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Key Plan: NO SCALE

Client:

NORTHVILLE PUBLIC SCHOOLS

Project:

**COOKE SCHOOL
MISCELLANEOUS
RENOVATIONS**

21200 TAFT RD.
NORTHVILLE, MICHIGAN 48167

Seat:

Date

05-15-2012 PROGRESS
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Drawn: JGW

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**MECHANICAL
SPECIFICATIONS**

Project Number: 312081

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LEGEND OF ABBREVIATIONS

- AFF -- ABOVE FINISHED FLOOR
APPROX. OR ~ -- APPROXIMATELY
B.F.P. -- BACK FLOW PREVENTER
B.O. -- BOTTOM OF
BOT. -- BOTTOM
CAP. -- CAPACITY
CFM -- CUBIC FEET PER MINUTE
CONC. -- CONCRETE
CONST. -- CONSTRUCTION
CONT. -- CONTINUOUS
DIA -- DIAMETER
DN -- DOWN
E.W. -- EACH WAY
EA. -- EACH
EF -- EXHAUST FAN
EL. -- ELEVATION
EQUIP. -- EQUIPMENT
EXIST. -- EXISTING
'F -- DEGREES FAHRENHEIT
FD -- FLOOR DRAIN
GALV. -- GALVANIZED
GPM -- GALLONS PER MINUTE
HOR. -- HORIZONTAL
HP -- HORSEPOWER
HVAC -- HEATING/VENTILATING/AIR CONDITIONING
HW -- HOT WATER (DOMESTIC)
IN -- INCHES
LAV. -- LAVATORY
MAX. -- MAXIMUM
MBH -- BTUH (1,000'S)
MIN. -- MINIMUM
MISC. -- MISCELLANEOUS
N.T.S. -- NOT TO SCALE
QTY. -- QUANTITY
RAD. -- RADIUS
RD -- ROOF DRAIN
REF. -- REFERENCE
REQ'D. -- REQUIRED
RM. -- ROOM
SCH. -- SCHEDULE
SHT -- SHEET
SI -- SOLID INTERCEPTOR
STD. -- STANDARD
TEMP -- TEMPERATURE
T.O. -- TOP OF
TYP. -- TYPICAL
U.N.O. -- UNLESS NOTED OTHERWISE
VAV -- VARIABLE AIR VOLUME BOXES/ TERMINAL REHEAT
V.I.F. -- VERIFY IN FIELD
VERT. -- VERTICAL
W.C. -- WATER CLOSET

LEGEND:

- -- EXISTING PIPE (UNDERGROUND)
- - - - - -- NEW PIPE (UNDERGROUND)
- - - - - -- EXISTING PIPE (ABOVEGROUND)
- - - - - -- NEW PIPE (ABOVEGROUND)
--- V --- -- EXISTING VENT
--- V --- -- NEW VENT
--- -- NEW HOT WATER
--- -- NEW COLD WATER
--- -- NEW COMPRESSED AIR
--- -- EXISTING DUCT WORK (TO REMAIN)
--- -- EXISTING DUCT WORK (TO BE REMOVED)
--- -- NEW DUCT WORK
--- -- FLEXIBLE CONNECTION
--- -- POINT OF CONNECTION, NEW TO EXISTING
--- -- FIRE DAMPER AND ACCESS DOOR
--- -- VOLUME DAMPER
--- -- VARIABLE AIR VOLUME BOX
--- -- SUPPLY
--- -- RETURN/ EXHAUST
--- -- SUPPLY
--- -- THERMOSTAT
--- -- CAP
--- -- PIPING CONNECTION -- UP
--- -- PIPING CONNECTION -- DOWN
--- -- PIPING CONNECTION -- BOTTOM
--- -- VALVE

MECHANICAL SPECIFICATION

WORK INCLUDED:
FURNISH ALL LABOR AND MATERIAL, APPLIANCES, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS:

PLUMBING.
HEATING, VENTILATING AND AIR CONDITIONING.

DEFINITIONS:
"PROVIDE": TO FURNISH AND COMPLETELY INSTALL SPECIFIED PRODUCTS AND INCIDENTALS, WHETHER SPECIFICALLY INDICATED OR NOT, NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. INCLUDES ALL GENERAL AND SPECIALIZED LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE INSTALLATION.

"PIPING": A COMPLETE SYSTEM, INCLUDING PIPE, TUBING, FITTINGS, HANGERS, SUPPORTS, VALVES, AND ALL SPECIALTIES THAT COMPRISE A FULLY FUNCTIONAL PIPING SYSTEM, WHETHER SPECIFICALLY INDICATED OR NOT.

CODES, ORDINANCES, AND STANDARDS:
ALL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE LATEST ADOPTED FEDERAL, STATE AND LOCAL CODES, ORDINANCES, AND STANDARDS HAVING JURISDICTION OVER THE WORK.

WHERE CONTRACT DOCUMENT REQUIREMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, ORDINANCES AND STANDARDS, THE CONTRACT DOCUMENT REQUIREMENTS SHALL BE TAKEN AS MINIMUM.

ALL EQUIPMENT CONTAINING ELECTRICAL WIRING AND/OR ELECTRICAL COMPONENTS SHALL HAVE A UNDERWRITERS LABORATORIES (UL) "PACKAGE" LABEL.

PERMITS, FEES AND INSPECTIONS:
SECURE ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS.

FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

EXAMINATION OF SITE:
VISIT PROJECT SITE AND BECOME FULLY COGNIZANT OF ALL EXISTING ARCHITECTURAL, MECHANICAL, ELECTRICAL, STRUCTURAL AND SITE CONDITIONS, OR EXISTING CODE VIOLATIONS WHICH MAY AFFECT THE WORK.

NOTIFY ARCHITECT PRIOR TO SUBMITTING BID IF REVISIONS TO CONTRACT DOCUMENTS ARE NECESSARY TO RECTIFY ANY OF THE AFOREMENTIONED EXISTING CONDITIONS.

NO "EXTRAS" TO CONTRACT PRICE WILL BE ALLOWED AFTER RECEIVING BID IN ORDER TO RECTIFY EXISTING CONDITIONS IN ORDER TO MEET THE DESIGN INTENT OF THE CONTRACT DOCUMENTS OR SATISFY CODE REQUIREMENTS.

COORDINATION WITH OTHER TRADES:
COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED TRADES.

WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT.

RELOCATION OF CONFLICTING INSTALLED WORK, DUE TO LACK OF COORDINATION, OR POOR COORDINATION WILL NOT BE CONSIDERED EXTRA WORK.

APPROVED MANUFACTURERS:
USE ONLY MATERIALS SPECIFICALLY INDICATED IN CONTRACT DOCUMENTS, OR COMPARABLE MATERIALS BY OTHER LISTED ACCEPTABLE MANUFACTURERS. NOTE THAT "ACCEPTABLE MANUFACTURER" DOES NOT CONSTITUTE AUTOMATIC APPROVAL OF SPECIFIC MATERIALS BY ONE OR ALL OF THE LISTED ACCEPTABLE MANUFACTURERS. ARCHITECT RESERVES THE RIGHT OF FINAL DETERMINATION OF ACCEPTABILITY OF EACH ITEM.

FURNISHING OF MATERIALS AND MANUFACTURERS OTHER THAN THOSE INDICATED AS ACCEPTABLE IN THE CONTRACT DOCUMENTS WILL BE CONSIDERED VOLUNTARY SUBSTITUTES.

SUBMIT ALL VOLUNTARY SUBSTITUTES TO ARCHITECT FOR REVIEW NO LATER THAN FIFTEEN (15) DAYS PRIOR TO BID DUE DATE. IF ACCEPTABLE, ARCHITECT WILL AUTHORIZE USE OF SUBSTITUTE IN WRITTEN FORM BY LETTER OR ADDENDUM TO CONTRACT DOCUMENTS.

APPROVED VOLUNTARY SUBSTITUTES MUST ONLY BE INDICATED ON FORM OF PROPOSAL WITH APPROPRIATE "ADD" OR "DEDUCT" TO CONTRACT PRICE. DO NOT USE VOLUNTARY SUBSTITUTES FOR BASE BID.

AFTER FIFTEEN (15) DAYS PRIOR TO BID DUE DATE, NO CONSIDERATION WILL BE GIVEN TO VOLUNTARY SUBSTITUTES.

SHOP DRAWINGS:
SUBMIT COMPLETE SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.

SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.

SUBMIT A MINIMUM OF SIX (6) COPIES OF ALL SHOP DRAWINGS FOR REVIEW BY ARCHITECT. ONE (1) COPY WILL BE RETAINED BY ARCHITECT, ONE (1) COPY TO BE INCLUDED IN OPERATION AND MAINTENANCE MANUAL, AND A MINIMUM OF ONE (1) COPY TO BE USED BY MECHANICAL TRADES.

NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

OPERATION AND MAINTENANCE MANUALS:
UPON COMPLETION OF PROJECT, SUBMIT TWO (2) COMPLETE BOUND SETS OF OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND SYSTEMS INSTALLED IN THIS PROJECT.

MANUALS SHALL INCLUDE GUARANTEE(S), COMPLETE OPERATING INSTRUCTIONS, REPAIR PARTS LIST, PREVENTATIVE MAINTENANCE SCHEDULE, BELT AND FILTER SCHEDULE, AND LIST OF ALL SUBCONTRACTORS ASSOCIATED WITH THE WORK, INCLUDING TELEPHONE NUMBER AND CONTACT PERSON.

OPERATING AND MAINTENANCE INSTRUCTIONS:
PRIOR TO FINAL ACCEPTANCE BY OWNER, PROVIDE ALL PERSONNEL, EQUIPMENT, AND LABOR AS NECESSARY TO INSTRUCT OWNER'S PERSONNEL IN PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT INSTALLED IN THIS PROJECT. PROVIDE INSTRUCTIONAL SESSION DURING TIME PERIOD AGREED TO WITH OWNER.

CUTTING AND PATCHING:
ALL CUTTING AND PATCHING SHALL BE PROVIDED BY THE GENERAL TRADES UNDER THE DIRECTION OF THE MECHANICAL TRADES. COST WILL BE PAID BY THE MECHANICAL TRADE REQUESTING THE WORK.

RESTORED SURFACES SHALL BE OF SAME MATERIALS AND QUALITY AS ADJACENT SURFACES, AND SHALL MATCH SURROUNDING SURFACES, AND/OR BE RESTORED TO PRE-CONSTRUCTION CONDITION.

PROTECTION OF EXISTING SERVICES:
PROTECT FROM ALL DAMAGE, EXISTING SERVICES (I.E., WATER, ELECTRICAL, ETC.), ENCOUNTERED IN THE WORK, NOT SPECIFICALLY INDICATED TO BE DEMOLISHED. INCLUDE ALL RELATED COSTS.

REPAIR AND/OR REPLACE EXISTING ACTIVE SERVICES INTENDED TO REMAIN IN SERVICE, BUT DAMAGED DURING THE COURSE OF CONSTRUCTION. ABSORB ALL RELATED COSTS. NO "EXTRAS" WILL BE PAID TO RESTORE EXISTING ACTIVE SERVICES DAMAGED DURING CONSTRUCTION.

ARCHITECT WILL DETERMINE COURSE OF ACTION WHEN EXISTING INACTIVE SERVICES ARE DAMAGED DURING COURSE OF CONSTRUCTION. ABSORB ALL COSTS RELATIVE TO ADDITIONAL DEMOLITION, TERMINATION, RELOCATION AND/OR RESTORATION OF EXISTING, DAMAGED INACTIVE SERVICES AS DIRECTED BY ARCHITECT.

CLEANING AND FINISHING:
PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER.

GUARANTEE:
PROVIDE A ONE (1) YEAR GUARANTEE COVERING ALL LABOR AND MATERIAL PROVIDED IN THIS PROJECT. GUARANTEE SHALL INCLUDE ALL SHIPPING AND TRANSPORTATION CHARGES NECESSARY TO RETURN DEFECTIVE MATERIALS TO MANUFACTURER, AS WELL AS LABOR CHARGES NECESSARY TO REMOVE AND REPLACE DEFECTIVE MATERIALS.

DEFECTIVE MATERIALS AND/OR EQUIPMENT MAY BE REPAIRED IN LIEU OF REPLACED WITH PRIOR APPROVAL OF ARCHITECT AND/OR OWNER.

PLUMBING SYSTEM:
THE WORK UNDER THIS SECTION SHALL CONSIST OF PROVIDING AND INSTALLING NEW PLUMBING FIXTURE, EQUIPMENT, AND PIPING, INCLUDING ALL LABOR AND MATERIALS, FOR A COMPLETE PLUMBING SYSTEM, TESTED AND READY FOR USE, AS INDICATED ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND AS DESCRIBED HEREIN.

SYSTEM DESCRIPTION:
SANITARY SEWER SYSTEM: CONNECT TO EXISTING SYSTEMS AS INDICATED. VERIFY THE EXACT LOCATION, SIZE, AND DEPTH BEFORE STARTING CONSTRUCTION.

DOMESTIC WATER SYSTEM: CONNECT TO EXISTING BUILDING DOMESTIC WATER SYSTEM, AS INDICATED. VERIFY THE EXACT LOCATION, SIZE, AND WATER PRESSURE BEFORE STARTING CONSTRUCTION.

ALL DRILLING, CUTTING AND PATCHING REQUIRED FOR THE WORK; PATCHING MATERIALS AND FINISH SHALL MATCH THE SURROUNDING WORK.

ALL LABOR, MATERIALS, AND EQUIPMENT NOT INDICATED BY THE DRAWINGS OR SPECIFICATIONS, WHICH ARE REQUIRED FOR PROPER OPERATION OF THE SYSTEMS IN ACCORDANCE WITH THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS, SHALL BE PROVIDED AND INCORPORATED IN THE WORK BY AND AT THE EXPENSE OF THE CONTRACTOR.

PIPING NOTES:
SANITARY AND VENT PIPE, FITTINGS: ABOVE GRADE, BELOW GRADE AND/OR BELOW FLOOR SLABS WITHIN BUILDING WALLS.

UP TO 6" DIAMETER (IF CODE APPROVED): PIPE: ASTM D2665 SCHEDULE 40 PVC-DWV INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FITTINGS: ASTM D1554 SOLVENT CEMENTED. SOLVENT CEMENT: ASTM D2564. INSTALLATION: IN ACCORDANCE WITH ASTM D2321. WHEN PENETRATING FIRE RATED ASSEMBLY THE PIPING MATERIAL NEEDS TO COMPLY WITH UL 723 AND ASTM E84.

ABOVEGROUND DOMESTIC HOT AND COLD WATER:
DOMESTIC HOT WATER:
PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE. FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT, FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

DOMESTIC COLD WATER 4" AND SMALLER:
PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE. FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT, FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

VALVES:
PROVIDE ALL VALVES NECESSARY FOR THE PROPER OPERATION AND DRAINAGE OF THE SYSTEMS. PROVIDE DRAIN VALVES AT ALL LOW POINTS IN ALL SYSTEMS. PROVIDE DRAIN VALVES IN EACH HORIZONTAL RUNOUT FROM EACH RISER ON ALL FLOORS SO THAT ALL HORIZONTAL PIPING ON ALL FLOORS CAN BE INDIVIDUALLY DRAINED WITHOUT DRAINING THE ENTIRE PIPING SYSTEM.

PROVIDE BALL VALVES AT EACH PIECE OF EQUIPMENT REQUIRING A WATER CONNECTION, IN RISERS AND MAIN BRANCHES AT POINTS OF TAKE-OFF FROM THEIR SUPPLY AND RETURN MAINS, ADJACENT TO CONTROL VALVES AND ALL EQUIPMENT REQUIRING DISCONNECTION FOR REPAIRS.

PROVIDE CHECK VALVES WHERE SHOWN OR NECESSARY TO PREVENT BACKFLOW.

PROVIDE BALANCING VALVES IN LINES WHERE IT IS NECESSARY TO REGULATE THE QUANTITY OF WATER FLOWING IN A CIRCUIT.

ALL VALVES SHALL BE LINE SIZE UNLESS OTHERWISE INDICATED.

ALL PRODUCTS THAT CONSTITUTE A PART OF ANY VALVE ASSEMBLY SHALL BE ASBESTOS-FREE.

DOMESTIC COLD WATER AND DOMESTIC HOT WATER SYSTEMS:
BALL VALVES:
BALL VALVES 1/4" TO 1" PIPE SIZE: APOLLO 77C-140-01 FULL PORT, TWO PIECE WITH SCREWED ENDS, BRONZE BODY AND END PIECE, STAINLESS STEEL BALL, TEFLON SEAT RINGS, STAINLESS STEEL STEM, REINFORCED PTFE TEFLON PACKING WITH BRASS PACKING GLAND, ZINC PLATED STEEL HANDLE WITH PLASTIC GRIP SECURED BY ZINC PLATED STEEL HANDLE NUT, 150 PSI STEAM, 600 PSI WOG WORKING PRESSURE.

BALL VALVES 1-1/4" TO 2" PIPE SIZE: APOLLO 82-140-01, 3 PIECE, FULL SIZE PORT WITH SCREWED ENDS, BRONZE BODY, STAINLESS STEEL BALL, TEFLON DOUBLE SEAL SEATS AND THRUST WASHER, BRASS PACKING GLAND, REINFORCED TEFLON PACKING, STAINLESS STEEL STEM, PLASTIC COATED ZINC PLATED STEEL HANDLE AND ZINC PLATED STEEL HANDLE NUT, 150 PSI SATURATES STEAM, 600 PSI WOG.