Lankford Fendler + associates

SHOP DRAWING REVIEW

PROJECT NO.: 22.7119

PROJECT NAME: Kiewit Westlake KIE Water

RE: 230900-03.0 - HVAC Controls PD

☐ Reviewed

☐ Recommend Rejected

☒ Recommend Furnish As Corrected

☐ Recommend Revise and Resubmit

☐ Recommend Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents prepared by others. Corrections or comments made on shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations or comments on shop drawings reviewed by Engineer of Record. Approval of a specific item shall not include approval of an assembly of which the item is a component. The contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

Lankford | Fendler + associates

Date: 3/24/23

By: Carly

The following items were observed and recorded not to be in compliance with the bid plans and specifications:

VERFIFY ALL VAV AND FAN POWERED BOXES IN AREAS A & B HAVE BEEN COORDINATED TO RECEIVE NEW TEMPERATURE CONTROLS.

1730 Walnut Street | Kansas City MO 64108
Phone 816.221.1411 | Fax 816.221.1429 | lankfordfendler.com

Pacific Builders, Inc.
7950 Legacy Dr, Suite 150
Plano, Texas 75024
P: (972) 866-8080

Project: 33021 Kiewit Westlake - Phase II
2050 Roanoke Rd
Westlake, Texas 76262

Submittal #230000-3.0 - HVAC Controls Submittal

Revision	0	**Submittal Manager**	Katie Reed (Pacific Builders, Inc.)
Status	Open	**Date Created**	Feb 15, 2023
Issue Date	Feb 15, 2023	**Spec Section**	
Responsible Contractor	Metro Mechanical	**Received From**	John Spradling (Metro Mechanical)
Received Date		**Submit By**	
Final Due Date	Mar 22, 2023	**Lead Time**	
		Cost Code	
Location		**Type**	Product Information

Approvers Bryce Green (Pacific Builders, Inc.), Sarah Godfrey (HOK), Katie Lopez (HOK), Stacey Price (HOK), Melissa Weber (HOK)

Ball in Court Sarah Godfrey (HOK), Katie Lopez (HOK), Stacey Price (HOK), Melissa Weber (HOK)

Distribution Nathan Heckt (Pacific Builders, Inc.), Keith Baker (Pacific Builders, Inc.), Bryce Green (Pacific Builders, Inc.)

Description

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					
John Spradling	Feb 15, 2023	Feb 22, 2023	Mar 15, 2023	Submitted	
Bryce Green	Mar 15, 2023	Feb 24, 2023	Mar 15, 2023	Approved	230000-3 - HVAC Controls Submittal - For Review.pdf (Current)
Sarah Godfrey	Mar 15, 2023	Mar 22, 2023		Pending	
Katie Lopez	Mar 15, 2023	Mar 22, 2023		Pending	
Stacey Price	Mar 15, 2023	Mar 22, 2023		Pending	
Melissa Weber	Mar 15, 2023	Mar 22, 2023		Pending	

HOK
03/15/2023
RECEIVED

PACIFIC BUILDERS

Job Name: Kiewit Westlake - Phase II
Job #: 33021R
Submittal #: 230000-3 - HVAC Controls Submittal

PACIFIC BUILDERS

- [x] NO EXCEPTIONS TAKEN
- [ ] EXCEPTION AS NOTED
- [ ] REVISE & RESUBMIT
- [ ] REJECTED
- [ ] ARCHITECT/ENGINEER VERIFY
- [ ] _____

Review is only for general conformance with the Design Concept of the project and the general compliance with the information given in the contract documents. Subcontractor is responsible for conformance with all requirements of the plans and specifications including, but not limited to, dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

BY Bryce Green DATE 3/15/23

7950 Legacy Dr,
Suite 150
Plano, TX 75024

T: 972.866.8080
F: 972.866.9090

pbidfw.com

ARCHITECT COMMENTS:

Hellmuth, Obata & Kassabaum, Inc.
ARCHITECTURE, ENGINEERING, PLANNING, INTERIORS, GRAPHICS, CONSULTING

A - Approved **B** - Approved as Noted	Proceed with the work covered by this Submittal provided it complies with the Contract Documents. Comments and corrections do not authorize changes to the Contract Documents.
C - Revise as Noted and Resubmit **D** - Rejected	Do not proceed with the work covered by this Submittal. Limit corrections in resubmissions to items noted in this Submittal.
E - Reviewed for Information **F** - Reviewed for Information as Noted	This Submittal is for information only. Resubmit only if noted in this Submittal.

B Approved as Noted

Review of this Submittal is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The review is not for determining the accuracy or completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, which remains the Contractor's responsibility. Review shall not constitute approval of safety precautions, or of construction means, methods, and techniques, sequences or procedures.

Approval of a specific item shall not indicate approval of an assembly of which the item is a component. Approval of this Submittal does not relieve the Contractor of its responsibility to comply with the Contract Documents.

Reviewed By:

sarah.godfrey 3/27/2023

Submittal File:

230000-3.0 - HVAC Controls PD_LFA_HOK.pdf

Kiewit Westlake Office TI
2050 Roanoke Road
WESTLAKE, TX 76262

Customer Contact

METRO MECHANICAL INC
430 S BRYAN BELTLINE
MESQUITE TX 75149 USA

TRANE PROJECT TEAM

SALESPERSON:	**PROJECT MANAGER:**	**DESIGNED BY:**
Zach Rutledge	Michael Drury	Ben Nyamaah

TRANE®

DRAWINGS ARE BASED ON CONSTRUCTION DOCUMENTS
DATED 12-2-2021 ADDENDUM 1

TITLE PAGE				
CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah	2	-RECORD DRAWINGS	7/21/2022	BEN
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN
Fort Worth	PROJECT: Kiewit Westlake Office TI			
4200 N. Sylvania Avenue				
FORT WORTH, TX 76137	2050 Roanoke Road			
817-838-1300	WESTLAKE TX 76262			
FILE: Kiewitt Westlake Office_rev1.vsdx			DWG 1 OF 41	

INDEX OF CONTROL SYSTEM DRAWINGS				
DWG #	DRAWING TITLE	REVISION LEVEL	REVISION DATE	COMMENTS
1	TITLE PAGE	2	7/21/2022	INCLUDES LRT 2050 AND TI
2	DRAWING INDEX	1	3/1/2022	
3	LEGEND	1	3/1/2022	
4	WIRING NOTES	1	3/1/2022	
5	RISER	2	7/28/2022	INCLUDES LRT 2050 AND TI
6	HVAC LEVEL 1 - AREA A	1	3/1/2022	
7	HVAC LEVEL 1 - AREA B	1	3/1/2022	
8	HVAC LEVEL 1 - AREA C	1	3/1/2022	
9	HVAC LEVEL 2 - AREA A	1	3/1/2022	
10	HVAC LEVEL 2 - AREA B	1	3/1/2022	
11	HVAC LEVEL 2 - AREA C	1	3/1/2022	
12	ADDRESS SCHEDULE (1)	1	3/1/2022	
13	ADDRESS SCHEDULE (2)			
14	ADDRESS SCHEDULE (3)			
15	ADDRESS SCHEDULE (4)			
16	ADDRESS SCHEDULE (5)			
17	ENCLOSURE SCHEDULE	1	3/1/2022	
18	ENCLOSURE GRAPHICS	1	3/1/2022	
19	FIRST FLOOR (SC-1) - CONTROLLER	1	3/1/2022	
20	SECOND FLOOR (SC-2) - CONTROLLER	1	3/1/2022	
21	CARRIER INTERGRATION PC - 1 SEQUENCE	1	3/1/2022	
22	CARRIER INTERGRATION PC - 1 CONTROLLER	1	3/1/2022	
23	ELEC SC 2ND FL B SC - 3 CONTROLLER			
24	FAN POWERED BOXES - FLOW	1	3/1/2022	
25	FAN POWERED BOXES - SEQUENCE	1	3/1/2022	
26	FAN POWERED BOXES - S210 CONTROLLER	1	3/1/2022	
27	VAV BOXES - FLOW	1	3/1/2022	
28	VAV BOXES - SEQUENCE	1	3/1/2022	
29	VAV BOXES - S210 CONTROLLER	1	3/1/2022	
30	FPB 1 ~ 22 S210 - 18 FLOW			
31	FPB 1 ~ 22 S210 - 18 SEQUENCE			
32	FPB 1 ~ 22 S210 - 18 CONTROLLER			
33	VAVRH S210 - 19 FLOW			
34	VAVRH S210 - 19 SEQUENCE			
35	VAVRH S210 - 19 CONTROLLER			
36	VAV 1 ~ 33 S210 - 20 FLOW			
37	VAV 1 ~ 33 S210 - 20 SEQUENCE			
38	VAV 1 ~ 33 S210 - 20 CONTROLLER			
41	MINI SPLIT BRG - 1 CONTROLLER			
42	DETAIL SHEET			
43	BILL OF MATERIALS	1	3/1/2022	

DRAWING INDEX

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

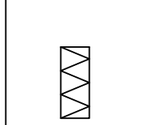
Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

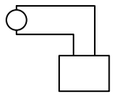
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FLOW SHAPE SYMBOLS


AIR FILTER


FAN CFM SENSOR


FIX PLATE HEAT-X

COIL


DUCT DIVIDER


FUEL FIRED HEAT-X


ELECTRIC HEATER


ALARM


CURRENT SENSOR

POWER METER


ACTUATOR


DAMPER


ROUND DAMPER


TRAQ DAMPER


OUTDOOR UNIT


OUTDOOR UNIT


FAN


PLENUM FAN

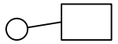
PLENUM FAN ARRAY


PROPELLOR FAN


EXHAUST FAN


SUPPLY FAN


LIQUID FLOW SENSOR


FLOAT SWITCH


FLOW SWITCH


ULTRASONIC SENSOR


OVERFLOW ALARM

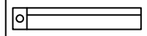

INDOOR AIR QUALITY


SMOKE DETECTOR


HUMIDISTAT


HUMIDITY SENSOR


TEMP/HUMID SENSOR


WALL HEATER


OCCUPANCY SENSOR


VARIABLE FREQ DRIVE

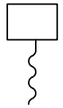

MOTOR STARTER


DISCONNECT


SENSOR MTG CLIP


SPACE TEMP SENSOR

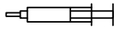

WIRELESS SPACE TEMP SENSOR


AVERAGING TEMPERATURE SENSOR


TEMPERATURE SENSOR


FROSTSTAT


THERMOWELL

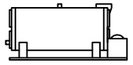

THERMAL PASTE


WALL THERMOSTAT

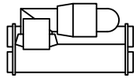

SEQUENCER


DC POWER SUPPLY


TRANSFORMER


INDUSTRIAL BOILER

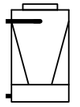

BOILER

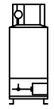

CENTRAVAC


INTELLIPAK CHILLER


COAXIAL COIL

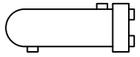

REVERSING VALVE

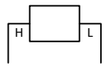

COOLING TOWER


GLYCOL MAKEUP


ICE STORAGE


HEAT EXHANGER


HW CONVERTER



DIFFERENTIAL PRESSURE

DUCT STATIC

STATIC TIP


DUCT PRESS PORTAL


FLUID PRESS SENSOR


ID PRESS PORTAL


OD PRESS PORTAL

PRESSURE GAUGE

PRESS TRANSDUCER

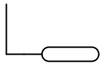

SYPHON LOOP

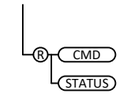

INLINE PUMP


PUMP

CABLE RELAY

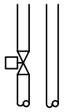

SOCKET RELAY


UNIVERSAL POINT



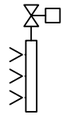
CURRENT SENS W/CMD

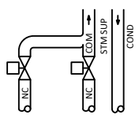
WALL SWITCH


COIL VALVE


BALL / GLOBE VALVE


BUTTERFLY VALVE


DUCT HUMIDIFIER



1/3 - 2/3 STEAM VALVE

LEGEND

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

TRANE®

Fort Worth
4200 N. Sylvania Avenue
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PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

WIRING NOTES

ELECTRICAL CONTRACTOR FOR TRANE:

1. REFER TO DEVICE INSTALLATION MANUALS FOR SPECIFIC WIRING REQUIREMENTS.
2. FIELD WIRING MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, STATE AND LOCAL BUILDING CODES, AND APPLICABLE SECTIONS OF PROJECT SPECIFICATION.
3. TAG ALL CONTROL WIRING AT EACH END OF THE CABLE OR WIRE PER TAGS SHOWN IN ATTACHED DRAWINGS.
4. AVOID OVER TIGHTENING CABLE TIES AND OTHER FORMS OF CABLE WRAPS. THIS CAN DAMAGE THE WIRES INSIDE THE CABLES.
5. DO NOT CABLE TIE TO INSULATED WATER, STEAM OR OTHER LINES.
6. IN OPEN PLENUMS, DO NOT RUN NEAR LIGHTING BALLASTS.
7. ALL PANELS AND FIELD DEVICES LISTED IN THIS DOCUMENT ARE TO BE INSTALLED BY CONTROL ELECTRICAL SUBCONTRACTOR UNLESS OTHERWISE NOTED ON DRAWINGS.
8. MOUNT ALL ROOM SENSORS AND SWITCHES AS SHOWN ON THE CONSTRUCTION DOCUMENTS, UNLESS OTHERWISE DIRECTED IN WRITING BY THE OWNER AND/ OR ENGINEER. IF NO DIRECTION IS PROVIDED IN THE CONSTRUCTION DOCUMENTS, THEN MOUNT AT 4FT (1.2M) ABOVE FINISHED FLOOR.
9. FLEXIBLE CONDUIT IS NOT TO EXCEED 24" IN LENGTH.
10. CONTROL PANELS ARE NOT TO BE USED AS JUNCTION BOXES OR RACEWAYS. WIRING THAT DOES NOT TERMINATE IN A CONTROL PANEL IS NOT TO BE RUN WITHIN THE PANEL.
11. BINARY INPUT LIMITS: 1000 FT (300 M).
12. 0~10 VDC ANALOG INPUT LIMITS: 300 FT (100 M).
13. 0~20 MA ANALOG INPUT LIMITS: 1000 FT (300 M).
14. VARIABLE RESISTANCE ANALOG INPUT LIMITS: 300 FT (100 M).
15. ANALOG OUTPUT LIMITS: 1000 FT (300 M).
16. BINARY OUTPUT LIMITS: 1000 FT (300 M).
17. WIRING POWER FROM THE AC OUT TERMINALS TO POWER ANALOG INPUT DEVICES WILL CAUSE IMMEDIATE CONTROLLER FAILURE IF INPUT DEVICE USES HALF-WAVE RECTIFICATION. WHEN UNSURE, USE A SEPARATE SUPPLY FOR DEVICE.

GENERAL COMMUNICATION GUIDE:

18. DO NOT RUN COMMUNICATION LINK WIRING IN THE SAME CONDUIT OR WIRE BUNDLE WITH AC-POWER WIRES (INCLUDING CONDUCTORS RUNNING FROM TRIAC-TYPE OUTPUTS). KEEP POLARITY CONSISTENT THROUGHOUT THE SITE. MAKE SURE THAT THE 24 VAC POWER SUPPLIES ARE CONSISTENT IN HOW THEY ARE GROUNDED.

    AVOID SHARING 24 VAC BETWEEN CONTROLLERS. USE ONLY ONE TYPE OF COMMUNICATION CABLE; DO NOT MIX CABLE. IF AN EXISTING JOB USED ALTERNATE CABLE, CONTINUE USING THE SAME CABLE AFTER APPROVAL FROM THE PROJECT MANAGER.
19. BACNET MS/TP COMMUNICATION CABLE MUST BE SHIELDED TWISTED PAIR, 18 AWG MINIMUM, STRANDED, TINNED COPPER CONDUCTORS. SHIELD MUST BE CONTINUOUS THROUGHOUT, ISOLATED FROM OTHER CONDUCTORS OR GROUND, AND GROUNDED AT THE SYSTEM CONTROLLER ONLY. MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 24 PICOFARADS PER FOOT. MAXIMUM DISTANCE IS 4000 FT (1372 M).

    MAXIMUM OF 60 TRANE DEVICES PER LINK BUT LESS WHEN COMBINED WITH NON-TRANE DEVICES. A TRACER BACNET TERMINATOR IS REQUIRED AT EACH END OF THE COMMUNICATION LINK. EACH TERMINATOR REQUIRES 24 VDC POWER. EXPANSION MODULE LINK LIMIT IS 656 FT (200 M). TOPOLOGY MUST BE DAISY CHAINED.
20. LONTALK (COMM 5) COMMUNICATION CABLE MUST BE LEVEL 4 UNSHIELDED, 22 AWG WITH MAXIMUM CAPACITANCE BETWEEN CONDUCTORS OF 17 PICOFARADS PER FOOT. MAXIMUM DISTANCE IS 4500 FT (1400 M). MAXIMUM DEVICES IS 60 DEVICES WITHOUT REPEATER AND 120 WITH REPEATER. ONE REPEATER PER LINK CAN BE USED FOR AN ADDITIONAL 4500 FT (1400 M), 60 DEVICES.

    CCP III LINK LIMIT IS 3500 FT (1090 M). 105 OHMS, 1%, 1/4 WATT TERMINATION RESISTORS ARE REQUIRED AT EACH END FOR LEVEL 4 WIRE AND 82 OHMS, 1%, 1/ 4 WATT AT EACH END FOR 18 AWG SHIELDED (PURPLE) WIRE. EX2 LINK LIMIT IS 1000 FT (300 M). TOPOLOGY MUST BE DAISY CHAINED.
21. COMM 3 AND COMM 4 COMMUNICATION CABLE MUST BE SHIELDED TWISTED PAIR, 18 AWG MINIMUM, STRANDED, TINNED COPPER CONDUCTORS. SHIELD MUST BE CONTINUOUS THROUGHOUT, ISOLATED FROM OTHER CONDUCTORS OR GROUND, AND GROUNDED AT BCU ONLY.

    MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 24 PICOFARADS PER FOOT. MAXIMUM DISTANCE IS 5000 FT (1715 M). UNDER CERTAIN CONDITIONS, TERMINATION RESISTORS ARE REQUIRED ON A COMM 3 COMMUNICATION LINK.
22. ETHERNET LAN COMMUNICATION CABLE MAXIMUM DISTANCE IS 295 FT (90 M) PLUS 33 FT (10 M) FOR PATCH CABLES.
23. TRANE WIRELESS COMMUNICATION TYPICAL WCI TO WCI DISTANCE IS UP TO 200 FT (60 M) WITH COMMON BUILDING OBSTRUCTIONS. WCI IS POWERED BY 24 VDC OR 24 VAC. EACH NETWORK REQUIRES 1 WCI AS A NETWORK COORDINATOR AND SUPPORTS UP TO 30 TRANE BACNET CONTROLLERS EQUIPPED WITH WCI. TRACER SC SUPPORTS UP TO 8 NETWORK COORDINATORS AND UP TO 120 TRANE BACNET CONTROLLERS. TRACER SC NETWORK COORDINATORS MAY HAVE A COMBINED IMC WIRING LENGTH OF 656 FT (200 M). REFER TO IOM FOR DETAILS.
24. MODBUS. REFER TO MANUFACTURER DOCUMENTATION FOR SPECIFIC WIRING REQUIREMENTS, TERMINATION RESISTORS, AND THE MAXIMUM NUMBER OF DEVICES SUPPORTED PER LINK. IF THIRD-PARTY PRODUCT LITERATURE IS NOT AVAILABLE, GENERAL LOW-DATA RATE GUIDELINES ARE AS FOLLOWS:

    COMMUNICATION CABLE MUST BE 2-WIRE EIA/TIA-485 BRAID OR FOIL SHIELD TWISTED PAIR WIRE, 18 AWG, AND MAXIMUM CAPACITANCE BETWEEN CONDUCTIONS OF 24 PF/FT. MAXIMUM DISTANCE IS 4000FT (1200M). MAXIMUM DEVICES IS 30 DEVICES PER LINK. WIRING MUST BE ASSEMBLED IN A DAISY-CHAIN CONFIGURATION AND 1/2 WATT 120 OHM TERMINATION RESISTOR OR TRACER BACNET TERMINATOR MAY BE USED AT EACH END OF THE COMMUNICATION LINK.
25. M-NET COMMUNICATION CABLE MUST BE PLENUM RATED, SHIELDED TWISTED PAIR, 16 AWG MINIMUM, STRANDED, TINNED COPPER CONDUCTORS. SHIELD MUST BE CONTINUOUS THROUGHOUT, ISOLATED FROM OTHER CONDUCTORS OR GROUND AND 2 IN. OR MORE FROM ANY POWER SOURCE WIRING. MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 59 PICOFARADS PER FOOT. MAXIMUM DISTANCE FOR OUTDOOR UNITS IS 1640 FT (500 M). MAXIMUM DISTANCE FOR INDOOR UNITS IS 656 FT (200 M). MAXIMUM DISTANCE FOR REMOTE CONTROLLERS IS 32 FT (10 M). TOPOLOGY MUST BE DAISY CHANGED.

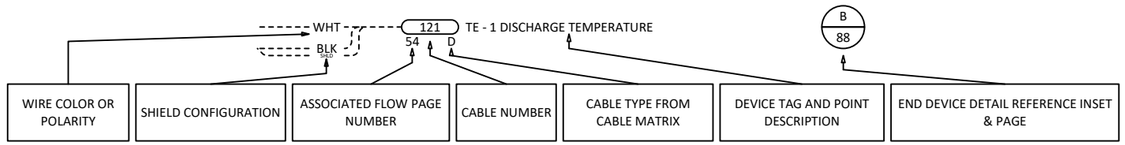
CABLE MATRIX

KEY	PART NO*	DESCRIPTION	WIRE COLORS
A	052003-S	18/2 TWIST SHLD VIOLET PLENUM CABLE	WHT, BLK
B	N/A	FACTORY PROVIDED CABLE	
C	105500	22/2 TWIST NON-SHLD BLUE COMM PLENUM CABLE	WHT, BLU/BLU
D	002320-S	18/2 TWIST SHLD WHITE PLENUM CABLE	WHT, BLK
E	002330-S	18/3 TWIST SHLD WHITE PLENUM CABLE	WHT, BLK, RED
F	002340-S	18/4 TWIST SHLD WHITE PLENUM CABLE	WHT, BLK, RED, GRN
G	002351	18/6 TWIST SHLD WHITE PLENUM CABLE	WHT, BLK, RED, GRN, BLU, BRN
H	6200FH	BELDEN 16/2 TWIST SHLD PLENUM CABLE	RED, BLK
J	N/A	1 PAIR #14 THHN STRANDED IN CONDUIT	
L	N/A	ETHERNET RG58 THNNET PLENUM CABLE	
M	555619-S	ETHERNET CAT-5 PLENUM CABLE	WHT, BLK, RED, GRN, BLU, YEL, ORN, BRN
O	002352-S	18/8 TWIST SHLD WHITE PLENUM CABLE	WHT, BLK, RED, GRN, BLU, YEL, ORN, BRN
P	106502-S	22/2 TWIST SHLD ORANGE COMM PLENUM CABLE	BLK, RED
Q	761360-S	16/2 SOLID RED SMOKE DETECTOR PLENUM CABLE	WHT, RED
2C	N/A	18/2 SOLID THERMOSTAT PLENUM CABLE	WHT, RED
3C	N/A	18/3 SOLID THERMOSTAT PLENUM CABLE	WHT, RED, GRN
5C	510005-S	18/5 SOLID THERMOSTAT PLENUM CABLE	WHT, RED, GRN, YEL, BLU
8C	510007-S	18/8 SOLID THERMOSTAT PLENUM CABLE	WHT, RED, GRN, YEL, BLU, ORN, BLK, BRN
10C	N/A	18/10 SOLID THERMOSTAT PLENUM CABLE	WHT, RED, GRN, YEL, BLU, ORN, BLK, BRN, PNK, GRY
12C	N/A	18/12 SOLID THERMOSTAT PLENUM CABLE	WHT, RED, GRN, YEL, BLU, ORN, BLK, BRN, PNK, GRY, PUR, TAN

* TRANE APPROVED WINDY CITY PART NUMBERS. WHEN ORDERING CABLE SPECIFY JACKET COLOR. PART NUMBERS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

CABLE MATRIX NOTES
ALL CABLE WIRING METHODS MUST BE TRANE RECOMMENDED. CONTACT TRANE FOR RECOMMENDED CABLES AND SPECIFICATIONS

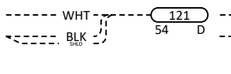
CABLE INFORMATION SHAPE (CIS)
EACH CABLE CONNECTION HAS A CIS WHICH PROVIDES SOME OR ALL OF THE INFORMATION INDICATED BELOW



SHIELDING NOTE

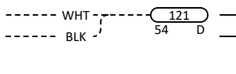
TAPE OFF SHIELD AT DEVICE

SHIELDING NOTE



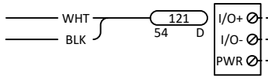
ATTACH ALL SHIELDS TO COMMON AS SHOWN

WIRING NOTE:



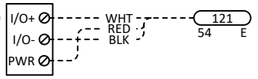
DASHED LINES: WIRED BY FIELD

WIRING NOTE:



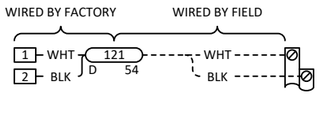
SOLID LINES: NOT WIRED BY FIELD

POWER WIRING NOTE:

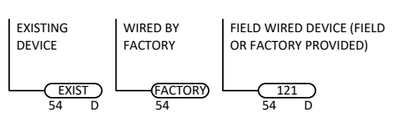


SOLID-LINE POWER WIRE INSIDE DASHED-LINE FIELD WIRING MUST BE FIELD INSTALLED.

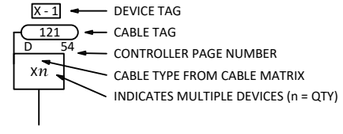
FACTORY MOUNTED DEVICE WITH FIELD MOUNTED CONTROLLER:



FIELD, FACTORY AND EXISTING DEVICE NOTES:

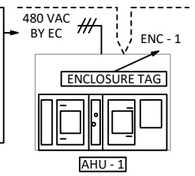


FLOW SHAPE NOTES:



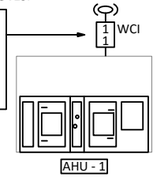
RISER 'WIRING BY' NOTE:

EC - ELECTRICAL CONTRACTOR
ESC - ELECTRICAL SUBCONTRACTOR
OTHER
TRANE
EXIST - EXISTING

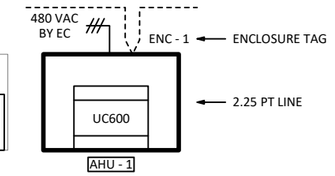


WIRELESS COMMUNICATION NOTES:

WIRELESS COMMUNICATION INTERFACE DISPLAYING GROUP ID (TOP) AND NETWORK ID (BOTTOM)



ENCLOSURE TAG:



INTERCONNECT WIRING DETAIL REFERENCE:

A
12
INTERCONNECT WIRING DETAIL REFERENCE INSET
LETTER (TOP), PAGE NUMBER (BOTTOM)

RISER TERMINATION DEVICES

BT — BACNET TERMINATOR

R — TERMINATION RESISTOR

WIRING NOTES

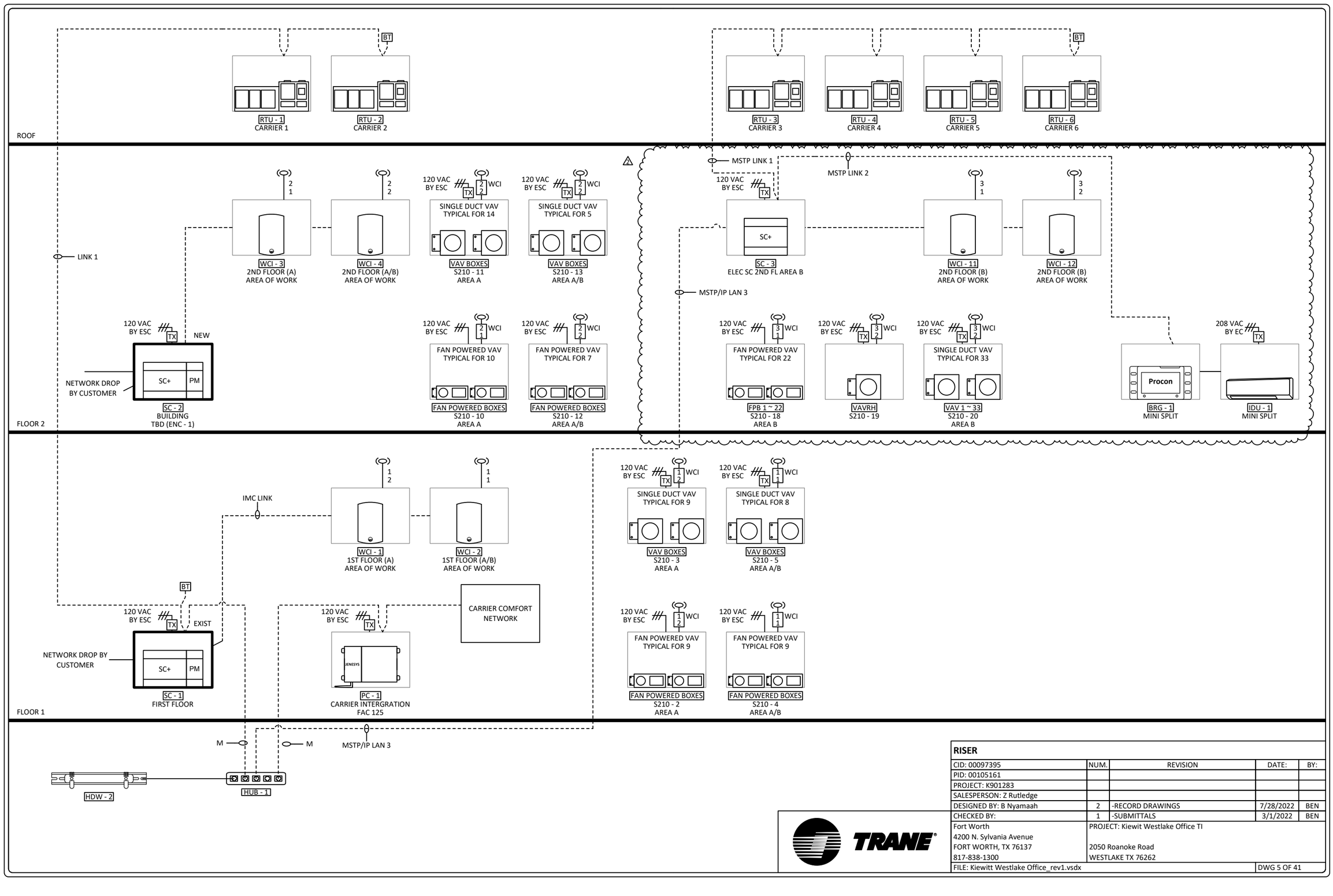
CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx



RISER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah	2	-RECORD DRAWINGS	7/28/2022	BEN
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

TRANE

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

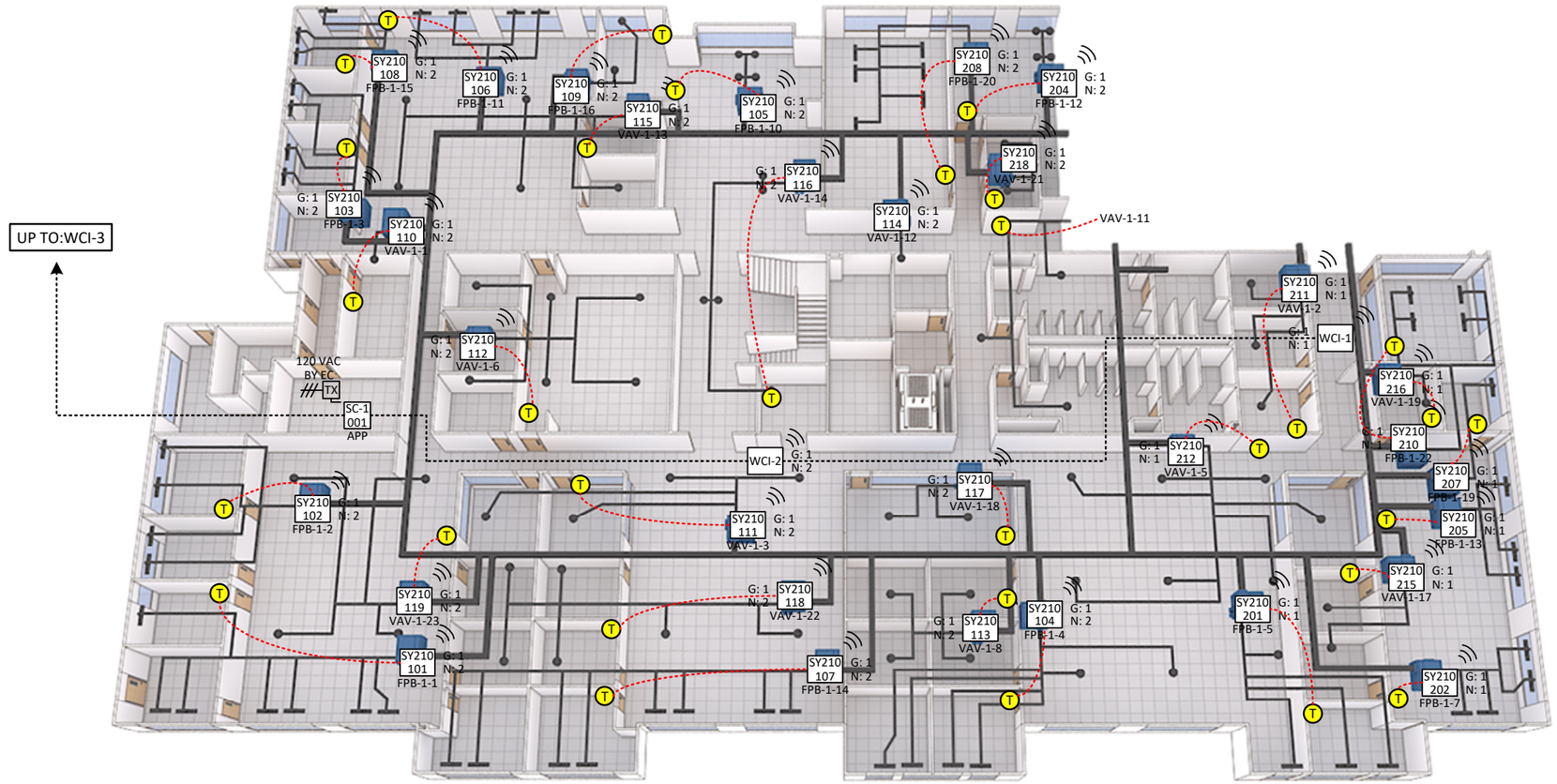
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

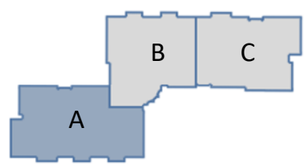
DWG 5 OF 41

(HVAC LEVEL 1 – AREA A)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



KEY PLAN



1 FIELD TO REFERENCE MECHANICAL FOR "EXACT LOCATION OF EQUIPMENT AND SENSORS" M101 & M102

NOTES:

1. COMM. LINK ROUTING SHOWN IS ONLY SUGGESTION, & ORDER OF CONNECTION OF DEVICES IS NOT CRITICAL. HOWEVER, DOCUMENT ALL DEVIATIONS FOR RECORD DRAWINGS. COMM. LINK SHOULD ONLY BE "DAISY CHAINED". "STAR" CONNECTIONS ARE UNACCEPTABLE.
2. ROUTE COMM. LINKS BETWEEN AREAs & FLOORs IN THE MOST LOGICAL & EXPEDITIOUS MANNER.
3. WIRING BETWEEN A WCI AND A CONTROLLER CANNOT EXCEED 656' (200m)
4. EACH TRANE WIRELESS NETWORK CAN HAVE A TOTAL OF 21 WCI'S (20 NETWORK MEMBER WCIs PLUS 1 NETWORK COORDINATOR WCI). EACH NETWORK REQUIRES ONE WCI TO FUNCTION AS THE NETWORK COORDINATOR.

LEGEND:

- IMC (A)
- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

LEGEND:

- (T) TEMPERATURE
- (H) HUMIDITY

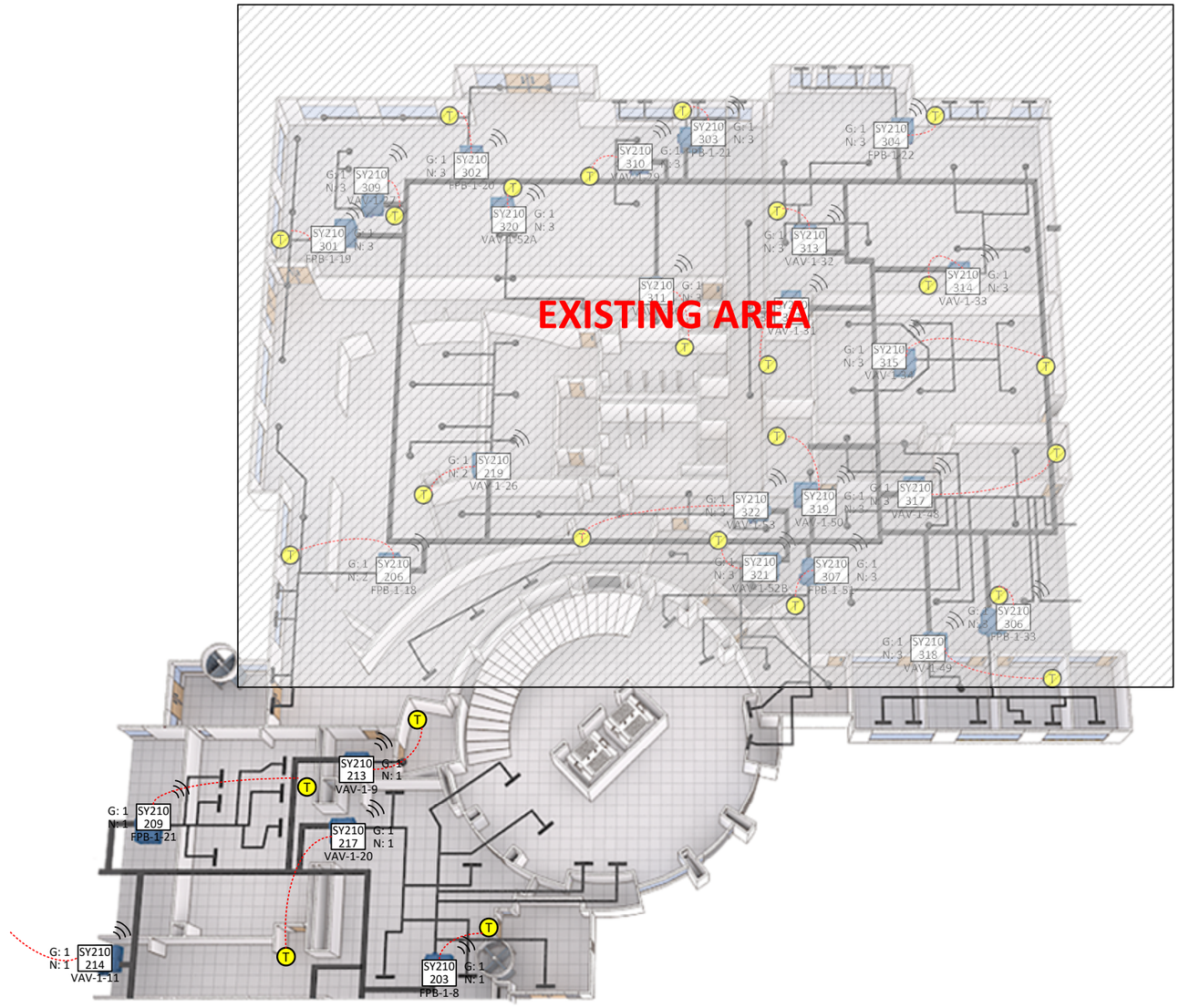
POWER → 120 VAC BY EC — TX — WIRELESS COMM
CONTROLLER TAG → UCx00-# ### — G: # GROUP NUMBER
UC ROTARY ADDRESS → N: # NETWORK NUMBER
SYSTEM — SYSTEM NAME

TRANE

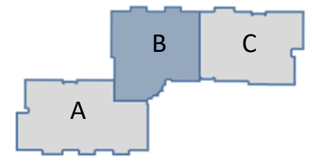
HVAC LEVEL 1 - AREA A				
CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN
Fort Worth 4200 N. Sylvania Avenue FORT WORTH, TX 76137 817-838-1300	PROJECT: Kiewit Westlake Office TI 2050 Roanoke Road WESTLAKE TX 76262			
FILE: Kiewitt Westlake Office_rev1.vsdx			DWG 6 OF 41	

(HVAC LEVEL 1 – AREA B)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



KEY PLAN



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LEGEND:

- IMC (A)
- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

LEGEND:

- (T) TEMPERATURE
- (H) HUMIDITY

POWER → 120 VAC BY EC
CONTROLLER TAG → UCx00-# ###
UC ROTARY ADDRESS → SYSTEM
TX ← WIRELESS COMM
G: # ← GROUP NUMBER
N: # ← NETWORK NUMBER
SYSTEM ← SYSTEM NAME

1 FIELD TO REFERENCE MECHANICAL FOR "EXACT LOCATION OF EQUIPMENT AND SENSORS" M101 & M102

HVAC LEVEL 1 - AREA B

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

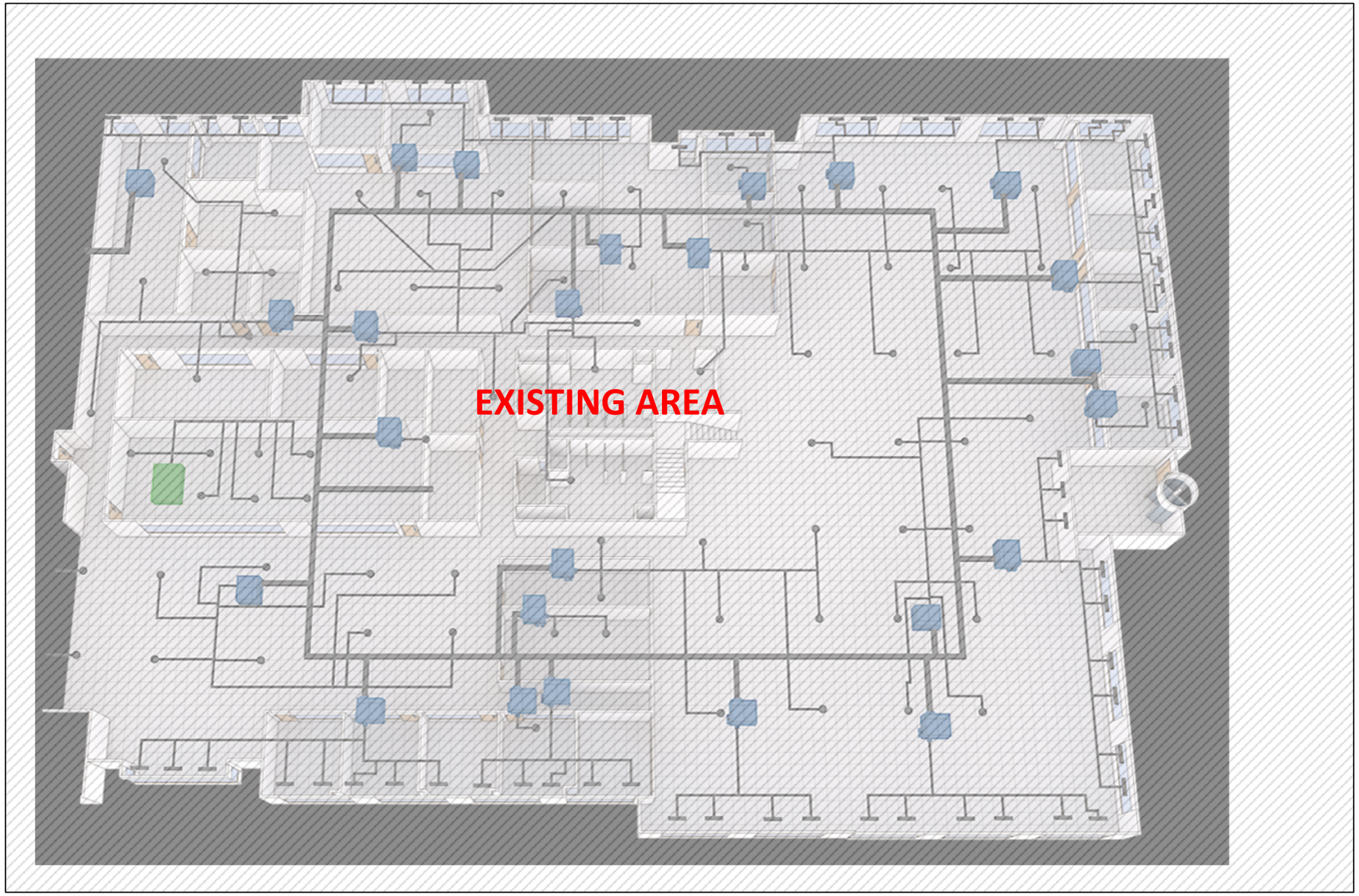
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

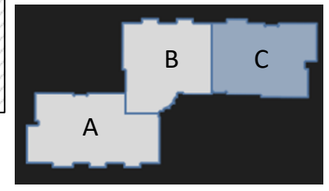
(HVAC LEVEL 1 – AREA C)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



CARRIER COMFORT NETWORK

KEY PLAN



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LEGEND:

- IMC (A)
- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

LEGEND:

- (T) TEMPERATURE
- (H) HUMIDITY

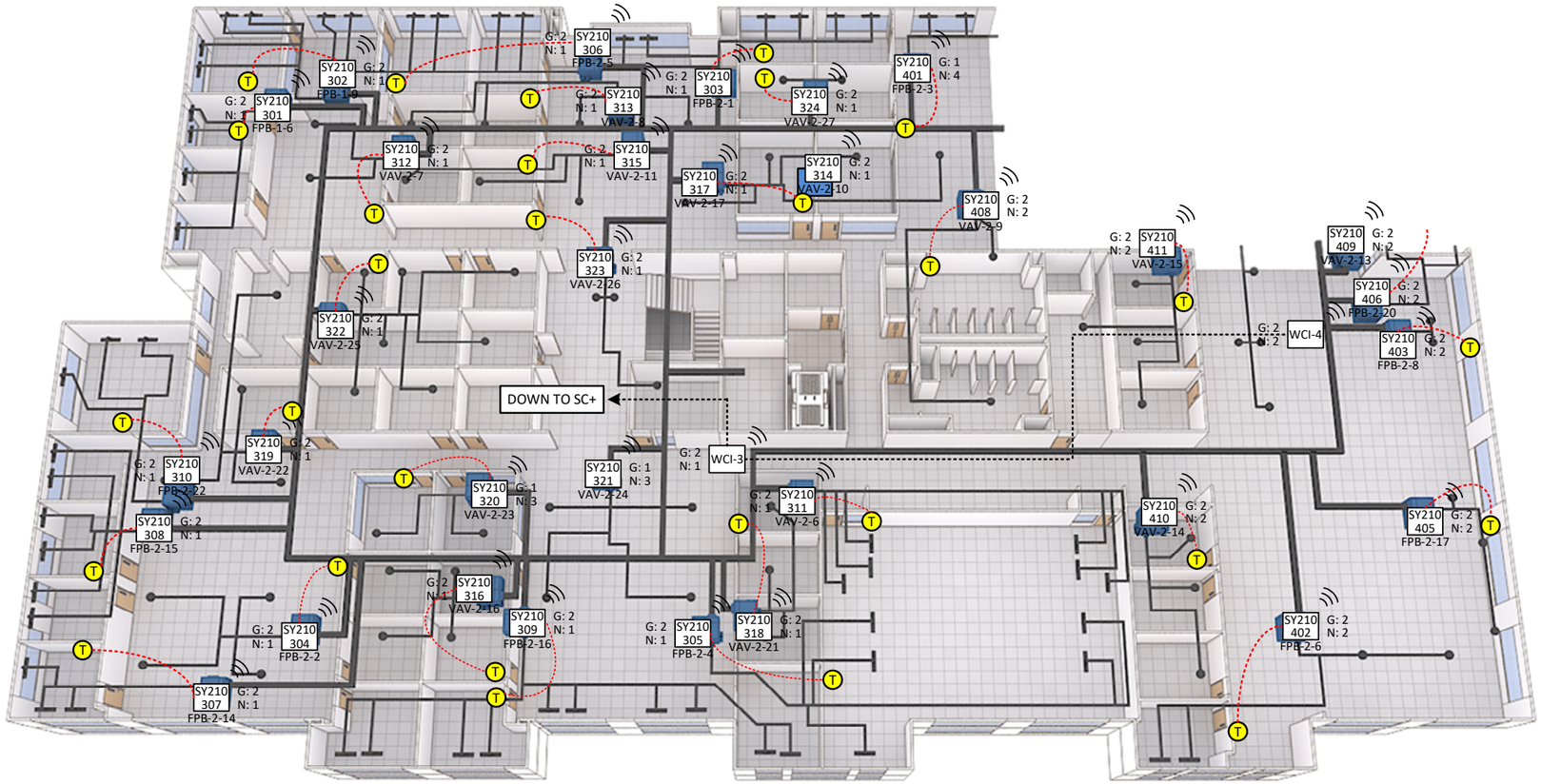
POWER → 120 VAC BY EC
CONTROLLER TAG → UCx00-# ###
UC ROTARY ADDRESS → SYSTEM
TX ← WIRELESS COMM
G: # ← GROUP NUMBER
N: # ← NETWORK NUMBER
SYSTEM ← SYSTEM NAME

TRANE®

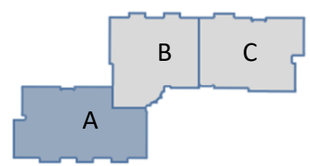
HVAC LEVEL 1 - AREA C				
CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN
Fort Worth 4200 N. Sylvania Avenue FORT WORTH, TX 76137 817-838-1300	PROJECT: Kiewit Westlake Office TI 2050 Roanoke Road WESTLAKE TX 76262			
FILE: Kiewitt Westlake Office_rev1.vsdx			DWG 8 OF 41	

(HVAC LEVEL 2 – AREA A)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



KEY PLAN



1 FIELD TO REFERENCE MECHANICAL FOR "EXACT LOCATION OF EQUIPMENT AND SENSORS" M101 & M102

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LEGEND:

- IMC (A)
- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

LEGEND:

(T) TEMPERATURE

(H) HUMIDITY

POWER → 120 VAC BY EC
CONTROLLER TAG → UCx00-# ###
UC ROTARY ADDRESS →
SYSTEM
TX → WIRELESS COMM
G: # ← GROUP NUMBER
N: # ← NETWORK NUMBER
SYSTEM ← SYSTEM NAME

TRANE

HVAC LEVEL 2 - AREA A

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

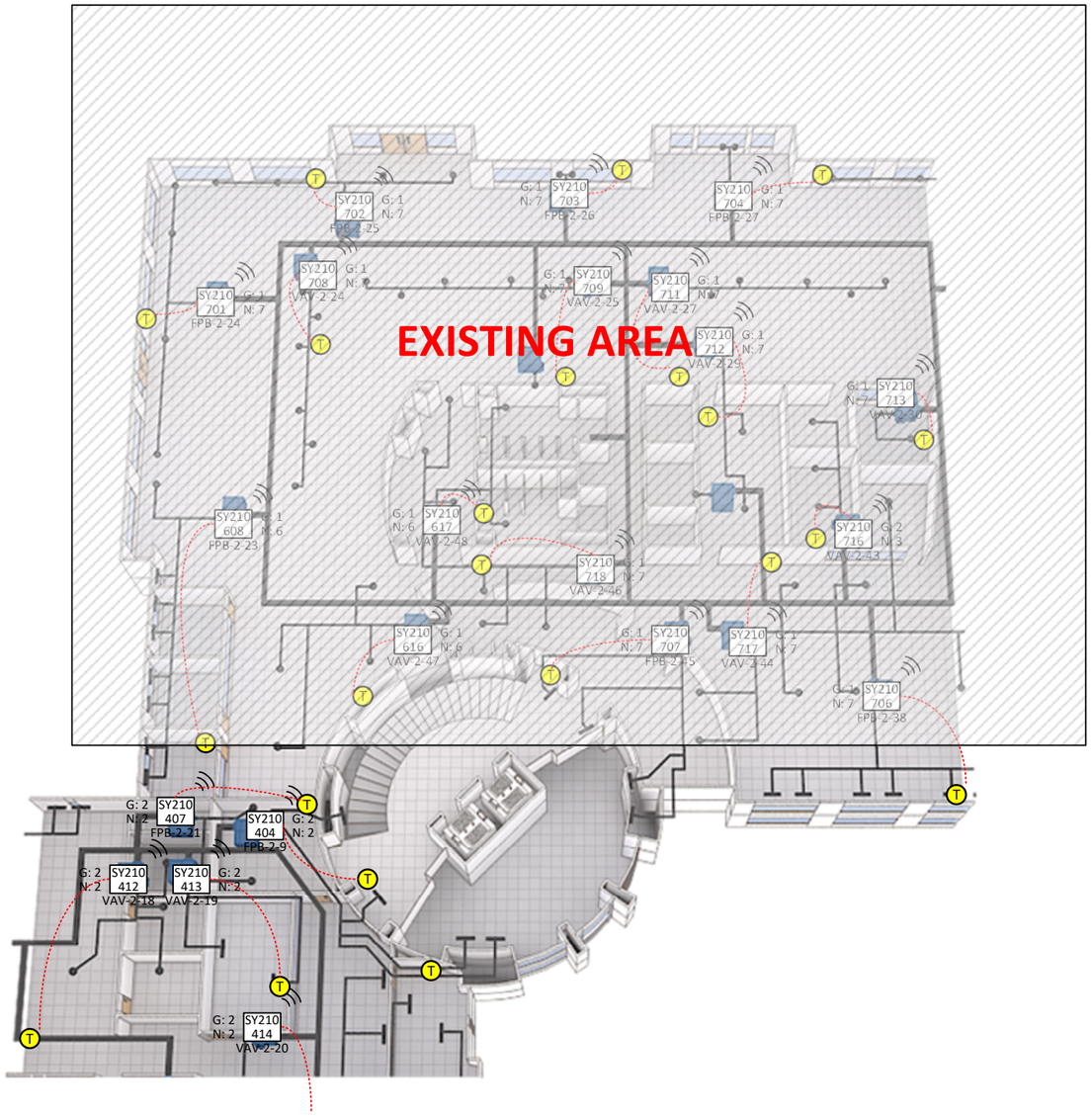
PROJECT: Kiewit Westlake Office TI
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

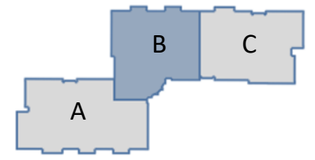
DWG 9 OF 41

(HVAC LEVEL 2 – AREA B)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



KEY PLAN



1 FIELD TO REFERENCE MECHANICAL FOR "EXACT LOCATION OF EQUIPMENT AND SENSORS" M101 & M102

NOTES:

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LEGEND:

- IMC (A)
- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

LEGEND:

- (T) TEMPERATURE
- (H) HUMIDITY

POWER → 120 VAC BY EC
CONTROLLER TAG → UCx00-# ###
UC ROTARY ADDRESS →
SYSTEM ← SYSTEM NAME
TX ← WIRELESS COMM
G: # ← GROUP NUMBER
N: # ← NETWORK NUMBER

TRANE

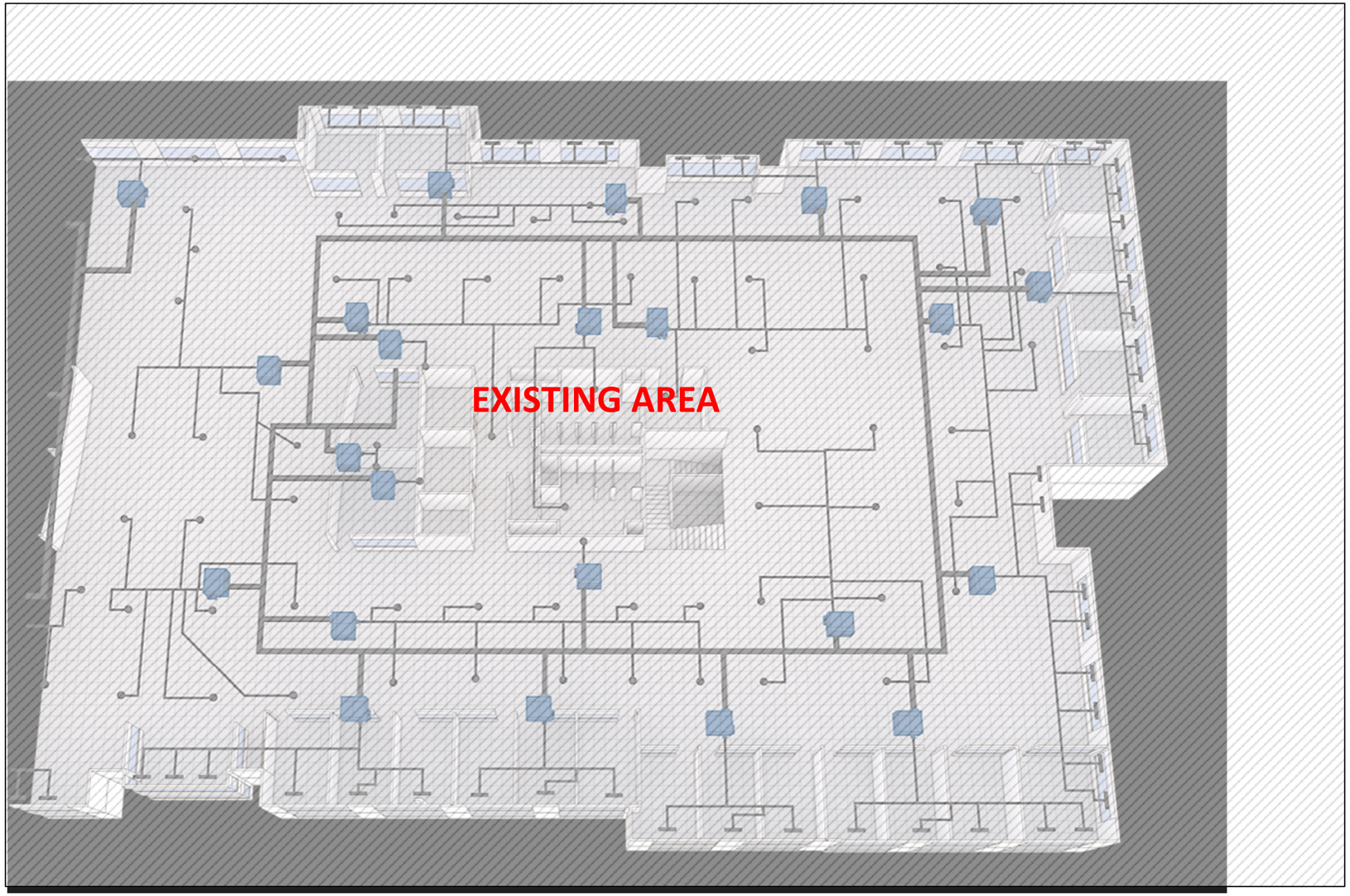
HVAC LEVEL 2 - AREA B

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth 4200 N. Sylvania Avenue FORT WORTH, TX 76137 817-838-1300	PROJECT: Kiewit Westlake Office TI 2050 Roanoke Road WESTLAKE TX 76262
FILE: Kiewitt Westlake Office_rev1.vsdx	DWG 10 OF 41

(HVAC LEVEL 2 – AREA C)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



CARRIER COMFORT NETWORK

KEY PLAN

NOTES:

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LEGEND:

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- BACNET MSTP LINK 1 (A)
- BACNET MSTP LINK 2 (A)

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- (H) HUMIDITY

POWER → 120 VAC BY EC
CONTROLLER TAG → UCx00-# ###
UC ROTARY ADDRESS → SYSTEM
TX ← WIRELESS COMM
G: # ← GROUP NUMBER
N: # ← NETWORK NUMBER
SYSTEM ← SYSTEM NAME

TRANE

HVAC LEVEL 2 - AREA C

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
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817-838-1300

PROJECT: Kiewit Westlake Office TI
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ADDRESS SCHEDULE (1 of 5)

ITEM	LINK TYPE	LINK	RISER TAG	CONTROLLER/SYSTEM	LOCATION	AREA SERVED	GRP.	NET.	ADD.	WIRELESS SENSOR ADDRESS	IP ADDRESS	SUBNET MASK	GATEWAY	NOTE
1	BACnet	SC - 3 BACNET LINK 2	MINI SPLIT	BRG - 1										
2	ETHERNET	ETHERNET	PC - 1	PC - 1										
3	ETHERNET	ETHERNET	SC - 1	SC - 2					001					
4	ETHERNET	ETHERNET	SC - 2	SC - 1					002					
5	ETHERNET	ETHERNET	SC - 4	SC - 3										
6	WCI IMC	SC - 1 WCI IMC 1	WCI - 1	WCI - 1	AREA OF WORK	1ST FLOOR (A)								
7	WCI IMC	SC - 1 WCI IMC 1	WCI - 2	WCI - 2	AREA OF WORK	1ST FLOOR (A/B)								
8	WCI IMC	SC - 2 WCI IMC 1	WCI - 3	WCI - 3	AREA OF WORK	2ND FLOOR (A)								
9	WCI IMC	SC - 2 WCI IMC 1	WCI - 4	WCI - 4	AREA OF WORK	2ND FLOOR (A/B)								
10	WCI IMC	SC - 3 WCI IMC 1	WCI - 11	WCI - 11	AREA OF WORK	2ND FLOOR (B)								
11	WCI IMC	SC - 3 WCI IMC 1	WCI - 12	WCI - 12	AREA OF WORK	2ND FLOOR (B)								
12	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 1	FAN POWERED BOXES	1ST FLOOR		1	2	101					
13	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 2	FAN POWERED BOXES	1ST FLOOR		1	2	102					
14	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 3	FAN POWERED BOXES	1ST FLOOR		1	2	103					
15	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 4	FAN POWERED BOXES	1ST FLOOR		1	2	104					
16	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 10	FAN POWERED BOXES	1ST FLOOR		1	2	105					
17	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 11	FAN POWERED BOXES	1ST FLOOR		1	2	106					
18	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 14	FAN POWERED BOXES	1ST FLOOR		1	2	107					
19	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 15	FAN POWERED BOXES	1ST FLOOR		1	2	108					
20	WIRELESS	SC - 1 VIA WCI - 1	FPB-1 - 16	FAN POWERED BOXES	1ST FLOOR		1	2	109					
21	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 1	VAV BOXES	1ST FLOOR		1	2	110					
22	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 3	VAV BOXES	1ST FLOOR		1	2	111					
23	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 6	VAV BOXES	1ST FLOOR		1	2	112					
24	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 8	VAV BOXES	1ST FLOOR		1	2	113					
25	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 12	VAV BOXES	1ST FLOOR		1	2	114					
26	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 13	VAV BOXES	1ST FLOOR		1	2	115					
27	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 14	VAV BOXES	1ST FLOOR		1	2	116					
28	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 18	VAV BOXES	1ST FLOOR		1	2	129					
29	WIRELESS	SC - 1 VIA WCI - 1	VAV-1 - 23	VAV BOXES	1ST FLOOR		1	2	119					
30	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 5	FAN POWERED BOXES	1ST FLOOR		1	1	201					
31	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 7	FAN POWERED BOXES	1ST FLOOR		1	1	202					
32	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 8	FAN POWERED BOXES	1ST FLOOR		1	1	203					
33	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 12	FAN POWERED BOXES	1ST FLOOR		1	1	204					
34	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 13	FAN POWERED BOXES	1ST FLOOR		1	1	206					
35	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 19	FAN POWERED BOXES	1ST FLOOR		1	1	207					
36	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 20	FAN POWERED BOXES	1ST FLOOR		1	1	208					
37	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 21	FAN POWERED BOXES	1ST FLOOR		1	1	209					
38	WIRELESS	SC - 1 VIA WCI - 2	FPB-1 - 22	FAN POWERED BOXES	1ST FLOOR		1	1	210					
39	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 2	VAV BOXES	1ST FLOOR		1	1	211					
40	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 5	VAV BOXES	1ST FLOOR		1	1	212					
41	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 9	VAV BOXES	1ST FLOOR		1	1	213					
42	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 11	VAV BOXES	1ST FLOOR		1	1	214					
43	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 17	VAV BOXES	1ST FLOOR		1	1	205					

TRANE

ADDRESS SCHEDULE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ADDRESS SCHEDULE (2 of 5)

ITEM	LINK TYPE	LINK	RISER TAG	CONTROLLER/SYSTEM	LOCATION	AREA SERVED	GRP.	NET.	ADD.	WIRELESS SENSOR ADDRESS	IP ADDRESS	SUBNET MASK	GATEWAY	NOTE
44	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 19	VAV BOXES	1ST FLOOR		1	1	216					
45	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 20	VAV BOXES	1ST FLOOR		1	1	217					
46	WIRELESS	SC - 1 VIA WCI - 2	VAV-1 - 21	VAV BOXES	1ST FLOOR		1	1	218					
47	WIRELESS	SC - 2 VIA WCI - 3	FPB-1 - 6	FAN POWERED BOXES	2ND FLOOR		2	1	301					
48	WIRELESS	SC - 2 VIA WCI - 3	FPB-1 - 9	FAN POWERED BOXES	2ND FLOOR		2	1	302					
49	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 1	FAN POWERED BOXES	2ND FLOOR		2	1	303					
50	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 2	FAN POWERED BOXES	2ND FLOOR		2	1	304					
51	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 4	FAN POWERED BOXES	2ND FLOOR		2	1	305					
52	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 5	FAN POWERED BOXES	2ND FLOOR		2	1	306					
53	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 14	FAN POWERED BOXES	2ND FLOOR		2	1	307					
54	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 15	FAN POWERED BOXES	2ND FLOOR		2	1	308					
55	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 16	FAN POWERED BOXES	2ND FLOOR		2	1	309					
56	WIRELESS	SC - 2 VIA WCI - 3	FPB-2 - 22	FAN POWERED BOXES	2ND FLOOR		2	1	602					
57	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 3	FAN POWERED BOXES	2ND FLOOR		2	2	401					
58	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 6	FAN POWERED BOXES	2ND FLOOR		2	2	402					
59	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 8	FAN POWERED BOXES	2ND FLOOR		2	2	403					
60	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 9	FAN POWERED BOXES	2ND FLOOR		2	2	404					
61	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 17	FAN POWERED BOXES	2ND FLOOR		2	2	405					
62	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 20	FAN POWERED BOXES	2ND FLOOR		2	2	406					
63	WIRELESS	SC - 2 VIA WCI - 4	FPB-2 - 21	FAN POWERED BOXES	2ND FLOOR		2	2	607					
64	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 6	VAV BOXES	2ND FLOOR		2	2	311					
65	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 7	VAV BOXES	2ND FLOOR		2	2	312					
66	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 8	VAV BOXES	2ND FLOOR		2	2	313					
67	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 9	VAV BOXES	2ND FLOOR		2	2	408					
68	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 10	VAV BOXES	2ND FLOOR		2	2	314					
69	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 11	VAV BOXES	2ND FLOOR		2	2	315					
70	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 13	VAV BOXES	2ND FLOOR		2	2	409					
71	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 15	VAV BOXES	2ND FLOOR		2	2	441					
72	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 16	VAV BOXES	2ND FLOOR		2	2	519					
73	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 17	VAV BOXES	2ND FLOOR		2	2	412					
74	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 19	VAV BOXES	2ND FLOOR		2	2	414					
75	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 20	VAV BOXES	2ND FLOOR		2	2	413					
76	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 21	VAV BOXES	2ND FLOOR		2	2	318					
77	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 22	VAV BOXES	2ND FLOOR		2	2	319					
78	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 23	VAV BOXES	2ND FLOOR		2	2	320					
79	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 24	VAV BOXES	2ND FLOOR		2	2	321					
80	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 25	VAV BOXES	2ND FLOOR		2	2	322					
81	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 26	VAV BOXES	2ND FLOOR		2	2	323					
82	WIRELESS	SC - 2 VIA WCI - 4	VAV-2 - 27	VAV BOXES	2ND FLOOR		2	2	324					
83	WIRELESS	SC - 3 VIA WCI - 11	FPB - 1	FPB 1 ~ 22			3	1						
84	WIRELESS	SC - 3 VIA WCI - 11	FPB - 1 Sensor WCS - 4	FPB 1 ~ 22			3	1						
85	WIRELESS	SC - 3 VIA WCI - 11	FPB - 2	FPB 1 ~ 22			3	1						
86	WIRELESS	SC - 3 VIA WCI - 11	FPB - 2 Sensor WCS - 4	FPB 1 ~ 22			3	1						

ADDRESS SCHEDULE (2)

	NUM.	REVISION	DATE:	BY:
CID: 00097395				
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ADDRESS SCHEDULE (3 of 5)

ITEM	LINK TYPE	LINK	RISER TAG	CONTROLLER/SYSTEM	LOCATION	AREA SERVED	GRP.	NET.	ADD.	WIRELESS SENSOR ADDRESS	IP ADDRESS	SUBNET MASK	GATEWAY	NOTE
87	WIRELESS	SC - 3 VIA WCI - 11	FPB - 3	FPB 1 ~ 22			3	1						
88	WIRELESS	SC - 3 VIA WCI - 11	FPB - 3 Sensor WCS - 4	FPB 1 ~ 22			3	1						
89	WIRELESS	SC - 3 VIA WCI - 11	FPB - 4	FPB 1 ~ 22			3	1						
90	WIRELESS	SC - 3 VIA WCI - 11	FPB - 4 Sensor WCS - 4	FPB 1 ~ 22			3	1						
91	WIRELESS	SC - 3 VIA WCI - 11	FPB - 5	FPB 1 ~ 22			3	1						
92	WIRELESS	SC - 3 VIA WCI - 11	FPB - 5 Sensor WCS - 4	FPB 1 ~ 22			3	1						
93	WIRELESS	SC - 3 VIA WCI - 11	FPB - 6	FPB 1 ~ 22			3	1						
94	WIRELESS	SC - 3 VIA WCI - 11	FPB - 6 Sensor WCS - 4	FPB 1 ~ 22			3	1						
95	WIRELESS	SC - 3 VIA WCI - 11	FPB - 7	FPB 1 ~ 22			3	1						
96	WIRELESS	SC - 3 VIA WCI - 11	FPB - 7 Sensor WCS - 4	FPB 1 ~ 22			3	1						
97	WIRELESS	SC - 3 VIA WCI - 11	FPB - 8	FPB 1 ~ 22			3	1						
98	WIRELESS	SC - 3 VIA WCI - 11	FPB - 8 Sensor WCS - 4	FPB 1 ~ 22			3	1						
99	WIRELESS	SC - 3 VIA WCI - 11	FPB - 9	FPB 1 ~ 22			3	1						
100	WIRELESS	SC - 3 VIA WCI - 11	FPB - 9 Sensor WCS - 4	FPB 1 ~ 22			3	1						
101	WIRELESS	SC - 3 VIA WCI - 11	FPB - 10	FPB 1 ~ 22			3	1						
102	WIRELESS	SC - 3 VIA WCI - 11	FPB - 10 Sensor WCS - 4	FPB 1 ~ 22			3	1						
103	WIRELESS	SC - 3 VIA WCI - 11	FPB - 11	FPB 1 ~ 22			3	1						
104	WIRELESS	SC - 3 VIA WCI - 11	FPB - 11 Sensor WCS - 4	FPB 1 ~ 22			3	1						
105	WIRELESS	SC - 3 VIA WCI - 11	FPB - 12	FPB 1 ~ 22			3	1						
106	WIRELESS	SC - 3 VIA WCI - 11	FPB - 12 Sensor WCS - 4	FPB 1 ~ 22			3	1						
107	WIRELESS	SC - 3 VIA WCI - 11	FPB - 13	FPB 1 ~ 22			3	1						
108	WIRELESS	SC - 3 VIA WCI - 11	FPB - 13 Sensor WCS - 4	FPB 1 ~ 22			3	1						
109	WIRELESS	SC - 3 VIA WCI - 11	FPB - 14	FPB 1 ~ 22			3	1						
110	WIRELESS	SC - 3 VIA WCI - 11	FPB - 14 Sensor WCS - 4	FPB 1 ~ 22			3	1						
111	WIRELESS	SC - 3 VIA WCI - 11	FPB - 15	FPB 1 ~ 22			3	1						
112	WIRELESS	SC - 3 VIA WCI - 11	FPB - 15 Sensor WCS - 4	FPB 1 ~ 22			3	1						
113	WIRELESS	SC - 3 VIA WCI - 11	FPB - 16	FPB 1 ~ 22			3	1						
114	WIRELESS	SC - 3 VIA WCI - 11	FPB - 16 Sensor WCS - 4	FPB 1 ~ 22			3	1						
115	WIRELESS	SC - 3 VIA WCI - 11	FPB - 17	FPB 1 ~ 22			3	1						
116	WIRELESS	SC - 3 VIA WCI - 11	FPB - 17 Sensor WCS - 4	FPB 1 ~ 22			3	1						
117	WIRELESS	SC - 3 VIA WCI - 11	FPB - 18	FPB 1 ~ 22			3	1						
118	WIRELESS	SC - 3 VIA WCI - 11	FPB - 18 Sensor WCS - 4	FPB 1 ~ 22			3	1						
119	WIRELESS	SC - 3 VIA WCI - 11	FPB - 19	FPB 1 ~ 22			3	1						
120	WIRELESS	SC - 3 VIA WCI - 11	FPB - 19 Sensor WCS - 4	FPB 1 ~ 22			3	1						
121	WIRELESS	SC - 3 VIA WCI - 11	FPB - 20	FPB 1 ~ 22			3	1						
122	WIRELESS	SC - 3 VIA WCI - 11	FPB - 20 Sensor WCS - 4	FPB 1 ~ 22			3	1						
123	WIRELESS	SC - 3 VIA WCI - 11	FPB - 21	FPB 1 ~ 22			3	1						
124	WIRELESS	SC - 3 VIA WCI - 11	FPB - 21 Sensor WCS - 4	FPB 1 ~ 22			3	1						
125	WIRELESS	SC - 3 VIA WCI - 11	FPB - 22	FPB 1 ~ 22			3	1						
126	WIRELESS	SC - 3 VIA WCI - 11	FPB - 22 Sensor WCS - 4	FPB 1 ~ 22			3	1						
127	WIRELESS	SC - 3 VIA WCI - 12	VAV - 1	VAV 1 ~ 33			3	2						
128	WIRELESS	SC - 3 VIA WCI - 12	VAV - 1 Sensor WCS - 6	VAV 1 ~ 33			3	2						
129	WIRELESS	SC - 3 VIA WCI - 12	VAV - 2	VAV 1 ~ 33			3	2						

ADDRESS SCHEDULE (3)

	NUM.	REVISION	DATE:	BY:
CID: 00097395				
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ADDRESS SCHEDULE (4 of 5)

ITEM	LINK TYPE	LINK	RISER TAG	CONTROLLER/SYSTEM	LOCATION	AREA SERVED	GRP.	NET.	ADD.	WIRELESS SENSOR ADDRESS	IP ADDRESS	SUBNET MASK	GATEWAY	NOTE
130	WIRELESS	SC - 3 VIA WCI - 12	VAV - 2 Sensor WCS - 6	VAV 1 ~ 33			3	2						
131	WIRELESS	SC - 3 VIA WCI - 12	VAV - 3	VAV 1 ~ 33			3	2						
132	WIRELESS	SC - 3 VIA WCI - 12	VAV - 3 Sensor WCS - 6	VAV 1 ~ 33			3	2						
133	WIRELESS	SC - 3 VIA WCI - 12	VAV - 4	VAV 1 ~ 33			3	2						
134	WIRELESS	SC - 3 VIA WCI - 12	VAV - 4 Sensor WCS - 6	VAV 1 ~ 33			3	2						
135	WIRELESS	SC - 3 VIA WCI - 12	VAV - 5	VAV 1 ~ 33			3	2						
136	WIRELESS	SC - 3 VIA WCI - 12	VAV - 5 Sensor WCS - 6	VAV 1 ~ 33			3	2						
137	WIRELESS	SC - 3 VIA WCI - 12	VAV - 6	VAV 1 ~ 33			3	2						
138	WIRELESS	SC - 3 VIA WCI - 12	VAV - 6 Sensor WCS - 6	VAV 1 ~ 33			3	2						
139	WIRELESS	SC - 3 VIA WCI - 12	VAV - 7	VAV 1 ~ 33			3	2						
140	WIRELESS	SC - 3 VIA WCI - 12	VAV - 7 Sensor WCS - 6	VAV 1 ~ 33			3	2						
141	WIRELESS	SC - 3 VIA WCI - 12	VAV - 8	VAV 1 ~ 33			3	2						
142	WIRELESS	SC - 3 VIA WCI - 12	VAV - 8 Sensor WCS - 6	VAV 1 ~ 33			3	2						
143	WIRELESS	SC - 3 VIA WCI - 12	VAV - 9	VAV 1 ~ 33			3	2						
144	WIRELESS	SC - 3 VIA WCI - 12	VAV - 9 Sensor WCS - 6	VAV 1 ~ 33			3	2						
145	WIRELESS	SC - 3 VIA WCI - 12	VAV - 10	VAV 1 ~ 33			3	2						
146	WIRELESS	SC - 3 VIA WCI - 12	VAV - 10 Sensor WCS - 6	VAV 1 ~ 33			3	2						
147	WIRELESS	SC - 3 VIA WCI - 12	VAV - 11	VAV 1 ~ 33			3	2						
148	WIRELESS	SC - 3 VIA WCI - 12	VAV - 11 Sensor WCS - 6	VAV 1 ~ 33			3	2						
149	WIRELESS	SC - 3 VIA WCI - 12	VAV - 12	VAV 1 ~ 33			3	2						
150	WIRELESS	SC - 3 VIA WCI - 12	VAV - 12 Sensor WCS - 6	VAV 1 ~ 33			3	2						
151	WIRELESS	SC - 3 VIA WCI - 12	VAV - 13	VAV 1 ~ 33			3	2						
152	WIRELESS	SC - 3 VIA WCI - 12	VAV - 13 Sensor WCS - 6	VAV 1 ~ 33			3	2						
153	WIRELESS	SC - 3 VIA WCI - 12	VAV - 14	VAV 1 ~ 33			3	2						
154	WIRELESS	SC - 3 VIA WCI - 12	VAV - 14 Sensor WCS - 6	VAV 1 ~ 33			3	2						
155	WIRELESS	SC - 3 VIA WCI - 12	VAV - 15	VAV 1 ~ 33			3	2						
156	WIRELESS	SC - 3 VIA WCI - 12	VAV - 15 Sensor WCS - 6	VAV 1 ~ 33			3	2						
157	WIRELESS	SC - 3 VIA WCI - 12	VAV - 16	VAV 1 ~ 33			3	2						
158	WIRELESS	SC - 3 VIA WCI - 12	VAV - 16 Sensor WCS - 6	VAV 1 ~ 33			3	2						
159	WIRELESS	SC - 3 VIA WCI - 12	VAV - 17	VAV 1 ~ 33			3	2						
160	WIRELESS	SC - 3 VIA WCI - 12	VAV - 17 Sensor WCS - 6	VAV 1 ~ 33			3	2						
161	WIRELESS	SC - 3 VIA WCI - 12	VAV - 18	VAV 1 ~ 33			3	2						
162	WIRELESS	SC - 3 VIA WCI - 12	VAV - 18 Sensor WCS - 6	VAV 1 ~ 33			3	2						
163	WIRELESS	SC - 3 VIA WCI - 12	VAV - 19	VAV 1 ~ 33			3	2						
164	WIRELESS	SC - 3 VIA WCI - 12	VAV - 19 Sensor WCS - 6	VAV 1 ~ 33			3	2						
165	WIRELESS	SC - 3 VIA WCI - 12	VAV - 20	VAV 1 ~ 33			3	2						
166	WIRELESS	SC - 3 VIA WCI - 12	VAV - 20 Sensor WCS - 6	VAV 1 ~ 33			3	2						
167	WIRELESS	SC - 3 VIA WCI - 12	VAV - 21	VAV 1 ~ 33			3	2						

ADDRESS SCHEDULE (4)

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
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817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

ADDRESS SCHEDULE (5 of 5)

ITEM	LINK TYPE	LINK	RISER TAG	CONTROLLER/SYSTEM	LOCATION	AREA SERVED	GRP.	NET.	ADD.	WIRELESS SENSOR ADDRESS	IP ADDRESS	SUBNET MASK	GATEWAY	NOTE
168	WIRELESS	SC - 3 VIA WCI - 12	VAV - 21 Sensor WCS - 6	VAV 1 ~ 33			3	2						
169	WIRELESS	SC - 3 VIA WCI - 12	VAV - 22	VAV 1 ~ 33			3	2						
170	WIRELESS	SC - 3 VIA WCI - 12	VAV - 22 Sensor WCS - 6	VAV 1 ~ 33			3	2						
171	WIRELESS	SC - 3 VIA WCI - 12	VAV - 23	VAV 1 ~ 33			3	2						
172	WIRELESS	SC - 3 VIA WCI - 12	VAV - 23 Sensor WCS - 6	VAV 1 ~ 33			3	2						
173	WIRELESS	SC - 3 VIA WCI - 12	VAV - 24	VAV 1 ~ 33			3	2						
174	WIRELESS	SC - 3 VIA WCI - 12	VAV - 24 Sensor WCS - 6	VAV 1 ~ 33			3	2						
175	WIRELESS	SC - 3 VIA WCI - 12	VAV - 25	VAV 1 ~ 33			3	2						
176	WIRELESS	SC - 3 VIA WCI - 12	VAV - 25 Sensor WCS - 6	VAV 1 ~ 33			3	2						
177	WIRELESS	SC - 3 VIA WCI - 12	VAV - 26	VAV 1 ~ 33			3	2						
178	WIRELESS	SC - 3 VIA WCI - 12	VAV - 26 Sensor WCS - 6	VAV 1 ~ 33			3	2						
179	WIRELESS	SC - 3 VIA WCI - 12	VAV - 27	VAV 1 ~ 33			3	2						
180	WIRELESS	SC - 3 VIA WCI - 12	VAV - 27 Sensor WCS - 6	VAV 1 ~ 33			3	2						
181	WIRELESS	SC - 3 VIA WCI - 12	VAV - 28	VAV 1 ~ 33			3	2						
182	WIRELESS	SC - 3 VIA WCI - 12	VAV - 28 Sensor WCS - 6	VAV 1 ~ 33			3	2						
183	WIRELESS	SC - 3 VIA WCI - 12	VAV - 29	VAV 1 ~ 33			3	2						
184	WIRELESS	SC - 3 VIA WCI - 12	VAV - 29 Sensor WCS - 6	VAV 1 ~ 33			3	2						
185	WIRELESS	SC - 3 VIA WCI - 12	VAV - 30	VAV 1 ~ 33			3	2						
186	WIRELESS	SC - 3 VIA WCI - 12	VAV - 30 Sensor WCS - 6	VAV 1 ~ 33			3	2						
187	WIRELESS	SC - 3 VIA WCI - 12	VAV - 31	VAV 1 ~ 33			3	2						
188	WIRELESS	SC - 3 VIA WCI - 12	VAV - 31 Sensor WCS - 6	VAV 1 ~ 33			3	2						
189	WIRELESS	SC - 3 VIA WCI - 12	VAV - 32	VAV 1 ~ 33			3	2						
190	WIRELESS	SC - 3 VIA WCI - 12	VAV - 32 Sensor WCS - 6	VAV 1 ~ 33			3	2						
191	WIRELESS	SC - 3 VIA WCI - 12	VAV - 33	VAV 1 ~ 33			3	2						
192	WIRELESS	SC - 3 VIA WCI - 12	VAV - 33 Sensor WCS - 6	VAV 1 ~ 33			3	2						
193	WIRELESS	SC - 3 VIA WCI - 12	VAVRH	VAVRH			3	2						
194	WIRELESS	SC - 3 VIA WCI - 12	VAVRH Sensor WCS - 5	VAVRH			3	2						

ADDRESS SCHEDULE (5)

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

TRANE

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ENCLOSURE SCHEDULE							
TAG	**LOCATION**	**VENDOR**	**PART NUMBER**	**DESCRIPTION**	**DIN RAIL**	**CONTROLLER**	**SYSTEM CONTROLLED**
ENC - 1 (SC+ ENCLOSURE)	**TBD**	**KELE**	**HC1612P**	**16 X 12 X 6 NEMA 1 HINGED COVER ENCLOSURE W/ PERF PANEL**	**SINGLE**		

ENCLOSURE SCHEDULE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

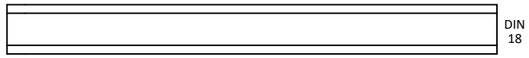
Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

ENC - 1 (SC+ ENCLOSURE) - TBD



ENCLOSURE GRAPHICS

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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PROJECT: Kiewit Westlake Office TI

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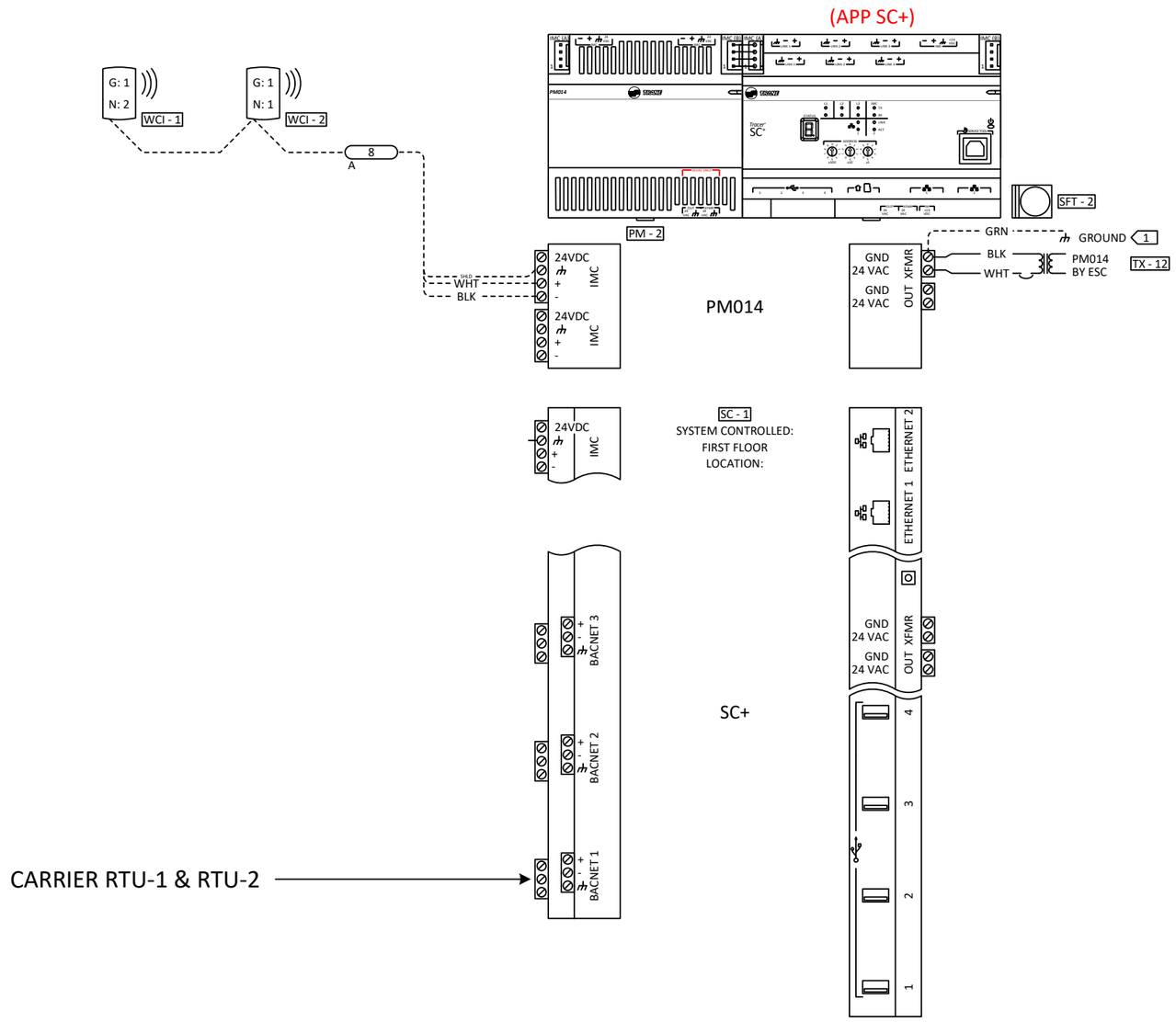
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

(FIRST FLOOR)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



5 TO BE COMPLETED DURING INSTALLATION AND INCLUDED IN RECORD DRAWINGS.

4 REMOTE ACCESS REQUIRED FOR TIS IN WARRANTY SERVICE AGREEMENT.

3 FOR THE CUSTOMER TO REMOTELY CONNECT TO THE SC, A SECURE NETWORK BEHIND A FIREWALL AND VPN ACCESS IS REQUIRED.

2 CUSTOMER TO SUPPLY NETWORK COMM ACCESS POINT.

1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

FIRST FLOOR (SC-1) - CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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4200 N. Sylvania Avenue
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817-838-1300

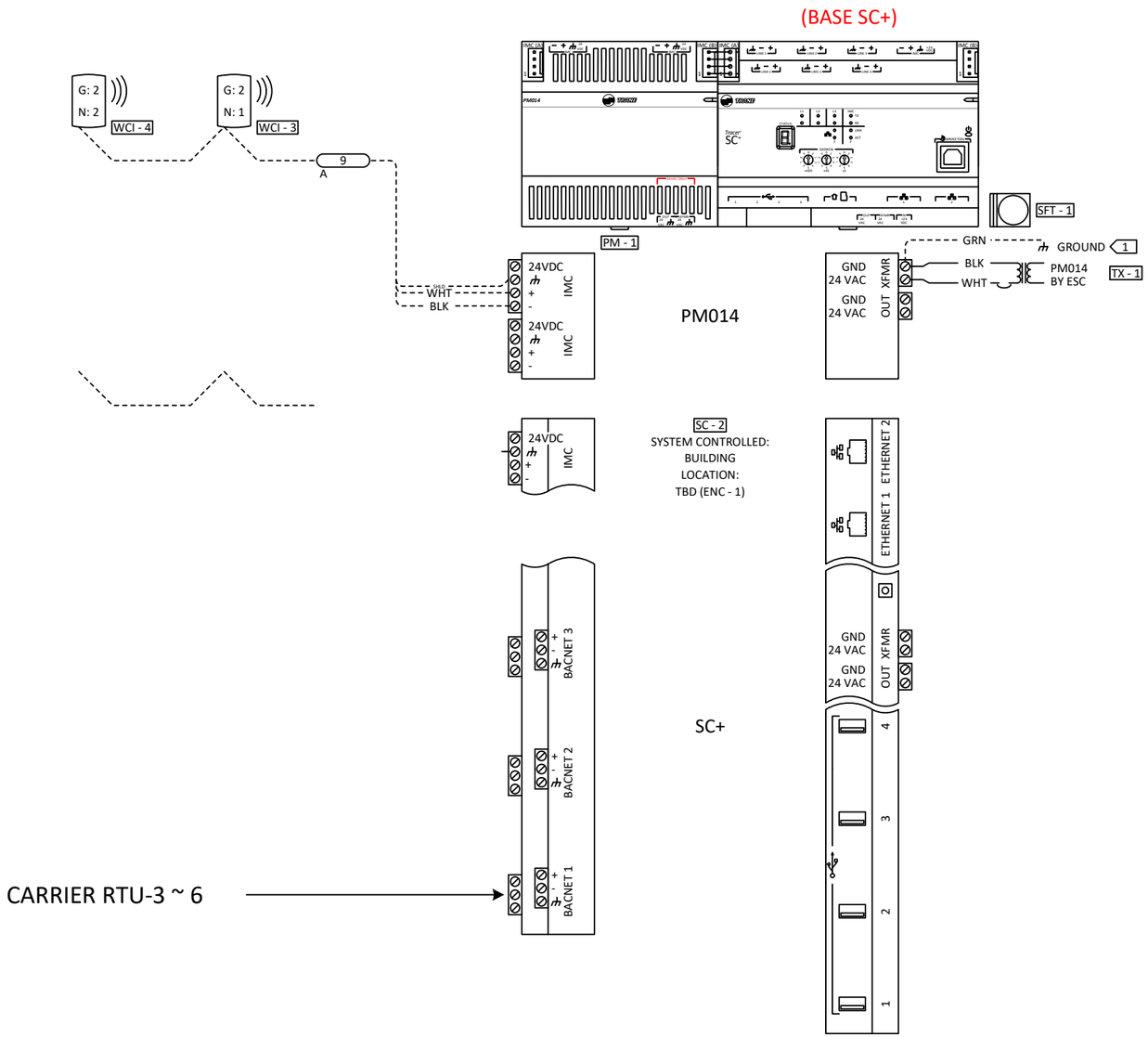
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

(BUILDING)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



5 TO BE COMPLETED DURING INSTALLATION AND INCLUDED IN RECORD DRAWINGS.

4 REMOTE ACCESS REQUIRED FOR TIS IN WARRANTY SERVICE AGREEMENT.

3 FOR THE CUSTOMER TO REMOTELY CONNECT TO THE SC, A SECURE NETWORK BEHIND A FIREWALL AND VPN ACCESS IS REQUIRED.

2 CUSTOMER TO SUPPLY NETWORK COMM ACCESS POINT.

1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

SECOND FLOOR (SC-2) - CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

DRAG A SHAPE FROM THE 'BUILDING CONTROLLER SEQUENCE SHAPES' STENCIL HERE

CARRIER INTERGRATION PC - 1 SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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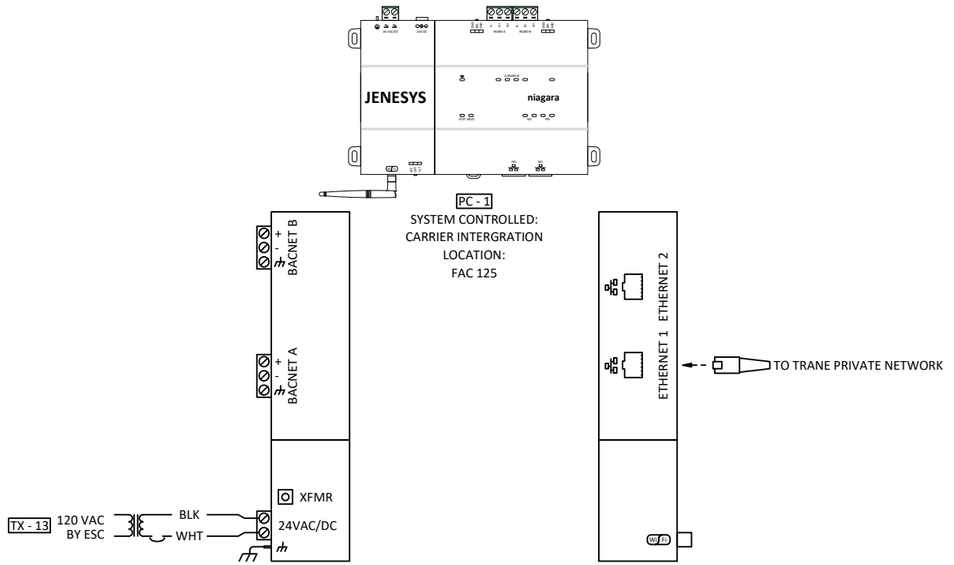
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

(CARRIER INTERGRATION)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



CARRIER INTERGRATION PC - 1 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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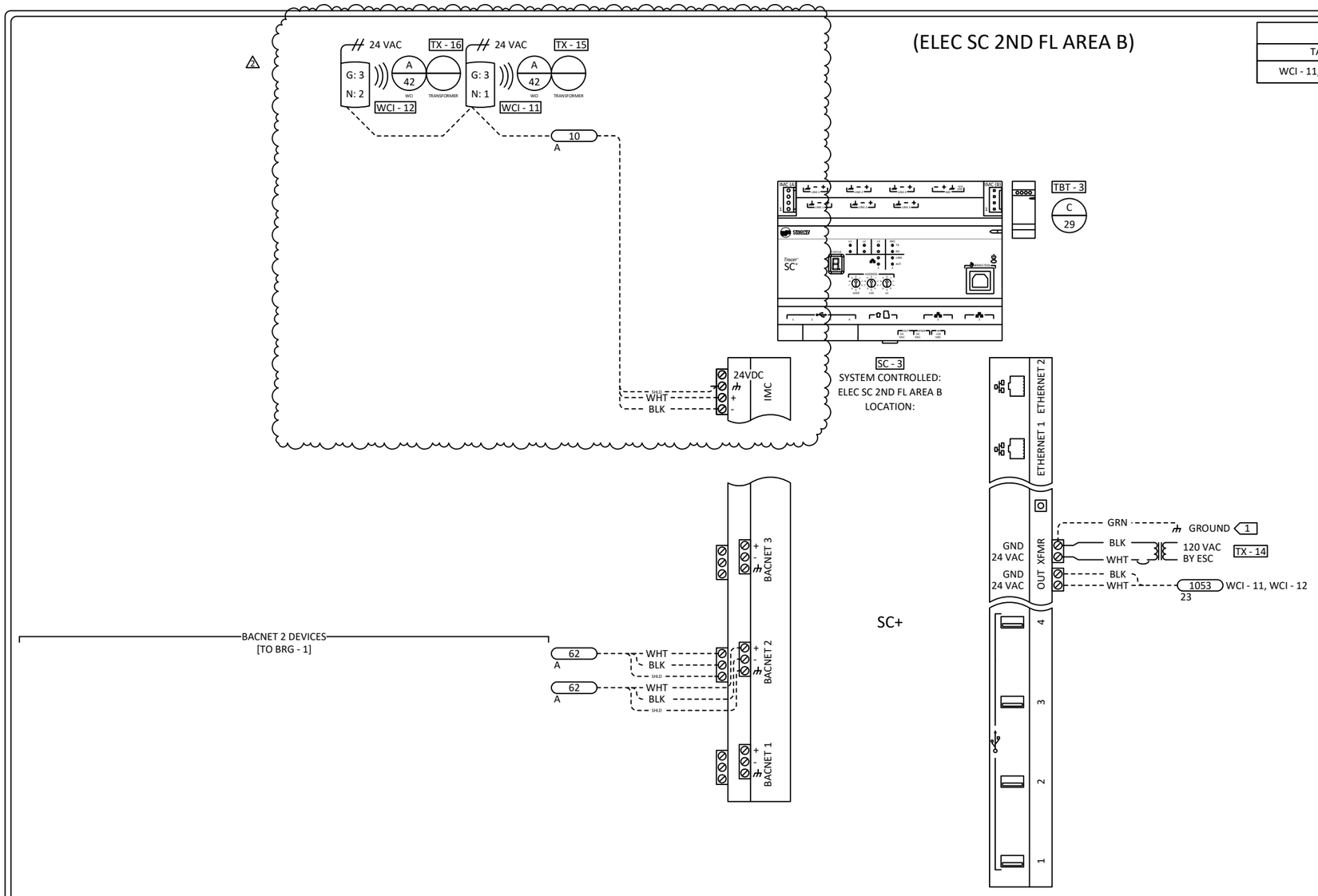
Fort Worth	PROJECT: Kiewit Westlake Office TI
4200 N. Sylvania Avenue	
FORT WORTH, TX 76137	2050 Roanoke Road
817-838-1300	WESTLAKE TX 76262
FILE: Kiewitt Westlake Office_rev1.vsdx	DWG 22 OF 41

(ELEC SC 2ND FL AREA B)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
WCI - 11, WCI - 12	2	TRANE	X13790901030	AIR-FI WIRELESS COMM INTERFACE, INDOOR MOUNTING, FIELD



SC+

5 TO BE COMPLETED DURING INSTALLATION AND INCLUDED IN RECORD DRAWINGS.

4 REMOTE ACCESS REQUIRED FOR TIS IN WARRANTY SERVICE AGREEMENT.

3 FOR THE CUSTOMER TO REMOTELY CONNECT TO THE SC, A SECURE NETWORK BEHIND A FIREWALL AND VPN ACCESS IS REQUIRED.

2 CUSTOMER TO SUPPLY NETWORK COMM ACCESS POINT.

1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

ELEC SC 2ND FL B SC - 3 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

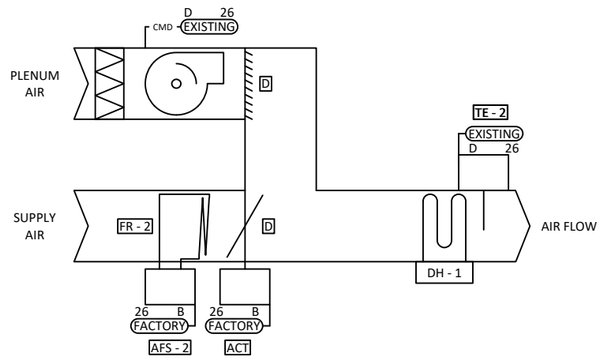
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

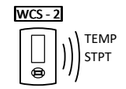
FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 35
(FAN POWERED BOXES) 1

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



SPACE TEMPERATURE SENSOR



1 8 FAN POWERED BOXES WILL BE NEW SUPPLIED BY FACTORY. (27) EXISTING FAN POWERED BOXES WILL REQUIRE NEW CONTROLLER AND WCI. SEE FLOORPLAN FOR REFERENCE.

FAN POWERED BOXES - FLOW

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

DWG 24 OF 41

Kiewit Westlake Office TI, 2050 Roanoke Road, WESTLAKE, TX

FAN POWERED BOXES S210 - 2

Sequence of Operations

FAN POWERED BOXES Flow

Building Automation System Interface:

The Building Automation System (BAS) will send the controller Occupied and Unoccupied commands. The BAS may also send a Heat/Cool mode, priority shutdown commands, space temperature and/or space temperature setpoint. If communication is lost with the BAS, the VAV controller will operate using its local setpoints.

Occupied Mode:

The occupancy mode will be communicated or hardwired to the controller via a binary input. When the unit is in the occupied mode the VAV will maintain the space temperature at the active occupied heating or cooling setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the VAV.

Unoccupied:

Normal operating mode for unoccupied spaces or nighttime operation. When the unit is in unoccupied mode the VAV controller will maintain the space temperature at the stored unoccupied heating or cooling setpoint regardless of the presence of a hardwired or communicated setpoint. When in the Unoccupied Mode, the controller will disable the electric heat, and close the ventilation air damper, unless unoccupied cooling or heating is needed. When the space temperature is between the active unoccupied setpoint the VAV will modulate fully closed, and the fan will turn off.

Heat/Cool Mode:

The Heat/Cool mode will be set by a communicated value or automatically by the VAV controller. In standalone or auto mode the VAV controller will compare the primary air temperature with the configured auto changeover setpoint to determine if the air is "hot" or "cold". Heating mode implies the primary air temperature is hot. Cooling mode implies the primary air temperature is cold.

Heat/Cool Setpoint:

The space temperature setpoint will be determined either by a local (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV will use the communicated value.

Cooling Mode:

When the unit is in cooling mode, the VAV controller will maintain the space temperature at the active cooling setpoint by simultaneously modulating both the VAV damper (between the active cooling minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active cooling setpoint will be one of the following:

Setpoint	Default Value
Occupied Cooling Setpoint	74.0 deg. F
Unoccupied Cooling Setpoint	85.0 deg. F
Occupied Standby Cooling Setpoint	78.0 deg. F
Occupied Min Cooling Airflow Setpoint	See VAV Schedule
Occupied Max Cooling Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

The VAV controller will use the measured space temperature and the active cooling setpoint to determine the requested cooling capacity of the unit. The outputs will be controlled based on the unit configuration and the requested cooling capacity.

Heating Mode:

When the unit is in heating mode, the VAV controller will maintain the space temperature at the active heating setpoint by simultaneously modulating both the VAV damper (between the active heating minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	Default Value
Occupied Heating Setpoint	71.0 deg. F
Unoccupied Heating Setpoint	60.0 deg. F
Occupied Standby Heating Setpoint	67.0 deg. F
Occupied Min Heating Airflow Setpoint	See VAV Schedule
Occupied Max Heating Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

Intermittent Fan Control:

During all occupied modes, when the unit is in cooling mode, as the space temperature falls below the active cooling setpoint, the VAV damper will modulate to its minimum cooling airflow setpoint. The terminal fan and heat will cycle as needed to maintain a reduced space temperature. If the discharge air temperature reaches the design heating discharge air temperature setpoint of 90.0 deg. F (adj.), the VAV controller will modulate the fan between the minimum and maximum fan airflow setpoints to maintain space temperature at the active heating setpoint and modulate the electric heater to maintain discharge air temperature at the design heating discharge air temperature setpoint. If the fan reaches the maximum fan airflow setpoint, the VAV controller will modulate the electric heater to maintain space temperature at the active heating setpoint while the fan continues to operate at the maximum fan airflow setpoint. During the unoccupied mode, the VAV damper will modulate fully closed.

During reheat the VAV damper, fan, and electric heat will operate as follows:

Silicon Controlled Rectifier (SCR):

The VAV controller will operate the fan at the minimum fan airflow setpoint and modulate the SCR electric heater to maintain space temperature at the active heating setpoint. If the discharge air temperature reaches the design heating discharge air temperature setpoint of 90.0 deg. F (adj.), the VAV controller will modulate the fan between the minimum and maximum fan airflow setpoints to maintain space temperature at the active heating setpoint and modulate the SCR electric heater to maintain discharge air temperature at the design heating discharge air temperature setpoint. If the fan reaches the maximum fan airflow setpoint, the VAV controller will modulate the SCR electric heater to maintain space temperature at the active heating setpoint while the fan continues to operate at the maximum fan airflow setpoint.

When the unit is in occupied mode, the ventilation airflow setpoint will equal the design outdoor airflow (see VAV schedule).

The current ventilation airflow setpoint will be communicated to the BAS for control of the system outdoor-air intake.

Space Sensor Failure:

If there is a fault with the operation of the zone sensor an alarm will be annunciated at the BAS. Space sensor failure will cause the VAV controller to drive the VAV damper to minimum air flow setpoint. If the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode. The parallel fan will be disabled along with the reheat.

TRANE

FAN POWERED BOXES - SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

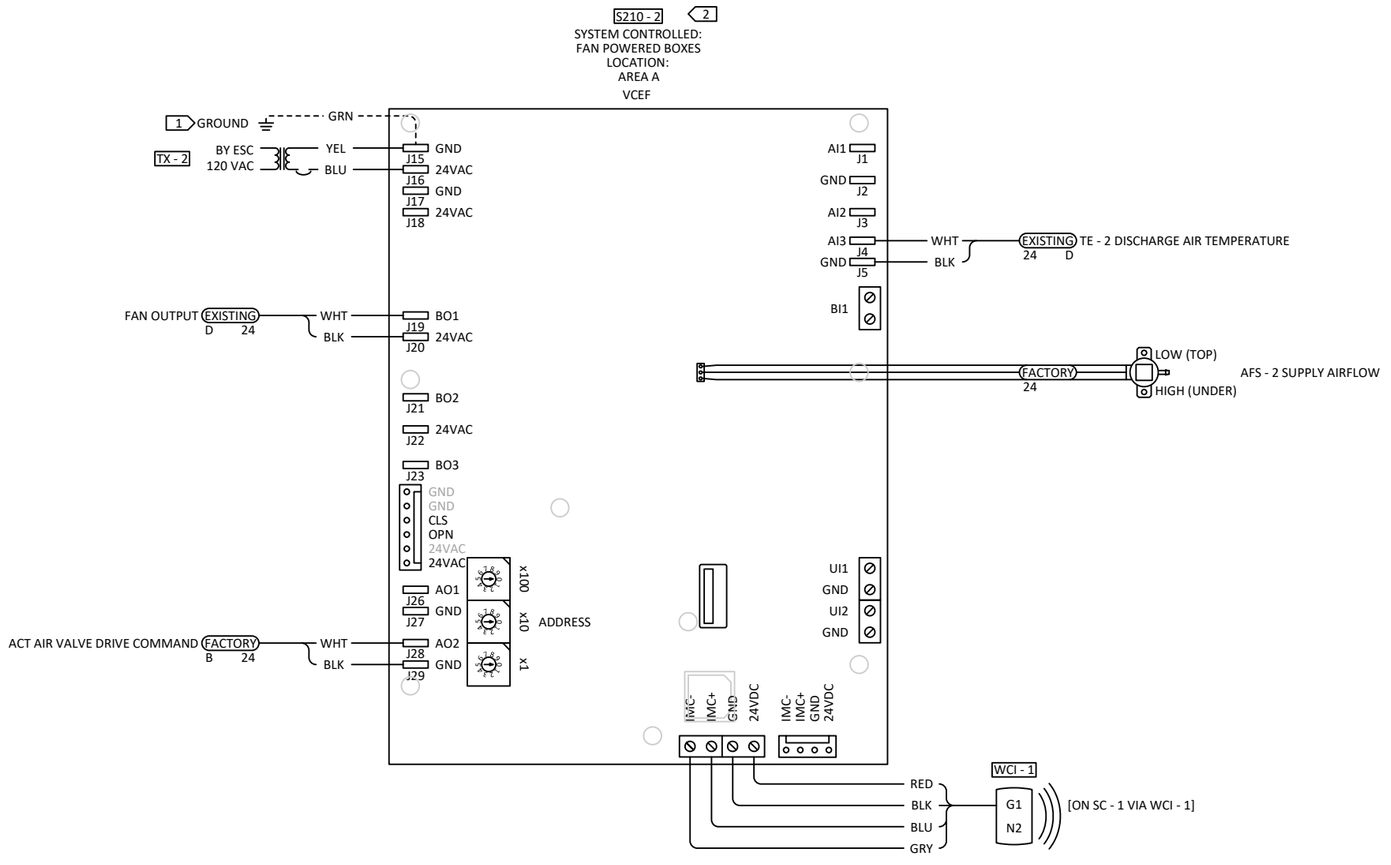
PROJECT: Kiewit Westlake Office TI
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 35
(FAN POWERED BOXES) 2

AREA OF WORK WILL ONLY CONSIST 35 BOXES ONLY PER SCOPE

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



2 8 FAN POWERED BOXES WILL BE NEW SUPPLIED BY FACTORY. (27) EXISTING FAN POWERED BOXES WILL REQUIRE NEW CONTROLLER AND WCI. SEE FLOORPLAN FOR REFERENCE.

1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

FAN POWERED BOXES - S210 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

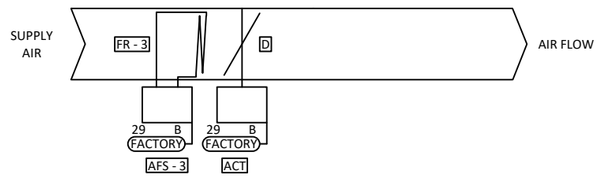
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

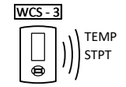
AREA OF WORK WILL ONLY CONSIST 40 BOXES ONLY PER SCOPE

TYPICAL FOR 36 (VAV BOXES) 1

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



SPACE TEMPERATURE SENSOR



1 13 VAV BOXES WILL BE NEW SUPPLIED BY FACTORY. (27) EXISTING VAV BOXES WILL REQUIRE NEW CONTROLLER AND WCI. SEE FLOORPLAN FOR REFERENCE.

VAV BOXES - FLOW

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

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4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

DWG 27 OF 41

Kiewit Westlake Office TI, 2050 Roanoke Road, WESTLAKE, TX

VAV BOXES S210 - 3

Sequence of Operations

VAV BOXES Flow

Building Automation System Interface:

The Building Automation System (BAS) will send the controller Occupied and Unoccupied commands. The BAS may also send a Heat/Cool mode, priority shutdown commands, space temperature and/or space temperature setpoint. If communication is lost with the BAS, the VAV controller will operate using its local setpoints.

Occupied Mode:

The occupancy mode will be communicated or hardwired to the controller via a binary input. When the unit is in the occupied mode the VAV will maintain the space temperature at the active occupied heating or cooling setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the VAV.

Unoccupied:

Normal operating mode for unoccupied spaces or nighttime operation. **Unoccupied:**

When in the Unoccupied Mode, the controller will close the air damper, unless unoccupied cooling or ventilation is required. When the unit is in unoccupied mode the VAV controller will maintain the space temperature at the stored unoccupied heating or cooling setpoint regardless of the presence of a hardwired or communicated setpoint. If the zone temperature rises above its Unoccupied Cooling Setpoint, the controller will modulate the air damper, until the zone temperature drops back to 2.0 deg. F below the Unoccupied Cooling Setpoint.

Heat/Cool Mode:

The Heat/Cool mode will be set by a communicated value or automatically by the VAV controller. In standalone or auto mode the VAV controller will compare the primary air temperature with the configured auto changeover setpoint to determine if the air is "hot" or "cold". Heating mode implies the primary air temperature is hot. Cooling mode implies the primary air temperature is cold.

Heat/Cool Setpoint:

The space temperature setpoint will be determined either by a local (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV will use the communicated value.

Cooling Mode:

When the unit is in cooling mode, the VAV controller will maintain the space temperature at the active cooling setpoint by modulating the VAV damper (between the active cooling minimum and maximum airflow setpoints). The outputs will be controlled based on the unit configuration and the requested cooling capacity.

Heating Mode:

When the unit is in heating mode, the VAV controller will maintain the space temperature at the active heating setpoint by modulating the VAV damper (between the active heating minimum and maximum airflow setpoints). Based on the VAV controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	**Default Value**
Occupied Heating Setpoint	71.0 deg. F
Unoccupied Heating Setpoint	60.0 deg. F
Occupied Standby Heating Setpoint	67.0 deg. F
Occupied Min Heating Airflow Setpoint	See VAV Schedule
Occupied Max Heating Airflow Setpoint	See VAV Schedule

When the unit is in occupied mode, the ventilation airflow setpoint will equal the design outdoor airflow (see VAV schedule).

The current ventilation airflow setpoint will be communicated to the BAS for control of the system outdoor-air intake.

Space Sensor Failure:

If there is a fault with the operation of the zone sensor an alarm will be annunciated at the BAS. Space sensor failure will cause the VAV to drive the damper to minimum air flow if the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode.

VAV BOXES - SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

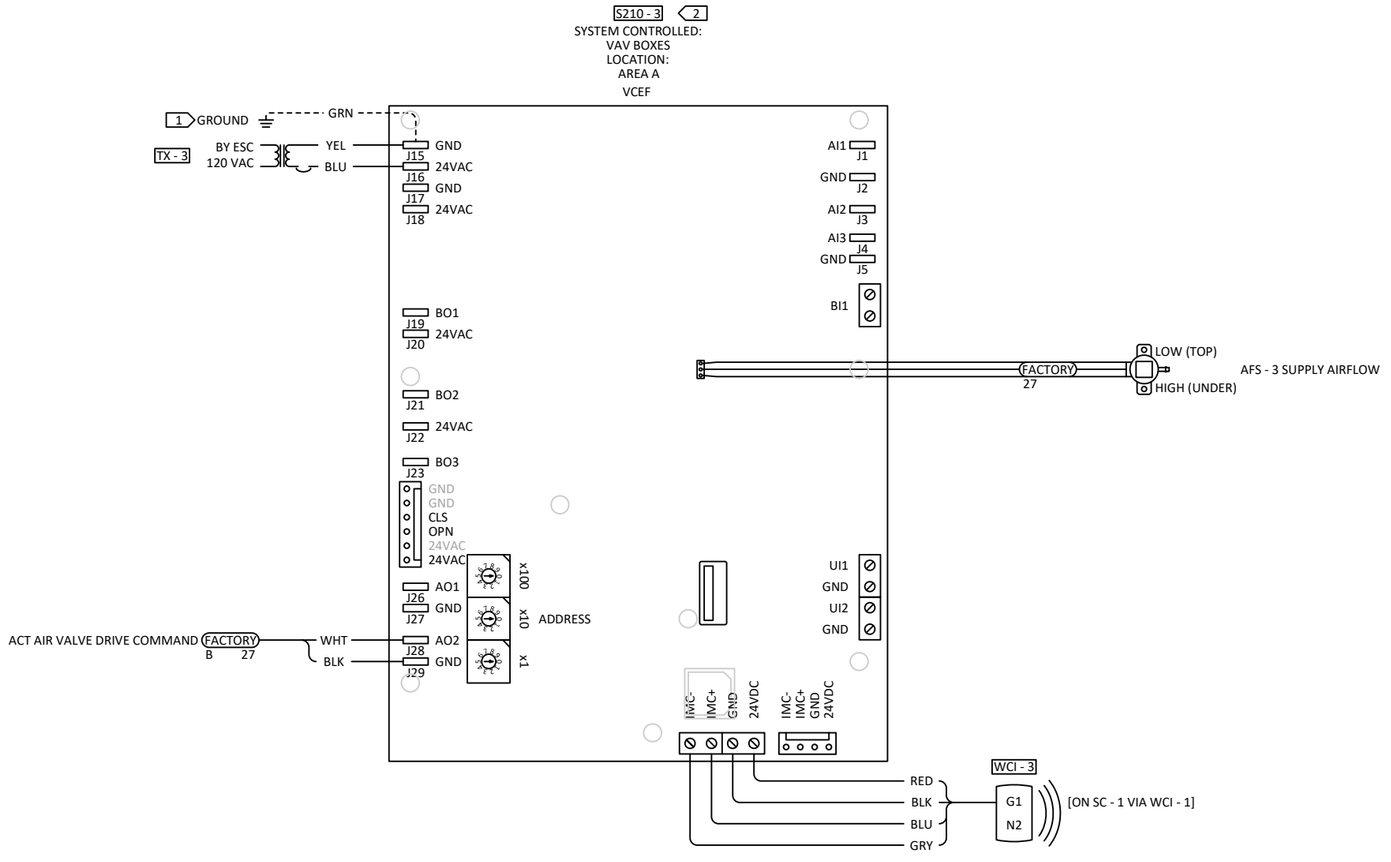
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 36
(VAV BOXES) 2

AREA OF WORK WILL ONLY CONSIST 40 BOXES ONLY PER SCOPE

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



2 13 VAV BOXES WILL BE NEW SUPPLIED BY FACTORY. (27) EXISTING VAV BOXES WILL REQUIRE NEW CONTROLLER AND WCI. SEE FLOORPLAN FOR REFERENCE.

1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

VAV BOXES - S210 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

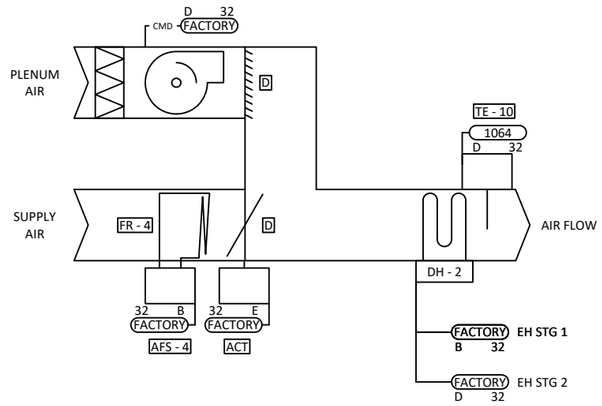
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

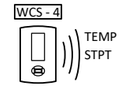
FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 22
(FPB 1 ~ 22)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
WCS - 4	22	TRANE	X13790955010	TEMP SENS, AIR-FI WIRELESS COMM, DISPLAY, UNIVERSAL



SPACE TEMPERATURE SENSOR



FPB 1 ~ 22 S210 - 18 FLOW

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

Kiewit Westlake Office TI, 2050 Roanoke Road, WESTLAKE, TX

FPB 1 ~ 22 S210 - 18

Sequence of Operations

FPB 1 ~ 22 Flow

Building Automation System Interface:

The Building Automation System (BAS) will send the controller Occupied and Unoccupied commands. The BAS may also send a Heat/Cool mode, priority shutdown commands, space temperature and/or space temperature setpoint. If communication is lost with the BAS, the VAV controller will operate using its local setpoints.

Occupancy:

The occupancy mode will be communicated or hardwired to the controller via a binary input. When the unit is in the occupied mode the VAV will maintain the space temperature at the active occupied heating or cooling setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the VAV.

Unoccupied:

Normal operating mode for unoccupied spaces or nighttime operation. When the unit is in unoccupied mode the VAV controller will maintain the space temperature at the stored unoccupied heating or cooling setpoint regardless of the presence of a hardwired or communicated setpoint. When in the Unoccupied Mode, the controller will disable the electric heat, and close the ventilation air damper, unless unoccupied cooling or heating is needed. When the space temperature is between the active unoccupied setpoint the VAV will modulate fully closed, and the fan will turn off.

Heat/Cool Mode:

The Heat/Cool mode will be set by a communicated value or automatically by the VAV controller. In standalone or auto mode the VAV controller will compare the primary air temperature with the configured auto changeover setpoint to determine if the air is "hot" or "cold". Heating mode implies the primary air temperature is hot. Cooling mode implies the primary air temperature is cold.

Heat/Cool Setpoint:

The space temperature setpoint will be determined either by a local (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV will use the communicated value.

Cooling Mode:

When the unit is in cooling mode, the VAV controller will maintain the space temperature at the active cooling setpoint by simultaneously modulating both the VAV damper (between the active cooling minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active cooling setpoint will be one of the following:

Setpoint	Default Value
Occupied Cooling Setpoint	74.0 deg. F
Unoccupied Cooling Setpoint	85.0 deg. F
Occupied Standby Cooling Setpoint	78.0 deg. F
Occupied Min Cooling Airflow Setpoint	See VAV Schedule
Occupied Max Cooling Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

The VAV controller will use the measured space temperature and the active cooling setpoint to determine the requested cooling capacity of the unit. The outputs will be controlled based on the unit configuration and the requested cooling capacity.

Heating Mode:

When the unit is in heating mode, the VAV controller will maintain the space temperature at the active heating setpoint by simultaneously modulating both the VAV damper (between the active heating minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	Default Value
Occupied Heating Setpoint	71.0 deg. F
Unoccupied Heating Setpoint	60.0 deg. F
Occupied Standby Heating Setpoint	67.0 deg. F
Occupied Min Heating Airflow Setpoint	See VAV Schedule
Occupied Max Heating Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

Intermittent Fan Control:

During all occupied modes, when the unit is in cooling mode, as the space temperature falls below the active cooling setpoint, the VAV damper will modulate to its minimum cooling airflow setpoint. The terminal fan and heat will cycle as needed to maintain a reduced space temperature. If the discharge air temperature reaches the design heating discharge air temperature setpoint of 90.0 deg. F (adj.), the VAV controller will modulate the fan between the minimum and maximum fan airflow setpoints to maintain space temperature at the active heating setpoint and modulate the electric heater to maintain discharge air temperature at the design heating discharge air temperature setpoint. During the unoccupied mode, the VAV damper will modulate fully closed.

The reheat will be enabled when the space temperature drops below the active heating setpoint and the minimum airflow requirements are met. During reheat the VAV damper, fan, and electric heat will operate as described above.

Electric Staged:

Stage 1 energizes when the space temperature falls below the active heating setpoint and minimum airflow requirements are met. When the zone temperature rises above the active heating setpoint by 0.5 deg. F, stage 1 is de-energized.

Stage 2 energizes when the space temperature is 1.0 deg. F or more below the active heating setpoint, and is de-energized when the space temperature is 0.5 deg. F below the active heating setpoint.

Ventilation Control (Fixed):

When the unit is in unoccupied mode, the ventilation airflow setpoint will be zero. When the unit is in occupied mode, the ventilation airflow setpoint will equal the design outdoor airflow (see VAV schedule).

The current ventilation airflow setpoint will be communicated to the BAS for control of the system outdoor-air intake.

Space Sensor Failure:

If there is a fault with the operation of the zone sensor an alarm will be annunciated at the BAS. Space sensor failure will cause the VAV controller to drive the VAV damper to minimum air flow setpoint. If the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode. The parallel fan will be disabled along with the reheat.

FPB 1 ~ 22 S210 - 18 SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

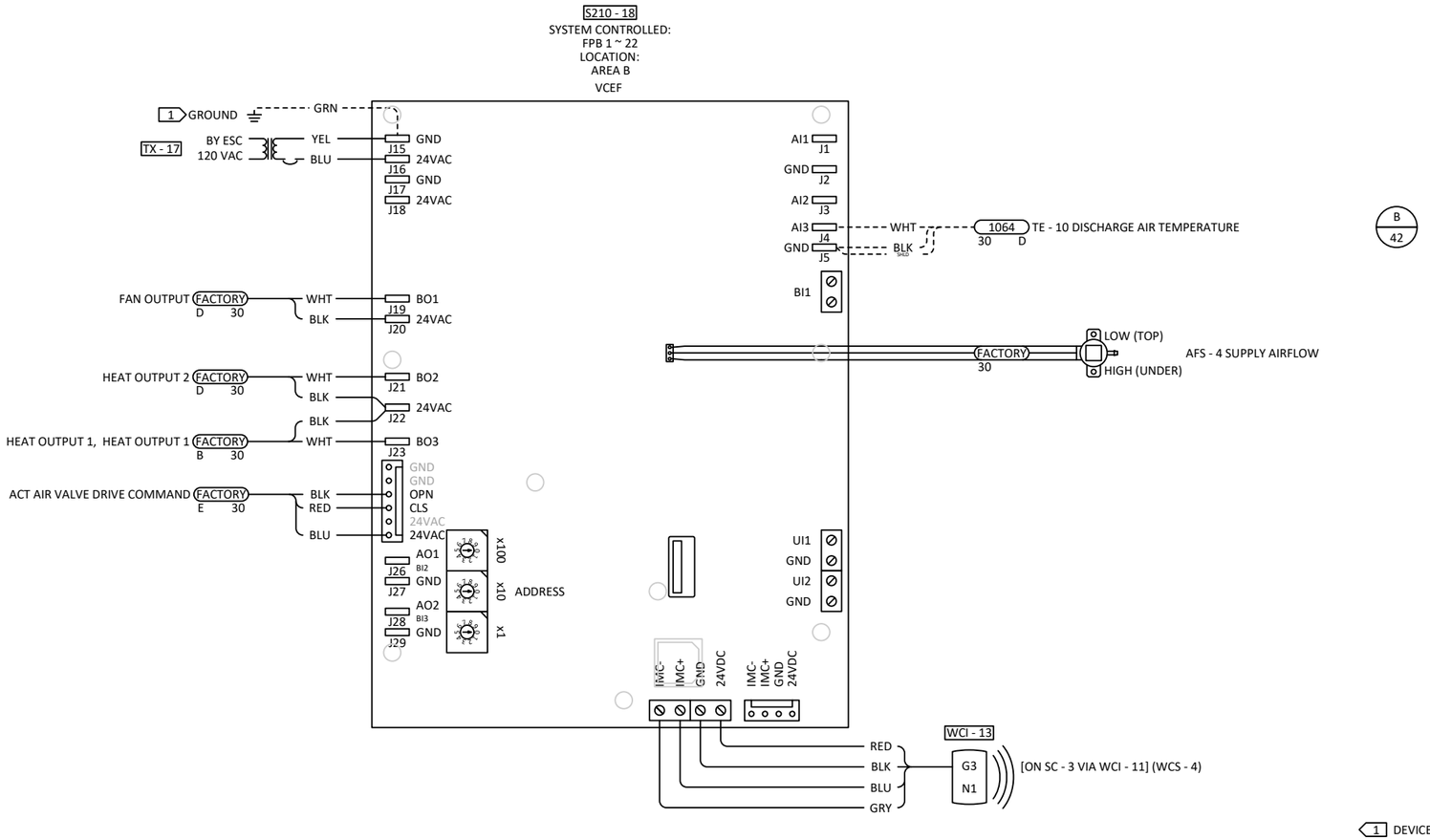
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 22
(FPB 1 ~ 22)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

FPB 1 ~ 22 S210 - 18 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

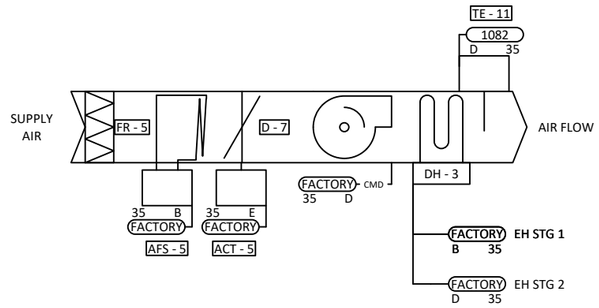
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

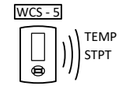
FILE: Kiewitt Westlake Office_rev1.vsdx

(VAVRH)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
WCS - 5	1	TRANE	X13790955010	TEMP SENS, AIR-FI WIRELESS COMM, DISPLAY, UNIVERSAL



SPACE TEMPERATURE SENSOR



VAVRH S210 - 19 FLOW

	NUM.	REVISION	DATE:	BY:
CID: 00097395				
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

TRANE®

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

Kiewit Westlake Office TI, 2050 Roanoke Road, WESTLAKE, TX

VAVRH S210 - 19

Sequence of Operations

VAVRH Flow

Building Automation System Interface:

The Building Automation System (BAS) will send the controller Occupied and Unoccupied commands. The BAS may also send a Heat/Cool mode, priority shutdown commands, space temperature and/or space temperature setpoint. If communication is lost with the BAS, the VAV controller will operate using its local setpoints.

Occupancy:

The occupancy mode will be communicated or hardwired to the controller via a binary input. When the unit is in the occupied mode the VAV will maintain the space temperature at the active occupied heating or cooling setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the VAV.

Unoccupied:

Normal operating mode for unoccupied spaces or nighttime operation. When the unit is in unoccupied mode the VAV controller will maintain the space temperature at the stored unoccupied heating or cooling setpoint regardless of the presence of a hardwired or communicated setpoint. When in the Unoccupied Mode, the controller will disable the electric heat, and close the ventilation air damper, unless unoccupied cooling or heating is needed. When the space temperature is between the active unoccupied setpoint the VAV will modulate fully closed, and the fan will turn off.

Heat/Cool Mode:

The Heat/Cool mode will be set by a communicated value or automatically by the VAV controller. In standalone or auto mode the VAV controller will compare the primary air temperature with the configured auto changeover setpoint to determine if the air is "hot" or "cold". Heating mode implies the primary air temperature is hot. Cooling mode implies the primary air temperature is cold.

Heat/Cool Setpoint:

The space temperature setpoint will be determined either by a local (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV will use the communicated value.

Cooling Mode:

When the unit is in cooling mode, the VAV controller will maintain the space temperature at the active cooling setpoint by simultaneously modulating both the VAV damper (between the active cooling minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active cooling setpoint will be one of the following:

Setpoint	Default Value
Occupied Cooling Setpoint	74.0 deg. F
Unoccupied Cooling Setpoint	85.0 deg. F
Occupied Standby Cooling Setpoint	78.0 deg. F
Occupied Min Cooling Airflow Setpoint	See VAV Schedule
Occupied Max Cooling Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

The VAV controller will use the measured space temperature and the active cooling setpoint to determine the requested cooling capacity of the unit. The outputs will be controlled based on the unit configuration and the requested cooling capacity.

Heating Mode:

When the unit is in heating mode, the VAV controller will maintain the space temperature at the active heating setpoint by simultaneously modulating both the VAV damper (between the active heating minimum and maximum airflow setpoints) and the fan (between the minimum and maximum fan airflow setpoints). Based on the VAV controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	Default Value
Occupied Heating Setpoint	71.0 deg. F
Unoccupied Heating Setpoint	60.0 deg. F
Occupied Standby Heating Setpoint	67.0 deg. F
Occupied Min Heating Airflow Setpoint	See VAV Schedule
Occupied Max Heating Airflow Setpoint	See VAV Schedule
Min Fan Airflow Setpoint	See VAV Schedule
Max Fan Airflow Setpoint	See VAV Schedule

Continuous Fan Control:

The VAV fan will operate continuously in all occupied modes. The terminal fan and heat will cycle as needed to maintain a reduced space temperature.

The reheat will be enabled when the space temperature drops below the active heating setpoint and the minimum airflow requirements are met. During reheat the VAV damper, fan, and electric heat will operate as described above.

Electric Staged:

Stage 1 energizes when the space temperature falls below the active heating setpoint and minimum airflow requirements are met. When the zone temperature rises above the active heating setpoint by 0.5 deg. F, stage 1 is de-energized.

Stage 2 energizes when the space temperature is 1.0 deg. F or more below the active heating setpoint, and is de-energized when the space temperature is 0.5 deg. F below the active heating setpoint.

Ventilation Control (Fixed):

When the unit is in unoccupied mode, the ventilation airflow setpoint will be zero. When the unit is in occupied mode, the ventilation airflow setpoint will equal the design outdoor airflow (see VAV schedule).

The current ventilation airflow setpoint will be communicated to the BAS for control of the system outdoor-air intake.

Space Sensor Failure:

If there is a fault with the operation of the zone sensor an alarm will be annunciated at the BAS. Space sensor failure will cause the VAV to drive the damper to minimum air flow if the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode. The series fan will be enabled and the reheat will be disabled.

VAVRH S210 - 19 SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

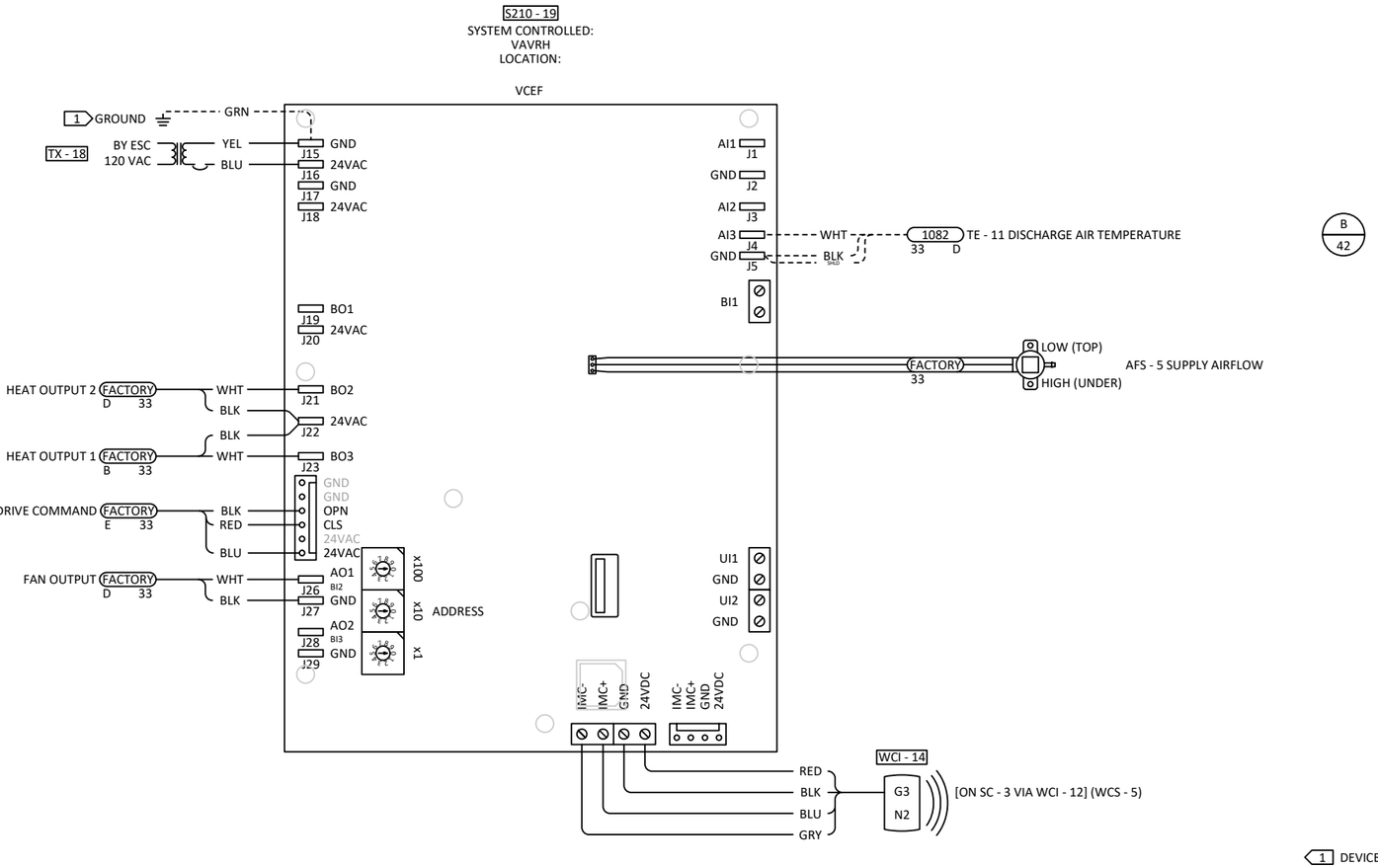
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

(VAVRH)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

VAVRH S210 - 19 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

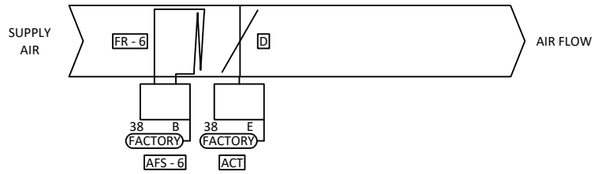
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

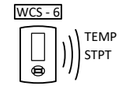
FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 33
(VAV 1 ~ 33)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
WCS - 6	33	TRANE	X13790955010	TEMP SENS, AIR-FI WIRELESS COMM, DISPLAY, UNIVERSAL



SPACE TEMPERATURE SENSOR



VAV 1 ~ 33 S210 - 20 FLOW

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

TRANE®

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

DWG 36 OF 41

Kiewit Westlake Office TI, 2050 Roanoke Road, WESTLAKE, TX

VAV 1 ~ 33 S210 - 20

Sequence of Operations

VAV 1 ~ 33 Flow

Building Automation System Interface:

The Building Automation System (BAS) will send the controller Occupied and Unoccupied commands. The BAS may also send a Heat/Cool mode, priority shutdown commands, space temperature and/or space temperature setpoint. If communication is lost with the BAS, the VAV controller will operate using its local setpoints.

Occupancy:

The occupancy mode will be communicated or hardwired to the controller via a binary input. When the unit is in the occupied mode the VAV will maintain the space temperature at the active occupied heating or cooling setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the VAV.

Unoccupied:

Normal operating mode for unoccupied spaces or nighttime operation. **Unoccupied:**

When in the Unoccupied Mode, the controller will close the air damper, unless unoccupied cooling or ventilation is required. When the unit is in unoccupied mode the VAV controller will maintain the space temperature at the stored unoccupied heating or cooling setpoint regardless of the presence of a hardwired or communicated setpoint. If the zone temperature rises above its Unoccupied Cooling Setpoint, the controller will modulate the air damper, until the zone temperature drops back to 2.0 deg. F below the Unoccupied Cooling Setpoint.

Heat/Cool Mode:

The Heat/Cool mode will be set by a communicated value or automatically by the VAV controller. In standalone or auto mode the VAV controller will compare the primary air temperature with the configured auto changeover setpoint to determine if the air is "hot" or "cold". Heating mode implies the primary air temperature is hot. Cooling mode implies the primary air temperature is cold.

Heat/Cool Setpoint:

The space temperature setpoint will be determined either by a local (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV will use the communicated value.

Cooling Mode:

When the unit is in cooling mode, the VAV controller will maintain the space temperature at the active cooling setpoint by modulating the VAV damper (between the active cooling minimum and maximum airflow setpoints). The outputs will be controlled based on the unit configuration and the requested cooling capacity.

Heating Mode:

When the unit is in heating mode, the VAV controller will maintain the space temperature at the active heating setpoint by modulating the VAV damper (between the active heating minimum and maximum airflow setpoints). Based on the VAV controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	**Default Value**
Occupied Heating Setpoint	71.0 deg. F
Unoccupied Heating Setpoint	60.0 deg. F
Occupied Standby Heating Setpoint	67.0 deg. F
Occupied Min Heating Airflow Setpoint	See VAV Schedule
Occupied Max Heating Airflow Setpoint	See VAV Schedule

Ventilation Control (Fixed):

When the unit is in unoccupied mode, the ventilation airflow setpoint will be zero. When the unit is in occupied mode, the ventilation airflow setpoint will equal the design outdoor airflow (see VAV schedule).

The current ventilation airflow setpoint will be communicated to the BAS for control of the system outdoor-air intake.

Space Sensor Failure:

If there is a fault with the operation of the zone sensor an alarm will be annunciated at the BAS. Space sensor failure will cause the VAV to drive the damper to minimum air flow if the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode.

VAV 1 ~ 33 S210 - 20 SEQUENCE

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

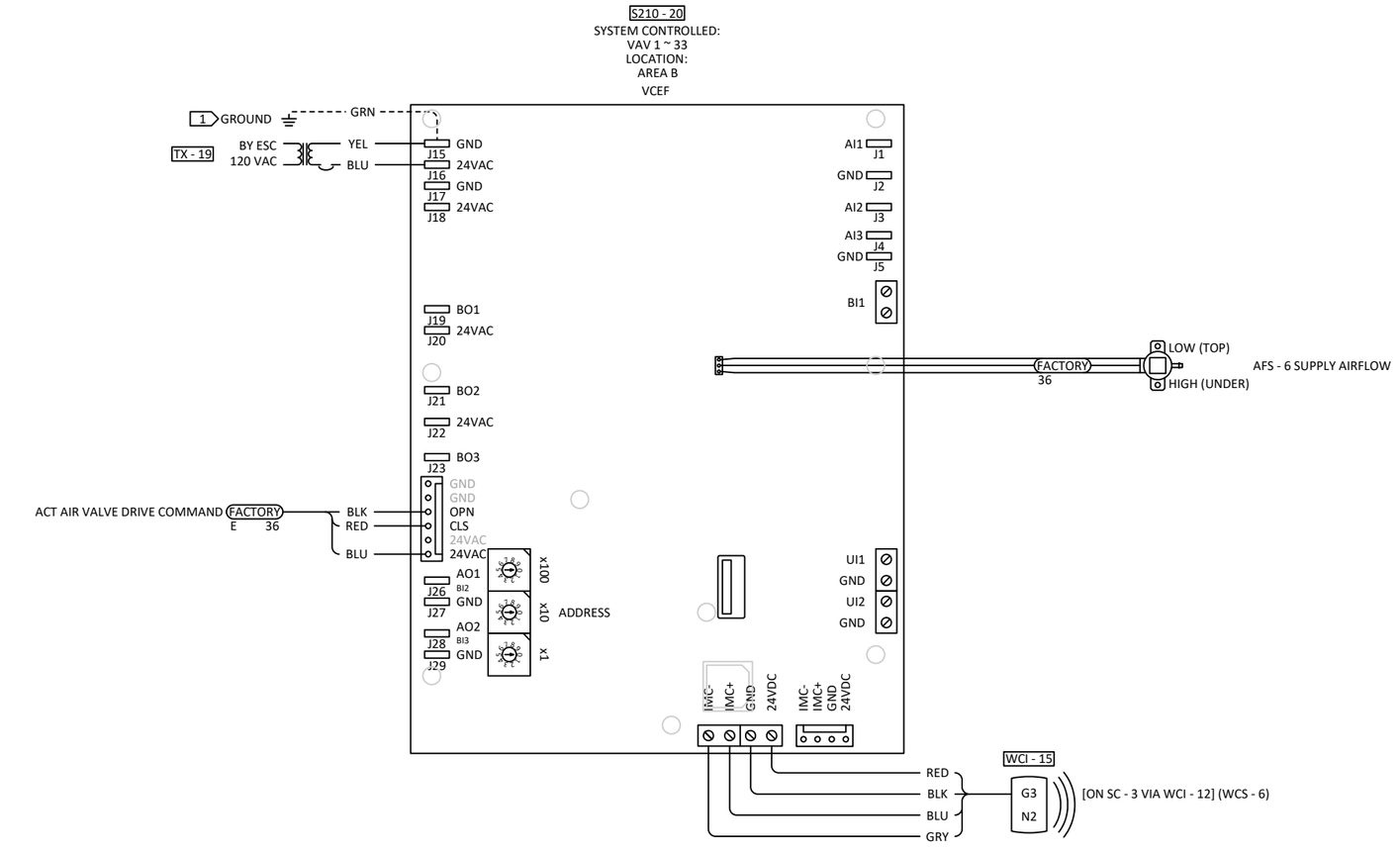
PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

TYPICAL FOR 33
(VAV 1 ~ 33)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION



1 DEVICE MUST BE GROUNDED WITH FACTORY PROVIDED GROUND WIRE AS DETAILED IN THE DEVICE INSTALLATION LITERATURE.

VAV 1 ~ 33 S210 - 20 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

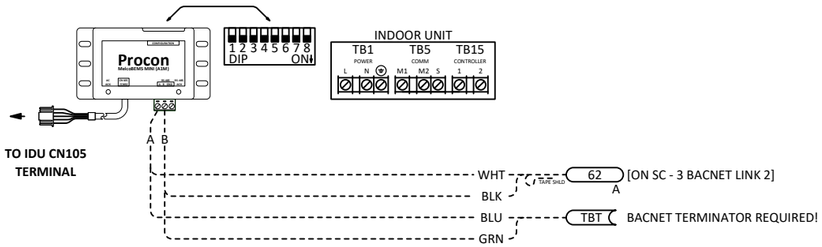
2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

(MINI SPLIT)

BILL OF MATERIAL				
TAG	QTY	VENDOR	PART NO	DESCRIPTION

BRG - 1
SYSTEM CONTROLLED:
MINI SPLIT
LOCATION:



DIP SWITCH SETTINGS												
ITEM	**RISER TAG**	**INDOOR UNIT SERVED**	**ADD**	**SW 1**	**SW 2**	**SW 3**	**SW 4**	**SW 5**	**SW 6** BAUD	**SW 7** COMM	**SW 8** DEADBAND	**NOTE**
1	BRG - 1	IDU - 1	1	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	

MINI SPLIT BRG - 1 CONTROLLER

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

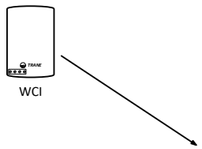
Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

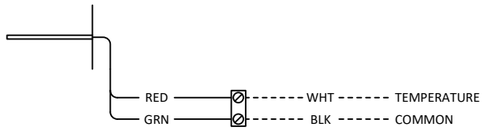
FILE: Kiewitt Westlake Office_rev1.vsdx

AIR-FI WIRELESS COMM INTERFACE, INDOOR MOUNTING, FIELD
TRANE
X13790901030



A

SENSOR TEMP 4" DUCT THERM
TRANE
41901129



B

DETAIL SHEET

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:				

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx

DWG 40 OF 41

BILL OF MATERIAL				
TAG PREFIX	QTY	VENDOR	PART NO	DESCRIPTION
WCI	2	TRANE	X13790901030	AIR-FI WIRELESS COMM INTERFACE, INDOOR MOUNTING, FIELD
WCS	56	TRANE	X13790955010	TEMP SENS, AIR-FI WIRELESS COMM, DISPLAY, UNIVERSAL

2 ONLY 54 WCI FOR BOXES, AND 4 WCI FOR IMC LINK

1 ONLY 54 CONTROLLERS WILL BE PROVIDED FOR EXISTING BOXES. 21 CONTROLLERS WILL BE SUPPLIED WITH NEW FACTORY CONTROLLERS.

BILL OF MATERIALS

CID: 00097395	NUM.	REVISION	DATE:	BY:
PID: 00105161				
PROJECT: K901283				
SALESPERSON: Z Rutledge				
DESIGNED BY: B Nyamaah				
CHECKED BY:	1	-SUBMITTALS	3/1/2022	BEN

Fort Worth
4200 N. Sylvania Avenue
FORT WORTH, TX 76137
817-838-1300

PROJECT: Kiewit Westlake Office TI

2050 Roanoke Road
WESTLAKE TX 76262

FILE: Kiewitt Westlake Office_rev1.vsdx