

**HVAC GENERAL NOTES**

1. DRAWING IS DIAGRAMMATIC AND IS NOT TO BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE CODE(S) NOTED ON THE COVER SHEET.
3. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONSTRUCTION PRIOR TO SUBMITTING HIS BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED EXISTING CONDITIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL FEES AND DIRECT EXPENSES INVOLVED IN ANY INSPECTION REQUIRED FOR THE PROJECT.
5. 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.
6. 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.
7. THE PROPER PERFORMANCE OF THE CONTROL SYSTEM IS THE RESPONSIBILITY OF THE CONTRACTOR.
8. 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".
9. 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.
10. DUCT DIMENSIONS ON PLANS ARE TO BE FINISHED INSIDE DIMENSIONS.
11. ALL WORK IS TO BE GUARANTEED FOR ONE YEAR UPON OCCUPANCY. REFRIGERATION COMPRESSORS SHALL HAVE A 5-YEAR WARRANTY.
12. 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.
13. DUCT MATERIALS SHALL BE AS FOLLOWS:
  - a. 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.
  - b. 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 RADIUSED ELBOWS.
  - c. DUCT WRAP INSULATION - DUCT WRAP INSULATION SHALL BE 2" THICK, 1-1/2 LB/CSU FOOT DENSITY, FIBERGLASS TYPE, WITH FOIL SCRIM 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.
- d. RUNOUTS TO DIFFUSERS - UNLISTED CLASS 1 PRE-INSULATED FLEX DUCT, NOT OVER 8' LONG. (SEE DIFFUSER INSTALLATION DETAIL).
- e. EXHAUST DUCT - UNINSULATED SNAPLOCK PIPE OR UNLINED GALVANIZED STEEL.
  - f. TRANSITIONS - SHALL CONFORM TO SMACNA STANDARDS.
14. INSULATE HVAC CONDENSATE DRAIN PIPING WITH 1/2" ARMAFLEX.
15. UPON COMPLETION BALANCE SYSTEMS TO AIR FLOWS SHOWN. REPORT THE BALANCING MEASUREMENTS ON THE "AS BUILT" DRAWINGS.
16. MOUNT CONDENSATE AND REFRIGERANT LINES (WHEN APPLICABLE) AS HIGH AS POSSIBLE.
17. NO EQUIPMENT OR FIXTURE SUBSTITUTIONS ALLOWED (THAT ARE NOT CURRENTLY LISTED) WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER.
18. CONTROL WIRING BY HVAC CONTRACTOR, FINAL CONNECTIONS BY HVAC CONTRACTOR.
19. PROVIDE AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) 8.
20. 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**

- 1 THERMOSTATS (TYPICAL WIRING FOR EACH THERMOSTAT) SEE VS1 SHEET
- 2 12"x12" DUCT WITH ELBOW FROM "R2" TO JUST ABOVE THE CEILING PLATFORM.
- 3 CONNECT NEW DUCTWORK TO EXISTING DUCTWORK / DUCT DROPS AS SHOWN ON PLAN WITH LIKE MATERIALS. TRANSITION AS REQUIRED. ENSURE VAPOR BARRIER IS MAINTAINED. DUCTWORK CONNECTION TO BE SEALED TO SMACNA LOW LEAK STANDARDS. TRANSITION AS REQUIRED TO SIZES SHOWN ON PLAN.
- 4 EXISTING DUCTWORK TO REMAIN AND BE REUSED. CONTRACTOR SHALL VERIFY EXACT SIZE, LOCATION AND CONDITION OF ALL EXISTING DUCTWORK INCLUDING INSULATION. SHOULD ANY REPAIRS BE REQUIRED, CONTACT OWNER'S REPRESENTATIVE AND SUBMIT A WRITTEN COST PROPOSAL INCLUDING COMPLETE COST TO REPAIR IN "LIKE NEW" CONDITION AND TIME ESTIMATE TO COMPLETE REPAIRS.
- 5 EXISTING AIR DEVICE AND DUCTWORK SHALL REMAIN. CONTRACTOR SHALL REBALANCE TO AIR QUANTITIES SHOWN ON PLAN. CLEAN AND PAINT AS REQUIRED TO PUT AIR DEVICE IN "LIKE NEW" CONDITION.
- 6 CAP EXISTING DUCTWORK AIR TIGHT AT APPROXIMATE LOCATION SHOWN ON PLANS WITH MATCHING MATERIALS. ENSURE VAPOR BARRIER IS MAINTAINED. DUCTWORK CONNECTION TO BE SEALED TO SMACNA LOW LEAK STANDARDS.
- 7 COVER OPEN END OF RETURN AIR DUCTWORK WITH 1" MESH HARDWARE CLOTH IN REMOVABLE FRAME. REFER TO DETAIL, SHEET M2, FOR ADDITIONAL INFORMATION.

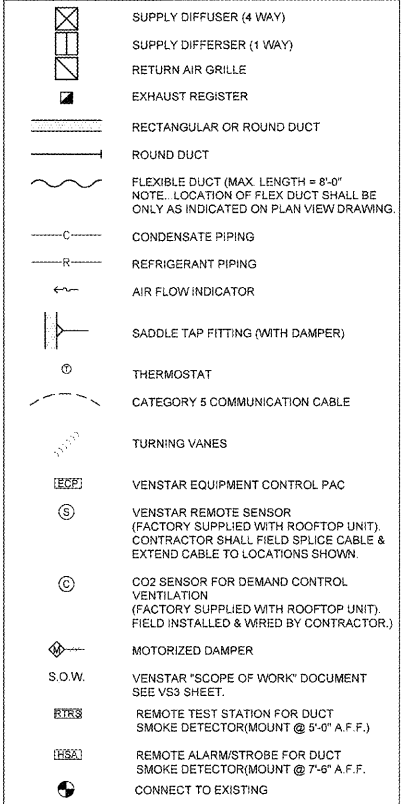
**CASCO**  
PROJECT MANAGERS  
1081 Watson Road  
St. Louis, MO 63127  
Phone: (314) 821-1100

REVISIONS:


**O'Reilly AUTO PARTS**

CORPORATE OFFICES  
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**HVAC LEGEND**



**HVAC OUTDOOR AIR REQUIREMENTS**

OUTDOOR DOOR VENTILATION CALCULATIONS ARE BASED ON THE 2012 INTERNATIONAL MECHANICAL CODE, CHAPTER 4: VENTILATION, SECTION 403: MECHANICAL VENTILATION, TABLE 403.3.

1. SHOWROOM = 3174 SQUARE FEET
2. HARD PARTS = 4067 SQUARE FEET

SHOWROOM (SALES)  
3174 (SQUARE FEET) x (12 CFM/SQUARE FEET) = 380.9 CFM  
380.9 + 8 (EFFECTIVENESS) = 478 (MIN.)

3174 (SQUARE FEET) ÷ 1000 (SQUARE FEET) = 3.1  
3.1 x 15 (PERSONS/1000 SQUARE FEET) = 47 PEOPLE  
(CFM/PERSON x PERSONS) + (CFM/SQUARE FEET x SQUARE FEET) = CFM  
(7.5 x 47) + (12 x 3174) = 733.4 CFM OF OUTSIDE AIR REQUIRED  
733.4 + 8 (EFFECTIVENESS) = 917 CFM (MAX.)

HARD PARTS (STORAGE ROOM)  
4067 x 12 (CFM/SQUARE FEET) = 488 CFM OF OUTSIDE AIR REQUIRED  
488 + 8 (EFFECTIVENESS) = 610 CFM (MAX.)

478 CFM + 610 CFM = 1088 (MIN. TOTAL CFM)  
917 CFM + 610 CFM = 1527 (MAX. TOTAL CFM)

MINIMUM OUTSIDE AIR REQUIRED: 1088 CFM  
MAXIMUM OUTSIDE AIR REQUIRED: 1527 CFM  
TOTAL OUTSIDE AIR SPECIFIED: 1535 CFM (MAX.)

**OUTSIDE AIR SETUP**

CONTRACTOR TO SET DAMPERS AS FOLLOWS

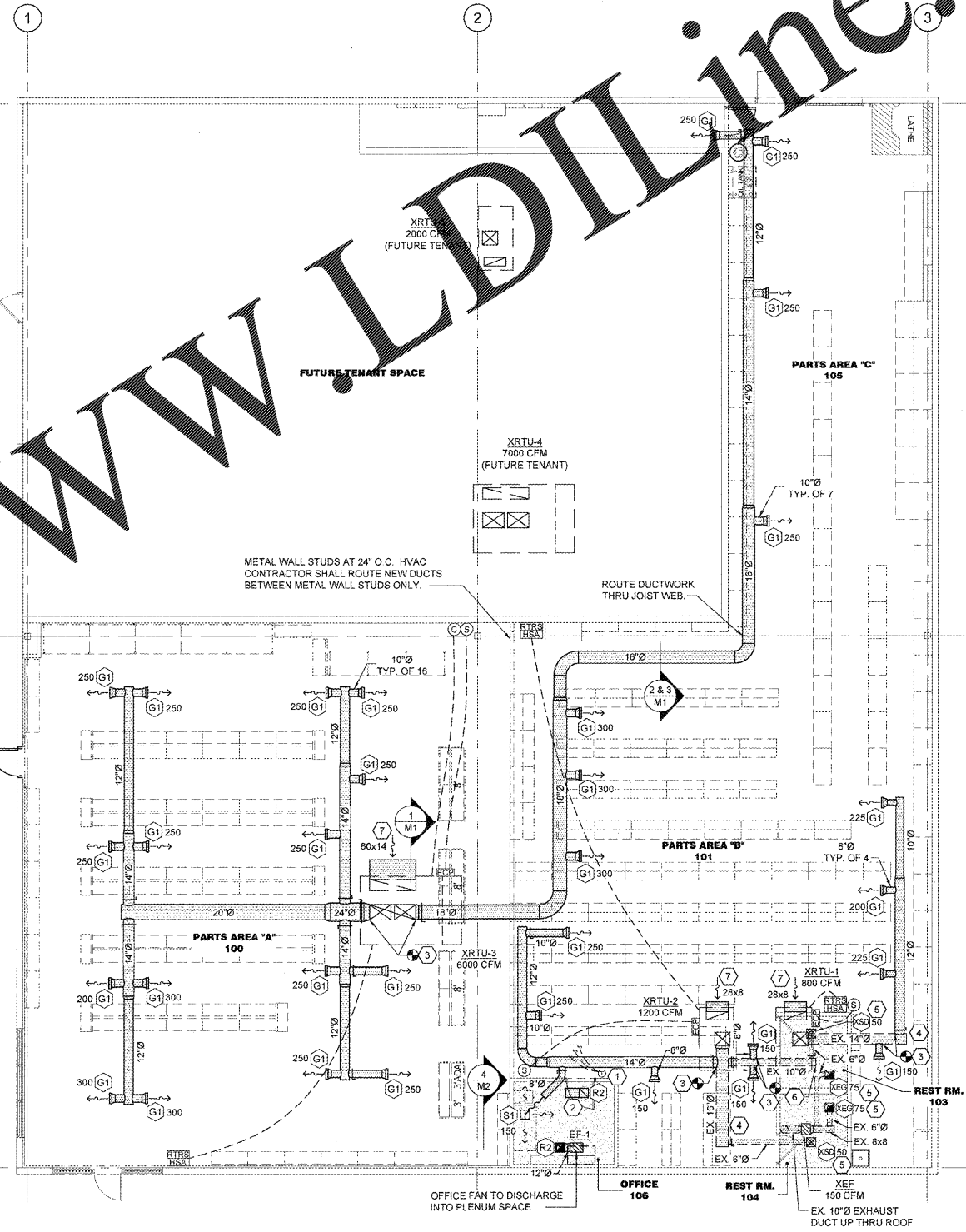
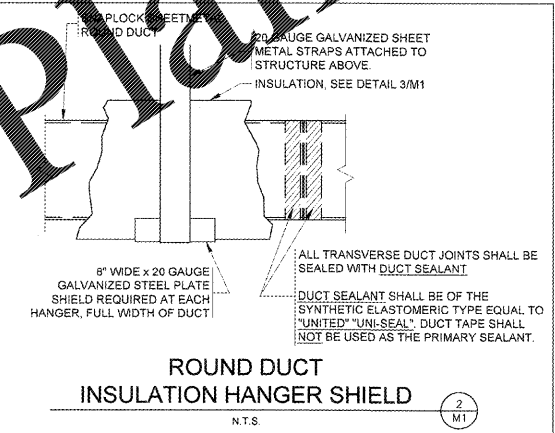
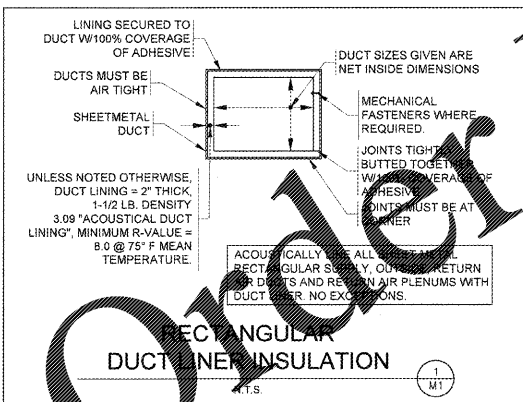
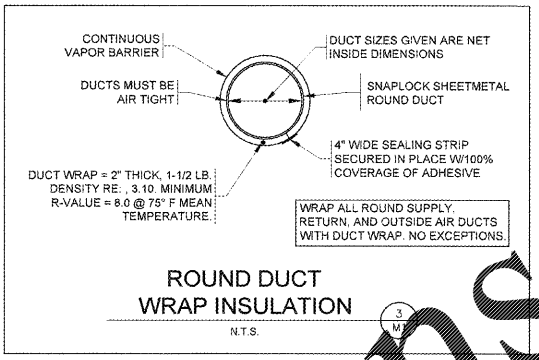
ECONOMIZER MODE MAXIMUM CFM  
15 TON RTU = 6,000

MAXIMUM OUTSIDE AIR PER RTU:  
XRTU 1 = 130 CFM (MAX)  
XRTU 2 = 190 CFM (MAX)  
XRTU 3 = 775 CFM (MIN)  
          = 1215 CFM (MAX)

NOTE:  
TOP OF DUCTWORK SHALL BE TIGHT TO BOTTOM OF STRUCTURE.

**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.



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Quick Plans

PROJECT:  
**RE-MODEL O'REILLY AUTO PARTS STORE**  
523 NORTH MILITARY STREET  
LORETTO, TN 38469

**HVAC PLAN**

MICHAEL C. GRAPPPERHAUS  
License # 120854  
Exp. Date: 11/30/19  
Professional of Record

DRAWN: MAK  
CHECKED: MCG  
DATE: 2-15-2018  
JOB NO.: 319287 (LTO)  
SHEET:

**M1**

**HVAC PLAN**  
SCALE: 1/8" = 1'-0"

