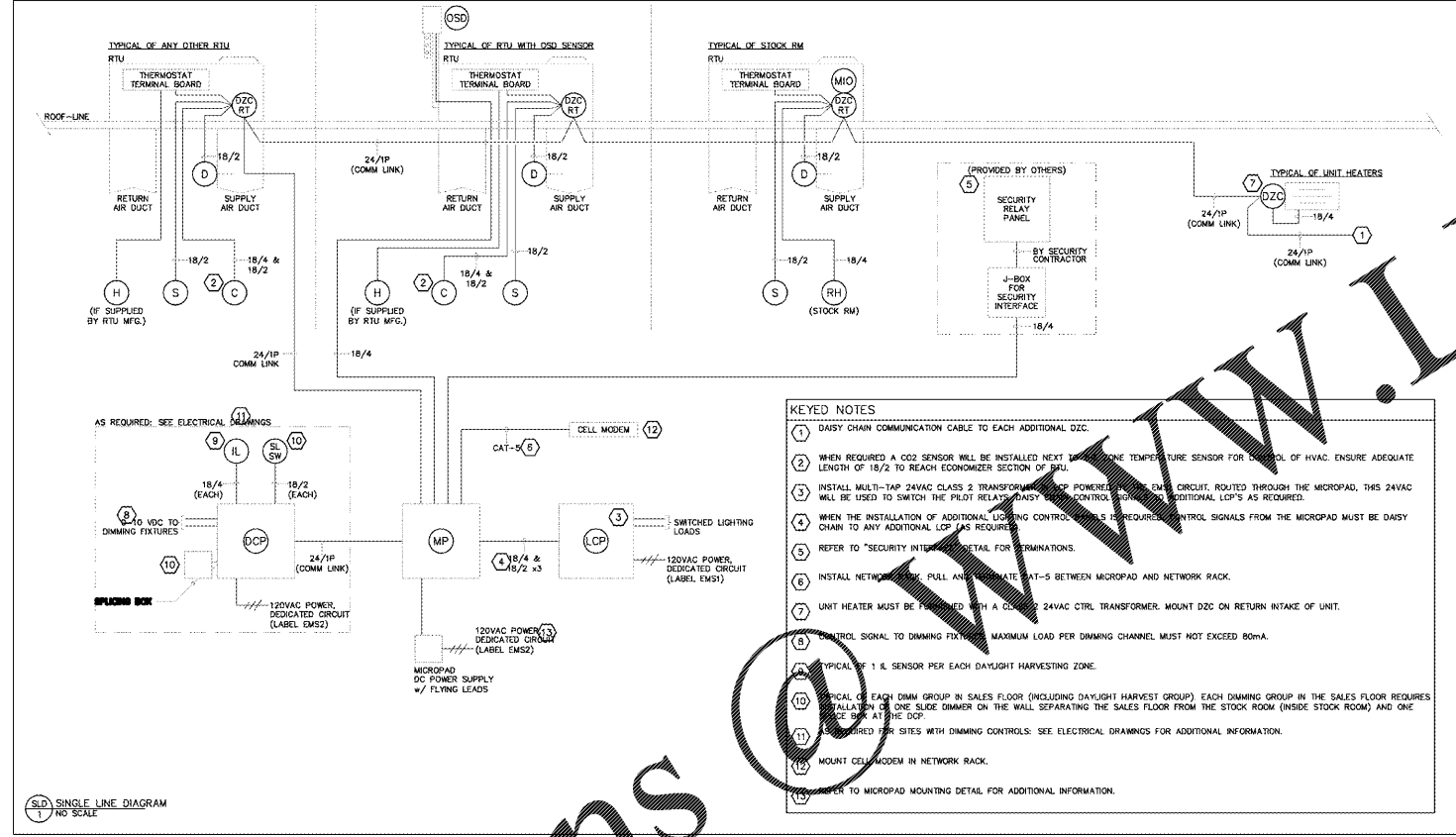


EMS DEVICES SCHEDULE AND CONSTRUCTION INSTALLATION RESPONSIBILITIES MATRIX
 HFT GENERAL CONTRACTOR IS TO MANAGE AND VALIDATE THE EMS INSTALLATION AND COMMISSIONING THROUGH COMPLETION AND FINAL OPERATION.

SYMBOL	DEVICE	QUANTITY SUPPLIED BY SIEMENS	DEVICE CABLE TYPE	DEVICE LOCATION	PROVIDED BY	MOUNTING	BOX/RACEWAYS	INSTALL CABLE/WIRE, TERMINATE BOTH ENDS	INSTALLATION NOTES
⊙	CARBON DIOXIDE SENSOR	1 PER HVAC UNIT WITH CO2 (AS REQUIRED PER MECHANICAL DRAWINGS)	18/4 & 16/2	NEXT TO ZONE TEMP SENSOR	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	DUCT TEMPERATURE SENSOR	1 PER CONTROLLED HVAC EXCEPT UNIT HEATERS	18/2	BOTTOM OF MAIN SUPPLY AIR DUCT DROP	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	DIMMING CONTROL PANEL	1 (AS REQUIRED PER ELECTRICAL DRAWINGS)	VARIES PER CONNECTED DEVICES.	NEAR LCP	SIEMENS	E.C.	E.C.	E.C. / SIEMENS WILL TERMINATE LOW VOLTAGE WIRING AT DCP	4
⊙	DIGITAL ZONE CONTROLLER (WALL MOUNT VERSION)	1 PER UNIT HEATER	18/4 TO UNIT HEATER / 24-1P DAISY CHAIN	RETURN SIDE OF UNIT HEATER	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	DIGITAL ZONE CONTROLLER (ROOFTOP VERSION)	1 PER CONTROLLED HVAC (EXCEPT UNIT HEATER)	18/10 TO RTU'S CTRL. TERMINAL / 24/1P DAISY CHAIN / SENSORS AS REQUIRED	HVAC CONTROLS SECTION	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	INDOOR LIGHT SENSOR	AS REQUIRED PER ELECTRICAL DRAWINGS	18/4	IN DAYLIGHT HARVESTING ZONE	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	LIGHTING CONTROL PANEL	1 (TYPICAL)	AS REQUIRED	NEAR BREAKER PANELS FEEDING LIGHTING CIRCUITS	SIEMENS	E.C.	E.C.	E.C. / SIEMENS WILL TERMINATE LOW VOLTAGE WIRING AT DCP	1
⊙	MICRO I/O	1 (STOCK ROOM RTU)	AS REQUIRED	MOUNTED ON DZC-RT	SIEMENS	SIEMENS	N/A	SIEMENS	
⊙	MICROPAD	1	VARIES PER CONNECTED DEVICE	MANAGER'S OFFICE	SIEMENS	SIEMENS	E.C.	SIEMENS	2, 3
⊙	OUTSIDE SENSING DEVICE	1	18/4	ROOF	SIEMENS	SIEMENS	M.C.	SIEMENS	
⊙	RELATIVE HUMIDITY SENSOR	1	18/4	STOCK ROOM	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	ZONE TEMPERATURE SENSOR	1 PER CONTROLLED HVAC	18/2	1 IN EACH ZONE (SEE CONSTRUCTION DRAWING FOR LOCATIONS)	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	SLIDER SWITCH	1 PER EACH DIMMING GROUP IN SALES FLOOR (AS REQUIRED PER ELECTRICAL DRAWINGS)	16/2	WALL BETWEEN STOCK AND SALES FLOOR	SIEMENS	E.C.	E.C.	E.C. / SIEMENS	4
⊙	SECURITY INTERFACE	1	18 / 4	WITHIN 10 FEET OF SECURITY RELAY PANEL	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	SPLICE BOX	1 PER EACH DIMMING GROUP ON SALES FLOOR (AS REQUIRED)	AS REQUIRED	NEXT TO DCP	SIEMENS	SIEMENS	E.C.	SIEMENS	
⊙	MICROPAD POWER SUPPLY w/ FLYING LEADS	1	AS REQUIRED	6"x6" ENCLOSURE BEHIND MICROPAD	SIEMENS	SIEMENS	E.C.	E.C.	



INSTALLATION NOTES

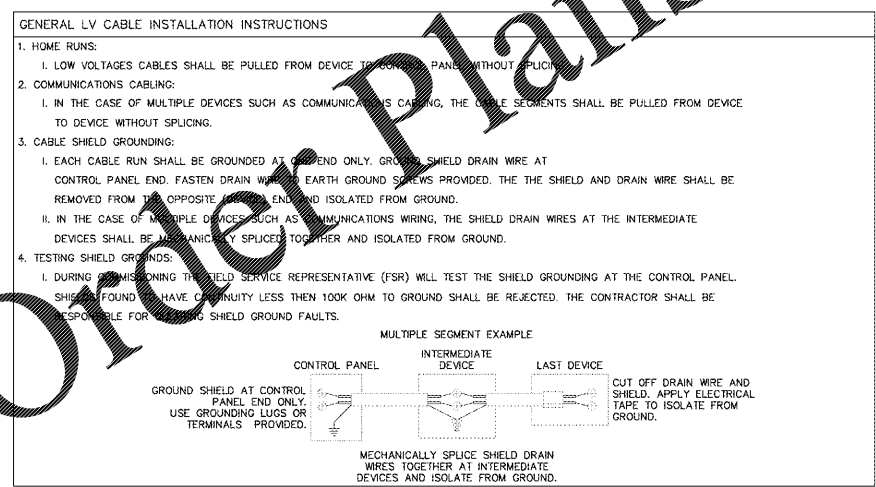
1. SIEMENS SHALL INSTALL LOW VOLTAGE CABLE IN RACEWAYS PROVIDED BY E.C. AND TERMINATE BOTH ENDS. LINE VOLTAGE CONDUIT, WIRING AND TERMINATIONS BY E.C.
2. SIEMENS SHALL TERMINATE ALL LOW VOLTAGE CABLES AT MICROPAD.
3. E.C. TO PROVIDE RECEPTACLE WITHIN 5' (ROOFTOP) MOUNTING LOCATION OF THE MICROPAD AND ROUTE POWER CABLE.
4. E.C. SHALL BE RESPONSIBLE FOR INSTALLATION OF POWER WIRING AND LOW VOLTAGE DIMMING CONTROL SIGNALS TO LIGHTING FIXTURES. SIEMENS SHALL BE RESPONSIBLE FOR INSTALLATION OF ADDITIONAL CONTROL WIRING IN RACEWAYS INSTALLED BY E.C.

GENERAL NON-EMS CONSTRUCTION

1. SIEMENS 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. PROVIDE 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 LABOR AND MATERIALS TO INSTALL THE LINE VOLTAGE PORTION OF THE EMS SYSTEM 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 DEVICES.
 - ii. PROVIDE AND INSTALL A 5' SECTION OF 1/2" RIGID FOR ROOF MOUNTED OSD.
3. SIEMENS SHALL PROVIDE THE LABOR AND MATERIALS TO INSTALL THE LINE VOLTAGE PORTION OF THE EMS SYSTEM ACCORDING TO THE EMS SCHEDULES AND THE FOLLOWING:
 - i. MOUNT EMS PANELS AND PIPE TOGETHER ACCORDING TO THE EMS DRAWINGS.
 - ii. SIEMENS SHALL INSTALL AND TERMINATE OSD AND CABLE.
4. NOTES ABOVE DO NOT ALLEVIATE CONTRACTORS OF OVERALL RESPONSIBILITIES OF PROVIDING A COMPLETE AND OPERATIONAL SYSTEM.
5. TITLE 24: THE E.C. SHALL WIRE AND INSTALL A LOW VOLTAGE DIMMER LOCATED OUTSIDE OF THE BREAK ROOM FOR SALES REPLENISHMENT FIXTURES MANUAL DRAWING. THE DIMMING SWITCH WIRES SHALL BE TERMINATED IN A JUNCTION BOX MOUNTED ABOVE DCP. SIEMENS TO EXTEND WIRING TO DCP.

GENERAL NON-EMS CONTROLS

1. COMBUSTION AIR VENTILATION AND OTHER EQUIPMENT:
 - i. 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.
2. EXHAUST FAN, TRANSFER FAN AND OTHER "HARD-WIRED" INTERLOCKS (SEE INTERLOCK EXAMPLE BELOW):
 - i. 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.
 - ii. WHERE EXHAUST FAN AND RTU INTERLOCKS ARE CALLED OUT, THE CONTRACTOR SHALL CONTACT DIRECTLY TO THE SUPPLY FAN CONTRACTOR 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.
3. LIFE SAFETY AND FIRE ALARM SYSTEMS:
 - i. 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.
 - ii. MECHANICAL EQUIPMENT SHUTDOWN SHALL BE WIRED AS TO NOT AFFECT THE EMS SYSTEM.
4. MANUFACTURER SUPPLIED HUMIDITY CONTROLLERS:
 - i. SOME ROOFTOP UNITS MAY COME EQUIPPED WITH A DEHUMIDIFICATION CYCLE AND SPACE HUMIDITY SENSOR. THIS SENSOR SHALL BE INSTALLED IN ADDITION TO THE EMS SYSTEM AND ACCORDING TO THE MANUFACTURER'S INSTRUCTION.



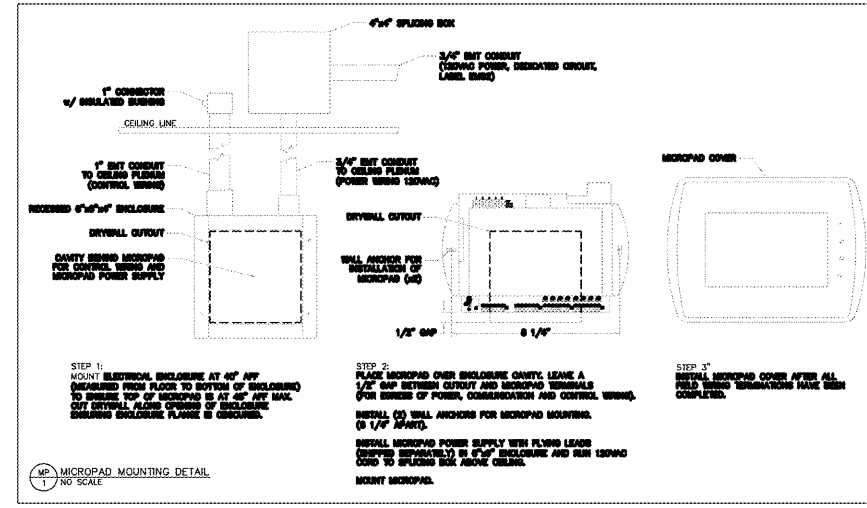
INSTALLATION SUMMARY

1. LOW VOLTAGE CABLE:
 - i. SIEMENS SHALL FURNISH THE LOW VOLTAGE CABLE FOR THE EMS SYSTEM. THE CABLE SHALL BE AS SPECIFIED IN THE CABLE SCHEDULE.
 - ii. REFER TO "EMS DEVICES SCHEDULE AND CONSTRUCTION INSTALLATION RESPONSIBILITY MATRIX" FOR ADDITIONAL INFORMATION ON RESPONSIBILITIES FOR INSTALLATION OF LOW VOLTAGE CABLE.
2. EQUIPMENT DELIVERY:
 - i. SITE CONTROLS SHALL PROVIDE THE EMS EQUIPMENT IN 1 SHIPMENT.
 - ii. IT SHALL BE UP TO THE G.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 AND PROJECT MANAGEMENT REQUESTS TO SIEMENS RCS AT (512) 751-5942 OR PROJECT MANAGER KARLA LARA AT KARLA.LARA@SIEMENS.COM
 - ii. PLEASE DIRECT ALL TECHNICAL RFI TO JUAN CABRERA AT JUAN.CABRERA@SIEMENS.COM, CC TO LESLIE.VAUGHN@SIEMENS.COM
4. EMS COMMISSIONING:
 - i. IT SHALL BE UP TO THE G.C. TO CALL FOR EMS COMMISSIONING AT LEAST 2 WEEKS PRIOR TO TURN OVER AND BEFORE THE INSTALLING CONTRACTOR HAS LEFT THE PROJECT. SIEMENS WILL BE ON SITE PER HFT REQUEST 1 WEEK AFTER THE HFT "FIXTURE DATE". THE FOLLOWING CONDITIONS MUST BE MET PRIOR TO SIEMENS ARRIVAL:
 - 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.
 - iii. E.C. & M.C. MUST BE PRESENT FOR COMMISSIONING OF EMS.

NOTE: TITLE 23 REPRESENTATIVE SHALL ALSO BE PRESENT AT CALIFORNIA LOCATIONS.

CABLE SCHEDULE

CABLE	SIZE	TYPE	MFG./MODEL
18/2	18AWG/2-CONDUCTOR	SHIELDED, STRANDED, PLENUM RATED	BELDEN/6300FE NON-PAIRED
18/4	18AWG/4-CONDUCTOR	SHIELDED, STRANDED, PLENUM RATED	LAKE CABLE/P184CS
18/10	18AWG/10-CONDUCTOR	UNSHIELDED, STRANDED, PLENUM	BELDEN/6308UE NON-PAIRED
24/1P	24AWG/1-TWISTED PAIR	SHIELDED, STRANDED, PLENUM RATED, TWISTED PAIR	BELDEN/82841 PAIRED
CAT-5	24AWG/ 4-U1P	UNSHIELDED SOLID CONDUCTOR TWISTED PAIR	BELDEN 1583A CAT5



Order Plans

SIEMENS
 9225 BEE CAVES ROAD, BLDG. B, SUITE 100,
 AUSTIN, TEXAS 78733 Phone: 512-421-6257

Project: **HARBOR FREIGHT
 NEW CONSTRUCTION NATIONAL EMS BID SET**

Description: **PROTOTYPICAL
 NATIONAL EMS BID SET**

Drawing File Name/Origin: Harbor Freight-Bid Set-NA-Rev1.dwg

Scale: NTS

Date: 11-15-17

#	DESCRIPTION	DATE	BY
0	Initial Release	11-15-17	MS
1	Revised	1-3-18	MS
2	Revised	4-16-18	MS
3	Revised	4-23-18	MS
4	Revised	8-12-19	MS
5	Revised	10-10-19	MS

REVISIONS

EMS-1