ARCHITECTURE

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GROGAN ELEMENTARY SCHOOL REMODEL

SOUTHGATE COMMUNITY SCHOOLS

SOUTHGATE, MI 48195

PROJECT NUMBER 16011

BIDS - BID PACKAGE 2

CONSULTANTS:

MECHANICAL ENGINEER

PETER BASSO ASSOCIATES INC.
CONSULTING ENGINEERS
5145 LIVERNOIS ROAD, SUITE 100
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LIST OF DRAWINGS

GENERAL INFORMATION

TS.1 COVER SHEET
TG.1 GENERAL INFORMATION

ARCHITECTURAL

AC1.1 COMPOSITE FLOOR PLAN
AD1.1 DOOR AND FRAME SCHEDULE
A0.1B FIRST LEVEL DEMOLITION PLAN - ZONE 'B'
A1.1B FIRST LEVEL FLOOR PLAN - ZONE 'B'
A2.1B FIRST LEVEL REFLECTED CEILING PLAN - ZONE 'B'
A5.1 DETAILS
A10.1 FIRST LEVEL FINISH PLAN - ZONE 'B'

MECHANICAL

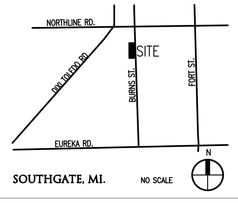
M0.1 MECHANICAL STANDARDS AND DRAWING INDEX
MD3.1 MECHANICAL DEMOLITION PLAN - ZONE 'B'
M3.1 MECHANICAL NEW WORK PLAN - ZONE 'B'
M7.1 MECHANICAL DETAILS AND SCHEDULES
M7.2 MECHANICAL DETAILS AND SCHEDULES
M8.1 TEMPERATURE CONTROLS STANDARDS AND GENERAL NOTES
M8.2 TEMPERATURE CONTROLS
M8.3 DDC-BAS SYSTEM ARCHITECTURE

ELECTRICAL

E0.1 ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2 ELECTRICAL STANDARD SCHEDULES
E0.3 ELECTRICAL COMPOSITE PLAN
ED1.1 PARTIAL ELECTRICAL DEMOLITION PLAN
E1.1 PARTIAL ELECTRICAL NEW WORK PLANS
E4.1 EMERGENCY LIGHTING CALCULATIONS

PROJECT DATA:

LOCATION MAP



SOUTHGATE, MI. NO SCALE

BUILDING:

BUILDING AREA(S) = 44,245 SQ. FT. (EXISTING)
2,575 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. 11B

FIRE PROTECTION: NON - SPRINKLERED

USE GROUP CLASSIFICATION: E (EDUCATION)

ADDRESS: GROGAN ELEMENTARY SCHOOL
13300 BURNS ST.
SOUTHGATE, MI 48195

DATE	ISSUED FOR:
04-04-2016	BP NO. 2 - BIDS

LICENSEE'S STATEMENT:

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REGISTRATION SEALS

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PROJECT TITLE
Grogan Elementary

PROJECT NO.
16011

DRAWING NO.
TS.1

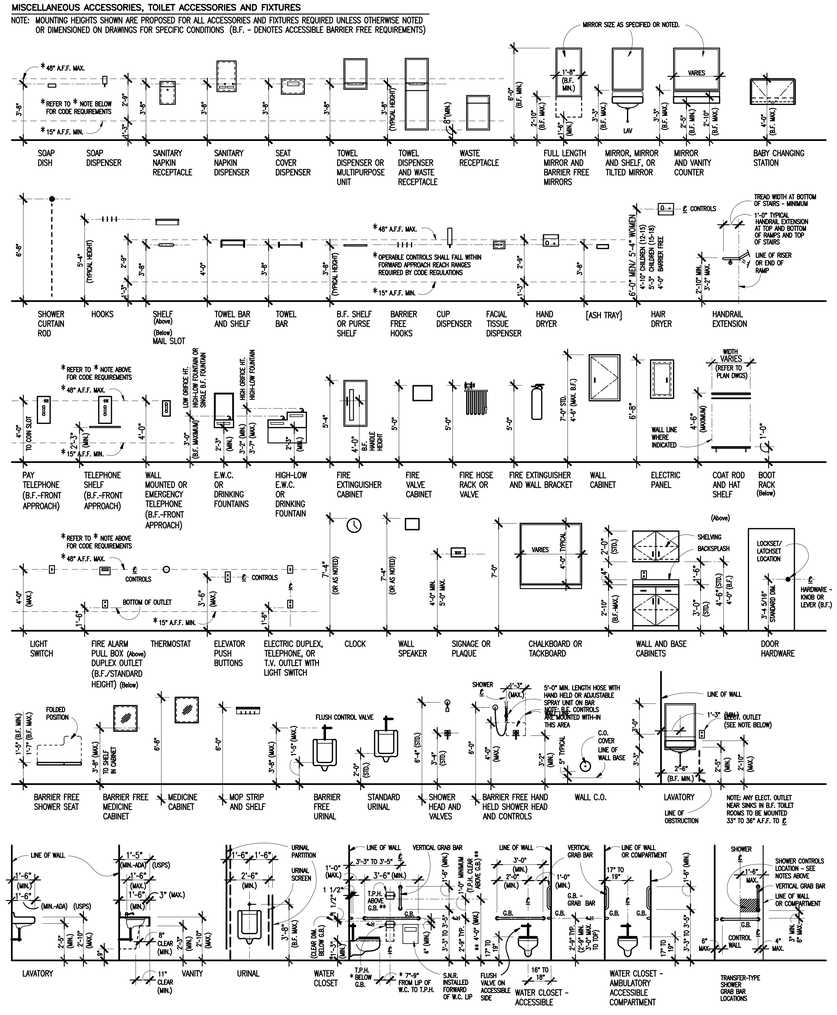
ABBREVIATIONS

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
ADDTN	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.	ASH TRAY
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.L.	BLACK-IRON
BLK	BLOCK
BLKG	BLOCKING
BD	BOARD
BLR	BOILER
BLR. 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
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	CASMENT
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
CLG.	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
CHAN. 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
C.CL.	CLOSURE
C.OL.	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
DMPFG	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.WD	FIRE RETARDANT TREATED WOOD
F.V.C.	FIRE VALVE CABINET
FP.	FIREPLACE
FPRFG.	FIREPROOFING
FIXT.	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
G.	GAS
GSKT	GASKET
G.V.A/ 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
HWHR	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
IW	INDIRECT WASTE
INFO.	INFORMATION
I.D.	INSIDE DIAMETER
I.F.	INSIDE FACE
INST'L.	INSTALL/INSTALLATION
INSUL.	INSULATE/INSULATION
INT.	INTERIOR
INTER.	INTERMEDIATE
I.E.	INVERT
	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/O	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
R.	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
SS.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
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
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.Y.	TURNING VANE
T.T.	TWIN TOILET
TYP.	TYPICAL
U	
U.C.	UNDERCUT
U.G.	UNDER GROUND
UL	UNDERWRITER'S LABORATORY
U.L.T.	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.	VERSUS
VTR	VENT THRU ROOF
VENT.	VENTILATE/ VENTILATION
V.I.F.	VERIFY IN FIELD
VS.	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./-	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

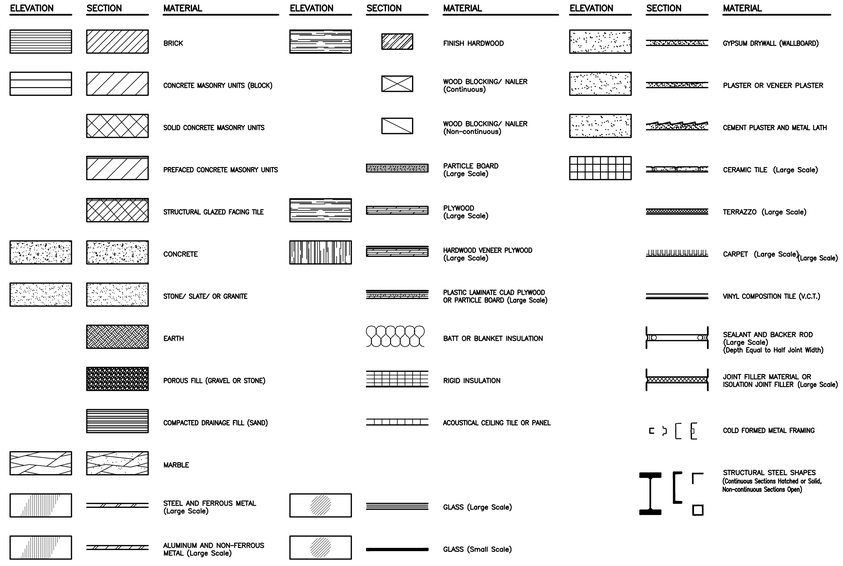
TYPICAL MOUNTING HEIGHTS

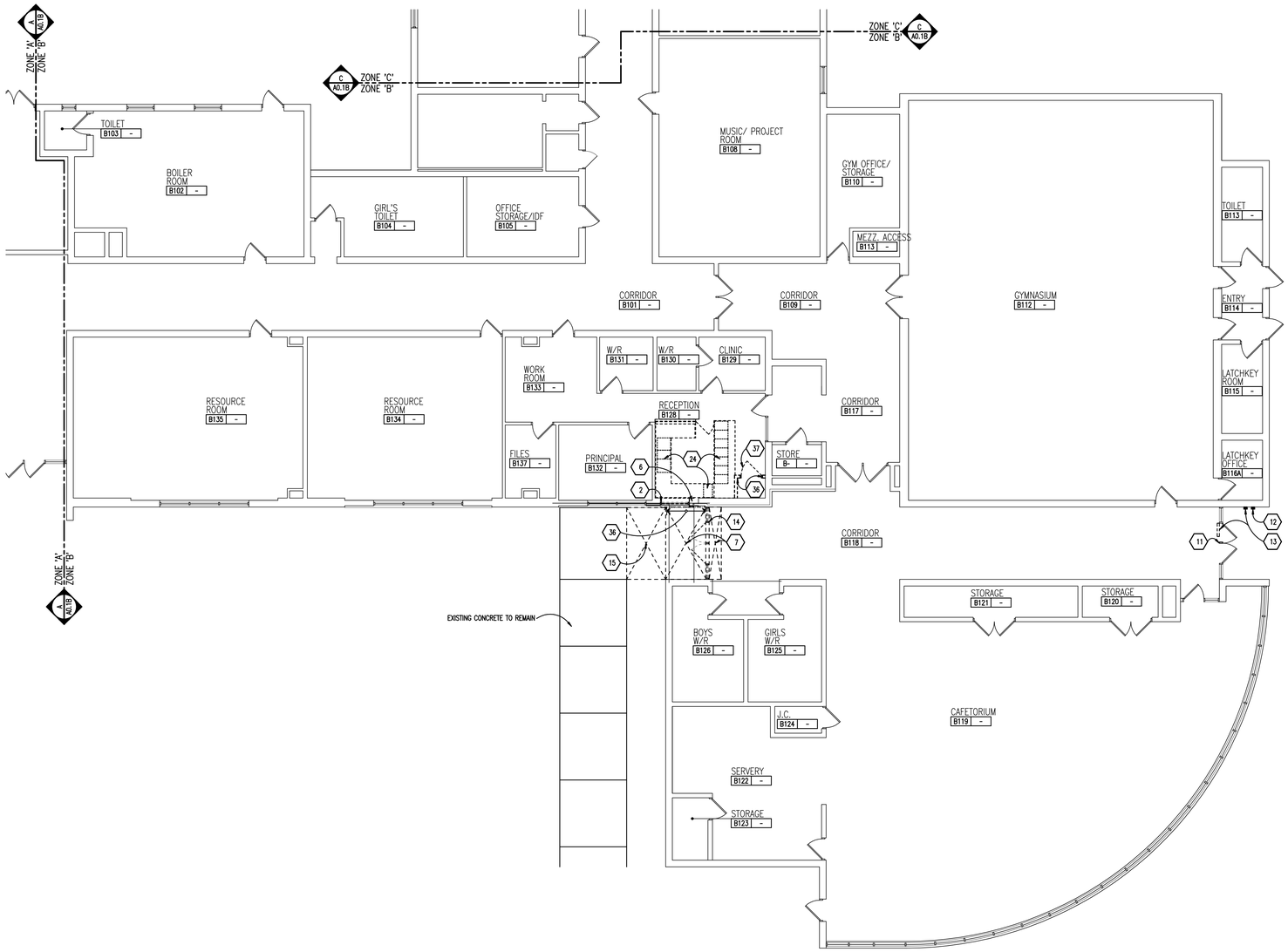
MISCELLANEOUS ACCESSORIES, TOILET ACCESSORIES AND FIXTURES

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)



MATERIAL DESIGNATIONS


ELEVATION
SECTION
MATERIAL
BRICK
CONCRETE MASONRY UNITS (BLOCK)
SOLID CONCRETE MASONRY UNITS
PREFACED CONCRETE MASONRY UNITS
STR



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.
2. REFER TO FOOD SERVICE EQUIPMENT (FSE) DRAWINGS FOR ADDITIONAL INFORMATION.
3. NOT USED.
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.
5. WHERE REMOVAL OF CASEWORK, MILLWORK, CHALKBOARD, TACKBOARD, OR EQUIPMENT, IS INDICATED. FILL HOLES AND PATCH EXISTING WALLS, BASES AND CEILINGS WHICH ARE TO REMAIN EXPOSED.
6. UNLESS OTHERWISE INDICATED, TOOTH NEW MATERIAL INTO EXISTING WHEREVER INFILL REMAINS EXPOSED.
7. SEE SPECIFICATION SECTIONS 01731 AND 01732 FOR ADDITIONAL DEMOLITION AND PATCHING REQUIREMENTS.
8. REFER ALSO TO ARCHITECTURAL WALL SECTIONS FOR ADDITIONAL SELECTIVE DEMOLITION.

DEMOLITION KEYNOTES

1. REMOVE MECHANICAL EQUIPMENT, REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL NOTES AND DETAILS. PATCH, REPAIR AND/OR FILL EXPOSED ADJACENT SURFACES TO MATCH EXISTING (U.O.N.).
2. REMOVE ALUMINUM WINDOW ASSEMBLY. STONE SILL AND MARBLE WINDOW STOOL. SALVAGE AND TURN OVER TO OWNER IF REQUESTED.
3. REMOVE PORTIONS OF EXISTING CMU WALL TO ACCOMMODATE NEW OPENING. COORDINATE SIZE OF OPENING REQUIRED WITH THE NEW WORK.
4. REMOVE PORTIONS OF EXISTING PARTIAL HEIGHT CMU WALL BELOW GLAZING TO ACCOMMODATE NEW OPENING. CMU TO BE TOOTHED IN AT JAMBS. COORDINATE SIZE OF OPENING REQUIRED WITH THE NEW WORK.
5. REMOVE PORTIONS OF EXISTING CMU AND BRICK WALL TO ACCOMMODATE NEW OPENING. SAW CUT BRICK VERTICAL AND PLUMB OR SALVAGE BRICK AND TOOTH IN OPENING. CMU TO BE TOOTHED IN AT JAMBS. COORDINATE SIZE OF OPENING REQUIRED WITH THE NEW WORK.
6. REMOVE EXTERIOR BRICK AND CMU FOR NEW OPENING. COORDINATE EXTENT WITH THE NEW WORK. SAVE THE EXISTING BRICK FOR PATCHING OF THE WALL.
7. REMOVE EXISTING CEILING IN ENTIRE ROOM OR AREA INDICATED REQUIRED TO ACCOMMODATE NEW WORK.
8. REMOVE PORTION OF EXISTING GYPSUM CEILING BULKHEAD TO ACCOMMODATE NEW WALL HEAD CONSTRUCTION. ONCE NEW PARTITION INSTALLED PATCH BULKHEAD AND REPAINT ENTIRE BULKHEAD.
9. REMOVE HOLLOW METAL FRAME, SIDELIGHTS & GLAZING, DOOR AND HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
10. REMOVE DOOR AND HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
11. REMOVE HARDWARE SPECIFIED AND PREPARE DOOR TO RECEIVE NEW HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
12. REMOVE INTERCOM AND SALVAGE FOR REINSTALLATION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
13. REMOVE EXISTING OVERHEAD DOOR OPERATOR AND RELATED CONTROLS, INCLUDING ACTUATORS AND SALVAGE FOR REINSTALLATION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
14. REMOVE EXTERIOR ALUMINUM DOORS, FRAMING AND GLAZING, INCLUDING ADJACENT GLAZED-IN PANELS, ALUMINUM THRESHOLDS AND HARDWARE. SALVAGE FOR REINSTALLATION AS NOTED FOR NEW WORK.
15. REMOVE CONCRETE FLOOR SLAB TO EXTENT SHOWN.
16. REMOVE VCT FLOOR FINISH. PREPARE SUB FLOOR TO RECEIVE NEW FINISH.
17. REMOVE CARPET. PREPARE SUBFLOOR TO RECEIVE NEW FINISH.
18. REMOVE TERRAZZO BASE TO EXTENT REQUIRED TO ACCOMMODATE NEW DOOR OPENING.
19. VAT FLOORING TO BE ABATED BY OTHERS. PREPARE SUB FLOOR TO RECEIVE NEW FINISH.
20. REMOVE DISPLAY CASE, FRAMING, SHWELVING, LIGHTING AND GLAZING.
21. REMOVE CURTAIN TRACK AND CURTAIN (OR VERTICAL BLINDS). FILL, PATCH, REPAIR AND FINISH TO MATCH EXISTING.
22. REMOVE SHELVING. PATCH AND FILL HOLES IN EXISTING WALLS.
23. BASE CABINETS AND COUNTERTOP TO REMAIN. TIE INTO NEW WORK AS DETAILED.
24. REMOVE COUNTERTOP(S) AND EXISTING BASE CABINET CASEWORK. SALVAGE BASE CABINET CASEWORK FOR REINSTALLATION WITH NEW COUNTERTOPS.
25. REMOVE COUNTERTOP AND METAL DESK BASE.
26. REMOVE LIGHT FIXTURE AND SALVAGE FOR REINSTALLATION, OR TO BE TURNED OVER TO OWNER. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
27. DISHWASHING EQUIPMENT TO BE REMOVED BY OWNER. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
28. AQUARIUM AND BASE TO BE RELOCATED BY OWNER.
29. REMOVE AND SALVAGE FOR REINSTALLATION, EXISTING WALL MOUNTED MAIL CASEWORK UNIT.
30. NOT USED
31. NOT USED
32. NOT USED
33. NOT USED
34. REPOSITION EXISTING CASEWORK AND COUNTERTOP AS INDICATED ON FLOOR PLAN.
35. REMOVE EXISTING GYPSUM BOARD BULKHEAD ASSEMBLY WITHIN NEW VESTIBULE
36. REMOVE EXISTING STONE SILL WEST SIDE OF NEW VESTIBULE

SALVAGED ITEMS

- DOORS AND HARDWARE.
- CASEWORK AS NOTED.
- INTERCOM CALL STATION EQUIPMENT.
- ELECTRIC STRIKES AS NOTED.
-

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REGISTRATION SEAL

CONSULTANT

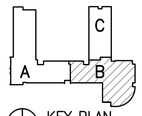
PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

First Level Demolition Plan - Zone - 'B'



KEY PLAN
NO SCALE

ISSUE DATES

04-04-2016	BP NO. 2 - BIDS

DATE:	ISSUED FOR:
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APPROVED	...

PROJECT NO.

16011

DRAWING NO.

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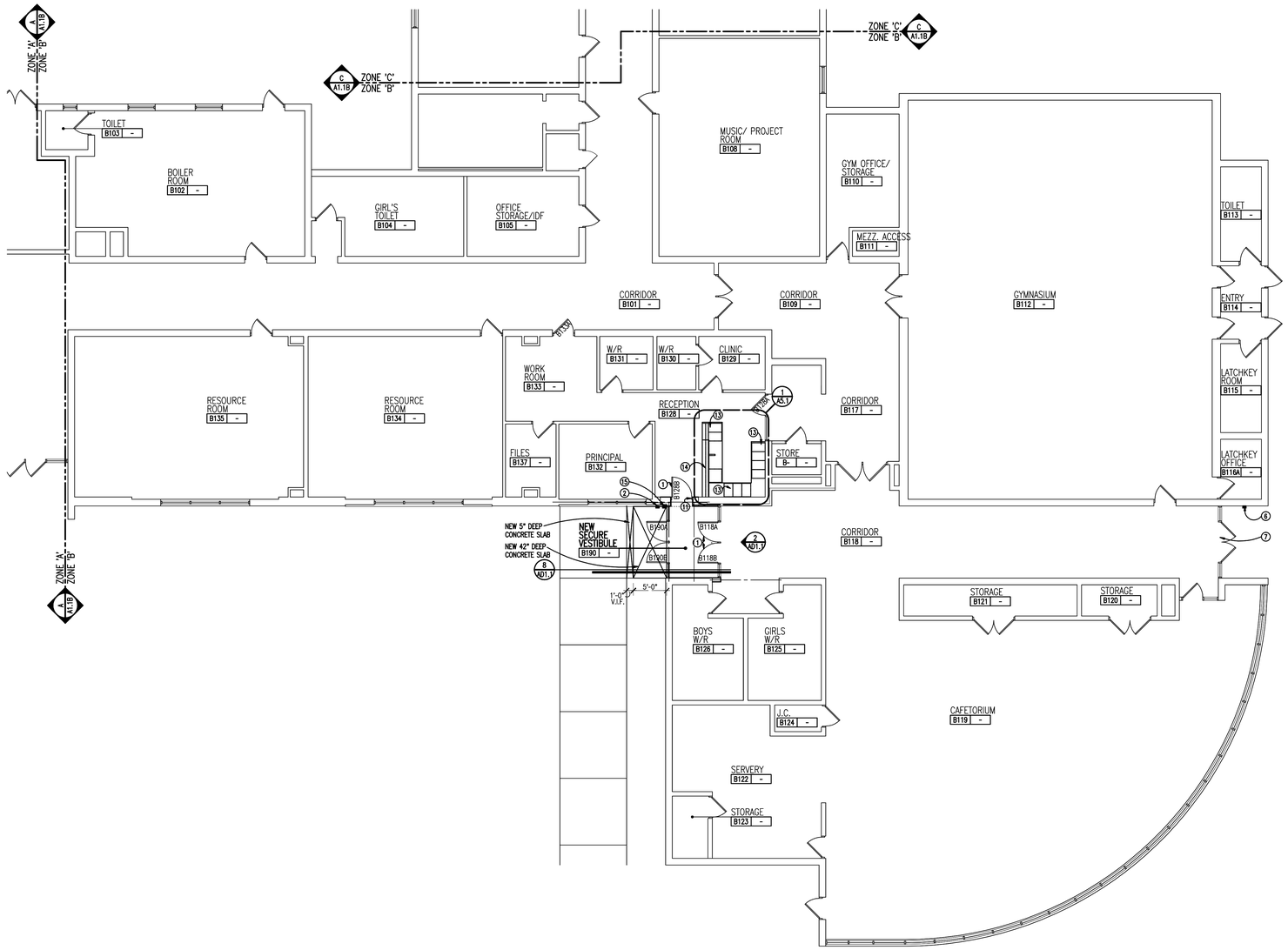

FIRST LEVEL FLOOR PLAN - ZONE 'B'

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..
- CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)

WALL / PARTITION LEGEND

1A — 3-5/8" METAL STUDS AT 16" O.C. (MAX.) WITH 5/8" GYPSUM BOARD EACH SIDE. HEIGHT: FROM FLOOR TO STRUCTURE ABOVE.

NOTE: COORDINATE WITH THE REFLECTED CEILING PLANS FOR RATED WALLS, WALLS WHICH EXTEND UP TO THE STRUCTURE ABOVE AND WALLS WHICH EXTEND ONLY A MINIMUM OF 4" ABOVE THE ADJACENT HIGHEST CEILING. DIMENSIONS OF WALLS ARE SHOWN NOMINAL IN PLAN FOR DETERMINING THE CMU THICKNESS. REFER TO BUILDING SECTIONS, WALL SECTIONS AND INTERIOR ELEVATIONS FOR BANDING OF SPECIAL CMU TYPES OR ANY OTHER SPECIAL CONDITIONS. PARTIAL HEIGHT CMU WALLS WILL BE NOTED AS SUCH ON THE FLOOR PLANS.

NOTE: AT FIRE-RATED AND SMOKE-RESISTING WALLS (MASONRY OR GYPSUM BOARD), PROVIDE U.L. APPROVED, FIRE-RATED, HEAD-OF-WALL TERMINATIONS AS INDICATED. IF NOT INDICATED, PROVIDE "BASIS OF DESIGN", HEAD-OF-WALL FIRESTOP JOINT SYSTEM AS INDICATED IN SPECIFICATION SECTION 07842 (1 OR 2 HOUR AS APPROPRIATE). PROVIDE MINIMUM 1 HOUR TERMINATION AT SMOKE-RESISTING WALLS.

NOTE: ALL CMU IS 8" THICK (NOM.) UNLESS DIMENSIONED OTHERWISE.

GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
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 EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECTS FIELD REPRESENTATIVE.
3. 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.
4. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.
5. 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.
6. 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.
7. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS)
8. 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.
9. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.
10. REFER TO A10.__ SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.
11. VERIFY ALL DIMENSIONS IN FIELD.
12. 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 A8.__ SERIES DRAWINGS.

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. NEW POWER DOOR OPERATOR ACTUATOR SWITCH
3. NEW KEYPAD/PROXIMITY READER
4. NEW PROXIMITY READER
5. EXISTING POWER DOOR OPERATOR ACTUATOR SWITCH TO REMAIN
6. PROVIDE STAINLESS STEEL COVER PLATE WITH TAMPER PROOF SCREWS TO BACK BOX FOR ABANDONED INTERCOM LOCATION (INTERCOM REMOVED FOR RELOCATION)
7. PROVIDE STAINLESS STEEL COVER PLATE WITH TAMPER PROOF SCREWS TO BACK BOX FOR ABANDONED OVERHEAD DOOR OPERATOR ACTUATOR SWITCH LOCATION ACTUATOR SWITCH REMOVED FOR RELOCATION)
8. EXISTING KEYPAD/PROXIMITY READER TO REMAIN
9. NEW PROXIMITY READER AND ELECTRONIC STRIKE
10. NEW ELECTRONIC STRIKE
11. PROVIDE NEW STRIKE TO DOOR FRAME, COORDINATED WITH EXISTING EXIT DEVICE.
12. EXISTING COUNTER AND BASE COUNTER TO REMAIN.
13. NEW COUNTERTOP AND SALVAGED BASE CABINET CASEWORK.
14. NEW MILLWORK UNIT WITH TRANSACTION COUNTER.
15. RELOCATED INTERCOM CALL STATION
16. RETAIN EXISTING FRAME IN OPENING.
17. PATCH ROOFING ASSEMBLY AROUND NEW CURB AT PENETRATIONS FOR MECHANICAL AND ELECTRICAL SERVICES AND PROVIDE MEMBRANE AND GALVANIZED FLASHINGS FOR CURB PROVIDED BY MECHANICAL CONTRACTOR.
18. REPOSITION EXISTING BASE CABINETS AND COUNTERTOP AS INDICATED.

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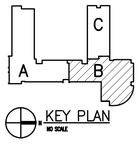

ISSUE DATES

DATE:	ISSUED FOR:
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16011

DRAWING NO.

A1.1B

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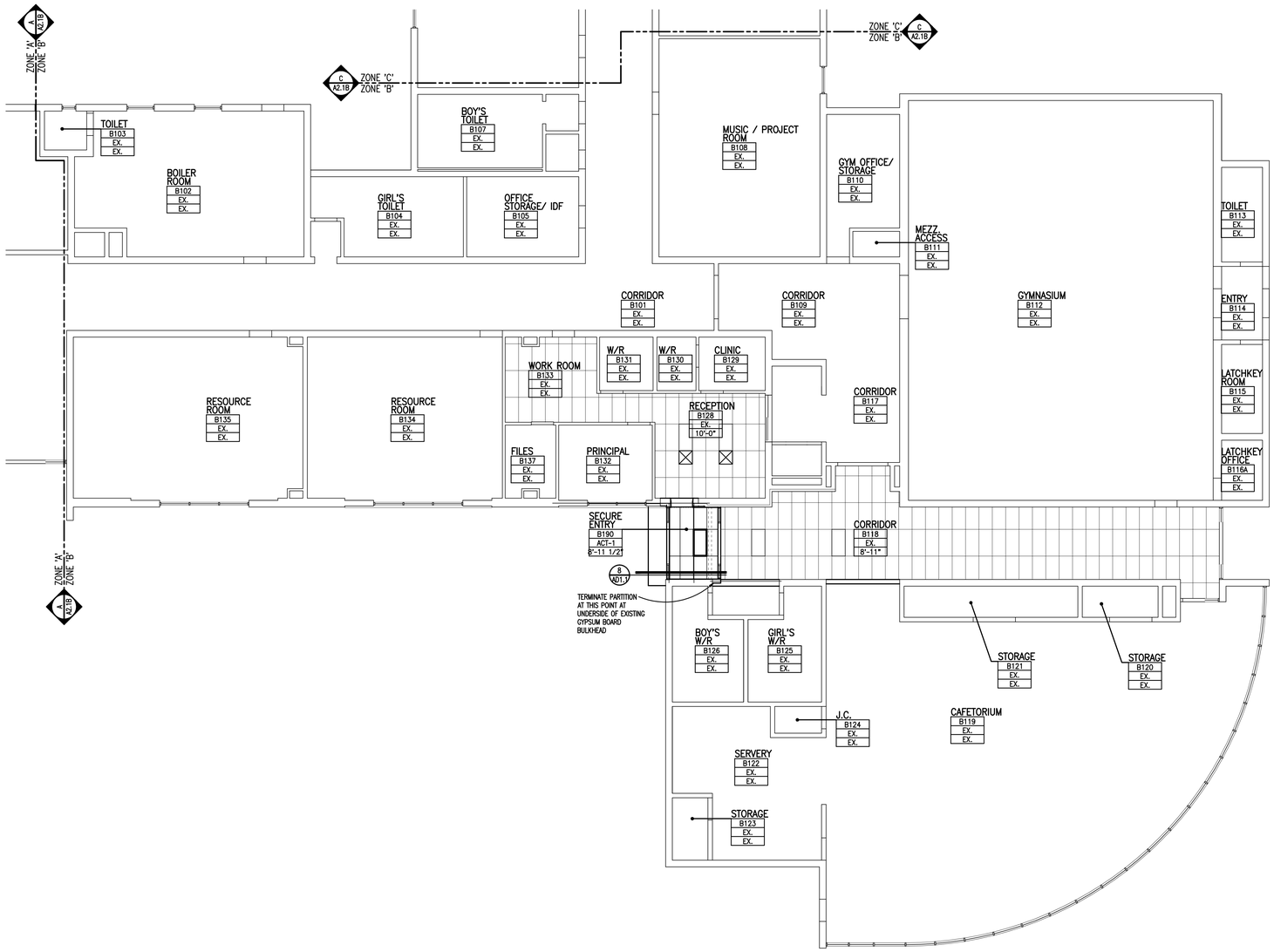

FIRST LEVEL REFLECTED CEILING PLAN - ZONE 'B'

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

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"MINMUM 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

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REGISTRATION SEAL

CONSULTANT

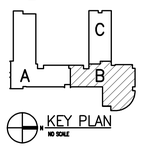
PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

First Level
Reflected Ceiling Plan - Zone - 'B'



ISSUE DATES

DATE:	ISSUED FOR:
04-04-2016	BP NO. 2 - BIDS

DRAWN	AKW
CHECKED	...
APPROVED	...

PROJECT NO.

16011

DRAWING NO.

A2.1B

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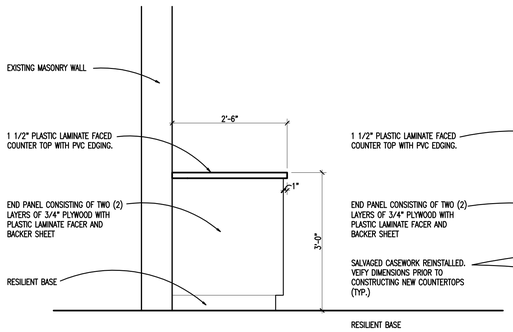
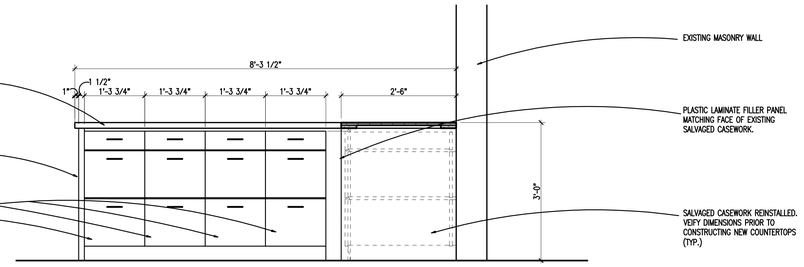
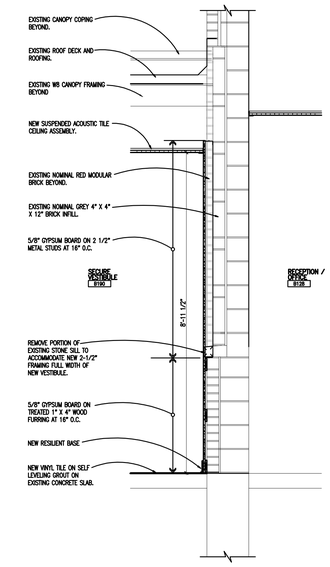


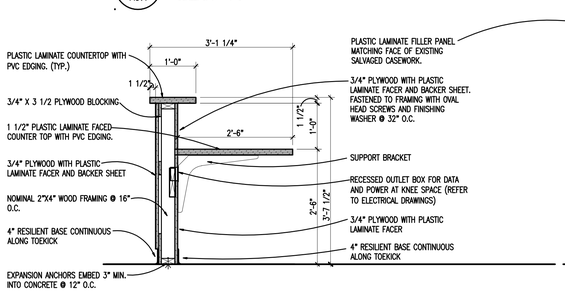
10 A5.1 DETAIL
SCALE: 3/4" = 1'-0"



6 A5.1 MILLWORK ELEVATION
SCALE: 3/4" = 1'-0"



2 A1.1B WALL SECTION
SCALE: 3/4" = 1'-0"



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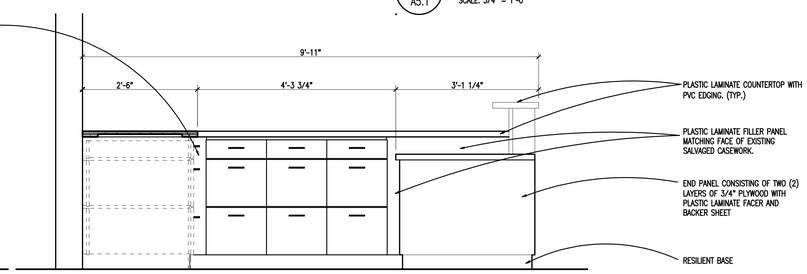
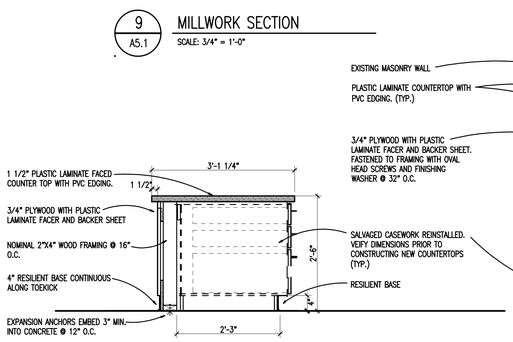


5 A5.1 MILLWORK ELEVATION
SCALE: 3/4" = 1'-0"



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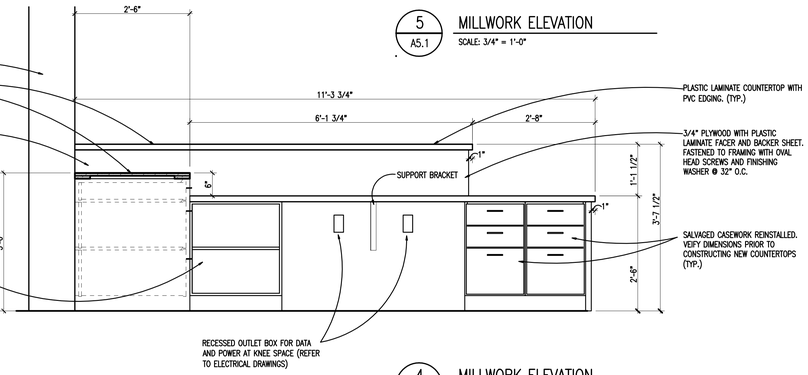

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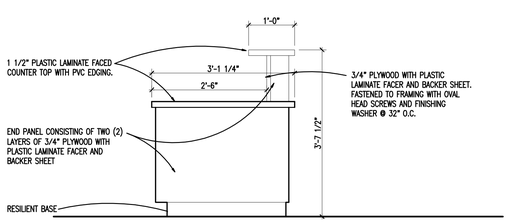
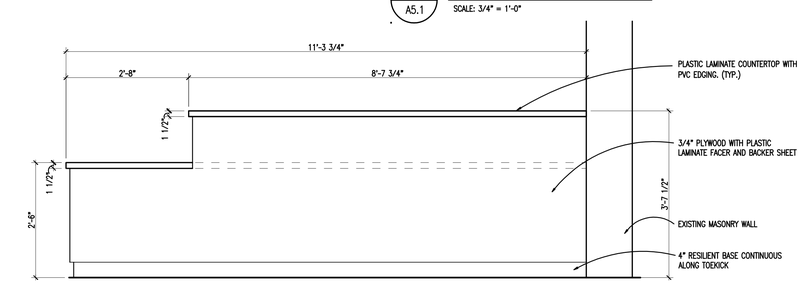


7 A5.1 MILLWORK ELEVATION
SCALE: 3/4" = 1'-0"



3 A5.1 MILLWORK ELEVATION
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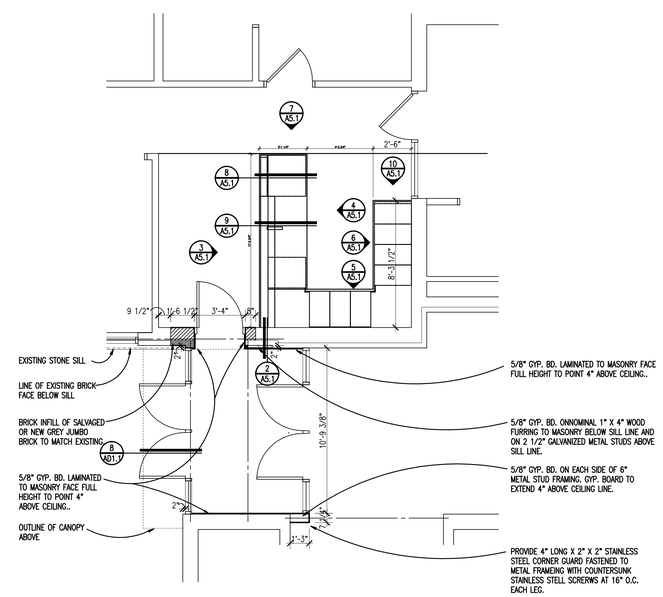

1 A1.1 ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

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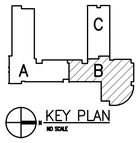
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE
Details



ISSUE DATES

DATE:	ISSUED FOR:
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APPROVED	...

PROJECT NO.
16011

DRAWING NO.
A5.1

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Apr 04, 2016 - 4:02pm

N

FIRST LEVEL FINISH PLAN - ZONE 'B'

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
RB
CPT-P
DENOTES PATTERN DETAIL
REFER TO "SPECIFIC NOTES" BELOW
PL ← PLASTIC LAMINATE TYPE/COLOR (TAG APPLIES TO ALL CABINETS AND/OR COUNTERTOPS WITHIN THAT SPACE, U.O.N.)

WALLS

AWP	ACOUSTICAL WALL PANEL
BRK	BRICK
CST	CAST STONE
DCMU	DECORATIVE CMU
EP	EPOXY PAINT
EX	EXISTING (NO NEW FINISH)
FWC	FABRIC WALL COVERING
PT	PAINT
PCMU	PREFACED CMU
PWP	PROTECTIVE WALL PANEL
ST	STONE
UF	UNFINISHED
WP	WOOD PANELING
VWC	VINYL WALL COVERING

BASE

CPT	CARPET
CT	CERAMIC TILE
DCMU	DECORATIVE CMU
EX	EXISTING (NO NEW FINISH)
LIN	LINOLEUM
NB	NO BASE, WALL FINISH EXTENDS TO FLOOR
PCMU	PREFACED CMU
RB	RESILIENT BASE
SV	SHEET VINYL (FLASHED COVE)
SR	SHEET RUBBER
ST	STONE
TREP	TROWELED EPOXY
TZ	TERRAZZO
VB	VENTED BASE
WD	WOOD BASE
WPF	WATERPROOF FLOORING

FLOORS

CONC	CONCRETE (UNFINISHED)
CONCD	CONCRETE - DECORATIVE/APPLIED FINISH
CONCP	CONCRETE - PAINTED
CONCS	CONCRETE - WITH APPLIED SURFACE SEALER
CRK	CORK
CPT	CARPET
CT	CERAMIC TILE
EMS	ENTRY MAT SYSTEM
EP	EPOXY PAINT
EX	EXISTING (NO NEW FINISH)
LIN	LINOLEUM
LVT	LUXURY VINYL TILE
RF	RUBBER FLOOR TILE
RSF	RUBBER SPORTS FLOORING SYSTEM
RST	RUBBER STAIR TREAD & RISER SYSTEM
SR	SHEET RUBBER
ST	STONE
SV	SHEET VINYL
TREP	TROWELED EPOXY
TZ	TERRAZZO
VCT	VINYL COMPOSITION TILE
WD	HARDWOOD FLOORING
WDG	HARDWOOD GYMNASIUM FLOORING
WPF	WATERPROOF FLOORING

GENERAL NOTES

1. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES, HEIGHTS AND FINISH INFORMATION.
2. AT CERAMIC TILE LOCATIONS, INSTALLER TO USE APPROPRIATE TROWEL TO ACCOMMODATE DIFFERENT TILE THICKNESSES.
3. REFER TO STRUCTURAL DRAWINGS FOR DEPRESSED SLAB LOCATIONS, INDICATIVE OF MUDSET BEDS AT CERAMIC TILE. SLOPE MUDSET TO DRAINS. REFER TO ARCHITECTURAL DRAWINGS FOR DRAIN ELEVATIONS AND LOCATIONS.
4. PROVIDE ANTI-FRACTURE MEMBRANE AT ALL THINSET CERAMIC FLOOR TILE LOCATIONS, UNLESS OTHERWISE NOTED.
5. PROVIDE RESILIENT BASE AT TOE KICK OF ALL CASEWORK AND BEHIND ALL MOVABLE EQUIPMENT/APPLIANCES, WHEN SCHEDULED WITHIN A ROOM.
6. 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.
7. REFER TO SPEC. SECTION 01230 FOR COMPLETE LIST AND DESCRIPTION OF ALTERNATIVES.
8. 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.
9. PROVIDE APPROPRIATE TRANSITION STRIPS BETWEEN DISSIMILAR FLOORING MATERIALS AT VERTICAL AND/OR HORIZONTAL APPLICATIONS.
10. CARPET EDGES SHALL BE CAPTURED BY NOSING. NOSING SHALL BE MITERED AT ALL OUTSIDE AND INSIDE CORNER CONDITIONS. ALL EDGES OF CARPET SHALL BE SEALED WITH A SEAM-SEALER.
11. WHEN CARPET IS SPECIFIED WITHIN A ROOM, ALL EXPOSED VERTICAL SIDES OF STAIR SHALL BE CARPETED.

SPECIFIC NOTES

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

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REGISTRATION SEAL

CONSULTANT

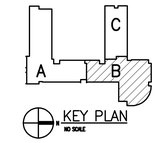
PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

First Level Finish Plan - Zone - 'B'



ISSUE DATES

DATE:	ISSUED FOR:
04-04-2016	BP NO. 2 - BIDS

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APPROVED	...

PROJECT NO.

16011

DRAWING NO.

A10.1B

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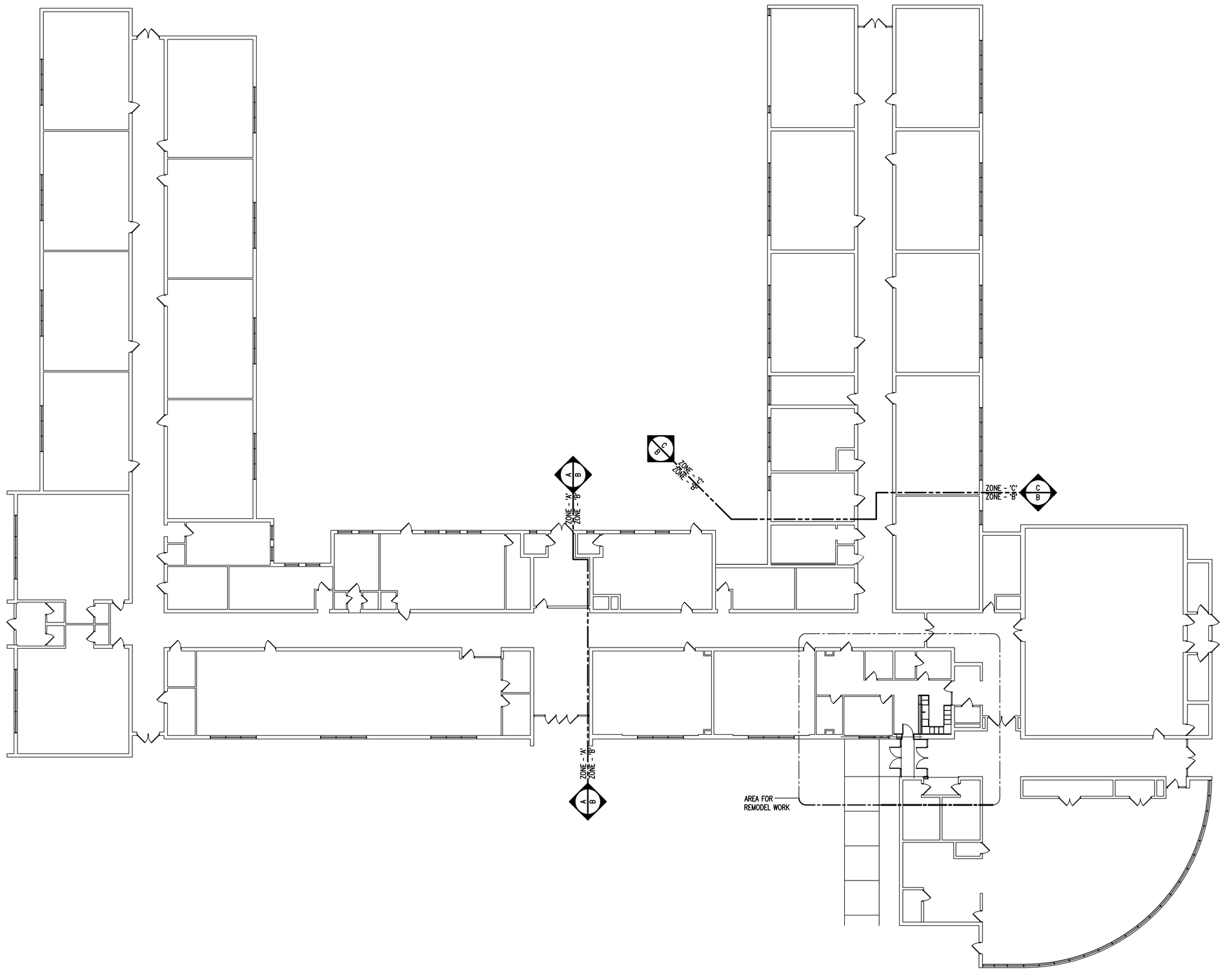

N FIRST LEVEL COMPOSITE FLOOR PLAN
SCALE: 1/16" = 1'-0"

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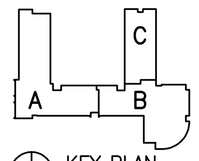
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE
First Level
Composite Floor Plan



N KEY PLAN
NO SCALE

ISSUE DATES

DATE:	ISSUED FOR:
04-04-2016	BP NO. 2 - BIDS

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APPROVED	...

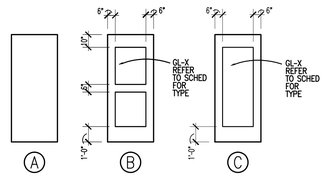
PROJECT NO.
16011

DRAWING NO.
AC1.1

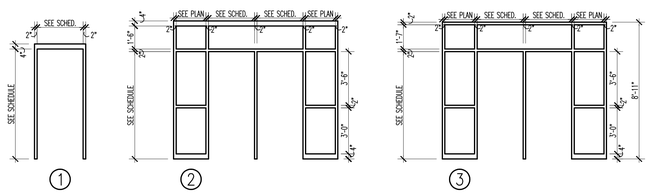
Drawing File: O:\proj\2016\tmpa\16011\16011_ac1.16011_ac11.dwg
Apr 01, 2016 - 3:23pm

DOOR & FRAME SCHEDULE

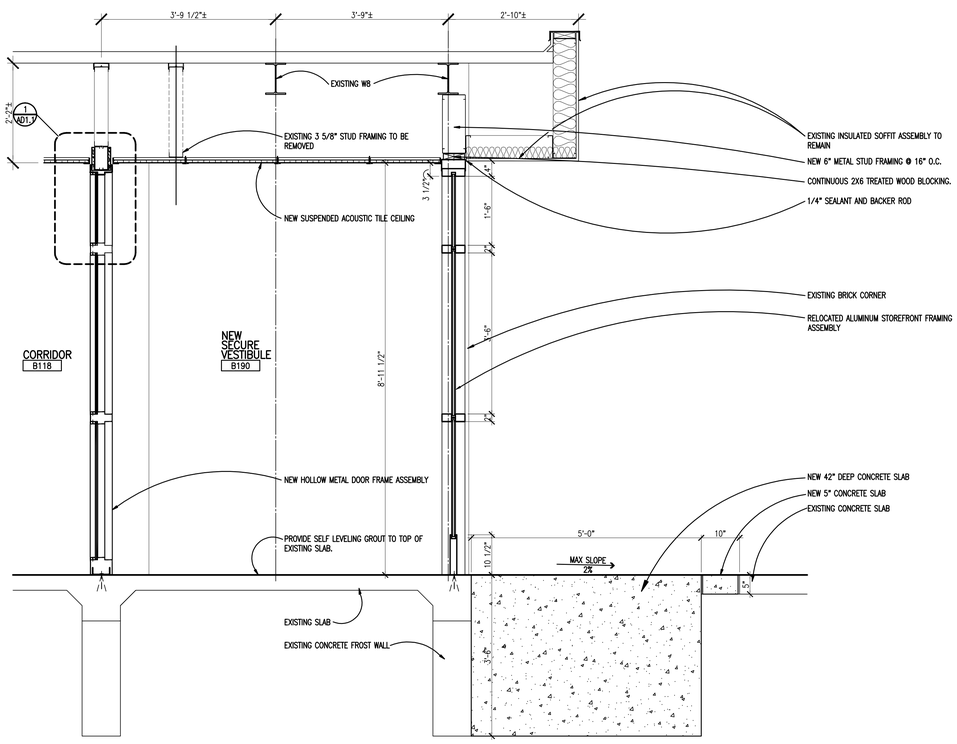
Opening		Door				Frame				Details							Remarks
No.	Opening Size (Width x Height)	Type	Material	Finish	Glass	Type	Material	Finish	Glass	Head	Jamb	Sill	Threshold	U.L. Label	Hdwe. Set		
Lower Level - Zone 'A'																	
B118A	3'-0"x 7'-0"	B	H.M.	PTD	GL-1	3	H.M.	PTD	GL-1	1/AD1.1	4, 5/AD1.1	-	.	.	.	.	
B118B	3'-0"x 7'-0"	B	H.M.	PTD	GL-1	3	H.M.	PTD	GL-1	1/AD1.1	4, 5/AD1.1	-	.	.	.	.	
B128A	EXISTING	B	EX. WD	EX.	EX.	EX.	EX H.M.	EX.	.	-	-	-	.	.	.	.	
B128B	3'-0"x 7'-0"	B	WD	PTD	GL-1	1	H.M.	PTD	-	2/AD1.1	3, 6A, 6B/AD1.1	-	MET	45	.	(2)	
B133A	EXISTING	A	EX. WD	EX.	.	EX.	EX H.M.	EX.	.	-	-	-	.	.	.	.	
B190A	3'-0"x 7'-0"	C	EX. AL	EX.	EX.	2	EX. AL	EX.	EX.	8/AD1.1	3, 7/AD1.1	-	.	.	.	RELOCATED	
B190B	3'-0"x 7'-0"	C	EX. AL	EX.	EX.	2	EX. AL	EX.	EX.	8/AD1.1	3, 7/AD1.1	-	.	.	.	(3) RELOCATED	



DOOR TYPES



FRAME TYPES



8 / AD1.1 WALL SECTION
SCALE: 3/4" = 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

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.

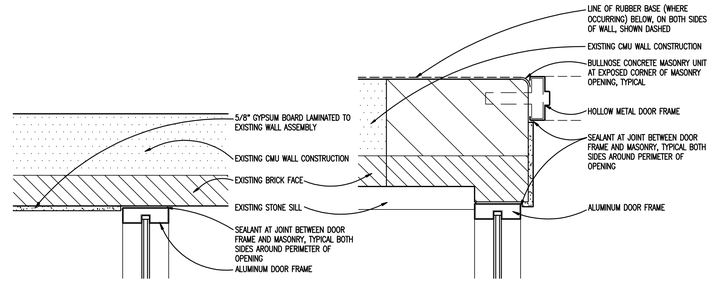
NOTES - REMARKS COLUMN

1. INSTALL SALVAGED ELECTRIC STRIKE
2. CONNECT STRIKE TO FIRE ALARM SYSTEM
3. REINSTALL SALVAGED OVERHEAD DOOR OPERATOR

GLAZING TYPES

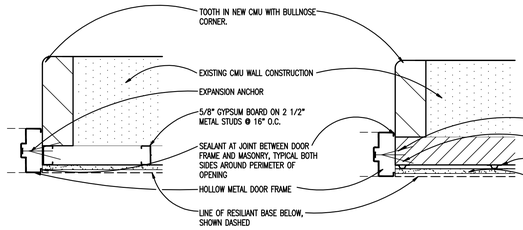
(REFER TO SPECIFICATIONS FOR ASSEMBLIES)

GL-1	1/4" CLEAR TEMPERED MONOLITHIC GLASS
GL-2	45 MIN. FIRE RATED CLEAR GLASS

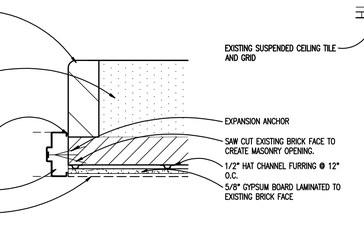


7 / AD1.1 ALUMINUM DOOR FRAME JAMB
SCALE: 1 1/2" = 1'-0"

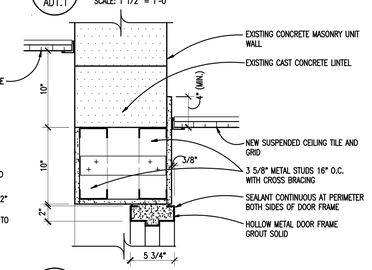
3 / AD1.1 HOLLOW METAL FRAME JAMB
SCALE: 1 1/2" = 1'-0"



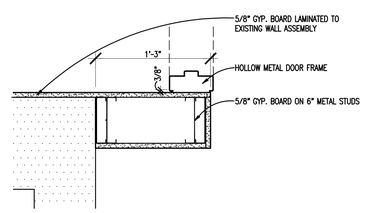
6B / AD1.1 HOLLOW METAL DOOR FRAME JAMB ABOVE SILL
SCALE: 1 1/2" = 1'-0"



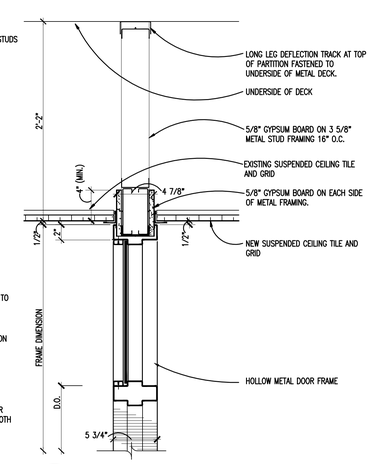
6A / AD1.1 HOLLOW METAL DOOR FRAME JAMB UNDER SILL
SCALE: 1 1/2" = 1'-0"

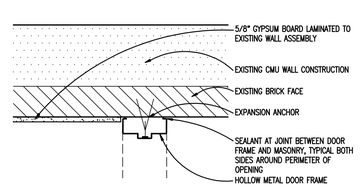


2 / AD1.1 HOLLOW METAL FRAME HEAD
SCALE: 1 1/2" = 1'-0"



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





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

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

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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE
Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE
Door & Frame Schedule

ISSUE DATES

DATE:	ISSUED FOR:
04-04-2016	BP NO. 2 - BIDS

DRAWN	AKW
CHECKED	...
APPROVED	...

PROJECT NO.
16011

DRAWING NO.
AD1.1

Drawing File: Q:\cosd\2016\mep\16011\16011_ad11.dwg
Apr 04, 2016 - 4:39pm

ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION
FX	FIXTURE TYPE
	LIGHTING FIXTURE
	DIRECT/INDIRECT LIGHTING FIXTURE
	EMERGENCY FIXTURE
	NIGHT LIGHTING FIXTURE
FX-NL	LIGHTING FIXTURE
	EMERGENCY FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	LIGHTING FIXTURE
	EMERGENCY FIXTURE
	DIRECTIONAL LIGHTING FIXTURE
	PENDANT LIGHTING FIXTURE
	WALL SCONCE
	LIGHTING TRACK
	TRACK LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE – POST TOP
	BOLLARD LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE – WALL MOUNTED
ELTD	EMERGENCY LOAD TRANSFER DEVICE
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3 WAY TOGGLE SWITCH
S4	4 WAY TOGGLE SWITCH
K	KEY OPERATED SWITCH
K3	3 WAY KEY OPERATED SWITCH
K4	4 WAY KEY OPERATED SWITCH
D	DIMMER SWITCH
D3	3 WAY DIMMER SWITCH
DO	DIMMER OCCUPANCY SENSOR SWITCH
DL	LOW VOLTAGE DIMMER SWITCH
SP	PILOT SWITCH

SYMBOL	DESCRIPTION
TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION
TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER
TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL
TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP
TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP
RGP	REMOTE GENERATOR ANNUCIATOR PANEL
ATS	AUTOMATIC TRANSFER SWITCH
UPS	UN-INTERRUPTABLE POWER SUPPLY
CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	QUAD RECEPTACLE
	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFI RECEPTACLES)
	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER
	DUPLEX EMERGENCY RECEPTACLE
	TAMPER RESISTANT RECEPTACLE
	QUAD TAMPER RESISTANT RECEPTACLE
	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE
	DUPLEX UPS RECEPTACLE
	USB RECEPTACLE
	4 PORT USB CHARGING STATION
	CEILING MOUNTED DUPLEX RECEPTACLE
	POWER POLE
	SPECIAL RECEPTACLE – REFER TO ELECTRICAL STANDARD SCHEDULES
	MULTI-OUTLET RACEWAY
"X"	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE
PTX	POKE THRU SERVICE FITTING "X" INDICATES TYPE
FBX	FLOOR BOX SERVICE FITTING "X" INDICATES TYPE
AFX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE
RX	CORD REEL "X" INDICATES TYPE
S3	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S3S3	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S4S4	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
ST	DIGITAL TIME SWITCH
SI	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION
SL	LOW VOLTAGE SWITCH
SO	OCCUPANCY SENSOR
SO2	OCCUPANCY SENSOR
OS X	OCCUPANCY SENSOR "X" INDICATES TYPE

REFER TO ELECTRICAL STANDARD SCHEDULES

SYMBOL	DESCRIPTION
CP	CONTROL PANEL
	MOTOR
VFC	VARIABLE FREQUENCY CONTROLLER.
	MANUAL CONTROLLER
	MAGNETIC CONTROLLER
	COMBINATION MAGNETIC CONTROLLER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
	PUSH BUTTON STATION
	JUNCTION BOX
	HARD WIRE POWER CONNECTION
DP	AUTOMATIC DOOR CONTROLLER
PP	AUTOMATIC DOOR PUSH PAD OPERATOR
	GROUND ROD
	GROUND CONNECTION
X	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE
	CONDUIT UP
	CONDUIT DOWN
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET
X	TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION BACKBOARD
TGB	TELECOMMUNICATION GROUNDING BUS BAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUS BAR
IC	INTERCOM OUTLET
S	SPEAKER
S	SPEAKER – WALL MOUNTED
MIC	MICROPHONE
VC	VOLUME CONTROL/STATION SELECTOR
B	SIGNALING BELL
	SINGLE FACE CLOCK – CEILING MOUNTED
	SINGLE FACE CLOCK – WALL MOUNTED
	DOUBLE FACE CLOCK – CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED
	DOUBLE FACE CLOCK – WALL MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED
TC	TIME CLOCK
C	CONTACTOR
P	PHOTOCELL
TT	TWIST TIMER

SYMBOL	DESCRIPTION
	SECURITY CAMERA
MD	MOTION DETECTOR
K	SECURITY KEY SWITCH
DC	DOOR CONTACT
KP	KEY PAD
CR	ACCESS CONTROL STATION
DB	DURESS PUSH BUTTON STATION
DE	DELAYED EGRESS
REX	REQUEST TO EXIT STATION
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
	SWITCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTOR
X	PANELBOARD "X" INDICATES PANELBOARD NAME
	GROUND
	STRESS CONE TERMINATION
K	SECURITY KEY INTERLOCK
G	ENGINE GENERATOR
M	UTILITY METER
EMU	ELECTRONIC METERING UNIT
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
SPD	SURGE PROTECTIVE DEVICE
CR	CONTROL RELAY
TDR	TIME DELAY RELAY
	THERMAL OVERLOAD RELAY
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
X-X	CABLE VAULT "X-X" INDICATES TYPE
	BRANCH CIRCUIT PANELBOARD
	MOTOR CONTROL CENTER
T	TRANSFORMER
	DISTRIBUTION PANEL
GB	GROUND BUS
PB	PLUG IN BUSWAY
FB	FEEDER BUSWAY

SYMBOL	DESCRIPTION
F	MANUAL FIRE ALARM BOX
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
CO	CARBON MONOXIDE DETECTOR
RT	REMOTE TEST STATION (FOR DUCT DETECTOR)
TD	THERMAL DETECTOR
BD	PROJECTED BEAM DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE- CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE – CEILING MOUNTED
F	FIREFIGHTERS PHONE JACK
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
IM	ADDRESSABLE MONITORING MODULE
CM	ADDRESSABLE CONTROL MODULE
TS	TAMPER SWITCH
FS	FLOW SWITCH
DR	MAGNETIC DOOR RELEASE

ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES
E0.3	ELECTRICAL COMPOSITE PLAN
ED1.1	PARTIAL ELECTRICAL DEMOLITION PLAN
E1.1	PARTIAL ELECTRICAL NEW WORK PLANS
E4.1	EMERGNECY LIGHTING CALCULATIONS

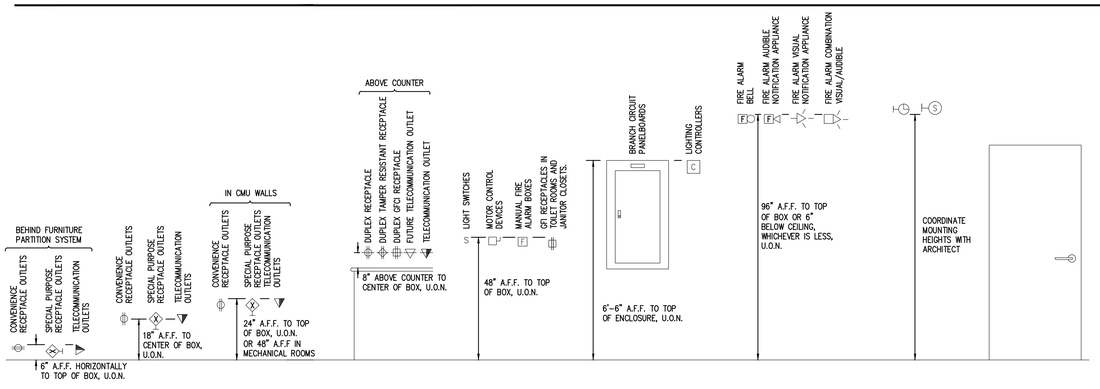
ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	AMPERES
AF	AMPERES FRAME (BREAKER RATING)
A.F.F.	ABOVE FINISH FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	AUDIENCE LEFT
AR	AUDIENCE RIGHT
AT	AMPERES TRIP (BREAKER SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
DEMO	DEMOLITION
DIM	DIMENSION
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DS	DOWNSTAGE
DWG	DRAWING
EBU	EMERGENCY BATTERY UNIT
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EM/ EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EO	ELECTRICALLY OPERATED
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
FA	FIRE ALARM
FLA	FULL LOAD AMPS
FLR	FLOOR
FOH	FRONT OF HOUSE
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FU	FUSE

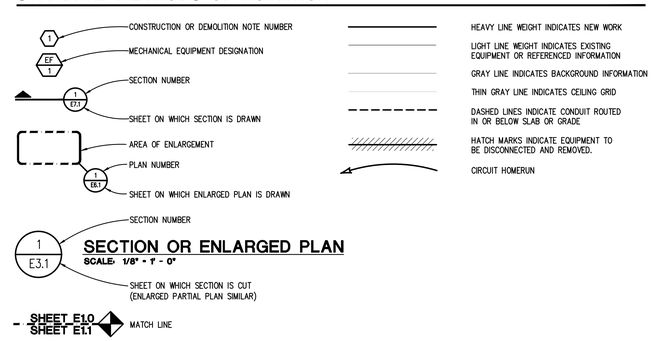
ABBREVIATION	DESCRIPTION
G/GRD/EG	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT – AMPERES
KW	KILOWATT
KWH	KILOWATT – HOURS
LA	LIGHTNING ARRESTOR
LP	LIGHTING PANEL
LDP	LIGHTING DISTRIBUTION PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE

ABBREVIATION	DESCRIPTION
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
P	POLE
PB	PUSHBUTTON STATION
PH	PHASE
PT	POTENTIAL TRANSFORMER
PDP	POWER DISTRIBUTION PANEL
RECEPT.	RECEPTACLE
RDP	RECEPTACLE DISTRIBUTION PANEL
RP	RECEPTACLE PANEL
RSC	RIGID STEEL CONDUIT
SCHED	SCHEDULE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TELECOM	TELECOMMUNICATIONS
TR	TAMPER RESISTANT
TTB	TELEPHONE TERMINAL BACKBOARD
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
US	UPSTAGE
V	VOLTS
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
(E)	EXISTING
(R)	RELOCATED

STANDARD MOUNTING HEIGHTS



STANDARD METHODS OF NOTATION



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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

ELECTRICAL STANDARDS AND DRAWING INDEX

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN SC
CHECKED GJZ
APPROVED GJZ

PROJECT NO.
16011

DRAWING NO.
E0.1

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LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURERS	LAMPS
F1E OFFICE	2 LAMP 2'X4' SPECIFICATION GRADE, LAY-IN FLUORESCENT FIXTURE: A12.125 INCH ACRYLIC PRISMATIC DIFFUSER. BALLAST SHALL BE MULTI-VOLT, REFER TO SPECIFICATIONS. FIXTURE SHALL BE HIGH REFLECTANCE POST PAINTED. PROVIDE WITH INTEGRAL EMERGENCY BATTERY BALLAST WITH MIN 1200 LUMENS OUTPUT FOR 90 MINUTES OF OPERATION.	1. METALUX GCB SERIES 2. LITHONIA SPB SERIES 3. COLUMBIA SPB SERIES	F32T8/4100K
L1E VESTIBULE	LED WALL PACK LIGHT FIXTURE: FORWARD THROW, WEATHER RESISTANT DIE CAST ALUMINUM HOUSING, IMPACT-RESISTANT, TEMPERED GLASS LENS FULLY GASKETED WITH INTEGRAL WEATHER TIGHT MULTI VOLT DRIVER WITH HIGH PERFORMANCE ALUMINUM HEATSINKS. U.L. LISTED FOR WET LOCATIONS. FIXTURE SHALL BE COMPLETELY GASKETED, ELECTRONIC DRIVER SHALL BE MULTI-VOLT. (MOUNT FIXTURE AT 9'-0"AFF). PROVIDE WITH COLD WEATHER EMERGENCY BATTERY BACKUP -20°C. PROVIDE WITH OCCUPANCY SENSOR CONTROL. FIXTURE SHALL DIM TO 50% OUTPUT WHEN NO MOTION IS DETECTED. PROVIDE WITH INTEGRAL PHOTO CELL. CUSTOM COLOR BY ARCHITECT.	1. LITHONIA TWH SERIES 2. MCGRAW 3. SPALDING	LED 4100K WHITE MINIMUM 2500 DELIVERED LUMENS MAX 40 WATTS 80 CRI
X	EXIT LIGHT SHALL BE MOUNTED AS INDICATED ON PLAN. THERMOPLASTIC WHITE HOUSING. HIGH OUTPUT LED DIFFUSE LIGHT PANEL, SINGLE STENCIL WHITE FACE, MULTI VOLT (FUSED) OPERATION. PROVIDE DIRECTIONAL ARROW AS INDICATED ON PLAN. UNIT SHALL BE COMPLETELY SELF-CONTAINED WITH SEALED MAINTENANCE FREE BATTERY CAPABLE OF PROVIDING 90 MINUTE FULL LIGHT OPERATION. UNIT SHALL HAVE AUTOMATIC CONSTANT CURRENT SERIES CHARGER, TRANSFER CIRCUIT AND TEST SWITCH. WARRANTY FOR 3 YEARS WITH AN ADDITIONAL 3 YEAR PRO RATA WARRANTY ON THE BATTERY.	1. LITHONIA QUANTUM SERIES 2. SURLITE LPX SERIES 3. DUAL-LITE EVE SERIES 4. LIGHTALARMS GRANDE SERIES	HIGH OUTPUT LED LIGHT PANEL

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

	OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS					
		WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE			
		PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
	15-20	12	12	3/4"	3/4"	3/4"	3/4"
	25-30	10	10	3/4"	3/4"	3/4"	3/4"
	35-40	8	10	3/4"	3/4"	3/4"	3/4"
*	45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"
*	60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	3/4" (1")
	70	4	8	1"	1 1/4"	1 1/4"	1 1/4"
*	80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"
*	90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"
*	110	2 (1)	6	–	1 1/4"	1 1/4"	1 1/4" (1 1/2")
*	125	1 (1/0)	6	–	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"
	150	1/0	6	–	1 1/2"	1 1/2"	1 1/2"
	175	2/0	6	–	2"	2"	2"
	200	3/0	6	–	2"	2"	2 1/2"
	225	4/0	4	–	2"	2"	2 1/2"
	250	250	4	–	2 1/2"	2 1/2"	2 1/2"
	300	350	4	–	2 1/2"	2 1/2"	3"
	350	500	3	–	3"	3"	3"
	400	500	3	–	3"	3"	3"
	450	2-4/0	2-2	–	2-2"	2-2"	2-2 1/2"
	500	2-250	2-2	–	2-2 1/2"	2-2 1/2"	2-2 1/2"
	600	2-350	2-1	–	2-2 1/2"	2-2 1/2"	2-3"
	700	2-500	2-1/0	–	2-3"	2-3"	2-3"
	800	2-500	2-1/0	–	2-3"	2-3"	2-3 1/2"
	1000	3-400	3-2/0	–	3-3"	3-3"	3-3"
	1200	3-600	3-3/0	–	3-3 1/2"	3-3 1/2"	3-3 1/2"
	1600	4-600	4-4/0	–	4-3 1/2"	4-3 1/2"	4-3 1/2"
	2000	5-600	5-250	–	5-3 1/2"	5-3 1/2"	5-3 1/2"

* = SEE NOTE 4

NOTES:

1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
4. CONDUCTORS ARE BASED ON 90°C, 600V, INSULATED COPPER WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.
5. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
6. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
7. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
8. PRIOR APPROVAL FROM ENGINEER SHALL OCCUR IF A DIFFERENT SIZE/NUMBER OF CONDUCTORS IS TO BE USED. AMPACITY SHALL BE EQUAL OR GREATER.

MOTOR CIRCUIT SIZING SCHEDULE (208V, 3 PHASE)

MOTOR HP	SWITCH/ FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNECT (NOTE 3)
1/2	30/6A	15A	1	30A
3/4	30/6A	15A	1	30A
1	30/10A	15A	1	30A
1 1/2	30/10A	15A	1	30A
2	30/10A	15A	1	30A
3	30/20A	20A	1	30A
5	30/25A	35A	1	30A
7 1/2	60/40A	50A	1	60A
10	60/50A	60A	2	60A
15	60/60A	90A	3	60A
20	100/80A	100A	3	100A
25	100/100A	110A	3	100A
30	200/125A	125A	4	200A
40	200/175A	175A	4	200A
50	200/200A	200A	5	200A
60	400/250A	250A	5	400A
75	400/300A	300A	5	400A
100	400/400A	400A	6	400A
125	600/500A	600A	6	600A
150	600/600A	600A	6	600A

RACEWAY APPLICATION SCHEDULE

RACEWAY		AC/MC CABLE	ALUMINUM RIGID CONDUIT	ELECTRICAL METALLIC TUBING (EMT)	SURFACE RACEWAY	ELECTRICAL NONMETALLIC TUBING (ENT)	FLEXIBLE METAL CONDUIT (FMC)	GENERAL-USE OPTICAL FIBER/COMMUNICATION CABLE RACEWAY	INTERMEDIATE METAL CONDUIT (IMC)	LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)	LIQUIDTIGHT FLEXIBLE NONMETAL CONDUIT (LFNC)	PLENUM-TYPE OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY	RIGID STEEL CONDUIT	RISER-TYPE OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY	RIGID NONMETALLIC CONDUIT (RNC) TYPE EPC-40	RIGID NONMETALLIC CONDUIT (RNC) TYPE EPC-80	HIGH DENSITY POLYTHYLENE (HDPE) SCHEDULE 40	HIGH DENSITY POLYTHYLENE (HDPE) SCHEDULE 80	KEYED NOTES
OUTDOOR	EXPOSED								X				X						
	CONCEALED (ABOVE GROUND)								X				X						
	UNDERGROUND												X		X	X	X	X	
	CONNECTED TO VIBRATING EQUIPMENT									X									EQUIPMENT INCLUDING: TRANSFORMERS, HYDRAULIC PNEUMATIC, ELECTRIC SOLENOID, MOTOR DRIVEN EQUIPMENT
INDOOR	EXPOSED NOT SUBJECT TO PHYSICAL DAMAGE - UNFINISHED SPACES			X															
	EXPOSED NOT SUBJECT TO PHYSICAL DAMAGE - FINISHED SPACES				X														
	EXPOSED SUBJECT TO SEVERE PHYSICAL DAMAGE								X				X						RIGID STEEL CONDUIT UP TO 10'-0"AFF. LOCATIONS INCLUDE: LOADING DOCKS, CORRIDORS USED FOR TRAFFIC OF MECHANIZED CARTS AND PALLET HANDLING UNITS, MECHANICAL ROOMS
	CONCEALED IN CEILINGS, INTERIOR WALL AND PARTITIONS	X		X															NOT TO EXCEED 6'-0" IN CEILING SPACE
	CONNECTED TO VIBRATING EQUIPMENT						X			X									EQUIPMENT INCLUDING: TRANSFORMERS, HYDRAULIC PNEUMATIC, ELECTRIC SOLENOID, MOTOR DRIVEN EQUIPMENT USE LFMC IN DAMP/WET LOCATIONS
	DAMP AND WET LOCATIONS								X				X						
	BELOW SLAB IN GRADE														X	X			PROVIDE RIGID STEEL ELBOWS WHERE CONDUIT PENETRATES SLAB. CONDUIT INSTALLED 6" BELOW BOTTOM OF SLAB
	EMBEDDED IN CONCRETE ABOVE GRADE												X		X	X			
	OPTICAL FIBER OR COMMUNICATIONS CABLE IN SPACES USED FOR ENVIRONMENTAL AIR			X								X							
	CONCEALED GENERAL PURPOSE DISTRIBUTION OF OPTICAL FIBER OR COMMUNICATION CABLE			X				X				X		X					
SPECIAL APPLICATIONS	MRI		X																
	NATATORIUMS/FOUNTAINS			X															USE COMPRESSION FITTINGS. PAINTED WITH CORROSION RESISTANT PAINT BY PAINTING CONTRACTOR.

GENERAL NOTES

1. "X" INDICATES ACCEPTABLE SELECTION.
2. REFER TO "CONDUCTORS AND CABLES" SPECIFICATION FOR APPLICATION LIMITATIONS OF AC/MC CABLE.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS

BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

NOTES:

1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE/IES 90.1 - 1999 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

OCCUPANCY SENSOR LEGEND

TYPE	DESCRIPTION
OS A	360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS B	90° CEILING/WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS C	360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR
OS D	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
OS E	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR - CORRIDOR OPTIMIZED
So	WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR
So2	WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR - DUAL LEVEL SWITCHING
Do	WALL DIMMER SWITCH INFRARED OCCUPANCY SENSOR

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

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PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
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ELECTRICAL STANDARD SCHEDULES

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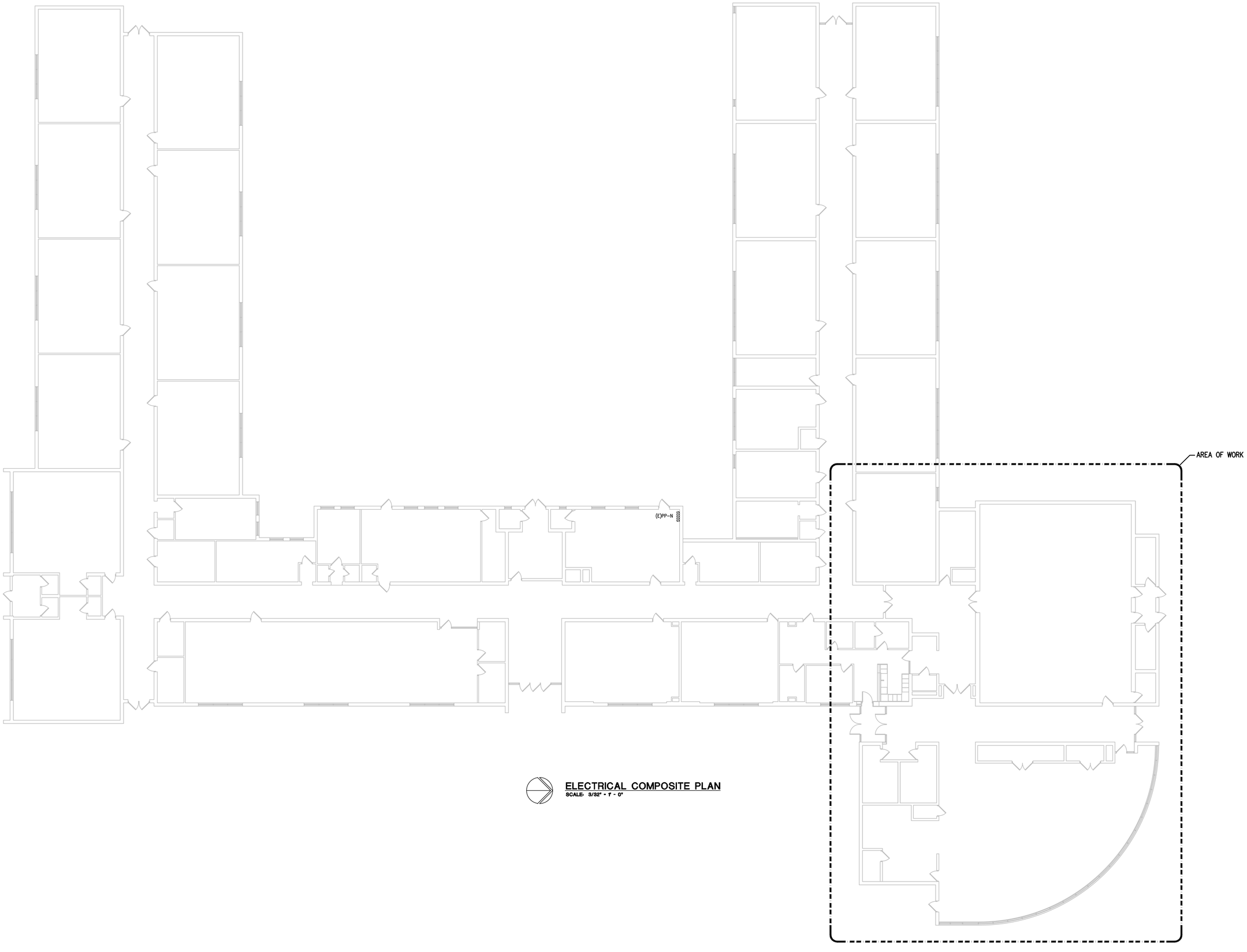
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



ELECTRICAL COMPOSITE PLAN
SCALE: 3/32" = 1' - 0"

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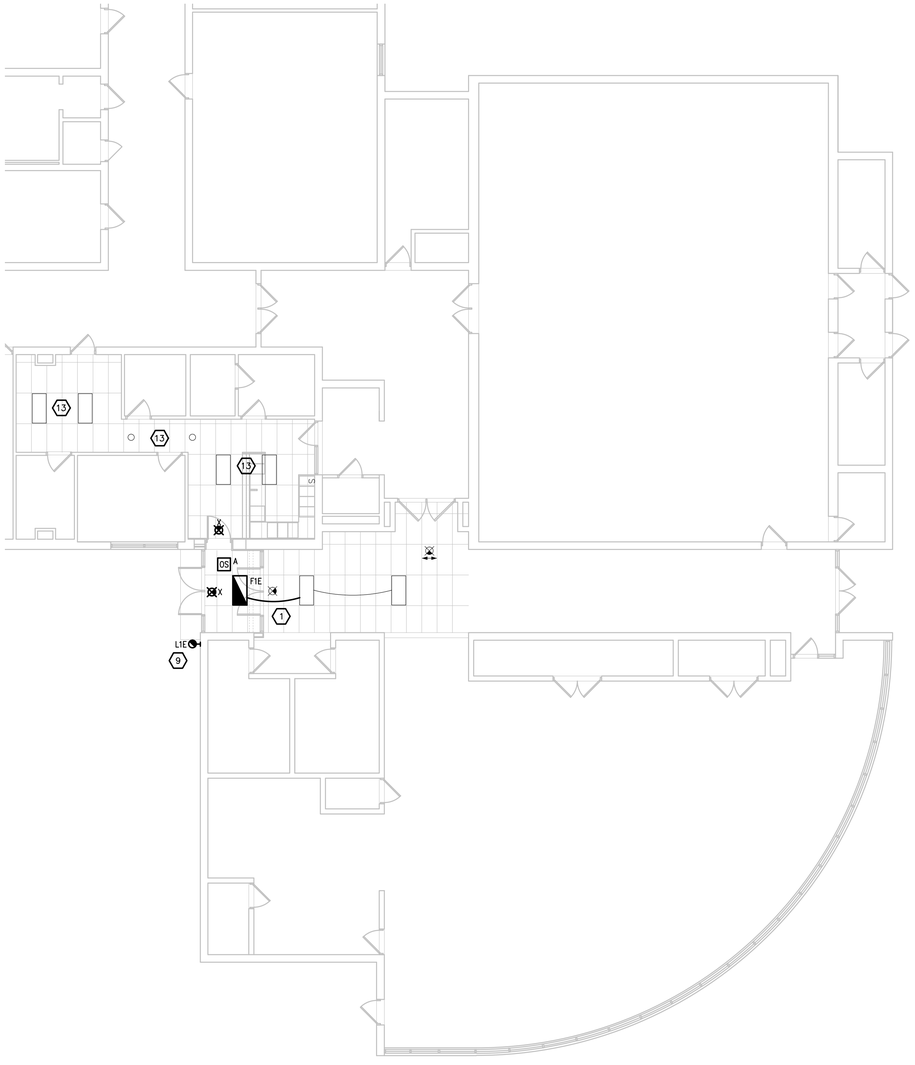


PARTIAL LIGHTING NEW WORK PLAN

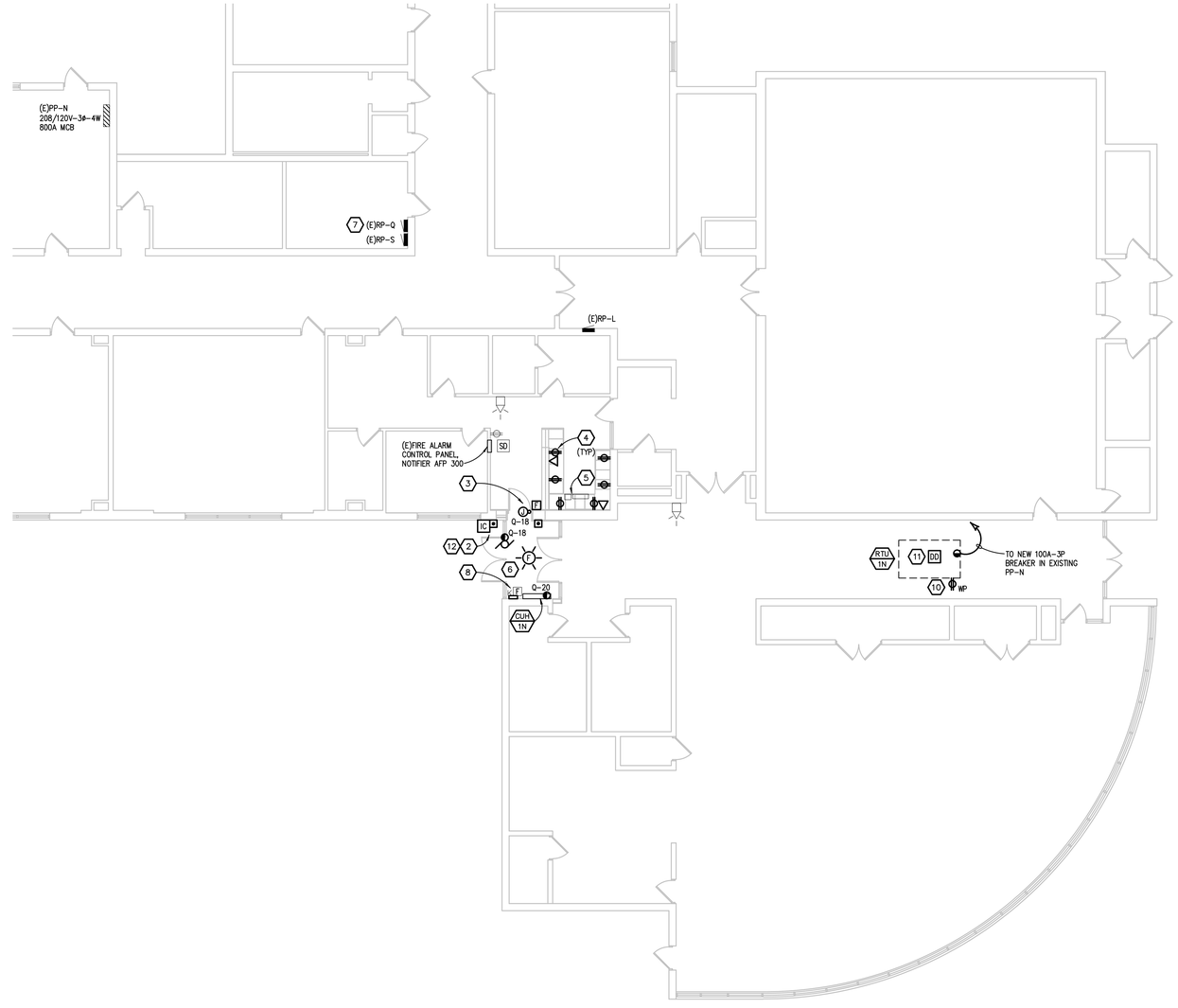
SCALE: 1/8" = 1' - 0"

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
7. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
8. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
9. ALL EXIT LIGHTS, EMERGENCY BATTERY UNITS SHALL BE CONNECT TO THE UN-SWITCHED HOT LEG OF ADJACENT CIRCUIT SERVING AREA.

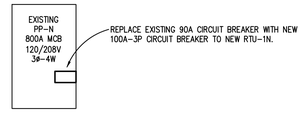
7 CONSTRUCTION KEY NOTES:

1. CIRCUIT LIGHTING TO MAINTAINED BRANCH CIRCUIT. MODIFY SWITCH LEG AS REQUIRED FOR EMERGENCY AND OCCUPANCY SENSOR. EXTEND CIRCUITING AS REQUIRED. PROVIDE GROUND WIRE PER NEC.
2. RELOCATED PUSH PADS(TYPICAL) FOR AUTOMATIC DOORS. ELECTRICAL CONTRACTOR SHALL INSTALL PUSH PADS AND PROVIDE CONDUIT AND WIRE FOR COMPLETE OPERATION. COORDINATE WITH DOOR CONTRACTOR. PUSH PAD BACK BOX IS 2-GANG.
3. PROVIDE 1/2"CONDUIT INTO DOOR FRAME FROM ACCESSIBLE CEILING FOR ELECTRIC DOOR STRIKE. COORDINATE WIRING REQUIREMENTS WITH DOOR HARDWARE CONTRACTOR. PROVIDE 120V CIRCUIT TO JUNCTION BOX IN CEILING SPACE ABOVE DOOR FOR DOOR CONTROLS. WIRING TO DOOR CONTROLS BY OTHERS.
4. CIRCUIT (6) RECEPTACLES TO MAINTAINED CIRCUIT. EXTEND CIRCUIT AS REQUIRED.
5. RELOCATED WEATHER/FIRE/BELL TOGGLE SWITCHES AND DUKANE PA CONSOLE. COORDINATE FINAL LOCATION WITH OWNERS REPRESENTATIVE. EXTEND CIRCUITING AS REQUIRED.
6. PROVIDE SYNC MODULE SO THAT ALL VISIBLE STROBES ARE IN SYNC.
7. PROVIDE NEW 20A-1P BREAKER FOR NEW CIRCUIT AS INDICATED ON PLAN.
8. RELOCATED FIRE ALARM PULSATION, KEY SWITCH, WIREMOLD. EXTEND CIRCUITING AS REQUIRED.
9. CIRCUIT TO UN-SWITCHED HOT LEG OF ADJACENT CORRIDOR CIRCUIT. EXTEND CIRCUITING AS REQUIRED. LIGHT FIXTURE IS PHOTO CELL CONTROLLED.
10. CONNECT NEW SERVICE RECEPTACLE TO NEAREST AVAILABLE 120V CIRCUIT.
11. DUCT SMOKE DETECTORS, COORDINATE REQUIRED QUANTITIES AND MOUNTING LOCATIONS WITH THE EXISTING DUCT WORK TO MEET CODE. (PROVIDE 4 DUCT SMOKE DETECTORS PER AHU/RTU/AC FOR BID PURPOSES. QUANTITIES WILL BE ADJUSTED IN FIELD BASED ON THE EXISTING DUCT WORK PENETRATIONS AND ROUTING LOCATIONS). COORDINATE INSTALLATION WITH THE EXISTING MECHANICAL DUCT WORK SO THAT UPON DETECTION OF SMOKE, THE SUPPLY/RETURN FAN WILL SHUT DOWN. CONTRACTOR SHALL WIRE DUCT SMOKE DETECTOR TO FIRE ALARM SYSTEM. CONTROL OF AIR HANDLING EQUIPMENT IS VIA THE FIRE ALARM CONTROL PANEL. PROVIDE ALL REQUIRED FIRE ALARM CONTROL MODULES AND RELAYS TO INTERFACE WITH SUPPLY FAN AND ASSOCIATED RETURN FAN (OR EXHAUST FAN). PROVIDE ALL CONTROL MODULES, RELAYS, ETC FOR A COMPLETE OPERATING SYSTEM.
12. RELOCATE EXISTING INTERCOM EXTEND CIRCUITING AS REQUIRED.
13. CLEAN AND RE-LAMP EXISTING LIGHT FIXTURES.



PARTIAL POWER NEW WORK PLAN

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



PARTIAL ONE LINE DIAGRAM

NO SCALE

LOAD CALCULATIONS

(E)PP-N (METERED PER NEC 220.87)	
152 KVA X 125%	190 KVA
RTU-1N MCA IS 92A (ADDED 2A)	0.7 KVA
TOTAL CONNECTED LOAD	190.7 KVA

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PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
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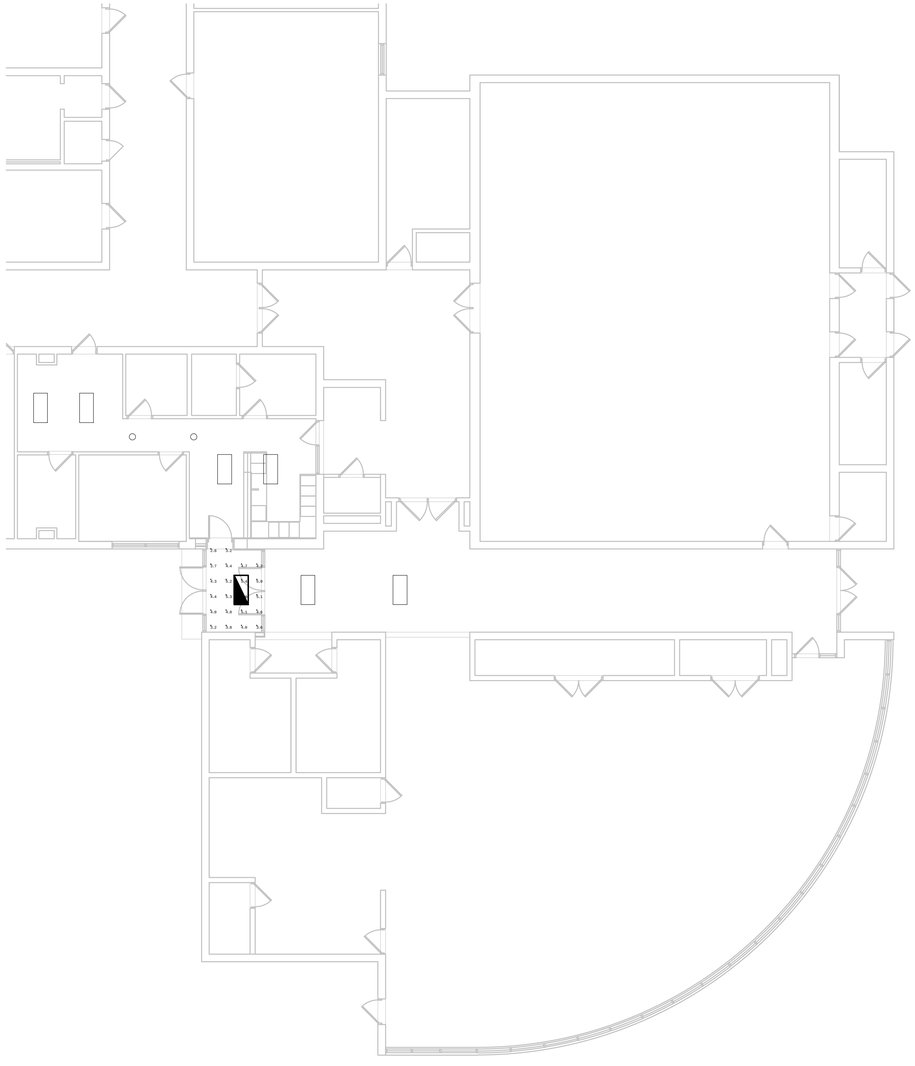

EMERGENCY LIGHTING CALCULATIONS

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

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Secure Entrance A100_Floor	Illuminance	Fc	4.38	5.6	2.8	1.56	2.00

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EMERGNECY LIGHTING CALCULATIONS

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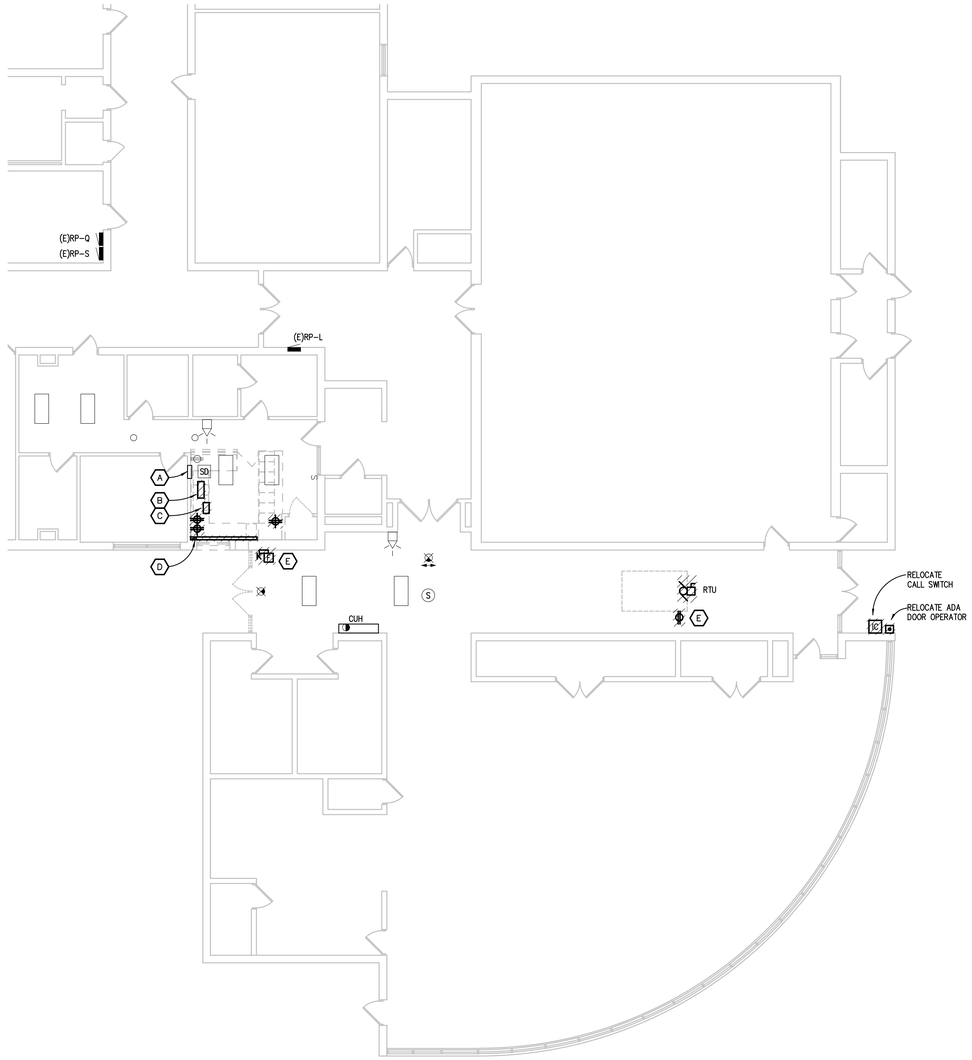

PARTIAL ELECTRICAL DEMOLITION PLAN

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

GENERAL NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
6. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
8. DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK STAINLESS STEEL COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
10. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
11. PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
12. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
13. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

DEMOLITION NOTES:

A. FIRE ALARM CONTROL PANEL, NOTIFIER AFP 300.

B. RELOCATE WEATHER/FIRE/BELL TOGGLE SWITCHES.

C. RELOCATE DUKANE P.A. CONSOLE.

D. WIREMOLD V4000, CIRCUITING SHALL REMAIN.

E. RELOCATE WIREMOLD, FIRE ALARM PULL STATION KEY SWITCH.

F. MECHANICAL EQUIPMENT AND UTILITY RECEPTACLE TO BE REMOVED, EXISTING CIRCUITING TO REMAIN FOR REUSE.

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PARTIAL ELECTRICAL DEMOLITION PLAN

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MECHANICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	COMPRESSED AIR
A(___#)	COMPRESSED AIR (SPECIFIC PSIG)
AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AD	AREA DRAIN
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
APD	AIR PRESSURE DROP
AR	ARGON
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS
ASR	AUTOMATIC SPRINKLER RISER
AUX	AUXILIARY
AV	ACID VENT
AVTR	ACID VENT THROUGH ROOF
AW	ACID WASTE
BAS	BUILDING AUTOMATION SYSTEM
BCU	BLOWER COIL UNIT
BDD	BACKDRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BWV	BACKWATER VALVE
C	COMMON
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CATCH BASIN
CC	COOLING COIL
CD	COLD DECK
CD	CONDENSATE DRAIN
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	COOLING
CNDS	CONDENSATE
CNDS (___#)	CONDENSATE (SPECIFIC PSIG)
CO	CLEAN OUT
CO2	CARBON DIOXIDE
CONT	CONTINUATION OR CONTINUED
CONTR	CONTRACTOR
CONV	CONVECTOR
COP	COEFFICIENT OF PERFORMACE
COS	CENTRAL OPERATOR STATION
CP	CIRCULATING PUMP
CRU	CONDENSATE RETURN UNIT
CSS	CLINICAL SERVICE SINK
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	DOMESTIC COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D&T	DRIP AND TRAP
DA	DISCHARGE AIR
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DMPR	DAMPER
D/N	DAY/NIGHT
DN	DOWN
DNZ	DOWNSPOUT NOZZLE
DS	DUCT SILENCER
DT	DRAIN TILE
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
DWG	DRAWING
(E)	EXISTING
E	EXHAUST GRILLE OR REGISTER
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	EXPANSION COMPENSATOR
ECUH	ELECTRIC CABINET UNIT HEATER
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
EES	EMERGENCY EYE WASH / SHOWER
EEW	EMERGENCY EYE WASH
EF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ERL	ENERGY RECOVERY LOOP
ERLR	ENERGY RECOVERY LOOP RETURN
ERLS	ENERGY RECOVERY LOOP SUPPLY
ERU	ENERGY RECOVERY UNIT
ESH	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FIRE PROTECTION
°F	DEGREES FAHRENHEIT
F&B	FACE AND BYPASS
F&T	FLOAT AND THERMOSTATIC
FA	FACE AREA
FCU	FAN COIL UNIT

ABBREVIATION	DESCRIPTION
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW MEASURING DEVICE
FMS	FLOW MEASURING STATION
FPM	FEET PER MINUTE
FP	FIRE PUMP
FPTU	FAN POWERED (AIR) TERMINAL UNIT
FS	FLOOR SINK
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FT	FEET
FTR	FINNED TUBE RADIATION
FV	FACE VELOCITY
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GRH	GRAVITY RELIEF HOOD
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HYDROGEN
HB	HOSE BIBB
HC	HEATING COIL
HD	HOT DECK
HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE
HL	HIGH LIMIT
HOA	HAND/OFF/AUTO
HP	HEAT PUMP
HP	HORSEPOWER
HPCW	HIGH PRESSURE DOMESTIC COLD WATER
HPHW	HIGH PRESSURE DOMESTIC HOT WATER
HPHWR	HIGH PRESSURE DOMESTIC HOT WATER RETURN
HPL	HEAT PUMP LOOP
HPLR	HEAT PUMP LOOP RETURN
HPLS	HEAT PUMP LOOP SUPPLY
HR	HOUR
HTG	HEATING
HV	HEATING VENTILATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATING
HWHR	HOT WATER HEATING RETURN
HWHS	HOT WATER HEATING SUPPLY
HW	DOMESTIC HOT WATER
HW(___)	DOMESTIC HOT WATER (SPECIFIC TEMP °F)
HWR	DOMESTIC HOT WATER RETURN
HX	HEAT EXCHANGER
HZ	HERTZ
IAQ	INDOOR AIR QUALITY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCHES
IR	INFRARED HEATER
IW	INDIRECT WASTE
JC	JANITOR'S CLOSET
JP	JOCKEY PUMP
KW	KILOWATT
KWH	KILOWATT-HOUR
LAT	LEAVING AIR TEMPERATURE
LAB	LABORATORY
LAV	LAVATORY
LBS	POUNDS
LDB	LEAVING DRY BULB
LL	LOW LIMIT
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCA	MEDICAL COMPRESSED AIR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MMBH	MILLION BRITISH THERMAL UNITS PER HOUR
M/S	MOTOR STARTER
MTD	MOUNTED
MTR	MOTOR
MV	MANUAL AIR VENT
MVAC	MEDICAL VACUUM
N	NITROGEN
N2O	NITROUS OXIDE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NCTC	NORMALLY CLOSED TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPCW	NON POTABLE COLD WATER

ABBREVIATION	DESCRIPTION
O	OXYGEN
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER/CENTER TO CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
ORC	OVERFLOW RAIN CONDUCTOR
ORD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
PACU	PACKAGED AIR CONDITIONING UNIT
PBD	PARALLEL BLADE DAMPER
PC	PUMPED CONDENSATE
PCW	PROCESS COOLING WATER
PCWR	PROCESS COOLING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PD	PRESSURE DROP (FEET OF WATER)
PH	PERIMETER HEAT
PHR	PERIMETER HEAT RETURN
PHS	PERIMETER HEAT SUPPLY
PNL	PANEL
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSAN	PUMPED SANITARY
PST	PUMPED STORM
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PW	PURIFIED WATER
PWR	PURIFIED WATER RETURN
PWS	PURIFIED WATER SUPPLY
(R)	RELOCATED
R	RETURN GRILLE OR REGISTER
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RC	RAIN CONDUCTOR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
REQD	REQUIRED
REF	ROOF EXHAUST FAN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RL	REFRIGERANT LIQUID
RLFA	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
S	SUPPLY AIR DIFFUSER OR GRILLE
SA	SOUND ATTENUATOR
SA	SUPPLY AIR
SAN	SANITARY WASTE
SAT	SUPPLY AIR TEMPERATURE
SECT	SECTION
SF	SUPPLY FAN
SH	SHOWER
SK	SINK
SMR	SNOW MELT RETURN
SMS	SNOW MELT SUPPLY
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SQFT	SQUARE FOOT/SQUARE FEET
S/S	START/STOP
SS	SERVICE SINK
ST	STORM
STD	STANDARD
STK	STACK
STM	STEAM
STM(___#)	STEAM (SPECIFIC PSIG)
S/W	SUMMER/WINTER
SW	SWITCH
T	TRANSFER GRILLE
TC	TEMPERATURE CONTROL
TC	TEMPERING COIL
TCP	TEMPERATURE CONTROL PANEL
TD	TRENCH DRAIN
TEMP	TEMPERATURE
TEMP	TEMPORARY
TH	TERMINAL HEATING
THA	TOTAL HEAT ABSORBED
THR	TERMINAL HEATING RETURN
THR	TOTAL HEAT REJECTED
THS	TERMINAL HEATING SUPPLY
TSP	TOTAL STATIC PRESSURE
TU	(AIR) TERMINAL UNIT
TV	TURNING VANES
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UV	UNIT VENTILATOR
V	VALVE
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VOL	VOLUME
VFC	VARIABLE FREQUENCY CONTROLLER
VTR	VENT THROUGH ROOF
VTU	VENTURI TERMINAL UNIT
VUV	VERTICAL UNIT VENTILATOR
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB
WC	WATER CLOSET
WC	WATER COLUMN
WG	WATER GAUGE
WH	WALL HYDRANT
WPD	WATER PRESSURE DROP
WT	WEIGHT
XFMR	TRANSFORMER

TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
CO2	CARBON DIOXIDE SENSOR	OS	OCCUPANCY SENSOR
CO	CARBON MONOXIDE SENSOR	PT	PRESSURE TRANSMITTER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	SP	STATIC PRESSURE SENSOR OR PROBE
FM	FLOW METER		VALVE - 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR		VALVE - 3 WAY CONTROL VALVE
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)	T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

NOTE: LIST OF ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED WITH TEMPERATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.

MECHANICAL SYMBOL LIST

PIPING SYMBOLS

SYMBOL	DESCRIPTION
AV	AIR VENT - AUTOMATIC
MV	AIR VENT - MANUAL
BFP	BACKFLOW PREVENTER
	CATCH BASIN
CP	CIRCULATING PUMP
CO	CLEAN OUT - IN FLOOR
CO	CLEAN OUT - FLANGE
	DIRECTION OF FLOW
	DIRECTION OF PITCH - DOWN
	FINNED TUBE RADIATION
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL
	FLOOR DRAIN
	FLOOR DRAIN - ELEVATION
	FLOOR DRAIN - FUNNEL
	FLOOR DRAIN - FUNNEL, ELEVATION
	FLOW MEASURING DEVICE
FS	FLOW SWITCH
HB	HOSE BIBB
MH	MANHOLE
	OPEN SITE DRAIN
	PIPE - ANCHOR
	PIPE - CAP OR PLUG
	PIPE - ELBOW DOWN
	PIPE - ELBOW UP
	PIPE - EXPANSION JOINT OR COMPENSATOR
	PIPE - FLANGE
	PIPE - HOSE AND BRAID FLEXIBLE CONNECTION
	PIPE - RUBBER FLEXIBLE CONNECTION
	PIPE - GUIDE
	PIPE - TEE DOWN
	PIPE - TEE UP
	PIPE - UNION
P/T	PRESSURE AND TEMPERATURE TEST PLUG
	PRESSURE GAUGE AND COCK
	REDUCER - CONCENTRIC
	REDUCER - ECCENTRIC
	ROOF/OVERFLOW DRAIN
	STEAM TRAP - FLOAT AND THERMOSTATIC
	STEAM TRAP - BUCKET
	STRAINER
	STRAINER WITH BLOW-OFF
	THERMOMETER
	TRAP
	VALVE - ANGLE
	VALVE - BALL
	VALVE - BUTTERFLY
0.5	VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)
0.5	VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)
	VALVE - CHECK
	VALVE - SPRING CHECK
	VALVE - GAS (MANUAL)
	VALVE - GLOBE
	VALVE - ISOLATION
	VALVE - NEEDLE
	VALVE - OS&Y
	VALVE - PLUG
	VALVE - PRESSURE REGULATING
	VALVE - PRESSURE REDUCING
	VALVE - PRESSURE RELIEF
	VALVE - PRESSURE & TEMPERATURE RELIEF
VTR	VENT THROUGH ROOF
MH	WALL HYDRANT

DOUBLE LINE PIPING SYMBOLS

SYMBOL	DESCRIPTION
	FLANGE
	FLEX CONNECTION
	STRAINER - BASKET
	STRAINER - Y TYPE
	VALVE - 2 WAY CONTROL
	VALVE - 3 WAY CONTROL
	VALVE - BUTTERFLY
	VALVE - CHECK
	VALVE - DETECTOR CHECK
	VALVE - OS&Y HORIZONTAL STEM
	VALVE - OS&Y VERTICAL STEM

DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	AIR TERMINAL UNIT
TU-101	AIR TERMINAL UNIT WITH HEATING COIL
TU-101	LABORATORY AIR TERMINAL UNIT
LTU-101	LABORATORY AIR TERMINAL UNIT WITH HEATING COIL
LTU-101	DAMPER - HORIZONTAL FIRE (EXISTING, NEW)
	DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)
	DAMPER - SMOKE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)
BDD	DAMPER - BACK DRAFT
M	DAMPER - MOTORIZED
	DAMPER - VOLUME (MANUALLY ADJUSTABLE)
	DIFFUSER - BLANK OFF
	DIFFUSER - LINEAR SLOT
	DIFFUSER - SQUARE OR RECTANGULAR
	DUCT CROSS SECTION - SUPPLY
	DUCT CROSS SECTION - RETURN OR EXHAUST
	DUCT CROSS SECTION - EXHAUST
	DUCT - FLEXIBLE CONNECTION
	DUCT - FLEXIBLE DUCT
	DUCT TAKE-OFF - ROUND CONICAL
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR/ ROUND SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	FAN - AXIAL
	FAN - CENTRIFUGAL (ELEVATION)
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	INTAKE OR RELIEF HOOD
	REGISTER - RETURN OR EXHAUST
	REGISTER - RETURN WITH BOOT
	REGISTER - TRANSFER GRILLE
	ROOF EXHAUST FAN
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC
	UNIT HEATER - HORIZONTAL THROW
	UNIT HEATER - VERTICAL THROW

DOUBLE LINE DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	DUCT TAKE-OFF - ROUND CONICAL
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR SHORT RADIUS WITH SPLITTER VANES
	ELBOW - ROUND
	ELBOW - RECTANGULAR SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC

MECHANICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
M0.1	MECHANICAL STANDARDS AND DRAWING INDEX
M03.1	MECHANICAL DEMOLITION PLAN - ZONE 'B'
M3.1	MECHANICAL NEW WORK PLAN - ZONE 'B'
M7.1	MECHANICAL DETAILS AND SCHEDULES
M7.2	MECHANICAL DETAILS AND SCHEDULES
M8.1	TEMPERATURE CONTROLS STANDARDS AND GENERAL NOTES
M8.2	TEMPERATURE CONTROLS
M8.3	DDC-BAS SYSTEM ARCHITECTURE

STANDARD METHODS OF NOTATION

S-1 10# 350-4	SUPPLY DIFFUSER WITH SCHEDULE TAG "1", 10" DIAMETER NECK SIZE 350 CFM TYPICAL FOR 4
R-1 22x22 640-2	RETURN REGISTER WITH SCHEDULE TAG "1", 22"x 22" NECK SIZE 640 CFM TYPICAL FOR 2 EXHAUST REGISTER E DESIGNATION SIMILAR.
TU-101	AIR TERMINAL UNIT WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN
LTU-101	LABORATORY AIR TERMINAL WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN
8	PIPE DIAMETER NOTATION ALL SIZES IN INCHES
8ø	DUCT SIZE NOTATION ALL SIZES IN INCHES
22x10	OVAL DUCT
18x14#	RECTANGULAR DUCT
1	CONSTRUCTION NOTE NUMBER
EF 1	EQUIPMENT DESIGNATION, (i.e. EXHAUST FAN NUMBER 1)
HW-1	PIPING RISER DESIGNATION (i.e. HOT WATER RISER NUMBER 1)
	NEW SYSTEM COMPONENT
	EXISTING SYSTEM COMPONENT TO REMAIN
	POINT OF NEW CONNECTION SYMBOL
1 M5.1	SECTION OR PLAN NUMBER
	SHEET WHERE SECTION IS DRAWN
	AREA OF ENLARGEMENT
	PLAN NUMBER
1 M5.1	SHEET WHERE ENLARGED PLAN IS DRAWN
1 M5.1	SECTION OR PLAN NUMBER **SECTION OR ENLARGED PLAN** SCALE: 1/8" = 1' - 0" SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED
SHEET M1.0 SHEET M1.1	MATCH LINE
	HEAVY LINE WEIGHT INDICATES NEW WORK
	LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION
	GRAY LINE INDICATES BACKGROUND INFORMATION
	DASHED LINES INDICATE PIPING ROUTED BELOW SLAB OR GRADE
	HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED.

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

MECHANICAL STANDARDS AND DRAWING INDEX

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN JRM
CHECKED RNR
APPROVED DJE

PROJECT NO.
16011

DRAWING NO.
M0.1

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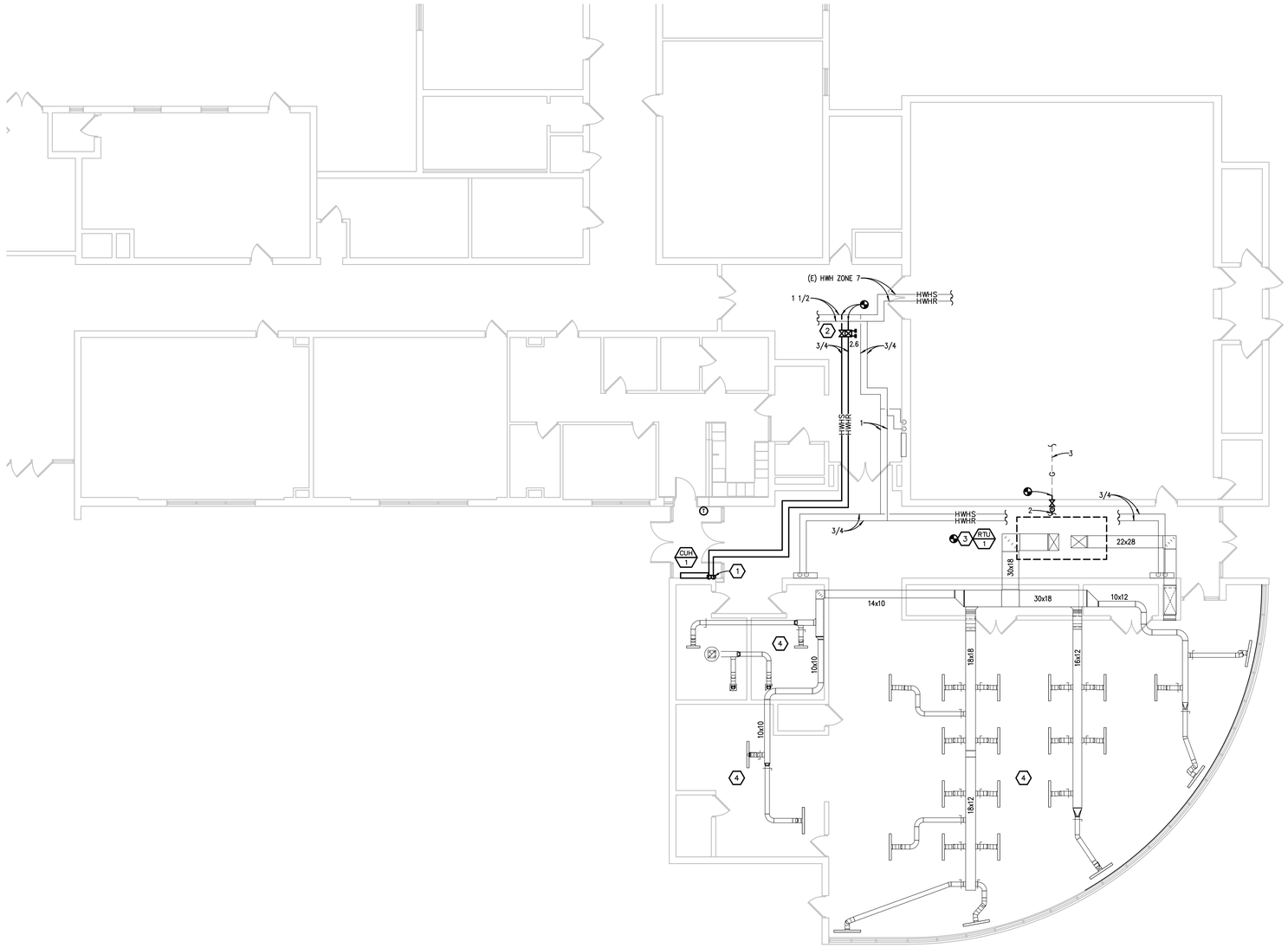
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



MECHANICAL NEW WORK PLAN - ZONE 'B'

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

HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. MOUNT THERMOSTATS 48" A.F.F., UNLESS OTHERWISE NOTED. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.

SHEET METAL GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.

CONSTRUCTION KEY NOTES:

1. ROUTE 3/4 HWH PIPING DOWN PIPE ENCLOSURE TO CUH-1. REFER TO CUH DETAIL ON SHEET M7.1.
2. CONNECT NEW HWHS/R BRANCH TO HWH ZONE 7 PIPING.
3. CONNECT NEW RTU TO EXISTING SHEET METAL. PROVIDE ROOF CURB ADAPTER.
4. BALANCE EXISTING SUPPLY DIFFUSERS TO PRE DEMOLITION AIR FLOW READINGS.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

MECHANICAL NEW WORK PLAN - ZONE 'B'

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN JRM
CHECKED RNR
APPROVED DJE

PROJECT NO.

16011

DRAWING NO.

M3.1

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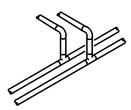
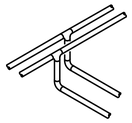


BRANCH CONNECTION OFF TOP

APPLIES TO THE FOLLOWING SYSTEMS:
DOMESTIC WATER
STEAM & CONDENSATE
LABORATORY GASES
LABORATORY VACUUM
COMPRESSED AIR
NATURAL GAS

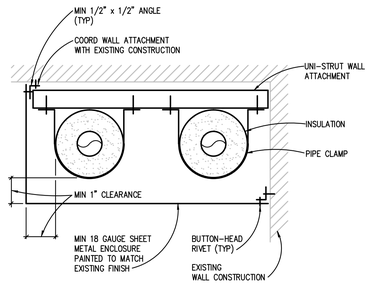


BRANCH CONNECTION OFF BOTTOM

APPLIES TO THE FOLLOWING SYSTEMS:
HOT WATER HEATING
CHILLED WATER
CONDENSER WATER
ENERGY RECOVERY
PROCESS COOLING WATER

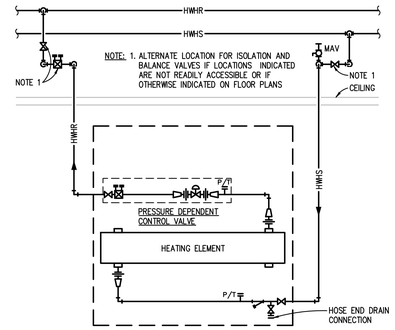
NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

TYPICAL BRANCH TAKE-OFF CONNECTION PIPING DETAIL
NO SCALE

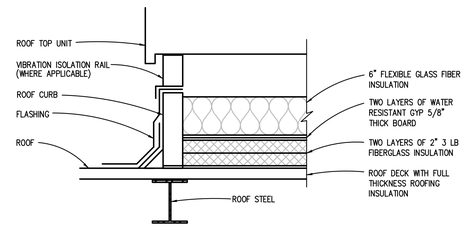


PIPE ENCLOSURE DETAIL
NO SCALE

PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWHR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL



DOWNFEED CONV. OR CUH WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM
NO SCALE



NOTE: ALL DUCT, PIPING, OR ELECTRICAL CONNECTIONS TO UNIT BELOW CURB SHALL HAVE FLEXIBLE CONNECTIONS. CUT INSULATION, GYP BOARD, ROOFING INSULATION, AND METAL DECKING PENETRATIONS TIGHT TO ITEM PENETRATING ROOF. PACK ALL PENETRATION OPENINGS WITH FLEXIBLE GLASS FIBER.

ROOF TOP UNIT CURB DETAIL
NO SCALE

SCHEDULES GENERAL NOTES:

TYPICAL FOR ALL SCHEDULE SHEETS:

1. REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
2. PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:
   - A – NON-FUSED DISCONNECT SWITCH
   - B – UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS
   - C – SERVICE RECEPTACLE
   - D – FUSED DISCONNECT SWITCH
   - E – COMBINATION STARTER
   - F – UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.
3. FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
4. IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.
5. WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
6. WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.
7. WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.
8. WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN HE UNIT DISCONNECT IS IN THE OFF POSITION.
9. SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.

ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE

	MATERIAL							CONNECTION								ISOLATION VALVES					
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	GENERAL SERVICE BUTTERFLY	HI-PERF BUTTERFLY	GATE	KEYED NOTES
HEATING HOT WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
UP TO 2		X						X	X					X	X	X				

GENERAL NOTES

1. "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.
   - a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION.
   - b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY.
B. BALL VALVE WITH 250 PSIG STEAM TRIM.
C. BALL VALVE WITH 150 PSIG STEAM TRIM.
D. GROOVED FITTINGS, JOINTS AND COUPLINGS MAY BE USED IN MECHANICAL ROOMS ONLY.

ABOVEGROUND HVAC PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD-APPLIED JACKET MATERIAL						
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
HEATING HOT WATER SUPPLY & RETURN 200 DEG F AND LOWER														
3 AND SMALLER		1						X		X				A

GENERAL NOTES

1. "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

KEYED NOTES

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.
C. STEAM AND CONDENSATE PIPING JACKET SHALL BE STUCCO EMBOSSED.
D. PIPING WITHIN ENERGY RECOVERY UNITS SHALL BE TYPE 304 STAINLESS STEEL, SMOOTH; 0.010 INCH THICK. SEAMS AND JOINTS CAULKED WITH CHEMICALLY RESISTANT SEALER.

PLUMBING PIPING & VALVE APPLICATION SCHEDULE

	MATERIAL													PRESSURE CONNECTIONS													GRAVITY DWV CONNECTIONS					ISOLATION VALVES				
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (STD.)	GALV. STEEL (SCHED. 40)	PEX	RE PIPE	PE SHEATHED CARBON STEEL PIPE	CSST	NO-HUB CISP	PVC TYPE DWV	PP DRAINAGE PIPE	COPPER TYPE DWV	DUCTILE IRON PIPE	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	INSERT & CRIMP	FUSION	PRESSURE-SEAL	MECHANICALLY-FORMED TEE	MECHANICAL JOINT	PUSH-ON-JOINT	SOLVENT WELDED	SOLDERED	FUSION	CISPI HUBLESS	HEAVY-DUTY HUBLESS	BALL	AGA BALL	GENERAL SERVICE BUTTERFLY	LUBRICATED PLUG	GATE	KEYED NOTES
ABOVEGROUND FUEL GAS - MIN. WORKING PRESS.: 100 PSIG																																							
UP TO 2				X														X	X															X				E
2-1/2 TO 3				X														X		X														X				E

GENERAL NOTES

1. "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS.
   - a. NPS 2 AND SMALLER: USE DIELECTRIC NIPPLE/WATERWAY.
   - b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. PLUMBING EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED AND PRESSURE SEALED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS ONLY FOR THIS PIPING SYSTEM.
B. JOINTS ARE NOT PERMITTED ON UNDERGROUND WATER PIPING.
C. USE CAST IRON DRAINAGE PATTERN (DURHAM) FITTINGS.
D. INSTALL IN CONTAINMENT JACKET, REFER TO SPECIFICATIONS.
E. USE STEEL WELDING FITTINGS AND WELDED JOINTS IN PLENUM CEILINGS. VALVES, FLANGES, OR UNIONS ARE PROHIBITED.
F. NO JOINTS ALLOWED UNDERGROUND.

HORIZONTAL PIPING AND SUPPORT APPLICATION SCHEDULE

	HANGER OR SUPPORT TYPE							SHIELD TYPE			
METAL PIPE TYPE & SIZE	MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND		MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
INSULATED SINGLE HOT PIPES											
UP TO 2 INCH	X	X						X	X	X	A, C

GENERAL NOTES

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
3. HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS.
5. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
7. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS INDICATED FOR SINGLE COLD PIPES.
8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
9. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C.
10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.

KEYED NOTES

A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.
B. USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE .
C. USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.

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HOT WATER CABINET UNIT HEATER SCHEDULE

UNIT IDENTIFICATION	CAPACITY MBH	AIR			FAN		WATER				CONTROL VALVE W.P.D. FT. HEAD	DIMENSIONS			RECESS DEPTH INCHES	FILTER		MODULATION/ CONTROL TYPE	ELECTRICAL			MODEL NUMBER	REMARKS
		AIRFLOW CFM	E.D.B. °F	L.D.B. °F	HP	RPM	FLOW GPM	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD		LENGTH INCHES	HEIGHT INCHES	DEPTH INCHES		TYPE	AREA SQ. FT.		VOLTS	PHASE	OPTIONS/ ACCESSORIES		
CUH-1	26.3	420	60.0	118.0	1/25	900	2.6	180.0	160.0	0.8	11.55	50.2	26.5	10.0	---	THROW AWAY	2.3	AUTO	120	1	B	RWI-310-04	

NOTE:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE RITTLING UNLESS OTHERWISE NOTED.

UNITARY ROOFTOP AIR CONDITIONING UNIT SCHEDULE

UNIT I.D.	AREA SERVED	SUPPLY FAN							EXHAUST/RELIEF FAN					COOLING SECTION – DX									INTEGRAL AIR-COOLED CONDENSING SECTION			HEATING SECTION – GAS FIRED (NATURAL GAS)							FILTER SECTION				MAXIMUM UNIT DIMENSIONS			MAXIMUM UNIT OPERATING WEIGHT LBS.	TOTAL UNIT ELECTRICAL				MODEL NO.	NOTES
		AIRFLOW CFM	MINIMUM OUTSIDE AIR FLOW CFM	E.S.P. IN. W.G.	T.S.P. IN. W.G.	FAN SPEED RPM	BHP	HP	AIRFLOW CFM	E.S.P. IN. W.G.	FAN SPEED RPM	BHP	HP	MIXED AIR		UNIT LEAVING AIR		NET UNIT CAPACITY		NUMBER OF CIRCUITS	REFRIG. TYPE	MAX. FACE VEL. F.P.M.	DESIGN AMBIENT TEMP °F	MIN. AMBIENT TEMP. °F	NO. OF CAPACITY CONTROL STAGES	AIR TEMP.		CAPACITY (MBH)		GAS PRESSURE TO GAS TRAIN IN. W.C.	MAXIMUM ALLOWABLE OUTPUT AT MINIMUM FIRING RATE (MBH)	MIN. NO. OF CAPACITY CONTROL STAGES	TYPE	MERV	AIR PRESS. DROP		LENGTH	HEIGHT	WIDTH		VOLTS	PHASE	FLA	MOP		
														E.D.B. °F	E.W.B. °F	L.D.B. °F	L.W.B. °F	TOTAL MBH	SENSIBLE MBH							E.A.T. °F	L.A.T. °F	INPUT	OUTPUT						INITIAL IN. W.G.	FINAL IN. W.G.										
RTU-1	CAFETERIA	5000	2280	1.0	2.3	2971	3.95	5.0	5000	0.5	1682	1.5	4.0	84.2	69.3	56.6	56.6	206	150	1	R-410A	500	95.0	45	2	34.8	101.2	450	360	7-14	30	12	PLEATED	8	0.07	0.5	162.3	70.5	76.5	3912	208	3	80.5	125	DPS018A	

NOTE:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE DAIKIN UNLESS OTHERWISE NOTED
3. DESIGN MINIMUM OUTSIDE AIRFLOW CFM (VENTILATION) LISTED IS BASED ON THE ESTIMATED MAXIMUM OCCUPANT LOAD. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
4. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.
5. AIR HANDLING UNIT TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR PRESSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.
6. UNIT SHALL HAVE A SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECT MEANS, STARTERS, AND CONTROLS.
7. REFER TO VIBRATION ISOLATOR APPLICATION SCHEDULE.

UNIT I.D.	MAXIMUM SOUND POWER LEVELS																
	UNIT INLET Lw BY OCTAVE BAND								CASING RADIATED Lw BY OCTAVE BAND								
	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)
RTU-1	80	79	84	82	74	73	68	65	88	88	84	81	79	74	67	60

NOTE: SEE NOTES UNDER PART "A"

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TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
AFC	AIR FLOW CONTROLLER
AQ	AQUASTAT, STRAP ON BULB
CO2	CARBON DIOXIDE SENSOR – WALL MOUNTED
CO2	CARBON DIOXIDE SENSOR – DUCT MOUNTED
CS	CURRENT SWITCH
CT	CURRENT TRANSMITTER
	DAMPER – OPPOSED BLADE
	DAMPER – PARALLEL BLADE
M	DAMPER MOTOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DPS	DIFFERENTIAL PRESSURE SWITCH
CM	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE
IM	FIRE ALARM SYSTEM, ADDRESSABLE INTERFACE MODULE
FMS	FLOW MEASURING STATION
FM	FLOW METER
FS	FLOW SWITCH
FZ	FREEZESTAT
F/	GAUGE – FLOW
P/	GAUGE – PRESSURE
T/	GAUGE – TEMPERATURE
	GUARD FOR STAT OR SENSOR
	HUMIDIFIER
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)
H	HUMIDITY SENSOR, DUCT MOUNTED
LVL	LEVEL SWITCH OR TRANSMITTER
LS	LIMIT SWITCH
	LINE – ELECTRIC
	LINE – INSTRUMENT AIR
M	MAIN CONTROL AIR SUPPLY
M	MOTOR STARTER
OS	OCCUPANCY SENSOR
R	PILOT LIGHT OR BEACON R – RED LENS A – AMBER LENS B – BLUE LENS G – GREEN LENS
PT	PRESSURE TRANSMITTER
R	RELAY, ELECTRIC
N	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
AI	SIGNAL – DDC/BAS, ANALOG INPUT
AO	SIGNAL – DDC/BAS, ANALOG OUTPUT
DI	SIGNAL – DDC/BAS, DIGITAL INPUT
DO	SIGNAL – DDC/BAS, DIGITAL OUTPUT
AI	SIGNAL – PACKAGED EQUIPMENT, ANALOG INPUT
AO	SIGNAL – PACKAGED EQUIPMENT, ANALOG OUTPUT
DI	SIGNAL – PACKAGED EQUIPMENT, DIGITAL INPUT
DO	SIGNAL – PACKAGED EQUIPMENT, DIGITAL OUTPUT

SCHEMATIC SYMBOLS (CONT.)

SYMBOL	DESCRIPTION
DD	SMOKE DETECTOR – DUCT MOUNTED
SD	SMOKE DETECTOR – SPACE MOUNTED
S/S	START/STOP RELAY
SPT	STATIC PRESSURE TRANSMITTER
SP	STATIC PRESSURE SENSOR OR PROBE
SW	SWITCH
T	TEMPERATURE SENSOR – RIGID ELEMENT IN WELL
T	TEMPERATURE SENSOR – STRAP ON BULB
T	TEMPERATURE SENSOR – DUCT MOUNTED AVG ELEMENT
T	TEMPERATURE SENSOR – DUCT MOUNTED RIGID ELEMENT
T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
T N	THERMOSTAT FOR NIGHT SETBACK
XF	TRANSFORMER
	VALVE – 2 WAY CONTROL VALVE
	VALVE – 3 WAY CONTROL VALVE
VFC	VARIABLE FREQUENCY CONTROLLER
VS	VELOCITY SENSOR
VIB	VIBRATION SWITCH
V	VOLTAGE SENSOR

WIRING SYMBOLS

SYMBOL	DESCRIPTION
	AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
M/S	COIL – MOTOR STARTER CONTACTOR
R	COIL – RELAY
TDR	COIL – TIME DELAY RELAY
VFC	COIL – VARIABLE FREQUENCY CONTROLLER CONTACTOR
	COIL – EP OR SOLENOID VALVE
	CONTACT – INSTANT OPERATING, NO
	CONTACT – INSTANT OPERATING, NC
	CONTACT – TIMED AFTER COIL IS ENERGIZED, NOTC
	CONTACT – TIMED AFTER COIL IS ENERGIZED, NCTO
	CONTACT – TIMED AFTER COIL IS DE-ENERGIZED, NOTO
	CONTACT – TIMED AFTER COIL IS DE-ENERGIZED, NCTC
	GROUND
	MOTOR, SINGLE PHASE
R	PILOT LIGHT OR BEACON R – RED LENS A – AMBER LENS B – BLUE LENS G – GREEN LENS
R	PILOT LIGHT, WITH PUSH-TO-TEST
	PUSH BUTTON – MOMENTARY CONTACT, NO
	PUSH BUTTON – MOMENTARY CONTACT, NC
	PUSH BUTTON – MOMENTARY CONTACT, NO & NC
	PUSH BUTTON – MOMENTARY, NO (MUSHROOM HEAD)
	PUSH BUTTON – MOMENTARY, NC (MUSHROOM HEAD)

WIRING SYMBOLS (CONT.)

SYMBOL	DESCRIPTION
1 2	SWITCH – 2 POSITION SELECTOR
H O A	SWITCH – 3 POSITION SELECTOR HAND/OFF/AUTO
	SWITCH – FLOW (AIR, WATER, ETC.), NO
	SWITCH – FLOW (AIR, WATER, ETC.), NC
	SWITCH – LIMIT, NO
	SWITCH – LIMIT, NO, HELD CLOSED
	SWITCH – LIMIT, NC
	SWITCH – LIMIT, NC, HELD OPEN
	SWITCH – LIQUID LEVEL, NO
	SWITCH – LIQUID LEVEL, NC
	SWITCH – MANUAL SPST, NO
	SWITCH – MANUAL DPDT, NO
	SWITCH – MANUAL SPST, NC
	SWITCH – MANUAL DPDT, NC
	SWITCH – MANUAL SPDT
	SWITCH – MANUAL DPDT
	SWITCH – PRESSURE & VACUUM, NO
	SWITCH – PRESSURE & VACUUM, NC
	SWITCH – TEMPERATURE ACTUATED, NO
	SWITCH – TEMPERATURE ACTUATED, NC
	THERMAL OVERLOAD, SINGLE PHASE
OL'S	THERMAL OVERLOAD CONTACTS – 3 PHASE
	TRANSFORMER
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION
	WIRING NOT CONNECTED

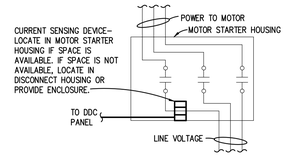
WIRING TERMS

ABBREVIATION	DESCRIPTION
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NCTC	NORMALLY CLOSED TIMED CLOSED

NOTE: SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

NOTES:

1. SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT
2. REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.



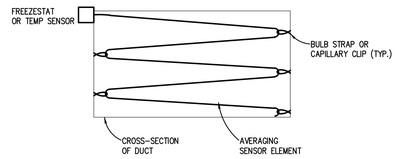
CURRENT SWITCH INSTALLATION DETAIL

TYPICAL FOR ALL CURRENT SWITCHES USED ON FAN AND PUMP MOTORS.
NOTES:

1. ALL MOTOR LOADS SHOWN ON DRAWINGS SHALL HAVE CURRENT SWITCHES FOR STATUS INDICATION AND RUN HOURS TOTALIZATION BY DDC TO THE BAS.
2. INSTALL CURRENT SWITCH ON MOTOR LEADS. CURRENT SWITCH SHALL BE ADJUSTED TO MEET THE CURRENT DRAW REQUIRED TO DETECT FAN BELT LOSS, PUMP COUPLING DETACHMENT, OR VFC LOSS.

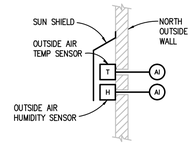
SEQUENCE OF OPERATION NOTES FOR CURRENT SWITCH INSTALLATIONS:

1. ALL DELAY TIMERS DESCRIBED IN THE HVAC SYSTEM'S SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS).
2. UPON FAN OR PUMP MOTOR START OR STOP, AND AFTER 120 SECONDS (ADJUSTABLE) DELAY BY DDC, IF THE CURRENT DRAW IS NOT APPROPRIATE, DDC SHALL ALARM THE MOTOR STATUS POINT.
3. WHEN FAN OR PUMP IS ON AND NOT IN ALARM, DDC SHALL TOTALIZE RUN TIME HOURS FOR BAS USE.



AVERAGING ELEMENT INSTALLATION DETAIL

NO SCALE

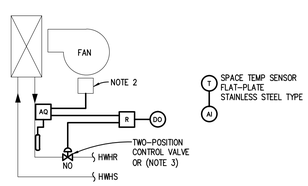


OA SENSOR INSTALLATION DETAIL

NO SCALE

NOTES:

1. REFER TO TEMPERATURE CONTROL FLOOR PLAN FOR OA SENSOR LOCATIONS.
2. DEWPOINT TEMPERATURE SHALL BE CALCULATED AND USED FOR ECONOMIZER LOCKOUT LOGIC WHERE APPLICABLE AS DESCRIBED IN CONTROL SEQUENCES OF OPERATION.
3. INDICATE CALCULATED DEWPOINT TEMP ON GRAPHICS ALONG WITH OA TEMP AND HUMIDITY VALUES.



HWH CUH CONTROL

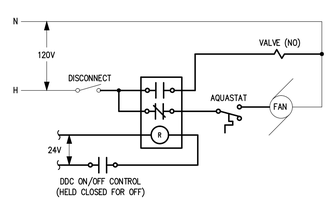
TYPICAL

NOTES:

1. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
2. AQUASTAT SHALL BE WIRED IN SERIES WITH FAN CONTROL WIRING CIRCUIT.

SEQUENCE OF OPERATION:

1. DDC SHALL ENABLE/DISABLE FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY. FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQUASTAT.
2. DDC SHALL PROVIDE 2°F DEADBAND AT SETPOINTS FOR CONTROL.
3. DDC SHALL PROVIDE ALARM TO BAS IF SPACE TEMPERATURE GOES LOWER THAN 50°F.



HWH CUH WIRING

TYPICAL

TC GENERAL NOTES

1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL DRAWINGS.
2. "PROVIDE" AS USED THROUGHOUT DRAWINGS IS DEFINED AS "FURNISH AND INSTALL".
3. TC CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
4. ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE FURNISHED AND/OR INSTALLED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT IS EXISTING.
5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION. FIELD VERIFY EXISTING CONDITIONS AS REQUIRED.
6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
7. ALL TC PROVIDED COMPONENTS, AND ALL TC CONTRACTOR INSTALLED PANELS, COMPONENTS AND WIRING SHALL BE LABELED PER SPECIFICATIONS.
8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE SPECIFICATIONS.
9. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR. TC CONTRACTOR SHALL FIELD VERIFY EXISTING MOTOR STARTERS FOR INTERFACE WIRING REQUIREMENTS AND TERMINATION POINTS AS REQUIRED.
10. ALL DDC SIGNAL WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
11. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH LOCAL CODE REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V. WIRING AND THE OTHER FOR 24V WIRING.
12. ALL 120V WIRING SHALL BE INSTALLED IN CONDUIT OR EMT. SIZE SHALL BE ¾" MINIMUM.
13. ALL 24V CONTROL WIRING IN MECHANICAL ROOMS SHALL BE INSTALLED IN CONDUIT OR EMT. PLENUM RATED CABLE IS ACCEPTABLE ABOVE CEILINGS AND SHALL BE SECURED EVERY FIVE FT AND BE INSTALLED PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR STRUCTURAL MEMBERS. AT TRANSITION FROM RACEWAY TO EXPOSED PLENUM CABLE, CONDUIT SLEEVES OR ENDS ARE TO BE FITTED WITH PLASTIC BUSHINGS TO PREVENT DAMAGE TO CONDUCTORS.
21. CONDUIT OR EMT SHALL BE EXPOSED ONLY IN MECHANICAL AND ELECTRICAL ROOMS. SIZE CONDUIT OR EMT TO BE FILLED AT 40% CAPACITY MAXIMUM.
22. ALL 24V CONTROL WIRING SHALL BE CONCEALED IN WALLS AND ABOVE CEILINGS IN FINISHED AREA WHERE POSSIBLE. EXPOSED WORK IN NON-MECHANICAL ROOM AREAS SHALL BE INSTALLED IN SURFACE METAL RACEWAY PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR STRUCTURAL MEMBERS.
23. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED.
24. POWER SUPPLIES (120VAC) REQUIRED FOR NEW TC COMPONENTS SHALL BE FROM EXISTING PANELBOARDS. SPARE CIRCUIT BREAKERS MAY BE USED WHEN AVAILABLE. IN PANELBOARDS THAT DO NOT HAVE SPARE CIRCUIT BREAKERS, NEW BREAKERS TO MATCH EXISTING SHALL BE INSTALLED IN BLANKED OUT SPACES WHERE AVAILABLE. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE WITH PROPER INTERRUPTING RATING. PANEL AND CIRCUIT NUMBERS USED SHALL BE INDICATED WITHIN ENCLOSURE AT DEVICE WHERE POWER SUPPLY IS USED.
25. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
26. NEW SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR. FOR EXISTING SPACE TEMPERATURE SENSOR REPLACEMENTS, TC CONTRACTOR SHALL MOUNT NEW SENSORS AT SAME LOCATION REGARDLESS OF HEIGHT REQUIREMENT.
27. TC CONTRACTOR SHALL PROVIDE GUARDS FOR TEMPERATURE SENSORS FOR CORRIDOR AND GENERAL PUBLIC USE AREAS AS NOTED.
28. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL.
29. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSE IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
30. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
31. NEW FREEZESTATS, WHERE REQUIRED, SHALL BE MOUNTED WHERE INDICATED ON CONTROL DETAILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ FT OF CROSS SECTIONAL AREA.
32. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
33. ALL NEW CONTROL VALVES IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR.
34. TC CONTRACTOR MAY REUSE THERMOWELLS FOR EXISTING DDC SYSTEM COMPONENT REPLACEMENTS WHERE COMPATIBLE WITH NEW CONTROL COMPONENTS; OTHERWISE, TC CONTRACTOR SHALL PROVIDE NEW THERMOWELLS FOR APPLICATION. TC CONTRACTOR SHALL FIELD VERIFY EXISTING SIZES AND THREADED CONNECTIONS AS REQUIRED.
35. TC CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR TO INSTALL ALL CONTROL VALVES AND THERMOWELLS FURNISHED BY THE TC CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL SUBCONTRACTOR.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

TEMPERATURE CONTROLS STANDARDS AND GENERAL NOTES

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN JRM
CHECKED RNR
APPROVED DJE

PROJECT NO.

16011

DRAWING NO.

M8.1

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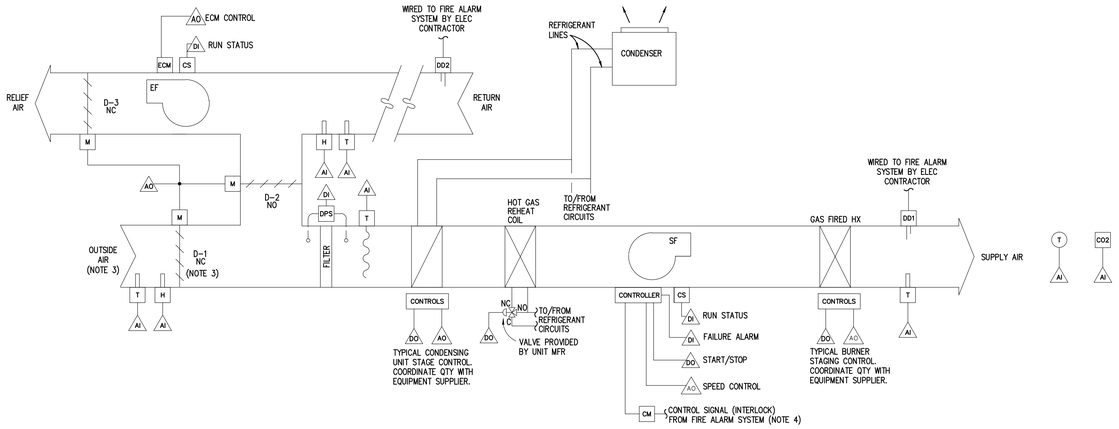
TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.



RTU-1 CAV CONTROL W/DCV/DEHUMIDIFICATION

RTU-1 SERVES: CAFETERIA

NOTES:

1. EQUIPMENT PROVIDER (MANUFACTURER) SHALL PROVIDE RTU WITH PACKAGED DDC CONTROLS (HEREIN CALLED DDC). DDC SHALL PROVIDE SEQUENCE OF OPERATION AS SHOWN BELOW. DDC OPERATING SCHEDULES, SETPOINT ADJUSTMENTS, SYSTEM OVERRIDES, AND SYSTEM MONITORING SHALL BE INTEGRATED TO THE OWNER'S EXISTING BAS.
2. DEPENDING ON UNIT MANUFACTURER, OUTSIDE AIR INTAKE MAY BE SPLIT REQUIRING 2 SETS OF DAMPERS. COORDINATE WITH UNIT SUPPLIER.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO SAFETY CIRCUIT.
4. TC CONTRACTOR SHALL COORDINATE WITH THE TAB CONTRACTOR FOR SUPPLY/POWERED EXHAUST FAN SPEED SETTINGS.

RTU CONTROLLER DISPLAY SHALL PROVIDE (BUT NOT BE LIMITED TO) THE FOLLOWING POINTS AS AVAILABLE:

RTU CONTROL PANEL (UNIT MOUNTED BY MANUFACTURER)

- OCCUPANCY MODE SCHEDULER
- EFFECTIVE OCCUPANCY MODE
- SPACE AIR TEMP SETPOINT
- EFFECTIVE SPACE AIR TEMP SETPOINT
- OA DAMPER MIN-MIN SETPOINT
- OA DAMPER MAX-MIN SETPOINT
- EFFECTIVE MIN OA DAMPER CFM SETPOINT
- OA DAMPER % POSITION
- OA TEMPERATURE/HUMIDITY
- RA TEMPERATURE/HUMIDITY
- DISCHARGE AIR TEMP
- MIXED AIR TEMP
- SPACE TEMP
- SPACE CO2
- ALL TEMP, HUMIDITY, & CO2 SETPOINTS USED
- SUPPLY FAN ON/OFF STATUS
- SUPPLY FAN VSC FAILURE ALARM
- SUPPLY FAN SPEED SIGNAL
- RETURN FAN ON/OFF STATUS
- RETURN FAN SPEED SIGNAL
- DIRTY FILTER ALARMS
- TEMP SENSOR FAILURE ALARMS
- COMPRESSOR ENABLE STATUS – EACH STAGE
- COMPRESSOR FAILURE ALARMS (TO BAS) – EACH STAGE
- HEATING ENABLE STATUS
- HEATING CONTROL % OUTPUT

SEQUENCE OF OPERATION

1. EXISTING RTU DDC CONTROLLER SHALL HEREIN BE CALLED DDC. THE EXISTING SEQUENCE IS TO BE MODIFIED TO CONTROL BASED ON THE FOLLOWING.
2. ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.
3. SUPPLY AND POWERED EXHAUSTER SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. AHU SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE (COMPENSATED BY OPTIMUM START PROGRAM), TEMPORARY OCCUPIED MODE (SET FOR 2 HRS ENABLED FROM OVERRIDE SWITCH ON TEMPERATURE SENSOR) AND UNOCCUPIED CYCLE MODE.
4. UPON INITIAL START, THE MIXED AIR DAMPER SHALL OPEN TO THE MINIMUM POSITION (SEE BELOW). THE SUPPLY FAN SHALL RAMP UP SPEED TO THE TAB CONTRACTOR'S SETTING FOR SUPPLY CFM. THE POWERED EXHAUSTER SHALL REMAIN OFF. AT THE MIN-MIN OA DAMPER POSITION, THE POWERED EXHAUSTER SHALL REMAIN OFF. AT THE MAX-MIN OA DAMPER POSITION, THE EXHAUST FAN SHALL START AND RAMP TO AN INITIAL CFM OFFSET FROM THE SUPPLY FAN AS DETERMINED BY THE TAB CONTRACTOR.
5. WHEN THE ECONOMIZER IS ENABLED AND THE OA DAMPER INCREASES ABOVE THE MAX-MIN POSITION, THE POWERED EXHAUSTER SPEED SHALL BE INCREASED IN PROPORTION TO THE OA DAMPER POSITION PERCENTAGE, AS DETERMINED BY THE TAB CONTRACTOR.
6. FOR HEATING OCCUPIED MODE, AHU SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 70°F.
7. FOR COOLING OCCUPIED MODE, AHU SHALL BE CONTROLLED TO MAINTAIN SPACE TEMP SETPOINT OF 74°F.
8. FOR HEATING UNOCCUPIED MODE, AHU SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMP SETPOINT OF 62°F.
9. FOR COOLING UNOCCUPIED MODE, AHU SHALL CYCLE ON & OFF TO MAINTAIN A SETUP SPACE TEMP SETPOINT OF 80°F.
10. WHEN AHU IS ACTIVATED DURING OCCUPIED MODE; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN AHU IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE MODE OR MORNING WARM-UP MODE, DAMPERS SHALL REMAIN IN NORMAL POSITIONS.
11. WHEN SPACE TEMP IS BELOW HEATING SETPOINT, DDC SHALL MODULATE DAMPERS, ABOVE MINIMUM OA POSITION, IN SEQUENCE WITH HEATING COIL VALVE CONTROL TO MAINTAIN SPACE TEMP SETPOINT.
12. WHEN SPACE TEMP IS ABOVE COOLING SETPOINT AND OA ENTHALPY IS LESS THAN RA ENTHALPY AND OA HUMIDITY IS LESS THAN 60% RH, DDC SHALL MODULATE THE COOLING COIL VALVE (OR CONTROL DX COOLING) IN SEQUENCE WITH DAMPER OA ECONOMIZER TO MAINTAIN SPACE TEMP SETPOINT.
13. WHEN SPACE TEMP IS ABOVE COOLING SETPOINT AND OA ENTHALPY IS GREATER THAN RA ENTHALPY, DAMPERS SHALL REMAIN AT MINIMUM OA POSITION AND DDC SHALL MODULATE THE COOLING COIL VALVE (OR CONTROL DX COOLING) TO MAINTAIN SPACE TEMP SETPOINT.
14. MINIMUM OA DAMPER SETPOINT SHALL BE RESET PROPORTIONALLY BETWEEN MIN/MIN (BASE LOAD VENTILATION REQUIREMENT) AND MAX/MIN (FULL OCCUPANCY REQUIREMENT) BASED ON RETURN AIR CARBON DIOXIDE LEVEL AS FOLLOWS:

CO2	OA DAMPER MIN POSITION
600 PPM	MIN-MIN (SEE MECHANICAL SCHEDULES FOR CFM)
1,100 PPM	MAX-MIN (SEE MECHANICAL SCHEDULES FOR CFM)

15. SUPPLY AND RETURN FAN STATUS SHALL BE MONITORED BY DDC THRU CURRENT SWITCH. SF CURRENT SWITCH SHALL PROVIDE FEEDBACK TO ENABLE TEMPERATURE CONTROLS. ABNORMAL STATUS CONDITION FOR SF SHALL ACTIVATE ALARM. DDC SHALL TOTALIZE THE FANS' RUN TIME HOURS OF OPERATION.
16. FREEZESTAT(S) SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW.
17. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
18. FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE SWITCH.
19. WHEN AHU IS DEACTIVATED, COOLING COIL VALVE SHALL REMAIN CLOSED (OR DX COOLING SHALL REMAIN OFF).
20. WHEN OA TEMP IS BELOW 40°F AND AHU IS DEACTIVATED, HEATING COIL VALVE SHALL BE MODULATED BY DDC BASED ON DISCHARGE AIR TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

TEMPERATURE CONTROLS

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN JRM
CHECKED RNR
APPROVED DJE

PROJECT NO.

16011

DRAWING NO.

M8.2

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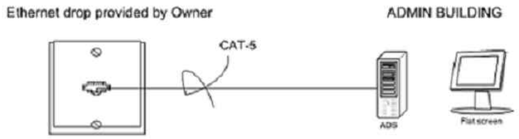
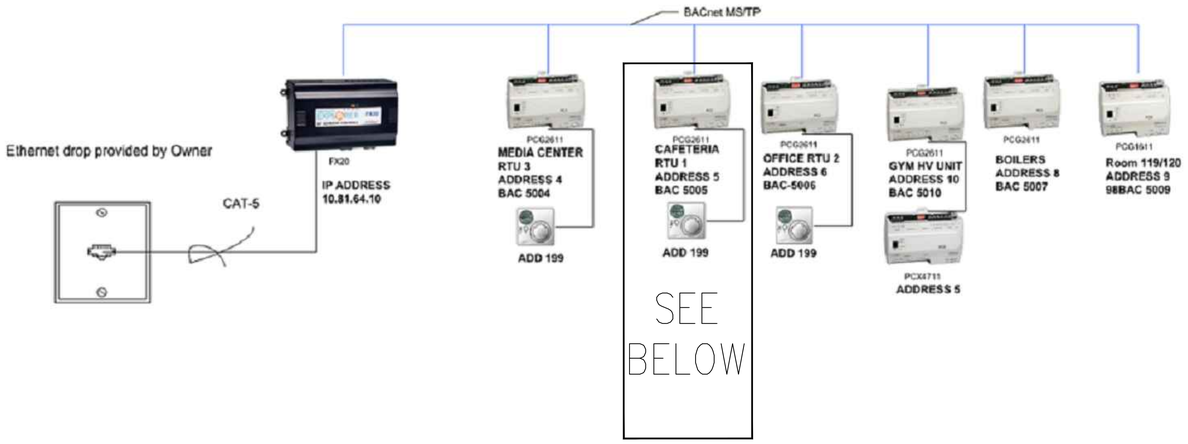
TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.





DDC SYSTEM ARCHITECTURE

NOTES:

1. REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH SYSTEM. FOR RTU-1, CAFETERIA, TC CONTRACTOR SHALL REMOVE THE EXISTING JCI PCG2611 CONTROLLER AND RETURN IT TO OWNER STOCK.
2. TC CONTRACTOR SHALL DETERMINE DDC PANEL QUANTITY BASED ON POINT DENSITIES AND AVAILABLE MOUNTING SPACE. UNLESS SPECIFICALLY NOTED IN DESIGN DRAWINGS, TC CONTRACTOR SHALL LOCATE DDC PANELS AND COORDINATE WITH OTHER TRADES.
3. TC CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES FROM SPARE CIRCUITS. COORDINATE WITH CONTRACTOR.
4. NEW CAFETERIA RTU-1 DDC CONTROLLER SUPPLIED BY EQUIPMENT MANUFACTURER.
5. TC CONTRACTOR SHALL TIE-IN NEW DDC PANEL AND NEW RTU-1 DDC CONTROLLER TO THE EXISTING BACNET NETWORK, PROVIDE INTEGRATION OF CONTROLLER POINTS TO EXISTING BAS, AND PROVIDE NEW GRAPHIC TO MATCH THE CONTROLS SHOWN HEREIN.
6. TC CONTRACTOR SHALL SUBMIT A NEW DDC RISER DIAGRAM SHOWING ALL EXISTING AND NEW CONTROLLERS AND PROVIDE ANY MODIFICATIONS IN THE RECORD DOCUMENTS.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

DDC-BAS SYSTEM ARCHITECTURE

ISSUE DATES

DATE:	ISSUED FOR:
04-04-16	BP No. 2-BIDS

DRAWN JRM
CHECKED RNR
APPROVED DJE

PROJECT NO.

16011

DRAWING NO.

M8.3

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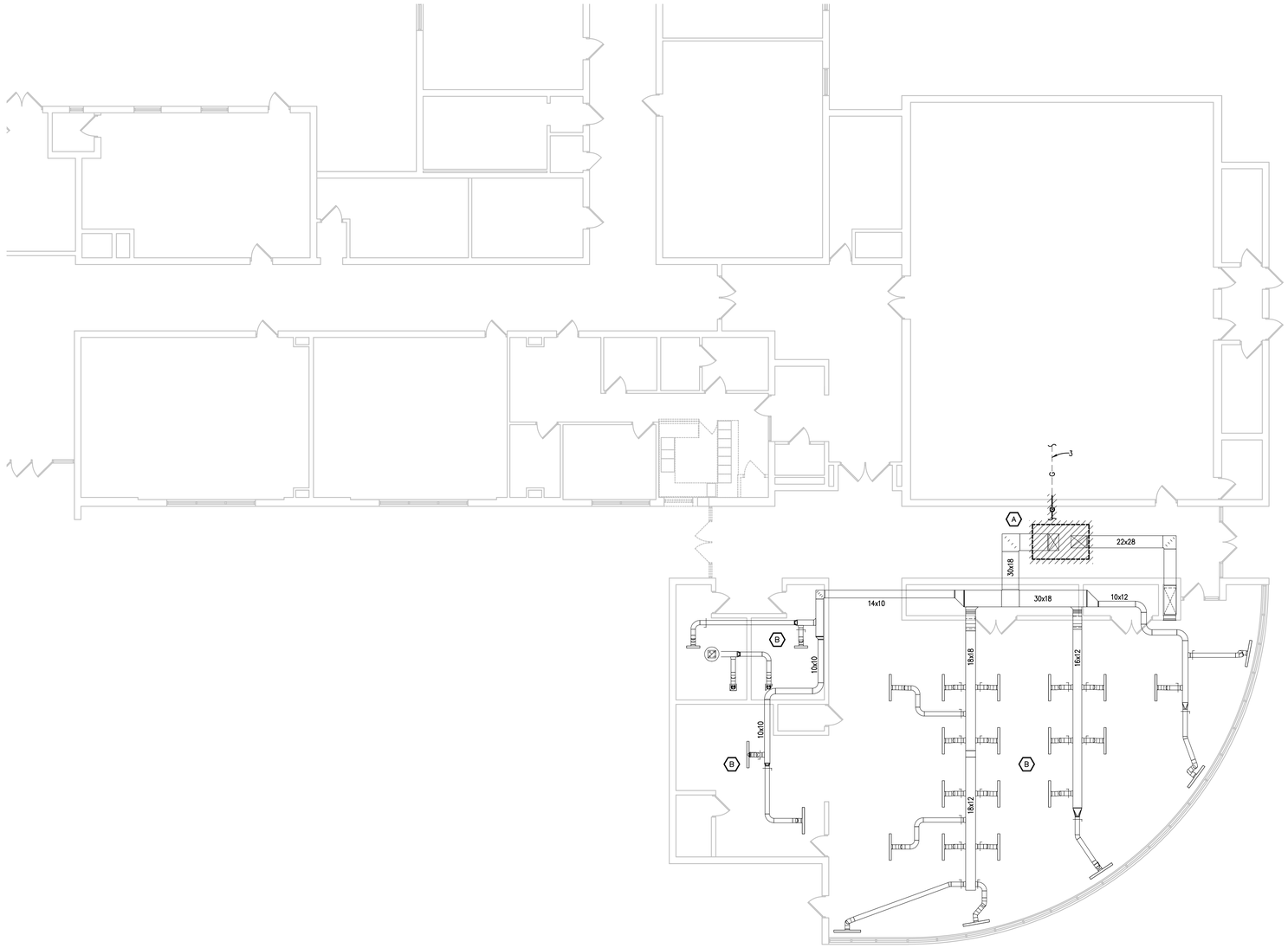
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



MECHANICAL DEMOLITION PLAN - ZONE 'B'

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

MECHANICAL GENERAL DEMOLITION NOTES:

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

(#) DEMOLITION KEY NOTES:

A. REMOVE ROOFTOP UNIT COMPLETE. ROOF CURB TO REMAIN. PREPARE ROOF CURB, SHEET METAL, AND GAS PIPING FOR NEW WORK.

B. PROVIDE PRE-DEMOLITION AIR FLOW READINGS ON ALL EXISTING DIFFUSERS.

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PBA Project No.: 2016.0070

PROJECT TITLE

Grogan Elementary Remodel

Southgate Community Schools
Southgate, Michigan

DRAWING TITLE

MECHANICAL DEMOLITION PLAN - ZONE 'B'

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04-04-16	BP No. 2-BIDS

DRAWN JRM
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16011

DRAWING NO.

MD3.1

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