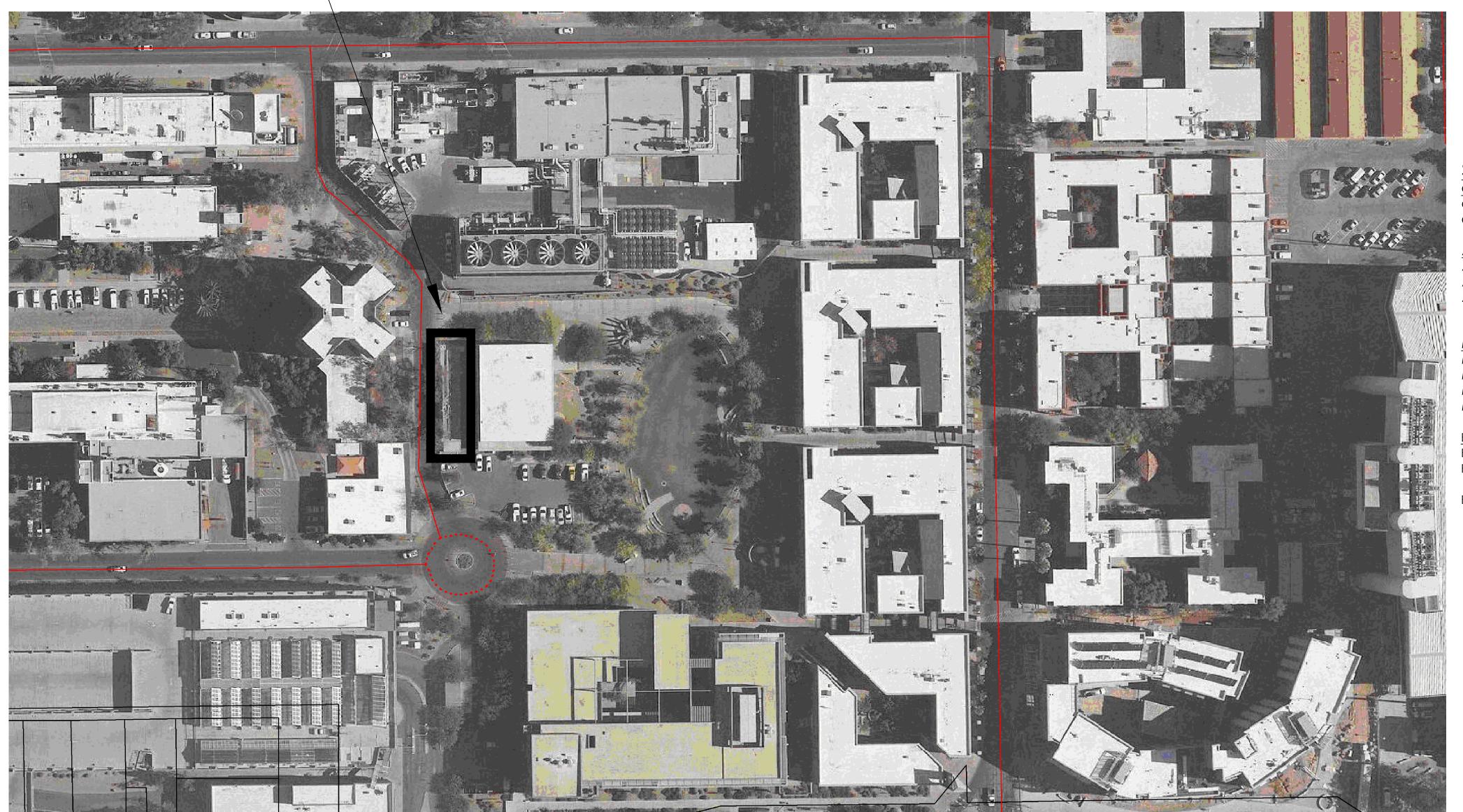
THE UNIVERSITY OF ARIZONA ELECTRIC SHOP TO TREE RING WOODSHOP RENOVATION AT BUILDING 45A NEW WORK PACKAGE

PROJECT LOCATION —



B2 LOCATION MAP

SCALE:NONE

SHEET INDEX

GENERAL GIOO1

GI001 COVER SHEET GI111 CODE ANALY

ARCHITECTURA

AKOO1 ARCHITECTURAL SYMBOLS AND ABBREVIATIONS

AE111 ARCHITECTURAL NEW WORK PLANS - FIRST FLOOR AND RO

ARCHITECTURAL DETA

MECHANICA

MK001 MECHANICAL GENERAL DRAWING NOTES

MH111 MECHANICAL HVAC NEW WORK PLAN - FIRST FLO

MH121 MECHANICAL HVAC NEW WORK PLAN - ROOF

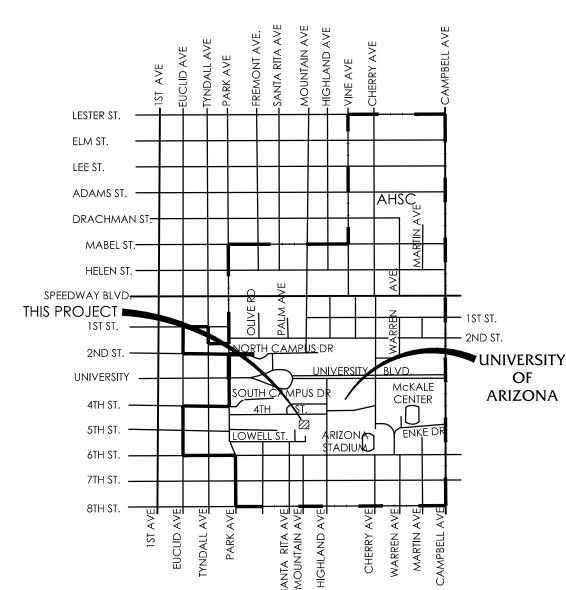
1 MECHANICAL DETAILS AND SCHEDULES

FI FCTRICAI

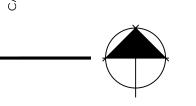
ELECTRICAL POWER PLAN - FIRST FLOOR

P601 ELECTRICAL SINGLE LINE, SCHEDULES, SYMBOLS AND

ABBREVIATIONS
P701 SPECIFICATIONS







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OF ARIZONA

IVERSITY OF ARIZONA
SHOP TO TREE RING WOOD SHO
TIONS AT BUILDING 45A

ARCHITECTS & ENGINEERS, INC

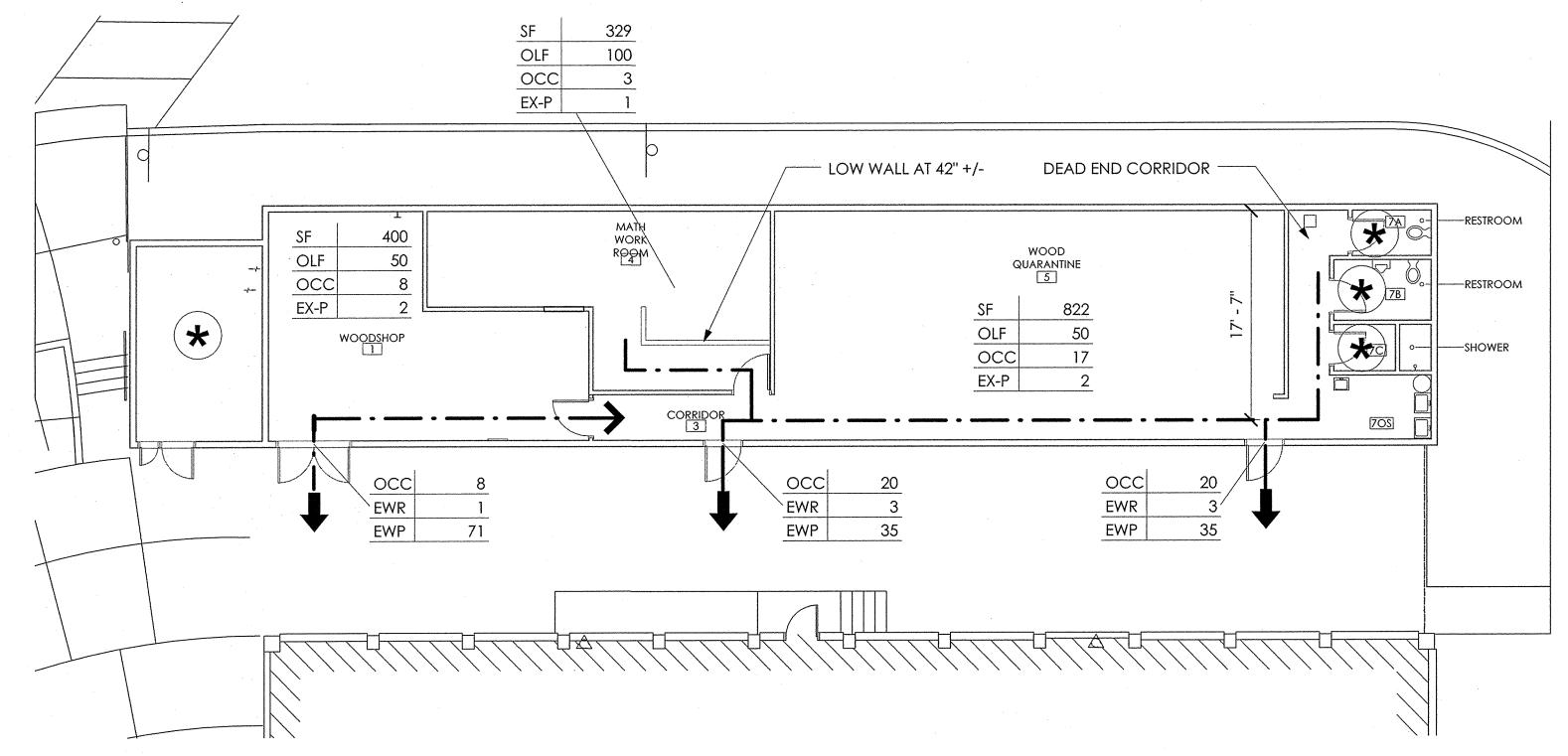
U OF A NO. 08-882 PROJECT NO. 0843.4 DESIGN BY: PM

DRAWN BY: PM
CHECKED BY: HW
DATE: 2012/08/10

GIOO1

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OCCUPANCY (chapter 3)	Occupancy Classification: Group "F-1" WOOD - WORKING / MACHINERY.	MEANS OF EGRESS (Chapter 10)	(Table 1004.1.1) Occupant Load Occupancy S.F/OCC. OCC. Load Business 100 3
SPECIAL REQUIREMENTS based on Occupancy	None		Education - Shop 50 25
(chapter 4) GENERAL BLDG. HEIGHTS & AREAS (chapter 5)	(Table 503) Construction Type: VB Basic Allowable Area: 8,500 SF. Increase for Sprinklers: (No Sprinklers) Single-story Building = 100% Total Allowable Area: 8,500 SF. Actual: First Floor 2,200 SF Allowable Bldg. Height (stories): 1		Total Occupant Load: = 28 (Table 1005.1) Egress Width required: Exit: Business = 0.15 See Plan For additional information. 1006.1 Exit Illumination Emergency egress lighting, see Electrical Lighting Plan. Egress lighting complies with 1006 for illumination level and emergency power supply. Provided in/at corridors, exterior egress components, interior discharge elements, and exterior landings.
	Actual Bldg. Ht.: Max. Bldg. Ht: Allowable Increase: Actual Bldg. Ht.: 9 FT.		1015.1 Means of Egress 'F' Occupancy = 49 Maximum Occupant Load Occupancy load greater than 49 requires 2 exits. (Table 1016.1) Exit Access Travel Distance (Occupancy "F") : 200 feet max. allowed. Less than 100 feet max. provided.
TYPE OF CONSTRUCTION (chapter 6)	(Table 601) Fire-Resistance Ratings: Type VB Structural Frame: OHR Bearing Walls: O HR Non-Bearing Wall-Interior: O HR Floor Construction: O HR Roof Construction: O HR		(Table 1017.1) Type "F" less than 30 occupant load - <u>Corridor Fire Resistance Rating</u> : 0 Hrs required. 1017.3 Dead ends:
FIRE RESISTANCE RATED CONSTRUCTION (chapter 7)	None.		Not more than 20'- 0".
FIRE PROTECTION SYSTEMS (chapter 9)	(903) <u>Automatic Fire Sprinkler System:</u> Not Required. PER 903.2.3		
		ACCESSIBILITY (chapter 11)	Accessible Parking spaces: Not applicable for this project, included in campus parking. Required: 2010 ADA Standards for Accessible Design. Accessibility provided



CODE ANALYSIS FLOOR PLAN

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

<u>LEGEND</u>

EWR EXIT WIDTH REQUIRED IN INCHES

EWP EXIT WIDTH PROVIDED IN INCHES

EX-P TOTAL EXITS PROVIDED FROM SPACE/AREA

OLF OCCUPANT LOAD FACTOR FOR ROOM/SPACE
FROM IBC 2006 TABLE 1004.1.1

OCC TOTAL OCCUPANTS

SF SQUARE FEET

PH PANIC HARDWARE
NRE NOT A REQUIRED EXIT
OAD OVERALL DIAGONAL

OCC EWR - EGRESS
EWP - SUMMARY

SF OLF - ROOM
SUMMARY

EXIT DISCHARGE

ACCESSIBLE ROUT

*

AREAS NOT INCLUDED IN OCCUPANCY CALC.

FEC FIRE EXTINGUISHER CABINET

FE WALL MOUNTED FIRE EXTINGUISHER

NRE NOT REQUIRED EXIT

AFES AUTOMATIC FIRE EXTINGUISHING SYSTEM
IN ACCORDANCE WITH IBC CHAPTER 9

TD TRAVEL DISTANCE

1-HR FIRE -RATED PARTITION

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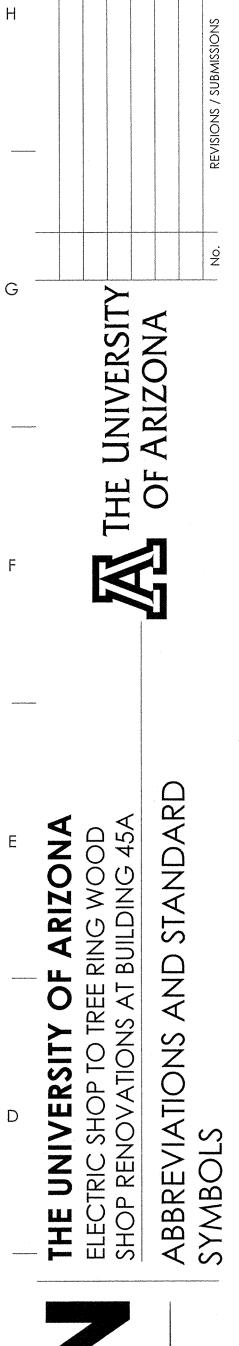
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U OF A NO.	08-8826
PROJECT NO.	0843.43
DESIGN BY:	RLU
DRAWN BY:	DD
CHECKED BY:	BH

8/10/2012

ARC	HITECTURAL ABBREVIATIONS
A.B. A.B.C. A/C AC(T) A.D. ADJ AFC AFF ALLOW ALT ALUM AMP A.O. A.P. @ AUTO L APPX. ARCH	ANCHOR BOLT AGGREGATE BASE COURSE AIR CONDITIONING ACOUSTICAL CEILING (TILE) ACCESS DOOR ADJACENT ABOVE FINISH CEILING ABOVE FINISH FLOOR ALLOWANCE ALTERNATE ALUMINUM AMPERE ACCESS OPENING ACCESS PANEL AT AUTOMATIC ANGLE APPROXIMATE(LY) ARCHITECT(URAL)
BD B.L. BLDG. BM B.M. BOT BRG BSMT BTWN B.U. B.F. B.G. BLK(G) BRG.	BOARD BUILDING LINE BUILDING BEAM BENCH MARK BOTTOM BEARING BASEMENT BETWEEN BUILT UP BELOW FLOOR BELLOW GRADE BLOCK(ING) BEARING
CAB C.B. CEM CEM PLAS CER CH C.F.C.I. CFM C.I. C.I.P. CIR C.J. C.G. C.L. CLG CLR CMU C.O. COL COMB CONC CONST CONT CPT CSK C.T. C.W. CORR. CORRUG.	CABINET CATCH BASIN CEMENT CEMENT PLASTER CERAMIC CHANNEL CONTRACTOR FURNISHED CONTRACTOR INSTALLED CUBIC FEET PER MINUTE CAST IRON CAST IN PLACE CIRCUIT CONTROL JOINT CORNER GUARD CENTER LINE CEILING CLEAR CONCRETE MASONRY UNIT CLEAN OUT COLUMN COMBINATION CONCRETE CONSTRUCTION CONTINUOUS CARPET COUNTERSINK CERAMIC TILE COLD WATER CORRUGATED
DEMO DTL. D.F. DIA. DIAG DIM DISP. DN DO DR D.S. DWG	DEMOLISH (DEMOLITION) DETAIL DRINKING FOUNTAIN DIAMETER DIAGONAL DIMENSION DISPENSER DOWN DITTO DOOR DOWNSPOUT DRAWING
EA EC E.F. E.J. ELEC. ELEV. ENT EQ EQUIP E.W. EWC EXH EXIST EXP EXT	EACH ELECTRICAL CONTRACTOR EACH FACE EXPANSION JOINT ELECTRICAL ELEVATION ENTRANCE EQUAL EQUIPMENT EACH WAY ELECTRIC WATER COOLER EXHAUST EXISTING EXPANSION EXTERIOR

ARCH	ITECTURAL ABBREVIATIONS
F.A. F.D. F.C.O. FDN F.E. FEC FFE FIN FIXT. FLSH FLR F.O. F.S. FT FTG. FURR FUT FV	FIRE ALARM FLOOR DRAIN FLOOR CLEAN OUT FOUNDATION FIRE EXTINGUISHER FIRE EXTINGUISHER CABINET FINISHED FLOOR ELEVATION FINISH FIXTURE FLASHING FLOOR FACE OF FLOOR SINK FEET, FOOT FOOTING FURRING FUTURE FIELD VERIFY
GA GALV GL GLB GND GWB GYP.	GAUGE GALVANIZED GLASS GLUE LAMINATED BEAM GROUND GYPSUM WALL BOARD GYPSUM
H.B. H.C. HDW H.M. HORIZ H.P. HT H.W. HWR	HOSE BIB HOLLOW CORE HARDWARE HOLLOW METAL HORIZONTAL HORSEPOWER HEIGHT HOT WATER HOT WATER RETURN
I.D. I.F. IN. INFO INS INT	INSIDE DIAMETER INSIDE FACE INCH (ES) INFORMATION INSULATION INTERIOR
J.B. J.C. JST JT	JUNCTION BOX JANITOR CLOSET JOIST JOINT
KIT. K.O.	KITCHEN KNOCK OUT
L LAB LAV LBS LIN. FT.	LONG, LENGTH LABORATORY LAVATORY POUNDS LINEAR FEET
MAS MAT MAX M.B. MC MCJ MECH MEMB MFG MH MIN. MISC ML MO MTD MTG MET MUL	MASONRY MATERIAL MAXIMUM MACHINE BOLT MECHANICAL CONTRACTOR MASONRY CONTROL JOINT MECHANICAL MEMBRANE MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS METAL LATH MASONRY OPENING MOUNTED MOUNTING METAL MULLION
N/A NIC NOM NO. NTS	NOT APPLICABLE NOT IN CONTRACT NOMINAL NUMBER NOT TO SCALE
O.A. O.C. O.D. O.F. O.F.C.I. O.F.O.I. OH OPNG OPP	OVERALL ON CENTER OUTSIDE DIAMETER OUTSIDE FACE OWNER FURNISHED, CONTRACTOR INSTALLED OWNER FURNISHED, OWNER INSTALLED OVERHEAD OPENING OPPOSITE

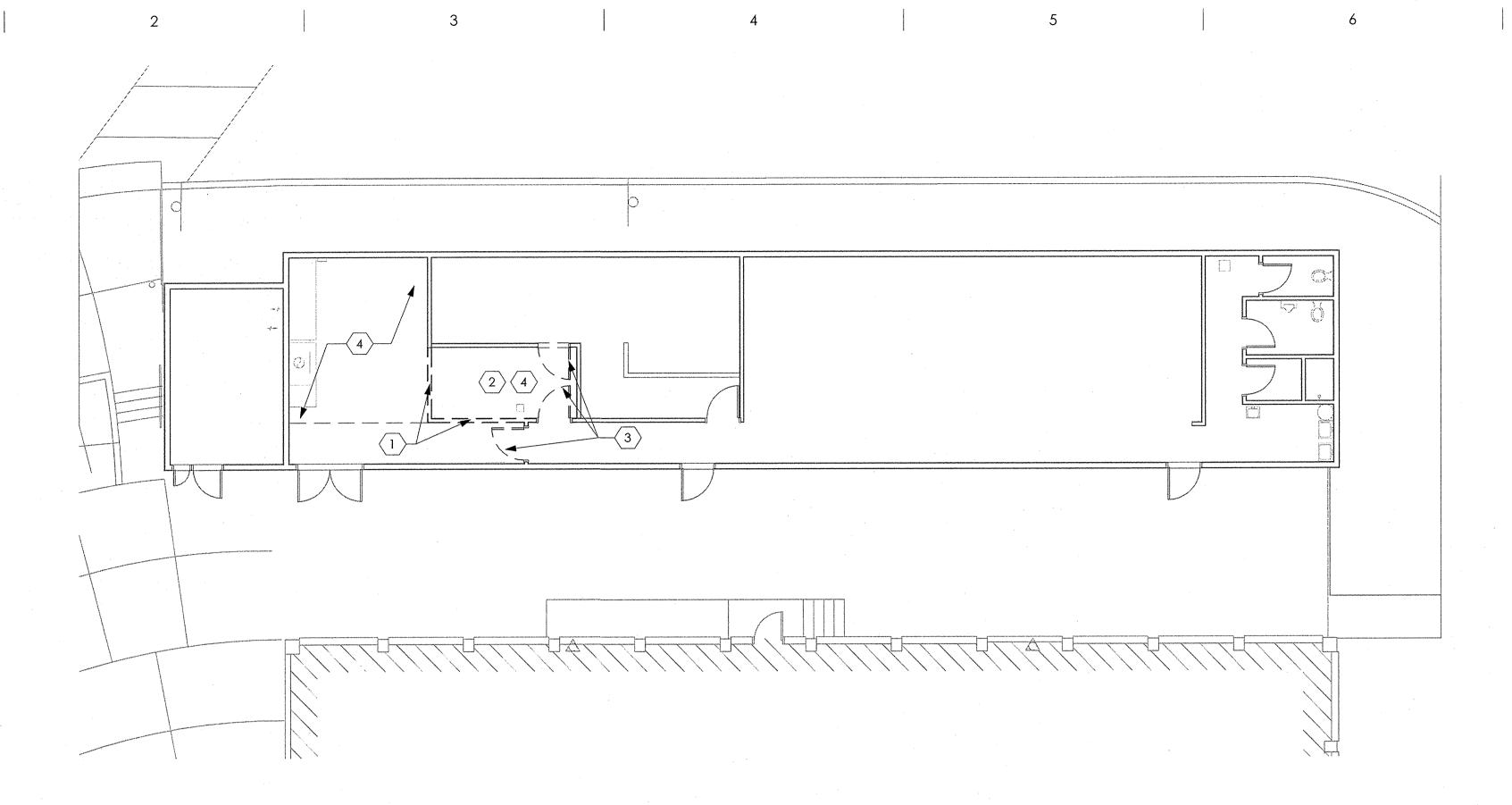
AR	CHITECTURAL ABBREVIATIONS
P P.C. PERIM. PERP	PAVEMENT PULL CHAIN PERIMETER PERPENDICULAR
PL P.L.	PLATE PROPERTY LINE
PLAS PL GL PL. LAM.	PLATER PLATE GLASS PLASTIC LAMINATE
PLYWD PNL PR	PLYWOOD PANEL PAIR
PROJ PSI	PROJECT POUNDS PER SQUARE INCH
PSF PT PTN	POUNDS PER SQUARE FOOT PRESSURE TREATED PARTITION
PVC PTD	POLYVINYL CHLORIDE PAINTED
POL. Q.T. QTY	POLISHED QUARRY TILE QUANTITY
R	RISER OR RADIUS
RA R.C.P. RECEPT	RETURN AIR REFLECTED CEILING PLAN RECEPTACLE
R.D. REC REF.	ROOF DRAIN RECESSED REFERENCE
REFRIG. REG	REFRIGERATOR REGISTER
REINF REQD REV	REINFORCEMENT REQUIRED REVISION
RFG R.H.	ROOFING RIGHT HAND
RM R.O. R.O.W.	ROOM ROUGH OPENING RIGHT OF WAY
RWL	RAIN WATER LEADER
S.C. SCHED S.D.	SOLID CORE SCHEDULE STORM DRAIN
SECT. SQ. FT.	SECTION SQUARE FOOT
SHT. SIM. SLV	SHEET SIMILAR SHORT LEG VERTICAL
SHT MET SPEC. SPKR	SHEET METAL SPECIFICATION(S) SPEAKER
SQ. S.S.	SQUARE SERVICE SINK
S. STL ST STD	STAINLESS STEEL STATION STANDARD
STOR STL	STORAGE STEEL
STRUCT SUSP CLO S.V.	STRUCTURAL SUSPENDED CEILING SHEET VINYL
T T&G TEL	TREAD TONGUE AND GROOVE TELEPHONE
TEMP TH	TEMPERED THICK
THR T.O. T.O.B.	THRESHOLD TOP OF TOP OF BEAM
T.O.C. T.O.F.	TOP OF CURB TOP OF FOOTING
T.O.J <i>.</i> T.O.M. T.O.P.	TOP OF JOIST TOP OF MASONRY TOP OF PARAPET
T.O.W. T.T.B	TOP OF WALL TELEPHONE TERMINAL BOARD
TV TYP. UNO	TELEVISION TYPICAL UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V VCP VCT	VENTILATION VITRIFIED CLAY PIPE VINYL COMPOSITION TILE
VERT VT. VTR	VERTICAL VENT VENT THROUGH ROOF
V.W.C. V.I.F	VINYL WALL COVER VERIFY IN FIELD
W/ W.C.	WITH WATER CLOSET
WCO WD WDW	WALL CLEAN OUT WOOD WINDOW
WP W.R.	WATER PROOF WATER RESISTANT
WRGWB WSCT	WALL BOARD WAINSCOT
WT WWM	WEIGHT WELDED WIRE MESH
YD.	YARD



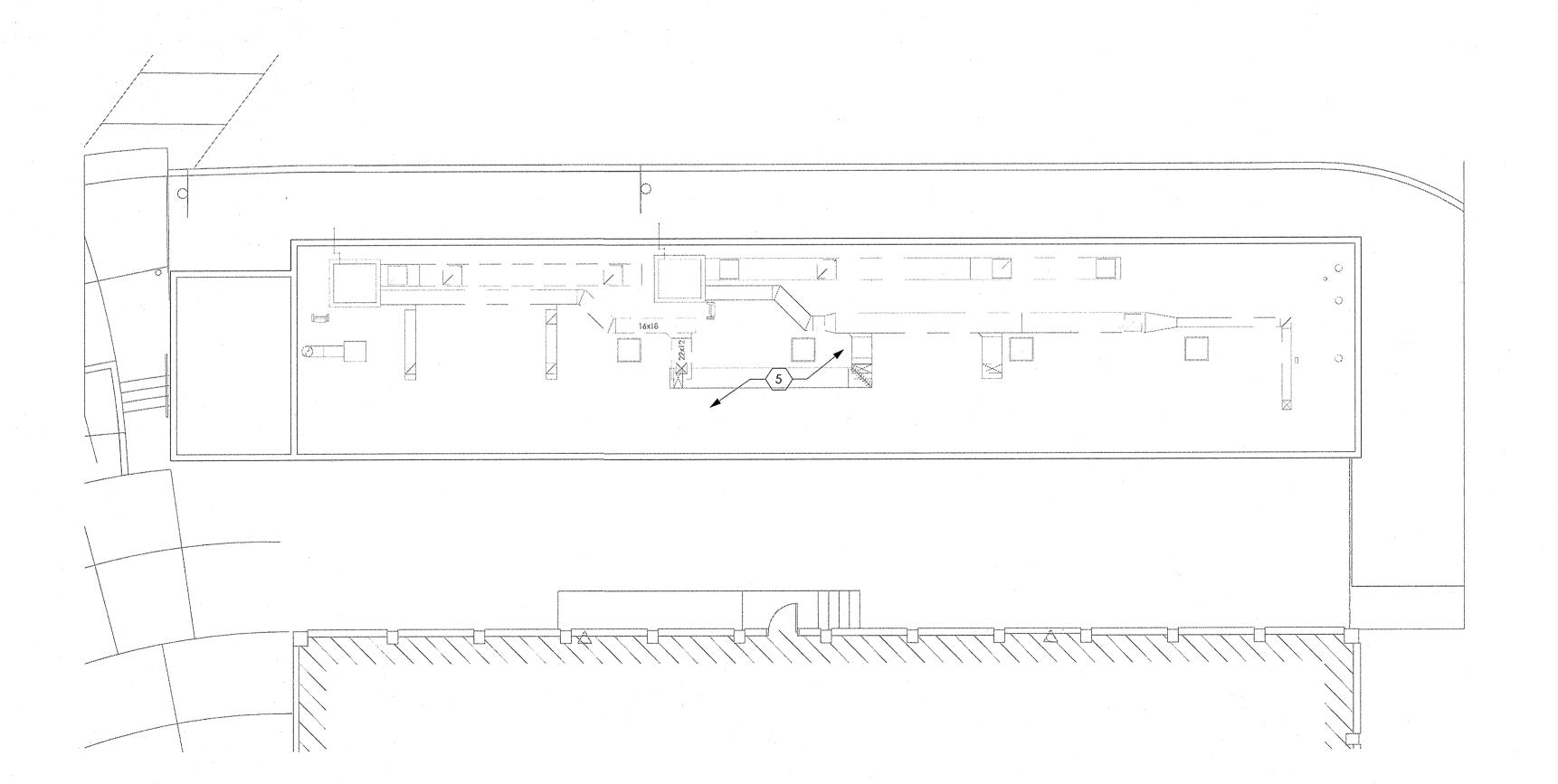
DESIGN BY: Designer DRAWN BY: BH 8/10/2012

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E1 DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



A1 DEMOLITION ROOF PLAN

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

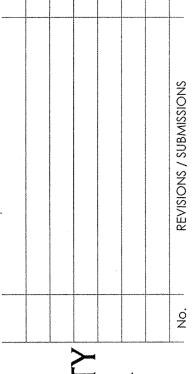
GENERAL NOTES

A. SEE STRUCTURAL FOR REQUIRED LINTELS AND SHORING REQUIRED FOR REMOVAL OF WALLS/OPENINGS.

- B. CONTRACTOR SHALL REVIEW THE PROJECT SITE AND SCOPE OF WORK. ANY EXPOSED ITEM THAT REQUIRES REMOVAL TO PERFORM THE NEW WORK, WHETHER SHOWN TO BE REMOVED OR NOT, SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.
- C. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL FOR ALL ITEMS REMOVED. CONTRACTOR SHALL DETERMINE WITH OWNER ITEMS TO BE SALVAGED AND SHALL PROTECT ALL SALVAGED ITEMS FROM DAMAGE UNTIL TURNED OVER TO THE OWNER.
- D. WHERE ITEMS ARE CALLED OUT TO BE REMOVED AND REINSTALLED, CONTRACTOR SHALL PROTECT FROM DAMAGE UNTIL REINSTALLED.
- E. REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND STRUCTURAL FOR ADDITIONAL INFORMATION.

KEYNOTES

- 1. EXISTING WALLS TO BE DEMOLISHED.
- 2. EXISTING VCT FLOORING TO REMAIN.
- 3. DOORS AND FRAME TO BE DEMOLISHED.
- EXISTING ACT CEILING AND GRID TO BE DEMOLISHED.
- ROOFING TO BE CLEANED AND PREPPED FOR ELASTOMER COATING (MUST MEET OR EXCEED ASTM D-6083 AND ASTM E108). PATCH AND REPAIR AS NECESSARY AND RESEAL ROOF PENETRATIONS WITH PLASTIC CEMENT AND REINFORCEMENT FABRIC.



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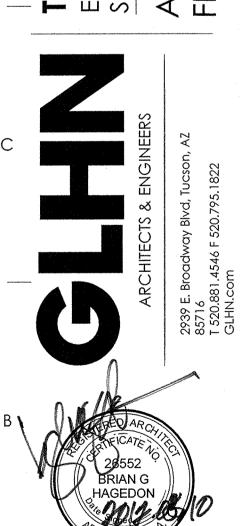
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AT BUILDING 45A

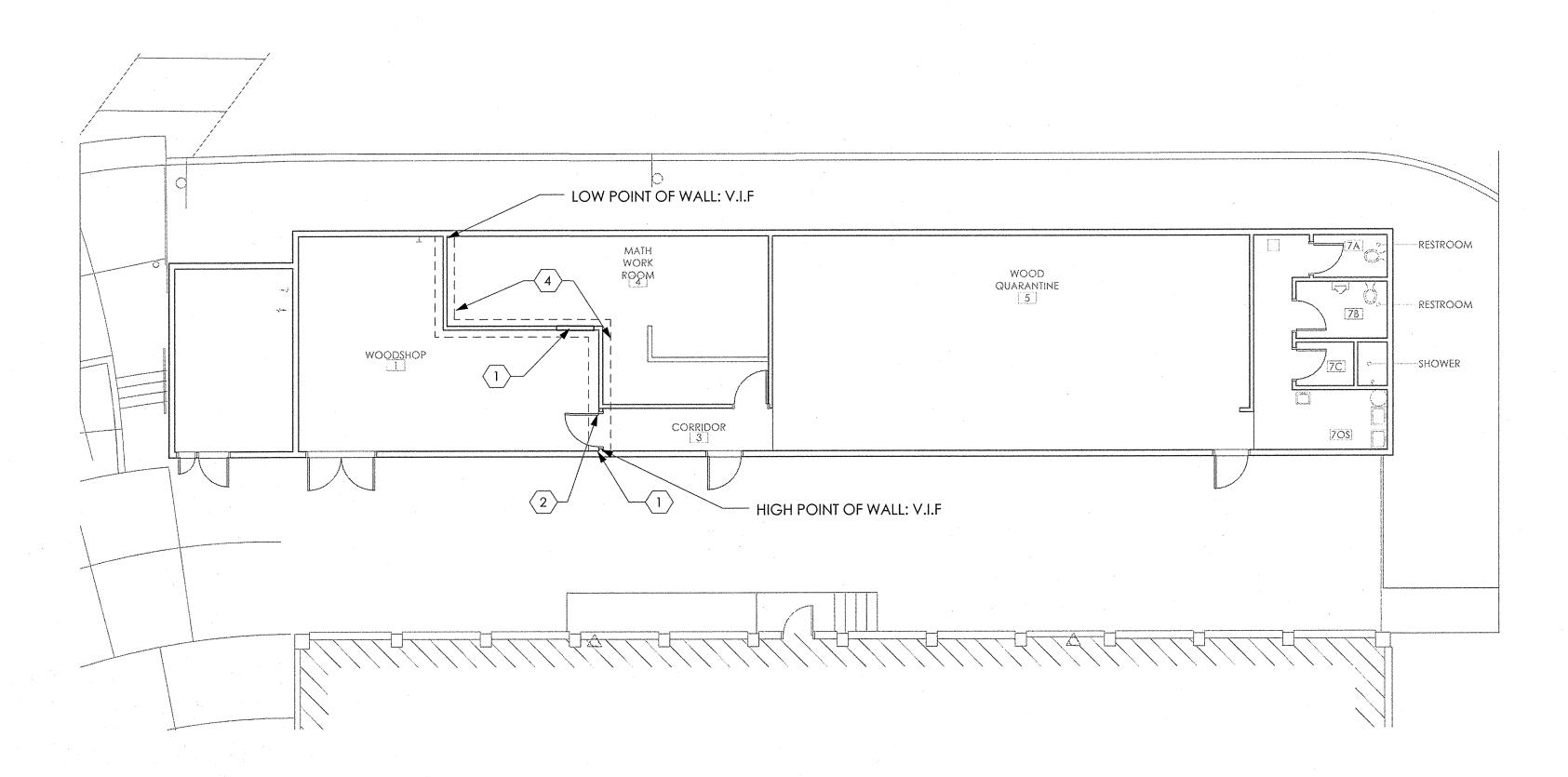
SEMOLITION PLAN

POOF

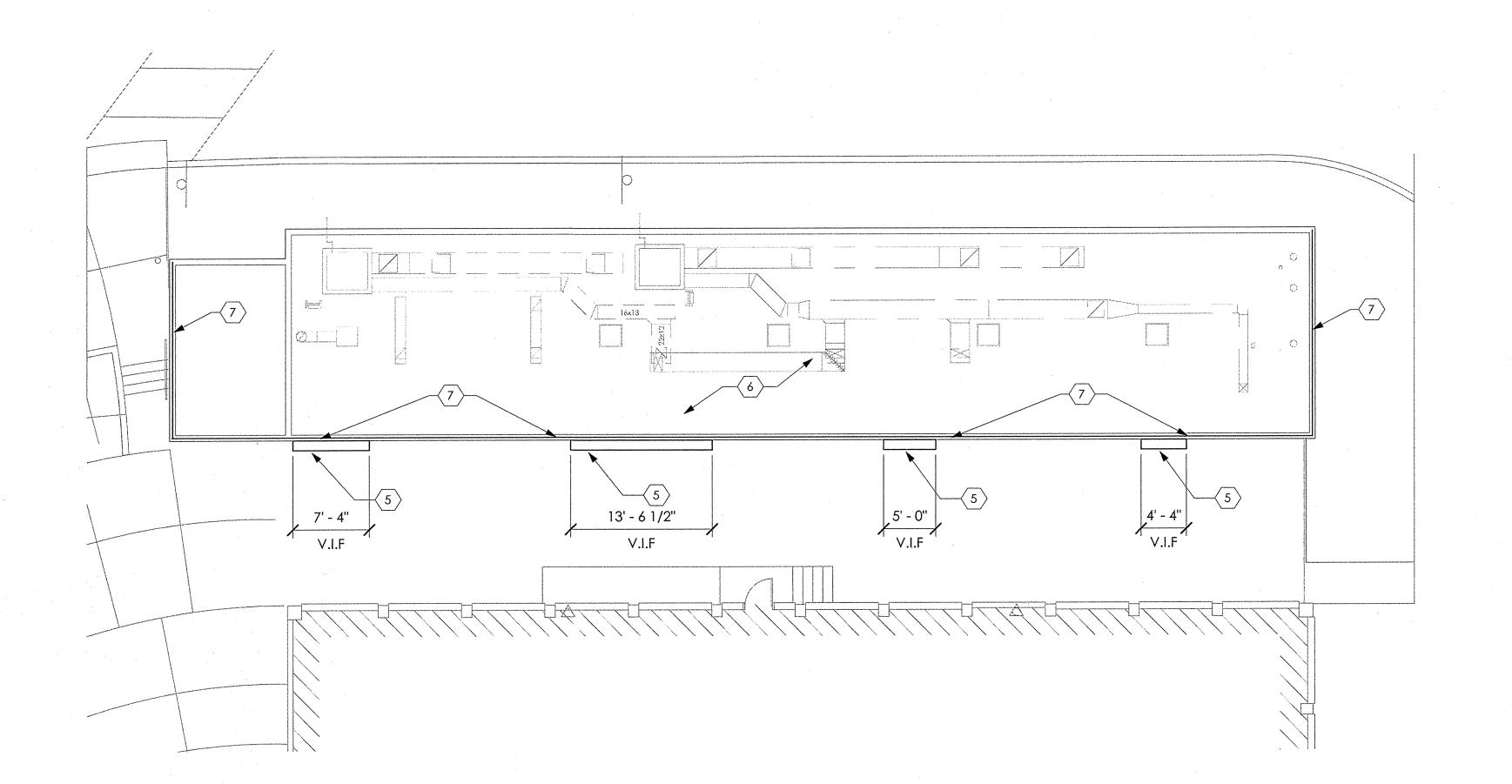
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FLOOR PLAN
SCALE: 1/8" = 1'-0"



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

GENERAL NOTES

- 1. DRAWING SHALL NOT BE SCALED. IF THERE IS A QUESTION PERTAINING TO DIMENSIONS, CONTRACTOR SHALL NOTIFY THE ARCHITECT FOR CLARIFICATION.
- 2. DIMENSIONS BASE LOCATIONS ARE TAKEN FROM THE FOLLOWING LOCATIONS.
- a) **EXTERIOR WALL**:

i) EXTERIOR FACE OF STEM WALL EITHER CMU OR CONCRETE.

ii) OUTSIDE FACE OF PLYWOOD FOR METAL OR WOOD FRAMED WALLS.

o) INTERIOR WALL:

i) FACE OF STUD AS INDICATED
ii) WHERE DIMENSIONS IS NOTED AS "CLEAR" (CLR)
DIMENSIONS SHALL BE THE REMAINING DISTANCE AFTER
ALL FINISHES HAVE BEEN APPLIED.

c) **DOORS**:

i) GENERAL: PUSH/PULL CLEARANCES SHALL BE MAINTAINED PER ADA DIAGRAMS IN THESE DOCUMENTS. CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY CONFLICTS DURING LAYOUT/PRIOR TO CONSTRUCTION OF ANY WALLS FOR RESOLUTION.
ii) INTERIOR: WHERE NO DIMENSION IS GIVEN DOORS,

HINGE SIDE, SHALL BE 4" MINIMUM TO WALL PERPENDICULAR TO FRAME.

iii) EXTERIOR: DIMENSIONS SHALL BE TO INSIDE FACE OF DOOR JAMB OR CENTER OF DOOR AS INDICATED.

d) WINDOWS:

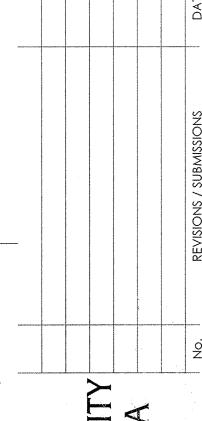
i) EXTERIOR: DIMENSIONS SHALL BE TO OUTSIDE FACE OF JAMB OR CENTER OF WINDOW AS INDICATED.

- 1. INFILL WALL. 2 X 4 METAL STUD W/ 5/8" TYP X GYP BOTH SIDES. FINISHED AND ALIGNED TO MATCH EXISTING ADJACENT WALLS. IF INSULATION IS PROVIDED IN EXISTING WALL, INSULATION IS TO BE PROVIDED IN NEW WALL (V.I.F). COORDINATE WITH OWNER.
- 2. 3'-0" X 7'-0" SOLID CORE WOOD DOOR WITH HOLLOW METAL FRAME. DOOR TO BE FINISHED FROM FACTORY, AND FRAME TO BE FINISHED TO MATCH EXISTING.

 -LOCKSET: SARGENT LEVER
 -HINGES: STANLEY

-SEALS: PEMKO
-THRESHOLD: PEMKO
-DOOR BOTTOM: PEMKO

- 3. 3 1/2" WOOD STUD W/ 5/8" TYP X GYP BOTH SIDES. FINISHED TO MATCH EXISTING ADJACENT WALLS.
- 4. NEW AND EXISTING WALLS TO EXTEND UP TO CEILING. ABOVE CEILING TO BE DUST SEALED BY CAULK/SEAL UP TO BOTTOM OF STRUCTURE.
- 5. NEW SHADING CANOPY TO BE INSTALLED ABOVE DOOR/WINDOW. SEE AJ511 FOR DETAILS
- 6. NEW ELASTOMER ROOF COATING APPLIED OVER EXISTING ROOF.
- 7. NEW 3' HIGH SAFETY BAR RAIL TO BE INSTALLED AT ROOF EDGE. **ALTERNATE**: 3' PERFORATED MESH SCREEN WALL TO MATCH ADJACENT TREE RING INSTALLATION.

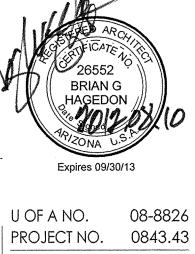


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THE UNIVERSITY OF ARIZONA
ELECTRIC SHOP TO TREE RING WOOD
SHOP RENOVATIONS AT BUILDING 45A
ARCHITECTURAL NEW WORK PLA
FIRST FLOOR AND ROOF

ARCHITECTS & ENGINEERS
2939 E. Broadway Bivd, Tucson, AZ
85716

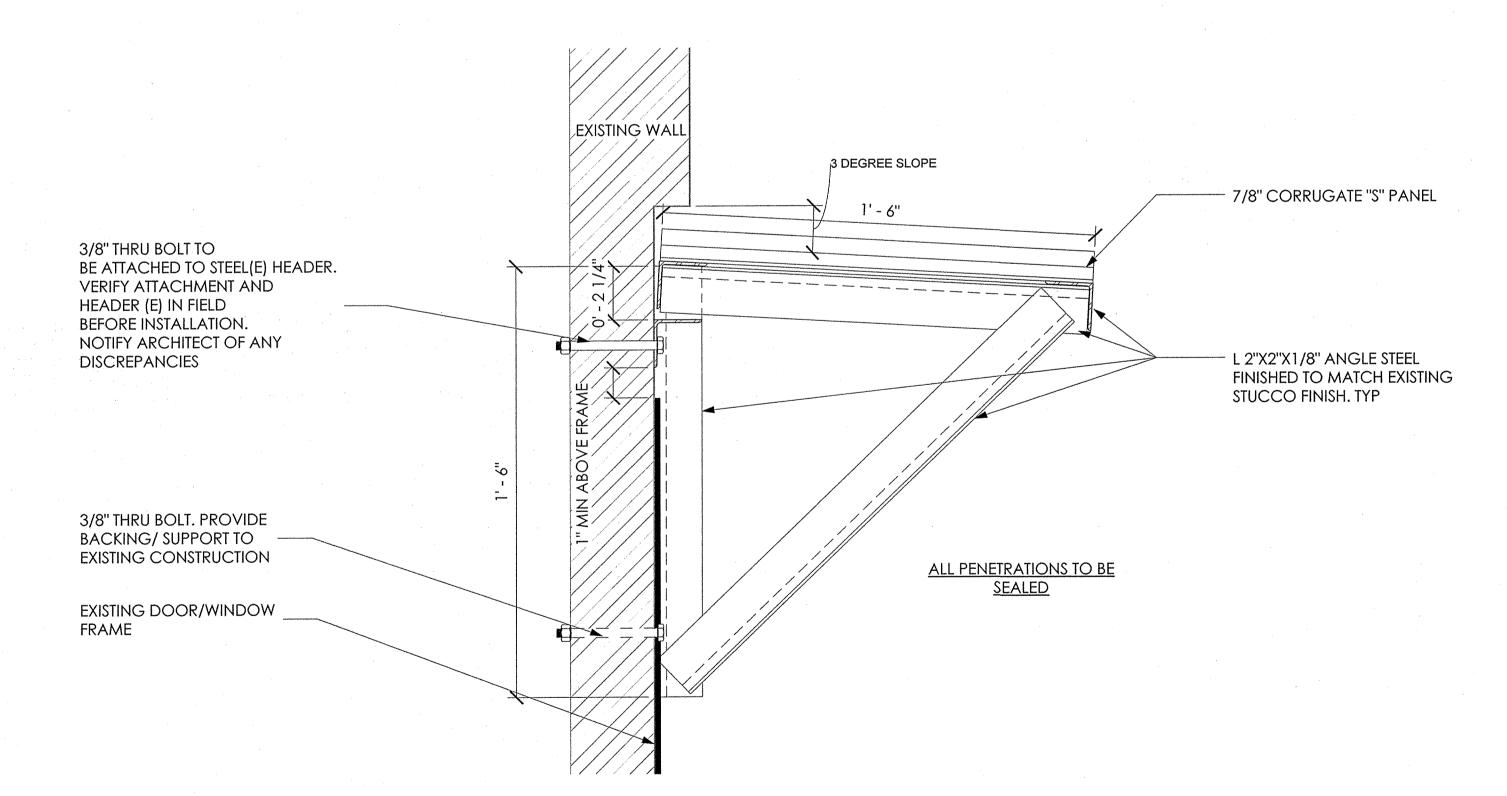


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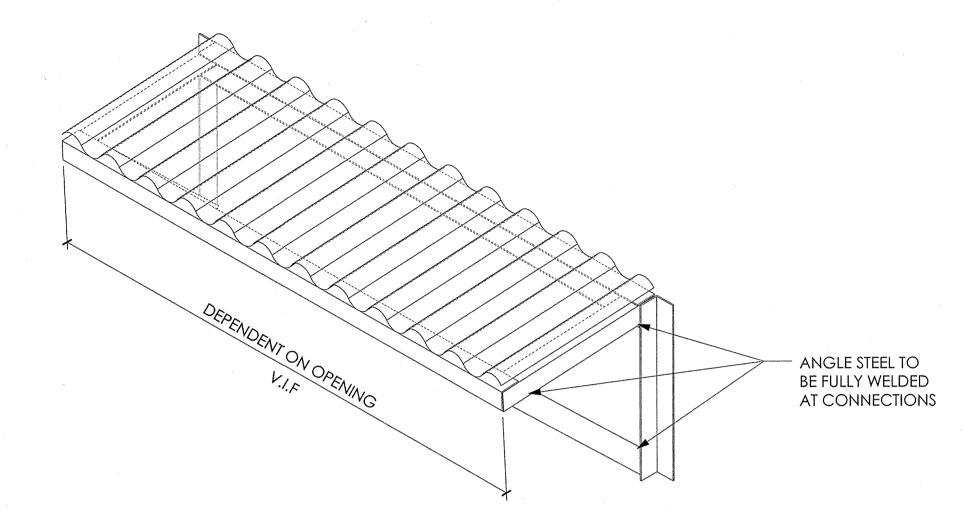
E1 CANOPY ELEVATION

SCALE: 1 1/2" = 1'-0"



CANOPY DETAIL

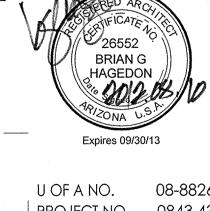
SCALE: 3" = 1'-0"



E6 CANOPY AXONOMETRIC
SCALE:

THE UNIVERSITY OF ARIZON
ELECTRIC SHOP TO TREE RING WOO!
SHOP RENOVATIONS AT BUILDING 45





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UNIVERSITY OF ARIZONA DSS

ARIZONA FIRE CODE

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AS APPROVED BY THE DEPARTMENT OF JUSTICE ON JULY 26, 2010 (PUBLISHED IN THE FEDERAL REGISTER ON SEPTEMBER 15, 2010) AND ANY MORE RECENT RELATED FEDERAL AND STATE REQUIREMENTS WITH THEIR RELATED STANDARDS AS THEY MAY APPLY

2007 ASME A17.1, SAFETY CODES FOR ELEVATORS AND ESCALATORS,

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS,

ARIZONA REVISED STATUTES, INCLUDING, BUT NOT LIMITED TO: 34-451 (ENERGY CONSERVATION STANDARDS), 34-452 (SOLAR DESIGN STANDARDS AND ENERGY LIFE CYCLE COSTING)

ARIZONA GOVERNOR'S EXECUTIVE ORDER NO. 91.3 (WATER CONSERVATION IN STATE BUILDINGS)

ASHRAE DESIGN CODES 189.1 (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)

IAQ GUIDELINES FOR OCCUPIED BUILDINGS UNDER CONSTRUCTION (SMACNA) (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)

ACGIH INDUSTRIAL VENTILATION MANUAL OF RECOMMENDED PRACTICES (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)

ANSI/AIHA Z9.5 LABORATORY VENTILATION (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED.

COMPLIANCE SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITIONS OF ALL STATE REGULATIONS AND THE VARIOUS CODES WHICH HAVE BEEN ADOPTED BY NAU AT THE TIME OF SELECTION OF THE DESIGN PROFESSIONAL UNLESS OTHERWISE REQUIRED BY FEDERAL OR STATE REGULATION (SUCH AS ADA CODE COMPLIANCE WHICH IS REQUIRED AT TIME OF BID).

DP WILL BE HELD TO HAVE EXAMINED AND TO HAVE BECOME FAMILIAR WITH THESE REGULATIONS IN ALL WAYS THEY APPLY TO THE PROJECT.UA:

DP SHALL DESIGN THE PROJECT IN COMPLIANCE WITH THE FOLLOWING CODES:

- 1) 2006 INTERNATIONAL FIRE CODE
- 2) 2006 INTERNATIONAL BUILDING CODE
- 3) 2006 INTERNATIONAL EXISTING BUILDING CODE
- 4) 2006 INTERNATIONAL PLUMBING CODE
 5) 2006 INTERNATIONAL MECHANICAL CODE
- 2006 INTERNATIONAL FUEL GAS CODE
- 2006 INTERNATIONAL ENERGY CONSERVATION CODE
- 8) 2005 NATIONAL ELECTRICAL CODE (NFPA 70)
- 9) 2002 NATIONAL FIRE ALARM CODE (NFPA 72)
- 10) 2002 INSTALLATION OF SPRINKLER SYSTEMS (NFPA 13)
 11) 2007 ASME A17.1, SAFETY CODES FOR ELEVATORS AND
 ESCALATORS (NOTE: ASME A17.1 REQUIRES THE USE OF THE
 LATEST EDITION OF NFPA 70
- AND 72)
 12) LIFE SAFETY CODE (NFPA 101)
- 13) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS 29 CFR 1910, 1919.146 CONFINED SPACES STANDARD AND 1926
- 14) ACCESSIBILITY GUIDELINES IN ADDITION TO ANY REQUIREMENTS IN THE ABOVE LISTED CODES:
- GOVERNING REGULATION: DEPARTMENT OF JUSTICE'S TITLE II REGULATION 28 CFR PART 35 AND TITLE III REGULATION 28 CFR PART 36
- AMERICANS WITH DISABILITIES ACT AND ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES DATED JULY 23, 2004 BY THE UNITED STATES ACCESS BOARD.

IF A CONFLICT ARISES BETWEEN THESE CODE AND REGULATION REFERENCES, THE UNIVERSITY WILL MAKE A DETERMINATION IN CONSULTATION WITH THE DESIGN CONSULTANT.

15) ARIZONA REVISED STATUTES, INCLUDING:

- 34-451 (ENERGY CONSERVATION STANDARDS)
 34-452 (SOLAR DESIGN STANDARDS AND ENERGY LIFE CYCLE COSTING)
- SEE ITEM 12) ABOVE FOR ACCESSIBILITY
 16) ARIZONA GOVERNOR'S EXECUTIVE ORDER NO. 91-3 (WATER CONSERVATION
- IN STATE BUILDINGS)
- 17) ASHRAE DESIGN CODES (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)
- 18) IAQ GUIDELINES FOR OCCUPIED BUILDINGS UNDER CONSTRUCTION (SMACNA) (MOST RECENT EDITION UNLESS
- OTHERWISE REQUIRED)

 19) ACGIH INDUSTRIAL VENTILATION MANUAL OF RECOMMENDED PRACTICES
- (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)
 20) ANSI/AIHA Z9.5 LABORATORY VENTILATION (MOST RECENT EDITION UNLESS OTHERWISE REQUIRED)

MECHANICAL WORK SHALL CONSIST OF LABOR, MATERIALS AND EQUIPMENT REQUIRED TO FURNISH AND INSTALL MECHANICAL SYSTEMS AS SPECIFIED AND SHOWN IN THE CONTRACT DOCUMENTS.

BASIC MECHANICAL REQUIREMENTS:

GENERAL DRAWING NOTES

PAY ALL COSTS ASSOCIATED WITH PERMITS, FEES, TESTING AND INSPECTIONS AS APPLICABLE TO THE WORK AND INCLUDE COST IN THE BID. SCHEDULE INSPECTIONS ACCORDINGLY AND PROVIDE COPIES TO THE ARCHITECT AND OWNER FOR THEIR RECORDS.

ALL EQUIPMENT AS PART OF THIS WORK SHALL BE LISTED BY THE UNDERWRITERS LABORATORY WHEN APPLICABLE. THE MECHANICAL CONTRACTOR SHALL SUBMIT MANUFACTURERS LITERATURE FOR ALL MECHANICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO RELIEF VENTS, DUCTWORK, DUCTWORK ACCESSORIES, INSULATION, AIR INLETS AND OUTLETS, TESTING ADJUSTING AND BALANCE REPORT, OPERATION AND MAINTENANCE MANUAL.

PROVIDE ALL LABOR, MATERIALS, TOOLS, SCAFFOLDING AND OTHER EQUIPMENT NECESSARY TO COMPLETE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

ALL WORK INCLUDED UNDER THIS CONTRACT SHALL EMPLOY SKILLED AND QUALIFIED TRADESMEN FOR WORK.

OBTAIN MANUFACTURERS INSTALLATION INSTRUCTIONS PRIOR TO ROUGHING-IN AND MAKING FINAL CONNECTIONS.

DRAWINGS ARE DIAGRAMMATIC AND DO NOT INDICATE ALL PIPE, FITTINGS, ETC., AS REQUIRED FOR ALL CONDITIONS. VERIFY EXACT LOCATION OF EQUIPMENT AND INSTALLATION REQUIREMENTS. COORDINATE WORK WITH OTHER TRADES SO THAT INTERFERENCE BETWEEN OTHER TRADES AND CONDUIT, PIPING, DUCTS, ARCHITECTURAL AND STRUCTURAL EQUIPMENT AND MATERIALS WILL BE AVOIDED.

COORDINATE OPENINGS AND RECESSES WITH THE GENERAL CONTRACTOR. MATERIALS OR LABOR OBVIOUSLY REQUIRED TO FULLY COMPLETE THE WORK SHALL BE INCLUDED, EVEN THOUGH EACH ITEM NECESSARILY INVOLVED IS NOT SPECIFICALLY MENTIONED OR SHOWN. SUCH WORK AND MATERIALS SHALL BE FURNISHED AND SHALL BE OF THE SAME GRADE OR QUALITY AS THE PARTS ACTUALLY SPECIFIED AND SHOWN. SHOULD THERE BE A CONFLICT BETWEEN THE PLANS AND SPECIFICATIONS, THE GREATER QUANTITY AND BETTER QUALITY SHALL BE FURNISHED.

CUTTING AND DRILLING OF WALLS, SLABS, AND STRUCTURAL MEMBERS REQUIRED IN CONJUNCTION WITH THE WORK IN THIS SECTION, SHALL BE DONE UNDER THE CONSENT OF THE GENERAL CONTRACTOR. BEAMS, JOISTS, ETC. SHALL NOT BE CUT WITHOUT WRITTEN CONSENT FROM THE GENERAL CONTRACTOR. WORK SHALL BE NEATLY PERFORMED AND ONLY NECESSARY MATERIAL SHALL BE REMOVED. HOLES AND OPENINGS SHALL BE LOCATED WHERE THEY WILL NOT WEAKEN THE STRUCTURE.

CUTTING AND DRILLING OF HOLES THROUGH MASONRY AND CONCRETE SHALL BE PERFORMED USING A CORE DRILL TO MINIMIZE DAMAGE TO SUCH AREAS. LOCATIONS SHALL BE ACCURATELY DETERMINED AND CHECKED, AND THE APPROPRIATE DRILL BIT SHALL BE USED TO MINIMIZE HOLE SIZE.

INSTALL FIRE STOPPING MATERIALS, INCLUDING FORMING, PACKING, AND OTHER ACCESSORY MATERIALS TO FILL OPENINGS AROUND MECHANICAL AND ELECTRICAL SERVICES PENETRATING FLOORS AND WALLS TO PROVIDE FIRESTOPS WITH FIRE RESISTANCE RATINGS INDICATED FOR FLOOR OR WALL ASSEMBLY IN WHICH PENETRATION OCCURS. COMPLY WITH INSTALLATION REQUIREMENTS ESTABLISHED BY TESTING AND INSPECTING AGENCY.

PAINT ALL EXPOSED PIPING, HANGERS, SUPPORTS, DUCTWORK, DIFFUSERS, AND EQUIPMENT INSTALLED UNDER THIS CONTRACT PER OWNERS REQUIREMENTS. FINISH PAINT IN COLORS SELECTED BY THE ARCHITECT/OWNER. EQUIPMENT FURNISHED UNDER THIS DIVISION THAT IS PRE-PAINTED OR PRE-FINISHED BY THE MANUFACTURER SHALL HAVE ALL SCRATCHES, CHIPS AND RUST SPOTS CLEANED, PRIMED, AND REFINISHED. ALL EXPOSED DUCTWORK REQUIRED TO BE PAINTED SHALL BE PROVIDED WITH A PAINT GRIP SURFACE.

GENERAL DRAWING NOTES

WORK DONE BY THE CONTRACTOR UNDER THIS DIVISION SHALL INCLUDE THE SERVICES OF AN EXPERIENCED SUPERINTENDENT, WHO SHALL BE CONSTANTLY IN CHARGE OF THE WORK, TOGETHER WITH THE QUALIFIED JOURNEYMEN, HELPERS, AND LABORERS REQUIRED TO PROPERLY UNLOAD, INSTALL, CONNECT, ADJUST, START, AND OPERATE, AND TEST THE WORK INVOLVED, INCLUDING RELATED EQUIPMENT AND MATERIALS FURNISHED UNDER OTHER CONTRACTS OR BY THE OWNER

ALL MATERIALS AND WORKMANSHIP UNDER THIS CONTRACT AS SPECIFIED HEREIN SHALL BE WARRANTED FOR ONE YEAR AFTER THE FINAL ACCEPTANCE DATE OF COMPLETION, EXCEPT WHERE EQUIPMENT IS SPECIFIED WITH LONGER WARRANTIES. IF FAULTY MATERIAL AND/OR WORKMANSHIP IS DISCOVERED WITHIN THE WARRANTY PERIOD (NOT INCLUDING MISUSE OR ABUSE OF EQUIPMENT BY THE OWNER), THE FAULTY MATERIAL AND WORKMANSHIP SHALL BE REPLACED, INCLUDING LABOR, AT NO ADDITIONAL COST TO THE OWNER.

DUCTS: GALVANIZED STEEL DUCTS: ASTM A525 AND ASTM A527 GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING G90 ZINC COATING IN CONFORMANCE WITH ASTM A90.

FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE FURNISH DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR LOW-PRESSURE APPLICATION.

CONSTRUCT TEES, BENDS, AND ELBOWS WITH MINIMUM RADIUS 1-1/2 TIMES CENTERLINE DUCT WIDTH. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE; MAXIMUM 30 DEGREES DIVERGENCE UPSTREAM OF EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM. PROVIDE STANDARD 45-DEGREE LATERAL WYE TAKEOFFS.

INSTALL AND SEAL DUCTS IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.

PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCTWORK CONNECTIONS TO VIBRATING OR ROTATING EQUIPMENT INCLUDING EXHAUST FANS AND AIR HANDLING UNITS.

FLEXIBLE DUCTWORK: CONNECT DIFFUSERS TO LOW PRESSURE DUCTS DIRECTLY (AS SHOWN) OR WITH 5 FEET MAXIMUM LENGTH OF FLEXIBLE DUCT HELD IN PLACE WITH STRAP OR CLAMP. PROVIDE THERMAFLEX, FLEXMASTER, OR CLEVAFLEX UL 181, CLASS 1, ALUMINUM LAMINATE AND POLYESTER FILM WITH LATEX ADHESIVE SUPPORTED BY HELICAL WOUND SPRING STEEL WIRE; FIBERGLASS INSULATION; POLYETHYLENE OR ALUMINIZED VAPOR BARRIER FILM. PRESSURE RATING: 10 INCHES WG POSITIVE AND 1.0 INCHES WG NEGATIVE. MAXIMUM VELOCITY: 4000 FPM. TEMPERATURE RANGE: -20 DEGREES F TO 210 DEGREES F. CONNECT FLEXIBLE DUCTS TO METAL DUCTS WITH ADHESIVE PLUS SHEET METAL SCREWS.

OUTDOOR DUCTWORK:

PROVIDE ALUMINUM JACKET: 0.016 INCH THICK WITH FACTORY APPLIED MOISTURE BARRIER OR PVC JACKET: UV RESISTANT, WHITE OR PREFABRICATED, SELF-ADHERING, SHEET TYPE WATERPROOFING MEMBRANE: STUCCO EMBOSSED UV-RESISTANT ALUMINUM WEATHERING SURFACE WITH A DOUBLE LAYER OF HIGH DENSITY POLYETHYLENE REINFORCEMENT AND A UNIFORM LAYER OF RUBBERIZED ASPHALT ADHESIVE WHICH STICKS DIRECTLY TO FACED INSULATION SIMILAR TO FLEX CLAD 400 AS MANUFACTURED BY MFM.

MECHANICAL INSULATION: DUCTWORK

1" FLEXIBLE GLASS FIBER BLANKET, KNAUF FIBER GLASS DUCT WRAP OR
EQUAL; CONFORMING TO ASTM C553, TYPE I, II OR III. THERMAL
CONDUCTIVITY (K VALUE) OF AT LEAST 0.29 AT 75 DEGREES F MEAN
TEMPERATURE. PROVIDE WITH VAPOR RETARDER JACKET. DENSITY:
CONCEALED AREAS: 0.75 PCF (POUNDS PER CUBIC FOOT). EXPOSED
AREAS: 1.0 PCF (POUNDS PER CUBIC FOOT).

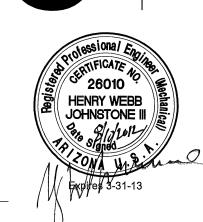
NOTE:
EVERY EFFORT HAS BEEN MADE TO PROVIDE THIS CONTRACTOR WITH ACCURATE INFORMATION REGARDING EXISTING CONDITIONS. THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING PROJECT. ANY CONFLICTS DISCOVERED BY THIS CONTRACTOR DURING THE PRE-BID PROCESS WHICH MAY AFFECT THE SCOPE OF WORK SHALL BE REPORTED TO THE ARCHITECT AND/OR ENGINEER PRIOR TO BIDDING. THE SUBMISSION OF A BID SHALL INDICATE THIS CONTRACTOR'S COMPLETE UNDERSTANDING OF THE CONTRACT DOCUMENTS AND ACCEPTANCE OF EXISTING CONDITIONS. THE NEW SYSTEM INDICATED ON PLANS AND IN SPECIFICATIONS SHALL BE FULLY INSTALLED AND OPERATIONAL. ALL ITEMS INCIDENTAL TO THE COMPLETION OF THE WORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. THIS CONTRACTOR SHALL COORDINATE ALL CUTTING, PATCHING AND REPAIRING AS REQUIRED WITH GENERAL CONTRACTOR.

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THE UNIVERSITY OF ARIZON ELECTRIC SHOP TO TREE RING WOO!
RENOVATIONS AT BUILDING 45A
MECHANICAL GENERAL
DRAWINGS NOTES

ARCHITECTS & ENGINEERS, INC



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GENERAL NOTES

1. FIRE PROTECTION/ALARM TO BE BY OTHERS.

- EXISTING SUPPLY GRILLE TO REMAIN.
- 2. EXISTING RETURN GRILLE TO REMAIN.
- 3. NEW 24" X 24" SUPPLY GRILLE TITUS MODEL TDC OR APPROVED EQUAL.
- 4. NEW 24" x 24" FILTER RETURN GRILLE TITUS MODEL 50FF OR APPROVED EQUAL.
- 5. NEW 24" x 24" RETURN GRILLE TITUS MODEL PAR OR APPROVED EQUAL.
- 6. EXISTING DOOR TO BE SEALED CLOSED SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.
- 7. NEW DOOR SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.
- 8. NEW CANOPY SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.
- 9. EXISTING BAND SAW RELOCATED FROM BASEMENT TO NEW WOODSHOP AREA.
- 10. EXISTING DRILL PRESS RELOCATED FROM BASEMENT TO NEW WOODSHOP AREA.
- 11. NEW SELF CONTAINED DOWNDRAFT DUST COLLECTOR BENCH. ALTERNATE IS A REMOTE DOWNDRAFT BENCH.
- 12. NEW 30" x 6" WORK TABLE.
- 13. EXISTING 12"Ø EXHAUST DUCT TO REMAIN.
- 14. NEW PORTABLE DUST COLLECTOR.
- 15. NEW 10"Ø DIRTY AIR DUCT FROM DOWNDRAFT BENCH TO DUST COLLECTOR.
- 16. NEW STATIONARY DUST COLLECTOR TO BE UTILIZED WITH REMOTE DOWNDRAFT BENCH.
- 17. NEW 24"x14" CLEAN AIR DUCT.
- 18. NEW 24"x14" GRILLE.



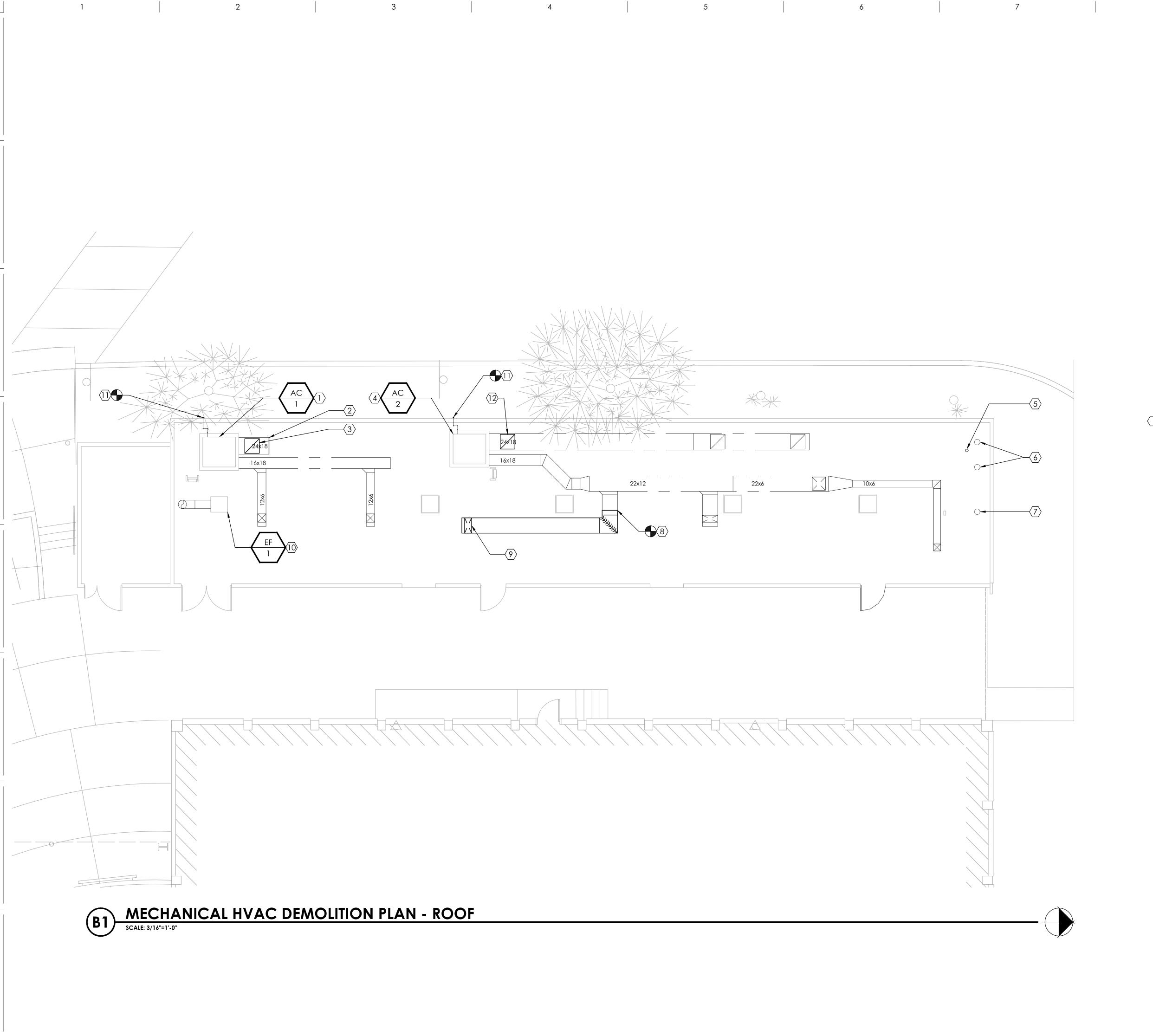


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MECHANICAL NEW WORK PLAN
SCALE: 3/16"=1'-0"





- 1. EXISTING AC-1 UNIT TO REMAIN.
- EXISTING RETURN DUCTWORK TO AC-1 TO BE MODIFIED TO CONFIGURE TO NEW ROOM LAYOUT.
- 3. NEW 21"x21" RETURN DUCT DROP INTO NEW TREE RING WOODSHOP.
- 4. EXISTING AC-2 UNIT TO REMAIN.
- 5. EXISTING DOMESTIC WASTE VENT PIPE TO REMAIN.
- EXISTING 8"Ø EXHAUST DUCT TO RESTROOM TO REMAIN.
- 7. EXISTING 8"Ø EXHAUST DUCT TO SHOWER TO REMAIN,.
- 8. NEW 22" x 6" SUPPLY DUCT.
- 9. NEW 22" x 6" SUPPLY DUCT DROP.
- 10. EXISTING EXHAUST FAN AND DUCT TO REMAIN.
- 11. NEW 1" CONDENSATE DRAIN LINE TO BE ROUTED DOWN WALL TO 1" ABOVE GRADE LEVEL.
- 12. NEW 21" x 21" RETURN DUCT DROP INTO MATH WORK ROOM AREA.



ELECTRIC SHOP TO TREE RING RENOVATIONS AT BUILDING MECHANICAL HVAC

RCHITECTS & ENGINEERS, INC



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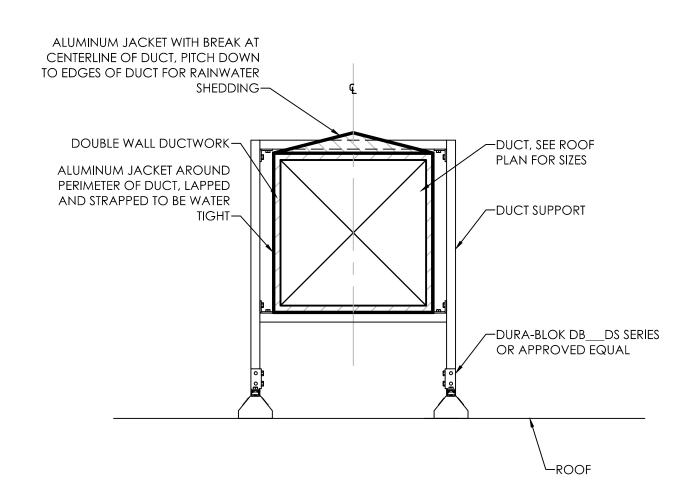
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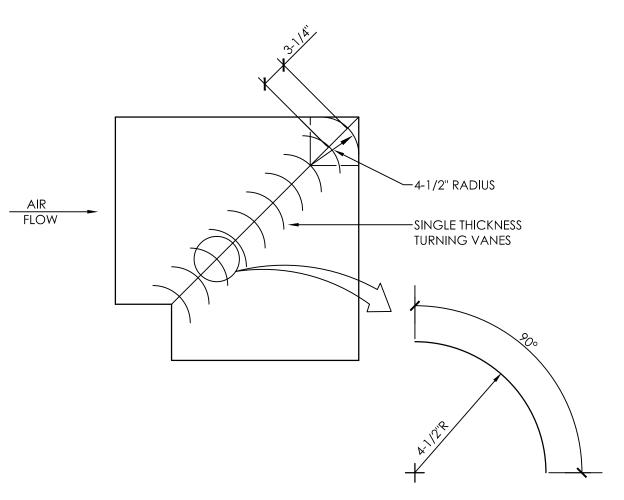
FLUORESCENT LIGHT FIXTURE (2 BULBS SUPPLIED BY OWNER)
LIGHT SWITCH AND POWER CORD (AVAILABLE WITH LIGHT FIXTURE)

	PORTABLE DUST COLLECTOR											
		SYSTEM	BAG			STATIC			MO	TOR		
MARK	LOCATION	AND/OR SERVICE	DIAMETER (IN.)	FILTER BAG LENGTH (IN.)		PRESSURE (W.G.)	IMPELLER MATERIAL	IPOWER1	VOLT	PHASE	AMPS	REMARKS
DC-1	TREE RING LAB	DRILL PRESS/BAND SAW	20	25	5.3	11 1/2	STEEL	2	230	1	8	JET 710704K DC-1200VX-CK3 VORTEK DUST COLLECTOR

				STA	ationary di	JST COLLECT	ror I					
MARK	LOCATION A	SYSTEM ON AND/OR QUANTITY SERVICE	QUANTITY	NOMINAL AIRFLOW	INLET DIAMETER (IN.)	NO. OF BINS/DRUMS	NO. OF FILTER	MOTOR		REMARKS		
			RANGE			BAGS	POWER HP	VOLT	PHASE	HZ		
SDC-1	TREE RING WOODSHOP	REMOTE DOWNDRAFT BENCH	1	450-3,000	10	1	1	5	208	3	60	BASIS OF DESIGN: DONALDSON TORIT UMA

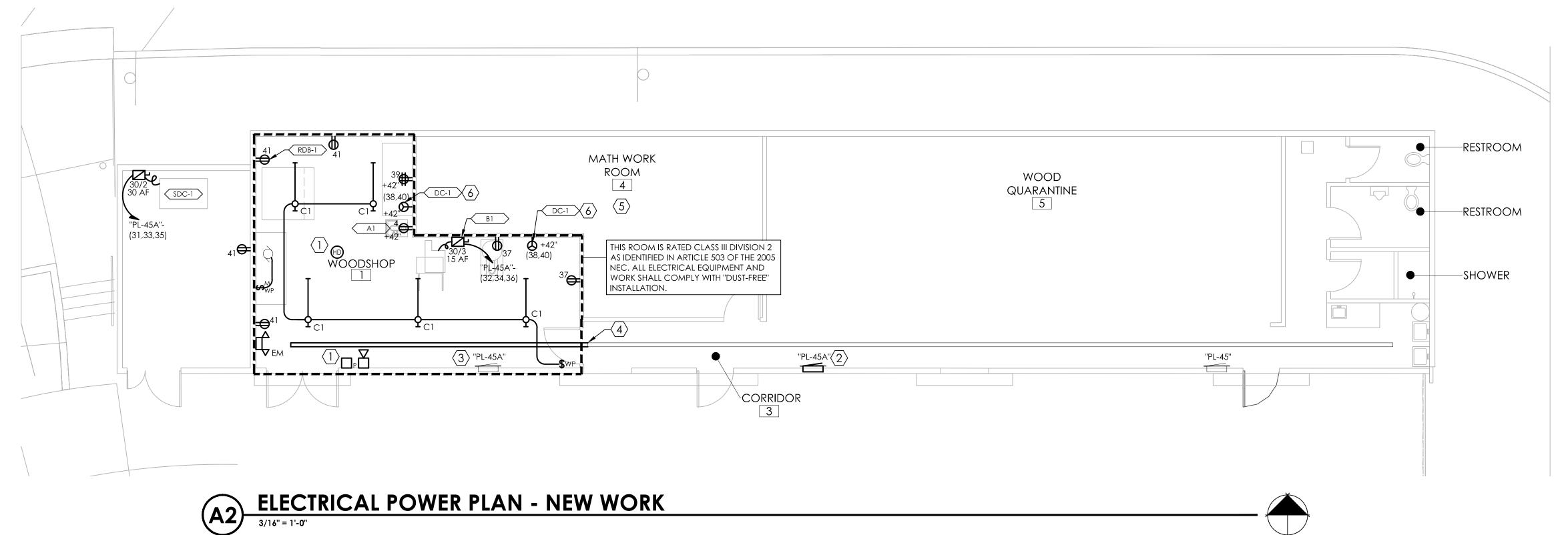






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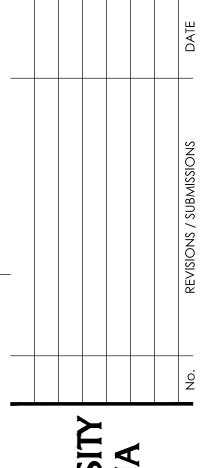
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GENERAL NOTES

- A. THE LOCKNUT-BUSHING AND DOUBLE-LOCKNUT TYPES OF CONTACTS SHALL NOT BE USED FOR BONDING PURPOSES. PROVIDE BONDING JUMPERS WITH PROPER FITTINGS OR OTHER APPROVED MEANS OF BONDING IN ACCORDANCE WITH NEC ARTICLE 503. BONDING SHALL APPLY TO ALL INTERVENING RACEWAY, FITTINGS, BOXES, ENCLOSURES BETWEEN CLASS III LOCATION AND THE POINT OF GROUNDING OF THE SEPARATELY DERIVED SYSTEM.
- B. FLEXIBLE CONDUIT SHALL BE INSTALLED WITH INTERNAL OR EXTERNAL BONDING JUMPERS IN PARALLEL WITH EACH CONDUIT.
- C. SIGNALING SYSTEM DEVICES SHALL BE ALTERED PER MANUFACTURERS REQUIREMENTS TO COMPLY WITH CLASS III DIVISION 2 REQUIREMENTS.
- D. ALL NEW CIRCUITRY THIS SHEET SHALL HOME RUN TO PANEL "PL-45A".
- E. ALL RECEPTACLES IN THE CLASS III DIV 2 SPACE SHALL BE PROVIDED WITH GASKETS AND "IN USE" COVERS.
- F. FUSIBLE DISCONNECT IN THE CLASS III DIV 2 SPACE SHALL BE NEMA 4X RATED.
- G. ALL FUSES FOR FUSIBLE DISCONNECTS SHALL BE SIZED PER THE NAMEPLATE DATA. REFER TO SPECIFICATIONS.

◯ KEYNOTES

- 1. CONTACTOR SHALL CONTACT SIMPLEX FOR REPLACEMENT OF FIRE ALARM DEVICE TO COMPLY WITH THE CLASS III DIV 2 REQUIREMENTS. REFER TO GENERAL NOTES ABOVE. COORDINATE INSTALLATION REQUIREMENTS WITH UNIVERSITY OF ARIZONA INTEGRATED SYSTEMS GROUP (UAISG).
- NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM FOR ADDITIONAL INFORMATION. LOCATION OF PANEL IS TO PROVIDE FOR FUTURE EXPANSION OF THE WOOD SHOP.
- 3. EXISTING PANEL SHALL BE GUTTED. CONTRACTOR SHALL TAG EXISTING BRANCH CIRCUITRY TO REMAIN. EXTEND EXISTING TO REMAIN CIRCUITRY TO NEW PANELBOARD "PL-45A". PROVIDE NEW METAL COVER WITH GASKET TO COMPLY WITH THE CLASS III DIV 2 REQUIREMENTS.
- 4. CONTRACTOR SHALL REMOVE EXISTING WIREWAY COVERS FROM WITH THE WOOD SHOP UP TO APPROXIMATELY THIS LOCATION. PROVIDE NEOPRENE GASKET TO WIREWAY AND REATTACH. PROVIDE BAKELITE NAME PLATE WITH WHITE LETTERS ON EACH COVER REMOVED TO READ "WIREWAY SHALL BE DUST TIGHT". SILICONE SEAL ALL JOINTS.
- 5. THIS ROOM TO BE CONSIDERED PART OF THE WOOD SHOP IN THE FUTURE.
- 6. DEDICATED OUTLET FOR (1) PORTABLE DUST COLLECTOR.



THE UNIVERSITY OF ARIZONA

ERSITY OF ARIZONA
OP TO TREE RING WOOD SHOWS AT BUILDING 45A

CHITECTS & ENGINEERS, INC

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PE. Broadway Blvd, Tucson, AZ 85716

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PLAN SYMBOLS

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- WALL MOUNTED SWITCH. LETTER INDICATES AS FOLLOWS:
 - a INDICATES SWITCH LEG
 - 3 3-WAY SWITCH M - MANUAL MOTOR STARTER SWITCH. # OF
 - POLES AS REQUIRED.
 - WP- WEATHERPROOF.
- JUNCTION BOX MOUNTED EXPOSED OR ABOVE CEILING. 4"x4"xDEPTH PER SPECIFICATIONS UON
- JUNCTION BOX MOUNTED FLUSH IN WALL UON 4"x4"xDEPTH PER SPECIFICATIONS W/ 2-GANG PLASTER RING UON. NUMBER INDICATES BRANCH CIRCUIT.



WIRE IS #12 CU. UON.

FIXTURE TYPE.

CEILING RECESSED FLUORESCENT OR HID FIXTURE. SEE FIXTURE SCHEDULE FOR TYPE. NUMBER INDICATES BRANCH CIRCUIT, LETTER INDICATE

CONDUIT & WIRE HOME RUN TO PANEL SHOWN.

- CHANNEL OR STRIP TYPE FLUORESCENT FIXTURE. SEE FIXTURE SCHEDULE FOR TYPE. NUMBER INDICATES BRANCH CIRCUIT, LETTERS INDICATE FIXTURE TYPE.
- EMERGENCY BATTERY PACK W/ INCANDESCENT OR FLUORESCENT DIRECTIONAL LAMPS. SEE FIXTURE SCHEDULE FOR TYPE. NUMBER INDICATES BRANCH CIRCUIT, LETTERS INDICATE FIXTURE TYPE.
- DUPLEX RECEPTACLE, NEMA 5-20R UON, IN 4"x4" BOX W/ PLASTER RING. NUMBER INDICATES BRANCH CIRCUIT. MH=18" TO CENTER OF BOX UON.
- GFI RATED (2) DUPLEX RECEPTACLES, NEMA 5-20R UON IN 4"x4" BOX W/ PLASTER RING. NUMBER INDICATES BRANCH CIRCUIT. MH=18" TO CENTER OF BOX UON.
- SPECIAL RECEPTACLE IN 4"x4" BOX W/ PLASTER RING. NUMBERS INDICATE BRANCH CIRCUIT & NEMA RECEPTACLE TYPE. MH=18" TO CENTER OF BOX UON
- PANELBOARD, FLUSH MOUNTED. SEE SINGLE LINE DIAGRAM & PANEL SCHEDULES FOR VOLTAGE, SIZE, & POLES. MH=78" MAXIMUM TO TOP OF PANEL.
- PANELBOARD, SURFACE MOUNTED. SEE SINGLE LINE DIAGRAM & PANEL SCHEDULES FOR VOLTAGE, SIZE, & POLES. MH=78" MAXIMUM TO TOP OF PANEL.
- HEAVY DUTY NON-FUSED SAFETY SWITCH. NUMBER INDICATES AMPS/POLES.
- HEAVY DUTY FUSED SAFETY SWITCH. NUMBER 30/3 30 AF INDICATES AMPS/POLES.

DIAGRAM SYMBOLS



PAD-MOUNTED UTILITY TRANSFORMER.



DRY-TYPE TRANSFORMER. → 3Ø, 4W. PRIMARY/SECONDARY VOLTAGE; Ø & WIRES. SEE SPECIFICATIONS.



CIRCUIT BREAKER PANELBOARDS. SEE SCHEDULES FOR NUMBER & SIZES OF BREAKERS, PANEL SIZE, VOLTAGE & INTERRUPTING DUTY.



NON-FUSED SWITCH. NUMBERS INDICATE AMPERES/POLES. SEE SPECIFICATIONS FOR TYPE.

FUSE. NUMBERS INDICATE AMPERE/TRIP RATING.



CIRCUIT BREAKER. NUMBERS INDICATE TRIP RATING/POLES. SEE SPECIFICATIONS FOR TYPE.



METER & CURRENT TRANSFORMERS. SEE SPECIFICATIONS FOR SIZE & TYPE.



GROUND CONNECTION.

SEE SPECIFICATIONS FOR TYPE.

ABBREVIATIONS

A, AMP	AMPERE
AF	AMP FUSE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
С	CONDUIT
COT	CITY OF TUCSON
CU	COPPER

- DIAGRAM DISTRIBUTION DN DOWN DWG DRAWING EACH **EMERGENCY**
- EMERGENCY POWER OFF **EXISTING**
- FIRE ALARM FΑ FAAP FIRE ALARM ANNUNCIATOR PANEL
- FACP FIRE ALARM CONTROL PANEL G GROUND
- GΑ GAUGE **GALV** GALVANIZED **GEN** GENERATOR
- **GFCI** GROUND FAULT CIRCUIT INTERRUPTER GFP GROUND FAULT PROTECTOR GRS GALVANIZED RIGID STEEL CONDUIT
- HD HEAVY DUTY ΗP HORSEPOWER ΗZ HERTZ
- INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS **IEEE** JUNCTION BOX
- kHz KILOHERTZ kVA, KVA KILOVOLT AMPERES KILOWATTS kWH, KWH KILOWATT HOURS MAXMAXIMUM MCB
- MAIN CIRCUIT BREAKER MHz MEGAHERTZ MIN MINIMUM MLO MAIN LUGS ONLY
- NEUTRAL N/A NOT APPLICABLE NEC NATIONAL ELECTRICAL CODE
- NEMA NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION NFPA NATIONAL FIRE PROTECTION ASSOCIATION NO. NUMBER
- NTS NOT TO SCALE OD OUTSIDE DIAMETER POLE PHASE
- PANEL PWR POWER **RECP** RECEPTACLE
- RGS RIGID GALVANIZED STEEL SES SERVICE ENTRANCE SECTION SPEC SPECIFICATION
- TBD TO BE DETERMINED TYP TYPICAL
- UL UNDER WRITERS LABORATORY UON UNLESS OTHERWISE NOTED **VOLT OR VOLTS**
- VA VOLT AMPS WATT OR WIRE WP WEATHERPROOF XFMR TRANSFORMER

		TYPE:							'I	PL-	45 <i>A</i>	ι'				BUS:	200	AMP			
		RVICE: :		120 V	3 Ø,4 W					NI	EW					MAINS: NEUTRAL: AIC: NEMA 1		A MCB FULL MATCH	EXIS IT	NG	
*	ØA	ØB	ØC	Cond	Wire	Gnd	Load	С	В	C	KT	CE	3	Load	Cond	Wire	Gnd	ØA	ØB	ØC	*:
							e) Load	20	/1	1	2	20	/1	e) Load							T
							e) Load	20	/1	3	4	20	/1	e) Load							
							e) Load	20	/1	5	6	20	/1	e) Load							
7							e) Load	20	/1	7	8	20	/1	e) Load							T
							e) Load	20	/1	9	10	20	/1	e) Load							
							e) Load	20	/1	11	12	20	/1	e) Load							
7								20	/1	13	14	20	/1								Τ
								20	/1	15	16	20	/1								
								20	/1	17	18	20	/1								
								20	/1	19	20	20	/1								T
								20	/1	21	22	20	/1								
								20	/1	23	24	20	/1								
1								20	/1	25	26	20	/1								T
								20	/1	27	28	20	/1								
								20	/1	29	30	20	/1								
	2.0			3/4	#10	#10	Dust Collector SDC-1	30	/3	31	32	15	/3	Band Saw B1	3/4	#12	#12	0.9			
		2.0			#10		n	_		33	34	_		п		#12			0.9		
,			2.0		#10		D.	-		35	36	-		11		#12				0.9	
1	0.4			3/4	#12	#12	Recep General	20	/1	37	38	20	/2	Prtbl Dust Collect DC-1	3/4	#12	#12	1.4			
		0.4					Recep Counter	20	/1	39	40	_		п		#12			1.4		
			0.7				Recep General	20	/1	41	42	25	/1	Drill Press A1	3/4	#10	#10			1.7	
İ	DEMAN	ID FAC	TORS /	AS NO	ED	CIRCUIT	BREAKER NOTES							LOAD SUMMARY				ØA	ØB	ØC	T
	LTG & C	CONTIN	IUOUS	LOAD		A - HAC	R CIRCUIT BREAKER							NON-CONTINUOUS LOAI	0 @ 10	00%					T
2 RECEPTACLE LOAD C- SOLENOID OPERATED CIRCUIT BREAKER									LIGHTING & CONTINUOU	S LOA	D @ 125%										
3 MOTOR LOAD G - GFI CIRCUIT BREAKER									RECEPTACLE LOAD PER N	IEC 22	0-13		0.4	0.4	0.7						
4 KITCHEN EQUIPMENT LOAD L - TO BE LOCKABLE IN OPEN POSITION							MOTOR LOAD PER NEC 430-24 4.8 4.8			5.1											
	SUBPA	NEL FEE	D AT 1	00%										KITCHEN EQPT LOAD PER	NEC 2	20-20					_
OTE	ES:													TOTAL kVA				5.1	5.1	5.9	
														TOTAL AMPS				43	43	49	
														TOTAL LOAD (kVA)						16	+

	LUMINAIRE SCHEDULE										
TYPE MANUFACTURER		CATALOG NO.	LAMP(S)		VOLTS	MOUNTING					
1116	MANOFACTORER	CATALOG NO.	TYPE	NO	VOLIS	MODIVING	REMARKS				
C1	AZZ RAL Rig-A-Lite	MHD2-265-4-2-U-F-TW	T8 (32W)	2	120V	TO STRUCTURE	Class III Division 2 rated fixture				
EM	Lithonia	Z1225N H1206	12W/6V Halogen	2	120V	TO W ALL	Nema 4X rated enclosure, Class I Division 2.				

Note: basis of design or approved equal

KEYNOTES

- 1. EXISTING PANEL TO REMAIN. REROUTE EXISTING SUB-FEED TO NEW PANEL LOCATION AS REQUIRED. FIELD VERIFY ACTUAL CONDITIONS.
- 2. EXISTING CONDUCTORS BACK TO SOURCE TO REMAIN AS IS.
- 3. NEW PANELBOARD. REFER TO PLANS FOR LOCATIONS.
- 4. EXISTING PANEL TO BE GUTTED. REFER TO PLAN.

400 Amps

5. EXISTING WIREWAY TO REMAIN. EXTEND EXISTING CIRCUITS TO NEW PANEL ACCORDINGLY. FIELD VERIFY ACTUAL CONDITIONS. REFERENCE EP111 FOR ADDITIONAL SEALING REQUIREMENTS.

BASEMENT Tree Ring Building 45A 2,189 square feet 2.1 k VA Lighting 65 lamps, rated at 32watts each 6.5 k VA General use Receptacles 3 watts / sq foot per NEC 220-3(a) 6.9 k VA A/C #1 19.2 FLA at 208V, 3PH 6.9 k VA A/C #1 19.2 FLA at 208V, 3PH EF-1 2.4 k VA 11/2HP at 120V PANEL 6.2 k VA **Dust Collector** 5HP at 208V, 3PH 'PL-45' 2.5 k VA 2HP at 208V, 1PH Portable Dust Collector $\langle 1 \rangle$ 1.8 k VA **Drill Press** 1HP at 115V 2HP at 208V, 3PH 1.8 kVA **Band Saw** 37.2 kVA sub-Total 24.0 kVA 25% largest motor (A/C #1) 19.2 x 1.25 61.2 kVA Total PANEL 120/208V, 3 PH, 4W 170 Amps

existing building service sized adequate

PARTIAL SINGLE LINE DIAGRAM

'PL-45A'

'PL-45A'

3

REFER TO

SCHEDULE

FEED FROM

BUILDING 45

SYN

л О

SHERYL DENISE Expires 9/30/12

08-8826 0843.43 U OF A NO. PROJECT NO. **DESIGN BY:** DRAWN BY: CHECKED BY: DATE: 2012/08/10

> **EP601** Copyright 2012 GLHN Arch

ELECTRICAL SPECIFICATIONS

1.0 GENERAL

A. ALL WORK SHALL COMPLY WITH THE 2005 EDITION OF THE NATIONAL ELECTRIC CODE, AS ADOPTED BY THE UNIVERSITY OF ARIZONA DESIGN AND SPECIFICATION STANDARDS. WHERE CONTRACT DOCUMENTS EXCEED THESE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. IN NO CASE SHALL ANY WORK BE INSTALLED CONTRARY TO, OR BELOW, MINIMUM LEGAL STANDARDS. ANY DISCREPANCY BETWEEN THE CONTRACT DOCUMENTS AND THESE CODES, RULES AND REGULATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING THE PROJECT OR ANY WORK ON THE ITEM IN QUESTION.

B. CONTRACTOR SHALL VISIT THE JOB SITE AND FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING AND CONSTRUCTION. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING, ORDERING OF EQUIPMENT OR CONSTRUCTION.

C. ALL EQUIPMENT SHALL BE NEW, PURCHASED SPECIFICALLY FOR THE PROJECT, BE U.L. LISTED FOR THE ENVIRONMENT IN WHICH INSTALLED AND BE DELIVERED TO THE JOB SITE IN THE ORIGINAL MANUFACTURER'S APPLICATION AND SHIPPING CONTAINERS. ALL ELECTRICAL EQUIPMENT, FUSES, ETC., WITHIN THE SAME CATEGORY (E.G., DISCONNECTS, PANELBOARDS, CIRCUIT BREAKERS, FUSES) SHALL BE OF THE SAME

D. CONTRACTOR SHALL SUBMIT MANUFACTURERS LITERATURE FOR APPROVAL FOR ALL ELECTRICAL EQUIPMENT EXCLUSIVE OF CONDUIT, FITTINGS AND WIRE.

2.0 WIRING

A. ALL WIRING SHALL BE STRANDED COPPER, THHN/THWN, FOR ALL CIRCUITING EXCEPT FOR POWER DISTRIBUTION FEEDERS (PANELBOARDS) WHICH SHALL BE STRANDED COPPER TYPE XHHW-2 UNLESS NOTED

B. MINIMUM WIRE SIZE SHALL BE #12 AWG UNLESS NOTED OTHERWISE ON THE DRAWINGS.

C. CONTRACTOR SHALL INSTALL A MINIMUM OF 1 PHASE CONDUCTOR, 1- NEUTRAL CONDUCTOR, AND 1-GROUND CONDUCTOR FOR ALL HOME RUNS AND DOWN STREAM SINGLE CIRCUITS. CONTRACTOR SHALL have the option to install multiple phase conductors in common homeruns and down STREAM MULTIPLE CIRCUITS WITH 1 NEUTRAL AND 1 GROUND AND NO MORE THAN THREE (3) PHASE CONDUCTORS IN A COMMON CONDUIT.

D. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING NEW CIRCUITRY TO BE IN COMPLIANCE WITH THE NATIONAL ELECTRIC CODE.

E. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. RECOMMENDED WIRE PULLING TENSIONS, TAKING INTO ACCOUNT CONDUIT SIZE, CONDUIT BENDS AND WIRE LAY, SHALL NOT BE EXCEEDED.

APPROVED OUTLET OR JUNCTION BOXES. WIRING SHALL BE INSTALLED IN A COMPLETE CONDUIT SYSTEM UNLESS NOTED OTHERWISE ON THE DRAWINGS.

F. ALL WIRING SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND NO SPLICES SHALL BE MADE EXCEPT IN

G. WIRING TO BE COLOR CODED AS FOLLOWS: (120/208V 3-PHASE 4W) NEUTRAL-WHITE; PHASES A-BLACK, B-RED, C-BLUE, GROUND-GREEN.

H. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 100 LF.

3.0 CONDUIT

A. ALL CONDUITS SHALL BE GALVANIZED EMT IN DRY CONCEALED LOCATIONS UNLESS NOTED OTHERWISE

B. ALL CONDUITS SHALL BE GALVANIZED RGS IN EXPOSED LOCATIONS ABOVE GRADE ACCEPTABLE TO DAMAGE, CONDUIT SHALL BE PAINTED TO MATCH SURROUNDING FINISHES.

C. ALL CONDUITS SHALL BE FLEXIBLE METALLIC CONDUIT FOR ALL VIBRATING EQUIPMENT. CONDUIT SHALL NOT EXCEED 6 FEET.

CONNECTORS FOR EMT CONDUITS SHALL BE STEEL COMPRESSION TYPE

G. CONNECTORS FOR RGS SHALL BE THREADED.

H. CONNECTOR FOR FLEXIBLE METALLIC CONDUIT SHALL BE MADE OF APPROVED MATERIAL.

I. ALL CONDUIT AND CONNECTIONS SHALL COMPLY WITH THE REQUIREMENT OF NEC ARTICLE 503.

J. CONDUITS SHALL RUN PARALLEL TO ALL BUILDING WALLS AND BE SUPPORTED EVERY EIGHT FEET MINIMUM AND WITHIN 3 FEET OF ALL CONNECTIONS, OUTLETS AND BOXES. JUNCTION BOXES AND OUTLET BOXES SHALL BE SUPPORTED INDEPENDENTLY OF THE CONDUIT SYSTEM.

K. ONE-HOLE PIPE STRAPS OR INDIVIDUAL CONDUIT HANGERS SHALL BE USED FOR SUPPORTING CONDUITS CONCEALED. TWO-HOLE PIPE STRAPS SHALL BE USED TO SUPPORT EXPOSED CONDUITS.

L. ALL EMPTY CONDUITS SHALL BE FURNISHED WITH PULL STRINGS AND TAGGED AT BOTH ENDS.

M. ALL CONDUITS IN FINISHED AREAS SHALL BE RUN CONCEALED UNLESS APPROVED IN WRITING BY ENGINEER.

N. MINIMUM SIZE CONDUIT SHALL BE 3/4".

O. JUNCTION BOXES SHALL BE HPT-DIPPED GALVANIZED STAMP STEEL WITH FACTORY MADE 1/2" AND 3/4" KNOCKOUTS, 4" SQUARE AND 2 1/8" DEEP.

P. ALL JUNCTION BOXES INSTALLED IN THE WOOD SHOP SHALL BE PROVIDED WITH GASKETS.

4.0 EQUIPMENT CONNECTIONS

A. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY CONDUIT, WIRE, DISCONNECTS, MOTOR STARTERS AND CONNECTIONS EQUIPPED FOR MECHANICAL AND OWNER FURNISHED EQUIPMENT RATED AT 120 VOLTS OR ABOVE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL PROVIDE THE INSTALLATION AND INTERCONNECTION OF LOW VOLTAGE CONTROL WIRING AND RACEWAY WITH THE MECHANICAL CONTRACTOR OR OWNER PRIOR TO BIDDING THE PROJECT.

B. ALL EQUIPMENT SHALL BE LABELED WITH A LAMINATED BAKELITE (BLACK WITH WHITE LETTERS) AND SCREWS OR RIVETED TO THE EQUIPMENT. 1/4" HIGH WHITE ON BLACK LETTERS TO IDENTIFY EQUIPMENT AND CIRCUIT. ADHESIVE ATTACHMENTS IS NOT ACCEPTABLE.

C. ALL EQUIPMENT IN THE WOOD SHOP SHALL HAVE A NEMA 4X RATING.

D. ENCLOSURES IN INTERIOR FINISHED SPACES SHALL BE NEMA TYPE 1.

5.0 LUMINAIRES

A. ALL LUMINAIRES SHALL BE CLASS III DIV 2 U.L. LISTED, AS SCHEDULED OR INDICATED ON THE DRAWINGS, AND. BE INSTALLED COMPLETE WITH ALL MOUNTING HARDWARE, LAMPS, LENSES, JUNCTION BOXES, SEISMIC WIRES, ETC., NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL LUMINAIRES SHALL BE THOROUGHLY CLEANED AT THE END OF THE CONSTRUCTION AND ALL BURNED OUT LAMPS AND BALLASTS REPLACED. BALLASTS FOR EXTERIOR INSTALLATIONS SHALL BE ZERO DEGREE RATED.

B. LUMINAIRES REQUIRING BALLASTS SHALL HAVE BALLASTS OF HIGH POWER FACTOR, ELECTRONIC EFFICIENT TYPE, MOTOROLA, ADVANCE, GE OR EQUAL.

C. LAMPS SHALL BE OF STANDARD WATTAGE, (32W/T8), 41000K, CRI85 MINIMUM.

D. LUMINAIRES IDENTIFED IN THE LUMINAIRE SCHEDULE ARE BASIS OF DESIGN ONLY. ALL OTHER MANUFACTURERS ARE APPROVED AS EQUALS.

6.0 WIRING DEVICES

A. ALL SWITCHES, RECEPTACLES, OUTLETS, ETC., SHALL BE CLASS III DIV 2 RATED AND INSTALLED COMPLETE WITH GROUNDING BOXES, ALL MOUNTING HARDWARE AND SMOOTH STAINLESS STEEL, SATIN FINISH, MINIMUM OF 0.035" THICK FACE PLATES (SIERRA BRAND), MATCHED TO THE DEVICE, INSTALLED UNLESS NOTED OTHERWISE ON THE DRAWINGS.

B. ALL RECEPTACLES SHALL BE INSTALLED AT 18 INCHES (TO CENTER) ABOVE FINISHED FLOOR (A.F.F.) OR ABOVE COUNTER BACK SPLASHES WHERE APPLICABLE. CONTRACTOR SHALL COORDINATE DEVICE LOCATIONS WITH CABINETRY PRIOR TO ROUGH-IN.

C. ALL SWITCHES SHALL BE INSTALLED AT 46 INCHES ABOVE FINISHED FLOOR (TO CENTER) UNLESS NOTED OTHERWISE ON THE DRAWINGS. CONTRACTOR SHALL COORDINATE SWITCH LOCATIONS WITH ARCHITECTURAL DRAWINGS, CABINETRY SUPPLIER AND/OR EXISTING CABINETRY PRIOR TO ROUGH-IN.

STANDARD NEMA CONFIGURATION AND EQUAL TO LEVITON, PASS AND SEYMOUR, AND HUBBELL UNLESS NOTED OTHERWISE ON THE DRAWINGS. E. ALL SWITCHES SHALL BE IVORY FINISH AND RATED AT 20 AMPS, 125/277 VOLTS, TYPE AS INDICATED ON

D. ALL RECEPTACLES SHALL BE IVORY FINISH AND RATED AT 20 AMPS, 125 VOLTS, GROUNDING TYPE, OF

THE DRAWINGS, AND EQUAL TO LEVITON, PASS AND SEYMOUR, AND HUBBELL UNLESS NOTED OTHERWISE ON THE DRAWINGS.

A. ALL DISCONNECTS SHALL BE NEMA RATED SIZED PER PLANS AND INSTALLED PER THE MANUFACTURER'S. RECOMMENDATIONS COMPLETE WITH LUGS, CONNECTORS, ETC., RATED FOR THE LOAD SERVED AND ENVIRONMENT IN WHICH INSTALLED OR AS INDICATED ON THE DRAWINGS.

B. FUSIBLE SWITCHES SHALL BE QUICK-MAKE, QUICK-BREAK WITH VISIBLE BLADES, HORSEPOWER RATED, PLUG-ON, WITH RATINGS AS INDICATED ON THE DRAWINGS. SWITCH HANDLES SHALL PHYSICALLY INDICATE "ON" AND "OFF" POSITIONS AND BE LOCKABLE IN THE "OFF" POSITION. SWITCH COVERS DOORS AND HANDLES SHALL BE INTERLOCKED TO PREVENT OPENING IN THE "ON" POSITION. SWITCHES SHALL BE INSTALLED COMPETE WITH ALL LUGS (INCLUDING DOUBLE LUGS AS NECESSARY), CONNECTORS, AND FUSE HOLDERS CAPABLE OF ACCEPTING THE APPROPRIATED CLASS OF FUSES.

E. FUSES SHALL BE BUSSMAN, "FRN-R" OR APPROVED EQUAL. FUSES SHALL BE SIZED PER THE EQUIPMENT NAME PLATE DATA.

8.0 PANELBOARDS (CIRCUIT BREAKER)

7.0 DISCONNECTS/STARTERS/CONTACTORS

A. PANELBOARD BUS STRUCTURE SHALL BE COPPER (ONLY) HAVING RATINGS AS INDICATED ON THE PANEL SCHEDULES OR THE DRAWINGS. ALL PANELBOARDS SHALL BE U.L. LISTED WITH A MINIMUM INTEGRATED SHORT CIRCUIT RATING AS SHOWN ON THE PLANS WITH ALL DEVICES.

B. CIRCUIT BREAKERS SHALL BE PLUG-ON FOR 240 VOLT RATED PANELBOARDS AND BE OF THE SAME MANUFACTURER AS THE PANELBOARD SUPPLIED. CIRCUIT BREAKERS SHALL BE OF THE THERMAL-MAGNETIC TYPE, SINGLE HANDLE FOR ALL POLES, WITH RATINGS AS INDICATED ON THE DRAWINGS. CIRCUIT BREAKERS SHALL HAVE A MINIMUM SHORT CIRCUIT RATING EQUAL TO THE PANELBOARD IN WHICH INSTALLED

C. PANELBOARDS SHALL BE ENCLOSED IN A STEEL CABINET PER U.L. STANDARD 50 WITH WIRING GUTTER SPACE PER U.L. STANDARD 67. THE BOX AND/OR FRONTS SHALL BE FULLY FINISHED WITH RUST-INHIBITING PRIMER AND BAKED ENAMEL FINISH. CIRCUIT BREAKER PANELBOARDS SHALL HAVE LOCKABLE DOORS WITH FLUSH CYLINDER TUMBLER-TYPE LOCK WITH DOOR IN DOOR PIANO HINGED STAINLESS STEEL DOOR. ALL PANELBOARDS SHALL BE KEYED ALIKE.

D. ALL PANELBOARDS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND BE COMPLETE WITH ALL NECESSARY MOUNTING HARDWARE, BACK BOXES, TRIM, LUGS AND WITH A COMPLETE, TYPED, PANELBOARD SCHEDULE MOUNTED ON THE INSIDE OF THE DOOR IN A DIRECTORY FRAME WITH CLEAR PLASTIC COVER INDICATING LOAD SERVED AND LOCATION. CONTRACTOR SHALL VERIFY THE MOUNTING LOCATION AND, IN THE CASE OF RECESSED PANELBOARDS, VERIFY WALL THICKNESS PRIOR TO ORDERING EQUIPMENT.

E. CIRCUIT BREAKER PANELBOARD SHALL BE MANUFACTURED BY GE, CUTLER HAMMER OR SIEMENS.

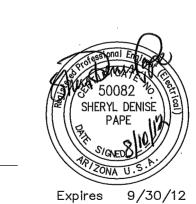
9.0 GROUNDING

A. ALL CONDUITS SHALL BE PROVIDED WITH A COPPER CONDUCTOR WITH GREEN COLOR INSULATION SIZED PER THESE CONSTRUCTION DOCUMENTS OR NEC, WHICH EVER IS GREATER.

B. ALL PANELBOARDS, CABINETS, EQUIPMENT, ENCLOSURES, AND COMPLETE CONDUIT SYSTEM SHALL BE GROUNDED SECURELY IN ACCORDANCE WITH PERTINENT SECTIONS OF NEC ARTICLE 250 AND THE AUTHORITY HAVING JURISDICTION. CONDUCTORS SHALL BE COPPER.

C. WHERE CONDUIT ENTERS OR LEAVES ANY ELECTRICAL ENCLOSURE WITH REMOVABLE COVER PLATES, PROVIDE CONDUIT GROUNDING BUSHINGS AND BONDING JUMPERS SIZED IN ACCORDANCE WITH NEC ARTICLE 250 BETWEEN THE GROUNDING BUSHINGS AND THE ENCLOSURE RIGID FRAME OR GROUND BUS.

D. ALL GROUNDING WITH THE WOOD SHOP SHALL COMPLY WITH THE REQUIREMENTS OF NEC ARTICLE



U OF A NO. PROJECT NO. **DESIGN BY:** DRAWN BY: CHECKED BY:

