

EXISTING

EXISTING PANEL 'A'				BRANCH PANELBOARD - NORMAL POWER											
LOCATION: PEDESTAL A				VOLTAGE: 480/277		AIG: 14000A		Load Type						CKT	
FED FROM: UTILITY				PHASE: Three		MANS: 100A		L= Lighting, R=Receptacle, M=Motors, H=Hospital K=Kitchen, H=Heat, Mi=Misc							
MOUNTING: Surface				WIRES: 4W + G		MCR: 100A		ENCLOSURE: Type 1							
CKT	LOAD DESCRIPTION	TRIP	POLE	TYPE	PHASE	A	PHASE	B	PHASE	C	TYPE	POLE	TRIP	LOAD DESCRIPTION	CKT
1	LIGHTS LINDBERG	20	2	L	590	0		590	0			1	20	SPARE	2
3												1	20	SPARE	4
5	TRANSFORMER	20	2	Mi	140	0			140	0		1	20	SPARE	6
7												1	20	SPARE	8
9	SPARE	20	1					0	0			1	20	SPARE	10
11	SPARE	20	1						0	0		1	20	SPARE	12
TOTAL LOAD (KVA)				0.73		0.59		0.14							
TOTAL AMPS/PHASE				2.64		2.13		0.51							

LOAD SUMMARY					
LOAD TYPES	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND (KVA)	PANEL TOTALS	
LIGHTS	1.2	1.25 Continuous	1.5	TOTAL CONN. LOAD (KVA) 1.5	
RECEPTACLES	0.0	Per NEC Table 220.13	0.0	TOTAL DEMAND LOAD (KVA) 1.8	
MOTORS	0.0	Per NEC 220.14	0.0	TOTAL CONN. CURRENT 1.8	
HOSPITAL	0.0	Per NEC Table 220.11	0.0	TOTAL DEMAND CURRENT 2.1	
KITCHEN	0.0	Per NEC Table 220.20	0.0		
HEAT	0.0	Per NEC 220.15	0.0		
MISC	0.3	1.00	0.3		

LIGHT FIXTURE SCHEDULE

FIXT. LTR.	MANUFACTURER	CATALOG NUMBER	LAMPS	DRIVER	FIXTURE VOLTAGE	FINISH	MOUNTING	FIXTURE VA	REMARKS/DESCRIPTION	SPECIFIC NOTES
SB	LUMEC	DM550-90W49LED4K-ES-LE3F-208-[LM-009]-1A-[LG-003]-SSM8V-14-GFI-1X36-12 1/2-DEC-BRTX	1 LED	1 ELECTRONIC	480	BLACK	14" CUSTOM	95	LED TYPE 3 DISTRIBUTION ROADWAY LUMINAIRE WITH CUSTOM 14" POLE.	1

**GENERAL NOTES (APPLY TO ALL LIGHTING):**

A ALL LIGHTING FIXTURES SHALL BE RATED FOR LIGHTING POWER CIRCUIT VOLTAGE. CONTRACTOR MUST VERIFY ALL LOCATIONS.

B ELECTRICAL CONTRACTOR SHALL CHECK AND COORDINATE ALL LIGHTING FIXTURE CATALOG NUMBERS WITH THE INTENT OF FIXTURE DESCRIPTIONS, LISTED ACCESSORIES AND TYPE OF INSTALLATION.

C ELECTRICAL CONTRACTOR SHALL PROVIDE EACH LIGHTING FIXTURE COMPLETE WITH PLASTER FRAMES AND ALL OTHER INSTALLATION AND HANGING HARDWARE AS REQUIRED FOR A COMPLETE AND FINISHED INSTALLATION AT EACH FIXTURE LOCATION.

D ALL FIXTURES SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) AND LABELED. ALL LIGHTING FIXTURES EXPOSED TO WEATHER, MOISTURE, OR OTHER ENVIRONMENTS SHALL BEAR THE APPLICABLE ENVIRONMENTAL OR APPLICATION LABEL.

E REFER TO APPLICABLE SECTIONS OF THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR LIGHTING FIXTURES.

F ELECTRICAL CONTRACTOR TO FIELD ADJUST AIMING PATTERN OF EXTERIOR LIGHTS AT NIGHT SESSION. OWNER & ARCHITECT TO DETERMINE TIME AND DATE.

G INSTALLATION ELEVATION SHOWN IS FROM AFF OR AFG AS OBVIOUSLY APPLICABLE, TO CENTER OF OUTLET BOX, UNLESS OTHERWISE NOTED.

H FIXTURE SUBSTITUTIONS: ARE NOT ALLOWED.

**SPECIFIC NOTES (AS REFERRED TO IN SCHEDULES):**

1. FIXTURE AND POLE ARE CUSTOM TO WATERFRONT DEVELOPMENT. COORDINATE WITH LUMEC PRIOR TO SHOP DRAWING SUBMITTAL.

IMPROVEMENT

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MOUNTING: Surface				WIRES: 4W + G		MCR: 100A		ENCLOSURE: Type 1							
CKT	LOAD DESCRIPTION	TRIP	POLE	TYPE	PHASE	A	PHASE	B	PHASE	C	TYPE	POLE	TRIP	LOAD DESCRIPTION	CKT
1	LIGHTS LINDBERG	20	2	L	590	420		590	420		L	2	20	LIGHTS STONEGATE LN	2
3											L	2	20	SPARE	4
5	TRANSFORMER	20	2	Mi	140	0			140	0		1	20	SPARE	6
7												1	20	SPARE	8
9	SPARE	20	1					0	0			1	20	SPARE	10
11	SPARE	20	1						0	0		1	20	SPARE	12
TOTAL LOAD (KVA)				1.156		1.016		0.14							
TOTAL AMPS/PHASE				4.17		3.67		0.51							

LOAD SUMMARY					
LOAD TYPES	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND (KVA)	PANEL TOTALS	
LIGHTS	2.0	1.25 Continuous	2.5	TOTAL CONN. LOAD (KVA) 2.3	
RECEPTACLES	0.0	Per NEC Table 220.13	0.0	TOTAL DEMAND LOAD (KVA) 2.8	
MOTORS	0.0	Per NEC 220.14	0.0	TOTAL CONN. CURRENT 2.8	
HOSPITAL	0.0	Per NEC Table 220.11	0.0	TOTAL DEMAND CURRENT 3.4	
KITCHEN	0.0	Per NEC Table 220.20	0.0		
HEAT	0.0	Per NEC 220.15	0.0		
MISC	0.3	1.00	0.3		



ELECTRICAL SITE LIGHTING PLANS FOR WATERFRONT EIGHTH ADDITION PART B

ELECTRICAL SCHEDULES

SHEET TITLE  
**472-85097**

PROJECT NUMBER

CNG / JSR / BWB  
DESIGNED DRAWN CHECKED

ISSUED  
**August 2013**

REVISED

SHEET NO.  
**4 of 12**

ELECTRICAL SPECIFICATIONS

A. GENERAL:

- SCOPE OF SERVICES** - WORK SHALL INCLUDE THE FURNISHING AND INSTALLING OF A COMPLETE AND FUNCTIONING ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND THESE SPECIFICATIONS. THIS SHALL INCLUDE ACCESSORIES NECESSARY WHETHER SPECIFICALLY STATED OR NOT TO MAKE THE REQUIRED ELECTRICAL SYSTEMS COMPLETE AND OPERATIONAL. THIS WILL INCLUDE EVERY ARTICLE, DEVICE OR ACCESSORY NECESSARY TO FACILITATE EACH SYSTEM FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT SPECIFIED. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE AND ALL EXISTING CONDITIONS PRIOR TO BIDDING.
- MATERIAL AND WORKMANSHIP** - ALL EQUIPMENT AND MATERIALS PROVIDED SHALL BE NEW EXCEPT AS OTHERWISE STATED ON THE DRAWINGS. ALL EQUIPMENT PROVIDED SHALL BE UL LISTED WHEN SUCH STANDARDS EXIST FOR THE TYPE OF EQUIPMENT FURNISHED AND ACCEPTABLE FOR INSTALLATION OF THE LOCAL BUILDING AUTHORITY. ALL WORKMANSHIP SHALL BE BY LICENSED AND EXPERIENCED ELECTRICIANS OR JOURNEYMEN. ALL TOOLS, MACHINERY AND EQUIPMENT REQUIRED OF THE PERFORMANCE OF THE ELECTRICAL WORK SHALL BE FURNISHED BY THIS CONTRACTOR.
- COORDINATION** - THE CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER CONTRACTORS AND SUBCONTRACTORS SO THAT VARIOUS COMPONENTS OF THE ELECTRICAL SYSTEMS WILL BE INSTALLED AT THE PROPER TIME, WILL FIT THE AVAILABLE SPACE, AND WILL ALLOW PROPER SERVICE ACCESS TO ALL EQUIPMENT. THE CONTRACTOR SHALL REFER TO CIVIL DRAWINGS AND TO RELEVANT EQUIPMENT DRAWINGS TO DETERMINE THE EXTENT OF CLEAR SPACES.
- ORDINANCES AND CODES** - CONTRACTOR'S PERFORMANCE, WORKMANSHIP AND MATERIALS SHALL COMPLY WITH APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION CODES, STATE AND LOCAL BUILDING CODES, AND/OR ALL OTHER APPLICABLE CODES AND ORDINANCES. ALL PERMITS, LICENSES AND FEES THAT ARE REQUIRED BY THE GOVERNING AUTHORITIES FOR THE PERFORMANCE OF THE ELECTRICAL WORK SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR. FILLING OUT FORMS FOR APPLICATIONS BY THE ENGINEER WILL BE BILLED HOURLY TO THE CONTRACTOR.

B. COMMON WORK AND BASIC MATERIALS/EQUIPMENT:

- GUARANTEE** - GUARANTEE AGAINST DEFECTIVE WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF PAYMENT. GUARANTEE SHALL INCLUDE MATERIAL/EQUIPMENT TO BE REPLACED AND ALL LABOR REQUIRED.
- TESTING, CHECK-OUT AND CLEANING** - REPLACE ALL BURNED-OUT LAMPS. THE CONTRACTOR SHALL CLEAN ALL MATERIAL AND EQUIPMENT INSTALLED UNDER THE ELECTRICAL CONTRACT. DIRT, DUST, PLASTER, STAINS AND FOREIGN MATTER SHALL BE REMOVED FROM ALL SURFACES. ALL EQUIPMENT SHALL HAVE FINISH TOUCHED UP PRIOR TO INSPECTION. DAMAGED ELECTRICAL EQUIPMENT DURING THE CONSTRUCTION PROCESS SHALL BE REPLACED WITH NEW EQUIPMENT. ALL COSTS ASSOCIATED WITH THE DAMAGED EQUIPMENT SHALL BE ASSUMED BY THE INSTALLING CONTRACTOR.
- UTILITY REQUIREMENTS** - THE SECONDARY SERVICE SHALL EXTEND FROM A PAD MOUNTED TRANSFORMER TO THE MAIN SERVICE ENTRANCE PANEL. PRIMARY DUCTBANK SHALL BE PROVIDED BY THE CONTRACTOR IF REQUIRED BY THE LOCAL UTILITY COMPANY. FINAL TERMINATIONS AT THE PAD MOUNTED TRANSFORMER SHALL BE COORDINATED WITH THE UTILITY COMPANY.

- THE FOLLOWING ELECTRICAL SERVICE CHARACTERISTICS SHALL BE COORDINATED WITH THE UTILITY COMPANY:
- SERVICE VOLTAGE
  - POWER COMPANY CONNECTION CHARGES
  - AVAILABLE SHORT CIRCUIT CURRENT
  - LOAD ANALYSIS, CONNECTED AND ESTIMATED DEMAND
  - POWER COMPANY CHARGES FOR ESTABLISHING SERVICE WHICH ARE TO BE PAID BY THE OWNER.

CONTRACTOR SHALL PROVIDE PROPER TERMINATION, METERING PROVISIONS, ETC. FOR ELECTRICAL AND TELEPHONE SERVICES FOR CONNECTION BY THE SERVING UTILITY, IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF ALL CODES HAVING JURISDICTION AND OF THE SERVING UTILITY INVOLVED. UTILITY COSTS SHALL BE INCLUDED IN THE BID. COORDINATE ALL INSTALLATION REQUIREMENTS WITH THE LOCAL UTILITY PRIOR TO BIDDING.

- CONDUIT INSTALLATION** - ALL WIRING SHALL BE ROUTED IN CONDUIT. CONDUIT SHALL BE INSTALLED CONCEALED WHEREVER POSSIBLE. EXPOSED CONDUIT SHALL BE PAINTED TO MATCH SURROUNDINGS. ALL CONDUIT BOXES SHALL BE ACCESSIBLE TO COMPLY WITH THE NEC. THE MINIMUM CONDUIT SIZE SHALL BE 1" UNLESS OTHERWISE NOTED ON THE DRAWINGS. CONDUIT TYPES SHALL BE THE FOLLOWING:

- EMT - SHALL BE USED FOR INDOOR, ABOVE GRADE POWER FEEDERS, BRANCH CIRCUITS, AND IN CONCEALED LOCATIONS. SHALL ALSO BE USED FOR FIRE ALARM, TELE/DATA SECURITY, A/V, NURSE CALL, AND PAGING SYSTEMS. ALL CONDUIT FITTINGS FOR EMT CONDUIT SHALL BE COMPRESSION TYPE FITTINGS. INDENTURE FITTINGS WILL NOT BE ALLOWED.
- RMC - SHALL BE USED IN HAZARDOUS LOCATIONS, MECHANICAL AND ELECTRICAL ROOMS WHERE PHYSICAL ABUSE IS PROBABLE, UNDERGROUND CONDUIT ELBOWS AND ELBOWS EXTENDING UP THROUGH THE SLAB. SHALL ALSO BE USED IN OUTDOOR, EXPOSED APPLICATIONS.
- PVC - SHALL BE USED IN UNDERGROUND CONDUIT APPLICATIONS.

- UNDERGROUND CONDUIT** - SCHEDULE 40 PVC WITH RMC FOR ELBOWS AND ABOVE GRADE. WHERE INSTALLED BELOW SLAB, CONDUIT SHALL BE SURROUNDED ON ALL SIDES WITH 2" OF AGGREGATE.

- WIRE** - ALL WIRE SHALL HAVE COPPER CONDUCTORS, WITH U.L. LISTING. SERVICE ENTRANCE CABLE SHALL BE THWN OR XHHW WITH STRANDED CONDUCTORS. ALL FEEDER AND BRANCH CIRCUIT WIRE #8 AWG AND LARGER SHALL BE TYPE THWN OR XHHW, BOTH WITH STRANDED CONDUCTORS. ALL WIRE #10 AND SMALLER AWG SHALL BE TYPE THWN (WET OR DAMP LOCATIONS, OR IN CONDUIT BELOW GRADE OR SLAB) OR THHN (DRY LOCATIONS ONLY AND ABOVE GROUND). BOTH WITH SOLID CONDUCTORS. ALL BRANCH CIRCUIT WIRING SHALL BE NOT SMALLER THAN #12 AWG WIRE.

- WIRING INSTALLATION** - ALL WIRING SHALL BE INSTALLED IN APPROVED RACEWAY AND ENCLOSURES. ALL SPLICES OR TAPS SHALL OCCUR IN APPROVED BOXES AND ENCLOSURES, AND SHALL BE MADE UP WITH APPROVED SOLDERLESS CONNECTORS. FOR #10 CONDUCTORS AND SMALLER THE CONDUCTORS SHALL HAVE INSULATION OF THE PROPER COLOR TO MATCH NEC COLOR CODE SYSTEM. FOR CONDUCTORS OF #8 AND LARGER THE CONTRACTOR MAY USE COLORED PRESSURE SENSITIVE PLASTIC TAPE AT EACH END TO PROPERLY IDENTIFY THE CONDUCTOR VOLTAGE PER THE NEC. ALL BRANCH CIRCUITS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR INSTALLED IN THE RACEWAY, SIZED IN ACCORDANCE WITH NEC 250-122. COMPLY WITH VOLTAGE DROP SECTION IN THIS SPECIFICATION.

- DEVICES** - DEVICES SHALL BE SPECIFICATION GRADE. COMMERCIAL OR RESIDENTIAL GRADE DEVICES ARE NOT ACCEPTABLE. COORDINATE DEVICE AND COVERPLATE COLOR WITH THE ENGINEER PRIOR TO SUBMITTAL OF EQUIPMENT. DEVICE PLATES SHALL BE NYLON. ACCEPTABLE MANUFACTURERS SHALL BE ARROW HART, BRYANT, HUBBELL, LEVITON, AND PASS & SEYMOUR.

CONVENIENCE RECEPTACLES SHALL BE NEMA 5-20R TYPE.  
GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES SHALL BE NEMA 5-20R TYPE WITH FAULT SENSOR DESIGNED TO DETECT 4-6 mA LEAKAGE IN 25 MILLISECONDS OR LESS.

RECEPTACLES INSTALLED OUTDOORS SHALL BE NEMA 5-20R WEATHER-RESISTANT, GROUND FAULT TYPE DEVICES WITH CLEAR PLASTIC IMPACT RESISTANT WEATHERPROOF COVER.

- BOXES** - ALL BOXES SHALL BE METALLIC TYPE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

EXTERIOR BOXES SHALL BE CORROSION RESISTANT, CAST-METAL, WEATHERPROOF OUTLET WIRING BOXES.

DIVIDERS SHALL BE PROVIDED IN ALL BOXES WITH WIRING OF DIFFERENT VOLTAGE TO SEPARATE VOLTAGES.

JUNCTION BOXES AND PULL BOXES SHALL BE INSTALLED WHERE REQUIRED FOR CONDUCTOR PULLING AND BEND RADIUS REQUIREMENTS PER THE NEC.

C. LIGHTING:

- GENERAL** - THE LOCATIONS, NUMBERS, SIZES AND TYPES OF LIGHTING FIXTURES SHALL BE AS SHOWN ON THE CONTRACT DOCUMENTS. ALL LIGHTING FIXTURES FURNISHED UNDER THIS CONTRACT TO HAVE UL LABELS ATTACHED TO EACH FIXTURE OR AN INTEGRAL PART OF THE DEVICES FOR 120V AND 277V SOLID-STATE EQUIPMENT. FOR DEVICES WITHOUT INTEGRAL LINE VOLTAGE SURGE PROTECTION, FIELD MOUNTING SURGE PROTECTION SHALL COMPLY WITH IEEE C62.41, WITH UL 1449. METAL PARTS SHALL BE FREE FROM BURRS, SHARP CORNERS AND EDGES. DOORS, FRAMES AND OTHER INTERNAL ACCESSORIES SHALL BE SMOOTH OPERATING, FREE FROM LIGHT LEAKAGE UNDER OPERATING CONDITIONS, AND ARRANGED TO PERMIT RELAMPING WITHOUT USE OF TOOLS. ARRANGE DOORS, FRAMES, LENSES, DIFFUSERS AND OTHER PIECES TO PREVENT ACCIDENTAL FALLING DURING RELAMPING AND WHEN SECURED IN OPERATING POSITION. LENSES, DIFFUSERS, COVERS AND GLOBES SHALL BE 100 PERCENT VIRGIN ACRYLIC PLASTIC OR ANNEALED CRYSTAL GLASS, UNLESS OTHERWISE INDICATED. PLASTIC SHALL BE HIGH RESISTANCE TO YELLOWING AND OTHER CHANGES DUE TO AGING, EXPOSURE TO HEAT AND ULTRAVIOLET RADIATION. CLEAN ALL LIGHT FIXTURES AFTER INSTALLATION AND PRIOR TO OWNER ACCEPTANCE. TEST EACH FIXTURE AND REPLACE ALL MALFUNCTIONING LAMPS AND BALLASTS.

- LED FIXTURES AND DRIVERS** - MANUFACTURERS SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS. LED DRIVER AND HEAT SINK SHALL BE MATCHED TO PROVIDE 50,000 HOURS OF LAMP LIFE.

- POLES** - POLES SHALL BE OF THE TYPES AND SIZES AS SHOWN ON THE CONTRACT DRAWINGS. THE POLE SHALL BE STEEL, UNLESS SPECIFICALLY SHOWN AS OTHER MATERIAL ON THE CONTRACT DRAWINGS. WHERE APPLICABLE, THE POLE SHOULD BE PROVIDED WITH A HANDHOLE AND A GROUND LUG, AND LOCAL FUSES. THE POLE SHALL BE INSTALLED AS SHOWN ON THE CONTRACT DRAWINGS. POLE FINISH SHOULD MATCH LIGHT FIXTURE FINISH. PROVIDE CONCRETE POLE BASES AS INDICATED ON THE DRAWINGS.

D. CONSTRUCTION:

- SUBMITTALS** - SUBMIT FOR REVIEW SIX SETS OF MANUFACTURERS CUT SHEETS AND/OR SHOP DRAWINGS OF LIGHT FIXTURES WITH LAMPS AND LIGHT FIXTURE BASE, POWER PEDESTAL, AND ALL ITEMS IN THIS SPECIFICATION OTHER THAN WIRE AND CONDUIT. ALSO SUBMIT ITEMS REQUIRING COORDINATION BETWEEN CONTRACTORS. BEFORE SENDING SUBMITTALS, THE CONTRACTOR SHALL VERIFY THAT ALL EQUIPMENT SUBMITTED IS MUTUALLY COMPATIBLE AND SUITABLE FOR THE INTENDED USE, AND SHALL FIT THE AVAILABLE SPACE AND ALLOW AMPLE ROOM FOR MAINTENANCE. THE ENGINEER'S REVIEW AND COMMENT ON SUCH SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR QUANTITIES; OR OMISSIONS OF COMPONENTS OR FITTINGS; OR FOR COORDINATING ITEMS WITH ACTUAL PROJECT CONDITIONS.

E. SUBSTITUTIONS:

- ARE NOT ALLOWED