

ELECTRICAL SPECIFICATIONS

GENERAL REQUIREMENTS:

REFER TO GENERAL AND SPECIAL CONDITIONS, ETC. OF THE CONTRACT REGARDING THE INSURANCE, TEMPORARY UTILITIES, AND OTHER ITEMS AFFECTING THIS CONTRACT.

VISIT THE JOB SITE TO GET FAMILIAR WITH THE EXISTING CONDITIONS.

THE WORK COVERED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS CONSISTS IN PROVIDING A COMPLETE SYSTEM INCLUDING LABOR, MATERIALS, ETC.

THE TERM "PROVIDE" USED THROUGHOUT SPECIFICATIONS AND ON DRAWINGS SHALL MEAN TO FURNISH, INSTALL AND CONNECT WITH ALL RELATED ACCESSORIES AS REQUIRED FOR COMPLETE INSTALLATION READY FOR USE.

COMPLY WITH ALL CODES, LAWS AND REGULATIONS APPLICABLE TO ELECTRICAL INSTALLATION, INCLUDING LATEST NATIONAL ELECTRICAL AND OTHER APPLICABLE CODES. GIVE ALL REQUIRED NOTICES, OBTAIN NECESSARY PERMITS, LICENSES, INSPECTIONS, TESTS AND PAY ALL REQUIRED FEES. PROVIDE A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM THE LOCAL ELECTRICAL INSPECTOR. INCLUDE IN THE BID ALL ADDITIONAL COSTS FROM THE LOCAL POWER, AND TELEPHONE COMPANY FOR UNDERGROUND ELECTRICAL AND TELEPHONE SERVICE AND EQUIPMENT AS THEY MAY APPLY.

THE ENTIRE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE WHICH INCLUDES THE LATEST EDITION OF THE NATIONAL ELECTRICAL AND ALL OTHER APPLICABLE CODES, WITH LATEST REVISIONS.

CHECK AND VERIFY WITH THE OWNER, EQUIPMENT SUPPLIERS, AND ALL OTHER CONTRACT DOCUMENTS FOR THE PROJECT THE EXACT REQUIREMENTS FOR PROVIDING REQUIRED AND COMPLETE SERVICES FOR EQUIPMENT, SYSTEMS, ETC., AS SHOWN OR INDICATED. MINOR CHANGES IN OUTLET, LIGHT AND EQUIPMENT LOCATION MAY BE MADE AT ANY TIME PRIOR TO ROUGHING-IN OF THE ELECTRICAL WORK WITHOUT ANY ADDITIONAL COSTS.

INCLUDE ALL EXCAVATION, TRENCHING AND BACKFILLING TO ORIGINAL GRADE AND TO 95% COMPACTION AS REQUIRED FOR INSTALLATION AND COMPLETION OF ALL ELECTRICAL WORK. REFER TO SUPPLEMENTARY CONDITIONS FOR TESTING OF BACKFILLING. PROVIDE SHORING FOR ALL EXCAVATION AND TRENCHING TO PREVENT CAVE-INS. ALL EXCAVATION AND TRENCHING SHALL BE UNCLASSIFIED UNLESS OTHERWISE STATED IN GENERAL AND SPECIAL CONDITIONS OR IN PROPOSAL FORM.

BACKFILL AND TAMP IN 6" LAYERS USING ONLY CLEAN EARTH WITHOUT ANY ROCKS, DEBRIS, ETC.

IT IS ASSUMED THAT ALL MATERIAL TO BE EXCAVATED IS EARTH AND SHALL INCLUDE ALL MATERIALS NOT CLASSIFIED AS ROCK, WHICH SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, SHALE, HARDPAN, LOOSE SHALE, LOOSE STONE IN MASSES AND BOULDERS MEASURING LESS THAN 1/2 CUBIC YARD IN VOLUME. ROCK EXCAVATION SHALL COMPRISE THE FOLLOWING: BOULDERS LARGER THAN 1/2 CUBIC YARD OR MORE IN VOLUME, UNSTRATIFIED MASSES AND ROCK IN LEDGES THAT POSSESSES THE CHARACTERISTICS OF SOLID ROCK WHICH CANNOT BE REMOVED WITHOUT SYSTEMATIC DRILLING AND/OR BLASTING.

CUTTING AND PATCHING OF EXISTING PAVING, WALKS, ETC., AS REQUIRED FOR INSTALLATION OF NEW CONDUIT, BOXES, ETC. WILL BE DONE BY THE ELECTRICAL CONTRACTOR. CUT AND PATCH WALKS, PAVING, ETC. AS REQUIRED FOR INSTALLATION OF NEW CONDUITS, ETC. REPAIR CUT WALKS, PAVING, CURBS, ETC. WITH SAW CUT SECTIONS. PATCH CUT AREAS TO MATCH ADJACENT AREAS AND SURFACES.

SUBMITTALS:

SUBMIT ELECTRONIC COPY OF SUBMITTAL DATA FOR ALL MATERIALS AND EQUIPMENT THAT ARE TO BE INSTALLED ON THIS PROJECT. UPON APPROVAL BY THE ENGINEER, ELECTRONIC COPY WILL BE RETURNED.

PRIOR TO SUBMITTING INFORMATION, THE CONTRACTOR SHALL REVIEW INFORMATION TO ENSURE IT COMPLIES WITH THE CONTRACT DOCUMENTS AND ALL APPLICABLE CODES. THE CONTRACTOR SHALL NOT SUBMIT DATA UNTIL IT COMPLIES.

STAMP ALL SUBMITTAL DATA AND SHOP DRAWINGS AS "APPROVED" ONCE THE DATA COMPLIES INDICATING FULL COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. SHOP DRAWINGS AND SUBMITTAL DATA WILL NOT BE REVIEWED WITHOUT THE "APPROVED" STAMP.

SUBMITTAL DATA AND SHOP DRAWINGS SHALL CLEARLY INDICATE WHICH PIECES OF EQUIPMENT ARE TO BE INSTALLED FOR THIS PROJECT. DATA SHALL INCLUDE EQUIPMENT SIZES, CAPACITIES, REQUIREMENTS FOR ACCESS AND MAINTENANCE, MINIMUM CLEARANCES AS REQUIRED BY THE MANUFACTURER AND CODE, AND ALL OTHER PERTINENT INFORMATION FOR THIS PARTICULAR PROJECT. ALL SHOP DRAWINGS SHALL BE SUBMITTED AT THE SAME TIME AND AS SOON AS POSSIBLE AFTER AWARD OF CONTRACT.

NO MATERIALS OR EQUIPMENT SHALL BE PLACED ON THE JOB SITE, OR INSTALLED, WITHOUT PRIOR APPROVAL BY THE ENGINEER.

RECORD DRAWINGS:

THIS CONTRACTOR SHALL MAINTAIN A SET OF RECORD DRAWINGS THROUGHOUT CONSTRUCTION AND SHALL UPDATE THEM DAILY.

MARK THE DRAWINGS WITH ALL DEVIATIONS SHOWING THE AS-BUILT CONDITIONS. INCLUDE REVISIONS TO ALL SCHEDULES AS WELL AS REVISED LOCATIONS OF ALL UNDERGROUND CONDUITS, POLES, EQUIPMENT, BOXES, ETC., UNDERGROUND, IN WALLS, ABOVE CEILINGS AND OTHERWISE CONCEALED, WHICH WILL REQUIRE SERVICE AND MAINTENANCE.

SUBMIT 2 COPIES OF THE MARKED UP RECORD DRAWINGS SHOWING THE AS-BUILT CONDITIONS TO THE ENGINEER WHEN CONSTRUCTION IS COMPLETE OR AS DIRECTED BY THE ENGINEER.

CODES AND STANDARDS:

MATERIALS INSTALLED IN THIS CONTRACT SHALL CONFORM TO THE STANDARDS LISTED BELOW WHERE SUCH STANDARDS ARE APPLICABLE AND SHALL BE NEW AND FIRST CLASS IN ALL RESPECTS.

UNDERWRITER'S LABORATORIES, INC. STANDARDS AND APPROVED LISTINGS (UL)

ELECTRICAL TESTING LABORATORIES STANDARDS (ETL)

CERTIFIED BALLAST MANUFACTURER'S STANDARDS (CBM)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION STANDARDS (NEMA)

NORTH CAROLINA STATE BUILDING CODE, LATEST EDITION WHICH INCLUDES THE NATIONAL ELECTRICAL CODE (NEC)

INSULATED POWER CABLE ENGINEERS ASSOCIATION STANDARD (IPCEA)

EDISON ELECTRICAL INSTITUTE (EEI)

AMERICAN NATIONAL STANDARDS INSTITUTE STANDARDS (ANSI)

AMERICAN SOCIETY FOR TESTING MATERIALS STANDARDS (ASTM)

ELECTRICAL AND OTHER EQUIPMENT AND/OR MATERIALS THAT ARE DEFECTIVE, OR ARE DAMAGED IN THE COURSE OF CONSTRUCTION, SHALL BE REMOVED AND REPLACED BY THIS CONTRACTOR AT HIS EXPENSE.

DEPARTURES AND/OR DEVIATIONS FROM THE SPECIFICATIONS SHALL BE REQUESTED IN WRITING BY THE CONTRACTOR FROM THE ENGINEER AND NO SUCH DEPARTURES AND/OR DEVIATIONS SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.

WORKMANSHIP SHALL BE OF THE HIGHEST GRADE, PERFORMED BY MECHANICS SKILLED IN THE INSTALLATION OF THIS TYPE OF WORK, AND LICENSED BY THE PROPER AUTHORITIES TO PERFORM THE WORK.

WIRING METHODS:

RUN ALL WIRING FOR LIGHTING, POWER AND ALL OTHER SYSTEMS BELOW SLAB ON GRADE AND UNDERGROUND, IN SCHEDULE 40 PVC CONDUIT WITH ASPHALT COATED RIGID GALVANIZED ELBOWS, WITH GROUND WIRE, AND WITH ALL THREADED CONNECTIONS AND JOINTS WATERPROOFED FOR WATERTIGHT INSTALLATION UNLESS OTHERWISE NOTED. RUN ALL WIRING FOR LIGHTING, POWER AND ALL OTHER SYSTEMS ABOVE SLAB ON GRADE AND OVERHEAD IN RIGID GALVANIZED CONDUIT WITH THREADED FITTINGS UNLESS OTHERWISE NOTED.

RIGID, NON-METALLIC CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH ART. 352 OF THE NATIONAL ELECTRICAL CODE. NON-METALLIC CONDUIT SHALL BE SUPPORTED AND/OR ANCHORED IN ACCORDANCE WITH TABLE 352.30 OF THE NATIONAL ELECTRICAL CODE. RIGID NON-METALLIC CONDUIT SHALL NOT BE INSTALLED WHERE SUBJECT TO MECHANICAL DAMAGE UNLESS ADEQUATELY AND PERMANENTLY PROTECTED AGAINST SUCH DAMAGE. WHEN RIGID NON-METALLIC CONDUIT IS USED IN ANY SYSTEM CARRYING POWER OR LIGHTING CIRCUITS AN INSULATED, GREEN, COPPER GROUNDING CONDUCTOR SHALL BE INSTALLED WITHIN THE CONDUIT AND SECURELY ATTACHED AND GROUNDED TO ALL METALLIC PARTS OF THE SYSTEM.

RIGID, NON-METALLIC CONDUIT AND FITTINGS SHALL BE SUNLIGHT PROOF, SCHEDULE 40 PVC AND BEAR THE UNDERWRITER'S LABORATORIES, INC. LABEL OF APPROVAL.

ALL WIRING SHALL BE STRANDED AND SHALL BE COPPER WITH THWN INSULATION. USE COLOR CODED WIRING THROUGHOUT.

TEMPERATURE RATING OF WIRE INSULATION SHALL NOT EXCEED THE TEMPERATURE RATING OF CIRCUIT BREAKERS, LUGS, CONNECTORS, ETC. IF WIRE WITH HIGHER TEMPERATURE RATING IS USED, IT SHALL BE DERATED TO THE TEMPERATURE RATING OF EQUIPMENT TO WHICH IT IS CONNECTED.

WIRE MARKERS AROUND THE CONDUCTOR SHALL BE NON-METALLIC PERMANENT TYPE AS MANUFACTURED BY W.H. BRADY OR APPROVED EQUAL.

RUN TOP OF ALL UNDERGROUND CONDUITS OUTSIDE THE BUILDING MINIMUM 24" BELOW FINISHED GRADE OR PAVING.

PROVIDE ALLEN SYSTEM CAUTION TAPE PLASTIC STRIP MARKER OVER THE ENTIRE RUN OF CONDUITS OUTSIDE THE BUILDING, APPROXIMATELY 8" BELOW FINISHED GRADE OR PAVING.

PROVIDE TYPED CIRCUIT INDEX FOR ALL NEW PANELS AND EQUIPMENT, SHOWING ALL CIRCUIT DESIGNATIONS, INCLUDING ROOM NAMES, EQUIPMENT AND AREAS SERVED, ETC. AS DESIGNATED JUST PRIOR TO OCCUPANCY AND NOT AS DESIGNATED ON DRAWINGS.

PROVIDE PROPER GROUNDING FOR ALL RECEPTACLES, LIGHTS, EQUIPMENT, ETC., AS REQUIRED BY ALL CODES TO COMPLY WITH ARTICLE 250 OF THE LATEST N.E.C., LOCAL CODES, ORDINANCES AND REGULATIONS. USE COPPER FOR MAIN GROUND AS REQUIRED BY CODE. PROVIDE SEPARATE GREEN INSULATED GROUNDING CONDUCTOR FOR EACH NEW LIGHT, RECEPTACLE AND PIECE OF EQUIPMENT INSIDE AND OUTSIDE THE BUILDING. SIZES OF CONDUCTORS SHALL BE AS SHOWN. IF NOT INDICATED, SIZE IN ACCORDANCE WITH CODE.

ALL WIRING DEVICES EQUIPPED WITH GROUNDING CONNECTIONS SHALL BE PERMANENTLY AND SECURELY CONNECTED TO THE ENCLOSURE AND BUILDING GROUNDING SYSTEM IN WHICH THEY ARE MOUNTED WITH A COPPER GROUNDING JUMPER.

VERIFY EXACT GROUNDING REQUIREMENTS ON THE PROJECT BEFORE RUNNING NEW CONDUITS, CONDUCTORS, ETC. GROUNDING CONDUCTORS AS REQUIRED AND/OR INDICATED SHALL BE RUN IN CABLES, RACEWAYS OR CONDUITS WITH CIRCUIT WIRING, PROPERLY BONDED FOR GROUNDING CONTINUITY. GROUND ALL WATER SYSTEMS IN ACCORDANCE WITH THE LATEST NEC CODE.

GROUND SERVICE ENTRANCE EQUIPMENT AS REQUIRED BY ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE AND THE LOCAL ELECTRICAL CODE.

DISCONNECT SWITCHES SHALL BE NEMA 3R, WEATHERPROOF FOR EXTERIOR USE. PROVIDE NAME PLATES ON EACH MAIN DISCONNECT TO PERMANENTLY IDENTIFY THE EQUIPMENT SERVED.

SPlicing (CIRCUITS OF 600 VOLTS OR LESS): CONDUCTORS, NAMELY THOSE SIZED #6 AWG COPPER AND SMALLER, SHALL BE SPLICED BY USE OF SILICONE FILLED WATERTIGHT SAFETY CONNECTORS EQUAL TO KING NO. 40-569.

STRANDED CONDUCTORS, NAMELY #4 AWG AND LARGER, SHALL BE SPLICED BY APPROVED MECHANICAL CONNECTORS PLUS GUM TAPE, PLUS FRICTION OR PLASTIC TAPE. SOLDERLESS MECHANICAL CONNECTORS FOR SPLICES AND TAPS PROVIDED WITH UL APPROVED INSULATING COVERS MAY BE USED INSTEAD OF MECHANICAL CONNECTORS PLUS TAPE.

CONDUCTORS IN ALL CASES SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND NO SPLICING SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES, TROUGHS AND GUTTERS.

ALL WIRES, CABLES, ETC. SHALL BE APPROVED BY THE UNDERWRITER'S LABORATORIES, INC.

ALL BRANCH CIRCUIT CONDUCTORS SHALL BE FACTORY COLOR CODED AND ALL OTHER CONDUCTORS SHALL BE COLOR-TAPED IN LIKE MANNER THROUGHOUT THE SYSTEM TO INDICATE VARIOUS PHASES AND NEUTRAL.

COLOR CODING FOR CONDUCTORS SHALL MATCH EXACTLY THE CODING OF EXISTING SYSTEMS. IN GENERAL THE COLOR CODING FOR SYSTEMS OF LESS THAN 150 VOLT TO GROUND SHALL BE BLACK-RED-BLUE FOR PHASES A-B-C RESPECTIVELY, WHITE FOR GROUNDED NEUTRAL AND GREEN FOR EQUIPMENT GROUNDING.

ALL FEEDER CONNECTORS SIZED LARGER THAN #1/0 SHALL BE 2 BOLT TYPE. SINGLE BOLT CONNECTORS SHALL BE LIMITED FOR USE WITH WIRE SIZE #1/0 AND SMALLER.

ALL RECEPTACLES, DEVICES, ETC. SHALL BE NEMA GROUNDING TYPE.

PANELS SHALL BE WITH BOLT-ON MOLDED CASE BREAKERS AS INDICATED, WITH COMMON TRIP FOR TWO-POLE AND THREE-POLE BREAKERS. FIELD APPLIED HANDLE TIES ARE NOT ACCEPTABLE.

ALL PANEL AND EQUIPMENT BUSSES SHALL BE COPPER.

TESTS, INSTRUCTIONS:

PERFORM ALL TESTS AS REQUIRED BY CODES. MEG-TEST ALL PANELS TO ELIMINATE GROUNDS AND SHORTS. TEST ALL LIGHTS, RECEPTACLES, EQUIPMENT, ETC. FOR PROPER CONNECTION AND GROUNDING.

CHECK GROUND SYSTEM WITH "EARTH MEGGER". FURNISH THE TEST RESULT TO OWNER AND ENGINEER. THE READINGS SHALL BE 25 OHMS OR LESS.

MAKE SURE THAT ALL LUGS ON ALL FEEDERS ARE TIGHT THROUGHOUT THE CONSTRUCTION.

INSTRUCT OWNER'S REPRESENTATIVE IN PROPER OPERATION AND MAINTENANCE OF ALL SYSTEMS AND EQUIPMENT. FURNISH TO OWNER TWO (2) BOUND COPIES OF ALL OPERATING AND MAINTENANCE DATA, INCLUDING GUARANTEES AND SPARE PARTS LIST.

GUARANTEE:

GUARANTEE ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY OWNER AS STATED IN WRITING. REPAIR AND/OR REPLACE, WITHOUT ANY COST TO THE OWNER, ANY DEFECTIVE PART OR PARTS OF THE WORK WITHIN THE GUARANTEE PERIOD FROM THE TIME THE SYSTEM IS PUT INTO OPERATION AS DETERMINED BY THE DATE OF FINAL CERTIFICATE OF PAYMENT WITH EXCEPTIONS AS NOTED.

PROVIDE PERIODICAL INSPECTION AND ADJUSTMENT SERVICE THROUGHOUT THE GUARANTEE PERIOD.

ELECTRICAL ABBREVIATIONS

A OR AMP	AMPERE	JB	JUNCTION BOX
ABV	ABOVE	KO	KNOCKOUT
AC	ALTERNATING CURRENT	KV	KILOVOLT
ACB	ABOVE COUNTER BACKSPLASH	KVA	KILOVOLT-AMPERE
AFD	ADJUSTABLE FREQUENCY DRIVE	KVAR	KILOVOLT-AMPERE REACTIVE
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
AIC	AMPERES INTERRUPTING CAPACITY	KWH	KILOWATT-HOUR
AL	ALUMINUM	LA	LIGHTNING ARRESTER
AM	AMMETER	LC	LOADCENTER
AMPL	AMPLIFIER	LPS	LOW PRESSURE SODIUM
ASYM	ASYMMETRICAL	LTG	LIGHTING
ATS	AUTOMATIC TRANSFER SWITCH	LUM	LUMENS
AWG	AMERICAN WIRE GAGE	MAG	MAGNETIC
BEL	BELOW	MAN	MANUAL
BD	BUS DUCT	MC	MECHANICAL CONTRACTOR
BRKR	BREAKER	MCB	MAIN CIRCUIT BREAKER
CA	CABLE	MCC	MOTOR CONTROL CENTER
CAB	CABINET	MCM	THOUSAND CIRCULAR MILS
CATV	COMMUNITY ANTENNA TELEVISION OR CABLE TELEVISION	MIC	MOTORGENERATOR
		MH	METAL HALIDE OR MOUNTING HEIGHT
CB	CIRCUIT BREAKER	MIN	MINIMUM
CCTV	CLOSED CIRCUIT TELEVISION	MLO	MAIN LUGS ONLY
CF	COMPACT FLUORESCENT	MOD	MOTOR OPERATED DAMPER
CKT	CIRCUIT	MOT	MOTOR
CLG	CEILING	MS	MAGNETIC STARTER
CND	CONDUIT	MT	MOUNTED OR MOUNTING
CNTR	CENTER	MTR	METER
COMB	COMBINATION	MV	MERCURY VAPOR
COND	CONDUCTOR	NEC	NATIONAL ELECTRICAL CODE
CONN	CONNECTION	NEUT	NEUTRAL
CONT	CONTACTOR	NPSS	NON-FUSIBLE SAFETY SWITCH
CT	CURRENT TRANSFORMER	NO	NUMBER
CTRL	CONTROL	OH	OVERHEAD
CJ	COPPER	P	POLE
CW	COLD WATER	PB	PULL BOX OR PUSHBUTTON
DC	DIRECT CURRENT	PBS	PUSHBUTTON STATION
DISC	DISCONNECT	PER	PERSONAL EMERGENCY RESPONSE SYSTEM
DIST	DISTRIBUTION	PH(Ø)	PHASE
DR	DOOR RELEASE SERVICE	PNL	PANEL
		PNLBD	PANELBOARD
E OR EMER	EMERGENCY	PRI	PRIMARY
EC	ELECTRICAL CONTRACTOR	PT	POTENTIAL TRANSFORMER
EL	EXISTING TO BE RELOCATED	PVC	POLYVINYL CHLORIDE
ELEC	ELECTRICAL	PWR	POWER
EM	EXISTING TO BE REMOVED		
EMN	EXISTING TO BE REMOVED AND NEW INSTALLED	QTY	QUANTITY
EMT	ELECTRICAL METALLIC TUBING	RECP	RECEPTACLE
ENCL	ENCLOSURE	RSC	RIGID STEEL CONDUIT
ENG	ENGINE	SCC	SHORT CIRCUIT CURRENT
EP	EXPLOSIONPROOF	SDR	MOTOR OPERATED SMOKE DAMPER
EQUIP	EQUIPMENT	SEC	SECONDARY
ER	EXISTING TO REMAIN	SER	SERVICE ENTRANCE RATED
EW	ELECTRIC WATER COOLER	SPD	SURGE PROTECTION DEVICE
EXIST	EXISTING	SPKR	SPEAKER
EXT	EXTERIOR	SR	SURFACE RACEWAY
FA	FIRE ALARM	SS	SURGE SUPPRESSOR/ISOLATED GROUND
FACP	FIRE ALARM CONTROL PANEL	STR	STARTER
FDR	FEEDER	SW	SWITCH
FC	FOOTCANDLE	SWBD	SWITCHBOARD
FLUOR	FLUORESCENT	SWG	SWITCHGEAR
FSS	FUSIBLE SAFETY SWITCH	SYM	SYMMETRICAL
FWE	FURNISHED WITH EQUIPMENT	S/N	SOLID NEUTRAL
FXTR	FIXTURE	TC	TIME CLOCK
		TEL	TELEPHONE
GC	GENERAL CONTRACTOR	TGB	TELECOMMUNICATIONS GROUND BAR
GF	GROUND FAULT	TGMB	TELECOMMUNICATIONS MAIN GROUND BAR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TV	TELEVISION
GND	GROUND	TYP	TYPICAL
H	HORIZONTAL	UF	UNDERFLOOR
HG	HOSPITAL GRADE	UG	UNDERGROUND
HID	HIGH INTENSITY DISCHARGE	UL	UNDERWRITER'S LABORATORIES
HOA	HAND-OFF-AUTOMATIC	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER OR HEAT PUMP	V	VOLT
HPF	HIGH POWER FACTOR	VA	VOLT-AMPERE
HPS	HIGH PRESSURE SODIUM	VAR	VOLT-AMPERE REACTIVE
HTR	HEATER	VM	VOLTMETER
HW	HOT WATER	W	WATT OR WIRE
HZ	HERTZ	WP	WEATHERPROOF
IC	INTERCOM OR INTERRUPTING CAPACITY	XFER	TRANSFER
IG	ISOLATED GROUND	XFMR	TRANSFORMER
IMC	INTERMEDIATE METAL CONDUIT		
INC	INCANDESCENT		
INIT	INITIAL		

NOTES (ELECTRICAL ABBREVIATIONS):

1. REFER TO OTHER ABBREVIATION LISTS ELSEWHERE IN THESE DOCUMENTS FOR ABBREVIATIONS NOT LISTED HERE.

250184-E1003.DWG



ELEC SYMBOL LEGEND

MTG. HGT.	SYMBOL	DESCRIPTION
		BRANCH CIRCUIT CONDUIT RUN UNDERGROUND. CONDUIT SIZE AND NUMBER OF CONDUCTORS ARE AS INDICATED. CONDUIT BELOW GRADE TO BE INSTALLED NO LESS THAN 2'-0" BELOW FINISHED GRADE.
		BRANCH CIRCUIT CONDUIT RUN EXPOSED ABOVEGROUND. CONDUIT SIZE AND NUMBER OF CONDUCTORS ARE AS INDICATED. CONDUIT SHALL BE EXTENDED PARALLEL OR PERPENDICULAR ON EXPOSED STRUCTURAL ELEMENTS AND INSTALLED IN A MANNER THAT CONCEALS THE CONDUIT FROM LINE OF SIGHT AS MUCH AS POSSIBLE.
		BRANCH CIRCUIT HOME RUN - LETTER INDICATES PANEL DESIGNATION. NUMERALS IN PARENTHESIS INDICATE CIRCUIT NUMBER. ARROWS INDICATE NUMBER OF CIRCUITS.
2'-0" UNO		DUPLEX, GROUNDING TYPE RECEPTACLE MOUNTED IN CAST FD BOX. NUMERAL IN PARENTHESIS INDICATES CIRCUIT NUMBER. PROVIDE 20A RATED, TAMPER RESISTANT, WEATHER RESISTANT, GFCI RECEPTACLE WITH CAST ALUMINUM WEATHERPROOF WHILE IN-USE COVER. "H" = INSTALL RECEPTACLE IN HORIZONTAL ORIENTATION.
		120/240V PANELBOARD
		OPEN BOTTOM POLYMER CONCRETE ELECTRICAL PULL JUNCTION BOX FOR INGROUND INSTALLATION AS NOTED ON PLANS.
		HEAVY DUTY DISCONNECT SWITCH. NUMBER INDICATES DISCONNECT SWITCH POLES / AMP RATING / (AND IF FUSIBLE TYPE) FUSE SIZE. "WP" = INDICATES WEATHER PROOF (NEMA 3R) ENCLOSURE. "FWE"= INDICATES FURNISHED WITH EQUIPMENT
		JUNCTION BOX OUTLET FOR LIGHT AND RECEPTACLE CIRCUITS. PROVIDE WET LOCATION TYPE WITH GASKETED COVERS. COORDINATE WITH EQUIPMENT FOR SIZE AND STYLE OF BOX REQUIRED.
		LED LIGHT FIXTURE WITH AIMABLE HEADS. CEILING MOUNTED. UPPER CASE LETTER INDICATED FIXTURE SYMBOL. LOWER CASE LETTER IN PARENTHESIS INDICATES SWITCHING ARRANGEMENT.
3'-10"		SINGLE-POLE TOGGLE LIGHT SWITCH. "WP" = WEATHER PROOF RATED NEMA 4.
		FOOD TRUCK PEDESTAL. PROVIDE ALL RECEPTACLES AND EQUIPMENT FOR A COMPLETE PACKAGE.
		CATENARY LIGHT FIXTURES SUPPORTED FROM STAINLESS STEEL AIRCRAFT CABLE.

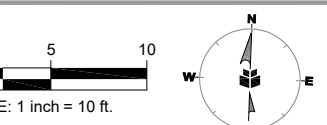
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COATS DOWNTOWN SQUARE
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CONFIRMED SET



INITIAL PLAN DATE: 01/30/2026
REVISIONS:

Know what's below.
Call before you dig.

WR JOB NUMBER: 22-0125-022
DRN: AJF DGN: AJF CKD: RGL

ELECTRICAL SPECIFICATIONS AND SYMBOLS

E1.00

ELECTRICAL DRAWING INDEX

File #: 250184-E1001.DWG
E1.00 ELECTRICAL SPECIFICATIONS AND SYMBOLS
E2.00 ELECTRICAL DEMOLITION PLAN
E2.01 ELECTRICAL DETAILS
E3.00 ELECTRICAL DETAILS

GENERAL DEMOLITION NOTES:

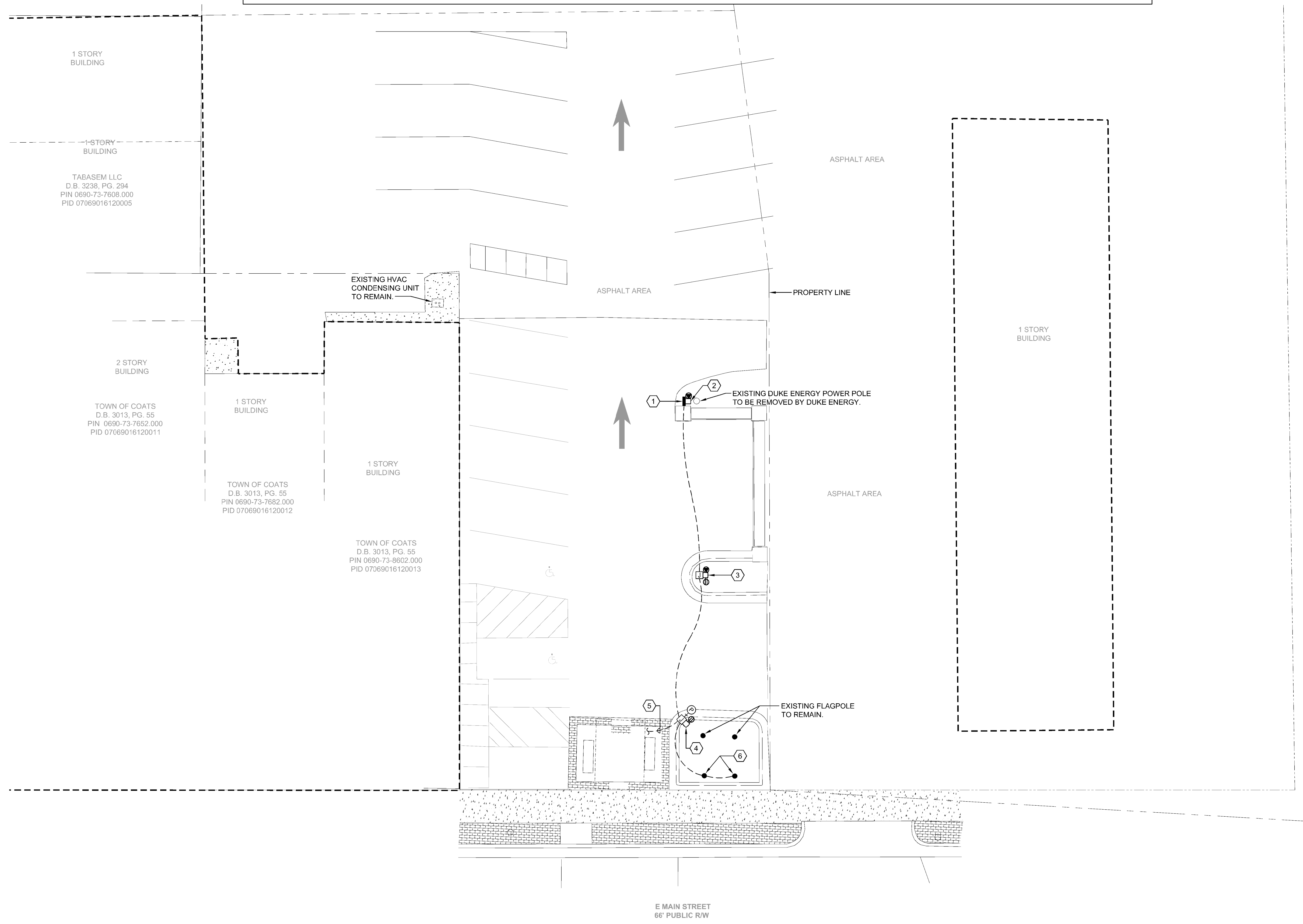
1. THESE DRAWINGS HAVE BEEN DEVELOPED FROM EXISTING DRAWINGS AND LIMITED FIELD MEASUREMENTS AND MAY NOT FULLY REFLECT ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND NOTIFY THE DESIGN TEAM IN WRITING OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PERFORMED DUE TO EXISTING CONDITIONS.
2. VERIFY WITH OWNER FINAL DISPOSITION OF ALL ELECTRICAL EQUIPMENT TO BE REMOVED. ITEMS TO BE SALVAGED FOR OWNER SHALL BE COLLECTED AND STORED AT OWNER DESIGNATED LOCATION WITHIN THE BUILDING FOR REMOVAL BY OWNER. ITEMS REFUSED BY THE OWNER SHALL BE REMOVED BY THE CONTRACTOR AND BE PROPERLY DISPOSED OF OFF-SITE WITHIN FIVE WORKING DAYS.
3. PROTECT FROM DAMAGE ALL MATERIALS TO REMAIN. ANY WORK DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO MATCH CONDITION PRIOR TO CONSTRUCTION.
4. DEMOLITION WORK INCLUDES, BUT IS NOT NECESSARILY LIMITED TO THOSE ITEMS. OTHER ITEMS OF A MINOR NATURE MAY EXIST WHICH ARE NOT SPECIFICALLY NOTED ON THE DRAWINGS ARE TO BE REMOVED AS REQUIRED, TO PROVIDE ACCESS AND ALLOW ALTERATION OR NEW WORK TO PROCEED.
5. NOT ALL ELECTRICAL EQUIPMENT WHICH IS REQUIRED TO BE REMOVED IS SHOWN. CONTRACTOR SHALL REMOVE ALL SUCH EQUIPMENT WHICH WILL INTERFERE WITH NEW CONSTRUCTION. EQUIPMENT WHICH NO LONGER BE USED (E.G. PIPES, CONDUITS AND DUCTS) SHALL BE REMOVED COMPLETELY BACK TO THE POINT OF SERVICE TO BE REUSED AND CAPPED OR PLUGGED AS INDICATED ON ELECTRICAL DRAWINGS.
6. REFER TO CIVIL DEMOLITION DRAWINGS TO DETERMINE EXTENT OF DEMOLITION. ALL EXISTING ELECTRICAL EQUIPMENT AND MATERIAL IN AREAS TO BE REMOVED SHALL BE REMOVED WHERE THEY INTERFERE WITH NEW CONSTRUCTION AND/OR INTERFERE WITH PROPOSED USAGE OF SPACE BY OWNER. THIS DEMOLITION INCLUDES, BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING:
 - 6.1. REMOVE ALL LIGHTING FIXTURES, SWITCHES, AND ASSOCIATED WIRING BACK TO THE POINT OF SERVICE AS REQUIRED TO FIT SCHEME OF NEW WORK.
 - 6.2. REMOVE ALL ELECTRICAL DEVICES, COVERPLATES, OUTLET BOXES, CONDUITS AND ASSOCIATED WIRING BACK TO THE POINT OF SERVICE AS REQUIRED TO FIT SCHEME OF NEW WORK.
7. WHERE CONDUIT ASSOCIATED WITH AN ITEM TO BE REMOVED IS IN AN INACCESSIBLE AREA, SUCH AS ENCASED IN CONCRETE, THE INACCESSIBLE CONDUIT ONLY SHALL BE ABANDONED IN PLACE. ALL WIRING SHALL BE REMOVED AND CONDUIT SHALL BE CUT OFF FLUSH AND FINISHED OVER WITH A MATERIAL TO MATCH EXISTING.
8. IN REMODELED/ALTERED AREAS ANY FEEDERS, CONDUITS, BRANCH CIRCUITS, SIGNAL, TELEPHONE OR OTHER LOW VOLTAGE SYSTEMS, ETC. PASSING THROUGH THE REMODELED AREAS TO SERVE (OR BE SERVED FROM EXISTING ADJACENT, REMOTE OR SURROUNDING AREA THAT ARE TO REMAIN) SHALL BE RETAINED AND KEPT OPERATIONAL AND SHALL BE REROUTED IN ALL CASES WHERE THEY INTERFERE WITH ANY NEW WORK.
9. WHERE DEVICES ARE OMITTED FROM PRESENT BRANCH CIRCUITS, THE REMAINING DEVICES SHALL BE REWIRED AS REQUIRED.
10. IF ANY SUSPECT HAZARDOUS MATERIALS ARE ENCOUNTERED BY CONTRACTOR, INCLUDING BUT NOT LIMITED TO MATERIALS CONTAINING ASBESTOS, LEAD PAINT, ETC. WORK IS TO BE STOPPED IN THE AREA WHERE SUCH MATERIALS WERE FOUND AND THE OWNER IMMEDIATELY NOTIFIED IN WRITING. THE REMOVAL OF HAZARDOUS MATERIALS WILL BE THE OWNER'S RESPONSIBILITY.

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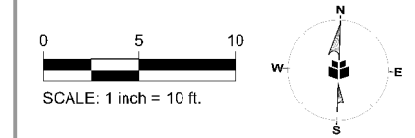
Project Number: 250164
File Name: 250164-E200
Plotted: 10/23/2025 2:46 PM

NOTES KEYED TO PLAN

1. REMOVE EXISTING METER/PANEL COMBO UNIT. REMOVE ASSOCIATED CONDUIT AND WIRING BACK TO DUKE ENERGY POINT OF DELIVERY. REMOVE ASSOCIATED WIRING FROM UNDERGROUND BRANCH CONDUIT. EXISTING CONDUIT BELOW REMAINING CONCRETE SHALL BE CUT OFF FLUSH WITH GRADE AND ABANDONED IN PLACE.
2. REMOVE EXISTING WOODEN POST AND ASSOCIATED NEMA 14-50R RECEPTACLE.
3. REMOVE EXISTING 4x4 WOODEN POST AND ASSOCIATED J-BOX AND TWO RECEPTACLES. REMOVE ASSOCIATED WIRING FROM UNDERGROUND CONDUIT. EXISTING CONDUIT BELOW REMAINING CONCRETE SHALL BE CUT OFF FLUSH WITH GRADE AND ABANDONED IN PLACE.
4. REMOVE EXISTING 4X4 WOODEN POST AND ASSOCIATED J-BOX, RECEPTACLE, AND PHOTOCELL. REMOVE ASSOCIATED WIRING FROM UNDERGROUND CONDUIT. EXISTING CONDUIT BELOW REMAINING CONCRETE SHALL BE CUT OFF FLUSH WITH GRADE AND ABANDONED IN PLACE.
5. CAREFULLY REMOVE ALL ELECTRICAL DEVICES INCLUDING LIGHTING, SWITCHES, AND RECEPTACLES FROM EXISTING TRELIS STRUCTURE. CAREFULLY REMOVE ALL ASSOCIATED WIRING AND CONDUIT. TRELIS WILL BE REMOVED BY OTHERS AND RELOCATED TO NEW LOCATION OFFSITE.
6. REMOVE EXISTING FLAGPOLE LIGHT FIXTURES AND STORE IN PROTECTED LOCATION FOR REINSTALLATION. REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO J-BOX ON 4X4 POST.



1
E2.00 ELECTRICAL DEMOLITION PLAN
1" = 10'
Dwg.# 250164-E2011.DWG



INITIAL PLAN DATE: 01/30/2026
REVISIONS:

Know what's below.
Call 811 before you dig.
WR JOB NUMBER 22-0125-022
DRN: AJF DGN: AJF CKD: RG.

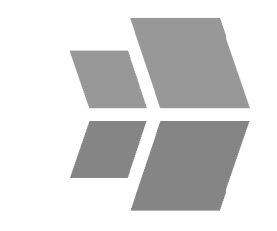
ELECTRICAL DEMOLITION PLAN

E2.00

TOWN OF COATS
25 E MAIN STREET
COATS, NC 27521

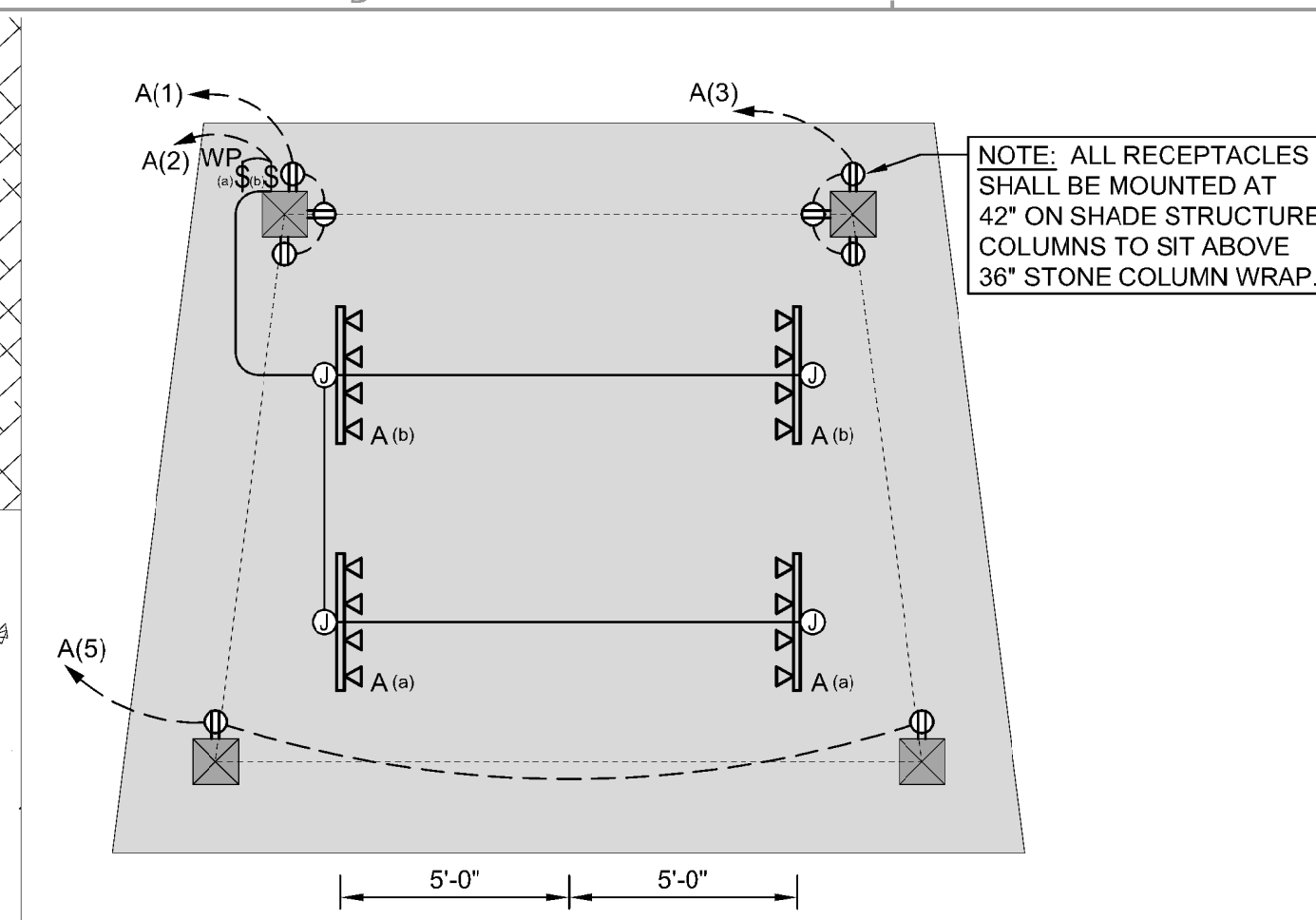
CONFIRMED SET
COATS DOWNTOWN SQUARE
30 E. MAIN STREET | COATS, NC 27521 | HARNETT COUNTY

WithersRavenel
137 S. Wilmington Street | Suite 200 | Raleigh, NC 27601
License #: F-1479 | T: 919.469.3340 | www.withersravenel.com



LIGHTING FIXTURE SCHEDULE									
SYMBOL	MANUFACTURER	CATALOG NO.	VOLTS	LAMPS		ENERGY INPUT		MOUNTING	DESCRIPTION
				TYPE	DESCRIPTION	WATTS			
A	WAC LIGHTING	TK-180504 - 3000K - BK	120	LED	3,200 LUMENS 3000°K, 90 CRI	32		J-BOX MOUNTED TO SURFACE OF CEILING	LED FOUR-LIGHT FIXTURE WITH DIE-CAST ALUMINUM CONSTRUCTION, AIMABLE HEADS, DAMP LOCATION LISTING, -4°F TO 104°F OPERATING TEMP RANGE, AND BLACK FINISH.
B (ALT #2 ONLY)	ALUZ	(PROVIDE TWO LENGTHS OF 175' FOR TOTAL OF 350') A5-ZOZO-STN - 48" - 27K-GSFL - WET - 175'	120	LED	256 LUMENS / BULB 2700°K, 90 CRI	3W / BULB		SUSPENDED ON 1/8" 316 STAINLESS STEEL AIRCRAFT CABLE AT 14'-0" ABOVE FINISHED GRADE	ALTERNATE #2: LED CATENARY LIGHTING SYSTEM WITH BLACK FINISH AND BULBS LOCATED EVERY 48". PROVIDE WITH 3W CLEAR, SHATTERPROOF GLASS, LED FILAMENT BULBS. PROVIDE COMPLETE SYSTEM WITH 1/2" DIAMETER 316 STAINLESS STEEL AIRCRAFT CABLE MOUNTING SYSTEM AND STAINLESS STEEL HARDWARE. MOUNT CABLE TO EXISTING LIBRARY FACADE AND SHADE SAIL POLES.

250184-E5001.DWG

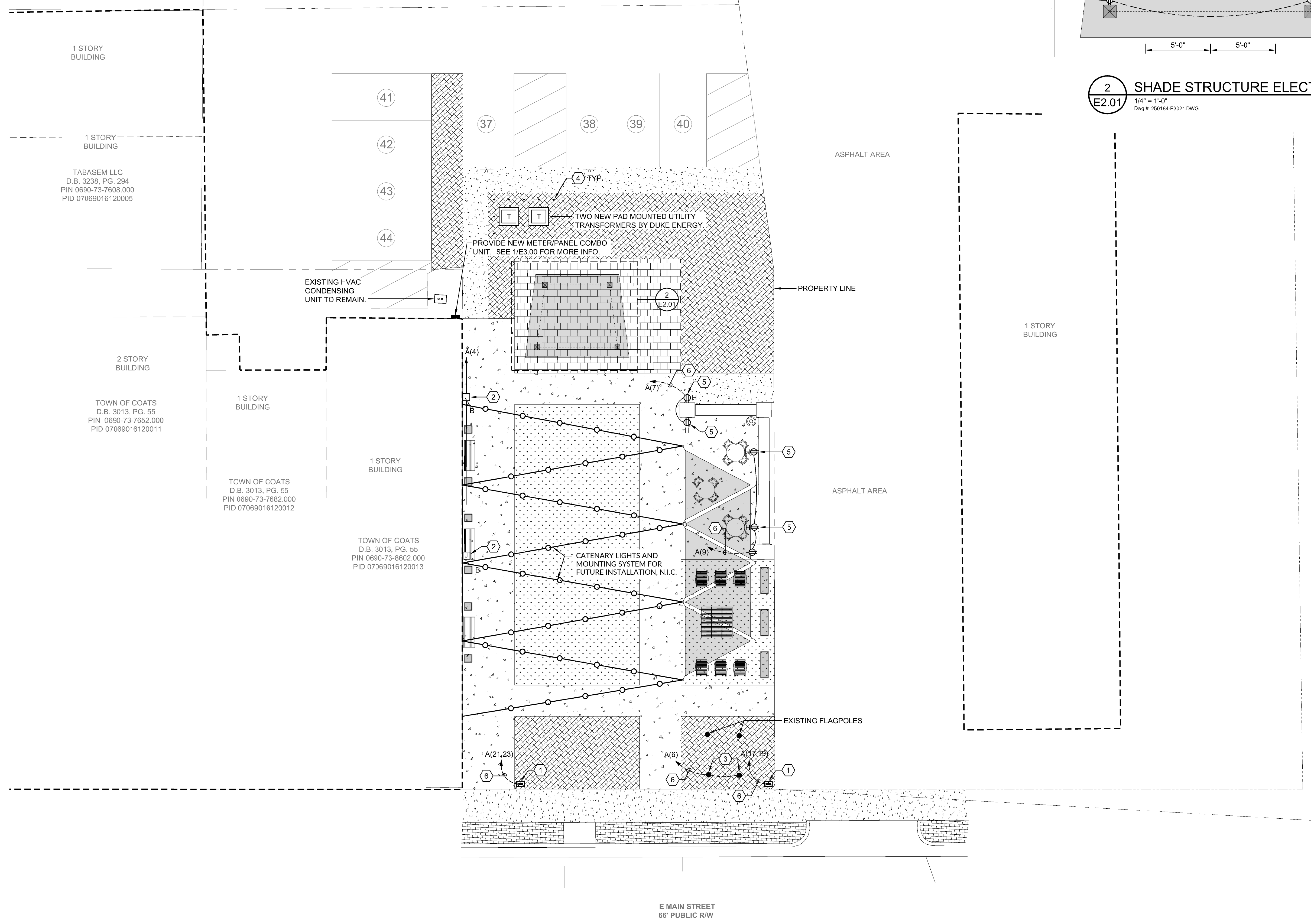


2
E2.01 SHADE STRUCTURE ELECTRICAL PLAN
1/4" = 1'-0"
Dwg # 250184-E3021.DWG

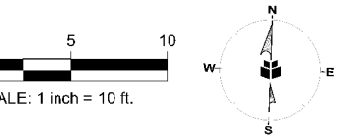
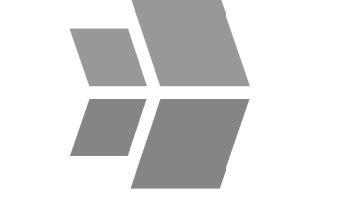
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CONSULTING ENGINEERS
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Project Number: 250184
File Name: 250184-E2021
Plotted: 10/23/2025 2:47 PM

- NOTES KEYED TO PLAN**
- FOOD TRUCK PEDESTAL. PROVIDE DIRECT BURIAL NEMA 3R TYPE WITH (1) 14-50R, (1) TT30R, AND (1) 5-20R GFI RECEPTACLES SIMILAR TO MILBANK: U5200-XL-75. CONNECT COMPLETE.
 - J-BOX FOR CATENARY LIGHTING SYSTEM INSTALLED IN BASE BID. CONNECT TO TIMECLOCK CONTROLLED CIRCUIT AS INDICATED IN 1/E3.00. FOR BASE BID, TERMINATE CONTROL WIRING IN TWO J-BOXES FOR FUTURE CONNECTION TO CATENARY LIGHTS. CATENARY LIGHTING SYSTEM TO BE PROVIDED FOR AND INSTALLED UNDER ALTERNATE #2.
 - EXISTING FLAGPOLE LIGHTS TO BE REINSTALLED IN PLANTER AND CONNECTED THRU PHOTOCELL LOCATED BEHIND LIBRARY. SEE 1/E3.00 FOR MORE INFORMATION.
 - ELECTRICAL CONTRACTOR TO PROVIDE SEVEN NEW 4" DIAMETER CONDUIT BOLLARDS WITH CONCRETE ACCORDING TO DUKE ENERGY "PROTECTIVE POLES FOR PAD-MOUNTED EQUIPMENT" DOCUMENT IN DUKE ENERGY "REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATIONS" MANUAL.
 - RECEPTACLE SHALL BE MOUNTED HORIZONTALLY RIGHT UNDER LIP OF BRICK WALL CAPSTONE. EXPOSED CONDUIT SHALL BE CONCEALED AS MUCH AS POSSIBLE JUST BELOW CAPSTONE.
 - HOMERUN CONDUIT SHALL BE INSTALLED BY UNDERGROUND BORING.



1
E2.01 ELECTRICAL PLAN
1" = 10'
Dwg # 250184-E2021.DWG



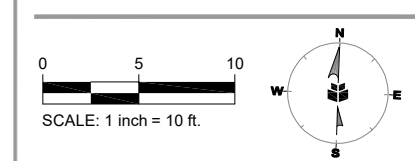
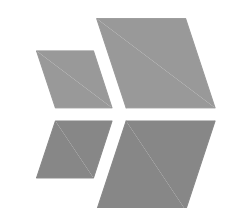
INITIAL PLAN DATE: 01/30/2026
REVISIONS:

Know what's below.
Call before you dig.
WR JOB NUMBER: 22-0125-022
DRN: AJF DGN: AJF CKD: RG.

ELECTRICAL PLANS

E2.01

S:\Projects\250184\250184-E2021.dwg Thursday, October 23, 2025 2:47:01 PM - AJF



INITIAL PLAN DATE: 01/30/2026
 REVISIONS:

Know what's below.
 Call before you dig.
 WR JOB NUMBER 22-0125-022
 DRN: AJF DGN: AJF CKD: RGL

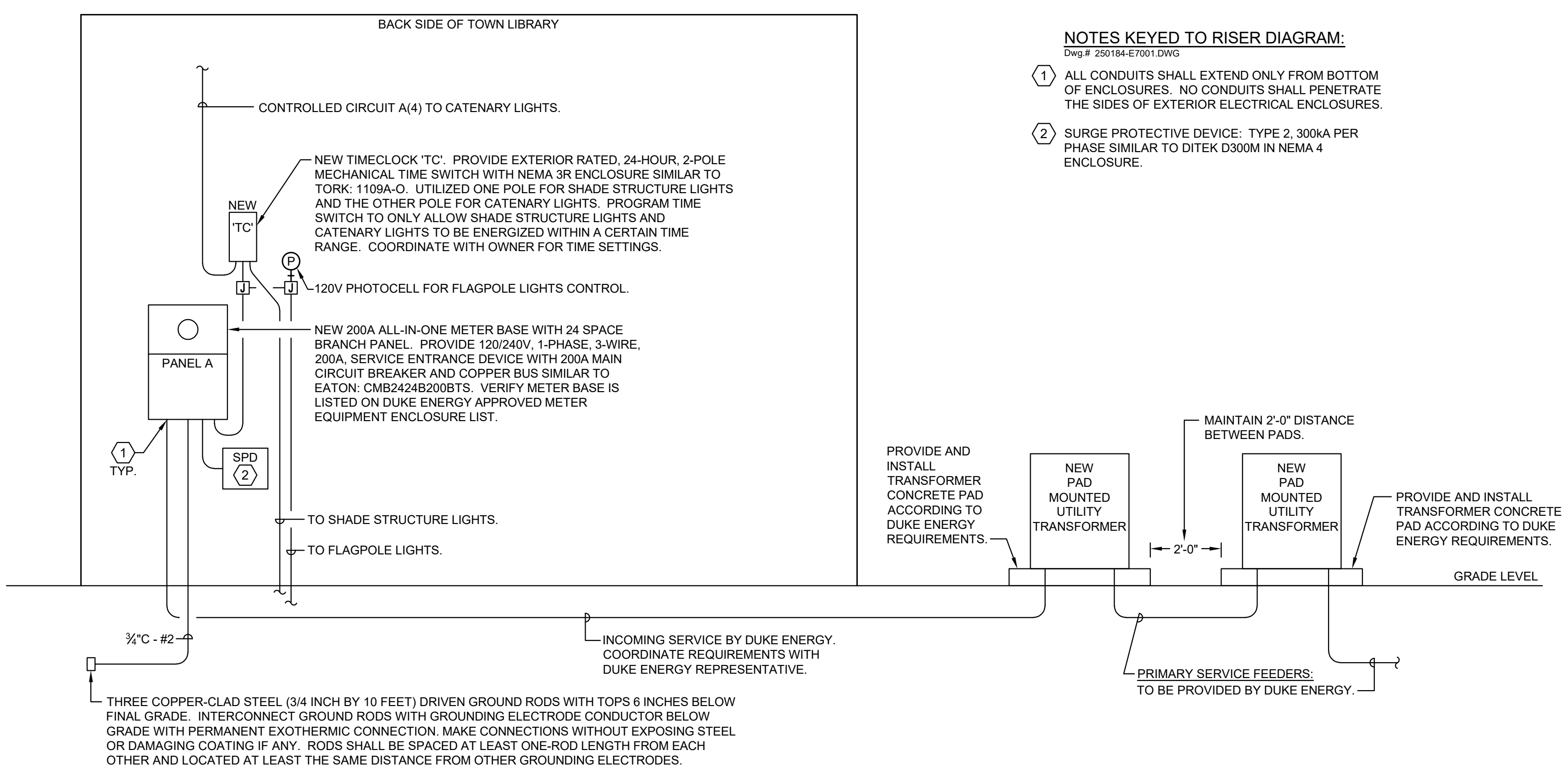
ELECTRICAL
 DETAILS

E3.00

WIRING LEGEND
 A - 1" C., 2 #12 & 1 #12 GND.
 B - 1" C., 2 #10 & 1 #10 GND.
 C - 1" C., 2 #6, 1 #6 N & 1 #10 GND.
 D - 1 1/2" C., 2 #2, 1 #2 N & 1 #8 GND.

PANEL-A		MAKE: EATON	RATING: 120/240V, 1Ø, 3W	200A MAIN CIRCUIT BREAKER							
LOAD SERVED		TYPE: CMB2424B200BTS	MOUNTING: SURFACE	EQUIPMENT GROUND BUS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO							
LOAD SERVED	VA PER PHASE		CKT BRKR	CKT NO.	NEUTRAL	CKT NO.	CKT BRKR	VA PER PHASE		LOAD SERVED	
	AØ	BØ						AØ	BØ		
A REC - SHADE STRUCT (NW)	540		20/1	1		2	20/1	128		LTG - SHADE STRUCTURE	
A REC - SHADE STRUCT (NE)		540	20/1	3		4	20/1		261	LTG - CATENARY LIGHTS	
A REC - SHADE STRUCT (S)	360		20/1	5		6	20/1	100		LTG - FLAGPOLE LIGHTS	
B REC - BRICK WALL		360	20/1	7		8	20/1			SPARE	
B REC - BRICK WALL	540		20/1	9		10	20/1			SPARE	
SPARE			20/1	11		12	20/1			SPARE	
SPARE			20/1	13		14	20/1			SPARE	
SPARE			20/1	15		16	20/1			SPARE	
D FOOD TRUCK PED. (EAST)	7800		100/2	17		18	20/1			SPARE	
D FOOD TRUCK PED. (WEST)		7800	100/2	19		20	20/1			SPARE	
	7800		100/2	21		22	60/2*	100		SURGE PROTECTOR (SPD)	
		7800		23		24			100		
REMARKS		17040	16500	SUB-TOTAL "B"		200A BUS	SUB-TOTAL "A"		328	361	MIN. 22,000 A.I.C.
- ALL-IN-ONE METER BASE WITH 24-SPACE PANEL. PROVIDE WITH COPPER BUS AND SERVICE ENTRANCE RATING.				LUGS		SUB-TOTAL "B"		17040	16500	SYM. AMPERES	
				100% S/N		GRAND TOTAL		17368	16861	LUGS/PHASE	
				BOTTOM FEED		AMPS / PHASE		145	141	LUGS/NEUT.	

* COORDINATE CIRCUIT BREAKER SIZE WITH SPD REQUIREMENTS. 250184-E0002.DWG



- NOTES KEYED TO RISER DIAGRAM:**
 Dwg # 250184-E7001.DWG
- ALL CONDUITS SHALL EXTEND ONLY FROM BOTTOM OF ENCLOSURES. NO CONDUITS SHALL PENETRATE THE SIDES OF EXTERIOR ELECTRICAL ENCLOSURES.
 - SURGE PROTECTIVE DEVICE: TYPE 2, 300kA PER PHASE SIMILAR TO DITEK D300M IN NEMA 4 ENCLOSURE.

1 RISER DIAGRAM
 E3.00 NO SCALE
 Dwg # 250184-E7001.DWG