MECHANICAL NOTES:

1. ALL HVAC EQUIPMENT AND DUCTWORK TO BE INSTALLED IN ACCORDANCE WITH STATE AND LOCAL CODES.

2. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL DUCTWORK, PIPING, AND ELECTRICAL REQUIREMENTS WITH ALL OTHER TRADES PRIOR TO BEGINNING INSTALLATION TO AVOID CONFLICTS AND INTERFERENCE WITH OTHER TRADES.

3. ALL EQUIPMENT TO BE INSTALLED AS SUGGESTED BY MANUFACTURER.

4. INSULATE SUPPLY AND RETURN DUCTWORK LOCATED IN UNCONDITIONED SPACES BY WRAPPING WITH INSULATION WITH A MINIMUM INSTALLED R-VALUE OF 5.0. DIMENSIONS SHOWN ARE INSIDE CLEAR AREA DIMENSIONS.

5. FIRST 10' FROM THE HVAC UNIT OF EXPOSED INTERIOR DUCTWORK MUST BE INSULATED WITH 1" DUCT LINER.

6. EQUIP RETURN AIR GRILLES WITH FILTERS. INSTALL WASHABLE SCREEN FILTER ON OUTSIDE AIR INTAKE OF ROOF TOP UNITS.

7. MECHANICAL SYSTEM TO BE BALANCED AND TESTED AFTER INSTALLATION TO ASSURE PROPER OPERATION.

8. COORDINATE EXACT LOCATION OF THERMOSTATS WITH OWNER.

9. BATHROOM EXHAUST FANS ARE TO BE FURNISHED, INSTALLED AND DUCTED TO OUTDOORS BY THE MECHANICAL CONTRACTOR. EXHAUST FAN TO BE WIRED BY THE ELECTRICAL CONTRACTOR.

10. SMOKE DETECTORS ARE TO BE PROVIDED IN RETURN AIR DUCT OF EACH UNIT AHEAD OF MAKE-UP AIR CONNECTIONS TO SHUT DOWN THE UNIT IN CASE OF FIRE.

11. DUCT SMOKE DETECTORS ARE TO BE CONNECTED TO FIRE ALARM.

12. EXHAUST FAN DISCHARGE TO BE AT LEAST TEN FEET AWAY FROM HVAC FRESH AIR IN-TAKE.

13. GAS PIPING BASED ON 2 PSI GAS PRESSURE. VERIFY ALL GAS LINES SIZES WITH GAS COMPANY.

14. ALL GAS PIPING TO BE BLACK STEEL PIPING WITH PROTECTIVE PAINT.

15. GAS REGULATORS FOR HVAC EQUIPMENT TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.

16. FINAL UTILITY CONNECTIONS (GAS, ELECTRIC, ETC.) TO EQUIPMENT SHALL BE MADE BY THE CONTRACTOR INSTALLING THE EQUIPMENT REQUIRING THE UTILITIES.

17. DUCT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW THE INTENT OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY ADDITIONAL TRANSITIONS, OFFSETS, OR TURNS, IN THE DUCTWORK AND/OR PIPING, NOT SHOWN BUT REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

18. ALL DUCTWORK SHALL BE INSTALLED TIGHT AGAINST THE STRUCTURE UNLESS OTHERWISE NOTED OR SHOWN.

19. AIR DISTRIBUTION LOCATIONS SHOWN ON MECHANICAL PLANS ARE APPROXIMATE. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR ACTUAL LOCATIONS.

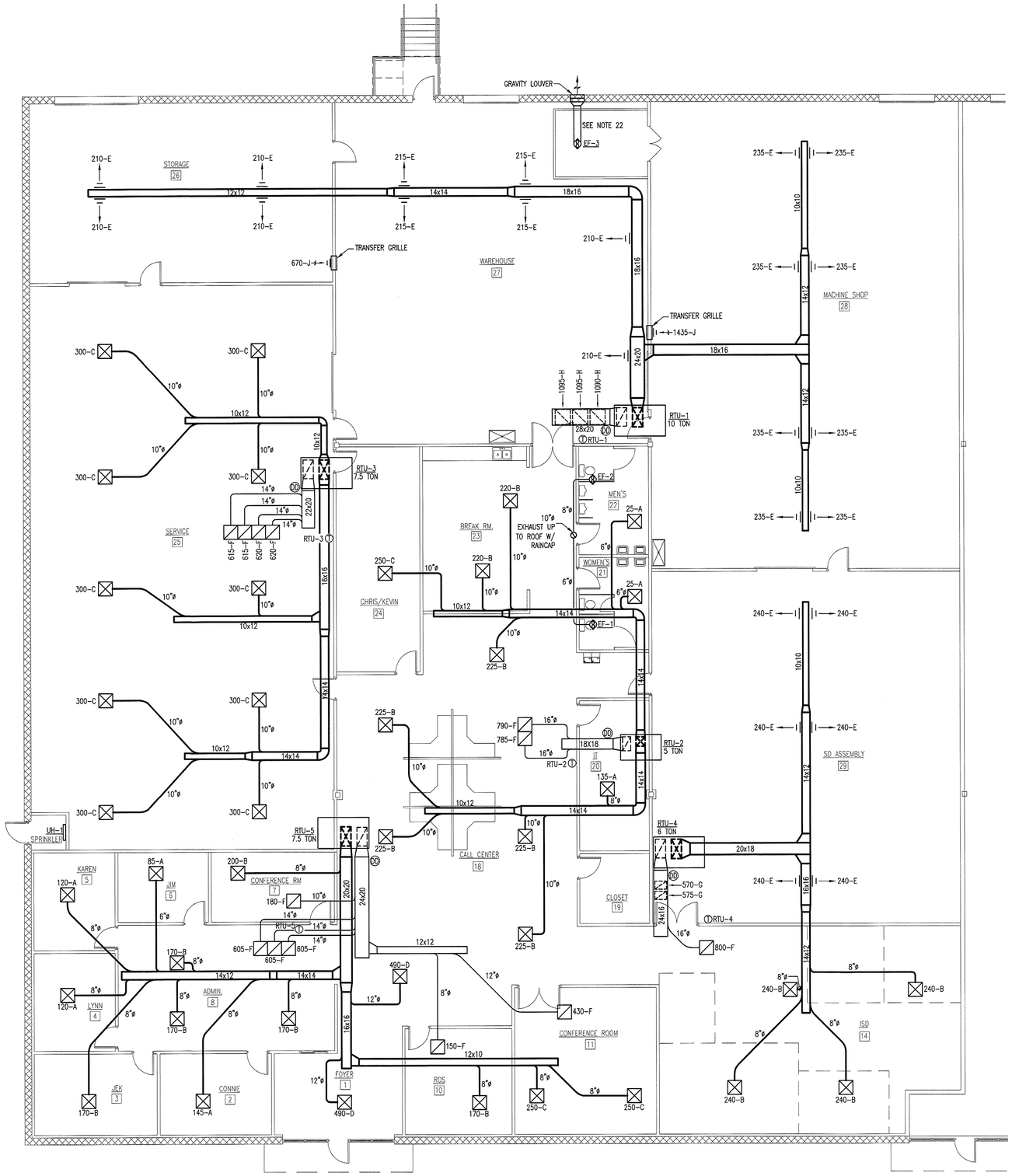
20. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONED LOCATIONS OF WALLS AND PARTITIONS AND FOR PARTITION THICKNESS AND CONSTRUCTION MATERIALS.

21. ELECTRICAL POWER REQUIREMENTS ARE BASED ON MANUFACTURER'S PUBLISHED DATA. IF ACTUAL UNIT IS A DIFFERENT MANUFACTURER OR THE ACTUAL PURCHASED UNIT(S) OTHERWISE HAVE DIFFERENT ELECTRICAL LOAD (MCA) OR CIRCUIT BREAKER (MCB) REQUIREMENTS THAN WHAT IS PUBLISHED ON THE DRAWING SCHEDULE, THE MECHANICAL CONTRACTOR MUST SUBMIT THE CORRECT DATA IN WRITING TO THE GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR (IF KNOWN). IT IS THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE GC AND ELECTRICAL CONTRACTOR ARE NOTIFIED OF CHANGES IN THE MECHANICAL EQUIPMENT, WHICH WILL CHANGE THE ELECTRICAL WIRING, BREAKER SIZES OR QUANTITY OF CIRCUITS.

22. OWNER TO SUPPLY FAN AND STAIGHT DUCTWORK FOR PAINT BOOTH EXHAUST. COORDINATE DUCT AND WALL OPENING SIZE WITH OWNER PRIOR TO CONSTRUCTION

SYMBOLS & ABBREVIATIONS LEGEND

SYMBOL	DESCRIPTION
T	THERMOSTAT
	CEILING SUPPLY DIFFUSER
	CEILING RETURN GRILLE
	SIDEWALL SUPPLY DIFFUSER
	SIDEWALL RETURN OR EXHAUST GRILLE
	SUPPLY DUCT SECTION
	RETURN DUCT SECTION
CFM	CUBIC FEET PER MINUTE
— · —	NATURAL GAS
	UNION
ø	DIAMETER OR POWER PHASE
O.A.	OUTSIDE AIR
R.A.	RETURN AIR
S.A.	SUPPLY AIR
A.F.F.	ABOVE FINISHED FLOOR
EF	EXHAUST FAN
DD	DUCT MOUNTED SMOKE DETECTOR



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

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE

PRESCRIPTIVE ☒ ENERGY COST BUDGET ☐

THERMAL ZONE 8

EXTERIOR DESIGN CONDITIONS
WINTER DRY BULB 15 °F
SUMMER DRY BULB 90 °F

INTERIOR DESIGN CONDITIONS
WINTER DRY BULB 68 °F
SUMMER DRY BULB 78 °F
RELATIVE HUMIDITY 50 %

BUILDING HEATING LOAD 407,168 BTU/HR

BUILDING COOLING LOAD 33.56 TONS

MECHANICAL SPACING CONDITIONING SYSTEM
UNITARY
DESCRIPTION OF UNIT GAS PACKAGE UNITS

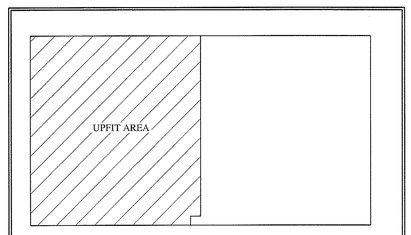
HEATING EFFICIENCY
COOLING EFFICIENCY
HEATING OUTPUT OF UNITS 569,000 BTU/HR
COOLING OUTPUT OF UNITS 36 TONS

LIST EQUIPMENT EFFICIENCIES

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEM)
MOTOR HORSEPOWER HP
NUMBER OF PHASES ø
MINIMUM EFFICIENCY %
MOTOR TYPE
#OF POLES

DESIGNER STATEMENT:

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF NORTH CAROLINA STATE BUILDING CODES.



KEY PLAN

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TENANT UPFIT FOR:
J.A. KING
Greensboro, North Carolina

DRAWING NAME
MECHANICAL PLAN

NORTH CAROLINA PROFESSIONAL SEAL 25043 ENGINEER KEVIN BERGER

DRAWN MJW
CHECKED KMB
DATE 4/1/09
SCALE AS NOTED
JOB NO. 9024
SHEET M-1

OUTSIDE AIR CALCULATIONS (RTU-1)

OCCUPANCY CLASSIFICATION (PER TABLE 403.3)	NET (GROSS) SQUARE FOOTAGE	OCCUPANCY LOAD PERSONS PER 1,000 S.F.	CALCULATED # OF PEOPLE	OUTSIDE AIR REQUIRED PER PERSON (CFM)	OUTSIDE AIR REQUIRED PER S.F. (CFM)	OUTSIDE AIR REQUIRED (CFM)	OUTSIDE AIR PROVIDED (CFM)
MACHINE SHOP 28	(2954)	–	–	–	.15	443	445
STORAGE 26	(1116)	–	–	–	.15	167	170
WAREHOUSE 27	(2054)	–	–	–	.05	103	105
					TOTAL OUTSIDE AIR	713	720

OUTSIDE AIR CALCULATIONS (RTU-2)

OCCUPANCY CLASSIFICATION (PER TABLE 403.3)	NET (GROSS) SQUARE FOOTAGE	OCCUPANCY LOAD PERSONS PER 1,000 S.F.	CALCULATED # OF PEOPLE	OUTSIDE AIR REQUIRED PER PERSON (CFM)	OUTSIDE AIR REQUIRED PER S.F. (CFM)	OUTSIDE AIR REQUIRED (CFM)	OUTSIDE AIR PROVIDED (CFM)
CALL CENTER 18	(1897)	–	–	–	.05	107	110
OPEN OFFICE	221	7	6	20	–	120	120
OFFICE 24	290	7	2	20	–	40	40
IT 20	(215)	–	–	–	.15	32	35
BREAK ROOM 23	263	30	8	15	–	120	120
					TOTAL OUTSIDE AIR	419	425

OUTSIDE AIR CALCULATIONS (RTU-3)

OCCUPANCY CLASSIFICATION (PER TABLE 403.3)	NET (GROSS) SQUARE FOOTAGE	OCCUPANCY LOAD PERSONS PER 1,000 S.F.	CALCULATED # OF PEOPLE	OUTSIDE AIR REQUIRED PER PERSON (CFM)	OUTSIDE AIR REQUIRED PER S.F. (CFM)	OUTSIDE AIR REQUIRED (CFM)	OUTSIDE AIR PROVIDED (CFM)
SERVICE 25	(3510)	–	–	–	.15	527	530
					TOTAL OUTSIDE AIR	527	530

OUTSIDE AIR CALCULATIONS (RTU-4)

OCCUPANCY CLASSIFICATION (PER TABLE 403.3)	NET (GROSS) SQUARE FOOTAGE	OCCUPANCY LOAD PERSONS PER 1,000 S.F.	CALCULATED # OF PEOPLE	OUTSIDE AIR REQUIRED PER PERSON (CFM)	OUTSIDE AIR REQUIRED PER S.F. (CFM)	OUTSIDE AIR REQUIRED (CFM)	OUTSIDE AIR PROVIDED (CFM)
SD ASSEMBLY 29	(2227)	–	–	–	.15	334	335
OPEN OFFICE (ISD)	929	7	6	20	–	120	120
					TOTAL OUTSIDE AIR	454	455

OUTSIDE AIR CALCULATIONS (RTU-5)

OCCUPANCY CLASSIFICATION (PER TABLE 403.3)	NET (GROSS) SQUARE FOOTAGE	OCCUPANCY LOAD PERSONS PER 1,000 S.F.	CALCULATED # OF PEOPLE	OUTSIDE AIR REQUIRED PER PERSON (CFM)	OUTSIDE AIR REQUIRED PER S.F. (CFM)	OUTSIDE AIR REQUIRED (CFM)	OUTSIDE AIR PROVIDED (CFM)
OFFICE 2	140	7	1	20	–	20	20
OFFICE 3	155	7	1	20	–	20	20
OFFICE 4	122	7	1	20	–	20	20
OFFICE 5	122	7	1	20	–	20	20
OFFICE 6	98	7	1	20	–	20	20
ADMINISTRATION 8	420	7	3	20	–	60	60
OFFICE 10	175	7	1	20	–	20	20
CONFERENCE ROOM 11	320	50	16	10*	–	160	160
CONFERENCE ROOM 7	133	50	7	10*	–	70	70
ENTRY/FOYER	(251)	–	–	–	.05	13	15
					TOTAL OUTSIDE AIR	423	425

EXHAUST FAN SCHEDULE

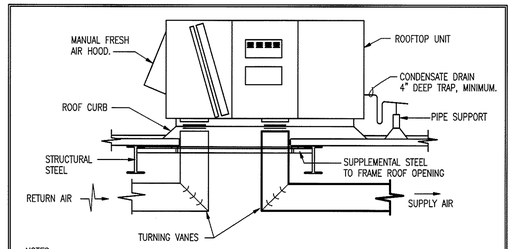
MARK	MANUFACTURER	MODEL	TYPE	CFM	SP	MOTOR	POWER	SONES	WATTS	CONTROL
EF-1	GREENHECK	SP-A190	CEILING EXHAUST	150	0.125" W.G.	FHP	120V/1ø	2.9	113	WALL SWITCH
EF-2	GREENHECK	SP-A250	CEILING EXHAUST	225	0.125" W.G.	FHP	120V/1ø	3.0	83	WALL SWITCH
EF-3	*	*	EXHAUST	*	*	*	208/3ø	*	*	WALL SWITCH

* OWNER TO FURNISH AND INSTALL

PACKAGED GAS UNIT SCHEDULE

MARK	MANUFACTURER	MODEL NO.	TONS	POWER	MCA	MCB	FAN DATA					COOLING CAPACITY			HEATING CAPACITY		
							AIR FLOW (CFM)	R.A. FLOW (CFM)	O.A. FLOW (CFM)	E.S.P. (IN. W.G.)	MOTOR SIZE (H.P.)	SENSIBLE (BTUH)	TOTAL (BTUH)	MIN. EFF.	INPUT (BTUH)	OUTPUT (BTUH)	MIN. EFF.
RTU-1	TRANE	YSC120A3	10	208V/3ø	52.6	60	4000	3280	720	0.50	5.0	111,400	124,200	10.2 SEER	175,000	141,800	81%
RTU-2	TRANE	YSC060E3	5	208V/3ø	29.5	45	2000	1575	425	0.50	1.0	61,800	67,200	13.0 SEER	130,000	104,000	80%
RTU-3	TRANE	YSC090A3	7.5	208V/3ø	42.7	60	3000	2470	530	0.50	3.0	84,400	98,500	10.1 SEER	140,000	113,000	81%
RTU-4	TRANE	YSC072A3	6	208V/3ø	32.7	50	2400	1945	455	0.50	1.0	53,600	72,000	10.3 SEER	120,000	97,200	81%
RTU-5	TRANE	YSC090A3	7.5	208V/3ø	42.7	60	3000	2575	425	0.50	3.0	84,400	98,500	10.1 SEER	140,000	113,000	81%

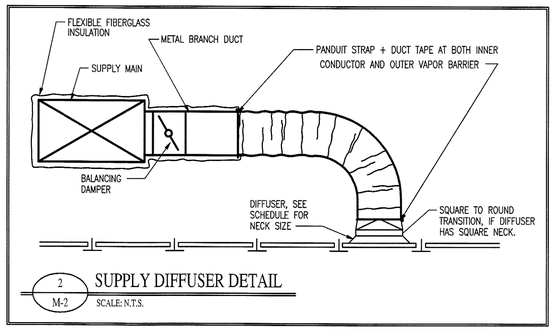
* UNITS TO BE EQUIPPED WITH ON-BOARD BREAKER OR FUSED DISCONNECT
** UNITS TO BE EQUIPPED WITH ON-BOARD CONVENIENCE RECEPTACLES, FACTORY ROOF CURBS, AND OUTSIDE AIR DAMPERS



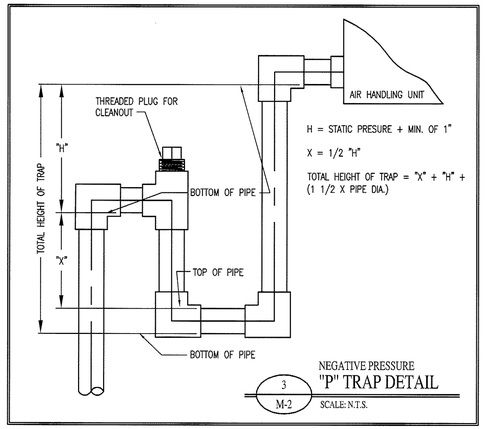
NOTES:

LEAVE ROOF DECKING INTACT INSIDE THE ROOF CURB. CUT HOLES LARGE ENOUGH FOR THE SUPPLY AND RETURN DUCTWORK. AFTER THE DUCTWORK HAS BEEN INSTALLED, CAULKING MUST BE USED TO SEAL THE LINE OF CONTACT BETWEEN THE DECKING AND DUCT. AREA BELOW THE COMPRESSOR TO BE FILLED WITH ABSORBING MATERIAL.

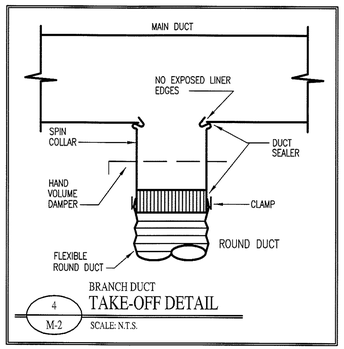
1 / M-2 ROOFTOP HVAC UNIT DETAIL
SCALE: N.T.S.



2 / M-2 SUPPLY DIFFUSER DETAIL
SCALE: N.T.S.



3 / M-2 NEGATIVE PRESSURE "P" TRAP DETAIL
SCALE: N.T.S.



4 / M-2 BRANCH DUCT TAKE-OFF DETAIL
SCALE: N.T.S.

AIR DISTRIBUTION SCHEDULE

MARK	MANUFACTURER	NECK SIZE	PANEL SIZE	CFM RANGE	USE	TYPE	MODEL	MATERIAL	FILTER SIZE
A	E.H. PRICE	6"ø	24x24	0-150	SUPPLY	STAMPED LOUVER FACE	SCD	STEEL	–
B	E.H. PRICE	8"ø	24x24	151-250	SUPPLY	STAMPED LOUVER FACE	SCD	STEEL	–
C	E.H. PRICE	10"ø	24x24	251-375	SUPPLY	STAMPED LOUVER FACE	SCD	STEEL	–
D	E.H. PRICE	12"ø	24x24	376-550	SUPPLY	STAMPED LOUVER FACE	SCD	STEEL	–
E	E.H. PRICE	–	16x6	201-300	SUPPLY	SIDEWALL REGISTER	520D	STEEL	–
F	E.H. PRICE	20x20	24x24	0-800	RETURN	RETURN FILTER GRILLE	530FF	STEEL	20x20
G	E.H. PRICE	–	20x14	0-790	RETURN	RETURN FILTER GRILLE	530FF	STEEL	18x12
H	E.H. PRICE	–	26x26	0-1150	RETURN	RETURN FILTER GRILLE	530FF	STEEL	24x24
J	E.H. PRICE	22x22	24x24	0-1600	RETURN	NON-FILTERED RETURN GRILLE	530	STEEL	–

UNIT HEATER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	BTUH	WATTS	POWER	AMPS
UH-1	QMARK	WHT-500	1,708	500	120V/1ø	4.2

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TENANT UPFIT FOR:
J.A. KING
Greensboro, North Carolina

DRAWING NAME
MECHANICAL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 25043 ENGINEER KEVIN BENGEL
9/1/09

DRAWN
MJW

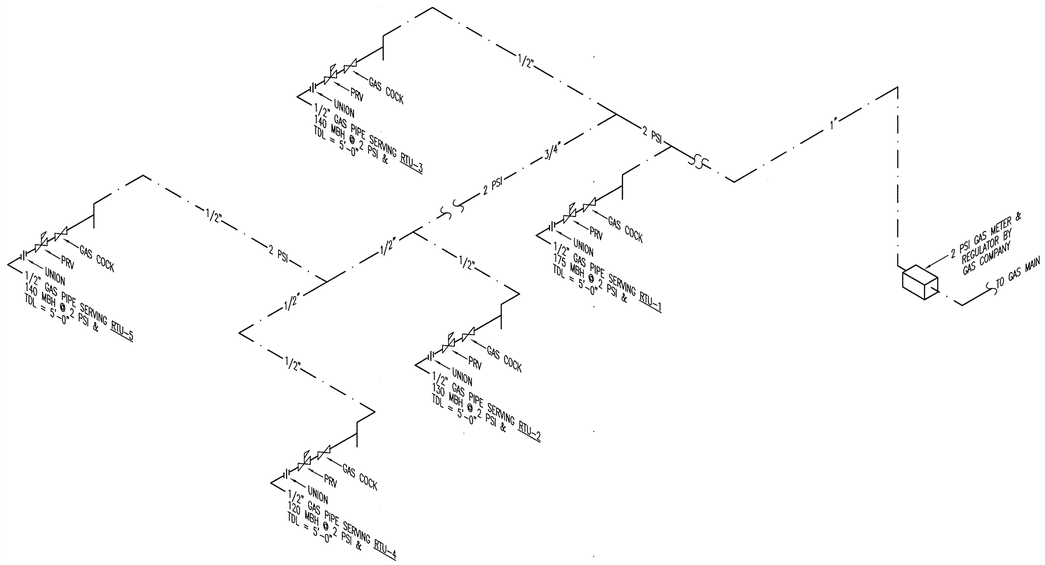
CHECKED
MK

DATE
9/1/09

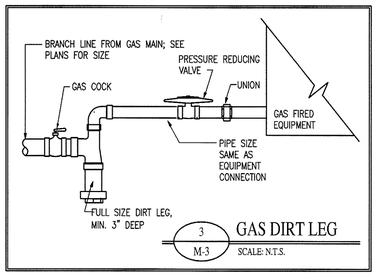
SCALE
AS NOTED

JOB NO.
9024

SHEET
M-2

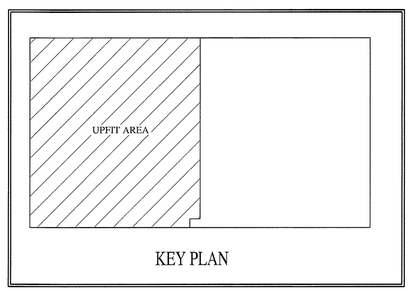


GAS PIPING
RISER DIAGRAM
2 / M-3
SCALE: N.T.S.

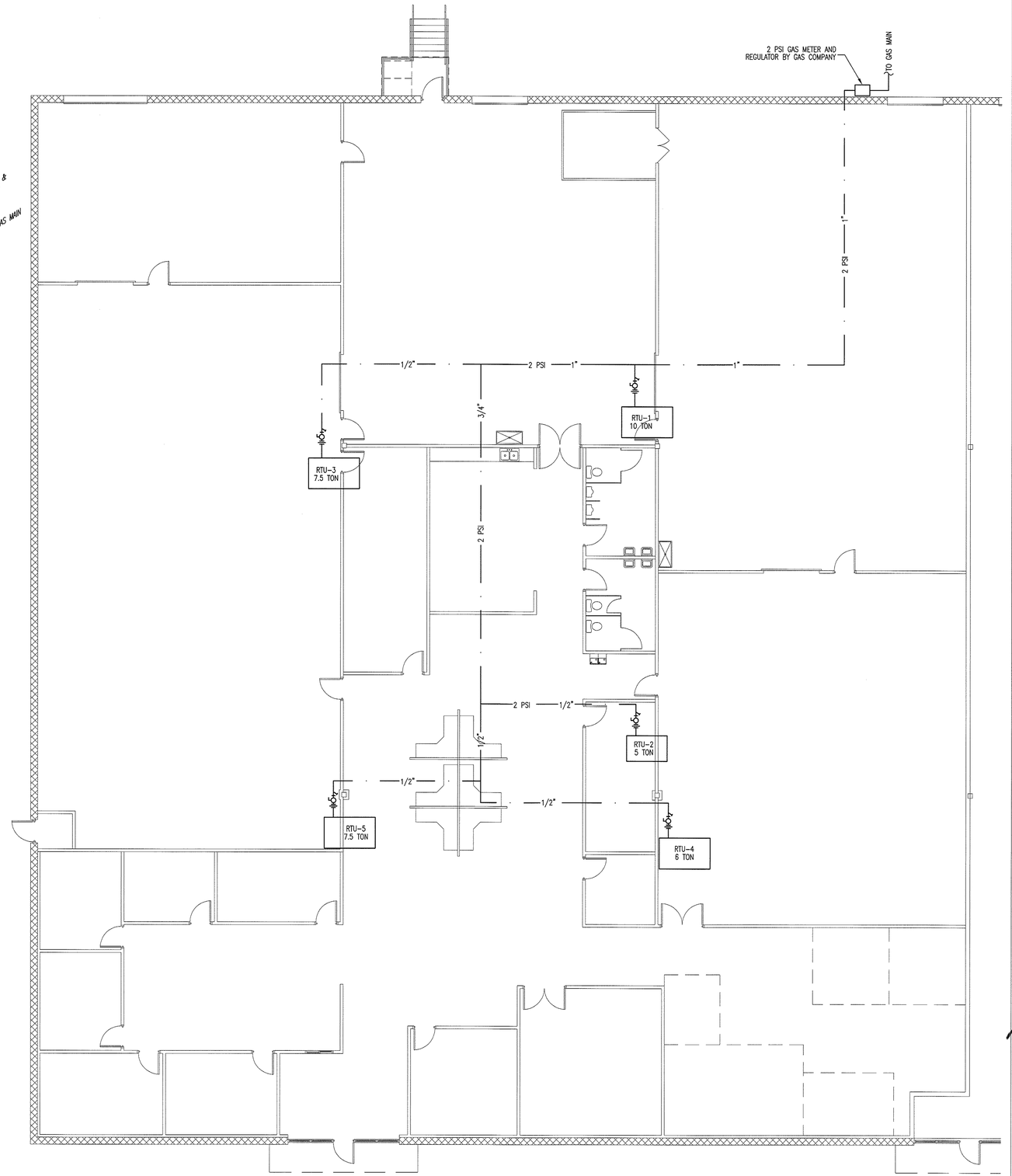


GAS DIRT LEG
3 / M-3
SCALE: N.T.S.

GAS EQUIPMENT SCHEDULE		
MARK	DESCRIPTION	BTU/hr. INPUT
RTU-1	ROOF TOP UNIT	175,000
RTU-2	ROOF TOP UNIT	130,000
RTU-3	ROOF TOP UNIT	140,000
RTU-4	ROOF TOP UNIT	120,000
RTU-5	ROOF TOP UNIT	140,000
	TOTAL	705,000 @210° T.D.L.



KEY PLAN



GAS PIPING PLAN
1 / M-3
SCALE: 1/8" = 1'-0"

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TENANT UPFIT FOR:
J.A. KING
Greensboro, North Carolina

DRAWING NAME
GAS PIPING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 25043 ENGINEER KEVIN BENGE
4/1/09

DRAWN: MJW
CHECKED: KMB
DATE: 4/1/09
SCALE: AS NOTED
JOB NO.: 9024
SHEET: M-3