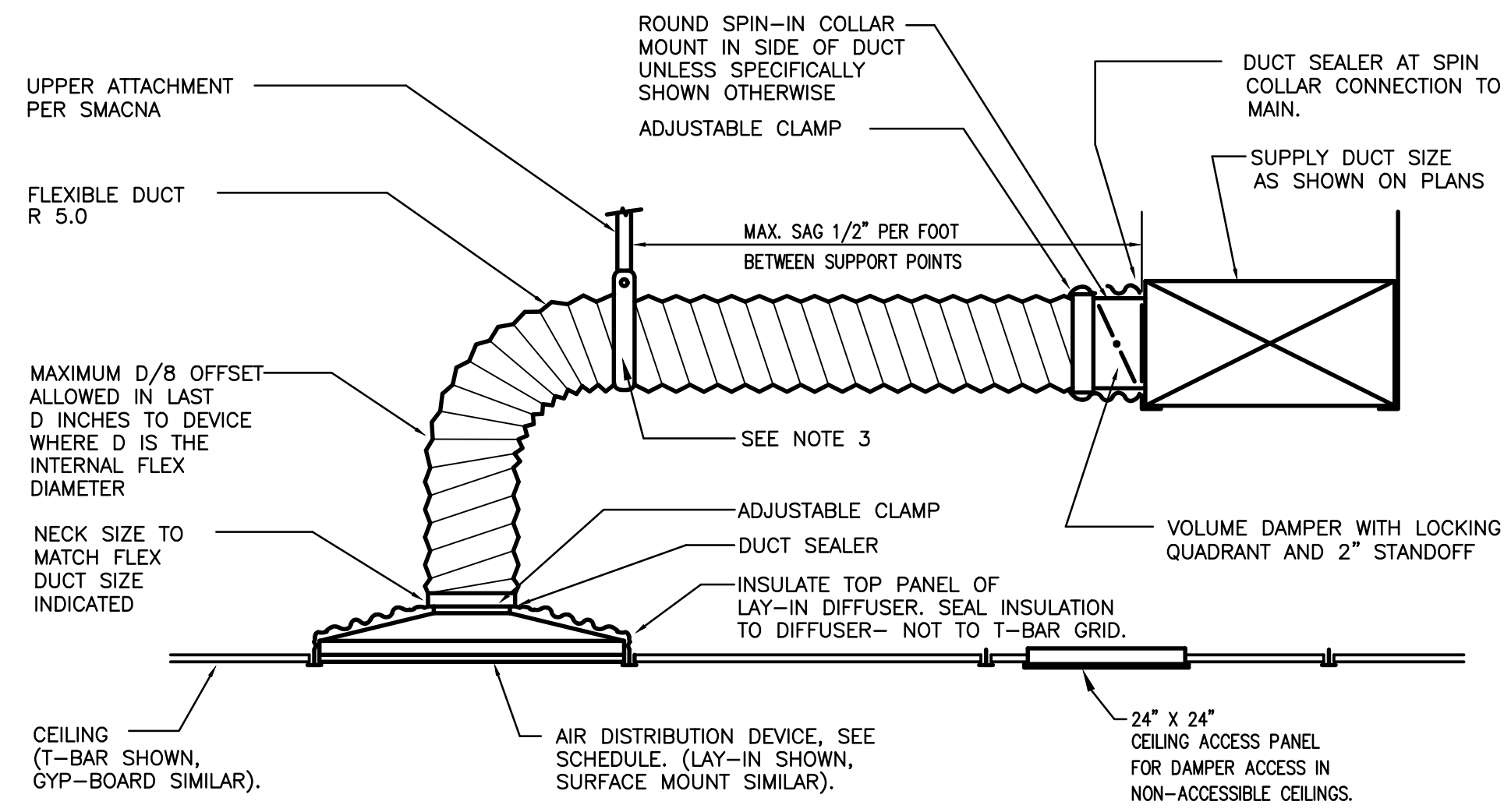


## MECHANICAL GENERAL NOTES

- THIS WORK SHALL PROVIDE A COMPLETE AND OPERABLE MECHANICAL SYSTEM.
- THIS DRAWING IS DIAGRAMATIC. ALL OFFSETS AND FITTING REQUIREMENTS ARE NOT SHOWN. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL REQUIREMENTS TO PERFORM A COMPLETE AND FUNCTIONING HVAC SYSTEM.
- ALL WORK SHALL BE PERFORMED IN A FIRST CLASS WORKMANLIKE MANNER BY LICENSED CONTRACTORS.
- THE CONTRACTOR SHALL OBTAIN AT HIS EXPENSE ALL NECESSARY FEES PERMITS, AND TESTS.
- ALL WORK SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES. NO CONTRACTOR SHALL BID UNLESS FAMILIAR WITH THESE CODES.
- EQUIPMENT SHALL BEAR A U.L. OR OTHER RECOGNIZED LABEL. NAMEPLATES, WIRING DIAGRAMS, AND ENERGY RATINGS AS APPLICABLE.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND ACCESSORIES SO THAT IT IS READILY ACCESSIBLE FOR SERVICING, TESTING, BALANCING, AND REPLACEMENT.
- CORRECTION OF DEFECTS TO THIS WORK SHALL BE MADE PROMPTLY WITHOUT CHARGE TO THE OWNER. REPAIR AND REPLACEMENT FOR DAMAGE CAUSED BY THIS CONTRACTOR SHALL BE MADE PROMPTLY WITHOUT CHARGE TO THE OWNER.
- THE CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE AGAINST DEFECTS IN ALL MATERIALS AND WORKMANSHIP FOR ONE YEAR FROM ACCEPTANCE WITH FOUR ADDITIONAL YEARS OF WARRANTY ON COMPRESSORS.
- THE CONTRACTOR SHALL PROVIDE THREE COPIES OF SUBMITTAL DATA, SHOP DRAWINGS, AND AT COMPLETION OF THE PROJECT TWO RED LINED PLANS SHOWING EXACT LOCATION AND SIZES OF ALL PROJECT ITEMS.
- THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM. HE SHALL INCLUDE ALL ITEMS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. HE SHALL INCLUDE ALL SUB-CONTRACTORS AS REQUIRED TO PERFORM FIRST CLASS AND CODE ACCEPTABLE (ELECTRICAL, TESTING AND BALANCING, INSULATION, CEILING) REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
- NOT USED
- PRIOR TO ACCEPTANCE BY THE OWNER THE SYSTEMS SHALL BE TESTED AND BALANCED BY A CERTIFIED T&B CONTRACTOR EXPERIENCED WITH THIS SYSTEM. THE CONTRACTOR SHALL CERTIFY THE TESTING AND BALANCING AND PROVIDE BALANCE TEST SHEETS.
- ALL OUTSIDE AIR DUCTWORK SHALL BE SHEETMETAL.
- AIR BALANCE TO BE PERFORMED BY THE AIR CONDITIONING CONTRACTOR TO THE OWNER'S COMFORT.
- ALL SUPPLY & RETURN DUCT WORK SHALL BE FIREBOARD INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS AND LOCAL BUILDING CODES.
- PROVIDE ALL CONTROLS, STARTERS, CONTROL WIRING, DISCONNECTS, AND OTHER ELECTRICAL EQUIPMENT AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. MECHANICAL CONTRACTOR IS TO COORDINATE WITH OTHER CONTRACTORS TO ENSURE THAT ALL ITEMS REQUIRED ARE INCLUDED IN BID.
- COORDINATE POWER & CONTROL WIRING WITH ELECTRICIAN.
- FLEXIBLE DUCT, WHERE SHOWN, SHALL BE U.L. CLASS 1. W/1" INSULATION WITH VAPOR BARRIER
- ALL GRILLES TO BE TITUS UNLESS OTHERWISE NOTED, SIZES AS SHOWN ON PLANS, ALUMINUM CONSTRUCTION.
- PLANS ARE DIAGRAMMATICALLY DRAWN, DO NOT SCALE FOR INSTALLATION.
- ALL EXHAUST AIR DUCT SHALL BE GALVANIZED SHEET METAL CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
- ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.
- ALL WORK OF THIS TRADE SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID ANY INTERFERENCES THAT MAY DELAY PROGRESS OF CONSTRUCTION.
- COORDINATE LOCATION OF CEILING DIFFUSERS, GRILLES AND REGISTERS IN THE FIELD WITH LIGHTS AND ARCHITECTURAL ELEMENTS.
- SUPPLY AND RETURN DUCTWORK IS FIBERGLASS DUCTBOARD, R-6.
- PROVIDE ELBOW TURNING VANES IN ALL DUCTS WHERE TURNS ARE GREATER THAN 45 DEGREES.
- PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST FANS.
- SEE PLUMBING PLANS FOR CONDENSATE SPECIFICATIONS.
- THE HVAC CONTRACTOR IS RESPONSIBLE FOR MAINTAINING, ON SITE, A DETAILED AS-BUILT PLAN SHOWING ACTUAL INSTALLATIONS. THE CONTRACTOR SHALL PROVIDE A NEATLY DRAWN COMPREHENSIVE AS-BUILT SET OF PLANS UPON COMPLETION, WHICH ARE SUITABLE FOR SUBMISSION TO THE BUILDING DEPARTMENT AND TO THE OWNER.

## A/C CONTROL SEQUENCE

- A/C UNIT SHALL HAVE DIGITAL, PROGRAMMABLE THERMOSTAT LOCATED 4'-6" ABOVE FIN. FL. AS SHOWN ON THE DRAWINGS. THERMOSTAT SHALL HAVE THE FOLLOWING FEATURES.
  - 7 DAY PROGRAMMING (ON-OFF, ETC.)
  - NIGHT SETBACK
  - HEATING & COOLING
  - ADJUSTABLE DEAD BAND
  - AUTOMATIC HEAT/COOL CHANGEOVER
  - MANUAL OVERRIDE (TEMPORARY UP TO 2 HOURS)
  - LOCKING KEYBOARD
  - DIGITAL TIME & TEMPERATURE DISPLAY
  - REMOTE TEMPERATURE SENSOR
 AIR HANDLING UNIT FAN SHALL RUN CONTINUOUSLY WHENEVER SYSTEM IS PROGRAMMED TO RUN IN OCCUPIED MODE.
- AHU'S OUTDOOR AIR DAMPER SHALL BE INTERLOCKED WITH THERMOSTAT AND SHALL CLOSE WHEN AHU IS OFF OR IN THE UNOCCUPIED MODE.
- PROVIDE ALL NECESSARY CONTROLS TO ACCOMPLISH THE DESIRED CONTROL SEQUENCE, INCLUDING RELAYS, TRANSFORMERS, CIRCUITRY, ETC. COORDINATE WITH THE A/C UNIT MANUFACTURER. PROVIDE LINE VOLTAGE POWER SUPPLY FROM SPARE ON POWER PANEL IF NECESSARY FOR CONTROL SYSTEM OPERATION.
- ALL THERMOSTATS AND DUCT SENSORS SHALL BE FIELD LOCATED WITH THE OWNER'S REPRESENTATIVE. ALL COSTS ASSOCIATED WITH LOCATION OF THESE DEVICES SHALL BE INCLUDED IN THE BASE BID COST. THERE WILL BE NO EXTRA COST ALLOWED REGARDLESS OF FINAL THERMOSTAT LOCATIONS.



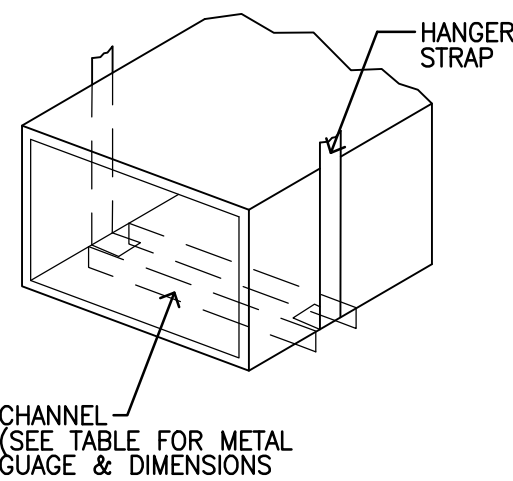
TYP. FLEXIBLE DUCT DETAIL  
N.T.S.

## FLEXIBLE DUCT NOTES

- FLEXIBLE DUCTS SHALL BE ONE-PIECE AND SHALL NOT BE SPLICED TOGETHER.
- EXTEND FLEXIBLE DUCT INSULATION TO DUCT/DIFFUSER PANEL INSULATION AND SEAL WITH MASTIC.
- MINIMUM 1 1/2" WIDE 22 GALVANIZED STRAP HANGER WITH HEMMED EDGES PER SMACNA, FIGURE 3-10
- FLEXIBLE AIR DUCT SHALL BE FULLY EXTENDED AND NOT COMPRESSED WITH ELBOW RADIUS NO LESS THAN R/D = 1.0.

## Note for Exam and Work-up rooms and All Offices:

PROVIDE EXTRA SUPPLY AND RETURN FLEX AND COIL LOOSELY 360° BETWEEN TAKEOFF AND REGISTER

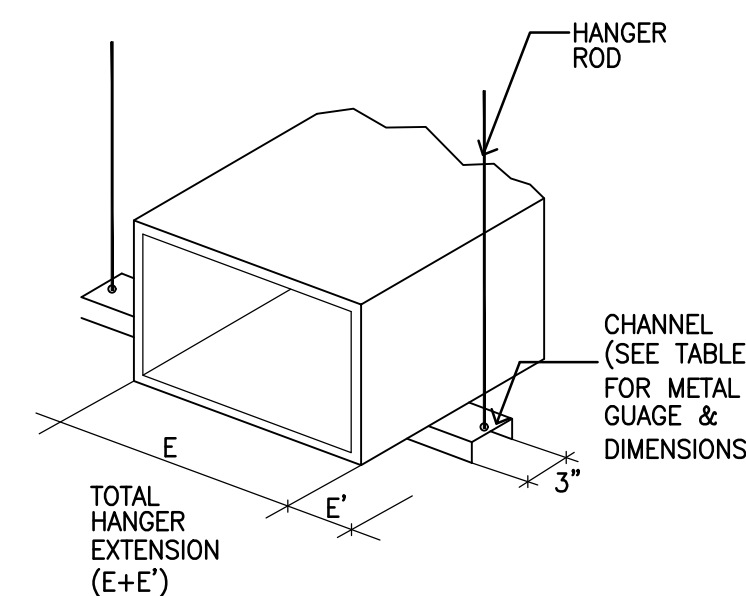


STANDARD 3" WIDE HANGERS  
HANGER EXTENSION IS DEFINED AS THE SUM OF THE DISTANCES BETWEEN THE HANGING WIRES AND THE DUCT WALLS (BOTH SIDES).

MAXIMUM HANGER SPACING BY DUCT SIZE, I.D.

| DUCT SIZE, INCHES                                 | MAXIMUM HANGER SPACING |
|---|------------------------|
| 48" WIDE OR GREATER                               | 4 FT                   |
| LESS THAN 48" WIDE & LESS THAN 48" DEEP           | 6 FT                   |
| WIDTH BETWEEN 28" & 48" AND GREATER THAN 16" DEEP | 6 FT                   |
| LESS THAN 28" WIDE & 16" DEEP OR LESS             | 8 FT                   |

| IF TOTAL EXTENSION IS NOT GREATER THAN: | MINIMUM CHANNEL GAUGE | MINIMUM CHANNEL PROFILE |
|---|-----------------------|-------------------------|
| 6"                                      | 24                    | 3"x1.5"                 |
| 18"                                     | 22                    | 3"x2"                   |
| 30"                                     | 18                    | 3"x2"                   |



## FIBERGLASS DUCT HANGER DETAILS

N.T.S.

## OUTDOOR AIR CALCULATION

BASED ON FBC MECHANICAL

| UNIT NO. | SPACE USE            | OCC. | CFM/OCC. | OCC. CFM | SPACE AREA | CFM/S.F. | AREA CFM | TOTAL CFM |
|----------|----------------------|------|----------|----------|------------|----------|----------|-----------|
| AC-1     | WAITING 101          | 8    | 5        | 40       | 215 S.F.   | 0.06     | 13       | 53        |
|          | TOPO 102, VISUAL 103 | 2    | 5        | 10       | 67 S.F.    | 0.06     | 4        | 14        |
|          | WORK-UP 104, 105     | 4    | 5        | 20       | 159 S.F.   | 0.06     | 9        | 29        |
|          | TECH 106             | 1    | 5        | 5        | 59 S.F.    | 0.06     | 3        | 8         |
|          | SUB-WAIT 107         | 4    | 5        | 20       | 98 S.F.    | 0.06     | 6        | 26        |
|          | OFFICES 108, 109     | 2    | 5        | 10       | 174 S.F.   | 0.06     | 10       | 20        |
|          | EXAMS 110, 111       | 4    | 5        | 20       | 160 S.F.   | 0.06     | 9        | 29        |
|          | BREAK 112            | 3    | 5        | 15       | 90 S.F.    | 0.06     | 5        | 20        |
|          | BUSINESS 113         | 2    | 5        | 10       | 133 S.F.   | 0.06     | 8        | 18        |
|          | HALLWAYS 118, 119    | -    | -        | -        | 338 S.F.   | 0.06     | 20       | 20        |
|          | TOTAL O/A REQUIRED   |      |          |          |            |          |          | 237       |
|          | O/A PROVIDED         |      |          |          |            |          |          | 237       |

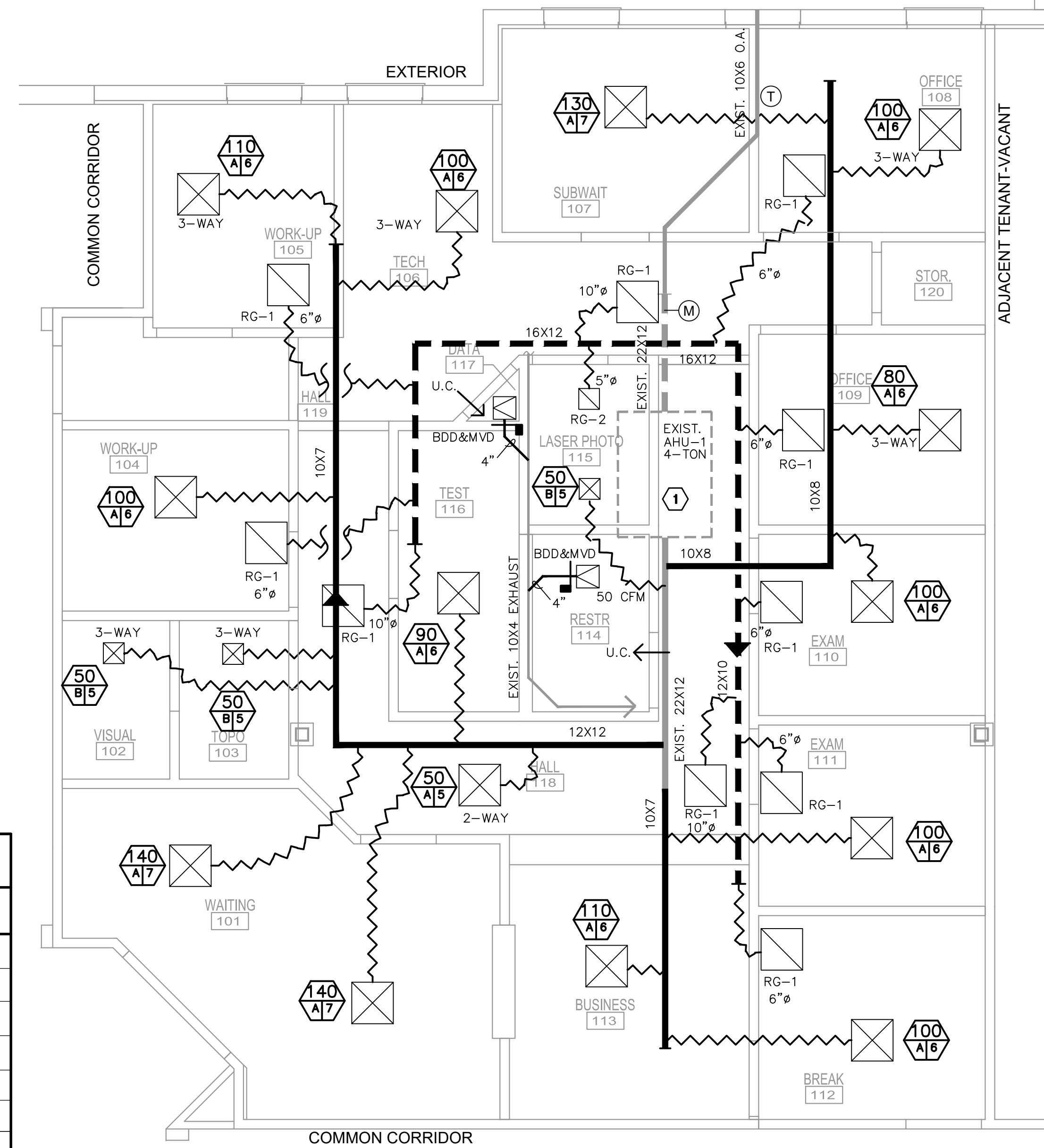
## TYPICAL NOTES

- THERMOFIN NOT ALLOWED. USE GALV. METAL DUCT FOR EXHAUST.
- SUPPLY & INSTALL ALL NEW FILTERS.
- MUST INSTALL TURNING VANES ON ALL ELBOWS & TEES.
- 2 PIECE ELBOWS WILL NOT BE ACCEPTABLE.
- IN ADDITION TO TEST AND BALANCE PROVIDE COMFORT BALANCE AFTER USER OCCUPIES SPACE FOR AT LEAST 2 WEEKS
- EXHAUST FAN OPERATION SHALL BE INTERLOCKED WITH AHU OPERATION.
- TEST AND BALANCE SHALL BE BY INDEPENDENT LICENSED COMPANY
- INSTALL CONDENSING UNITS ON EXIST. EQPT. ROOF RACK. SECURE TO RACK TO MEET CODE WIND LOAD REQUIREMENTS.
- PROVIDE 2" DEEP TRAP WITH CLEANOUTS, RUN 3/4" SCH 40 PVC DRAIN LINES WITH 1" FOAM PLASTIC INSULATION TO EXIST. CONDENSATE RISER.

## AIR DISTRIBUTION DEVICE SCHEDULE

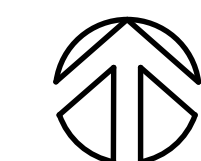
|      | MAKE  | MODEL  | SIZE                | MATERIAL | FRAME TYPE | DAMPER | THROW    | FINISH |
|------|-------|--------|---------------------|----------|------------|--------|----------|--------|
| A    | TITUS | TDC-AA | 24X24-NECK PER PLAN | ALUMINUM | LAY-IN     |        | PER PLAN | WHITE  |
| B    | TITUS | TDC-AA | 6X6- NECK PER PLAN  | ALUMINUM | FLAT FRAME |        | PER PLAN | WHITE  |
| RG-1 | TITUS | 3FL    | 24X24-NECK PER PLAN | ALUMINUM | LAY-IN     |        |          | WHITE  |
| RG-2 | TITUS | 3FL    | 12X12-NECK PER PLAN | ALUMINUM | FLAT FRAME |        |          | WHITE  |

PROVIDE VOLUME DAMPERS FOR ALL BRANCH LINES  
PROVIDE SQUARE TO ROUND ADAPTERS WHERE REQUIRED FOR ROUND DUCT CONNECTION.  
PROVIDE FLEXIBLE DUCT SIZED TO MATCH S/A GRILL NECK UNLESS NOTED OTHERWISE.  
PROVIDE PLENUM BOX ABOVE RETURN AIR GRILLES.



## KEY NOTES:

- EXIST. 4-TON AHU-1. PROVIDE OUTSIDE AIR AS SHOWN IN TABLE. ALL REFRIGERANT & CONDENSATE LINES ARE EXISTING.



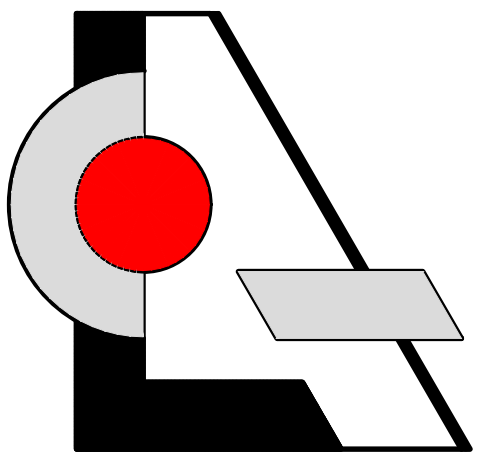
HVAC PLAN  
SCALE: 1/4"=1'-0"

## HVAC LEGEND

|  |                                      |  |                            |
|--|--------------------------------------|--|----------------------------|
|  | AIR SUPPLY DIFFUSER                  |  | EXIST. HARD DUCT           |
|  | AIR RETURN GRILLE OR TRANSFER GRILLE |  | NEW HARD DUCT-SUPPLY       |
|  | EXHAUST FAN/ REGISTER                |  | NEW HARD DUCT-RETURN       |
|  | FIRE DAMPER                          |  | EXIST. FLEX DUCT           |
|  | BACK DRAFT DAMPER                    |  | NEW FLEX DUCT              |
|  | MANUAL VOLUME DAMPER                 |  | EXIST. EXHAUST DUCT        |
|  | THERMOSTAT                           |  | NEW EXHAUST DUCT           |
|  | DUCT MTD. TEMPERATURE SENSOR         |  | EXIST. ITEMS TO BE REMOVED |
|  | DUCT MTD. SMOKE DETECTOR & RELAY     |  | ONE WAY BLOW (EXAMPLE)     |
|  | MOTORIZED DAMPER                     |  | UNDERCUT DOOR              |

## DIFFUSER LEGEND

|   |  |              |
|---|--|--------------|
| OUTPUT IN CFM   |  | DIFFUSER TAG |
| DIFFUSER CODE - SEE AIR DISTRIBUTION SCHEDULE                                 |  |              |
| NECK SIZE IN INCHES PROVIDE DUCT OF SAME SIZE                                 |  |              |
| PROVIDE MANUAL VOLUME DAMPER AT EACH FLEX BRANCH. VERIFY LOCATION OF EXISTING |  |              |
| ALL DIFFUSERS 4-WAY U.O.N.  |  |              |



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DATE 11/30/16  
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HVAC  
PLAN  
DETAILS