EMCS file

DEPARTMENT OF THE NAVY
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION
NAVAL REGIONAL MEDICAL CENTER
FIELD OFFICE
CAMP LEJEUNE, NC 28542

TELEPHONE NO.
919-353-3455

IN REPLY REFER TO:
JR:jj
N62470-77-C-7526
SEP 0 4 1980

Lockwood-Greene/Six Associates
A Joint Venture
Post Office Box 491
Spartanburg, South Carolina 29304

RE: Contract N62470-77-C-7526, 205 Bed Hospital, Naval Regional Medical Center, Camp Lejeune, North Carolina

SUBJ: Change Orders related to EMCS

Gentlemen:

During the August 27, 1980 meeting of Resident Officer in Charge of Construction, Naval Regional Medical Center staff and Lockwood-Greene Engineers held at Camp Lejeune, certain agreements were made concerning the responsibility of various parties in the preparation of EMCS related change orders.

The following is a summary of the ROICC's understanding of these agreements.

1. Area Paging System - ROICC has issued a request for proposal (RFP 140) to the contractor. No further action required for this system.

2. Code Blue System - Prior to issuing a change order proposal request, Lockwood-Greene will furnish the ROICC appropriate specifications and wiring details for Code Blue components.

3. KW - Demand Meter - no action required.

4. FID General I/O - no action required.

5. Steam Boiler - Lockwood-Greene to furnish ROICC with specifications for annunciators and wiring instructions for connection of boilers to annunciators, and connection of annunciator to FID.

Data Base will be updated as follows:

a. Change steam pressure input from digital to analog.
b. Delete monitoring of chemical feed tanks.
c. Delete duplicate alarms.
d. Provide remote boiler stopping as required by NFPA.

6. Emergency Power System - Lockwood-Greene to provide ROICC with wiring diagrams and specifications for connection of transfer switches to FID.

7. Intrusion Detection - RFP #149 issued. Lockwood-Greene to include Access Hatches #14 and #15 in Data Base.

8. Facilities Monitoring - RFP #161 issued to contractor for installation of a 25 pair cable from FID BE to the Sewage Lift Station.

   Data Base to be updated to delete requirement for monitoring Dental Oral Evacuation, and to add monitoring of instrument air.

9. Fire Alarm System - Lockwood-Greene to provide drawings and specifications for modification of Fire Alarm System. RFP will be issued by ROICC upon receipt.

10. HVAC - RFP #138 issued to Honeywell to obtain new submittal. When received it will be evaluated for further changes.

If there are any questions regarding these understandings, please contact this office.

Sincerely,

R. D. COLEY
Assistant Resident Officer in Charge
of Construction

Copy to:
LANTDIV (Code 05)
Gen. Corr.
EMCS file
Reading file

ROUTINE

****
* U N C L A S S I F I E D *
****

PT 00260 221/2027Z

ACTION

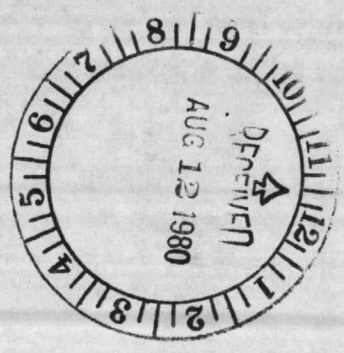
PAGE 01

RTTUZYUW RULYSGG9313 2212027-UUUU--RUEBDOA.
ZNR UUUUU
R 0819267 AUG 80
FM LANTNAVFACENGCOM NORFOLK VA
TO RUEBDOA/ROICC NAVREGMEDCEN CAMP LEJEUNE NC
BT
UNCLAS //N11010//
SUBJ: CONSTRUCTION CONTRACT N62470-77-C-7526, 205 BED HOSPITAL, NAVREGMEDCEN CAMPLEJ
A. LOCKWOOD GREENE/SIX ASSOC LTRS 445 OF 16 JUL 80; 450 OF 22 JUL 80, 451 OF 23 JUL 80, 452 OF 24 JUL 80, 453 OF 25 JUL 80, 454 OF 25 JUL 80, 459 OF 25 JUL 80, 458 OF 28 JUL 80, 467 OF 1 AUG 80, 468 OF 1 AUG 80, 469 OF 1 AUG 80, 470 OF 1 AUG 80, 471 OF 1 AUG 80, 473 OF 4 AUG 80 AND 474 OF 4 AUG 80
1. REF A FORWARDED I/O SUMMARY SHEETS FOR VAR/ELEC/MECH COMPONENTS OF THE SUBJ CONTRACT. THE EFFORT REPORTED BY REF A IS IN PREPARATION FOR THE EMCS SYSTEM CURRENTLY UNDER DESIGN. REQUEST YOUR REVIEW RECOMMENDATIONS ASSOCIATED WITH THE ABOVE REF AND PROVIDE COMMENTS BY 15 AUG 1980. YOUR COMMENTS SHOULD BE ORIENTED TOWARD ACTIONS WHICH HAVE BEEN TAKEN BY YOUR OFFICE IN CONNECTION WITH ANY RECOMMENDATIONS CITED. THAT INFO WILL BE UTILIZED AS A PART OF THE RESPONSE TO THE DESIGNER OF RECORD. IF NECESSARY, COMMENTS MAY BE

PAGE 02 RULYSGG9313 UNCLAS
TELEPHONED TO EITHER MR. J. C. GRUBBS, AV 690-7621 OR MR. S. D. EMRICK/A. G. BRYANT, JR., P.E., AV 690-7521.
BT
#9313

NNNN

NRMC /42



ROUTINE

****
* U N C L A S S I F I E D *
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DEPARTMENT OF THE NAVY
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION
NAVAL REGIONAL MEDICAL CENTER
FIELD OFFICE
CAMP LEJEUNE, NC 28542

TELEPHONE NO.
919-353-3455

IN REPLY REFER TO:
JR:jj
N62470-77-C-7526
AUG 0 8 1980

From: Resident Officer in Charge of Construction, Naval Regional Medical Center, Field Office, Camp Lejeune, North Carolina
To: Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia (Attn: Code 09A21A)

Subj: Contract N62470-77-C-7526, 205 Bed Hospital, Naval Regional Medical Center, Camp Lejeune, North Carolina

Ref:
(a) Lockwood-Greene ltr dtd Jul 16, 80 - Area Paging System
(b) Lockwood-Greene ltr dtd Jul 22, 80 - Code Blue System
(c) Lockwood-Greene ltr dtd Jul 24, 80 - KW Demand Meter
(d) Lockwood-Greene ltr dtd Jul 25, 80 - FID General I/O
(e) Lockwood-Greene ltr dtd Jul 25, 80 - Steam Boiler
(f) Lockwood-Greene ltr dtd Jul 25, 80 - Emergency Power System
(g) Lockwood-Greene ltr dtd Jul 23, 80 - Intrusion Detection
(h) Lockwood-Greene ltr dtd Jul 28, 80 - Facilities Monitoring
(i) Lockwood-Greene ltr dtd Aug 1, 80 - HV Units
(j) Loskwood-Greene ltr dtd Aug 1, 80 - Hot Water Converters
(k) Lockwood-Greene ltr dtd Aug 1, 80 - Fans
(l) Lockwood-Greene ltr dtd Aug 1, 80 - Fire Alarm System
(m) Lockwood-Greene ltr dtd Aug 1, 80 - Signel Zone AHU
(n) Lockwood-Greene ltr dtd Aug 1, 80 - Chillers

Encl: (1) Summary of ROICC comments on EMCS Data Base

1. References (a) through (n) were submitted to the ROICC for review and comment.

2. Enclosure (1) summarizes the ROICC comments to date. It is anticipated that additional Data Bases will be forthcoming and comments will be forwarded as appropriate.

R. E. CARLSON

Copy to:
Gen. Corr.
EMCS file
Reading file
Pending file
Rave

ROICC COMMENTS OF LOCKWOOD-GREENE DATA BASE

1. Area Paging System

   a. Area page select unit has been designed by the ROICC.
   b. Connection of entrance PA System to the EMCS has been deleted.
   c. Connection of the area Paging System amplifiers to the EMCS has been added to the existing contract.
   d. The above changes were accomplished through RFP #140. Copies of RFP #140 have been sent to both LANTDIV and Lockwood-Greene.

2. Code Blue System

   a. There is insufficient information available to issue a change order for the Code Blue System. The following questions need to be answered:

      1. What is purpose of the blue dome light?
      2. How will alarm be acknowledged? This is a BUMED requirement.
      3. What is system voltage? Is the empty conduit running from ME units to TSC for more than just Code Blue System?
      4. What are button characteristics?
      5. What is typical wiring layout?

3. KW Demand Meter

   a. ROICC letter to the contractor instructed them to supply a demand meter with the following characteristics:

      - Pulse rate - 1 pulse per kilowatt/hr
      - Meter range - 0-5 megawatts
      - Demand interval - 15 minutes

   b. Application programs do not list totalization. This is required for Navy reporting requirements.

4. FID General I/O

   a. Original contract calls for relative humidity input, not dew point. This could result in a possible software problem during enthalapy calculations.
   b. There are no software programs listed which use dew point input.
   c. Are terminals required in the FID terminal cabinet for FID DOOR. INTRUSION and FID POWER TIME delay?

5. Steam Boiler

   a. Annunciators required to meet NAVFAC monitoring requirements.
   b. I/O listing duplicates several alarms at the CC, by direct input and via the annunciators.
   c. The ROICC considers the monitoring of levels in the chemical feed tanks as unnecessary.
   d. Steam pressure input should be analog, not operator entry.
   e. Remote stopping of boiler required by Specification 15631-4. This should be listed as a digital output.
   f. Input for heat content of steam required. Could be calculated or operator entered.

Enclosure (1)

6. Emergency Power System

   a. Auxiliary contacts are available for indicating transfer of power to the emergency diesels. Loss of normal power under voltage relays not presently available.
   b. Instruction manual for transer switches sent to Lockwood-Greene 7-31-80.

7. Intrusion Detection

   a. The proposed listing of intrusion devices has been reviewed by the Medical Construction Liaison Officer. They are satisfied with the listing as prepared, but insist that intrusion detection devices be installed on roof access hatches #14 and #15 in the tower buildings.

8. Facilities Monitoring

   a. The use of the existing ductbank for communications wiring to the sewage lift station would require a physical separation within the electric manhole. This might be more expensive than direct burial cable.
   b. Fire alarm trouble and valve supervisory devices should be grouped under the fire alarm system. This is necessary for management of the change order.
   c. Connection of the Dental Oral Evac System to the EMCS is not required. The system is in use during the day only and is locally controlled and monitored.
   d. Instrument air should be monitored by the EMCS.

9. Heating and Ventilating Units

   a. Data Base appears complete.
   b. RFP #138 issued to Honeywell to accomplish changes derived from A&E submittal markup.

10. Hot Water Converters

   a. Data Base appears complete.
   b. RFP #138 issued to Honeywell to accomplish changes.

11. Fans

   a. It is not possible to determine if the correct number of fans has been listed until a new smoke removal plan has been prepared.

12. Fire Alram System

   a. There are too many holes in the existing contract for proper coordination of the fire alarm system with the future EMCS contract. Coordination is urgently needed between Lockwood-Greene and Code 408 before a change order can be issued.

13. Single Zone Air Handling Units

    a. RFP #138 issued to Honeywell to accomplish changes

14. Chillers

    a. Data Base contains significant changes in the quantity and type of field sensors. Change order will be required in addition to changes requested in RFP #138

EMCS file

NAVAL REGIONAL MEDICAL CENTER

CAMP LEJEUNE, N. C. 28542

IN REPLY REFER TO:
MCLO:DAW:ca
27 May 1980

MEMORANDUM FOR THE RESIDENT OFFICER IN CHARGE OF CONSTRUCTION (ATTN: JIM RAVE), NAVAL REGIONAL MEDICAL CENTER, CAMP LEJEUNE, NORTH CAROLINA 28542

Subj: Intrusion Devices

1. The following comments are forwarded to clarify the requirements for those intrusion devices that the A/E has indicated will not be included in the revised IO Schedule.

a. Door M010A--This door must include an intrusion device in order to maintain total Boiler Room security. All other access doors to this space have intrusion devices on them.

b. Door M109--This is a typographical error and should be M009. This door, as well as M009A, require intrusion devices. Both doors are shown as having intrusion devices on Drawing IO-2. Again, the requirement is to maintain total building envelope security. These are both exterior doors that can be reached from the loading dock areas.

c. Doors E122 and E124--E122 was originally shown in the Communications' Drawings as having an intrusion device. This is the doorway into the public Post Office. This office previously requested that the intrusion device be moved from E122 to doorway E124, the entrance to the hospital Mail Room. This is still a valid requirement and must be included in the IO Schedule. The public Post Office area will be open 24-hours a day so that hospital staff have access to their mailboxes. However, the hospital Mail Room must be secured after normal working hours and does require the intrusion device so that proper security can be maintained for U.S. Mail.

d. Doors M513A and M514A--These Elevator Machine Rooms were requested to have intrusion devices because of their isolated location at the top of access stairwells. However, since no other interior mechanical spaces have intrusion devices, we will eliminate the requirement for these two spaces.

e. Roof Access Hatches--The requirement for intrusion devices on these hatches is still valid. There are stairwells leading to both hatches and both have panic release hardware to allow emergency egress from the stairwell. Just as all other doors providing access to the roof have intrusion devices, both of these locations must be included.

f. Pharmacy Vault--An intrusion device is required on the vault door. Just as the Narcotic Vault in the Warehouse is protected with a motion detector and intrusion device, this vault must be protected for the same

MCLO:DAW:ca
27 May 1980

reasons. While the vault may be open during certain periods, the motion detector provides security for unauthorized entrance. On the other hand while the motion detector can be bypassed by a Key System, the intrusion device will provide necessary security if the motion detector is inoperable (turned off).

2. These requirements are all necessary elements of the Intrusion Device IO Schedule. Should there be any other information required in addressing the validity of these needs, please contact this office.

D.A. WYNKOOP
LT, MSC, USN
Assistant Medical Construction Liaison Officer

ROUTING SLIP

NRMC, CLNC

	INT	DATE	REMARKS
EC 1			
DC 3	ROC	5/28	
R 2			
Y 4			
P			
S			
H			
W			

EC'Y TO FILE 4

CTION:

LG-4

TELEPHONE CALL REPORT

Commander Carlson

☐ INCOMING ■ OUTGOING

JOB NO. 77239.18

COMPANY Johnson Controls
ADDRESS Greensboro, N.C. 27409
P.O. Box 11033

DATE May 15, '80
TIME 1030
REF. Fire Alarm System

TELEPHONE NO. 919-292-7931
NAME Allen Bradley

CHARGE CODE
TITLE

DATA

Called to discuss fire alarm system as it relates to the future EMCS. Items discussed were as follows:

(1) Lockwood Greene has no responsibility for the fire alarm shop drawings but needs some help in assistance which was kindly given by Mr. Bradley.

(2) Duct mounted smoke detectors are paralleled (if one exists on supply and return ducts) and brought to the FATC. The ZMC modules supplied are type sensor. An output contact per zone (normally closed) is provided on the module for the circuit to the FID terminals and input. No other contacts other than the one used by the fire alarm system is available on the approved smoke detectors. Mr. Bradley is sending literature to LG on the detector and remote monitor.

(3) Door holder circuits have not been defined in the Johnson shop drawings. The provisions as they now exist require a:

FID DO for initiating time delay
FID DI for time delay contact closure
FID DO's for "individual doors"

It was jointly agreed that one time delay relay per FATC would not satisfy the desired circuits. It was further agreed that the time delay function could easily be implemented in the EMCS rather than hardwire.

(4) ZMC contacts are rated 26VDC@5A/120VAC@3A

BY

continued

Telephone report 5/15/80
Johnson Controls

(5) Allen has heard no word regards the joint meeting. We discussed the purpose of the meeting and our present task of preparing specifications for the future EMCS. I informed Allen it was my understanding that Honeywell under the Mechanical Contract was responsible for construct as required by 13942X for the FID terminal cabinets. We both agreed that some procedure must be set up for Honeywell, Johnson Controls, and Lockwood Greene to full communicate on the interface of these various systems.

(6) It was agreed that if either party needed any informatio we would communicate with each other.

(7) A later call this date was made concerning the door holders. Allen said that a 24VDC gel filled battery capable of a 12 amp load from the door circuits and recharg is located in the BFAEC. At the present time the door holder circuits are not connected to the battery but could be if desired.

CC: Steve Emrick
George Novey
Cmdr. Carlson
Charles Minich

W M Scott


RECEIVED
MAY 19 1980

LG-4

TELEPHONE CALL REPORT

☐ INCOMING ■ OUTGOING

JOB NO. 77239.18

COMPANY Webb Builders Hardware, Inc
ADDRESS P.O. Box 98
Arlington, Texas 76010

DATE May 15, '80
TIME 1800
REF. Smoke Dam Doors

TELEPHONE NO. 817-261-0391
NAME Danny Roberts

CHARGE CODE
TITLE

DATA

Called to determine:
a) Was Electromagnetic included with Smoke Door Closer? Yes
b) What voltage was specified? 24VAC/DC
c) What hold is required? 80 ma.
d) What is failure mode & when is voltage to be applied? Normal Door Closer

Rixson - Firemark
Retreat, Franklin Park, Illinois
312-671-5670
P.O.# 30346 Series

Dannies checks don't show electromagnetic voltage either. It appears to indicate 24VAC/DC. He gave me Rixson # to call & see if they can answer the questions.

cc: Steve Emrick
George Novey
Cmdr. Carlson
Charles Minch

BY GM Scott


RECEIVED
MAY 19 1980

ROUTING SLIP
NRMC, CLN

	INT.	DATE	REMARKS
EC 2	✓		
DC 1	ADC	5/28	
R			
Y 3	✓		
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EC'Y TO FILE 4

CTION:

ROUTING SLIP
NRMC, CLN

	INT.	DATE	REMARKS
EC 2nd	✓		
DC 1	MDC	5/28	
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EC'Y TO FILE 4

CTION:

MINUTES OF MEETING
CAMP LEJEUNE HOSPITAL
CAMP LEJEUNE, NORTH CAROLINA

Meetings were held at LANTDIV's offices in Norfolk, Virginia on May 1, 1980 and May 2, 1980. The purpose of the meetings was to review the 50% Submittal on the EMCS and to review the Honeywell Shop Drawing Submittal. Those attending the meeting were as follows:

LANTDIV	Mr. John Grubbs Mr. George Novey Mr. Tony Butts * Mr. Steve Emrick * Mr. Rennie Tisdale *
ROICC	Commander Dick Carlson Mr. Jim Rave
BUMED	Mr. Dave Wynkoop
LOCKWOOD GREENE ENGINEERS, INC.	Mr. Bruce Byford Mr. George Scott * Mr. Charlie Ratterree * Mr. Charles Minch

* Indicates part-time attendance

The EMCS Follow-on Bid Package and the Honeywell shop drawings are very closely related. Significant items discussed during the meetings are as follows:

1. The EMCS Bid Package will be for a one-step purchasing of the system. That is, this is not a two-step proposal where technical proposals will be requested and then prices later. All vendors bidding on this project must submit a price based on this bid package which is developed by Lockwood Greene.

2. Appendix A-1 is the FID list. The FID location will be added to this list. Appendix A-2 is the I/O Schedule for the bid package. Appendix A-3 is the system list with attendant sensors. Cover sheets will be added to all the Appendices and an explanation will be included for the abbreviations and the numbering systems. Also, the following changes will be made: the word "furnishing" will be used in lieu of "providing"; "responsibility" in lieu of "contractors"; and "external" in lieu of "LANTDIV" in Appendix A-3.

3. LANTDIV requested Lockwood Greene to keep the changes to the Cardinal Construction Contract to a minimum.

4. The data base which Lockwood Greene is building can be sorted in many different ways. The following are preliminary types of sorts which were requested by LANTDIV.

   a. A list of systems and sensors sorted by FID number.

   b. A list of systems and sensors sorted by system and FTC (FID Terminal Cabinet).

   c. A list of systems and sensors sorted by system and sensor numbers.

   d. A list of sensors that should be added by Change Order to the Construction Contract.

   e. A list of sensors that are the responsibility of the EMCS Contractor to furnish.

   f. A list of systems and sensors that Cardinal has not yet submitted data on but is in their scope of work.

   g. A list of sensors requiring interface equipment.

   It will be possible to generate other types of sorts which will be appropriate to give to the Contractor. Lockwood Greene will produce preliminary lists for review prior to the 90% submittal.

5. The computer delivery could be a problem with the EMCS. This is due to recent long delivery times for computer equipment. The LANTDIV Project Manager will be requested to try to get a higher priority for the computer for this EMCS Bid Package.

6. Lockwood Greene is currently working on Nurse Call System and the Code Blue System. The Code Blue System is part of the EMCS.

7. The ROICC should thoroughly review the facilities monitoring portion of the EMCS. This is where the blood banks, sewage lift station, and other facility related equipment are listed. The purpose of the review should be for completeness so that all equipment is covered.

8. The boiler annunciator has an alarm contact. EMCS gets one signal for any alarm on the boilers. This means that the EMCS is only monitoring the boilers. Specification Section 13944, paragraph 5.12 may not be used. That is it is not being implemented but since it is part of the software package, it will be provided. Lockwood Greene agreed to provide and separately cost sensors for the boiler management program for the next submittal.

9. Lockwood Greene will check to be sure that the additional doors and intrusion devices are included in the EMCS.

10. The Public Address System is tied into the EMCS for paging in nine different areas.

11. The sewage lift station will be connected to the EMCS. Lockwood Greene will provide cable between the sewage lift station and the hospital.

12. LANTDIV directed Lockwood Greene to add intercoms in all mechanical and electrical equipment rooms. These intercoms should be part of the telephone system, not the EMCS.

13. No change has been issued to the Contractor concerning the EMCS. That is, no conduit has been added between FID's in adjacent areas or any other changes. These changes will be made when the EMCS Bid Package is complete.

14. The ROICC stated the transfer switches are on the job site. Lockwood Greene should check the shop drawing and determine if there are contacts available on the switches which should be wired to the FTC.

15. The typical drawings are to be used for graphic generation. The typical drawings should be referenced by a drawing number. In the I/O Schedules, statements should be "typical graphics should be used" instead of "typical graphics satisfactory". Also, instead of "special graphic required", it should say "provide special graphics in accordance with reference drawing".

16. NFPA requires alarms on the medical gases. This requirement can be met by the EMCS if it is classified as a Class 4 alarm and will alarm every 3 minutes.

17. In the specification, Lockwood Greene will add a reference that the FTC's and sensors are existing.

18. In the specification, Lockwood Greene will add a statement that will prohibit the EMCS vendor from replacing any devices being provided under the Cardinal Contract.

19. It was noted that Cardinal is responsible for providing a fully operational system from the FTC to the sensors and devices.

20. The specification will be revised to require the EMCS vendor to test the sensors and devices prior to tying into the EMCS system which he is providing. This provision will be in lieu of testing the devices within 120 days. Also, the contracting officer must be notified and may witness the test.

21. In the specification, Division 1 there should be words that addressess the on-going contract and the interferences which should be avoided. This statement should require coordination and a proper interface so that rules are established between the EMCS vendor and the Cardinal Construction Company.

22. Lockwood Greene should revise the specification to remove all aspects of the two-step procurement procedure.

23. Lockwood Greene will revise the specification to delete paragraph No. 23 in section 13941.

24. Specifications will be revised to require shop drawings submittal within 60 days for long-lead equipment items and all other shop drawings should be submitted within 120 days after award of the contract.

25. There is a lot of information in Section 13942 that is in the current contract. This section will be needed to cover new sensors that are required and will have to be added to the specification.

26. In providing the software for the EMCS, it is Lockwood Greene's experience that it costs more to delete programs rather than leaving the software list intact. This is the reason that even if certain functions are not required, it will be left in the specification and will be provided. This provides some degree of future expansion and flexibility.

27. Specification Section 13944 defines functions rather than requires specific programs be written.

28. LANTDIV established the budget for the EMCS and Nurse Call at $1,300,000. Approximately $300,000 of this is for the Nurse Call, the remainder being for EMCS. LANTDIV stated that since the budget for the Nurse Call is only $300,000, we may have to go with the conventional Nurse Call system as opposed to the processor based system which is preferred. Lockwood Greene will monitor cost of the EMCS and Nurse Call very closely to be able to notify LANTDIV if there are any budget problems. Based on Lockwood Greene's previous experience with EMCS systems, the cost for the EMCS Bid Package should be approximately $800,000.

29. Lockwood Greene stated that devices will not be added to satisfy program requirements. Programs will have to use the sensors that are being provided.

30. Specification Section 13944 will have two more paragraphs added. These will cover smoke removal and intrusion devices.

31. Specification Section 13945 is the specification for the cable. This cable must be the same as in the existing contract. Currently Lockwood Greene is reviewing the broadband frequency spectrum and channel allocations. Lockwood Greene has reviewed the Broadband System shop drawing and has disapproved the equipment but did approve the system.

32. BUMED is planning on hiring a GS-7 EMCS operator and a GS-11 will be in charge of the overall system.

33. LANTDIV stated that there will be one FID per smoke zone. Lockwood Greene will locate all FID's adjacent or as close as possible to the fire alarm terminal cabinet. In remote areas, such as mechanical equipment rooms, MUX's will be provided where the trade-off economic comparison indicates that direct wiring would be more expensive.

34. Currently, the sensor on the return air fan is hardwired and turns off the supply fan when smoke is detected. The smoke detector on the return air fan will initiate the smoke removal sequence in the same manner as the EMCS when it senses smoke in the return air stream. This will involve wiring to a terminal block, etc. instead of "hardwiring it" into the return air fan circuit.

35. It was noted that the FTC can be located up high since access is only required during initial construction.

36. All wire and cables shall be installed in conduit.

37. Lockwood Greene will provide conduit and interconnect all FID's. This interconnection will be routed through the MUX conduit and then connecting to each other thereby connecting the FID's.

38. Smoke removal will be in accordance with the established plan which requires all adjacent areas including above and below be notified and positively pressurized. Areas in which smoke is detected shall be negatively pressurized.

39. The boxes being provided (NEMA 12 enclosures) will remain in the contract. This is being done at Mr. George Novey's direction. He will assume full responsibility for any problems which may arise.

40. Mr. Earl Thomas at LANTDIV is currently reviewing the resubmitted fire protection and alarm system. Mr. John Grubbs will forward marked shop drawings when they are available.

41. LANTDIV agreed with Lockwood Greene's suggestion that instead of marking up all prints, only the sepias be marked up of the Honeywell submittal. Prints will be made from these sepias for distribution. This should be coordinated with other Lockwood

Greene and ROICC personnel. Lockwood Greene, in marking up the Honeywell shop drawing should make reference to similar shop drawings which have been marked up instead of marking each and every drawing in detail. Lockwood Greene is to send a copy of the marked-up Honeywell drawings to LANTDIV Code 05 - Construction Division.

42. LANTDIV directed Lockwood Greene to provide electric meters for power consumption.

43. LANTDIV directed Lockwood Greene to provide chiller optimization by adding PT's and CT's to determine the load on the two chillers. A Change Order should be prepared to modify the No. 6 motor starters which are being provided with the chillers. It is noted that Carrier is providing the chillers and the starters are Westinghouse manufactured. Lockwood Greene is to forward the necessary change information to ROICC and to LANTDIV.

44. LANTDIV is going to review the emergency power system for possible changes. LANTDIV will advise Lockwood Greene if any changes are to be made in the future.

45. Hot and cold deck temperatures for all dual-duct systems shall be resettable from the EMCS. No reset shall be provided for the discharge temperature of single zone units.

46. The Honeywell shop drawings are acceptable as marked for Chapter 15 of the specifications, but it is rejected for Chapter 13, EMCS requirements. When Lockwood Greene returns the Honeywell shop drawings, the changes which are both adds and deducts will be identified in the transmittal letter. Lockwood Greene will forward one shop drawing marked in multi-colors to show the different types of comments to the ROICC.

47. A CPA port will be required on the water temperature controller for hot water convertors EX-5, 6, and 7. This will make their control loops compatible with the 7 zone hot water pumps.

48. It was agreed to allow an option to the Contractor to replace the electric operators for the 8" cooling tower bypass valves with pneumatic operators. The air line supplying these valves shall be equipped with a desiccant air dryer cartridge to prevent condensation within the pneumatic lines themselves.

49. It maybe possible to delete the requirement for a second set of contacts in the freezestat. The requirement will be left in for now but if there are cost problems then it would be possible to delete this.

50. In Lockwood Greene's opinion, shutting down air handlers pressurizing adjacent areas with a freezestat interlock during a fire is a violation of the intent of the Life Safety Code. It is understood that continuing fan operation may freeze the coils with resultant damage. It was agreed to run the fan for pressurization during a fire, but warn the operator as the freezing temperature is approached. The freezestat will not shut off the supply fan on the smoke removal mode, but the freezestat will shut the fan off in other operating conditions.

51. It was agreed that a warning sign should be placed at each "HAND-OFF-AUTO" switch in the MCC to warn the maintenance personnel that the HVAC equipment may turn on unless the disconnect switch is turned off. It was agreed that the hospital maintenance should provide these warning signs.

52. It was agreed to delete the Honeywell control circuitry allowing a bypass around the motor overloads of single phase exhaust fans, such as EF-99 for smoke control purposes.

53. It was agreed to take the initiation of the smoke removal sequence out of the pneumatic system requirements and have it initiated by the EMCS instead. Lockwood Greene will check the specifications to determine if this is a major deduct.

54. Lockwood Greene will mark up the Honeywell shop drawings to require 24 volt DC relays to be furnished by Honeywell for contact closure in starting control sequences on HVAC equipment.

55. It was agreed to delete the supply fan volume control override on the smoke removal control sequence as originally called for by the I/O Schedules.

56. It was agreed that the controlled systems for HVAC equipment will fail off when the EMCS is off; i.e., EMCS contacts shall be normally open. The specification will request relays, whose contacts can be convertible from normally closed to normally open configuration.

57. It was agreed to have an alarm report to the EMCS operator if the supply fan is off and the return fan is on.

58. Lockwood Greene will incorporate the Honeywell shop drawings into the EMCS Bid Package. This will be done by referencing that these shop drawings are available for perusal during the bid period. The successful vendor for the EMCS system will be given a complete set of the drawings. LANTDIV Construction Division is to review this procedure and approve or disapprove at a later date.

59. Lockwood Greene agreed to a deadline for marking up the Honeywell shop drawing and locating FID's and MUX's. This work will be completed by May 16 or earlier. It was agreed that the Honeywell shop drawings will not be held up due to locating FID's.

60. After the Honeywell shop drawings are returned to the correct Contractor, a meeting should be held as soon as possible between Honeywell, Walldinger, Bryant, Johnson, Cardinal, ROICC and Lockwood Greene to discuss the shop drawings and coordination between Honeywell and Johnson. This meeting should take place approximately two weeks after these shop drawings are returned.

61. After subsequent review, Lockwood Greene has established the following design schedule:

a. EMCS Bid Package:

Final Submittal - June 16, 1980.
Review Meeting - June 26 and 27 in Norfolk at LANTDIV's offices.
For construction issue - July 21, 1980.

b. Nurse Call:

Preliminary Design Submittal - June 9, 1980.
Review Meeting - June 26 and 27.
Final Submittal - July 28, 1980.
LANTDIV return review comments - August 11, 1980.
For Construction Issue - August 25, 1980.

c. Telephone System Bid Package:

This package is based on receiving a Notice To Proceed after negotiations on May 26, 1980.
Start Design - May 26, 1980.
Preliminary Design Submittal - July 7, 1980.
Final Design Submittal - August 18, 1980.
Final Review Meeting - September 15, 1980.
For Construction Issue - September 29, 1980.

LOCKWOOD GREENE/SIX ASSOCIATES

Charles W. Minch
Project Manager

CWM:cr2/6/2/d
cc: Mr. J. C. Curry
Mr. Tony Jackson
Mrs. Carolyn Geen
Mr. John Stanley
Attendees


RECEIVED
MAY 16 1980

ROUTING SLIP
NRMC, CLN

	INT	DATE	REMARKS
EC 1			
DC 2	AOC	5/28	
R			
Y			
P 3	CF		
S			
H			
W			

EC'Y TO FILE

CTION: OK. Cross Brewster 5-27-80
leave half of road open at all times.
starting @ 08:00 clear

CARDINAL
Contracting Co., Inc.
FIRST NATIONAL BANK BUILDING • SUITE 875
1401 MAIN ST. COLUMBIA, S.C. 29201 A/C 803-254-9064

PLEASE ADDRESS REPLY TO:
P. O. BOX 8408
CAMP LEJEUNE, N.C. 28542

May 21, 1980

Resident Officer in
Charge of Construction
Naval Regional Medical Center
Field Office
Camp Lejeune, North Carolina 28542

Attention: LCDR R.E. Carlson

RE: 205 Bed Hospital
Naval Regional Medical Center
Camp Lejeune, North Carolina
Contract No: N62470-77-C-7526

SUBJ: Temporary Closing of Brewster Boulevard

Gentlemen:

Attached please find copy of East Coast Construction Company's letter of May 20, 1980, which is self explanatory.

Please confirm this request so we may proceed with this scheduled operation.

Very truly yours,

CARDINAL CONTRACTING COMPANY, INC.

B. A. Wyatt
Project Manager

BAW:mw

Attachment as noted

cc: Dallas Office
Columbia Office


RECEIVED
MAY 22 1980

(919) 353-4479

229 CENTER STREET

EAST COAST CONSTRUCTION COMPANY, INC.
GENERAL CONTRACTORS
Post Office Box 5004
JACKSONVILLE, NORTH CAROLINA 28540

May 20, 1980

Cardinal Contracting Company
P.O. Box 8408
Camp Lejeune, NC 28542

Re: Contract N62470-77-C-7526
205 Bed Hospital, NRMC
Camp Lejeune, NC

Subj: Sanitary Sewer Crossing at Brewster Blvd.

Gentlemen:

We request authorization from the AROICC on the above referenced project to cross Brewster Boulevard on May 27, 1980 to tie in the new sewage force main to the existing sanitary sewer as shown on sheet CV3-6 of the contract drawings.

Yours truly,

EAST COAST CONSTRUCTION COMPANY, INC.

Bill Corbin, Jr.

BC:lem


RECEIVED
MAY 22 1980

RESI NT OFFICER IN CHARGE OF CONST TION

NAVAL REGIONAL MEDICAL CENTER

CAMP LEJEUNE, N. C. 28542
P. O. BOX 131

IN REPLY REFER TO:
REC:jj
N62470-77-C-7526
AUG 16 1979

From: Resident Officer in Charge of Construction, Naval Regional Medical Center, Camp Lejeune, North Carolina
To: Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia (Attn: Code 05)

Ref: (a) ROICC NRMC ltr dtd 10 Jul 79

Encl: (1) System Operation Concept
(2) Modifications to EMCS Specification
(3) Sensor Listing
(4) Graphic Index
(5) I/O Summary

1. Reference (a) addressed discrepancies discovered during a general review of the Engineering Monitor and Control System (EMCS) described in the subject contract. Enclosures (1) through (5) are the results of a follow on constructability review.

2. Enclosure (1) describes the system concept. Comparing the current specification with the system concept revealed several deficiencies which are addressed in enclosure (2). Enclosure (3) and (4) are a sensor list and graphic index, respectively, keyed to enclosure (5), a revised I/O monitoring point summary.

3. Request that Atlantic Division:

a. prepare appropriate specifications for all required sensors listed in enclosure (3).

b. authorize ROICC, NRMC, Camp Lejeune, NC to issue a proposal request to Cardinal Construction for a change order incorporating the additional sensor specifications and replacing the existing I/O Summary with enclosures (3) through (5).

4. Mechanical and electrical equipment submittals and approvals are dependent on receipt of these additional specifications. It is essential that these submittals not be delayed.

R. E. CARLSON

Copy to: Gen. Corr.
Reading file

System Operation Concept

1. The Engineering Monitor and Control System (EMCS) is intended to monitor and control:

   a. Life Safety Systems.

      (1) fire alarm
      (2) smoke removal
      (3) elevator positioning
      (4) emergency diesels
      (5) fire pumps

   b. Building Security Systems.

      (1) intrusion devices
      (2) CCTV
      (3) special security devices

   c. Critical Medical Equipment.

      (1) medical gases
      (2) blood bank refrigerators
      (3) Ventilation/temperature/humidity in critical spaces
      (4) emergency power

   d. HVAC Systems.

      (1) air handling units
      (2) perimeter heating
      (3) filters
      (4) chill water equipment

   e. Energy Consumption.

      (1) power
      (2) steam flow
      (3) fuel oil
      (4) hot water
      (5) outside lights
      (6) area isolation

   f. Preventative Maintenance Program.

2. To support system operation, the following programs are required:

   a. initiate smoke removal and area isolation immediately upon signal from the fire alarm system.

   b. activate security devices by time sequence.

   c. list preventative maintenance work load.

Modifications to EMCS Specification

1. The following modifications to the existing EMCS specification are necessary for system operation described in enclosure (1).

a. Life Safety.

(1) incorporate 43 smoke damper controls into smoke removal plan.
(2) incorporate 6 supply fans and 5 air handling units into smoke removal plan.
(3) add smoke door controls to I/O sheets.
(4) add fire alarm terminal cabinets to I/O sheets.
(5) add separate damper and vane controls for smoke removal.

b. Building Security.

(1) add door intrusion devices to I/O sheets.

c. Critical Medical Equipment.

(1) add blood bank refrigerators to I/O sheets.

d. HVAC Equipment.

(1) delete elapsed time meters, outside air temperature and humidity detectors.
(2) coordinate AHU filter schedule with I/O sheets.
(3) coordinate control of AHU with sequence of operation diagrams.
(4) delete boiler room alarms - 24 hour manning required.

e. Energy Monitoring.

(1) delete power demand monitoring - no shedable load.
(2) delete photo electric cell monitoring.

f. Miscellaneous.

(1) 21 of 42 AHU do not have preheat coils and consequently will not function for smoke removal when outside air is below the 45° freezstat setting. Possible solution is to write the smoke removal program to incorporate an outside air sensory step and switch units ON/OFF as appropriate.
(2) add CRT graphic displays for all major sub-systems/equipment.

Sensor Listing

Number	Description	Specification
1	Auxiliary relay on 115/460v motor starter	None
2	Auxiliary contact on motor 115v starter	None
3	Electropneumatic switch (EP)	None
4	Thermocouple	13942X - 3.1.4.2
5	Humidity detectors	13942X - 3.1.7
6	Valve controller	13942X - 3.1.9
7	Smoke detector	16721 - 13.2
8	Freezestat	15911 - 2.4.7.4
9	Differential pressure switch	13942X - 3.1.6
	steam/water	None
	air drop across filter	None
10	Flow switch for water	None
11	Control relay	
	air damper	None
	smoke damper	None
	chiller	None
	cooling tower fan	None
	power failure	None
	CCTV	None
	PA system	None
	smoke door	None
12	Microswitch for duct mounted smoke damper status	None
13	Intrusion device	08710 - 5.5.11.2
14	Pressure switch	
	medical gas	None
	water	None
	steam	None
	compressed air	None
15	Level switch	
	O_2 tank	Specified
	cooling tower water	None
	diesel fuel oil	None
	lift station wet well	None

Number	Descriptio	Specification
16	Medical vacuum switch	None
17	Temperature probe	13942X - 3.1.4
18	Domestic water meter	None
19	Steam flow meter	15631 - 4.1
	main steam	None
	hot water tanks	13942X - 3.1.9
20	Temperature controller	None
21	Cooling tower vibration switch	None
22	Diesel functions	None
23	Diesel functions	None
24	Fuel oil flow meter	13942X - 3.1.10
25	Fuel oil level transmitter	None
26	Elevator position indicator	None
27	Code blue push button	16760 - 3.11
28	Motion detector	None
29	Lighting contactor	None
30	Auxiliary contact for lighting contactor	13942X - 3.1.8
31	Watt hour meter (incomplete)	16721
32	Auxiliary contact FA cabinet	16720 - 3.12
33	Panic switch	

GRAPHIC INDEX

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GRAPHIC INDEX

Discrete Point	Equipment	Graphic	Function	Sensor
010	AHU # 4	A	start/stop/status/alarm	①②③
011			return air temp	④
012			return air humidity	⑤
013			leaving HRC/PHC temp/alarm	④
014			cold deck temp/reset/alarm	④⑥
015			hot deck temp/reset/alarm	④⑥
016			cold deck humidity/alarm	⑤
017			smoke detector alarm	⑦
018			freezestat alarm	⑧
019			prefilter diff. pressure alarm	⑨
020			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
021			open outside air damper	⑪
022			open SF inlet vane	⑪
023	↓		close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
024	RF-4		start/stop/status/alarm	①②
025	↓		open relief air damper	⑪
026	↓		open RF inlet vane	⑪
027	EF-111		start / stop / status / alarm	① ②
028	Pump. # 147		start / stop / status / alarm	① ②
029	↓	↓	water flow alarm	⑩

Discrete Point	Equipment	Graphic	Function	Sensor
030	AHU #5	B	start/stop/status/alarm	①②③
031			return air temp	④
032			return air humidity	⑤
033			leaving HRC/PHC temp/alarm	④
034			cold deck temp/reset/alarm	④⑥
035			hot deck temp/reset/alarm	④⑥
036			cold deck humidity/alarm	⑤
037			smoke detector alarm	⑦
038			freezestat alarm	⑧
039			prefilter diff. pressure alarm	⑨
040			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
041			open outside air damper	⑪
042			open SF inlet vane	⑪
043	↓		close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
044	RF-5		start/stop/status/alarm	①②
045			open relief air damper	⑪
046	↓		open RF inlet vane	⑪
047	EF-114		start/stop/status/alarm	①②
048	Pump #148		start/stop/status/alarm	①②
049	↓	↓	water flow alarm	⑩

Discrete Point	Equipment	Graphic	Function	Sensor
050	AHU #6	C	start/stop/status/alarm	①②③
051			return air temp	④
052			return air humidity	⑤
053			leaving HRC/PHC temp/alarm	④
054			cold deck temp/reset/alarm	④⑥
055			hot deck temp/reset/alarm	④⑥
056			cold deck humidity/alarm	⑤
057			smoke detector alarm	⑦
058			freezestat alarm	⑧
059			prefilter diff. pressure alarm	⑨
060			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
061			open outside air damper	⑪
062			open SF inlet vane	⑪
063	↓		close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
064	RF-6		start/stop/status/alarm	①②
065			open relief air damper	⑪
066	↓		open RF inlet vane	⑪
067	EF-115		on/off/status/alarm	①②
068	Pump #149		on/off/status/alarm	①②
069	↓	↓	water flow alarm	⑩

Discrete Point	Equipment	Graphic	Function	Sensor
070	AHU #7	D	start/stop/status/alarm	①②③
071			return air temp	④
072			return air humidity	⑤
073			leaving HRC/PHC temp/alarm	④
074			cold deck temp/reset/alarm	④⑥
075			hot deck temp/reset/alarm	④⑥
076			cold deck humidity/alarm	⑤
077			smoke detector alarm	⑦
078			freezestat alarm	⑧
079			prefilter diff. pressure alarm	⑨
080			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
081			open outside air damper	⑪
082			open SF inlet vane	⑪
083			close return air damper	⑪
084	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
085	RF-7		start/stop/status/alarm	①②
086			open relief air damper	⑪
087	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
090	AHU-8	E	start/stop/status/alarm	①②③
091			return air temp	④
092			return air humidity	⑤
093			leaving HRC/PHC temp/alarm	④
094			cold deck temp/reset/alarm	④⑥
095			hot deck temp/reset/alarm	④⑥
096			cold deck humidity/alarm	⑤
097			smoke detector alarm	⑦
098			freezestat alarm	⑧
099			prefilter diff. pressure alarm	⑨
100			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
101			open outside air damper	⑪
102			open SF inlet vane	⑪
103			close return air damper	⑪
104	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
105	RF-8		start/stop/status/alarm	①②
106			open relief air damper	⑪
107	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
110	AHU-9	F	start/stop/status/alarm	①②③
111			return air temp	④
112			return air humidity	⑤
113			leaving HRC/PHC temp/alarm	④
114			cold deck temp/reset/alarm	④⑥
115			hot deck temp/reset/alarm	④⑥
116			cold deck humidity/alarm	⑤
117			smoke detector alarm	⑦
118			freezestat alarm	⑧
119			prefilter diff. pressure alarm	⑨
120			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
121			open outside air damper	⑪
122			open SF inlet vane	⑪
123			close return air damper	⑪
124	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
125	RF-9		start/stop/status/alarm	①②
126			open relief air damper	⑪
127	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
130	AHU-10	G	start/stop/status/alarm	①②③
			return air temp	④
131			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
132			cold deck temp/reset/alarm	④⑥
133			hot deck temp/reset/alarm	④⑥
134			cold deck humidity/alarm	⑤
135			smoke detector alarm	⑦
136			freezestat alarm	⑧
137			prefilter diff. pressure alarm	⑨
138			80% filter diff. pressure alarm	⑨
139			99.5% filter diff. pressure alarm	⑨
140			open outside air damper	⑪
			open SF inlet vane	⑪
141			close return air damper	⑪
142	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
143	RF-10		start/stop/status/alarm	①②
144	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
150	AHU #11	H	start/stop/status/alarm	① ② ③
151			return air temp	④
152			return air humidity	⑤
153			leaving HRC/PHC temp/alarm	④
154			cold deck temp/reset/alarm	④ ⑥
155			hot deck temp/reset/alarm	④ ⑥
156			cold deck humidity/alarm	⑤
157			smoke detector alarm	⑦
158			freezestat alarm	⑧
159			prefilter diff. pressure alarm	⑨
160			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
161			open outside air damper	⑪
162			open SF inlet vane	⑪
163			close return air damper	⑪
164	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
165	RF-11		start/stop/status/alarm	① ②
166			open relief air damper	⑪
167	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
170	AHU #12	I	start/stop/status/alarm	① ② ③
171			return air temp	④
172			return air humidity	⑤
173			leaving HRC/PHC temp/alarm	④
174			cold deck temp/reset/alarm	④ ⑥
175			hot deck temp/reset/alarm	④ ⑥
176			cold deck humidity/alarm	⑤
177			smoke detector alarm	⑦
178			freezestat alarm	⑧
179			prefilter diff. pressure alarm	⑨
180			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
181			open outside air damper	⑪
182			open SF inlet vane	⑪
183			close return air damper	⑪
184	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
185	RF-12		start/stop/status/alarm	① ②
186			open relief air damper	⑪
187	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
190	AHU-13	J	start/stop/status/alarm	①②③
191			return air temp	④
192			return air humidity	⑤
193			leaving HRC/PHC temp/alarm	④
194			cold deck temp/reset/alarm	④⑥
195			hot deck temp/reset/alarm	④⑥
196			cold deck humidity/alarm	⑤
197			smoke detector alarm	⑦
198			freezestat alarm	⑧
199			prefilter diff. pressure alarm	⑨
200			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
201			open outside air damper	⑪
202			open SF inlet vane	⑪
203			close return air damper	⑪
204	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
205	RF-13		start/stop/status/alarm	①②
206			open relief air damper	⑪
207	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
210	AHU-14	K	start/stop/status/alarm	① ② ③
			return air temp	④
211			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
212			cold deck temp/reset/alarm	④ ⑥
213			hot deck temp/reset/alarm	④ ⑥
214			cold deck humidity/alarm	⑤
215			smoke detector alarm	⑦
216			freezestat alarm	⑧
217			prefilter diff. pressure alarm	⑨
218			80% filter diff. pressure alarm	⑨
219			99.5% filter diff. pressure alarm	⑨
220			open outside air damper	⑪
			open SF inlet vane	⑪
221			close return air damper	⑪
222	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
223	RF-14		start/stop/status/alarm	① ②
224	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
230	AHU-15	L	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
231			cold deck humidity/alarm	⑤
232			smoke detector alarm	⑦
233			freezestat alarm	⑧
234			prefilter diff. pressure alarm	⑨
235			80% filter diff. pressure alarm	⑨
236			99.5% filter diff. pressure alarm	⑨
237			open outside air damper	⑪
			open SF inlet vane	⑪
238			close return air damper	⑪
239			mixed air temp alarm	④
240	↓		leaving cooling coil temp/alarm/reset	④ ⑥
241	RF-15		start/stop/status/alarm	① ②
242	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
250	AHU-16	M	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
251			cold deck humidity/alarm	⑤
252			smoke detector alarm	⑦
253			freezestat alarm	⑧
254			prefilter diff. pressure alarm	⑨
255			80% filter diff. pressure alarm	⑨
256			99.5% filter diff. pressure alarm	⑨
257			open outside air damper	⑪
			open SF inlet vane	⑪
258			close return air damper	⑪
259			mixed air temp alarm	④
260	↓		leaving cooling coil temp/alarm	④⑥
261	RF-16		start/stop/status/alarm	①②
262	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
270	AHU #17	N	start/stop/status/alarm	①②③
271			return air temp	④
272			return air humidity	⑤
273			leaving HRC/PHC temp/alarm	④
274			cold deck temp/reset/alarm	④⑥
275			hot deck temp/reset/alarm	④⑥
276			cold deck humidity/alarm	⑤
277			smoke detector alarm	⑦
278			freezestat alarm	⑧
279			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
280			open outside air damper	⑪
281			open SF inlet vane	⑪
282			close return air damper	⑪
283	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
284	RF-17		start/stop/status/alarm	①②
285			open relief air damper	⑪
286	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
290	AHU-18	O	start/stop/status/alarm	① ② ③
291			return air temp	④
292			return air humidity	⑤
293			leaving HRC/PHC temp/alarm	④
294			cold deck temp/reset/alarm	④ ⑥
295			hot deck temp/reset/alarm	④ ⑥
296			cold deck humidity/alarm	⑤
297			smoke detector alarm	⑦
298			freezestat alarm	⑧
299			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
300			open outside air damper	⑪
301			open SF inlet vane	⑪
302			close return air damper	⑪
303	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
304	RF-18		start/stop/status/alarm	① ②
305			open relief air damper	⑪
306	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
320	AHU #19	P	start/stop/status/alarm	①②③
321			return air temp	④
322			return air humidity	⑤
323			leaving HRC/PHC temp/alarm	④
324			cold deck temp/reset/alarm	④⑥
325			hot deck temp/reset/alarm	④⑥
326			cold deck humidity/alarm	⑤
327			smoke detector alarm	⑦
328			freezestat alarm	⑧
329			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
330			open outside air damper	⑪
331			open SF inlet vane	⑪
332			close return air damper	⑪
333	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
334	RF-19		start/stop/status/alarm	①②
335			open relief air damper	⑪
336	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
340	AHU-20	Q	start/stop/status/alarm	① ② ③
			return air temp	④
341			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
342			cold deck temp/reset/alarm	④ ⑥
343			hot deck temp/reset/alarm	④ ⑥
344			cold deck humidity/alarm	⑤
345			smoke detector alarm	⑦
346			freezestat alarm	⑧
347			prefilter diff. pressure alarm	⑨
348			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
349			open outside air damper	⑪
			open SF inlet vane	⑪
350			close return air damper	⑪
351	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
352	RF-20		start/stop/status/alarm	① ②
353	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
360	AHU-21	R	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
361			smoke detector alarm	⑦
362			freezestat alarm	⑧
363			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
364			open outside air damper	⑪
365			open SF inlet vane	⑪
366			close return air damper	⑪
367			mixed air temp alarm	④
368	↓		leaving cooling coil temp/alarm/reset	④⑥
369	RF-21		start/stop/status/alarm	①②
370			open relief air damper	⑪
371	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
380	AHU #22	S	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
381			smoke detector alarm	⑦
382			freezestat alarm	⑧
383			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
384			open outside air damper	⑪
385			open SF inlet vane	⑪
386			close return air damper	⑪
387			mixed air temp alarm	④
388			leaving cooling coil temp/alarm/reset	④⑥
389	RF-22		start/stop/status/alarm	①②
390			open relief air damper	⑪
391			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
400	AHU-23	T	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
401			smoke detector alarm	⑦
402			freezestat alarm	⑧
403			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
404			open outside air damper	⑪
405			open SF inlet vane	⑪
406			close return air damper	⑪
407			mixed air temp alarm	④
408	↓		leaving cooling coil temp/alarm/reset	④ ⑥
409	RF-23		start/stop/status/alarm	① ②
410			open relief air damper	⑪
411	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
420	AHU#24	4	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
421			smoke detector alarm	⑦
422			freezestat alarm	⑧
423			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
424			open outside air damper	⑪
425			open SF inlet vane	⑪
426			close return air damper	⑪
427			mixed air temp alarm	④
428	↓		leaving cooling coil temp/alarm/reset	④⑥
429	RF-24		start/stop/status/alarm	①②
430			open relief air damper	⑪
431	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
440	AHU-25	V	start/stop/status/alarm	① ② ③
	↓	↓	return air temp	④
441			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
442			cold deck temp/reset/alarm	④ ⑥
443			hot deck temp/reset/alarm	④ ⑥
444			cold deck humidity/alarm	⑤
445			smoke detector alarm	⑦
446			freezestat alarm	⑧
447			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
448			open outside air damper	⑪
			open SF inlet vane	⑪
449			close return air damper	⑪
450	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
451	RF-25		start/stop/status/alarm	① ②
452	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
460	AHU-26	ω	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
461	AHU-26	ω	smoke detector alarm	⑦
			freezestat alarm	⑧
462	AHU-26	ω	prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
463	AHU-26	ω	leaving cooling coil temp/alarm	④
			start/stop/status/alarm	①②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
470	AHU-27	X	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
471			smoke detector alarm	⑦
472			freezestat alarm	⑧
473			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
474			open outside air damper	⑪
475			open SF inlet vane	⑪
476			close return air damper	⑪
477			mixed air temp alarm	④
478	↓		leaving cooling coil temp/alarm/reset	④⑥
479	RF-27		start/stop/status/alarm	①②
480			open relief air damper	⑪
481	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
490	AHU-28	Y	start/stop/status/alarm	①②③
491			return air temp	④
492			return air humidity	⑤
493			leaving HRC/PHC temp/alarm	④
494			cold deck temp/reset/alarm	④⑥
495			hot deck temp/reset/alarm	④⑥
496			cold deck humidity/alarm	⑤
497			smoke detector alarm	⑦
498			freezestat alarm	⑧
499			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
500			open outside air damper	⑪
501			open SF inlet vane	⑪
502			close return air damper	⑪
503	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
504	RF-28		start/stop/status/alarm	①②
505			open relief air damper	⑪
506	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
510	AHU #29	2	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
511			smoke detector alarm	⑦
512			freezestat alarm	⑧
513			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
514			open outside air damper	⑪
515			open SF inlet vane	⑪
516			close return air damper	⑪
517			mixed air temp alarm	④
518	↓		leaving cooling coil temp/alarm/reset	④ ⑥
519	RF-29		start/stop/status/alarm	① ②
520			open relief air damper	⑪
521	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
530	AHU-30	AA	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
531			smoke detector alarm	⑦
532			freezestat alarm	⑧
533			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
534			open outside air damper	⑪
535			open SF inlet vane	⑪
536			close return air damper	⑪
537			mixed air temp alarm	④
538	↓		leaving cooling coil temp/alarm/reset	④ ⑥
539	RF-30		start/stop/status/alarm	① ②
540			open relief air damper	⑪
541	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
550	AHU-31	AB	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
551			smoke detector alarm	⑦
552			freezestat alarm	⑧
553			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
554			open outside air damper	⑪
555			open SF inlet vane	⑪
556			close return air damper	⑪
557			mixed air temp alarm	④
558	↓		leaving cooling coil temp/alarm/reset	④ ⑥
559	AHU-31		start/stop/status/alarm	① ②
560			open relief air damper	⑪
561	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
570	AHU-32	AC	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
571			smoke detector alarm	⑦
572			freezestat alarm	⑧
573			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
574			open outside air damper	⑪
575			open SF inlet vane	⑪
576			close return air damper	⑪
577			mixed air temp alarm	④
578	↓		leaving cooling coil temp/alarm/reset	④⑥
579	RF-32		start/stop/status/alarm	①②
580			open relief air damper	⑪
581	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
590	AHU-33	AD	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
591			leaving HRC/PHC temp/alarm	④
592			cold deck temp/reset/alarm	④ ⑥
593			hot deck temp/reset/alarm	④ ⑥
594			cold deck humidity/alarm	⑤
595			smoke detector alarm	⑦
596			freezestat alarm	⑧
597	↓		prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
598	EF-33		start/stop/status/alarm	① ②
	↓		open relief air damper	⑪
			open RF inlet vane	⑪
599	Pump 160		on/off/status/alarm	① ②
600	↓	↓	water flow alarm	⑩

Discrete Point	Equipment	Graphic	Function	Sensor
610	AHU-34	AE	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
611			smoke detector alarm	⑦
612			freezestat alarm	⑧
613			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
614			open outside air damper	⑪
615			open SF inlet vane	⑪
616			close return air damper	⑪
617			mixed air temp alarm	④
618	↓		leaving cooling coil temp/alarm/reset	④ ⑥
619	RF-34		start/stop/status/alarm	① ②
620			open relief air damper	⑪
621	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
630	AHU #35	AF	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
631			smoke detector alarm	⑦
632			freezestat alarm	⑧
633			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
634			open outside air damper	⑪
635			open SF inlet vane	⑪
636			close return air damper	⑪
637			mixed air temp alarm	④
638	↓		leaving cooling coil temp/alarm/reset	④⑥
639	RF-35		start/stop/status/alarm	①②
640			open relief air damper	⑪
641	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
650	AHU-36	AG	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
651			smoke detector alarm	⑦
652			freezestat alarm	⑧
653			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
654			open outside air damper	⑪
655			open SF inlet vane	⑪
656			close return air damper	⑪
657			mixed air temp alarm	④
658	↓		leaving cooling coil temp/alarm/reset	④⑥
659	RF-36		start/stop/status/alarm	①②
660			open relief air damper	⑪
661	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
670	AHU #37	AH	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
671			smoke detector alarm	⑦
672			freezestat alarm	⑧
673			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
674			open outside air damper	⑪
675			open SF inlet vane	⑪
676			close return air damper	⑪
677			mixed air temp alarm	④
678	↓		leaving cooling coil temp/alarm/reset	④ ⑥
679	RF-37		start/stop/status/alarm	① ②
680			open relief air damper	⑪
681	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
690	AHU-38	AI	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
691			smoke detector alarm	⑦
692			freezestat alarm	⑧
693			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
694			open outside air damper	⑪
695			open SF inlet vane	⑪
696			close return air damper	⑪
697			mixed air temp alarm	④
698	↓		leaving cooling coil temp/alarm/reset	④⑥
699	RF-38		start/stop/status/alarm	①②
700			open relief air damper	⑪
701	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
710	AHU-39	AJ	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
711			smoke detector alarm	⑦
712			freezestat alarm	⑧
713			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
714			open outside air damper	⑪
715			open SF inlet vane	⑪
716			close return air damper	⑪
717			mixed air temp alarm	④
718	↓		leaving cooling coil temp/alarm/reset	④⑥
719	RF-39		start/stop/status/alarm	①②
720			open relief air damper	⑪
721	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
730	AHU-40	AK	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
731			smoke detector alarm	⑦
732			freezestat alarm	⑧
733			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
734			open outside air damper	⑪
735			open SF inlet vane	⑪
736			close return air damper	⑪
737			mixed air temp alarm	④
738	↓		leaving cooling coil temp/alarm/reset	④⑥
739	RF-40		start/stop/status/alarm	①②
740			open relief air damper	⑪
741	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
750	AHU-41	AL	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
751			smoke detector alarm	⑦
752			freezestat alarm	⑧
753			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
754			open outside air damper	⑪
755			open SF inlet vane	⑪
756			close return air damper	⑪
757			mixed air temp alarm	④
758	↓		leaving cooling coil temp/alarm/reset	④⑥
759	RF-41		start/stop/status/alarm	①②
760			open relief air damper	⑪
761	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
770	AHU-42	AM	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
771			cold deck humidity/alarm	⑤
772			smoke detector alarm	⑦
773			freezestat alarm	⑧
774			prefilter diff. pressure alarm	⑨
775			80% filter diff. pressure alarm	⑨
776			99.5% filter diff. pressure alarm	⑨
777			open outside air damper	⑪
			open SF inlet vane	⑪
778			close return air damper	⑪
779			mixed air temp alarm	④
780	↓		leaving cooling coil temp/alarm/reset	④ ⑥
781	RF-42		start/stop/status/alarm	① ②
782	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
790	AHU-43	AN	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
791			smoke detector alarm	⑦
792			freezestat alarm	⑧
793			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
794	↓	↓	leaving cooling coil temp/alarm	④
			start/stop/status/alarm	①②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
800	AHU-44	AO	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
801			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
802			smoke detector alarm	⑦
803			freezestat alarm	⑧
804			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
805	↓		leaving cooling coil temp/alarm/reset	④ ⑥
806	EF-44	↓	start/stop/status/alarm	① ②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
810	AHU-45	AP	start/stop/status/alarm	①②③
811			return air temp	④
812			return air humidity	⑤
813			leaving HRC/PHC temp/alarm	④
814			cold deck temp/reset/alarm	④⑥
815			hot deck temp/reset/alarm	④⑥
816			cold deck humidity/alarm	⑤
817			smoke detector alarm	⑦
818			freezestat alarm	⑧
819			prefilter diff. pressure alarm	⑨
820			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
821			open outside air damper	⑪
822			open SF inlet vane	⑪
823			close return air damper	⑪
824	↓		mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
825	RF-45		start/stop/status/alarm	①②
826			open relief air damper	⑪
827	↓	↓	open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
830	AHU-46	AQ	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
831	AHU-46		smoke detector alarm	⑦
832	AHU-46		freezestat alarm	⑧
833	AHU-46		prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
834	AHU-46	↓	leaving cooling coil temp/alarm/reset	④⑥
			start/stop/status/alarm	①②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
840	HV-1	AR	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
841			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
842			smoke detector alarm	⑦
843			freezestat alarm	⑧
844	↓		prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
845	EF-46	↓	start/stop/status/alarm	①②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
850	HV-2	AS	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
851	HV-2	AS	leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
852	HV-2	AS	smoke detector alarm	⑦
853	HV-2	AS	freezestat alarm	⑧
854	HV-2	AS	prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
855	EF-47	AS	start/stop/status/alarm	①②
			open relief air damper	⑪
			open RF inlet vane	⑪
856	EF-43	AS	start/stop/status/alarm	①②
857	EF.-124	AS	start/stop/status/alarm	①②

Discrete Point	Equipment	Graphic	Function	Sensor
860	HV-3	AT	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
861			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
862			smoke detector alarm	⑦
863			freezestat alarm	⑧
864			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
865			open outside air damper	⑪
			open SF inlet vane	⑪
866	↓		close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
867	RF-48		start/stop/status/alarm	①②
868	↓	↓	open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
870	HV-4	AU	start/stop/status/alarm	① ② ③
			return air temp	④
			return air humidity	⑤
871			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④ ⑥
			hot deck temp/reset/alarm	④ ⑥
			cold deck humidity/alarm	⑤
872			smoke detector alarm	⑦
873			freezestat alarm	⑧
874	↓		prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
875	EF-49	↓	start/stop/status/alarm	① ②
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
880	HV-5	AV	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
881			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
882			smoke detector alarm	⑦
883			freezestat alarm	⑧
884			prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
885			open outside air damper	⑪
			open SF inlet vane	⑪
886	↓		close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
887	RF-26	↓	start/stop/status/alarm	①②
888	↓		open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
890	HV-6	AW	start/stop/status/alarm	①②③
			return air temp	④
			return air humidity	⑤
891			leaving HRC/PHC temp/alarm	④
			cold deck temp/reset/alarm	④⑥
			hot deck temp/reset/alarm	④⑥
			cold deck humidity/alarm	⑤
892			smoke detector alarm	⑦
893			freezestat alarm	⑧
894	↓		prefilter diff. pressure alarm	⑨
			80% filter diff. pressure alarm	⑨
			99.5% filter diff. pressure alarm	⑨
			open outside air damper	⑪
			open SF inlet vane	⑪
			close return air damper	⑪
			mixed air temp alarm	④
			leaving cooling coil temp/alarm	④
895	HV-7	↓	start/stop/status/alarm	①②③
			open relief air damper	⑪
			open RF inlet vane	⑪

Discrete Point	Equipment	Graphic	Function	Sensor
900	Exhaust fan # 93	AX	on/off/status/alarm	① ②
901	94			
902	95			
903	96			
904	97			
905	98			
906	99			
907	101			
908	102			
909	105			
910	106			
911	107			
912	108			
913	109			
914	110			
915	112			
916	113			
917	116			
918	117			
919	118			
920	119			
921	122			
922	125			
923	132			
924	133			

Discrete Point	Equipment	Graphic	Function	Sensor
925	Exhaust fan # 136	AX	on/off/status/alarm	① ②
926	145			
927	146			
928	148			
929	104			
930	147			
931	134			
932	135			

Discrete Point	Equipment	Graphic	Function	Sensor
940	Supply Fan # 89	AY	start / stop / status / alarm	① ②
941	91			
942	92			
943	93			
944	128			
945	149			

Discrete Point	Equipment		Graphic	Function	Sensor
950	Smoke damper #	1	AZ	close damper/status	(11) (12)
951		2			
952		3			
953		4			
954		5			
955		6			
956		7			
957		8			
958		9			
959		10			
960		11			
961		12			
962		13			
963		14			
964		15			
965		16			
966		17			
967		18			
968		19			
969		20			
970		21			
971		22			
972		23			
973		24			
974		25			

Discrete Point	Equipment	Graphic	Function	Sensor
975	Smoke damper # 26	AZ	close damper/status	(11) (12)
976	27			
977	28			
978	29			
979	30			
980	31			
981	32			
982	33			
983	34			
984	35			
985	36			
986	37			
987	38			
988	39			
989	40			
990	41			
991	42			
992	43			

Discrete Point	Equipment	Graphic	Function	Sensor
1000	Oxygen System	BA	high pressure alarm	(14)
1001			low pressure alarm	(14)
1002			Reserve in use	(14)
1003			low reserve pressure	(14)
1004			low liquid tank level	(15)
1005	Nitrous Oxide		high pressure alarm	(14)
1006			low pressure alarm	(14)
1007			reserve in use	(14)
1008	Nitrogen		high pressure alarm	(14)
1009			low pressure alarm	(14)
1010			reserve in use	(14)
1011	Medical Vacuum		Excessive vacuum alarm	(16)
1012			insufficient vacuum alarm	(16)
1013	Anesthesia Vacuum		Excessive vacuum alarm	(16)
1014			insufficient vacuum	(16)
1015	Medical Air		high pressure alarm	(14)
1016			low pressure alarm	(14)
1017	Dental Air		high pressure alarm	(14)
1018			low pressure alarm	(14)

Discrete Point	Equipment	Graphic	Function	Sensor
1020	Potable Water System	BB	low pressure alarm	(14)
1021	Tank WH-1		high water temp alarm	(17)
1022	Tank WH-2		↓	(17)
1023	Tank WH-3			(17)
1024	PWH - Recirc		flow alarm	(10)
1025	Kitchen PWH Recirc		flow alarm	(10)
1026	PWH system		measure water flow	(18)
1027	PWH system	↓	measure steam flow	(19)

Discrete Point	Equipment	Graphic	Function	Sensor
1030	Pump # 116	BC	on/off/status/alarm	(1) (2) (3)
1031	# 117			
1032	# 118			
1033	# 119			
1034	# 138			
1035	# 139			
1036	# 140			
1037	# 141			
1038	# 156			1 2
1039	# 157			1 2
1040	RM-1			(11)
1041			chill water flow alarm	(10)
1042			condenser water flow alarm	(10)
1043			chill water outlet temp/reset/alarm	(17) (20)
1044			chill water inlet temp	(17)
1045			condenser water outlet temp	(17)
1046			condenser water inlet temp	(17)
1047	RM-2		on/off/status/alarm	(11)
1048			chill water flow alarm	(10)
1049			condenser water flow alarm	(10)
1050			chill water outlet temp/reset/alarm	(17) (20)
1051			chill water inlet temp	(17)
1052			condenser water outlet temp	(17)
1053			condenser water inlet temp	(17)
1054	RM-3		on/OFF/status/alarm	(11)

Discrete Point	Equipment	Graphic	Function	Sensor
1055	RM-3	BC	chill water flow alarm	(10)
1056			condenser water flow alarm	(10)
1057			chill water inlet temp	(17)
1058			chill water oullet temp/alarm/reset	(17) (20)
1059			condenser water inlet temp	(17)
1060			condenser water outlet temp	(17)
1061	CT-1		ENERGISE control circuit	(11)
1062			fan status	(2)
1063			low water level alarm	(15)
1064			low water temp alarm	(17)
1065			vibration alarm	(21)
1066	CT-2		energize control circuit	(11)
1067			fan status	(2)
1068			low water level alarm	(15)
1069			low water temp alarm.	(17)
1070			vibration alarm	(21)

Discrete Point	Equipment	Graphic	Function	Sensor
1080	Pump # 142	BD	status	②
1081	143			
1082	144			
1083	145			
1084	146			
1085	150			
1086	151			
1087	152			
1088	153			
1089	154			
1090	155			
1091	114			
1092	115			
1093	Converter EX-5		high water temp alarm	⑰
1094	EX-6			
1095	EX-7			
1096				

Discrete Point	Equipment	Graphic	Function	Sensor
1100	Diesel #1	BE	status	(22)
1101			low lube oil pressure alarm	(23)
1102			high cooling water temp alarm	(17)
1103			over speed alarm	(23)
1104			over crank alarm	(23)
1105			radiator fan status	(2)
1106			low cooling water temp alarm	(17)
1107	Diesel #2		status	(22)
1108			low lube oil pressure alarm	(23)
1109			high cooling water temp alarm	(17)
1110			overspeed alarm	(23)
1111			overcrank alarm	(23)
1112			radiator fan status	(2)
1113			low cooling water temp alarm	(17)
1114	Diesel # 3		status	(22)
1115			low lube oil pressure alarm	(23)
1116			high cooling water temp alarm	(17)
1117			overspeed alarm	(23)
1118			over crank alarm	(23)
1119			radiator fan status	(2)
1120			low cooling water temp alarm	(17)
1121	Fuel oil overflow tank		high level alarm	(15)

Discrete Point	Equipment	Graphic	Function	Sensor
1130	Steam system	BF	low header pressure alarm	(14)
1131	Boiler #1		steam flow	(19)
1132	#1		oil flow	(24)
1133	#2		steam flow	(19)
1134	#2		oil flow	(24)
1140	Oil tank #1	BG	level (gallons)	(25)
1141	#2			(25)
1142	#3			(25)
1143	#4			(25)
1150	Diesel Pump	BH	status	(23)
1151			trouble	(23)
1152			controller off	(23)
1153			controller manual	(23)
1154	Electric Pump		power failure	(11)

Discrete Point	Equipment		Graphic	Function	Sensor
1160	ELEVATOR # 1		BT	Floor position indication	(26)
1161		2			
1162		4			
1163		5			
1164		7			
1165		8			
1166		9			
1167		10			
1168		11			
1169		12			
1170		13			
1171		14			
1172		15			
1173		16			

Discrete Point	Equipment	Graphic	Function	Sensor
1180	Frozen stores	BJ	high temperature alarm	(4)
1181	Meat thaw			
1182	Refrig. Stores			
1183	issue refrig.			
1184	produce refrig.			
1185	dairy refrig.			
1186	Blood bank #1			
1187	#2			
1188	#3			
1189	#4			
1190	Body refrig			
1191	Room 5117 Freezer			

Discrete Point	Equipment	Graphic	Function	Sensor
1200	Camera #1	BK	wiper on/off	(11)
1201	#2			
1202	#3			
1203	#4			
1204	#1		on/off/status	
1205	#2			
1206	#3			
1207	#4			
1208	#5			
1209	#6			
1210	#7			
1211	#8			
1212				

Discrete Point	Equipment	Graphic	Function	Sensor
1220	ICU	BL	Code Blue alarm	(27)
1221	CCU			(27)
1222	Recovery			(27)
1223	Pharmacy		Panic	(32)
1224	Narcotic Vault		Motion	(28)
1225	Lobby		PA system on/off	(11)
1226	Lighting Panel YL1		status	(30)
1227	YL2		status	(30)
1228	YLR		on/off/status	(30)
1229	1L4			(29) (30)
1230	2L2			(29) (30)
1231	2L4			(29) (30)
1232	1L5			(29) (30)
1233	Watt-hour meter		power level	(31)
1234	outside air		temperature	(4)
1235			humidity	(5)

Discrete Point	Equipment	Graphic	Function	Sensor
1240	Lift station	BM	Pump #1 status	(2)
1241			Pump #2 status	(2)
1242			High wet well level alarm	(15)
1243			low air pressure alarm	(14)
1244			power failure alarm	(11)

Discrete Point	Equipment	Graphic	Function	Sensor
1250-1267	BFAEC	BN	See Fire alarm device annunciator	(32)
1270-1285	1FATCA	BO	table on specification pages	
1290-1297	1FATCB	BP	13942x-9 thru -19	
1300-1310	1FATCC1	BQ		
1320-1331	1FATCD	BR		
1340-1344	1FATCF	BS		
1350-1359	1FATCG	BT		
1360-1363	1FATCH	BU		
1370-1375	2FATCA	BV		
1380-1386	2FATCB	BW		
1390-1396	2FATCC1	BX		
1400-1404	2FATCC2	BY		
1410-1417	2FATCD	BZ		
1420-1428	2FATCG	CA		
1430-1439	2FATCH	CB		
1440-1447	3FATCG	CC		
1450-1457	3FATCH	CD		
1460-1471	4FATCG	CE		
1500-1574	Smoke doors	CF	Close doors. See pages ~~16945~~ 16721X-32 for door numbers	(11)

Discrete Point	Equipment	Graphic	Function	Sensor
1600-1615	Intrusion Device Basement	CG	Alarm - see specification	(13)
1620-1678	1st	CH	page 13942X-27 thru-29 for	
1680-1684	2nd	CT	schedule	
1690-1707	3rd	CJ		
1710-1713	4th	CK		