

# ANCHOR BAY SCHOOL DISTRICT MACDONALD ELEMENTARY SCHOOL

## HVAC Upgrade

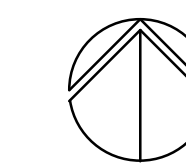
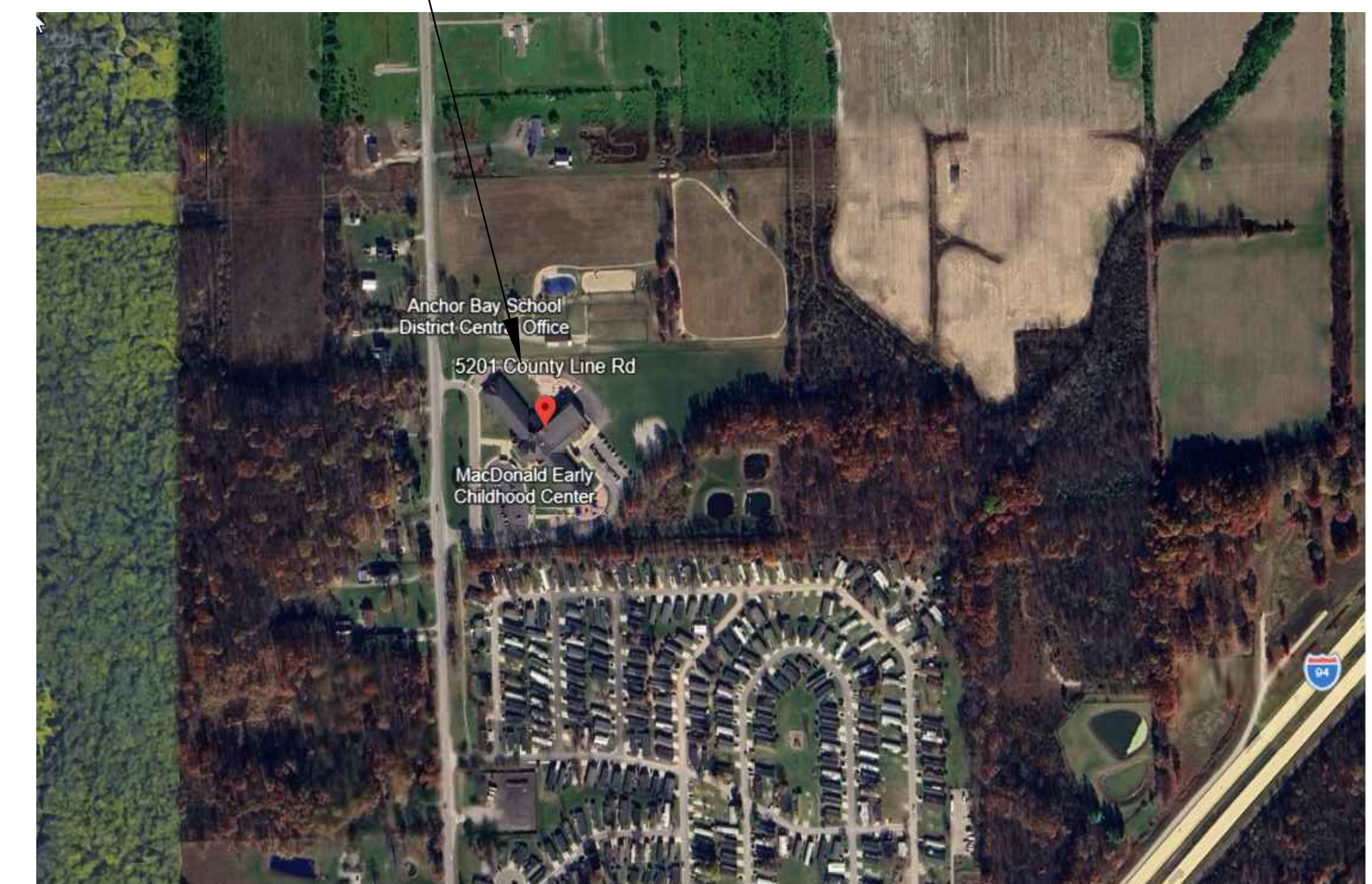
5201 County Line Road, Casco, MI 48064

# CONSTRUCTION DOCUMENTS 05-01-2026



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PBA Project No.: 2026.0034.52

PROJECT LOCATION



LOCATION MAP  
NO SCALE

### CODES AND STANDARDS

|      |   |
|------|---|
| 2021 | MICHIGAN BUILDING CODE                              |
| 2021 | MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS |
| 2021 | MICHIGAN MECHANICAL CODE                            |
| 2023 | MICHIGAN ELECTRICAL CODE PART 8                     |

### MECHANICAL DRAWING INDEX

| CONSTRUCTION DOCUMENTS |  | SHEET NO. | SHEET TITLE                                      |
|------------------------|--|-----------|--|
|                        |  | M0.1      | MECHANICAL STANDARDS AND DRAWING INDEX           |
|                        |  | M0.2      | FIRST FLOOR MECHANICAL COMPOSITE DEMOLITION PLAN |
|                        |  | M6.2      | FIRST FLOOR MECHANICAL COMPOSITE NEW WORK PLAN   |
|                        |  | M6.1      | MECHANICAL DETAILS                               |
|                        |  | M7.1      | MECHANICAL SCHEDULES                             |
|                        |  | M8.1      | TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES  |

### ELECTRICAL DRAWING INDEX

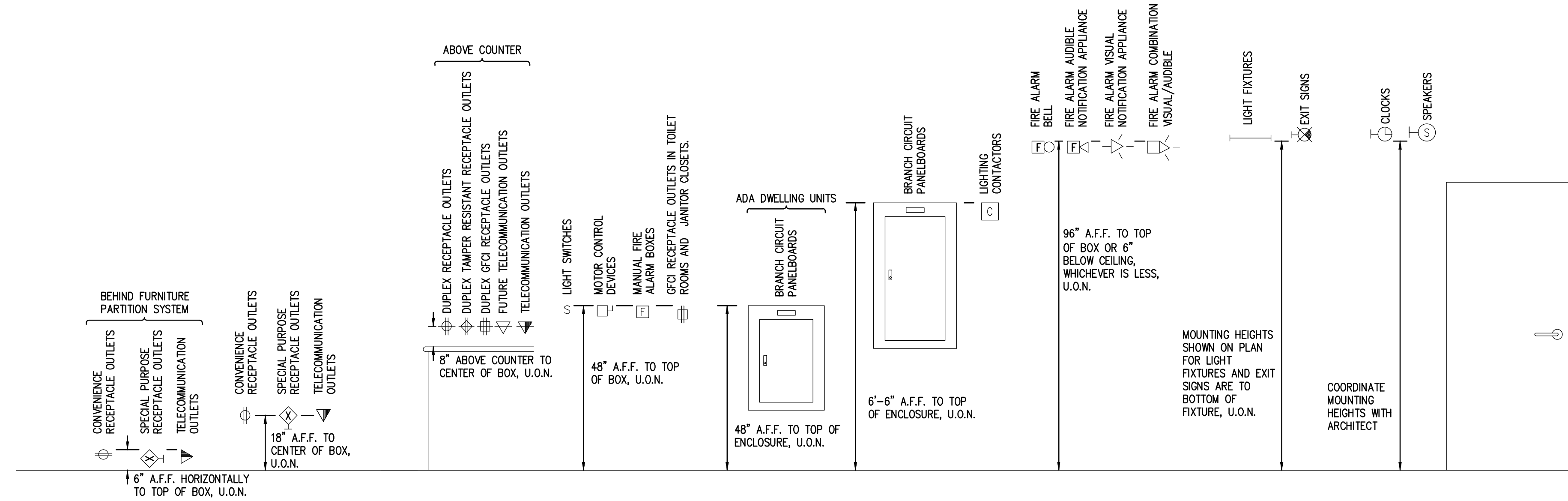
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|                        |  | E0.1      | ELECTRICAL STANDARDS AND DRAWING INDEX           |
|                        |  | E0.2      | ELECTRICAL STANDARD SCHEDULES                    |
|                        |  | E0.3      | FIRST FLOOR ELECTRICAL COMPOSITE DEMOLITION PLAN |
|                        |  | E0.3      | FIRST FLOOR ELECTRICAL COMPOSITE NEW WORK PLAN   |
|                        |  | E5.1      | ONE LINE DIAGRAM                                 |

**ELECTRICAL SYMBOL LIST**

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

| SYMBOL | DESCRIPTION  | SYMBOL | DESCRIPTION  | SYMBOL | DESCRIPTION   | SYMBOL | DESCRIPTION                                    |
|--------|--|--------|--|--------|---|--------|--|
|        | DENOTES NIGHT LIGHT AND/OR EMERGENCY LIGHT<br>X DENOTES FIXTURE TYPE<br>Y DENOTES LIGHTING CONTROL ZONE<br>ZZ-# DENOTES PANELBOARD AND BREAKER |        | TWO-WAY COMMUNICATION SYSTEM CALL STATION  |        | MOTOR   |        | SECURITY CAMERA                                |
|        | TROFFER LIGHT  |        | TWO-WAY COMMUNICATION SYSTEM AUTO DIALER   |        | VARIABLE FREQUENCY CONTROLLER                                 |        | MOTION DETECTOR                                |
|        | STRIP LIGHT  |        | TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL   |        | MANUAL CONTROLLER   |        | SECURITY KEY SWITCH                            |
|        | LINEAR LIGHT   |        | TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP   |        | MAGNETIC CONTROLLER   |        | DOOR CONTACT                                   |
|        | MULTIHEAD ADJUSTABLE LIGHT   |        | TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP   |        | COMBINATION MAGNETIC CONTROLLER                               |        | KEY PAD  |
|        | DOWN LIGHT   |        | REMOTE GENERATOR ANNUNCIATOR PANEL   |        | NON-FUSIBLE DISCONNECT SWITCH                                 |        | CARD READER                                    |
|        | DIRECTIONAL DOWN LIGHT   |        | AUTOMATIC TRANSFER SWITCH  |        | FUSIBLE DISCONNECT SWITCH                                     |        | DURESS PUSH BUTTON STATION                     |
|        | DECORATIVE LIGHT   |        | UNINTERRUPTIBLE POWER SUPPLY   |        | ENCLOSED CIRCUIT BREAKER                                      |        | DELAYED EGRESS                                 |
|        | WALL MOUNTED LIGHT   |        | SINGLE / DUPLEX RECEPTACLE OUTLET "X" INDICATES TYPE   |        | PUSH BUTTON STATION   |        | REQUEST TO EXIT STATION                        |
|        | WALL SCONCE  |        | SINGLE/DUPLEX RECEPTACLE OUTLET CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM (SIMILAR FOR TAMPER RESISTANT, GFCI, USB)                            |        | JUNCTION BOX  |        | AUTOMATIC DOOR PUSH PAD OPERATOR               |
|        | ARM MOUNTED LIGHT  |        | DUPLEX / TAMPER RESISTANT RECEPTACLE OUTLET HALF CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM   |        | HARD WIRE POWER CONNECTION                                    |        | DOOR OPERATOR                                  |
|        | LIGHTING TRACK   |        | QUAD RECEPTACLE OUTLET   |        | GROUND ROD  |        | DOOR ACTUATOR                                  |
|        | TRACK LIGHT  |        | ABOVE COUNTER DUPLEX RECEPTACLE OUTLET (SIMILAR FOR TAMPER RESISTANT, CONTROLLED, SINGLE, QUADS, EMERGENCY, UPS, USB, AND GFCI RECEPTACLE OUTLETS) |        | GROUND CONNECTION   |        | ACCESS CONTROL STATION                         |
|        | ADJUSTABLE FLOOD LIGHT   |        | DEAD FRONT GROUND FAULT CIRCUIT INTERRUPTER  |        | HANDHOLE  |        | ACCESS CONTROL CONTROL PANEL                   |
|        | STEP LIGHT   |        | DUPLEX EMERGENCY RECEPTACLE OUTLET   |        | CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED               |        | ACCESS CONTROL POWER SUPPLY                    |
|        | LED TAPE   |        | DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET  |        | CONDUIT UP  |        | CIRCUIT BREAKER                                |
|        | REMOTE DRIVER  |        | QUAD TAMPER RESISTANT RECEPTACLE OUTLET  |        | CONDUIT DOWN  |        | DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED     |
|        | HIGH BAY LIGHT   |        | DUPLEX UPS RECEPTACLE OUTLET   |        | EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET                 |        | DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED |
|        | POLE MOUNTED LIGHT   |        | DUPLEX RECEPTACLE OUTLET WITH 2 USB PORTS  |        | ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET   |        | SWITCH   |
|        | POST TOP LIGHT   |        | 4 PORT USB CHARGING STATION  |        | EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET |        | AUTOMATIC OR MANUAL TRANSFER SWITCH            |
|        | BOLLARD LIGHT  |        | CEILING MOUNTED DUPLEX/QUAD RECEPTACLE OUTLET  |        | TELECOMMUNICATION OUTLET "X" INDICATES TYPE                   |        | FUSE   |
|        | IN GROUND LIGHT  |        | WALL/CEILING MOUNTED SPECIAL RECEPTACLE OUTLET - REFER TO ELECTRICAL STANDARD SCHEDULES  |        | ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE     |        | TRANSFORMER                                    |
|        | EMERGENCY LIGHT  |        | MULTI-OUTLET SURFACE RACEWAY   |        | TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE   |        | CURRENT TRANSFORMER                            |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | POWER POLE   |        | TELECOMMUNICATION BACKBOARD                                   |        | POTENTIAL TRANSFORMER                          |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | WALL/CEILING MOUNTED SPECIAL RECEPTACLE OUTLET - REFER TO ELECTRICAL STANDARD SCHEDULES  |        | TELECOMMUNICATION GROUNDING BUS BAR                           |        | LIGHTNING ARRESTOR                             |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | TELECOMMUNICATION MAIN GROUNDING BUS BAR                      |        | PANELBOARD                                     |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | INTERCOM OUTLET   |        | STRESS CONE TERMINATION                        |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | SPEAKER - WALL MOUNTED  |        | KEY INTERLOCK                                  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | SPEAKER - WALL MOUNTED  |        | ENGINE GENERATOR                               |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | MICROPHONE  |        | UTILITY METER                                  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | VOLUME CONTROL/STATION SELECTOR                               |        | ELECTRONIC METERING UNIT                       |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | SIGNALING BELL  |        | AMMETER  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | SINGLE FACE CLOCK - CEILING MOUNTED                           |        | VOLTMETER                                      |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | SINGLE FACE CLOCK - WALL MOUNTED                              |        | AMMETER SWITCH                                 |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DOUBLE FACE CLOCK - CEILING MOUNTED                           |        | SURGE PROTECTIVE DEVICE                        |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DOUBLE FACE CLOCK - WALL MOUNTED                              |        | CONTROL RELAY                                  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED         |        | TIME DELAY RELAY                               |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED            |        | PHASE ROTATION MONITOR                         |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | TIME CLOCK  |        | CAMLK - MALE                                   |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | CONTACTOR   |        | CAMLK - FEMALE                                 |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | PHOTOCELL   |        | THERMAL OVERLOAD RELAY                         |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | TWIST TIMER   |        | NORMALLY OPEN CONTACTS                         |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | ELECTRICAL VEHICLE SUPPLY EQUIPMENT                           |        | NORMALLY CLOSED CONTACTS                       |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DC FAST CHARGER - STANDALONE                                  |        | N.O. PUSH BUTTON SINGLE CIRCUIT                |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DC FAST CHARGER - POWER MODULE                                |        | N.C. PUSH BUTTON SINGLE CIRCUIT                |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DC FAST CHARGER - DISPENSER                                   |        | CABLE VAULT "X-X" INDICATES TYPE               |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | BRANCH CIRCUIT PANELBOARD                                     |        | MOTOR CONTROL CENTER                           |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | LOAD CENTER   |        | TRANSFORMER                                    |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | MOTOR CONTROL CENTER  |        | DISTRIBUTION EQUIPMENT                         |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | TRANSFORMER   |        | ELECTRICAL GROUNDING BUS BAR                   |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | DISTRIBUTION EQUIPMENT  |        | PLUG IN BUSWAY                                 |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | ELECTRICAL GROUNDING BUS BAR                                  |        | FEEDER BUSWAY                                  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | PLUG IN BUSWAY  |        | CABLE TRAY - ALL SIZES IN INCHES               |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | FEEDER BUSWAY   |        |  |
|        | EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)  |        | MULTI-OUTLET SURFACE RACEWAY   |        | CABLE TRAY - ALL SIZES IN INCHES                              |        |  |

**STANDARD MOUNTING HEIGHTS**



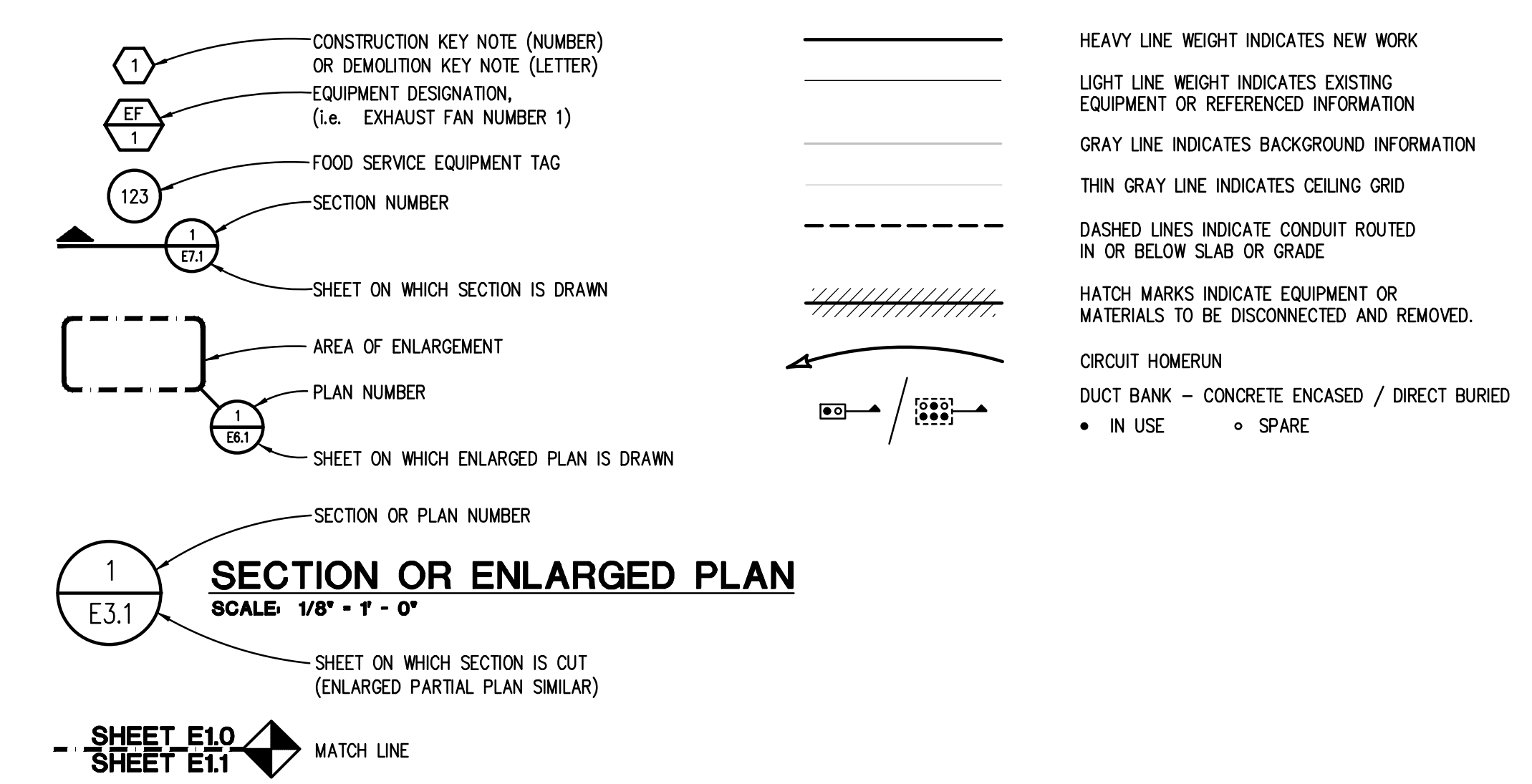
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| SHEET NO. | SHEET TITLE                                      |
|-----------|--|
| EO.1      | ELECTRICAL STANDARDS AND DRAWING INDEX           |
| EO.2      | ELECTRICAL STANDARD SCHEDULES                    |
| EO.3      | FIRST FLOOR ELECTRICAL COMPOSITE DEMOLITION PLAN |
| EO.3      | FIRST FLOOR ELECTRICAL COMPOSITE NEW WORK PLAN   |
| EO.1      | ONE LINE DIAGRAM                                 |

**ELECTRICAL ABBREVIATION LIST**

| ABBREVIATION | DESCRIPTION                                       | ABBREVIATION | DESCRIPTION                      | ABBREVIATION | DESCRIPTION                           |
|--------------|---|--------------|----------------------------------|--------------|---------------------------------------|
| A            | AMPERES   | G/GRD/EG     | GROUND                           | OC           | ON CENTER                             |
| AER          | ARC ENERGY REDUCTION                              | GFCI         | GROUND FAULT CIRCUIT INTERRUPTER | OFCI         | OWNER FURNISHED, CONTRACTOR INSTALLED |
| AF           | AMPERES FRAME (BREAKER RATING)                    | GFP          | GROUND FAULT PROTECTION          | OFDI         | OWNER FURNISHED, OWNER INSTALLED      |
| AFCI         | ARC FAULT CIRCUIT INTERRUPTER                     | HOA          | HAND-OFF-AUTO                    | POP          | PUSHBUTTON STATION                    |
| A.F.F.       | ABOVE FINISH FLOOR                                | HP           | HORSEPOWER                       | P            | POLE                                  |
| AIC          | AMPS INTERRUPTING CAPACITY                        | HV           | HIGH VOLTAGE                     | PH           | PHASE                                 |
| AL           | AUDIENCE LEFT                                     | HZ           | HERTZ                            | PT           | POTENTIAL TRANSFORMER                 |
| ALCR         | AUTOMATIC LOAD CONTROL RELAY                      | IG           | ISOLATED GROUND                  | PTD          | POWER DISTRIBUTION PANEL              |
| AR           | AUDIENCE RIGHT                                    | JB           | JUNCTION BOX                     | RD           | RECEPTACLE DISTRIBUTION PANEL         |
| AT           | AMPERES TRIP (BREAKER SETTING)                    | KA           | THOUSAND AMP                     | RP           | RECEPTACLE PANEL                      |
| ATS          | AUTOMATIC TRANSFER SWITCH                         | KV           | KILOVOLT                         | RSC          | RIGID STEEL CONDUIT                   |
| AUX          | AUXILIARY   | KVA          | KILOVOLT - AMPERES               | SCSR         | SHORT CIRCUIT CURRENT RATING SCHEDULE |
| BCELTS       | BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH | KW           | KILOWATT                         | SPD          | SURGE PROTECTION DEVICE               |
| BKR          | BREAKER   | KWH          | KILOWATT - HOURS                 | ST           | SHUNT TRIP                            |
| BPS          | BOLTED PRESSURE SWITCH                            | LA           | LIGHTNING ARRESTOR               | SW           | SWITCH                                |
| C            | CONDUIT   | LP           | LIGHTING PANEL                   | SWB          | SWITCHBOARD                           |
| CB           | CIRCUIT BREAKER                                   | LDP          | LIGHTING DISTRIBUTION PANEL      | SWGR         | SWITCHGEAR                            |
| OCFI         | CONTRACTOR FURNISHED, CONTRACTOR INSTALLED        | MAX          | MAXIMUM                          | TB           | TERMINAL BOX                          |
| CKT          | CIRCUIT   | MCA          | MINIMUM CIRCUIT AMPACITY         | TELECOM      | TELECOMMUNICATIONS                    |
| CT           | CURRENT TRANSFORMER                               | MCB          | MAIN CIRCUIT BREAKER             | TR           | TAMPER RESISTANT                      |
| DDMO         | DEMOLITION  | MCC          | MOTOR CONTROL CENTER             | TTB          | TELEPHONE TERMINAL BACKBOARD          |
| DM           | DIMENSION   | MCP          | MAIN DISTRIBUTION PANEL          | TYP          | TYPICAL                               |
| DISC         | DISCONNECT  | MECH         | MECHANICAL                       | U.O.N.       | UNLESS OTHERWISE NOTED                |
| DP           | DISTRIBUTION PANEL                                | MIN          | MINIMUM                          | UVR          | UNDERVOLTAGE RELAY                    |
| DS           | DOWNSTAGE   | MISC.        | MISCELLANEOUS                    | V            | VOLTS                                 |
| DWG          | DRAWING   | M.L.O.       | MAIN LUGS ONLY                   | W            | WIRE OR WATTS                         |
| EBU          | EMERGENCY BATTERY UNIT                            | MOP          | MAXIMUM OVERCURRENT PROTECTION   | WAP          | WIRELESS ACCESS POINT                 |
| EC           | ELECTRICAL CONTRACTOR                             | MTD          | MOUNTED                          | WG           | WIRE GUARD                            |
| EOM          | ELECTRONICALLY COMMUTATED MOTOR                   | MTG          | MOUNTING                         | WP           | WEATHERPROOF                          |
| ELEC         | ELECTRICAL  | MTR          | MOTOR                            | WR           | WEATHER RESISTANT                     |
| EM/EMERG     | EMERGENCY   | N            | NEUTRAL                          | XP           | TRANSFORMER EXPLOSION PROOF           |
| EMT          | ELECTRICAL METALLIC TUBING                        | NC           | NORMALLY CLOSED                  | (E)          | EXISTING                              |
| EO           | ELECTRICALLY OPERATED                             | NEC          | NATIONAL ELECTRICAL CODE         | (R)          | RELOCATED                             |
| EPO          | EMERGENCY POWER OFF                               | NEF          | NON-FUSIBLE                      |              |                                       |
| EWC          | ELECTRIC WATER COOLER                             | NIC          | NOT IN CONTRACT                  |              |                                       |
| EXIST        | EXISTING  | NO           | NORMALLY OPEN                    |              |                                       |
| FA           | FIRE ALARM  | NTS          | NOT TO SCALE                     |              |                                       |
| FLA          | FULL LOAD AMPS                                    |              |                                  |              |                                       |
| FLR          | FLOOR   |              |                                  |              |                                       |
| FOH          | FRONT OF HOUSE                                    |              |                                  |              |                                       |
| FSEC         | FOOD SERVICE EQUIPMENT CONTRACTOR                 |              |                                  |              |                                       |
| FU           | FUSE  |              |                                  |              |                                       |

**STANDARD METHODS OF NOTATION**



**STANDARD MOUNTING HEIGHTS**



REVISION

REVISION

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PBA Project#: 2026-0034-00

**Peter Basso Associates**  
CONSULTING ENGINEERS

PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
MACDONALD ELEMENTARY SCHOOL  
HVAC Upgrade**  
5201 County Line Road, Casco, MI 48064

SHEET TITLE  
**ELECTRICAL STANDARDS AND  
DRAWING INDEX**

DATE  
05-01-2026

ISSUE  
CONSTRUCTION DOCUMENTS

SHEET No.

**E0.1**

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| FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE |                          |        |  |                                     |                                |  |             |
|---|--------------------------|--------|--|-------------------------------------|--------------------------------|--|-------------|
| OVERCURRENT DEVICE RATING (AMPERES)                         | COPPER CONDUCTORS        |        |  |                                     |                                |  | KEYED NOTES |
|   | WIRE SIZE (AWG OR KCMIL) |        | CONDUIT SIZE                                 |                                     |                                |  |             |
|   | PHASE & NEUTRAL          | GROUND | SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G, 2PH, 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"   | 1           |
| 60  | 6 (4)                    | 10     | 3/4" (1")                                    | 3/4" (1")                           | 3/4" (1")                      | 1" (1 1/4")                                  | 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"                                       | 1           |
| 90-100  | 3 (2)                    | 8      | 1 1/4"                                       | 1 1/4"                              | 1 1/4"                         | 1 1/4"                                       | 1           |
| 110   | 2 (1)                    | 6      | -  | 1 1/4"                              | 1 1/4"                         | 1 1/4" (1 1/2")                              | 1           |
| 125   | 1 (1/0)                  | 6      | -  | 1 1/4" (1 1/2")                     | 1 1/4" (1 1/2")                | 1 1/2"                                       | 1           |
| 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 1/2"                                     |             |
| 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"                                     |             |

GENERAL 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-2 UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.  
 4. CONDUIT SIZES ARE VALID FOR EMT OR RSC. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.  
 5. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.  
 6. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.

KEYED NOTES:  
 1. CONDUCTORS ARE BASED ON 90°C, 600V INSULATED 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.

| 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                                      | 145  | 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 |

GENERAL 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 90.1 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%.

**MOTOR CIRCUIT SIZING SCHEDULE (480V, 3 PHASE)**

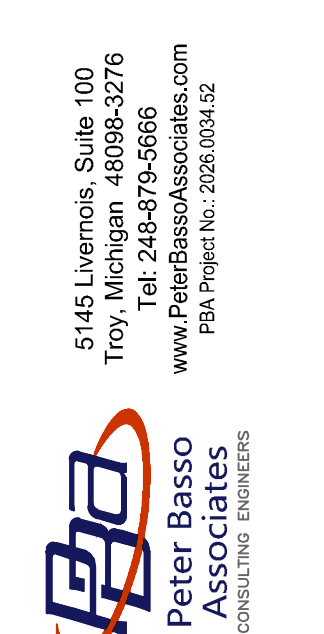
| MOTOR HP | SWITCH/FUSE | CIRCUIT BREAKER | STARTER SIZE/TYPE | MOTOR DISCONNECT (NOTE 3) |
|----------|-------------|-----------------|-------------------|---------------------------|
| 1/2      | 30/3A       | 15A             | 1                 | 30A                       |
| 3/4      | 30/3A       | 15A             | 1                 | 30A                       |
| 1        | 30/6A       | 15A             | 1                 | 30A                       |
| 1 1/2    | 30/6A       | 15A             | 1                 | 30A                       |
| 2        | 30/6A       | 15A             | 1                 | 30A                       |
| 3        | 30/10A      | 15A             | 1                 | 30A                       |
| 5        | 30/15A      | 15A             | 1                 | 30A                       |
| 7 1/2    | 30/20A      | 20A             | 1                 | 30A                       |
| 10       | 30/20A      | 25A             | 1                 | 30A                       |
| 15       | 30/30A      | 40A             | 2                 | 30A                       |
| 20       | 60/40A      | 60A             | 2                 | 60A                       |
| 25       | 60/50A      | 70A             | 2                 | 60A                       |
| 30       | 60/60A      | 80A             | 3                 | 60A                       |
| 40       | 100/80A     | 90A             | 3                 | 100A                      |
| 50       | 100/100A    | 100A            | 3                 | 100A                      |
| 60       | 200/125A    | 125A            | 4                 | 200A                      |
| 75       | 200/150A    | 150A            | 4                 | 200A                      |
| 100      | 200/200A    | 200A            | 4                 | 200A                      |
| 125      | 200/200A    | 225A            | 5                 | 200A                      |
| 150      | 400/250A    | 250A            | 5                 | 400A                      |
| 200      | 400/350A    | 350A            | 5                 | 400A                      |

GENERAL NOTES:  
 1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC.  
 2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.  
 3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

| RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE            |                          |                     |                                  |                                  |                           |  |  |   |                              |
|---|--------------------------|---------------------|----------------------------------|----------------------------------|---------------------------|--|--|---|------------------------------|
| FEEDERS - EXTERIOR  | WIRE                     |                     | RACEWAY                          |                                  |                           |  | CABLE / CORD                                 |   |                              |
|   | COPPER, TYPE THHN/THWN-2 | COPPER, TYPE XHHW-2 | ELECTRICAL METALLIC TUBING (EMT) | INTERMEDIATE METAL CONDUIT (IMC) | RIGID STEEL CONDUIT (RSC) | RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-40 | RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-80 | REINFORCED THERMOSET RESIN CONDUIT (RTRC) TYPE AG | FLEXIBLE METAL CONDUIT (FMC) |
| EXPOSED, SURFACE MOUNTED TO STRUCTURE                       | X                        |                     | X                                | X                                | X                         | X  |  |   |                              |
| EXPOSED, WITH FREESTANDING SUPPORT                          | X                        |                     | X                                | X                                | X                         | X  |  |   |                              |
| ROOFTOPS (WHEN APPROVED BY ENGINEER)                        | X                        |                     | X                                | X                                | X                         | X  |  |   |                              |
| CONCEALED, ACCESSIBLE CEILINGS                              | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| CONCEALED, INACCESSIBLE CEILINGS                            | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| CONCEALED IN GYPSUM BOARD PARTITION WALLS                   | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE                | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE            | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| EXPOSED, ABOVE 10' AFF UNFINISHED SPACES                    | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| EXPOSED, FINISHED SPACES                                    | X                        |                     |                                  |                                  |                           |  |  | X   |                              |
| DAMP AND WET LOCATIONS                                      | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| BRANCH CIRCUITS - EXTERIOR                                  |                          |                     |                                  |                                  |                           |  |  |   |                              |
| EXPOSED, SURFACE MOUNTED TO STRUCTURE                       | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| EXPOSED, WITH FREESTANDING SUPPORT                          | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| WITHIN 5' OF FOUNDATION WALL                                | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| ROOFTOPS (WHEN APPROVED BY ENGINEER)                        | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| BRANCH CIRCUITS - INTERIOR                                  |                          |                     |                                  |                                  |                           |  |  |   |                              |
| CONCEALED, ACCESSIBLE CEILINGS                              | X                        |                     | X                                | X                                |                           |  |  |   | X                            |
| CONCEALED, INACCESSIBLE CEILINGS                            | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| CONCEALED IN GYPSUM BOARD PARTITION WALLS                   | X                        |                     | X                                | X                                |                           |  | X  |   | X                            |
| EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE                | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE            | X                        |                     | X                                | X                                |                           |  |  | X   |                              |
| EXPOSED, ABOVE 10' AFF UNFINISHED SPACES                    | X                        |                     | X                                | X                                |                           |  |  |   |                              |
| DAMP AND WET LOCATIONS                                      | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| SPECIAL APPLICATIONS  |                          |                     |                                  |                                  |                           |  |  |   |                              |
| CONNECTION BETWEEN WFC AND MOTORS (KEYED NOTE 1)            |                          |                     |                                  |                                  |                           |  |  |   | X                            |
| CLASS 1 CONTROL CIRCUITS                                    | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| CLASS 2 CONTROL CIRCUITS                                    | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| CLASS 3 CONTROL CIRCUITS                                    | X                        |                     | X                                | X                                | X                         |  |  |   |                              |
| CONNECTIONS TO TRANSFORMERS, MOTORS AND VIBRATING EQUIPMENT | X                        |                     |                                  |                                  |                           |  |  |   |                              |

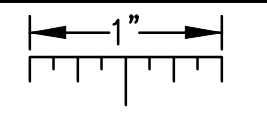
GENERAL NOTES:  
 1. TRANSITION FROM PVC/HDPE AND PROVIDE RIGID STEEL OR RTRC SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, CONCRETE BASES, AND ASPHALT.  
 2. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC/AC CABLE INSTALLATION.  
 3. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF.

KEYED NOTES:  
 1. NON-ARMORED CABLE SHALL BE INSTALLED IN RACEWAY. ARMORED CABLE SHALL BE INSTALLED IN TRAY OR FREE-AIR AS APPLICABLE.  
 2. CONDUIT AND BUILDING WIRE ALLOWED PER ONE OF THE FOLLOWING METHODS: ROUTED OUTSIDE THE BUILDING, ROUTED UNDER A MINIMUM OF 2" OF CONCRETE BENEATH THE BUILDING, OR ENCASED IN A MINIMUM OF 2" OF CONCRETE.  
 3. EMERGENCY FEEDERS IN OCCUPANCIES THAT ARE UNDER 700.10(D) SHALL HAVE A TWO HOUR RATING. RATING SHALL BE OBTAINED BY ROUTING CONDUIT AND BUILDING WIRE IN SPRINKLERED SPACE, IN A TWO HOUR SHIRT, OUTSIDE OF THE BUILDING, IN A LISTED TWO HOUR RATED RACEWAY, OR UNDER A MINIMUM OF 2" OF CONCRETE; OR BY USING A LISTED TWO-HOUR RATED CABLE ASSEMBLY.  
 4. SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS BASED ON UL TESTING AND RATING.  
 5. INTERMEDIATE METAL CONDUIT AND RIGID STEEL CONDUIT, INCLUDING ALL FITTINGS, BOXES AND SUPPORTS, SHALL BE TREATED WITH CORROSION RESISTANT PAINT. FLEXIBLE CORD SHALL ONLY BE USED FOR FINAL CONNECTION TO LUMINAIRES.



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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.

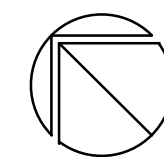
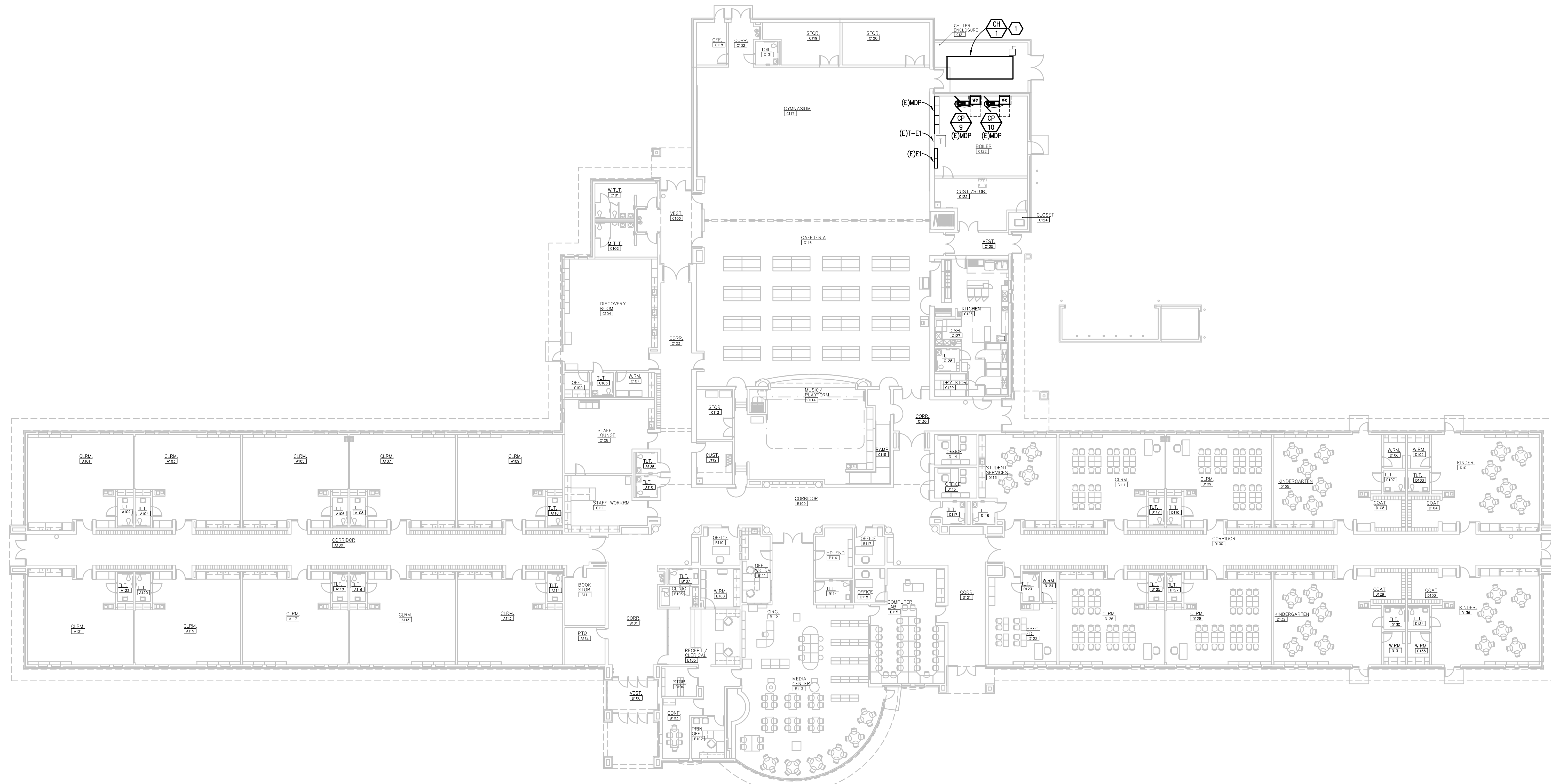


**ELECTRICAL GENERAL NOTES:**

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. 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. 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.
8. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.

**CONSTRUCTION KEY NOTES:**

1. CIRCUIT MECHANICAL EQUIPMENT TO MAINTAINED BRANCH CIRCUIT.



**FIRST FLOOR ELECTRICAL COMPOSITE NEW WORK PLAN**  
SCALE: 1/16" = 1' - 0"

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5145 Livemore, Suite 100  
Troy, Michigan 48066-9276  
www.PeterBassoAssociates.com  
PBA Project No.: 2026-0034

**Peter Basso Associates**  
CONSULTING ENGINEERS

PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
MACDONALD ELEMENTARY SCHOOL  
HVAC Upgrade**  
5201 County Line Road, Cassco, MI 48064

SHEET TITLE  
**FIRST FLOOR ELECTRICAL  
COMPOSITE NEW WORK PLAN**

DATE  
05-01-2026

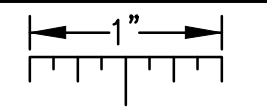
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**E0.3**

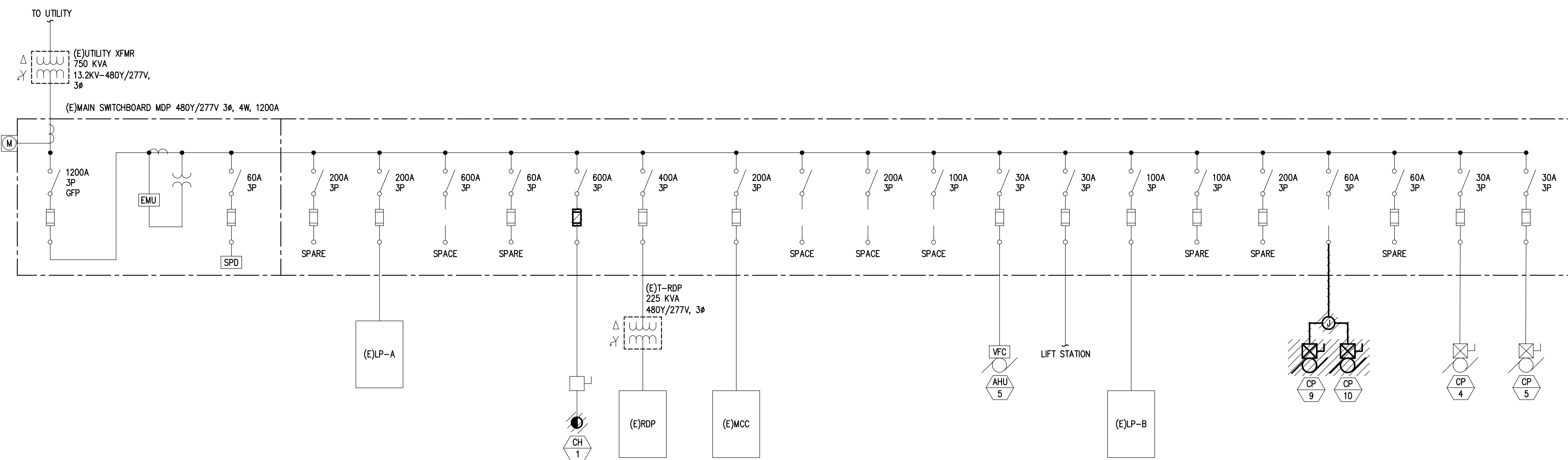
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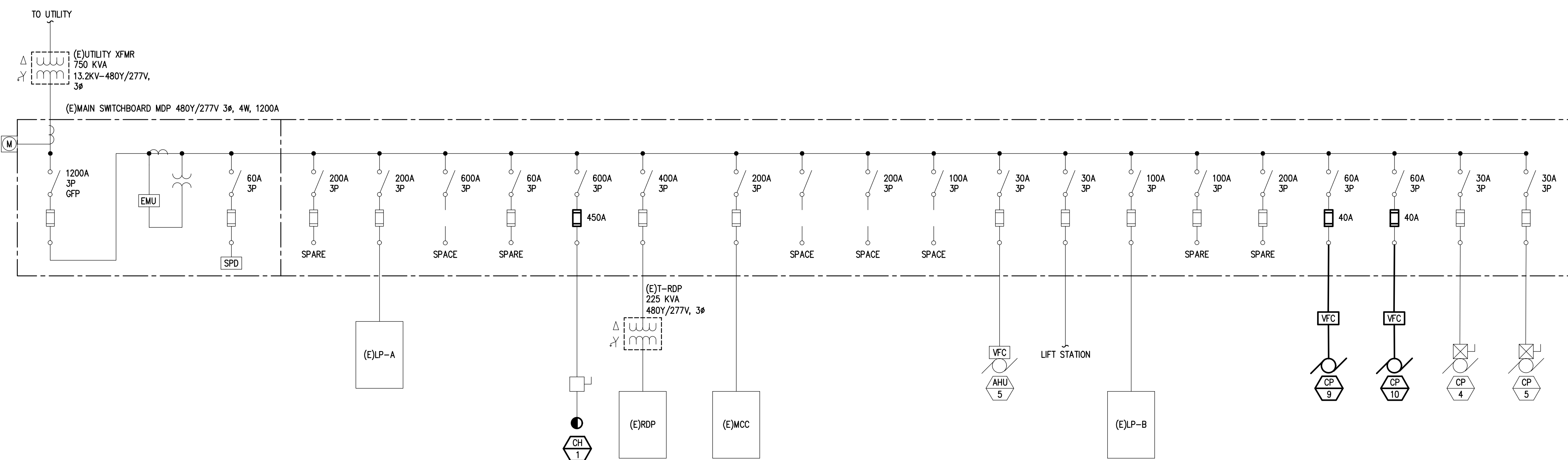


**DIAGRAM GENERAL NOTES:**

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
3. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.



**ONE LINE DIAGRAM - DEMOLITION**  
NO SCALE



**ONE LINE DIAGRAM - DEMOLITION**  
NO SCALE

**MAIN SWITCHBOARD  
CONNECTED LOAD CALCULATION**

|                               |            |                |
|-------------------------------|------------|----------------|
| MAIN SWITCHBOARD METERED LOAD | 634 (1.25) | 792 KVA        |
| REMOVED LOAD                  |            |                |
| MDP (CH-1)                    | 3 KVA      |                |
| <b>TOTAL CONNECTED LOAD</b>   |            | <b>789 KVA</b> |

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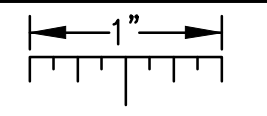
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**ONE LINE DIAGRAM**

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**E5.1**

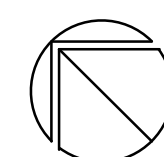
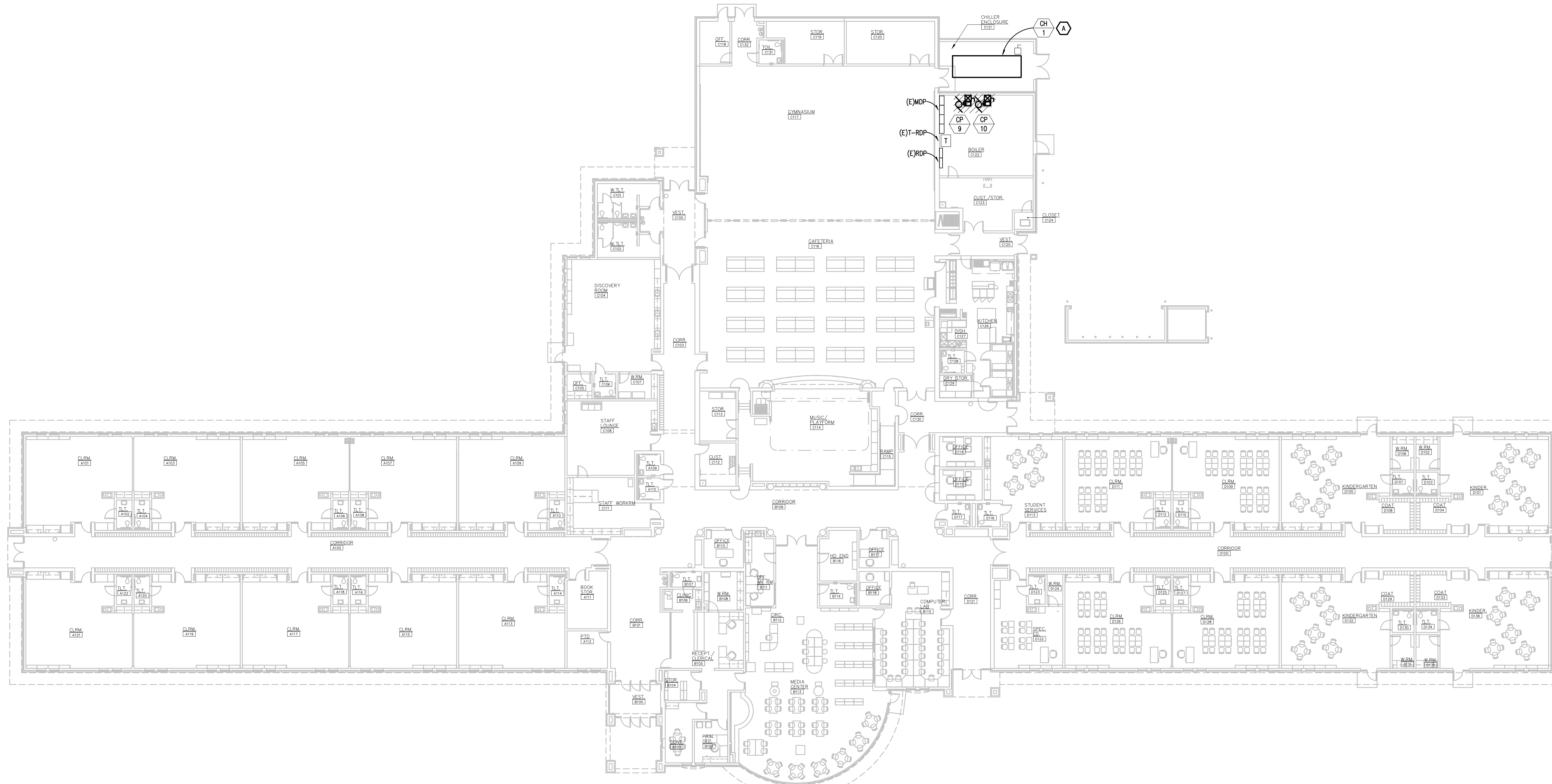
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**ELECTRICAL DEMOLITION GENERAL NOTES:**

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 EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE COMPONENTS 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 DISPOSAL OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TOLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK 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.



**FIRST FLOOR ELECTRICAL COMPOSITE DEMOLITION PLAN**  
SCALE: 1/16" = 1' - 0"

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**ED0.3**

**MECHANICAL ABBREVIATION LIST**

| ABBREVIATION | DESCRIPTION   | ABBREVIATION | DESCRIPTION                                 | ABBREVIATION | DESCRIPTION   |
|--------------|---|--------------|---|--------------|---|
| A            | COMPRESSED AIR  | FLA          | FULL LOAD AMPS                              | PAU          | PACKAGED AIR CONDITIONING UNIT                      |
| A(##)        | COMPRESSED AIR (SPECIFIC PSIG)  | FLR          | FLOOR                                       | PBD          | PARALLEL BLADE DAMPER                               |
| AAY          | AUTOMATIC AIR VENT  | FM           | FLOW METER                                  | PC           | PUMPED CONDENSATE                                   |
| ACC          | AIR COOL CONDENSER  | FS           | FLOW SWITCH                                 | PCW          | PROCESS COOLING WATER                               |
| ACCU         | AIR COOLED CONDENSING UNIT  | FOB          | FLAT ON BOTTOM                              | PCWR         | PROCESS COOLING WATER RETURN                        |
| AD           | ACCESS DOOR   | FOT          | FLAT ON TOP                                 | PCWS         | PROCESS COOLING WATER SUPPLY                        |
| AD           | AREA DRAIN  | FPM          | FEET PER MINUTE                             | PD           | PRESSURE DROP (FEET OF WATER)                       |
| AE           | AIR EXTRACTOR   | FR           | FIRE RAMP                                   | PH           | PERIMETER HEAT                                      |
| AFF          | ABOVE FINISHED FLOOR  | FPTU         | FAN POWERED (AIR) TERMINAL UNIT             | PHR          | PERIMETER HEAT RETURN                               |
| AHU          | AIR HANDLING UNIT   | FS           | FLOOR SINK                                  | PHS          | PERIMETER HEAT SUPPLY                               |
| ALT          | ALTERNATE   | FSEC         | FOOD SERVICE EQUIPMENT CONTRACTOR           | PNL          | PANEL   |
| AMP          | AMPERE  | FT           | FEET  | PPM          | PARTS PER MILLION                                   |
| APD          | AIR PRESSURE DROP   | FTR          | FINNED TUBE RADIATION                       | PRESS        | PRESSURE  |
| AR           | ARCON   | FV           | FACE VELOCITY                               | PRV          | PRESSURE REDUCING VALVE                             |
| ASHRAE       | AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS | G            | NATURAL GAS                                 | PSAN         | PUMPED SANITARY                                     |
| ASR          | AUTOMATIC SPRINKLER RISER   | GAL          | GALLON                                      | PST          | PUMPED STORM  |
| ATD          | AIR TRANSFER DUCT   | GAL          | GALLON                                      | PSI          | POUNDS PER SQUARE INCH                              |
| AUX          | AUXILIARY   | GRH          | GRAVITY RELIEF HOOD                         | PSIA         | POUNDS PER SQUARE INCH - ABSOLUTE                   |
| AV           | ACID VENT   | GPM          | GALLONS PER MINUTE                          | PSIG         | POUNDS PER SQUARE INCH - GAUGE                      |
| AVTR         | ACID VENT THROUGH ROOF  | GSAN         | GREASE SANITARY WASTE                       |              |   |
| AW           | ACID WASTE  |              |   | (R)          | RELOCATED   |
| BAS          | BUILDING AUTOMATION SYSTEM  | H            | HYDROGEN                                    | R            | RETURN GRILLE OR REGISTER                           |
| BCU          | BLOWER COIL UNIT  | HB           | HOSE BIBB                                   | RA           | RETURN AIR  |
| BDU          | BACKDRIFT DAMPER  | HC           | HEATING COIL                                | RAT          | RETURN AIR TEMPERATURE                              |
| BFF          | BELOW FINISHED FLOOR  | HD           | HOT WATER HEATING                           | RC           | RAIN CONDUCTOR                                      |
| BFP          | BACKFLOW PREVENTER  | HEPA         | HIGH EFFICIENCY PARTICULATE ARRESTANCE      | RD           | RADIANT CEILING PANEL                               |
| BHP          | BRAKE HORSEPOWER  | HL           | HIGH LIMIT                                  | RD           | ROOF DRAIN  |
| BDD          | BOTTOM OF DUCT  | HLD          | HAND/OPER/AUTO                              | REQD         | REQUIRED  |
| BOP          | BOTTOM OF PIPE  | HP           | HEAT PUMP                                   | REF          | ROOF EXHAUST FAN                                    |
| BTU          | BRITISH THERMAL UNIT  | HPW          | HIGH PRESSURE DOMESTIC HOT WATER            | RF           | RETURN FAN  |
| BTUH         | BRITISH THERMAL UNIT PER HOUR   | HPHW         | HIGH PRESSURE DOMESTIC HOT WATER            | RH           | RELATIVE HUMIDITY                                   |
| BVC          | BEVERAGE CONDUNIT   | HPHW         | HIGH PRESSURE DOMESTIC HOT WATER RETURN     | RL           | REFRIGERANT LIQUID                                  |
| BWV          | BACKWATER VALVE   | HPWR         | HIGH PRESSURE DOMESTIC HOT WATER RETURN     | RFA          | RELIEF AIR FAN                                      |
|              |   | HPLR         | HEAT PUMP LOOP RETURN                       | RO           | REVERSE OSMOSIS RETURN                              |
| C            | COMMON  | HPLS         | HEAT PUMP LOOP SUPPLY                       | ROR          | REVERSE OSMOSIS SUPPLY                              |
| CAP          | CAPACITY  | HR           | HOUR  | RPM          | REVOLUTIONS PER MINUTE                              |
| CAV          | CONSTANT AIR VOLUME   | HTC          | HEATING                                     | RPM          | REDUCED PRESSURE BACKFLOW PREVENTION DETECTION ASSY |
| CB           | CATCH BASIN   | HV           | HEATING VENTILATING                         | RPZA         | REDUCED PRESSURE BACKFLOW PREVENTION ZONE ASSY      |
| CC           | COOLING COIL  | HVAC         | HEATING, VENTILATING, AIR CONDITIONING      | RS           | REFRIGERANT SUCTION                                 |
| CD           | COLD DECK   | HWH          | HOT WATER HEATING                           | RTU          | ROOFTOP UNIT  |
| CE           | CONDENSATE DRAIN  | HWS          | HOT WATER HEATING RETURN                    | S            | SUPPLY AIR DIFFUSER OR GRILLE                       |
| CFCI         | CONTRACTOR FURNISHED, CONTRACTOR INSTALLED                                | HWS          | HOT WATER HEATING SUPPLY                    | SA           | SOUND ATTENUATOR                                    |
| CFH          | CUBIC FEET PER HOUR   | HWS          | HOT WATER HEATING SUPPLY                    | SA           | SUPPLY AIR  |
| CFM          | CUBIC FEET PER MINUTE   | HW           | DOMESTIC HOT WATER                          | SA           | SANITARY WASTE                                      |
| CH           | CHILLER   | HW           | DOMESTIC HOT WATER (SPECIFIC TEMP °)        | SA           | DOMESTIC HOT WATER                                  |
| CHW          | CHILLED WATER   | HWR          | DOMESTIC HOT WATER RETURN (SPECIFIC TEMP °) | SECT         | SECTION   |
| CHWR         | CHILLED WATER RETURN  | HWR          | DOMESTIC HOT WATER RETURN (SPECIFIC TEMP °) | SCRC         | SHORT CIRCUIT CURRENT RATING                        |
| CHWS         | CHILLED WATER SUPPLY  | HX           | HEAT EXCHANGER                              | SF           | SHOWER FAN  |
| CLG          | COOLING   | HZ           | HERTZ                                       | SH           | SHOWER  |
| CLG          | CONDENSATE  |              |   | SK           | SNK   |
| CND          | CONDENSATE (SPECIFIC PSIG)  | IAQ          | INDOOR AIR QUALITY                          | SMR          | SNOW MELT RETURN                                    |
| CO           | CLEAN OUT   | ID           | INSIDE DIAMETER                             | SMS          | SNOW MELT SUPPLY                                    |
| CO2          | CARBON DIOXIDE  | IE           | INVERT ELEVATION                            | SP           | STATIC PRESSURE                                     |
| CONT         | CONTINUATION OR CONTINUED   | IE           | INVERT ELEVATION                            | SPEC         | SPECIFICATION                                       |
| CONTR        | CONTRACTOR  | INTAKE HOOD  | INTAKE HOOD                                 | SPR          | SPRINKLER   |
| CONV         | CONVECTOR   | IN           | INCHES                                      | SQFT         | SQUARE FOOT/SQUARE FEET                             |
| CP           | CIRCULATING PUMP  | IN           | INCHES                                      | S/S          | START/STOP  |
| CRU          | CONDENSATE RETURN UNIT  | IR           | INFRARED HEATER                             | SS           | SERVICE SINK  |
| CSS          | CLINICAL SERVICE SINK   | IS           | INDIRECT WASTE                              | ST           | STANDARD  |
| CT           | COOLING TOWER   | JC           | JANITOR'S CLOSET                            | STD          | STANDARD  |
| CUH          | CABINET UNIT HEATER   | JP           | JOCKEY PUMP                                 | STK          | STEAM   |
| CV           | DOMESTIC COLD WATER   | KA           | THOUSAND AMP                                | STM          | STEAM (SPECIFIC PSIG)                               |
| CVF          | DOMESTIC COLD WATER - FILTERED  | KW           | KILOWATT                                    | SW           | SWITCH  |
| CWR          | CONDENSER WATER RETURN  | KWH          | KILOWATT-HOUR                               |              |   |
| CWS          | CONDENSER WATER SUPPLY  |              |   | T            | TRANSFER GRILLE                                     |
| D&T          | DRIP AND TRAP   | LAT          | LEAVING AIR TEMPERATURE                     | TC           | TEMPERATURE CONTROL                                 |
| DA           | DISCHARGE AIR   | LAV          | LAVATORY                                    | TC           | TEMPERATURE CONTROL PANEL                           |
| DAT          | DISCHARGE AIR TEMPERATURE   | LBS          | POUNDS                                      | TCP          | TEMPERATURE CONTROL PANEL                           |
| DB           | DRY BULB  | LDB          | LEAVING DRY BULB                            | TDR          | TRENCH DRAIN  |
| DDC          | DIRECT DIGITAL CONTROL  | LL           | LOW LIMIT                                   | TEMP         | TEMPERATURE   |
| DDC          | DIRECT DIGITAL CONTROL  | LPC          | LOW PRESSURE CONDENSATE                     | TEMP         | TEMPERATURE   |
| DFU          | DRAINAGE FIXTURE UNITS  | LPS          | LOCKED ROTOR AMPS                           | TH           | TEMPERATURE   |
| DIA          | DIAMETER  | LRA          | LEAVING RADIANT                             | TH           | TEMPERATURE   |
| DIR          | DIRECT RETURN   | LWB          | LEAVING WET BULB                            | TH           | TEMPERATURE   |
| DIS          | DIONIZED SUPPLY   | LWT          | LEAVING WATER TEMPERATURE                   | TH           | TEMPERATURE   |
| DMPR         | DAMPER  | MA           | MIXED AIR                                   | TK           | TANK  |
| D/N          | DAY/NIGHT   | MAT          | MIXED AIR TEMPERATURE                       | TRM          | TIMER SWITCH  |
| DN           | DOWN  | MAU          | MAKE-UP AIR UNIT                            | TPD          | TEPID WATER   |
| DNZ          | DOWNSPOUT NOZZLE  | MAX          | MAXIMUM                                     | TSP          | TOTAL STATIC PRESSURE                               |
| DS           | DUCT SILENCER   | MBSH         | THOUSAND BRITISH THERMAL UNITS PER HOUR     | TU           | TERMINAL UNIT                                       |
| DT           | DRAIN TILE  | MCA          | MINIMUM CIRCUIT AMPACITY                    | TV           | TURNING VANES                                       |
| DTC          | DRAIN TILE CONNECTION   | MCC          | MOTOR CONTROL CENTER                        | TW           | TEMPERED WATER                                      |
| DWH          | DOMESTIC WATER HEATER   | MCC          | MOTOR CONTROL CENTER                        | TYP          | TYPICAL   |
| DWS          | DRAINING  | MCC          | MOTOR CONTROL CENTER                        |              |   |
|              |   | MECH         | MECHANICAL                                  | UH           | UNIT HEATER   |
| (E)          | EXISTING  | MEZZ         | MEZZANINE                                   | UL           | UNDERWRITER'S LABORATORY                            |
| E            | EXHAUST GRILLE OR REGISTER  | MFR          | MANUFACTURER                                | UN           | UNLESS OTHERWISE NOTED                              |
| EA           | EACH  | MH           | MANHOLE                                     | UR           | URINAL  |
| EA           | EXHAUST AIR   | MIN          | MINIMUM                                     | UV           | UNIT VENTILATOR                                     |
| EAT          | ENTERING AIR TEMPERATURE  | MISC         | MISCELLANEOUS                               | V            | VALVE   |
| EC           | EXPANSION COMPENSATOR   | MMBH         | MILLION BRITISH THERMAL UNITS PER HOUR      | VAC          | VACUUM  |
| ECM          | ELECTRONICALLY COMMUTATED MOTOR   | MOP          | MAXIMUM OVERCURRENT PROTECTION              | VAV          | VARIABLE AIR VOLUME                                 |
| ECUH         | ELECTRIC CABINET UNIT HEATER  | M/S          | MINIMUM                                     | VAV          | VARIABLE AIR VOLUME                                 |
| EDB          | ENTERING DRY BULB   | MTD          | MOUNTED                                     | VB           | VACUUM BREAKER                                      |
| EER          | ENERGY EFFICIENCY RATIO   | MTR          | MOTOR                                       | VD           | VOLUME DAMPER (MANUALLY ADJUSTABLE)                 |
| EES          | EMERGENCY EYE WASH / SHOWER   | MV           | MEDICAL VACUUM                              | VOL          | VOLUME  |
| EW           | EMERGENCY EYE WASH  | MVAC         | MEDICAL VACUUM                              | VFC          | VARIABLE FREQUENCY CONTROLLER                       |
| EF           | EXHAUST FAN   | N2O          | NITROGEN                                    | VTR          | VENT THROUGH ROOF                                   |
| EFF          | EFFICIENCY  | NC           | NORMALLY CLOSED                             | VTU          | VENTURI TERMINAL UNIT                               |
| CHC          | ELECTRIC HEATING COIL   | NC           | NORMALLY CLOSED                             | W            | WASTE   |
| EJ           | EXPANSION JOINT   | NCTC         | NORMALLY CLOSED TIMED CLOSED                | W&V          | WASTE AND VENT                                      |
| EL           | ELEVATION   | NCTO         | NORMALLY CLOSED TIMED OPEN                  | WAGD         | WASTE ANESTHETIC GAS DISPOSAL                       |
| ELEC         | ELECTRICAL  | NFA          | NATIONAL FIRE PROTECTION ASSOCIATION        | WB           | WET BULB  |
| ELE          | ELECTRIC  | NOTC         | NORMALLY OPEN TIMED CLOSED                  | WC           | WATER CLOSET  |
| EMS          | ENERGY MANAGEMENT SYSTEM  | NOTO         | NORMALLY OPEN TIMED OPEN                    | WC           | WATER COLUMN  |
| ERL          | ENERGY RECOVERY LOOP  | NIC          | NOT IN CONTRACT                             | WG           | WATER GAUGE   |
| ERL          | ENERGY RECOVERY LOOP RETURN   | NO           | NOMINAL                                     | WH           | WALL HYDRANT  |
| ERLS         | ENERGY RECOVERY LOOP SUPPLY   | NOM          | NOMINAL                                     | WMSD         | WASHING MACHINE SUPPLY AND DRAIN BOX                |
| ERU          | ENERGY RECOVERY UNIT  | NPCW         | NON POTABLE COLD WATER                      | WPD          | WATER PRESSURE DROP                                 |
| ESH          | EMERGENCY SHOWER  | NPWH         | NON POTABLE HOT WATER                       | WT           | WEIGHT  |
| ESP          | EXTERNAL STATIC PRESSURE  | OA           | OXYGEN                                      | XFMR         | TRANSFORMER   |
| EUH          | ELECTRIC UNIT HEATER  | OAT          | OUTSIDE AIR                                 | ZVB          | ZONE VALVE BOX                                      |
| EMB          | ENTERING WET BULB   | OB           | OUTLET BOX                                  |              |   |
| EW           | ELECTRIC WATER COOLER   | OB           | OPPOSED BLADE DAMPER                        |              |   |
| EWT          | ENTERING WATER TEMPERATURE  | OC           | ON CENTER/CENTER TO CENTER                  |              |   |
| EXH          | EXHAUST   | OD           | OUTSIDE DIAMETER                            |              |   |
|              |   | OED          | OPEN ENDED DUCT                             |              |   |
| F            | FIRE PROTECTION   | OFI          | OWNER FURNISHED, CONTRACTOR INSTALLED       |              |   |
| F            | DEGREE FAHRENHEIT   | OFI          | OWNER FURNISHED, CONTRACTOR INSTALLED       |              |   |
| F&B          | FACE AND BYPASS   | OL           | OVERLOAD                                    |              |   |
| F&T          | FLOAT AND THERMOSTATIC  | OR           | OVERFLOW RAIN CONDUCTOR                     |              |   |
| FA           | FACE AREA   | ORD          | OVERFLOW ROOF DRAIN                         |              |   |
| FCU          | FAN COIL UNIT   | OS&Y         | OUTSIDE SCREW AND YOKE                      |              |   |
| FD           | FLOOR DRAIN   | OS           | OUTLET VELOCITY                             |              |   |
| FFD          | FUNNEL FLOOR DRAIN  | OWS          | OPERATOR WORKSTATION                        |              |   |
| FR           | FUEL GAS RETURN   |              |   |              |   |
| FOS          | FUEL GAS SUPPLY   |              |   |              |   |
| FH           | FIRE HYDRANT  |              |   |              |   |
| FHC          | FIRE HOSE CABINET   |              |   |              |   |
| FHR          | FIRE HOSE RACK  |              |   |              |   |
| FHV          | FIRE HOSE VALVE   |              |   |              |   |

**TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST**

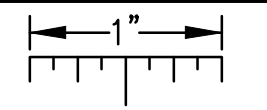
| SYMBOL | DESCRIPTION   | SYMBOL | DESCRIPTION  |
|--------|---|--------|--|
|        | CARBON DIOXIDE SENSOR                                     |        | OCCUPANCY SENSOR   |
|        | CARBON MONOXIDE SENSOR                                    |        | PRESSURE TRANSMITTER   |
|        | DIFFERENTIAL PRESSURE TRANSMITTER                         |        | STATIC PRESSURE SENSOR OR PROBE                              |
|        | FLOW METER  |        | VALVE - 2 WAY CONTROL VALVE                                  |
|        | GUARD FOR STAT OR SENSOR                                  |        | VALVE - 3 WAY CONTROL VALVE                                  |
|        | HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS) |        | 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 |  | DUCTWORK SYMBOLS |  |
|----------------|--|------------------|--|
| SYMBOL         | DESCRIPTION  | SYMBOL           | DESCRIPTION  |
|                | AIR VENT - AUTOMATIC   |                  | AIR TERMINAL UNIT                                    |
|                | AIR VENT - MANUAL  |                  | AIR TERMINAL UNIT WITH HEATING COIL                  |
|                | BACKFLOW PREVENTER   |                  | VENTURI AIR TERMINAL UNIT                            |
|                | CATCH BASIN  |                  | VENTURI AIR TERMINAL UNIT WITH HEATING COIL          |
|                | CIRCULATING PUMP   |                  | DAMPER - HORIZONTAL FIRE (EXISTING, NEW)             |
|                | CLEAN OUT - IN FLOOR   |                  | DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)     |
|                | CLEAN OUT - FLANGE   |                  | DAMPER - VERTICAL FIRE (EXISTING, NEW)               |
|                | CLEAN OUT - FLANGE   |                  | DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)       |
|                | DIRECTION OF FLOW  |                  | DAMPER - BACK DRAFT                                  |
|                | DIRECTION OF PITCH - DOWN  |                  | DAMPER - MOTORIZED                                   |
|                | FINNED TUBE RADIATION  |                  | DAMPER - VOLUME (MANUALLY ADJUSTABLE)                |
|                | FIRE PROTECTION - SAMESE CONNECTION - FREE STANDING                          |                  | DIFFUSER - BLANK OFF                                 |
|                | FIRE PROTECTION - SAMESE CONNECTION - WALL MOUNTED                           |                  | DIFFUSER - LINEAR SLOT                               |
|                | FIRE PROTECTION - SPRINKLER HEAD, CONCEALED                                  |                  | DIFFUSER - SQUARE OR RECTANGULAR                     |
|                | FIRE PROTECTION - SPRINKLER HEAD, PENDANT                                    |                  | DUCT CROSS SECTION - SUPPLY                          |
|                | FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT                                    |                  | DUCT CROSS SECTION - RETURN                          |
|                | FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL                                   |                  | DUCT CROSS SECTION - EXHAUST                         |
|                | FLOOR DRAIN  |                  | DUCT - FLEXIBLE CONNECTION                           |
|                | FLOOR DRAIN - ELEVATION  |                  | DUCT - FLEXIBLE DUCT                                 |
|                | FLOOR DRAIN - FUNNEL   |                  | DUCT TAKE-OFF - ROUND CONICAL                        |
|                | FLOOR DRAIN - FUNNEL, ELEVATION  |                  | DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP            |
|                | FLOW MEASURING DEVICE (FOR TEST AND BALANCING)                               |                  | ELBOW - RECTANGULAR WITH TURNING VANES               |
|                | FLOW SWITCH  |                  | ELBOW - RECTANGULAR / ROUND SMOOTH RADIUS            |
|                | FLOW METER   |                  | ELBOW DOWN - RECTANGULAR                             |
|                | HOSE BIBB  |                  | ELBOW DOWN - ROUND                                   |
|                | MANHOLE  |                  | ELBOW UP - RECTANGULAR                               |
|                | OPEN SITE DRAIN  |                  | ELBOW UP - ROUND                                     |
|                | PIPE - ANCHOR  |                  | FAN - AXIAL  |
|                | PIPE - CAP OR PLUG   |                  | FAN - CENTRIFUGAL (ELEVATION)                        |
|                | PIPE - ELBOW DOWN  |                  | VARIABLE FREQUENCY CONTROLLER SERVING EQUIPMENT XX-# |
|                | PIPE - ELBOW UP  |                  | HEATING COIL   |
|                | PIPE - EXPANSION JOINT OR COMPENSATOR  |                  | INCLINED DROP IN DIRECTION OF AIRFLOW                |
|                | PIPE - FLANGE  |                  | INCLINED RISE IN DIRECTION OF AIRFLOW                |
|                | PIPE - HOSE AND BRAID FLEXIBLE CONNECTION                                    |                  | INTAKE OR RELIEF HOOD                                |
|                | PIPE - RUBBER FLEXIBLE CONNECTION  |                  | REGISTER - RETURN OR EXHAUST                         |
|                | PIPE - GUIDE   |                  | REGISTER - RETURN WITH BOOT                          |
|                | PIPE - TEE DOWN  |                  | REGISTER - TRANSFER GRILLE                           |
|                | PIPE - TEE UP  |                  | ROOF EXHAUST FAN                                     |
|                | PIPE - UNION   |                  | RECTANGULAR DUCT                                     |
|                | PRESSURE AND TEMPERATURE TEST PLUG   |                  | TRANSITION - CONCENTRIC                              |
|                | PRESSURE GAUGE AND COOK  |                  | TRANSITION - ECCENTRIC                               |
|                | REDUCER - CONCENTRIC   |                  | UNIT HEATER - HORIZONTAL THROW                       |
|                | REDUCER - ECCENTRIC  |                  | UNIT HEATER - VERTICAL THROW                         |
|                | ROOF OVERFLOW DRAIN  |                  |  |
|                | STEAM TRAP - FLOAT AND THERMOSTATIC  |                  |  |
|                | STEAM TRAP - BUCKET  |                  |  |
|                | STRAINER   |                  |  |
|                | STRAINER WITH VALVE AND BLOW-OFF   |                  |  |
|                | THERMOMETER  |                  |  |
|                | TRAP   |                  |  |
|                | VALVE - ANGLE  |                  |  |
|                | VALVE - BALL   |                  |  |
|                | VALVE - BUTTERFLY  |                  |  |
|                | VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)                              |                  |  |
|                | VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM) |                  |  |
|                | VALVE - CHECK  |                  |  |
|                | VALVE - SPRING CHECK   |                  |  |
|                | VALVE - GAS (MANUAL)   |                  |  |
|                | VALVE - ISOLATION  |                  |  |
|                | VALVE - NEEDLE   |                  |  |
|                | VALVE - OS&Y   |                  |  |
|                | VALVE - PLUG   |                  |  |
|                | VALVE - PRESSURE REGULATING  |                  |  |
|                | VALVE - PRESSURE REDUCING  |                  |  |
|                | VALVE - PRESSURE RELIEF  |                  |  |
|                | VALVE - PRESSURE & TEMPERATURE   |                  |  |

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



**HVAC PIPING GENERAL NOTES:**

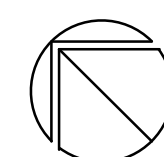
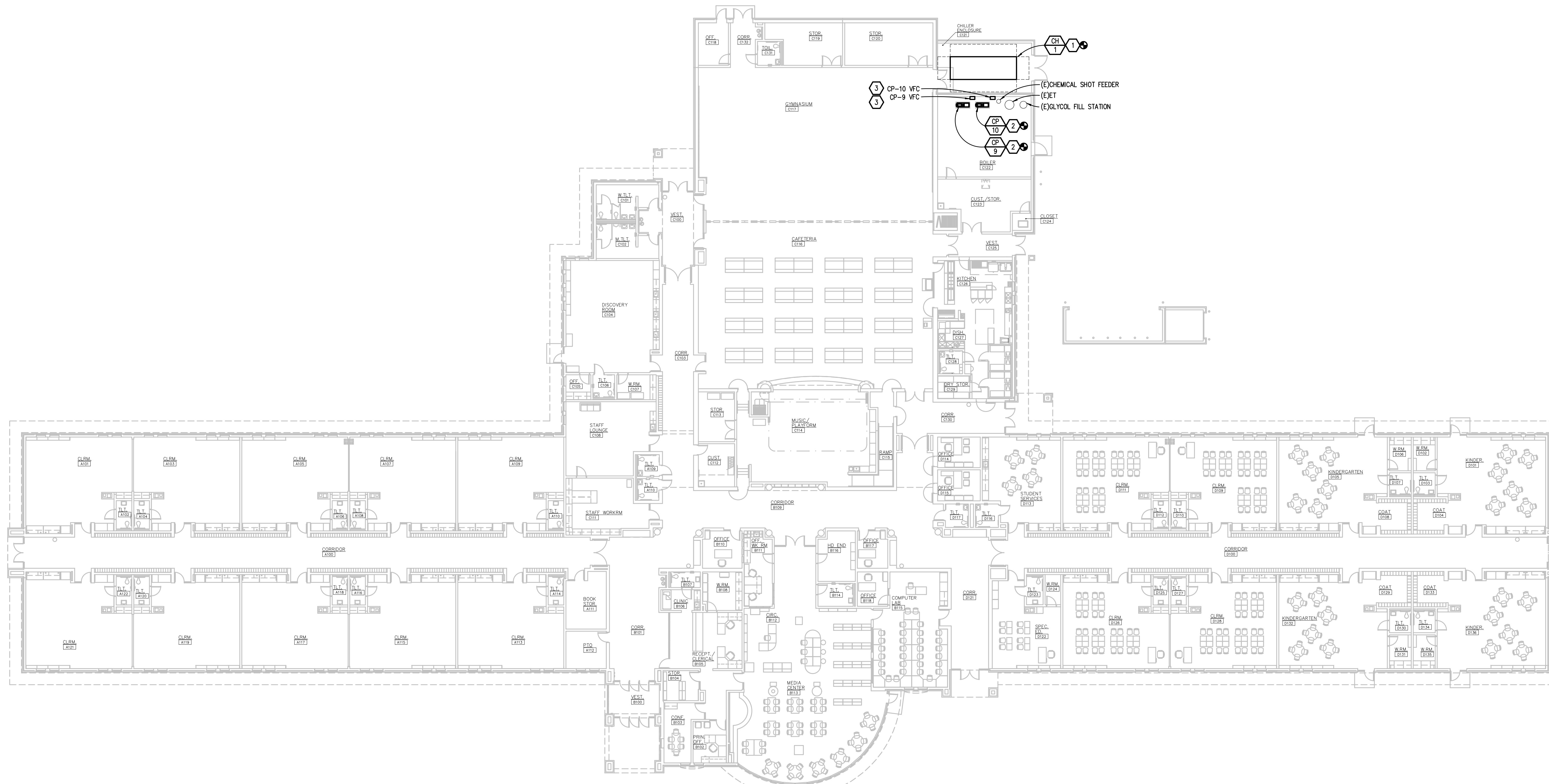
1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM 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. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.
10. STEAM AND CONDENSATE SYSTEMS ARE DESIGNED BASED ON THE ASSUMPTION OF A SUPERVISED WARM-UP PROCEDURE.

**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, 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.
7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

**CONSTRUCTION KEY NOTES:**

1. EXTEND EXISTING CHWS/R PIPING AS REQUIRED TO RECONNECT TO NEW CHILLERS.
2. RECONNECT CHWS/R PIPING TO NEW PUMPS.
3. INSTALL NEW VFC IN EXISTING DISCONNECT LOCATION.



**FIRST FLOOR MECHANICAL COMPOSITE NEW WORK PLAN**  
SCALE: 1/16" = 1' - 0"

REVISION

REVISION

5145 Livemore, Suite 100  
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www.PeterBassoAssociates.com  
PBA Project No.: 2026-0034

**Peter Basso Associates**  
CONSULTING ENGINEERS

PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
MACDONALD ELEMENTARY SCHOOL  
HVAC Upgrade**  
5201 County Line Road, Casco, MI 48064

SHEET TITLE  
**FIRST FLOOR MECHANICAL  
COMPOSITE NEW WORK PLAN**

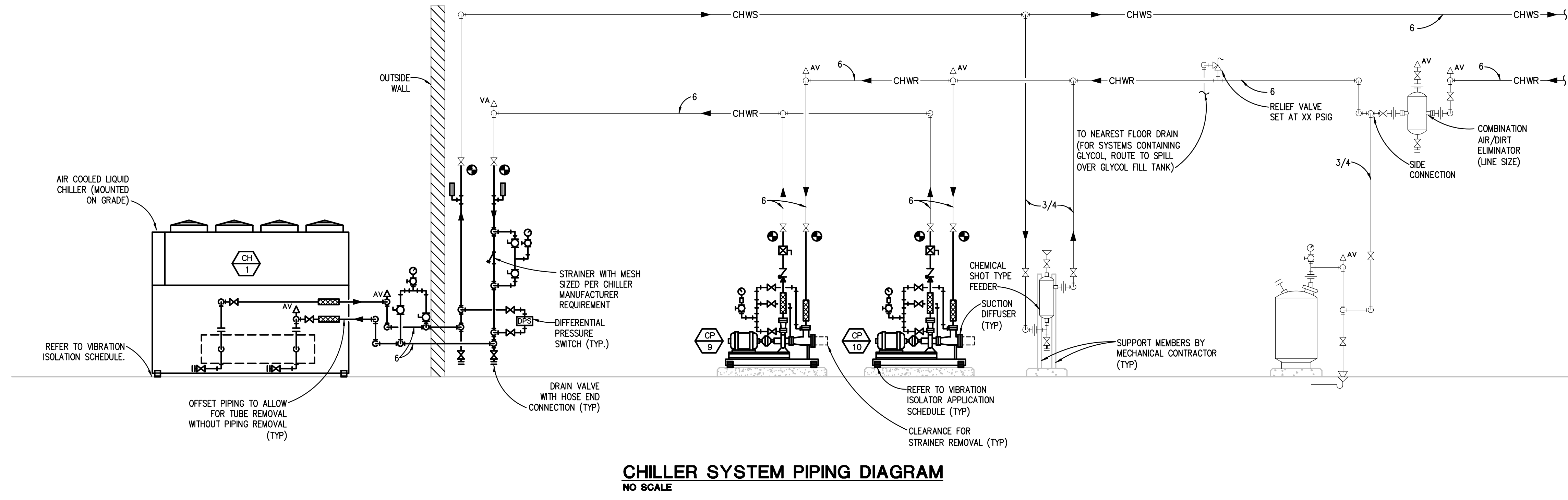
DATE  
05-01-2026

ISSUE  
CONSTRUCTION  
DOCUMENTS

SHEET No.

**M0.2**

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**CHILLER SYSTEM PIPING DIAGRAM**  
NO SCALE

**NOTES**  
CONTRACTOR SHALL ADD PROPYLENE GLYCOL TO THE CHILLED WATER SYSTEM TO ACHIEVE A 35% PROPYLENE GLYCOL FLUID MIXTURE.  
ESTIMATED SYSTEM VOLUME: 400 GAL.  
CURRENT GLYCOL PERCENTAGE: 23%

REVISION

REVISION

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PBA Project No.: 2026-0034-52



PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
MACDONALD ELEMENTARY SCHOOL  
HVAC Upgrade**  
5201 County Line Road, Casco, MI 48064

SHEET TITLE  
**MECHANICAL DETAILS**  
DATE  
05-01-2026  
ISSUE  
CONSTRUCTION DOCUMENTS  
SHEET No.

**M6.1**

**SCHEDULES GENERAL NOTES:**

- TYPICAL FOR ALL SCHEDULE SHEETS:
- REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
  - 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.
  - FOR MODULATION TYPE COLUMN, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
  - FOR VARIABLE FREQUENCY CONTROLLER COLUMN:
    - A- NON-INTEGRAL INDICATES THAT VARIABLE FREQUENCY CONTROLLER SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR, INCLUDING LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR, AND INCLUDING MISCELLANEOUS STEEL WHEN REQUIRED FOR SUPPORT AND MOUNTING. REFER TO FLOOR PLANS FOR LOCATION.
    - B- INTEGRAL INDICATES THAT EQUIPMENT SHALL COME COMPLETE WITH VARIABLE FREQUENCY CONTROLLER WHICH IS FACTORY INSTALLED AND WIRED TO THE MOTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE LINE SIDE WIRING TO THE VARIABLE FREQUENCY CONTROLLER.
    - C- NONE INDICATES THAT NO VARIABLE FREQUENCY CONTROLLER IS REQUIRED FOR THIS EQUIPMENT.
  - 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.
  - 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.
  - WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELEGITS 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 LOADS, OR ARCHITECTURAL APPEARANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN THEIR BID.
  - 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 THE UNIT DISCONNECT IS IN THE OFF POSITION.
  - 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 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) | PVC (INDOOR) | PVC (OUTDOOR) |
| INDOOR PIPE SYSTEM AND SIZE (INCHES)                              |                               |            |              |                  |          |                |                  |          |                 |     |  |              |               |
| CHILLED WATER & BRINE 40 DEG F TO 60 DEG F:                       | 1                             | 1          |              |                  |          |                |                  | X        |                 | X   |  |              | A             |
| OUTDOOR (ABOVEGROUND) AND TUNNEL PIPE SYSTEM AND SIZE (INCHES)    |                               |            |              |                  |          |                |                  |          |                 |     |  |              |               |
| CHILLED WATER & BRINE   | 3                             | 3          |              |                  |          |                |                  | X        |                 | X   |  |              | B             |

UNLESS OTHERWISE INDICATED OR SCHEDULED, THE FOLLOWING DO NOT REQUIRE INSULATION:  
 DIRECT BURIED COOLING SYSTEM PIPING  
 PIPING THAT CONVEYS FLUIDS HAVING DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60 DEG F. AND 105 DEG F., INCLUSIVE.

- GENERAL NOTES:**
- "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
  - INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.
  - FOR PIPING NPS 1-1/4" AND SMALLER WITHIN PARTITIONS IN CONDITIONED SPACES INSULATION MAY BE REDUCED BY ONE-INCH THICKNESS, BUT NOT TO LESS THAN ONE-INCH THICKNESS.
  - FOR PIPING NPS 1" AND SMALLER, INSULATION IS NOT REQUIRED FOR STRAINERS, CONTROL VALVES, AND BALANCING VALVES.

- KEYED NOTES:**
- 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.
  - PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.
  - STEAM AND CONDENSATE PIPING JACKET SHALL BE SILICO BRASS.
  - PIPING WITHIN ENERGY RECOVERY UNITS SHALL BE TYPE 304 STAINLESS STEEL, SMOOTH, 0.010 INCH THICK, SEAMS AND JOINTS CAULKED WITH CHEMICALLY RESISTANT SEALER.

| VIBRATION ISOLATOR APPLICATION SCHEDULE |  |                      |     |                    |               |                      |                               |               |                      |             |
|---|--|----------------------|-----|--------------------|---------------|----------------------|-------------------------------|---------------|----------------------|-------------|
| EQUIPMENT TYPE                          | EQUIPMENT CATEGORY                         | HORSEPOWER AND OTHER | RPM | EQUIPMENT LOCATION |               |                      |                               |               |                      | KEYED NOTES |
|   |  |                      |     | SLAB ON GRADE      |               |                      | UP TO 40 FT (12 M) FLOOR SPAN |               |                      |             |
|   |  |                      |     | BASE TYPE          | ISOLATOR TYPE | MIN. DEFL., IN. (MM) | BASE TYPE                     | ISOLATOR TYPE | MIN. DEFL., IN. (MM) |             |
| REFRIGERATION MACHINES AND CHILLERS     | RECIPROCATING CENTRIFUGAL, SCROLL          | ALL                  | ALL | A                  | 2             | 0.25 (6)             | A                             | 4             | 2.50 (64)            | NOTE 3      |
|   | SCREW ABSORPTION AIR-COOLED RECIP., SCROLL | ALL                  | ALL | A                  | 1a OR 1b      | 0.25 (6)             | A                             | 4             | 1.50 (38)            |             |
|   | AIR-COOLED SCREW OPEN CENTRIFUGAL          | ALL                  | ALL | A                  | 1a OR 1b      | 1.00 (25)            | A                             | 4             | 2.50 (64)            |             |
|   |  | ALL                  | ALL | A                  | 2             | 0.25 (6)             | A                             | 4             | 2.50 (64)            |             |
| PUMPS                                   | GLOSE COUPLED                              | <7.5                 | ALL | B                  | 2             | 0.25 (6)             | C                             | 3             | 0.75 (19)            | NOTE 3      |
|   |  | >10                  | ALL | C                  | 3             | 0.75 (19)            | C                             | 3             | 1.50 (38)            |             |
|   | INLINE                                     | 5 TO 25              | ALL | A                  | 3             | 0.75 (19)            | A                             | 3, 8a OR 8b   | 1.50 (38)            |             |
|   |  | >30                  | ALL | A                  | 3             | 1.50 (38)            | A                             | 3, 8a OR 8b   | 2.50 (64)            |             |
|   | END SUCTION AND DOUBLE SUCTION/SPLIT CASE  | <40                  | ALL | C                  | 3             | 0.75 (19)            | C                             | 3             | 1.50 (38)            |             |
|   | 50 TO 125                                  | ALL                  | C   | 3                  | 0.75 (19)     | C                    | 3                             | 2.50 (64)     |                      |             |
|   | >150                                       | ALL                  | C   | 3                  | 0.75 (19)     | C                    | 3                             | 3.50 (89)     |                      |             |
| PACKAGED PUMP SYSTEMS                   | ALL  | ALL                  | A   | 3                  | 0.75 (19)     | C                    | 3                             | 2.50 (64)     |                      |             |

**GENERAL NOTES:**

- THRUST RESTRAINTS: PROVIDE THRUST RESTRAINTS BETWEEN FAN DISCHARGE AND DUCT (IN PAIRS, LOCATED ON THE CENTERLINE OF THE DISCHARGE OUTLET OF THE FAN, BRIDGING THE FLEXIBLE DUCT CONNECTOR) FOR ALL FAN HEADS, FOR AXIAL AND CENTRIFUGAL FANS UNITS OPERATING AT 2 INCHES OR GREATER TOTAL STATIC PRESSURE AND AS SHOWN ON DRAWINGS. SPRING DEFLECTION SHALL BE SAME AS THE SUPPORT ISOLATORS.
- PIPING RISER ISOLATION: PROVIDE PIPE RISER RESILIENT ANCHORS, SPRING MOUNTS AND RESILIENT PIPE GUIDES CAPABLE OF DISTRIBUTING THE LOADS WITHIN THE BUILDING DESIGN LIMITS AT THE SUPPORT POINTS.
- HORIZONTAL PIPING VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR PIPING CONNECTED TO VIBRATION ISOLATED EQUIPMENT FOR ALL PIPING IN MECHANICAL ROOMS OR THE FOLLOWING MINIMUM HORIZONTAL DISTANCES FROM THE ISOLATED EQUIPMENT: UP TO 6" - 50 FEET (1 1/2" MINIMUM DEFLECTION), 6" AND LARGER - 100 FEET (2 1/2" MINIMUM DEFLECTION), WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS. THE FIRST 4 HANGERS FROM THE ISOLATED EQUIPMENT SHALL BE TYPE 8a.
- DUCTWORK VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR DUCTWORK WITH A CROSS SECTION OF 2 SQUARE FEET OR GREATER CONNECTED TO AIR HANDLING UNITS, RETURN OR RELIEF FANS, AND VIBRATION ISOLATED EQUIPMENT FOR ALL SUCH DUCTWORK IN MECHANICAL ROOMS OR FOR A MINIMUM HORIZONTAL DISTANCE OF 100 FEET FROM THE ISOLATED EQUIPMENT, WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS (3/4" MINIMUM DEFLECTION).
- IF SPAN DOES NOT EXCEED 20 FT, SPRING DEFLECTION MAY BE 1.0 IN AND TYPE D BASE MAY BE USED. FOR SPANS GREATER THAN 20 FT, USE SPRING DEFLECTION INDICATED AND TYPE E BASE.

**BASE TYPES:**

BASE TYPE A - NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.  
 BASE TYPE B - STRUCTURAL, STEEL RAILS OR BASE.  
 BASE TYPE C - CONCRETE INERTIA BASE.  
 BASE TYPE D - CURB - MOUNTED ALUMINUM BASE WITH 1" DEFL. SPRING ISOLATORS  
 BASE TYPE E - CURB - MOUNTED STEEL BASE WITH ADJUSTABLE 1", 2" OR 3" DEFL. SPRING ISOLATORS

**ISOLATOR TYPES:**

ISOLATOR TYPE 1a - ELASTOMERIC ISOLATION PAD.  
 ISOLATOR TYPE 1b - ELASTOMERIC ISOLATION PAD WITH STEEL LOAD BEARING PLATE.  
 ISOLATOR TYPE 2 - ELASTOMERIC FLOOR ISOLATOR.  
 ISOLATOR TYPE 3 - FREE STANDING SPRING FLOOR ISOLATOR.  
 ISOLATOR TYPE 4 - RESTRAINED SPRING ISOLATOR.  
 ISOLATOR TYPE 5 - THRUST RESTRAINT.  
 ISOLATOR TYPE 6 - AIR SPRING.  
 ISOLATOR TYPE 7 - ELASTOMERIC HANGERS.  
 ISOLATOR TYPE 8a - SPRING HANGERS.  
 ISOLATOR TYPE 8b - SPRING HANGERS WITH VERTICAL-LIMIT STOP.

| ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE                              |                    |                    |                    |                         |                         |            |        |        |          |         |                  |                                       |      |   |      |
|---|--------------------|--------------------|--------------------|-------------------------|-------------------------|------------|--------|--------|----------|---------|------------------|---------------------------------------|------|---|------|
| PIPE SIZE (INCHES)  | MATERIAL           |                    |                    |                         |                         | CONNECTION |        |        |          |         | ISOLATION VALVES |                                       |      |   |      |
|   | SOFT COPPER TYPE K | HARD COPPER TYPE L | HARD COPPER TYPE M | CARBON STEEL (SCHD. 40) | CARBON STEEL (SCHD. 80) | SOLDERED   | BRAZED | WELDED | THREADED | FLANGED | GROOVED          | PRESSURE SEAL MECHANICALLY FORMED TEE | BALL | GENERAL SERVICE BUTTERFLY HI-PERF BUTTERFLY | GATE |
| CHILLED WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP. 125 PSIG AT 200 DEG F |                    |                    |                    |                         |                         |            |        |        |          |         |                  |                                       |      |   |      |
| UP TO 2   | X                  |                    |                    |                         |                         | X          | X      |        |          |         | X                | X                                     | X    |   |      |
| 2-1/2 TO 4  |                    |                    | X                  |                         |                         |            |        | X      | X        | X       | X                |                                       |      | X   |      |
| 6 TO 8  |                    |                    | X                  |                         |                         |            |        | X      | X        | X       |                  |                                       |      | X   |      |

- GENERAL NOTES:**
- "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
  - 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.
  - USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
  - HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
  - GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

**KEYED NOTES:**

- GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS.
- BALL VALVE WITH 250 PSIG STEAM TRIM.
- BALL VALVE WITH 150 PSIG STEAM TRIM.

| PUMP SCHEDULE       |               |             |             |               |               |            |  |               |                 |                      |                 |    |      |                               |                                 |      |      |                 |            |       |                  |                     |              |             |
|---------------------|---------------|-------------|-------------|---------------|---------------|------------|--|---------------|-----------------|----------------------|-----------------|----|------|-------------------------------|---------------------------------|------|------|-----------------|------------|-------|------------------|---------------------|--------------|-------------|
| UNIT IDENTIFICATION | SYSTEM SERVED | LOCATION    | TYPE        | COUPLING TYPE | WATERFLOW GPM | FLUID TYPE | COLDEST SYSTEM OPERATING TEMP. °F FOR PUMP SELECTION | PUMP HEAD FT. | OVERLOAD GPM    | MINIMUM EFFICIENCY % | INDUCTION MOTOR |    |      |                               | ELECTRONICALLY COMMUTATED MOTOR |      |      | MODULATION TYPE | ELECTRICAL |       |                  |                     | MODEL NUMBER | KEYED NOTES |
|                     |               |             |             |               |               |            |  |               |                 |                      | BHP             | HP | RPM  | VARIABLE FREQUENCY CONTROLLER | FLA                             | MOP  | RPM  |                 | VOLTS      | PHASE | SCOR KA (NOTE 4) | OPTIONS/ACCESSORIES |              |             |
| CP-9                | CH-1          | BOILER ROOM | END SUCTION | FLEXIBLE      | 325           | PG35       | 40   | 75            | NON-OVERLOADING | 74.8                 | 8.61            | 15 | 1800 | NON-INTEGRAL                  | ----                            | ---- | ---- | MANUAL          | 480        | 3     | 10               | ----                | E-1510 3BD   |             |
| CP-10               | CH-1          | BOILER ROOM | END SUCTION | FLEXIBLE      | 325           | PG35       | 40   | 75            | NON-OVERLOADING | 74.8                 | 8.61            | 15 | 1800 | NON-INTEGRAL                  | ----                            | ---- | ---- | MANUAL          | 480        | 3     | 10               | ----                | E-1510 3BD   |             |

- GENERAL NOTES:**
- REFER TO SCHEDULES GENERAL NOTES.
  - MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
  - FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.
  - CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

| PACKAGED AIR COOLED LIQUID CHILLER SCHEDULE |               |               |                            |            |           |           |                         |                |                      |            |          |                       |                    |                            |                                |          |                         |        |        |                         |            |       |       |     |     |              |             |         |                     |
|---|---------------|---------------|----------------------------|------------|-----------|-----------|-------------------------|----------------|----------------------|------------|----------|-----------------------|--------------------|----------------------------|--------------------------------|----------|-------------------------|--------|--------|-------------------------|------------|-------|-------|-----|-----|--------------|-------------|---------|---------------------|
| UNIT NUMBER                                 | CAPACITY TONS | CHILLED WATER |                            |            |           |           | COMPRESSOR MOTOR        |                |                      | EFFICIENCY |          | CONDENSER             |                    | CONDENSER FAN MOTOR        |                                |          | MAXIMUM UNIT DIMENSIONS |        |        | MODULATION/CONTROL TYPE | ELECTRICAL |       |       |     |     | MODEL NUMBER | KEYED NOTES |         |                     |
|   |               | FLOW GPM      | MINIMUM OPERATING FLOW GPM | FLUID TYPE | E.W.T. °F | L.W.T. °F | MAXIMUM W.P.D. FT. HEAD | FOULING FACTOR | NUMBER OF COMPRESSOR | KW TOTAL   | RLA EACH | MINIMUM FULL LOAD EER | MINIMUM IPLV (EER) | AMBIENT AIR TEMPERATURE °F | MINIMUM AMBIENT TEMPERATURE °F | QUANTITY | FLA EACH                | LENGTH | HEIGHT |                         | WIDTH      | VOLTS | PHASE | MCA | MOP |              |             | SCOR KA | OPTIONS/ACCESSORIES |
| CH-1  | 180.6         | 325           | 251.4                      | PG35       | 56.3      | 42        | 9.3                     | 0.0001         | 6                    | 218.4      | 69       | 10.52                 | 17.42              | 95                         | 32                             | 12       | 3.3                     | 255.3  | 99     | 88                      | AUTO       | 480   | 3     | 396 | 450 | 22           | B           | AG2012F |                     |

- GENERAL NOTES:**
- REFER TO SCHEDULES GENERAL NOTES.
  - MODEL NUMBERS ARE DAKIN UNLESS OTHERWISE NOTED.
  - FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

**PRESCRIPTIVE INCENTIVES PROGRAM**

THE MECHANICAL CONTRACTOR SHALL INCLUDE IN HIS BID AND BE RESPONSIBLE FOR PROVIDING AND MEETING ALL REQUIREMENTS FOR THE OWNER TO PARTICIPATE IN UTILITY PROVIDER RESERVE PROGRAM. THE FOLLOWING ITEMS WILL BE REQUIRED BUT NOT LIMITED TO, FOR THE OWNER TO PARTICIPATE IN THIS PROGRAM:

- ON BEHALF OF THE OWNER, PROVIDE ALL REQUIRED DOCUMENTATION FOR THE RESERVATION AND FINAL APPLICATIONS.
- CUSTOMER INFORMATION.
- CONTRACTOR INFORMATION.
- MECHANICAL INCENTIVES WORKSHEETS AS REQUIRED.
- MANUFACTURERS' EQUIPMENT SPECIFICATIONS AND CUT-SHEETS WITH MODEL NUMBERS, QUANTITIES AND ENERGY PERFORMANCE.
- ITEMIZED INVOICES.
- MEASURES ARE COMPLETELY INSTALLED WITHIN 90 DAYS OF PROJECT APPROVAL.
- THE FINAL APPLICATION MUST BE SUBMITTED WITHIN 60 DAYS OF PROJECT COMPLETION.

IT IS THE MECHANICAL CONTRACTORS RESPONSIBILITY TO CONTACT UTILITY PROVIDER REPRESENTATIVE IF A PROJECT IS DELAYED, OR SUBSTANTIALLY CHANGED.

THE MECHANICAL CONTRACTOR SHALL WORK AND COORDINATE WITH THE OWNER FOR THE RESERVATION AND FINAL APPLICATION PROCESS PRIOR TO SITE WORK BEING CONDUCTED AND POST REVIEW INSPECTION FOR REMOVAL AND INSTALLATION OF ALL EQUIPMENT RELATED TO THE INCENTIVE PROGRAM.

REVISION

REVISION

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 Troy, Michigan 48066-0276  
 www.PeterBassoAssociates.com  
 PBA Project No: 22081004.02  
**Peter Basso Associates**  
 CONSULTING ENGINEERS

PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
 MACDONALD ELEMENTARY SCHOOL  
 HVAC Upgrade**  
 5201 County Line Road, Casco, MI 48064

SHEET TITLE  
**MECHANICAL SCHEDULES**  
 DATE  
 05-01-2026  
 ISSUE  
**CONSTRUCTION DOCUMENTS**  
 SHEET No.

**M7.1**

# TEMPERATURE CONTROL - SYMBOLS LIST

## SCHEMATIC SYMBOLS

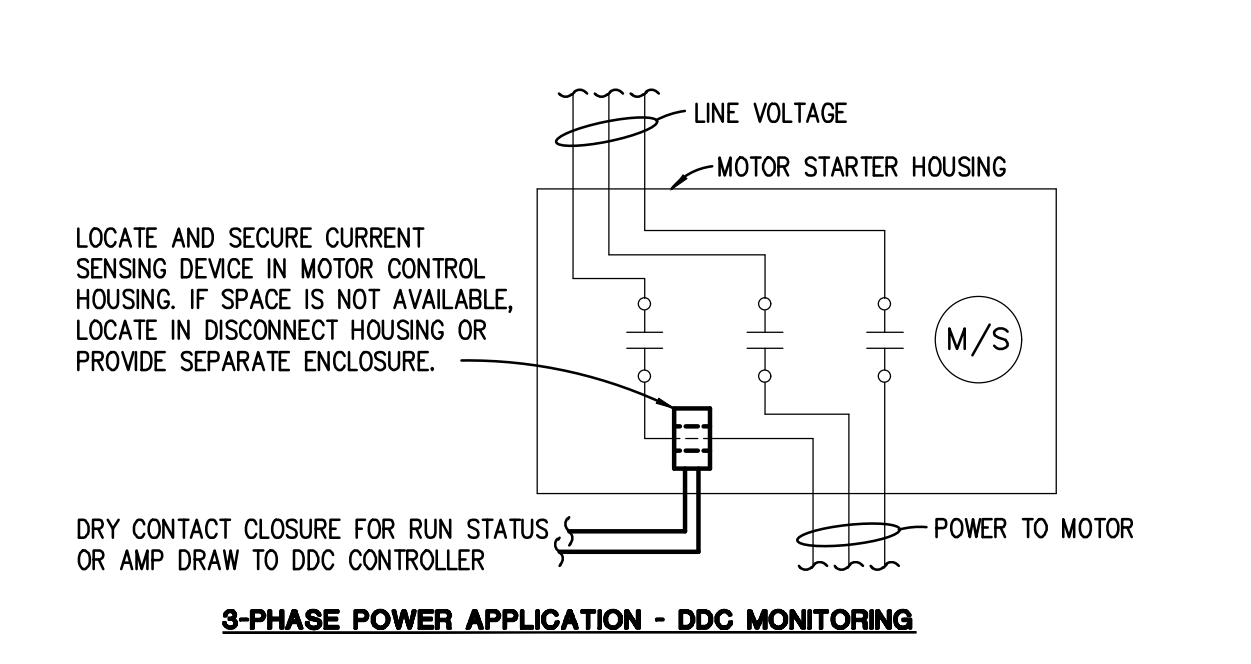
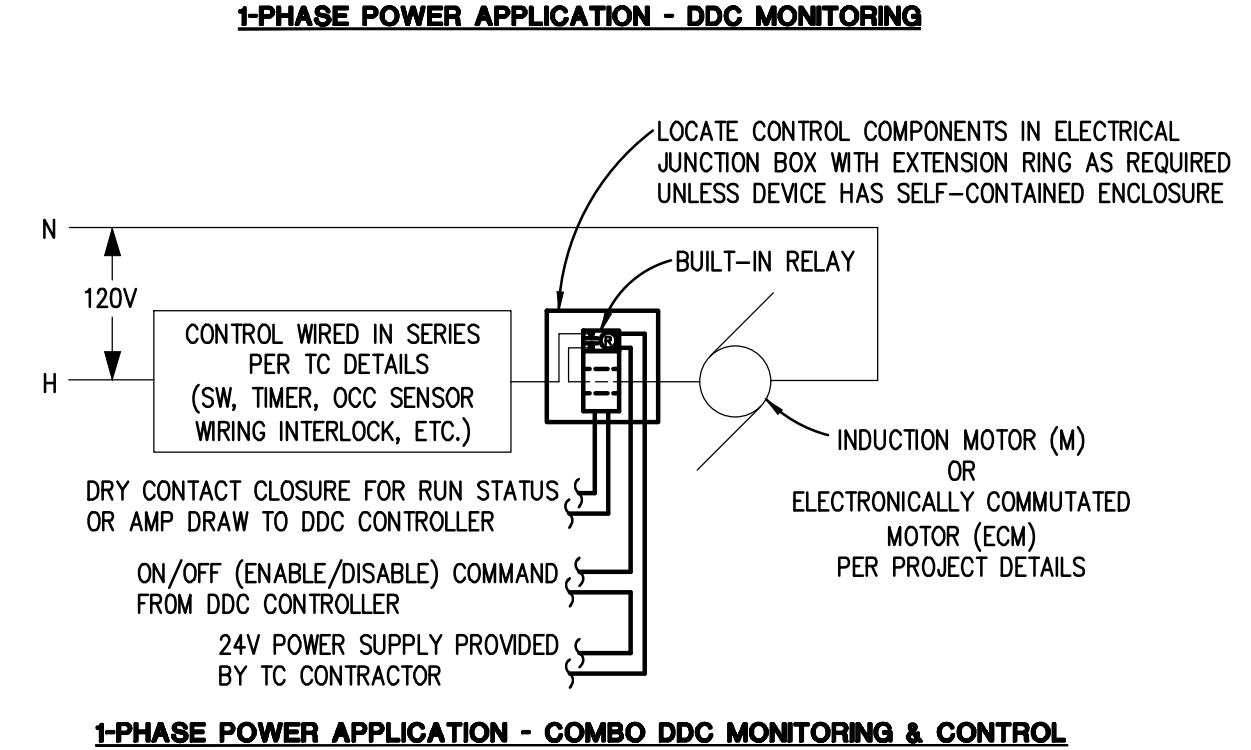
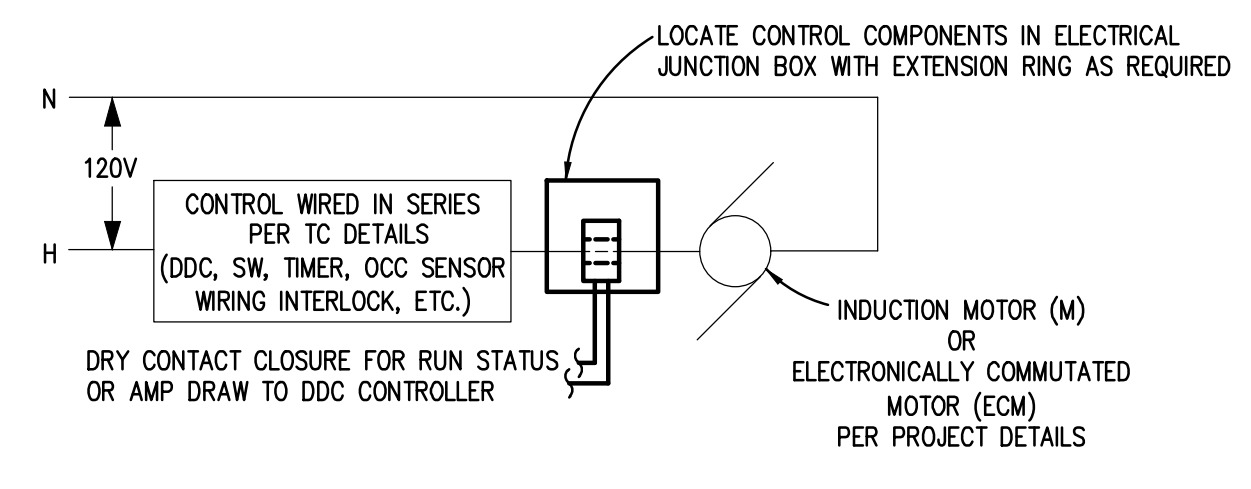
| SYMBOL | DESCRIPTION   |
|--------|---|
| AD     | AQUASTAT, STRAP ON BULB                                   |
| CO2    | CARBON DIOXIDE SENSOR - WALL MOUNTED                      |
| CO2D   | CARBON DIOXIDE SENSOR - DUCT MOUNTED                      |
| CS     | CURRENT SWITCH  |
| CT     | CURRENT TRANSDUCER  |
| DB     | DAMPER - OPPOSED BLADE                                    |
| DBP    | DAMPER - PARALLEL BLADE                                   |
| M      | DAMPER MOTOR  |
| DPS    | DIFFERENTIAL PRESSURE SWITCH                              |
| DPT    | DIFFERENTIAL PRESSURE TRANSMITTER                         |
| ECM    | ELECTRONICALLY COMMUTATED MOTOR                           |
| GM     | FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE             |
| FM     | FLOW METER  |
| FS     | FLOW SWITCH   |
| FZ     | FREESTAT  |
| G      | GUARD FOR STAT OR SENSOR                                  |
| H      | HUMIDIFIER  |
| H      | HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS) |
| H      | HUMIDITY SENSOR, DUCT MOUNTED                             |
| LA     | LEVEL SWITCH OR TRANSMITTER                               |
| LS     | LIMIT SWITCH  |
| ---    | LINE - ELECTRIC   |
| ---    | LINE - INSTRUMENT AIR (PNEUMATIC)                         |
| M/S    | MOTOR STARTER   |
| OS     | OCCUPANCY SENSOR  |
| PT     | PRESSURE TRANSMITTER                                      |
| R      | RELAY, ELECTRIC   |
| N      | SELECTOR SWITCH, (N=NUMBER OF POSITIONS)                  |
| A      | SIGNAL - DDC/BAS, ANALOG INPUT                            |
| AO     | SIGNAL - DDC/BAS, ANALOG OUTPUT                           |
| D      | SIGNAL - DDC/BAS, DIGITAL INPUT                           |
| DO     | SIGNAL - DDC/BAS, DIGITAL OUTPUT                          |
| AI     | SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT                 |
| AOI    | SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT                |
| DI     | SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT                |
| DOI    | SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT               |
| SD     | SMOKE DETECTOR - DUCT MOUNTED                             |
| S/S    | START/STOP RELAY  |
| SPT    | STATIC PRESSURE TRANSMITTER                               |
| SP     | STATIC PRESSURE SENSOR OR PROBE                           |

## SCHEMATIC SYMBOLS (CONT.)

| SYMBOL | DESCRIPTION  |
|--------|--|
| SW     | SWITCH   |
| T      | TEMPERATURE SENSOR - RIGID ELEMENT IN WELL                   |
| T      | TEMPERATURE SENSOR - STRAP ON BULB                           |
| T      | TEMP SENSOR - DUCT MOUNTED AVG ELEMENT                       |
| T      | TEMP SENSOR - DUCT MOUNTED RIGID ELEMENT                     |
| T      | THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS) |
| TS     | TIMER SWITCH   |
| TR     | TRANSFORMER  |
| V      | VALVE - 2 WAY CONTROL VALVE                                  |
| V      | VALVE - 3 WAY CONTROL VALVE                                  |
| VFC    | VARIABLE FREQUENCY CONTROLLER                                |
| VS     | VELOCITY SENSOR  |
| VB     | VIBRATION SWITCH   |
| M/S    | COIL - MOTOR STARTER CONTACTOR                               |
| R      | COIL - RELAY   |
| I      | CONTACT - INSTANT OPERATING, NO                              |
| I      | CONTACT - INSTANT OPERATING, NC                              |
| G      | GROUND   |
| M      | MOTOR, SINGLE PHASE  |
| P      | PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)                  |
| H      | SWITCH - 3 POSITION SELECTOR HAND/OFF/AUTO                   |
| F      | SWITCH - FLOW (AIR, WATER, ETC.), NO                         |
| L      | SWITCH - LIMIT, NO   |
| P      | SWITCH - PRESSURE & VACUUM, NC                               |
| T      | SWITCH - TEMPERATURE ACTUATED, NO                            |
| OL     | THERMAL OVERLOAD, SINGLE PHASE                               |
| OLs    | THERMAL OVERLOAD CONTACTS-3 PHASE                            |
| TR     | TRANSFORMER  |
| W      | WIRE TERMINATION AT DEVICE                                   |
| W      | WIRE TO WIRE TERMINATION                                     |
| W      | WIRING NOT CONNECTED   |

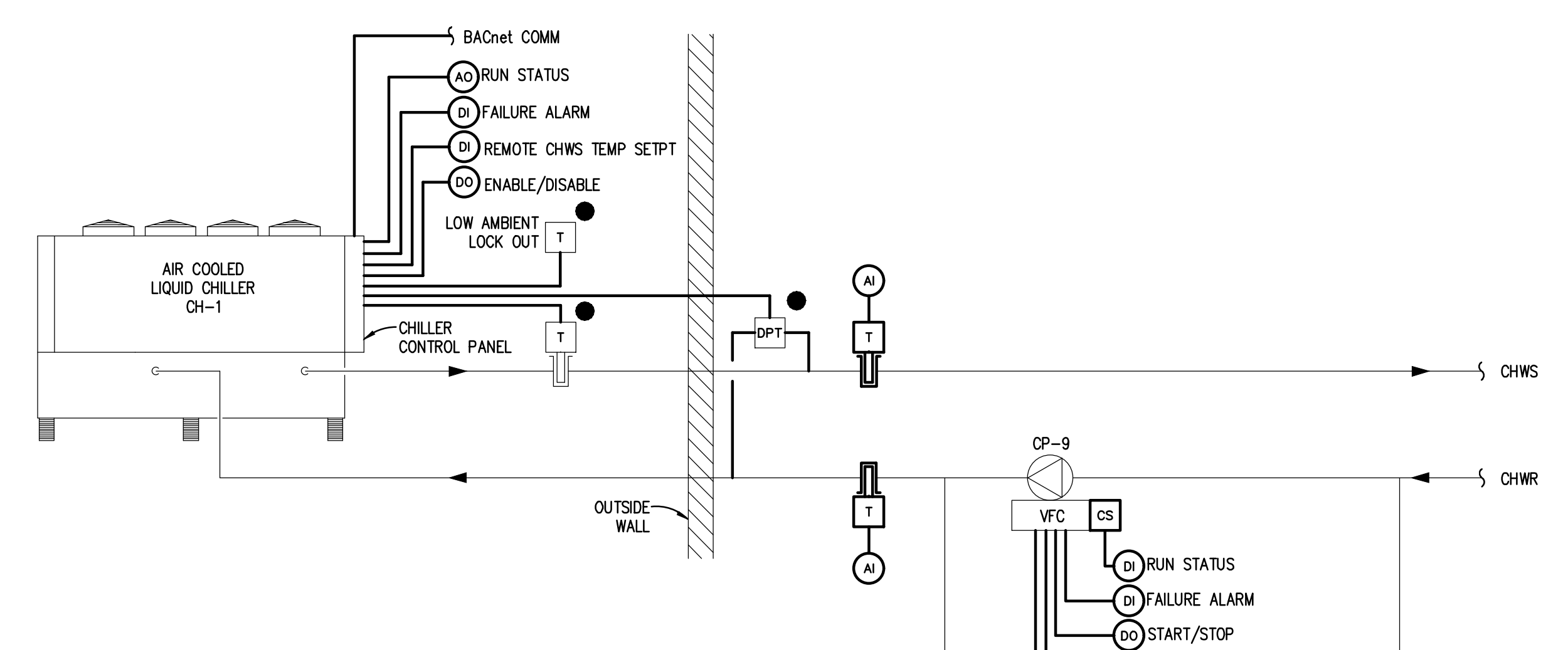
| ABBREVIATION | DESCRIPTION                |
|--------------|----------------------------|
| BAS          | BUILDING AUTOMATION SYSTEM |
| DDC          | DIRECT DIGITAL CONTROL     |
| TC           | TEMPERATURE CONTROLS       |
| NO           | NORMALLY OPEN              |
| NC           | NORMALLY CLOSED            |

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



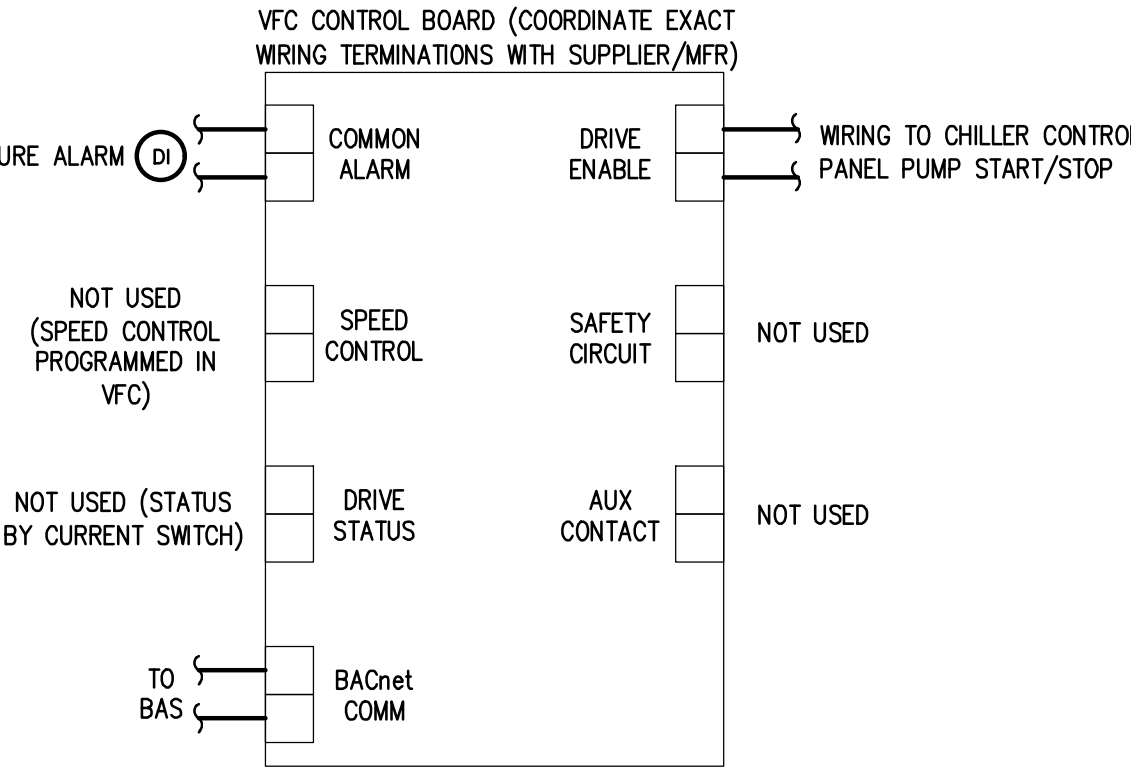
## CURRENT SWITCH INSTALLATION DETAILS

- TYPICAL
- NOTES:
- CURRENT SWITCH (CS) OR CURRENT TRANSDUCER (CT) AMP MONITORING AS APPLICABLE PER CONTROL DETAILS SHALL BE INSTALLED FOR DDC SYSTEM STATUS INDICATION OF FAN OR PUMP OPERATION. APPROPRIATE TIME DELAY FOR STATUS FEEDBACK UPON DDC START AND STOP COMMANDS SHALL BE INCLUDED WITH THE DDC LOGIC TO AVOID NUISANCE OPERATIONAL ALARMS.
  - REVIEW EQUIPMENT SHOP DRAWINGS TO DETERMINE POTENTIAL AMPERAGE RANGE OF FAN OR PUMP OPERATION FOR AMPERAGE TRIP SETTING REQUIREMENTS PRIOR TO SELECTING APPROPRIATE CURRENT SWITCH (MINIMUM SPEED AMPERAGE FOR FFTU WITH ECM CAN BE VERY LOW).
  - FOR ECM CURRENT SWITCH APPLICATIONS: PROVIDE CURRENT SWITCH RATED FOR ECM OPERATION WITH AMPERAGE TRIP SETTING HIGHER THAN TRICKLE/IDLE/STANDBY AMPERAGE ASSOCIATED WITH ECM WHEN OFF AND AMPERAGE TRIP SETTING LOWER THAN THE MINIMUM SPEED OPERATION OF FAN OR PUMP AS SET BY THE TAG CONTRACTOR.
  - FOR INDUCTION MOTOR CURRENT SWITCH APPLICATIONS (AS APPLICABLE): AMPERAGE TRIP SETTING SHALL BE ADJUSTABLE TO ACCOMMODATE VFC MINIMUM SPEED SETTING, TO DETECT FAN BELT LOSS, OR TO DETECT PUMP COUPLING DETACHMENT.
  - WHEN FAN OR PUMP IS ON AND NOT IN ALARM, DDC SYSTEM SHALL TOTALIZE RUN TIME HOURS FOR OPERATOR INFORMATION FROM BUILDING AUTOMATION SYSTEM OPERATOR INTERFACE.



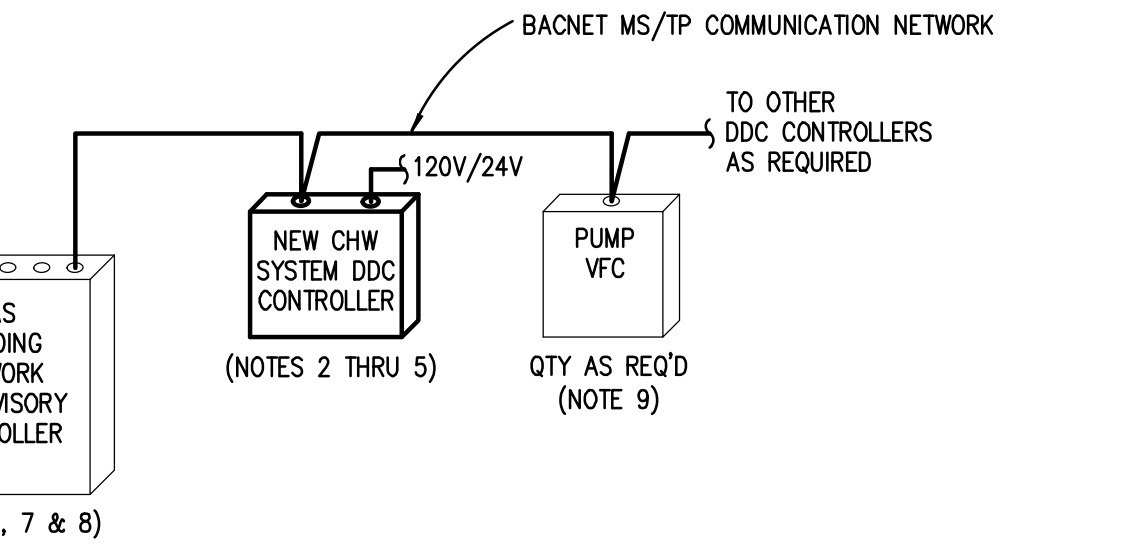
## CHILLED WATER SYSTEM CONTROL

- NOTE:
- DESIGNATES CHILLED WATER SYSTEM CONTROL DEVICE FURNISHED BY CHILLER MANUFACTURER AND WIRED BY TEMPERATURE CONTROLS CONTRACTOR.
  - TC SHALL COORDINATE PUMP VFD MINIMUM SPEED WITH BALANCER AND CHILLER MANUFACTURER TO MAINTAIN CHILLER MINIMUM EVAPORATOR FLOW UNDER ALL LOAD CONDITIONS.



## CHW PUMP VFC WIRING

- NOTES:
- WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER FOR THE ACTUAL WIRING REQUIREMENTS.



## BUILDING AUTOMATION SYSTEM ARCHITECTURE

- NO SCALE
- NOTES:
- EXISTING BUILDING AUTOMATION SYSTEM FOR BUILDING IS AUTOMATED LOGIC OPERATOR INTERFACE PLATFORM.
  - REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH NEW HVAC SYSTEM PER MECHANICAL DRAWINGS.
  - TC CONTRACTOR SHALL DETERMINE DDC CONTROLLER QUANTITY AND AUXILIARY PANEL REQUIREMENTS BASED ON POINT DENSITIES AND LOCATIONS PER AVAILABLE MOUNTING SPACE. UNLESS SPECIFICALLY NOTED IN DESIGN DRAWINGS, TC CONTRACTOR SHALL LOCATE TEMPERATURE CONTROL PANELS WITH CONTROLLERS AND AUX COMPONENTS AS REQUIRED. COORDINATE WITH OTHER TRADES.
  - TC CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES AS INDICATED IN TC GENERAL NOTES.
  - TC CONTRACTOR SHALL PROVIDE 24V TRANSFORMERS REQUIRED FOR TC CONTRACTOR PROVIDED CONTROLLERS AS REQUIRED. TRANSFORMERS SHALL BE LOCATED WITHIN EQUIPMENT ENCLOSURES OR OTHER TC PROVIDED ENCLOSURES TO BE LOCATED IN MECHANICAL OR ELECTRICAL ROOMS - COORDINATE LOCATIONS. MAXIMUM TRANSFORMER SIZE SHALL BE 100VA.
  - TC CONTRACTOR SHALL PROVIDE AUXILIARY PANEL FOR GAUGES, TRANSMITTERS, RELAYS, POWER TRANSFORMERS, ETC.
  - GRAPHICS FOR OPERATOR INTERFACE OF SYSTEMS ARE TO BE BUILT ON THE EXISTING TROILUM N4 SERVER APPLICATION SOFTWARE LOCATED ON THE DISTRICT'S IT NETWORK.
  - DDC CONTROLLERS FOR PACKAGED CONTROL EQUIPMENT SHALL INCLUDE BACNET MS/TP INTERFACE CARDS FOR THIS PROJECT. TO CONTRACTOR TO PROVIDE BACNET NETWORK WIRING TO PACKAGED CONTROLLERS.
  - TC CONTRACTOR SHALL PROVIDE BACnet COMMUNICATION TO VARIABLE FREQUENCY CONTROLLERS FOR NEW EQUIPMENT WHERE APPLICABLE FOR ADDITIONAL MONITORING INFORMATION. REFER TO VFC BACnet INTERFACE & MONITORING REQUIREMENTS DETAIL.

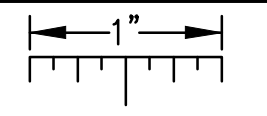
## VFC BACnet INTERFACE & MONITORING REQUIREMENTS

- TYPICAL FOR PUMP VFCs
- NOTE:
- TC CONTRACTOR SHALL COORDINATE BACnet-MS/TP OPEN PROTOCOL WIRE TERMINATION REQUIREMENTS AND POINT INTEGRATION CAPABILITIES WITH VFC SUPPLIER/MANUFACTURER AND PROVIDE APPROPRIATE BAS COMPONENTS FOR COMMUNICATION INTERFACE TO BAS.
- |                                    |                             |
|------------------------------------|-----------------------------|
| ● ON/OFF ACTIVE COMMAND STATUS     | ● MOTOR AMPS                |
| ● ON/OFF RUN STATUS                | ● MOTOR TORQUE              |
| ● COMMON ALARM STATUS              | ● POWER (KW)                |
| ● REMOTE VFC (ALARM) RESET         | ● ACCUMULATED KWH           |
| ● CURRENT SPEED COMMAND (0-100%)   | ● ACCUMULATED KWH RESET     |
| ● CURRENT OPERATING FREQUENCY (Hz) | ● DC LINK VOLTAGE           |
| ● RUNTIME HOURS                    | ● MOTOR THERMAL (0-100%)    |
| ● RUNTIME HOURS RESET              | ● INVERTER THERMAL (0-100%) |
| ● MOTOR VOLTAGE                    | ● HEAT SINK TEMPERATURE     |

# TC GENERAL NOTES

- THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL (TC) DRAWINGS.
- "PROVIDE" IS DEFINED AS "FURNISH AND INSTALL".
- TEMPERATURE CONTROLS CONTRACTOR (TC CONTRACTOR) SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES.
- 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.
- TO 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.
- ALL TO PROVIDED COMPONENTS AND ALL TO CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
- ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
- VARIABLE FREQUENCY CONTROLLER AND PUMP MOTOR STARTERS, STARTER WIRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
- ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VFC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
- ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
- TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
- TO CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- 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. DEPENDING ON WIRE QUANTITY OR COMPLEXITY, PROVIDE CONDUITS BETWEEN PANELS OR WIRING THROUGH WITH CONDUIT STUBS ABOVE ALL ASSOCIATED PANELS.
- REMOVELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSED IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
- CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
- CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
- ALL CONTROL VALVES AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
- ALL CONTROL VALVES FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
- ALL INSTRUMENTATION TUBING REQUIRED FOR DPS AND DPT COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
- TO CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED "SHIPPED LOOSE" PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.

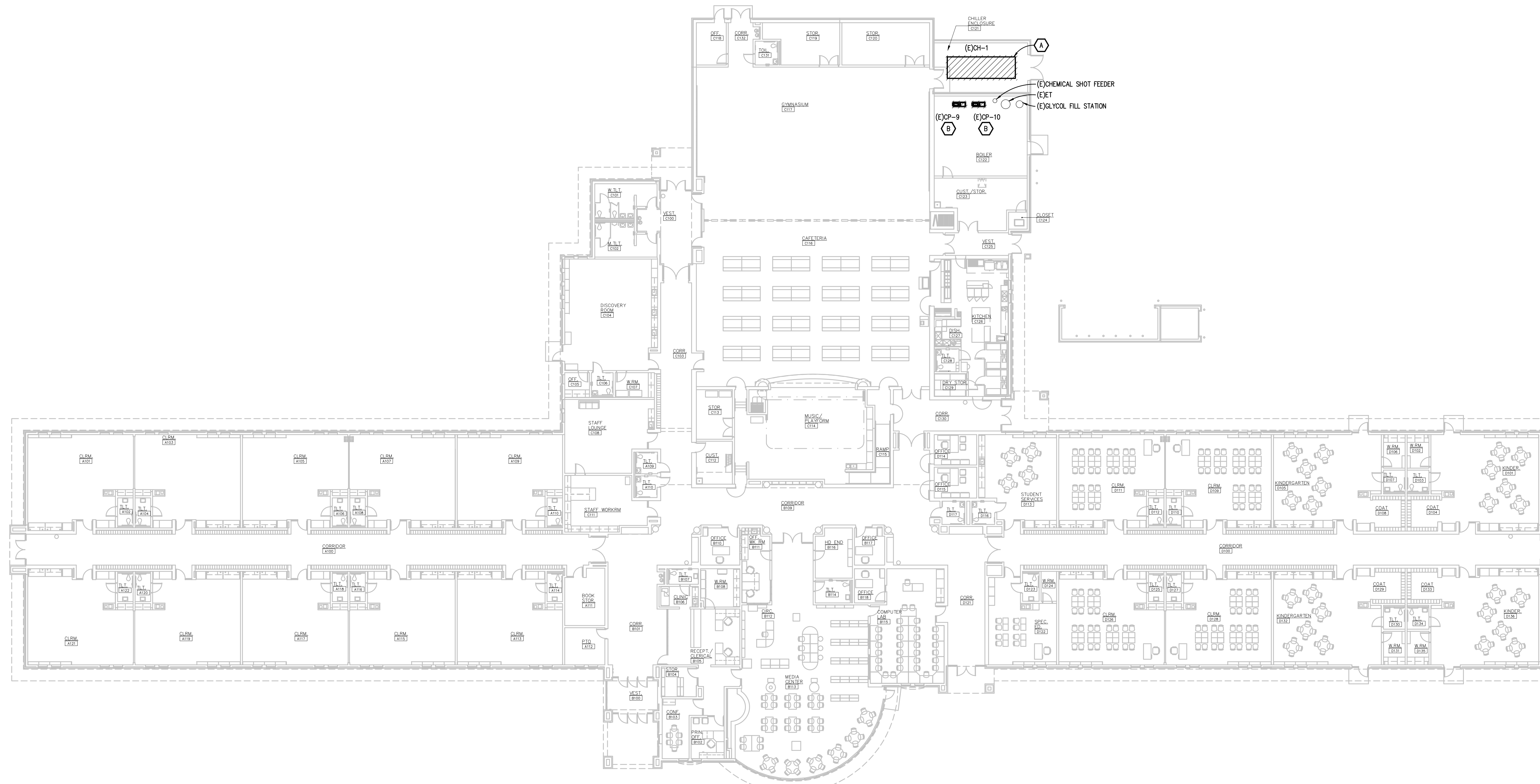


**MECHANICAL DEMOLITION GENERAL NOTES:**

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 EXISTING CHILLER AND ASSOCIATED CHWS/R PIPING BACK TO ISOLATION VALVE. PREPARE CHWS/R PIPING FOR RECONNECTION.
- B. REMOVE EXISTING PUMP AND PREPARE CHWS/R PIPING FOR RECONNECTION. PROVIDE PRE-DEMOLITION WATER FLOW AND HEAD PRESSURE READINGS.



**FIRST FLOOR MECHANICAL COMPOSITE DEMOLITION PLAN**  
SCALE: 1/16" = 1' - 0"

REVISION

REVISION

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PBA Project No.: 2026-0034

**Peter Basso Associates**  
CONSULTING ENGINEERS

PROJECT TITLE  
**ANCHOR BAY SCHOOL DISTRICT  
MACDONALD ELEMENTARY SCHOOL  
HVAC Upgrade**  
5201 County Line Road, Casco, MI 48064

SHEET TITLE  
**FIRST FLOOR MECHANICAL  
COMPOSITE DEMOLITION PLAN**

DATE  
05-01-2026

ISSUE  
CONSTRUCTION DOCUMENTS

SHEET No.

**MD0.2**

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