**Report By:**

**National TAB**
**1329 E. KEMPER ROAD**
**SUITE 4210**
**CINCINNATI, OH 45246**

**Report: TAB REPORT**

**Function: Test, Adjust, & Balance**

**Date: 09/18/2024**

# PROJECT

## 06-17-24 PENN STATION CLEVES, OH

4175 OH 128

CLEVES , OH 45002

Client

C&T DESIGN

4025 PORT UNION RD.

FAIRFIELD, OH 45014

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## Table Of Contents

## Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units) w/ Diffusers
Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

Kitchen Exhaust Hood & Associated Fans
Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow. . Any EF's that fell outside of this tolerance is noted throughout the report.

MUA (Make Up Air Unit) w/ PSP
Total flow for the MAU (Make-up Air Unit) unit was measured by readings taken at the discharge of the hood's perforated supply plenum. Readings taken with a velocity matrix were averaged and multiplied by a manufacturer's corrected area. Adjustments to the fan speed were made in order to bring the unit to within design tolerance. Any MUA's that fell outside of this tolerance is noted throughout the report.

General Exhaust Fans w/ Grilles
The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests
After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of -0.02" wc to +0.02" wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.
The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

## Issue List

- Hood 2 loose panel
- Missing diffuser
- RTU1 Mixed air
- RTUs Dirty Filters

## 06-17-24 PENN STATION CLEVES, OH

### Project Issue Information

**Issue Name :** Hood 2 loose panel

**Description :** Loose panels on hood 2. Drop out of square by ~0.5” preventing panels from matching up.

**Created By :** National TAB

**Assigned To :** National TAB - Joe Hertenstein

**Status :** Open

**Priority :** Low

**Asset Tag :**

**Originated Date :** 06/17/2024 - Gabe Merk - National TAB

Project Issue File Details

**06/17/2024**

Project Issue Response Details

- **06/17/2024 National TAB - Gabe Merk**
  - Oven off centered. Permanent wall attachment prevents centering. ANSUL sprayer not covering opening.

| | | |
|---|---|---|
| **06/17/2024** | **06/17/2024** | **06/17/2024** |

- **06/17/2024 National TAB - Joe Hertenstein**
  - Gabe, I notice that oven is not centered under hood. Can it be moved over to the left ?

## 06-17-24 PENN STATION CLEVES, OH

### Project Issue Information

**Issue Name :** Missing diffuser
**Description :** Missing diffuser 2-11 in boh.

**Created By :** National TAB
**Assigned To :** National TAB - Joe Hertenstein

**Status :** Open
**Priority :** Urgent
**Asset Tag :**
**Originated Date :** 06/18/2024 - Gabe Merk - National TAB

Project Issue File Details

**06/18/2024**

Project Issue Response Details

- **06/18/2024 National TAB - Gabe Merk**
  - Not much room to add through wall

**06/18/2024**

## 06-17-24 PENN STATION CLEVES, OH

### Project Issue Information

**Issue Name :** RTU1 Mixed air

**Description :** Rtu 1 has a mixed air leak at curb. This should be sealed to prevent any excess outdoor air/debris/creatures from entering unit.

**Created By :** National TAB

**Assigned To :** National TAB - Joe Hertenstein

**Status :** Open

**Priority :** Urgent

**Asset Tag :**

**Originated Date :** 05/29/2024 - Gabe Merk - National TAB

Project Issue File Details

**05/29/2024**

Project Issue Response Details

- **06/17/2024 National TAB - Gabe Merk**
  - Issue still open 6/17/24

## 06-17-24 PENN STATION CLEVES, OH

**Project Issue Information**

| | | | |
|---|---|---|---|
| **Issue Name :** | RTUs Dirty Filters | | |
| **Description :** | Dirty construction filters installed in RTUs. Airflow restricted by filter buildup. Filters removed for TAB. Recommend installing correct, clean filters. | | |
| **Created By :** | National TAB | **Assigned To :** | National TAB - Joe Hertenstein |
| **Status :** | Open | | |
| **Priority :** | Urgent | **Asset Tag :** | |
| **Originated Date :** | 06/17/2024 - Gabe Merk - National TAB | | |

NATIONAL TAB

## AIR BALANCE SCHEDULE

| UNIT | AREA SERVED | HVAC SUPPLY | | HVAC RETURN | | HVAC OUTDOOR | | OA % | | HOOD MAKE-UP | | HOOD EXHAUST | | GENERAL EXH. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DESIGN | ACTUAL | DESIGN | ACTUAL | DESIGN | ACTUAL | DESIGN | ACTUAL | DESIGN | ACTUAL | DESIGN | ACTUAL | DESIGN | ACTUAL |
| RTU-1 | DINING | 4000 | 3342 | 3120 | 2489 | 880 | 853 | 22.0% | 25.5% | | | | | | |
| RTU-2 | KITCHEN | 2900 | 2286 | 2445 | 1821 | 455 | 465 | 15.7% | 20.3% | | | | | | |
| MUA-1 | COOKLINE | | | | | | | | | 1630 | 1661 | | | | |
| KEF-1 | GRILL | | | | | | | | | | | 1120 | 1129 | | |
| KEF-2 | OVEN | | | | | | | | | | | 600 | 602 | | |
| KEF-3 | FRYER | | | | | | | | | | | 850 | 894 | | |
| EF-4 | RESTROOM | | | | | | | | | | | | | 75 | 75 |
| EF-5 | RESTROOM | | | | | | | | | | | | | 75 | 59 |
| **TOTALS** | | 6900 | 5628 | 5565 | 4310 | 1335 | 1318 | | | 1630 | 1661 | 2570 | 2625 | 150 | 134 |

**NET BUILDING AIRFLOW CALCULATION**

| TOTALS | DESIGN | ACTUAL |
|---|---|---|
| TOTAL OA | 2965 | 2979 |
| TOTAL EXHAUST | 2720 | 2759 |
| **NET AIRFLOW** | 245 | 220 |

| DOOR TESTED | BUILDING PRESSURE MEASUREMENTS (IN. H20) |
|---|---|
| FRONT | 0.00 |
| SIDE | NA |
| REAR | -0.001 |
| **AVERAGE** | **-0.001** |

**FINAL CHECKS**

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✗

PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

BUILDING NEGATIVE IN REAR DUE TO RETURN ALONE IN SPACE.

# CheckList List

- TECH - SITE PICTURE

# 06-17-24 PENN STATION CLEVES, OH

## CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | TECH - SITE PICTURE | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 05/23/2024 - Brianna Biggs - National TAB | | |
| **Completed Date :** | 06/18/2024 - Gabe Merk - National TAB | | |

## CheckList Item Details

**STORE FRONT**

**Comment:**

**05/29/2024**

---

**RTU-1**

**Comment:**

**05/29/2024**

---

**RTU-2**

**Comment:**

**05/29/2024**

---

**KEF-1**

**Comment:**

**05/29/2024**

---

**KEF-2**

**Comment:**

**05/29/2024**

---

**KEF-3**

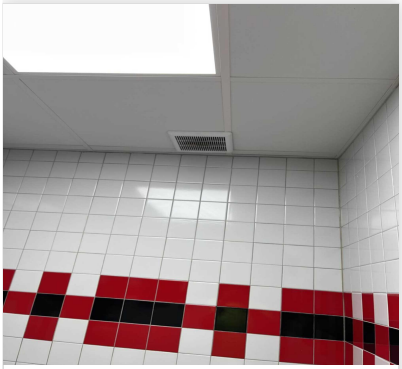
**Comment:**

**05/29/2024**

---

**EF-4**

**Comment:**



**06/17/2024**

---

**EF-5**

**Comment:**

**06/17/2024**

---

**MUA-1**

**Comment:**

**05/29/2024**

---

**HD-1**

**Comment:**

**06/17/2024**

---

**HD-2**

**Comment:**

**06/17/2024**

---

**HD-3**

**Comment:**

**06/17/2024**

# CheckList List

- TECH - STEP 1: INITIAL WALKTHROUGH
- TECH - STEP 2: UNIT DATA AND EVAL
- TECH - STEP 3: TEST, ADJUST AND BALANCE
- TECH - STEP 4: FINAL TESTS

## 06-17-24 PENN STATION CLEVES, OH

### CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | TECH - STEP 1: INITIAL WALKTHROUGH | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 05/23/2024 - Brianna Biggs - National TAB | | |
| **Completed Date :** | 06/18/2024 - Gabe Merk - National TAB | | |

### CheckList Item Details

**INITIAL SITE WALKTHROUGH**

**Review Plan Review Checklist, has it been signed off and meets our standards to start balancing? If not contact processor to ensure job is ready.**

**Comment:**

N/A

**All diffusers and grilles are installed and match design?**

**Comment:**

YES

**All hood filters installed and accounted for?**

**Comment:**

YES

**Hoods are wired and have power?**

**Comment:**

YES

**Hood is free of alarms?**

**Comment:**

YES

**Thermostats have power?**

**Comment:**

YES

---

**Have trades/general contractor been notified about any issues and are they created on FaciliBuild?**

**Comment:**

YES

---

## 06-17-24 PENN STATION CLEVES, OH

### CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | TECH - STEP 2: UNIT DATA AND EVAL | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 05/23/2024 - Brianna Biggs - National TAB | | |
| **Completed Date :** | 06/18/2024 - Gabe Merk - National TAB | | |

### CheckList Item Details

**UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:**

**RTU's/AHU's**

**Economizers are assembled and functional?**

**Comment:**

N/A

**DCV Max damper opening position is set to minimum?**

**Comment:**

MANUALLY SET

**Free cooling enthalpy set point set for lowest setting (Typically "D")**

**Comment:**

N/A

**Motors are all operating below the FLA rating?**

**Comment:**

YES

**Are belts tight?**

**Comment:**

YES

**If direct drive unit is the speed controller working.**

**Comment:**

N/A

---

**Is gas piping installed and valves turned on?**

**Comment:**

YES

---

**Unit free of noticeable noise and vibration**

**Comment:**

YES

---

**EF's**

---

**Rotation is correct?**

**Comment:**

YES

---

**Belts are tight?**

**Comment:**

N/A

---

**Grease cup installed on hood fan?**

**Comment:**

YES

---

**Hinge kit installed installed on hood fan?**

**Comment:**

YES

---

**Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?**

**Comment:**

YES

---

**Flex conduit is long enough so that fan can be completely tilted back?**

**Comment:**

YES

---

**There is no major leakage around base of fan?**

**Comment:**

NO

---

**Is the motor operating below the motor FLA rating?**

**Comment:**

YES

---

**For restroom fan(s) is the back draft damper installed and can it fully open?**

**Comment:**

N/A

---

**Unit free of noticeable noise and vibration?**

**Comment:**

YES

---

**MUA**

---

**Rotation is correct?**

**Comment:**

YES

---

**Gas piping is installed and valves are in on position?**

**Comment:**

YES

---

**Heater tested and is functional?**

**Comment:**

YES

---

**Internal motorized damper is fully opening?**

**Comment:**

YES

---

**Motor is operating below the FLA rating?**

**Comment:**

YES

---

**Unit free of noticeable noise and vibration?**

**Comment:**

YES

**HOODS**

**Kitchen equipment installed in proper places?**

**Comment:**

YES

**Can kitchen equipment be turned on for final smoke test?**

**Comment:**

YES

**DOCUMENTATION**

**Have trades/general contractor been notified about any issues and are they created on FaciliBuild?**

**Comment:**

YES

## 06-17-24 PENN STATION CLEVES, OH

### CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | TECH - STEP 3: TEST, ADJUST AND BALANCE | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 05/23/2024 - Brianna Biggs - National TAB | | |
| **Completed Date :** | 06/18/2024 - Gabe Merk - National TAB | | |

### CheckList Item Details

**TEST, ADJUST, AND BALANCE ALL EQUIPMENT:**

**DURING TESTING MAKE NOTE OF THE FOLLOWING:**

**Is space free of drafting?**

**Comment:**

YES

**Is space comfortable in all areas?**

**Comment:**

Dining unit not making temperature setpoint.

**Is the space free of ventilation noise?**

**Comment:**

YES

**If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".**

**Comment:**

N/A

## 06-17-24 PENN STATION CLEVES, OH

### CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | TECH - STEP 4: FINAL TESTS | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 05/23/2024 - Brianna Biggs - National TAB | | |
| **Completed Date :** | 09/18/2024 - Wesley John - National TAB | | |

### CheckList Item Details

**FINAL TESTS**

**HOOD CAPTURE TEST**

**List equipment turned on for testing**

**Comment:**

FRYER, OVEN, GRIDDLE

**List smoke candle type used**

**Comment:**

COOKING

**Smoke test capture - Perimeter of hood**

**Comment:**

100%

**Smoke test capture - Top of cooking surface**

**Comment:**

100%

**WITNESS**

**Date test was completed**

**Comment:**

6/18/2024

**TAB tech name / Firm**

**Comment:**

GABE / NTAB

**Site super name / Firm**

**Comment:**

N/A

**Owner representative name / Firm (if Applicable)**

**Comment:**

N/A

**Building pressure at front & back doors (All Systems On)**

**Comment:**

0.000",-0.001"

**ADDITIONAL**

**Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)**

**Comment:**

NO, LONE RETURN IN BOH CAUSING NEGATIVITY

**PROGRAM THERMOSTATS**

| | |
|---|---|
| **Occupied 7:15AM-10:15PM: 68 Heat/72 Cool (NOTE: 3 degree MAX setback)** | N/A |

**Comment:**

| | |
|---|---|
| **Unoccupied 10:16PM-7:14AM: 65 Heat/75 Cool** | N/A |

**Comment:**

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: AHU/RTU

**Asset: RTU1** AREA:DINING

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CARRIER | CARRIER |
| **Serial Num** | - | 3402G40503 |
| **Model Num** | 48TFD012 | 48TFD012 |
| **Type** | RTU | RTU |
| **Configuration** | VERTICAL | VERTICAL |
| **Num OA Filters 1** | - | 1 |
| **OA Filter Size 1** | - | 32”x23” |
| **Num Final Filter 1** | - | 4 |
| **Final Filter Size 1** | - | 20”x20”x2” |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **SF CFM** | 4000 | 3342 |
| **SF RPM** | - | 825 |
| **RA CFM** | 3120 | 2489 |
| **OA CFM** | 880 | 853 |
| **RL Voltage** | - | 206/207/208 |
| **RL Amperage** | - | 5.2/5.2/5.3 |
| **SF Rotation** | - | CW |
| **Min OA Damper Position** | - | MANUALLY SET |
| **Min OA Damper Type** | - | MANUALLY SET |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | GE |
| **Frame** | - | 56Y |
| **Horsepower** | - | NA |
| **Motor Rpm** | - | 1725 |
| **Phase** | 3 | 3 |
| **Rated Voltage** | 208 | 208 |
| **Rated Amperage** | - | 5.2 |

| Performance Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MA Plenum SP** | - | -0.49” |
| **Fan Suction SP** | - | -0.81” |
| **Fan Discharge SP** | - | 0.55” |
| **Total ESP** | - | 1.04" |
| **Fan Total SP** | - | 1.36" |

| Drive Data | |
|---|---|
| | **Actual** |
| **Motor Sheave Size** | 4” |
| **Motor Bore Size** | 5/8” |
| **Motor Sheave SetPt** | 2 OUT |
| **Fan Sheave Size** | 7” |
| **Fan Sheave Bore** | 1” |
| **Belt CL Distance** | 17.25” |
| **Num of Belts** | 1 |
| **Belt Size** | 4L-500 |
| **Belt Alignment** | GOOD |

| General | |
|---|---|
| | **Actual** |
| **Fan Rotation Correct** | YES |
| **Unit Filters Clean** | NO REMOVED FOR TAB |
| **Condensate Drain Installed** | YES |

Completed By: Gabe Merk on 06/17/2024

Notes:
MOTOR MAXED ON AMPERAGE.
DIRTY FILTERS REMOVED FOR TAB.
DIFFUSER 1-9 DAMPER FULLY OPEN NOT REACHING FLOW.

Written By: Wesley John on 09/18/2024

**Diffuser Supply (GRD)**

**RTU1/DINING**

| Asset | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Asset Name** | **Location** | **Type** | **Size** | **DESIGN CFM** | **AK** | **CFM(1)** | **CFM(2)** | **FINAL CFM** | **% to design** |
| RTU1-SGRD13 | | | | 50 | | | | 53 | 106.0 |
| RTU1-SGRD14 | | | | 50 | | | | 51 | 102.0 |
| SGRD1 | ENTRY VESTIBULE | | 6" | 50 | 1 | 70 | 75 | 43 | 86.0 |
| SGRD2 | DINING | | 10" | 400 | 1 | 273 | 297 | 316 | 79.0 |
| SGRD3 | DINING | | 10" | 400 | 1 | 331 | 333 | 366 | 91.5 |
| SGRD4 | DINING | | 10" | 400 | 1 | 313 | 318 | 338 | 84.5 |
| SGRD5 | DINING | | 10" | 400 | 1 | 365 | 372 | 319 | 79.8 |
| SGRD6 | DINING | | 10" | 400 | 1 | 76 | 314 | 338 | 84.5 |
| SGRD7 | DINING | | 10" | 375 | 1 | 316 | 353 | 288 | 76.8 |
| SGRD8 | DINING | | 10" | 375 | 1 | 261 | 268 | 294 | 78.4 |
| SGRD9 | DINING | | 10" | 400 | 1 | 231 | 229 | 245 | 61.3 |
| SGRD10 | DINING | | 10" | 375 | 1 | 277 | 288 | 325 | 86.7 |
| SGRD11 | DINING | | 10" | 375 | 1 | 314 | 322 | 320 | 85.3 |
| SGRD12 | RR HALLWAY | | 6" | 50 | 1 | 107 | 113 | 46 | 92.0 |
| Total | | | | 4100 | | 2934 | 3282 | 3342 | 81.51% |

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: AHU/RTU

**Asset: RTU2** AREA:KITCHEN

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CARRIER | CARRIER |
| **Serial Num** | - | 1202G20643 |
| **Model Num** | 48TFD008 | 48TFD008 |
| **Type** | RTU | RTU |
| **Configuration** | VERTICAL | VERTICAL |
| **Num OA Filters 1** | - | 1 |
| **OA Filter Size 1** | - | 32”x23” |
| **Num Final Filter 1** | - | 4 |
| **Final Filter Size 1** | - | 20”x16”x2” |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **SF CFM** | 2900 | 2286 |
| **SF RPM** | - | 870 |
| **RA CFM** | 2545 | 1821 |
| **OA CFM** | 455 | 465 |
| **RL Voltage** | - | 208/208/210 |
| **RL Amperage** | - | 4.5/4.5/4.6 |
| **SF Rotation** | - | CW |
| **Min OA Damper Position** | - | MANUALLY SET |
| **Min OA Damper Type** | - | MANUALLY SET |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | GE |
| **Frame** | - | 56Y |
| **Horsepower** | - | NA |
| **Motor Rpm** | - | 1725 |
| **Phase** | 3 | 3 |
| **Rated Voltage** | 208 | 208 |
| **Rated Amperage** | - | 5.2 |

| Performance Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MA Plenum SP** | - | -0.20" |
| **Fan Suction SP** | - | -0.71" |
| **Fan Discharge SP** | - | 0.77” |
| **Total ESP** | - | 0.97" |
| **Fan Total SP** | - | 1.48" |

| Drive Data | |
|---|---|
| | **Actual** |
| **Motor Sheave Size** | 3.75” |
| **Motor Bore Size** | 5/8” |
| **Motor Sheave SetPt** | 2 OUT |
| **Fan Sheave Size** | 7” |
| **Fan Sheave Bore** | 1” |
| **Belt CL Distance** | 17.5” |
| **Num of Belts** | 1 |
| **Belt Size** | A48 |
| **Belt Alignment** | GOOD |

| General | |
|---|---|
| | **Actual** |
| **Fan Rotation Correct** | YES |
| **Unit Filters Clean** | NO |
| **Condensate Drain Installed** | YES |

Completed By: Gabe Merk on 06/18/2024

Notes:
2-12 and 2-13 connected to RTU 1
2-11 NOT INSTALLED. LOAD ADDED TO 2-7,2-9, AND 2-10
UNDERSIZED DUCTWORK TO COOKLINE DIFFUSERS 2-2,2-3,2-4,2-6 INSTALLED 2X4" DUCTS FOR EACH.

Written By: Wesley John on 09/18/2024

**Diffuser Supply (GRD)**

**RTU2/KITCHEN**

| Asset | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Asset Name** | **Location** | **Type** | **Size** | **DESIGN CFM** | **AK** | **CFM(1)** | **FINAL CFM** | **% to design** |
| SGRD1 | HOOD 1 | ACPSP | 70X6 | 465 | 2.275 | 426 | 426 | 91.6 |
| SGRD2 | KITCHEN | | | 315 | 1 | 141 | 166 | 52.7 |
| SGRD3 | KITCHEN | | | 315 | 1 | 114 | 146 | 46.3 |
| SGRD4 | KITCHEN | | | 315 | 1 | 140 | 163 | 51.7 |
| SGRD5 | HOOD 3 | ACPSP | 48X6 | 250 | 1.56 | 332 | 273 | 109.2 |
| SGRD6 | KITCHEN | | | 315 | 1 | 164 | 177 | 56.2 |
| SGRD7 | BOH | | 10" | 225 | 1 | 224 | 273 | 121.3 |
| SGRD8 | BOH | | 6" | 50 | 1 | 238 | 46 | 92.0 |
| SGRD9 | BOH | | 8" | 225 | 1 | 406 | 307 | 136.4 |
| SGRD10 | BOH | | 8" | 225 | 1 | 472 | 309 | 137.3 |
| SGRD11 | BOH | | 8" | 200 | | | | - |
| Total | | | | 2900 | | 2657 | 2286 | 78.83% |

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Exhaust

**Asset: EF4** AREA:RESTROOM

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | ZHONGSHAN AOCHUANG |
| **Model Num** | NA | BPT13-14D |
| **Serial Num** | - | 774741 |
| **Type** | CEILING | CEILING |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Phase** | - | 1 |
| **Voltage (rated)** | - | 120 |
| **Amperage (rated)** | - | 0.18 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 75 | 75 |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Exhaust

**Asset: EF5** AREA:RESTROOM

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | ZHONGSHAN AOCHUANG |
| **Model Num** | NA | BPT13-14D |
| **Serial Num** | - | ILLEGIBILE |
| **Type** | CEILING | CEILING |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Phase** | - | 1 |
| **Voltage (rated)** | - | 120 |
| **Amperage (rated)** | - | 0.18 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 75 | 59 |

Completed By: Gabe Merk on 06/17/2024

Notes:
SINGLE SPEED FAN.
NO OBSTRUCTIONS TO NOTE.
UNABLE TO INCREASE AIRFLOW.

Written By: Wesley John on 09/18/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Exhaust

**Asset: KEF1** AREA:HOOD-3

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECONAIR |
| **Model Num** | DU85HFA | EADU85H |
| **Serial Num** | - | 6351756 |
| **Type** | UPBLAST | UPBLAST |
| **Configuration** | VERTICAL | VERTICAL |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | TELCO GREEN |
| **Horsepower** | 0.750 | 0.75 |
| **Motor Rpm** | - | 1800 |
| **Phase** | 1 | 1 |
| **Voltage (rated)** | 115 | 115 |
| **Amperage (rated)** | - | 8.9 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 1120 | 1129 |
| **Fan Rotation** | - | CCW |
| **System SetPt** | - | 60% |
| **RL Voltage** | - | 120 |
| **RL Amperage** | - | 4.9 |
| **Total ESP** | 1.150" | 1.01" |
| **Fan Inlet SP** | - | -1.01” |
| **Fan Discharge SP** | - | ATM |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Exhaust

**Asset: KEF2** AREA:HOOD-2

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECONAIR |
| **Model Num** | DU33HFA | EADU33H |
| **Serial Num** | - | 6351756 |
| **Type** | UPBLAST | UPBLAST |
| **Configuration** | VERTICAL | VERTICAL |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | TELCO GREEN |
| **Horsepower** | 0.333 | 0.333 |
| **Phase** | 1 | 1 |
| **Voltage (rated)** | 115 | 115 |
| **Amperage (rated)** | - | 4.3 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 600 | 602 |
| **Fan Rotation** | - | CCW |
| **System SetPt** | - | 80% |
| **RL Voltage** | - | 121 |
| **RL Amperage** | - | 3.2 |
| **Total ESP** | 0.600" | 0.86" |
| **Fan Inlet SP** | - | -0.86” |
| **Fan Discharge SP** | - | ATM |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Exhaust

**Asset: KEF3** AREA:HOOD-1

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECONAIR |
| **Model Num** | DU85HFA | EADU85H |
| **Serial Num** | - | 6351756 |
| **Type** | UPBLAST | UPBLAST |
| **Configuration** | VERTICAL | VERTICAL |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | TELCOGREEN |
| **Horsepower** | 0.750 | 0.750 |
| **Phase** | 1 | 1 |
| **Voltage (rated)** | 115 | 115 |
| **Amperage (rated)** | - | 8.9 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 850 | 894 |
| **Fan Rotation** | - | CCW |
| **System SetPt** | - | 55% |
| **RL Voltage** | - | 120 |
| **RL Amperage** | - | 4.6 |
| **Total ESP** | 1.150" | 1.07" |
| **Fan Inlet SP** | - | -1.07” |
| **Fan Discharge SP** | - | ATM |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: FAN - Supply

**Asset: MUA1** AREA:COOKLINE

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECONAIR |
| **Model Num** | A1-D.250-15D | EA1-D.250-15D |
| **Serial Num** | - | 6351756 |
| **Type** | MUA | MUA |
| **Configuration** | VERTICAL | VERTICAL |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | WESTINGHOUSE |
| **Frame** | - | 145T |
| **Horsepower** | 1.5 | 1.5 |
| **Motor Rpm** | - | 1740 |
| **Phase** | 3 | 3 |
| **Voltage (rated)** | 208 | 208 |
| **Amperage (rated)** | - | 4.03 |
| **Service Factor** | - | 1.15 |

| Gas Heat | | |
|---|---|---|
| | **Design** | **Actual** |
| **Heater Operates (y/n)** | - | YES |
| **Flame Status (pass/fail)** | - | PASS |
| **Inlet Air Temp SetPt** | 55 | 55 |
| **Discharge Air Temp SetPt** | 60 | 60 |
| **Air Flow Switch SP Actual** | - | 0.30” |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 1630 | 1661 |
| **SF System SetPt** | - | 59.6 |
| **RL Voltage** | - | 207/208/209 |
| **RL Amperage** | - | 3.7/3.0/3.3 |
| **Total ESP** | - | 0.47" |
| **Fan Discharge SP** | - | 0.47” |

| General | |
|---|---|
| | **Actual** |
| **Fan Rotation Correct** | YES |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: Kitchen Hood Type I

**Asset: HD1** AREA:COOKLINE

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECON AIR |
| **Model Num** | 3650 ELPX-2 246 MISC ACPSP | 3650 ELPX-2 |
| **Job / Serial Num** | - | 6351756 |
| **Type** | TYPE I LOW PROXIMITY | TYPE 1 CANOPY |
| **Hood length** | 72" | 72” |
| **Hood Width** | 36" | 36” |
| **Supply Plenum Type** | - | ACPSP |
| **Supply Plenum Width** | 14" | 14” |
| **Supply Plenum Length** | 72" | 72” |

| Test Data Exhaust | | |
|---|---|---|
| | **Design** | **Actual** |
| **Filter Type** | CAPTRATE SOLO | CAPTRATE SOLO |
| **Filter Size 1** | 16X16 | 16x16 |
| **Filter Qty 1** | 4 | 4 |
| **Filter AK factor size 1** | 1.62 | 1.62 |
| **Filter Total AK Area** | 6.48 | 6.48 |
| **Filter1 FPM** | - | 167 |
| **Filter2 FPM** | - | 179 |
| **Filter3 FPM** | - | 172 |
| **Filter4 FPM** | - | 177 |
| **Filter Ave FPM(corr)** | - | 174 |
| **CFM** | 1120 | 1129 |

| Cooking Equipment | |
|---|---|
| | **Actual** |
| **Item 1** | GRIDDLE |

| Test Data Supply | | |
|---|---|---|
| | **Design** | **Actual** |
| **Total AK Area** | 7 | 7 |
| **Kv factor (Vel)** | 0.89 | 0.89 |
| **Num of Readings** | - | 4 |
| **Reading1 FPM** | - | 168 |
| **Reading2 FPM** | - | 160 |
| **Reading3 FPM** | - | 182 |
| **Reading4 FPM** | - | 181 |
| **Ave FPM(corr)** | - | 173 |
| **CFM** | 1000 | 1076 |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: Kitchen Hood Type I

**Asset: HD2** AREA:COOKLINE

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECON AIR |
| **Model Num** | 4412 PS-OVN | NL |
| **Job / Serial Num** | - | NL |
| **Type** | TYPE I CANOPY | TYPE I CANOPY |
| **Hood length** | 21.25" | 21” |
| **Hood Width** | 44" | 44” |

| Test Data Exhaust | | |
|---|---|---|
| | **Design** | **Actual** |
| **Filter Type** | SS BAFFLE | SS BAFFLE |
| **Filter Size 1** | 20X10 | 20x10 |
| **Filter Qty 1** | 2 | 2 |
| **Filter AK factor size 1** | - | 1.2 |
| **Filter Total AK Area** | - | 2.4 |
| **Filter1 FPM** | - | 250 |
| **Filter2 FPM** | - | 252 |
| **Filter Ave FPM(corr)** | - | 251 |
| **CFM** | 600 | 602 |

| Cooking Equipment | |
|---|---|
| | **Actual** |
| **Item 1** | OVEN |

Completed By: Gabe Merk on 06/17/2024

# National TAB

**Project: 06-17-24 PENN STATION CLEVES, OH**

## System/Unit: Kitchen Hood Type I

**Asset: HD3** AREA:COOKLINE

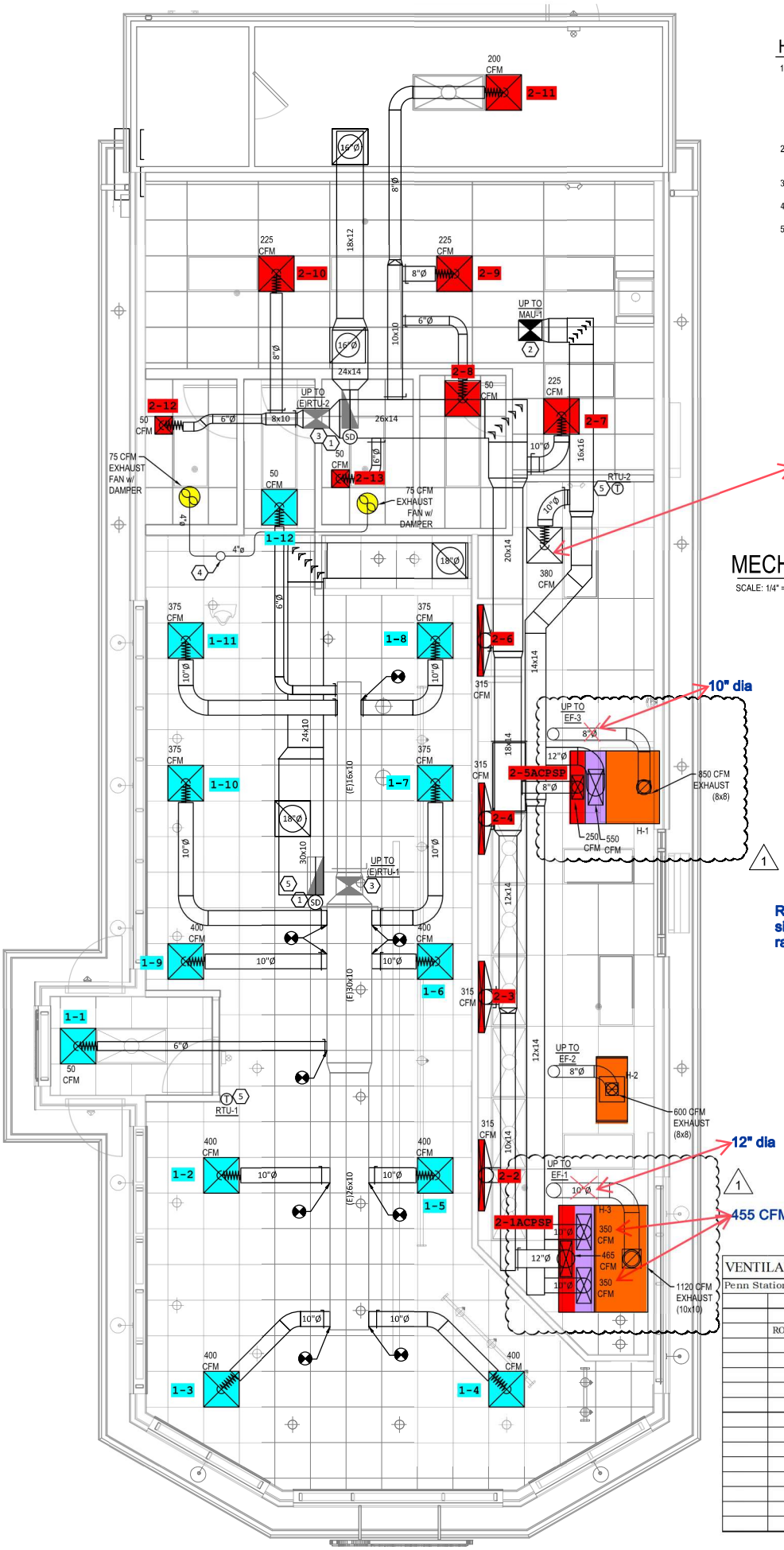
| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | CAPTIVEAIRE | ECON AIR |
| **Model Num** | 3650 ELPX-2 246 MISC ACPSP | 3650 ELPX-2 |
| **Job / Serial Num** | - | 6351756 |
| **Type** | TYPE I LOW PROXIMITY | TYPE 1 CANOPY |
| **Hood length** | 50" | 50” |
| **Hood Width** | 36" | 36” |
| **Supply Plenum Type** | - | ACPSP |
| **Supply Plenum Width** | 14" | 14” |
| **Supply Plenum Length** | 50" | 50" |

| Test Data Exhaust | | |
|---|---|---|
| | **Design** | **Actual** |
| **Filter Type** | CAPTRATE SOLO | CAPTRATE SOLO |
| **Filter Size 1** | 16X16 | 16x16 |
| **Filter Qty 1** | 3 | 3 |
| **Filter AK factor size 1** | 1.62 | 1.62 |
| **Filter Total AK Area** | 4.86 | 4.86 |
| **Filter1 FPM** | - | 184 |
| **Filter2 FPM** | - | 191 |
| **Filter3 FPM** | - | 177 |
| **Filter Ave FPM(corr)** | - | 184 |
| **CFM** | 850 | 894 |

| Cooking Equipment | |
|---|---|
| | **Actual** |
| **Item 1** | FRYER |

| Test Data Supply | | |
|---|---|---|
| | **Design** | **Actual** |
| **Total AK Area** | 4.86 | 4.86 |
| **Kv factor (Vel)** | 0.89 | 0.89 |
| **Num of Readings** | - | 4 |
| **Reading1 FPM** | - | 133 |
| **Reading2 FPM** | - | 104 |
| **Reading3 FPM** | - | 146 |
| **Reading4 FPM** | - | 158 |
| **Ave FPM(corr)** | - | 135 |
| **CFM** | 630 | 585 |

Completed By: Gabe Merk on 06/17/2024




## HVAC PLAN NOTES

1. EC TO FURNISH RETURN DUCT MOUNTED SMOKE DETECTOR AND PROVIDE COMPATIBLE REMOTE ANNUNCIATOR/TEST SWITCH. MC TO INSTALL SMOKE DETECTOR IN RETURN DUCT, PRIOR TO ANY OUTDOOR AIR CONNECTIONS. MC TO PROVIDE INTERLOCK WIRING BETWEEN SMOKE DETECTOR AND UNIT TO SHUT DOWN UNIT UPON DETECTION OF SMOKE. EC SHALL PROVIDE WIRING FOR FINAL CONNECTION TO CENTRAL FIRE ALARM SYSTEM, IF APPLICABLE, AND WIRING TO REMOTE ANNUNCIATOR/TEST SWITCH.
2. TYPICAL SUPPLY AIR DROP FROM MAKEUP AIR UNIT, PROVIDE DIRECTIONAL VANES AT BOTTOM OF DROP INSIDE DUCT. KEEP ALL MAKEUP AIR DUCTS ABOVE THE CEILING.
3. TYPICAL SUPPLY FROM RTU, PROVIDE DIRECTIONAL VANES AT BOTTOM OF DROP INSIDE DUCT. 22 GA. MATERIAL
4. REPLACE EXISTING EXHAUST FAN AND REUSE EXISTING EXHAUST DUCT, ROOF PENETRATION AND VENT CAP.
5. PROVIDE NEW THERMOSTAT AND MOUNT ON WALL 4 FEET A.F.F.

## REQUIRED TE

1. CONDUCT A LIGHT-T WITNESSED BY THE UNDER CERTAIN CIR
2. A PUFF TEST IS REQ
3. AN AIR-CAPTURE TE
4. A TEST AND BALANC

**Recommended this be perforated. At times they install too close to hood & then causes performance issues if 4way. They dont always install exact location shown on prints, so fail safe.**

## MECHANICAL - FLOOR PLAN

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

1 M1.0

**To be 100 cfm Positive in pressure for building based upon RTU units OA amounts & including bathroom fan, & all hood exhaust we need the make up air unit to have 1460 CFM of supply air. Adjusted CFM at hood.**

**total exhaust = -2720**
**rtu OA = + 1335**
**SF1 (mua) = +1460**
**net = +75 CFM**

**Recommended grease duct size for performance & sound ratings.**

## MECHANICAL SPECIFICATI

1. HVAC SYSTEMS SHALL INCLUDE HIGH &L FOR LOCAL CODE COMPLIANCE BY THE M
2. COORDINATE ALL WORK WITH THE EQUIP WORK, AND HOOK UP REQUIREMENTS.
3. HOOD SUPPLIER SHALL PROVIDE SHOP D
4. GENERAL NOTES
   A. NO PENETRATIONS SHALL OCCUR TH
   B. GAS LINE PENETRATIONS BEHIND SE PULLED OUT TO NEAR FULL LENGTH OF EQUIPMENT, BUT NOT SO CLOSE AGAINST THE WALL. GAS LINE MUST RESTRAINT DETAIL" ON SHEET A6.0.
5. GENERAL CONTRACTOR MUST COORDIN SYSTEMS ARE INSTALLED TOGETHER PR COMPLETED AT LEAST 4 WORKING DAYS BALANCE TO TAKE PLACE. CHECKLIST SC
6. 6. LIMIT FLEX-PIPE RUNS TO 5'-0" MAXIM
7. 7. USE HARD-PIPE, 90° ELBOWS AT ALL
8. 8. ALL HANGERS AND INSTALLATION ME
9. 9. PROVIDE 4" X 48", LINEAR DIFFUSERS
10. 10. REFER TO CAPTIVEAIRE SHOP DRAW
11. 11. EXHAUST FANS BY NUTRONE OR EQU
12. SINGLE PORT IN-LIVE VENTILATOR TYPE PENETRATION IF FIELD CONDITIONS PER
13. 12. IN OCCUPIED MODE, THE HVAC UNIT

## VENTILATION SCHEDULE - O.M.C - 2017 - 403.3.1.1

Penn Station - Cleves, OH

| | | | | Table 403.3.1.1 | | | Vbz |
|---|---|---|---|---|---|---|---|
| | | | Az | OCCUPANCY | Rp | Ra | Pz |
| | ROOM # | ROOM NAME | SQFT | CATEGORY | CFM/P | CFM/SQFT | people |
| | 100 | Vestibule | 50 | Corridor | 0 | 0.06 | 0 |
| | 101 | Dining | 1061 | Dining | 7.5 | 0.18 | 58 |
| | | RTU-1 | 1111 | | | | 58 |
| | 102 | Serving | 420 | Kitchen | 7.5 | 0.18 | 4 |
| | 103 | Storage | 41 | Storage | 0 | 0.12 | 0 |
| | 104 | Prep | 370 | Kitchen | 7.5 | 0.18 | 2 |
| | 105 | Men's RR | 42 | N/A | 0 | 0 | 0 |
| | 106 | Women's RR | 42 | N/A | 0 | 0 | 0 |
| | 107 | Dry Storage | 202 | Storage | 0 | 0.12 | 0 |
| | | RTU-2 | 1117 | | | | 6 |