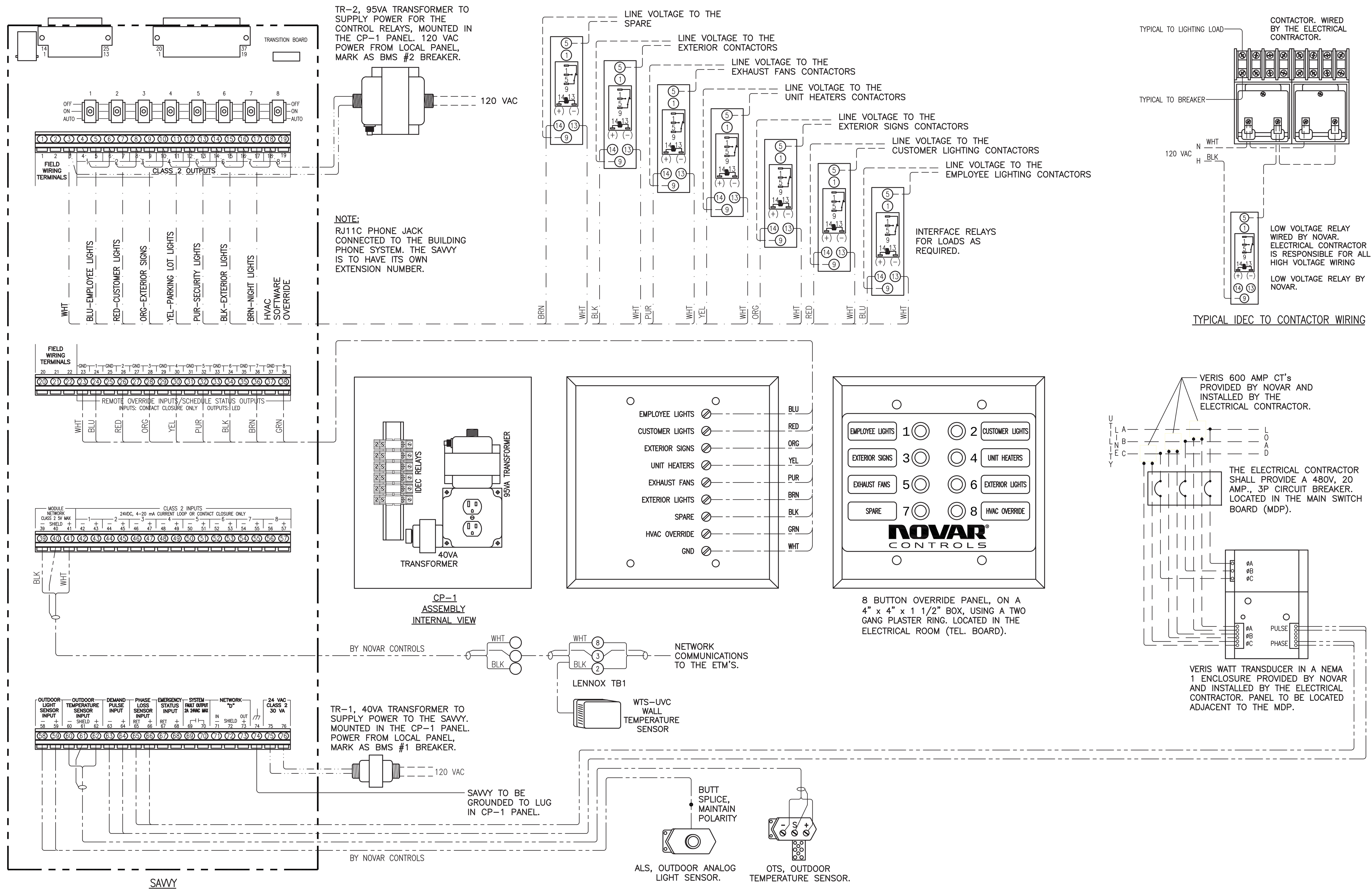

1 / E1.7 NOVAR CONTROLS– SAVVY WIRING DIAGRAM

SCALE: NOT TO SCALE

LEGENDS

- 18/9 GA. LOW VOLTAGE WIRING
- 18 GA. THHN WIRING
- 18/2 GA. THHN WIRING
- 22/2 GA. W/ SHIELDED GROUND BELDEN 8761 OR EQUIVALENT
- 20/2 GA. AND 18/2 GA. SHIELDED GROUND BELDEN 9155 OR EQUIVALENT
- LINE VOLTAGE WIRING IN CONDUIT

REMARKS

- WIRE SPLICES ARE NOT ACCEPTABLE.
- THE COMMUNICATIONS TRUNK WILL BE TERMINATED AT THE MODULES
- ALL LOW VOLTAGE CABLE IS TO BE SUPPORTED SECURELY ACCORDING TO THE APPLICABLE ELECTRICAL CODE, TAPE IS NOT ACCEPTABLE.
- ALL LOW VOLTAGE CABLE IS TO BE RUN NEATLY AND CONCEALED WITHIN THE BUILDING STRUCTURE.
- ALL LOW VOLTAGE CABLE IS TO BE SLEEVED IN CONDUIT UP TO THE CEILING OR BAR JOISTS.

MAIN DISTR. PANEL "MDP"

TYPE: SQUARE D | PHASE: 3 WIRE: 4 60 Hz BOLT-ON | MOUNTING: SURFACE
BUS AMP RATING: 600A (A1) | VOLT: 480Y/277VAC WITH GROUND BAR | FAULT CURRENT: 28,216 A | FEED: TOP
MAIN TYPE: MLO MAIN SIZE BREAKER: NONE | NEMA 1 – CU BUS | FAULT BRACING (SCR): 42K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL ROOM

CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	C ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.
1	RTU-1, ON ROOF	#6	11.833	50	3	●			3	35	8.702	#8	RTU-2, ON ROOF	2
3	"	–	11.833	–	–		●		–	–	8.702	–	"	4
5	"	–	11.833	–	–			●	–	–	8.702	–	"	6
7	RTU-3, ON ROOF	#8	8.702	35	3	●			3	50	11.833	#6	RTU-4, ON ROOF	8
9	"	–	8.702	–	–		●		–	–	11.833	–	"	10
11	"	–	8.702	–	–			●	–	–	11.833	–	"	12
13	RTU-5, ON ROOF	#6	11.833	50	3	●			3	15	4.073	#10	RTU-6, ON ROOF	14
15	"	–	11.833	–	–		●		–	–	4.073	–	"	16
17	"	–	11.833	–	–			●	–	–	4.073	–	"	18
19	RTU-7, ON ROOF	#10	5.321	25	3	●			3	15	4.074	#10	RTU-8, ON ROOF	20
21	"	–	5.321	–	–		●		–	–	4.074	–	"	22
23	"	–	5.321	–	–			●	–	–	4.074	–	"	24
25	RTU-9, ON ROOF	#10	4.406	20	3	●			3	100	10.786	#3	PANEL "HA"	26
27	"	–	4.406	–	–		●		–	–	10.786	–	"	28
29	"	–	4.406	–	–			●	–	–	10.786	–	"	30
31	COMPACTOR	#8	5.820	30	3	●			3	110	17.131	#2	75 KVA TRANSFORMER "T1"/PANEL DPL	32
33	"	–	5.820	–	–		●		–	–	17.131	–	"	34
35	"	–	5.820	–	–			●	–	–	17.131	–	"	36
37	VERIS WATT TRANSDUCER	#12	0.100	20	3	●							SPACE	38
39	"	–	0.100	–	–		●						"	40
41	"	–	0.100	–	–			●					"	42

A ø =104.663 KVA | B ø =104.663 KVA | C ø =104.663 KVA
TOTAL CONNECTED LOAD 313.989 KVA, 378.1 AMPS
TOTAL DEMAND LOAD 322.864 KVA, 388.8 AMPS
2011 NEC ARTICLE 215.3 ARTICLE 220 II & III ARTICLE 440.33

DISTRIBUTION PANEL "DPL"

TYPE: SQUARE D | PHASE: 3 WIRE: 4 60 Hz BOLT-ON | MOUNTING: SURFACE
BUS AMP RATING: 225A | VOLT: 208Y/120VAC WITH GROUND BAR | FAULT CURRENT: 8,066 | FEED: BOTTOM
MAIN TYPE: MCB MAIN SIZE BREAKER: 200A | NEMA 1 – CU BUS, IG (ISOLATED GROUND) | FAULT BRACING (SCR): 35K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL ROOM

CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	C ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.
1	PANEL "LA"	#4	6.081	80	3	●			3	80	6.240	#4	PANEL "LB"	2
3	"	–	6.081	–	–		●		–	–	6.240	–	"	4
5	"	–	6.081	–	–			●	–	–	6.240	–	"	6
7	UPS/PANEL "CP" (3)	#8	2.835	30	2	●			2	30	2.250	#8	EWH-1, JANITOR RM.	8
9	"	–	2.835	–	–		●		–	–	2.250	–	"	10
11	HAND DRYER, MEN'S RESTROOM	#10	2.130	30	1			●	1	30	2.130	#10	HAND DRYER, WOMEN'S RESTROOM	12
13	SPACE					●							SPACE	14
15	"						●						"	16
17	"							●					"	18
19	SPACE					●							SPACE	20
21	"						●						"	22
23	"							●					"	24

A ø = 17.406 KVA | B ø = 17.406 KVA | C ø = 16.581 KVA
TOTAL CONNECTED LOAD 51.393 KVA, 133.5 AMPS
TOTAL DEMAND LOAD 40.560 KVA, 112.6 AMPS
2011 NEC ARTICLE 215.3 ARTICLE 220 II & III

NOTES:
① WITH ISOLATED GROUND BUS.

(A1)

PANEL "LB"

TYPE: SQUARE D | PHASE: 3 WIRE: 4 60 Hz BOLT-ON | MOUNTING: SURFACE
BUS AMP RATING: 100A | VOLT: 208Y/120VAC WITH GROUND BAR | FAULT CURRENT: 6,857 A | FEED: BOTTOM
MAIN TYPE: MLO MAIN SIZE BREAKER: NONE | NEMA 1 – CU BUS | FAULT BRACING (SCR): 10K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL ROOM

BMS CTRL	CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	C ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.	BMS CTRL
	1	AUTOMATIC SLIDING DOOR, FRONT	#10	1.200	20	1	●			1	20	0.540	#10	RECEPTACLES, SALES AREA	2	
	3	AUTOMATIC SLIDING DOOR, FRONT	#10	1.200	20	1		●		1	20	0.540	#10	RECEPTACLES, SALES AREA	4	
	5	RECEPTACLES, SALES AREA	#10	0.540	20	1			●	1	20	0.540	#12	RECEPTACLES, PROCESSING RM.	6	
	7	RECEPTACLE-VACUUM EQUIPMENT, VACUUM CLOSET	#10	0.800	20	1	●			1	20	0.180	#12	RECEPTACLE-REWRAP TABLE, PROCESSING RM.	8	
	9	PATCH PANEL AND SWITCH, CASH ROOM (2)	#12	0.540	20	1		●		1	20	1.200	#12	RECEPTACLE-EWC-1, HALL	10	
	11	RECEPTACLES, MANAGER RM.	#12	0.540	20	1			●	1	20	0.100	#12	TIME CLOCK, LOUNGE RM.	12	
	13	RECEPTACLE-VENDING MACHINE, LOUNGE RM.	#10	0.900	20	1	●			1	20	1.200	#10	RECEPTACLE, COUNTERTOP, LOUNGE RM.	14	
	15	RECEPTACLE-VENDING MACHINE, LOUNGE RM.	#10	0.900	20	1		●		1	20	1.200	#10	RECEPTACLE, COUNTERTOP, LOUNGE RM.	16	
	17	RECEPTACLE-REFRIGERATOR, LOUNGE RM.	#10	0.780	20	1			●	1	20	0.500	#10	RECEPTACLES, ABOVE COUNTERTOP LOUNGE RM.	18	
	19	RECEPTACLES, LOUNGE RM.	#10	0.500	20	1	●			1	20	0.540	#10	RECEPTACLES, RTUs ON ROOF	20	
	21	RECEPTACLES, LOUNGE, JANITOR, HALL	#10	0.540	20	1		●		1	20	0.540	#10	RECEPTACLES, RTUs ON ROOF	22	
	23	SUMP PUMP, LOADING DOCK ①	#10	1.200	20	1			●	1	20	0.540	#10	RECEPTACLES, RTUs ON ROOF	24	
EF	25	EF-2 ON ROOF (3)	#10	0.168	20	1	●			1	20	0.864	#12	GUH-1, PROCESSING RM.	26	HTR
EF	27	EF-1 ON ROOF	#10	0.158	20	1		●		1	20	0.269	#10	EF-3 ON ROOF (3)	28	EF
	29	SPARE			20	1			●	1	20	0.180	#10	VESTIBULE OUTLET FOR CART CONTAINMENT SYSTEM	30	
	31	"			20	1	●			1	20			SPARE	32	
	33	"			20	1		●		1	20			"	34	
	35	"			20	1			●	1	20			"	36	
	37	SPACE					●							SPACE	38	
	39	"						●						"	40	
	41	"							●					"	42	

A ø = 6.892 KVA | B ø = 7.087 KVA | C ø = 4.740 KVA
TOTAL CONNECTED LOAD 18.719 KVA, 51.9 AMPS
TOTAL DEMAND LOAD 16.647 KVA, 46.2 AMPS
2011 NEC ARTICLE 220 II & III

NOTES:
① INSTALL GFCI CIRCUIT BREAKER.

(2)

PANEL "HA"

TYPE: SQUARE D | PHASE: 3 WIRE: 4 60 Hz BOLT-ON | MOUNTING: SURFACE
BUS AMP RATING: 100A | VOLT: 480Y/277VAC WITH GROUND BAR | FAULT CURRENT: 25,742 A | FEED: SIDE
MAIN TYPE: MLO MAIN SIZE BREAKER: NONE | NEMA 1 – CU BUS | FAULT BRACING (SCR): 35K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL ROOM

BMS CTRL	CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	C ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.	BMS CTRL
	1	EMERGENCY, EGRESS LIGHTS & EXIT SIGNS	#12	0.683	20	1	●			1	20	1.980	#12	NIGHT LIGHTS, SALES AREA	2	
C	3	LIGHTS, PROCESSING ROOM	#12	0.882	20	1		●		1	20	0.791	#12	LIGHTS, MEN/WOMEN RR, HALL, LOUNGE, JANITOR	4	E
E	5	LIGHTS, PROCESSING ROOM	#12	0.882	20	1			●	1	20	1.781	#10	LIGHTS, ELEC., OFFICES, DRESSING RMS.	6	E
E	7	LIGHTS, SALES AREA	#10	2.128	20	1	●			1	20	2.280	#10	LIGHTS, SALES AREA	8	C
C	9	LIGHTS, SALES AREA	#10	2.280	20	1		●		1	20	2.280	#10	LIGHTS, SALES AREA	10	E
E	11	LIGHTS, SALES AREA	#10	2.280	20	1			●	1	20	2.128	#10	LIGHTS, SALES AREA	12	C
E	13	LIGHTS, SALES AREA	#10	1.064	20	1	●			1	20	1.002	#10	LIGHTS, SALES AREA – VALANCE	14	C
C	15	LIGHTS, SALES AREA	#10	1.167	20	1		●		1	20	1.830	#10	LIGHTS, SALES AREA – VALANCE	16	C
C	17	LIGHTS, SALES AREA – VALANCE	#10	0.843	20	1			●	1	20	2.022	#10	LIGHTS, SALES AREA – VALANCE	18	C
SEL	19	FRONT CANOPY	#10	0.855	20	1	●			1	20	0.200	#12	EXTERIOR/SECURITY LIGHTS – BACK	20	SEL
HTR	21	EUH-1, VESTIBULE	#10	3.000	20	1		●		1	20			SPARE	22	
	23	SPARE			20	1			●	1	20			"	24	
	25	" (A1)			20	1	●			1	20			"	26	
	27	"			20	1		●		1	20			"	28	
	29	"			20	1			●	1	20			"	30	
	31	SPACE					●							SPACE	32	
	33	"						●						"	34	
	35	"							●					"	36	
	37	"					●							"	38	
	39	"						●						"	40	
	41	"							●					"	42	

A ø =10.192 KVA | B ø = 12.230 KVA | C ø = 12.936 KVA
TOTAL CONNECTED LOAD 32.358 KVA, 38.9 AMPS
TOTAL DEMAND LOAD 40.448 KVA, 48.7 AMPS
2011 NEC ARTICLE 215.3

PANEL "LA"

TYPE: SQUARE D | PHASE: 3 WIRE: 4 60 Hz BOLT-ON | MOUNTING: SURFACE
BUS AMP RATING: 100A | VOLT: 208Y/120VAC WITH GROUND BAR | FAULT CURRENT: 7,661 A | FEED: BOTTOM
MAIN TYPE: MLO MAIN SIZE BREAKER: NONE | NEMA 1 – CU BUS | FAULT BRACING (SCR): 10K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL ROOM

BMS CTRL	CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	C ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.	BMS CTRL
C	1	TRACK LIGHTS, SALES AREA	#12	0.180	20	1	●			1	20	0.120	#10	TRACK LIGHTS, SALES AREA	2	C
C	3	TRACK LIGHTS, SALES AREA	#10	0.180	20	1		●		1	20	0.120	#10	TRACK LIGHTS, SALES AREA	4	C
C	5	LIGHTED MIRRORS, MEN/WOMEN DRESSING RMS.	#10	0.663	20	1			●	1	20	0.500	#10	VENDING MACHINE, CASH REGISTER AREA	6	
ES	7	EXTERIOR FRONT BUILDING SIGN	#10	1.200	20	1	●			1	20	0.500	#10	CASH CABINET, CASH REGISTER AREA	8	
ES	9	EXTERIOR FRONT BUILDING SIGN	#10	1.200	20	1		●		1	20	0.180	#10	RECEPTACLE, ABOVE CEILING	10	
ES	11	EXTERIOR FRONT BUILDING SIGN	#10	1.200	20	1			●	1	20	1.080	#10	RECEPTACLES, CASH REGISTERS	12	
	13	SINGLE RECEPTACLE, CASH REGISTER	#10	0.500	20	1	●			1	20	1.080	#10	RECEPTACLES, EAS SECURITY-CASH REGISTERS	14	
	15	QUAD RECEPTACLES-TRANFS., ABOVE CLG.	#10	0.360	20	1		●		1	20	0.500	#10	RECEPTACLES, EAS SENSORMATIC-FRONT DOOR	16	
	17	DOOR BELL SYSTEM, CASH RM.	#10	0.100	20	1			●	1	20	0.500	#10	RECEPTACLES, EAS SENSORMATIC-FRONT DOOR	18	
	19	SECURITY DOOR SYSTEM, CASH RM.	#10	0.200	20	1	●			1	20	0.500	#12	BMS #1 POWER SUPPLY/TRANSF., ELEC. RM.	20	
	21	RECEPTACLE-SECURITY, ABOVE CLG., ASSIST. MAN.	#12	0.180	20	1		●		1	20	0.500	#12	BMS #2 POWER SUPPLY/TRANSF., ELEC. RM.	22	
	23	FIRE ALARM CONTROL PANEL, ELEC. RM. ①	#12	1.200	20	1			●	1	20	1.200	#12	SECURITY CONTROL PANEL, ELEC. RM. ①	24	
	25	DOOR ALARM SYSTEM, PROCESSING RM.	#12	0.200	20	1	●			1	20	0.200	#12	DOOR BELL/CHIME SYSTEM, PROCESSING RM.	26	
	27	CONTACTOR "C1" – EMPLOYEE LIGHTS	#12	0.100	20	1		●		1	20	0.100	#12	CONTACTOR "C2" – CUSTOMER LIGHTS	28	
	29	CONTACTOR "C3" – EXTERIOR BUILDING SIGNS	#12	0.100	20	1			●	1	20	0.100	#12	CONTACTOR "C4" – UNIT HEATERS	30	
	31	CONTACTOR "C5" – EXHAUST FANS	#12	0.100	20	1	●			1	20	0.100	#12	CONTACTOR "C6" – EXTERIOR/SECURITY LIGHTS	32	
	33	RECEPTACLES, CASH RM.	#10	0.540	20	1		●		1	20	0.600	#10	PLUGMOLDS, LP RM. ①	34	
	35	RECEPTACLES, ASSIST. MANAGER RM.	#10	0.720	20	1			●	1	20	0.360	#10	QUAD RECEPTACLES, LP RM. ①	36	
	37	RECEPTACLES, TRAINING RM.	#12	0.360	20	1	●			1	20	0.360	#10	QUAD RECEPTACLES, LP RM, ELEC. RM. ①	38	
	39	RECEPTACLES, MANAGER RM.	#12	0.360	20	1		●		1	20			SPARE	40	
	41	SPARE			20	1			●	1	20			" (A1)	42	

A ø = 5.600 KVA | B ø = 4.920 KVA | C ø = 7.723 KVA
TOTAL CONNECTED LOAD 18.243 KVA, 50.6 AMPS
TOTAL DEMAND LOAD 18.243 KVA, 50.6 AMPS
2011 NEC ARTICLE 215.3 ARTICLE 220 II & III

(A1) NOTES:
① INSTALL LOCKABLE CIRCUIT BREAKER.

(2)

PANEL "CP" (3)

TYPE: SQUARE D | PHASE: 1 WIRE: 3 60 Hz BOLT-ON | MOUNTING: SURFACE
~~BUS AMP RATING: 100A~~ | VOLT: 208VAC WITH GROUND BAR | FAULT CURRENT: 6,056 A | FEED: BOTTOM
MAIN TYPE: MCB MAIN SIZE BREAKER: 30A | NEMA 1 – CU BUS, IG (ISOLATED GROUND) | FAULT BRACING (SCR): 10K AIC RMS SYM. FULLY RATED | LOCATION: ELECTRICAL AREA

CKT NO.	SERVING	WIRE SIZE	LOAD (KVA)	TRIP	P	A ø	B ø	P	TRIP	LOAD (KVA)	WIRE SIZE	SERVING	CKT NO.
1	CASH REGISTER #1, CUSTOMER SERVICE	#10	0.360	20	1	●		1	20			SPARE (3) ②	2
3	CASH REGISTER #2, CUSTOMER SERVICE	#10	0.360	20	1		●	1	20			SPARE ②	4
5	CASH REGISTER #3, CUSTOMER SERVICE	#10	0.360	20	1	●		1	20			SPARE ②	6
7	CASH REGISTER #4, CUSTOMER SERVICE	#10	0.360	20	1		●	1	20			SPARE ②	8
9	CASH REGISTER #5, CUSTOMER SERVICE	#10	0.360	20	1	●		1	20	0.360	#12	SYSTEMS RACK 1	10
11	CASH REGISTER #6, CUSTOMER SERVICE	#10	0.360	20	1		●	1	20	0.360	#12	SYSTEMS RACK 2	12
13	CASH REGISTER #7, CUSTOMER SERVICE	#10	0.360	20	1	●		1	20			SPARE (3)	14
15	PLUGMOLDS, TEL. BD., ELECTRICAL RM.	#12	0.450	20	1		●	1	20			"	16
17	SPARE			20	1	●		1	20			"	18
19	"			20	1		●	1	20			SPACE	20
21	"			20	1	●		1	20			"	22
23	SPACE			20	1		●	1	20			"	24

A ø = 1.800 KVA | B ø = 1.890 KVA
TOTAL CONNECTED LOAD 3.690 KVA, 15.4 AMPS
TOTAL DEMAND LOAD 3.690 KVA, 15.4 AMPS (3)
2011 NEC ARTICLE 220 II & III

NOTES:
① WITH ISOLATED GROUND BUS.
② CONNECT TO COMPUTER EQUIPMENT. FIELD CONFIRM EXACT LOCATION WITH TJX/OWNER. MARK "SPARE", IF NOT IN USED.

Rev.	Description	Date
1A	ADDENDUM #1	JUNE 24,2013
2	CCD#1	MARCH 11,2014
3	CCD #2	APRIL 29, 2015

WINDLE + VOLPE ARCHITECTS
7600 SAN FELIPE HOUSTON, TEXAS 77063 PH 713-255-1390

CAI CONSULTING ENGINEERS
10700 RICHMOND AVE., SUITE 145
HOUSTON, TX 77042
TEL: (713) 785-0334 • FAX: (713) 785-0309
TEXAS ID # F-5348

STATE OF TEXAS BASSAM G. JABORI 89863 PROFESSIONAL ENGINEER
4/21/15

MARSHALLS BUILD-OUT CROSSROADS MALL
GREENVILLE, TEXAS

GREENVILLE PROPERTIES LTD.
GREENVILLE, TEXAS

DATE 3/11/2015
PROJECT NO. 08-12-01M
DRAWN BY R.F.V.

PANEL SCHEDULES & NOVAR CONTROLS SAVVY WIRING DIAGRAM

E1.7

COPYRIGHT © 2013 WINDLE + VOLPE Architects