

- LEGEND:
- FURNITURE BY PIMA COUNTY
- NOTES:
- FURNITURE PLAN TO BE USED FOR PROPER COORDINATION OF ELECTRICAL, DATA AND SWITCHING LAYOUT FOR SPACES SHOWN.
  - FURNITURE PLAN TO BE USED TO PROVIDE ADDITIONAL BLOCKING WHERE NOTED
  - REFER TO PLANS FOR CONTRACTOR PROVIDED BUILT IN MILLWORK AND COUNTER TOPS

1 INTERIOR FURNITURE PLAN

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

FURNITURE SHOWN  
FOR REFERENCE ONLY

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMIN WEST FIFTH FLOOR TI  
INTERIOR FURNITURE PLAN

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

SEAL

RECEIVED

46931  
EDUARDO ANTONIO  
VERGARA II  
REGISTERED PROFESSIONAL  
ARCHITECT  
ARIZONA U.S.A.

SEAL of PIMA COUNTY  
ARIZONA

REVISED

DATE:

DRWN BY: SS  
CKD BY: EAV  
DATE: 07/22/19  
SCALE: AS NOTED  
SHEET NO:

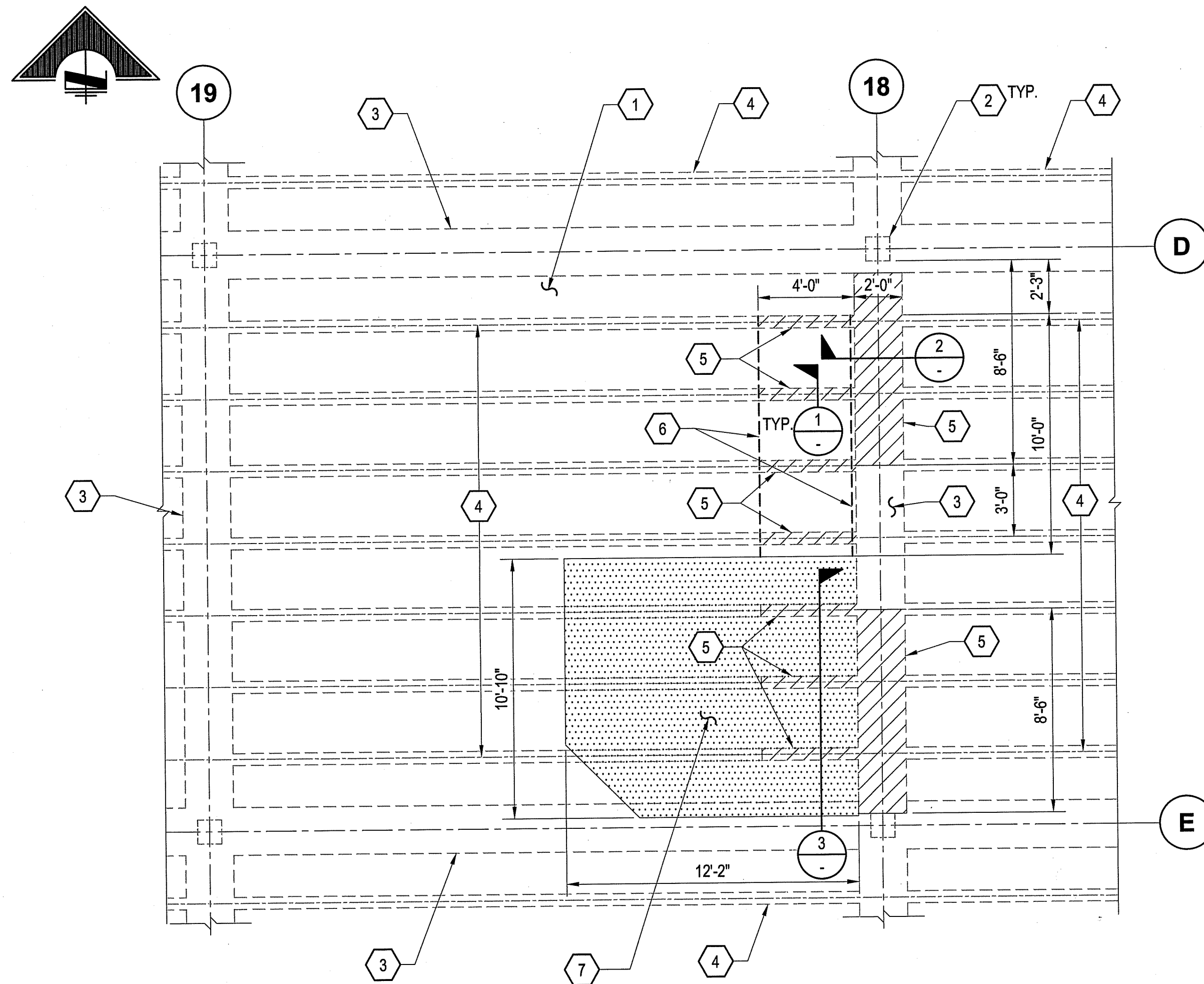
ID1.0  
17 OF 48  
W.O. NUMBER  
19\*10427

I. GENERAL

- A. GENERAL REFERENCE:  
ALL WORK MUST CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, 2018 EDITION WITH CITY OF TUCSON AMENDMENTS, AND OSHA, LATEST EDITION.
- B. THE GENERAL STRUCTURAL NOTES ARE AN INSTRUMENT OF THE STRUCTURAL DRAWINGS AND SHALL BE THOROUGHLY REVIEWED BY THE GENERAL CONTRACTOR AND ALL OTHER TRADES ASSOCIATED WITH THE PROJECT.
- C. OWNER SHALL CONTRACT A QUALIFIED THIRD-PARTY INSPECTION AGENCY APPROVED BY THE AUTHORITY HAVING JURISDICTION. THE INSPECTION AGENCY SHALL PREPARE A QUALITY ASSURANCE AND TESTING PROGRAM IN ACCORDANCE WITH CHAPTER 17 OF THE IBC 2018.
- D. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING WITH INSPECTION FREQUENCIES PER IBC 2018, TABLE 1705.3 W/ LOCAL AMENDMENTS.
- |   | YES                                 | NO                       | N/A                                 |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 1. CONCRETE   | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. CARBON FIBER REINFORCED POLYMER STRENGTHENING PER ACI 440.2R-17, CHAPTER 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
- E. DESIGN LOADS:
- ROOF LIVE LOAD - 20 PSF (REDUCIBLE) (ASSUMED)
  - FLOOR PARTITION LOAD - 15 PSF (NON-REDUCIBLE) - NOT APPLICABLE WHERE LIVE LOAD EXCEEDS OR EQUALS 80 PSF
  - FLOOR CONSTRUCTION LIVE LOAD - 20 PSF (NON-REDUCIBLE)
  - FLOOR SUPERIMPOSED DEAD LOAD - 20 PSF
  - FLOOR LIVE LOAD HALLWAYS - 80 PSF
  - FLOOR LIVE LOAD OFFICE SPACES - 50 PSF
  - FLOOR LIVE LOAD HIGH DENSITY FILING - 235 PSF (NON-REDUCIBLE)
  - FLOOR LIVE STANDARD FILING - 125 PSF (NON-REDUCIBLE)
  - BUILDING INFORMATION: OCCUPANCY CATEGORY II
  - WIND LOADS: 5 PSF ASD (8 PSF LRFD) INTERNAL PRESSURE
  - SEISMIC DESIGN: N/A
  - SOILS REPORT: N/A
- F. CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHOD OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO: BRACING, SHORING OF LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- G. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND ANY EXISTING STRUCTURES PRIOR TO START OF CONSTRUCTION. RESOLVE ANY DISCREPANCY WITH ARCHITECT.
- H. CONSTRUCTION MATERIAL SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOFS. LOAD SHALL NOT EXCEED THE CONSTRUCTION LIVE LOAD PER SQUARE FOOT.
- I. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDUM.
- J. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.
- K. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES NECESSARY IF CONTRACTOR CHOOSES AN OPTION AND CONTRACTOR SHALL COORDINATE ALL DETAILS.
- L. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT.
- M. TYPICAL DETAILS ARE NOT CUT ON DRAWINGS, BUT APPLY UNLESS NOTED OTHERWISE.
- N. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL STRUCTURAL NOTES AND SPECIFICATIONS, THE STRICTER REQUIREMENTS SHALL GOVERN. MODIFICATION OF CERTAIN CONNECTION DETAILS AS PART OF THE SHOP DRAWING REVIEW PROCESS SHALL BE ANTICIPATED BY THE CONTRACTOR.
- O. CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS PRIOR TO ORDERING MATERIALS AND STARTING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
- P. CALCULATIONS FOR DESIGN/BUILD ITEMS MUST BE SUBMITTED FOR REVIEW OF ARCHITECT/STRUCTURAL ENGINEER AND SHALL BEAR THE SEAL OF A CIVIL OR STRUCTURAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.
- Q. ALL CONSTRUCTION BRACING AND SHORING MUST BE DESIGNED BY THE CONTRACTOR.
- R. STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR ANY ASPECT OF THE GEOTECHNICAL DESIGN.
- S. INSPECTIONS REQUIRED FOR PERMITTING AS MANDATED BY IBC SECTION 110 AND NON-SPECIAL INSPECTIONS MANDATED BY THE MUNICIPALITY, COUNTY, OR AUTHORITY HAVING JURISDICTION WHICH ARE ALSO REQUIRED FOR BUILDING PERMITTING SHALL BE COORDINATED BY THE GENERAL CONTRACTOR. IF DISCREPANCIES OCCUR, NOTIFY THE ARCHITECT/STRUCTURAL ENGINEER OR RECORD FOR REVIEW.
- T. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO M3 ENGINEERING AND TECHNOLOGY FOR REVIEW PRIOR TO CONSTRUCTION. CONTRACTOR TO SUBMIT DOCUMENTATION SEALED BY A LICENSED CIVIL OR STRUCTURAL ENGINEER TO DEMONSTRATE THAT THE PROPOSED SUBSTITUTION IS EQUAL TO THE SPECIFIED DESIGN. SUBSTITUTIONS MAY BE PERMITTED PROVIDED THEY ARE APPROVED BY M3 ENGINEERING AND TECHNOLOGY IN WRITING.

II. CARBON FIBER REINFORCED POLYMER (CFRP)

- A. THE SURFACES TO RECEIVE THE COMPOSITE SHALL BE FREE FROM FIN, SHARP EDGES AND PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE INSTALLED CASING OR THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBERS. EXISTING UNEVEN SURFACES TO RECEIVE COMPOSITE SHALL BE FILLED WITH THE SYSTEM EPOXY FILLER OR OTHER MATERIAL APPROVED BY M3 ENGINEERING AND TECHNOLOGY IN WRITING. IN CASE LARGE VOIDS IN SURFACE FOUND; INFORM THE ENGINEER. FILLING DETAIL WILL BE PROVIDED. (SMALL PINHOLES OR MICRO BUBBLES IN THE CONCRETE SURFACE OR RESIN DO NOT REQUIRE SPECIAL DETAILING). THE CONTACT SURFACES SHALL HAVE NO FREE MOISTURE ON THEM AT THE TIME OF APPLICATION. IF MOISTURE IS PRESENT, USE THE MANUFACTURER SUGGESTED WET PRIME EPOXY, AS NEEDED.
- B. REPAIR ALL DAMAGED CONCRETE, SPALLING, AND IRREGULAR SURFACES TO CREATE A FLAT, OR SLIGHTLY CONVEX SURFACE, FILL SURFACES WITH THICKENED EPOXY TO ELIMINATE AIR SURFACE VOIDS GREATER THAN 1/2" DIAMETER.
- C. VERIFY AMBIENT AND CONCRETE TEMPERATURES. NO WORK SHALL PROCEED IF THE TEMPERATURE OF THE CONCRETE SURFACE IS LESS THAN 40 DEG F OR GREATER THAN 100 DEG. F, UNLESS PROVISIONS HAVE BEEN MADE TO ENSURE COMPONENTS' TEMPERATURE IS MAINTAINED WITHIN THIS RANGE OR THE RANGE SPECIFIED BY THE MANUFACTURER.
- D. APPLY SUBSEQUENT LAYERS, CONTINUOUSLY OR SPLICED, UNTIL DESIGNED NUMBER OF LAYERS IS ACHIEVED PER PROJECT DRAWINGS.
- E. DESIGN IS BASED ON UNIDIRECTIONAL CARBON FIBER FABRIC, WITH CURED COMPOSITE THICKNESS AS NOTED ON THE DRAWINGS. CARBON FIBER REINFORCING POLYMER (CFRP) PRODUCTS ON THIS DRAWING ARE PRODUCED BY DOWAKSA CARBONWRAP.
- F. USE CARBONBOND-200P TO SMOOTH THE SURFACE OF THE CONCRETE MEMBERS PRIOR TO APPLICATION OF CFRP, IF NEEDED.
- G. USE CARBONBOND-300 FOR SATURATING THE FABRIC AND BONDING TO CONCRETE MEMBERS SURFACE.
- H. INSTALLATION SHALL MEET THE REQUIREMENTS OF ACI440.2R-17. EXISTING SURFACE SHALL BE PREPARED AND CFRP PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- I. INSPECTION OF MATERIALS, TEMPERATURES & INSTALLATION & CURING SHALL BE PERFORMED DAILY AND RESULTS COMMUNICATED TO GENERAL CONTRACTOR IN TIMELY MANNER.
- J. ANY APPROVED PENETRATIONS IN THE CFRP SYSTEM MUST FIRST HAVE THE BOUNDARIES OF THE HOLE CUT IN THE CURED LAMINATE WITH A HIGH-SPEED CUTOFF WHEEL TO LIMIT THE DAMAGE TO THE SURROUNDING CFRP.
- K. POWDER ACTUATED FASTENERS ARE NOT PERMITTED TO PENETRATE THE CFRP SYSTEM.
- L. ALL CORNERS WHICH ARE TO HAVE CFRP WRAPPED OVER THEM SHALL BE RADIUS TO 1/2" MIN. PER ACI 440.2R-17 SEC. 6.4.2.1. THIS INCLUDES CORNERS WITH EXISTING CHAMFERS.

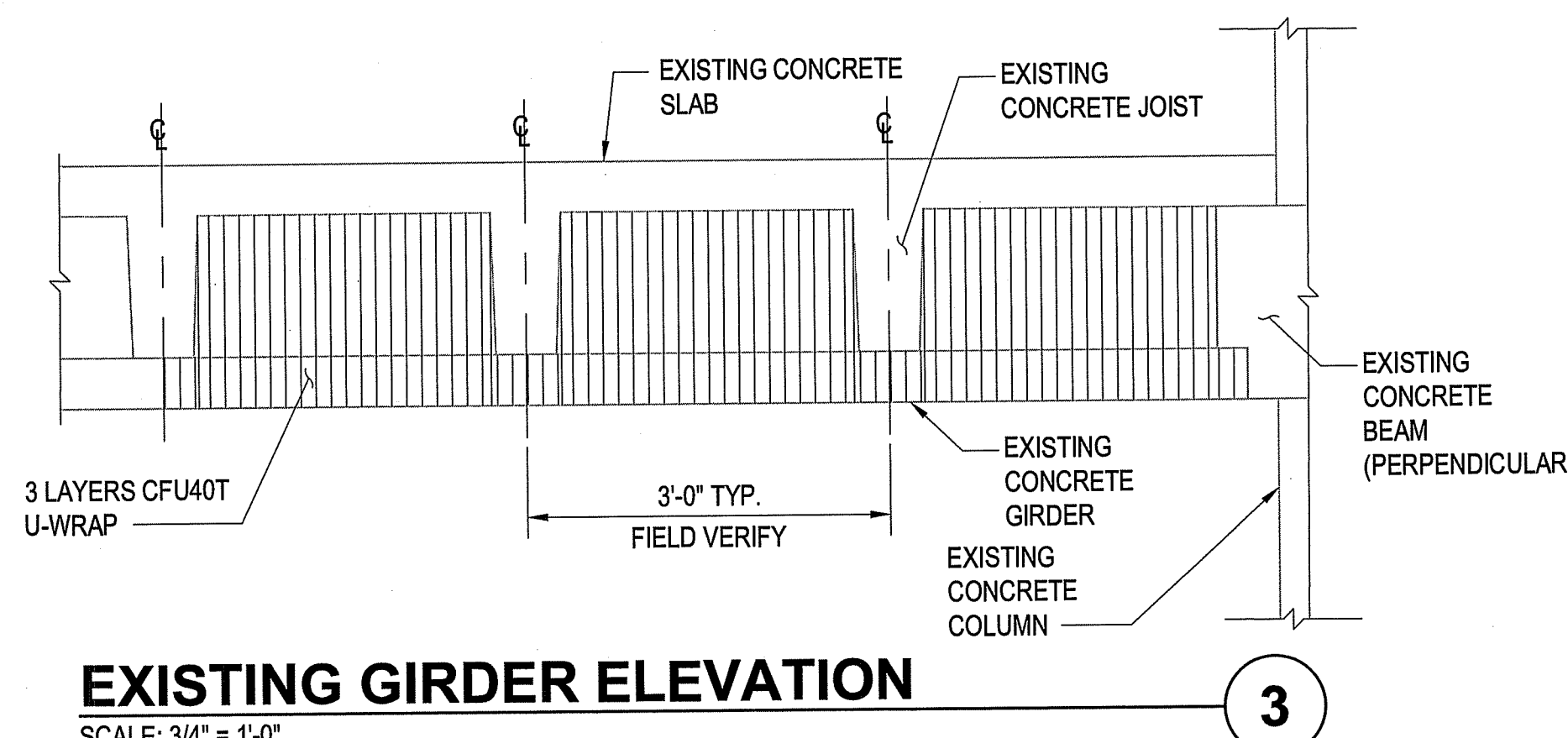


FLOOR PLAN

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

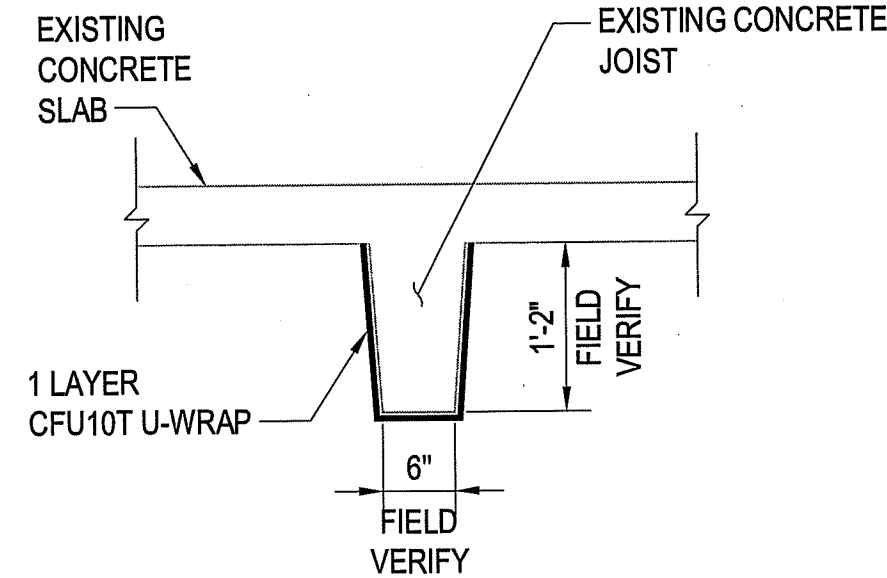
EXISTING GIRDER ELEVATION

SCALE: 3/4" = 1'-0"



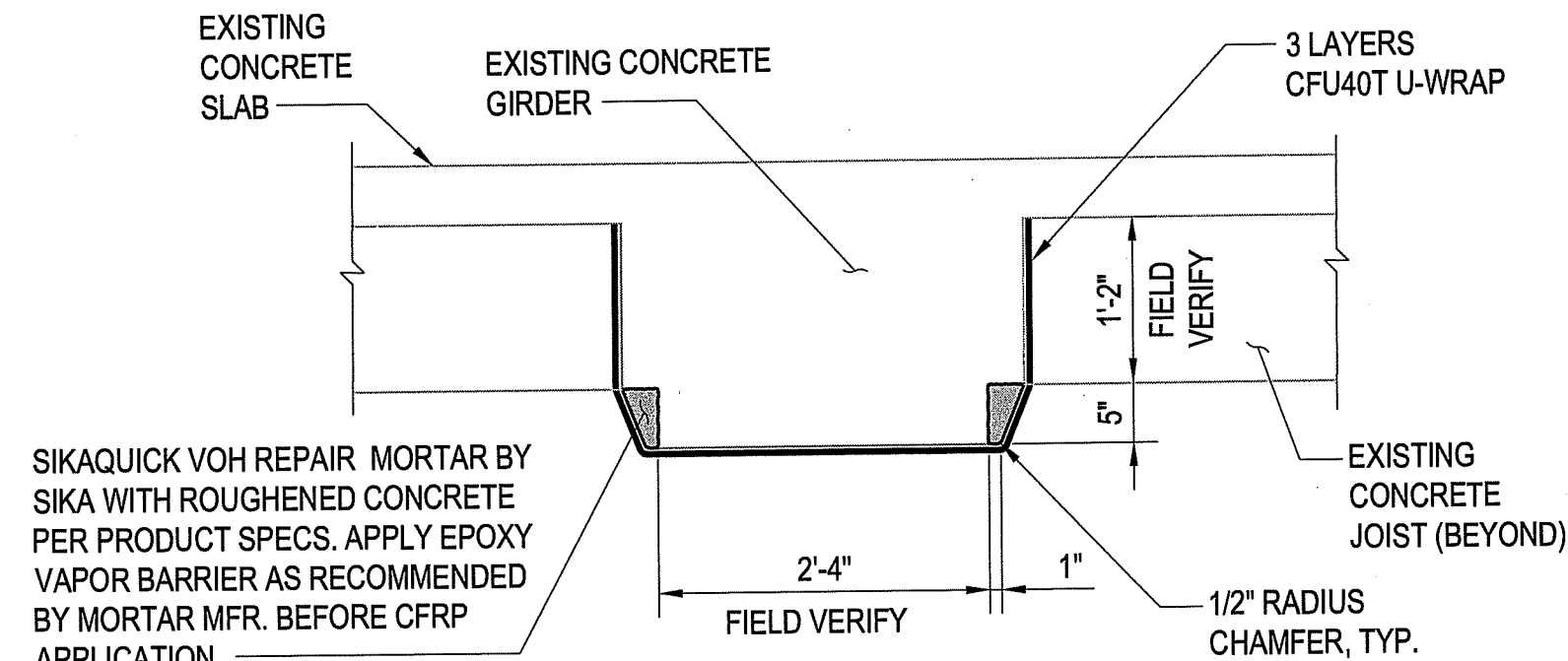
EXISTING JOIST CFRP STRENGTHENING

SCALE: 3/4" = 1'-0"



EXISTING GIRDER CFRP STRENGTHENING

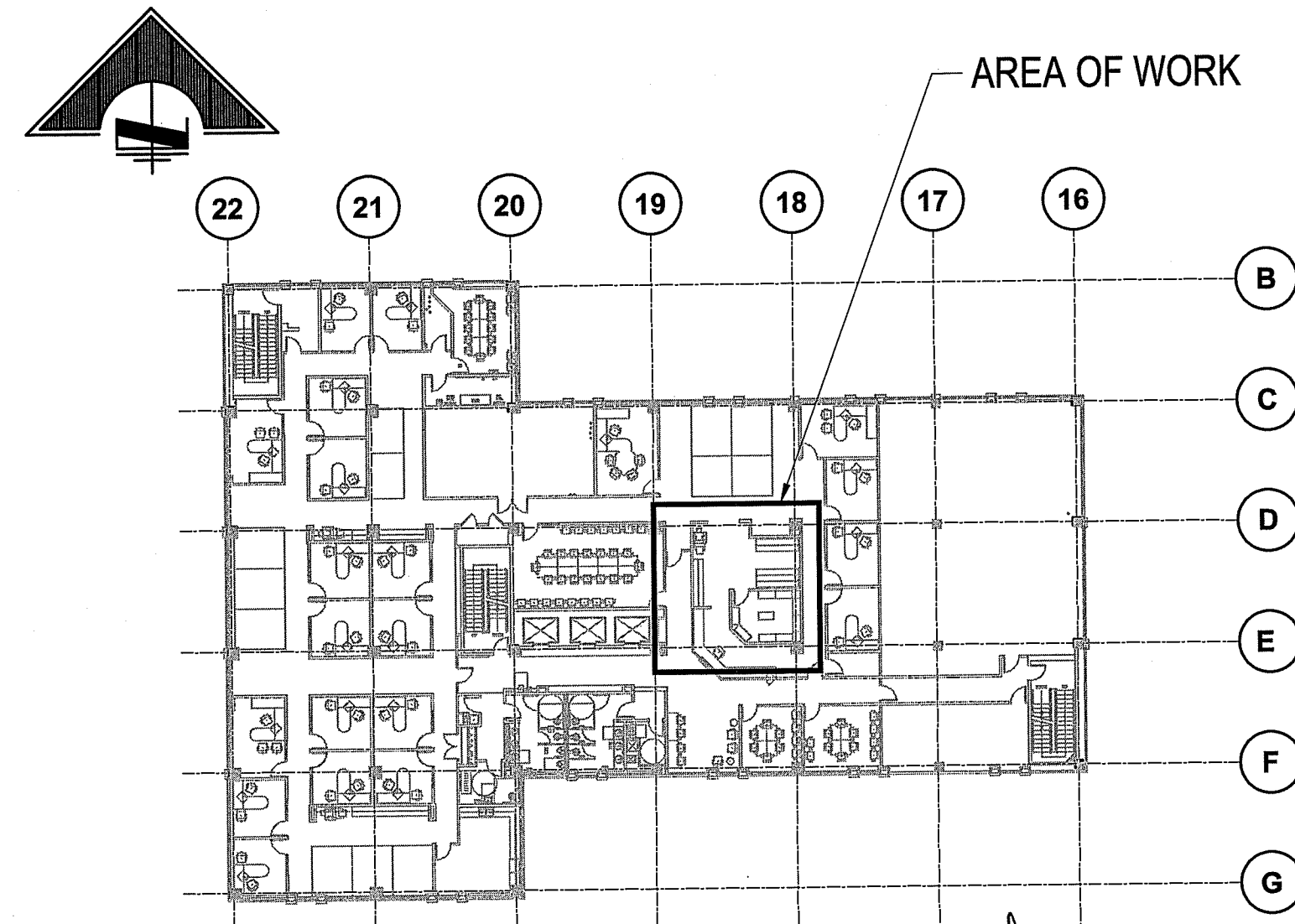
SCALE: 3/4" = 1'-0"



KEYNOTES

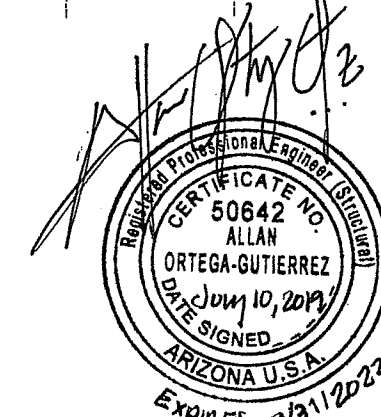
- EXISTING CONCRETE SLAB TO REMAIN.
- EXISTING CONCRETE COLUMN TO REMAIN.
- EXISTING CONCRETE BEAM TO REMAIN.
- EXISTING CONCRETE JOIST TO REMAIN.
- HATCHED AREA REPRESENTS CFRP STRENGTHENING EXTENT.
- LOCATION FOR HIGH-DENSITY FILING SYSTEM RAILS AND EXTENT AS INDICATED. WHEEL LOADS SHALL NOT EXCEED 725 LBS.
- HATCHED ZONE REPRESENTS STANDARD FILING AREA, SEE GENERAL NOTES DIVISION I, SECTION E, 9 FOR MAXIMUM LIVE LOAD PERMITTED.

KEYPLAN



ARCHITECTURE  
ENGINEERING  
CONSTRUCTION MANAGEMENT

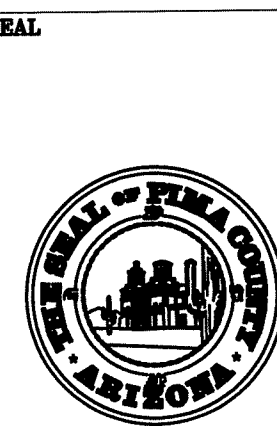
2051 W SUNSET RD.  
SUITE NO. 101  
TUCSON, ARIZONA 85704  
TEL. (520) 293-1488  
FAX. (520) 293-8349  
M3ENG.COM  
M3-PN180114.001



PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

Pima County Facilities Management  
150 W. Congress  
Tucson, AZ

ADMIN WEST FIFTH FLOOR TI  
CONCRETE FLOOR  
STRENGTHENING



REVS: DATE:

DRWN BY: JTA

CKD BY: AOG

DATE: JULY 10, 2019

SCALE: AS NOTED

SHEET NO:

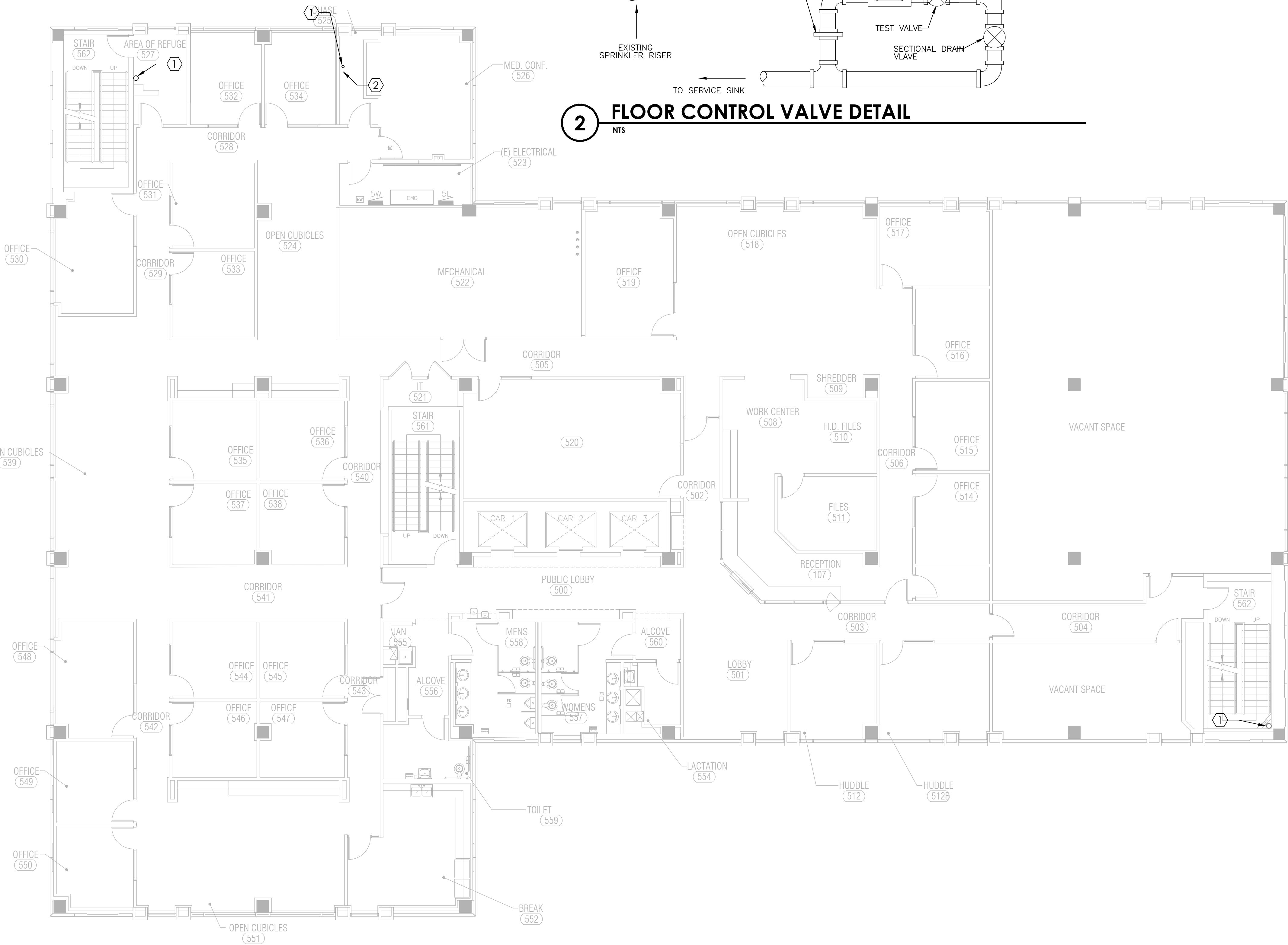
SB101

1 OF 1

W.O. NUMBER

19-10427





1 FIRE PROTECTION FLOOR 5 PLAN

1/8" = 1'-0"

2 FLOOR CONTROL VALVE DETAIL

NTS

GENERAL NOTES

- SYSTEM PIPING LAYOUT, INCLUDING PIPE SIZING, SHALL BE PERFORMED BY THE SPRINKLER CONTRACTOR. SEE SPECIFICATIONS.
- THIS BUILDING FLOOR SHALL BE PROTECTED WITH A HYDRAULICALLY CALCULATED WET PIPE SPRINKLER SYSTEM. ROOMS/SPACES SHALL BE CONSIDERED AS LIGHT HAZARD OCCUPANCIES UNLESS NOTED OTHERWISE.
- WET PIPE AUTOMATIC SPRINKLER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13, STATE OF ARIZONA FIRE MARSHALL'S OFFICE AND ALL LOCAL REQUIREMENTS.
- PENDANT SPRINKLER HEADS SHALL BE RECESSED TYPE WITH 2-PIECE ESCUTCHEON PLATES.
- EXISTING SPRINKLER RISER SUPPLIED FROM A FIRE PUMP LOCATED IN THE BASEMENT. SEE FIRE PUMP TEST DATA ON THIS SHEET.
- DEMO ALL (E) PIPING BACK TO (E) RISERS.
- FP PIPING SHALL NOT PASS THROUGH ELECTRICAL NOR TELECOM ROOMS.
- SEE SPECIFICATIONS FOR HAZARD CLASSES

KEYNOTES

- EXISTING 4" STANDPIPE RISER.
- PREFERRED LOCATION OF NEW SPRINKLER SYSTEM FLOOR CONTROL VALVE ASSEMBLY. SEE DETAIL ON THIS SHEET.

FIRE PUMP TEST DATA

BELOW DATA IS AS PROVIDED BY UNITED FIRE EQUIPMENT COMPANY. FULL TEST REPORTS ARE AVAILABLE FROM PIMA COUNTY.

TEST DATE: 03/07/2019

FIRE PUMP NAMEPLATE DATA

FLOW	HEAD	SPEED	HP	DRIVE
GPM	FT. H2O	RPM		
500	173	1770	5	ELECT.

TEST DATA

SPEED	DISCHARGE	SUCTION	NET HEAD	STREAMS			PERCENT CAPACITY	AMP	VOLTS
				NO.	SIZE	PITOT PRESSURE			
1790	150	65	85	N/A	N/A	N/A	CHURN	44	280
1780	125	55	70	2	1.75	16	100%	55	280
1778	95	25	70	2	1.75	16	150%	62	280

**GLHN**  
ARCHITECTS & ENGINEERS, INC.

2939 E. Broadway Blvd, Tucson, AZ 85716  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

ADMIN WEST FIFTH FLOOR TI  
FIRE PROTECTION PLAN



REV: DATE:

DRWN BY: AG  
CKD BY: JMJ  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO:

**F1.1**  
19 OF 48  
W.O. NUMBER  
**19\*10427**



MECHANICAL SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
	DUCT SECTION - SUPPLY
	DUCT SECTION - RETURN
	DUCT SECTION - EXHAUST
	DUCTWORK DIMENSIONS FOR SHEET METAL (WxD)
	DUCT RISE IN DIRECTION OF FLOW OR DROP (DN)
	FLEXIBLE DUCT CONNECTOR
	RADIUS DUCT ELBOW
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	MANUAL BALANCING DAMPER W/LOCKING QUADRANT
	FIRE DAMPER
	FIRE SMOKE DAMPER
	DAMPER AND LOCKING QUADRANT
	ELBOW AWAY
	ELBOW TOWARD
	SQUARE TO ROUND TRANSITION
	90 DEG. ELBOW TURNING DOWN
	90 DEG. ELBOW TURNING UP
	45 DEG. ELBOW TURNING DOWN
	45 DEG. ELBOW TURNING UP
	ROUND
	DETAIL NUMBER
	DETAIL LOCATION
	EQUIPMENT SYMBOL
	EQUIPMENT NUMBER
	CEILING SUPPLY GRILLE, RECTANGULAR OR SQUARE
	CEILING RETURN GRILLE, RECTANGULAR OR SQUARE
	CEILING EXHAUST GRILLE, RECTANGULAR OR SQUARE
	DIFFUSER ID TAG
	THROAT SIZE
	CFM

MECHANICAL SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
	DAMPER ACTUATOR
	PRESSURE INDICATOR
	DUCT SMOKE DETECTOR
	THERMOMETER
	THERMOSTAT
	TEMPERATURE AVERAGING ELEMENT
	TEMPERATURE INDICATOR/TEMPERATURE GAUGE
	TEMPERATURE SWITCH LOW (FREEZE STAT)
	TEMPERATURE WELLS WITH SENSOR
	AIR FLOW MEASURING STATION
	ELECTRONICALLY COMMUTATED MOTOR
	VARIABLE FREQUENCY DRIVE PANEL
	AIR VENT
	ARROW INDICATES DIRECTION OF FLOW
	AUTOMATIC AIR VENT WITH BALL VALVE
	CAPPED PIPE
	CkV CHECK VALVE
	CIRCUIT SETTER (BALANCING VALVE)
	CIRCULATING PUMP
	CONCENTRIC PIPE REDUCER
	DRAIN VALVE W/BALL VALVE - HOSE THREAD
	ECCENTRIC INCREASER/DECREASER
	FLANGE
	FLEXIBLE PIPE CONNECTION
	GAUGE WITH GAUGE COCK
	2-WAY MANUAL SHUTOFF VALVE
	2-WAY MOTORIZED VALVE
	3-WAY MANUAL SHUTOFF VALVE
	3-WAY MOTORIZED VALVE
	PETES PLUG
	PIPE DOWN
	PIPE TEE
	PIPE UP
	STOP CHECK VALVE
	STRAINER WITH BLOW DOWN VALVE & HOSE CONNECTION
	TEE DOWN
	TEE UP
	UNION

GENERAL SYMBOLS LEGEND																															
	POC	POINT OF CONNECTION (NEW TO EXISTING)																													
		DEMOLITION (TO BE REMOVED)																													
		SECTION NUMBER	SHOWN ON SHEET NUMBER																												
		DIMENSION LINE																													
		DETAIL NUMBER	SHOWN ON SHEET NUMBER																												
		COLUMN NUMBER OR LETTER																													
CONTROL POINTS																															
<p><u>POINT SYMBOLS</u></p>																															
<p><b>DATA TYPES</b></p> <table><tr><td>AI</td><td>ANALOG INPUT</td><td>BO</td><td>BINARY OUTPUT</td></tr><tr><td>AO</td><td>ANALOG OUTPUT</td><td>COMM</td><td>COMMUNICATION (DATA)</td></tr><tr><td>BI</td><td>BINARY INPUT</td><td></td><td></td></tr></table>				AI	ANALOG INPUT	BO	BINARY OUTPUT	AO	ANALOG OUTPUT	COMM	COMMUNICATION (DATA)	BI	BINARY INPUT																		
AI	ANALOG INPUT	BO	BINARY OUTPUT																												
AO	ANALOG OUTPUT	COMM	COMMUNICATION (DATA)																												
BI	BINARY INPUT																														
<p><b>HARDWARE TYPES</b></p> <table><tr><td>ALA</td><td>ALARM</td><td>POS</td><td>POSITION</td></tr><tr><td>D</td><td>DATA</td><td>T</td><td>TEMP</td></tr><tr><td>DP</td><td>DIFFERENTIAL PRESS</td><td>TAL</td><td>TEMP ALARM LOW</td></tr><tr><td>F</td><td>FLOW</td><td>SPD</td><td>SPEED</td></tr><tr><td>H</td><td>HUMIDITY</td><td>SS</td><td>START/STOP</td></tr><tr><td>P</td><td>PRESS</td><td>ST</td><td>STATUS</td></tr><tr><td>PAH</td><td>PRESS ALARM HIGH</td><td></td><td></td></tr></table>				ALA	ALARM	POS	POSITION	D	DATA	T	TEMP	DP	DIFFERENTIAL PRESS	TAL	TEMP ALARM LOW	F	FLOW	SPD	SPEED	H	HUMIDITY	SS	START/STOP	P	PRESS	ST	STATUS	PAH	PRESS ALARM HIGH		
ALA	ALARM	POS	POSITION																												
D	DATA	T	TEMP																												
DP	DIFFERENTIAL PRESS	TAL	TEMP ALARM LOW																												
F	FLOW	SPD	SPEED																												
H	HUMIDITY	SS	START/STOP																												
P	PRESS	ST	STATUS																												
PAH	PRESS ALARM HIGH																														
ABBREVIATIONS																															
ABBR	ABBREVIATION	FT	FOOT/FEET																												
A/E	ARCHITECT / ENGINEER	GA	GAUGE, GAGE																												
AD	ACCESS DOOR	GAL	GALLON																												
AF	AFTER FILTER	GPH	GALLONS PER HOUR																												
AFF	ABOVE FINISHED FLOOR	GPM	GALLONS PER MINUTE																												
AHU	AIR HANDLING UNIT	HB	HOSE BIBB																												
AMPS	AMPERES	HC	HEATING COIL																												
APD	AIR PRESSURE DROP	HP	HORSE POWER																												
APPX	APPROXIMATE	HR	HOUR																												
ARCH	ARCHITECTURAL	HSTAT	HUMIDISTAT																												
AV	AIR VENT	HWC	HOT WATER COIL																												
AVG	AVERAGE	HHWR	HEATING HOT WATER RETURN																												
BAS	BLDG. AUTOMATION SYSTEM	HHWS	HEATING HOT WATER SUPPLY																												
BDD	BACKDRAFT DAMPER	HZ	HERTZ																												
BHP	BRAKE HORSEPOWER	IAQ	INDOOR AIR QUALITY																												
BOD	BOTTOM OF DUCT	ID	INSIDE DIAMETER																												
BTU	BRITISH THERMAL UNIT	IN	INCH																												
BTUH	BRITISH THERMAL UNIT PER HOUR	IN WC	INCH WATER COLUMN																												
CC	COOLING COIL	IN WG	INCH WATER GAUGE																												
CD	CONDENSATE DRAIN	KWH	KILOWATT HOUR																												
CFM	CUBIC FEET PER MINUTE	LAT	LEAVING AIR TEMPERATURE																												
CHWR	CHILLED WATER RETURN	LBS	POUNDS																												
CHWS	CHILLED WATER SUPPLY	LVR	LOUVER																												
CL	CENTERLINE	LWT	LEAVING WATER TEMPERATURE																												
CLG	COOLING	MA	MIXED AIR																												
CP	CONDENSATE PUMP	MAT	MIXED AIR TEMPERATURE																												
CV	CONTROL VALVE	MAX	MAXIMUM																												
D	DRAIN	MBD	MANUAL BALANCING DAMPER																												
DB	DRY-BULB TEMPERATURE	MBH	1000 BTUH																												
DCW	DOMESTIC COLD WATER	MERV	MINIMUM EFFICIENCY REPORTING VALUE																												
DDC	DIRECT DIGITAL CONTROLS	MIN	MINIMUM																												
DEG	DEGREE	(N)	NEW																												
DIA	DIAMETER	N/A	NOT APPLICABLE																												
DN	DOWN	NC	NOISE CRITERIA																												
DP	DIFFERENTIAL PRESSURE	NC	NORMALLY CLOSED																												
(E)	EXISTING	NO	NORMALLY OPEN																												
EA	EXHAUST AIR	NOM	NOMINAL																												
EAT	ENTERING AIR TEMPERATURE	NPS	NOMINAL PIPE SIZE																												
EF	EXHAUST FAN	NTS	NOT TO SCALE																												
EG	EXHAUST GRILLE	OA	OUTSIDE AIR																												
ESP	EXTERNAL STATIC PRESSURE	OBD	OPPOSED BLADE DAMPER																												
EWT	ENTERING WATER TEMPERATURE	OC	ON CENTER																												
F	FAHRENHEIT	OD	OUTSIDE DIAMETER																												
FSD	COMBINATION FIRE SMOKE DAMPER	OFCl	OWNER FURNISHED CONTRACTOR																												
FA	FIRE ALARM	INSTALLED	INSTALLED																												
FCU	FAN COIL UNIT	OFOI	OWNER FURNISHED OWNER																												
FD	FIRE DAMPER	INSTALLED	INSTALLED																												
FF	FINAL FILTER	PF	PRE-FILTER																												
FFM	FEET PER MINUTE	PG	PRESSURE GAUGE																												
FPS	FEET PER SECOND																														

ABBREVIATIONS	
PH	PHASE
PHC	PREHEAT COIL
POC	POINT OF CONNECTION
PPM	PARTS PER MILLION
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
PSIG	POUNDS PER SQUARE INCH – GAUGE
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
REA	RELIEF AIR
RF	RETURN FAN
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SAG	SUPPLY AIR GRILLE
SAT	SUPPLY AIR TEMPERATURE
SD	SMOKE DAMPER
SENS	SENSIBLE COOLING CAPACITY
SF	SUPPLY FAN
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SQFT	SQUARE FOOT (FEET)
SS	STAINLESS STEEL
TAB	TESTING, ADJUSTING, AND BALANCING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT (EXCLUDING INSULATION WRAP)
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TU	TERMINAL UNIT
TYP	TYPICAL
V	VOLTAGE
VA	VOLT AMPERE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
ADDITIONAL NOTES	
<p><b>COMMISSIONING</b></p> <p>COMMISSIONING OF SYSTEMS SHALL BE PROVIDED UNDER THIS PROJECT TO MEET THE MINIMUM REQUIREMENTS OF IECC-2019. ITEMS TO BE PROVIDED INCLUDE THE COMMISSIONING PLAN, PRELIMINARY COMMISSIONING REPORT, AND FINAL COMMISSIONING REPORT. ALL REQUIRED COMMISSIONING DOCUMENTS SHALL BE PROVIDED TO OWNER WITHIN 90 DAYS OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY AND SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION PER IECC REQUIREMENTS. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.</p> <p><b>PRE-DEMO TAB SURVEYS</b></p> <p>PRE-DEMOLITION TAB SURVEYS WILL BE REQUIRED IN THIS PROJECT TO MITIGATE THIS WORK'S IMPACT ON OTHER FLOORS. SEE SOW DESCRIPTIONS ELSEWHERE IN THESE DOCUMENTS (E.G. DEMOLITION SHEETS).</p> <p><b>GENERAL MECHANICAL NOTES</b></p> <p>MECHANICAL WORK SHALL CONSIST OF LABOR, MATERIALS AND EQUIPMENT REQUIRED TO FURNISH AND INSTALL MECHANICAL SYSTEMS AS SPECIFIED AND SHOWN IN THE CONTRACT DOCUMENTS.</p> <p>ALL WORK MUST COMPLY WITH THE PIMA COUNTY DESIGN STANDARDS AND ALL ADOPTED CODES AND STANDARDS. THIS INCLUDES, BUT IS NOT LIMITED TO 2018 I-CODES. ADDITIONALLY ALL WORK MUST COMPLY WITH THE FOLLOWING: ASHRAE STANDARD 90.1, AIR CONDITIONING AND REFRIGERATION INSTITUTE, ASSOCIATED AIR BALANCE COUNCIL, AMERICAN WATER WORKS ASSOCIATION, ASHRAE STANDARD 62.1, 2016.</p> <p>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.</p> <p>ALL WORK THAT WILL IMPACT ADDITIONAL FLOORS SHALL BE COORDINATED WITH PIMA COUNTY FACILITIES MANAGEMENT DEPARTMENT (IN WRITING), 7 DAYS PRIOR TO SCHEDULED WORK. WORK SHALL BE SCHEDULED AFTER HOURS, WEEKENDS AND/OR HOLIDAYS UNLESS OTHERWISE ARRANGED WITH PCFM. APPROVAL FROM PCFM SHALL BE OBTAINED (IN WRITING) PRIOR TO START OF WORK.</p> <p>MAXIMUM DEVELOPED LENGTH OF FLEX DUCTS = 5 FT.</p>	
<p><b>GLHN</b></p> <p>ARCHITECTS &amp; ENGINEERS, INC</p> <p>2939 E. Broadway Blvd, Tucson, AZ 85714 T 520.881.4546 F 520.795.1822 GLHN.com</p>	

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

**ADMINISTRATION WEST BUILDING**

**150 WEST CONGRESS**

**TUCSON, AZ**

SEAL

REVIEWS: DATE:

DRWN BY: **AG**

CKD BY: **JMZ**

DATE: **2019/07/22**

SCALE: **NTS**

SHEET NO:

**M1.0**

**20OF 48**

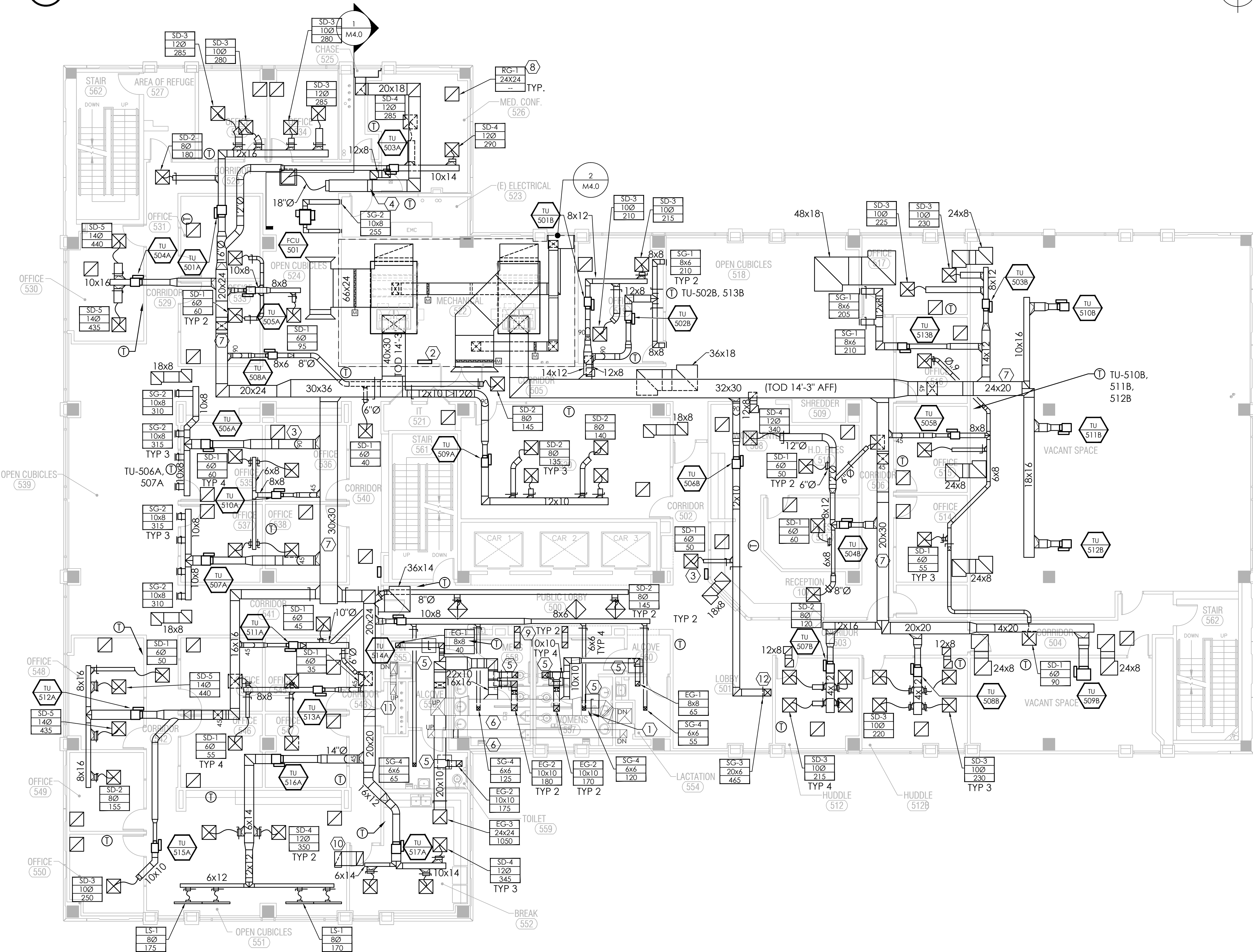
W.O. NUMBER

**19\*10427**



2 MECHANICAL FLOOR 5 DEMOLITION PLAN

1/8" = 1'-0"



1 MECHANICAL FLOOR 5 NEW WORK PLAN

1/8" = 1'-0"

TAB SURVEY REQUIREMENTS

PRIOR TO ANY HVAC MODIFICATION WORK, THE BELOW TAB SURVEY SCOPE SHALL BE PERFORMED AND THE RESULTS REPORTED TO THE OWNER AND ENGINEER.

1. PROVIDE TRAVERSE TO DETERMINE TOTAL AIRFLOW AND VELOCITY IN RISER DUCT SERVING FLOORS 1 AND 2.
2. PROVIDE TRAVERSE OF TO DETERMINE TOTAL AIRFLOW VOLUME SERVING FLOORS 1, 2, AND 5.
3. PROVIDE ROOFTOP FAN TEST FOR EXHAUST FAN SERVING FLOORS 1, 2, AND 5 INCLUDING BUT NOT LIMITED TO TOTAL AIRFLOW, FAN/MOTOR RPM, MOTOR NAMEPLATE AND RUNNING AMPS, AND NAMEPLATE DATA.

GENERAL NOTES

- A. CONTRACTOR SHALL COORDINATE LOCATION OF ABOVE CEILING UNITS WITH CEILING GRID SUCH THAT ACCESS TO THE UNIT IS NOT OBSTRUCTED BY THE CEILING GRID OR OTHER IN-CEILING ELEMENTS. COORDINATE REQUIREMENTS WITH ALL TRADES.
- B. ALL HVAC COMPONENTS THAT UTILIZE ENERGY SHALL HAVE A MINIMUM 30X30" SERVICE PLANE PER IMC-2018 SECTION 306.1 REQUIREMENTS. COORDINATE INSTALLATIONS WITH ALL TRADES.
- C. ALL ABOVE CEILING HVAC EQUIPMENT (E.G. TUs AND FCU) SHALL INCLUDE LABELS ON THE CEILING GRID NEAR THE MAIN ACCESS LOCATION INDICATING THE UNIT MARK. COORDINATE WITH COUNTY LABELING REQUIREMENTS.
- D. SEE SCHEDULES AND DETAILS FOR TERMINAL UNIT AND TERMINAL UNIT RUNOUT SIZES AND ARRANGEMENTS.
- E. MAXIMUM LENGTH OF FLEX TO AIR DEVICES 6 FT INCLUDING HORIZONTAL AND VERTICAL. TOTAL BENDS IN FLEX DUCT SHALL NOT EXCEED 90 DEGREES.
- F. ALL PLENUM RETURN GRILLES TO RECEIVE RETURN LINED RETURN BOOT. SEE DETAILS SHEET FOR FURTHER INFORMATION.
- G.

DEMOLITION KEYNOTES

1. EXISTING 14X12 DUCT STACKED ON TOP OF ADDITIONAL 14X12 DUCT. BOTTOM DUCT TO REMAIN. TOP DUCT TO BE REMOVED.
2. REMOVE 14X12 DUCT THROUGH STRUCTURE ABOVE. CAP AND SEAL DUCT JUST ABOVE FLR. 6 OPENING. SEAL OPENING TO MAINTAIN FIRE/SMOKE RATING. COORDINATE WITH OWNER FOR ACCESS TO FLR. 6.
3. REMOVE 14X12 DUCT THROUGH FLR. PENETRATION TO FLR 4. SEAL OPENING TO MAINTAIN FIRE/SMOKE RATING. COORDINATE WITH OWNER FOR ACCESS TO FLR. 4 RISER CLOSET.
4. ABANDONED 10X22 EXHAUST DUCT TO BE REMOVED THROUGH STRUCTURE ABOVE. CAP AND SEAL DUCT JUST ABOVE FLR. 6 OPENING. SEAL OPENING TO MAINTAIN FIRE/SMOKE RATING. COORDINATE WITH OWNER FOR ACCESS TO FLR. 6
5. EXISTING 10X22 EXHAUST DUCT TRANSITIONING TO 10X30 AT FLR. REMOVE DUCT THROUGH FLOOR PENETRATION TO FLR. 4. SEAL OPENING TO MAINTAIN FIRE/SMOKE RATING. COORDINATE WITH OWNER FOR ACCESS TO FLR. 4 RISER CLOSET.
6. REMOVE EXISTING FLR. 5 EXHAUST TAKEOFFS BACK TO MAIN. PATCH OPENINGS. SEE NEW WORK FOR NEW FLR. 5 SERVICE DUCTWORK.
7. EXHAUST DUCT TO REMAIN. 18X10 ABOVE TRANSITIONING TO 20X12 AT FLR.
8. EXHAUST DUCT TO REMAIN. DUCT IS 30X24 AT WEST PENETRATION FROM FLR. 6; 26X24 AT EAST PENETRATION DOWN TO FLR. 4.

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW BALANCING DAMPER ON EXISTING 26X24 EXHAUST DUCT. FIELD VERIFY SIZE PRIOR TO PROCUREMENT. BRANCH TO LOWER FLOORS TO BE SET BACK TO PRE-DEMOLITION AIRFLOW RATE DURING FINAL TAB.
2. SUGGESTED LOCATION OF MAIN CONTROL ENCLOSURE AND POWER TRANSFORMER. CONTROLS CONTRACTOR SHALL PROPOSE FINAL LOCATION OF OWNER AND ENGINEER APPROVAL. COORDINATE LOCATION AND CLEARANCE REQUIREMENTS WITH ALL OTHER TRADES.
3. SUGGESTED LOCATION OF ABOVE CEILING TERMINAL UNIT POWER TRANSFORMER. CONTROLS CONTRACTOR SHALL PROPOSE FINAL LOCATION OF OWNER AND ENGINEER APPROVAL. COORDINATE LOCATION AND CLEARANCE REQUIREMENTS WITH ALL OTHER TRADES.
4. NEW 20X18 ADJUSTABLE BAROMETRIC BACKDRAFT DAMPER IN RELIEF AIR DUCT. PROVIDE WITH 12X12 ACCESS DOOR IN BOTTOM OF DUCT FOR DAMPER MAINTENANCE AND ADJUSTMENT.
5. ACCESS PANEL IN HARD CEILING, MINIMUM 24X24, COORDINATE WITH ARCHITECTURAL DRAWINGS.
6. EXISTING EXHAUST DUCT TO REMAIN.
7. SUGGESTED LOCATION OF DUCT STATIC PRESSURE SENSOR. CONTROLS CONTRACTOR SHALL SUBMIT FINAL LOCATION TO OWNER AND ENGINEER FOR APPROVAL.
8. ALL RETURN AIR DEVICES TO BE TYPE RG-1 UNLESS OTHERWISE INDICATED.
9. 10X10 CEILING TO CEILING TRANSFER DUCT WITH TWO RG-3 DEVICES. SEE MECHANICAL DETAILS FOR FURTHER REQUIREMENTS.
10. 24X12 CEILING TO CEILING TRANSFER DUCT WITH TWO RG-2 DEVICES. OFFSET DUCT IN VERTICAL AS NECESSARY TO MATCH TO CEILING GRIDS SEE MECHANICAL DETAILS FOR FURTHER REQUIREMENTS.
11. EXISTING EXHAUST DUCT TO REMAIN. PROVIDE SHEET METAL CAP AND SEAL ON ABANDONED 8" TAP ON WEST SIDE OF HORIZONTAL DUCT.
12. 12X10 SUPPLY DUCT DOWN TO SG-3 AIR DEVICE IN SOFFIT, PROVIDE SHEET METAL PLENUM ON BACK OF AIR DEVICE FOR CONNECTION.

**GLHN**  
ARCHITECTS & ENGINEERS, INC.  
2939 E. Broadway Blvd., Tucson, AZ 85716  
T 520.881.4546 F 520.795.1822 GLHN.com

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ



REVISED: DATE:

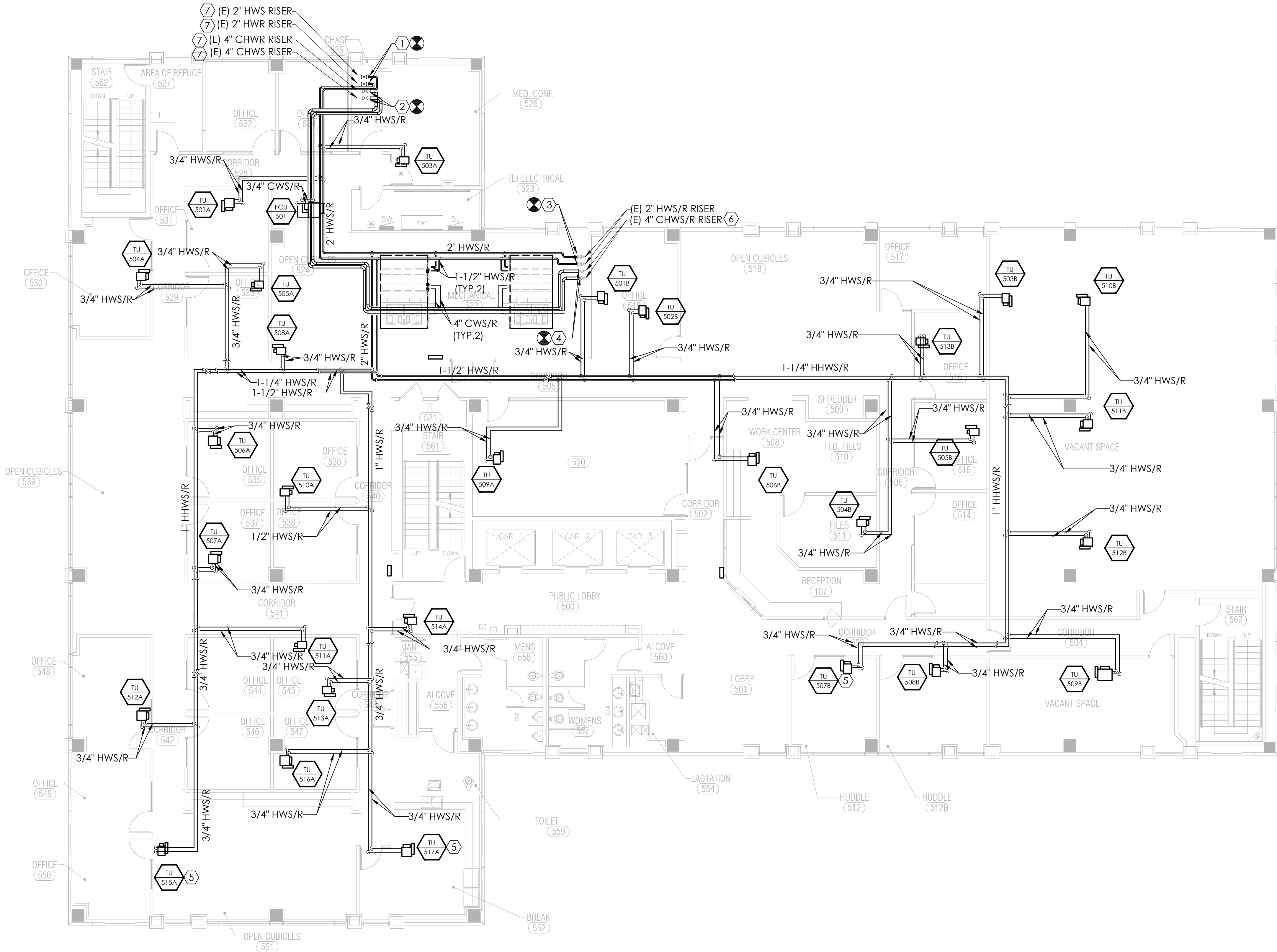
DRWN BY: OG  
CKD BY: JMJ  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO:

**M1.1**  
210F 48  
W.O. NUMBER  
19\*10427

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL DEMO AND NEW WORK

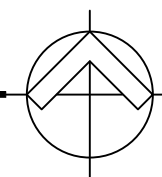




- KEYNOTES**
1. CONNECT (N) 2" HHWS/R TO (E) 2" SHUTOFF VALVES
  2. CONNECT (N) 4" CHWS/R TO (E) 4" SHUTOFF VALVES
  3. CONNECT (N) 2" HHWS/R TO (E) 2" SHUTOFF VALVES
  4. CONNECT (N) 4" CHWS/R TO (E) 4" SHUTOFF VALVES
  5. PROVIDE TERMINAL UNIT WITH 3-WAY CONTROL VALVE TO BETTER ENSURE BRANCH CIRCULATION. PROVIDE WITH CIRCUIT SETTER IN BYPASS AND SET AT 0.5 GPM. SEE DETAILS.
  6. RE-INSULATE (E) CHWS/R RISER AND BRANCH PIPING WHERE INSULATION IS MISSING (APPROX. 15 FT. EACH PIPE, FIELD VERIFY LENGTHS)
  7. RE-INSULATE (E) CHWS/R AND HHWS/R RISER PIPING WHERE INSULATION IS MISSING (APPROX. 12 FT. EACH PIPE, FIELD VERIFY LENGTHS)

**1 MECHANICAL PIPING FLOOR 5 NEW WORK PLAN**

1/8" = 1'-0"



**GLHN**  
ARCHITECTS & ENGINEERS, INC.  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

**ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ**

**ADMIN WEST FIFTH FLOOR TI  
MECHANICAL PIPING NEW WORK**

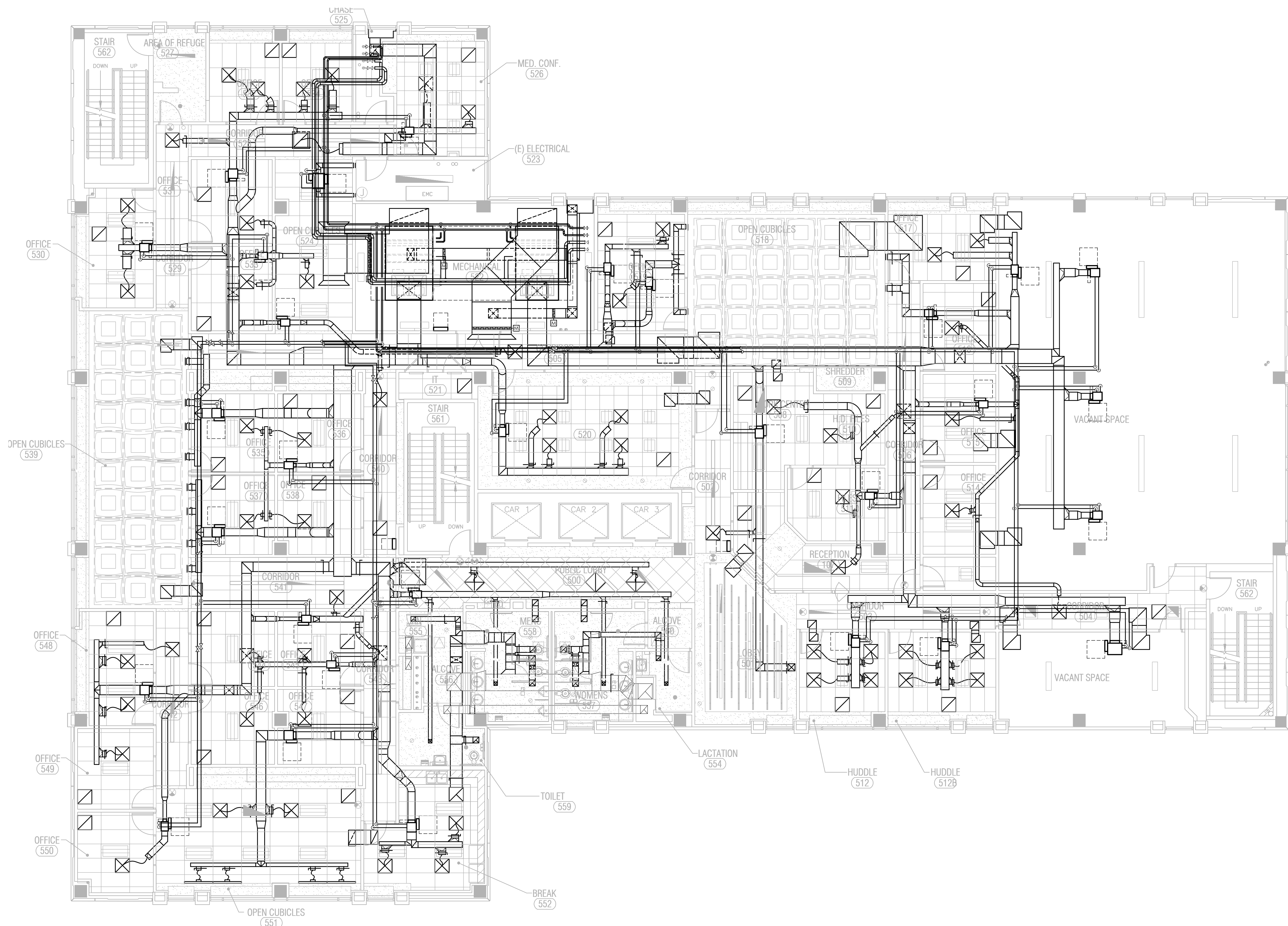


REVS: DATE:

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M1.2**  
**22 OF 48**  
W.O. NUMBER  
**19\*10427**

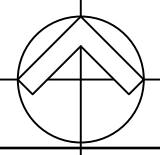




GENERAL NOTES

- A. CONTRACTOR SHALL COORDINATE LOCATION OF ABOVE CEILING UNITS WITH CEILING GRID SUCH THAT ACCESS TO THE UNIT IS NOT OBSTRUCTED BY THE CEILING GRID OR OTHER IN-CEILING ELEMENTS. COORDINATE REQUIREMENTS WITH ALL TRADES.
- B. ALL HVAC COMPONENTS THAT UTILIZE ENERGY SHALL HAVE A MINIMUM 30X30" SERVICE PLANE PER IMC-2018 SECTION 306.1 REQUIREMENTS. COORDINATE INSTALLATIONS WITH ALL TRADES.
- C. ALL ABOVE CEILING HVAC EQUIPMENT (E.G. TUs AND FCU) SHALL INCLUDE LABELS ON THE CEILING GRID NEAR THE MAIN ACCESS LOCATION INDICATING THE UNIT MARK. COORDINATE WITH COUNTY LABELING REQUIREMENTS.
- D. SEE SCHEDULES AND DETAILS FOR TERMINAL UNIT AND TERMINAL UNIT RUNOUT SIZES AND ARRANGEMENTS.
- E. MAXIMUM LENGTH OF FLEX TO AIR DEVICES 6 FT INCLUDING HORIZONTAL AND VERTICAL. TOTAL BENDS IN FLEX DUCT SHALL NOT EXCEED 90 DEGREES.
- F. ALL PLENUM RETURN GRILLES TO RECEIVE RETURN LINED RETURN BOOT. SEE DETAILS SHEET FOR FURTHER INFORMATION.

1 MECHANICAL FLOOR 5 COORDINATION PLAN  
1/8" = 1'-0"



**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

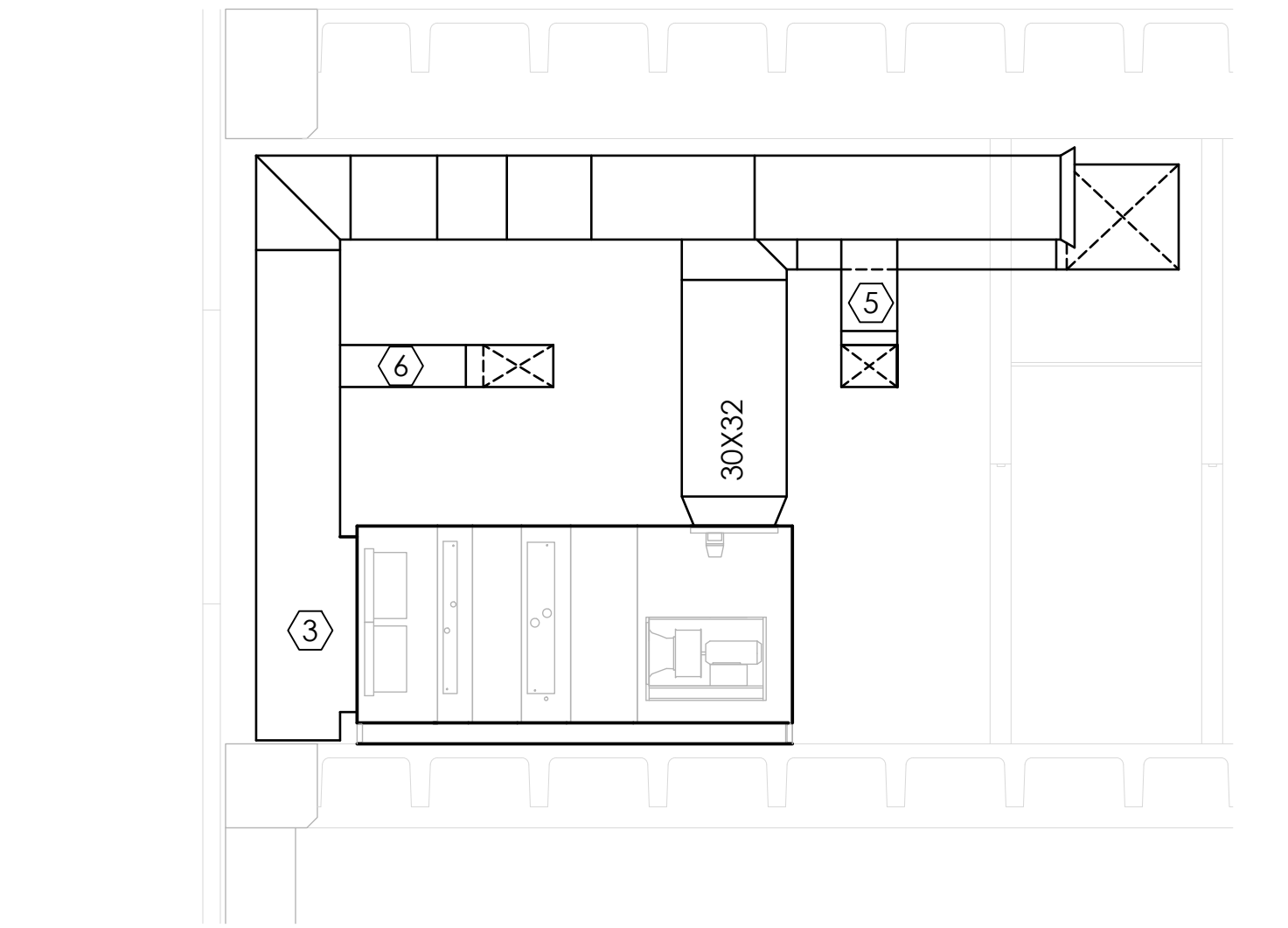
PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

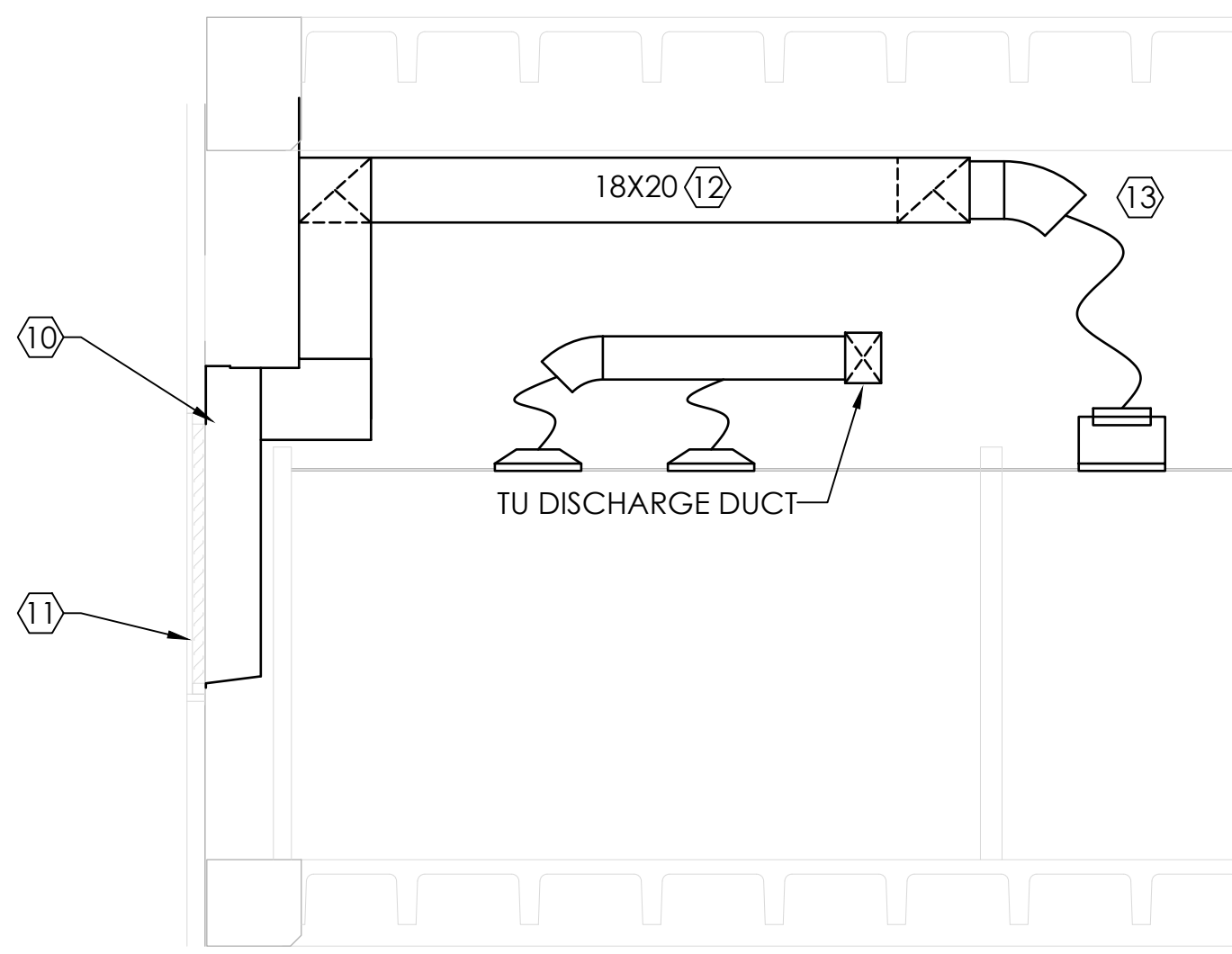
ADMIN WEST FIFTH FLOOR TI  
HVAC EQUIPMENT COORDINATION

SEAL  
  
REV: 1 DATE: 2019/07/22  
DRWN BY: AG  
CKD BY: JMZ  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO: 23 OF 48  
W.O. NUMBER 19\*10427

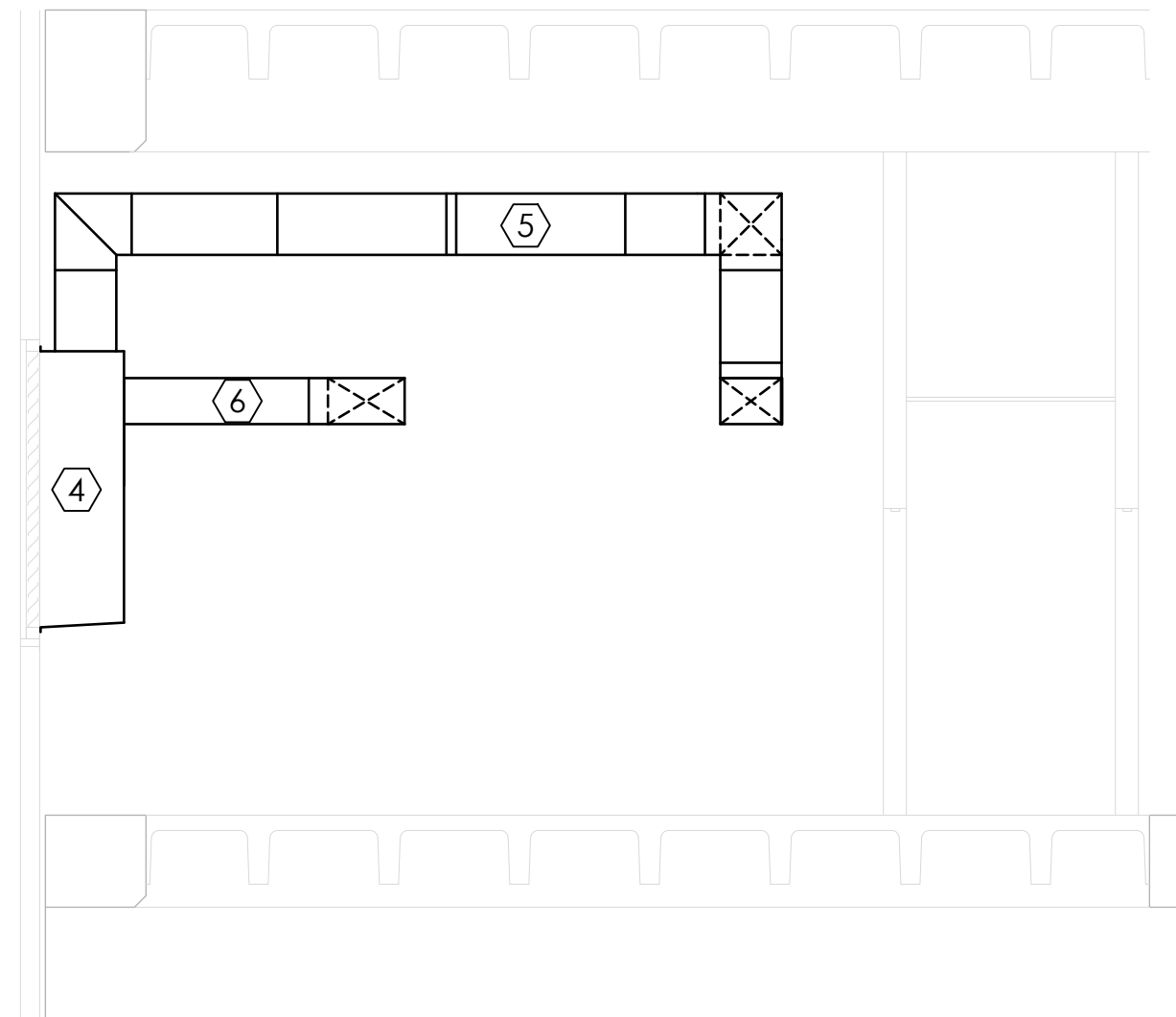




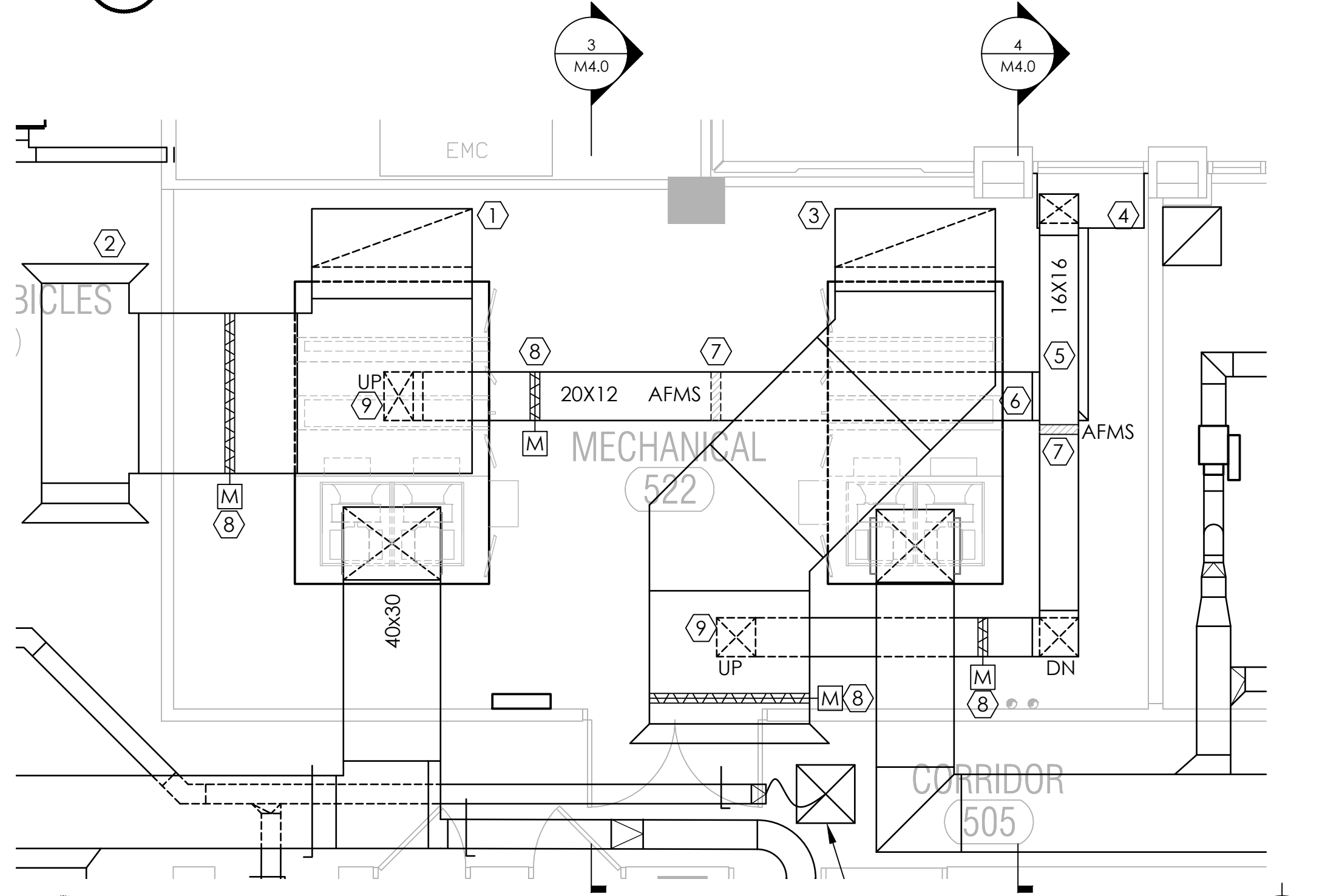
**3 AHU-5B SECTION**  
1/4" = 1'-0"



**1 RELIEF AIR DUCTWORK SECTION**  
1/4" = 1'-0"



**4 OA PLENUM SECTION**  
1/4" = 1'-0"



**2 ENLARGED FLOOR 5 MECHANICAL ROOM**  
1/4" = 1'-0"

#### GENERAL NOTES

- A. ALL WORK THAT WILL IMPACT ADDITIONAL FLOORS SHALL BE COORDINATED WITH PIMA COUNTY FACILITIES MANAGEMENT DEPARTMENT (IN WRITING), 7 DAYS PRIOR TO SCHEDULED WORK. WORK SHALL BE SCHEDULED AFTER HOURS, WEEKENDS AND/OR HOLIDAYS UNLESS OTHERWISE ARRANGED WITH PCFM. APPROVAL FROM PCFM SHALL BE OBTAINED (IN WRITING) PRIOR TO START OF WORK.

#### NEW WORK KEYNOTES

- NEW 66X24 RETURN DUCT PLENUM. CONNECT TO FULL SIZE OF UNIT OPENING AND SUPPORT FROM FLOOR. CONTINUE WITH 66X24 THROUGH WEST MECHANICAL ROOM WALL INTO THE ABOVE CEILING RETURN AIR PLENUM.
- 36X20 RETURN DUCT WITH BELL MOUTH OPENING. (TYP 2)
- NEW 66X24 RETURN DUCT PLENUM. CONNECT TO FULL SIZE OF UNIT OPENING AND SUPPORT FROM FLOOR. CONTINUE WITH 66X24 THROUGH SOUTH MECHANICAL ROOM WALL INTO THE ABOVE CEILING RETURN AIR PLENUM.
- SHEET METAL OA PLENUM, MINIMUM 22 INCHES DEEP. PLENUM TO BE FULL SIZE OF EXISTING TO BE REUSED 42X80 LOUVER. BOTTOM OF PLENUM TO BE SLOPED MINIMUM 1/8" PER FT BACK TO LOUVER FOR DRAINAGE. ATTACH PLENUM FRAME TO LOUVER AND SEAL WEATHER TIGHT.
- NEW 16X16 OA DUCT FROM TOP OF OA PLENUM. ROUTE TO AHU-5B RA DUCTWORK.
- NEW 20X12 OA DUCT BELOW 16X16 DUCT. ROUTE TO AHU-5A RETURN AIR DUCTWORK.
- OA AIRFLOW MONITORING STATION. INSTALL PER MANUFACTURER'S MINIMUM STRAIGHT LENGTH REQUIREMENTS. SEE CONTROL DIAGRAMS.
- MOTORIZED CONTROL DAMPER. SEE CONTROL DIAGRAMS.
- CONNECT NEW 20X12 OA DUCT TO THE BOTTOM OF NEW RA DUCT.
- NEW RELIEF AIR PLENUM TO BE FULL HEIGHT OF LOUVER, MAXIMUM WIDTH AS THE NEW PARTITION ALLOWS, WITH MINIMUM 10" DEPTH. EXTEND PLENUM ABOVE LOUVER AS NECESSARY TO AVOID INTERFERENCE WITH NEW PARTITION. BOTTOM OF PLENUM TO BE SLOPED MINIMUM 1/8" PER FT BACK TO LOUVER FOR DRAINAGE. ATTACH PLENUM FRAME TO LOUVER AND SEAL WEATHER TIGHT.
- EXISTING 42X80 LOUVER TO BE REUSED.
- NEW RELIEF AIR DUCT WITH ADJUSTABLE BAROMETRIC DAMPER IN DUCT. ROUTE FROM IN CEILING RG-1 AND NEW LVR-1. ROUTE DUCT TIGHT TO STRUCTURE ABOVE SUPPLY AIR DUCTWORK.
- FURNISH AND INSTALL TWO 16"Ø FLEX CONNECTIONS BETWEEN RELIEF DUCT AND RG-1. SEE LAYOUT DRAWINGS AND DETAILS. MAXIMUM 5 FT OF DEVELOPED LENGTH.

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

**ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ**

**ADMIN WEST FIFTH FLOOR TI  
MECH ENLARGED PLANS & SECTIONS**

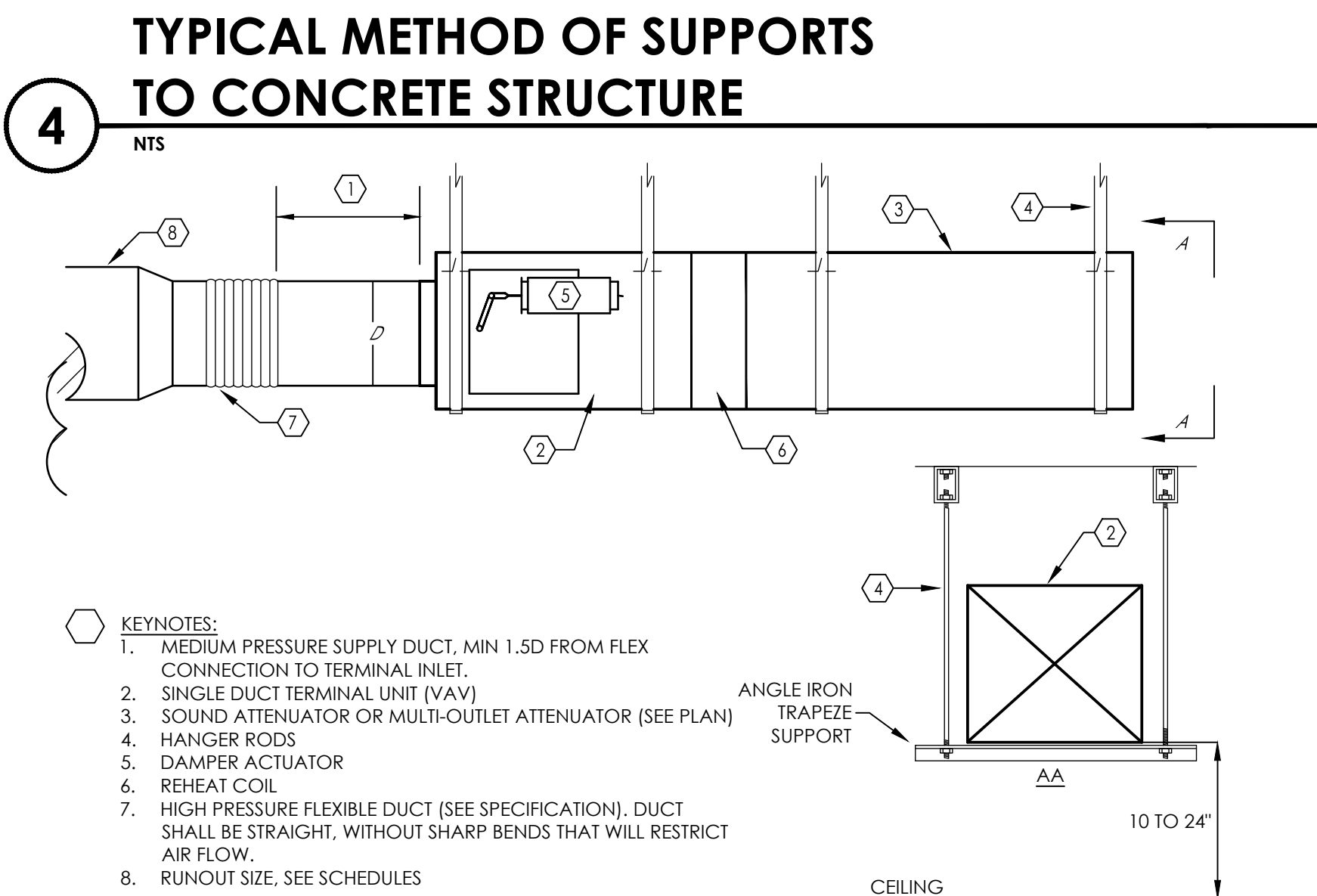
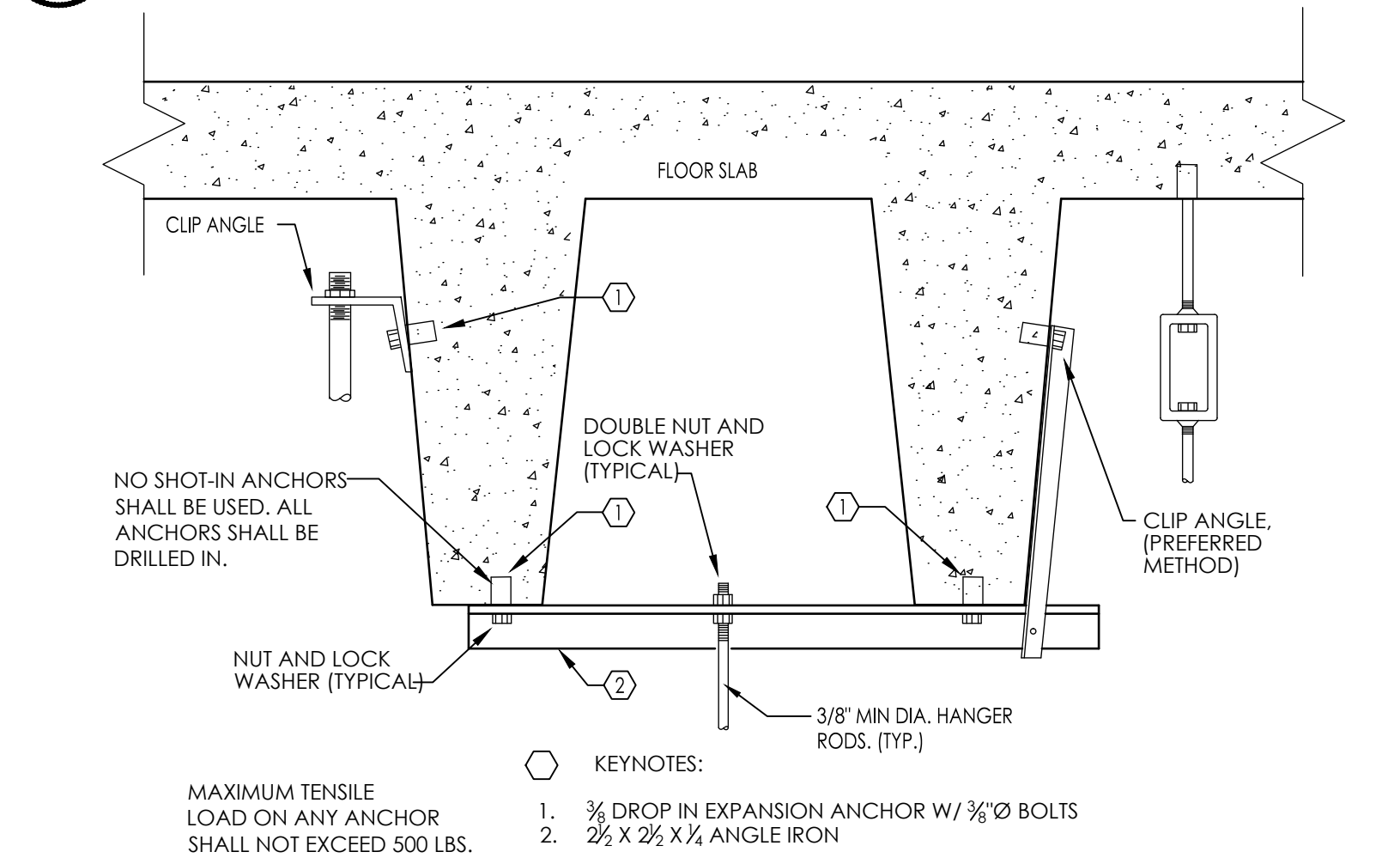
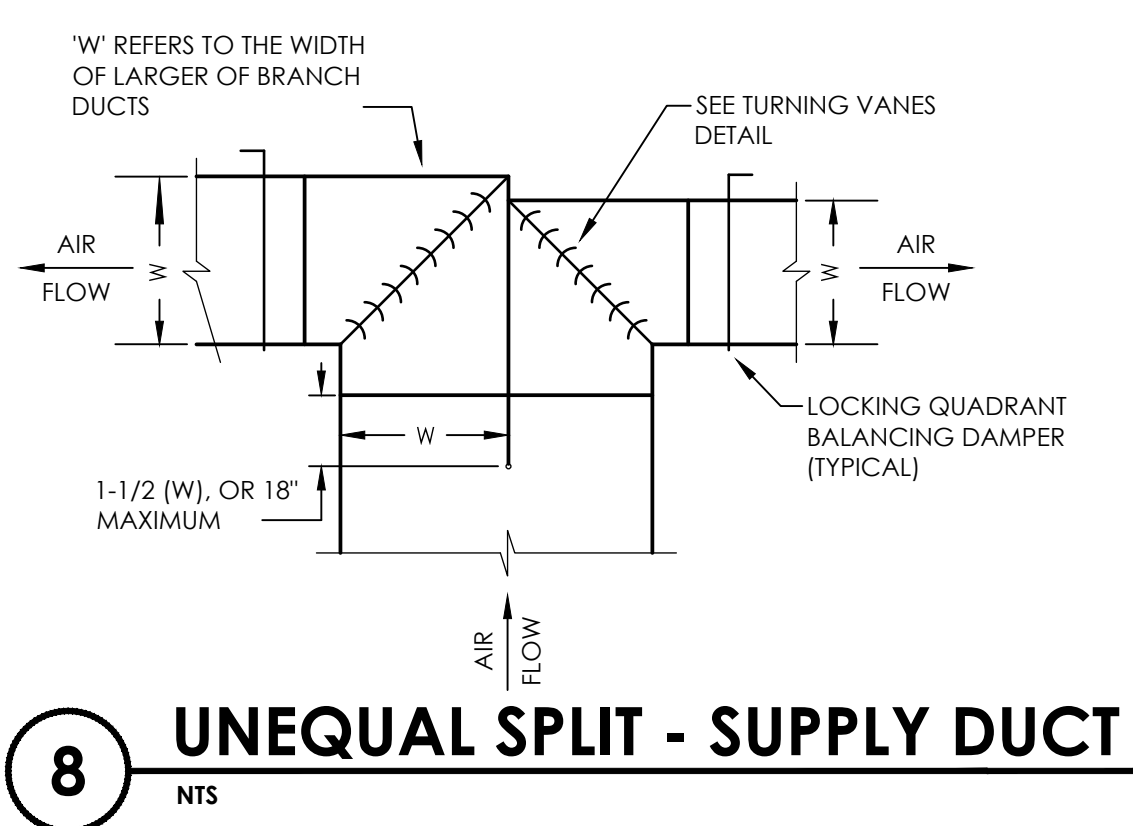
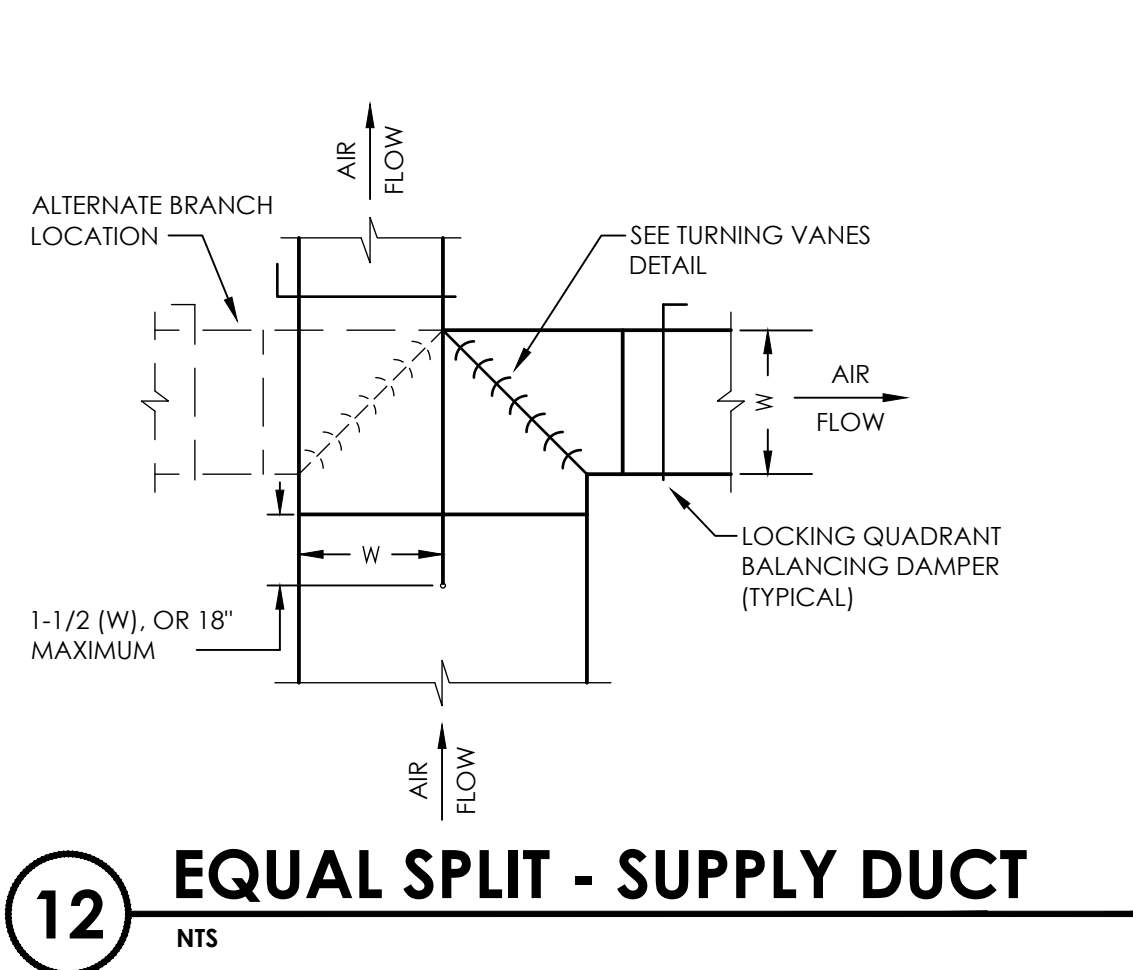


REVS: DATE:

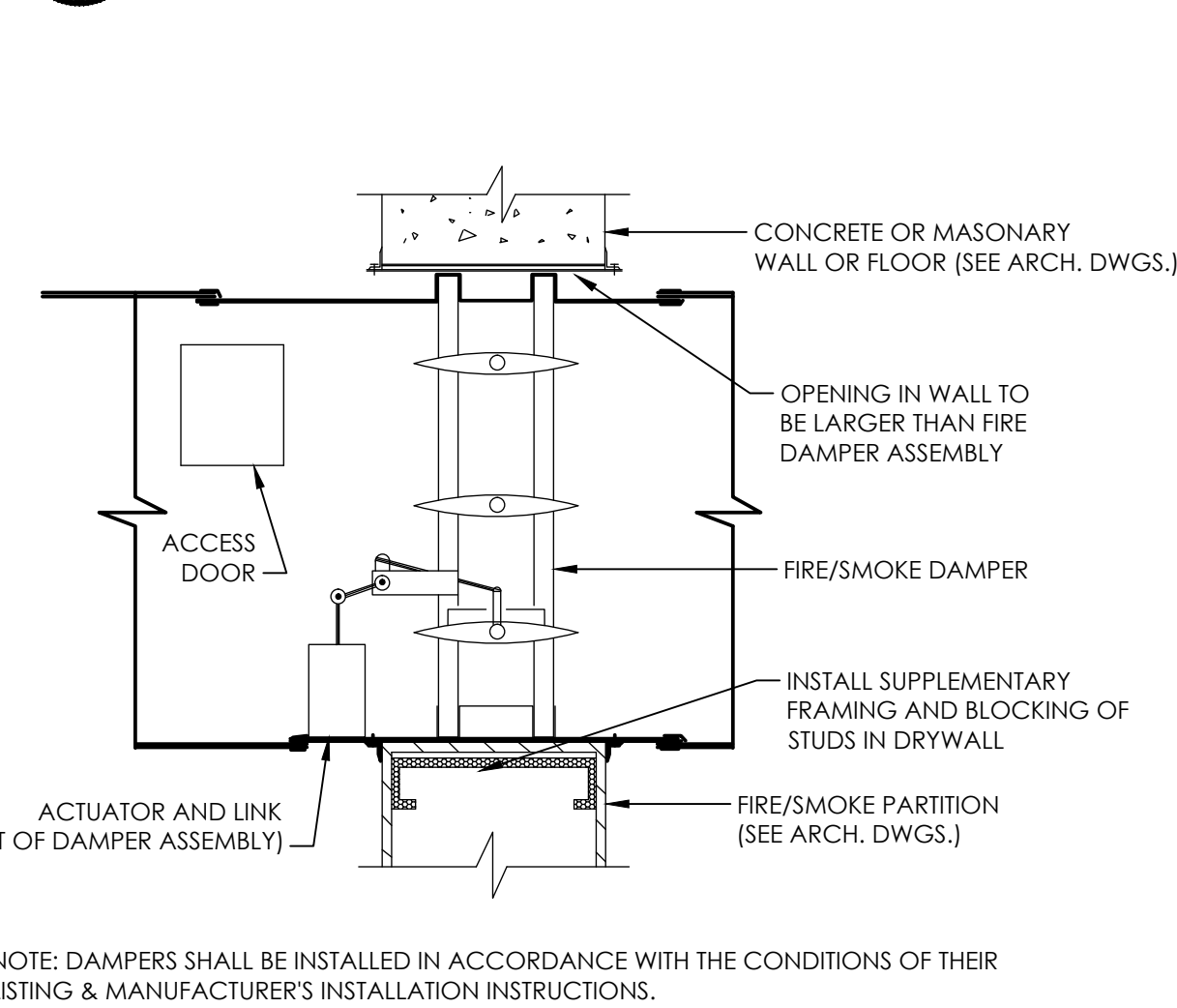
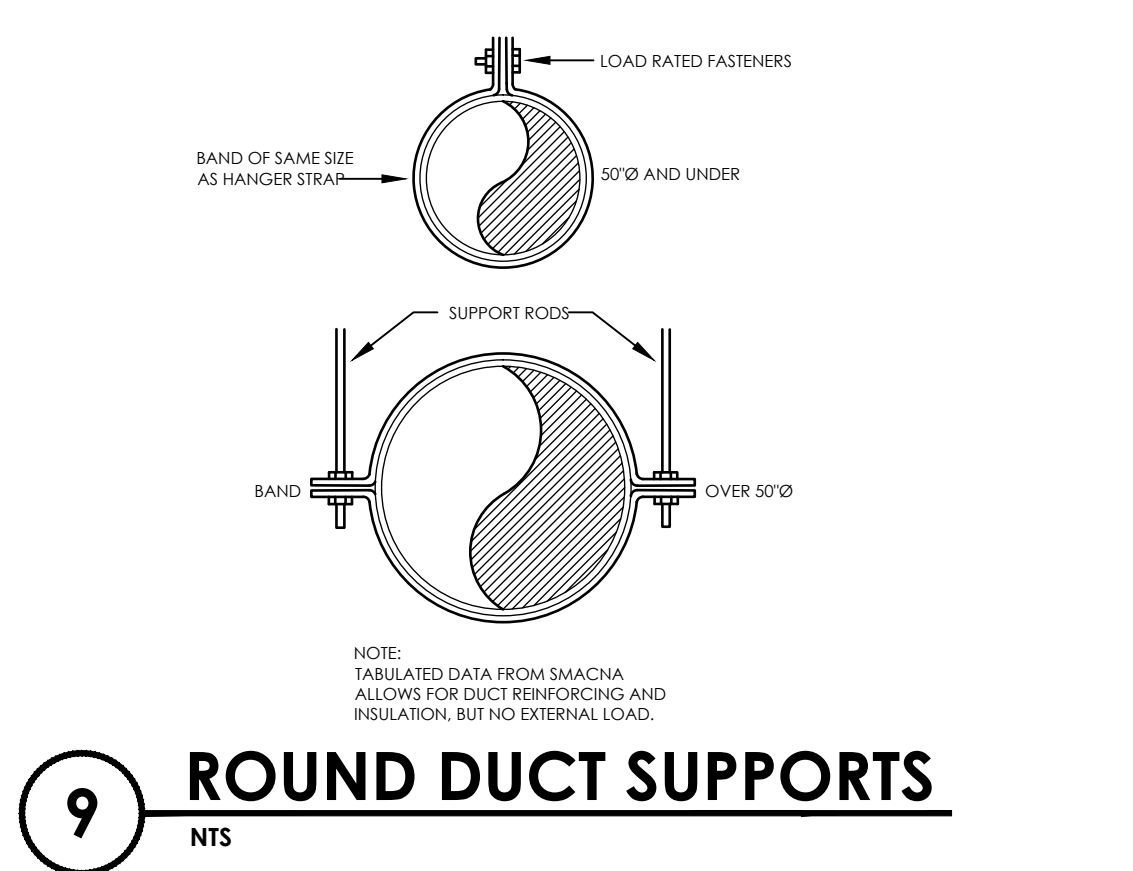
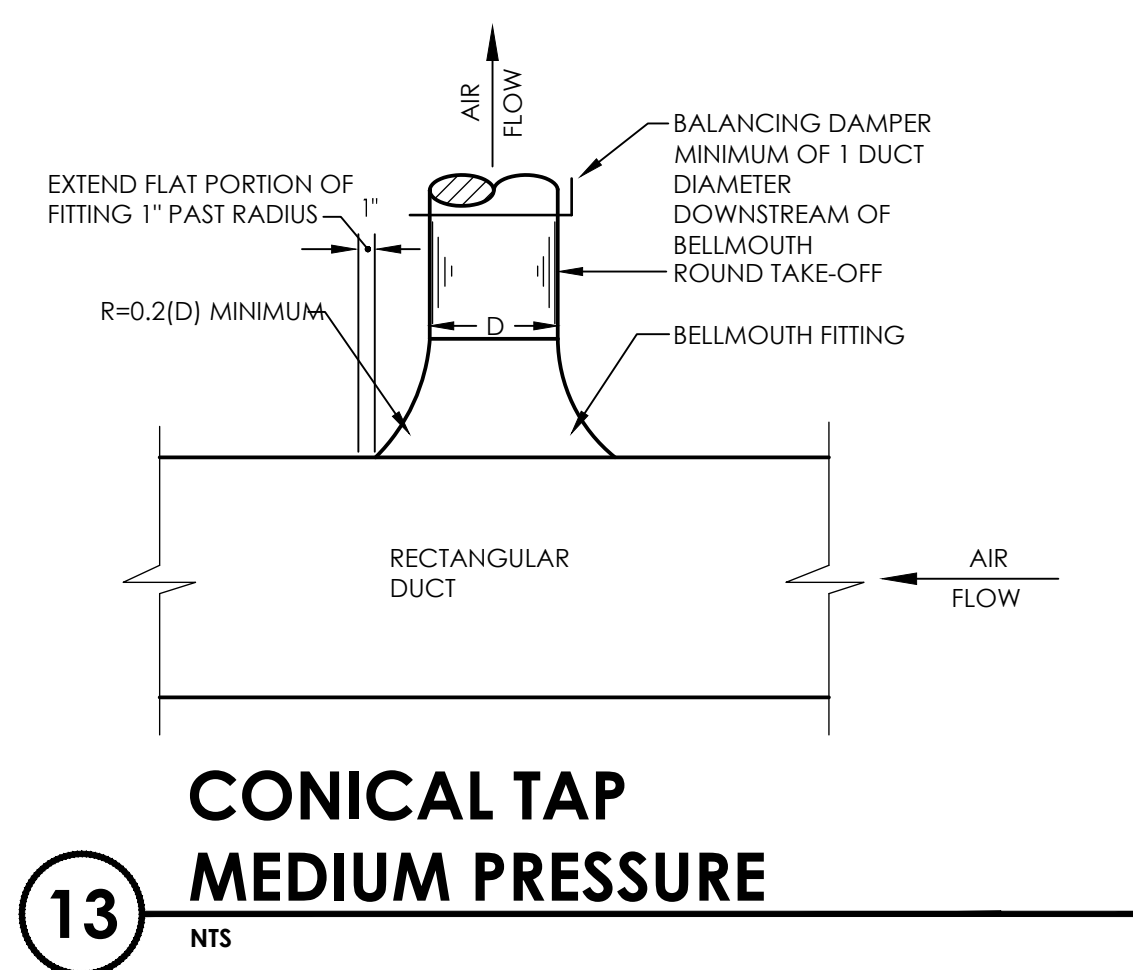
DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M4.0**  
24 OF 48  
W.O. NUMBER  
**19\*10427**

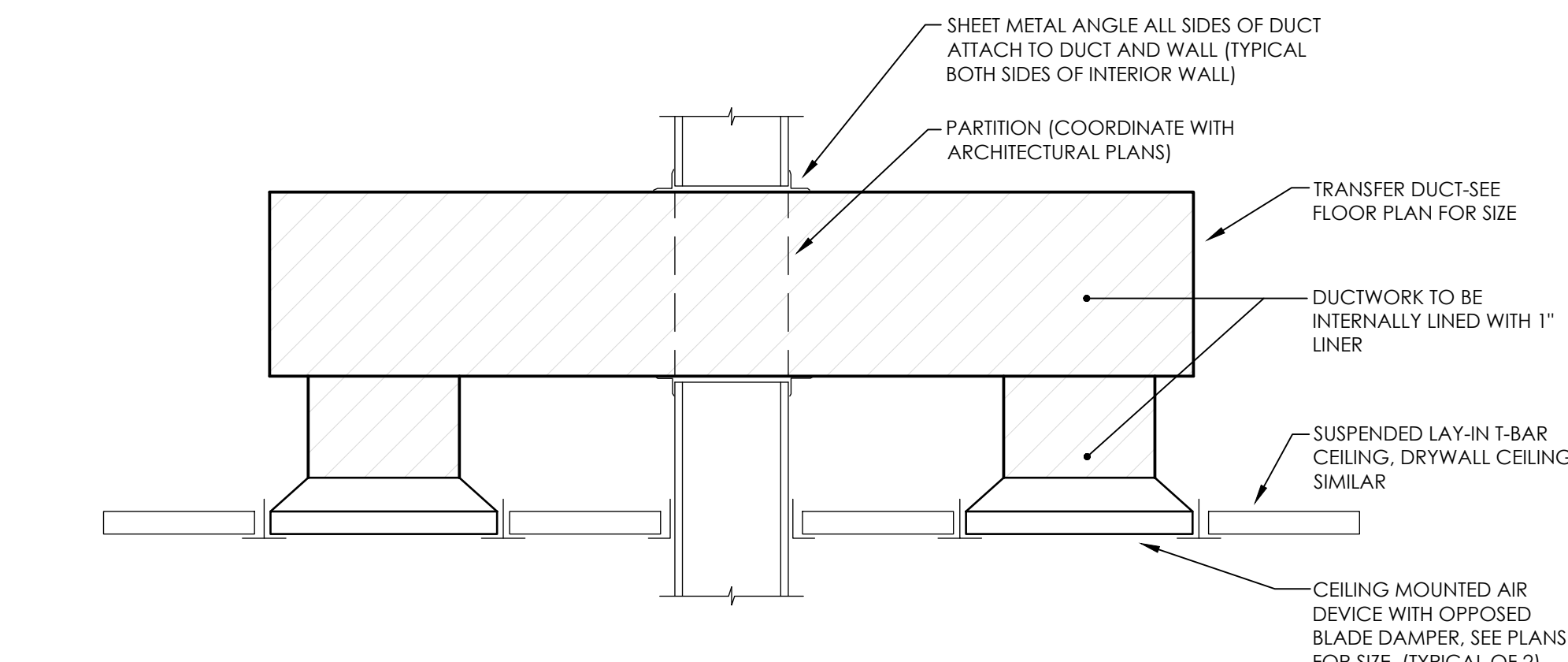




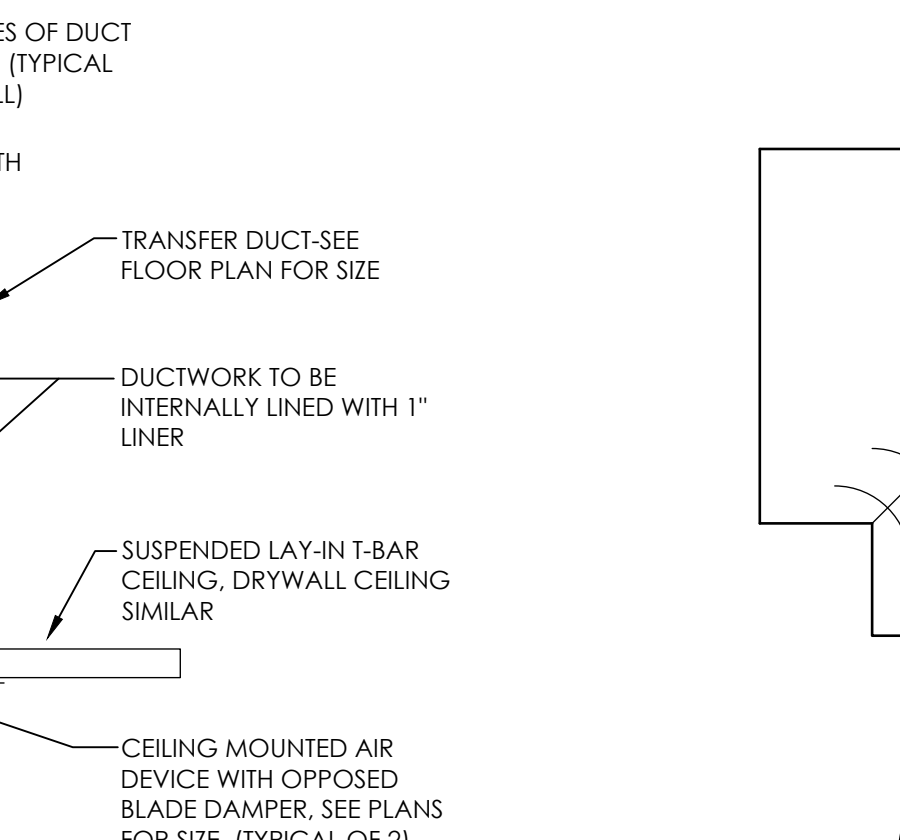
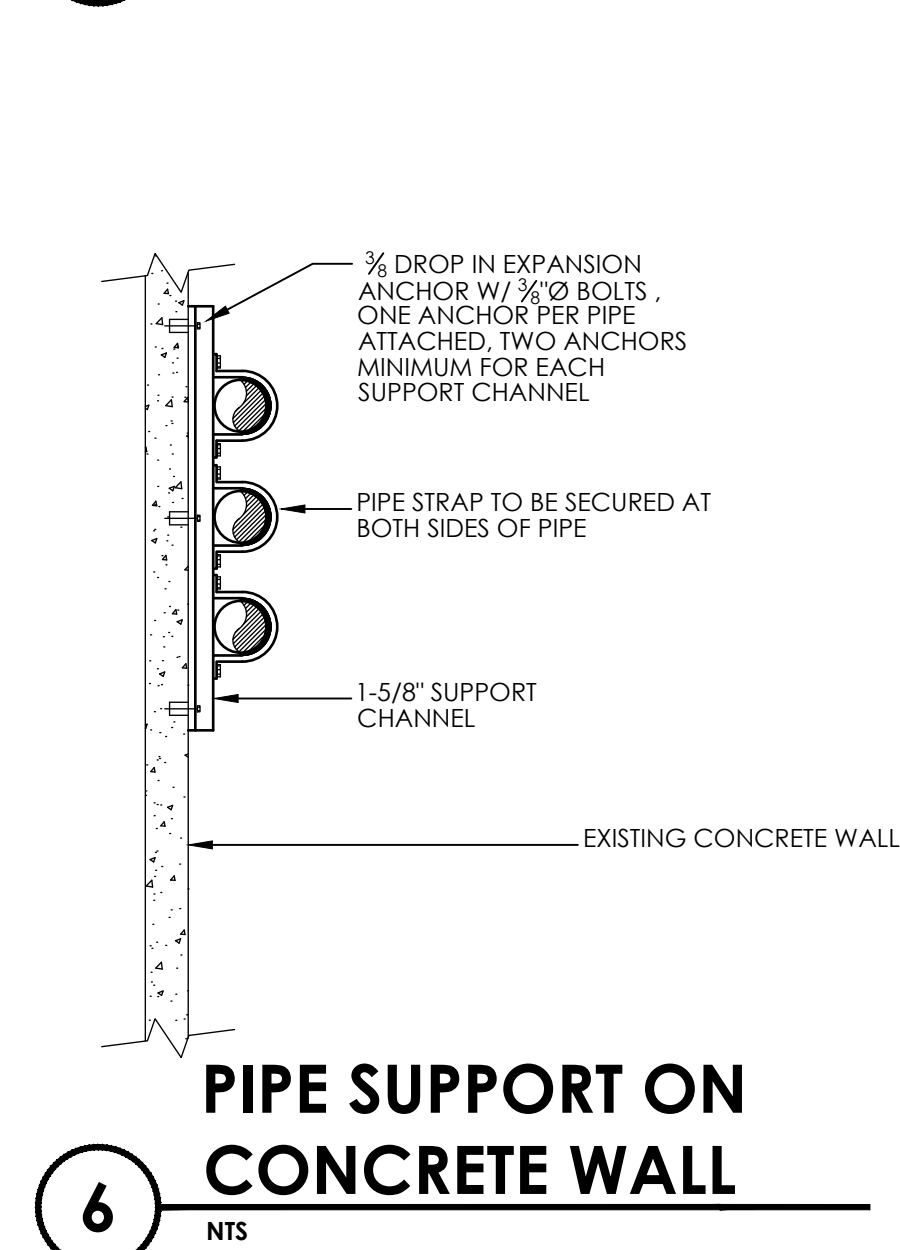
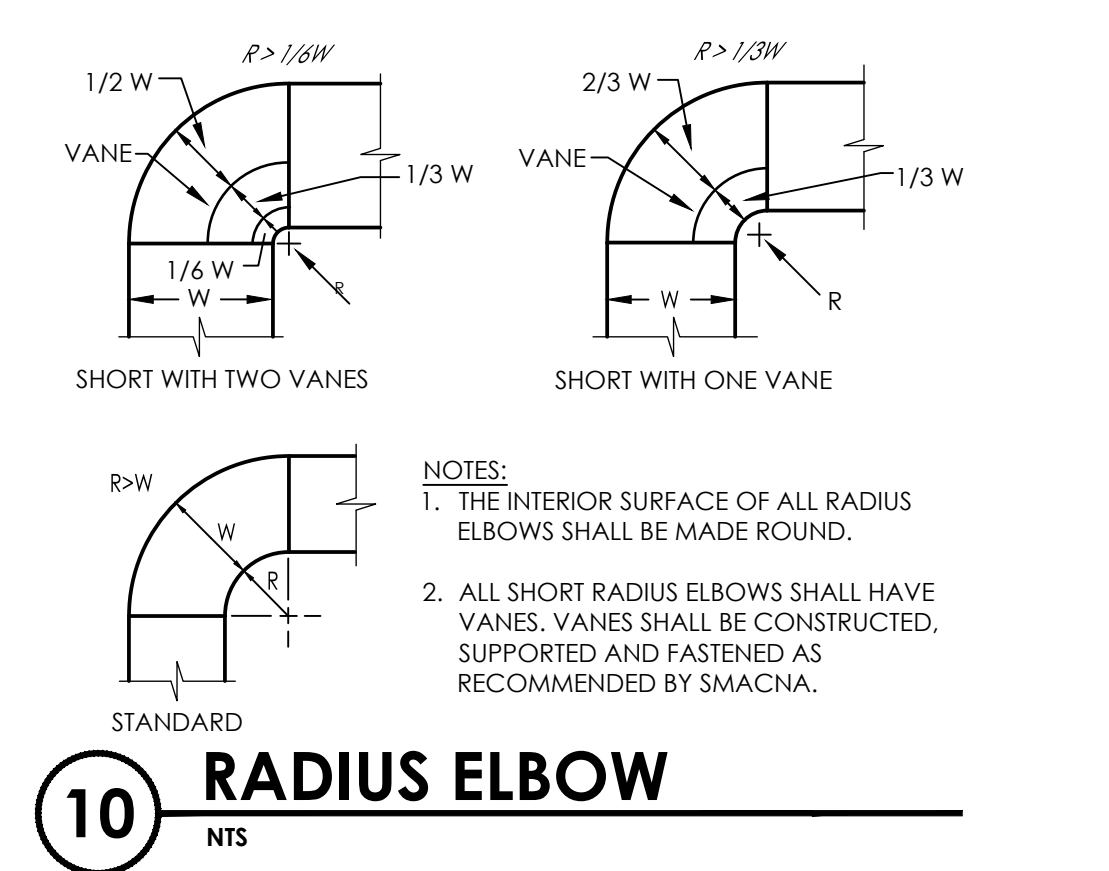
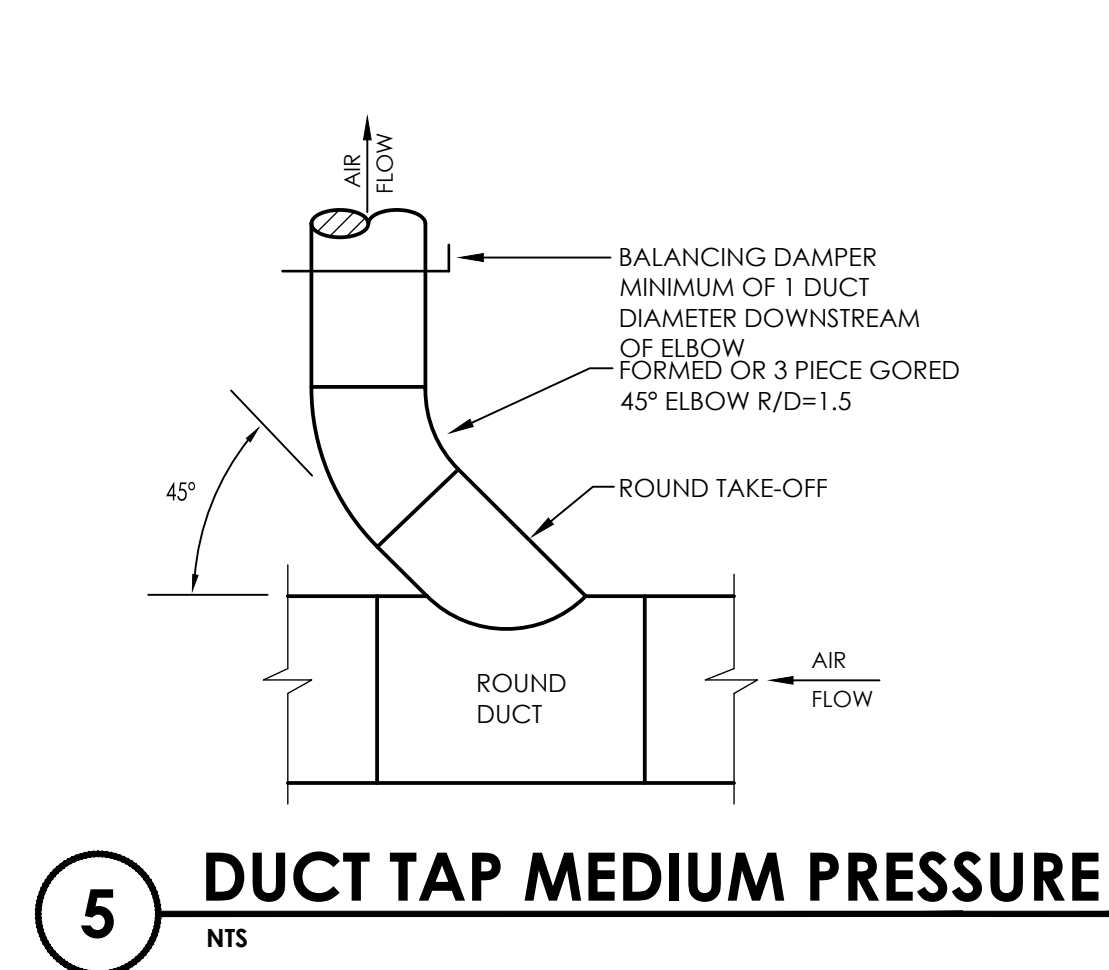
1 SINGLE DUCT TERMINAL UNIT WITH REHEAT



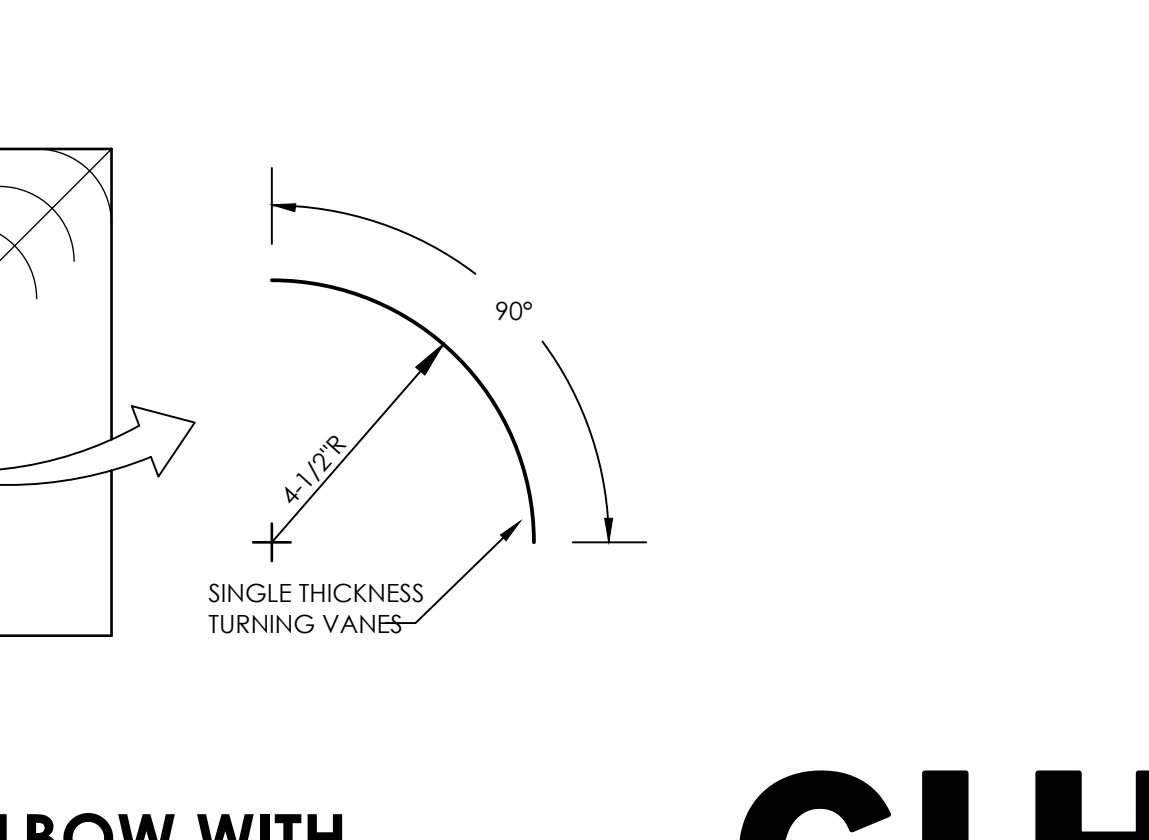
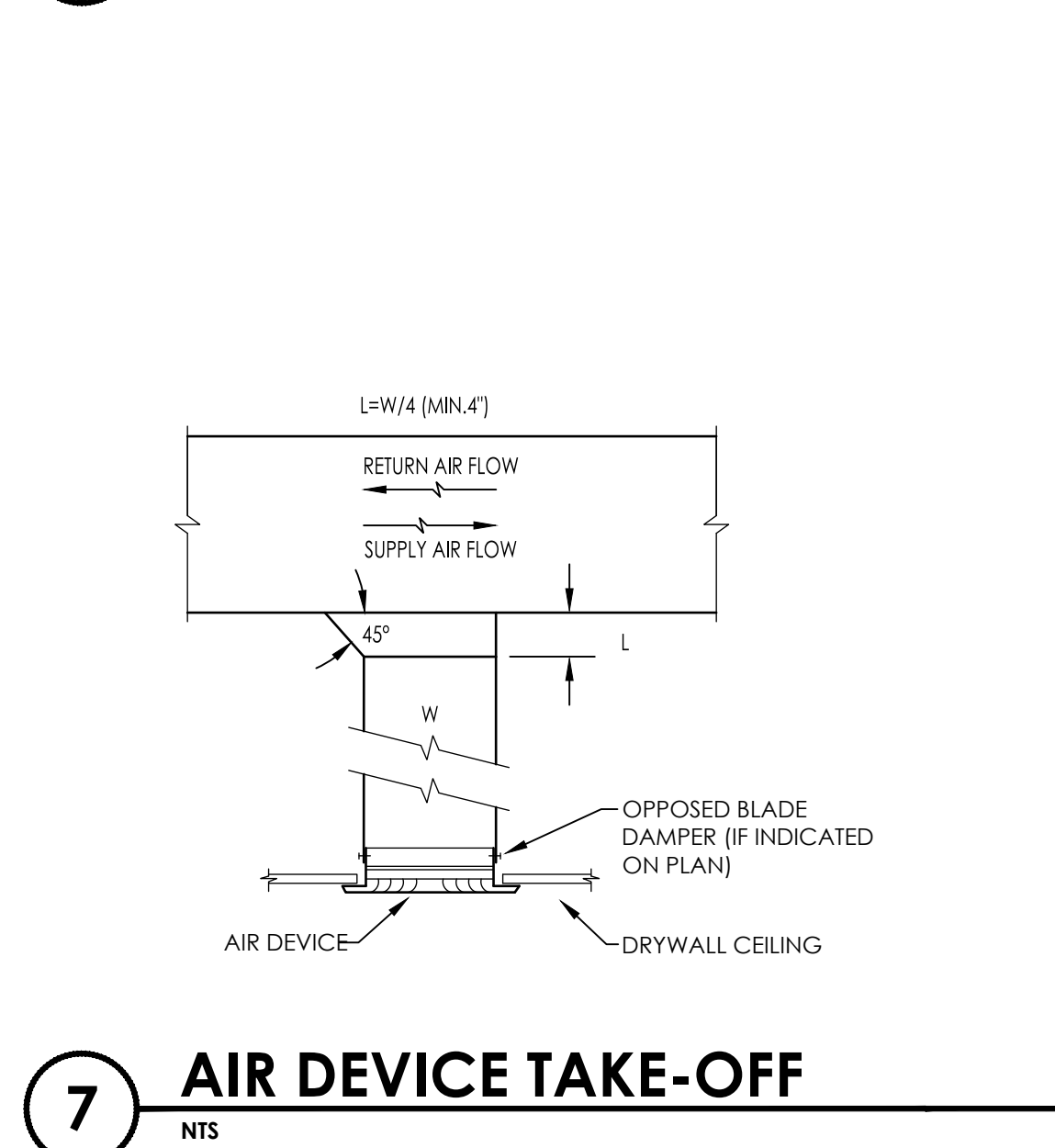
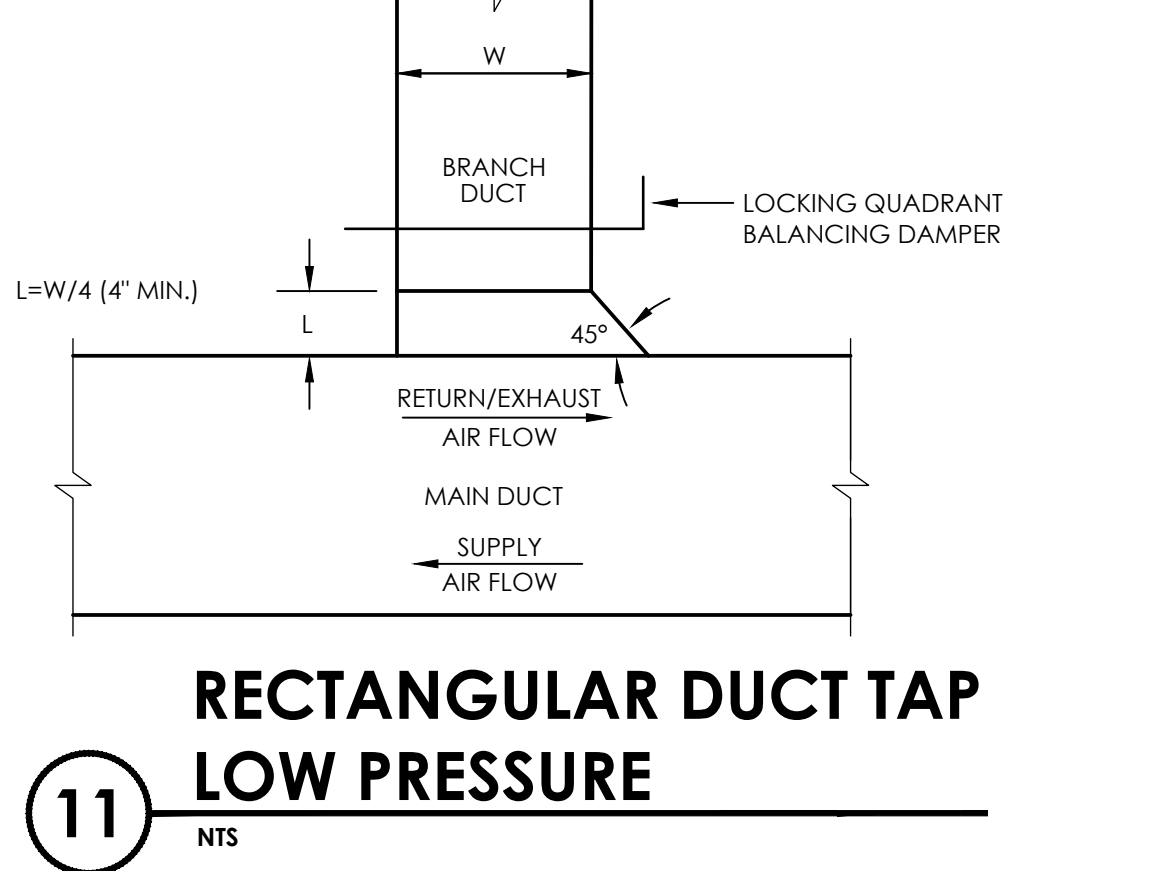
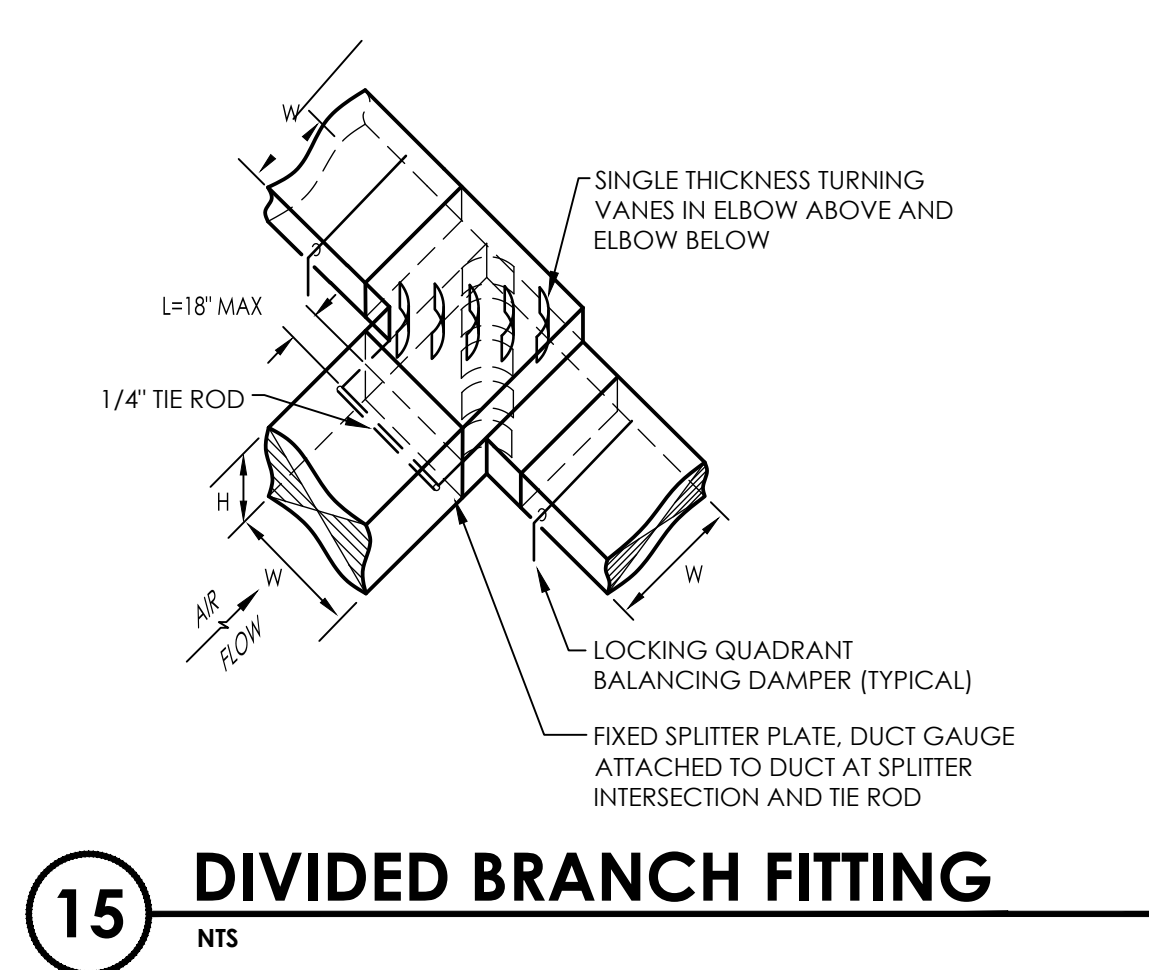
5 COMBINATION FIRE/ SMOKE DAMPER



2 NON-RATED TRANSFER DUCT



3 MITER ELBOW WITH TURNING VANES



1 SINGLE DUCT TERMINAL UNIT WITH REHEAT

**GLHN**  
ARCHITECTS & ENGINEERS, INC.  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

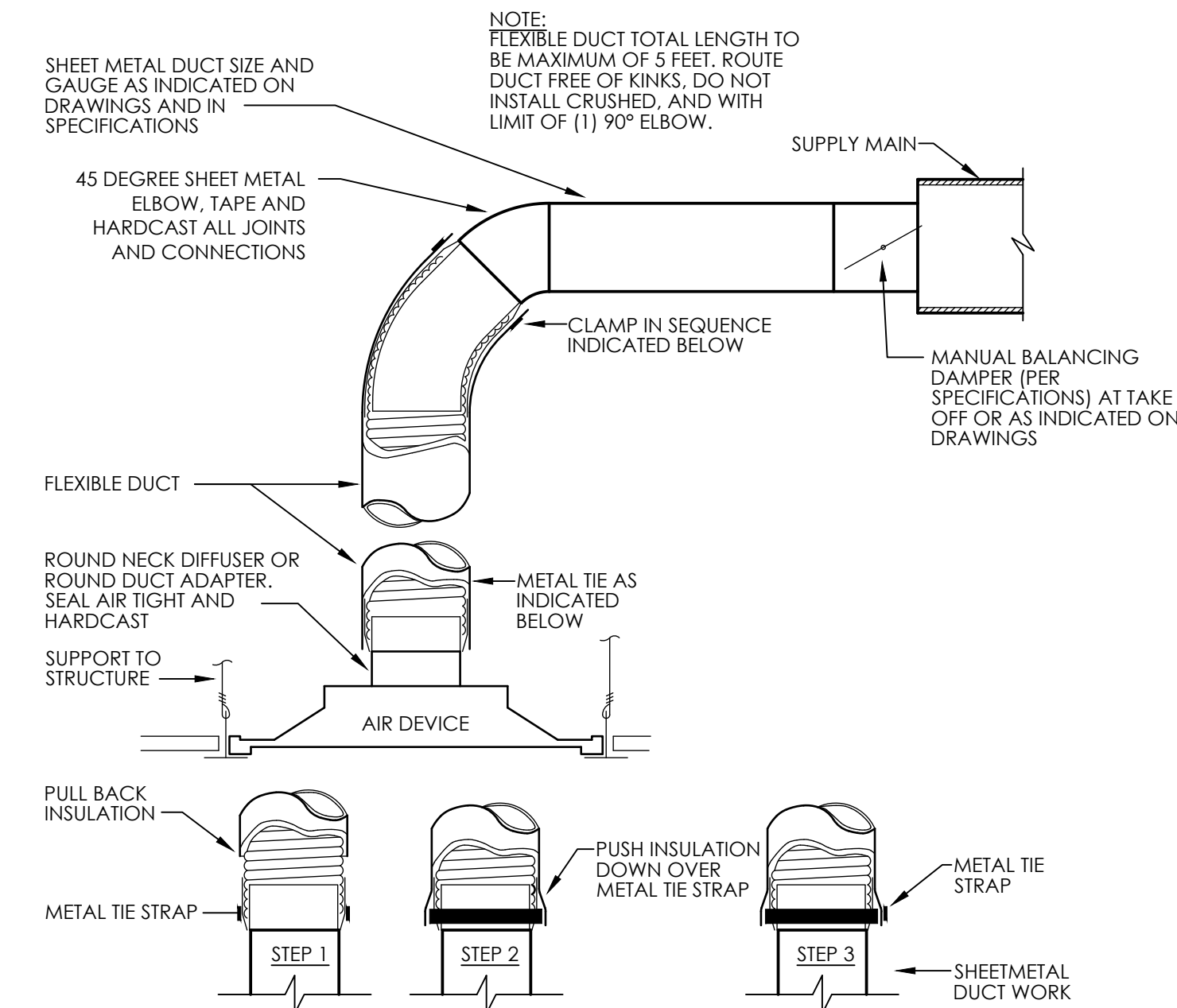
ADMIN WEST FIFT FLOOR TI  
MECHANICAL DETAILS

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

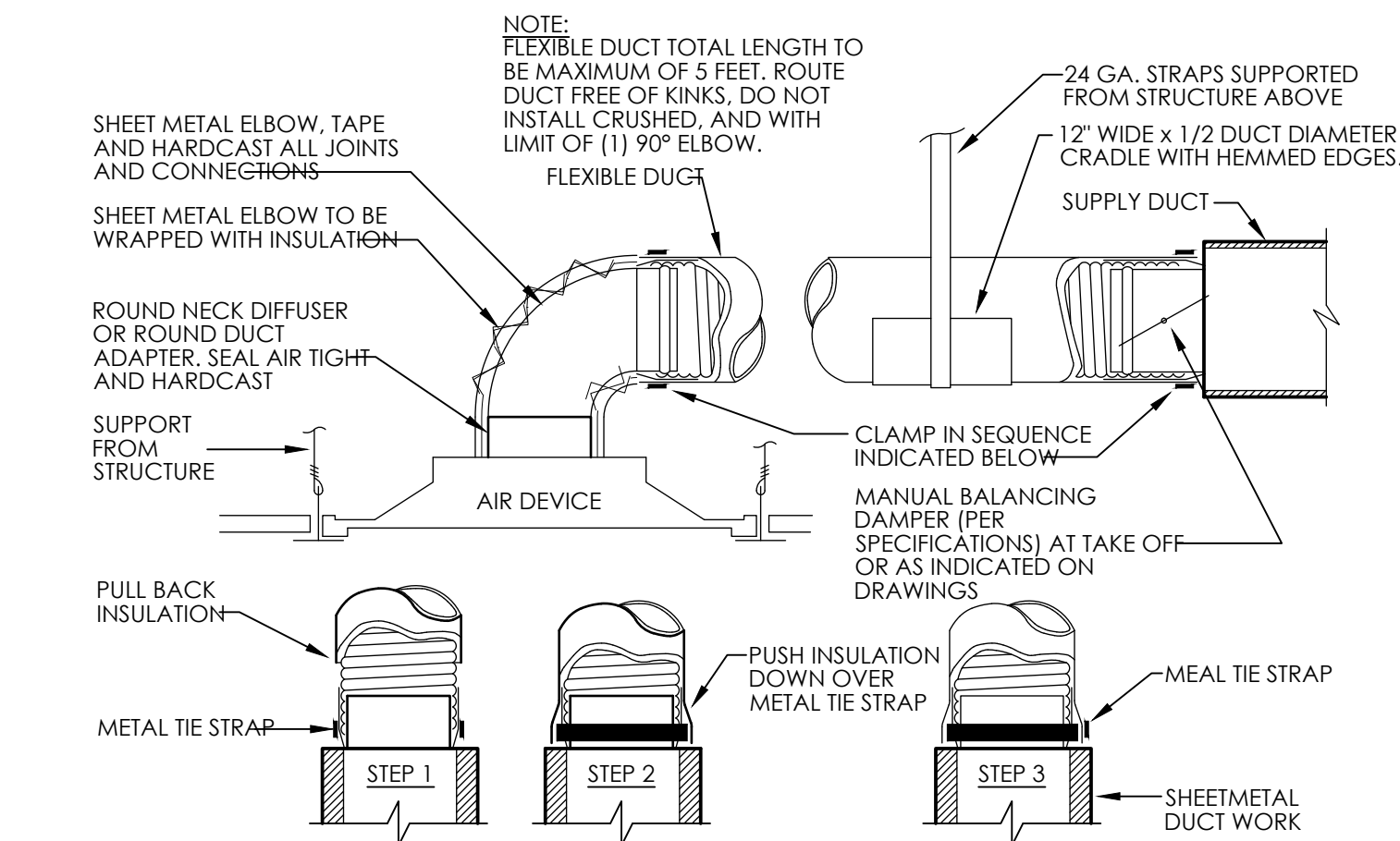
SEAL  
43047  
RONALD DOUGLAS  
STINGELIN  
REGISTERED PROFESSIONAL ENGINEER  
ARIZONA U.S.A.  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO: M5.0

DRWN BY: AG  
CKD BY: JMZ  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO: M5.0  
25 OF 48  
W.O. NUMBER  
19\*10427

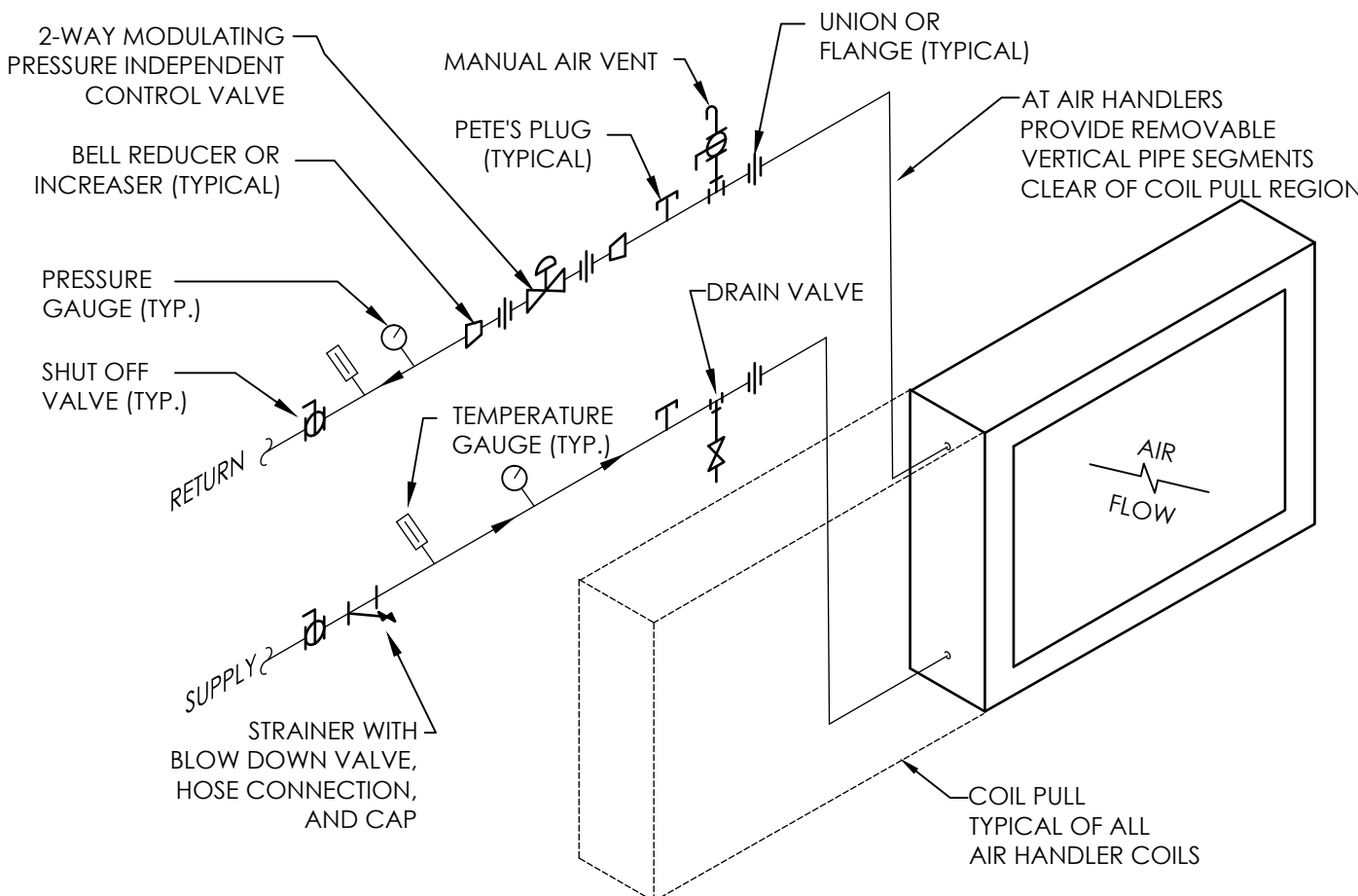




**8 FLEX DUCT CONNECTION OPTION 2**  
NTS

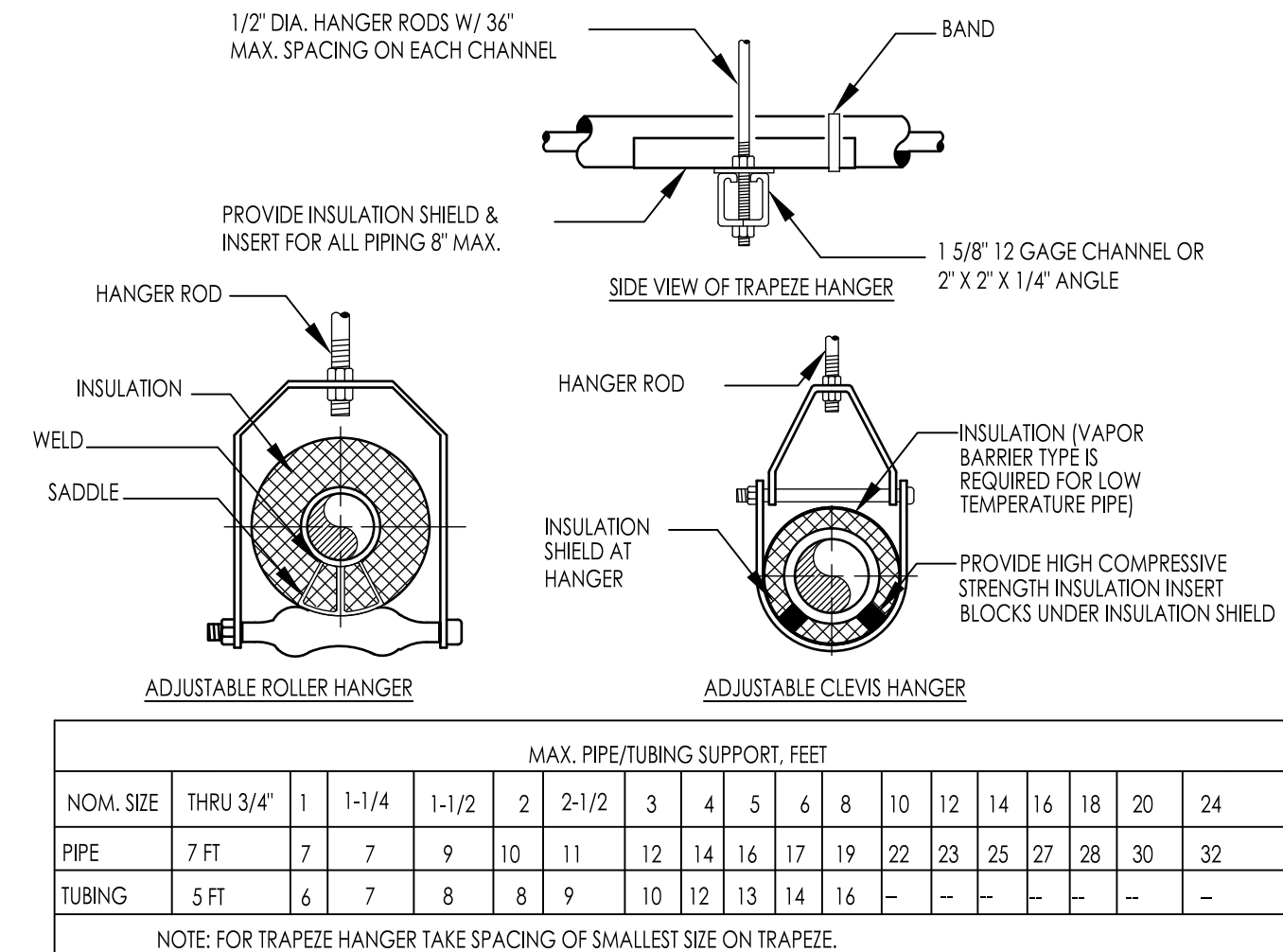


**4 FLEX DUCT CONNECTION OPTION 1**  
NTS

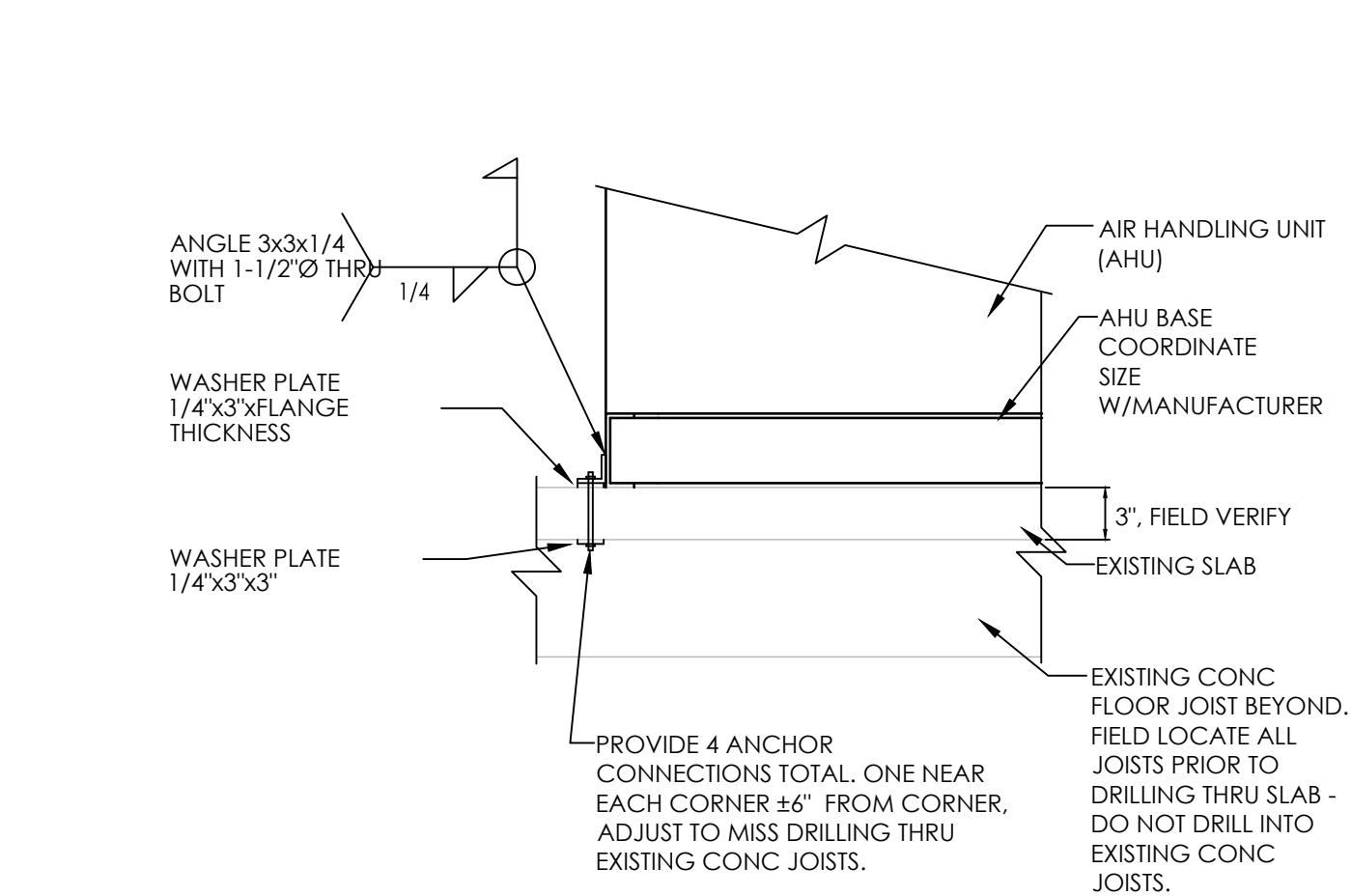


- NOTES:
- SEE HVAC PIPING LAYOUT FOR RUNOUT SIZES. PIPING SHALL BE LINE SIZE. NOT CONNECTION SIZE (CONTROL VALVE EXEMPT). FINAL SIZE REDUCTION SHALL OCCUR AT THE UNIT'S POINT OF CONNECTION.
  - SUPPORT PIPING AT VALVES AND COIL CONNECTIONS.
  - SEE DETAIL ON M5.2 FOR ADDITIONAL REQUIREMENTS FOR AIR HANDLING UNITS WITH MULTIPLE COILS.

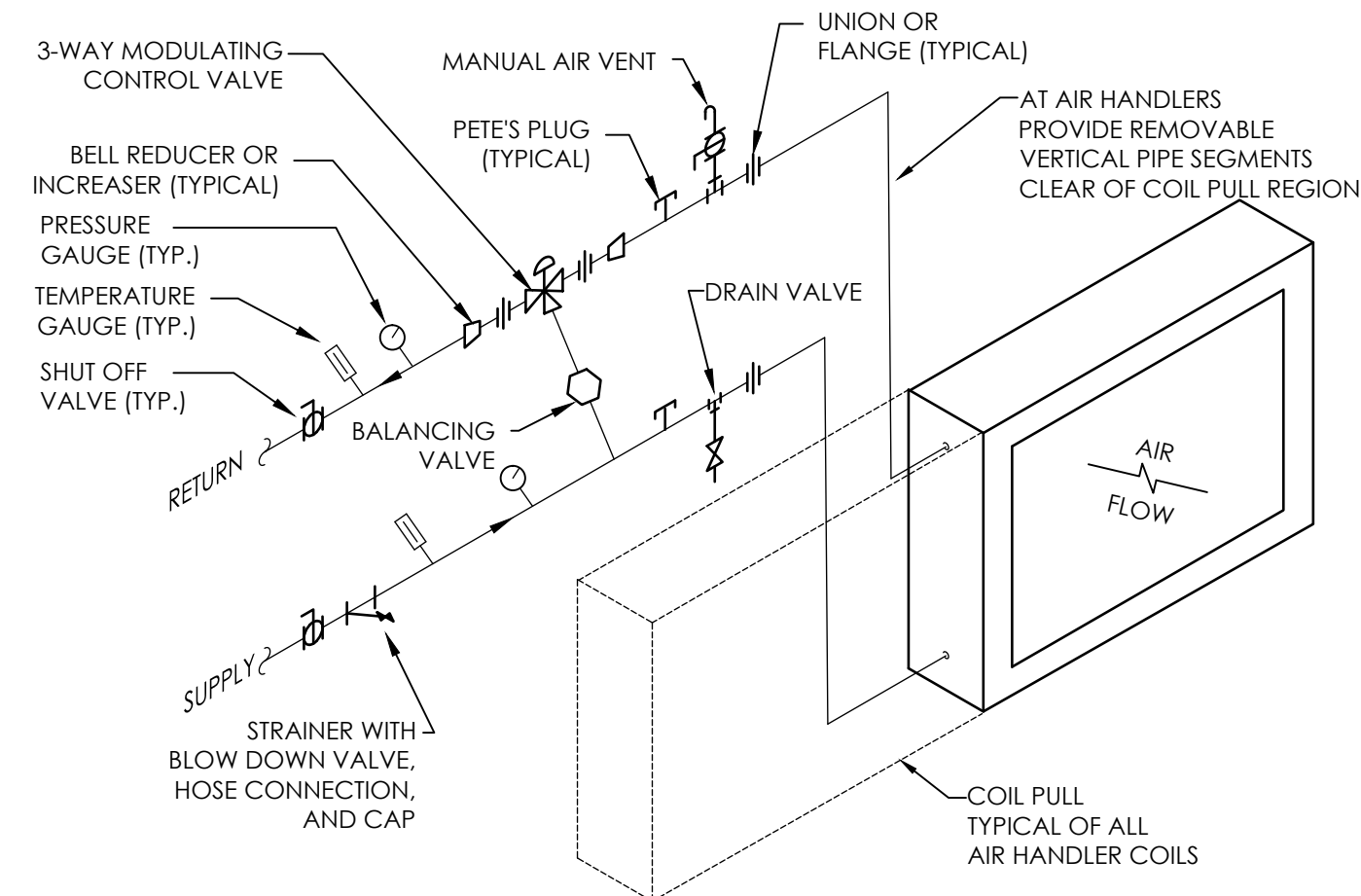
**1 TWO-WAY COIL CONNECTION**  
NTS



**9 TYPICAL PIPE SUPPORT**  
NTS

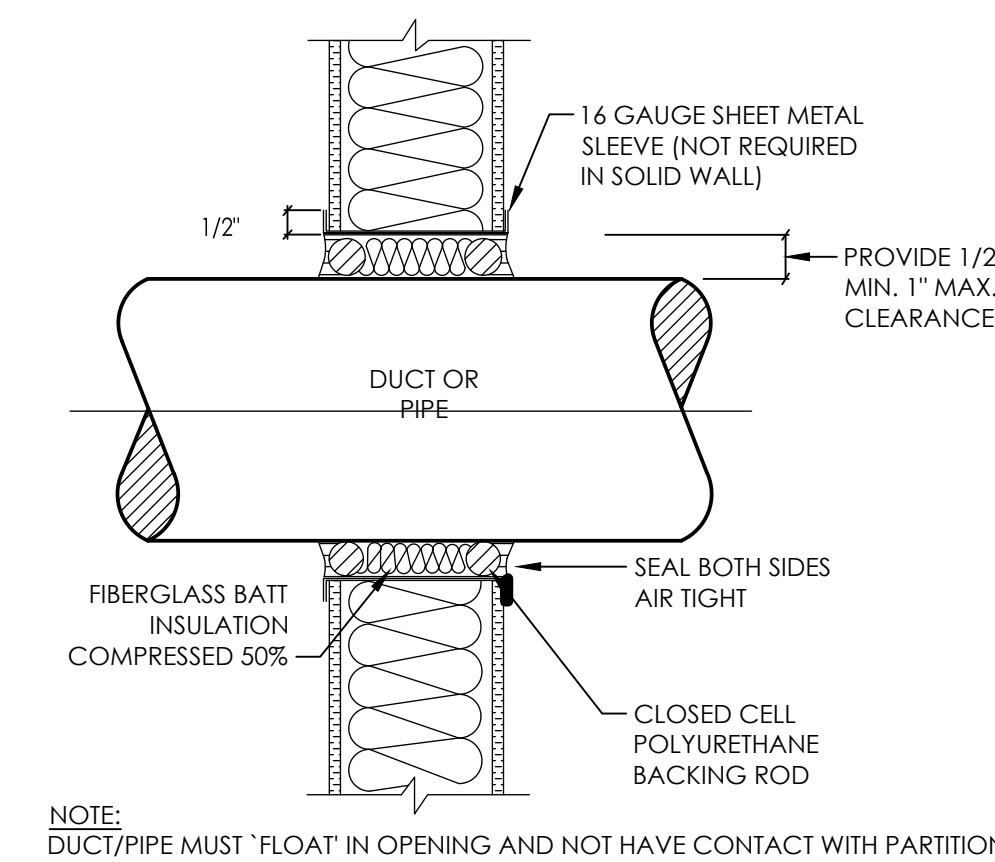


**5 AHU ANCHORING DETAIL**  
NTS

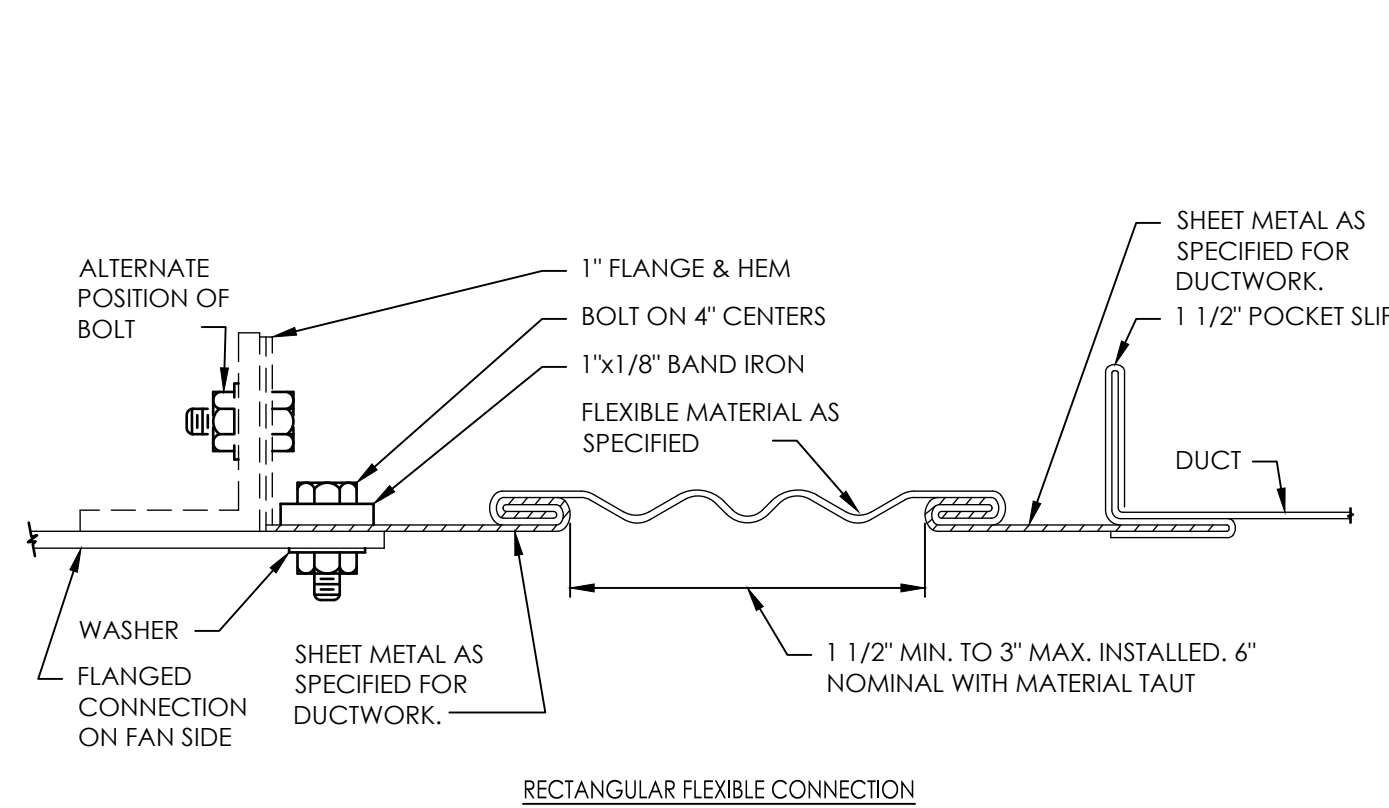


- NOTES:
- SEE HVAC PIPING LAYOUT FOR RUNOUT SIZES. PIPING SHALL BE LINE SIZE. NOT CONNECTION SIZE (CONTROL VALVE EXEMPT). FINAL SIZE REDUCTION SHALL OCCUR AT THE UNIT'S POINT OF CONNECTION.
  - SUPPORT PIPING AT VALVES AND COIL CONNECTIONS.
  - SEE DETAIL ON M5.2 FOR ADDITIONAL REQUIREMENTS FOR AIR HANDLING UNITS WITH MULTIPLE COILS.

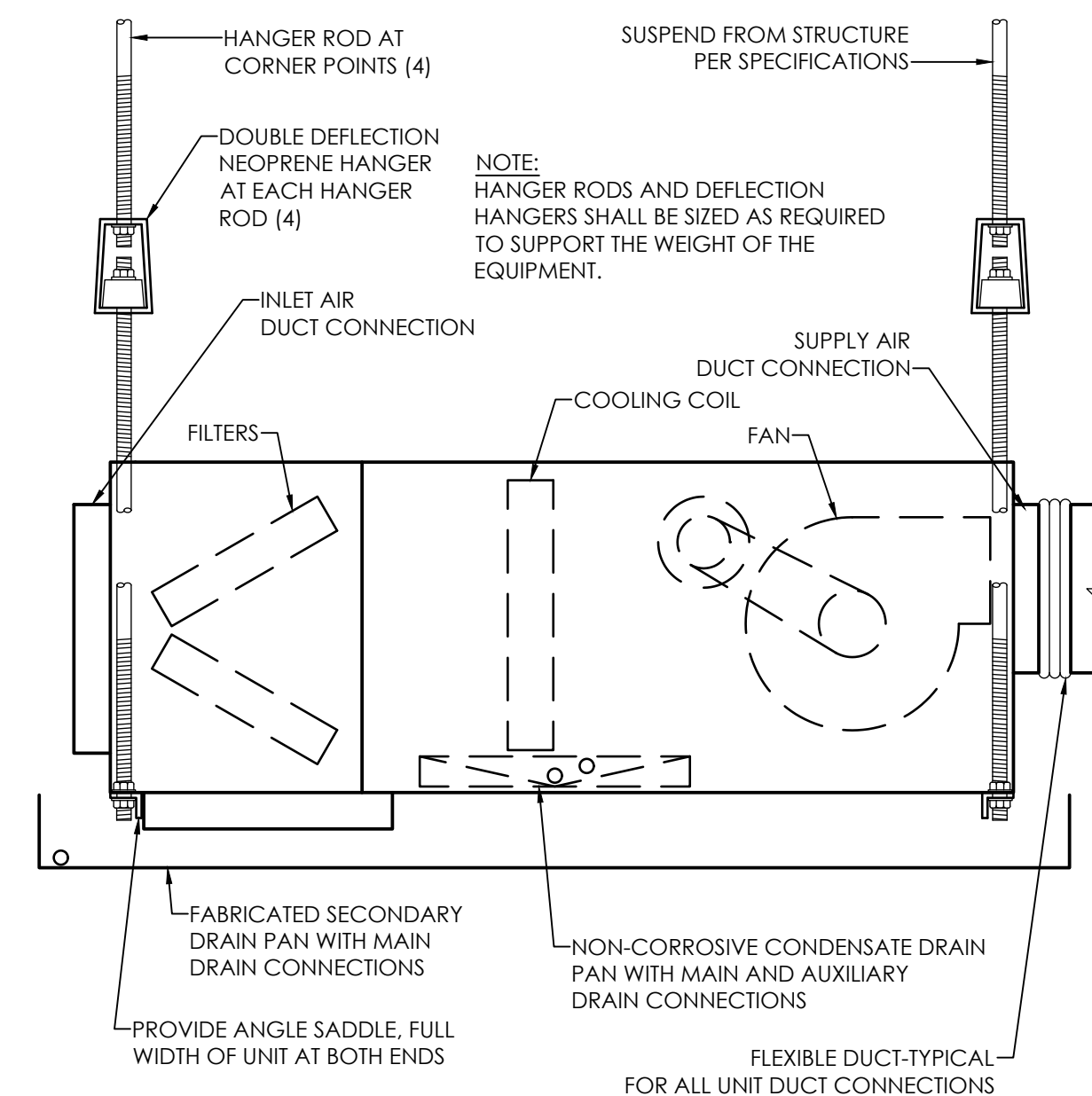
**2 THREE-WAY COIL CONNECTION**  
NTS



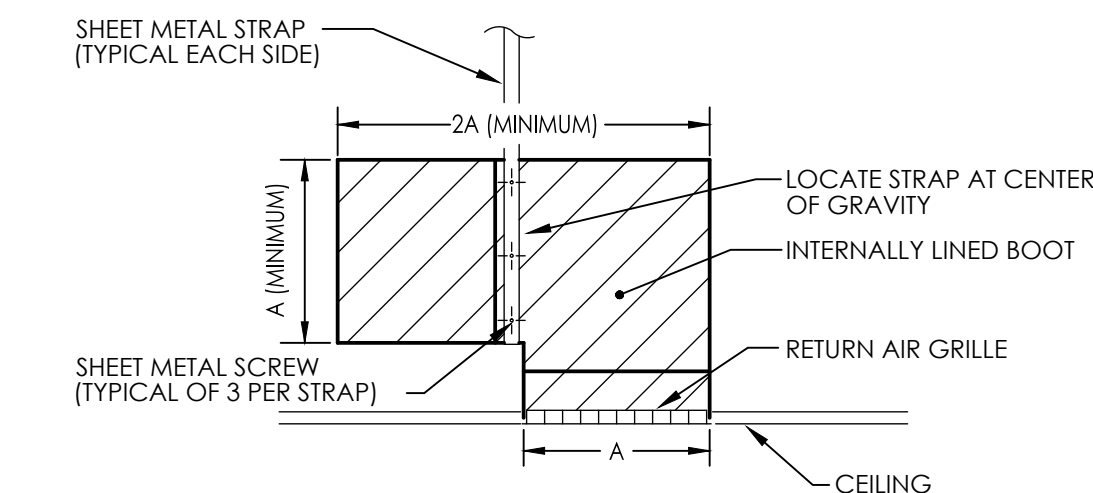
**10 DUCT OR PIPE THROUGH NON-RATED PARTITION**  
NTS



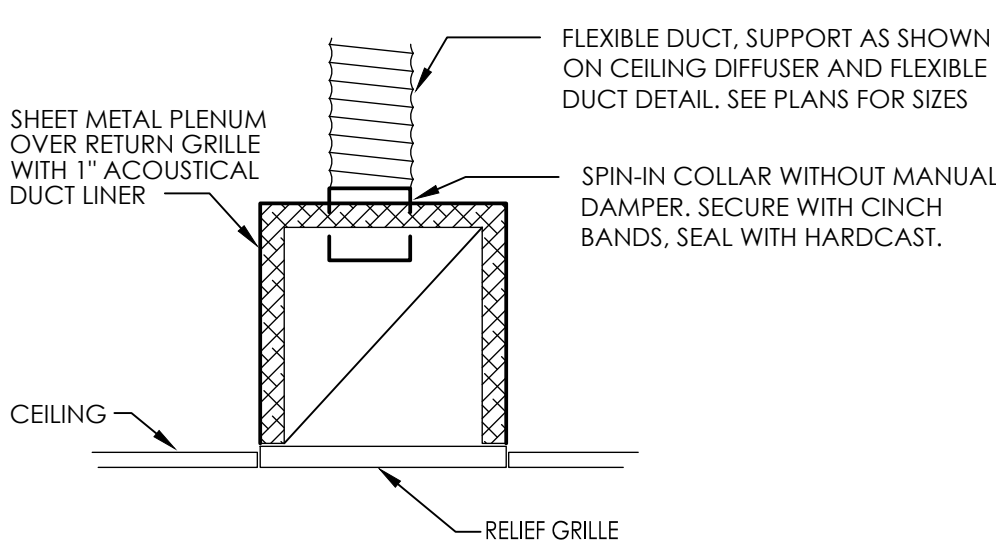
**6 FLEXIBLE DUCT CONNECTION AT AHU**  
NTS



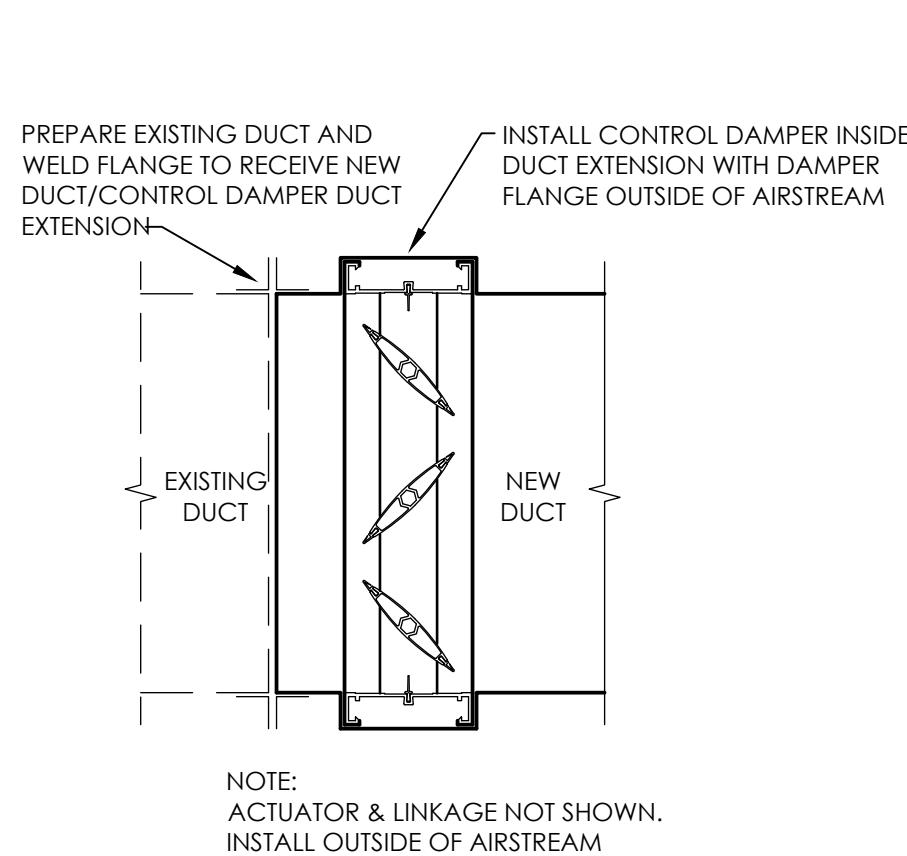
**3 FAN COIL UNIT DETAIL**  
NTS



**12 RETURN GRILLE BOOT**  
NTS



**11 FLEXIBLE DUCT TO RELIEF**  
NTS



**7 CONTROL DAMPER**  
NTS

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

**ADMIN WEST FIFT FLOOR TI  
MECHANICAL DETAILS**

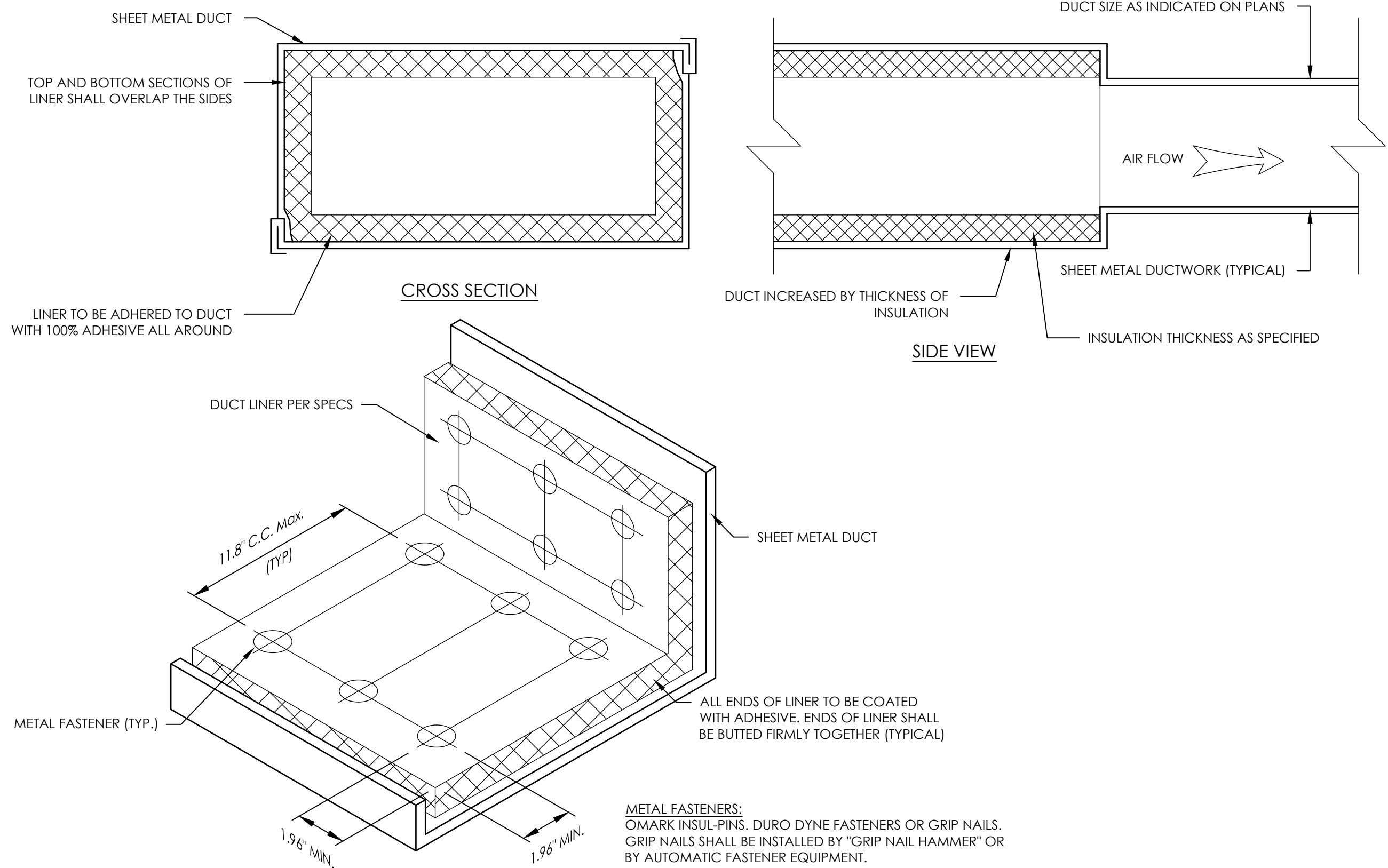
**ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ**



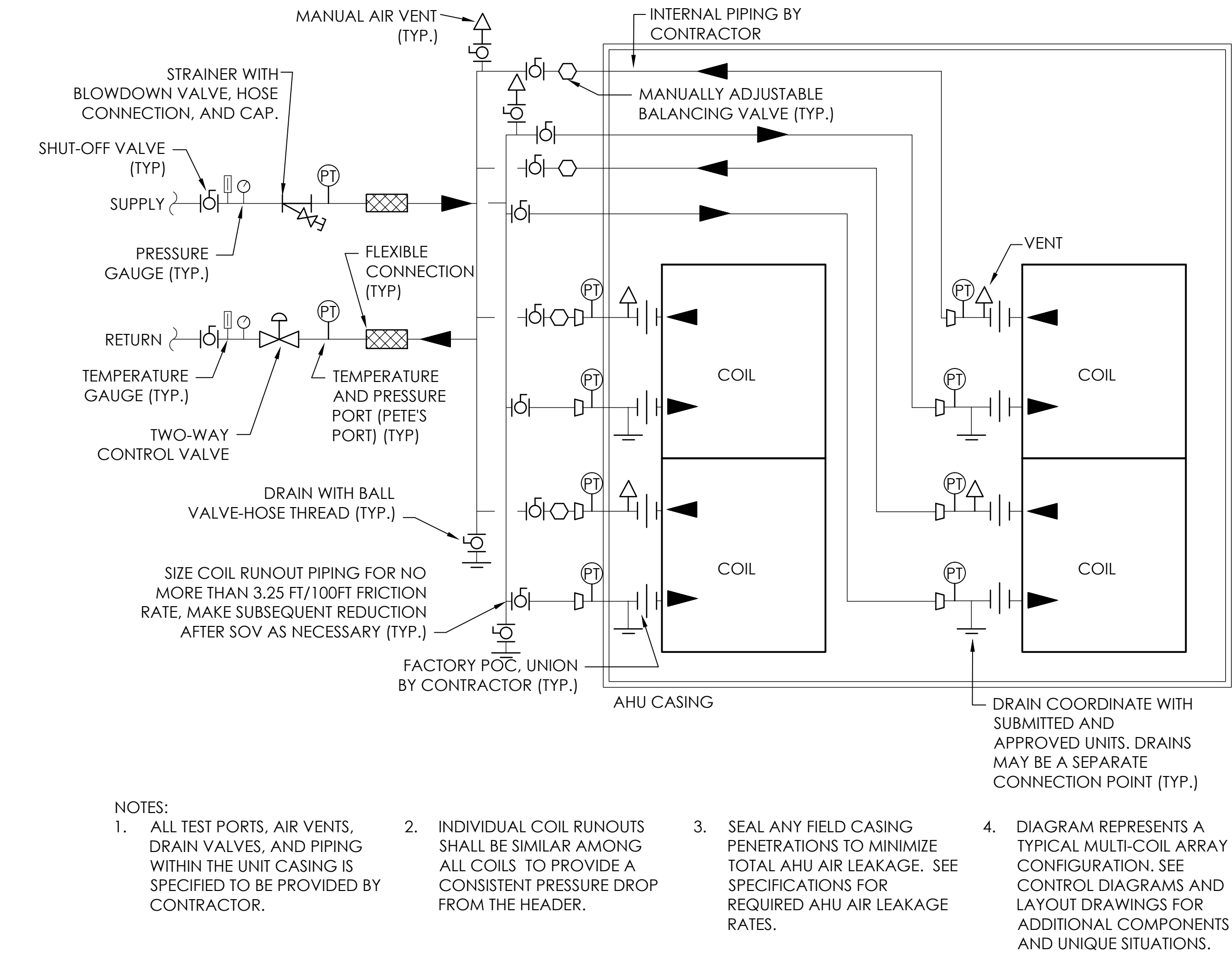
REVS: DATE:  
DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M5.1**  
26OF 48  
W.O. NUMBER  
**19\*10427**

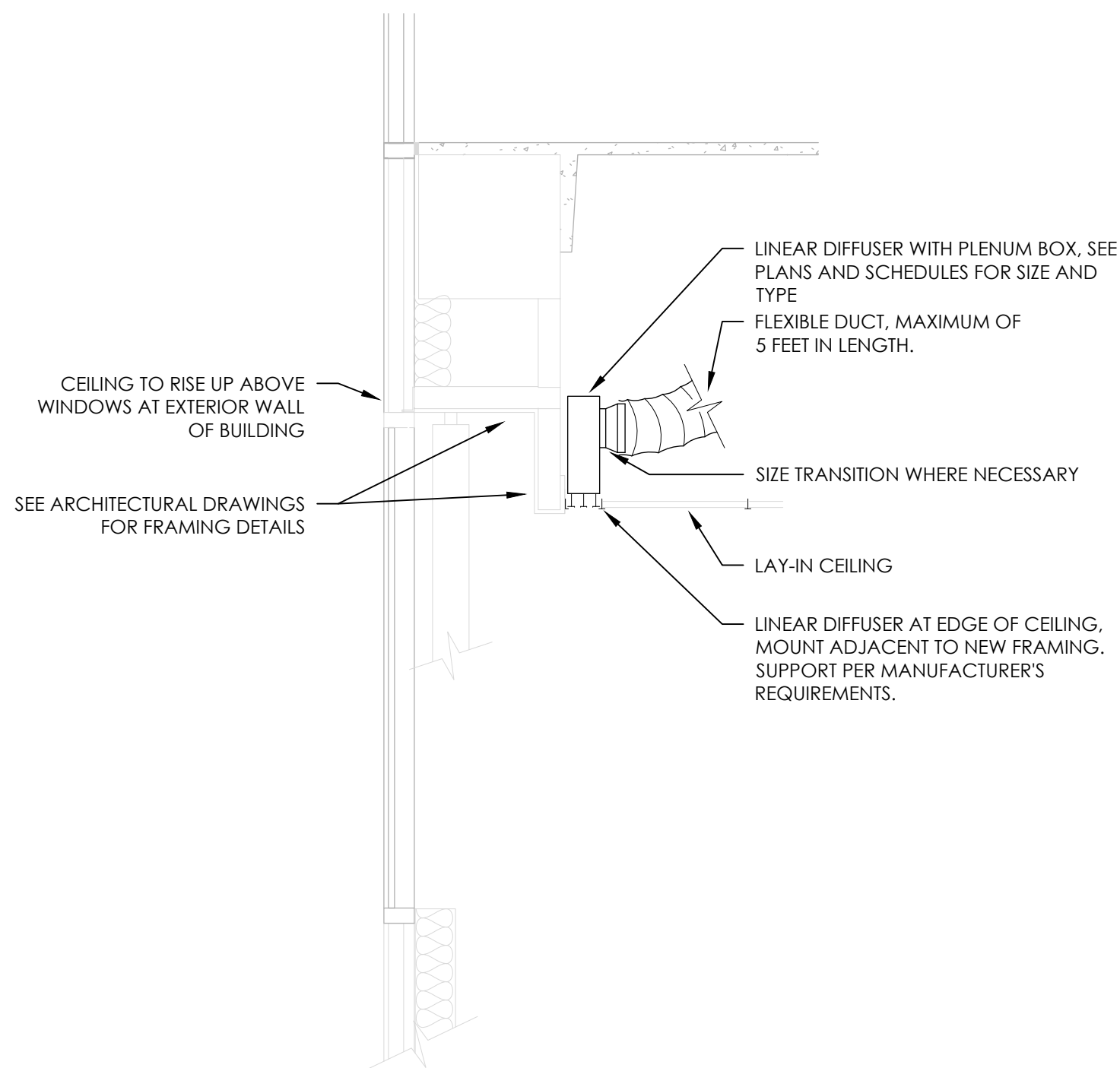




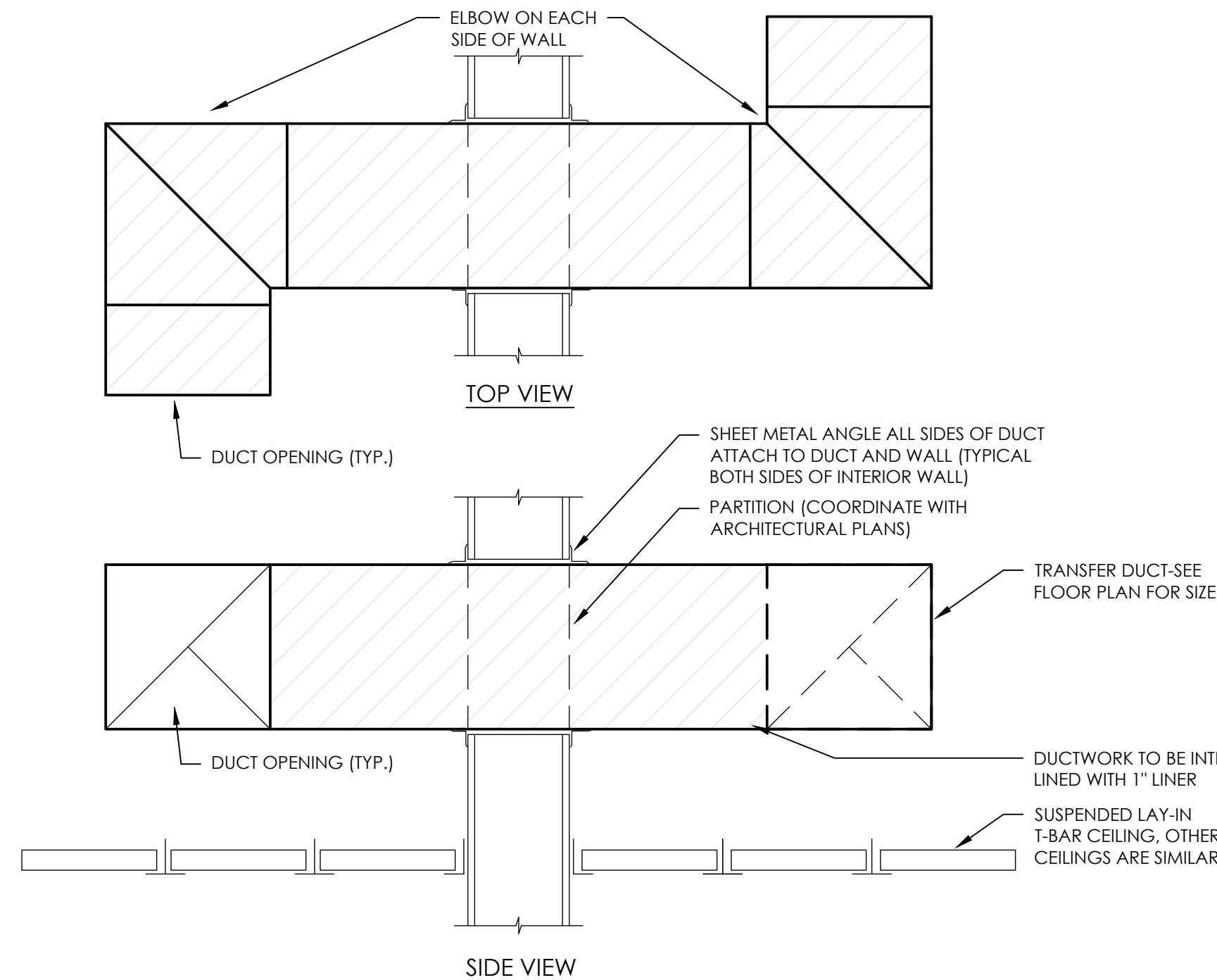
**3 DUCT LINER ATTACHMENT**  
NTS



**4 AHU WITH MULTIPLE COIL CONNECTIONS PIPING ARRANGEMENT**  
NTS



**1 LINEAR DIFFUSER DETAIL**  
NTS



**2 ABOVE CEILING TRANSFER DUCT AT NON-RATED, FULL HEIGHT PARTITIONS**  
NTS

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

**ADMIN WEST FIFT FLOOR TI  
MECHANICAL DETAILS**

**ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ**

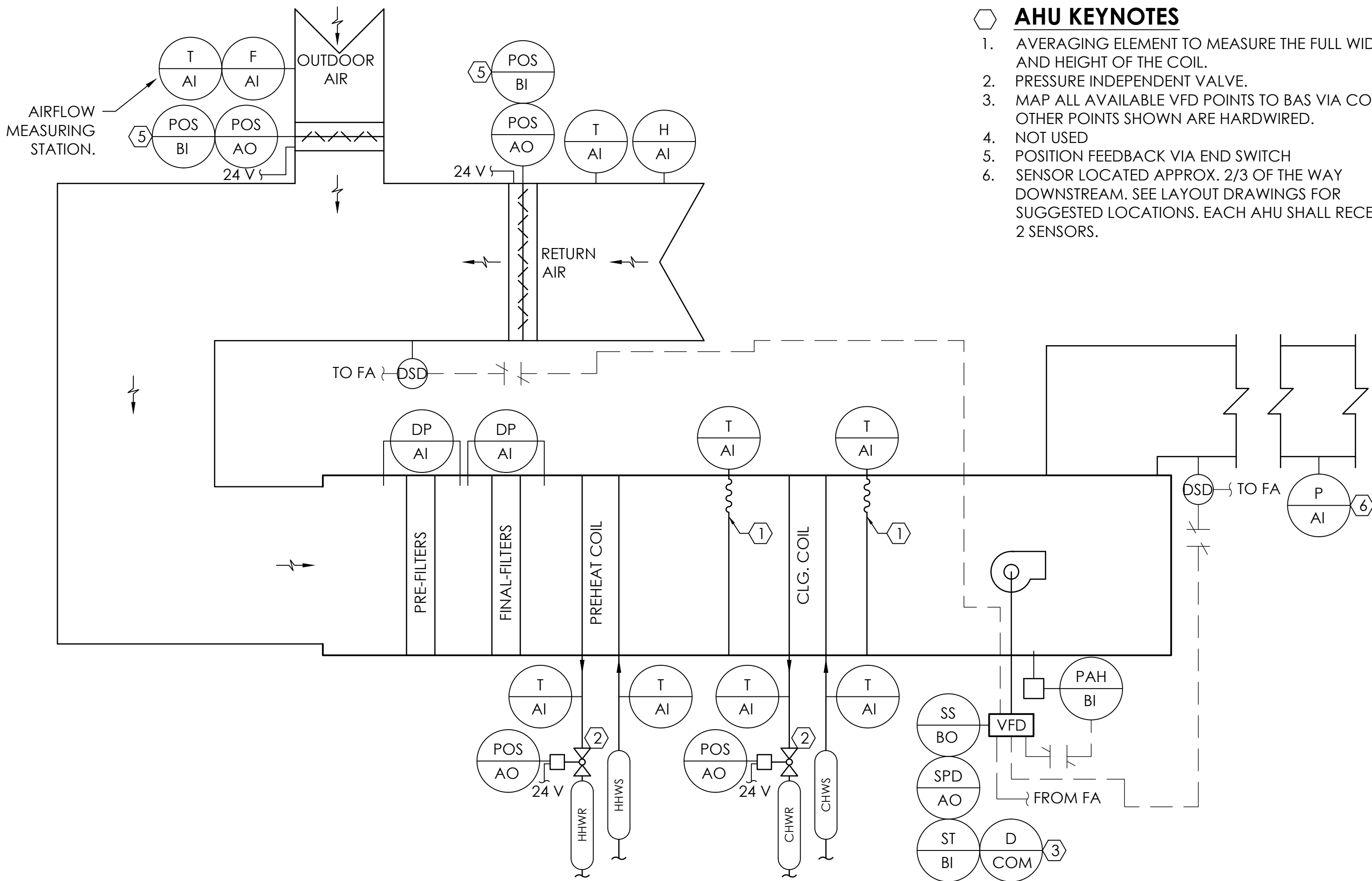
SEAL  
43047  
RONALD DOUGLAS  
STINGELIN  
REGISTERED  
ARCHITECT  
ARIZONA U.S.A.  
THE SEAL OF PIMA COUNTY  
ARIZONA

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M5.2**  
27 OF 48  
W.O. NUMBER  
**19\*10427**

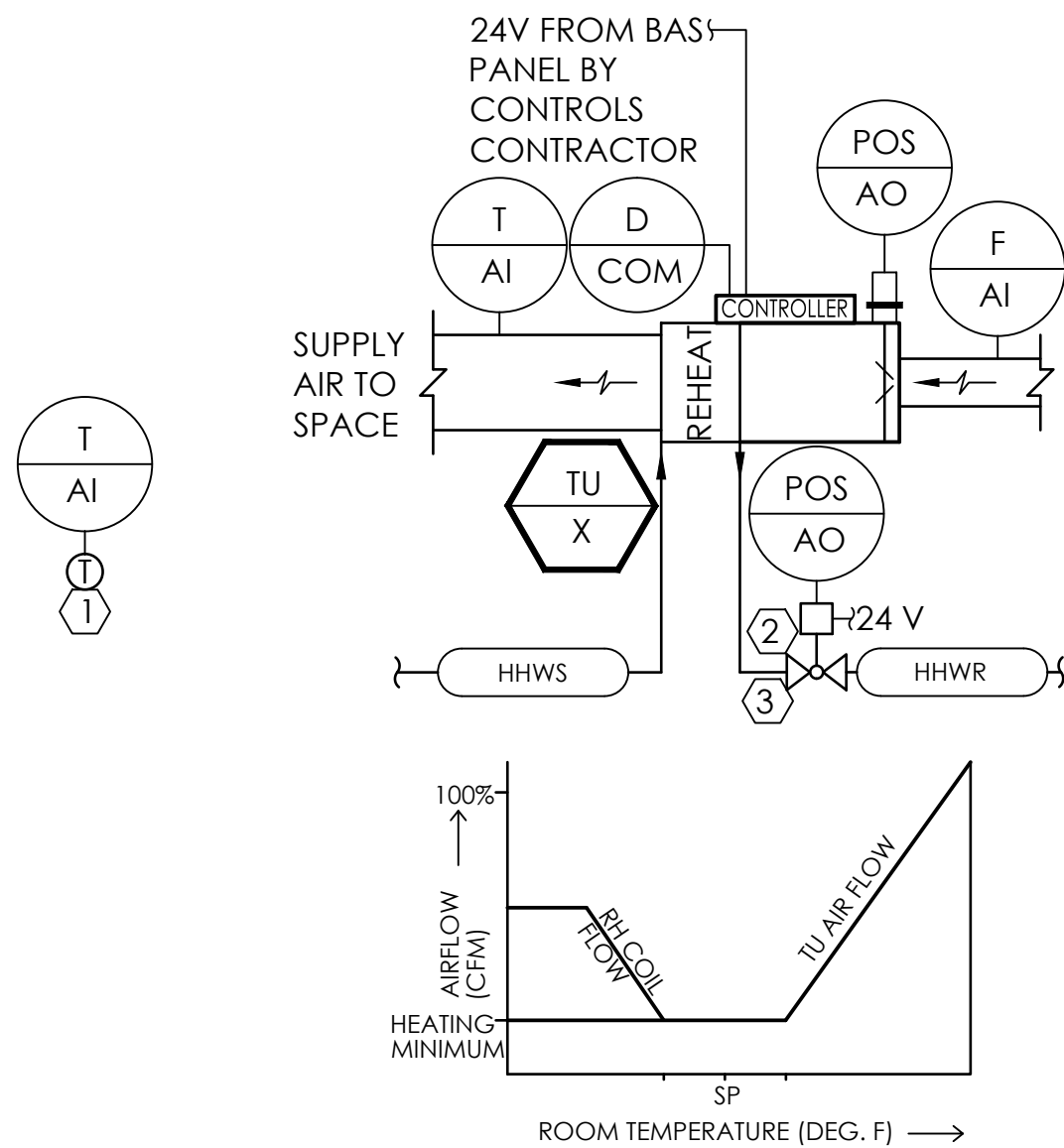
PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085





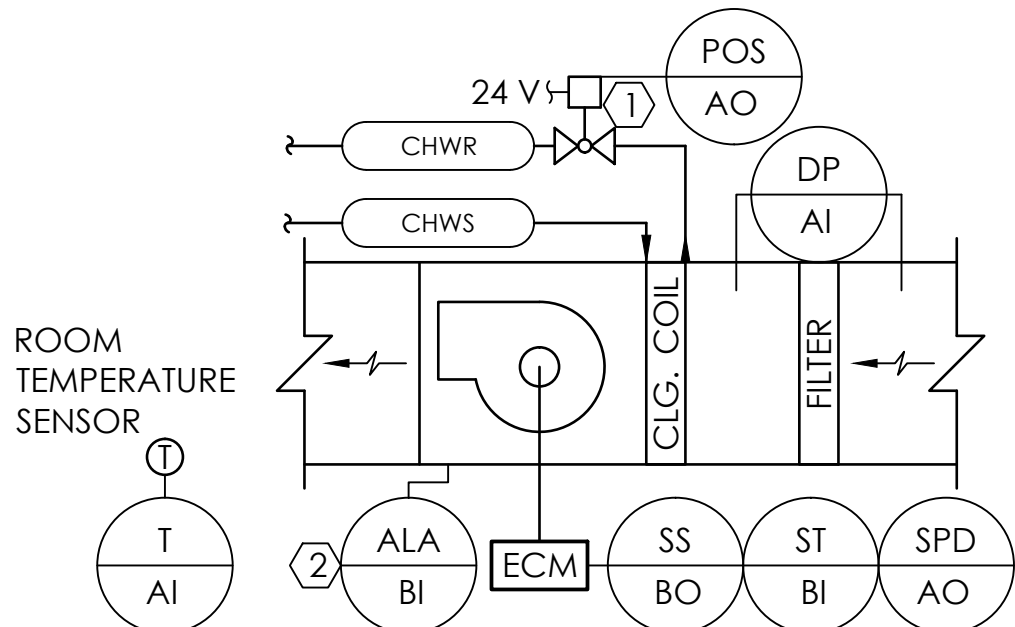
# 1 AHU CONTROL DIAGRAM

NOT TO SCALE



# 2 TERMINAL UNIT CONTROL DIAGRAM

NOT TO SCALE



# 3 FCU CONTROL DIAGRAM

NOT TO SCALE

## AHU KEYNOTES

1. AVERAGING ELEMENT TO MEASURE THE FULL WIDTH AND HEIGHT OF THE COIL.
2. PRESSURE INDEPENDENT VALVE.
3. MAP ALL AVAILABLE VFD POINTS TO BAS VIA COM. OTHER POINTS SHOWN ARE HARDWIRED.
4. NOT USED
5. POSITION FEEDBACK VIA END SWITCH
6. SENSOR LOCATED APPROX. 2/3 OF THE WAY DOWNSTREAM. SEE LAYOUT DRAWINGS FOR SUGGESTED LOCATIONS. EACH AHU SHALL RECEIVE 2 SENSORS.

## AIR HANDLING UNIT (AHU) SEQUENCE OF OPERATION

AHU-5A & 5B SHALL OPERATE PER EXISTING COUNTY PROGRAMMING.

### 1. FAN OPERATION

THE SUPPLY FANS (SFs) SHALL OPERATE CONTINUOUSLY DURING ALL OCCUPIED HOURS. DURING UNOCCUPIED HOURS, THE SUPPLY FAN SHALL MODULATE ON WHENEVER ANY TU EXPERIENCES A COOLING OR HEATING DEMAND. THE SUPPLY FAN SHALL MODULATE OFF WHEN NO THERMAL DEMAND ON THAT SYSTEM ARE PRESENT.

THE SF VFD'S SHALL MODULATE TO MAINTAIN A USER ADJUSTABLE DISCHARGE STATIC PRESSURE (DSP) SET POINT. EACH STATIC PRESSURE SENSOR SHALL HAVE A UNIQUE, INDEPENDENT SET POINT. EACH AHU SHALL USE LOW SELECT LOGIC (ACTUAL VS. SET POINT) ON ITS ASSOCIATED SENSORS TO MODULATE FAN SPEED.

EACH DSP SET POINT SHALL BE RESET BASED ON ACTUAL BLDG DEMAND REQUIREMENTS. THE BAS SHALL MONITOR AND AVERAGE ALL TU DAMPER POSITIONS ASSOCIATED WITH EACH AIR HANDLER. THIS AVERAGE VALUE SHALL BE USED TO LINEARLY RESET THE DSP. EACH SENSOR SHALL HAVE ITS OWN UNIQUE RESET SCHEDULE. ALL RESET SCHEDULES SHALL BE INITIALLY SET AS INDICATED BELOW. FINAL SETTINGS SHALL BE AS RECOMMENDED BY THE TAB CONTRACTOR.

AVG DAMPER POSITION	DSP SET POINT
20% (ADJ)	0.8" WC (ADJ)
70% (ADJ)	1.2" WC (ADJ)

FOR SYSTEMS WITH MULTIPLE STATIC PRESSURE SENSORS, EACH SENSOR SHALL HAVE AN INDEPENDENT, USER ADJUSTABLE SET POINT RESET SCHEDULE.

THE BAS SHALL ALLOW USERS TO REMOVE INDIVIDUAL TUs FROM THIS RESET LOGIC.

THE DISCHARGE AIR PRESSURE HIGH LIMIT ALARM SHALL BE USER ADJUSTABLE AND INITIALLY SET AT 4.5" WG. UPON ALARM, THE NORMALLY CLOSED CONTACT SHALL OPEN AND SHUT OFF THE FAN. THIS CONDITION SHALL REPORT AN ALARM CONDITION TO THE BAS.

### 2. COOLING AND HEATING COILS

THE AHU CHILLED AND HEATING WATER VALVES SHALL MODULATE TO MAINTAIN A DISCHARGE AIR TEMP (DAT) SET POINT. THE DAT SET POINT SHALL BE RESET BASED ON ACTUAL BLDG DEMAND REQUIREMENTS. THE BAS SHALL MONITOR AND AVERAGE ALL TU REHEAT (RH) COIL VALVE POSITIONS ASSOCIATED WITH EACH AIR HANDLER. THIS AVERAGE VALUE SHALL BE USED TO LINEARLY RESET THE DAT. EACH SYSTEM SHALL HAVE ITS OWN UNIQUE RESET SCHEDULE. ALL RESET SCHEDULES SHALL BE INITIALLY SET AS INDICATED BELOW.

## TERMINAL UNITS WITH 3-WAY VALVES

1. PROVIDE 3-WAY REHEAT CONTROL VALVES ON THE FOLLOWING TERMINAL UNIT TO ENSURE BRANCH CIRCULATION. PROVIDE WITH CIRCUIT SETTER IN THE BYPASS SET AT 0.5 GPM. COORDINATE WITH LAYOUT DRAWINGS

- 515A, 517A, 507B

## TERMINAL UNITS WITH COMMON THERMOSTATS

1. THE FOLLOWING SETS OF TERMINAL UNITS SHALL RECEIVE A COMMON SET POINT FROM A SINGLE THERMOSTAT.

TU-506A, TU-507A  
TU-502B, TU-513B  
TU-510B, 511B, AND 512B

## TU KEYNOTES

1. ROOM TEMPERATURE SENSOR W/ PROGRAMMABLE WARM/COOL ADJUSTER, OCCUPANCY OVERRIDE, AND COMM PORT.
2. PRESSURE INDEPENDENT VALVE. (3-WAYS EXEMPT)
3. 2-WAY VALVE SHOWN. SEE LAYOUT DRAWINGS FOR LOCATIONS OF 3-WAY CONTROL VALVES.

## FCU KEYNOTES

1. PRESSURE INDEPENDENT VALVE.
2. COIL CONDENSATE OVERFLOW ALARM PER IMC

## FAN COIL UNIT SEQUENCE OF OPERATIONS

1. USER ADJUSTABLE SET POINTS SHALL BE INITIALLY SET AS FOLLOWS BASED ON THE BUILDING OCCUPANCY SCHEDULE:

OCCUPIED	UNOCCUPIED
COOLING 80°F (ADJ)	COOLING 85°F (ADJ)

2. UPON A RISE IN SPACE TEMPERATURE THE FAN WILL ENERGIZE AND THE COOLING COIL VALVE WILL MODULATE TO MAINTAIN SET POINT  $\pm$  3° F (ADJUSTABLE).
3. DURING OCCUPIED HOURS, THE FAN SHALL RUN CONTINUOUSLY.
4. DURING UNOCCUPIED HOURS, THE FAN SHALL CYCLE ON/OFF BASED ON THERMAL LOAD.

AVG VALVE POSITION	DSP SET POINT
25% (ADJ)	55 °F (ADJ)
80% (ADJ)	75 °F (ADJ)

THE BAS SHALL ALLOW USERS TO REMOVE INDIVIDUAL TUs FROM THIS RESET LOGIC.

THE AHU HEATING AND COOLING SIGNALS SHALL BE COMPARED TO PREVENT SIMULTANEOUS HEATING AND COOLING AT THE AHU LEVEL.

### 3. DAMPER CONTROL

THE OA AND RETURN AIR (RA) DAMPERS WILL MODULATE TO MAINTAIN THE MINIMUM OA FLOW RATE (ADJ) AS REPORTED BY THE AIR FLOW MEASURING STATION. THIS FLOW RATE IS TO REMAIN CONSTANT DURING ALL OCCUPIED HOURS.

DAMPER CONTROL SHALL START WITH THE RA DAMPER FULLY OPEN AND THE OA DAMPER MODULATING TO MAINTAIN SET POINT. IF THE OA DAMPER IS FULLY OPEN AND THE SET POINT CANNOT BE ATTAINED FOR A PERIOD OF 5 MINUTES (ADJ), THE RA DAMPER SHALL BEGIN TO SHUT UNTIL THE SET POINT IS REACHED. THE RA DAMPER SHALL NOT BE ALLOWED TO CLOSE BEYOND 50% OPEN (ADJ). IF THE OA DAMPER IS FULLY OPEN, THE RA DAMPER AT MINIMUM POSITION, AND THE SET POINT IS NOT ATTAINED FOR A PERIOD OF 10 MINUTES (ADJ), AN ALARM SHALL BE GENERATED IN THE BAS.

THE AUTOMATIC OA CONTROL DAMPER SHALL FULL SHUT WHEN THE AIR HANDLER IS IN THE UNOCCUPIED MODE PER IECC REQUIREMENTS.

### 4. FIRE ALARM INTERFACE

UPON SIGNAL FROM THE BUILDING FIRE ALARM, THE FAN SHALL SHUT DOWN VIA A NORMALLY CLOSED CONTACT WIRED TO THE VFD. UPON DETECTION BY EITHER AHU DUCT SMOKE DETECTOR, THE FAN SHALL SHUT DOWN VIA A NORMALLY CLOSED CONTACT WIRED TO THE VFD.

## OCCUPANCY SCHEDULE NOTES

OCCUPANCY SHALL PER THE EXISTING PIMA COUNTY CENTRAL PLANT PROGRAMMING.

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL CONTROLS

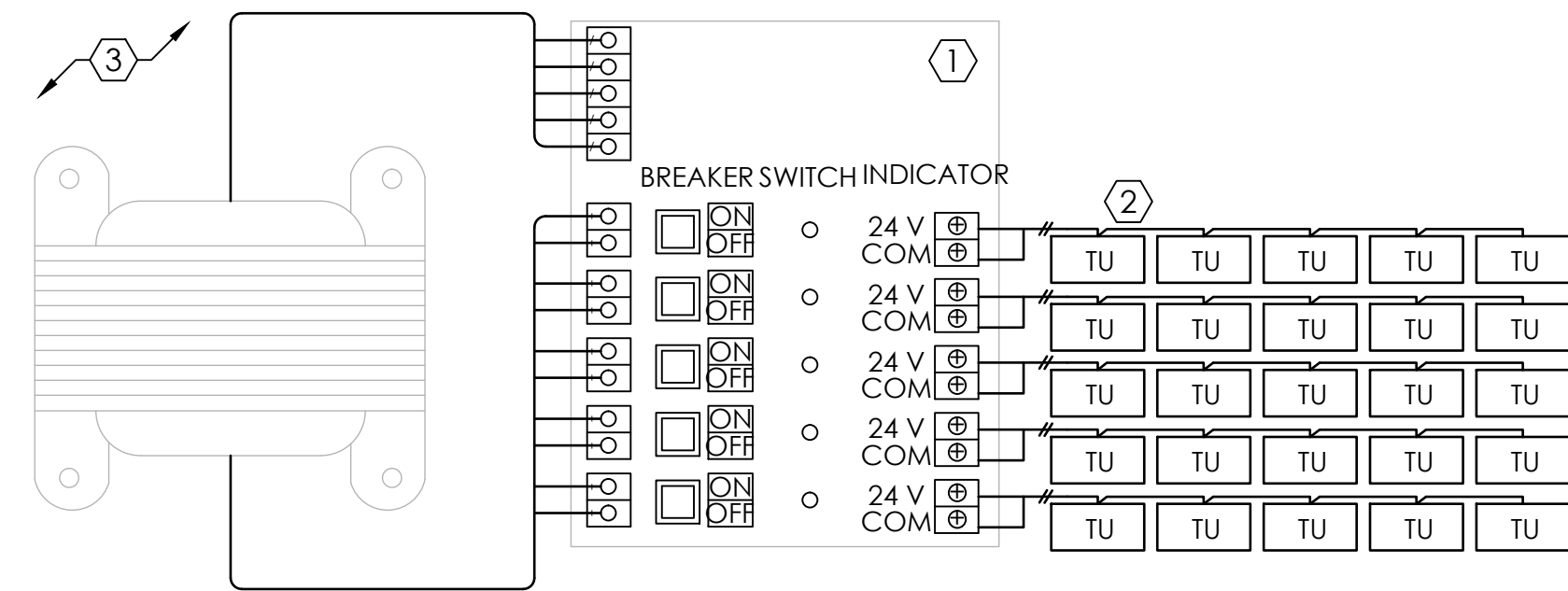


REVS: DATE:

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M6.0**  
28OF 48  
W.O. NUMBER  
**19\*10427**



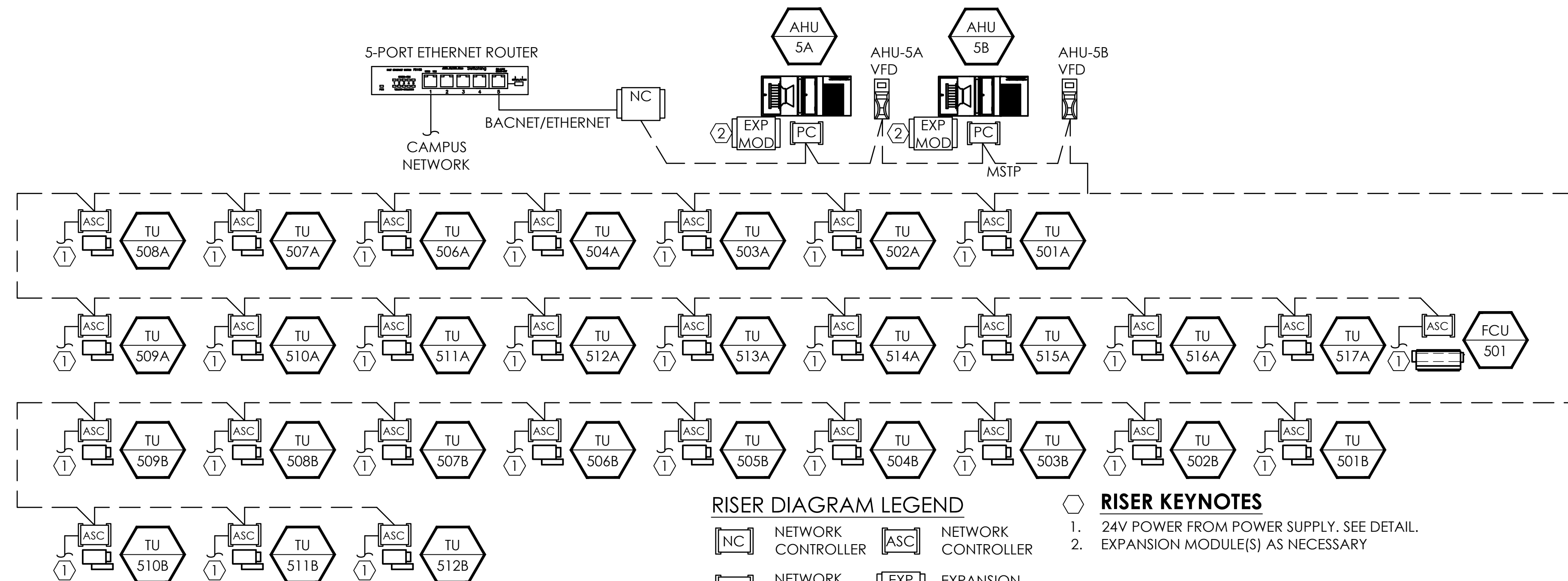


#### TRANSFORMER DETAIL KEYNOTES

- FUNCTIONAL DEVICES POWER SUPPLY MODEL # PSH500A IN 12X12X6 NEMA 1 ENCLOSURE (OR APPROVED EQUAL)
- MAXIMUM 5 TU CONTROLLERS PER BREAKER
- SEE DRAWINGS FOR APPROXIMATE ENCLOSURE LOCATION(S)

## 2 TERMINAL UNIT POWER TRANSFORMER DIAGRAM

NTS



#### RISER DIAGRAM LEGEND

- |      |                    |           |                    |
|------|--------------------|-----------|--------------------|
| [NC] | NETWORK CONTROLLER | [ASC]     | NETWORK CONTROLLER |
| [PC] | NETWORK CONTROLLER | [EXP MOD] | EXPANSION MODULE   |
| ---  | BACNET MSTP        |           |                    |

#### RISER KEYNOTES

- 24V POWER FROM POWER SUPPLY. SEE DETAIL.
- EXPANSION MODULE(S) AS NECESSARY

## 1 HVAC CONTROLS NETWORK DIAGRAM

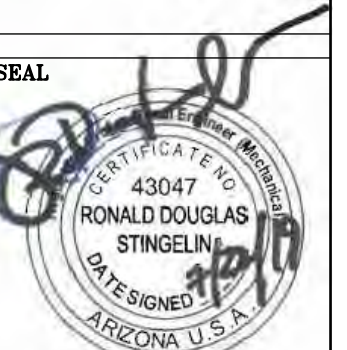
NTS

**GLHN**  
ARCHITECTS & ENGINEERS, INC.  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL CONTROLS



REVS: DATE:

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M6.1**  
29 OF 48  
W.O. NUMBER  
**19\*10427**



AIR HANDLING UNIT SCHEDULE																		
MARK	LOCATION	AREA AND/OR BLDG SERVED	AIR FLOW	AIR FLOW			ESP	SUPPLY FAN MARK	RETURN OR RELIEF FAN MARK	EXHAUST FAN MARK	PREFILTER MARK	AFTER FILTER MARK	FINAL FILTER MARK	HEAT RECOVERY MARK	PREHEAT COIL MARK	COOLING COIL MARK	REHEAT COIL MARK	REMARKS
				SUPPLY	MIN OA	RETURN												
				CFM	CFM	CFM												
AHU-5A	LEVEL 5	LEVEL 5 WEST	VARIABLE	10,200	1,350	8,850	2.75	SF5A	NONE	NONE	PF-5A	NONE	FF-5A	NONE	PHC-5A	CC-5A	NONE	BASIS OF DESIGN = TRANE CSA021
AHU-5B	LEVEL 5	LEVEL 5 EAST	VARIABLE	9,000	1,470	7,530	2.75	SF5B	NONE	NONE	PF-5B	NONE	FF-5B	NONE	PHC-5B	CC-5B	NONE	BASIS OF DESIGN = TRANE CSA021
NOTES: 1. SIZE UNITS FOR 2600 FT. ELEVATION 2. INCLUDE FACTORY PROVIDED VFD AND MOTOR SHAFT GROUNDING BRUSHES 3. AIR HANDLER SECTIONS TO BE SIZED TO FIT IN EXISTING ELEVATORS, STAIRWELLS, &/OR WINDOWS. FIELD VERIFY PRIOR TO SUBMITTING. 4. MAXIMUM OPERATING FLOOR LOADING NOT TO EXCEED 60 LBS/FT <sup>2</sup> OVER ENTIRE AHU FOOTPRINT 5. SIZE UNIT BASE TO ACCOMMODATE P-TRAP HEIGHT 6. PROVIDE WITH BACKDRAFT DAMPER AT EACH FAN.																		

FAN SCHEDULE																							
MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	MAX AIR FLOW	TSP	FAN								MOTOR ELECTRICAL								REMARKS	
				CFM	IN	TYPE	WHEEL	CLASS	ARRANGEMENT, ROTATION, AND DISCHARGE	DIAMETER	STATIC EFF.	DRIVE	FAN RPM	POWER					PHASE	VOLT	RPM		SPEED CONTROL
										IN				BHP	HP	FLA	MCA	PF					
SF5A	LEVEL 5	LEVEL 5 WEST	AHU-5A	10,200	4.4	PLENUM	AIRFOIL	II	VERT. DISCHARGE	2@ 18.25	60	DIRECT	2488	11.8	2 @ 7.5	21.00	26.25	0.79	3	480	1,800	VARIABLE	---
SF5B	LEVEL 5	LEVEL 5 EAST	AHU-5B	9,000	4.69	PLENUM	AIRFOIL	II	VERT. DISCHARGE	2@ 16.5	64	DIRECT	3006	10.3	2 @ 7.5	21.00	26.25	0.80	3	480	1,800	VARIABLE	---
NOTES																							
1. VALUES SHOWN ARE FOR THE DEHUMIDIFICATION DESIGN CONDITION (MOST STRINGENT)																							

CHILLED WATER COOLING COIL SCHEDULE																			
MARK	LOCATION	AREA AND/OR BLDG	SYSTEM AND/OR SERVICE	SUPPLY AIR FLOW CFM	MAX FACE VELOCITY FPM	MAX APD IN WG	CONDITION	EAT		LAT		TOTAL CLG. MBH	SENSIBLE CLG. MBH	LATENT CLG. MBH	CHILLED WATER				REMARKS
								DB °F	WB °F	DB °F	WB °F				FLOW GPM	EWI °F	LWT °F	MAX WPD FT	
CC-5A	LEVEL 5	LEVEL 5 WEST	AHU-5A	10,200	500	0.85	0.4% SENSIBLE 0.4% DEHUMID.	81.6	64.8	55.0	54.0	315.8	269.3	46.5	63.2	45.0	55.0	6.0	SEE DRAWINGS FOR CONNECTION SIDE
CC-5B	LEVEL 5	LEVEL 5 EAST	AHU-5B	9,000	500	0.85	0.4% SENSIBLE 0.4% DEHUMID.	82.5	64.8	55.0	54.0	277.2	243.2	34.0	55.4	45.0	55.0	4.5	SEE DRAWINGS FOR CONNECTION SIDE

MARK	LOCATION	AREA AND/OR BLDG	SYSTEM AND/OR SERVICE	APPLICATION	AIR FLOW CFM	MAX FACE VELOCITY FPM	MAX APD IN WG	TEMPERATURES		TOTAL MIN MBH	HOT WATER				% GLYCOL	REMARKS
								EAT °F	LAT °F		FLOW GPM	EWI °F	LWT °F	MAX WPD FT		
PHC-5A	LEVEL 5	LEVEL 5 WEST	AHU-5A	PREHEAT	10,200	525	0.1	63	80	168	16.8	170	150	1.0	0	SEE DRAWINGS FOR CONNECTION SIDE
PHC-5B	LEVEL 5	LEVEL 5 EAST	AHU-5B	PREHEAT	9,000	525	0.1	62	80	158	15.8	170	150	1.0	0	SEE DRAWINGS FOR CONNECTION SIDE

AIR FILTER SCHEDULE												
MARK	LOCATIO N	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	MINIMUM MERV RATING	AIR FLOW	APD		HOUSING TYPE	CARTRIDGES			REMARKS
						INITIAL	CHANGE- OVER		QTY.	THICKNESS	ARRANGEMENT	
						CFM	IN			IN		
PF-5A	LEVEL 5	LEVEL 5 WEST	AHU-5A	8	10,200	0.27	1	SIDE	6	2		----
PF-5B	LEVEL 5	LEVEL 5 EAST	AHU-5B	8	9,000	0.27	1	SIDE	6	2		-----
FF-5A	LEVEL 5	LEVEL 5 WEST	AHU-5A	15	10,200	0.32	1.5	SIDE	6	12		-----
FF-5B	LEVEL 5	LEVEL 5 EAST	AHU-5B	15	9,000	0.32	1.5	SIDE	6	12		-----

AIR HANDLING UNIT SOUND POWER LEVELS																											
MARK	LOCATION	AREA SERVED	SOUND POWER LEVELS OUTLET (dB RE: 10E-12 WATTS)								SOUND POWER LEVELS INLET (dB RE: 10E-12 WATTS)								SOUND POWER LEVELS CASING RADIATED (dB RE: 10E-12 WATTS)								
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
AHU-5A	LEVEL 5	LEVEL 5 WEST	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8KHz	
AHU-5B	LEVEL 5	LEVEL 5 EAST	88	83	85	91	84	85	80	71	80	79	79	84	72	74	67	58	83	80	78	81	78	67	53	40	
NOTES: 1. SOUND POWER LEVEL MEASUREMENTS IN ACCORDANCE WITH AMCA STANDARD 300. 2. VALUES SHOWN FOR UNIT OPERATING AT DEHUMIDIFICATION DESIGN POINTS.																											

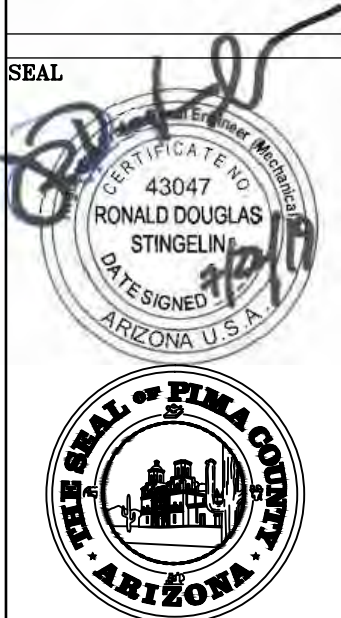
ALL SELECTIONS  
SHALL BE MADE  
AT AN ALTITUDE  
OF 2,600 FT.

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL SCHEDULES

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ



REVS: DATE:

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M7.0**  
30 OF 48  
W.O. NUMBER  
**19\*10427**



COOLING ONLY TWO PIPE FAN COIL UNIT SCHEDULE																					
MARK	LOCATION	SERVICE	TOTAL AIR FLOW	OA FLOW	ESP	COOLING REQUIREMENTS				CIRCULATING WATER				FILTER	FAN MOTOR				REMARKS		
			CFM	CFM		IN WG	MIN TOTAL	MIN SENS. CAPACITY	EAT		FLOW	EWT	LWT		MAX WPD	WATTS	PHASE	VOLT		RPM	SPEED CONTROL
							BTUH	BTUH	°F	°F	GPM	°F	°F		FT						
FCU-501	LEVEL 5	ELECT. RM.	255	0	0.39	8,055	8,055	85	61	1.9	45	53	8.0	8	91.0	1	120	1524	ECM		
NOTE 1. SIZE UNITS FOR 2600 FT. ELEVATION 2. PROVIDE WITH MOTOR SPEED CONTROLLER WITH DIAL ADJUSTMENT.																					

AIR DEVICE SCHEDULE (SUPPLY)											
MARK	TYPE	MAX FLOW	MAX PRESS DROP	MOUNTING	NECK SIZE	MAX. NC	DAMPER	FINISH	THROW	REMARKS	
		CFM	IN WC		INCHES						
SD-1	FULLY LOUVERED FACE, CONE STYLE	115	0.08	LAY-IN	6" Ø	20	OBD	WHITE	4 WAY	PRICE SERIES SCDA, ADJUSTABLE THROW, 4 CONE, 24"x 24" FULLY LOUVERED WITH FRAME FOR T-BAR INSTALLATION, AND ROUND NECK	
SD-2	FULLY LOUVERED FACE, CONE STYLE	185	0.08	LAY-IN	8" Ø	20	OBD	WHITE	4 WAY	PRICE SERIES SCDA, ADJUSTABLE THROW, 4 CONE, 24"x 24" FULLY LOUVERED WITH FRAME FOR T-BAR INSTALLATION, AND ROUND NECK	
SD-3	FULLY LOUVERED FACE, CONE STYLE	280	0.08	LAY-IN	10" Ø	20	OBD	WHITE	4 WAY	PRICE SERIES SCDA, ADJUSTABLE THROW, 4 CONE, 24"x 24" FULLY LOUVERED WITH FRAME FOR T-BAR INSTALLATION, AND ROUND NECK	
SD-4	FULLY LOUVERED FACE, CONE STYLE	365	0.08	LAY-IN	12" Ø	20	OBD	WHITE	4 WAY	PRICE SERIES SCDA, ADJUSTABLE THROW, 4 CONE, 24"x 24" FULLY LOUVERED WITH FRAME FOR T-BAR INSTALLATION, AND ROUND NECK	
SD-5	FULLY LOUVERED FACE, CONE STYLE	480	0.08	LAY-IN	14" Ø	20	OBD	WHITE	4 WAY	PRICE SERIES SCDA, ADJUSTABLE THROW, 4 CONE, 24"x 24" FULLY LOUVERED WITH FRAME FOR T-BAR INSTALLATION, AND ROUND NECK	
SG-1	SIDEWALL ADJUSTABLE	210	0.08	SIDEWALL	8x6	20	OBD	WHITE	ADJUSTABLE	PRICE SERIES Z2 WITH DOUBLE DEFLECTION FACE, HORIZONTAL FRONT WITH VERTICAL REAR, AND FLAT FRAME FOR SURFACE MOUNTING	
SG-2	SIDEWALL ADJUSTABLE	320	0.08	SIDEWALL	10x8	20	OBD	WHITE	ADJUSTABLE	PRICE SERIES Z2 WITH DOUBLE DEFLECTION FACE, HORIZONTAL FRONT WITH VERTICAL REAR, AND FLAT FRAME FOR SURFACE MOUNTING	
SG-3	SIDEWALL ADJUSTABLE	485	0.08	SIDEWALL	20x6	20	OBD	WHITE	ADJUSTABLE	PRICE SERIES Z2 WITH DOUBLE DEFLECTION FACE, HORIZONTAL FRONT WITH VERTICAL REAR, AND FLAT FRAME FOR SURFACE MOUNTING	
SG-4	SIDEWALL ADJUSTABLE	145	0.08	HARDLID	6x6	20	OBD	WHITE	ADJUSTABLE	PRICE SERIES Z2 WITH DOUBLE DEFLECTION FACE, HORIZONTAL FRONT WITH VERTICAL REAR, AND FLAT FRAME FOR SURFACE MOUNTING	

AIR DEVICE SCHEDULE (LINEAR SUPPLY)												
MARK	TYPE	MAX AIR FLOW	MAX PRESSURE DROP	SLOTS	SLOT WIDTH	LENGTH	PLENUM INLET SIZE	THROW PATTERN	DAMPER	MAX. NC	FINISH	REMARKS
			INCHES WG		INCHES		INCHES					
LG-1	LINEAR SLOT	190	0.1	2	1	48	8" Ø	ADJUSTABLE	BUTTERFLY TYPE	20	WHITE WITH BLACK INTERIOR	PRICE SDS WITH FACTORY SD8 PLENUM BOX AND FULLY ADJUSTABLE AIR PATTERN.

AIR DEVICE SCHEDULE (RETURN/EXHAUST)											
MARK	TYPE	USAGE	MAX FLOW	MAX PRESS DROP	MOUNTING	NOMINAL FACE SIZE	MA X NC	DAMPER	FINISH	REMARKS	
			CFM	IN WC		IN x IN					
RG-1	EGG CRATE	RETURN	2000	0.100	LAY-IN	24"x 24"	20	OBD	WHITE	PRICE SERIES 80-TSF, 1/2 GRID CORE WITH 1-1/4" FRAME FOR T-BAR INSTALLATION	
RG-2	EGG CRATE	RETURN	1000	0.100	LAY-IN	24"x 12"	20	OBD	WHITE	PRICE SERIES 80-TSF, 1/2 GRID CORE WITH 1-1/4" FRAME FOR T-BAR INSTALLATION	
RG-3	FIXED LOUVERD FACE	RETURN	240	0.100	HARDLID	10X10	20	OBD	WHITE	PRICE SERIES 530 WITH 45 DEG. BLADES AND 3/4" SPACING.	
EG-1	FIXED LOUVERD FACE	EXHAUST	150	0.100	HARDLID	8X8	20	OBD	WHITE	PRICE SERIES 530 WITH 45 DEG. BLADES AND 3/4" SPACING.	
EG-2	FIXED LOUVERD FACE	RETURN	240	0.100	HARDLID	10X10	20	OBD	WHITE	PRICE SERIES 530 WITH 45 DEG. BLADES AND 3/4" SPACING.	
EG-3	EGG CRATE	RETURN	2000	0.100	LAY-IN	24"x 24"	20	OBD	WHITE	PRICE SERIES 80-TSF, 1/2 GRID CORE WITH 1-1/4" FRAME FOR T-BAR INSTALLATION	

5TH FLOOR AIR TERMINAL UNIT SCHEDULE												
MARK	MAX AIR FLOW	MIN AIR FLOW	RUN-OUT SIZE	DUCT INLET SIZE	MAX AIR PRESS. DROP	HOT WATER HEATING COIL						REMARKS
	CFM	CFM	IN	IN	IN WG	EAT	EWT	LWT	FLOW	CAPA-CITY	MAX WPD	
						°F	°F	°F	GPM	BTUH	FT	
TU-501A	1,310	525	16	12	0.35	55	170	150	1.9	18,650	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-502A	NOT USED											
TU-503A	575	205	12	8	0.30	55	170	150	0.7	6,980	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-504A	875	440	14	10	0.35	55	170	150	1.3	13,300	0.8	PRICE MODEL SDV OR APPROVED EQUAL
TU-505A	215	80	8	6	0.30	55	170	150	0.5	4,910	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-506A	1255	440	16	12	0.35	55	170	150	1.4	13,610	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-507A	1255	440	16	12	0.35	55	170	150	1.4	13,610	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-508A	185	75	8	6	0.30	55	170	150	0.6	5,710	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-509A	545	195	12	8	0.30	55	170	150	0.8	7,810	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-510A	240	85	8	6	0.30	55	170	150	0.5	5,090	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-511A	370	150	10	8	0.30	55	170	150	0.7	7,460	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-512A	1080	435	16	12	0.35	55	170	150	1.5	14,710	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-513A	220	80	8	6	0.30	55	170	150	0.5	4,670	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-514A	365	150	10	8	0.30	55	170	150	0.7	6,960	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-515A	250	90	10	6	0.30	55	170	150	0.3	3,190	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-516A	1385	485	16	14	0.40	55	170	150	1.6	15,820	1.3	PRICE MODEL SDV OR APPROVED EQUAL
TU-517A	1035	365	14	12	0.35	55	170	150	1.2	11,540	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-501B	425	150	12	10	0.35	55	170	150	0.5	5,470	0.8	PRICE MODEL SDV OR APPROVED EQUAL
TU-502B	420	150	10	8	0.30	55	170	150	0.6	5,580	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-503B	455	160	12	8	0.30	55	170	150	0.5	5,480	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-504B	620	310	12	8	0.30	55	170	150	1.3	12,540	0.7	PRICE MODEL SDV OR APPROVED EQUAL
TU-505B	255	90	10	6	0.30	55	170	150	0.6	5,980	0.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-506B	515	185	12	10	0.35	55	170	150	0.7	7,390	0.8	PRICE MODEL SDV OR APPROVED EQUAL
TU-507B	860	305	14	10	0.35	55	170	150	0.9	9,480	0.8	PRICE MODEL SDV OR APPROVED EQUAL
TU-508B	910	320	14	10	0.35	55	170	150	1.0	10,060	0.8	PRICE MODEL SDV OR APPROVED EQUAL
TU-509B	1865	655	18	16	0.40	55	170	150	2.0	20,490	1.5	PRICE MODEL SDV OR APPROVED EQUAL
TU-510B	955	335	14	12	0.35	55	170	150	1.3	13,420	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-511B	960	340	14	12	0.35	55	170	150	1.4	13,560	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-512B	960	340	14	12	0.35	56	170	150	1.4	13,560	1.25	PRICE MODEL SDV OR APPROVED EQUAL
TU-513B	415	150	10	8	0.30	57	170	150	0.6	5,580	0.7	PRICE MODEL SDV OR APPROVED EQUAL
NOTES												
1. INLET STATIC BASED ON ARI 885-98.												

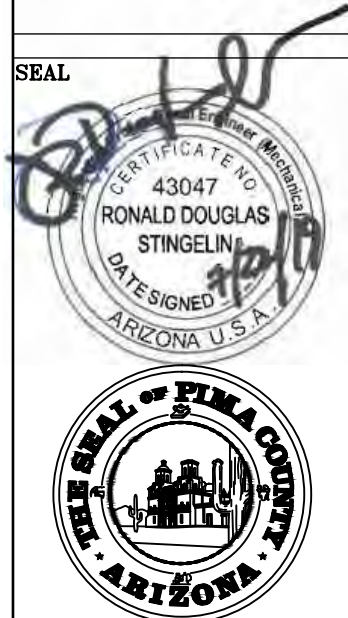
ALL SELECTIONS SHALL BE MADE AT AN ALTITUDE OF 2,600 FT.

**GLHN**  
ARCHITECTS & ENGINEERS, INC  
2939 E. Broadway Blvd, Tucson, AZ 85714  
T 520.881.4546 F 520.795.1822 GLHN.com

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL SCHEDULES

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ



REVISED: DATE:

DRWN BY: **AG**  
CKD BY: **JMZ**  
DATE: **2019/07/22**  
SCALE: **NTS**  
SHEET NO:

**M7.1**  
31 OF 48  
W.O. NUMBER  
**19\*10427**



AHU-5A, ASHRAE 62.1-2016 CODE REVIEW VENTILATION FOR MULTIPLE-ZONE RECIRCULATING SYSTEMS																					
System Type		Ceiling supply of warm air 15 deg. F or more above space temperature					Air Distribution Effectiveness, E <sub>z</sub>		0.8		Diversity				1.00		per Section 6.2.5.3				
ZONE TYPE	ROOM NAME/ NUMBER	OCCUPANCY CLASSIFICATION	A <sub>z</sub> , ZONE AREA (ft <sup>2</sup> )	IS ACTUAL OCCUPANCY KNOWN	P <sub>z</sub> , KNOWN OCCUPANCY	1000P <sub>z</sub> /A <sub>z</sub> , OCCUPANCY DENSITY (PERSONS PER 1000 ft <sup>2</sup> )	R <sub>p</sub> , COMBINED OUTDOOR AIR FLOWRATE (CFM/PERSON)	R <sub>a</sub> , OUTDOOR AIR FLOWRATE (CFM/SQFT)	TU NUMBER	TU MAX CFM TO ZONE	TU MIN CFM TO ZONE	TU % MIN	MAXIMUM SUPPLY TO ZONE (CFM)	V <sub>PO</sub> , MINIMUM SUPPLY TO ZONE (CFM)	R <sub>p</sub> P <sub>z</sub> , OCCUPANT OUTDOOR AIR (CFM)	R <sub>a</sub> A <sub>z</sub> , AREA OUTDOOR AIR (CFM)	V <sub>OD</sub> =(R <sub>p</sub> P <sub>z</sub> +R <sub>a</sub> A <sub>z</sub> )/E <sub>z</sub> , ZONE OUTDOOR AIR (CFM)	Z <sub>VD</sub> =V <sub>OD</sub> /V <sub>TD</sub> , ZONE OUTDOOR AIR FRACTION	E <sub>VT</sub> =1+X <sub>5</sub> Z <sub>OD</sub> , ZONE VENTILATION EFFICIENCY	REMARKS	
Office_Buildings	532 OFFICE	Office	123.3	No	N/A	5	17	N/A	501A	565.0	226.0	40%	565	226	10	0.0	13.1	0.116	1.046		
	534 OFFICE	Office	123.3	No	N/A	5	17	N/A	501A	565.0	226.0	40%	565	226	10	0.0	13.1				
	524 OPEN CUBICLES	Office	264.6	No	N/A	5	17	N/A	505A	95.0	33.3	35%	95	33	22	0.0	28.1				
	530 OFFICE	Office	172.7	No	N/A	5	17	N/A	504A	875.0	437.5	50%	875	438	15	0.0	18.3				
	531 OFFICE	Office	137.0	No	N/A	5	17	N/A	505A	60.0	21.0	35%	60	21	12	0.0	14.6				
	533 OFFICE	Office	137.0	No	N/A	5	17	N/A	505A	60.0	21.0	35%	60	21	12	0.0	14.6				
	535 OFFICE	Office	137.0	No	N/A	5	17	N/A	510A	60.0	21.0	35%	60	21	12	0.0	14.6				
	536 OFFICE	Office	137.0	No	N/A	5	17	N/A	510A	60.0	21.0	35%	60	21	12	0.0	14.6				
	537 OFFICE	Office	137.0	No	N/A	5	17	N/A	510A	60.0	21.0	35%	60	21	12	0.0	14.6				
	538 OFFICE	Office	137.0	No	N/A	5	17	N/A	510A	60.0	21.0	35%	60	21	12	0.0	14.6				
	539 OPEN CUBICLES	Office	456.6	No	N/A	5.0	17.0	N/A	506A	1,255.0	439.3	35%	2,510	879	39	0.0	48.5				
									507A	1,255.0	439.3	35%									
	544 OFFICE	Office	122.4	No	N/A	5	17	N/A	513A	55.0	19.3	35%	55	19	10	0.0	13.0				
	545 OFFICE	Office	122.4	No	N/A	5	17	N/A	513A	55.0	19.3	35%	55	19	10	0.0	13.0				
	546 OFFICE	Office	122.4	No	N/A	5	17	N/A	513A	55.0	19.3	35%	55	19	10	0.0	13.0				
	547 OFFICE	Office	122.4	No	N/A	5	17	N/A	513A	55.0	19.3	35%	55	19	10	0.0	13.0				
	548 OFFICE	Office	166.6	No	N/A	5	17	N/A	512A	875.0	350.0	40%	875	350	14	0.0	17.7				
	549 OFFICE	Office	119.8	No	N/A	5	17	N/A	512A	155.0	62.0	40%	155	62	10	0.0	12.7				
550 OFFICE	Office	117.4	No	N/A	5	17	N/A	515A	250.0	87.5	35%	250	88	10	0.0	12.5					
551 OPEN CUBICLES	Office	394.8	No	N/A	5	17	N/A	516A	1,385.0	484.8	35%	1,385	485	34	0.0	41.9					
General	528 CORR	corridors	220.7	Yes	0	N/A	0	0.06	501A	110.0	44.0	40%	110	44	0	13.2	16.6	0.648	0.514		
	529 CORR	corridors	264.9	Yes	0	N/A	0	0.06	501A	70.0	28.0	40%	70	28	0	15.9	19.9				
	505 CORR	corridors	578.9	Yes	0	N/A	0	0.06	508A	145.0	58.0	40%	145	58	0	34.7	43.4				
	540 CORR	corridors	150.8	Yes	0	N/A	0	0.06	508A	40.0	16.0	40%	40	16	0	9.0	11.3				
	541 CORR	corridors	176.0	Yes	0	N/A	0	0.06	511A	45.0	18.0	40%	45	18	0	10.6	13.2				
	542 CORR	corridors	182.7	Yes	0	N/A	0	0.06	512A	50.0	20.0	40%	50	20	0	11.0	13.7				
	543 CORR	corridors	133.9	Yes	0	N/A	0	0.06	511A	35.0	14.0	40%	35	14	0	8.0	10.0				
	556 ALCOVE	corridors	59.6	Yes	0	N/A	0	0.06	511A	15.0	6.0	40%	15	6	0	3.6	4.5				
	560 ALCOVE	corridors	29.6	Yes	0	N/A	0	0.06	511A	10.0	4.0	40%	10	4	0	1.8	2.2				
General	520 LG CONF	Conference/meeting	473.6	No	0	50	6	N/A	509A	545.0	190.8	35%	545	191	142	0.0	177.6	0.512	0.649		
	526 CONF	Office	219.3	No	N/A	5	17	N/A	503A	575.0	201.3	35%	575	201	19	0.0	23.3				
Office_Buildings	552 BREAK	Breakrooms	232.5	No	N/A	50	7	N/A	517A	1,035.0	362.3	35%	1,035	362	81	0.0	101.7	0.281	0.881		
Office_Buildings	554 LACTATION	Restrooms	52.5	No	N/A	0	0	N/A	514A	55.0	22.0	40%	55	22	0	0.0	0.0			Exhaust requirement only per Section 6.2.8 & Table 6-4	
	557 WOMENS	Restrooms	168.8	No	N/A	0	0	N/A	514A	120.0	48.0	40%	120	48	0	0.0	0.0			Exhaust requirement only per Section 6.2.8 & Table 6-4	
	558 MENS	Restrooms	177.9	No	N/A	0	0	N/A	514A	125.0	50.0	40%	125	50	0	0.0	0.0			Exhaust requirement only per Section 6.2.8 & Table 6-4	
	559 TOILET	Restrooms	88.0	No	N/A	0	0	N/A	514A	65.0	26.0	40%	65	26	0	0.0	0.0			Exhaust requirement only per Section 6.2.8 & Table 6-4	
Office_Buildings	500 PUBLIC LOBBY	Reception Areas	259.2	No	N/A	30	7	N/A	511A	265.0	106.0	40%	265	106	54	0.0	68.0	0.642	0.520		
Table 6.2.5.2 Calculations										Appendix A Calculations					Use Appendix A to calculate Ventilation Efficiency, E <sub>VT</sub>						
Max Z <sub>VD</sub> = N/A										X <sub>5</sub> =V <sub>OD</sub> /V <sub>TD</sub> = 0.162					Uncorrected Outside Air Total, V <sub>OD</sub> = 681						
E <sub>V</sub> = N/A										E <sub>V</sub> =Min{E <sub>VT</sub> } 0.51					Supply Air Total at Minimum, V <sub>TD</sub> =SUM{V <sub>TD</sub> }= 4,203						
															Corrected Outside Air Total Requirement, V <sub>OD</sub> =V <sub>OD</sub> /E <sub>VT</sub> = 1,324						
															Provided Outside Air= 1,350						



COMcheck Software Version 4.1.1.0  
Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC  
Project Title: Pima County Admin West Fifth Flr, TI  
Location: Pima County location < 4000 feet, Arizona  
Climate Zone: 2b  
Project Type: New Construction

Construction Site: 150 W. Congress Tucson, AZ 85701  
Owner/Agent: Pima County  
Designer/Contractor: GLHN Architects & Engineers 2939 E. Broadway Blvd. Tucson, AZ 85716 520-881-4546

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

- | Quantity | System Type & Description  |
|----------|--|
| 1        | AHU-5A (Multiple-Zone):<br>Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 168 kBtu/h<br>No minimum efficiency requirement applies<br>Cooling: 1 each - Hydronic Coil, Capacity = 393 kBtu/h, Water Economizer<br>No minimum efficiency requirement applies<br>Fan System: SF-5A   Flr: 5 West -- Compliance (Brake HP method) : Passes<br><br>Fans:<br>SF5A Supply, Multi-Zone VAV, 10200 CFM, 15.0 motor nameplate hp, 11.8 design brake hp (11.9 max. BHP), 75.0 fan efficiency grade<br>Pressure Drop Credits:<br>Particulate filtration credit: MERV 13 through 15, 2.2222 credit |
| 1        | AHU-5B (Multiple-Zone):<br>Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 158 kBtu/h<br>No minimum efficiency requirement applies<br>Cooling: 1 each - Hydronic Coil, Capacity = 354 kBtu/h, Water Economizer<br>No minimum efficiency requirement applies<br>Fan System: SF5B   Flr: 5 East -- Compliance (Brake HP method) : Passes<br><br>Fans:<br>SF5B Supply, Multi-Zone VAV, 9000 CFM, 15.0 motor nameplate hp, 9.6 design brake hp (10.3 max. BHP), 75.0 fan efficiency grade<br>Pressure Drop Credits:<br>Particulate filtration credit: MERV 13 through 15, 1.9608 credit    |
| 1        | FCU-501 (Single-Zone):<br>Cooling: 1 each - Hydronic Coil, Capacity = 8 kBtu/h, Water Economizer<br>No minimum efficiency requirement applies<br>Fan System: FCU Fan   Elect. Rm. -- Compliance (Motor nameplate HP method) : Passes<br><br>Fans:<br>FCU501 Supply, Constant Volume, 255 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade   |

Mechanical Compliance Statement

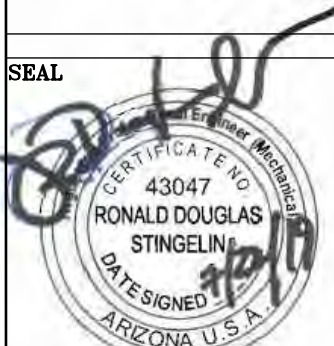
Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Jon Ziegler II, Sr. Mech. Engineer  
Signature  
7/19/2019  
Date

PIMA COUNTY FACILITIES MANAGEMENT, 150 WEST CONGRESS, TUCSON ARIZONA 85701 (520)740-3085

ADMIN WEST FIFTH FLOOR TI  
MECHANICAL CALCULATIONS

ADMINISTRATION WEST BUILDING  
150 WEST CONGRESS  
TUCSON, AZ



REVS: DATE:

DRWN BY: AG  
CKD BY: JMZ  
DATE: 2019/07/22  
SCALE: NTS  
SHEET NO:

M7.2  
32 OF 48  
W.O. NUMBER  
19\*10427

GLHN  
ARCHITECTS & ENGINEERS, INC

2939 E. Broadway Blvd, Tucson, AZ 85716  
T 520.881.4546 F 520.795.1822 GLHN.com