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PIERCE ELEMENTARY SCHOOL REMODELING

BIRMINGHAM PUBLIC SCHOOLS

BIRMINGHAM, MI 48009

PROJECT NUMBER 15102

BIDS

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CONSULTANT

LIST OF DRAWINGS

GENERAL INFORMATION
TS.1 COVER SHEET
TG.1 GENERAL INFORMATION

LANDSCAPE
L3.01 SOFTBALL FILED IMPROVEMENTS
L3.02 SOFTBALL FIELD DETAILS

STRUCTURAL
S-001 GENERAL STRUCTURAL NOTES
S-002 SPECIAL INSPECTIONS
S-101 TRUCK DOCK PLAN
S-501 TYPICAL DETAILS

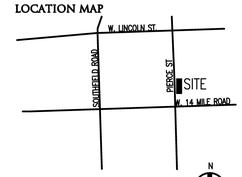
ARCHITECTURAL
AC1.1 FIRST LEVEL COMPOSITE FLOOR PLAN
AC1.2 SECOND LEVEL COMPOSITE FLOOR PLAN
AD1.1 DOOR AND FRAME SCHEDULE
A0.1A FIRST LEVEL DEMOLITION PLAN - ZONE 'A'
A0.1B FIRST LEVEL DEMOLITION PLAN - ZONE 'B'
A0.1C FIRST LEVEL DEMOLITION PLAN - ZONE 'C'
A0.2A SECOND LEVEL DEMOLITION PLAN - ZONE 'A'
A0.2B SECOND LEVEL DEMOLITION PLAN - ZONE 'B'
A0.2C SECOND LEVEL DEMOLITION PLAN - ZONE 'C'
A1.1A FIRST LEVEL FLOOR PLAN - ZONE 'A'
A1.1B FIRST LEVEL FLOOR PLAN - ZONE 'B'
A1.1C FIRST LEVEL FLOOR PLAN - ZONE 'C'
A1.2A SECOND LEVEL FLOOR PLAN - ZONE 'A'
A1.2B SECOND LEVEL FLOOR PLAN - ZONE 'B'
A1.2C SECOND LEVEL FLOOR PLAN - ZONE 'C'
A2.2B SECOND LEVEL REFLECTED CEILING PLAN - ZONE 'B'
A3.1 EXTERIOR ELEVATIONS
A3.2 EXTERIOR ELEVATIONS
A4.1 WALL SECTIONS (NOT ISSUED)
A7.1 INTERIOR ELEVATIONS (NOT ISSUED)
A10.1C FINISH FLOOR PLAN - ZONE 'C'

MECHANICAL
MC1.1 FIRST LEVEL MECHANICAL COMPOSITE PLAN, SHEET INDEX, ABBREVIATION AND SYMBOL LIST
MC1.2 SECOND LEVEL MECHANICAL COMPOSITE PLAN
M2.1A FIRST LEVEL MECHANICAL PLAN - ZONE 'A'
M2.1B FIRST LEVEL MECHANICAL PLAN - ZONE 'B'
M2.1C FIRST LEVEL MECHANICAL PLAN - ZONE 'C'
M2.2A SECOND LEVEL MECHANICAL PLAN - ZONE 'A'
M2.2B SECOND LEVEL MECHANICAL PLAN - ZONE 'B'
M2.2C SECOND LEVEL MECHANICAL PLAN - ZONE 'C'
M3.1 MECHANICAL SCHEDULES AND DETAILS
M4.1 TEMPERATURE CONTROLS
M4.2 TEMPERATURE CONTROLS
M4.3 TEMPERATURE CONTROLS
M4.4 TEMPERATURE CONTROLS
M4.5 TEMPERATURE CONTROLS
M4.6 TEMPERATURE CONTROLS
M4.7 TEMPERATURE CONTROLS
M4.8 TEMPERATURE CONTROLS

ELECTRICAL
EC1.1 FIRST LEVEL ELECTRICAL COMPOSITE PLAN, SHEET INDEX, SYMBOL LIST AND LIGHTING FIXTURE SCHEDULE
EC1.2 SECOND LEVEL ELECTRICAL COMPOSITE PLAN
E0.1C FIRST LEVEL ELECTRICAL DEMOLITION PLAN - ZONE 'C'
E1.1C FIRST LEVEL LIGHTING PLAN - ZONE 'C'
E2.1A FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'A'
E2.1B FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'B'
E2.1C FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'C'
E2.2A SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'A'
E2.2B SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'B'
E2.2C SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'C'
E3.1 MISCELLANEOUS DETAILS AND WIRING DIAGRAMS
E3.2 MISCELLANEOUS DETAILS AND WIRING DIAGRAMS
E4.1 POWER ONE LINE DIAGRAM - NEW WORK

PROJECT DATA:

LOCATION MAP



BIRMINGHAM, MI NO SCALE

ADDRESS: PIERCE ELEMENTARY SCHOOL
1829 PIERCE STREET,
BIRMINGHAM, MI 48009

BUILDING:

BUILDING AREA(S) = 76,851 SQ. FT. (EXISTING)
000,000 SQ. FT. (EXISTING ALTERED)

CODE:

GOVERNING CODES :
- 1999 SCHOOL FIRE SAFETY RULES (1997 Life Safety Code, plus amendments and policy letters)
- 2012 MICHIGAN BUILDING CODE
- 2012 MICHIGAN PLUMBING CODE
- 2012 MICHIGAN MECHANICAL CODE
- 2009 MICHIGAN UNIFORM ENERGY CODE (ANSI/ASHRAE/IESNA Standard 90.1-2007)
- 2014 MICHIGAN ELECTRICAL RULES (2014 NEC, plus Part 8 Rules)
- 2010 MICHIGAN ELEVATOR RULES (ASME A17.1-2010, ASME A18.1-2011)
- MICHIGAN BARRIER FREE CODE (Michigan Building Code 2012 and ICC A117.1-2009)
- 2013 MICHIGAN BOILER CODE RULES (ASME Boiler and Pressure Vessel Code, 2010 edition, plus 2011a addenda) (National Board Inspection Code [NBIC], 2011 edition)

CONSTRUCTION CLASSIFICATION :
HFPA II(000)
M.B.C. II B

USE GROUP CLASSIFICATION:
E (EDUCATION)

FIRE PROTECTION:
FULLY SPRINKLERED

02-15-2016	BP NO. 1 - BIDS
DATE	ISSUED FOR:

LICENSEE'S STATEMENT:

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REGISTRATION SEALS

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PROJECT TITLE
Pierce Elementary School

PROJECT NO.
15102

DRAWING NO.
TS.1

Drawing File: Q:\Work\2015\tmp\15102\15102_cd\15102_ad1.dwg
Feb 15, 2016 - 12:53pm

ABBREVIATIONS

A

ABV.	ABOVE
A.F.F.	ABOVE FINISH FLOOR
A.R.F.	ABOVE REFERENCE FLOOR
ABR.	ABRASIVE
ABS.	ABSORBING
ACC.	ACCESS
ACC. PNL.	ACCESS PANEL
AC.	ACOUSTIC/ACOUSTICAL
ACT	ACOUSTIC TILE
AC. INSUL.	ACOUSTIC INSULATION
ADD.	ADDENDUM
ADDN.	ADDITION
ADDNL.	ADDITIONAL
ADH.	ADHESIVE
ADJ.	ADJUSTABLE
AGGR.	AGGREGATE
A.C.B.	AIR CIRCUIT BREAKER
A/C	AIR CONDITIONING
A.C.C.	AIR CONDITIONING COMPRESSOR
A.C.U.	AIR CONDITIONING UNIT
A.H.U.	AIR HANDLING UNIT
ALT.	ALTERNATE
ALUM./AL	ALUMINUM
AMT	AMOUNT
AMP	AMPHERE
AMPL.	AMPLIFIER
ANCH.	ANCHOR
A.B.	ANCHOR BOLT
&	AND
ANG./ L or ∠	ANGLE
ANOD.	ANODIZED
APT.	APARTMENT
APPR.	APPROVED
APPROX.	APPROXIMATE
ARCH.	ARCHITECT/ARCHITECTURAL
A-	ARCHITECTURAL DRAWING-NO.
A.T.	ASPHALT TILE
ATM	AUTOMATIC TELLER MACHINE
ASPH.	ASPHALT
ASSY.	ASSEMBLY
@	AT
AUTO.	AUTOMATIC
A.S.R.	AUTOMATIC SPRINKLER RISER
AUX.	AUXILIARY
AVG.	AVERAGE

B

B/B	BACK-TO-BACK
B.F.P.	BACK FLOW PREVENTER
B.D.D.	BACK DRAFT DAMPER
B.F.	BARRIER FREE
B.B.R.	BASE BOARD RADIATION
B.PL.	BASE PLATE
BSMT	BASEMENT
B.	BATH ROOM
BM	BEAM
B/C	BACK OF CURB
BRG	BEARING
B.R.	BEDROOM
B.M.	BENCH MARK
BT	BENT
BETW.	BETWEEN
BEV.	BEVEL
BIT.	BITUMINOUS
B.I.	BLACK-IRON
BLK	BLOCK
BLKG	BLOCKING
BD	BOARD
BLR	BOILER
B.LR. F.	BOILER FEED
BLR. H.	BOILER HOUSE
BK. SH.	BOOK SHELVES
B.S.	BOTH SIDES
B.W.	BOTH WAYS
BOT.	BOTTOM
BOT. EL.	BOTTOM ELEVATION
BLVD	BOULEVARD
BDRY	BOUNDARY
BRKT	BRACKET
BR.	BRASS
BRKR	BREAKER
BRK	BRICK
BTU	BRITISH THERMAL UNIT
BRZ	BRONZE
BLDG.	BUILDING
B.L.	BUILDING LINE
B.U.R.	BUILT-UP ROOFING
B.N.	BULLNOSE
BLKD	BULKHEAD JOINT
BULL.	BULLETIN
B.A.	BURGLAR ALARM
BUZZ.	BUZZER

C

CAB.	CABINET
C.U.H.	CABINET UNIT HEATER
CAP.	CAPACITY
CPT	CARPET
C.R.S.	CARPET REDUCER STRIP
CSMT	CASEMENT
CSWRK	CASEWORK
CSG	CASING
C.I.	CAST IRON
C.I.F.	CAST IRON FRAME
C.I.P.	CAST IRON PIPE/CAST-IN-PLACE
CSTG	CASTING
CAT. NO.	CATALOG NUMBER
C.B.	CATCH BASIN
C.L.G.	CEILING
C.D.	CEILING DIFFUSER
CLG. HT.	CEILING HEIGHT
CEM.	CEMENT
CEM. PLAS.	CEMENT PLASTER
CTR	CENTER
℄	CENTERLINE
C/C	CENTER-TO-CENTER
CER.	CERAMIC
C.T.	CERAMIC TILE
C.BD.	CHALKBOARD
CHAM.	CHAMFER
CHG.	CHANGE
CHANL or ⊏	CHANNEL
CHKD. PL.	CHECKERED PLATE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHD	CHORD
CIRCUM.	CIRCUMFERENCE
CIR.	CIRCLE/CIRCULAR
CIRC.	CIRCUIT
C.BR	CIRCUIT BREAKER
C-	CIVIL DRAWING-NO.
CL.	CLASS
CLRM	CLASSROOM
C.O.	CLEAN OUT
CLR	CLEAR
CLR GL	CLEAR GLASS
CLR W.GL	CLEAR WIRE GLASS
CL.	CLOSET
CLO.	CLOSURE
C.CL.	COAT CLOSET
COEF.	COEFFICIENT
CW	COLD WATER
COL.	COLUMN
CO.	COMPANY
COMPT.	COMPARTMENT
COMPO.	COMPOSITION
CA	COMPRESSED AIR
COMPR.	COMPRESSOR
CONC.	CONCRETE
C.M.U.	CONCRETE MASONRY UNIT
CWR	CONDENSING WATER RETURN
CWS	CONDENSING WATER SUPPLY
COND.	CONDUIT
CONF.	CONFERENCE
CONN.	CONNECT
CONST.	CONSTRUCTION
C.J.	CONTROL JOINT
CONT.	CONTINUE/CONTINUOUS
CONTR.	CONTRACTOR
C.P.	CONTROL PANEL
CONV.	CONVECTOR
CNVYR	CONVEYOR
COR.	CORNER
C.G.	CORNER GUARD
CORR.	CORRIDOR/CORRUGATED
CPR	COPPER
CNTR	COUNTER
CTSK	COUNTERSINK
CRS.	COURSE
COV.	COVER
COV. PL.	COVER PLATE
C.C.T.	CUBICAL CURTAIN TRACK
CU.FT.	CUBIC FEET/ CUBIC FOOT
CFM	CUBIC FEET PER MINUTE
CY	CUBIC YARD
CULV.	CULVERT
C.D.	CUP DISPENSER
CYL.	CYLINDER
CYC.	CYCLES

D

DMPR	DAMPER
DMPRG	DAMPPROOFING
D.L.	DEAD LOAD
DB	DECIBLE
D.	DEEP
DWG.	DRAWING
DMT. PARTN	DEMOUNTABLE PARTITION
DEPT.	DEPARTMENT
DEPR.	DEPRESSED
DES.	DESIGN
DET.	DETAIL
D.E. CO.	DETROIT EDISON COMPANY
DIAG.	DIAGONAL
DGM	DIAGRAM
DIA.	DIAMETER
DIFF.	DIFFUSER
DIM.	DIMENSION
D.R.	DINING ROOM
DIR.	DIRECTORY
DISC.	DISCONNECT
DISCONT.	DISCONTINUOUS
DW	DISHWASHER
DISP.	DISPENSER
DIST.	DISTANCE
D.P.	DISTRIBUTION PANEL
DO.	DITTO (DO OVER)
DIV.	DIVIDER/DIVISION
DR.	DOOR
D.O.	DOOR OPENING
DR. OP.	DOOR OPERATOR
DBL.	DOUBLE
D.A.	DOUBLE ACTING
D.H.	DOUBLE HUNG
DWL.	DOWEL
DN	DOWN
D.S.	DOWNSPOUT
DRN	DRAIN
D.T.	DRAIN TILE
D.T.C.	DRAIN TILE CONNECTOR
DWR	DRAWER
DWG	DRAWING
D.F.	DRINKING FOUNTAIN
D.B.	DRY BULB
D.S.P.	DRY STAND PIPE
DBWTR	DUMBWAITER
DUP.	DUPLICATE
D.DR.	DUTCH DOOR

E

EA.	EACH
E.F.	EACH FACE
E.W.	EACH WAY
E	EAST
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
ELAST.	ELASTOMERIC
ELAST. FLASH.	ELASTOMERIC FLASHING
ELAST. W.P.	ELASTOMERIC WATERPROOFING
E.S.R.	ELASTOMERIC SHEET ROOFING
ELEC.	ELECTRIC/ELECTRICAL
ELEC. CL.	ELECTRICAL CLOSET
ELEC. CAB.	ELECTRICAL CABINET
E.C.	ELECTRICAL CONTRACTOR
E-	ELECTRICAL DRAWING-NO.
E.P.	ELECTRICAL PANEL
EWC	ELECTRIC WATER COOLER
ELEC. OPER.	ELECTRICALLY OPERATED
EL.	ELEVATION
ELEV.	ELEVATOR
EMERG.	EMERGENCY
ENCL.	ENCLOSURE
ENGR	ENGINEER
E/E	END-TO-END
ENTR.	ENTRANCE/ENTRY
EP.	EPOXY
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EQ	EQUAL
EQUIP.	EQUIPMENT
EQUIV.	EQUIVALENT
ESC.	ESCALATOR
EST.	ESTIMATE
EXC.	EXCAVATED
EXH.	EXHAUST
E.D.	EXHAUST DUCT
E.F.	EXHAUST FAN
E.G.	EXHAUST GRILLE
E.R.	EXHAUST REGISTER
EXIST.	EXISTING
EXP.	EXPANSION
EXP.B.	EXPANSION BOLT
E.J.	EXPANSION JOINT
EXPL.P.	EXPLOSION PROOF
EXP'D	EXPOSED
EXT'N	EXTENSION
EXT.	EXTERIOR
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM
E.H.	EXTRA HEAVY
EXTR.	EXTRUDED
E.S.P.	EXTERNAL STATIC PRESSURE

F

FAB.	FABRICATED/FABRIC
F/F	FACE-TO-FACE
F. FIN.	FACTORY FINISH
F.C.U.	FAN COIL UNIT
F.S.	FAR SIDE
FAS.	FASTENER
FDR	FEEDER
FT or '	FEET/FOOT
FPM	FEET PER MINUTE
FN	FENCE
F.BD.	FORM BOARD
FIG.	FIGURE
FIN.	FINISH/FINISHED
FIN. FLR/F.F.	FINISH FLOOR
F.T.R.	FINNED TUBE RADIATION
F.A.	FIRE ALARM
F.A.C.P.	FIRE ALARM CONTROL PANEL
F. BRK	FIRE BRICK
F.D.	FIRE DAMPER
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
F.H.C.	FIRE HOSE CABINET
F.H.	FIRE HYDRANT
F.L.	FIRE LINE
F.R.	FIRE RETARDANT/FIRE RATED
F.R.T.W.D	FIRE RETARDANT TREATED WOOD
F.V.C.	FIRE VALVE CABINET
FP.	FIREPLACE
FPRFG.	FIREPROOFING
FXT.	FIXTURE
FLASH.	FLASHING
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLAT HEAD WOOD SCREW
F.C.	FLEXIBLE CONNECTION
FLR	FLOOR
F.C.O.	FLOOR CLEAN OUT
F.D.	FLOOR DRAIN
FLR. FIN.	FLOOR FINISH
FLUOR.	FLUORESCENT
FLDG	FOLDING
FTG	FOOTING
FM. BD	FORMBOARD
FDN	FOUNDATION
FR.	FRAME
FR/COV.	FRAME AND COVER
FRMG	FRAMING
FRZR	FREEZER
F.S.	FULL SIZE
FURN.	FURNISH/FURNISHED
FURR.	FURRING/FURRED
FUT.	FUTURE

G

GA.	GAUGE
GAL.	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GALV.	GALVANIZED
GALV. I.	GALVANIZED IRON
G	GAS
GSKT	GASKET
G.V.& B.	GATE VALVE AND BOX
GEN'L.	GENERAL
GL.	GLASS
GLZ	GLAZING
G.H.T.	GLAZED HOLLOW TILE
G.B.	GRAB BAR
GR.	GRADE/GRILLE
GB	GRADE BEAM
GRAT.	GRATING
G.L.	GRID LINE
GRN	GRANITE
G.S.	GREASE SEPARATOR
G.T.	GREASE TRAP
GND	GROUND
G.F.I.	GROUND FAULT INTERRUPTOR
GT	GROUT
G.	GUTTER ELEVATION
GYP.	GYPSUM
GYP.BD.	GYPSUM BOARD

H

HNDCP	HANDICAPPED
H.R.	HANDRAIL
H.BD	HARDBOARD
HDWE	HARDWARE
HDWD	HARDWOOD
HD	HEAD
HDR	HEADER
H.A. GL.	HEAT ABSORBING GLASS
H.R.U.	HEAT RECOVERY UNIT
HTR	HEATER
HTG	HEATING
H/V	HEATING AND VENTILATING
H.V.A.C.	HEATING, VENTILATING AND AIR CONDITIONING
HHWR	HEATING HOT WATER SUPPLY
HHWS	HEATING HOT WATER RETURN
HGT	HEIGHT
HEX.	HEXAGON
H.	HIGH
H.I.D.	HIGH INTENSITY DISCHARGE
H.P.	HIGH POINT
H.PR.	HIGH PRESSURE
H.S.	HIGH STRENGTH
H.S.B.	HIGH STRENGTH BOLT
H.V.	HIGH VOLTAGE
HWY	HIGHWAY
HSTWY	HOISTWAY
H.C.	HOLLOW CORE
H.M.	HOLLOW METAL
HNYCB	HONEYCOMB
HK	HOOK
HORIZ.	HORIZONTAL
HP	HORSEPOWER
H.B.	HOSE BIBB
H.S.P.	HOSE STAND PIPE
H.V.C.	HOSE VALVE CABINET
HOSP.	HOSPITAL
H.W.	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HR.	HOUR
H.O.	HUB OUTLET
HYD.	HYDRANT/HYDRAULIC
H	HYDROGEN

I

I.D.	IDENTIFICATION
INCAND.	INCANDESCENT
IN. or "	INCH/INCHES
INCIN.	INCINERATOR
INCL.	INCLUDE/INCLUDING
I.W.	INDIRECT WASTE
INFO.	INFORMATION
I.D.	INSIDE DIAMETER
I.F.	INSIDE FACE
INST'L.	INSTALL/INSTALLATION
INSUL.	INSULATE/INSULATION
INT.	INTERIOR
INTER.	INTERMEDIATE
INV.	INVERT
I.E.	INVERT ELEVATION

J

J.C.	JANITOR CLOSET
JT	JOINT
JST	JOIST
J.B.	JUNCTION BOX
JR	JUNIOR

K

K.P.	KICK PLATE
KV	KILOVOLT
KVA	KILOVOLT AMPHERE
KW	KILOWATT
K	KIP (1000#)
KIT.	KITCHEN
K.S.	KNEE SPACE
K.D.	KNOCK DOWN
K.O.P.	KNOCK-OUT PANEL

L

LBL.	LABEL
LAB.	LABORATORY
LAD.	LADDER
L.B.	LAG BOLT
LAM.	LAMINATE/LAMINATED
LDG	LANDING
L-	LANDSCAPE DRAWING-NO.
LGE	LARGE
LDRY	LAUNDRY
LAV.	LAVATORY
L.H.	LEFT HAND
L.H.R.B.	LEFT HAND REVERSE BEVEL
LGTH	LENGTH
LEV.	LEVEL
LIB.	LIBRARY
LT.	LIGHT
LPRF	LIGHTPROOF
LTG	LIGHTING
L.P.	LIGHTING PANEL
L.R.P.	LIGHTING RECEPTACLE PANEL
LTWT	LIGHTWEIGHT
LTWT. CONC.	LIGHTWEIGHT CONCRETE
LMS	LIMESTONE
LTL	LINTEL
LIN. DIFF.	LINEAR DIFFUSER
L.F.	LINEAR FEET/FOOT
LIQ	LIQUID
LPG	LIQUID PROPANE GAS
L.P.G.	LIQUID PETROLEUM GAS
L.L.	LIVE LOAD
L.R.	LIVING ROOM
LOC.	LOCATION
LKR	LOCKER
LG	LONG
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
LVR	LOUVER
L.O.	LOUVER OPENING
L.P.	LOW POINT
L.PR.	LOW PRESSURE
LBR	LUMBER
LBS. or #	POUNDS

M

MACH.	MACHINE
M.B.	MACHINE BOLT
MACH. RM	MACHINE ROOM
M.A.U.	MAKE-UP AIR UNIT
M.D.P.	MAIN DISTRIBUTION PANEL
M.S.B.	MAIN SWITCH BOARD
MAINT.	MAINTENANCE
MH.	MANHOLE
MFR	MANUFACTURER
MAR.	MARBLE
MK	MARK
MAS.	MASONRY
M.O.	MASONRY OPENING
MATL	MATERIAL
MAX.	MAXIMUM
MECH.	MECHANICAL
M-	MECHANICAL DRAWING-NO.
M.C.	MEDICINE CABINET
MED.	MEDIUM
MEMB.	MEMBRANE
MET.	METAL
M.D.S.	METAL DIVIDER STRIP
M.E.S.	METAL EDGE STRIP
M.L.	METAL LATH
M.L.& PLAS.	METAL LATH AND PLASTER
M.T.	METAL THRESHOLD
MET. W.P.	METALLIC WATERPROOFING
MEZZ.	MEZZANINE
MDOT	MICHIGAN DEPARTMENT OF TRANSPORTATION
MWK.	MILLWORK
MIN.	MINIMUM
MIR.	MIRROR
M.&S.	MIRROR AND SHELF
MISC.	MISCELLANEOUS
M.I.	MISCELLANEOUS IRON
MOD.	MODEL
MON.	MONUMENT
M.S.& S.	MOP STRIP AND SHELF
M.O.D.	MOTOR OPERATED DAMPER
MLDG	MOULDING
MTD	MOUNTED
MTG	MEETING/MOUNTING
MOV.	MOVEABLE
MOV. PARTN.	MOVEABLE PARTITION
MULL	MULLION
M	THOUSAND (1000)

N

NAT.	NATURAL
N.S.	NEAR SIDE
NEUT.	NEUTRAL
NRC	NOISE REDUCTION COEFFICIENT
NOM.	NOMINAL
NOR.	NORMAL
N	NORTH
NOS.	NOSING
N.I.C.	NOT-IN-CONTRACT
N.T.S.	NOT-TO-SCALE
NO. or #	NUMBER

O

OBS.	OBSCURE
OBS.GL.	OBSCURE GLASS
OFF.	OFFICE
O.C.	ON CENTER
OPQ.	OPAQUE
OPG.	OPENING
OPER.	OPERATOR
OPP.	OPPOSITE
OPP.HD.	OPPOSITE HAND
ORIG.	ORIGINAL
ORN.	ORNAMENTAL
OZ.	OUNCE
O/D	OUT-TO-OUT
O.A.	OUTSIDE AIR
O.D.	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
O.H.S.	OVAL HEAD SCREW
O.A.	OVERALL
OHD	OVERHEAD
OHD.DR	OVERHEAD DOOR
OXY.	OXYGEN

P

PTD	PAINTED
PR	PAIR
PG.	PAGE
PNL.	PANEL
P.T.D.	PAPER TOWEL DISPENSER
P.T.W.R.	PAPER TOWEL WASTE RECEPTACLE
PRL	PARALLEL
PKG	PARKING
P.BD	PARTICLE BOARD
PRTN	PARTITION
PASS.	PASSAGE
PAT.	PATENT
PVMT	PAVEMENT
PVG	PAVING
PED.	PEDESTAL
PERF.	PERFORATED
PERIM.	PERIMETER
PERM.	PERMANENT
PERP.	PERPENDICULAR
P. or ℘	PHASE
PHOTO.	PHOTOGRAPH
P.H.	PHYSICALLY HANDICAPPED
PC.	PIECE
PCS.	PIECES
PLAS.	PLASTER
PL. LAM.	PLASTIC LAMINATE
PL.	PLATE
PL. GL.	PLATE GLASS
PLAT.	PLATFORM
PLBG	PLUMBING
PLWD	PLYWOOD
PT	POINT
P.T.	POINT OF TANGENCY
P.C.	POINT OF CURVATURE
POL.	POLISH/POLISHED
PVC	POLYVINYLCHLORIDE
PORC.	PORCELAIN
PORC. ENAM.	PORCELAIN ENAMEL
POR.	POROUS
PORT.	PORTABLE
POS.	POSITION
P.I.V.	POST INDICATOR VALVE
PLF	POUNDS PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PCF	POUNDS PER CUBIC FOOT
P.P	POWER PANEL
P/C	PRECAST
P.T.R.	PRECAST TERRAZZO RECEPTOR
PREFAB.	PREFABRICATED
PFN.	PREFINISHED
P.T.WD	PRESERVATIVE TREATED WOOD
P.G.	PRESSURE GAUGE
P.R.V.	PRESSURE REDUCING VALVE
PRIM.	PRIMARY
PROJ.	PROJECT/PROJECTION
PROP.	PROPERTY/PROPOSED
P.L.	PROPERTY LINE
P.A.	PUBLIC ADDRESS
P.S.	PURSE SHELF
P.B.	PUSH BUTTON

Q

QTY	QUANTITY
Q.T.	QUARRY TILE
QTR	QUARTER
QTR. RD	QUARTER ROUND

R

RBT	RABBET
RAD. or R.	RADIUS
R.W.C.	RAIN WATER CONDUCTOR
R.R.	RAILROAD
RECEIV.	RECEIVE/RECEIVING
RECPT.	RECEPTACLE
R.P.	RECEPTACLE PANEL
REC.	RECESS
RECT.	RECTANGLE/RECTANGULAR
RED.	REDUCER
RWD	REDWOOD
REF.	REFER/REFERENCE
REFL.	REFLECTED/REFLECTIVE
REFR.	REFRIGERATOR
REG.	REGISTER
REINF.	REINFORCE/REINFORCING/ REINFORCEMENT
REM.	REMOVE/REMOVABLE
REP.	REPAIR
REQ'D.	REQUIRED
RESIL.	RESILIENT
RET.	RETURN
R.A.	RETURN AIR
R.A.D.	RETURN AIR DIFFUSER
R.A.F.	RETURN AIR FAN
REV.	REVISED/REVISION
RPM	REVOLUTIONS PER MINUTE
RISER	RISER
R.H.	RIGHT HAND
R.H.R.B.	RIGHT HAND REVERSE BEVEL
R.O.W.	RIGHT OF WAY
RVT	RIVET
RD	ROAD
R.S.C.	ROLLING STEEL CURTAIN
RF	ROOF
R.C.	ROOF CONDUCTOR
R.D.	ROOF DRAIN
RF.H.	ROOF HATCH
R.S.	ROOF SUMP
R.V.	ROOF VENTILATOR
RFG	ROOFING
R.T.U.	ROOF TOP UNIT
RM	ROOM
R.O.	ROUGH OPENING
RND or ◔	ROUND
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
R.T.	RUBBER TILE

S

SAN.	SANITARY
S.N.D.	SANITARY NAPKIN DISPENSER
S.N.R.	SANITARY NAPKIN RECEPTACLE
SCHED.	SCHEDULE
SCN	SCREEN
STG	SEATING
SECT.	SECTION
SERV.	SERVICE
S.S.	SERVICE SINK
SHTHG	SHEATHING
SHT	SHEET
SHT. MET.	SHEET METAL
SH.& R.	SHELF AND ROD
SHWR	SHOWER
S.C.R.	SHOWER CURTAIN ROD
S.DR	SHOWER DOOR
S.W.	SIDEWALK
SIM.	SIMILAR
SGL.	SINGLE
SK	SINK
S.D.	SOAP DISPENSER
S.C.	SOLID CORE
STC	SOUND TRANSMISSION CLASS
S	SOUTH
SP.	SPACE
SPR.	SPARE
SPKR	SPEAKER
SPEC.	SPECIFICATIONS
S.D.	SPLITTER DAMPER
SPRYD	SPRAYED
SPKLR	SPRINKLER
SQ.	SQUARE
S.F.	SQUARE FEET/SQUARE FOOT
STAG.	STAGGERED
ST.STL	STAINLESS STEEL
STD	STANDARD
SP.	STANDPIPE
S.P.	STATIC PRESSURE
STA.	STATION
STM	STEAM
STL	STEEL
STL. PL.	STEEL PLATE
STIFF.	STIFFENER
STO. FR.	STOREFRONT
STOR.	STORAGE
STR.	STRAIGHT
ST.	STREET
STRUCT.	STRUCTURAL
S-	STRUCTURAL DRAWING-NO.
S.G.F.T.	STRUCTURAL GLAZED FACING TILE
S.STL	STRUCTURAL STEEL
SB.D.	SUBSOIL DRAIN
SS.D.C.	SUBSOIL DRAIN CONNECTION
SUB.	SUBSTATION
S.A.G.	SUPPLY AIR GRILLE
S.D.	SUPPLY DIFFUSER/ DUCT
SUBST.	SUSTITUTE
S.A.R.	SUPPLY AIR REGISTER
S.F.	SUPPLY FAN

S

SW.	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMBOL/ SYMMETRICAL
SYS.	SYSTEM
SUPP.	SUPPORT
SURF.	SURFACE/ SURFACING
SUSP.	SUSPEND/ SUSPENSION

T

T.BD	TACKBOARD
TAN.	TANGENT
TECH.	TECHNICAL
TEL.	TELEPHONE
TEL. CAB.	TELEPHONE CABINET
TV	TELEVISION
TV.M	TELEVISION MONITOR
TEMP.	TEMPERATURE
TEMP. GL.	TEMPERED GLASS
T.U.	TERMINAL UNIT
TERR.	TERRAZZO
T.B.	TEST BORING
T.	THERMOSTAT
THK	THICK/ THICKNESS
T.S.	THICKENED SLAB
THD	THREAD
THRESH.	THRESHOLD
THRU	THROUGH
T.	TILE
T./ TOIL.	TOILET
T.P.D.	TOILET PAPER DISPENSER
T.P.H.	TOILET PAPER HOLDER
T & G	TONGUE AND GROOVE
T & B	TOP AND BOTTOM
T/C	TOP OF CURB
T/EL.	TOP ELEVATION
T/F	TOP OF FOOTING
T/G	TOP OF GUTTER
T/M	TOP OF MASONRY
T/P	TOP OF PARAPET
T/P	TOP OF PAVEMENT
T/R	TOP OF RIM
T/S	TOP OF STEEL
T/W	TOP OF WALL
T.B.	TOWEL BAR
T.D.	TOWEL DISPENSER
TD &/WR	TOWEL DISPENSER AND WASTE RECEPTACLE
T.G.	TRANSFER GRILLE
TRFR	TRANSFORMER
TRAN.	TRANSOM
T	TREAD
T.D.	TRENCH DRAIN
TS	TUBE SECTION
T.V.	TURNING VANE
T.T.	TWIN TEE
TYP.	TYPICAL

U

U.C.	UNDERCUT
U.G.	UNDER GROUND
U.	UNDERWRITER'S LABORATORY
ULT.	ULTIMATE
UNFIN.	UNFINISHED
U.H.	UNIT HEATER
U.SUB.	UNIT SUBSTATION
U.V.	UNIT VENTILATOR
USGS	UNITED STATES GEOLOGICAL SURVEY
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL

V

VAC.	VACUUM
V.B.	VACUUM BREAKER
V.C.O.	VACUUM CLEANER OUTLET
V. BARR.	VAPOR BARRIER
VAR.	VARIABLE
VARN.	VARNISH
VNR	VENEER
V. PLAS.	VENEER PLASTER
V.	VENT
VTR	VENT THRU ROOF
VENT.	VENTILATE/ VENTILATION
V.I.F.	VERIFY IN FIELD
VERSUS.	VERSUS
VERT.	VERTICAL/ VERTICALLY
VERT. C.	VERTICAL CURVE
VEST.	VESTIBULE
V.I.	VIBRATION ISOLATOR
VNY	VINYL
VCT	VINYL COMPOSITION TILE
VIN. FAB.	VINYL FABRIC
V.R.S.	VINYL REDUCER STRIP
VIT.	VITREOUS
VCP	VITRIFIED CLAY PIPE
VOL.	VOLUME
V.D.	VOLUME DAMPER
V	VOLTS

W

WAINS.	WAINSCOT
W.CAB.	WALL CABINET
W.C.O.	WALL CLEAN OUT
W.H.	WALL HYDRANT
W/W	WALL-TO-WALL
W.V.	WALL VENT
WHSE	WAREHOUSE
W.F.	WASH FOUNTAIN
W.	WASTE/ WATTS
W &/V	WASTE AND VENT
W.R.	WASTE RECEPTACLE
W.C.	WATER CLOSET
W.G.	WATER GAUGE
W.H.	WATER HEATER
WP	WATERPROOFING
W.PRFG.	WEATHERPROOFING
W.STPG.	WEATHERSTRIPPING
WT.	WEIGHT
W.W.F.	WELDED WIRE FABRIC
W	WEST
W.B.	WET BULB
W.	WIDE/ WIDTH
W._x_	WIDE FLANGE SECTION
WT	WIDE FLANGE TEE SECTION
W.O.	WINDOW OPENING
W.GL.	WIRE GLASS
W.M.	WIRE MESH
w/	WITH
w/o	WITHOUT
WD	WOOD
W.L.	WORK LINE
W.P.	WORK POINT
W.I.	WROUGHT IRON

X

Y

YD	YARD
Y.P.	YIELD POINT
Y.S.	YIELD STRENGTH
YR	YEAR

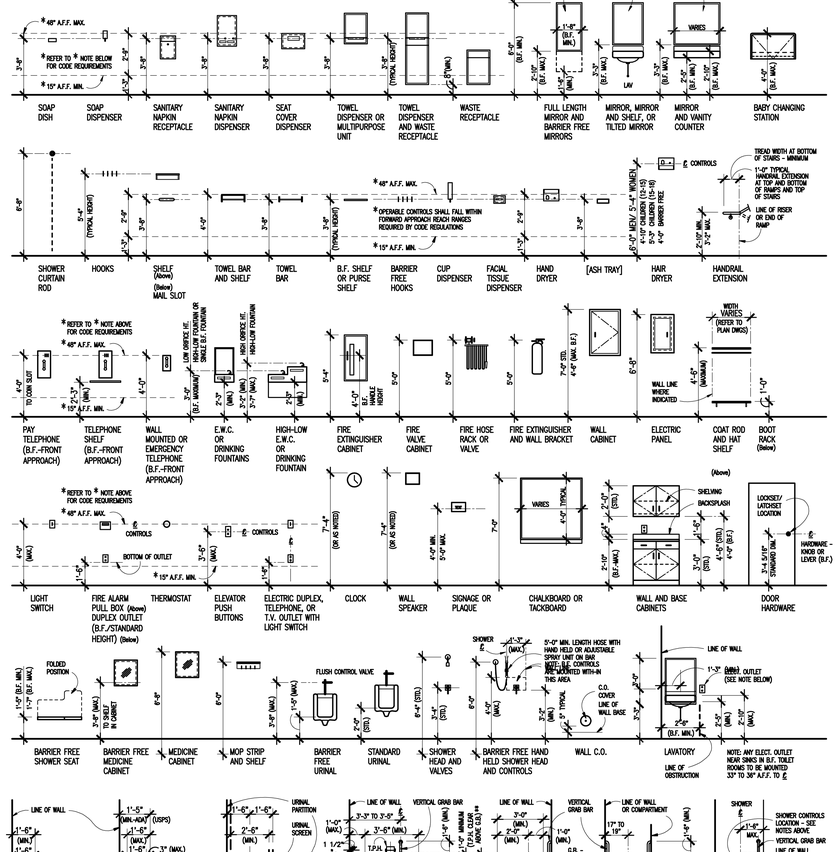
Z

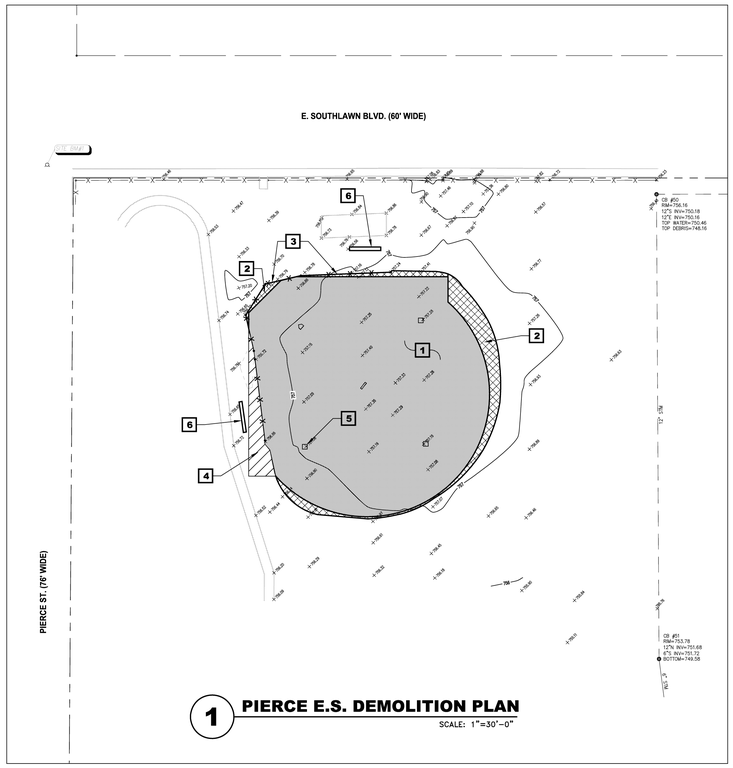
ZC	ZINC

TYPICAL MOUNTING HEIGHTS

MISCELLANEOUS ACCESSORIES, TOILET ACCESSORIES AND FIXTURES

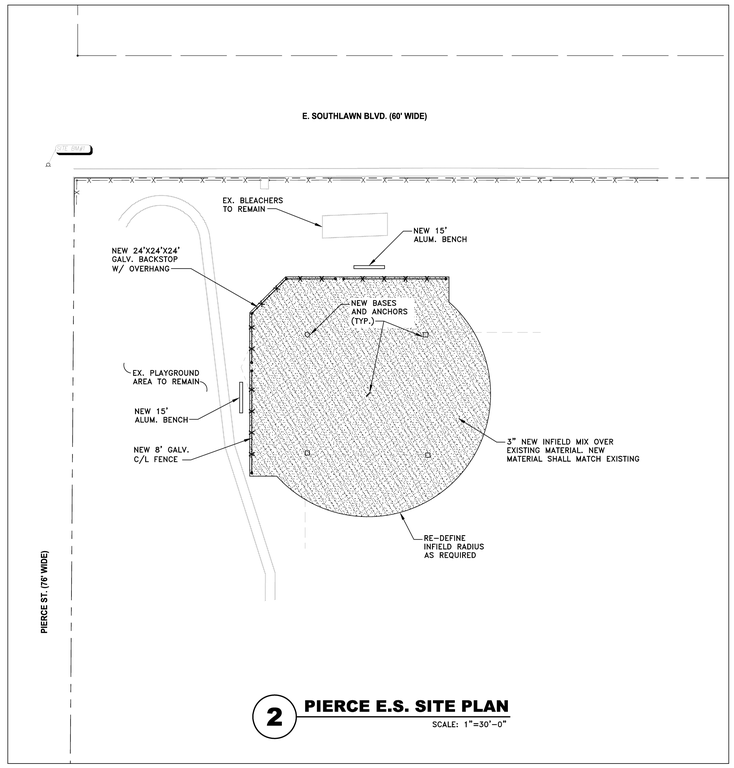
NOTE: MOUNTING HEIGHTS SHOWN ARE PROPOSED FOR ALL ACCESSORIES AND FIXTURES REQUIRED UNLESS OTHERWISE NOTED OR DIMENSIONED ON DRAWINGS FOR SPECIFIC CONDITIONS (B.F. - DENOTES ACCESSIBLE BARRIER FREE REQUIREMENTS)


SOAP DISH
SOAP DISPENSER
SANITARY NAPKIN RECEPTACLE
SANITARY NAPKIN DISPENSER
SEAT COVER DISPENSER
TOWEL DISPENSER OR MULTIPURPOSE UNIT
TOWEL DISPENSER AND WASTE RECEPTACLE
WASTE RECEPTACLE
FULL LENGTH MIRROR AND BARRIER FREE MIRRORS
MIRROR, MIRROR AND SHELF, OR TILTED MIRROR
MIRROR AND VANITY COUNTER
BABY CHANGING STATION
SHOWER CURTAIN ROD
HOOKS
SHELF (Above) (Below) MAIL SLOT
TOWEL BAR AND SHELF
TOWEL BAR
B.F. SHELF OR PURSE SHELF
BARRIER FREE HOOKS
CUP DISPENSER
FACIAL TISSUE DISPENSER
HAND DRYER
[ASH TRAY]
HAIR DRYER
HANDRAIL EXTENSION
PAY TELEPHONE (B.F.-FRONT APPROACH)
TELEPHONE SHELF (B.F.-FRONT APPROACH)
WALL MOUNTED OR EMERGENCY TELEPHONE (B.F.-FRONT APPROACH)
E.W.C. OR DRINKING FOUNTAINS
HIGH-LOW E.W.C. OR DRINKING FOUNTAIN
FIRE EXTINGUISHER CABINET
FIRE VALVE CABINET
FIRE HOSE RACK OR VALVE
FIRE EXTINGUISHER AND WALL BRACKET
WALL CABINET
ELECTRIC PANEL
COAT ROD AND HAT SHELF
BOOT RACK (Below)
LIGHT SWITCH
FIRE ALARM PULL BOX (Above) DUPLEX OUTLET (B.F./STANDARD HEIGHT) (Below)
THERMOSTAT
ELEVATOR PUSH BUTTONS
ELECTRIC DUPLEX, TELEPHONE, OR T.V. OUTLET WITH LIGHT SWITCH
CLOCK
WALL SPEAKER
SIGNAGE OR PLAQUE
CHALKBOARD OR TACKBOARD
WALL AND BASE CABINETS
DOOR HARDWARE
BARRIER FREE SHOWER SEAT
BARRIER FREE MEDICINE CABINET
MEDICINE CABINET
MOP STRIP AND SHELF
BARRIER FREE URINAL
STANDARD URINAL
SHOWER HEAD AND VALVES
BARRIER FREE HAND HELD SHOWER HEAD AND CONTROLS
WALL C.O.
LAVATORY
LAVATORY
URINAL
WATER CLOSET
WATER CLOSET - AMBULATORY ACCESSIBLE COMPARTMENT
WATER CLOSET - ACCESSIBLE
TRANSFER-TYPE SHOWER GRAB BAR LOCATIONS



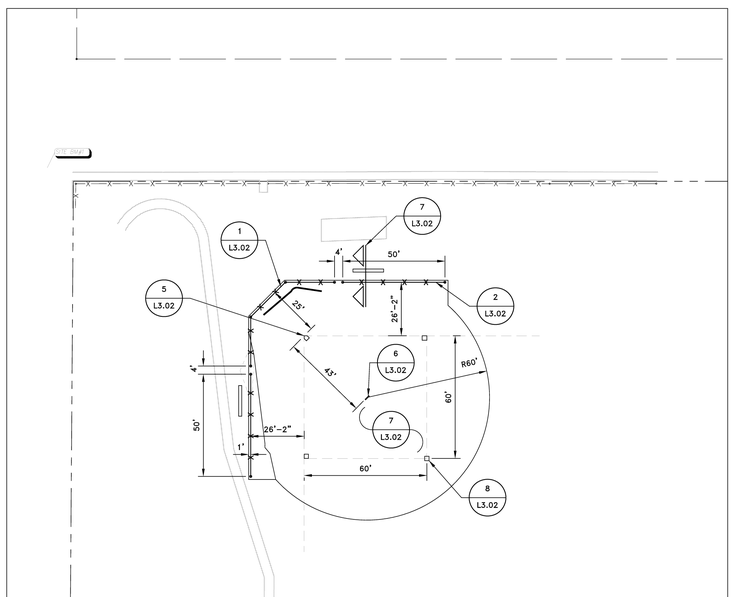
1 PIERCE E.S. DEMOLITION PLAN

SCALE: 1"=30'-0"



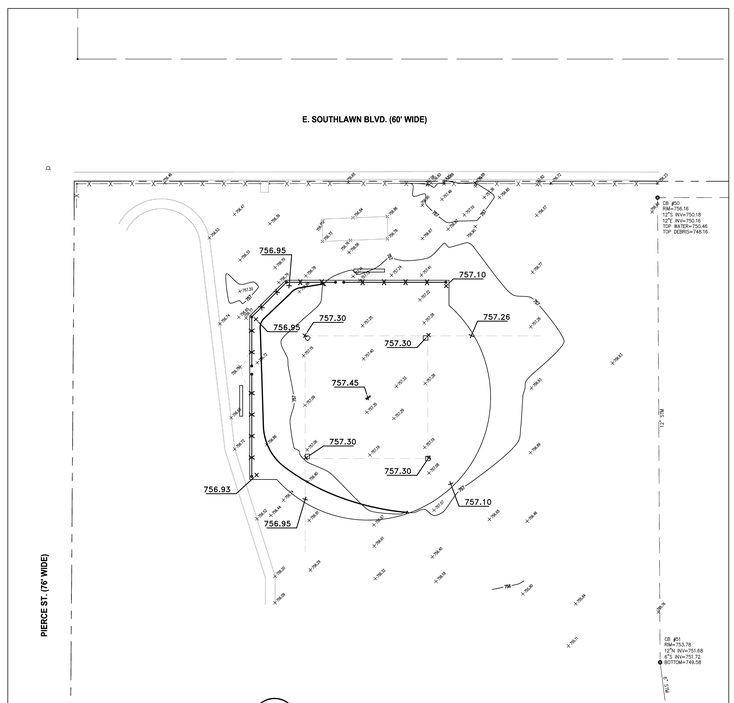
2 PIERCE E.S. SITE PLAN

SCALE: 1"=30'-0"



3 PIERCE E.S. DIMENSION PLAN

SCALE: 1"=30'-0"



4 PIERCE E.S. GRADING PLAN

SCALE: 1"=30'-0"

LEGEND

EXISTING	PROPOSED
SPOT ELEVATION	100.00 SPOT GRADE
FENCE	T/T=XXX.XX TOP OF TRENCH ELEVATION
DRAINAGE STRUCTURE	T/C=XXX.XX TOP OF CURB ELEVATION
STORM DRAIN	T/W=XXX.XX TOP OF WALL ELEVATION
LIGHT POLE	DRAINAGE SWALE
ELECTRICAL	FENCE - SEE PLANS FOR HT.
WATER	DRAINAGE STRUCTURE
TELEPHONE	STORM DRAIN
PROPERTY	FLAT DRAIN
SANITARY	6" PERFORATED DRAINTILE
GAS	8 DT 8" PERFORATED DRAINTILE
	LIGHT POLE
	ELECTRICAL
	WATER
	TELEPHONE
	IRRIGATION
	LIMITS OF CONSTRUCTION
	3" ASPHALT (2 LIFTS) OVER 6" CRUSHED STONE BASE
	ACRYLIC COATING OVER 3" ASPHALT (2 LIFTS) OVER 6" CRUSHED STONE BASE
	4" CONCRETE OVER COMPACTED SAND
	DEMOLITION
	LAWN RESTORATION

NORTH

0 15 30 60

SCALE: 1"=30'-0"

BENCHMARK DESCRIPTIONS

SITE BM#1 ARROW ON HYDRANT LOCATED AT THE SOUTHEAST CORNER OF PIERCE ST. AND E. SOUTHLAWN BLVD.
ELEV.=759.02

SITE BM#2 SET CHISELED x IN NORTH RIM OF 6" VALVE IN CONC.. ±100' NORTH OF CENTERLINE OF SMITH AVE. AND ±45' WEST OF CENTERLINE OF EDGEWOOD AVE.
ELEV.=754.65

DEMOLITION LEGEND:

1. REMOVE 3" OF EXISTING ATHLETIC MEAL
2. REMOVE EXISTING ATHLETIC MEAL COMPLETE TO RE-DEFINE RADIUS OF INFIELD AND BACKSTOP (±1,015SF)
3. REMOVE EXISTING BACKSTOP AND FENCE INCLUDING FABRIC, POSTS, FOOTINGS, RAILS AND HARDWARE. HOLES FROM FOOTINGS TO BE BACKFILLED AS SPECIFIED
4. EXCAVATE SOIL AS REQUIRED FOR NEW FIELD
5. REMOVE AND DISPOSE OF EXISTING BASES AND ANCHORS
6. REMOVE AND DISPOSE OF EXISTING BENCH AND FOOTINGS

NOTES

1. NOTES AND LEGEND SHALL APPLY TO ALL SHEETS AND ALL SITES
2. CONTRACTOR SHALL BE SOLELY RESPONSIBLE AND MAKE EVERY EFFORT TO LOCATE EXISTING UNDERGROUND UTILITIES. THIS SHALL INCLUDE CONSULTING WITH ALL LOCAL UTILITY COMPANIES AND USING A SIGNAL LOCATOR PRIOR TO EXCAVATION. ANY AND ALL REPAIRS SHALL BE COMPLETED WITHIN 48 HRS. OR THE OWNER SHALL HAVE THE REPAIR WORK COMPLETED AT THE CONTRACTORS EXPENSE.
3. TOPSOIL AND SEED ALL AREAS DISTURBED AND NOT OTHERWISE DEVELOPED. ALL WORK I.E. DEMOLITION AND REMOVALS, DRAINAGE WORK, STONE AND ASPHALT, FENCING, TENNIS COURT SURFACE, ETC. SHALL BE COMPLETED BY DATE AS NOTED IN CONTRACT DOCUMENTS. ALL LAWN AREAS SHALL SLOPE TO DRAINAGE STRUCTURES.
4. ALL CONTOURS AND SPOT GRADES REFER TO FINISH GRADE OF LAWN, ASPHALT, OR CONCRETE. DO NOT FACTOR IN THE ALL-WEATHER SURFACE OR ACRYLIC COATING DEPTH.

TMP ARCHITECTURE

TMP ARCHITECTURE INC
470 WEST CENTRE AVENUE
PORTAGE · MICHIGAN · 49024
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WWW.FORESITEDESIGN.COM

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE
Softball Field Improvements

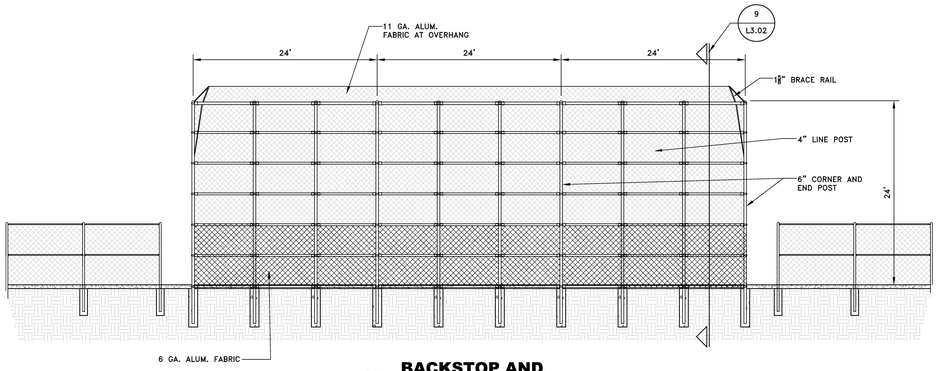
ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No.1 - BIDS

DRAWN	MDS
CHECKED	BSL
APPROVED	BSL

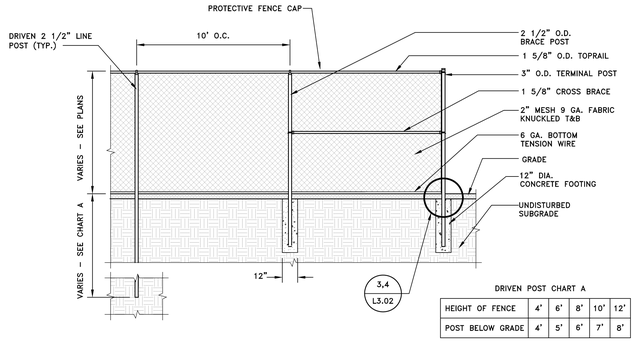
PROJECT NO.
15102

DRAWING NO.
L3.01



1 BACKSTOP AND DUGOUT ELEVATION

SCALE 1/8"=1'-0"

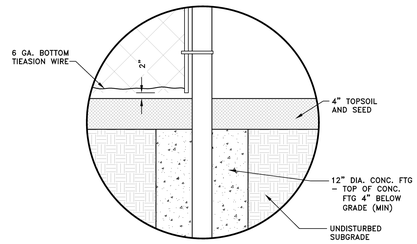


DRIVEN POST CHART A

HEIGHT OF FENCE	4'	6'	8'	10'	12'
POST BELOW GRADE	4'	5'	6'	7'	8'

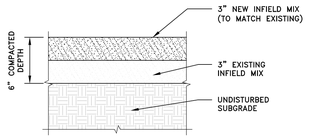
2 FENCE ELEVATION

N.T.S.



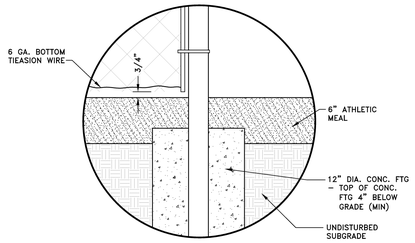
3 FENCE LAWN DETAIL

N.T.S.



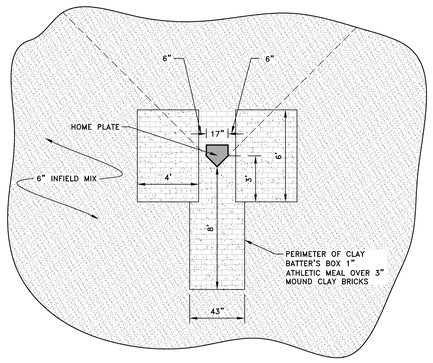
7 INFIELD MIX SECTION

SCALE 1-1/2"=1'-0"



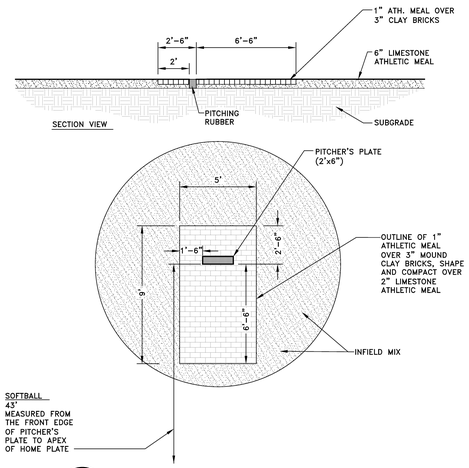
4 FENCE ATHLETIC MEAL DETAIL

N.T.S.



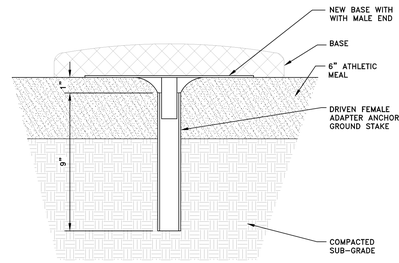
5 BASEBALL BATTER'S BOX

SCALE 1/4"=1'-0"



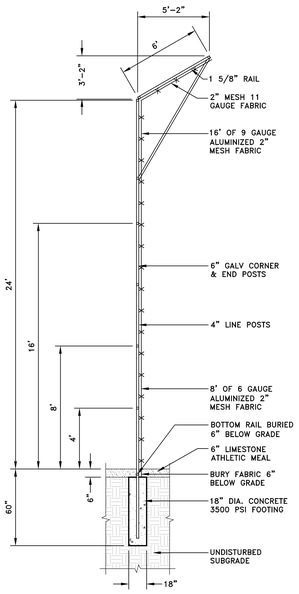
6 SOFTBALL PITCHER'S PLATE

SCALE 1/4"=1'-0"



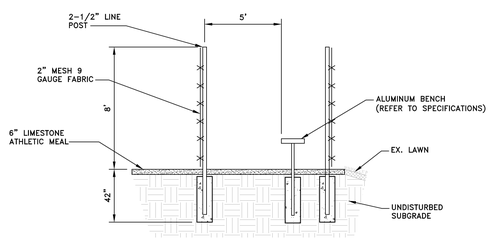
8 BASE PLATE & ANCHOR CONNECTION

SCALE 3"=1'-0"



9 BACKSTOP SECTION

SCALE 1/4"=1'-0"



10 DUGOUT SECTION

SCALE 1/4"=1'-0"

TMP ARCHITECTURE

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PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Softball Details

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No.1 - BIDS

DRAWN	MDS
CHECKED	BSL
APPROVED	BSL

PROJECT NO.

15102

DRAWING NO.

L3.02

GENERAL STRUCTURAL NOTES

1. The structural notes are intended to augment the drawings and specifications. Should conflicts exist between the Drawings, Specifications and the Structural notes, the strictest provision shall govern.
2. The Structural drawings form an integral part of Contract Documents, which include Architectural, Structural, Mechanical, Electrical, Civil/Site drawings and Specifications. Coordinate the Structural drawings with the requirements shown in the other components of the Contract Documents.
3. Typical details and other sections/details apply to conditions that are similar to the conditions described in the sections/details, even if they are not specifically referenced on the plans.
4. The Contractor shall be responsible for means, methods, sequences and procedures of construction.
5. The structure is designed to be self□supporting and stable after it is fully completed per requirements of Contract Documents. Contractor shall determine erection procedures and sequence, and ensure the safety of the building and its component parts during erection. This includes the addition of temporary bracing, guys or tie□downs if necessary. Contractor shall retain ownership of such material after completion of the project.
6. Construction shall comply fully with the applicable provisions of OSHA and the local Governing Codes, current edition, and all requirements specified in the codes shall be adhered to as if they were called for or shown on the drawings. This shall not be construed to mean that requirements set forth on the drawing may be modified because they are more stringent than the code requirements or because they are not specifically required by code.
7. Governing Building Code – **Michigan (International) Building Code 2012**. Standards listed in structural note sections refer to the version and effective date identified in the REFERENCED STANDARDS Chapter in the Governing Building Code.
8. Work constructed per these drawings shall be inspected by an Independent Testing Agency retained to ensure compliance with the requirements shown on the Drawings. Special Inspections required by the Governing Building Code, local building department and the Contract Documents shall be performed by a qualified Special Inspector. Project site visits by the Engineer do not constitute or replace inspection.

SHOP DRAWINGS

1. Submit shop drawings for review as indicated in material section of general Structural notes.
2. Use of Engineering Drawings as erection drawings by the Contractor is strictly prohibited.
3. Allow in the schedule - detailing, fabrication and erection - a minimum of 10 working days for review of each shop drawing submittal by the Structural Engineer. Submit shop drawings in reasonable quantities at reasonable intervals (not more than 70 drawings per submittal per week). The 10 working days stated herein, will be in addition to the review time required by other project team members. Submit a shop drawing submittal schedule prior to the first submittal.
4. Review of shop drawings and other submittals by the Structural Engineer does not relieve the Contractor of the responsibility to check the shop drawings prior to submittal. Errors and omissions associated with the preparation of shop drawings not conforming to the Construction Documents are the responsibility of the shop drawing preparer.
5. Shop drawings are an aid for field placement and are superseded by the Contract Documents. Contractor shall ensure that construction is in accordance with the latest Contract Documents. Shop drawing review is only for general compliance with the Contract Documents. Review of the shop drawings by the Structural Engineer does not guarantee that the shop drawings are correct nor infer that the shop drawings supersede the Contract Documents.
6. Contractor shall provide two hard copies of shop drawing sets for review - one for record and one to be returned with review comments. Contractor shall provide a set of approved shop drawings bearing the review stamp of the Structural Engineer, to the local building department and to the project site.
7. Notes on submitted shop drawings for work "by others" cannot be responsibly approved by Structural Engineer. Contractor shall coordinate responsibility for materials, connections, etc. prior to shop drawing submittal to the Structural Engineer.
8. Contractor shall verify all relevant dimensions and elevations for equipment installations against purchased Manufacturer's certified equipment drawings. Contractor shall coordinate dimensions that depend upon specific equipment, such as elevator openings, mechanical equipment supports, etc., prior to submittal. Such dimensions shall be provided on the shop drawings prior to submittal to the Structural Engineer. Contractor's failure to provide such dimensions on submitted shop drawings will result in shop drawing return without review.

MECHANICAL & ELECTRICAL EQUIPMENT

1. Pipes of 3 inches or greater in diameter shall be suspended from steel members, using pipe hangers and clamps. Hangers and clamps shall be aligned with structural member centerlines. One sided beam connections, expansion anchors or other anchors to slabs are not allowed for pipes of 3 inches or greater in diameter. Submit details for pipe hangers and attachments for review by Architect/Structural Engineer.
2. Mechanical and electrical equipment weights assumed for structural design are shown on the plans. If the equipment weight varies from that listed, consult with the Architect/Structural Engineer prior to steel shop drawing submittal.

FOOTINGS AND FOUNDATIONS

1. Contractor shall verify all conditions, including underground utilities and field measurements at job site and report any discrepancies to Owner's Representative.
2. Provide necessary sheeting, shoring, bracing, etc. as required during excavations to protect sides of excavations.
3. Comply fully with requirements of OSHA and other regulatory agencies for safety provisions.
4. Top of spread footing elevations noted on plan are minimum elevations. In all cases, footings are to bear on undisturbed natural soils or engineered fill having a minimum net allowable bearing capacity of 1500 psf.
5. Sides of foundations shall be formed. All concrete surfaces shall be maintained smooth and vertical. Slope sides of excavations as approved by the Geotechnical Engineer, and clean up sloughing before and during concrete placement. If existing soil conditions warrant earth forming, Geotechnical Engineer shall make recommendations for specific preparation and procedure to follow.
6. Where footing steps are necessary, they shall be no steeper than one vertical to two horizontal unless noted otherwise.
7. Footings shall be centered under columns and walls unless specifically detailed otherwise on the Drawings.
8. No footings or slabs shall be placed on or against sub-grade containing free water, frost or ice. Should water or frost, however slight, enter a footing excavation after sub-grade approval, the sub-grade shall be re□inspected by the Geotechnical Engineer/Testing Laboratory after removal of water or frost.
9. The Contractor shall provide all necessary measures to prevent any frost or ice from penetrating any footing or slab sub-grade before and after placing of concrete until the full building enclosure is completed and heated.
10. Excavated material shall be legally disposed of off the Owner's property or stored at the site or used for backfilling operations as required in accordance with the Geotechnical Engineer's recommendations and Project Specification requirements.
11. Contractor shall furnish all required de-watering equipment to maintain a dry excavation until backfill is complete.
12. Where new footings are adjacent or abut existing foundations, carefully hand excavate and determine bottom of existing foundation. If different than anticipated, adjust new foundations to match existing. In no case shall the new footing be lower than the existing without protection against undermining such as underpinning or shoring.
13. Foundation bearing soils shall be inspected by a qualified Geotechnical Engineer. The testing shall include, but not be limited to, identification of soils at and below the foundation bearing level, and the allowable bearing capacity of these soils.
14. A Geotechnical Engineer registered in the State of the Project shall inspect the condition and assure the adequacy of all subgrades, fills, backfills before placement of foundations, footings, slabs and walls. They shall submit reports to the Architect/Engineer describing their investigations, including any non-conforming work.

STRUCTURAL STEEL

1. Design, fabrication and erection of structural steel shall be in accordance with the American Institute of Steel Construction (AISC) 360 Specification for Structural Steel Buildings and the Steel Construction Manual, Load and Resistance Factor Design LRFD [Allowable Strength Design ASD].
2. Structural steel shall conform to the following ASTM specifications and minimum yield strength:

W Shapes	A572 Gr. 50	Fy = 50 ksi
Miscellaneous shapes and plates	A36	Fy = 36 ksi

3. Masonry and brick lintels shall be galvanized G90 per ASTM A123.
4. Shear connectors shall conform to the requirements of "Structural Welding Code – Steel" of the American Welding Society, ANSI/AWS D1.1, Fu = 65 ksi, as manufactured by Nelson Stud Welding, Div. of TRW, or approved substitute, and welded as per Manufacturer's written instructions.
5. Welding shall be done with appropriate E70 series electrodes compatible with the new and existing steel. Welds and welding procedures shall conform to, and welders shall be qualified in accordance with, the "Structural Welding Code - Steel" of the American Welding Society, ANSI/AWS D1.1.
6. Where specifically noted as AESS, steel and connections are Architecturally Exposed Structural Steel. Finish steel in compliance with AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10 - Architecturally Exposed Structural Steel.
7. Detailing shall be performed using rational engineering design and standard practice in accordance with the Contract Documents. The typical details shown are approximate only and do not indicate the required number of bolts or weld sizes, unless specifically noted.
8. Contractor shall submit for review, typical connection details and calculations sealed by a Professional Engineer registered in the State in which the Project is being constructed for proposed connections and for connections not specifically designed and detailed. Follow the details shown where specific connections are detailed.
9. Contractor shall submit for review, engineered drawings showing shop fabrication details, field assembly details and erection diagrams for all structural steel. Show at minimum all details included in these Contract Documents with additional erection details as required to completely define the interconnection of structural steel pieces.
10. Fabricator shall be AISC Certified or have an AISC equivalent Quality Assurance program as certified by a qualified independent testing agency. (NON CERTIFIED NEED TO COMPLY WITH ADDITIONAL SPECIAL INSPECTIONS PER CODE)
11. Anchor rods, base plates and bearing plates shall be located and built into connecting work, pre-set by templates or similar method prior to concrete placement. Plates shall be set in full beds of non-shrink grout.
12. Contractor shall reference Architectural drawings for miscellaneous shapes and plates not shown on structural drawings. These items shall be shop welded to the structural framing sections to minimize field welding.
13. The length, dimension and connection detail from new structural member to existing structures shall be field verified before fabrication. Field modifications to the fabricated member or connection are not allowed without prior approval by the Structural Engineer. Contractor shall submit sketches or shop drawings detailing proposed modifications for approval.
14. Beam connections shall be standard AISC approved connections. Extended shear plate connections protruding from column web only approved where beams/girders on either side of column web have equally loaded bays.
15. Simple shear connections shall be capable of end rotation as per the requirements of the AISC Specification, Simple Connections, Specification Section J1.2 and Manual Part 10.
16. Connections shall be shop welded in accordance with latest AWS Specifications for E70XX electrodes and field bolted with ASTM A325 or ASTM A490 bolts.
17. Contractor shall install A325 and A490 bolts in accordance with the "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Snug tight condition shall be achieved using an impact wrench, to bring the connected plies into firm contact, except where noted as slip critical, pre-tensioned or finger tight.
18. Contractor shall provide slip-critical connections at braced frames, moment connections, beams and columns supporting cranes and equipment, mechanical penthouse and elevator room framing and where bolts are in tension.
19. Contractor shall provide 3/4" diameter shoulder bolts, double nuts or tack welded nuts finger tight to allow vertical movement with lock washers at slotted connections of wind columns or as noted.
20. Where field welding to existing structural steel is indicated, contractor shall thoroughly clean all surfaces to receive weld, removing rust, paint, dirt and other foreign matter in area of work. Provide fire watch protection acceptable to the Owner.
21. Beams shall be fabricated with the natural camber up. Provide cambers as indicated on the drawings.
22. Stiffener plates and bearing stiffeners are to be provided in pairs.
23. Brick relieving angles shall be bolted to plate work as indicated and field welded after alignment to a tolerance of +/- 1/8" from the location specified on the Architectural drawings. The alignment and adjustment shall be done after placement of concrete on floor slabs and after placement of roofing including ballast where applicable.
24. Fabrication and erection tolerances for brick frames shall conform to the requirements for Architecturally Exposed Structural Steel (AESS) per AISC 303 Code of Standard Practice for Steel Buildings and Bridges Section 10, with adjustment to meet the brick shelf tolerance noted above unless otherwise specified.
25. Secondary steel framing supporting exterior façade shall have connections with minimum 1 inch lateral (check for higher buildings) and 1/2 inch vertical adjustment - allowance each direction from center of attachment point. Contractor shall provide slotted holes and shims as required to provide adjustment.
26. Wood blocking shall be fastened to adjacent steel members using minimum 0.177" diameter power actuated fasteners or equivalent fasteners coordinated with the steel thickness. Install 2 fasteners at 3" minimum spacing across the member spaced along the length at 24" on center.
27. Structural steel to remain unpainted except for steel outside the 'conditioned space'.

CAST-IN-PLACE CONCRETE

1. Concrete structural framing has been designed by the Ultimate Strength Method per ACI 318 "Building Code Requirements for Structural Concrete".
2. Concrete work shall conform to the requirements of ACI 301, "Specifications for Structural Concrete of Buildings", and ACI 318 "Building Code Requirements for Structural Concrete" except as modified by Structural requirements noted on the Drawings.
3. Cement shall conform to ASTM C150 "Specification for Portland Cement" type I or III.
4. Concrete aggregates shall conform to ASTM C33 "Specification for Concrete Aggregates"; and ASTM C330 "Specification for Light Weight Aggregates for Structural Concrete".
5. Reinforcing shall conform to ASTM A615 grade 60.
6. Reinforcement shall be fabricated and erected according to the ACI standards: "Details and Detailing of Concrete Reinforcement", ACI 315 and "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures", ACI 315R.
7. Welded Wire Fabric shall be furnished in flat sheets (rolls not permitted) and shall conform to ASTM A185 and have minimum side and end lap of 8 inches.
8. Welding of reinforcing steel is prohibited unless specifically detailed. Welding where detailed shall conform to AWS D1.4 specification.
9. Concrete shall have a minimum 28-day compressive strength as follows:

Foundations:	**4,000** psi
Slab-on-grade:	**4,000** psi
Concrete slabs:	**4,000** psi

10. Exterior concrete, and interior concrete subjected to freeze/thaw cycles, salt, etc., including walls, shall be air-entrained 6% +/- 1%.
11. Concrete shall be normal weight, unless indicated otherwise. Light weight concrete, if specified for supported slabs shall be sand light weight with a concrete unit weight not exceeding 115 pcf. [ENGINEER TO COORDINATE WEIGHT AND CONCRETE THICKNESS TO MEET FIRE RATING REQUIREMENTS]
12. Contractor shall submit the concrete mix design(s) for review by the Structural Engineer. Proportion mix designs and provide proof of mix design strength as defined in ACI 301. The submittal shall include cement type and source, cement cube strength, aggregate gradations, water tests, admixture catalog information and cylinder strength test results from 30 tests, on specimens with identical mix design, for each concrete mix, or other proof of strength per ACI 301.
13. Use of calcium chloride, chloride ions, or other salts in concrete is not permitted.
14. Samples for strength tests of each class of concrete placed each day shall be taken by the Testing Agency not less than once per day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 50 cubic yards of 6,000 psi and higher concrete, nor less than once for each 5,000 square feet of surface area for slabs and walls. Sample concrete in accordance with ASTM C172. Perform the following tests in accordance with the indicated standard:

A.	Slump:	ASTM C143
B.	Air content:	ASTM C173
C.	Compressive strength:	ASTM C39 *

* With 1 cylinder at 7-days, 2 cylinders at 28-days, and one specimen held in reserve.

15. Contractor shall prepare and submit reinforcement shop drawings to the Structural Engineer for review prior to fabrication. The shop drawings shall clearly show reinforcement lengths and bends, locations of bars, methods of support, details of placement and placement coordination with formwork, embedments, concrete vibration and construction joints. The drawings shall also indicate openings, sleeves, curbs and concrete dimensions in accordance with ACI 315. Provide, at minimum wall, column and beam elevations; wall, column and beam sections, material schedules, bar lap schedules and locations.
16. Contractor shall tie reinforcing steel securely in place prior to placing concrete and provide sufficient supports to maintain the position of reinforcing within specified tolerances during all construction activities. Inserting dowels into wet concrete is not permitted.
17. Horizontal wall reinforcement shall be continuous with the minimum lap per ACI 318 unless detailed or noted otherwise. Corner bars shall be provided at changes in wall direction (however small) and shall be of the same size and spacing as the horizontal steel. Each corner bar leg to provide lap splice per ACI 318 unless detailed or noted otherwise. Extend horizontal wall reinforcing through piers.
18. Hooked bars shall be standard 90 degree hooks per ACI unless noted otherwise on the Drawings.
19. Minimum lap splice shall be Class B per ACI 318 [Increase lap length by 50% for coated bars unless noted otherwise on the drawings]. Location of lap splices shall be as indicated on Construction Documents and/or as shown on the approved reinforcing steel shop drawings.
20. Approved rebar couplers may be used to aid placement of dowels through forms. Mechanical splices shall develop 125% of the tensile strength of the rebar.
21. Reinforcing steel shall not be cut, bent or straightened in the field unless approved by the Structural Engineer or as indicated on the Drawings.
22. Reinforcing steel shall be placed with minimum concrete cover and tolerances as per requirements of ACI 318.
23. Do not place pipes or ducts exceeding one quarter the slab or wall thickness within the slab or wall unless specially shown and detailed on the Structural drawings. Pipes or duct shall be located within middle third of slab or wall thickness.
24. Install inserts and anchors in concrete for suspending mechanical, electrical and architectural items. If additional fasteners are needed in conventionally reinforced concrete, use drilled-in type anchors located to avoid conflict with reinforcement. [Do not use drilled-in anchors or power driven fasteners in post-tensioned concrete unless approved by the Structural Engineer - refer to notes on post tensioning for additional information].
25. Anchor rods and steel embeds (furnished by Structural Steel Contractor) shall be set by template to within a 1/8" tolerance in any direction with minimum embedment and exact projection indicated on the drawings, prior to placing concrete.
26. No aluminum conduit or products containing aluminum or any other material injurious to the concrete shall be embedded in the concrete.
27. Dowels into foundation shall match size and spacing of vertical reinforcement at all columns, piers and walls, unless otherwise noted.
28. Provide two #5 bars (one each face) around unframed openings in slabs and walls. Place bars parallel to sides of openings and extend them 24 inches beyond corners, unless otherwise noted.
29. Locate sleeves, openings, embeds, etc. as indicated on the drawings. The Concrete Contractor shall check with other trades to make sure the sleeves, openings and embeds that are to be provided and set by them are in place prior to placing of concrete in the area involved.
30. Contractor shall obtain approval prior to placing openings or sleeves not shown on the Drawings, through any structural member.
31. Contractor shall review Architectural, Mechanical and Electrical drawings for bases, openings, sleeves, anchors, inserts, conduits, recesses and other devices in concrete work before placing concrete.
32. Horizontal construction joints are permitted only where indicated. The location of vertical construction joints shall be submitted to the Structural Engineer for review and approval. Construction joints shall be thoroughly mechanically roughened, cleaned and bonding agent applied before placement of adjoining concrete.
33. For control joints in slabs and walls, space joints at maximum 15'-0" on center unless otherwise noted on the Drawings.
34. Construction joints shall be furnished with a full length keyway centered on members. Where the size of key is not shown on the Drawings, the key shall be 25% of the cross section dimension of the member and minimum 1-1/2 inches into the first pour of concrete.
35. Provide waterstops in construction joints in cast-in-place concrete elements that have one side exposed to the weather or soil and the other side occurring adjacent to enclosed space. Refer to Drawings and Specifications for other waterproofing and damp proofing details.
36. Provide 3/4" x 3/4" chamfer strip at all exposed corners of concrete members, unless noted otherwise.
37. Provide dovetail slots in concrete members where masonry abuts and where required for veneer attachment.
38. The Concrete Contractor shall be responsible for all pour sequences and construction procedures for all concrete work to account for temperature differentials and shrinkage occurring during the construction phase until the building is permanently in a mechanically controlled environment.

CAST-IN-PLACE CONCRETE (CONT.)

39. Coordinate vapor retarder requirements with floor finish requirements.
40. Provide pockets or recesses in concrete work for steel columns and beams as required and/or as called for in the Specifications even if not shown on the Drawings. Provide concrete fill after steel erection.
41. Refer to Architectural drawings for slab recesses and for floor finish materials and requirements.
42. Provide recess in top of basement walls and grade beams, where applicable, for door openings, ramps, for support of thickened floor slabs, and to receive door jambs.
43. The use of chlorides such as deicing salts is prohibited for melting ice prior to placement of concrete.
44. Curing of concrete surfaces shall conform to ACI 308.1 "Standard Specification for Concrete Curing" and ACI 308R "Guide to Curing Concrete".
45. Joints to be prepared and filled with joint sealant shall include, but are not limited to, construction joints, control joints, isolation joints, and all interface joints between similar and dissimilar members. Specific locations may be indicated on the Drawings, or may be required by approved shop drawings, or may occur due to the construction sequence selected by the Contractor.
46. Prior to placing concrete adjacent to existing concrete, thoroughly clean, de-grease and mechanically roughen existing concrete surfaces. Apply bonding agent prior to placing fresh concrete. Bonding agent shall be "Sika Armatec 110 EpoChem" by Sika Corporation, or approved equal. Follow all Manufacturer's instructions for surface preparation, mixing and application.
47. Non-shrink: grout shall conform to ASTM C1107. Grout shall be premixed, non-shrink, non-catalyzed natural aggregate grout with a minimum 7-day compressive strength of 7,000 psi plastic, 6,000 psi flowable, and 5,000 psi fluid consistency.
48. Reinforcing steel, anchor rods and embed placement shall be inspected, prior to placement of concrete, in accordance with ACI-318 and code required special inspection by qualified Inspector prior. These inspections are not included in the basic services of the Structural Engineer of Record.

MASONRY NOTES

1. Concrete masonry has been designed in accordance with ACI 530, "Building Code Requirements for Masonry Structures" and shall be constructed in accordance with ACI 530.1, "Specifications for Masonry Structures".
2. Concrete Masonry to have a minimum 28-day compressive strength f' m=1,500 psi unless noted otherwise.
3. Concrete Masonry units (CMU) shall conform to the following standards:

a.	Load Bearing Units:	ASTM C90
b.	Medium Weight Units:	105 to 125 pcf
c.	Normal Weight Units:	greater than 125 pcf

4. Load-bearing CMU shall be at minimum medium weight units, unless noted otherwise.
5. Mortar for all masonry shall conform to ASTM C270 with minimum compressive strength of 1,800 psi. Mortar below grade shall be type M. Elsewhere mortar may be either type M or S unless specifically indicated otherwise. Use either Portland cement/lime or masonry cement for mortar.
6. Grout shall conform to ASTM C476 with minimum 28-day compressive strength of 3,000 psi.
7. Steel bar reinforcement shall conform to ASTM A615, grade 60. Horizontal joint reinforcement shall be "Ladder" type with (W1.7 for low walls without cavity wall with veneer) (3/16 inch for high walls and walls with cavity and veneer) diameter longitudinal bars.
8. Vertical cells containing reinforcing and grout shall form a continuous cavity, free of mortar droppings.
9. Minimum vertical CMU wall reinforcing shall be continuous #5 bars at 48" on center, unless noted otherwise. Dowels to concrete foundation to match size and spacing of reinforcing unless noted otherwise. Reinforce CMU core at corners, each side of control joints and each side of wall openings with additional (2) #5 continuous vertical reinforcing bars.
10. Horizontal bond beam and vertical reinforcing shall be continuous unless noted otherwise. Lap splice reinforcing per the schedule below or use mechanical splices adequate for 125% of specified yield strength of the bar. Lap vertical reinforcement with minimum dowels of same size and spacing that have been previously installed in the foundations. Dowel embedment in concrete shall conform to the requirements of the CAST-IN-PLACE CONCRETE notes.

BAR SIZE	LAP SPLICE LENGTH
#4	24"
#5	30"
#6	48"
#7	Provide mechanical splice

11. Reinforcing bars shall be held in position by wire ties or other approved means to insure design location and lap. Place bars and lap prior to grouting.
12. Grouting of masonry walls shall conform to recommended procedure for "low lift grouting" or "high lift grouting" as outlined in the NCMA TEK 3-2A –"Grouting Concrete Masonry Walls" and ACI 530.1/ASCE 6 "Specification for Masonry Structures". Grout lifts shall not exceed 5 feet without mechanically consolidated (vibrated) grout pours.
13. Lifts of grout shall be keyed 4 inches into the previous course of masonry below.
14. Masonry below grade shall be grouted solid.
15. Sampling and Testing of mortar and grout shall be in accordance ASTM C780 and ASTM C1019, respectively. One test of each is required for each 5,000 square foot of wall.
16. Construction and testing of masonry prisms shall be in accordance with the procedure outlined in the ASTM C1314.
17. Special Inspection of masonry construction is required. Refer to project specifications and ACI 530 for quality assurance requirements. Special Inspection shall include at minimum:
    a. Mortar and grout testing.
    b. Reinforcement placement and lap verification.
    c. Verification of clear grout space prior to grouting.
    d. Verification of proper grouting procedures (grout lift and consolidation).
18. Contractor shall brace masonry walls to resist wind loads until floors and roofs are in place, and the masonry has reached 75% of the required strength f'm. Bracing shall be provided in accordance with OSHA – Construction Safety Standards for Masonry Wall Bracing and NCMA TEK 3-4B – "Bracing Concrete Masonry Walls During Construction".
19. Contractor shall shore masonry walls above masonry bond beam lintels until the masonry is placed full height and has reached the required strength.

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REGISTRATION SEAL

NOT FOR CONSTRUCTION

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DNCE Project No.: 8951-17

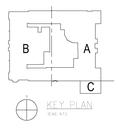
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

GENERAL STRUCTURAL NOTES



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2015	BP NO. 1 - BIDS

DRAWN	DT
CHECKED	DT
APPROVED	DT

PROJECT NO.
15102

DRAWING NO.
S-001

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3. Allow in the schedule - detailing, fabrication and erection - a minimum of 10 working days for review of each shop drawing submittal by the Structural Engineer. Submit shop drawings in reasonable quantities at reasonable intervals (not more than 70 drawings per submittal per week). The 10 working days stated herein, will be in addition to the review time required by other project team members. Submit a shop drawing submittal schedule prior to the first submittal.
4. Review of shop drawings and other submittals by the Structural Engineer does not relieve the Contractor of the responsibility to check the shop drawings prior to submittal. Errors and omissions associated with the preparation of shop drawings not conforming to the Construction Documents are the responsibility of the shop drawing preparer.
5. Shop drawings are an aid for field placement and are superseded by the Contract Documents. Contractor shall ensure that construction is in accordance with the latest Contract Documents. Shop drawing review is only for general compliance with the Contract Documents. Review of the shop drawings by the Structural Engineer does not guarantee that the shop drawings are correct nor infer that the shop drawings supersede the Contract Documents.
6. Contractor shall provide two hard copies of shop drawing sets for review - one for record and one to be returned with review comments. Contractor shall provide a set of approved shop drawings bearing the review stamp of the Structural Engineer, to the local building department and to the project site.
7. Notes on submitted shop drawings for work "by others" cannot be responsibly approved by Structural Engineer. Contractor shall coordinate responsibility for materials, connections, etc. prior to shop drawing submittal to the Structural Engineer.
8. Contractor shall verify all relevant dimensions and elevations for equipment installations against purchased Manufacturer's certified equipment drawings. Contractor shall coordinate dimensions that depend upon specific equipment, such as elevator openings, mechanical equipment supports, etc., prior to submittal. Such dimensions shall be provided on the shop drawings prior to submittal to the Structural Engineer. Contractor's failure to provide such dimensions on submitted shop drawings will result in shop drawing return without review.

MECHANICAL & ELECTRICAL EQUIPMENT

1. Pipes of 3 inches or greater in diameter shall be suspended from steel members, using pipe hangers and clamps. Hangers and clamps shall be aligned with structural member centerlines. One sided beam connections, expansion anchors or other anchors to slabs are not allowed for pipes of 3 inches or greater in diameter. Submit details for pipe hangers and attachments for review by Architect/Structural Engineer.
2. Mechanical and electrical equipment weights assumed for structural design are shown on the plans. If the equipment weight varies from that listed, consult with the Architect/Structural Engineer prior to steel shop drawing submittal.

FOOTINGS AND FOUNDATIONS

1. Contractor shall verify all conditions, including underground utilities and field measurements at job site and report any discrepancies to Owner's Representative.
2. Provide necessary sheeting, shoring, bracing, etc. as required during excavations to protect sides of excavations.
3. Comply fully with requirements of OSHA and other regulatory agencies for safety provisions.
4. Top of spread footing elevations noted on plan are minimum elevations. In all cases, footings are to bear on undisturbed natural soils or engineered fill having a minimum net allowable bearing capacity of 1500 psf.
5. Sides of foundations shall be formed. All concrete surfaces shall be maintained smooth and vertical. Slope sides of excavations as approved by the Geotechnical Engineer, and clean up sloughing before and during concrete placement. If existing soil conditions warrant earth forming, Geotechnical Engineer shall make recommendations for specific preparation and procedure to follow.
6. Where footing steps are necessary, they shall be no steeper than one vertical to two horizontal unless noted otherwise.
7. Footings shall be centered under columns and walls unless specifically detailed otherwise on the Drawings.
8. No footings or slabs shall be placed on or against sub-grade containing free water, frost or ice. Should water or frost, however slight, enter a footing excavation after sub-grade approval, the sub-grade shall be re□inspected by the Geotechnical Engineer/Testing Laboratory after removal of water or frost.
9. The Contractor shall provide all necessary measures to prevent any frost or ice from penetrating any footing or slab sub-grade before and after placing of concrete until the full building enclosure is completed and heated.
10. Excavated material shall be legally disposed of off the Owner's property or stored at the site or used for backfilling operations as required in accordance with the Geotechnical Engineer's recommendations and Project Specification requirements.
11. Contractor shall furnish all required de-watering equipment to maintain a dry excavation until backfill is complete.
12. Where new footings are adjacent or abut existing foundations, carefully hand excavate and determine bottom of existing foundation. If different than anticipated, adjust new foundations to match existing. In no case shall the new footing be lower than the existing without protection against undermining such as underpinning or shoring.
13. Foundation bearing soils shall be inspected by a qualified Geotechnical Engineer. The testing shall include, but not be limited to, identification of soils at and below the foundation bearing level, and the allowable bearing capacity of these soils.
14. A Geotechnical Engineer registered in the State of the Project shall inspect the condition and assure the adequacy of all subgrades, fills, backfills before placement of foundations, footings, slabs and walls. They shall submit reports to the Architect/Engineer describing their investigations, including any non-conforming work.

STRUCTURAL STEEL

1. Design, fabrication and erection of structural steel shall be in accordance with the American Institute of Steel Construction (AISC) 360 Specification for Structural Steel Buildings and the Steel Construction Manual, Load and Resistance Factor Design LRFD [Allowable Strength Design ASD].
2. Structural steel shall conform to the following ASTM specifications and minimum yield strength:

W Shapes	A572 Gr. 50	Fy = 50 ksi
Miscellaneous shapes and plates	A36	Fy = 36 ksi

3. Masonry and brick lintels shall be galvanized G90 per ASTM A123.
4. Shear connectors shall conform to the requirements of "Structural Welding Code – Steel" of the American Welding Society, ANSI/AWS D1.1, Fu = 65 ksi, as manufactured by Nelson Stud Welding, Div. of TRW, or approved substitute, and welded as per Manufacturer's written instructions.
5. Welding shall be done with appropriate E70 series electrodes compatible with the new and existing steel. Welds and welding procedures shall conform to, and welders shall be qualified in accordance with, the "Structural Welding Code - Steel" of the American Welding Society, ANSI/AWS D1.1.
6. Where specifically noted as AESS, steel and connections are Architecturally Exposed Structural Steel. Finish steel in compliance with AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10 - Architecturally Exposed Structural Steel.
7. Detailing shall be performed using rational engineering design and standard practice in accordance with the Contract Documents. The typical details shown are approximate only and do not indicate the required number of bolts or weld sizes, unless specifically noted.
8. Contractor shall submit for review, typical connection details and calculations sealed by a Professional Engineer registered in the State in which the Project is being constructed for proposed connections and for connections not specifically designed and detailed. Follow the details shown where specific connections are detailed.
9. Contractor shall submit for review, engineered drawings showing shop fabrication details, field assembly details and erection diagrams for all structural steel. Show at minimum all details included in these Contract Documents with additional erection details as required to completely define the interconnection of structural steel pieces.
10. Fabricator shall be AISC Certified or have an AISC equivalent Quality Assurance program as certified by a qualified independent testing agency. (NON CERTIFIED NEED TO COMPLY WITH ADDITIONAL SPECIAL INSPECTIONS PER CODE)
11. Anchor rods, base plates and bearing plates shall be located and built into connecting work, pre-set by templates or similar method prior to concrete placement. Plates shall be set in full beds of non-shrink grout.
12. Contractor shall reference Architectural drawings for miscellaneous shapes and plates not shown on structural drawings. These items shall be shop welded to the structural framing sections to minimize field welding.
13. The length, dimension and connection detail from new structural member to existing structures shall be field verified before fabrication. Field modifications to the fabricated member or connection are not allowed without prior approval by the Structural Engineer. Contractor shall submit sketches or shop drawings detailing proposed modifications for approval.
14. Beam connections shall be standard AISC approved connections. Extended shear plate connections protruding from column web only approved where beams/girders on either side of column web have equally loaded bays.
15. Simple shear connections shall be capable of end rotation as per the requirements of the AISC Specification, Simple Connections, Specification Section J1.2 and Manual Part 10.
16. Connections shall be shop welded in accordance with latest AWS Specifications for E70XX electrodes and field bolted with ASTM A325 or ASTM A490 bolts.
17. Contractor shall install A325 and A490 bolts in accordance with the "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Snug tight condition shall be achieved using an impact wrench, to bring the connected plies into firm contact, except where noted as slip critical, pre-tensioned or finger tight.
18. Contractor shall provide slip-critical connections at braced frames, moment connections, beams and columns supporting cranes and equipment, mechanical penthouse and elevator room framing and where bolts are in tension.
19. Contractor shall provide 3/4" diameter shoulder bolts, double nuts or tack welded nuts finger tight to allow vertical movement with lock washers at slotted connections of wind columns or as noted.
20. Where field welding to existing structural steel is indicated, contractor shall thoroughly clean all surfaces to receive weld, removing rust, paint, dirt and other foreign matter in area of work. Provide fire watch protection acceptable to the Owner.
21. Beams shall be fabricated with the natural camber up. Provide cambers as indicated on the drawings.
22. Stiffener plates and bearing stiffeners are to be provided in pairs.
23. Brick relieving angles shall be bolted to plate work as indicated and field welded after alignment to a tolerance of +/- 1/8" from the location specified on the Architectural drawings. The alignment and adjustment shall be done after placement of concrete on floor slabs and after placement of roofing including ballast where applicable.
24. Fabrication and erection tolerances for brick frames shall conform to the requirements for Architecturally Exposed Structural Steel (AESS) per AISC 303 Code of Standard Practice for Steel Buildings and Bridges Section 10, with adjustment to meet the brick shelf tolerance noted above unless otherwise specified.
25. Secondary steel framing supporting exterior façade shall have connections with minimum 1 inch lateral (check for higher buildings) and 1/2 inch vertical adjustment - allowance each direction from center of attachment point. Contractor shall provide slotted holes and shims as required to provide adjustment.
26. Wood blocking shall be fastened to adjacent steel members using minimum 0.177" diameter power actuated fasteners or equivalent fasteners coordinated with the steel thickness. Install 2 fasteners at 3" minimum spacing across the member spaced along the length at 24" on center.
27. Structural steel to remain unpainted except for steel outside the 'conditioned space'.

CAST-IN-PLACE CONCRETE

1. Concrete structural framing has been designed by the Ultimate Strength Method per ACI 318 "Building Code Requirements for Structural Concrete".
2. Concrete work shall conform to the requirements of ACI 301, "Specifications for Structural Concrete of Buildings", and ACI 318 "Building Code Requirements for Structural Concrete" except as modified by Structural requirements noted on the Drawings.
3. Cement shall conform to ASTM C150 "Specification for Portland Cement" type I or III.
4. Concrete aggregates shall conform to ASTM C33 "Specification for Concrete Aggregates"; and ASTM C330 "Specification for Light Weight Aggregates for Structural Concrete".
5. Reinforcing shall conform to ASTM A615 grade 60.
6. Reinforcement shall be fabricated and erected according to the ACI standards: "Details and Detailing of Concrete Reinforcement", ACI 315 and "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures", ACI 315R.
7. Welded Wire Fabric shall be furnished in flat sheets (rolls not permitted) and shall conform to ASTM A185 and have minimum side and end lap of 6 inches.
8. Welding of reinforcing steel is prohibited unless specifically detailed. Welding where detailed shall conform to AWS D1.4 specification.
9. Concrete shall have a minimum 28-day compressive strength as follows:

Foundations:	**4,000** psi
Slab-on-grade:	**4,000** psi
Concrete slabs:	**4,000** psi

10. Exterior concrete, and interior concrete subjected to freeze/thaw cycles, salt, etc., including walls, shall be air-entrained 6% +/- 1%.
11. Concrete shall be normal weight, unless indicated otherwise. Light weight concrete, if specified for supported slabs shall be sand light weight with a concrete unit weight not exceeding 115 pcf. [ENGINEER TO COORDINATE WEIGHT AND CONCRETE THICKNESS TO MEET FIRE RATING REQUIREMENTS]
12. Contractor shall submit the concrete mix design(s) for review by the Structural Engineer. Proportion mix designs and provide proof of mix design strength as defined in ACI 301. The submittal shall include cement type and source, cement cube strength, aggregate gradations, water tests, admixture catalog information and cylinder strength test results from 30 tests, on specimens with identical mix design, for each concrete mix, or other proof of strength per ACI 301.
13. Use of calcium chloride, chloride ions, or other salts in concrete is not permitted.
14. Samples for strength tests of each class of concrete placed each day shall be taken by the Testing Agency not less than once per day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 50 cubic yards of 6,000 psi and higher concrete, nor less than once for each 5,000 square feet of surface area for slabs and walls. Sample concrete in accordance with ASTM C172. Perform the following tests in accordance with the indicated standard:
    A. Slump: ASTM C143
    B. Air content: ASTM C173
    C. Compressive strength: ASTM C39 *

    * With 1 cylinder at 7-days, 2 cylinders at 28-days, and one specimen held in reserve.
15. Contractor shall prepare and submit reinforcement shop drawings to the Structural Engineer for review prior to fabrication. The shop drawings shall clearly show reinforcement lengths and bends, locations of bars, methods of support, details of placement and placement coordination with formwork, embedments, concrete vibration and construction joints. The drawings shall also indicate openings, sleeves, curbs and concrete dimensions in accordance with ACI 315. Provide, at minimum wall, column and beam elevations; wall, column and beam sections, material schedules, bar lap schedules and locations.
16. Contractor shall tie reinforcing steel securely in place prior to placing concrete and provide sufficient supports to maintain the position of reinforcing within specified tolerances during all construction activities. Inserting dowels into wet concrete is not permitted.
17. Horizontal wall reinforcement shall be continuous with the minimum lap per ACI 318 unless detailed or noted otherwise. Corner bars shall be provided at changes in wall direction (however small) and shall be of the same size and spacing as the horizontal steel. Each corner bar leg to provide lap splice per ACI 318 unless detailed or noted otherwise. Extend horizontal wall reinforcing through piers.
18. Hooked bars shall be standard 90 degree hooks per ACI unless noted otherwise on the Drawings.
19. Minimum lap splice shall be Class B per ACI 318 [Increase lap length by 50% for coated bars unless noted otherwise on the drawings]. Location of lap splices shall be as indicated on Construction Documents and/or as shown on the approved reinforcing steel shop drawings.
20. Approved rebar couplers may be used to aid placement of dowels through forms. Mechanical splices shall develop 125% of the tensile strength of the rebar.
21. Reinforcing steel shall not be cut, bent or straightened in the field unless approved by the Structural Engineer or as indicated on the Drawings.
22. Reinforcing steel shall be placed with minimum concrete cover and tolerances as per requirements of ACI 318.
23. Do not place pipes or ducts exceeding one quarter the slab or wall thickness within the slab or wall unless specially shown and detailed on the Structural drawings. Pipes or duct shall be located within middle third of slab or wall thickness.
24. Install inserts and anchors in concrete for suspending mechanical, electrical and architectural items. If additional fasteners are needed in conventionally reinforced concrete, use drilled-in type anchors located to avoid conflict with reinforcement. [Do not use drilled-in anchors or power driven fasteners in post-tensioned concrete unless approved by the Structural Engineer - refer to notes on post tensioning for additional information].
25. Anchor rods and steel embeds (furnished by Structural Steel Contractor) shall be set by template to within a 1/8" tolerance in any direction with minimum embedment and exact projection indicated on the drawings, prior to placing concrete.
26. No aluminum conduit or products containing aluminum or any other material injurious to the concrete shall be embedded in the concrete.
27. Dowels into foundation shall match size and spacing of vertical reinforcement at all columns, piers and walls, unless otherwise noted.
28. Provide two #5 bars (one each face) around unframed openings in slabs and walls. Place bars parallel to sides of openings and extend them 24 inches beyond corners, unless otherwise noted.
29. Locate sleeves, openings, embeds, etc. as indicated on the drawings. The Concrete Contractor shall check with other trades to make sure the sleeves, openings and embeds that are to be provided and set by them are in place prior to placing of concrete in the area involved.
30. Contractor shall obtain approval prior to placing openings or sleeves not shown on the Drawings, through any structural member.
31. Contractor shall review Architectural, Mechanical and Electrical drawings for bases, openings, sleeves, anchors, inserts, conduits, recesses and other devices in concrete work before placing concrete.
32. Horizontal construction joints are permitted only where indicated. The location of vertical construction joints shall be submitted to the Structural Engineer for review and approval. Construction joints shall be thoroughly mechanically roughened, cleaned and bonding agent applied before placement of adjoining concrete.
33. For control joints in slabs and walls, space joints at maximum 15'-0" on center unless otherwise noted on the Drawings.
34. Construction joints shall be furnished with a full length keyway centered on members. Where the size of key is not shown on the Drawings, the key shall be 25% of the cross section dimension of the member and minimum 1-1/2 inches into the first pour of concrete.
35. Provide waterstops in construction joints in cast-in-place concrete elements that have one side exposed to the weather or soil and the other side occurring adjacent to enclosed space. Refer to Drawings and Specifications for other waterproofing and damp proofing details.
36. Provide 3/4" x 3/4" chamfer strip at all exposed corners of concrete members, unless noted otherwise.
37. Provide dovetail slots in concrete members where masonry abuts and where required for veneer attachment.
38. The Concrete Contractor shall be responsible for all pour sequences and construction procedures for all concrete work to account for temperature differentials and shrinkage occurring during the construction phase until the building is permanently in a mechanically controlled environment.

CAST-IN-PLACE CONCRETE (CONT.)

39. Coordinate vapor retarder requirements with floor finish requirements.
40. Provide pockets or recesses in concrete work for steel columns and beams as required and/or as called for in the Specifications even if not shown on the Drawings. Provide concrete fill after steel erection.
41. Refer to Architectural drawings for slab recesses and for floor finish materials and requirements.
42. Provide recess in top of basement walls and grade beams, where applicable, for door openings, ramps, for support of thickened floor slabs, and to receive door jambs.
43. The use of chlorides such as deicing salts is prohibited for melting ice prior to placement of concrete.
44. Curing of concrete surfaces shall conform to ACI 308.1 "Standard Specification for Concrete Curing" and ACI 308R "Guide to Curing Concrete".
45. Joints to be prepared and filled with joint sealant shall include, but are not limited to, construction joints, control joints, isolation joints, and all interface joints between similar and dissimilar members. Specific locations may be indicated on the Drawings, or may be required by approved shop drawings, or may occur due to the construction sequence selected by the Contractor.
46. Prior to placing concrete adjacent to existing concrete, thoroughly clean, de-grease and mechanically roughen existing concrete surfaces. Apply bonding agent prior to placing fresh concrete. Bonding agent shall be "Sika Armatec 110 EpoChem" by Sika Corporation, or approved equal. Follow all Manufacturer's instructions for surface preparation, mixing and application.
47. Non-shrink: grout shall conform to ASTM C1107. Grout shall be premixed, non-shrink, non-catalyzed natural aggregate grout with a minimum 7-day compressive strength of 7,000 psi plastic, 6,000 psi flowable, and 5,000 psi fluid consistency.
48. Reinforcing steel, anchor rods and embed placement shall be inspected, prior to placement of concrete, in accordance with ACI-318 and code required special inspection by qualified Inspector prior. These inspections are not included in the basic services of the Structural Engineer of Record.

MASONRY NOTES

1. Concrete masonry has been designed in accordance with ACI 530, "Building Code Requirements for Masonry Structures" and shall be constructed in accordance with ACI 530.1, "Specifications for Masonry Structures".
2. Concrete Masonry to have a minimum 28-day compressive strength f' m=1,500 psi unless noted otherwise.
3. Concrete Masonry units (CMU) shall conform to the following standards:
    a. Load Bearing Units: ASTM C90
    b. Medium Weight Units: 105 to 125 pcf
    c. Normal Weight Units: greater than 125 pcf
4. Load-bearing CMU shall be at minimum medium weight units, unless noted otherwise.
5. Mortar for all masonry shall conform to ASTM C270 with minimum compressive strength of 1,800 psi. Mortar below grade shall be type M. Elsewhere mortar may be either type M or S unless specifically indicated otherwise. Use either Portland cement/lime or masonry cement for mortar.
6. Grout shall conform to ASTM C476 with minimum 28-day compressive strength of 3,000 psi.
7. Steel bar reinforcement shall conform to ASTM A615, grade 60. Horizontal joint reinforcement shall be "Ladder" type with (W1.7 for low walls without cavity wall with veneer) (3/16 inch for high walls and walls with cavity and veneer) diameter longitudinal bars.
8. Vertical cells containing reinforcing and grout shall form a continuous cavity, free of mortar droppings.
9. Minimum vertical CMU wall reinforcing shall be continuous #5 bars at 48" on center, unless noted otherwise. Dowels to concrete foundation to match size and spacing of reinforcing unless noted otherwise. Reinforce CMU core at corners, each side of control joints and each side of wall openings with additional (2) #5 continuous vertical reinforcing bars.
10. Horizontal bond beam and vertical reinforcing shall be continuous unless noted otherwise. Lap splice reinforcing per the schedule below or use mechanical splices adequate for 125% of specified yield strength of the bar. Lap vertical reinforcement with minimum dowels of same size and spacing that have been previously installed in the foundations. Dowel embedment in concrete shall conform to the requirements of the CAST-IN-PLACE CONCRETE notes.

BAR SIZE	LAP SPLICE LENGTH
#4	24"
#5	30"
#6	48"
#7	Provide mechanical splice

11. Reinforcing bars shall be held in position by wire ties or other approved means to insure design location and lap. Place bars and lap prior to grouting.
12. Grouting of masonry walls shall conform to recommended procedure for "low lift grouting" or "high lift grouting" as outlined in the NCMA TEK 3-2A – "Grouting Concrete Masonry Walls" and ACI 530.1/ASCE 6 "Specification for Masonry Structures". Grout lifts shall not exceed 5 feet without mechanically consolidated (vibrated) grout pours.
13. Lifts of grout shall be keyed 4 inches into the previous course of masonry below.
14. Masonry below grade shall be grouted solid.
15. Sampling and Testing of mortar and grout shall be in accordance ASTM C780 and ASTM C1019, respectively. One test of each is required for each 5,000 square foot of wall.
16. Construction and testing of masonry prisms shall be in accordance with the procedure outlined in the ASTM C1314.
17. Special Inspection of masonry construction is required. Refer to project specifications and ACI 530 for quality assurance requirements. Special Inspection shall include at minimum:
    a. Mortar and grout testing.
    b. Reinforcement placement and lap verification.
    c. Verification of clear grout space prior to grouting.
    d. Verification of proper grouting procedures (grout lift and consolidation).
18. Contractor shall brace masonry walls to resist wind loads until floors and roofs are in place, and the masonry has reached 75% of the required strength f'm. Bracing shall be provided in accordance with OSHA – Construction Safety Standards for Masonry Wall Bracing and NCMA TEK 3-4B – "Bracing Concrete Masonry Walls During Construction".
19. Contractor shall shore masonry walls above masonry bond beam lintels until the masonry is placed full height and has reached the required strength.

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REGISTRATION SEAL

NOT FOR CONSTRUCTION

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DNCE Project No.: 8951-17

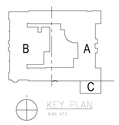
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

GENERAL STRUCTURAL NOTES



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

DRAWN	DT
CHECKED	DT
APPROVED	DT

PROJECT NO.
15102

DRAWING NO.
S-001

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SPECIAL INSPECTION REQUIREMENTS - SOILS AND FOUNDATIONS

TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. SITE PREPARATION:					
A. VERIFY SITE PREPARED IN ACCORDANCE WITH APPROVED GEOTECHNICAL REPORT.	-	X	GEOTECHNICAL REPORT	1705.6, 1803	SI/GE
2. EXCAVATION:					
A. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	-	X	GEOTECHNICAL REPORT	1705.6	SI/GE
3. FILL PLACEMENT:					
A. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X	GEOTECHNICAL REPORT	1705.6, 1803.5	SI/GE/TA
B. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	-			
C. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY	-	X			
4. SHALLOW FOUNDATIONS:					
A. IDENTIFICATION OF SOILS AT AND BELOW FOUNDATION BEARING LEVEL.	-	X	GEOTECHNICAL REPORT	1705.6	SI/GE
B. VERIFY ALLOWABLE BEARING CAPACITY OF FOUNDATION BEARING SOILS.	-	X			
5. GEOPIER FOUNDATIONS:					
A. VERIFY SHAFT DIAMETER AND CONDITION OF SHAFT.	X	-	GEOTECHNICAL REPORT	1705.7	SI/GE
B. VERIFY BEARING SOILS.	X	-			
C. DETERMINE CAPACITIES OF TEST GEOPIERS (MODULUS AND UPLIFT) AND CONDUCT ADDITIONAL LOAD TESTS AS REQUIRED.	X	-			
D. OBSERVE GEOPIER INSTALLATION OPERATION AND MAINTAIN A COMPLETE AND ACCURATE RECORD OF EACH GEOPIER INCLUDING OBSERVING SUBSURFACE CONDITIONS AND SOILS AND BOTTOM STABILIZATION TESTS	X	-			
E. COORDINATE ALL ACTIVITIES WITH INSTALLER'S FULL TIME QUALITY CONTROL REPRESENTATIVE.	X	-			
6. PILE FOUNDATIONS:					
A. VERIFY PILE MATERIALS, SIZES AND LENGTHS COMPLY WITH THE REQUIREMENTS.	X	-	GEOTECHNICAL REPORT	1705.7	SI/GE
B. DETERMINE CAPACITIES OF TEST PILES AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED.	X	-			
C. OBSERVE DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH PILE.	X	-			
D. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION, DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENTANY PILE DAMAGE	X	-			
E. FOR STEEL PILES, PERFORM ADDITIONAL INSPECTION IN ACCORDANCE WITH REQUIREMENTS OF STEEL CONSTRUCTION.	-	-			
F. FOR CONCRETE PILES AND CONCRETE FILLED PILES, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH REQUIREMENTS OF CONCRETE CONSTRUCTION.	-	-			
G. FOR SPECIALTY PILES, PERFORM ADDITIONAL INSPECTIONS AS DETERMINED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.	-	-			
7. PIER/CAISSON/AUGER CAST PILE FOUNDATIONS:					
A. DETERMINE CAPACITIES OF TEST PIER/CAISSON/AUGER CAST PILE AND CONDUCT ADDITIONAL LOAD TESTS AS REQUIRED.	X	-	GEOTECHNICAL REPORT	1705.8	SI/GE
B. OBSERVE PIER/CAISSON/AUGER CAST PILE INSTALLATION OPERATION AND MAINTAIN A COMPLETE AND ACCURATE RECORD OF EACH ELEMENT INCLUDING OBSERVING SUBSURFACE CONDITIONS AND SOILS AND BOTTOM STABILIZATION TESTS	X	-			
C. COORDINATE ALL ACTIVITIES WITH INSTALLER'S FULL TIME QUALITY CONTROL REPRESENTATIVE.	X	-			
D. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM PIER/CAISSON/AUGER CAST PILE DIAMETERS, BELL DIAMETERS (IFAPPLICABLE), LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE), AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES	X	-			
E. PERFORM ADDITIONAL INSPECTION IN ACCORDANCE WITH REQUIREMENTS OF CONCRETE CONSTRUCTION.	-	-			

SPECIAL INSPECTION REQUIREMENTS - STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL

TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK:					SI/TA
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	-	X	APPLICABLE ASTM MATERIAL STANDARDS	1705.2.2	
B. MANUFACTURER'S CERTIFIED TEST REPORTS.	-	X	-	-	
2. INSPECTION OF WELDING:					
A. COLD-FORMED STEEL DECK:					
a. FLOOR AND ROOF DECK WELDS.	-	X	AWS D1.3	1705.2.2	
B. REINFORCING STEEL:					
1) VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706.	-	X	AWS D1.4, ACI 318: SECTION 3.5.2	1705.2.2	
2) REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	X	-			
3) SHEAR REINFORCEMENT.	X	-			
4) OTHER REINFORCING STEEL.	-	X			

SPECIAL INSPECTION REQUIREMENTS - CONCRETE CONSTRUCTION

TASK	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE	RESPONSIBLE AGENT
	CONTINUOUS	PERIODIC			
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRE-STRESSING TENDONS, AND PLACEMENTS.	-	X	ACI 318: 3.5, 7.1-7.7	1910.4	SI
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1704.3, ITEM 5B.	-	-	AWS D1.4 ACI 318: 3.5.2	-	SI
3. INSPECTION OF ANCHOR RODS AND EMBEDS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.	X	-	ACI 318: 8.1.3, 21.2.8	1908.5, 1909.1	SI/TA
4. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE (POST-INSTALLED).	-	X	ACI 318: 3.8.6, 8.1.3, 21.2.8	1909.1	SI/TA
5. VERIFYING USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: CHAPT 4, 5.2-5.4	1904.2, 1910.2, 1910.3	SI/TA
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1913.10	SI/TA
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 5.9, 5.10	1913.6, 1913.7, 1913.8	SI
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 5.11-5.13	1913.9	SI
9. INSPECTION OF PRE-STRESSED CONCRETE:				-	SI/SE
A. APPLICATION OF PRE-STRESSED FORCES.	X	-	ACI 318: 18.20		
B. GROUTING OF BONDED PRE-STRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING-SYSTEM.	X	-	ACI 318: 18.18.4		
10. ERECTION OF PRECAST CONCRETE MEMBERS.	-	X	ACI 318: Ch. 16	-	SI/SE
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 6.2	-	SI/SE/TA
12. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 6.1.1	-	SI/SE/TA

SPECIAL INSPECTION NOTES

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE 2012 MICHIGAN (INTERNATIONAL) BUILDING CODE CHAPTER 17 AND AS MODIFIED HEREIN.
2. DESIGNATIONS

   SI: SPECIAL INSPECTOR QUALIFIED WITH DEMONSTRATED COMPETENCE DOCUMENTED BY CERTIFICATIONS FROM RECOGNIZED AGENCIES SUCH AS AWS, ACI, MASONRY INSTITUTE OF MICHIGAN (MIM), ETC., AS SUBMITTED AND APPROVED BY THE BUILDING OFFICIAL. SPECIAL INSPECTOR MAY BE A FIRM WITH MULTIPLE SPECIALISTS AND A PROJECT MANAGER PROVIDING REPORTS.

   TA: TESTING AGENCY QUALIFIED TO TEST AND INSPECT MATERIALS AND ASSEMBLIES. TESTING AGENCY SHALL BE UNDER THE SUPERVISION OF THE SPECIAL INSPECTOR.

   GE: GEOTECHNICAL ENGINEER WHO PROVIDED THE ORIGINAL PROJECT GEOTECHNICAL SOILS INVESTIGATION REPORT.

   SE: SPECIALTY ENGINEER RESPONSIBLE FOR DESIGNING ASSEMBLIES SUCH AS PRECAST CONCRETE, STEEL JOISTS, COLD FORMED FRAMING ASSEMBLIES, ETC. SPECIALTY ENGINEER SHALL PROVIDE OBSERVATION OF FABRICATED AND INSTALLED ITEMS OF THEIR DESIGN IN ADDITION TO THE SPECIAL INSPECTION.
3. TA, GE AND SE SHALL SUBMIT RECORDS OF THE INSPECTION RESULTS TO THE SI. THE SI SHALL COMPILE AND SUBMIT INSPECTION RECORDS TO THE ARCHITECT/ENGINEER AND BUILDING OFFICIAL. RECORDS SHALL INCLUDE STATEMENTS OF TESTS, WHETHER INSTALLED/FABRICATED ITEM COMPLIES WITH CONTRACT DOCUMENTS, REMEDIAL WORK PERFORMED, RETESTS.
4. SI SHALL PROVIDE A DAILY REPORT OF ANY DISCREPANCIES FROM THE CONTRACT DOCUMENTS FOUND ON THE SAME DAY OF THE INSPECTION TO THE ENGINEER OF RECORD. FORMAL REPORTS OF COMPLIANCE CAN FOLLOW BY A MAXIMUM OF 2 WEEKS. SI SHALL PROVIDE AND SIGN FINAL REPORT WITH A SUMMARY OF ALL TESTS PERFORMED AND RESULTS TO THE ENGINEER OF RECORD AND BUILDING OFFICIAL
5. SI, TA & GE SHALL BE PAID BY THE OWNER IN COMPLIANCE WITH THE MICHIGAN (INTERNATIONAL) BUILDING CODE.

TMP ARCHITECTURE

TMP ASSOCIATES INC

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BLOOMFIELD HILLS MICHIGAN 48303
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REGISTRATION SEAL

NOT FOR CONSTRUCTION

CONSULTANT

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6765 Daly Road
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info@desainasr.com
DNCE Project No.: 8951-17

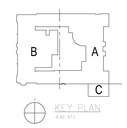
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

SPECIAL INSPECTIONS



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2015	BP NO. 1 - BIDS

DRAWN	DT
CHECKED	Checker
APPROVED	Approver

PROJECT NO.

15102

DRAWING NO.

S-002

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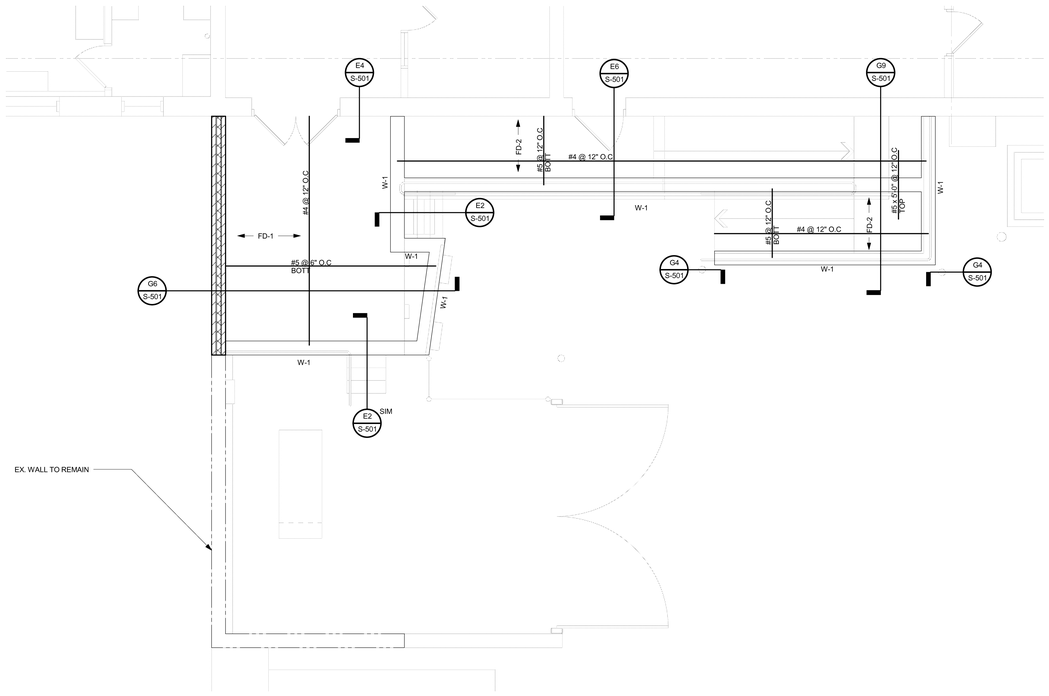

TRUCK DOCK

1/4" = 1'-0"

NOTES:

1. REFERENCE ARCHITECTURAL FOR FINISHED SLAB ON GRADE ELEVATION
2. REFERENCE TO DRAWING S-001 FOR GENERAL STRUCTURAL NOTES
3. REFER TO DRAWING S-002 FOR SPECIAL INSPECTION SCHEDULES
4. DESIGNATIONS:
   FD-1 - 8" SLAB WITH #5 @ 6" O.C BOTTOM WITH #4 @ 1'-0" O.C. BOTTOM
   FD-2 - 6" SLAB WITH #5 @ 1'-0" O.C BOTTOM WITH #4 @ 1'-0" O.C. BOTTOM
   W-1 - 12" THK CONCRETE WALL

TMP ARCHITECTURE

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DNCE Project No.: 8951-17

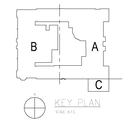
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

TRUCK DOCK PLAN



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

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CHECKED	Checker
APPROVED	Approver

PROJECT NO.

15102

DRAWING NO.

S-101

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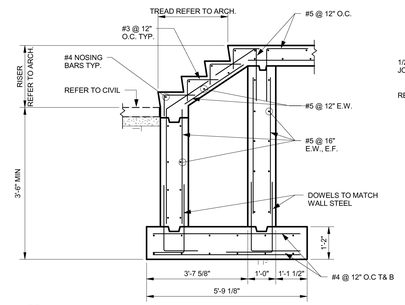
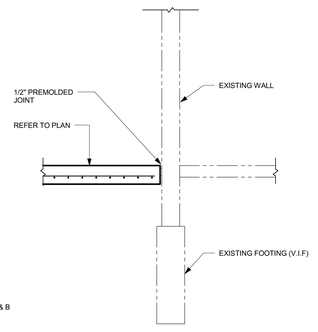


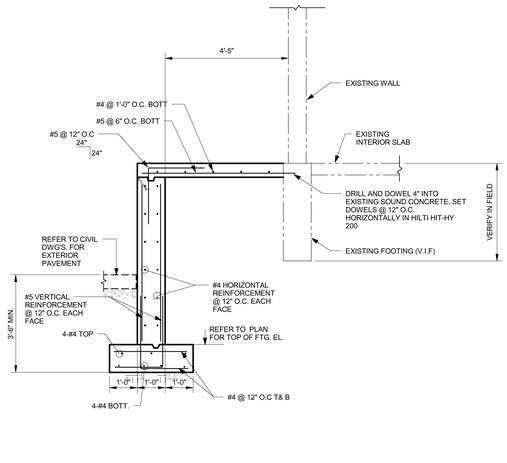
E2 S-501 CONCRETE STAIR SECTION

1/2" = 1'-0"



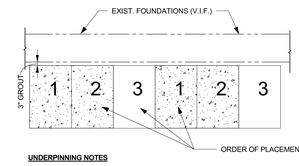
E4 S-501 SUSPENDED SLAB AT TRUCK DOCK

1/2" = 1'-0"



E6 S-501 RAMP SLAB AT TRUCK DOCK AREA

1/2" = 1'-0"



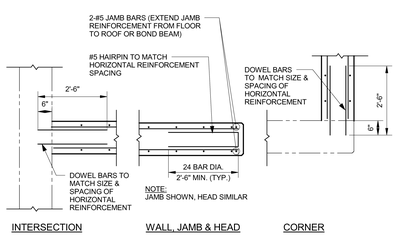
UNDERPINNING NOTES

SEQUENCE OF UNDERPINNING FOR EXISTING FOUNDATIONS:

1. UNDERPINNING TO BE INSTALLED IN (3) PLACEMENTS AS NOTED IN 3'-0" MAX. SECTIONS. USE CONCRETE OF 3000 PSI AT 7 DAYS WITH HIGH EARLY CEMENT OR ADMIXTURE.
2. THOROUGHLY CLEAN UNDERSIDE OF EXIST. FOOTING PRIOR TO PLACEMENT OF UNDERPINNING.
3. FORM AND INSTALL FIRST PLACEMENT, REMOVE ALL DIRT, LAITANCE, OIL, GREASE, ETC. FROM BOTH NEW AND EXIST. SURFACES, SATURATE SURFACES WITH WATER.
4. REMOVE FREE WATER AND COMPLETELY PACK (3") SPACE W/ NON-SHRINK DO NOT USE GROUT OF FLOWABLE CONSISTENCY UNLESS UNDERSIDE OF EXISTING FOOTING IS SMOOTH AND REAR SIDE IS ACCESSIBLE.
5. THREE DAYS AFTER FIRST PLACEMENT REPEAT THE ABOVE OPERATIONS FOR THE SECOND PLACEMENT, ETC.

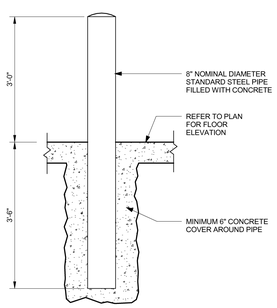
E9 S-501 SEQUENCE OF UNDERPINNING

1/4" = 1'-0"



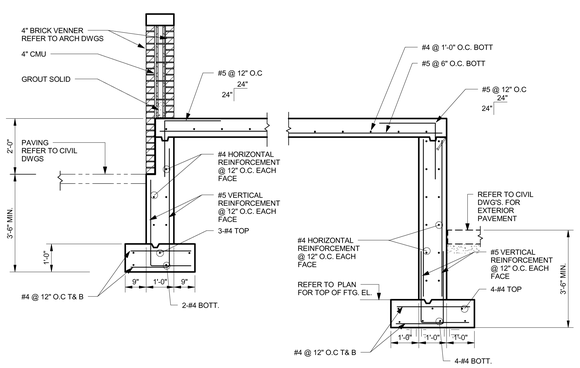
G2 S-501 WALL REINFORCING DETAIL @ EXIST

1/2" = 1'-0"



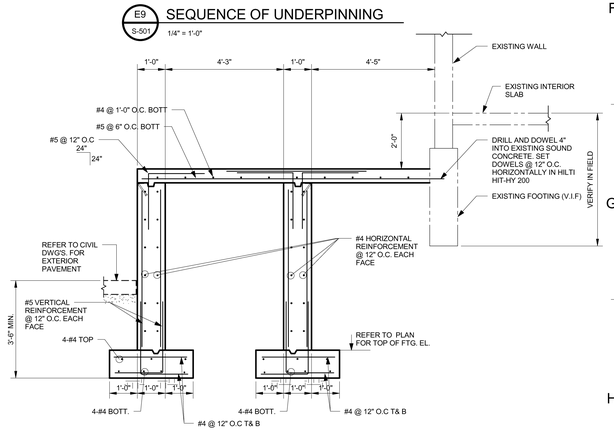
G4 S-501 TYP - PIPE BOLLARD

3/4" = 1'-0"



G6 S-501 RETAINING WALL FOR NEW TRUCK DOCK

1/2" = 1'-0"



G9 S-501 RAMP SLAB AT TRUCK DOCK AREA

1/2" = 1'-0"

TMP ARCHITECTURE

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DNCE Project No.: 8951-17

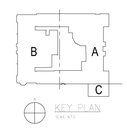
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

TYPICAL DETAILS



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

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CHECKED	Checker
APPROVED	Approver

PROJECT NO.

15102

DRAWING NO.

S-501

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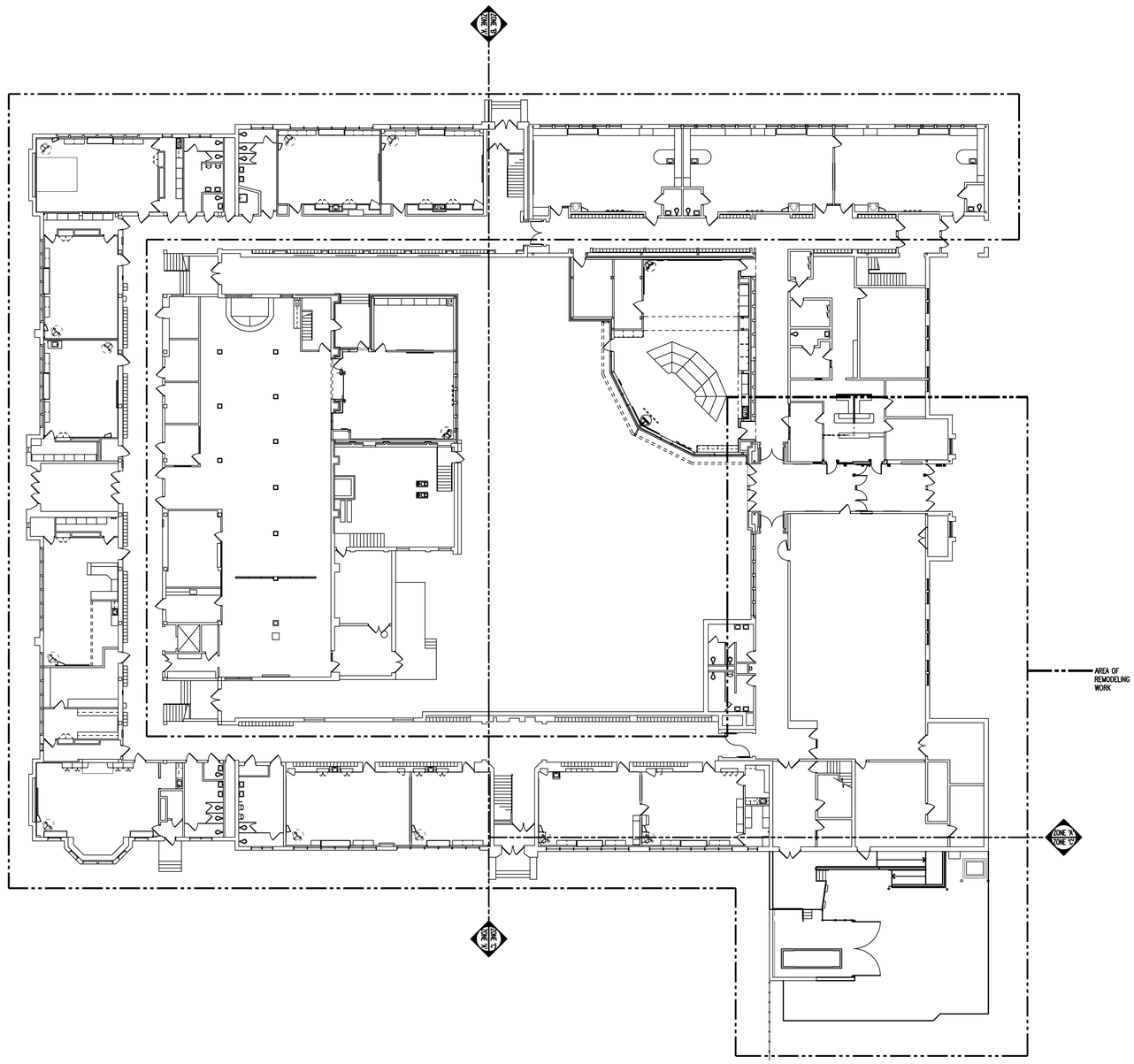

FIRST LEVEL COMPOSITE FLOOR PLAN
SCALE: 1/16" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC
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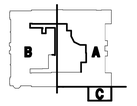
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE
First Level Composite Floor Plan



KEY PLAN

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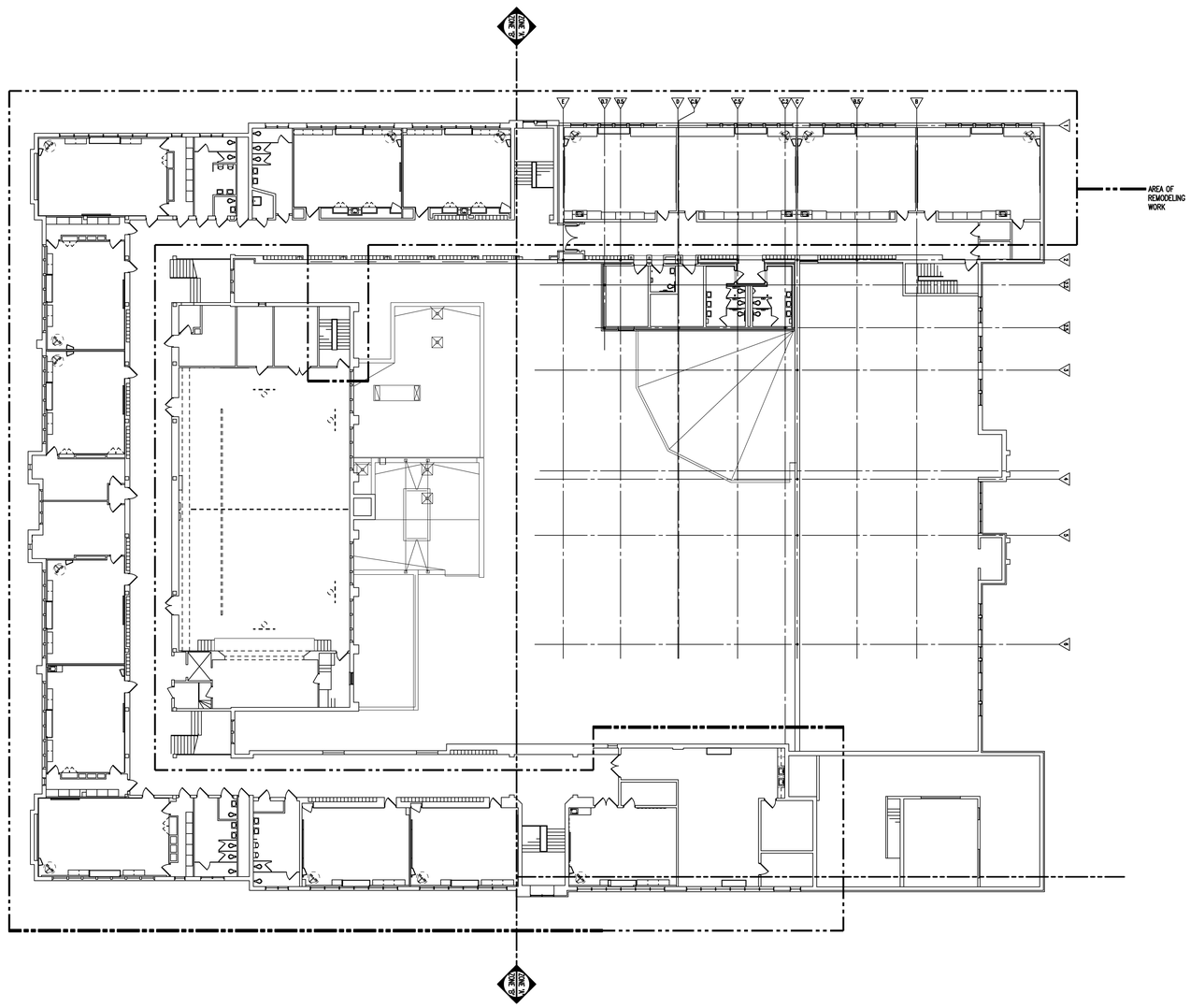
CHECKED	...
APPROVED	...

PROJECT NO.
15102

DRAWING NO.
AC1.1



SECOND LEVEL COMPOSITE FLOOR PLAN

SCALE: 1/16" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC

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BLOOMFIELD HILLS - MICHIGAN - 48302
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REGISTRATION SEAL

CONSULTANT

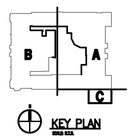
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level
Composite Floor Plan



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

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CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

AC1.2

Drawing File: Q:\Local\2015\mep\15102\15102_ac12.dwg
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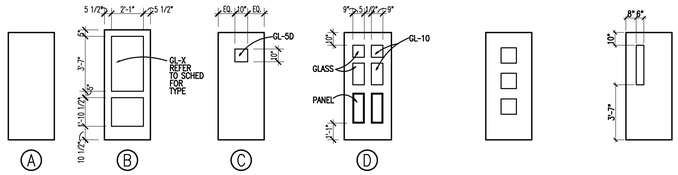
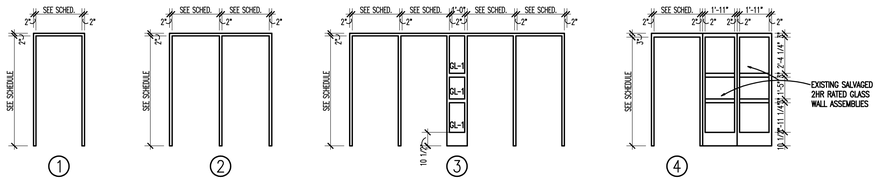
DOOR & FRAME SCHEDULE

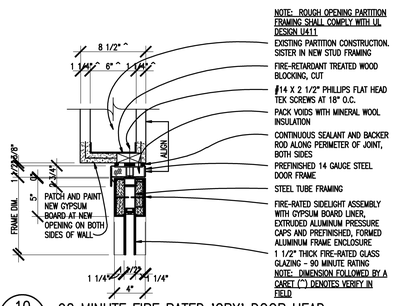
Opening		Door				Frame				Details						Remarks
No.	Opening Size (Width x Height)	Type	Material	Finish	Glass	Type	Material	Finish	Glass	Head	Jamb	Sill	Threshold	U.L. Label	Hdwe. Set	
First Level - Zone 'A'																
A119B	3'-0"x 7'-0" (EXIST)	EX.	EX. AL	EX.	EX.	EX.	EX.	EX.	-	.	.	.	.	90	.	.
A119C	3'-0"x 7'-0"	E	HM	PT	GL-6d	1	HM	PTD	-	2/AD1.1	1/AD1.1	.	.	45	15	.
A121	3'-0"x 7'-4" (EXIST)	EX.	EX. FRP	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	06	ALTERNATE A-1: PROVIDE GL-12; A-2
A121A	3'-0"x 7'-4" (EXIST)	EX.	EX. FRP	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	06	ALTERNATE A-1: PROVIDE GL-12
A121B	3'-0"x 7'-4" (EXIST)	EX.	EX. FRP	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	06	ALTERNATE A-1: PROVIDE GL-12
A121C	3'-0"x 7'-4" (EXIST)	EX.	EX. FRP	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	21	ALTERNATE A-1: PROVIDE GL-12
A122	3'-0"x 7'-4"	B	FRP	PFN	GL-1*	3	AL	PFN	GL-1*	.	.	.	.	.	02	ALTERNATE A-1: PROVIDE GL-3
A122A	3'-0"x 7'-4"	B	FRP	PFN	GL-1*	3	AL	PFN	GL-1*	.	.	.	.	.	02	ALTERNATE A-1: PROVIDE GL-3
A122B	3'-0"x 7'-4"	B	FRP	PFN	GL-1*	3	AL	PFN	GL-1*	.	.	.	.	.	02	ALTERNATE A-1: PROVIDE GL-3
A122C	3'-0"x 7'-4"	B	FRP	PFN	GL-1*	3	AL	PFN	GL-1*	.	.	.	.	.	01	ALTERNATE A-1: PROVIDE GL-3
A123A	3'-0"x 7'-4"	B	AL	PFN	GL-6d	4	AL	PFN	-	8, 9, 10/AD1.1	5, 6, 7/AD1.1	3, 4/AD1.1	.	90	10	.
A123B	3'-0"x 7'-4"	B	AL	PFN	GL-6d	1	AL	PFN	-	9, 10/AD1.1	6, 7/AD1.1	3/AD1.1	.	90	14	(SALVAGE & REINSTALL EXISTING DOOR AND FRAME)
A132	3'-0"x 7'-0" (EXIST)	EX.	EX. WD	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	07	ALTERNATE A-3
A147	3'-0"x 7'-0" (EXIST)	EX.	EX. WD	EX.	EX.*	EX.	EX.	EX.	EX.*	.	.	.	.	.	07	ALTERNATE A-3
First Level - Zone 'B'																
B139A	3'-1"x 7'-0"	D	AMP	PFN	GL-10	EX.	EX.	EX.	EX.	.	.	.	.	.	.	.
B139B	3'-1"x 7'-0"	D	AMP	PFN	GL-10	EX.	EX.	EX.	EX.	.	.	.	.	.	.	.
B139C	3'-1"x 7'-0"	D	AMP	PFN	GL-10	EX.	EX.	EX.	EX.	.	.	.	.	.	.	.



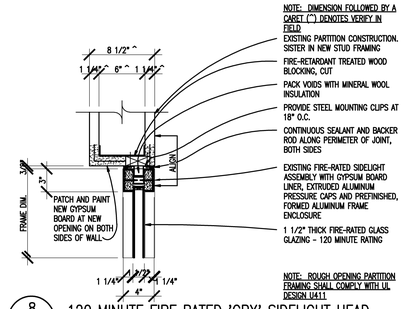
DOOR TYPES



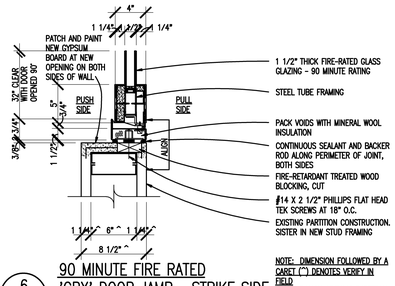
FRAME TYPES



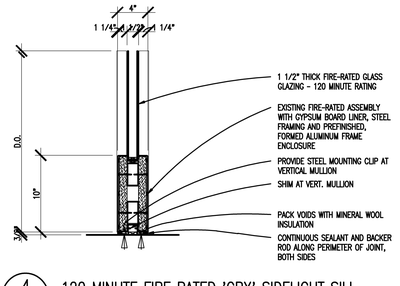
10 AD1.1 — 90 MINUTE FIRE RATED 'GPX' DOOR HEAD
SCALE: 1 1/2" = 1'-0"



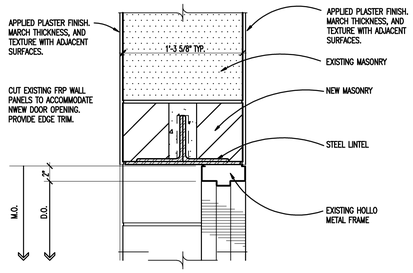
8 AD1.1 — 120 MINUTE FIRE RATED 'GPX' SIDELIGHT HEAD
SCALE: 1 1/2" = 1'-0"



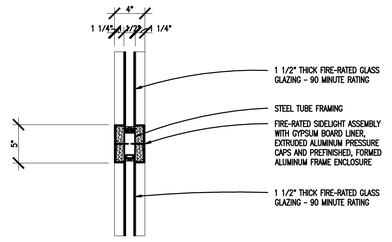
6 AD1.1 — 90 MINUTE FIRE RATED 'GPX' DOOR JAMB - STRIKE SIDE
SCALE: 1 1/2" = 1'-0"



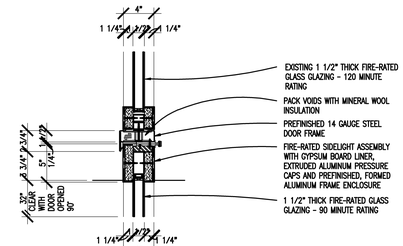
4 AD1.1 — 120 MINUTE FIRE RATED 'GPX' SIDELIGHT SILL
SCALE: 1 1/2" = 1'-0"



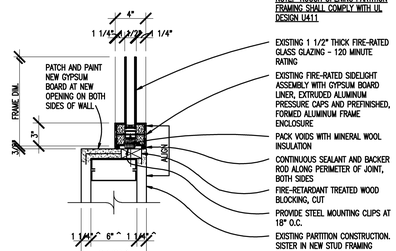
2 AD1.1 — HOLLOW METAL FRAME HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



9 AD1.1 — 90 MINUTE FIRE RATED 'GPX' DOOR MIDRAIL
SCALE: 1 1/2" = 1'-0"



7 AD1.1 — 120 MINUTE FIRE RATED 'GPX' DOOR JAMB - HINGE SIDE
SCALE: 1 1/2" = 1'-0"



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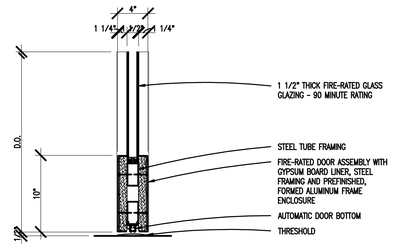
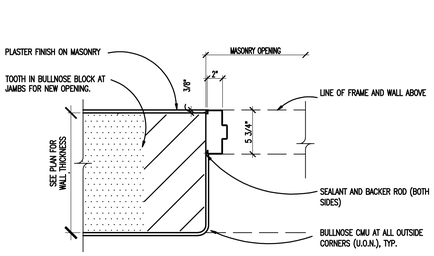
SCALE: 1 1/2" = 1'-0"



3 AD1.1 — 90 MINUTE FIRE RATED 'GPX' DOOR SILL
SCALE: 1 1/2" = 1'-0"



1 AD1.1 — HOLLOW METAL FRAME JAMB DETAIL
SCALE: 1 1/2" = 1'-0"

DOOR SCHEDULE ABBREVIATIONS AND NOTES

(REFER TO SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION)

DOOR SCHEDULE ABBREVIATIONS

AL	ALUMINUM
ALGL	ALUMINUM AND GLASS
HM	HOLLOW METAL
WD	SOLID CORE HARDWOOD
PFN	PREFINISHED BY MANUFACTURER
PTD	PAINTED
MAR	SYNTHETIC MARBLE THRESHOLD
MET	METAL THRESHOLD
LAM	PLASTIC LAMINATE CLAD
FRP	FIBERGLASS REINFORCED POLYESTER
STSTL	STAINLESS STEEL
STL	STEEL
AMP	ACRYLIC MODIFIED POLYESTER

DOOR SCHEDULE GENERAL NOTES

1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATION.
2. DOORS ARE 1-3/4" THICK UNLESS OTHERWISE NOTED.
3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/ OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED.
4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5 3/4" WIDE (U.O.N.).
5. HOLLOW METAL FRAMES, SET IN GYPSUM BD. /METAL STUD PARTITIONS, SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH SIDE OF THE PARTITION. PROVIDE EQUAL RABBETS.
6. AN ASTERISK (*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

U.L. DOOR LABEL DESIGNATIONS:

U.L. LABEL**	MIN. OPENING PROTECTION ASSEMBLY
180	3 HR. FIRE RATING
90	1-1/2 HR. FIRE RATING
60	1 HR. FIRE RATING
45	3/4 HR. FIRE RATING
20	1/3 HR. FIRE RATING

** ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED.

GLAZING TYPES

(REFER TO SPECIFICATIONS FOR ASSEMBLIES)

GL-1	1/4" CLEAR TEMPERED, MONOLITHIC GLASS
GL-2	1/4" LAMINATED GLASS
GL-3	INTERIOR LAMINATED SECURITY GLASS
GL-6c	60 & 90 MINUTE FIRE RATED GLASS - DOORS
GL-6d	60, 90 OR 120 MIN FIRE RATED GLASS
GL-10	TEMPERED INSULATING GLASS - CLEAR
GL-11	TEMPERED INSULATING GLASS - TINTED
GL-12	EXTERIOR INSULATING LAMINATED SECURITY GLASS

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE
Door & Frame Schedule

ISSUE DATES

02-15-2016	BP NO. 1 - BIDS
DATE:	ISSUED FOR:
DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.
15102

DRAWING NO.
AD1.1

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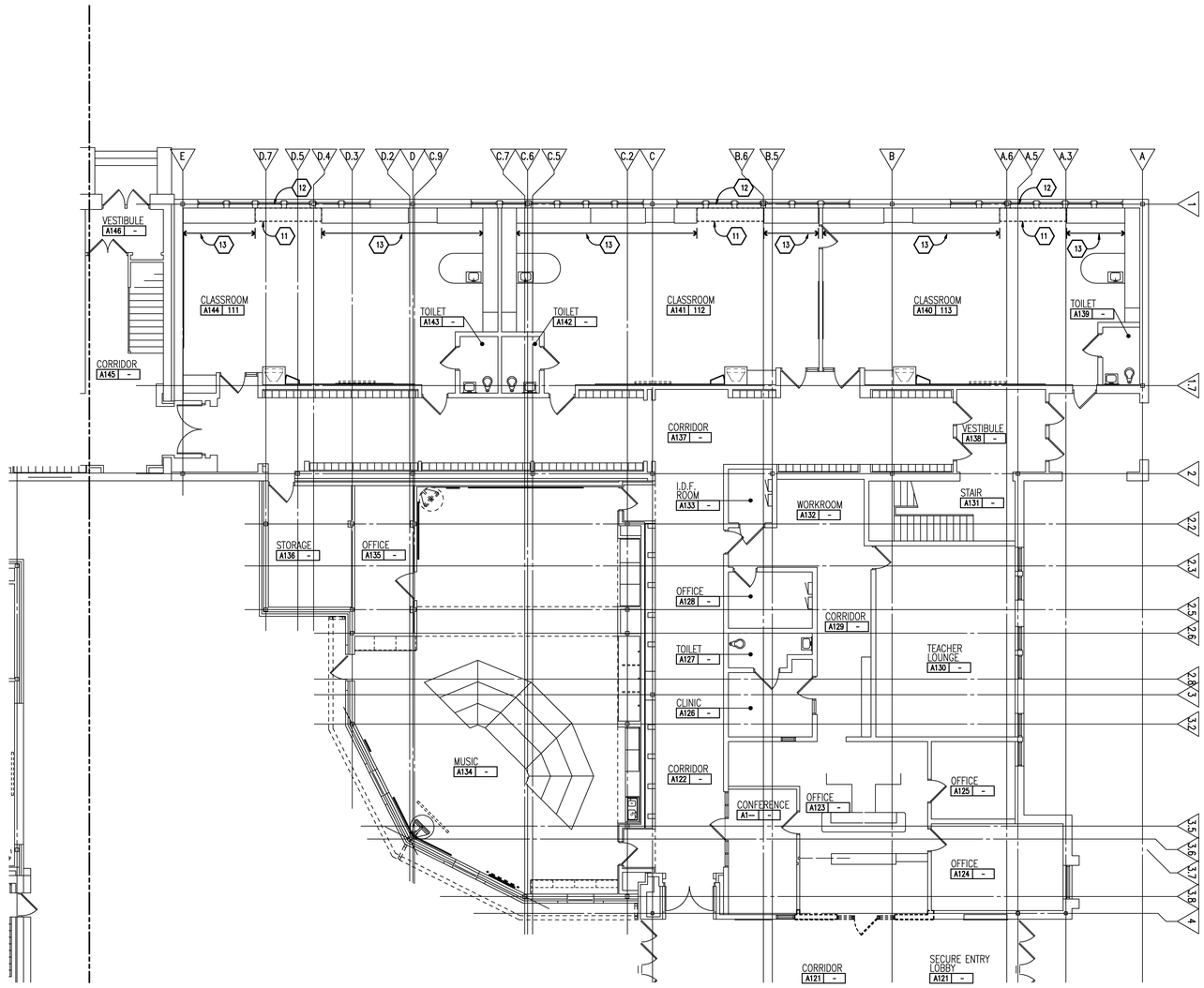

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7. SEE SPECIFICATION SECTIONS 01731 AND 01732 FOR ADDITIONAL DEMOLITION AND PATCHING REQUIREMENTS.
8. REFER ALSO TO ARCHITECTURAL WALL SECTIONS FOR ADDITIONAL SELECTIVE DEMOLITION.

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SALVAGED ITEMS

- DOORS AND HARDWARE.
- STONE CAP.
-
-
-

N

FIRST LEVEL DEMOLITION PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

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REGISTRATION SEAL

CONSULTANT

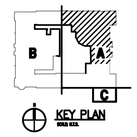
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Demolition Plan - Zone 'A'



KEY PLAN

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

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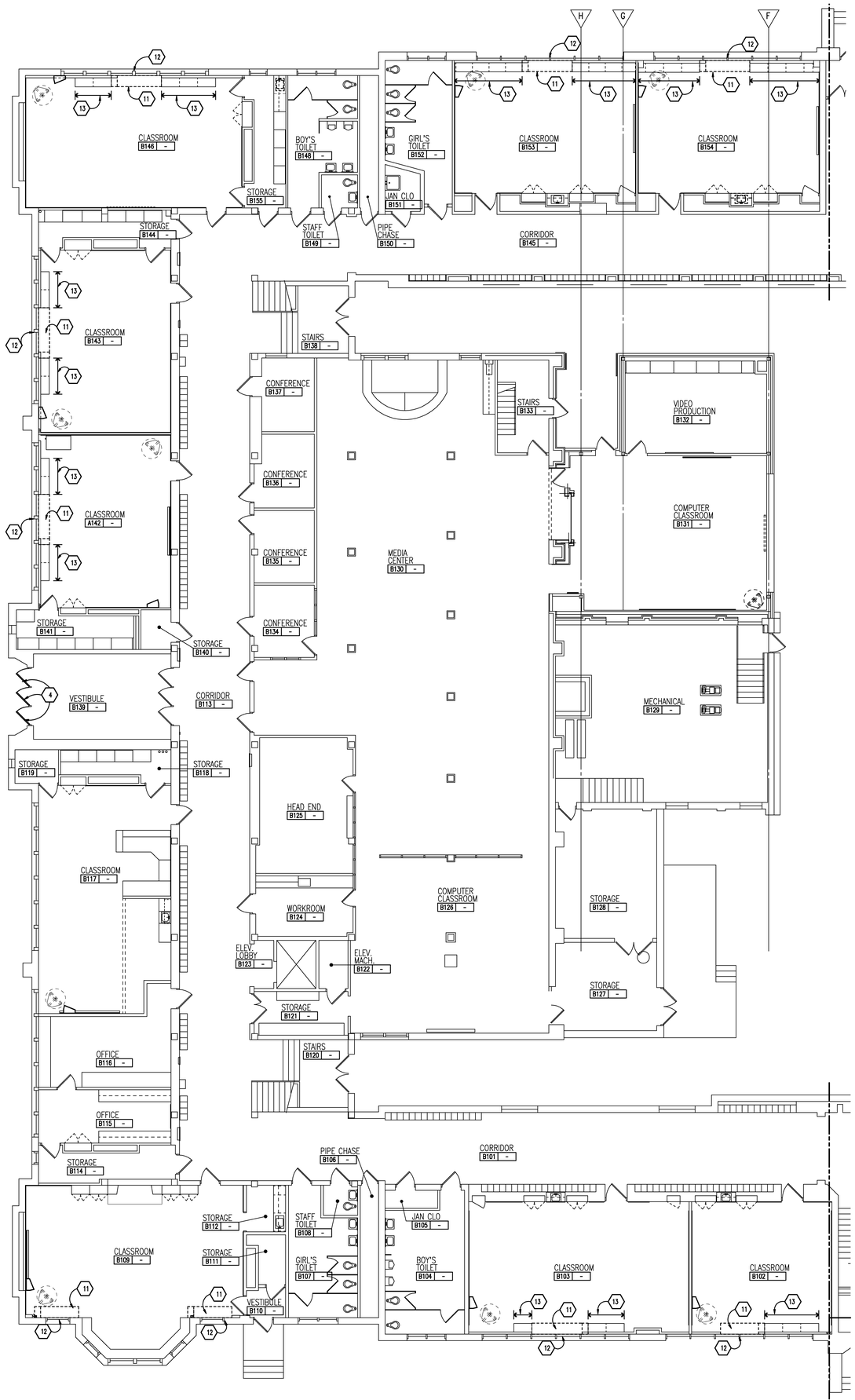

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SALVAGED ITEMS

- DOORS AND HARDWARE.
- STONE CAP.

FIRST LEVEL DEMOLITION PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC

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EM · INFO @TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

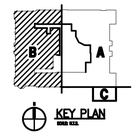
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Demolition Plan - Zone 'B'



ISSUE DATES

02-15-2016	BP NO. 1 - BIDS

DATE:	ISSUED FOR:
DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A0.1B

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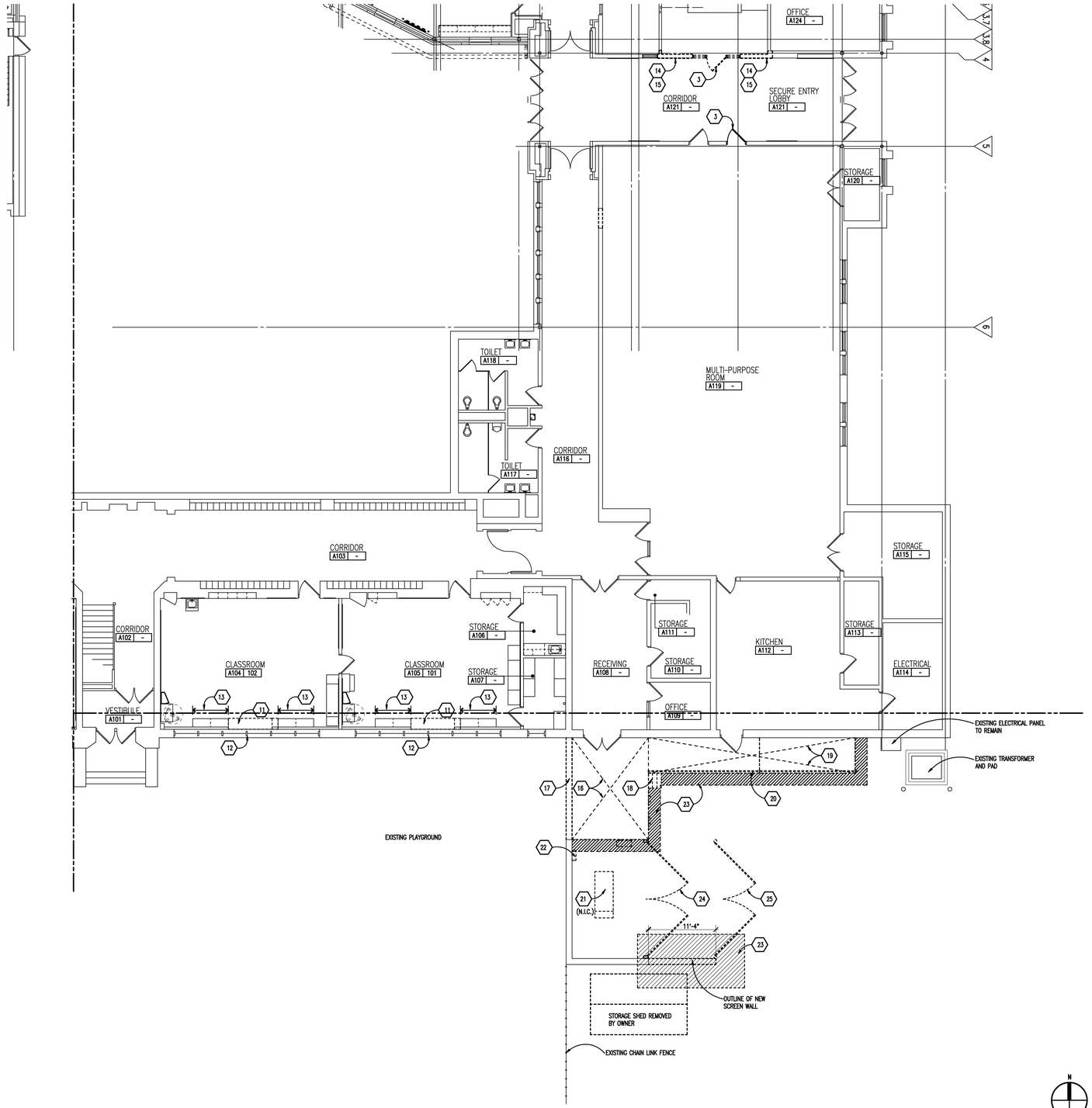
Feb 15, 2016 - 4:33pm



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25. REMOVE EXISTING CHAIN LINK GATES AND POSTS.
26. REMOVE EXISTING CEILING MOUNTED UNIT VENTILATOR. PREPARE OPENING TO ACCOMMODATE NEW CEILING HUNG UNIT VENTILATOR. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

SALVAGED ITEMS

- DOORS AND HARDWARE.
- STONE CAP.

N

FIRST LEVEL DEMOLITION PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Demolition Plan - Zone 'C'

KEY PLAN

ISSUE DATES

02-15-2016	BP NO. 1 - BIDS
DATE:	ISSUED FOR:

DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A0.1C

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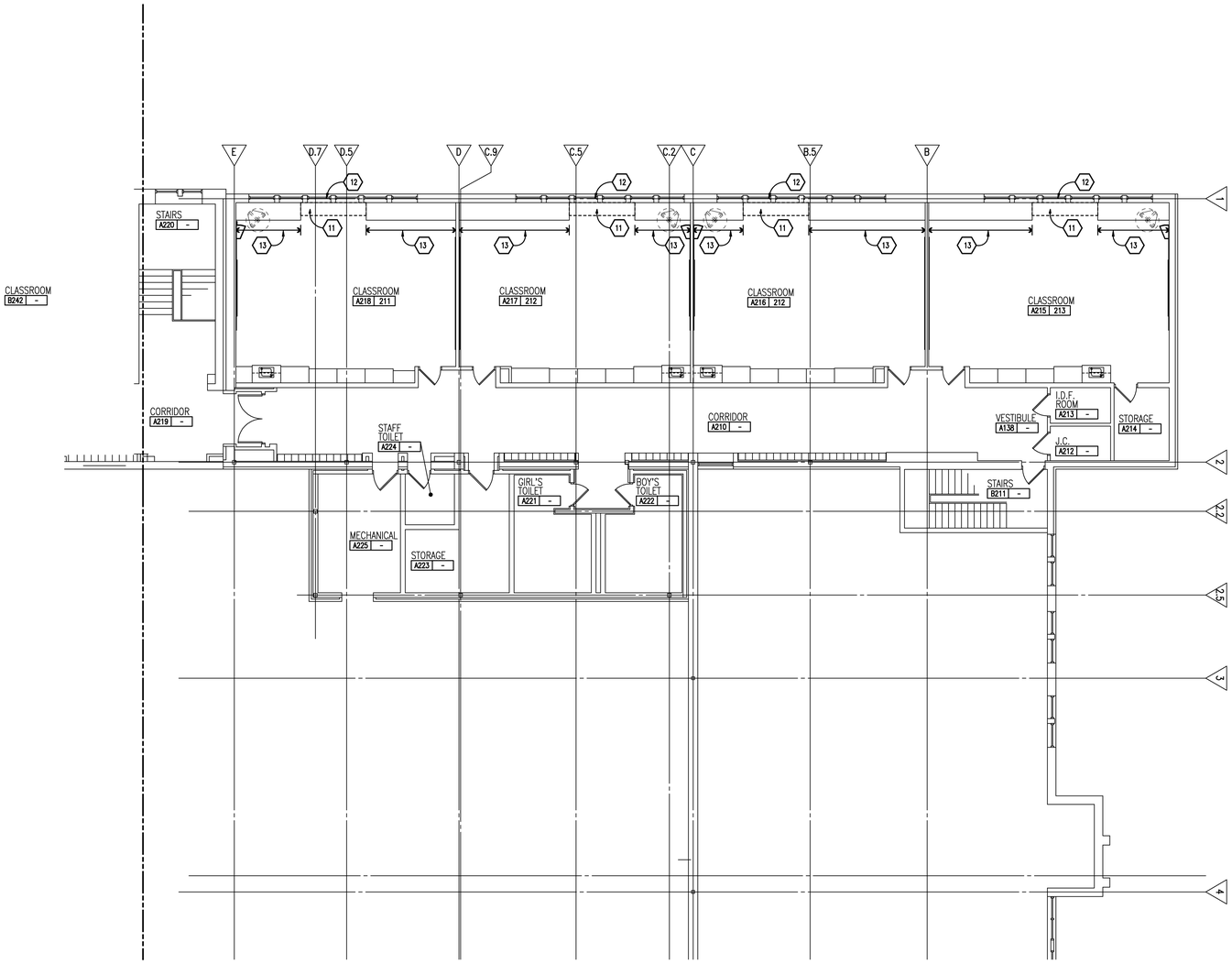

GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
2. NOT USED.
3. SEE CIVIL DRAWINGS FOR SITE DEMOLITION AND PATCHING WORK.
4. SEE EXTERIOR ELEVATIONS FOR ADDITIONAL DEMOLITION AND PATCHING WORK AT EXTERIOR OF BUILDING, INCLUDING (BUT NOT LIMITED TO) DEMOLITION NOTES RELATED TO WINDOW REPLACEMENT.
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SALVAGED ITEMS

- DOORS AND HARDWARE.
- STONE CAP.

N

SECOND LEVEL DEMOLITION PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

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REGISTRATION SEAL

CONSULTANT

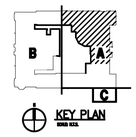
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Demolition Plan - Zone 'A'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

DRAWN	AKW
CHECKED	...
APPROVED	...

PROJECT NO.

15102

DRAWING NO.

A0.2A

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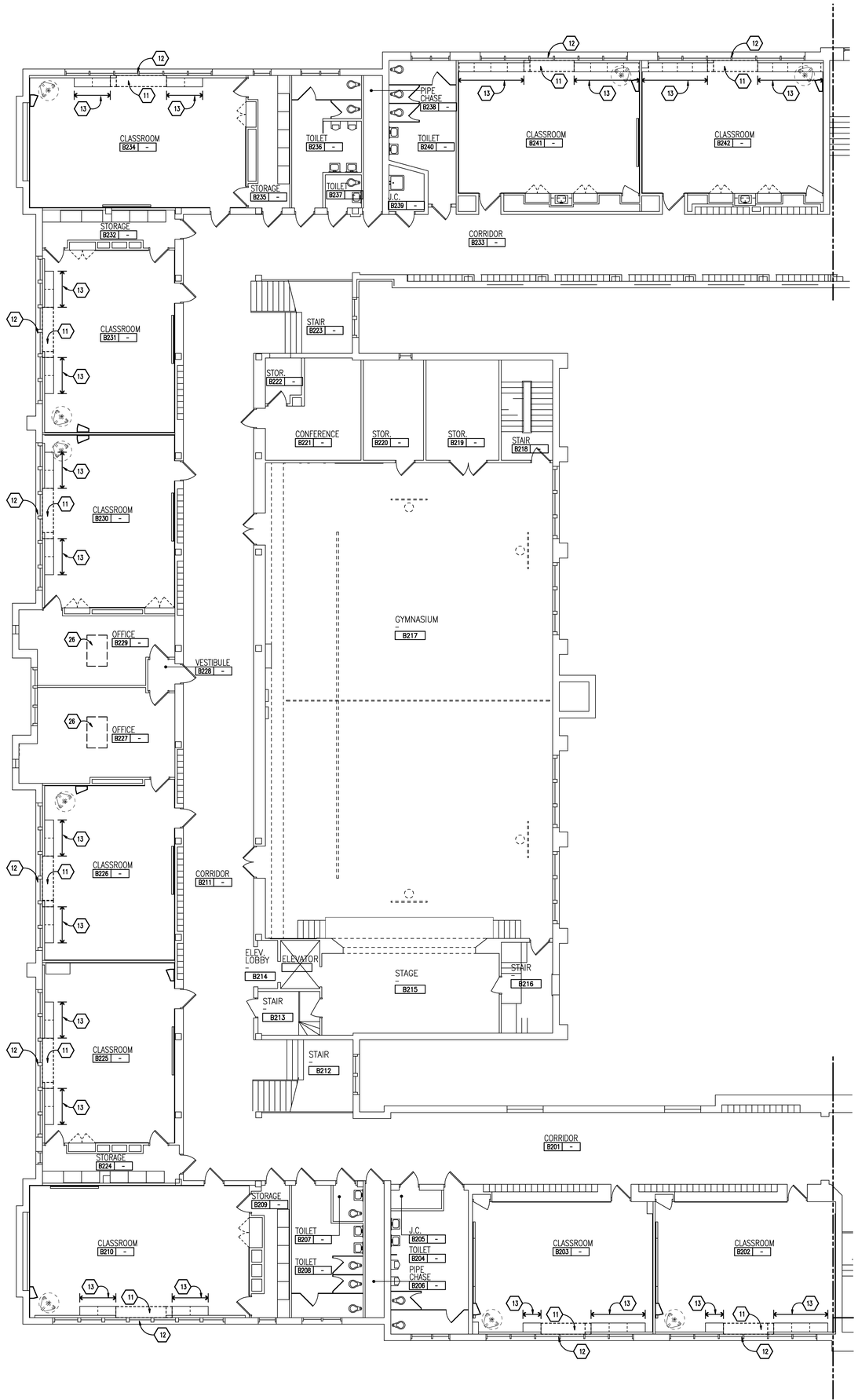

SECOND LEVEL DEMOLITION PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
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- DOORS AND HARDWARE.
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REGISTRATION SEAL

CONSULTANT

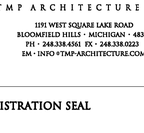
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Demolition Plan - Zone 'B'



KEY PLAN

ISSUE DATES

02-15-2016	BP NO. 1 - BIDS
DATE:	ISSUED FOR:

DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A0.2B

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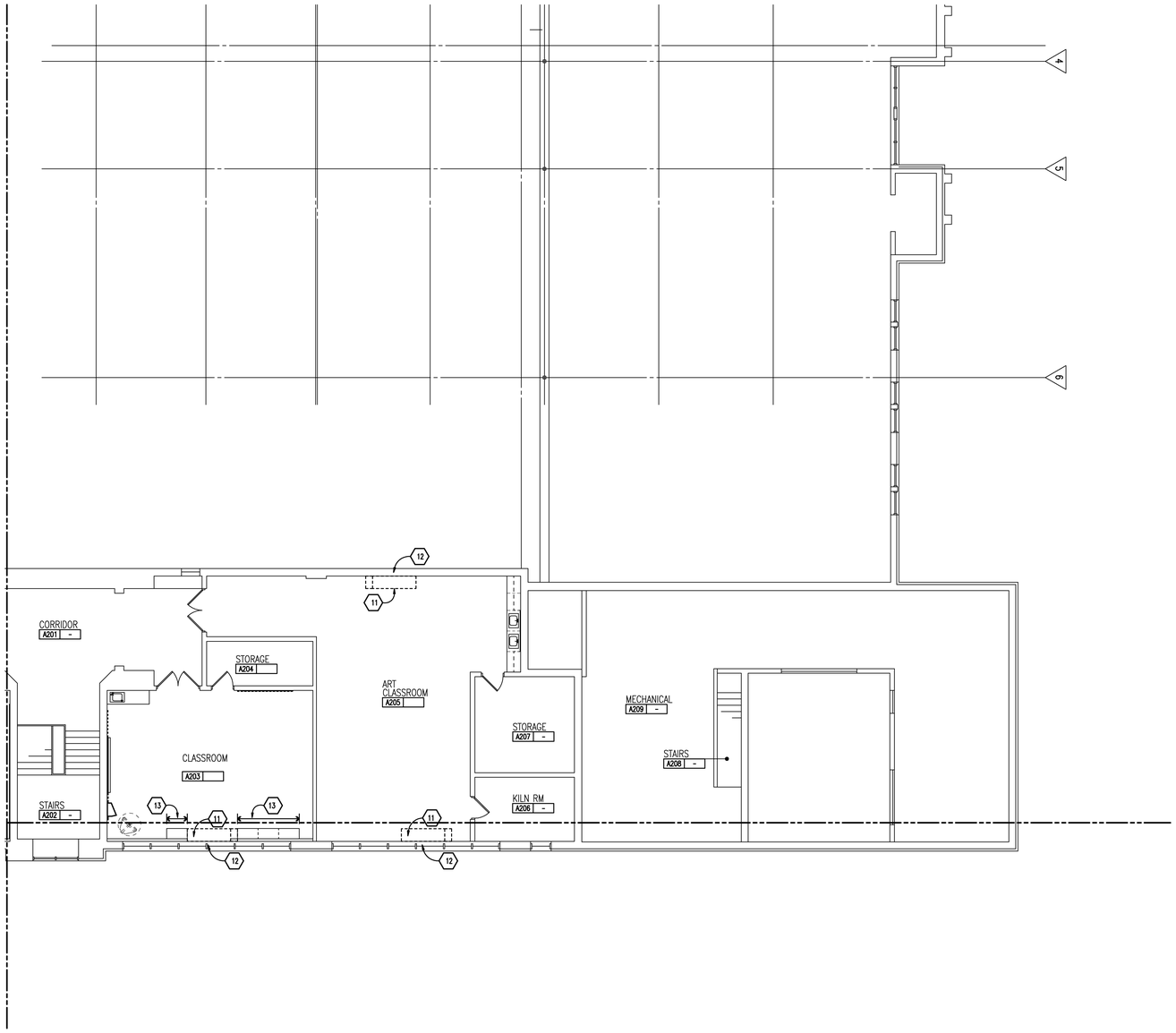

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SALVAGED ITEMS

- DOORS AND HARDWARE.
- STONE CAP.
-
-
-

N

SECOND LEVEL DEMOLITION PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

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REGISTRATION SEAL

CONSULTANT

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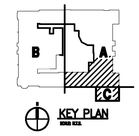
Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Demolition Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 - BIDS

DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A0.2C

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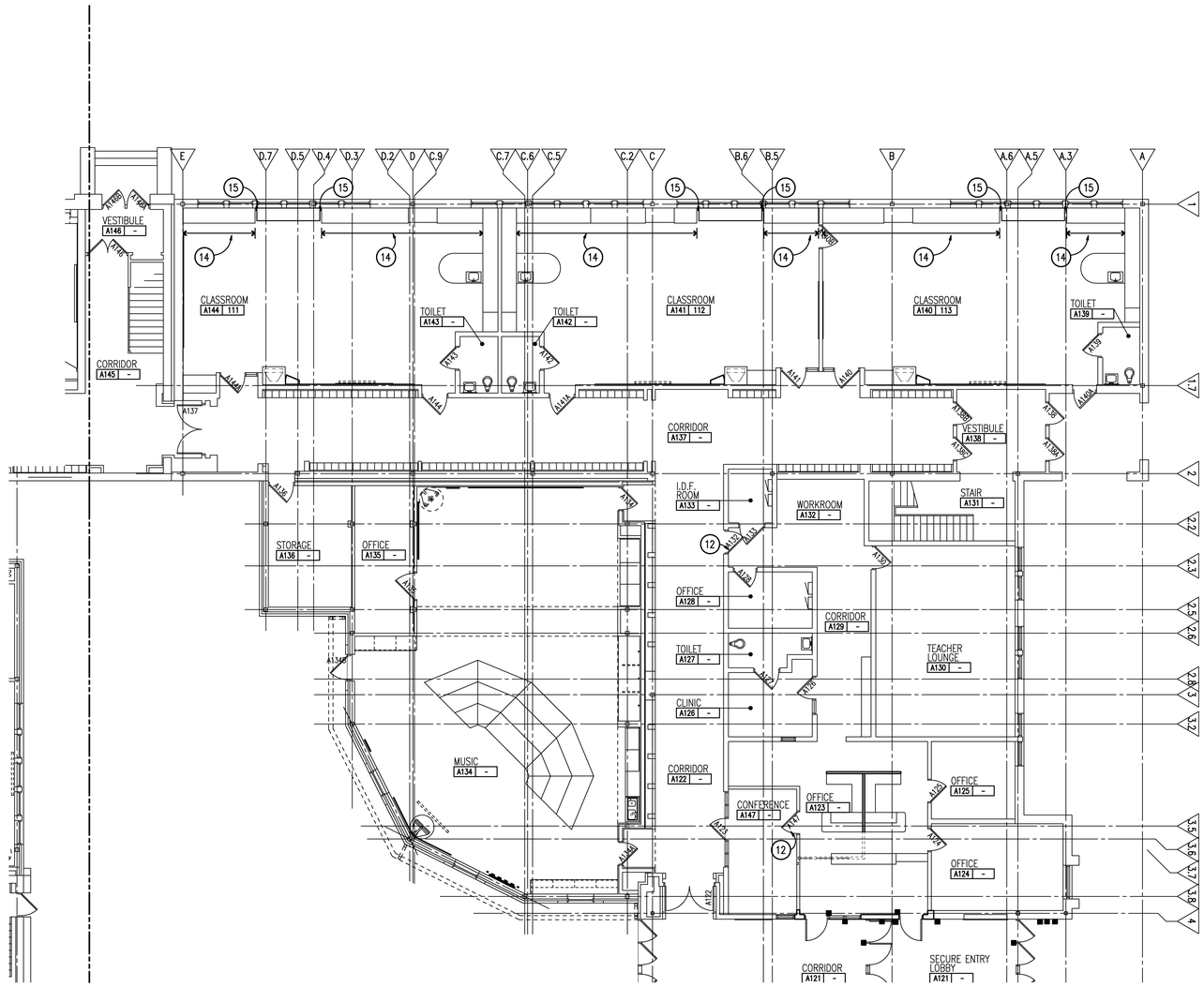
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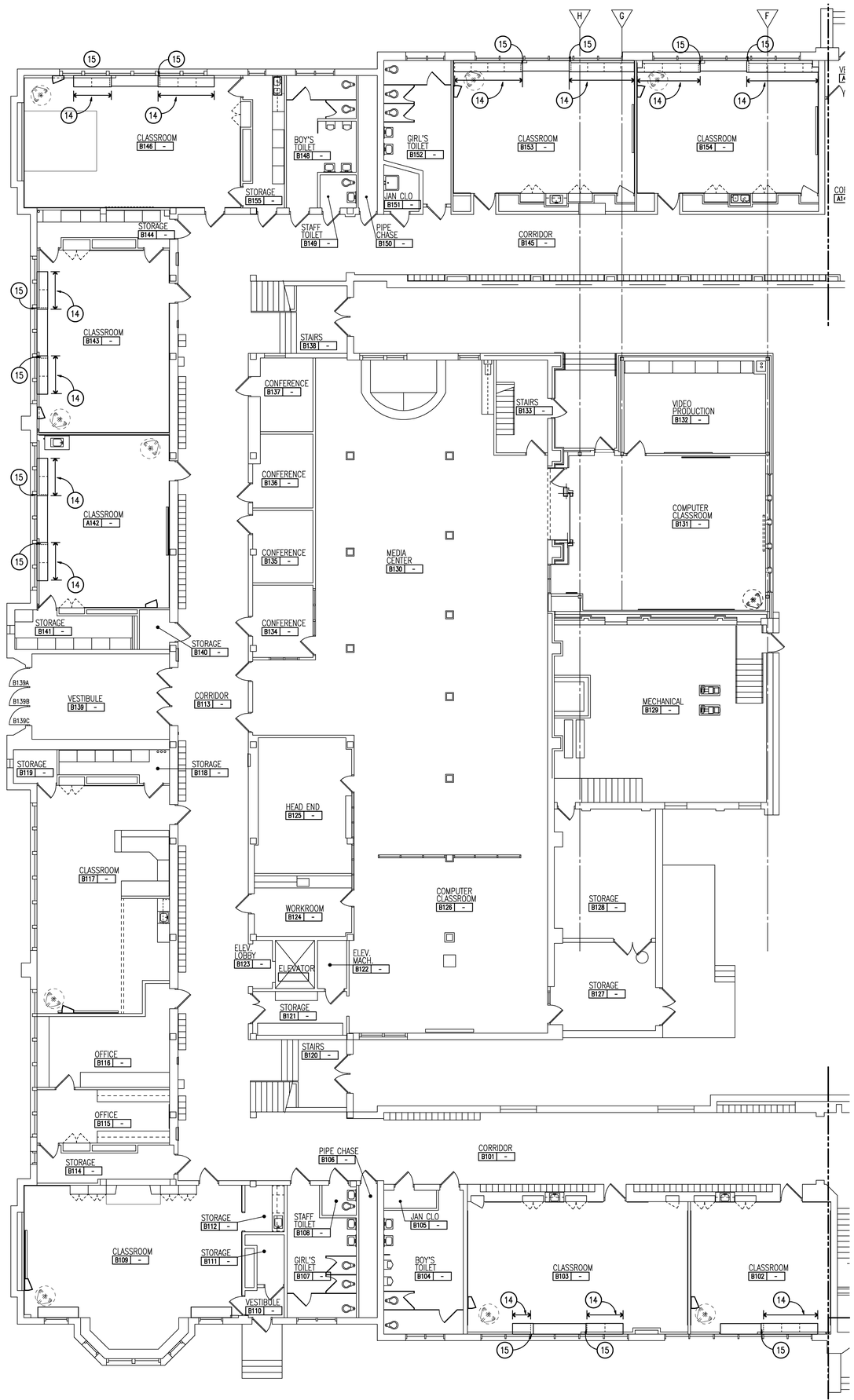

WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C..
- CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)

GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECTS FIELD REPRESENTATIVE.
2. CONTRACTORS SHALL VERIFY ALL EXISTING BUILDING DIMENSIONS, PARTITION AND WALL LOCATIONS, AND FLOOR ELEVATIONS IN THE FIELD AND NOTIFY THE ARCHITECTS REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.
3. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS)
7. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.
8. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.
9. REFER TO A10_ _ SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.
10. VERIFY ALL DIMENSIONS IN FIELD.
11. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS i.e. GRAB BARS, TOWEL DISPENSERS, PENCIL SHARPENERS, WALL STOPS, ACCORDIAN PARTITION JAMBS, ETC. REFER ALSO TO A9_ _ SERIES AND A6_ _ SERIES DRAWINGS.
12. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF NEW FLOOR MOUNTED, LOW PROFILE RACEWAY ASSEMBLIES. REMOVE AND SALVAGE PORTIONS OF EXISTING CARPET IN AREA WHERE RACEWAY IS TO BE INSTALLED. ONCE RACEWAY IS INSTALLED, REINSTALL CARPET OVER CONCEALED SLOPED BLOCKING PORTION OF RACEWAY TERMINATING CARPET AT METAL EDGE TRIM OF RACEWAY.
13. WHERE SURFACE MOUNTED CONDUITS AND/OR RACEWAYS ARE INDICATED ON ELECTRICAL DRAWINGS, FINAL LOCATIONS AND CONFIGURATIONS ARETO BE REVIEWED AND DETERMINED ON SITE WITH THE ARCHITECT PRIOR TO INSTALLATION.

PATCHING NOTES

1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. FOR ALL FLOOR SURFACES RECEIVING NEW FLOOR FINISHES, PREPARE SUBSTRATE BY PROVIDING LEVELING AND PATCHING COMPOUNDS RECOMMENDED BY FINISH FLOORING MANUFACTURERS. CONTRACTOR'S BASE BID PROPOSAL SHALL ASSUME THAT ALL AREAS, INDICATED TO RECEIVE NEW FINISHES, WILL REQUIRE FLOOR PREPARATION.
3. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK, CHALKBOARDS, TACKBOARDS, DISPLAY CASES OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH EXISTING, AS ACCEPTABLE TO THE ARCHITECT.
4. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.
5. AT EXISTING FLOOR FINISHES TO REMAIN, THAT BECOME SUBSTRATES FOR NEW FLOOR FINISHES, PATCH AND FILL EXISTING AS REQUIRED TO PREPARE FOR NEW FLOOR FINISH UNTIL ACCEPTABLE TO NEW FLOOR FINISH CONTRACTOR.
6. TOOTH-IN MASONRY INTO EXISTING, U.O.N., INCLUDING JAMBS OF DOOR AND OTHER OPENINGS.

CONSTRUCTION KEY NOTES

1. INSTALL NEW DOORS, FRAMES, GLAZING AND HARDWARE. REFER TO DRAWING AD1.1 FOR ADDITIONAL INFORMATION
2. INSTALL NEW DOOR, AND HARDWARE. REFER TO DRAWING AD1.1 FOR ADDITIONAL INFORMATION.
3. INSTALL NEW GLAZING IN EXISTING FRAMES AS PART OF ALTERNATE NO, A1
4. INSTALL NEW GLAZING IN EXISTING DOORS AS PART OF ALTERNATE NO, A1
5. EXISTING POWER DOOR OPERATOR ACTUATOR SWITCH TO REMAIN
6. NEW POWER DOOR OPERATOR ACTUATOR SWITCH
7. EXISTING INTERCOM BOX TO REMAIN
8. EXISTING KEYPAD/PROXIMITY READER TO REMAIN
9. NEW KEYPAD/PROXIMITY READER
10. NEW PROXIMITY READER
11. NEW PROXIMITY READER (REFER TO ALTERNATE 2)
12. PROVIDE NEW LOCKSET TIED INTO SECURITY SYSTEM AS PER ALTERNATE NO. A-3.
13. PROVIDE NEW SECURITY GLAZING IN LIEU OF SCHEDULED GLAZING IN NEW DOORS AND NEW FRAMING AS PER ALTERNATE NO. A-1.
14. PROVIDE NEW 1-1/2" THICK PLASTIC LAMINATE COUNTERTOPS WITH 3 MM PVC EDGE BANDING OVER EXISTING CASEWORK TO EDGE OF NEW UNIT VENTILATOR. PROVIDE PVC EDGING TO ENDS.
15. PROVIDE NEW PLASTIC LAMINATE FACED FILLER STRIPS INCLUDING CLEATS FOR CONCEALED FASTENING, BETWEEN EXISTING CASEWORK AND NEW UNIT VENTILATOR FROM FLOOR TO UNDERSIDE OF COUNTERTOP.
16. PROVIDE NEW MASONRY SCREEN WALL CONSISTING OF 4" CONCRETE MASONRY CORE AND FACE BRICK ON EACH SIDE. USE SALVAGED STONE CAP ALONG TOP.
17. PROVIDE NEW MASONRY SCREEN WALL CONSISTING OF 8" CONCRETE MASONRY ON THE SERVICE COURT SIDE, AND FACE BRICK ON THE SOUTH SIDE. PROVIDE A STONE CAP MATCHING THE ADJACENT WALL SURFACE ALONG THE TOP.
18. PROVIDE NEW STAINLESS STEEL HANDRAIL AND GUARD. TOP OF GUARD TO BE 43" ABOVE SURFACE OF RAMP AND LOADING DOCK. HANDRAIL TO BE 35" ABOVE WALKING SURFACE. PROVIDE INTERMEDIATE RAIL AT MIDPOINT PARALLEL TO THE GUARD. POSTS TO BE LOCATED AT 3'-0" O.C. AND ARE TO BE CORED INTO SURFACE TO A DEPTH OF 8" AND GROUTED WITH A NON SHRINK, NON-METALIC GROUT.
19. NEW 24" LONG DOCK BUMPERS

N

FIRST LEVEL FLOOR PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

TMP ARCHITECTURE INC

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Floor Plan - Zone 'B'



ISSUE DATES

02-15-2016	BP NO. 1 - BIDS

DATE:	ISSUED FOR:
DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A1.1B

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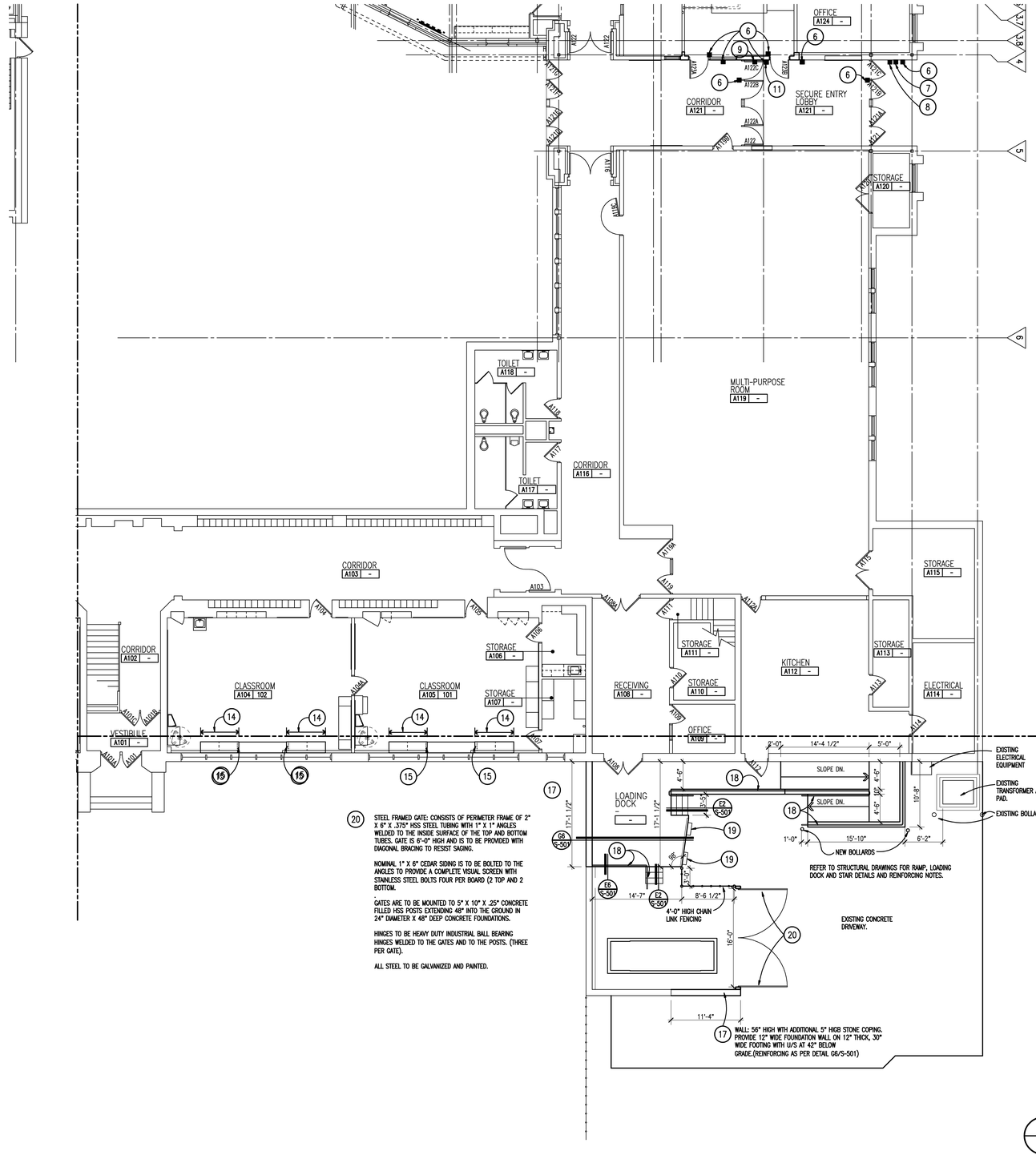

20 STEEL FRAMED GATE: CONSISTS OF PERIMETER FRAME OF 2" X 6" X .375" HSS STEEL TUBING WITH 1" X 1" ANGLES WELDED TO THE INSIDE SURFACE OF THE TOP AND BOTTOM TUBES. GATE IS 6'-0" HIGH AND IS TO BE PROVIDED WITH DIAGONAL BRACING TO RESIST SAGING.

NOMINAL 1" X 6" CEDAR SIDING IS TO BE BOLTED TO THE ANGLES TO PROVIDE A COMPLETE VISUAL SCREEN WITH STAINLESS STEEL BOLTS FOUR PER BOARD (2 TOP AND 2 BOTTOM.

GATES ARE TO BE MOUNTED TO 5" X 10" X .25" CONCRETE FILLED HSS POSTS EXTENDING 48" INTO THE GROUND IN 24" DIAMETER X 48" DEEP CONCRETE FOUNDATIONS.

HINGES TO BE HEAVY DUTY INDUSTRIAL BALL BEARING HINGES WELDED TO THE GATES AND TO THE POSTS. (THREE PER GATE).

ALL STEEL TO BE GALVANIZED AND PAINTED.

17 WALL: 56" HIGH WITH ADDITIONAL 5" HIGH STONE COPING. PROVIDE 12" WIDE FOUNDATION WALL ON 12" THICK, 30" WIDE FOOTING WITH U/S AT 42" BELOW GRADE.(REINFORCING AS PER DETAIL G6/S-501)

REFER TO STRUCTURAL DRAWINGS FOR RAMP, LOADING DOCK AND STAIR DETAILS AND REINFORCING NOTES.

N

FIRST LEVEL FLOOR PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C..
- CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)

GENERAL NOTES

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5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
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REGISTRATION SEAL

CONSULTANT

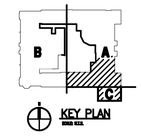
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Floor Plan - Zone 'C'



ISSUE DATES

02-15-2016	BP NO. 1 - BIDS

DATE:	ISSUED FOR:
DRAWN	AKW, GAS, TRB
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A1.1C

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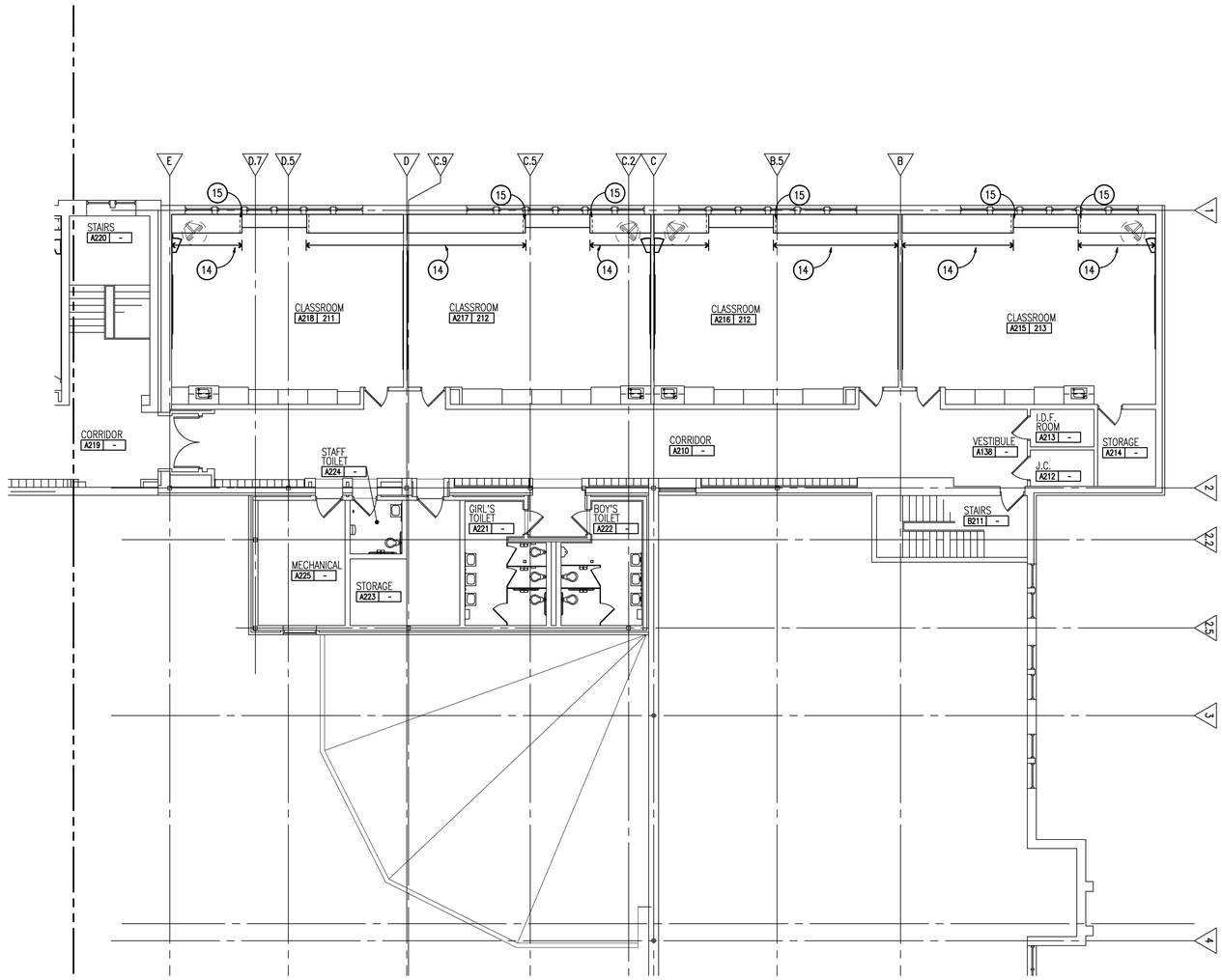

WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C..
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CONSTRUCTION KEY NOTES

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19. NEW 24" LONG DOCK BUMPERS

N

SECOND LEVEL FLOOR PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

TMP ARCHITECTURE

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REGISTRATION SEAL

CONSULTANT

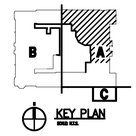
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Floor Plan - Zone 'A'



ISSUE DATES

02-15-2016	BP NO. 1 - BIDS

DATE:	ISSUED FOR:
DRAWN	AKW
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A1.2A

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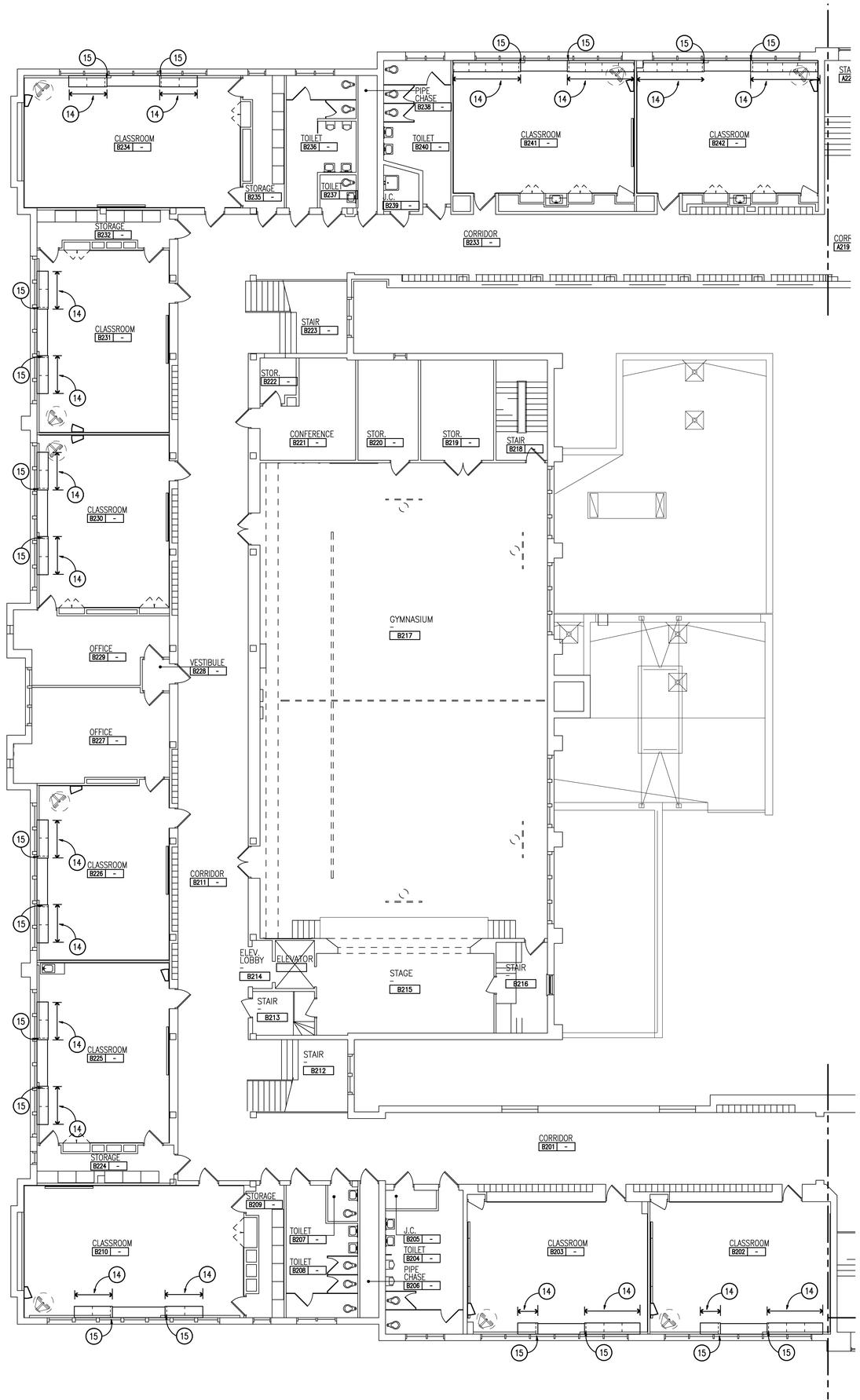

SECOND LEVEL FLOOR PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C..
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4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS)
7. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.
8. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.
9. REFER TO A10.._ SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.
10. VERIFY ALL DIMENSIONS IN FIELD.
11. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS i.e. GRAB BARS, TOWEL DISPENSERS, PENCIL SHARPENERS, WALL STOPS, ACCORDIAN PARTITION JAMBS, ETC. REFER ALSO TO A9.._ SERIES AND A6.._ SERIES DRAWINGS.
12. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF NEW FLOOR MOUNTED, LOW PROFILE RACEWAY ASSEMBLIES. REMOVE AND SALVAGE PORTIONS OF EXISTING CARPET IN AREA WHERE RACEWAY IS TO BE INSTALLED. ONCE RACEWAY IS INSTALLED, REINSTALL CARPET OVER CONCEALED SLOPED BLOCKING PORTION OF RACEWAY TERMINATING CARPET AT METAL EDGE TRIM OF RACEWAY.
13. WHERE SURFACE MOUNTED CONDUITS AND/OR RACEWAYS ARE INDICATED ON ELECTRICAL DRAWINGS, FINAL LOCATIONS AND CONFIGURATIONS ARETO BE REVIEWED AND DETERMINED ON SITE WITH THE ARCHITECT PRIOR TO INSTALLATION.

PATCHING NOTES

1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.
2. FOR ALL FLOOR SURFACES RECEIVING NEW FLOOR FINISHES, PREPARE SUBSTRATE BY PROVIDING LEVELING AND PATCHING COMPOUNDS RECOMMENDED BY FINISH FLOORING MANUFACTURERS. CONTRACTOR'S BASE BID PROPOSAL SHALL ASSUME THAT ALL AREAS, INDICATED TO RECEIVE NEW FINISHES, WILL REQUIRE FLOOR PREPARATION.
3. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK, CHALKBOARDS, TACKBOARDS, DISPLAY CASES OR OTHER FIXED EQUIPMENT WITH MATERIALS TO MATCH EXISTING, AS ACCEPTABLE TO THE ARCHITECT.
4. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.
5. AT EXISTING FLOOR FINISHES TO REMAIN, THAT BECOME SUBSTRATES FOR NEW FLOOR FINISHES, PATCH AND FILL EXISTING AS REQUIRED TO PREPARE FOR NEW FLOOR FINISH UNTIL ACCEPTABLE TO NEW FLOOR FINISH CONTRACTOR.
6. TOOTH-IN MASONRY INTO EXISTING, U.O.N., INCLUDING JAMBS OF DOOR AND OTHER OPENINGS.

CONSTRUCTION KEY NOTES

1. INSTALL NEW DOORS, FRAMES, GLAZING AND HARDWARE. REFER TO DRAWING A01.1 FOR ADDITIONAL INFORMATION
2. INSTALL NEW DOOR, AND HARDWARE. REFER TO DRAWING A01.1 FOR ADDITIONAL INFORMATION.
3. INSTALL NEW GLAZING IN EXISTING FRAMES AS PART OF ALTERNATE NO, A1
4. INSTALL NEW GLAZING IN EXISTING DOORS AS PART OF ALTERNATE NO, A1
5. EXISTING POWER DOOR OPERATOR ACTUATOR SWITCH TO REMAIN
6. NEW POWER DOOR OPERATOR ACTUATOR SWITCH
7. EXISTING INTERCOM BOX TO REMAIN
8. EXISTING KEYPAD/PROXIMITY READER TO REMAIN
9. NEW KEYPAD/PROXIMITY READER
10. NEW PROXIMITY READER
11. NEW PROXIMITY READER (REFER TO ALTERNATE 2)
12. PROVIDE NEW LOCKSET TIED INTO SECURITY SYSTEM AS PER ALTERNATE NO. A-3.
13. PROVIDE NEW SECURITY GLAZING IN LIEU OF SCHEDULED GLAZING IN NEW DOORS AND NEW FRAMING AS PER ALTERNATE NO. A-1.
14. PROVIDE NEW 1-1/2" THICK PLASTIC LAMINATE COUNTERTOPS WITH 3 MM PVC EDGE BANDING OVER EXISTING CASEWORK TO EDGE OF NEW UNIT VENTILATOR. PROVIDE PVC EDGING TO ENDS.
15. PROVIDE NEW PLASTIC LAMINATE FACED FILLER STRIPS INCLUDING CLEATS FOR CONCEALED FASTENING, BETWEEN EXISTING CASEWORK AND NEW UNIT VENTILATOR FROM FLOOR TO UNDERSIDE OF COUNTERTOP.
16. PROVIDE NEW MASONRY SCREEN WALL CONSISTING OF 4" CONCRETE MASONRY CORE AND FACE BRICK ON EACH SIDE. USE SALVAGED STONE CAP ALONG TOP.
17. PROVIDE NEW MASONRY SCREEN WALL CONSISTING OF 8" CONCRETE MASONRY ON THE SERVICE COURT SIDE, AND FACE BRICK ON THE SOUTH SIDE. PROVIDE A STONE CAP MATCHING THE ADJACENT WALL SURFACE ALONG THE TOP.
18. PROVIDE NEW STAINLESS STEEL HANDRAIL AND GUARD. TOP OF GUARD TO BE 43" ABOVE SURFACE OF RAMP AND LOADING DOCK. HANDRAIL TO BE 35" ABOVE WALKING SURFACE. PROVIDE INTERMEDIATE RAIL AT MIDPOINT PARALLEL TO THE GUARD. POSTS TO BE LOCATED AT 3'-0" O.C. AND ARE TO BE CORED INTO SURFACE TO A DEPTH OF 8" AND GROUTED WITH A NON SHRINK, NON-METALIC GROUT.
19. NEW 24" LONG DOCK BUMPERS

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Floor Plan - Zone 'B'



KEY PLAN

ISSUE DATES

02-15-2016	BP NO. 1 - BIDS
DATE:	ISSUED FOR:

DRAWN	AKW, GAS
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APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A1.2B

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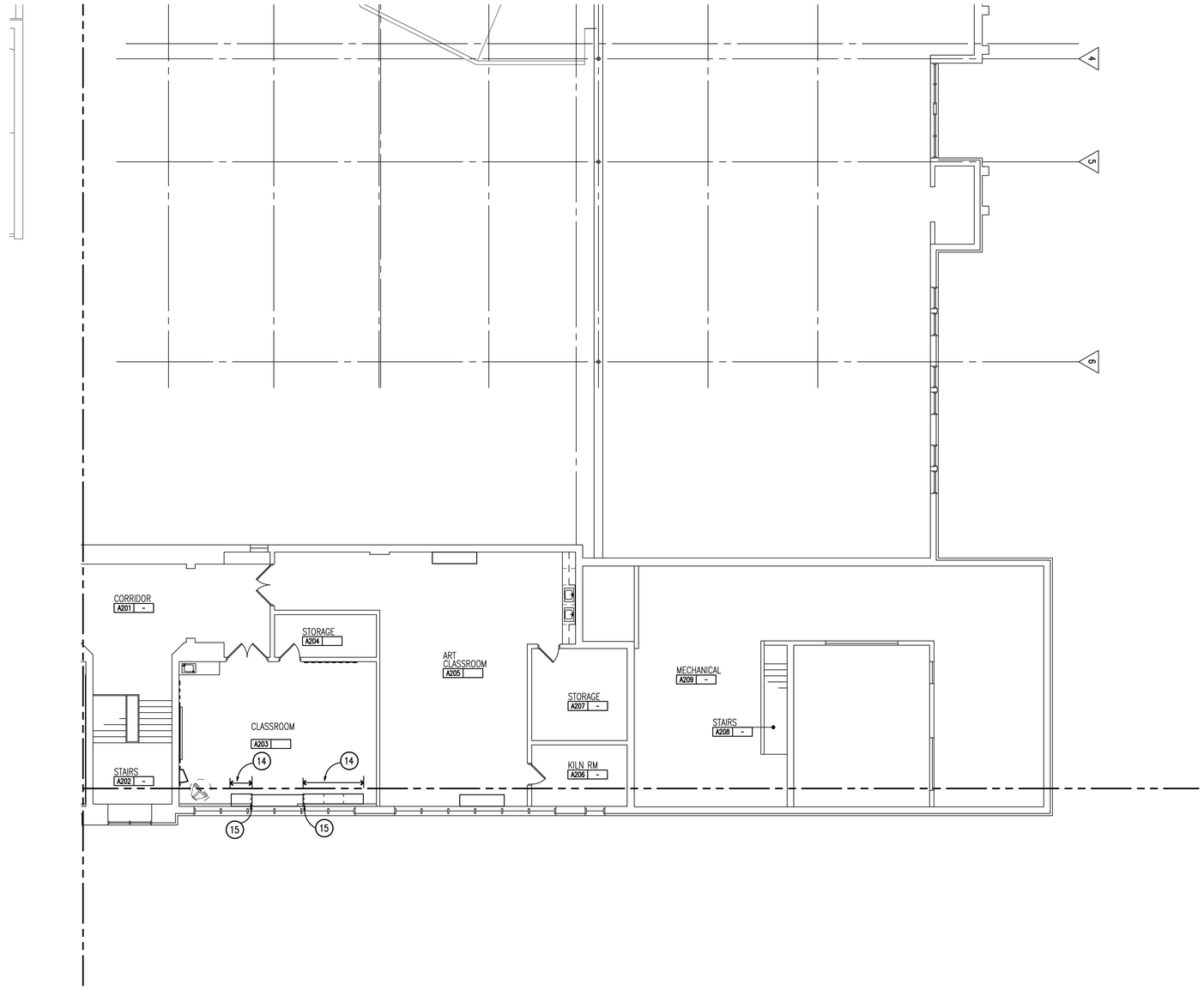

SECOND LEVEL FLOOR PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16" O.C..
- CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)

GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECTS FIELD REPRESENTATIVE.
2. CONTRACTORS SHALL VERIFY ALL EXISTING BUILDING DIMENSIONS, PARTITION AND WALL LOCATIONS, AND FLOOR ELEVATIONS IN THE FIELD AND NOTIFY THE ARCHITECTS REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.
3. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.
6. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS)
7. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.
8. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.
9. REFER TO A10.._ SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.
10. VERIFY ALL DIMENSIONS IN FIELD.
11. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS i.e. GRAB BARS, TOWEL DISPENSERS, PENCIL SHARPENERS, WALL STOPS, ACCORDIAN PARTITION JAMBS, ETC. REFER ALSO TO A9.._ SERIES AND A6.._ SERIES DRAWINGS.
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PATCHING NOTES

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6. TOOTH-IN MASONRY INTO EXISTING, U.O.N., INCLUDING JAMBS OF DOOR AND OTHER OPENINGS.

CONSTRUCTION KEY NOTES

1. INSTALL NEW DOORS, FRAMES, GLAZING AND HARDWARE. REFER TO DRAWING A01.1 FOR ADDITIONAL INFORMATION
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12. PROVIDE NEW LOCKSET TIED INTO SECURITY SYSTEM AS PER ALTERNATE NO. A-3.
13. PROVIDE NEW SECURITY GLAZING IN LIEU OF SCHEDULED GLAZING IN NEW DOORS AND NEW FRAMING AS PER ALTERNATE NO. A-1.
14. PROVIDE NEW 1-1/2" THICK PLASTIC LAMINATE COUNTERTOPS WITH 3 MM PVC EDGE BANDING OVER EXISTING CASEWORK TO EDGE OF NEW UNIT VENTILATOR. PROVIDE PVC EDGING TO ENDS.
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REGISTRATION SEAL

CONSULTANT

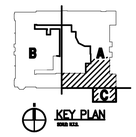
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Second Level Floor Plan - Zone 'C'



KEY PLAN

ISSUE DATES

02-15-2016	B.P. NO. 1 - BIDS
DATE:	ISSUED FOR:

DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A1.2C

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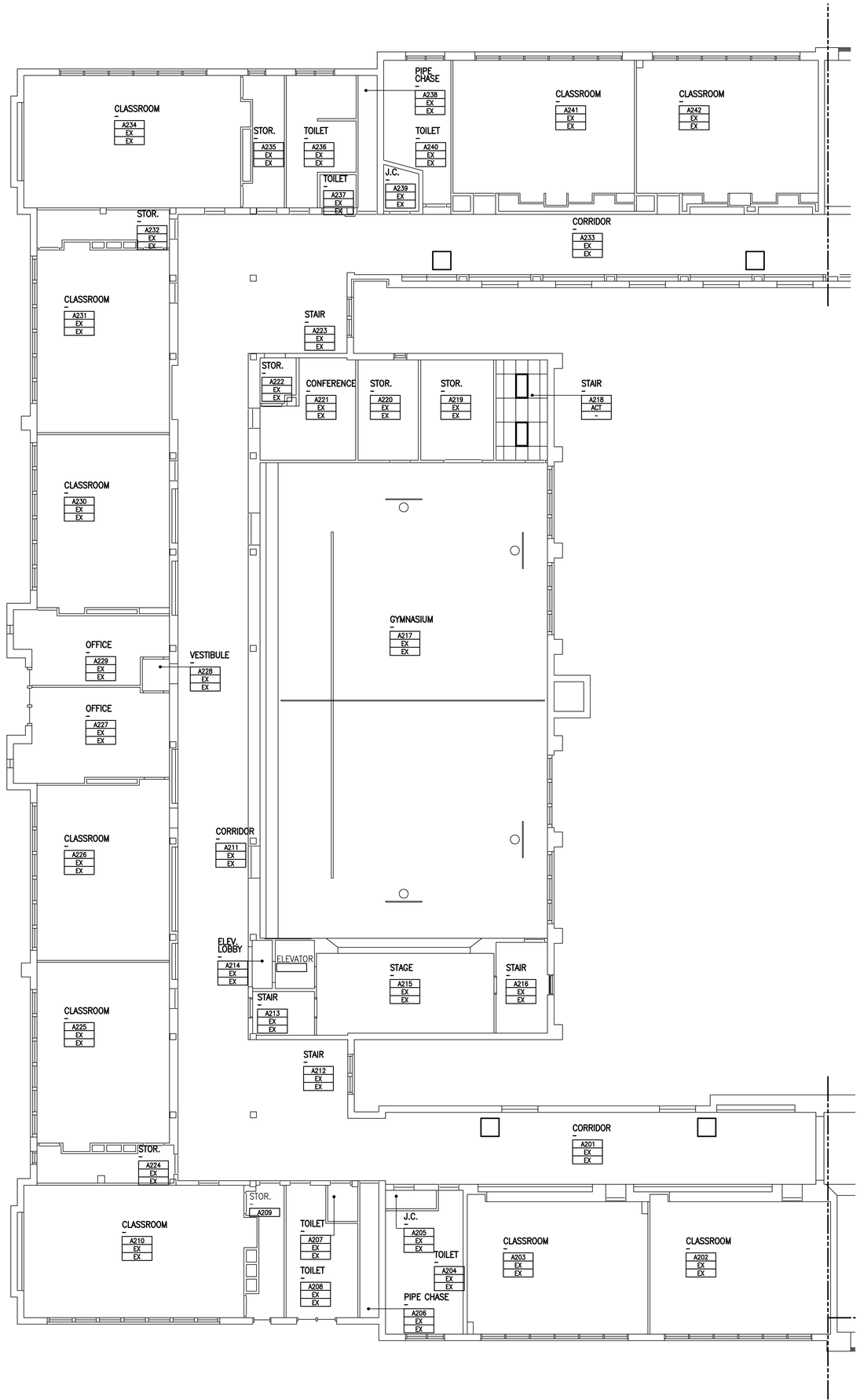

FIXTURE LEGEND

- RECESSED FLUORESCENT TROFFER (2'x4' / 1'x4')
- FLUORESCENT COVE LIGHTING
- FLUORESCENT INDUSTRIAL FIXTURE
- SURFACE MOUNTED FLUORESCENT FIXTURE
- PENDANT MOUNTED FLUORESCENT LIGHT FIXTURE
- RECESSED DOWNLIGHT
- EXIT SIGN / LIGHT
- SMOKE DETECTOR
- CEILING MOUNTED CABINET UNIT HEATER
- EXHAUST GRILLE
- SUPPLY DIFFUSER
- RETURN-AIR GRILLE
- SPEAKER
- PENDANT SPRINKLER HEAD (SEE MECHANICAL FOR TYPE)
- SIDEWALL SPRINKLER HEAD

CEILING LEGEND

- GYPSUM DRYWALL OR SYNTHETIC VENEER PLASTER CEILING/SOFFIT
- 24" x 48" SUSPENDED LAY-IN ACOUSTICAL CEILING
- 24" x 24" SUSPENDED LAY-IN ACOUSTICAL CEILING
- ALUMINUM PANEL SOFFIT
- LINEAR PVC CEILING
- EXPOSED OR EXISTING CONSTRUCTION TO REMAIN

CEILING FINISH KEY
ROOM NAME AND NUMBER PLUS GENERAL CEILING FINISH AND HEIGHT UNLESS NOTED OTHERWISE BY FINISH KEY

FINISH KEY
SPECIFIC FINISH INFORMATION WHERE VARIED FROM CEILING FINISH KEY

CLASSROOM ← ROOM NAME
101 ← ROOM NUMBER
ACT ← CEILING FINISH ABBREVIATION (SEE BELOW) → ALUM
9'-0" ← CEILING HEIGHT (A.F.F.) → 8'-10"

CEILING FINISH ABBREVIATIONS

ACT	ACOUSTICAL LAY-IN CEILING TILE
ALUM	ALUMINUM PANEL
AWP	ACOUSTICAL WALL PANEL
AB	ACOUSTICAL BAFFLE
EX	EXISTING
EXP-P	EXPOSED CONSTRUCTION - TO BE PAINTED
FB	FABRIC BANNER
GYP-P	GYPSUM BOARD - TO BE PAINTED
GYP-EP	GYPSUM BOARD - TO BE EPOXY PAINTED
LIN	LINEAR PVC SYSTEM
PT	PAINT
SVP	SYNTHETIC VENEER PLASTER
UF	(UNFINISHED)

NOTES

1. REFER TO FINISH PLANS FOR INFORMATION ON ROOM FINISHES.
2. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON MATERIALS AND CONSTRUCTION.
3. WHERE EXPOSED CONSTRUCTION IS INDICATED TO BE PAINTED, THIS SHALL INCLUDE ALL STRUCTURAL MEMBERS, ROOF/FLOOR DECK, DUCTWORK, DIFFUSERS, GRILLES, PIPING, SUSPENDED EQUIPMENT, CONDUITS, ETC. (U.O.N.)

REFLECTED CEILING PLAN WALL LEGEND

(ALL WALLS INDICATED WITH LINE TYPES BELOW CONTINUE TO FLOOR OR ROOF STRUCTURE ABOVE - ALL WALLS WITHOUT THESE INDICATIONS EXTEND A MINIMUM OF 4" ABOVE THE HIGHEST ADJACENT CEILING)

- : 2-HOUR FIRE RATED HORIZONTAL EXIT
- : 2-HOUR FIRE BARRIER
- : SMOKE BARRIER WITH 1-HOUR FIRE RATING
- : SMOKE BARRIER (NON-RATED) UNENCLOSED FLOOR OPENINGS
- : 1-HOUR FIRE BARRIER FOR UNENCLOSED FLOOR OPENINGS
- : 1-HOUR FIRE RATED EXIT/ELEVATOR SHAFT ENCLOSURE
- : 1-HOUR FIRE BARRIER ENCLOSED VERTICAL SHAFTS
- : 1-HOUR FIRE BARRIER FOR PROTECTION FROM HAZARDS
- : SMOKE RESISTING PARTITION
- : NON RATED WALLS TO STRUCTURE ABOVE

REFLECTED CEILING PLAN GENERAL NOTES

1. REFER TO ELECTRICAL DRAWINGS FOR FIXTURE TYPES. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION PERTAINING TO ELECTRICAL AND MECHANICAL WORK.
2. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY TRADE. SPOT ALL LOCATIONS WITHIN FIXED GYPSUM BOARD CEILINGS AND RECEIVE APPROVAL FROM THE ARCHITECT'S FIELD REPRESENTATIVE BEFORE PLACEMENT.
3. COORDINATE CEILING SUSPENSION SYSTEMS WITH OTHER CEILING SPACE EQUIPMENT SUPPORTS.
4. ALL SMOKE BARRIER PARTITIONS, HORIZONTAL EXIT ENCLOSURES AND FIRE RATED PARTITIONS WHICH EXTEND TO THE DECK ABOVE SHALL BE MARKED EVERY 20'-0" HORIZONTALLY WITHIN THE CEILING SPACE: "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS"
5. ALL GYPSUM BOARD FASCIAS @ SOFFITS, ADJACENT TO LAY-IN CEILINGS, SHALL EXTEND 4"MINIMUM ABOVE LAY-IN CEILINGS.
6. PROVIDE WOOD BLOCKING, ABOVE GYPSUM BOARD CEILINGS, AS REQUIRED FOR MISCELLANEOUS SUSPENDED ITEMS (e.g. CURTAIN TRACKS, WINDOW SHADES, ACOUSTICAL BAFFLES, ETC.)
7. REFER TO DRAWING A8.1 FOR TYPICAL DETAILS PERTAINING TO WALL TERMINATIONS AT STRUCTURE ABOVE.
8. REFER TO LIFE SAFETY PLANS FOR DAMPERING REQUIREMENTS

N

SECOND LEVEL REFLECTED CEILING PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

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REGISTRATION SEAL

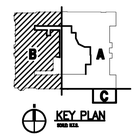
CONSULTANT

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE
Second Level Reflected Ceiling Plan - Zone 'B'



ISSUE DATES

02-15-2016	BP NO. 1 - BIDS
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DRAWN	AKW, GAS
CHECKED	JMM
APPROVED	JJC

PROJECT NO.
15102

DRAWING NO.
A2.2B

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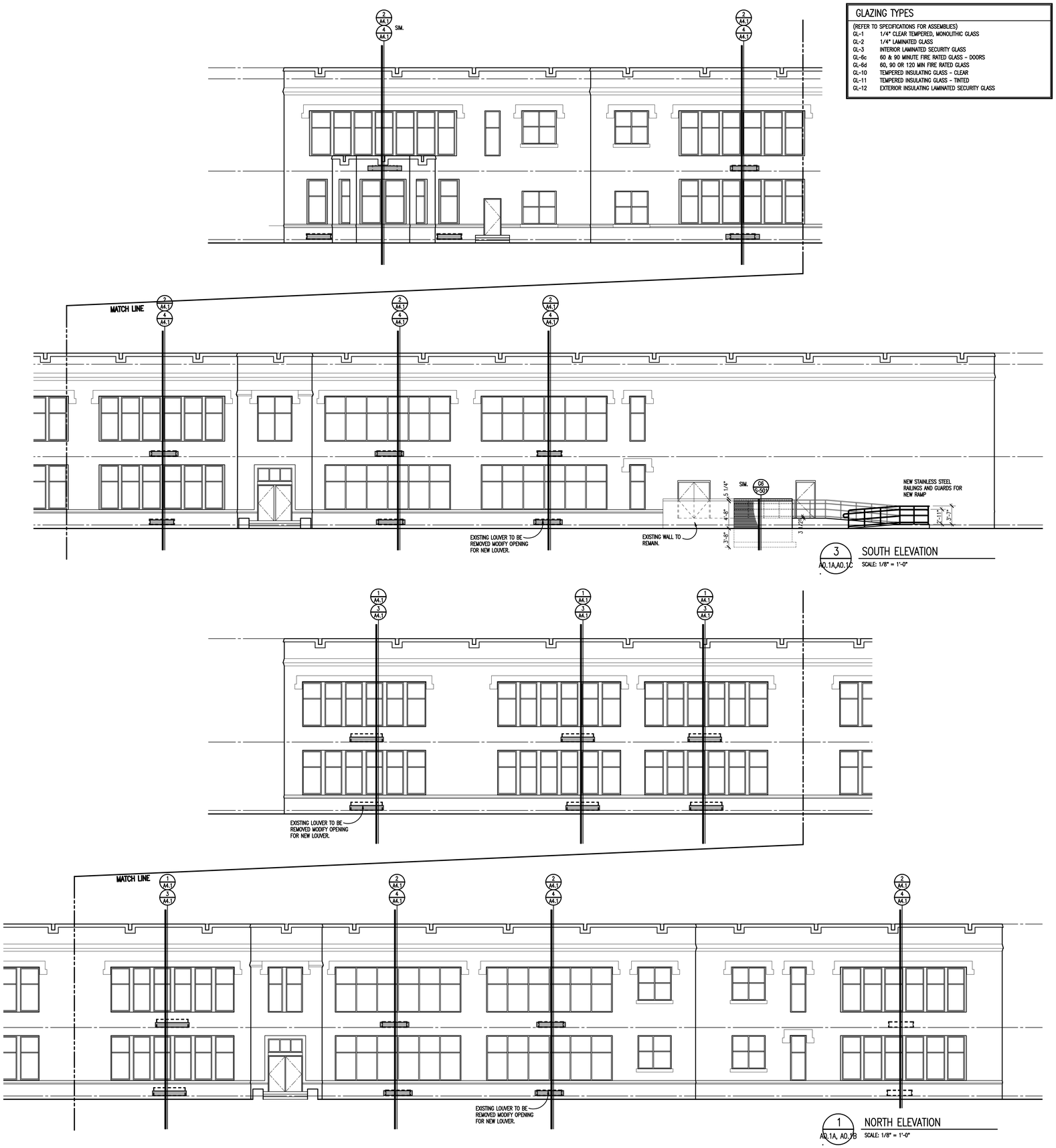

3 A0.1A,A0.1C SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

1 A0.1A, A0.1B NORTH ELEVATION
SCALE: 1/8" = 1'-0"

GLAZING TYPES

(REFER TO SPECIFICATIONS FOR ASSEMBLIES)

GL-1	1/4" CLEAR TEMPERED, MONOLITHIC GLASS
GL-2	1/4" LAMINATED GLASS
GL-3	INTERIOR LAMINATED SECURITY GLASS
GL-6c	60 & 90 MINUTE FIRE RATED GLASS - DOORS
GL-6d	60, 90 OR 120 MIN FIRE RATED GLASS
GL-10	TEMPERED INSULATING GLASS - CLEAR
GL-11	TEMPERED INSULATING GLASS - TINTED
GL-12	EXTERIOR INSULATING LAMINATED SECURITY GLASS

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Exterior Elevations

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P. NO. 1 - BIDS

DRAWN	AKW
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A3.1

GLAZING TYPES

(REFER TO SPECIFICATIONS FOR ASSEMBLIES)

GL-1	1/4" CLEAR TEMPERED, MONOLITHIC GLASS
GL-2	1/4" LAMINATED GLASS
GL-3	INTERIOR LAMINATED SECURITY GLASS
GL-6c	60 & 90 MINUTE FIRE RATED GLASS - DOORS
GL-6d	60, 90 OR 120 MIN FIRE RATED GLASS
GL-10	TEMPERED INSULATING GLASS - CLEAR
GL-11	TEMPERED INSULATING GLASS - TINTED
GL-12	EXTERIOR INSULATING LAMINATED SECURITY GLASS



4 WEST ELEVATION
A0.1A/A1.1A
SCALE: 1/8" = 1'-0"



3 EAST ELEVATION
A0.1B, A01.C
A1.1B, A1.1C
SCALE: 1/8" = 1'-0"

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Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

Exterior Elevations

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P. NO. 1 - BIDS

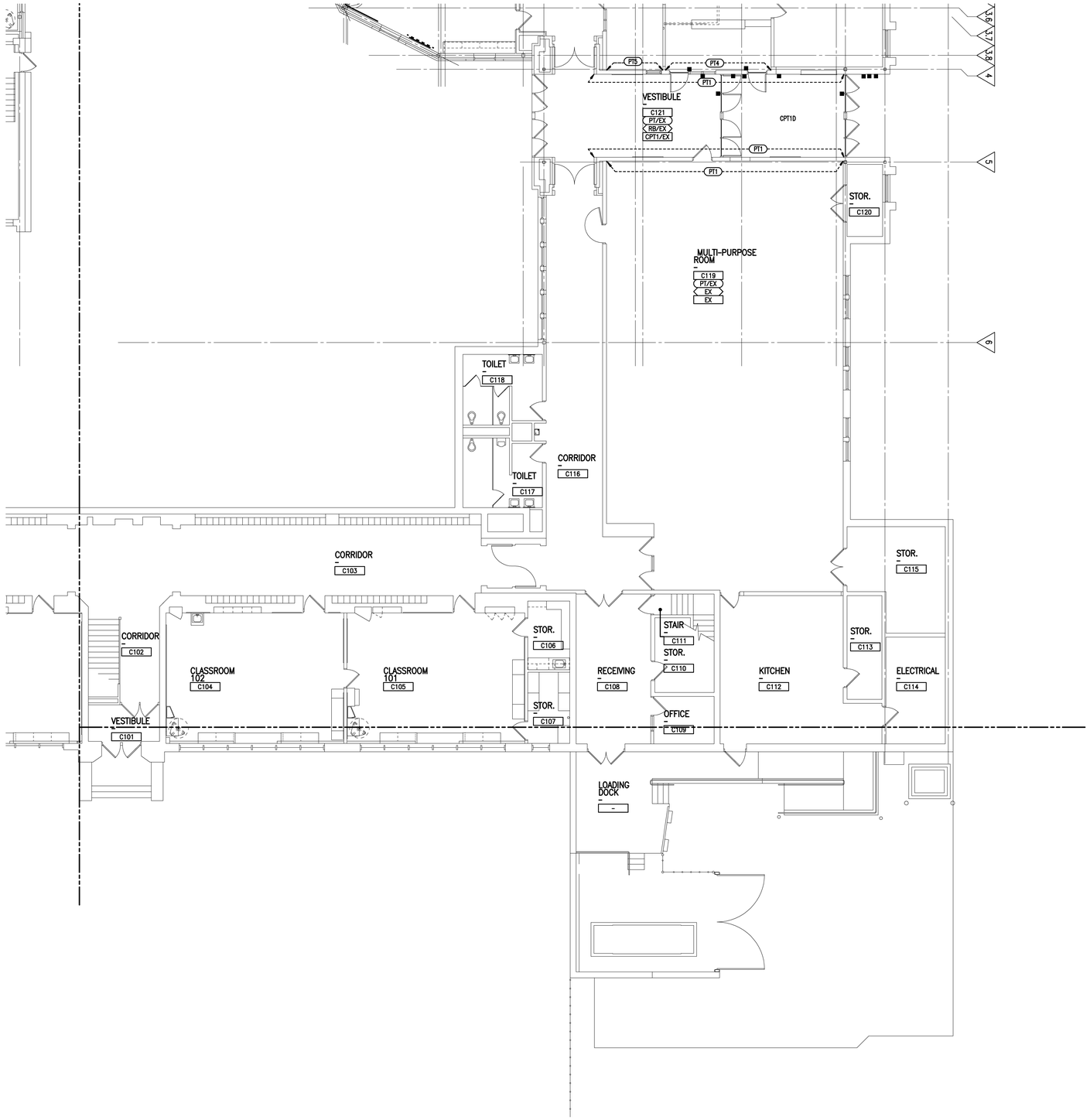
DRAWN	AKW
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A3.2



FIRST LEVEL FINISH PLAN – ZONE 'C'

SCALE: 1/8" = 1'-0"

FINISH LEGEND

ROOM FINISH TAGS
ROOM NAME AND NUMBER PLUS GENERAL ROOM FINISH INFORMATION.
FINISH TAGS SHALL APPLY TO ALL LIKE MATERIALS WITHIN A ROOM (U.O.N.).

FINISH LEGEND
FINISH LEGEND IS GENERAL. REFER TO SPECIFICATIONS FOR SPECIFIC FINISH INFORMATION. MULTIPLE FINISH TYPES ARE DENOTED BY NUMBER FOLLOWING ABBREVIATION.

CLASSROOM — ROOM NAME
101 — ROOM NUMBER
PT — WALL FINISH (SEE BELOW)
RB — BASE (SEE BELOW)
CPT — FLOOR FINISH (SEE BELOW)
PT-P_ — DENOTES PATTERN DETAIL
RB — REFER TO "SPECIFIC NOTES" BELOW
CPT-P_ — PLASTIC LAMINATE TYPE/COLOR (TAG APPLIES TO ALL CABINETS AND/OR COUNTERTOPS WITHIN THAT SPACE, U.O.N.)

WALLS

EX	EXISTING (NO NEW FINISH)
PT	PAINT

BASE

EX	EXISTING (NO NEW FINISH)
NB	NO BASE, WALL FINISH EXTENDS TO FLOOR
RB	RESILIENT BASE

FLOORS

CPT	CARPET
EX	EXISTING (NO NEW FINISH)

GENERAL NOTES

1. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES, HEIGHTS AND FINISH INFORMATION.
2. PROVIDE RESILIENT BASE AT TOE KICK OF ALL CASEWORK AND BEHIND ALL MOVABLE EQUIPMENT/APPLIANCES, WHEN SCHEDULED WITHIN A ROOM.
3. ALL WALL MOUNTED MECHANICAL EQUIPMENT (DIFFUSERS, GRILLES, ETC.) AND ELECTRICAL EQUIPMENT (PANELS, ETC.) SHALL BE PAINTED TO MATCH THE ADJACENT WALL COLOR. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR QUANTITIES AND LOCATIONS.
4. REFER TO SPEC. SECTION 01230 FOR COMPLETE LIST AND DESCRIPTION OF ALTERNATIVES.
5. WHERE REMOVAL OR MODIFICATION TO A FINISH MATERIAL IS SHOWN, BUT NEW FINISHES ARE NOT SCHEDULED, PATCH AND REPAIR TO MATCH EXISTING FINISH CONDITION AS REQUIRED.
6. PROVIDE APPROPRIATE TRANSITION STRIPS BETWEEN DISSIMILIAR FLOORING MATERIALS AT VERTICAL AND/OR HORIZONTAL APPLICATIONS.
7. FLOOR FINISHES AND BASES (N.I.C.) AND SHALL BE FURNISHED AND INSTALLED BY OWNER. FLOOR AND BASE SHOWN ON PLAN FOR REFERENCE ONLY.

SPECIFIC NOTES

1. .....
2. .....
3. .....

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REGISTRATION SEAL

CONSULTANT

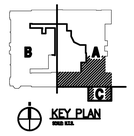
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Birmingham, Michigan

DRAWING TITLE

First Level Finish Plan - Zone 'C'



KEY PLAN

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	BP NO. 1 – BIDS
02-01-2016	CD OWNER REVIEW
12-18-2015	40% CONSTRUCTION DOCUMENTS

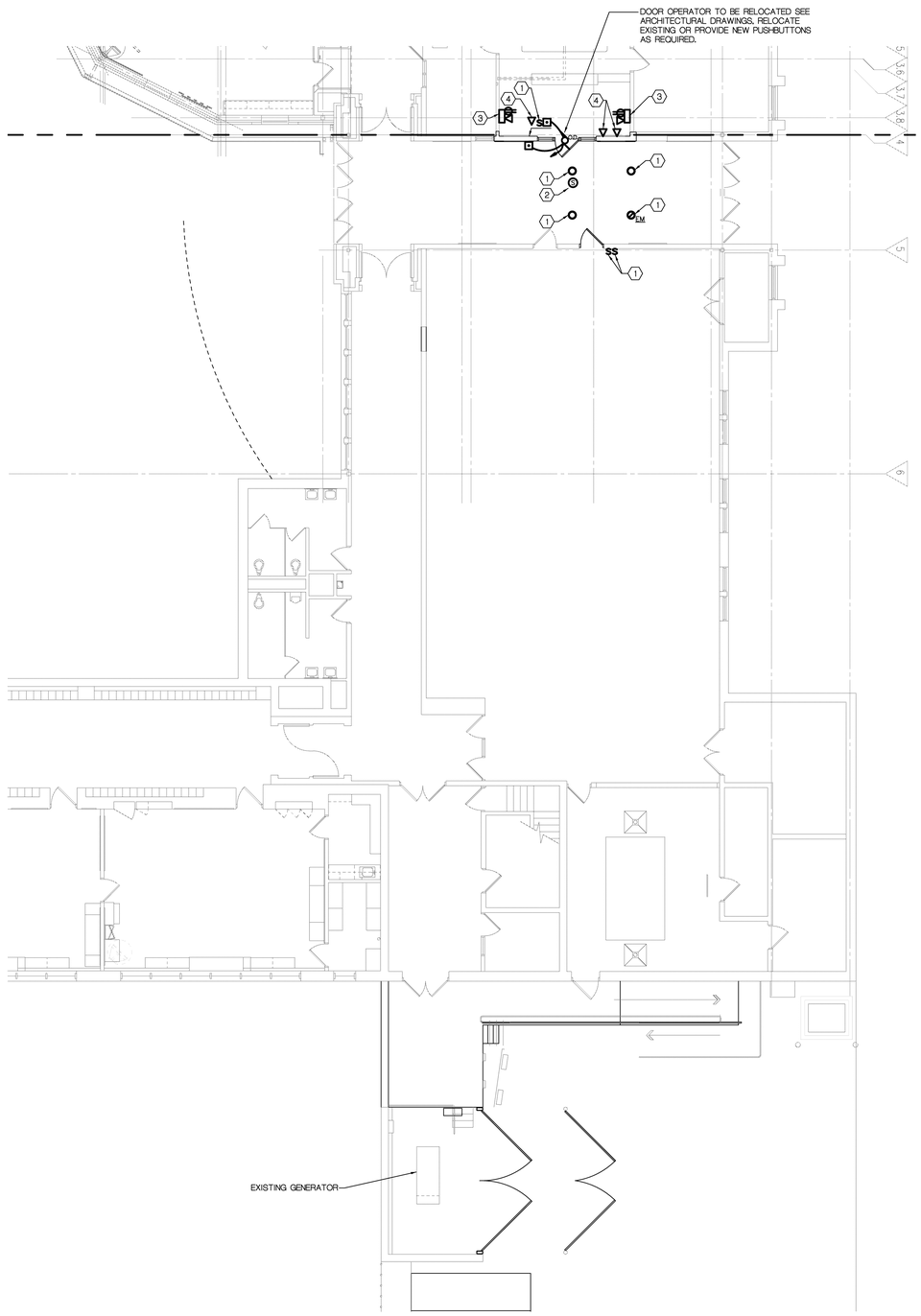
DRAWN	LMC
CHECKED	JMM
APPROVED	JJC

PROJECT NO.

15102

DRAWING NO.

A10.1C



N

FIRST LEVEL ELECTRICAL DEMOLITION PLAN - ZONE 'C'

SCALE- 1/8" = 1'-0"

DEMOLITION GENERAL NOTES:

1 REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.

2 ELECTRICAL CONTRACTOR SHALL VISIT SITE AND VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING BID, INCLUDE ALL DEMOLITION WORK REQUIRED AND MAKE THE SPACE READY FOR THE INSTALLATION OF NEW SYSTEMS AND EQUIPMENT.

3 ALL ELECTRICAL DEVICES, LIGHTING, MECHANICAL EQUIPMENT SERVICES, ETC. DOWNSTREAM OF DEVICES INTENDED TO BE DEMOLISHED OR REVISED SHALL REMAIN OPERATIONAL. PROVIDE ALL BRANCH CIRCUIT WIRING REVISIONS AS REQUIRED TO MAINTAIN OPERATION OF ALL DEVICES, LIGHTING, ETC. NOT INTENDED TO BE REVISED.

4 ALL EXISTING LIGHTING FIXTURES, DEVICES, CONDUIT, WIRING, BOXES, ETC. SHOWN THIS PLAN SHALL BE DEMOLISHED UNLESS OTHERWISE INDICATED TO REMAIN, OR INDICATED AS 'EXISTING TO REMAIN', IN CONTRACT DOCUMENTS.

5 ELECTRICAL EQUIPMENT, DEVICES, BOXES, ETC. INDICATED ON ELECTRICAL DEMOLITION DRAWINGS ARE NOT INTENDED TO SHOW COMPLETE DEMOLITION REQUIREMENTS OR ALL ITEMS TO BE DEMOLISHED BUT IS INTENDED TO SHOW MAJOR COMPONENTS ONLY. THE ELECTRICAL DEMOLITION WORK SHALL BE COMPLETE IN ALL DETAILS AND REQUIREMENTS AND READY FOR THE INSTALLATION OF NEW SYSTEMS AND EQUIPMENT.

6 UNLESS OTHERWISE INDICATED, ALL LOW VOLTAGE WIRING NOT REQUIRED TO REMAIN SERVING VOICE, DATA, COMMUNICATIONS, AND SECURITY SHALL BE REMOVED COMPLETE. VERIFY THE USAGE OF LOW VOLTAGE WIRING WITH THE DISTRICT TECHNOLOGY OFFICER PRIOR TO DEMOLITION. DO NOT REMOVE EXISTING ACTIVE CABLING OR CABLING REQUIRED TO REMAIN.

7 WHEN REMOVING AN ENCLOSURE, DEVICE, LIGHT FIXTURE, ETC. WIRING NOT REQUIRED SHALL BE REMOVED COMPLETE. NO UNUSED WIRING SHALL REMAIN. INCLUDE FIELD INVESTIGATIONS AND WIRE TRACING IN ORDER TO DETERMINE THE USE AND FUNCTION OF ALL EXISTING WIRING.

8 ALL CONDUIT SHALL BE REMOVED COMPLETE EXCEPT THAT CONDUIT WHICH IS CONCEALED WITHIN EXISTING BUILDING CONSTRUCTION MAY BE ABANDONED IN PLACE ONCE WIRING IS REMOVED.

9 REMOVED EQUIPMENT, CONDUIT, WIRE, RECEPTACLES, TOGGLE SWITCHES, LIGHTING FIXTURES, ETC., SHALL NOT BE REUSED UNLESS OTHERWISE NOTED, SHALL BECOME THE PROPERTY OF THIS CONTRACTOR AND HE/SHE SHALL REMOVE SAME FROM THE PREMISES. REMOVED EQUIPMENT AND MATERIALS SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL ENVIRONMENTAL REQUIREMENTS.

10 ALL WALL PENETRATIONS, CONDUITS OR CONDUIT SLEEVES NO LONGER REQUIRED, REGARDLESS OF THE SYSTEM SERVED, SHALL BE REMOVED COMPLETE WITH THE PENETRATION PATCHED TO MAINTAIN THE ORIGINAL FIRE RATING OR CONSTRUCTION OF THE WALL.

DEMOLITION KEY NOTES:

(1) RELOCATE, EXTEND WIRING TO NEW LOCATION. SEE NEW WORK PLANS FOR LOCATION.

(2) REMOVE DEVICE(S), EXTEND WIRING TO NEW LOCATION. SEE NEW WORK PLAN FOR LOCATIONS.

(3) SERVING VIDEO DISPLAY. TO BE RELOCATED, REUSE 120V CIRCUIT AT NEW LOCATION.

(4) REMOVE EXISTING OUTLET AND RACEWAY, WIRING REVISIONS BY DISTRICT.

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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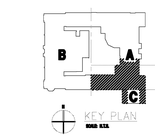
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Electrical Demolition Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

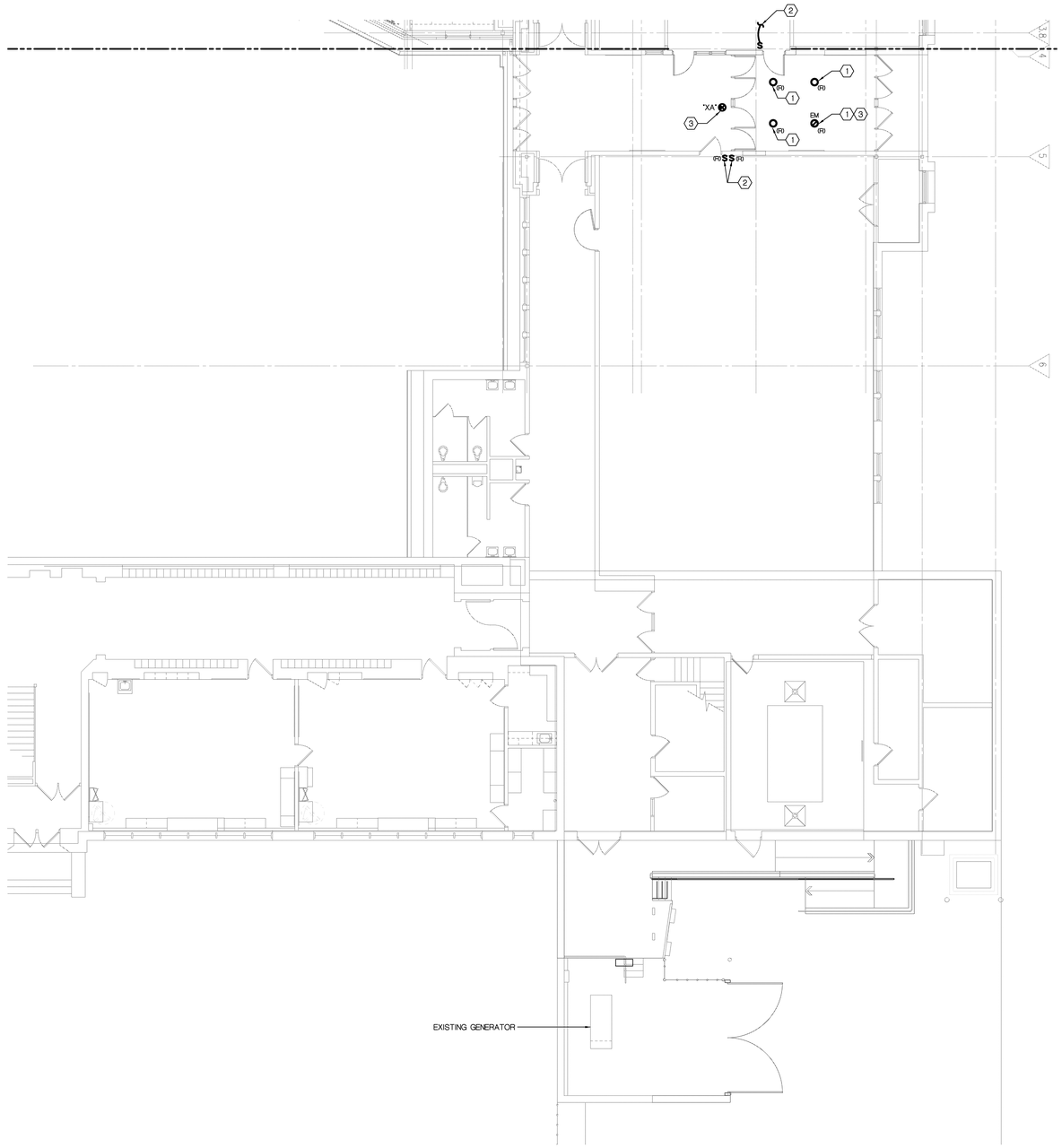
DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E0.1C



N

FIRST LEVEL LIGHTING PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

LIGHTING GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHT FIXTURES.
3. ALL LIGHT FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AND IN ACCORDANCE WITH NEC AND LOCAL REQUIREMENTS.
4. ALL LIGHTING TO REMAIN, SERVED ON A CIRCUIT DOWNSTREAM OF LIGHTING OR DEVICES BEING DEMOLISHED OR REVISED SHALL REMAIN OPERATIONAL. PROVIDE ALL BRANCH CIRCUIT WIRING REVISIONS AS REQUIRED TO MAINTAIN OPERATION OF LIGHTING, NOT INTENDED TO BE REVISED.
5. CONTRACTOR SHALL FIELD VERIFY EXACT MOUNTING REQUIREMENTS FOR ALL EXIT LIGHTS PRIOR TO ORDERING.
6. ALL CONDUIT AND WIRING SHALL BE CONCEALED IN ALL FINISHED AREAS.
7. ALL JUNCTION BOXES SERVING BRANCH CIRCUIT WIRING SHALL BE LABELED WITH CIRCUITS BEING SERVED. USE INDELIBLE MARKER ON BOX COVER.
8. CIRCUIT NUMBERS INDICATED ON PLAN DO NOT INDICATE ACTUAL CIRCUIT BREAKER POLE POSITION IN PANEL, BUT REPRESENT ITEMS GROUPED ON SAME CIRCUIT.

LIGHTING KEY NOTES:

1. RELOCATED FIXTURES FROM EXISTING LIGHTING CIRCUIT SERVING CORRIDOR.
2. RELOCATED LIGHTING SWITCH TO SERVE EXISTING AREA LIGHTING.
3. SERVE FROM THE EXISTING EMERGENCY LIGHTING CIRCUIT SERVING AREA.

1/16" 0 2 4 6 8 10 20 40 80
1/8" 0 1 2 3 4 5 10 20 40
1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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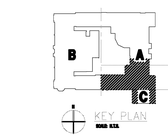
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Lighting Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

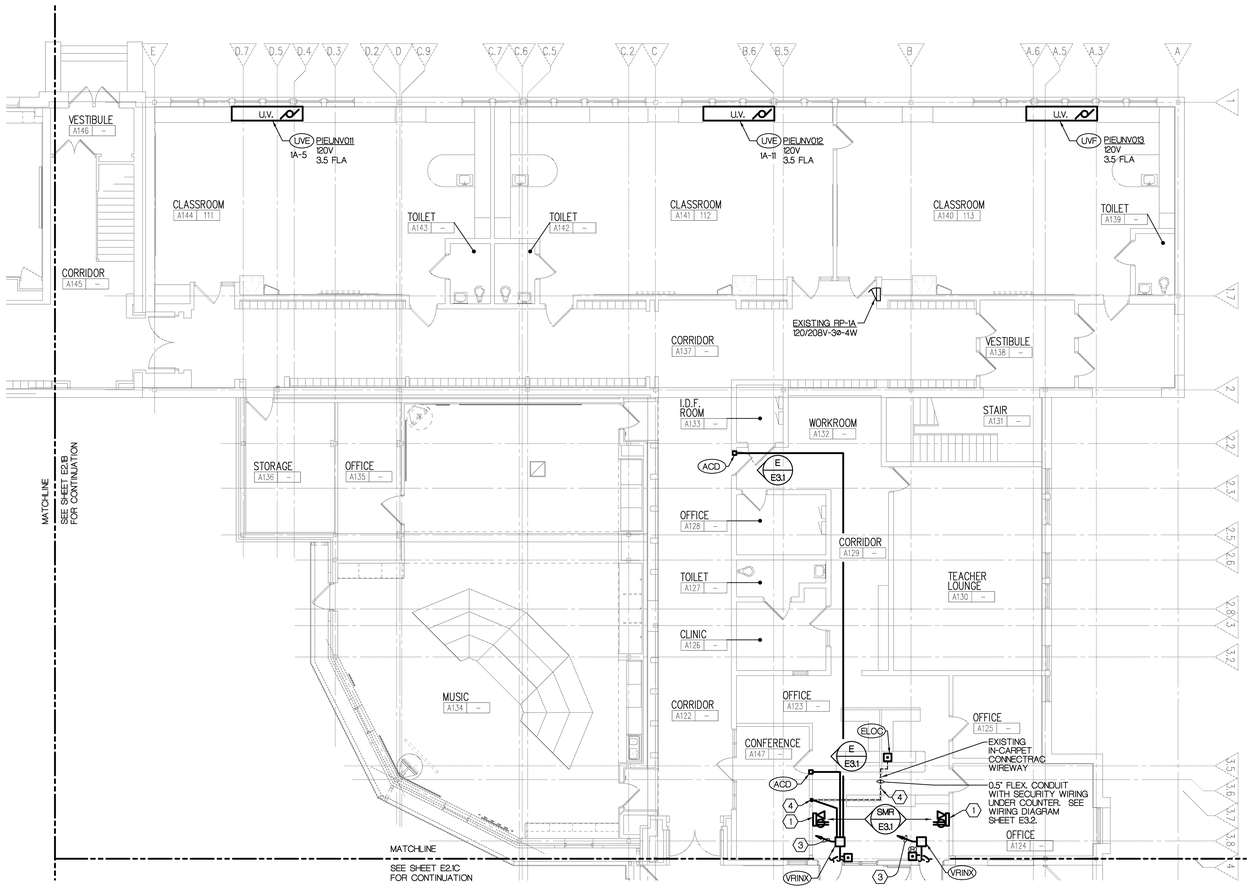
DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E1.1C



N

FIRST LEVEL POWER AND SYSTEM PLAN - ZONE 'A'

SCALE- 1/8" = 1'-0"

POWER AND SYSTEMS SPECIAL KEY NOTES:

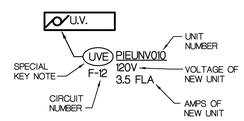
- (ACD) ACCESS CONTROLLED DOOR WITH ELECTRIC LOCK AND DOOR POSITION SWITCH OR INDICATOR FURNISHED AND INSTALLED BY DOOR CONTRACTOR, WIRED BY ELECTRICAL TRADES. REFER TO DOOR HARDWARE SPECIFICATIONS AND EQUIPMENT SHOP DRAWINGS.
- (CAM) IP BASED SECURITY CAMERA, FURNISHED, INSTALLED, AND WIRED BY THE DISTRICTS VIDEO SECURITY VENDOR. FIELD VERIFY EXACT CAMERA MOUNTING LOCATION WITH THE DISTRICTS SECURITY OFFICER PRIOR TO ROUGH-IN. LEAVE A PULL WIRE IN THE EMPTY CONDUIT. STUB THE CONDUIT TO AN ACCESSIBLE CEILING SPACE LOCATION ONLY.
- (MDO) MOTORIZED DOOR OPERATOR, 120 VOLT, FURNISHED AND INSTALLED BY DOOR CONTRACTOR, WIRED BY ELECTRICAL TRADES. PROVIDE LOCAL 120 VOLT DISCONNECT SWITCH AS REQUIRED FOR CODE CONFORMANCE. PROVIDE INSTALLATION AND WIRING OF PUSHBUTTON STATIONS. ALL WIRING TO BE IN ACCORDANCE WITH EQUIPMENT SHOP DRAWINGS. INTERFACE WIRING AND OPERATION WITH CARD ACCESS SYSTEM SO THAT DOOR OPERATOR DOES NOT OPERATE EXCEPT WHEN ACCESS IS APPROVED BY CARD ACCESS SYSTEM.
- (EACD) EXISTING ACCESS CONTROLLED DOOR. DOOR, POSITION SWITCH, ELECTRIC LOCK, VRINX DOOR CONTROL MODULE, ETC. TO REMAIN.
- (ELOC) DOOR LOCK DOWN PUSH BUTTON, FURNISHED, INSTALLED AND WIRED BY THE ACCESS CONTROL CONTRACTOR. FIELD COORDINATE EXACT MOUNTING LOCATION WITH ARCHITECTURAL TRADES AND DISTRICT STAFF PRIOR TO INSTALLATION.
- (VRINX) VANDERBILT INDUSTRIES •VRINX DOOR CONTROL MODULE IN NEMA ONE ENCLOSURE FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR. CONCEAL IN CEILING SPACE WHERE FEASIBLE. PROVIDE POWER SUPPLY TO SERVE ONE OR MORE MODULES. INCLUDE ALL 120 VOLT WIRING FOR POWER SUPPLIES.
- (RO) PROXIMITY READER, FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR.
- (ROCD) PROXIMITY READER CONTROLLED DOOR.
- (RK) PROXIMITY READER WITH INTEGRAL KEYPAD, FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR.
- (RKCD) PROXIMITY READER/KEYPAD CONTROLLED DOOR.
- (UVE) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.
- (UVF) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. FIELD VERIFY EXISTING CIRCUIT AND CIRCUIT BREAKER SIZE. TOTAL LOAD ON CIRCUIT BREAKER SHALL NOT EXCEED 70% OF RATING. NOTIFY ENGINEER OF DISCREPANCIES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.

POWER AND SYSTEMS KEY NOTES:

1. RESERVE FROM 120 VOLT CIRCUIT PREVIOUSLY SERVING VIDEO DISPLAY. SEE DEMOLITION DRAWING.
2. LOW VOLTAGE OUTLET. PROVIDE EMPTY 1"C. WITH BUSHED END TO ACCESSIBLE CEILING SPACE.
3. HOMERUN TO ACP. SEE ACCESS CONTROL DIAGRAMS SHEETS E3.1 AND E3.2.
4. ROUTE NEW WIRING TO ELOC PUSH-BUTTON THROUGH EXISTING VERTICAL RACEWAY AND FLOOR "IN-CARPET" FINISHED WIREWAY.

POWER AND SYSTEMS GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. THE DISTRICT UTILIZES A VISITOR NOTIFICATION SYSTEM (VNS). THE VNS UTILIZES A NUMBER OF INTEGRATED BUILDING SYSTEMS INCLUDING CARD ACCESS, VIDEO SECURITY, TELEPHONE/INTERCOM, LOCK DOWN, ETC.
3. ALL CARD ACCESS REVISIONS SHALL BE PERFORMED BY A CARD ACCESS SYSTEM CONTRACTOR WHO SHALL BE A SUBCONTRACTOR TO THE ELECTRICAL CONTRACTOR. REFER TO SPECIFICATIONS FOR A LIST OF ACCEPTABLE SUBCONTRACTORS.
4. ALL CARD ACCESS SYSTEM REVISIONS SHALL BE COORDINATED WITH DOOR HARDWARE REVISIONS AND ARCHITECTURAL TRADES.
5. WIRING, CONNECTIONS AND REVISIONS FOR ALL DOOR HARDWARE COMPONENTS AND DEVICES SHALL BE IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS, WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS AND THE EQUIPMENT SHOP DRAWINGS.
6. ALL CARD ACCESS AND/OR VNS SYSTEM REVISIONS SHALL BE TESTED FOR PROPER OPERATION.
7. REFER TO CARD ACCESS/VNS SYSTEM WIRING DIAGRAMS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. ALL CONDUIT AND WIRING SHALL BE CONCEALED IN ALL FINISHED AREAS. WHERE CONCEALING CONDUIT IS NOT FEASIBLE, A FINISHED SURFACE RACEWAY (WIREMOLD OR EQUAL) MAYBE USED. WHERE A FINISHED SURFACE WIREWAY IS USED, SURFACE MOUNTED JUNCTION BOXES SHALL ALSO BE A FINISHED SURFACE BOX (WIREMOLD OR EQUAL). REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
9. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHT AND LOCATION OF ALL RECEPTACLES AND OUTLETS ABOVE OR BELOW COUNTERS. REFER TO ARCHITECTURAL DRAWINGS, ELEVATIONS AND DETAILS FOR LOCATIONS AND MOUNTING HEIGHTS OF VARIOUS ELECTRICAL RECEPTACLES, OUTLETS AND DEVICES.
10. COORDINATE THE EXACT ROUGH-IN LOCATION OF JUNCTION BOXES OR, RECEPTACLES OR OUTLETS, REQUIRED TO SERVE EQUIPMENT BENEATH COUNTERS.
11. REFER TO ARCHITECTURAL DRAWINGS FOR THE SCOPE OF CEILING SYSTEM REVISIONS INCLUDING CEILINGS BEING REPLACED, RAISED OR LOWERED. INCLUDE ALL ELECTRICAL WORK REQUIRED TO ACCOMMODATE CEILING SYSTEM REVISIONS INCLUDING RE-SUPPORTING OR RELOCATING CONDUIT, BOXES, WIRING, ETC. REQUIRED TO REMAIN, AS REQUIRED FOR CODE CONFORMANCE. INCLUDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED AND COORDINATE ALL WORK WITH ARCHITECTURAL TRADES.
12. MAINTAIN SERVICE TO ALL LOADS NOT INTENDED TO BE REVISED, INTERRUPTED OR DEMOLISHED. PROVIDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED TO ACCOMPLISH SAME AND INCLUDE ALL COSTS IN THE ELECTRICAL BID.
13. MODIFY EXISTING PANELBOARD CIRCUIT BREAKERS AS REQUIRED TO ACCOMMODATE CIRCUITING REQUIREMENTS INDICATED ON PLAN. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
14. LABEL ALL RECEPTACLES, JUNCTION BOXES, DOOR POWER SUPPLIES, ETC. WITH THE PANEL AND CIRCUIT FROM WHICH THEY ARE SERVED. UTILIZE 0.25" HIGH BLACK LETTERS ON A CLEAR BACKGROUND LOCATED ON THE RECEPTACLE OR JUNCTION BOX COVERPLATE. WHERE RECEPTACLE IS SERVED WITH GENERATOR POWER, UTILIZE RED LETTERS. IN ADDITION, NEATLY WRITE WITH AN INDELIBLE MARKER THE PANEL AND CIRCUIT ON THE INSIDE OF THE RECEPTACLE OR JUNCTION BOX COVERPLATE.
15. USING AN INDELIBLE MARKER, NEATLY LABEL BY HAND, IN ALL UNFINISHED AREAS, JUNCTION BOXES TO INDICATE THE PANEL AND CIRCUIT(S) WHICH THE BOX SERVES.
16. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS. TRACE EXISTING CIRCUITS AS REQUIRED TO DETERMINE LOADS SERVED FROM EXISTING CIRCUIT BREAKERS AND COMPLETE PANELBOARD DIRECTORIES ACCORDINGLY.
17. ALL 120 VOLT BRANCH CIRCUITS SHALL BE 2•12 + 1•12 GROUND - ¾" C SERVED FROM A 20 AMP SINGLE POLE CIRCUIT BREAKER UNLESS OTHERWISE REQUIRED.
18. ALL 120 VOLT CIRCUITS GREATER THAN 90 FEET FROM CIRCUIT BREAKER TO LAST LOAD ON CIRCUIT SHALL BE WITH •10 AWG WIRE.
19. REFER TO MECHANICAL HVAC AND PLUMBING DRAWINGS FOR MECHANICAL EQUIPMENT REQUIREMENTS. INCLUDE ALL WORK REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS. COORDINATE ALL WORK WITH MECHANICAL TRADES AND INCLUDE ALL COSTS IN THE ELECTRICAL BID AS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS.
20. ALL 120-VOLT BRANCH CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR.
21. ALL CONDUIT SERVING WIRING 120 VOLTS OR GREATER SHALL HAVE A GROUND WIRE.
22. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS.
23. BRANCH CIRCUIT WIRING SHALL BE IN STRICT ACCORDANCE WITH NEC ARTICLE 310 AND TABLE 310.15 ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A RACEWAY. INSTALL A MAXIMUM OF THREE CIRCUITS IN A SINGLE CONDUIT. DERATE THE AMPACITY PER THE NEC WHERE THE NUMBER OF CONDUCTORS EXCEEDS THREE.
24. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL CIRCUITING FOR ALL PROJECT PANELS.
25. ALL VOICE AND DATA CABLING WILL BE FURNISHED AND INSTALLED BY THE DISTRICTS TECHNOLOGY CONTRACTOR.
26. ALL CAMERA CABLING WILL BE FURNISHED AND INSTALLED BY THE DISTRICTS TECHNOLOGY CONTRACTOR.
27. PROVIDE A PULL WIRE IN ALL EMPTY CONDUIT.
28. ALL CONDUIT INSTALLED TO SERVE VOICE OR DATA CABLING SHALL HAVE A BUSHED END STUBBED TO AN ACCESSIBLE CEILING LOCATION.
29. ALL CONDUIT SERVING THE CARD ACCESS SYSTEM SHALL BE CONCEALED WITHIN BUILDING CONSTRUCTION. UTILIZE A FINISHED SURFACE RACEWAY SUCH AS WIREMOLD WHERE CONCEALING CONDUIT IS NOT FEASIBLE AS A RESULT OF EXISTING MASONRY CONSTRUCTION. IN EXISTING DRYWALL CONSTRUCTION, CONCEAL THE CONDUIT.
30. ALL LOW VOLTAGE CARD ACCESS SYSTEM, FIRE ALARM SYSTEM WIRING, AND OTHER INSTALLED BY THIS CONTRACTOR SHALL BE INSTALLED IN CONDUIT OR A FINISHED SURFACE RACEWAY EXCEPT AS FOLLOWS:
    WHERE INSTALLED ABOVE AN ACCESSIBLE LAY-IN CEILING.
    WHERE INSTALLED IN A DOOR OR WINDOW FRAME MULLION
31. LOW VOLTAGE CABLING SHALL BE INSTALLED AS FOLLOWS OR WHERE THE RACEWAY ONLY IS INSTALLED BY THE ELECTRICAL CONTRACTOR, RACEWAY SHALL BE INSTALLED TO PERMIT CABLING TO BE INSTALLED AS FOLLOWS:
    A. NOT INSTALLED WITHIN 18 INCHES OF LIGHT FIXTURE BALLASTS OR WITHIN 36 INCHES OF MOTORS OR TRANSFORMERS.
    B. IN ACCORDANCE WITH MAXIMUM BENDING RADIUS AS RECOMMENDED BY THE MANUFACTURER.
    C. INSTALLED PERPENDICULAR TO POWER CONDUIT RUNS UPON THEIR INTERSECTION WHEREVER POSSIBLE.
32. WHEN TRANSITIONING FROM CONDUIT TO NO CONDUIT, UTILIZE A BUSHING ON THE END OF THE CONDUIT.
33. ALL JUNCTION BOXES PROVIDED TO SERVE FIRE ALARM PULL STATIONS, A READER, DOOR OPERATOR PUSHBUTTON, ETC., SHALL BE APPROVED BY THE MANUFACTURER TO SERVE THAT DEVICE AND FOR THE INTENDED PURPOSE. SURFACE BOXES SHALL BE FINISHED, SMOOTH EDGED AND WITHOUT SHARP EDGES. BOX FINISH SHALL MATCH THE CONNECTED RACEWAY. BOXES SERVING FIRE ALARM PULL STATIONS SHALL BE RED.
34. INCLUDE ALL CONDUIT SLEEVES THROUGH WALLS AS REQUIRED FOR THE ROUTING OF LOW VOLTAGE CABLING INCLUDING CABLING INSTALLED BY THE DISTRICT. SLEEVES INSTALLED IN EXISTING WALLS SHALL UTILIZE A NEAT HOLE MADE WITH A CORING MACHINE OR HOLE SAW. CORING IN MASONRY SURFACES SHALL BE CONTINUOUS FROM ONE WALL SURFACE TO THE APPOSING WALL SURFACE WITHOUT SPALLING. NO CONDUIT LESS THAN 1" SHALL BE USED FOR SLEEVES.
35. FIRE PROOF INSIDE AND OUT ALL CONDUIT SLEEVES.
36. LOW VOLTAGE CABLING SHALL BE INSTALLED AS REQUIRED FOR CONFORMANCE WITH THE CABLING RECOMMENDATIONS OF THE CABLE MANUFACTURER. OBTAIN SAME FROM THE MANUFACTURER.
37. FIRE ALARM SYSTEM EQUIPMENT, DEVICES AND REVISIONS SHALL BE IN ACCORDANCE WITH CODE REQUIREMENTS.
38. THE EXISTING FIRE ALARM SYSTEM IS A NATIONAL TIME AND SIGNAL 902 SERIES ADDRESSABLE SYSTEM.
39. ALL FIRE ALARM SYSTEM DEVICES SHALL BE NATIONAL TIME AND SIGNAL, LATEST PRODUCT, COMPATIBLE WITH THE EXISTING SYSTEM.
40. WHERE FIRE ALARM SYSTEM REVISIONS ARE MADE, UPDATE THE GRAPHIC ANNUNCIATOR TO REFLECT THE REVISION.
41. FIRE ALARM SYSTEM TESTING SHALL INCLUDE THE PERCENTAGE OF EXISTING SYSTEM-UNALTERED DEVICES, WIRING AND EQUIPMENT AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
42. CONDUIT SERVING CLASSROOM RECEPTACLES MAY BE ROUTED THRU JUNCTION BOX AT UNIT VENTILATOR. PROVIDE ALL WORK AND REVISIONS REQUIRED TO MAINTAIN SERVICE TO RECEPTACLES. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.



UNIT VENTILATOR LEGEND

NO SCALE

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

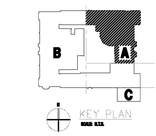
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Power and Systems Plan - Zone 'A'



ISSUE DATES

02-15-2016	B.P.No. 1 - BIDS
DATE:	ISSUED FOR:

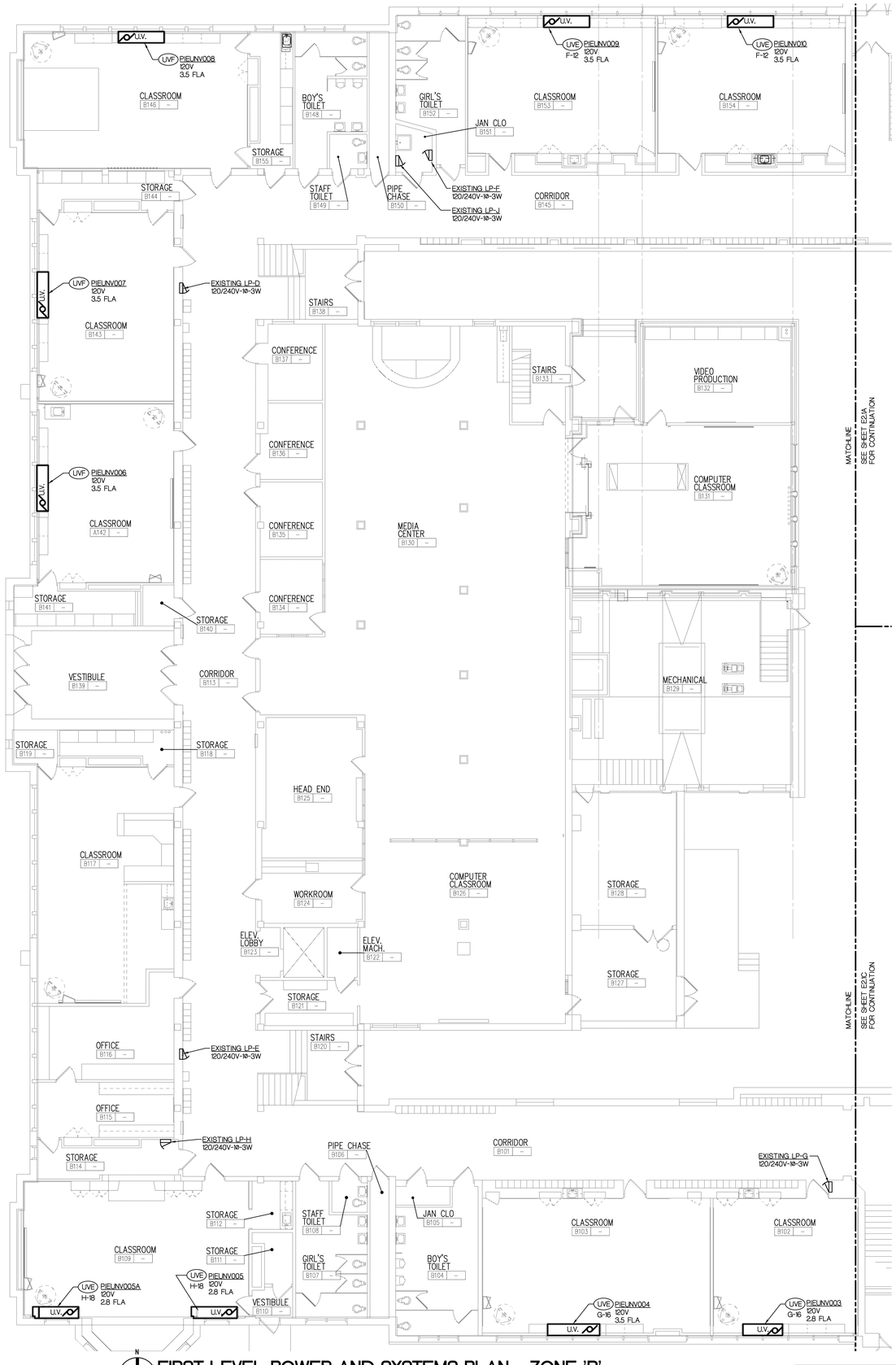
DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E2.1A



FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

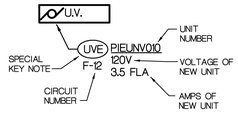
POWER AND SYSTEMS GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. MAINTAIN SERVICE TO ALL LOADS NOT INTENDED TO BE REVISED. INTERRUPTED OR DEMOLISHED. PROVIDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED TO ACCOMPLISH SAME AND INCLUDE ALL COSTS IN THE ELECTRICAL BID.
3. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS. TRACE EXISTING CIRCUITS AS REQUIRED TO DETERMINE LOADS SERVED FROM EXISTING CIRCUIT BREAKERS AND COMPLETE PANELBOARD DIRECTORIES ACCORDINGLY.
4. REFER TO MECHANICAL HVAC AND PLUMBING DRAWINGS FOR MECHANICAL EQUIPMENT REQUIREMENTS. INCLUDE ALL WORK REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS. COORDINATE ALL WORK WITH MECHANICAL TRADES AND INCLUDE ALL COSTS IN THE ELECTRICAL BID AS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS.
5. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL CIRCUITING FOR ALL PROJECT PANELS.
6. CONDUIT SERVING CLASSROOM RECEPTACLES MAY BE ROUTED THRU JUNCTION BOX AT UNIT VENTILATOR. PROVIDE ALL WORK AND REVISIONS REQUIRED TO MAINTAIN SERVICE TO RECEPTACLES. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.

POWER AND SYSTEMS SPECIAL KEY NOTES:

(UVE) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.

(UVF) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. FIELD VERIFY EXISTING CIRCUIT AND CIRCUIT BREAKER SIZE. TOTAL LOAD ON CIRCUIT BREAKER SHALL NOT EXCEED 70% OF RATING. NOTIFY ENGINEER OF DISCREPANCIES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.



UNIT VENTILATOR LEGEND

NO SCALE

1/16" 0 2 4 6 8 10 20 40 80 — 1/8" 0 1 2 3 4 5 10 20 40 — 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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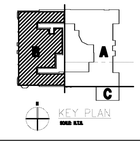

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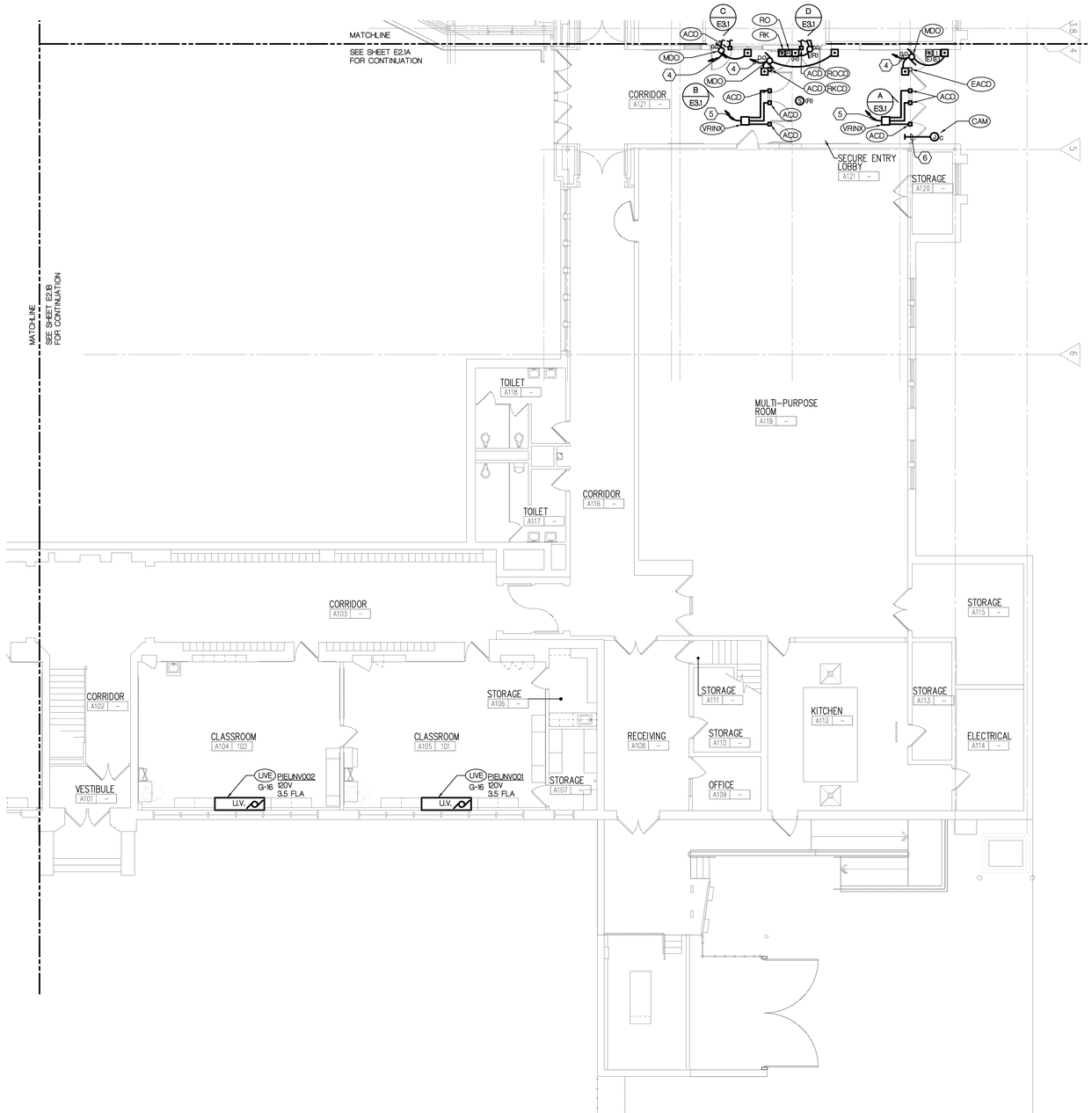

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FIRST LEVEL POWER AND SYSTEM PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

POWER AND SYSTEMS SPECIAL KEY NOTES:

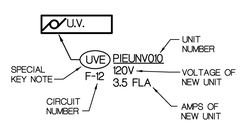
- (ACD) ACCESS CONTROLLED DOOR WITH ELECTRIC LOCK AND DOOR POSITION SWITCH OR INDICATOR FURNISHED AND INSTALLED BY DOOR CONTRACTOR, WIRED BY ELECTRICAL TRADES. REFER TO DOOR HARDWARE SPECIFICATIONS AND EQUIPMENT SHOP DRAWINGS.
- (CAM) IP BASED SECURITY CAMERA, FURNISHED, INSTALLED, AND WIRED BY THE DISTRICTS VIDEO SECURITY VENDOR. FIELD VERIFY EXACT CAMERA MOUNTING LOCATION WITH THE DISTRICTS SECURITY OFFICER PRIOR TO ROUGH-IN. LEAVE A PULL WIRE IN THE EMPTY CONDUIT. STUB THE CONDUIT TO AN ACCESSIBLE CEILING SPACE LOCATION ONLY.
- (MDO) MOTORIZED DOOR OPERATOR, 120 VOLT, FURNISHED AND INSTALLED BY DOOR CONTRACTOR, WIRED BY ELECTRICAL TRADES. PROVIDE LOCAL 120 VOLT DISCONNECT SWITCH AS REQUIRED FOR CODE CONFORMANCE. PROVIDE INSTALLATION AND WIRING OF PUSH-BUTTON STATIONS. ALL WIRING TO BE IN ACCORDANCE WITH EQUIPMENT SHOP DRAWINGS. INTERFACE WIRING AND OPERATION WITH CARD ACCESS SYSTEM SO THAT OPERATE DOES NOT OPERATE EXCEPT WHEN ACCESS IS APPROVED BY CARD ACCESS SYSTEM.
- (EACD) EXISTING ACCESS CONTROLLED DOOR. DOOR, POSITION SWITCH, ELECTRIC LOCK, VRINX DOOR CONTROL MODULE, ETC. TO REMAIN.
- (ELOC) DOOR LOCK DOWN PUSH BUTTON, FURNISHED, INSTALLED AND WIRED BY THE ACCESS CONTROL CONTRACTOR. FIELD COORDINATE EXACT MOUNTING LOCATION WITH ARCHITECTURAL TRADES AND DISTRICT STAFF PRIOR TO INSTALLATION.
- (VRINX) VANDERBILT INDUSTRIES •VRINX DOOR CONTROL MODULE IN NEMA ONE ENCLOSURE FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR. CONCEAL IN CEILING SPACE WHERE FEASIBLE. PROVIDE POWER SUPPLY TO SERVE ONE OR MORE MODULES.
- (RO) PROXIMITY READER, FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR.
- (ROCD) PROXIMITY READER CONTROLLED DOOR.
- (RK) PROXIMITY READER WITH INTEGRAL KEYPAD, FURNISHED, INSTALLED, AND WIRED BY ACCESS CONTROL CONTRACTOR.
- (RKCD) PROXIMITY READER/KEYPAD CONTROLLED DOOR.
- (UVE) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.

POWER AND SYSTEMS KEY NOTES:

1. USE EXISTING SURFACE RACEWAY TO PROVIDE 120-VOLT POWER AND LOW VOLTAGE CABLE TO EXISTING VIDEO DISPLAY. COORDINATE LOW VOLTAGE CONNECTIONS BY SECURITY AND COMMUNICATIONS CONTRACTOR.
2. SURFACE MOUNTED RACEWAY TO ACCESSIBLE CEILING SPACE.
3. LOW VOLTAGE OUTLET. PROVIDE EMPTY 7C. WITH BUSHED END TO ACCESSIBLE CEILING SPACE.
4. 120 VOLT CIRCUIT, TO NEW OR SPARE 20A-1P, CIRCUIT BREAKER IN NEAREST AVAILABLE NON-TECHNOLOGY RECEPTACLE PANEL. FIELD VERIFY EXISTING CONDITIONS. TWO (2) DOOR OPERATORS MAYBE SERVED WITH ONE 20A CIRCUIT.
5. HOMERUN TO ACP, SEE ACCESS CONTROL DIAGRAMS SHEETS E3.1 AND E3.2.
6. FLUSH CEILING MOUNTED JUNCTION BOX AND CONCEALED 0.75" CONDUIT, STUB CONDUIT INTO ACCESSIBLE CEILING SPACE. BUSH END OF CONDUIT AND PROVIDE PULL WIRE.

POWER AND SYSTEMS GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. THE DISTRICT UTILIZES A VISITOR NOTIFICATION SYSTEM (VNS). THE VNS UTILIZES A NUMBER OF INTEGRATED BUILDING SYSTEMS INCLUDING CARD ACCESS, VIDEO SECURITY, TELEPHONE/INTERCOM LOCK DOWN, ETC.
3. ALL CARD ACCESS REVISIONS SHALL BE PERFORMED BY A CARD ACCESS SYSTEM CONTRACTOR WHO SHALL BE A SUBCONTRACTOR TO THE ELECTRICAL CONTRACTOR. REFER TO SPECIFICATIONS FOR A LIST OF ACCEPTABLE SUBCONTRACTORS.
4. ALL CARD ACCESS SYSTEM REVISIONS SHALL BE COORDINATED WITH DOOR HARDWARE REVISIONS AND ARCHITECTURAL TRADES.
5. WIRING, CONNECTIONS AND REVISIONS FOR ALL DOOR HARDWARE COMPONENTS AND DEVICES SHALL BE IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS, WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS AND THE EQUIPMENT SHOP DRAWINGS.
6. ALL CARD ACCESS AND/OR VNS SYSTEM REVISIONS SHALL BE TESTED FOR PROPER OPERATION.
7. REFER TO CARD ACCESS/VNS SYSTEM WIRING DIAGRAMS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. ALL CONDUIT AND WIRING SHALL BE CONCEALED IN ALL FINISHED AREAS. WHERE CONCEALING CONDUIT IS NOT FEASIBLE, A FINISHED SURFACE RACEWAY (WIREMOLD OR EQUAL) MAYBE USED. WHERE A FINISHED SURFACE WIREWAY IS USED, SURFACE MOUNTED JUNCTION BOXES SHALL ALSO BE A FINISHED SURFACE BOX (WIREMOLD OR EQUAL). REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
9. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHT AND LOCATION OF ALL RECEPTACLES AND OUTLETS ABOVE OR BELOW COUNTERS. REFER TO ARCHITECTURAL DRAWINGS, ELEVATIONS AND DETAILS FOR LOCATIONS AND MOUNTING HEIGHTS OF VARIOUS ELECTRICAL RECEPTACLES, OUTLETS AND DEVICES.
10. COORDINATE THE EXACT ROUGH-IN LOCATION OF JUNCTION BOXES OR, RECEPTACLES OR OUTLETS, REQUIRED TO SERVE EQUIPMENT BENEATH COUNTERS.
11. REFER TO ARCHITECTURAL DRAWINGS FOR THE SCOPE OF CEILING SYSTEM REVISIONS INCLUDING CEILINGS BEING REPLACED, RAISED OR LOWERED. INCLUDE ALL ELECTRICAL WORK REQUIRED TO ACCOMMODATE CEILING SYSTEM REVISIONS INCLUDING RE-SUPPORTING OR RELOCATING CONDUIT, BOXES, WIRING, ETC. REQUIRED TO REMAIN, AS REQUIRED FOR CODE CONFORMANCE. INCLUDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED AND COORDINATE ALL WORK WITH ARCHITECTURAL TRADES.
12. MAINTAIN SERVICE TO ALL LOADS NOT INTENDED TO BE REVISED, INTERRUPTED OR DEMOLISHED. PROVIDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED TO ACCOMPLISH SAME AND INCLUDE ALL COSTS IN THE ELECTRICAL BID.
13. MODIFY EXISTING PANELBOARD CIRCUIT BREAKERS AS REQUIRED TO ACCOMMODATE CIRCUITING REQUIREMENTS INDICATED ON PLAN. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
14. LABEL ALL RECEPTACLES, JUNCTION BOXES, DOOR POWER SUPPLIES, ETC. WITH THE PANEL AND CIRCUIT FROM WHICH THEY ARE SERVED. UTILIZE 0.25" HIGH BLACK LETTERS ON A CLEAR BACKGROUND LOCATED ON THE RECEPTACLE OR JUNCTION BOX COVERPLATE. WHERE RECEPTACLE IS SERVED WITH GENERATOR POWER, UTILIZE RED LETTERS. IN ADDITION, NEATLY WRITE WITH AN INDELIBLE MARKER THE PANEL AND CIRCUIT ON THE INSIDE OF THE RECEPTACLE OR JUNCTION BOX COVERPLATE.
15. USING AN INDELIBLE MARKER, NEATLY LABEL BY HAND, IN ALL UNFINISHED AREAS, JUNCTION BOXES TO INDICATE THE PANEL AND CIRCUIT(S) WHICH THE BOX SERVES.
16. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS. TRACE EXISTING CIRCUITS AS REQUIRED TO DETERMINE LOADS SERVED FROM EXISTING CIRCUIT BREAKERS AND COMPLETE PANELBOARD DIRECTORIES ACCORDINGLY.
17. ALL 120 VOLT BRANCH CIRCUITS SHALL BE 2•12 + 1•12 GROUND - 1/2 C SERVED FROM A 20 AMP SINGLE POLE CIRCUIT BREAKER UNLESS OTHERWISE REQUIRED.
18. ALL 120 VOLT CIRCUITS GREATER THAN 90 FEET FROM CIRCUIT BREAKER TO LAST LOAD ON CIRCUIT SHALL BE WITH •10 AWG WIRE.
19. REFER TO MECHANICAL HVAC AND PLUMBING DRAWINGS FOR MECHANICAL EQUIPMENT REQUIREMENTS. INCLUDE ALL WORK REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS. COORDINATE ALL WORK WITH MECHANICAL TRADES AND INCLUDE ALL COSTS IN THE ELECTRICAL BID AS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS.
20. ALL 120-VOLT BRANCH CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR.
21. ALL CONDUIT SERVING WIRING 120 VOLTS OR GREATER SHALL HAVE A GROUND WIRE.
22. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS.
23. BRANCH CIRCUIT WIRING SHALL BE IN STRICT ACCORDANCE WITH NEC ARTICLE 310 AND TABLE 310.15 ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A RACEWAY. INSTALL A MAXIMUM OF THREE CIRCUITS IN A SINGLE CONDUIT. DERATE THE AMPACITY PER THE NEC WHERE THE NUMBER OF CONDUCTORS EXCEEDS THREE.
24. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL CIRCUITING FOR ALL PROJECT PANELS.
25. ALL VOICE AND DATA CABLING WILL BE FURNISHED AND INSTALLED BY THE DISTRICTS TECHNOLOGY CONTRACTOR.
26. ALL CAMERA CABLING WILL BE FURNISHED AND INSTALLED BY THE DISTRICTS TECHNOLOGY CONTRACTOR.
27. PROVIDE A PULL WIRE IN ALL EMPTY CONDUIT.
28. ALL CONDUIT INSTALLED TO SERVE VOICE OR DATA CABLING SHALL HAVE A BUSHED END STUBBED TO AN ACCESSIBLE CEILING LOCATION.
29. ALL CONDUIT SERVING THE CARD ACCESS SYSTEM SHALL BE CONCEALED WITHIN BUILDING CONSTRUCTION. UTILIZE A FINISHED SURFACE RACEWAY SUCH AS WIREMOLD WHERE CONCEALING CONDUIT IS NOT FEASIBLE AS A RESULT OF EXISTING MASONRY CONSTRUCTION. IN EXISTING DRYWALL CONSTRUCTION, CONCEAL THE CONDUIT.
30. ALL LOW VOLTAGE CARD ACCESS SYSTEM, FIRE ALARM SYSTEM WIRING, AND OTHER INSTALLED BY THIS CONTRACTOR SHALL BE INSTALLED IN CONDUIT OR A FINISHED SURFACE RACEWAY EXCEPT AS FOLLOWS:
    WHERE INSTALLED ABOVE AN ACCESSIBLE LAY-IN CEILING.
    WHERE INSTALLED IN A DOOR OR WINDOW FRAME MULLION
31. LOW VOLTAGE CABLING SHALL BE INSTALLED AS FOLLOWS OR WHERE THE RACEWAY ONLY IS INSTALLED BY THE ELECTRICAL CONTRACTOR, RACEWAY SHALL BE INSTALLED TO PERMIT CABLING TO BE INSTALLED AS FOLLOWS:
    A. NOT INSTALLED WITHIN 18 INCHES OF LIGHT FIXTURE BALLASTS OR WITHIN 36 INCHES OF MOTORS OR TRANSFORMERS.
    B. IN ACCORDANCE WITH MAXIMUM BENDING RADIUS AS RECOMMENDED BY THE MANUFACTURER.
    C. INSTALLED PERPENDICULAR TO POWER CONDUIT RUNS UPON THEIR INTERSECTION WHEREVER POSSIBLE.
32. WHEN TRANSITIONING FROM CONDUIT TO NO CONDUIT, UTILIZE A BUSHING ON THE END OF THE CONDUIT.
33. ALL JUNCTION BOXES PROVIDED TO SERVE FIRE ALARM PULL STATIONS, A READER, DOOR OPERATOR PUSH-BUTTON, ETC., SHALL BE APPROVED BY THE MANUFACTURER TO SERVE THAT DEVICE AND FOR THE INTENDED PURPOSE. SURFACE BOXES SHALL BE FINISHED, SMOOTH EDGED AND WITHOUT SHARP EDGES. BOX FINISH SHALL MATCH THE CONNECTED RACEWAY. BOXES SERVING FIRE ALARM PULL STATIONS SHALL BE RED.
34. INCLUDE ALL CONDUIT SLEEVES THROUGH WALLS AS REQUIRED FOR THE ROUTING OF LOW VOLTAGE CABLING INCLUDING CABLING INSTALLED BY THE DISTRICT. SLEEVES INSTALLED IN EXISTING WALLS SHALL UTILIZE A NEAT HOLE MADE WITH A CORING MACHINE OR HOLE SAW. CORING IN MASONRY SURFACES SHALL BE CONTINUOUS FROM ONE WALL SURFACE TO THE APPOSING WALL SURFACE WITHOUT SPALLING. NO CONDUIT LESS THAN 1" SHALL BE USED FOR SLEEVES.
35. FIRE PROOF INSIDE AND OUT ALL CONDUIT SLEEVES.
36. LOW VOLTAGE CABLING SHALL BE INSTALLED AS REQUIRED FOR CONFORMANCE WITH THE CABLING RECOMMENDATIONS OF THE CABLE MANUFACTURER. OBTAIN SAME FROM THE MANUFACTURER.
37. FIRE ALARM SYSTEM EQUIPMENT, DEVICES AND REVISIONS SHALL BE IN ACCORDANCE WITH CODE REQUIREMENTS.
38. THE EXISTING FIRE ALARM SYSTEM IS A NATIONAL TIME AND SIGNAL 902 SERIES ADDRESSABLE SYSTEM.
39. ALL FIRE ALARM SYSTEM DEVICES SHALL BE NATIONAL TIME AND SIGNAL, LATEST PRODUCT, COMPATIBLE WITH THE EXISTING SYSTEM.
40. WHERE FIRE ALARM SYSTEM REVISIONS ARE MADE, UPDATE THE GRAPHIC ANNUNCIATOR TO REFLECT THE REVISION.
41. FIRE ALARM SYSTEM TESTING SHALL INCLUDE THE PERCENTAGE OF EXISTING SYSTEM-UNALTERED DEVICES, WIRING AND EQUIPMENT AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
42. CONDUIT SERVING CLASSROOM RECEPTACLES MAY BE ROUTED THRU JUNCTION BOX AT UNIT VENTILATOR. PROVIDE ALL WORK AND REVISIONS REQUIRED TO MAINTAIN SERVICE TO RECEPTACLES. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.



UNIT VENTILATOR LEGEND

NO SCALE

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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Birmingham Public Schools
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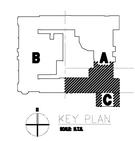
DRAWING TITLE

First Level Power and Systems Plan - Zone 'C'



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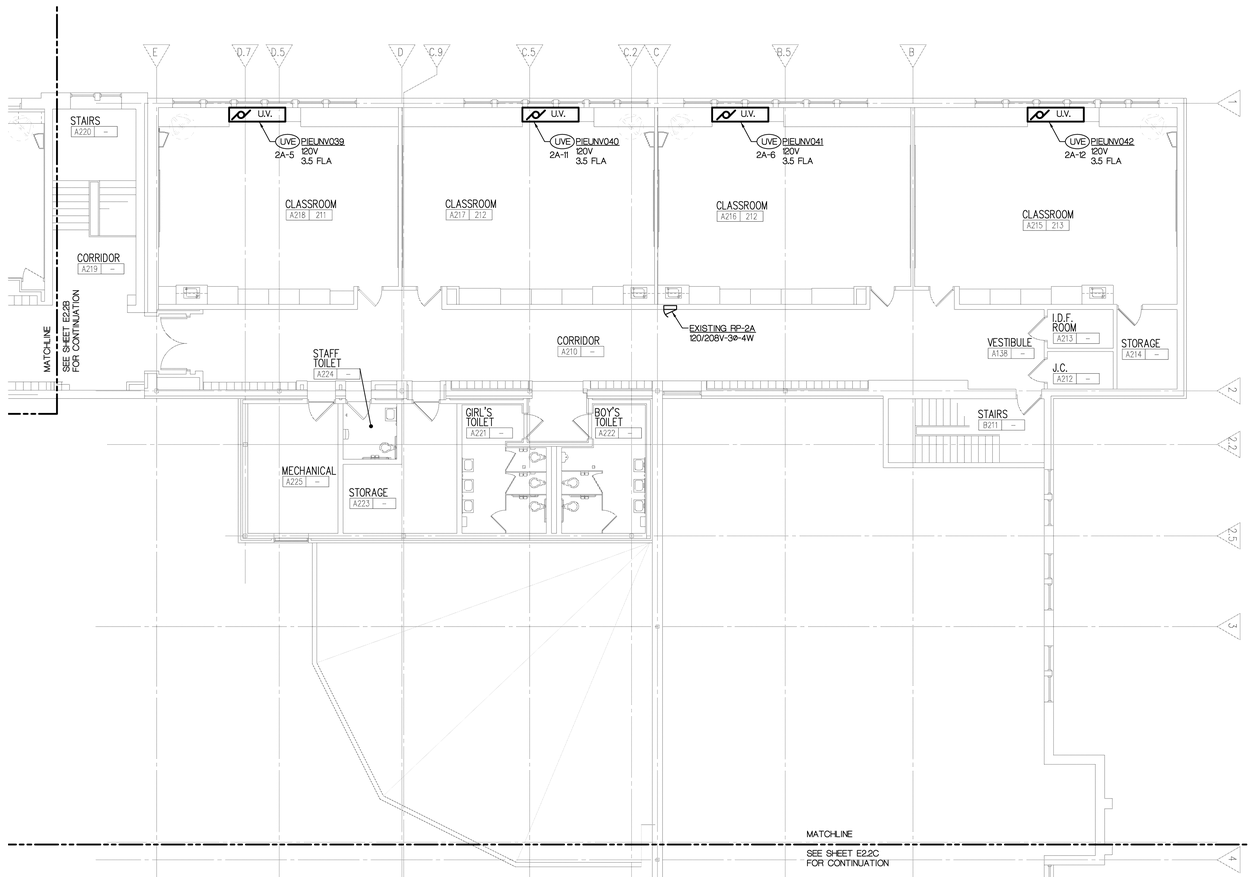

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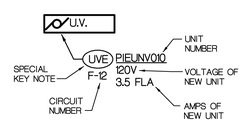
SECOND LEVEL POWER AND SYSTEM PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"



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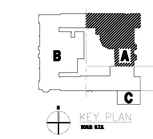
Second Level Power and Systems Plan - Zone 'A'



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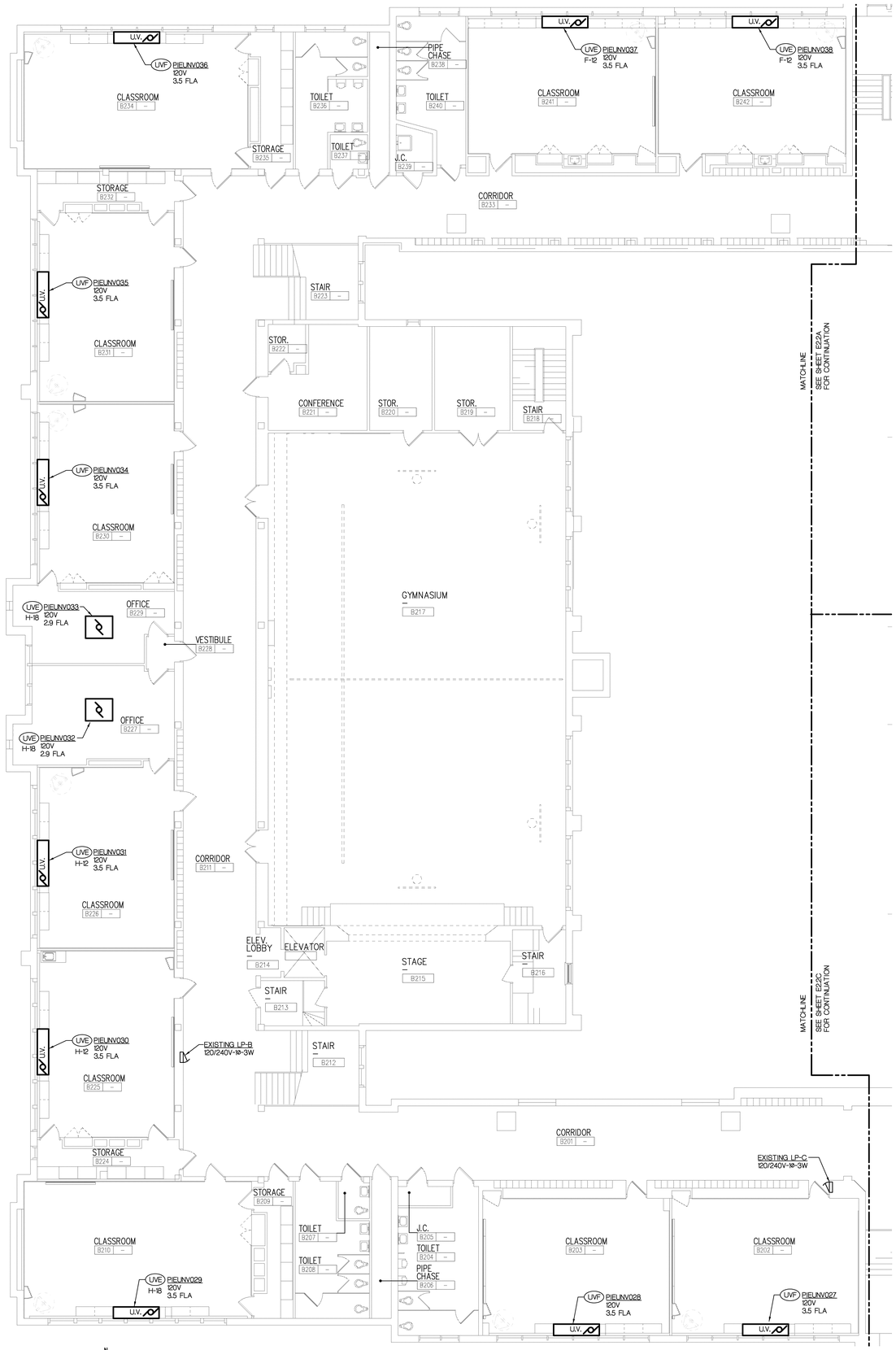
DRAWING NO.

E2.2A



N

SECOND LEVEL POWER AND SYSTEM PLAN - ZONE 'B'

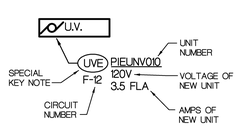
SCALE: 1/8" = 1'-0"

POWER AND SYSTEMS GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. MAINTAIN SERVICE TO ALL LOADS NOT INTENDED TO BE REVISED, INTERRUPTED OR DEMOLISHED. PROVIDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED TO ACCOMPLISH SAME AND INCLUDE ALL COSTS IN THE ELECTRICAL BID.
3. PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS. TRACE EXISTING CIRCUITS AS REQUIRED TO DETERMINE LOADS SERVED FROM EXISTING CIRCUIT BREAKERS AND COMPLETE PANELBOARD DIRECTORIES ACCORDINGLY.
4. REFER TO MECHANICAL HVAC AND PLUMBING DRAWINGS FOR MECHANICAL EQUIPMENT REQUIREMENTS. INCLUDE ALL WORK REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS. COORDINATE ALL WORK WITH MECHANICAL TRADES AND INCLUDE ALL COSTS IN THE ELECTRICAL BID AS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS.
5. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL CIRCUITING FOR ALL PROJECT PANELS.
6. CONDUIT SERVING CLASSROOM RECEPTACLES MAY BE ROUTED THRU JUNCTION BOX AT UNIT VENTILATOR. PROVIDE ALL WORK AND REVISIONS REQUIRED TO MAINTAIN SERVICE TO RECEPTACLES. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.

POWER AND SYSTEMS SPECIAL KEY NOTES:

- (UVE) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.
- (UVF) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. FIELD VERIFY EXISTING CIRCUIT AND CIRCUIT BREAKER SIZE. TOTAL LOAD ON CIRCUIT BREAKER SHALL NOT EXCEED 70% OF RATING. NOTIFY ENGINEER OF DISCREPANCIES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.



UNIT VENTILATOR LEGEND

NO SCALE

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

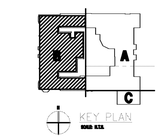
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Power and Systems Plan - Zone 'B'



ISSUE DATES

02-15-2016	B.P.No. 1 - BIDS

DATE:	ISSUED FOR:
DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E2.2B

POWER AND SYSTEMS GENERAL NOTES:

1 REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.

2 MAINTAIN SERVICE TO ALL LOADS NOT INTENDED TO BE REVISED, INTERRUPTED OR DEMOLISHED. PROVIDE ALL CONDUIT, BOX AND WIRING REVISIONS REQUIRED TO ACCOMPLISH SAME AND INCLUDE ALL COSTS IN THE ELECTRICAL BID.

3 PROVIDE ACCURATE TYPED DIRECTORIES IN ALL PANELBOARDS. TRACE EXISTING CIRCUITS AS REQUIRED TO DETERMINE LOADS SERVED FROM EXISTING CIRCUIT BREAKERS AND COMPLETE PANELBOARD DIRECTORIES ACCORDINGLY.

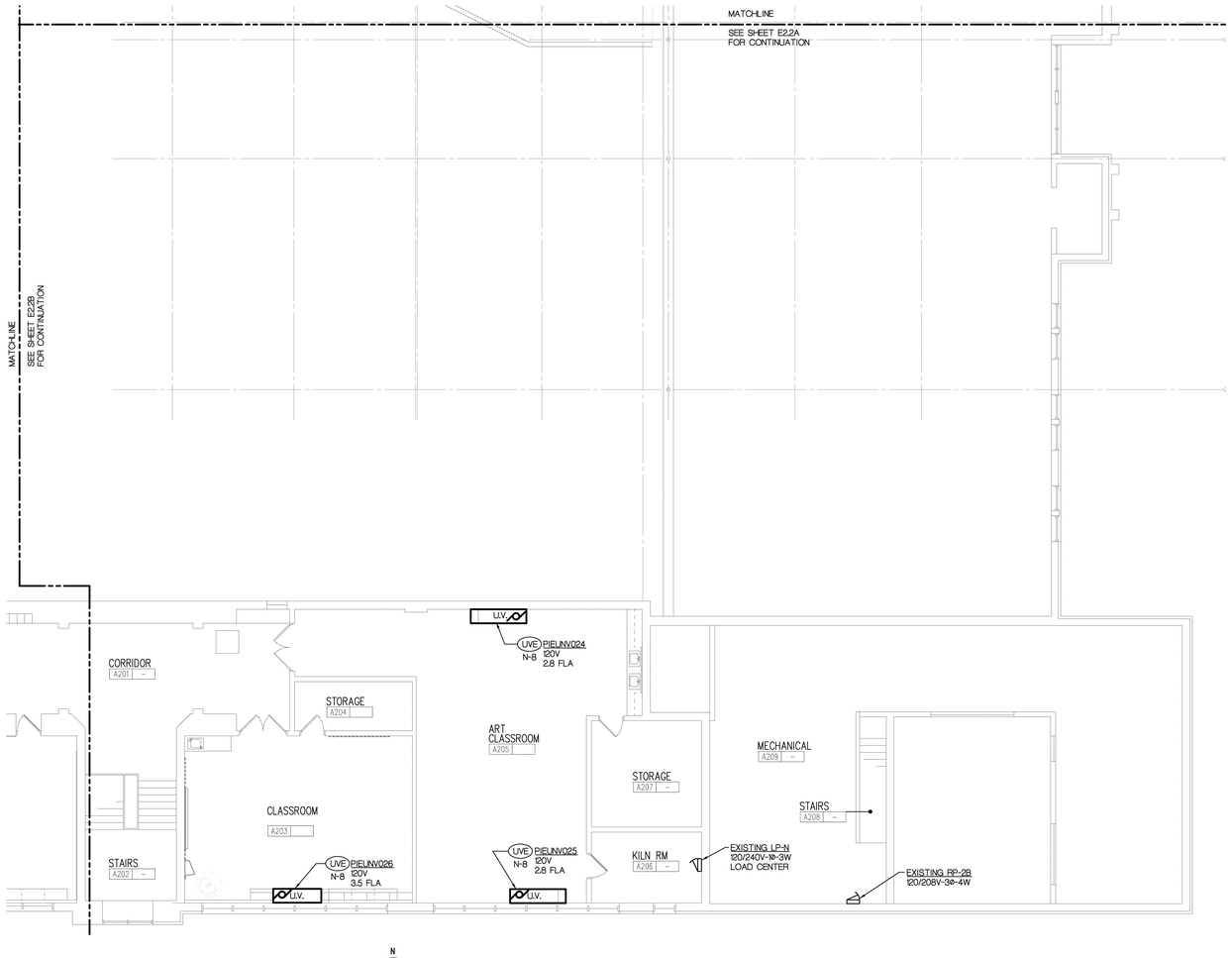
4 REFER TO MECHANICAL HVAC AND PLUMBING DRAWINGS FOR MECHANICAL EQUIPMENT REQUIREMENTS. INCLUDE ALL WORK REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS. COORDINATE ALL WORK WITH MECHANICAL TRADES AND INCLUDE ALL COSTS IN THE ELECTRICAL BID AS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT REVISIONS.

5 AS-BUILT DRAWINGS SHALL INDICATE ACTUAL CIRCUITING FOR ALL PROJECT PANELS.

6 CONDUIT SERVING CLASSROOM RECEPTACLES MAY BE ROUTED THRU JUNCTION BOX AT UNIT VENTILATOR. PROVIDE ALL WORK AND REVISIONS REQUIRED TO MAINTAIN SERVICE TO RECEPTACLES. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.

POWER AND SYSTEMS SPECIAL KEY NOTES:

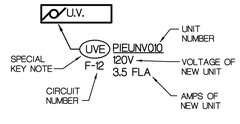
(UVE) EXISTING UNIT VENTILATOR TO BE REMOVED AND REPLACED WITH NEW UNIT BY MECHANICAL TRADES. DISCONNECT ELECTRIC SERVICE AND MODIFY AS REQUIRED. CONNECT TO SERVE NEW REPLACEMENT UNIT. COORDINATE ALL WORK WITH MECHANICAL TRADES. PROVIDE ALL FIELD TRACING AND VERIFICATION AS REQUIRED TO VERIFY EXISTING PANEL AND CIRCUIT INDICATED. LABEL UNIT WITH PANEL AND CIRCUIT SERVING UNIT. REVISE CIRCUIT BREAKER PANEL DIRECTORY TO INDICATE UV NUMBER AND ROOM SERVED.



N

SECOND LEVEL POWER AND SYSTEM PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"



UNIT VENTILATOR LEGEND

NO SCALE

1/16" 0 2 4 6 8 10 20 40 80

1/8" 0 1 2 3 4 5 10 20 40

1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

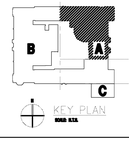
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Power and Systems Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

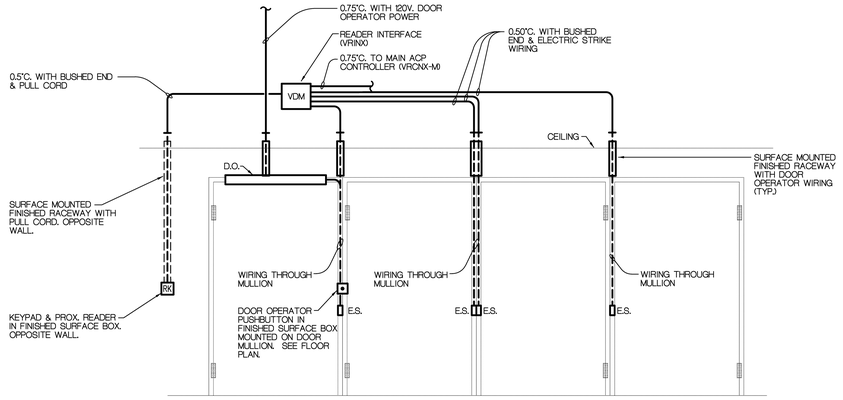
DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E2.2C

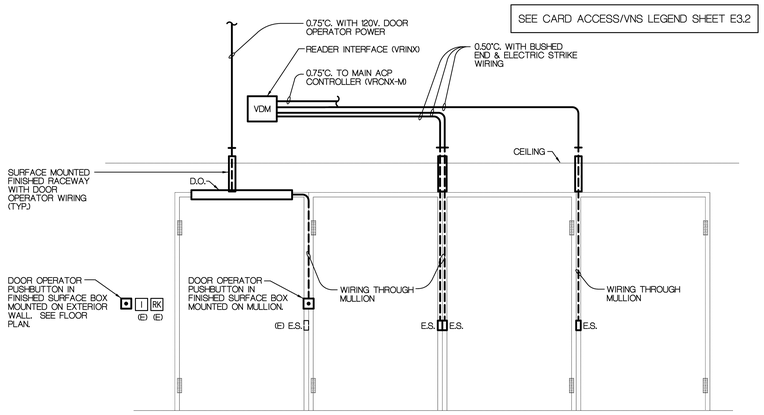


DOOR DIAGRAM

NO SCALE

B E2.1C

NOTES:
1. SEE DOOR WIRING DIAGRAM SHEET E3.2.
2. SEE FLOOR PLAN FOR ALL OPERATORS.
3. DOORS A122, A122A, A122B, A122C

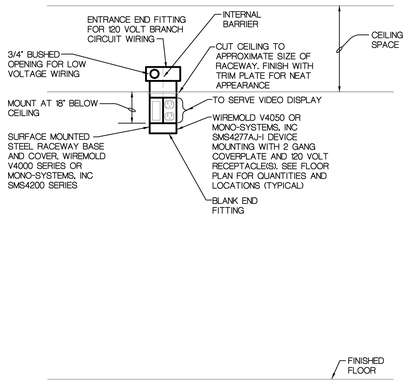


DOOR DIAGRAM

NO SCALE

A E2.1C

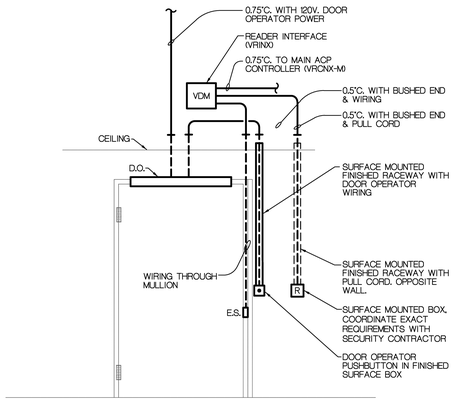
NOTES:
1. SEE DOOR WIRING DIAGRAM SHEET E3.2.
2. SEE FLOOR PLAN FOR ALL OPERATORS.
3. DOORS A121, A121A, A121B, A121C



SURFACE RACEWAY

NO SCALE

SRW E3.1C

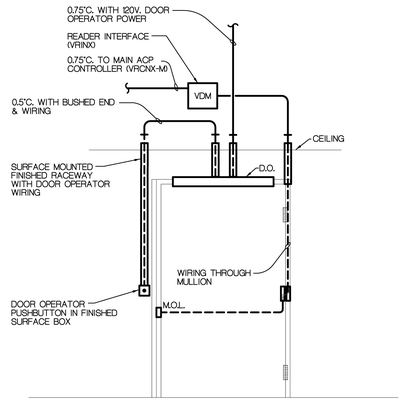


DOOR DIAGRAM

NO SCALE

D E2.1C

NOTES:
1. SEE DOOR WIRING DIAGRAM SHEET E3.2.
2. SEE FLOOR PLAN FOR ALL OPERATORS.
3. DOOR A123B

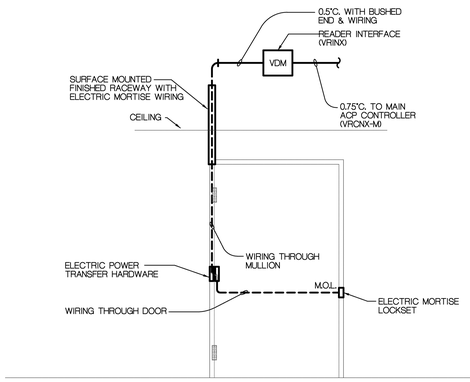


DOOR DIAGRAM

NO SCALE

C E2.1C

NOTES:
1. SEE DOOR WIRING DIAGRAM SHEET E3.2.
2. SEE FLOOR PLAN FOR ALL OPERATORS.
3. DOOR A123A



DOOR DIAGRAM

NO SCALE

E E2.1A

NOTES:
1. SEE DOOR WIRING DIAGRAM SHEET E3.2.
2. SEE FLOOR PLAN FOR ALL OPERATORS.
3. DOOR A132, A147

CARD ACCESS/VNS SYSTEM GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. REFER TO POWER AND SYSTEM GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
3. THE DISTRICT UTILIZES A VISITOR NOTIFICATION SYSTEM (VNS). THE VNS UTILIZES A NUMBER OF INTEGRATED BUILDING SYSTEMS INCLUDING CARD ACCESS, VIDEO SECURITY, TELEPHONE/INTERCOM, LOCK DOWN, ETC.
4. ALL CARD ACCESS REVISIONS SHALL BE PERFORMED BY A CARD ACCESS SYSTEM CONTRACTOR WHO SHALL BE A SUBCONTRACTOR TO THE ELECTRICAL CONTRACTOR. REFER TO SPECIFICATIONS FOR A LIST OF ACCEPTABLE SUBCONTRACTORS.
5. ALL CARD ACCESS SYSTEM REVISIONS SHALL BE COORDINATED WITH DOOR HARDWARE REVISIONS AND ARCHITECTURAL TRADES.
6. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR THE SEQUENCE OF OPERATION AT EACH DOOR AND A DESCRIPTION OF THE INTENDED DOOR CONTROL SECURITY.
7. THE EXACT LOCATION OF ALL READERS, OPERATORS, PUSHBUTTONS, ETC. SHALL BE COORDINATED WITH AND APPROVED BY ARCHITECTURAL TRADES AND DISTRICT STAFF PRIOR TO ROUGH-IN.
8. ALL READERS, OPERATORS, PUSHBUTTONS, ETC. SHALL BE LOCATED AT 48" AFF UNLESS OTHERWISE NOTED OR INDICATED.
9. WIRING, CONNECTIONS AND REVISIONS FOR ALL DOOR HARDWARE COMPONENTS AND DEVICES SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS, WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS AND THE EQUIPMENT SHOP DRAWINGS. INSTALLER SHALL OBTAIN SAME PRIOR TO INSTALLATION.
10. ALL CARD ACCESS AND/OR VNS SYSTEM REVISIONS SHALL BE TESTED FOR PROPER OPERATION.
11. EXISTING DOOR POWER SUPPLIES MAY BE USED TO SERVE NEW LOAD PROVIDED THE POWER SUPPLY IS NOT LOADED MORE THAN 75% OF IT NAMEPLATE RATING.
12. LABEL ALL DOOR POWER SUPPLIES WITH THE PANEL AND CIRCUIT FROM WHICH THEY ARE SERVED. USE AN INDELIBLE MARKER, NEATLY LABEL BY HAND ON THE INSIDE OF THE POWER SUPPLY ENCLOSURE.
13. SUBMIT SHOP DRAWINGS ON ALL CARD ACCESS SYSTEM EQUIPMENT AND COMPONENTS. INCLUDE WITH SHOP DRAWINGS THE RATING AND LOADING OF ALL NEW POWER SUPPLIES.
14. ALL POWER SUPPLY LOADING SHALL BE BASED ON DOOR HARDWARE SHOP DRAWINGS.
15. ALL POWER SUPPLIES SHALL BE LABELED WITH THE PANEL AND CIRCUIT FROM WHICH IT IS SERVED.
16. PROVIDE NEW 120 VOLT BRANCH CIRCUIT WIRING TO SERVE ALL NEW DOOR POWER SUPPLIES. EXISTING 120 VOLT CIRCUITS SERVING EXISTING POWER SUPPLIES MAY BE USED TO SERVE NEW POWER SUPPLIES PROVIDED THE EXISTING 120 VOLT CIRCUIT IS NOT LOADED GREATER THAN 14 AMPS.
17. ALL NEW 120 VOLT CIRCUITS SERVING DOOR POWER SUPPLIES SHALL ORIGINATE FROM THE CIRCUIT BREAKER PANEL CURRENTLY SERVING POWER SUPPLIES IN THE AREA. TYPICALLY THIS WILL BE A PANELBOARD PROVIDED WITH TRANSIENT VOLTAGE SURGE SUPPRESSION AND SERVED FROM THE GENERATOR. ALL CARD ACCESS SYSTEM POWER MUST BE SERVED FROM A GENERATOR POWERED PANEL.
18. CARD ACCESS SYSTEM DETAILS AND DIAGRAMS ARE PROVIDED TO CONVEY THE SYSTEM OPERATION AND DESIGN INTENT. DETAILS AND DIAGRAMS ARE NOT GUARANTEED TO BE COMPLETE OR ACCURATE OR TO REFLECT THE FINAL INSTALLATION REQUIREMENTS OR COMPLETE EXISTING CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING CEILING CONSTRUCTION, WALL CONSTRUCTION, ARCHITECTURAL CONDITIONS, ETC. AND ADJUST DETAILS AND DIAGRAMS ACCORDINGLY. PROVIDE ALL ADDITIONAL OR MODIFY EXISTING AS REQUIRED, RACEWAYS, WIRING, DEVICES, BOXES, CONNECTIONS, ETC. AND INCLUDE ALL COSTS FOR SAME. INCLUDE ALL PROGRAMMING, DIP SWITCH SETTINGS, ETC. AS REQUIRED FOR THE INTENDED SECURITY OPERATION AND INCLUDE ALL COSTS FOR SAME. BIDDER SHALL BE RESPONSIBLE FOR ANY ADDITIONAL ENGINEERING OR DESIGN REQUIRED, AND SHALL INCLUDE ALL COSTS FOR SAME AS REQUIRED FOR COMPLETE AND OPERATING SYSTEMS IN ACCORDANCE WITH THE DESIGN INTENT. IN BIDDING THIS PROJECT, BIDDER ACKNOWLEDGES THAT NO ADDITIONAL COSTS WILL BE APPROVED DURING CONSTRUCTION UNLESS A CHANGE IN SCOPE IS REQUESTED BY THE DISTRICT.
19. PROVIDE COMPLETE SYSTEM AS BUILT DRAWINGS REFLECTING THE SYSTEM INSTALLATION.

CARD ACCESS/VNS SYSTEM RACEWAYS AND WIRING NOTES:

1. REFER TO POWER AND SYSTEM GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
3. CONDUITS, BOXES, RACEWAYS, ETC. SHALL BE SUBJECT TO THE REQUIREMENTS OF THE SPECIFICATIONS.
4. WIRING, CONNECTIONS AND REVISIONS FOR ALL DOOR HARDWARE COMPONENTS AND DEVICES SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS, WIRING DIAGRAMS AND INSTALLATION INSTRUCTIONS AND THE EQUIPMENT SHOP DRAWINGS.
5. ONE VRINX DOOR MODULE ONBOARD RELAY SHALL SERVE A MAXIMUM OF 0.7 AMPS. RELAYS ARE RATED 1 AMP AT 30 VDC. PROVIDE ADDITIONAL RELAY WHERE REQUIRED TO SERVE MORE THAN 0.7 AMPS.
6. ALL CARD ACCESS AND/OR VNS SYSTEM REVISIONS SHALL BE TESTED FOR PROPER OPERATION.
7. ALL WIRING SERVING THE CARD ACCESS SYSTEM SHALL BE PLENUM RATED.
8. THE COLOR CODING OF ALL WIRING SERVING THE CARD ACCESS SYSTEM SHALL BE THE SAME THROUGHOUT AND SHALL MATCH EXISTING.
9. ALL CONDUIT SERVING THE CARD ACCESS SYSTEM SHALL BE CONCEALED WITHIN BUILDING CONSTRUCTION. UTILIZE A FINISHED SURFACE RACEWAY SUCH AS WIREMOLD WHERE CONCEALING CONDUIT IS NOT FEASIBLE AS A RESULT OF EXISTING MASONRY CONSTRUCTION. IN EXISTING DRYWALL CONSTRUCTION, CONCEAL THE CONDUIT.
10. ALL CARD ACCESS SYSTEM LOW VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT OR A FINISHED SURFACE RACEWAY EXCEPT AS FOLLOWS:
    WHERE INSTALLED ABOVE AN ACCESSIBLE LAY-IN CEILING.
    WHERE INSTALLED IN A DOOR OR WINDOW FRAME MULLION
11. LOW VOLTAGE WIRING INSTALLED ABOVE A LAY-IN ACCESSIBLE CEILING AND NOT IN CONDUIT, SHALL BE SUPPORTED ON J-HOOKS INSTALLED AT MAXIMUM 4 FOOT ON CENTERS. EXISTING J-HOOKS MAYBE USED FOR NEW WIRING.
12. WHEN TRANSITIONING FROM CONDUIT TO NO CONDUIT, UTILIZE A BUSHING ON THE END OF THE CONDUIT.
13. ALL JUNCTION BOXES PROVIDED TO SERVE A READER, DOOR OPERATOR PUSHBUTTON, ETC., SHALL BE APPROVED BY THE MANUFACTURER TO SERVE THAT DEVICE AND FOR THE INTENDED PURPOSE. SURFACE BOXES SHALL BE FINISHED, SMOOTH EDGED AND WITHOUT SHARP EDGES. BOX FINISH SHALL MATCH THE CONNECTED RACEWAY.
14. INCLUDE ALL CONDUIT SLEEVES THROUGH WALLS AS REQUIRED FOR THE ROUTING OF LOW VOLTAGE CABLING. SLEEVES INSTALLED IN EXISTING WALLS SHALL UTILIZE A NEAT HOLE MADE WITH A CORING MACHINE OR HOLE SAW. CORING IN MASONRY SURFACES SHALL BE CONTINUOUS FROM ONE WALL SURFACE TO THE APPOSING WALL SURFACE WITHOUT SPALLING. NO CONDUIT LESS THAN 1" SHALL BE USED FOR SLEEVES.
15. FIRE PROOF INSIDE AND OUT ALL CONDUIT SLEEVES.
16. LOW VOLTAGE CABLING SHALL BE INSTALLED AS REQUIRED FOR CONFORMANCE WITH THE CABLING RECOMMENDATIONS OF THE CABLE MANUFACTURER. OBTAIN SAME FROM THE MANUFACTURER.
17. LOW VOLTAGE CABLING SHALL BE INSTALLED AS FOLLOWS:
    A. NOT INSTALLED WITHIN 18 INCHES OF LIGHT FIXTURE BALLASTS OR WITHIN 36 INCHES OF MOTORS OR TRANSFORMERS.
    B. IN ACCORDANCE WITH MAXIMUM BENDING RADIUS AS RECOMMENDED BY THE MANUFACTURER.
    C. INSTALLED PERPENDICULAR TO POWER CONDUIT RUNS UPON THEIR INTERSECTION WHEREVER POSSIBLE.

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BAI No. 15-1606

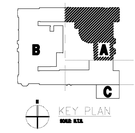
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Miscellaneous Details and Diagrams



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

DRAWN	CC
CHECKED	AZ
APPROVED	JB

PROJECT NO.

15102

DRAWING NO.

E3.1

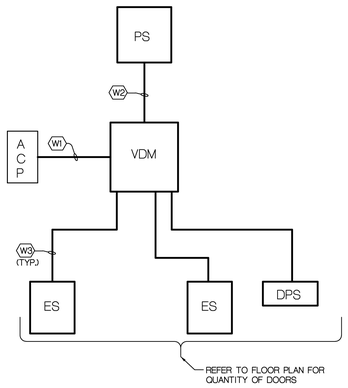
DOOR CONTROL SCHEDULE								
15102 - Pierce								
Door Number (s) (refer to architectural drawings)	A121, A121A, A121B	A121C	A122C	A122, A122A, A122B	A123B	A123B	A123A	A147, A132
Usage	Exterior Entry	Exterior Entry	New Vestibule	New Vestibule	Vestibule to Office	Alternate No.2 Vestibule to Office	Office to School	Alternate No. 3 Office to School
Control/ Sequence of Operation	New Electric Strike on timed locking and opening cycle	Existing Electric Strike, Existing Keypad & Prox Reader and NEW ADA Operator	New Electric Strike on timed locking and unlocking cycle, Keypad & Prox Reader and ADA Operator	New Electric Strike on timed locking and opening cycle	Existing mechanical lock remains. In Case of new door, new classroom lock function	Electric Strike, Prox Reader added	New electronic lock to replace existing mechanical lock and tied into panic button to lock door from both sides	New electronic lock to replace existing mechanical lock and tied into panic button to lock door from both sides
Refer to Wiring Diagram Indicated	1	2	3	5	N/A	7	8	9

CARD ACCESS/VNS LEGEND	
ACP	ACCESS CONTROL PANEL, EXISTING, LOCATED IN TECHNOLOGY HEAD END OR IDF ROOM, VANDERBILT INDUSTRIES VRCNX SERIES
PS	POWER SUPPLY 120-24 VOLT DC (NEW OR EXISTING, REFER TO NOTES SHEET E3.0, VANDERBILT INDUSTRIES SMS SERIES, NEMA ONE ENCLOSURE
VDM	VANDERBILT INDUSTRIES VRINX DOOR MODULE, NEMA ONE ENCLOSURE
ES	ELECTRIC STRIKE, REFER TO DOOR HARDWARE SPECIFICATIONS/SHOP DRAWINGS
MOL	MORTISE LOCK, REFER TO DOOR HARDWARE SPECIFICATIONS/SHOP DRAWINGS
DO	DOOR OPERATOR
R	READER
R/K	COMBINATION READER KEY PAD
DOCP	MOTORIZED DOOR OPERATOR CONTROL PANEL
ELOC	OFFICE PANIC ELECTRIC DOOR LOCK DOWN PUSHBUTTON

NOTE: REFER TO CARD ACCESS/VNS GENERAL AND WIRING NOTES SHEET E3.1

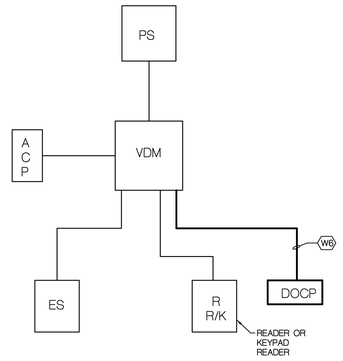
WIRING LEGEND	
W1	4/C, 18 AWG, TWISTED, SHIELDED, STRANDED
W2	2/C, 18 AWG, TWISTED, SHIELDED, STRANDED
W3	2/C, 18 AWG, TWISTED, SHIELDED, STRANDED, ONE VRINX DOOR MODULE ONBOARD RELAY SHALL SERVE A MAXIMUM OF 0.7 AMPS, RELAYS ARE RATED 1 AMP AT 30 VDC, PROVIDE ADDITIONAL RELAY WHERE REQUIRED TO SERVE MORE THAN 0.7 AMPS.
W4	NOT USED
W5	6/C, 18 AWG, TWISTED, SHIELDED, STRANDED
W6	2/C, 18 AWG, TWISTED, SHIELDED, STRANDED
W7	2/C, 18 AWG, TWISTED, SHIELDED, STRANDED

NOTE: REFER TO CARD ACCESS/VNS GENERAL AND WIRING NOTES SHEET E3.1



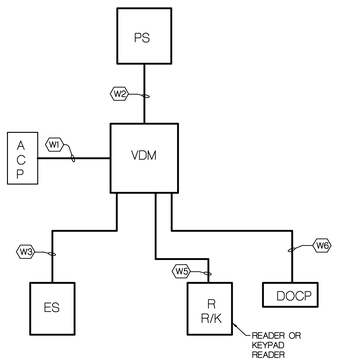
1/E3.2 5/E3.2 NEW ACCESS CONTROLLED ELECTRIC STRIKE DOOR ON TIMED LOCKING AND OPENING CYCLE WIRING DIAGRAM

NO SCALE



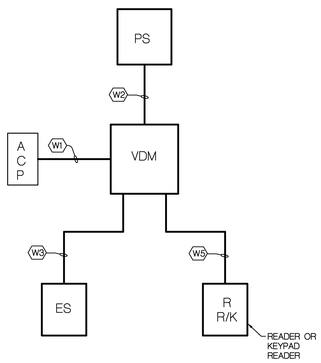
2/E3.2 EXISTING ACCESS CONTROLLED DOOR WITH NEW MOTORIZED DOOR OPERATOR WIRING DIAGRAM

NO SCALE



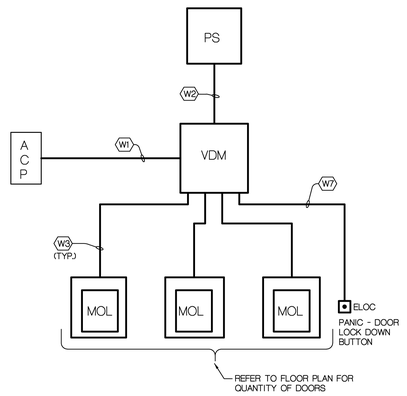
3/E3.2 NEW ACCESS CONTROLLED ELECTRIC STRIKE DOOR WITH MOTORIZED DOOR OPERATOR WIRING DIAGRAM

NO SCALE



7/E3.2 NEW ACCESS CONTROLLED ELECTRIC STRIKE DOOR WIRING DIAGRAM

NO SCALE



8/E3.2 9/E3.2 OFFICE DOOR LOCK DOWN WIRING DIAGRAM

NO SCALE

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PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Miscellaneous Details and Diagrams

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DRAWING NO.

E3.2

GENERAL NOTES:

1. ALL DISTRIBUTION EQUIPMENT THIS DIAGRAM IS EXISTING UNLESS OTHERWISE NOTED.
2. THIS DIAGRAM INCLUDED FOR REFERENCE ONLY, TAKEN FROM OWNERS RECORD DOCUMENTS. FIELD VERIFY EXISTING CONDITIONS.

INCOMING DTE PRIMARY SERVICE CONDUCTORS IN CONCRETE ENCASED PVC CONDUIT
DTE CABLE POLE
EXISTING DTE PAD MOUNTED TRANSFORMER 4.8 / 13.2 KV, 3ø-3W PRIMARY 480/277, 3ø-4W SECONDARY
DTE METER LOCATED ON SIDE OF DTE TRANSFORMER
KIRK KEY INTERLOCK
MAIN SWITCH COMPARTMENT
CUSTOMER METERING COMPARTMENT
EXISTING 100 KW / 125 KVA 277/480V-3ø-4W, NATURAL GAS GENERATOR
225A 3P
NEMA 3R LOCATED ADJACENT TO GENERATOR PP3-EM
400A, 480/277, 3ø, 4W
(50,000 AIC)
150A-3P 100% RATED
60A-3P
GENERATOR START / ATS CONTROL WIRING.
ANNUNCIATOR WIRING, CONDUIT
EXISTING ANNUNCIATOR
PP-3
600A, 480/277, 3ø, 4W
(50,000 AIC)
600A-3P 600AF
MAIN DISTRIBUTION SWITCHBOARD MSB
1200A, 480/277, 3ø, 4W
(50,000 AIC)
400A 3P HACR RATED
30A 3P HACR RACED
30A 3P HACR RATED
20A 3P HACR RATED
20A 3P HACR RATED
200A 3P SPARE
100A 3P SPARE
225A 3P
225A 3P
100A 3P
100A 3P
100A 3P
300A 3P
300A 3P
250A 3P
150A 3P
150A 3P
60A-3P
150A-3P 100% RATED
MTS
150A-3P MANUAL TRANSFER SWITCH
ATS-EL
70A-3P AUTOMATIC TRANSFER SWITCH
LP3-EM1
CHILLER
PIECHL301
30A-3P SIZE 1 20AF
PIEPMP301
15 HP
30A-3P SIZE 1 20AF
PIEPMP302
15 HP (STAND BY)
CHILLER PUMPS
20A 3P HACR RATED
(MUSIC RM) PIEAHU302
20A 3P HACR RATED
(MUSIC RM) PIEAHU302
15 KVA TRANS. 480-208/120V-3ø-4W
RP3-EM
LP-1A
LP-1B
LP-2A
MCC-1
400A, 208 3ø-3W (42,000 AIC)
CH-1 180 FLA
PP-2A
150 KVA TRANS. 480-240/120V 3ø-4W
600A-3P 500AF
30/9A 3P
BOILER #1
30/9A 3P
BOILER #2
30A/6A 3P FVNR SIZE 1
P-1
30A/6A 3P FVNR SIZE 1
P-2
150 KVA TRANS. 480-208/120V-3ø-4W
75 KVA TRANS. 480-208/120V-3ø-4W
30 KVA T-5. 480-208/120V-3ø-4W
LP3-EM2
DP-1T5
600A, 208/120V, 3ø, 4W
(22,000 AIC)
600A 3P
100A 3P
225A 3P
100A 3P
100A 3P
100A 3P
100A 3P
100A 3P
100A 3P
100A 3P
100A 3P
60A 3P
60A-3P SPARE
60A-3P SPARE
RP-1T1
RP-1T2
RP-1T3
RP-1T4
RP-1T5
RP-1T6
RP-1T7
RP-1T8
RP-1T9
RP3-1T10 (COMPUTER LAB)
RP3-1T11 (MUSIC)
UPS
12 KVA - 208/120-3ø-4W INPUT 208/120V-3ø-4W OUTPUT
RP-1TEM
RDP-1
400A, 208/120V, 3ø, 4W
(22,000 AIC)
300A 3P
100A 3P
100A 3P
225A 3P
100A 3P
100A 3P
100A 3P
100A 3P
60A 3P
60A-3P SPARE
60A-3P SPARE
RP-1A
RP-1B
RP-1C
RP-2A
RP-2B
DP-1
800A, 240/120V, 3ø, 4W
200A 3P
200A 3P
200A 3P
400A 3P
200A 3P
30A 2P
ELEV CONTROL PNL
PDP-1
LP-AA
LP-F
LP-X
LDP-1
200A, 240/120V, 3ø, 4W
(22,000 AIC)
60A 3P
70A 3P
70A 3P
70A 3P
100A 3P
30A 2P SPARE
30A 2P SPARE
30A 2P SPARE
30A 2P SPARE
20A 1P SPARE
20A 1P SPARE
20A 1P SPARE
20A 1P
20A 2P SPARE
20A 2P SPARE
20A 1P
AIR COMP.
BOILER FEED
LP-BB
LP-K
LP-D
LP-E
LP-J
LP-A
LP-B
PDP-2
400A, 240/120V, 3ø, 4W
(22,000 AIC)
100A 3P
100A 3P
100A 3P
200A 3P
200A 3P
200A 3P
SPARE
SPARE
LP-C
LP-H
LP-N
LP-G
LP-M
PP-FL
LOAD CENTER JAN CLOSET (STORAGE B205)

POWER ONE-LINE DIAGRAM - NEW WORK

NOT TO SCALE

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BAI No. 15-1606

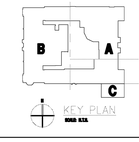
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Power One-Line Diagram - New Work



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PROJECT NO.

15102

DRAWING NO.

E4.1

LIGHTING FIXTURE SCHEDULE

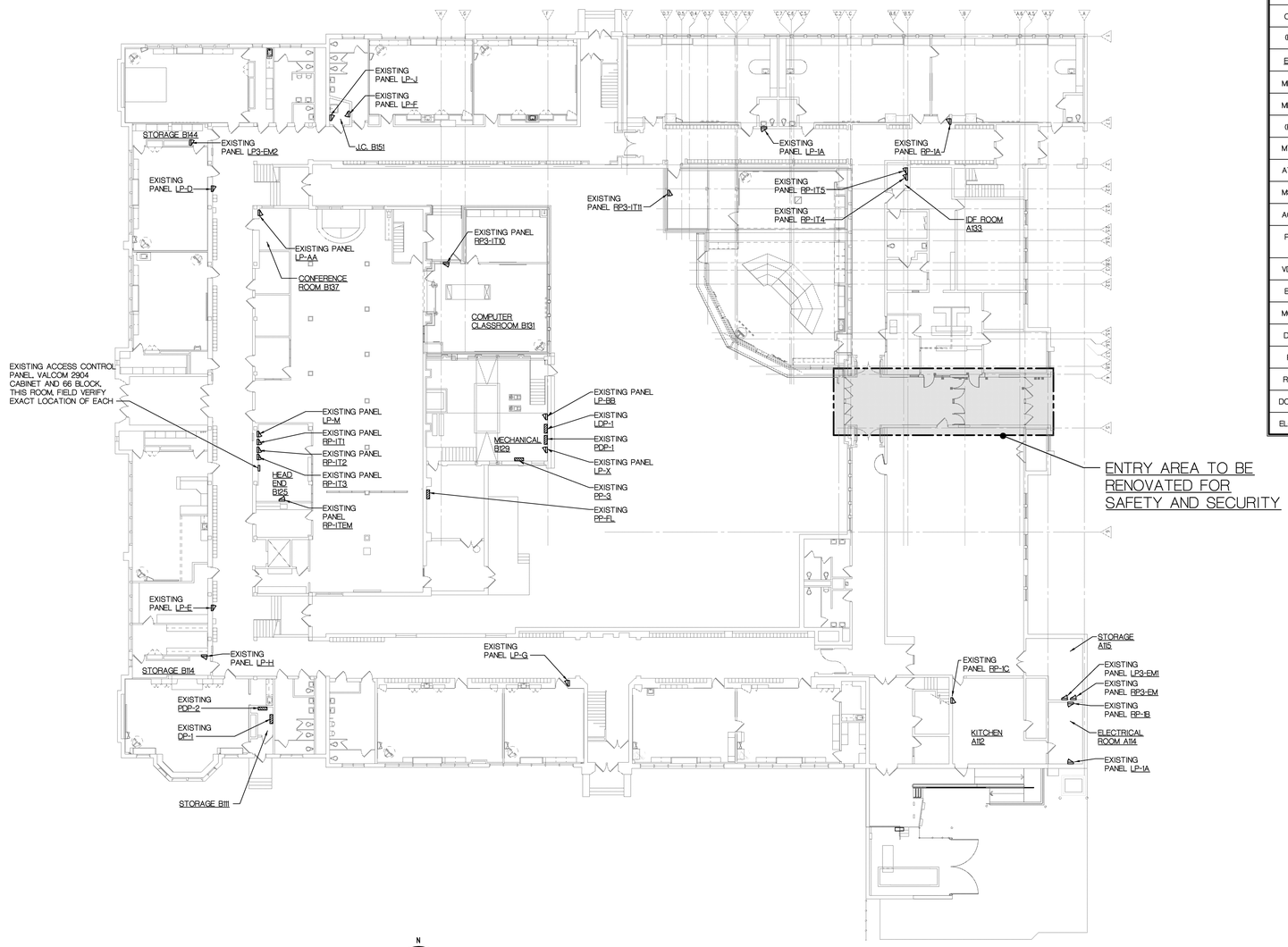
TYPE	LAMP/ SOURCE/ WATTAGE	DESCRIPTION	VOLTAGE	MANUFACTURER(S)
XA	LED	LED EXIT SIGN, SINGLE FACE THERMOPLASTIC ALL WHITE HOUSING AND FACE, UV-STABLE, UNIVERSAL DIRECTIONAL CHEVRON INSERTS, LETTERS 6" HIGH RED LETTERS WITH 3/4" STROKE, UNIVERSAL (TOP-, END-, OR BACK-) MOUNTING.	120/277V DUAL INPUT READY	LITHONIA LQM SERIES DUAL-LITE, SURE-LITES LIGHTALARMS, EMERGI-LITE

ELECTRICAL SHEET INDEX

SHEET	DESCRIPTION
EC1.1	FIRST LEVEL ELECTRICAL COMPOSITE PLAN, SHEET INDEX, SYMBOL LIST AND LIGHTING FIXTURE SCHEDULE
EC1.2	SECOND LEVEL ELECTRICAL COMPOSITE PLAN
E0.1C	FIRST LEVEL ELECTRICAL DEMOLITION PLAN - ZONE 'C'
E1.1C	FIRST LEVEL LIGHTING PLAN - ZONE 'C'
E2.1A	FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'A'
E2.1B	FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'B'
E2.1C	FIRST LEVEL POWER AND SYSTEMS PLAN - ZONE 'C'
E2.2A	SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'A'
E2.2B	SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'B'
E2.2C	SECOND LEVEL POWER AND SYSTEMS PLAN - ZONE 'C'
E3.1	MISCELLANEOUS DETAILS AND DIAGRAMS
E3.2	MISCELLANEOUS DETAILS AND DIAGRAMS
E4.1	POWER ONE LINE DIAGRAM - NEW WORK

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH
	FLUORESCENT DOWN LIGHT FIXTURE, TYPE AS INDICATED
	EXIT LIGHT, (SHADED AREA INDICATED FACE OF FIXTURE), TYPE AS INDICATED
	DUPLEX RECEPTACLE
S	CEILING MOUNTED SPEAKER
CVD	CABLE VIDEO DISPLAY
SVD	SECURITY VIDEO DISPLAY
	PUSHBUTTON
	EXISTING PANELBOARD
	DISTRIBUTION PANEL
T	TRANSFORMER
M	UTILITY METER
	JUNCTION BOX
	DISCONNECT SWITCH
K	KEY PAD
CB	CIRCUIT BREAKER
(E)	EXISTING EQUIPMENT OR DEVICES
EM	EMERGENCY
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
(R)	INDICATES RELOCATED
MTS	MANUAL TRANSFER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
MSB	MAIN SWITCHBOARD
ACP	ACCESS CONTROL PANEL, EXISTING, LOCATED IN TECHNOLOGY HEAD END OR IDF ROOM, VANDERBILT INDUSTRIES VRCNX SERIES
PS	POWER SUPPLY 120-24 VOLT DC (NEW OR EXISTING, REFER TO NOTES SHEET E3.1), VANDERBILT INDUSTRIES SMS SERIES, NEMA ONE ENCLOSURE
VDM	VANDERBILT INDUSTRIES VRINX DOOR MODULE, NEMA ONE ENCLOSURE
ES	ELECTRIC STRIKE, REFER TO DOOR HARDWARE SPECIFICATIONS/SHOP DRAWINGS
MOL	MORTISE LOCK, REFER TO DOOR HARDWARE SPECIFICATIONS/SHOP DRAWINGS
DO	DOOR OPERATOR
R	READER
R/K	COMBINATION READER KEY PAD
DOCP	MOTORIZED DOOR OPERATOR CONTROL PANEL
ELOC	OFFICE PANIC ELECTRIC DOOR LOCK DOWN PUSHBUTTON



N

FIRST LEVEL ELECTRICAL COMPOSITE PLAN

SCALE: 1/16" = 1'-0"

NOTE:

ELECTRICAL INFORMATION TAKEN FROM OWNERS RECORD DOCUMENTS. FIELD VERIFY EXISTING CONDITIONS.

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

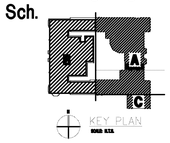
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Elec. Comp. Plan, Sheet Index, Symbol List and Lighting Fixture Sch.



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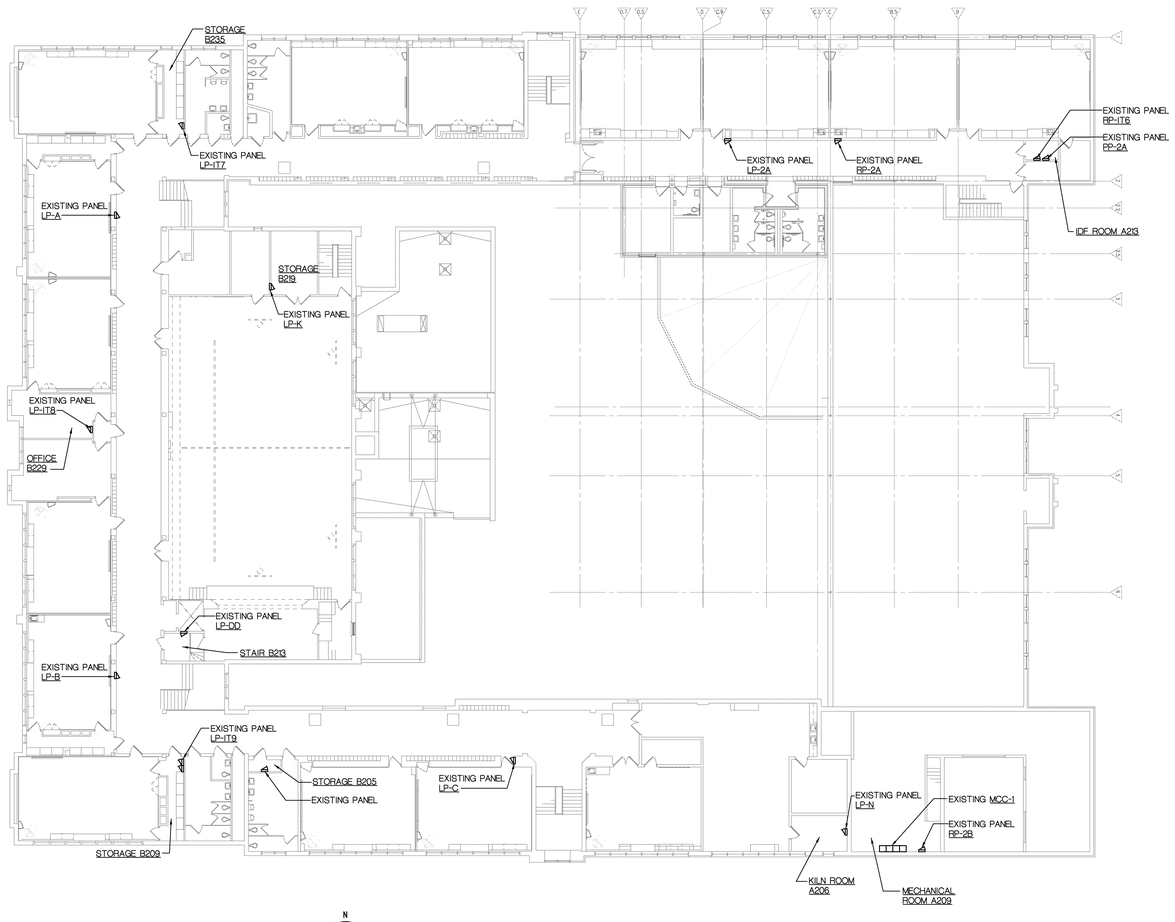
15102

DRAWING NO.

EC1.1



SECOND LEVEL ELECTRICAL COMPOSITE PLAN

SCALE: 1/16" = 1'-0"

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

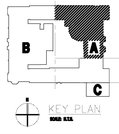
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Electrical Composite Plan



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15102

DRAWING NO.

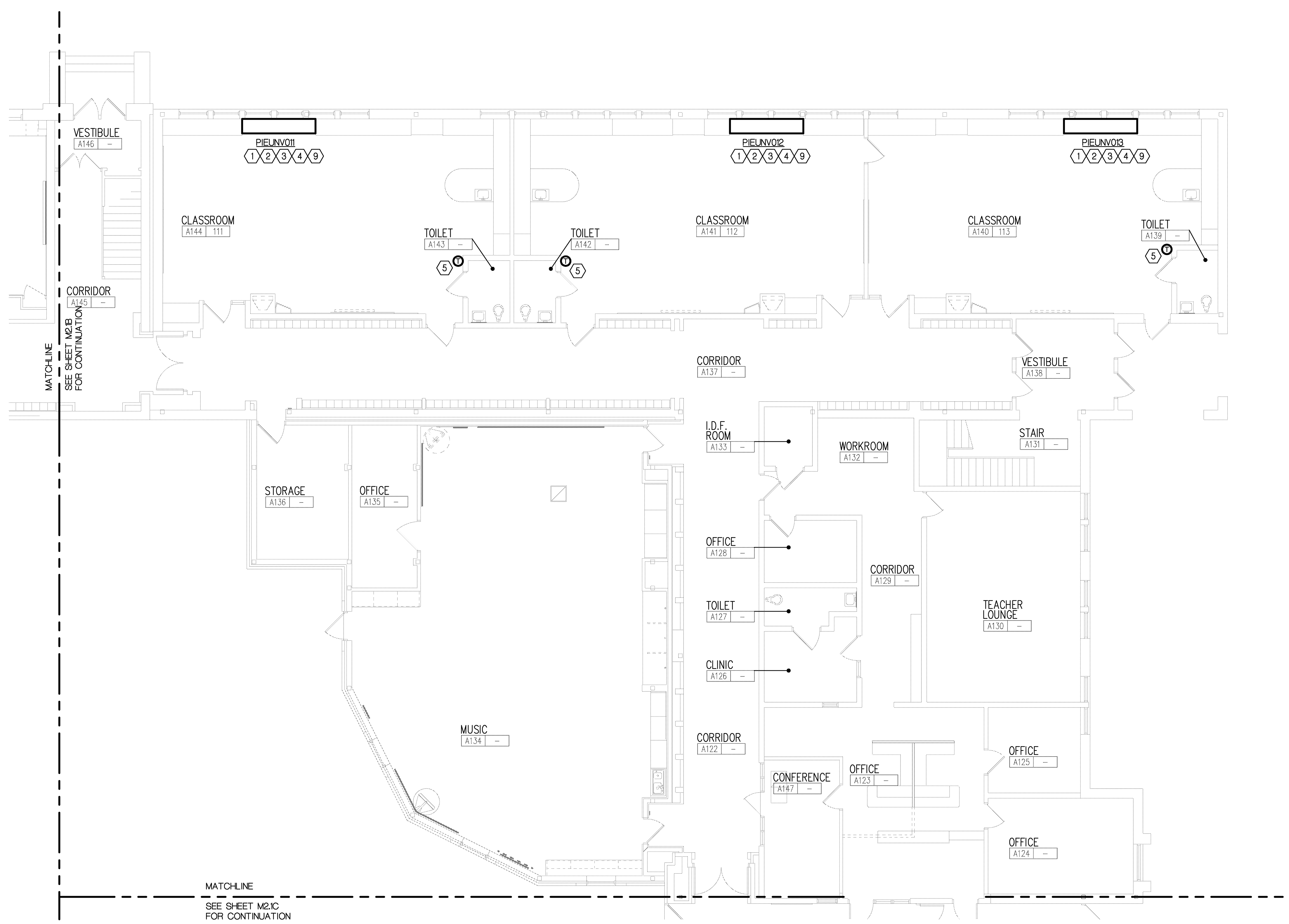
EC1.2

EXISTING CHILLED WATER SYSTEM IS A 35% ETHYLENE GLYCOL/WATER MIXTURE. DRAIN AND SALVAGE EXISTING CHILLED WATER SYSTEM AS REQUIRED TO ACCOMMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. STORE EXISTING GLYCOL FOR REUSE. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH SALVAGED GLYCOL AND ADD AS REQUIRED TO PROVIDE A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

EXISTING HEATING HOT WATER SYSTEM IS 100% WATER. DRAIN EXISTING HEATING HOT WATER SYSTEM AS REQUIRED TO ACCOMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
2. ANY INTERRUPTIONS OF EXISTING SERVICES OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE BUILDING OPERATION.
3. ALL MECHANICAL SYSTEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN PIPES AND DUCTS. PATCH AND SEAL ALL OPENINGS AS A RESULT OF DEMOLITION IN RATED WALLS TO MAINTAIN EXISTING WALL'S FIRE OR SMOKE RATING AND TO MATCH EXISTING ADJACENT SURFACES.
4. ALL ITEMS AND EQUIPMENT REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. CONTRACTOR SHALL MEET WITH THE OWNER PRIOR TO START OF DEMOLITION TO DETERMINE WHICH ITEMS ARE TO BE SALVAGED. CONTRACTOR SHALL REMOVE REMAINING ITEMS FROM SITE.
5. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES PRIOR TO START OF DEMOLITION.
6. PATCH WALL TO MATCH EXISTING WHERE EXISTING CONTROLLERS/TEMPERATURE SENSORS ARE NOT BEING REPLACED WITH NEW.



FIRST LEVEL MECHANICAL PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK BUT ARE NOT FABRICATION DRAWINGS. COORDINATE NEW DUCTWORK AND PIPING SYSTEMS WITH SITE CONDITIONS. EQUIPMENT MANUFACTURER AND ALL OTHER TRADES, PRIOR TO FABRICATION OR INSTALLATION, TO AVOID INTERFERENCES.
2. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S REQUIREMENTS OR CODES REFERENCED BY THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
3. ALL CORING AND CUTTING THROUGH FLOORS, WALLS, AND ROOFS SHALL BE BY MECHANICAL CONTRACTOR.
4. COORDINATE ALL DUCTWORK AND PIPE ROUTING WITH SITE CONDITIONS, EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND ALL OTHER TRADES TO AVOID INTERFERENCES.
5. SEAL ALL PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS AIR AND WATER TIGHT. REFER TO DETAILS AND SPECIFICATIONS.
6. CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCES (PER THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE) ABOVE AND AROUND ANY NEW ELECTRICAL PANELS, EQUIPMENT, AND TRANSFORMERS WHEN ROUTING OVERHEAD PIPING.
7. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH FURNITURE AND ARCHITECT. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHERE INDICATED BY DOOR.
8. ALL HVAC PIPING SHALL BE INSULATED AND LABELED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
9. REFER TO PIPING DIAGRAMS, DETAILS AND SPECIFICATIONS FOR VALVES, FITTINGS AND OTHER ACCESSORIES.
10. MECHANICAL CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING GRID AND CEILING TILES AS REQUIRED FOR DEMOLITION OF EXISTING AND INSTALLATION OF NEW MECHANICAL SYSTEMS. ANY CEILING TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH SAME AT NO ADDITIONAL COST TO OWNER.

(X) **MECHANICAL KEY NOTES:**

1. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING UNIT VENTILATORS. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. CUT AND REMOVE EXISTING HEATING HOT WATER PIPING MAINS BEHIND UNIT VENTILATOR. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. PER EXISTING DRAWINGS HEATING HOT WATER PIPE SIZE BEHIND UNIT VENTILATOR IS 1 1/4" CONTRACTOR SHALL FIELD VERIFY SIZE AND NOTIFY ENGINEER OF ANY DISCREPANCIES. NEW PIPING MAINS BEHIND NEW UNIT VENTILATOR SHALL MATCH EXISTING.
2. REMOVE EXISTING CONDENSATE DRAIN PIPING THROUGH WALL FROM DEMOLISHED UNIT VENTILATOR. PATCH WALL TO MATCH EXISTING.
3. PROVIDE NEW UNIT VENTILATOR COMPLETE. CONNECT EXISTING HEATING HOT WATER AND CHILLED WATER PIPING TO NEW UNIT VENTILATOR. MECHANICAL CONTRACTOR SHALL COORDINATE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS AS RELATED TO LEFT-HAND, RIGHT-HAND CONNECTIONS AT UNIT VENTILATORS PRIOR TO ORDERING. NEW UNIT VENTILATOR CONNECTIONS SHALL BE ON THE SAME SIDE AS EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS. PROVIDE NEW WALL INTAKE LOUVER. COORDINATE EXACT LOCATION AND WALL OPENING REQUIREMENTS WITH ARCHITECTURAL TRADES PRIOR TO INSTALLATION.
4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL. TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE "L".
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
6. REMOVE EXISTING CONDENSATE DRAIN PIPING DOWN THROUGH FLOOR TO CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM. PREPARE EXISTING CONDENSATE DRAIN PIPING FOR NEW CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE DEMOLITION WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
7. ROUTE NEW 1" CONDENSATE DRAIN PIPING FROM CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM TO NEW UNIT VENTILATOR CONDENSATE DRAIN. COORDINATE EXACT LOCATION WITH NEW UNIT VENTILATOR DRAIN CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE NEW WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
8. NEW HEATING HOT WATER GLYCOL SYSTEM. ROUTE 1" GLYCOL FEED AND CONNECT TO EXISTING VENT OFF EXISTING AIR SEPARATOR.
9. PROVIDE AND INSTALL NEW 1 1/4" HEATING HOT WATER SUPPLY AND RETURN PIPING MAINS BEHIND NEW UNIT VENTILATOR. CONNECT NEW CHILLED WATER SUPPLY AND RETURN PIPING TO EXISTING IN CABINETRY. ROUTE NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO ORDERING. NEW PIPE SIZES SHALL MATCH EXISTING.
10. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM UNIT VENTILATOR TO FIRST FLOOR CEILING PLENUM. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. PREPARE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTIONS.
11. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN FIRST FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
12. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING CEILING UNIT VENTILATOR. REMOVE EXISTING UNIT VENTILATOR COMPLETE. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. DISCONNECT EXISTING OUTDOOR AIR DUCT FROM EXISTING UNIT VENTILATOR. DISCONNECT EXISTING CONDENSATE FROM EXISTING UNIT VENTILATOR.
13. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN SECOND FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
14. PROVIDE NEW UNIT VENTILATOR COMPLETE. CONNECT EXISTING HEATING HOT WATER AND CHILLED WATER PIPING TO NEW UNIT VENTILATOR. MECHANICAL CONTRACTOR SHALL COORDINATE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS AS RELATED TO LEFT-HAND, RIGHT-HAND CONNECTION AT UNIT VENTILATORS PRIOR TO ORDERING. NEW UNIT VENTILATOR CONNECTIONS SHALL BE ON THE SAME SIDE AS EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS. PROVIDE NEW OUTDOOR AIR DUCT AND CONNECT TO NEW UNIT VENTILATOR AND EXISTING OUTDOOR AIR DUCT IN CEILING. PROVIDE TRANSITIONS AS REQUIRED TO CONNECT TO NEW UNIT VENTILATOR AND EXISTING 12"x14" ABOVE CEILING. ROUTE NEW CONDENSATE AND CONNECT TO EXISTING CONDENSATE DRAIN LINE.

1/16" 0 2 4 6 8 10 20 40 80 1/8" 0 1 2 3 4 5 10 20 40 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

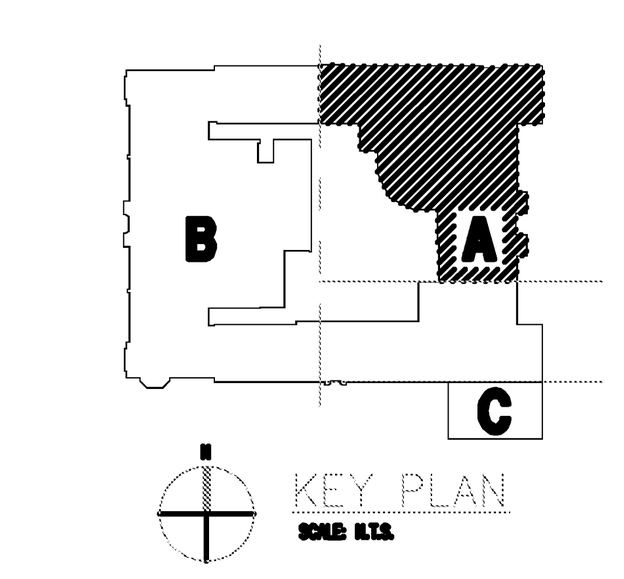
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Mechanical Plan - Zone 'A'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

DRAWN	CC
CHECKED	DB
APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

M2.1A

Drawing File: M:\TMP\15-1606 BPS 2015 Bond Program\Mech\Pierce\15-1606_M2-1A.dwg
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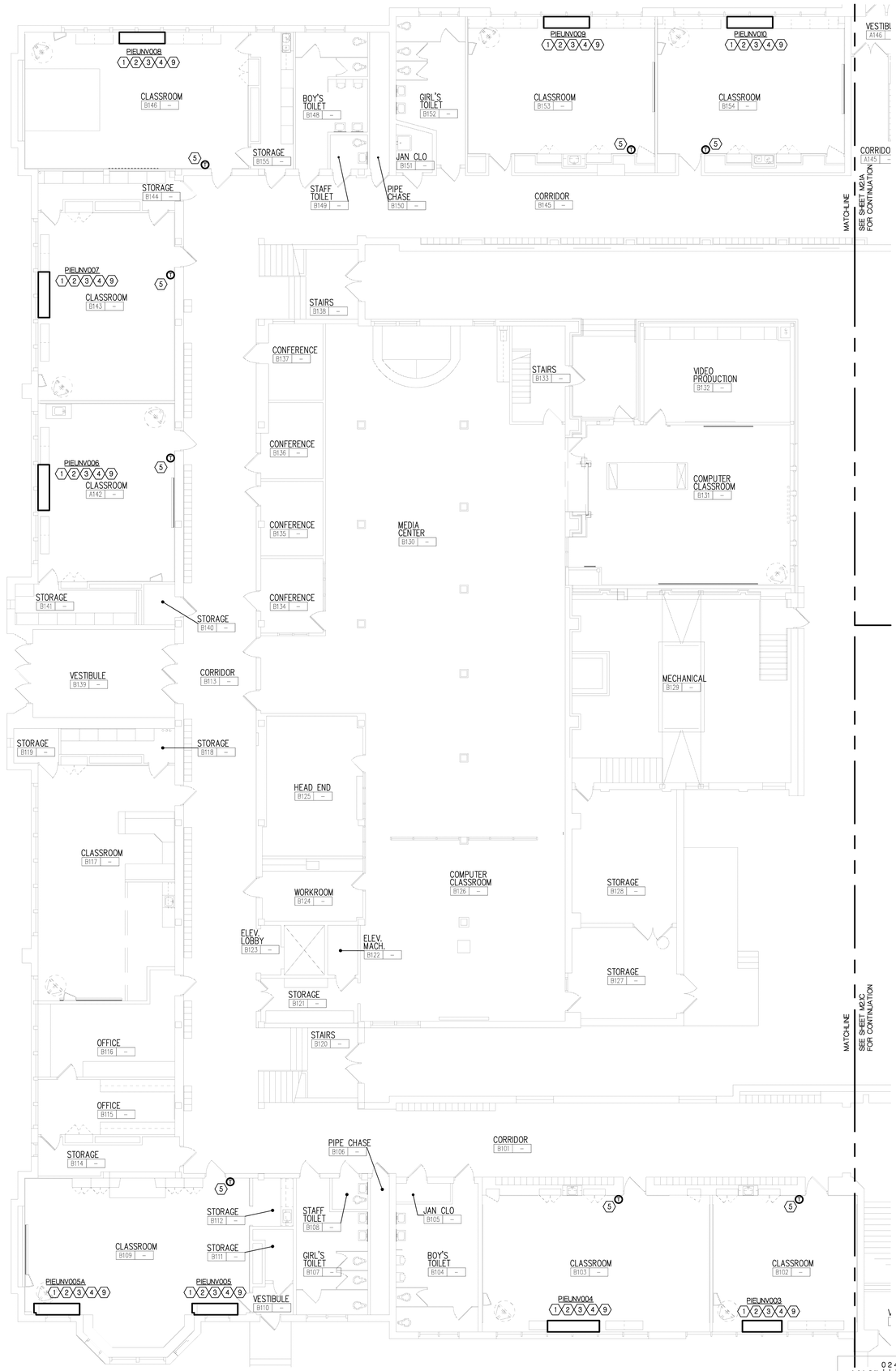

FIRST LEVEL MECHANICAL PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

1/16" 1/8" 1/4"

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
2. ANY INTERRUPTIONS OF EXISTING SERVICES OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE BUILDING OPERATION.
3. ALL MECHANICAL SYSTEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN PIPES AND DUCTS, PATCH AND SEAL ALL OPENINGS AS A RESULT OF DEMOLITION IN RATED WALLS TO MAINTAIN EXISTING WALL'S FIRE OR SMOKE RATING AND TO MATCH EXISTING ADJACENT SURFACES.
4. ALL ITEMS AND EQUIPMENT REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. CONTRACTOR SHALL MEET WITH THE OWNER PRIOR TO START OF DEMOLITION TO DETERMINE WHICH ITEMS ARE TO BE SALVAGED. CONTRACTOR SHALL REMOVE REMAINING ITEMS FROM SITE.
5. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES PRIOR TO START OF DEMOLITION.
6. PATCH WALL TO MATCH EXISTING WHERE EXISTING CONTROLLERS/TEMPERATURE SENSORS ARE NOT BEING REPLACED WITH NEW.

EXISTING HEATING HOT WATER SYSTEM IS 100% WATER. DRAIN EXISTING HEATING HOT WATER SYSTEM AS REQUIRED TO ACCOMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

EXISTING CHILLED WATER SYSTEM IS A 35% ETHYLENE GLYCOL/WATER MIXTURE. DRAIN AND SALVAGE EXISTING CHILLED WATER SYSTEM AS REQUIRED TO ACCOMMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. STORE EXISTING GLYCOL FOR REUSE. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH SALVAGED GLYCOL AND ADD AS REQUIRED TO PROVIDE A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK BUT ARE NOT FABRICATION DRAWINGS. COORDINATE NEW DUCTWORK AND PIPING SYSTEMS WITH SITE CONDITIONS. EQUIPMENT MANUFACTURER AND ALL OTHER TRADES, PRIOR TO FABRICATION OR INSTALLATION, TO AVOID INTERFERENCES.
2. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S REQUIREMENTS OR CODES REFERENCED BY THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
3. ALL CORING AND CUTTING THROUGH FLOORS, WALLS, AND ROOFS SHALL BE BY MECHANICAL CONTRACTOR.
4. COORDINATE ALL DUCTWORK AND PIPE ROUTING WITH SITE CONDITIONS, EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND ALL OTHER TRADES TO AVOID INTERFERENCES.
5. SEAL ALL PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS AIR AND WATER TIGHT. REFER TO DETAILS AND SPECIFICATIONS.
6. CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCES (PER THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE) ABOVE AND AROUND ANY NEW ELECTRICAL PANELS, EQUIPMENT, AND TRANSFORMERS WHEN ROUTING OVERHEAD PIPING.
7. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH FURNITURE AND ARCHITECT. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHERE INDICATED BY DOOR.
8. ALL HVAC PIPING SHALL BE INSULATED AND LABELED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
9. REFER TO PIPING DIAGRAMS, DETAILS AND SPECIFICATIONS FOR VALVES, FITTINGS AND OTHER ACCESSORIES.
10. MECHANICAL CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING GRID AND CEILING TILES AS REQUIRED FOR DEMOLITION OF EXISTING AND INSTALLATION OF NEW MECHANICAL SYSTEMS. ANY CEILING TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH SAME AT NO ADDITIONAL COST TO OWNER.

(X) MECHANICAL KEY NOTES:

1. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING UNIT VENTILATORS. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. CUT AND REMOVE EXISTING HEATING HOT WATER PIPING MAINS BEHIND UNIT VENTILATOR. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. PER EXISTING DRAWINGS HEATING HOT WATER PIPE SIZE BEHIND UNIT VENTILATOR IS 1 1/4" CONTRACTOR SHALL FIELD VERIFY SIZE AND NOTIFY ENGINEER OF ANY DISCREPANCIES. NEW PIPING MAINS BEHIND NEW UNIT VENTILATOR SHALL MATCH EXISTING.
2. REMOVE EXISTING CONDENSATE DRAIN PIPING THROUGH WALL FROM DEMOLISHED UNIT VENTILATOR. PATCH WALL TO MATCH EXISTING.
3. PROVIDE NEW UNIT VENTILATOR COMPLETE. CONNECT EXISTING HEATING HOT WATER AND CHILLED WATER PIPING TO NEW UNIT VENTILATOR. MECHANICAL CONTRACTOR SHALL COORDINATE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS AS RELATED TO LEFT-HAND, RIGHT-HAND CONNECTIONS AT UNIT VENTILATORS PRIOR TO ORDERING. NEW UNIT VENTILATOR CONNECTIONS SHALL BE ON THE SAME SIDE AS EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS. PROVIDE NEW WALL INTAKE LOUVER. COORDINATE EXACT LOCATION AND WALL OPENING REQUIREMENTS WITH ARCHITECTURAL TRADES PRIOR TO INSTALLATION.
4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL, TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE 'L'.
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
6. REMOVE EXISTING CONDENSATE DRAIN PIPING DOWN THROUGH FLOOR TO CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM. PREPARE EXISTING CONDENSATE DRAIN PIPING FOR NEW CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE DEMOLITION WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
7. ROUTE NEW 1" CONDENSATE DRAIN PIPING FROM CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM TO NEW UNIT VENTILATOR CONDENSATE DRAIN. COORDINATE EXACT LOCATION WITH NEW UNIT VENTILATOR DRAIN CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE NEW WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
8. NEW HEATING HOT WATER GLYCOL SYSTEM. ROUTE 1" GLYCOL FEED AND CONNECT TO EXISTING VENT OFF EXISTING AIR SEPARATOR.
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BAI No. 15-1606

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Mechanical Plan - Zone 'B'

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

DRAWN	CC
CHECKED	DB
APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

M2.1B

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Apr 13, 2016 - 1:03pm

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
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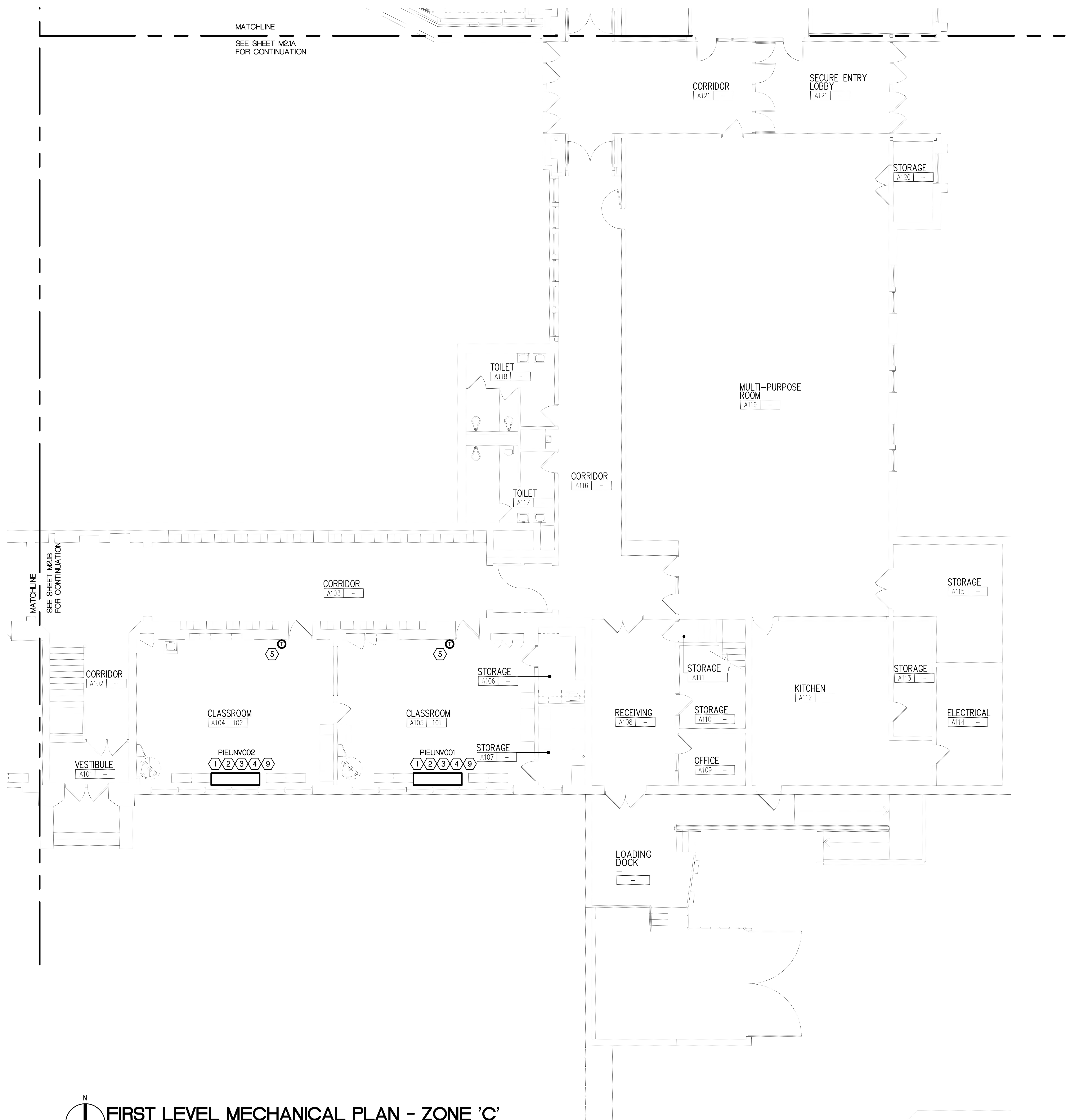

FIRST LEVEL MECHANICAL PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK BUT ARE NOT FABRICATION DRAWINGS. COORDINATE NEW DUCTWORK AND PIPING SYSTEMS WITH SITE CONDITIONS. EQUIPMENT MANUFACTURER AND ALL OTHER TRADES, PRIOR TO FABRICATION OR INSTALLATION, TO AVOID INTERFERENCES.
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7. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH FURNITURE AND ARCHITECT. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHERE INDICATED BY DOOR.
8. ALL HVAC PIPING SHALL BE INSULATED AND LABELED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
9. REFER TO PIPING DIAGRAMS, DETAILS AND SPECIFICATIONS FOR VALVES, FITTINGS AND OTHER ACCESSORIES.
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4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL. TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE "L".
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
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1/16" 0 2 4 6 8 10 20 40 80 — 1/8" 0 1 2 3 4 5 10 20 40 — 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

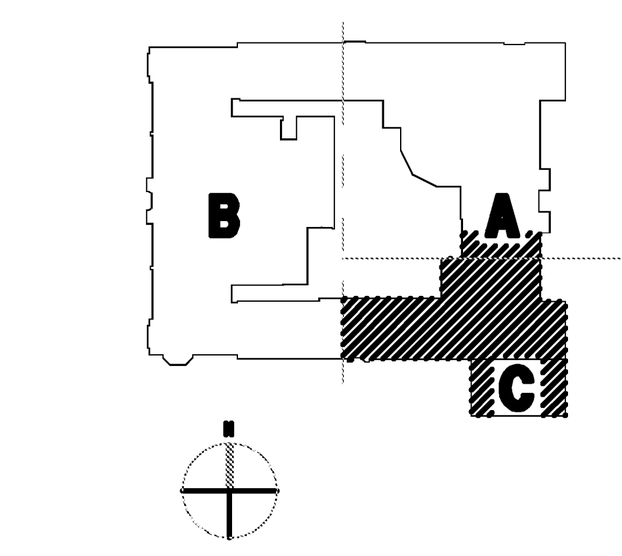
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Mechanical Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

DRAWN	CC
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APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

M2.1C

Drawing File: M:\TMP\15-1606 BPS 2015 Bond Program\Mech\Pierce\15-1606_M2-1C.dwg
Feb 13, 2016 - 1:34pm

EXISTING CHILLED WATER SYSTEM IS A 35% ETHYLENE GLYCOL/WATER MIXTURE. DRAIN AND SALVAGE EXISTING CHILLED WATER SYSTEM AS REQUIRED TO ACCOMMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. STORE EXISTING GLYCOL FOR REUSE. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH SALVAGED GLYCOL AND ADD AS REQUIRED TO PROVIDE A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

EXISTING HEATING HOT WATER SYSTEM IS 100% WATER. DRAIN EXISTING HEATING HOT WATER SYSTEM AS REQUIRED TO ACCOMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
2. ANY INTERRUPTIONS OF EXISTING SERVICES OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE BUILDING OPERATION.
3. ALL MECHANICAL SYSTEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN PIPES AND DUCTS. PATCH AND SEAL ALL OPENINGS AS A RESULT OF DEMOLITION IN RATED WALLS TO MAINTAIN EXISTING WALL'S FIRE OR SMOKE RATING AND TO MATCH EXISTING ADJACENT SURFACES.
4. ALL ITEMS AND EQUIPMENT REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. CONTRACTOR SHALL MEET WITH THE OWNER PRIOR TO START OF DEMOLITION TO DETERMINE WHICH ITEMS ARE TO BE SALVAGED. CONTRACTOR SHALL REMOVE REMAINING ITEMS FROM SITE.
5. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES PRIOR TO START OF DEMOLITION.
6. PATCH WALL TO MATCH EXISTING WHERE EXISTING CONTROLLERS/TEMPERATURE SENSORS ARE NOT BEING REPLACED WITH NEW.

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK BUT ARE NOT FABRICATION DRAWINGS. COORDINATE NEW DUCTWORK AND PIPING SYSTEMS WITH SITE CONDITIONS, EQUIPMENT MANUFACTURER AND ALL OTHER TRADES, PRIOR TO FABRICATION OR INSTALLATION, TO AVOID INTERFERENCES.
2. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S REQUIREMENTS OR CODES REFERENCED BY THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
3. ALL CORING AND CUTTING THROUGH FLOORS, WALLS, AND ROOFS SHALL BE BY MECHANICAL CONTRACTOR.
4. COORDINATE ALL DUCTWORK AND PIPE ROUTING WITH SITE CONDITIONS, EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND ALL OTHER TRADES TO AVOID INTERFERENCES.
5. SEAL ALL PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS AIR AND WATER TIGHT. REFER TO DETAILS AND SPECIFICATIONS.
6. CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCES (PER THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE) ABOVE AND AROUND ANY NEW ELECTRICAL PANELS, EQUIPMENT, AND TRANSFORMERS WHEN ROUTING OVERHEAD PIPING.
7. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH FURNITURE AND ARCHITECT. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHERE INDICATED BY DOOR.
8. ALL HVAC PIPING SHALL BE INSULATED AND LABELED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
9. REFER TO PIPING DIAGRAMS, DETAILS AND SPECIFICATIONS FOR VALVES, FITTINGS AND OTHER ACCESSORIES.
10. MECHANICAL CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING GRID AND CEILING TILES AS REQUIRED FOR DEMOLITION OF EXISTING AND INSTALLATION OF NEW MECHANICAL SYSTEMS. ANY CEILING TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH SAME AT NO ADDITIONAL COST TO OWNER.

(X) **MECHANICAL KEY NOTES:**

1. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING UNIT VENTILATORS. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. CUT AND REMOVE EXISTING HEATING HOT WATER PIPING MAINS BEHIND UNIT VENTILATOR. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. PER EXISTING DRAWINGS HEATING HOT WATER PIPE SIZE BEHIND UNIT VENTILATOR IS 1 1/4" CONTRACTOR SHALL FIELD VERIFY SIZE AND NOTIFY ENGINEER OF ANY DISCREPANCIES. NEW PIPING MAINS BEHIND NEW UNIT VENTILATOR SHALL MATCH EXISTING.
2. REMOVE EXISTING CONDENSATE DRAIN PIPING THROUGH WALL FROM DEMOLISHED UNIT VENTILATOR. PATCH WALL TO MATCH EXISTING.
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4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL. TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE "L".
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
6. REMOVE EXISTING CONDENSATE DRAIN PIPING DOWN THROUGH FLOOR TO CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM. PREPARE EXISTING CONDENSATE DRAIN PIPING FOR NEW CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE DEMOLITION WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
7. ROUTE NEW 1" CONDENSATE DRAIN PIPING FROM CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM TO NEW UNIT VENTILATOR CONDENSATE DRAIN. COORDINATE EXACT LOCATION WITH NEW UNIT VENTILATOR DRAIN CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE NEW WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
8. NEW HEATING HOT WATER GLYCOL SYSTEM. ROUTE 1" GLYCOL FEED AND CONNECT TO EXISTING VENT OFF EXISTING AIR SEPARATOR.
9. PROVIDE AND INSTALL NEW 1 1/4" HEATING HOT WATER SUPPLY AND RETURN PIPING MAINS BEHIND NEW UNIT VENTILATOR. CONNECT NEW CHILLED WATER SUPPLY AND RETURN PIPING TO EXISTING IN CABINETRY. ROUTE NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO ORDERING. NEW PIPE SIZES SHALL MATCH EXISTING.
10. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM UNIT VENTILATOR TO FIRST FLOOR CEILING PLENUM. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. PREPARE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTIONS.
11. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN FIRST FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
12. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING CEILING UNIT VENTILATOR. REMOVE EXISTING UNIT VENTILATOR COMPLETE. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. DISCONNECT EXISTING OUTDOOR AIR DUCT FROM EXISTING UNIT VENTILATOR. DISCONNECT EXISTING CONDENSATE FROM EXISTING UNIT VENTILATOR.
13. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN SECOND FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
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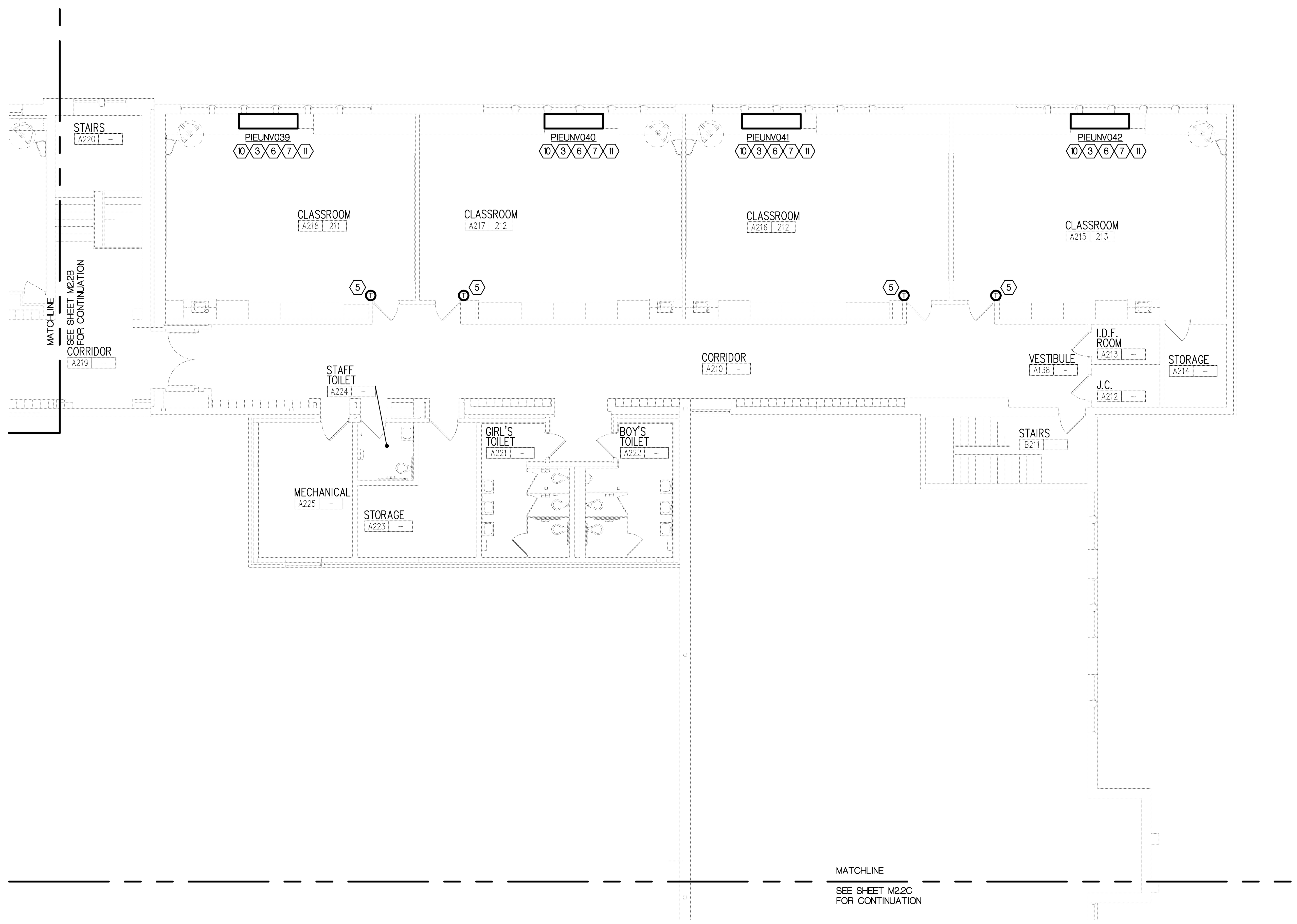

SECOND LEVEL MECHANICAL PLAN - ZONE 'A'

SCALE: 1/8" = 1'-0"

1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

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BAI No. 15-1606

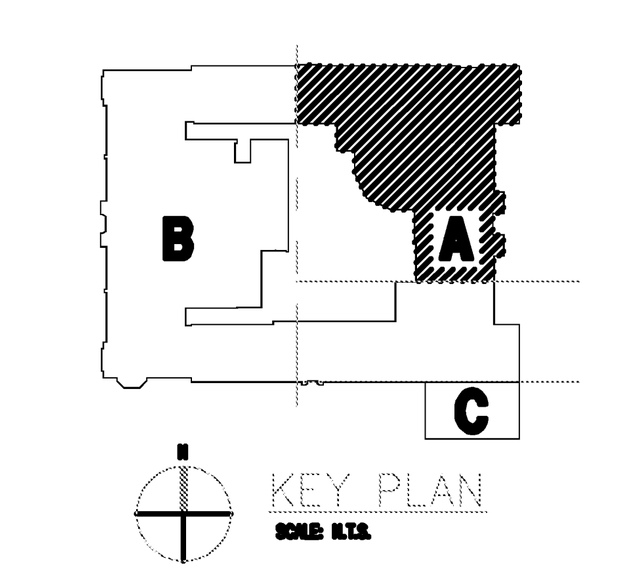
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Mechanical Plan - Zone 'A'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

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APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

M2.2A

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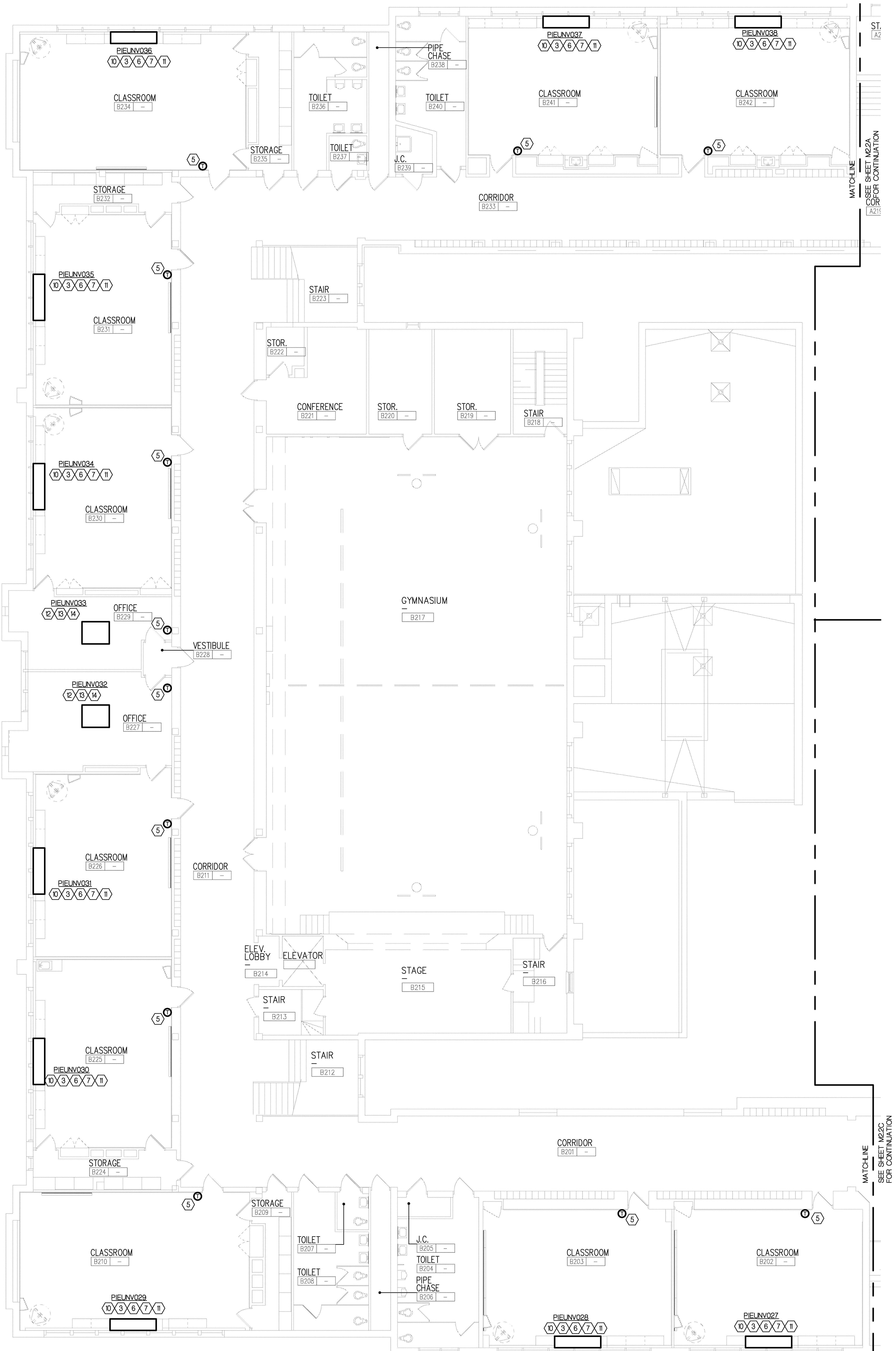
Feb 15, 2016 - 1:33pm



SECOND LEVEL MECHANICAL PLAN - ZONE 'B'

SCALE: 1/8" - 1'-0"

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
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5. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES PRIOR TO START OF DEMOLITION.
6. PATCH WALL TO MATCH EXISTING WHERE EXISTING CONTROLLERS/TEMPERATURE SENSORS ARE NOT BEING REPLACED WITH NEW.

EXISTING HEATING HOT WATER SYSTEM IS 100% WATER. DRAIN EXISTING HEATING HOT WATER SYSTEM AS REQUIRED TO ACCOMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

EXISTING CHILLED WATER SYSTEM IS A 35% ETHYLENE GLYCOL/WATER MIXTURE. DRAIN AND SALVAGE EXISTING CHILLED WATER SYSTEM AS REQUIRED TO ACCOMMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. STORE EXISTING GLYCOL FOR REUSE. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH SALVAGED GLYCOL AND ADD AS REQUIRED TO PROVIDE A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

MECHANICAL GENERAL NOTES:

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(X) **MECHANICAL KEY NOTES:**

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4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL. TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE "L".
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
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1/16" 0 2 4 6 8 10 20 40 80 | 1/8" 0 1 2 3 4 5 10 20 40 | 1/4" 0 1 2 3 4 5 10 20

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BAI No. 15-1606

PROJECT TITLE

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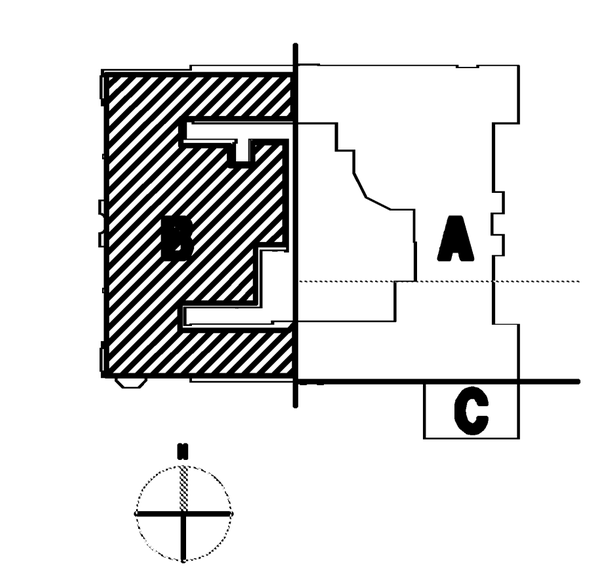
Birmingham Public Schools Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Mechanical Plan - Zone 'B'



ISSUE DATES

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02-15-2016	B.P.No. 1 - BIDS

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APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

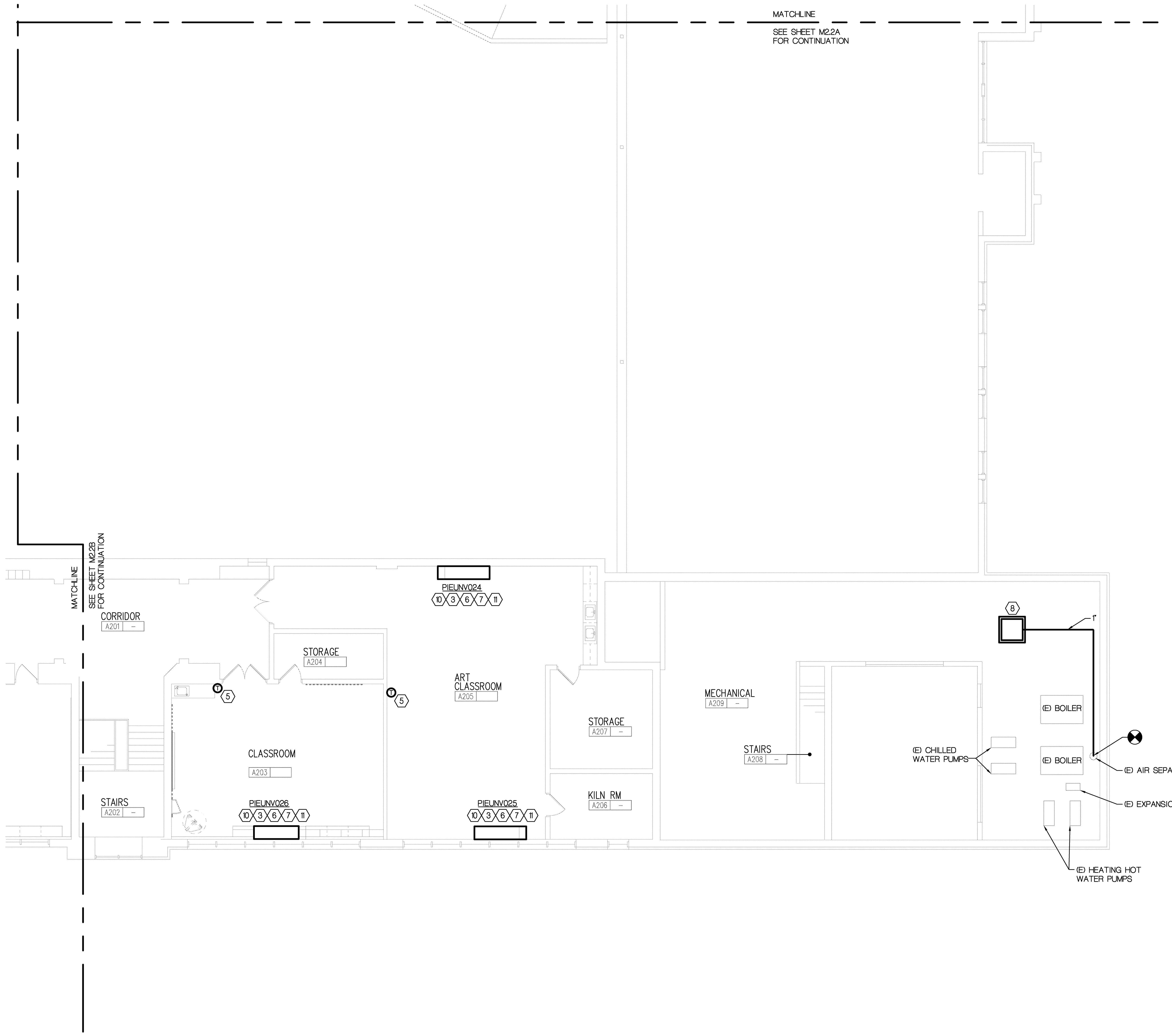
M2.2B

MECHANICAL GENERAL DEMOLITION NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK. THE EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK AND REMOVAL OF MATERIALS/COMPONENTS NOT REQUIRED FOR THE NEW AND RENOVATED SYSTEMS.
2. ANY INTERRUPTIONS OF EXISTING SERVICES OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE BUILDING OPERATION.
3. ALL MECHANICAL SYSTEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN PIPES AND DUCTS. PATCH AND SEAL ALL OPENINGS AS A RESULT OF DEMOLITION IN RATED WALLS TO MAINTAIN EXISTING WALL'S FIRE OR SMOKE RATING AND TO MATCH EXISTING ADJACENT SURFACES.
4. ALL ITEMS AND EQUIPMENT REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. CONTRACTOR SHALL MEET WITH THE OWNER PRIOR TO START OF DEMOLITION TO DETERMINE WHICH ITEMS ARE TO BE SALVAGED. CONTRACTOR SHALL REMOVE REMAINING ITEMS FROM SITE.
5. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES PRIOR TO START OF DEMOLITION.
6. PATCH WALL TO MATCH EXISTING WHERE EXISTING CONTROLLERS/TEMPERATURE SENSORS ARE NOT BEING REPLACED WITH NEW.

EXISTING HEATING HOT WATER SYSTEM IS 100% WATER. DRAIN EXISTING HEATING HOT WATER SYSTEM AS REQUIRED TO ACCOMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

EXISTING CHILLED WATER SYSTEM IS A 35% ETHYLENE GLYCOL/WATER MIXTURE. DRAIN AND SALVAGE EXISTING CHILLED WATER SYSTEM AS REQUIRED TO ACCOMMODATE REMOVAL AND INSTALLATION OF ALL MECHANICAL SYSTEMS AS PART OF RENOVATION PROJECT. STORE EXISTING GLYCOL FOR REUSE. FLUSH ENTIRE SYSTEM UPON COMPLETION OF CONSTRUCTION. FILL SYSTEM WITH SALVAGED GLYCOL AND ADD AS REQUIRED TO PROVIDE A 35% PROPYLENE GLYCOL/WATER MIXTURE. PRESSURE TEST SYSTEM TO ENSURE NO LEAKS EXIST TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.



SECOND LEVEL MECHANICAL PLAN - ZONE 'C'

SCALE: 1/8" = 1'-0"

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS INDICATE THE GENERAL EXTENT OF WORK BUT ARE NOT FABRICATION DRAWINGS. COORDINATE NEW DUCTWORK AND PIPING SYSTEMS WITH SITE CONDITIONS. EQUIPMENT MANUFACTURER AND ALL OTHER TRADES, PRIOR TO FABRICATION OR INSTALLATION, TO AVOID INTERFERENCES.
2. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S REQUIREMENTS OR CODES REFERENCED BY THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT.
3. ALL CORING AND CUTTING THROUGH FLOORS, WALLS, AND ROOFS SHALL BE BY MECHANICAL CONTRACTOR.
4. COORDINATE ALL DUCTWORK AND PIPE ROUTING WITH SITE CONDITIONS, EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND ALL OTHER TRADES TO AVOID INTERFERENCES.
5. SEAL ALL PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS AIR AND WATER TIGHT. REFER TO DETAILS AND SPECIFICATIONS.
6. CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCES (PER THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE) ABOVE AND AROUND ANY NEW ELECTRICAL PANELS, EQUIPMENT, AND TRANSFORMERS WHEN ROUTING OVERHEAD PIPING.
7. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH FURNITURE AND ARCHITECT. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHERE INDICATED BY DOOR.
8. ALL HVAC PIPING SHALL BE INSULATED AND LABELED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
9. REFER TO PIPING DIAGRAMS, DETAILS AND SPECIFICATIONS FOR VALVES, FITTINGS AND OTHER ACCESSORIES.
10. MECHANICAL CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING GRID AND CEILING TILES AS REQUIRED FOR DEMOLITION OF EXISTING AND INSTALLATION OF NEW MECHANICAL SYSTEMS. ANY CEILING TILES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH SAME AT NO ADDITIONAL COST TO OWNER.

(X) **MECHANICAL KEY NOTES:**

1. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING UNIT VENTILATORS. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. CUT AND REMOVE EXISTING HEATING HOT WATER PIPING MAINS BEHIND UNIT VENTILATOR. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. PER EXISTING DRAWINGS HEATING HOT WATER PIPE SIZE BEHIND UNIT VENTILATOR IS 1 1/4" CONTRACTOR SHALL FIELD VERIFY SIZE AND NOTIFY ENGINEER OF ANY DISCREPANCIES. NEW PIPING MAINS BEHIND NEW UNIT VENTILATOR SHALL MATCH EXISTING.
2. REMOVE EXISTING CONDENSATE DRAIN PIPING THROUGH WALL FROM DEMOLISHED UNIT VENTILATOR. PATCH WALL TO MATCH EXISTING.
3. PROVIDE NEW UNIT VENTILATOR COMPLETE. CONNECT EXISTING HEATING HOT WATER AND CHILLED WATER PIPING TO NEW UNIT VENTILATOR. MECHANICAL CONTRACTOR SHALL COORDINATE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS AS RELATED TO LEFT-HAND, RIGHT-HAND CONNECTIONS AT UNIT VENTILATORS PRIOR TO ORDERING. NEW UNIT VENTILATOR CONNECTIONS SHALL BE ON THE SAME SIDE AS EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS. PROVIDE NEW WALL INTAKE LOUVER. COORDINATE EXACT LOCATION AND WALL OPENING REQUIREMENTS WITH ARCHITECTURAL TRADES PRIOR TO INSTALLATION.
4. PROVIDE 1" CONDENSATE DRAIN THROUGH WALL. TERMINATE WITH 90 DEGREE ELBOW DOWN. CONDENSATE DRAIN SHALL BE COPPER, TYPE "L".
5. REMOVE EXISTING TEMPERATURE SENSOR COMPLETE INCLUDING ALL CONTROL WIRING BACK TO DEMOLISHED UNIT VENTILATOR. PREPARE LOCATION FOR NEW TEMPERATURE SENSOR. PROVIDE NEW DDC TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROL WIRING. ROUTE AND CONNECT NEW WIRING FROM TEMPERATURE SENSOR TO UNIT VENTILATOR.
6. REMOVE EXISTING CONDENSATE DRAIN PIPING DOWN THROUGH FLOOR TO CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM. PREPARE EXISTING CONDENSATE DRAIN PIPING FOR NEW CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE DEMOLITION WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
7. ROUTE NEW 1" CONDENSATE DRAIN PIPING FROM CONDENSATE MAIN IN FIRST FLOOR CEILING PLENUM TO NEW UNIT VENTILATOR CONDENSATE DRAIN. COORDINATE EXACT LOCATION WITH NEW UNIT VENTILATOR DRAIN CONNECTION. REMOVE AND REINSTALL EXISTING CEILING TILES AS NECESSARY TO ACCOMMODATE NEW WORK. ANY DAMAGED CEILING TILES SHALL BE REPLACED WITH LIKE AT CONTRACTORS EXPENSE.
8. NEW HEATING HOT WATER GLYCOL SYSTEM. ROUTE 1" GLYCOL FEED AND CONNECT TO EXISTING VENT OFF EXISTING AIR SEPARATOR.
9. PROVIDE AND INSTALL NEW 1 1/4" HEATING HOT WATER SUPPLY AND RETURN PIPING MAINS BEHIND NEW UNIT VENTILATOR. CONNECT NEW CHILLED WATER SUPPLY AND RETURN PIPING TO EXISTING IN CABINETRY. ROUTE NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO ORDERING. NEW PIPE SIZES SHALL MATCH EXISTING.
10. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM UNIT VENTILATOR TO FIRST FLOOR CEILING PLENUM. REMOVE EXISTING UNIT VENTILATOR COMPLETE INCLUDING WALL INTAKE LOUVER AND ALL ASSOCIATED ACCESSORIES. PREPARE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTIONS.
11. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN FIRST FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
12. DISCONNECT AND REMOVE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING FROM EXISTING CEILING UNIT VENTILATOR. REMOVE EXISTING UNIT VENTILATOR COMPLETE. PREPARE HEATING HOT WATER AND CHILLED WATER PIPING FOR NEW CONNECTION. DISCONNECT EXISTING OUTDOOR AIR DUCT FROM EXISTING UNIT VENTILATOR. DISCONNECT EXISTING CONDENSATE FROM EXISTING UNIT VENTILATOR.
13. CONNECT NEW 1 1/4" HEATING HOT WATER AND 1 1/2" CHILLED WATER PIPING IN SECOND FLOOR CEILING PLENUM AND ROUTE AND CONNECT TO NEW UNIT VENTILATOR. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE SIZES AS COMPARED TO NEW AND REPORT ANY DISCREPANCIES TO ENGINEER. NEW PIPE SIZES SHALL MATCH EXISTING.
14. PROVIDE NEW UNIT VENTILATOR COMPLETE. CONNECT EXISTING HEATING HOT WATER AND CHILLED WATER PIPING TO NEW UNIT VENTILATOR. MECHANICAL CONTRACTOR SHALL COORDINATE EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS AS RELATED TO LEFT-HAND, RIGHT-HAND CONNECTION AT UNIT VENTILATORS PRIOR TO ORDERING. NEW UNIT VENTILATOR CONNECTIONS SHALL BE ON THE SAME SIDE AS EXISTING HEATING HOT WATER AND CHILLED WATER PIPING LOCATIONS. PROVIDE NEW OUTDOOR AIR DUCT AND CONNECT TO NEW UNIT VENTILATOR AND EXISTING OUTDOOR AIR DUCT IN CEILING. PROVIDE TRANSITIONS AS REQUIRED TO CONNECT TO NEW UNIT VENTILATOR AND EXISTING 12"x14" ABOVE CEILING. ROUTE NEW CONDENSATE AND CONNECT TO EXISTING CONDENSATE DRAIN LINE.

1/16" 0 2 4 6 8 10 20 40 80 — 1/8" 0 1 2 3 4 5 10 20 40 — 1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

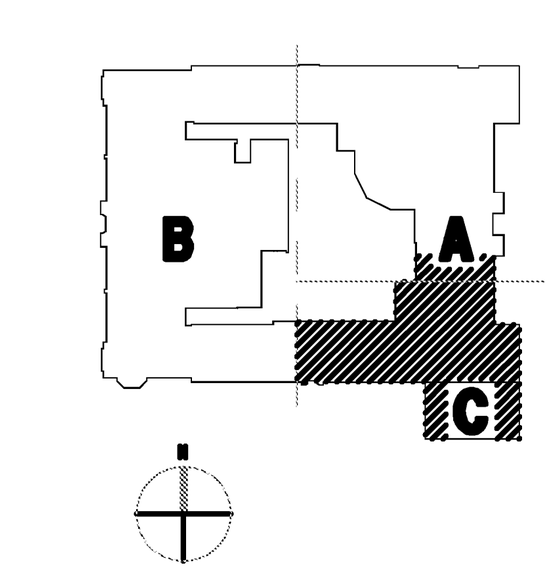
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Mechanical Plan - Zone 'C'



ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

DRAWN	CC
CHECKED	DB
APPROVED	ML

PROJECT NO.

15102

DRAWING NO.

M2.2C

Drawing File: M:\TMP\15-1606 BPS 2015 Bond Program\Mech\Pierce\15-1606_M2-2C.dwg
Feb 15, 2016 - 1:28pm

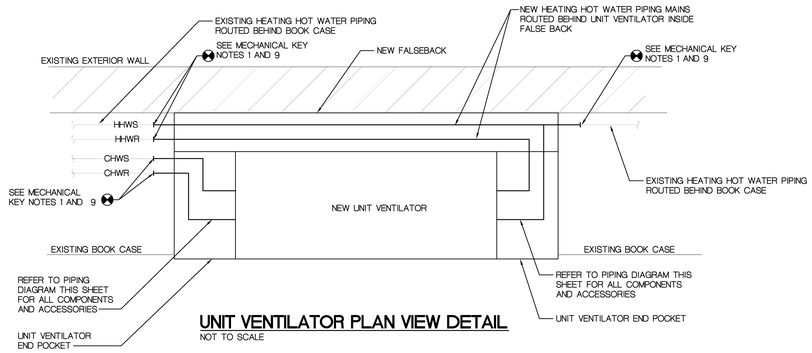
UNIT VENTILATOR SCHEDULE

UNIT TAG	SUPPLY FAN		HEATING COIL						CHILLED WATER COOLING COIL												ARRANGEMENT	APPROXIMATE DIMENSIONS (L X W X H)	MANUFACTURER	MODEL NUMBER	NOTES
				AIR		WATER			AIR						WATER											
	CFM	MIN. O.A. CFM	MIN. TOTAL CAPACITY MBH	E.A.T. °F	L.A.T. °F	FLOW GPM	E.W.T. °F	L.W.T. °F	MAX.W.P.D. FT. HEAD	NOMINAL CFM	E.D.B. °F	E.W.B. °F	L.D.B. °F	L.W.B. °F	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	FLOW GPM	E.W.T. °F	L.W.T. °F	MAX W.P.D. FT. HEAD	NO. ROWS	FAN RPM	FLA AT 120v (NOTE 3)	MCA	VOLTS	PHASE	HERTZ				
A	750	200	59.33	53	128.7	2.97	180	140	0.67	750	78.80	66.10	60.98	58.48	13.78	16.99	3.7	45	54.15	1.41	2	1050	2.9	15	120	1.0	60.0	HORIZONTAL/CEILING	71" x 49" x 17"	TRANE	HUVC0751	1,2,4,5,6,7
B	750	200	61.41	53	131.1	3.27	180	140	0.87	750	78.80	66.10	58.64	57.81	14.48	17.38	4.3	43	51.89	3.46	3	1050	2.9	15	120	1.0	60.0	HORIZONTAL/CEILING	71" x 49" x 17"	TRANE	HUVC0751	1,2,4,5,6,7
C	1000	260	42.61	51	91.95	2.13	180	140	2.31	1000	79.80	65.20	62.27	58.45	18.41	20.15	6.51	43	49.84	4.31	3	1105	2.8	4.5	120	1.0	60.0	HORIZONTAL/FLOOR	81" x 21" x 30"	TRANE	VUVE1000	1,2,4,5,6,7
D	1000	260	50.00	51	100.93	4.16	180	154.74	6.92	1000	81.40	67.00	59.88	58.29	21.76	25.49	4.25	43	55	2.05	4	1105	2.8	3.5	120	1.0	60.0	HORIZONTAL/FLOOR	81" x 21" x 30"	TRANE	VUVE1000	1,2,4,5,6,7
E	1000	260	50.00	53	102.93	4.51	180	156.7	7.93	1000	78.60	65.20	59.45	57.67	19.36	21.48	5.89	43	51.01	4.79	4	1105	2.8	4.5	120	1.0	60.0	HORIZONTAL/FLOOR	81" x 21" x 30"	TRANE	VUVE1000	1,2,4,5,6,7
F	1250	450	76.80	43	96.62	6.3	180	154.32	16.97	1250	80.60	68.60	62.47	59.74	26.20	28.95	8.48	43	50.49	5.84	4	1116	3.5	4.38	120	1.0	60.0	HORIZONTAL/FLOOR	93" x 21" x 30"	TRANE	VUVE1250	1,2,4,5,6,7
G	1250	450	76.80	43	96.62	6.3	180	154.32	16.97	1250	82.40	68.00	64.71	61.65	25.57	27.72	6.92	43	51.8	4.04	4	1116	3.5	9.0	120	1.0	60.0	HORIZONTAL/FLOOR	93" x 21" x 30"	TRANE	VUVE1250	1,2,4,5,6,7
H	1500	450	97.00	43	102.44	8.5	180	155.89	31.97	1500	79.60	66.00	60.69	58.05	31.14	37.45	10.52	43	50.77	8.72	4	1116	3.5	9.0	120	1.0	60.0	HORIZONTAL/FLOOR	105" x 17" x 30"	TRANE	VUVE1500	1,2,4,5,6,7
J	1500	450	97.00	43	102.44	8.5	180	155.89	31.97	1500	81.20	67.00	62.93	60.00	30.09	33.94	8.52	43	51.72	7.8	3	1116	3.5	9.0	120	1.0	60.0	HORIZONTAL/FLOOR	105" x 17" x 30"	TRANE	VUVE1500	1,2,4,5,6,7

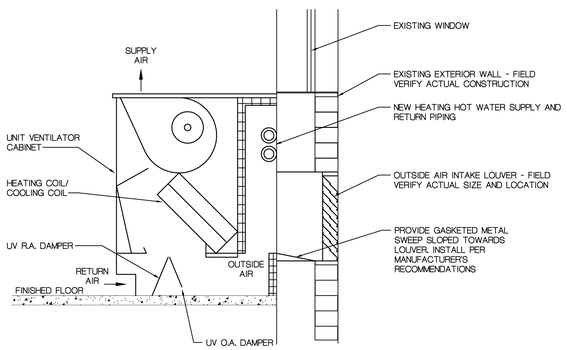
1. COIL SELECTIONS, HEATING AND CHILLED WATER BASED ON 35% PROPYLENE GLYCOL SOLUTION.
2. CONTROL VALVES ARE 3-WAY. FURNISHED AND INSTALLED BY UNIT MANUFACTURER, WIRED BY TEMPERATURE CONTROLS CONTRACTOR. ACTUATORS FOR CONTROL VALVES SHALL AS MANUFACTURERED BY BELIMO.
3. UNIT FLA SHALL NOT EXCEED SCHEDULED FLA BY MORE THAN 10%.
4. PROVIDE INTEGRAL CO2 SENSOR WITH UNIT VENTILAROR.
5. DISCONNECT SWITCH PROVIDED BY UNIT VENTILATOR MANUFACTURER.
6. PROVIDE UNIT CONTROLLER FOR INTERFACE WITH BUILDING MANAGEMENT SYSTEM.
7. PROVIDE PLASTIC LAMINATE UNIT VENTILATOR IDENTIFICATION TAG WITH UNIT ID MOUNTED ON FRONT OF UNIT TO MATCH EXISTING.

UNIT VENTILATOR APPLICATION SCHEDULE

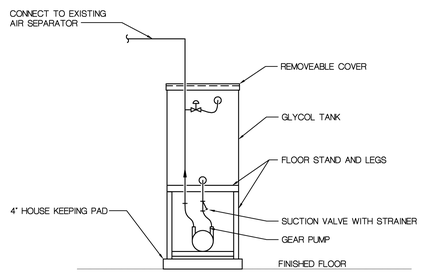
UNIT ID	ROOM NAME	REAR FALSE BACK	HEATING	COOLING	RELIEF HOOD - EXISTING	UNIT VENTILATOR TYPE	HEATING/ COOLING CONTROL VALVE TYPE
PIEUNV001	CLASSROOM A105	YES	HHW	CHW	NO	F	3-WAY
PIEUNV002	CLASSROOM A104	YES	HHW	CHW	NO	F	3-WAY
PIEUNV003	CLASSROOM B102	YES	HHW	CHW	NO	C	3-WAY
PIEUNV004	CLASSROOM B103	YES	HHW	CHW	NO	H	3-WAY
PIEUNV005	CLASSROOM B109	YES	HHW	CHW	NO	D	3-WAY
PIEUNV5A	CLASSROOM B109	YES	HHW	CHW	NO	D	3-WAY
PIEUNV006	CLASSROOM A142	YES	HHW	CHW	NO	F	3-WAY
PIEUNV007	CLASSROOM B143	YES	HHW	CHW	NO	F	3-WAY
PIEUNV008	CLASSROOM B146	YES	HHW	CHW	NO	J	3-WAY
PIEUNV009	CLASSROOM B153	YES	HHW	CHW	NO	G	3-WAY
PIEUNV010	CLASSROOM B154	YES	HHW	CHW	NO	G	3-WAY
PIEUNV011	CLASSROOM A144	YES	HHW	CHW	YES	J	3-WAY
PIEUNV012	CLASSROOM A141	YES	HHW	CHW	YES	J	3-WAY
PIEUNV013	CLASSROOM A140	YES	HHW	CHW	YES	J	3-WAY
PIEUNV024	ART CLASSROOM A205	YES	HHW	CHW	NO	E	3-WAY
PIEUNV025	ART CLASSROOM A205	YES	HHW	CHW	NO	E	3-WAY
PIEUNV026	CLASSROOM A203	YES	HHW	CHW	NO	F	3-WAY
PIEUNV027	CLASSROOM B202	YES	HHW	CHW	NO	F	3-WAY
PIEUNV028	CLASSROOM B203	YES	HHW	CHW	NO	F	3-WAY
PIEUNV029	CLASSROOM B210	YES	HHW	CHW	NO	H	3-WAY
PIEUNV030	CLASSROOM B225	YES	HHW	CHW	NO	F	3-WAY
PIEUNV031	CLASSROOM B226	YES	HHW	CHW	NO	F	3-WAY
PIEUNV032	OFFICE B227	NO	HHW	CHW	YES	B	3-WAY
PIEUNV033	OFFICE B229	NO	HHW	CHW	YES	A	3-WAY
PIEUNV034	CLASSROOM B230	YES	HHW	CHW	NO	F	3-WAY
PIEUNV035	CLASSROOM B231	YES	HHW	CHW	NO	F	3-WAY
PIEUNV036	CLASSROOM B234	YES	HHW	CHW	NO	J	3-WAY
PIEUNV037	CLASSROOM B241	YES	HHW	CHW	NO	G	3-WAY
PIEUNV038	CLASSROOM B242	YES	HHW	CHW	NO	G	3-WAY
PIEUNV039	CLASSROOM A218	YES	HHW	CHW	YES	J	3-WAY
PIEUNV040	CLASSROOM A217	YES	HHW	CHW	YES	J	3-WAY
PIEUNV041	CLASSROOM A216	YES	HHW	CHW	YES	J	3-WAY
PIEUNV042	CLASSROOM A215	YES	HHW	CHW	YES	J	3-WAY



UNIT VENTILATOR PLAN VIEW DETAIL
NOT TO SCALE

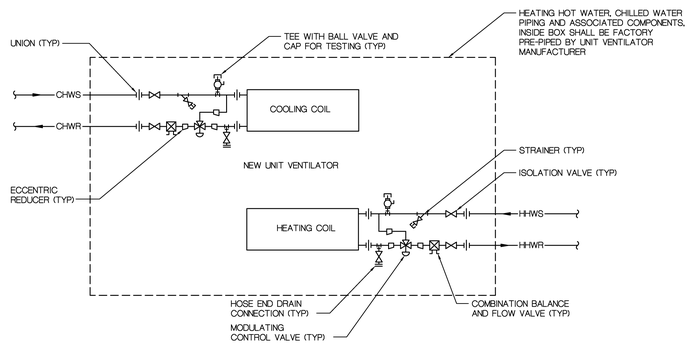


UNIT VENTILATOR/LOUVER DETAIL
NOT TO SCALE



NOTE: GLYCOL FILL UNIT SIMILAR TO J.L. WINGERT MODEL GL50-E1 WITH THE FOLLOWING COMPONENTS-
1. 50 GALLON POLYETHYLENE TANK
2. NEMA 4X CONTROL PANEL WITH 8' POWER CORD
3. LOW LEVEL SWITCH - INTERLOCK WITH BMS
4. 1/ 3 HP GEAR PUMP
5. PRESSURE SWITCH
6. PRESSURE RELIEF VALVE
7. SUCTION VALVE

GLYCOL FILL SYSTEM DETAIL
NOT TO SCALE



UNIT VENTILATOR WITH 3-WAY HOT WATER AND CHILLED WATER CONTROL VALVE PIPING DIAGRAM
NOT TO SCALE
NOTE:
ALL HEATING HOT WATER AND CHILLED WATER COMPONENTS SHALL BE INSTALLED AND EASILY ACCESSIBLE THRU FRONT ACCESS PANELS.

1/16" 0 2 4 6 8 10 20 40 80
1/8" 0 1 2 3 4 5 10 20 40
1/4" 0 1 2 3 4 5 10 20

WHEN USING THIS DRAWING - PLOT OR PRINT FULL SIZE TO ENSURE CORRECT SCALE. NOTE REDUCED SIZE DRAWINGS ARE NOT TO SCALE

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BAI No. 15-1606

PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Mechanical Schedules and Details

ISSUE DATES

DATE:	ISSUED FOR:
02-15-2016	B.P.No. 1 - BIDS

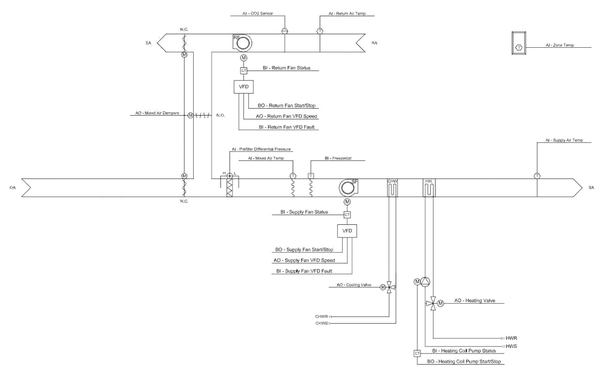
DRAWN	CC
CHECKED	DB
APPROVED	ML

PROJECT NO.
15102

DRAWING NO.
M3.1

Drawing Ref: M:\2015-006 BPS 2015 Bond Projects\Mech\Pierce\15-006_M3-1.dwg
Feb 16, 2016 - 1:23pm

AHU-1 GYMNASIUM



AHU-1 Gymnasium (typical of 1)

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule in the following modes:
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
- A 85°F (adj.) cooling setpoint.
- A 60°F (adj.) heating setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
The supply fan shall run at a fixed speed determined by the balancer.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Supply Fan VFD Fault.

Return Fan:
The return fan shall run whenever the supply fan runs, unless shutdown on safeties. To prevent short cycling, the return fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Return Fan Failure: Commanded on, but the status is off.
- Return Fan in Hand: Commanded off, but the status is on.
- Return Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Return Fan VFD Fault.

Return Fan Tracking:
The return fan VFD shall modulate in unison with the supply fan VFD. The return fan VFD shall track the supply fan VFD at 80% (adj.) of the supply fan VFD speed. The return fan VFD speed shall not drop below 25% (adj.).

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 57°F (adj.).
- AND the economizer is disabled or fully open.
- AND the zone temperature is above cooling setpoint.
- AND the supply fan status is on.
- AND the heating is not active.

The cooling coil valve shall open to 50% (adj.) whenever the freezestat is on.

Heating Coil Valve:
The controller shall measure the zone temperature and modulate the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 60°F (adj.) and Winter Mode (Global) is on.
- AND the zone temperature is below heating setpoint.
- AND the supply fan status is on.
- AND the cooling is not active.

The heating coil valve shall open whenever the freezestat (if present) is on.

Heating Coil Pump:
The recirculation pump shall run whenever:
- The heating coil valve is enabled.
- OR the freezestat (if present) is on.

Alarms shall be provided as follows:
- Heating Coil Pump Failure: Commanded on, but the status is off.
- Heating Coil Pump in Hand: Commanded off, but the status is on.
- Heating Coil Pump Runtime Exceeded: Status runtime exceeds a user definable limit.

Economizer:
The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 45°F to 40°F (adj.).
- OR on loss of supply fan status.
- OR the freezestat is on.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Carbon Dioxide (CO2) Control:
When in the occupied mode, the controller shall measure the return air CO2 levels and modulate the outside air dampers open on rising CO2 concentrations, overriding normal damper operation to maintain a CO2 setpoint of 750 ppm (adj.).

Prefilter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the prefilter.
Alarms shall be provided as follows:
- Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control.
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

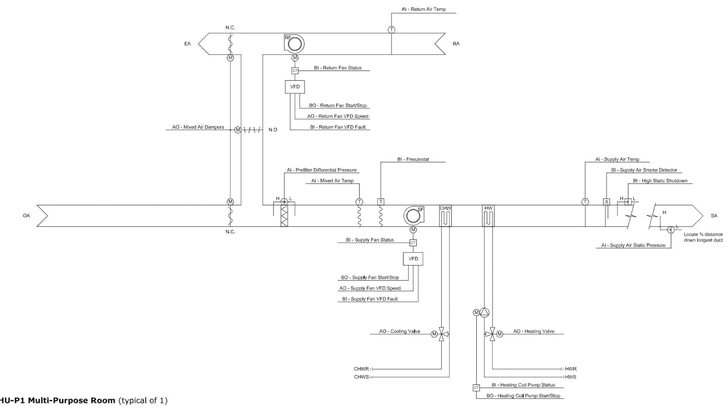
Return Air Temperature:
The controller shall monitor the return air temperature.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Zone Temp	x								x		x
Prefilter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Carbon Dioxide PPM	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Cooling Valve		x							x		x
Heating Valve		x							x		x
Mixed Air Dampers		x							x		x
Supply Fan VFD Speed		x							x		x
Return Fan VFD Speed		x							x		x
Freezestat			x						x	x	x
Supply Fan Status			x						x		x
Return Fan Status			x						x		x
Supply Fan VFD Fault			x							x	x
Return Fan VFD Fault			x							x	x
Supply Fan Start/Stop				x					x		x
Return Fan Start/Stop				x					x		x
Economizer Zone Temp Setpoint					x				x		x
Return Air Carbon Dioxide PPM Setpoint					x				x		x
Snow Day Shutdown						x				x	x
Schedule								x			
Heating Setpoint									x		x
Cooling Setpoint									x		x
High Zone Temp										x	
Low Zone Temp										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Return Fan Failure										x	
Return Fan in Hand										x	
Return Fan Runtime Exceeded										x	
Prefilter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Carbon Dioxide Concentration										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	**6**	**5**	**5**	**2**	**2**	**1**	**0**	**1**	**20**	**20**	**23**

Total Hardware (18) **Total Software (44)**

AHU-P1 MULTIPURPOSE ROOM



AHU-P1 Multi-Purpose Room (typical of 1)

Run Conditions - Scheduled:
The unit shall run based upon an operator adjustable schedule.

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Supply Fan VFD Fault.

Supply Air Duct Static Pressure Control:
The controller shall measure duct static pressure and modulate the supply fan VFD speed to maintain a duct static pressure setpoint. The speed shall not drop below 30% (adj.). The static pressure setpoint shall be reset based on zone cooling requirements.
- The initial duct static pressure setpoint shall be .75in H2O (adj.).
- As cooling demand increases, the setpoint shall incrementally reset up to a maximum of 1.5in H2O (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset down to a minimum of 0.5in H2O (adj.) .

Alarms shall be provided as follows:
- High Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint.
- Low Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) less than setpoint.

Return Fan:
The return fan shall run whenever the supply fan runs, unless shutdown on safeties. To prevent short cycling, the return fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Return Fan Failure: Commanded on, but the status is off.
- Return Fan in Hand: Commanded off, but the status is on.
- Return Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Return Fan VFD Fault.

Return Fan Tracking:
The return fan VFD shall modulate in unison with the supply fan VFD. The return fan VFD shall track the supply fan VFD at 80% (adj.) of the supply fan VFD speed. The return fan VFD speed shall not drop below 25% (adj.).

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the zone temperature is above cooling setpoint.
- AND the supply fan status is on.
- AND the heating is not active.

The cooling coil valve shall open to 50% (adj.) whenever the freezestat (if present) is on.

Heating Coil Valve:
The controller shall measure the zone temperature and modulate the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 60°F (adj.) and Winter Mode (Global) is on.
- AND the zone temperature is below heating setpoint.
- AND the supply fan status is on.
- AND the cooling is not active.

The heating coil valve shall open whenever the freezestat (if present) is on.

Heating Coil Pump:
The recirculation pump shall run whenever:
- The heating coil valve is enabled.
- OR the freezestat (if present) is on.

Alarms shall be provided as follows:
- Heating Coil Pump Failure: Commanded on, but the status is off.
- Heating Coil Pump in Hand: Commanded off, but the status is on.
- Heating Coil Pump Runtime Exceeded: Status runtime exceeds a user definable limit.

Economizer:
The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 45°F to 40°F (adj.).
- OR on loss of supply fan status.
- OR the freezestat (if present) is on.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours.

Prefilter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the prefilter.
Alarms shall be provided as follows:
- Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer .
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

Return Air Temperature:
The controller shall monitor the return air temperature and use as required for economizer control.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Supply Air Static Pressure	x								x	x	x
Prefilter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Supply Fan VFD Speed		x							x		x
Return Fan VFD Speed		x							x		x
Cooling Valve		x							x		x
Heating Valve		x							x		x
Mixed Air Dampers		x							x		x
Freezestat			x						x	x	x
High Static Shutdown			x						x	x	x
Supply Fan VFD Fault			x							x	x
Supply Fan Status			x						x		x
Return Fan VFD Fault			x							x	
Return Fan Status			x						x		x
Heating Coil Pump Status			x						x		x
Supply Fan Start/Stop				x					x		x
Return Fan Start/Stop				x					x		x
Heating Coil Pump Start/Stop				x					x		x
Supply Air Static Pressure Setpoint					x				x		x
Supply Air Temp Setpoint					x				x		x
Economizer Mixed Air Temp Set-point					x				x		x
Schedule								x			
High Supply Air Static Pressure										x	
Low Supply Air Static Pressure										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Return Fan Failure										x	
Return Fan in Hand										x	
Return Fan Runtime Exceeded										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Heating Coil Pump Failure										x	
Heating Coil Pump in Hand										x	
Heating Coil Pump Runtime Exceeded										x	
Prefilter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	**5**	**5**	**7**	**3**	**3**	**0**	**0**	**1**	**21**	**25**	**22**

Total Hardware (20) **Total Software (49)**

TMP ARCHITECTURE

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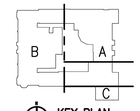
PROJECT TITLE
Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE
Temperature Controls



KEY PLAN
NOT TO SCALE

ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 – BIDS

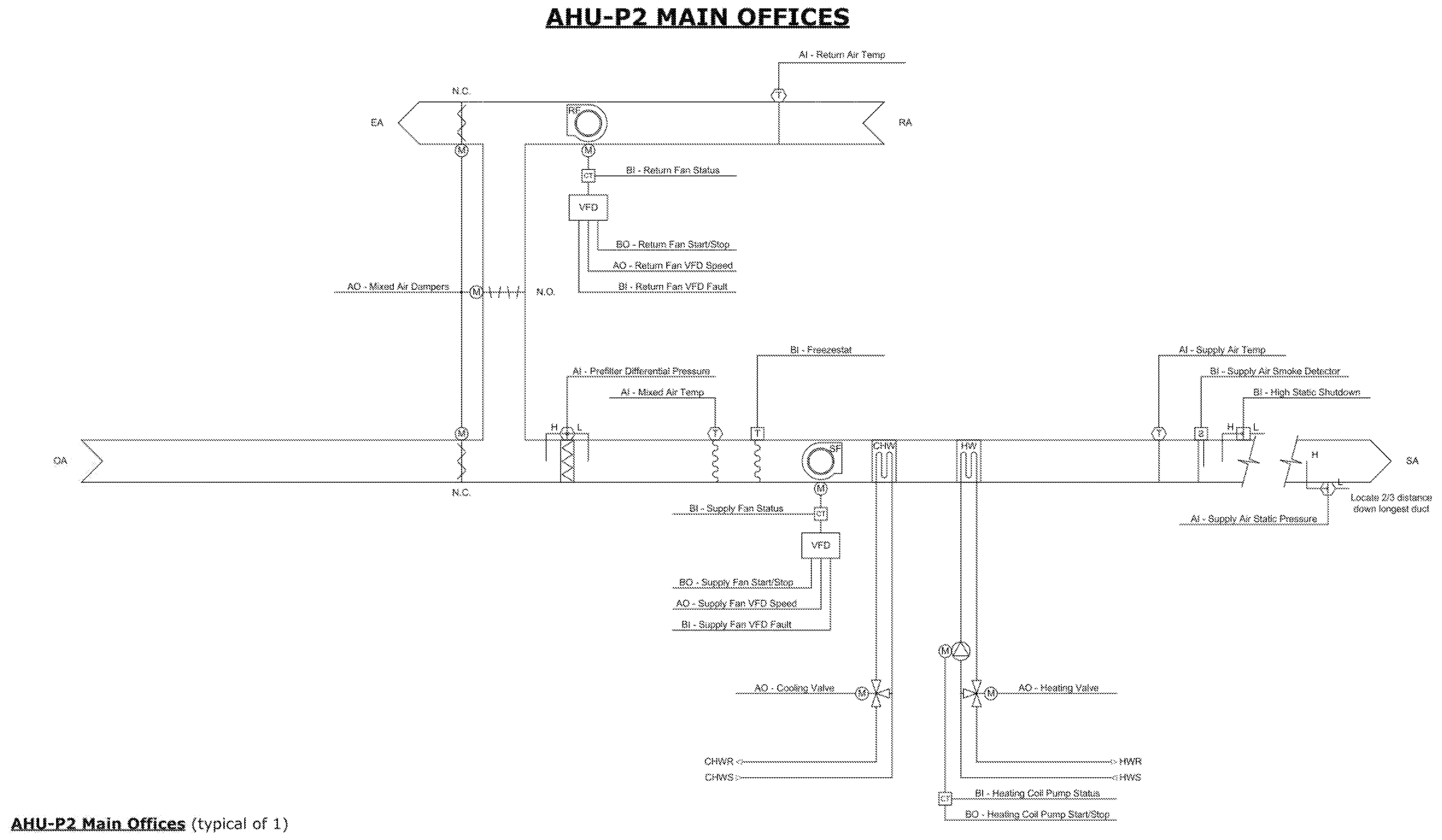
DRAWN ME
CHECKED ME
APPROVED EC

PROJECT NO.
15102

DRAWING NO.
M4.1

Drawing File: C:\Users\jmm\Appdata\Local\Temp\AcPublish_2916\M4.1.dwg
Feb 11, 2016 - 6:02pm

AHU-P2 MAIN OFFICES



AHU-P2 Main Offices (typical of 1)

Run Conditions - Scheduled:
The unit shall run based upon an operator adjustable schedule.

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Supply Fan VFD Fault.

Supply Air Duct Static Pressure Control:
The controller shall measure duct static pressure and modulate the supply fan VFD speed to maintain a duct static pressure setpoint. The speed shall not drop below 30% (adj.). The static pressure setpoint shall be reset based on zone cooling requirements.
- The initial duct static pressure setpoint shall be .75in H2O (adj.).
- As cooling demand increases, the setpoint shall incrementally reset up to a maximum of 1.5in H2O (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset down to a minimum of 0.5in H2O (adj.) .

Alarms shall be provided as follows:
- High Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint.
- Low Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) less than setpoint.

Return Fan:
The return fan shall run whenever the supply fan runs, unless shutdown on safeties. To prevent short cycling, the return fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Return Fan Failure: Commanded on, but the status is off.
- Return Fan in Hand: Commanded off, but the status is on.
- Return Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Return Fan VFD Fault.

Return Fan Tracking:
The return fan VFD shall modulate in unison with the supply fan VFD. The return fan VFD shall track the supply fan VFD at 80% (adj.) of the supply fan VFD speed. The return fan VFD speed shall not drop below 25% (adj.).

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the zone temperature is above cooling setpoint.
- AND the supply fan status is on.
- AND the heating is not active.

The cooling coil valve shall open to 50% (adj.) whenever the freezestat (if present) is on.

Heating Coil Valve:
The controller shall measure the zone temperature and modulate the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 60°F (adj.) and Winter Mode (Global) is on.
- AND the zone temperature is below heating setpoint.
- AND the supply fan status is on.
- AND the cooling is not active.

The heating coil valve shall open whenever the freezestat (if present) is on.

Heating Coil Pump:
The recirculation pump shall run whenever:
- The heating coil valve is enabled.
- OR the freezestat (if present) is on.

Alarms shall be provided as follows:
- Heating Coil Pump Failure: Commanded on, but the status is off.
- Heating Coil Pump in Hand: Commanded off, but the status is on.
- Heating Coil Pump Runtime Exceeded: Status runtime exceeds a user definable limit.

Economizer:
The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 45°F to 40°F (adj.).
- OR on loss of supply fan status.
- OR the freezestat (if present) is on.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours.

Prefilter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the prefilter.
Alarms shall be provided as follows:
- Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer .
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

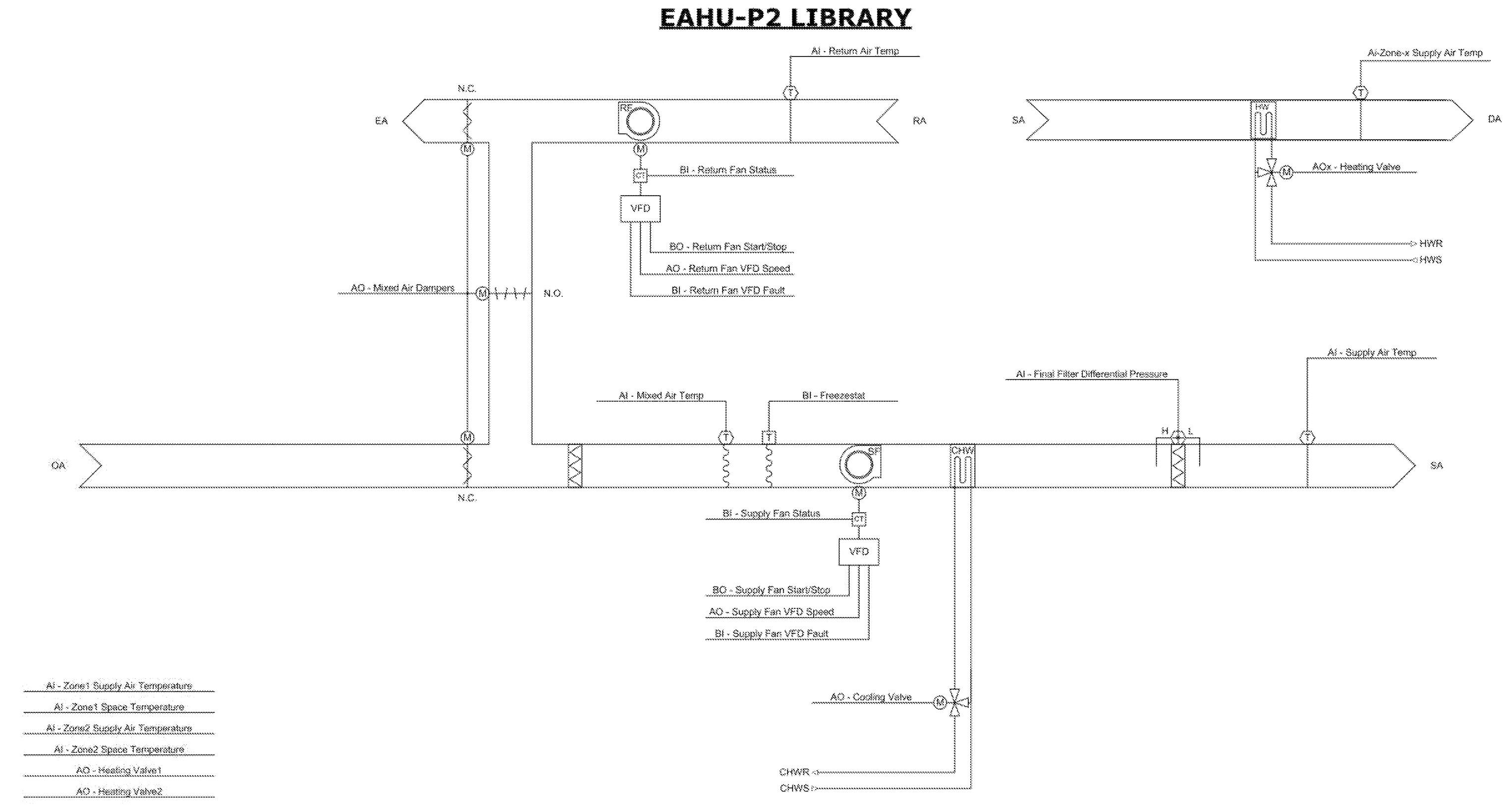
Return Air Temperature:
The controller shall monitor the return air temperature and use as required for economizer control.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Supply Air Static Pressure	x								x	x	x
Prefilter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Supply Fan VFD Speed		x							x		x
Return Fan VFD Speed		x							x		x
Cooling Valve		x							x		x
Heating Valve		x							x		x
Mixed Air Dampers		x							x		x
Freezestat			x						x	x	x
High Static Shutdown			x						x	x	x
Supply Fan VFD Fault			x							x	x
Supply Fan Status			x						x		x
Return Fan VFD Fault			x							x	
Return Fan Status			x						x		x
Heating Coil Pump Status			x						x		x
Supply Fan Start/Stop				x					x		x
Return Fan Start/Stop				x					x		x
Heating Coil Pump Start/Stop				x					x		x
Supply Air Static Pressure Setpoint					x				x		x
Supply Air Temp Setpoint					x				x		x
Economizer Mixed Air Temp Set-point					x				x		x
Schedule								x			
High Supply Air Static Pressure										x	
Low Supply Air Static Pressure										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Return Fan Failure										x	
Return Fan in Hand										x	
Return Fan Runtime Exceeded										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Heating Coil Pump Failure										x	
Heating Coil Pump in Hand										x	
Heating Coil Pump Runtime Ex-ceeded										x	
Prefilter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	5	5	7	3	3	0	0	1	21	25	22

Total Hardware (20) Total Software (49)

EAHU-P2 LIBRARY



EAHU-P2 Library (typical of 1)

Run Conditions - Requested:
The unit shall run according to a user definable time schedule.

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
The supply fan shall run at a fixed speed determined by the balancer.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Supply Fan VFD Fault.

Return Fan:
The return fan shall run whenever the supply fan runs, unless shutdown on safeties. To prevent short cycling, the return fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Return Fan Failure: Commanded on, but the status is off.
- Return Fan in Hand: Commanded off, but the status is on.
- Return Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Return Fan VFD Fault.

Return Fan Tracking:
The return fan VFD shall modulate in unison with the supply fan VFD. The return fan VFD shall track the supply fan VFD at 80% (adj.) of the supply fan VFD speed. The return fan VFD speed shall not drop below 25% (adj.).

Supply Air Temperature Setpoint - Optimized:
The controller shall monitor the supply air temperature and shall maintain a supply air temperature setpoint reset based on zone cooling and heating requirements.
The supply air temperature setpoint shall be reset for cooling based on zone cooling requirements as follows:
- The initial supply air temperature setpoint shall be 55°F (adj.).
- As cooling demand increases, the setpoint shall incrementally reset down to a minimum of 55°F (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset up to a maximum of 60°F (adj.) .

Cooling Coil Valve:
The controller shall measure the supply air temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 57°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the supply fan status is on.
- AND the heating (if present) is not active.

The cooling coil valve shall open to 50% (adj.) whenever the freezestat (if present) is on.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is 5°F (adj.) greater than setpoint.

Low Supply Air Temperature Alarm:
The controller shall alarm if the supply air temperature is less than 45°F (adj.).

Economizer:
The controller shall measure the mixed air temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the supply air temperature setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 40°F to 35°F (adj.).
- OR the freezestat (if present) is on.
- OR on loss of supply fan status.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum adjustable position during building occupied hours and be closed during unoccupied hours.

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer.
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

Return Air Temperature:
The controller shall monitor the return air temperature and use as required for economizer control.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Heating Coils - Scheduled:
The unit heating coils run according to a user definable time schedule in the following modes:
When Winter Mode (Global) is active:
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
- A 85°F (adj.) cooling setpoint.
- A 60°F (adj.) heating setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Prefilter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Zone 1 Supply Air Temperature	x								x		
Zone 1 Space Temperature	x								x		x
Zone 1 Supply Air Temperature	x								x		x
Zone 1 Space Temperature	x								x		x
Supply Fan VFD Speed		x							x		x
Return Fan VFD Speed		x							x		x
Cooling Valve		x							x		x
Mixed Air Dampers		x							x		x
Heating Valve 1		x							x		x
Heating Valve 2		x							x		x
Freezestat			x						x	x	x
Supply Fan VFD Fault			x							x	x
Supply Fan Status			x						x		x
Return Fan VFD Fault			x							x	
Return Fan Status			x						x		x
Supply Fan Start/Stop				x					x		x
Return Fan Start/Stop				x					x		x
Supply Air Temp Setpoint					x				x		x
Economizer Mixed Air Temp Set-point					x				x		x
Schedule								x			
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Return Fan Failure										x	
Return Fan in Hand										x	
Return Fan Runtime Exceeded										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Prefilter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	8	6	5	2	2	0	0	1	21	18	22

Total Hardware (20) Total Software (48)

Drawing File: C:\Users\[illegible]\M4.2.dwg
Feb 11, 2016 – 8:03pm

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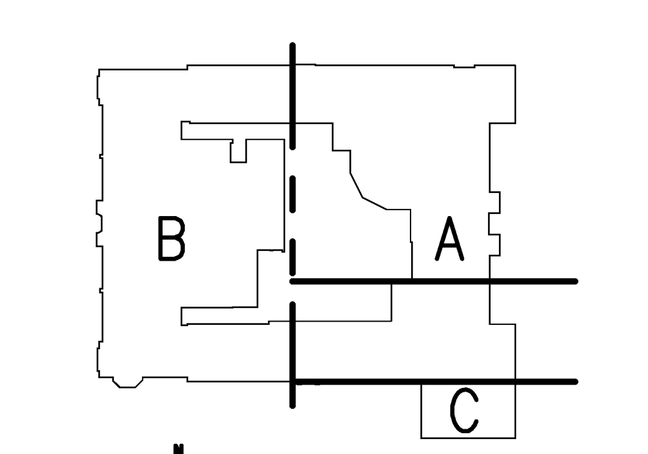
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
SCALE: N.T.S.

ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 – BIDS

DRAWN ME
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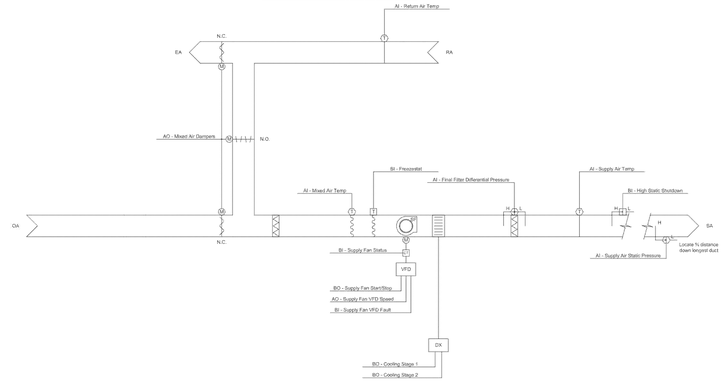
APPROVED EC

PROJECT NO.
15102

DRAWING NO.
M4.2

EAHU-P3 CLASSROOMS



EAHU-P3 Classrooms (typical of 1)

Run Conditions - Scheduled:
The unit shall run based upon an operator adjustable schedule.

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

High Static Shutdown:
The unit shall shut down and generate an alarm upon receiving an high static shutdown signal.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- Supply Fan VFD Fault.

Supply Air Duct Static Pressure Control:
The controller shall measure duct static pressure and shall modulate the supply fan VFD speed to maintain a duct static pressure setpoint of 1.0in H2O (adj.). The supply fan VFD speed shall not drop below 30% (adj.).
Alarms shall be provided as follows:
- High Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint.
- Low Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) less than setpoint.
- Supply Fan VFD Fault.

Supply Air Temperature Setpoint - Optimized:
The controller shall monitor the supply air temperature and shall maintain a supply air temperature setpoint reset based on zone cooling requirements.
The supply air temperature setpoint shall be reset based on zone cooling requirements as follows:
- The initial supply air temperature setpoint shall be 55°F (adj.).
- As cooling demand increases, the setpoint shall incrementally reset down to a minimum of 53°F (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset up to a maximum of 60°F (adj.) .

Cooling Stages:
The controller shall measure the supply air temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the supply fan status is on.
- AND the heating (if present) is not active.

Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is 5°F (adj.) greater than setpoint.

Low Supply Air Temperature Alarm:
The controller shall alarm if the supply air temperature is less than 45°F (adj.).

Economizer:
The controller shall measure the mixed air temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the supply air temperature setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 40°F to 35°F (adj.).
- OR the freezestat (if present) is on.
- OR on loss of supply fan status.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum adjustable position during building occupied hours and be closed during unoccupied hours.

Final Filter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the final filter.
Alarms shall be provided as follows:
- Final Filter Change Required: Final filter differential pressure exceeds a user definable limit (adj.).

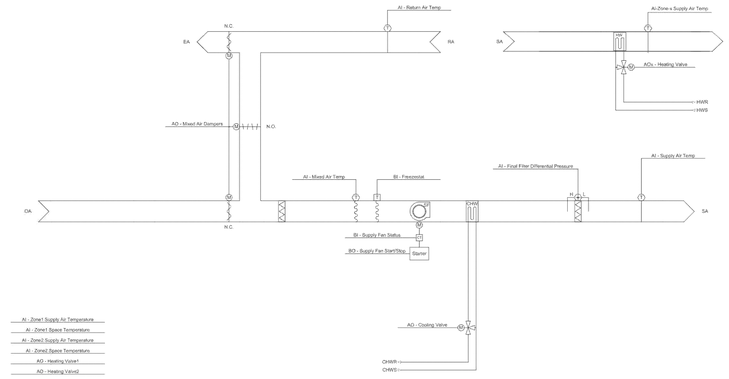
Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer.
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

Return Air Temperature:
The controller shall monitor the return air temperature.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Supply Air Static Pressure	x								x	x	x
Final Filter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Supply Fan VFD Speed		x							x		x
Mixed Air Dampers		x							x		x
Freezestat			x						x	x	x
High Static Shutdown			x						x	x	x
Supply Fan VFD Fault			x							x	x
Supply Fan Status			x						x		x
Supply Fan Start/Stop				x					x		x
Cooling Stage 1				x					x		x
Cooling Stage 2				x					x		x
Supply Air Static Pressure Setpoint					x				x		x
Supply Air Temp Setpoint					x				x		x
Economizer Mixed Air Temp Set-point					x				x		x
Schedule								x			
High Supply Air Static Pressure										x	
Low Supply Air Static Pressure										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
High Supply Air Temp										x	
Compressor Runtime Exceeded										x	
Low Supply Air Temp										x	
Final Filter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	5	2	4	3	3	0	0	1	16	19	17
Total Hardware (14)					**Total Software (39)**						

PIEAHU-301 COMPUTER ROOM/ PIEAHU-302 MUSIC ROOM 18



PIEAHU-301 Computer Room/PIEAHU-302 Music Room 18 (typical of 2)

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule.

Snow Day Shutdown:
The unit shall shut down and generate a notification upon receiving an snow day shutdown signal.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.
Alarms shall be provided as follows:
- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).

Supply Air Temperature Setpoint - Optimized:
The controller shall monitor the supply air temperature and shall maintain a supply air temperature setpoint reset based on zone cooling requirements.
The supply air temperature setpoint shall be reset based on zone cooling requirements as follows:
- The initial supply air temperature setpoint shall be 55°F (adj.).
- As cooling demand increases, the setpoint shall incrementally reset down to a minimum of 53°F (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset up to a maximum of 60°F (adj.) .

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the zone temperature is above cooling setpoint.
- AND the supply fan status is on.
- AND the heating is not active.

The cooling coil valve shall open to 50% (adj.) whenever the freezestat (if present) is on.

Economizer:
The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is less than 65°F (adj.).
- AND the outside air temperature is less than the return air temperature.
- AND the supply fan status is on.

The economizer shall close whenever:
- Mixed air temperature drops from 45°F to 40°F (adj.).
- OR on loss of supply fan status.
- OR the freezestat (if present) is on.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours.

Final Filter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the final filter.
Alarms shall be provided as follows:
- Final Filter Change Required: Final filter differential pressure exceeds a user definable limit (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control (if present) or preheating control (if present).
Alarms shall be provided as follows:
- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

Return Air Temperature:
The controller shall monitor the return air temperature and use as required for economizer control.
Alarms shall be provided as follows:
- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.
Alarms shall be provided as follows:
- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

Heating Coils - Scheduled:
The unit heating coils run according to a user definable time schedule in the following modes:
When Winter Mode (Global) is active:
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
- A 85°F (adj.) cooling setpoint.
- A 60°F (adj.) heating setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Prefilter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Temp	x								x		x
Supply Air Temp	x								x		x
Zone1 Supply Air Temperature	x								x		x
Zone1 Space Temperature	x								x		x
Zone1 Space Setpoint Adjust	x								x		x
Zone2 Supply Air Temperature	x								x		x
Zone2 Space Temperature	x								x		x
Zone2 Space Setpoint Adjust	x								x		x
Cooling Valve		x							x		x
Mixed Air Dampers		x							x		x
Heating Valve1		x							x		x
Heating Valve2		x							x		x
Zone Override			x						x		x
Freezestat			x						x	x	x
Supply Fan Status			x						x		x
Supply Fan Start/Stop				x					x		x
Economizer Zone Temp Setpoint					x				x		x
Schedule							x				
Heating Setpoint									x		x
Cooling Setpoint									x		x
High Zone Temp										x	
Low Zone Temp										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Prefilter Change Required										x	x
High Mixed Air Temp										x	
Low Mixed Air Temp										x	
High Return Air Temp										x	
Low Return Air Temp										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	10	4	3	1	1	0	0	1	20	13	21
Total Hardware (18)					**Total Software (35)**						

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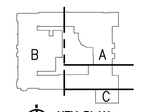
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
ROAD KEY

ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 - BIDS

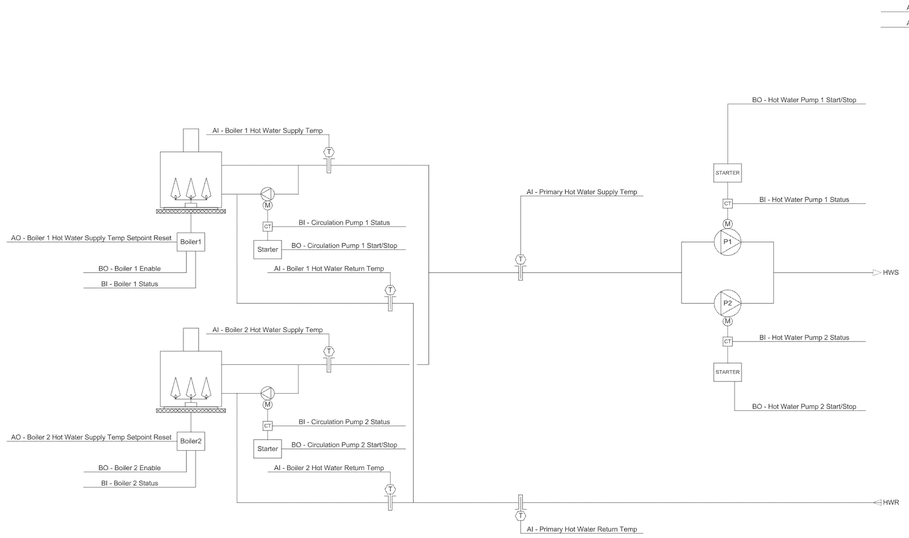
DRAWN ME
CHECKED ME
APPROVED EC

PROJECT NO.
15102

DRAWING NO.
M4.3

Drawing File: C:\Users\jmm\Appdata\Local\Temp\AcPublish_7264\M4.3.dwg
Aug 11, 2016 - 6:42pm

TWO BOILER SYSTEM



Two Boiler System (typical of 1)

Boiler System - Run Conditions:
The boiler system shall be enabled to run whenever Winter Mode (Global) is On. Winter Mode is On when outside air temperature falls below 55°F (adj.). and is Off upon a rise in outside air temperature above 60°F (adj.).
To prevent short cycling, each boiler shall run for and be off for minimum adjustable times (both user definable), unless shutdown on safeties or outside air conditions.
Each boiler shall run subject to its own internal safeties and controls.
The boiler system shall also run for freeze protection whenever the outside air temperature is less than 38°F (adj.).

Hot Water Pump Lead/Lag Operation:
The two hot water pumps shall operate in a lead/lag fashion.
- The lead pump shall run first.
- On failure of the lead pump, the lag pump shall run and the lead pump shall turn off.

The designated lead pump shall rotate upon one of the following conditions (user selectable):
- manually through a software switch
- if pump runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:
- Hot Water Pump 1
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

- Hot Water Pump 2
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

Circulation Pump 1:
The Circulation Pump 1 shall run anytime Boiler 1 is called to run and shall have a user definable delay (adj.) on stop.
Alarms shall be provided as follows:
- Circulation Pump 1 Failure: Commanded on, but the status is off.
- Circulation Pump 1 Running in Hand: Commanded off, but the status is on.
- Circulation Pump 1 Runtime Exceeded: Status runtime exceeds a user-definable limit.

Circulation Pump 2:
The Circulation Pump 2 shall run anytime Boiler 2 is called to run and shall have a user definable delay (adj.) on stop.
Alarms shall be provided as follows:
- Circulation Pump 2 Failure: Commanded on, but the status is off.
- Circulation Pump 2 Running in Hand: Commanded off, but the status is on.
- Circulation Pump 2 Runtime Exceeded: Status runtime exceeds a user-definable limit.

Boiler Lead/Lag Operation:
The two boilers shall operate in a lead/lag fashion.
- The lead boiler shall run first.
- On failure of the lead boiler, the lag boiler shall run and the lead boiler shall turn off.
- As hot water temperature drops below a setpoint of 182 F (adj.), the lag boiler shall stage on and run in unison with the lead boiler to maintain hot water temperature setpoint.
- As hot water temperature rises back to 20°F above setpoint, the lag boiler shall stage off.

The designated lead boiler shall rotate upon one of the following conditions: (user selectable):
- manually through a software switch
- if boiler runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:
- Boiler 1
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

- Boiler 2
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

- Lead Boiler Failure: The lead boiler is in failure and the standby boiler is on.

Hot Water Supply Temperature Setpoint Reset:
The hot water supply temperature setpoint shall reset based on outside air temperature.
As outside air temperature rises from 20°F (adj.) to 60°F (adj.) the hot water supply temperature setpoint shall reset downwards from 182°F (adj.) to 142°F (adj.).
- Below 20°F (adj.) outside air temperature, the hot water supply temperature setpoint shall be 182°F (adj.).
- Above 60°F (adj.) outside air temperature, the hot water supply temperature setpoint shall be 142°F (adj.).
- Between 20°F (adj.) and 60°F (adj.) outside air temperature, the hot water supply temperature setpoint shall reset linearly.

Primary Hot Water Temperature Monitoring:
The following temperatures shall be monitored:
- Primary hot water supply.
- Primary hot water return.

Alarms shall be provided as follows:
- High Primary Hot Water Supply Temp: If greater than 200°F (adj.).
- Low Primary Hot Water Supply Temp: If less than 100°F (adj.).

Boiler 1 Hot Water Temperature Monitoring:
The following temperatures shall be monitored:
- Boiler 1 hot water supply.
- Boiler 1 hot water return.

Alarms shall be provided as follows:
- High Hot Water Supply Temp: If greater than 200°F (adj.).
- Low Hot Water Supply Temp: If less than 100°F (adj.).

Boiler 2 Hot Water Temperature Monitoring:
The following temperatures shall be monitored:
- Boiler 2 hot water supply.
- Boiler 2 hot water return.

Alarms shall be provided as follows:
- High Hot Water Supply Temp: If greater than 200°F (adj.).
- Low Hot Water Supply Temp: If less than 100°F (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Primary Hot Water Return Temp	x								x		x
Primary Hot Water Supply Temp	x								x		x
Boiler 1 Hot Water Return Temp	x								x		x
Boiler 1 Hot Water Supply Temp	x								x		x
Boiler 2 Hot Water Return Temp	x								x		x
Boiler 2 Hot Water Supply Temp	x								x		x
Boiler 1 Hot Water Supply Temp Setpoint Reset		x							x		x
Boiler 2 Hot Water Supply Temp Setpoint Reset		x							x		x
Boiler 1 Diverting Valve		x							x		x
Boiler 2 Diverting Valve		x							x		x
Hot Water Pump 1 Status			x						x		x
Hot Water Pump 2 Status			x						x		x
Circulation Pump 1 Status			x						x		x
Circulation Pump 2 Status			x						x		x
Boiler 1 Status			x						x		x
Boiler 2 Status			x						x		x
Hot Water Pump 1 Start/Stop				x							x
Hot Water Pump 2 Start/Stop				x							x
Circulation Pump 1 Start/Stop				x					x		x
Circulation Pump 2 Start/Stop				x					x		x
Boiler 1 Enable				x							x
Boiler 2 Enable				x							x
Outside Air Temp					x						x
Hot Water Differential Pressure Set-point					x				x		x
Winter						x			x		x
Snow Day						x			x		x
Hot Water Pump 1 Failure										x	
Hot Water Pump 1 Running in Hand										x	
Hot Water Pump 1 Runtime Ex-ceeded										x	
Hot Water Pump 2 Failure										x	
Hot Water Pump 2 Running in Hand										x	
Hot Water Pump 2 Runtime Ex-ceeded										x	
Circulation Pump 1 Failure										x	
Circulation Pump 1 Running in Hand										x	
Circulation Pump 1 Runtime Ex-ceeded										x	
Circulation Pump 2 Failure										x	
Circulation Pump 2 Running in Hand										x	
Circulation Pump 2 Runtime Ex-ceeded										x	
Boiler 1 Failure										x	
Boiler 2 Failure										x	
Boiler 1 Running in Hand										x	
Boiler 2 Running in Hand										x	
Boiler 1 Runtime Exceeded										x	
Boiler 2 Runtime Exceeded										x	
Lead Boiler Failure										x	x
High Primary Hot Water Supply Temp										x	
Low Primary Hot Water Supply Temp										x	
Boiler 1 High Hot Water Supply Temp										x	
Boiler 1 Low Hot Water Supply Temp										x	
Boiler 2 High Hot Water Supply Temp										x	
Boiler 2 Low Hot Water Supply Temp										x	
Totals	6	4	6	6	2	2	0	0	22	25	26
Total Hardware (22)									**Total Software (51)**		

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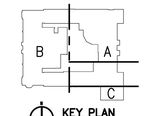
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
NOT TO SCALE

ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 – BIDS

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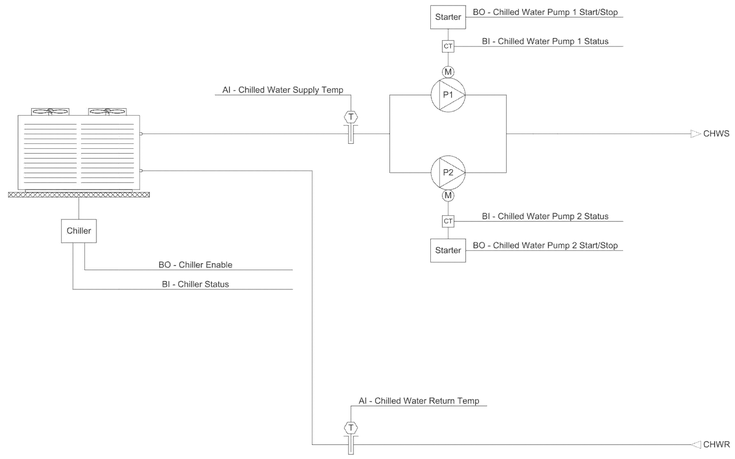
CHECKED ME
APPROVED EC

PROJECT NO.
15102

DRAWING NO.
M4.4

Drawing File: C:\Users\jmm\Desktop\Birmingham 15\M4.4.dwg
Feb 11, 2016 - 6:02pm

SINGLE AIR COOLED CHILLER



AI - CHW Glycol Fill

Single Air Cooled Chiller (typical of 2)

Chiller - Run Conditions:
The chiller shall be enabled to run whenever the outside air temperature is greater than 57°F (adj.) and shall be disabled to run whenever the outside air temperature is less than 52°F
To prevent short cycling, the chiller shall run for and be off for minimum adjustable times (both user definable), unless shutdown on safeties or outside air conditions.
The chiller shall run subject to its own internal safeties and controls.

Chilled Water Pump Lead/Standby Operation:
The two chilled water pumps shall be enabled to run anytime the chiller is called to run.
The lead pump shall start prior to the chiller being enabled and shall stop only after the chiller is disabled. The pump(s) shall therefore have:
- A user adjustable delay on start.
- AND a user adjustable delay on stop.

The delay times shall be set appropriately to allow for orderly chilled water system start-up, shutdown and sequencing.

The two pumps shall operate in a lead/standby fashion.
- The lead pump shall run first.
- On failure of the lead pump, the standby pump shall run and the lead pump shall turn off.

The designated lead pump shall rotate upon one of the following conditions (user selectable):
- manually through a software switch
- if pump runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:
- Chilled Water Pump 1
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

- Chilled Water Pump 2
- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.

Chiller:
The chiller shall be enabled a user adjustable time after pump statuses are proven on.
The chiller shall therefore have a user adjustable delay on start.
The delay time shall be set appropriately to allow for orderly chilled water system start-up, shutdown and sequencing.
The chiller shall run subject to its own internal safeties and controls.
Alarms shall be provided as follows:
- Chiller Failure: Commanded on, but the status is off.
- Chiller Running in Hand: Commanded off, but the status is on.
- Chiller Runtime Exceeded: Status runtime exceeds a user definable limit.

Chiller Chilled Water Supply Setpoint:
The chiller shall maintain a chilled water supply temperature setpoint as determined by its own internal controls (provided by others).

Chilled Water Temperature Monitoring:
The following temperatures shall be monitored:
- Chilled water supply.
- Chilled water return.

Alarms shall be provided as follows:
- High Chilled Water Supply Temp: If the chilled water supply temperature is greater than 55°F (adj.).
- Low Chilled Water Supply Temp: If the chilled water supply temperature is less than 38°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Chilled Water Return Temp	x								x		x
Chilled Water Supply Temp	x								x		x
CHW Glycol Fill	x										
Chilled Water Pump 1 Status			x						x		x
Chilled Water Pump 2 Status			x						x		x
Chiller Status			x						x		x
Chilled Water Pump 1 Start/Stop				x							x
Chilled Water Pump 2 Start/Stop				x							x
Chiller Enable				x							x
Outside Air Temp					x						x
Chilled Water Pump 1 Failure										x	
Chilled Water Pump 1 Running in Hand										x	
Chilled Water Pump 1 Runtime Exceeded										x	
Chilled Water Pump 2 Failure										x	
Chilled Water Pump 2 Running in Hand										x	
Chilled Water Pump 2 Runtime Exceeded										x	
Chiller Failure										x	
Chiller Running in Hand										x	
Chiller Runtime Exceeded										x	
High Chilled Water Supply Temp										x	
Low Chilled Water Supply Temp										x	
Totals	3	0	3	3	1	0	0	0	5	11	9
Total Hardware (9)					**Total Software (17)**						

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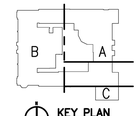
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
SCALE: N.T.S.

ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 – BIDS

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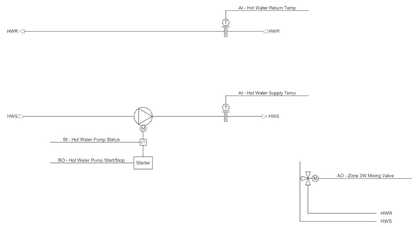
PROJECT NO.
15102

DRAWING NO.
M4.5

Drawing Title: C:\Users\jpmm\appdata\local\temp\AcPublish_7968\M4.5.dwg
Feb 11, 2016 - 4:04pm

HOT WATER LOOP PUMPS



Hot Water Loop Pumps (typical of 6)

Hot Water Pump Run Conditions:
The hot water pumps shall be enabled whenever:
- A definable number of hot water coils need heating.
- AND outside air temperature is less than 60°F (adj.) and Winter Mode (Global) is active.

The pumps shall run for freeze protection anytime outside air temperature is less than 38°F (adj.).
To prevent short cycling, the pump shall run for a minimum time and be off for a minimum time (both user adjustable).

Hot Water Pump:
The hot water pump shall run anytime it is requested to run. The hot water pump shall also run for freeze protection whenever the outside air temperature is less than a user definable setpoint (adj.).
The hot water pump shall have:
- A user adjustable delay on start.
- AND a user adjustable delay on stop.

The delay times shall be set appropriately to allow for orderly hot water system start-up, shutdown and sequencing.
Alarms shall be provided as follows:
- Hot Water Pump Failure: Commanded on, but the status is off.
- Hot Water Pump Running in Hand: Commanded off, but the status is on.
- Hot Water Pump Runtime Exceeded: Status runtime exceeds a user definable limit

Hot Water Mixing Valve:
The hot water mixing valve shall modulate to maintain the loop water temperature at the user-defined setpoint.

Hot Water Temperature Monitoring:
The following temperatures shall be monitored:
- Hot water supply.
- Hot water return.

Alarms shall be provided as follows:
- High Hot Water Supply Temp: If the hot water supply temperature is greater than 200°F (adj.).
- Low Hot Water Supply Temp: If the hot water supply temperature is less than 100°F (adj.).

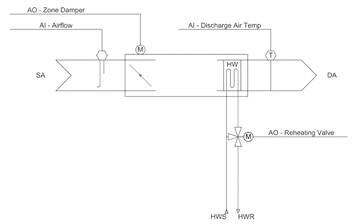
	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Hot Water Return Temp	x								x		x
Hot Water Supply Temp	x								x		x
Zone 3W Mixing Valve		x							x		x
Hot Water Pump Status			x						x		x
Hot Water Pump Start/Stop				x					x		x
Outside Air Temp					x						x
Hot Water Pump Failure										x	
Hot Water Pump in Hand										x	
Hot Water Pump Runtime Exceeded										x	
High Hot Water Supply Temp										x	
Low Hot Water Supply Temp										x	
Totals	2	1	1	1	1	0	0	0	5	5	6
Total Hardware (5)					**Total Software (11)**						

DOMESTIC HOT WATER MONITORING

Domestic HW Monitoring (typical of 1)
The DDC System will monitor the Domestic Hot Water Supply Temperature and Pump Status. Pump runtime will be trended. An alarm will be generated if the Domestic Hot Water Supply Temperature falls below a predetermined setpoint.

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
DHW Supply Temperature	x								x		x
DHW Pump Status			x						x		x
Totals	1	0	1	0	0	0	0	0	2	0	2
Total Hardware (2)					**Total Software (2)**						

VAV Terminal Units





VAV TU (typical of 28)

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule in the following modes:
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
- A 80°F (adj.) cooling setpoint.
- A 60°F (adj.) heating setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

Reversing Variable Volume Terminal Unit - Flow Control:
The unit shall maintain zone setpoints by controlling the airflow through one of the following:
Occupied:
- When zone temperature is greater than its cooling setpoint, the zone damper shall modulate between the minimum occupied airflow (adj.) and the maximum cooling airflow (adj.) until the zone is satisfied.
- When the zone temperature is between the cooling setpoint and the heating setpoint, the zone damper shall maintain the minimum required zone ventilation (adj.).
- When zone temperature is less than its heating setpoint, the controller shall enable heating to maintain the zone temperature at its heating setpoint. Additionally, if warm air is available from the AHU, the zone damper shall modulate between the minimum occupied airflow (adj.) and the maximum heating airflow (adj.) until the zone is satisfied.

Unoccupied:
- When the zone is unoccupied the zone damper shall control to its minimum unoccupied airflow (adj.).
- When the zone temperature is greater than its cooling setpoint, the zone damper shall modulate between the minimum unoccupied airflow (adj.) and the maximum cooling airflow (adj.) until the zone is satisfied.
- When zone temperature is less than its unoccupied heating setpoint, the controller shall enable heating to maintain the zone temperature at the setpoint. Additionally, if warm air is available from the AHU, the zone damper shall modulate between the minimum unoccupied airflow (adj.) and the auxiliary heating airflow (adj.) until the zone is satisfied.

Reheat Coil Valve:
The controller shall measure the zone temperature and modulate the reheating coil valve open on dropping temperature to maintain its heating setpoint when the Winter Mode (Global) is active.

Discharge Air Temperature:
The controller shall monitor the discharge air temperature.
Alarms shall be provided as follows:
- High Discharge Air Temp: If the discharge air temperature is greater than 120°F (adj.).
- Low Discharge Air Temp: If the discharge air temperature is less than 40°F (adj.).

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Zone Temp	x								x		x
Zone Setpoint Adjust	x										x
Airflow	x								x		x
Discharge Air Temp	x								x		x
Zone Damper		x									x
Reheating Valve		x							x		x
Zone Override			x						x		x
Airflow Setpoint					x				x		x
Heating Mode						x			x		
Schedule								x			
Heating Setpoint									x		x
Cooling Setpoint									x		x
High Zone Temp										x	
Low Zone Temp										x	
High Discharge Air Temp										x	
Low Discharge Air Temp										x	
Totals	4	2	1	0	1	1	0	1	9	4	10
Total Hardware (7)					**Total Software (16)**						

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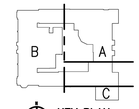
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
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ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 - BIDS

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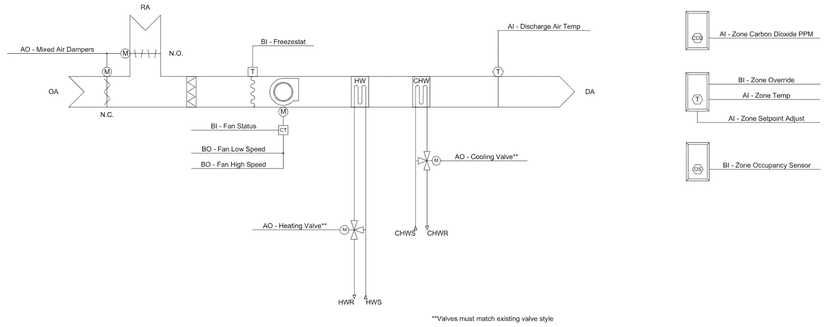
PROJECT NO.
15102

DRAWING NO.
M4.6

Drawing File: C:\Users\jpeters\Desktop\Revit\Revit Archive_2016\M4.6.rvt
Feb 11, 2016 - 6:06pm

UNIT VENTILATORS



**Valves must match existing valve style

Unit Ventilator (typical of 34)

Run Conditions - Standby/Occupied and Unoccupied Modes
- System shall utilize three modes of operation.
- Occupancy Sensors: DDC system shall monitor zone occupancy sensor to determine occupancy of spaces. If while in 'Standby Mode' any Occupancy Sensor goes active for minimum of 5 continuous minutes (adj.), then unit shall be indexed to 'Occupied Mode'. If unit schedule is not active then unit shall be 'Unoccupied'.
- Standby Mode: Unit shall be scheduled to 'Standby Mode'. While in standby mode, Unit Ventilator shall cycle on or off in unit heater fashion to maintain 'standby heating or cooling' setpoints. If 'ON' while in standby heating mode, outside air dampers shall close and return air damper shall open and discharge temperature setpoint shall be 95 degrees F until space temperature rises above Standby heating setpoint. If 'ON' while in standby cooling mode, mixed air dampers shall remain in control as defined by economizer cycle and cooling valve shall modulate to maintain 55 degrees F until space temperature is below Standby cooling setpoint. Minimum on runtime timer shall be set for 5 minutes (adj.) and off timer for 15 minutes (adj.).
- Occupied Mode: If unit is scheduled to 'Standby Mode' and any occupancy goes active for minimum of 5 continuous minutes (adj.), then Unit Vent shall be placed into 'Occupied Mode'. After 15 minutes of detected un-occupancy by space occupancy sensors (adjusted at occupancy sensor), unit shall be indexed to and operate per Standby Mode.
- Unoccupied Mode: If EMS schedule is not active then unit shall be 'Unoccupied'.
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.
- Standby Mode : The unit shall maintain
- A 76°F (adj.) cooling setpoint.
- A 68°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
- A 80°F (adj.) cooling setpoint.
- A 60°F (adj.) heating setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

Freeze Protection:
The unit shall shut down and generate an alarm upon receiving a freezestat status.

Fan:
The fan shall run anytime the unit is commanded to run, unless shutdown on safeties. The fan speeds shall be indexed as follows:
- Low speed shall run anytime the zone temperature is within setpoints.
- High speed shall run anytime the zone temperature is outside of setpoints or unit is in Morning WarmUp.

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the zone temperature is above cooling setpoint.
- AND the fan is on.

The cooling coil valve shall open whenever the freezestat (if present) is on.

Heating Coil Valve:
The controller shall measure the zone temperature and modulate the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 60°F (adj.) and Winter Mode (Global) is active.
- AND the zone temperature is below heating setpoint.
- AND the fan is on.

The heating coil valve shall open whenever the unit is in Morning WarmUp.
The heating coil valve shall open whenever the freezestat (if present) is on.

Economizer (ASHRAE Cycle II):
The controller shall measure the zone temperature and modulate the mixed air dampers in sequence to maintain the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open during heating and ventilation whenever occupied.
The economizer shall be enabled whenever:
- Outside air temperature is at least 3°F (adj.) less than the Zone Temperature.
- AND the outside air temperature is less than 75°F (adj.)

The economizer shall close whenever the freezestat (if present) is on.
The outside air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.
The controller shall monitor the discharge air temperature. Should discharge temperature drop below a user definable temperature (adj.), the controller shall enable the heating, close the outside damper and open the return damper.

Minimum Outside Air Ventilation - Carbon Dioxide (CO2) Control:
When in the occupied mode, the controller shall measure the zone CO2 levels and open the outside air dampers on rising CO2 concentrations, overriding normal damper operation as CO2 concentrations rise from 750ppm to 800ppm (adj.) and above.

Discharge Air Temperature:
The controller shall monitor the discharge air temperature.
Alarms shall be provided as follows:
- High Discharge Air Temp: If the discharge air temperature is greater than 120°F (adj.).
- Low Discharge Air Temp: If the discharge air temperature is less than 40°F (adj.).

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

Zone Carbon Dioxide (CO2) Concentration Monitoring:
The controller shall measure the zone CO2 levels.
Alarms shall be provided as follows:
- High Zone Carbon Dioxide Concentration: If the zone CO2 concentration is greater than 1000ppm (adj.) when in the occupied mode.

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Zone Temp	x								x		x
Zone Setpoint Adjust	x										x
Discharge Air Temp	x								x		x
Zone Carbon Dioxide PPM	x								x		x
Cooling Valve		x							x		x
Heating Valve		x							x		x
Mixed Air Dampers		x							x		x
Zone Override			x						x		x
Freezestat			x						x	x	x
Fan Status			x						x		x
Occupancy Sensor			x						x		x
Fan Low Speed				x					x		x
Fan High Speed				x					x		x
Zone Carbon Dioxide PPM Setpoint					x				x		x
Schedule								x			
Cooling Setpoint									x		x
Heating Setpoint									x		x
High Zone Temp										x	
Low Zone Temp										x	
High Discharge Air Temp										x	
Low Discharge Air Temp										x	
Fan Failure										x	
Fan in Hand										x	
Fan Runtime Exceeded										x	
High Zone Carbon Dioxide Concentration										x	
Totals	**4**	**3**	**4**	**2**	**1**	**0**	**0**	**1**	**14**	**9**	**15**
Total Hardware (12)					**Total Software (25)**						

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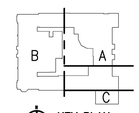
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
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ISSUE DATES

DATE: 02-15-16 ISSUED FOR: B.P. No. 1 - BIDS

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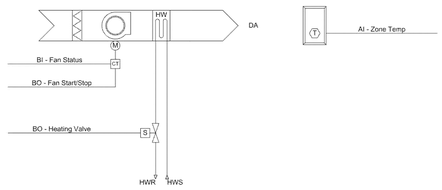
PROJECT NO.
15102

DRAWING NO.
M4.7

Printed: Tue, J:\Users\jmm\Sketches\Birmingham 15\M4.7.dwg
Feb 23, 2016 - 7:36am

CABINET HEATER



Cabinet Heater (typical of 10)

Run Conditions - Continuous:
The unit shall run continuously and shall maintain a heating setpoint of 70°F (adj.).
Alarms shall be provided as follows:
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

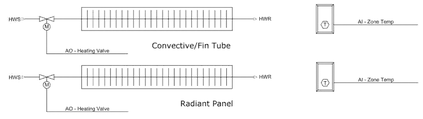
Fan:
The fan shall run anytime the zone temperature is below heating setpoint, unless shutdown on safeties.

Heating Coil Valve:
The controller shall measure the zone temperature and open the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 55°F (adj.) and Winter Mode (Global) is active.
- AND the zone temperature is below heating setpoint.
- AND the fan is on.

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Zone Temp	x								x		x
Fan Status			x						x		x
Fan Start/Stop				x					x		x
Heating Valve				x					x		x
Heating Setpoint									x		x
Low Zone Temp										x	
Fan Failure										x	
Fan in Hand										x	
Fan Runtime Exceeded										x	
Totals	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**5**	**4**	**5**
Total Hardware (4)					**Total Software (9)**						

CONVECTIVE/ FIN TUBE HEATER/ RADIANT PANEL



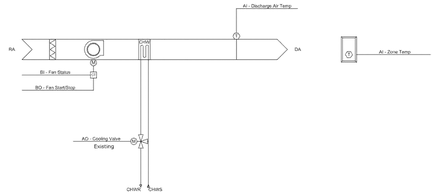
Convective / Fin Tube Heater/ Radiant Panel (typical of all)

Run Conditions - Continuous:
The unit shall run continuously and shall maintain a heating setpoint of 70°F (adj.).
Alarms shall be provided as follows:
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Heating Coil Valve:
The controller shall measure the zone temperature and open the heating coil valve to maintain its heating setpoint.
The heating shall be enabled whenever:
- Outside air temperature is less than 55°F (adj.) and Winter Mode (Global) is active.
- AND the zone temperature is below heating setpoint.

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Zone Temp	x								x		x
Heating Valve		x							x		x
Heating Setpoint									x		x
Low Zone Temp										x	
Totals	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**3**
Total Hardware (2)					**Total Software (4)**						

CORRIDOR CHW FAN COIL UNITS



Corridor CHW Fan Coil Units (typical of 11)

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule and proof of chillers before running in the following modes:
- Occupied Mode: The unit shall maintain
- A 74°F (adj.) cooling setpoint

- Unoccupied Mode (night setback): The unit shall maintain
- A 80°F (adj.) cooling setpoint.

Alarms shall be provided as follows:
- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Fan:
The fan shall run anytime the unit is calling for cooling, unless shutdown on safeties.

Cooling Coil Valve:
The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling shall be enabled whenever:
- Outside air temperature is greater than 60°F (adj.).
- AND the zone temperature is above cooling setpoint.
- AND the fan is on.

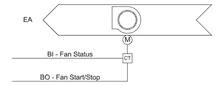
The cooling coil valve shall open whenever the freezestat (if present) is on.

Discharge Air Temperature:
The controller shall monitor the discharge air temperature.
Alarms shall be provided as follows:
- High Discharge Air Temp: If the discharge air temperature is greater than 120°F (adj.).
- Low Discharge Air Temp: If the discharge air temperature is less than 40°F (adj.).

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Zone Temp	x								x		x
Discharge Air Temp	x								x		x
Cooling Valve - *Existing*		x							x		x
Fan Status			x								x
Fan Start/Stop				x					x		x
Schedule								x			
Heating Setpoint									x		x
Cooling Setpoint									x		x
High Zone Temp										x	
Low Zone Temp										x	
High Discharge Air Temp										x	
Low Discharge Air Temp										x	
Fan Failure										x	
Fan in Hand										x	
Fan Runtime Exceeded										x	
Totals	**2**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**6**	**7**	**7**
Total Hardware (5)					**Total Software (14)**						

EXHAUST FAN



Exhaust Fan - On/Off (typical of 5)

Run Conditions - Scheduled:
The fan shall run according to a user definable schedule.

Fan:
The fan shall have a user definable (adj.) minimum runtime.

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Fan Status			x						x		x
Fan Start/Stop				x					x		x
Schedule								x			
Fan Failure										x	
Fan in Hand										x	
Fan Runtime Exceeded										x	
Totals	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**3**	**2**
Total Hardware (2)					**Total Software (6)**						

INDOOR LIGHTING



Indoor Lighting (typical of 3)

Run Conditions - Scheduled:
The lighting shall be turned on or off based on a user definable schedule.

Occupant Override:
A timed local override control will allow an occupant to override the schedule and turn the lighting on for an adjustable period of time. At the expiration of this time, control of the lighting will automatically return to the schedule

Warning Flash:
The output will cycle off (flash) 5 times (adj) to warn occupants when the lights are about to turn off. This flashing will occur 5 minutes (adj) before the the lights turn off.
Alarm shall be provided as follows:
- Output Runtime Exceeded: Lighting runtime exceeds a user definable limit (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
TLO Input			x						x		x
Lighting Output				x					x		x
Schedule								x			
Runtime Alarm										x	
Totals	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**1**	**2**
Total Hardware (2)					**Total Software (4)**						

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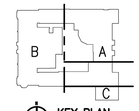
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Temperature Controls



KEY PLAN
NOT TO SCALE

ISSUE DATES

DATE: 02-15-16 **ISSUED FOR:** B.P. No. 1 – BIDS

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PROJECT NO.

15102

DRAWING NO.

M4.8

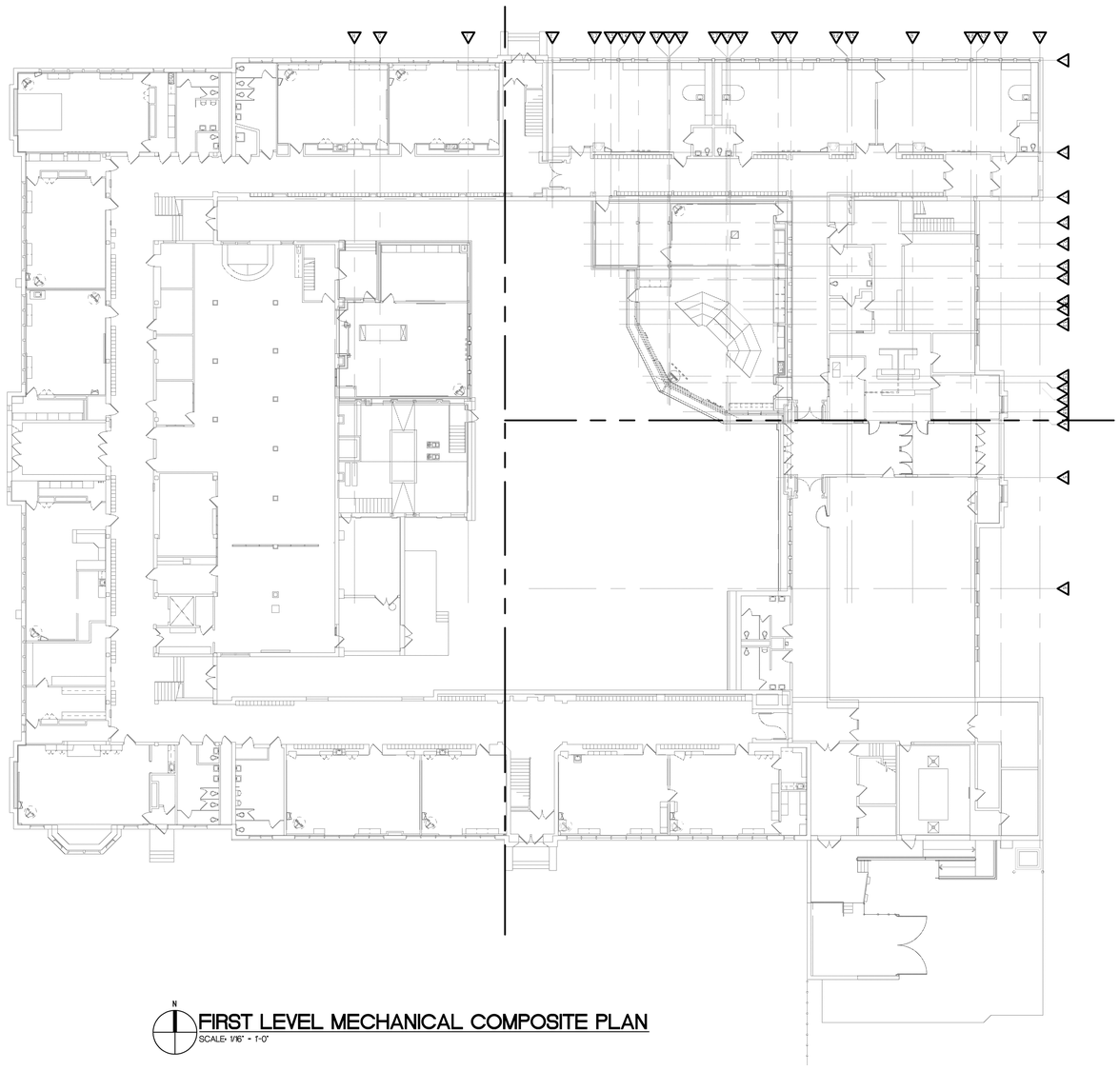
Drawing file: C:\Users\jenn\appdata\local\temp\AcPublish_7068\M4.6.dwg
Feb 11, 2016 - 4:04pm

MECHANICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
SAN	SANITARY DRAINAGE
V	PLUMBING VENT
ST	STORM
COND	CONDENSATE
FP	FIRE PROTECTION
NG	NATURAL GAS
SA	SUPPLY AIR
RA	RETURN AIR
EA	EXHAUST AIR
OA	OUTSIDE AIR
FHS	FIRE HOSE STATION
MBC	MICHIGAN BUILDING CODE
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN

MECHANICAL SHEET INDEX

SHEET	DESCRIPTION
MC1.1	FIRST LEVEL MECHANICAL COMPOSITE PLAN, SHEET INDEX, ABBREVIATION AND SYMBOL LISTS
MC1.2	SECOND LEVEL MECHANICAL COMPOSITE PLAN
M2.1A	FIRST LEVEL MECHANICAL PLAN - ZONE 'A'
M2.1B	FIRST LEVEL MECHANICAL PLAN - ZONE 'B'
M2.1C	FIRST LEVEL MECHANICAL PLAN - ZONE 'C'
M2.2A	SECOND LEVEL MECHANICAL PLAN - ZONE 'A'
M2.2B	SECOND LEVEL MECHANICAL PLAN - ZONE 'B'
M2.2C	SECOND LEVEL MECHANICAL PLAN - ZONE 'C'
M3.1	MECHANICAL SCHEDULES AND DETAILS
M4.1	TEMPERATURE CONTROLS
M4.2	TEMPERATURE CONTROLS
M4.3	TEMPERATURE CONTROLS
M4.4	TEMPERATURE CONTROLS
M4.5	TEMPERATURE CONTROLS
M4.6	TEMPERATURE CONTROLS
M4.7	TEMPERATURE CONTROLS
M4.8	TEMPERATURE CONTROLS



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FIRST LEVEL MECHANICAL COMPOSITE PLAN

SCALE- 1/16" = 1'-0"

MECHANICAL SYMBOL LIST

SYMBOL	DESCRIPTION
VAV OR CAV-X	AIR TERMINAL UNIT WITH HEATING COIL
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILL
	EXHAUST AIR GRILL
	DIFFUSER/GRILL MOUNTED TO SIDE OF DUCT
AxB	RECTANGULAR DUCT WITH DIMENSIONS A (SHOWN) x B (NOT SHOWN) IN INCHES
A"	ROUND DUCT WITH DIMENSION A IN INCHES
	VOLUME DAMPER
	UL APPROVED FIRE DAMPER FOR VERTICAL INSTALLATION
	UL APPROVED FIRE DAMPER FOR HORIZONTAL INSTALLATION
	SHUT-OFF BALL VALVE
	SHUT-OFF LUBRICATED PLUG VALVE
	CHECK VALVE
	CALIBRATED BALANCING VALVE
	REDUCED PRESSURE ZONE BACK FLOW PREVENTER
	PRESSURE RELIEF VALVE
	STRAINER
	PRESSURE REDUCING VALVE
	PRESSURE GAUGE
	THERMOMETER
	PIPE ANCHOR
	FLOOR DRAIN
	CLEAN OUT
	AUTOMATICE FIRE PROTECTION SPRINKLER RISER
	TEMPERATURE CONTROL WIRING USED TO DESIGNATE THERMOSTAT ZONING
T	THERMOSTAT

1/16" 0 2 4 6 8 10 20 40 80

1/8" 0 1 2 3 4 5 10 20 40

1/4" 0 1 2 3 4 5 10 20

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BAI No. 15-1606

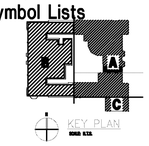
PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

First Level Mechanical Composite Plan, Sheet Index, Abbreviation and Symbol Lists



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DRAWING NO.

MC1.1

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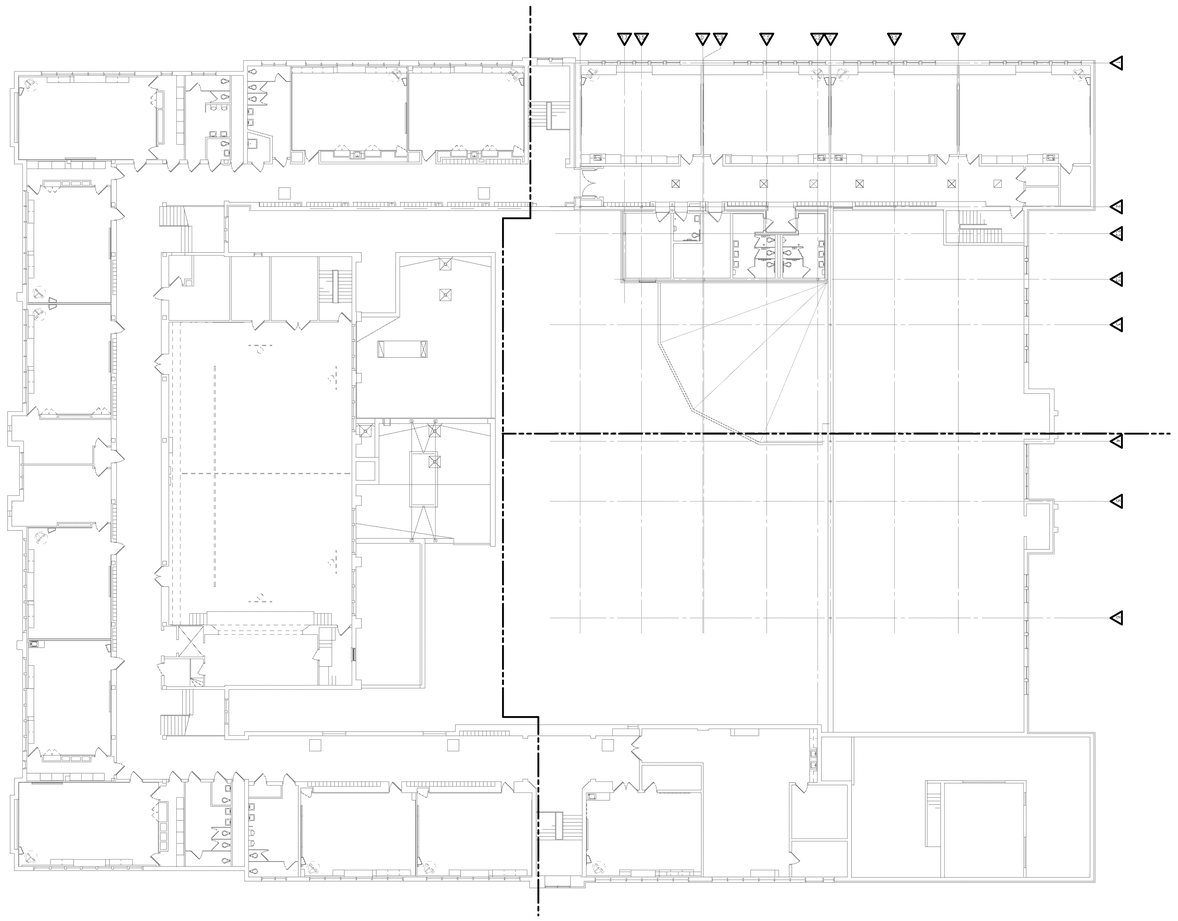

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SECOND LEVEL MECHANICAL COMPOSITE PLAN

SCALE: 1/16" = 1'-0"

1/16" 0 2 4 6 8 10 20 40 80

1/8" 0 1 2 3 4 5 10 20 40

1/4" 0 1 2 3 4 5 10 20

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PROJECT TITLE

Pierce Elementary School Remodeling

Birmingham Public Schools
Bloomfield Hills, Michigan

DRAWING TITLE

Second Level Mechanical Composite Plan



ISSUE DATES

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15102

DRAWING NO.

MC1.2

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