	A	В	C)	E	F		G
						1. THESE SPECIFICATIONS DRAWINGS UNLESS NOT		MECHANICAL
1						EXISTING BUILDING.	PRISES ALTERATIONS AND THE EXISTING BUILDING	
						BE FURNISHED UND LIMITING GENERALIT	ONSISTS OF INSTALLATION ER THE CONTRACT DOCU THEREOF CONSISTS OF	MENTS AND WITHOUT FURNISHING LABOR,
						RIGGING, STAGING, AND/OR INCIDENTAI SHOWN ON THE DR	ENT, HOISTING, PLANT, TR APPURTENANCES, AND SE . TO PROPERLY COMPLET AWINGS AND AS DESCRIB HALL INCLUDE BUT NOT	RVICES NECESSARY E ALL WORK AS ED HEREIN. THE
						B.B. DUCTWORK AND	REMOVAL OF ITEMS AS DUCTWORK ACCESSORIES PIPING, EQUIPMENT AND	· .
						B.E. CUTTING AND P B.F. SHOP DRAWINGS B.G. AS—BUILT DRAW	ATCHING S.	
						B.I. FULL COORDINA B.J. WARRANTY AND B.K. PHASING AS RE	TION WITH OTHER TRADES	STRUCTION MANAGER,
2						AS REQUIRED E B.M. FILING, PERMITS B.N. FULL TESTING A	FOR WORK TO BE PERFO Y BUILDING MANAGEMENT , CONTROLLED INSPECTIO ND STARTUP OF ALL SYS	AND/OR OWNER. NS. TEMS.
						DELIVER TO THE PF	DWING DEFINITIONS APPLY M "FURNISH" MEANS TO ROJECT SITE, READY FOR BLY, INSTALLATION, AND S	"PURCHASE AND UNLOADING,
						AT PROJECT SITE II UNPACKING, ASSEM APPLYING, WORKING	M "INSTALL" IS USED TO NCLUDING THE ACTUAL "U BLY, ERECTION, PLACING, TO DIMENSION, FINISHIN	INLOADING, ANCHORING, G, CURING,
						C. PROVIDE: THE TER INSTALL, COMPLETE	ING, AND SIMILAR OPERATION M "PROVIDE" MEANS "TO AND READY FOR THE INTERACTION AND READY AND MANUEL OF THE INTERACTION AND MANUEL OF THE INTERACTION AND READY AND MANUEL OF THE INTERACTION AND MANUEL OF THE INTERACTION	FURNISH AND TENDED USE."
						TWO YEARS AND NI E. REMOVE: THE TER PRESENT POSITION,	M REMOVE MEANS TO DIS REMOVE FROM THE PREI	SCONNECT FROM ITS
						EQUIPMENT AND AL WITHOUT DAMAGE, S	RM "RELOCATE" MEANS T L ACCESSORIES AS REQU STORING AS NECESSARY E	IRED SAFELY AND
3						IN PRODUCTS, MATE	UBSTITUTIONS" ARE REQU RIALS AND METHODS OF CONTRACTOR AFTER AWA	CONSTRUCTION AS
						SHALL REVIEW ALL	DRAWINGS ON OF A FORMAL BID, TI DRAWINGS OF THE ENTIR CTION, DEMOLITION, ARCHI	E PROJECT INCLUDING
						INCLUDE ANY WORK OR IMPLIED TO BE SECTIONS OF THE		WHICH IS INDICATED ADE IN OTHER
						COMPLETE THE WOI DOCUMENTS. THE DOCUMENTS ARE D	RIALS, EQUIPMENT AND LA RK OUTLINED ON THESE (CONTRACTOR IS TO NOTE AGRAMMATIC ONLY AND T DEVICES IN THE FIELD M	CONTRACT THAT THESE HAT FINAL PLACEMENT
						A CONFLICT IN POS NOTIFY THE ENGINE INTENT WAS BY THI	HAT WHICH IS SHOWN ON SITIONING OCCURS THE CO ER IMMEDIATELY TO ASCE E DESIGN PROFESSIONAL. OTHER TRADES TO AVOID	ONTRACTOR IS TO RTAIN WHAT THE ALL WORK SHALL BE
						CONFLICT OCCURS THE MORE STRINGE 5. SURVEY AND MEASUREI	IN THE SPECIFICATIONS A NT SITUATION SHALL APP MENTS:	ND/OR ON DRAWINGS, LY.
4						CONDITIONS AND DI PERFORMED. NO (ADDITIONAL WORK (CONDITIONS THAT A	NG BID, VISIT SITE AND II FFICULTIES THAT WILL AFI COMPENSATION WILL BE G CAUSED BY UNFAMILIARITY RE VISIBLE OR READILY I	FECT WORK TO BE BRANTED FOR WITH SITE DENTIFIED BY
						WORK REQUIRED. B. DO NOT SCALE DRA FOR ESTABLISHING	RVERS. INCLUDE IN THE WINGS. SCALE INDICATED REFERENCE POINTS ONLY	D ON DRAWINGS IS . ACTUAL FIELD
						C. PRIOR TO ORDERING THOROUGHLY REVIE ADEQUATE CLEARAN	GOVERN ALL DIMENSIONS G ANY MATERIALS AND ECUTE ON THE SITE CONDITIONS CES AND ACCESS IS ALLO CES A	QUIPMENT, TO DETERMINE IF OWED TO INSTALL THE
						TO ALLOW FOR PROVIDE ALL NECES THE BUILDING AS N	DER EQUIPMENT BROKEN DPER RIGGING THROUGH SSARY ALTERATIONS TO TH IECESSARY TO RIG THE E ION TO PROVIDE ACCESS	THE PROJECT AREA. HE STRUCTURE OF QUIPMENT IN PLACE.
						EASY MAINTENANCE 6. CODES AND STANDARDS ACCORDANCE WITH THE	AND REPAIR.	COMPLETED IN YORK ACCEPTED
						ENGINEER OF ANY EXIS OF THE LAWS AND REC THE CONTRACTOR CAUS	TING WORK OR MATERIAL GULATIONS LISTED BELOW. SING SUCH VIOLATION SHHIS CONTRACTOR AND AT	S WHICH VIOLATE ANY ANY WORK DONE BY HALL BE CORRECTED
5						A. INTERNATIONAL RES B. INTERNATIONAL BUIL		
						C. INTERNATIONAL PLU D. INTERNATIONAL MEC E. NATIONAL ELECTRIC	HANICAL CODE	
						F. THE LIFE SAFETY C 7. PERMITS AND FEES: THE NOTICES, OBTAIN ALL F STATE SALES TAXES AN		DVERNMENT AND
						COSTS, INCLUDING UTIL CONNECTION WITH THE PREPARE ALL DOCUMEN OF ALL GOVERNMENTAL	ITY CONNECTIONS OR EX- WORK, FILE ALL NECESS. ITS AND OBTAIN ALL NEC AND STATE DEPARTMENT ALL REQUIRED CERTIFICATI	TENSIONS IN ARY DRAWINGS, ESSARY APPROVALS S HAVING
						FOR HIS WORK, AND D AT JOB COMPLETION. 8. SHOP DRAWINGS:	ELIVER A COPY TO THE (OWNER AND ENGINEER
						SCALE OF 1/4"=1'0 INDICATE DEVIATION: REPRODUCE CONTR INFORMATION AS TH	PARED INFORMATION, DRA)". HIGHLIGHT, ENCIRCLE S FROM THE CONTRACT D ACT DOCUMENTS OR COP E BASIS OF SHOP DRAWI	, OR OTHERWISE OCCUMENTS. DO NOT Y STANDARD INGS. STANDARD
6						PROJECT IS NOT CO B. SHOP DRAWINGS IN AND INSTALLATION	RED WITHOUT SPECIFIC FOR STORM STORM SHOP DRAWIN CLUDE EQUIPMENT SUBMIN DRAWINGS, SETTING DIAGRE	GS. TTALS, FABRICATION PAMS, SCHEDULES,
						FOLLOWING INFORMA a. DIMENSIONS.	ES AND SIMILAR DRAWING ATION: OF PRODUCTS AND MATE	
						c. COMPLIANCE W DATA AS INDIC	TITH SPECIFIED STANDARDS	S AND PERFORMANCE
						e. NOTATION OF MEASUREMENT. f. SUBMIT 3 BLA	DIMENSIONS ESTABLISHED CK-LINE PRINTS AND 2 A	BY FIELD ADDITIONAL PRINTS
						NUMBER OF P DISTRIBUTION. REMAINDER RE SHALL BE MAF	ED FOR MAINTENANCE MARINTS NEEDED BY THE EI ONE PRINT WILL BE RET TURNED. ONE OF THE F EKED-UP AND MAINTAINED	NGINEEŔ FOR TAINED; THE PRINTS RETURNED
							SHOP DRAWINGS WITHOUT NDICATING ACTION TAKEN	
7						RECEIVING FINA	R ANY MATERIALS OR EQUAL APPROVED SHOP DRAVING ITTALS AS INDICATED IN SECTIONS.	VINGS.
						9. USE ADEQUATE NUMBER THOROUGHLY TRAINED AND WHO ARE COMPLE REQUIREMENTS AND TH	RS OF SKILLED WORKMEN AND EXPERIENCED IN THE TELY FAMILIAR WITH THE E METHODS NEEDED FOR	E NECESSARY CRAFTS SPECIFIED
						PERFORMANCE OF THE 10. THE CONTRACTOR SHALL	WORK.	RUPTIONS OF

THAN 2 DAYS PRIOR TO THE INTERRUPTION.

c. COPIES OF WARRANTIES.

- OF INSTALLATION OF MATERIALS TO CONTRACT DOCUMENTS AND WITHOUT OF CONSISTS OF FURNISHING LABOR, ISTING, PLANT, TRANSPORTATION. NANCES, AND SERVICES NECESSARY
- CLUDE BUT NOT BE LIMITED TO: /AL OF ITEMS AS REQUIRED. ORK ACCESSORIES. EQUIPMENT AND DUCTWORK.
- NANCE MANUALS.
- TH OTHER TRADES.
- BY OWNER, CONSTRUCTION MANAGER, OR BUILDING MANAGEMENT RK TO BE PERFORMED AFTER-HOURS DING MANAGEMENT AND/OR OWNER. ROLLED INSPECTIONS.
- RTUP OF ALL SYSTEMS. EFINITIONS APPLY TO THIS CONTRACT NISH" MEANS TO "PURCHASE AND
- STALLATION, AND SIMILAR OPERATIONS." LL" IS USED TO DESCRIBE OPERATIONS THE ACTUAL "UNLOADING, CCTION, PLACING, ANCHORING, ENSION, FINISHING, CURING,
- VIDE" MEANS "TO FURNISH AND EADY FOR THE INTENDED USE."
 - EANS MANUFACTURED WITHIN THE PAST FORE USED.
- FROM THE PREMISES AND TO
- LOCATE" MEANS TO MOVE EXISTING SSORIES AS REQUIRED SAFELY AND AS NECESSARY BETWEEN DEMOLITION
- TIONS" ARE REQUESTS FOR CHANGES AND METHODS OF CONSTRUCTION AS CTOR AFTER AWARD OF THE CONTRACT.

- FORMAL BID, THIS CONTRACTOR S OF THE ENTIRE PROJECT INCLUDING EMOLITION, ARCHITECTURAL, LUMBING, AND SPRINKLER AND SHALL ID IN THE BID WHICH IS INDICATED RMED BY THIS TRADE IN OTHER
- QUIPMENT AND LABOR NECESSARY TO INED ON THESE CONTRACT CTOR IS TO NOTE THAT THESE ATIC ONLY AND THAT FINAL PLACEMENT IN THE FIELD MAY NOT DIRECTLY CH IS SHOWN ON THE DRAWINGS. IF OCCURS THE CONTRACTOR IS TO DIATELY TO ASCERTAIN WHAT THE PROFESSIONAL. ALL WORK SHALL BE TRADES TO AVOID CONFLICT. IF SPECIFICATIONS AND/OR ON DRAWINGS, ATION SHALL APPLY.
- VISIT SITE AND IDENTIFY EXISTING S THAT WILL AFFECT WORK TO BE SATION WILL BE GRANTED FOR BY UNFAMILIARITY WITH SITE LE OR READILY IDENTIFIED BY INCLUDE IN THE BID ALL DEMOLITION
- SCALE INDICATED ON DRAWINGS IS ICE POINTS ONLY. ACTUAL FIELD ALL DIMENSIONS.
- ATERIALS AND EQUIPMENT, SITE CONDITIONS TO DETERMINE IF ACCESS IS ALLOWED TO INSTALL THE JIPMENT BROKEN DOWN AS NECESSARY GGING THROUGH THE PROJECT AREA. TERATIONS TO THE STRUCTURE OF RY TO RIG THE EQUIPMENT IN PLACE.
- PROVIDE ACCESS TO EQUIPMENT FOR VORK SHALL BE COMPLETED IN
- STATE OF NEW YORK ACCEPTED ODES. CONTRACTOR IS TO INFORM ORK OR MATERIALS WHICH VIOLATE ANY S LISTED BELOW. ANY WORK DONE BY CH VIOLATION SHALL BE CORRECTED ITRACTOR AND AT NO EXPENSE TO THE
- CODE
- CODE
- CODE (NFPA 70)
- RACTOR SHALL GIVE ALL NECESSARY AND PAY ALL GOVERNMENT AND WHERE APPLICABLE, AND OTHER NECTIONS OR EXTENSIONS IN FILE ALL NECESSARY DRAWINGS. OBTAIN ALL NECESSARY APPROVALS TATE DEPARTMENTS HAVING JIRED CERTIFICATES OF INSPECTION
- INFORMATION, DRAWN TO ACCURATE HLIGHT, ENCIRCLE, OR OTHERWISE THE CONTRACT DOCUMENTS. DO NOT UMENTS OR COPY STANDARD OF SHOP DRAWINGS. STANDARD HOUT SPECIFIC REFERENCE TO THE ED SHOP DRAWINGS.
- EQUIPMENT SUBMITTALS, FABRICATION , SETTING DIAGRAMS, SCHEDULES, SIMILAR DRAWINGS. INCLUDE THE
- DUCTS AND MATERIALS INCLUDED. CIFIED STANDARDS AND PERFORMANCE
- IATION REQUIREMENTS.
- ONS ESTABLISHED BY FIELD
- PRINTS AND 2 ADDITIONAL PRINTS MAINTENANCE MANUALS, PLUS THE EEDED BY THE ENGINEER FOR RINT WILL BE RETAINED; THE ONE OF THE PRINTS RETURNED AND MAINTAINED AS A "RECORD
- RAWINGS WITHOUT AN APPROPRIATE NG ACTION TAKEN IN CONNECTION WITH
- MATERIALS OR EQUIPMENT PRIOR TO OVED SHOP DRAWINGS. S INDICATED IN SPECIFIC
- SKILLED WORKMEN WHO ARE PERIENCED IN THE NECESSARY CRAFTS MILIAR WITH THE SPECIFIED ODS NEEDED FOR PROPER
- DINATE ALL INTERRUPTIONS OF ACCESS WITH THE OWNER NO LESS

- 11. OPERATION AND MAINTENANCE
- A. UPON COMPLETION OF ALL WORK AND TESTS, THE CONTRACTOR SHALL INSTRUCT THE OWNER OR THE OWNER'S REPRESENTATIVE IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL EQUIPMENT FURNISHED. THE CONTRACTOR SHALL GIVE AT LEAST SEVEN (7) DAYS NOTICE TO THE OWNER AND THE ENGINEER IN ADVANCE OF THIS PERIOD.
- B. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A COMPLETE OPERATION AND MAINTENANCE MANUAL, BOUND IN BOOKLET FORM. ORGANIZE OPERATING AND MAINTENANCE DATA INTO SUITABLE SETS OF MANAGEABLE SIZE. BIND PROPERLY INDEXED DATA IN INDIVIDUAL HEAVY-DUTY 3-RING VINYL-COVERED BINDERS, WITH POCKET FOLDERS FOR FOLDED SHEET INFORMATION AND DESIGNATION PARTITIONS WITH IDENTIFICATION TABS. MARK APPROPRIATE IDENTIFICATION ON FRONT AND SPINE OF EACH BINDER.
- C. OPERATION AND MAINTENANCE MANUAL SHALL INCLUDE THE FOLLOWING:
- a. MANUFACTURER'S PRINTED OPERATING AND MAINTENANCE
- b. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING.
- d. APPROVED SHOP DRAWINGS AND PRODUCT DATA.
- e. BALANCE REPORTS.
- f. INCLUDE IN THE MANUAL, A TABULATED EQUIPMENT SCHEDULE FOR ALL EQUIPMENT. SCHEDULE SHALL INCLUDE PERTINENT DATA SUCH AS: MAKE, MODEL NUMBER, SERIAL NUMBER, VOLTAGE, NORMAL OPERATING CURRENT, BELT SIZE, FILTER QUANTITIES AND SIZES, BEARING NUMBER, ETC. SCHEDULE SHALL INCLUDE MAINTENANCE TO BE DONE AND
- g. MAINTENANCE AND INSTRUCTION MANUALS SHALL BE SUBMITTED TO THE OWNER AT THE SAME TIME AS THE SEVEN (7) DAY NOTICE IS GIVEN PRIOR TO THE INSTRUCTION

12. AS-BUILT DRAWINGS

- A. PREPARE AS-BUILT DRAWINGS TO A SCALE OF 1/4"=1'-0" OR LARGER; DETAILING THE ACTUAL INSTALLATION OF MAJOR ELEMENTS, COMPONENTS, AND SYSTEMS OF MECHANICAL EQUIPMENT AND MATERIALS. WHERE SHOP DRAWINGS ARE USED, RECORD A CROSS-REFERENCE AT THE CORRESPONDING LOCATION ON THE AS-BUILT DRAWINGS. GIVE PARTICULAR ATTENTION TO CONCEALED ELEMENTS THAT WOULD BE DIFFICULT TO MEASURE AND RECORD AT A LATER DATE.
- B. MARK NEW INFORMATION THAT IS IMPORTANT TO THE OWNER, BUT WAS NOT SHOWN ON CONTRACT DRAWINGS OR SHOP DRAWINGS. C. NOTE RELATED CHANGE ORDER NUMBERS WHERE APPLICABLE.
- D. ORGANIZE AS-BUILT DRAWINGS INTO MANAGEABLE SETS, BIND WITH DURABLE PAPER COVER SHEETS, AND PRINT SUITABLE TITLES, DATES AND OTHER IDENTIFICATION ON THE COVER OF
- 13. OBTAIN IN OWNER'S NAME WRITTEN EQUIPMENT AND MATERIAL WARRANTIES OFFERED IN MANUFACTURER'S PUBLISHED PRODUCT DATA WITHOUT EXCLUSION OR LIMITATION.
- 14. GUARANTEE WORK OF THESE CONTRACT DOCUMENTS IN WRITING FOR NOT LESS THAN ONE (1) YEAR FROM DATE OF FINAL NOTICE OF ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPT AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.
- 15. THIS CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL SYSTEMS UNTIL THE FINAL ACCEPTANCE OF THE
- 16. ALL AIR CONDITIONING UNIT COMPRESSORS AND REFRIGERATION COMPONENTS SHALL HAVE A 5-YEAR WARRANTY. 17. SUBMIT TO THE OWNER AN OFFICIAL CERTIFICATE OF INSURANCE FOR

THEIR RECORDS. MEANS AND METHODS ALL TRADES 1. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH

- MANUFACTURER'S RECOMMENDATIONS 2. DO NOT BURN WASTE MATERIALS. DO NOT BURY DEBRIS OR EXCESS MATERIALS ON THE OWNER'S PROPERTY. DO NOT DISCHARGE VOLATILE, HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE AND DISPOSE OF ALL WASTE MATERIALS, PACKAGING MATERIAL, SKIDS ETC. FROM THE SITE AND DISPOSE OF IN A LAWFUL MANNER IN ACCORDANCE WITH MUNICIPAL, STATE AND FEDERAL REGULATIONS.
- 3. MATERIALS AND EQUIPMENT SHALL BE UL LISTED WHERE STANDARD HAS BEEN ESTABLISHED. 4. CAREFULLY INSPECT ALL BUILDING ELEMENTS PRIOR TO CUTTING OR DRILLING INTO WALL, FLOORS OR CEILINGS. PATCH AND PAINT SURFACES DISTURBED BY WORK UNDER THIS CONTRACT AS REQUIRED
- TO RESTORE THEM TO THEIR ORIGINAL CONDITION. 5. SCAFFOLDING, RIGGING, HOISTING: THE CONTRACTOR SHALL FURNISH ALL SCAFFOLDING, RIGGING, HOISTING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES ANY EQUIPMENT AND APPARATUS FURNISHED UNDER THIS DIVISION. REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.
- 6. EXCAVATION AND BACKFILLING: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE SIZES, DEPTHS, FILL AND BEDDING REQUIREMENTS AND ANY OTHER EXCAVATION WORK REQUIRED UNDER

7. WATERPROOFING: WHERE ANY WORK PIERCES WATERPROOFING

- INCLUDING WATERPROOF CONCRETE, ROOFS, EXTERIOR WALL AND FLOORS IN WET AREAS, THE METHOD OF INSTALLATION SHALL BE REVIEWED BY THE ENGINEER BEFORE WORK IS DONE. THE CONTRACTOR SHALL FURNISH ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY
- MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED PARTITIONS. PROVIDE ASBESTOS FREE FIRESTOPPING SYSTEM CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME AND GASES. SYSTEM SHALL BE UL LISTED AND COMPLY WITH ASTM E

8. PROVIDE FIRESTOPPING AROUND ALL FIRE PROTECTION, PLUMBING,

- 9. ACCESS DOORS SHALL BE PROVIDED IN CEILINGS, WALLS AND FLOORS AT ALL DAMPERS, VALVES, CONTROL DEVICES, AND OTHER APPARATUS AND EQUIPMENT REQUIRING PERIODIC SERVICE AND INSPECTION. COORDINATE TYPE AND LOCATION WITH ARCHITECTURAL
- 10. SEISMIC RESTRAINTS SHALL BE INSTALLED AS REQUIRED PER BUILDING CODE AND FIRE SAFETY CODE. RESTRAINTS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13 AND SMACNA STANDARDS. SUBMIT SHOP DRAWINGS INCLUDING SEISMIC CALCULATIONS WITH PROFESSIONAL ENGINEER'S SEAL FOR REVIEW BY ENGINEER.

HVAC SPECIFICATIONS 1. DUCTWORK AND ACCESSORIES

3. VOLUME DAMPERS:

- A. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. THE MORE STRINGENT REQUIREMENT OF ANY CODES
- B. ALL DUCTWORK AND ACCESSORIES AS ITEMIZED HERE-IN SHALL BE HOT-DIPPED GALVANIZED SHEETMETAL CONSTRUCTION WITH 60 COMMERCIALCOATING ACCORDING TO ASTM 653 AND A924, INCLUDING ALL FITTINGS AND FASTENERS AND SHALL COMPLY WITH THE LATEST EDITION OF SMACNA STANDARDS FOR 2" PRESSURE CLASS. ALL DUCTWORK DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS. ALL SQUARE DUCT ELBOWS ARE TO BE INSTALLED WITH TURNING VANES. ALL RADIUS DUCT ELBOWS SHALL HAVE MINIMUM CENTER LINE RADIUS EQUAL TO 1-1/2TIMES THE DUCT WIDTH.
- C. FLEXIBLE DUCT RUNOUTS SHALL NOT EXCEED 8 FEET IN LENGTH, SHALL BE PREINSULATED WITH VAPOR BARRIER. CPE INNER LINER. FACTORY FABRICATED, AND SHALL COMPLY WITH NFPA 90A AND UI 181 THE INSULATION MATERIAL SURFACE SHALL NOT BE EXPOSED TO THE AIR STREAM. FLEXIBLE DUCT RUNOUTS SHALL BE INSTALLED FULLY EXTENDED AND SUPPORTED TO MINIMIZE BENDS. FLEXIBLE DUCT SHALL BE AS MANUFACTURERD BY THERMAFLEX. TUTTLE AND BAILEY OR APPROVED EQUAL. FLEXIBLE DUCT CONNECTORS APPROXIMATELY 6 INCHES IN LENGTH SHALL BE PROVIDED WHERE SHEET METAL CONNECTIONS ARE MADE TO AIR HANDLING EQUIPMENT.
- 2. DUCT ACCESS DOORS SHALL BE PROVIDED IN DUCTWORK AT ALL: A. AUTOMATIC DAMPERS, COILS, CONTROL DEVICES, AND OTHER APPARATUS REQUIRING SERVICE AND INSPECTION.
- B. MANUAL BALANCING DAMPERS SHALL BE PROVIDED FOR EACH DIFFUSER, GRILLE AND REGISTER, EACH BRANCH OF THE MAIN

TRUNK DUCT AND AS INDICATED ON THE DRAWINGS.

- C. INSTALLATION OF DIFFUSERS GRILLES AND REGISTERS SHALL BE COORDINATED WITH AND SUITABLE FOR INSTALLATION IN, ON, OR FROM CEILING, WALL OR FLOORS SPECIFIED ON THE ARCHITECTURAL PLANS. THE CONTRACTOR MUST VERIFY THE CEILING OR WALL TYPES PRIOR TO ORDERING.
- A. DAMPERS SHALL BE GALVANIZED STEEL OR SAME AS DUCT CONSTRUCTION. CONFORM TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS. INSTALL WITH LEVERS ACCESSIBLE THROUGH INSULATION. SPLITTER DAMPER OR AIR EXTRACTORS ARE

4. WALL PENETRATIONS:

- A. SEAL OPENINGS AROUND DUCTS THROUGH WALLS WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. SEAL ALL DUCT PENETRATIONS THROUGH WALLS AIRTIGHT.
- 5. PIPING AND FITTINGS
- A. CONDENSATE DRAIN : SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS OR TYPE L COPPER TUBING WITH 95-5

TIN-ANTIMONY SOLDER FILLER METALS.

- A. INSULATION THICKNESS SHALL BE IN ACCORDANCE WITH LATEST EDITION OF THE IECC EXCEPT THAT PIPE INSULATION SHALL NOT BE LESS THAN 1" THICK AND, FLEXIBLE DUCTWORK INSULATION SHALL NOT BE LESS THAN 1-1/2" THICK. ALL INSULATION MATERIALS, ADHESIVES, COATINGS, AND OTHER ACCESSORIES SHALL HAVE FLAME SPREAD RATINGS OF 25 OR LESS, AND SMOKE DEVELOPED RATINGS OF 50 OR LESS AS TESTED BY ASTM E-84 (NFPA 255) METHOD. ALL INSULATION MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE
- B. PIPE INSULATION SHALL BE FIBERGLASS WITH VAPOR BARRIER JACKET. PROVIDE INSULATION FOR THE FOLLOWING PIPING SYSTEMS:

WITH THE LATEST EDITION OF SMACNA AND ASHRAE STANDARDS.

- C. INTERIOR DUCT INSULATION MATERIALS SHALL BE FLEXIBLE FIBERGLASS DUCTWORK INSULATION WITH VAPOR BARRIER JACKET. DUCT INSULATION INSTALLED WITHIN UNCONDITIONED SPACES SHALL BE MINIMUM R-6. DUCTWORK ACOUSTIC LINING SHALL BE CELLULAR GLASS WITH FACE BONDED TO PROVIDE A SMOOTH DAMAGE RESISTANT FINISH. PROVIDE INSULATION FOR THE FOLLOWING DUCTWORK SYSTEMS:
- b. RETURN AIR DUCTWORK IN UNCONDITIONED SPACES (WHERE SPACE TEMPERATURE IS MORE THAN10 DEGREES F DIFFERENT FROM DUCT TEMPERATURE)
- c. OUTSIDE AIR INTAKE DUCTWORK d. OUTSIDE AIR AND EXHAUST PLENUMS AT LOUVER CONNECTIONS
- e. COMBUSTION AIR DUCTWORK D. EXTERIOR DUCTWORK INSULATION MATERIALS SHALL BE 3" RIGID POLYSTYRENE (R-12 MINIMUM) WITH PVC JACKETING SEALED WATER
- TIGHT. DUCTWORK INSULATION SHALL BE WATER TIGHT. a. SUPPLY AIR DUCTWORK

AND GOOD PRACTICES.

OF EQUIPMENT.

b. RETURN AIR DUCTWORK c. OUTSIDE AIR INTAKE DUCTWORK

a. SUPPLY AIR DUCTWORK

d. OUTSIDE AIR AND EXHAUST PLENUMS AT LOUVER CONNECTIONS e. COMBUSTION AIR DUCTWORK

7. PIPING INSTALLATIONS A. INSTALL PIPING IN ACCORDANCE WITH ALL APPLICABLE CODES

- B. INSTALL UNIONS OR FLANGES IN PIPES ADJACENT TO EACH VALVE, CONTROL DEVICE AND AT FINAL CONNECTIONS EACH PIECE
- C. INSTALL DIELECTRIC UNIONS TO JOIN DISSIMILAR METALS.
- D. INSTALL AND ANCHOR PIPING TO ENSURE PROPER EXPANSION AND CONTRACTION.
- E. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS AND DRAIN VALVES AT ALL LOW POINTS.
- F. ANCHOR PIPING TO ENSURE PROPER DIRECTION OF EXPANSION AND CONTRACTION.
- G. SUPPORT PIPING TO PREVENT VIBRATION OR SAGGING. PROVIDE HANGER SPACING ACCORDING TO DISTANCES LISTED IN APPLICABLE CODES AND REGULATIONS.

8. TESTING , ADJUSTING AND BALANCING

- A. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING (TAB) AGENCY TO PROVIDE TAB SERVICES FOR THE MECHANICAL SYSTEMS. THE TAB AGENCY SHALL BE CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR THE ASSOCIATED AIR BALANCE COUNCIL (AABC) IN THOSE TESTING AND BALANCING DISCIPLINES REQUIRED FOR THIS PROJECT. THE TAB AGENCY SHALL HAVE AT LEAST ONE PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE SERVICES ARE TO BE PERFORMED
- B. PRIOR TO TESTING, ADJUSTING, AND BALANCING, THE MECHANICAL CONTRACTOR SHALL VERIFY THAT THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING AS SPECIFIED. APPROVED SHOP DRAWINGS, AS BUILT DRAWINGS, AND ALL OTHER DATA REQUIRED FOR EACH SYSTEM AND/OR COMPONENT TO BE TESTED SHALL BE MADE AVAILABLE AT THE JOB SITE DURING THE ENTIRE TAB EFFORT. THE OWNER SHALL BE NOTIFIED IN WRITING OF ALL EQUIPMENT, COMPONENTS, OR BALANCING DEVICES, THAT ARE DAMAGED, INCORRECTLY INSTALLED, OR MISSING, AS WELL AS ANY DESIGN DEFICIENCIES THAT WILL PREVENT PROPER TESTING, ADJUSTING, AND BALANCING. TESTING, ADJUSTING, AND BALANCING SHALL NOT COMMENCE UNTIL APPROVED BY THE

AND CERTIFIED BY NEBB OR AABC AS A TEST AND BALANCE

- C. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM IDENTIFIED, IN ACCORDANCE WITH THE DETAILED PROCEDURES OUTLINED IN EITHER NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS" OR AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE." THE TAB AGENCY SHALL TEST, ADJUST,
- AND BALANCE THE FOLLOWING MECHANICAL SYSTEMS: a. ALL AIR HANDLING EQUIPMENT

CANNOT BE SUCCESSFULLY BALANCED.

- b. ALL SUPPLY AIR SYSTEMS
- c. ALL RETURN AIR SYSTEMS
- d. VERIFY OPERATION OF ALL TEMPERATURE CONTROL SYSTEMS e. TEST SYSTEMS FOR PROPER SOUND AND VIBRATION LEVELS D. SUBMIT TESTING, ADJUSTING, AND BALANCING REPORTS BEARING THE SEAL AND SIGNATURE OF THE TAB PROFESSIONAL ENGINEER. PREPARE A REPORT OF RECOMMENDATIONS FOR CORRECTING UNSATISFACTORY MECHANICAL PERFORMANCES WHEN A SYSTEM
- E. PROVIDE ALL NECESSARY CONTROL DEVICES, EQUIPMENT, MATERIALS, LABOR, WIRE AND CONDUIT TO PERFORM THE SEQUENCES OF OPERATION AS INDICATED. WIRING AND CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH DIVISION 16. ALL CONTROL WIRING INSTALLED WITHIN AIR PLENUM SPACES TO BE TEFLON COATED RATED FOR PLENUM CEILINGS.

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No. |Description|Date

MECHANICAL **SPECIFICATIONS**

THE PREMIER COLLECTION

Project Number 23-12 06/07/23 Drawn By Checked By

As Noted