

++++++		EXISTING PIPING/EQUIPMENT TO BE REMOVED	MBH					
	,	NEW PIPING	SP					
		NEW FILLING	RPM					
•		POINT OF NEW WORK CONNECTED TO EXISTING WORK	NO.					
		POINT OF DISCONNECT FROM EXISTING WORK	V					
		TOTAL OF BIOCONTECT THOM EXICTING WORK	PH					
			- KW					
	HVAC LEGEND							
SYMBOL	SYMBOL DESCRIPTION							
—— DR ——	DRAIN LINE							
HHWR	HHWR —— HEATING HOT WATER RETURN							
—— HHWS ——	HHWS — HEATING HOT WATER SUPPLY							
	-		HZ					
	DII	OTIMORIA OL AGO	1					

	DUCTWOF	RK CLASS			EQUIPMENT TAGS					
SYSTEM	DUCT PRESSURE CLASS	DUCT SEAL CLASS	DUCT LEAK CLASS CFM/100SF		TAG/NO	DESCRIPTION				
					ACCU/1	AIR CONDENSING UNIT NO.1				
SUPPLY	+4" W.G.	A	4		EF/1	EXHAUST FAN NO. 1				
RETURN	-2" W.G.	A	4		CH/1	CHILLER NO. 1				
					VAV/1	VARIABLE AIR VOLUME BOX NO. 1				
EXHAUST	-2" W.G.	-2" W.G. A 4		'	"X" - PREFIX DENOTES EXISTING EQUIPMENT					

AIR DEVICE SCHEDULE												
TYPE	SYMBOL	FACE SIZE	DESCRIPTION	CFM RANGE	NECK SIZE							
A	A(CFM)	24x24	SUPPLY GRILLE	0-160 161-300 301-400 401-500	12x12 (D4) 16x16 (F6) 18x18 (G7) 20x20 (H8)							
В	B(CFM)	24x24	RETURN OR EXHAUST GRILLE	0-160 161-300 301-400 401-500	12x12 (D4) 16x16 (F6) 18x18 (G7) 20x20 (H8)							
	TYPE 'A' - ANEMOSTAT SV2 MAXIMUM SECURITY GRILLE (MODULE SIZE 24x24), 14-GAUGE STEEL AIR DEVICE TYPE 'B' - ANEMOSTAT SV6 MAXIMUM SECURITY GRILLE (MODULE SIZE 24x24), 14-GAUGE STEEL AIR DEVICE											

- BALANCING TO BE VIA YOUNG REGULATOR MODEL 830ACC WITH SECURITY 270-301 OPERATOR.
- PROVIDE SHOP DRAWINGS INCLUDING THROW DATA, NC VALUES, ETC.
- 3. EXACT COLOR & FINISH FOR ALL AIR DEVICES SHALL BE SELECTED AND APPROVED BY ARCHITECT.
- 4. COORDINATE AIR DEVICES/BORDER TYPE WITH ARCHITECTS CEILING GRID PRIOR TO RELEASE OF ORDER.
- 5. EXACT LOCATION OF ALL AIR DEVICES TO BE AS PER ARCHITECTS REFLECTED CEILING PLAN.
- 6. CONTRACTOR SHALL APPLY FLAT BLACK PAINT TO INTERIOR PORTIONS OF DUCT AND/OR GRILLES WHERE VISIBLE FROM FLOOR LEVEL NC VALUE NOT TO EXCEED NC 25.
- ALL CONNECTIONS TO AIR OUTLETS SHALL BE MADE USING GALVANIZED (OR STAINLESS STEEL) DUCTWORK. THE USE OF FLEXIBLE DUCT FOR CONNECTION TO AIR OUTLETS IS STRICTLY FORBIDDEN.

DEMOLITION NOTES

DUCTWORK LEGEND

NECK SIZE

VOLUME DAMPER

MOTORIZED DAMPER

FLEXIBLE CONNECTION

OF AIR FLOW

CEILING SUPPLY

ACOUSTICAL LINING

SIDE CONNECTED SUPPLY,

RETURN OR EXHAUST

AIR DEVICE

FIRE DAMPER

BOTTOM SPLIT SIZE

TOP SPLIT SIZE

TURNING VANES

OUTSIDE AIR INTAKE

BACK-TO-BACK TOP

LOUVERED DOOR

UNDER-CUT DOOR

WIRE MESH SCREEN

CUBIC FEET PER MINUTE

ACCESS DOOR

ABBREVIATIONS

GRILLES WITH FIRE DAMPER

SUPPLY AIR

EQUAL SPLIT

EQS

TGFD

WMS

CFM

ABOVE FINISHED FLOOR

CONNECT, CONNECTIONS

ABOVE

BELOW

CEILING

DIAMETER

DRAWING

FLOOR

ELEVATION

FINISHED FLOOR

FEET PER MINUTE

FEET PER SECOND

HORSEPOWER

MANUFACTURER

ACCESS DOOR

TYPICAL

SQUARE FEET

STATIC PRESSURE

ROTATIONS PER MINUTE

FACH

NUMBER

VOLTS

PHASE

KILOWATTS

ENTERING

LEAVING

EFFICIENCY

DRY BULB

WET BULB

HERTZ (CYCLES PER SECOND)

OUTSIDE AIR INTAKE

POUNDS PER SQUARE INCH GAUGE

TEMPERATURE DIFFERENCE IN °F.

THOUSANDS OF BTU PER HOUR

BRAKE HORSEPOWER

DOWN

// - {////

CLG

CONN

DWG

MFR

PSIG

TYP

AIR DEVICE

RISE OR DROP IN THE DIRECTION

CEILING RETURN OR EXHAUST AIR DEVICE

DESCRIPTION

ABBREV

SYMBOL

- PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, STORAGE FACILITIES, SERVICES AND SUPERVISION NECESSARY FOR THE DEMOLITION WORK AS INDICATED ON DRAWINGS AND SPECIFIED HEREIN.
- . ALL EXISTING EQUIPMENT, MATERIALS AND WORK SHALL BE PROTECTED FROM DAMAGE DURING DEMOLITION. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL DAMAGE OCCURRING FROM HIS WORK.
- ALL WORK SHALL BE EXECUTED IN AN ORDERLY AND CAREFUL MANNER WITH DUE CONSIDERATION FOR PUBLIC SAFETY AND IN CONFORMANCE WITH OSHA REGULATIONS.

4. CONTRACTOR SHALL PROVIDE BARRIERS TO PREVENT DUST, ODORS, DIRT AND DEBRIS FROM MIGRATING TO AREAS

- NOT AFFECTED BY THIS WORK. REMOVAL OF ANY MATERIAL AND EQUIPMENT SHALL INCLUDE ALL ASSOCIATED ITEMS SUCH AS FASTENERS,
- SUPPORTS, CONDUIT, FLASHING, ADHESIVE, ETC.
- REMOVE DEBRIS AS IT ACCUMULATES. DO NOT STORE OR PERMIT DEBRIS TO ACCUMULATE ON SITE. IF THE CONTRACTOR FAILS TO REMOVE DEBRIS PROMPTLY OR PROPERLY, THE OWNER SHALL REMOVE IT AT THE CONTRACTOR'S EXPENSE.
- EXISTING EQUIPMENT OR MATERIALS NOT SHOWN TO BE RE-USED BY OWNER, OR NOT SHOWN ON THE DRAWINGS TO BE RETAINED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES
- PRIOR TO SUBMISSION OF BID, THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE THE EXISTING CONDITIONS AND SHALL INCLUDE ALL COSTS FOR REMOVALS IN THE CONTRACT. THESE COSTS SHALL INCLUDE WORK DESCRIBED HEREIN AND/OR SHOWN ON THE DRAWINGS WITH ALLOWANCES FOR UNFORESEEN FIELD CONDITIONS. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN SPECIFIC CASES CONSIDERED JUSTIFIABLE BY THE ENGINEER.
- THE CONTRACTOR SHALL DISCONNECT AND REMOVE ALL ELECTRICAL OUTLETS, SWITCHES AND OTHER DEVICES, COMPLETE WITH ASSOCIATED WIRING AND CONDUITS, ETC. FROM PARTITIONS AND OTHER WORK THAT IS TO BE REMOVED. CONDUIT AND WIRING SHALL BE REMOVED BACK TO THE NEAREST ELECTRICAL JUNCTION BOX THAT IS TO REMAIN OR TO THE PANELBOARD.
- 10. TAKE POSSESSION AND REMOVE FROM THE PREMISES ALL ABANDONED MATERIALS AND EQUIPMENT UNLESS OTHERWISE REQUESTED BY THE OWNER, IN WHICH CASE REMOVE WITHOUT DAMAGE ALL SUCH EQUIPMENT AND DELIVER TO OWNER WITHIN BUILDING AT LOCATION DESIGNATED BY THE OWNER.
- 1. CONTRACTOR SHALL TRACE ALL CONDUITS AND WIRING BEFORE REMOVAL TO ENSURE THAT SERVICES AND CIRCUITS TO AREAS THAT WILL REMAIN ARE NOT INTERRUPTED.
- . ORDINANCES. ALL CHARGES ASSOCIATED WITH TESTING, FILING, DISPOSAL, PREPARATION AND SUBMISSION OF ALL REQUIRED DOCUMENTATION SHALL BE INCLUDED IN THE CONTRACTOR'S BID. ALL REQUIRED FORMS, RECORDS, TEST, DISPOSAL AND TRANSPORTATION COSTS AND THE LIKE SHALL BE INCLUDED IN THE CONTRACTOR'S PROPOSAL AND SUBMITTED TO OWNER. NO ADDITIONAL COSTS SHALL BE PAID TO THE CONTRACTOR BECAUSE OF THE CONTRACTOR'S FAILURE TO COMPLY WITH THE ABOVE.
- 13. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL DEMOLITION WORK.

DUCTWORK NOTES:

- THE MATERIALS, THICKNESS AND CONSTRUCTION OF SHEET METAL DUCTS SHALL PROVIDE STRUCTURAL STRENGTH AND DURABILITY. DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH LOW PRESSURE AND HIGH PRESSURE DUCT STANDARDS OF THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA), LATEST EDITION IN PRINT OR IN ACCORDANCE WITH THE FUNDAMENTALS VOLUME BOOK OF THE AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE), LATEST EDITION IN
- DUCTS SHALL BE SUBSTANTIALLY SUPPORTED. HANGERS AND BRACKETS FOR SUPPORTING DUCTS SHALL BE OF METAL HANGERS SHALL HAVE SUFFICIENT STRENGTH AND DURABILITY AND SUFFICIENT RESISTANCE TO THE CORROSIVE EFFECTS OF THE ATMOSPHERE TO WHICH THEY WILL BE EXPOSED, TO PROPERLY AND SAFELY SUPPORT THE DUCTWORK. HANGERS SHALL NOT BE USED IN DIRECT CONTACT WITH A DISSIMILAR METAL THAT WOULD CAUSE GALVANIC ACTION IN THE HANGER, DUCT, FASTENINGS OR STRUCTURE.
- HANGERS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS:
- HANGERS SHALL BE FASTENED TO THE SIDES OF DUCT. FOR DUCTS OVER 48 INCHES WIDE, HANGERS SHALL TURN UNDER DUCT AT LEAST TWO INCHES AND SHALL BE FASTENED TO THE BOTTOM AS WELL AS TO THE SIDES.
- FOR DUCTS WITH A CROSS-SECTIONAL AREA OF TWO SQUARE FEET OR LESS, HANGERS SHALL BE CONSTRUCTED OF AT LEAST ONE INCH BY 1/16 INCH STEEL STRAP.
- FOR DUCTS WITH A CROSS SECTIONAL AREA OVER TWO SQUARE FEET, HANGERS SHALL BE CONSTRUCTED OF THREADED STEEL ROD (MINIMUM 1/2"-DIAMETER) WITH STEEL SINGLE TRAPEZE SUPPORTS.
- DUCTS AND ALL PARTS OF THE DUCT SYSTEM SHALL BE SUBSTANTIALLY SUPPORTED AND SECURELY FASTENED TO THE STRUCTURAL MEMBERS OF THE BUILDING WITH APPROVED DEVICES OF NONCOMBUSTIBLE MATERIAL DESIGNED TO CARRY THE REQUIRED LOADS. THE USE OF EXPANSION BOLTS IN CINDER CONCRETE IS PROHIBITED. CONNECTIONS SHALL NOT IMPAIR THE EFFECTIVENESS OF THE FIRE PROTECTION OF STRUCTURAL MEMBERS.
- DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY SUSPENDED CEILINGS.
- GALVANIZED SHEET STEEL: LOCK-FORMING QUALITY, ASTM A 527, COATING DESIGNATION G 90.
- JOINT AND SEAM SEALANT: ONE-PART, NON-SAG, SOLVENT RELEASE CURING, SYNTHETIC ELASTOMERIC SEALANT COMPLYING WITH FS TT-S-001657, TYPE I, FORMULATED WITH A MINIMUM OF 71% SOLIDS.
- SEALANTS COMPLYING WITH ASTM C 920, TYPE S, GRADE NS, CLASS 25, USE O.
- BUILDING ATTACHMENTS: CONCRETE INSERTS, POWDER ACTUATED FASTENERS, OR STRUCTURAL STEEL FASTENERS APPROPRIATE FOR BUILDING MATERIALS. DO NOT USE POWDER ACTUATED CONCRETE FASTENERS FOR LIGHTWEIGHT AGGREGATE CONCRETES OR FOR SLABS LESS THAN 4" THICK.

FLANGED JOINT MASTICS FOR NON LAB EXHAUST DUCTWORK: ONE-PART ACID-CURING SILICONE ELASTOMERIC JOINT

- 11. HANGERS: GALVANIZED SHEET STEEL THREADED ROD.
- STRAPS AND ROD SIZES: CONFORM WITH TABLE 4-1 AND 4-2 IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1985 EDITION, FOR SHEET STEEL WIDTH AND GAGE AND STEEL ROD DIAMETERS.
- DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETED OR SELF-TAPPING METAL SCREWS COMPATIBLE WITH

- 1. ALL WORK SHALL BE PERFORMED BY PROFESSIONALS IN THE FIELD AND COMPLY WITH THE APPLICABLE REGULATIONS OF DEC/DEP, DOB, OSHA AND OWNER'S WORK RULES.
- 2. ALL NOTES PROVIDED IN THESE DOCUMENTS ARE PART OF THE CONTRACT AND CARRY EQUAL VALUE.

REQUIRED PRIOR TO ISSUANCE OF ANY CONTRACT.

EXPERIENCED CONTRACTORS IN THE FIELD.

- 3. CONTRACTOR SHALL BE REQUIRED FOR ALL PERMITS AND BE RESPONSIBLE TO ARRANGE AND SECURE ALL NECESSARY INSPECTIONS. A FINAL INSPECTION CERTIFICATE SHALL BE REQUIRED TO BE SUBMITTED WITH THE FINAL PAYMENT APPLICATION.
- 4. ONLY EXPERIENCED CONTRACTORS MAY BID OR PERFORM THE WORK INCLUDED IN THIS PROJECT. PROOF OF EXPERIENCE SHALL BE
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK, MATERIALS AND ITEMS PERFORMED BY ANY SUBCONTRACTORS. PLANNED LIST OF SUBCONTRACTORS SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL. NO SUBCONTRACTOR SHALL PERFORM WORK ONSITE WITHOUT A REPRESENTATIVE OF THE PRIME CONTRACTOR HOLDER, OR HIS DESIGNATED REPRESENTATIVE ON SITE.
- 6. THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, STANDARD FORM OF THE AMERICAN INSTITUTE OF ARCHITECTS CURRENT EDITION, SHALL APPLY TO ALL WORK IN THIS CONTRACT, EXCEPT AS SPECIFICALLY MODIFIED BY THESE NOTES OR ADDITIONAL CONDITIONS IN THE CONTRACT DOCUMENTS.
- 7. PRIOR TO BEGINNING ANY WORK, THE CONTRACTOR SHALL FURNISH A CONSTRUCTION SCHEDULE SHOWING THE CHRONOLOGICAL PHASES OF HIS WORK, AND ALL RELATED WORK FOR THE COMPLETION OF THE PROJECT. THIS SCHEDULE SHALL INDICATE ALL ORDERING LEAD TIME, LENGTH OF TIME FOR EACH PHASE, ITS START AND COMPLETION, WITH A PROJECTED COMPLETION DATE. INITIAL SCHEDULE SHALL BE SUBMITTED WITHIN TWO WEEKS AFTER THE NOTICE OF AWARD, AND UPDATED EVERY TWO MONTHS THEREAFTER.
- 8. ALL WORK PERFORMED BY THE CONTRACTOR/SUB-CONTRACTORS SHALL CONFORM TO THE REQUIREMENTS OF MUNICIPAL, LOCAL OR FEDERAL AND STATE LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
- 9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND JOBSITE CONDITIONS BEFORE SUBMISSION OF HIS PROPOSAL. UPON SUBMISSION OF THE PROPOSAL THE CONTACTOR ACCEPTS RESPONSIBILITY FOR ALL JOBSITE CONDITIONS AND ACCEPTS THAT NO CONSIDERATION WILL BE GRANTED FOR ANY MISUNDERSTANDING OF THE WORK REQUIRED MATERIALS TO BE SUPPLIED OR ACCESS TO WORK AREAS.
- 10. THE CONTRACTOR SHALL NOTIFY THE OWNER OR OWNERS' REPRESENTATIVE OF ANY FIELD CONDITIONS THAT DO NOT AGREE WITH THE CONTRACT DOCUMENTS OR THAT MAY PRESENT PROBLEM WITH COMPLETING THE WORK AS REQUIRED.
- 11. CONTRACTOR SHALL SOLELY RESPONSIBLE FOR JOBSITE SAFETY AND SHALL ARRANGE WORK IN SUCH A MANNER TO PROVIDE FOR SAFE ACCESS FOR OWNER INSPECTION OF ALL WORK. 12. ANY FORCED STOPPAGE OF WORK BY THE OWNER OR AGENCY DUE TO NONCOMPLIANCE FOR SAFETY, ACCESS, MATERIAL OR WORK
- PRACTICE SHALL NOT BE CAUSE FOR CLAIM BY THE CONTRACTOR. 13. THE CONTRACT DOCUMENTS GENERALLY SHOW THE WORK REQUIRED TO COMPLETE THE SCOPE OF WORK REQUIRED, IT SHALL NOT BE RESPONSIBLE TO NOTE EVERY DETAIL OR PRODUCT THAT CAN BE REASONABLY ASSUMED AS COMMON KNOWLEDGE TO EXPERT AND
- 14. THE TERMS "PROVIDE" OR "FURNISH AND INSTALL" SHALL INCLUDE ALL LABOR, MATERIALS, DEVICES, WIRING, RIGGING, SUPPORTS, DELIVERY ETC. THAT WOULD BE NECESSARY TO PROVIDE FOR A FULLY FUNCTIONAL DEVICE AS INDICATED.
- 15. ALL MATERIAL SHALL BE NEW. REBUILT OR REFURBISHED MATERIALS SHALL BE REJECTED.
- 16. ALL MATERIALS, TOOLS, TRUCKS ETC. SHALL BE STORED IN AREAS DESIGNATED BY THE OWNER. CONTACTOR SHALL BE RESPONSIBLE FOR PRODUCT STORAGE CONDITIONS AND SECURITY.
- 17. ALL WORK SHALL BE PERFORMED WITH MINIMAL INTERRUPTION TO THE OWNER. ANY WORK REQUIRING UTILITY SHUTDOWN, ROAD EXCAVATION, OR OTHER DISRUPTION SHALL NOT BE DONE WITHOUT OWNER APPROVAL. CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS IN ADVANCE OF ANY SUCH INTERRUPTION. ANY WORK REQUIRING A SHUTDOWN OR INTERRUPTION LASTING MORE THAN 8 HOURS SHALL BE SCHEDULED WITH THE FACILITY A MINIMUM OF 2 WEEKS PRIOR.
- 18. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT, MATERIALS, SHOP DRAWINGS, AND PERFORMANCE INFORMATION ON ALL PRODUCTS FOR OWNER APPROVAL. ALL PRODUCTS INSTALLED WITHOUT APPROVAL SHALL BE AT RISK. OWNER APPROVAL SHALL BE LIMITED TO THAT THE PRODUCT COMPLIES WITH THE SPECIFICATIONS OR EXPECTED PERFORMANCE; ACTUAL PERFORMANCE TO THE LIMITS DEFINED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 19. CONTRACTOR SHALL PROVIDE FOR INSTRUCTION TO THE OWNER FOR ALL EQUIPMENT SUPPLIED AND INSTALLED UNDER THIS CONTRACT INCLUDING ANY WORK PERFORMED BY SUBCONTRACTORS.
- 20. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM AND COORDINATE JOBSITE DIMENSIONS THAT AFFECT THE ERECTION OR OPERATION OF SYSTEMS, AS INTENDED BY THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ENSURE INSTALLED EQUIPMENT MAINTAINS ADEQUATE CLEARANCES FOR OPERATIONAL ACCESS AND SERVICE, AND HE SHALL MAINTAIN ANY CLEARANCES REQUIRED BY ALL APPLICABLE CODES.
- 21. THE CONTRACTOR SHALL MAKE ALL REQUIRED ARRANGEMENTS FOR DELIVERY OF EQUIPMENT AND/OR MATERIALS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE RULES AND REGULATIONS GOVERNING WORK ON THE PREMISES.
- 22. THE CONTRACTOR, HIS SUBCONTRACTORS, AND ANY OTHER CONTRACTOR INVOLVED IN THIS PROJECT SHALL TAKE NOT THAT ANY COST CAUSED BY DEFECTIVE OR ILL-TIMED WORK, AS A RESULT OF, BUT NOT LIMITED TO INFERIOR WORKMANSHIP OR MATERIALS, IMPROPER SCHEDULING OR DELINQUENT ORDERING SHALL BE BORNE BY THE PARTY RESPONSIBLE THEREFORE
- 23. ALL CONTRACTORS SHALL BE RESPONSIBLE TO REMOVE ALL RUBBISH AND WASTE MATERIALS. AT THE END OF EACH WORK DAY THE PROJECT SITE SHALL BE LEFT IN A SAFE AND BROOM CLEANED CONDITION.
- 24. CONTACTORS SHALL SUBMIT ALL FABRICATION SHOP DRAWINGS AND FIXTURE CUTS TO OWNER FOR APPROVAL. ALL SHOP DRAWINGS AND CUTS SIGNED "APPROVED" SHALL SUPERSEDE ORIGINATING DRAWINGS IN DESIGN APPEARANCE ONLY. CONTRACTORS SHALL ASSUME RESPONSIBILITY FOR ERRORS IN THEIR DRAWINGS. ALL STEEL REMOVALS OR MODIFICATIONS REQUIRED BY THE WORK SHALL BE REVIEWED AND CERTIFIED BY A NYS PROFESSIONAL ENGINEER.
- 25. CONTRACTORS SHALL PROPERLY PROTECT THE BUILDING AND ANY ADJOINING PROPERTY OR WORK AND ANY DAMAGE TO THE SAME CAUSED BY HIS WORK OR WORKMEN MUST BE MADE GOOD WITHOUT DELATY. PATCHING AND REPLACING OF DAMAGED WORK SHALL BE DONE BY THE CONTRACTOR WHO IS RESPONSIBLE FOR THE DAMAGE.
- 26. DURING THE ENTIRE PERIOD OF DEMOLITION AND CONSTRUCTION, ALL EXISTING EXITS, EXIT LIGHTING, FIRE PROTECTIVE DEVICES AND ALARMS SHALL BE CONTINUOUSLY MAINTAINED.
- 27. WHERE OPENINGS OCCUR IN EXISTING FIRE RATED AREAS OR PARTITIONS DUE TO EXISTING OR NEW CONDUIT RUNS, DUCTWORK, CABLES PIPING, ETC., AND/OR WHERE EXISTING FIREPROOFING HAS BEEN REMOVED AS A RESULT OF EXISTING OR NEW CONSTRUCTION WORK THE CONTACTOR SHALL CLOSE AND/OR PATCH AS REQUIRED ALL OPENINGS TO MATCH IMMEDIATE ADJACENT AREAS IN MATERIAL. FINISH AND
- 28. ONCE WORK HAS STARTED THE CONTRACTOR SHALL REMAIN ONSITE FOR THE DURATION UNTIL PROJECT COMPLETION. ANY ABSENCE FROM THE JOBSITE WITHOUT OWNER KNOWLEDGE SHALL BE CAUSE FOR DELAY AND THE CONTRACTOR SUBJECTED TO POSSIBLE BACK
- 29. ALL ACCEPTANCE TESTING SHALL BE WITNESSED BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
- 30. THE CONTRACTOR SHALL MAINTAIN THE WORK AREA IN A STATE FREE FROM HAZARDS AND A NEAT AND CLEAN CONDITION AT THE END OF EACH WORKDAY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS, FOLLOW SAFE WORKING PRACTICES, AND MAINTAIN THE SITE AND ADJACENT AREAS SAFE FOR WORKERS AND FACILITY EMPLOYEES. JOB BOX SAFETY MEETING SHALL BE HELD EVERY WEEK.
- 31. ALL MATERIALS, TOOLS, TRUCKS ETC. SHALL BE STORED IN AREAS DESIGNATED BY THE OWNER. CONTACTOR SHALL BE RESPONSIBLE FOR PRODUCT STORAGE CONDITIONS AND SECURITY. THE OWNER SHALL NOT BE RESPONSIBLE FOR ANY OF THE CONTRACTOR'S SHIPPING, DELIVERY OR OFFLOADING.
- 32. ALL WORK BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF NO LESS THAN ONE YEAR FROM THE DATE OF ACCEPTANCE THIS GUARANTEE SHALL INCLUDE ALL WORK PERFORMED BY ANY AND ALL OF HIS SUBCONTRACTORS. THE PRIME CONTRACTOR SHALL MAKE GOOD ON ALL SUBCONTRACTOR WORK DURING THIS PERIOD.
- 33. PREPARE AND FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
- 34. MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER FOR ALL EQUIPMENT AND SYSTEMS REQUIRING PREVENTATIVE MAINTENANCE. REGULAR MAINTENANCE ACTIONS SHALL BE CLEARLY STATED AND INCORPORATED ON A READLY ACCESABLE LABEL. THE LABEL SHALL INCLUDE THE TITLE FOR THE OPERATION AND MAINTENANCE AND MAINTENANCE MANUAL FOR THAT PARTICULAR MODEL.
- 35. THREE BOUND MANUALS SHALL BE SUBMITTED UPON COMPLETION WITH MAINTENANCE INSTRUCTIONS, PARTS LIST AND MANUFACTURERS WARRANTIES. WARRANTEE FROM THE INSTALLING CONTRACTOR SHALL ALSO BE PROVIDED AT THIS TIME. COPIES OF THE AS-BUILT AND TEST RESULTS SHALL BE SUBMITTED AT THIS TIME.
- 36. IT IS A VIOLATION OF STATE LAW TO FOR ANY PERSON OR PERSONS TO ALTER THESE PLANS. ANY MODIFICATIONS SHALL BE UNDER THE DIRECTION OF A LICENSED ENGINEER.

WORK DESCRIPTION

- 1. DEMOLITION OF EXISTING CONSTANT VOLUME AIR DISTRIBUTION SYSTEM INCLUDING DUCTWORK, AIR DEVICES AND PERIMETER FAN COIL UNITS.
- PROVISION OF NEW VARIABLE AIR VOLUME DISTRIBUTION SYSTEM INCLUDING NEW VAV BOXES WITH INTERNAL HOT WATER HEATING COILS.
- PROVISION OF NEW ROOFTOP EXHAUST FAN TO SERVE NEW TOILET.

SPECIAL INSPECTION NOTES:

PROVIDE SPECIAL INSPECTIONS FOR THE FOLLOWING

- MECHANICAL SYSTEMS BC 1704.16
- MECHANICAL DEMOLITION BC 1704.20.4 HEATING SYSTEMS BC 1704.25
- VENTILATION AND AIR DISTRIBUTION SYSTEM (IB2)
- SHUTOFF DAMPERS (IIB2) HVAC-R AND SERVICE WATER HEATING SYSTEM CONTROLS (IB3), (IIB3)
- HVAC-R AND SERVICE WATER HEATING SYSTEM CONTROLS (IB4), (IIB4) HVAC-R AND SERVICE WATER PIPING DESIGN AND INSULATION (IB5), (IIB5)

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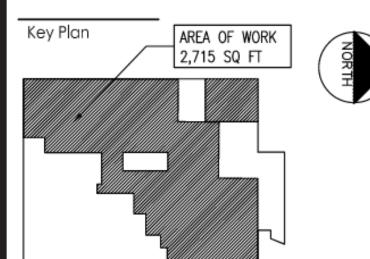
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Dwn. Chkd. Dsgn. YY.MM.DD

Permit-Seal

Client/Proiect

RICHMOND UNIVERSITY MEDICAL CENTER TRANSFORMATIONAL GRANT

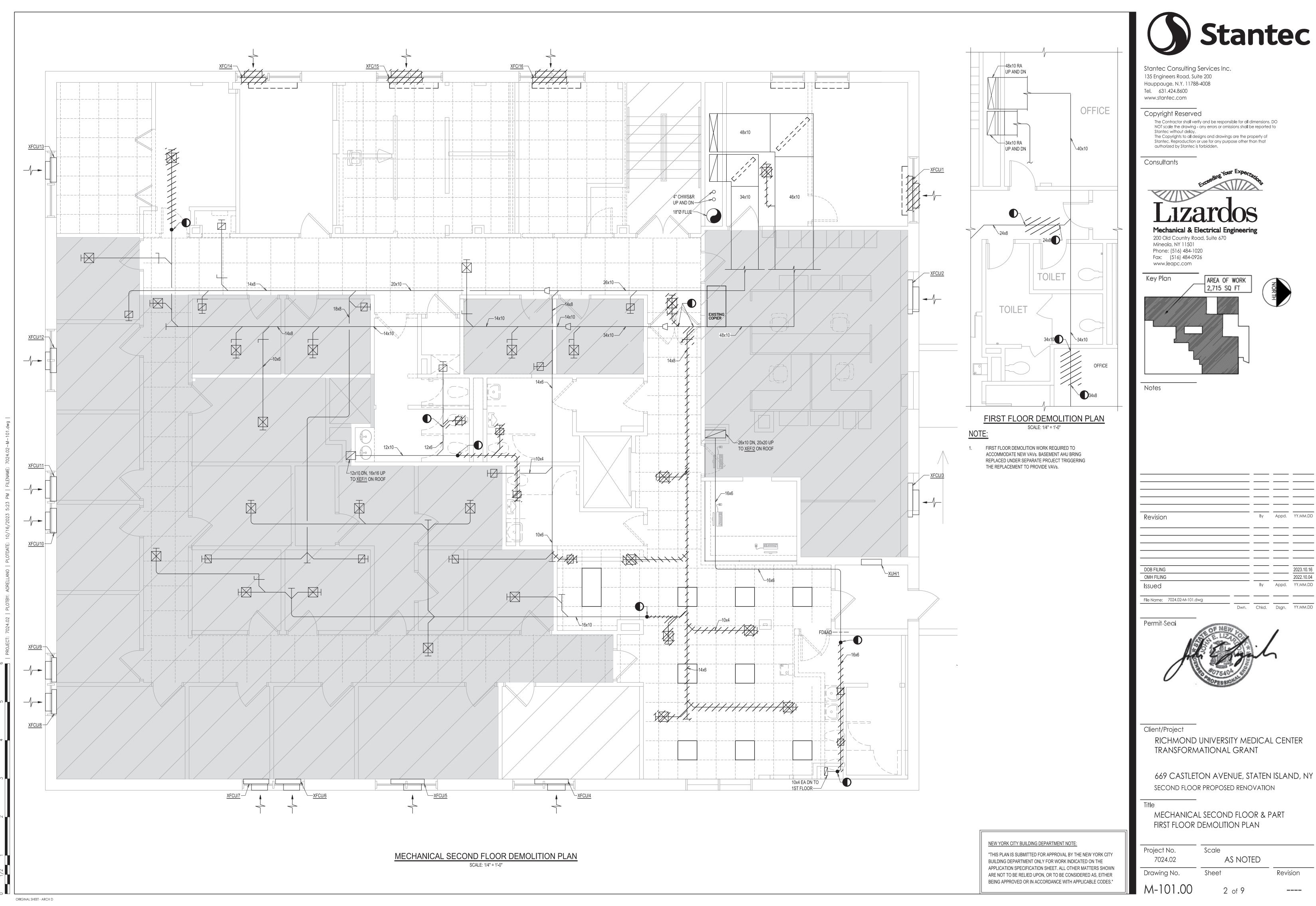
669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

Project No.

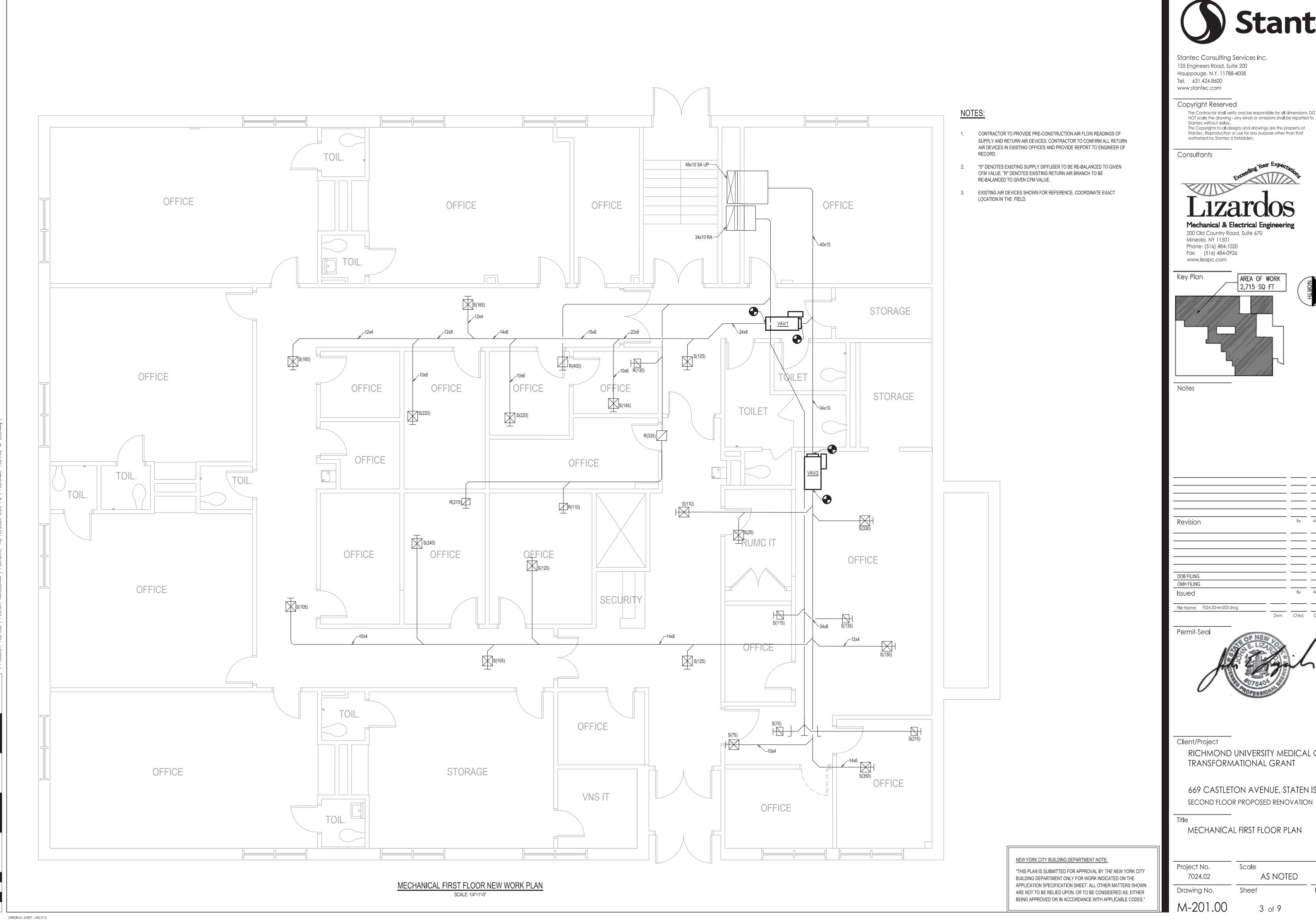
MECHANICAL LEGENDS, NOTES, AND ABBREVIATIONS

Scale

7024.02 AS NOTED Drawina No.



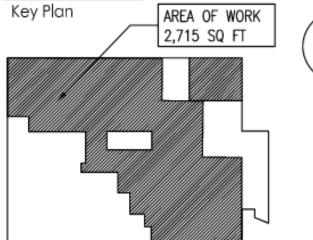
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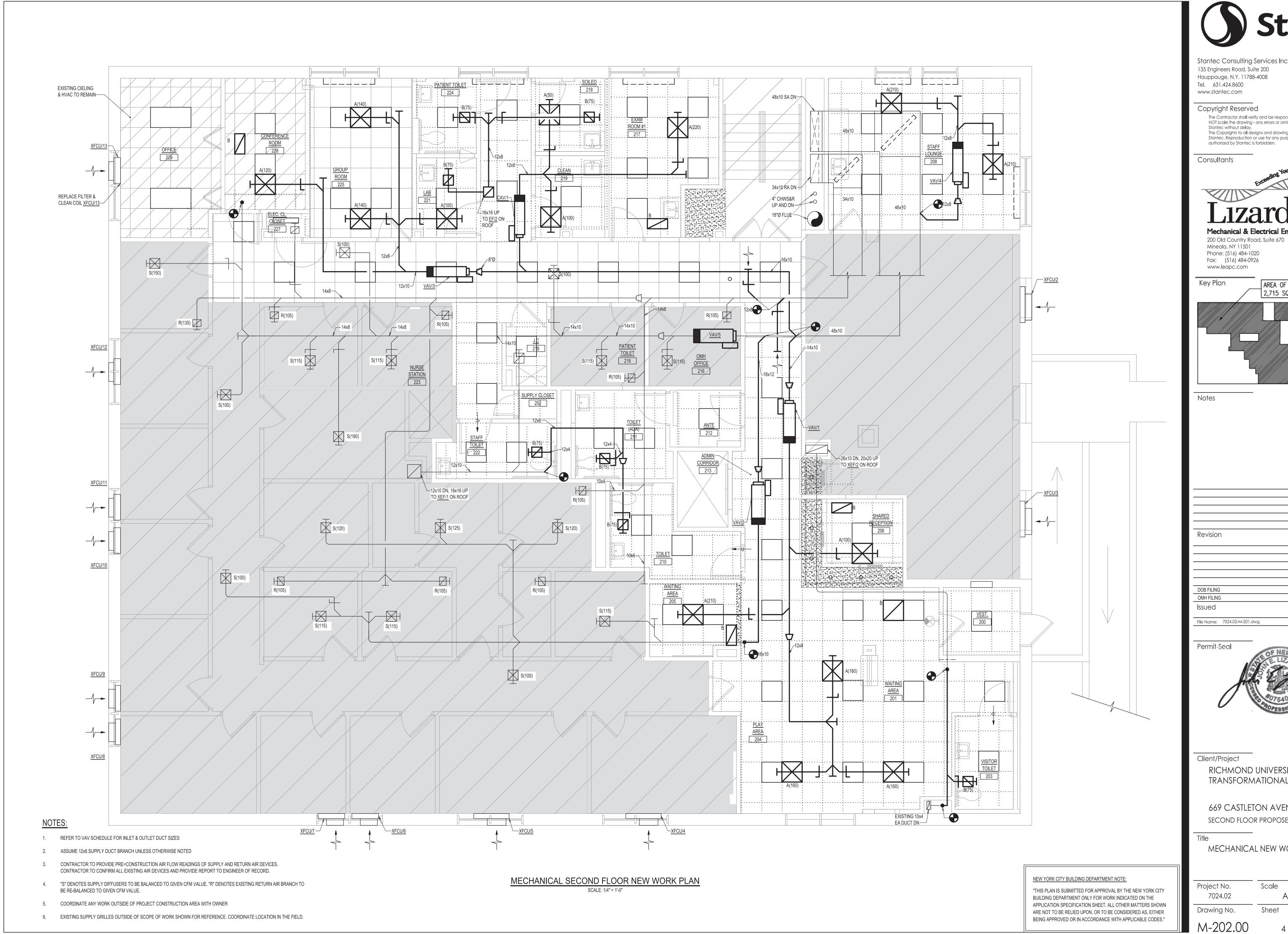
Revision		Ву	Appd.	YY.MM.DD
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DOB FILING				2023.10.16
OMH FILING				2022.10.04
Issued		Ву	Appd.	YY.MM.DD
File Name: 7024.02-M-203.dwg				
	Dwn.	Chkd.	Dsgn.	YY.MM.DD



RICHMOND UNIVERSITY MEDICAL CENTER

669 CASTLETON AVENUE, STATEN ISLAND, NY

Revision





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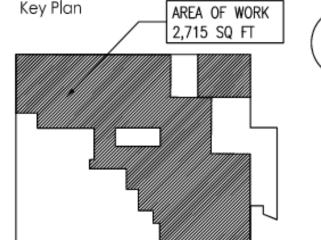
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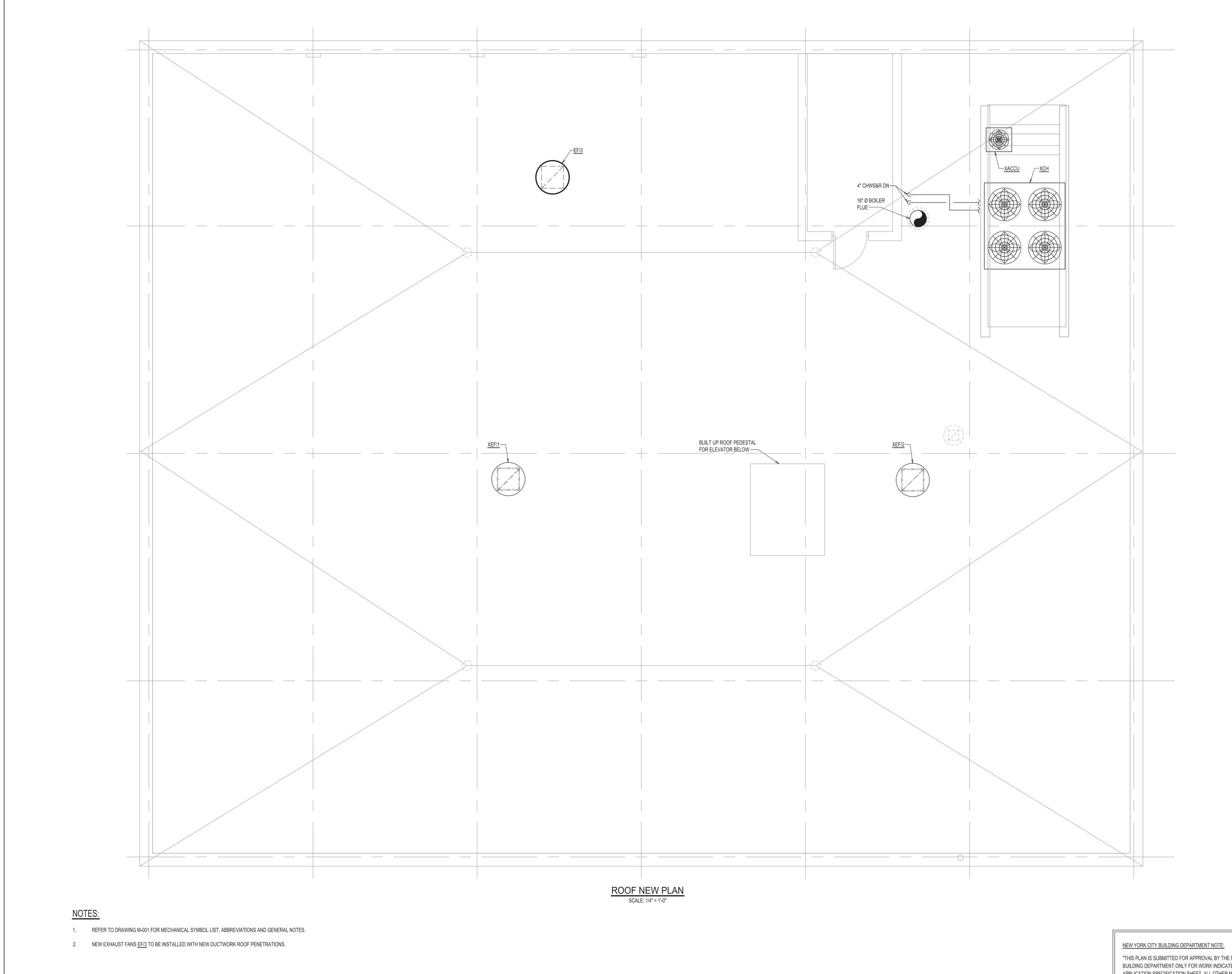


RICHMOND UNIVERSITY MEDICAL CENTER TRANSFORMATIONAL GRANT

669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

MECHANICAL NEW WORK PLAN

Project No.	Scale
7024.02	as noted
Drawing No.	Sheet
14 000 00	





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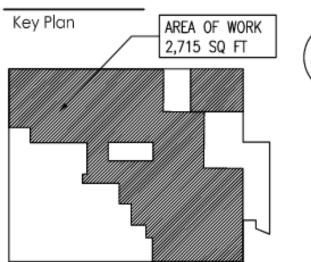
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Mechanical & Electrical Engineering

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2022.10.04

Permit-Seal



Client/Project

RICHMOND UNIVERSITY MEDICAL CENTER TRANSFORMATIONAL GRANT

669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

MECHANICAL ROOF PLAN

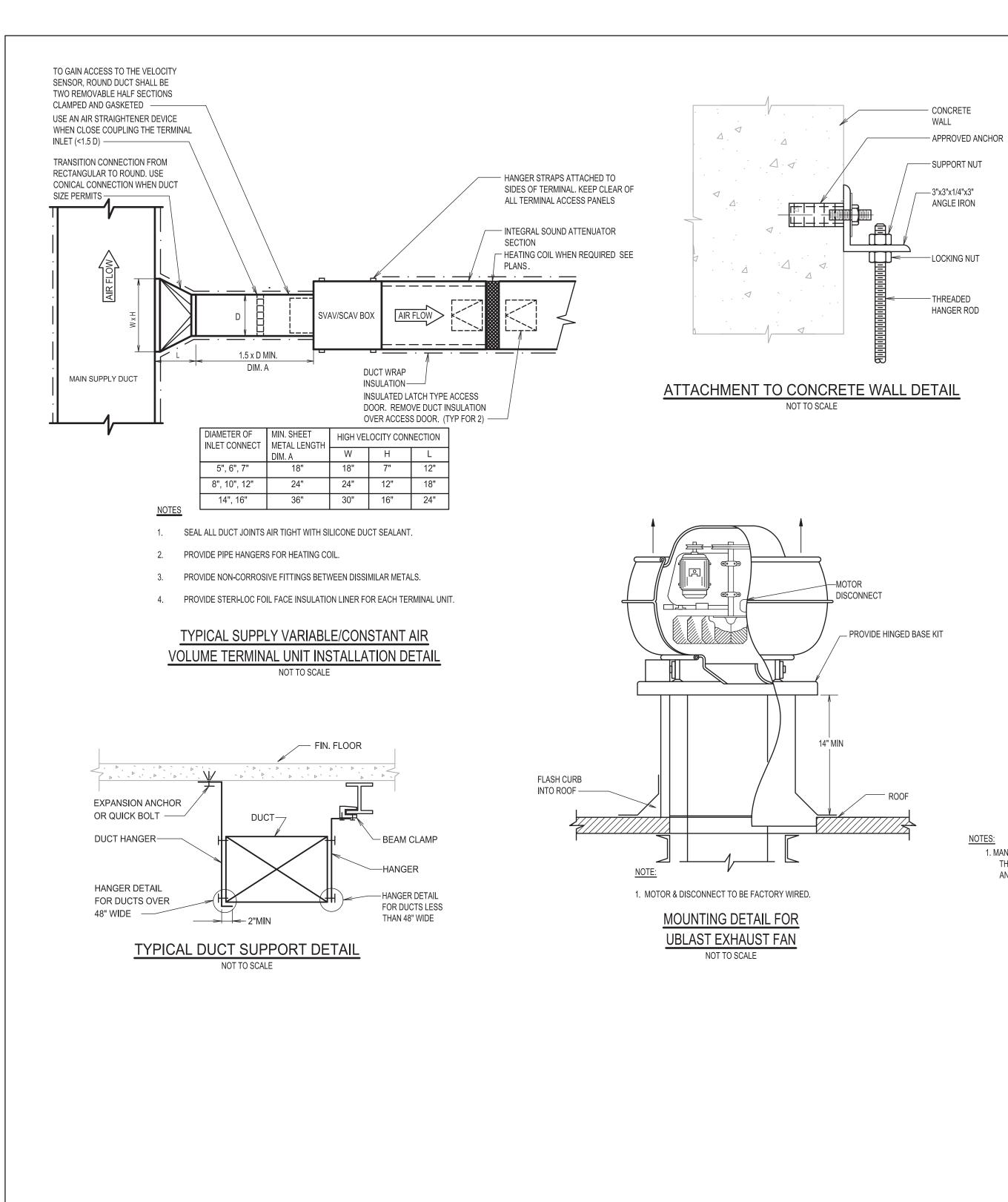
Project No. 7024.02	Scale AS NOTED	
Drawing No.	Sheet	Revision
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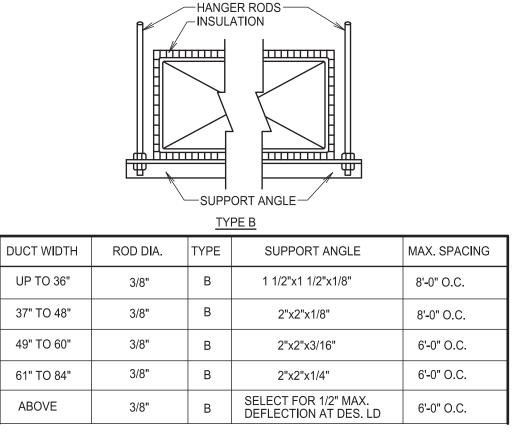
ORIGINAL SHEET - ARCH D

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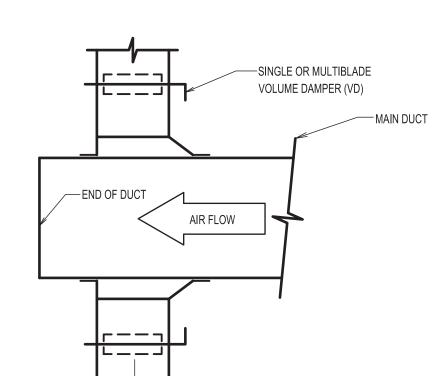
APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON, OR TO BE CONSIDERED AS, EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES."

> M-203.005 of 9

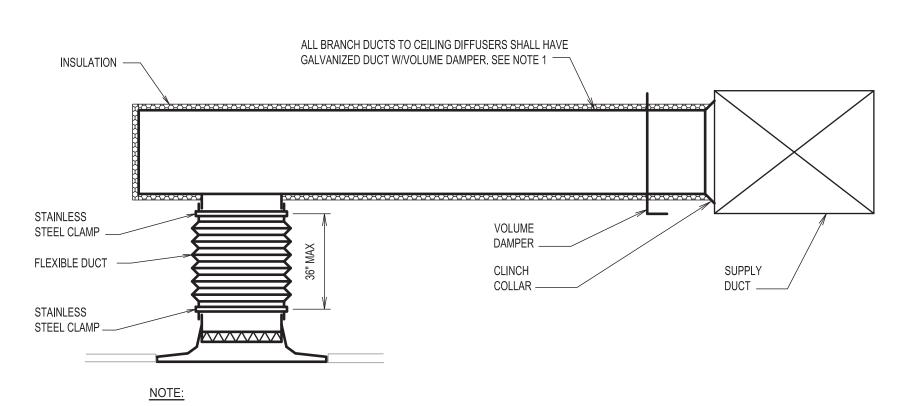




DUCTWORK HANGER DETAIL NOT TO SCALE

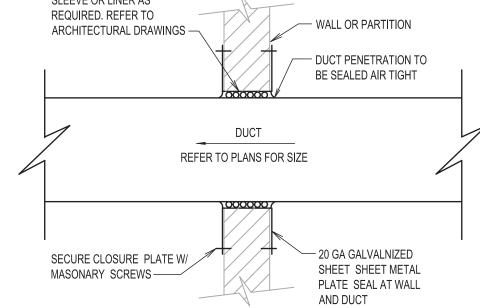


BRANCH TAKE-OFF DETAIL 1. MANUAL VOLUME DAMPERS SHALL BE OPPOSED BLADE TYPE ON DUCTS 12" DEEP OR GREATER AND USED WHEN THE BRANCH TAKE-OFF IS AT THE END OF MAIN PLENUM OR WHEN BRANCH TAKE-OFFS ARE BACK TO BACK AND A MAIN DUCT WIDTH OF 2X BRANCH CANNOT BE ACCOMMODATED.



1. PROVIDE RECTANGULAR TO ROUND TRANSITION WHERE INDICATED ON THE DRAWINGS. TYPICAL BRANCH DUCT TO DIFFUSER CONNECTIONS

NOT TO SCALE SLEEVE OR LINER AS



DUCT PENETRATION THRU NON-RATED WALL DETAIL NOT TO SCALE



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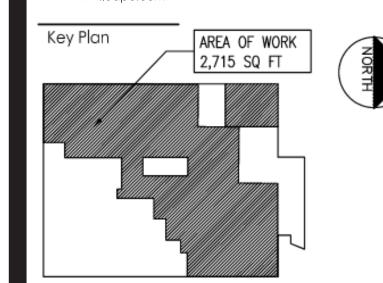
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Appd. YY.MM.DD Revision OMH FILING 2022.10.04 By Appd. YY.MM.DD Issued File Name: 7024.02-M-301.dwg Dwn. Chkd. Dsgn. YY.MM.DD

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RICHMOND UNIVERSITY MEDICAL CENTER TRANSFORMATIONAL GRANT

669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

MECHANICAL DETAILS

Project No. Scale **AS NOTED** Drawing No. Revision

	SUPPLY VARIABLE AIR VOLUME BOX SCHEDULE																				
TAG	LOCATION	SERVICE	TERMINAL TYPE	MAX CFM	MIN		SIZE	SOUND POWER DATA (NC)		ELECTRIC HEATING COIL						TERMINAL DIMENSIONS, LxWxH, IN.	MANUFACTURER	MODEL	REMARKS		
IAG	EGOATION			IVIAA CEWI	CFM	SIZE, IN	OUTLET DUCT SIZE, IN.	DISCH.	RAD.	CFM	EAT	LAT	KW	AMP	MCA	MOP	STEPS	TERMINAL DIMENSIONS, EXVIAI, IN.	WINTERNATIONALIN	WOOLE	REMARKO
VAV/1-1	1ST FLOOR	EXISTING SPACE	SINGLE DUCT	1040	320	12	14.75x13.25	17	16	NOT USED					39-1/2x16x15	ANEMOSTAT	EZTE-DDC	1 THRU 5			
VAV/1-2	1ST FLOOR	EXISTING SPACE	SINGLE DUCT	1825	550	14	18-3/4x16-1/4	19	19						39-1/2x20x17-1/2	ANEMOSTAT	EZTE-DDC	1 THRU 5			
VAV/2-1	2ND FLOOR	WAITING AREA / SHARED RECEPTION / WAITING AREA-(205)	SINGLE DUCT	790	240	10	12-3/4x11-1/4	20	16	240	55	90	2.7	7.5	9.5	15	SCR	39-1/2x14x12-1/2	ANEMOSTAT	EZTE-DDC	1 THRU 5
VAV/2-2	2ND FLOOR	EXISTING SPACE	SINGLE DUCT	910	280	12	14-3/4x13-1/4	16	15	280	55	90	3.18	8.8	11	15	SCR	39-1/2x16x15	ANEMOSTAT	EZTE-DDC	1 THRU 5
VAV/2-3	2ND FLOOR	CONFERENCE ROOM / LAB / GROUP ROOM/	SINGLE DUCT	500	150	8	10-3/4x8-3/4	19	15	150	55	90	1.71	4.8	5.9	15	SCR	39-1/2x12x10	ANEMOSTAT	EZTE-DDC	1 THRU 5
VAV2-4	2ND FLOOR	STAFF LOUNGE	SINGLE DUCT	420	130	8	10-3/4x8-3/4	19	15	130	55	90	1.5	4	5	15	SCR	39-1/2x12x10	ANEMOSTAT	EZTE-DDC	1 THRU 5
VAV/2-5	2ND FLOOR	EXISTING SPACE	SINGLE DUCT	900	270	12	14-3/4x13-1/4	16	15	270	55	90	3	8.5	10.5	15	SCR	39-1/2x16x15	ANEMOSTAT	EZTE-DDC	1 THRU 5
CAV/1	2ND FLOOR	CLEAN / SOILED / EXAM ROOM #1	SINGLE DUCT	370	120	8	10-3/4x8-3/4	18	15	120	55	90	1.36	3.8	4.7	15	SCR	39-1/2x12x10	ANEMOSTAT	EZTE-DDC	1 THRU 5

REMARKS:

1. SELECTIONS BASED ON ANEMOSTAT AS MANUFACTURER. APPROVED ALTERNATE: NAILOR, TITUS

2. ALL PERFORMANCE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ASHRAE 130-2008 AND AHRI 880-2008.

6. BOXES SHALL BE FURNISHED WITH INLET SENSOR, 208V/24V CONTROL TRANSFORMER, AND CONTROL ENCLOSURE

3. PROVIDE SHOP DRAWINGS

4. FACTORY FURNISHED AND INSTALL MULTIPOINT CROSS FLOW VELOCITY SENSOR.

5. PROVIDE INTEGRAL SOUND ATTENUATOR, 24 CONTROL TRANSFORMER AND BOTTOM ACCESS DOOR.

EXHAUST FAN SCHEDULE													
TAG	SERVICE	TYPE	AIR FLOW, CFM	ESP, IN. WG	FAN RPM	DRIVE TYPE	HP V/PH/HZ FLA		MANUFACTURER	MODEL NO.	WEIGHT, LBS	REMARKS	
EF/1	LAB,SOILED HOLDING,PATIENT TOILET (224)	UPBLAST	300	0.3	-	DIRECT	1/4	208/1/60	-	PENNBARRY	FX13QGP	-	

REMARKS:

1. PROVIDE SHOP DRAWINGS.

2.FURNISHED WITH MANUFACTURER'S ROOF CURB, MODEL GPI

3. MOTOR WITH DISCONNECT SWITCH

4. FURNISHED WITH HORIZONTAL EXHAUST DAMPER



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AREA OF WORK 2,715 SQ FT

Notes

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Client/Project

RICHMOND UNIVERSITY MEDICAL CENTER TRANSFORMATIONAL GRANT

669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

____ Title

MECHANICAL SCHEDULES

Project No. Scale
7024.02 AS NOTED

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A. WORK INCLUDED

- 1. WORK UNDER THIS MECHANICAL CONTRACT SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE MECHANICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - a. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS TO THE OWNER.
 - b. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
 - PROTECT, TEST, BALANCE, CLEAN, ADJUST AND GUARANTEE ALL OF THE WORK OF THIS CONTRACT TO SAFELY, PROPERLY AND CONTINUOUSLY OPERATE.
 - d. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
 - e. PROVIDE IDENTIFICATION LABELS, TAGS, CHARTS AND DIAGRAMS.
 - f. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT.
 - g. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS. AND BASES FOR PIPING. DUCTWORK AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT.
 - h. PROVIDE VIBRATION ISOLATORS AND FLEXIBLE CONNECTORS FOR EQUIPMENT PIPING AND DUCTWORK PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT.
 - i. PROVIDE INSULATION FOR EQUIPMENT, PIPING, DUCTWORK AND ACCESSORIES PROVIDED OR INSTALLED
 - UNDER THE WORK OF THIS CONTRACT. j. PROVIDE COUNTERFLASHING, SLEEVES AND SEALS FOR ROOF, FLOOR AND WALL PENETRATIONS.

 - FURNISH WALL AND CEILING ACCESS DOORS FOR INSTALLATION BY OTHERS.
 - m. SMOKE DETECTORS
 - 1) INSTALL DUCT MOUNTED SMOKE DETECTORS FURNISHED UNDER ELECTRICAL CONTRACT
 - a) PROVIDE ACCESS DOOR.

k. PROVIDE METERS, GAUGES AND INDICATORS.

- 2) FURNISH AND INSTALL A SELF-CONTAINED DUCT DETECTOR WIRED TO SHUT DOWN PACKAGED ROOFTOP AIR CONDITIONING UNIT RTU/1, RTU/2, AND RTU/3 AND PROVIDE LOCAL ALARM BELL. SIMPLEX SERIES 2098. PROVIDE 120 VOLT POWER ADAPTER, SAMPLING TUBE, BAFFLE AND HEAD.
- a) SUPPLY ACCESS DOOR.
- n. PROVIDE ALL EQUIPMENT COMPONENTS, APPURTENANCES, PIPING, DUCTWORK, CONTROLS AND SPECIALTIES REQUIRED FOR THE FOLLOWING SYSTEMS:
- 1) EXHAUST FAN
- 2) VAIRABLE AIR VOLUME BOXES
- o. PROVIDE AUTOMATIC TEMPERATURE CONTROLS, INCLUDING AUTOMATIC DAMPERS AND VALVES, PANEL, CONTROLLERS, SENSORS AND ASSOCIATED COMPONENTS
- p. POWER OR CONTROL WIRING LESS THAN 120 VOLTS.
- B. WORK NOT INCLUDED
- 1. ALL POWER WIRING, CONTROL WIRING AND ELECTRICAL CONNECTIONS TO EQUIPMENT (UNDER ELECTRICAL
- 2. ALL MOTOR STARTERS, DISCONNECT SWITCHES, PUSHBUTTONS AND SELECTOR SWITCHES FOR CONTROL OF EQUIPMENT FURNISHED AND INSTALLED EXCEPT WHERE STARTERS SWITCHES AND PUSHBUTTONS ARE PROVIDED INTEGRALLY WITH THE EQUIPMENT (UNDER ELECTRICAL CONTRACT).
- ELECTRICAL DISCONNECTING OF EQUIPMENT TO BE REMOVED (UNDER ELECTRICAL CONTRACT).
- GENERAL REQUIREMENTS
 - GENERAL
 - AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THEIR PROPOSAL, EACH BIDDER SHALL VISIT THE SITE TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA WILL BE ALLOWED IF THE CONTRACTOR FAILS TO EXAMINE THE SITE, OR HAVING EXAMINED THE SITE, THE CONTRACTOR FAILS TO NOTIFY THE OWNER IN WRITING OF ANY DISCREPANCIES THAT HE MAY HAVE NOTED BETWEEN THE EXISTING CONDITIONS, AND DRAWINGS AND SPECIFICATIONS.
 - b. THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS OF HIS OWN OR OTHERS AT THE SITE, AND SHALL BE RESPONSIBLE FOR CORRECTNESS OF SAME AS RELATED TO HIS WORK.
 - CONTRACTOR SHALL COOPERATE WITH ALL OTHER CONTRACTORS WHO FURNISH AND INSTALL WORK IN CONNECTION WITH THE WORK OF THIS PROJECT. GIVE THEM COMPLETE DATA AS TO HIS REQUIREMENTS, AND NOTIFY OWNER OF ANY CONDITION THAT WILL INTERFERE WITH PROPER COMPLETION OF THIS WORK. COOPERATE IN THE SCHEDULING OF THIS WORK WITH THE WORK OF OTHER CONTRACTS SO AS NOT TO

 - a. ALL MOTORS SHALL BE IEEE PREMIUM EFFICIENCY AND SHALL MEET THE ENERGY CONSERVATION CONSTRUCTION CODE. MOTORS SELECTED AT THE SPECIFIED OPERATING VOLTAGE, RPM, AND EFFICIENCY AS SPECIFIED HEREIN IN THE SCHEDULE ON THE CONTRACT DRAWINGS.
 - b. ALL INVERTER DUTY MOTORS, IN ADDITION TO THE ABOVE, SHALL BE PROVIDED WITH AN AEGIS BEARING PROTECTION RING TO PREVENT ELECTRICAL DISCHARGE MACHINING (EDM) DAMAGE TO THE MOTOR BEARINGS. BEARING SHALL HAVE L10 80,000 RATING.
 - 3. CODES, REGULATIONS AND STANDARDS
 - a. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING CODES:
 - 1) FEDERAL, STATE AND LOCAL CODES HAVING JURISDICTION.
 - NFPA. NEC.
 - ALL WORK TO BE APPROVED BY IRI AND OWNER.

 - a. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF ALL REQUIRED PERMITS, FEES, INSPECTIONS, TESTS AND CERTIFICATES OF APPROVAL
 - COORDINATION AND SUPERVISION
 - a. THE WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, THE WORK SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDING OR EQUIPMENT SHALL BE PATCHED AND/OR REPAIRED IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER.
 - SECURITY
 - a. OBEY ALL SECURITY REGULATIONS ESTABLISHED BY THE OWNER, AND ABIDE BY ALL BUILDING RULES AND REGULATIONS. OWNER'S APPROVAL SHALL BE OBTAINED BEFORE ENTERING SECURED AREAS OF THE
 - CLEANING
 - MAINTAIN ALL AREAS, UNDER CONTRACTOR'S CONTROL, FREE OF EXTRANEOUS DEBRIS. INITIATE AND MAINTAIN A SPECIFIC PROGRAM TO PREVENT ACCUMULATION OF DEBRIS AT CONSTRUCTION SITE, STORAGE AND PARKING AREAS.
 - PROVIDE CONTAINERS FOR DEPOSIT OF DEBRIS AS SPECIFIED HEREIN.
 - SCHEDULE REGULAR COLLECTION AND DISPOSAL OF DEBRIS DAILY AND HEREIN
- D. SPECIAL REQUIREMENTS
- IDENTIFICATION
- a. NAMEPLATES

PIPE IDENTIFICATION

- 1) IDENTIFY EQUIPMENT WITH LAMINATED PLASTIC NAMEPLATES. SETON NAMEPLATE CO. STYLE 2060 OR
- 2) MINIMUM NAMEPLATE LENGTH SHALL BE THREE INCHES WITH 3/16 INCH LETTERING
- SECURE NAMEPLATES WITH SCREWS.

c. VALVE TAGS AND CHARTS

NAMEPLATE SETMARK OR EQUAL

- 1) IDENTIFY EACH MANUAL, AUTOMATIC AND SELF-CONTAINED VALVE WITH A PERMANENTLY ATTACHED TAG BEARING DISTINGUISHING NUMBERS AND LETTERS CORRESPONDING TO THE VALVE CHART.
- 2) TAGS SHALL BE AS MANUFACTURED BY SETON NAMEPLATE CO. STYLE 250-BL, 11/2 INCH DIAMETER BRASS
- WITH DEPRESSED BLACK-FILLED ½ INCH HIGH NUMBERS AND ¼ INCH HIGH LETTERS.
- d. PROVIDE TWO COPIES OF VALVE CHARTS. CHARTS SHALL INCLUDE SCHEMATIC DRAWINGS OF PIPING LAYOUTS, VALVE IDENTIFICATION NUMBERS, LOCATION AND PURPOSE.
 - 1) MOUNT FIRST CHART IN AN ALUMINUM FRAME WITH A GLASS FRONT, SETON NAMEPLATE CO. STYLE A 11G. SECURE ON THE PLANT WALL WHERE DIRECTED.
- 2) MOUNT THE SECOND CHART IN A HEAVY GAUGE CLEAR VINYL PLASTIC ENVELOPE IN A ½ INCH BLACK OPAQUE VINYL FRAME WITH METAL EYELETS ON FOUR SIDES, AND WITH EIGHT INCH LENGTH OF NICKEL-PLATED BEAD CHAIN AS MANUFACTURED BY SETON NAMEPLATE STYLE P. THIS CHART IS TO BE PRESENTED TO THE OWNER.
- CUTTING AND PATCHING
 - ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED FOR THE WORK SHALL BE PROVIDED BY THE CONTRACTOR.
 - b. CUTTING OF BEAMS, FLOORS OR WALLS FOR PIPING OR CONDUIT SHALL BE DONE AS APPROVED BY THE OWNER IN A CAREFUL MANNER, WITH CORE DRILLS, SO AS NOT TO SERIOUSLY IMPAIR THE APPEARANCE OR STRENGTH OF THE STRUCTURE.
 - PROVIDE ALL DRILLING AND PATCHING FOR EXPANSION BOLTS, HANGERS AND OTHER SUPPORTS FOR PROPER AND SAFE INSTALLATION OF THE WORK.
- TESTING
 - a. TEST EQUIPMENT AND SYSTEMS FOLLOWING THE PROCEDURES SPECIFIED HEREIN, OR AS DIRECTED BY THE
- 4. SCAFFOLDING, RIGGING AND HOISTING
 - a. PROVIDE, ERECT, MAINTAIN AND BE RESPONSIBLE FOR THE SAFE AND LEGAL USE OF ALL SCAFFOLDING, HOISTING AND RIGGING. ALSO, PROVIDE ADDITIONAL BRACING AND SERVICES REQUIRED FOR THE DELIVERY OR ERECTION OF THE EQUIPMENT AND CONSTRUCTION MATERIALS PROVIDED OR INSTALLED UNDER THIS
- SUBMITTALS
 - - 1) SUBMIT ONE PDF COPY AND THREE PRINTS OF SYSTEM FABRICATION DRAWINGS AND AUTOMATIC CONTROL SYSTEM SCHEMATIC DIAGRAMS.
 - 2) SUBMIT SIX COPIES OF MANUFACTURER'S SUBMITTAL SHEETS OR CATALOG CUTS.
 - 3) SUBMIT SHOP DRAWINGS OF THE FOLLOWING:
 - a) SYSTEM FABRICATION/INSTALLATION DRAWINGS.
 - b) AUTOMATIC CONTROL SYSTEM, SCHEMATIC DIAGRAMS, WIRING DIAGRAMS AND CONTROL SEQUENCES.
 - c) ALL EQUIPMENT SPECIFIED HEREIN.

 - VAVs AIR DEVICES
 - INSULATION
 - DUCTWORK MATERIAL
 - d) STRUCTURAL WORK.
- b. AS-BUILT DRAWINGS
- 1) PROVIDE OWNER WITH A COMPLETE SET OF AS-BUILT DRAWINGS COVERING EVERY ASPECT OF THE WORK. THE COMPLETE SET SHALL INCLUDE A SET OF MYLARS OR QUALITY VELLUMS CAPABLE OF PRODUCING QUALITY PRINTS, AND TWO FULL SETS OF ALL AS-BUILT DRAWINGS.
- c. SERVICE MANUALS
 - 1) UPON COMPLETION OF THE WORK, FULLY INSTRUCT THE OWNER AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
- PROVIDE THREE COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.
- PIPING SYSTEMS, ACCESSORIES, SUPPORTS, SLEEVES
 - INSTALL ALL EQUIPMENT, PLUMBING FIXTURES AND PIPING SYSTEMS USING THE BEST STANDARD PRACTICES OF THE TRADE AND AS REQUIRED TO MAKE THE CONNECTED SYSTEM COMPONENTS COMPLETE AND READY FOR OPERATION. UNLESS OTHERWISE NOTED, SPECIFIED OR INDICATED, ALL PIPING AND EQUIPMENT SHALL BE CONNECTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED DETAILS AND AS APPROVED BY THE
- PROMPTLY INSTALL PIPING REQUIRED TO BE CONCEALED IN FLOOR, WALL OR CEILING CONSTRUCTION TO NOT CAUSE DELAY TO OTHER WORK, AND TO ALLOW AMPLE TIME FOR NECESSARY TASKS AND APPROVALS.
- 3. MODIFY PIPING ARRANGEMENTS AS NECESSARY TO SUIT CONDITIONS IN THE BUILDING, AND TO PERMIT ACCESS
- 4. ALL EXPOSED POLISHED, FINISHED OR ENAMELED CONNECTIONS SHALL BE MADE WITH SPECIAL CARE. TOOL MARKS OR EXPOSED THREADS ARE NOT PERMITTED.
- PIPING SYSTEMS ARE NOT TO BE OPERATED UNTIL ALL CONSTRUCTION DIRT AND DEBRIS HAVE BEEN REMOVED FROM THE SYSTEM
- PIPING SYSTEMS SHALL BE CLEANED AND DEGREASED WITH AN ALKALINE TYPE DETERGENT AT A .5% CONCENTRATION CIRCULATED FOR A MINIMUM OF EIGHT HOURS. AFTER CIRCULATION THE SYSTEM SHALL BE COMPLETELY DRAINED AND FILLED WITH WATER TREATMENT AS DESCRIBED BELOW.

7. CLOSED PIPING SYSTEMS SHALL BE FLUSHED AND TREATED WITH A NITRITE BASED PROTECTIVE FILM FORMING

- CORROSION INHIBITOR AND SCALE SUPPRESSANT TO CONTROL PITTING AND CORROSION INHIBITOR SHALL REMAIN EFFECTIVE AT TEMPERATURES OF 250°F AND ABOVE AND SHALL BE COMPATIBLE WITH GLYCOL SOLUTIONS. INHIBITOR SHALL NOT AFFECT NON-METALLIC MATERIALS IN THE CLOSED SYSTEM. MECHANICAL CONTRACTOR SHAL USE THE CHEMICAL TREATMENT VENDOR DESIGNATED BY THE OWNER.
- 8. UPON COMPLETION OF ALL PIPING SYSTEMS, NOTIFY THE OWNER, IN WRITING, FIVE DAYS IN ADVANCE OF THE TIME LEAK TESTS ARE TO BE MADE.
- a. CONDUCT TESTS IN ACCORDANCE WITH THE SPECIFICATIONS, OR AS DIRECTED BY OWNER.
- b. PIPING TESTS ARE TO BE CONDUCTED PRIOR TO PAINTING, INSULATING, BACKFILLING OR CONCEALING WITHIN THE BUILDING.
- THE WORK. d. PIPING SHALL BE TESTED WITH WATER FOR TWO HOURS AT A PRESSURE OF 125 PSIG, UNLESS OTHERWISE

c. ALL MATERIALS, EQUIPMENT AND COSTS INVOLVED IN TESTING THE PIPING SYSTEMS SHALL BE INCLUDED IN

9. ALL THE NEW POTABLE HOT AND COLD WATER PIPING AND AFFECTED OTHER WATER PIPING, INCLUDING ALL

VALVES, FITTINGS AND OTHER DEVICES CONNECTED THERETO, SHALL BE DISINFECTED WITH A SOLUTION

CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. 10. PRIOR TO INSTALLING SPRINKLER AND HEADS, DETERMINE THE EXACT LOCATION OF DUCTS, LIGHTS, STRUCTURE EQUIPMENT, ETC. SO AS TO AVOID CONFLICTS AND TO OBTAIN THE PROPER SPRINKLER SPRAY COVERAGE. WHERE DUCTWORK WOULD OTHERWISE INTERFERE WITH SPRAY DISTRIBUTION ADDITIONAL HEADS, EVEN

THOUGH NOT SHOWN ON THE DRAWINGS SHALL BE INSTALLED ABOVE OR BELOW THE DUCTS AS REQUIRED.

- DRAIN PIPING (DR) SHALL BE TYPE L, ANSI B88, HARD TEMPER COPPER TUBE. SOLDER FITTINGS SHALL BE WROUGHT COPPER, ANSI B16.22. SOLDER SHALL BE 95%-5% TIN ANTIMONY.
- b. VENT PIPE SHALL BE SCHEDULE 40, GALVANIZED STEEL, ANSI A52.
- c. WASTE PIPE AND FITTINGS BELOWGROUND SHALL BE XH CAST IRON ANSI/ASTM (A74) (C-564).
- d. REFRIGERANT LIQUID (RL), REFRIGERANT SUCTION (RS) AND REFRIGERANT HOT GAS (RHG) SHALL BE:
 - 1) HARD OR SOFT TEMPER COPPER (ACR), WROUGHT COPPER, ANSI B16.22.

12. HANGERS, SUPPORTS, ANCHORS AND SEALS SHALL CONFORM TO THE FOLLOWING STANDARDS

- a) 2 INCHES AND UNDER BRAZED. b) 2½ INCHES AND OVER FLANGED AT VALVES AND EQUIPMENT.

- MSS SP-58
- b. AUTOMATIC SPRINKLER PIPE SUPPORTS NFPA NO. 13. c. FOR GROOVED PIPE PROVIDE MINIMUM OF TWO HANGERS BETWEEN EVERY CONNECTION.
- 13. PROVIDE DIELECTRIC FITTINGS FOR CONNECTION OF DISSIMILAR MATERIALS. PERFECTION CORP. CLEARFLOW OR
- 14. PROVIDE FLOAT-TYPE AIR ELIMINATORS AT HIGH POINTS IN HEATING HOT WATER PIPING SYSTEMS. SARCO TYPE
- 15. PROVIDE "Y" TYPE STRAINERS. SARCO OR EQUAL.
- 21/2 INCHES AND OVER, FLANGED TYPE BT-150.
- 16. PROVIDE SHOCK ABSORBERS (SA) AT CONNECTIONS TO ALL EQUIPMENT WITH QUICK-CLOSING VALVES. JOSAM TYPE 75001 OR EQUAL
- a. SIZE AND LOCATION OF SHOCK ABSORBER SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ANCHOR PIPING AT SHOCK ABSORBER AND PROVIDE SHUTOFF VALVE.
- F. METERS AND GAUGES
- PRESSURE GAUGE
- a. 0 PSIG TO 100 PSIG RANGE, 41/2 INCH DIAMETER, T-HANDLE LOCK, WEISS SERIES PG-1. WEKSLER, MARSH.
- THERMOMETER
 - 5VBM VARI-ANGLE. WEKSLER, MARSH.
- - INSULATION SHALL HAVE COMPOSITE (INSULATION, JACKET AND ADHESIVE) FIRE AND SMOKE HAZARD RATINGS AS TESTED UNDER PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING:
 - a. FLAME SPREAD 25
 - c. INSULATION MUST CONFORM TO USDA REQUIREMENTS; NON-TOXIC
- 2. PLUMBING PIPING SYSTEM INSULATION SHALL BE NOM. 3/8 INCH THICK ARMSTRONG ARMAFLEX OR EQUAL
- INDOOR PIPING INSULATION SHALL BE FIBERGLASS EQUAL TO JOHNS MANVILLE MICRO-LOK HP WITH ALL SERVICE JACKET AND VAPOR BARRIER. INSULATION SHALL HAVE A MAXIMUM K VALUE OF .23 @75 F MEAN TEMPERATURE.
- @ 75 f MEAN TEMPERATURE.
- ALL OUTDOOR PIPING SHALL BE FINISHED WITH A .01" THICK STAINLESS STEEL JACKET INCLUDING ALL FITTINGS,
- INSULATION ACCESSORIES SUCH AS ADHESIVES, MASTICS, CEMENT AND CLOTH FOR FITTINGS SHALL HAVE THE
- FIBERGLASS INSULATION BOARD WITH VAPOR BARRIER. 0.23 @ 75°F THERMAL CONDUCTIVITY, R:8.7, 6 LBS/FT3 DENSITY, EQUAL TO JOHNS-MANVILLE SPIRACOUSTIC PLUS OR EQUAL.
- 9. INSULATE ROUND EXPOSED SUPPLY AND OUTDOOR DUCTS WITH 2 INCH THICK PREFORMED SEMI-RIGID FIBERGLASS INSULATION WITH VAPOR BARRIER. 0.24 @ 75°F THERMAL CONDUCTIVITY R:8.3, 2.5 LBS/FT³ DENSITY, EQUAL TO JOHNS-MANVILLE FSK MICROFLEX OR EQUAL
- BARRIER. 0.24 @ 75°F THERMAL CONDUCTIVITY R:8.3, 1.5 LBS/FT³ DENSITY, EQUAL TO JOHNS-MANVILLE TYPE 150 MICROLITE DUCT WRAP. 11. WEATHERPROOF OUTDOOR DUCT AND ANY DUCT SUBJECT TO EXPOSURE TO ADVERSE WEATHER CONDITIONS,
- 12. INSULATE BLACK IRON HOOD EXHAUST DUCTS WITH TWO INCH THICK ASBESTOS-FREE RIGID HYDROUS CALCIUM
- SILICATE INSULATION, OWENS/CORNING KAYLO 10 OR EQUAL.
- - FABRICATE AND INSTALL DUCTWORK IN ACCORDANCE WITH LATEST SMACNA HVAC DUCT CONSTRUCTION
 - a. UNLESS NOTED OTHERWISE, FABRICATE ALL DUCTWORK TO THE TWO INCH W.G. POSITIVE OR NEGATIVE VOLUME TERMINAL UNITS DUCTWORK UPSTREAM OF TERMINAL UNITS ON SUPPLY SIDE AND DOWNSTREAM OF TERMINAL UNITS ON THE RETURN/EXHAUST SIDE SHALL BE FABRICATED TO 4" W.C. PRESSURE CLASS.

 - DUCTWORK INSIDE BUILDING SHALL BE GALVANIZED STEEL.
 - PROVIDE SINGLE THICKNESS TURNING VANES FOR ALL SQUARE ELBOWS.
 - a. TRAILING EDGES ON TURNING VANES ARE NOT ACCEPTABLE. 4. DUCT HANGERS AND SUPPORTS SHALL CONFORM TO THE LATEST SMACNA HVAC DUCT CONSTRUCTION
- I. DUCT ACCESSORIES
- PROVIDE FLEXIBLE CONNECTORS. DURODYNE EXCELON OR EQUAL 2. PROVIDE OPPOSED BLADE, LOW LEAKAGE VOLUME DAMPERS, HONEYWELL MODEL D641 OR EQUAL
- K. BALANCING
 - a. PROCURE THE SERVICES OF AN INDEPENDENT BALANCE AND TESTING AGENCY, APPROVED BY THE OWNER, WHICH SPECIALIZES IN THE BALANCING AND TESTING OF HEATING, VENTILATING AND AIR CONDITIONING
 - b. ALL WORK BY THIS AGENCY SHALL BE DONE UNDER DIRECT SUPERVISION OF A QUALIFIED ENGINEER EMPLOYED BY THE AGENCY WHICH IS DEFINED HEREIN AS A GRADUATE MECHANICAL ENGINEER WITH AT LEAST FIVE YEARS FIELD EXPERIENCE IN HEATING, VENTILATING, AIR CONDITIONING AND REFRIGERATION SYSTEMS INSTALLATIONS OR THE EQUIVALENT, AS APPROVED BY THE OWNER.
 - c. THE AGENCY SHALL PROVIDE PROOF OF HAVING SUCCESSFULLY COMPLETED AT LEAST FIVE PROJECTS OF SIMILAR SIZE AND SCOPE, AND SHALL BE A QUALIFIED AND CERTIFIED MEMBER OF THE ASSOCIATED AIR
 - WORKING ORDER. IF REQUESTED, THE TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER.
 - 1) ALL HEATING SYSTEMS AND EQUIPMENT SHALL BE PLACED IN FULL OPERATION AND SHALL CONTINUE IN OPERATION EACH WORKING DAY OF TESTING AND BALANCING.

 - a. UPON COMPLETION OF THE HEATING SYSTEMS, THE AGENCY SHALL PERFORM THE TESTS OUTLINED IN SECTION 3 - EXECUTION, COMPILE THE TEST DATA, AND SUBMIT SIX COPIES OF THE COMPLETE TEST DATA TO THE CONTRACTOR FOR FORWARDING TO THE OWNER FOR EVALUATION AND ACCEPTANCE.
 - - 1) AIR DISTRIBUTION SYSTEMS

FOLLOWING REQUIREMENTS:

PERFORM THE FOLLOWING TESTS AND BALANCE THE SYSTEM IN ACCORDANCE WITH THE

- 13W OR EQUAL.
- TWO INCHES AND UNDER, SCREWED TYPE BT.

- a. 30 DEGREES F. TO 300 DEGREES F. RANGE, BI-METAL 5 INCH CASE, 3½ INCH STEM, SEPARABLE WELL, WEISS
- - SMOKE DEVELOPED 50

 - OUTDOOR PIPING INSULATION SHALL BE POLYISOCYANURATE FOAM EQUAL TO DOW TRYMER-2000 WITH SARAN CX FILM AND VAPOR BARRIER AND STAINLESS SSTEEL JACKET. INSULATION SHALL HAVE A MAXIMUM K VALUE OF .19
 - VALVES AND COMPONENTS.
 - INDOOR FITTINGS SHALL BE INSULATED WITH FIBERGLASS INSERTS WITH PRE MOLDED PVC FITTINGS COVERS EQUAL TO JOHNS MANVILLE ZESTON 2000 PVC INSULATED FITTING COVERS.
 - SAME COMPONENT RATINGS LISTED ABOVE. INSULATE RECTANGULAR EXPOSED SUPPLY AND OUTDOOR AIR DUCTS WITH 2 INCH THICK PREFORMED RIGID
- 10. INSULATE CONCEALED SUPPLY AND RETURN AIR DUCTS WITH 2 INCH THICK FIBERGLASS DUCT WRAP WITH VAPOR
- HAVING BRIGHT ALUMINUM FINISH EQUAL TO FLEX CLAD 400 OR ALUMAGUARD, OR WEATHERPROOF WITH HEXAGONAL WIRE MESH AND WEATHERPROOF COATING, SCHULLER INSULKOTE ET OR EQUAL.

ETC. WITH PREFABRICATED METALLIC 0.60 INCH RUBBERIZED BITUMEN, FOIL FACED MEMBRANE WRAP COVERING

- a. REFER TO DRAWINGS FOR EXTENT OF BLACK IRON DUCT
- - PRESSURE CLASS WITH SMACNA SEAL CLASSIFICATION A. FOR SYSTEMS WITH CONSTANT OR VARIABLE
- DUCT MATERIAL

DUCTWORK ON ROOF SHALL BE ALUMINUM.

- STANDARDS.
- J. AIR DEVICES
- REFER TO AIR DEVICE SCHEDULE ON DRAWING.
- GENERAI
- d. ALL INSTRUMENTS USED BY THE AGENCY SHALL BE ACCURATELY CALIBRATED, AND MAINTAINED IN GOOD
- e. FINAL ADJUSTMENT, BALANCING AND TESTING SHALL NOT BEGIN UNTIL THE SYSTEMS HAVE BEEN COMPLETED AND ARE IN FULL WORKING ORDER.
- a. AIR BALANCE PROCEDURE
- "THIS PLAN IS SUBMITTED FOR APPROVAL BY THE NEW YORK CITY

NEW YORK CITY BUILDING DEPARTMENT NOTE:

APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON, OR TO BE CONSIDERED AS, EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

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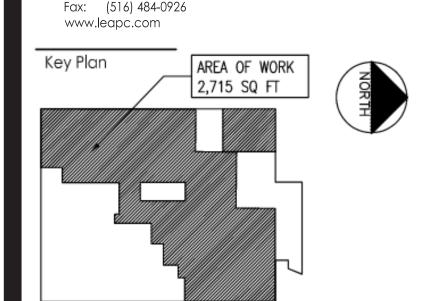
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RICHMOND UNIVERSITY MEDICAL CENTER

MECHANICAL SPECIFICATIONS (1 OF 2)

Scale

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Drawing No.

Project No.

Client/Proiect

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Revision

- (2) TEST AND RECORD MOTOR FULL LOAD AMPERES.
- (3) MAKE PILOT TUBE TRAVERSE OF MAIN SUPPLY AND OBTAIN DESIGN CFM AT FANS.
- (4) TEST AND RECORD STATIC PRESSURES, SUCTION AND DISCHARGE.
- (5) OBTAIN THE SPECIFIED AIR VOLUMES THROUGHOUT THE SYSTEM IN ACCORDANCE WITH THE CAPACITIES SHOWN ON THE DRAWINGS. IN ALL CASES ADJUST AIR VOLUMES BY MEANS OF MANUAL DAMPERS IN THE DUCTWORK, NOT BY INTEGRAL DAMPERS IN THE DUCTWORK, AND NOT BY INTEGRAL DAMPERS IN THE TERMINAL OUTLETS OR INLETS.
- b) MAKE ANY CHANGES IN, OR REPLACE PULLEYS, BELTS, AND DAMPERS OR ADD ANY DAMPERS, AS REQUIRED FOR CORRECT BALANCE AS RECOMMENDED BY THE AGENCY OR THE OWNER.
- c) THE FINAL DATA IN REPORT FORM SHALL BE SUBMITTED UNDER THE SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE.

L. INSTRUMENTATION CONTROLS

GENERAL

- a. THE AUTOMATIC CONTROL SYSTEM SHALL BE COMPLETE IN ALL RESPECTS INCLUDING ALL LABOR. MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO FULFILL THE SEQUENCE OF OPERATION AND CONTROL DIAGRAMS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN, WHETHER OR NOT SPECIFICALLY MENTIONED OR INDICATED.
- c. ALL PIPE MOUNTED LIQUID AND GAS TEMPERATURE CONTROLS AND INDICATING DEVICES SHALL BE MOUNTED IN THERMOWELLS FURNISHED BY THE AUTOMATIC CONTROL SUBCONTRACTOR AND INSTALLED BY THE CONTRACTOR UNDER THE AUTOMATIC CONTROL SUBCONTRACTOR'S SUPERVISION.
- d. ALL AUTOMATIC THERMOSTATS, THERMOSTAT SUBBASES, SAFETY CONTROLS, WELLS AND OTHER PIPE OR DUCT MOUNTED CONTROL DEVICES SHALL BE FURNISHED BY THE AUTOMATIC CONTROL SUBCONTRACTOR

AND INSTALLED BY THE CONTRACTOR UNDER THE AUTOMATIC CONTROL SUBCONTRACTOR'S SUPERVISION.

- e. QUALITY ASSURANCE
 - 1) AUTOMATIC CONTROL SUBCONTRACTORS SHALL HAVE A MINIMUM OF TEN YEARS SATISFACTORY EXPERIENCE IN THE DESIGN, MANUFACTURE, INSTALLATION AND SERVICING OF CONTROL SYSTEMS AND
 - a) JOHNSON CONTROLS, 6A AERIAL WAY, SYOSSET, NY (516) 822-0490, MR. TOM WEHMEYER.
 - b) SIEMENS BUILDING TECHNOLOGIES, FLORHAM PARK, NY 11787, (973) 307-7698, MR. JOHN HODGES.
 - c) ENVIRONMENTAL ENERGY CORP., 120C EAST JEFRYN BLVD., DEER PARK, NY 11729, 516-243-1116,
 - e) HONEYWELL INC., 125 FROEHLICH FARM BOULEVARD, WOODBURY, NY 11797, 516-496-2300, MR. MICHAEL J. PERNECKE.
 - 3) THE ELECTRICAL COMPONENTS OF THE AUTOMATIC CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NEC AND/OR AS AMENDED AND REVISED BY LOCAL GOVERNING CODES.
- 4) THE AUTOMATIC CONTROL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CODE CONFORMANCE REGARDING THERMAL OVERLOAD PROTECTION ON ALL VALVE MOTORS AND OTHER CONTROL DRIVE MECHANISMS.

f. CONTROL INTENT

- 1) THE CONTROL DIAGRAMS ON THE DRAWINGS SHALL NOT BE CONSTRUED AS COMPLETE, SINCE THE METHOD OF AUTOMATIC CONTROL ASSOCIATED WITH EACH AUTOMATIC CONTROL SUBCONTRACTOR IS GENERALLY UNIQUE.
- 2) THE AUTOMATIC CONTROL SUBCONTRACTOR SHALL FURNISH APPROVED DETAILED TERMINAL-TO-TERMINAL WIRING DIAGRAMS TO FACILITATE THE FIELD WIRING WORK.
- 3) THE MODEL NUMBERS AND SCHEMATIC DIAGRAMS SHOWN ON THE CONTRACT DOCUMENTS ARE NOT TO BE CONSTRUED AS BEING SHOP DRAWINGS FOR THE PROJECT.
- 4) IT IS THE INTENT THAT THE NORMAL RESPONSIBLE PROCEDURES ASSOCIATED WITH QUANTITIES, ACCURACY OF MODEL ORDERING NUMBERS, VOLTAGE, SYSTEM INTERFACE, SHOP WIRING DIAGRAMS, AND FIELD DEBUGGING OF THE CONTROL SYSTEM SHALL BE ORGANIZED, DIRECTED AND SUPERVISED BY THE AUTOMATIC CONTROL SUBCONTRACTOR.

g. ELECTRIC, ELECTRONIC AND SOLID STATE CONTROLS

- 1) UNLESS NOTED OTHERWISE, ALL ELECTRIC, ELECTRONIC AND SOLID STATE CONTROLS SHALL BE FURNISHED BY THE AUTOMATIC CONTROL SUBCONTRACTOR AND INSTALLED BY THE CONTRACTOR OR THE ELECTRICAL WORK BY THE ELECTRICAL CONTRACTOR UNDER THE AUTOMATIC CONTROL SUBCONTRACTOR'S SUPERVISION.
- 3) WITH THE EXCEPTION OF FACTORY MOUNTED UNIT CONTROL PANELS FURNISHED WITH THE HEATING, EQUIPMENT AND THE CONTROL PANELS FOR THE AUTOMATIC CONTROLS, ALL DISCONNECT SWITCHES, MOTOR STOP/TEST STATIONS, MANUAL AND MAGNETIC MOTOR STARTERS SHALL BE FURNISHED, INSTALLED AND WIRED UNDER THE ELECTRICAL CONTRACT.
- 4) THE WIRING TO ALL ELECTRIC, ELECTRONIC AND SOLID STATE CONTROLS SHALL BE BY THE ELECTRICAL CONTRACTOR UNDER THE SUPERVISION OF THE AUTOMATIC CONTROL SUBCONTRACTOR AND IN ACCORDANCE WITH THE APPROVED AUTOMATIC CONTROL SUBCONTRACTOR'S SHOP DRAWING WIRING

h. NAMEPLATES

- 1) IDENTIFY ALL CONTROLS AND CONTROL PANEL COMPONENTS WITH NAMEPLATES OF LAMINATED BAKELITE, LAMICOID, OR EQUAL.
- 2) NAMEPLATES SHALL BE THREE INCHES LONG WITH 1/4 INCH HIGH LETTERING.
- 3) WHEN POSSIBLE THE PREFERRED METHOD OF SECURING NAMEPLATES SHALL BE WITH SCREWS, OR BOLTS AND NUTS.
- 4) WHEN NOT PRACTICAL TO SECURE THE NAMEPLATE WITH SCREWS, OR BOLTS AND NUTS, GLUED OR PASTED-ON LAMINATED NAMEPLATES SHALL BE ACCEPTABLE.
- 5) SUBMIT NAMEPLATE SCHEDULE FOR REVIEW BY THE OWNER BEFORE FABRICATION.

SHOP DRAWINGS

- 1) THE AUTOMATIC CONTROL SUBCONTRACTOR SHALL SUBMIT THE FOLLOWING:
- a) DESCRIPTIVE TECHNICAL LITERATURE AND SPECIFICATION CUTS OF ALL CONTROLS, DEVICES AND
- b) CLEAR, CONCISE CONTROL DIAGRAMS OF EACH SYSTEM IN FLOW DIAGRAM FORMAT.
- c) DETAILS AND CONSTRUCTION OF CONTROL PANELS.
- d) NAMEPLATE SCHEDULE.
- e) SEQUENCE OF OPERATION FOR EACH CONTROL DIAGRAM.
- f) ELECTRIC WIRING DIAGRAM.
- g) SCHEMATIC ELECTRIC DIAGRAMS.
- 2) THE CONTROL SYSTEMS SHALL NOT BE INSTALLED UNTIL THE REQUIRED SHOP DRAWINGS HAVE BEEN REVIEWED AND EXCEPTIONS NOTED BY THE OWNER.
- 3) THE SCHEMATIC ELECTRIC DIAGRAMS SHALL BE PREPARED IN THE SAME FORMAT SHOWN ON THE DRAWINGS.
- 4) THE CONTRACTOR SHALL HAVE THE OPTION OF SECURING AT COST REPRODUCIBLES OF THE SCHEMATIC TYPE CONTROL DIAGRAMS SHOWN ON THE DRAWINGS FOR USE IN THE PREPARATION OF THE SHOP DRAWINGS.

PRODUCTS

- a. EQUIPMENT SHALL BE OF THE TYPE, SIZE AND RATING SPECIFIED HEREIN AND ON THE DRAWINGS.
- b. CONTROL PANELS
 - 1) CONSTRUCT WALL MOUNTED CONTROL PANELS TO NEMA 1 STANDARDS FOR GENERAL PURPOSE
 - 2) PROVIDE 12 INCH WALL BRACKETS AND/OR STRUCTURAL CHANNELS FOR PERMANENT MOUNTING TO THE BUILDING CONSTRUCTION.
 - 3) PROVIDE FACTORY FURNISHED BAKED ENAMEL FURNITURE FINISH AND HINGED PANEL DOOR FRONT
 - 4) ELECTRICAL COMPONENTS AT CONTROL PANEL
 - a) SWITCHES, POTENTIOMETERS, PUSHBUTTONS, PILOT LIGHTS, INDICATORS, ETC., SHALL BE FLUSH
 - b) RELAYS TIME-DELAYS TIMERS RESETS CONTROLLERS ETC. SHALL BE MOLINTED INSIDE THE

MEDITO, TIME DELITO, TIMENO, MEDITO, CONTINCELLAS, ETC., CHIME DE MICONTED MICONE THE

5) WIRING

- a) PANEL CONTROLS AND DEVICES SHALL BE FACTORY-WIRED TO CODED TAGGED TERMINAL STRIPS.
- b) EXTERNAL WIRING FROM THE FACTORY-WIRED CODED AND TAGGED TERMINAL STRIPS SHALL BE BY THE ELECTRICAL CONTRACTOR.
- c) TERMINAL STRIPS SHALL BE SEGREGATED ACCORDING TO SYSTEM VOLTAGE, FOR CONNECTION OF ALL INTERNAL, INCOMING AND OUTGOING WIRING IN THE PANELS, WITH ADEQUATE WIRING SPACE FOR INSTALLATION OF WIRING.
- d) ALL INTERNAL PANEL WIRING SHALL BE HARNESSED, TRAINED, NUMBERED, AND TAGGED FOR IDENTIFICATION OF SERVICE.
- e) ALL WIRE AND CABLE SHALL BE HIGH CONDUCTIVITY STRANDED COPPER, 600 VOLT INSULATED IN ACCORDANCE WITH THE NFPA STANDARDS FOR TYPE "THW" WIRES, EXCEPT A\$ NOTED ON THE DRAWINGS OR OTHERWISE SPECIFIED HEREIN.
- PANEL DISCONNECT RELAYS (RD), CONTROL RELAYS (R) AND CONTROLLERS SHALL BE A MINIMUM WIRE SIZE OF NO. 12 AWG TYPE THW.

f) ALL POWER AND CONTROL WIRE SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRIC

CODE (NEC) AND LOCAL GOVERNING CODES. ALL MOTORS LOADS WIRED THROUGH THE CONTROL

g) WITH THE EXCEPTION NOTED FOR THE POWER REQUIREMENTS FOR MOTOR LOADS ABOVE, ALL CONTROL WIRING SHALL BE A MINIMUM SIZE OF NO. 16 AWG.

6) CIRCUIT PROTECTION

- a) PROTECTION OF CONTROL CIRCUITS AND COMPONENTS THEREIN, SHALL BE BY CIRCUIT BREAKER OF FUSE SIZED IN COMPLIANCE WITH NEC AND/OR COMPONENT MANUFACTURER'S
- b) INDIVIDUAL CIRCUITS SHOWN IN THE CONTROL PANEL SHALL BE PROTECTED WITH CIRCUIT BREAKERS OR FUSES MOUNTED INSIDE PANEL.
- c) CIRCUIT BREAKERS SHALL BE UL LISTED AND BE AS MANUFACTURED BY AIRPAX, MODEL 209, OR
- d) CONTROL CIRCUIT FUSES SHALL BE DUAL-TEMPERATURE "FUSETRONS," BUSSMAN MANUFACTURING CO. TYPE FNM, OR EQUAL.
- e) FUSE BLOCKS SHALL BE BUSSMAN MANUFACTURING CO. TYPE 4535, OR EQUAL.
- WHEN FUSES ARE USED A FUSE PULLER CHAINED TO THE CONTROL PANEL SHALL BE PROVIDED, OR EACH FUSE SHALL HAVE A FUSE PULLER ATTACHMENT AS MANUFACTURED BY ALLEN-BRADLEY, CATALOG NO. 1492-CE6 BLOCK.

7) NAMEPLATES

a) IDENTIFY ALL PANEL FACED AND INTERNAL CONTROLS, COMPONENTS AND DEVICES WITH NAMEPLATES AS HEREIN SPECIFIED.

8) SHOP DRAWINGS

- a) BEFORE FABRICATION OF THE CONTROL PANEL, THE AUTOMATIC CONTROL MANUFACTURER SHALL
- (1) DESCRIPTIVE TECHNICAL LITERATURE AND SPECIFICATION CUTS OF ALL CONTROLS, DEVICES AND COMPONENTS.
- (2) PHYSICAL DIMENSIONAL DRAWING OF FRONT PANEL DOOR COMPONENTS.
- (3) PHYSICAL DIMENSIONAL DRAWING OF THE INTERNAL PANEL LAYOUT.
- (4) SCHEMATIC ELECTRICAL DIAGRAMS.
- (5) ELECTRICAL WIRING DIAGRAMS
- (6) TERMINAL NUMBER.
- (7) WIRE NUMBERS.
- b) THE CONTROL PANEL SHALL NOT BE FABRICATED UNTIL THE SHOP DRAWINGS HAVE BEEN REVIEWED AND EXCEPTIONS NOTED BY THE OWNER.
- c) THE AUTOMATIC CONTROL MANUFACTURER SHALL HAVE THE OPTION OF DESIGNATING THE WIRE AND TERMINAL NUMBERS AFTER THE SHOP DRAWING REVIEW OF THE SUBMISSION BY THE OWNER.
- d) A COPY OF THE CONTROL PANEL SHOP DRAWING DIAGRAMS SHALL BE PLACED IN 0.015 INCH THICK PLASTIC LAMINATE ENCLOSURE AND MOUNTED OR SECURED INSIDE OR OUTSIDE THE PANEL.



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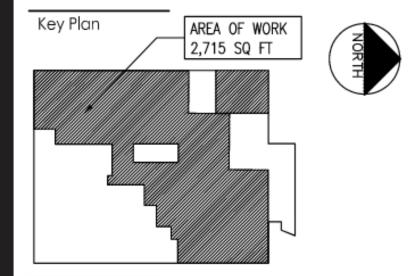
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669 CASTLETON AVENUE, STATEN ISLAND, NY SECOND FLOOR PROPOSED RENOVATION

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