

# GYMNASIUM HVAC RENOVATION COLLINWOOD MIDDLE SCHOOL

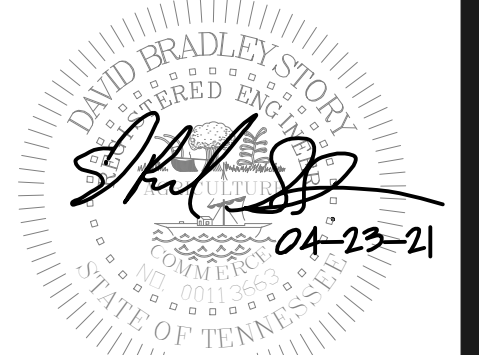
300 4TH Av. N.  
COLLINWOOD, TN 38450

MECHANICAL/ELECTRICAL:  
**DW COLLIER ENGINEERING, INC.**  
720 BROADWAY ST SUITE 100  
SOUTH FULTON, TENNESSEE 38257  
PHONE: (731) 479-2115  
www.dwcolliereng.com

MECHANICAL:



ELECTRICAL:



CODE ANALYSIS:

1. 2012 INTERNATIONAL MECHANICAL CODE
2. 2012 INTERNATIONAL PLUMBING CODE
3. 2012 INTERNATIONAL FUEL & GAS CODE
4. 2011 NATIONAL ELECTRICAL CODE
5. 2012 NFPA 101 - LIFE SAFETY CODE
6. 2010 AMERICANS WITH DISABILITIES ACT
7. 2012 INTERNATIONAL BUILDING CODE

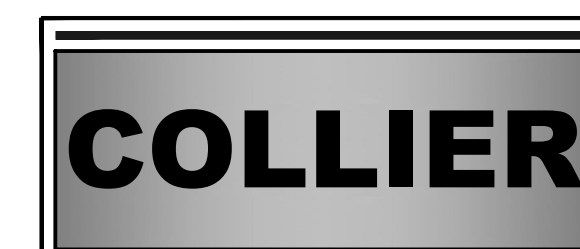
## SHEET INDEX

COVER SHEET

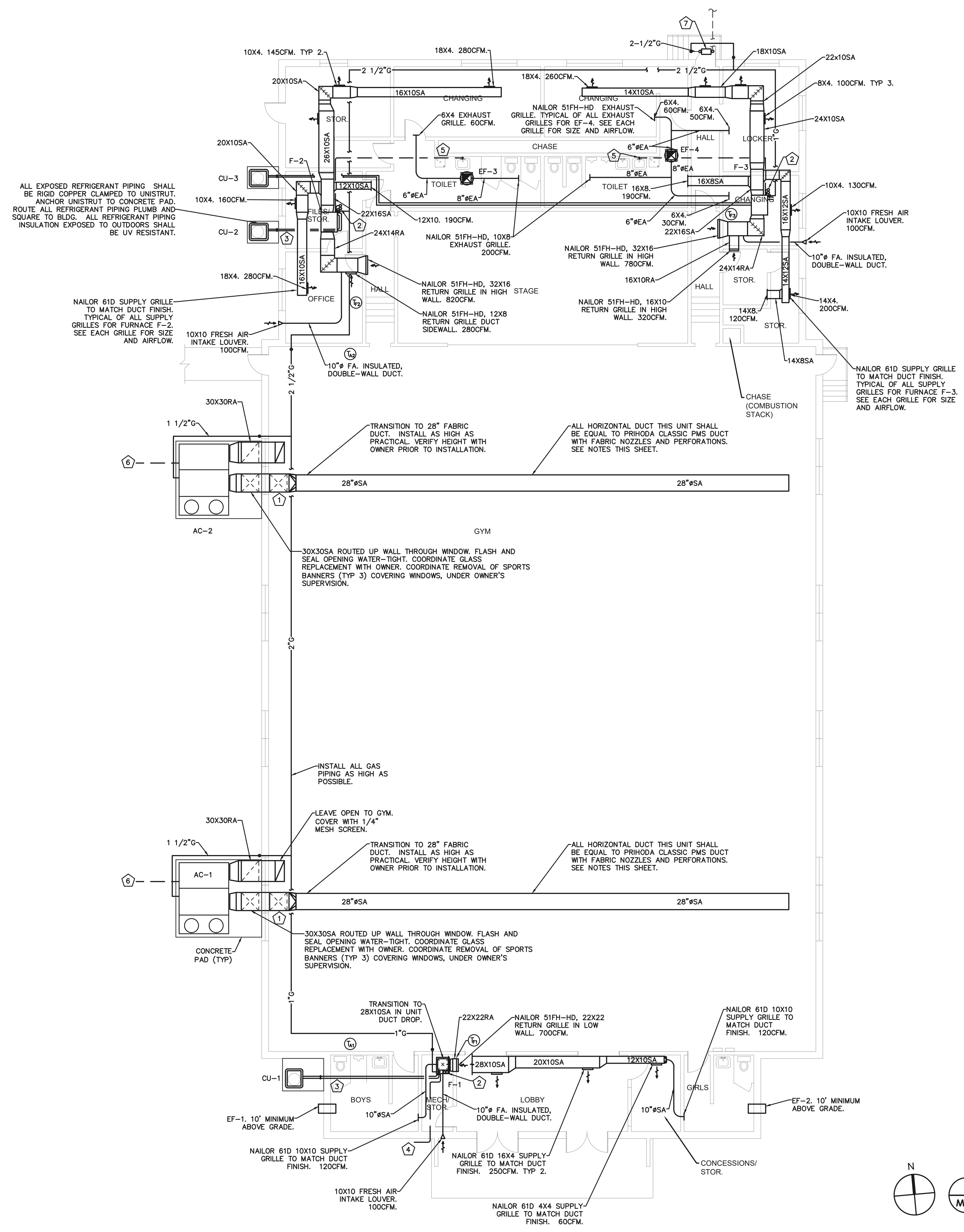
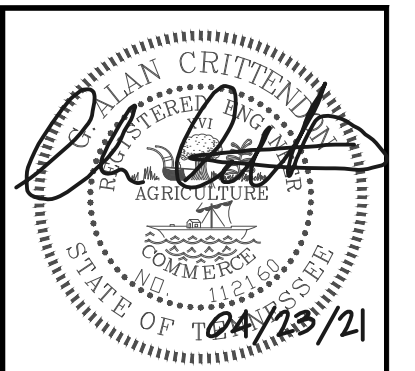
- M1.1 - HVAC PLAN
- M1.2 - HVAC DEMOLITION PLAN
- M2.1 - HVAC SCHEDULES
- M2.2 - HVAC DETAILS

- E1.1 - POWER PLAN
- E2.1 - ONE-LINE AND SCHEDULES
- E3.1 - ELECTRICAL NOTES

## REVISIONS:



DWCEI PROJECT NO. 21-051



ALL EXPOSED REFRIGERANT PIPING SHALL BE RIGID COPPER CLAMPED TO UNISTRUT. ANCHOR UNISTRUT TO CONCRETE PAD. ROUTE ALL REFRIGERANT PIPING PLUMB AND SQUARE TO BLDG. ALL REFRIGERANT PIPING INSULATION EXPOSED TO OUTDOORS SHALL BE UV RESISTANT.

NAILOR 61D SUPPLY GRILLE TO MATCH DUCT FINISH. TYPICAL OF ALL SUPPLY GRILLES FOR FURNACE F-2. SEE EACH GRILLE FOR SIZE AND AIRFLOW.

30X30SA ROUTED UP WALL THROUGH WINDOW. FLASH AND SEAL OPENING WATER-TIGHT. COORDINATE GLASS REPLACEMENT WITH OWNER. COORDINATE REMOVAL OF SPORTS BANNERS (TYP 3) COVERING WINDOWS, UNDER OWNER'S SUPERVISION.

ALL HORIZONTAL DUCT THIS UNIT SHALL BE EQUAL TO PRIHODA CLASSIC PMS DUCT WITH FABRIC NOZZLES AND PERFORATIONS. SEE NOTES THIS SHEET.

INSTALL ALL GAS PIPING AS HIGH AS POSSIBLE.

30X30SA ROUTED UP WALL THROUGH WINDOW. FLASH AND SEAL OPENING WATER-TIGHT. COORDINATE GLASS REPLACEMENT WITH OWNER. COORDINATE REMOVAL OF SPORTS BANNERS (TYP 3) COVERING WINDOWS, UNDER OWNER'S SUPERVISION.

ALL HORIZONTAL DUCT THIS UNIT SHALL BE EQUAL TO PRIHODA CLASSIC PMS DUCT WITH FABRIC NOZZLES AND PERFORATIONS. SEE NOTES THIS SHEET.

TRANSITION TO 28X10SA IN UNIT DUCT DROP.

NAILOR 51FH-HD, 22X22 RETURN GRILLE IN LOW WALL. 700CFM.

NAILOR 61D 10X10 SUPPLY GRILLE TO MATCH DUCT FINISH. 120CFM.

NAILOR 61D 10X10 SUPPLY GRILLE TO MATCH DUCT FINISH. 120CFM.

NAILOR 61D 16X4 SUPPLY GRILLE TO MATCH DUCT FINISH. 250CFM. TYP 2.

NAILOR 61D 4X4 SUPPLY GRILLE TO MATCH DUCT FINISH. 60CFM.

- KEYED NOTES:
- TURN 30X30SA METALLIC DUCT UP IN GYM TO ACHIEVE HIGHEST-PRACTICAL HEIGHT FOR CONNECTED FABRIC DUCT.
  - 3" (VERIFY SIZE WITH MANUFACTURER REQUIREMENTS) COMBUSTION AIR SUPPLY AND EXHAUST DUCTS, PVC OR APPROVED VENTING MATERIAL FOR CONDENSING APPLIANCES. CONNECT TO SINGLE, MANUFACTURER-APPROVED CONCENTRIC VENT THROUGH ROOF. SIZE BASED ON LENGTH OF RUN PER MANUFACTURER REQUIREMENTS. FLASH AND SEAL ALL ROOF PENETRATIONS, AND MAINTAIN ROOF WARRANTY. CONNECT TO FURNACE.
  - SPLIT A/C REFRIGERANT LINES FROM REMOTE GRADE MOUNTED CONDENSING UNIT. ROUTE LINES ABOVE CEILING OR HIGH TO STRUCTURE, AS STRAIGHT AS POSSIBLE. PROVIDE WITH INSULATION PER SPECIFICATIONS. ROUTE TO INSIDE EVAPORATOR UNIT. SIZE PER MANUFACTURER REQUIREMENTS, BASED ON REFRIGERANT RISE AND RUN.
  - CONDENSATE DRAIN THROUGH WALL TO FRENCH DRAIN. INSTALL FRENCH DRAIN PER DETAIL. SIZE PIPING PER MANUFACTURER.
  - CONDENSATE DRAIN TO HOUSE SIDE OF SINK. SIZE PIPING PER MANUFACTURER. SEE DETAIL.
  - CONDENSATE DRAIN TO FRENCH DRAIN. INSTALL FRENCH DRAIN PER DETAIL. SIZE PIPING PER MANUFACTURER.
  - EXISTING NATURAL GAS METER. EXISTING NATURAL GAS LOAD ESTIMATED AT 620CFH. NEW LOAD IS 920CFH. NEW PIPING IS SIZED AT LOW PRESSURE.

- GENERAL NOTES:
- DUCT SIZES INDICATED ARE ACTUAL SHEET METAL DIMENSIONS. ALLOWANCES HAVE BEEN MADE FOR THICKNESS OF INSULATION. ALL EXPOSED (RECTANGULAR AND ROUND) DUCTS TO BE LINED WITH 1 1/2" THICK, FIBERGLASS INSULATION EQUAL TO CERTAINTED TOUGHGARD TYPE 150, R-6 MINIMUM. FRESH AIR INTAKE DUCTS SHALL BE DOUBLE-WALL DUCT INTERNALLY INSULATED (R-8 MINIMUM).
  - EXHAUST DUCTS DO NOT REQUIRE INSULATION.
  - ALL DUCTWORK EXPOSED INSIDE SHALL BE PAINTGRIP TYPE. ALL GRILLES IN SIDEWALL OF DUCTS SHALL MATCH FINAL DUCT COLOR. COORDINATE ALL GRILLE COLORS WITH ARCHITECT.
  - FABRIC DUCT TO BE UTILIZED WHERE POSSIBLE AS INDICATED. FABRIC DUCT SHALL BE EQUAL TO PRIHODA CLASSIC PMS DUCT WITH FABRIC NOZZLES AND PERFORATIONS. PROVIDE WITH CABLES AND SINGLE TRACK SUSPENSION SYSTEM WITH ALL-IN ONE HOOPS. VERIFY HEIGHTS AND COLORS WITH OWNER PRIOR TO INSTALLATION. COORDINATE EXACT LAYOUT WITH VENDOR PROVIDED DESIGN.
  - IN ADDITION TO INTERNAL LINER, ALL DUCTWORK INSTALLED OUTDOORS SHALL BE EXTERNALLY INSULATED WITH 1" RIGID BLUEBOARD POLYSTYRENE INSULATION ADHERED TO DUCT AND COVERED WITH POLYURETHANE SELF-ADHESIVE, SELF-HEALING MEMBRANE.
  - WHERE HOLES LEFT BY REMOVAL OF EXISTING EQUIPMENT FROM THE DEMOLITION PLAN ARE USED FOR NEW EQUIPMENT OR SYSTEMS, PROPERLY PATCH, SEAL, RECONSTRUCT, AND PAINT (AS APPLICABLE) AROUND NEW COMPONENTS TO FINISH BUILDING AND GIVE IT A UNIFORM APPEARANCE.
  - COORDINATE EXCAVATION AND BURIAL OF PIPING WITH EXISTING UNDERGROUND AND ABOVE GROUND OBSTACLES.
  - COORDINATE ALL NEW ROOF PENETRATIONS WITH ROOFING CONTRACTOR. ENSURE ALL NEW PENETRATIONS ARE PROPERLY CUT AND FLASHED WEATHERTIGHT. ENSURE ANY EXISTING WARRANTY IS MAINTAINED.
  - VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. HVAC LAYOUT DETERMINED FROM SITE OBSERVATIONS AND AS BUILT DRAWINGS. CONTRACTOR SHALL NOTIFY ENGINEER SHOULD EXISTING CONDITIONS DIFFER FROM THESE DRAWINGS.
  - PROVIDE SEISMIC RESTRAINT FOR ANY DUCTWORK 6FT OR GREATER.

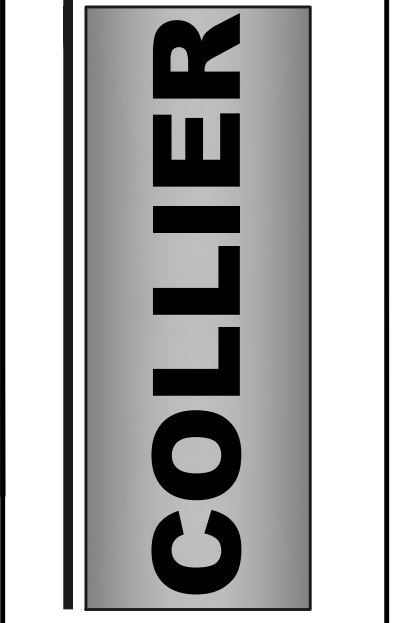
| LEGEND |  |
|--------|--|
|        | SUPPLY AIR DIFFUSER                      |
|        | RETURN/EXHAUST AIR GRILLE SIDEWALL       |
|        | RETURN/EXHAUST AIR GRILLE BOTTOM OF DUCT |
|        | THERMOSTAT                               |
|        | TURNING VANE                             |
|        | SA SUPPLY AIR                            |
|        | RA RETURN AIR                            |
|        | FA FRESH AIR/OUTSIDE AIR                 |
|        | EA EXHAUST AIR                           |

N  
1  
M1.1  
HVAC Plan  
SCALE: 1/8" = 1'-0"

|           |  |
|-----------|--|
| COMMENT:  |  |
| DATE:     |  |
| REVISION: |  |

SHEET TITLE: HVAC Plan  
PROJECT: GYMNASIUM HVAC RENOVATION  
COLLINSWOOD ELEMENTARY SCHOOL  
COLLINSWOOD, TN

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720 BROADWAY STREET  
SOUTH FULTON, TN 38257  
PH: (731) 479-2115  
www.dwcolliereng.com  
office@dwcollier.com



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PROJECT NUMBER: 21-051  
SHEET NUMBER: M1.1



REMOVE EXISTING FURNACE AND ALL ASSOCIATED DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, AND NATURAL GAS PIPING. ONLY DEMOLISH GAS PIPING BACK TO A POINT THAT WILL NOT INTERFERE WITH OPERATION OF OTHER EQUIPMENT STILL IN OPERATION, AND WILL NOT CAUSE DAMAGE TO THE BUILDING. PROPERLY REPAIR / CAP GAS PIPING ACCORDING TO LOCAL CODES AT POINT WHERE DEMOLITION IS TERMINATED.

REMOVE EXISTING FURNACE AND ALL ASSOCIATED DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, AND NATURAL GAS PIPING. ONLY DEMOLISH GAS PIPING BACK TO A POINT THAT WILL NOT INTERFERE WITH OPERATION OF OTHER EQUIPMENT STILL IN OPERATION, AND WILL NOT CAUSE DAMAGE TO THE BUILDING. PROPERLY REPAIR / CAP GAS PIPING ACCORDING TO LOCAL CODES AT POINT WHERE DEMOLITION IS TERMINATED.

REMOVE LOUVER

REMOVE EXISTING GAS UNIT HEATER AND ALL ASSOCIATED COMBUSTION AIR DUCT, EXHAUST DUCT, AND NATURAL GAS PIPING. CAP FLUE PIPING. ONLY DEMOLISH GAS PIPING BACK TO A POINT THAT WILL NOT INTERFERE WITH OPERATION OF OTHER EQUIPMENT STILL IN OPERATION, AND WILL NOT CAUSE DAMAGE TO THE BUILDING. PROPERLY REPAIR / CAP GAS PIPING ACCORDING TO LOCAL CODES AT POINT WHERE DEMOLITION IS TERMINATED.

REMOVE EXHAUST FAN AND CAP OPENING WITH INSULATED METAL COVER.

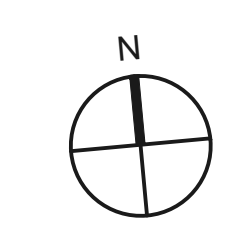
REMOVE EXISTING FURNACE AND ALL ASSOCIATED DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, AND NATURAL GAS PIPING. CAP FLUE AT ROOF. ONLY DEMOLISH GAS PIPING BACK TO A POINT THAT WILL NOT INTERFERE WITH OPERATION OF OTHER EQUIPMENT STILL IN OPERATION, AND WILL NOT CAUSE DAMAGE TO THE BUILDING. PROPERLY REPAIR / CAP GAS PIPING ACCORDING TO LOCAL CODES AT POINT WHERE DEMOLITION IS TERMINATED.

REMOVE EXHAUST FAN

REMOVE EXHAUST FAN

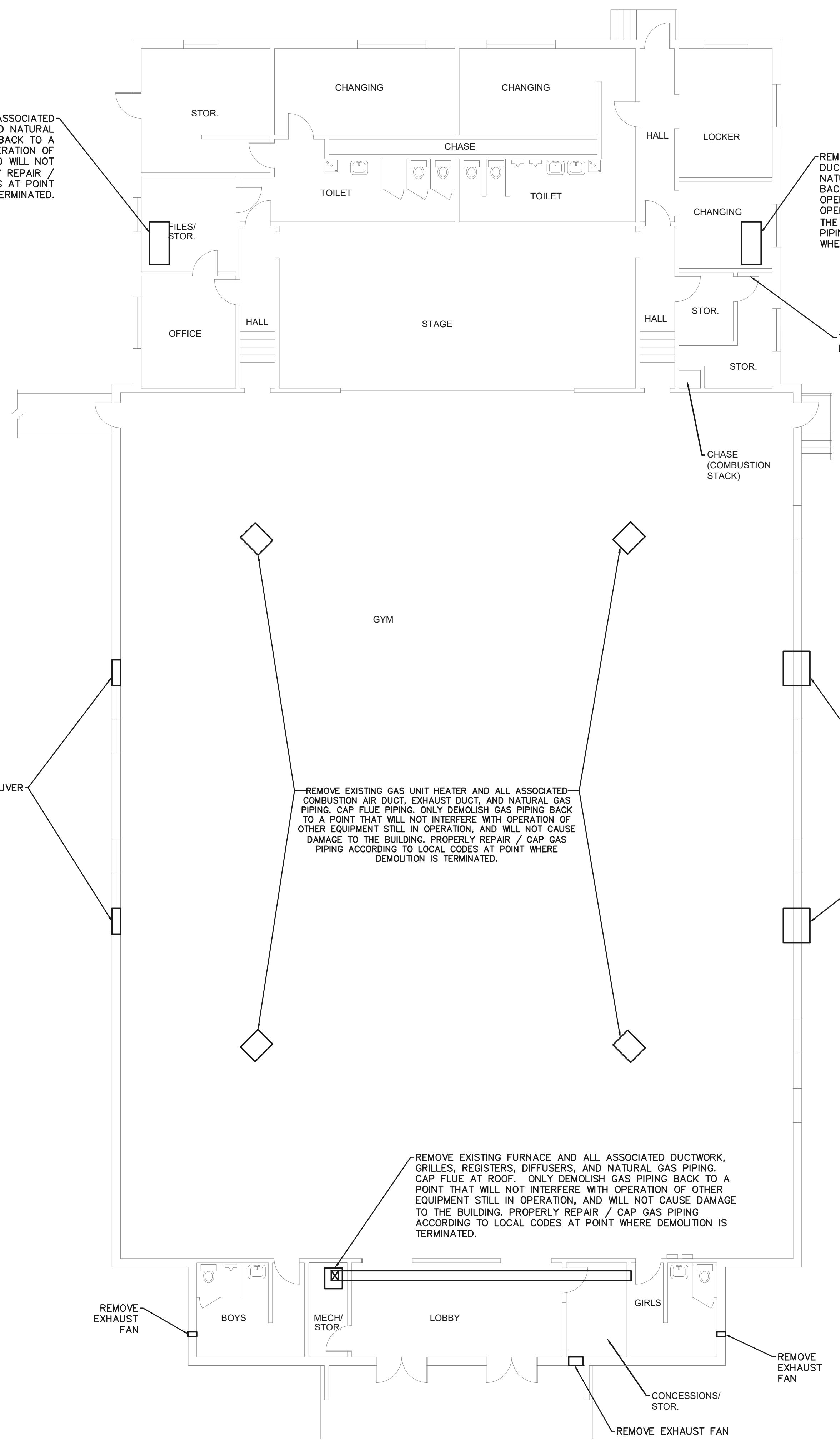
REMOVE EXHAUST FAN

- GENERAL NOTES:
1. ALL HOLES CREATED IN INTERIOR OR EXTERIOR WALLS BY DEMOLITION OF EXISTING EQUIPMENT OR COMPONENTS SHALL BE PATCHED, SEALED, PAINTED (WHERE APPLICABLE), RECONSTRUCTED (WHERE APPLICABLE), AND MADE TO MATCH THE SURROUNDING WALL, ON BOTH SIDES OF WALL, TO OWNER'S SATISFACTION.
  2. REVIEW THE PLANS FOR INSTALLATION OF NEW WORK, TO COORDINATE THE RE-USE OF ANY BUILDING OPENINGS CREATED BY DEMOLITION.
  3. VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. HVAC LAYOUT DETERMINED FROM SITE OBSERVATIONS AND AS BUILT DRAWINGS. CONTRACTOR SHALL NOTIFY ENGINEER SHOULD EXISTING CONDITIONS DIFFER FROM THESE DRAWINGS.



1  
M1.2

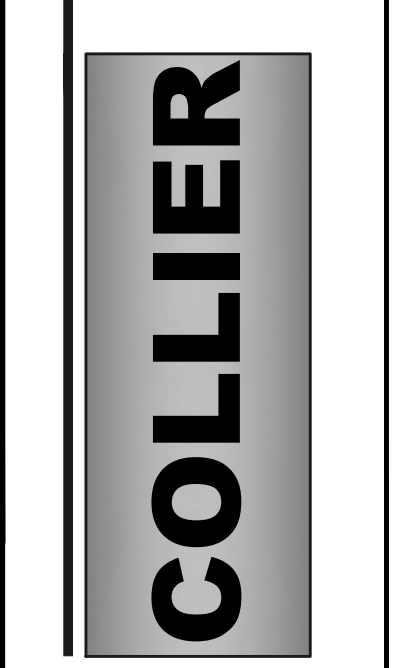
**HVAC Demolition Plan**  
SCALE: 1/8" = 1'-0"



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SHEET TITLE: **Gym HVAC Demolition Plan**  
PROJECT: **GYMNASIUM HVAC RENOVATION**  
COLLINWOOD ELEMENTARY SCHOOL  
COLLINWOOD, TN

DW COLLIER, INC.  
ENGINEERING, INC.  
720 BROADWAY STREET  
SOUTH FULTON, TN 38257  
PH: (731) 479-2115  
www.dwcolliereng.com  
office@dwcollier.com



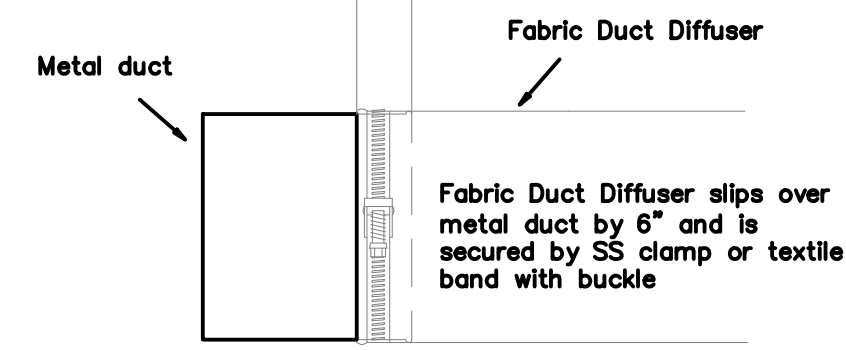
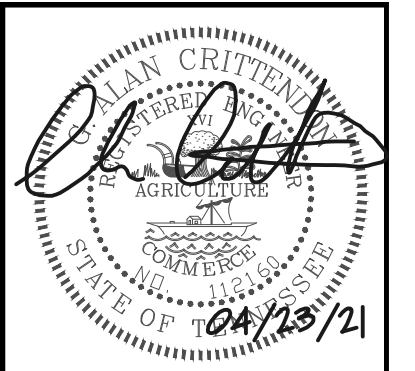
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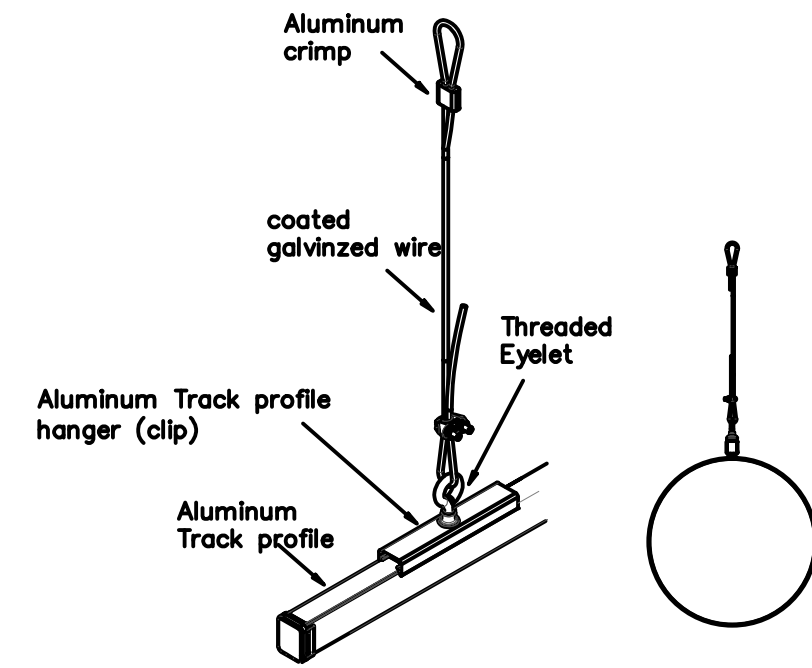
PROJECT NUMBER:  
**21-051**

SHEET NUMBER:  
**M1.2**

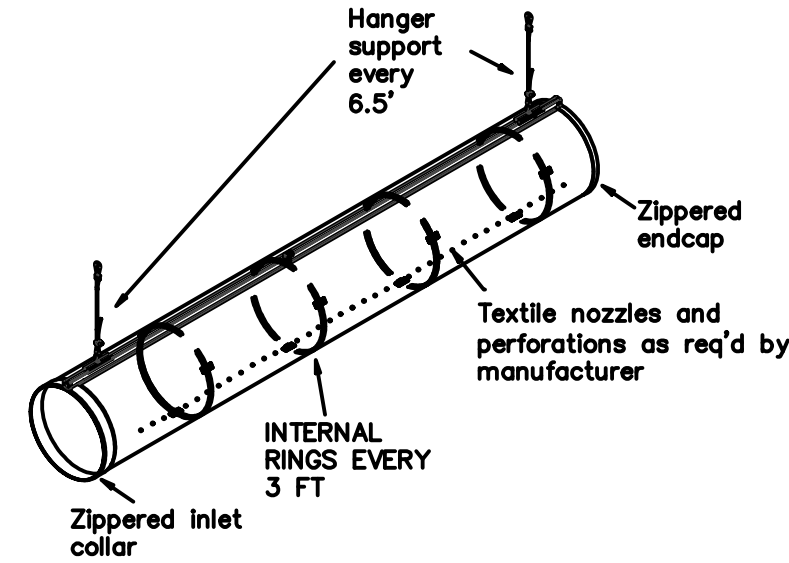




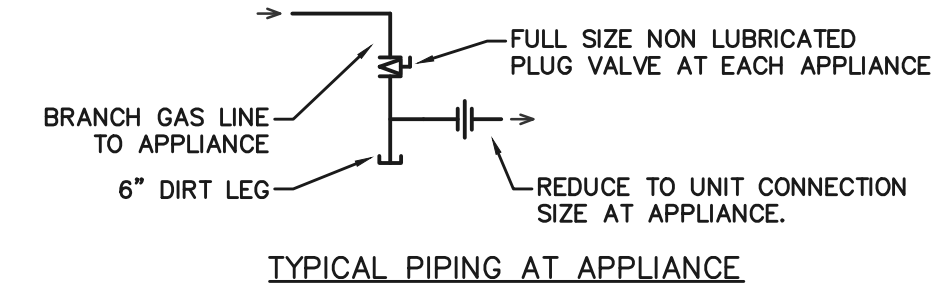
Fabric Duct Inlet connection Detail



Fabric Duct Hanger Detail Single Track Profile

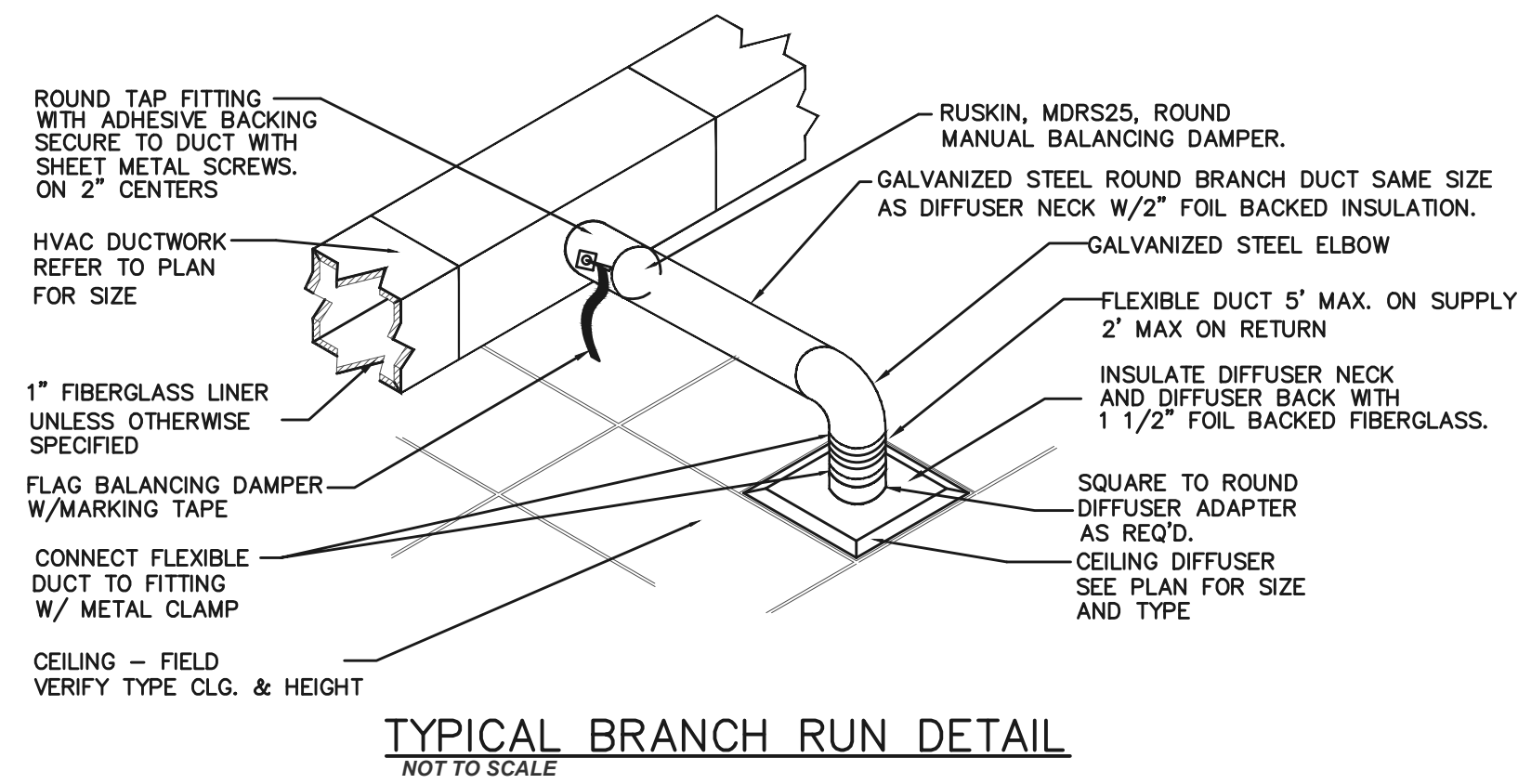


Fabric duct Installation Detail Single Track Profile

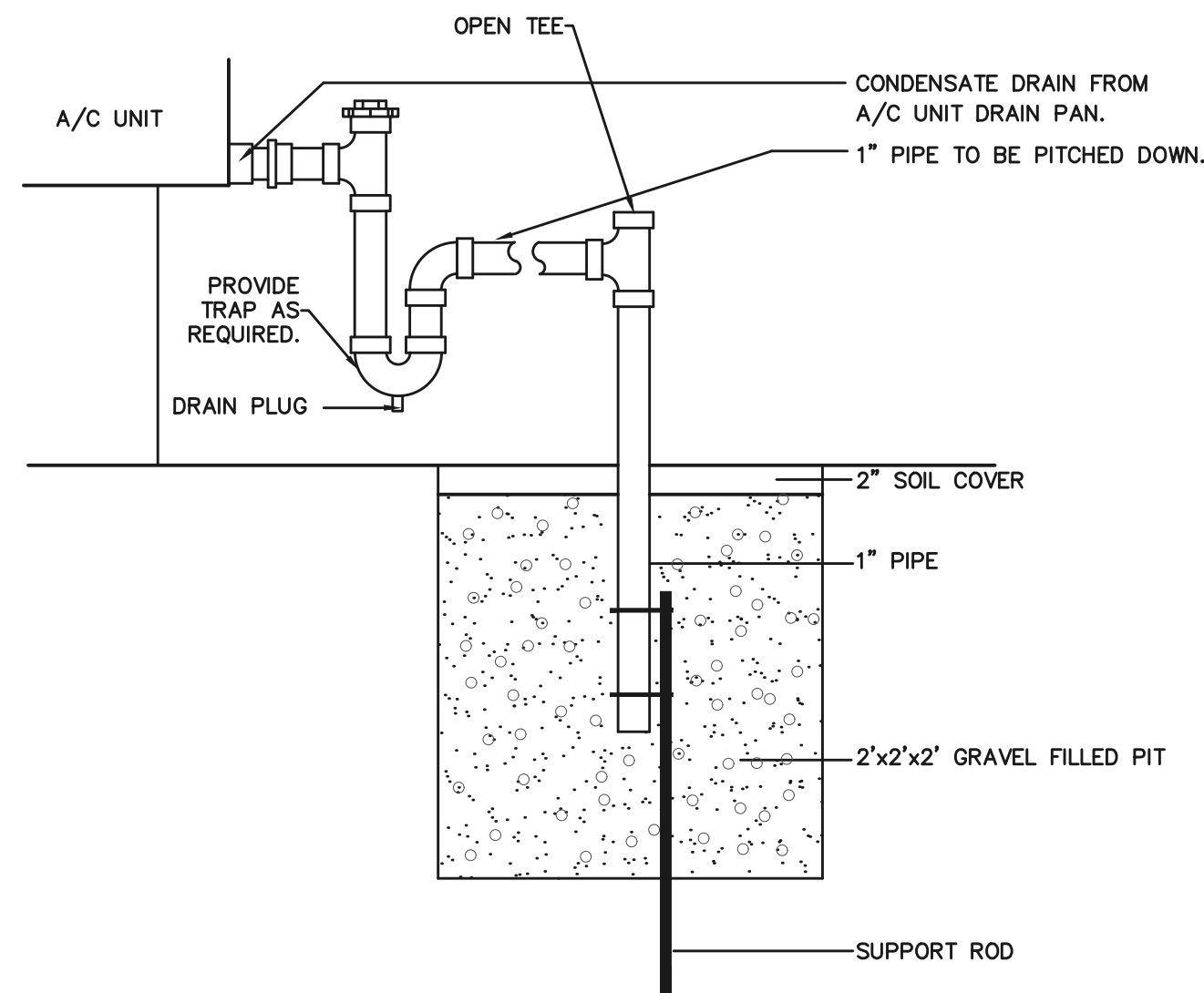


GENERAL GAS PIPING NOTES:

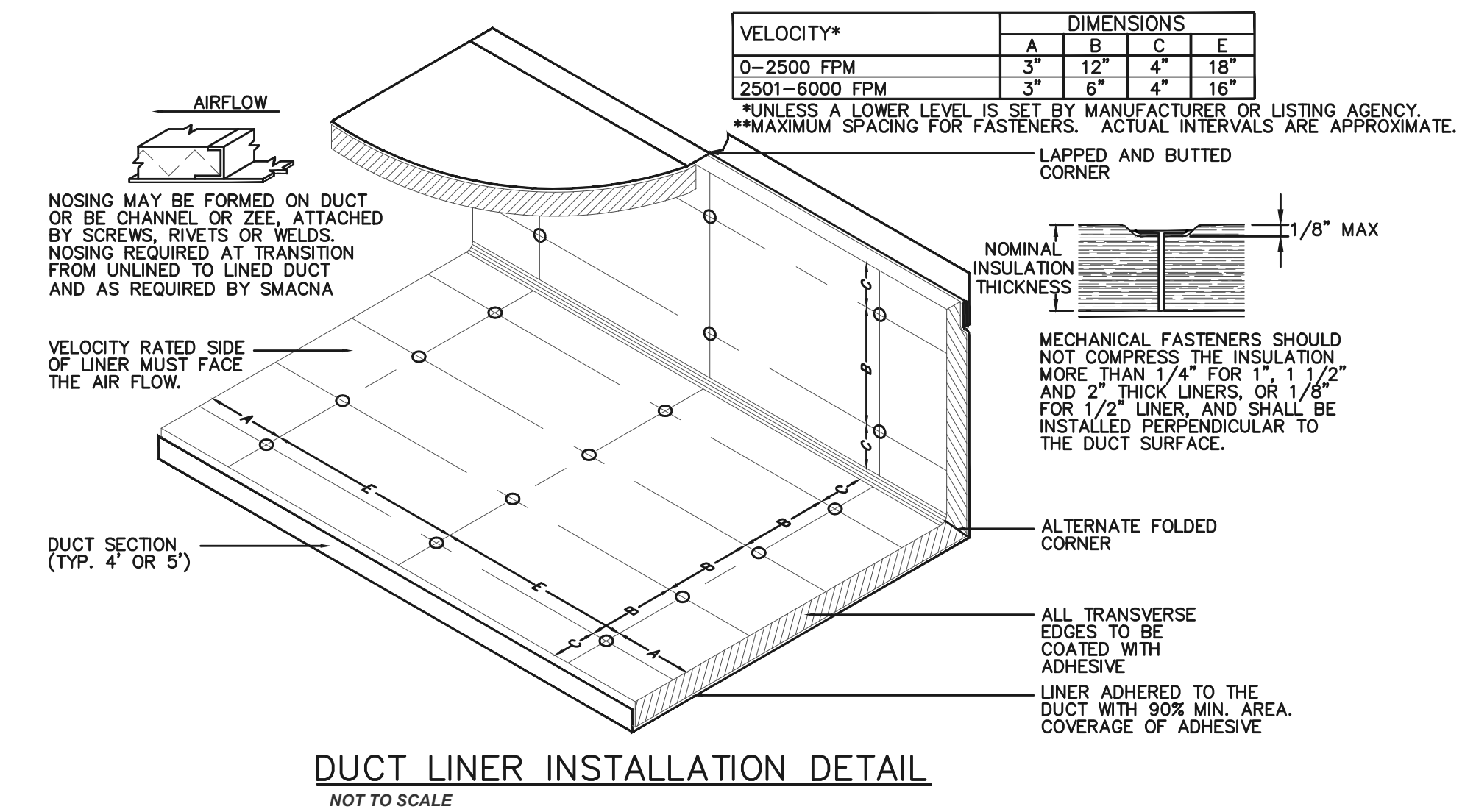
- 1) BALL VALVES ARE NOT ACCEPTABLE. ALL VALVES TO BE NON-LUBRICATED PLUG VALVES RATED FOR GAS SERVICE.
- 2) PIPING, VALVES, UNION, ETC. SHALL REMAIN FULL-SIZE AND SHALL NOT REDUCE TO UNIT CONNECTION SIZE UNTIL WITHIN 6" OF APPLIANCE.
- 3) ANCHOR GAS PIPING TO APPLIANCE PAD OR BUILDING STRUCTURE WITHIN 36" OF TERMINATION. DIRT LEG AND SHUTOFF VALVE SHALL BE EXPOSED ON ROOF. GAS PIPING SHALL NOT BE INSTALLED IN ROOF CURB OF ANY GAS-FIRED, ROOF-MOUNTED MECHANICAL EQUIPMENT.
- 4) DIRT LEGS SHALL BE INSTALLED AS SHOWN IN DETAIL, FORMED BY A 6" CAPPED NIPPLE IN THE RUN OF A TEE.
- 5) PAINT ALL EXPOSED GAS PIPING YELLOW OR GRAY OR SOME OTHER APPROVED COLOR AS DIRECTED BY ARCHITECT OR ENGINEER. WHERE GAS PIPING CAN BE EASILY SEEN AT GRADE, VERIFY COLOR WITH ARCHITECT OR ENGINEER. LABEL ALL GAS PIPING.
- 6) SYSTEMS INSPECTED AND FOUND TO NOT COMPLY WITH THESE REQUIREMENTS WILL REQUIRE CORRECTION AT NO ADDITIONAL COST TO THE OWNER.



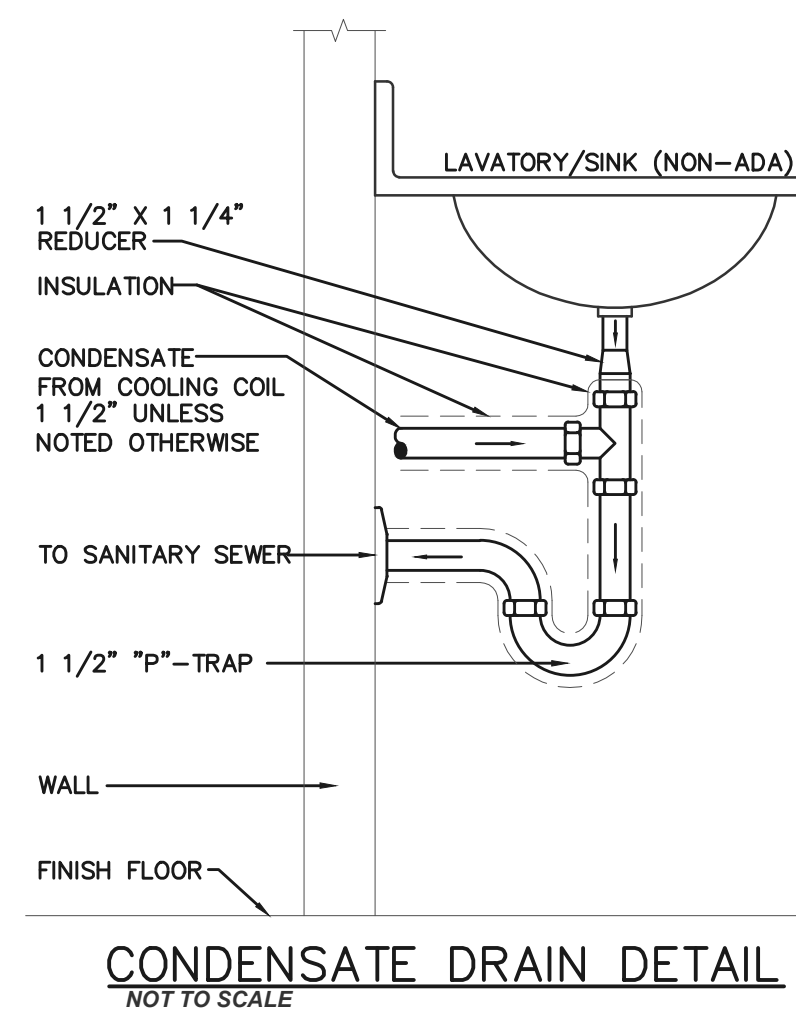
TYPICAL BRANCH RUN DETAIL NOT TO SCALE



FRENCH DRAIN DETAIL NOT TO SCALE



DUCT LINER INSTALLATION DETAIL NOT TO SCALE



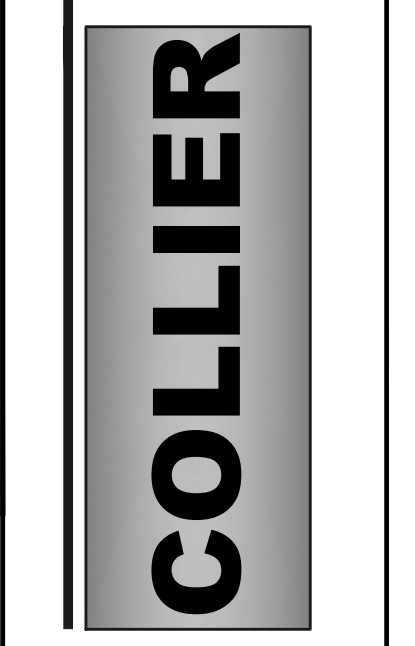
CONDENSATE DRAIN DETAIL NOT TO SCALE

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SHEET TITLE: HVAC Details and Schedules

PROJECT: GYMNASIUM HVAC RENOVATION  
COLLINWOOD ELEMENTARY SCHOOL  
COLLINWOOD, TN

DW COLLIER, INC.  
ENGINEERING, INC.  
720 BROADWAY STREET  
SOUTH FULTON, TN 38257  
PH: (731) 479-2115  
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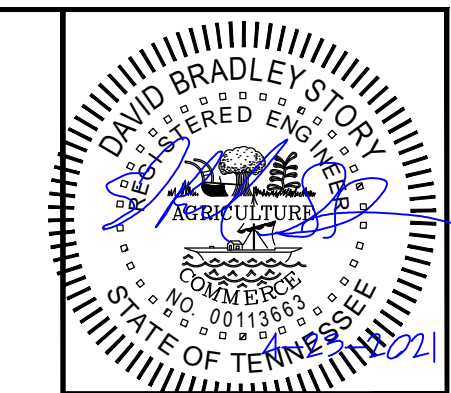


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PROJECT NUMBER:  
21-051

SHEET NUMBER:  
**M2.2**

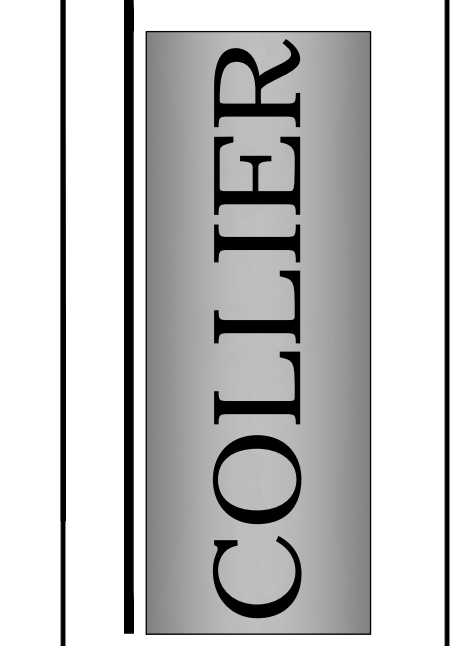


| REVISION | DATE | COMMENT |
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|          |      |         |

**ELECTRICAL PLAN**

**GYMNASIUM HVAC RENOVATION**  
COLLINWOOD ELEMENTARY SCHOOL  
COLLINWOOD, TN

**DW COLLIER, INC.**  
ENGINEERING, INC.  
1720 8th STREET  
SUITE 100  
SOUTH FULTON, TN 38257  
PH: (731) 479-2115  
www.dwcollier.com  
office@dwcollier.com

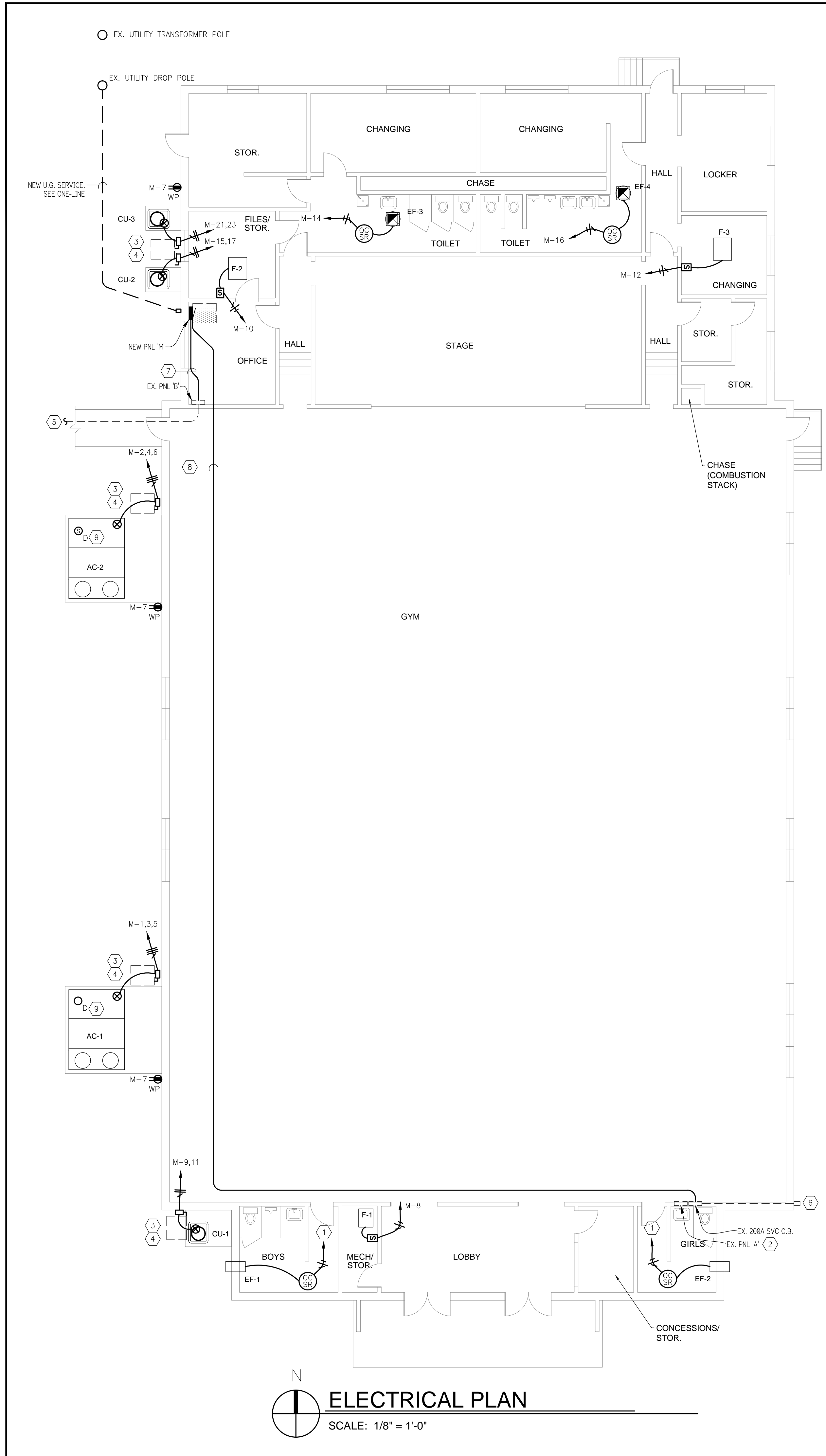


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| ORIGINAL ISSUE DATE | 04/23/21 |
| SCALE               | AS SHOWN |
| CHECKED BY          | TSL      |
| APPROVED BY         | DBS      |
| DRAWN BY            | DBS      |

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**21-051**

SHEET NUMBER:  
**E1.1**



**DEMOLITION NOTE:**

PROVIDE ELECTRICAL SUPPORT FOR REMOVAL OF EXISTING MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN FOR QUANTITIES AND LOCATIONS OF ALL EQUIPMENT TO BE REMOVED. I.O.N., REMOVE ALL WIRING BACK TO BRANCH CIRCUIT SOURCE EQUIPMENT. REMOVE ANY EXPOSED OR ACCESSIBLE CONDUITS. UPDATE PANEL CIRCUIT INDEX DENOTING C.B.'S AS SPARES. REFER TO DEMOLITION SPEC. FOR ADDITIONAL INFORMATION.

**FIRE ALARM SYSTEM**

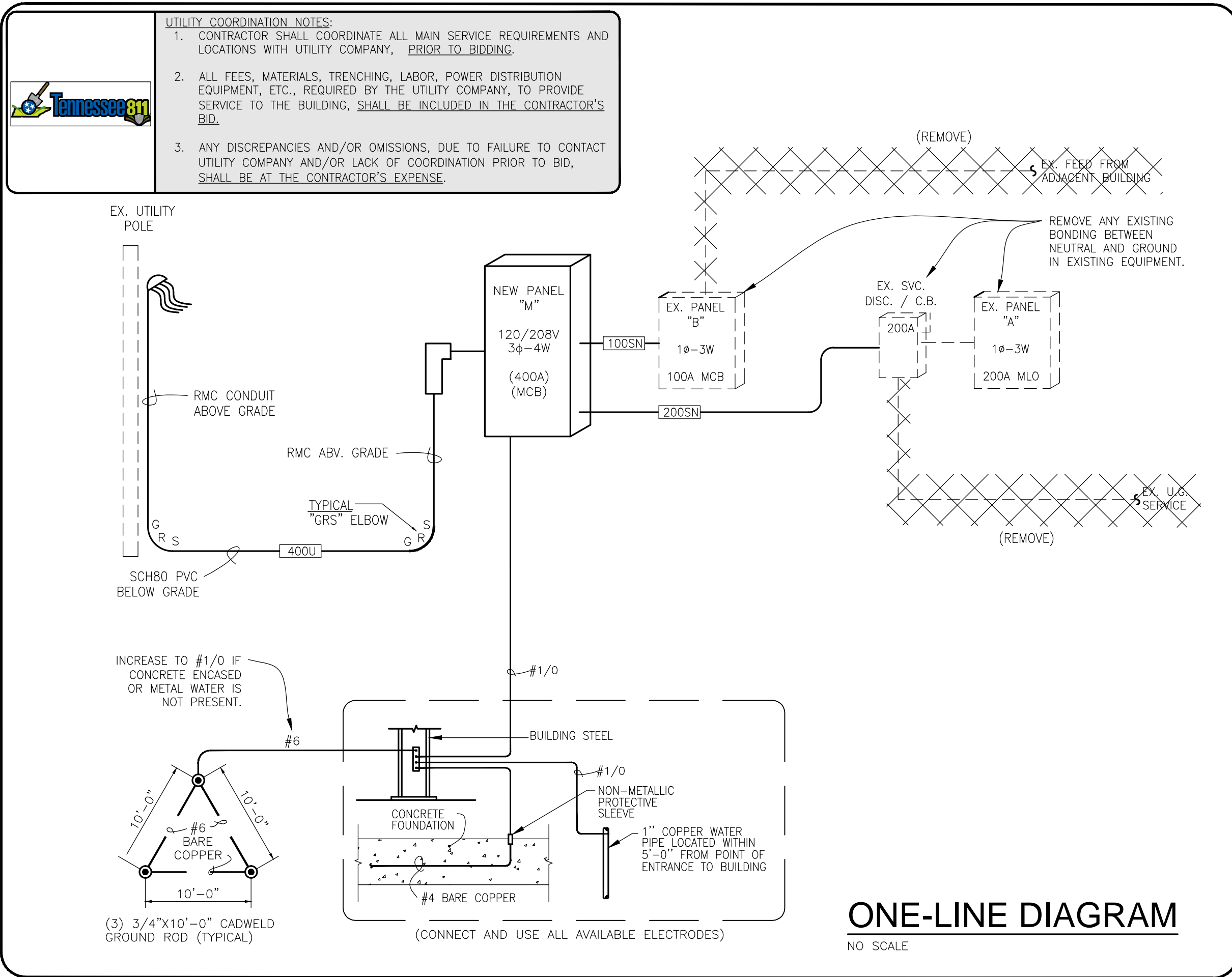
REQUIRED ADDITIONS TO EXISTING FIRE ALARM SYSTEM SHALL BE DONE BY LICENSED FIRE ALARM INSTALLER. THE INSTALLER SHALL BE RESPONSIBLE FOR ANY REQUIRED SUBMITTALS, TESTING, AND RE-CERTIFICATIONS.

- KEYED CONSTRUCTION NOTES:**
- CONNECT TO AN EXISTING 20A, 1P C.B. IN PANEL 'A'.
  - PROVIDE A NEW TYPED CIRCUIT INDEX FOR PANEL INCLUDING UPDATES FROM DEMOLITION & NEW CIRCUITS.
  - MAINTAIN NEC 110.26 WORKING CLEARANCES IN FRONT OF DISCONNECT. COORDINATE WITH EQUIPMENT INSTALLER PRIOR TO LOCATING DISC. TO ENSURE CLEARANCES FROM ANY DUCTWORK, PIPING, UNITS.
  - USE METALLIC CONDUIT FROM DISC. TO WITHIN 2FT OF UNIT CONNECTION THEN TRANSITION TO FLEXIBLE. AT NO POINT SHALL CONDUITS BE IN CONTACT WITH CONCRETE PAD. FURNISH SUPPORTS UNDER CONDUITS TO KEEP ELEVATED FROM PAD.
  - EXISTING FEEDER FROM OTHER BUILDING TO PANEL 'B'. DISCONNECT AND REMOVE FEEDER INCLUDING ALL CONDUIT & WIRE.
  - EXISTING SERVICE ENTRANCE UNDERGROUND. DISCONNECT AND REMOVE EXISTING WIRE.
  - NEW FEEDER TO PANEL 'B'. SEE ONE LINE DIAGRAM.
  - NEW FEEDER TO PANEL 'A'. SEE ONE LINE DIAGRAM.
  - FURNISH A NEW RETURN AIR DUCT SMOKE DETECTOR FOR EACH UNIT. FURNISH CONDUIT, WIRING, & MODULES TO CONNECT TO EXISTING BUILDING FIRE ALARM SYSTEM AND UNIT SHUT DOWN INTERLOCK.

**MECHANICAL EQUIPMENT CONNECTION SCHEDULE**

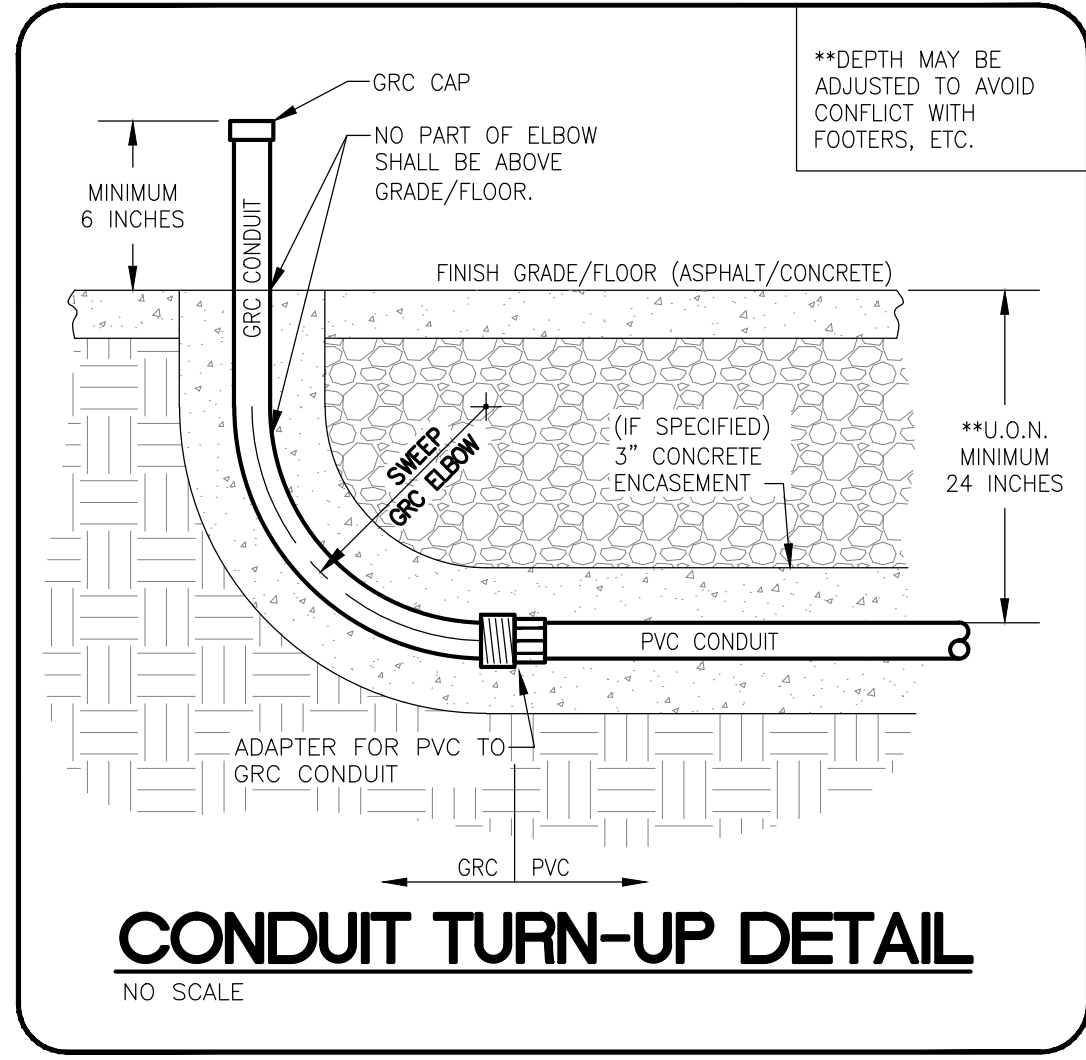
| EQUIPMENT DESIGNATION | VOLTAGE & PHASE | LOCATION | LOAD |    |      | HACR CIRCUIT BREAKER | LOCAL DISCONNECTING MEANS |             |           |            | STARTERS (PER UNIT) |                    |               |                   | CIRCUITRY  |        |                   | METHOD OF CONTROL | REMARKS        |                |
|-----------------------|-----------------|----------|------|----|------|----------------------|---------------------------|-------------|-----------|------------|---------------------|--------------------|---------------|-------------------|------------|--------|-------------------|-------------------|----------------|----------------|
|                       |                 |          | kW   | hp | MCA  |                      | N.F.D.S. SIZE             | F.D.S. SIZE | FUSE SIZE | NEMA ENCL. | MAGNETIC (SIZE)     | COMBINATION (SIZE) | MANUAL (SIZE) | MANUAL W/ NO O.L. | NEMA ENCL. | PANEL  | CONDUIT SIZE MIN. |                   |                | WIRE QTY& SIZE |
| AC-1,2                | 208V/3Ø         | OUTSIDE  | --   | -- | 75   | 3P100                | 3P100                     | --          | --        | 3R         | --                  | --                 | --            | --                | M          | 1-1/2" | 3 #1              | 1 #8              | SEE MECH. SPEC | -----          |
| CU-1                  | 208V/1Ø         | OUTSIDE  | --   | -- | 14   | 2P20                 | 2P30                      | --          | --        | 3R         | --                  | --                 | --            | --                | M          | 1/2"   | 2 #10             | 1 #10             | SEE MECH. SPEC | -----          |
| CU-2,3                | 208V/1Ø         | OUTSIDE  | --   | -- | 12   | 2P20                 | 2P30                      | --          | --        | 3R         | --                  | --                 | --            | --                | M          | 1/2"   | 2 #12             | 1 #12             | SEE MECH. SPEC | -----          |
| F-1                   | 120V/1Ø         | MECH     | --   | -- | 11.8 | 1P15                 | --                        | --          | --        | --         | --                  | 1P20               | --            | 1                 | M          | 1/2"   | 2 #8              | 1 #8              | SEE MECH. SPEC | -----          |
| F-2                   | 120V/1Ø         | FILES    | --   | -- | 11.8 | 1P15                 | --                        | --          | --        | --         | --                  | 1P20               | --            | 1                 | M          | 1/2"   | 2 #12             | 1 #12             | SEE MECH. SPEC | -----          |
| F-3                   | 120V/1Ø         | CHNGING  | --   | -- | 11.8 | 1P15                 | --                        | --          | --        | --         | --                  | 1P20               | --            | 1                 | M          | 1/2"   | 2 #10             | 1 #10             | SEE MECH. SPEC | -----          |
| EF-1,2                | 120V/1Ø         | RR'S     | --   | -- | 1/4  | 1P20                 | --                        | --          | --        | --         | --                  | --                 | --            | A                 | 1/2"       | 2 #12  | 1 #12             | OCC. SENSOR       | -----          |                |
| EF-3,4                | 120V/1Ø         | RR'S     | --   | -- | 1/15 | 1P15                 | --                        | --          | --        | --         | --                  | --                 | --            | M                 | 1/2"       | 2 #12  | 1 #12             | OCC. SENSOR       | -----          |                |

- REFER TO ELECTRICAL DRAWINGS AND BUSSING DIAGRAMS FOR UNIT QUANTITIES. REFER TO MECHANICAL DRAWINGS TO VERIFY QUANTITIES AND EXACT PLACEMENT. PLACEMENT OF ELECTRICAL DEVICES SERVING EQUIPMENT SHALL NOT INTERFERE WITH MANUFACTURER'S SERVICE CLEARANCES. MAINTAIN PROPER N.E.C. WORKING CLEARANCES FOR ELECTRICAL DEVICES INSTALLED ON OR NEAR UNIT.
- SEE TYPICAL CONNECTION DETAIL.
- FURNISH AND INSTALL A NEW WEATHERPROOF, 120V, 20A, G.F.C.I. DUPLEX RECEPTACLE MOUNTED ON SUITABLE SUPPORT NEAR UNIT. CONNECT TO NEAREST 120V GENERAL RECEPTACLE CIRCUIT, UNLESS OTHERWISE NOTED. VERIFY LOADING.
- FURNISH AND INSTALL ALL FIELD AND/OR INTERLOCK WIRING REQUIRED TO COMPLETELY CONNECT SYSTEM FOR FUNCTIONALITY.
- CONTRACTOR SHALL INSTALL ANY ELECTRICAL DEVICES THAT ARE SHIPPED LOOSE WITH EQUIPMENT, UNLESS OTHERWISE NOTED.
- COORDINATE WITH MECHANICAL CONTRACTOR FOR CONTROL WIRING REQUIREMENTS AND/OR CONDUITS THAT NEED TO BE FURNISHED AND INSTALLED BY A LICENSED ELECTRICIAN THAT ARE RELATED TO THIS SYSTEM.
- DUCT SMOKE DETECTORS SHALL BE TIED TO AND SUPERVISED BY THE FIRE ALARM SYSTEM. CONTRACTOR SHALL FURNISH AND INSTALL DUCT SMOKE DETECTORS. SEE DRAWINGS FOR LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
- FOR RESTROOM/TOILET EXHAUST FANS THAT ARE CONNECTED TO SWITCHED LIGHTING CIRCUITS AND CONTROLLED BY OCCUPANCY SENSORS SHALL RUN FOR A MINIMUM OF TEN (10) MINUTES AFTER NO OCCUPANCY IS DETECTED. CONTRACTOR SHALL ADJUST OCCUPANCY SENSOR SETTINGS TO ACCOMPLISH THIS.



**COPPER FEEDER SCHEDULE**

| FEEDER CODE                    | CONDUIT QTY & SIZE | PHASE COND. QTY & SIZE PER RACEWAY | NEUTRAL COND. QTY & SIZE PER RACEWAY | GND COND. QTY & SIZE PER RACEWAY |
|--------------------------------|--------------------|------------------------------------|--------------------------------------|----------------------------------|
| <b>3 PHASE UTILITY</b>         |                    |                                    |                                      |                                  |
| 400U                           | 1 @ 4"             | (3) #600 MCM                       | (1) #600 MCM                         | (NONE)                           |
| <b>SINGLE PHASE W/ NEUTRAL</b> |                    |                                    |                                      |                                  |
| 100SN                          | 1 @ 1-1/2"         | (2) #1 AWG                         | (1) #1 AWG                           | (1) #8 AWG                       |
| 200SN                          | 1 @ 2-1/2"         | (2) #3/0 AWG                       | (1) #3/0 AWG                         | (1) #6 AWG                       |



**EQUIPMENT LABELING REQUIREMENTS**

ALL ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO SWITCHBOARDS, PANELBOARDS, ENCLOSED C.B.'S, FUSED AND NON-FUSED DISC. SW., MOTOR CONTROLS, ETC., SHALL BE LABELED IN ACCORDANCE WITH THE FOLLOWING:

- LABEL SHALL BE AN ENGRAVED BAKELITE TAG - BLACK BACKGROUND WITH WHITE LETTERING.
- LABEL SHALL BE ATTACHED TO EQUIPMENT WITH SILICONE ADHESIVE.
- ALL LABELS SHALL HAVE AN EQUIPMENT NAME AT THE TOP IN SLIGHTLY LARGER LETTERING THAN OTHER TEXT ON THE LABEL. FOR PANELBOARDS OR SWITCHBOARDS, THE NAME SHALL BE THE NAME OF SAID EQUIPMENT. FOR DISCONNECTS, STARTERS, ETC., THE NAME SHALL BE THE EQUIPMENT BEING FED.
- ALL LABELS SHALL INCLUDE THE UPSTREAM EQUIPMENT NAME AND CIRCUIT # THAT IS PROVIDING POWER TO SAID EQUIPMENT. IN THE CASE OF SERVICE EQUIPMENT, JUST REPLACE THIS LINE WITH THE WORDS "SERVICE EQUIPMENT"
- ALL LABELS SHALL INCLUDE THE FOLLOWING INFORMATION: VOLTAGE(S), PHASES, 3 OR 4 WIRE, MAIN OC DEVICE OR MAIN LUG, AMP RATING, AND PHASE AND NEUTRAL WIRE COLORS.

IN ADDITION TO THE ABOVE LABEL, ANY EQUIPMENT THAT CONTAINS OVERCURRENT OR SWITCHING DEVICES SHALL HAVE ADDITIONAL INFORMATION ACCORDANCE WITH THE FOLLOWING:

- ENGRAVED BAKELITE TAG - EITHER A SECOND LABEL OR ADD TO THE FIRST LABEL ABOVE.
- LABEL SHALL INCLUDE, AT MINIMUM, THE FOLLOWING INFORMATION:
  - AVAILABLE FAULT CURRENT
  - DATE THE LABEL WAS CREATED
- THE ENGINEER OF RECORD WILL PROVIDE THE ABOVE INFORMATION TO CONTRACTOR PRIOR TO PROJECT COMPLETION. CONTRACTOR SHALL PROVIDE A MINIMUM OF ONE WEEK'S NOTICE TO ENGINEER FOR TIME TO PERFORM CALCULATIONS.
- TO ASSIST THE ENGINEER IN PROVIDING ACCURATE DATA, AT THE TIME OF REQUEST, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION TO THE ENGINEER: THE LENGTH AND SIZE OF ALL SERVICE AND FEEDER CONDUCTORS AND BRANCH CONDUCTORS TO UTILIZATION EQUIPMENT REQUIRING LABELS, TYPE OF WIRING METHOD USED, CU OR AL CONDUCTORS.

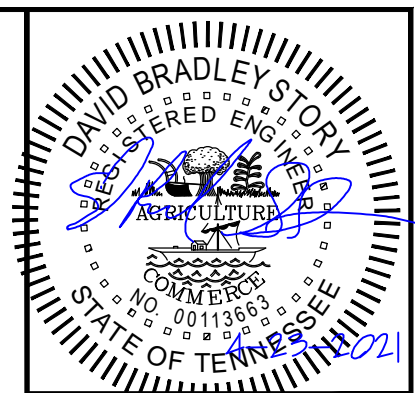
**THREE PHASE PANELBOARD SCHEDULE**

| CIRCUIT DESCRIPTION | CONNECTED KVA |      |      |    |     |          |      |      |       |     | CONNECTED KVA |          |     |     |      |    |     |                     |  |  |
|---------------------|---------------|------|------|----|-----|----------|------|------|-------|-----|---------------|----------|-----|-----|------|----|-----|---------------------|--|--|
|                     | LTG           | REC  | HVAC | EQ | KIT | AMP/POLE | WIRE | CCT  | PHASE | CCT | WIRE          | AMP/POLE | LTG | REC | HVAC | EQ | KIT | CIRCUIT DESCRIPTION |  |  |
| AC-1                |               |      | 8.1  |    |     | 100/3    | 1    | 1 A  | 2     |     |               |          |     |     | 8.1  |    |     | AC-2                |  |  |
| RECEPTS - EXTERIOR  |               | 0.54 |      |    |     | 20/1     | 10   | 7 B  | 8     | 8   | 15/1          |          |     |     | 1.42 |    |     | F-1                 |  |  |
| CU-1                |               |      | 1.31 |    |     | 20/2     | 10   | 9 B  | 10    | 12  | 15/1          |          |     |     | 1.42 |    |     | F-2                 |  |  |
| SPARE               |               |      |      |    |     | 20/1     |      | 11 C | 12    | 10  | 15/1          |          |     |     | 1.42 |    |     | F-3                 |  |  |
| CU-2                |               |      | 1.13 |    |     | 20/2     | 12   | 13 A | 14    | 12  | 15/1          |          |     |     | 0.2  |    |     | EF-3                |  |  |
| SPARE               |               |      |      |    |     | 20/1     |      | 15 B | 16    | 12  | 15/1          |          |     |     | 0.2  |    |     | EF-4                |  |  |
| CU-3                |               |      | 1.13 |    |     | 20/2     | 12   | 17 C | 18    | 1   | 100/2         |          | 0   | 1.5 | 0    | 10 | 0   | EXISTING PANEL 'B'  |  |  |
|                     |               |      |      |    |     |          |      | 19 A | 20    |     |               |          | 0   | 3   | 0    | 6  | 0   |                     |  |  |
|                     |               |      |      |    |     |          |      | 21 B | 22    |     |               |          |     |     |      |    |     | SPARE               |  |  |
|                     |               |      |      |    |     |          |      | 23 C | 24    |     |               |          |     |     |      |    |     | SPARE               |  |  |
|                     |               |      |      |    |     |          |      | 25 A | 26    |     |               |          |     |     |      |    |     | SPARE               |  |  |
|                     |               |      |      |    |     |          |      | 27 B | 28    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 29 C | 30    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 31 A | 32    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 33 B | 34    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 35 C | 36    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 37 A | 38    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 39 B | 40    |     |               |          |     |     |      |    |     |                     |  |  |
|                     |               |      |      |    |     |          |      | 41 C | 42    |     |               |          |     |     |      |    |     |                     |  |  |

\* SHALL BE A GFCI TYPE BREAKER

|     |      |   |     |   |                            |
|-----|------|---|-----|---|----------------------------|
| 5.2 | 4.7  | 0 | 8   | 0 | SUB-FEED BREAKER TO EXIST. |
| 5.7 | 5.34 | 0 | 7.5 | 0 | PANEL 'A' - 200A, 2P       |
|     |      |   |     |   | LARGEST MOTOR KVA          |

| CONNECTED KVA LOAD |       | DEMANDED KVA LOAD |                                | CONNECTED KVA/PHASE |                     |
|--------------------|-------|-------------------|--------------------------------|---------------------|---------------------|
| LIGHTING           | 10.9  | 125%              | 13.63 (PER NEC TABLE 220.12)   | 45.26               | PHASE A             |
| RECEPTACLE         | 15.08 | 50%               | 12.54 (50% DEMAND ABOVE 10KVA) | 39.9304             | PHASE B             |
| HVAC               | 60.4  | 100%              | 60.4                           | 32.69               | PHASE C             |
| EQUIPMENT          | 31.5  | 100%              | 31.5                           |                     |                     |
| KITCHEN            | 0     | 100%              | 0 (PER NEC TABLE 220.56)       |                     |                     |
|                    |       |                   |                                | TOTAL LOADS         |                     |
|                    |       |                   |                                | 117.9               | TOTAL CONNECTED KVA |
|                    |       |                   |                                | 118.1               | TOTAL DEMAND KVA    |
|                    |       |                   |                                | PANEL DESIGN AMPS   | 400                 |
|                    |       |                   |                                | 327.7               | TOTAL DEMAND AMPS   |

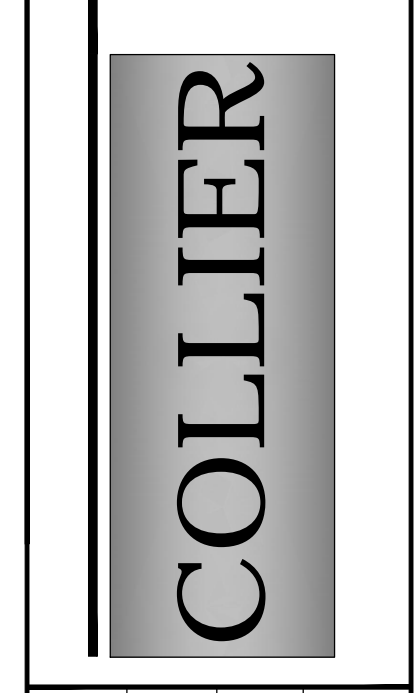


| REVISION | DATE | COMMENT |
|----------|------|---------|
|          |      |         |
|          |      |         |

**ONE-LINE DIAG. & PANEL SCHEDS.**

**PROJECT:** GYMNASIUM HVAC RENOVATION  
COLLINWOOD ELEMENTARY SCHOOL  
COLLINWOOD, TN

**DW COLLIER, INC.**  
ENGINEERING, INC.  
720 8th STREET  
SUITE 100  
SOUTH FULTON, TN 38257  
PH (731) 479-2115  
www.dwcollier.com  
office@dwcollier.com



|                     |          |
|---------------------|----------|
| ORIGINAL ISSUE DATE | 04/23/21 |
| SCALE               |          |
| CHECKED             | TSL      |
| APPROVED            | DBS      |
| DRAWN BY            | DBS      |

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PROJECT NUMBER: 21-051  
SHEET NUMBER: E2.1

