

**TSEWG TP-12: UFC 3-500-10N APPENDICES****INTRODUCTION.**

UFC 3-500-10N was developed by NAVFAC and was used as the starting point for the tri-services development of UFC 3-500-10, Design: Electrical Engineering. UFC 3-500-10N contained Appendix C, Design Data Tables, and Appendix D, Design Details, which have not been included in UFC 3-500-10. These appendices are provided as an attachment to this Technical Paper.

**APPENDIX C DESIGN DATA TABLES**  
**(Obtained from UFC 3-500-10N)**

**TABLE C1 – TYPICAL LOADING FOR PERSONAL COMPUTER SYSTEMS**

<b>Component</b>	<b>Measured Load</b>
Pentium 550 MHz Computer with Monitor	1.48 amps
Pentium 200 MHz Computer with Monitor	1.45 amps
HP LaserJet 4000 printer	0.25 amps idle, 5 amps printing

**TABLE C2 – LOAD DATA FOR PRELIMINARY DEMAND CALCULATIONS**

<b>Facility Type</b>	<b>VA/m<sup>2</sup></b>	<b>VA/ft<sup>2</sup></b>
BEQ	21-64	2-6
Commissary/Exchange	75- 97	7-9
Café/Mess Hall	75-108	7-10
Administration Building	64-108	6-10
Craft/Hobby/Golf Pro	43-54	4-5
SIMA	64-108	6-10
BOQ	22-64	2-6
Warehouse/Exchange	43	4
Child Care	64	6
Chapel	54-75	5-7
Applied Instruction Building	64-108	6-10

Use the above information to aid in estimating demand for transformer sizing for preliminary calculations. As the design progresses, update demand calculations to reflect actual load of the building.

**Dwelling Unit Demand Data for Electrical Calculations**

**Note:**

These Tables are provided to aid the Designer of Record in estimating the total demand for “**ALL ELECTRIC**” dwelling units (including diversity). Size all distribution systems for dwellings for “**ALL ELECTRIC**”. Use the data below for sizing distribution transformers, service lateral voltage drops and flicker calculations. These tables are not to be used for sizing the service laterals or service entrance conductors.

**TABLE C3 – Dwelling Demand KVA per A/C Size**

# of Units	HVAC Diversity	2 TONS		2.5 TONS		3 TONS		3.5 TONS		4 TONS	
		FE	TOTAL	FE	TOTAL	FE	TOTAL	FE	TOTAL	FE	TOTAL
1	1.0	3.89	6.42	4.09	7.25	4.29	8.08	4.93	9.35	5.67	10.72
2	0.85	6.61	10.91	6.95	12.33	7.29	13.74	8.38	15.9	9.64	18.22
3	0.82	8.64	14.91	9.08	16.95	9.52	18.96	10.94	21.95	12.59	25.16
4	0.80	10.27	18.37	10.8	20.91	11.33	23.45	13.02	27.16	14.97	31.13
5	0.77	11.86	21.61	12.47	24.64	13.08	27.68	15.04	32.05	17.29	36.74
6	0.75	13.3	24.69	13.99	20.21	14.67	31.73	16.86	36.75	19.39	42.12
7	0.73	14.7	27.63	15.46	31.61	16.22	35.58	18.64	41.22	21.43	47.24
8	0.72	16.2	30.76	17.01	35.22	17.85	39.68	20.51	45.97	23.59	52.68

**TABLE C4 –Typical A/C Size for Dwelling Units**

Dwelling Type	A/C (Tons)	Typical m <sup>2</sup>	Typical ft <sup>2</sup>
Mobile Home, Small House	2.0	93	1000
Townhouse, House	2.5	116	1250
Townhouse, Condominium	3.0	140	1500
Condo, House	3.5	163-186	1750-2000
House	4.0	186-279	2000-3000

**TABLE C5 – Demand for Electric Strip Heat**

KW Rating of Strip	KVA Demand
5	5.0
10	8.0
15	10.5
20	14.0

**FE** (Full Electric) is the demand value (with diversity pre-calculated) of the load **without** a summer (air conditioning) or winter (heat strip) HVAC mechanical load included.

**"Total"** is the demand which **includes** a summer air conditioner load (**Total = FE + air conditioning load**). "Total" does not include the demand associated with resistive heat elements (which may drive the need for larger transformers). **HVAC diversity** = the diversity factor to use for winter HVAC unit demand calculations. It is incumbent of the electrical designer to address loads that are larger than those associated with the summer load. **Size the transformer for the summer load unless the winter load calculation is more than 140 percent of the summer calculation.**

**Example:** A new underground distribution system is being designed for a housing development of duplexes. Each dwelling unit is 140 m<sup>2</sup> (1500 ft<sup>2</sup>) with a 3-ton heat pump and 5 kW of strip heat. "Total" load for 8 dwellings (max 4 duplexes per transformer – See paragraph "Housing Distribution") and 3 ton units = 39.68 kVA (Table C3). A check of the winter load = FE (Table C3) + # of strip units x heat strip demand (Table C5) x HVAC diversity (Table C3). Winter load = 17.85 + 8 x 5 kW x 0.72 or 46.65 kVA. Summer to Winter load ratio = 46.65/39.68 or 1.18. Size the transformer for the summer load (39.68 kVA). Thus, each 50 kVA pad-mounted transformer must feed 4 duplexes.

**TABLE C6 – Grounding Electrode Table**

<b>SOIL TYPE</b>	<b>NO. OF ELECTRODES BEFORE MEASURING</b>	<b>NO. OF 3.05 m (10 ft) RODS PER STACKED ELECTRODE</b>	<b>MAXIMUM NO. OF ELECTRODES TO INSTALL</b>
In or near swamps, marshes, loamy wet soils	1	2	6
Level, high, sandy, dry, coarse soils	2	3	9
Level or sloping areas loamy with clay soils	2	3	9
Inland sand hills	3	4	12
Clay soils	2	3	9
Rocky areas	2	2	8

Note 1:

Drive the specified number of stacked rods. When soil conditions prohibit, drive the number of stacked rods possible.

Note 2:

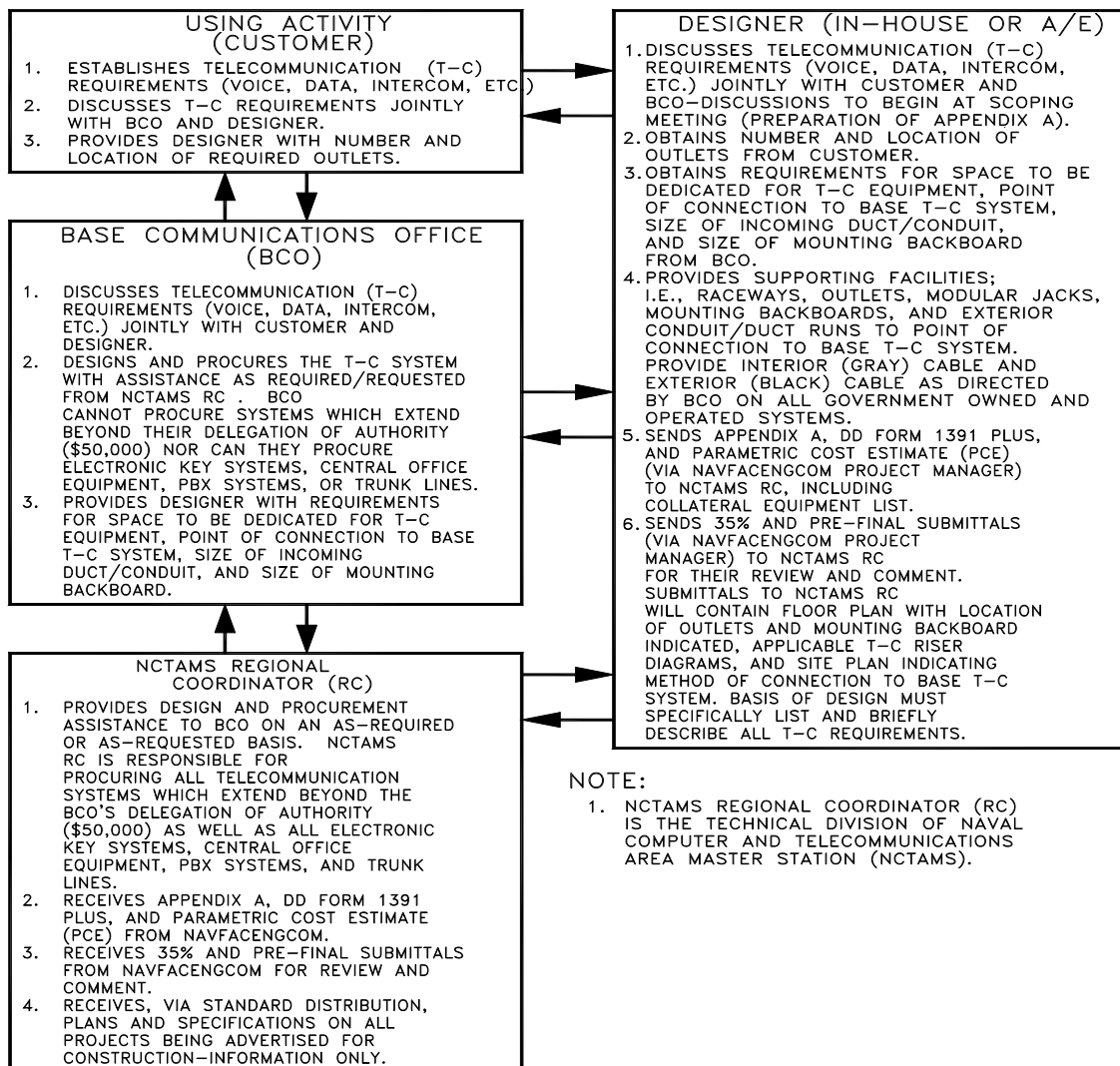
In areas of rock at or near the surface, it may be impossible to drive even one rod at the locations specified. In these cases extend the trench until a place is found where ground rods can be driven or 15 m (50 ft) whichever comes first. Terminate the wire in a ground rod of at least 2.4 m (8 ft) in length. Ensure poles in or near moist areas are well grounded.

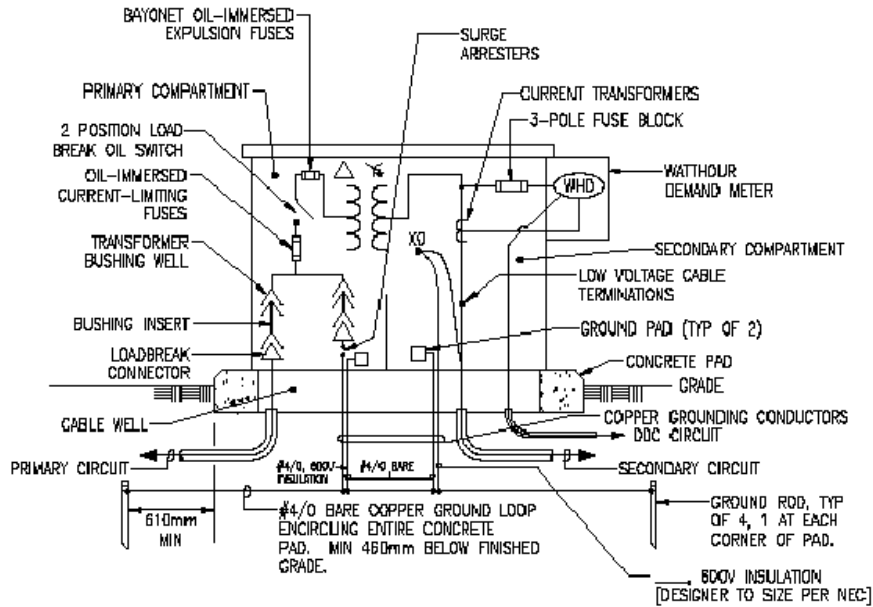
**APPENDIX D DESIGN DETAILS**  
**(Obtained from UFC 3-500-10N)**

Other details are available in at <http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf> and at [http://www.wbdg.org/ccb/browse\\_cat.php?o=78&c=232](http://www.wbdg.org/ccb/browse_cat.php?o=78&c=232).

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TELECOMMUNICATIONS COORDINATION AND RESPONSIBILITY CHART

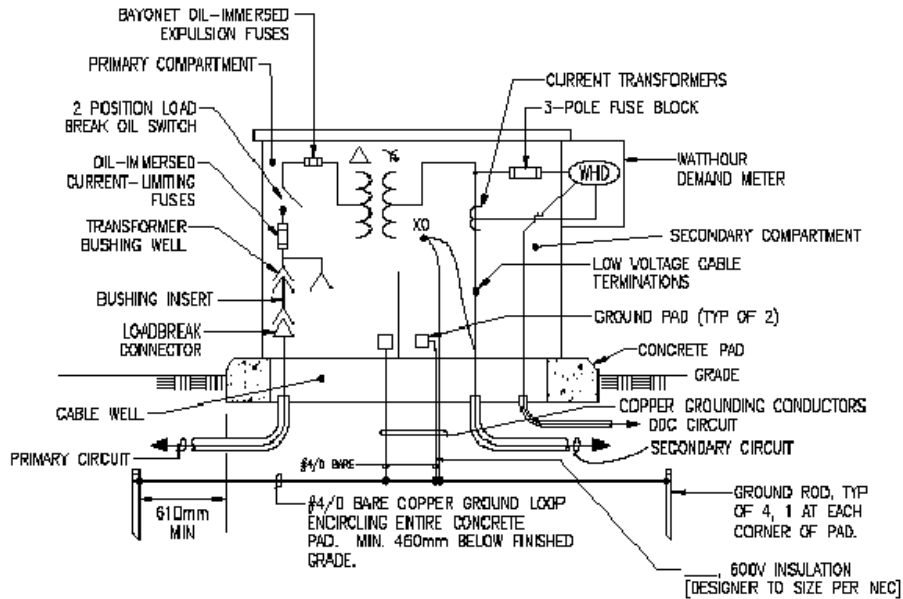




**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ UNGROUNDED OR SINGLE GROUNDED PRIMARY SYSTEM - WITH SURGE ARRESTERS ]

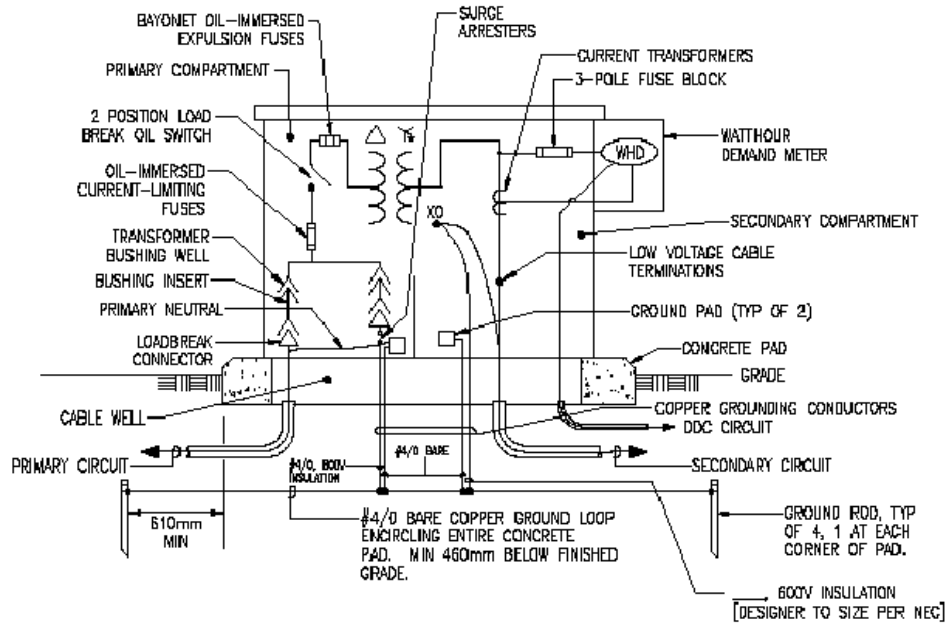


**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ UNGROUNDED OR SINGLE GROUNDED PRIMARY SYSTEM - WITHOUT SURGE ARRESTERS ]

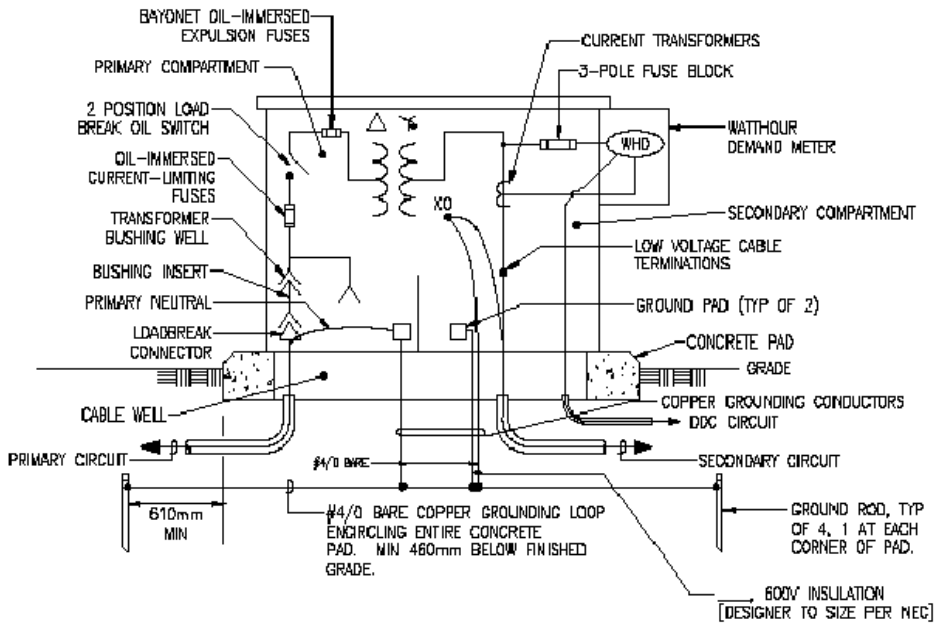
ATTACHMENT 2



**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ MULTI-GROUNDED PRIMARY SYSTEM (DELTA-WYE) - WITH SURGE ARRESTERS ]



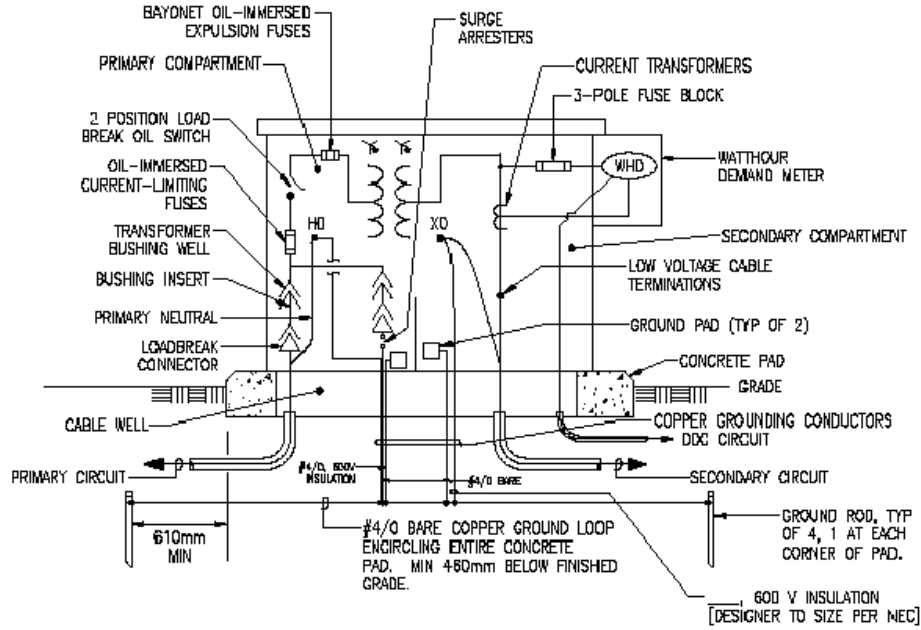
**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ MULTI-GROUNDED PRIMARY SYSTEM (DELTA-WYE) - WITHOUT SURGE ARRESTERS ]

ATTACHMENT 3

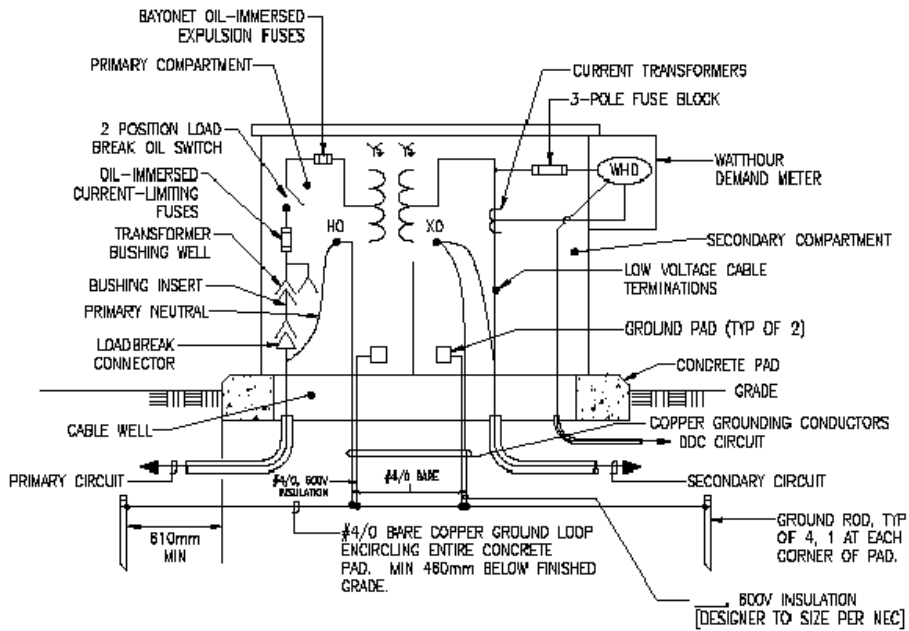




**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ MULTI-GROUNDED PRIMARY SYSTEM (WYE-WYE) - WITH SURGE ARRESTERS ]



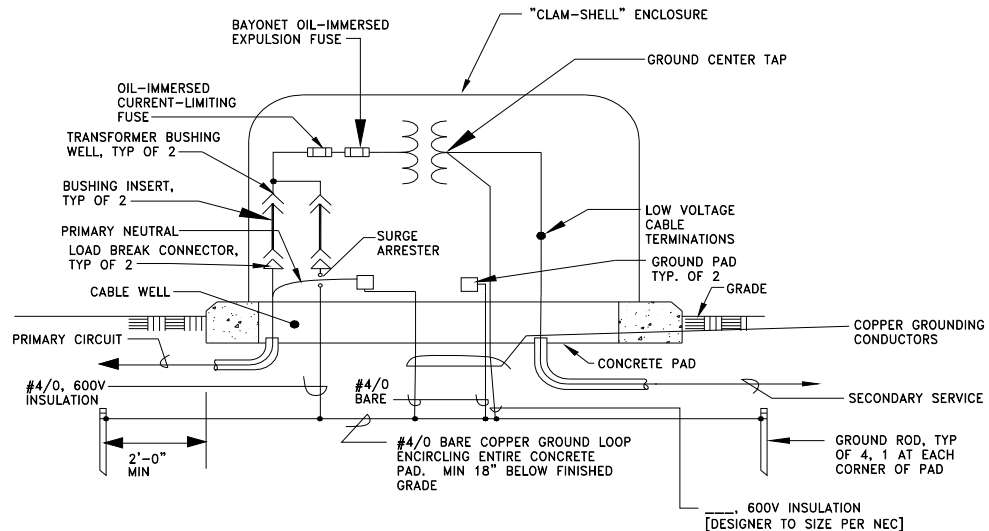
**PAD-MOUNTED TRANSFORMER DETAIL**

NOT TO SCALE

[ MULTI-GROUNDED PRIMARY SYSTEM (WYE-WYE) - WITHOUT SURGE ARRESTERS ]

ATTACHMENT 4

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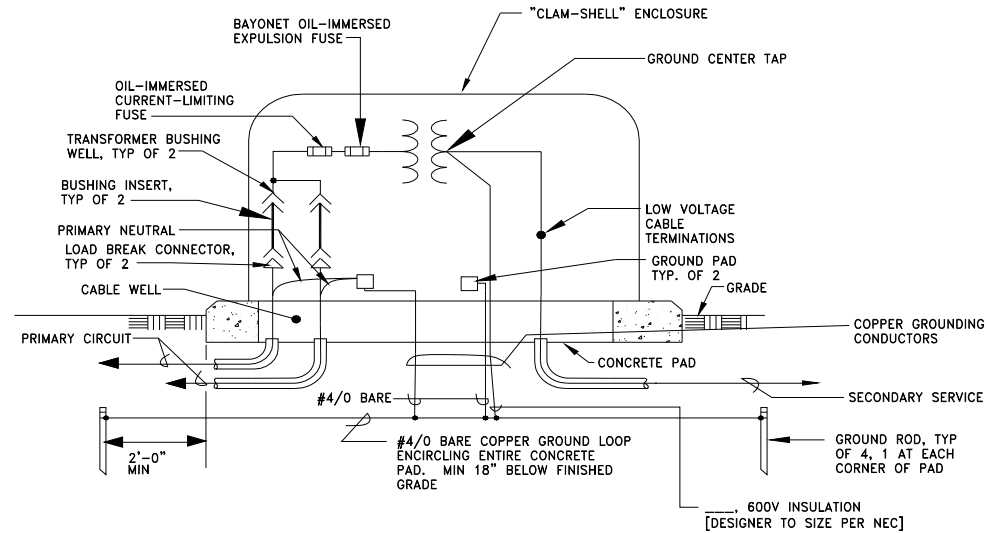


SINGLE PHASE PAD-MOUNTED TRANSFORMER DETAIL

NOT TO SCALE

[ PHASE-NEUTRAL CONNECTION SHOWN ]

[ DEAD FRONT LOOP FEED CONFIGURATION (ONE CIRCUIT W/ARRESTER). ]



SINGLE PHASE PAD-MOUNTED TRANSFORMER DETAIL

NOT TO SCALE















[ PHASE-NEUTRAL CONNECTION SHOWN ]

[ DEAD FRONT LOOP FEED CONFIGURATION (FEED-THRU CIRCUIT). ]





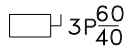



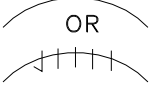
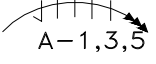




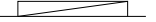


ATTACHMENT 5

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ELEC. GUIDE LEGEND – (INTERIOR)





























<u>SYMBOL</u>	<u>DESCRIPTION</u>
	FLUORESCENT LIGHTING FIXTURE.
	FLUORESCENT EMERGENCY AND/OR NIGHT LIGHTING FIXTURE.
	INCANDESCENT OR HIGH INTENSITY DISCHARGE LIGHTING FIXTURE.
	EXIT LIGHTING FIXTURE. ARROW, WHEN USED, INDICATES DIRECTION.
	LIGHTING FIXTURE TYPE. SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-__
	EMERGENCY BATTERY POWERED LIGHTING UNIT.
	DUPLEX CONVENIENCE RECEPTACLE. 15 A., 125 VAC. MOUNT__ AFF UON
	DOUBLE DUPLEX CONVENIENCE RECEPTACLE. 15 A., 125 VAC. MOUNT __ AFF UON.
	DUPLEX CONVENIENCE RECEPTACLE WITH INTERNAL GROUND FAULT PROTECTION. __ A., 125 VAC. MOUNT__ AFF UON
	SINGLE RECEPTACLE. __ A., __ VAC. MOUNT __ AFF UON
	FLUSH FLOOR DUPLEX RECEPTACLE. 15 A., 125 VAC.
	FLUSH FLOOR SINGLE RECEPTACLE. __ A., 125 VAC.
	CLOCK OUTLET, 15A., 125 VAC MOUNT__ AFF
	SPECIAL PURPOSE RECEPTACLE. ____ A., __ POLE, __ WIRE, __ VAC. MOUNT __ AFF UON NOTE TO DESIGNER: USE SAME SYMBOL & FORMAT AS ABOVE FOR ADDITIONAL SPECIAL PURPOSE OUTLETS/RECEPTACLES. DIFFERENTIATE BETWEEN TYPE BY USING SUBSCRIPT.
S	SINGLE POLE SWITCH. 20A., 120/277V.
S <sub>A</sub>	SINGLE POLE SWITCH. 20A., 120/277V. LOWER CASE SUBSCRIPT, WHEN USED, INDICATES FIXTURES CONTROLLED.
S <sub>2</sub>	DOUBLE POLE SWITCH. 20A., 120/277V.
S <sub>3</sub>	THREE-WAY SWITCH. 20A., 120/277V.
S <sub>4</sub>	FOUR-WAY SWITCH. 20A., 120/277V.
S <sub>D</sub>	DIMMER SWITCH. _____ WATTS UON
S <sub>A</sub>	KEY OPERATED SWITCH.
S <sub>M</sub>	[MOTOR RATED SWITCH][MANUAL MOTOR STARTER SWITCH] WITH OVERLOADS.
S <sub>P</sub>	SWITCH WITH PILOT LIGHT.

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SYMBOL	DESCRIPTION
	EQUIPMENT CONNECTION AS NOTED.
	JUNCTION BOX.
	MOTOR CONNECTION, HP INDICATED.
	MAGNETIC MOTOR CONTROLLER.
	DISCONNECT SWITCH. ___V IN NEMA ___ ENCLOSURE UON 3P = NO. OF POLES, 60 = SWITCH RATING, 40 = FUSE RATING (NF INDICATES NON-FUSIBLE).
	ELECTRICAL PANELBOARD (208Y/120 VOLT).
	ELECTRICAL PANELBOARD (480Y/277 VOLT).
	WIREWAY.
	BRANCH CIRCUIT OR FEEDER WIRING IN CONDUIT. NO TICK MARKS INDICATE 2 #12 CONDUCTORS & 1 #12 GND. IN 1/2" CONDUIT UON. TICK MARKS, WHEN SHOWN, INDICATE NUMBER OF #12 CONDUCTORS IF OTHER THAN THREE; (✓) INDICATES GROUND. CONDUIT LARGER THAN 1/2" & WIRE LARGER THAN #12 SHALL BE AS INDICATED.
	HOMERUNS TO PANEL. PANEL & CIRCUIT DESIGNATIONS AS INDICATED.
	INDICATES A CONDUIT RUN CONCEALED IN CEILING, WALL, FLOOR, OR ABOVE SUSPENDED CEILING UON. NOTE TO DESIGNER: INDICATE BY NOTE ON DRAWINGS WHERE EXPOSED CONDUITS ARE TO BE USED.
	CONDUIT TURNED UP.
	CONDUIT TURNED DOWN.
	CONDUIT SEAL.
	TELEPHONE TERMINAL BACKBOARD.
	TELEPHONE OUTLET, MOUNT ___ AFF
	PAY TELEPHONE OUTLET. MOUNT ___ AFF

ATTACHMENT 7

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<u>SYMBOL</u>	<u>DESCRIPTION</u>
	TELEVISION SYSTEM OUTLET, MOUNT ___ AFF
	SPEAKER.
	INTERCOM OUTLET, MOUNT ___ AFF
	LINE VOLTAGE THERMOSTAT, MOUNT ___ AFF
	CONTROL STATION.
	PUSH BUTTON.
	DRY TYPE TRANSFORMER.
	TIME SWITCH
	PHOTO-ELECTRIC CONTROL.
	FIRE ALARM CONTROL PANEL (FACP).
	FIRE ALARM MANUAL STATION, MOUNT ___ AFF
	FIRE ALARM STROBE/CHIME, MOUNT ___ AFF
	FIRE ALARM MINI-HORNS, MOUNT ___ AFF
	FIRE ALARM STROBE/HORN, MOUNT ___ AFF
	FIRE ALARM ___-INCH BELL, MOUNT ___ AFF
	FIRE ALARM SYSTEM CODED TRANSMITTER.
	MASTER FIRE ALARM BOX WITH LOCATION LIGHT.
	FIRE ALARM SYSTEM VISUAL STROBE, MOUNT ___ AFF
	FIRE ALARM SYSTEM SMOKE DETECTOR. MOUNT ON CEILING UON SUBSCRIPT "F", WHEN USED, INDICATES DETECTOR UNDER RAISED FLOOR.
	DUCT SMOKE DETECTOR.
	120-VAC SINGLE-STATION SMOKE DETECTOR, HARD WIRED INTO THE ELECTRICAL SOURCE AS INDICATED.
	SPRINKLER SYSTEM TAMPER SWITCH.
	FIRE ALARM SYSTEM HEAT DETECTOR.
	SPRINKLER SYSTEM FLOW SWITCH.
	SPRINKLER SYSTEM PRESSURE SWITCH.
	KITCHEN HOOD FIRE EXTINGUISHING SYSTEM SWITCH.
	REMOTE FIRE ALARM SYSTEM TROUBLE BELL (OR BUZZER).
	MAGNETIC DOOR HOLDER.

ATTACHMENT 8

IDS SYMBOLS:

<u>SYMBOL</u>	<u>DESCRIPTION</u>
<b>AS</b>	ACCESS SWITCH
<b>BS</b>	BALANCED MAGNETIC SWITCH
<b>CR</b>	CARD READER WITHOUT KEY PAD
<b>CK</b>	CARD READER WITH KEY PAD
<b>CP</b>	CENTRAL PROCESSING UNIT
<b>CU</b>	CONTROL UNIT
<b>DA</b>	DURESS ALARM
<b>DR</b>	DOOR STRIKE
<b>K</b>	KEY PAD
<b>MU</b>	MONITORING UNIT
<b>PI</b>	PASSIVE INFARED SENSOR
<b>R</b>	REQUEST TO EXIT SWITCH

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ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ARF	ABOVE RAISED FLOOR
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
EC	EMPTY CONDUIT
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
EXP	INDICATES EXPLOSION PROOF EQUIPMENT
GFCI	GOVERNMENT FURNISHED CONTRACTOR INSTALLED
GFGI	GOVERNMENT FURNISHED GOVERNMENT INSTALLED
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
MLO	MAIN LUGS ONLY
MT	MOUNT
MTG HT	MOUNTING HEIGHT
MCB	MAIN CIRCUIT BREAKER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE

ATTACHMENT 10

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ABBREVIATIONS

PNL	PANEL
PNLBD	PANELBOARD
RECEPT	RECEPTACLE
REQ'D	REQUIRED
XFMR	TRANSFORMER
UON	UNLESS OTHERWISE NOTED
WP	INDICATES WEATHERPROOF EQUIPMENT



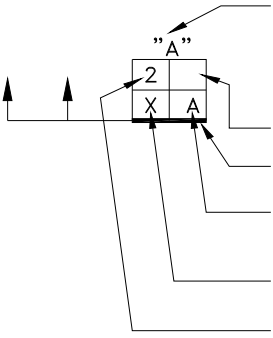
- NOTES:
1. WHERE BLANK SPACES OCCUR, INSERT APPROPRIATE DATA.
  2. WHERE DATA IS ENCLOSED IN BRACKETS [ ], A CHOICE MUST BE MADE. DELETE INAPPLICABLE DATA.
  3. THIS LEGEND PROVIDES BASIC SYMBOLS. MODIFY LEGEND AS REQUIRED TO PROPERLY DIFFERENTIATE BETWEEN "NEW", "EXISTING TO REMAIN" & "EXISTING REMOVE".

ATTACHMENT 11



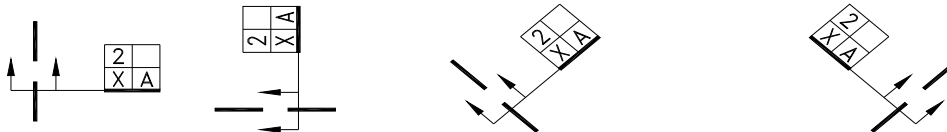
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## ELEC. GUIDE LEGEND--(EXTERIOR UNDERGROUND)

<u>SYMBOL</u>	<u>DESCRIPTION</u>
	UNDERGROUND DUCTBANK, CONCRETE ENCASED UON. DESCRIPTION AS INDICATED.
	EXISTING UNDERGROUND DUCTBANK, CONCRETE ENCASED UON. DESCRIPTION AS INDICATED.
	<p>SYMBOL REFERS TO SPECIFIC DUCTBANK SECTION DETAIL. (SEE NOTE 1)</p> <p>DUCTBANK SECTION LOOKING IN DIRECTION OF ARROWS. (SEE NOTE 2)</p> <p>SPARE DUCT (TYPICAL)</p> <p>HEAVY LINE INDICATES BOTTOM OF DUCT</p> <p>EXIST. CABLE DESIGNATION (TYPICAL) DESCRIPTION PER CABLE SCHEDULE. (SEE NOTE 3)</p> <p>OCCUPIED DUCT, UNIDENTIFIED CABLE.</p> <p>NEW CABLE DESIGNATION (TYPICAL) DESCRIPTION PER CABLE SCHEDULE. (SEE NOTE 3)</p>

DUCTBANK NOTES TO DESIGNER:

- 1- USE THIS SYMBOL ONLY WHEN SPECIFIC DUCTBANK SECTIONS ARE REQUIRED TO INDICATE SPECIAL CONDITIONS, SUCH AS STEEL REINFORCING, WHICH WOULD INVALIDATE THE DUCT SPACING AND CONCRETE ENCASEMENT INFORMATION GIVEN IN THE GUIDE SPECIFICATIONS. INCLUDE THE REQUIRED DUCTBANK SECTIONS ON THE DRAWINGS AND MODIFY THE SPECIFICATIONS.
- 2- DISPLAY DUCTBANK SECTIONS IN ANY OF THE FOLLOWING ACCEPTABLE WAYS:

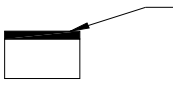
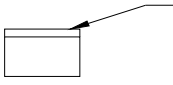




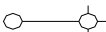



- 3- PROVIDE A CABLE SCHEDULE CONTAINING CABLE DESIGNATION SYMBOLS, CABLE DESCRIPTIONS, CONDUIT SIZES, ROUTING AND OTHER INFORMATION THAT MAY BE NECESSARY. THIS INFORMATION SHOULD NOT BE REPEATED ELSEWHERE ON THE DRAWINGS. IDENTIFY CABLE SHOWN ON SITE PLANS, FLOOR PLANS, RISER DIAGRAMS, ETC. BY ITS CABLE DESIGNATION SYMBOL ONLY.

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<u>SYMBOL</u>	<u>DESCRIPTION</u>
—— UP ——	UNDERGROUND CONDUIT, CONCRETE ENCASED UON. DESIGNER TO DESCRIBE CABLE AND CONDUIT. EXAMPLE: 3-1/C 500 KCMIL (15KV) & 1 500 KCMIL NEUTRAL (600V) IN 5" C.
— — US — —	EXISTING UNDERGROUND CONDUIT, CONCRETE ENCASED UON DESIGNER TO DESCRIBE CABLE AND CONDUIT. EXAMPLE: 4 #2 (600V) IN 3" C.
✕ ✕USL✕ ✕	REMOVE EXISTING CIRCUIT. ABANDON CONDUIT IN PLACE UON. DESIGNER TO DESCRIBE CABLE. EXAMPLE: 3-1/C, 120 VOLT STREET LIGHT CABLE.
	<p>TYPICAL DESIGNATIONS TO BE USED IN CONJUNCTION WITH CONDUIT SYMBOLS</p> <div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 10px;">{</div> <ul style="list-style-type: none"> <li>UP- UNDERGROUND PRIMARY</li> <li>US- UNDERGROUND SECONDARY</li> <li>UT- UNDERGROUND TELEPHONE</li> <li>UFA- UNDERGROUND FIRE ALARM</li> <li>USL- UNDERGROUND STREET LIGHTING</li> <li>UTV- UNDERGROUND TELEVISION CABLE</li> </ul> </div>
—— G ——	GROUNDING CONDUCTOR. DESIGNER TO DESCRIBE.
<input checked="" type="checkbox"/>	MANHOLE OR HANDHOLE, AS NOTED.
<input type="checkbox"/>	EXISTING MANHOLE OR HANDHOLE AS NOTED.
<input type="checkbox"/> <input type="checkbox"/>	EXISTING COMBINATION POWER/COMMUNICATION MANHOLE.
	<p>NOTE TO DESIGNER: REQUEST MANHOLE &amp; HANDHOLE DESIGNATION NUMBERS FROM THE ACTIVITY. <u>DO NOT</u> USE ARBITRARILY ASSIGNED NUMBERS UNLESS STATION PROVIDED NUMBERS ARE NOT AVAILABLE. IF NUMBERS ARE NOT AVAILABLE, PRE-FINAL SUBMITTAL MUST STATE THIS FACT AND INDICATE INDIVIDUAL (NAME AND TELEPHONE NUMBER) AT THE ACTIVITY WHO WAS CONTACTED.</p>

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<u>SYMBOL</u>	<u>DESCRIPTION</u>
	<p>INDICATES FRONT.</p> <p>PAD MOUNTED TRANSFORMER. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 75KVA, 3 PHASE, 12KV-208Y/120 VOLTS.</p>
	<p>INDICATES FRONT.</p> <p>EXISTING PAD MOUNTED TRANSFORMER. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 25KVA, 1 PHASE, 2.4KV-120/240 VOLTS.</p> <p>NOTE TO DESIGNER: FOR UNIT SUBSTATIONS AND OTHER MAJOR PIECES OF ELECTRICAL EQUIPMENT SHOW APPROXIMATE EQUIPMENT OUTLINE ON PLANS, PROPERLY IDENTIFY, INDICATE FRONT OF EQUIPMENT.</p>
	<p>PAD MOUNTED SWITCH. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 15KV, 3 WAY, 600 AMP NON-FUSED, OIL.</p>
	<p>EXISTING PAD MOUNTED SWITCH. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 5KV, 4 WAY, 200 AMP FUSED, AIR.</p>
	<p>AREA/STREET LIGHTING POLE WITH LUMINAIRE. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 400 WATT, 120 V. WITH 6' MOUNTING ARM.</p>
	<p>EXISTING AREA/STREET LIGHTING POLE WITH LUMINAIRE. <u>DESIGNER TO PROVIDE DESCRIPTION.</u> EXAMPLE: 400 WATT, 120 V. WITH 6' MOUNTING ARM.</p>
	<p>EXISTING AREA/STREET LIGHTING POLE WITH EXISTING LUMINAIRE. <u>DESIGNER TO PROVIDE DESCRIPTION.</u></p>
	<p>LIGHTING FIXTURE TYPE. SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-__</p>

ABBREVIATIONS

C	CONDUIT
HH	HANDHOLE
MH	MANHOLE
UG	UNDERGROUND
XFMR	TRANSFORMER
UON	UNLESS OTHERWISE NOTED

ATTACHMENT 14

ELEC. GUIDE LEGEND-(EXTERIOR-OVERHEAD)

<u>SYMBOL</u>	<u>DESCRIPTION</u>
●	POWER POLE (HEIGHT AND CLASS AS INDICATED).
● <sup>R</sup>	REMOVE EXISTING AND PROVIDE NEW POWER POLE (HEIGHT AND CLASS AS INDICATED).
○	EXISTING POWER POLE (HEIGHT AND CLASS AS INDICATED).
⊗	REMOVE EXISTING POWER POLE (HEIGHT AND CLASS AS INDICATED).
NOTE TO DESIGNER: REQUEST POLE NUMBERS FROM THE ACTIVITY. DO NOT USE ARBITRARILY ASSIGNED NUMBERS UNLESS STATION PROVIDED NUMBERS ARE NOT AVAILABLE. IF NUMBERS ARE NOT AVAILABLE, PRE-FINAL SUBMITTAL MUST STATE THIS FACT AND INDICATE INDIVIDUAL (NAME AND TELEPHONE NUMBER) AT THE ACTIVITY WHO WAS CONTACTED.	
2	DOWN GUY AND ANCHOR – QUANTITY AS INDICATED IF OTHER THAN ONE.
⊗	EXISTING DOWN GUY AND ANCHOR – PROVIDE ADDITIONAL DOWN GUY TO EXISTING ANCHOR.
2	EXISTING DOWN GUY AND ANCHOR – QUANTITY AS INDICATED IF OTHER THAN ONE.
2 ⊗	REMOVE EXISTING DOWN GUY AND ANCHOR – QUANTITY AS INDICATED IF OTHER THAN ONE.
2 ←	SPAN GUY – QUANTITY AS INDICATED IF OTHER THAN ONE.
2 ⊗ ←	EXISTING SPAN GUY – QUANTITY AS INDICATED IF OTHER THAN ONE.
2 ⊗ ←	REMOVE EXISTING SPAN GUY – QUANTITY AS INDICATED IF OTHER THAN ONE.
▲ <sub>25</sub>	POLE MOUNTED TRANSFORMER – SINGLE PHASE WITH KVA AS INDICATED.
△ <sub>25</sub>	EXISTING POLE MOUNTED TRANSFORMER – SINGLE PHASE WITH KVA AS INDICATED.
⊗ <sub>25</sub>	REMOVE POLE MOUNTED SINGLE PHASE TRANSFORMER – KVA AS INDICATED.

4/98

<u>SYMBOL</u>	<u>DESCRIPTION</u>
—13.2—	<u>13.2</u> KV, <u>3</u> PHASE, <u>3</u> WIRE CIRCUIT # <u>1/0</u> B. ALUM. UNLESS OTHERWISE NOTED.
	NOTE TO DESIGNER: MODIFY UNDERLINED DATA TO MATCH CIRCUIT VOLTAGE, SYSTEM AND CONDUCTOR CHARACTERISTICS. PROVIDE TICKMARKS, IF DESIRED, TO FURTHER INDICATE NUMBER OF CONDUCTORS. TYPICAL COMMENT FOR ALL CIRCUIT SYMBOLS.
- -13.2- -	EXISTING <u>13.2</u> KV, <u>3</u> PHASE, <u>3</u> WIRE CIRCUIT - # <u>4</u> W.P. CU.
* *13.2* *	REMOVE <u>13.2</u> KV, <u>3</u> PHASE, <u>3</u> WIRE CIRCUIT - <u>477</u> B. ALUM.
— N —	ONE WIRE COMMON NEUTRAL - # <u>4</u> B. CU.
- - N - -	EXISTING ONE WIRE COMMON NEUTRAL - # <u>4/0</u> B. ALUM.
* * N * *	REMOVE ONE WIRE COMMON NEUTRAL - # <u>4</u> W.P. CU.
- - G - -	EXISTING ONE WIRE GROUND (STATIC) - <u>3/8"</u> STEEL.
* * G * *	REMOVE ONE WIRE GROUND (STATIC) - <u>5/16"</u> STEEL.
— SL —	<u>2</u> WIRE SERIES TYPE STREET LIGHTING CIRCUIT - # <u>6</u> W.P. CU.
- - SL - -	EXISTING <u>1</u> WIRE SERIES TYPE STREET LIGHTING CIRCUIT - # <u>4</u> B. CU.
* * SL * *	REMOVE <u>2</u> WIRE SERIES TYPE STREET LIGHTING CIRCUIT - # <u>6</u> B. CU.
— FA —	<u>2</u> WIRE FIRE ALARM CIRCUIT - # <u>8</u> W.P. CU.
- - FA - -	EXISTING <u>2</u> WIRE FIRE ALARM CIRCUIT - # <u>8</u> W.P. CU.
* * FA * *	REMOVE <u>2</u> WIRE FIRE ALARM CIRCUIT - # <u>8</u> W.P. CU.
— S —	OPEN <u>3</u> WIRE <u>120/240</u> VOLT SECONDARY CIRCUIT.
- - S - -	EXISTING OPEN <u>3</u> WIRE <u>480Y/277</u> VOLT SECONDARY CIRCUIT.
* * S * *	REMOVE EXISTING OPEN <u>3</u> WIRE <u>240/480</u> VOLT SECONDARY CIRCUIT.




ATTACHMENT 16

4/98

<u>SYMBOL</u>	<u>DESCRIPTION</u>
— SD —	<u>120 VOLT SECONDARY (DUPLEX) CIRCUIT - #4 ALUM INSULATED PHASE CONDUCTOR WITH #4 B. ALUM NEUTRAL CONDUCTOR.</u>
-- SD --	EXISTING <u>240 VOLT SECONDARY (DUPLEX) CIRCUIT - #4 COPPER.</u>
* * SD * *	REMOVE <u>120 VOLT SECONDARY (DUPLEX) CIRCUIT - #4 COPPER.</u>
— ST —	<u>120/240 VOLT SECONDARY (TRIPLEX) CIRCUIT - #2 COPPER INSULATED PHASE CONDUCTORS WITH #2 B. CU. NEUTRAL CONDUCTOR.</u>
-- ST --	EXISTING <u>120/240 VOLT SECONDARY (TRIPLEX) CIRCUIT - #2 ALUM.</u>
* * ST * *	REMOVE <u>120/240 VOLT SECONDARY (TRIPLEX) CIRCUIT - #4/0 ALUM.</u>
— SQ —	<u>208Y/120 VOLT SECONDARY (QUADRUPLEX) CIRCUIT - #1/0 ALUMINUM INSULATED PHASE CONDUCTORS WITH #1/0 B. ALUM NEUTRAL CONDUCTOR.</u>
-- SQ --	EXISTING <u>208Y/120 VOLT SECONDARY (QUADRUPLEX) CIRCUIT - #1/0 ALUM.</u>
* * SQ * *	REMOVE <u>208Y/120 VOLT SECONDARY (QUADRUPLEX) CIRCUIT - #1/0 B. ALUM.</u>
— TD —	<u>120/240 VOLT TRIPLEX SERVICE DROP - #2 COPPER INSULATED PHASE CONDUCTORS WITH #2 B. COPPER NEUTRAL CONDUCTOR.</u>
-- TD --	EXISTING <u>120/240 VOLT TRIPLEX SERVICE DROP - #1/0 COPPER.</u>
* * TD * *	REMOVE <u>120/208 VOLT TRIPLEX SERVICE DROP - #1/0 ALUM.</u>
— QD —	<u>208Y/120 VOLT QUADRUPLEX SERVICE DROP - #1/0 ALUM.INSULATED PHASE CONDUCTORS WITH #1/0 B. ALUM. NEUTRAL CONDUCTOR.</u>
-- QD --	EXISTING <u>208Y/120 VOLT QUADRAPLEX SERVICE DROP - #4/0 ALUM.</u>
* * QD * *	REMOVE <u>208Y/120 VOLT QUADRUPLEX SERVICE DROP - #2 COPPER.</u>

ATTACHMENT 17

4/98

<u>SYMBOL</u>	<u>DESCRIPTION</u>
-- D --	EXISTING <u>120/240</u> VOLT OPEN WIRE SERVICE DROP - <u>3 #4</u> W.P. CU. .
* * D * *	REMOVE <u>120/240</u> VOLT OPEN WIRE SERVICE DROP - <u>3 #1/0</u> W.P. CU. .
— T —	<u>100</u> PAIR TELEPHONE CABLE.
-- T --	EXISTING <u>26</u> PAIR TELEPHONE CABLE.
* * T * *	REMOVE <u>100</u> PAIR TELEPHONE CABLE.
— TV —	<u>CABLE</u> OR <u>CLOSED CIRCUIT</u> TELEVISION CABLE.
-- TV --	EXISTING <u>CABLE</u> OR <u>CLOSED CIRCUIT</u> TELEVISION CABLE.
* * TV * *	REMOVE <u>CABLE</u> OR <u>CLOSED CIRCUIT</u> TELEVISION CABLE.
— A —	<u>SECURITY ALARM</u> OR <u>ANNUNCIATOR CIRCUIT</u> - CHARACTERISTICS AS INDICATED.
-- A --	EXISTING <u>SECURITY ALARM</u> OR <u>ANNUNCIATOR CIRCUIT</u> - CHARACTERISTICS AS INDICATED.
* * A * *	REMOVE <u>SECURITY ALARM</u> OR <u>ANNUNCIATOR CIRCUIT</u> - CHARACTERISTICS AS INDICATED.
— C —	<u>12</u> CONDUCTOR, <u>#10</u> AWG COPPER, <u>600</u> VOLT CONTROL CABLE.
-- C --	EXISTING <u>18</u> CONDUCTOR, <u>#12</u> AWG COPPER, <u>300</u> VOLT CONTROL CABLE.
* * C * *	REMOVE <u>6</u> CONDUCTOR, <u>#14</u> AWG COPPER, <u>600</u> VOLT CONTROL CABLE.
—  —	AREA/STREET LIGHTING FIXTURE - TYPE <u>A</u> PER LIGHTING FIXTURE SCHEDULE ON SHEET <u>E-</u> .
—  —	EXISTING <u>120</u> VOLT, <u>250</u> WATT, AREA/STREET LIGHTING FIXTURE.
—  —	REMOVE EXISTING <u>120</u> VOLT, <u>400</u> WATT, AREA/STREET LIGHTING FIXTURE.

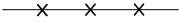
















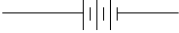

ATTACHMENT 18

### ELEC. GUIDE LEGEND (ONE-LINE DIAGRAMS)

SYMBOLS	DESCRIPTION
	POWER TRANSFORMER.
	POTENTIAL TRANSFORMER.
	CONTROL POWER TRANSFORMER.
	SURGE ARRESTER.
	FUSED SWITCH.
	DISCONNECT SWITCH.
	MOLDED CASE CIRCUIT BREAKER.
	LOW VOLTAGE DRAW-OUT POWER CIRCUIT BREAKER.
	FUSED LOW VOLTAGE DRAW-OUT POWER CIRCUIT BREAKER.
	MEDIUM VOLTAGE POWER CIRCUIT BREAKER.
	MEDIUM VOLTAGE POWER DRAW-OUT CIRCUIT BREAKER.
	DELTA CONNECTION.
	GROUNDING WYE CONNECTION.
	CURRENT TRANSFORMER - SINGLE RATIO AS SHOWN.
	CURRENT TRANSFORMER - MULTI RATIO (FULL RATIO SHOWN).
	MEDIUM VOLTAGE CABLE TERMINATION.
	EXISTING MEDIUM VOLTAGE CABLE TERMINATION.
	CAPACITOR.
	GROUNDING ELECTRODE CONNECTION.
	CABLE OR BUS, TYPE AND CHARACTERISTICS AS INDICATED.
	EXISTING CABLE OR BUS, TYPE AND CHARACTERISTICS AS INDICATED.



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<u>SYMBOL</u>	<u>DESCRIPTION</u>
	REMOVE CABLE OR BUS, TYPE AND CHARACTERISTICS AS INDICATED.
	AMMETER.
	VOLTMETER.
	WATTMETER.
	WATTHOUR METER.
	WATTHOUR METER WITH DEMAND REGISTER.
	VARMETER.
	FREQUENCY METER.
	POWER FACTOR METER.
	SYNCHROSCOPE.
	AMMETER SWITCH.
	VOLTMETER SWITCH.
	KIRK KEY INTERLOCK.
	SHUNT TRIP.
	GROUND FAULT PROTECTION.
	GENERATOR.
	INDICATING LAMP.
	BATTERY.
	RELAY AND ANSI CONTROL FUNCTION SYMBOL. NUMBER OUTSIDE CIRCLE INDICATES QUANTITY IF GREATER THAN ONE.

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TYPICALLY USED ANSI CONTROL FUNCTION SYMBOLS

01	CONTROL SWITCH.
2	TIME DELAY RELAY.
15	SPEED OR FREQUENCY MATCHING RELAY.
25	SYNCHRONIZING RELAY.
27	UNDER VOLTAGE RELAY.
32	REVERSE POWER RELAY.
43	SELECTOR SWITCH.
46	NEGATIVE SEQUENCE CURRENT RELAY.
50	INSTANTANEOUS OVERCURRENT RELAY.
51	TIME OVERCURRENT RELAY.
52	AC CIRCUIT BREAKER.
59	OVERVOLTAGE RELAY.
63	SUDDEN PRESSURE RELAY.
67	DIRECTIONAL OVERCURRENT RELAY.
74	ALARM RELAY.
79	AC RECLOSING RELAY.
81	FREQUENCY RELAY.
86	LOCK-OUT RELAY.
87	DIFFERENTIAL RELAY.

ATTACHMENT 21

4/98

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ABBREVIATIONS

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X	AUXILIARY.
LTC	LOAD TAP CHANGER.
AUTO	AUTOMATIC.
AF	AMP FRAME.
AT	AMP TRIP.
CPT	CONTROL POWER TRANSFORMER.
N	NEUTRAL.

ATTACHMENT 22





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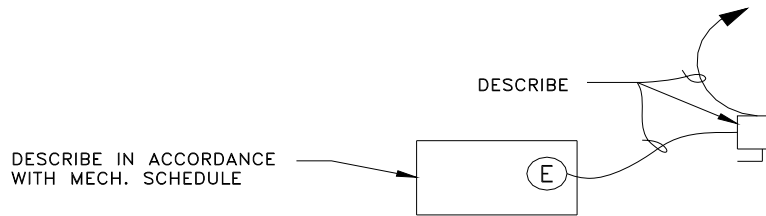
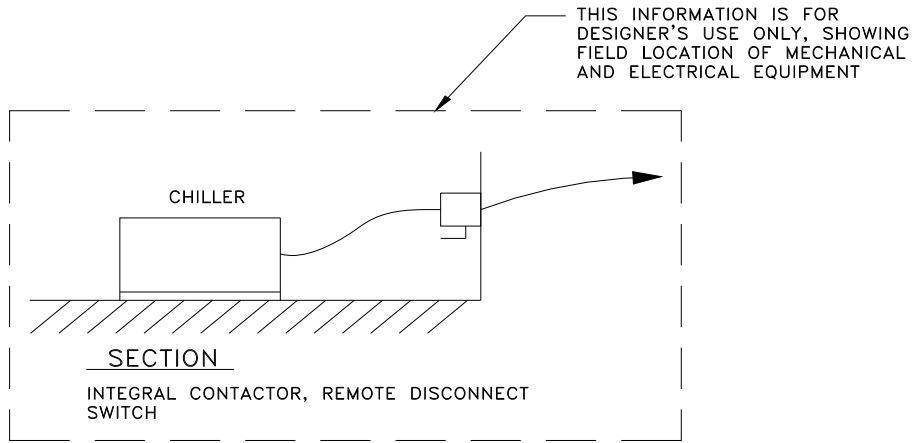
LIGHTING FIXTURE SCHEDULE					
FIXTURE SYMBOL	SKETCH NO. & TYPE	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	NOTES
△	NL-1, TYPE A	2-F32/T8	120	SURFACE	
△	NL-3, TYPE C	2-F32/T8	120	RECESSED	
△	NL-57, TYPE B	1-13W DOUBLE TWIN TUBE FLUOR.	120	RECESSED	
△	NL-4, TYPE A	2-F17/T8	120	WALL 6" AFF	
△	DETAIL "D" SEE SHEET E-6	2-F32/T8	120	SUSPENDED W/1/2" C 12' AFF	
△	NL-9, TYPE E	4-F32/T8	120	RECESSED	32 CELL NATURAL FINISH
△	NL-25, TYPE A	1-70W HPS	120	WALL 10' AFF	
△	NL-51	2-12W HALOGEN	120	WALL 7' AFF	
△	NL-61	LED	120	WALL 7' AFF	

ATTACHMENT 23

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LEGEND (ATTACHMENTS 24-26)

-  DISCONNECT SWITCH, SIZE & TYPE AS INDICATED
-  MAGNETIC MOTOR CONTROLLER
-  MOTOR CONNECTION, HP INDICATED
-  ELECTRICAL EQUIPMENT CONNECTION

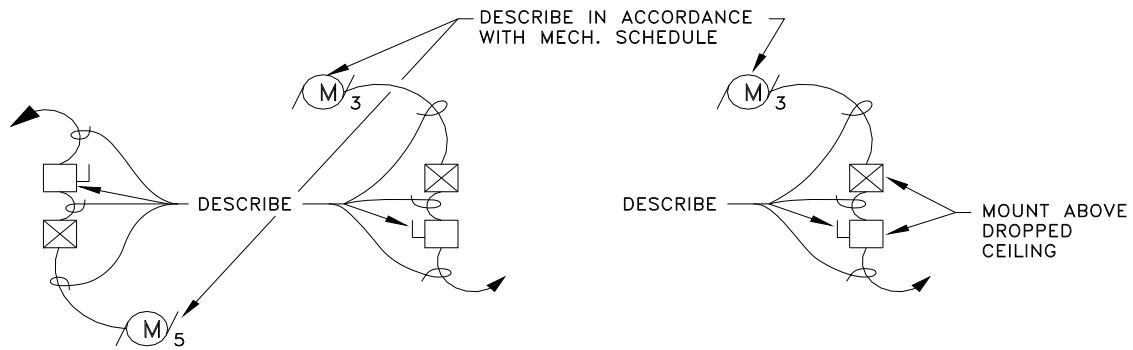
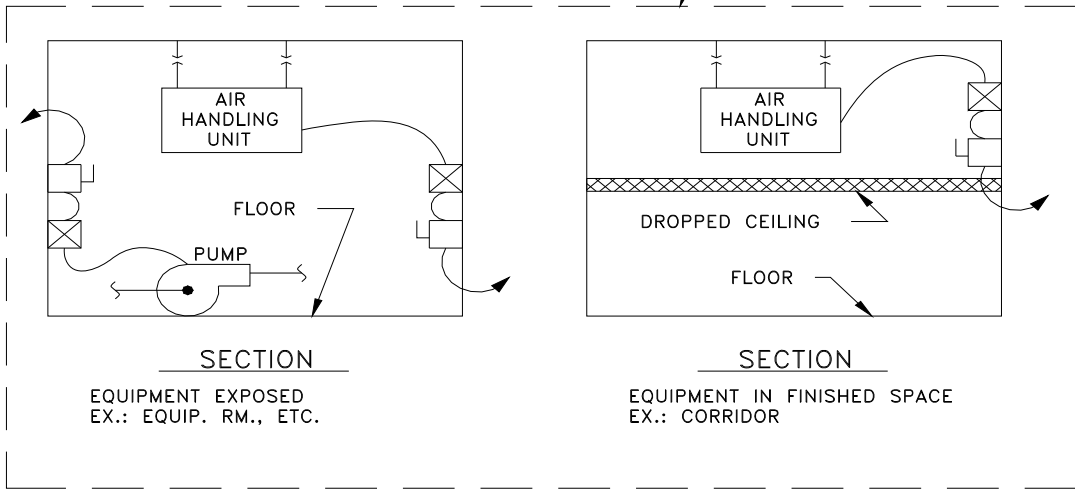


EQUIPMENT CONNECTION ILLUSTRATIONS

ATTACHMENT 24

4/98

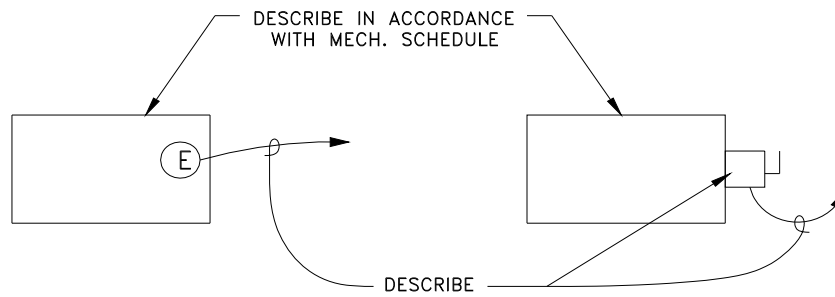
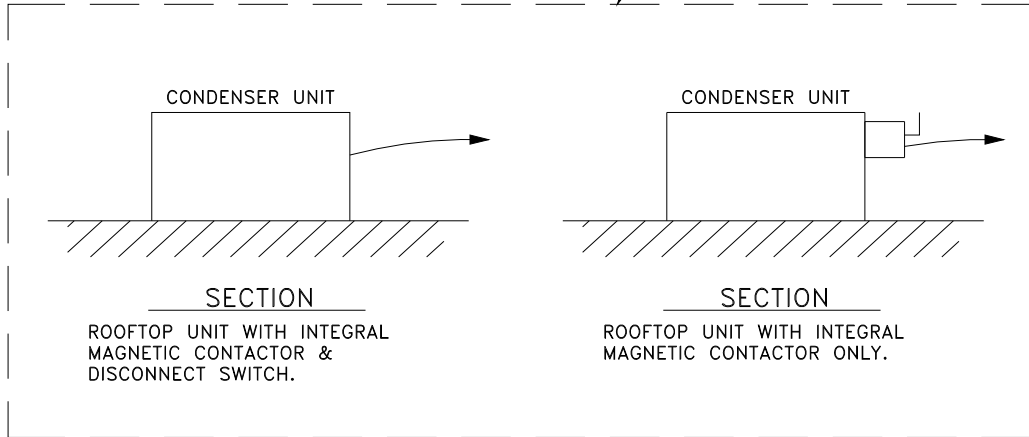
THIS INFORMATION IS FOR DESIGNER'S  
USE ONLY, SHOWING FIELD LOCATION  
OF MECH. & ELECT. EQUIPMENT



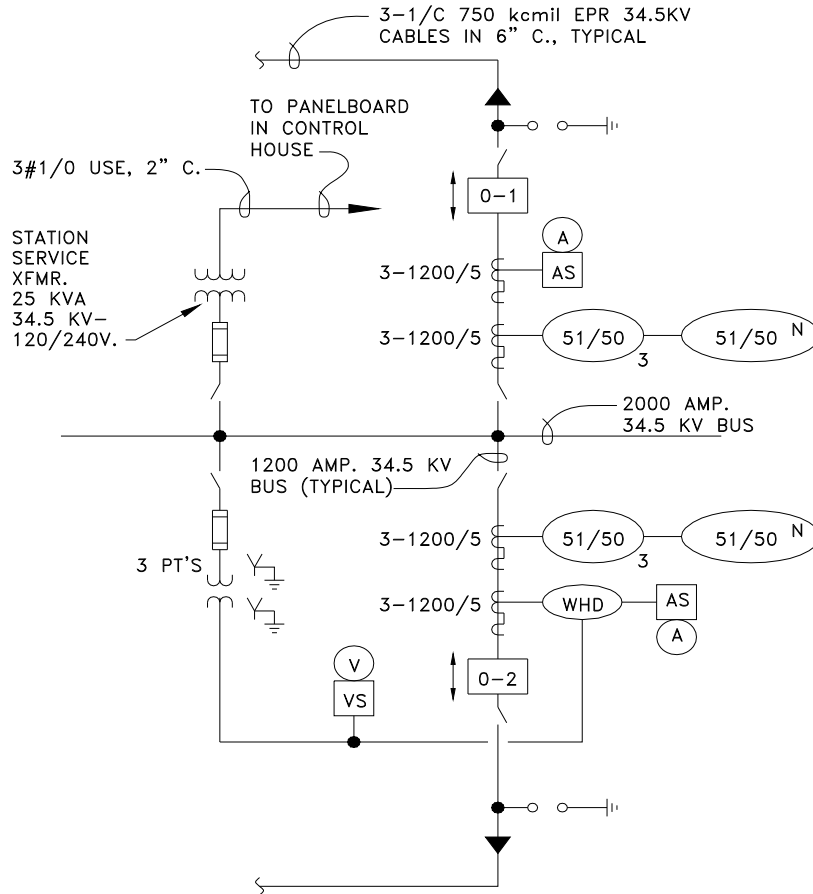
EQUIPMENT CONNECTION ILLUSTRATIONS

ATTACHMENT 25

THIS INFORMATION IS FOR DESIGNER'S  
USE ONLY, SHOWING FIELD LOCATION OF  
MECH. & ELECT. EQUIPMENT.



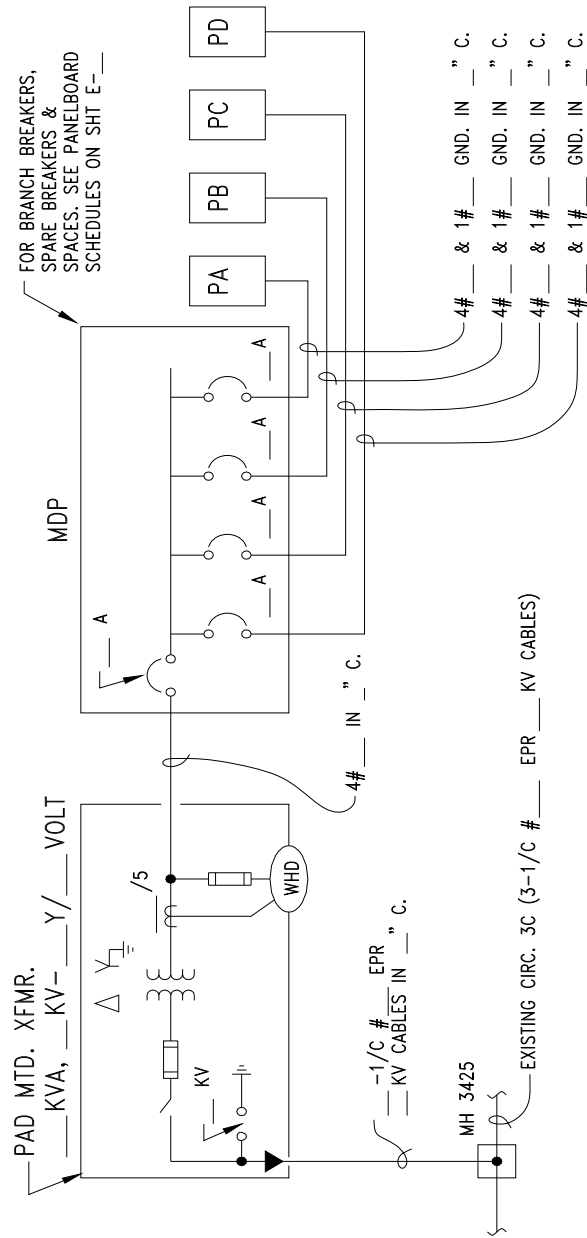
EQUIPMENT CONNECTION ILLUSTRATIONS



ONE-LINE DIAGRAM

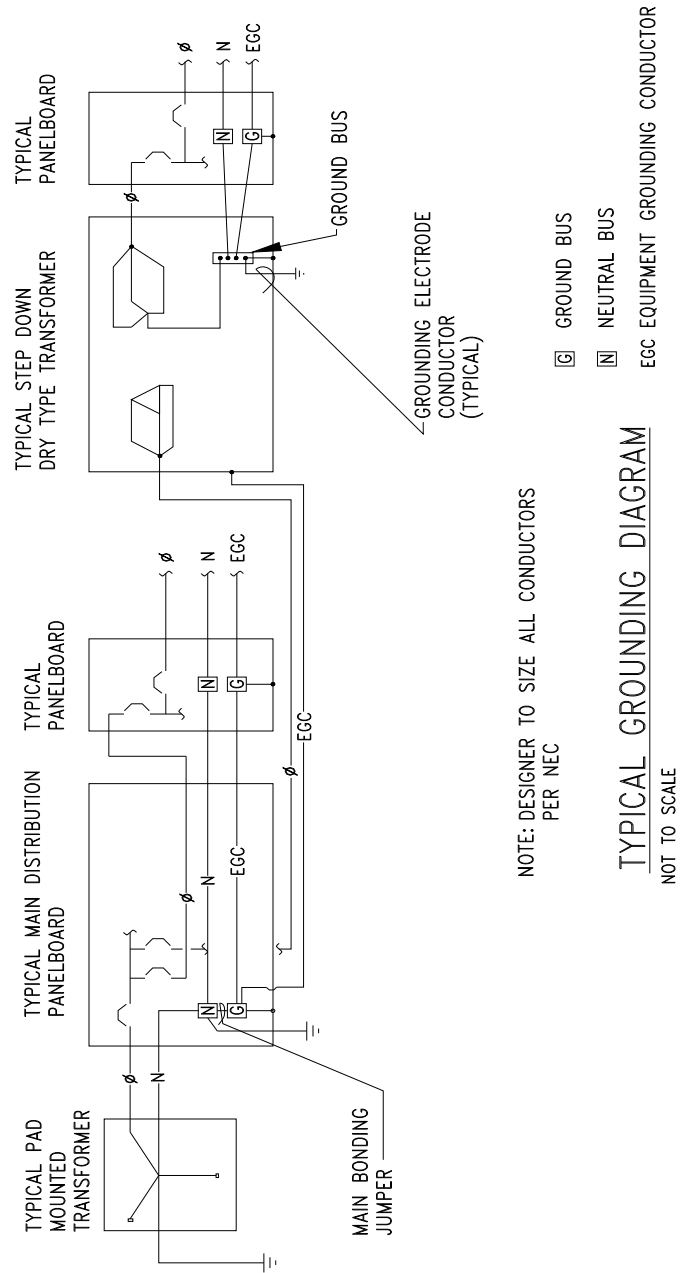


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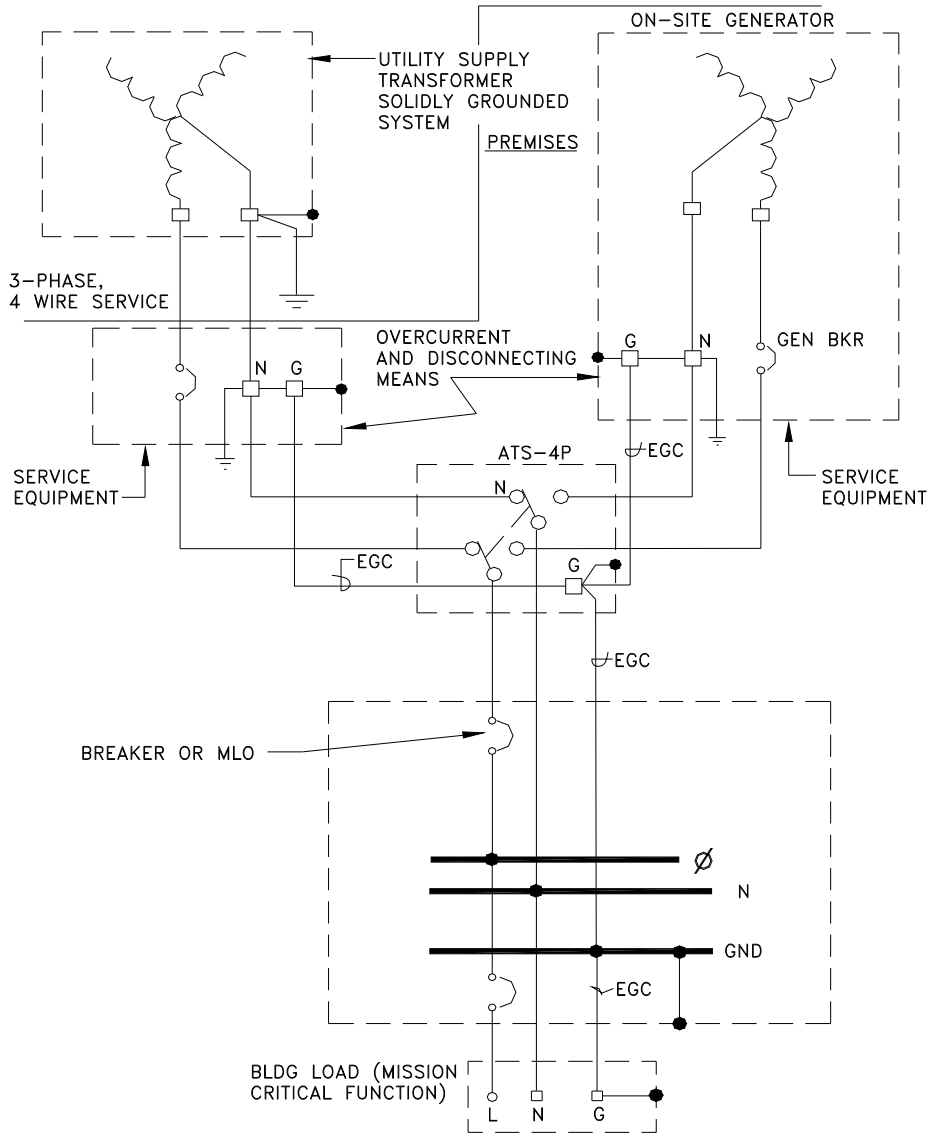
ONE-LINE/RISER DIAGRAM

ATTACHMENT 28



ATTACHMENT 29

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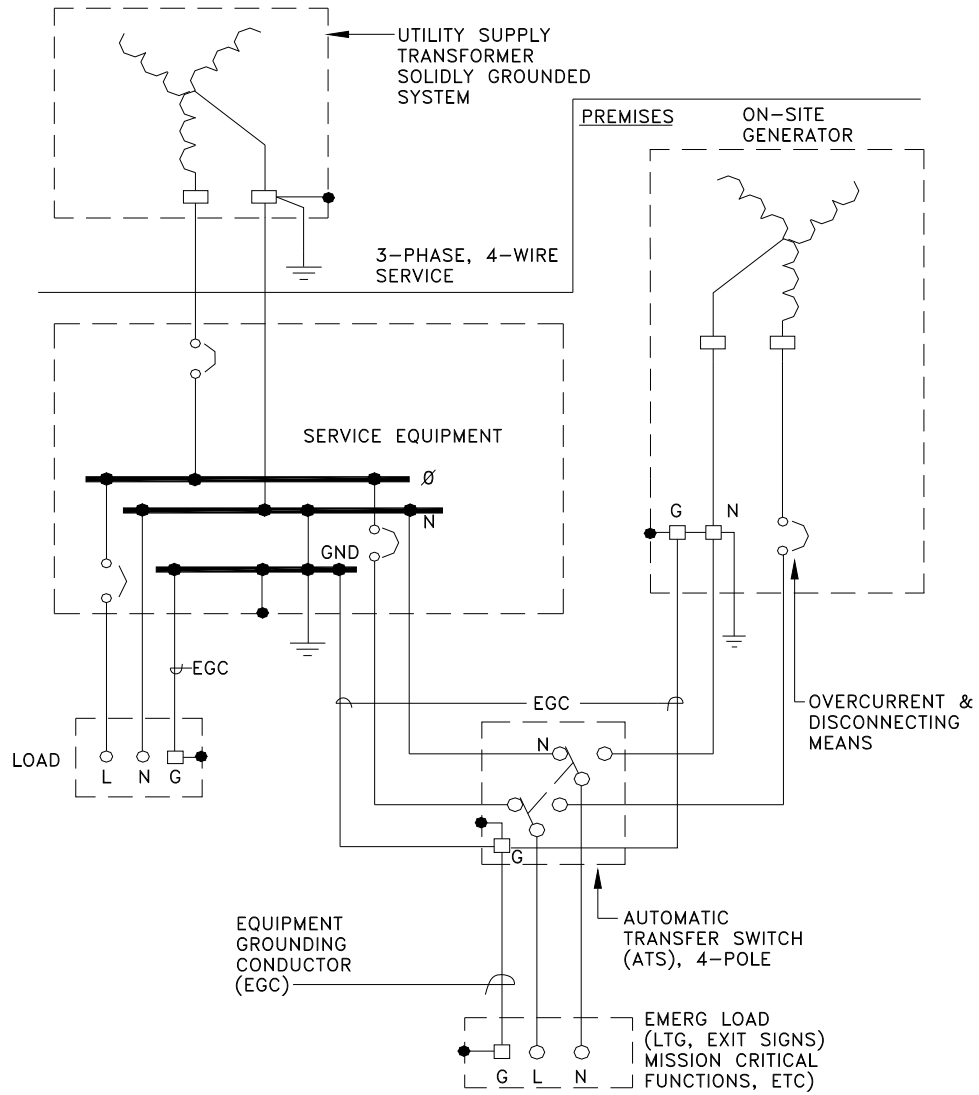


**GROUNDING DIAGRAM**

ALL BUILDING LOADS PROVIDED WITH BACK-UP  
EMERGENCY GENERATION

ATTACHMENT 30

4/98



GROUNDING DIAGRAM

SELECTED BUILDING LOADS PROVIDED WITH BACK-UP EMERGENCY GENERATION

ATTACHMENT 31

PANELBOARD MDP SCHEDULE (1)																
600 A. MAINS W/400A M.C.B., 208Y/120 V., 3 PHASE, 4 WIRE, 10 KAIC MINIMUM, FLUSH MOUNT																
LOAD SERVED	LOAD (AMPS)			BKR. TRIP	WIRE SIZE	CKT. NO.	PHASE			CKT. NO.	WIRE SIZE	BKR. TRIP	LOAD (AMPS)			LOAD SERVED
	A	B	C				A	B	C				A	B	C	
UH-1 & EF-1 RM. 101	1.5			20	12	1	~	~	~	2	12	20	5.1			UNIT HEATERS RM 105
EF-2 RM. 102		1.6		20	12	3	~	~	~	4	12	20		3.5		UNIT HEATERS RM. 107
EF-5 RM. 103			.58	20	12	5	~	~	~	6	12	20			2	FACP (2)
SPARE				20		7	~	~	~	8		20				SPARE
SPARE				20		9	~	~	~	10		20				SPARE
SPACE						11	~	~	~	12						SPACE
SPACE						13	~	~	~	14						SPACE
BAY DOORS RM. 105		11		20	12	15	~	~	~	16						SPACE
			11			18	~	~	~							SPACE
PANEL A	173			100	3	19	~	~	~	20						SPACE
		164														
			168													
ACU-1 RM. 104	6			20	12	25	~	~	~	26	8	50	137			PANEL B
		6												135		
			6												136	
EF-3 RM 107	6			20	12	31	~	~	~	32	8	50	108			PANEL C
		6													113	
			6													137
EF-4 RM. 106	4.1			20	12	37	~	~	~	38	12	20	4.1			H&V-1 ISSUE RM.
		4.1													4.1	
			4.1													4.1
TOTAL	191	193	196										254	256	279	TOTAL
TOTAL CONNECTED AMPS A: 445 B: 451 C: 475																

(1) PROVIDE SERVICE RATED PANEL. PROVIDE RED LAMINATED PLASTIC LABEL WITH WHITE CENTER CORE WITH THE FOLLOWING INSCRIPTION "EMERGENCY BREAKER WITHIN"

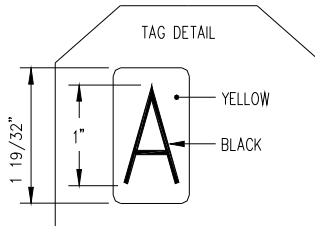
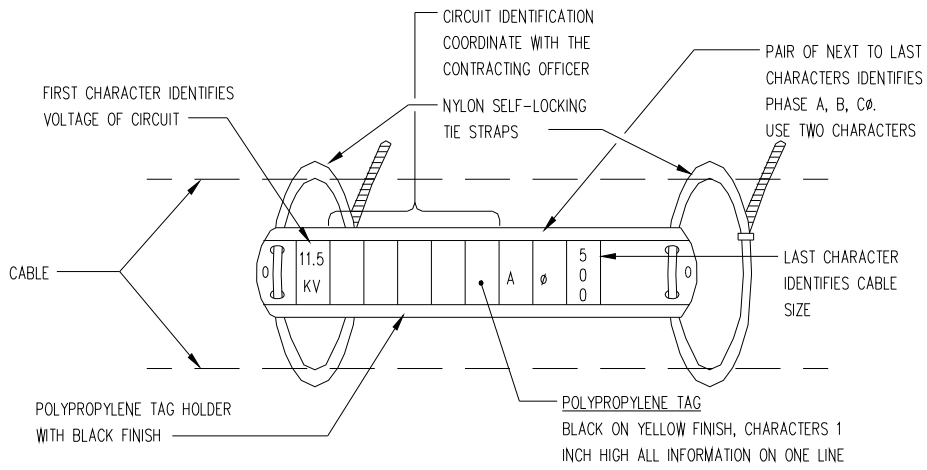
(2) PROVIDE LOCK-ON BREAKER PAINTED RED

PANELBOARD C SCHEDULE																
225 A., MAIN LUGS ONLY, 208Y/120V., 3 PHASE, 4 WIRE, 10 KAIC MINIMUM, FLUSH MOUNT																
LOAD SERVED	LOAD (AMPS)			BKR. TRIP	WIRE SIZE	CKT. NO.	PHASE			CKT. NO.	WIRE SIZE	BKR. TRIP	LOAD (AMPS)			LOAD SERVED
	A	B	C				A	B	C				A	B	C	
LIGHTING RM. 100	10.4			20	12	1	~	~	~	2	12	20	10.4			LIGHTING RM. 107
LIGHTING RM. 101		16.0		20	12	3	~	~	~	4	12	20		16.0		LIGHTING RM. 108
LIGHTING RM. 102			16.0	20	12	5	~	~	~	6	12	20			16.0	LIGHTING RM. 109
LIGHTING RM. 103	5.8			20	12	7	~	~	~	8	12	20	10.4			LIGHTING RM. 110
LIGHTING RM. 104		10.4		20	12	9	~	~	~	10	12	20		16.0		LIGHTING RM. 111
LIGHTING RM. 105			10.4	20	12	11	~	~	~	12	12	20			16.0	LIGHTING RM. 112
LIGHTING RM. 106	15.0			20	12	13	~	~	~	14	12	20	10.4			LIGHTING RM. 113
SPARE				20		15	~	~	~	16		20				SPARE
SPARE				20		17	~	~	~	18		20				SPARE
SPACE						19	~	~	~	20						SPACE
SPACE						21	~	~	~	22						SPACE
RECEPTACLES RM. 100			10.4	20	12	23	~	~	~	24	12	20			10.5	RECEPTACLES RM. 107
RECEPTACLES RM. 101	10.4			20	12	25	~	~	~	26	12	20	12.0			RECEPTACLES RM. 108
RECEPTACLES RM. 102		15.0		20	12	27	~	~	~	28	12	20		9.0		RECEPTACLES RM. 109
RECEPTACLES RM. 103			14.2	20	12	29	~	~	~	30	12	20			9.0	RECEPTACLES RM. 110
RECEPTACLES RM. 104	10.4			20	12	31	~	~	~	32	12	20	10.5			RECEPTACLES RM. 111
RECEPTACLES RM. 105		16.0		20	12	33	~	~	~	34	12	20		15.0		RECEPTACLES RM. 112
RECEPTACLES RM. 106			16.0	20	12	35	~	~	~	36	12	20			7.5	RECEPTACLES RM. 113
SPACE						37	~	~	~	38	12	20	2			TELEPHONE BACKBOARD
SPACE						39	~	~	~	40						SPACE
SPACE						41	~	~	~	42						SPACE
TOTAL	52.0	57.4	67.0										55.7	56.0	69.5	TOTAL
TOTAL CONNECTED AMPS A: 107.7 B: 113.4 C: 136.5																

4/98

PANELBOARD I SCHEDULE													
100 A. MAIN LUGS ONLY, 120/240 V., 1 PHASE, 3 WIRE, 10 KAIC MINIMUM, SURFACE MOUNT													
LOAD SERVED	LOAD (AMPS)		BKR. TRIP	WIRE SIZE	CKT. NO.	PHASE		CKT. NO.	WIRE SIZE	BKR. TRIP	LOAD (AMPS)		LOAD SERVED
	A	B				A	B				A	B	
DRILL PRESS	6		20	12	1	~	~	2	12	20	6		DRILL PRESS
	6					~	~				6		
GRINDER	8		20	12	5	~	~	6	12	20	10		ARC WELDER
	8					~	~				10		
TABLE SAW	9		20	12	9	~	~	10	12	20	9		TABLE SAW
	9					~	~				9		
RADIAL ARM SAW	6		20	12	13	~	~	14	12	20	6		SANDER
	6					~	~				6		
BAND SAW	5		20	12	17	~	~	18	12	20	7		MASONRY SAW
	5					~	~				7		
PLANER	6		20	12	21	~	~	22	12	20	5		SHAPER
	6					~	~				5		
SPARE			20		25	~	~	26		20			SPARE
						~	~						
SPACE					29	~	~	30					SPACE
						~	~						
SPACE					33	~	~	34					SPACE
						~	~						
SPACE					35	~	~	36					SPACE
						~	~						
SPACE					37	~	~	38					SPACE
						~	~						
SPACE					39	~	~	40					SPACE
						~	~						
SPACE					41	~	~	42					SPACE
						~	~						
TOTAL	40	40									43	43	TOTAL
TOTAL CONNECTED AMPS A: 83 B: 83													

ATTACHMENT 33



CABLE IDENTIFICATION TAG DETAIL