SECTION 16470 - PANELBOARDS

GENERAL

1.1 SECTION INCLUDES

A. Distribution and branch circuit panelboards.

1.2 REFERENCES

A. NECA (National Electrical Contractors Association) "Standard of Installation."

B. NEMA AB 1 - Molded Case Circuit Breakers.

C. NEMA PB 1 - Panelboards.

D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards rated 600 Volts or Less.

E. NEMA PB 1.2 - Application Guide for Ground-fault Protective Devices for Equipment.

F. NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Section 16010.

B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

1.4 SPARE PARTS

A. Keys: Furnish 4 each to Owner.

PRODUCTS

2.1 DISTRIBUTION AND BRANCH CIRCUIT PANELBOARDS

A. Acceptable Manufacturers.
1. Square D.
2. Cutler-Hammer.
3. General Electric
4. Siemens.
5. Substitutions: None Permitted.

B. Circuit Breaker Panelboards
1. Panelboards: NEMA PB1; circuit breaker type.

2. Enclosure: NEMA PB 1; Type 1.
3. Branch Circuit Panelboard Cabinet Size: 5 ¾ inches deep; 20 inches wide.
4. Distribution Panelboard Cabinet Size: 8¼ inches deep; 32 inches wide.
5. Provide cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel
6. Provide panelboards with copper bus, ratings as scheduled on Drawings. Provide copper ground bus in all panelboards.
7. Minimum Integrated Short Circuit Rating: 25,000 AIC for 208 volt panelboards, 65,000 AIC for 480 volt panelboards.
8. Molded Case Circuit Breakers: NEMA AB 1; bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits.
9. Provide circuit breaker accessory trip units and auxiliary contacts as indicated.

EXECUTION

3.1 INSTALLATION

A. Install panelboards plumb and flush with wall finishes, in conformance with NEMA PB 1.1.

B. Height: Top circuit breaker in panel shall not be higher than 6'-0" AFF.

C. Clearance: 3 feet in front of panelboard, floor to ceiling with no foreign pipes, ducts, or other system equipment. Contractor shall coordinate with the General Contractor prior to rough-in to assure that this requirement is met.

D. Provide filler plates for unused spaces in panelboards.

E. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

A. Measure state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**R-E1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 202

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	LIGHTS	1906	L	1	2406			2	L	500	RAMP SECURITY LIGHTS	1	20
20	1	CANOPY LIGHTS	1178	L	3		1678		4	L	500	RAMP SECURITY LIGHTS	1	20
20	1	LIGHTING CONTROL PANEL	500	L	5			1000	6	S	500	SPARE	1	20
20	1	SPARE	500	S	7	1000			8	S	500	SPARE	1	20
20	1	SPARE	500	S	9		1000		10	S	500	SPARE	1	20
20	1	SPARE	500	S	11			1000	12	S	500	SPARE	1	20
					PHASE TOTALS	3406	2678	2000						

CONNECTED VOLT-AMPERES= 8084
CONNECTED AMPERES= 10
DEMAND VOLT-AMPERES= 6334
DEMAND AMPERES= 8

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**R-E2**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 202

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
15	3	CP5	499	M	1	998			2	M	499	CP6	3	15
15	3	CP5	499	M	3		998		4	M	499	CP6	3	15
15	3	CP5	499	M	5			998	6	M	499	CP6	3	15
20	1	SPARE	500	S	7	1000			8	S	500	SPARE	1	20
20	1	SPARE	500	S	9		1000		10	S	500	SPARE	1	20
20	1	SPARE	500	S	11			1000	12	S	500	SPARE	1	20
20	1	SPARE	500	S	13	1000			14	S	500	SPARE	1	20
20	1	SPARE	500	S	15		1000		16	S	500	SPARE	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
60	3	PANEL R-E3	5420		19	5920			20	S	500	SPARE	1	20
60	3	PANEL R-E3	6508		21		7008		22	S	500	SPARE	1	20
60	3	PANEL R-E3	5320		23			5820	24	S	500	SPARE	1	20
					PHASE TOTALS	8918	10006	8818						

CONNECTED VOLT-AMPERES= 27742
CONNECTED AMPERES= 33
DEMAND VOLT-AMPERES= 14446
DEMAND AMPERES= 17

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	120/208	AMPS	100	MAIN:	MLO	**PANEL:**	**R-E3**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 202

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	TELEPHONE EQUIPMENT	400	O	1	800			2	R	400	RECEPTACLES	1	20
20	1	FIRE ALARM CONTROL PNL	500	O	3		1500		4	O	1000	DATA NETWORK RACK	1	20
20	1	LIGHTING CONTROL PANEL	500	O	5			1700	6	R	1200	RECEPTACLES	1	20
20	1	B2	1176	M	7	1326			8	M	150	CP7	1	15
20	1	TEMP CONTROL PANEL	500	O	9		1364		10	M	864	CP8	1	15
20	1	TEMP CONTROL PANEL	500	O	11			620	12	M	120	SAC2	1	15
15	1	UH1	150	H	13	1294			14	M	1144	SCU2	2	20
20	2	HEAT TRACE	500	H	15		1644		16	M	1144	SCU2	2	20
20	2	HEAT TRACE	500	H	17			1000	18	M	500	HEAT TRACE	2	20
20	1	SPARE	500	S	19	1000			20	M	500	HEAT TRACE	2	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
						0								
							0							
								0						
						0								
							0							
								0						
					PHASE TOTALS	5420	6508	5320						

CONNECTED VOLT-AMPERES= 17248
CONNECTED AMPERES= 48
DEMAND VOLT-AMPERES= 9199
DEMAND AMPERES= 26

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	225	MAIN:	MLO	**PANEL:**	**R-L1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 202

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	2	PARKING LOT LIGHTING	2480	L	1	4570			2	L	2090	PARKING LOT LIGHTING	2	20
20	2	PARKING LOT LIGHTING	2480	L	3		4570		4	L	2090	PARKING LOT LIGHTING	2	20
20	2	DROP OFF LIGHTING	1395	L	5			1895	6	S	500	SPARE	1	20
20	2	DROP OFF LIGHTING	1395	L	7	3893			8	L	2498	LIGHTS	1	20
90	3	CU1 (ALT #9)	16905	M	9		26286		10	M	9381	EVR3	3	50
90	3	CU1 (ALT #9)	16905	M	11			26286	12	M	9381	EVR3	3	50
90	3	CU1 (ALT #9)	16905	M	13	26286			14	M	9381	EVR3	3	50
20	1	LIGHTS	1240	L	15		4360		16	L	3120	LIGHTS	1	20
20	1	LIGHTING CONTROL PNL	500	O	17			1670	18	L	1170	BOLLARD LIGHTS	1	20
20	1	SPARE	500	S	19	1400			20	L	900	RAMP LIGHTS	1	20
20	1	SPARE	500	S	21		1400		22	L	900	RAMP LIGHTS	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
				PHASE TOTALS		37149	37616	31851						

CONNECTED VOLT-AMPERES= 106616
CONNECTED AMPERES= 128
DEMAND VOLT-AMPERES= 64187
DEMAND AMPERES= 77

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS: 120/208 AMPS 100 MAIN: MLO **PANEL: R-P1**

MOUNT: SURFACE PHASE: 3 WIRES: 4 LOCATION: ELECTRICAL 202

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	RECEPTACLES	1200	R	1	2200			2	O	1000	ELEC WATER COOLER	1	20
20	1	RECEPTACLES	1000	R	3		2000		4	O	1000	ELEC WATER COOLER	1	20
20	1	RECEPTACLES	1000	R	5			1800	6	R	800	RECEPTACLES	1	20
20	1	RECEPTACLES	1000	R	7	1600			8	R	600	RECEPTACLES	1	20
15	1	EF4	696	M	9		996		10	M	300	MOTOR OPER DAMPERS	1	20
20	1	AUTO FLUSH VALVES	600	M	11			5100	12	H	4500	EWH2	1	20
20	1	AUTO FLUSH VALVES	450	M	13	1850			14	R	1400	RECEPTACLES	1	20
20	1	RECEPTACLES	1200	R	15		1700		16	L	500	120 VOLT LIGHTS	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
20	1	SPARE	500	S	19	1000			20	S	500	SPARE	1	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
					PHASE TOTALS	7650	6696	9900						

CONNECTED VOLT-AMPERES= 24246

CONNECTED AMPERES= 67

DEMAND VOLT-AMPERES= 14623

DEMAND AMPERES= 41

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**

PROJ. NO: 03-0054

DATE: 10/27/04

STATUS: 100% CONSTRUCTION DOCS

Bartlett Design

LIGHTING & ELECTRICAL ENGINEERING

942 WASHINGTON STREET BATH, MAINE 04530

TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**T-E1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 207

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	EMERGENCY LIGHTS	1403	L	1	3731			2	L	2328	EMERGENCY LIGHTS	1	20
20	1	EMERGENCY LIGHTS	2604	L	3		3104		4	S	500	SPARE	1	20
20	1	OUTSIDE LIGHTS	1178	L	5			1678	6	S	500	SPARE	1	20
20	1	SPARE	500	S	7	1000			8	S	500	SPARE	1	20
20	1	SPARE	500	S	9		1000		10	S	500	SPARE	1	20
20	1	SPARE	500	S	11			1000	12	S	500	SPARE	1	20
					PHASE TOTALS	4731	4104	2678						

CONNECTED VOLT-AMPERES= 11513
CONNECTED AMPERES= 14
DEMAND VOLT-AMPERES= 9513
DEMAND AMPERES= 11

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**T-E2**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	BOILER 206

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
15	3	SEP	1330	M	1	2272			2	M	942	CP1	3	15
15	3	SEP	1330	M	3		2272		4	M	942	CP1	3	15
15	3	SEP	1330	M	5			2272	6	M	942	CP1	3	15
20	1	SPARE	500	S	7	1442			8	M	942	CP2	3	15
20	1	SPARE	500	S	9		1442		10	M	942	CP2	3	15
20	1	SPARE	500	S	11			1442	12	M	942	CP2	3	15
20	1	SPARE	500	S	13	1000			14	S	500	SPARE	1	20
20	1	SPARE	500	S	15		1000		16	S	500	SPARE	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
60	3	PANEL T-E3	16766		19	17266			20	S	500	SPARE	1	20
60	3	PANEL T-E3	15800		21		16300		22	S	500	SPARE	1	20
60	3	PANEL T-E3	16120		23			16620	24	S	500	SPARE	1	20
					PHASE TOTALS	21981	21015	21335						

CONNECTED VOLT-AMPERES=	64330
CONNECTED AMPERES=	77
DEMAND VOLT-AMPERES=	32570
DEMAND AMPERES=	39

CIRCUIT TYPE CODES		DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	120/208	AMPS	225	MAIN:	MLO	**PANEL:**	**T-E3**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	BOILER 206

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	CH1, CH2, UH	450	H	1	810			2	H	360	(6) WH	1	20
20	1	TEMP CONTROL PANEL	500	O	3		800		4	M	300	MOTOR OPER DAMPERS	1	20
20	1	TEMP CONTROL PANEL	500	O	5			1000	6	M	500	CP-4	1	20
20	1	TEMP CONTROL PANEL	500	O	7	2156			8	M	1656	B1	1	25
20	1	TEMP CONTROL PANEL	500	O	9		1500		10	R	1000	RECEPTACLES	1	20
20	1	TEMP CONTROL PANEL	500	O	11			2000	12	R	1500	DATA NETWORK RACK	1	20
20	1	EJECTOR CONTROL PANEL	500	O	13	1300			14	R	800	RECEPTACLES	1	20
20	1	SEWAGE PUMP PANEL	500	O	15		1000		16	O	500	FIRE ALARM CONTROL PNL	1	20
20	1	HIGH LEVEL ALARM	500	O	17			620	18	M	120	SAC1	1	15
20	1	TEMP CONTROL PANEL	500	O	19	1000			20	O	500	INTERCOM SYSTEM	1	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
20	1	SPARE	500	S	31	1000			32	S	500	SPARE	1	20
20	1	SPARE	500	S	33		1000		34	S	500	SPARE	1	20
20	1	SPARE	500	S	35			1000	36	S	500	SPARE	1	20
100	3	PANEL T-E4	9000		37	9500			38	S	500	SPARE	1	20
100	3	PANEL T-E4	9000		39		9500		40	S	500	SPARE	1	20
100	3	PANEL T-E4	9000		41			9500	42	S	500	SPARE	1	20
				PHASE TOTALS		16766	15800	16120						

CONNECTED VOLT-AMPERES= 48686
CONNECTED AMPERES= 135
DEMAND VOLT-AMPERES= 24748
DEMAND AMPERES= 69

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	120/208	AMPS	100	MAIN:	MLO	**PANEL:**	**T-E4**
MOUNT:	RECESSED	PHASE:	3	WIRES:	4	LOCATION:	LAN 111

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	INS BOOTH #1	1000	R	1	2000			2	R	1000	INS BOOTH #5	1	20
20	1	INS BOOTH #1	1000	R	3		2000		4	R	1000	INS BOOTH #5	1	20
20	1	INS BOOTH #1	1000	R	5			2000	6	R	1000	INS BOOTH #5	1	20
20	1	INS BOOTH #2	1000	R	7	2000			8	R	1000	INS BOOTH #6	1	20
20	1	INS BOOTH #2	1000	R	9		2000		10	R	1000	INS BOOTH #6	1	20
20	1	INS BOOTH #2	1000	R	11			2000	12	R	1000	INS BOOTH #6	1	20
20	1	INS BOOTH #3	1000	R	13	2000			14	R	1000	INS BOOTH #7	1	20
20	1	INS BOOTH #3	1000	R	15		2000		16	R	1000	INS BOOTH #7	1	20
20	1	INS BOOTH #3	1000	R	17			2000	18	R	1000	INS BOOTH #7	1	20
20	1	INS BOOTH #4	1000	R	19	2000			20	R	1000	INS BOOTH #8	1	20
20	1	INS BOOTH #4	1000	R	21		2000		22	R	1000	INS BOOTH #8	1	20
20	1	INS BOOTH #4	1000	R	23			2000	24	R	1000	INS BOOTH #8	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
				PHASE TOTALS		9000	9000	9000						

CONNECTED VOLT-AMPERES= 27000
CONNECTED AMPERES= 75
DEMAND VOLT-AMPERES= 13500
DEMAND AMPERES= 37

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**T-L1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 207

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
15	3	CP3A	2106	M	1	4212			2	M	2106	CP3B	3	15
15	3	CP3A	2106	M	3		4212		4	M	2106	CP3B	3	15
15	3	CP3A	2106	M	5			4212	6	M	2106	CP3B	3	15
20	1	LIGHTS	2520	L	7	5388			8	L	2868	LIGHTS	1	20
20	1	LIGHTS	2730	L	9		5384		10	L	2654	LIGHTS	1	20
20	1	LIGHTS	2166	L	11			3596	12	L	1430	LIGHTS	1	20
20	1	SPARE	500	S	13	1000			14	S	500	SPARE	1	20
20	1	SPARE	500	S	15		1000		16	S	500	SPARE	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
20	1	SPARE	500	S	19	1000			20	S	500	SPARE	1	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
				PHASE TOTALS		12600	12596	10808						

CONNECTED VOLT-AMPERES= 36005
CONNECTED AMPERES= 43
DEMAND VOLT-AMPERES= 25186
DEMAND AMPERES= 30

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	120/208	AMPS	100	MAIN:	MLO	**PANEL:**	**T-P1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	ELECTRICAL 207

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	RECEPTACLES	1200	R	1	2200			2	R	1000	RECEPTACLES	1	20
20	1	RECEPTACLES	1400	R	3		2400		4	R	1000	RECEPTACLES	1	20
20	1	RECEPTACLES	1000	R	5			1300	6	O	300	AUTO FLUSH VALVES	1	20
20	1	RECEPTACLES	1000	R	7	1800			8	R	800	RECEPTACLES	1	20
20	1	RECEPTACLES	1000	R	9		1500		10	M	500	SUMP PUMP	1	20
20	1	RECEPTACLES	800	R	11			1200	12	R	400	ELEV PIT RECEPT	1	20
20	1	RECEPTACLES	1000	R	13	1400			14	R	400	ELEV MACH RM RECEPT	1	20
20	1	RECEPTACLES	800	R	15		1300		16	O	500	ELEV CONTROLS	1	20
20	1	120 VOLT LIGHTS	13	L	17			513	18	S	500	SPARE	1	20
20	1	SPARE	500	S	19	1000			20	S	500	SPARE	1	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
20	1	SPARE	500	S	25	1000			26	S	500	SPARE	1	20
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
				PHASE TOTALS		7400	7200	5013						

CONNECTED VOLT-AMPERES= 19613
CONNECTED AMPERES= 54
DEMAND VOLT-AMPERES= 9813
DEMAND AMPERES= 27

CIRCUIT TYPE CODES		DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS: 120/208 AMPS 225 MAIN: MLO **PANEL: T-P2**

MOUNT: SURFACE PHASE: 3 WIRES: 4 LOCATION: JANITOR 210

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	RECEPTACLES	1400	R	1	2200			2	R	800	RECEPTACLES	1	20
20	1	TEL TERMINATION EQUIP	500	O	3		1500		4	O	1000	ELEC WATER COOLER	1	20
15	1	EF-2	696	M	5			1696	6	O	1000	ELEC WATER COOLER	1	20
15	1	EF-3	528	M	7	2028			8	O	1500	VENDING	1	20
20	1	RECEPTACLES	1200	R	9		2700		10	O	1500	VENDING	1	20
20	1	RECEPTACLES	800	R	11			2300	12	O	1500	VENDING	1	20
20	1	AUTO FLUSH VALVES	450	O	13	1450			14	R	1000	RECEPTACLES	1	20
20	1	AUTO FLUSH VALVES	600	O	15		1800		16	R	1200	RECEPTACLES	1	20
15	1	EF-1	696	M	17			2096	18	R	1400	RECEPTACLES	1	20
20	1	PAYPHONES	600	R	19	1100			20	O	500	EVR1 CONTROL PANEL	1	20
20	1	RECEPTACLES	1000	R	21		1500		22	O	500	EVR2 CONTROL PANEL	1	20
20	1	AUTO FLUSH VALVES	750	O	23			5250	24	H	4500	EWH	1	70
20	1	SF1	696	M	25	5196			26	H	4500	EWH	1	70
20	1	SPARE	500	S	27		1000		28	S	500	SPARE	1	20
20	1	SPARE	500	S	29			1000	30	S	500	SPARE	1	20
20	1	SPARE	500	S	31	1000			32	S	500	SPARE	1	20
20	1	SPARE	500	S	33		1000		34	S	500	SPARE	1	20
20	1	SPARE	500	S	35			1000	36	S	500	SPARE	1	20
20	1	SPARE	500	S	37	1000			38	S	500	SPARE	1	20
20	1	SPARE	500	S	39		1000		40	S	500	SPARE	1	20
20	1	SPARE	500	S	41			1000	42	S	500	SPARE	1	20
				PHASE TOTALS		13974	10500	14342						

CONNECTED VOLT-AMPERES= 38816

CONNECTED AMPERES= 108

DEMAND VOLT-AMPERES= 23908

DEMAND AMPERES= 66

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**

PROJ. NO: 03-0054

DATE: 10/27/04

STATUS: 100% CONSTRUCTION DOCS

Bartlett Design

LIGHTING & ELECTRICAL ENGINEERING

942 WASHINGTON STREET BATH, MAINE 04530

TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**V-L1 EXISTING**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	VIS BLDG RM 101

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	2	POLE LIGHTS	2635	L	1	4185			2	L	1550	POLE LIGHTS	2	20
20	2	POLE LIGHTS	2635	L	3		4185		4	L	1550	POLE LIGHTS	2	20
20	2	FLOOD LIGHTS	1085	L	5			1585	6	S	500	SPARE	1	20
20	2	FLOOD LIGHTS	1085	L	7	1785			8	L	700	POLE LIGHTS	1	20
20	2	INSPECTION CANOPY LTG	2300	L	9		3000		10	L	700	POLE LIGHTS	1	20
20	2	INSPECTION CANOPY LTG	2300	L	11			3910	12	L	1610	INSPECTION CANOPY LTG	2	20
20	2	INSPECTION CANOPY LTG	1610	S	13	3220			14	L	1610	INSPECTION CANOPY LTG	2	20
20	2	INSPECTION CANOPY LTG	1610	S	15		2110		16	S	500	SPARE	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
20	3	PANEL V-P1	9100		19	9600			20	S	500	SPARE	1	20
20	3	PANEL V-P1	8050		21		8550		22	S	500	SPARE	1	20
20	3	PANEL V-P1	9550		23			10050	24	S	500	SPARE	1	20
					PHASE TOTALS	18790	17845	16545						

CONNECTED VOLT-AMPERES= 53180
CONNECTED AMPERES= 64
DEMAND VOLT-AMPERES= 42770
DEMAND AMPERES= 51

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	120/208	AMPS	225	MAIN:	MLO	**PANEL:**	**V-P1**
MOUNT:	RECESSED	PHASE:	3	WIRES:	4	LOCATION:	VIS BLDG RM 101

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	SURVEILLANCE CAMERAS	500	O	1	1700			2	R	1200	RECEPTACLES	1	20
20	1	RECEPTACLES	400	R	3		1400		4	R	1000	RECEPTACLES	1	20
20	1	BOOTH POWER	1000	R	5			2200	6	R	1200	RECEPTACLES	1	20
20	1	BOOTH POWER	1000	R	7	1200			8	L	200	BOOTH LIGHTS	1	20
20	1	BOOTH POWER	1000	R	9		1200		10	L	200	BOOTH LIGHTS	1	20
20	1	BOOTH POWER	1000	R	11			1200	12	L	200	BOOTH LIGHTS	1	20
20	1	BOOTH POWER	1000	R	13	1200			14	L	200	BOOTH LIGHTS	1	20
20	2	ELEC HEAT VIS BLDG	500	H	15		700		16	L	200	BOOTH LIGHTS	1	20
20	2	ELEC HEAT VIS BLDG	500	H	17			1000	18	H	500	ELEC HEAT VIS BLDG	2	20
20	2	ELEC HEAT VIS BLDG	500	H	19	1000			20	H	500	ELEC HEAT VIS BLDG	2	20
20	2	ELEC HEAT VIS BLDG	500	H	21		1250		22	H	750	ELEC WALL HTR. VIS BLDG	2	20
20	2	ELEC HEAT VIS BLDG	250	H	23			1000	24	H	750	ELEC WALL HTR. VIS BLDG	2	20
20	2	ELEC HEAT VIS BLDG	250	H	25	1250			26	H	1000	ELEC HEAT VIS BLDG	2	20
20	1	LIGHTS VIS BLDG	600	L	27		1600		28	H	1000	ELEC HEAT VIS BLDG	2	20
20	1	INSPECTION CANOPY LTG	1500	L	29			2250	30	H	750	ELEC WALL HTR. VIS BLDG	2	20
20	1	INSPECTION CANOPY LTG	1000	L	31	1750			32	H	750	ELEC WALL HTR. VIS BLDG	2	20
20	1	RECEPTACLES	400	R	33		900		34	S	500	SPARE	1	20
20	1	RECEPTACLES	400	R	35			900	36	S	500	SPARE	1	20
20	1	SPARE	500	S	37	1000			38	S	500	SPARE	1	20
20	1	SPARE	500	S	39		1000		40	S	500	SPARE	1	20
20	1	SPARE	500	S	41			1000	42	S	500	SPARE	1	20
				PHASE TOTALS		9100	8050	9550						

CONNECTED VOLT-AMPERES=	26700
CONNECTED AMPERES=	74
DEMAND VOLT-AMPERES=	19650
DEMAND AMPERES=	55

CIRCUIT TYPE CODES		DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

VOLTS: 120/208 AMPS 100 MAIN: MLO **PANEL: G-E1**

MOUNT: SURFACE PHASE: 3 WIRES: 4 LOCATION: GENERATOR ROOM

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	1	LIGHTS	186	L	1	786			2	R	600	RECEPTACLES	1	20
20*	2	HEAT TRACE	1600	H	3		3100		4	H	1500	GENERATOR COOLANT HTR	1	20
20*	2	HEAT TRACE	1600	H	5			2100	6	O	500	GEN BATTERY CHARGER	1	20
20*	2	HEAT TRACE	1600	H	7	3200			8	H	1600	HEAT TRACE	2	20*
20*	2	HEAT TRACE	1600	H	9		3200		10	H	1600	HEAT TRACE	2	20*
20*	2	HEAT TRACE	1600	H	11			2100	12	O	500	GENERATOR ROOM LOUVER	1	20
20*	2	HEAT TRACE	1600	H	13	2100			14	S	500	SPARE	1	20
20	1	SPARE	500	S	15		1000		16	S	500	SPARE	1	20
20	1	SPARE	500	S	17			1000	18	S	500	SPARE	1	20
20	1	SPARE	500	S	19	1000			20	S	500	SPARE	1	20
20	1	SPARE	500	S	21		1000		22	S	500	SPARE	1	20
20	1	SPARE	500	S	23			1000	24	S	500	SPARE	1	20
					PHASE TOTALS	7086	8300	6200						

CONNECTED VOLT-AMPERES= 21586

CONNECTED AMPERES= 60

DEMAND VOLT-AMPERES= 16536

DEMAND AMPERES= 46

CIRCUITS INDICATED BY * SHALL BE SERVED BYGFIC C.B.s

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**

PROJ. NO: 03-0054

DATE: 10/27/04

STATUS: 100% CONSTRUCTION DOCS

Bartlett Design

LIGHTING & ELECTRICAL ENGINEERING

942 WASHINGTON STREET BATH, MAINE 04530

TEL (207) 443-5447 FAX (207) 443-5560

VOLTS:	277/480	AMPS	100	MAIN:	MLO	**PANEL:**	**G-L1**
MOUNT:	SURFACE	PHASE:	3	WIRES:	4	LOCATION:	GENERATOR ROOM

BREAKER		DESCRIPTION	CKT	TYPE	CKT	LOAD			CKT	TYPE	CKT	DESCRIPTION	BREAKER	
A	P		VA		NO.	A	B	C	NO.		VA		P	A
20	2	UNIT HEATER	2500	H	1	9586			2		7086	PANEL G-E1	3	45
20	2	UNIT HEATER	2500	H	3		10800		4		8300	PANEL G-E1	3	45
20	1	SPARE	500	S	5			6700	6		6200	PANEL G-E1	3	45
20	1	SPARE	500	S	7	500			8			BLANK		
		BLANK			9		0		10			BLANK		
		BLANK			11			0	12			BLANK		
				PHASE TOTALS		10086	10800	6700						

CONNECTED VOLT-AMPERES=	27586
CONNECTED AMPERES=	33
DEMAND VOLT-AMPERES=	22036
DEMAND AMPERES=	27

	CIRCUIT TYPE CODES	DEMAND FACTOR
L	LIGHTS	1.0
M	MOTORS	0.5
R	RECEPTACLES	0.5
H	HEAT	1.0
O	OTHER	0.5
S	SPARE	0.5

PROJECT: **OCEAN GATEWAY**
PROJ. NO: 03-0054
DATE: 10/27/04
STATUS: 100% CONSTRUCTION DOCS

Bartlett Design
LIGHTING & ELECTRICAL ENGINEERING
942 WASHINGTON STREET BATH, MAINE 04530
TEL (207) 443-5447 FAX (207) 443-5560

END OF SECTION