

FIRE ALARM NOTE

ALL NEW FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH EXISTING NOTIFIER FIRE ALARM SYSTEM. PROVIDE ALL EXPANSION MODULES, POWER SUPPLIES, WIRING AND LABOR TO EXPAND SYSTEM TO ACCEPT NEW DEVICES SHOWN, INCLUDE ALL PROGRAMMING AND TESTING AS REQUIRED.

INSTALLING CONTRACTOR SHALL SUBMIT PRODUCT DATA, CALCULATIONS AND SHOP DRAWINGS INDICATING DEVICE LOCATIONS AND ADDRESSABLE IDENTIFICATIONS TO LOCAL AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL.

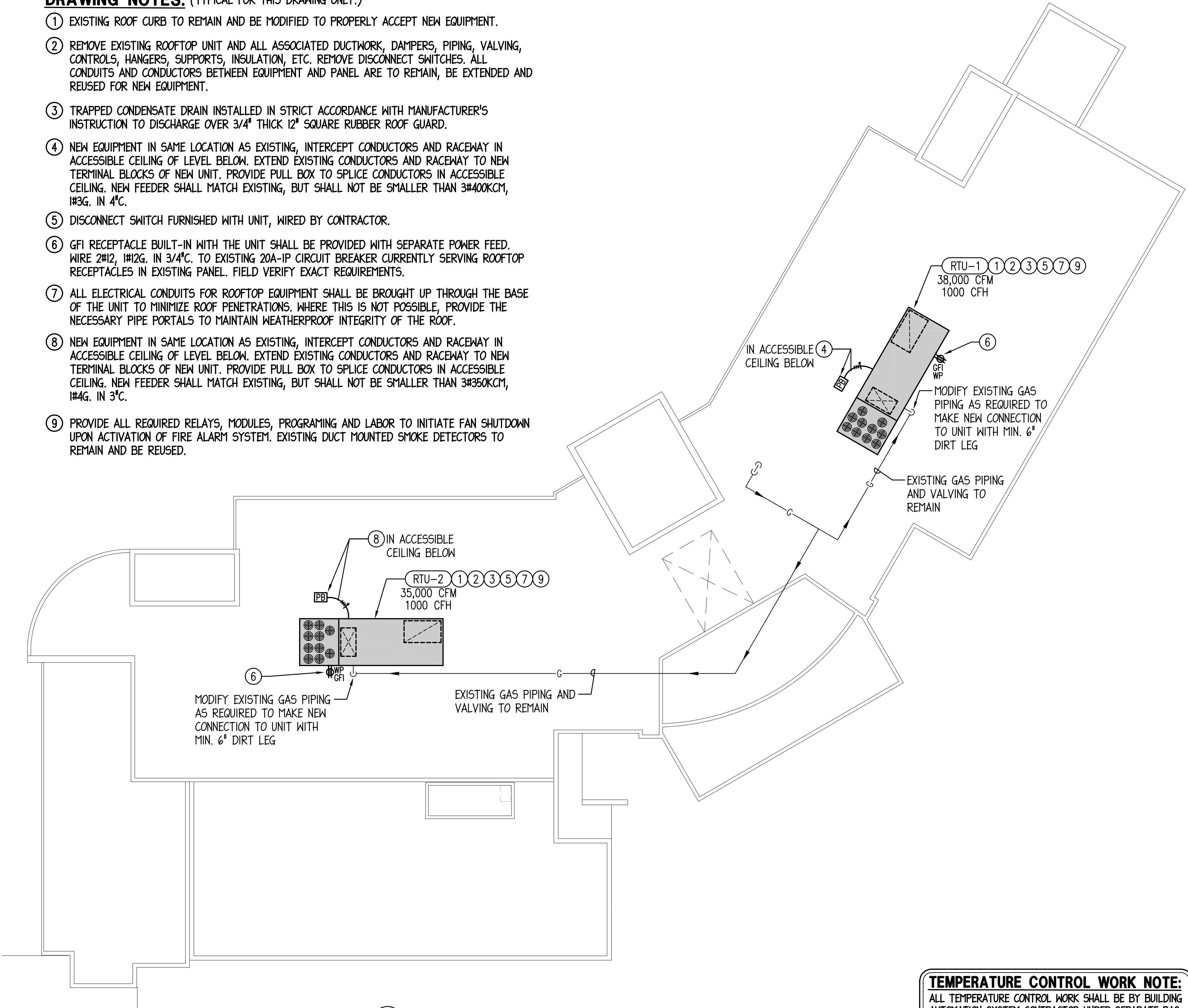
ALL FIRE ALARM WORK SHALL BE CARRIED OUT BY FOX VALLEY FIRE & SAFETY (847-696-5990) LOCATED IN ELGIN, ILLINOIS.

EXISTING SWITCHBOARD LOCATION, REFER TO RISER DIAGRAM ON SHEET ME-3 FOR ADDITIONAL INFORMATION.

2 PARTIAL MECHANICAL/ELECTRICAL FIRST FLOOR PLAN
1/16" = 1'-0"

DRAWING NOTES: (TYPICAL FOR THIS DRAWING ONLY.)

- EXISTING ROOF CURB TO REMAIN AND BE MODIFIED TO PROPERLY ACCEPT NEW EQUIPMENT.
- REMOVE EXISTING ROOFTOP UNIT AND ALL ASSOCIATED DUCTWORK, DAMPERS, PIPING, VALVING, CONTROLS, HANGERS, SUPPORTS, INSULATION, ETC. REMOVE DISCONNECT SWITCHES. ALL CONDUITS AND CONDUCTORS BETWEEN EQUIPMENT AND PANEL ARE TO REMAIN, BE EXTENDED AND REUSED FOR NEW EQUIPMENT.
- TRAPPED CONDENSATE DRAIN INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTION TO DISCHARGE OVER 3/4" THICK 12" SQUARE RUBBER ROOF GUARD.
- NEW EQUIPMENT IN SAME LOCATION AS EXISTING, INTERCEPT CONDUCTORS AND RACEWAY IN ACCESSIBLE CEILING OF LEVEL BELOW. EXTEND EXISTING CONDUCTORS AND RACEWAY TO NEW TERMINAL BLOCKS OF NEW UNIT. PROVIDE PULL BOX TO SPLICE CONDUCTORS IN ACCESSIBLE CEILING. NEW FEEDER SHALL MATCH EXISTING, BUT SHALL NOT BE SMALLER THAN 3#400KCM, #36. IN 4".
- DISCONNECT SWITCH FURNISHED WITH UNIT, WIRED BY CONTRACTOR.
- GFI RECEPTACLE BUILT-IN WITH THE UNIT SHALL BE PROVIDED WITH SEPARATE POWER FEED. WIRE 2#12, #12G. IN 3/4". TO EXISTING 20A-IP CIRCUIT BREAKER CURRENTLY SERVING ROOFTOP RECEPTACLES IN EXISTING PANEL. FIELD VERIFY EXACT REQUIREMENTS.
- ALL ELECTRICAL CONDUITS FOR ROOFTOP EQUIPMENT SHALL BE BROUGHT UP THROUGH THE BASE OF THE UNIT TO MINIMIZE ROOF PENETRATIONS. WHERE THIS IS NOT POSSIBLE, PROVIDE THE NECESSARY PIPE PORTALS TO MAINTAIN WEATHERPROOF INTEGRITY OF THE ROOF.
- NEW EQUIPMENT IN SAME LOCATION AS EXISTING, INTERCEPT CONDUCTORS AND RACEWAY IN ACCESSIBLE CEILING OF LEVEL BELOW. EXTEND EXISTING CONDUCTORS AND RACEWAY TO NEW TERMINAL BLOCKS OF NEW UNIT. PROVIDE PULL BOX TO SPLICE CONDUCTORS IN ACCESSIBLE CEILING. NEW FEEDER SHALL MATCH EXISTING, BUT SHALL NOT BE SMALLER THAN 3#350KCM, #46. IN 3".
- PROVIDE ALL REQUIRED RELAYS, MODULES, PROGRAMING AND LABOR TO INITIATE FAN SHUTDOWN UPON ACTIVATION OF FIRE ALARM SYSTEM. EXISTING DUCT MOUNTED SMOKE DETECTORS TO REMAIN AND BE REUSED.



1 MECHANICAL/ELECTRICAL ROOF PLAN
1/16" = 1'-0"

TEMPERATURE CONTROL WORK NOTE:
ALL TEMPERATURE CONTROL WORK SHALL BE BY BUILDING AUTOMATION SYSTEM CONTRACTOR UNDER SEPARATE BAS CONTRACT.

PRE-PURCHASED ROOFTOP UNIT SCHEDULE

GENERAL										SUPPLY FAN										EXHAUST FAN					GAS HEATING SECTION					COOLING SECTION							FILTERS		ELECTRICAL DATA				NOTES	
EQUIPMENT TAG	LOCATION	AREA SERVED	MANUF.	MODEL	TYPE OF SYSTEM	TYPE OF UNIT	PHYSICAL CHARACTERISTICS				CFM	CODE OA	MIN. OA	ESP (IN.)	TYPE	DRIVE SPEED	MOTOR			CFM	ESP (IN.)	TYPE	MOTOR			INPUT CAPACITY (MBH)	OUTPUT CAPACITY (MBH)	STAGES	EAT (°F)	LAT (°F)	COMPR	CAPACITY STEPS	REFRIG. TYPE	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	OAT (DB°F)	EAT (DB/WB°F)	LAT (DB/WB°F)	TYPE	MCA	MOCp	PHASE		VOLTS
							L	W	H	WEIGHT (LBS.)							BHP	RPM	HP				BHP	RPM	HP																			
RTU-1	ROOF	NORTH AREA VAV SYSTEM	TRANE	SFHKD13	VAV	PACKAGED DOWNBLOW	424	138	82	17000	38000	9500	3800	1.5	BELT	AS REQ'D	44.1	1750	50.0	32000	0.5	FC	20.2	1750	40	1000.0	800.0	MOD	50.0	64.5	5	MOD	R-410A	1455.7	1060.5	95.0	80/67	55.4/54.5	2" THICK THROWAWAY	326.1	350	3		480
RTU-2	ROOF	SOUTH AREA VAV SYSTEM	TRANE	SFHKD12	VAV	PACKAGED DOWNBLOW	424	138	82	17000	35000	8750	3500	1.5	BELT	AS REQ'D	37.4	1750	40.0	30000	0.5	FC	17.5	1750	25	1000.0	800.0	MOD	50.0	71.2	5	MOD	R-410A	1325.1	970.8	95.0	80/67	55.5/54.7	2" THICK THROWAWAY	277.1	300	3	480	1,2,3,4,5
NOTES:																																												
1. UNIT PRE-PURCHASED BY OWNER AND RECEIVED/INSTALLED UNDER THIS CONTRACT.										2. PROVIDE THE FOLLOWING OPTIONS/ACCESSORIES: BACnet INTERFACE, SUPPLY AND RETURN/EXHAUST FAN VFDS, 0-100% ECONOMIZER WITH LOW LEAK DAMPERS, SUCTION SERVICE VALVES, REPLACABLE CORE FILTER/DRIERS, DOUBLE WALL ACCESS DOORS, PERFORATED WALL IN FAN SECTIONS, PITCHED DRAIN PAN, BUILDING STATIC PRESSURE CONTROL, 2" FAN ISOLATION, 14:1 MODULATING GAS HEAT, NON-FUSED DISCONNECT, FIELD POWERED CONVENIENCE OUTLET, ALL REQUIRED SENSORS/CONTROLS FOR MANUFACTURER'S STANDARD VAV SEQUENCE, AND VARIABLE SPEED LEAD COMPRESSOR.										3. PROVIDE THE FOLLOWING FIELD INSTALLED ACCESSORIES: DUCT MOUNTED CO2 SENSOR. 4. PROVIDE FACTORY STARTUP AND 5 YEAR COMPRESSOR AND 10 YEAR HEAT EXCHANGER PARTS AND LABOR WARRANTY.										5. BASIS OF DESIGN UNIT TO MATE WITH EXISTING ROOF CURB. IF ALTERNATE MANUFACTURER IS SELECTED, CONTRACTOR TO PROVIDE APARTER CURB AS REQUIRED FOR PROPER INSTALLATION OF NEW UNIT ON EXISTING CURB.														

McHENRY COUNTY COLLEGE - BUILDING 'E' 2017 RTU REPLACEMENT

8900 US HWY 14 - BLDG. 'E' CRYSTAL LAKE, IL 60012

1/31/2017 BID DOCUMENTS
DATE DESCRIPTION
Mechanical - Electrical Engineers
1216 Tower Road
Schaumburg, Illinois 60173
847.882.2010
Fax 847.882.2201

2010 ENGINEERING GROUP LLC

Sheet Title
MECHANICAL/ELECTRICAL ROOF PLANS

PROJ. MGR: 20/10
DRAWN BY: 20/10
CHECKED BY: 20/10
ME-1

GENERAL REMODELING NOTES - ALL CONTRACTORS

1. ALL WORK SHOWN ON DRAWINGS SHALL BE CONSIDERED NEW AND IN CONTRACT UNLESS SPECIFICALLY INDICATED OTHERWISE.

2. DRAWINGS ARE GENERALLY DIAGRAMMATIC. ROUTING OF PIPING, DUCTWORK, CONDUITS, RACEWAYS, ETC., AS SHOWN ON DRAWINGS, DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF THIS WORK. EACH CONTRACTOR SHALL MAKE ANY REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS, SUCH AS OFFSETS, BENDS OR CHANGES IN ELEVATION DUE TO COORDINATION WITH THE WORK OF OTHER TRADES AND BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER OR DELAY IN COMPLETION DATE OF THE PROJECT.

3. IT IS INTENDED THAT EQUIPMENT SHALL BE LOCATED SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS OF THE BUILDING, NOTWITHSTANDING THE FACT THAT LOCATIONS INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLEARNESS OF PRESENTATION.

4. CONTRACTOR SHALL CHECK DRAWINGS OF OTHER TRADES TO VERIFY THAT SPACES IN WHICH THEIR WORK WILL BE INSTALLED ARE CLEAR OF OBSTRUCTIONS. WORK SHALL BE INSTALLED TO MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, CONTRACTOR SHALL NOTIFY OWNER/ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION OF THEIR WORK.

5. CONTRACTOR SHALL FURNISH OTHER TRADES ADVANCE INFORMATION AND/OR SHOP DRAWINGS ON LOCATIONS AND SIZES OF PIPING, DUCTWORK, CONDUIT, RACEWAYS, EQUIPMENT, FRAMES, BOXES, SLEEVES AND OPENINGS, ETC. NEEDED FOR THEIR WORK TO PERMIT OTHER TRADES AFFECTED TO INSTALL THEIR WORK PROPERLY AND WITHOUT DELAY.

6. WHERE THERE IS EVIDENCE THAT WORK OF ONE TRADE WILL INTERFERE WITH WORK OF OTHER TRADES, ALL TRADES SHALL MEET ON JOB SITE TO WORK OUT SPACE CONDITIONS AND MAKE SATISFACTORY ADJUSTMENTS TO INSTALLATION OF THE NEW WORK. CONTRACTORS SHALL VERIFY EXACT LOCATIONS OF ALL DEVICES AND EQUIPMENT WITH FIELD CONDITIONS, SHOP DRAWINGS, AND WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EACH CONTRACTOR SHALL BE RESPONSIBLE, AT THEIR OWN EXPENSE, FOR THE REMOVAL AND REINSTALLATION OF ANY PART OF THEIR WORK IF SAME WAS INSTALLED WITHOUT CONSULTING WITH OTHER TRADES BEFORE INSTALLING THEIR WORK.

7. CONTRACTOR SHALL PROVIDE SLEEVES IN BEAMS, FLOORS, COLUMNS AND WALLS AS SHOWN ON THE DRAWINGS, AS REQUIRED BY JOB SITE CONDITIONS, AND/OR AS SPECIFIED, WHEN INSTALLING THEIR WORK. ALL BEAMS AND COLUMNS WHICH ARE REQUIRED TO BE SLEEVED SHALL BE CUT AND REINFORCED AS REQUIRED BY FIELD CONDITIONS AND LOCATIONS AND SIZES SHALL BE CHECKED AND APPROVED BY ARCHITECT BEFORE CONTRACTOR CUTS ANY STRUCTURAL BUILDING MEMBER.

8. THE SEQUENCE FOR THE INSTALLATION OF ALL WORK SHALL BE COORDINATED BETWEEN ALL CONTRACTORS ON THE PROJECT AND IN STRICT ACCORDANCE WITH ARCHITECT/ENGINEER AND OWNERS STIPULATION AS DIRECTED.

9. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND STRUCTURAL CONTRACT DRAWINGS (BEFORE SUBMITTING THEIR BIDS) TO FAMILIARIZE THEMSELVES WITH THE EXTENT OF THE GENERAL CONTRACTOR'S WORK, CEILING HEIGHTS AND CLEARANCE FOR INSTALLING THEIR WORK.

10. CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL CORING, CUTTING, PATCHING, REPAIRING, REFINISHING AND REMOVAL/REPLACEMENT OF NEW OR EXISTING BUILDING CONSTRUCTION REQUIRED TO ACCOMMODATE THE INSTALLATION OR REMOVAL OF THEIR WORK. ALL PATCHING, REPAIRING AND REFINISHING WORK SHALL BE PERFORMED BY THOSE REGULARLY INVOLVED IN THAT TRADE AND SHALL MATCH THE ADJACENT CONSTRUCTION AS CLOSELY AS POSSIBLE. CARE SHALL BE TAKEN SO AS NOT TO DAMAGE ANY EXISTING BUILDING CONSTRUCTION OR ITEMS THAT ARE TO REMAIN. ANY EXISTING FINISHES THAT ARE DAMAGED DURING THE INSTALLATION OF NEW WORK OR REMOVAL OF EXISTING WORK SHALL BE REPAIRED, REPLACED AND PAID FOR BY THE INSTALLING CONTRACTOR, TO THE SATISFACTION OF THE ARCHITECT AND OWNER. REFER TO ARCHITECTURAL DRAWINGS FOR EXISTING BUILDING CONSTRUCTION THAT IS TO REMAIN AND, THEREFORE, SUBJECT TO PATCHING, REPAIRING, REFINISHING, AND REMOVAL/REPLACEMENT. (NOTE: CONTRACTOR SHALL VERIFY EXISTING BUILDING'S ROOF WARRANTY AND EMPLOY OTHER SUBCONTRACTOR(S) AS REQUIRED BY ROOF MANUFACTURER'S REPRESENTATIVE SO AS NOT TO VOID OWNER'S ROOF WARRANTY.)

11. SOME OF THE EXISTING ITEMS AND EQUIPMENT SCHEDULED TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER. ANY ITEMS THAT THE OWNER WANTS TO RETAIN SHALL BE REMOVED CAREFULLY SO AS NOT TO DAMAGE THEM. ALL OTHER ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR OWN CLEAN-UP DURING CONSTRUCTION. IF CONTRACTOR FAILS TO PROVIDE SUCH CLEAN-UP, THE ARCHITECT/ENGINEER WILL DIRECT ANOTHER CONTRACTOR TO PERFORM THE CLEAN-UP AND THE NEGLIGENT CONTRACTOR SHALL PAY THE ASSOCIATED BACK-CHARGES AS DEEMED APPROPRIATE BY THE ARCHITECT/ENGINEER.

13. CONTRACTOR SHALL INSTALL ALL AUXILIARY SUPPORTING STEEL AS REQUIRED FOR THE SUPPORTING OF THEIR PIPING, DUCTWORK, CONDUIT, TANKS, EQUIPMENT, ETC. ALL SUPPORTING STEEL FOR ITEMS ABOVE A SUSPENDED CEILING SHALL BE FROM BUILDING STRUCTURAL MEMBERS ONLY.

14. IT IS MANDATORY THAT THE COMPLETE EXISTING BUILDING REMAIN IN CONTINUOUS AND NON-INTERRUPTED OPERATION DURING REMODELING/ALTERING OF SAID EXISTING BUILDING. THE SPECIFIC AREA(S) BEING REMODELED/ALTERED AT ANY SCHEDULED TIME ARE OBVIOUSLY EXCLUSIVE OF THIS STATEMENT. SERVICES TO EXISTING BUILDING SHALL BE KEPT IN CONTINUOUS OPERATION INCLUDING POWER, SIGNAL SYSTEMS, LIGHTING, TELEPHONE, HEATING, COOLING, VENTILATING, TEMPERATURE CONTROL, SEWERS AND HOT AND COLD WATER. ANY ABSOLUTELY NECESSARY INTERRUPTION OF THESE SERVICES TO ACCOMPLISH CONTRACT WORK SHALL BE ARRANGED WITH THE OWNER A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE. SUCH INTERRUPTIONS SHALL BE KEPT TO AN ABSOLUTE MINIMUM AS FAR AS TIME INTERVAL IS INVOLVED AND TEMPORARY SERVICES SHALL BE FURNISHED AND INSTALLED UNDER THIS CONTRACT WHERE NECESSARY TO ACCOMPLISH THIS PURPOSE. TEMPORARIES SHALL BE REMOVED BY THE CONTRACTOR ONLY AFTER NEW PERMANENT SERVICES ARE INSTALLED AND FULLY OPERATIONAL.

15. UNLESS INDICATED OTHERWISE, THE ARCHITECT/ENGINEER MAKES NO REPRESENTATION AS TO WHETHER OR NOT ANY HAZARDOUS OR CONTAMINATED MATERIALS (INCLUDING BUT NOT LIMITED TO ASBESTOS, PCB'S, CONTAMINATED SOILS, ETC.) ARE PRESENT WITHIN THE EXISTING BUILDING OR ON THE SITE. WORK SHOWN ON THE DRAWINGS AND/OR INDICATED IN THE SPECIFICATIONS SHALL NOT BE CONSTRUED TO CALL FOR CONTACT WITH ANY OF THESE MATERIALS. IF THESE MATERIALS ARE ENCOUNTERED OR SUSPECTED, THE CONTRACTOR SHALL NOT DISTURB THEM AND SHALL CONTACT THE ARCHITECT/ENGINEER IMMEDIATELY.

16. WHERE WORK CALLED FOR ON THE DRAWINGS OR IN THE SPECIFICATIONS INVOLVES THE REMOVAL OR RELOCATION OF PIPING OR EQUIPMENT CONTAINING REFRIGERANT, ALL REFRIGERANT SHALL BE RECOVERED BY APPROVED METHODS PER EPA REGULATIONS.

17. CONTRACTOR SHALL STORE ALL MATERIALS AND EQUIPMENT SHIPPED TO THE SITE IN A PROTECTED AREA. IF MATERIAL IS STORED OUTSIDE OF THE BUILDING, IT MUST BE STORED OFF THE GROUND A MINIMUM OF SIX INCHES (6") SET ON 6 X 6 PLANKS AND/OR WOOD PALLETES. ALL MATERIAL AND EQUIPMENT MUST BE COMPLETELY COVERED WITH WATERPROOF TARPS OR VISQUIN. ALL PIPING AND DUCTWORK WILL HAVE THE ENDS CLOSED TO KEEP OUT DIRT AND OTHER DEBRIS. NO EQUIPMENT WILL BE ALLOWED TO BE STORED OUTSIDE THE BUILDING ON THE SITE UNLESS IT IS SUPPORTED OFF THE GROUND AND COMPLETELY PROTECTED WITH WEATHERPROOF COVERS.

18. THE DRAWINGS, SCHEDULES AND SPECIFICATIONS HAVE BEEN PREPARED USING ONE MANUFACTURER FOR EACH PIECE OF EQUIPMENT AS THE BASIS FOR DIMENSIONAL DESIGN. IF THE CONTRACTOR PURCHASES EQUIPMENT FROM A SPECIFIED ACCEPTABLE MANUFACTURER, BUT NOT THE SCHEDULED MANUFACTURER USED FOR THE BASE DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL THE DIMENSIONS OF THE EQUIPMENT TO VERIFY THAT IT WILL FIT IN THE SPACE SHOWN ON THE DRAWINGS. MINOR DEVIATIONS IN DIMENSIONS WILL BE PERMITTED, PROVIDED THE RATINGS MEET THOSE SHOWN ON THE DRAWINGS AND EQUIPMENT WILL PHYSICALLY FIT INTO THE SPACE ALLOCATED WITH SUITABLE ACCESS AROUND EQUIPMENT FOR OPERATION AND MAINTENANCE OF THE EQUIPMENT. WHEN EQUIPMENT SUBMITTED FOR REVIEW DOES NOT MEET THE PHYSICAL SIZE OR ARRANGEMENT OF THAT SCHEDULED AND SPECIFIED, CONTRACTOR SHALL PAY FOR ALL ALTERATIONS REQUIRED TO ACCOMMODATE SUCH EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR WILL ALSO PAY ALL COSTS FOR ADDITIONAL WORK REQUIRED BY OTHER CONTRACTORS, OWNER, ARCHITECT OR ENGINEER TO MAKE CHANGES WHICH WOULD ALLOW THE EQUIPMENT TO FIT IN THE SPACE AND FUNCTION AS INTENDED.

19. CONTRACTOR AND/OR MANUFACTURER SHALL VERIFY THAT THE CHARACTERISTICS OF THE EQUIPMENT HE SUBMITS FOR REVIEW MEET THE CAPACITY AND DUTY SPECIFIED. WHEN EQUIPMENT SUBMITTED FOR REVIEW REQUIRES MODIFICATIONS TO THE WORK OF OTHER CONTRACTORS, SUBMITTING CONTRACTOR SHALL PAY FOR ALL COSTS FOR ADDITIONAL WORK REQUIRED BY OTHER CONTRACTORS, OWNER, ARCHITECT OR ENGINEER TO MAKE CHANGES WHICH WOULD ALLOW THE EQUIPMENT FUNCTION SAFELY AND PROPERLY.

20. CONTRACTOR SHALL FIELD VERIFY THE SIZE OF EXISTING OPENINGS, WINDOWS, DOORS, CORRIDORS, ROOMS, ETC. FOR ACCESS OF THE NEW EQUIPMENT INTO OR REMOVAL OF EXISTING EQUIPMENT FROM THE BUILDING. IF OPENINGS ARE TOO SMALL FOR ACCESS THEN CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROVIDE NEW OR ENLARGED OPENINGS AND RESTORE SAME TO ORIGINAL SIZE AND CONDITION. CONTRACTOR MAY ELECT TO ORDER THE EQUIPMENT DISASSEMBLED AND/OR WITH SPLIT HOUSING FOR ENTRANCE INTO THE EXISTING SPACE OR BUILDING. CONTRACTOR SHALL REASSEMBLE EQUIPMENT AFTER IT IS IN THE SPACE AT HIS OWN EXPENSE.

21. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND THEIR ASSOCIATED FEES.

22. CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS OF ALL EQUIPMENT, TEMPERATURE CONTROL SYSTEM, BOILERS, VALVING, FLUE PIPING, PANELBOARDS, ELECTRICAL DEVICES TO ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY ITEMS OR FABRICATING ANY DUCTWORK/PIPING.

23. CONTRACTOR SHALL PROVIDE OWNER TRAINING ON ALL EQUIPMENT AND BUILDING SYSTEMS PROVIDED/ALTERED BY HIS WORK. TRAINING SHALL BE ACCOMPLISHED DURING TIME DEDICATED FOR THAT PURPOSE, NOT IN CONJUNCTION WITH SERVICE WORK. SEE SPECIAL TEMPERATURE CONTROL TRAINING INSTRUCTIONS ELSEWHERE.

24. AT COMPLETION OF PROJECT, CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF OPERATION AND MAINTENANCE MANUALS FOR ALL WORK PROVIDED BY HIM ON PROJECT. MANUALS SHALL BE CLEARLY ORGANIZED AND CONTAIN COPIES OF APPROVED EQUIPMENT, SHOP DRAWINGS, EQUIPMENT PARTS LISTS, SERVICE CONTACTS, CONTRACTOR AND MANUFACTURER WARRANTIES, AND *AS BUILT* FLOOR PLANS.

25. CONTRACTOR SHALL PROVIDE WARRANTY FOR ALL MATERIAL AND GUARANTEE ALL WORKMANSHIP PROVIDED BY HIM FOR 1 (ONE) YEAR FROM SUBSTANTIAL COMPLETION OF WORK INVOLVED.

26. CONTRACTOR SHALL MAINTAIN A CURRENT LICENSE THROUGHOUT ALL PHASES OF CONSTRUCTION WITH THE CODE ENFORCING BODY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE ALL INSPECTIONS WITH CODE ENFORCING BODY.

27. IDENTIFY ALL PIPING AND DUCTWORK WITH PLASTIC LABELS INDICATING CONTENTS AND FLOW DIRECTION. MARKERS TO BE PLACED AT A MAXIMUM OF 50 FT. INTERVALS AT BRANCH CONNECTIONS, AND AT BOTH SIDES OF WALL/FLOOR PENETRATIONS. IDENTIFY VALVES, EQUIPMENT, AND PANELS WITH ENGRAVED 3-LAYER PLASTIC LAMINATED TAGS OR SIGNS.
- GENERAL NOTES - HVAC WORK:
1. ALL NEW WORK AND MATERIALS SHALL CONFORM TO COMMUNITY COLLEGE CODE AND McHENRY COUNTY COLLEGE BUILDING STANDARDS.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND INSPECTIONS AND PAYING THEIR ASSOCIATED FEES.

3. NOISE AND VIBRATION WILL NOT BE TOLERATED. CONTRACTOR SHALL BID ON FURNISHING EVERY DETAIL TO ASSURE THIS END.

4. PATCH AND REFINISH ALL DAMAGED INSULATED SURFACES OF ALL EXISTING DUCTWORK, PIPING AND ASSOCIATED FITTINGS TO MATCH EXISTING WHERE NEW CONNECTIONS ARE BEING MADE.

5. CONTRACTORS SHALL PROVIDE A ONE YEAR WARRANTY ON ALL MATERIALS, EQUIPMENT AND LABOR FROM DATE OF SUBSTANTIAL COMPLETION OF WORK EXCEPT AS FOLLOWS: PROVIDE A 5 YEAR PARTS AND LABOR WARRANTY FOR ROOFTOP UNIT COMPRESSOR; PROVIDE A 10 YEAR PARTS AND LABOR WARRANTY FOR ROOFTOP UNIT HEAT EXCHANGER.

7. CONTRACTORS SHALL PROVIDE IN WARRANTY LABOR AND MANUFACTURER WILL PROVIDE IN WARRANTY PARTS FOR EQUIPMENT WHICH HAS BEEN PRE-PURCHASED BY THE OWNER. CONTRACTOR SHALL RECEIVE THIS EQUIPMENT FROM THE OWNER AT THE PROJECT SITE, THEN COMPLETE REQUIRED ASSEMBLY WORK AND PROVIDE LABOR AND PROPER INSTALLATION.

8. THE LOCATIONS SHOWN FOR ALL DIFFUSERS, REGISTERS AND GRILLES, ETC. ARE DIAGRAMMATIC. EXACT LOCATION SHALL BE DETERMINED FROM THE REFLECTED CEILING PLANS AND/OR ON THE JOB SITE BY THE ARCHITECT/ENGINEER REPRESENTATIVES.

9. EXCEPT AS NOTED OTHERWISE, ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE GALVANIZED SHEET METAL WITH SEALED JOINTS CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CURRENT SMACNA MANUAL. SIZES SHOWN ARE INSIDE FACE TO INSIDE FACE.

10. ROUND EXPOSED SUPPLY OR RETURN DUCTWORK SHALL BE SINGLE WALL SPIRAL GALVANIZED. WHERE EXPOSED DUCTWORK IS TO REMAIN UNPAINTED, ASSEMBLE WITHOUT SEALED JOINTS. CLEAN AND DEGREASE EXPOSED DUCT IN PREPARATION FOR CLEAR COAT FINISH.

11. THE GAUGES OF IRON FOR DUCTS AND CASINGS AND SIZE OF STRUCTURAL REINFORCING ANGLES FOR DUCTS AND CASING SHALL BE SUCH AS TO PROVIDE ABSOLUTELY AIR TIGHT CONSTRUCTION FREE FROM PULSATION, DEFORMATION, OR VIBRATION AT NORMAL OPERATING PRESSURES.

12. PROVIDE MANUAL VOLUME DAMPERS AT EACH BRANCH DUCT TAKEOFF IN SUPPLY DUCTWORK AND IN RETURN/EXHAUST DUCTWORK. PROVIDE TURNING VANES IN ALL SQUARE DUCT ELBOWS.

13. BALANCE DUCT SYSTEMS TO ACCOMPLISH AIR QUANTITIES SHOWN AT ALL INLETS/OUTLETS (NEW AND EXISTING) AS SHOWN ON DRAWING AND SUBMIT TEST REPORT FOR REVIEW BY OWNER AND ENGINEER.

14. DRIP PAN DRAIN PIPING SHALL BE SCHEDULE 40 PVC.

15. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK AND CONFORM WITH ASTM STANDARDS WELDED FOR PIPE SIZES 2 1/2" AND OVER AND SCREWED FOR PIPE SIZES 2" AND UNDER. WIRE BRUSH CLEAN AND PAINT EXTERIOR PIPING WITH 2 COATS OF RUST RESISTANT PAINT.

16. FLUSH, CLEAN, PRESSURE TEST AND CHARGE ALL NEW PIPING SYSTEMS AND EXTENSION TO PIPING SYSTEMS. TESTING SHALL BE MINIMUM 50 PSI HIGHER THAN NORMAL OPERATING PRESSURE OF SYSTEM.

17. PROVIDE MIRO PIPE CURBS ON TOP OF 3/4" RUBBER ROOF GUARD PAD FOR NEW PIPE OR CONDUIT ON ROOF SUPPORT PIPING OR CONDUITS MAXIMUM 6' ON CENTER.

18. PROVIDE GAS SHUT-OFF VALVE AT EACH PIECE OF EQUIPMENT AND PRESSURE REGULATORS WHERE REQUIRED. VENT ALL PRESSURE REGULATORS WITHIN THE BUILDING FULL SIZE TO BUILDING EXTERIOR.
- GENERAL NOTES - TEMPERATURE CONTROL (FOR REFERENCE ONLY):
1. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF NATIONAL ELECTRIC CODE AND COMMUNITY COLLEGE BUILDING CODE.

2. BAS LOW VOLTAGE WIRING SHALL BE U/L LISTED, LOW SMOKE PRODUCING, PLENUM RATED. WIRING SHALL BE IN CONDUIT WHERE EXPOSED IN EQUIPMENT ROOMS OR CONCEALED IN WALLS, CHASES, OR ABOVE NON-ACCESSIBLE CEILINGS. LOW VOLTAGE PLENUM RATED WIRING MAY BE INSTALLED WITHOUT CONDUIT ABOVE ACCESSIBLE LAY-IN CEILING SPACES ONLY.

3. ALL CONDUIT SHALL BE LOCATED SO AS NOT TO INTERFERE WITH ANY EQUIPMENT SERVICE ACCESS AREAS. CONDUIT FOUND BLOCKING ACCESS AREAS SHALL BE REROUTED AT INSTALLING CONTRACTOR'S EXPENSE.

4. GENERAL REQUIREMENTS:

A. APPROVED INSTALLING CONTRACTOR: TRANE CHICAGO, 7100 MADISON, WILLOWBROOK, IL 60521, 630-734-3200.

B. CONTRACTOR TO EXTEND AND MODIFY EXISTING WEB-BASED TRANE SUMMIT SYSTEM TO SERVE ALL NEW EQUIPMENT AND COMPONENTS.

C. CONTRACTOR SHALL REMOVE ALL EXISTING RELAYS, DEVICES, AND CONTROL CONDUIT THROUGHOUT THE BUILDING WHICH SERVED EQUIPMENT OR DEVICES REMOVED EITHER IN THE PAST OR AS PART OF THIS PROJECT.

D. CONTRACTOR SHALL PROVIDE ON SITE OWNER TRAINING FOR 2 PEOPLE FOR A TOTAL OF 2 HOURS INITIALLY AND ANOTHER 1/2 DAY (4 HOURS) AT TIMES OF OWNER'S CHOOSING WITHIN THE FIRST YEAR. TRAINING SHALL BE ACCOMPLISHED DURING TIME DEDICATED FOR THAT PURPOSE, NOT IN CONJUNCTION WITH SERVICE WORK.

5. SEQUENCE OF OPERATION: VAV RTUs

1. BAS CONTRACTOR TO MAP ALL AVAILABLE READ/WRITE/ALARM POINTS FROM MANUFACTURER'S BACNET INTERFACE CARD AND DISPLAY POINTS ON BAS GRAPHICS SCREEN.

2. OCCUPIED/UNOCCUPIED MODE SHALL BE PROGRAMMED INTO THE BAS SYSTEM.

3. IF EITHER THE EXISTING DUCT MOUNTED SMOKE DETECTOR OR BUILDING FIRE ALARM GOES INTO ALARM, THE UNIT SHALL SHUT DOWN THROUGH HARD WIRED INTERLOCK.

4. IN OCCUPIED MODE, SUPPLY FAN SHALL BE IN CONTINUOUS OPERATION AND UNIT SHALL MODULATE BURNER OR COMPRESSOR/ECONOMIZER IN A NON-OVERLAPPING SEQUENCE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. IF OUTSIDE TEMPERATURES ARE SUITABLE, ECONOMIZER SHALL BE FIRST STAGE OF COOLING.

5. SUPPLY FAN SHALL MODULATE AS REQUIRED TO MAINTAIN DUCT STATIC PRESSURE SETPOINT.

6. RETURN/EXHAUST FAN SHALL MODULATE AS REQUIRED TO MAINTAIN SLIGHTLY POSITIVE BUILDING PRESSURE.

7. IN OCCUPIED MODE, NEW DUCT MOUNTED CO2 SENSOR SHALL MODULATE UNIT OUTSIDE AIR DAMPER AS REQUIRED TO MAINTAIN 1000 PPM SPACE CO2 LEVELS. IF LEVELS REACH 2000 PPM, ALARM SHALL SOUND ON THE BAS.

8. IN UNOCCUPIED MODE, O.A. DAMPER SHALL BE 100% CLOSED AND FAN SHALL CYCLE WITH EITHER BURNER OR COMPRESSOR/ECONOMIZER AS REQUIRED TO MAINTAIN UN-OCCUPIED TEMPERATURE SETPOINT. NOTE: IN HEATING MODE, FAN POWERED BOX SERVING EACH ZONE SHALL CYCLE WITH HOT WATER COIL VALVE OPEN UNTIL SPACE IS SATISFIED. IF FAN POWERED BOX IS OPERATING AND ROOM TEMPERATURE FALLS BELOW SETPOINT, UNIT SHALL BE CALLED INTO OPERATION.

HVAC SYMBOLS AND ABBREVIATIONS

BAS	BUILDING AUTOMATION SYSTEM	IH	INTAKE HOOD
BHP	BRAKE HORSEPOWER	LAT	LEAVING AIR TEMPERATURE
BTU	BRITISH THERMAL UNIT	MCA	MINIMUM CIRCUIT AMPS
BTUH	BRITISH THERMAL UNIT PER HOUR	MOCP	MAXIMUM OVERCURRENT PROTECTION
CFM	CUBIC FEET PER MINUTE	PH	PHASE
DB	DRY BULB	RPM	REVOLUTIONS PER MINUTE
DN.	DOWN	RTU	ROOFTOP UNIT
EAT	ENTERING AIR TEMPERATURE	TSP	TOTAL STATIC PRESSURE
EF	EXHAUST FAN	TYP.	TYPICAL
ESP	EXTERNAL STATIC PRESSURE	VAV	VARIABLE AIR VOLUME
EWT	ENTERING WATER TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
F	FAHRENHEIT	WB	WET BULB
FPB	SERIES FAN POWERED BOX	W.C.	WATER COLUMN
FPM	FEET PER MINUTE	WG	WATER GAUGE
HP	HORSEPOWER		

	NATURAL GAS
	BALL VALVE (2" & SMALLER)
	BUTTERFLY VALVE (2 1/2" & LARGER)
	DIRECTION OF FLOW
	PIPE ELBOW (TURNED DOWN)
	PIPE TEE UP OR ANGLE
	NEW CONNECTION
	MANUAL SINGLE BLADE OR OPPOSED BLADE DAMPER
	AIR FLOW
	DUCT SIZE FREE AREA (1ST FIGURE, SIDE OF DUCT SHOWN)
	CROSS-SECTION OF SUPPLY OR OUTSIDE AIR INTAKE DUCT
	CROSS-SECTION OF RETURN OR EXHAUST DUCT

	90° ELBOW WITH TURNING VANES
	90° BRANCH TAKE-OFF W/45 DEGREE ENTRY
	SQUARE OR RECTANGLE DUCT TRANSITION
	SQUARE OR RECTANGLE TO ROUND DUCT TRANSITION
	DUCT UP TO ROOF MOUNTED EXHAUST FAN OR VENTILATOR
	EQUIPMENT TAG
	WALL THERMOSTAT OR TEMPERATURE SENSOR
	WALL THERMOSTAT OR TEMPERATURE SENSOR WITH GUARD
	WALL CARBON DIOXIDE SENSOR
	ROUND
	PIPING, DUCTWORK, OR EQUIPMENT TO BE REMOVED

TEMPERATURE CONTROL WORK NOTE:
ALL TEMPERATURE CONTROL WORK SHALL BE BY BUILDING AUTOMATION SYSTEM CONTRACTOR UNDER SEPARATE BAS CONTRACT.

McHENRY COUNTY COLLEGE - BUILDING 'E' 2017 RTU REPLACEMENT

8900 US HWY 14 - BLDG. 'E'
CRYSTAL LAKE, IL 60012

1/31/2017	BID DOCUMENTS
DATE	DESCRIPTION
Mechanical - Electrical Engineers 1216 Tower Road Schaumburg, Illinois 60173 847.882.2010 Fax 847.882.2201	

Sheet Title
MECHANICAL/ELECTRICAL
NOTES, DETAILS, AND
SYMBOLS

PROJ. MGR: 20/10
DRAWN BY: 20/10
CHECKED BY: 20/10

ME-2

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1. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF NATIONAL ELECTRIC CODE AND ILLINOIS PUBLIC COMMUNITY COLLEGE BUILDING CODE.
2. PROVIDE ALL PERMITS AND INSPECTION FEES.
3. PROVIDE A ONE YEAR WARRANTY ON ALL MATERIALS, EQUIPMENT AND LABOR FROM DATE OF SUBSTANTIAL COMPLETION OF WORK.
4. PROVIDE ALL HIS OWN RIGGING, SCAFFOLDING, RUBBISH REMOVAL AND LEAVE SPACE BROOM CLEAN.
5. MINIMUM SIZE CONDUIT SHALL BE 3/4" E.M.T. PROVIDE IMC FOR CONDUITS 2" AND LARGER OR WHERE EXPOSED TO MET OR DAMP LOCATIONS. E.M.T. FITTINGS SHALL BE COMPRESSION TYPE. IMC SHALL BE THREADED CONNECTIONS. TRANSITION TO LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR FINAL CONNECTION (LAST 6 FEET MAXIMUM) OF CONDUCTORS SERVING EQUIPMENT SUBJECT TO VIBRATION.
6. MINIMUM SIZE CONDUCTOR SHALL BE #12 THIN, OR THIN WHERE REQUIRED, WITH #14 USED FOR CONTROL WIRING. CONDUCTOR MATERIAL SHALL BE COPPER ONLY.
7. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL RACEWAYS.
8. BRANCH CIRCUIT CONDUCTORS FOR 20A RECEPTACLE CIRCUITS SHALL BE ADJUSTED FOR VOLTAGE DROP.
 - A. 120/208V: 0'-75' - #12AWG MINIMUM
75'-150' - #10AWG MINIMUM
150'-225' - # 8AWG MINIMUM
9. CONDUCTOR SIZES #14AWG, #12AWG AND #10AWG SHALL BE SOLID, CONDUCTOR SIZE #8AWG AND LARGER SHALL BE STRANDED. ALL CONDUCTORS SHALL BE COLOR CODED.
10. CONTRACTOR SHALL PROVIDE ALL NECESSARY CUTTING AND PATCHING INCLUDING SLEEVES AND INSERTS.
11. ALL NEW CIRCUIT BREAKERS SHALL BE BOLT-ON BREAKERS COMPATIBLE WITH EXISTING PANELBOARD. PROVIDE UPDATED TYPEWRITTEN DIRECTORIES IN ALL PANELS.
12. BEFORE SUBMITTING HIS BID, THE CONTRACTOR SHALL VISIT THE SITE TO ASCERTAIN ALL WORK INVOLVED IN THE PROJECT.
13. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS ON THE PROJECT.
14. CONTRACTOR SHALL MAKE NECESSARY MODIFICATIONS AND ADJUSTMENTS TO ALL ELECTRICAL ITEMS AND EQUIPMENT AS MAY BE REQUIRED BY THIS WORK.
15. ALL ELECTRICAL EQUIPMENT MUST MAINTAIN WORKING CLEARANCES AS REQUIRED BY NEC.
16. FLEXIBLE RACEWAY SYSTEMS SHALL NOT BE USED TO PENETRATE ROOFS, FLOORS AND AIR/MOISTURE BARRIERS.
17. RACEWAY SYSTEMS SHALL NOT BE ROUTED THRU OR IN HVAC DUCTS.
18. ALL NEW EXPOSED CONDUITS SHALL BE PAINTED TO MATCH EXISTING CEILINGS.
19. ALL NEW FIRE ALARM CABLING ABOVE ACCESSIBLE CEILINGS SHALL BE PLENUM RATED CABLE OF TYPE COMPATIBLE WITH EXISTING BUILDING FIRE ALARM SYSTEM.
20. ALL NEW FIRE ALARM DEVICE(S) SHALL BE UL LISTED AND OF TYPE AND MANUFACTURER TO MATCH EXISTING. NEW FIRE ALARM DEVICE(S) SHALL BE INTEGRATED INTO EXISTING FIRE ALARM SYSTEM.



3. THE CONTRACTOR SHALL PROVIDE ALL PENETRATIONS, SLEEVES, RACENAYS AND SEALANT AS REQUIRED THROUGH PARTITIONS TO ACCOMMODATE THEIR SCOPE OF WORK. ANY PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE PROPERLY SEALED AND TREATED TO MAINTAIN THE FIRE STOPPING RATING OF THE WALLS, FLOORS AND CEILINGS.
2. UNLESS INDICATED OTHERWISE ALL MATERIALS REQUIRED TO PROVIDE BRANCH CIRCUITS AND FEEDERS ARE TO BE NEW.
3. DURING THE COURSE OF INVESTIGATION AND DEMOLITION, IF IT IS DETERMINED THAT IT MAY BE FEASIBLE TO UTILIZE EXISTING MATERIALS FOR BRANCH CIRCUITS AND FEEDERS, CONTRACTOR SHALL NOTIFY ENGINEER FOR APPROVAL PRIOR TO PERFORMING ANY WORK.
4. LOW VOLTAGE WIRING SHALL NOT LAY ON TOP OF CEILING GRID SYSTEM. WIRING SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 5 FEET UTILIZING J-HOOKS SUPPORTED BY STRUCTURAL MEMBERS. WIRING SHALL BE ROUTED PARALLEL OR PERPENDICULAR TO STRUCTURAL MEMBERS.
5. DRAWINGS DO NOT REPRESENT ALL EXISTING FIRE ALARM DEVICES. INITIATING AND NOTIFICATION DEVICES NOT SHOWN ON THE DRAWINGS ARE EXISTING TO REMAIN. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO MAINTAIN OPERATION OF THE EXISTING DEVICES NOT SHOWN.
6. EXISTING FIRE ALARM SYSTEM SHALL BE OPERATIONAL AT ALL TIMES. THE OCCUPIED AREA OF THE BUILDING SHALL NOT BE LEFT UNPROTECTED AT ANY TIME. IF AN INTERRUPTION OF FIRE ALARM SYSTEM IS REQUIRED TO FACILITATE DEVICE INSTALLATION, PROVIDE 48 HOURS OF ADVANCE NOTICE TO THE OWNER AND THE LOCAL FIRE DEPARTMENT. CONTRACTOR SHALL HIRE AN AUTHORIZED PERSONNEL TO WATCH/GUARD ANY UNPROTECTED AREAS OF THE BUILDING WHERE NECESSARY.
7. REMOVE AND REINSTALL CEILING MOUNTED DEVICES AS REQUIRED TO ALLOW INSTALLATION OF FEEDERS, BRANCH CIRCUITS, MECHANICAL PIPING AND DUCT WORK. DEVICES INCLUDE BUT ARE NOT LIMITED TO, LIGHT FIXTURES, SPEAKERS, FIRE ALARM, AND PAGING DEVICES.
8. PROVIDE PULL BOX(ES) BETWEEN PULL POINTS AS REQUIRED TO COMPLY WITH NEC 344.26 THAT THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF FOUR QUARTER BEND (360 DEGREE TOTAL) BETWEEN PULL POINTS.

- (GFI, WPI)
1. 2P, 3 WIRE, GROUNDING TYPE, 125V. COMMERCIAL-GRADE, DUPLEX RECEPTACLE NEMA 5-20R INSTALLED $\frac{1}{16}$ " A.F.F. UNLESS NOTED OTHERWISE.
- "GFI" DENOTES RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER.
 - "WPI" DENOTES RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER.
2. CEILING JUNCTION BOX.
3. WALL MOUNTED JUNCTION BOX.
4. JUNCTION BOX WITH FLEXIBLE CONDUIT AND FINAL CONNECTION TO EQUIPMENT.
5. CONDUIT ROUTED CONCEALED IN WALLS AND CEILING. HASH MARKS DENOTE QUANTITY OF #12 CONDUCTORS OR AS NOTED.
6. CONDUIT ROUTED EXPOSED. INSTALL PARALLEL TO WALLS AND CEILINGS. HASH MARKS DENOTE QUANTITY OF #12 CONDUCTORS OR AS NOTED.
7. CONDUIT ROUTED BELOW GRADE. HASH MARK DENOTES QUANTITY OF #12 CONDUCTORS OR AS NOTED.
8. DENOTES CONDUIT, $\frac{3}{4}$ " MINIMUM
9. DENOTES INSULATED GROUND WIRE, #12 AWG MINIMUM
10. LONG TICK MARK DENOTES NEUTRAL CONDUCTOR, #10 AWG MINIMUM
11. SHORT TICK MARK DENOTES LINE (HOT) OR SWITCH LEG CONDUCTOR, #12 AWG MINIMUM.
12. CIRCUIT BREAKER PANELBOARD.

- ① INTERCEPT EXISTING FEED AND EXTEND TO NEW REPLACEMENT EQUIPMENT. PROVIDE PULL BOXES WHERE REQUIRE FOR SPLICE CONNECTIONS. PULL BOXES SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C.
- ② NEW FEEDER SHALL MATCH EXISTING, BUT SHALL NOT BE SMALLER THAN 3#400KCM², 1#3G. IN 4". FIELD VERIFY EXACT REQUIREMENTS.
- ③ NEW FEEDER SHALL MATCH EXISTING, BUT SHALL NOT BE SMALLER THAN 3#350KCM², 1#4G. IN 3". FIELD VERIFY EXACT REQUIREMENTS.
- ④ UTILIZE EXISTING 400A RATED FUSIBLE SWITCH MADE AVAILABLE FROM DEMOLITION WORK TO SERVE NEW REPLACEMENT UNIT. PROVIDE NEW 300A FUSES OF TYPE AND AIC RATING TO MATCH EXISTING SWITCHBOARD TO FEED NEW MECHANICAL EQUIPMENT 'RTU-2'. PROVIDE NEW PLACARDS WITH WHITE LETTERS ON BLACK BACKGROUND TO INDICATE LOADS BEING SERVED. FIELD VERIFY EXACT REQUIREMENTS.
- ⑤ UTILIZE EXISTING 600A RATED FUSIBLE SWITCH MADE AVAILABLE FROM DEMOLITION WORK TO SERVE NEW REPLACEMENT UNIT. PROVIDE NEW 350A FUSES OF TYPE AND AIC RATING TO MATCH EXISTING SWITCHBOARD TO FEED NEW MECHANICAL EQUIPMENT 'RTU-1'. PROVIDE NEW PLACARDS WITH WHITE LETTERS ON BLACK BACKGROUND TO INDICATE LOADS BEING SERVED. FIELD VERIFY EXACT REQUIREMENTS.