

## ELECTRICAL NOTES (IN COMPLIANCE F.B.C 2017)

- ALL WIRING RUNS EXPOSED, CONCEALED IN MASONRY WALLS OR CONCRETE SLABS, BENEATH SLABS OF GRADE OR RUN UNDERGROUND, SHALL BE IN RIGID GALVANIZED STEEL CONDUIT. ELECTRICAL METALLIC TUBING MAY BE CONCEALED IN INTERIOR HOLLOW WALLS AND ABOVE SUSPENDED CEILINGS.
- ALL WIRES SHALL BE COPPER UNLESS SPECIFICALLY OTHERWISE INDICATED ON THE DRAWINGS. ALL INSULATION SHALL BE TYPE "THW", OR "THHN/THWN".
- BOXES SHALL BE PROVIDED FOR ALL OUTLETS. IN GENERAL, THESE BOXES SHALL BE STAMPED OR PRESSED SHEET METAL. BOXES IN HAZARDOUS AREAS SHALL BE APPROVED FOR THE CONDITIONS INDICATED.
- ALL CONDUITS SHALL BE SECURELY FASTENED TO THE BUILDING WITH PIPE STRAPS OR OTHER APPROVED PIPE SUPPORTS.
- MANUFACTURER'S NAMES AND CATALOG NUMBERS ARE USED TO DEFINE THE TYPE AND QUALITY OF EQUIPMENT AND MATERIAL. EQUAL ITEMS OF OTHER MANUFACTURERS ARE ACCEPTABLE WITH THE APPROVAL OF THE ENGINEER.
- ALL WORK SHALL BE DONE IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ALL APPLICABLE STATE AND LOCAL CODES, AND THE LOCAL UTILITY COMPANY REQUIREMENTS.
- ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER.
- AS SOON AS PRACTICABLE, AND WITHIN THIRTY DAYS AFTER THE AWARD OF THE CONTRACT, AND BEFORE ANY MATERIALS OR EQUIPMENT ARE RELEASED FOR SHIPMENT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A COMPLETE LIST OF MATERIALS AND EQUIPMENT THAT HE PROPOSES TO FURNISH AND INSTALL, GIVING MANUFACTURER'S NAMES, TRADE NAMES, CATALOG NUMBERS, ETC. SEVEN COPIES SHALL BE FURNISHED.
- WHERE A CONDUIT PASSES THROUGH A BUILDING EXPANSION JOINT OR A STRAIGHT RUN EXCEEDS 200 FT. AND APPROVED EXPANSION FITTING WITH BONDING JUMPER SHALL BE INSTALLED.
- WHERE FUSIBLE EQUIPMENT IS SPECIFIED, DELIVER TO THE OWNERS REPRESENTATIVE SPARE FUSES IN THE AMOUNT OF 10 % OF EACH SIZE USED ON THE JOB WITH A MINIMUM OF 3 FUSES OF EACH SIZE.
- THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING HIS BID IN ORDER THAT HE MAY BECOME AWARE OF EXISTING CONDITIONS. NO ALLOWANCES WILL BE MADE FOR ANY EXISTING CONDITION OF WHICH THIS CONTRACTOR WAS NOT AWARE.
- CIRCUIT NUMBERS SHOWN ARE FOR IDENTIFICATION ONLY. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO COMPLETE PHASE PANEL BOARD (BALANCE LOAD).
- SEE EQUIPMENT LAYOUT PLANS FOR EXACT LOCATION OF ALL MOTORS AND OTHER EQUIPMENT BEFORE ROUGHING-IN.
- ELECTRICAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT NOT FURNISHED UNDER THIS SECTION BEFORE ROUGHING-IN.
- SEE EQUIPMENT LAYOUT PLANS FOR LOCATION OF BUILDING EQUIPMENT BEFORE ROUGHING-IN.
- ELECTRICAL CONTRACTOR SHALL VERIFY LOCATION OF ALL EQUIPMENT'S REQUIRING ELECTRICAL CONNECTION BEFORE ROUGHING-IN.
- CONDUIT RUNS ARE SHOWN SCHEMATICALLY. BUILDING CONDITIONS WILL DETERMINE THE ACTUAL CONDUIT RUN.
- ELECTRICAL CONTRACTOR SHALL VERIFY WITH MANUFACTURER THE LOCATION OF CONNECTION BOX OF EACH EQUIPMENT BEFORE ROUGHING-IN.
- WHERE WIRE SIZES ARE INDICATED ON THE PLANS FOR ANY INDIVIDUAL CIRCUITS, THE INDICATED WIRE SIZE SHALL APPLY TO THE COMPLETE CIRCUIT UNLESS OTHERWISE INDICATED.
- ALL MOTORS STARTERS FOR FANS, PUMPS, BOILERS, AIR CONDITIONING, ETC.; SHALL BE EQUIPPED WITH OVERLOAD PROTECTION IN EACH PHASE LEG. STARTERS FOR MOTORS RATED AT 50 HP. OR LESS AT 208 v., MAY BE ACROSS THE LINE TYPE, WHERE APPLICABLE STARTERS FOR LARGER MOTORS SHALL BE REDUCED VOLTAGE TYPE PART WINDING, PRIMARY RESISTOR, ETC.)
- ALL EQUIPMENT FURNISHED WITH CORD, THE CORD SHALL BE SHORTENED AND INSTALLED WITH CORRECT OUTLET PLUG, JACKS, ETC., AS REQUIRED FOR COMPLETE INSTALLATION OF EQUIPMENT. ALSO WHEN APPLICABLE RECEPTACLES SHALL BE FURNISHED TO MATCH THE ELECTRICAL EQUIPMENT SERVED BY.
- ALL ELECTRICAL SERVICE EQUIPMENT SHALL BE READILY ACCESSIBLE AND SHALL HAVE CLEAN AND DRY LOCATION AND BE PROTECTED FROM PHYSICAL DAMAGE. ALSO, CLEAN WORKING SPACE SHALL BE PROVIDED AROUND EQUIPMENT AS PER NEC. 110-16 (a)(b).
- JUNCTION AND PULLBOXES SHALL BE SECURELY MOUNTED TO THE BUILDING STRUCTURE WITH SUPPORTING FACILITIES INDEPENDENT OF THE CONDUITS ENTERING OR LEAVING THE BOXES. BRACKETS, RODS, HANGERS, BOLTS OF OTHER SUITABLE SUPPORTING METHOD MAY BE USED.
- JUNCTION AND PULLBOXES SHALL BE GALVANIZED CODE-GAUGE SHEET STEEL, WITH SCREWED ON COVER, NEMA 1, OF SIZES AND SHAPE TO ACCOMMODATE WIRING WITHOUT CROWDING AND TO SUIT LOCATION.
- ALL JUNCTION AND PULLBOXES SHALL BE ACCESSIBLE ALL THE TIME.
- ALL RACEWAYS ROUTED, INSULATED CONDUCTORS SYSTEM SHALL BE COLOR CODED AS PER NEC. STANDARDS.
- COMPLY WITH THE N.E.C. 2014 AND FLORIDA BUILDING CODE 2017 6th EDITION.

## SITE INVESTIGATION NOTE

EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK: THE BIDDER IS REQUIRED, BEFORE SUBMITTING HIS PROPOSAL, TO VISIT THE SITE OF THE PROPOSED WORK AND FAMILIARIZE HIM OR HERSELF WITH THE NATURE AND EXTENT OF THE WORK AND ANY LOCAL CONDITIONS THAT MAY IN ANY MANNER AFFECT THE WORK TO BE DONE AND EQUIPMENT. MATERIALS AND LABOR REQUIRED THEREFORE, SINCE THE WORK INVOLVES NEW AND/OR EXISTING BUILDINGS, SYSTEMS AND FACILITIES, SPECIAL CONSIDERATION SHALL BE GIVEN TO EXAMINATION OF WORKING CONDITIONS, NEW FACILITIES AND ALL BUILDING STRUCTURES FAMILIARIZE TO HIMSELF WITH ALL EXISTING CONDITIONS. SLIGHT VARIATION OF ROUTING AND OR CONSTRUCTIONS SHOULD BE ANTICIPATED BY THIS CONTRACTOR TO AVOID CONFLICTS WITH OTHER TRADES. THESE VARIATIONS ARE EXPRESSLY INCLUDED AS PART OF THE WORK WHENEVER REQUIRED AT NO ADDITIONAL COST TO THE OWNER. IGNORANCE ON THE PART OF THE CONTRACTOR WILL IN NO WAY RELIEVE HIM OF THE OBLIGATIONS AND RESPONSIBILITY ASSUMED UNDER THIS CONTRACT.

### NOTE

CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO THE BUILDING OWNER, INCLUDING: 1) A SINGLE-LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND 2) FLOOR PLANS INDICATING LOCATION AND AREA SERVED FOR ALL DISTRIBUTION. PROVIDE CIRCUIT NUMBERS ON FLOOR PLANS. 405.7.4.2 MANUALS. CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT AN OPERATION MANUAL AND MAINTENANCE MANUAL BE PROVIDED TO THE BUILDING OWNER. THE MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: 1) SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTING MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED. 3) NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.

### ELECTRICAL SYMBOL LEGEND

- JUNCTION BOX
- CEILING MOUNTED FIXTURE
- WALL MOUNTED FIXTURE
- GFI RECEPTACLE
- ELECTRIC PANEL
- WP/WR WEATHER PROOF/WATER RESISTANT SWITCH
- GFI GROUND FAULT INTERRUPTER
- DISCONNECT SWITCH
- POLE WITH LIGHT
- COURTESY LIGHTS
- PH PHOTO SENSOR CONTROL

### NOTES:

ANY DEVIATION FROM THIS DRAWING WILL BE RESPONSIBLE OF THE ELECTRICAL CONTRACTOR TO PROVIDE SHOP DRAWINGS, CATALOG CUTS, POINT BY POINT CALCULATION, AND SITE LIGHTING LETTER OF ACCEPTANCE BY A PROFESSIONAL ENGINEER.

ALL SINGLE PHASE RECEPT. SHALL BE 20 AMP, RATED UL LISTED & APPROVED FOR COMMERCIAL USE.

EGRESS ILLUMINATION MUST COMPLY WITH A MINIMUM OF 1 FOOT CANDLE FBC 1006.

CONTRACTOR TO VERIFY THE ELECTRICAL INFORMATION PROVIDED.

ALL EXTERIOR AND INTERIOR LIGHTING ARE CONTROLLED VIA TIMER FROM HOUSE PANEL OR PHOTO CELL TO COMPLY FBC. C405.2.4 2017 EDITION.

PROVIDE 75% ENERGY EFFICIENCY LAMPS F.B.C. E 405.

PROVIDE 50% OF ALL RECEPTACLES SHALL BE CONTROLLED BY AN AUTOMATIC CONTROL DEVICE TO COMPLY W/FBC CE 405/ASHRAE 90.1 (2010) SECTION 8.4.2

LUMINARIES INSTALLED IN WET OR DAMP LOCATION SHALL BE SUITABLE FOR WET AND DAMP LOCATION AND SHALL BE MARKED. 410.10(A) EXTERIOR LIGHTS.

PROVIDE SIGNAGE, WARNING OF ARC FLASH HAZARDS AS PER NEC 110.16.

### SHORT CIRCUIT CALCULATION AT MAIN BKR

WORST CONDITION FROM TX TO BLDG#3 (MAIN SERVICE)

Isc=38620 SYM AMPS (F.P.L. TRANSFORMER)(LETTER)

$$F = \frac{2 \times L \times I_{sc}}{C \times N \times E} = \frac{2 \times 20 \times 38620}{28033 \times 2 \times 240 \text{ Volts}} = 13455840$$

$$F = \frac{2 \times 20 \times 38620}{28033 \times 2 \times 240 \text{ Volts}} = 13455840$$

$$F = 0.112$$

$$M = \frac{1}{1+F} = \frac{1}{1+0.112} = \frac{1}{1.112} = 0.899$$

$$I_{sc} = I_{sc} \times M = (38620)(0.899) = 34730 \Rightarrow \text{USE 42000 AICS IN O.C.P.D AT MAIN BKR}$$

#### LEGEND :

Isc= AVAILABLE SHORT CKT. CURRENT OF FAULT.

Isc = TRANSFORMER SHORT CKT. CURRENT.

L = LEGEND (FEET) OF CKT TO THE FAULT.

C = CONSTANT FOR FEEDER FROM TABLE "C".

E = L-L = VOLTAGE LINE TO LINE.

F = FACTOR.

M = FACTOR.

N = NUMBER OF CONDUCTORS PER PHASE (ADJUST "C" VALUE FOR PARALLEL RUNS.)

## LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	Number Lamps	Lumens per Lamp	LLF	Watts	Polar Plot
	A	13	VUE-2-T2-96L-1050-40K-UNV	27.06" L X 21.56" W X 8" H LED LUMINARIES ALUMINUM REFLECTOR WITH CLEAR LENS.		1	31830	1	316	25'-0"
	B	13	Model # 7787-05B or equal	8.7" L X 8.7" W X 16.2" H LED Exterior Lighting Product Type Post and Lamp Sets	Light Bulb Base Code E26	1	—	—	60	6'-0"

### FREE STAND #1

#### FEEDER - VOLTAGE DROP CALCULATION

DISTANCE FROM TX TO PNL H-1 L=38' IS IRRELEVANT, SEE WORST CASE (FREE STAND #3)

#### FEEDER - VOLTAGE DROP CALCULATION

DISTANCE FROM TX TO PNL H-2 L=159' IS IRRELEVANT, SEE WORST CASE (FREE STAND #3)

#### BRANCH CIRCUIT - VOLTAGE DROP CALCULATION

WORST CASE FROM "PANEL "H-1" TO FARTHEST LUMINARY (A)

CIRCUIT H-1(1,3), L=237 LF, I=5.3 Amp, WIRE#10

$$V_d = \frac{2 \times L \times I \times R}{1000} = \frac{2 \times 237 \times 5.3 \times 1.3}{10380} = 3.12$$

$$\%V_d = \frac{3.12 \times 100}{240V} = 1.3\% \leq 3\%$$

#### BRANCH - VOLTAGE DROP CALCULATION

DISTANCE FROM PNL H-2 TO FARTHEST LUMINARY (A) L=157' IS IRRELEVANT SEE WORST CASE (FREE STAND #3)

#### BRANCH CIRCUIT - VOLTAGE DROP CALCULATION

WORST CASE FROM "PANEL "H-1" TO FARTHEST CIRCUIT (SPRINKLER PUMP)

CIRCUIT H-1(5,7), L=289 LF, I=17 Amp, WIRE#10

$$V_d = \frac{2 \times L \times I \times R}{1000} = \frac{2 \times 289 \times 17 \times 1.3}{10380} = 2.0$$

$$\%V_d = \frac{2.0 \times 100}{240V} = 0.8\% \leq 3\%$$

### SERVICE - VOLTAGE DROP CALCULATION

WORST CASE FROM "TX" TO SERVICE

PANEL H-3, L=192 LF, I=18 Amp, WIRE#2

$$V_d = \frac{2 \times L \times I \times R}{1000} = \frac{2 \times 12.9 \times 192 \times 1.8}{66360} = 1.4$$

$$\%V_d = \frac{1.4 \times 100}{240V} = 0.5\% \leq 2\%$$

#### BRANCH CIRCUIT - VOLTAGE DROP CALCULATION

WORST CASE FROM "PANEL "H-3" TO FARTHEST LUMINARY (A)

CIRCUIT H-3(1,3), L=266 LF, I=6.5 Amp, WIRE#10

$$V_d = \frac{2 \times L \times I \times R}{1000} = \frac{2 \times 12.9 \times 266 \times 6.5}{10380} = 4.2$$

$$\%V_d = \frac{4.2 \times 100}{240V} = 1.7\% \leq 3\%$$

#### BRANCH CIRCUIT - VOLTAGE DROP CALCULATION

WORST CASE FROM "PANEL "H-3" TO FARTHEST CIRCUIT (RECEPTACLE)

CIRCUIT H-3(6), L=292 LF, I=1.5 Amp, WIRE#10

$$V_d = \frac{2 \times L \times I \times R}{1000} = \frac{2 \times 12.9 \times 292 \times 1.5}{10380} = 1.0$$

$$\%V_d = \frac{1.0 \times 100}{240V} = 0.9\% \leq 3\%$$

## ELECTRICAL GENERAL SITE PLAN

SCALE: 1/32"= 1'-0"

### Revisions

- 02.01.19 1ST ISSUE
- 08.23.19 B.D.C
- 10.28.19 B.D.C

## PROPOSED NEW BLDG #5 (7 UNITS)

THE VILLAGES AT MIAMI GARDENS

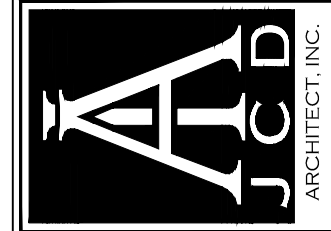
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Job No.

Date

Scale SHOWN

Seal

AA-26001560

Sheet No.

E-0