

EMS SCHEDULES

SYMBOL	DEVICE	QUANTITY	DEVICE LOCATION	DEVICE CABLE TYPE
⊙	CARBON DIOXIDE SENSOR	1	MAIN SPACE	18/4 OR 18/2 (X2)
⊙	DUCT TEMPERATURE SENSOR	1 PER ROOFTOP UNIT	BOTTOM OF MAIN SUPPLY AIR DUCT DROP	18/2
⊙	DIMMING CONTROL PANEL	1	NEAR BREAKER PANELS FEEDING LIGHTING CIRCUITS	VARIES PER CONNECTED DEVICE
⊙	ROOFTOP DIGITAL ZONE CONTROLLER	1 PER ALL OTHER CONTROLLED HVAC	HVAC CONTROLS SECTION	18/10 LOCAL TO CONTROLS TERMINAL, 24/1P IN/OUT FOR COMMS
⊙	ENERGY METER	1 PER MDP	MAIN 3-PHASE SUPPLY NEAR UTILITY METER	18/2 600V INSIDE MDP, 24/1P TO MP IF REQUIRED.
⊙	INDOOR LIGHT SENSOR	PER PLAN	PER PLAN	18/4 OR 18/2 (X2)
⊙	LIGHTING CONTROL PANEL	1 (TYPICAL)	NEAR BREAKER PANELS FEEDING LIGHTING CIRCUITS	18/10
⊙	MICROPAD	1	MANAGER'S OFFICE	VARIES PER CONNECTED DEVICE
⊙	OUTSIDE SENSING DEVICE	1	ROOF	18/4 OR 18/2 (X2)
⊙	ZONE TEMPERATURE SENSOR	1 PER ROOFTOP UNIT	1 IN EACH ZONE, SEE MECHANICAL DRAWING FOR LOCATIONS	18/2

INSTALLATION RESPONSIBILITIES					INSTALL CABLE/WIRE, TERMINATE BOTH ENDS	NOTES
SYMBOL	DEVICE	PROVIDED BY	MOUNTING	BOX/RACEWAYS		
⊙	CARBON DIOXIDE SENSOR	SIEMENS	M.C.	E.C.	M.C.	
⊙	CAT-5 FOR FUTURE NETWORK CONNECTION	SIEMENS	E.C.	E.C.	E.C.	
⊙	DUCT TEMPERATURE SENSOR	SIEMENS	M.C.	E.C.	M.C.	
⊙	DIMMING CONTROL PANEL	SIEMENS	E.C.	E.C.	E.C./M.C.	6
⊙	ROOFTOP DIGITAL ZONE CONTROLLER	SIEMENS	M.C.	E.C.	M.C.	
⊙	ENERGY METER	SIEMENS	E.C.	E.C.	E.C.	1
⊙	INDOOR LIGHT SENSOR	SIEMENS	M.C.	E.C.	M.C.	
⊙	LIGHTING CONTROL PANEL	SIEMENS	E.C.	E.C.	E.C./M.C.	2, 4
⊙	MICROPAD	SIEMENS	E.C.	E.C.	E.C./M.C.	4, 5
⊙	OUTSIDE SENSING DEVICE	SIEMENS	E.C.	E.C.	E.C.	
⊙	ZONE TEMPERATURE SENSOR	SIEMENS	M.C.	E.C.	M.C.	

INSTALLATION NOTES	
NOTES:	
1. MOUNT ENERGY METER CT'S ON 3-PHASE BUSS BARS AT MDP AFTER UTILITY METER AND BEFORE BRANCH CIRCUITS.	
2. E.C. SHALL PROVIDE AND INSTALL A DEDICATED 120V, 20A CIRCUIT TO POWER THE LIGHTING CONTACTORS. LABEL BREAKER EMS-1.	
3. M.C. SHALL INSTALL LOW VOLTAGE CABLE IN RACEWAYS PROVIDED BY E.C. AND TERMINATE BOTH ENDS. LINE VOLTAGE WIRING AND TERMINATIONS BY E.C.	
4. THE M.C. SHALL TERMINATE ALL LOW VOLTAGE CABLES AT THE MICROPAD.	
5. E.C. TO PROVIDE RECEPTACLE WITHIN 5' (ROUTING) OF MOUNTING LOCATION OF THE MICROPAD AND ROUTE POWER CABLE.	
6. M.C. SHALL INSTALL AND TERMINATE CABLE FOR LIGHT SENSORS AND COMMUNICATION. E.C. TO INSTALL AND TERMINATE CONTROL VOLTAGE TO LIGHTING BALLASTS AND ALL LINE VOLTAGE.	

CABLE SCHEDULE			
CABLE	SIZE	TYPE	MFG./MODEL
18/2	18AWG/2-CONDUCTOR	SHIELDED, STRANDED, PLENUM	BELDIN/6300FE NON-PAIRED COMTRAN/3644 TAPPAN/1880AB2M-CMP SMART WIRE 002320-B
18/4	18AWG/10-CONDUCTOR	SHIELDED, STRANDED, PLENUM	LAKE CABLE/P184CS BELDIN- #82841 Polired TAPPAN/1880AB4M-CMP WINDY CITY- 002340-B
18/10	18AWG/10-CONDUCTOR	UNSHIELDED, STRANDED, PLENUM	LAKE CABLE/P1810C TAPPAN/1880AB10-CMP SMART WIRE 002393-S
24/1P	24AWG/1-TWISTED PAIR	SHIELDED, STRANDED, PLENUM, TWISTED PAIR	BELDIN/82841 PAIRED LAKE CABLE/PF242CS TAPPAN/2469AT1M-CMP SMART WIRE 044000-B
CAT-5	24AWG/4-UTP	UNSHIELDED, SOLID CONDUCTOR, TWISTED PAIR	BELDEN/ 1583A CAT5

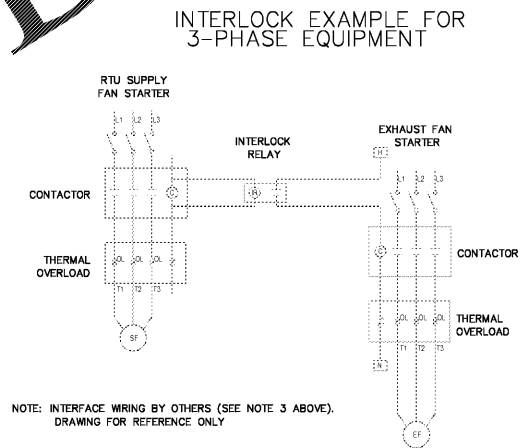
GENERAL EMS CONSTRUCTION NOTES:	
1. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE INSTALLATION LABOR AND MATERIALS TO INSTALL THE LOW VOLTAGE PORTION OF THE EMS SYSTEM ACCORDING TO THE EMS SCHEDULES AND THE FOLLOWING:	
I. INSTALL EMS DEVICES AT LOCATIONS SHOWN ON THE MECHANICAL DRAWINGS AND MOUNT ACCORDING TO THE EMS DETAILS.	
II. PROVIDE AND INSTALL THE LOW VOLTAGE CABLING FROM THE EMS DEVICES TO THE RTU'S AND LCP	
III. TERMINATE THE LOW VOLTAGE CABLING AT BOTH ENDS.	
IV. CLEARLY IDENTIFY (LABEL) THE CABLES AT BOTH ENDS.	
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE INSTALLATION LABOR AND MATERIALS TO INSTALL THE LINE VOLTAGE PORTION OF THE EMS SYSTEM PURCHASED BY THE E.C. ACCORDING TO THE EMS SCHEDULES AND THE FOLLOWING:	
I. PROVIDE AND INSTALL ELECTRICAL BOXES WITH 3/4" EMT STUB-UPS TO ABOVE CEILING GRID FOR WALL MOUNTED EMS AND CONTROL PANELS.	
II. MOUNT EMS PANELS AND WIRE TOGETHER ACCORDING TO THE EMS DRAWINGS.	
III. INSTALL ENERGY METER AT THE MAIN DISTRIBUTION PANEL. INSTALL AND TERMINATE COMMUNICATIONS CABLE.	
IV. PROVIDE AND INSTALL AN 8" SECTION OF 1/2" RIGID FOR ROOF MOUNTED OSD. INSTALL AND TERMINATE OSD AND CABLE.	
V. PROVIDE AND INSTALL (1) EACH 120V, 20A CIRCUIT TO POWER THE LCP. LABEL LCP BREAKER "EMS-1".	
3. NOTES ABOVE DO NOT ALLEVIATE CONTRACTORS OF OVERALL RESPONSIBILITIES OF PROVIDING A COMPLETE AND OPERATIONAL SYSTEM.	

INSTALLATION SUMMARY	
1. LOW VOLTAGE CABLE	
I. THE M.C. SHALL FURNISH THE LOW VOLTAGE CABLE FOR THE EMS SYSTEM. THE CABLE SHALL BE AS SPECIFIED IN THE CABLE SCHEDULE.	
2. EQUIPMENT DELIVERY	
I. SITE CONTROLS SHALL PROVIDE THE EMS EQUIPMENT IN 1 SHIPMENT.	
II. IT SHALL BE UP TO THE E.C. TO CALL FOR EMS EQUIPMENT DELIVERY. THE EQUIPMENT WILL BE SHIPPED WITHIN 2 DAYS OF RECEIVING A VALID REQUEST. A VALID REQUEST SHALL CONSIST OF THE FOLLOWING:	
1-NAME AND PHONE NUMBER OF PERSON RESPONSIBLE FOR RECEIVING THE EMS EQUIPMENT AND STORE NUMBER	
2-A VALID SHIPPING ADDRESS (CONFIRMABLE BY THE DELIVERY AGENT).	
3. CONTACT INFORMATION	
I. PLEASE DIRECT ALL SHIPPING REQUESTS TO SITE CONTROLS @ (512) 306-9400	
4. EMS COMMISSIONING	
I. IT SHALL BE UP TO THE E.C. TO CALL FOR EMS COMMISSIONING AT LEAST 2 WEEKS PRIOR TO TURN OVER AND BEFORE THE INSTALLING CONTRACTOR HAS LEFT THE PROJECT.	
a. SITE CONTROL WILL COMMISSION THE EMS SYSTEM UPON RECEIVING A VALID REQUEST AND AFTER THE FOLLOWING CONDITIONS HAVE BEEN MET:	
1-ALL EMS DEVICES AND PANELS HAVE BEEN INSTALLED AND WIRED	
2-ALL LINE VOLTAGE WIRING HAS BEEN COMPLETED	
3-ALL CONTROLLED EQUIPMENT HAS BEEN INSTALLED AND STARTED	
II. FAILURE TO MEET THESE CONDITIONS COULD RESULT IN DELAY OF STORE OPENING AND ADDITIONAL CHARGES.	

NON-EMS CONTROLS

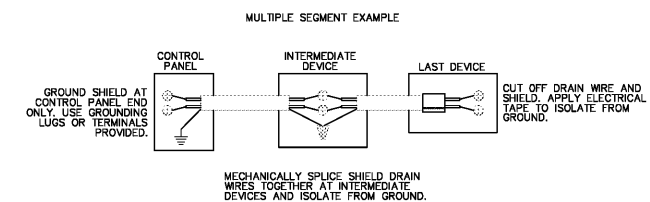
GENERAL NON-EMS CONTROLS NOTES:

- COMBUSTION AIR VENTILATION AND OTHER EQUIPMENT
 - CONTROLS FOR COMBUSTION AIR VENTILATION AND ANY OTHER EQUIPMENT NOT SPECIFICALLY MENTIONED IN THE EMS SCHEDULES SHALL BE FURNISHED AND INSTALLED ACCORDING TO THE MECHANICAL AND ELECTRICAL BID DOCUMENTS.
- EXHAUST FAN, TRANSFER FAN AND OTHER "HARD-WIRED" INTERLOCKS (SEE INTERLOCK EXAMPLE BELOW)
 - WHEN HARD-WIRED INTERLOCKING IS SPECIFIED IN THE MECHANICAL AND/OR ELECTRICAL SCHEDULES, THE INTERLOCKS SHALL BE FURNISHED AND INSTALLED BY THE TRADES SPECIFIED. INTERLOCKING IS NOT PART OF EMS SYSTEM.
 - WHERE EXHAUST FAN AND RTU INTERLOCKS ARE CALLED OUT, THE CONTRACTOR SHALL CONNECT DIRECTLY TO THE SUPPLY FAN CONTACTOR COIL AND WIRE IN PARALLEL TO THE COIL OF A PROPERLY SIZED CONTACTOR OR STARTER SERVING THE INTERLOCKED EQUIPMENT. DO NOT USE THE EMS SYSTEM TO INTERLOCK EQUIPMENT.
- LIFE SAFETY AND FIRE ALARM SYSTEMS
 - LIFE SAFETY AND FIRE ALARM SYSTEMS ARE NOT PART OF THE EMS SYSTEM AND SHALL BE FURNISHED AND INSTALLED AS SPECIFIED IN THE MECHANICAL AND ELECTRICAL BID DOCUMENTS.
 - MECHANICAL EQUIPMENT SHUTDOWN SHALL BE WIRED AS TO NOT AFFECT THE EMS SYSTEM.
- MANUFACTURER SUPPLIED HUMIDITY CONTROLLERS
 - DEHUMIDIFICATION UNIT CONTROLS
 - SOME ROOFTOP UNITS MAY COME EQUIPPED WITH DEHUMIDIFICATION CYCLE AND SPACE HUMIDITY SENSOR. THIS SENSOR SHALL BE INSTALLED IN ADDITION TO THE EMS SYSTEM AND ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.



GENERAL LV CABLE INSTALLATION INSTRUCTIONS

- HOME RUNS
 - LOW VOLTAGE CABLES SHALL BE PULLED FROM DEVICE TO CONTROL PANEL WITHOUT SPLICING.
- COMMUNICATIONS CABLING
 - IN THE CASE OF MULTIPLE DEVICES SUCH AS COMMUNICATIONS CABLING, THE CABLE SEGMENTS SHALL BE PULLED FROM DEVICE TO DEVICE WITHOUT SPLICING.
- CABLE SHIELD GROUNDING
 - EACH CABLE RUN SHALL BE GROUNDED AT ONE END ONLY. GROUND SHIELD DRAIN WIRE AT CONTROL PANEL END. FASTEN DRAIN WIRE TO EARTH GROUND SCREWS PROVIDED. THE SHIELD AND DRAIN WIRE SHALL BE REMOVED FROM THE OPPOSITE (DEVICE) END AND ISOLATED FROM GROUND.
 - IN THE CASE OF MULTIPLE DEVICES SUCH AS COMMUNICATIONS WIRING, THE SHIELD DRAIN WIRES AT THE INTERMEDIATE DEVICES SHALL BE MECHANICALLY SPLICED TOGETHER AND ISOLATED FROM GROUND.
- TESTING SHIELD GROUNDS
 - DURING COMMISSIONING THE FIELD SERVICE REPRESENTATIVE (FSR) WILL TEST THE SHIELD GROUNDING AT THE CONTROL PANEL. SHIELDS FOUND TO HAVE CONTINUITY LESS THEN 100K OHM TO GROUND SHALL BE REJECTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING SHIELD GROUND FAULTS.



ROBERT F. VANNEY ARCHITECT

3601 OBERLIN STREET, STE. 201
MINNETONKA, MINNESOTA 55345
P: 952.222.4242 FAX: 952.222.3838

consultant



HALLBERG ENGINEERING
Mechanical/Electrical Consulting Engineers
1750 Commerce Court
White Bear Lake, WI 55110
(651) 748-1100 • Fax (651) 748-9370

West Marine
500 Westridge Drive
Watsonville, California 95076
p: 831.728.2700 f: 831.761.4220

ISLAND WALK @ PALM COAST
250 PALM COAST PKWY NE
PALM COAST, FL 32137
STORE #1BD

commission number R17-2777.003

WM 75% 07/07/2017
LL Final
Permit 07/24/2017
Bidding 10/02/2017

sheet title
EMS DETAILS

sheet number
E303