

# ELECTRICAL SPECIFICATIONS (NEC 2020)

## GENERAL:

- ENTIRE INSTALLATION TO COMPLY WITH THE (NFPA 70), NFPA STANDARDS AS APPLICABLE IN ADDITION TO SPECIFICATIONS AS OUTLINED BELOW. ALL ELECTRICAL WORK FOR THE ENTIRE PROJECT SHALL BE PERFORMED IN A NEAT AND CRAFTSMANLIKE MANNER BY PERSONS SKILLED IN THE TRADE, AND SHALL BE DONE UNDER THE SUPERVISION OF A MASTER ELECTRICIAN LICENSED TO DO WORK IN THE AREA WHERE THE PROJECT IS TO BE CONSTRUCTED. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST COPY OF THE NATIONAL ELECTRIC CODE PRESENTLY ENFORCED.

## SCOPE:

- THE PROJECT INCLUDING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION INCLUDING, BUT NOT LIMITED TO, POWER SERVICES (TEMPORARY, NORMAL, AND STAND-BY OR EMERGENCY), SWITCHBOARDS, AUTOMATIC TRANSFER SWITCHES, SERVICE ENTRANCES, DISCONNECTS, DISTRIBUTION PANELS, CONDUIT, WIRING, JUNCTION AND OUTLET BOXES, WIRING DEVICES AND COVER PLATES, LIGHTING FIXTURES, CONNECTION CHORDS, SPECIAL CONNECTIONS AND OUTLETS, ALL AS ILLUSTRATED ON THE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES, UTILITY COMPANIES, AND GOVERNING AUTHORITIES.

- THE ELECTRICAL CONTRACTOR TO FURNISH A MINIMUM 100 AMP SINGLE PHASE TEMPORARY SERVICE. POWER COMPANY FEES AND MONTHLY ELECTRIC BILL TO BE PAID BY THIS CONTRACTOR.

## CODES:

- ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH ANSI, NFPA70, STATE OF FLORIDA LAWS, AND ALL LOCAL RULES AND REGULATIONS, INCLUDING THE NATIONAL ELECTRIC CODE AND ENERGY CODE IN EFFECT.

## DRAWINGS:

- THE DRAWINGS ARE DIAGRAMMATIC, AND DO NOT SHOW ALL CHANGES IN HEIGHT, STRUCTURAL MEMBERS, DUCTWORK, PIPING, BRACKETS AND ANY OTHER NUMBER OF ITEMS WHICH MIGHT CAUSE A CONFLICT. THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OTHER TRADES AS TO THE LOCATION OF HIS DEVICES AND NECESSARY AREAS FOR PANELS AND CONDUIT/WIRING RUNS. VERIFY AND COORDINATE ALL ELECTRICAL WORK WITH ALL TRADES TO PROVIDE A TIMELY INSTALLATION. ADDITIONAL CHARGES DUE TO LACK OF COORDINATION WILL NOT BE APPROVED.

## MATERIAL:

- ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS, AND SHALL BE LISTED BY AND BEAR THE U.L. LABEL WHERE SUBJECT TO APPROVAL. MATERIALS SHALL BE OF THE SAME MANUFACTURER OR BRAND FOR EACH TYPE OF MATERIAL, UNLESS DESIGNATED OTHERWISE.

## FIXTURES:

- ALL FIXTURES SHALL BE AS LISTED IN THE LIGHTING FIXTURE SCHEDULES. ALL FIXTURES SHALL BE UL LISTED OR EQUAL TESTING AGENCY, AND SHALL BE SPECIFICALLY LISTED FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.

## PANELS:

- ALL PANELS TO BE FURNISHED AS PER PANEL SCHEDULES PROVIDED. SQUARE D, GE, AND SIEMENS ARE ACCEPTABLE MANUFACTURERS.

- ALL SWITCHBOARD AND OVERCURRENT DEVICES SHALL BE SERIES-RATED TO WITHSTAND THE AVAILABLE FAULT CURRENT; ADDITIONAL VERIFICATION WITH LOCAL UTILITY COMPANY DURING CONSTRUCTION IS REQUIRED.

## DEVICES:

- EXTERIOR DISCONNECT SWITCHES SHALL BE NEMA 3R ENCLOSURES AND ELECTRICALLY PROTECTED AS PER MANUFACTURER'S SPECIFICATIONS.
- INTERIOR DISCONNECT SWITCHES SHALL BE NEMA 1 ENCLOSURES AND ELECTRICALLY PROTECTED AS PER MANUFACTURER'S SPECIFICATIONS.
- DISCONNECTS LOCATED WITHIN CORROSIVE ENVIRONMENTS OR NEAR CORROSIVE STORED MATERIALS SHALL BE NEMA-4X.
- EXTERIOR DISCONNECTS SERVING LIFT STATIONS SHALL BE NEMA-4X STAINLESS STEEL.
- SWITCHES SHALL BE 20 AMP, SPECIFICATION GRADE TOGGLE SWITCHES. SIDE WIRED WITH GROUNDING TERMINAL; COLOR SHALL BE WHITE (UNLESS NOTED OTHERWISE) WITH MATCHING COVERPLATE; MOUNTING HEIGHT SHALL BE +48" AFF TO BOTTOM.
- RECEPTACLES SHALL BE 15 AMP MINIMUM, SPECIFICATION GRADE. SIDE WIRED WITH GROUNDING TERMINAL. COLOR SHALL BE WHITE (UNLESS NOTED OTHERWISE) WITH MATCHING COVERPLATE; MOUNTING HEIGHT NOTED IN SYMBOL LEGEND OR ON DRAWING.
- ALL 15- AND 20-AMPERE, 125- AND 250-VOLT NON-LOCKING-TYPE RECEPTACLES IN THE AREAS SPECIFIED IN NEC 406.12 SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES.
- ALL RECEPTACLES INSTALLED IN KITCHENS, KITCHEN COUNTER TOPS, OR WITHIN 6 FEET (6') OF A WATER SUPPLY (i.e. SINK), SHALL BE GROUND FAULT CIRCUIT INTERRUPTER (G.F.C.I.) DEVICES WITH DOWNSTREAM DEVICES IDENTIFIED.
- ALL 120-VOLT, SINGLE PHASE, 15- AND 20-AMPERE BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN BATHROOMS SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL.

## BRANCH CIRCUIT WIRING:

- ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE SPECIFIED ON PLANS.
- MINIMUM BRANCH CIRCUIT WIRING SHALL BE #12 AWG THIN COPPER.

## TYPICAL NOTES:

- EQUIPMENT FURNISHED AND PHYSICALLY INSTALLED BY "OTHERS". ALL ELECTRICAL CONNECTIONS EXTERNAL TO THE EQUIPMENT SHALL BE MADE BY THE ELECTRICAL CONTRACTOR. WIRE, CONDUIT, LUGS, RECEPTACLES, PIGTAILS, DISCONNECTS, ETC. AS MAY BE REQUIRED SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR.  
NOTE: INCLUDE WORSE CONDITION IN PRICING. VERIFY ROUGH-IN LOCATIONS, TYPE OF CONNECTION AND AMPACITY REQUIRED FROM APPLICABLE EQUIPMENT DRAWINGS PRIOR TO INSTALLING ANY CONDUIT, CONDUCTORS OR BOXES.
- WALL TELEPHONE/DATA OUTLET. INSTALL 2-GANG BOX WITH MODULAR TELEPHONE DEVICE IN COVER PLATE. INSTALL (1) 3/4" EMT CONDUIT TO ACCESSIBLE CEILING SPACE OR HOMERUN TO TELEPHONE/COMPUTER TERMINAL EQUIPMENT. HEIGHT, UNLESS NOTED, IS 18" ABOVE FINISH FLOOR.
- PROVIDE LIGHT FIXTURE AND RECEPTACLE AT LOCATIONS INDICATED FOR HVAC MAINTENANCE LIGHTING. USE COMBINATION SWITCH AND RECEPTACLE FOR LIGHT CONTROL. FIELD DETERMINES EXACT LOCATION AND HEIGHT.
- SWITCHED JUNCTION BOX IN CEILING FOR CEILING FAN OR LIGHT. NOTE: BOX MUST BE IDENTIFIED FOR FAN SUPPORT USE; ANCHOR TO STRUCTURE TO SUPPORT 75 LBS. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL FAN AND/OR LIGHT, AND ALL WIRING, INCLUDING SWITCH AND POWER LEGS. VERIFY AND COORDINATE FAN TYPE WITH OWNER.
- IF THE CEILING SPACE OR HVAC CLOSETS IN THIS PROJECT WILL BE USED AS A RETURN AIR PLENUM THEN ALL MATERIALS AND COMPONENTS LOCATED ABOVE CEILING SPACE OR CLOSET (WITHIN RETURN AIR PLENUM) SHALL BE APPROVED FOR PLENUM USE (OR) SHALL BE WRAPPED WITH A UL LISTED AND APPROVED PLENUM WRAP AND INSTALLED PER MANUFACTURER'S INSTRUCTIONS. MATERIALS AND WRAPS SHALL MEET THE FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723. THIS NOTE SHALL APPLY TO ALL ITEMS LOCATED WITHIN THE RETURN AIR PLENUM SPACE WHETHER THEY ARE NEW OR EXISTING. ENTIRE PLENUM SPACE SHALL COMPLY WITH LOCAL BUILDING CODES. THIS NOTE SHALL SUPERCEDE ALL OTHER NOTES LOCATED ON THESE DRAWINGS OR OTHER DRAWINGS INCLUDED FOR THIS PERMIT.

## GENERAL NOTES: ELECTRICAL

- ALL ELECTRICAL SWITCHGEAR, PANELS, AND DEVICES SHALL BE INSTALLED 1'-0" ABOVE FLOOD ELEVATION. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOD ELEVATION AND COORDINATE WITH GENERAL CONTRACTOR.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ALL ELECTRICAL SERVICE ROUGH-IN AND INSTALLATION DETAILS, FEES, WITH THE LOCAL POWER COMPANY/UTILITY FIELD ENGINEER PRIOR TO AND INCLUDE IN BID/ELECTRICAL METERING EQUIPMENT AND METERING DEVICES ARE REQUIRED TO BE APPROVED BY POWER COMPANY.
- THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH ALL STATE/LOCAL BUILDING CODES/ORDINANCES/REGULATIONS PRESENTLY IN EFFECT. IN ADDITION, COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.).
- THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE IN ORDER TO FAMILIARIZE THEM SELF WITH EXISTING CONDITIONS, FAILURE TO DO SO WILL NOT WARRANT ANY ADDITIONAL CHARGES TO THE OWNER.
- THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN THEIR BID, ANY CUTTING OR PATCHING OF CONCRETE/ASPHALT PAVEMENTS, ETC. TO RUN ELECTRICAL.
- ALL EQUIPMENT, FIXTURES, ETC. SHALL BE STARTED, TESTED, ADJUSTED AND PLACED IN SATISFACTORY OPERATING CONDITION. THIS CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP. MATERIALS AND EQUIPMENT TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY (C.O.), AND SHALL REPAIR ANY SUCH DEFECTS WITHOUT COST TO THE OWNER. ALL EQUIPMENT SHALL BE COVERED FOR THE DURATION OF THE MANUFACTURER'S GUARANTEE WARRANTY. THIS CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEE AND WARRANTIES.
- HVAC AIR HANDLER AND CONDENSING UNIT CIRCUIT BREAKERS MUST BE UL LISTED AS "HACR" RATED. IN ORDER TO USE NON-AUTO DISCONNECTS AT HVAC EQUIPMENT. IF NOT LISTED, THEN A FUSED DISCONNECT IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S NAMEPLATE REQUIREMENTS MUST BE INSTALLED AT THE EQUIPMENT.
- THE ELECTRICAL, GENERAL, HVAC, AND PLUMBING CONTRACTOR(S) SHALL STRICTLY ADHERE TO THE FOLLOWING ITEMS WHEN DEALING WITH ELECTRICAL EQUIPMENT CLEARANCES.
  - NO PIPING OR DUCTWORK OF ANY KIND SHALL BE INSTALLED ABOVE ANY SWITCHBOARD OR PANELBOARD. THIS AREA TO REMAIN CLEAN FROM THE EQUIPMENT TO 25 ABOVE OR TO THE BOTTOM OF THE STRUCTURAL SLAB.

B. A CLEARANCE OF 36" MINIMUM SHALL BE MAINTAINED IN FRONT OF ELECTRICAL EQUIPMENT FOR THE ENTIRE WIDTH OF THE EQUIPMENT, PLUS A MINIMUM OF 30" TOTAL LEFT/RIGHT CLEARANCE.

## GENERAL NOTES: ELECTRICAL (CONTINUED)

- ALL "WEATHERPROOF" ("WP") DEVICES ARE TO BE INSTALLED WITH A WEATHER SHIELDING COVER.
- ALL ELECTRICAL CONDUITS NOT CONTAINING SPECIFIED CONDUCTORS SHALL HAVE A PULL WIRE INSTALLED.
- DO NOT SCALE THE ELECTRICAL DRAWINGS; REFER TO THE ARCHITECTURAL PLANS FOR EQUIPMENT LOCATIONS, CABINETS, CEILING GRIDS, DOOR SWINGS, ETC.
- THE INTENT OF THESE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL ELECTRICAL INSTALLATION.
- IT IS NOT THE INTENT OF THESE PLANS TO SHOW ALL DETAILS OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS SUCH AS HARDWARE, J-BOXES, CONDUIT FITTINGS, ETC., AS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION.
- TECHNICIANS SKILLED IN THEIR TRADE SHALL PERFORM ALL ELECTRICAL INSTALLATIONS IN A PROFESSIONAL MANNER.
- WIRE TO, AND MAKE CONNECTIONS AS NECESSARY, TO ALL PIECES OF EQUIPMENT (FURNISHED BY OTHERS), FOR COMPLETE AND SATISFACTORY OPERATION BY THE OWNER.
- ALL ELECTRICAL PANELS SHALL BE LABELED WITH THEIR RESPECTIVE SOURCES PER NEC 408.4(B)
- ALL SERVICE AND FEEDER CONDUITS SHALL HAVE EXPANSION FITTINGS WHEN PENETRATING SLABS, ETC. TO ALLOW FOR STRUCTURAL SETTLEMENT.
- PROVIDE "PVC" CONDUITS STUBBED OUT, BELOW GRADE FOR ADDITIONAL SERVICES, IN ORDER TO PROVIDE CONCEALED TELEPHONE AND/OR DATA SERVICE ENTRANCE.
- PROVIDE TIME CLOCKS WITH BATTERY BACK-UP TO CONTROL ALL SIGNAGE AND EXTERIOR LIGHTING CIRCUITS. SEE POWER RISER DIAGRAM FOR ADDITIONAL DETAILS.
- ALL CONDUCTORS SHALL BE TYPE THINWALL COPPER (CU) UNLESS OTHERWISE CALLED FOR ON THESE DOCUMENTS. SEE PANEL SCHEDULES AND RISER DIAGRAM.
- ALL LIGHTING FIXTURES (INCLUDING THOSE PROVIDED BY OTHERS) ARE TO BE INSTALLED UNDER THIS CONTRACT. SEE SCHEDULE FOR FIXTURE RECOMMENDATIONS, LAMPS, ETC.
- ALL LIGHTING BRANCH CIRCUITS TO BE WIRED WITH #16 SOLID AWG CU CONTROL CONDUCTORS (GREY & PURPLE) FOR LIGHT FIXTURE CONTROL WIRING.
- NOTICE TO CONTRACTOR: REVISIONS TO THESE DRAWINGS AND CERTIFICATION THEREOF WHICH MAY BE REQUIRED BECAUSE OF CONTRACTOR (OFFER) REVISIONS, SHALL BE COMPENSATED TO THE ENGINEER(S) BY THE REQUESTING CONTRACTOR. PAYMENT SHALL BE REQUIRED AT THE TIME OF CERTIFICATION DELIVERY.

## INSTALLATION:

### GENERAL:

- ROUGH-IN LOCATIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, AS WELL AS EQUIPMENT SIZE, TO AVOID CONFLICT WITH OTHER TRADES.
- PRIOR TO ROUGH-IN, THE ELECTRICAL CONTRACTOR SHALL RELOCATE, AS DIRECTED BY THE OWNER/ARCHITECT, ANY PIECE OF EQUIPMENT IN THE VERTICAL AND/OR HORIZONTAL DIRECTION UP TO 15'-0" FROM THE LOCATION SHOWN ON THE DRAWINGS AT NO ADDITIONAL COSTS TO THE OWNER.

### WIRING METHODS:

- BELOW GRADE: SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED NONMETALLIC CONDUIT. CONDUIT MAY BE RUN IN OR BELOW CONCRETE, AND CONCEALED IN WALLS TO FIRST BOXES. ALL PVC COMPONENTS (PIPING, FITTINGS, CEMENT, ETC.) SHALL BE FROM THE SAME MANUFACTURER.
- EXTERIOR ABOVE GRADE: SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED METALLIC OR NONMETALLIC CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER.

NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL BE SIX FEET (6').

- EXTERIOR EQUIPMENT: SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED LIQUIDTIGHT FLEXIBLE METALLIC OR NONMETALLIC CONDUIT (MINIMUM 3/4"). ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER.

NOTE: MAXIMUM LENGTH OF FLEXIBLE CONDUIT BETWEEN MEANS OF DISCONNECT (OR JUNCTION BOX) AND EQUIPMENT SHALL BE THREE FEET (3').

- INTERIOR: SINGLE- OR MULTI-CONDUCTOR COPPER WIRE WITH GROUND, MEETING N.E.C. AND NEMA REQUIREMENTS, IN APPROVED METALLIC (EMT) CONDUIT. ALL COMPONENTS (PIPING, FITTINGS, ETC.) SHALL BE FROM THE SAME MANUFACTURER. CONDUITS SHALL BE CONCEALED IN OR BEHIND CEILINGS, WALLS, OR FLOORS, EXCEPT WHERE EXPOSED RACEWAYS ARE SPECIFICALLY PERMITTED.

NOTE: EMT SHALL NOT BE INSTALLED IN LOCATIONS (1) SUBJECT TO SEVERE DAMAGE, (2) IN CONTACT WITH EARTH, (3) IN CONCRETE SLABS ON GRADE, (4) OTHER LOCATIONS AS LISTED IN N.E.C., ARTICLE 358.12.

EXCEPTION: NON-METALLIC SHEATHED CABLE (NM, NMC, NMS) MAY BE USED WITHIN DWELLING UNITS, IN COMPLIANCE WITH N.E.C., ARTICLE 334.

- ELECTRICAL SYSTEM EXPANSION: ANY PANELBOARD MOUNTED SO THAT ITS FRONT FACE IS FLUSH WITH THE FINISHED WALL SHALL HAVE ONE (1) 3/4" EMT CONDUIT INSTALLED FROM PANELBOARD TO ACCESSIBLE CEILING SPACE FOR EVERY FOUR (4) OR MAJOR FRACTION THEREOF, POLES INDICATED AS "SPACE" OR "SPARE" IN THE PANELBOARD SCHEDULE PER THESE DOCUMENTS.
- EXCEPTION: PANELBOARDS INSTALLED ON A WALL SURFACE, WHERE AT LEAST THREE (3) SIDES, NOT INCLUDING THE FRONT, REMAIN ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY SHALL NOT BE REQUIRED TO MEET #16320.5.

- ELECTRICAL BOXES: ALL OUTLET, DEVICE, AND JUNCTION BOXES SHALL BE STANDARD 4" SQUARE GALVANIZED STEEL OR APPROVED PLASTIC, 1-1/2" DEEP, WITH DEVICE RINGS OF THE SAME MATERIAL UNLESS OTHERWISE NOTED. GALVANIZED BOXES SHALL BE MANUFACTURED BY APPLETON, NATIONAL, STEEL CITY, RACO OR APPROVED EQUAL. PLASTIC BOXES SHALL BE ALLED, NELLO, CARLON, OR EQUAL. ALL ELECTRICAL BOXES MUST BE ACCESSIBLE AFTER CERTIFICATE OF OCCUPANCY.

## EQUIPMENT:

- WIRE TO, AND MAKE CONNECTIONS TO, ALL PIECES OF EQUIPMENT FURNISHED BY OTHERS FOR COMPLETE AND SATISFACTORY OPERATION BY OTHERS.
- THIS CONTRACT TO INCLUDE CONNECTION OF LINE VOLTAGE ONLY. CONTROL WIRING TO BE BY THE HVAC CONTRACTOR.

## GROUNDING:

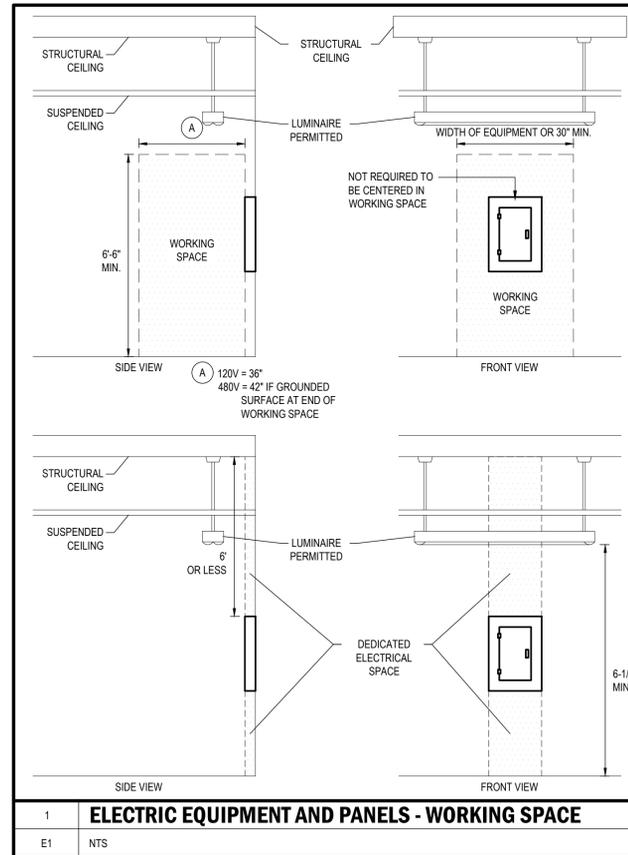
- THE ENTIRE ELECTRICAL GROUNDING SYSTEM SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF SECTION 250.66 AND 250.122 OF THE NATIONAL ELECTRIC CODE, INCLUDING BUT NOT LIMITED TO, THE ELECTRICAL SERVICE, ITS EQUIPMENT AND ENCLOSURE, CONDUITS AND OTHER CONDUCTIVE ENCLOSURES, NEUTRAL OR IDENTIFIED CONDUCTOR OF INTERIOR WIRING SYSTEM, MAIN PANELBOARD, POWER AND LIGHTING PANELBOARDS, NON-CURRENT-CARRYING METAL PARTS OF FIXED EQUIPMENT SUCH AS MOTORS, STARTER AND CONTROLLER CABINETS, INSTRUMENT CASES AND LIGHTING FIXTURES.
- PROVIDE A SERVICE GROUND ACCORDING TO N.E.C. ARTICLE 250. THE MINIMUM INSTALLATION TO INCLUDE: BUILDING FOOTER FOUNDATION REINFORCING STEEL TURNED UP OR OTHERWISE EXPOSED AT THE SERVICE LOCATION WITH APPROVED CONNECTOR TO BOND A GROUNDING CONDUCTOR SIZED PER TABLE 250 TO THE STEEL AND A DRIVEN ROD GROUND (MINIMUM 5/8" BY 8" DEEP) WITH #6 COPPER GROUNDING CONDUCTOR. IF AVAILABLE ON THE PREMISES, ALSO BOND METAL COLD WATER PIPING, METAL BUILDING FRAME AND GROUND RING WITH JUMPERS SIZED FROM 250-94.
- ALL TELEPHONE, DATA, TELEVISION, AND OTHER TERMINAL EQUIPMENT SHALL BE BONDED TO THE GROUNDING ELECTRODE WITH MINIMUM #8 AWG-CU.

## WARRANTY: NOTE

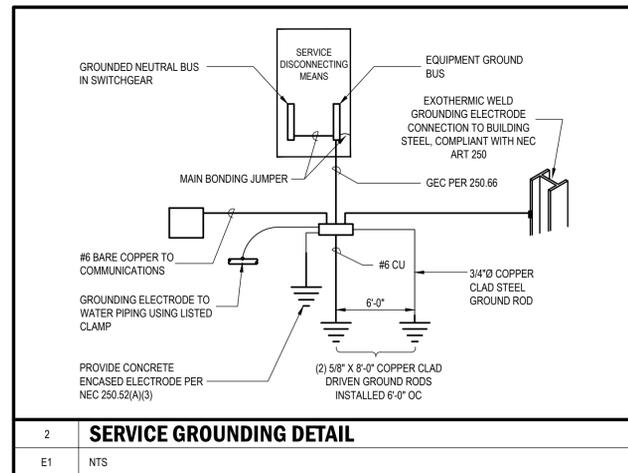
- ELECTRICAL CONTRACTOR TO PROVIDE FULL WARRANTY (PARTS AND LABOR) ON ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE SCOPE OF WORK FOR A PERIOD OF ONE YEAR FROM THE CERTIFICATE OF OCCUPANCY.
- E.C. SHALL PROVIDE OWNER AND ENGINEER WITH REPRODUCIBLE "AS-BUILT" DRAWINGS SHOWING ALL REQUIRED MODIFICATIONS THAT HAVE OCCURRED IN THE FIELD.

## SITE VERIFICATION NOTES

- ALL ITEMS ON THESE DRAWINGS MARKED AS "EXISTING" OR "EXIST" SHALL BE VERIFIED IN FIELD ANY DIFFERENCES BETWEEN ITEMS OR EQUIPMENT INDICATED AS EXISTING SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OR ARCHITECT.
- PRIOR TO CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE PHASE TO PHASE VOLTAGE AVAILABLE IS EQUAL TO EACH OTHER, AND EQUAL TO VOLTAGE SHOWN ON THESE DRAWINGS. A DIFFERENCE IN PHASE TO PHASE VOLTAGE MAY INDICATE THE PRESENCE OF A "HIGH LEG" DELTA SYSTEM. ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR REQUIRED REVISIONS.
- SPLIT PHASE CIRCUIT BREAKERS ARE NOT PERMITTED TO BE INSTALLED ON HIGH LEG DELTA SYSTEMS. HIGH LEG DELTA SYSTEMS SHALL BE LABELED PER 408.3 AND THE HIGH LEG CONDUCTOR TO BE MARKED PER 110.15.



1 ELECTRIC EQUIPMENT AND PANELS - WORKING SPACE  
E1 NTS



2 SERVICE GROUNDING DETAIL  
E1 NTS

## CODE COMPLIANCE STATEMENT

ENTIRE INSTALLATION SHALL COMPLY WITH CODES BELOW, IN ADDITION TO ALL REFERENCED STANDARDS OR ANY OTHER LOCALLY ADOPTED AMENDMENTS.

FLORIDA BUILDING CODE:	2023 EDITION
FLORIDA ENERGY CODE:	2023 EDITION
FLORIDA FIRE CODE:	2023 EDITION
FLORIDA FUEL GAS CODE:	2023 EDITION
FLORIDA MECHANICAL CODE:	2023 EDITION
FLORIDA PLUMBING CODE:	2023 EDITION
FLORIDA FIRE PREVENTION CODE:	2023 EDITION
NATIONAL ELECTRICAL CODE:	2020 EDITION

TO THE BEST OF OUR KNOWLEDGE, THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE ABOVE INDICATED CODES.

## ELECTRICAL PLAN LEGEND

(CLG = CEILING) (SW=INSTALL PER 210.62) (U) = USB / DUPLEX RECEPTACLE

- 120V DUPLEX RECEPTACLE @ 18" AFF
- 120V DUPLEX RECEPTACLE @ 44" AFF (ABOVE COUNTER) OR SPECIAL HEIGHT)
- SPECIAL PURPOSE RECEPTACLE (VERIFY NEMA CONFIGURATION)
- QUADPLEX RECEPTACLE @ 44" AFF 120V
- QUADPLEX RECEPTACLE @ 18" AFF 120V
- DUPLEX GFCI RECEPTACLE @ 18" AFF 120V
- DUPLEX GFCI RECEPTACLE @ 44" AFF (ABOVE COUNTER) OR SPECIAL HEIGHT)
- SIMPLEX (ABOVE COUNTER) OR SPECIAL HEIGHT)
- SINGLE-POLE TOGGLE SWITCH (OS= OCCUPANCY SENSOR) (T-TIMER)
- SINGLE-POLE DIMMER SWITCH (COMPATIBLE W/ LIGHT FIXTURE)
- WALL MOUNTED OCCUPANCY SENSOR
- CEILING MOUNTED OCCUPANCY SENSOR
- DATA/PHONE ROUGH-IN BOX W/ 1" CONDUIT STUBBED TO CLG)
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- JUNCTION BOX (ACCESSIBLE)
- ELECTRICAL PANEL
- DIRECTIONAL SIGN (UL LISTED WITH 90 MINUTE BATTERY)
- DUAL HEAD EMERGENCY LIGHT (UL LISTED WITH 90 MIN. BATTERY)
- COAXIAL CABLE ROUGH IN BOX
- 120V RECEPTACLE COAXIAL CABLE. DATA ROUGH IN BOX - VERIFY FINAL HEIGHT.
- CARD ACCESS READER ROUGH IN BOX

## ELECTRICAL LEGEND NOTES

- VERIFY ALL RECEPTACLE MOUNTING HEIGHTS WITH OWNER
- LOW VOLTAGE INDICATED ON THESE DRAWINGS IS FOR ROUGH-IN BOX LOCATIONS ONLY AND DOES NOT INCLUDE ANY WIRING OR CABLING REQUIRED. ALL LOW VOLTAGE WILL BE PERMITTED SEPARATELY BY THE CONTRACTOR. THIS INCLUDES BUT IS NOT LIMITED TO DATA WIRING, SPEAKER WIRING, TV COAX WIRING ETC.

ST. JAMES CITY FIRE STATION  
STORAGE BUILDING  
5015 STRINGFELLOW ROAD  
ST. JAMES CITY, FL 33956

**CASTELLANOS + TRAMONTE** ARCHITECTS  
1228 LAFAYETTE STREET SUITE #1 CAPE CORAL, FLORIDA 33904  
(239) 549-0997  
AA 26003303

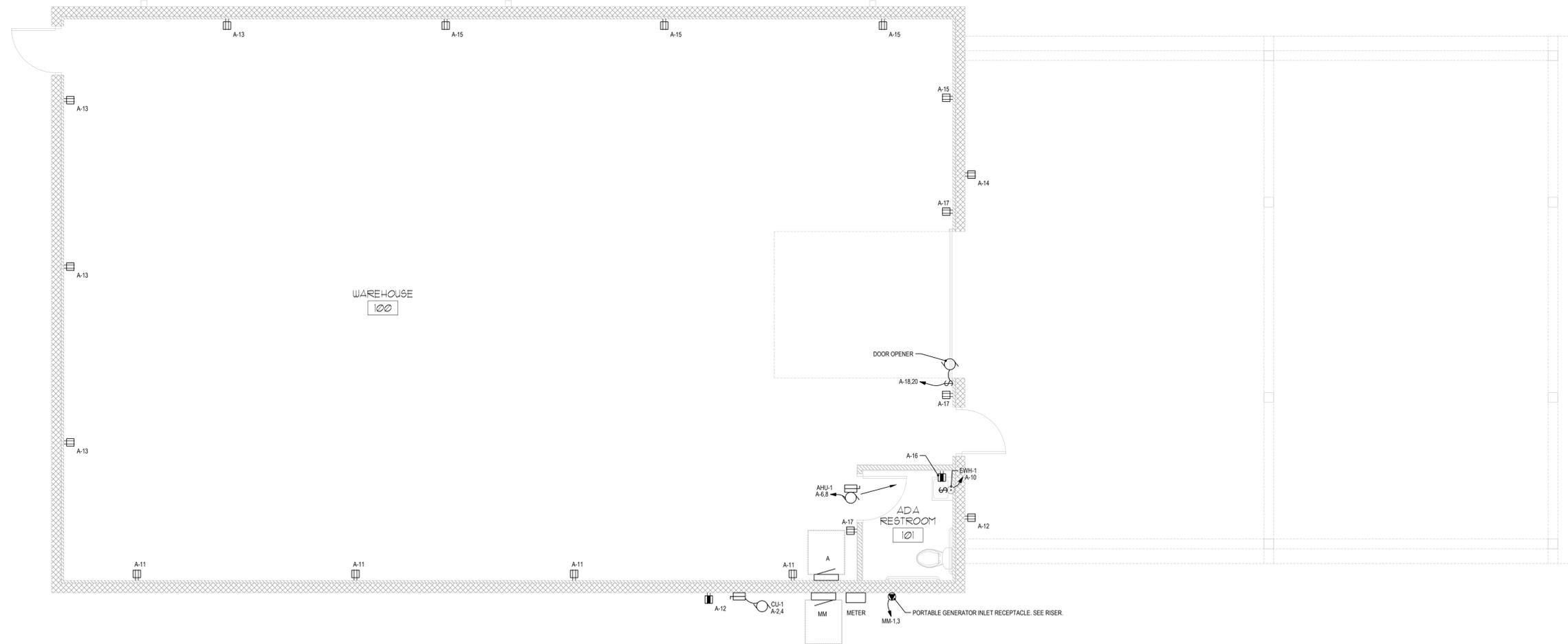
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ARCHITECT/ENGINEER STAMP

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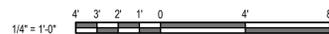
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UT-1  
FINAL TRANSFORMER LOCATION  
TO BE DETERMINED BY UTILITY  
SERVICE PLANNER

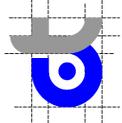
**ELECTRICAL POWER FLOOR PLAN**  
SCALE: 1/4" = 1'-0" 

**GRAPHIC SCALE**



ST. JAMES CITY FIRE STATION  
STORAGE BUILDING  
5015 STRINGFELLOW ROAD  
ST. JAMES CITY, FL 33956

**CASTELLANOS + TRAMONTE**  
ARCHITECTS



1228 LAFAYETTE STREET SUITE #1 CAPE CORAL, FLORIDA 33904  
(239) 549-0997

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PERMIT/BID SET	05/09/25
REV-1 BLDG COM	08/20/25

ARCHITECT/ENGINEER STAMP

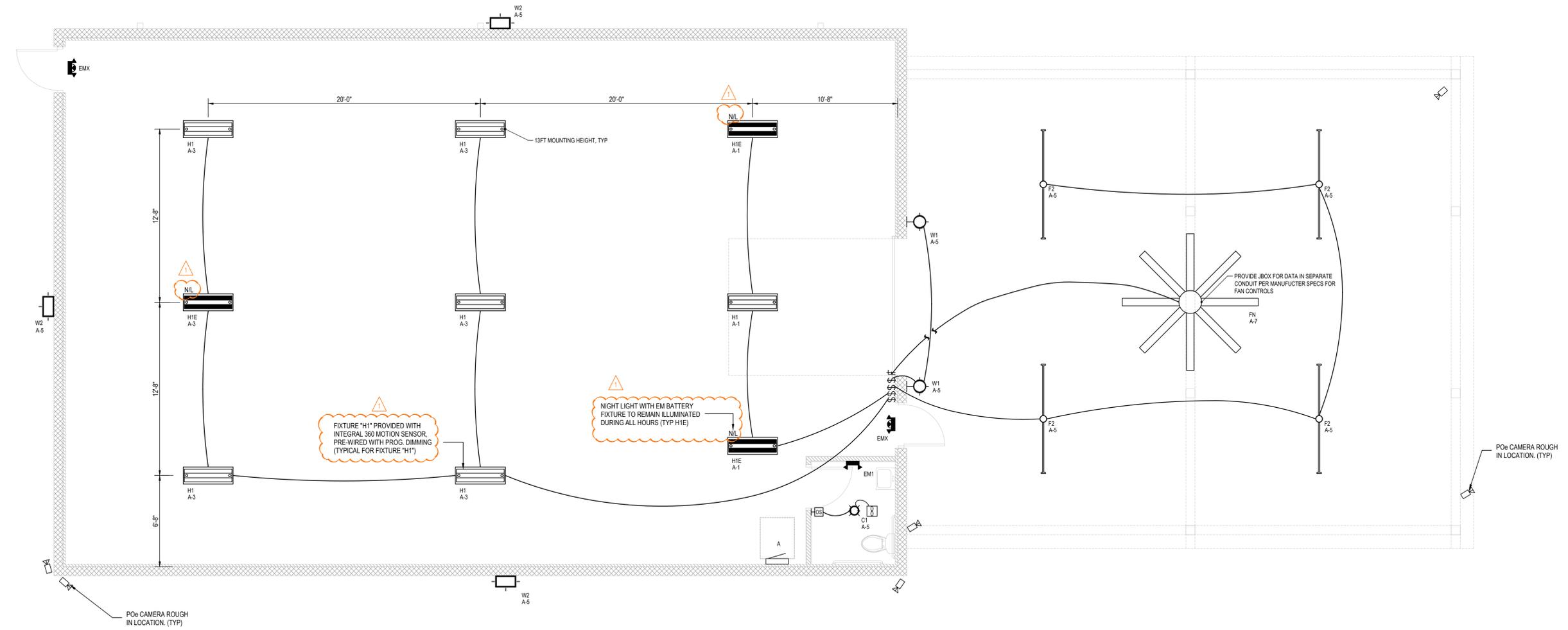
DRAWING NAME:

**NPS Consulting**  
MECHANICAL | ELECTRICAL | PLUMBING | ENGINEERING  
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SHEET  
**E2**

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 5015 STRINGFELLOW ROAD  
 ST. JAMES CITY, FL 33956

**CASTELLANOS + TRAMONTE**  
 ARCHITECTS  
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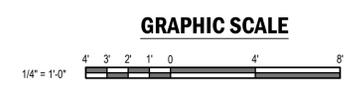
**ELECTRICAL LIGHTING FLOOR PLAN**   
 SCALE: 1/4" = 1'-0"

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ISSUED FOR:	
PERMIT/BID SET	05/09/25
REV-1 BLDG COM	08/20/25

ARCHITECT/ENGINEER STAMP

DRAWING NAME:

SHEET  
**E3**



**NPS Consulting**  
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MOUNTING: SURFACE FED FROM: MM		<b>PANEL: A</b>		FUSED AT: 200 AIC RATING: 22,000 MAIN BKR: MLO LUGS: STANDARD									
VOLTS: 240/120V 1-PH 3W BUS AMPS: 200													
NOTE:													
CKT #	CKT BKR	WIRE SIZE	EG SIZE	LOAD KVA	CIRCUIT DESCRIPTION	Φ	CIRCUIT DESCRIPTION	LOAD KVA	EG SIZE	WIRE SIZE	CKT BKR	CKT #	
1	20/1	#12	#12	0.408	HIGH BAY LTG WH	A	CU-1	9.36	#10	#8	40/2	2	
3	20/1	#12	#12	0.816	HIGH BAY LTG WH	B						4	
5	20/1	#12	#12	0.362	LTS/EMERG. RESTROOM, EXTERIOR	A	AHU-1	2.64	#12	#12	15/2	6	
7	20/1	#12	#12	0.12	EXTERIOR HVLS FAN	B						8	
9	-/1			0	(SHUNT TRIP)	A	EW-1	2.4	#10	#10	25/1	10	
11	20/1	#12	#12	0.72	RECEPTS: WAREHOUSE	B	RECEPTS: EXTERIOR	0.36	#12	#12	20/1	12	
13	20/1	#12	#12	0.72	RECEPTS: WAREHOUSE	A	RECEPTS: EXTERIOR	0.18	#12	#12	20/1	14	
15	20/1	#12	#12	0.72	RECEPTS: WAREHOUSE	B	RECEPTS: RESTROOM / HVAC SERV	0.18	#12	#12	20/1	16	
17	20/1	#12	#12	0.54	RECEPTS: WAREHOUSE	A	DOOR OPENER	0.864	#12	#12	20/2	18	
19	20/1	#12	#12	1	PARKING LOT LIGHTS (T/C)	B						20	
21	-/1			0		A		0			-/1	22	
23	-/1			0		B		0			-/1	24	
25	-/1			0		A		0			-/1	26	
27	-/1			0		B		0			-/1	28	
29	-/1			0		A		0			-/1	30	
31	-/1			0		B		0			-/1	32	
33	-/1			0		A		0			-/1	34	
35	-/1			0		B		0			-/1	36	
37	-/1			0		A		0			-/1	38	
39	-/1			0		B		0			-/1	40	
41	-/1			0		A	SPD (SURGE SUPPRESSION)	0			30/2	42	
				CONN KVA		CALC KVA							
LIGHTING		2.71		3.38		(125%)		NONCONTINUOUS		3.26		3.26 (100%)	
LARGEST MOTOR		9.36		2.34		(25%)		HEATING		12		12 (100%)	
RECEPTACLES		3.42		3.42		(50%>10)		COOLING		12		0 (0%)	
								TOTAL LOAD				24.4	
								BALANCED LOAD				102 A	
								PHASE A				100%	
								PHASE B				98.8%	

MOUNTING: SURFACE FED FROM: UT-1		<b>PANEL: MM</b>		FUSED AT: 200 AIC RATING: 22,000 MAIN BKR: 200 LUGS: FEEDTHRU									
VOLTS: 240/120V 1-PH 3W BUS AMPS: 200													
NOTE:													
CKT #	CKT BKR	WIRE SIZE	EG SIZE	LOAD KVA	CIRCUIT DESCRIPTION	Φ	CIRCUIT DESCRIPTION	LOAD KVA	EG SIZE	WIRE SIZE	CKT BKR	CKT #	
1	20/2	#12	#12	0	50A/2P (GENERATOR)	A		0			-/1	2	
3						B		0			-/1	4	
				CONN KVA		CALC KVA							
LIGHTING		2.71		3.38		(125%)		NONCONTINUOUS		3.26		3.26 (100%)	
LARGEST MOTOR		9.36		2.34		(25%)		HEATING		12		12 (100%)	
RECEPTACLES		3.42		3.42		(50%>10)		COOLING		12		0 (0%)	
								TOTAL LOAD				24.4	
								BALANCED LOAD				102 A	
								PHASE A				100%	
								PHASE B				98.8%	

LUMINAIRE SCHEDULE						
MARK	QTY	SYMBOL	DESCRIPTION	MODEL	WATTS	NOTES
C1	1		4" ROUND DOWNLIGHT, LOW LUMENS, CLEAR, SPECULAR REFLECTOR, CRIB, ADJUSTABLE LUMENS, ADJUSTABLE CCT	LITHONIA: LDN4 AL01 SWW1 LSS MVOLT UG21	13	0-10V1%-ADJUSTABLE LUMENS, ADJUSTABLE CCT
EM1	1		EMERGENCY LIGHT, AC POWERED, WITH 90 MIN. BATTERY AND SELF-DIAGNOSTICS	LITHONIA: ELM2 UVOLT SDRT		UL LISTED, PROVIDED WITH 90MIN BATTERY AND SELF DIAGNOSTICS
EMX	2		COMBO EXTEMERGENCY LIGHT, RED LETTERS, AC POWERED, WITH 90 MIN. BATTERY, WITH SELF-DIAGNOSTICS	LITHONIA: LHQM LED R SD		UL LISTED, PROVIDED WITH 90MIN BATTERY AND SELF DIAGNOSTICS
F2	4		8FT VAPOR PROOF LED STRIP LIGHT, 80CRI SWITCHABLE LUMENS, 6000LM, 8000LM, 10000LM SWITCHABLE WHITE, 35K / 40K / 50K	LITHONIA: CSV7-AL04-MVOLT-SHW3-80CRI	73	0-10V, PROVIDE WITH REQUIRED MOUNTING HARDWARE.
FN	1		10FT HVLS EXTERIOR FAN, 120V/10A	FINAL MODEL, TYPE, AND DIAMETER TO BE SELECTED BY OWNER	120	TO BE SHUNT TRIPPED. PROVIDE WITH CONTROLS PER MANUFACTURE SPECIFICATIONS
H1	6		IBH 18,000 LUMENS SEMI-DIFFUSE ACYCLIC LENS (MEDIUM DISTRIBUTION, 4000K, 80CRI, PROVIDED WITH 360 MOTION SENSOR, PRE-WIRED, WITH PROGRAMMABLE DIMMING)	LITHONIA: IBE-L48-18000LM-ATC-MD-MVOLT-G210-40K-80CRI-LAHSZU	136	13FT MOUNTING HEIGHT, UNO, 0-10V DIMMING PROVIDE WITH REQUIRED HARDWARE AND ACCESSORIES.
H1E	3		IBH 18,000 LUMENS SEMI-DIFFUSE ACYCLIC LENS (MEDIUM DISTRIBUTION, 4000K, 80CRI, WITH 90MIN EMERGENCY BATTERY)	LITHONIA: IBE-L48-18000LM-ATC-MD-MVOLT-G210-40K-80CRI-E15WCP	136	13FT MOUNTING HEIGHT, UNO, 0-10V DIMMING PROVIDE WITH REQUIRED HARDWARE AND ACCESSORIES. PROVIDED WITH EMERGENCY BATTERY
W1	2		EXTERIOR ADA COMPLIANT WALL SCONCE LED	BROWNLEE: 7317-BZ-806-WHA-35K	6	
W2	3		EXTERIOR WALL PACK LED WITH INTERNAL PHOTOCCELL, 2000LM, 40K	LITHONIA: WDG1 LED P2 40K 80CRI VF MVOLT SRM PE DDBXD	15	

ALL FIXTURES TO BE REVIEWED AND APPROVED BY OWNER, ENGINEER, ARCHITECT, AND INTERIOR DESIGNER PRIOR TO CONSTRUCTION.

EQUIPMENT CONNECTION SCHEDULE							
CALLOUT	SYMBOL	VOLTS AND PHASE	CIRCUIT	BREAKER	AMPS	KVA	NOTES
AHU-1		240/120V 1-PH 3W	A-6.8	15/2	11	2.64	
CU-1		240V 1-PH 2W	A-2.4	40/2	39	9.36	
DOOR OPENER		240/120V 1-PH 3W	A-18.20	20/2	3.6	0.86	
EW-1		120V 1-PH 2W	A-10	25/1	20	2.4	

VERIFY ALL INFORMATION ON SCHEDULE WITH HVAC CONTRACTOR AND NAMEPLATE DATA. MOOP SUBJECT TO CHANGE.

FEEDER SCHEDULE		
ID	FEEDER AMPS	CONDUIT AND FEEDER
2002	200	2" C, 2#30, #3/0N, #6G
2002/A	200	2" C, 2#30, #3/0N

SIZING METHOD: NEC 310.15

FAULT CURRENT SCHEDULE				
DEVICE	FAULT	AIC RATING	L-L VOLTS	L-N VOLTS
UT-1	18,055	100,000	240V	120V
MM	11,163	22,000	240V	120V
A	10,275	22,000	240V	120V

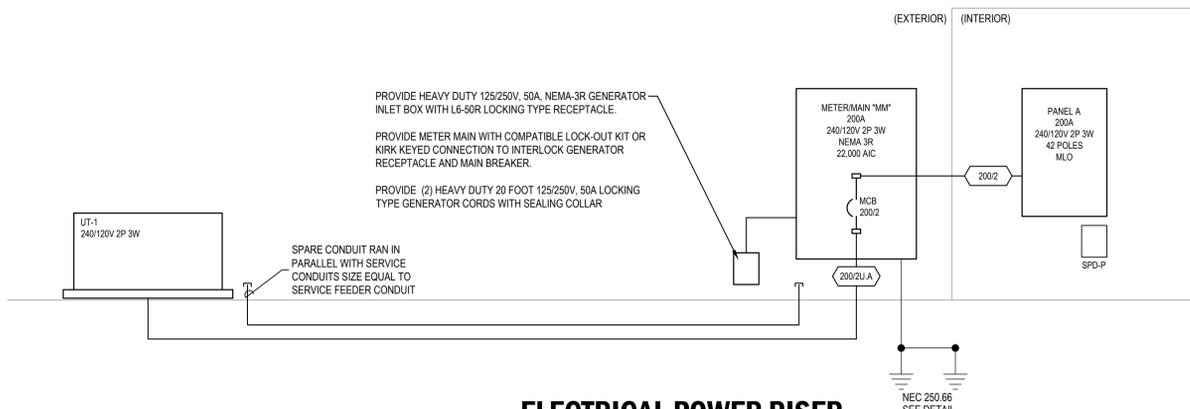
FEEDER LENGTHS INDICATED WITHIN FAULT CURRENT SCHEDULE ARE FOR REFERENCE ONLY AND SHALL NOT BE USED FOR BIDDING PURPOSES.

THE SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT IN WHICH IT IS INSTALLED PER SECTION 110.24(A)

SPD SURGE SUPPRESSION SCHEDULE				
CALLOUT	QUANTITY	MANUFACTURER	MODEL NO.	KA / PHASE
SPDP	1	PQ PROTECTION	PQC100	100 kA

VOLTAGE DROP SCHEDULE				
DEVICE	VOLTAGE DROP	FEEDER		TOTAL VOLTAGE DROP
		WIRE SIZE	LENGTH	
UT-1	0%		-	0%
MM	0.45%	#30	61'	0.45%
A	0.54%	#30	12'	2%

FEEDER LENGTHS INDICATED WITHIN VOLTAGE DROP SCHEDULE ARE REFERENCE ONLY AND SHALL NOT BE USED FOR BIDDING PURPOSES.



**ELECTRICAL POWER RISER**  
SCALE: NTS

ST. JAMES CITY FIRE STATION  
STORAGE BUILDING  
5015 STRINGFELLOW ROAD  
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**CASTELLANOS + TRAMONTE** ARCHITECTS

1228 LAFAYETTE STREET SUITE #1 CAPE CORAL, FLORIDA 33904  
(239) 549-0997

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CHECKED BY	---
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