

Planning

Architecture

Interior design

Graphic Design

Project Management

ADDENDUM to CONTRACT DOCUMENTS

Date: July 23th, 2013

To: All Bidders

From: Renee Richardson, BSA + A

Copies: Delaware Technical & Community College

Delaware Engineering & Design Corporation

Project Name: Delaware Technical & Community

College – Stanton Career Center

Renovations

Project Number: BSA+A # 12.028

Subject: ADDENDUM 1

NOTICE:

Attention is called to the following item(s), effective as of the date above, which shall be added to, deleted from, or changed in the contract documents dated **July 1, 2013** and any previously issued addenda, thereby incorporating these items into the contract documents.

Attach this Addendum to the project manual for this project. Work or materials not specifically mentioned herein are to be as described in the main body of the specifications and as shown on the drawings. Bidders shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the bidder to disqualification.

The following clarification, changes and/or additions shall by this reference be incorporated into the contract documents as though fully set forth therein.

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A. GENERAL

Item No.	Item
A-1	NONE

B. MODIFICATIONS TO PROJECT MANUAL

Item No.	Description:
B-1	NONE

C. BIDDER QUESTIONS & CLARIFICATIONS

Item No.	Question/Answer:
C-1	NONE

D. MODIFICATIONS TO DRAWINGS

Item No.	Description:
D-1	Drawing M001 – Notes, Legends & Specifications Mechanical:
	a.) Add sheet per Addendum.
D-2	Drawing M101 – First Floor Plans Demolition Mechanical:
	a.) Add sheet per Addendum.
D-3	Drawing M111 – First Floor Plan Mechanical:
	a.) Add sheet per Addendum.
D-4	Drawing E100 – Notes, Legends & Specifications Electrical:
	a.) Add sheet per Addendum.
D-5	Drawing E101 – First Floor – Light Plans Demolition Electrical:
	a.) Add sheet per Addendum.
D-6	Drawing E102 –First Floor – Power Plans Demolition Electrical:
	a.) Add sheet per Addendum.

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D-7	Drawing E111 – First Floor – Light Plans:
	a.) Add sheet per Addendum.
D-8	Drawing E112 – First Floor – Power Plans Electrical:
	a.) Add sheet per Addendum.

E. ATTACHMENTS

Items	Date
M001	7/23/13
M101	7/23/13
M111	7/23/13
E100	7/23/13
E101	7/23/13
E102	7/23/13
E111	7/23/13
E112	7/23/13

END OF ADDENDUM 1

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ABBREVIATIONS:

ABV ABOVE AD ACCESS DOOR

AFF ABOVE FINISHED FLOOR ATC AUTOMATION TEMPERATURE CONTROL

AVG. AVERAGE

BAS BUILDING AUTOMATION SYSTEM BLW BELOW

BTUH BRITISH THERMAL UNITS PER HOUR CFM CUBIC FEET PER MINUTE

CLG CEILING CO CLEAN OUT CV CONTROL VALVE

(D) DEMOLISH AND REMOVE

DIFF DIFFUSER

DOWN

EXHAUST FAN

EXISTING TO REMAIN

ESP EXTERNAL STATIC PRESSURE

E.C. ELECTRICAL CONTRACTOR

EG EXHAUST AIR GRILLE

ELEC ELECTRICAL

DN

BTU BRITISH THERMAL UNITS

CD−1 → AIR TERMINAL DEVICE TYPE (CD, SG, ETC.) 100 → AIRFLOW (CFM)

SQUARE

ROUND

尸」 | CONNECTION

CONNECTION

RECTANGLE ROUND

SUPPLY CEILING DIFFUSER (CD)

<u>AIR-FLOW PATTERNS</u>:

CORNER

NOTE: 4-WAY AIR-FLOW PATTERN UNLESS

INDICATED OTHER WISE ON PLANS

3-WAY 2-WAY 2-WAY 1-WAY

CEILING RETURN DIFFUSER (CR)

DUCT TRANSITION (SQUARE TO ROUND)

VOLUME DAMPER (MANUALLY)

POINT OF CONNECTION

POINT OF DISCONNECTION

DEMOLITION WORK

EQUIPMENT DESIGNATION MARK

THERMOSTAT (MOUNTED A MAX. 48" A.F.F)

DUCT TRANSITION

FLR FLOOR FT. FEET W/ RND. TRANSTION | DUCT TAKE-OFF W/ VOLUME DAMPER GPM GALLONS PER MINUTE CONICAL HIGH

HWR HOT WATER RETURN HWS HOT WATER SUPPLY IN. INCHES

IN.WC INCH WATER COLUMN IN.WG INCH WATER GAUGE LBS POUNDS (WEIGHT)

MBH 1000 x BTUH M.C. MECHANICAL CONTRACTOR MECH. MECHANICAL

MIN MINIMUM MOD MOTOR OPERATED DAMPER MTD. MOUNTED

MAX MAXIMUM

(N) NEW NIC NOT IN CONTRACT

P.C. PLUMBING CONTRACTOR PLMG. PLUMBING PSI POUNDS PER INCH

ra return air RHC REHEAT COIL

S/C SERVICE CLEARANCE STATIC PRESSURE TEMPERATURE SENSOR

TSP TOTAL STATIC PRESSURE TYP TYPICAL VENT

VAV VARIABLE AIR VOLUME VD VOLUME DAMPER

WITH

W/

SYMBOL LEGEND: FIRE PROTECTION SPRINKLER SYSTEM NOTES:

1. THIS PROJECT SHALL REQUIRE ADDITIONS AND MODIFICATIONS TO THE EXISTING OPERATIONAL AUTOMATIC WET SPRINKLER SYSTEM FOR THE BUILDING MODIFICATION OF THIS PROJECT. THE GENERAL CONTRACTOR SHALL HIRE A FIRE PROTECTION COMPANY TO ENGINEER AND INSTALL A COMPLETE SYSTEM AS REQUIRED.

2. INSTALLATION SHALL CONFORM TO NFPA-13, THE DELAWARE STATE FIRE CODES AND ALL OTHER LOCAL CODES AND ORDINANCES.

3. THE EXISTING SPRINKLER SYSTEM SHALL REMAIN IN OPERATION DURING ALL PHASES OF THE PROJECT. MEANS SHALL BE TAKEN TO LIMIT EXISTING SYSTEM IMPAIRMENTS. COORDINATE ALL WORK WITH GENERAL CONTRACTOR.

4. PROVIDE ALL WORK TO CONNECT TO EXISTING SPRINKLER SYSTEM AS RELATED TO THE PROJECT. COORDINATE ALL SHUT-DOWNS OF EXISTING SYSTEMS WITH OWNER.

5. PROVIDE ALL REQUIRED HANGERS, SUPPORT SYSTEMS REQUIRED FOR FIRE PROTECTION SYSTEM INSTALLATION. ALL HANGERS AND SUPPORTS SHALL BE DESIGNED AND/ OR INSTALLED IN ACCORDANCE WITH NFPA 13.

6. NEW SPRINKLER HEADS SHALL BE LOCATED IN AN ARRANGEMENT TO COMPLY WITH THE REQUIREMENTS OF THE FIRE CODE REGULATION.

7. ALL SPRINKLER HEADS, IN ACCESSIBLE CEILING ROOMS SHALL BE PENDANT, QUICK RESPONSE

SELECTED FOR THE TEMPERATURE FOR THE SPACE REQUIRED BY NFPA 13. 8. ALL SPRINKLER HEADS SHALL BE LOCATED CENTER OF TILE AND FINISHED WITH A TWO PIECE

9. PROVIDE ALL SHOP DRAWING SUBMISSIONS TO THE FIRE MARSHAL'S OFFICE FOR ALL REVIEWS AND APPROVALS. PROVIDE PAYMENT FOR ALL FEES FOR INSPECTION AND REVIEW SERVICES AS REQUIRED BY FIRE MARSHALL'S OFFICE. ALL SUBMISSIONS SHALL HAVE ALL REQUIRED INSTALLATION

10.CONTRACTOR SHALL PERFORM ALL REQUIRED SYSTEM TESTING ON THE SYSTEM INSTALLATION IN ACCORDANCE WITH NFPA 123, THE DELAWARE STATE FIRE CODE AND ALL LOCAL AUTHORITIES HAVING JURISDICTION. PROVIDE HYDROSTATIC PRESSURE TEST OF SYSTEM AT 50 PSI OVER NORMAL SYSTEM WORKING PRESSURE FOR 2 HOURS WITHOUT LEAKS. PERFORM TESTS ON ALL FIRE PROTECTION SYSTEM IN THE PRESENCE OF THE AUTHORITIES HAVING JURISDICTION, PROPERLY FLUSH THE PIPING SYSTEM AS REQUIRED WITH NFPA 13. CONTRACTOR SHALL PROVIDE ALL REPORTS, RECORDS AND DOCUMENTATION TO THE OWNER AT THE COMPLETION OF THE PROJECT.

CEILING RETURN

TAG	CFM RANGE	MODULE SIZE, IN.	NECK SIZE, IN.	NC	SP IN.WG	BASIS OF DESIGN MANUFACTURER MODEL	NOTES
CR-1	301-480		12x12	20	0.09	PRICE MODEL 'PDDR'	
CR-2	481-650	24x24	15x15	20	0.06		
CR-3	651-870]	18x18	20	0.06	(PERFORATED FACE)	

. INTERIOR BACK-PAN VISIBLE THROUGH FACE SHALL FINISHED IN FLAT BLACK.

COORDINATE BORDER TYPE WITH CEILING TYPE BEING INSTALLED. REFER TO FLOOR PLANS FOR DEVICE AIR FLOW PATTERN.

SCHEDULE

TAG	CFM RANGE	MODULE SIZE, IN.	FACE SIZE, IN.	NECK SIZE, IN.	NC	SP IN.WG	BASIS OF DESIGN MANUFACTURER & MODEL	NOTES
CD-1	0-140		9x9	6	20	0.11	PRICE	1
CD-2	141-240	24x24	12x12	8	20	0.08	MODEL 'SMD'	1
CD-3	241-320		12x12	10	20	0.09	(LOUVER FACE)	1
CD-10	141-200	12x12	9x9	8	20	0.11	PRICE MODEL 'SMD' (LOUVER FACE)	1

1. PROVIDE DIFFUSER WITH 24x24 LAY-IN ADAPTER FRAME.

ACCEPTABLE MANUFACTURERS: PRICE, TITUS, KRUEGER, TUTTLE&BAILEY

			V			BOX SCHEDULE								
	AIR FLOW (CFM) INLET APD					HOT WATER REHEAT COIL						DAGIO OF DEGICAL		
TAG	CLG.	HTG.	MIN.	SIZE (IN. DIA.)	(IN.)	MIN. MBH	EAT/ LAT (°F)	GPM	EWT/ LWT (°F)	ROW	WPD (FT.)	BASIS OF DESIGN MANUFACTURER & MODEL	TYPE	NOTES
VAV 1	660	418	170	10	0.25	18.1	55/ 95	1.9	160/ 140	1	4.5	JOHNSON CONTROL/ YORK MODEL 'TSS-WC'	SINGLE-DUCT	1, 2
VAV 2	930	700	240	12	0.27	30.2	55/ 95	3.1	160/ 140	1	11.2	JOHNSON CONTROL/ YORK MODEL 'TSS-WC'	SINGLE-DUCT	1, 2
NOTES:														

. UNIT CONSTRUCTION SHALL BE DOUBLE WALL WITH 22 GAUGE LINER. . UNIT SHALL HAVE 24VOLT ACTUATOR.

TYPE, SIMILAR TO VIKING MODEL 'M' WITH WHITE FINISH. EACH HEAD SHALL BE PROPERLY

ESCUTCHEON RING.

DATA AND CALCULATIONS REQUIRED FOR FIRE MARSHALL REVIEW.

GRILLE SCHEDULE

TAG	CFM RANGE	MODULE SIZE, IN.	NECK SIZE, IN.	NC	SP IN.WG	BASIS OF DESIGN MANUFACTURER MODEL	NOTES
CR-1	301-480		12x12	20	0.09	PRICE	
CR-2	481-650	24x24	15x15	20	0.06	MODEL 'PDDR'	
CR-3	651-870		18x18	20	0.06	(PERFORATED FACE)	

CCEPTABLE MANUFACTURERS: PRICE, TITUS, KRUEGER, TUTTLE&BAILEY

CEILING DIFFUSER

TAG	CFM RANGE	MODULE SIZE, IN.	FACE SIZE, IN.	NECK SIZE, IN.	NC	SP IN.WG	BASIS OF DESIGN MANUFACTURER & MODEL	NOTES
CD-1	0-140		9x9	6	20	0.11	PRICE	1
CD-2	141-240	24x24	12x12	8	20	0.08	MODEL 'SMD'	1
CD-3	241-320		12x12	10	20	0.09	(LOUVER FACE)	1
CD-10	141-200	12x12	9x9	8	20	0.11	PRICE MODEL 'SMD' (LOUVER FACE)	1

COORDINATE BORDER TYPE WITH CEILING TYPE BEING INSTALLED. REFER TO FLOOR PLANS FOR DEVICE AIR FLOW PATTERN.

	VAV BOX SCHEDULE																	
	AIR FLOW (CFM) INLET			INLET	ADD		H	HOT WATER	R REHEAT COIL									
TAG	CLG.	HTG.	MIN.	SIZE (IN. DIA.)	SIZE	SIZE	SIZE	SIZE (IN. DIA.)	APD (IN.)	MIN. MBH	EAT/ LAT (°F)	GPM	EWT/ LWT (°F)	ROW	WPD (FT.)	BASIS OF DESIGN MANUFACTURER & MODEL	TYPE N	NOTES
VAV 1	660	418	170	10	0.25	18.1	55/ 95	1.9	160/ 140	1	4.5	JOHNSON CONTROL/ YORK MODEL 'TSS-WC'	SINGLE-DUCT	1, 2				
VAV 2	930	700	240	12	0.27	30.2	55/ 95	3.1	160/ 140	1	11.2	JOHNSON CONTROL/ YORK MODEL 'TSS-WC'	SINGLE-DUCT	1, 2				

SPECIFICATIONS:

A. DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL G90 GRADE PER SMACNA. PROVIDE ALL NECESSARY CROSS-BREAKING AND DUCT REINFORCING AS REQUIRED PER SMACNA RECOMMENDATIONS. DUCTWORK SHALL BE DESIGNED. CONSTRUCTED AND INSTALLED PER SMACNA STANDARDS.

B.ALL SQUARE ELBOWS SHALL HAVE TURNING VANES. ELBOWS FOR 90 DEGREES SHALL HAVE DOUBLE THICKNESS TURNING C.VAV PRIMARY AIR DUCTWORK SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED PER SMACNA STANDARDS AND FOR 4"

E.S.P. USE. ALL OTHER DUCTWORK SHALL BE RATED FOR PRESSURES OF 2" E.S.P. SEAL ALL LONGITUDINAL SEAMS AND TRANSVERSE JOINTS WITH FIRE-PROOF SEALANT FOR "AIR-TIGHT" APPLICATION. D.DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR DIMENSIONS. ALL DUCTWORK SIZES ARE IN INCHES BUT WHERE OTHERWISE NOTES. DUCT SIZES ARE NET FREE AREA.

E. COORDINATE LOCATION OF DUCTWORK, PIPING, AND DIFFUSERS WITH ALL OTHER TRADES. F. ALL DUCTWORK BRANCH TAKE-OFFS SHALL BE PROVIDED WITH VOLUME DAMPERS.

G.ALL DUCTWORK IS SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY ALL ROUTING FOR POSSIBLE INTERFERENCE. CONTRACTOR SHALL VERIFY ALL ROUTING FOR POSSIBLE INTERFERENCE'S BEFORE FABRICATION AND INSTALLATION. CONTRACTORS BID SHALL INCLUDE LABOR, MATERIAL AND EQUIPMENT TO RESOLVE INTERFERENCE'S.

H.PROVIDE AT MINIMUM 10 GAUGE STEEL SLEEVES FOR ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS. FLOORS AND PARTITIONS. PROVIDE PIPE SLEEVES FOR ALL MECHANICAL PIPING PENETRATING THROUGH FIRE RATED WALLS, FLOORS AND PARTITIONS. SEAL ALL ANNULAR SPACE BETWEEN SLEEVES AND DUCTWORK OR PIPING WITH A FIRE BARRIER MATERIAL EQUAL TO 3M "PENETRATION SEALING SYSTEM".

I. THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH A GRILLE AND DIFFUSER SHALL BE PAINTED FLAT BLACK. J. SUPPORTS FOR DUCTS SHALL BE INSTALLED AT INTERVALS OF NOT MORE THAN 10 FEET.

A.INSULATION MUST BE FIRE RATED FOR FLAME SPREAD OF 25 OR LESS AND SMOKE DEVELOPED FOR 50 OR LESS. B.INSULATION TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. C.DUCT WRAP: ALL CONCEALED DUCTWORK SHALL BE WRAPPED WITH 2" THICK FIBERGLASS DUCT INSULATION HAVING A CONDUCTIVITY OF 0.29 AT MEAN TEMPERATURE OF 75°F AND A DENSITY OF 0.75 PCF. INSULATION SHALL HAVE A 25% COMPRESSION R-VALVE OF GREATER THAN 5. INSULATION SHALL BE KNAUF DUCT-WRAP WITH FOIL FACE ALL-SERVICE

D. INSULATION SHALL BE KNAUF INSULATION BROAD WITH ALL-SERVICE JACKET OR APPROVED EQUAL.

3. FLEXIBLE DUCT A.FLEXIBLE DUCT SHALL BE INSULATED HIGH PRESSURE MULTI-PLY METALIZED POLYESTER CORE TYPE. B.INSULATED SHALL HAVE AN R-8 VALVE WITH A FIBERGLASS SCRIM TO PREVENT TEARING. C.DUCT SHALL HAVE BE PRESSURE TESTED FOR 10" W.C. POSITIVE & 1" W.C. NEGATIVE.

D.DUCT SHALL BE UL-181 LISTED. E.FLEXIBLE DUCTWORK SHALL BE CONNECTED TO BRANCHES AND MAINS USING CONICAL FITTINGS AND SHALL NOT EXCEED 5'-0" IN LENGTH INCLUDING ONE ELBOW.

F.FLEXIBLE DUCTWORK SHALL NOT BE USE AS EXHAUST DUCTWORK. G.ACCEPTABLE MANUFACTURES: HART & COOLEY, FLEXMASTER, THERMAFLEX, OWEN CORNING.

A.PROVIDE VOLUME DAMPERS AT ALL DUCT BRANCHES, RUNOUTS AND FOR EACH OUTLET. PROVIDE OPPOSED BLADE VOLUME DAMPERS AT ALL REGISTERS, AND GRILLES IN GENERAL ROOM EXHAUST ONLY WHERE INDICATED ON PLANS. B.MANUAL VOLUME DAMPERS

1. ROUND TYPE: 20 GAGE GALVANIZED FRAME AND BLADE, LOCKING HAND GUADRANT AXLE SHAFT EXTENDING BEYOND FRAME, MOLDED SYNTHIC BEARINGS. 2.RECTANGLE TYPE: 16 GAGE GALVANIZED FRAME AND BLADE WITH STOP, LOCKING HAND GUADRANT AXLE SHAFT EXTENDING BEYOND FRAME, MOLDED SYNTHIC BEARINGS, DUCTS UP TO 10-INCHES - SINGLE BLADE TYPE

DUCTS 12-INCHES AND LARGER - MULTI-BLADE TYPE. C.ALL DAMPERS SHALL HAVE 2" STAND-OFF HAND QUADRANT MOUNTING BRACKET.

D.BASIS OF DESIGN: RECTANGULAR, RUSKIN MODEL 'MBD-35' ROUND, RUSKIN MODEL 'MDBRS-25' E. ACCEPTABLE MANUFACTURERS: RUSKIN, NAILER-HART, POTTORFF, LOUVERS & DAMPERS

A. PIPING SHALL BE TYPE "L" HARD DRAWN COPPER UP TO 2" DIAMETER. 1. COPPER TUBING: ASTM B88 (ASTM B 88M) TYPE 'L' HARD DRAWN.

a.SOLDER JOINTS: ASME B16.18 CAST BASS/BRONZE OR ASME B16.22 SOLDER WROUGHT COPPER FITTINGS. b.SOLDER: ASTM B 32 LEAD-FREE SOLDER, TIN AND SILVER. JOINED USING 95-5 TIN/ANTIMONY SOLDER. c. BRAZING: AWS A5.3/ A5.8M BCuP COPPER/ SLIVER ALLOY.

B.UNIONS, FLANGES & COUPLINGS: 1. UNIONS FOR 2" AND UNDER COPPER PIPING. UNIONS SHALL BE BRONZE WITH SOLDERED JOINTS. C. VALVES:

2. ACCEPTABLE MANUFACTURERS: NIBCO, MILWAUKEE, APOLLO (FOR BALL & GATE VALVES ONLY)

1. HOT WATER a. BALL VALVES: FOR PIPING 2" AND SMALLER. 600 PSI CWP CAST BRASS BODY, STAINLESS STEEL BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE WITH BALANCING STOPS AND SOLDER ENDS WITH UNIONS. b. GLOBE VALVES: FOR PIPING 2" AND SMALLER. CLASS 150 WITH BODY AND UNION BONNET OF ASTM B-26 CAST BRONZE. c.CHECK VALVES: FOR PIPING 2" AND SMALLER. CLASS 150 WITH BODIES AND CAPS OF ASTM B-62 BRONZE COMPOSITION AND THREADED ENDS.

D.PIPING SHALL BE RIGIDLY SUPPORTED AT INTERVALS OF NOT MORE THAN 10 FEET.

E. CONTRACTOR TO PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN ALL MODIFIED OR NEW PIPING SYSTEMS. F. ALL PIPING CONDUCTING LIQUIDS SHALL BE INSTALLED ON "WARM" SIDE OF BUILDING INSULATION. G.PROVIDE DIELECTRIC UNIONS IN PIPING WHERE DISSIMILAR METALS ARE JOINED TOGETHER. H.THE SIZE OF ALL PIPING SHALL BE AS SHOWN ON THE DRAWINGS, OR WHERE NOT SHOWN, AS REQUIRED.

I. CHANGE OF PIPE SIZES ON HORIZONTAL RUNS SHALL BE MADE WITH ECCENTRIC REDUCERS WITH TOP OF PIPE LEVEL. J. PROVIDE A MINIMUM THREE (3) ELBOW SWING FOR ALL PIPE TAKE-OFFS. K.PROVIDE BALANCING COCKS AT SYSTEM LOOP RETURNS AND AT RETURN RISERS. PROVIDE SHUT-OFF VALVES AT SYSTEM

LOOP SUPPLIES AND SUPPLY RISERS. L. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE AND PROVIDE EXPANSION COMPENSATION FOR ALL MECHANICAL PIPING SYSTEMS AS NECESSARY TO PREVENT STRESSING ON ALL MECHANICAL PIPING. PROVIDE EXPANSION JOINTS ONLY WHERE EXPANSION LOOPS ARE DIMENSIONALLY IMPRACTICAL. PROVIDE AT MINIMUM TWO (2) PIPE GUIDES ON

EACH END OF EXPANSION LOOPS OR JOINTS. PROVIDE ACCESS TO ALL EXPANSION JOINTS. M.PROVIDE FOR COMPLETE DRAINAGE AT ACCESSIBLE LOW POINTS WITH HOSE END DRAIN VALVES. N.PRIOR TO INSULATING, PIPING SHALL HYDROSTATICALLY TESTED AT 100 PSIG WITH NO LOSS OF PRESSURE FOR 3 HOURS. O.ALL HORIZONTAL LINES SHALL BE RUN LEVEL WITHOUT POCKETS. WHERE VERTICAL, DROP IN DIRECTION OF FLOW. P. WATER PIPE CONNECTIONS TO AIR HEATING SHALL BE MADE SO THERE WILL BE COUNTER FLOW BETWEEN WATER AND AIR.

6. PIPE INSULATION

A. ALL HOT WATER PIPING SHALL BE INSULATED. B.PRIOR TO INSULATING, PIPING SHALL BE HYDROSTATICALLY TESTED AT 100 PSIG WITH NO LOSS OF PRESSURE FOR THREE

C.INSULATION SHALL CARRY THROUGH ALL PENETRATIONS AND PIPE SUPPORTS. D.PROVIDE GALVANIZED METAL SHIELDS FORMED TO FIT THE INSULATION BETWEEN SUPPORT AND FINISHED INSULATIONS. E. FIBERGLAS PIPE INSULATION SHALL HAVE FACTORY APPLIED PAPER FREE ALL SERVICE JACKET AND SSL II ADHESIVE CLOSURE SYSTEM, RATED FOR A MAXIMUM SERVICE TEMPERATURE OF 850 °F, WITH A CONDUCTIVITY LESS THAN 0.27 BTU-IN./H-FT2-°F AT A 75°F MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM C 177 OR ASTM C 518, LATEST REVISIONS. CIRCUMFERENTIAL JOINTS SHALL BE SEALED WITH PAPER FREE BUTT STRIPS THAT ARE COMPATIBLE FACING.

ACCEPTABLE MANUFACTURES: KAUF, OWENS-CORNING. F. CLOSED—CELL ELASTOMERIC PIPE INSULATION SHALL REQUIREMENTS AS DEFINED IN ASTM C 534. INSULATION MATERIAL SHALL BE MANUFACTURED WITHOUT THE USE OF CFC'S, HFC'S OR HCFC'S. IT IS ALSO FORMALDEHYDE FREE, LOW VOC'S, FIBER FREE, DUST FREE AND RESISTS MOLD AND MILDEW.MATERIALS SHALL HAVE A MAXIMUM WATER VAPOR TRANSMISSION OF 0.08 PERM-INCHES WHEN TESTED IN ACCORDANCE WITH ASTM E 96, PROCEDURE A, LATEST REVISION. INSULATION SHALL BE SIMILAR TO K-FLEX 'INSUL-TUBE' . ACCEPTABLE MANUFACTURERS: ARMCELL, K-FLEX AND NOMACO. G.INSULATION THICKNESS:

HOT WATER:

CLOSED-CELL ELASTOMERIC - 1 1/2" THICK FOR PIPING 1-1/2" & BELOW FIBERGLASS - 2" THICK FOR PIPING 2" & ABOVE

H.INSULATION SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. I. INSULATION MUST BE FIRE RATED FOR FLAME SPREAD OF 25 OR LESS AND SMOKE DEVELOPED OF 50 OR LESS. J. ALL VALVES, INCLUDING BUT NOT LIMITED TO STRAINERS, AUTOFLOW VALVES, CIRCUIT SETTERS, BALL VALVES, BALANCING VALVES AND COMBINATION VALVES, ETC., IN CHILLED WATER AND HEATING HOT WATER SYSTEMS, SHALL BE INSULATED WITH A FACTORY FABRICATED REMOVABLE AND REUSABLE COVER. INSULATION SHALL HAVE A MINIMUM K-FACTOR OF 0.26, USING FIBERGLASS BLANKET. FLAME AND SMOKE SPREAD SHALL BE 25/50 PER ASTM E-84. OUTER JACKET SHALL BE MADE OF MATERIAL EQUAL TO DUPONT-TYCHEMA 'QC', OVERLAPPING AND COMPLETELY COVERING THE INSULATION WITH SEAMS JOINED BY TABS MADE FROM HOOK AND LOOP FASTENERS (VELCRO). BUTT ENDS SHALL HAVE SEWN—IN—PLACE ELASTIC. OUTER JACKET SHALL OVERLAP ADJOINING SECTIONS OF PIPE INSULATION. INSTALLATION SHALL NOT REQUIRE THE USE OF ANY SPECIAL HAND TOOLS. MANUFACTURERS: NO SWEAT VALVE WRAPS, INC., OR APPROVED EQUAL.

. AIR TERMINAL DEVICES (GRILLE AND DIFFUSERS)

A.CEILING DIFFUSER (CD) 1. DIRECTIONAL LOUVERED FACE DIFFUSERS OF THE SIZES INDICATED ON PLANS. DIFFUSERS SHALL CONSIST OF AN OUTER FRAME ASSEMBLY, WHICH FACILITATES MOUNTING IN THE APPLICATION SHOWN. A COLLAR THAT ALLOWS CONNECTION TO THE DUCTWORK AS SIZE INDICATED SHALL BE AN INTEGRAL PART OF THE FRAME ASSEMBLY. THE INNER CORE ASSEMBLIES SHALL BE IDENTICALLY CONSTRUCTED SO THAT DIRECTIONAL CORE ASSEMBLIES PROVIDING DIFFERENT AIRFLOW DISCHARGE PATTERNS MAY BE INTERCHANGED BETWEEN FRAMES, PROVIDED THE FRAME DUCT CONNECTIONS ARE OF THE SAME SIZE. FINISH SHALL BE WHITE POWDER COAT. 2.BASIS OF DESIGN: PRICE MODEL 'SMD'

B.CEILING RETURN (CR) 1. RETURN DIFFUSÈR SHALL CONSIST OF A PERFORATED AIR DISTRIBUTION FACE OF NO LESS THAN 51% FREE AREA, A HEAVY GAUGE STEEL BACK-PAN WITH ROUND / SQUARE INLET COLLARS AS INDICATED ON SCHEDULE. INTERIOR OF BACK-PAN SHALL BE FINISHED IN FLAT BLACK. THE PERFORATED FACE SHALL BE REMOVABLE FROM THE DIFFUSER FACE AND SHALL BE FITTED WITH HINGES TO FACILITATE THE REMOVAL OF FACE SCREEN FOR CLEANING PURPOSES. THE PERFORATED FACE SCREEN SHALL BE STEEL. THE FINISH OF THE DIFFUSER SHALL BE B12 WHITE POWDER COAT.

2.BASIS OF DESIGN: PRICE MODEL 'PDDR' C.ACCEPTABLE MANUFACTURERS: PRICE, TITUS, AND TUTTLE & BAILEY.

8. LABELING & IDENTIFICATION

A. ALL HVAC EQUIPMENT SHALL BE PERMANENT LABELED WITH A BLACK LAMINATED MICARTA WHITE CORE LABELS WITH 3/8 INCH LETTERS. THIS SHALL ALSO APPLY TO ALL CONTROLLERS, REMOTE START/STOP PUSHBUTTONS AND EQUIPMENT CABINETS. B. PIPING IDENTIFICATION: IDENTIFY PIPING WITH SETON "SETMARK" OR BRIMAR, SEMI RIGID PLASTIC, WRAPAROUND PIPE MARKERS WITH FLOW ARROWS AND CONFORMING TO ANSI A13.1. LOCATE MARKER AT EACH VALVE, CHANGES IN DIRECTION, WHERE PIPES PASS THRU BARRIERS AND EVERY 25' OF HORIZONTAL RUNS. LETTERING ON BACKGROUND SHALL BE IN ACCORDANCE WITH THE FOLLOWING COLORS:

HEATING SUPPLY & RETURN: BACKGROUND: YELLOW LETTING: BLACK C.PROVIDE COLOR CODED 1+ DIAMETER MARKERS ON CEILING TILE GRIDS TO INDICATE SYSTEM AND VALVE LOCATIONS. CHILLED WATER: — BLUE HOT WATER: — RED

D. ACCEPTABLE MANUFACTURERS: SETON % ETMARK+, BRIMAR, B-LINE MSI. 9. SYSTEM BALANCING & CLOSE-OUT

A. ALL NEW AND EXISTING SHALL BE BALANCED TO AIR QUANTITIES INDICATED ON SCHEDULE. BALANCING CONTRACTOR SHALL BE CERTIFIED BY NEBB. NEBB FORMS SHALL BE USED FOR THE BALANCING REPORT. SUBMIT THREE (3) COPIES OF REPORT FOR

B.UPON COMPLETION OF THE CONTRACT THE CONTRACTOR SHALL PROVIDE THE OWNER WITH (3) COMPLETE SETS OF MANUFACTURERS' OPERATING. MAINTENANCE AND PREVENTIVE MAINTENANCE INSTRUCTIONS (IN BOUND BOOK FORM) INCLUDING PARTS LISTS AND COMPLETE PROCUREMENT INFORMATION INCLUDING EQUIPMENT NUMBERS AND DESCRIPTIONS. OPERATING STAFF PERSONS SHALL BE INSTRUCTED IN PROPER OPERATING AND SERVICE REQUIREMENTS OF THE SYSTEMS AND EQUIPMENT.

GENERAL NOTES:

1. <u>ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH DELAWARE</u> ECHNICAL & COMMUNITY COLLEGE STANDARDS AND SPECIFICATIONS.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY OF HIS OWN PERSONAL AND SURROUNDINGS OF THE WORK AREA. THIS INCLUDES PROVIDING ALL NECESSARY BARRICADES, SIGNS, FIRE EXTINGUISHERS, ETC. ALL APPLICABLE OSHA REGULATIONS SHALL APPLY TO THIS WORK. COMPLY WITH ALL OWNER'S SITE SAFETY CONDITIONS.

3. ALL WORK SHALL BE IN CONFORMANCE WITH ALL APPLICABLE LAWS. CODES AND REGULATIONS ADOPTED BY MUNICIPAL, COUNTY, STATE AND FEDERAL AUTHORITIES, UTILITY COMPANIES, INSURANCE AGENCIES AND OTHER AUTHORITIES HAVING JURISDICTION OF AUTHORITIES.

4. THE CONTRACTOR SHALL APPLY FOR, SECURE AND PAY FOR ALL PERMITS AND/OR CERTIFICATES OF INSPECTION REQUIRED IN THE PERFORMANCE OF THE WORK BY ALL AUTHORITIES HAVING

REQUIRED CONNECTION LOCATIONS, TYPES, & SIZES.

5. THESE DOCUMENTS ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY ALL ROUTING FOR POSSIBLE INTERFERENCES BEFORE FABRICATION AND INSTALLATION. CONTRACTORS BID SHALL INCLUDE LABOR, MATERIAL AND EQUIPMENT TO RESOLVE INTERFERENCES.

6. ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION ARE NOT SHOWN ON THE DRAWINGS.

REFER TO EQUIPMENT INSTALLATION INSTRUCTIONS FOR ADDITIONAL REQUIREMENTS, INCLUDING

7. ALL WORK SHALL BE SCHEDULED AND COORDINATED WITH THE OWNER SO THAT DISRUPTION TO THE AREAS INVOLVED IS KEPT TO A MINIMUM. CONTRACTOR SHALL GIVE OWNER A MINIMUM OF 5 WORKING DAYS NOTICE OF ANY AND ALL WORK THAT WILL INTERFERE WITH THE OWNER'S OPERATION SO A SCHEDULE SUITABLE TO THE OWNER CAN BE ARRANGED. ANY ACCIDENTAL INTERRUPTIONS TO SERVICES SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

8. THE DRAWINGS GENERALLY INDICATE MAJOR ITEMS OF EXISTING MATERIALS AND EQUIPMENT THAT SHALL BE REMOVED. RELOCATED. REROUTED OR ABANDON BY EACH TRADE. IT IS NOT POSSIBLE TO INDICATE ALL RELATED ACCESSORIES, SPECIALTIES AND OTHER MINOR ITEMS: HOWEVER, THEIR REMOVAL, RELOCATIONS, REROUTING OR ABANDONMENT SHALL ALSO BE INCLUDED IN THIS CONTACT AND SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER.

9. ALL DEMOLITION SHALL BE COMPLETED IN A SAFE AND ORDERLY MANNER. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS. BRACING, ETC. AS MAY BE REQUIRED DURING DEMOLITION.

10. VERIFY ALL FIELD CONDITIONS, ACCESS WAYS, DIMENSIONS AND DETAILS IN THE FIELD PRIOR TO BID AND PRIOR TO FABRICATION. INCLUDE IN BID ALL WORK NECESSARY TO COVER COSTS RESULTING FROM FIELD CONDITIONS.

11. IN ADDITION TO SPECIFICS AS MAY BE DEFINED HEREINAFTER THE CONTRACTOR SHALL PROTECT THE WORK SITE AND ALL HIS WORK AGAINST DAMAGE FROM ANY SOURCE (INCLUDING BUT NOT LIMITED TO WATER, DUST, HEAT, FREEZING ETC.) UNTIL FINAL COMPLETION AND ACCEPTANCE BY

12. EXISTING CONCEALED AND/OR EXPOSED EQUIPMENT AND MATERIALS THAT WILL BECOME ABANDONED DUE TO NEW WORK SHALL BE REMOVED BACK TO ACTIVE RISER OR MAIN. PROPERLY PLUG AND/OR CAP ABANDONED ITEM BEHIND FINISH SURFACES.

13. CONTRACTOR SHALL REMOVE ALL DEMOLISHED EQUIPMENT AND MATERIALS NOT DESIRED BY OWNER AND SHALL BECOME PROPERTY OF CONTRACTOR. CONTRACTOR SHALL REMOVE ALL SUCH MATERIAL PROMPTLY FROM SITE TO MAINTAIN A CLEAN AND ORDERLY WORK ARE. EQUIPMENT AND MATERIALS DESIRED BY OWNER SHALL BE DELIVERED BY CONTRACTOR TO AN ON-SITE STORAGE LOCATION DESIGNATED BY OWNER

14. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND PERFORM ALL LABOR. MATERIAL, EQUIPMENT, INCIDENTALS, METHODS AND SERVICES REQUIRED TO INSTALL ALL WORK INDICATED COMPLETELY AND IN FULL OPERATION. CONTRACTOR SHALL PROVIDE ALL HANGERS. SUPPORTS, NUTS, BOLTS, AND GASKETS AS REQUIRED FOR PROPER SYSTEM INSTALLATION. 15. EACH CONTRACTOR SHALL REVIEW "ALL" PROJECT DOCUMENTS OF "ALL" TRADES REVIEWING ALL OF

THE PROJECT REQUIREMENTS PRIOR TO BIDDING, DISCREPANCIES BETWEEN DOCUMENTS SHALL BE REPORTED AT THE TIME OF BID. 16. CONTRACTOR SHALL PROVIDE ALL PIPING SPECIALTIES AS INDICATED IN DESIGN DOCUMENTS OR

17. WHERE REQUIRED FOR CLEARANCE, TO AVOID INTERFERENCE OR EQUIPMENT CONNECTIONS, THE MECHANICAL CONTRACTOR SHALL OFFSET PIPES OR CONDUITS AS NECESSARY. SPECIAL FITTINGS OR ADAPTERS SHALL BE PROVIDED TO MAINTAIN GOOD FLOW CHARACTERISTICS. PROPERLY DRAIN AND

DRIP WHERE NECESSARY. 18. ALL WORK, EQUIPMENT AND MATERIALS SHALL BE PROTECTED AT ALL TIMES. ALL PIPE, DUCT AND EQUIPMENT OPENINGS SHALL BE PROPERLY CAPPED OR PLUGGED DURING INSTALLATION.

NECESSARY FOR PROPER OPERATION OF SYSTEMS SHOWN ON THE DRAWINGS.

19. LOCATE CEILING AIR TERMINAL DEVICES (DIFFUSER, GRILLES, REGISTERS) IN CEILING GRID. COORDINATE EXACT LOCATION WITH LIGHTING, FIRE PROTECTION DEVICE, OTHER CEILING MOUNTED

20. PROVIDE STEEL SLEEVES FOR ALL DUCTWORK AND PIPING THAT PASS THROUGH WALLS, FLOORS, CEILING AND ROOF. SEAL PENETRATION WITH AN APPROVED FIRE-STOPING SYSTEM. 21. CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS EFFECTED BY THIS PROJECT (WATER AND AIR) TO

QUANTITIES INDICATED AND PROVIDE A BALANCING REPORT FOR REVIEW / APPROVAL. 22. THERMOSTAT LOCATIONS SHOWN ON THE DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE

ACTUAL LOCATION WITH CONTROLS CONTRACTOR. 23. ALL EQUIPMENT SHALL HAVE ITS MANUFACTURER'S NAMEPLATE SECURELY ATTACHED GIVING DESIGN AND OPERATING CHARACTERISTICS. NAMEPLATES SHALL NOT BE COVERED OR OBSTRUCTED FROM VIEW. ELECTRICAL PANEL SCHEDULES SHALL BE PROVIDED AND/OR WHERE EXISTING THEY SHALL BE AMENDED TO REFLECT THE NEW WORK. PIPING AND CONDUIT SYSTEMS SHALL BE LABELED AND VALVES SHALL BE TAGGED.

24. UNLESS OTHERWISE NOTED, ALL PARTS, EQUIPMENT AND MATERIALS SHALL BE NEW AND SHALL BE

ASME AND/OR UL APPROVED. 25. CONTRACTOR SHALL COMPLETE ALL CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF THE WORK. CUTTING AND PATCHING SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. PATCHING MATERIALS SHALL MATCH EXISTING MATERIALS TO THE GREATEST EXTENT POSSIBLE. PROVIDE TOUCH-UP PAINT TO MATCH EXISTING SURROUNDING AREAS OF CUTTING AND PATCHING

26. PRIOR TO ACCEPTANCE OF THE PROJECT, ALL SYSTEMS SHALL BE TESTED, BALANCED AND OPERATED TO DEMONSTRATE TO THE OWNER OR HIS DESIGNATED REPRESENTATIVE THAT THE INSTALLATION AND PERFORMANCE OF THESE SYSTEMS AND/OR PARTS THEREOF CONFORM TO DESIGN INTENT.

27. THE CONTRACTOR IS REQUIRED TO MAKE SUBMISSIONS "SHOP-DRAWINGS" TO THE ENGINEER FOR APPROVAL OF EQUIPMENT, MATERIALS AND SYSTEMS INSTALLED ON THIS PROJECT. SHOP DRAWINGS AND REQUIRED SUBMISSIONS ARE CHECKED BY THE ENGINEER FOR DISCREPANCIES. FAILURE OF THE CONTRACTOR TO MAKE THE REQUIRED SUBMISSION AND OBTAINS THE MATERIAL, EQUIPMENT OR SYSTEM WITHOUT APPROVAL TAKES FULL RESPONSIBILITY FOR THE SUITABILITY OF THE MATERIAL, EQUIPMENT OR SYSTEM. INADEQUACIES AND DEFICIENCIES OF MATERIALS, EQUIPMENT OR SYSTEMS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER TO MEET PROJECT REQUIREMENTS AND PARAMETERS. PROVIDE 3 SETS OF SHOP DRAWINGS FOR ALL

CONTINUITY OF EXISTING SYSTEMS AND SERVICES:

1. ALL WORK SHALL BE PERFORMED AT SUCH TIME AND IN SUCH MANNER AS WILL LEAST INTERFERE WITH MAINTENANCE AND OPERATION OF OWNER'S ACTIVITIES. PROVISIONS SHALL BE MADE TO PERMIT OWNER'S USE OF ALL THE BUILDING AND OF EXISTING SYSTEMS AT ALL TIMES. PROVIDE TEMPORARY FACILITIES TO SECURE THESE CONDITIONS. REMOVE TEMPORARY FACILITIES WHEN PERMANENT WORK HAS BEEN PLACED INTO SERVICE.

2. FULLY COORDINATE WITH OWNER AND ALL OTHER TRADES, ALL WORK INVOLVING SHUT-DOWN AND INTERRUPTION OF EXISTING SYSTEMS AND SERVICE.

3. SHUT-DOWN OF EXISTING SERVICES WHERE REQUIRED TO INSTALL NEW SYSTEMS OR ALTER EXISTING, SHALL BE PERFORMED DURING HOURS THAT THE BUILDING IS NOT BEING USED BY OWNER. ALL COSTS FOR PERFORMING THIS WORK SHALL BE BORNE BY THE CONTRACTOR AND WITHOUT "EXTRA" COST TO THE OWNER.

4. EXISTING SYSTEMS AND SERVICES THAT ARE TEMPORARILY DISCONNECTED, BUT ARE TO REMAIN IN USE, SHALL BE PERMANENTLY RECONNECTED AND RETURNED TO PROPER OPERATION.

5. FULLY COORDINATE WITH ARCHITECT, OWNER AND OTHER TRADES TO INSURE COMPLETE CONTINUITY OF ALL SYSTEMS AND SERVICES.

NFW WORK.

6. CONTRACTOR SHALL FIELD VERIFY EXISTING DUCT AND PIPING TIE POINTS BEFORE BEGINNING

No. Description 100% CD'S / ISSUED FOR BID 07-01-13 ADDENDUM # 1 07-23-13

KEYPLAN

DELAWARE TECHNICAL COMMUNITY COLLEGE 400 STANTON CHRISTIANA ROAD NEWARK, DE 19713 302.454.3900

MECH./ELEC. ENGINEER:

OWNER:

DEDC, LLC. 315 S. CHAPEL STREET NEWARK, DE 19711 302-738-7172 Fax 302-738-7175 DEDC Proj. #: 13P018





Buck Simpers Architect + Associates, Inc. 715 North Orange St. Wilmington, DE 19801 302 658-9300 Fax 658-1125

12.028 DELAWARE TECHNICAL AND

COMMUNITY COLLEGE

STANTON CAMPUS

CAREER CENTER OFFICE

RENOVATION 400 STANTON CHRISTIANA ROAD

NOTES, LEGENDS & SPECIFICATIONS



MECHANICAL

NEWARK, DE 19713

DEMOLITION NOTES: 1 REMOVE CEILING DIFFUSER [(D)CD] AND ASSOCIATED DUCTWORK TO POINT INDICATED. - EXISTING TAKE-OFF TO REMAIN FOR RE-USE BUT AS NOTED OTHERWISE.

2 PATCH & SEAL EXISTING DUCTWORK AIR-TIGHT. - INSULATE PATCH TO MATCH EXISTING TO CREATE A CONTINUES THERMAL AND VAPOR

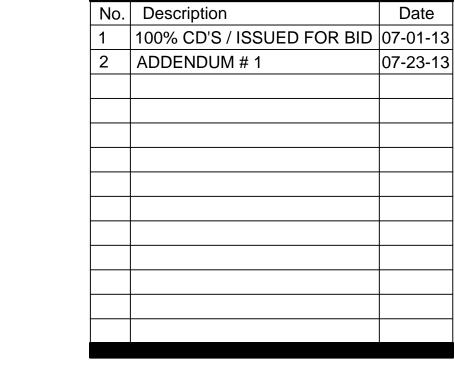
3 REMOVE VAV BOX AND ASSOCIATED DUCTWORK COMPLETELY. DISCONNECT DUCTWORK AT POINT INDICATED - DISCONNECT AND REMOVE HOT WATER PIPING TO EXISTING MAIN SUPPLY & RETURN. VALVE, CAP & SEAL EXISTING PIPING WATER-TIGHT AS REQUIRED. - REMOVE ALL ASSOCIATED CONTROLS & THERMOSTAT COMPLETELY. COORDINATE WITH BUILDING'S BAS VENDOR (JOHNSON CONTROLS BY MODERN CONTROLS).

SHEET NOTES:

1. REFER TO DRAWING M-001 FOR GENERAL NOTES, LEGENDS AND SPECIFICATIONS. 2. PROVIDE TEMPORARY SUPPORTS, BRACING, ETC. AS REQUIRED DURING ALL PHASED OF WORK. 3. PROVIDE REMOVAL AND RE-INSTALLATION OF EXISTING EQUIPMENT/ COMPONENTS ON WALLS

BEING RE-FINISHED (REFER TO ARCHITECTURAL PLANS).

4. PROVIDE MODIFICATION AND ADDITION TO EXISTING FIRE PROTECTION SYSTEM TO SUIT RENOVATED SPACE. REFER TO FIRE PROTECTION SPRINKLER SYSTEM NOTES ON DRAWING M-001.



DELAWARE TECHNICAL

COMMUNITY COLLEGE 400 STANTON CHRISTIANA ROAD

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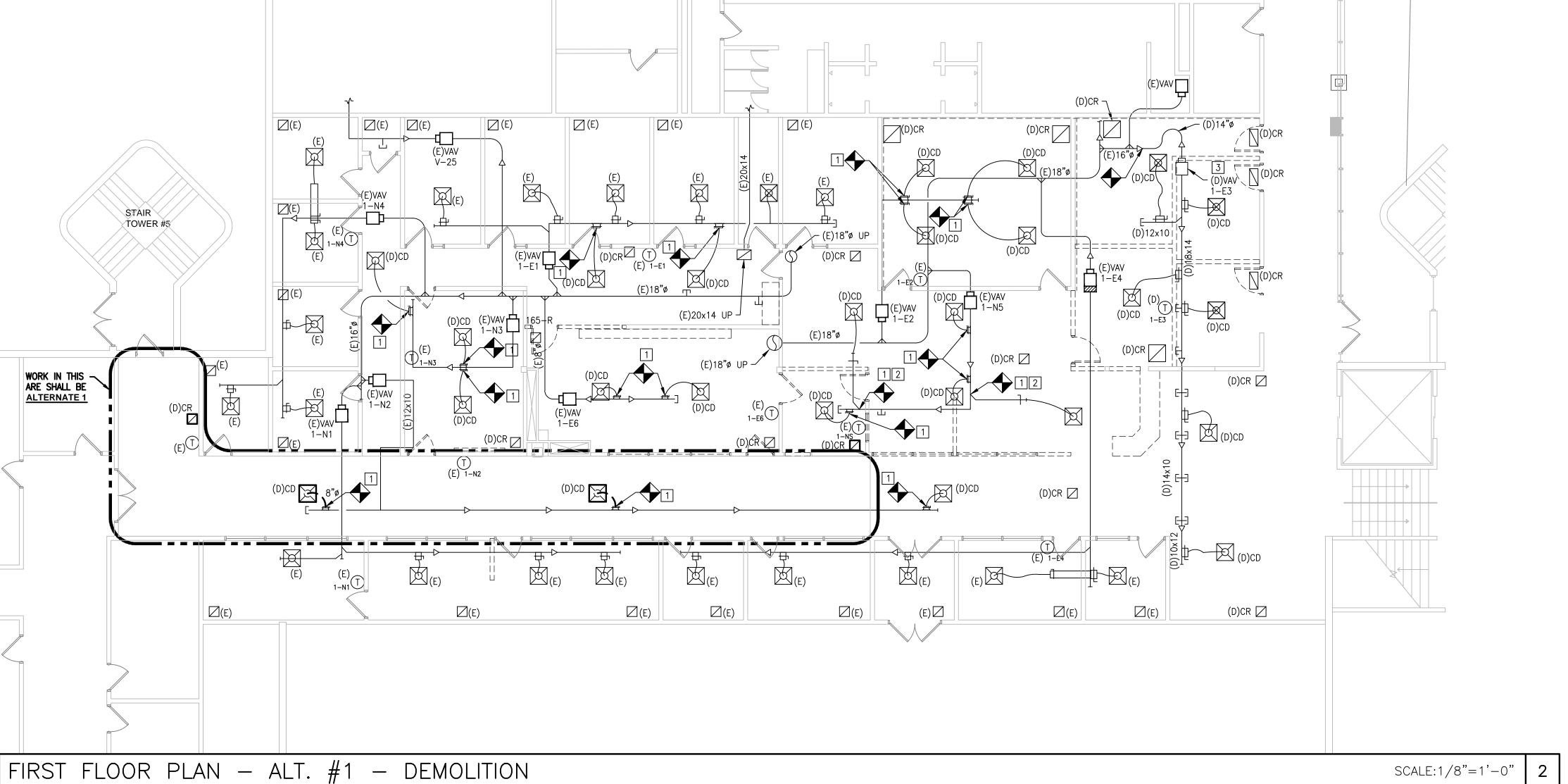
DEDC Proj. #: 13P018

MECH./ELEC. ENGINEER:

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KEYPLAN









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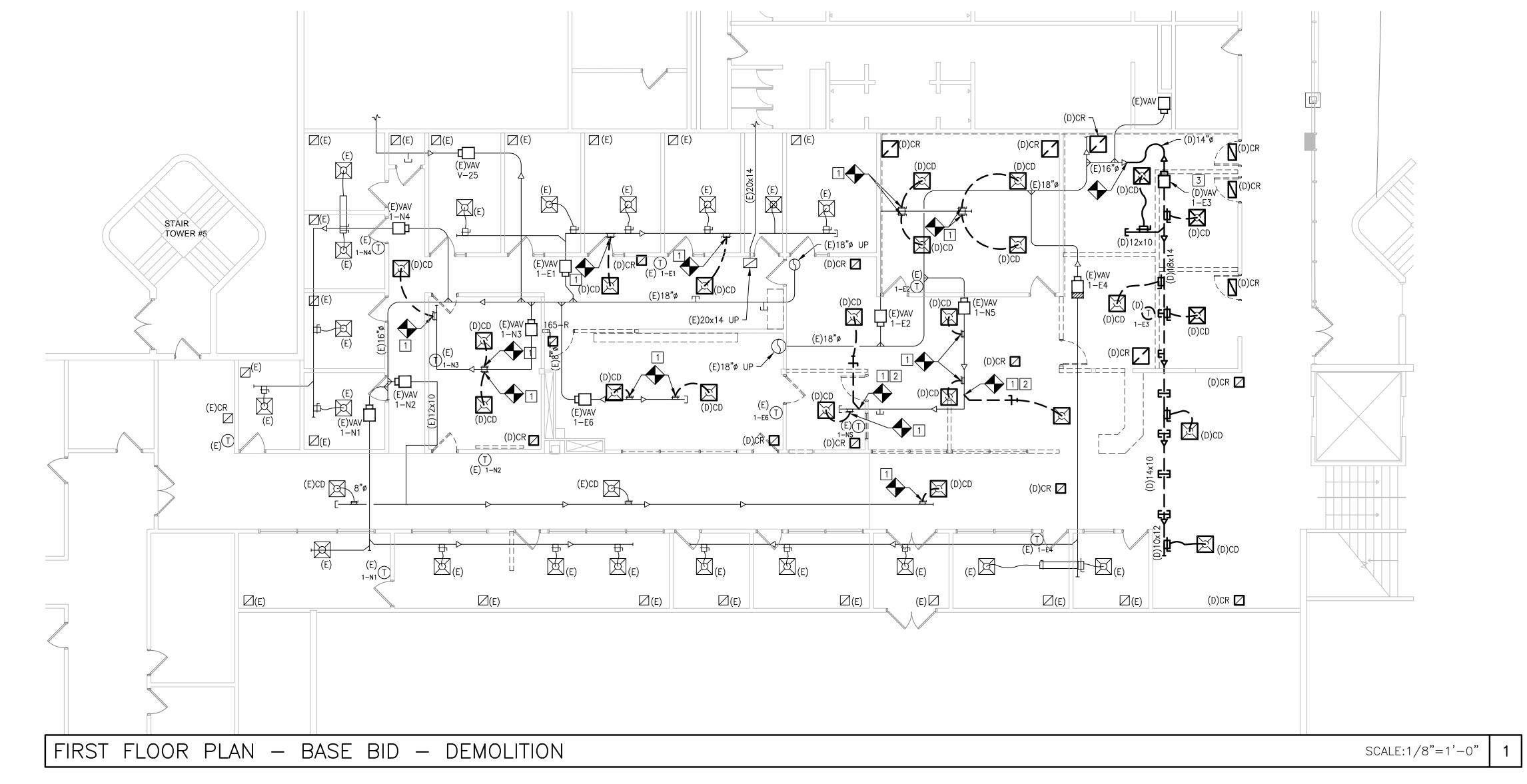
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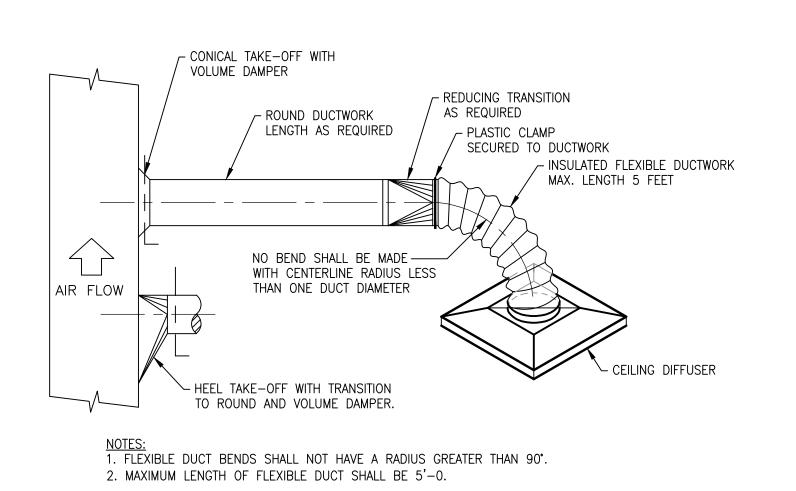
DELAWARE TECHNICAL AND COMMUNITY COLLEGE STANTON CAMPUS

CAREER CENTER OFFICE RENOVATION

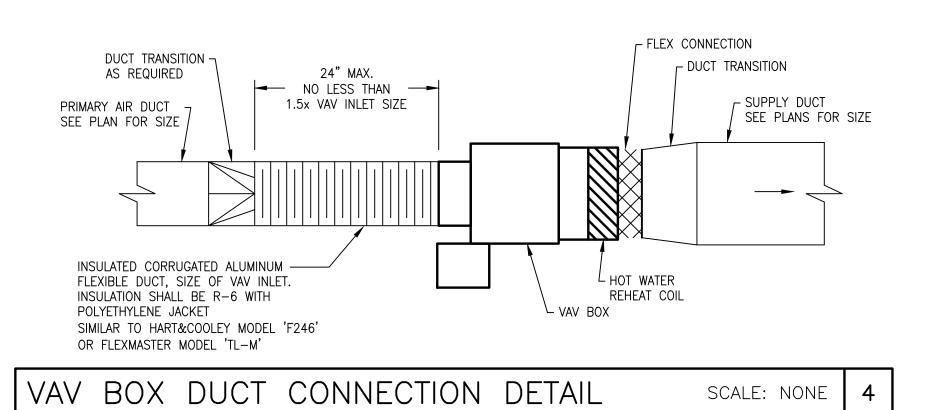
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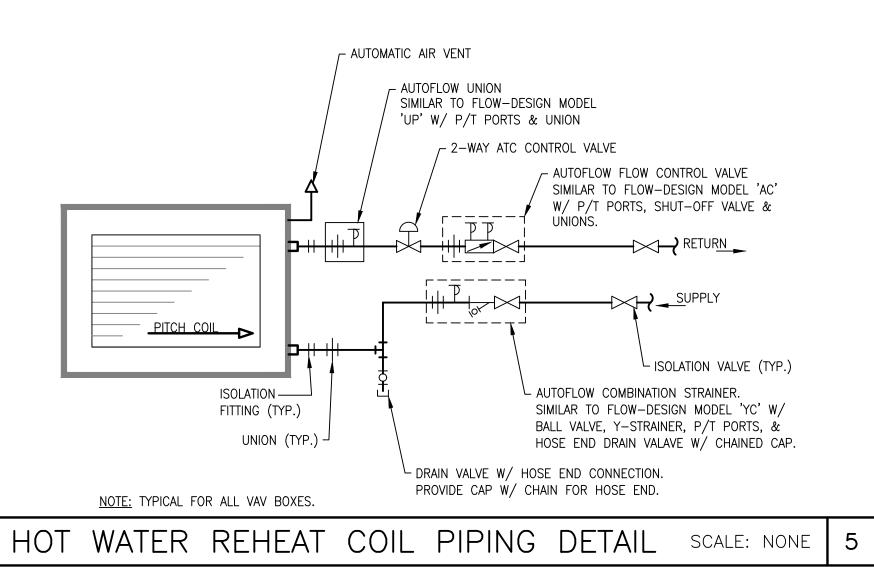
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FLEXIBLE DUCTWORK DETAIL SCALE: NONE 3





CONSTRUCTION NOTES:

CONTROLS BY MODERN CONTROLS).

- (1) CONNECT VAV BOXES HOT WATER COIL TO (E)HW PIPING THAT IS WITHIN 20'. RUN 34" PIPING WITH SHUT OFF AND BALANCING VALVE AT CONNECTION (REFER TO DETAIL). INSULATE PIPING AND BALANCE SYSTEM POST INSTALLATION. CONTRACTOR SHALL FIGURE ON DRAINING A PORTION OF THE SYSTEM TO INSTALL NEW SHUT OFF VALVES TO THE
- (2) PROVIDE RETURN DISSIPATER SILENCER ON CEILING RETURN (CR). DISSIPATER SHALL BE SIMILAR TO PRICE MODEL 'TLRD', SIZE OF CEILING RETURN OPENING. (3) PROVIDE CONTROLS FOR VAV BOX. COORDINATE WITH BUILDING BAS VENDOR (JOHNSON

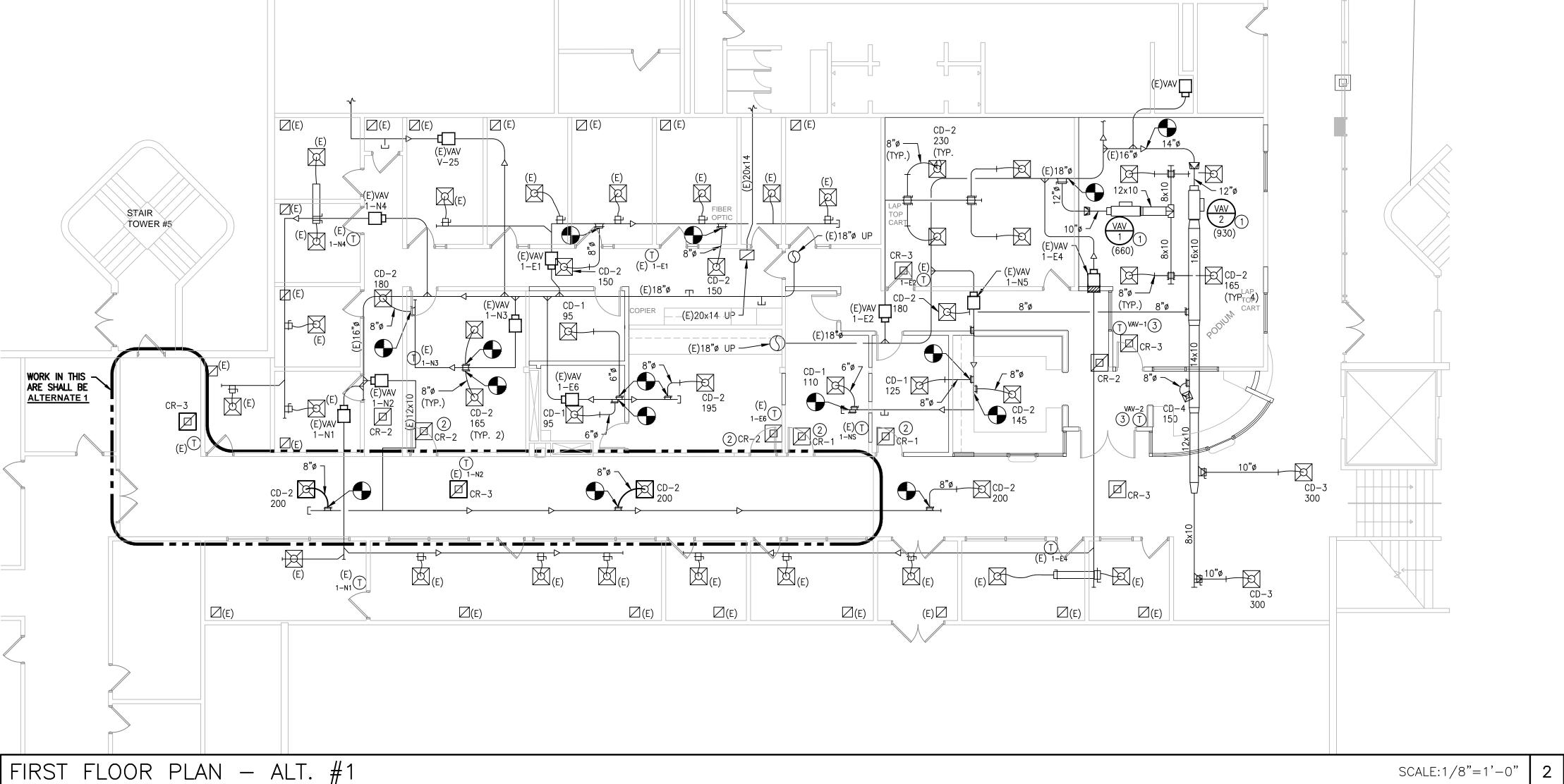
SHEET NOTES:

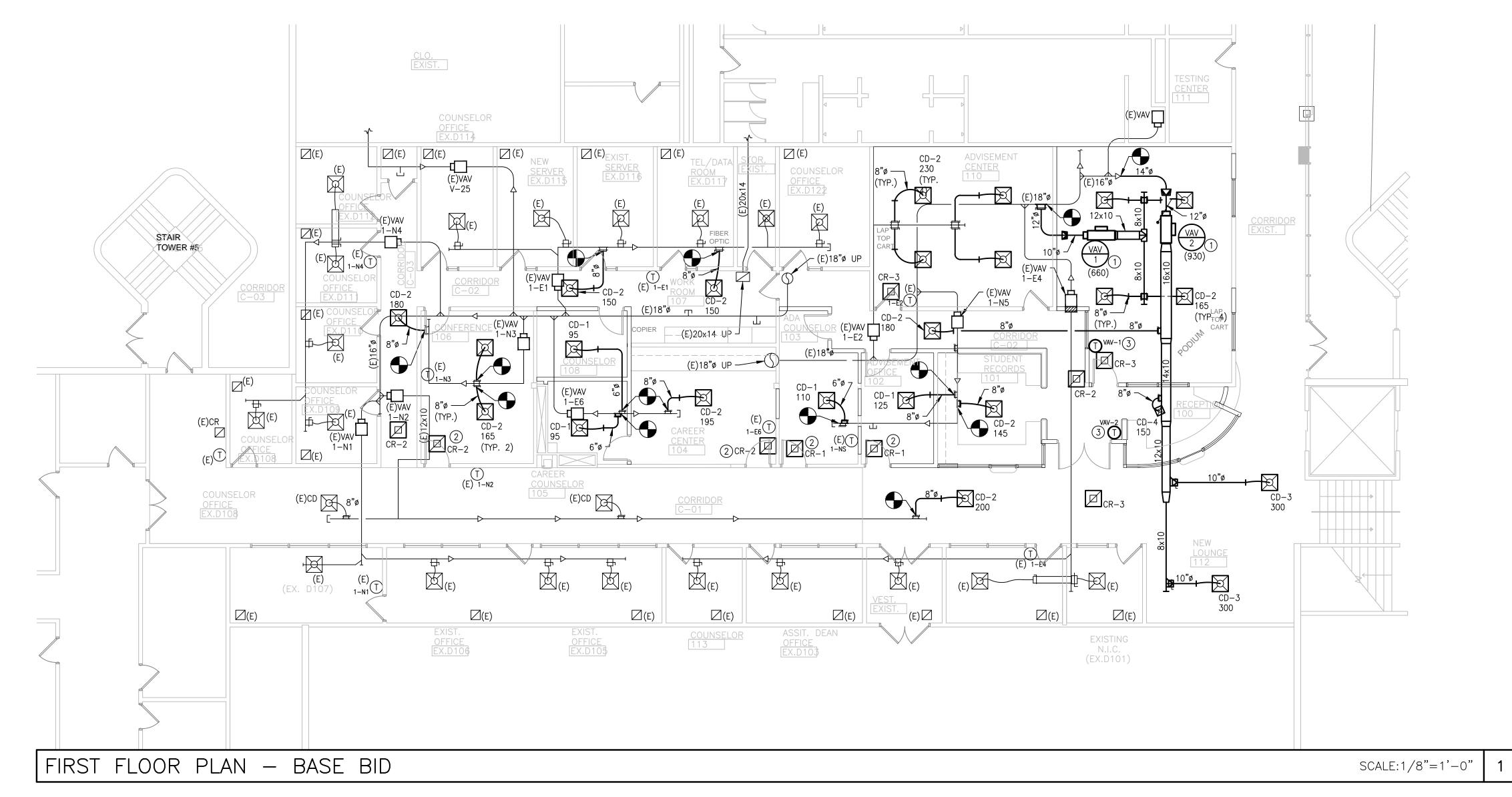
- 1. REFER TO DRAWING M-001 FOR GENERAL NOTES, LEGENDS AND SPECIFICATIONS. 2. PROVIDE TEMPORARY SUPPORTS, BRACING, ETC. AS REQUIRED DURING ALL PHASED OF WORK. 3. PROVIDE REMOVAL AND RE-INSTALLATION OF EXISTING EQUIPMENT/ COMPONENTS ON WALLS
- 4. PROVIDE MODIFICATION AND ADDITION TO EXISTING FIRE PROTECTION SYSTEM TO SUIT RENOVATED SPACE, REFER TO FIRE PROTECTION SPRINKLER SYSTEM NOTES ON DRAWING M-001.

BEING RE-FINISHED (REFER TO ARCHITECTURAL PLANS).

100% CD'S / ISSUED FOR BID 07-01-13 ADDENDUM # 1 07-23-13

No. Description





KEYPLAN

MECH./ELEC. ENGINEER: DEDC, LLC. 315 S. CHAPEL STREET NEWARK, DE 19711 302-738-7172

DELAWARE TECHNICAL

COMMUNITY COLLEGE 400 STANTON CHRISTIANA ROAD

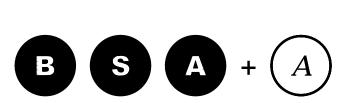
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DELAWARE TECHNICAL AND COMMUNITY COLLEGE STANTON CAMPUS

CAREER CENTER OFFICE RENOVATION

400 STANTON CHRISTIANA ROAD NEWARK, DE 19713

> FIRST FLOOR PLANS **MECHANICAL**

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GENERAL DEMOLITION NOTES:

- 1. THE CONTRACTOR SHALL CONDUCT AN ON-SITE SURVEY TO DETERMINE THE FULL SCOPE OF WORK AND REVIEW EXISTING SITE CONDITIONS.
- BEFORE PERFORMING WORK ON ELECTRIC CIRCUITS. THE CONTRACTOR SHALL POSITIVELY IDENTIFY POWER SOURCES. TURN CIRCUIT BREAKERS OR SWITCHES TO "OFF", AND LOCK OUT/TAG OUT CIRCUITS AS REQUIRED.
- THE CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DEMOLITION WORK WITH THE OWNER AS WELL AS ALL OTHER TRADES INVOLVED IN THIS PROJECT (MECHANICAL, PLUMBING, CONTROLS, ETC).
- 4. THE CONTRACTOR SHALL KEEP WORK AREA CLEAN AND ORDERLY
- UNLESS NOTED OTHERWISE, ALL ELECTRICAL ITEMS INDICATED FOR DEMOLITION SHALL BE REMOVED INCLUDING ALL ASSOCIATED WIRING, CONTROLS. ACCESSIBLE RACEWAY AND BOXES TO POINT OF ORIGIN. WHERE REMOVAL CAUSES POWER INTERRUPTION OF ELECTRICAL ITEMS TO REMAIN, REWIRE EXISTING CIRCUITS AS REQUIRED TO MAINTAIN CONTINUITY.
- RACEWAY AND BOXES BECOMING INACTIVE THAT ARE INACCESSIBLE SHALL BE ABANDONED IN PLACE WITH OPEN ENDS FILLED WITH FIRE-RATED EXPANDABLE FOAM.
- OPENINGS IN RACEWAY AND BOXES REMAINING ACTIVE SHALL BE CAPPED WITH APPROPRIATE FITTINGS.
- 7. OPENINGS TO THE EXTERIOR OF THE BUILDING SHALL BE SEALED WATERTIGHT. FIRE RATINGS OF WALLS SHALL BE RESTORED.
- 8. UNLESS OTHERWISE NOTED, CIRCUIT BREAKERS BECOMING INACTIVE IN PANELBOARDS AFFECTED BY THIS PROJECT SHALL BE RETAINED AND
- 9. ALL SPARE CIRCUIT BREAKERS SHALL HAVE THEIR OPERATING MECHANISM PLACED IN THE "OFF" (DE-ENERGIZED) POSITION.
- 10. THE CONTRACTOR SHALL UPDATE PANEL SCHEDULES FOR ALL PANELBOARDS AFFECTED BY THIS PROJECT
- 11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY AND SHALL FOLLOW ALL SAFETY RULES AND CONDITIONS AS REQUIRED FOR CONTRACTORS.
- 12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND PAINTING OF ANY HOLES, DENTS, CRACKS, PENETRATIONS, ETC. LEFT IN SURFACES AND/OR STRUCTURES AFTER DEMOLITION OF ELECTRICAL EQUIPMENT. SURFACES/STRUCTURES SHALL INCLUDE CEILINGS, WALLS, FLOORS, COLUMNS, ROOFS AND THE LIKE. PATCHING AND PAINTING SHALL RESTORE SURFACES/STRUCTURES TO ORIGINAL DESIGNS AND/OR FINISHES, INCLUDING ANY WATERTIGHT AND/OR FIRE RESISTANT RATINGS.
- 13. DAMAGE CAUSED BY THE CONTRACTOR TO AREAS OUTSIDE THE AREA OF DEMOLITION SHALL BE REPAIRED TO ORIGINAL CONDITION BY THE CONTRACTOR.
- 14. ANY BRANCH CIRCUIT WIRING OR WIRING/CABLING OF OTHER SYSTEMS PASSING THROUGH THE PROJECT AREA THAT INTERFERES WITH THE NEW CONSTRUCTION SHALL BE RELOCATED AS REQUIRED. ANY RELOCATION SHALL BE COORDINATED WITH THE OWNER AND WITH ALL OTHER AFFECTED TRADES BEFORE PROCEEDING WITH THE NEW CONSTRUCTION.
- 15. ALL DEMOLISHED MATERIALS WHICH ARE NOT TO BE TURNED OVER TO THE OWNER SHALL BE REMOVED FROM THE SITE DAILY. SALVAGED MATERIALS SHALL BE STORED FOR RE-USE.

GENERAL WIRING METHODS AND MATERIALS:

- 1. UNLESS OTHERWISE NOTED, ALL WIRING SHALL BE (AS A MINIMUM) COPPER WITH THHN/THWN INSULATION RATED 600 VOLTS AND 90/75 DEGREES CELSIUS. CONDUCTORS SHALL BE STRANDED FOR #8 AWG AND LARGER, SOLID FOR #10 AWG AND SMALLER.
- BRANCH CIRCUITS SHALL CONSIST OF CONDUCTORS NOT LESS THAN 1#12 AWG (LINE), 1#12 AWG (NEUTRAL) AND 1#12 AWG (GREEN INSULATED GROUND) INSTALLED IN CONDUIT NOT LESS THAN 3/4 INCH SIZE.
- SHARED NEUTRAL CONDUCTORS SHALL NOT BE PERMITTED ANYWHERE ON THIS PROJECT.
- 4. ALL ELECTRICAL RACEWAY/CONDUIT SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.)
- 5. ELECTRICAL METALLIC TUBING (EMT):
 - A. MAY BE USED ANYWHERE IN DRY LOCATIONS FOR FEEDERS AND BRANCH CIRCUITS 480 VOLTS AND UNDER TO GROUND.
 - B. SHALL NOT BE INSTALLED IN WET OR DAMP LOCATIONS.
 - C. ALL FITTINGS SHALL BE COMPRESSION LOCKING RING TYPE. SET SCREW FITTINGS ARE NOT PERMITTED.
 - D. ALL BOX CONNECTORS SHALL BE INSULATED THROAT TYPE.
 - E. AN INTERNAL EQUIPMENT GROUNDING CONDUCTOR SHALL BE RUN WITHIN ALL ELECTRICAL METALLIC TUBING.
- 6. METAL CLAD (TYPE MC) CABLE MAY BE USED ON A LIMITED BASIS AS FOLLOWS:
- A. TYPE MC CABLE MAY BE USED IN LIEU OF CONDUIT WHERE CONCEALED FOR BRANCH CIRCUITS NOT EXCEEDING 30 AMPS AT 208 VOLTS PHASE-TO-PHASE OR 120 VOLTS PHASE-TO-GROUND.
- B. TYPE MC CABLE SHALL NOT BE PERMITTED ANYWHERE IT WILL BE EXPOSED. IT SHALL NOT BE PERMITTED IN MECHANICAL OR ELECTRICAL ROOMS. IT SHALL NOT BE PERMITTED IN WET OR DAMP LOCATIONS. IT SHALL NOT BE PERMITTED IN HAZARDOUS LOCATIONS.
- C. TYPE MC CABLE SHALL, AT NO POINT, COME IN CONTACT WITH A SUSPENDED CEILING.
- D. TYPE MC CABLE INSTALLED ABOVE A SUSPENDED CEILING SHALL BE SUPPORTED AT 6 FOOT MAXIMUM INTERVALS USING "CADDY" BRIDLE OR MC CABLE SUPPORTS.
- E. ALL TYPE MC CABLE SHALL HAVE A <u>STEEL</u> OR <u>ALUMINUM</u> ARMORED JACKET. THE JACKET SHALL ONLY BE CUT WITH TOOLS SPECIFICALLY DESIGNED TO CUT MC CABLE.
- F. PROVIDE PLASTIC ANTI-SHORT BUSHINGS ON ENDS OF ALL TYPE MC CABLE.
- G. FITTINGS USED FOR CONNECTING TYPE MC CABLE TO BOXES, CABINETS OR OTHER EQUIPMENT SHALL BE LISTED AND IDENTIFIED FOR SUCH USE. NO SNAP-IN CONNECTORS OR INTERNAL BOX CLAMPS SHALL BE PERMITTED. ALL CONNECTORS MUST BE OF THE LOCKNUT TYPE, DESIGNED TO SECURE CONNECTORS TO BOXES OR ENCLOSURES.
- 7. FLEXIBLE METAL CONDUIT (FMC):
- A. MAY BE USED TO PROVIDE A FLEXIBLE CONNECTION TO A MOVING OR VIBRATING LOAD AND SHALL BE LIMITED TO 18 INCHES IN LENGTH.
- B. SHALL NOT BE INSTALLED IN WET OR DAMP LOCATIONS.
- C. AN INTERNAL EQUIPMENT GROUNDING CONDUCTOR SHALL BE RUN WITHIN ALL FLEXIBLE METAL CONDUIT. THE JACKET SHALL NOT BE PERMITTED TO BE THE SOLE EQUIPMENT GROUND.
- D. FITTINGS USED FOR CONNECTING FLEXIBLE METAL CONDUIT (GREENFIELD) TO BOXES, CABINETS OR OTHER EQUIPMENT SHALL BE LISTED AND IDENTIFIED FOR SUCH USE. NO SNAP-IN CONNECTORS OR INTERNAL BOX CLAMPS SHALL BE PERMITTED. ALL CONNECTORS MUST BE LOCKNUT TYPE, DESIGNED TO SECURE THE CONNECTOR TO A BOX OR ENCLOSURE
- 9. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC):
 - A. SHALL BE USED FOR ALL FLEXIBLE CONNECTIONS REQUIRED OUTDOORS, ON THE ROOF OR IN OTHER WET OR DAMP LOCATIONS.
 - B. SHALL BE USED FOR CONNECTIONS TO ALL MOTORS, REGARDLESS OF WHETHER THE MOTOR IS LOCATED INSIDE OR OUTSIDE OF THE BUILDING. LENGTH OF FLEXIBLE CONNECTION SHALL NOT EXCEED 18 INCHES.
 - C. ALL CONNECTORS USED SHALL BE LIQUIDTIGHT AND OF THE TYPE LISTED FOR USE WITH LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
 - D. AN INTERNAL EQUIPMENT GROUND SHALL BE RUN WITHIN ALL LIQUIDTIGHT FLEXIBLE METAL CONDUIT. THE JACKET SHALL NOT BE PERMITTED TO BE THE SOLE EQUIPMENT GROUND.
- 10. <u>CIRCUITS INSTALLED ON ROOF:</u> UNLESS OTHERWISE NOTED, ALL CONDUITS INSTALLED ON ROOF SHALL BE ELEVATED A MINIMUM OF 12" ABOVE THE ROOFTOP WHERE EXPOSED TO DIRECT SUNLIGHT. PROVIDE ALL EXTERIOR—GRADE CONDUIT SUPPORTS AND ASSOCIATED HARDWARE AS REQUIRED.

FIRE ALARM SYSTEM NOTES:

MECHANICAL PLANS FOR QUANTITY.

- THE CONTRACTOR SHALL SECURE THE SERVICES OF AN OWNER-APPROVED LICENSED FIRE ALARM SYSTEMS CONTRACTOR TO MODIFY AND EXTEND THE EXISTING BUILDING FIRE ALARM SYSTEM TO SUIT THE NEW PROGRAM REQUIREMENTS. REQUIREMENTS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
- A. THE FIRE ALARM SYSTEM SHALL BE FIELD ADDRESSABLE WITH NEW SMOKE DETECTORS, HEAT DETECTORS, MANUAL PULL STATIONS, NOTIFICATION DEVICES AND INTERFACES FURNISHED AND INSTALLED AS REQUIRED TO SUIT THE NEW PROGRAM REQUIREMENTS.
- B. THE MODIFIED FIRE ALARM SYSTEM SHALL SHUT DOWN HVAC EQUIPMENT AS REQUIRED. REFER TO MECHANICAL DRAWINGS FOR EQUIPMENT THAT REQUIRES SHUTDOWN. - CONTRACTOR SHALL FURNISH SUPPLY & RETURN DUCTWORK SMOKE DETECTORS FOR INSTALLATION BY MECHANICAL CONTRACTOR. THIS <u>CONTRACTOR SHALL PROVIDE ALL WIRING, INTERFACE AND ACCESSORIES REQUIRED FOR OPERATION OF SMOKE DETECTION. REFER TO</u>
- C. THE FIRE ALARM SYSTEMS CONTRACTOR SHALL FURNISH TO THE AUTHORITY HAVING JURISDICTION PLANS AND DETAILS OF THE MODIFIED FIRE ALARM SYSTEM FOR APPROVAL PRIOR TO BEGINNING WORK. PROPOSED INSTALLATION OF NEW DEVICES AND MODIFICATIONS OF THE EXISTING SYSTEM SHALL BE DOCUMENTED ON FULL—SIZE DRAWINGS AND SUBMITTED ALONG WITH CUT SHEETS OF EQUIPMENT & DEVICES AND OTHER DESCRIPTIVE DATA TO THE AUTHORITY HAVING JURISDICTION AS REQUIRED BY STATE AND LOCAL FIRE REGULATIONS.
- D. PROGRAMMING OF THE FIRE ALARM SYSTEM SHALL BE PERFORMED BY THE FIRE ALARM SYSTEMS CONTRACTOR.
- E. THE FIRE ALARM SYSTEMS CONTRACTOR SHALL PROVIDE THE OWNER WITH FIRE ALARM SYSTEM OPERATION AND MAINTENANCE (O&M) MANUALS

GENERAL NOTES AND CONDITIONS:

- PRIOR TO SUBMITTING A BID OR PROPOSAL, THE CONTRACTOR SHALL CONDUCT AN ON-SITE SURVEY TO DETERMINE THE FULL SCOPE OF WORK AND REVIEW EXISTING SITE CONDITIONS.
- 2. THE CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS OF ALL TRADES PRIOR TO BIDDING. DISCREPANCIES AMONG DOCUMENTS SHALL BE
- 3. "PROVIDE" SHALL MEAN FURNISH AND INSTALL

REPORTED AT THE TIME OF BID.

- 4. UNLESS SPECIFICALLY INDICATED AS EQUIPMENT FURNISHED BY OTHERS, ALL ELECTRICAL EQUIPMENT FOR THIS PROJECT SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL EQUIPMENT SUBMISSIONS (SHOP DRAWINGS), EQUIPMENT ARRIVAL SCHEDULING, INSTALLATION SCHEDULING WITH THE OWNER'S REPRESENTATIVE, EQUIPMENT REMOVAL FROM DELIVERY VEHICLES PROVIDING SUITABLE TEMPORARY STORAGE OF EQUIPMENT (OFF SITE) UNTIL EQUIPMENT CAN BE INSTALLED, ERECTION AND ASSEMBLY OF FQUIPMENT AND TESTING.
- 5. ALL POWER SHUTDOWNS REQUIRED FOR THIS PROJECT AFFECTING OTHER OCCUPIED AREAS OF THE SITE MUST BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
- 6. THE CONTRACTOR SHALL KEEP WORK AREA CLEAN AND ORDERLY
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY, AND SHALL FOLLOW SAFETY RULES AND CONDITIONS AS REQUIRED FOR CONTRACTORS.
- ALL ELECTRICAL WORK SHALL BE DONE IN A SAFE AND ORDERLY MANNER AND IN ACCORDANCE WITH ALL STATE REGULATIONS, SITE REGULATIONS, LOCAL CODES, OSHA, THE INTERNATIONAL BUILDING CODE (I.B.C.) AND THE NATIONAL ELECTRICAL CODE (N.E.C.).
- THE CONTRACTOR SHALL BE AWARE OF ALL FLASH HAZARD REQUIREMENTS FOR THIS PROJECT. PROTECTIVE EQUIPMENT SHALL BE WORN AND PRACTICES SHALL BE FOLLOWED IN ACCORDANCE WITH FLASH HAZARD LEVEL.

10. DRAWINGS ARE DIAGRAMMATIC ONLY; EXACT LOCATIONS, MOUNTING HEIGHTS OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED

- WITH EQUIPMENT REQUIREMENTS AND FIELD CONDITIONS. 11. THE CONTRACTOR SHALL COORDINATE EXACT LOCATIONS AND ROUGH-IN DIMENSIONS OF ALL EQUIPMENT AND SHALL MAKE ALL FINAL
- CONNECTIONS AS REQUIRED.

12. THE CONTRACTOR SHALL PROVIDE ACCESS HATCHES WHERE REQUIRED FOR INACCESSIBLE CEILINGS, WALLS, FLOORS, ETC.

- 13. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES ON THE PROJECT
- 14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY SUPPORTS AND HARDWARE FOR MOUNTING OF ELECTRICAL EQUIPMENT INCLUDED IN THIS PROJECT. MOUNTING HEIGHTS AND RESTRICTIONS SHALL BE PER N.E.C. REQUIREMENTS
- 15. PROVIDE "HACR" TYPE CIRCUIT BREAKERS FOR ALL CIRCUITS SUPPLYING HVAC EQUIPMENT.
- 16. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, INCIDENTALS, METHODS AND SERVICES REQUIRED TO INSTALL ALL WORK COMPLETELY AND IN FULL OPERATION.
- 17. UNLESS NOTED OTHERWISE, ALL MATERIAL TO BE USED ON THIS PROJECT SHALL BE NEW AND UL OR ETL LISTED WHERE AVAILABLE
- 18. THE CONTRACTOR SHALL PROVIDE 6 SETS OF SUBMITTALS INCORPORATING PRODUCT DATA (CATALOG CUTS) AND SHOP DRAWINGS FOR APPROVAL OF ALL MATERIAL TO BE USED ON THIS PROJECT. PRODUCT DATA/SHOP DRAWINGS SHALL BE SUBMITTED FOR ITEMS TO INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING AS APPLICABLE FOR THE PROJECT: CONDUCTORS, CABLES, CONDUIT, CONDUIT FITTINGS, CONDUIT BODIES, SUPPORT HARDWARE, DEVICE BOXES, DEVICE COVERS, JUNCTION BOXES, PULL BOXES, ENCLOSURES, SAFETY SWITCHES, FUSES, CIRCUIT BREAKERS, PANELBOARDS, MOTOR CONTROLS, WIRING DEVICES, LIGHTING FIXTURES, IDENTIFICATION LABELS, ETC.
- 19. THE CONTRACTOR SHALL BE REQUIRED TO MAKE SUBMISSIONS TO THE ENGINEER FOR APPROVAL OF EQUIPMENT, MATERIALS AND SYSTEMS INSTALLED ON THIS PROJECT. IN SOME INSTANCES CATALOG NUMBERS MAY CHANGE OVER THE COURSE OF TIME, NUMBERS SOMETIMES INADVERTENTLY ARE TRANSCRIBED INCORRECTLY OR THE OWNER FOR A SPECIFIC ITEM MAY INITIATE A CHANGE. SHOP DRAWINGS AND REQUIRED SUBMISSIONS ARE CHECKED BY THE ENGINEER FOR THESE DISCREPANCIES OR CHANGES. FOR THIS REASON, REQUIRED SUBMISSIONS ARE NOT WAIVED BY THE ENGINEER FOR ANY REASON. FAILURE OF THE CONTRACTOR TO MAKE REQUIRED SUBMISSIONS AND/OR OBTAINING MATERIAL, EQUIPMENT OR SYSTEMS WITHOUT APPROVAL WILL RESULT IN THE CONTRACTOR TAKING FULL RESPONSIBILITY FOR THE SUITABILITY OF THE MATERIAL, EQUIPMENT OR SYSTEM. INADEQUACIES AND DEFICIENCIES OF MATERIALS, EQUIPMENT OR SYSTEMS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER TO MEET PROJECT REQUIREMENTS AND PARAMETERS.
- 20. ALL CONDUIT PENETRATIONS INTO ELECTRICAL ENCLOSURES SHALL BE MADE BY THE ELECTRICAL CONTRACTOR.
- ALL PENETRATIONS THROUGH FLOORS OR WALLS SHALL BE CORE-DRILLED. THE USE OF JACK HAMMERS SHALL NOT BE PERMITTED. MAXIMUM HOLE DIAMETERS SHALL NOT EXCEED 6 INCHES. ALL HOLES SHALL BE SPACED AT LEAST 18 INCHES APART IN ALL DIRECTIONS. RE-USE OF EXISTING PENETRATIONS SHALL BE PERMITTED.
- 22. PRIOR TO ANY CORE DRILLING THROUGH FLOORS OR WALLS. THE ELECTRICAL CONTRACTOR SHALL VISUALLY SURVEY BOTH SIDES TO SEE IF THERE ARE ANY PIPES, DUCTS, OR ELECTRICAL SERVICES THAT MAY PRESENT OBSTACLES. THE ELECTRICAL CONTRACTOR SHALL ALSO IDENTIFY LOCATIONS OF EXISTING CONCRETE SLAB REINFORCEMENT OR IN-SLAB UTILITIES USING A PACHOMETER, X-RAY, OR SIMILAR DEVICE. ALL CORE-DRILLED PENETRATIONS SHALL BE A MINIMUM OF 3 INCHES AWAY FROM EXISTING CONCRETE SLAB REINFORCEMENT OR IN-SLAB UTILITIES.
- 23. ALL CONDUIT PENETRATIONS THROUGH FLOORS AND WALLS SHALL BE SEALED ON BOTH SIDES WITH FIREPROOFING CAULK SO AS TO MANTAIN THE FIRE RATING OF THE FLOOR OR WALL. FIREPROOFING MATERIALS ARE TO BE PRE-APPROVED BY THE ENGINEER.
- 24. ALL CONDUIT PENETRATIONS THROUGH THE ROOF AND THROUGH WALLS TO THE EXTERIOR OF THE BUILDING SHALL BE SEALED WATERTIGHT.
- 25. SIZE HOMERUN BRANCH CIRCUIT CONDUCTORS FROM THE PANELBOARD TO THE FIRST OUTLET IN ACCORDANCE WITH THE FOLLOWING MAXIMUM CIRCUIT LIMITS, USING CENTER OF LOAD SERVED AS BASIS FOR COMPUTING CIRCUIT LENGTHS:

#12 AWG 120 VOLT (20A) 100FT

#10 AWG 120 VOLT (20A) 165FT

- 26. THE CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELING OF CIRCUITS, WIRING DEVICES, CONDUIT AND CONDUCTORS AS FOLLOWS:
- A. THE CONTRACTOR SHALL PROVIDE NEW TYPEWRITTEN PANEL SCHEDULES FOR ALL PANELS INVOLVED IN THE PROJECT INCLUDING EXISTING PANELS.
- ALL INDIVIDUAL CONDUCTORS WITHIN PULL BOXES, JUNCTION BOXES AND AT POINTS OF USE SHALL BE IDENTIFIED BY PANEL AND CIRCUIT NUMBERS. CONDUCTORS SHALL BE IDENTIFIED VIA HEAT SHRINK IDENTIFICATION LABELS. COLOR CODE SHALL FOLLOW N.E.C. AND STANDARD
- ALL PULL BOXES AND JUNCTION BOXES ENCLOSING FEEDERS, SUB-FEEDERS AND BRANCH CIRCUITS SHALL IDENTIFY THE CIRCUITS WITHIN BY PANEL AND CIRCUIT NUMBERS. IDENTIFICATION SHALL BE ACCOMPLISHED VIA 1/4 INCH "P—TOUCH" (CLEAR W/ BLACK) LABELS AFFIXED TO COVERPLATES.
- ALL WIRING DEVICES (RECEPTACLES, TOGGLE SWITCHES, ETC.) AFFECTED BY THIS PROJECT SHALL HAVE 1/4 INCH "P-TOUCH" (CLEAR W/ BLACK) LABELS AFFIXED TO COVER PLATES. CONNECTED BRANCH CIRCUITS SHALL BE IDENTIFIED BY PANEL AND CIRCUIT NUMBERS.
- ALL PANELBOARDS, SAFETY SWITCHES, MOTOR CONTROLS, CONTROL CABINETS, ETC. SHALL HAVE BLACK LAMINATED PLASTIC IDENTIFICATION PLATES WITH WHITE LETTERS INDICATING VOLTAGE CONTAINED WITHIN, EQUIPMENT SERVED AND POWER SOURCE (PANEL AND CIRCUIT NUMBER). **EXAMPLES**:

PANELBOARD PANEL "PPD 120/208V, 3ø, 4W FED FROM PANEL "PPC"

SAFETY SWITCH: CU-10

208V, 1ø FED FROM PPF-45,47

SAME AS FOR SAFETY SWITCH

- 27. ALL EMERGENCY LIGHTING BATTERY PACKS SHALL BE CONNECTED TO THE UNSWITCHED LEG OF THE DESIGNATED LIGHTING CIRCUIT.
- 28. ALL FLUORESCENT LIGHTING FIXTURES UTILIZING DOUBLE-ENDED LAMPS SHALL BE PROVIDED WITH DISCONNECTING MEANS FOR EACH BALLAST CONFORMING TO N.E.C. ARTICLE 410.130(G).
- 29. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE BOTH THE BUILDING OWNER AND ENGINEER WITH "AS-BUILT" DRAWINGS INDICATING ALL CHANGES FROM THE CONTRACT DRAWINGS. ALL CHANGES SHALL BE LEGIBLY MARKED UP IN RED. IN ADDITION, ANY CONCEALED OR BURIED ELECTRICAL ITEMS SHALL BE INDICATED WITH DIMENSIONED LOCATIONS AND/OR ELEVATIONS. PROVIDE (3) COPIES OF "AS-BUILT"
- 30. THE CONTRACTOR SHALL CIRCUIT ALL DEVICES IN THE PROJECT AREA AS SHOWN ON THE PROJECT DRAWINGS. IF DIFFERENT CIRCUIT NUMBERS ARE USED THAN THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL FOLLOW THE SAME CIRCUIT SCHEME AND DOCUMENT CIRCUIT NUMBER CHANGES ON REQUIRED "AS BUILT" DRAWINGS AND PANEL SCHEDULES.
- 31. PROVIDE THREE (3) COPIES OF OPERATION AND MAINTENANCE (0&M) MANUALS FOR ALL NEW EQUIPMENT AND DEVICES INSTALLED AS PART OF
- A. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
- B. O&M MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY
- C. SPARE PARTS LISTS FOR ALL EQUIPMENT.
- D. NAME AND ADDRESS OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
- E. A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.

THIS WORK. MANUALS SHALL INCLUDE THE FOLLOWING ITEMS BOUND IN A SUBSTANTIAL BINDER:

- 32. THE CONTRACTOR SHALL ARRANGE FOR ALL WORK TO BE INSPECTED IN ACCORDANCE WITH STATE AND LOCAL CODES BY AN APPROVED INSPECTION AGENCY. CONTRACTOR SHALL PAY FOR ALL PERMITS AND INSPECTIONS AS MAY BE REQUIRED.
- 33. PRIOR TO ACCEPTANCE OF THE PROJECT BY THE OWNER, ALL SYSTEMS SHALL BE TESTED AND OPERATED TO DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT THE INSTALLATION AND PERFORMANCE OF THESE SYSTEMS AND/OR PARTS THEREOF CONFORM TO THE DESIGN INTENT.

ABBREVIATIONS:

EXISTING REUSED

NOTE: REFER TO MECHANICAL DRAWINGS FOR MECHANICAL EQUIPMENT ABBREVIATIONS

POLE **AMPERES** G/GND GROUND A.F.F. ABOVE FINISHED FLOOR GROUND FAULT CIRCUIT INTERRUPTING HACR TYP. TYPICAL ABOVE FINISHED GRADE HEATING, AIR CONDITIONING & REFRIGERATION U.O.N. UNLESS OTHERWISE NOTED AMPERE INTERRUPTING CURRENT HP HORSEPOWER AMERICAN WIRE GAUGE VOLTS AWG JUNCTION BOX CONDUIT WIRE THOUSAND COUNTER HEIGHT WEATHERPROOF WP THOUSAND CIRCULAR MILS EXISTING TO REMAIN NATIONAL ELECTRICAL CODE (NFPA 70)

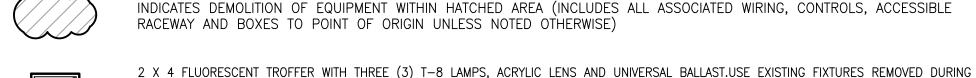
BRANCH CIRCUIT LIGHTING CONTROL IDENTIFICATION: EXAMPLE:

EXAMPLE: <u>PPD</u> - <u>1,3</u> ELECTRICAL └─CIRCUIT BREAKER WITHIN PANEL ---PANEL SERVING BRANCH LAMP CONTROL - IS

FLUORESCENT LIGHTING FIXTURE

ELECTRICAL LEGEND:

REQUIRED.



DEMOLITION. CLEAN AND RE-LAMP THE REMOVED FIXTURES BEFORE RE-INSTALLING. PROVIDE ADDITIONAL FIXTURES TO MATCH EXISTING AS

- 2 X 2 FLUORESCENT TROFFER WITH TWO (2) T-8 LAMPS, ACRYLIC LENS AND UNIVERSAL BALLAST. USE EXISTING FIXTURES REMOVED DURING DEMOLITION. CLEAN AND RE-LAMP THE REMOVED FIXTURES BEFORE RE-INSTALLING. PROVIDE ADDITIONAL FIXTURES TO MATCH EXISTING AS REQUIRED.
- FLUORESCENT DOWN LIGHT WITH ONE (1) 32 WATT COMPACT FLUORESCENT LAMP, ALZAK REFLECTOR, UNIVERSAL ELECTRONIC BALLAST. USE EXISTING FIXTURES REMOVED DURING DEMOLITION. CLEAN AND RE-LAMP THE REMOVED FIXTURES BEFORE RE-INSTALLING. PROVIDE ADDITIONAL FIXTURES TO MATCH EXISTING AS REQUIRED.
- FLUORESCENT DOWN LIGHT, SAME AS ABOVE EXCEPT WITH ELECTRONIC DIMMING BALLAST TO 5% NEW.
- ILLUMINATED EXIT SIGN FACES AND DIRECTIONAL ARROWS AS INDICATED CONNECT UNSWITCHED LEG OF LIGHTING BRANCH CIRCUIT TO INPUT
- EMERGENCY LIGHTING BATTERY UNIT CONNECT UNSWITCHED LEG OF LIGHTING BRANCH CIRCUIT TO INPUT COMBINATION ILLUMINATED EXIT SIGN/DUAL HEAD EMERGENCY LIGHTING BATTERY UNIT - CONNECT UNSWITCHED LEG OF
- LIGHTING BRANCH CIRCUIT TO INPUT DEVICE BOX MOUNTED 6" ABOVE SINK/COUNTERTOP BACKSPLASH LEVEL

BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNT 18" A.F.F. U.O.N.

DEVICE BOX MOUNTED 18" A.F.F. (MOUNTING HEIGHT AS INDICATED)

DEVICE BOX WITH BLANK COVER PLATE

- DUPLEX RECEPTACLE OUTLET IN DUAL-GANG FLUSH-MOUNTED DEVICE BOX WITH SINGLE-GANG TILE RING AND WHITE NYLON DEVICE COVER PLATE. RECEPTACLE SHALL BE EXTRA HEAVY DUTY SPECIFICATION GRADE, STRAIGHT BLADE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5—20R, WHITE COLOR. PROVIDE HUBBELL CAT. NO. HBL5362W OR EQUAL
- RECEPTACLE OUTLETS AS ABOVE IN DOUBLE-DUPLEX CONFIGURATION WITH DUAL-GANG TILE RING.
- RECEPTACLE OUTLET AS ABOVE IN SINGLE-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED STEEL DEVICE COVER
- RECEPTACLE OUTLETS AS ABOVE IN DOUBLE-DUPLEX CONFIGURATION IN DUAL-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED STEEL DEVICE COVER PLATE.
- DUPLEX RECEPTACLE OUTLET ISOLATED GROUND TYPE
- RECEPTACLE OUTLET TWIST LOCKING LYPE
- GFCI RECEPTACLE OUTLET IN DUAL-GANG FLUSH-MOUNTED DEVICE BOX WITH SINGLE-GANG TILE RING AND WHITE NYLON DEVICE COVER PLATE. RECEPTACLE SHALL BE EXTRA HEAVY DUTY SPECIFICATION GRADE, WEATHER-RESISTANT, STRAIGHT BLADE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, WHITE COLOR. PROVIDE HUBBELL CAT. NO. GFR5362SGW OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNT 18" A.F.F. U.O.N.
- GFCI RECEPTACLE OUTLET AS ABOVE WITH HORIZONTAL WEATHERPROOF WHILE-IN-USE DEVICE COVER. DEVICE COVER SHALL BE HEAVY DUTY GRAY DIE-CAST ZINC OR ALUMINUM (PASS & SEYMOUR CAT. #WIUC10CAGH OR APPROVED EQUAL). MOUNT 18" A.F.F. U.O.N.
- GFCI RECEPTACLE OUTLET AS ABOVE IN SINGLE-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED STEEL DEVICE COVER PLATE.
- RECEPTACLE OUTLET (NEMA TYPE 14-20R CONFIGURATION) IN DUAL-GANG FLUSH-MOUNTED DEVICE BOX WITH STAINLESS STEEL DEVICE COVER PLATE. RECEPTACLE SHALL BE STRAIGHT BLADE, 20 AMPERE, 125/250 VOLT, 3 POLE, 4 WIRE GROUNDING TYPE. PROVIDE HUBBELL CAT. NO. HBL8410 OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNTING HEIGHT AS INDICATED.
- RECEPTACLE OUTLET (NEMA TYPE 14-30R CONFIGURATION) IN DUAL-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED STEEL DEVICE COVER PLATE. RECEPTACLE SHALL BE STRAIGHT BLADE, 30 AMPERE, 125/250 VOLT, 3 POLE, 4 WIRE GROUNDING TYPE. PROVIDE HUBBELL CAT. NO. HBL9430A OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNTING HEIGHT AS INDICATED.
- RECEPTACLE OUTLET (NEMA TYPE 14-50R CONFIGURATION) IN DUAL-GANG FLUSH-MOUNTED DEVICE BOX WITH STAINLESS STEEL DEVICE COVER PLATE. RECEPTACLE SHALL BE STRAIGHT BLADE, 50 AMPERE, 125/250 VOLT, 3 POLE, 4 WIRE GROUNDING TYPE. PROVIDE HUBBELL CAT. NO. HBL9450A OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNT 18" A.F.F.
- STEEL DEVICE COVER PLATE. RECEPTACLE SHALL BE STRAIGHT BLADE, 50 AMPERE, 250 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE. PROVIDE HUBBELL CAT. NO. HBL9367 OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNTING HEIGHT AS INDICATED. RECEPTACLE OUTLET (NEMA TYPE 6-20R CONFIGURATION) IN DUAL-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED

RECEPTACLE OUTLET (NEMA TYPE 6-50R CONFIGURATION) IN DUAL-GANG FLUSH-MOUNTED DEVICE BOX WITH STAINLESS

RECEPTACLE OUTLET (NEMA TYPE 6-30R CONFIGURATION) IN DUAL-GANG SURFACE-MOUNTED DEVICE BOX WITH GALVANIZED

STEEL DEVICE COVER PLATE, RECEPTACLE SHALL BE STRAIGHT BLADE, 30 AMPERE, 250 VOLT, 2 POLE, 3 WIRE GROUNDING

18" A.F.F. (MOUNTED HEIGHT AS INDICATED) U.O.N. TELECOMMUNICATION WIRING, JACKS AND DEVICE PLATE TO BE PROVIDED

SURFACE NONMETALLIC RACEWAY - DUAL CHANNEL (POWER & TELECOMMUNICATIONS) WITH POWER FEED AND WIRING

BRANCH CIRCUIT EXPOSED OR CONCEALED IN CEILING OR WALL CONSTRUCTION. MINIMUM (3) #12 AWG CONDUCTORS (LINE,

NEUTRAL, GROUND) IN 3/4" CONDUIT UNLESS NOTED OR SPECIFIED OTHERWISE HEREIN. NUMBER OF CROSS LINES

TYPE. PROVIDE HUBBELL CAT. NO. HBL9330 OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNTING HEIGHT AS

- STEEL DEVICE COVER PLATE. RECEPTACLE SHALL BE STRAIGHT BLADE, 20 AMPERE, 250 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE. PROVIDE HUBBELL CAT. NO. HBL5462 OR EQUAL BY BRYANT, LEVITON OR PASS & SEYMOUR. MOUNTING HEIGHT AS INDICATED.
- INDICATED. FLUSH-MOUNTED TELECOMMUNICATION OUTLET - IN NEW WALLS, PROVIDE FLUSH- MOUNTED DUAL-GANG OUTLET BOX WITH SINGLE-GANG PLASTER RING AND (2) 3/4" EMT CONDUITS CONCEALED IN WALL EXTENDING FROM BOX TO 6" ABOVE CEILING LEVEL. IN EXISTING DRYWALL, CUT APPROPRIATELY—SIZED OPENINGS IN WALLS AND PROVIDE SINGLE—GANG METALLIC MOUNTING PLATE BRACKETS (CADDY PLATES) SUITABLE FOR USE WITH LOW VOLTAGE TELECOMMUNICATION EQUIPMENT. MOUNT
- LOW VOLTAGE SWITCH IN DUAL-GANG FLUSH MOUNTED DEVICE BOX WITH SINGLE-GANG TILE RING AND WHITE NYLON DEVICE
- COVER PLATE. SWITCH SHALL MATCH EXISTING GERR7 OR EQUAL. LOW VOLTAGE SWITCHES AS ABOVE IN 2-GANG CONFIGURATION WITH DUAL-GANG TILE RING.
- DIMMER WITH ON/ OFF SWITCH FOR FLUORESCENT DOWN LIGHT. COMPATIBLE WITH DOWN LIGHT DIMMING BALLAST.

RY RY DEVICES AS INDICATED. PROVIDE ALL DEVICES, APPURTENANCES, FITTINGS AND MOUNTING HARDWARE AS REQUIRED FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. PROVIDE WIREMOLD 5400 SERIES, WHITE COLOR, OR EQUAL BY HUBBELL. JUNCTION BOX

INDICATES NUMBER OF CONDUCTORS WHEN MORE THAN THREE. BRANCH CIRCUIT AS ABOVE CONCEALED UNDER FLOOR CONSTRUCTION OR UNDERGROUND.

HOMERUN TO PANELBOARD

BY OTHERS. PROVIDE WITH PULL WIRES.

PANELBOARD - SURFACE MOUNTED. FLUSH MOUNTED

No. Description Date 100% CD'S / ISSUED FOR BID 07-01-13 ADDENDUM # 1 07-23-13

KEYPLAN

DELAWARE TECHNICAL **COMMUNITY COLLEGE** 400 STANTON CHRISTIANA ROAD **NEWARK, DE 19713** 302.454.3900

MECH./ELEC. ENGINEER:

DEDC, LLC. 315 S. CHAPEL STREET NEWARK, DE 19711 302-738-7172 Fax 302-738-7175 DEDC Proj. #: 13P018





Buck Simpers Architect + Associates, Inc. 715 North Orange St Wilmington, DE 19801 302 658-9300

12.028 JOB NO. **DELAWARE TECHNICAL AND**

COMMUNITY COLLEGE

STANTON CAMPUS

CAREER CENTER OFFICE RENOVATION

400 STANTON CHRISTIANA ROAD **NEWARK. DE 19713**

NOTES, LEGENDS & SPECIFICATIONS **ELECTRICAL**

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2	ADDENDUM # 1	07-23-13

DELAWARE TECHNICAL

COMMUNITY COLLEGE

400 STANTON CHRISTIANA ROAD

NEWARK, DE 19713

MECH./ELEC. ENGINEER:

315 S. CHAPEL STREET NEWARK, DE 19711

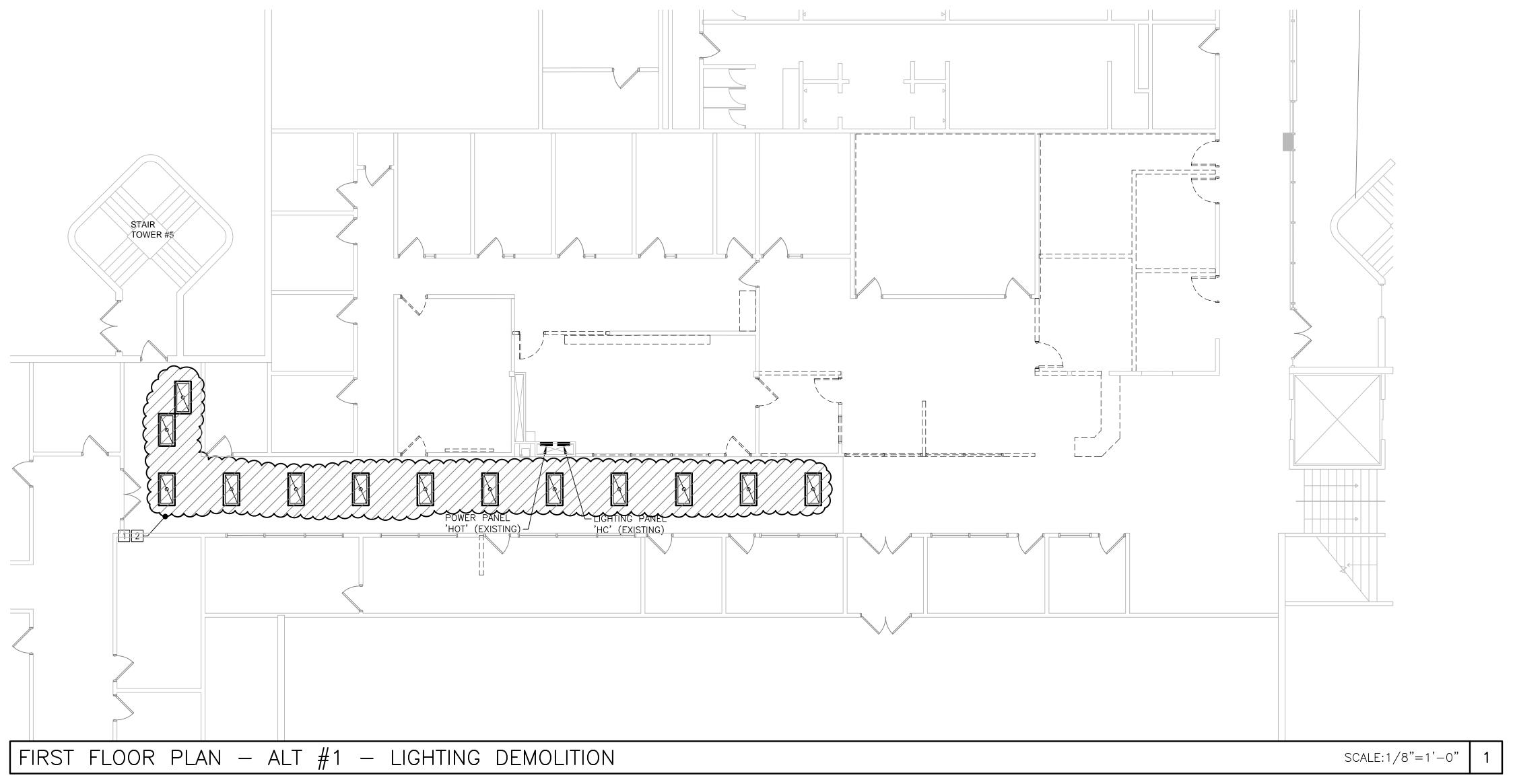
302.454.3900

DEDC, LLC.

302-738-7172 Fax 302-738-7175 DEDC Proj. #: 13P018

DEMOLITION NOTES:

- 1 PROVDE COMPLETE DEMOLITION OF EXISTING CEILING MOUNTED LIGHT FIXTURE. EXISTING CIRCUIT SHALL REMAIN FOR NEW INSTALL.
- THE EXISTING LIGHT FIXTURES ARE 277 VOLT AND CONTROLLED BY A LOW VOLTAGE LIGHTING SWITCHING. REWIRE THE EXISTING LOW VOLTAGE LIGHTING RELAYS AND SWITCHES IN ALL OFFICE SPACES WITH NEW WALL MOUNTED OCCUPANCY SENSORS.
- 3 SEE DRAWING E-100 FOR ADDITIONAL DEMOLITION NOTES.





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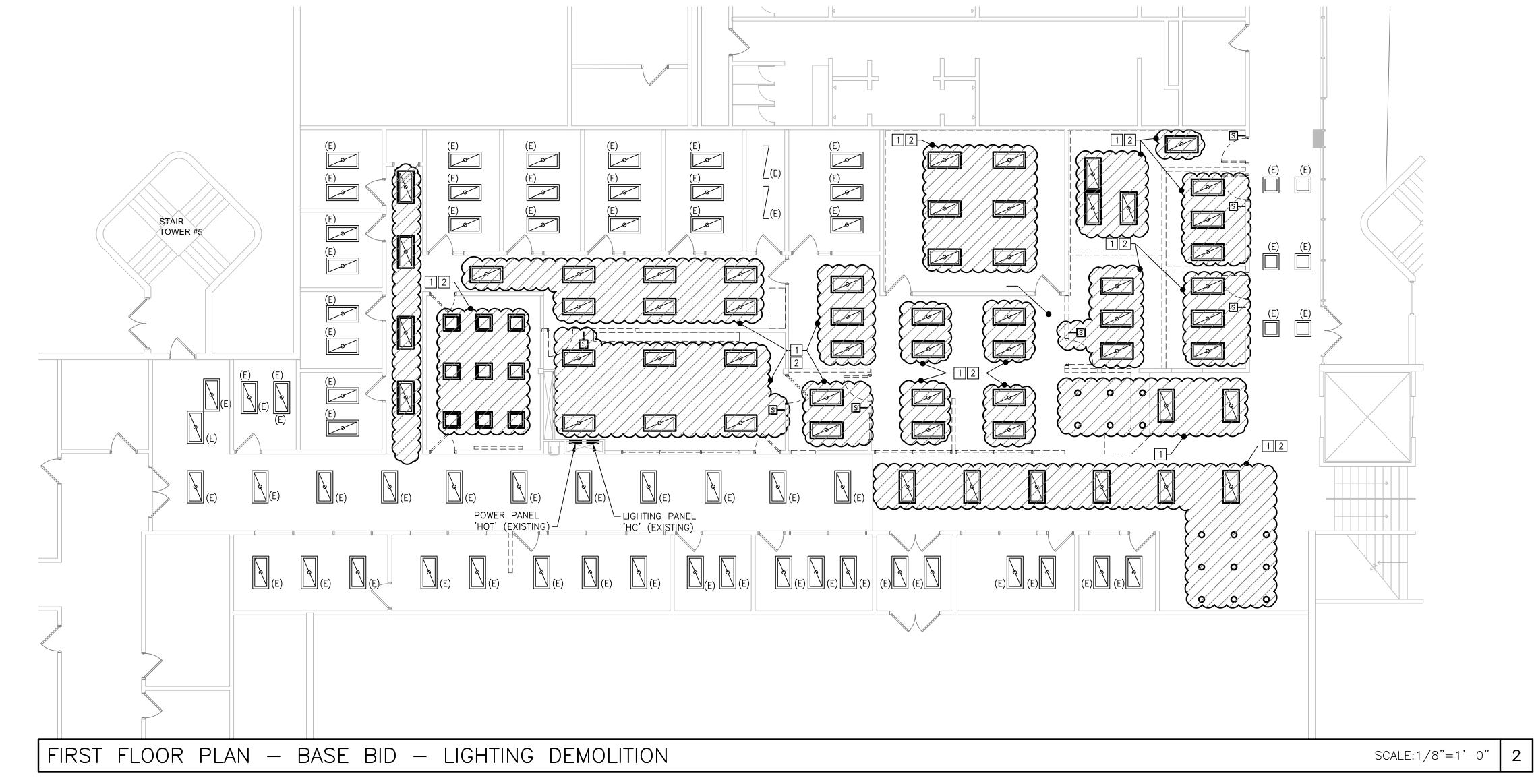
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FIRST FLOOR - LIGHT PLANS DEMOLITION ELECTRICAL

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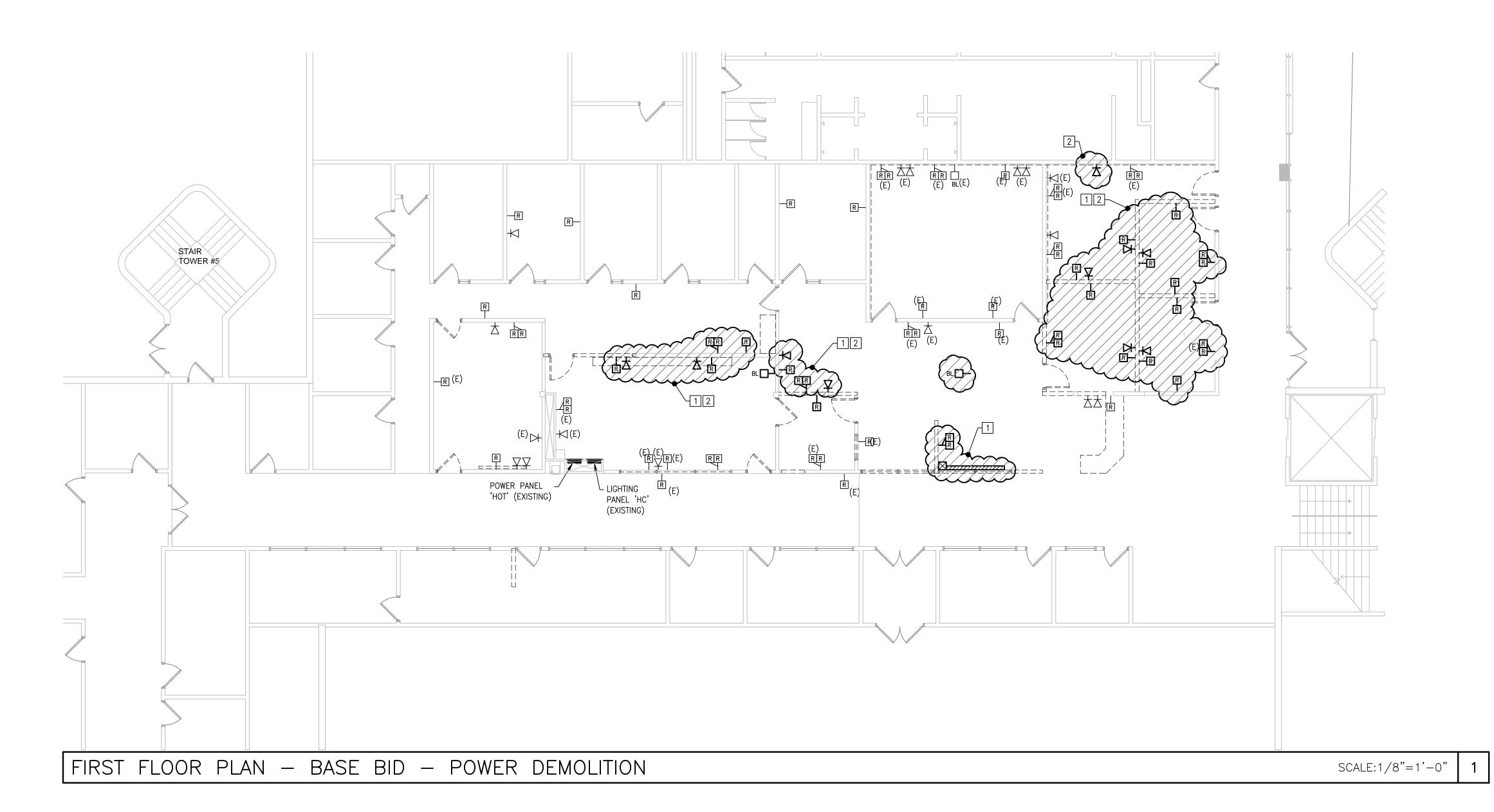
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DEMOLITION NOTES:

1 REMOVE THE EXISTING RECEPTACLE COMPLETE. REMOVE THE BRANCH CIRCUIT WIRING COMPLETE BACK TO THE NEAREST JUNCTION BOX OR THE PANEL AND MAKE SAFE.

2 REMOVE THE EXISTING DATA/COMMUNICATIONS BOX AND CONDUIT COMPLETE. EXISTING DATA AND COMMUNICATIONS WIRE TO BE DECOMMISSIONED BY THE OWNER AND REMOVED BY THE ELECTRICAL CONTRACTOR. COORDINATE THE DECOMMISSIONING OF THE CABLE WITH THE OWNERS IT CONTRACTOR.

3 SEE DRAWING E-100 FOR ADDITIONAL DEMOLITION NOTES AND REQUIREMENTS.







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DELAWARE TECHNICAL AND

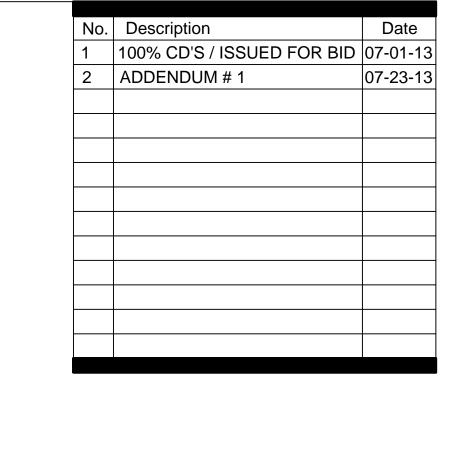
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FIRST FLOOR - POWER PLANS

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MECH./ELEC. ENGINEER:

315 S. CHAPEL STREET

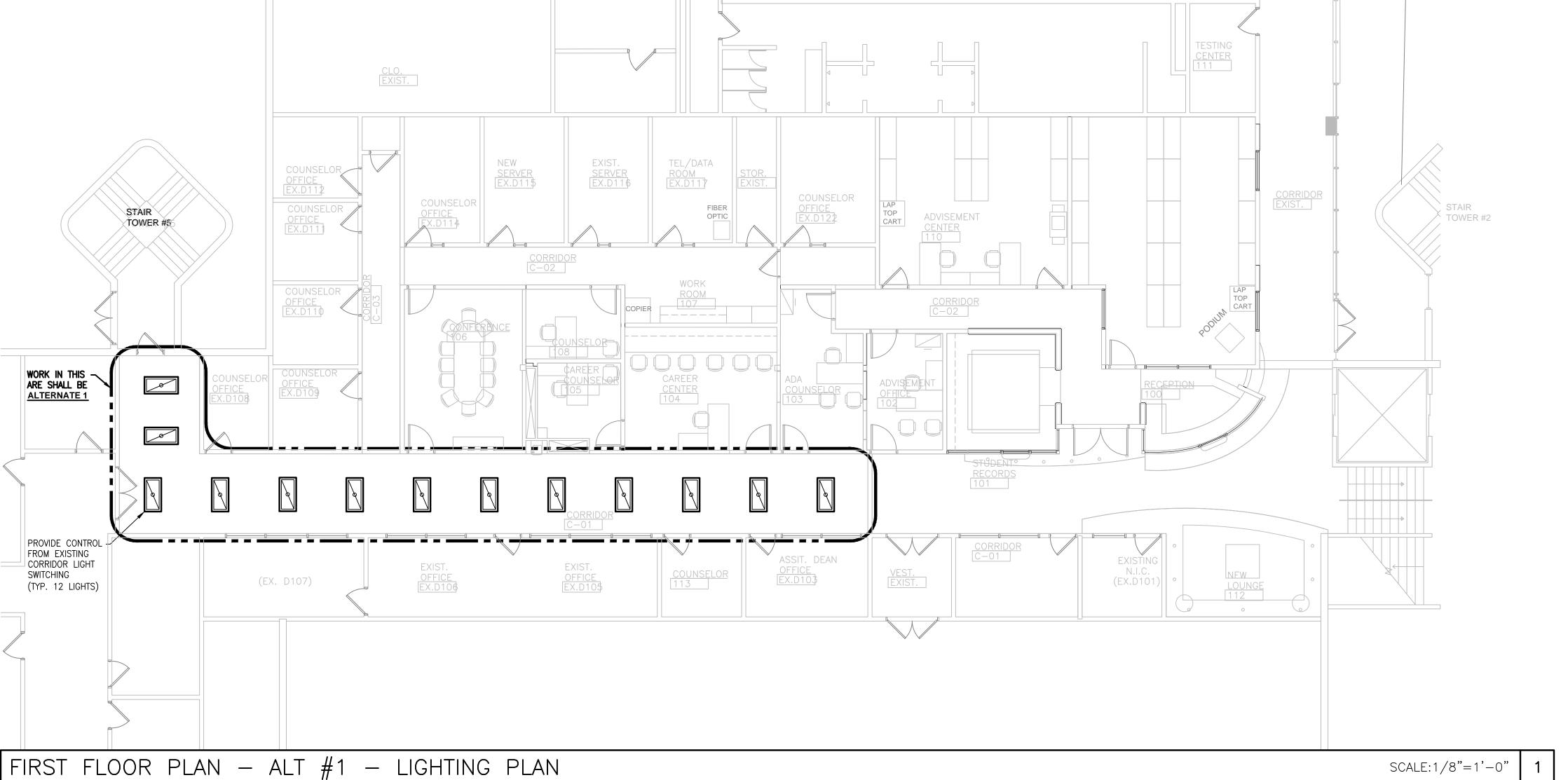
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JOB NO.

12.028 DELAWARE TECHNICAL AND COMMUNITY COLLEGE STANTON CAMPUS

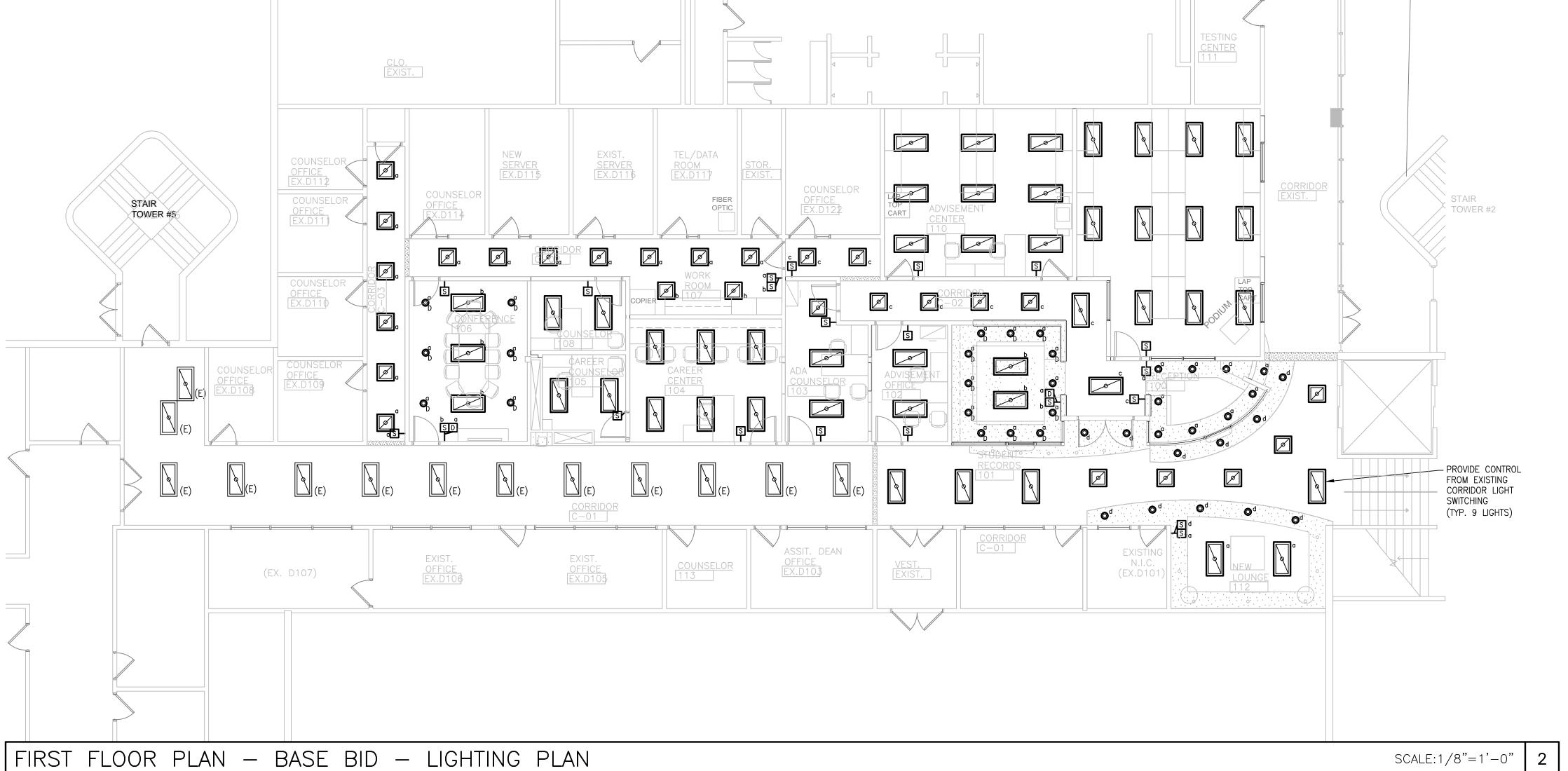
CAREER CENTER OFFICE RENOVATION

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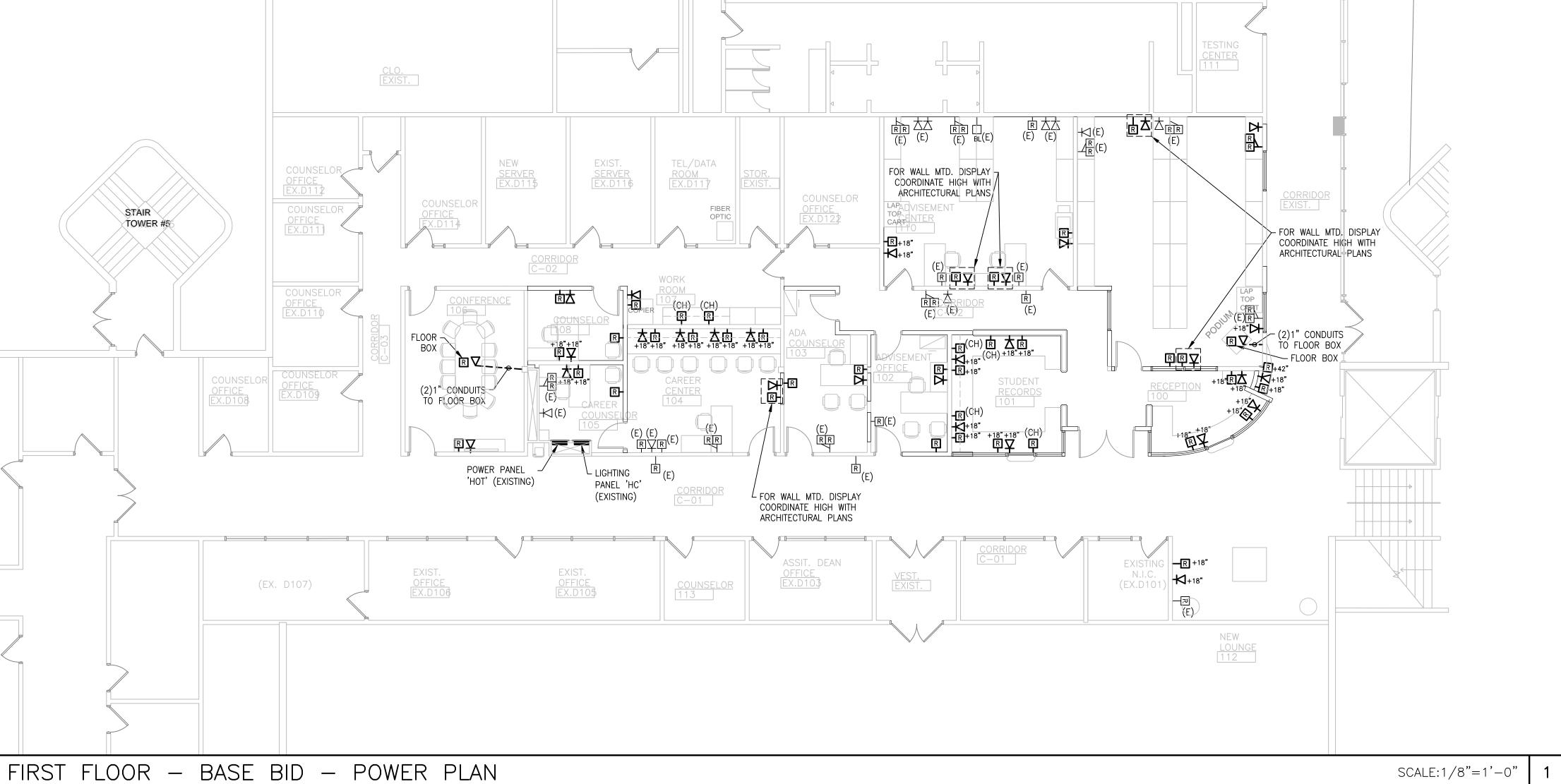
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E-111



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	2	ADDENDUM # 1	07-23-13
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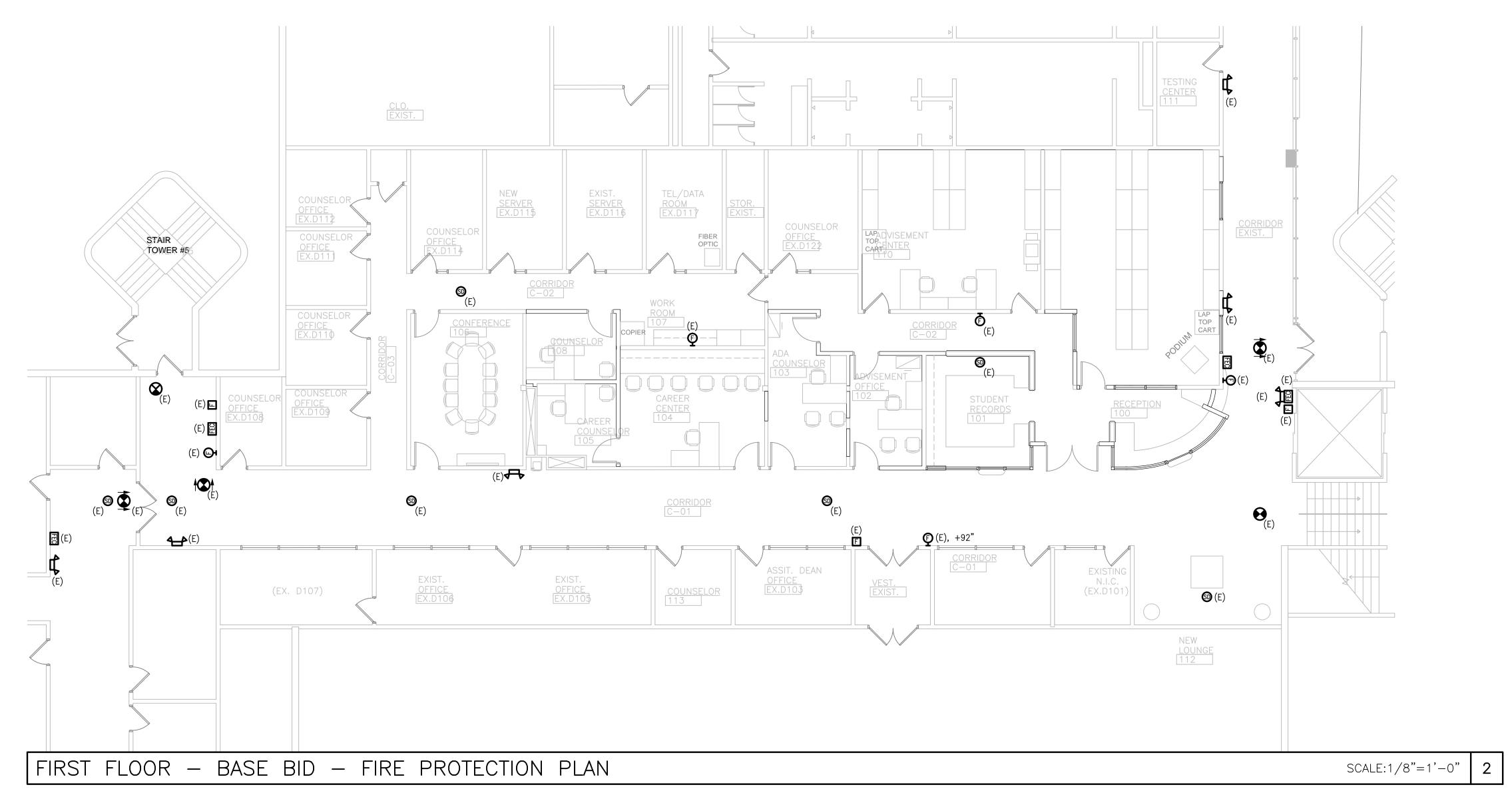


KEYPLAN

DELAWARE TECHNICAL **COMMUNITY COLLEGE** 400 STANTON CHRISTIANA ROAD NEWARK, DE 19713 302.454.3900

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DELAWARE TECHNICAL AND COMMUNITY COLLEGE STANTON CAMPUS

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400 STANTON CHRISTIANA ROAD NEWARK, DE 19713

FIRST FLOOR - POWER PLANS ELECTRICAL

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E-112

FIRE PROTECTION LEGEND:

- SMOKE DETECTOR CEILING MOUNTED.
- FIRE ALARM PULL STATION WALL MOUNTED MOUNT 48" AFF UNO.
- FIRE ALARM STROBE WALL MOUNTED AUDIO AND VISUAL MOUNT 75" AFF UNO.
- FEC FIRE EXTINGUISHER CABINET.
- ILLUMINATED EXIT SIGN FACES AND DIRECTIONAL ARROWS AS INDICATED CONNECT UNSWITCHED LEG OF LIGHTING BRANCH CIRCUIT TO INPUT.
- EMERGENCY LIGHTING BATTERY UNITY CONNECT UNSWITCHED LEG OF LIGHTING BRANCH CIRCUIT TO INPUT.