ELECTRICAL SYMBOLS - DIAGRAM

- MOTOR, THREE–PHASE
- JUNCTION BOX
- MOLDED CASE CIRCUIT BREAKER
- COMBINATION STARTER MOLDED CASE CIRCUIT BREAKER
- DISCONNECT SWITCH, FUSED
- DISCONNECT SWITCH, UNFUSED
- VFD — VARIABLE FREQUENCY DRIVE
- TRANSFORMER
- EARTH GROUND

ELECTRONIC SAFETY AND SECURITY SYMBOLS

- DETECTOR, SMOKE, FOR DUCT
- FA — FIRE ALARM LINE = FA
- R F — RELAY; LETTER INDICATES RELAY TYPE F = FIRE ALARM RELAY
- FACP — ALARM, FIRE, PANEL; LETTERS INDICATE AS FOLLOWS: FACC = CENTRAL CONSOLE FACP = CONTROL PANEL MFACP= MASTER CONTROL PANEL FAAP = ANNUNCIATOR PANEL

ELECTRICAL SYMBOLS - POWER PLAN

- MOTOR, THREE–PHASE
- BRANCH CIRCUIT HOMERUN. LINES INDICATE NUMBER OF CIRCUITS, NEUTRAL, AND SWITCH LEG CONDUCTORS. ONE SEPARATE GREEN GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH HOMERUN; NOT SHOWN
- PANELBOARD CABINET, SURFACE MOUNTED
- JUNCTION BOX
- MOTOR CONTROL CENTER
- EARTH GROUND
- TRANSFORMER, PLAN
- CIRCUIT BREAKER IN NEMA 1 ENCLOSURE
- SWITCHBOARD, FREE STANDING
- DISTRIBUTION PANELBOARD, SURFACE MOUNTED
- MOTOR STARTER
- COMBINATION MOTOR STARTER AND DISCONNECT SWITCH
- DISCONNECT SWITCH, FUSED
- DISCONNECT SWITCH, UNFUSED
- VFD — VARIABLE FREQUENCY DRIVE

ELECTRICAL ABBREVIATIONS

1PH	SINGLE–PHASE
1P	SINGLE POLE
2/C	TWO–CONDUCTOR
3/C	THREE–CONDUCTOR
3PH	THREE–PHASE
4/C	FOUR–CONDUCTOR
4W	FOUR–WIRE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AMP	AMPERE
AWG	AMERICAN WIRE GAUGE
BFF	BELOW FINISH FLOOR
C	CONDUIT
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CLG	CEILING
DEMO	DEMOLITION
DS	DISCONNECT SWITCH
EC	EMPTY CONDUIT
EG	EQUIPMENT GROUND
EXIST	EXISTING
FLEX	FLEXIBLE METALLIC CONDUIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FP	FIRE PROTECTION
GRD	EQUIPMENT GROUND CONDUCTOR
HWP	HOT WATER PUMP
J–BOX	JUNCTION BOX
kV	KILOVOLT
kVA	KILOVOLT AMPERE
kVAH	KILOVOLT AMPERE PER HOUR
kVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
kWH	KILOWATT HOUR
kWHM	KILOWATT HOUR METER
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
ML	MAIN LUG
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NS	NO SCALE
NTS	NOT TO SCALE
PB	PANELBOARD, PULL BOX, OR PUSHBUTTON
PH	PHASE
PNL	PANEL
PWR	POWER
SD	SMOKE DETECTOR
SPEC	SPECIFICATION
SURF	SURFACE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SLD	SEE SINGLE LINE DIAGRAM
SFLEX	SEALTIGHT FLEXIBLE METALLIC CONDUIT
TYP	TYPICAL
V	VOLT
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
VOLT	VOLTAGE
W	WATT
WH	WATER HEATER
WP	WEATHERPROOF
XFER	TRANSFER
XFMR	TRANSFORMER

TYPICAL FEEDER DESIGNATION

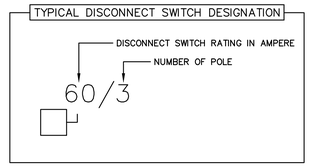
#_ & 1#_GRD – _C

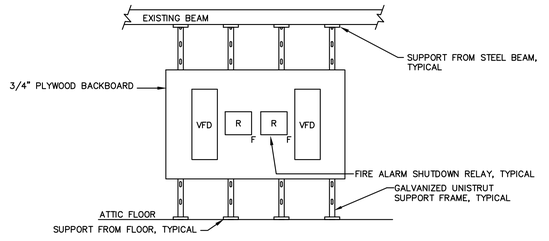
- NUMBER OF CIRCUIT CONDUCTORS
- SIZE OF CIRCUIT CONDUCTORS "AWG UNLESS NOTED KCMIL"
- SIZE OF CONDUIT
- SIZE OF GROUNDING CONDUCTOR

NOTE:

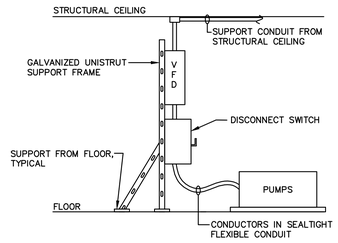
1. CONDUCTOR INSULATION TO BE 600V UNLESS OTHERWISE INDICATED.

TYPICAL DISCONNECT SWITCH DESIGNATION

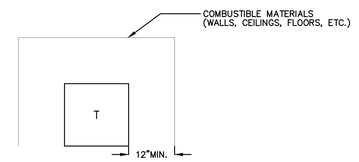




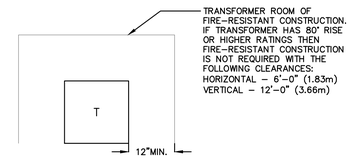
DETAIL
UNI–STRUT MOUNTING IN ATTIC FOR AHU & SF
NOT TO SCALE



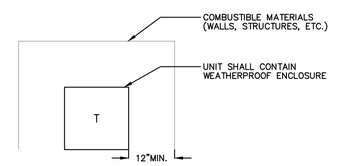
DETAIL
UNI–STRUT MOUNTING IN BASEMENT FOR CHWP & HWP
NOT TO SCALE



INDOOR – 112.5 KVA OR LESS



INDOOR – ABOVE 112.5 KVA



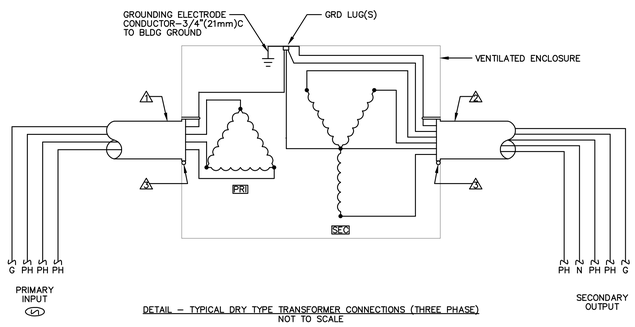
OUTDOOR – 112.5 KVA OR MORE

DETAIL – TYPICAL MINIMUM INSTALLATION CLEARANCE
NOT TO SCALE

DRY–TYPE TRANSFORMER NOTES:

1. DRY–TYPE TRANSFORMERS SHALL CONSIST OF BUT NOT BE LIMITED TO THE FOLLOWING:
   a. VENTILATED ENCLOSURE
   b. PRIMARY SECTION
   c. SECONDARY SECTION
2. INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
3. ALL CONDUCTIVE PARTS OF EQUIPMENT, ENCLOSURES, FRAMES, ETC., SHALL BE GROUNDED.
4. ALL CLEARANCES SHALL BE MAINTAINED PER NESC AND NEC. ALL PARTS, DEVICES, EQUIPMENT, ETC. WHICH REQUIRE MAINTENANCE, ADJUSTMENT, OPERATION OR EXAMINATION DURING NORMAL NETWORK OPERATION SHALL BE ARRANGED SO AS TO BE ACCESSIBLE BY THE PROVISION OF ADEQUATE WORKING SPACES, WORKING FACILITIES AND CLEARANCES. UNLESS NOTED OTHERWISE ALL CLEARANCES ARE MEASURED FROM SURFACE TO SURFACE.
5. ALL DIMENSIONS INDICATED IN THESE DOCUMENTS ARE FOR REFERENCE AND COORDINATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD.
6. TRANSFORMERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND APPLICABLE DETAILS, ACCESSIBLE WITH MECHANICAL PROTECTION, VENTILATED ENCLOSURES AND WITHIN A SPACE TO PROVIDE VENTILATION TO DISPOSE OF THE TRANSFORMER FULL LOAD LOSSES. EACH TRANSFORMER SHALL CONTAIN A NAMEPLATE IN ACCORDANCE WITH NEC SECTION 450–11 AND THE CONTRACTOR SHALL INSURE THAT ALL SPECIAL PRECAUTIONS ARE MET SUCH AS PROPER CLEARANCES FOR VENTILATION, OVERCURRENT PROTECTION, ETC.
7. TRANSFORMERS UTILIZED FOR NON–LINEAR LOADS SHALL BE UL LISTED FOR THAT PURPOSE AND "K" RATED WITH THE FOLLOWING FEATURES:
   ELECTROSTATIC SHIELDING
   DOUBLE SIZE NEUTRAL TERMINALS
   ADDITIONAL COIL CAPACITY
   REDUCED CORE FLUX
   115°C TEMPERATURE RISE

KEYED NOTES
1. PRIMARY CONDUIT SYSTEM
2. SECONDARY CONDUIT SYSTEM
3. GROUNDING BUSHING

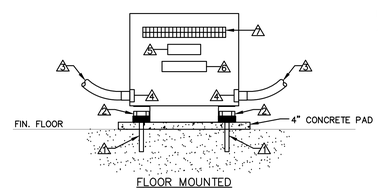


DETAIL – TYPICAL DRY TYPE TRANSFORMER CONNECTIONS (THREE PHASE)
NOT TO SCALE

KEYED NOTES
1. FLOOR ANCHOR SYSTEM
2. VIBRATION ISOLATORS – TYP. FOR FOUR
3. FLEXIBLE CONNECTION
4. GROUND BUSSING TERMINATIONS
5. NAMEPLATE
6. TRANSFORMER IDENTIFICATION PLATE
7. VENTED COVER

INSTALLATION NOTES:

1. SIZE ALL SUPPORTS, ANCHOR SYSTEMS, BOLTS, ETC., AS REQUIRED FOR A SECURE INSTALLATION IN ACCORDANCE WITH THE SPECIFICATIONS.



DETAIL – TYPICAL INDOOR INSTALLATION OF DRY TYPE TRANSFORMERS
NOT TO SCALE

ALABAMA REGISTERED No. 17591 PROFESSIONAL ENGINEER
3/21/12

CONSTRUCTION DOCUMENTS

REV. A – ADDENDUM #1	3/21/12
Revisions	Date

TVHS NASHVILLE CAMPUS

Tennessee Valley Healthcare System

TVHS MURFREESBORO CAMPUS

SAJJADIEH ENGINEERING GROUP, P.C.
1507 ALEX DRIVE, SUITE 101
BIRMINGHAM, ALABAMA 35210
205.833.7033 FAX: 205.314.0180
www.sajjadiehengineering.com
PROJECT: 11–37

Approved: ––
Approved: ––

Drawing Title: GENERAL SYMBOLS AND DETAILS
Approved: Facility Manager
Approved: Director

Project Title: REPLACE ATTIC AHU's- BLDG 6
Building Number: 6
Checked: JJ8
Drawn: AL
Location: VAMC – MURFREESBORO

Date: 03/21/2012
Project No.: 626A4–11–204
DRAWING NO.: 6-E1
FILE NAME: –

Veterans Administration