## HVAC NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION AND THE 2015 MICHIGAN MECHANICAL CODE.
2. ALL DUCTWORK SHALL BE FABRICATED, REINFORCED AND INSTALLED IN ACCORDANCE WITH THE SMACNA HANDBOOK, CURRENT EDITION.
3. SUPPLY AND RETURN DUCTWORK SHALL BE GALVANIZED STEEL. EXPOSED ROUND DUCTWORK SHALL BE GALVANIZED SPIRAL DUCT.
4. RECTANGULAR SUPPLY AND RETURN DUCTWORK SHALL BE INTERNALLY LINED WITH 1" THICK DUCT LINER FOR THE FIRST 20' FROM UNIT. REMAINING DUCTWORK SHALL BE EXTERNALLY WRAPPED WITH 1 1/2" ASJ, ALL SERVICE JACKET, WITH VAPOR BARRIER.
5. CONCEALED ROUND DUCTWORK SHALL BE EXTERNALLY WRAPPED WITH 1 1/2" ASJ, ALL SERVICE JACKET, WITH VAPOR BARRIER. ROUND FLEXIBLE DUCT USED TO CONNECT TO DIFFUSERS SHALL NOT EXCEED 10' AND SHALL BE INSULATED WITH 1" THICK FIBERGLASS, THERMAFLEX II, WIREHOLD OR EQUAL.
6. DUCTWORK EXPOSED OUTDOORS SHALL BE INTERNALLY LINED AS ABOVE AND EXTERNALLY WRAPPED WITH 3" FIBERGLASS INSULATION AND SEALED WITH WATER RESISTANT VAPOR BARRIER JACKET.
7. WHERE DUCTWORK IS INSTALLED ABOVE NON-ACCESSIBLE CEILINGS WITH AND DAMPER, PROVIDE DAMPER AND REMOTE DAMPER OPERATOR AS MANUFACTURED BY YOUNG REGULATOR COMPANY.
8. PROVIDE FIRE AND COMBINATION SMOKE/FIRE DAMPERS AS INDICATED ON THE DRAWINGS.
9. AFTER INSTALLATION PROVIDE CERTIFIED TEST AND BALANCE REPORTS BY AN INDEPENDENT TEST AND BALANCE CONTRACTOR IN ACCORDANCE WITH AABC OR NEBB STANDARDS.
10. WHOLE BUILDING AND APPLIANCES MUST BE 'ENERGY STAR' CERTIFIED.
11. CEILING PLENUM IS USED FOR RETURN AIR. ALL CONTRACTORS MUST USE MATERIALS THAT ARE PLENUM RATED PER CODE.

## ZONE OA CALCULATIONS

2015 MICHIGAN MECHANICAL CODE

403.3.1.1 BREATHING ZONE OUTDOOR AIR FLOW

EQUATION 4-1: $V_{bz} = R_p P_z + R_a A_z$

WHERE:

$A_z$ = ZONE FLOOR AREA

$P_z$ = ZONE POPULATION = 15 PEOPLE/1000 SQ FT , RETAIL
30 PEOPLE/1000 SQ FT, WAITING
5 PEOPLE/1000 SQ FT, OFFICE

$R_p$ = PEOPLE OUTDOOR AIR RATE = 7.5 CFM/PERSON, RETAIL
5 CFM/PERSON, WAITING & OFFICE

$R_a$ = AREA OUTDOOR AIR RATE = 0.12 CFM/SQ FT, RETAIL
0.06 CFM/SQ FT, WAITING & OFFICE

403.3.1.2 ZONE AIR DISTRIBUTION EFFECTIVENESS E = 0.8

403.3.1.3 ZONE OUTDOOR AIR FLOW

EQUATION 4-2: $V_{oz} = V_{bz} / E_z$

| | | | REQUIRED OUTDOOR AIR FLOW | |
|---|---|---|---|---|
| ZONE | ZONE FLOOR AREA $A_z$ | ZONE POPULATION $P_z$ | EQUATION 4-1 | EQUATION 4-2 |
| WAITING | 180 | 5 | 34 | 45 |
| RETAIL | 661 | 10 | 154 | 193 |
| OFFICES & REMAINING SPACE | 426 | 2 | 34 | 45 |
| TOTALS | 1,267 | 17 | 224 | 283 |

## HVAC EQUIPMENT SCHEDULE

| ROOFTOP UNIT | | | | HEATING | | | ELECTRICAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNIT I.D. | SUPPLY CFM | O.A. CFM | NOMINAL TONS | BLOWER HP | INPUT BTU | OUTPUT BTU | MCA | MOCP | VOLTS | PHASE | MFR. | MODEL |
| RTU-1 | 1,905 | 300 | 5 | 1 | 120,000 | 97,000 | 27 | 40 | 208/230 | 3 | CARRIER | 48TCFA06A |

NOTES:
1. ECONOMIZER W/CHARCOAL FILTER ON RELIEF AIR OPENING
2. PROGRAMMABLE THERMOSTAT
3. DISCONNECT SWITCH
4. CONVENIENCE OUTLET
5. MUST BE "ENERGY STAR" CERTIFIED
6. EQUAL BY TRANE OR LENNOX

DIFFUSERS AND GRILLS

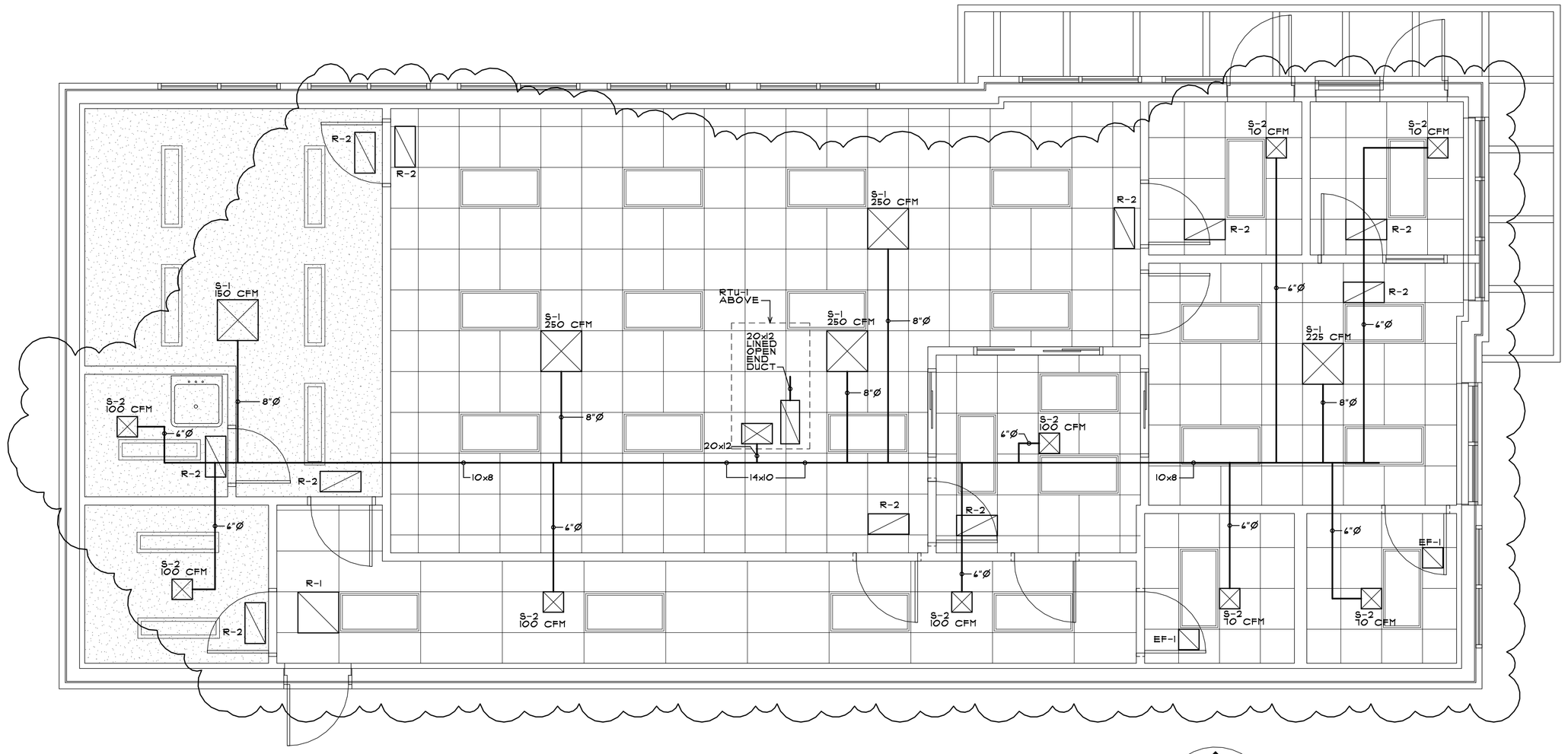
| I.D. | USAGE | SIZE | LOCATION | TYPE | MODEL | MFR. | |
|---|---|---|---|---|---|---|---|
| S-1 | SUPPLY | 24"x24" | SEE PLAN | STEEL | SCD | PRICE | |
| S-2 | SUPPLY | 12"x12" | SEE PLAN | STEEL | SCD | PRICE | |
| R-1 | RETURN | 24"x24" | SEE PLAN | ALUMINUM | 80 | PRICE | |
| R-2 | RETURN | 12"x24" | SEE PLAN | ALUMINUM | 80 | PRICE | |

NOTES:
1. SUPPLY AIR GRILLES TO HAVE BALANCING DAMPERS
2. EQUAL BY CARNES OR TITUS

EXHAUST FANS

| UNIT I.D. | CFM | ESP | MODEL | VOLTS | PHASE | MFR. | |
|---|---|---|---|---|---|---|---|
| EF-1 | 75 | 0.125" | SP-A90 | 120 | 1 | GREENHECK | |

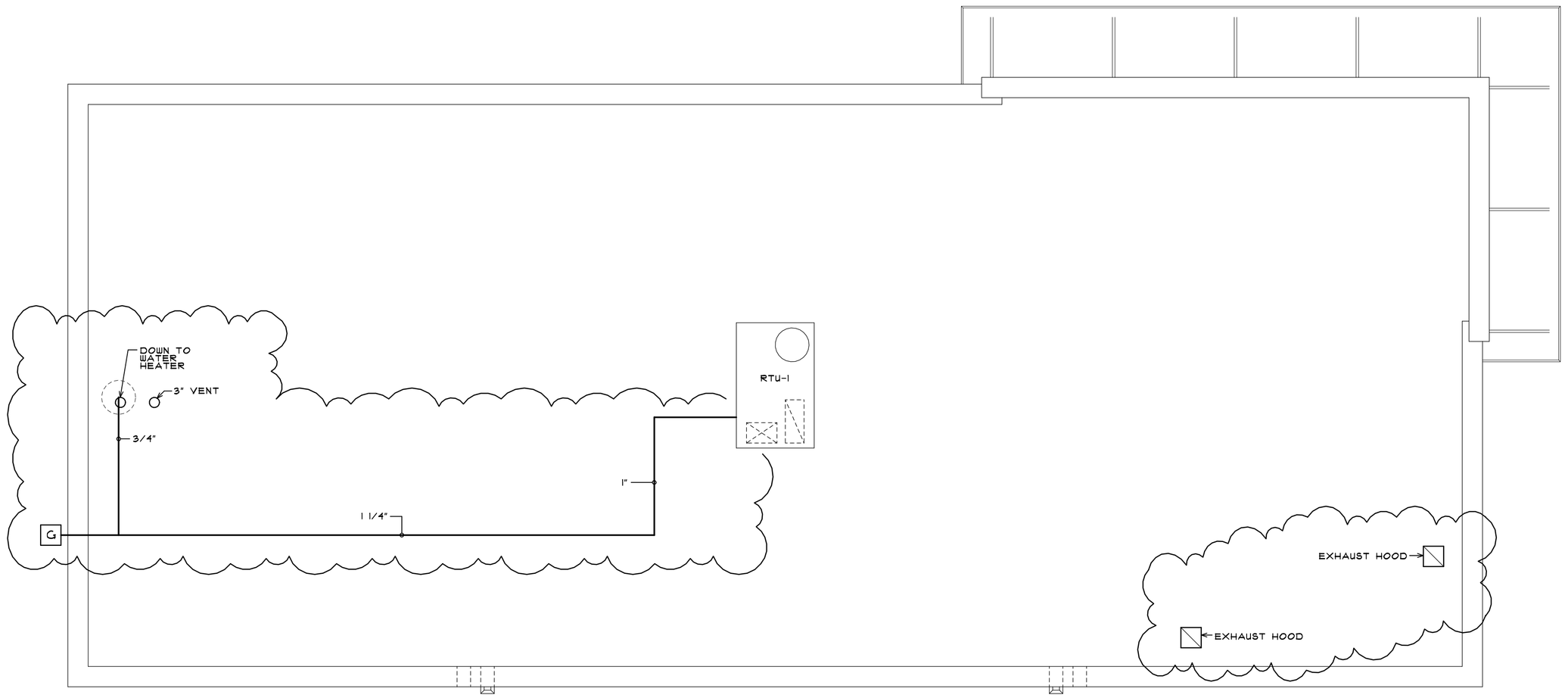
NOTES:
1. DISCONNECT SWITCH, BACKDRAFT DAMPER
2. MUST BE "ENERGY STAR" CERTIFIED
3. EQUAL BY KRUEGER OR TITUS




1 HVAC PLAN

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

NORTH




2 GAS PIPING PLAN

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

NORTH

DAZ ARCHITECTURAL DESIGN INC.

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CLIENT / PROJECT:
NATURE'S FINEST PROVISIONING CENTER
625 NORTH AVENUE
BATTLE CREEK, MICHIGAN 49017

DRAWN BY: DZ
CHECKED BY: DZ/JM

SHEET INFORMATION:
HVAC PLAN AND GAS PIPING PLAN

CAD FILE: NATURES_FINEST .AEC

REVIEW SET: 01-28-19
BID SET: 02-08-19
PERMIT SET: 02-08-19
CONSTRUCTION SET:

COMPLETION DATE:

REVISIONS: 08-09-19: FLOOR PLAN

JOB NO. 180810

SHEET NO. M-1