

ELECTRICAL SPECIFICATION:

PART 1: GENERAL

A. WORK INCLUDED

FURNISH ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS, INCLUDING FINAL CONNECTIONS TO LESSEE'S OR FRANCHISE OWNER'S EQUIPMENT AND SIGNS, AS SPECIFIED HEREIN, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, JURISDICTION ELECTRICAL CODE, THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY, AND ALL APPLICABLE CODES AND LAWS. IT IS THE INTENT OF THIS SECTION OF THE SPECIFICATIONS AND ACCOMPANYING ELECTRICAL DRAWINGS TO REQUIRE THESE SYSTEMS TO BE FURNISHED COMPLETE IN EVERY RESPECT, FURNISH ALL WIRING AND EQUIPMENT NEEDED AND USUALLY FURNISHED IN CONNECTION WITH SUCH WORK, WHETHER SPECIFICALLY MENTIONED OR NOT.

B. PERMITS

PROCURE ALL NECESSARY PERMITS FOR WORK INSTALLED, PAY ALL FEES AND CHARGES CONNECTED HEREIN. DELIVER CERTIFICATES OF APPROVAL BY AUTHORITIES HAVING JURISDICTION OVER WORK, TO THE OWNER, BEFORE THE WORK WILL BE FINALLY ACCEPTED.

C. DOCUMENTS REFERRED TO IN PAR. 1. SCOPE OF SPECIAL CONDITIONS ARE PART HEREOF, THE SAME AS IF REPEATED HEREIN.

D. WORK SET FORTH IN THIS SECTION SHALL BE COORDINATED WITH WORK SET FORTH IN OTHER SECTIONS OF THE SPECIFICATIONS IN ORDER THAT ALL WORK PERFORMED BY THE VARIOUS TRADES INVOLVED SHALL NOT CONFLICT, AND WILL BE COMPLETE IN EVERY RESPECT.

E. DRAWINGS ARE DIAGRAMMATIC, INDICATING PRINCIPAL REQUIREMENTS BUT NOT NECESSARILY ALL REQUIRED DETAILS.

F. THE ELECTRICAL INSTALLATION SHALL CONFORM TO THE LATEST EDITIONS, INCLUDING AMENDMENTS TO THE FOLLOWING:

- (1) ELECTRICAL CODE OF FREDERICK, MARYLAND.
- (2) RULES AND REGULATIONS OF THE ALLEGHENY POWER COMPANY.
- (3) ELECTRICAL LICENSING AND BONDING REGULATIONS OF THE FREDERICK, MARYLAND.

G. A COMPLETE SET OF ELECTRICAL PRINTS WILL BE FURNISHED THE CONTRACTOR, WHO SHALL KEEP AND MAINTAIN THE SET OF PRINTS, RECORDING THEREON ANY DEVIATIONS FROM CONTRACT DRAWINGS OR SPECIFICATIONS. UPON COMPLETION OF WORK, CONTRACTOR SHALL FORWARD THE SET OF "AS BUILT" PRINTS TO THE CONTRACTING OFFICER.

H. MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMITY WITH APPLICABLE SECTIONS OF SPECIAL STIPULATIONS.

I. REFERENCE TO MANUFACTURES NAMES, MAKES, MODEL NUMBERS OR CATALOGUE NUMBERS, WHERE USED IN THESE SPECIFICATIONS AND DRAWINGS, SHALL BE INTERPRETED AS ESTABLISHING A STANDARD QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPLETING OR CONTROLLING THE SELECTION OF MANUFACTURERS. THE CONTRACTOR MAY AT HIS OPTION USE ANY ARTICLE, DEVICE, PRODUCT OR FIXTURE, WHICH, IN THE JUDGMENT OF THE CONTRACTING OFFICER EXPRESSED IN WRITING, IS EQUAL TO THAT SPECIFIED.

J. THE WORD "PROVIDE" AS USED THROUGHOUT THIS SECTION MEANS, "FURNISH AND INSTALL".

2. DESCRIPTION OF WORK: PROVIDE COMPLETE ELECTRICAL FACILITIES INCLUDING FIXTURES COMPLETE WITH LAMPS, PANELS, WIRING, RACEWAYS SYSTEMS, WIRING DEVICES, AND CONNECTIONS TO ELECTRICAL EQUIPMENT FURNISHED UNDER OTHER SECTIONS.

3. DEFECTIVE MATERIAL: CONTRACTOR SHALL REMEDY ALL DEFECTS WHICH MAY DEVELOP BY USE OF ANY INFERIOR MATERIAL OR WORKMANSHIP, AND WHICH MAY OR MAY NOT BE DISCOVERED UNTIL EACH SYSTEM HAS BEEN PUT IN ACTUAL OPERATION. SUCH DEFECTIVE MATERIAL AND WORK SHALL BE IMMEDIATELY REMOVED AND REPLACED WITH APPROVED MATERIAL.

4. TESTS: AFTER WORK HAS BEEN COMPLETED AS HEREIN SPECIFIED, OWNER RESERVES THE RIGHT TO REQUIRE TESTS AS MAY BE CONSIDERED NECESSARY, TO BE MADE AT THE EXPENSE OF CONTRACTOR. IF SUCH TESTS ARE NOT SATISFACTORY, INDICATING INSTALLATION IS NOT IN ACCORDANCE WITH RULES AND REGULATIONS GOVERNING ELECTRICAL WIRING AND APPARATUS OF DC OF WITH REQUIREMENTS OF THE PLANS AND SPECIFICATIONS, CONTRACTOR SHALL IMMEDIATELY MAKE SUCH CHANGES AS ARE NECESSARY TO CONFORM THERETO.

5. APPROVAL OF MATERIALS:

A. SHOP DRAWINGS (SPECIAL STIPULATIONS) OF THE FOLLOWING SHALL BE SUBMITTED: SERVICE EQUIPMENT, POWER SWITCHBOARDS, PANEL BOARDS, LIGHTING FIXTURES, FIRE ALARM SYSTEM, DISCONNECT AND SAFETY SWITCHES, CIRCUIT BREAKERS, AND CONTRACTORS.

B. WHERE PRODUCT IS ONE THAT IS SUBJECT TO UNDERWRITERS' LABORATORIES INSPECTION AND LABEL SERVICE, IT SHALL BEAR THE UNDERWRITERS' LABEL AND BE SUBJECT TO THE U.L. RE-EXAMINATION SERVICE.

C. WHERE APPLICABLE, SHOP DRAWINGS SHALL INDICATE COMPLIANCE WITH NEMA SPECIFICATIONS.

6. RACEWAY: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL RACEWAYS SHALL BY RIGID, GALV. STEEL CONDUIT AND SHALL BE MIN. 3/4" TRADE SIZE. TELEPHONE RACEWAYS SHALL BE 1" MINIMUM.

A. ELECTRICAL METALLIC TUBING:

1. RACEWAY RUNS 1-1/2" TRADE SIZE AND SMALLER, ABOVE HUNG CEILINGS, CONCEALED IN INTERIOR PARTITIONS, OR IN DRY LOCATIONS WHERE EXPOSED WORK IS OTHERWISE PERMITTED, MAY BY GALV. EMT. VERTICAL RUNS THROUGH Poured SLABS ARE ACCEPTABLE IF SLEEVES ARE PROVIDED. RACEWAY FOR CITY FIRE ALARM FACILITIES IS AN EXCEPTION TO THIS AND SHALL BE RIGID CONDUIT.
2. FITTINGS SHALL BE COMPRESSED TYPE, ALL STEEL.

B. RACEWAY INSTALLATION:

1. ALL WORK SHALL BE CONCEALED UNLESS SPECIFICALLY PERMITTED OTHERWISE. CONCEALED RACEWAYS SHALL BE RUN IN A DIRECT LINE WITH LONG SWEEP BENDS AND OFFSETS. EXPOSED RACEWAY SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO BUILDING LINES.
2. RACEWAY ENDS SHALL BE CAPPED WITH A METAL FITTING TO PREVENT ENTRANCE OF FOREIGN MATERIAL DURING CONSTRUCTION.
3. RACEWAY SYSTEMS SHALL BE INSTALLED COMPLETE BEFORE CONDUCTORS ARE PULLED IN.
4. APPROVED EXPANSION JOINT FITTINGS SHALL BE INSTALLED WHERE RACEWAYS CROSS BUILDING EXPANSION JOINTS.
5. RACEWAY SIZES SHOWN ON DRAWINGS ARE MINIMUM AND SHALL BE INCREASED IN SIZE WHERE REQUIRED FOR CODE COMPLIANCE.
6. PROVIDE A 3/32" MINIMUM NYLON DRAG ROPE IN ALL EMPTY RACEWAYS.
7. PULL BOXES SHALL BE INSTALLED, WHERE NECESSARY, IN APPROVED LOCATIONS AND IN ALL EMPTY RACEWAYS AS FOLLOWS:
 - A. IN STRAIGHT RUNS, SPACING NOT TO EXCEED 150 FEET.
 - B. IN RUNS WITH ONE RIGHT ANGLE BEND, SPACING NOT TO EXCEED 75 FEET.
8. WHERE REQUIRED TO SUIT FIELD CONDITIONS, CONTRACTOR SHALL SHIFT THE LOCATION OF RACEWAY RUNS THE LOCATION SHOWN ON DRAWING AT NO INCREASE IN COST TO THE OWNER.

7. SPACING OF RACEWAY SUPPORTS SHALL NOT EXCEED 8' , WITH NOT LESS THAN TWO SUPPORTS FOR EACH 10' STRAIGHT LENGTH. PROVIDE SUPPORTS ON HORIZONTAL RUNS ENTERING BOXES AND ON BOTH SIDES OF 90-DEGREE ELBOWS. SUSPENDED HORIZONTAL RACEWAY SHALL BE HUNG WITH APPROVED ADJUSTABLE HANGERS CONSISTING OF 1/4" MINIMUM ALL-THREAD RODS AND CLAMPS. RODS SHALL 3/8" MINIMUM FOR CONDUITS 1-1/2" AND LARGER.

8. BOXES: SHALL BE LOCATED APPROXIMATELY AS SHOWN OR AS REQUIRED TO SUIT FIELD CONDITIONS. ALL BOXES SHALL BE GALV. STEEL TYPE, 1-1/2" DEEP BY 4" SQUARE MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE.

A. OUTLET BOXES:

1. SHALL BE EQUIPPED WITH PLASTER RING OR COVER AS NECESSARY.
2. VERIFY REQUIREMENTS OF ALL EQUIPMENT BEFORE ROUGHING-IN BOXES.
3. WHERE OUTLETS WOULD NORMALLY OCCUR PARTIALLY IN WAINSCOT, INSTALL OUTLET ENTIRELY WITHIN WAINSCOT.

B. UNDER SLAB UTILITIES:

DIMENSIONS FOR ALL UNDER-SLAB UTILITIES ARE CRITICAL FOR LATER EQUIPMENT INSTALLATION. CROSS-REFERENCE ALL DRAWINGS WITH THIS WORK INCLUDING THE ELEVATIONS SHOWING DIMENSIONAL LOCATION OF ALL STUBS FOR EQUIPMENT.

C. JUNCTION OR PULL BOXES: SHALL BE OF CODE GAUGE GALV. STEEL WITH SCREW COVERS. BOXES SHALL BE SUPPORTED INDEPENDENTLY OF CONDUITS ENTERING THEM.

9. WIRING DEVICES:

A. SWITCHES: SHALL BE QUIET, AC TYPE 20A., 120 VOLTS, EQUAL TO BRYANT 4900 SERIES.

B. RECEPTACLES:

1. DUPLEX RECEPTACLES SHALL BE 20A., 120 VOLTS, GROUNDING TYPE, EQUAL TO BRYANT 5352.
2. RANGLE RECEPTACLES SHALL BE 50A., 250 VOLTS, 3- WIRE POLARIZED RECEPTACLE WITH GROUNDING PROVISIONS, EQUAL TO AH NO. 7990-CG WITH AF NO. 7952 CAP.
3. RECEPTACLES SHALL BE MOUNTED 18" AFF, EXCEPT WHERE NOTED OTHERWISE.
4. ALL TOGGLE SWITCHES AND RECEPTACLES SHALL BE FLUSH WITH THE FINISH WALL, UNLESS SPECIFICALLY NOTED OTHERWISE. INTERIOR FLUSH BOXES SHALL BE CODE GRADE STEEL, SECURELY FASTENED WITH APPROVED DEVICES TO STUDS OR MASONRY AND SHALL BE AS MANUFACTURED BY RACO, OR APPROVED EQUAL. TOGGLE SWITCHES SHALL BE TYPE 53521-I (WHITE) AS MANUFACTURED BY LEVITON, INC., AND SHALL BE TUMBLER TYPE 20 AMP., QUIET TYPE. ALL INDOOR CONVENIENCE OUTLETS SHALL BE TYPE 5014-I (WHITE) AS MANUFACTURED BY LEVITON. OUTLET AND SWITCH PLATES SHALL BE WHITE - LEVITON.

10. DISCONNECT SWITCHES:

UNLESS SPECIFICALLY INDICATED OTHERWISE, DISCONNECTS REQUIRED FOR CODE COMPLIANCE OR SHOWN ON DRAWINGS SHALL BE PROVIDED UNDER THIS SECTION OF THE SPECIFICATIONS. DESIGNATIONS "HD" AND "GD" REQUIRE COMPLIANCE WITH FEDERAL SPECIFICATIONS AND NEMA STANDARDS FOR THESE DESIGNATIONS.

11. SAFETY SWITCHES AND FUSES

SAFETY SWITCHES SHALL BE OF THE FUSIBLE TYPE EQUIPPED WITH AN EXTERNAL LEVER OR HANDLE FOR MANUAL OPERATION WITH INTERLOCKING COVER. NEUTRAL CONDUCTORS SHALL BE SOLID THROUGHOUT. SAFETY SWITCHES SHALL BE TYPE GD. SAFETY SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D" COMPANY, I.T.E., GENERAL ELECTRIC, AND WESTINGHOUSE. ALL FUSES INSTALLED IN SAFETY SWITCHES THROUGHOUT THE CONTRACT SHALL BE NON-RENEWABLE DUAL ELEMENT TYPE. FUSES SHALL BE AS MANUFACTURED BY BUSSMAN.

A. SERVICE SWITCHES AND FEEDER DISCONNECTS:

1. SHALL BE NEMA TYPE HD WITH NEMA 1 ENCLOSURE.
2. SHALL BE EQUIPPED FOR SINGLE FUSING PER PHASE.
3. WHERE INSTALLED FOR EMERGENCY SYSTEMS, SHALL BE PAINTED FIRE SAFETY RED, WITH AN APPROVED ENGRAVED NAMEPLATE MARKED "EMERGENCY MAIN SWITCH".

B. MOTOR SWITCHES:

- (1) SHALL BE NEMA TYPE GD IN NEMA ENCLOSURE IN DRY LOCATIONS OR NEMA 3R ENCLOSURE IN DAMP OR EXTERIOR LOCATIONS.
- (2) WHERE USED FOR ELEVATOR SERVICE, SHALL HAVE PROVISIONS FOR LOCKING IN THE "OFF" POSITION ONLY.

12. WIRE AND CABLE: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WISE SHALL BE COPPER. TYPE THWN, THHN, 600 VOLT INSULATION, INSTALLED IN RACEWAY.

13. WIRES: MINIMUM SIZE FOR BRANCH CIRCUIT WIRING SHALL BE NO. 12 AWG SOLID COPPER FOR 600-VOLT SERVICE. WHERE PERMITTED BY LOCAL CODE, NON-METALLIC SHEATHED CABLE TYPE NMC (ROMEX) WITH GROUND WIRE MAY BE USED. IF REQUIRED BY LOCAL CODE, USE BX ARMORED CABLE OR TYPE THHN WIRE ENCLOSED IN APPROVED METAL RACEWAYS. ALUMINUM WIRE SHALL NOT BE USED.

A. SHALL BE NEW; SHALL HAVE SIZE, GRADE OF INSULATION, VOLTAGE AND MANUFACTURER'S NAME PERMANENTLY MARKED ON OUTER COVERING AT REGULAR INTERVALS; SHALL BE DELIVERED IN COMPLETE COILS OR REELS WITH IDENTIFYING SIZE AND INSULATION TAGS.

B. ALL CONDUCTORS SHALL BE COLOR CODED (FACTORY APPLIED) THROUGHOUT THE ENTIRE LENGTH. CODING FOR CONDUCTORS NO. 2 AWG AND SMALLER SHALL BE SOLID COLOR COMPOUND. CODING CONDUCTORS LARGER THAN NO. 2 AWG SHALL BE SOLID COLOR COMPOUND, SOLID COLOR COATING, COLORED STRIPING, COLORED BANDS, OR COLORED HASH MARKS.

1. ON 208Y/120 VOLT SYSTEM, USE BLACK, RED, BLUE AND WHITE COLORS FOR PHASES A, B, C, AND NEUTRAL, RESPECTIVELY.

C. CONDUCTORS NO. 8 AWG AND SMALLER BE SOLID; NO. 6 AWG AND LARGER STRANDED.

D. NO WIRE SMALLER THAN NO. 12 AWG SHALL BE USED EXCEPT FOR CONTROL WORK, LOCAL FIRE ALARM SYSTEM WHICH MAY BE NO. 14 AWG.

E. ALL FEEDER CONDUCTORS SHALL BE CONTINUOUS FROM ORIGIN TO PANEL OR TERMINATION WITHOUT RUNNING SPLICES.

F. EXCEPT WHERE NOTED OTHERWISE, ALL TERMINATIONS, TAPS, AND SPLICES, SHALL BE MADE WITH APPROVED PRESSURE OR BOLTED TYPE CONNECTORS, PROPERLY TAPED. SOLDERLESS CONNECTORS OF THE CRIMP-ON OR COLOR CODED SCREW- ON TYPE SIMILAR TO IDEAL, T & B OR 3M SHALL BE USED ON BRANCH CIRCUIT WIRING.

G. BRANCH CIRCUIT HOMERUNS FOR 120 VOLT LIGHTING CIRCUITS SHALL BE NO. 10 AWG WHEN LONGER THAN 75 FEET.

H. LOOPS NOT LESS THAN 8" SHALL BE LEFT IN ALL OUTLET BOXES FOR CONNECTIONS TO FIXTURE OR WIRING DEVICES. I. GENERALLY THE DRAWINGS INDICATE THE SIZE AND NUMBER OF CONDUCTORS IN EACH RACEWAY. CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS AND PROVIDE THE PROPER SIZE AND NUMBER WITHOUT ADDITIONAL COST TO THE OWNER.

J. WIRING THROUGH FIXTURE RACEWAYS AND WIRING CONNECTIONS FROM INTERNAL WIRING OF LIGHTING FIXTURES TO BRANCH CIRCUIT WIRING SHALL BE MADE WITH 600V INSULATED WIRE HAVING A PERMISSIBLE OPERATING TEMPERATURE 90 DEGREE C MINIMUM.

K. THE GROUPING OF BRANCH CIRCUIT HOMERUNS AS SHOWN ON DRAWINGS IS APPROXIMATE ONLY. UNLESS OTHERWISE INDICATED ON DRAWINGS, CONTRACTOR MAY GROUP HOMERUNS, WITHIN ANY ONE SYSTEM, TO SUIT FIELD CONDITIONS OR TO MINIMIZE THE INSTALLATION OF RACEWAY. IF CONTRACTOR ELECTS TO REVISE RACEWAY RUNS, HE SHALL PREPARE AND SUBMIT THREE SETS OF FIELD INSTALLATION DRAWINGS TO OWNER, PRIOR TO INSTALLATION , FOR RECORD PURPOSES ONLY. DO NOT INSTALL MORE THAN ONE 3-PHASE OR THREE SINGLE-PHASE, 120V CIRCUITS IN ONE RACEWAY UNLESS SHOWN OTHERWISE ON CONTRACT DRAWING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE RACEWAY TO SUIT JOB REQUIREMENTS.

14. EQUIPMENT CONNECTIONS: ALL ELECTRICAL WORK, WHETHER PROVIDED UNDER THIS SECTION OR ANY OTHER SECTION SHALL BE IN ACCORDANCE WITH THIS SECTION OF THE SPECIFICATIONS.

A. UNDER THIS SECTION, CONTRACTOR SHALL PROVIDE ELECTRIC SERVICE, FINAL CONNECTIONS AND CONTROL WORK FOR ALL EQUIPMENTS INSTALLED UNDER THIS CONTRACT, EXCEPT AS NOTED IN PARAGRAPH.

B. CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND OTHER SECTIONS OF THE SPECIFICATIONS TO FULLY UNDERSTAND THE WIRING REQUIREMENT FURNISHED UNDER THOSE SECTIONS. CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING AND BREAKERS FOR THIS EQUIPMENT, WHETHER OR NOT SPECIFICALLY INDICATED ON ELECTRICAL DRAWINGS.

C. FINAL CONNECTIONS TO EQUIPMENT CONTAINING ELECTRIC MOTORS SHALL BE MADE WITH 1/2" MINIMUM FLEXIBLE METAL CONDUIT OR, WHERE REQUIRED, LIQUID TIGHT FLEXIBLE METAL CONDUIT. THE NUMBER AND SIZE OF CONDUCTORS BETWEEN MOTOR AND CONTROL OR PROTECTIVE APPARATUS, SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER. (FLEXIBLE METAL CONDUIT LENGTH NOT TO EXCEED 60 INCHES.).

D. GUARANTEES AND INSTRUCTIONS: GUARANTEE ALL EQUIPMENT, SYSTEMS AND WORK FURNISHED AND INSTALLED UNDER THIS SECTION FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION THEREOF, AGAINST DEFECTS IN MATERIAL, DESIGN AND WORKMANSHIP. FAILURE OF ANY PART OR PARTS DURING GUARANTEE, OWING TO ABOVE CAUSES, SHALL BE REPLACED PROMPTLY UPON NOTICE TO THE OWNER, WITHOUT ANY CHARGES.

E. CONTRACTOR SHALL OBTAIN NECESSARY INFORMATION REGARDING ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.

MOTOR HORSEPOWER AND EQUIPMENT KW LOADS ARE NECESSARILY APPROXIMATE. IF EQUIPMENT ACTUALLY INSTALLED REQUIRES MORE OR LARGER FEED WIRES OR CONTROL WIRES, CONDUIT, SWITCHES, FUSES, CIRCUIT BREAKERS, ETC., SAME SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE DISTRICT OF COLUMBIA. IN NO CASE SHALL A CONDUIT SMALLER THAN SPECIFIED OR SHOWN ON THE DRAWINGS BE INSTALLED UNLESS ORDERED IN WRITING.

15. SERVICE:

A. ELECTRIC POWER:

- (1) PEPCO ELECTRIC COMPANY SHALL PROVIDE INCOMING SERVICE TO THE WILLOW DALE UTILITY ROOM. CONTRACTOR TO PROVIDE 2-2", 30" BELOW GRADE FROM EXISTING ELECTRICAL CLOSET TO THE NEW UTILITY ROOM. SEE ELECTRICAL SITE PLAN E3.
- (2) THE CONTRACTOR SHALL SUBMIT TO PEPCO: THERE (3) COPIES OF EXISTING METER BANK AND ADDITIONAL METER, WITHIN SIXTY (60) DAYS AFTER AWARD OF CONTRACT FOR PEPCO APPROVAL.

16. TELEPHONE AND CABLE TV: PROVIDE 2-1" PVC CONDUIT KORDUCTS, STUBBED OUT FOR TEL AND CABLE COMPANY FROM EXISTING TELEPHONE AND CABLE TERMINAL TO UTILITY ROOM. SEE ELECTRICAL SITE PLAN E3.

17. PANELBOARD-LIGHTING AND POWER:

- A. SHALL BE CIRCUIT BREAKER TYPE, CONFORMING TO FEDERAL SPECIFICATIONS AND NEMA STANDARDS.
- B. ALL LUGS SHALL BE SOLDERLESS TYPE.
- C. PANELBOARDS USED IN A FEED- THRU CONNECTION (SEE RISE DIAGRAM) SHALL HAVE MINIMUM 6" GUTTERS.
- D. ALL PANELBOARDS SHALL BE KEYPED ALIKE. DOOR LOOKS SHALL BE FLUSH BARREL TYPE WITH SPRING CATCH, CORBIN, YALE, OR APPROVED EQUAL.
- E. PANELBOARD BUSES SHALL BE COPPER, AND BUS CONNECTIONS SHALL BE ARRANGED FOR CONSECUTIVE PHASING.
- F. BREAKERS SHALL BE BOLT-IN. MULTIPLE BREAKERS SHALL BE OF INTEGRAL OR COMMON TRIP TYPE.
- G. PANEL DIRECTIVES SHALL BE TYPED.
- H. CIRCUIT BREAKERS IN SEPARATE ENCLOSURES SHALL CONFORM TO REQUIREMENTS FOR BREAKERS MOUNTED IN PANELBOARDS.

I. ALL PANELBOARDS SHALL BE DEAD-FRONT, SAFETY-TYPE EQUIPPED WITH SINGLE OR MULTI-POLE CIRCUIT BREAKERS, SPECIFIED IN THIS SECTION AND AS SCHEDULED ON THE DRAWINGS. ALL PANELBOARDS SHALL BE RECESSED WALL MOUNTED WITH A MINIMUM CAPACITY OF 24 CIRCUITS. PANELBOARDS SHALL BE SUITABLE FOR 120-240 VOLTS, SINGLE PHASE, AND FOUR WIRE OPERATIONS AS SCHEDULED ON THE DRAWINGS. ALL PANELBOARDS SHALL HAVE A CIRCUIT DIRECTORY CARD MOUNTED IN A FRAME WITH PLASTIC COVER INSTALLED ON THE INSIDE OF THE DOOR. ALL DIRECTORY CARDS SHALL BE PROPERLY FILLED IN "TYPE WRITTEN" AND INDICATING AREAS AND DEVICES SERVED BY EACH CIRCUIT. ALL CIRCUIT BREAKERS SHALL BE BOLTED-TYPE, QUICK-MADE AND QUICK-BREAK TYPE OF MANUAL OPERATION, TRIP FREE, AND WITH INVERSE TIME CHARACTERISTICS SECURED THROUGH THE USE OF BIMETALLIC THERMAL-MAGNETIC TRIPPING ELEMENTS. ALL MULTI-POLE BREAKERS SHALL HAVE A SIMULTANEOUS TRIP. SINGLE POLE, DOUBLE AND THREE-POLE CIRCUIT BREAKERS FOR LIGHTING AND POWER PANEL BOARDS SHALL BE 240 VOLTS, TYPE QOB-H FOR 30 AMPS AND BELOW, TYPE Q1B-H FOR 40 AMPS THROUGH 100 AMPS, HAVING NEMA INTERRUPTING CAPACITY NOT LESS THAN 10,000 AMPERES A.C. AT 240 VOLTS OR LESS. PANELBOARDS SHALL BE TYPE NQOD PANEL BOARDS AS MANUFACTURED BY SQUARE "D" COMPANY, I.T.E., GENERAL ELECTRIC, WESTINGHOUSE, PETERSON. CIRCUIT BREAKERS IN LIGHTING PANEL SHALL BE APPROVED "SWITCHING TYPE" CIRCUIT BREAKERS.

18. LOCAL FIRE ALARM SYSTEM:

- A. SYSTEM SHALL BE NON-CODED, SUPERVISED (STATIONS, GONGS AND DETECTORS), ZONE INDICATING, MARCH TIME RINGING WITH ANNUNCIATOR. ALL COMPONENTS SHALL HAVE FIRE DEPARTMENT APPROVAL) SHOP DRAWINGS SHALL INCLUDE APPROVAL NUMBERS).
- B. CONTROL PANEL: SHALL BE SURFACE MOUNTED, COMPLETE WITH MULTI-AMMETER, AUDIBLE TROUBLE SIGNAL WITH SILENCING SWITCH AND PILOT LIGHT AND AUTO- TRANSFORMERS FOR COMPENSATING GONG CIRCUITS. PROVIDE MINIMUM OF ONE GONG- CIRCUIT FOR EACH 8 GONGS OR FRACTION THEREOF, AND ONE SPARE CIRCUIT. UPON ACTUATION OF STRIKE DETECTOR OR DETECTOR, PANEL SHALL OPERATE SYSTEM ON A MARCH TIME TEMPO.
- C. DISARRANGEMENT SIGNAL: SHALL CONSIST OF A FLUSH, WALL MOUNTED LAMP, BUZZER AND SILENCING SWITCH ARRANGED TO OPERATE CONTINUOUSLY UNTIL TROUBLE HAS BEEN CLEARED AND SYSTEM RESTORED TO ITS NORMAL OPERATING CONDITION.
- D. STRIKING STATIONS: SHALL BE PULL- HANDLE, BREAK-GLASS ROD TYPE. EACH STATION SHALL BE SEMI-FLUSH, WALL MOUNTED 4'-6" AFF, UNLESS NOTED OTHERWISE. SIMPLEX CAT 4251-113 OR APPROVED EQUAL.
- E. WIRING: REQUIREMENTS INDICATED ON DRAWINGS ARE APPROXIMATE. EXACT REQUIREMENTS TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND MINIMUM CODE REQUIREMENTS. MINIMUM CONDUIT SIZE SHALL BE 3/4".
- F. SUPERVISION: EQUIPMENT MANUFACTURER SHALL PROVIDE THE SERVICES OF A FACTORY-TRAINED REPRESENTATIVE TO CHECK THE INSTALLATION OF THIS EQUIPMENT. THIS REPRESENTATIVE SHALL PRESENT WHEN THE SYSTEM IS FIRST ENERGIZED AND OPERATED. CONTRACTOR SHALL FURNISH A LETTER OF CERTIFICATION FROM THE EQUIPMENT MANUFACTURER THAT THE INSTALLATION IS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- G. DRAWINGS: CONTRACTOR SHALL PREPARE ONE-LINE BUILDING DRAWINGS, (FLOOR PLANS) TO SCALE, SHOWING NUMBER OF DETECTORS, TYPES, AND LOCATIONS. SUBMIT TWO SETS TO THE FIRE DEPARTMENT FOR APPROVAL. FURNISH ONE APPROVED SET TO THE DEPARTMENT OF PUBLIC WORKS FOR RECORD PURPOSES.
- H. PHOTOELECTRIC SMOKE DETECTOR: THIS DETECTOR SHALL BE UL APPROVED, WORKS ON THE PHOTOELECTRIC PRINCIPLE, AND USES A STABLE LED LIGHT SOURCE AND SILICON PHOTODIODE AS THE RECEIVING ELEMENT TO FORM A HIGHLY ACCURATE MEANS OF SMOKE DETECTION. CONSUMES VERY LITTLE POWER IN NORMAL OPERATION. DUE TO THE BUILT-IN-LINE FILTER COMBINED WITH TIME DELAY CIRCUITRY AND SHIELDED CIRCUITS WILL PREVENT FALSE OPERATION, WHICH MAY RESULT IN MOMENTARY VOLTAGE OR SMOKE TRANSIENTS AND ALSO, WIND VELOCITY WILL NOT BE A FACTOR IN ITS OPERATION EXCEPT AS A CARRIER OF SMOKE TO OR AWAY FROM THE DETECTOR. SIMPLEX CAT. NO. 2098-9529 OR APPROVED EQUAL.
- I. HEAT DETECTOR: HEAT DETECTOR SHALL BE AN ULTRA SENSITIVE ELECTRIC THERMOSTAT DESIGNED TO AUTOMATICALLY DETECT THE EXCESSIVE HEAT CREATED BY A FIRE AND IT SHALL NOT BE RUGGED AND AFFECTED BY VIBRATION. ALL METAL PARTS SHALL BE BRASS OR ALUMINUM AND MOUNTED ON A DURABLE, MINERAL- FILLED, PHENOLIC BASE. NO EXPOSED METAL PARTS SHOULD CARRY CURRENT AND ELECTRIC CONTACT SHOULD BE ALL SILVER GLAD AND OF AMPLE SIZE SIMPLEX CAT. NO. 2098 OR APPROVED EQUAL.

LEASING OFFICE

CLUB HOUSE

Walker Mill Apartments

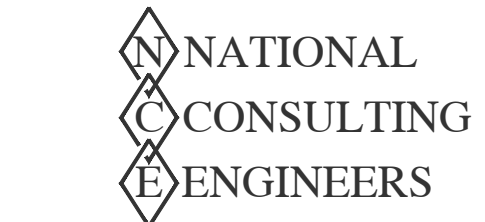
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I CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NUMBER: 16869,
EXPIRATION DATE: March 25, 2016

graphic scales

project: 21418

phase: Permit

date: 17 April 2015

revisions:

ELECTRICAL SPECIFICATIONS