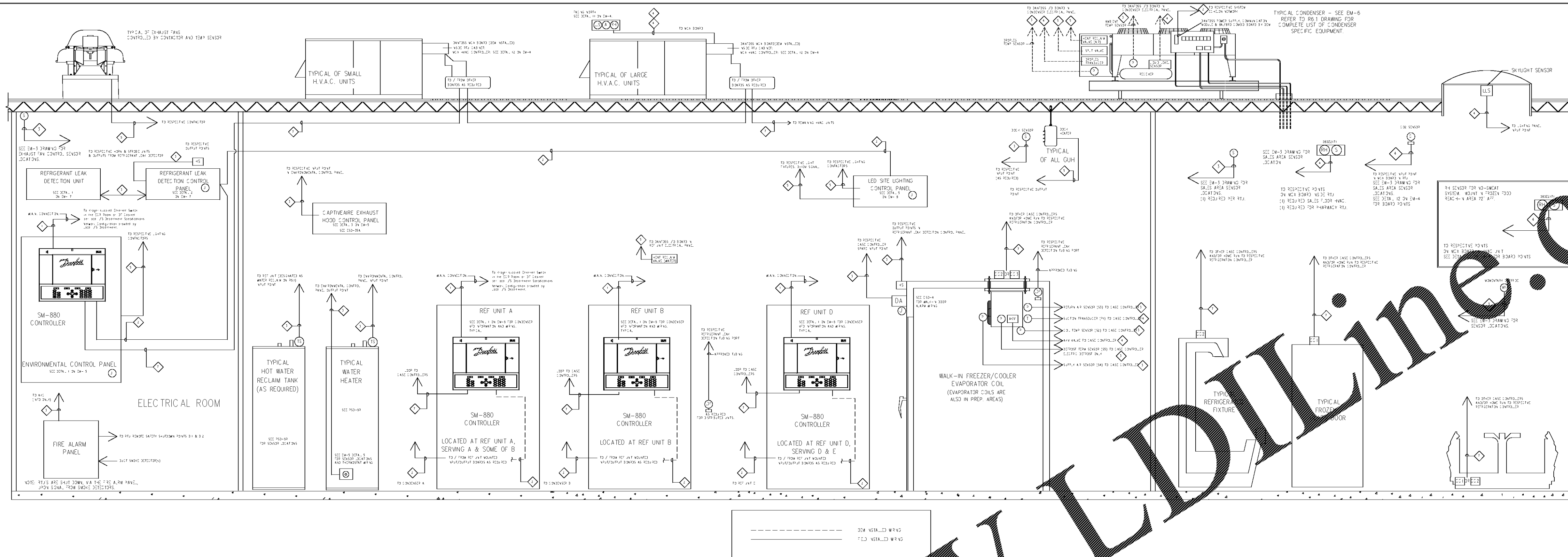


1 ENERGY MANAGEMENT SYSTEM REQUIREMENTS — SCALE: NONE

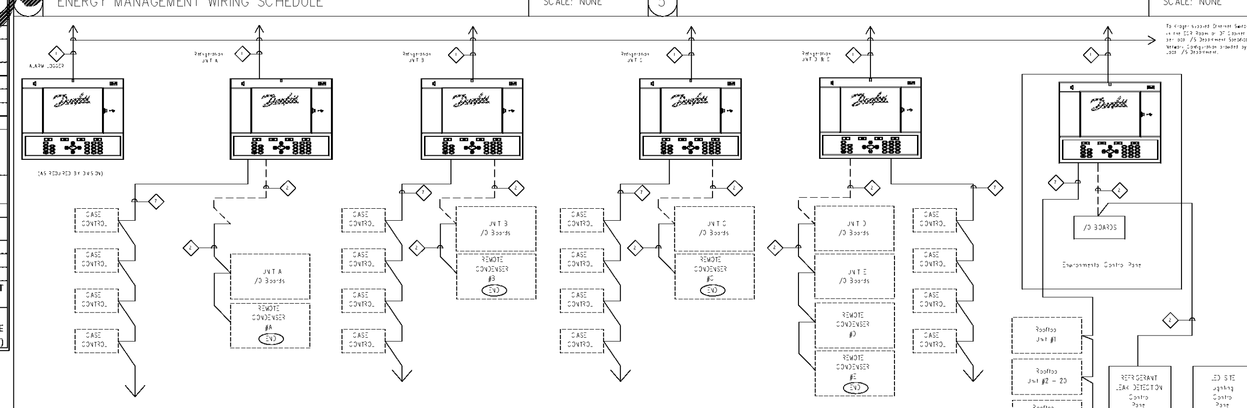
DANFOSS CONTROLS TAKEOFF

REFRIGERANT LEAK DETECTION			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005955	AK2 Enclosure for 1 row of 4 full size Modules includes Power Supply and 1AK2 Comm Module 13x30x5	AK2I08	1
K-0005947	AK2 Module Type AK2-XM 205A (8AI/8DO)	080Z0010	2
K-0005980	150 VA Wall Mount Control Transformer - 24V	55-168	1
K-0052368	Bacharach 16Ch HGM MZ, 5x 1,000' Tubing, 10 High Flow Fittings, 2 & 3 way splitter connections with line end filter assembly, Machine room binder with technical bulletins and parts guide (Includes Filter Ends)	3015-KIT	1
K-0052369	4- 20v Interface Card (Danfoss compatible)	3015-5152	1
K-0052371	Washdown J-box for filter ends.	3015-5748	4
K-0052370	Tubing- 1,000' roll (Not for NH3)	TG100	EXTRA IF REQ'D
K-0052372	Line End Filter Assembly (Includes filter & tubing connection)	3015-3420	EXTRA IF REQ'D
K-0052397	TYPE BLUE HORN STROBE AC/DC 24V 868STRB-AQ	BLUE HORN STROBE	1 FOR OFFICES, 1 NEAR LDU, 1 PER MECH ROOM, 1 PER BOX (CODE MAY REQUIRE 2 PER BOX, INSIDE AND [illegible])
LIGHTING DIMMING CONTROL			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005955	AK2 Enclosure for 1 row of 4 full size Modules includes Power Supply and 1AK2 Comm Module 13x30x5	[illegible]08	1
K-0005947	AK2 Module Type AK2-XM 205A (8AI/8DO)	[illegible]010	1
K-0023514	Danfoss AK-XM 103A, Control, Ext. Module, 4AI/4AO	[illegible]0032	1
K-0037729	AK2 Light Ballast Dimmer Driver board (Boosts signal to drive [illegible] ballasts)	080Z0270	[illegible]
K-0005980	150 VA Wall Mount Control Transformer - 24V	55-168	1
BUILDING CONTROL			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005935	Environmental Control Kit [illegible] SM-880 Building Controller mounted on 22x[illegible] enclosure w/ [illegible] supply & comm module, 8RO, 8RO/8AI co[illegible], [illegible]idistat, [illegible]ocell / temp sensor, Indoor temp [illegible] Sensor, XM-[illegible] Board.	080Z2222	1
K-0005967	Humidity [illegible] w/Indoor Temp Sensor ([illegible] Number EMHS3-1)	080Z2171	2
K-0005980	[illegible] VA Wall Mount [illegible]ntrol Transformer - 24V	55-168	1
K-003773[illegible]	[illegible] Temperat[illegible] Sensor (Te[illegible]nsor on cover plate - for HVAC room [illegible]perature)	ZTP-2	1 PER RTU
[illegible]0228[illegible]	Danfoss CO2 Detector	LDCO2	1
[illegible]00596[illegible]	Sky[illegible] Photocell 0-5000 FC with Resistor (For new applications)	080Z2169	1 (IF REQUIRED)
K-0046573	[illegible] 21W Boiler Temp Probe (fits well with 1/2 NPT)	084N2032	1
K-0007856	DAN[illegible]SS Only: Misc. Controls Equipment (per quote); Note: Quote No. must appear on PO.	PER QUOTE	USE FOR DANFOSS PART QUOTES
[illegible]54610	Danfoss COMMISSIONING of Energy Mgmt. Store Controls (per quote)	K-0060135	USE FOR DANFOSS COMMISSIONING (CASE CONTROL STORES ONLY)

2 TAKE-OFF SHEET — SCALE: NONE

KEY NOTE	DESCRIPTION	WIRE TY[illegible] ALL WIRING - PLEN[illegible]TED
1	LAN CONNECTION	[illegible]1700A #24-8 CATEGORY-5E CABLE
2	ECHELON NETWORK	WINDY CITY #1055[illegible]S #22-2 UNSHIELDED, TWISTED CABLE OR APPROVED [illegible]
3	#18-2 LOW VOLTAGE CONTROL WIRE	BELDEN [illegible]2760 #18-2 [illegible]ELDED CABLE OR APPROVED EQUAL
4	#18-4 LOW VOLTAGE CONTROL WIRE	BELD[illegible]18 #18-4 SH[illegible]DED CABLE OR APPROVED EQUAL
5	LIGHTING CONTROL / SOLENOID V[illegible]E / UNIT HEATE[illegible]	#14 TWS[illegible]AR (ONE PER [illegible]GHTING CONTACTOR)
6	LINE VOLTAGE IN CONDUIT	PER NEC [illegible]UFACTURE[illegible] GUIDLINES
7	MODBUS / 485 COMMUNICATION	WINDY CITY #[illegible] #22-2 SHIEL[illegible]D CABLE OR APPROVED EQUAL

3 ENERGY MANAGEMENT WIRING SCHEDULE — SCALE: NONE



NOTE:
1. CONTRACTOR TO INSTALL AND TERMINATE NETWORKS. NETWORK SHALL BE DAISY-CHAINED AND TERMINATED AT MODULE END.
1. CONTRACTOR TO TERMINATE NETWORKS WITH APPROPRIATELY SIZED RESISTORES PER NETWORK WIRE IMPEDANCE.

4 I/O NETWORK DETAIL — SCALE: NONE

5 — SCALE: NONE

SYMBOL	DESCRIPTION
⬡	REFRIGERATION CIRCUIT DESIGNATION
△	DEFROST TERMINATION THERMOSTAT
◇	WIRING KEY NOTE SYMBOL
(P)	ANALOG TEMPERATURE SENSOR (REFRIGERATION)
(S)	ANALOG ZONE TEMPERATURE SENSOR (HVAC)
(RH) (S)	ANALOG TEMPERATURE / RELATIVE HUMIDITY SENSOR
LLS	INDOOR LIGHT LEVEL SENSOR
(A)(RH)(LS)	AMBIENT TEMPERATURE / OUTSIDE HUMIDITY / OUTDOOR LIGHT LEVEL
(DF)	REFRIGERANT LEAK DETECTION FILTER DEVICE
(J)	CLEAN POWER FIELD INSTALLED BY EC
(C)	CO2 SENSOR
(T)	REFRIGERANT PRESSURE TRANSDUCER

SYMBOL	DESCRIPTION
DA	DOOR ALARM
TS	IMMERSABLE TEMPERATURE SENSOR
M1	MOMENTARY OVER RIDE BUTTON
HS	HORN / STROBE UNIT
CC1	CASE CONTROLLER W/ ELECTRIC DEFROST
CC2	CASE CONTROLLER W/O ELECTRIC DEFROST
CC3	WALK-IN CASE CONTROLLER W/ ELECTRIC DEFROST
AKV	ELECTRONIC EXPANSION VALVE

6 GENERAL SYMBOLS — SCALE: NONE

1. THE CONTROLS INSTALLER SHALL BE RESPONSIBLE FOR SUPERVISING THE COMPLETE INSTALLATION OF THE ENERGY MANAGEMENT SYSTEM (EMS). THIS SHALL INCLUDE, BUT NOT BE LIMITED TO THE START-UP, PUNCHDOWN AND PROGRAMMING ADJUSTMENT OF THE ENTIRE DANFOSS CONTROL SYSTEM, INCLUDING REFRIGERATION, HVAC AND LIGHTING CONTROL.
2. THE CONTROLS INSTALLER SHALL PROVIDE ALL COORDINATION BETWEEN THE VARIOUS TRADES, INCLUDING REFRIGERATION, HVAC AND ELECTRICAL TO ENSURE THAT ALL EQUIPMENT IS PROPERLY CONTROLLED AND THAT ALL CONTROL POINTS HAVE BEEN ACCOMMODATED. THIS SHALL INCLUDE VERIFYING ALL HVAC EQUIPMENT TO BE CONTROLLED, VERIFYING ALL STAGES OF HEATING, COOLING, HEAT RECLAIM, ETC. AND ENSURING THAT ADEQUATE SENSORS HAVE BEEN SUPPLIED TO ENABLE PROPER CONTROL OF SAME.
3. UPON COMPLETION OF THE EMS INSTALLATION, THE CONTROLS INSTALLER SHALL PROVIDE ACCURATE AND COMPLETE AS-BUILT DOCUMENTATION TO THE OWNER AND THE ENGINEER. THIS DOCUMENTATION MUST INCLUDE AN 8 1/2" x 11" PLAN INDICATING THE LOCATIONS OF ALL OF THE PROBES, SENSORS, RELAYS, REMOTE I/O BOARDS, CONTROLLERS AND REFRIGERANT LEAK SENSORS FOR THE ENTIRE EMS INSTALLATION INCLUDING REFRIGERATION, HVAC AND LIGHTING. THE EMS-C SHALL ALSO FURNISH AND INSTALL AN 8 1/2" x 11" DRAWING SHOWING THE LOCATIONS OF ALL THE REFRIGERATION CIRCUITS. THIS DRAWING SHALL BE MOUNTED ADJACENT TO THE CONTROL PANEL. FURTHER, THIS DOCUMENT SHALL INCLUDE A COMPLETE PRINTOUT SHOWING TERMINATION POINTS, BOARD LAYOUTS AND INITIAL CONTROL SET POINTS FOR REFRIGERATION, HVAC AND LIGHTING CONTROL.
4. ONCE THE NEW CONTROL SYSTEM HAS BEEN INSTALLED AND THE HVAC SYSTEMS ARE READY TO BE BROUGHT ON LINE, THE HVAC-C MUST PROVIDE THE NECESSARY SUPERVISION FOR STARTUP OF THE CONTROL SYSTEM AND COORDINATE START-UP WITH CONTROLS INSTALLER ON SITE. THE HVAC-C MUST ENSURE THAT ALL THE HVAC SYSTEMS ARE OPERATING CORRECTLY AND PROVIDE ANY FINE TUNING OF THE SYSTEM THAT IS REQUIRED.
5. THIS DRAWING IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO CONVEY INSTALLATION REQUIREMENTS REGARDING THE ENERGY MANAGEMENT CONTROL SYSTEM. THIS DRAWING IS PICTORIALLY DRAWN FOR CLARIFICATION PURPOSES ONLY, DO NOT SCALE. REFER TO RESPONSIBILITY MATRIX FOR FINAL EQUIPMENT AND INSTALLATION REQUIREMENTS.
6. FOR CONTRACTOR RESPONSIBILITIES, REFER TO RESPONSIBILITY MATRIX LOCATED IN CONTROLS INSTALLATION SPEC. 11.41.45
7. REFER TO REFRIGERATION LEGENDS FOR INFORMATION REGARDING FIXTURE, WALK-IN COOLER/FREEZERS, EVAPORATORS, CONDENSERS AND RECLAIM REQUIREMENTS.
8. REFER TO DANFOSS INSTRUCTION MANUALS FOR INFORMATION REGARDING CONTROL COMPONENTS (I.E. INPUT / OUTPUT BOARDS, ELECTRICAL REQUIREMENTS, ETC.)

7 ENERGY MANAGEMENT NOTES — 2" REFERENCE LINE — SCALE: NONE

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OWNER
Kroger

DATE	ISSUE
10/23/2018	90% OWNER REVIEW
11/01/2018	100% BID/PERMIT

# DATE	REVISION

PROJECT TITLE
KROGER STORE R543
MERCURY BLVD.
HAMPTON, VA

COMMISSION NO. 517315
ISSUE DATE 10/23/2018
SHEET TITLE
ELECTRICAL ENERGY MANAGEMENT SCHEDULES AND DETAILS
SHEET NO.
EM1.3.1

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