SPH Egress Renovation

Ulteration The University of Texas **Health Science Center at Houston**

Philo Vilke Partnership

11275 S. Sam Houston Parkway W. Suite 200 Houston, Texas 77031 (832) 554-1130 www.pwarch.com

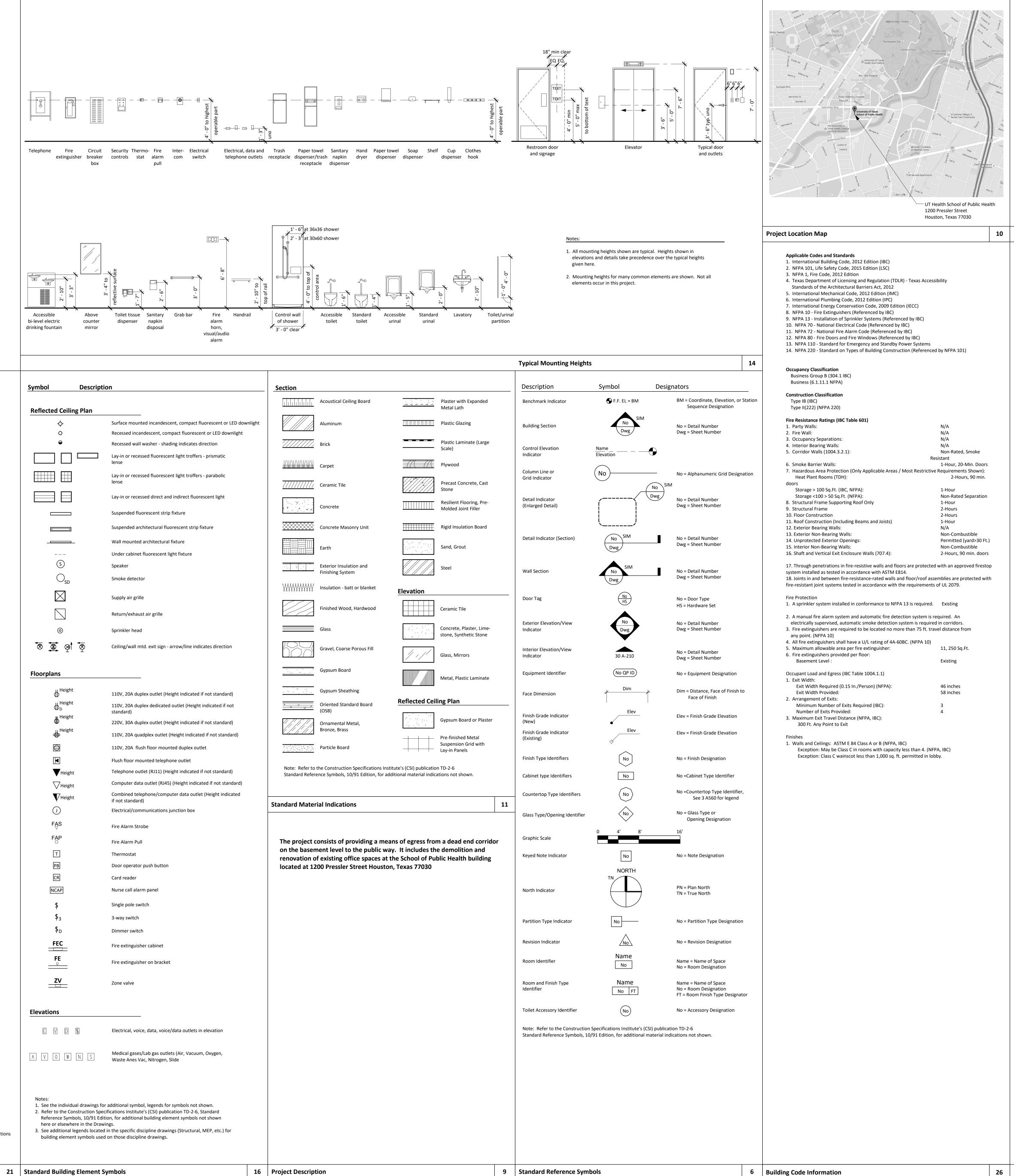
MEP Engineer E&C Engineers & Consultants 1010 Lamar St #650 Houston,TX 77002 (P) 713-580-8800



Construction //2017 02/10/ Issued for

SPH Egress Renovation

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Reflected Ceiling Plan	
	Surface mounted incandescent, compact fluorescent or LED d
0	Recessed incandescent, compact fluorescent or LED downligh
÷	Recessed wall washer - shading indicates direction
	Lay-in or recessed fluorescent light troffers - prismatic lense
	Lay-in or recessed fluorescent light troffers - parabolic lense
	Lay-in or recessed direct and indirect fluorescent light
	Suspended fluorescent strip fixture
٥	Suspended architectural fluorescent strip fixture
	Wall mounted architectural fixture
$\succ - \dashv$	Under cabinet fluorescent light fixture
S	Speaker
\bigcirc_{SD}	Smoke detector
\boxtimes	Supply air grille
	Return/exhaust air grille
\odot	Sprinkler head
र्के कि कि	Ceiling/wall mtd. exit sign - arrow/line indicates direction
Floorplans	

oorplans	
${\displaystyle \bigoplus}^{{\scriptstyle Height}}$	110V, 20A duplex
	110V, 20A duplex standard)
${\displaystyle \bigoplus}^{{\sf Height}}$	220V, 30A duplex
Height	110V, 20A quadpl
\bigcirc	110V, 20A flush f
	Flush floor mount
Height	Telephone outlet
Height	Computer data ou
V Height	Combined telephories telephories (Combined telephories) if not standard)
L	Electrical/commu
FAS ▽	Fire Alarm Strobe
FAP	Fire Alarm Pull
Т	Thermostat
РВ	Door operator pu
CR	Card reader

11-1-6-6	
Height ⊕	110V, 20A quadplex outlet (Height indicated if not standard
	110V, 20A flush floor mounted duplex outlet
×	Flush floor mounted telephone outlet
Height	Telephone outlet (RJ11) (Height indicated if not standard)
₩Height	Computer data outlet (RJ45) (Height indicated if not standar
Height	Combined telephone/computer data outlet (Height indicate if not standard)
J	Electrical/communications junction box
AS	Fire Alarm Strobe
	Fire Alarm Pull
Т	Thermostat
РВ	Door operator push button
CR	Card reader
САР	Nurse call alarm panel
\$	Single pole switch
\$ ₃	3-way switch
\$ _D	Dimmer switch
FEC	Fire extinguisher cabinet
FE	Fire extinguisher on bracket
ZV	Zone valve
ns	
V D X	Electrical, voice, data, voice/data outlets in elevation
0 W N S	Medical gases/Lab gas outlets (Air, Vacuum, Oxygen, Waste Anes Vac, Nitrogen, Slide
	dditional symbol, legends for symbols not shown.
TO THE CONSTRUCTION SPECIFI	ications Institute's (CSI) publication TD-2-6. Standard

ACOUS Acoustical ADJ Adjustable AFF Above Finish Floor ALUM Aluminum AMP Ampers AMS Automated ANOD Anodized ATTN Attenuation, Attention AUX Auxiliary BLDG Building BLK Black BTU British Thermal Units BTUH Btu Per Hour C Celsius C.I. Cast Iron C.O. Clean Out CFM Cubic Feet Per Minute CJ Construction Joint CKT Circuit CLOS Closet CLR Clear CMU Concrete Masonry Unit COL Column CONC Concrete COND Condensing, Condition CONN Connection CONT Continuous CTR Center CW Cold Water D Depth DESCR Description DET Detail DIA Diameter DIM Dimension DL Dead Load DN Down DWG Drawing E.C. Electrical Contractor EA Each EDF Electronic Drinking Fountain EF Exhaust Fan Elevation, Elevator FI ELEC Electrical EMER Emergency EQ Equal EQUIP Equipment EXT Exterior F Fahrenheit FACP Fire Alarm Control Panel FD Floor Drain FEC Fire Extinguisher Cabinet FIN Finish FLUOR Fluorescent FURN Furnish, Furniture G.C. General Contractor GA MTL Galvanized Metal GALV Galvanized GFI Ground Fault Interrupter GND Ground GYP BD Gypsum Board H Height H.M. Hollow Metal HARDWD Hardwood HDW Hardware HPDL High Pressure Decorative Laminate HORIZ Horizontal HT Height HVAC Heating, Ventilation, & A/C

A/C Air Conditioning

A/W Air/Water

MTG Mounting, Meeting MTL Metal, Material N.C. Normally Closed N.O. Normally Opened N/A Not Applicable NO Number O.C. On Center O.D. Overflow Drain, Outside Dimension O/A Outside Air PART Partition PB Push Button PLAS LAM Plastic Laminate PLMBG Plumbing PLYWD Plywood PSF Pounds Per Square Foot PSI Pounds Per Square Inch PTD Painted PVC Poly Vinyl Chloride R.D. Roof Drain R/A Return Air RE Refer To REF Reference REINF Reinforced REQ'D Required RH Relative Humidity RO Rough Opening RPM Revolutions Per Minute RTU Roof Top Unit S/A Supply Air SC WD Solid-core Wood SCHED Schedule SIM Similar SPST Single Pole, Single Throw STD Standard STL Steel STOR Storage STRUCT Structure, Structural SYS System TEMP Tempered, Temperature THK Thick TTB Telephone Terminal Board TYP Typical UNO Unless Noted Otherwise VAC Volt Alternative Current VDC Volt Direct Current VTR Vent Through Roof W Width W/ With WB Wet Bulb WD Wood WWF Welded Wire Fabric WWM Welded Wire Mesh Note: Refer to the Specifications for abbreviations

of trade association names.

INSUL Insulation

JT(S) Joint(s)

KW Kilowatt

LAM Laminate

LTS Lights

LL

IPS Inside Pipe Size

KSI Kips Per Square Inch

Live Load

M.O. Masonry Opening

MED Medium, Medical

MANUF Manufacturer

MAX Maximum

MECH Mechanical

MIN Minimum

MISC Miscellaneous

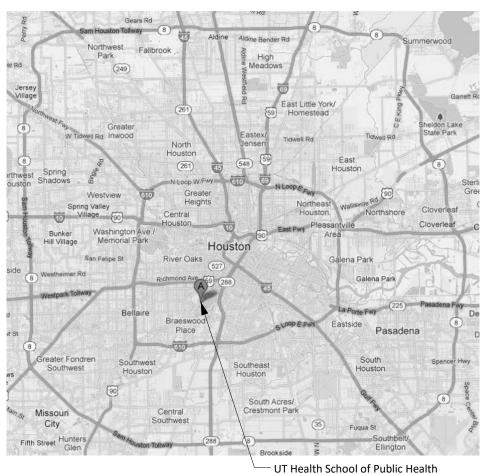
LPDL Low Pressure Decorative Laminate

HW Hot Water

IG Isolated Ground

HZ Hertz

IN Inch



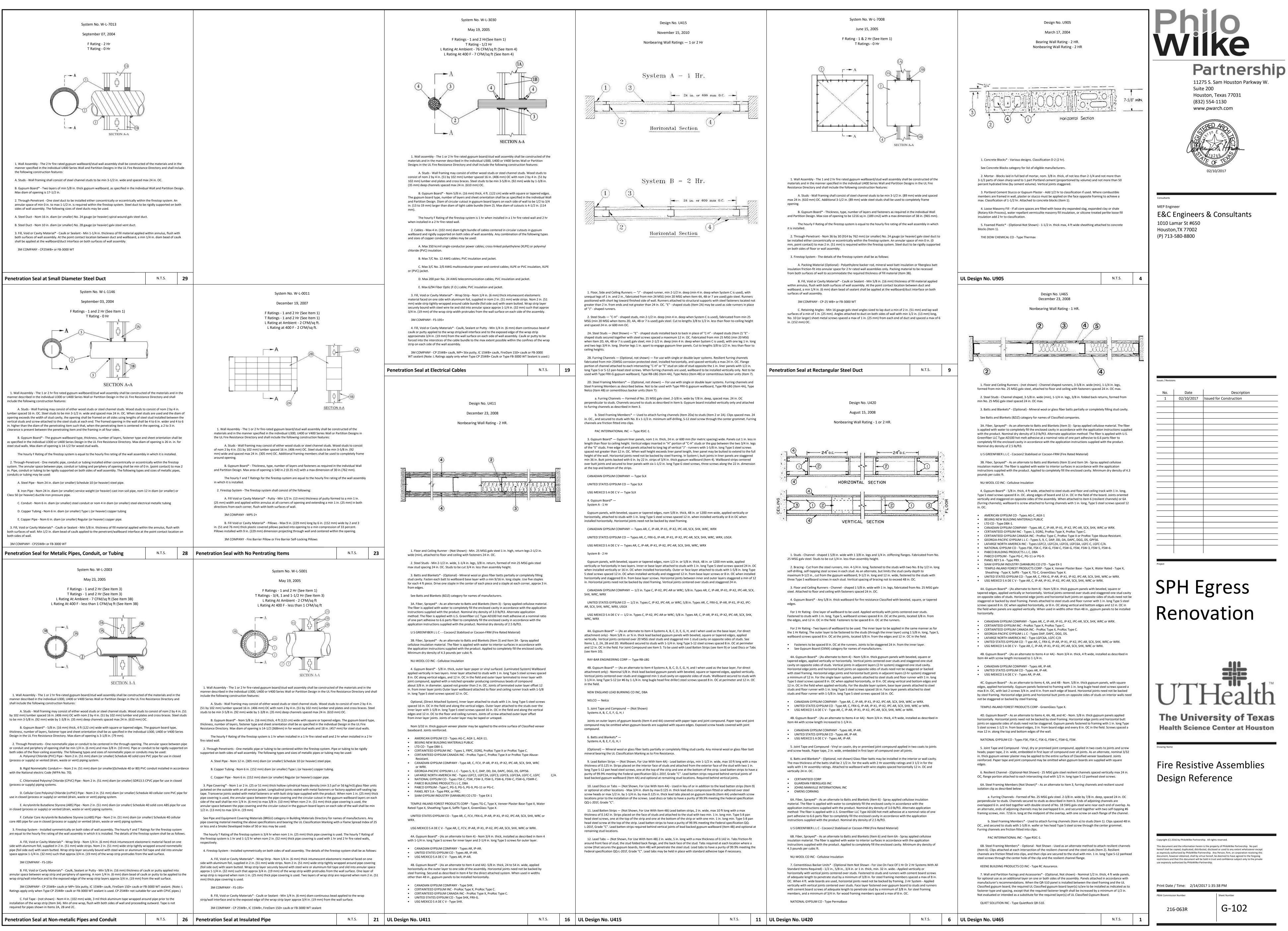
1200 Pressler Street

	essler Street , Texas 77030			1200 Pressler Street Houston, Texas 77030		
roject Location Map		10	Project Vicinity Ma	ap	5	
Applicable Codes and Standards		TÜ		4 ⁴	>	Consultants MEP Engineer
 International Building Code, 2012 Edition (IBC) NFPA 101, Life Safety Code, 2015 Edition (LSC) NFPA 1, Fire Code, 2012 Edition Texas Department of Licensing and Regulation (TDLR) - Texas Accessibili Standards of the Architectural Barriers Act, 2012 International Mechanical Code, 2012 Edition (IMC) International Plumbing Code, 2012 Edition (IPC) International Energy Conservation Code, 2009 Edition (IECC) NFPA 10 - Fire Extinguishers (Referenced by IBC) NFPA 13 - Installation of Sprinkler Systems (Referenced by IBC) NFPA 70 - National Electrical Code (Referenced by IBC) NFPA 80 - Fire Doors and Fire Windows (Referenced by IBC) NFPA 110 - Standard for Emergency and Standby Power Systems NFPA 220 - Standard on Types of Building Construction (Referenced by 			Cover Sheet G-100 G-102 G-104 G-110 Architectural A-101 A-111 A-160 A-161 A-520 A-540 A-600 MEP	General Information Fire Resistive Assemblies Design Reference Specifications Fire Safety Plan Demolition Plan Floor Plan Reflected Ceiling Plan - Demolition Reflected Ceiling Plan Partition Types and Interior Construction Details Door and Window Details Schedules		E&C Engineers & Consultants 1010 Lamar St #650 Houston,TX 77002 (P) 713-580-8800
2. Fire Wall:N3. Occupancy Separations:N4. Interior Bearing Walls:N	I/A I/A I/A I/A		MEP-000 MEP-001 MEP-002 MPD-101 MP-111 ELD-101 EL-111 EPD-101 EP-111	Mechanical, Electrical, Plumbing Symbols and Abbreviations Mechanical, Plumbing Specifications Electrical Specifications Mechanical, Plumbing Basement Level - Demolition Plan Mechanical, Plumbing Basement Level Renovation Plan Electrical Lighting Basement Level - Demolition Plan Electrical Lighting Basement Level - Renovation Plan Electrical Power Basement Level - Demolition Plan Electrical Power Basement Level - Demolition Plan		
Resist 6. Smoke Barrier Walls: 1 7. Hazardous Area Protection (Only Applicable Areas / Most Restrictive Re	ant Hour, 20-Min. Doors quirements Shown):					Issues / Revisions
Storage <100 > 50 Sq.Ft. (NFPA):N8. Structural Frame Supporting Roof Only19. Structural Frame210. Floor Construction211. Roof Construction (Including Beams and Joists)112. Exterior Bearing Walls:N13. Exterior Non-Bearing Walls:N14. Unprotected Exterior Openings:F15. Interior Non-Bearing Walls:N	2-Hours, 90 min. -Hour Ion-Rated Separation -Hour -Hours -Hours -Hour J/A Ion-Combustible Permitted (yard>30 Ft.) Ion-Combustible -Hours, 90 min. doors					No. Date Description 1 02/10/2017 Issued for Construction
 Through penetrations in fire-resistive walls and floors are protected wissystem installed as tested in accordance with ASTM E814. Joints in and between fire-resistance-rated walls and floor/roof assemblic fire-resistant joint systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the requirements of the systems tested in accordance with the systems tested in accordance with the systems tested with testested with tested with tested with tested with tested with tes	blies are protected with					
Fire Protection 1. A sprinkler system installed in conformance to NFPA 13 is required.						
6. Fire extinguishers provided per floor:	corridors. distance from 1, 250 Sq.Ft.					
Occupant Load and Egress (IBC Table 1004.1.1) 1. Exit Width:	xisting					
	6 inches 8 inches					Project
 300 Ft. Any Point to Exit Finishes 1. Walls and Ceilings: ASTM E 84 Class A or B (NFPA, IBC) Exception: May be Class C in rooms with capacity less than 4. (NFPA, Exception: Class C wainscot less than 1,000 sq. ft. permitted in lobby. 						SPH Egress Renovation
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						Paw Commission Number Pake Number





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216-063R	G-100



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GENERAL CONDITIONS AND SPECIFICATIONS D. Laminate Materials A. The Specifications, General Conditions, and Supplementary Conditions for the building in which this project is located ("Shell Building") are hereby made part of these Contract Documents, and shall govern all Work as follows: described herein, except to the extent specifically noted otherwise. B. The Contractor shall contact the Owner and discuss insurance, performance and payment bonds, and bid bond requirements prior to submitting pricing information. The Contractor's understanding of the above provisions must be stated in a written agreement prior to commencement of the Work. selected. GENERAL REQUIREMENTS finish as scheduled. A. Codes and Standards: The Work shall be performed in accordance with all applicable codes, regulations, and ordinances having jurisdictic B. Permits: The Contractor shall obtain and pay for all fees, taxes, permits and inspections required in of panels faced with high pressure decorative laminate. connection with the Work. E. Accessories C. Cutting and Patching: Each miscellaneous item of cutting, patching, and fitting is not necessarily individually shown on the Drawings. The absence of specific descriptions of cutting, patching, and fitting required to properly accommodate the Work shall not relieve the Contractor from responsibility to perform to match component thickness. such work as required. a. Use at all exposed plywood edges. D. The Contractor shall fill and patch all openings and holes, seal around all pipes, ducts, and other b. Use at all exposed shelf edges. penetrating objects, and insure the integrity of all required fire and smoke separations in accordance will 3. Fasteners: Size and type to suit application. all applicable Codes and Ordinances. E. Relocation: Relocation of any existing items or materials involved in the Work is subject to the Contractor's ability to do so without permanently damaging or marring the item to be relocated. If the Contractor is locations unable to relocate any item described herein without permanent damage, then he shall substitute new items or 5. Concealed Joint Fasteners: Threaded steel. materials to match the existing in lieu of relocating the material or item. The Contractor may also elect to 6. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface. use new items or materials to match existing in lieu of relocation for his own convenience. F. Shop Treatment of Wood Materials F. Cooperate and coordinate job operations with the operations of others doing adjacent work in order to

delay and conflict, or damage to either party's operations. G. In performing the Work, it will be the Contractor's responsibility to repair all existing and new construction that is disturbed, relocated, damaged, and altered. Make all repairs as required to eliminate

- all evidence of damage, and refinish damaged construction to match like-new finish and appearance. Where new 3. Drawer Construction Technique: Dovetail joints. work is installed, or existing finishes are disturbed, refinish such areas to match existing as indicated herein, with the following minimum requirements: 1. Walls: From floor to ceiling and between nearest corners. New wall construction shall be flush with
- no visible joint showing. For walls with wall covering other than paint, the entire wall shall receive new wall covering of equal guality, as approved by the Architect.
- 2. Ceilings: The complete surface of the room.
- 3. Floor: The complete surface of the room. 4. Openings: The entire unit, including frame. 5. Base: Between nearest inside corners.

G. Shop Drawings: The Contractor shall submit, in electronic format, all required shop drawings and product

- literature to the Architect for review for design intent and general compliance with the information given in the Contract Documents. All shop drawings and product literature signed "No Exception Taken" shall supercede the originating drawings. The Architect's review of shop drawings does not relieve the Contractor from his responsibilities to fulfill the requirements of the Contract Documents
- H. The Contractor shall arrange for elevator or other hoisting facilities for his materials. I. Do not scale the Drawings. All dimensions indicated govern. Larger scale details govern smaller scale drawings. All dimensions shown on floor plans are to face of gypsum board finish, and exclude ceramic tile, paneling, and other thick finishes, unless noted otherwise.
- 1. If dimensions are in question, the Contractor shall be responsible for obtaining clarification from the Architect before continuing with construction activity.
- 2. Unless shown on the drawings by exact dimension, the Contractor shall verify with the Architect the exact location of all electrical outlets, telephone outlets, special devices and appurtenances indicated on the drawings.
- J. Where the term "approved equal" or "equal" is used, it shall be understood that reference is made to the ruling and judgment of the Architect and the proposed substitution shall be submitted for review and written approval.

K. Existing Conditions: 1. The Contractor shall be deemed to be thoroughly familiar with the condition of the building and Project

- environment before submitting a proposal for the Work, and to be satisfied as to the condition under which the Work is to be performed, or that will, in any manner, affect the Work. No extra payment will be made for claims for additional work that could have been determined or anticipated prior to submitting the Proposal. 2. The Contractor shall check and verify the Contract Documents and field conditions for accuracy,
- confirming that the Work is buildable as shown, before proceeding with construction. If here are any questions regarding these documents or other coordinating questions, the Contractor is responsible for obtaining clarification from the Architect before proceeding with the work, or related work, in question. 3. Verify all space dimensions as shown with existing job conditions before starting construction. Notify the Architect of any discrepancies found.
- 4. The existing structure is presently served with active electrical, water, sewer, communications, and drainage lines. Interruption of, or tie-ins to, these lines and services must occur during non-operating hours and must be scheduled in advance with the Owner. When an interruption to one of these services does occur, the Contractor shall restore the service promptly.
- 5. All areas of the Work must be sealed off from occupied portions of the building to prevent entry of dust and noise. Furnish and maintain temporary partitions and other types of protection as necessary to adequately protect and prevent accidental injury of the public, Owner's personnel and other personnel employed at the site of the Work. Properly secure the work area from entry when work is not in progress. a. The Owner intends to occupy and utilize portions of the building in which the Work is located during normal business hours. Coordinate work with the Owner to minimize disruption.
- b. Work utilizing noise-producing equipment shall be subject to the Owner's approval at all times. c. Dust producing work, or work that produces excessive noise levels may be required to be conducted during non-business hours, at the Owner's direction. 6. The Contractor shall patch and finish to match existing, any adjacent rooms or corridors that are
- affected, in any manner, by the Work, including those spaces above or below the construction site that may provide required access to the Work. When it becomes necessary to obtain access to adjacent spaces, including those above or below the construction site, the Contractor shall coordinate such access with the Owner, allowing as much advance notice as possible 7. In laying out and detailing the Work, consideration shall be given to variations in the floor levelness
- resulting from construction quality and live and dead loads imposed on the structure. Field verification shall be made of the condition to verify construction tolerances. Alignment of door heads and other horizontal elements shall be maintained at a constant level and shall not follow variations of the floor plane. Level floors as required using approved leveling compound. 8. The Contractor and all sub-contractors shall verify building opening clearances for delivery of equipment
- and materials (e.g. size of elevator doors, doors, corridors, etc.).

OWNER SUPPLIED MATERIALS

- A. All materials, fixtures, casework and other items removed from the project site are, and shall remain, the property of the Owner. Unless scheduled to be reused in the Work, the Contractor shall consult with the Owner in the disposition of all items. B. Equipment indicated to be furnished by the Owner and installed by the Contractor shall be received and by the Contractor. The Contractor shall coordinate equipment delivery with the Owner.
- SUBMITTALS
- A. Millwork: Submit shop drawings indicating materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessories, hardware and finish B. Aluminum Door Frames: Submit product data including details at each opening, glazing, frame profiles, and C. Wood Doors: Provide product data and shop drawings illustrating door elevation, size, type, swing, and
- D. Door Hardware: Submit shop drawings indicating door hardware locations, schedules, and any electrical characteristics and connection requirements
- E. Finishes: Submit one (1) sample of each finish for verification. Do not submit multiple samples of the same finish material for multiple tenant improvement projects.

ROUGH CARPENTRY A. General Requirements

1. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies. a. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements. b. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Dimension Lumber 1. Sizes: Nominal sizes as indicated on drawings, S4S.

- 2. Moisture Content: S-dry or MC19. 3. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
- a. Lumber: S4S, No. 2 or Standard Grade.
- b. Boards: Standard or No. 3. C. Construction Panels
- 1. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in
- accordance with ASTM E 84. D. Factory Wood Treatment
- 1. Treated Lumber and Plywood: Comply with requirements of AWPA U1 Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications. a. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements. 2. Fire Retardant Treatment:
- a. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
- b. All interior rough carpentry items are to be fire retardant treated. c. Treat rough carpentry items as indicated.

d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

- ARCHITECTURAL WOOD CASEWORK A. Wood-Based Components
- 1. Wood fabricated from old growth timber is not permitted. B. Lumber Materials
- 1. Softwood Lumber: NIST PS 20; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade III/Economy; average moisture content of 4-9 percent; species as follows a. Exposed Surfaces: Species Douglas fir.
- b. Semi-Exposed Surfaces: Species Douglas fir. c. Concealed Surfaces: Species Douglas fir.
- 2. Hardwood Lumber: NHLA; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards 6. Finishes: Identified in schedule. Illustrated, Grade III/Economy; average moisture content of 4-9 percent; species as follows: a. Drawer Sides and Back: Species Red Oak, Grade AA.
- b. Exposed Stiles and Rails: Species Red Oak, Grade AA. c. Exposed Surfaces: Species Red Oak.
- d. Semi-Exposed Surfaces: Species Poplar e. Concealed Surfaces: Species Poplar.
- C. Panel Materials
- 1. Exposed Surfaces: PS 1; APA A-A Grade, plain-sliced redwood face veneer, Interior rated adhesives, core of medium density fiberboard, thickness as indicated.
- 2. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated; composed of wood fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces; thickness as required.
- a. Use for painted components, concealed components, and components not indicated as another material. b. Use as backing for plastic laminate unless otherwise indicated. 3. Hardboard: AHA A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S); use for dust panels and other components indicated on drawings.

- 1. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications and a. Horizontal Surfaces: HGS, 048 inch nominal thickness, colors as scheduled, finish as scheduled. b. Vertical Surfaces: VGS, 028 inch nominal thickness, colors as scheduled, finish as scheduled. c. Post-Formed Horizontal Surfaces: HGP, 039 inch nominal thickness, colors as scheduled, finish as d. Post-Formed Vertical Surfaces: VGP, 028 inch nominal thickness, through color, colors as scheduled, e. Cabinet Liner: CLS, 020 inch nominal thickness, colors as scheduled, finish as scheduled. f. Laminate Backer: BKL, 020 inch nominal thickness, undecorated; for application to concealed backside
- 1. Adhesive: Type recommended by AWI/AWMAC to suit application. 2. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; self locking serrated tongue; of width
- 4. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel, or chrome-plated finish in exposed
- 1. Provide UL approved identification on fire retardant treated material. 2. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.
- G. Fabrication 1. Cabinet Style: Flush overlay.
- 2. Cabinet Doors and Drawer Fronts: Flush style.
- 4. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- 5. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- 6. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting. 7. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- a. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces. b. Cap exposed plastic laminate finish edges with material of same finish and pattern. 8. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:
- 9. Mechanically fasten back splash to countertops with steel brackets at 16 inches on center. 1 Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges. H. Factory Finishing
- 1. Sand work smooth and set exposed nails and screws.
- 2. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth. 3. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes 4. Finish work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Section
- 1500, Precatalyzed Lacquer, Transparent.

JOINT SEALERS A. Sealants

- 1. Type I-1 -General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable. a. Color: Standard colors matching finished surfaces.
- b. Product: "Tremflex 834" manufactured by Tremco, Inc.: www.tremcosealants.com. c. Applications: Use for:
- i. Interior wall and ceiling control joints. ii. Joints between interior door and window frames and wall surfaces.
- iii. Other interior joints for which no other type of sealant is indicated. 2. Type I-2 -Bathtub/Tile Sealant: Silicone, anti-fungal, anti-bacterial; ASTM C 920, Uses M, G and A;
- single component, mildew resistant. a. Product: "Tremsil 200" manufactured by Tremco, Inc.: www.tremcosealants.com.
- b. Color(s): Clear. c. Applications: Use for
- i. Joints between plumbing fixtures and floor and wall surfaces. ii. Joints between kitchen and bath countertops and wall surfaces.
- B. Accessories 1. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- 2. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials. 3. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

ALUMINUM FRAMES A. Manufacturers

- 1. The design of the project has been based on products manufactured by RACO Interior Products . Acceptable products a. Interior Door Frames: RACO Classic Prestige fixed throat frames to accommodate wall thicknesses indicated on Drawings; ceiling height system.
- B. Materials 1. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy 6063-T5 or alloy 6463-T5.
- C. Components 1. Aluminum Door Frames: Provide frames sized to fit wall thicknesses indicated on the drawings, in profiles indicated, and constructed from materials as follows
- a. Frame Members: Extruded aluminum shapes, not less than 062 in thick, reinforced at hinge and strike locations. b. Corner Brackets: Extruded aluminum, fastened with stainless steel screws. c. Trim: Extruded aluminum, not less than 062 in. thick, removable snap-in type without exposed

fasteners. d. Glazing: Clear, 1/4 in. tempered glass.

- D. Finishes 1. Aluminum frames: Match existing building standard unless otherwise indicated. 2. Factory finish extruded frame and door components so that all parts exposed to view upon completion of installation are uniform in finish and color. Exposed surfaces shall be free of scratches and other
- serious blemishes. E. Fabrication
- 1. Door sizes shown are nominal; provide standard clearances as follows: a. Hinge and Lock Stiles: 125 inch.
- b. Between Meeting Stiles: 250 inch. c. At Top Rail and Bottom Rail: 125 inch
- 2. Sizes and locations of lights: As indicated on drawings.
- 3. Aluminum frames: Sizes and contours as indicated on drawings. F. Accessories
- 1. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as noncorrosive and compatible with aluminum components. 2. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, nonmagnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A 123/A 123M.

WOOD DOORS

- A. General 1. All Doors: See drawings for locations and additional requirements. a. Quality Level: Premium Grade, in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated. Section 130
- b. High Pressure Decorative Laminate Faced Doors: 5-ply or 9-ply unless otherwise indicated. 2. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
- a. Provide solid core doors at all locations. b. High pressure decorative laminate finish where indicated on drawings.
- B. Door and Panel Cores
- 1. Solid Core: Type particleboard core (PC), plies and faces as indicated above. C. Door Facings
- 1. High Pressure Decorative Laminate Facing for Non-Fire-Rated Doors: NEMA LD 3, HGS; color as selected; finish as selected. 2. Facing Adhesive: Type I - waterproof.

7. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware

8. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in

1. Provide all hardware specified or required to make doors fully functional, compliant with applicable

b. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose

4. Function: Lock and latch function numbers and descriptions of manufactures series as listed in hardware

5. Electrically Operated and/or Controlled Hardware: Provide all power supplies, power transfer hinges,

relays, and interfaces required for proper operation; provide wiring between hardware and control

9. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 170.

2. Provide all items of a single type of the same model by the same manufacturer.

a. Provide five-knuckle full mortise butt hinges unless otherwise indicated.

a. Hardware Sets indicate locking functions required for each door.

b. If no hardware set is indicated for a swinging door provide an office lockset.

2. Lock Cylinders: Manufacturer's standard tumbler type, six-pin standard core.

a. Provide cams and/or tailpieces as required for locking devices required.

d. Where electrified hardware is mounted in door leaf, provide power transfer hinges.

1. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.

c. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have

d. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no

4. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated

D. Accessories

Cores Constructed with stiles and rails:

requirements and dimensions.

specified and indicated.

DOOR HARDWARE

A. General

B. Hinges

C. Locks and Latches

no outside trim.

3. Keying: Master keyed.

locking or no outside trim.

a. Key to existing keying system.

"push/pull" or "not required to latch".

1. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

accordance with specified quality standard.

codes, and secure to the extent indicated.

3. Provide products that comply with the following:

components and to building power connection.

1. Hinges: Provide hinges on every swinging door.

c. Provide hinges in the quantities indicated.

b. Provide ball-bearing hinges at all doors having closers.

a. Applicable provisions of federal, state, and local code

E. Door Construction 1. Fabricate doors in accordance with door quality standard specified.

3. Provide solid blocks at lock edge for hardware reinforcement

a. Provide solid blocking for other through bolted hardware.

4. Fit door edge trim to edge of stiles after applying veneer facing.

6. Fit door edge trim to edge of stiles after applying veneer facing.

5. Vertical Exposed Edge of Stiles - Veneer Faces: Hardwood for paint finish.

D. Closers 1. Closers: Complying with BHMA A156.4.

b. Thickness:

a. Provide surface-mounted, door-mounted closers unless otherwise indicated. b. On pairs of swinging doors, if an overlapping astragal is present, provide coordinator to ensure the

leaves close in proper order. E. Stops and Holders 1. Stops: Complying with BHMA A156.8; provide a stop for every swinging door, unless otherwise indicated. a. Provide wall stops, unless otherwise indicated.

b. If wall stops are not practical, due to configuration of room or furnishings, provide overhead stop. c. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop unless specifically so stated.

GYPSUM BOARD ASSEMBLIES

A. Gypsum Board Assemblies 1. Provide completed assemblies complying with ASTM C 840 and GA-216.

B. Board Materials

1. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut. a. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.

a. Vertical Surfaces: 5/8 inch.

C. Fiberglass Reinforced Board Materials 1. Glass Mat Gypsum Board: Gypsum panels with moisture-resistant core and coated inorganic fiberglass mat back surface designed to resist growth of mold and mildew, per ASTM D 3273.

a. Product: "Dens-Shield Tile Backer" manufactured by G-P Gypsum Corporation. D. Accessories

1. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.

a. Types: As detailed or required for finished appearance. b. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges

2. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions. a. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.

b. Ready-mixed vinyl-based joint compound. 3. Textured Finish Materials: Latex-based compound; plain.

4. Screws: ASTM C 1002; self-piercing tapping type. 5. Nails for Attachment to Wood Members: ASTM C 514.

6. Staples: ASTM C 84

7. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place. 8. Adhesive for Attachment to Wood: ASTM C 557.

TILING

A. Ceramic Tile 1. Manufacturers, sizes, patterns and colors: See Schedule on the drawings.

2. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with the following requirements:

a. Size: As indicated, coordinated with size and coursing of adjoining flat tile where applicable. a. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide a reduction in thickness

from 1/2 to 1/4 inch (12.7 to 6.35 mm) across nominal 4-inch (100-mm) dimension. B. Adhesive Materials

1. Organic Adhesive: ANSI A136.1, thinset bond type; use Type I in areas subject to prolonged moisture exposure.

C. Mortar Materials 1. Mortar Bed Materials: Portland cement, sand, latex additive, and water.

D. Grout Materials

1. Latex-Portland Cement Grout: a. Characteristics: Dry-set grout with dry polymers added in re-emulsifiable powder form, factory-

mixed; conforming to ANSI A118.6. Comply with the following requirements: a. Sanded Dry-Grout Mix: Commercial portland cement grout complying with ANSI A118.6 for materials

described in Section H-2.1, for joints 1/8 inch (3.2 mm) and wider. b. Latex Additive: Acrylic resin.

b. Color: To be selected from manufacturer's full range of available colors.

ACOUSTICAL CEILINGS A. Acoustical Tiles

1. Manufacturers: a. Supply acoustical panels from manufacturers listed in the Finish Schedule located on the Finish

Schedule. 2. Acoustical Tiles - General: ASTM E 1264, Class A.

B. Suspended Acoustical Grid 1. The acoustical grid is existing.

RESILIENT FLOORING

A. Tile Flooring 1. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness, and:

a. Minimum Requirements: Comply with ASTM F 1066, of Class corresponding to type specified. b. Size: 12 x 12 inch.

c. Thickness: 125 inch.

d. Pattern: See Finish Materials Schedule. B. Resilient Base

1. Resilient Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set style straight or cove as indicated, and as follows:

a. Height: 4 inch. b. Thickness: 125 inch thick.

c. Finish: Matte. d. Length: Roll.

e. Color: Color as selected from manufacturer's standards. f. Accessories: Premolded external corners and end stops.

C. Accessories

1. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer. 2. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer. 3. Moldings, Transition and Edge Strips: Metal.

4. Filler for Coved Base: Plastic 5. Sealer and Wax: Types recommended by flooring manufacturer.

PLASTIC TOILET COMPARTMENTS

A. SECTION INCLUDES 1. Phenolic toilet compartments.

2. Urinal screens. B. ADMINISTRATIVE REQUIREMENT

1. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

C. SUBMITTALS 1. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.

2. Product Data: Provide data on panel construction, hardware, and accessories. 3. Samples: Submit two samples of partition panels, [6x6] inch in size illustrating panel finish, color, and sheen.

MANUFACTURERS 1. Basis of Design: Ampco Products, Inc; Product [Phenolic Core Ceiling Hung with PVC Edging]: www.ampco.com

Doors: 1. Thickness: 3/4 inch

2. Width: 24 inch. 3. Width for Handicapped Use: 36 inch, out-swinging.

4. Height: 58 inch. F. Panels:

1. Thickness: 1/2 inch. 2. Height: 58 inch.

G. Pilasters: 1. Thickness: 3/4 inch.

2. Width: As required to fit space; minimum 3 inch. ACCESSORIES

1. Pilaster Shoes: Formed chromed steel with polished finish, 3 in high, concealing floor fastenings. 2. Pilaster Brackets: Polished stainless steel

3. Wall Brackets: Continuous type, polished stainless steel.

4. Attachments, Screws, and Bolts: Stainless steel, tamper proof type. Hardware: Polished stainless steel:

6. Pivot hinges, gravity type, adjustable for door close positioning; two per door. 7. Door Latch: Slide type with exterior emergency access feature.

8. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch. 9. Coat hook with rubber bumper; one per compartment, mounted on door. 10. Provide door pull for outswinging doors.

EXAMINATION 1. Verify that field measurements are as indicated.

2. Verify correct spacing of and between plumbing fixtures. 3. Verify correct location of built-in framing, anchorage, and bracing.

INSTALLATION 1. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

2. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters. 3. Attach panel brackets securely to walls using anchor devices.

4. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines. TOLERANCES

1. Maximum Variation From True Position: 1/4 inch. 2. Maximum Variation From Plumb: 1/8 inch.

ADJUSTING 1. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch. 2. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position. 3. Adjust adjacent components for consistency of line or plane.

PAINTING

A. Manufacturers 1. Provide all paint and coating products used in any individual system from the same

manufacturer: no exceptions. 2. Provide all paint and coating products from the same manufacturer to the greatest

extent possible. 3. In the event that a single manufacturer cannot provide all specified products.

minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions

a. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer. b. Substitution of a different system using MPI-approved products by the same

manufacturer will be considered. B. Materials - General

1. Volatile Organic Compound (VOC) Content: a. Provide coatings that comply with the most stringent requirements specified

in the following: 1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission

Standards for Architectural Coatings. b. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to

authorities having jurisdiction. 2. Paints and Coatings: Provide products listed in Master Painters Institute

Approved Product List, current edition available at www.paintinfo.com, for specified MPI Categories, except as otherwise indicated. a. Provide products complying with regulatory requirements for volatile organic compound (VOC) content in force in jurisdiction where project is located.

b. Provide ready mixed paints and coatings, except field-catalyzed coatings. c. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

3. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified; commercial quality.

- 4. Patching Material: Latex filler.
- 5. Fastener Head Cover Material: Latex filler. C. Paint Systems - General
- 1. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
- 2. Where a specified paint system does not have a Premium Grade, provide Custom Grade 3. Where sheen is not specified or more than one sheen is specified, sheen will be
- selected later by Architect from the manufacturer's full line. Provide colors as directed by Architect.
- a. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
- b. Extend colors to surface edges; colors may change at any edge as directed by Architect. D. Interior Paint Systems
- 1. Gypsum Board: a. Applications include but are not limited to walls, ceilings, soffits, and
- bulkheads and exposed structure. b. INT 9.2M Institutional Low Odor/VOC: Latex Primer Sealer MPI #50, Institutional Low Odor/VOC MPI #144, gloss level 2.

MISCELLANEOUS

type X gypsum board to maintain rating integrity of wall.

partitions to the window wall framing.

- A. All dimensions on the floor plans are from face-of-finish to face-of-finish unless otherwise indicated.
- B. Provide scheduled finish base along the bottom of all exposed fronts, backs, sides, and ends of fixed casework, wardrobes, vertical supports, columns, knee spaces, etc.
- C. Apply sealant at juncture of interior faces of door frames, view window frames, casework and millwork with adjacent materials even though the joint may not be visible.

D. Screws, or any other type of mechanical fasteners, shall not be used to attach

E. Recessed items (greater than 16 square inches) in rated walls, including electrical

panels, electrical ducts, fire extinguisher cabinets, etc., shall be backed with 5/8"



MEP Engineer

E&C Engineers & Consultants 1010 Lamar St #650 Houston,TX 77002 (P) 713-580-8800

> Descriptior 02/10/2017 Issued for Constructio

SPH Egress Renovation

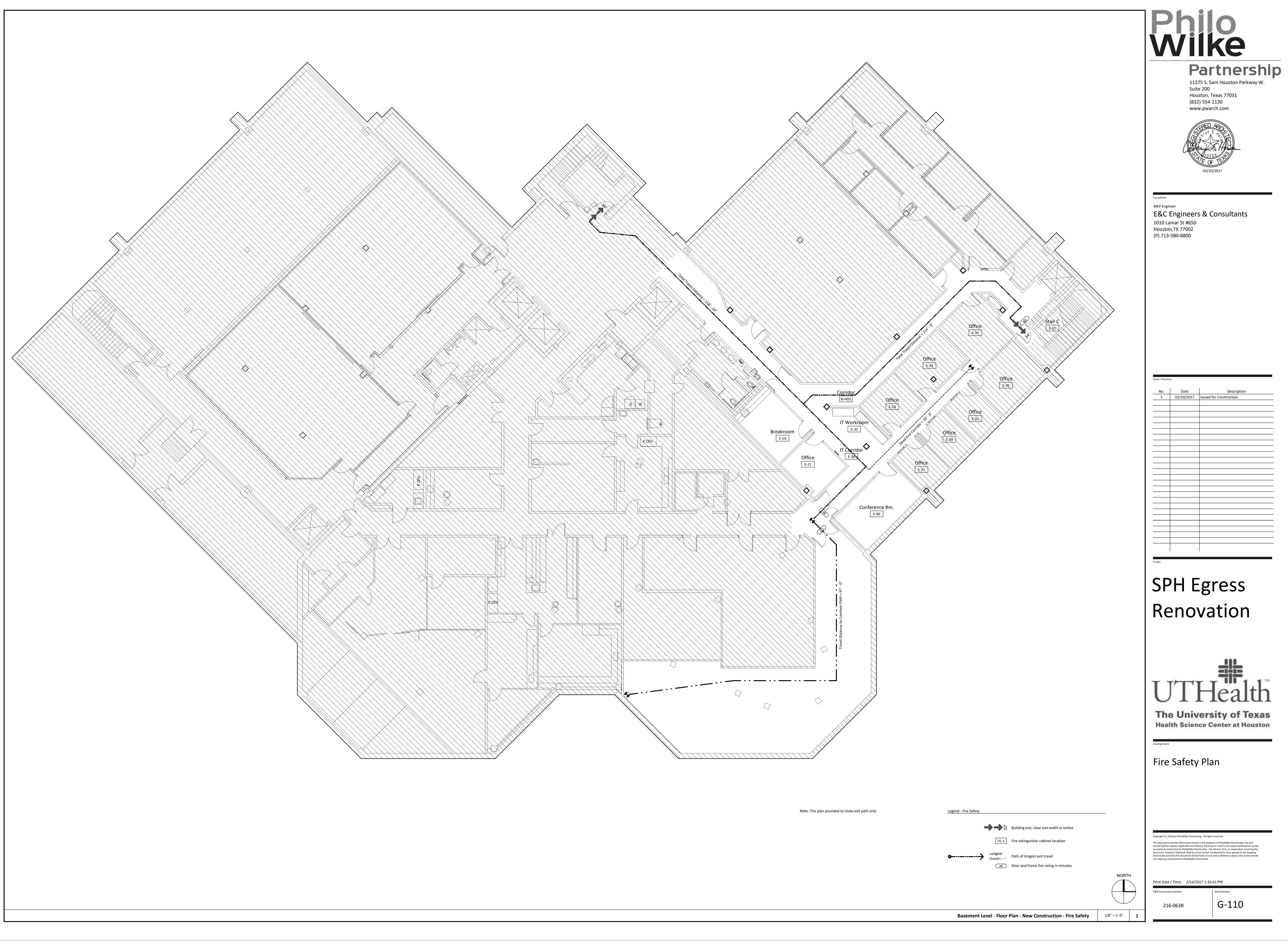


Specifications

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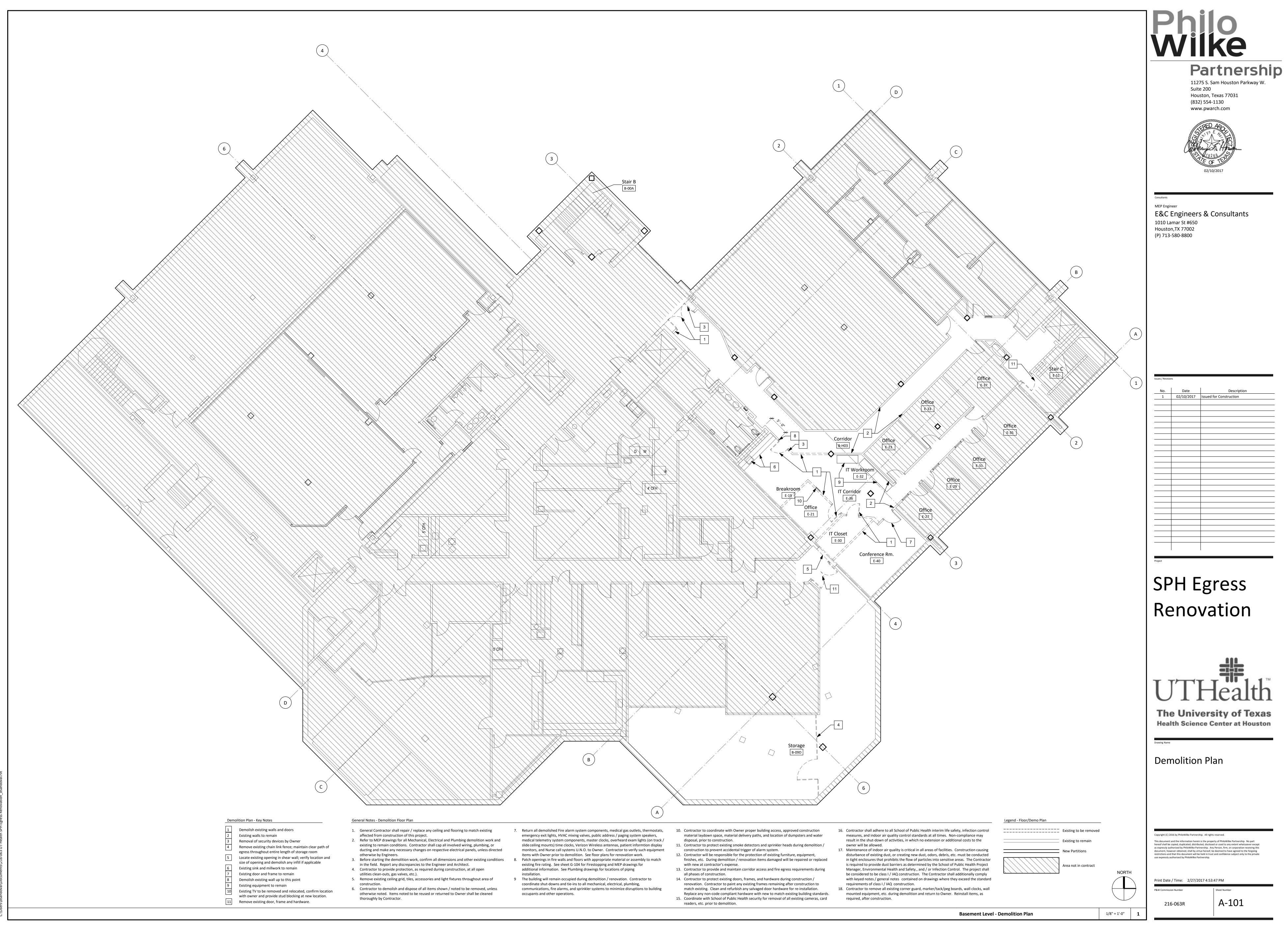
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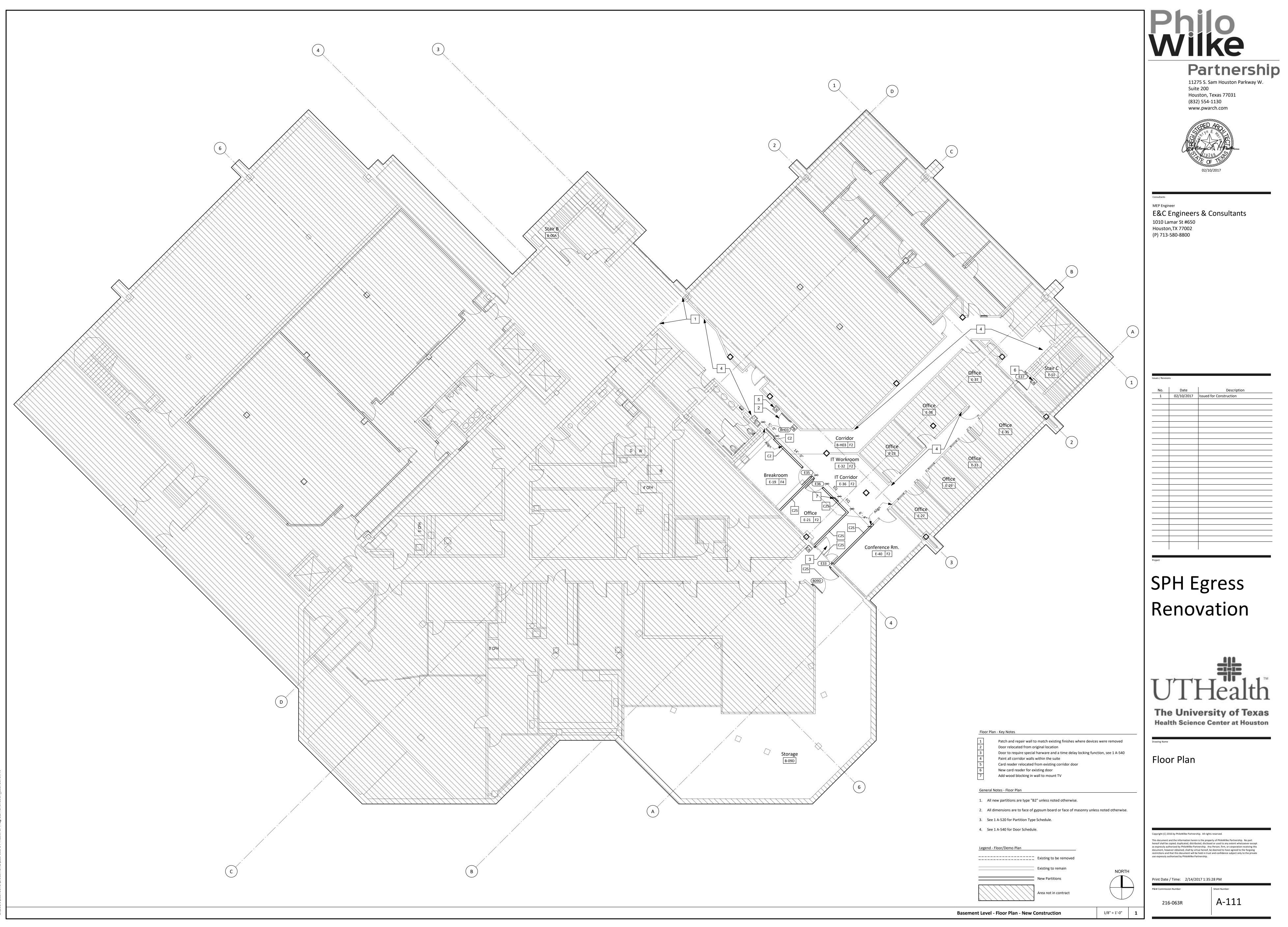
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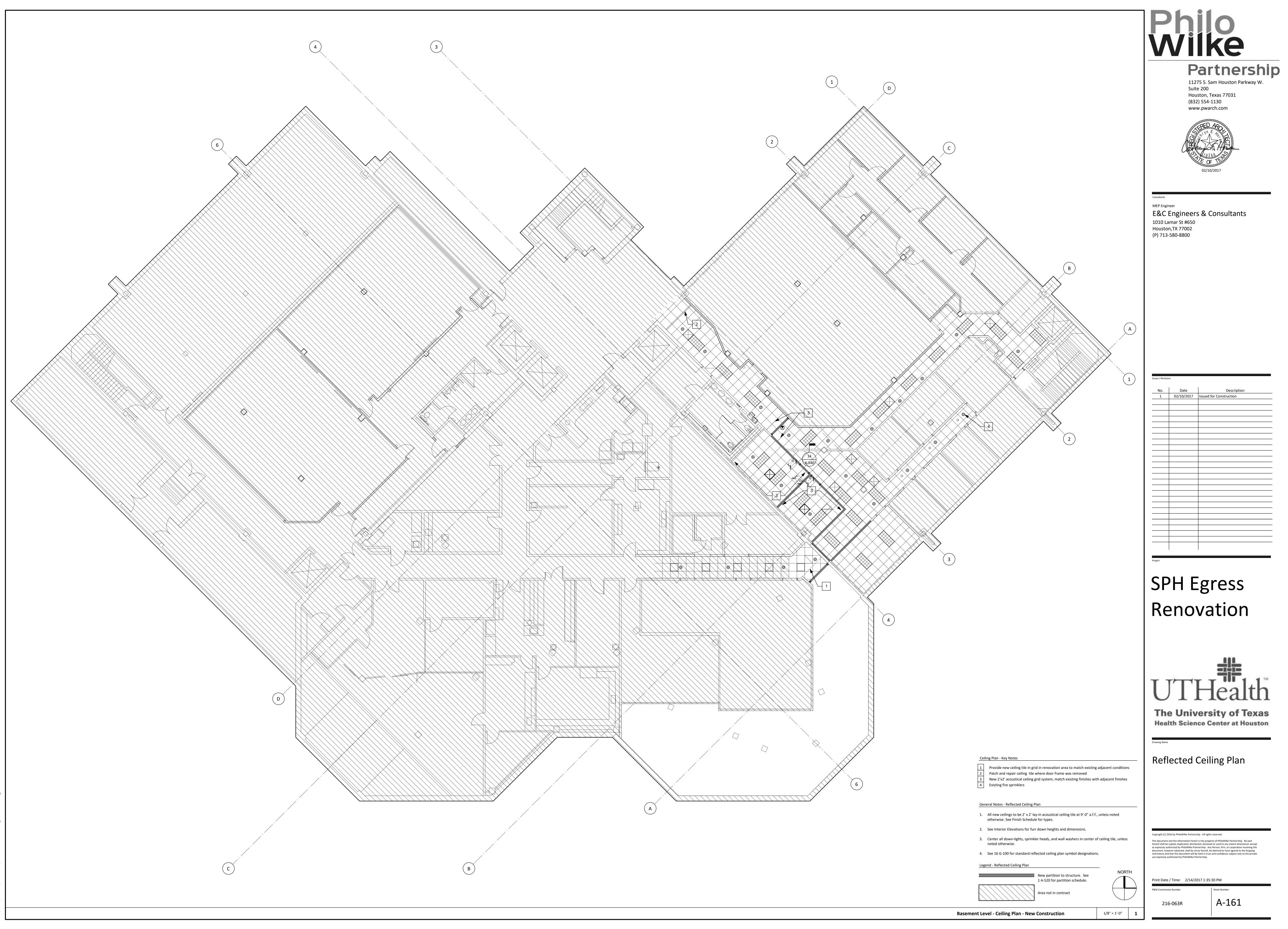


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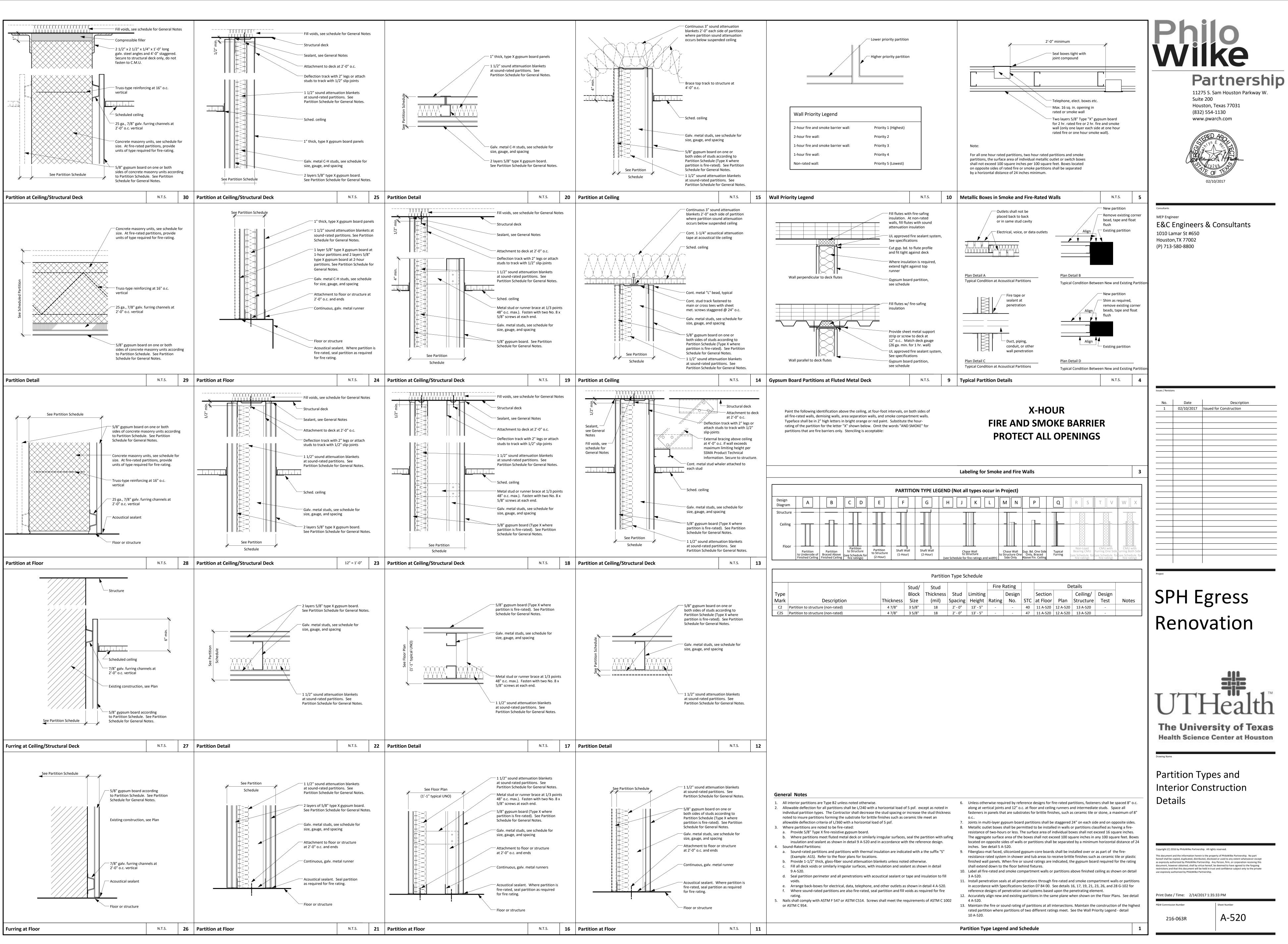


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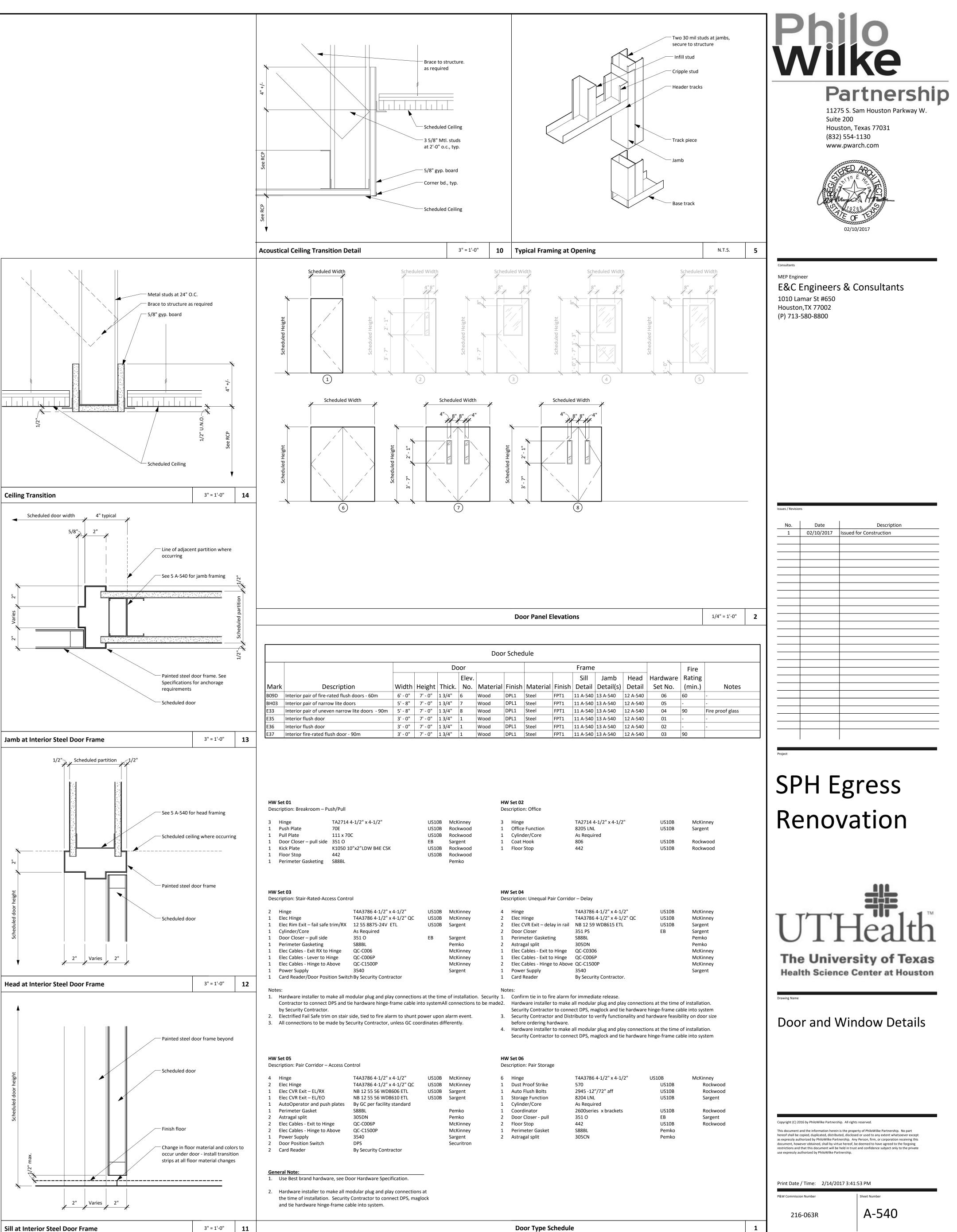


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G	eneral Notes		
1.	All interior partitions are Type B2 unless noted otherwise.	6.	Unless otherwise required by reference designs for fire-rated partitions, fasteners shall be spaced 8" o.
2.	Allowable deflection for all partitions shall be L/240 with a horizontal load of 5 psf. except as noted in individual partition types. The Contractor shall decrease the stud spacing or increase the stud thickness noted to insure partitions forming the substrate for brittle finishes such as ceramic tile meet an		along at vertical joints and 12" o.c. at floor and ceiling runners and intermediate studs. Space all fasteners in panels that are substrates for brittle finishes, such as ceramic tile or stone, a maximum of 8 o.c
	allowable deflection criteria of L/360 with a horizontal load of 5 psf.	7.	Joints in multi-layer gypsum board partitions shall be staggered 24" on each side and on opposite sides
3.		8.	Metallic outlet boxes shall be permitted to be installed in walls or partitions classified as having a fire-
Л	 a. Provide 5/8" Type X fire-resistive gypsum board. b. Where partitions meet fluted metal deck or similarly irregular surfaces, seal the partition with safing insulation and sealant as shown in detail 9 A-520 and in accordance with the reference design. Sound-Rated Partitions: 		resistance of two-hours or less. The surface area of individual boxes shall not exceed 16 square inches. The aggregate surface area of the boxes shall not exceed 100 square inches in any 100 square feet. Boy located on opposite sides of walls or partitions shall be separated by a minimum horizontal distance of inches. See detail 5 A-520.
4.	 a. Sound-rated partitions and partitions with thermal insulation are indicated with a the suffix "S" (Example: A1S). Refer to the floor plans for locations. b. Provide 1-1/2" thick, glass-fiber sound attenuation blankets unless noted otherwise. c. Fill all deck voids or similarly irregular surfaces, with insulation and sealant as shown in detail 	9.	Fiberglass-mat faced, siliconized gypsum-core boards shall be installed over or as part of the fire- resistance rated system in shower and tub areas to receive brittle finishes such as ceramic tile or plasti finished wall panels. When fire or sound ratings are indicated, the gypsum board required for the rating shall extend down to the floor behind fixtures.
	9 A-520.	10	Label all fire-rated and smoke compartment walls or partitions above finished ceiling as shown on deta
	d. Seal partition perimeter and all penetrations with acoustical sealant or tape and insulation to fill		3 A-520.
	 voids. Arrange back-boxes for electrical, data, telephone, and other outlets as shown in detail 4 A-520. f. Where sound-rated partitions are also fire-rated, seal partition and fill voids as required for fire rating. 	11	 Install penetration seals at all penetrations through fire-rated and smoke compartment walls or partition in accordance with Specifications Section 07 84 00. See details 16, 17, 19, 21, 23, 26, and 28 G-102 for reference designs of penetration seal systems based upon the penetrating element. Accurately align new and existing partitions in the same plane when shown on the Floor Plans. See details
5.	Nails shall comply with ASTM F 547 or ASTM C514. Screws shall meet the requirements of ASTM C 1002		4 A-520.
	or ASTM C 954.	13	Maintain the fire or sound rating of partitions at all intersections. Maintain the construction of the high rated partition where partitions of two different ratings meet. See the Wall Priority Legend - detail



Door Type Schedule

nmission Number	Sheet Number
216-063R	A-540

	Equipment Schedule						
Description	Manufacturer	Model	Contractor Furnished	Owner Furnished	Contractor Installed	Owner Installed Notes	5
Notes to Schedule: 1. 2. General Notes: 1.Provide treated wood blocking in walls for mounting of equipment as recommended by the manufacturer. 2.							
	Equipment Schedu	le					12
Description	Manufacturer	Model				Notes	
nded mounting height and in compliance with all local and nation treated wood blocking in walls for mounting of all accessories a	nal accessibility requirements. s recommended by the manufacturer.						
	ichedule: otes: treated wood blocking in walls for mounting of equipment as re Description	Description Manufacturer schedule:	Description Manufacturer Model chedule:	Description Manufacturer Model idealate: stati: tractice wood blocking in walls for mounting of equipment as recommended by the manufacturer. Equipment Schedule Toilet Accessories Schedule Model	Description Manufacturer Model Opgung Upgungung Upgung Upgung Upgung Upgungung Upgung Upgung Upg	Description Manufacturer Model cheadule: Cheadu	Description Manufacturer Model Notes ateration: Image: Control of the second sec

Finish Material Schedule						
Type Mark	Description	Manufacturer	Pattern/Line	Color	Note	
Floors						
CPT1	Carpet					
SVF1	Seamless welded sheet vinyl flooring					
Base						
RBC	Rubber base, cove					
RBS	Rubber base, straight					
	, ,					
Walls						
PT1	Paint					
Ceilings						
ACT1	Acoustical ceiling tile	Eurostone	M	Vhite		
Misc/Trim						
PT1	Paint					
Millwork						
DALA	Clear anodized aluminum					
FPT1	Paint (frame)					
Doors						
DALA	Clear anodized aluminum					
DPL1	Plastic laminate					
DPT1	Paint (door)					
Frames						
DALA	Clear anodized aluminum					
FPT1	Paint (frame)					

<u>Notes to Schedule:</u> 1.

Finish Type Mark

F2 F4

2.

2.

2.

<u>General Notes:</u> 1. Refer to 3 A-560 for Millwork Finish Schedule.

Notes

Frame

FPT1 FPT1

3	
	Project
otes	S

U Drawing Name

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P&W Comm

Finish Material Schedule

Misc/Trim

Door

DPL1 DPL1

Room Finish Type Schedule

Ceiling

ACT1 ACT1

Wall

PT1 PT1

<u>Notes to Schedule:</u> 1. 2.

<u>General Notes:</u> 1. All restrooms are to receive floor to ceiling tile unless noted otherwise.

Floor

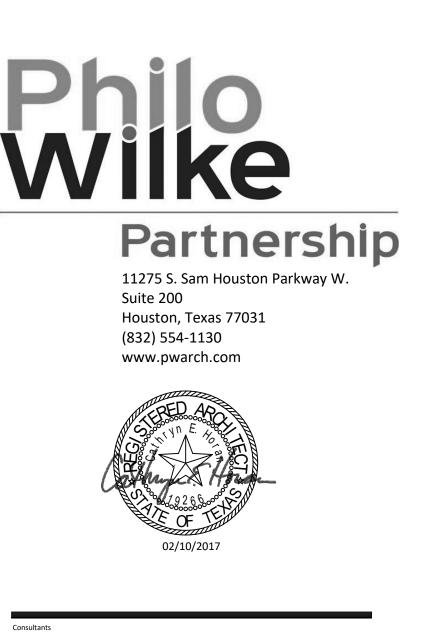
CPT1 SVF1

Base

RBS

RBC

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MEP Engineer

E&C Engineers & Consultants 1010 Lamar St #650 Houston,TX 77002 (P) 713-580-8800

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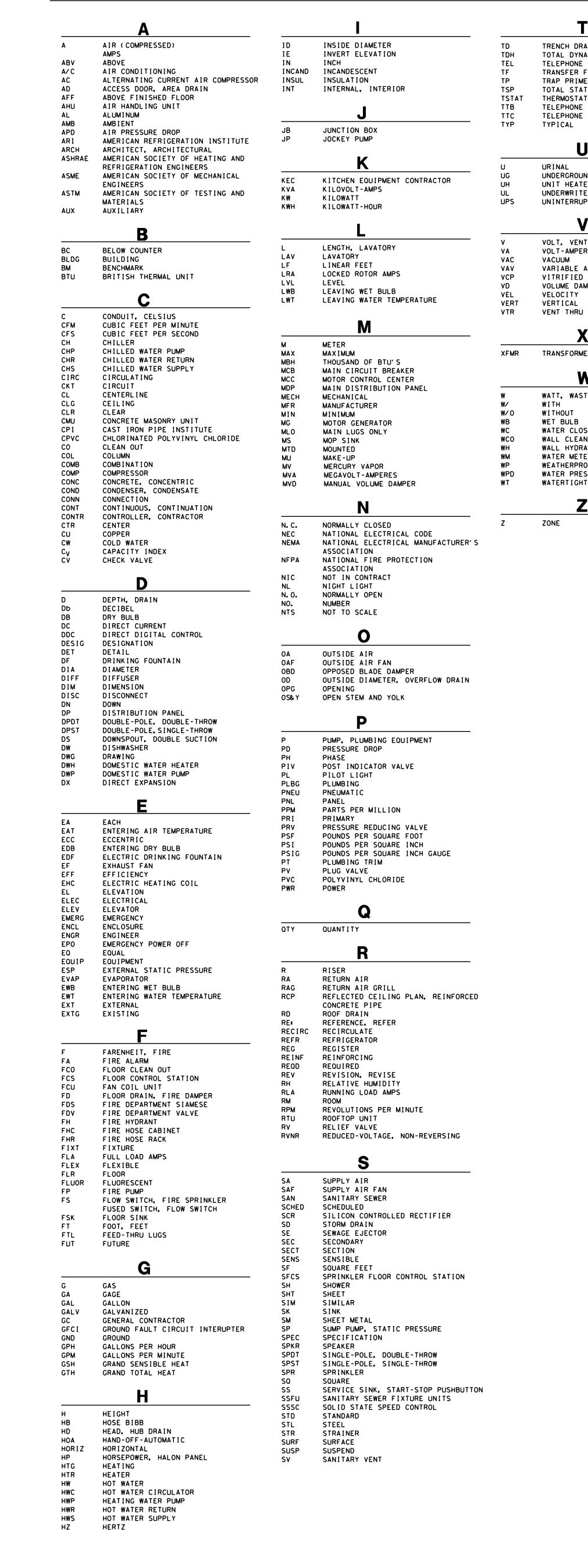


Schedules

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ABBREVIATIONS



50\3366\M\Mech\3366 M SA (MEP-000) dg

	MEP SY PIPING	MBOLS (ALL SYMBOLS SHOWN ARE NOT NECESSARILY		awings) WORK
т	СНS	CHILLED WATER SUPPLY		SUPPLY AIR DIFFUSER, NO LETTER DENOTES NEW,
RAIN NAMIC HEAD	CHR	CHILLED WATER RETURN		"R" DENOTES RELOCATED EXISTING.
	—— HWS ——	HEATING HOT WATER SUPPLY		EXISTING SUPPLY AIR DIFFUSER, NO LETTER DENO TO REMAIN, "R" DENOTES TO BE REMOVED AND REU AS APPLICABLE.
MER ATIC PRESSURE	HWR	HEATING HOT WATER RETURN		RETURN AIR OR EXHAUST GRILL, NO LETTER DENOT NEW, "R" DENOTES RELOCATED EXISTING.
AT IE TERMINAL BOARD IE TERMINAL CABINET		SANITARY DRAIN BELOW FLOOR SANITARY DRAIN ABOVE FLOOR		EXISTING RETURN AIR OR EXHAUST GRILL, NO LET
		SANITARY VENT	<u>لا</u> '_ا	DENOTES TO REMAIN, "R" DENOTES TO BE REMOVED REUSED AS APPLICABLE.
U	Gw	GREASE (KITCHEN) WASTE	_ <u> </u>	SUPPLY AIR SLOT, NO LETTER DENOTES NEW, "R" DENOTES RELOCATED EXISTING.
UND	SD	STORM DRAIN	- 프로그	EXISTING SUPPLY AIR SLOT, NO LETTER DENOTES REMAIN, "R" DENOTES TO BE REMOVED AND REUSED
TER TERS LABORATORIES, INC.	OD	OVERFLOW DRAIN		APPLICABLE. Return Air Slot, no letter denotes new, "R"
UPTABLE POWER SYSTEM		COLD WATER		DENOTES RELOCATED EXISTING.
		HOT WATER RECIRCULATION		→ EXISTING RETURN AIR SLOT, NO LETTER DENOTES REMAIN, "R" DENOTES TO BE REMOVED AND RELOCA → AS APPLICABLE.
NT, VACUUM PERE, VARIABLE AIR VOLUME	G	NATURAL GAS		NEW RECTANGULAR OR ROUND DUCTWORK
AIR VOLUME D CLAY PIPE	A ——	COMPRESSED AIR		RELOCATED EXISTING RECTANGULAR OR ROUND DUCT
AMPER	F	FIRE STANDPIPE, FIRE LINE		EXISTING DUCTWORK
U ROOF	FS	FIRE SPRINKLER TRAP PRIMER		EXISTING RECTANGULAR OR ROUND DUCTWORK TO BE REMOVED AND RELOCATED AS APPLICABLE
X	D	DRAIN LINE	<u>⊢×</u> —×— ×⊣	NEW FLEXIBLE DUCT
MER	····· 000 ·····	EXISTING PIPE, 'aaa' DENOTES TYPE		EXISTING FLEXIBLE DUCT
W	···X·· 000 ···X···	EXISTING PIPE TO BE REMOVED, 'aaa' DENOTES TYPE		EXISTING FLEXIBLE DUCT TO BE REMOVED
STE, WIDTH				RETURN, RELIEF, OR EXHAUST AIR DUCT
				FLEXIBLE DUCT CONNECTION
OSET ANOUT RANT	PIPING			INCLINED RISE IN DUCT
TER ROOF				INCLINED DROP IN DUCT
ESSURE DROP HT, WEIGHT		ELBOW DOWN DIRECTION OF FLOW		TURNING VANES
7	_	DIRECTION OF SLOPE DOWN		DUCT EXTRACTOR
		CONCENTRIC REDUCER		SPLITTER DAMPER DUCT MOUNTED HEATING COIL
	<u> </u>	ECCENTRIC REDUCER		FIRE DAMPER
	O	TEE OUTLET UP	<u>s</u> —	SMOKE DAMPER
		TEE OUTLET DOWN	ES	FIRE/SMOKE DAMPER
		UNION PIPE ANCHOR		MANUAL BALANCING DAMPER
		STRAINER WITH BLOWDOWN VALVE		GRAVITY BACKDRAFT DAMPER MOTORIZED DAMPER
		GATE VALVE, HVAC BALANCING/STOP VALVE		
		GLOBE VALVE		
		BALL VALVE	FIRE	ALARM
		OS&Y VALVE	FACP FACP	
		CHECK VALVE TWO-WAY MODULATING CONTROL VALVE		J FIRE ALARM REMOTE ANNUNCIATOR (FLUSH/SURFACE) FIRE ALARM AUDIO VISUAL SIGNAL, WALL MOUNTED
		THREE-WAY MODULATING CONTROL VALVE	V	FIRE ALARM VISUAL SIGNAL, WALL MOUNTED
	-FCS	SPRINKLER FLOOR CONTROL STATION		FIRE ALARM AUDIO SIGNAL, WALL MOUNTED
		MANUAL AIR VENT	(A) (H)	FIRE ALARM CEILING SPEAKER HEAT DETECTOR
	<u> </u>	AUTOMATIC AIR VENT	\$	AREA SMOKE DETECTOR
		T&P RELIEF VALVE VACUUM BREAKER	S.	AREA SMOKE DETECTOR WITH LOCAL ALARM
		LINE CLEANOUT		DUCT SMOKE DETECTOR. "RA" DENOTES RETURN AIR. DENOTES SUPPLY AIR
	ф — ф	FLOOR CLEANOUT	R ⊲	SMOKE DETECTOR REMOTE INDICATOR STATION FIREFIGHTER'S COMMUNICATION JACK
	<u> </u>	PRESSURE GAUGE WITH GAUGE COCK		STAIRWAY EMERGENCY TELEPHONE
	<u> </u>	THERMOMETER	ES	ELEVATOR LOBBY EMERGENCY SIGN
		WATER METER FLEXIBLE CONNECTION	F FJ	FIRE ALARM MANUAL PULL STATION FIRE ALARM MANUAL PULL STATION WITH FIREMAN'
		PRESSURE AND TEMPERATURE TAP	WF	SPRINKLER WATER FLOW SWITCH
	×	· SUPERVISORY VALVE WITH FLOW/TAMPER SWITCH	VS	VALVE SUPERVISORY SWITCH
		SOLENVISORI VREVE WITH LEOW TAW EN SWITCH	」 <u>田</u> _ - 中	MAGNETIC DOOR HOLDER ELECTRIC DOOR LOCK
	MISCEL	LANEOUS	R	FIRE ALARM RELAY
		PLUMBING FIXTURES		HALON CONTROL PANEL
	•	POINT OF NEW CONNECTION TO EXISTING		L DESIGNATIONS
	(1)	DRAWING NOTE REFERENCE OWNER OR CONTRACTOR FURNISHED EQUIPMENT REFERENCE	2HEA-3	 '2' DENOTES FLOOR WHERE PANEL IS LOCATED 'H' DENOTES VOLTAGE - 'H' = 480Y/277V, 'L' = 208
		AIR DISTRIBUTION DEVICE REFERENCE. 'a' DENOTES TYPE, 'bbb' DENOTES CFM, 'cc/dd' DENOTES NECK		'E' DENOTES SYSTEM TYPE - BLANK = NORMAL POWEF EMERGENCY POWER
		SIZE HVAC TERMINAL UNIT REFERENCE. " ada" DENOTES		A DENOTES PANEL SEQUENCE
	aaa bbb	TYPE, 'DDD' DENOTES CFM, 'CCC KW' DENOTES HEATING KW WHERE APPLICABLE		
	P	RISER DESIGNATION. "P" DENOTES WASTE/VENT OR WASTE/VENT/WATER, "W" DENOTES WATER, "DS" DENOTES	ELEC	FRICAL EQUIPMENT
	ES ES	DOWNSPOUT, 'F' DENOTES FIRE. FLOW SWITCH		DISTRIBUTION PANEL
	VS	VALVE SUPERVISORY SWITCH FIRE HOSE CABINET		SWITCHBOARD OR MOTOR CONTROL CENTER NEW PANELBOARD (FLUSH/SURFACE MOUNT)
		FIRE HOSE RACK		EXISTING PANELBOARD
	HIII-O			DRY-TYPE TRANSFORMER
	¢;	FIRE DEPARTMENT SIAMESE CONNECTION THERMOSTAT		PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8'
	() () () ()			UNLESS NOTED OTHERWISE TERMINAL CABINET (FLUSH/SURFACE MOUNT).TYPE AS
	 C E 	THERMOSTAT		UNLESS NOTED OTHERWISE
	() () () ()	THERMOSTAT HUMIDISTAT FIRESTAT DUCT SMOKE DETECTOR. "SA" DENOTES SUPPLY AIR, "RA" DENOTES RETURN AIR		UNLESS NOTED OTHERWISE TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS 24° X 48° X 3 1/2° UNLESS NOTED OTHERWISE.
	 C E 	THERMOSTAT HUMIDISTAT FIRESTAT DUCT SMOKE DETECTOR. 'SA' DENOTES SUPPLY AIR. 'RA' DENOTES RETURN AIR PNEUMATIC TUBING OR CONTROL WIRING DASHED SYMBOLS INDICATE EXISTING DEVICES TO		UNLESS NOTED OTHERWISE TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS 24° X 48° X 3 1/2° UNLESS NOTED OTHERWISE.
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	°¢ ① H (F) ② RA	THERMOSTAT HUMIDISTAT FIRESTAT DUCT SMOKE DETECTOR. 'SA' DENOTES SUPPLY AIR, 'RA' DENOTES RETURN AIR PNEUMATIC TUBING OR CONTROL WIRING DASHED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED. INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL INDICATED ABOVE COUNTER WHEN INCLUDED WITH	BAT BAT	UNLESS NOTED OTHERWISE TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS 24' X 48' X 3 1/2' UNLESS NOTED OTHERWISE. BATTERY/INVERTER UNIT PRS AND CONTROLS SINGLE OR THREE PHASE MOTOR ELECTRIC DUCT HEATER
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		THERMOSTAT HUMIDISTAT FIRESTAT DUCT SMOKE DETECTOR. 'SA' DENOTES SUPPLY AIR, 'RA' DENOTES RETURN AIR PNEUMATIC TUBING OR CONTROL WIRING DASHED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED. INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL INDICATED ABOVE COUNTER WHEN INCLUDED WITH ANY SYMBOL TELEVISION OUTLET FLOOR DRAIN AREA DRAIN ROOF DRAIN OR OVERFLOW DRAIN HOSE BIBB WALL HYDRANT MG/DETAIL REFERENCE KEY		UNLESS NOTED OTHERWISE TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS 24' x 48' x 3 1/2' UNLESS NOTED OTHERWISE. BATTERY/INVERTER UNIT PRS AND CONTROLS SINGLE OR THREE PHASE MOTOR ELECTRIC DUCT HEATER DISCONNECT (SAFETY) SWITCH '200/3/150' DENOTES AMPERES/POLE/FUSE, 'NF' DENOTES NON-FUSED ENCLOSED CIRCUIT BREAKER MOTOR STARTER MOTOR STARTER FURNISHED WITH EOUIPMENT COMBINATION DISCONNECT (SAFETY) SWITCH AND MOT STARTER, '30/3/15/*0' DENOTES AMPERES/POLES/FU STARTER, '30/3/15/*0' DENOTES NON-FUSED. COMBINATION DISCONNECT (SAFETY) SWITCH AND MOT STARTER, '30/3/15/*0' DENOTES NON-FUSED. COMBINATION DISCONNECT (SAFETY) SWITCH AND MOT STARTER FURNISHED WITH EOUIPMENT MANUAL MOTOR STARTING WITH THERMAL OVERLOAD MOTOR-RATED TOGGLE SWITCH LIGHTING CONTACTOR

			GENERAL	NOTES
	LIGHT	ING	APPLICABLE ST	L.ELECTRICAL & PLUMBING WORK SHALL COMPLY WITH ALL ATE AND LOCAL BUILDING CODES AND LANDLORD'S DUIREMENTS. THE QUALITY OF MATERIALS AND WORKMANSHIP
	O _A ● _B	NEW INCANDESCENT OR HID LIGHTING FIXTURE, LETTER DENOTES TYPE, H PREFIX DENOTES HID	SHALL BE ESTA BUILDING CONT	BLISHED BY THE WORK COMPLETED BY THE BASE RACTORS, AS INTERPRETED BY THE ENGINEER. REFER DING SPECIFICATIONS WHEN AVAILABLE, FOR MATERIALS
	®	RELOCATED EXISTING INCANDESCENT OR HID LIGHTING FIXTURE, LETTER DENOTES TYPE WHERE APPLICABLE	AND METHODS F	OR MECHANICAL AND PLUMBING CONSTRUCTION.
REUSED	(j)	EXISTING INCANDESCENT OR HID LIGHTING FIXTURE TO REMAIN	THE SITE AND RELATED TO TH	FAMILIARIZE THEMSELVES WITH ALL EXISTING CONDITIONS IEIR WORK AND THE WORK OF ALL OTHER TRADES, PRIOR BIDS. ANY DISCREPANCIES IN THE CONTRACT
NOTES	(Ř.	EXISTING INCANDESCENT OR HID LIGHTING FIXTURE TO BE REMOVED AND REUSED AS APPLICABLE	DOCUMENTS WHI	CH ARE NOTED DURING THIS VISIT SHALL BE BROUGHT ION OF THE ARCHITECT/ENGINEER PRIOR TO SUBMITTING
LETTER VED AND	₹x	NEW EXIT SIGN, ARROWS AS INDICATED, LETTER DENOTES TYPE	C. FURNISH ALL L	ABOR, MATERIALS, EQUIPMENT, APPARATUS AND REQUIRED FOR A COMPLETE WORKING AND COORDINATED
R•	€ _R	RELOCATED EXISTING EXIT SIGN, ARROWS AS INDICATED	SYSTEM. ALL N APPURTENANCES	EW MATERIALS, EQUIPMENT, APPARATUS AND SHALL MATCH EXISTING BUILDING STANDARDS IN AND FINISH, UNLESS OTHERWISE NOTED.
		EXISTING EXIT SIGN TO REMAIN, ARROWS AS INDICATED EXISTING EXIT SIGN TO BE REMOVED AND REUSED AS	D. ALL INTERRUPT	IONS OF SERVICES (POWER, WATER, HVAC, ETC.) AND OCCUPIED TENANT SPACES (E.G. PLUMBING OR
ES TO SED AS	R	APPLICABLE NEW FLUORESCENT LIGHTING FIXTURE, LETTER DENOTES	ELECTRICAL WO UNDER CONSTRU	ORK IN AN OCCUPIED TENANT'S SPACE BELOW A SPACE JCTION) MUST BE SCHEDULED THRU THE BUILDING IIMUM OF 24 HOURS IN ADVANCE, ANY INTERRUPTIONS
R"		TYPE, F PREFIX DENOTES FLUORESCENT	OR CONSTRUCTI BUILDING OR I	ON WHICH WILL AFFECT NORMAL OPERATION OF THE T'S TENANTS SHALL BE SCHEDULED, WITH THE GER'S APPROVAL, ON AN AFTER-HOURS BASIS.
ES TO	FB		E. SUBMIT SHOP D	RAWINGS TO THE ENGINEER AND OBTAIN APPROVAL. CURING ANY NEW EQUIPMENT. SUBMIT OPERATING AND
OCATED			MAINTENANCE M	MANUALS FOR ALL NEW EQUIPMENT TO THE ENGINEER. HVAC CONTROL WIRING AND EQUIPMENT SHALL BE
	•	LIGHT FIXTURE ON EMERGENCY CIRCUIT	FURNISHED AND	INSTALLED BY THE MECHANICAL CONTRACTOR.
UCTWORK	SWIT	CHES	LOCATION OF A	LL CEILING MOUNTED DEVICES.
	\$	NEW SWITCH, SPST, 20A, 120/277V	ARCHITECT HAS WALL MOUNTED	DRAWN SUCH ELEVATIONS, FOR THE LOCATIONS OF ALL DEVICES. OBTAIN THE ARCHITECT'S APPROVAL OF TIONS FOR ALL VISIBLE THERMOSTATS AND OTHER
BE	\$ _R	RELOCATED EXISTING SWITCH	CONTROL DEVIC	IITECTURAL DRAWINGS FOR LOCATIONS OF WALLS WHICH
	\$ \$ _R	EXISTING SWITCH TO REMAIN EXISTING SWITCH TO BE REMOVED AND REUSED AS	THESE WALLS S DUCT PENETRAT	RUCTURE. EACH HVAC DUCT OR PIPE PENETRATION THRU HALL BE INSTALLED AS DETAILED. WHERE FLEXIBLE ES A WALL WHICH EXTENDS TO STRUCTURE. PROVIDE
	\$3	APPLICABLE SWITCH, 20A, 120/277V, "2" DENOTES DPST, "3" DENOTES	THE PARTITION	
	\$	THREE-WAY, "4" DENOTES FOUR-WAY SWITCH, SPDT, CENTER OFF, MOMENTARY CONTACT	K. ALL SLAB PENE	SIZES SHOWN ARE FREE AIR STREAM DIMENSIONS.
	\$ _K	SWITCH, SPST, 20A, 120/277V, 'K' DENOTES KEY SWITCH, 'P' DENOTES PILOT LIGHT, 'T' DENOTES SPRING WOUND	STATE AND LOC PENETRATIONS	TERSTOP MATERIAL, IN ACCORDANCE WITH APPLICABLE CAL REQUIREMENTS, COORDINATE NEW SLAB WITH THE EXISTING STRUCTURE AND OBTAIN WRITTEN
	φ	TIMER DIMMER CONTROL SWITCH, 600 WATT UNLESS OTHERWISE	L. FURNISH ACCES	THE BUILDING MANAGER PRIOR TO CORE DRILLING.
		NOTED	CONCEALED MEC	I WALLS AND CEILINGS WHERE ACCESS IS REOUIRED TO CHANICAL,ELECTRICAL OR PLUMBING EOUIPMENT, VALVES, OTHER DEVICES.
	RECE	PTACLES AND OUTLETS	M. ALL SUPPLY AI NOTED ON THE	R DIFFUSERS ARE 4-WAY THROW, UNLESS OTHERWISE DRAWINGS WITH FLOW ARROWS.
	Ð	SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V	ANY ABOVE CEI	L CONTRACTOR SHALL BE RESPONSIBLE FOR PAINTING LING ITEMS, WHICH CAN BE SEEN THROUGH AIR SLOTS
	₽ ₽	NEW DUPLEX WALL RECEPTACLE, NEMA 5-15R, 15A, 125V OR NEMA 5-20R, 20A, 125V, RE: SPECIFICATIONS, DOT INDICATES ABOVE COUNTER	OR GRILLS, FL O. COORDINATE TH	E EXACT LOCATIONS OF NEW MECHANICAL AND PLUMBING
	€ _R	RELOCATED EXISTING DUPLEX RECEPTACLE		H THE LOCATIONS OF LIGHTING FIXTURES, PIPING AND ICTION, TO ALLOW FOR PROPER ACCESS TO SERVICE
	ः () R	EXISTING DUPLEX RECEPTACLE TO REMAIN EXISTING DUPLEX RECEPTACLE TO BE REMOVED AND REUSED	TRADES AND PR	E LOCATION OF DUCTWORK AND PIPING WITH OTHER OVIDING OFFSETS IN DUCTWORK AND PIPING AS
	r €	AS APPLICABLE DUPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT,	REQUIRED.	ENT OF THESE DOCUMENTS TO ALLOW ALL CEILING
	•	RED COLOR DUPLEX WALL RECEPTACLE ON A CIRCUIT DEDICATED TO DATA	DRAWINGS. COO PROVIDE OFFSE	AND HEIGHTS TO BE AS SHOWN ON THE ARCHITECTURAL REDINATE THE LOCATION OF DUCTWORK AND PIPING AND TS IN DUCTWORK AND PIPING AS REQUIRED TO MEET
	A	PROCESSING, GRAY COLOR, PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED. (IG)		IPPLY AND RETURN AIR SLOT DIFUSERS SHOWN ARE
	⊖ ⊕	DUPLEX WALL RECEPTACLE. "WP" DENOTES WEATHERPROOF. "TP" DENOTES SAFETY TYPE.		EXACT LENGTHS SHALL BE AS SHOWN ON THE DRAWINGS. LENGTHS SHALL BE FIELD COORDINATED NCATION.
	₩	FOURPLEX WALL RECEPTACLE. NEMA 5-15R, 15A, 125V Fourplex wall receptacle on emergency circuit, red	PROJECT. IN G	LENUM IS USED AS A RETURN AIR PATH ON THIS ENERAL, RETURN AIR LIGHT FIXTURES AND RETURN L BE USED AS THE RETURN AIR PATH TO THE PLENUM.
	₽	COLOR SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED	THE MECHANICA BAFFLES, AS D	L DE USED AS THE RETURN AIR FAIR TO THE FLENOM. L CONTRACTOR SHALL INSTALL RETURN AIR SLOT DETAILED, IN ALL UNUSED PORTIONS OF PERIMETER CHITECTURAL LINEAR DIFFUSERS, WHERE NOTED ON THE
	• • • • • • • • • • • • • • • • • • •	FLOOR OUTLET, "P" DENOTES POKE-THRU, "F" DENOTES FLUSH, "A" DENOTES TYPE WHERE APPLICABLE.	DRAWINGS.	NG AND DUCTWORK SHALL BE INDEPENDENTLY
ACE)		MULTI-OUTLET SURFACE RACEWAY JUNCTION BOX	SUPPORTED, AN	ID THIS SUPPORT SHALL BE INDEPENDENT OF PARTITION SYSTEM SUPPORTS.
TED	•	DIRECT CONNECTION TO EQUIPMENT	THE COMPLETE	L CONTRACTOR SHALL PERFORM AN AIR BALANCE FOR TENANT AIR SYSTEM, INCLUDING ALL NEW AND DEVICES SERVED BY EACH SYSTEM BEING MODIFIED, TO
	P	PULL BOX (OVER 4" SOUARE) NEW TELEPHONE WALL OUTLET. "W" DENOTES WALL PHONE	MAINTAIN 75 D CONTRACTOR SH	EGREES F IN ALL OCCUPIED SPACES. THE MECHANICAL IALL PERFORM A WATER BALANCE FOR ALL NEW R AND WATER BALANCE REPORTS SHALL BE
	▲.	HEIGHT, "P" DENOTES PAY PHONE, DOT INDICATES ABOVE COUNTER.	SUBMITTED TO	THE ENGINEER FOR APPROVAL. FIRE PROTECTION SYSTEM CONSISTS OF A COMPLETE
		EXISTING TELEPHONE WALL OUTLET TO REMAIN EXISTING TELEPHONE WALL OUTLET TO BE REMOVED	AUTOMATIC FIR SHALL BE RELO	E SPRINKLER SYSTEM, EXISTING SPRINKLER HEADS CATED AND NEW SPRINKLER HEADS SHALL BE PROVIDED O SUIT THE NEW TENANT LAYOUT, NEW SPRINKLER
		NEW DATA WALL OUTLET	HEADS SHALL M	MATCH EXISTING.
AIR, 'SA'	୍ବ <mark>ନ</mark>	RELOCATED EXISTING DATA WALL OUTLET EXISTING DATA WALL OUTLET TO REMAIN	SHALL BE CLEA SHALL NOT BE DEVICE OF THE	NED PRIOR TO REUSE. DAMAGED AIR DEVICES REUSED AND SHALL BE REPLACED WITH A NEW AIR SAME TYPE AND APPEARANCE. EXISTING AIR
	^{с:} R	EXISTING DATA WALL OUTLET TO BE REMOVED AND REUSED AS APPLICABLE	DEVICES WHICH AS DIRECTED B	I ARE REMOVED AND NOT REUSED SHALL BE STORED BY THE BUILDING MANAGER.
	•	COMBINATION TELEPHONE/DATA WALL OUTLET	REUSED SHALL AND TRIM SHAL	URES WHICH ARE INDICATED TO BE REMOVED AND BE CLEANED PRIOR TO REUSE. DAMAGED FIXTURES L NOT BE REUSED AND SHALL BE REPLACED WITH
			PROVIDE A LIK	AND TRIM OF THE SAME TYPE, AS REQUIRED TO E NEW APPERANCE.
AN' S JACK		CIRCUIT CONCEALED IN WALL OR CEILING	SHALL BE REMO	DUCTWORK AND PIPING WHICH IS NOT REUSED. DVED FROM THE SITE AND DISPOSED OF PROPERLY.
		CONDUIT CAST IN CONCRETE OR BELOW SLAB	20/1 BRANCH B	ALL BE NO. 12 AWG, COPPER IN 1/2" CONDUIT TO REAKERS, UNLESS OTHERWISE NOTED.
		EXPOSED CONDUIT CONDUIT TURNED UP	TEFLON JACKET PLENUMS.	IICH IS NOT INSTALLED IN CONDUIT, SHALL BE ED AND UL LISTED FOR USE IN RETURN AIR
		CONDUIT TURNED DOWN	BB. PROVIDE A PLA AND A PULL ST	STER RING WITH A GROMMET IN THE WALL TOP PLATE RING UP TO AN ACCESSIBLE CEILING SPACE FOR ALL
		HASH MARKS INDICATE NUMBER OF CONDUCTORS PHASE/NEUTRAL/SWITCH LEG/GROUND LEFT TO RIGHT, NO HASH MARKS INDICATES 2#12, UNLESS OTHERWISE NOTED.	OUTLETS (🏠).	LETS (), DATA OUTLETS () AND TELEPHONE/DATA UNLES OTHERWISE NOTED. TRATIONS SHALL BE SEALED WITH A UL LISTED FIRE
		HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.	SAFING AND WA STATE AND LOC	TRESTOP SYSTEM, IN ACCORDANCE WITH APPLICABLE AL REQUIREMENTS, COORDINATE NEW SLAB WITH THE EXISTING STRUCTURE AND OBTAIN WRITTEN
		PARTIAL CIRCUIT HOMERUN TO PANEL	APPROVAL FROM ALL RATED PAR	THE BUILDING MANAGER PRIOR TO CORE DRILLING. TITITION PENETRATIONS SHALL BE SEALED WITH A SE SAFING SYSTEM, IN ACCORDANCE WITH APPICABLE
2081/1200	т	COMMUNICATIONS CONDUIT OR CABLE. "T" DENOTES TELEPHONE, "D" DENOTES DATA, "I" DENOTES INTERCOM, "PA" DENOTES PAGING, "S" DENOTES SECURITY,	STATE AND LOC	C CABLE SHALL BE INDEPENDENTLY SUPPORTED FROM
OWER, E=		"FA" DENOTES FIRE ALARM	THE BUILDING	STRUCTURE, AND THIS SUPPORT SHALL BE F PARTITION AND CEILING SYSTEM SUPPORTS.
			REUSED SHALL DAMAGED OR DE	URES WHICH ARE INDICATED TO BE RELOCATED OR BE CLEANED AND RELAMPED PRIOR TO REUSE. FECTIVE LIGHT FIXTURES SHALL NOT BE REUSED AND
	CIRCI	UITING NOTES	SHALL BE REPL BE REPAIRED T	ACED WITH A COMPLETE NEW LIGHT FIXTURE OR SHALL O A LIKE NEW CONDITION. EXISTING LIGHT FIXTURES WOVED AND NOT REUSED SHALL BE STORED AS DIRECTED
		TURE CIRCUITING NOTES ING PLANS INDICATE SWITCHING AND BRANCH CIRCUIT	BY THE BUILDI	
	NUMBERS FO	AND LIGHTING FIXTURES, LOWER CASE LETTERS AT AND LIGHT FIXTURES INDICATE SWITCHING WHERE THE ATTERN IS NOT OBVIOUS. INSTALL BRANCH CIRCUIT	DEVICES SHALL	KED PRIOR TO REUSE. DAMAGED OR DEFECTIVE WIRING BE REPLACED WITH A NEW WIRING DEVICE OF THE MANUFACTURER.
	WIRING IN AND TO JU	A RACEWAY TO ALL RIGIDLY ATTACHED LIGHT FIXTURES NCTION BOXES FOR ALL LAY-IN LIGHT FIXTURES, AS TO PROVIDE SWITCHING AND CIRCUITING AS SHOWN ON THE		BRANCH CIRCUIT AND COMMUNICATIONS WIRING AND I IS NOT REUSED, SHALL BE REMOVED AND DISPOSED
	DRAWINGS.	RE: SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.	OF PROPERLY.	
8′ X 3/4"	CONDUCTOR: ONE GROUN	S (ON DIFFERENT PHASES), ONE NEUTRAL CONDUCTOR AND D CONDUCTOR (WHERE SHOWN OR SPECIFIED), AND SHALL LED IN CONDUIT.		
AS NOTED.	C. ALL LAY-I	N LIGHTING FIXTURES SHALL BE CONNECTED TO A BRANCH UNCTION BOX WITH A FLEXIBLE FIXTURE TAIL, RE		
	SPECIFICA CONNECTED	TIONS. A MAXIMUM OF FOUR FIXTURE TAILS SHALL BE TO A SINGLE JUNCTION BOX. FIXTURE TO FIXTURE LAY-IN LIGHTING FIXTURES IS NOT PERMITTED.		
	D. WHERE ALL	OWED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND TYPE MC CABLE MAY BE USED FOR LAY-IN		
	FIXTURE P FIXTURE JI CIRCUIT B	IGTAILS (IO FEET MAXIMUM), SWITCH LEG DROPS FROM UNCTION BOXES OR NONLAY-IN FIXTURES AND FOR SINGLE RANCH CIRCUIT WIRING FROM FIXTURE TO FIXTURE (EXCEPT	DRAWING L	_IST
	CABLE SHAL	XTURES) AND FROM FIXTURE TO JUNCTION BOX. TYPE MC LL NOT BE USED FOR BRANCH CIRCUIT HOMERUNS. ABLE SHALL NOT BE USED WHERE MORE THAN		CAL/ELECTRICAL/PLUMBING SYMBOLS AND ABBREVIATIONS CAL/PLUMBING SPECIFICATIONS AND DETAIL
DTES	THREE CON EXPOSED;	DUCTORS (PHASE/NEUTRAL/GROUND) ARE REOUIRED; WHERE OR IN LENGTHS EXCEEDING 20 FEET.	MEP-002 ELECTRIC	CAL SPECIFICATIONS
	A. THE POWER	IRCUITING NOTES PLANS INDICATE BRANCH CIRCUIT NUMBERS FOR ALL		CAL/PLUMBING BASEMENT LEVEL - DEMOLITION PLAN AL/PLUMBING BASEMENT LEVEL - RENOVATION PLAN
	RECEPTACL INSTALL BI PROVIDE C	ES. WHERE BRANCH CIRCUIT WIRING IS NOT SHOWN. RANCH CIRCUIT WIRING IN A RACEWAY. AS REQUIRED TO IRCUITING AS SHOWN ON THE DRAWINGS. RE¤		CAL LIGHTING BASEMENT LEVEL - DEMOLITION PLAN
MOTOR S/FUSE/	B. BRANCH CI	TIONS FOR ADDITIONAL REQUIREMENTS.		AL LIGHTING BASEMENT LEVEL - RENOVATION PLAN CAL POWER BASEMENT LEVEL - DEMOLITION PLAN
MOTOR	CONDUCTOR: AND SHALL	S (ON DIFFERENT PHASES), ONE, TWO OR THREE NEUTRAL S AND ONE GROUND CONDUCTOR (WHERE SHOWN OR SPECIFIED), BE INSTALLED IN CONDUIT, SEPARATE NEUTRAL CONDUCTORS		AL POWER BASEMENT LEVEL - RENOVATION PLAN
)	ELSEWHERE	PROVIDED FOR EACH PHASE ON DATA CIRCUITS AND WHERE SHOWN OR NOTED ON THE DRAWINGS, WHERE OR WHERE SPECIFIED.		
	THE NEC T	OWED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND YPE MC CABLE MAY BE USED FOR DROPS IN S TO RECEPTACLES TYPE MC CABLE SHALL NOT		
	BE USED FO	S TO RECEPTACLES. TYPE MC CABLE SHALL NOT OR BRANCH CIRCUIT HOMERUNS OR FOR RECEPTACLE TO E WIRING IN PARTITIONS. TYPE MC CABLE BE USED WHERE MORE THAN THREE CONDUCTORS (PHASE/		
	SHALL NOT NEUTRAL/GI EXCEEDING	ROUND) ARE REQUIRED; WHERE EXPOSED; OR IN LENGTHS		

Pr W	ike
	Partnership 11275 S. Sam Houston Parkway W.

Suite 200

Houston, Texas 77031

(832) 554-1130

www.pwarch.com

MEP Engineer**E&C Engineers & Consultants**TX Firm Registration No: F-0030681010 Lamar St # 650Houston, TX77002



HE SAL ANYANNE ON THIS DAMING WIS AUTHORIZED IN: William C. Clifford 2017.02.10 06:56:20-06'00' E&C Engineers & Consultants Inc. Texas Firm Registration Nox F-003068

No.	Date	Description
1	02/10/2017	Issued for Construction

Project

School of Public Health Egress Renovation

UT Health

Drawing Name

Mechanical/Electrical/ Plumbing Symbols and Abbreviations

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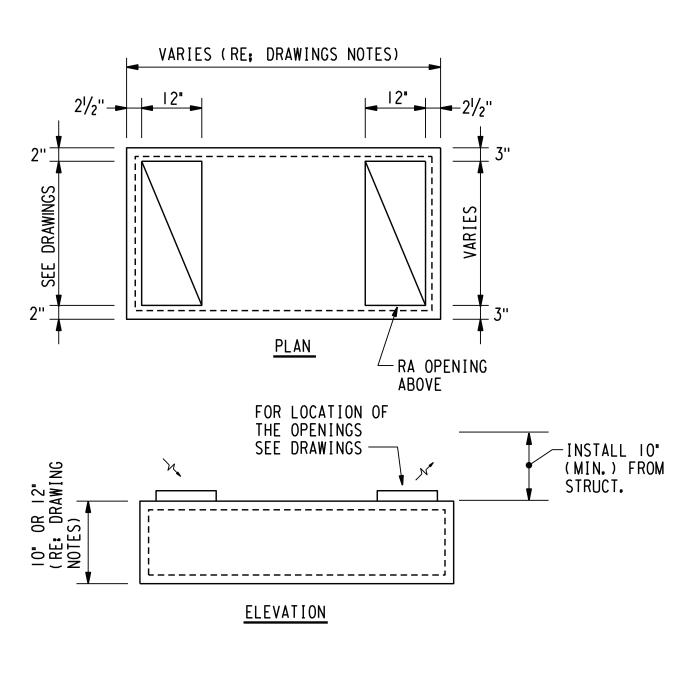
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C.	Furnish access doors to the General Contractor, for installation by the appropriate trades, in locations where access is required to mechanical and plumbing equipment which would be otherwise inaccessible. Care should be taken in locating mechanical and plumbing systems to minimize the number of access doors required. Final locations of access doors in finished areas shall be approved by the architect. Access doors shall be as specified by the Architect. Where no architectural access door specifications exists, then access doors shall be as follows:		
	Drywall Partitions Drywall Ceilings	Inryco/Milcor Style DW Inryco/Milcor Style SW or Style WB-PL as directed by Architect	
	Plaster Walls or Ceilings	Inryco/Milcor Style WB-PL	
12.	DDC HVAC TEMPERATURE CONTROLS		
А.		emperature sensors and associated control wiring shall be hall coordinate General Construction to allow the Owner ring.	
13.	FIRE PROTECTION		
А.	General.		
1.	All fire protection work on the project shall be performed by a state licensed fire protection contractor.		
В.	Sprinkler Systems:		
1.	The existing building is sprinklered, new sprinkler heads shall be added and existing sprinkler heads shall be relocated or capped above the ceiling, as required to suit the tenant space plan and ceiling layout and in accordance with NFPA 13 and other applicable code requirements. Proposed sprinkler head locations and types for new, existing and relocated existing heads shall be submitted to the architect for approval prior to design of the sprinkler system modifications.		
2.	NFPA 13 pipe sizing via the pipe schedule method may be used where there are only minor changes to an existing system. Hydraulic calculations shall be used where new systems are added or existing systems are extensively modified. Sprinkler system design shall be by a state licensed Responsible Managing Employee (RME) in the direct employ of the fire protection contractor.		
C.	Fire Protection Materials:		
1.	Fire protection and sprinkler piping shall be Schedule 40 black steel per ASTM A795. Schedule 10 thinwall black steel pipe per ASTM A795 may be used for sprinkler piping, at the Contractor's option, when thinwall sprinkler pipe is already used elsewhere on the project or is being extended on the project.		
2.	Piping 2" and smaller shall use ANSI B16.3 malleable iron screwed fittings. Piping 2-1/2" and larger shall use a grooved piping connection system with "cut-grooves" and matching fittings and couplings, UL Listed for fire protection use. Where schedule 10 thinwall pipe is used in a grooved coupling system, "rolled-grooves" shall be used.		
3.	Fire protection valves 2" and smaller shall be bronze, outside screw and yoke gate valves, Jenkins No. 275-J (175 PSI), Crane No. 424 (300 PSI) or and approved equal as required to suit the system pressure rating. Valves 2-1/2" and larger shall be bronze fitted, iron body outside screw and yolk gate valves, Jenkins No. 825-A (175 PSI), Crane No. 7-1/2E (300 PSI) or an approved equal as required to suit the system pressure rating.		
4.	Existing floor sprinkler floor control stations shall be reused.		
5.	Fire protection and sprinkler piping supports shall be UL Listed for fire protection use and piping shall be supported per NEPA 13 and NEPA 14		

- supported per NFPA 13 and NFPA 14.
- 6. Sprinkler heads shall match the existing building standard.

- D. Testing: 1. Test sprinkler systems in full accordance with applicable underwriters' and municipal requirements, but in no case shall be sprinkler system be tested at less than 200 pounds hydrostatic pressure. Apply the test for a minimum of two consecutive hours with no loss in pressure. Prior to applying the hydrostatic test, the system shall be tested with 50 psig compressed air for a period of 10 minutes with no loss in pressure.
- 2. Furnish and pay for all devices, materials, supplies, labor and power required in connection with tests. Make all tests in the presence and to the satisfaction of the UTHSC-H, Engineer and Inspectors having jurisdiction. Repair or replace defective work with new work without extra charge and repeat test as directed, until work is proven satisfactory.





- insulation thickness. Where regulators are required in non-accessible locations, provide access doors or
- counter-balanced type. 7. Ductwork transitions and offsets shall be constructed in accordance with the SMACNA HCDS. Branch taps
- 8. Turning vanes shall be installed in all abrupt elbows and bend of 46 degrees or greater and where shown on be used. Turning vanes are not required in standard radius elbows.
- 9. Rigid round low pressure, low velocity ductwork material, gauge, transverse joints and longitudinal seams shall ductwork fittings shall be in accordance with the SMACNA HSCDS. 10. Fire dampers shall be installed in all ductwork penetrations of rated walls and floor slabs and as shown on the
- or an approved equal. Dampers shall be installed in accordance with UL Listing requirements.
- 11. Provide Flexmaster Inspector Series Tab Door or an approved equal dual wall, insulated, hinged, gasketed assembly
- 12. All ductwork supports shall be per the SMACNA HCDS with all supports directly anchored to the building
- B. Flexible Duct:
- connections and 6'-0" for air device connections. Where longer runs are required, provide rigid duct extensions.
- insertion losses (IL), in dB, as follows:
- <u>Octave Band</u> Straight Duct at zero flow Straight Duct at 2500 fpm flow 90 Bend Duct at zero flow
- 90 Bend Duct at 2500 fpm flow 12 3. Flexible ducts shall be installed in accordance with the
- HVAC terminal unit connections or 90 degrees for air device connections.
- 5. All flexible duct connections upstream of HVAC terminal units shall be made by turning back the insulation and approved metalized duct tape.
- Flexmaster STO Fittings. Spin-ins shall be installed with their damper axis parallel to air flow
- C. Air Devices: 1. Furnish and install air distribution devices as scheduled on the drawings and required. Devices shall be Coordinate mounting types with the architectural drawings.
- installed in the branch duct.
- painting contractor. The Architect/Engineer's decision on white color compatibility is final.
- PIPING AND VALVES A. Domestic Water Piping:
- copper joined with ASTM B32 95-5 tin-antimony solder.
- B. Waste and Vent Piping:
- assembly over a one piece Neoprene sealing sleeve.
- 2. Piping below grade shall be schedule 40 PVC with solvent welded DWV fittings. Slope all waste and vent piping in accordance with local plumbing code requirements.
- 4. Furnish and install floor drains, floor sinks, cleanouts and other accessories as noted on the drawings or required by local plumbing code requirements.
- C. Piping Installation:
- desian.
- plumb and true, parallel with walls and other pipes and neatly spaced. Domestic water piping shall be disinfected in accordance with local code requirement.
- 10. INSULATION
- the duct and provide a continuous vapor parrie
- an approved equal preformed cover.
- C. Furnish and install pipe insulation as follows: <u>Piping Type</u>
- Domestic Hot Water All exposed plumbing fixture traps and supplies shall be insulated with a fully molded, flexible vinyl insulation
- system equal to McGuire ProWrap. MISCELLANEOUS 11

nameplates.

- Α.
- as furnished and shall provide rough-in and final connections as required. Each piece of new HVAC equipment shall have a screw secured, engraved plastic nameplate. Nameplates

6. Balancing dampers shall be provided where shown on the drawings. Dampers shall consist of single blade dampers for rigid round duct and rectangular duct up to 11" high and opposed blade dampers for rectangular ducts 12" high and larger. Dampers shall be in accordance with the SMACNA HCDS. Single blade dampers for rectangular duct shall be Ruskin MD35 single blade series or an approved equal. Opposed blade dampers for rectangular duct shall be Ruskin MD 35/OB or an approved equal. Rigid round duct dampers shall be Duro Dyne "JDS" series jiffy damper or an approved equal. At contractor's option, dampers may be shop fabricated using Duro Dyne model RS-256 "rapit" dampers regulators or an approved equal. Damper regulators for concealed accessible applications shall be Young Valcalox 400 series or an approved equal. Where regulators are installed on externally insulated ductwork, provide stand-off platforms at least 1/4" higher than the

Young or equal extension rods, couplers 90 degree gear drives, etc. As required and Young 301 or approved equal flush-mounted regulator, as directed by the Architect. Backdraft dampers shall be of the self-operating,

shall be 45 degree entry expanded taps unless shown otherwise and shall be in accordance with the SMACNA

the drawings and shall be fabricated with Elgen, sheet metal products or approved equal single vane. Turning vanes shall be constructed in accordance with the SMACNA HCDS. Where shown, and at the contractor's option on all abrupt elbows, standard radius elbows constructed in accordance with the SMACNA HCDS may

be in accordance the SMACNA HCDS except that draw band transverse joints will not be acceptable. Round

drawings. Dampers shall be designed for dynamic closure against airflow and pressure. Dampers shall be rated for 1-1/2 hours per UL Standard 555 and shall comply with all applicable NFPA 90A and UL Standard 555 requirements. Fire dampers shall be Ruskin Type DIBD2, Style A, for applications where the Style A damper free area exceeds 95% of the free area of the duct in which the damper is installed, or Style B, for applications where a Style A damper free area is less than 95% of the free area of the duct in which the damper is installed,

access doors in ductwork as required for access to fire, smoke and fire/smoke dampers, duct smoke detectors, sampling tubes and other duct-mounted devices. Minimum door size shall be 14" x 14" unless a smaller size is required due to duct dimensions. Provide minimum 6" x 6" access doors at each zone of a multi-zone damper

structure. Supports shall be on maximum 8'-0" centers with additional supports as required to prevent sagging. 13. All longitudinal and transverse joints in all new and existing sheet metal ductwork shall be sealed with a water base adhesive sealer designed for use in medium velocity duct systems. Sealer shall be effective against both negative and positive pressure losses. Sealer shall have a flame spread Rating of 25 or less and a smoke developed rating of 50 or less. Apply un-thinned with brush, trowel or caulking gun per the manufacturer's recommendations and allow to dry for a minimum of 48 hours before air is applied to the system. Sealer shall be "Iron Grip Water Base Duct Sealant #601" as manufactured by Hardcast, Inc. or an approved equal. Total duct system leakage shall not exceed 5% of the schedule capacity of the fan serving the duct system.

1. Furnish and install flexible duct for final connections to HVAC terminal units and air devices where shown on the drawings. Flexible duct connections shall be limited to a maximum length of 1'-6" for HVAC terminal unit

2. Flexible duct shall be a factory-fabricated assembly consisting of an inner liner, insulation and an outer vapor barrier jacket. The inner liner shall consist of a galvanized steel helix mechanically securing an inner liner composed of a tri-laminate of aluminum foil, fiberglass and aluminized polyester for applications upstream of HVAC terminal units and an acoustically transparent CPE film for applications downstream of HVAC terminal units. Insulation shall be nominal one inch (1") thick fiberglass with a maximum thermal conductance of 0.23 Btu/hr/sf/f. The assembly shall be sheathed in reinforced metalized aluminum vapor barrier jacket with a maximum permeability of 0.05 Perm per ASTM E96, Procedure A. Flexible duct assemblies shall be listed Class 1 by Underwriters' Laboratory with a flame spread of not over 25 and a smoke developed rate of not over 50. Ducts shall also comply with NFPA Standard 90A. Flexible duct for applications upstream of HVAC terminal units shall be rated for 12" positive and 5" negative internal working pressure and shall be Flexmaster Type 3M or an approved equal. Flexible duct for air device applications shall be rated for 6" positive and 4" negative internal working pressure and shall be Flexmaster Type 6M or an approved equal. Flexible duct for air device applications shall be designed to provide sound attenuation and a 10' length of 8" duct shall have typical

3	<u>_4</u>	<u>5</u>	<u>6</u>	_7
1	36	35	38	21
9	36	35	38	22
7	42	42	39	23
1	40	38	38	23
the SM	ACNA HC	DS. Flex	ible ducts	s shall be installed

ed in a fully extended condition free of sags and kinks, using only the minimum length required to make the connection, subject to the maximum lengths above. Bends in any length of flexible duct shall not exceed 45 degrees for

4. Where flexible duct extension exceeds 36", horizontally, a support shall be provided. Duct shall be suspended on 36" centers with a minimum 3/4" wide flat banding material and a minimum 6" wide sheet metal protective

securing the inner liner with duct sealer and Flexmaster LS Series or equal 1/2" wide positive locking stainless steel straps. The insulation shall then be placed over the joint and sealed on the exterior with Panduit or equal self-locking nylon straps and an approved metalized duct tape. All air device flexible duct shall be made by turning back the insulation and securing the inner liner with Flexmaster LS Series or equal 1/2" wide positive locking stainless steel straps or Panduit or equal self-locking nylon straps and sealing with an approved metalized duct tape. The insulation shall then be placed over the joint and sealed on the exterior with an

6. All take-offs for HVAC terminal units shall be conical bellmouth taps, equal to a Flexmaster Conical Bellmouth Fitting, or 45 degree side take offs without dampers, equal to a Flexmaster STO Fitting. All round take-offs for air devices shall be made with a damper spin-collar, equal to a Flexmaster dampered spin fitting. Where the duct height does not allow the use of a spin-in fitting, use 45 degree side take offs with dampers, equal to

complete with all required mounting accessories for installation in the actual construction at the installation location. Devices shall be suitable for mounting in the ceiling or wall type for which they will be installed.

2. All air devices shall be selected to provide a NC of 30 or less at indicated CFM and shall include other typical accessories as required. Do not install balancing dampers in the air devices. Balancing dampers shall be

3. All ceiling and wall-mounted air devices shall be painted white or off white, unless specified otherwise, and all air devices shall be the same color. Where the factory finish on all devices is not the same as determined by the architect/engineer, then the Division 15 Contractor shall be responsible for coordinating field-painting of air devices by the painting contractor. The Division 15 Contractor shall be responsible for all costs associated with painting of white or off white air devices. Special color painting of air devices shall be the responsibility of the

1. Piping shall be type "L" hard drawn copper tubing per ASTM B88. Fittings shall be ANSI B16.22 wrought

2. Valves for isolation service up to 2-1/2" shall be bronze body ball or gate valves, Jenkins No. 9005 or an approved equal full port ball valve or Jenkins No. 47 or an approved equal gate valve. Valves for isolation service 3" and larger, shall be bronze-mounted, iron body, OS&Y gate valves, Jenkins No. 651A or an approved

1. Piping above grade shall be CISPI 301-78 standard weight hubless cast iron pipe and fittings joined with CISPI 310 hubless pipe clamps. Hubless pipe clamps shall consist of a stainless steel corrugated shield and clamp

1. Furnish and install suitable and substantial hangers, inserts, and supports for all piping. Hangers and supports shall be Grinnell, or an approved equal. Pipe hangers shall be attached to steel by beam clamps or approved

2. Install pipes approximately as shown on drawings and as directed during installation as straight as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. Erect pipes risers

Furnish and install Schuller "Microlite" R-Series or an approved equal 2" thick flexible fiberglass external duct wrap with fiberglass reinforced kraft-scrim-foil vapor barrier jacket on all sheetmetal supply ductwork, on all rigid round ductwork and on all outside air ductwork. Ductwrap shall have a density of 0.75 pounds per cubic foot, K factor of 0.31 at 75° F and a permeability of 0.04 perm. Insulation shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less. External ductwrap insulation shall be installed to fully cover

Furnish and install premolded fiberglass pipe insulation/vapor barrier on all piping listed below. Pipe insulation shall be Schuller AP-T, Owens-Corning ASJ/SSL or an approved equal installed using a factory-applied pressure sensitive tape closure system and matching butt strips to provide a continuous vapor barrier. Valves, fittings, and flanges shall be insulated using premolded rigid glass fiber insulation and Manville Zeston 25/50 or

> <u>Thickness</u> 1/2"

Mechanical and plumbing connections to Owner and contractor-furnished equipment shall be the responsibility of this contractor, unless noted otherwise. This contractor shall verify the rough-in requirements for equipment

shall indicate equipment type, designation, voltage and branch circuit number. Nameplates shall be clearly visible on equipment as installed. New nameplates and descriptions shall match the style of existing

DIVISION 15 - MECHANICAL

GENERAL

A. Furnish all labor, supervision, materials, equipment, apparatus and appurtenances required for a complete working and coordinated mechanical and plumbing systems as shown on the drawings and specified herein. B. All mechanical and plumbing work shall be constructed and finished in every respect in a workmanlike and substantial manner. Furnish and install all work as may be necessary to complete systems in accordance with the best trade practice and to the satisfaction of the Engineer. The entire installation shall be ready in every

respect for satisfactory and efficient operation when completed. The Engineer will interpret the meaning of the drawings and specifications and will reject all work and materials which, in his judgment, is not in full accordance therewith. Submit a single certification stating that all portions of the work are in accordance with contract requirements.

Warranty all work against faulty and improper material and workmanship for a period of one year from date of final acceptance by UTHSC-H, except that where guarantees or warranties for longer terms are specified by contract, such longer term shall apply. At no additional cost to UTHSC-H or Engineer, within 24 hours after notification, correct any deficiencies which occur during the warranty period, to the satisfaction of UTHSC-H.

D. The Contractor covenants and agrees that he and his Subcontractors and his and their agents and employees will provide and maintain a safe place to work and will comply with all laws and regulations of any governmental authorities having jurisdiction thereof, and the Contractor agrees to indemnify, defend and hold harmless, the Engineer and Owner from and against any liability, loss, damage or expense, including attorneys' fees, arising from a failure or alleged failure on the part of the contractor, his subcontractors and his and their agents and employees to provide and maintain a safe place to work or to comply with laws and regulations of governmental authorities having jurisdiction thereof.

The Contractor and each Subcontractor covenants and agrees to indemnify, defend and hold harmless the Engineer and Owner against any liability, loss, damage or expenses, including attorneys' fees, arising from a failure or alleged failure on the part of the contractor, his subcontractor or his or their agents and employees properly to discharge the obligations assumed by him or them in the performance of the work, including any act or omission allegedly resulting in death or personal injury or property damage on improper construction, construction techniques, or the use of improper or inappropriate material or tools.

Comply with all applicable requirements of UTHSC-H.

Architectural specifications and general, special and supplementary conditions, where provided, shall form a G part of these specifications. H. This Contractor shall be responsible for all leaks in all pipes for a period of one year from date of acceptance of

work under this contract. Repair at no cost to UTHSC-H, all such leaks which occur within 24 hour notice thereof by UTHSC-H. Leaks which occur prior to the completion of this contract shall be repaired at once. This Contractor shall be responsible for any damage caused by such leaks and repair thereof and reimburse UTHSC-H for all expense incurred thereby. This Contractor indemnifies UTHSC-H, the Architect and the Engineer against loss, liability, damage or expense, including reasonable attorneys' fees, in connection with any claim resulting from such leaks.

CODES AND PERMITS

- All work shall be done in full compliance with all applicable state and local codes, requirements and ordinances and applicable requirements of NFPA, UL and other applicable standards. All equipment and materials shall be new and listed by the Underwriters' Laboratories, inc., Manufactured in full
- accordance with applicable ASME, NEMA, ANSI, or IEEE standards. Secure and pay for all necessary approvals, permits, inspections, etc., and deliver the official records of the granting of permits to the tenant without additional cost to the Owner.

COORDINATION

- Coordinate the work of this section with the work of other sections in ample time for the proper installation and А. connection. Carefully check space requirements with other trades to ensure that all equipment and materials can be installed in the spaces allotted thereto.
- B. Work on this project will be phased, as defined by the Architect and will occur while other areas of the floor and the floor below are occupied. Coordinate all work with the General Contractor to prevent noise, dust or worker disruption of the occupants. Continued building operation is critical.
- Carefully check the documents of other sections to ascertain the requirements of any materials or equipment being furnished or furnished and installed by that section and provide the proper installation or connections including controls
- Transmit all information required for work being performed by other trades in ample time for the proper installation and connection and for the provision of all openings required in floors and walls.
- Refer to Architectural Drawings for exact locations of supply and return air devices and thermostats, if shown. Refer to the Architectural Drawings for equipment finishes and materials not specified herein. Provide required supports and hangers for ductwork, piping and equipment, such that loading will not exceed allowable loading of structure. Submittal of a bid shall be deemed a representation that the contractor
- submitting such bid has ascertained allowable loading and has included in his estimates, the costs associated in furnishing required supports. All ductwork, piping and equipment supports shall be independent of the ceiling support system.
- All interruptions of services (power, water, HVAC, etc.) And all work in occupied spaces (e.g. plumbing or G. electrical work in an occupied space below a space under construction) must be scheduled through the UTHSC-H Project Manager a minimum of 5 days in advance. Any interruptions or construction which will affect normal operation of the building or it's occupants shall be scheduled, with the UTHSC-H Project Manager's approval, on an after-hours basis.
- Field core drilling and cutting of holes in the existing structure for the work under this section shall be the Н. responsibility of this Contractor. Drilling and cutting shall be coordinated through the General Contractor and approved by the UTHSC-H Project Manager. Where the services of a structural engineer are necessary to approve such drilling and cutting, this contractor shall bear the cost of such services. All costs for drilling, cutting and associated structural reinforcing shall be borne by this Contractor.
- Cutting and patching of new or existing building finishes for installation of work of this section shall be coordinated through the General Contractor and approved by the UTHSC-H Project Manager. Where cutting and patching is approved, it shall be performed by the trades who normally install the work which is being removed and the cost of cutting and patching shall be borne by this Contractor. EXISTING CONDITIONS
- Before submitting bid, the Contractor shall become thoroughly familiar with actual existing conditions at the building of the present installations to which connections must be made or which must be changed or altered. The intent of the work is shown on the drawings and described hereinafter, and no consideration will be granted by reason of lack of familiarity on the part of the Contractor with actual physical conditions at the site.
- Schedule all work connecting with existing systems to ensure a minimum of service interruption. Notify the UTHSC-H Project Manager in writing of any planned interruption in service and proceed with plan only after the UTHSC-H Project Manager's written approval is obtained. Where specifically called for on the drawings or when permission is specifically given by the UTHSC-H Project
- Manager, existing equipment and material may be reused. Verify and become thoroughly familiar with the building systems in order to provide for proper ductwork and ceiling interconnections where applicable. Verify the height of existing ductwork to ascertain that it does not
- conflict with the installation of light fixtures, ceiling systems or other new construction. Promptly notify the Architect and Engineer, in writing, of any potential conflicts. This Contractor shall repair any fireproofing damaged by this Contractor, to the integrity of the original
- construction. DEMOLITION
- Refer to Architectural Demolition and Renovation Plans for scope of area being renovated and walls to be Α. removed
- B. Where mechanical/plumbing work occur in walls being removed, the mechanical/plumbing contractor is responsible for removing/relocation such work as required.

SUBMITTALS Α.

- No manufacturer's data or shop drawing submittals are required for this project scope. Notify the Engineer, in writing, within 5 days of award of contract, of the proposed delivery schedule, for any B equipment or material, which will prevent the installation from being completed at the time of the scheduled project completion.
- During the progress of the work, make a careful record of all changes by which the actual installation differs from that indicated on the Contract Drawings. Upon completion of the installation, furnish two complete sets of as-built drawings. These drawings shall be submitted to the Engineer for approval. After approval they shall become the property of the UTHSC-H. Final payment will be withheld until receipt of the approved as-built drawings.

TESTING AND BALANCING

- The Contractor shall fully test all systems, which the Contractor has installed, for proper operation and shall demonstrate such proper operation to the UTHSC-H's and Engineer's representative. Any systems which do not test out satisfactorily shall be repaired or replaced and retested.
- All pressurized piping shall be leak tested prior to enclosure or cover-up. Piping shall be leak tested for В. 24-hours under a hydrostatic pressure of 150% of the system design working pressure. The Engineer shall be notified prior to all hydrostatic tests and may elect to witness any of the tests. Care shall be taken to protect any equipment which may be damaged by hydrostatic testing.
- All soil, waste, storm and vent piping shall be leak tested by temporarily plugging piping stacks and filling the system to be tested with a minimum of 10 feet of standing water for 24 hours. Additional testing shall also be provided as required by the local plumbing inspection department. All systems and equipment installed on the project shall be balanced and/or adjusted to provide proper D
- operation or function in accordance with the drawings, specifications, and manufacturer's recommendations. All temperature control, air and water balancing shall be performed by the installing contractor.

Perform an air balance for the air system modifications as applicable, including new and existing air devices served by each system being added or modified, to maintain 72F in all occupied spaces. Delivered air flows shall be within 5% of design airflows. An air balance report shall be submitted to the Engineer for approval. AIR DISTRIBUTION EQUIPMENT

Sheet Metal Ductwork:

- 1. Furnish and install new ductwork as shown on the drawings. All ductwork shall be galvanized sheet metal constructed in accordance with the latest edition of the SMACNA HVAC Duct Construction Standards (HDCS), the ASHRAE guide and data "Handbook of Fundamentals" (latest edition) and NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems" (latest edition).
- Duct sizes shown on the drawings are free air stream dimensions. Where duct liner is specified, increase duct sheet metal dimensions accordingly. Ductwork upstream of HVAC terminal units, and outside air ductwork shall be designed for velocities up to 2500 FPM and pressures up to 3" WG. Ductwork downstream of HVAC terminal units shall be designed for velocities to 2500 FPM and pressures up to 2" WG.
- 3. Route all duct tight to underside of structure, unless otherwise noted. All ductwork shall be top level with bottom and side transitions only. The Mechanical Contractor shall be held responsible for coordinating with all other trades prior to the construction or installation of ductwork. Some ductwork may require the use of S-Drive joints, flat seams or offsets to allow installation of other ducts or equipment. Use 45 degree radius elbows (centerline radius 1.5 time duct height) to rise up into and drop down from pan or joist space when crossing ductwork as shown. The mechanical contractor shall be responsible for coordination of all such work with the general contractor and other subcontractors as required. Minimum bottom of duct elevation above finished ceiling shall be 9", unless noted otherwise on the drawings.
- 4. All ductwork shall be constructed of "lock forming quality" galvanized sheet metal with a minimum gauge and reinforcing not less than that shown in SMACNA HDCS. Cross-break or transverse bead all flat surfaces which are more than 12" wide. Transverse beading shall be on 12" centers and shall be a minimum of 1/8" deep at the center of the bead and 3/8" wide at the base of the bead. Do not cross-break negative pressure ductwork
- 5. All longitudinal seams shall be "Pittsburgh Lock" or button punch snap lock at corner seams and grooved (ACME) seam or seam welded in sides between corners. All transverse joints and intermediate reinforcement shall be as shown in SMACNA HCDS with drive slip connections (reinforced or unreinforced as required) on the short sides and hemmed "S" slip connections (reinforced or unreinforced as required) on the long sides.



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School of **Public Health** Egress Renovation

UT Health

MECHANICAL/PLUMBING SPECIFICATIONS AND DETAIL

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16. MOUNTING HEIGHTS

Mounting heights for electrical devices shall be as follows, unless noted otherwise on the electrical or architectural drawings or required to match existing installations or TAS/ADA

ecti	ural drawings or required to match existing installations	or TAS/ADA:
1	Wall switches	48" above finished floor
	Wall receptacles	18" above finished floor with long axis vertical. Above counter receptacles 6" above counters without backsplashes or 4" above backsplash for counters with backsplashes, with long axis horizontal
,	Voice and data outlets	18" above finished floor

Wall telephone outlets 45" above finished floor Fire alarm pull stations 45" above finished floor Fire alarm wall signals 80" above finished floor or 6" below

finished ceiling, whichever is lower.

In lay-in ceiling provide a minimum of two hold-down clips per fixture, located at opposite corners of fixtures. Confirm with ceiling installer that grid is capable of supporting the light fixtures, where ceiling grid is not, provide hanger wires attached to the structure. WIRE AND CABLE

Control wiring shall be stranded copper, No. 14 AWG minimum with Type THW or THHN/THWN insulation. wiring sized No. 10 AWG and larger shall be stranded copper with Type THHN/THWN insulation. Stranded wire shall not be terminated under screw terminals.

- color coded insulation or color coded tape at every conductor splice, termination or tap. conductors with THHN insulation and a full size green THHN insulated ground wire and an aluminum or
- galvanized steel flexible armor. exposed, or in lengths exceeding 20'.
- Type MC cable shall be supported in accordance with the NEC. For 120 volt, 20 amp branch circuits with a length of 75' or more to the homerun junction box or first outlet, 150' or more, to the first outlet provide No. 10 AWG conductors to the center of the load (minimum first outlet, where there is only one outlet).

Conductors for lighting and power branch circuits shall be of such a size that the drop in potential from the panelboards to the farthest point on the circuits shall not exceed 2% at maximum load and 70% power factor, at 120/208 volts and 1% at maximum load at 277/480 volts.

CONDUIT AND BOXES

10

11.

- structure. Supports shall be independent from the ceiling system supports.
- Electrical metallic tubing (EMT) shall be used for raceways indoors where concealed or exposed. Electrical metallic tubing may not be used in damp or wet locations or where subject to physical damage. access for maintenance or adjustment. Liquid tight flexible metal conduit shall be used for all flexible
- connections in damp or wet areas. conduit shall be concealed below grade or enclosed with a minimum of 2" of concrete.
- drawings. Outlet and junction boxes shall be minimum 4" square or octagonal by 2_1/8" deep with coverplates or plaster
- all outlet and junction boxes used in suspended ceiling spaces. All slab penetrations shall be sealed with a UL_listed fire safing and waterstop system and all rated partition
- requirements.
- WIRING DEVICES Duplex receptacles shall be standard face, specification
- applicable. Typical receptacle types shall be as follows Duplex, NEMA 5 15R, white 5252-W
 - Duplex, NEMA 5_20R, white
 - 5352-W Duplex, NEMA 5-20R GFCI, white
- #S7899-W
- Switches shall be toggle type, specification grade type, rated at 120/277 volts, 20 amps, and shall match the building standards, where applicable. Typical switch types shall be as follows, or an approved equal:

Single pole, white

- Three_way, white Wall mounted room occupancy sensor with off-auto switch, capable of controlling fluorescent electronic ballast
- shall be as noted on the drawings or an approved equal.
- with a common coverplate, whenever possible. 12. ELECTRICAL EQUIPMENT
- All electrical equipment used on the project shall, to the maximum extent possible, be the product of a single manufacturer. All new electrical equipment shall be fully compatible with existing equipment. Where new
- circuit numbers identified on the cover with a black felt tip marker.
- VOICE AND DATA OUTLETS 13.
- ceiling space or a voice or data terminal board as noted on the drawings.
- not clearly indicated, the Contractor shall be responsible for clarifying the exact scope of the work prior to submitting a bid.
- C. All voice and data wiring which is not installed in conduit, shall be teflon-jacketed and UL_listed for use in return air plenums. FIRE ALARM 14.
- alarm devices and functions, including devices and functions in addition to those shown on this drawing, as required by the specifications, applicable codes and standards and the AHJ.
- Furnish and install new fire alarm system components and devices, with a proper interface to the existing fire alarm system, as shown on the drawings and as required. New components shall be UL_listed for use with the building fire alarm system.
- wiring where possible.
- New fire alarm wiring shall be either UL_listed fire alarm cable in conduit or UL_listed low smoke producing the ceiling system for its support. New fire alarm riser wiring between floors in high-rise buildings shall always be installed in conduit with a 2 hour enclosure.
- must be coordinated with and approved by the Project Manager MISCELLANEOUS

- furnished and shall provide rough_in and final connections as required.
- by this Contractor or the Owner, General Contractor or other Contractors. HVAC temperature controls, control devices and control wiring shall be furnished and installed by the Owner.
- as shown on the drawings and as required. Furnish and install security systems provisions, where shown on the drawings. Prior to installation, coordinate the
- exact rough_in requirements with the selected security vendor. Provide all material and equipment to make the final connections to all equipment, appliances and furniture including any flexible conduit for furniture connections not furnished with furniture.
- Furnish access doors to the general contractor, for installation by the appropriate trades, in locations where access is required to electrical equipment which would otherwise be inaccessible. Care should be taken in locating electrical equipment to minimize the number of access doors required. Final locations of access doors
 - Drywall partitions Drywall ceilings
 - Plaster walls or ceilings

Power wiring sized No. 12 AWG shall be solid or stranded copper with Type THHN/THWN insulation. Power

Conductor splices, taps, and terminations shall be made using connectors or lugs approved for the intended use. Preinsulated spring connectors may be used for connections and splices of wire sizes up to No. 8 AWG. All power wiring shall be color coded to match the base building color coding schedule. Color coding shall be via

Type MC cable may be used, if it is currently used in the space and approved by the Project Manager: for drops in partitions to receptacles; for single circuit branch circuit wiring from receptacle to receptacle; for lay_in fixture pigtails; for switch leg drops; from fixture junction boxes or nonlay_in fixtures; or for single circuit branch circuit wiring from fixture to fixture (except lay_in fixtures) and fixture to junction box. Type MC cable shall be copper

Type MC cable shall not be used for branch circuit homeruns or for receptacle to receptacle wiring in partitions. Type MC cable shall not be used where more than three conductors (phase/neutral/ground) are required, where

provide minimum No. 10 AWG conductors to the homerun junction box or first outlet. Where the additional circuit length from the homerun junction box or first outlet to the last outlet exceeds 75', provide minimum No. 10 AWG conductors to the last outlet. For 208 volt, 20 amp branch circuits with a length of 100' or more, provide No. 10 AWG conductors for the entire branch circuit. For 208 volt, 30 amp branch circuits with a length of 100' or more, provide No. 8 AWG conductors for the entire branch circuit. For 277 volt, 20 amp branch circuits with a length of

All power wiring shall be installed in an approved raceway, except where Type MC cable is allowed, as specified hereinabove. All control wiring shall be installed in an approved raceway, except that low voltage control wiring may be installed without a raceway, in concealed accessible locations, when a UL_listed plenum rated cable is used. Conduit shall be concealed to the maximum extent possible and when exposed, shall be run parallel and perpendicular to building lines. All conduit and Type MC cable shall be independently supported from the building

Flexible conduit, in lengths not to exceed 48", shall be used to extend conduit connections to motors, transformers and other permanently connected appliances, equipment or devices which are vibration producing or require

PVC conduit shall not be used, except where specifically noted on the drawings. Where noted to be used, PVC

Minimum conduit size shall be 1/2" for power wiring and 3/4" for voice and data, unless noted otherwise on the

rings as required. Larger boxes shall be provided where required by the NEC. Deep boxes shall be provided for

penetrations shall be sealed with a UL_listed fire safing system, in accordance with applicable state and local

on grade type and shall match the building star vs, or an approved equal:	idards, where
	Leviton
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Where only one wiring device is installed on a 20 ampere branch circuit, then a 20 ampere wiring device must be

Leviton 1221-2W Leviton 1223-2W

Matching white thermoplastic coverplates shall be provided for all wiring devices. Wiring devices shall be ganged

components are added to existing electrical equipment, they shall be manufactured by the existing equipment manufacturer and shall have rating equal to or exceeding the existing equipment in which they arer installed. Safety switches shall be heavy duty type, fuse or nonfused, as noted, and with a solid neutral bus where a neutral is present. Switches shall have a NEMA 1 enclosure for indoor use and a NEMA 3R enclosure for outdoor use. Each piece of electrical equipment shall have a screw secured, engraved plastic nameplate. Nameplates shall indicate equipment type, designation, voltage and equipment served, as applicable. Typed panel schedules indicating circuit numbers, loads served and connected loads for all circuits shall be installed behind a lexan cover inside each new and existing panelboard which serves the lease space. All junction and pull boxes shall have

Unless noted otherwise on the drawings, individual voice and data outlets shall consist of a drywall mounting ring with a grommet in the wall top plate and a pull string up to an accessible ceiling space. Where voice and data outlets are located in areas with inaccessible ceiling spaces and elsewhere where noted on the drawings, voice and data outlets shall consist of a wall outlet box with a 3/4", minimum, conduit with pullstring to an accessible

Voice and data cable shall be furnished, installed and terminated by Owner. Where the exact scope of work is

Fire alarm device locations shown on the drawings are for general coordination purposes only. A state licensed fire alarm contractor shall design the fire alarm system/system modifications for the space as specified with all fire

Relocate existing building fire alarm devices as shown on the drawings and as required. Reuse existing fire alarm

plenum type fire alarm cable installed without conduit, as required to match existing building fire alarm wiring. Fire alarm wiring which is installed without conduit shall be suspended from the structure and shall not depend upon

Modifications and interface with the existing building fire alarm system and any interruptions in fire alarm service

Electrical connections to Ownrer and Contractor-furnished equipment shall be the responsibility of this contractor, unless noted otherwise. This Contractor shall verify the rough_in requirements for equipment as

Miscellaneous electrical controls and equipment shall be furnished and installed as noted on the drawings. This contractor shall be responsible for furnishing all miscellaneous control power connections to equipment furnished

This Contractor shall be responsible for furnishing 120 volt power connections to the HVAC temperature controls

in finished areas shall be approved by the Architect. Access doors shall be as specified by the Architect. Where no architectural access door specification exists, then access doors shall be as follows:

> Inryco/Milcon Style DW Inryco/Milcon Style DW or Style WB-PL as directed by the Architect

Inryco/Milcon style WB-PL

DIVISION 16 - ELECTRICAL GENERAL

> Furnish all labor, supervision, materials, equipment, apparatus and appurtenances required for a complete working and coordinated electrical system as shown on the drawings and specified herein.

- All electrical work shall be constructed and finished in every respect in a workmanlike and substantial manner. Furnish and install all work necessary to complete the system in accordance with the best trade practice and to the satisfaction of the Engineer. The entire installation shall be ready in every respect for satisfactory and efficient operation when completed. The Engineer will interpret the meaning of the drawings and specifications and may reject any work and materials which, in their judgment, is not in full accordance therewith.
- Submit a single certification stating that all portions of the work are in accordance with contract requirements. C. Warranty all work against faulty and improper material and workmanship for a period of one year from date of final acceptance by UTHSC-H, except that where guarantees or warranties for longer terms are specified, such longer term shall apply. At no additional cost to UTHSC-H or Engineer, within 24 hours after notification, correct any deficiencies which occur during the warranty period, to the satisfaction of UTHSC-H.
- The Contractor covenants and agrees that he and his subcontractors and his and their agents and employees will D. provide and maintain a safe place to work and will comply with all laws and regulations of all governmental authorities having jurisdiction thereof, and the Contractor agrees to indemnify, defend and hold harmless, the Engineer and Owner from and against any liability, loss, damage or expense, including attorneys' fees, arising from a failure or alleged failure on the part of the contractor, his subcontractors and his and their agents and employees to provide and maintain a safe place to work or to comply with laws and regulations of governmental authorities having jurisdiction thereof.
- The Contractor and each Subcontractor covenants and agrees to indemnify, defend and hold harmless the Engineer and Owner against any liability, loss, damage or expenses, including attorneys' fees, arising from a failure or alleged failure on the part of the contractor, his subcontractor or his or their agents and employees to properly discharge the obligations assumed by him or them in the performance of the work, including any act or omission allegedly resulting in death or personal injury or property damage on improper construction, construction techniques, or the use of improper or inappropriate material or tools.
- The drawings show various conduit and wiring systems schematically and provide circuit numbers for reference only. Provide additional neutral wire where it is necessary to run circuits of the same phase in common conduit (maximum of three phase conductors in a single conduit). Balance all panelboards and record all circuit numbers on as_built drawings.
- Comply with all applicable requirements of UTHSC-H.
- н Architectural specifications and general, special and supplementary conditions, where provided, shall form a part of these specifications.
- CODES AND PERMITS
- All work shall be done in full compliance with the National Electrical Code, all applicable state and local codes, requirements and ordinances and applicable requirements of NFPA, UL and other applicable standards. All equipment and materials shall be new and listed by the Underwriters' Laboratories, Inc., Manufactured in full
- accordance with applicable ASME, NEMA, ANSI, or IEEE standards. Secure and pay for all necessary approvals, permits, inspections, etc., and deliver the official records of the granting of such to the tenant without additional cost to the Owner.
- COORDINATION
- Coordinate the work of this section with the work of other sections in ample time for the proper installation and Α. connection. Carefully check space requirements with other trades to ensure that all equipment and materials can be installed in the spaces allotted thereto.
- Work on this project will be phased, as defined by the Architect and will occur while other areas of the floor and the floor below are occupied. Coordinate all work with the General Contractor to prevent noise, dust or worker disruption of the occupants. Continued building operation is critical.
- Carefully check the documents of other Divisions to ascertain the requirements of any materials or equipment С. being furnished or furnished and installed by that Division and provide the proper installation and connections including any control wiring required.
- Transmit all information required for work being performed by other trades in ample time for the proper installation and connection and for the provision of all openings required in floors and walls.
- Refer to Architectural Drawings for exact locations of all lighting fixtures, outlets and switches, including mounting heights. Refer to the Architectural Drawings for finishes of equipment and materials not specified herein. All interruptions of services (power, fire alarm, water, HVAC, etc.) and all work in occupied tenant spaces (e.g.
- plumbing or electrical work in an occupied tenant's space below a space under construction) must be scheduled through the UTHSC-H Project Manager a minimum of 5 days in advance. Any interruptions or construction which will affect normal operation of the building or it's tenants shall be scheduled, with the UTHSC-H Project Manager's approval, on an after-hours basis
- Field core drilling and cutting of holes in the existing structure for the work under this section shall be the G. responsibility of this contractor. Drilling and cutting shall be coordinated through the general contractor and approved by the UTHSC-H Project Manager. Where the services of a structural engineer are necessary to approve such drilling and cutting, this contractor shall bear the cost of such services. All costs for drilling, cutting, and associated structural reinforcing shall be borne by this contractor.
- Cutting and patching of new and existing building finishes for installation of work of this section shall be coordinated through the General Contractor and approved by the UTHSC-H Project Manager. Where cutting and patching is approved, it shall be performed by the trades who normally install the work which is being removed and the cost of cutting and patching shall be borne by this Contractor. EXISTING CONDITIONS
- Α
- Before submitting a bid, the contractor shall become thoroughly familiar with actual existing conditions at the building and the present installations to which connections must be made or which must be changed or altered. The intent of the work is shown on the drawings and described herein, and no consideration will be granted by reason of lack of familiarity on the part of the contractor with actual physical conditions at the site.
- Schedule all work connecting with existing systems to ensure a minimum of service interruption. Notify the UTHSC-H Project Manager in writing of any planned interruption in service in ample time for the building manager's convenience and proceed with plan only after the UTHSC-H's written approval is obtained.
- Where specifically called for on the drawings or when permission is specifically given by the UTHSC-H Project Manager, existing equipment and material may be reused.
- Verify and become thoroughly familiar with building systems, such as life safety and emergency lighting and D. provide for the proper wiring and interconnects where applicable. This contractor shall repair any fireproofing damaged by this contractor, to the integrity of the original
- construction.
- DEMOLITION Α.
- Refer to Architectural Demolition and Renovation Plans for scope of area being renovated and walls to be removed. Where electrical devices occur in walls being removed, the electrical contractor is responsible for removing all wire and conduit back to a junction to remain, to the homerun junction box or flush with chase walls, floor penetrations or areas where access to the conduit is restricted. Where the circuit it released the electrical contractor shall remove the wire from the breaker and turn the breaker to the "off" position and label the freed
- circuit breaker as "Spare". Where electrical devices are removed, it is the responsibility of the electrical contractor to ensure circuit С. continuity to remaining electrical devices, that are not in areas where the demolition is occurring.
- SUBMITTALS
- Prepare and submit detailed shop drawings for electrical equipment as requested herein. Equipment installed Α. without approval thereof shall be done at the risk of this Contractor and the cost of removal of such equipment or related work which is judged unsatisfactory for any reason shall be at the expense of this Contractor.
- Submittal reviews for equipment will not be made upon submission of manufacturers' names. Submittal reviews for equipment will be made only after receipt of complete and satisfactory submittals. Equipment will be reviewed for general compliance with the design concepts shown on the Construction Documents. The opinion and judgment of the Engineer shall be final.
- Submit manufacturer's data or shop drawings of the following apparatus, as applicable, giving full information as to dimensions, materials, features, performance data and other information pertinent to the submitted equipment. Lighting controls
- Notify the engineer, in writing, within 5 days of award of contract, of the proposed delivery schedule for any equipment or material which will prevent the installation from being completed at the time of the scheduled project completion.
- During the progress of the work, make a careful record of all instances where the actual installation differs from that indicated on the contract drawings. Where branch circuit conduit connections between individual devices are not shown on the contract documents, as_built drawings shall show the branch circuit connections between devices as actually installed. Upon completion of the installation, furnish two complete sets of reproducible as_built drawings. These drawings shall be submitted to the engineer for approval. After approval they shall become the property of UTHSC-H. Final payment will be withheld until receipt of the approved as_built drawings.
- TESTING
- A. The contractor shall fully test all systems, which the contractor has installed, for proper operation and shall demonstrate such proper operation to UTHSC-H's and Engineer's representative.
- Prior to energization, all new feeder and branch circuit conductors shall be checked for continuity and short Β. circuits.
- C. All new feeder conductors shall have their insulation resistance tested after its installation is complete except for connection at the source and point of termination. Tests shall be made using a Biddler Megger or equivalent test instrument at a voltage of not less than 1,000 volts dc, and after one minute of operation at slip speed. Resistance shall be measured from conductor to conductor and conductor to ground for all installed conductors. Conductors which do not meet or exceed the following insulation resistance values shall be removed, replaced
 - and retested: INSULATION RESISTANCE (OHMS) <u>WIRE SIZE (AWG)</u> 1,000 K 250 K No. 10 and No. 8 No. 6 through No. 2 100 K

50 K

25 K

- No. 1 through No. 4/0 250 MCM and larger
- LIGHTING FIXTURES AND LAMPS
- Furnish and install light fixtures and lamps as specified on the drawings. Light fixtures shall be complete with all required accessories for proper installation in the ceiling types in which they are installed. All indoor fluorescent fixture ballasts shall be electronic ballast with less than 10% THD, unless noted otherwise.
- All fluorescent lamps shall be Philips T8 or an approved equal, unless noted otherwise. All lighting fixtures and lamps shall be furnished by the electrical contractor, unless noted otherwise on the
- drawings as reused or relocated existing building fixtures furnished by the Owner; or fixtures furnished by the Owner.
- Lighting fixtures which are noted to be relocated or reused shall be cleaned and relamped prior to reuse. Damaged or defective lighting fixtures shall not be reused and shall be repaired to like-new condition or replaced with a complete new light fixture. Existing light fixtures which are removed and not reused shall be stored as directed by the Project Manager.
- Conductors for connection to individual light fixtures in grid type ceilings from their associated junction boxes shall be No. 14 AWG THHN, 600 volt, solid copper conductors in 72" long 3/8" flexible metal conduit fixture tails, or by Type MC cable fixture tails where permitted by the local authority having jurisdiction, in lengths not to exceed 10'.



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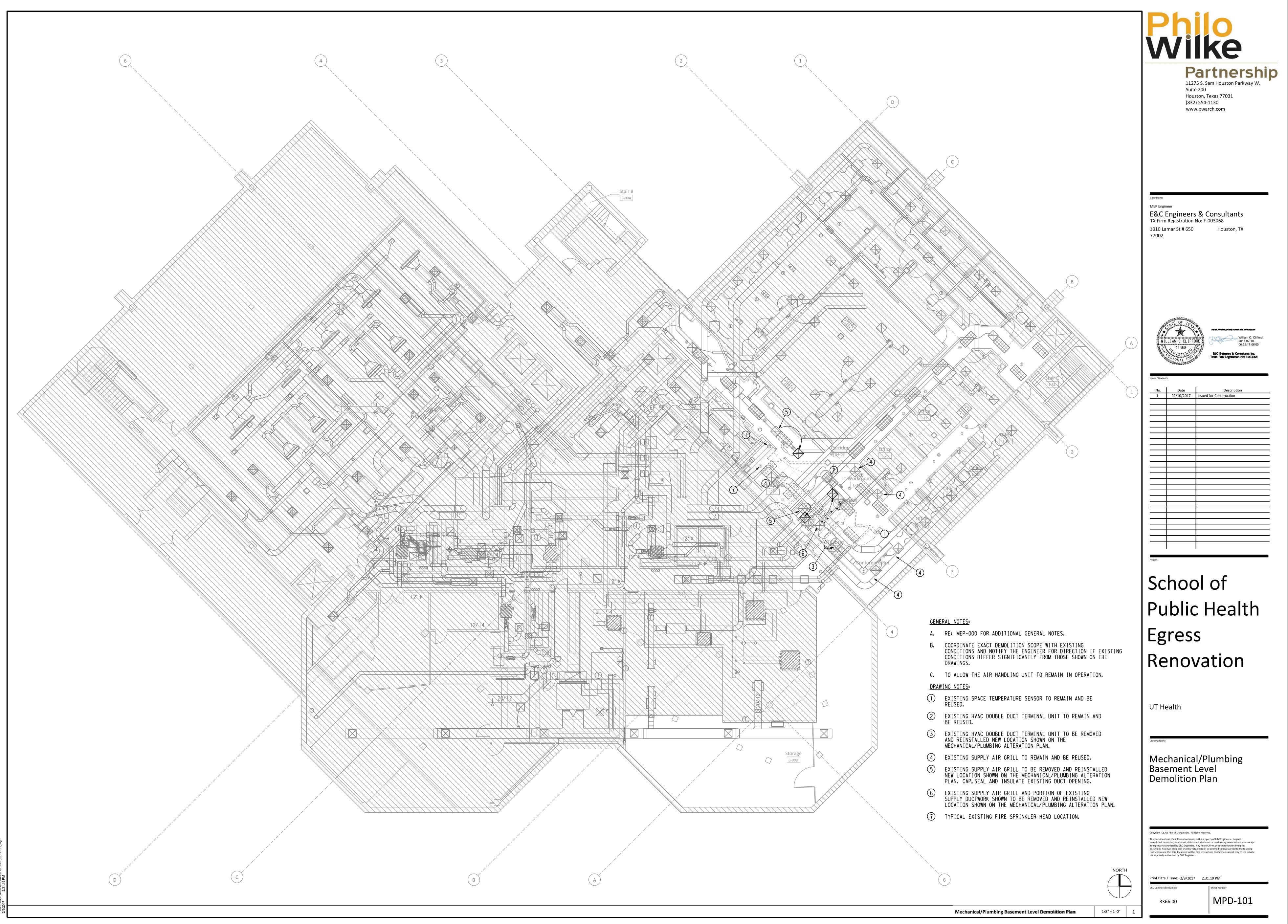
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ELECTRICAL **SPECIFICATIONS**

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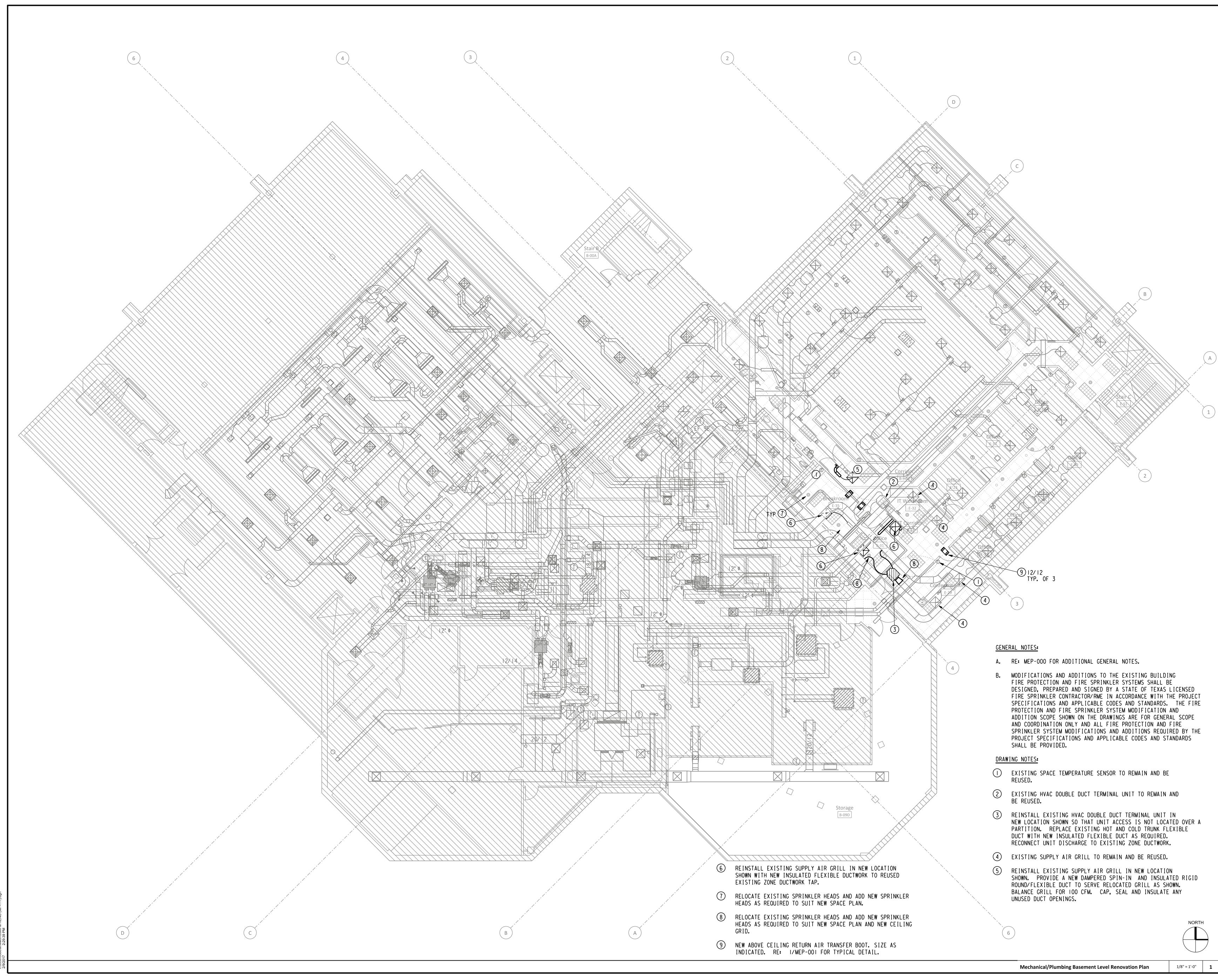
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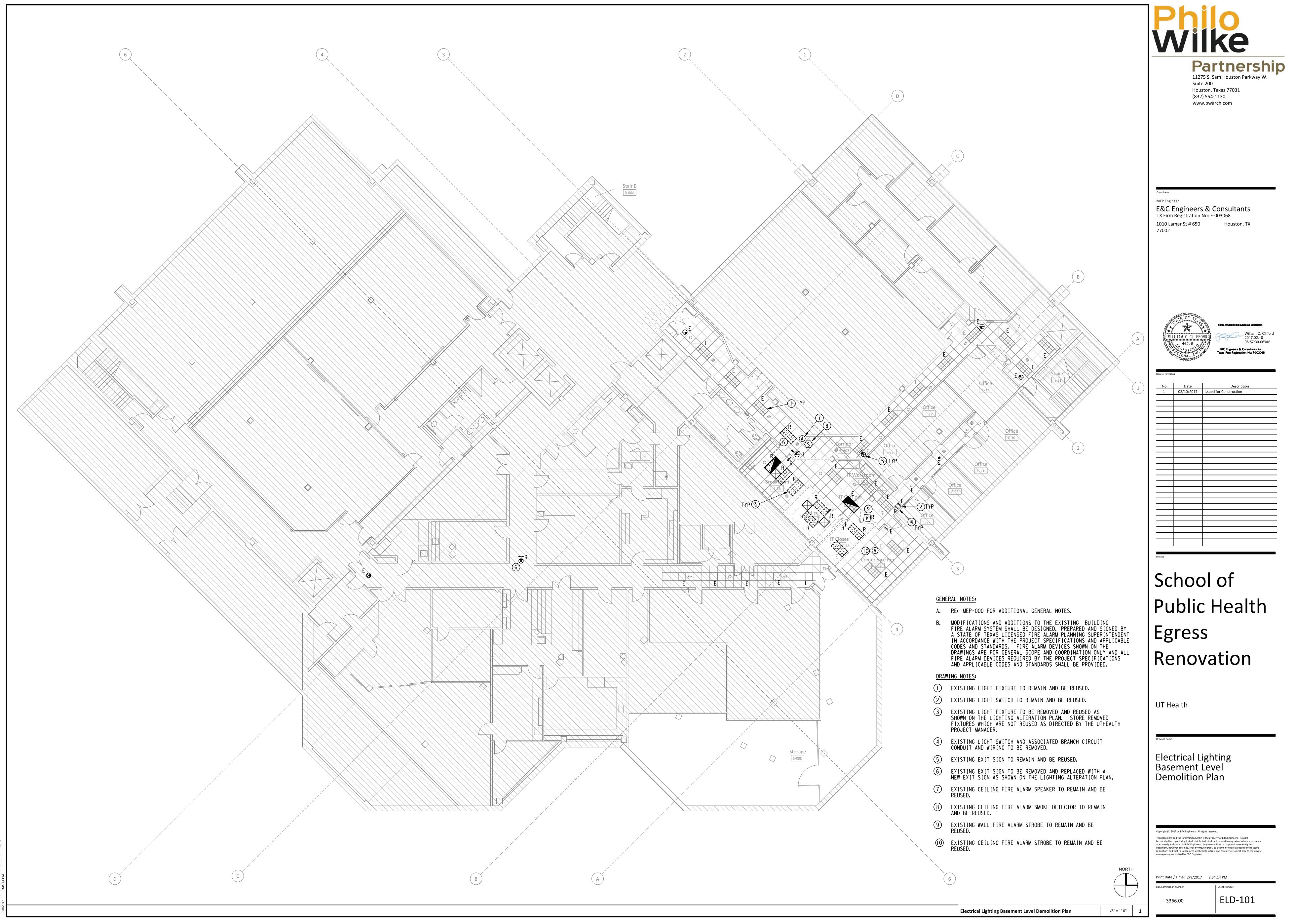
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Mechanical/Plumbing Basement Level Renovation Plan

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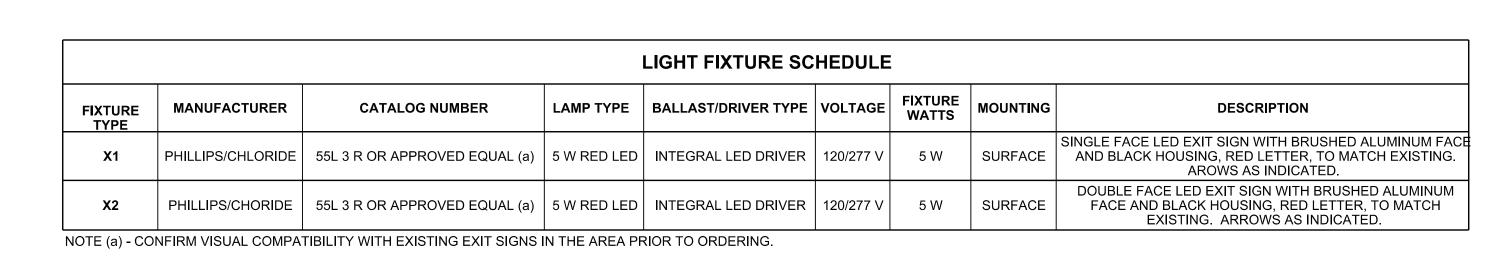
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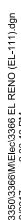
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- A. RE: MEP-000 FOR ADDITIONAL GENERAL NOTES.
- MODIFICATIONS AND ADDITIONS TO THE EXISTING BUILDING FIRE ALARM SYSTEM SHALL BE DESIGNED, PREPARED AND SIGNED BY A STATE OF TEXAS LICENSED FIRE ALARM PLANNING SUPERINTENDENT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND APPLICABLE CODES AND STANDARDS. FIRE ALARM DEVICES SHOWN ON THE Β. DRAWINGS ARE FOR GENERAL SCOPE AND COORDINATION ONLY AND ALL FIRE ALARM DEVICES REQUIRED BY THE PROJECT SPECIFICATIONS AND APPLICABLE CODES AND STANDARDS SHALL BE PROVIDED.

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Storage B-09D

- (I) EXISTING LIGHT FIXTURE TO REMAIN AND BE REUSED.
- EXISTING LIGHT SWITCH TO REMAIN AND BE REUSED. (2)

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- (3) EXISTING EXIT SIGN TO REMAIN AND BE REUSED.
- (4) RELOCATED EXISTING LIGHT FIXTURE, RECIRCUIT AS SHOWN.
- CIRCUIT RELOCATED LIGHT FIXTURE TO EXISTING BRANCH CIRCUIT WHICH SERVED EXISTING LIGHT FIXTURES REMOVED FROM THIS ROOM WITH NEW LIGHTING CONTROLS AS SHOWN. (5)
- 6 NEW WATTSTOPPER OR APPROVED EQUAL DUAL TECHNOLOGY WALLBOX OCCUPANCY SENSING LIGHT SWITCH.
- CIRCUIT RELOCATED LIGHT FIXTURE UNSWITCHED TO EXISTING UNSWITCHED EMERGENCY POWER BRANCH CIRCUIT WHICH SERVED EXISTING LIGHT FIXTURE REMOVED FROM THIS ROOM.
- (8) RECIRCUIT EXISTING LIGHT FIXTURE TO BRANCH CIRCUIT SERVING EXISTING CORRIDOR LIGHT FIXTURES AS SHOWN.
- (9) CIRCUIT EXISTING/RELOCATED LIGHT FIXTURES TO BRANCH CIRCUIT SERVING EXISTING CORRIDOR LIGHT FIXTURES AS SHOWN.
- (1) NEW LED EXIT SIGN, TYPE AS SHOWN.
- (1) CIRCUIT NEW EXIT SIGNS TO BRANCH CIRCUIT SERVING EXISTING EXIT SIGNS AS SHOWN.
- (12) REPLACE EXISTING EXIT SIGN WITH NEW LED EXIT SIGN, TYPE AS SHOWN.
- (13) EXISTING UNSWITCHED LIGHT FIXTURE ON EMERGENCY POWER TO REMAIN AND BE REUSED.
- (14) EXISTING CEILING FIRE ALARM STROBE TO REMAIN AND BE REUSED.
- (15) NEW CEILING FIRE ALARM STROBE. WIRE AND INTERFACE WITH FIRE ALARM SYSTEM AS REQUIRED.
- (6) NEW FIRE ALARM MANUAL PULL STATION. WIRE AND INTERFACE WITH FIRE ALARM SYSTEM AS REQUIRED.
- 17 NEW ABOVE CEILING FIRE ALARM RELAY FOR INTERFACE WITH DOOR ACCESS CONTROLS. WIRE AND INTERFACE WITH NORTH FIRE ALARM SYSTEM AS REQUIRED.

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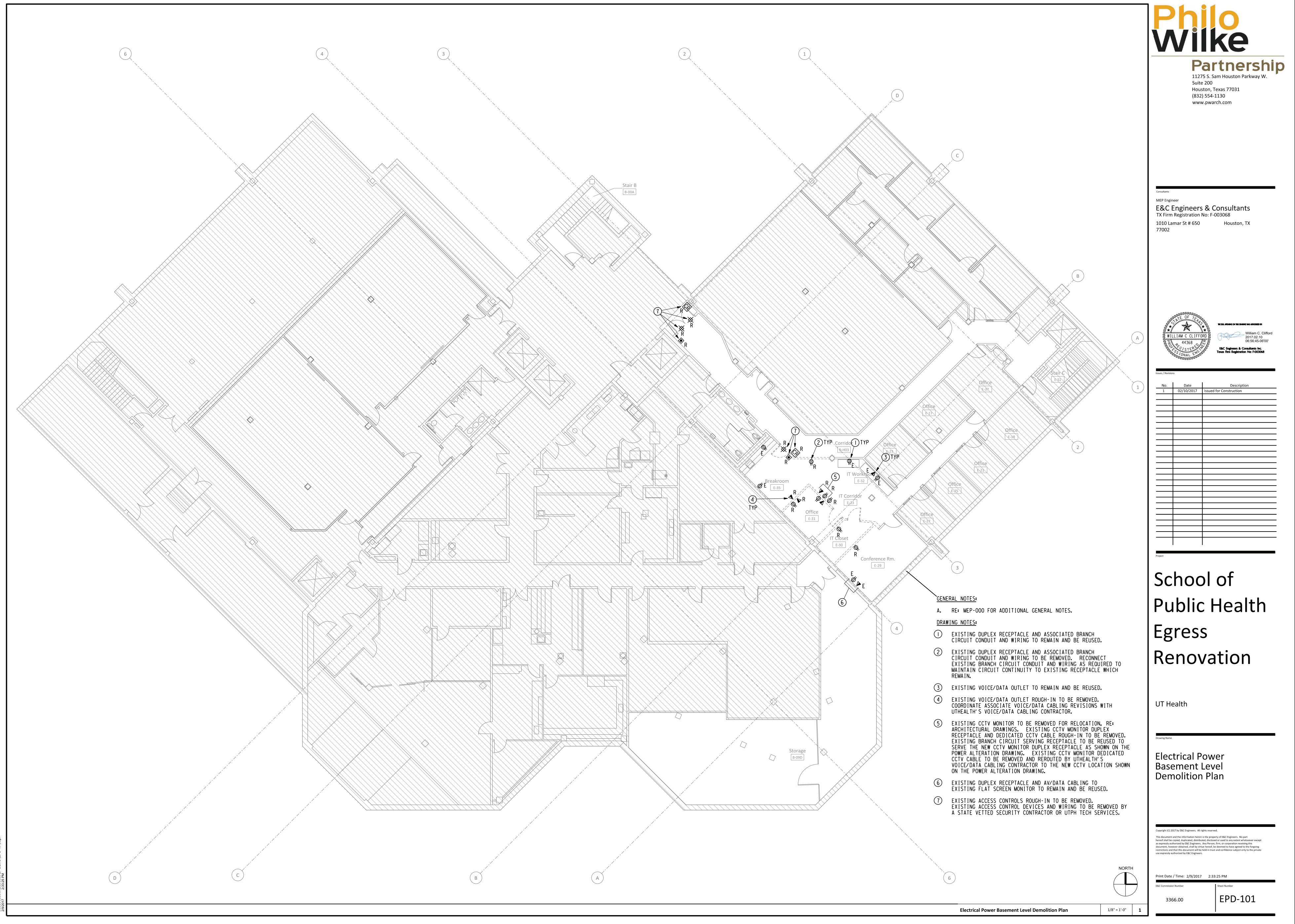
UT Health

Electrical Lighting Basement Level **Renovation** Plan

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E&C Commission Number Sheet Number EL-111 3366.00



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GENERAL NOTES:

- A. RE: MEP-000 FOR ADDITIONAL GENERAL NOTES.
- B. UPDATE EXISTING PANEL SCHEDULES TO INDICATE NEW LOADS SERVED AND TO LABEL CIRCUIT BREAKERS FREED DURING DEMOLITION AS SPARE, APPLICABLE.

DRAWING NOTES:

(D)

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- EXISTING DUPLEX RECEPTACLE AND ASSOCIATED BRANCH CIRCUIT CONDUIT AND WIRING TO REMAIN AND BE REUSED.
- 2 NEW NEMA 5-20R DUPLEX RECEPTACLE AT 18" AFF.
- 3 NEW NEMA 5-20R FOURPLEX RECEPTACLE AT 18" AFF.
- (4) CIRCUIT NEW RECEPTACLE TO EXISTING BRANCH CIRCUIT SERVING EXISTING RECEPTACLE AS SHOWN.
- 5 CIRCUIT NEW RECEPTACLES TO THE EXISTING BRANCH CIRCUIT WHICH SERVED EXISTING RECEPTACLES WHICH WERE REMOVED FROM THE EXISTING OFFICE.

B

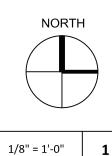
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- CIRCUIT NEW RECEPTACLE TO THE EXISTING BRANCH CIRCUIT WHICH SERVED THE EXISTING RECEPTACLE WHICH WAS REMOVED FROM THE STORAGE ROOM. 6
- CIRCUIT NEW RECEPTACLE TO THE EXISTING BRANCH CIRCUIT WHICH SERVED THE EXISTING RECEPTACLE WHICH WAS REMOVED FROM THE CONFERENCE ROOM.
- (8) NEW CCTV MONITOR DUPLEX RECEPTACLE AT 60" AFF AND NEW VOICE DATA ROUGH-IN AT 60" AFF FOR EXISTING DEDICATED CCTV CABLE TO BE REROUTED THE NEW CCTV MONITOR LOCATION BY UTHEALTH'S VOICE/DATA CABLING CONTRACTOR.
- GIRCUIT NEW RECEPTACLE TO THE EXISTING BRANCH CIRCUIT WHICH SERVED THE EXISTING CCTV MONITOR RECEPTACLE WHICH WAS REMOVED FROM THE CORRIDOR WALL.
- (0) EXISTING DUPLEX RECEPTACLE AND AV/DATA CABLING TO EXISTING FLAT SCREEN MONITOR TO REMAIN AND BE REUSED.
- (I) EXISTING DUPLEX RECEPTACLES SERVING EXISTING IT WORKSTATIONS TO REMAIN AND BE REUSED.

(3)

(6)

- (2) EXISTING VOICE/DATA OUTLET TO REMAIN AND BE REUSED.
- 13 NEW 4' SOUARE BOX SINGLE GANG DRYWALL RING AND I' C. WITH PULLCORD TO AN ACCESSIBLE CEILING SPACE FOR INSTALLATION AND CABLING OF A NEW VOICE/DATA OUTLET BY THE VOICE/DATA CABLING CONTRACTOR. RE: GENERAL NOTE B FOR ADDITIONAL REQUIREMENTS.
- (14) NEW 120 VOLT POWER CONNECTION TO EGRESS DOOR FROM AN EXISTING SPARE 20A/IP CIRCUIT BREAKER IN AN EXISTING BASEMENT 120/208V PANELBOARD.
- (5) RELOCATE EXISTING CONTROL POWER CONNECTION TO SERVE RELOCATED HVAC DOUBLE DUCT BOX.
- (6) PROVIDE ROUGH-IN AS REQUIRED FOR NEW ACCESS CONTROLS TO BE INSTALLED BY A BY A STATE VETTED SECURITY CONTRACTOR.



Partnership11275 S. Sam Houston Parkway W.Suite 200Houston, Texas 77031(832) 554-1130www.pwarch.com			
Consultants			
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TX Firm	Registration	& Consultants No: F-003068	
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School of Public Health Egress Renovation

UT Health

Electrical Power Basement Level **Renovation** Plan

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E&C Commission Number Sheet Number EP-111 3366.00