

REVISIONS:

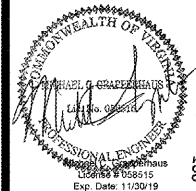
O'Reilly AUTO PARTS

CORPORATE OFFICES
233 SOUTH PATTERSON
SPRINGFIELD, MISSOURI 65802
417-865-2674 PHONE

PROJECT:
RE-MODEL O'REILLY AUTO PARTS STORE

**103 E. GORDON AVE.
GORDONSVILLE, VA 22942**

HVAC PLAN



Professional of Record
DRAWN: LCA
CHECKED: MCG
DATE: 10-17-2018
JOB NO.: 118168 (GDV)
SHEET:

M1

HVAC GENERAL NOTES

- DRAWING IS DIAGRAMMATIC AND IS NOT TO BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.
- ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE CODE(S) NOTED ON THE COVER SHEET.
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONSTRUCTION PRIOR TO SUBMITTING HIS BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED EXISTING CONDITIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL FEES AND DIRECT EXPENSES INVOLVED IN ANY INSPECTION REQUIRED FOR THE PROJECT.
- ALL ROOF AND WALL PENETRATIONS REQUIRED SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND/OR LANDLORDS ROOFING CONTRACTOR. PROVIDE ALL SLEEVES, FLASHING, CURBS, REINFORCED ANGLE SUPPORTING FRAMES, ETC., WHICH ARE REQUIRED UNLESS THEY ARE SPECIFICALLY CALLED OUT TO BE FURNISHED BY OTHERS.
- A SUBMITTAL OF ALL MATERIALS AND EQUIPMENT PROPOSED TO BE USED ON THE JOB SHALL BE PREPARED AS SOON AS POSSIBLE AFTER AWARD OF THE CONTRACT. THE SUBMITTAL WILL BE REVIEWED BY THE OWNER FOR EQUAL QUALITY AND PERFORMANCE TO THE ITEMS SPECIFIED. ALL CONTROL DEVICES SHALL BE INCLUDED IN THE SUBMITTAL. A TABULATION OF SUBMITTED ITEMS MUST BE INCLUDED FOR REVIEW.
- THE PROPER PERFORMANCE OF THE CONTROL SYSTEM IS THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS WORK WITH THE WORK OF OTHER SUBCONTRACTORS OF THE PROJECT. COORDINATION DOES NOT MEAN "I WAS HERE FIRST".
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING A COMPLETE AND FUNCTIONAL SYSTEM IN ACCORDANCE WITH THE INTENT OF THE PLANS, WHETHER OR NOT EVERY ELEMENT THEREOF IS SPECIFICALLY CALLED OUT.
- DUCT DIMENSIONS ON PLANS ARE TO BE FINISHED INSIDE DIMENSIONS.
- ALL WORK IS TO BE GUARANTEED FOR ONE YEAR UPON OCCUPANCY. REFRIGERATION COMPRESSORS SHALL HAVE A 5-YEAR WARRANTY.
- ALL CAULKING ON BUILDING PENETRATIONS SHALL BE ELASTOMERIC POLYURETHANE (NO EXCEPTIONS), EQUAL TO "VULKEM" 116. ANY CONTRACTOR WHO USES SILICONE OR ANY OTHER CAULKING WILL BE REQUIRED TO REMOVE AND REPLACE WITH ELASTOMERIC POLYURETHANE AT THEIR OWN EXPENSE.
- DUCT MATERIALS SHALL BE AS FOLLOWS:
 - ROUND SUPPLY AIR DUCT - GALVANIZED "SNAPLOCK" PIPE WITH TRANSVERSE JOINTS TAPED AND WRAPPED WITH 2" THICK, 1-1/2 LB. FIBERGLASS DUCT WRAP WITH A CONTINUOUS VAPOR BARRIER.
 - RECTANGULAR SUPPLY AND RETURN AIR DUCT WORK - GALVANIZED STEEL WITH 2" THICK, 1-1/2 LB LINER, CONSTRUCTED IN ACCORDANCE WITH SMACNA. INSTALL TURNING VANES IN ALL ELBOWS. DO NOT SUBSTITUTE RADIUS ELBOWS.
 - DUCT WRAP INSULATION - DUCT WRAP INSULATION SHALL BE 2" THICK, 1-1/2 LB/CFU FOOT DENSITY, FIBERGLASS TYPE, WITH FOIL SCRM KRAFT FACING. THE INSULATION SHALL HAVE AN R-VALUE OF 8.3 @ 75° F MEAN TEMPERATURE. DUCT WRAP SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
 - ALL CONCEALED ROUND AND RETURN, SUPPLY AND OUTSIDE AIR DUCTS.
 - ALL SUPPLY AND RETURN DUCTS WITHIN ROOF-CEILING ASSEMBLIES (ATTICS) THAT ARE VENTED TO THE OUTSIDE AND WHERE OTHERWISE EXPOSED TO AMBIENT CONDITIONS. SUCH DUCTS SHALL BE LINED AND WRAPPED.
 - ALL DUCTS WHERE WRAPPING IS CALLED FOR ON THE DRAWINGS.
- RUNOUTS TO DIFFUSERS - UL LISTED CLASS 1 PRE-INSULATED FLEX DUCT, NOT OVER 8' LONG. (SEE DIFFUSER INSTALLATION DETAIL).
- EXHAUST DUCT - UNINSULATED SNAPLOCK PIPE OR UNLINED GALVANIZED STEEL.
- TRANSITIONS - SHALL CONFORM TO SMACNA STANDARDS.
- INSULATE HVAC CONDENSATE DRAIN PIPING WITH 1/2" ARMAFLEX.
- UPON COMPLETION BALANCE SYSTEMS TO AIR FLOWS SHOWN. REPORT THE BALANCING MEASUREMENTS ON THE "AS BUILT" DRAWINGS.
- MOUNT CONDENSATE AND REFRIGERANT LINES (WHEN APPLICABLE) AS HIGH AS POSSIBLE.
- NO EQUIPMENT OR FIXTURE SUBSTITUTIONS ALLOWED (THAT ARE NOT CURRENTLY LISTED) WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER.
- CONTROL WIRING BY HVAC CONTRACTOR. FINAL CONNECTIONS BY HVAC CONTRACTOR.
- PROVIDE AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) 8 COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. AT THE TIME OF ROUGH INSTALLATION, OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.

HVAC - KEYNOTES

- 12"x12" DUCT WITH ELBOW FROM "R2" TO JUST ABOVE THE CEILING PLATFORM.
- WALL CAP SIZED FOR 500 CFM EXHAUST. WALL CAP TO BE MOUNTED MIN. 10'-0" ABOVE GRADE AND MIN. 3'-0" ABOVE ANY OPENING. REFER TO SCHEDULE, SHEET M2.

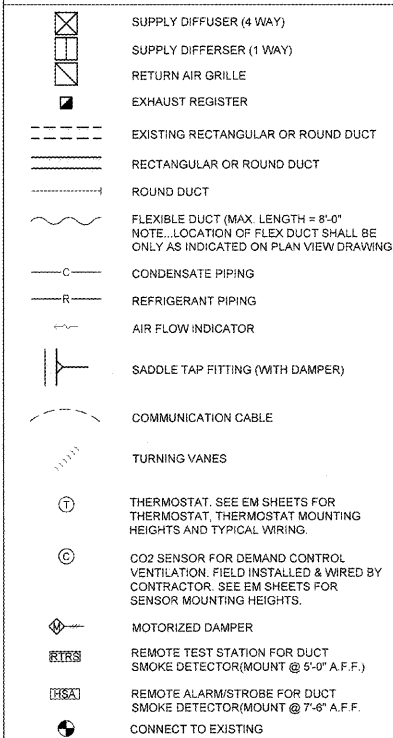
DUCTWORK MOUNTING NOTES

- OPEN CEILING: TOP OF DUCTWORK SHALL BE TIGHT TO BOTTOM OF STRUCTURE.
- LAY-IN CEILING: BOTTOM OF DUCTWORK SHALL BE MOUNTED, ABOVE CEILING, AT A HEIGHT EASILY ACCESSIBLE FOR MAINTENANCE AND DAMPER ADJUSTMENT (TYP. 2'-0" WHEN CLEARANCE ALLOWS) ABOVE CEILING.

HVAC SYSTEMS TESTING & BALANCING

THE HVAC SYSTEM SHALL BE TESTED AND BALANCED (T&B) BY THE CONTRACTOR IN ACCORDANCE WITH THE PROCEDURES OF AABC OR NEBB. CONTRACTOR SHALL SUBMIT WRITTEN T&B REPORTS TO THE OWNER.

HVAC LEGEND



HVAC OUTDOOR AIR REQUIREMENTS

OUTDOOR DOOR VENTILATION CALCULATIONS ARE BASED ON THE 2015 INTERNATIONAL MECHANICAL CODE, CHAPTER 4: VENTILATION, SECTION 403: MECHANICAL VENTILATION, TABLE 403.3.

- SHOWROOM = 3236 SQUARE FEET
- HARD PARTS = 6080 SQUARE FEET

SHOWROOM (SALES)
3236 (SQUARE FEET) x (12 CFM/SQUARE FEET) = 388.3 CFM
388.3 ÷ 3 (EFFECTIVENESS) = 129.4 CFM (MIN.)
3236 (SQUARE FEET) ÷ 1000 (SQUARE FEET) = 3.2
3.2 x 15 (PERSONS/1000 SQUARE FEET) = 49 PEOPLE
(CFM/ PERSON x PERSONS) + (CFM/SQUARE FEET x SQUARE FEET) = CFM
(7.5 x 49) + (12 x 3236) = 755.8 CFM OF OUTSIDE AIR REQUIRED
818.9 ÷ 3 (EFFECTIVENESS) = 945 CFM (MAX.)

HARD PARTS (STORAGE ROOM)
6080 x 12 (CFM/SQUARE FEET) = 729.6 CFM
729.6 ÷ 3 (EFFECTIVENESS) = 912 CFM (MAX.)

485 CFM + 912 CFM = 1397 (MIN. TOTAL CFM)
945 CFM + 912 CFM = 1857 (MAX. TOTAL CFM)

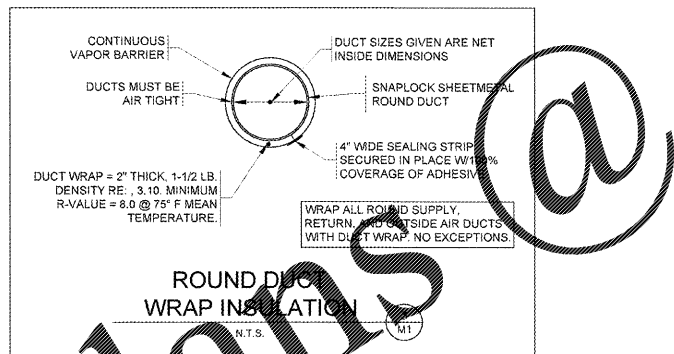
MINIMUM OUTSIDE AIR REQUIRED: 1397 CFM
MAXIMUM OUTSIDE AIR REQUIRED: 1857 CFM
TOTAL OUTSIDE AIR SPECIFIED: 1880 CFM (MAX.)

OUTSIDE AIR SETUP

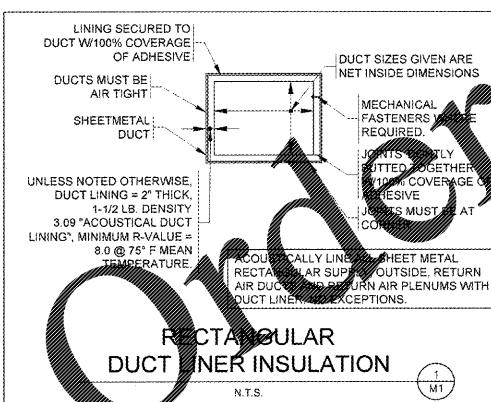
CONTRACTOR TO SET DAMPERS AS FOLLOWS:

ECONOMIZER MODE MAXIMUM CFM PER UNIT
7.5 TON RTU = 3,000
5 TON RTU = 2,000

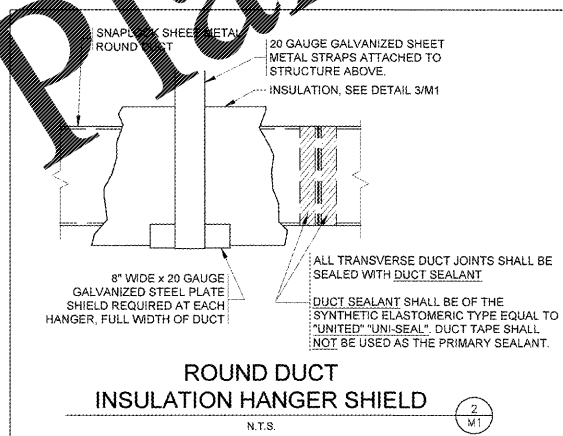
MAXIMUM OUTSIDE AIR PER RTU:
RTU 1, 2, 3 = 350 CFM (MIN)
= 510 CFM (MAX)
RTU 4 = 350 CFM (MAX)



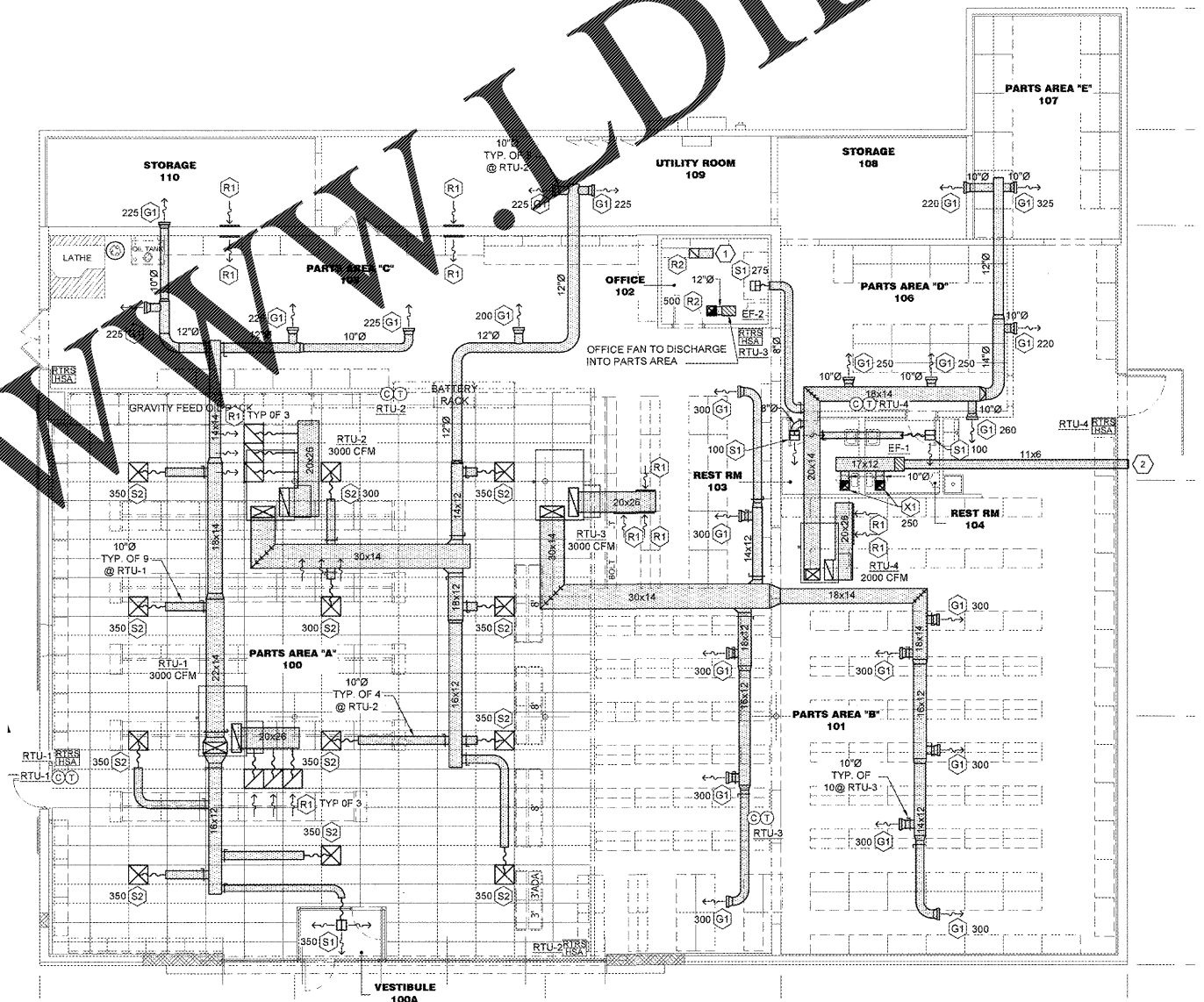
ROUND DUCT WRAP INSULATION



RECTANGULAR DUCT LINER INSULATION



ROUND DUCT INSULATION HANGER SHIELD



HVAC PLAN

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



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