

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

**KEYED NOTES**

- NEW GAS METER BY UTILITY. CONTRACTOR SHALL VERIFY THAT NEW GAS METER IS REGULATED FOR 7" W.C. PRESSURE, AND HAS A MINIMUM CAPACITY OF 534 CFH. GAS PIPING IS SIZED BASED ON SCHEDULE 40 METALLIC PIPE, 7" W.C. INLET PRESSURE, 0.5" W.C. PRESSURE DROP, 0.80 SPECIFIC GRAVITY, OVER A TOTAL DEVELOPED LENGTH OF 50'-0". AS PER THE 2015 INTERNATIONAL FUEL GAS CODE, TABLE 402.4(2), ANY DISCREPANCIES IN THIS INFORMATION SHOULD BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND/OR PROJECT ENGINEER. FIELD VERIFY EXTENT OF WORK PRIOR TO INSTALLATION OF PIPING.
- CONTRACTOR SHALL EXTEND NEW 1-1/2" GAS RISER UP TO ROOF OUTSIDE OF BUILDING, TIGHT TO WALL. PROVIDE AN APPROVED GAS SHUT-OFF AT 48" ABOVE FINISHED GRADE.
- UTILITY SHALL BE RESPONSIBLE FOR SPLITTING GAS SERVICE.
- CONTRACTOR TO EXTEND AND CONNECT NEW GAS PIPING TO NEW HVAC UNIT, AS INDICATED. SEE DETAIL ON SHEET M201.
- CONTRACTOR SHALL INSTALL NEW CONTRACTOR PROVIDED HVAC UNIT AND CONTRACTOR PROVIDED ROOF CURB AS INDICATED ON PLANS, SCHEDULE AND NOTES. PROVIDE NEW ROOF OPENINGS AND STRUCTURAL SUPPORT, AS SHOWN ON STRUCTURAL DRAWINGS. PROVIDE FULL SIZE DUCT DROP/SLIPS 2'-0" BELOW STRUCTURE FOR FUTURE CONNECTION BY TENANT.
- PROVIDE FULL SIZE CONDENSATE TRAP/LINE. TERMINATE IN A CODE APPROVED LOCATION. SEE DETAIL ON SHEET M201.
- FURNISH AND INSTALL DUCT SMOKE DETECTOR (SYSTEM SENSOR #D4120) IN RETURN AIR DROP FROM UNIT. WIRE DUCT SMOKE DETECTOR TO BUILDING FIRE ALARM CONTROL PANEL OR FURNISH AND INSTALL A REMOTE AUDIBLE/VISUAL ALARM DEVICE WITH A REMOTE TEST SWITCH (SYSTEM SENSOR #RTS2-AOS) LOCATED IN AN APPROVED LOCATION. FIELD VERIFY EXACT REQUIREMENTS. CONTRACTOR SHALL TEST SYSTEM TO INSURE PROPER FUNCTION PRIOR TO TENANT OCCUPYING SPACE.
- MOUNT THERMOSTAT TO COLUMN, AS SHOWN, AT 48" ABOVE FINISHED FLOOR. NOTE: THERMOSTAT TO BE USED FOR STARTUP PURPOSES ONLY, AND WILL BE REPLACED BY TENANT'S ENERGY MANAGEMENT SYSTEM. SEE SCHEDULE SHEET 201 FOR FURTHER DETAIL.
- EXISTING GAS METER TO REMAIN AND BE REUSED BY FUTURE TENANT. TEMPORARILY CAP STUB-IN FOR FUTURE CONNECTION. FUTURE TENANT IS ESTIMATED TO REQUIRE 250 CFH OF GAS.
- TAP OFF GAS LINE OF SIZE SHOWN. DROP BELOW ROOF AND BRING TO FUTURE TENANT SPACE AND CAP. PIPE IS SIZED TO SUPPLY 130 CFH OF GAS PER TENANT SPECIFICATIONS.

**SYMBOLS LEGEND**

—NG—	NEW NATURAL GAS STUB-IN
	NEW GAS METER
	EQUIPMENT/FIXTURE DESIGNATION
	KEYED NOTE
	REVISION NUMBER
TYP.	TYPICAL
F.V.	FIELD VERIFY
	THERMOSTAT
	SMOKE DETECTOR

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI  
10/19/2020

**SPECIFICATIONS**

GENERAL MECHANICAL CONDITIONS

TENANT SHALL FURNISH SELECTED MECHANICAL EQUIPMENT, ACCESSORIES AND CONTROLS AS SCHEDULED AND AS SPECIFIED. THE MECHANICAL SUBCONTRACTOR(S) SHALL BE RESPONSIBLE FOR DELIVERY COORDINATION, RECEIVING, STORING, SETTING, STARTUP AND INSTALLING ALL TENANT FURNISHED EQUIPMENT AS WELL AS THE ONE YEAR PARTS AND LABOR WARRANTY FROM THE DATE OF STORE OPENING.

A. SCOPE

- PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROPERLY INSTALL AIR CONDITIONING SYSTEMS WHERE SHOWN ON DRAWINGS AND AS SCHEDULED.
- PROVIDE EQUIPMENT AS SPECIFIED TOGETHER WITH ALL NECESSARY DUCTS, GRILLES, REGISTERS, CONTROLS, PIPING, LOW VOLTAGE FANS, CONTROL WIRING, HANGERS, STANDS, EQUIPMENT SUPPORTS, FLASHING AT EQUIPMENT, DUCT AND PIPE INSULATION, UNLESS OTHERWISE NOTED.
- RELATED WORK BY OTHERS:
  - PAINTING EXCEPT AS HEREIN SPECIFIED.
  - LINE VOLTAGE WIRING AND CONDUIT.
  - ELECTRICAL SUPPLY CONNECTION TO EQUIPMENT.

B. ALL WORK SHALL CONFORM TO ALL FEDERAL, STATE AND LOCAL CODES AND ANY LANDLORD REQUIREMENTS AS SPECIFIED IN THE EXECUTED LEASE AGREEMENT. CONTRACTOR SHALL VERIFY AND COORDINATE SCOPE OF WORK WITH TENANT AND LANDLORD.

C. THE CONTRACTOR SHALL EXAMINE THE PREMISES AND VERIFY THE EXISTING CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE IN PERFORMING HIS PART OF THE WORK OR THAT WILL IN ANY MANNER AFFECT THE WORK UNDER CONTRACT. NO ADDITIONAL COMPENSATION SHALL BE PROVIDED FOR CONDITIONS FOUND DURING THE EXECUTION OF CONTRACTED WORK. THE CONTRACTOR SHALL COOPERATE WITH ALL OTHER TRADES SO THAT THE INSTALLATION OF ALL EQUIPMENT MAY BE PROPERLY COORDINATED. CONTRACTOR SHALL BRING TO THE ATTENTION OF THE CONSTRUCTION MANAGER ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND DESIGN DOCUMENTS.

D. ALL EQUIPMENT FURNISHED SHALL FIT THE SPACE AVAILABLE, WITH CONNECTIONS, ETC., IN THE REQUIRED LOCATIONS AND WITH ADEQUATE SPACE FOR OPERATING AND SERVICING. SHOULD A CONFLICT EXIST BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE CONSTRUCTION MANAGER WHOSE DECISION SHALL BE FINAL. NO ALLOWANCE WILL BE MADE, SUBSEQUENTLY, IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR AFTER AWARD OF THE CONTRACT.

E. ALL MECHANICAL EQUIPMENT SHALL CONFORM WITH THE REQUIREMENTS OF THE STATE MECHANICAL CODE, THE STATE BUILDING CODE, THE STATE ENERGY CODE, NFPA 90A, 96.101 AND ALL APPLICABLE LOCAL CODES AND ORDINANCES.

F. DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS AS REQUIRED. FURNISH AND INSTALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS AND MATERIALS NECESSARY TO FACILITATE THE SYSTEMS FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PAY ANY ASSOCIATED FEES.

G. THE CONTRACTOR SHALL INSTALL ALL PIPING, DUCTWORK, FIXTURES AND EQUIPMENT AS REQUIRED TO CONFORM THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE CEILING HEIGHTS AND HEADROOM AND MAKE ALL EQUIPMENT REQUIRING MAINTENANCE OR REPAIR ACCESSIBLE.

H. THE CONTRACTOR SHALL INSTALL MECHANICAL SYSTEMS AS SHOWN, NOTED AND SPECIFIED. EQUIPMENT MAY NOT BE SUBSTITUTED UNLESS WRITTEN APPROVAL BY THE ENGINEER OR TENANT'S REPRESENTATIVE IS OBTAINED. ANY UNAUTHORIZED CHANGES SHALL BE REMOVED AT CONTRACTOR'S EXPENSE IF DEEMED NECESSARY BY ENGINEER OR TENANT'S REPRESENTATIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REQUIRED CHANGE TO RELATED WORK CAUSED BY THE SUBSTITUTION OF ANY ITEMS OF MATERIALS OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.

HVAC UNITS

- CONTRACTOR SHALL COORDINATE THE DELIVERY, RECEIVING, STORAGE, RIGGING, HOISTING, INSTALLATION AND START UP OF HEATING AND COOLING UNITS INCLUDING ALL ACCESSORIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.
- HVAC UNITS SHALL BE FURNISHED COMPLETE WITH CASING, REFRIGERATION SYSTEM, HEATING SECTION (AS SCHEDULED ON DRAWINGS), FANS, MOTORS AND DRIVES, FILTERS, AUTOMATIC CONTROLS, AND OPTIONS AND ACCESSORIES AS SCHEDULED ON DRAWINGS.

C. TEMPERATURE CONTROLS.

- HVAC UNITS SHALL BE FURNISHED WITH FACTORY INSTALLED AND TESTED COMPONENTS TO PROVIDE TWO STAGES OF COOLING, TWO STAGES OF HEATING (WHERE APPLICABLE), ANTI-RECYCLE TIMER, FIVE (5) MINUTE COMPRESSOR STAGING RELAY, AND OTHER ITEMS AS SCHEDULED ON DRAWINGS.

D. SEQUENCE OF OPERATION

- OCCUPIED HOURS.
  - UNIT OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND UNIT SUPPLY FAN SHALL OPERATE CONTINUOUSLY.
  - UNIT COMPRESSOR(S) SHALL CYCLE OR HEAT EXCHANGER SHALL STAGE TO MAINTAIN SPACE SETPOINT.
  - UNIT ECONOMIZER CYCLE SHALL BE INITIATED UPON A SIGNAL FROM OUTDOOR AND RETURN AIR TEMPERATURE AND ENTHALPY SENSORS. OUTDOOR AIR DAMPER, RETURN AIR DAMPER, AND UNIT COMPRESSOR(S) SHALL CYCLE TO MAINTAIN SPACE SETPOINT. ECONOMIZER CYCLE SHALL OVER RIDE CO2 MONITORING SYSTEM.
- UNOCCUPIED HOURS.
  - UNIT OUTDOOR AIR DAMPER SHALL REMAIN CLOSED AND UNIT SUPPLY FAN SHALL CYCLE ON A SIGNAL FROM SPACE SENSOR.
  - UNIT COMPRESSOR(S) SHALL CYCLE OR HEAT EXCHANGER SHALL STAGE WITH UNIT SUPPLY FAN TO MAINTAIN SPACE SETPOINT.
- SMOKE ALARM (WHERE REQUIRED).
  - UNIT OUTDOOR AIR DAMPER SHALL CLOSE AND UNIT SUPPLY FAN SHALL STOP ON A SIGNAL FROM DUCT SMOKE DETECTOR. DUCT SMOKE DETECTOR SHALL SEND A SIGNAL TO REMOTE ALARM DEVICE.

EXECUTION

- ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 10'-0" AWAY FROM EXHAUST DISCHARGE OPENINGS AND PLUMBING VENT STACKS.
- PROVIDE UL APPROVED FIRE DAMPERS FOR ALL PENETRATIONS THROUGH FIRE RATED WALLS, PARTITIONS, CEILINGS, AND FLOORS. INSTALL FIRE DAMPERS AS PER MANUFACTURER'S DIRECTIONS AND AS PER UL GUIDELINES.
- SUPPLY, RETURN AND POSITIVE PRESSURE EXHAUST DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS "C".
- CORE-DRILL OR SAW-CUT EXISTING WALLS, ROOF, ETC. AS REQUIRED FOR PIPING OR DUCTWORK AND FIRE-STOP OPENING AROUND PIPE OR DUCTWORK. VERIFY LOCATION OF STRUCTURAL BEAMS, JOISTS, ETC. BEFORE DRILLING OR CUTTING. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
- WHEREVER FOUNDATION WALLS, OUTSIDE WALLS, ROOFS, ETC. ARE CUT FOR INSTALLATION OF SYSTEMS, THEY SHALL BE PATCHED TO MATCH EXISTING CONSTRUCTION AND SEALED WEATHER TIGHT. WORK SHALL BE PERFORMED BY CRAFTSMEN SKILLED IN THEIR RESPECTIVE TRADES.
- PROVIDE 3 SETS OF PLEATED DISPOSABLE FILTERS. ONE SET TO BE USED UNTIL COMPLETION OF CONSTRUCTION PHASE. INSTALL ONE SET AT COMPLETION OF CONSTRUCTION PHASE AND DELIVER ONE SET TO OWNER AND LABEL EACH SET OF FILTERS TO DENOTE THEIR RESPECTIVE HVAC UNITS.
- PROVIDE TWO OPERATION AND MAINTENANCE MANUALS BOUND IN 8-1/2" X 11" PAGE BINDERS, TITLED "OPERATION AND MAINTENANCE MANUAL". SUBDIVIDE BINDER CONTENTS WITH PAGE DIVIDERS BY SYSTEM AND EQUIPMENT. INCLUDE ALL SHOP DRAWINGS, AS-BUILT DRAWINGS AND WARRANTIES. SUBMISSION OF THESE DOCUMENTS SHALL BE WITHIN 90 DAYS OF SYSTEM ACCEPTANCE, PER ENERGY CODE, AND A REQUIREMENT FOR FINAL PAYMENT.

TESTING, ADJUSTING, BALANCING AND INSPECTION

- WORK SHALL BE PERFORMED AFTER THE COMPLETE INSTALLATION AND STARTUP OF ALL EQUIPMENT, DUCT SYSTEMS AND TEMPERATURE AND ENERGY MANAGEMENT CONTROLS AND COMPLETED PRIOR TO TURNOVER FOR THE START OF STOCKING.
- CONTRACTOR SHALL SUBMIT TEST AND BALANCE REPORT TO GENERAL CONTRACTOR FOR SUBMITTAL TO TENANT'S PROJECT MANAGER AND LOCAL CODE AUTHORITY (IF REQUIRED).
- TESTING AND BALANCING CONTRACTOR SHALL ALSO INSPECT THE COMPLETED AND OPERATIONAL HVAC EQUIPMENT, DUCT SYSTEMS AND TEMPERATURE AND ENERGY MANAGEMENT CONTROLS PRIOR TO TURNOVER OF THE STORE FOR THE START OF STOCKING. TESTING AND BALANCING CONTRACTOR SHALL SUBMIT THE COMPLETED TENANT'S HVAC FIELD INSPECTION REPORT TO THE GENERAL CONTRACTOR FOR SUBMITTAL TO TENANT'S PROJECT MANAGER FOR REVIEW.

**CASCO**  
17 Summit Drive, Suite 100, St. Louis, MO 63143 T 314.821.1100

**MIDLAND**

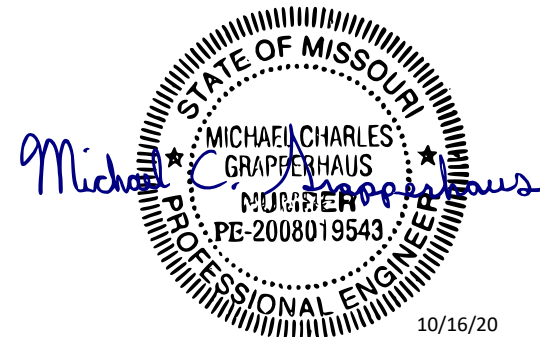
Starbucks & Medical Office

155 S.W. MO-150 HWY  
LEE'S SUMMIT, MO 64802

CONSTR. DOC. & REVISIONS

No.	Description	Date
1	Owner Review	05/12/20
2	Clarifications	07/09/20
3	Owner Revisions	07/20/20
5	Clarifications	08/06/20
8	Owner Comments	10/16/20

CASCO DIVERSIFIED CORPORATION  
PROFESSIONAL ENGINEERING  
CERTIFICATE OF AUTHORITY #000613  
EXP. 12/31/21



PROFESSIONAL OF RECORD  
MICHAEL C. GRAPPERHAUS  
License NO.: PE-2008019543  
Expiration Date: 12/31/20

Drawn By/Checked By: BAM/MCG

Project Number 320488

Permit Date 06-17-20

**MECHANICAL  
PLAN AND  
SPECIFICATIONS**

**M101**