

MECHANICAL SPECIFICATIONS

1. SECTION 15010 - BASIC MECHANICAL REQUIREMENTS

- A. THE WORK OF EACH OF THE MECHANICAL SECTIONS INCLUDES FURNISHING AND INSTALLING THE MATERIAL, EQUIPMENT AND SYSTEMS COMPLETE AS SPECIFIED AND/OR INDICATED ON THE DRAWINGS...
B. ALL WORK UNDER THIS CONTRACT SHALL BE DONE IN STRICT ACCORDANCE WITH APPLICABLE MUNICIPAL, STATE AND FEDERAL CODES...
C. THE CONTRACTOR SHALL MAKE APPLICATIONS AND PAY ALL CHARGES FOR ALL NECESSARY PERMITS, LICENSES AND INSPECTIONS AS REQUIRED UNDER THE ABOVE CODES...
D. NO MATERIALS OR EQUIPMENT SHALL BE USED IN THE WORK UNLESS APPROVED...
E. THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND SPECIFICATIONS AND SHALL INSPECT THE EXISTING CONDITIONS...
F. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF THE MECHANICAL INSTALLATIONS...
G. PROVIDE SUFFICIENT ACCESS AND CLEARANCE FOR ALL ITEMS OF EQUIPMENT...
H. THE CONTRACTOR SHALL PERFORM ALL NECESSARY CUTTING AND PATCHING AS REQUIRED TO COMPLETE THE INSTALLATION...
I. THE CONTRACTOR SHALL PREPARE THREE (3) COPIES OF A RECORD AND INFORMATION BOOKLET...
J. THE ENTIRE NEW PIPING SYSTEM SHALL BE TESTED HYDROSTATICALLY BEFORE INSULATION...
K. ALL PARTS OF THE AIR CONDITIONING SYSTEM SHALL BE ADJUSTED, CHECKED, BALANCED, AND TESTED BY AN INDEPENDENT A.A.B.C. CERTIFIED TESTING & BALANCING CONTRACTOR...
L. UPON COMPLETION OF THE MECHANICAL INSTALLATIONS, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS...
M. ALL PIPING AND VALVE SYSTEMS SHALL BE IDENTIFIED WITH LABELS AND TAGS...
N. ALL NEW MECHANICAL INSTALLATIONS, INCLUDING ALL MATERIALS AND LABOR SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF OWNER ACCEPTANCE...
O. THE CONTRACTOR SHALL ALSO PROVIDE ONE (1) YEAR SERVICE TO KEEP THE EQUIPMENT IN OPERATING CONDITION...
P. IN ADDITION TO THE FIRST YEAR WARRANTY PERIOD, THE CONTRACTOR SHALL PROVIDE, AT NO ADDITIONAL COST TO THE OWNER, A MINIMUM OF FOUR (4) SERVICE CALLS AND MAINTENANCE INSPECTIONS...
R. DUCTWORK & EQUIPMENT CLEANING (GYMNASIUM ONLY)
1) ALL EXISTING SUPPLY AIR, OUTSIDE AIR AND RETURN AIR DUCTWORK THAT IS TO REMAIN IN SERVICE SHALL BE THOROUGHLY CLEANED BY A HVAC SYSTEM CLEANING CONTRACTOR WHO IS A CERTIFIED MEMBER OF THE NATIONAL AIR DUCT CLEANERS ASSOCIATION (NADCA)...

- f. CLEANING METHODS USED SHALL NOT CAUSE DAMAGE TO FIBROUS GLASS COMPONENTS AND SHALL RENDER THE SYSTEM CAPABLE OF PASSING CLEANING VERIFICATION TESTS.
g. EVIDENCE OF DAMAGE: IF THERE IS ANY EVIDENCE OF DAMAGE, DETEIORATION, DELAMINATING, FRAGILE MATERIAL, MOLD OR FUNGUS GROWTH, OR MOISTURE SUCH THAT FIBROUS GLASS MATERIALS CANNOT BE RESTORED BY CLEANING OR RESURFACING WITH AN ACCEPTABLE INSULATION REPAIR COATING...
h. BIOCIDAL AGENTS SHALL ONLY BE APPLIED IF ACTIVE FUNGAL GROWTH IS REASONABLY SUSPECTED, OR WHERE UNACCEPTABLE LEVELS OF FUNGAL CONTAMINATION HAVE BEEN VERIFIED THROUGH TESTING.
i. APPLICATION OF ANY BIOCIDAL AGENTS USED TO CONTROL THE GROWTH OF FUNGAL OR BACTERIOLOGICAL CONTAMINANTS SHALL BE PERFORMED AFTER THE REMOVAL OF SURFACE DEPOSITS AND DEBRIS.
j. CHEMICAL BIOCIDES AND COATINGS SHALL BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REGISTRATION LISTING.
k. BIOCIDAL COATINGS SHALL BE APPLIED ACCORDING TO MANUFACTURERS' INSTRUCTIONS...
l. DAMAGED SYSTEM COMPONENTS FOUND DURING THE INSPECTION SHALL BE DOCUMENTED AND BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER.
m. CONTRACTOR SHALL CONDUCT A SITE EVALUATION AND ESTABLISH A SPECIFIC, COORDINATED PLAN WHICH DETAILS HOW EACH AREA OF THE BUILDING WILL BE PROTECTED DURING THE VARIOUS PHASES OF THE PROJECT.
n. QUALIFIED PERSONNEL SHOULD PERFORM THE HVAC CLEANLINESS INSPECTION TO DETERMINE THE NEED FOR CLEANING...
o. DEBRIS REMOVED DURING CLEANING SHALL BE COLLECTED AND PRECAUTIONS MUST BE TAKEN TO ENSURE THAT DEBRIS IS NOT OTHERWISE DISPERSED OUTSIDE THE HVAC SYSTEM DURING THE CLEANING PROCESS.
p. WHEN THE PARTICULATE COLLECTION EQUIPMENT IS EXHAUSTING INSIDE THE BUILDING, HIGH EFFICIENCY PARTICULATE ARRESTING (HEPA) FILTRATION WITH 99.97% COLLECTION EFFICIENCY FOR PARTICLES WITH AERIAL DIAMETER SHALL BE USED...
q. NADCA VACUUM TEST ANALYSIS SHOULD BE PERFORMED BY A QUALIFIED THIRD PARTY EXPERIENCED IN TESTING OF THIS NATURE.
r. CLEANLINESS VERIFICATION SHALL BE PERFORMED IMMEDIATELY AFTER MECHANICAL CLEANING AND BEFORE THE HVAC SYSTEM IS RESTORED TO NORMAL OPERATION.
s. AT THE CONCLUSION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE A REPORT TO THE ENGINEER INDICATING THE FOLLOWING:
a. SUCCESS OF THE CLEANING PROJECT, AS VERIFIED THROUGH VISUAL INSPECTION AND GRAVIMETRIC ANALYSIS.
b. AREAS OF THE SYSTEM FOUND TO BE DAMAGED AND/OR IN NEED OF REPAIR.
2. SECTION 15050 - BASIC MECHANICAL PIPING MATERIALS & METHODS
A. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO FURNISH AND INSTALL ALL PIPING SYSTEMS ON THIS PROJECT...
B. PIPING AND VALVES SHALL BE AS FOLLOWS:
1) ATMOSPHERIC CONDENSATE DRAINS:
PIPE 1/2" & SMALLER - TYPE DWV SEAMLESS COPPER TUBING
FITTINGS 1/2" & SMALLER - WROUGHT COPPER SOLDER DRAINAGE FITTINGS
2) CHILLED WATER SUPPLY & RETURN PIPING:
PIPES HARD COPPER TYPE L
FITTINGS SOLDER TYPE WROUGHT COPPER - TYPE 95-5
FLANGES CLASS 150 WELDING NECK, CONVULGATED, NIBCO #271.
CHECK VALVES 2" & SMALLER - BRONZE 1/2 LB. STD. SCREWED, NIBCO #T-413-Y.
BALANCING VLV.S DEZURK, OR APPROVED EQUAL, (PLUS SHUT-OFF NON-LUBRICATED, ECCENTRIC PLUG TYPE) WITH CHLOROBUTYL RUBBER OR BUNA-N COVERED PLUGS, SEMI-STEEL SCREWED WITH FIG. 159 LEVER AND OPERATOR KIT.
BALL VALVE/MEMORY STOP TYPE TWO PIECE BODY: 400 PSI FROM 2 1/2" TO 4" CHROME PLATED BALL, FULL PORT, BRASS BODY AND STEM, PTFE SEAT RINGS, NIBCO TFP80A.
C. COPPER PIPE SHALL BE MUELLER INDUSTRIES, WIELAND COPPER PRODUCTS, OR CERRO FLOW PRODUCTS, TYPE "L" HARD DRAWN, WITH APPROVED SOLDER FITTINGS.
D. ALL HANGERS FOR COPPER PIPING SHALL BE COPPER CLAD, SPLIT RING SWIVEL TYPE, HAVING RODS WITH MACHINE THREADS AND THREADED COPPER CLAD CEILING FLANGE.
E. PROVIDE DIELECTRIC COUPLINGS WHERE NON-FERROUS METAL PIPING IS JOINED TO FERROUS METAL PIPING...
3. SECTION 15250 - MECHANICAL INSULATION
A. ALL SUPPLY, OUTSIDE AIR DUCTWORK, CHILLED WATER, AND CONDENSATE PIPING SYSTEMS SHALL BE INSULATED.
B. ALL EXISTING (GYMNASIUM ONLY) AND NEW SUPPLY AND OUTSIDE AIR DUCTWORK SHALL BE INSULATED WITH MINIMUM 1/2" RIGID BOARD INSULATION...
C. PIPE INSULATION FOR INTERIOR PIPING SHALL BE PREMOLDED FIBERGLASS INSULATION WITH AN ALL SERVICE JACKET...
D. INTERIOR DUCT LINING SHALL BE AS SPECIFIED UNDER SECTION 15800.
4. SECTION 15500 - HEATING, VENTILATING & AIR CONDITIONING (HVAC)
A. THE WORK TO BE PERFORMED SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL COMPLETE ALL HVAC MECHANICAL EQUIPMENT AS SHOWN ON DRAWINGS AND/OR HEREINAFTER SPECIFIED...
B. CENTRAL STATION AIR HANDLING UNIT:
1) FURNISH AND INSTALL A CENTRAL STATION CHILLED WATER AIR HANDLING UNIT MANUFACTURED BY DAKIN APPLIED OR APPROVED EQUAL...
2) UNIT SHALL BE CONSTRUCTED WITH HEAVY GAUGE CHANNEL POSTS AND PANELS SECURED WITH MECHANICAL FASTENERS...
UNIT PANELS AND ACCESS DOORS SHALL BE CONSTRUCTED OF 2-INCH NOMINAL THICK THERMALLY BROKEN DOUBLE WALL, FOAM INFECTED WITH INSULATION VALUE NOT LESS THAN R-13...
K. HEAVY DUTY RETURN AIR GRILLES SHALL HAVE ALL STEEL CONSTRUCTION...
L. PROVIDE TITUS MODEL AG-358 VOLUME DAMPERS OR EQUAL BY PRICE INDUSTRIES AT EACH BRANCH DUCT AND ELSEWHERE WHERE SHOWN DAMPERS SHALL BE OPPOSED BLADE, MULTI-BLADE TYPE WITH LOCKING QUADRANT...

- UNIT SHALL BE SUPPORTED AT THE BASE BY A 6-INCH FORMED G60 GALVANIZED STEEL RAIL FOR STRUCTURAL RIGIDITY AND CONDENSATE TRAPPING...
DRAIN PANS SHALL BE STAINLESS STEEL WITH CROSS BREAK AND DOUBLE SLOPING PITCH TO DRAIN CONNECTION...
FAN ASSEMBLY SHALL BE A DOUBLE WIDTH, DOUBLE INLET, CLASS II BELT-DRIVE TYPE HOUSED AIRFLOW FAN DYNAMICALLY BALANCED AS AN ASSEMBLY...
THE BEARINGS SHALL BE DESIGNED FOR SERVICE WITH AN L10 LIFE OF 200,000 HOURS AND SHALL BE A HEAVY DUTY PILLLOW BLOCK, SELF-ALIGNING, GREASE-LUBRICATING BALL OR SPHERICAL ROLLER BEARING TYPE...
FAN MOTOR SHALL BE MANUFACTURER PROVIDED AND INSTALLED, OPEN DRIP PROOF, PREMIUM EFFICIENCY, 1750 RPM, SINGLE SPEED, 208V/60HZ/3 PHASE...
THE CHILLED WATER COOLING COIL SHALL BE CERTIFIED IN ACCORDANCE WITH AHRJ STANDARD 410 AND BEAR THE AHRJ LABEL...
IF NO CONTAMINANTS ARE EVIDENT THROUGH VISUAL INSPECTION, THE HVAC SYSTEM SHALL BE CONSIDERED CLEAN...
IF VISIBLE CONTAMINANTS ARE EVIDENT THROUGH VISUAL INSPECTION, THOSE PORTIONS OF THE SYSTEM WHERE CONTAMINANTS ARE VISIBLE SHALL BE RE-CLEANED AND SUBJECTED TO RE-INSPECTION FOR CLEANLINESS.
NADCA VACUUM TEST ANALYSIS SHOULD BE PERFORMED BY A QUALIFIED THIRD PARTY EXPERIENCED IN TESTING OF THIS NATURE.
CLEANLINESS VERIFICATION SHALL BE PERFORMED IMMEDIATELY AFTER MECHANICAL CLEANING AND BEFORE THE HVAC SYSTEM IS RESTORED TO NORMAL OPERATION.
AT THE CONCLUSION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE A REPORT TO THE ENGINEER INDICATING THE FOLLOWING:
SUCCESS OF THE CLEANING PROJECT, AS VERIFIED THROUGH VISUAL INSPECTION AND GRAVIMETRIC ANALYSIS.
AREAS OF THE SYSTEM FOUND TO BE DAMAGED AND/OR IN NEED OF REPAIR.
SECTION 15800 - AIR DISTRIBUTION
FURNISH FLAT FILTER WITHIN COOLING COIL SECTION WITH 2-INCH PLEATED MERV 8 FILTER...
ACCESS SECTION SHALL BE PROVIDED FOR ACCESS BETWEEN COMPONENTS...
FURNISH ALL LABOR AND MATERIALS NECESSARY TO COMPLETE THE SHEET METAL WORK ASSOCIATED WITH THE AIR CONDITIONING SYSTEM...
ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) STANDARDS...
SUPPORT HORIZONTAL DUCTS WITH HANGERS SPACED NOT MORE THAN FOUR (4) FEET APART...
DUCTS SHALL BE STRAIGHT AND SMOOTH ON THE INSIDE...
SEALANT SHALL BE AS MANUFACTURED BY HARD CAST INC. OR APPROVED EQUAL...
SUPPLY AIR DUCTWORK WITHIN FIFTEEN (15) FEET OF AIR HANDLING UNIT SHALL BE LINED ON THE INTERIOR FOR SOUND DUCTWORK...
HEAVY DUTY RETURN AIR GRILLES SHALL HAVE ALL STEEL CONSTRUCTION...
PROVIDE TITUS MODEL AG-358 VOLUME DAMPERS OR EQUAL BY PRICE INDUSTRIES AT EACH BRANCH DUCT AND ELSEWHERE WHERE SHOWN DAMPERS SHALL BE OPPOSED BLADE, MULTI-BLADE TYPE WITH LOCKING QUADRANT...

- HANDLING UNIT.
SECTION 15950 - CONTROLS
THE CONTRACTOR UNDER THIS HEADING SHALL FURNISH AND INSTALL ALL WIRING NECESSARY FOR A COMPLETE DIRECT DIGITAL CONTROL (DDC) SYSTEM OF AUTOMATIC TEMPERATURE CONTROL...
THE CENTRAL STATION AIR HANDLING UNIT CONTROLS SHALL BE INTERFACED INTO THE EXISTING BUILDING AUTOMATIC TEMPERATURE CONTROL SYSTEM.
THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMMISSIONING OF THE PROJECT TO ASSURE A FULLY FUNCTIONAL, FINE-TUNED HVAC SYSTEM UPON OCCUPANCY.
THE COMMISSIONING OF THE PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT ASHRAE GUIDELINE FOR COMMISSIONING OF HVAC SYSTEMS...
COMMISSIONING IS DEFINED AS VERIFICATION OF THE PROPER OPERATION OF ALL EQUIPMENT, ALARMS, SAFETIES AND CONTROL AND ENERGY MANAGEMENT SYSTEMS SERVING MECHANICAL SYSTEMS INSTALLED OR MODIFIED ON THIS PROJECT...
PROPER OPERATION IS DEFINED AS THE ACTIVATION OF ALL CONTROLS, FIELD OR FACTORY INSTALLED, TO ASSURE THE CORRECT SEQUENCING OF EQUIPMENT AND SYSTEMS...
THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR SHALL REPORT ALL SYSTEM DEFICIENCIES TO THE MECHANICAL CONTRACTOR...
PRIOR TO THE COMMENCEMENT OF ANY COMMISSIONING WORK, THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMMISSIONING REPORT...
COMMISSIONING REPORT FORMAT SHALL INCLUDE A LIST OF ALL ITEMS TO BE VERIFIED...
TWO (2) COMMISSIONING REPORTS ARE REQUIRED...
EACH SCHEDULED COMMISSIONING REPORT OR CONTRACT REQUIREMENT NOT MET WILL EXTEND THE ON-GOING COMMISSIONING REQUIREMENTS BY A THREE (3) MONTH PERIOD.
REVISIONS:
DATE DESCRIPTION DATE BY
1. 06/15/11
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LAST REV.:
PROJECT NO.: 16016B
DATE: 06/15/11
SCALE: NONE
TITLE: MECHANICAL SPECIFICATIONS
SHEET: ME
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ENGINEER'S SEAL
ENGINEER'S CERTIFICATION STATEMENT
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland. My license number is 20940 and my expiration date is May 28, 2018.
NOTRE DAME PREPARATORY SCHOOL GYMNASIUM AC UNIT UPGRADE
815 HAMPTON LANE TOWSON, MARYLAND 21286
SVA#16076B