circuit. At that location 'EMT' conduit with wire may be converted to 'MC' cable.

Where 'MC' cable penetrates fire rated construction, provide fire stopping

- per code and as approved by the local authority having jurisdiction. At lighting fixture, device or equipment being fed by 'MC' cable, provide
- appropriate junction or outlet box for wiring connections and mounting. 'MC' cable punched through wall, ceiling or into cabinetry is unacceptable.

WIRING DEVICES

- Light switches shall be toggle quiet AC type, 120/277 volts, 20 amp specification grade commercial series, contacts shall be silver alloy and switch shall have one piece Lexan lever and cam. Terminals shall be spring loaded, color coded and suitable for side and back wiring. Hubbel #CSB120 series or equal
- General purpose duplex receptacles shall be automatic grounding type, NEMA 5-20R configuration, finder-grove face, 20 amp commercial, specification grade, with provisions for back wiring by means of spring-staked screwed or side wiring with captive held binding screws. shall be constructed of arc-resistant material. Hubbell #BR20 series or
- C. Ground fault interrupting (GFI) type receptacles shall be self—contained, automatic grounding type, NEMA 5—20R configuration, specification grade, with test and reset buttons and self testing. Hubbell #GFR-ST20 or
- Locking receptacles shall be NEMA configuration of proper size for loads indicated on the plans and as required for equipment served. Coordinate requirements with the equipment supplier prior to rough-in.
- All devices shall be ivory in color.
- All wall outlet plates to be smooth thermoplastic. Provide type of faceplates to match devices.
- All non-locking 15 amp and 20 amp, 125 volt and 250 volt receptacles in damp or wet locations shall be listed as weather resistant.
- Exterior outlets shall be complete with weatherproof plate with hinged cover or covers in accordance with NEC 406.9(B) and a neoprene gasket between the plate, box and mounting surface. Red Dot CKM series or

16335

- Fuses shall be as manufactured by Bussmann, Shawmut, or Littlefuse.
- All fuses shall be Class R current-limiting with 200,000 ampere interrupting capacity, rejecting feature, and shall be of the same
- and general power circuits shall generally be NEMA Class R, dual-element type, Bussmann LPN-RK (250V.) "Low-Peak". No fuses shall be installed until the installation is complete, including thorough cleaning, tightening of all electrical connections, inspection of all ground and grounding conductors and a meager test for adequate

insulation to ground for all conductors. Install fuse reducers as required.

A fuse identification label indicating exact type and size fuse installed

shall be placed inside the door of each switch or combination starter

Fuses used for feeds to molded case circuit breaker panelboards, motors

- Furnish and install all lighting fixtures as indicated on drawings. Provide contactors and controls as indicated. Fluorescent ballasts shall be the electronic type with Class 'A' sound rating and UL listed Class 'P'
- Provide all necessary fittings required to support all fixtures, as well as wood or metal supports for surface and/or pendant fixtures on suspended ceilings. All fixtures are to be supported independent of ceiling system. Provide a minimum of (2) hanger wires similar to ceiling grid hanger wires from opposite corners of all lay—in lighting fixtures.

- C. Provide all lamps as indicated on drawings
- D. Locate and aim adjustable fixtures as directed by the Owner's representative

TEMPERATURE CONTROL

Unless otherwise indicated on the plans, all conduit, wiring, boxes, etc. for temperature controls shall be furnished and installed by the HVAC

FIRE ALARM SYSTEM (ADDRESSABLE)

A. The fire alarm system is existing and is to remain. Relocate fire alarm devices and provide new as shown on drawings. Connect to existing fire alarm system. All new fire alarm devices are to match existing and be by same manufacturer All equipment shall be as listed by Underwriters' Laboratories.

DATA SYSTEM WIRING

- A. Provide data outlets and CAT6a cables as described on drawings.
- Data wiring shall be category 6a with 8 port jacks, all equipment furnished by owner.
- Comply with NFPA 70, National Electrical Code, BICSI, and EIA/TIA
- Nationally Recognized Testing Laboratory NTRL Listing: Provide materials that are listed and labeled. The Terms 'Listed' and 'Labeled': as defined in the National Electrical Code. Article 100.
- Listing and Labeling Agency Qualifications: A Nationally Recognized Testing Laboratory (NRTL) as defined in OSHA Regulation 1910.7.
- FCC Regulation: Comply with FCC Part 68, Chapter 1, US Code of Federal Regulations, Title 47 for all telephone system wire and cable
- Meet jointly with the representatives of the above organizations and the Owner's representative to exchange information and agree on details of

Record agreements reached in the meeting and distribute the record to

- the other project participants. Contractor warrants that low voltage cabling is complete and free from defects for a period of one year or until such time as the plant cabling is accepted. Such release shall be made in writing and delivered to the
- Distribution System: Install completely so system will be fully operational when tel/data instruments and switching equipment are connected. Tel/data outlet locations may vary up to four feet from those shown on

general contractor prior to any release of the cabling warranty by the

- the drawings. Verify outlet locations with the owner's representative. Install cable without damaging conductors or jacket. Do not bend cable to a smaller radius than minimum recommended by manufacturer or BICSI. Do not exceed manufacturer's or BICSI's recommended pulling tensions. Pull cables simultaneously where more than one is being installed in the same raceway or at the same location. Use pulling compound or lubricant where necessary. Compound used must not damage conductor or insulation. Use pulling methods that will not damage cable or raceway, including fish tape, cable, rope, and
- Wiring Method: Wiring shall be pre-wired in entire building. All cabling shall be neatly installed with Caddy 'J' hooks 'D' rings no more than 30" on center. Maintain two foot separation between high voltage cabling and any low voltage cabling. Install parallel or perpendicular to surfaces or exposed structural members and follow surface contours where
- Cable Support: Secure cable to independent supports at intervals as required (no less than 60" o.c.) to prevent sagging between supports. Use metallic "Caddie" supports with corrosion-resistant finish.
- N. Splices: Do not splice cable between the normal terminations of runs.
- Wiring at backboards: Install conductors parallel to and at right angles to walls. Bundle, lace, and train the conductors to terminal points with no excess. Use wire distribution spools at points where cables are P. Labelina

All cables shall be permanently identified in all pull boxes, in wiring

011-A1

gutters and at each termination point with pre-marked self-adhesive

wrap around markers Brady B-500+ plastic cloth markers. All system components shall be permanently identified utilizing the following identification format:

wire-cable grips.

Cable Labels: Example 01001

<u>Designation</u> a. Cable Number b. Drop Location c. Patch Panel Pos.

Faceplate Labels: <u>Designation</u> <u>Example</u> a. Cable No., Drop Loc. 01001

- b. Closet no., Patch Pos. WC01011-A1 Q. Test cables for continuity after installation. The contractor shall notify the owner in writing at least three working days prior to the time testing is to begin. The Owner reserves the right to have its representatives be present and participate in the testing. The contractor shall be required to re-test at his expense if proper written
- notification as required above is no given. System acceptance is contingent upon owner's inspection and verification that all cables have been provided and that all work has been completed in accordance with these specifications and related drawings.
- S. Familiarize owner with the installation, configuration, operation and maintenance of the cabling during the installation and without delaying the work. Permit these personnel to observe the tests, measurements and adjustments explaining the significance of each operation.

EMERGENCY POWER SYSTEM

- A. Furnish and install an emergency generator, automatic transfer switch(es), and all appurtenances required for a complete and operational emergency power system. Size of generator, transfer switch and associated equipment is to be as shown on drawings.
- The Electrical Contractor shall be responsible for verification of all installation requirements for the generator to ensure proper operation. C. Provide wiring, conduit as shown on drawings and required by code.
- D. The generator and transfer switch shall be manufactured by Kohler, Onan or MTU or Caterpillar supplied by a factory approved vendor/distributor. No equipment brokers allowed.

The standby electric power shall be diesel fired with unit mounted fuel

- The stand by electric plant shall be rated at 60 hertz alternating current with unit mounted UL listed output circuit breaker(s). Generator set voltage, capacity and circuit breakers shall be as sized on drawings. Circuit breaker(s) to be 100% rated.
- The generator set shall be equipped with an alternator exciter circuit breaker, sized as required for generator set capacity.

- Generator set shall start all motor loads shown, with a maximum voltage dip of 20% as measured on a light beam galvanometer at the generator terminals. Generator voltage shall then recover to 100% in
- Generator shall be salient-pole, 10 lead re-connectable, self-ventilated, of drip proof construction, with built-in exciter. Radio interference suppression meeting commercial standards shall be supplied. Voltage regulator shall match the characteristics of the generator and engine. emperature rise shall be within NEMA, IEEE and ANSI standards for continuous duty temperature rise limits at all output ratings. Generator, having a single, maintenance free bearing, shall be direct connected to
- Plant mounted controller shall have a Level 1 rating and be vibration isolated on the generator frame. It shall include the following: factory installed, wired and tested by the manufacturer:
- Run-off/Reset-Auto switch
- Remote start/stop, 12 volt Overcranking protection designed to open the cranking circuit if engine does not start after 30-90 seconds, with cranking reset
- 4. Engine test switch to permit operating engine without interrupting
- normal power supply AC interlock to prevent starter reengagement with engine running
- Overspeed detection Low coolant level detection Emergency stop pushbuttor
- DC voltage protection 10. AC volt meter, ammeter, frequency meter
- 11. DC volt meter 12. Engine water temperature gauge
- 13. Engine oil pressure gauge 14. Battery charging ammeter 15. Running time meter
- 16. Voltage adjusting rheostat for ±5% voltage adjustment 17. Phase selector switch 18. Alarm lights and external alarm contacts for the following conditions:
- Overcrank shut down
- Low oil pressure High engine temperature
- Overspeed shut down Emergency stop Not in auto
- System ready Low battery voltage Battery charger fault
- Low fuel indicator Pre-alarm high engine temperature Pre-alarm low oil pressure
- Auxiliary alarm Auxiliary pre-alarm Air damper
- 19. Three spare auxiliary form C contacts for activating accessory items.
- Engine will be liquid cooled by means of a unit mounted radiator and engine driven fan. Coolant shall be anti-freeze/water mixture appropriate for the site ambient conditions as recommended by the
- Engine speed shall be controlled by an electronic isochronous governor with the capability of voltage and frequency regulation maintained at 2% during a no load to full load situation. Belt driven governors will not be
- I. Engine shall be equipped with the following:

recommended temperature. 280 volt.

Lube oil filter - dry gir cleaner - radio suppression. 2. Engine block heater with thermostat, maintain at manufacturer's

Provide crankcase oil drain line with valve and cap to extend 2"

- Unit mounted critical silencer. Gas proof seamless, stainless steel, flexible exhaust connection Flexible fuel connection. High water temperature and low oil pressure cutouts.
- beyond base rails. Standby plant shall be equipped with factory installed vibration isolators mounted between plant and fabricated steel skid base to prevent
- distortion of alignment between alternator and engine when installed.
- The entire unit shall be enclosed in a weatherproof enclosure with the following features:
- Sound attenuated steel construction for critical sound control. Sound (level 1)
- Removable side panels Cooling air louvers at each end Lockable latches Provide a 90 degree elbow and rain cap for exhaust opening
- Battery rack and battery warmer Rust inhibited primer and enamel painted finish. 12 volt, sealed lead acid 90 ampere hour battery, battery rack, and battery cables. 10 ampere automatic float battery charger with the following features: Constant voltage regulation, current limiting, overload

protection, temperature compensated, voltmeter and ammeter, equalizer

timer (10-12 hours), for conduit installation. Battery shall be capable

- to provide minimum of 3 cranking cycles. . Furnish and install a surface mounted remote annunciator panel located where shown on the drawings or where required by AHJ. The remote
- annunciator shall provide all the indications and audible alarms called for
- by NFPA Standard 110 and listed below:
- Normal Utility Power Generator Set Supplying Power Pre-low Oil Pressure

System Ready

- Low Oil Pressure Pre-high Coolant Temperature
- High Coolant Temperature 8. Low Engine Coolant Temperature 9. Overspeed

13. Auxiliary fault

- 10. Overcrank . Not in Automatic Mode 12. Low Fuel
- 14. Low Battery Voltage 15. Battery Charger Malfunction 16. Emergency stop The remote annunciator shall be provided with alarm silence and lamp
- switches. Furnish and install a U.L. 1008 and NFPA 110 listed microprocessor based, front accessible service entrance (SE) rated automatic transfer switch in a NEMA 3R enclosure with neoprene gasket on all doors. Switch shall be sized as noted on the drawings. Switch to have a molded case electronic trip circuit breaker for utility side and molded case switch on generator side, sized as noted on drawings. Breaker to be 80% rated and switch to be 100 % rated. Bussing to be 100% rated
- Transfer switch microprocessor based controller is to have the following

of the switch and be tin plated copper. Transfer switch shall have a

- Up to 10 second time delay on transfer from normal to emergency power allowing harmless power dips
- 2. Manual momentary test switch, fully wired. 3. Minimum of two N.O. and two N.C. auxiliary contacts.

and pick up at 92 - 95%.

condensate electric strip heater in the enclosure.

4. Close differential voltage sensing on all phases. Adjustable normal source voltage sensing to drop out at 83 - 85%

- emergency to normal power, 1-60 minutes.

power, 1-60 minutes.

8. Solid state plant exerciser with load/no load selector switch for auto

6. Adjustable time delay for transferring from emergency to normal

7. Adjustable time delay for engine cool down after ATS transfers from

exercise of generator and transfer switch 15 minutes every 14 days. 9. Pilot lights indicating position of automatic transfer switch and test

source outages and delay all transfer and engine starting signals.

- switch. U.L. listed. 10. Adjustable time delay of 0-10 seconds to override momentary normal
- 11. Transfer switch to have a programmed transition operation with a time delay in the middle (neutral) position between normal power and emergency power connections to allow for decay of motor currents

Transfer switches to be rated for withstand and closing rating (WCR) for available fault current as noted on drawings. Transfer switches to be 3 cycle (0.05 sec), "any breaker", rated for fault current. 'Series' or specific breaker' rated switches are not acceptable.

before connecting to normal or emergency power sources.

The service entrance rated automatic transfer switch shall automatically transfer the load to the generator supply in the event of a utility supply failure and return the load to the utility supply upon restoration. The transfer switch shall incorporate an isolating mechanism and over current protection on the utility supply to allow operation as the main services disconnect in accordance with NEC requirements. The transfer switch power switching devices shall be mechanically and electrically interlocked to prevent the utility and generator supplies from being interconnected.

Transfer switch to be free of defects in material and workmanship and be supplied with a 1 year warranty from the manufacturer.

Transfer switch shall be Kohler, Onan, ASCO or Russell Electric with same

Furnish and install a unit mounted fuel tank, sizes as shown on

drawings. Unit to be complete with fuel level gauge, low fuel alarm and

- V. Fuel tank shall have an audible alarm when tank reaches 90% of capacity and a solenoid shut-off valve at filler tube to stop the flow of fuel to the tank when the tank reaches 98% of capacity. Provide overspill container at filler tube that is capable of draining into fuel tank if fuel spill occurs when solenoid valve closes. Generator shall be independently supported to pad; do not use tank as support base. Design of tank shall incorporate a double wall design. Meet all
- Install emergency generator, transfer switch(es), batteries, charger and all power and control wiring associated with generator unit to provide a complete operational system.
- Factory-trained representative shall consult with Contractor during installation and start-up and shall fully instruct Owner's personnel in correct operating, test procedures and recommended maintenance.

The generator shall be run under load a minimum of two hours in the

AA. the fuel tank shall be completely filled after testing and prior to acceptanceby the owner.

AB. Provide standard 2 year warranty on generator set.

presence of the Architect, the Engineer and the Owner.

requirements of NFPA 30 and 30A.

END OF SECTION

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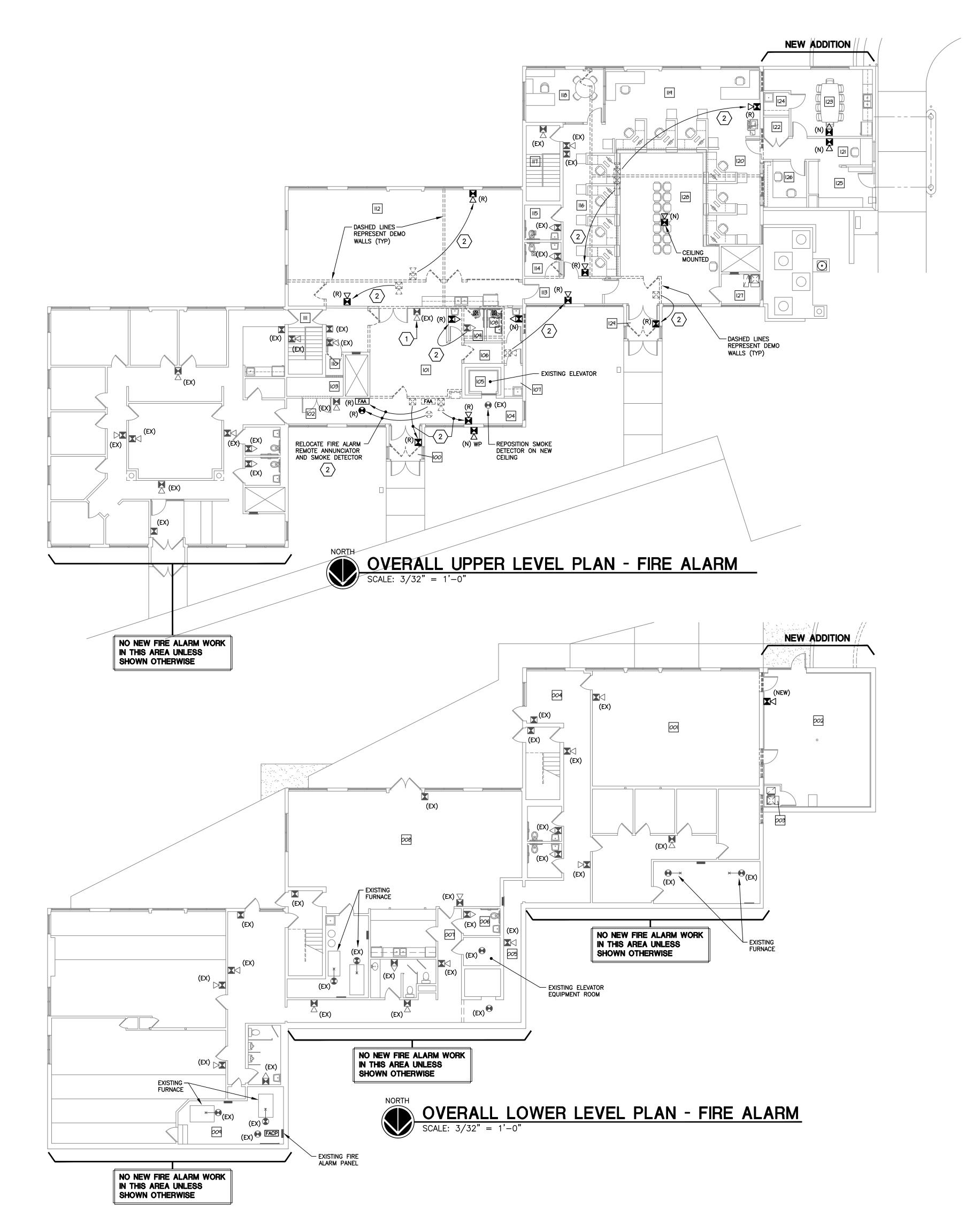
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RIN S:

ISSUE MARK DATE 5-5-22

DRAWN BY:

SPECIFICATIONS



FIRE ALARM LEGEND

FACP FIRE ALARM CONTROL PANEL

FIRE ALARM PULL STATION. M.H. 48" AFF

FIRE ALARM HORN/STROBE

FIRE ALARM STROBE (ONLY)

SMOKE DETECTOR

MACHINE STATEMENT STROBE (ONLY)

SMOKE DETECTOR, DUCT MOUNTED

HEAT DETECTOR, NUMBER INDICATES
TEMPERATURE IN DEGREES FAHRENHEIT

FAA FIRE ALARM ANNUNCIATOR PANEL

(EX) EXISTING FIRE ALARM DEVICE TO REMAIN

(R) RELOCATED FIRE ALARM DEVICE

(N) NEW FIRE ALARM DEVICE

DASHED DEVICES ARE TO BE DEMO'D OR RELOCATED

FIRE ALARM GENERAL NOTES

- A. BUILDING FIRE ALARM SYSTEM IS AN EXISTING SIMPLEX 4010 ADDRESSABLE SYSTEM LOCATED IN THE EAST POD BASEMENT MECHANICAL ROOM.
- B. EXISTING LOWER LEVEL AND STAIR DEVICES ARE SHOWN FOR COMPLETENESS.
- 3. EXISTING LOWER LEVEL AND STAIR DEVICES ARE SHOWN FOR COMPLETENESS.
- C. RELOCATE UPPER LEVEL FIRE ALARM DEVICES AS SHOWN. SEE CODED NOTES.
- ADD NEW FIRE ALARM DEVICES WHERE SHOWN. WIRE TO FIRE ALARM SYSTEM. DEVICES ARE TO MATCH EXISTING AND ARE TO BE BY THE SAME MANUFACTURER.
- E. EXISTING FURNACE DUCT DETECTORS AND REMOTE TEST SWITCHES TO REMAIN. REMOTE TEST SWITCHES ARE NOT SHOWN.

- 1. REPOSITION DEVICE ON NEW WALL AS SHOWN. EXTEND WIRING.
- 2. RELOCATE FIRE ALARM DEVICE AS SHOWN. EXTEND WIRING.

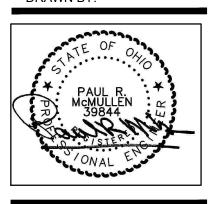
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THE OU PICKERINGTON CENTER FOR OMMISSIONERS:

ISSUE MARK DATE
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DRAWN BY:



OVERALL FLOOR
PLANS —
FIRE ALARM

DRAWING NUMBER