Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

BOARD OF DIRECTORS
Regular Business Meeting & Executive Session - 5:30 PM
October 24, 2023
364 S Park St
Walla Walla, WA 99362

Watch Live: https://wwps-org.zoom.us/j/91601914498
Listen: Dial 1-253-215-8782 and enter the Webinar ID: 916 0191 4498
Individuals with disabilities and those individuals who may have difficulty attending a board meeting due to issues such as mobility limitations may contact the superintendent's office at 509-526-6715 no later than three days before a regular meeting and as soon as possible in advance of a special meeting so the district can arrange for them to participate.
Spanish Agenda / Agenda Española: https://www.wwps.org/district/information/school-board/board-meeting-schedule

I. **CALL TO ORDER:** *(5:30 p.m.) Derek Sarley*
II. **FLAG SALUTE:** *Hailey Thrall*
III. **ROLL CALL:**
- Derek Sarley, President
- Kathy Mulkerin, Vice President
- Ruth Ladderud
- Eric Rindal
- Terri Trick
- Hailey Thrall, Student Board Representative

IV. **APPROVAL OF AGENDA:** *Derek Sarley*
V. **CONSENT AGENDA:** *Derek Sarley*

1. Personnel Report	3
2. Extracurricular Athletic Contracts	4
3. Non-Athletic Extra & Co-Curricular Contracts	6
4. October 24 Accounts Payable	7
5. Resolution 12-2023 Lincoln High School Commissioning	8
6. Resolution 13-2023 Pioneer Middle School Commissioning	153
7. Resolution 14-2023 Pioneer Middle School Final Acceptance	306
8. Resolution 15-2023 Walla Walla High School Commissioning	307
9. Resolution 16-2023 Walla Walla High School Final Acceptance	589
10. Notice to Proceed - HVAC Project	590
11. Excused Absence for Director Terri Trick	
12. Regular Study Meeting Minutes of October 3, 2023	591

VI. **SPECIAL PROGRAMS/INTRODUCTIONS/ANNOUNCEMENTS:** *(5:35 p.m.) Derek Sarley*

1. "Into the Blue" Review: *Shayna Hutchens*	593

VII. **CITIZENS' COMMENTS:** *(5:55 p.m.) Derek Sarley*
VIII. **REPORTS:** *(6:05 p.m.) Derek Sarley*

1. Board of Directors Report: *Derek Sarley*
2. Superintendent's Report: *Dr. Wade Smith*
    a. Monthly Enrollment Report 601
3. Monthly Financial Dashboard Report: *Janette Jeffris* 603
4. Strategic Plan Strategies 3 and 5: *Chris Gardea, Casey Monahan and Committee Members* 606
5. Educational Programs & Operations Levy Renewal and Capital Levy Resolutions: *Derek Sarley* 626

IX. **ACTION:** *Derek Sarley*

1. Resolution 17-2023: Proposition No. 1 - Walla Walla School District No. 140; Replacement of Expiring Educational Programs & Operations Levy 645
2. Resolution 18-2023: Proposition No. 2 - Walla Walla School District No. 140; Capital Projects Levy to Update Outdoor Athletic and Activity Facilities 653
3. Resolution 19-2023: In Support of Proposition No. 1; Walla Walla School District No. 140 - Replacement of Expiring Educational Programs & Operations Levy, and In Support of Proposition No. 2; Capital Projects Levy to Update Outdoor Athletic and Activity Facilities 662

X. **RECESS TO EXECUTIVE SESSION:** *(Approximately 7:30 p.m.) Derek Sarley*

The Board of Directors has scheduled an executive session to review the performance of a public employee. The executive session is not open to the public and is expected to last approximately 30 minutes.

XI. **RECONVENE REGULAR MEETING:** *(Approximately 8:00 p.m.) Derek Sarley*

XII. **ACTION:** *Derek Sarley*

XIII. **ADJOURNMENT:** *Derek Sarley*

Walla Walla Public Schools
Developing Washington's Most Sought-After Graduates

Human Resources
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Walla Walla, WA 99362
(509) 527-3000
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PERSONNEL REPORT

October 24, 2023 – Board Meeting

Date: October 19, 2023

EMPLOYMENT

Classified: Olga Abundis, Head Start Assistant Teacher, WWCCF
Nathan Bannerman, Temporary Para-Educator (2023-24), Berney Elementary School
Christian Herrera, Temporary Para-Educator (2023-24), Green Park Elementary School
Saul Martinez, Turf Specialist, Facilities and Operations
Erich Miller, Custodian, Garrison Middle School

RESIGNATION/RETIREMENT/SEPARATION OF EMPLOYMENT

Classified: Lenora Curtis, Special Education Secretary, Walla Walla High School, 8 months
Saidee Darensbourg, Para-Educator, Pioneer Middle School, 8 months
Tania Leon, Kitchen Assistant, Walla Walla High School, 1 week
Alejandra Quintero, Bilingual Assistant Secretary/Para-Educator, Lincoln High School, 2 years

EXTRA-CURRICULAR ATHLETIC CONTRACTS 2023-2024

Name	School	Assignment
Luciano Antonio Jr.	Pioneer Middle School	Assistant Boys Basketball 7th
Kevin Arizmendi	Pioneer Middle School	Boys Basketball 6th Grade
Morgan Arreola	Walla Walla High School	Head Cheer
Jeffrey Bartlow	Pioneer Middle School	Head Boys Basketball 7th Grade
Adam Berg	Walla Walla High School	Head Boys Basketball
David Blocklinger	Walla Walla High School	Assistant Head Boys Basketball
Jacob Butehoff	Walla Walla High School	Head Girls Wrestling
Jacob Butenhoff	Walla Walla High School	Head Boys Wrestling
Reginald Byrd	Garrison Middle School	Assistant Boys Basketball
Nathaniel Carrara	Garrison Middle School	Head Boys Basketball 7th Grade
Krystal Ceron	Walla Walla High School	Unified Basketball
Brooke Cinnamon	Walla Walla High School	Head Dance Coach Winter
Mike Clark	Walla Walla High School	Assistant Girls Basketball
Jamie Coburn	Walla Walla High School	Assistant Boys Swimming & Dive
Kaytlyn Dahlin	Walla Walla High School	Assistant Cheer
Amber Davin	Garrison Middle School	Assistant Boys Basketball
Kyle Eggers	Walla Walla High School	Assistant Boys Basketball
Nathan Ferraro	Garrison Middle School	Head Boys Basketball 8th Grade
Ruben Garanzuay	Garrison Middle School	Boys Basketball 6th Grade
Kevin Gwinn	Walla Walla High School	Assistant Boys Basketball
Yaneth Hernandez	Garrison Middle School	Head 6th Volleyball
Spencer Hessler	Walla Walla High School	Assistant Boys Basketball
Robert Hoppen	Walla Walla High School	Assistant Bowling Coach
Amy Korslund	Walla Walla High School	Assistant Girls Wrestling
Ruben Lozano	Walla Walla High School	Assistant Boys Wrestling
James Lux	Pioneer Middle School	Head Boys Basketball 8th Grade
Anderson Lynch	Walla Walla High School	Assistant Girls Basketball
Daniel Mears	Pioneer Middle School	Assistant Boys Basketball 8th
Ethan Naftzger	Pioneer Middle School	Boys Basketball 6th Grade
Jordan Neher	Walla Walla High School	Assistant Boys Wrestling
Maggie Nicholson	Walla Walla High School	Assistant Girls Basketball
Chris O'Dell	Walla Walla High School	Assistant Girls Wrestling
Jason Postlewait	Walla Walla High School	Bowling Coach
Tresa Reibel	Walla Walla High School	Head Girls Basketball

EXTRA-CURRICULAR ATHLETIC CONTRACTS 2023-2024

Name	School	Assignment
Daniel Rose	Walla Walla High School	Assistant Boys Swimming & Dive
Nancy Rose	Walla Walla High School	Head Boys Swimming & Dive
Jennifer Thiel	Garrison Middle School	Assistant 6th Volleyball

NON-ATHLETIC EXTRA/CO-CURRICULAR CONTRACTS 2023-2024

Name	School	Assignment
April Brown	BE	Social Emotional Learning Team
Michelle Paine	GA	Unified Robotics
Nicole Violet	PI	E-Sports

WARRANT SUMMARY

Vouchers audited and certified by the auditing officer as required by RCW 42.24.080, and those expense reimbursement claims certified as required by RCW 42.24.090, are approved for payment. Those payments have been recorded on this listing which has been made available to the board.

As of October 24th, the Board, by a majority vote, does approve for payment those vouchers and electronic transfers included in the following list and described as follow:

Warrant Date	Warrant Number	Fund	Warrant Number	Amount
		General Fund		
10/24/2023	230477	Through	230694	$ 1,017,534.74
10/24/2023	232400079	Wire Transfer	232400125	$ 4,336.12
		Capital Projects		
10/24/2023	230016	Through	230019	$ 207,451.26
		Wire Transfer		
		ASB		
10/24/2023	230030	Through	230041	$ 15,285.18
		Wire Transfer		
		Transportation Vehicle		
		Through		
		Wire Transfer		
		Payroll		
		Through		
		Wire Transfer		
	NA	Payroll Taxes	NA	

TOTAL:	**$ 1,244,607.30**

SCHOOL BOARD PRESIDENT:

Derek Sarley

SECRETARY OF THE BOARD:

Dr. Wade Smith, Superintendent

Walla Walla Public Schools
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RESOLUTION #12-2023
October 24, 2023

FINAL ACCEPTANCE OF BUILDING COMMISSIONING REPORT FOR LINCOLN HIGH SCHOOL MODERNIZATION PROJECT

WHEREAS, the Walla Walla Public Schools Board of Directors has received the final Building Commissioning Report from McKinstry regarding the Lincoln High School Modernization project; and

WHEREAS, the Superintendent and Board have reviewed this report in its entirety and have noted the recommendations by the district's construction manager.

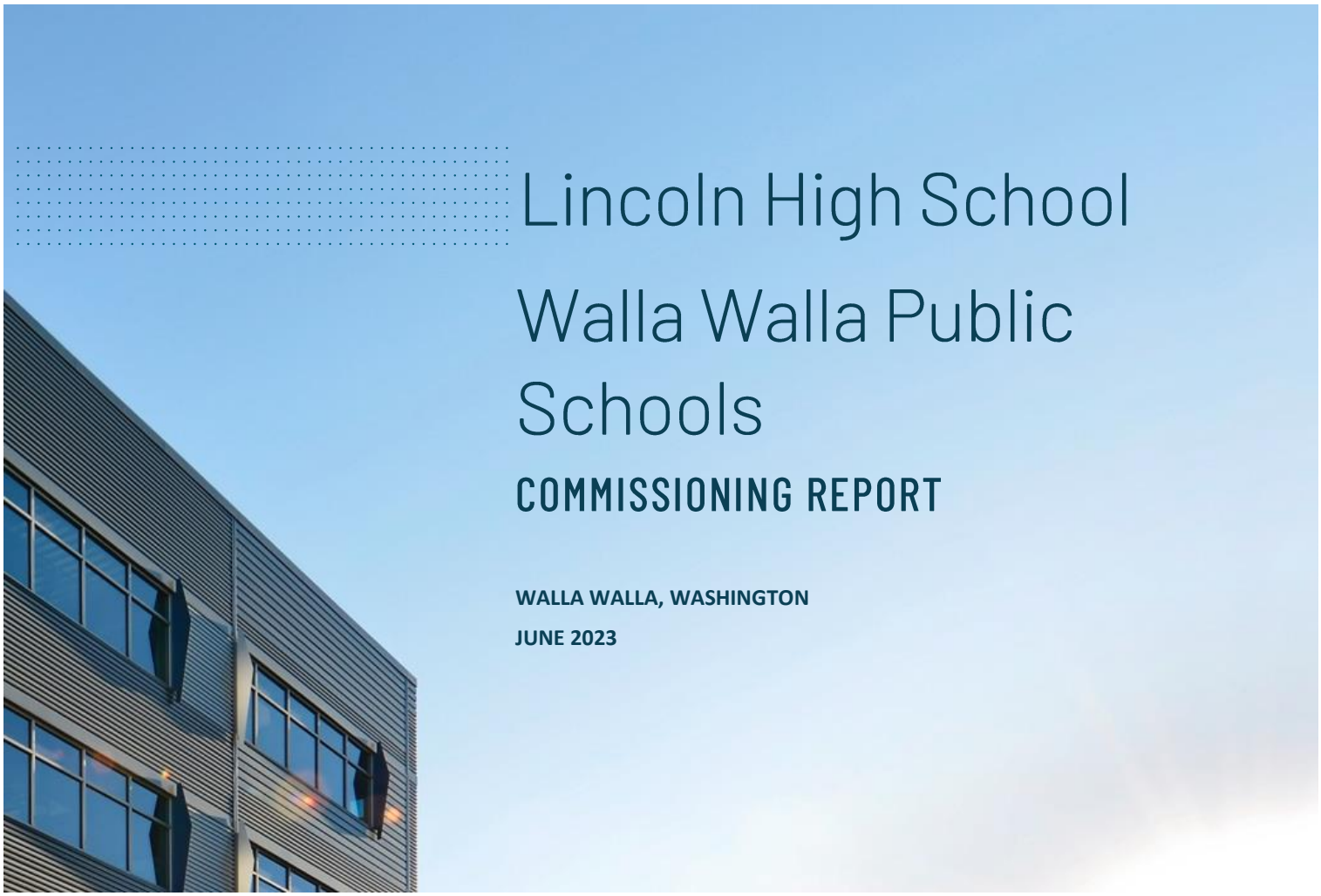
THEREFORE, BE IT RESOLVED by the Walla Walla Public Schools Board of Directors, that the Building Commissioning Report for the Lincoln High School Modernization project is hereby approved.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

Derek Sarley, School Board President

ATTEST: Dr. Wade Smith, Superintendent and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023



Lincoln High School

Walla Walla Public Schools

COMMISSIONING REPORT

WALLA WALLA, WASHINGTON

JUNE 2023

McKinstry
For The Life Of Your Building

Table of Contents

Executive Summary

McKinstry's Commissioning Intent

McKinstry was contracted by Walla Walla Public Schools to provide commissioning services for Lincoln High School at 421 S 4th Ave, Walla Walla, WA 99362. The intent of McKinstry's commissioning effort is to assure a result which delivers an operable, maintainable, and sustainable system. The commissioning process independently validates that systems have been engineered, installed, started-up, and are functioning per the original project design intent.

McKinstry Commissioning Report

The following report provides written record of the commissioning services provided for the Lincoln High School project. This document, coupled with the Operation and Maintenance manuals, should be utilized for troubleshooting system operation. This report also serves as documentation to validate the proper operation of the systems and equipment at the time it was installed and commissioned.

Commissioning Activities Performed

DESIGN PHASE

- ✓ OPR & BOD Development
- ✓ Design Review
- ✓ Development of Commissioning Specifications
- ✓ Development of Commissioning Plan

CONSTRUCTION PHASE

- ✓ Submittal Review
- ✓ Commissioning Kick-Off Meeting
- ✓ Conducted Commissioning Meetings
- ✓ Construction site observation visits
- ✓ Review of Start-up Procedures & Witnessing
- ✓ Review and Verification of Testing and Balancing Report
- ✓ Conducted Functional Performance Testing
- ✓ Generated and maintained a Cx Issues Log

POST CONSTRUCTION PHASE

- ✓ Verification & Monitoring of Training
- ✓ The CxA will conduct a 10-month warranty
- ✓ Commissioning Report

Summary of Deficiencies

Through the commissioning process, approximately 77 issues were identified; of these issues, 1 issue remains open and requires action by the installing contractors. The identified issues range from installation deficiencies

to control and performance issues that directly affect occupant safety and building energy use. Following are issues that remain open as a warranty issue:

- Issue #CHK-55-2: Room 203 lighting wall switch scene 3 button does not work. New wall switch will need to be provided.

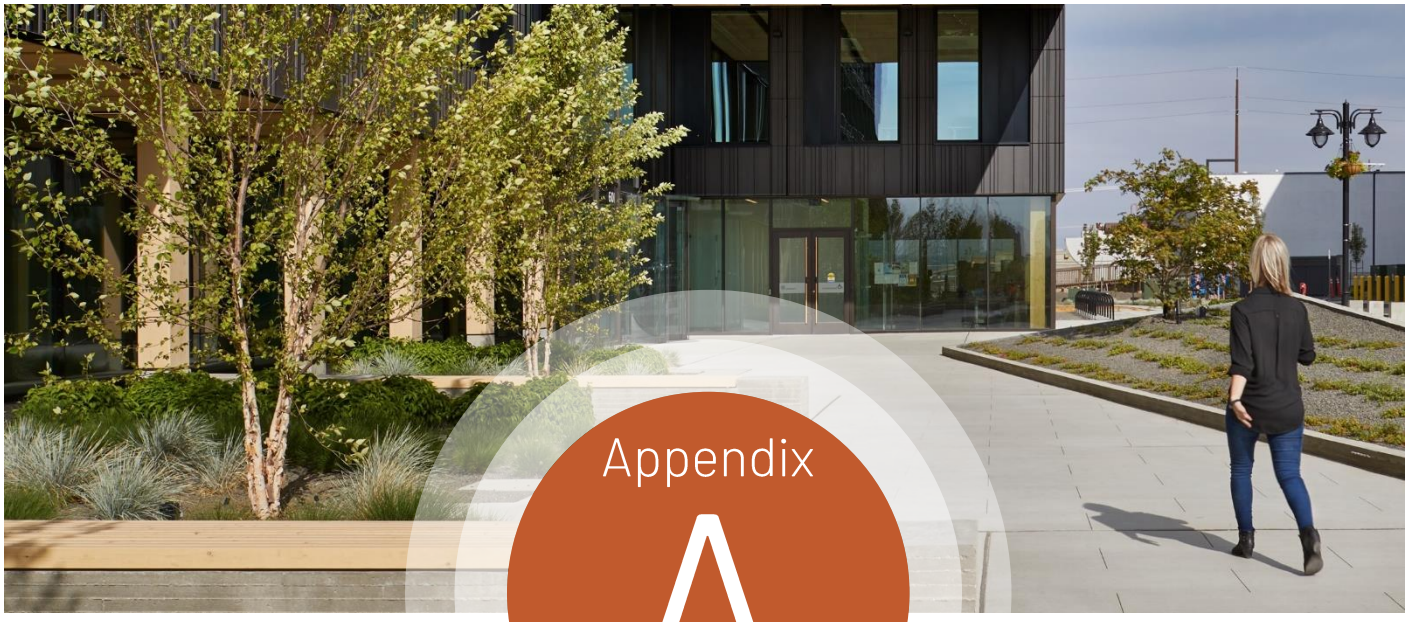
Results and Assessment

Based on the verification process noted above, the systems have been functionally proven to perform to the design intent with noted exceptions and observations. We enjoyed and appreciated working with your staff, and we look forward to future projects with Walla Walla Public Schools. Please do not hesitate to contact us with any questions or concerns about your system in general or the information in this report.

Sincerely,

Chase Schmidt

Chase Schmidt
Commissioning Engineer



Appendix

A

Commissioning Plan

Walla Walla Public Schools

Lincoln High School
Commissioning Plan

WALLA WALLA, WA

JUNE 2023

FOR THE LIFE OF YOUR BUILDING

Contents

1.0 Introduction

1.1 PURPOSE OF THE COMMISSIONING (CX) PLAN

This Commissioning (Cx) Plan describes the commissioning process for Lincoln High School located in Walla Walla, WA. This living document provides a high-level overview of the commissioning process, scope summary, and it identifies the various roles and respective responsibilities of those that will participate in the commissioning process. The end goal of the Commissioning Plan and the execution thereof is to ensure the systems are designed, installed, started, tested, and documented to meet both the Owner's Project Requirements (OPR) and the Basis of Design (BOD).

1.2 PROJECT DESCRIPTION

The Walla Walla School District will be updating and expanding the existing Lincolin High School located at 421 S 4th Ave. in Walla Walla, WA. The design was provided by Architects West and MSI Consulting Engineers.

The mechanical design will utilize 83 VRF fan coil units, an energy recovery unit that will provide tempered ventilation air to 29 Ventalation Air valves, an RTU to serve the Gym, electric heaters, split systems and unit heaters for isolated locations.

9 general exhaust fans will serve to relieve the building. A dedicated exhaust fans will serve Kiln hood.

Domestic hot water will be generated by two gas-fired hot water heaters and circulated via a hot water recirculation pump.

The lighting system, composed of primarily LED fixtures, will be capable of daylight harvesting, and will have automatic control over schedules and emergency lighting scenes. The lighting controls will be tied into the security and fire alarm system and will follow the Sequence of Operations described in the Construction Drawings.

1.3 COMMISSIONING APPROACH

The commissioning effort planned for this project will be based upon the following standards:

- ASHRAE Guideline 0-2019
- BCA Best Practices for Building Commissioning-New Construction
- GSA Guideline for Project Commissioning

1.4 SYSTEMS TO BE COMMISSIONED

The commissioning process for this project will include the following systems:

- HVAC system and controls
    - Roof Top Air Handling Unit with gas Heating and Dx Cooling (RTU-1): Testing for operation, setpoint adjustments, night setback cooling, occupancy override, night setback heating, morning warm-up, morning cool-down, damper control strategy, temperature control, economizer function, ventilation & CO_2 control (where applicable), occupied/unoccupied schedule and operation, BAS graphical interface, and safeties & alarms.

- Energy Recovery Units (ERV-1): Testing for operation, damper control, occupied/unoccupied schedule and operation, occupancy override interlock, defrost capability, BAS graphical interface and safeties & alarms.
- 83 VRF Fan Coils (FC1-1—FC1-44, FC2-1—FC2-17, FC3-1—FC3-18): Testing for operation, setpoint adjustments, night setback cooling, occupancy override, night setback heating, morning warm-up, morning cool-down, damper control strategy, temperature control, economizer function, CO_2 control, occupied/unoccupied schedule and operation, BAS graphical interface, and safeties & alarms.
- Ductless-Split AC System (AC-1): Testing for operation, temperature control, BAS graphical interface, and safeties & alarms.
- 9 Exhaust Fans (EF 1-9): Testing for operation, damper control (where applicable), BAS graphical interface, and safeties & alarms.
- 29 Air Valves (AV1-1—AV1-10, AV2-1—AV2-8, AV3-1—AV3-8): Testing for operation, installation, BAS graphical interface, and safeties & alarms.
- 5 Electric Heaters (CUH-1, UH-1-1, BB1-1—BB1-3): Testing for operation, installation, BAS graphical interface, and safeties & alarms.
- Building Automation System (BAS) Workstation: Testing for installation, operation, graphical interface with equipment, remote connectivity, and alarms.

- Domestic hot water system
  - 2 Water Heaters (WH 1 & 2): Testing for installation, setpoints, temperature control, and operation.
  - Domestic Hot Water Recirculation Pump (RCP-1): Testing for installation, flow, and operation.
  - 1 Digital Thermostatic Mixing Valve (TMV-1): Testing for setpoints, temperature control, installation, and operation.
- Lighting Controls
  - 1 Lighting Controls System: Testing for installation and operation

1.5 COMMISSIONING SCHEDULE

Event	Start Date	End Date
CD Design and Review	9/15/2020	10/2/2020
Construction	4/1/2022	8/15/2022
Distributed Power Available	6/27/2022	6/27/2022
Distributed Water Available	7/18/2022	7/18/2022
Start-Up Tests	6/20/2022	7/15/2022
TAB	8/10/2022	8/26/2022
Functional Performance Tests	6/15/2022	2/28/2023
Move-in / Public Opening	8/15/2022	8/15/2022

1.6 LIST OF ACRONYMS AND ABBREVIATIONS

Below is a list of common terminology and abbreviations used throughout this document.

- A/C – Air Conditioning
- A/E – Architect/Engineer
- AHJ – Authority Having Jurisdiction (Plans Examiners, County Inspectors, Fire Marshall, etc.)
- AHU – Air Handling Unit
- BAS – Building Automation System Contractor (controls & alarms)
- BECx – Building Enclosure Commissioning
- BOD – Basis of Design
- CET – Critical Environment Team, DCOPs Facilities Mgmt. Team
- CFM – Cubic Feet per Minute
- CDW – Condenser Water
- CHW – Chilled Water
- CRAC – Computer Room Air Conditioning unit
- Cx – Commissioning
- CxP – Commissioning Provider
- CCP – Certified Commissioning Professional (BCA)
- Cx-MIL – Cx Master Issues Log
- DCV – Demand Control Ventilation
- DB – Design Build
- DDC – Direct Digital Controls
- EC – Electrical Contractor
- EF – Exhaust Fan
- EOR – Engineer of Record
- FCU – Fan Coil Unit
- FPT – Functional Performance Test(s)
- FWT – Factory Witness Test(s)
- HHW – Heating Hot Water

- HVAC – Heating Ventilation & Air Conditioning
- IR - Infrared
- IST – Integrated Systems Test
- ITP-Cx – Independent Third-Party Commissioning
- IVC – Installation Verification Checklist
- MAU – Makeup Air Unit
- MC – Mechanical Contractor
- MEP Subs – DB's Mechanical/Electrical/Plumbing subcontractors
- OEM – Original Equipment Manufacturer
- OPR – Owner's Project Requirements
- OSA – Outside Air
- PPM – Parts Per Million
- QA/QC – Quality Assurance/Quality Control
- RA – Return Air
- RTU – Rooftop Unit
- SA – Supply Air
- TAB – Testing, Adjusting, and Balancing
- TU – Terminal Unit
- VAV – Variable Air Volume
- VFD – Variable Frequency Drive
- VRF – Variable Refrigerant Flow
- VTR – Vent Through Roof

2.0 Commissioning Overview

2.1 DESCRIPTION

Commissioning is the systematic process of ensuring that all building systems included in the scope perform interactively according to the design intent, BOD, and the Owner's operational needs. Generally, the CxP is involved in the process from design through post-construction. The Cx process incorporates all the parties involved in design and construction. The primary elements of Commissioning include:

- Identifying and documenting the Owner's needs and the requirements of the facility
- Defining the systems and equipment acceptance and performance criteria as outlined in the contract documents
- Ensuring that the systems installed are operable and maintainable
- Testing of the systems to ensure that they are interacting and performing optimally

The Commissioning Provider (CxP) oversees and coordinates the Cx efforts, although all parties play a vital role in the Cx process. The Commissioning Process starts early in the Design Phase and continues well into the first year of occupancy. The Commissioning Process includes many steps and tasks throughout the design-construction-occupancy timeline. These steps/tasks and their associated deliverables are described below, organized by the major milestones typically associated with the design and construction process.

2.2 DESIGN PHASE

The Design Phase spans from pre-design (OPR and BOD development) through the generation of construction documents. In the Design Phase, the Cx steps are as follows:

OPR & BOD Developed and Reviewed – The Owner documents their project and performance requirements in the Owner's Project Requirements (OPR). The A/E firm develops the Basis of Design (BOD) from the OPR. The CxP reviews the OPR and BOD to identify the performance expectations of the facility and systems and provides feedback as necessary.

- OPR: Document provides clear direction to the design team on the project's MEP system requirements.
- BOD: Document complies with OPR and includes, in detail, all assumptions, codes/standards/guidelines, calculations and design decisions that will be used in the design of the MEP systems for this project.

Participate in Design Development – The CxP participates in the design development to provide input and identify further design improvements.

Submit Cx Plan – Based on the OPR, BOD, and Cx contract, the CxP develops the Cx Plan and submits it to the Owner and A/E for review. The CxP incorporates the feedback and submits the revised draft. The CxP maintains and updates the Cx Plan as necessary throughout the Cx process.

Review Design Set – The A/E provides the CxP a design development set for review; the drawing set should be near 90% complete. The CxP reviews the design set for inconsistencies, misses, OPR & BOD compliance, and opportunities for improvement. The CxP documents their comments and provides them to the A/E for incorporation into the design set. The Commissioning Review will focus on:

- Compliance with OPR and BOD
- Identifying any single points of failure

- Design inconsistencies and/or obvious conflicts between trades
- Conflicts between drawings and specifications
- Potential maintenance issues/conflicts
- Potential installation issues/conflicts
- Items that may interfere with the successful commissioning of this project

Provide Cx Specifications – The CxP provides Commissioning Specifications to the A/E to include in the Construction Document (CD) set. The CxP caters the specifications as necessary to the project.

Review CD Set – The A/E provides a Construction Document (CD) set that is near 50% complete to the CxP for review. The CxP reviews the set to verify previous comments have been addressed and to identify any further misses or opportunities. The CxP documents their comments and provides them to the A/E for incorporation into the construction set.

Review Construction Submittals – The CxP reviews the submittals which pertain to the Cx scope to confirm the systems/equipment meet the Owner's requirements and goals. The CxP documents their feedback and provides it to the A/E and/or Contractor as necessary. This review will immediately follow the A/E Teams review and will focus on:

- Design inconsistencies and/or obvious conflicts between trades
- Potential maintenance issues
- Potential installation issues
- Items that may interfere with the successful commissioning of this project

The following deliverables should be expected during the Design Phase:

- OPR Review Comments
- BOD Review Comments
- DRAFT (On-going) Commissioning Plan
- Design Document Set and Construction Document Set Review Comments
- Commissioning Specifications
- Construction Document Set Review Comments

2.3 CONSTRUCTION PHASE

The Construction Phase spans from construction inception through building/system turn-over. In the Construction Phase, the CxP is involved through meetings and site visits. The CxP performs the following steps:

Cx Kickoff Meeting – The CxP coordinates a Cx Kickoff Meeting with the Owner, A/E, and contractors to communicate the Cx process, their responsibilities, and overall expectations. Target audience to include:

- Owner and/or Owner's Rep
- General Contractor
- MEP Contractors
- Key Vendors
- TAB and Controls Contractors

The purpose of this Cx Kick-Off Meeting is to:

- Formally introduce the Commissioning Provider to the build team.
- Review the Commissioning Process to be used on this project, including:
    - Roles and responsibilities of all members of the Commissioning Team.
    - Lines of communication and mechanism for distributing and updating shared documents
    - The Commissioning Plan (including process for distributing updates).
- Address any questions related to the Commissioning Process to be used on this project.
- Review the Commissioning Schedule.
- Review criteria for "Pass/Fail" status on tests, including:
    - Commissioning scope of work allowance for initial test and one retest only.
    - Compensation charges for more than one retest if necessary.
- Introduce and review all commissioning documentation to be used on this project, including:
    - Pre-Functional Checklists (format and sample checklist).
    - Functional Performance and Integrated Systems Test Procedures (format and sample test).
    - Master List of Findings Log (Autodesk BIM 360 Field format and response process).

Develop Commissioning Schedule – The CxP will prepare a schedule of the commissioning process activities. The schedule will identify critical times for witnessing testing activities, accessing systems and equipment, accessibility for maintenance and verification, completion of construction checklists, and activities related to substantial completion/project closeout.

Review Equipment Submittals – CxP will review and provide written comments to the A/E Team, on the equipment submittals for the MEP equipment to be commissioned for this project. This review will immediately follow the A/E Teams review and will focus on:

- Design inconsistencies and/or obvious conflicts between trades
- Potential maintenance issues
- Potential installation issues
- Items that may interfere with the successful commissioning of this project
- Sequence of Operation (SOO) verification and conformance to design.

Verification of conformance to the approved design documents is the responsibility of the A/E Team. The submittal review by the CxP shall not relieve the A/E Team of that burden.

Review Equipment O&Ms – CxP will review the submitted O&M materials, as provided by the contractors for the equipment to be commissioned on this project, and provide written comments to the A/E Team. This review will be conducted concurrent with the review of the same material by the A/E Team. The focus of the O&M review by the CxP will include:

- Completeness (that all relevant material has been included).
- Clarity (that submitted material is readable and usable).
- Compliance (that submitted material is in accordance with requirements of the design documents).

Since O&M materials are available at the time of equipment purchase, the CxP review should transpire early in the construction phase to allow the use of this material in the writing of the Pre-Functional Checklists, FPT/IST's and inclusion in the Systems Manuals.

Site Visits & Meetings – The CxP will conduct site visits and attend project meetings as necessary to stay apprised of project status and to observe construction progress. If issues are identified they will be communicated via the Master List of Findings or Observation Log and the Site Visit Report. The CxP's presence will gradually increase as the project nears the Acceptance Phase. The focus of the CxP Observation Visits includes:

- Verification of equipment/system installation in accordance with the design documents, I-O&M materials, codes, and recognized industry standards.
- Potential conflicts between trades.
- Potential maintenance/access issues.

The CxP will coordinate these periodic site visits with the GC in order to prevent conflicts with on-site project scheduled major events that may prevent full access to the site. The CxP will attend site specific safety orientations as necessary prior to the first site visit and will observe all site specific as well as industry recognized safety precautions at all times. The CxP will supply and use all personal safety and PPE required while on site, including:

- OSHA rated hard hat, safety glasses, and safety vest.
- Proper footwear (and gloves as required).

The CxP will check-in at the GC trailer (or designated location) upon entering and exiting the site so that their presence is known and documented in case of a site emergency. The CxP will conduct themselves in a professional manner at all times on site as they observe the installation progress. At no time will the CxP direct contractors in any way regarding installation practices, means or methods. If the CxP observes potential issues with the installation, these will be noted on the Commissioning Issues Log and will be distributed to the appropriate parties for their response. However, if the CxP observes any installation practice or procedure that they deem unsafe, the CxP will immediately notify the GC on site of the observed situation so that the GC may take appropriate action as they see fit.

Submit Cx Tests for Review – The CxP develops (or reviews contractors') Pre-Start/Start-up, Functional Performance Tests, and Integrated System Tests and provides them to the A/E and Contractor for review. The CxP incorporates feedback as necessary.

- Use ALL manufacturers' provided installation and start-up checklists during installation and start-up. Pre-Start/Start-up Checklists may be issued by the CxP to the General Contractor for distribution to the appropriate parties. An alternative is that the installing contractor provides Pre-Start/ Start-Up forms to the CxP for review and approval. Once approved forms have been established for each piece of equipment to be commissioned; the GC is responsible for monitoring the contractors/vendors responsible for completing the Checklists and for returning the Checklists to the CxP once they have been completed. Functional Performance Testing of each piece of equipment will not commence until the associated Pre-Start/Start-up Checklist has been completed by the contractor/vendor and verified by the CxP. The Pre-Start/Start-up Checklists shall be used to verify the following:
    - General Condition (equipment and components are free from damage).

- General Installation (equipment is the correct make/model and located on site in accordance with the design documents).
- Completed Installation (all support and/or associated systems, i.e.; electrical power, hydronic piping, drains, control wiring, seismic supports, ducting, etc. have been connected/terminated at subject equipment).
- Start-Up/FPT Readiness (equipment is ready for either factory authorized start-up and/or Functional Performance Testing to commence).

- Functional Performance Testing will be created by the CxP and will be written in step-by-step procedures that will be used to verify the sequence of operation for each piece of equipment to be commissioned for this project under each mode of operation. The format for the test procedures will include an overview of the specific section of the Sequence of Operation that is being tested, the exact and detailed steps to be used to test the specific section of the SOO and the expected results of each step. If the expected results are not an exact target, then an acceptable range will be listed. Test steps shall be non-destructive and shall be performed using "real-time" perimeters (simulations shall be limited as much as possible). Test format shall include spaces to document conditions/results where applicable and shall also include spaces for the CxP to date and initial when a test has been completed successfully. The CxP will transmit the FPT's in draft form to the A/E Team for their review and comment before final test forms are published for use by the Commissioning Team. Functional Performance Testing shall be used to verify the following and will include, but will not limited to:
  - Normal operating mode (On).
  - Normal stand-down mode (Off).
  - Status of operation during loss of power event.
  - Status of operation under emergency power.
  - Return to operation after restoration of normal power.
  - Status of operation during lead/lag cycle.
  - Status of operation in standby mode (Redundant/Back-up).
  - Status of operation during all alarms.
  - Monitoring and/or reporting modes.
  - Interface with BAS System.

- As required by contract and identified in the commissioning plan, CxP will create written step-by-step Integrated Systems Testing (IST) procedures that will be used to verify the interdependency of each commissioned system during various facility events. The purpose of conducting the IST's is to demonstrate the capability of the facility's commissioned systems to operate together, recover from loss of power, and maintain the environmental and power systems under load conditions. The format for the IST's shall be the same as noted above for the FPT's and will include the following:
    - All modes of facility operation.
    - All modes of power (normal and emergency).
    - All modes of maintenance scenarios (scheduled and non-scheduled events).

Maintain Master List of Findings or Observation Log – The CxP will document identified issues from site visits and tests in the Master List of Findings or Observation Log. The CxP will communicate such issues as needed to the Owner, A/E, and/or Contractor. The log requires contributions from each of the commissioning team memebers and as such everyone on the commissioning team has a responsibility to update the log via Autodesk BIM 360 Field. The CxP will validate and close issues as the team identifies that they are ready for closure. The Master List of Findings or Observation Log will be submitted as part of the Cx Report.

Review Pre-Start Tests – The contractors submit completed Pre-Start Tests and manufacturer supplied tests to the CxP. The CxP reviews such documents to verify that the equipment/system is ready for start-up. In some cases the Pre-Start may be performed with the Start-Up Tests. These factory test/checklists are used to verify:

- Equipment assemblies are complete (all components installed).
- Equipment operates as designed and specified.
- All accessories and appurtenances specified are included and functional.
- Equipment is ready for factory testing/demonstration (as witnessed by CxP, Owner/Owner Rep, A/E Team members, Facility Operators, and any other interested parties).

Review comments provided by the CxP will be sent, electronically, to the A/E Team as well as the vendor/manufacturer. All parties receiving the comments are instructed to incorporate the comments into subsequent re-submittals and/or respond, in writing, to the comments providing further clarification. This re-submittal and review process will continue until all interested parties are satisfied with the factory test procedures and scope.

Review Start-Up Procedures and Schedule – The CxP will review and provide written comments to the Cx Team on the start-up procedures and the proposed start-up schedule, for the MEP equipment to be commissioned on this project, as provided by the contractors and/or vendors prior to the beginning of the MEP start-up portion of the project. The focus of the CxP review will be:

- Completeness (that all relevant start-up items have been included).
- Correctness (that the start-up procedures submitted are the proper procedures for the equipment).
- Clarity (that submitted material is readable and usable).
- Compliance (that submitted material is in accordance with requirements of the design documents).
- Schedule: (that the order of start-up is logical and in sequence with the progress of the job).

Review & Verify TAB – The CxP will spot verify the TAB as required by contract; the TAB Contractor will conduct the spot test as directed by the CxP. The CxP will document any issues in the Master List of Findings or Observation Log. Focus of the TAB review will include:

- Verification of TAB Plan to ensure completeness and adherence to the design documents.
- Witness verification of TAB measurements (minimum of 10% random selection).
- Verification of Preliminary and Final TAB Reports to ensure documentation is complete and in accordance with design documents.

Final approval of the submitted TAB Reports is the responsibility of the A/E Team. The review by the CxP shall not relieve the A/E Team of that burden.

PTP Verification – The CxP will conduct a Point-to-Point sampling of the building controls system to verify that the field devices, system points, and graphic user interface (GUI) align.

Witness Start-up and Factory Testing – As required by contract and specifications the CxP will travel to the appropriate factory location to witness the execution of the Factory Testing as scheduled, and will provide documentation of Factory Testing outcome including any issues discovered during the testing/demonstrations.

Witness Functional Performance Tests (FPT) – The CxP will organize, direct and witness each Functional Performance Test (FPT) of the equipment to be commissioned on this project. The CxP shall conduct a Pre-Test Meeting prior to testing. Actual testing will be conducted by the contractors and/or vendors responsible for providing and installing the equipment. The CxP shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved FPT forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxP. In the event that a test is deemed as "Failed" then three successfully executed retests, in successive order, must be documented prior to final acceptance. Issues discovered during the testing shall be noted on the Master Commissioning Issues Log.

Prior to a scheduled test, the CxP shall schedule and conduct a "Pre-Test Meeting" at the site. The purpose of this meeting is to assemble all the parties responsible for conducting and/or witnessing the functional performance demonstrations (FPT's and IST's) and, as a group, review the following:

- The purpose of the test.
- List of equipment to be included in the test.
- The procedures that will be used for the test.
- Expected results of the test.
- The use of any access equipment (ladders, lifts, etc.), including:
    - Party responsible for supplying and using access equipment.
    - Acceptable types of access equipment.
- The use of any non-system equipment (meters, gauges, hand tools, etc.) including:
    - Party responsible for supplying and using the non-system equipment.
    - Calibration standards of non-system equipment.
    - Make/Model/Type of acceptable non-system equipment.
- Chain of command before and during the testing, including:
    - List of all personnel REQUIRED to attend the test.

    - Use of formal Sign-In Sheets at each test.
    - Roles and responsibilities for personnel attending the test.
    - Recognition by all personnel attending the test that McKinstry Commissioning has overall authority on Pass/Fail determination for each step of the test.
- Types of Acceptable Communication Tools:
    - Use of 2-way radios and/or cell phones.
    - Frequencies to be used for test instructions (Tach-1) and other frequencies to be used for "side-chatter" (Tach-2).
    - Each party responsible for their own radios/cell phones
    - Conduct a radio/phone test at the actual test site to verify that selected equipment/frequencies will work.
- Establishing time and location for test, including:
    - Check in time and location.
    - Sign-In Sheet.
    - Last minute supplemental instructions and "Go/No Go" status check.
- Site safety orientation requirements, including:
    - Rules of conduct to be followed by ALL personnel attending the test.
    - Dress code for all personnel attending the test (hard hats, safety glasses, safety vests, proper footwear, gloves, etc.).
- Criteria for approving the start of the test, including:
    - Completion of all pre-test documentation.
    - Verification that required personnel are on site and ready for test.
    - Verification that non-system equipment has been provided, charged (and/or new batteries installed) and calibration is current.
    - Verification that access equipment has been provided.
    - Verification that test area is available for the test (clean, clear of debris, and that no work is scheduled in the immediate area during the test period).
- Procedures for documenting issues discovered during the FPT, including:
    - All issues discovered during the FPT will be documented in the Issues Log.
    - Issues discovered during the testing that are corrected on the spot and proven as corrected by an immediate subsequent successful test shall be noted as "Closed" on the Issues Log.
    - Issues discovered during the testing that are not immediately correctable and result in an unsuccessful test, shall be noted as "Open" on the Issues Log.
- Criteria for determining a "Failed" test, including:
    - Criteria for determining an issue that can be corrected during the test period and immediate retesting.

- Criteria for determining an issue that requires a momentary delay in the test for corrections and postponing the test for no more than 30 minutes while corrective action is taken and then retesting.
- Criteria for determining an issue that will require the test to be rescheduled for another day (Failed Test Status).

The contractor shall prepare the area adjacent to the component/equipment/system for the test prior to the start of the test so as to not to cause a delay in the execution of the tests. The contractor shall coordinate with all trades working in the immediate area of the test so as to minimize the disruption of the work schedule, and to verify that any work being done in the immediate area of the test will not disrupt the test (loud noise, moving machinery, lift conflicts, etc.). This shall include not only the area of the test, but will also include the areas adjacent to the test area and the floor areas above and below the actual test area.

Witness Integrated System Testing (IST) – The CxP will organize, direct and witness the Integrated Systems Test (IST) of the MEP equipment to be commissioned on this project. Actual testing will be conducted by the team of contractors and/or vendors responsible for providing and installing the equipment within the systems related to the IST. The CxP shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved IST forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxP. Issues discovered during the testing shall be noted on the Commissioning Issues Resolution Log.

The CxP shall conduct a Pre-Test Meeting prior to the IST. In the event that a system test is deemed as "Failed" the tests shall be repeated as many times as necessary to successfully document the system's acceptable performance. The following deliverables should be expected during the Construction Phase:

- Construction Submittal Review Comments
- O&M Manual Review Comments
- Commissioning Schedule
- Factory witness testing reports
- Pre-functional checklists
- Review comments of proposed start-up checklists.
- Review comments of completed start-up checklists
- TAB Review comments
- Functional Performance Tests
- Integrated System Tests
- Master List of Findings or Observation Log / Investigation Report(s)

2.4 POST CONSTRUCTION PHASE

The Project Post Construction focuses on the turnover of the facility/system to the Owner and facility operations staff. The CxP assists with this transition per the following steps:

Verify Training – The CxP will verify the training of the facility operations staff on the various systems within the Cx scope. The contractors will provide the CxP with copies of the training material and completed training attendance logs. The focus of this review and monitoring effort by the CxP shall include:

- Verification that the Training is planned and executed to provide adequate training to the facility operators on the operation and maintenance of each piece of equipment and system commissioned.
- Verification that the Training materials are correct, complete, and are in accordance with the requirements of the design documents.
- Interview of the facilities staff during the training period to determine if the training is adequate. Suggest adjustments to the trainers, if necessary, prior to the end of each Training Session.

Resolve Master List of Findings or Observation Log – The CxP will work with the Owner, A/E, Contractor, and contractors to resolve the open issues on the Master List of Findings or Observation Log. The end goal is to close all issues on the log or obtain mutual acceptance of outstanding issues.

Deliver Cx Report – The CxP will provide a draft Cx Report to the Owner and A/E to review. The CxP will incorporate feedback as necessary. The CxP will obtain all required documentation and update Cx Report. The CxP will deliver final Cx Report to the Owner.

- Executive Summary
- Final Cx Plan
- Final Master List of Findings or Observation Log
- Document Review Comments
- Completed Test Forms (FPT and IST)
- TAB Report
- Training Logs

2.5 ONGOING COMMISSIONING AND SYSTEM OPTIMIZATION PHASE

The Ongoing Commissioning and System Optimization Phase begins upon acceptance of the facility/system(s) by the Owner and extends through at least the first year of operations. During this phase, the CxP will provide further expertise in the following tasks:

- **System Optimization** – As the facility/system goes through the “break-in” period, further refining and tuning of the systems is necessary. The CxP will provide periodic spot checks of facility/system operations via the building management system (BMS) and on-site assessments to ensure the facility/system is still operating as required. Depending on the nature of the facility, this may necessitate continuous remote monitoring.
- **Seasonal Review** – The transition between seasons is often quite challenging for a facility and its operators. The CxP will provide remote and on-site assessment of facility operations to ensure the facility meets the performance requirements.

3.0 Commissioning Team Members Roles & Responsibilities Parties Involved

3.1 PARTIES INVOLVED

The commissioning process requires the involvement of various project stakeholders. Below is a list of parties, other than the CxP, who have responsibilities in the commissioning process. These responsibilities do not negate contract requirements or specifications; they are included herein for clarification and reference purposes.

Owner

Walla Walla School District		
364 S. Park St, Walla Walla, WA 99362		
Wade Smith	(509) 526-6715	wsmith@wwps.org

Design Team (A/E)

Architects West		
850 E Spokane Falls Blvd #200, Spokane, WA 99202		
Ed Champagne	(509) 209-8820	edc@architectswest.com

MSI Engineers		
108 N Washington St Suite 505, Spokane, WA 99201		
Jess Stauffenburg	*(509) 624-1050*	*jess@msi-engineers*

Construction Manager (CM)

Wenaha Group		
125 SE Court Ave, Pendleton, OR 97801		
Heath Gardner	(503) 564-9504	heath@wenahagroup.com
Pam Bullock	(208) 866-6808	pamB@wenahagroup.com

General Contractor (GC)

Chervenell Construction		
107422 E Detrick PR SE, Kennewick, Washington 99338		
Joe Christensen	(509) 735-3377	Jchristensen@chervenell.com
Patrick Bestebreur	(509) 727-0388	pbestebreur@chervenell.com

Contractor

Mechanical Contractor

Total Energy Management		
2521 Stevens Dr, Richland WA 99354		
Craig Firkins	Phone	cfirkins@teminc.com
Marcel Pounds	Phone	mpounds@teminc.com

Electrical Contractor

Energized Electric		
4444 N Freya St, Spokane WA 99217		
Mike Benefiel	Phone	mikeee@energizedelectric.com
Tyler Cavanaugh	Phone	tyler@energizedelectric.com

Controls Contractor

Standard Plumbing and Heating		
10419 E Trent Ave, Spokane, WA 99206		
Steve Montagne	(509) 280-9003	stevem@sphcontrols.com

Plumbing Contractor

Cutting Edge Plumbing & Mechanical		
1104 N 12th Ave Walla Walla, WA 99362		
James Hallowell		jamesh@cepm.biz
Jeremy Knowles	(509) 520-6697	jeremyk@cepm.biz

Commissioning Provider

McKinstry Commissioning		
850 Spokane Falls Blvd. Suite 100, Spokane, WA 99202		
Garrett Husky	509-319-0003	garretth@mckinstry.com
Chase Schmidt	509-991-9485	chasesc@mckinstry.com

3.2 OWNER'S RESPONSIBILITIES

Below are the Owner's responsibilities by phase:

Design Phase

- Select Commissioning Engineer
- Develop Owner's Project Requirements (OPR) and provide to Design Team and Commissioning Provider
- Review and provide feedback to CxP on the Commissioning Plan
- Review Master Cx Issues Log and provide feedback to the CxP

Construction Phase

- Include Commissioning Provider in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Review and provide feedback to CxP of the test procedures
- Ensure points, parameters, and alarms are established as necessary for the CxP to monitor systems remotely
- Attend progress meetings to observe and provide direction on open issues
- Conduct periodic site visits; Report any issues to CxP for documentation and follow-up
- Witness Start-up Testing, if desired
- Identify Operations staff as early as possible and encourage their involvement in the commissioning process
- Witness/participate in FPT at Owner's discretion
- Work with CxP, A/E, and Contractor to resolve issues

Post Construction Phase

- Ensure Operations staff is available for training
- Review Final Commissioning Report

Ongoing Commissioning and System Optimization Phase

- Operate and maintain the systems & equipment facility per original equipment manufacturer (OEM) requirements or recommended maintenance practices
- Log system parameter changes and document any deficiencies
- Notify Cx Team of any significant facility/system changes required or of any unanticipated occupancy requirements that become evident
- Inform the design/construct team of any salient alterations or changes to the systems and their setup and indicate why it was necessitated
- Partner with CxP to resolve issues
- Provide building access to CxP to conduct site reviews, utility analysis, and resolve issues
- Provide remote access to controls system for the CxP to monitor; provide application and network log-in/username, as required

3.3 A/E'S RESPONSIBILITIES

Below are the A/E's responsibilities by phase:

Design Phase

- Review Commissioning Plan and provide feedback to CxP
- Provide Commissioning Team with written BOD narrative prior to the start of DD's
- The A/E is responsible for providing the CxP with a copy of the Design Documents (about *90*% complete) for the commissioning review. The A/E should allow at least three weeks for a design review.
- The A/E is responsible for providing the CxP with a copy of the Construction Documents (about *50*% complete) for the commissioning review.
- The A/E team will address/incorporate the CxP's review comments
- The A/E team will review and incorporate commissioning specifications into the construction documents
- Include Commissioning Provider in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.

Construction Phase

- Review submittals, shop drawings, and product data; forward copies to CxP
- Review commissioning test procedures and provide feedback
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Consult on and resolve any design-related issues that arise during acceptance testing
- Mechanical Design Engineer shall review and approve balancing reports

Post Construction Phase

- Provide updated as-builts, one-line diagrams, and sequence of operations to CxP
- Provide final Basis of Design (BOD) to CxP

Ongoing Commissioning and System Optimization Phase

- Consult with Owner as necessary to convey and maintain design intent and respond to any identified deficiencies
- Participate in the resolution of non-compliance, non-conformance and design deficiencies identified during warranty phase

3.4 PRIME / GENERAL CONTRACTOR'S RESPONSIBILITIES

Below are the General Contractor's (GC) and Contractors' responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents. In general, the GC is responsible to ensure all their contractors support and meet the requirements of the commissioning process.

Design Phase

- The CM is responsible for scheduling and cost estimating
- Include Commissioning Provider in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Incorporate Commissioning Schedule into Master Construction Schedule

Construction Phase

- Provide equipment submittals to CxP in a timely manner for review
- Install equipment per manufacturer and construction specifications
- Review commissioning test procedures and provide feedback to CxP
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Include Commissioning Provider in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, field changes, etc.
- Provide copy of O&M Manual, updated drawings, final submittals, record product data, and other pertinent documents to the CxP for review
- Assist CxP with coordination of Prime Contractors for testing
- Assist Prime Contractors with completing commissioning test documents as directed by the CxP
- Complete Pre-Start Tests and inform CxP equipment is ready for start-up
- Execute Start-Up Tests under direction of CxP
- Assemble O&M Manual and provide copies to CM or CxP
- Execute FPT under direction of CxP

Post Construction Phase

- Conduct training for Operations staff as coordinated by CxP
- Provide copy of training material to CxP

Ongoing Commissioning and System Optimization Phase

- Work with Owner and CxP to resolve issues as identified

3.5 CONTRACTOR'S RESPONSIBILITIES

Below are the Contractor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxP including but not limited to submittals, O&M materials, completed Pre-Functional checklists, proposed startup sheets, completed startup documentation and TAB reports
- Coordinate and schedule Factory Witness Testing and all other commissioning activities with the CxP and GC
- Notify the CxP when systems and assemblies are ready for startup and Functional Testing
- Provide O&M materials and training as detailed in the specifications
- Perform startup of equipment at the project site
- Execute Pre-Functional checklists, Functional Performance Testing and Integrated Systems Testing
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contract Documents, and Functional Performance Test Procedures
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Work with Owner and CxP to resolve issues as identified

Ongoing Commissioning and System Optimization Phase

- Work with Owner and CxP to resolve issues as identified

3.6 EQUIPMENT VENDOR'S RESPONSIBILITIES

Below are the Vendor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxP including, but not limited to; submittals, O&M materials, completed Pre-Functional checklists, and startup documentation (Factory Authorized Start-Up sheets)
- Coordinate and schedule commissioning activities with the CxP and GC
- Execute Pre-Functional checklists as systems are installed and provide completed checklists to the CxP
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contracts Documents, and Functional Performance Test Procedures
- Perform start-up of equipment utilizing Factory Authorized Start-Up sheets
- Execute Functional Performance Testing and Integrated Systems Testing under the direction of the CxP
- Demonstrate the performance of assemblies and/or operation of systems to the CxP as requested
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Implement the Training Plan as approved by the CxP

Ongoing Commissioning and System Optimization Phase

- Work with Owner and CxP to resolve issues as identified

Appendix

B

Design Review Comments

FO-1-16 DEFERRED MEDIUM

Sheet M6.04: Is there any desire to monitor the filter pressure drops in the RTU at the BAS?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/2/2020 10:56 AM

A pressure sensor has been added to the MERV 13 filter. The drawing shows this going to a DI labeled Dirty Filter Alarm. Should this be an analog signal that can be monitored by the BAS?
Bryan Perkins on **02/15/2021** at **01:46 PM**

FO-1-10 DEFERRED MEDIUM

Sheet M6.03: Is there any desire to monitor the filter pressure drops in the ERV at the BAS?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/2/2020 10:43 AM

FO-1-8 DEFERRED MEDIUM

Sheet M6.03: Pre-cooling mode references the FCU sequence of operations, but I'm not sure anything was provided in the FCU sequence. Please clarify. Will the ERV provide economizer cooling?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/2/2020 10:42 AM

FO-1-14 DEFERRED MEDIUM

Sheet P2.01: The appurtenances surrounding RCP-1 (isolation valves, circuit setter, etc.) don't match Detail 2 on Sheet P5.01. While I understand the detail should be referenced for construction, please consider at least locating the the circuit setter on the same side of the pump in both instances.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:48 PM

FO-1-9 DEFERRED MEDIUM

Sheet M6.04: Suspect that the supply fan speed needs to be varied based on load to comply with WSEC C403.2.11.5.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:41 PM

FO-1-7 DEFERRED MEDIUM

Sheet M6.03: For ERV mechanical Cooling mode, please consider also requiring an OSA temperature enable setpoint of > 75F.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:35 PM

FO-1-2 DEFERRED MEDIUM

Sheet M6.03: For ERV mechanical heating mode, please consider also requiring an OSA temperature enable setpoint of < 60F.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:34 PM

FO-1-18 DEFERRED MEDIUM

Sheet M6.03: Please clarify what constitutes a "satisfied" VAV with respect to ERV duct static pressure control. Less than 90% open?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:32 PM

FO-1-11 DEFERRED MEDIUM

Sheet M2.01: Please provide Grille and airflow information for EF-1-5.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 1:30 PM

FO-1-5 DEFERRED MEDIUM

Sheet M1.01: Please coordinate with electrical to ensure the Ductless Split System AC indoor and outdoor units will be connected with stranded (not solid core) wire. This requirement is often buried in the installation manual, but has the potential to cause communication errors between the units if solid core wire is used.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

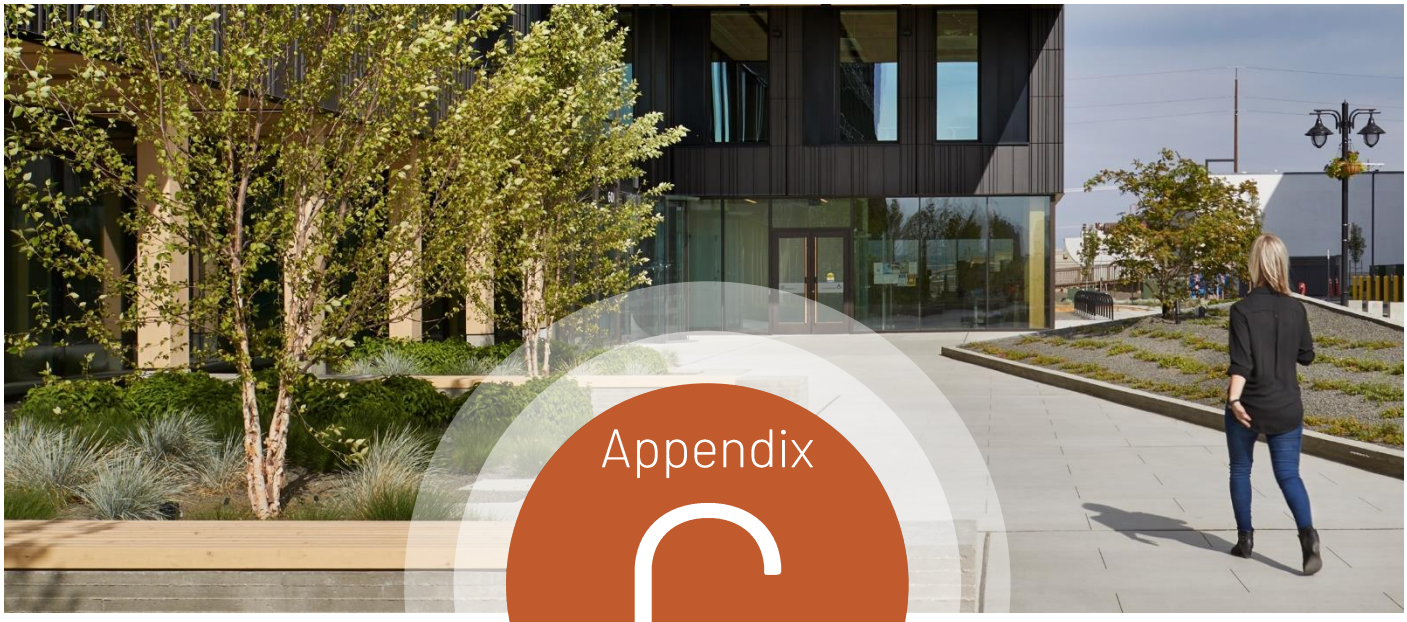
Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 1:19 PM

FO-1-19 DEFERRED MEDIUM

Sheet M1.01: Please confirm that the intent for RTU-1 is that it be provided with a motorized exhaust damper to ensure WSEC C403.2.4.3 is satisfied. The specification does not call this out specifically, but the controls diagram indicates one will be provided.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 12:57 PM



Appendix

C

Observation Log

FO-1-6 CLOSED MEDIUM

Sheet M1.01: The EF schedule indicates that a 24V motorized damper actuator is to be provided. Will we need separate digital outputs to be identified in Detail 3 on M6.01 to accommodate the DDC control (and 90 second delay) of the damper and fan?

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 1:12 PM

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Outputs and DDC controlled 90 second delay have been added to M6.01 Detail 3
Bryan Perkins commented on 01/22/2021 at 01:36 PM

FO-1-3 CLOSED MEDIUM

Sheet M1.01: Please clarify whether or not the thermostats shown on the floor plans for the Base Board Wall Heaters are the line voltage stats called out in the schedule or not. If they are, will we not be monitoring the space temperature in the vestibules? If they aren't, could we forego the line voltage stats in favor of DDC control of the base board heaters (via line voltage control relay)?

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 1:24 PM

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Base Board Wall heaters have been changed to DDC control.
Bryan Perkins commented on 01/22/2021 at 01:08 PM

FO-1-17 CLOSED MEDIUM

Sheet M3.01: Suspect BB-1 resides in "Stair 137", but the label was omitted?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 1:26 PM

BB 1-1 Label has been added in Stair 137
Bryan Perkins commented on 02/15/2021 at 01:54 PM

FO-1-15 CLOSED MEDIUM

Sheet M6.03: Control diagram indicates a heat wheel bypass damper will be utilized, but no sequence has been provided for the damper. Please clarify.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:36 PM

Heat Wheel bypass damper is now referenced in the sequence.
Bryan Perkins commented on 02/15/2021 at 01:43 PM

FO-1-4 CLOSED MEDIUM

Sheet M6.04: Please consider using a PI Loop for demand control ventilation instead of a proportional relationship as described. The PI loop is significantly more efficient.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:39 PM

Demand control ventilation is now controlled through a PID loop
Bryan Perkins commented on 01/22/2021 at 01:10 PM

FO-1-1 CLOSED MEDIUM

Sheet M6.04: Will shelter in place mode be required for this unit (RTU)?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/1/2020 2:42 PM

Shelter in place has been added
Bryan Perkins commented on 01/22/2021 at 12:49 PM

FO-1-12 CLOSED MEDIUM

Sheet M2.01: It appears that there is interference between a door and the water heaters located in room Mechanical/Fire 120. Has this been accounted for?

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/2/2020 11:46 AM

Water heaters have been relocated within the room
Bryan Perkins commented on 02/15/2021 at 01:13 PM

FO-1-13 CLOSED MEDIUM

Sheet M3.01: Please provide thermostat location in Kiln Room 128.

---------- BIM 360 Fields ----------
Subcontractor Rework: 1
Source Field Observation 1
Issues migrated from BIM 360 project 204924-001 WWPS Lincoln High School

Discipline Commissioning : Permit Set Review Comment
Created By Garrett Husky
Identified On 10/2/2020 11:48 AM

Kiln has been moved to room 129. Thermostat location is noted
Bryan Perkins commented on 02/15/2021 at 01:25 PM

FO-2-1 CLOSED MEDIUM

CIrcuit setter and check valve serving restroom 204 appear to be missing or are behind wall. If behind wall access panel will need to be provided to access the equipment.

Source Field Observation 2

Site Visit 4/19/22

Discipline Plumbing
Due Date 5/19/2022
Created By Chase Schmidt
Identified On 5/5/2022 11:19 AM

FO-2-2 CLOSED MEDIUM

Check valve in HWR line from custodial room 205 appeas to be missing after the circuit setter

Source Field Observation 2

Site Visit 4/19/22

Discipline Plumbing
Created By Chase Schmidt
Identified On 5/5/2022 11:20 AM

FO-2-3 CLOSED MEDIUM

Equipment labels have been painted over on the following units. New equipment labels will be required for TAB.

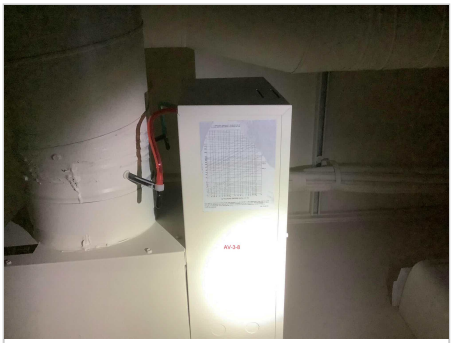
Discipline Mechanical
Created By Chase Schmidt
Identified On 5/5/2022 11:21 AM

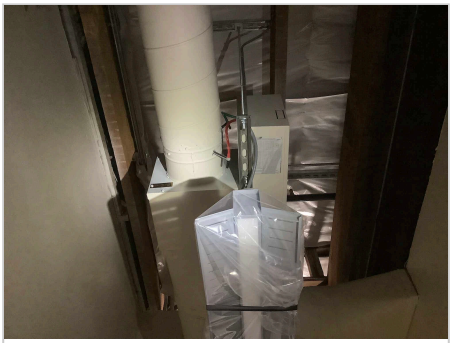
AV-2-6
AV-2-5
AV-2-4
AV-2-3
AV-2-2
EF-1-4
EF-1-3
AV-1-10

Source Field Observation 2
Site Visit 4/19/22

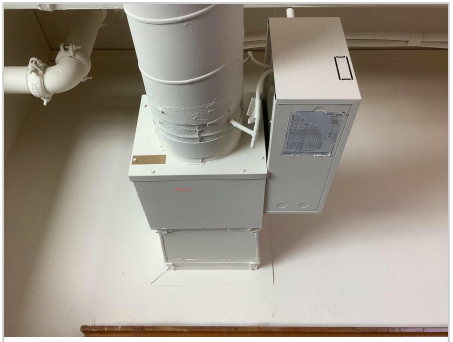
Labels have been replaced
Chase Schmidt commented on 10/07/2022 at 10:31 AM

Some units that were masked appear to have had the labels partially torn away from the masking
Chase Schmidt commented on 06/23/2022 at 01:05 PM


Issue FO-2-3 2022-06-23 13:05:22.heic


Issue FO-2-3 2022-06-23 13:10:52.heic


Issue FO-2-3 2022-06-23 13:09:20.heic


Issue FO-2-3 2022-06-23 13:42:44.heic

FO-2-4 CLOSED MEDIUM

Recommend that all thermostats are covered with painters tape to prevent construction debris from entering the unit.

Source Field Observation 2

Site Visit 4/19/22

Discipline Mechanical
Created By Chase Schmidt
Identified On 5/5/2022 11:22 AM

As of 5/12 site visit the thermostats have been covered in painters tape. Issue will be closed.

Chase Schmidt commented on 05/13/2022 at 10:20 AM

FO-3-1 CLOSED MEDIUM

Water heaters appear to be located very close to each other and the water header. Additional room may be required.

Source Field Observation 3

Site Visit 5/12/22

Assigned To Cutting Edge Plumbing
Discipline Plumbing
Due Date 5/26/2022
Created By Chase Schmidt
Identified On 5/12/2022 11:39 AM

RFI was submitted to the design / engineering team and they are aware / OK with the site condition

Chase Schmidt commented on 06/23/2022 at 01:05 PM

Per Commissioning meeting on 5/12 an RFI will be generated for this issue. Fire Marshal should be contacted before final inspection to determine if the as designed configuration is acceptable.

Chase Schmidt commented on 05/13/2022 at 10:18 AM

Issue 2022-05-12 09:06:43 2B336590.heic

Issue 2022-05-12 09:06:43 8EA8B5A8.heic

Issue 2022-05-12 09:06:43 9728FF8F.heic

FO-3-2 CLOSED MEDIUM

Removable insulation jackets are required per the specification on all serviceable valves. Jackets appear to be missing building wide. Please see attached section of the specification.

Source Field Observation 3

Site Visit 5/12/22

Assigned To Cutting Edge Plumbing
Discipline Plumbing
Due Date 6/30/2022
Created By Chase Schmidt
Identified On 5/12/2022 11:39 AM

Email response from Steve Bacon (MSI Engineers) on 9/28/22: "Logan simply responded to the commissioning agents' comments by instructing the reusable valve wraps to be installed per spec. The division 22 spec requires these on all serviceable valves. The intent of the specifications is in reference to balancing valves or circuit setters." Issue will be closed

Chase Schmidt commented on 09/28/2022 at 02:51 PM

Email response from Logan Gullickson (MSI Engineers) on 9/23/22: " Removable insulation covers on all the plumbing valves and devices are required as noted"

Reassigning the issue to CEPM

Chase Schmidt commented on 09/23/2022 at 11:42 AM

CEMP replied on 8/19 stating that this is about interpretation of the spec. and that the valves that would fall under this spec are the circuit setters that are on the hot water recirculating system only. Engineer to confirm if this is the correct interpretation of the specification. Reassigning the issue to MSI Engineers to determine the final outcome of the issue.

Chase Schmidt commented on 09/23/2022 at 09:03 AM

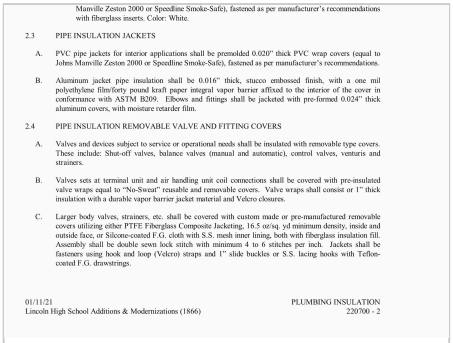
Still missing in conference room 114

Chase Schmidt commented on 06/23/2022 at 01:05 PM

Issue 2022-05-12 09:25:41 15E15ACC.heic

Issue 2022-05-12 09:26:59.heic

Issue 2022-05-12 09:29:48 F0BBCA25.heic



Manville Zeston 2000 or Speedline Smoke-Safe), fastened as per manufacturer's recommendations with fiberglass inserts. Color: White.

2.3 PIPE INSULATION JACKETS

A. PVC pipe jackets for interior applications shall be premolded 0.020" thick PVC wrap covers (equal to Johns Manville Zeston 2000 or Speedline Smoke-Safe), fastened as per manufacturer's recommendations.

B. Aluminum jacket pipe insulation shall be 0.016" thick, stucco embossed finish, with a one mil polyethylene film/forty pound kraft paper integral vapor barrier affixed to the interior of the cover in conformance with ASTM B209. Elbows and fittings shall be jacketed with pre-formed 0.024" thick aluminum covers, with moisture retarder film.

2.4 PIPE INSULATION REMOVABLE VALVE AND FITTING COVERS

A. Valves and devices subject to service or operational needs shall be insulated with removable type covers. These include: Shut-off valves, balance valves (manual and automatic), control valves, venturis and strainers.

B. Valves sets at terminal unit and air handling unit coil connections shall be covered with pre-insulated valve wraps equal to "No-Sweat" reusable and removable covers. Valve wraps shall consist or 1" thick insulation with a durable vapor barrier jacket material and Velcro closures.

C. Larger body valves, strainers, etc. shall be covered with custom made or pre-manufactured removable covers utilizing either PTFE Fiberglass Composite Jacketing, 16.5 oz/sq. yd minimum density, inside and outside face, or Silicone-coated F.G. cloth with S.S. mesh inner lining, both with fiberglass insulation fill. Assembly shall be double sewn lock stitch with minimum 4 to 6 stitches per inch. Jackets shall be fasteners using hook and loop (Velcro) straps and 1" slide buckles or S.S. lacing hooks with Teflon-coated F.G. drawstrings.

01/11/21 PLUMBING INSULATION
Lincoln High School Additions & Modernizations (1866) 220700 - 2

Issue 2022-05-12 09:25:41 161EA245.png

Issue 2022-05-12 09:29:48 BB85E052.heic

Issue 2022-05-12 09:30:56.heic

Issue 2022-05-12 09:34:03.heic

Issue FO-3-2 2022-06-23 09:34:06.heic

Issue FO-3-2 2022-06-23 09:36:08 1E554BDA.heic

Issue 2022-05-12 09:35:59.heic

Issue FO-3-2 2022-06-23 09:36:08 11037A6F.heic

Issue FO-3-2 2022-06-23 09:46:31.heic

FO-5-1 CLOSED MEDIUM

Fire damper access doors appear to be undersized. Spec calls for access doors to be 12” x 12”. Installed access doors appear to be around 6” x 6”

Source Field Observation 5

Site Visit 6/23/22

Assigned To Total Energy Management, Inc
Discipline Commissioning : Field - Observation
Due Date 7/7/2022
Created By Chase Schmidt
Identified On 6/23/2022 1:50 PM

Reply from Logan Gullickson (MSI Engineers) on 9/22/22: "The access doors are for inspection only to verify if the blades are operating when they are supposed to and to check when they have failed closed, not for replacing any portion of the smoke dampers. The 6x6 should be adequate to visual inspect the damper blades as long as there is a clear line of sight from the door to the damper blades". Issue will be closed.

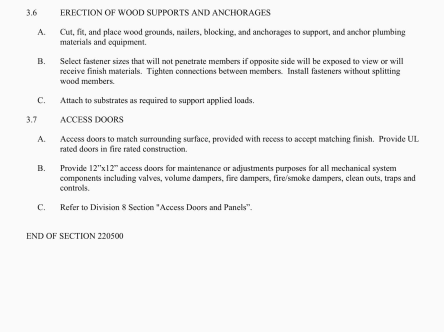
Chase Schmidt commented on 09/23/2022 at 08:09 AM

On 8/19 an email was received stating that all fire damper access doors had been replaced with 12 x 12" doors. On 9/9 I inspected the fire damper doors on level 1 and they appear to still be the smaller 6 x 6" doors. Unsure if the doors on level 2 & 3 have been replaced.

Chase Schmidt commented on 09/12/2022 at 12:31 PM

As of 8/11/22 site visit the access doors have not been changed.

Chase Schmidt commented on 08/12/2022 at 12:22 PM



3.6 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.7 ACCESS DOORS

A. Access doors to match surrounding surface, provided with recess to accept matching finish. Provide UL rated doors in fire rated construction.

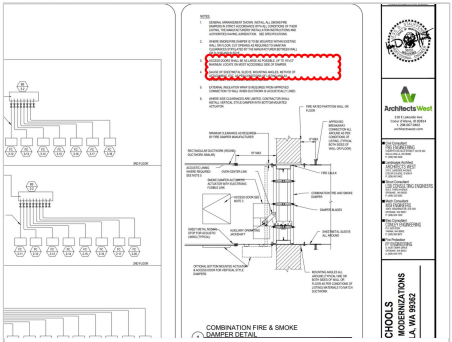
B. Provide 12"x12" access doors for maintenance or adjustments purposes for all mechanical system components including valves, volume dampers, fire dampers, fire/smoke dampers, clean outs, traps and controls.

C. Refer to Division 8 Section "Access Doors and Panels".

END OF SECTION 220500

2022-06-23 13:48:29 8CA7476F.png

2022-06-23 13:48:29 ABD413F1.heic



IMG_0312.png

FO-4-1 CLOSED

ERV return duct is too sharp of a transition potential to limit airflow.

Source Field Observation 4

ERV/RTU VRF system

Assigned To Total Energy Management, Inc
Due Date 8/1/2022
Created By Cody Murdock
Identified On 7/20/2022 10:53 AM

2022-07-18 10:39:13.heic

FO-4-2 CLOSED

ERV fire dampers are located outside but are not outside units. TEM will replace with outside units or outdoor enclosures.

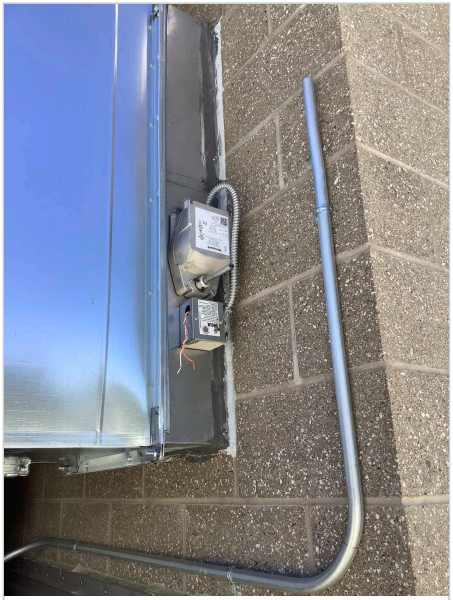
Source Field Observation 4

ERV/RTU VRF system

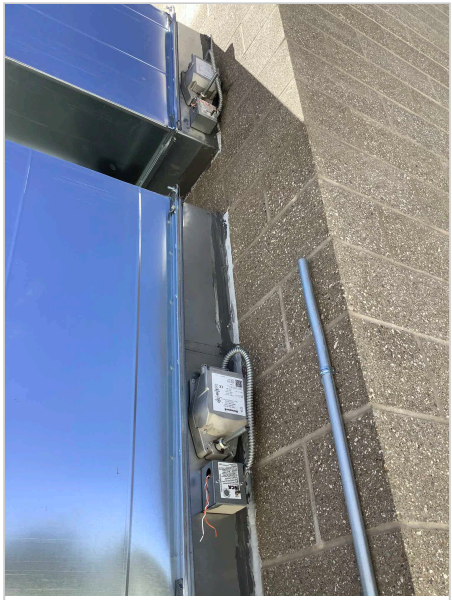
Assigned To Total Energy Management, Inc
Asset ERV-1
Energy recovery Ventilator
Due Date 8/1/2022
Created By Cody Murdock
Identified On 7/20/2022 10:53 AM

Fire dampers were removed from the project via RFI 192. Closing the issue.

Chase Schmidt commented on 09/13/2022 at 07:27 AM



2022-07-18 10:53:12 C8AD82E6.heic



2022-07-18 10:53:12 D9586528.heic

FO-4-3 CLOSED HIGH

Gas heat on ERV has a condensate drain (in cabinet then ran to roof). Should this drains have a neutralizer kit installed? Suggest TEM has design team review.

Source Field Observation 4

ERV/RTU VRF system

Assigned To MSI Engineers
Asset ERV-1
Energy recovery Ventilator
Due Date 8/1/2022
Created By Cody Murdock
Identified On 7/20/2022 10:53 AM

This is not a condensing gas heat unit. No neutralizer kit required. Unit will not have products of combustion condensate, just regular condensate/drain connection.

Logan Gullickson commented on 09/13/2022 at 09:44 AM
MSI Engineers

FO-4-4 CLOSED

RTU duct work is swapped (return and supply are backwards). TEM is going to replace the ducts on the lower roof to the correct locations. New ducts have been ordered to be installed once completed. Estimated by 7/22/22

Source Field Observation 4

ERV/RTU VRF system

Assigned To Total Energy Management, Inc
Asset RTU-1
Air Handling Unit
Due Date 8/1/2022
Created By Cody Murdock
Identified On 7/20/2022 10:53 AM

Ductwork has been corrected

Chase Schmidt commented on 09/12/2022 at 02:26 PM

2022-07-18 12:14:38.heic

FO-6-1 CLOSED MEDIUM

Exhaust fan EF-1-1 grille is covered by light fixture. Engineer to determine if this is an acceptable installed arrangement.

Source Field Observation 6

Site visit 8/11/22

Assigned To MSI Engineers
Due Date 8/25/2022
Created By Chase Schmidt
Identified On 8/12/2022 8:20 AM

Email from Logan Gullickson (MSI Engineers) on 9/23/22: "Provided grille is reaching design airflows, this is acceptable"

TAB report states that this exhaust grille is at 108% of design. Issue will be closed.

Chase Schmidt commented on 09/23/2022 at 11:48 AM

2022-08-11 13:36:46.heic

CHK-43-1 CLOSED MEDIUM

When 1 Fan Coil calls for demand control ventilation the ERV is not enabled into occupied mode. The logic currently requires 5 fan coil unit to have occupancy before the ERV is enabled.

The increased CO2 in any given space does not enable the ERV into occupied mode. Sequence states that one fan coil calling for ventilation should enable the ERV into occupied mode.

Source Checklist 43, Line 19

GENERATE A CALL FOR VENTILATION VIA CO2 SENSOR FROM ONE FAN COIL (ADJ). (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset ERV-1
Energy recovery Ventilator
Drawing M6.03
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 11:51 AM

Logic has been updated so that one call for ventilation will enable the ERV in occupied mode.
Chase Schmidt commented on 10/25/2022 at 09:42 AM

CHK-43-2 CLOSED HIGH

SIP switch has not been installed.

Source Checklist 43, Line 25

PRESS THE SIP SWITCH (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset ERV-1
Energy recovery Ventilator
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 12:13 PM

SIP Switch has been installed
Chase Schmidt commented on 10/25/2022 at 09:30 AM

CHK-43-3 CLOSED HIGH

Logic for static pressure reset is present in the BAS but the high, low, and initial setpoint are all set to 1.1 in W.C. Engineer to verify what the pressure reset range should be or if it is required. Sequence of operation states that the pressure is to be reset down "incrementally" but does not provide what the range / increments should be.

Source Checklist 43, Line 7

VERIFY THAT THE STATIC PRESSURE SETPOINT RESETS DOWN INCREMENTALLY IF ALL VENTILATION AIR VALVES ARE SATISFIED. (Pass, Fail, N/A)

Assigned To Jess Stauffenberg
Asset ERV-1
Energy recovery Ventilator
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 12:16 PM

SPHC has changed the logic so that the initial setpoint is 1", minimum is 0.8" and maximum is 1.125". Issue will be closed.
Chase Schmidt commented on 10/13/2022 at 12:51 PM

Email response from Logan Gullickson (MSI Engineers) on 9/23/22: Initial setpoint shall be 0.75" (final setpoint determined during TAB). Setpoint shall reset down incrementally when all air valves are satisfied until a single air valve is not satisfied".
Chase Schmidt commented on 09/23/2022 at 11:50 AM

CHK-42-1 CLOSED HIGH

Exhaust fan is not enabled when the unit is in occupied mode. OSA AFM is reading at around 1000 CFM. There is a block of logic which controls the exhaust fan enable and this is preventing the exhaust fan from turning on. Logic, damper, or airflow monitoring station may need to be investigated to resolve this issue.

Source Checklist 42, Line 4

CONFIRM THAT THE SUPPLY AND EXHAUST FANS ARE RUNNING CONTINUOUSLY. (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset RTU-1
Air Handling Unit
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 1:19 PM

The exhaust fan appears to be running continuously now. Issue will be closed.

Chase Schmidt commented on 09/26/2022 at 10:44 AM

CHK-42-2 CLOSED HIGH

Supply fan does reduce to 60% when the zone is in deadband but the exhaust fan is being controlled based off of the economizer position. Need to verify with the engineer that this meets design intent.

Source Checklist 42, Line 15

CONFIRM THAT THE SUPPLY FAN AND EXHAUST FAN RESET TO 60% SPEED. (Pass, Fail, N/A)

Assigned To Jess Stauffenberg
Asset RTU-1
Air Handling Unit
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 4:13 PM

Email from Logan Gullickson on 10/3: It is acceptable to control exhaust fan based off economizer position provided the supply fan is still turning down to 60% speed and OSA is still modulating based on feedback from CO2 sensor.

Issue will be closed.

Chase Schmidt commented on 10/13/2022 at 12:50 PM

CHK-42-3 CLOSED HIGH

unable to verify due to the AFM Station.

Source Checklist 42, Line 16

CONFIRM THAT THE RELIEF, RETURN, AND OUTSIDE AIR DAMPERS MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR. (Pass, Fail, N/A)

Asset RTU-1
Air Handling Unit
Due Date 9/22/2022
Created By Chase Schmidt
Identified On 9/8/2022 4:14 PM

Logic has been updated by SPHC. OSA flow is now being controlled to the minimum OSA cfm required. Issue will be closed.

Chase Schmidt commented on 11/07/2022 at 11:58 AM

CHK-46-1 CLOSED MEDIUM

Pumps appear to always be enabled during occupied hours and disabled during unoccupied hours. Logic does not appear to exist that would disable the recirculation pump when return water temperature reaches setpoint.

Source Checklist 46, Line 3

MANIPULATE THE RETURN WATER TEMPERATURE TO 118F. VERIFY THAT RCP-1 IS DE-ENERGIZED (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 9:53 AM

Logic has been added so that a return water temperature greater then 118F will disable the recirculation pump. Issue will be closed.

Chase Schmidt commented on 10/06/2022 at 10:43 AM

CHK-36-1 CLOSED MEDIUM

Damper position does not update on the graphic when it is modulated closed. The graphic shows that the damper is always open regardless of the actual position. Damper is operating as intended but graphic does not match the actual damper position.

Source Checklist 36, Line 3

DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-1-4
Exhaust Fan
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 11:46 AM

Damper graphic has been tied to the exhaust fan S/S and now shows the correct position.

Chase Schmidt commented on 09/28/2022 at 08:43 AM

damper graphic does not use DO for open/closed.

Steve Montagne commented on 09/26/2022 at 09:01 AM
Standard Plumbing And Heating Controls

CHK-37-1 CLOSED MEDIUM

Graphic shows that there is a damper associated with this exhaust fan. Unable to locate the damper onsite. Please verify if there is an existing damper associated with this fan. The graphic also does not reflect the correct position of the damper if there was one being controlled. The damper is stuck open in the graphic regardless of the exhaust fan status.

Source Checklist 37, Line 3

DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-1-5
Exhaust Fan
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 11:54 AM

Damper has been removed from the graphic. Issue will be closed.
Chase Schmidt commented on 10/13/2022 at 12:47 PM

Email response from Logan Gullickson (MSI) on 10/6/22: "It is acceptable to use a gravity backdraft damper instead of a motorized damper".

Once the damper graphic is removed from the BAS this issue will be closed.
Chase Schmidt commented on 10/06/2022 at 10:36 AM

Don't know what the spec says about dampers on duct work to outside but shouldn't it have one if it's missing?
Steve Montagne commented on 09/29/2022 at 01:55 PM
Standard Plumbing And Heating Controls

damper graphic does not go off of DO.
Steve Montagne commented on 09/26/2022 at 09:00 AM
Standard Plumbing And Heating Controls

CHK-34-1 CLOSED MEDIUM

Damper is being controlled from the BAS correctly but the graphic is showing that the damper position is always open. Graphic does not reflect the onsite condition of the damper.

Source Checklist 34, Line 3

DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-1-2
Exhaust Fan
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 11:58 AM

Damper graphic has been tied to the exhaust fan S/S and now shows the correct position.
Chase Schmidt commented on 09/28/2022 at 08:43 AM

Damper graphic not controlled by DO.
Steve Montagne commented on 09/26/2022 at 08:53 AM
Standard Plumbing And Heating Controls

CHK-39-1 CLOSED MEDIUM

Damper moves when commanded but the graphic does not reflect actual damper position. The damper is shown as 100% open regardless of the actual position on the graphic.

Source Checklist 39, Line 3

DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-3-1
Exhaust Fan
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 12:03 PM

Damper graphic has been tied to the exhaust fan S/S and now shows the correct position.

Chase Schmidt commented on 09/28/2022 at 08:43 AM

damper graphic doesn't go off the DO in the software.

Steve Montagne commented on 09/26/2022 at 08:10 AM
Standard Plumbing And Heating Controls

CHK-51-1 CLOSED MEDIUM

It appears that the electric meter is connected to the BAS but no data has been recorded as of 9/9/22

Source Checklist 51, Line 1

Verify that meter is connected to BAS and reporting usage data. (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Due Date 9/23/2022
Created By Chase Schmidt
Identified On 9/9/2022 12:09 PM

RFI #198 states that BACnet communication with the BAS is not required by the school district. Issue will be closed.

Chase Schmidt commented on 11/08/2022 at 02:28 PM

Email response from Tyler Cavanaugh on 9/28/22: "I am working on this. I spoke with the startup tech and he said we need an additional piece of equipment to report to the BAS. I have my supplier looking into this as it was required per spec. I will update you on the lead time and installation date."

Chase Schmidt commented on 09/28/2022 at 02:52 PM

The metering data is being reported in the provided COMMUNICATOR PQA software. The link I have sent as https://www.electroind.com/products/communicatorpqa-power-monitoring-software/ can be used to download and install in the computer. These are the profile files required to program the meter if required in future. Also, you can open these files in Communicator PQA and convert to pdf format if you want.

This was all discussed during the training. If more training is required we can set up a conference call for next week. Let me know.

Tyler Cavanaugh commented on 09/27/2022 at 10:13 AM
Energized Electric

This is an electrical issue not DDC. They have not configured their equipment yet.

Steve Montagne commented on 09/26/2022 at 07:59 AM
Standard Plumbing And Heating Controls

CHK-2-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 2, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-1
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:33 AM

CO2 sensor has been installed
Chase Schmidt commented on 10/25/2022 at 09:00 AM

CHK-4-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 4, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-3
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:34 AM

Temperature and CO2 have been removed from the graphic. CO2 sensor is not required for this piece of equipment per the design drawings. Issue will be closed.
Chase Schmidt commented on 10/03/2022 at 09:19 AM

Not showing this unit gets a CO2.
Steve Montagne commented on 09/29/2022 at 01:05 PM
Standard Plumbing And Heating Controls

CHK-5-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 5, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-4
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:35 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:39 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:59 AM

CHK-8-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 8, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-7
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:36 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:39 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:59 AM

CHK-11-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 11, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-10
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:36 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:38 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:58 AM

CHK-3-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 3, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-2
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:37 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:38 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:57 AM

CHK-6-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 6, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-5
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:38 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:38 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:56 AM

CHK-7-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 7, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-6
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:38 AM

CO2 Sensor has been installed and is connected to the BAS. Issue will be closed.
Chase Schmidt commented on 10/06/2022 at 10:39 AM

CHK-9-1 CLOSED HIGH

CO2 Sensor has not been installed
Source Checklist 9, Line 1
ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-1-8
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 9:39 AM

Points have been labeled as "Not Used" for clarity. Issue will be closed.
Chase Schmidt commented on 10/27/2022 at 08:37 AM

CO2 Sensor is not required for this room. Please remove from the BAS I/O Inputs page
Chase Schmidt commented on 10/25/2022 at 08:53 AM

CHK-16-1 CLOSED HIGH

CO2 sensor has been installed but the BAS does not register that the stat has been connected. May be wired incorrectly.

Source Checklist 16, Line 1

ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-2-4
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 10:59 AM

CO2 sensor is now reporting correctly to the BAS. Issue will be closed.

Chase Schmidt commented on 10/06/2022 at 10:38 AM

CHK-19-1 CLOSED MEDIUM

CO2 sensor is not required for this space but is shown on the graphic. Please remove the CO2 sensor from the BAS for clarity.

Source Checklist 19, Line 1

ROOM CO2 - AI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset AV-2-7
Ventilation Air Valve
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 11:00 AM

Graphic has been removed. Issue will be closed.

Chase Schmidt commented on 10/27/2022 at 08:36 AM

CHK-33-1 CLOSED HIGH

Current sensor is not responding when fan is on

Source Checklist 33, Line 2

FAN STATUS / POWER - DI (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-1-1
Exhaust Fan
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 1:55 PM

Current sensor has been replaced or fixed and is now operating as intended.

Chase Schmidt commented on 10/25/2022 at 08:18 AM

fixed

Steve Montagne commented on 10/24/2022 at 09:05 AM
Standard Plumbing And Heating Controls

As of 10/7 the current sensor is still not working. Fan S/S and damper work correctly but current sensor does not.

Chase Schmidt commented on 10/07/2022 at 03:28 PM

CHK-33-2 CLOSED MEDIUM

Damper opens and closes as it should but the graphic is not accurately showing the actual damper position

Source Checklist 33, Line 3

DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset EF-1-1
Exhaust Fan
Due Date 9/26/2022
Created By Chase Schmidt
Identified On 9/12/2022 1:56 PM

Damper graphic has been tied to the exhaust fan S/S and now shows the correct position.

Chase Schmidt commented on 09/28/2022 at 08:43 AM

Isn't this the same as issue chk-1-1

Steve Montagne commented on 09/26/2022 at 07:52 AM
Standard Plumbing And Heating Controls

CHK-1-1 CLOSED HIGH

Damper is moving when commanded but this damper is a 2 position damper. The graphic is showing an open position that is equal to the OSA damper position instead of 100% open or 0% open.

Source Checklist 1, Line 1

EXHAUST AIR DAMPER -DO (Pass, Fail, N/A)

Assigned To Standard Plumbing And Heating Controls
Asset RTU-1
Air Handling Unit
Due Date 9/30/2022
Created By Chase Schmidt
Identified On 9/16/2022 9:50 AM

Damper is now showing the correct position. Issue will be closed

Chase Schmidt commented on 09/30/2022 at 11:59 AM

FO-7-1 CLOSED HIGH

Samsung VRF system operation appears inconsistent with design intent.

Some dual unit rooms will have 1 unit in heating and 1 unit in cooling.

Pam (OAC) called me today and stated that the staff work room fan coil unit was blowing hot air while the temperature in the room was at 72F (around 10am). Since this unit was in deadband it should not have been in heating mode.

Not sure if this is a programming issue from the Samsung controller or if it is an issue with the branch selector boxes (potentially the high pressure and low pressure lines may be swapped)

Source Field Observation 7

Functional Performance Testing 9/8 - 9/9

Assigned To Total Energy Management, Inc
Due Date 10/12/2022
Created By Chase Schmidt
Identified On 9/28/2022 3:44 PM

Communications issues appear to have been resolved by TEM. Since this work has taken place there have not been any complaints of fan coils operating in different modes that serve the same zone. Issue will be closed.

Chase Schmidt commented on 10/17/2022 at 01:22 PM

It is my understanding that the additional low voltage control wiring (grouped fan coils) that TEM performed last month has resolved these communications issues. I believe this issue can be closed at this time.

Craig Firkins commented on 10/17/2022 at 11:58 AM

Phone conversation with Craig Firkins (Total Energy) on 9/29/22: These bugs should have all been fixed on Tuesday (9/27/22). VRF system will continue to be monitored over the next couple of weeks and if complaints regarding the VRF system are received from the school district they will be forwarded to TEM.

Chase Schmidt commented on 09/29/2022 at 02:52 PM

FO-8-1 CLOSED MEDIUM

VRF thermostat does not have the ability to adjust setpoint +/- 2F as requested by the school district

Source Field Observation 8

Site walk 10/7

Assigned To Total Energy Management, Inc
Due Date 10/21/2022
Created By Chase Schmidt
Identified On 10/7/2022 3:28 PM

Thermostats have been updated to provide setpoint adjustment by the occupant. Issue will be closed.

Chase Schmidt commented on 01/20/2023 at 08:27 AM

Arrived onsite to perform functional performance testing. While testing the Samsung thermostats I noticed that the "COOL MIN (72)" and the "HEAT MAX (71)" setpoints shown in the BAS are not being incorporated into the Samsung thermostat. The "COOL MAX (75)" and the "HEAT MIN (68)" are being used by the Samsung thermostat.

In effect this allows the occupant to set a heating and cooling setpoint as low as 68F or as high as 75F. The occupant should only have the ability to adjust the cooling setpoint between 75 - 72F and the heating setpoint between 68 - 71F.

From speaking with Rick Maddy (SPHC) it appears that these values are being sent to the Samsung central controller but they are not being used.

Is it possible to use these values to only allow the occupant to change their heating / cooling setpoints within the defined range?

Also when setting the thermostat outside of the range defined by the BAS the values shown on the thermostat do not match what is being read by the BAS. For example I set the heating setpoint to 68F and the cooling setpoint at 70F on the Samsung thermostat. Once the updated setpoints were sent to the BAS they came in as 68 heating and 72 cooling. Why is the cooling value being sent back to the BAS different than what is shown on the thermostat?

Chase Schmidt commented on 11/09/2022 at 11:18 AM

2EA STATS WERE FOUND TO BE MISTAKENLY LOCKED OUT. ALL STATS HAVE NOW BEEN CONFIRMED TO BE UNLOCKED. READY FOR VERIFICATION. 10/28/2022

Craig Firkins commented on 10/28/2022 at 01:50 PM

The t-stats are locally adjustable in single degree increments BETWEEN the range preset by the school district. They are however NOT adjustable beyond this range. So if the range is set at 68 and 73, any setpoint between 68 and 73 can be chosen locally at the stat. This is true of Daikin and other systems as well. The spec does not appear to be written correctly for a VRF system. My suggestion is to either increase the preset range, or simply close this issue.

Craig Firkins commented on 10/17/2022 at 11:52 AM

2022-10-07 10:51:56.heic

FO-8-2 CLOSED HIGH

VRF wall units have dirty filters in many rooms. Code CF on the unit display represents “Clean Filter”. IO&M states that these filters should be cleaned once every two weeks.

Source Field Observation 8

Site walk 10/7

Assigned To Chervenell Construction
Due Date 10/21/2022
Created By Chase Schmidt
Identified On 10/7/2022 3:28 PM

All filters on the system were replaced and/or cleaned after TAB was complete and the Owner was trained on the system on 8/8/2022. Additionally the building has been occupied since late August. If filters are required to be cleaned every 2 weeks, this responsibility should now be on the Owner.

Macoy Goulet commented on 10/17/2022 at 02:01 PM
Chervenell Construction

2022-10-07 11:13:12 08A62A63.heic

2022-10-07 11:13:12 4C3E0B9F.heic

2022-10-07 11:13:12 672D4E2C.heic

2022-10-07 11:13:12 3BAF6B7C.heic

2022-10-07 11:13:12 57885A6A.heic

2022-10-07 11:13:12 6DE84844.heic

2022-10-07 11:13:12 4516C3A8.heic

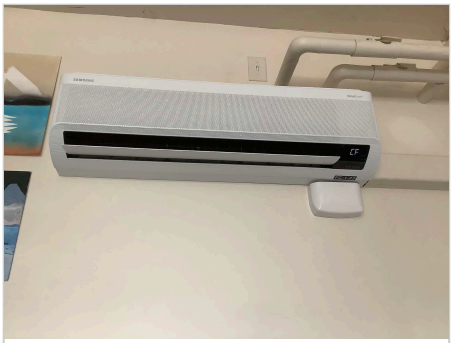
2022-10-07 11:13:12 5BC30BB6.heic

2022-10-07 11:13:12 74A7100E.heic

2022-10-07 11:13:12 768F9A57.heic

2022-10-07 11:13:12 B3F7CB71.heic

2022-10-07 11:13:12 C44C8C7A.heic



2022-10-07 11:13:12 8BF9F380.heic

2022-10-07 11:13:12 B6A198AE.heic

2022-10-07 11:13:12 DB8130B8.heic

2022-10-07 11:13:12 A4F81F23.heic

2022-10-07 11:13:12 BF8C4546.heic

2022-10-07 11:14:52.heic

FO-8-3 CLOSED MEDIUM

Cool setpoint and heating setpoint shown on the Samsung thermostat do not match what is shown in the BAS

Source Field Observation 8

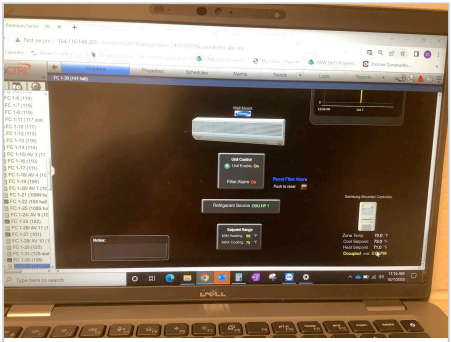
Site walk 10/7

Assigned To Standard Plumbing And Heating Controls
Due Date 10/21/2022
Created By Chase Schmidt
Identified On 10/7/2022 3:28 PM

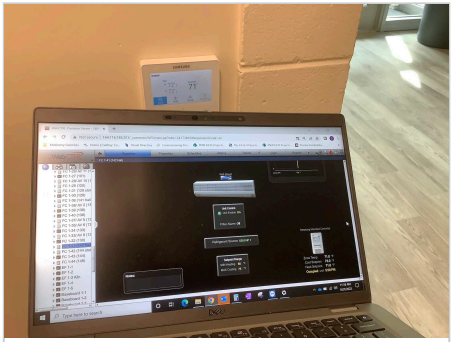
These points are now accurately being reported to the BAS. Issue will be closed.

Chase Schmidt commented on 11/09/2022 at 10:03 AM

2022-10-07 11:18:21 1FF0464D.heic



2022-10-07 11:18:21 6DAD912F.heic



2022-10-07 11:18:21 92C3B293.heic

FO-8-4 CLOSED HIGH

Missing condensation pump cover on FC-2-9

Source Field Observation 8

Site walk 10/7

Assigned To Total Energy Management, Inc
Due Date 10/21/2022
Created By Chase Schmidt
Identified On 10/7/2022 3:28 PM

COVER INSTALLED 10/28/22. READY FOR VERIFICATION

Craig Firkins commented on 10/28/2022 at 01:47 PM

2022-10-07 11:29:47.heic

image0.jpeg

FO-9-1 CLOSED HIGH

Fan operation is very loud. When the unit is commanded on or off a loud click can be heard from the RIB but it does not appear to effect the fan operation at all. When commanded on the amp draw increases from 3.6 amps to 4.1 amps (assuming that this is due to the heating element being turned on). Unsure if this noise is coming from the heating element or if it is coming from the fan.

Lots of complaints of this room getting too hot from the school staff. I noticed that the temperature swings drastically whenever the outside doors are opened. The temperature will drop from 71F down to 63F in a matter of seconds. Temperature will return to normal after a period of about a minute. Thermostat is located on the inner wall of the vestibule.

Source Field Observation 9

Functional Performance Testing - 11/9/22

Assigned To Patrick Bestebreur
Asset CUH-1
Electric Cabinet Unit
Heater
Due Date 11/23/2022
Created By Chase Schmidt
Identified On 11/9/2022 11:07 AM

Support structure has been modified to reduce unit vibration and noise. Issue will be closed.

Chase Schmidt commented on 01/18/2023 at 11:12 AM

This noise is believed to be from vibration of the unit and how it is connected to the ceiling. The mounting of this unit is going to be revised with input from the architect to reduce the noise from vibration. Once the rework is complete this issue will be closed.

Chase Schmidt commented on 12/12/2022 at 12:00 PM

FO-9-2 CLOSED MEDIUM

As built room numbers and construction drawing room numbers do not match. Pam has provided updated room numbers for the school floorplan. Please ensure that these updated room numbers are incorporated into the BAS graphic and the equipment tags in the navigation pane of the BAS.

Source Field Observation 9

Functional Performance Testing - 11/9/22

Assigned To Steve Montagne
Due Date 11/25/2022
Created By Chase Schmidt
Identified On 11/11/2022 9:59 AM

FO-10-1 CLOSED HIGH

FC-1-36 appears to be leaking refrigerant.

Source Field Observation 10

1/18/23 functional testing

Assigned To Total Energy Management, Inc
Asset FC-1-36
VRF Indoor Fan Coil Unit
Discipline Commissioning : Field - Observation
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 10:51 AM

Unit has been replaced and is no longer leaking.

Chase Schmidt commented on 02/28/2023 at 11:46 AM

2023-01-19 10:47:53 309FE283.jpg

2023-01-19 10:47:53 702A194F.jpg

2023-01-19 10:47:53 E354AD14.jpg

FO-10-2 CLOSED HIGH

FC-1-13: Thermostat setpoints are not being updated on the BAS after changing the setpoint on the thermostat. After a period of 19 minutes the setpoints have still not been updated (changed at 9:49 and comment was written at 10:09). Zone temperature also does not match.

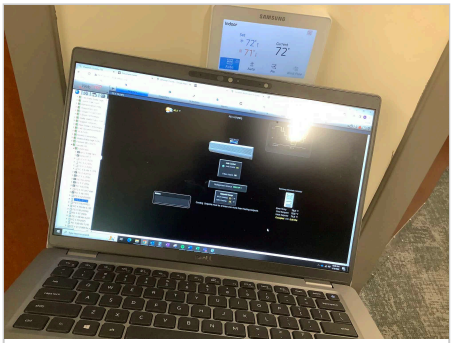
Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-1-13
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 10:56 AM

Thermostat has been tied to the correct fan coil unit

Chase Schmidt commented on 02/28/2023 at 11:45 AM



2023-01-19 10:55:25.heic

FO-10-3 CLOSED HIGH

FC-1-16: values are updated on the BAS after changing setpoints on the thermostat but all values are lower than the thermostat by 1F

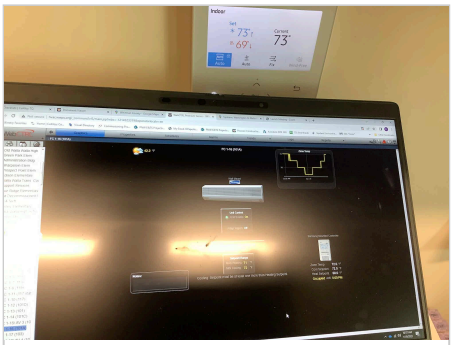
Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-1-16
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 11:01 AM

Thermostat has been tied to the correct fan coil unit. There seems to be a longer lag time for the zone temperature to update on the BAS when compared to the heating / cooling setpoints but the value eventually (within a couple of minutes) matches what is displayed on the BAS.

Chase Schmidt commented on 02/28/2023 at 11:45 AM



2023-01-19 10:57:27.jpg

FO-10-4 CLOSED HIGH

FC-1-38: Thermostat values do not match BAS values

Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-1-38
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 11:06 AM

Thermostat has been tied to the correct fan coil unit

Chase Schmidt commented on 02/28/2023 at 11:44 AM

2023-01-19 11:06:05.jpg

FO-10-5 CLOSED HIGH

FC-1-18: Thermostat values do not match BAS values

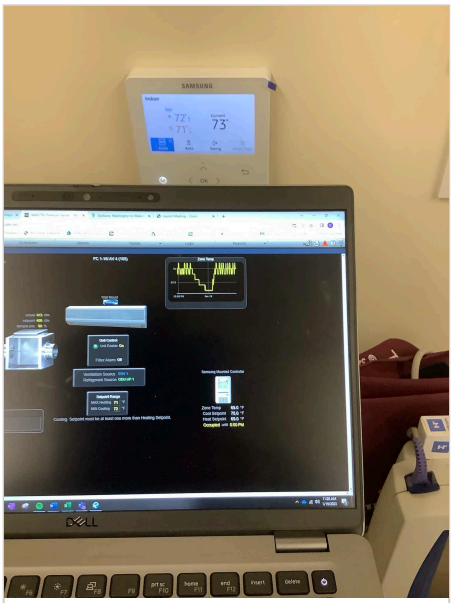
Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-1-18
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 11:31 AM

Thermostat has been tied to the correct fan coil unit

Chase Schmidt commented on 02/28/2023 at 11:44 AM



2023-01-19 11:28:46.jpg

FO-10-6 CLOSED HIGH

FC-1-33: Thermostat values do not match BAS values

Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls

Asset FC-1-33

VRF Indoor Fan Coil Unit

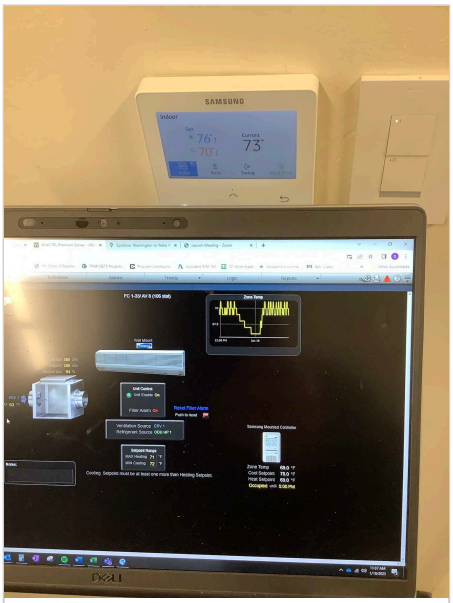
Due Date 2/2/2023

Created By Chase Schmidt

Identified On 1/19/2023 11:41 AM

Thermostat has been tied to the correct fan coil unit

Chase Schmidt commented on 02/28/2023 at 11:43 AM



2023-01-19 11:37:36.jpg

FO-10-7 CLOSED HIGH

FC-2-6: thermostat is set up in single setpoint mode. Please verify that this will still work with the current BAS logic

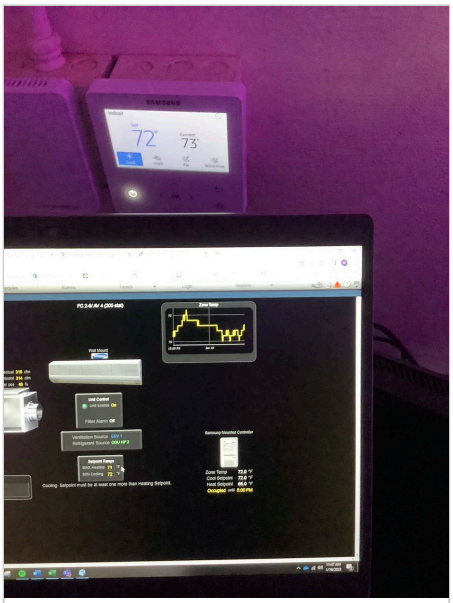
Source Field Observation 10

1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-2-6
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 11:51 AM

Fixed while onsite

Chase Schmidt commented on 01/19/2023 at 04:16 PM



2023-01-19 11:48:07.jpg

FO-10-8 CLOSED HIGH

FC-2-17: Thermostat screen light appears to be non functional. Very hard to read thermostat values. Thermostat may need to be replaced.

Source Field Observation 10

1/18/23 functional testing

Assigned To Total Energy Management, Inc
Asset FC-2-17
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 12:16 PM

As of 3/8/23 the thermostat has been replaced. Issue will be closed

Chase Schmidt commented on 03/08/2023 at 01:09 PM

Upon inspection on 2/28/23 the unit appears to have been broken into. Unit LED backlight is still non-operational. Thermostat to be replaced.

Chase Schmidt commented on 02/28/2023 at 11:43 AM

FO-10-9 CLOSED

FC-1-3: Thermostat values do not match BAS values
Source Field Observation 10
1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-1-3
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 4:06 PM

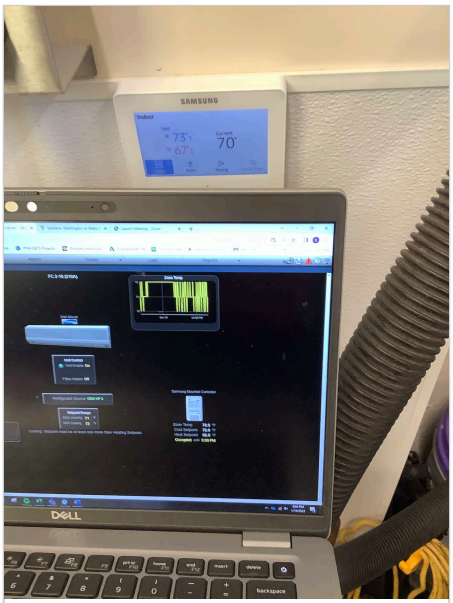
Thermostat has been tied to the correct fan coil unit
Chase Schmidt commented on 02/28/2023 at 11:41 AM

FO-10-10 CLOSED HIGH

FC-2-18: Thermostat values do not match BAS values
Source Field Observation 10
1/18/23 functional testing

Assigned To Standard Plumbing And Heating Controls
Asset FC-2-18
VRF Indoor Fan Coil Unit
Due Date 2/2/2023
Created By Chase Schmidt
Identified On 1/19/2023 4:06 PM

Thermostat has been tied to the correct fan coil unit
Chase Schmidt commented on 02/28/2023 at 11:41 AM



2023-01-19 16:04:58.jpg

FO-11-1 CLOSED HIGH

Dirty Filter alarm is still present on some of the fan coil units. Per our testing today we found that FC-2-5, FC-2-6 & FC-2-16 were all displaying CF on the fan coil unit LED and a dirty filter alarm was present in the BAS. Unsure how many additional units may also have the same alarm.

This alarm was to be removed from the Samsung Central Controller and a maintenance schedule was to be put in place by the school district maintenance staff.

Previously all of these alarms had been removed. It appears that some fan coil units were either forgotten or a system parameter was changed at the central controller that re-enabled the dirty filter alarm.

Source Field Observation 11

Functional Testing 2/28/23

Assigned To Total Energy Management, Inc
Asset VRF Indoor Fan Coil Unit
Discipline Controls
Due Date 3/14/2023
Created By Chase Schmidt
Identified On 2/28/2023 11:40 AM

After further review it has been determined that the "CF" alarm can not be disabled from the VRF system. Direction has been received by the school district from CMS on how this alarm can be reset. Issue will be closed.

Chase Schmidt commented on 03/15/2023 at 01:04 PM

Recommend resetting all of the fan coil units from the central controller so that the filter alarm does not show up on the fan coil unit or in the BAS

Chase Schmidt commented on 02/28/2023 at 11:40 AM

CHK-55-1 CLOSED

Wiring between lighting modules in the gym storage space is possibly daisy chained and is always showing occupancy. Lighting contractor to investigate and fix the issue.

Source Checklist 55, Line 15

GYM STAGE AND STORAGE AREA: 2 BUTTON DIMMING AND ON / OFF SWITCH

Due Date 4/19/2023
Created By Chase Schmidt
Identified On 4/6/2023 12:58 PM

Resolved

Chase Schmidt commented on 05/30/2023 at 02:23 PM

CHK-55-2 WARRANTY

Scene 3 does not function from the wall switch. Wall switch will need to be replaced.

Source Checklist 55, Line 26

ROOM 203: 4 BUTTON DIMMING

Due Date 4/19/2023
Created By Chase Schmidt
Identified On 4/6/2023 12:58 PM

Waiting on switch to be delivered.

Chase Schmidt commented on 05/30/2023 at 02:25 PM

Appendix

D

Point To Point Tests

CHECKLIST

#29 ERV-1 - ERV PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 87% Passed | 0% Failed | 12% N/A

Type Point to Point
Asset ERV-1
Energy recovery Ventilator

Lines 25

POINT TO POINT CHECKOUT			
✓	1	EXHAUST AIR DAMPER -DO (Pass, Fail, N/A)	Chase Schmidt on 9/16/2022 9:49 AM
✓	2	EXHAUST TEMP - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	EXHAUST AIR FLOW (CFM) - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	EXHAUST FAN SPEED CONTROL - AO X 2	Chase Schmidt on 8/12/2022 8:20 AM
✓	5	EXHAUST FAN START / STOP - DO X 2 (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	6	EXHAUST FAN VFD FAULT ALARM - DI X 2 (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
		VFD is not compatible with Bac net so this alarm does not exist	Chase Schmidt on 8/12/2022 8:20 AM
✓	7	ENERGY RECOVERY WHEEL SPEED - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	8	RETURN AIR TEMP - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	9	SUPPLY DUCT STATIC PRESSURE - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	10	SUPPLY AIR FLOW (CFM) - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	11	SUPPLY AIR TEMPERATURE - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	12	SUPPLY FAN SPEED CONTROL - AO X 2	Chase Schmidt on 8/12/2022 8:20 AM
✓	13	SUPPLY FAN START / STOP - DO X 2 (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	14	SUPPLY FAN VFD FAULT ALARM - DI X 2 (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
		VFD is not compatible with Bac net so this alarm does not exist	Chase Schmidt on 8/12/2022 8:20 AM
N/A	15	COMPRESSOR SAFETY SHUTDOWN - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	16	COMPRESSOR COOLING STAGE 1 ENABLE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	17	COMPRESSOR COOLING STAGE 2 ENABLE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	18	COMPRESSOR STAGE 1 CAPACITY CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	19	COMPRESSOR HEATING CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	20	TEMPERED AIR TEMP - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	21	OUTSIDE AIR TEMP - AI	Chase Schmidt on 9/12/2022 9:31 AM
		OSA temp has not been completed at time of testing	Chase Schmidt on 8/12/2022 8:20 AM
✓	22	OSA 1 DIRTY FILTER ALARM - DI (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 2:44 PM

✓	23	OSA 2 DIRTY FILTER ALARM - DI (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 2:44 PM
✓	24	OUTDOOR AIR DAMPER - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM

CHECKLIST

#1 RTU-1 - RTU PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 80% Passed | 0% Failed | 19% N/A

Note

EF-A, EF-B, and EF-Storage status was not complete at time of testing.
These are the existing fans that are being monitored only.

Asset RTU-1
Air Handling Unit

Lines 22

POINT TO POINT CHECKOUT			
✓	1	EXHAUST AIR DAMPER -DO (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM
✓	2	RETURN FAN SPEED CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	RETURN FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	4	RETURN FAN VFD FAULT ALARM - DI (Pass, Fail, N/A) Fault alarm does not exist because the vfd provided with this unit does not have Bac net capability	Chase Schmidt on 11/9/2022 11:34 AM Chase Schmidt on 8/12/2022 8:20 AM
✓	5	ROOM STAT - AI	Chase Schmidt on 11/9/2022 11:54 AM
✓	6	CO2 SENSOR - AI	Chase Schmidt on 11/9/2022 11:54 AM
✓	7	RETURN AIR DAMPER - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	8	SUPPLY AIR TEMPERATURE - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	9	SUPPLY FAN SPEED CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	10	SUPPLY FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	11	SUPPLY FAN VFD FAULT ALARM - DI (Pass, Fail, N/A) Fault alarm does not exist because the vfd provided with this unit does not have Bac net capability	Chase Schmidt on 11/9/2022 11:34 AM Chase Schmidt on 8/12/2022 8:20 AM
N/A	12	COMPRESSOR SAFETY SHUTDOWN - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	13	COMPRESSOR COOLING STAGE 1 ENABLE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	14	COMPRESSOR COOLING STAGE 2 ENABLE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	15	COMPRESSOR STAGE 1 CAPACITY CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	16	COMPRESSOR HEATING CONTROL - AO	Chase Schmidt on 8/12/2022 8:20 AM
✓	17	TEMPERED AIR TEMP - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	18	DIRTY FILTER ALARM - DI (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM
✓	19	OUTSIDE AIR TEMP - AI	Chase Schmidt on 11/9/2022 11:34 AM
✓	20	OUTDOOR AIR FLOW (CFM) - AI	Chase Schmidt on 8/12/2022 8:20 AM
✓	21	OUTDOOR AIR DAMPER - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM

CHECKLIST

#2 AV-1-1 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset AV-1-1
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 1/18/2023 11:19 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:41 AM

#3 AV-1-2 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-2
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:35 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:35 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 2/28/2023 11:19 AM

#4 AV-1-3 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-1-3
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:45 AM
		Sensor is not installed yet	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:41 AM

#5 AV-1-4 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-4
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:37 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:37 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 2/28/2023 11:31 AM

#6 AV-1-5 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-5
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:34 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:34 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#7 AV-1-6 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-1-6
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:45 AM
		Sensor is not installed yet	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

CHECKLIST

#8 AV-1-7 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-7
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:36 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:36 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#9 AV-1-8 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-8
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:32 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:34 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 2/28/2023 11:19 AM

#10 AV-1-9 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-1-9
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 1/18/2023 11:21 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

CHECKLIST

#11 AV-1-10 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-1-10
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:36 AM
		Sensor is not required for this space. Sensor needs to be removed from the BAS	Chase Schmidt on 10/25/2022 9:36 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

CHECKLIST

#12 AV-1-11 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-1-11
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 1/18/2023 11:21 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#13 AV-2-1 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-1
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#14 AV-2-2 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-2
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#15 AV-2-3 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-2-3
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
		CO2 sensor is not required from this unit. CO2 set point will be removed from the BAS	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:42 AM

#16 AV-2-4 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-4
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:45 AM
		CO2 sensor was not connected at time of test. May be wired incorrectly	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:43 AM

#17 AV-2-5 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-5
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:43 AM

#18 AV-2-6 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-6
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:43 AM

#19 AV-2-7 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 75% Passed | 0% Failed | 25% N/A

Type Point to Point
Asset AV-2-7
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
N/A	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
		A co2 sensor was not required for this space. CO2 sensor will be removed from the BAS	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:43 AM

#20 AV-2-8 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-2-8
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:43 AM

#21 AV-3-1 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-1
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#22 AV-3-2 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-2
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#23 AV-3-3 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-3
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#24 AV-3-4 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-4
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#25 AV-3-5 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-5
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#26 AV-3-6 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-6
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#27 AV-3-7 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-7
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

#28 AV-3-8 - FAN COIL PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset AV-3-8
Ventilation Air Valve

Lines 5

POINT TO POINT CHECKOUT			
✓	1	ROOM CO2 - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	OUTSIDE AIR DAMPER - AO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	CFM - AI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	ROOM TEMPERATURE - AI (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

CHECKLIST

#33 EF-1-1 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset EF-1-1
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 10/25/2022 9:30 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:44 AM

CHECKLIST

#34 EF-1-2 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset EF-1-2
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 11:57 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 11:57 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:46 AM

CHECKLIST

#35 EF-1-3 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset EF-1-3
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 11:40 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 11:41 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 11:41 AM

CHECKLIST

#36 EF-1-4 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset EF-1-4
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:46 AM

CHECKLIST

#37 EF-1-5 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 66% Passed | 0% Failed | 33% N/A

Type Point to Point
Asset EF-1-5
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
N/A	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:17 PM
		Damper does not appear to be included with this bathroom exhaust fan.	Chase Schmidt on 9/9/2022 11:53 AM

CHECKLIST

#32 EF-2-1 - EXHAUST FAN (PURGE) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset EF-2-1
Exhaust Fan

Lines 6

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	4	PUSHBUTTON - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	5	PILOT LIGHT - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM

CHECKLIST

#30 EF-2-2 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset EF-2-2
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM

CHECKLIST

#31 EF-2-3 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset EF-2-3
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 8/12/2022 8:20 AM

CHECKLIST

#39 EF-3-1 - EXHAUST FAN (TYP) PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset EF-3-1
Exhaust Fan

Lines 4

POINT TO POINT CHECKOUT			
✓	1	FAN START / STOP - DO (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 12:02 PM
✓	2	FAN STATUS / POWER - DI (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 12:02 PM
✓	3	DAMPER OPEN / CLOSE - DO (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:46 AM

#40 CUH-1 - UH & CUH PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset CUH-1
Electric Cabinet Unit
Heater

Lines 4

POINT TO POINT CHECKOUT			
✓	1	ELECTRIC ELEMENT - DO (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:01 AM
		This is listed as CUH enable in the BAS. Fan command and heating element command are bundled into one enable unit point.	Chase Schmidt on 11/9/2022 11:02 AM
✓	2	SPACE TEMPERATURE - AI	Chase Schmidt on 11/9/2022 10:44 AM
✓	3	FAN STATUS / ALARM - DI (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:01 AM

CHECKLIST

#41 UH-1 - UH & CUH PTP

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Type Point to Point
Asset UH-1
Electric Unit Heater

Lines 4

POINT TO POINT CHECKOUT			
✓	1	ELECTRIC ELEMENT - DO (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:43 AM
✓	2	SPACE TEMPERATURE - AI	Chase Schmidt on 11/9/2022 10:38 AM
✓	3	FAN STATUS / ALARM - DI (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:38 AM

Appendix

E

Functional Performance Tests

#54 FC-1-1 - Fan Coil Unit FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 99% Passed | 0% Failed | 0% N/A

Asset FC-1-1
VRF Indoor Fan Coil Unit

Lines 142

FAN COIL UNIT FUNCTIONAL PERFORMANCE TEST
SEQUENCE OF OPERATIONS
THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES FOR THE SYSTEM.
VENTILATION CONTROL:
WHERE CO2 SENSORS ARE INDICATED, THE CO2 SENSOR
SHALL MODULATE THE OSA VENTILATION AIR DAMPER BETWEEN THE SCHEDULED
MININMUM AND CODE CFM BASED ON CO2 LEVEL OF 400 TO 1000 PPM (OR AS SET)
THROUGH A PID LOOP. WHERE NO CO2 SENSOR IS INDICATED THE OSA VALVE SHALL
OPEN TO THE SCHEDULED FIXED CFM. WHERE PURGE FANS ARE INDICATED THE OSA
VALVE SHALL MODULATE TO MAXIMUM SCHEDULED CFM WHEN THE PURGE FAN IS
ENABLED. OSA VALVE SHALL CLOSE DURING UNOCCUPIED TIMES.
THE DAMPER SHALL BE FULLY CLOSE DURING UNOCCUPIED TIMES.
THE DDC SYSTEM WILL SET ROOM SETPOINTS.
OPTIMUM START:
HEATING:
THE DDC SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR
TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE
IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL
FULLY CLOSE AND RETURN AIR DAMPER SHALL FULLY OPEN DURING WARM-UP
PERIOD. UPON START OF OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL
MODULATE PER THE SEQUENCE OF OPERATIONS LISTED ABOVE.
COOLING:
THE DDC SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR
TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE
IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL
FULLY OPEN DURING PRE-COOL PERIOD, WHEN OUTSIDE AIR TEMPERATURE IS LOWER
THAN SPACE TEMPERATURE AND SPACE TEMPERATURE IS WARMER THAN OCCUPIED

SETPOINT AND MECHANICAL COOLING SHALL BE LOCKED OUT. UPON START OF			
OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF			
OPERATIONS LISTED ABOVE.			
TEST PROCEDURE:			
SETPOINTS AND SCHEDULE:			
✓	1	VERIFY THAT THE SCHEDULE HAS BEEN SET PER THE SCHOOL DISTRICTS REQUEST	Chase Schmidt on 1/20/2023 10:06 AM
✓	2	CONFIRM THAT THE DDC SYSTEM SETS THE ROOM TEMPERATURE SETPOINT	Chase Schmidt on 1/20/2023 10:06 AM
		Setpoint range is specified by the DDC	Chase Schmidt on 1/20/2023 10:06 AM
FAN COIL UNIT WITH CO2 SENSOR			
✓	3	MANIPULATE CO2 LEVEL IN THE SPACE UP TO 1100 PPM	Chase Schmidt on 1/20/2023 10:06 AM
		Current setpoint alarm is at 1200 PPM	Chase Schmidt on 1/20/2023 10:07 AM
✓	4	VERIFY THAT OSA VENTILATION DAMPER OPENS TO PROVIDE MAXIMUM SCHEDULED AIRFLOW TO THE SPACE	Chase Schmidt on 1/20/2023 10:06 AM
✓	5	MANIPULATE C02 LEVEL IN THE SPACE DOWN TO 700 PPM	Chase Schmidt on 1/20/2023 10:06 AM
✓	6	VERIFY THAT OSA VENTILATION DAMPER STARTS TO CLOSE IN ORDER TO PROVIDE AIRFLOW BETWEEN THE MINIMUM AND MAXIMUM SCHEDULED CFM	Chase Schmidt on 1/20/2023 10:06 AM
FAN COIL WITHOUT CO2 SENSOR			
✓	7	VERIFY THAT THE OSA VENTILATION DAMPER IS OPEN TO THE SCHEDULED FIXED CFM	Chase Schmidt on 1/20/2023 10:07 AM
FAN COIL WITH PURGE			
✓	8	PRESS THE WALL MOUNTED PURGE SWITCH IN THE SPACE	Chase Schmidt on 1/20/2023 10:07 AM
✓	9	VERIFY THAT OSA VENTILATION DAMPER MODULATES TO THE MAXIMUM SCHEDULED CFM ONCE THE PURGE FAN IS ENABLED	Chase Schmidt on 1/20/2023 10:07 AM
✓	10	PRESS THE WALL MOUNTED PURGE SWITCH AGAIN TO DISABLE PURGE MODE	Chase Schmidt on 1/20/2023 10:07 AM
✓	11	VERIFY THAT THE OSA VENTILATION DAMPER CLOSES DOWN TO NORMAL SCHEDULED CFM	Chase Schmidt on 1/20/2023 10:07 AM
OPTIMUM START HEATING MODE:			
✓	12	USING TREND DATA VERIFY THAT THE SPACE IS BROUGHT UP TO TEMPERATURE AT THE START OF SCHEDULED OCCUPIED MODE	Chase Schmidt on 1/20/2023 10:07 AM
✓	13	CONFIRM THAT THE OUTSIDE AIR DAMPER IS 0% OPEN DURING WARM UP PERIOD	Chase Schmidt on 1/20/2023 10:07 AM
✓	14	CONFIRM THAT THE RETURN AIR DAMPER IS 100% OPEN DURING WARM UP PERIOD	Chase Schmidt on 1/20/2023 10:07 AM
✓	15	CONFIRM THAT ONCE SCHEDULED OCCUPIED MODE IS ENABLED THAT THE OSA DAMPER MODULATES OPEN PER THE STANDARD SoO	Chase Schmidt on 1/20/2023 10:07 AM
OPTIMUM START COOLING MODE:			
✓	16	USING TREND DATA VERIFY THAT THE SPACE IS COOLED TO THE PROPER TEMPERATURE AT THE START OF SCHEDULED OCCUPIED MODE	Chase Schmidt on 1/20/2023 10:16 AM

✓	17	CONFIRM THAT THE OSA VENTILATION DAMPER IS 100% OPEN DURING THE PRE-COOL PERIOD WHEN THE OUTSIDE AIR TEMPERATURE IS LOWER THAN THE SPACE TEMPERATURE AND THE SPACE TEMPERATURE IS HIGHER THAN THE OCCUPIED SETPOINT.	Chase Schmidt on 1/20/2023 10:16 AM
✓	18	CONFIRM THAT MECHANICAL COOLING IS LOCKED OUT WHEN OSA TEMP IS LOWER THAN THE SPACE TEMP DURING PRE-COOL PERIOD	Chase Schmidt on 1/20/2023 10:16 AM
✓	19	CONFIRM THAT OSA DAMPER MODULATES PER THE STANDARD SoO DESCRIBED ABOVE AT THE START OF SCHEDULED OCCUPANCY	Chase Schmidt on 1/20/2023 10:16 AM
UNOCCUPIED MODE:			
✓	20	MANIPULATE THE SYSTEM INTO UNOCCUPIED MODE	Chase Schmidt on 1/20/2023 10:18 AM
N/A	21	VERIFY THAT THE OSA DAMPER IS FULLY CLOSED WHILE IN UNOCCUPIED MODE	Chase Schmidt on 1/20/2023 10:34 AM
INDIVIDUAL UNIT TEST RESULTS			
✓	22	FC-1-1	Chase Schmidt on 1/20/2023 10:37 AM
✓	23	FC-1-2	Chase Schmidt on 1/20/2023 10:37 AM
✓	24	FC-1-3	Chase Schmidt on 2/28/2023 11:32 AM
✓	25	FC-1-4	Chase Schmidt on 1/20/2023 10:37 AM
✓	26	FC-1-5	Chase Schmidt on 1/20/2023 10:37 AM
✓	27	FC-1-6	Chase Schmidt on 1/20/2023 10:37 AM
✓	28	FC-1-7	Chase Schmidt on 1/20/2023 10:37 AM
✓	29	FC-1-8	Chase Schmidt on 1/20/2023 10:37 AM
✓	30	FC-1-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	31	FC-1-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	32	FC-1-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	33	FC-1-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	34	FC-1-13	Chase Schmidt on 2/28/2023 11:32 AM
✓	35	FC-1-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	36	FC-1-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	37	FC-1-16	Chase Schmidt on 2/28/2023 11:32 AM
✓	38	FC-1-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	39	FC-1-18	Chase Schmidt on 2/28/2023 11:32 AM
✓	40	FC-1-19	Chase Schmidt on 1/20/2023 10:38 AM
✓	41	FC-1-20	Chase Schmidt on 1/20/2023 10:38 AM
✓	42	FC-1-21	Chase Schmidt on 1/20/2023 10:38 AM
✓	43	FC-1-22	Chase Schmidt on 1/20/2023 10:38 AM
✓	44	FC-1-23	Chase Schmidt on 1/20/2023 10:38 AM
✓	45	FC-1-24	Chase Schmidt on 1/20/2023 10:38 AM

✓	46	FC-1-25	Chase Schmidt on 1/20/2023 10:38 AM
✓	47	FC-1-26	Chase Schmidt on 1/20/2023 10:38 AM
✓	48	FC-1-27	Chase Schmidt on 1/20/2023 10:38 AM
✓	49	FC-1-28	Chase Schmidt on 1/20/2023 10:38 AM
✓	50	FC-1-29	Chase Schmidt on 1/20/2023 10:38 AM
✓	51	FC-1-30	Chase Schmidt on 1/20/2023 10:38 AM
✓	52	FC-1-31	Chase Schmidt on 1/20/2023 10:38 AM
✓	53	FC-1-32	Chase Schmidt on 1/20/2023 10:38 AM
✓	54	FC-1-33	Chase Schmidt on 2/28/2023 11:32 AM
✓	55	FC-1-34	Chase Schmidt on 1/20/2023 10:38 AM
✓	56	FC-1-35	Chase Schmidt on 1/20/2023 10:38 AM
✓	57	FC-1-36	Chase Schmidt on 1/20/2023 10:38 AM
✓	58	FC-1-37	Chase Schmidt on 1/20/2023 10:38 AM
✓	59	FC-1-38	Chase Schmidt on 2/28/2023 11:32 AM
✓	60	FC-1-39	Chase Schmidt on 1/20/2023 10:38 AM
✓	61	FC-1-40	Chase Schmidt on 1/20/2023 10:38 AM
✓	62	FC-1-41	Chase Schmidt on 1/20/2023 10:38 AM
✓	63	FC-1-42	Chase Schmidt on 1/20/2023 10:38 AM
✓	64	FC-1-43	Chase Schmidt on 1/20/2023 10:38 AM
✓	65	FC-1-44	Chase Schmidt on 1/20/2023 10:38 AM
✓	66	FC-2-1	Chase Schmidt on 1/20/2023 10:38 AM
✓	67	FC-2-2	Chase Schmidt on 1/20/2023 10:38 AM
✓	68	FC-2-3	Chase Schmidt on 1/20/2023 10:38 AM
✓	69	FC-2-4	Chase Schmidt on 1/20/2023 10:38 AM
✓	70	FC-2-5	Chase Schmidt on 1/20/2023 10:38 AM
✓	71	FC-2-6	Chase Schmidt on 1/20/2023 10:38 AM
✓	72	FC-2-7	Chase Schmidt on 1/20/2023 10:38 AM
✓	73	FC-2-8	Chase Schmidt on 1/20/2023 10:38 AM
✓	74	FC-2-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	75	FC-2-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	76	FC-2-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	77	FC-2-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	78	FC-2-13	Chase Schmidt on 1/20/2023 10:38 AM

✓	79	FC-2-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	80	FC-2-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	81	FC-2-16	Chase Schmidt on 1/20/2023 10:38 AM
✓	82	FC-2-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	83	FC-2-18	Chase Schmidt on 2/28/2023 11:32 AM
✓	84	FC-2-19	Chase Schmidt on 1/20/2023 10:38 AM
✓	85	FC-2-20	Chase Schmidt on 1/20/2023 10:38 AM
✓	86	FC-3-1	Chase Schmidt on 1/20/2023 10:38 AM
✓	87	FC-3-2	Chase Schmidt on 1/20/2023 10:38 AM
✓	88	FC-3-3	Chase Schmidt on 1/20/2023 10:38 AM
✓	89	FC-3-4	Chase Schmidt on 1/20/2023 10:38 AM
✓	90	FC-3-5	Chase Schmidt on 1/20/2023 10:38 AM
✓	91	FC-3-6	Chase Schmidt on 1/20/2023 10:38 AM
✓	92	FC-3-7	Chase Schmidt on 1/20/2023 10:38 AM
✓	93	FC-3-8	Chase Schmidt on 1/20/2023 10:38 AM
✓	94	FC-3-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	95	FC-3-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	96	FC-3-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	97	FC-3-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	98	FC-3-13	Chase Schmidt on 1/20/2023 10:38 AM
✓	99	FC-3-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	100	FC-3-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	101	FC-3-16	Chase Schmidt on 1/20/2023 10:38 AM
✓	102	FC-3-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	103	FC-3-18	Chase Schmidt on 1/20/2023 10:38 AM

#43 ERV-1 - ERV FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 96% Passed | 0% Failed | 3% N/A

Asset ERV-1
Energy recovery Ventilator

Lines 64

SEQUENCE OF OPERATION
THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES OF THE SYSTEM.
OCCUPIED MODE
SUPPLY AND EXHAUST AIR FANS SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR INTAKE AND EXHAUST AIR DAMPERS SHALL BE OPEN.
SUPPLY FAN SPEED SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED 2/3 THE DISTANCE DOWN THE LENGTH OF THE SUPPLY DUCT. COORDINATE EXACT LOCATION WITH BALANCER AND ENGINEER. INITIAL STATIC PRESSURE SETPOINT SHALL BE 0.75"W.G. OR AS SET DURING BALANCING. SETPOINT SHALL RESET DOWN INCREMENTALLY IF ALL VENTILATION AIR VALVES ARE SATISFIED. EXHAUST FAN SPEED SHALL BE MODULATE TO TRACK THE SUPPLY AIR FLOW CFM WITH AN ADJUSTABLE DIFFERENTIAL OFFSET (LESS AIR FLOW) THAN SUPPLY TO PROVIDE POSITIVE BUILDING PRESSURIZATION).
IF THE SUPPLY AIR TEMPERATURE FALLS BELOW 40°F A LOW TEMPERATURE ALARM SHALL BE INDICATED AT THE CENTRAL MONITORING LOCATION.
IF THE SUPPLY AIR TEMPERATURE FALLS BELOW 30F, AND ADDITIONAL ALARM SHALL BE INDICATED AND THE FANS SHALL DE-ENGERGIZE FOLLOWED BY THE OUTSIDE AIR AND EXHAUST AIR DAMPERS CLOSING.
HEAT RECOVERY OPERATION
HEAT RECOVERY WHEEL SHALL OPERATE TO TEMPER THE INCOMING OUTSIDE AIR TEMPERATURE AS FOLLOWS;
OUTSIDE AIR TEMP. BETWEEN 70 & 75 DEG. F.- THE HEAT RECOVERY WHEEL VFD SHALL STOP THE WHEEL IN ORDER TO AVOID RECOVERING EXHAUST AIR HEAT. HR WHEEL BYPASS DAMPER SHALL BE OPEN AND THE UNIT SHALL PROVIDE NEUTRAL "ECONOMIZER" AIR.
OUTSIDE AIR TEMP. BELOW 70 DEG. F - THE HR WHEEL SHALL MODULATE ITS SPEED THROUGH THE VFD TO RECOVER EXHAUST AIR ENERGY (HEAT) SO AS TO PRE-HEAT AND TEMPER THE INCOMING OUTSIDE AIR. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 70 DEG. F. (ADJ).
OUTSIDE AIR TEMP. ABOVE 75 DEG. F - THE HR WHEEL SHALL MODULATE ITS SPEED THROUGH THE VFD IN ORDER TO RECOVER EXHAUST AIR ENERGY (COOLING) SO AS TO PRE-COOL AND TEMPER THE INCOMING OUTSIDE AIR. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 75 DEG. F. (ADJ).
HEATING MODE:
WHENEVER THE HR WHEEL DISCHARGE TEMPERATURE FALLS BELOW 68 DEG. F. (ADJ) THE INDIRECT FIRED GAS HEATER SHALL BE ENERGIZED AND OPERATED UNDER ITS OWN CONTROL AND SAFETIES TO MAINTAIN THE LAT INDICATED ABOVE.
COOLING MODE:
WHENEVER THE HR WHEEL AIR DISCHARGE TEMPERATURE GOES ABOVE 75 DEG. F. (ADJ) THE STAGE 1 COOLING COMPRESSOR SHALL BE ENABLED AND ITS CAPACITY MODULATED FROM 10-100% TO MAINTAIN LEAVING AIR TEMP AS INDICATED ABOVE. WHEN STAGE 1 COMPRESSOR REACHES 100% CAPACITY, STAGE 2 COOLING SHALL BE ENABLED AND STAGE 1 SHALL CONTINUE TO MODULATE 10-100% TO SATISFY LAT.
HEAT RECOVERY WHEEL CONTROL:

DEFROST MODE: WHENEVER THE EXHAUST AIR DISCHARGE TEMPERATURE DOWNSTREAM FROM THE ENERGY RECOVERY WHEEL FALLS BELOW 35 DEG. F, THERE IS A POSSIBILITY OF FROST BUILD-UP ON THE COIL DUE TO HUMID EXHAUST AIR. TO AVOID THIS THE WHEEL ROTATION SPEED SHALL BE SLOWED DOWN TO AVOID THE DISCHARGE AIR TEMPERATURE FROM FALLING BELOW 35 DEG. F.

STOP-JOG MODE: WHENEVER THE UNIT IS OPERATING AND THE HR WHEEL ROTATION IS STOPPED FOR TEMPERATURE CONTROL REASONS, THE WHEEL ROTATION SHALL BE INTERMITTENTLY RESTARTED ON AN ADJUSTABLE PERIODIC INTERVAL (SET FOR 1 MINUTE EVERY 30 MINUTES) SO AS TO HELP KEEP THE WHEEL FROM FOULING DUE TO PRE-FILTER BYPASS. PERIODIC ROTATION OF THE WHEEL IN TO THE OPPOSING AIR STREAM DIRECTION HELPS DISLODGE ANY BUILT-UP CONTAMINANTS.

UNOCCUPIED MODE:

BOTH THE SUPPLY AND EXHAUST AIR FANS SHALL BE OFF AND THE OUTSIDE AIR AND EXHAUST AIR SHUT-OFF DAMPERS CLOSED. DOAS ERV UNIT SHALL RETURN TO OCCUPIED MODE WHEN THERE IS A CALL FOR VENTILATION, VIA CO2 SENSOR, FROM ONE FAN COIL (ADJ.) PLACED IN THE UNOCCUPIED OVERRIDE MODE. WHEN THIS OCCURS ALL OUTSIDE AIR VALVES SHALL OPEN TO 25% TO PROVIDE STABLE OPERATION FOR FANS.

THE SYSTEM SHALL BE TEMPORARILY REACTIVATED AND RUN IN THE OCCUPIED MODE UNTIL SUCH TIME AS THE VENTILATION REQUIREMENT IS SATISFIED OR THE FAN COIL OVERRIDE TIMERS HAVE EXPIRED, AT WHICH POINT THE SYSTEM WILL RETURN TO THE UNOCCUPIED MODE.

SHELTER IN PLACE:

WHEN THE SHELTER IN PLACE SWITCH IS TRIGGERED, THE ERV SUPPLY AND EXHAUST FANS SHALL BE DISABLED AND OUTSIDE AND EXHAUST AIR DAMPERS CLOSED.

TEST PROCEDURE:

SCHEDULE AND SETPOINTS:

✓	1	VERIFY THAT THE OCCUPIED / UNOCCUPIED SCHEDULE HAS BEEN SET PER THE OWNERS REQUEST. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:05 AM
✓	2	CONFIRM THAT THE STATIC PRESSURE SETPOINT IS SET TO 0.75 W.G. (OR AS SET BY TAB) (Pass, Fail, N/A) TAB set this to 1.1 W.G	Chase Schmidt on 9/8/2022 10:06 AM Chase Schmidt on 9/8/2022 10:10 AM

OCCUPIED MODE:

✓	3	PLACE THE UNIT INTO OCCUPIED MODE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:10 AM
✓	4	CONFIRM THAT THE SUPPLY AND EXHAUST FANS RUN CONTINUOUSLY AND THE OUTSIDE AIR INTAKE AND EXHAUST DAMPERS ARE OPEN. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:10 AM
✓	5	OPEN MULTIPLE DOWNSTREAM VENTILATION AIR VALVES. CONFIRM THAT THE FAN SPEED MODULATES TO MAINTAIN THE STATIC PRESSURE SETPOINT AS DETERMINED BY TAB. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:13 AM
✓	6	CONFIRM THAT THE EXHAUST FAN SPEED MODULATES TO MATCH THE SUPPLY AIR FLOW CFM WITH AN ADJUSTABLE DIFFERENTIAL OFFSET. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:14 AM
✓	7	VERIFY THAT THE STATIC PRESSURE SETPOINT RESETS DOWN INCREMENTALLY IF ALL VENTILATION AIR VALVES ARE SATISFIED. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM

HEAT RECOVERY OPERATION:

✓	8	MANIPULATE OSA TEMP TO BE 73F. CONFIRM THAT THE HEAT WHEEL STOPS ROTATION AND THE HEAT RECOVERY WHEEL BYPASS DAMPER IS OPENED. (Pass, Fail, N/A) Heat recovery wheel bypass damper does not exist. suspect that this was a mistake from the original sequence. The equipment schematic does not show a bypass damper.	Chase Schmidt on 9/8/2022 10:25 AM Chase Schmidt on 9/8/2022 10:26 AM

✓	9	MANIPULATE OSA TEMP TO BE 69F. CONFIRM THAT THE HEAT WHEEL MODULATES SPEED AND THAT THE SUPPLY AIR TEMPERATURE SETPOINT IS SET TO 70F (ADJ) (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:40 AM
✓	10	MANIPULATE OSA TEMP TO BE 76F. CONFIRM THAT THE HEAT WHEEL MODULATES SPEED AND THAT THE SUPPLY AIR TEMPERATURE SETPOINT IS SET TO 75F (ADJ) (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:40 AM
HEATING MODE:			
✓	11	MANIPULATE THE HEAT RECOVERY WHEEL DISCHARGE TEMPERATURE BELOW 68F. VERIFY THAT THE INDIRECT FIRED GAS HEATER IS ENABLED AND OPERATING UNDER ITS OWN CONTROL. VERIFY THAT THE LEAVING AIR TEMP IS MAINTAINED AT 70F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 10:49 AM
COOLING MODE:			
✓	12	SET THE HEAT RECOVERY WHEEL DISCHARGE TEMP TO 76F. CONFIRM THAT THE STAGE 1 COOLING COMPRESSOR IS ENABLED AND MODULATED BETWEEN 10-100% IN ORDER TO MAINTAIN A LEAVING AIR TEMPERATURE OF 75F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:03 AM
✓	13	INCREASE HEAT RECOVERY WHEEL DISCHARGE TEMP TO 80F. CONFIRM THAT THE COMPRESSOR CAPACITY REQUIREMENT INCREASES AS WELL COMPARED TO WHEN IT WAS SET AT 76F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:05 AM
HEAT RECOVERY WHEEL CONTROL:			
✓	14	DEFROST MODE: SET THE EXHAUST AIR DISCHARGE TEMPERATURE TO 34F. VERIFY THAT THE HEAT WHEEL ROTATION SPEED DECREASES. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:13 AM
✓	15	STOP JOG MODE: STOP WHEEL ROTATION. VERIFY THAT THE WHEEL ROTATES FOR A PERIOD OF 1 MINUTE EVERY 30 MINUTES (ADJUSTABLE) (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:11 AM
UNOCCUPIED MODE:			
✓	16	PLACE THE UNIT INTO UNOCCUPIED MODE (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:13 AM
✓	17	CONFIRM THAT THE SUPPLY AND EXHAUST FANS ARE DISABLED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:18 AM
✓	18	CONFIRM THAT THE OUTSIDE AIR AND EXHAUST AIR SHUT OFF DAMPERS ARE CLOSED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 11:18 AM
✓	19	GENERATE A CALL FOR VENTILATION VIA CO2 SENSOR FROM ONE FAN COIL (ADJ). (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM
✓	20	CONFIRM THAT THE ERV SWITCHES FROM UNOCCUPIED MODE TO OCCUPIED MODE. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM
N/A	21	CONFIRM THAT ALL OUTSIDE AIR VALVES OPEN TO 25% (Pass, Fail, N/A) This was not included in the controls submittal.	Chase Schmidt on 9/8/2022 11:59 AM Chase Schmidt on 9/8/2022 11:59 AM
✓	22	SET THE CO2 LEVEL BACK TO AN ACCEPTABLE LEVEL (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM
✓	23	CONFIRM THAT THE ERV GOES BACK INTO UNOCCUPIED MODE (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM
✓	24	CONFIRM THAT OVERRIDE TIMER EXISTS THAT WOULD FORCE THE ERV INTO UNOCCUPIED MODE IF THE CO2 LEVEL DOES NOT GET BACK TO AN ACCEPTABLE LEVEL. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:29 AM
SHELTER IN PLACE:			
✓	25	PRESS THE SIP SWITCH (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM
✓	26	CONFIRM THAT THE ERV SUPPLY AND EXHAUST FANS ARE DISABLED AND THE OSA / EXHAUST DAMPERS ARE FULLY CLOSED. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM

ALARMS:

✓	27	SET THE SUPPLY AIR TEMPERATURE TO 39F. CONFIRM THAT A LOW TEMPERATURE ALARM IS GENERATED AT THE BAS (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:40 PM
✓	28	SET THE SUPPLY AIR TEMPERATURE TO 29F. CONFIRM THAT AN ADDITIONAL ALARM IS GENERATED AT THE BAS. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:40 PM
✓	29	VERIFY THAT THE SUPPLY FAN AND EXHAUST FAN DE-ENERGIZE ONCE SUPPLY AIR TEMPERATURE FALLS BELOW 30F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:40 PM
✓	30	VERIFY THAT THE OUTSIDE AIR DAMPER AND EXHAUST AIR DAMPER FULLY CLOSE ONCE SUPPLY AIR TEMPERATURE FALLS BELOW 30F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:42 PM

#42 RTU-1 - RTU FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 95% Passed | 0% Failed | 4% N/A

Asset RTU-1
Air Handling Unit

Lines 74

SEQUENCE OF OPERATION

THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES FOR THE SYSTEM.

OCCUPIED MODE:

THE SUPPLY AND RETURN FANS SHALL OPERATE CONTINUOUSLY.

THE CO2 SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPER BETWEEN BETWEEN THE SCHEDULED MINIMUM AND CODE CFMS BASED ON A CO2 LEVEL BETWEEN 400 AND 1000 PPM (ADJ) THROUGH A PID LOOP. DURING ECONOMIZER COOLING OPERATION THE CO2 SENSOR WILL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL BE CAPABLE OF MODULATING FULLY OPEN.

WHEN ROOM TEMP IS IN THE DEADBAND (NO CALL FOR COOLING OR HEATING), THE SUPPLY FAN AND EXHAUST FAN SHALL BE RESET 60% OF MAX SPEED . THE RELIEF, RETURN, AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS DETERMINDED BY THE CO2 SENSOR.

ECONOMIZER COOLING:

UPON A CALL FOR COOLING FROM THE SPACE WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE RETURN AIR TEMPERATURE THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE OPEN WHILE THE RETURN AIR DAMPER MODULATES CLOSED. ON A FURTHER CALL FOR COOLING, THE COMPRESSOR SHALL ENABLE TO MAINTAIN SPACE TEMPERATURE AT SETPOINT. THE REVERSE SHALL OCCUR ON A DECREASE IN COOLING DEMAND.

COOLING:

UPON A CALL FOR COOLING FROM THE SPACE WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE THE RETURN AIR TEMPERATURE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS CONTROLLED BY THE CO2 SENSOR AND THE SUPPLY AND RETURN/EXHAUST FANS SHALL MODULATE TO 100% SPEED. THE STAGE 1 COOLING COMPRESSOR SHALL BE ENABLED AND ITS CAPACITY MODULATED FROM 10-100% TO MAINTAIN SPACE TEMP. WHEN STAGE 1 COMPRESSOR REACHES 100% CAPACITY, STAGE 2 COOLING SHALL BE ENABLED AND STAGE 1 SHALL CONTINUE TO MODULATE 10-100% TO MAINTAIN SPACE TEMPERATURE AT SETPOINT.

HEATING:

ON A CALL FOR HEAT FROM THE SPACE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR AND THE SUPPLY AND RETURN/EXHAUST FANS SHALL MODULATE TO 100% SPEED.THE INDIRECT FIRED GAS HEATER SHALL BE ENERGIZED AND OPERATED UNDER ITS OWN CONTROL AND SAFETIES TO MAINTAIN SPACE TEMPERATURE AT SETPOINT.

THE MIXED AIR TEMPERATURE SHALL OVERRIDE THE CO2 SENSOR TO MAINTAIN A MINIMUM MIXED AIR TEMPERATURE OF 40°F.

IF THE MIXED AIR TEMPERATURE FALLS BELOW 35°F A LOW TEMPERATURE ALARM SHALL BE INDICATED AT THE CENTRAL MONITORING LOCATION AND THE DAMPERS SHALL MODULATE TO FULL RECIRC MODE UNTIL THE ALARM IS CLEARED.

UNOCCUPIED MODE:

COOLING SHALL BE DISABLED. THE SUPPLY FAN SHALL CYCLE ON AND HEATING SHALL BE ENABLED TO MAINTAIN SPACE ROOM TEMPERATURE AT THE SETBACK SETPOINT (55°, ADJ). THE DAMPERS SHALL BE POSITIONED FOR FULL RECIRC MODE (0% OSA).

A PUSH-BUTTON AT THE ROOM SENSOR SHALL PUT THE SYSTEM INTO OVERRIDE MODE AND THE UNIT SHALL FOLLOW THE OCCUPIED MODE FOR 2 HOURS (ADJ).			
OPTIMUM STOP-START			
HEATING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AND RELIEF AIR DAMPERS SHALL FULLY CLOSE AND RETURN AIR DAMPER SHALL FULLY OPEN DURING WARM-UP PERIOD. UPON START OF OCCUPIED MODE, OUTSIDE, RELIEF AND RETURN AIR DAMPERS SHALL MODULATE PER THE SEQUENCE OF CONTROLS LISTED ABOVE.			
COOLING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AND RELIEF AIR DAMPERS SHALL FULLY OPEN AND RETURN AIR DAMPER SHALL FULLY CLOSE DURING PRE-COOL PERIOD, WHEN OUTSIDE AIR TEMPERATURE IS LOWER THAN SPACE TEMPERATURE AND SPACE TEMPERATURE IS WARMER THAN OCCUPIED SETPOINT. UPON START OF OCCUPIED MODE, OUTSIDE, RELIEF AND RETURN AIR DAMPERS SHALL MODULATE PER THE SEQUENCE OF OPERATIONS LISTED ABOVE.			
SHELTER IN PLACE:			
WHEN THE SHELTER IN PLACE SWITCH IS TRIGGERED, THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE UNIT SHALL ENTER FULL RECIRCULATION MODE.			
TEST PROCEDURE:			
SCHEDULE AND SETPOINTS:			
✓	1	VERIFY THAT THE SCHEDULE HAS BEEN SET PER THE OWNERS REQUIREMENTS. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:49 PM
✓	2	VERIFY THAT THE CO2 CONCENTRATION SETPOINT PID LOOP IS SET BETWEEN 400 & 1000 PPM (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:50 PM
OCCUPIED MODE:			
✓	3	PLACE THE UNIT INTO OCCUPIED MODE (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:50 PM
✓	4	CONFIRM THAT THE SUPPLY AND EXHAUST FANS ARE RUNNING CONTINUOUSLY. (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:47 AM
✓	5	SET THE CO2 CONCENTRATION TO 1100 PPM (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:51 PM
✓	6	CONFIRM THAT THE OUTSIDE AIR DAMPER MODULATES TO CODE CFM SCHEDULED AIR FLOW (1500 CFM). (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 12:51 PM
✓	7	SET THE MIXED AIR TEMPERATURE TO 39F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 3:53 PM
✓	8	CONFIRM THAT THE MIXED AIR TEMPERATURE OVERRIDES THE CALL FOR VENTILATION FROM THE CO2 SENSOR BY FULLY CLOSING THE OSA DAMPER. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 3:53 PM
✓	9	RETURN THE MIXED AIR TEMPERATURE TO ITS DEFAULT VALUE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 3:54 PM
✓	10	SET THE OSA TEMP 2 DEGREES F LOWER THAN THE SPACE TEMPERATURE IN ORDER TO ENTER ECONOMIZER MODE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 3:56 PM
✓	11	CONFIRM THAT THE CO2 SENSOR IS DISABLED AND THE OSA DAMPER IS CAPABLE OF OPENING 100%. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 3:58 PM
✓	12	INCREASE THE DEMAND FOR COOLING WHILE IN ECONOMIZER MODE. CONFIRM THAT THE COMPRESSOR IS ENABLED TO MAINTAIN SPACE TEMPERATURE AT SETPOINT. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:02 PM
✓	13	DECREASE THE DEMAND FOR COOLING AND VERIFY THAT THE COMPRESSOR IS DISABLED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:02 PM
✓	14	PLACE THE ROOM TEMPERATURE IN THE DEADBAND RANGE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:02 PM

✓	15	CONFIRM THAT THE SUPPLY FAN AND EXHAUST FAN RESET TO 60% SPEED. (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:48 AM
		Supply fan reduces to 60% speed. Exhaust fan is being controlled from the AFM.	Chase Schmidt on 10/6/2022 10:48 AM
✓	16	CONFIRM THAT THE RELIEF, RETURN, AND OUTSIDE AIR DAMPERS MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:10 PM
✓	17	SET THE OSA TEMP 2 DEGREES F ABOVE THE SPACE TEMPERATURE AND GENERATE A CALL FOR COOLING. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:14 PM
✓	18	CONFIRM THAT THE RELIEF, RETURN, AND OUTSIDE AIR DAMPERS MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:10 PM
✓	19	CONFIRM THAT THE RETURN / EXHAUST FANS MODULATE TO 100% SPEED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
✓	20	CONFIRM THAT THE STAGE 1 COOLING COMPRESSOR IS ENABLED AND MODULATES BETWEEN 10-100% CAPACITY BASED ON THE COOLING DEMAND. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
✓	21	INCREASE THE DEMAND FOR COOLING SO THAT THE STAGE 1 COMPRESSOR REACHES 100% CAPACITY. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
N/A	22	CONFIRM THAT AFTER 100% CAPACITY IS REACHED THAT THE STAGE 2 COOLING IS ENABLED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
N/A	23	CONFIRM THAT STAGE 1 COOLING IS ALLOWED TO MODULATE BETWEEN 10-100% CAPACITY AFTER STAGE 2 COOLING IS ENABLED IN ORDER TO MAINTAIN SPACE TEMPERATURE SETPOINT. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
✓	24	SET THE SPACE TEMPERATURE SETPOINT INTO THE DEADBAND RANGE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
✓	25	GENERATE A CALL FOR HEATING IN THE SPACE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:15 PM
✓	26	CONFIRM THAT THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS MODULATE TO MINIMUM OSA POSITIONS AS DETERMINED BY THE CO2 SENSOR. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 11:59 AM
✓	27	CONFIRM THAT THE RETURN / EXHAUST FANS MODULATE TO 100% SPEED. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 11:59 AM
✓	28	CONFIRM THAT THE INDIRECT FIRED GAS HEATER IS ENABLED AND RUNNING UNDER ITS OWN CONTROL TO MAINTAIN TEMPERATURE AT SETPOINT. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:04 PM
UNOCCUPIED MODE:			
✓	29	PLACE THE UNIT INTO UNOCCUPIED MODE. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:20 PM
✓	30	CONFIRM THAT THE COOLING IS DISABLED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:20 PM
✓	31	SET THE SPACE TEMPERATURE TO 53F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:21 PM
✓	32	CONFIRM THAT THE SUPPLY FAN AND HEATING ARE ENABLED TO MAINTAIN A SPACE TEMPERATURE OF 55F. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:21 PM
✓	33	CONFIRM THAT THE OSA DAMPER IS FULLY CLOSED. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:21 PM
✓	34	PUSH THE OVERRIDE BUTTON IN THE SPACE AND VERIFY THAT THE UNIT ENTERS OCCUPIED MODE FOR A PERIOD OF 2 HOURS (ADJ). (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:47 AM
		Override duration is set to 30 minute increments	Chase Schmidt on 1/20/2023 10:47 AM
OPTIMUM STOP-START:			

✓	35	USING TREND DATA FOR OPTIMUM STOP-START HEATING VERIFY THE FOLLOWING: (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:26 PM
✓	36	PROPER SPACE TEMPERATURE IS ACHIEVED AT THE BEGINNING OF SCHEDULED OCCUPANCY. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:26 PM
✓	37	OUTSIDE AND RELIEF AIR DAMPERS ARE FULLY CLOSED DURING WARM UP PERIOD. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:10 PM
✓	38	RETURN AIR DAMPER IS FULLY OPEN DURING WARM UP PERIOD. (Pass, Fail, N/A)	Chase Schmidt on 11/7/2022 12:10 PM
✓	39	AT START OF OCCUPIED SCHEDULE THE UNIT MODULATES PER THE STANDARD SEQUENCE OF OPERATIONS. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:26 PM
✓	40	USING TREND DATA FOR OPTIMUM STOP-START COOLING VERIFY THE FOLLOWING: (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:27 PM
✓	41	PROPER SPACE TEMPERATURE IS ACHIEVED AT THE BEGINNING OF SCHEDULED OCCUPANCY. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:27 PM
✓	42	OUTSIDE AND RELIEF AIR DAMPERS ARE FULLY OPEN DURING PRE-COOL PERIOD WHEN OSA TEMP IS COOLER THAN SPACE TEMP AND SPACE TEMP SETPOINT IS WARMER THAN OCCUPIED SETPOINT. (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:27 PM
✓	43	RETURN AIR DAMPER IS FULLY CLOSED DURING PRE-COOL PERIOD WHEN OSA TEMP IS COOLER THAN SPACE TEMP AND SPACE TEMP SETPOINT IS WARMER THAN OCCUPIED SETPOINT . (Pass, Fail, N/A)	Chase Schmidt on 9/8/2022 4:27 PM
SHELTER IN PLACE:			
✓	44	PRESS THE SIP SWITCH (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM
✓	45	CONFIRM THAT OUTSIDE AND EXHAUST AIR DAMPERS ARE FULLY CLOSED. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM
✓	46	CONFIRM THAT THE UNIT ENTERS FULL RECIRCULATION MODE. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:34 AM

#54 FC-1-1 - Fan Coil Unit FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 99% Passed | 0% Failed | 0% N/A

Asset FC-1-1
VRF Indoor Fan Coil Unit

Lines 142

FAN COIL UNIT FUNCTIONAL PERFORMANCE TEST
SEQUENCE OF OPERATIONS
THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES FOR THE SYSTEM.
VENTILATION CONTROL:
WHERE CO2 SENSORS ARE INDICATED, THE CO2 SENSOR
SHALL MODULATE THE OSA VENTILATION AIR DAMPER BETWEEN THE SCHEDULED
MININMUM AND CODE CFM BASED ON CO2 LEVEL OF 400 TO 1000 PPM (OR AS SET)
THROUGH A PID LOOP. WHERE NO CO2 SENSOR IS INDICATED THE OSA VALVE SHALL
OPEN TO THE SCHEDULED FIXED CFM. WHERE PURGE FANS ARE INDICATED THE OSA
VALVE SHALL MODULATE TO MAXIMUM SCHEDULED CFM WHEN THE PURGE FAN IS
ENABLED. OSA VALVE SHALL CLOSE DURING UNOCCUPIED TIMES.
THE DAMPER SHALL BE FULLY CLOSE DURING UNOCCUPIED TIMES.
THE DDC SYSTEM WILL SET ROOM SETPOINTS.
OPTIMUM START:
HEATING:
THE DDC SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR
TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE
IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL
FULLY CLOSE AND RETURN AIR DAMPER SHALL FULLY OPEN DURING WARM-UP
PERIOD. UPON START OF OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL
MODULATE PER THE SEQUENCE OF OPERATIONS LISTED ABOVE.
COOLING:
THE DDC SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR
TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE
IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL
FULLY OPEN DURING PRE-COOL PERIOD, WHEN OUTSIDE AIR TEMPERATURE IS LOWER
THAN SPACE TEMPERATURE AND SPACE TEMPERATURE IS WARMER THAN OCCUPIED

SETPOINT AND MECHANICAL COOLING SHALL BE LOCKED OUT. UPON START OF			
OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF			
OPERATIONS LISTED ABOVE.			
TEST PROCEDURE:			
SETPOINTS AND SCHEDULE:			
✓	1	VERIFY THAT THE SCHEDULE HAS BEEN SET PER THE SCHOOL DISTRICTS REQUEST	Chase Schmidt on 1/20/2023 10:06 AM
✓	2	CONFIRM THAT THE DDC SYSTEM SETS THE ROOM TEMPERATURE SETPOINT	Chase Schmidt on 1/20/2023 10:06 AM
		Setpoint range is specified by the DDC	Chase Schmidt on 1/20/2023 10:06 AM
FAN COIL UNIT WITH CO2 SENSOR			
✓	3	MANIPULATE CO2 LEVEL IN THE SPACE UP TO 1100 PPM	Chase Schmidt on 1/20/2023 10:06 AM
		Current setpoint alarm is at 1200 PPM	Chase Schmidt on 1/20/2023 10:07 AM
✓	4	VERIFY THAT OSA VENTILATION DAMPER OPENS TO PROVIDE MAXIMUM SCHEDULED AIRFLOW TO THE SPACE	Chase Schmidt on 1/20/2023 10:06 AM
✓	5	MANIPULATE C02 LEVEL IN THE SPACE DOWN TO 700 PPM	Chase Schmidt on 1/20/2023 10:06 AM
✓	6	VERIFY THAT OSA VENTILATION DAMPER STARTS TO CLOSE IN ORDER TO PROVIDE AIRFLOW BETWEEN THE MINIMUM AND MAXIMUM SCHEDULED CFM	Chase Schmidt on 1/20/2023 10:06 AM
FAN COIL WITHOUT CO2 SENSOR			
✓	7	VERIFY THAT THE OSA VENTILATION DAMPER IS OPEN TO THE SCHEDULED FIXED CFM	Chase Schmidt on 1/20/2023 10:07 AM
FAN COIL WITH PURGE			
✓	8	PRESS THE WALL MOUNTED PURGE SWITCH IN THE SPACE	Chase Schmidt on 1/20/2023 10:07 AM
✓	9	VERIFY THAT OSA VENTILATION DAMPER MODULATES TO THE MAXIMUM SCHEDULED CFM ONCE THE PURGE FAN IS ENABLED	Chase Schmidt on 1/20/2023 10:07 AM
✓	10	PRESS THE WALL MOUNTED PURGE SWITCH AGAIN TO DISABLE PURGE MODE	Chase Schmidt on 1/20/2023 10:07 AM
✓	11	VERIFY THAT THE OSA VENTILATION DAMPER CLOSES DOWN TO NORMAL SCHEDULED CFM	Chase Schmidt on 1/20/2023 10:07 AM
OPTIMUM START HEATING MODE:			
✓	12	USING TREND DATA VERIFY THAT THE SPACE IS BROUGHT UP TO TEMPERATURE AT THE START OF SCHEDULED OCCUPIED MODE	Chase Schmidt on 1/20/2023 10:07 AM
✓	13	CONFIRM THAT THE OUTSIDE AIR DAMPER IS 0% OPEN DURING WARM UP PERIOD	Chase Schmidt on 1/20/2023 10:07 AM
✓	14	CONFIRM THAT THE RETURN AIR DAMPER IS 100% OPEN DURING WARM UP PERIOD	Chase Schmidt on 1/20/2023 10:07 AM
✓	15	CONFIRM THAT ONCE SCHEDULED OCCUPIED MODE IS ENABLED THAT THE OSA DAMPER MODULATES OPEN PER THE STANDARD SoO	Chase Schmidt on 1/20/2023 10:07 AM
OPTIMUM START COOLING MODE:			
✓	16	USING TREND DATA VERIFY THAT THE SPACE IS COOLED TO THE PROPER TEMPERATURE AT THE START OF SCHEDULED OCCUPIED MODE	Chase Schmidt on 1/20/2023 10:16 AM

✓	17	CONFIRM THAT THE OSA VENTILATION DAMPER IS 100% OPEN DURING THE PRE-COOL PERIOD WHEN THE OUTSIDE AIR TEMPERATURE IS LOWER THAN THE SPACE TEMPERATURE AND THE SPACE TEMPERATURE IS HIGHER THAN THE OCCUPIED SETPOINT.	Chase Schmidt on 1/20/2023 10:16 AM
✓	18	CONFIRM THAT MECHANICAL COOLING IS LOCKED OUT WHEN OSA TEMP IS LOWER THAN THE SPACE TEMP DURING PRE-COOL PERIOD	Chase Schmidt on 1/20/2023 10:16 AM
✓	19	CONFIRM THAT OSA DAMPER MODULATES PER THE STANDARD SoO DESCRIBED ABOVE AT THE START OF SCHEDULED OCCUPANCY	Chase Schmidt on 1/20/2023 10:16 AM
UNOCCUPIED MODE:			
✓	20	MANIPULATE THE SYSTEM INTO UNOCCUPIED MODE	Chase Schmidt on 1/20/2023 10:18 AM
N/A	21	VERIFY THAT THE OSA DAMPER IS FULLY CLOSED WHILE IN UNOCCUPIED MODE	Chase Schmidt on 1/20/2023 10:34 AM
INDIVIDUAL UNIT TEST RESULTS			
✓	22	FC-1-1	Chase Schmidt on 1/20/2023 10:37 AM
✓	23	FC-1-2	Chase Schmidt on 1/20/2023 10:37 AM
✓	24	FC-1-3	Chase Schmidt on 2/28/2023 11:32 AM
✓	25	FC-1-4	Chase Schmidt on 1/20/2023 10:37 AM
✓	26	FC-1-5	Chase Schmidt on 1/20/2023 10:37 AM
✓	27	FC-1-6	Chase Schmidt on 1/20/2023 10:37 AM
✓	28	FC-1-7	Chase Schmidt on 1/20/2023 10:37 AM
✓	29	FC-1-8	Chase Schmidt on 1/20/2023 10:37 AM
✓	30	FC-1-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	31	FC-1-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	32	FC-1-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	33	FC-1-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	34	FC-1-13	Chase Schmidt on 2/28/2023 11:32 AM
✓	35	FC-1-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	36	FC-1-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	37	FC-1-16	Chase Schmidt on 2/28/2023 11:32 AM
✓	38	FC-1-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	39	FC-1-18	Chase Schmidt on 2/28/2023 11:32 AM
✓	40	FC-1-19	Chase Schmidt on 1/20/2023 10:38 AM
✓	41	FC-1-20	Chase Schmidt on 1/20/2023 10:38 AM
✓	42	FC-1-21	Chase Schmidt on 1/20/2023 10:38 AM
✓	43	FC-1-22	Chase Schmidt on 1/20/2023 10:38 AM
✓	44	FC-1-23	Chase Schmidt on 1/20/2023 10:38 AM
✓	45	FC-1-24	Chase Schmidt on 1/20/2023 10:38 AM

✓	46	FC-1-25	Chase Schmidt on 1/20/2023 10:38 AM
✓	47	FC-1-26	Chase Schmidt on 1/20/2023 10:38 AM
✓	48	FC-1-27	Chase Schmidt on 1/20/2023 10:38 AM
✓	49	FC-1-28	Chase Schmidt on 1/20/2023 10:38 AM
✓	50	FC-1-29	Chase Schmidt on 1/20/2023 10:38 AM
✓	51	FC-1-30	Chase Schmidt on 1/20/2023 10:38 AM
✓	52	FC-1-31	Chase Schmidt on 1/20/2023 10:38 AM
✓	53	FC-1-32	Chase Schmidt on 1/20/2023 10:38 AM
✓	54	FC-1-33	Chase Schmidt on 2/28/2023 11:32 AM
✓	55	FC-1-34	Chase Schmidt on 1/20/2023 10:38 AM
✓	56	FC-1-35	Chase Schmidt on 1/20/2023 10:38 AM
✓	57	FC-1-36	Chase Schmidt on 1/20/2023 10:38 AM
✓	58	FC-1-37	Chase Schmidt on 1/20/2023 10:38 AM
✓	59	FC-1-38	Chase Schmidt on 2/28/2023 11:32 AM
✓	60	FC-1-39	Chase Schmidt on 1/20/2023 10:38 AM
✓	61	FC-1-40	Chase Schmidt on 1/20/2023 10:38 AM
✓	62	FC-1-41	Chase Schmidt on 1/20/2023 10:38 AM
✓	63	FC-1-42	Chase Schmidt on 1/20/2023 10:38 AM
✓	64	FC-1-43	Chase Schmidt on 1/20/2023 10:38 AM
✓	65	FC-1-44	Chase Schmidt on 1/20/2023 10:38 AM
✓	66	FC-2-1	Chase Schmidt on 1/20/2023 10:38 AM
✓	67	FC-2-2	Chase Schmidt on 1/20/2023 10:38 AM
✓	68	FC-2-3	Chase Schmidt on 1/20/2023 10:38 AM
✓	69	FC-2-4	Chase Schmidt on 1/20/2023 10:38 AM
✓	70	FC-2-5	Chase Schmidt on 1/20/2023 10:38 AM
✓	71	FC-2-6	Chase Schmidt on 1/20/2023 10:38 AM
✓	72	FC-2-7	Chase Schmidt on 1/20/2023 10:38 AM
✓	73	FC-2-8	Chase Schmidt on 1/20/2023 10:38 AM
✓	74	FC-2-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	75	FC-2-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	76	FC-2-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	77	FC-2-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	78	FC-2-13	Chase Schmidt on 1/20/2023 10:38 AM

✓	79	FC-2-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	80	FC-2-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	81	FC-2-16	Chase Schmidt on 1/20/2023 10:38 AM
✓	82	FC-2-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	83	FC-2-18	Chase Schmidt on 2/28/2023 11:32 AM
✓	84	FC-2-19	Chase Schmidt on 1/20/2023 10:38 AM
✓	85	FC-2-20	Chase Schmidt on 1/20/2023 10:38 AM
✓	86	FC-3-1	Chase Schmidt on 1/20/2023 10:38 AM
✓	87	FC-3-2	Chase Schmidt on 1/20/2023 10:38 AM
✓	88	FC-3-3	Chase Schmidt on 1/20/2023 10:38 AM
✓	89	FC-3-4	Chase Schmidt on 1/20/2023 10:38 AM
✓	90	FC-3-5	Chase Schmidt on 1/20/2023 10:38 AM
✓	91	FC-3-6	Chase Schmidt on 1/20/2023 10:38 AM
✓	92	FC-3-7	Chase Schmidt on 1/20/2023 10:38 AM
✓	93	FC-3-8	Chase Schmidt on 1/20/2023 10:38 AM
✓	94	FC-3-9	Chase Schmidt on 1/20/2023 10:38 AM
✓	95	FC-3-10	Chase Schmidt on 1/20/2023 10:38 AM
✓	96	FC-3-11	Chase Schmidt on 1/20/2023 10:38 AM
✓	97	FC-3-12	Chase Schmidt on 1/20/2023 10:38 AM
✓	98	FC-3-13	Chase Schmidt on 1/20/2023 10:38 AM
✓	99	FC-3-14	Chase Schmidt on 1/20/2023 10:38 AM
✓	100	FC-3-15	Chase Schmidt on 1/20/2023 10:38 AM
✓	101	FC-3-16	Chase Schmidt on 1/20/2023 10:38 AM
✓	102	FC-3-17	Chase Schmidt on 1/20/2023 10:38 AM
✓	103	FC-3-18	Chase Schmidt on 1/20/2023 10:38 AM

CHECKLIST

#53 AC-1 - Ductless Split System

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset AC-1
Ductless Split System AC Unit

Lines 11

FUNCTIONAL PERFORMANCE TEST			
SEQUENCE OF OPERATIONS			
THE PROGRAMMABLE ROOM THERMOSTAT, FURNISHED WITH THE AC UNIT, SHALL OPERATE THE INDOOR BLOWER UNIT TO PROVIDE COOLING TO THE SPACE TO MAINTAIN SETPOINT.			
PROVIDE INTERCONNECTING WIRING TO OUTDOOR UNIT.			
THE EMCS SHALL MONITOR THE SPACE TEMPERATURE.			
TEST PROCEDURE			
SETPOINTS AND SCHEDULE			
✓	1	VERIFY THAT THE SYSTEM THERMOSTAT HAS BEEN SET PER THE OWNER'S REQUIREMENTS (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 9:39 AM
OPERATIONS:			
✓	2	MANIPULATE THE COOLING SETPOINT TO BE BELOW THE ROOM TEMPERATURE. VERIFY THAT THE UNIT IS ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 9:39 AM
✓	3	MANIPULATE THE COOLING SETPOINT TO BE ABOVE THE ROOM TEMPERATURE. VERIFY THAT THE UNIT IS DE-ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 9:39 AM

#52 EF-1-3 - Kiln Room FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset EF-1-3
Exhaust Fan

Lines 10

SEQUENCE OF OPERATION			
THE KILN DOWNDRAFT FAN (PROVIDED WITH KILN) SHALL RUN WITH THE KILN OPERATION PER			
INTERFACE BETWEEN KILN CONTROLLER PROGRAMMING AND FAN CONTROLLER. THE KILN ROOM			
EXHAUST FAN EF 1-3 SHALL BE THERMOSTATICALLY CONTROLLED TO MAINTAIN ROOM TEMPERATURE			
BELOW 76F. THE EXHAUST DAMPER SHALL OPEN ANYTIME EF 1-3 IS ENERGIZED.			
FUNCTIONAL TEST PROCEDURE:			
✓	1	ACTIVATE THE KILN SWITCH (OR SIMULATE) AND VERIFY THAT THE KILN DOWNDRAFT FAN IS ENABLED (Pass, Fail, N/A)	Chase Schmidt on 1/19/2023 12:36 PM
✓	2	VERIFY THAT THE KILN EXHAUST FAN (EF-1-3) IS ENABLED WHEN THE ROOM TEMPERATURE IS EQUAL OR GREATER THAN 76F (Pass, Fail, N/A)	Chase Schmidt on 1/19/2023 12:36 PM
✓	3	VERIFY THAT THE EXHAUST DAMPER MODULATES OPEN WHEN EF-1-3 IS ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 1/19/2023 12:36 PM
✓	4	DEACTIVATE KILN SWITCH AND CONFIRM THAT THE FANS DE-ENERGIZE AND THE DAMPER CLOSES (Pass, Fail, N/A)	Chase Schmidt on 1/19/2023 12:36 PM

CHECKLIST

#45 CUH-1 - Cabinet Unit Heater FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset CUH-1
Electric Cabinet Unit
Heater

Lines 9

SEQUENCE OF OPERATION			
WHEN THE SPACE TEMPERATURE DROPS BELOW 60F (OR AS SET), UNIT HEATER FAN AND ELECTRICAL ELEMENT SHALL ENERGIZE TO MAINTAIN TEMPERATURE.			
WHEN SPACE TEMPERATURE IS SATISFIED, THE UNIT HEATER FAN AND ELECTRICAL ELEMENT SHALL BE DE-ENERGIZED.			
FUNCTIONAL TEST PROCEDURE			
SCHEDULES & SETPOINTS			
✓	1	Confirm that heating setpoint has been set to 60 °F (Pass, Fail, N/A) Temperature setpoints have been set at the following: Occupied heating to 70F Unoccupied heating to 65F	Chase Schmidt on 11/9/2022 11:04 AM Chase Schmidt on 11/9/2022 11:05 AM
OPERATION			
✓	2	Manipulate the space temperature so that it is below 60F. Confirm that the unit heater fan and electrical element are energized (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:05 AM
✓	3	Manipulate the space temperature so that it is above 60F. Confirm that the unit heater fan and electrical element are de-energized. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 11:05 AM

CHECKLIST

#47 BB-1-1 - Electric Heater FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset BB-1-1
BASE BOARD WALL
HEATER

Lines 11

SEQUENCE OF OPERATION			
THE EMCS SHALL INITIALIZE THE OCCUPIED AND UNOCCUPIED MODE FOR THE SYSTEM.			
OCCUPIED MODE:			
THE ELECTRIC HEATING COIL SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE OF 65°F (ADJUSTABLE)			
UNOCCUPIED MODE:			
THE ELECTRIC COIL SHALL MODULATE TO MAINTAIN SPACE SETBACK TEMPERATURE OF 55°F (ADJUSTABLE)			
FUNCTIONAL TEST PROCEDURE			
SCHEDULES & SETPOINTS			
✓	1	Confirm that heating setpoint has been set as per the District's request of 60 °F at Occupied and 55 °F at Unoccupied (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:33 AM
OPERATION			
✓	2	Manipulate setpoints to ensure heating is energized appropriately. Manipulate setpoints to ensure heating is de-energized appropriately. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:33 AM

CHECKLIST

#48 BB-1-2 - Electric Heater FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset BB-1-2
BASE BOARD WALL
HEATER

Lines 11

SEQUENCE OF OPERATION			
THE EMCS SHALL INITIALIZE THE OCCUPIED AND UNOCCUPIED MODE FOR THE SYSTEM.			
OCCUPIED MODE:			
THE ELECTRIC HEATING COIL SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE OF 65°F (ADJUSTABLE)			
UNOCCUPIED MODE:			
THE ELECTRIC COIL SHALL MODULATE TO MAINTAIN SPACE SETBACK TEMPERATURE OF 55°F (ADJUSTABLE)			
FUNCTIONAL TEST PROCEDURE			
SCHEDULES & SETPOINTS			
✓	1	Confirm that heating setpoint has been set as per the District's request of 60 °F at Occupied and 55 °F at Unoccupied (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM
OPERATION			
✓	2	Manipulate setpoints to ensure heating is energized appropriately. Manipulate setpoints to ensure heating is de-energized appropriately. (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:44 AM

CHECKLIST

#49 BB-1-3 - Electric Heater FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Asset BB-1-3
BASE BOARD WALL
HEATER

Lines 11

SEQUENCE OF OPERATION			
THE EMCS SHALL INITIALIZE THE OCCUPIED AND UNOCCUPIED MODE FOR THE SYSTEM.			
OCCUPIED MODE:			
THE ELECTRIC HEATING COIL SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE OF 65°F (ADJUSTABLE)			
UNOCCUPIED MODE:			
THE ELECTRIC COIL SHALL MODULATE TO MAINTAIN SPACE SETBACK TEMPERATURE OF 55°F (ADJUSTABLE)			
FUNCTIONAL TEST PROCEDURE			
SCHEDULES & SETPOINTS			
✓	1	Confirm that heating setpoint has been set as per the District's request of 60 °F at Occupied and 55 °F at Unoccupied (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:28 AM
OPERATION			
✓	2	Manipulate setpoints to ensure heating is energized appropriately. Manipulate setpoints to ensure heating is de-energized appropriately. (Pass, Fail, N/A)	Chase Schmidt on 11/9/2022 10:28 AM

#46 DWH FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Lines 18

FUNCTIONAL PERFORMANCE TEST			
SEQUENCE OF OPERATIONS			
DURING THE OCCUPIED PERIODS THE HOT WATER RECIRCULATION PUMP, RCP-1, SHALL ENERGIZE.			
UPON A RETURN WATER TEMPERATURE OF 118F (ADJUSTABLE), THE RECIRCULATION PUMP SHALL DE-ENERGIZE			
SYSTEM SHALL MONITOR PUMP STATUS			
PROVIDE ALARM ANNUNCIATION TO THE OPERATORS TERMINAL FOR PUMP FAILURE			
DURING UNOCCUPIED PERIODS, RCP-1 SHALL BE OFF			
TEST PROCEDURE			
SETPOINTS AND SCHEDULE			
✓	1	VERIFY THAT THE TEMPERATURE SETPOINT HAS BEEN SET TO 118F (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 10:00 AM
		Supply water temperature setpoint is set to 140F. High return water temperature alarm is set to 120F.	Chase Schmidt on 9/9/2022 10:01 AM
OCCUPIED MODE:			
✓	2	WHILE IN OCCUPIED MODE VERIFY THAT THE RECIRCULATION PUMP RCP-1 IS ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 9:44 AM
✓	3	MANIPULATE THE RETURN WATER TEMPERATURE TO 118F. VERIFY THAT RCP-1 IS DE-ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:43 AM
✓	4	MANIPULATE THE RETURN WATER TEMPERATURE TO LESS THAN 118F. VERIFY THAT RCP-1 IS RE-ENERGIZED (Pass, Fail, N/A)	Chase Schmidt on 10/6/2022 10:44 AM
		Logic does not exist in the BAS at time of testing. See issue above.	Chase Schmidt on 9/9/2022 10:01 AM
UNOCCUPIED MODE:			
✓	5	PLACE THE SYSTEM INTO UNOCCUPIED MODE. VERIFY THAT RCP-1 IS DISABLED (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 9:53 AM
ALARMS:			
✓	6	VERIFY ALARM ANNUNCIATION TO THE OPERATORS TERMINAL WHEN A SIMULATED PUMP FAILURE TAKES PLACE. (Pass, Fail, N/A)	Chase Schmidt on 9/9/2022 9:54 AM

CHECKLIST

#50 TRAP PRIMER FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 100% Passed | 0% Failed | 0% N/A

Lines 3

FUNCTIONAL TEST PROCEDURE			
✓	1	CONFIRM THAT SCHEDULE IS SET TO OPEN VALVE FOR 10 SECONDS (ADJ) EVERY 48 HOURS (ADJ) ON THE SWITCH BETWEEN OCCUPIED AND UNOCCUPIED MODES. (Pass, Fail, N/A)	Chase Schmidt on 1/18/2023 11:17 AM
✓	2	MANIPULATE THE SCHEDULE TO CALL FOR THE TRAP PRIMER ENABLE. VERIFY THAT THE TRAP PRIMER RUNS FOR 10 SECONDS (Pass, Fail, N/A)	Chase Schmidt on 1/20/2023 10:48 AM

CHECKLIST

#55 Lighting FPT

McKinstry | WWPS Lincoln High School | 204924-001

FINISHED 97% Passed | 2% Failed | 0% N/A

Assigned To Chase Schmidt

Lines 62

LIGHTING FUNCTIONAL PERFORMANCE TEST			
SEQUENCE OF OPERATION			
LVDEM: LOW VOLTAGE DIMMING EMERGENCY MODULE			
LVDM: LOW VOLTAGE DIMMING MODULE			
LVEM: LOW VOLTAGE EMERGENCY MODULE			
LVM: LOW VOLTAGE MODULE			
OS: OCCUPANCY SENSOR			
LS-1: LIGHT SWITCH, SINGLE ZONE			
LS-2: LIGHT SWITCH, TWO ZONE			
LSOS: LIGHT SWITCH WITH OCCUPANCY SENSOR			
LDSOS: LIGHT DIMMING SWITCH WITH OCCUPANCY SENSOR			
LDS-1: LIGHT DIMMING SWITCH, SINGLE ZONE			
PROVIDE COMPLETE, PROGRAMMABLE, LIGHTING CONTROL SYSTEM TO CONTROL ALL LIGHTING SHOWN			
LIGHTING AND CONTROLS SHALL BE DESIGNED AND INSTALLED IN COMPLIANCE WITH CURRENT WSEC CODES, AND MEET THE SPECIFICATIONS AND OWNERS REQUIREMENTS			
ALL EMERGENCY LIGHTING MODULES REQUIRE A SECOND CIRCUIT TO ACT AS A SENSING CIRCUIT			
PROVIDE AN ADDITIONAL UNSWITCHED HOT CIRCUIT TO EACH EMERGENCY MODULE			
TEST PROCEDURE:			
VERIFY LIGHT SWITCHES HAVE THE SCENES PROGRAMMED CORRECTLY			
VERIFY THAT THE OCCUPANCY SENSORS ARE ACTIVE AND OPERATIONAL			
✓	1	ROOM 113: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	2	ROOM 111: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	3	ROOM 109: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	4	ROOM 107: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	5	ROOM 105: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	6	ROOM 103: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	7	ROOM 101: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	8	ROOM 101A: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	9	ROOM 101B: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM

✓	10	ROOM 101C: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	11	ROOM 101D: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	12	MECHANICAL ROOM: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	13	ELEVATOR CONTROL ROOM: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	14	ROOM 117: 2 BUTTON DIMMING AND 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	15	GYM STAGE AND STORAGE AREA: 2 BUTTON DIMMING AND ON / OFF SWITCH	Chase Schmidt on 5/30/2023 2:58 PM
✓	16	FOOM 104: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	17	ROOM 106: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	18	ROOM 106B: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	19	KILN ROOM: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	20	ROOM 115: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	21	LEVEL 1 HALLWAY: OCCUPANCY SENSOR	Chase Schmidt on 4/6/2023 12:58 PM
✓	22	ROOM 209: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	23	ROOM 210A: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	24	ROOM 207: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	25	ROOM 205: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✗	26	ROOM 203: 4 BUTTON DIMMING Wall switch is on order	Chase Schmidt on 4/6/2023 12:58 PM Chase Schmidt on 5/30/2023 2:58 PM
✓	27	ROOM 201: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	28	ROOM 202: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	29	ROOM 202A: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	30	ROOM 202B: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	31	LEVEL 2 STAFF RESTROOM: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	32	LEVEL 2 HALLWAY: OCCUPANCY SENSOR	Chase Schmidt on 4/6/2023 12:58 PM
✓	33	ROOM 311: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	34	ROOM 311A: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	35	ROOM 313: ON / OFF	Chase Schmidt on 4/6/2023 12:58 PM
✓	36	ROOM 309: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	37	ROOM 305: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	38	ROOM 303: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	39	ROOM 301: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	40	ROOM 302: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	41	ROOM 304: 4 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM

✓	42	ROOM 306: 2 BUTTON DIMMING	Chase Schmidt on 4/6/2023 12:58 PM
✓	43	LEVEL 3 HALLWAY: OCCUPANCY SENSOR	Chase Schmidt on 4/6/2023 12:58 PM

Walla Walla Public Schools
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RESOLUTION #13-2023
October 24, 2023

FINAL ACCEPTANCE OF BUILDING COMMISSIONING REPORT FOR PIONEER MIDDLE SCHOOL MODERNIZATION PROJECT

WHEREAS, the Walla Walla Public Schools Board of Directors has received the final Building Commissioning Report from McKinstry regarding the Pioneer Middle School Modernization project; and

WHEREAS, the Superintendent and Board have reviewed this report in its entirety and have noted the recommendations by the district's construction manager.

THEREFORE, BE IT RESOLVED by the Walla Walla Public Schools Board of Directors, that the Building Commissioning Report for the Pioneer Middle School Modernization project is hereby approved.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

Derek Sarley, School Board President

ATTEST: Dr. Wade Smith, Superintendent and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023

Walla Walla Public Schools – Pioneer Middle School Renovation

WALLA WALLA, WASHINGTON
MAY 2023

COMMISSIONING REPORT

Contents

Section 1

Executive Summary

General

McKinstry Commissioning served as the commissioning (Cx) agent for the Pioneer Middle School project in Walla Walla, Washington. McKinstry Cx provided technical support and commissioned the additions and modernizations of the Pioneer Middle School Mechanical, Electrical, and Plumbing systems. This report summarizes the commissioning activities undertaken to verify proper equipment operation, including execution of the associated control sequences.

COMMISSIONING SCOPE OF WORK

The commissioning activities included the following major tasks:

- Perform a design and sequence of operations review prior to the construction drawings being issued
- Develop an observation log identifying and tracking deficiencies discovered during commissioning
- Execution of an extensive point-to-point verification of physical control points
- Perform a review of the testing, adjusting, and balancing (TAB) report
- Prepare and execute functional test procedures verifying proper control and operation of the mechanical systems
- Development of a final commissioning report

Systems Commissioned

COMMISSIONING INTENT

The intent of McKinstry's Commissioning effort is to assure the project's result is an operable, maintainable, and sustainable system. The commissioning process independently verifies that systems have been engineered, installed, started-up, and function per the project design intent per the indicated test dates.

Commissioned Systems
The project scope of work identified that the mechanical systems were to be commissioned. The following table summarizes the systems that were commissioned.

Table 1. Summary of Commissioned Equipment

Systems and Major Items
Mechanical Equipment
Air Handler (Quantity 1)
Roof Top Units (Quantity 3)
Dedicated Outdoor Air System (Quantity 2)
Water Source Heat Pumps (Quantity 49)
Unit Heaters (Quantity 3)
Baseboard Wall Heater (Quantity 5)
Exhaust Fans (Quantity 6)
Ductless Split AC Units (Quantity 4)
Heating Water System (Quantity 1)
Chilled Water System (Quantity 1)
Domestic Hot Water System (Quantity 1)
Interior Lighting Control (Quantity 1)

Executive Summary

Commissioning Results

EQUIPMENT INSTALLATION

McKinstry Commissioning was not involved in the installation process; however, the installation of the equipment and controls was verified to the submittal drawings and scopes of work during the point-to-point checkout of the equipment.

AUTOMATIC CONTROLS

The focus of the commissioning was on the heated water system, chilled water system and air handling equipment. The systems were commissioned through the following steps:

- Reviewing the submitted design controls sequence
- Verify proper installation of equipment
- Verifying all points through a point-to-point checkout procedure
- Executing functional test procedures to verify the control sequences under actual operation
- Work with the controls contractor to identify and resolve deficiencies in the operation of the mechanical system
- Verifying the automation of the equipment operation with specific modes. These sequences were typically based on the load requirement, outside air conditions, or operator selections
- Verifying that the controls system will register the correct alarms to the BAS central station computer. Once equipment was in alarm, the controls system was observed to determine if the correct alarm was detected in a timely fashion.

The point-to-point testing, functional testing, and alarm testing were completed with the assistance of the controls contractor, Standard Plumbing & Heating Controls. The deficiencies discovered during testing are discussed in the Observations Log in Section 3. These deficiencies were corrected, retested, and found to be working properly. The point-to-point verification results, as well as the functional testing procedures and results, are located in section 4 of this report.

Executive Summary

Commissioning Comments

OWNER ISSUES

- No notable owner issues were found during the commissioning process.

OPEN ISSUES

- No open issues at the time of writing this report

OBSERVATIONS & MODIFICATIONS

- HP-48 and HP-49 outside air (OSA) ducts are designed and installed to directly route OSA louver and not to an air handler. This only allows these units to draw as much air as possible to the space (locker rooms). The BAS shows these units have variable air volume dampers on them to provide a scheduled amount of OSA.

Best Regards,

Chase Schmidt

Chase Schmidt
Commissioning Engineer
McKinstry

Section 2

Walla Walla Public Schools
Pioneer Middle School Renovation
Commissioning Plan

Walla Walla, WA
May 2023

Walla Walla Public Schools
Pioneer Middle School Renovation
Commissioning Plan

CONTENTS

Walla Walla Public Schools
Pioneer Middle School Renovation
Commissioning Plan

1.0 INTRODUCTION

1.1PURPOSE OF THE COMMISSIONING (CX) PLAN

This Commissioning (Cx) Plan describes the commissioning process for Pioneer Middle School located 405 Bridge St., Walla Walla, WA. This living document provides a high-level overview of the commissioning process, scope summary, and it identifies the various roles and respective responsibilities of those that will participate in the commissioning process. The end goal of the Commissioning Plan and the execution thereof is to ensure the systems are installed, started, tested, and documented to meet both the Owner's Project Requirements (OPR) and the Basis of Design (BOD).

1.2 PROJECT DESCRIPTION

Through public bonds and Washington state matching funds, the Walla Walla School District is performing additions and modernizations at Pioneer Middle School. The HVAC systems will consist of a water source heat pump system for heating and cooling with two DOAS heat recovery units supplying ventilation air. The heat pumps will be distributed throughout the building and fed by central boilers and cooling towers.

1.3 COMMISSIONING APPROACH

The commissioning effort planned for this project will be based upon the following standards:

- ASHRAE Guideline 0-2013
- BCA Best Practices for Building Commissioning-New Construction
- GSA Guideline for Project Commissioning

1.4 SYSTEMS TO BE COMMISSIONED

The commissioning process for this project will include the following systems:

1.4.1

- HVAC system and controls
  Air conditioning and ventilation system: Primary heating and cooling of the building air will be provided by reversing water-source heat pumps. The heat pumps will vary air flow via integral ECM fans. A central campus loop will supply the heat pumps from a central plant.

  Code-minimum ventilation air would be provided by a dedicated outside air system. Classrooms, support space, and ancillary areas will be served by two variable air volume energy recovery units located in the mechanical mezzanine. These units will have variable volume exhaust and supply air fans contolled by variable frequency drives on the fan motors. The units will be equipped with a fixed plate heat recovery core and pre/final filters. Control of individual room ventilation air will be provided by variable air valves and the CO2 sensors in code-required spaces.

  - Water source heat pumps: HP-1 – HP-49
  - Air Handling Unit: AHU-1
  - Boilers: B-1, B-2, B-3 (existing)
  - Chiller: CT-1 (existing)
  - Roof Top Units: RTU-1, RTU-2, RTU-3
  - Ductless Split AC System: AC-1 & CU-1, AC-2 & CU-2
  - Baseboard wall heater: BB-1, BB-2, BB-3, BB-4, BB-5
  - Electric unit heater: EUH-1, EUH-2, EUH-3
  - Exhaust Fans: EF-1 – EF-6
  - Hydronic pumps: P-1, P-2, P-3, P-4, BP-1, BP-2, BP-3
  - Dedicated outdoor air system: DOAS-1 & DOAS-2
  - Sequences: TBD

- Domestic hot water system
  The Building domestic water heating system would include a high efficiency, gas-fired water heater with integral storage tank, a thermostatic mixing valve, and building recirculation system.
  - Gas-fired hot water heater: WH-1 & WH-2
  - Thermostatic mixing valve: TMV-1 & TMV-2
  - Domestic hot water recircuating pump: RCP-1 & RCP-2

- Lighting controls system
  Interior lighting shall be controlled by switches in the individual rooms, providing choice for multiple illumination levels where possible; and classrooms shall be provided with occupancy detection per the Washington State Energy Code.

1.5 COMMISSIONING SCHEDULE

Event	Start Date	End Date
Construction	COMPLETE	COMPLETE
Distributed Power Available	COMPLETE	COMPLETE
Distributed Water Available	COMPLETE	COMPLETE
Equipment Start-Ups	COMPLETE	COMPLETE
TAB	COMPLETE	COMPLETE
Functional Performance Tests	COMPLETE	COMPLETE
Move-in / Public Opening	COMPLETE	COMPLETE

1.6 LIST OF ACRONYMS AND ABBREVIATIONS

Below is a list of common terminology and abbreviations used throughout this document.

- A/C – Air Conditioning
- A/E – Architect/Engineer
- AHJ – Authority Having Jurisdiction (Plans Examiners, County Inspectors, Fire Marshall, etc.)
- AHU – Air Handling Unit
- BAS – Building Automation System Contractor (controls & alarms)
- BECx – Building Enclosure Commissioning
- BOD – Basis of Design
- CET – Critical Environment Team, DCOPs Facilities Mgmt. Team
- CFM – Cubic Feet per Minute
- CDW – Condenser Water
- CHW – Chilled Water
- CRAC – Computer Room Air Conditioning unit
- Cx – Commissioning
- CxA– Commissioning Agent
- CCP – Certified Commissioning Professional (BCA)
- Cx-MIL – Cx Master Issues Log
- DCV – Demand Control Ventilation
- DB – Design Build
- DDC – Direct Digital Controls

- EC – Electrical Contractor
- EF – Exhaust Fan
- EOR – Engineer of Record
- FCU – Fan Coil Unit
- FPT – Functional Performance Test(s)
- FWT – Factory Witness Test(s)
- HHW – Heating Hot Water
- HVAC – Heating Ventilation & Air Conditioning
- IR - Infrared
- IST – Integrated Systems Test
- ITP-Cx – Independent Third-Party Commissioning
- IVC – Installation Verification Checklist
- MAU – Makeup Air Unit
- MC – Mechanical Contractor
- MEP Subs – DB's Mechanical/Electrical/Plumbing subcontractors
- OEM – Original Equipment Manufacturer
- OPR – Owner's Project Requirements
- OSA – Outside Air
- PPM – Parts Per Million
- QA/QC – Quality Assurance/Quality Control
- RA – Return Air
- RTU – Rooftop Unit
- SA – Supply Air
- TAB – Testing, Adjusting, and Balancing
- TU – Terminal Unit
- VAV – Variable Air Volume
- VFD – Variable Frequency Drive
- VRF – Variable Refrigerant Flow
- VTR – Vent Through Roof

2.0 Commissioning Overview

2.1 DESCRIPTION

Commissioning is the systematic process of ensuring that all building systems included in the scope perform interactively according to the design intent, BOD, and the Owner's operational needs. Generally, the CxA is involved in the process from design through post-construction. The Cx process incorporates all the parties involved in design and construction. The primary elements of Commissioning include:

- Identifying and documenting the Owner's needs and the requirements of the facility
- Defining the systems and equipment acceptance and performance criteria as outlined in the contract documents
- Ensuring that the systems installed are operable and maintainable
- Testing of the systems to ensure that they are interacting and performing optimally

The Commissioning Agent (CxA) oversees and coordinates the Cx efforts, although all parties play a vital role in the Cx process. The Commissioning Process starts early in the Design Phase and continues well into the first year of occupancy. The Commissioning Process includes many steps and tasks throughout the design-construction-occupancy timeline. These steps/tasks and their associated deliverables are described below, organized by the major milestones typically associated with the design and construction process.

2.2 DESIGN PHASE

The Design Phase spans from pre-design (OPR and BOD development) through the generation of construction documents. In the Design Phase, the Cx steps are as follows:

OPR & BOD Developed and Reviewed – The Owner documents their project and performance requirements in the Owner's Project Requirements (OPR). The A/E firm develops the Basis of Design (BOD) from the OPR. The CxA reviews the OPR and BOD to identify the performance expectations of the facility and systems and provides feedback as necessary.

- OPR: Document provides clear direction to the design team on the project's MEP system requirements.
- BOD: Document complies with OPR and includes, in detail, all assumptions, codes/standards/guidelines, calculations and design decisions that will be used in the design of the MEP systems for this project.

Submit Cx Plan – Based on the OPR, BOD, and Cx contract, the CxA develops the Cx Plan and submits it to the Owner and A/E for review. The CxA incorporates the feedback and submits the revised draft. The CxA maintains and updates the Cx Plan as necessary throughout the Cx process.

The following deliverables should be expected during the Design Phase:

- DRAFT (On-going) Commissioning Plan
- Permit Set of Construction Documents review comments
- Contractor submittals review comments

2.3 CONSTRUCTION PHASE

The Construction Phase spans from construction inception through building/system turn-over. In the Construction Phase, the CxA is involved through meetings and site visits. The CxA performs the following steps:

Cx Kickoff Meeting – The CxA coordinates a Cx Kickoff Meeting with the Owner, A/E, and contractors to communicate the Cx process, their responsibilities, and overall expectations. Target audience to include:

- Owner and/or Owner's Rep
- General Contractor
- MEP Contractors
- Key Vendors
- TAB and Controls Contractors

The purpose of this Cx Kick-Off Meeting is to:

- Formally introduce the Commissioning Agent to the build team.
- Review the Commissioning Process to be used on this project, including:
    - Roles and responsibilities of all members of the Commissioning Team.
    - Lines of communication and mechanism for distributing and updating shared documents
    - The Commissioning Plan (including process for distributing updates).
- Address any questions related to the Commissioning Process to be used on this project.
- Review the Commissioning Schedule.
- Review criteria for "Pass/Fail" status on tests, including:
    - Commissioning scope of work allowance for initial test and one retest only.
    - Compensation charges for more than one retest if necessary.
- Introduce and review all commissioning documentation to be used on this project, including:
    - Pre-Functional Checklists (format and sample checklist).
    - Functional Performance and Integrated Systems Test Procedures (format and sample test).
    - Master List of Findings Log (Autodesk BIM 360 Field format and response process).

Develop Commissioning Schedule – The CxA will prepare a schedule of the commissioning process activities. The schedule will identify critical times for witnessing testing activities, accessing systems and equipment, accessibility for maintenance and verification, completion of construction checklists, and activities related to substantial completion/project closeout.

Site Visits & Meetings – The CxA will conduct site visits and attend project meetings as necessary to stay apprised of project status and to observe construction progress. If issues are identified they will be communicated via the Master List of Findings or Observation Log and the Site Visit Report. The CxA's presence will gradually increase as the project nears the Acceptance Phase. The focus of the CxA Observation Visits includes:

- Verification of equipment/system installation in accordance with the design documents, I-O&M materials, codes, and recognized industry standards.
- Potential conflicts between trades.
- Potential maintenance/access issues.

The CxA will coordinate these periodic site visits with the GC in order to prevent conflicts with on-site project scheduled major events that may prevent full access to the site. The CxA will attend site specific safety orientations as necessary prior to the first site visit and will observe all site specific as well as industry recognized safety precautions at all times. The CxA will supply and use all personal safety and PPE required while on site, including:

- OSHA rated hard hat, safety glasses, and safety vest.
- Proper footwear (and gloves as required).

The CxA will check-in at the GC trailer (or designated location) upon entering and exiting the site so that their presence is known and documented in case of a site emergency. The CxA will conduct themselves in a professional manner at all times on site as they observe the installation progress. At no time will the CxA direct contractors in any way regarding installation practices, means or methods. If the CxA observes potential issues with the installation, these will be noted on the Commissioning Issues Log and will be distributed to the appropriate parties for their response. However, if the CxA observes any installation practice or procedure that they deem unsafe, the CxA will immediately notify the GC on site of the observed situation so that the GC may take appropriate action as they see fit.

Submit Cx Tests for Review – The CxA develops (or reviews contractors') Pre-Start/Start-up, Functional Performance Tests, and Integrated System Tests and provides them to the A/E and Contractor for review. The CxA incorporates feedback as necessary.

- Use ALL manufacturers' provided installation and start-up checklists during installation and start-up. Pre-Start/Start-up Checklists *may* be issued by the CxA to the General Contractor for distribution to the appropriate parties. An alternative is that the installing contractor provides Pre-Start/ Start-Up forms to the CxA for review and approval. Once approved forms have been established for each piece of equipment to be commissioned; the GC is responsible for monitoring the contractors/vendors responsible for completing the Checklists and for returning the Checklists to the CxA once they have been completed. Functional Performance Testing of each piece of equipment will not commence until the associated Pre-Start/Start-up Checklist has been completed by the contractor/vendor and verified by the CxA. The Pre-Start/Start-up Checklists shall be used to verify the following:

    - General Condition (equipment and components are free from damage).

- General Installation (equipment is the correct make/model and located on site in accordance with the design documents).
- Completed Installation (all support and/or associated systems, i.e.; electrical power, hydronic piping, drains, control wiring, seismic supports, ducting, etc. have been connected/terminated at subject equipment).
- Start-Up/FPT Readiness (equipment is ready for either factory authorized start-up and/or Functional Performance Testing to commence).

- Functional Performance Testing will be created by the CxA and will be written in step-by-step procedures that will be used to verify the sequence of operation for each piece of equipment to be commissioned for this project under each mode of operation. The format for the test procedures will include an overview of the specific section of the Sequence of Operation that is being tested, the exact and detailed steps to be used to test the specific section of the SOO and the expected results of each step. If the expected results are not an exact target, then an acceptable range will be listed. Test steps shall be non-destructive and shall be performed using "real-time" perimeters (simulations shall be limited as much as possible). Test format shall include spaces to document conditions/results where applicable and shall also include spaces for the CxA to date and initial when a test has been completed successfully. The CxA will transmit the FPT's in draft form to the A/E Team for their review and comment before final test forms are published for use by the Commissioning Team. Functional Performance Testing shall be used to verify the following and will include, but will not limited to:

  - Normal operating mode (On).
  - Normal stand-down mode (Off).
  - Status of operation during loss of power event.
  - Status of operation under emergency power.
  - Return to operation after restoration of normal power.
  - Status of operation during lead/lag cycle.
  - Status of operation in standby mode (Redundant/Back-up).
  - Status of operation during all alarms.
  - Monitoring and/or reporting modes.
  - Interface with BAS System.

As required by contract and identified in the commissioning plan, CxA will create written step-by-step Integrated Systems Testing (IST) procedures that will be used to verify the interdependency of each commissioned system during various facility events. The purpose of conducting the IST's is to demonstrate the capability of the facility's commissioned systems to operate together, recover from loss of power, and maintain the environmental and power systems under load conditions. The format for the IST's shall be the same as noted above for the FPT's and will include the following:

- All modes of facility operation.
- All modes of power (normal and emergency).
- All modes of maintenance scenarios (scheduled and non-scheduled events).

Maintain Master List of Findings or Observation Log – The CxA will document identified issues from site visits and tests in the Master List of Findings or Observation Log. The CxA will communicate such issues as needed to the Owner, A/E, and/or Contractor. The log requires contributions from each of the commissioning team memebers and as such everyone on the commissioning team has a responsibility to update the log via Autodesk BIM 360 Field. The CxA will validate and close issues as the team identifies that they are ready for closure. The Master List of Findings or Observation Log will be submitted as part of the Cx Report.

Review Pre-Start Tests – The contractors submit completed Pre-Start Tests and manufacturer supplied tests to the CxA. The CxA reviews such documents to verify that the equipment/system is ready for start-up. In some cases the Pre-Start may be performed with the Start-Up Tests. These factory test/checklists are used to verify:

- Equipment assemblies are complete (all components installed).
- Equipment operates as designed and specified.
- All accessories and appurtenances specified are included and functional.

- Equipment is ready for factory testing/demonstration (as witnessed by CxA, Owner/Owner Rep, A/E Team members, Facility Operators, and any other interested parties).

Review comments provided by the CxA will be sent, electronically, to the A/E Team as well as the vendor/manufacturer. All parties receiving the comments are instructed to incorporate the comments into subsequent re-submittals and/or respond, in writing, to the comments providing further clarification. This re-submittal and review process will continue until all interested parties are satisfied with the factory test procedures and scope.

Review Start-Up Procedures and Schedule – The CxA will review and provide written comments to the Cx Team on the start-up procedures and the proposed start-up schedule, for the MEP equipment to be commissioned on this project, as provided by the contractors and/or vendors prior to the beginning of the MEP start-up portion of the project. The focus of the CxA review will be:

- Completeness (that all relevant start-up items have been included).
- Correctness (that the start-up procedures submitted are the proper procedures for the equipment).
- Clarity (that submitted material is readable and usable).
- Compliance (that submitted material is in accordance with requirements of the design documents).
- Schedule: (that the order of start-up is logical and in sequence with the progress of the job).

Review & Verify TAB – The CxA will spot verify the TAB as required by contract; the TAB Contractor will conduct the spot test as directed by the CxA. The CxA will document any issues in the Master List of Findings or Observation Log. Focus of the TAB review will include:

- Verification of TAB Plan to ensure completeness and adherence to the design documents.
- Witness verification of TAB measurements (minimum of 10% random selection).
- Verification of Preliminary and Final TAB Reports to ensure documentation is complete and in accordance with design documents.

Final approval of the submitted TAB Reports is the responsibility of the A/E Team. The review by the CxA shall not relieve the A/E Team of that burden.

Witness Equipment Start-ups – As required by contract and specifications the CxA will witness the startup of major mechanical equipment as scheduled, and will provide documentation of the outcome including any issues encountered.

Witness Functional Performance Tests (FPT) – The CxA will organize, direct and witness each Functional Performance Test (FPT) of the equipment to be commissioned on this project. The CxA shall conduct a Pre-Test Meeting prior to testing. Actual testing will be conducted by the contractors and/or vendors responsible for providing and installing the equipment. The CxA shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved FPT forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxA. In the event that a test is deemed as "Failed" then three successfully executed retests, in successive order, must be documented prior to final acceptance. Issues discovered during the testing shall be noted on the Master Commissioning Issues Log.

Prior to a scheduled test, the CxA shall schedule and conduct a "Pre-Test Meeting" at the site. The purpose of this meeting is to assemble all the parties responsible for conducting and/or witnessing the functional performance demonstrations (FPT's and IST's) and, as a group, review the following:

- The purpose of the test.
- List of equipment to be included in the test.
- The procedures that will be used for the test.
- Expected results of the test.
- The use of any access equipment (ladders, lifts, etc.), including:
    - Party responsible for supplying and using access equipment.
    - Acceptable types of access equipment.
- The use of any non-system equipment (meters, gauges, hand tools, etc.) including:
    - Party responsible for supplying and using the non-system equipment.
    - Calibration standards of non-system equipment.

    - Make/Model/Type of acceptable non-system equipment.
- Chain of command before and during the testing, including:
    - List of all personnel REQUIRED to attend the test.
    - Use of formal Sign-In Sheets at each test.
    - Roles and responsibilities for personnel attending the test.
    - Recognition by all personnel attending the test that McKinstry Commissioning has overall authority on Pass/Fail determination for each step of the test.
- Types of Acceptable Communication Tools:
    - Use of 2-way radios and/or cell phones.
    - Frequencies to be used for test instructions (Tach-1) and other frequencies to be used for "side-chatter" (Tach-2).
    - Each party responsible for their own radios/cell phones
    - Conduct a radio/phone test at the actual test site to verify that selected equipment/frequencies will work.
- Establishing time and location for test, including:
    - Check in time and location.
    - Sign-In Sheet.
    - Last minute supplemental instructions and "Go/No Go" status check.
- Site safety orientation requirements, including:
    - Rules of conduct to be followed by ALL personnel attending the test.
    - Dress code for all personnel attending the test (hard hats, safety glasses, safety vests, proper footwear, gloves, etc.).
- Criteria for approving the start of the test, including:
    - Completion of all pre-test documentation.
    - Verification that required personnel are on site and ready for test.
    - Verification that non-system equipment has been provided, charged (and/or new batteries installed) and calibration is current.
    - Verification that access equipment has been provided.
    - Verification that test area is available for the test (clean, clear of debris, and that no work is scheduled in the immediate area during the test period).
- Procedures for documenting issues discovered during the FPT, including:
    - All issues discovered during the FPT will be documented in the Issues Log.
    - Issues discovered during the testing that are corrected on the spot and proven as corrected by an immediate subsequent successful test shall be noted as "Closed" on the Issues Log.
    - Issues discovered during the testing that are not immediately correctable and result in an unsuccessful test, shall be noted as "Open" on the Issues Log.
- Criteria for determining a "Failed" test, including:
    - Criteria for determining an issue that can be corrected during the test period and immediate retesting.
    - Criteria for determining an issue that requires a momentary delay in the test for corrections and postponing the test for no more than 30 minutes while corrective action is taken and then retesting.
    - Criteria for determining an issue that will require the test to be rescheduled for another day (Failed Test Status).

The contractor shall prepare the area adjacent to the component/equipment/system for the test prior to the start of the test so as to not to cause a delay in the execution of the tests. The contractor shall coordinate with all trades working in the immediate area of the test so as to minimize the disruption of the work schedule, and to verify that any work being done in the immediate area of the test will not disrupt the test (loud noise, moving machinery, lift conflicts, etc.). This shall include not only the area of the test, but will also include the areas adjacent to the test area and the floor areas above and below the actual test area.

Witness Integrated System Testing (IST) – The CxA will organize, direct and witness the Integrated Systems Test (IST) of the MEP equipment to be commissioned on this project. Actual testing will be conducted by the team of contractors and/or vendors responsible for providing and installing the equipment within the systems related to the IST. The CxA shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved IST forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxA. Issues discovered during the testing shall be noted on the Commissioning Issues Resolution Log.

The CxA shall conduct a Pre-Test Meeting prior to the IST. In the event that a system test is deemed as "Failed" the tests shall be repeated as many times as necessary to successfully document the system's acceptable performance. The following deliverables should be expected during the Construction Phase:

- Commissioning Schedule
- Pre-functional checklists
- Review comments of proposed start-up checklists.
- Review comments of completed start-up checklists
- TAB Review comments
- Functional Performance Tests
- Integrated System Tests
- Master List of Findings or Observation Log / Investigation Report(s)

2.4 POST CONSTRUCTION PHASE

The Project Post Construction focuses on the turnover of the facility/system to the Owner and facility operations staff. The CxP will assist with this transition per the following steps:

Resolve Master List of Findings or Observation Log – The CxA will work with the Owner, A/E, Contractor, and contractors to resolve the open issues on the Master List of Findings or Observation Log. The end goal is to close all issues on the log or obtain mutual acceptance of outstanding issues.

Deliver Cx Report – The CxA will provide a draft Cx Report to the Owner and A/E to review. The CxA will incorporate feedback as necessary. The CxA will obtain all required documentation and update Cx Report. The CxA will deliver final Cx Report to the Owner.

- Executive Summary
- Final Cx Plan
- Final Master List of Findings or Observation Log
- Completed Test Forms (FPT and IST)

3.0 Commissioning Team Members Roles & Responsibilities Parties Involved

3.1 PARTIES INVOLVED

The commissioning process requires the involvement of various project stakeholders. Below is a list of parties, other than the CxA, who have responsibilities in the commissioning process. These responsibilities do not negate contract requirements or specifications; they are included herein for clarification and reference purposes.

Owner

Walla Walla Public Schools		
364 South Park Street Walla Walla, WA 99362		
Mike Kay	*(509) 526-1873*	*mkay@wwps.org*
Wade Smith	*(501) 510-0260*	*wsmith@wwps.org*

Design Team (A/E)

MSI Engineers		
108 N Washington St, Ste. 505 Spokane, WA 99201		
Jess Stauffenberg		*jess@msi-engineers.com*
Amber Wood	*(509)624-1050*	*amber@msi-engineers.com*

Construction Manager (CM)

Wenaha Group		
100 N Morain #210 Kennewick, WA 99336		
Heath Gardner	*(509) 619-5206*	*heath@wenahagroup.com*
Rick Ahrens	*(509)460-7093*	*ricka@wenahagroup.com*

General Contractor (GC)

Jackson Contractor Group, Inc.		
PO Box 967 Missoula, MT 59806		
Collin Okerlund	*(509)505-5785*	*Collino@jacksoncontractorgroup.com*
Andy Semprimoznik	*(509)505-5785*	*andys@jacksoncontractorgroup.com*

Contractors

Mechanical Contractor

Bruce Mechanical		
5115 W Brinkley rd. Ste C Kennewick, WA 99338		
Chad Sugden	*(509)727-8496*	*chad@bruceinc.com*

Electrical Contractor

MM Harrison Electric Co.		
911 N Sumner St Colfax, WA 99111		
Mark Harrison	*(509)710-5564*	*markh@mmharrison.com*

Controls Contractor

Standard Plumbing Heating Controls Corp.		
10419 E Trent Ave Spokane, WA 99206		
Steve Montagne	*(509)992-1717*	*stevem@sphcontrols.com*

Plumbing Contractor

JRT Mechanical		
2211 SE Grave AVE Battle Ground, WA 98604		
Matt Massie	*(360)904-7748*	*mattm@jrtmechanical.com*

TAB Contractor

TestComm		
2211 E Sprague ave Spokane, WA 99202		
Jerry Ensminger	*(509)533-0498*	*jerrye@testcommllc.com*

Commissioning Agent

McKinstry LLC		
850 E Spokane Falls Blvd, Suite 100 Spokane, WA 99202		
Garrett Husky	*(509) 319-0003*	*garretth@mckinstry.com*
Cody Murdock	*(509) 386-0551*	*codym@Mckinstry.com*
Chase Schmidt	*(509) 991-9485*	*chasesc@mckinstry.com*

3.2 OWNER'S RESPONSIBILITIES

Below are the Owner's responsibilities by phase:

Design Phase

- Select Commissioning Agent
- Develop Owner's Project Requirements (OPR) and provide to Design Team and Commissioning Agent
- Review and provide feedback to CxA on the Commissioning Plan

Construction Phase

- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Review and provide feedback to CxA of the test procedures
- Ensure points, parameters, and alarms are established as necessary for the CxA to monitor systems remotely
- Attend progress meetings to observe and provide direction on open issues
- Conduct periodic site visits; Report any issues to CxA for documentation and follow-up
- Witness Start-up Testing, if desired
- Identify Operations staff as early as possible and encourage their involvement in the commissioning process
- Periodically include Operations staff in site inspections
- Witness/participate in FPT at Owner's discretion
- Work with CxA, A/E, and Contractor to resolve issues

Post Construction Phase

- Ensure Operations staff is available for training
- Review Final Commissioning Report
- Participate in Lessons Learned Session with CxA

3.3 A/E'S RESPONSIBILITIES

Below are the A/E's responsibilities by phase:

Design Phase

- Review Commissioning Plan and provide feedback to CxA
- Provide Commissioning Team with written BOD narrative prior to the start of DD's
- The A/E is responsible for providing the CxA with a copy of the Design Documents (about *90*% complete) for the commissioning review. The A/E should allow at least three weeks for a design review.
- The A/E is responsible for providing the CxA with a copy of the Construction Documents (about *50*% complete) for the commissioning review.
- The A/E team will address/incorporate the CxA's review comments
- The A/E team will review and incorporate commissioning specifications into the construction documents
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.

Construction Phase

- Review submittals, shop drawings, and product data; forward copies to CxA
- Review commissioning test procedures and provide feedback
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Consult on and resolve any design-related issues that arise during acceptance testing
- Mechanical Design Engineer shall review and approve balancing reports

Post Construction Phase

- Provide updated as-builts, one-line diagrams, and sequence of operations to CxA
- Provide final Basis of Design (BOD) to CxA

3.4 PRIME / GENERAL CONTRACTOR'S RESPONSIBILITIES

Below are the General Contractor's (GC) and Contractors' responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents. In general, the GC is responsible to ensure all their contractors support and meet the requirements of the commissioning process.

Design Phase

- The CM is responsible for scheduling and cost estimating
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Incorporate Commissioning Schedule into Master Construction Schedule

Construction Phase

- Provide equipment submittals to CxA in a timely manner for review
- Install equipment per manufacturer and construction specifications
- Review commissioning test procedures and provide feedback to CxA
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, field changes, etc.
- Provide copy of O&M Manual, updated drawings, final submittals, record product data, and other pertinent documents to the CxA for review
- Assist CxA with coordination of Prime Contractors for testing
- Assist Prime Contractors with completing commissioning test documents as directed by the CxA
- Complete Pre-Start Tests and inform CxA equipment is ready for start-up
- Execute Start-Up Tests under direction of CxA
- Assemble O&M Manual and provide copies to CM or CxA
- Execute FPT under direction of CxA

Post Construction Phase

- Conduct training for Operations staff as coordinated by CxA
- Provide copy of training material to CxA

3.5 CONTRACTOR'S RESPONSIBILITIES

Below are the Contractor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxA including but not limited to submittals, O&M materials, completed Pre-Functional checklists, proposed startup sheets, completed startup documentation and TAB reports
- Coordinate and schedule Factory Witness Testing and all other commissioning activities with the CxA and GC
- Notify the CxA when systems and assemblies are ready for startup and Functional Testing
- Provide O&M materials and training as detailed in the specifications
- Perform startup of equipment at the project site
- Execute Pre-Functional checklists, Functional Performance Testing and Integrated Systems Testing
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contract Documents, and Functional Performance Test Procedures
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Work with Owner and CxA to resolve issues as identified

3.6 EQUIPMENT VENDOR'S RESPONSIBILITIES

Below are the Vendor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxA including, but not limited to; submittals, O&M materials, completed Pre-Functional checklists, and startup documentation (Factory Authorized Start-Up sheets)
- Coordinate and schedule commissioning activities with the CxA and GC
- Execute Pre-Functional checklists as systems are installed and provide completed checklists to the CxA
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contracts Documents, and Functional Performance Test Procedures
- Perform start-up of equipment utilizing Factory Authorized Start-Up sheets
- Execute Functional Performance Testing and Integrated Systems Testing under the direction of the CxA
- Demonstrate the performance of assemblies and/or operation of systems to the CxA as requested
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Implement the Training Plan as approved by the CxA

Section 3

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 1:21 PM	**Root Cause**	

Description

M6-05 Detail 1: Please confirm that this unit doesn't have to meet WSEC C403.2.11.5 for variable fan speed. If this code applies, please consider modifying the sequence and also providing accurate OSA airflow monitoring to allow for simple damper control.

Location	<Top level>
Location Detail	

Comments for ID 000001

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:35 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.
Garrett Husky (garretth@mckinstry.com) 11 Mar 2021 12:10 PM	9/15/20 BP. OSA Airflow station shown on drawing. Sequence still calls for constant volume air flow.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 1:23 PM	**Root Cause**	

Description

M0-02 HRU Schedule: Please consider eliminating the HRU return air duct smoke detectors as per WAC 51-52-0606 which references IMC 606.2.1 (Exception #2), unless this is a specific requirement of the District.

Location	<Top level>
Location Detail	

Comments for ID 000002

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:36 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 1:24 PM	**Root Cause**	

Description

M0-02 Air Separator Schedule: The flow listed for this unit seems significantly more than what will be seen in the loop it serves, is this by design?

Location	<Top level>
Location Detail	

Comments for ID 000003

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:36 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 1:27 PM	**Root Cause**	

Description

M6-05 Detail 1: Does this detail and sequence apply to both the AHU as well as the RTUs?

Location	<Top level>
Location Detail	

Comments for ID 000004

Cody Murdock (codym@mckinstry.com)
10 Jul 2020 11:02 AM

Bid set of drawings shows detail M6-05 detail 1 is for AHU and RTU's.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 3:40 PM	**Root Cause**	

Description

M0-02 Pump Schedule: Should Note 2 be applied to the boiler circulation pumps?

Location	<Top level>
Location Detail	

Comments for ID 000005

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:36 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 3:43 PM	**Root Cause**	

Description

M0-03: Will a basis of design ventilation air valve be established?

Location	<Top level>
Location Detail	

Comments for ID 000006

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:36 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 3:58 PM	**Root Cause**	

Description

M0-02 Pump Schedule: The Cooling Tower Pumps appear to be undersized based on the Cooling Tower Schedule.

Location	<Top level>
Location Detail	

Comments for ID 000007

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:37 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 3:59 PM	**Root Cause**	

Description

M5-01: Please consider providing a complete (mechanical) hydronic riser diagram for system clarity.

Location	<Top level>
Location Detail	

Comments for ID 000008

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:37 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Jun 2020 4:05 PM	**Root Cause**	

Description

M6.02 Detail 1: For units without CO2 sensors, will two separate ventilation damper positions need to be programmed (and established by TAB) to accommodate the different fan speeds?

Location	<Top level>
Location Detail	

Comments for ID 000009

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:37 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:04 AM	**Root Cause**	

Description

M2-03: Is there a need for balance dampers in the main 24" trunk line of RTU-3 gym ductwork to proportion between the two sides of the gym? I'm not sure that General Note 12 would accommodate them if they're needed.

Location	<Top level>
Location Detail	

Comments for ID 000010

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:37 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.
Garrett Husky (garretth@mckinstry.com) 11 Mar 2021 12:11 PM	9/15/20 Still none show on drawing

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:09 AM	**Root Cause**	

Description

M2-03: It's unclear how this area of the building will be relieved/exhausted. Will this be a plenum return back to DOAS-1?

Location	<Top level>
Location Detail	

Comments for ID 000011

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:37 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:11 AM	**Root Cause**	

Description

M4-01: RTUs 1& 2 are within close proximity to EFs 1 & 2. Please confirm we'll be able to maintain the code-required minimum 10' distance between the outside air openings of those units and the exhaust fans. Also, sheet P2-30 appears to indicate there will be a new VTR very near RTU-2; has this been coordinated?

Location	<Top level>
Location Detail	

Comments for ID 000012

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:38 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:14 AM	**Root Cause**	

Description

M2-04: Is there an existing dryer duct and penetration that will be reused in Storage room 403?

Location	<Top level>
Location Detail	

Comments for ID 000013

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:38 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:20 AM	**Root Cause**	

Description

M2-05: Is there a need for any tempering in Storage 502, as it also appears to be a fire riser & domestic water room?

9/15/20 BP. EUH-4 for heating

Location	<Top level>
Location Detail	

Comments for ID 000014

Garrett Husky (garretth@mckinstry.com)
11 Mar 2021 12:11 PM

9/15/20 BP. EUH-4 for heating

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:22 AM	**Root Cause**	

Description

M2-07: Will tempering or ventilation be provided for workroom 721?

Location	<Top level>
Location Detail	

Comments for ID 000015

Cody Murdock (codym@mckinstry.com) 10 Jul 2020 12:28 PM	Tempering and ventilation ductwork has been included on the bid set to the work room 721.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:32 AM	**Root Cause**	

Description

P0-02: Will expansion tanks be required for each of the domestic water loops? They're not shown in the schedule, and don't appear to be indicated in Room 502. (They do appear in Detail 7 of P5-01 and Detail 1 of P5-02)

Location	<Top level>
Location Detail	

Comments for ID 000016

Cody Murdock (codym@mckinstry.com)
10 Jul 2020 12:34 PM

Expansion tank has been added to bid drawing P5-01 detail 7.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:45 AM	**Root Cause**	

Description

M0-02: Please coordinate with electrical regarding the requirement for stranded wire between the indoor and outdoor Ductless Split System AC Units.

Location	<Top level>
Location Detail	

Comments for ID 000017

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:38 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:53 AM	**Root Cause**	

Description

M5-03: Please consider adding pump details for this project.

9/15/20 M5-03 detail 10 Vertical In-line pump detail added

Location	<Top level>
Location Detail	

Company	MSI Engineers, Inc	**Status**	Closed
Type	Permit Set Cx Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 9:53 AM	**Root Cause**	

Description

Please consider coordinating airflow measuring and display devices between spec sections 23 72 19 and 23 09 23. I would recommend utilizing the controls spec; requiring Ebtron Gold AFMS.

Location	<Top level>
Location Detail	

Comments for ID 000019

Garrett Husky (garretth@mckinstry.com) 14 Apr 2022 8:38 AM	MSI never responded to Cx comments. It is assumed that best practices and specifications were met prior to final design.

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	20 Jul 2021 12:13 PM	**Root Cause**	

Description

Area 7 mezzanine over north west corridor. Duct work is resting/rubbing on insulated hydronic piping.

Location	<Top level>
Location Detail	

Attached Images for ID 000020

2021-07-20 12:14:55

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	02 Sep 2021 10:10 AM	**Root Cause**	

Description

Multiple locations, ie,HP-44, plastic fastener for condensate tubing has broken or is missing, consider using metal clamps

Location	<Top level>
Location Detail	

Comments for ID 000021

bryan Perkins (bryanper@mckinstry.com)
06 Jan 2022 9:49 AM

Per engineers direction, Jess MSI, the flexible hose needs to be replaced wilts a ridged copper adaptor. Another issue will be created.

Attached Images for ID 000021

2021-09-02 10:12:13

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	02 Sep 2021 10:15 AM	**Root Cause**	

Description

Multiple locations- Heat pump condensate lines need supports

Location	<Top level>
Location Detail	

Attached Images for ID 000022

2021-09-02 10:16:03

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	07 Oct 2021 12:35 PM	**Root Cause**	

Description

Boiler safety switches are missing. Boilers cannot be put into service until the safety switches have been installed and the system has passed Boiler inspection.

Location	<Top level>
Location Detail	

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	07 Oct 2021 12:36 PM	**Root Cause**	

Description

Boiler Supply temp header sensor is not installed. the boilers need a sensor in the system supply header in order to control to supply loop temperature.

Location	<Top level>
Location Detail	

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	27 Oct 2021 12:07 PM	**Root Cause**	

Description

Main gym duct sock- pleas ensure that the duct sock does not make contact with the basketball hoop frame when fully inflated

Location	<Top level>
Location Detail	

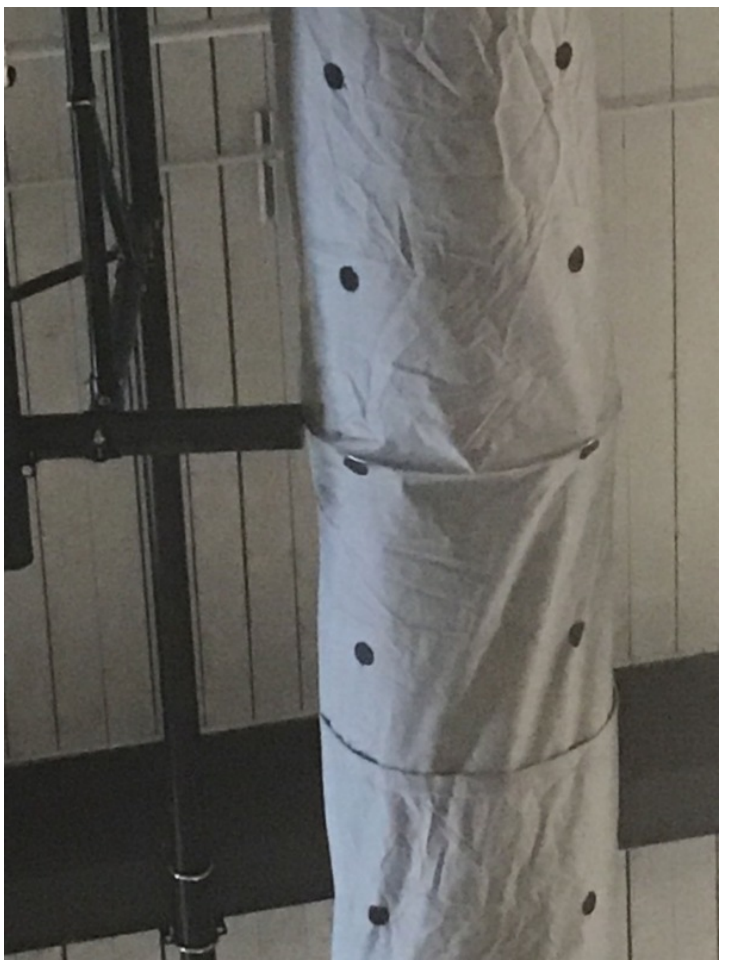
Comments for ID 000025

bryan Perkins (bryanper@mckinstry.com)
28 Oct 2021 9:11 AM

Resolved

Attached Images for ID 000025

2021-10-28 09:12:05



2021-10-27 12:09:14

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	27 Oct 2021 12:21 PM	**Root Cause**	

Description

Mech room hydronic pumps- Consider changing the switching frequency in the VFD to eliminate excessive noise

Location	<Top level>
Location Detail	

Comments for ID 000026

Cody Murdock (codym@mckinstry.com) 20 Jun 2022 10:39 AM	Per email from Chris Flippo the 3" Spring Check valve was malfunctioning in this space and it has been replaced with a new 3" wafer check valve. McKinstry to verify noise is eliminated on next site visit.

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	28 Oct 2021 9:54 AM	**Root Cause**	

Description

Hot water heater room- there is excessive chattering coming from the check valve and grinding coming from the recirc pump

Location	<Top level>
Location Detail	

Comments for ID 000027

bryan Perkins (bryanper@mckinstry.com) 12 Apr 2022 3:54 PM	Resolved, check valve was replaced
bryan Perkins (bryanper@mckinstry.com) 01 Feb 2022 9:26 AM	JRT is in process of resolving

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	28 Oct 2021 10:38 AM	**Root Cause**	

Description

AHU-1 return air premium is covered in paint overspray dust, recommend cleaning AHU and ductwork before unit is run. This dust could load the heat wheel.

Location	<Top level>
Location Detail	

Comments for ID 000028

bryan Perkins (bryanper@mckinstry.com) 28 Oct 2021 11:21 AM	Worker went in with a shop vac and got what he could. Recommend checking filters regularly and changing offer to prevent loading of the heat wheel.

Attached Images for ID 000028

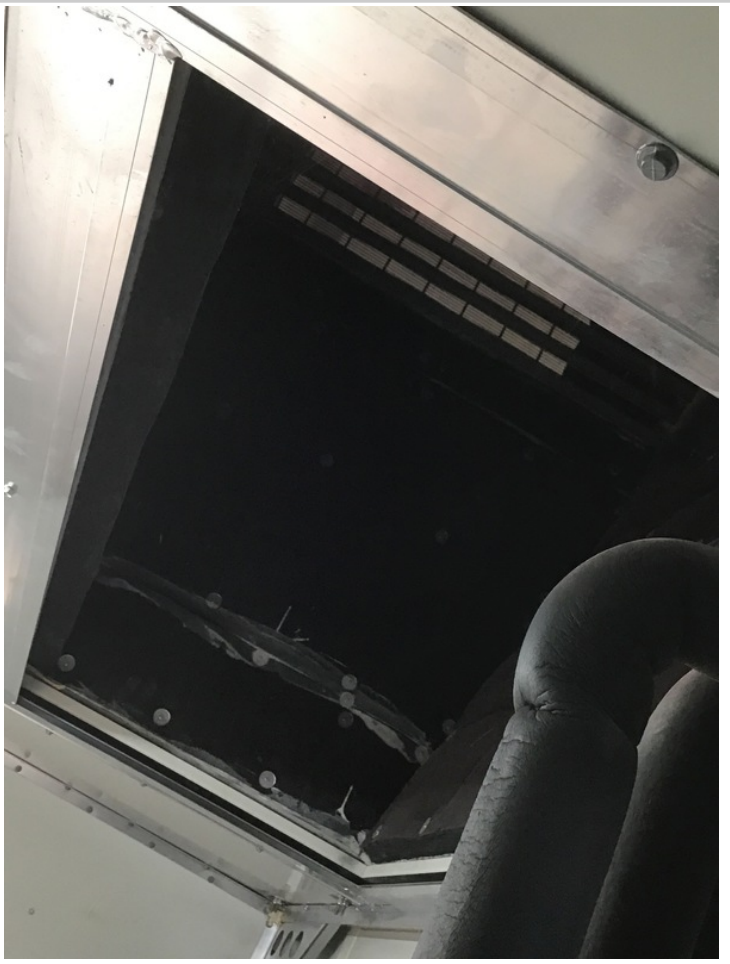
2021-10-28 11:22:19

2021-10-28 11:22:10

2021-10-28 11:13:41

2021-10-28 10:42:54

2021-10-28 10:41:14



2021-10-28 10:41:12

2021-10-28 10:40:56

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	28 Oct 2021 12:26 PM	**Root Cause**	

Description

AHU-1 supply ductwork is missing seals at duct junctions and at connection to the unit

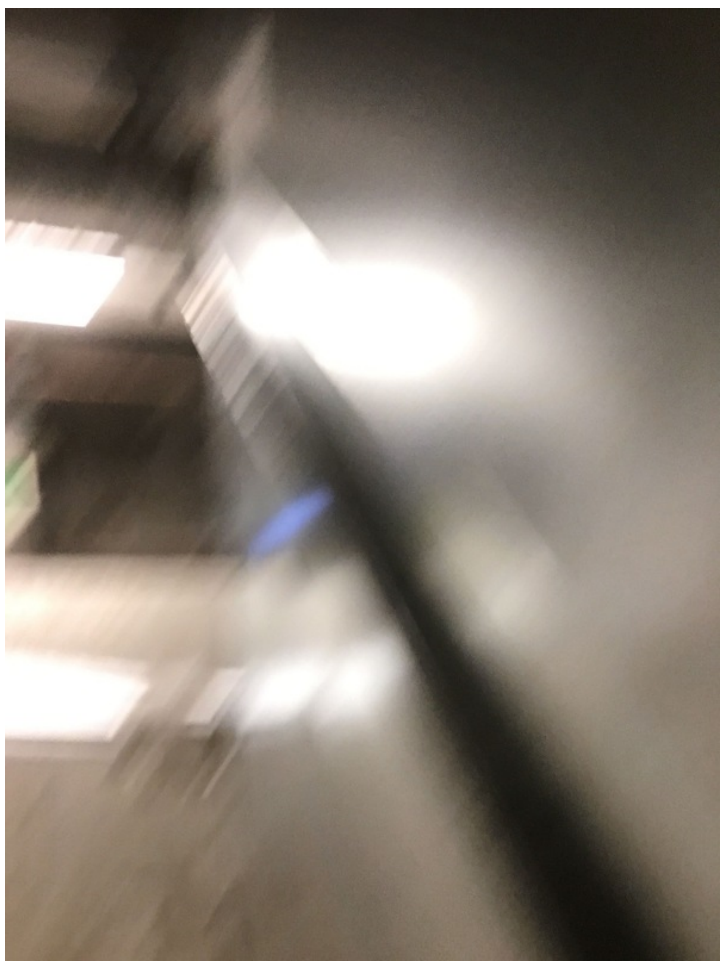
Location	<Top level>
Location Detail	

Comments for ID 000029

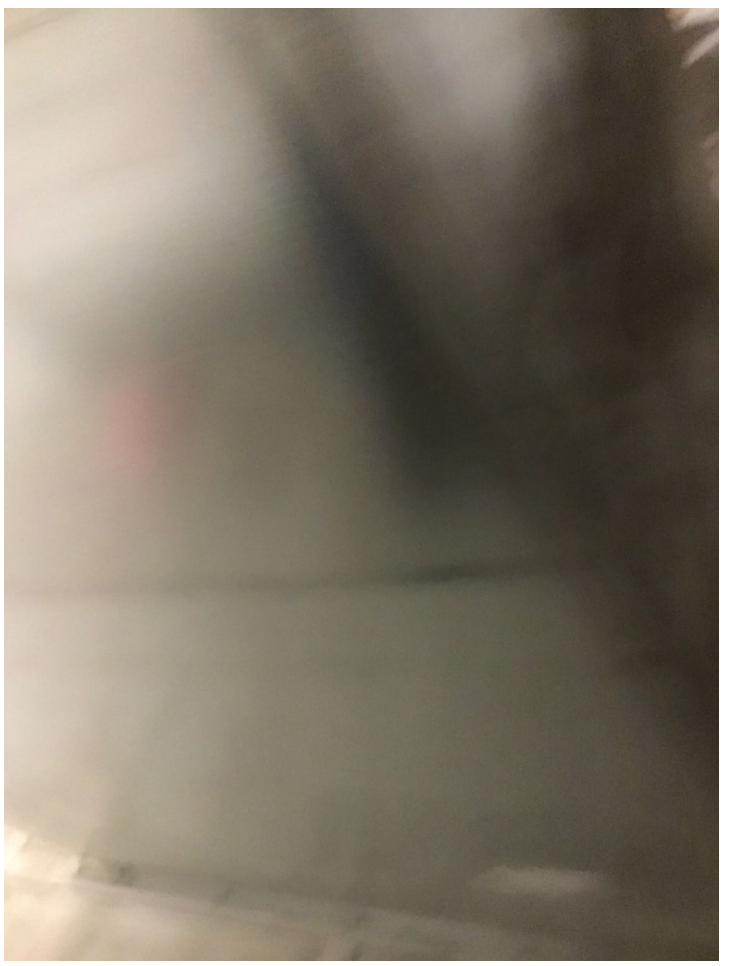
bryan Perkins (bryanper@mckinstry.com)
10 Mar 2022 10:06 AM

Joints have been sealed

Attached Images for ID 000029

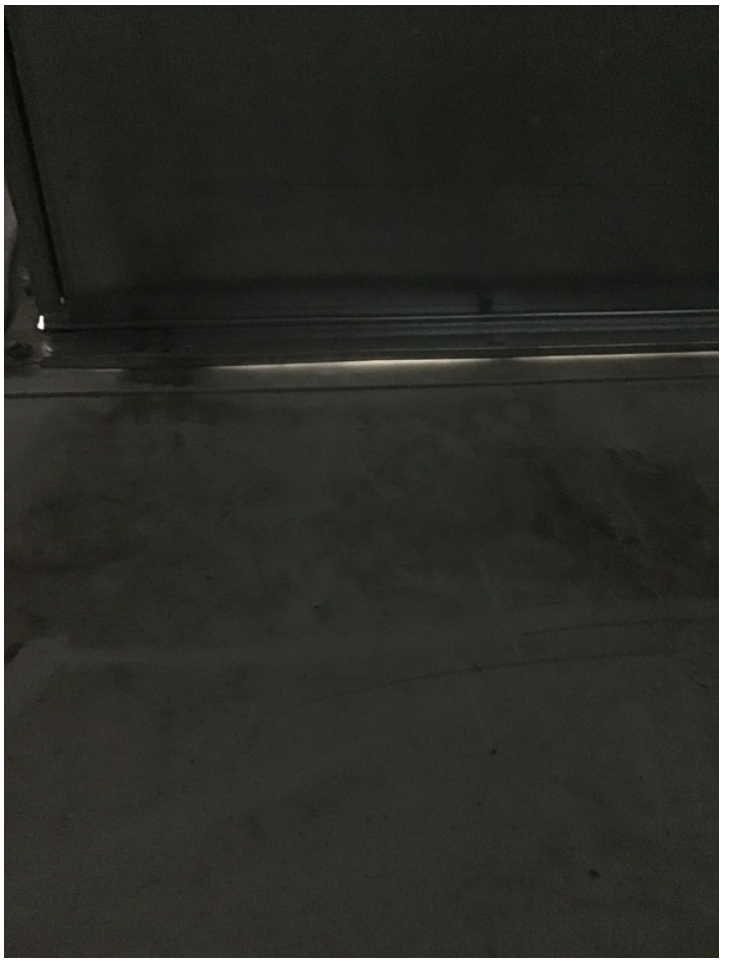


2022-02-01 09:41:26



2022-02-01 09:41:13

2022-02-01 09:41:03



2021-10-28 12:28:01

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	10 Nov 2021 11:08 AM	**Root Cause**	

Description

RTU’s and DOAS need to have condensate traps installed and primed.

Location	<Top level>
Location Detail	

Attached Images for ID 000030

2021-11-10 11:10:08

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	10 Nov 2021 11:16 AM	**Root Cause**	

Description

RTU-2 supply fan VFD failed. Part has been ordered

Location	<Top level>
Location Detail	

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	10 Nov 2021 11:31 AM	**Root Cause**	

Description

RTU’s Hydonic piping touching sides of the cutouts and electrical conduit

Location	<Top level>
Location Detail	

Attached Images for ID 000032

2021-11-10 11:34:14

2021-11-10 11:34:00

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	15 Dec 2021 12:03 PM	**Root Cause**	

Description

Multiple locations-Area 5- Hydronic piping insulation is not complete/sealed.

Location	<Top level>
Location Detail	

Comments for ID 000033

bryan Perkins (bryanper@mckinstry.com)
12 Apr 2022 3:53 PM

Resolved

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	29 Dec 2021 11:12 AM	**Root Cause**	

Description

Duplicate- Standard to re program. Confirm that three units need to have 'override' call for corresponding unit to go into occupied mode when on unoccupied schedule.

Location	Pioneer Middle School > Roof
Location Detail	

Equipment Name	DOAS-1
Equipment Barcode	

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	29 Dec 2021 11:13 AM	**Root Cause**	

Description

Standard to Confirm and program- that three units need to have 'override' call for corresponding unit to go into occupied mode when on unoccupied schedule.

Location	Pioneer Middle School > Roof
Location Detail	

Equipment Name	DOAS-1
Equipment Barcode	

Comments for ID 000035

Cody Murdock (codym@mckinstry.com) 20 Jun 2022 1:08 PM	Currently set for (8) units (adj) to override for a unit to allow an RTU/AHU/DOAS to go back into occupied mode. SoO calls out "several".

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	29 Dec 2021 1:13 PM	**Root Cause**	

Description

Steve (Standard) to modify program to meet Sequence of opps.

With the unit in unoccupied mode, press the occupancy override button on single unit. Confirm the system remains in unoccupied mode.

Location	Pioneer Middle School > Roof
Location Detail	

Equipment Name	DOAS-1
Equipment Barcode	

Comments for ID 000036

Cody Murdock (codym@mckinstry.com) 20 Jun 2022 1:11 PM	McKinstry to re-test.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Not Used	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	29 Dec 2021 1:14 PM	**Root Cause**	

Description

Steve (Standard) to modify program to meet Sequence of opps.

With the unit in unoccupied mode, press the occupancy override button on two units fed by the corresponding DOAS. Confirm the system goes to occupied mode.

Location	Pioneer Middle School > Roof
Location Detail	

Equipment Name	DOAS-1
Equipment Barcode	

Comments for ID 000037

Cody Murdock (codym@mckinstry.com) 20 Jun 2022 1:11 PM	McKinstry to verify in field.

Company	<not set>	**Status**	Closed
Type	Not used	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	06 Jan 2022 9:49 AM	**Root Cause**	

Description

The flexible clear hose on all horizontal units needs to be replaced with a ridged soldered copper fitting, per Jess MSI.

Location	<Top level>
Location Detail	

Comments for ID 000038

bryan Perkins (bryanper@mckinstry.com) 19 Jan 2022 9:18 AM	After walk through Jess is considering approving the condensate lines as installed. Awaiting written approval

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 9:24 AM	**Root Cause**	

Description

Provided Air handler Air Flow stations are not capable of outputting the measured CFM. they provide a velocity pressure which must then be used to calculate CFM in the program. Steve (Standard) is working with Bruce mechanical to resolve.

Location	<Top level>
Location Detail	

Comments for ID 000039

Cody Murdock (codym@mckinstry.com) 19 Oct 2022 10:20 AM	AFM stations are reading acceptable cfm.
Cody Murdock (codym@mckinstry.com) 02 Sep 2022 9:08 AM	9/1 All RTUs are reading 0.0 cfm air flow with fans running and dampers open.
Cody Murdock (codym@mckinstry.com) 20 Jun 2022 12:50 PM	BAS reflects calculations between VP and CFM but it does not appear to be correct. Preliminary TAB report shows RTU-1 supplying 3845 CFM and graphics show 238 cfm at 95% fan speed.

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 9:26 AM	**Root Cause**	

Description

The RTU's were provided with 2 position damper actuators on the bypass dampers. modulating dampers are required for the unit to function properly.

Location	<Top level>
Location Detail	

Comments for ID 000040

Cody Murdock (codym@mckinstry.com) 02 Sep 2022 9:09 AM	Complete
bryan Perkins (bryanper@mckinstry.com) 12 Apr 2022 3:51 PM	Bruce Mechanical is installing correct dampers

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 9:59 AM	**Root Cause**	

Description

RTU-2 Exhaust fan is pulling a foreign object into the fan blades when the fan ramps up to high speed making a loud noise and possibly damaging the fan cage.

Location	<Top level>
Location Detail	

Comments for ID 000041

bryan Perkins (bryanper@mckinstry.com) 12 Apr 2022 3:54 PM	Resolved
bryan Perkins (bryanper@mckinstry.com) 19 Jan 2022 10:03 AM	The exhaust fan VFD shut down and the unit is running in full recirc. mode

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 10:04 AM	**Root Cause**	

Description

AC-4 monitoring does not appear to functioning. Zone temp reads 0 degrees F

Location	<Top level>
Location Detail	

Comments for ID 000042

Cody Murdock (codym@mckinstry.com) 03 Nov 2022 7:41 AM	Temp sensor is reading correctly.
Cody Murdock (codym@mckinstry.com) 02 Sep 2022 9:09 AM	9/1 No change.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 10:07 AM	**Root Cause**	

Description

Mechanical drawings do not show a BAS point for monitoring status of the boiler pumps. The district has indicated that they would like the ability to monitor the status.

Location	<Top level>
Location Detail	

Comments for ID 000043

Cody Murdock (codym@mckinstry.com) 02 Sep 2022 9:10 AM	Boiler pumps are monitored on the graphics.
bryan Perkins (bryanper@mckinstry.com) 12 Apr 2022 3:50 PM	Standard submitted change order and is implementing this functionality

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	19 Jan 2022 10:43 AM	**Root Cause**	

Description

DOAS fan VFD's are not setup to auto reset after the door safety switch has been closed. This causes to fans to be locked out until someone manually resets the drives.

Location	<Top level>
Location Detail	

Comments for ID 000044

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 12:26 PM

Verified in the field.

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:46 AM	**Root Cause**	

Description

AHU-1 missing condensate trap

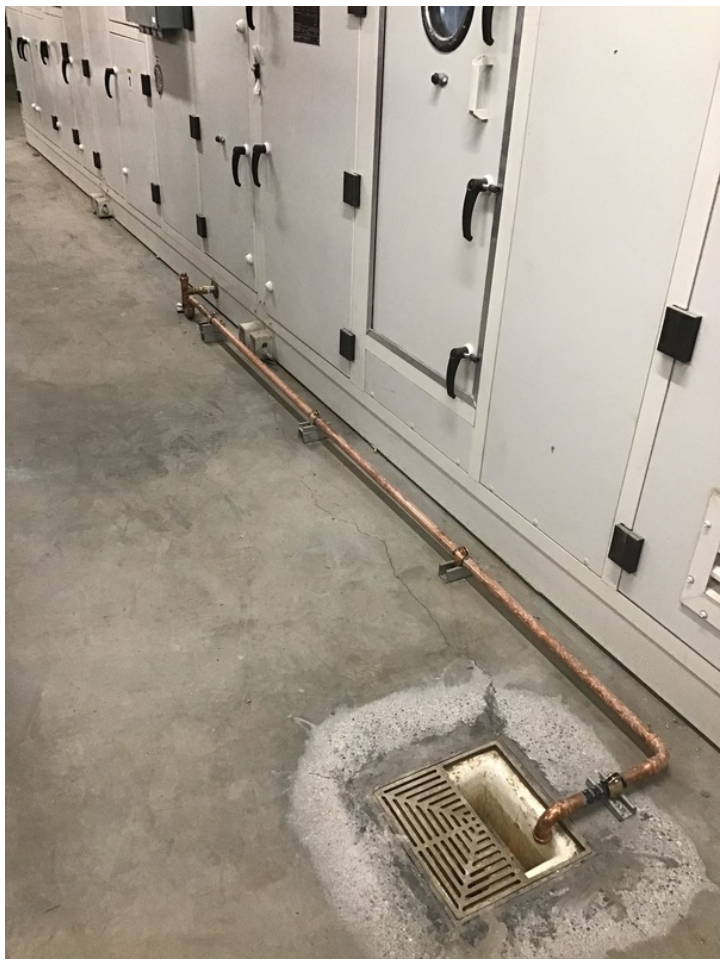
Location	<Top level>
Location Detail	

Comments for ID 000046

bryan Perkins (bryanper@mckinstry.com)
10 Mar 2022 10:06 AM

Resolved

Attached Images for ID 000046



2022-03-10 10:06:58

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:47 AM	**Root Cause**	

Description

Pipe and duct penetrations I’m the mech room have not been sealed

Location	<Top level>
Location Detail	

Comments for ID 000047

Cody Murdock (codym@mckinstry.com) 19 Oct 2022 10:22 AM	Issue resolved per site visit. 9/2/22
Cody Murdock (codym@mckinstry.com) 22 Jun 2022 10:42 AM	Issue still present

Attached Images for ID 000047

2022-06-22 10:41:48

2022-03-10 10:09:59

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:48 AM	**Root Cause**	

Description

Condensate coming from the boilers appears to be rusty. And is leaking from the flue. Condensate hose is also kinked.

Location	<Top level>
Location Detail	

Comments for ID 000048

bryan Perkins (bryanper@mckinstry.com) 10 Mar 2022 10:11 AM	Lines are no longer kinked. The manufacture has stated that the color is normal. Condensate is still leaking from the flue on boiler 1

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:50 AM	**Root Cause**	

Description

Expansion tank is missing relief valves. Drawing M5-03 detail 11

Location	<Top level>
Location Detail	

Comments for ID 000049

bryan Perkins (bryanper@mckinstry.com)
10 Mar 2022 10:07 AM

Resolved

Attached Images for ID 000049

2022-03-10 10:08:03

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:52 AM	**Root Cause**	

Description

Missing automatic air vents in hydronic high points. Drawing M5-04 detail 9.

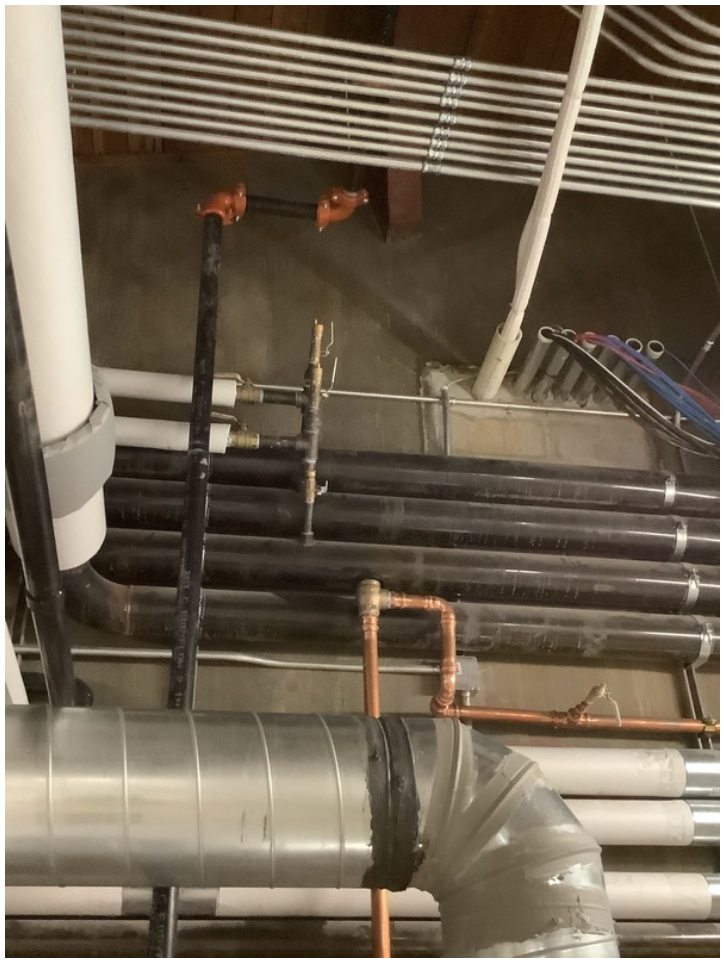
Location	<Top level>
Location Detail	

Comments for ID 000050

Cody Murdock (codym@mckinstry.com)
22 Jun 2022 10:38 AM

Air vents installed in west mechanical room

Attached Images for ID 000050



2022-06-22 10:39:00

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:54 AM	**Root Cause**	

Description

Heat pumps missing drain valve, threaded hose connection and air vents. Drawing M5-04.

Location	<Top level>
Location Detail	

Comments for ID 000051

Cody Murdock (codym@mckinstry.com)
22 Jun 2022 10:39 AM

Drain valves installed.

Attached Images for ID 000051

2022-06-22 10:39:43

2022-03-10 10:08:51

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	01 Feb 2022 10:57 AM	**Root Cause**	

Description

Hydronic pumps BP-1,2 and 3. Missing isolation valves, pressure gauges, snubbers and stop cock valves. Drawing M5-04 detail 10.

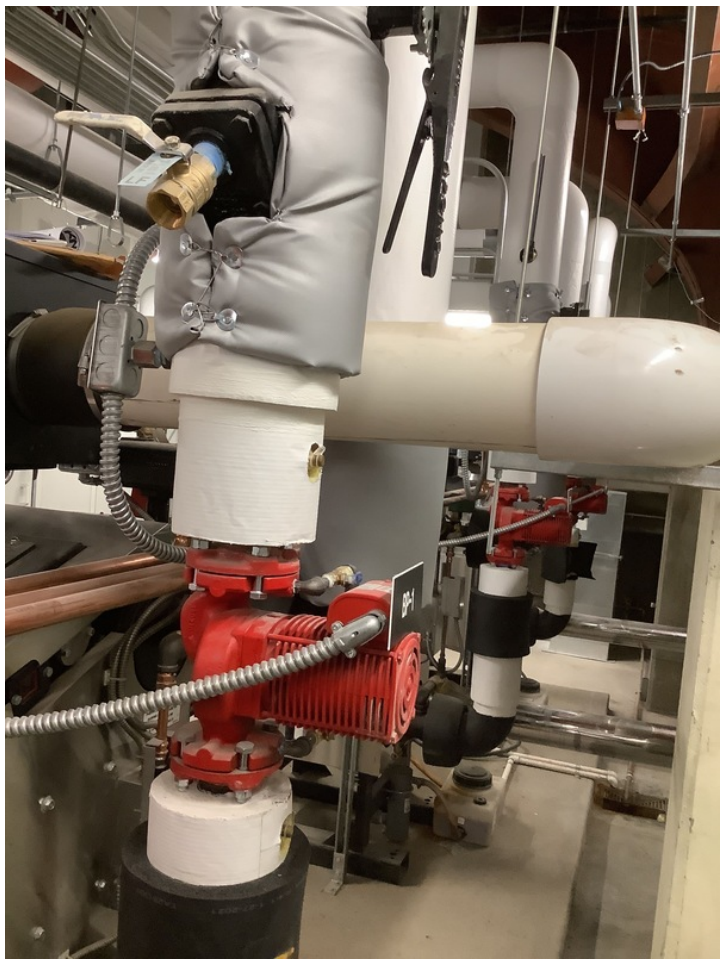
Location	<Top level>
Location Detail	

Comments for ID 000052

Cody Murdock (codym@mckinstry.com)
22 Jun 2022 10:44 AM

Piping has had pertinent accessories added.

Attached Images for ID 000052



2022-06-22 10:45:02

2022-06-22 10:44:53

Company	JRT Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	10 Mar 2022 9:54 AM	**Root Cause**	

Description

Piping insulation incomplete, next to stairs leading to the mech room

Location	<Top level>
Location Detail	

Comments for ID 000053

Cody Murdock (codym@mckinstry.com)
19 Apr 2022 11:25 AM

Insulation completed

Attached Images for ID 000053

2022-04-19 11:25:28

2022-03-10 09:55:53

2022-03-10 09:55:27

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	10 Mar 2022 10:42 AM	**Root Cause**	

Description

Cooling tower wiring wiring incomplete on scheduled start up day.

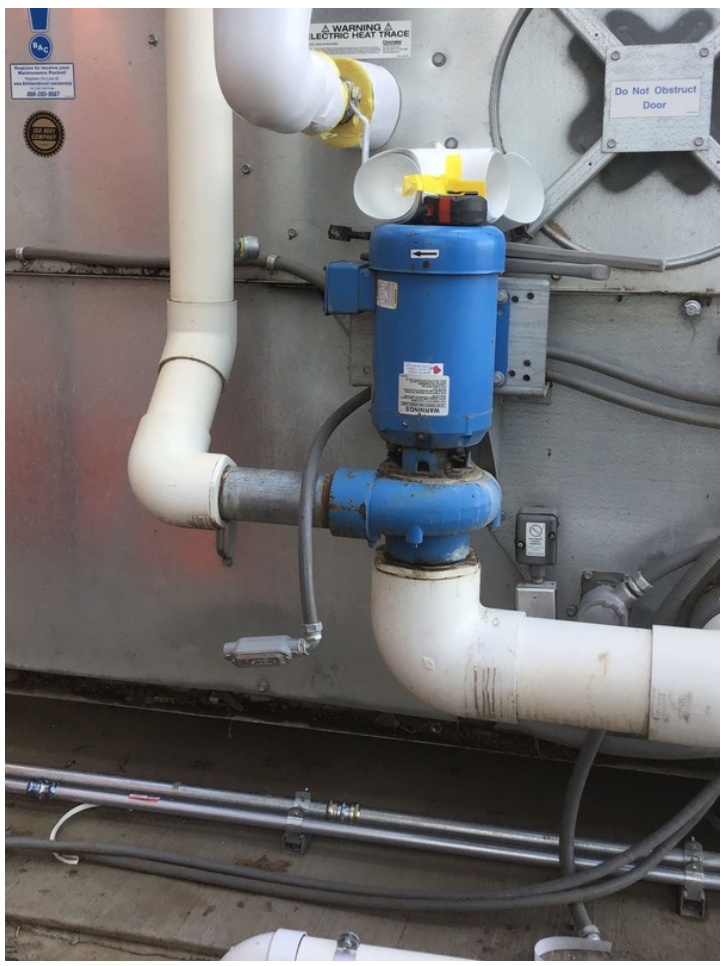
Location	<Top level>
Location Detail	

Comments for ID 000054

bryan Perkins (bryanper@mckinstry.com)
12 Apr 2022 3:53 PM

Startup was rescheduled and completed

Attached Images for ID 000054



2022-03-10 10:43:24

2022-03-10 10:43:15

2022-03-10 10:43:08

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Not Used	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	12 Apr 2022 3:27 PM	**Root Cause**	

Description

Defrost Control: Overide Discharge Air Flow temperature to below 32°F
standard to program

Location	Pioneer Middle School > Roof
Location Detail	

Equipment Name	DOAS-1
Equipment Barcode	

Comments for ID 000055

Cody Murdock (codym@mckinstry.com)
02 Sep 2022 9:12 AM

Freeze protection programming has been updated.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Not Used	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	12 Apr 2022 3:43 PM	**Root Cause**	

Description

B-3 Boiler Pump Status - DI
Standard to add via change order

Location	Pioneer Middle School > Area 8 > 801
Location Detail	

Equipment Name	B-1
Equipment Barcode	

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	18 Apr 2022 9:34 AM	**Root Cause**	

Description

AC-3 Zone temp is currently reading -60.2.

Location	<Top level>
Location Detail	

Comments for ID 000057

Cody Murdock (codym@mckinstry.com) 03 Nov 2022 7:38 AM	Temp sensor reading correctly.
Cody Murdock (codym@mckinstry.com) 02 Sep 2022 9:13 AM	9/1 - No change

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	18 Apr 2022 10:07 AM	**Root Cause**	

Description

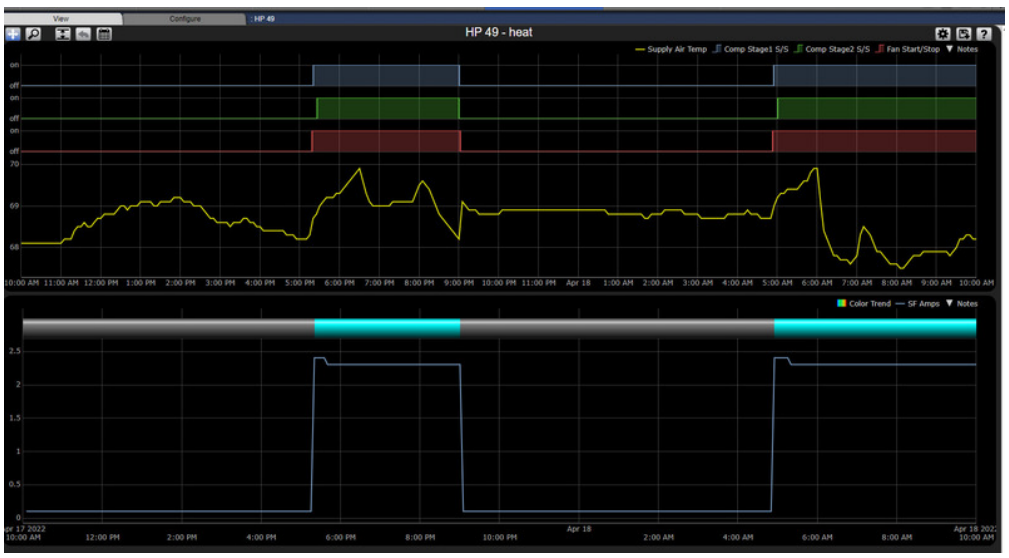
HP-49 Does not appear to be functioning to heat supply air when in stage 2 heating. Currently calling for stage 2 and supply air is 68F. The AV flow is showing damper position at 100% with 0 airflow.

Location	<Top level>
Location Detail	

Comments for ID 000058

Cody Murdock (codym@mckinstry.com) 03 Nov 2022 11:09 AM	Zone temp has been maintained over the last 1 month period. Appears unit is functioning correctly.
Cody Murdock (codym@mckinstry.com) 20 Jun 2022 10:54 AM	Space temperature is over setpoint, unit shows it is calling for cooling, supply air does not reflect any change in the tempered air. Supply air currently 74.5F and space temperature 75.1F.

Attached Images for ID 000058



2022-04-18 10:07:52

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:47 AM	**Root Cause**	

Description

RTU-2 has exhaust fan locked at 75% speed and OSA and RA dampers locked at 60% and 40%.

Location	<Top level>
Location Detail	

Comments for ID 000059

Cody Murdock (codym@mckinstry.com)
20 Jun 2022 12:40 PM

Exhaust fan and OSA and RA Dampers have been put back in AUTO.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:47 AM	**Root Cause**	

Description

RTU-1 has exhaust fan speed locked at 40%.

Location	<Top level>
Location Detail	

Comments for ID 000060

Cody Murdock (codym@mckinstry.com)
20 Jun 2022 12:41 PM

Exhaust fan speed has been returned to AUTO.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:49 AM	**Root Cause**	

Description

AHU-1 heat recovery wheel is showing it is running on graphics but speed is going 0%. Confirm wheel is running.

Location	<Top level>
Location Detail	

Comments for ID 000061

Cody Murdock (codym@mckinstry.com)
29 Aug 2022 10:16 AM

Graphics updated and showing correct status.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:50 AM	**Root Cause**	

Description

DOAS-1 heat recovery bypass is locked on.

Location	<Top level>
Location Detail	

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:51 AM	**Root Cause**	

Description

HP-9 OA valve is showing -1 cfm for airflow.

Location	<Top level>
Location Detail	

Comments for ID 000063

Cody Murdock (codym@mckinstry.com)
13 Dec 2022 1:54 PM

OSA Flow is showing correct value.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:56 AM	**Root Cause**	

Description

EF-2 (Dishwasher) has the hood interlock locked on. Is this programming not compelte?

Location	<Top level>
Location Detail	

Comments for ID 000064

Cody Murdock (codym@mckinstry.com)
02 Sep 2022 9:14 AM

Complete

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 10:57 AM	**Root Cause**	

Description

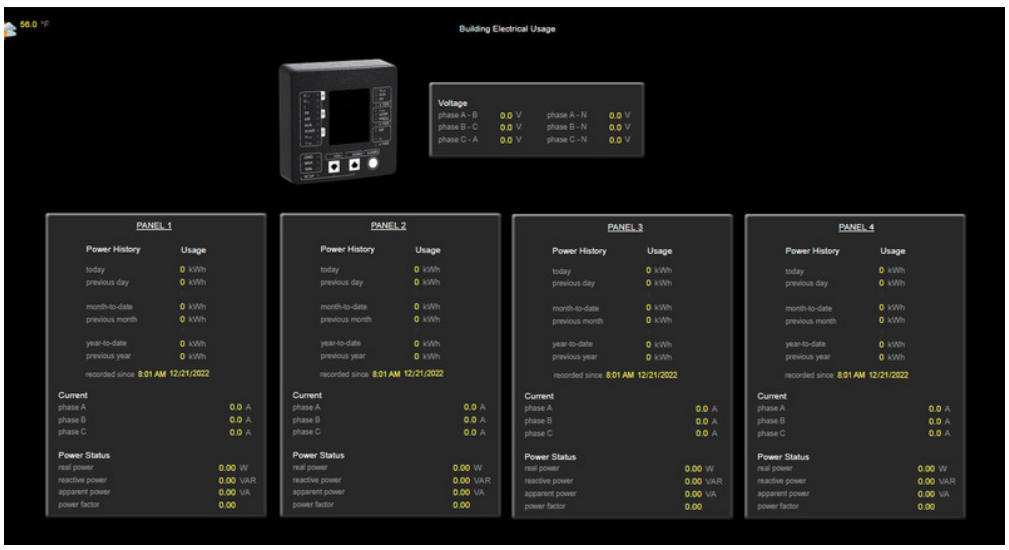
Building energy and building gas metering not completed. SPHC 11/29: will get gas meter fixed today. Just got approval for electric metering.

Location	<Top level>
Location Detail	

Comments for ID 000065

Cody Murdock (codym@mckinstry.com) 23 Feb 2023 12:56 PM	South Meter is reading correctly.
Cody Murdock (codym@mckinstry.com) 22 Feb 2023 8:49 AM	Electrical Meter reading on the North Meters, South is not reading currently.
Cody Murdock (codym@mckinstry.com) 13 Dec 2022 1:56 PM	Gas meter is recording data, electrical is not recording data.

Attached Images for ID 000065



2022-12-27 10:55:27

Company	JRT Mechanical	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jun 2022 11:19 AM	**Root Cause**	

Description

WH-1 DHW pump appears to have failed per BAS.

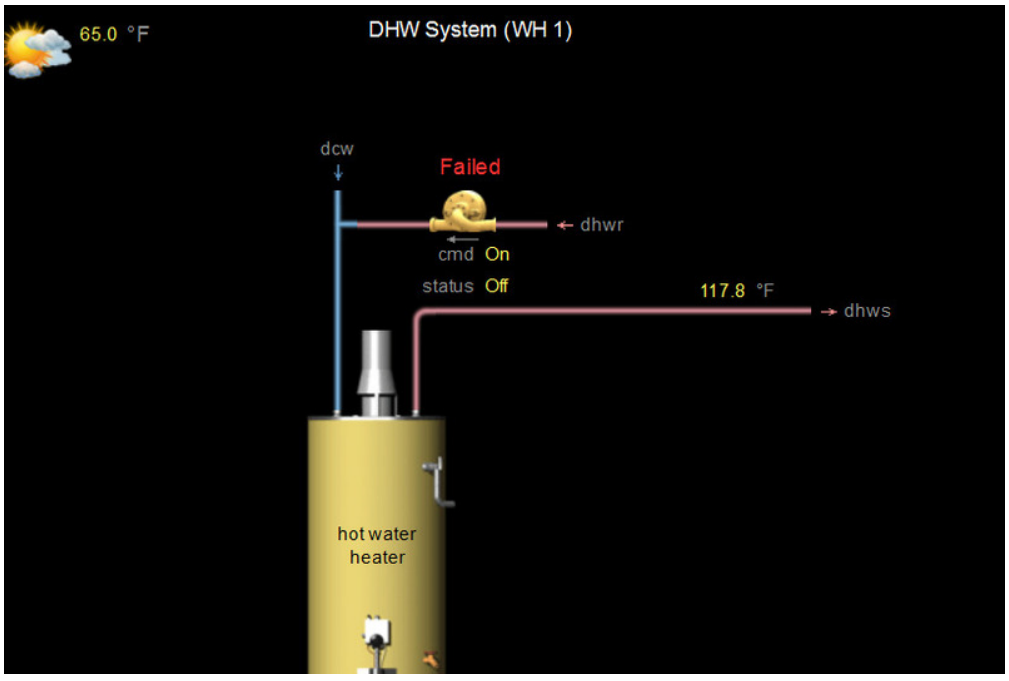
Location	<Top level>
Location Detail	

Comments for ID 000066

Cody Murdock (codym@mckinstry.com)
02 Sep 2022 8:40 AM

Pumps are in operation.

Attached Images for ID 000066



2022-06-20 11:21:07

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	29 Aug 2022 10:19 AM	**Root Cause**	

Description

HRUs do not appear to be running supply fans off of a DSP. Were these removed under the guidance of the design team?

Location	<Top level>
Location Detail	

Comments for ID 000067

Cody Murdock (codym@mckinstry.com)
02 Sep 2022 8:39 AM

Duct static pressure has been programmed to the HRUs

Company	Bruce Mechanical	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Sep 2022 8:38 AM	**Root Cause**	

Description

HP-28 AV flow will not make setpoint. Maxed out at 110 cfm when calling for 850 cfm.
Graphics also not complete.

Location	<Top level>
Location Detail	

Comments for ID 000068

Cody Murdock (codym@mckinstry.com) 06 Jan 2023 8:56 AM	DOAS that serves this unit has been resolved. Airflow issues have been resolved.
Cody Murdock (codym@mckinstry.com) 29 Dec 2022 12:01 PM	HP keeps losing graphics. Controls verified. Steve to get Bruce mechanical involved.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Sep 2022 8:38 AM	**Root Cause**	

Description

HP-31 AV flow will only go to 85 cfm when calling for 700 cfm.

Location	<Top level>
Location Detail	

Comments for ID 000069

Cody Murdock (codym@mckinstry.com)
08 Nov 2022 7:15 AM

Programming has been verified.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Sep 2022 9:17 AM	**Root Cause**	

Description

Programming not complete for the following equipment: ECH-1, ECH-2, BB-4, HP-36, HP-41, EF-9/Kiln

Location	<Top level>
Location Detail	

Comments for ID 000070

Cody Murdock (codym@mckinstry.com) 19 Oct 2022 10:18 AM	HP-36, HP-41, ECH-1, ECH-2 programming has been completed. Per Pam B the Kiln has been removed from the project, this needs to be removed from the graphics.

Company	Bruce Mechanical	**Status**	Closed
Type	Not used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Oct 2022 10:14 AM	**Root Cause**	

Description

HP-49 airflow is reading 1 cfm setpoint is 176 cfm. Verify flow is accurate.

Location	<Top level>
Location Detail	

Comments for ID 000071

Cody Murdock (codym@mckinstry.com) 06 Jan 2023 8:55 AM	Per mechanical drawings the OSA ducts are directly routed to an OSA louver therefore only drawing air through the fan. The ducts are installed per drawing. I will note on executive summary.
Cody Murdock (codym@mckinstry.com) 27 Dec 2022 10:58 AM	No Change as of 12-27-22
Cody Murdock (codym@mckinstry.com) 03 Nov 2022 11:10 AM	Airflow is still reading 1 cfm when set point is 204.

Attached Images for ID 000071

2022-12-27 10:58:17

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Oct 2022 10:19 AM	**Root Cause**	

Description

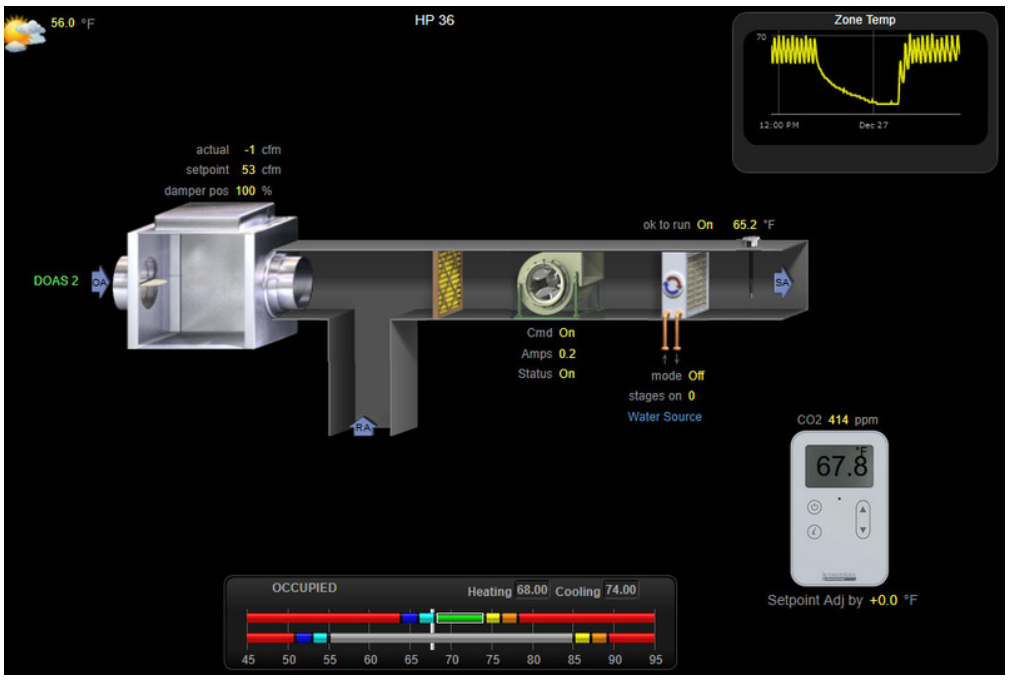
HP-36 airflow is reading -3 cfm. Verify flow monitoring station is reading correctly.

Location	<Top level>
Location Detail	

Comments for ID 000072

Cody Murdock (codym@mckinstry.com) 01 Feb 2023 12:50 PM	Airflow is reading on BAS.
Cody Murdock (codym@mckinstry.com) 27 Dec 2022 11:03 AM	No change as of 12-27-22

Attached Images for ID 000072



2022-12-27 11:03:52

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Nov 2022 8:32 AM	**Root Cause**	

Description

Boiler control and sensing points are not available on BAS. SPHC 11/29: working on today.

Location	<Top level>
Location Detail	

Comments for ID 000073

Cody Murdock (codym@mckinstry.com)
01 Feb 2023 1:49 PM

Boiler information is reading on BAS.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Nov 2022 10:59 AM	**Root Cause**	

Description

DOAS 1 OSA flow monitoring station reading -2.27 kcfm. EA flow monitoring station reading -1.94 kcfm.

Location	<Top level>
Location Detail	

Comments for ID 000074

Cody Murdock (codym@mckinstry.com)
13 Dec 2022 2:00 PM

AFM stations are reading correctly.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Nov 2022 10:59 AM	**Root Cause**	

Description

DOAS 2 OSA and EA flow monitoring station reading 0.00 kcfm.

Location	<Top level>
Location Detail	

Comments for ID 000075

Cody Murdock (codym@mckinstry.com)
13 Dec 2022 2:01 PM

AFM stations are reading correctly.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Nov 2022 11:00 AM	**Root Cause**	

Description

DOAS 2 Static Pressure is reading 0.0 iwc. Supply fan is locked at 50%. Please confirm this is installed and controlling fan speed. SPHC 11/29:bruce working on DOAS noise.

Location	<Top level>
Location Detail	

Comments for ID 000076

Cody Murdock (codym@mckinstry.com) 06 Jan 2023 8:54 AM	Noise issue was resolved and unit is running in auto. Issue resolved.
Cody Murdock (codym@mckinstry.com) 29 Dec 2022 12:32 PM	DSP has not been finalized. Unit making noise due to a loose gasket. Speed has been locked to be resealed 12/30

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Nov 2022 11:03 AM	**Root Cause**	

Description

EF-2 (dishwasher) enable is locked on. SoO calls for this fan to be ran on a schedule, should the enable be tied to the schedule and not the dishwasher?

Location	<Top level>
Location Detail	

Comments for ID 000077

Cody Murdock (codym@mckinstry.com) 29 Dec 2022 12:47 PM	Dishwasher has it’s known fan that runs at the time of use. EF-2 runs on district schedule.

Company	JRT Mechanical	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Nov 2022 1:54 PM	**Root Cause**	

Description

Per Reyna (Jackson) there have been complaints about getting DHW to area 5 (taking 5 mins), Reyna does not believe this system has been balanced at this time.

Location	<Top level>
Location Detail	

Comments for ID 000078

Cody Murdock (codym@mckinstry.com) 01 Feb 2023 12:47 PM	Confirmed by construction team.

Company	Connetix Engineering	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 11:26 AM	**Root Cause**	

Description

Classroom 106 - one light module has a bad sensor and will not turn off

Location	<Top level>
Location Detail	

Comments for ID 000079

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:06 PM

Sensor has been replaced. Issue will be closed.

Attached Images for ID 000079

2023-04-05 12:08:46

Company	Connetix Engineering	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 11:28 AM	**Root Cause**	

Description

Classroom 108 bad lighting module driver.one light stays on at minimum regardless of switch.

Location	<Top level>
Location Detail	

Comments for ID 000080

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:06 PM

Driver / sensor has been installed. Issue will be closed.

Attached Images for ID 000080

2023-04-05 11:28:54

Company	Connetix Engineering	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 11:36 AM	**Root Cause**	

Description

Music 306 - two lights stay on when powered off. Modules may need to be replaced

Location	<Top level>
Location Detail	

Comments for ID 000081

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:06 PM

Modules have been replaced. Issue will be closed.

Attached Images for ID 000081

2023-04-05 11:36:40

Company	Connetix Engineering	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 11:40 AM	**Root Cause**	

Description

Kitchen 203 - one fixture needs a sensor replaced. Light remains on when commanded off.

Location	<Top level>
Location Detail	

Comments for ID 000083

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:07 PM

Sensor has been replaced. Issue will be closed.

Attached Images for ID 000083

2023-04-05 11:41:31

Company	Connetix Engineering	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 11:58 AM	**Root Cause**	

Description

Room P602 (on lighting interface room 620 as labeled) has one lighting module that will not turn off when commanded from the wall switch.

Location	<Top level>
Location Detail	

Comments for ID 000084

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:07 PM

Sensor has been replaced. Issue will be closed.

Attached Images for ID 000084

2023-04-05 12:00:02

Company	Connetix Engineering	**Status**	Closed
Type	Cx Issue	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 12:01 PM	**Root Cause**	

Description

Room 630 has two lighting modules that will not turn off when commanded from the wall switch

Location	<Top level>
Location Detail	

Comments for ID 000085

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:07 PM

Sensors have been replaced. Issue will be closed.

Attached Images for ID 000085

2023-04-05 12:02:19

Company	Connetix Engineering	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 12:14 PM	**Root Cause**	

Description

Aux Gym 312 - one light module will not turn off. Suspect a wiring issue

Location	<Top level>
Location Detail	

Comments for ID 000086

Chase Schmidt (chasesc@mckinstry.com)
30 May 2023 1:08 PM

Issue has been corrected. Issue will be closed.

Attached Images for ID 000086

2023-04-05 12:14:41

Company	Connetix Engineering	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Chase Schmidt (chasesc@mckinstry.com)	**Author's Company**	McKinstry - Cx
Date Created	05 Apr 2023 12:15 PM	**Root Cause**	

Description

Aux Gym 312 - wall switches have been destroyed and power pack is not communicating with the control software. New switches are on order but are not scheduled for delivery until June 30th

Location	<Top level>
Location Detail	

Comments for ID 000087

Chase Schmidt (chasesc@mckinstry.com) 30 May 2023 1:10 PM	New scope being handled by the owner and lighting contractor. This work falls outside of the original scope of work and the issue shall be closed.

Attached Images for ID 000087

2023-04-05 12:16:11

Section 4

Details

ID	000027	**Company**	<not set>
Name	Hydronic Loop Control PTP	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 8 > 801
Created On	28 Mar 2022 9:55 AM	**Equipment Name**	B-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Differential Pressure Sensor - AI	Verified	0
	CT-1 Fan VFD Start/Stop - DO	Pass	0
	CT-1 Fan VFD Speed Signal - AO	Verified	0
	CT-1 VFD Fan Speed Feedback - AI	Verified	0
	CT-1 Fan VFD Alarm - DI	Pass	0
	CT-1 Spray Pump Start/Stop- DO	Pass	0
	CT-1 Spray Pump Status - DI	Pass	0
	Cooling Tower CT-1 Control Valve - DO	Pass	0
	Cooling Water Return Temp - AI	Verified	0
	Cooling Tower Flow Meter - AI	Verified	0
	Heat Pump Loop Water Return Temp - AI	Verified	0
	Cooling Water Supply Temp - AI	Verified	0
	Water Return Temp (T-8) - AI	Verified	0
	B-3 Boiler Pump Status - DI	Pass	1
	Comments		
	Standard to add via change order		
	Outside Air Temperature - AI	Verified	0
	Glycol alarm - AI	Verified	0
	B-3 Fire Rate Feedback - BACNET	Verified	0
	B-3 Gas Valve Status - DI	Pass	0
	B-3 Boiler Enable - DO	Pass	0
	B-3 Boiler Alarm - DI	Pass	0
	Heating Water Supply Temp (T-7) - AI	Verified	0

Item #	Item Text	Response	# Issues
	Water Return Temp (T-6) - AI	Verified	0
	B-2 Boiler Pump Status - DI	Pass	0
	B-2 Fire Rate Feedback - BACNET	Verified	0
	B-2 Gas Valve Status - DI	Pass	0
	B-2 Boiler Enable - DO	Pass	0
	B-2 Boiler Alarm - DI	Pass	0
	Heating Water Supply Temp (T-5) - AI	Verified	0
	Water Return Temp (T-6) - AI	Verified	0
	B-1 Boiler Pump Status - DI	Pass	0
	B-1 Fire Rate Feedback - BACNET	Verified	0
	B-1 Gas Valve Status - DI	Pass	0
	B-1 Boiler Enable - DO	Pass	0
	B-1 Boiler Alarm - DI	Pass	0
	Heating Water Supply Temp (T-5) - AI	Verified	0
	P-1 Pump VFD Start/Stop - DO	Pass	0
	P-1 Pump VFD Speed - AO	Verified	0
	P-1 Pump VFD Speed Feedback - AI	Verified	0
	P-1 Pump VFD Status/Alarm - DI	Pass	0
	P-2 Pump VFD Start/Stop - DO	Pass	0
	P-2 Pump VFD Speed - AO	Verified	0
	P-2 Pump VFD Speed Feedback - AI	Verified	0
	P-2 Pump VFD Status/Alarm - DI	Pass	0
	P-3 Pump VFD Start/Stop - DO	Pass	0
	P-3 Pump VFD Speed - AO	Verified	0
	P-3 Pump VFD Speed Feedback - AI	Verified	0
	P-3 Pump VFD Status/Alarm - DI	Pass	0
	Heat Pump Loop Flow Meter - AI	Verified	0
	Heat Pump Loop Water Supply Temp - AI	Verified	0

Details

ID	000004	**Company**	<not set>
Name	HYDRONIC LOOP FPT	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 8 > 801
Created On	29 Dec 2021 2:27 PM	**Equipment Name**	B-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
	HEAT PUMP FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATION:		
	THE PUMP LOOP SHALL BE OPERATED CONTINUOUSLY IN ORDER TO PROVIDE HEAT REJECTION OR HEAT ADDITION TO THE WATER SOURCE HEAT PUMP H YDRONIC PIPING SYSTEM. DURING SCHOOL YEAR SUMMER SHUT— DOWN, THE SYSTEM MAY BE MANUALLY DISABLED VIA AN OVERRIDE IN THE DDC WORKSTATION.		
	THE DESIGNATED LEAD BUILDING CIRC PUMP SHALL BE ENERGIZED AND PUMP SPEED CONTROLLED THROUGH THE VFD TO SATISFY THE REMOTE DIFFERENTI AL PRESSURE SENSOR(S) SETPOINT, INITIALLY SET AT 10 PSIG BUT ADJUSTED AS REQUIRED		
	DURING T.A.B. ONE PUMP SHALL ALWAYS SERVE AS A BACKUP. EACH PUMP STAGE		
	SHALL HAVE A MINIMUM 5— MIN (ADJ) RUN TIME BEFORE UNLOADING. PUMPS SHALL ROTATE LEAD ON A REGULAR BASIS (WEEKLY OR AS DETERMINED BY THE OWNER). FAILURE OF THE LEAD PUMP SHALL INITIATE AUTOMATIC SWITCH — OVER TO LAG		
	PUMP AND SEND AN ALARM SIGNAL TO THE DDC WORKSTATION.		
	THE CONTROL SYSTEM SHALL MAINTAIN THE TEMPERATURE OF HEAT PUMP WATER LOOP BETWEEN A MINIMUM TEMPERATURE OF 65'F AND A MAXIMUM TEMPERATURE OF 85'F, AS SENSED AT THE SUPPLY LINE SENSOR TI, BY STAGING EITHER THE COOLING TOWER FOR HEAT REJECTION OR THE BOILERS FOR HEAT ADDITION, AS DESCRIBED BELOW.		
	COOLING TOWER:		
	THE HEAT PUMP LOOP SUPPLY TEMPERATURE, T1, SHALL BE MAINTAINED AT OR BELOW THE UPPER TEMPERATURE LIMIT OF 85"F BY STAGING ON THE COOLING TOWER AS FOLLOWS:		
	ON A RISE IN TEMPERATURE ABOVE SETPOINT AT T1 THE COOLING TOWER LOOP PUMP (P— S) SHALL BE ENERGIZED TO ALLOW FLOW TO COOLING TOWER (STAGE—1 HEAT REJECTION BY NATURAL CONVECTION AT THE COOLING TOWER COIL). ON A FURTHER CALL FOR COOLING, COOLINC TOWER 1 (CT—1) FAN SHALL BE ENERCI ZED (STAGE—2 FORCED CONVECTION) AND THE FAN SPEED RAMPED UP SLOWLY VIA THE VFD CONTROLLER TO MAINTAIN SETPOINT AT T1. ON A FURTHER CALL FOR COOLING WITH FANS AT FULL SPEED, COOLING TOWER 1 SPRAY PUMP SHALL BE ENERGIZED (STAGE—3 E VAPOR ATIVE COOLING). AS CALL P-OR COOLING DECREASES THE REVERSE SHALL OCCUR. PROVIDE SUFFICIENT DIFFERENTIALS TO PREVENT SHORT CYCLING OF		
	STAGES.		
	DR YCOOLER OPERATION: WHENEVER THE COOLING TOWER BASIN IS SEASONALLY DRAINED FOR WINTER FREEZE PROTECTION, THE COOLING TOWER HEAT REJECTION SEQUENCE SHALL STILL BE AVAILABLE, EXCEPT THAT THE STAGE—3 SPRAY PUMP WILL BE PREVEN TED FROM OPERATING (PUMP DISABLED AND/OR SUMP LOW LEVEL LOCK— OUT ACTIVATED), AT WHICH TIME THE TOWER WILL CONTINUE TO OPERATE IF NECESSARY AS A DRYCOOLER (RADIATOR) FOR HEAT REJECTION.		
	BOILER CONTROL:		
	THE HEAT PUMP LOOP SUPPLY TEMPERATURE, T1, SHALL BE MAINTAINED AT OR ABOVE THE LOWER TEMPERATURE LIMIT OF 65"F BY STAGING ON THE HOT		

WATER BOILERS AS FOLLOWS:

Item #	Item Text	Response	# Issues

THE MASTER BOILER SHALL BE EN ABLED TO MAINTAIN HEATING WATER SUPPLY TEMPERATURE AS SET BY THE BAS IN ACCORDANCE WITH THE RESET SCHEDULE BELOW (ADJUSTABLE). CONTROL OF THE BOILER CIRC PUMP ON /OFF, BOILER STACING, FIRING RATE, OPTIMIZATION AND LEAD /LAC SHALL BE PROVIDED BY THE ON —BOARD BOILER CONTROLLERS PROVIDED WITH EACH BOILER. BAS CONTRACTOR

SHALL PROVIDE ALL INTERFACE WIRING AND COMMUNICATIONS AND SHALL WORK WITH THE BOILER VENDOR TO SET UP PROGRAM AND SEQUENCING.

FAILURE OF THE BOILER CIRC PUMP SHALL INITIATE AN ALARM DISABLE THE ASSOCIATED BOILER. THE MASTER BOILER ON— BOARD CONTROLS SHALL CONTINUE TO CONTROL THE REMAINING BOILERS.

ALL BOILER CONTROL AND SENSING POINTS SHALL BE AVAILABLE AS READ ONLY VIA THE NETWORK AND SHALL BE DISPLAYED AT THE OPERATORS TERMINAL. PROVIDE A BACNET INTERFACE AS REQUIRED.

THE CONTROL CONTRACTOR SHALL PROVIDE WIRING BETWEEN THE BOILERS AND BOILER PUMPS AS REQUIRED TO OPERATE THE PUMPS PER THE SEQUENCE OF OPERATIONS.

UPON SYSTEM DISABLE, THE HEAT PUMP LOOP PUMPS AND BOILER SHALL BE DISABLED. THE BOILER CIRC PUMP SHALL CONTINUE TO OPERATE FOR 1 MINUTES (ADJ) BEFORE BEING DISABLED.

IN THE EVENT THE DDC CONTROL SYSTEM FAILS, THE DDC PANEL SHALL CONTAIN TWO RELAYS. UPON FAILURE THE RELAYS SHALL DE— ENERGIZE. IN THE

DE— ENERGIZED MODE, (1) RELAY WILL BYPASS THE DDC ENABLE/DISABLE SICNAL.

(1) RELAY SHALL TRANSFER 0—10V SIGNAL FROM THE DDC TO THE EXISTING BOILER'S MOUNTED CON TROLS. THESE RELAYS SHALL BE PROVIDED AND INSTALLED BY CONTROL CONTRACTOR.

BOILER CONTROL:

THE HEAT PUMP LOOP SUPPLY TEMPERATURE, T1, SHALL BE MAINTAINED AT OR ABOVE THE LOWER TEMPERATURE LIMIT OF 65"F BY STAGING ON THE HOT WATER BOILERS AS FOLLOWS:

THE MASTER BOILER SHALL BE EN ABLED TO MAINTAIN HEATING WATER SUPPLY TEMPERATURE AS SET BY THE BAS IN ACCORDANCE WITH THE RESET SCHEDULE BELOW (ADJUSTABLE). CONTROL OF THE BOILER CIRC PUMP ON /OFF, BOILER STACING, FIRING RATE, OPTIMIZATION AND LEAD /LAC SHALL BE PROVIDED BY THE ON —BOARD BOILER CONTROLLERS PROVIDED WITH EACH BOILER. BAS CONTRACTOR

SHALL PROVIDE ALL INTERFACE WIRING AND COMMUNICATIONS AND SHALL WORK WITH THE BOILER VENDOR TO SET UP PROGRAM AND SEQUENCING.

FAILURE OF THE BOILER CIRC PUMP SHALL INITIATE AN ALARM DISABLE THE ASSOCIATED BOILER. THE MASTER BOILER ON— BOARD CONTROLS SHALL CONTINUE TO CONTROL THE REMAINING BOILERS.

ALL BOILER CONTROL AND SENSING POINTS SHALL BE AVAILABLE AS READ ONLY VIA THE NETWORK AND SHALL BE DISPLAYED AT THE OPERATORS TERMINAL. PROVIDE A BACNET INTERFACE AS REQUIRED.

THE CONTROL CONTRACTOR SHALL PROVIDE WIRING BETWEEN THE BOILERS AND BOILER PUMPS AS REQUIRED TO OPERATE THE PUMPS PER THE SEQUENCE OF OPERATIONS.

UPON SYSTEM DISABLE, THE HEAT PUMP LOOP PUMPS AND BOILER SHALL BE DISABLED. THE BOILER CIRC PUMP SHALL CONTINUE TO OPERATE FOR 1 MINUTES (ADJ) BEFORE BEING DISABLED.

IN THE EVENT THE DDC CONTROL SYSTEM FAILS, THE DDC PANEL SHALL CONTAIN TWO RELAYS. UPON FAILURE THE RELAYS SHALL DE— ENERGIZE. IN THE

DE— ENERGIZED MODE, (1) RELAY WILL BYPASS THE DDC ENABLE/DISABLE SICNAL.

(1) RELAY SHALL TRANSFER 0—10V SIGNAL FROM THE DDC TO THE EXISTING BOILER'S MOUNTED CON TROLS. THESE RELAYS SHALL BE PROVIDED AND INSTALLED BY CONTROL CONTRACTOR.

Item #	Item Text	Response	# Issues
	FREEZE PROTECTION:		
	WHEN OUTSIDE AIR TEMPERATURE IS BELOW 15F (ADJ), COOLING TOWER PUMP SHALL OPERATE AT 50% SPEED. COOLING TOWER CONTROL VALVE SHALL BE OPEN.		
	TEST:		
	Setpoints:		
	Verify the heat Pump Water Loop temperature setpoints are set for a minuim of 65F and a maximum of 85F	Pass	0
	Heat Pump Water Loop Pumps:		
	Verify Hydronic loop runs continously unless Manually disabled by DDC overide	Pass	0
	Overide Remote Differential Pressure sensor reading to veriy that the Loop Pump speed ramps both Up and Down to satisfy the differential pressure setpoint	Pass	0
	Verify Loop pumps switch from lead to lag on a schedule determined by the owner	Pass	0
	Simulate Lead pump Failure, Verify lag pump is energized and Pump failure alarm is signaled at the DDc workstation.	Pass	0
	Cooling Tower Control:		
	Override Loop Supply Temperature to 90F, Verify Cooling tower stage 1 is energized (Heat rejection by Natural convection at the cooling tower coil)	Pass	0
	On a further call for cooling verify Cooling tower stage 2 (forced convection) is energized, The fan shall ramp up slowly to maintain setpoint at T1	Pass	0
	with setpoint still not met, Verify stage 3 (evaporative coling) Spray pump 1 is energized.	Pass	0
	Verify sequence is reversed as call for cooling decreases.	Pass	0
	Verify Stage 3 lockout when tower basin is drained	Pass	0
	Override OAT to 10F, Verify cooling tower pump runs at 50% speed and the Cooling Tower Control Valve opens	Pass	0
	Boiler Control:		
	Override Loop Supply temperature to 50F	Pass	0
	Verify Master boiler is enabled to maintain supply temperature according to the reset schedule.	Pass	0
	Verify control of boiler staging, firing rate, boiler circ pump, optimazitation and lead lag by the onboard boiler controls	Pass	0
	Simulate Boiler pump failure, Verify the associated boiler is disabled and an alarm is generated	Pass	0

Item #	Item Text	Response	# Issues
	Verify stand by boiler is enabled	Pass	0
	Verify Boiler pump continues to run for 1 minute after the associated boiler has been	Pass	0
	Verify Boilers control and sensing points are are avaliable on the BAS	Pass	0
	Verify Function or the DDC failure bypass relays	Pass	0

Details

ID	000001	**Company**	<not set>
Name	DOAS PTP	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Roof
Created On	15 Dec 2021 11:04 AM	**Equipment Name**	DOAS-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	0
	OSA Filter Status - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	0
	RA Temp - AI	Verified	0
	Supply Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Supply VFD Speed Control - AO	Verified	0
	Supply VFD Start/Stop - DO	Pass	0
	Supply Fan A Amps - AI	Verified	0
	Supply Fan B Amps - AI	Verified	0
	Exhaust Fan A Amps - AI	Verified	0
	Exhaust Fan B Amps - AI	Verified	0
	Return Air Filter Status- AI	Verified	0
	Exhaust Air VFD Start/Stop - DO	Pass	0
	Exhaust Air VFD Speed Control - AO	Verified	0
	Exhaust Air Flow (cfm) - AI	Verified	0
	Exhaust Temp - AI	Verified	0
	OSA/Exhaust Air Damper - DO	Pass	0

Details

ID	000024	**Company**	<not set>
Name	DOAS PTP	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Roof
Created On	28 Mar 2022 10:06 AM	**Equipment Name**	DOAS-2
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	0
	OSA Filter Status - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	0
	RA Temp - AI	Verified	0
	Supply Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Supply VFD Speed Control - AO	Verified	0
	Supply VFD Start/Stop - DO	Pass	0
	Supply Fan A Amps - AI	Verified	0
	Supply Fan B Amps - AI	Verified	0
	Exhaust Fan A Amps - AI	Verified	0
	Exhaust Fan B Amps - AI	Verified	0
	Return Air Filter Status- AI	Verified	0
	Exhaust Air VFD Start/Stop - DO	Pass	0
	Exhaust Air VFD Speed Control - AO	Verified	0
	Exhaust Air Flow (cfm) - AI	Verified	0
	Exhaust Temp - AI	Verified	0
	OSA/Exhaust Air Damper - DO	Pass	0

Details

ID	000007	**Company**	<not set>
Name	DOAS HRU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Roof
Created On	29 Dec 2021 10:39 AM	**Equipment Name**	DOAS-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues

Sequence of Operation

THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES OF THE SYSTEM

OCCUPIED MODE:

SUPPLY FAN SPEED SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED 2/3 THE DISTANCE DOWN THE LENGTH OF THE SUPPLY DUCT SHALL. COORDINATE EXACT LOCATION WITH BALANCER AND ENGINEER. INITIAL STATIC PRESSURE SETPOINT SHALL 0.75"W. G. OR AS SET DURING BALANCING. SETPOINT SHALL RESET DOWN INCREMENTALLY IF ALL VENTILATION AIR VALVES ARE SATISFIED. EXHAUST FAN SPEED SHALL BE MODULATE TO TRACK THE SUPPLY AIR FLOW CFM WITH AN ADJUSTABLE DIFFERENTIAL OFFSET (LESS AIR FLOW

THAN SUPPLY TO PROVIDE POSITIVE BUILDING PRESSURIZATION).

IF THE SUPPLY AIR TEMPERATURE FALLS BELOW 40'F A LOW TEMPERATURE ALARM SHALL BE INDICATED AT THE CENTRAL MONITORING LOCATION.

IF THE SUPPLY AIR TEMPERATURE FALLS BELOW 30F, AND ADDITIONAL ALARM SHALL BE INDICATED AND THE FANS SHALL DE— ENGERCIZE FOLLOWED BY THE OUTSIDE AIR AND EXHAUST AIR DAMPERS CLOSING.

HEAT RECOVERY OPERATION

DURING THE OCCUPIED MODE THE HEAT RECOVERY CORE SHALL OPERATE TO TEMPER THE INCOMING OUTSIDE AIR TEMPERATURE AS FOLLOWS;

OUTSIDE AIR TEMP. BETWEEN 55 & 75 DEG. F.— THE HR CORE FACE A BYPASS DAMPERS SHALL RE— POSITION TO BYPASS OUTSIDE AIR AROUND THE HR CORE IN ORDER TO AVOID RECOVERING EXHAUST AIR HEAT AND THE UNIT SHALL PROVIDE NEUTRAL "ECONOMIZER" AIR.

OUTSIDE AIR TEMP BELOW 55°F (adjustable)

OUTSIDE AIR TEMP. BELOW 55 DEG. F — THE HR CORE FACE & BYPASS DAMPERS SHALL MODULATE TO DIRECT OUTSIDE AIR THROU GH THE HR CORE IN ORDER TO RECOVER EXHAUST AIR ENERGY (HEAT) SO AS TO PRE—HEAT AND TEMPER THE INCOMING OUTSIDE AIR. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 55 DEC. F.

OUTSIDE AIR TEMP. ABOVE 75 DEG. F — THE HR CORE FACE & BYPASS DAMPERS SHALL RE— POSITION TO DIRECT OUTSIDE AIR THROUCH THE HR CORE IN ORDER TO RECOVER EXHAUST AIR ENERGY (COOLING) SO AS TO PRE— COOL AND TEMPER THE INCOMING OUTSIDE AIR.

DEFROST CONTROL:

WHENEVER THE HR CORE EXHAUST DISCHARGE AIR TEMPERATURE FALLS BELOW 32 DEG. F. FROSTING MAY BE OCCURRING ON THE HUMID, EXHAUST AIR PART OF THE HR CORE SURFACES, DUE TO THE TRANSFER OF COLD ENERGY FROM THE INCOMING OUTSIDE AIR STREAM.

TO PREVENT FROST BUILDUP, THE HR WHEEL CORE OUTSIDE AIR FACE A BYPASS DAMPERS SHALL MODULATE TO BYPASS A PORTION OF THE OUTSIDE AIR AROUND THE CORE, REDUCING HEAT TRANSFER AFFECT, IN ORDER TO LIMIT THE EXHAUST AIR DISCH ARSE AIR TEMPERATURE TO NO LOWER THAN 32 DEC. F.

Item #	Item Text	Response	# Issues
	PRE— COOLING MODE:		
	SEE HEAT PUMP SEQUENCE FOR PRE— COOLING OPERATION. DISCHARGE AIR TEMPERATURE FROM DOAS (HRU) SHALL BE LIMITED TO NO		
	LESS THAN 50 F (ADJ).		
	UNOCCUPIED MODE:		
	BOTH THE SUPPLY AND EXHAUST AIR FANS SHALL BE OFF AND THE OUTSIDE AIR AND EXHAUST AIR SHUT— OFF DAMPERS CLOSED. DOAS		
	UNIT SHALL RETURN TO OCCUPIED MODE WHEN THERE IS A CALL FOR VENTILATION, VIA CO2 SENSOR, FROM 3 (ADJ.) HEAT PUMPS PLACED IN THE UNOCCUPIED OVERRIDE MODE. WHEN THIS OCCURS ALL OUTSIDE AIR VALVES SHALL OPEN TO 25% TO PROVIDE STABLE OPERATION FOR FANS.		
	THE SYSTEM SHALL BE TEMPORARILY REACTIVATED AND RUN IN THE OCCUPIED MODE UNTIL SUCH TIME AS THE VENTILATION REQUIREMENT IS SATISFIED OR THE SEVERAL ROOM HEAT PUMP OVERRIDE TIMERS HAVE EXPIRED, AT WHICH POINT THE SYSTEM WILL RETURN TO THE UNOCCUPIED MODE.		
	SHELTER IN PLACE:		
	WHEN THE SHELTER IN PLACE SWITCH IS TRIGCERED, THE DOAS SUPPLY AND EXHAUST FANS SHALL BE DISABLED AND OUTSIDE AND EXHAUST AIR DAMPERS CLOSED.		
	Functional Test Procedure		
	Test Procedure 1: Schedules & Setpoints		
1	Confirm occupied/unoccupied schedule and temperature setpoints have been set as per the District's request.	Pass	0
	Comments shcedule to be discussed durring owner training		
2	Confirm duct static pressure setpoint of 0.75" W.G.(adjustable)	Pass	0
	Comments will be set per TAB		
3	Confirm supply air low temperature alarm is set to 40°F.	Pass	0
4	Confirm supply air low temperature low limit is set to 30°F.	Pass	0
5	Confirm the occupied heating and cooling setpoints have been set to 55 °F and 65 °F respectively.	Pass	0
6	Confirm HR core temp (T4) low limit is set to 32°F for defrost mode.	Pass	0
7	Confirm that three units need to have 'override' call for corresponding unit to go into occupied mode when on unoccupied schedule.	Pass	2
	Test Procedure 2: Occupied Mode		
9	Manipulate multiple FCUs to call for air and verify the fans increase speed to maintain static pressure setpoint. Reduce demand for units and confirm fan speeds slow to maintain static pressure setpoint.	Pass	0
10	Manipulate the supply air temp (T2) to 29°F. Confirm supply fan and exhaust fan de-energize and the dampers close.	Pass	0

Item #	Item Text	Response	# Issues
Test Procedure 2: Heat Recovery Operation			
11	Manipulate OSA temperature between 55°F and 75°F. Verify that the dampers modulate to bypass the Heat Recovery core	Pass	0
12	Manipulate OSA temp to below 55°F. Verify that the dampers modulate to direct air through the Heat Recovery Core and that the supply air temperature setpoint is 55°F	Pass	0
13	Manipulate OSA temp to above 75°F. Verify that the dampers modulate to direct air through the Heat Recovery Core.	Pass	0
14	Defrost Control: Overide Discharge Air Flow temperature to below 32°F	Pass	1
	Comments standard to program 11/3/22 Programming completed.		
Test Procedure 3: UNOCCUPIED MODE			
15	Verify system is in unoccupied mode. Confirm the supply fan and exhaust fans are de-energized. OSA and exhaust dampers are closed.	Pass	0
Test Procedure 4: Occupancy Override			
16	With the unit in unoccupied mode, press the occupancy override button on single unit. Confirm the system remains in unoccupied mode.	Pass	1
17	With the unit in unoccupied mode, press the occupancy override button on two units fed by the corresponding DOAS. Confirm the system goes to occupied mode.	Pass	1
	Comments standard to add to program 11/3/22 Currently set up to need 8 units to enable DOAS.		
Test Procedure 5: Alarms			
18	Manipulate the supply air temp (T2) to 29°F. Confirm a low temperature alarm is initiated on the BAS.	Pass	0
19	Manipulate DP over OSA filter. Confirm BAS receives dirty OSA filter alarm.	Pass	0
20	Manipulate DP over RA filter. Confirm BAS receives dirty RA filter alarm.	Pass	0
Test Procedure 6: Smoke Detector Shutdown			
Test Procedure 7: Shelter-In-Place			
22	Press the SIP switch in the principal's office to verify the unit is de-energized and the OSA and EA dampers fully close.	Pass	0
23	Release the SIP switch command and ensure the unit returns to normal operation.	Pass	0

Item #	Item Text	Response	# Issues
Test Procedure 8: Individual Units			
24	DOAS-1 (B-Wing)	Pass	0
25	DOAS-2 (C-Wing)	Pass	0

Details

ID	000025	**Company**	<not set>
Name	AHU PTP	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 8 > 803
Created On	28 Mar 2022 9:55 AM	**Equipment Name**	AHU-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Supply Fan A Amps - AI	Verified	0
	Supply Fan B Amps - AI	Verified	0
	Outside Air CFM- AI	Verified	0
	Outside Air Temp. - AI	Verified	0
	Mixed Air Temp. - AI	Verified	0
	Supply air Temp. AI	Verified	0
	Return Air Temp. AI	Verified	0
	Exhaust Fan A Amps -AI	Verified	0
	Exhaust Fan B Amps -AI	Verified	0
	Exhaust CFM - AI	Verified	0
	Heat Wheel Enable - DO	Pass	0
	Exhaust Fan Enable - DO	Pass	0
	reversing Valve - DO	Pass	0
	Compressor Enable - DO	Pass	0
	Supply Fan Enable - DO	Pass	0
	Heat Wheel Control - AO	Verified	0
	OSA/RA Damper - AO	Verified	0
	Exhaust Fan VFD Control -AO	Verified	0

Details

ID	000023	**Company**	<not set>
Name	AHU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 8 > 803
Created On	28 Mar 2022 10:07 AM	**Equipment Name**	AHU-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
	Sequence of Operation		
	THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES OF THE SYSTEM		
	THE HEAT PUMP UNIT SHALL PROVIDE HEATING, COOLING AND VENTILATION TO THE SPACE SERVED WITH CONSTANT VOLUME AIR FLOW.		
	OCCUPIED MODE:		
	THE SUPPLY SHALL OPERATE CONTINUOUSLY. THE EXHAUST FAN SHALL TRACK OSA DAMPER POSITION WITH A NEGATIVE OFFSET TO MAINTAIN SLIGHT POSITIVE BUILDING PRESSURE. OFFSET TO BE DETERMINED DURING BALANCING.		
	THE CO2 SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPER BETWEEN 25% AND 100% OF THE OUTSIDE AIR CFM SCHEDULED ON DRAWINGS TO MAINTAIN A MAXIMUM CO2 LEVEL OF 1000 PPM (OR AS SET). DURING ECONOMIZER COOLING OPERATION THE CO2 SENSOR WILL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL BE CAPABLE OF MODULATING FULLY OPEN.		
	HEAT RECOVERY OPERATION:		
	HEAT RECOVERY WHEEL SHALL OPERATE TO TEMPER THE INCOMING OUTSIDE AIR TEMPERATURE AS FOLLOWS; OUTSIDE AIR TEMP. BETWEEN 70 & 75°F.- THE HEAT RECOVERY WHEEL VFD SHALL STOP THE WHEEL IN ORDER TO AVOID RECOVERING EXHAUST AIR HEAT AND THE UNIT SHALL PROVIDE NEUTRAL "ECONOMIZER" AIR.		
	OUTSIDE AIR TEMP. BELOW 70°F - THE HR WHEEL SHALL MODULATE ITS SPEED THROUGH THE VFD TO RECOVER EXHAUST AIR ENERGY (HEAT) SO AS TO PRE-HEAT AND TEMPER THE INCOMING OUTSIDE AIR. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 70°F. (ADJ)		
	OUTSIDE AIR TEMP. ABOVE 75°F - THE HR WHEEL SHALL MODULATE ITS SPEED THROUGH THE VFD IN ORDER TO RECOVER EXHAUST AIR ENERGY (COOLING) SO AS TO PRE-COOL AND TEMPER THE INCOMING OUTSIDE AIR. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 75°F. (ADJ).		
	ECONOMIZER COOLING:		
	UPON A CALL FOR COOLING FROM THE SPACE WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE RETURN AIR TEMPERATURE THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE OPEN WHILE THE RETURN AIR DAMPER MODULATES CLOSED. ON A FURTHER CALL FOR COOLING, THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS. ADDITIONAL COOLING DEMAND SHALL START ADDITIONAL COMPRESSORS AS REQUIRED. THE HEAT PUMP COMPRESSOR SHALL CYCLE/MODULATE AS REQUIRED TO MAINTAIN SETPOINT AT ROOM TEMPERATURE SENSOR. THE REVERSE SHALL OCCUR ON A DECREASE IN COOLING DEMAND.		
	COOLING:		
	UPON A CALL FOR COOLING FROM THE SPACE WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE THE RETURN AIR TEMPERATURE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS CONTROLLED BY THE CO2 SENSOR. THE REVERSING VALVE SHALL BE IN COOLING MODE. THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS. ADDITIONAL COOLING DEMAND SHALL START ADDITIONAL COMPRESSORS AS REQUIRED.		

Item #	Item Text	Response	# Issues

HEATING:

ON A CALL FOR HEAT FROM THE SPACE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR. THE REVERSING VALVE SHALL BE IN HEATING MODE. THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS. ADDITIONAL HEATING DEMAND SHALL START AND CYCLE ADDITIONAL COMPRESSORS AS REQUIRED.

THE MIXED AIR TEMPERATURE SHALL OVERRIDE THE CO2 SENSOR TO MAINTAIN A MINIMUM MIXED AIR TEMPERATURE OF 40°F. IF THE MIXED AIR TEMPERATURE FALLS BELOW 35°F A LOW TEMPERATURE ALARM SHALL BE INDICATED AT THE CENTRAL MONITORING LOCATION AND THE DAMPERS SHALL MODULATE TO FULL RECIRC MODE UNTIL THE ALARM IS CLEARED.

UNOCCUPIED MODE:

THE UNIT SHALL BE OFF AND THE OUTSIDE AIR DAMPER FULLY CLOSED. UPON A CALL TO MAINTAIN SETBACK ROOM TEMPERATURE SETPOINTS, THE UNIT SHALL TEMPORARILY CYCLE ON, WITH THE OUTSIDE AIR VENTILATION DAMPERS REMAINING CLOSED. ONCE THE ROOM TEMPERATURE IS SATISFIED, THE UNIT SHALL CYCLE OFF.

A PUSHBUTTON AT THE SENSOR SHALL ALLOW THE SYSTEM TO OVERRIDE THE UNOCCUPIED CYCLE AND PLACE THE HEAT PUMP IN THE OCCUPIED MODE FOR A PRE-SET TIME PERIOD OF 2 HOURS (OR AS SET).

OPTIMUM STOP-START:

HEATING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL FULLY CLOSE AND RETURN AIR DAMPER SHALL FULLY OPEN DURING WARM-UP PERIOD. UPON START OF OCCUPIED MODE, OUTSIDE AIR DAMPER AND RETURN AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF CONTROLS LISTED ABOVE.

COOLING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL MODULATE OPEN FOR ECONOMIZER COOLING AND THE RETURN AIR DAMPER SHALL MODULATE CLOSED DURING PRE-COOL PERIOD, WHEN OUTSIDE AIR TEMPERATURE IS LOWER THAN SPACE TEMPERATURE AND SPACE TEMPERATURE IS WARMER THAN OCCUPIED SETPOINT OF T1. UPON START OF OCCUPIED MODE, OUTSIDE AIR DAMPER AND RETURN AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF OPERATIONS LISTED ABOVE.

SAFETIES:

SMOKE DETECTOR: UPON DETECTION OF SMOKE, THE RETURN AIR DUCT MOUNTED SMOKE DETECTOR SHALL SIGNAL AN ALARM TO THE BUILDING FIRE ALARM CONTROL PANEL WHICH, SHALL IN TURN, SEND A SIGNAL TO SHUT-DOWN THE ROOF-TOP UNIT FANS IN ORDER TO PREVENT THE SPREAD OF SMOKE.

WATER FLOW SWITCH: THE HEAT PUMP MODULE SHALL BE PROVIDED WITH AN INTEGRAL FLOW SWITCH WHICH SHALL PREVENT COMPRESSOR OPERATION UNLESS ADEQUATE WATER FLOW IS DETECTED.

Functional Test Procedure

Test Procedure 1: Schedules & Setpoints

	Verify Schedules and Setpoints are set per districts direction	Pass	0

Test Procedure 2: Occupied Mode

	Verify that the Supply and Returns activate and run continously.	Pass	0
	Verify the Return fan tracks the Supply fan with a negative offset to maintain a positive building pressure.	Pass	0
	Verify that the OSA damper modulates between 25% and 100% to maintain a maximum Co2 level of 1000PPM	Pass	0

Test Procedure 2: Heat Recovery Operation

Item #	Item Text	Response	# Issues
	Set the OSA temperature between 70 and 75 degrees. Verify that the heat recovery wheel is stopped	Pass	0
	Set the OSA air temperature below 70 degrees. Verify heat wheel speed modulates to maintain 70 Supply air.	Pass	0
	Set the OSA to 75 degrees. Verify that the Heat Wheel speed modulates to maintain 75 degree supply air.	Pass	0
Test Procedure 3: Economizer Cooling			
	Create a call for cooling. Adjust the OSA temperature below the Return air temperature to enable Economizer Cooling mode. Verify that the OSA damper modulates open and the Return air damper modulates closed.	Pass	0
	Verify that during Econoimzer Cooling mode the CO2 sensor is disables and the OSA damper is capable of modulating fully open.	Pass	0
	Create a further call for cooling . Verify that the Heat pump compressor is enabled in cooling mode and modulates to maintain Supply air temperature setpoint.	Pass	0
	Verify Aadditional cooling demand starts additional compressors as required to maintain setpoint.	Pass	0
Test Procedure 4: Cooling			
	Create a call for Cooling. Adjust the OSA temperature above the Return air temperature to enable Cooling mode. Verify the OSA and Return air dampers modulate to minuim OSA position as controled by the CO2 sensor.	Pass	0
	Verify that the Heat Pump is enabled in cooling mode and the compressor modulates to maitain Supply air setpoint.	Pass	0
	Create a call for heating. Verify that the Return and OSA dampers modulate to minimum OSA position as controlled by the CO2 sensor.	Pass	0
Verify that the Heat Pump is enabled in Heating mode and that the compressor modulates to maintain the Supply Air setpoint.			
	Set the Mixed air temperature to 39 degrees. Verify that the C2 sensor is overidden and the OSA damper modulates closed to maintain a minium Mixed air temperature of 40 degrees	Pass	0
	Set the Mixed air temperature to 34 degrees. Verify that the Osa damper modulates 100% closed and Return air damper modulates 100% open and the unit operats in full recirc. Mode until the alarm is reset	Pass	0
	Verify that a low temperature alarm is generated at the centeral monitoring location.	Pass	0
Test Procedure 5: Unoccupied mode			
	Place the unit in unoocupied mode. Verify the unit is off with the OSA damper fully closed.	Pass	0
Create a call for unoccupied heating or cooling. Verify that the OAS damper remains closed While the unit cycles on to maintain setback setpoints.			

Item #	Item Text	Response	# Issues
	Verify the unit cycles off once setback setpoints have been reached.	Pass	0
	Send an unoccupied overide command. Verify that the unit is placed into occupied mode for 2 hours.	Pass	0
	Test Procedure 6: Optimum Stop- Start		
	Review trend logs to verify optimum start for both heating and cooling.	Pass	0
	Test Procedure 7: Safeties	Pass	0
	Verify that the heat pump compressor cannot operate with out adequate water flow.	Pass	0
	Verify that the unit shuts down with the building fire alarm.	Pass	0

Details

ID	000031	**Company**	<not set>
Name	Heat Pump PTP	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 1 > 100
Created On	12 Apr 2022 2:47 PM	**Equipment Name**	HP-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Zone Temp/ CO2- AI	Verified	0
	Fan Amps-AI	Verified	0
	Supply Air Temp.- AI	Verified	0
	CFM-AI	Verified	0
	VAV Damper- AO	Verified	0
	Stage 2 S/S- DO	Verified	0
	Comp S/S	Verified	0
	Fan S/S	Verified	0
Associated equipment			
	HP-2	Pass	0
	HP-3	Pass	0
	HP-4	Pass	0
	HP-5	Pass	0
	HP-6	Pass	0
	HP-7	Pass	0
	HP-8	Pass	0
	HP-9	Pass	0
	HP-10	Pass	0
	HP-11	Pass	0
	HP-12	Pass	0
	HP-13	Pass	0
	HP-14	Pass	0
	HP-15	Pass	0
	HP-16	Pass	0

Item #	Item Text	Response	# Issues
	HP-17	Pass	0
	HP-18	Pass	0
	HP-19	Pass	0
	HP-20	Pass	0
	HP-21	Pass	0
	HP-22	Pass	0
	HP-23	Pass	0
	HP-24	Pass	0
	HP-25	Pass	0
	HP-26	Pass	0
	HP-27	Pass	0
	HP-28	Pass	0
	HP-29	Pass	0
	HP-30	Pass	0
	HP-31	Pass	0
	HP-32	Pass	0
	HP-33	Pass	0
	HP-34	Pass	0
	HP-35	Pass	0
	HP-36	Pass	0
	HP-37	Pass	0
	HP-38	Pass	0
	HP-39	Pass	0
	HP-40	Pass	0

Details

ID	000034	**Company**	<not set>
Name	HEAT PUMPS FPT	**Priority**	Medium
Description		**Status**	Closed
Author	bryanper@mckinstry.com	**Location**	Pioneer Middle School > Area 1 > 100
Created On	12 Apr 2022 3:21 PM	**Equipment Name**	HP-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
	HEAT PUMP FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATION:		
	THE EMCS SHALL INITIATE THE UNOCCUPIED AND OCCUPIED CYCLES FOR THE SYSTEM		
	OCCUPIED MODE:		
	THE SUPPLY FAN SHALL BE ENABLED AND SPEED CON TROLLED AS FOLLOWS BY MFR. ONBOARD CONTROLLER. DURING HEATING AND COOLING MODE, FAN SHALL OPERATE AT HICH SPEED.		
	WHEN ROOM TEMP IS IN THE DEADBAND (NO CALL FOR COOLINC OR HEATING AND COMPRESSORS OFF), THE SUPPLY FAN SPEED SHALL ADJUST TO LOW SPEED. OUTSIDE AIR VALVE SHALL CONTINUE NORMAL SEQUENCE.		
	ON A CALL FOR COOLING OR HEATING, OPEN THE 2— POSITION WATER LOOP CONTROL VALVE (WHERE APPLICABLE) AND, AFTER A 2— MIN DELAY (ADJ), ENERCIZE THE COMPRESSORS AND REVERSING VALVE. THE 2— SPEED COMPRESSOR SHALL CYCLE BETWEEN 1ST AND 2ND STAGES AS REQUIRED TO MAINTAIN SETPOINT AT ROOM TEMPERATURE SENSOR. THE REVERSINC VALVE SHALL BE INDEXED BETWEEN HEATING AND COOLING MODE AS REQUIRED. WHEN NO COOLING OR HEATING IS REQUIRED, THE COMPRESSORS SHALL CYCLE OFF.		
	2— POSITION WATER LOOP CONTROL VALVE IS MODULATE PER MANUFACTURES ONBOARD CONTROLS.		
	VENTALATION DAMPER CONTROL:		
	UNITS WITH CO2 SENSORS — THE VENTILATION AIR DAMPER SHALL BE INTERLOCKED WITH THE CO2 SENSOR SERVING SAME SPACE. THE CO2 SENSOR SHALL MODULATE THE VENTILATION AIR DAMPER BETWEEN MINIMUM AND CODE CFM SCHEDULED ON THE DRAWINCS BETWEEN A CO2 LEVEL OF 400 AND 1000 PPM (OR AS SET). OUTSIDE AIR DAMPER SHALL CLOSE DURING UNOCCUPIED TIMES.		
	UNITS W/O CO2 SENSORS — DAMPER SHALL OPEN TO CODE OSA POSITION, AS SCHEDULED ON THE DRAWINCS, DURING OCCUPIED TIMES AND CLOSE DURINC UNOCCUPIED TIMES.		
	UNOCCUPIED MODE:		
	HEAT PUMP FAN SHALL BE OFF UN TIL ROOM TEMPERATURE DROPS BELOW THE REDUCED SETBACK ROOM TEMPERATURE SETPOINT (85 CLG, 55 HTG), AT WHICH TIME THE HEAT PUMP SHALL CYCLE ON TEMPORARILY AS DESCRIBED ABOVE TO MAINTAIN THE REDUCED SETBACK ROOM TEMPERATURE. THE OSA VALVE SHALL BE CLOSED.		
	A PUSHBUTTON AT THE ROOM SENSOR SHALL ALLOW THE SYSTEM TO OVERRIDE THE UNOCCUPIED CYCLE AND PLACE THE HEAT PUMP, OSA VALVE AND RELIEF DAMPER IN THE OCCUPIED MODE FOR 2 HOURS (ADJ). WHEN 3 OR MORE (ADJ) HEAT PUMPS HAVE BEEN PLACED IN OVERRIDE, THE HRU RESPONSIBLE FOR PROVIDING OSA TO HEAT PUMP IN OVERRIDE MODE SHALL BE ENERGIZED. ALL OTHER HEAT PUMPS SHALL REMAIN IN THE UNOCCUPIED MODE UNLESS THEIR RESPECTIVE OVERRIDE BUTTON IS PUSHED.		

Item #	Item Text	Response	# Issues
	MORNING WARM UP:		
	THE CONTROL SYSTEM SHALL ANALYZE THE SPACE TEMPERATURES AND THE OUTSIDE AIR TEMPERATURE TRENDS TO DETERMINE IF MORNINC WARM —UP /OPTIMUM START IS REQUIRED. MORNING WARM —UP SHALL BE INITIATED TO ENSURE THAT THE SPACE IS BROUGHT UP TO TEMPERATURE AT THE START OF THE OCCUPIED PERIOD. DURING MORNING WARM —UP THE OUTSIDE AIR VENTILATION DAMPERS SHALL REMAIN CLOSED TO SAVE ENERGY AND THE SYSTEM SHALL OPERATE IN THE UNOCCUPIED HEATING MODE AS DESCRIBED ABOVE. AT THE START OF THE PROGRAMMED OCCUPIED PERIOD, THE SYSTEM SHALL OPERATE IN THE NORMAL OCCUPIED MODE AS DESCRIBED ABOVE.		
	SHELTER-IN-PLACE:		
	WHEN THE SHELTER IN PLACE MODE IS INITIATED AT THE DDC SYSTEM, VENTILATION DAMPER DM —1 SHALL CLOSE AND THE HEAT PUMP SHALL OPERATE IN FULL RECIRCULATION MODE UNTIL SHELTER IN PLACE MODE IS DISABLED.		
	Test:		
	SETPOINTS & SCHEDULE:		
	Confirm occupied/unoccupied schedule and temperature setpoints have been set as per the districts's request.	Pass	0
	OCCUPIED MODE:		
	Place the unit in occupied mode. Verify that the supply fan energizes and runs at low speed with no call for heating or cooling	Pass	0
	Create a call for heating or Cooling. Verify that the supply fan modulates to high speed.	Pass	0
	Verify that the 2-position water loop control valve opens.	Pass	0
	Verify that after a 2 minuter delay (ADJ) the compressor and the reversing valve energize.	Pass	0
	Verify that the compressor cycles between 1st and 2nd stages to maintain room temperature setpoint.	Pass	0
	Verify that the Ventalation damper modulates to maintain the space CO2 between a level of 400 and 1000ppm.	Pass	0
	Units w/o CO2 sensors, Verify that the OSA damper modulates to the position determined by the schedule.	Pass	0
	UNOCCUPIED MODE:		
	Place the unit in unoccupied mode. Verify that the OSA damper closes	Pass	0
	Drop the space temperature setpoint below the heating setback setpoint. Verify the heat pump cycles On to maintain space temperature.	Pass	0
	Raise the spance temperature above the Cooling setback set point. Verify the heat pump cycles On to maintain space temperature.	Pass	0
	With the heat pump off push the overide button on the room sensor. Verify that the Heat Pump and Ventalation damper cycle into Occupied mode for 2hrs (ADJ).	Pass	0
	MORNING WARM UP:		
	Enable and analize trend data to verify that the space is at the occupied	Pass	0

temperature setpoint when the unit is brought into occupied mode by the schedule.

Comments

Trend logs set up to verify

Item #	Item Text	Response	# Issues
SHELTER IN PLACE:			
	Verify that when the shelter in place button is activated the ventalation damper closes and the Heat Pump runs in full recirculation mode.	Fail	0

Comments

To be tested

Associated equipment

HP-2	Pass	0
HP-3	Pass	0
HP-4	Pass	0
HP-5	Pass	0
HP-6	Pass	0
HP-7	Pass	0
HP-8	Pass	0
HP-9	Pass	0
HP-10	Pass	0
HP-11	Pass	0
HP-12	Pass	0
HP-13	Pass	0
HP-14	Pass	0
HP-15	Pass	0
HP-16	Pass	0
HP-17	Pass	0
HP-18	Pass	0
HP-19	Pass	0
HP-20	Pass	0
HP-21	Pass	0
HP-22	Pass	0
HP-23	Pass	0
HP-24	Pass	0

Item #	Item Text	Response	# Issues
	HP-25	Pass	0
	HP-26	Pass	0
	HP-27	Pass	0
	HP-28	Pass	0
	HP-29	Pass	0
	HP-30	Pass	0
	HP-31	Pass	0
	HP-32	Pass	0
	HP-33	Pass	0
	HP-34	Pass	0
	HP-35	Pass	0
	HP-36	Pass	0
	HP-37	Pass	0
	HP-38	Pass	0
	HP-39	Pass	0
	HP-40	Pass	0

Details

ID	000038	**Company**	<not set>
Name	DUCTLESS SPLIT SYSTEM FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 11:43 AM		
Tags	AC-1, AC-2, AC-3		

Checklist Items

Item #	Item Text	Response	# Issues
	DUCTLESS SPLIT SYSTEM FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATION:		
	SS AND CU SHALL CYCLE UPON DEMAND FOR COOLING FROM UNIT PROVIDED SPACE SENSOR. SPACE TEMPERATURE ABOVE 80° (OR AS SET) SHALL SEND ALARM TO EMCS.		
	SETPOINTS		
	Verify cooling setpoint of 80°F.	Pass	0
	TEST PROCEDURES		
	TEST 1 OPERATION		
	Adjust the cooling temperature setpoint to below current zone temperature. Verify the SS and CU are enabled and modulate to maintain setpoint.	Pass	0
	Release all overrides and verify system operates as scheduled.	Pass	0
	TEST 2 ALARMS		
	Adjust the high temp alarm setpoint to below current zone temperature. Verify a HIGH TEMP ALARM is generated to the BAS.	Pass	0

Details

ID	000036	**Company**	<not set>
Name	Exhaust Fan FPT EF 1 (only)	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 8:57 AM		
Tags	EF-1 Hood		

Checklist Items

Item #	Item Text	Response	# Issues
	Exhaust Fan FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATION:		
	WHEN EXHAUST IS COMMANDED, FAN SHALL START AND DAMPER SHALL OPEN. WHEN FAN IS OFF, DAMPER SHALL BE CLOSED.		
	SETPOINTS AND SCHEDULES		
	Verify owner's schedule is in place	Pass	0
	TEST PROCEDURES		
	TEST 1 OPERATION		
	Verify fan enables with Schedule, Equipment interlock or occupancy sensor as indicated ont the fan control schedule	Pass	0
	Verify fan damper opens when fan is enabled	Pass	0
	Alarms		
	Fan Fail Alarm	Pass	0

204747-001 WWPS Pioneer MS — EF-2 Thru EF-8

Details

ID	000037	**Company**	<not set>
Name	Exhaust Fan FPT EF-2 - EF-8	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 11:27 AM		
Tags	EF-2 (dishwasher) thru EF-8		

Checklist Items

Item #	Item Text	Response	# Issues
	Exhaust Fan FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATION:		
	WHEN EXHAUST IS COMMANDED, FAN SHALL START AND DAMPER SHALL OPEN. WHEN FAN IS OFF, DAMPER SHALL BE CLOSED.		
	SETPOINTS AND SCHEDULES		
	Verify owner's schedule is in place	Pass	0
	TEST PROCEDURES		
	TEST 1 OPERATION		
	Verify fan enables with Schedule, Equipment interlock or occupancy sensor as indicated ont the fan control schedule	Pass	0
	Verify fan damper opens when fan is enabled	Pass	0
	Alarms		
	Fan Fail Alarm	Pass	0

Details

ID	000046	**Company**	<not set>
Name	Pioneer Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	23 Feb 2023 10:57 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Classroom 101	Pass	0
4	Classroom 102	Pass	0
5	Classroom 103	Pass	0
6	Classroom 104	Pass	0
7	Classroom 105	Pass	0
8	Classroom 106	Pass	1
9	Classroom 107	Pass	0
10	Classroom 108	Pass	1
11	Classroom 109	Pass	0
12	Classroom 110	Pass	0
13	Vestibule 200	Pass	0
14	Commons 202	Pass	0
15	Kitchen 203	Pass	1
16	Cooridoor	Pass	0
17	Electrical 301	Pass	0

Item #	Item Text	Response	# Issues
18	Boys Restroom	Pass	0
19	Girls Restroom	Pass	0
20	Classroom 304	Pass	0
21	CTE 305	Pass	0
22	Music 306	Pass	1
23	Music Storage 307	Pass	0
24	Music 308	Pass	0
25	Music Storage 309	Pass	0
26	Music 310	Pass	0
27	Music Storage	Pass	0
28	Aux Gym 312	Pass	1
29	Cooridoor	Pass	0
30	Electrical 301	Pass	0
31	Boys Restroom	Pass	0
32	Girls Restroom	Pass	0
33	Classroom 304	Pass	0
34	CTE 305	Pass	0
35	Music 306	Pass	0
36	Music Storage 307	Pass	0
37	Music 308	Pass	0
38	Music Storage 309	Pass	0
39	Music 310	Pass	0
40	Music Storage	Pass	0

Comments

Wall switches have been destroyed and power pack is not communicating with the control software. New stitches are on order but are not schedule for delivery until June. Phone conversation with Pam on 5/26/23 stating that the new upgraded wall switches to be installed are in addition to the original scope of work.

Details

ID	000035	**Company**	<not set>
Name	DOMESTIC WATER HEATER FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 8:56 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	DOMESTIC WATER HEATER FUNCTIONAL PERFORMANCE TEST		
	SEQUENCE OF OPERATIONS		
	OCCUPIED MODE		
	THE BAS SHALL ENABLE THE RECIRC PUMP BASED UPON OCCUPIED SCHEDULE FURNISHED BY THE OWNER. UPON INITIAL START UP, THE RECIRC PUMP SHALL SHUT-OFF WHEN THE LOOP IS WARM AND THE RETURN WATER IS WITHIN 5 DEGREES (ADJUSTABLE) OF SETPOINT. WHEN THE RETURN WATER TEMPERATURE REDUCES TO 15 DEGREES (ADJUSTABLE) BELOW SUPPLY WATER SETPOINT, THE PUMP SHALL RESTART AND REMAIN ON UNTIL THE RETURN WATER IS WITHIN 5 DEGREES (ADJUSTABLE) OF SETPOINT.		
	THE DIGITAL RECIRCULATING VALVE SHALL CONTROL TO MAINTAIN THE DOMESTIC HOT WATER SUPPLY SETPOINT TO THE SYSTEM.		
	UNOCCUPIED MODE		
	WATER HEATER(S) AND RECIRCULATING PUMPS SHALL REMAIN OFF.		
	ALARMS		
	PUMP FAILURE		
	DIGITAL MIXING VALVE CONTROL SEQUENCE OF OPERATION:		
	THE WATER SUPPLY TEMPERATURE SHALL BE ADJUSTABLE AT THE OPERATORS TERMINAL. THROUGH EQUIPMENT PORTAL, THE BAS SHALL ADJUST THE SUPPLY WATER TEMPERATURE FROM THE OPERATOR'S TERMINAL		
	SETPOINTS AND SCHEDULES		
	Verify occupied schedule is in place.	Pass	0
	Verify domestic water supply water temperature setpoint 120°F	Pass	0
	Verify kitchen water supply setpoint of 140°F	Pass	0
	TEST PROCEDURES		
	TEST 1 OCCUPIED OPERATION		
	Place the school in occupied mode. Verify recirc. pump is enabled. Verify WH is enabled and modulates to maintain setpoint.	Pass	0
	Adjust the return water temperature setpoint to 5°F above current return water temperature. Verify Recirc pump is disabled.	Pass	0

Item #	Item Text	Response	# Issues
	Adjust the supply water and return water temperature setpoints differential to be 15°F. Verify the recirc pump is enabled.	Pass	0
	Release all overrides. Verify pump operates as scheduled.	Pass	0
TEST 2 UNOCCUPIED MODE			
	Place the school in unoccupied mode. Verify the water heaters and recirc pumps are disabled.	Pass	0
TEST 3 ALARMS			
	With the recirc pump enabled and running manually turn the pump off. Verify an alarm is generated to the BAS.	Pass	0
TEST 4 MIXING VALVE			
	Verify mixing valve adjusts to meet setpoint.	Pass	0

204747-001 WWPS Pioneer MS — 14 Electric Unit Heater FPT

Details

ID	000039	**Company**	<not set>
Name	Electric Unit and Baseboard Heater FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 11:46 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	Sequence of Operation		
	The BAS shall monitor the space temperature, and control the heater to maintain the heating setpoint.		
	Functional Test Procedure		
	Test Procedure 1: Schedules & Setpoints		
	Confirm that heating setpoint has been set as per the District's request (60 °F if not otherwise specified).	Pass	0
	Test Procedure 2: Operation		
	Manipulate setpoints to ensure heating and Fan are energized appropriately. Manipulate setpoints to ensure heating and fan de-energized appropriately.	Pass	0
	Test Procedure 3: Alarm		
	Initiate fan alarm and confirm that the fan status alarm is registered on DDC.	Pass	0
	Test Procedure 3: Individual Units		
	EUH-1	Pass	0
	EUH-2	Pass	0
	EUH-3	Pass	0
	EUH-4	Pass	0
	ECH-1	Pass	0
	ECH-2	Pass	0
	BB-1	Pass	0
	BB-2	Pass	0
	BB-3	Pass	0
	BB-4	Pass	0
	BB-5	Pass	0

Details

ID	000040	**Company**	<not set>
Name	Kitchen Equipment Alarms FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 11:49 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	Sequence of Operation		
	The operators panel will alarm if the freezer temperature is above the high temperature setpoint, the refrigerator temperature is above the high temperatur alarm setpoint and the refidgeration package controller fails.		
	Functional Test Procedure		
	Test Procedure 1: Schedules & Setpoints		
1	Confirm that the freezer high temperature has been set to specified temperature.	Pass	0
2	Confirm that the Cooler high temperature has been set to specified temperature.	Pass	0
	Test Procedure 2: Operation		
4	Confirm that the freezer high temperature alarms when temperature is higher then setpoint. Manipulate freezer temperture input to be higher than setpoint to show alarm is activated.	Pass	0
5	Confirm that the Cooler high temperature alarms when temperature is higher then setpoint. Manipulate refridgerator temperture input to be higher than setpoint to show alarm is activated.	Pass	0
	Test Procedure 3: Individual Units		
5	Kitchen Equipment -1	Pass	0

Details

ID	000041	**Company**	<not set>
Name	Trap Primer FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Nov 2022 11:53 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	Sequence of Operation		
	The trap primer valve shall open for 10-seconds every 24 hours.		
	Functional Test Procedure		
	Test Procedure 1: Schedules & Setpoints		
1	Confirm that the occupied/unoccupied schedule has been set as per the District's request.	Pass	0
	Test Procedure 2: Operation		
3	Verify the Trap Primer solenoid valve opens once per day for a period of 10 seconds	Pass	0

Comments

Set to run once every 48 hours.

	Test Procedure 3: Individual Units		
5	TP-1	Pass	0
6	TP-2	Pass	0
7	TP-3	Pass	0
8	TP-4	Pass	0
9	TP-5	Pass	0
10	TP-6	Pass	0
11	TP-7	Pass	0
12	TP-8	Pass	0

Details

ID	000047	**Company**	<not set>
Name	Metering FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	23 Feb 2023 11:17 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	SEQUENCE OF OPERATIONS:		
	ELECTRIC METER: THE EMCS SHALL MONITOR THE ELECTRIC CONSUMPTION OF THE BUILDING THROUGH A MODBUS DATA SIGNAL AS AN OUTPUT FROM THE POWER-LOGIC POWER MONITORING SYSTEM PROVIDED IN THE MAIN ELECTRICAL GEAR.		
	PEAK DEMAND HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE ELECTRIC METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	USAGE HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD ELECTRIC METER READINGS SO AS TO PROVIDE A ELECTRIC CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	WATER METERS: THE CONTROLLER SHALL MONITOR THE WATER METERS FOR WATER CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.		
	PEAK DEMAND HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE WATER METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	USAGE HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD WATER METER READINGS SO AS TO PROVIDE A WATER CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	GAS METER: THE CONTROLLER SHALL MONITOR THE GAS METERS FOR GAS CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.		
	PEAK DEMAND HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE GAS METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	USAGE HISTORY: THE CONTROLLER SHALL MONITOR AND RECORD GAS METER READINGS SO AS TO PROVIDE A GAS CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.		
	FUNCTIONAL TEST PROCEDURE:		
	Verify that Electrical Meter is connected to BAS and reporting usage data.	Pass	0
	Confirm that BAS is recording Electrical Peak Demand data on Daily, Monthly and Yearly basis.	Pass	0
	Confirm that BAS is recording Electrical Usage History data on Daily, Monthly and Yearly basis.	Pass	0
	Verify that Water Meter is connected to BAS and reporting usage data.	Pass	0

Item #	Item Text	Response	# Issues
	Confirm that BAS is recording Water Usage Peak Demand data on Daily, Monthly and Yearly basis.	Pass	0
	Confirm that BAS is recording Water Usage History data on Daily, Monthly and Yearly basis.	Pass	0
	Verify that GasMeter is connected to BAS and reporting usage data.	Pass	0
	Confirm that BAS is recording Gas Usage Peak Demand data on Daily, Monthly and Yearly basis.	Pass	0
	Confirm that BAS is recording Gas Usage History data on Daily, Monthly and Yearly basis.	Pass	0

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

RESOLUTION #14-2023
October 24, 2023

FINAL ACCEPTANCE OF PIONEER MIDDLE SCHOOL MODERNIZATION PROJECT CONSTRUCTION COMPLETION

WHEREAS, the Walla Walla Public Schools Board of Directors has received notification from Architects West that the Pioneer Middle School Modernization project is complete in accordance with contract specifications and documents: and

WHEREAS, the Superintendent and Board have walked through the project and concur.

THEREFORE, BE IT RESOLVED by the Walla Walla Public Schools Board of Directors, that the work of the contractor, Jackson Construction Company, is now complete.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

Derek Sarley, School Board President

ATTEST: Dr. Wade Smith, Superintendent and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

RESOLUTION #15-2023
October 24, 2023

FINAL ACCEPTANCE OF BUILDING COMMISSIONING REPORT FOR WALLA WALLA HIGH SCHOOL ADDITION AND MODERNIZATION PROJECT

WHEREAS, the Walla Walla School District Board of Directors has received the final Building Commissioning Report from McKinstry regarding the Walla Walla High School Addition and Modernization project; and

WHEREAS, the Superintendent and Board have reviewed this report in its entirety and have noted the recommendations by the district's construction manager.

THEREFORE, BE IT RESOLVED by the Walla Walla School District Board of Directors, that the Building Commissioning Report for the Walla Walla High School Addition and Modernization project is hereby approved.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

Derek Sarley, School Board President

ATTEST: Dr. Wade Smith, Superintendent and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023

Walla Walla High School

WALLA WALLA, WASHINGTON
AUGUST 2023

COMMISSIONING REPORT

Contents

Section 1

Executive Summary

General

McKinstry Commissioning served as the commissioning (Cx) agent for the Walla Walla Public Schools, Walla Walla High School Renovation in Walla Walla, Washington. McKinstry Cx provided technical support and commissioned the new mechanical, chilled and heating water systems, and lighting systems. This report summarizes the commissioning activities undertaken to verify proper equipment operation, including execution of the associated control sequences. The renovation of the Walla Walla High School campus consisted of updating the seven existing buildings including new heat pump water loops on each side of the creek. The West loop serves buildings #2 and #7 while the East loop serves buildings #3,#4,#5,#6. Building #8 is served by a stand alone water loop including a new boiler and cooling tower.

COMMISSIONING SCOPE OF WORK

The commissioning activities included the following major tasks:

- Perform a design and sequence of operations review prior to the construction drawings being issued
- Develop an observation log identifying and tracking deficiencies discovered during commissioning
- Execution of an extensive point-to-point verification of physical control points
- Prepare and execute functional test procedures verifying proper control and operation of the mechanical systems
- Development of a final commissioning report

Systems Commissioned

COMMISSIONING INTENT

The intent of McKinstry's Commissioning effort is to assure the project's end result is an operable, maintainable, and sustainable system. The commissioning process independently verifies that systems have been engineered, installed, started-up, and function per the project design intent per the indicated test dates.

Commissioned Systems
The project scope of work identified that the mechanical systems were to be commissioned. The following table summarizes the systems that were commissioned.

Table 1. Summary of Commissioned Equipment

Systems and Major Items
Mechanical Equipment
Air Handling Units (Quantity 5)
Heat Recovery Units (Quantity 7)
Make Up Air Units (Quantity 3)
Roof Top Unit (Quantity 1)
Heat Pumps (Quantity 113)
Hydronic Unit Heaters (Quantity 1)
Electric Unit Heater (Quantity 15)
Exhaust Fans (Quantity 22)
Ductless Split AC Units (Quantity 9)
Base Board Heaters (Quantity 7)
Radiant Heaters (Quantity 2)
Heat Pump Loop (Quantity 2 Eastside and Westside)
Domestic Hot Water System (Quantity 7)
Lighting Control System (Quantity 7)

Executive Summary

EQUIPMENT INSTALLATION

McKinstry Commissioning was not involved in the installation process; however, the installation of the equipment and controls was verified to the submittal drawings and scopes of work during the point-to-point checkout of the equipment.

AUTOMATIC CONTROLS

The focus of the commissioning was on the heated water system, chilled water system, air handling equipment, and the lighting systems. The systems were commissioned through the following steps:

- Reviewing the submitted design controls sequence
- Verify proper installation of equipment
- Verifying all points through a point-to-point checkout procedure
- Executing functional test procedures to verify the control sequences under actual operation
- Work with the controls contractor to identify and resolve deficiencies in the operation of the mechanical system
- Verifying the automation of the equipment operation with specific modes. These sequences were typically based on the load requirement, outside air conditions, or operator selections
- Verifying that the controls system will register the correct alarms to the BAS central station computer. Once equipment was in alarm, the controls system was observed to determine if the correct alarm was detected in a timely fashion.

The point-to-point testing, functional testing, and alarm testing were completed with the assistance of the controls contractor, Standard Plumbing & Heating Controls. The deficiencies discovered during testing are discussed in the Observations Log in Section 3. These deficiencies were corrected, retested, and found to be working properly. The point-to-point verification results, as well as the functional testing procedures and results, are located in section 4 of this report.

Executive Summary

OWNER ISSUES

- No notable owner issues were found during the commissioning process.

OPEN ISSUES

- None

OBSERVATIONS & MODIFICATIONS

- **Building 1** – Modifications to the boiler were made to remove the variable frequency drive for the heating water system loop pump and instead use the boilers internal controls to command this pump on/off. Initially the pump would be disabled at the time the boiler reached the loop temperature setpoint. This was allowing the building temperature to decrease due to the heating water loop not circulating. This was remedied by enabling a 40 minute delay from the boilers internal controls to keep the system loop pump running. This was verified in the field and demonstrated this modification maintains building demand.
- **Campus Heat Pump Loop (Building 6)** – Original sequence of operations for the heat pump loop called for the pumps to be controlled by the differential pressure at the new Science Building. Once the heat pump loop was installed at the Science building it proved difficult to maintain pressure set points. Per the Design Team: It is our opinion that the DP Sensor is not picking up a reading due to its location within Building 8; There is simply not enough pipe distance between the two sensors to detect a change in pressure. Ideally, these sensor would be located much farther away from each other, but with the direct buried piping, this is not practicable. In order to balance out the campus flow and maintain the intended energy saving variable flow conditions, we suggest the attached adjustments in controls.

  To sum up the adjustments, the controls will work as follows:

  As each building has demand for heating/cooling water flow, that demand will be reported to the DDC System. As buildings continue to call for heating/cooling, the campus circulation pumps will increase flow to match the summation of each building flow requirements. In a decreased call of heating/cooling, the campus circulation pumps will turn down to meet the flow requirements of each building.

- **Building 6 –**
  - AHU's for the old gym (existing equipment) do not appear to be included in the conformed mechanical drawings or the controls drawings. These units were not included in the commissioning of this building.
  - Wrestling Room MAU (existing equipment) is BacNet controlled, meaning it is only sends information to the BAS and the unit is controlled by internal controls. During commissioning the unit appeared to be controlling the temperature of the space but a formal functional test was not performed. It does not appear this equipment was included in the controls documents (other than to replace the space temperature sensor).

Best Regards,

Chase Schmidt

Chase Schmidt
Commissioning Engineer
McKinstry

Section 2

Walla Walla Public Schools

Walla Walla High School Renovation

Commissioning Plan

Walla Walla, WA
August 2023

Walla Walla Public Schools
Walla Walla High School Renovation
Commissioning Plan

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Walla Walla Public Schools
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Commissioning Plan

1.0 INTRODUCTION

1.1PURPOSE OF THE COMMISSIONING (CX) PLAN

This Commissioning (Cx) Plan describes the commissioning process for Walla Walla High School located in Walla Walla, WA. This living document provides a high-level overview of the commissioning process, scope summary, and it identifies the various roles and respective responsibilities of those that will participate in the commissioning process. The end goal of the Commissioning Plan and the execution thereof is to ensure the systems are installed, started, tested, and documented to meet both the Owner's Project Requirements (OPR) and the Basis of Design (BOD).

1.2 PROJECT DESCRIPTION

Through public bonds and Washington state matching funds, the Walla Walla School District is performing renovations at Walla Walla High School (Wa-Hi). Seven existing buildings will receive renovations/additions and a new Science building will be constructed. The existing HVAC systems will be replaced with new water source heat pump system. The heat pumps will be distributed throughout the buildings and fed by central boilers and cooling towers.

1.3 COMMISSIONING APPROACH

The commissioning effort planned for this project will be based upon the following standards:

- ASHRAE Guideline 0-2013
- BCA Best Practices for Building Commissioning-New Construction
- GSA Guideline for Project Commissioning

1.4 SYSTEMS TO BE COMMISSIONED

The commissioning process for this project will include the following systems:

1.4.1 Buildings 1 through 7

- HVAC system and controls
- Domestic hot water system
- Lighting control system

1.5 COMMISSIONING SCHEDULE

Event	Start Date	End Date
Construction	8/1/2021	8/1/2023
Distributed Power Available	COMPLETE	COMPLETE
Distributed Water Available	COMPLETE	COMPLETE
Equipment Start-Ups	COMPLETE	COMPLETE
TAB	COMPLETE	COMPLETE
Functional Performance Tests	COMPLETE	COMPLETE
Move-in / Public Opening	COMPLETE	COMPLETE

1.6 LIST OF ACRONYMS AND ABBREVIATIONS

Below is a list of common terminology and abbreviations used throughout this document.

- A/C – Air Conditioning
- A/E – Architect/Engineer
- AHJ – Authority Having Jurisdiction (Plans Examiners, County Inspectors, Fire Marshall, etc.)
- AHU – Air Handling Unit
- BAS – Building Automation System Contractor (controls & alarms)
- BECx – Building Enclosure Commissioning

- BOD – Basis of Design
- CFM – Cubic Feet per Minute
- CDW – Condenser Water
- CHW – Chilled Water
- Cx – Commissioning
- CxA– Commissioning Agent
- Cx-MIL – Cx Master Issues Log
- DB – Design Build
- DDC – Direct Digital Controls
- EC – Electrical Contractor
- EF – Exhaust Fan
- EOR – Engineer of Record
- FCU – Fan Coil Unit
- FPT – Functional Performance Test(s)
- FWT – Factory Witness Test(s)
- HHW – Heating Hot Water
- HVAC – Heating Ventilation & Air Conditioning
- IR - Infrared
- IST – Integrated Systems Test
- ITP-Cx – Independent Third-Party Commissioning
- IVC – Installation Verification Checklist
- MAU – Makeup Air Unit
- MC – Mechanical Contractor
- MEP Subs – DB's Mechanical/Electrical/Plumbing subcontractors
- OEM – Original Equipment Manufacturer
- OPR – Owner's Project Requirements
- OSA – Outside Air
- PPM – Parts Per Million
- QA/QC – Quality Assurance/Quality Control
- RA – Return Air
- RTU – Rooftop Unit
- SA – Supply Air
- TAB – Testing, Adjusting, and Balancing
- TU – Terminal Unit
- VAV – Variable Air Volume
- VFD – Variable Frequency Drive
- VRF – Variable Refrigerant Flow
- VTR – Vent Through Roof

2.0 Commissioning Overview

2.1 DESCRIPTION

Commissioning is the systematic process of ensuring that all building systems included in the scope perform interactively according to the design intent, BOD, and the Owner's operational needs. Generally, the CxA is involved in the process from design through post-construction. The Cx process incorporates all the parties involved in design and construction. The primary elements of Commissioning include:

- Identifying and documenting the Owner's needs and the requirements of the facility
- Defining the systems and equipment acceptance and performance criteria as outlined in the contract documents
- Ensuring that the systems installed are operable and maintainable
- Testing of the systems to ensure that they are interacting and performing optimally

The Commissioning Agent (CxA) oversees and coordinates the Cx efforts, although all parties play a vital role in the Cx process. The Commissioning Process starts early in the Design Phase and continues well into the first year of occupancy. The Commissioning Process includes many steps and tasks throughout the design-construction-occupancy timeline. These steps/tasks and their associated deliverables are described below, organized by the major milestones typically associated with the design and construction process.

2.2 DESIGN PHASE

The Design Phase spans from pre-design (OPR and BOD development) through the generation of construction documents. In the Design Phase, the Cx steps are as follows:

OPR & BOD Developed and Reviewed – The Owner documents their project and performance requirements in the Owner's Project Requirements (OPR). The A/E firm develops the Basis of Design (BOD) from the OPR. The CxA reviews the OPR and BOD to identify the performance expectations of the facility and systems and provides feedback as necessary.

- OPR: Document provides clear direction to the design team on the project's MEP system requirements.
- BOD: Document complies with OPR and includes, in detail, all assumptions, codes/standards/guidelines, calculations and design decisions that will be used in the design of the MEP systems for this project.

Submit Cx Plan – Based on the OPR, BOD, and Cx contract, the CxA develops the Cx Plan and submits it to the Owner and A/E for review. The CxA incorporates the feedback and submits the revised draft. The CxA maintains and updates the Cx Plan as necessary throughout the Cx process.

Provide Cx Specifications – The CxA provides Commissioning Specifications to the A/E to include in the Construction Document (CD) set. The CxA caters the specifications as necessary to the project.

The following deliverables should be expected during the Design Phase:

- DRAFT (On-going) Commissioning Plan
- Commissioning Specifications

2.3 CONSTRUCTION PHASE

The Construction Phase spans from construction inception through building/system turn-over. In the Construction Phase, the CxA is involved through meetings and site visits. The CxA performs the following steps:

Cx Kickoff Meeting – The CxA coordinates a Cx Kickoff Meeting with the Owner, A/E, and contractors to communicate the Cx process, their responsibilities, and overall expectations. Target audience to include:

- Owner and/or Owner's Rep
- General Contractor
- MEP Contractors
- Key Vendors
- TAB and Controls Contractors

The purpose of this Cx Kick-Off Meeting is to:

- Formally introduce the Commissioning Agent to the build team.
- Review the Commissioning Process to be used on this project, including:
  - Roles and responsibilities of all members of the Commissioning Team.
  - Lines of communication and mechanism for distributing and updating shared documents
  - The Commissioning Plan (including process for distributing updates).
- Address any questions related to the Commissioning Process to be used on this project.
- Review the Commissioning Schedule.
- Review criteria for "Pass/Fail" status on tests, including:
  - Commissioning scope of work allowance for initial test and one retest only.
  - Compensation charges for more than one retest if necessary.
- Introduce and review all commissioning documentation to be used on this project, including:
  - Pre-Functional Checklists (format and sample checklist).
  - Functional Performance and Integrated Systems Test Procedures (format and sample test).
  - Master List of Findings Log (Autodesk BIM 360 Field format and response process).

Develop Commissioning Schedule – The CxA will prepare a schedule of the commissioning process activities. The schedule will identify critical times for witnessing testing activities, accessing systems and equipment, accessibility for maintenance and verification, completion of construction checklists, and activities related to substantial completion/project closeout.

Site Visits & Meetings – The CxA will conduct site visits and attend project meetings as necessary to stay apprised of project status and to observe construction progress. If issues are identified they will be communicated via the Master List of Findings or Observation Log and the Site Visit Report. The CxA's presence will gradually increase as the project nears the Acceptance Phase. The focus of the CxA Observation Visits includes:

- Verification of equipment/system installation in accordance with the design documents, I-O&M materials, codes, and recognized industry standards.
- Potential conflicts between trades.
- Potential maintenance/access issues.

The CxA will coordinate these periodic site visits with the GC in order to prevent conflicts with on-site project scheduled major events that may prevent full access to the site. The CxA will attend site specific safety orientations as necessary prior to the first site visit and will observe all site specific as well as industry recognized safety precautions at all times. The CxA will supply and use all personal safety and PPE required while on site, including:

- OSHA rated hard hat, safety glasses, and safety vest.
- Proper footwear (and gloves as required).

The CxA will check-in at the GC trailer (or designated location) upon entering and exiting the site so that their presence is known and documented in case of a site emergency. The CxA will conduct themselves in a professional manner at all times on site as they observe the installation progress. At no time will the CxA direct contractors in any way regarding installation practices, means or methods. If the CxA observes potential issues with the installation, these will be noted on the Commissioning Issues Log and will be distributed to the appropriate parties for their response. However, if the CxA observes any installation practice or procedure that they deem unsafe, the CxA will immediately notify the GC on site of the observed situation so that the GC may take appropriate action as they see fit.

Submit Cx Tests for Review – The CxA develops (or reviews contractors') Pre-Start/Start-up, Functional Performance Tests, and Integrated System Tests and provides them to the A/E and Contractor for review. The CxA incorporates feedback as necessary.

- Use ALL manufacturers' provided installation and start-up checklists during installation and start-up. Pre-Start/Start-up Checklists *may* be issued by the CxA to the General Contractor for distribution to the appropriate parties. An alternative is that the installing contractor provides Pre-Start/ Start-Up forms to the CxA for review and approval. Once approved forms have been established for each piece of equipment to be commissioned; the GC is responsible for monitoring the contractors/vendors responsible for completing the Checklists and for returning the Checklists to the CxA once they have been completed. Functional Performance Testing of each piece of equipment will not commence until the associated Pre-Start/Start-up Checklist has been completed by the contractor/vendor and verified by the CxA. The Pre-Start/Start-up Checklists shall be used to verify the following:

    - General Condition (equipment and components are free from damage).
    - General Installation (equipment is the correct make/model and located on site in accordance with the design documents).
    - Completed Installation (all support and/or associated systems, i.e.; electrical power, hydronic piping, drains, control wiring, seismic supports, ducting, etc. have been connected/terminated at subject equipment).
    - Start-Up/FPT Readiness (equipment is ready for either factory authorized start-up and/or Functional Performance Testing to commence).

- Functional Performance Testing will be created by the CxA and will be written in step-by-step procedures that will be used to verify the sequence of operation for each piece of equipment to be commissioned for this project under each mode of operation. The format for the test procedures will include an overview of the specific section of the Sequence of Operation that is being tested, the exact and detailed steps to be used to test the specific section of the SOO and the expected results of each step. If the expected results are not an exact target, then an acceptable range will be listed. Test steps shall be non-destructive and shall be performed using "real-time" perimeters (simulations shall be limited as much as possible). Test format shall include spaces to document conditions/results where applicable and shall also include spaces for the CxA to date and initial when a test has been completed successfully. The CxA will transmit the FPT's in draft form to the A/E Team for their review and comment before final test forms are published for use by the Commissioning Team. Functional Performance Testing shall be used to verify the following and will include, but will not limited to:

    - Normal operating mode (On).
    - Normal stand-down mode (Off).
    - Status of operation during loss of power event.
    - Status of operation under emergency power.
    - Return to operation after restoration of normal power.
    - Status of operation during lead/lag cycle.
    - Status of operation in standby mode (Redundant/Back-up).
    - Status of operation during all alarms.
    - Monitoring and/or reporting modes.
    - Interface with BAS System.

As required by contract and identified in the commissioning plan, CxA will create written step-by-step Integrated Systems Testing (IST) procedures that will be used to verify the interdependency of each commissioned system during various facility events. The purpose of conducting the IST's is to demonstrate the capability of the facility's commissioned systems to operate together, recover from loss of power, and maintain the environmental and power systems under load conditions. The format for the IST's shall be the same as noted above for the FPT's and will include the following:

- All modes of facility operation.
- All modes of power (normal and emergency).
- All modes of maintenance scenarios (scheduled and non-scheduled events).

Maintain Master List of Findings or Observation Log – The CxA will document identified issues from site visits and tests in the Master List of Findings or Observation Log. The CxA will communicate such issues as needed to the Owner, A/E, and/or Contractor. The log requires contributions from each of the commissioning team memebers and as such everyone on the commissioning team has a responsibility to update the log via Autodesk BIM 360 Field. The CxA will validate and close issues as the team identifies that they are ready for closure. The Master List of Findings or Observation Log will be submitted as part of the Cx Report.

Review Pre-Start Tests – The contractors submit completed Pre-Start Tests and manufacturer supplied tests to the CxA. The CxA reviews such documents to verify that the equipment/system is ready for start-up. In some cases the Pre-Start may be performed with the Start-Up Tests. These factory test/checklists are used to verify:

- Equipment assemblies are complete (all components installed).
- Equipment operates as designed and specified.
- All accessories and appurtenances specified are included and functional.
- Equipment is ready for factory testing/demonstration (as witnessed by CxA, Owner/Owner Rep, A/E Team members, Facility Operators, and any other interested parties).

Review comments provided by the CxA will be sent, electronically, to the A/E Team as well as the vendor/manufacturer. All parties receiving the comments are instructed to incorporate the comments into subsequent re-submittals and/or respond, in writing, to the comments providing further clarification. This re-submittal and review process will continue until all interested parties are satisfied with the factory test procedures and scope.

Review Start-Up Procedures and Schedule – The CxA will review and provide written comments to the Cx Team on the start-up procedures and the proposed start-up schedule, for the MEP equipment to be commissioned on this project, as provided by the contractors and/or vendors prior to the beginning of the MEP start-up portion of the project. The focus of the CxA review will be:

- Completeness (that all relevant start-up items have been included).
- Correctness (that the start-up procedures submitted are the proper procedures for the equipment).
- Clarity (that submitted material is readable and usable).
- Compliance (that submitted material is in accordance with requirements of the design documents).
- Schedule: (that the order of start-up is logical and in sequence with the progress of the job).

Review & Verify TAB – The CxA will spot verify the TAB as required by contract; the TAB Contractor will conduct the spot test as directed by the CxA. The CxA will document any issues in the Master List of Findings or Observation Log. Focus of the TAB review will include:

- Verification of TAB Plan to ensure completeness and adherence to the design documents.
- Witness verification of TAB measurements (minimum of 10% random selection).
- Verification of Preliminary and Final TAB Reports to ensure documentation is complete and in accordance with design documents.

Final approval of the submitted TAB Reports is the responsibility of the A/E Team. The review by the CxA shall not relieve the A/E Team of that burden.

Witness Equipment Start-ups – As required by contract and specifications the CxA will witness the startup of major mechanical equipment as scheduled, and will provide documentation of the outcome including any issues encountered.

Witness Functional Performance Tests (FPT) – The CxA will organize, direct and witness each Functional Performance Test (FPT) of the equipment to be commissioned on this project. The CxA shall conduct a Pre-Test Meeting prior to testing. Actual testing will be conducted by the contractors and/or vendors responsible for providing and installing the equipment. The CxA shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved FPT forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxA. In the event that a test is deemed as "Failed" then three successfully executed retests, in successive order, must be documented prior to final acceptance. Issues discovered during the testing shall be noted on the Master Commissioning Issues Log.

Prior to a scheduled test, the CxA shall schedule and conduct a "Pre-Test Meeting" at the site. The purpose of this meeting is to assemble all the parties responsible for conducting and/or witnessing the functional performance demonstrations (FPT's and IST's) and, as a group, review the following:

- The purpose of the test.
- List of equipment to be included in the test.
- The procedures that will be used for the test.
- Expected results of the test.
- The use of any access equipment (ladders, lifts, etc.), including:
  - Party responsible for supplying and using access equipment.
  - Acceptable types of access equipment.
- The use of any non-system equipment (meters, gauges, hand tools, etc.) including:
  - Party responsible for supplying and using the non-system equipment.
  - Calibration standards of non-system equipment.
  - Make/Model/Type of acceptable non-system equipment.
- Chain of command before and during the testing, including:
  - List of all personnel REQUIRED to attend the test.
  - Use of formal Sign-In Sheets at each test.
  - Roles and responsibilities for personnel attending the test.
  - Recognition by all personnel attending the test that McKinstry Commissioning has overall authority on Pass/Fail determination for each step of the test.
- Types of Acceptable Communication Tools:
  - Use of 2-way radios and/or cell phones.
  - Frequencies to be used for test instructions (Tach-1) and other frequencies to be used for "side-chatter" (Tach-2).
  - Each party responsible for their own radios/cell phones
  - Conduct a radio/phone test at the actual test site to verify that selected equipment/frequencies will work.
- Establishing time and location for test, including:
  - Check in time and location.
  - Sign-In Sheet.
  - Last minute supplemental instructions and "Go/No Go" status check.
- Site safety orientation requirements, including:
  - Rules of conduct to be followed by ALL personnel attending the test.
  - Dress code for all personnel attending the test (hard hats, safety glasses, safety vests, proper footwear, gloves, etc.).
- Criteria for approving the start of the test, including:
  - Completion of all pre-test documentation.
  - Verification that required personnel are on site and ready for test.
  - Verification that non-system equipment has been provided, charged (and/or new batteries installed) and calibration is current.
  - Verification that access equipment has been provided.
  - Verification that test area is available for the test (clean, clear of debris, and that no work is scheduled in the immediate area during the test period).
- Procedures for documenting issues discovered during the FPT, including:
  - All issues discovered during the FPT will be documented in the Issues Log.
  - Issues discovered during the testing that are corrected on the spot and proven as corrected by an immediate subsequent successful test shall be noted as "Closed" on the Issues Log.
  - Issues discovered during the testing that are not immediately correctable and result in an unsuccessful test, shall be noted as "Open" on the Issues Log.
- Criteria for determining a "Failed" test, including:
  - Criteria for determining an issue that can be corrected during the test period and immediate retesting.
  - Criteria for determining an issue that requires a momentary delay in the test for corrections and postponing the test for no more than 30 minutes while corrective action is taken and then retesting.
  - Criteria for determining an issue that will require the test to be rescheduled for another day (Failed Test Status).

The contractor shall prepare the area adjacent to the component/equipment/system for the test prior to the start of the test so as to not to cause a delay in the execution of the tests. The contractor shall coordinate with all trades working in the immediate area of the test so as to minimize the disruption of the work schedule, and to verify that any work being done in the immediate area of the test will not disrupt the test (loud noise, moving machinery, lift conflicts, etc.). This shall include not only the area of the test, but will also include the areas adjacent to the test area and the floor areas above and below the actual test area.

Witness Integrated System Testing (IST) – The CxA will organize, direct and witness the Integrated Systems Test (IST) of the MEP equipment to be commissioned on this project. Actual testing will be conducted by the team of contractors and/or vendors responsible for providing and installing the equipment within the systems related to the IST. The CxA shall witness the testing, direct the flow and pace of the testing, and complete the testing documentation using the approved IST forms. Determination of the "Pass/Fail" status of each test shall be at the sole discretion of the CxA. Issues discovered during the testing shall be noted on the Commissioning Issues Resolution Log.

The CxA shall conduct a Pre-Test Meeting prior to the IST. In the event that a system test is deemed as "Failed" the tests shall be repeated as many times as necessary to successfully document the system's acceptable performance. The following deliverables should be expected during the Construction Phase:

- Commissioning Schedule
- Pre-functional checklists
- Review comments of proposed start-up checklists.
- Review comments of completed start-up checklists
- TAB Review comments
- Functional Performance Tests
- Integrated System Tests
- Master List of Findings or Observation Log / Investigation Report(s)

2.4 POST CONSTRUCTION PHASE

The Project Post Construction focuses on the turnover of the facility/system to the Owner and facility operations staff. The CxP will assist with this transition per the following steps:

Resolve Master List of Findings or Observation Log – The CxA will work with the Owner, A/E, Contractor, and contractors to resolve the open issues on the Master List of Findings or Observation Log. The end goal is to close all issues on the log or obtain mutual acceptance of outstanding issues.

Deliver Cx Report – The CxA will provide a draft Cx Report to the Owner and A/E to review. The CxA will incorporate feedback as necessary. The CxA will obtain all required documentation and update Cx Report. The CxA will deliver final Cx Report to the Owner.

- Executive Summary
- Final Cx Plan
- Final Master List of Findings or Observation Log
- Completed Test Forms (FPT and IST)

3.0 Commissioning Team Members Roles & Responsibilities Parties Involved

3.1 PARTIES INVOLVED

The commissioning process requires the involvement of various project stakeholders. Below is a list of parties, other than the CxA, who have responsibilities in the commissioning process. These responsibilities do not negate contract requirements or specifications; they are included herein for clarification and reference purposes.

Owner

Walla Walla Public Schools		
364 South Park Street Walla Walla, WA 99362		
Mike Kay	*(509) 526-1873*	*mkay@wwps.org*
Wade Smith	*(501) 510-0260*	*wsmith@wwps.org*

Design Team (A/E)

Architects West		
210 East Lakeside Ave. Coeur d' Alene, ID 83814		
Jolleen Severns	*(208)667-9402*	*jolleens@architectswest.com*
Kevin Col	*(208)667-9402*	*kevinc@architectswest.com*

MSI Engineers		
108 N Washington St, Ste. 505 Spokane, WA 99201		
Jess Stauffenberg		*jess@msi-engineers.com*
Steve Bacon		*steve@msi-engineers.com*
Logan Gullickson		*logan@msi-engineers.com*

Construction Manager (CM)

Wenaha Group		
100 N Morain #210 Kennewick, WA 99336		
Heath Gardner	*(509) 619-5206*	*heath@wenahagroup.com*
Rick Ahrens	*(509)460-7093*	*ricka@wenahagroup.com*

General Contractor (GC)

Jackson Contractor Group, Inc.		
PO Box 967 Missoula, MT 59806		
Larry Dimino	*(509)525-8585*	*larryd@@jacksoncontractorgroup.com*
Chris Webb	*(509)821-1296*	*chrisw@jacksoncontractorgroup.com*
Reyna Perez	*(509)524-8585*	*reynap@jacksoncontractorgroup.com*

Contractors

Mechanical Contractor

Total Energy Management, Inc.		
2521 Stevens Dr. Richland, WA 99354		
Eduardo Alvarado	*(509) 946-4500*	*ealvarado@teminc.com*
Craig Firkins	*(509) 946-4500*	*cfirkins@teminc.com*
Devin Van Ruiten	*(509) 946-4500*	*deven@teminc.com*
Andy Roberts	*(509)551-6408*	

Electrical Contractor

Titan Electrical		
615 Keys Road Yakima, WA 98901		
Sergio Avolos	*(509)941-8306*	*Avalosayala13@hotmail.com*

Andrew Guiterrez	*(509)941-8306*	*andrewguti@gmail.com*
Jose Mireles	*(509)941-8306*	*Mireles_92@outlook.com*
Andrew Root	*(509)941-8306*	*Andrew.root@titan-electrical.com*
Matt Smith	*(509)901-7338*	*matt@titan-electrical.com*
Mike Yusi	*(509)949-4029*	*mike@titan-electrical.com*

Controls Contractor

Standard Plumbing Heating Controls		
10419 E Trent Ave. Spokane, WA 999206		
Richard (Craig Co HVAC Controls)	*Phone*	*richard@craig-co.com*
Robert Scott	*(509)-922-1717*	*robert@sphcontrols.com*

Plumbing Contractor

Cutting Edge Plumbing & Mechanical		
1104 N. 12th Ave. Walla Walla, WA 99362		
John Hallowell	*(509) 525-0557*	*johnh@cepm.biz*
Wendy Hodgen	*(509) 525-0557*	*wendyh@cepm.biz*
Dave Knowles	*(509) 525-0557*	*davek@cepm.biz*
Jeremy Knowles	*(509) 520-6697*	*jeremyk@cepm.biz*
Rose Knowles	*(509) 525-0557*	*rosek@cepm.biz*
Mike Schultz	*(509) 525-0557*	*mikes@cepm.biz*

TAB Contractor

Testcomm		
2211 E Sprague Ave, Spokane, WA 99202		
Jerry Ensminger	*(509)-533-0498*	*jerrye@testcommllc.com*

Commissioning Agent

McKinstry LLC		
850 E Spokane Falls Blvd, Suite 100 Spokane, WA 99202		
Garrett Husky	*(509) 319-0003*	*garretth@mckinstry.com*
Chase Schmidt	*(509) 991-9485*	*chasesc@mckinstry.com*

3.2 OWNER'S RESPONSIBILITIES

Below are the Owner's responsibilities by phase:

Design Phase

- Select Commissioning Agent
- Develop Owner's Project Requirements (OPR) and provide to Design Team and Commissioning Agent
- Review and provide feedback to CxA on the Commissioning Plan

Construction Phase

- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Review and provide feedback to CxA of the test procedures
- Ensure points, parameters, and alarms are established as necessary for the CxA to monitor systems remotely
- Attend progress meetings to observe and provide direction on open issues
- Conduct periodic site visits; Report any issues to CxA for documentation and follow-up
- Witness Start-up Testing, if desired
- Identify Operations staff as early as possible and encourage their involvement in the commissioning process
- Periodically include Operations staff in site inspections
- Witness/participate in FPT at Owner's discretion
- Work with CxA, A/E, and Contractor to resolve issues

Post Construction Phase

- Ensure Operations staff is available for training
- Review Final Commissioning Report
- Participate in Lessons Learned Session with CxA

3.3 A/E'S RESPONSIBILITIES

Below are the A/E's responsibilities by phase:

Design Phase

- Review Commissioning Plan and provide feedback to CxA
- Provide Commissioning Team with written BOD narrative prior to the start of DD's
- The A/E is responsible for providing the CxA with a copy of the Design Documents (about *90*% complete) for the commissioning review. The A/E should allow at least three weeks for a design review.
- The A/E is responsible for providing the CxA with a copy of the Construction Documents (about *50*% complete) for the commissioning review.
- The A/E team will address/incorporate the CxA's review comments
- The A/E team will review and incorporate commissioning specifications into the construction documents
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.

Construction Phase

- Review submittals, shop drawings, and product data; forward copies to CxA
- Review commissioning test procedures and provide feedback
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Consult on and resolve any design-related issues that arise during acceptance testing
- Mechanical Design Engineer shall review and approve balancing reports

Post Construction Phase

- Provide updated as-builts, one-line diagrams, and sequence of operations to CxA
- Provide final Basis of Design (BOD) to CxA

3.4 PRIME / GENERAL CONTRACTOR'S RESPONSIBILITIES

Below are the General Contractor's (GC) and Contractors' responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents. In general, the GC is responsible to ensure all their contractors support and meet the requirements of the commissioning process.

Design Phase

- The CM is responsible for scheduling and cost estimating
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, etc.
- Incorporate Commissioning Schedule into Master Construction Schedule

Construction Phase

- Provide equipment submittals to CxA in a timely manner for review
- Install equipment per manufacturer and construction specifications
- Review commissioning test procedures and provide feedback to CxA
- Participate in the resolution of system deficiencies identified during commissioning, in accordance with the contract documents
- Include Commissioning Agent in pertinent communications and meetings, including meeting minutes, drawing updates, known issues, field changes, etc.
- Provide copy of O&M Manual, updated drawings, final submittals, record product data, and other pertinent documents to the CxA for review
- Assist CxA with coordination of Prime Contractors for testing
- Assist Prime Contractors with completing commissioning test documents as directed by the CxA
- Complete Pre-Start Tests and inform CxA equipment is ready for start-up
- Execute Start-Up Tests under direction of CxA
- Assemble O&M Manual and provide copies to CM or CxA
- Execute FPT under direction of CxA

Post Construction Phase

- Conduct training for Operations staff as coordinated by CxA
- Provide copy of training material to CxA

3.5 CONTRACTOR'S RESPONSIBILITIES

Below are the Contractor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxA including but not limited to submittals, O&M materials, completed Pre-Functional checklists, proposed startup sheets, completed startup documentation and TAB reports
- Coordinate and schedule Factory Witness Testing and all other commissioning activities with the CxA and GC
- Notify the CxA when systems and assemblies are ready for startup and Functional Testing
- Provide O&M materials and training as detailed in the specifications
- Perform startup of equipment at the project site
- Execute Pre-Functional checklists, Functional Performance Testing and Integrated Systems Testing
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contract Documents, and Functional Performance Test Procedures
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Work with Owner and CxA to resolve issues as identified

3.6 EQUIPMENT VENDOR'S RESPONSIBILITIES

Below are the Vendor's responsibilities by phase. These are in addition to the Commissioning Specifications and contract documents.

Design Phase

- Include cost for participating in Commissioning activities in the contract price
- Participate in commissioning coordination meetings as requested

Construction Phase

- Provide all documentation requested by the CxA including, but not limited to; submittals, O&M materials, completed Pre-Functional checklists, and startup documentation (Factory Authorized Start-Up sheets)
- Coordinate and schedule commissioning activities with the CxA and GC
- Execute Pre-Functional checklists as systems are installed and provide completed checklists to the CxA
- Provide all required monitoring, metering, load banks and other equipment as defined in the Commissioning Plan, Contracts Documents, and Functional Performance Test Procedures
- Perform start-up of equipment utilizing Factory Authorized Start-Up sheets
- Execute Functional Performance Testing and Integrated Systems Testing under the direction of the CxA
- Demonstrate the performance of assemblies and/or operation of systems to the CxA as requested
- Resolve issues and deficiencies identified during commissioning and perform retesting as necessary

Post Construction Phase

- Implement the Training Plan as approved by the CxA

Section 3

Final Walla Walla High School Commissioning Issue Log ID 000051

Company	<not set>	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Jul 2020 10:51 AM	**Root Cause**	

Description

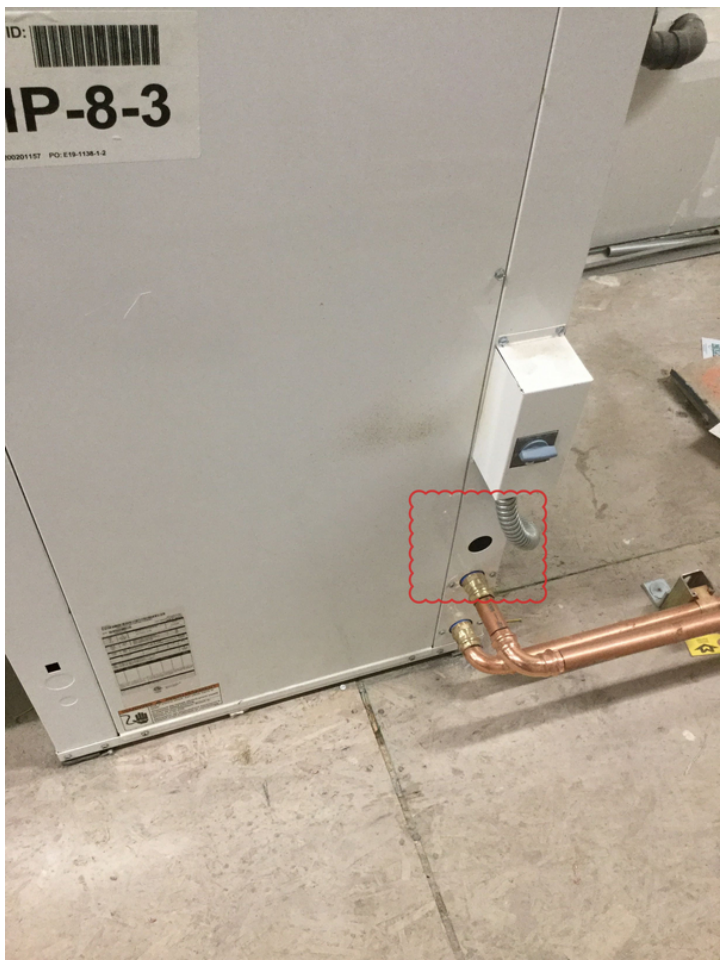
Heat pump condensate lines have not yet been piped.

Location	<Top level>
Location Detail	

Comments for ID 000051

Garrett Husky (garretth@mckinstry.com) 03 Aug 2020 10:42 AM	Complete.
Garrett Husky (garretth@mckinstry.com) 21 Jul 2020 11:52 AM	Ascent is aware and will complete prior to startup as per conversation with Sean.

Attached Images for ID 000051



2020-07-21 10:51:56

Company	<not set>	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 10:21 AM	**Root Cause**	

Description

Floor sink next to HRU-2 is plugged up.

Location	<Top level>
Location Detail	

Comments for ID 000060

Garrett Husky (garretth@mckinstry.com)
03 Aug 2020 10:41 AM

Test plug was found in the line and was punched into the main. Drain appears to be operational at this point. Floor clean out is available if any issues arise in the main.

Attached Images for ID 000060

2020-07-31 10:21:36

Final Walla Walla High School Commissioning Issue Log ID 000085

Company	<not set>	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:10 PM	**Root Cause**	

Description

Electric Heat on/off - DO

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Comments for ID 000085

Cody Murdock (codym@mckinstry.com) 10 Sep 2021 8:56 AM	No electric heat on HRUs in building 2.

Final Walla Walla High School Commissioning Issue Log ID 000086

Company	<not set>	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:24 PM	**Root Cause**	

Description

Exhaust Air Flow (cfm) - AI parts did not ship with unit. Parts on order

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Comments for ID 000086

Cody Murdock (codym@mckinstry.com)
10 Sep 2021 8:56 AM

AFM station has been installed and reading on BAS.

Final Walla Walla High School Commissioning Issue Log ID 000090

Company	<not set>	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:34 PM	**Root Cause**	

Description

Electric Heat on/off - DO

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Comments for ID 000090

Cody Murdock (codym@mckinstry.com) 09 Sep 2021 9:25 AM	No electric heat provided in HRU per approved submittal.

Company	<not set>	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Sep 2021 9:59 AM	**Root Cause**	

Description

Verify in spec if brass -mild steel is acceptable. Typ on 4-2,4-4, 4-5 HP coil kits in bld 4

Location	<Top level>
Location Detail	

Comments for ID 000103

Cody Murdock (codym@mckinstry.com)
27 Sep 2021 12:15 PM

Per spec 232113-7 Q dielectric fittings are only required when going from Copper to Mild Steel.

Attached Images for ID 000103

2021-09-14 10:00:16

2021-09-14 10:00:08

Final Walla Walla High School Commissioning Issue Log ID 000144

Company	<not set>	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Jul 2022 9:59 AM	**Root Cause**	

Description

Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.

Location	Walla Walla High School > Building 7 > Mezzanine > 2301
Location Detail	

Equipment Name	HRU-7-1
Equipment Barcode	

Final Walla Walla High School Commissioning Issue Log ID 000050

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Jul 2020 10:28 AM	**Root Cause**	

Description

Please confirm that specification 23-05-29 does not require thermal shield inserts for pipe clamps to insulate and to protect copper pipe. Copper pipe is attached directly to (coated) steel strut throughout the mechanical mezzanine.

Location	<Top level>
Location Detail	

Comments for ID 000050

Garrett Husky (garretth@mckinstry.com) 27 Oct 2020 10:35 AM	MSI has accepted the as-built condition for condenser water piping and zinc-coated pipe straps.
Garrett Husky (garretth@mckinstry.com) 21 Jul 2020 11:53 AM	MSI to review onsite (7/22/20) and provide final direction. Ascent (Sean) is aware of the question.

Attached Images for ID 000050

2020-07-21 10:29:52

Final Walla Walla High School Commissioning Issue Log ID 000054

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 9:37 AM	**Root Cause**	

Description

Pump P-8-2 is missing an isolation valve on the differential pressure piping on the outlet of the pump as per detail 6 on sheet M5.02.

Location	<Top level>
Location Detail	

Comments for ID 000054

Cody Murdock (codym@mckinstry.com) 23 Mar 2021 9:47 AM	Isolation valves have been installed.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:10 AM	McK will back check this issue on next site visit.

Attached Images for ID 000054

2021-03-23 09:47:48

2020-07-31 09:38:37

Final Walla Walla High School Commissioning Issue Log ID 000055

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 9:42 AM	**Root Cause**	

Description

It appears the recirc pumps have not been supported by straps as per detail 6 on M5.02. Please confirm engineer has approved current configuration.

Location	<Top level>
Location Detail	

Comments for ID 000055

Garrett Husky (garretth@mckinstry.com)
27 Oct 2020 10:36 AM

Current configuration is acceptable as per design, given the structure of the facility and the inability to hang the system from the wood-framing above.

Attached Images for ID 000055

2020-07-31 09:45:23

Final Walla Walla High School Commissioning Issue Log ID 000056

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 9:48 AM	**Root Cause**	

Description

Expansion tank for heating water loop to science building has not been installed.

Location	<Top level>
Location Detail	

Comments for ID 000056

Garrett Husky (garretth@mckinstry.com)
27 Oct 2020 10:34 AM

Tank has been installed

Attached Images for ID 000056

2020-07-31 09:48:53

Final Walla Walla High School Commissioning Issue Log ID 000057

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 9:53 AM	**Root Cause**	

Description

There are a number of locations in the mechanical mezzanine that the main condensing header have not been secured to the supports.

Location	<Top level>
Location Detail	

Comments for ID 000057

Cody Murdock (codym@mckinstry.com) 23 Mar 2021 10:38 AM	Pipes have been properly supported.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:11 AM	McK will back check issue on next site visit.

Attached Images for ID 000057

2020-07-31 10:03:16

Final Walla Walla High School Commissioning Issue Log ID 000061

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 11:07 AM	**Root Cause**	

Description

Cooling tower Venturi requires 5 straight pipe diameters upstream of device for proper reading.

Location	<Top level>
Location Detail	

Comments for ID 000061

Garrett Husky (garretth@mckinstry.com)
27 Oct 2020 10:37 AM

Venturi was relocated.

Attached Images for ID 000061

2020-07-31 11:09:35

Final Walla Walla High School Commissioning Issue Log ID 000071

Company	Ascent Mechanical	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Aug 2020 8:27 AM	**Root Cause**	

Description

Boiler circulation pumps are missing the required pressure gauge set.

Location	<Top level>
Location Detail	

Comments for ID 000071

Garrett Husky (garretth@mckinstry.com) 27 Oct 2020 10:35 AM	Gauges have been provided.
Garrett Husky (garretth@mckinstry.com) 21 Aug 2020 8:28 AM	Scott Turk (Ascent) is aware of the issue and will provide the necessary gauges.

Attached Images for ID 000071

2020-08-21 08:28:50

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	15 Apr 2021 9:15 AM	**Root Cause**	

Description

Ensure bld 7 pump openings are sealed so debris doesn’t get in them during construction.

Location	Walla Walla High School > Building 7
Location Detail	

Comments for ID 000078

Braden Pitman (bradenp@jacksoncontractorgroup.com)
26 May 2021 9:20 AM

Pump Openings have been covered and protected. Issue has been resolved.

Attached Images for ID 000078

2021-04-15 09:16:48

2021-04-15 09:16:43

Final Walla Walla High School Commissioning Issue Log ID 000079

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	29 Apr 2021 11:18 AM	**Root Cause**	

Description

Building 2 mezzanine near HP-2-2: Condenser water pipe is strapped directly to galvanized (not anodized) strut. Please separate using a Cush clamp.

Location	<Top level>
Location Detail	

Comments for ID 000079

Cody Murdock (codym@mckinstry.com) 13 Jul 2021 2:11 PM	Issue resolved.
Braden Pitman (bradenp@jacksoncontractorgroup.com) 10 Jun 2021 4:02 PM	Cush Clamps have been installed. Issue has been resolved.

Attached Images for ID 000079

2021-06-10 16:01:43

2021-04-29 11:21:28

2021-04-29 11:21:20

Final Walla Walla High School Commissioning Issue Log ID 000080

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 May 2021 10:37 AM	**Root Cause**	

Description

Bld 2 P 2-1 and P2-2 ensure 3 PT ports are added per detail 13 on sheet M5.02. Currently only see 2, one on inlet and one on outlet.

Location	<Top level>
Location Detail	

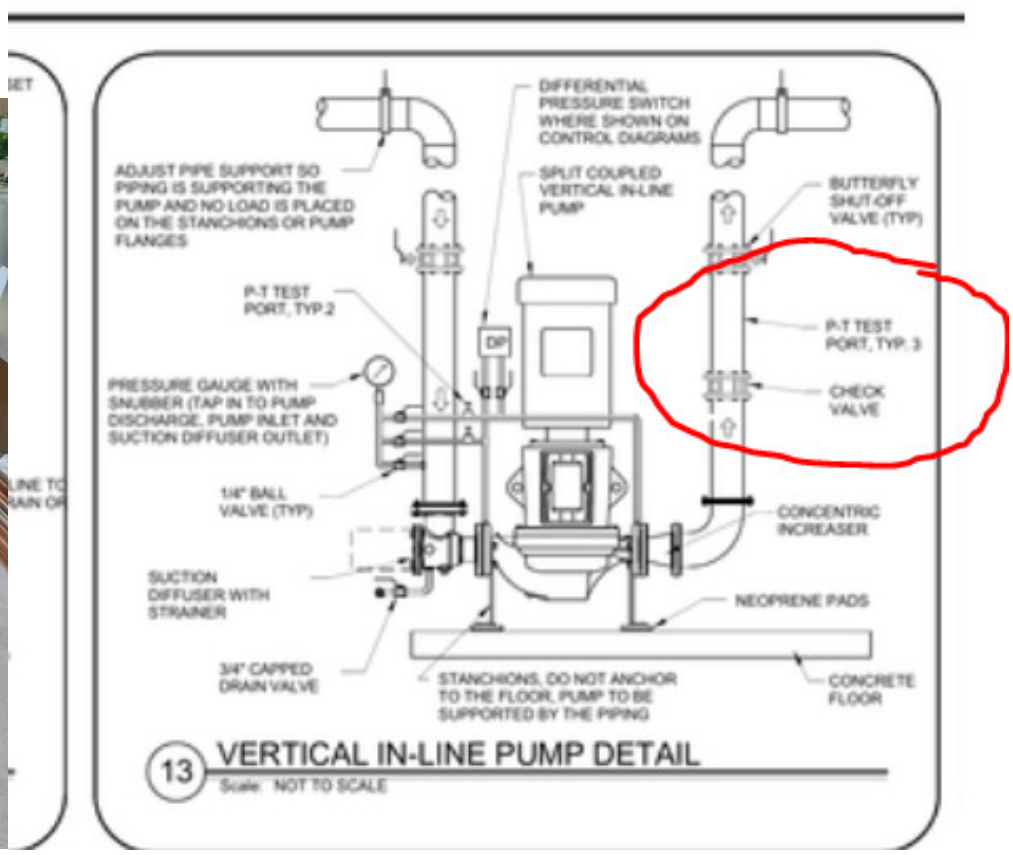
Comments for ID 000080

Braden Pitman (bradenp@jacksoncontractorgroup.com)
26 May 2021 9:20 AM

3 Test Ports are installed at each pump per detail. Issue has been resolved.

Attached Images for ID 000080

2021-06-10 16:01:06



2021-05-20 11:23:36

2021-05-20 10:38:43

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Jul 2021 10:18 AM	**Root Cause**	

Description

Cooling tower spray pipe flex hose is leaking. Needs a new hose clamp.

Location	<Top level>
Location Detail	

Comments for ID 000083

Cody Murdock (codym@mckinstry.com)
14 Sep 2021 10:48 AM

Hose has been replaced.

Attached Images for ID 000083

2021-09-14 10:47:47

2021-07-09 10:19:20

Final Walla Walla High School Commissioning Issue Log ID 000104

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Sep 2021 10:01 AM	**Root Cause**	

Description

No hi point air vents in north mezzanine in building 4. Hydronic piping goes through sheet rock on ceiling and is higher than any high point on the main header.

Location	<Top level>
Location Detail	

Comments for ID 000104

Cody Murdock (codym@mckinstry.com) 30 Mar 2022 10:12 AM	Per email from the engineer these vents are not necessary.
Cody Murdock (codym@mckinstry.com) 15 Mar 2022 2:10 PM	Per email between Jeremy (Cutting Edge) and Jess (MSI) high point vents do not need to be added.

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Oct 2021 9:47 AM	**Root Cause**	

Description

Building 3 expansion tank isolation valve needs to be upstream of the pressure pop off.

Location	<Top level>
Location Detail	

Comments for ID 000106

Cody Murdock (codym@mckinstry.com)
06 Oct 2021 10:01 AM

Additional pop off to be installed between tank and iso valve.

Attached Images for ID 000106

2021-10-06 09:48:15

Final Walla Walla High School Commissioning Issue Log ID 000114

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Dec 2021 9:45 AM	**Root Cause**	

Description

Inline pump for the DHW in building 3 does not appear to have unions installed on each side of the pump. If they are there is permanent insulation around then which should be removable.

Location	<Top level>
Location Detail	

Comments for ID 000114

Cody Murdock (codym@mckinstry.com)
06 Dec 2021 8:33 AM

Flange unions are included.

Attached Images for ID 000114

2021-12-01 09:46:52

Final Walla Walla High School Commissioning Issue Log ID 000115

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Dec 2021 9:47 AM	**Root Cause**	

Description

Drain line on outlet side of DHW in-line pump is horizontal and is detailed to be at the bottom of the pipe to allow complete drainage.

Location	<Top level>
Location Detail	

Comments for ID 000115

Cody Murdock (codym@mckinstry.com)
06 Dec 2021 8:34 AM

According to Ken (cutting edge) the recirc pump has this drain for an air vent and does not call for a strainer and drain.

Attached Images for ID 000115

2021-12-01 09:48:27

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Dec 2021 10:33 AM	**Root Cause**	

Description

No drain cover for floor drain between water softener and DHW in building 3.

Location	<Top level>
Location Detail	

Comments for ID 000116

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:21 AM

Drain cover has been installed.

Attached Images for ID 000116

2022-12-29 11:20:52

2021-12-06 10:34:24

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Dec 2021 10:39 AM	**Root Cause**	

Description

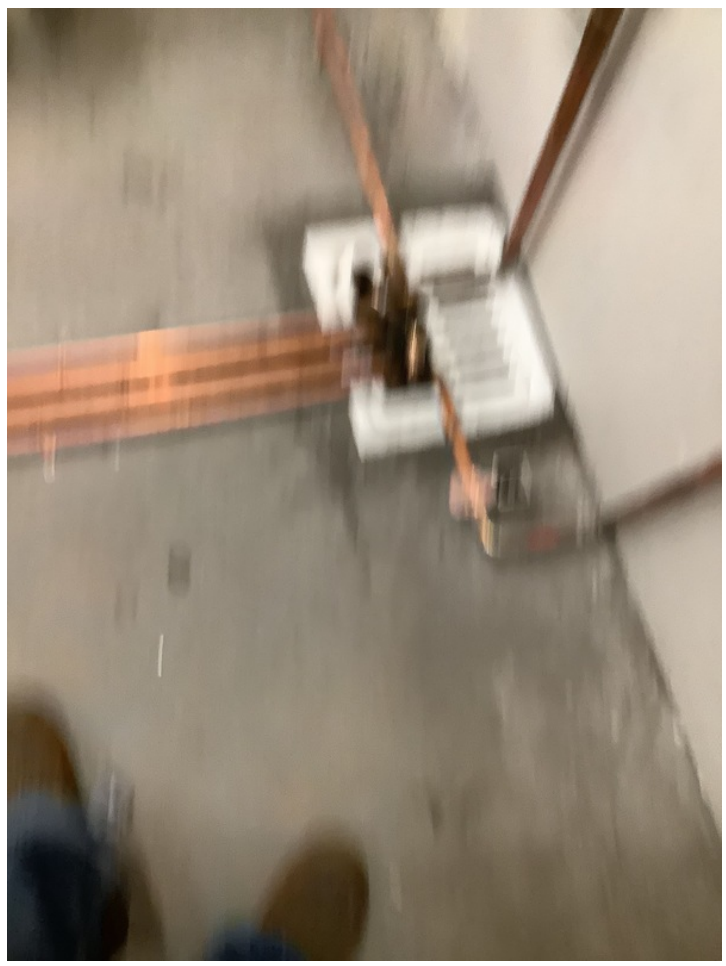
AHU 3-1 and 3-2 condensate traps do not meet the detail 17 on M5.02. The height of the unit from the floor does not allow for enough drop as described in the detail.

Location	<Top level>
Location Detail	

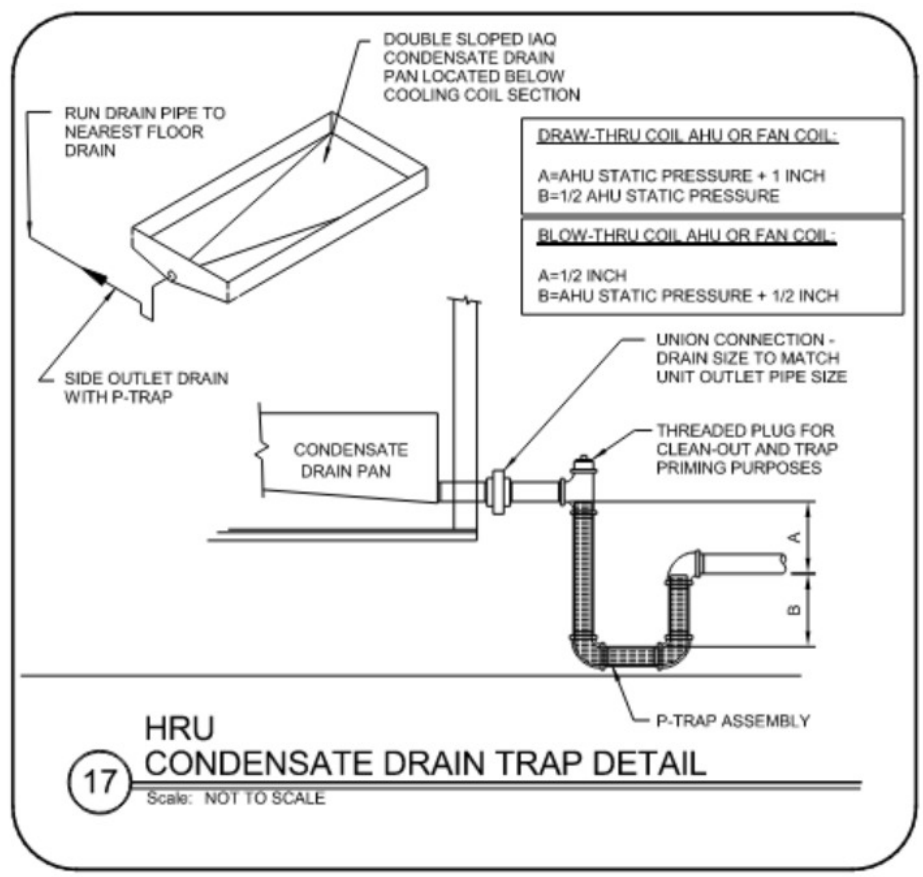
Comments for ID 000117

Cody Murdock (codym@mckinstry.com) 29 Dec 2022 11:22 AM	Condensate traps have been ran to floor drain per email from MSI.
Cody Murdock (codym@mckinstry.com) 11 Apr 2022 12:07 PM	Per email from Logan (MSI Engineers) on 4/7/22 - "We note on the schedule for these unit to “include extra height or additional base rail to elevate the condensate outlet a minimum of 7” from the bottom of the rail.” It does not appear this was provided. What we have allowed in the past is routing the condensate straight to the floor sink as high as possible and using the floor sink elevation drop to install the correct size P-trap."

Attached Images for ID 000117



2022-12-29 11:22:28



2022-03-31 08:07:40

2021-12-06 10:40:44

2021-12-06 10:40:38

Final Walla Walla High School Commissioning Issue Log ID 000136

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	30 Mar 2022 10:10 AM	**Root Cause**	

Description

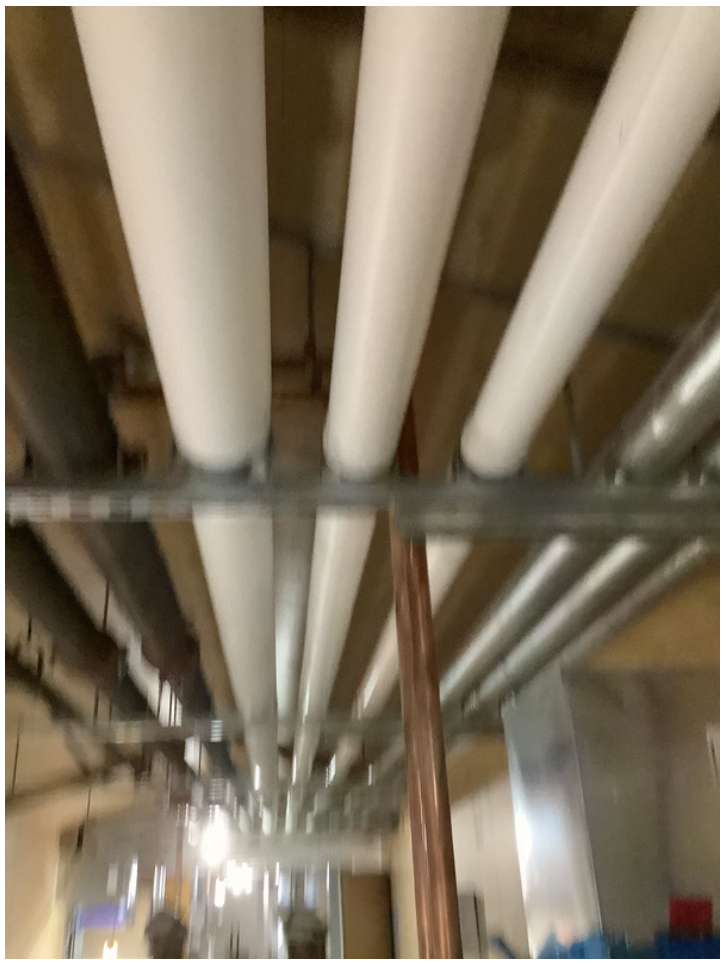
HP-5-15 does not have horizontal hydronic piping supported as is done on every other HP.

Location	<Top level>
Location Detail	

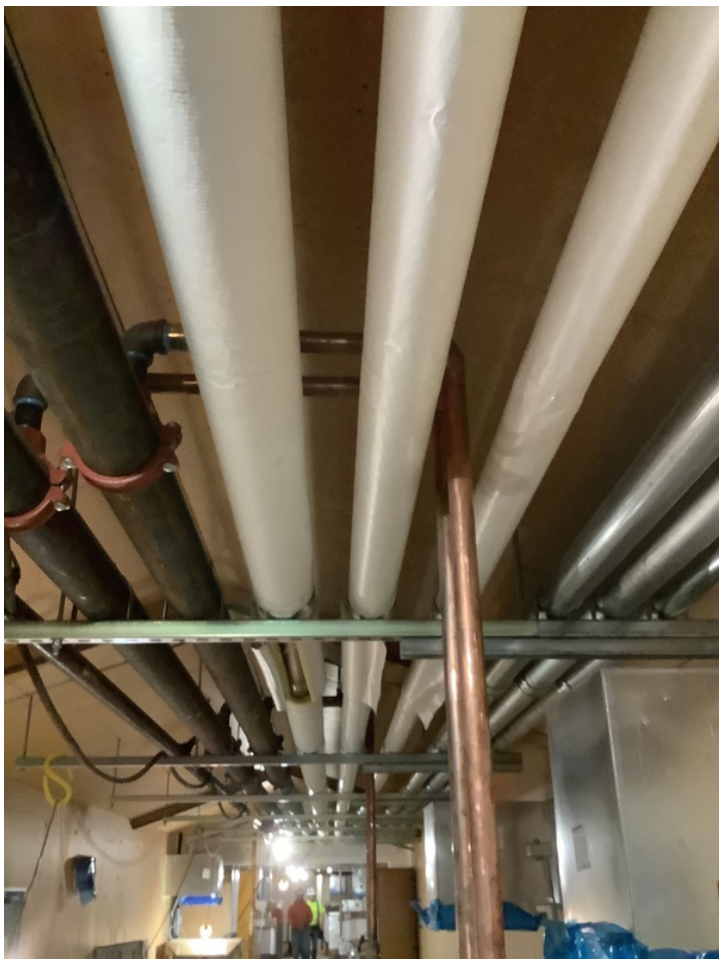
Comments for ID 000136

Cody Murdock (codym@mckinstry.com) 27 Jun 2022 11:04 AM	Per email from engineers on 3/4/22, they will re-evaluate to see where these supports are necessary.
Cody Murdock (codym@mckinstry.com) 22 Jun 2022 8:42 AM	Per email from MSI the additional supports will be inspected on next site visit to determine necessity.

Attached Images for ID 000136



2022-03-30 10:22:52



2022-03-30 10:22:33

Final Walla Walla High School Commissioning Issue Log ID 000163

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	29 Dec 2022 10:19 AM	**Root Cause**	

Description

Flow switch (boiler internal controls) is jumpered out on the control board. Low water cut out is installed. Should the flow switch be installed to control boiler? Bacnet controller needs to be set up by supplier.

Location	<Top level>
Location Detail	

Comments for ID 000163

Chase Schmidt (chasesc@mckinstry.com) 14 Aug 2023 1:40 PM	Graphic has been updated. Issue will be closed.
Chase Schmidt (chasesc@mckinstry.com) 07 Aug 2023 9:28 AM	New program has been implemented and the boiler is running correctly. Only remaining item is to change the boiler graphic from a Crest boiler to a Knight boiler in order to eliminate future confusion.
Chase Schmidt (chasesc@mckinstry.com) 16 May 2023 8:41 AM	Email correspondence with Steve Montagne (SPHC) on 5/15/23 New program was received by Steve for the boilers last week. Steve is investigating the boilers and will implement the new program sometime in the future. I asked Steve to keep me informed on when this work will be completed
Cody Murdock (codym@mckinstry.com) 06 Apr 2023 1:06 PM	Per Kody Lane (Jackson) SPHC is to install the flow switch for the boiler in Building 1.

Attached Images for ID 000163

2022-12-29 10:21:47

Final Walla Walla High School Commissioning Issue Log ID 000166

Company	Cutting Edge Plumbing	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	29 Dec 2022 11:57 AM	**Root Cause**	

Description

Bld 1 heating water pump is controlled off the boiler. When boiler is not running the pump shuts off. This causes spaces calling for cooling to not meet set point.

Location	<Top level>
Location Detail	

Comments for ID 000166

Cody Murdock (codym@mckinstry.com) 29 Dec 2022 11:58 AM	Per conversation with Jess (msi) Steve (SPHC) updated a delay in the boiler to run the system pump for 40 mins after boiler is disabled.

Final Walla Walla High School Commissioning Issue Log ID 000059

Company	Gordon's Electric	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	bryan Perkins (bryanper@mckinstry.com)	**Author's Company**	Z-Obsolete9
Date Created	31 Jul 2020 9:53 AM	**Root Cause**	

Description

It does not appear that UH-1 has been provided with a factory disconnect as per the mechanical schedule. Please confirm that one will be provided.

Location	Walla Walla High School > New Science Building > Level 1 > 119
Location Detail	

Equipment Name	UH-1
Equipment Barcode	

Comments for ID 000059

Cody Murdock (codym@mckinstry.com) 15 Apr 2021 10:19 AM	Electrical engineer confirmed a factory disconnect is not required per email from Reyna (Jackson).
Cody Murdock (codym@mckinstry.com) 01 Apr 2021 7:46 AM	Per email from Jackson Contractors Group, Electrical Engineer does not require a factory disconnect on the unit heater.
Cody Murdock (codym@mckinstry.com) 23 Mar 2021 9:49 AM	It does not appear a factory disconnect has been installed as of 3/23/21.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:11 AM	McK will back check on next site visit.

Attached Images for ID 000059

2020-07-31 09:56:10

Final Walla Walla High School Commissioning Issue Log ID 000070

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	10 Aug 2020 8:31 AM	**Root Cause**	

Description

Please clean debris from pump motors in mechanical room.

Location	<Top level>
Location Detail	

Comments for ID 000070

Garrett Husky (garretth@mckinstry.com) 27 Oct 2020 10:37 AM	Verified.
Reyna Perez (reynap@jacksoncontractorgroup.com) 19 Aug 2020 11:44 AM	The clean out has been cleaned and cleared of debris/water

Attached Images for ID 000070

2020-08-10 08:32:04

2020-08-10 08:31:57

Final Walla Walla High School Commissioning Issue Log ID 000075

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Feb 2021 9:58 AM	**Root Cause**	

Description

Building 2 mezzanine. Please ensure floor drains are kept covered and clean.

Location	<Top level>
Location Detail	

Comments for ID 000075

Garrett Husky (garretth@mckinstry.com)
02 Feb 2021 10:00 AM

Debris was cleaned out and cover reinstalled.

Attached Images for ID 000075

2021-02-02 10:00:05

2021-02-02 09:59:10

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	12 Jul 2021 12:41 PM	**Root Cause**	

Description

Cooling Tower (Dual Towers) currently have 3" drain pipe necked down to a 2" ball valve which will not allow the basin to drain completely. Per email between Jackson and MSI.

Location	<Top level>
Location Detail	

Comments for ID 000081

Cody Murdock (codym@mckinstry.com) 29 Dec 2022 11:21 AM	Correct size valves have been installed.

Final Walla Walla High School Commissioning Issue Log ID 000165

Company	Jackson Contractor Group, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	25 Jan 2023 12:40 PM	**Root Cause**	

Description

Boiler Gas Meter is not reading on DDC.

Location	<Top level>
Location Detail	

Comments for ID 000165

Chase Schmidt (chasesc@mckinstry.com) 12 May 2023 11:28 AM	Boiler Gas Meter appears to be working correctly from the BAS. Issue will be closed.
Cody Murdock (codym@mckinstry.com) 06 Apr 2023 1:05 PM	Per Kody Lane (Jackson) o CNG was just onsite Tuesday and got this installed. o I am working with SPH to try and get that done today as well as the Building #1 Boiler Bacnet.
Cody Murdock (codym@mckinstry.com) 25 Jan 2023 12:41 PM	Steve (SPHC) - waiting on a gas supplier to provide a pulse meter. This may have been installed, Steve will verify and update DDC.

Final Walla Walla High School Commissioning Issue Log ID 000058

Company	McKinstry E&TS	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 10:11 AM	**Root Cause**	

Description

Verify split ac to have a hard mounted stat through submittal.

Location	<Top level>
Location Detail	

Comments for ID 000058

Garrett Husky (garretth@mckinstry.com)
27 Oct 2020 10:38 AM

Verified. Has now been installed.

Attached Images for ID 000058

2020-07-31 10:12:33

Final Walla Walla High School Commissioning Issue Log ID 000021

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:05 PM	**Root Cause**	

Description

M1.01 HRU Schedule: Please confirm that the exhaust fans on the HRUs can be turned down below the scheduled supply fan minimum CFM during low ventilation requirements to ensure proper building pressurization can be maintained.

Location	<Top level>
Location Detail	

Comments for ID 000021

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:48 AM	Per email on 3/15/21 from Logan (MSI) fan speed can be adjusted. Fans are on VFDs for speed control.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:09 PM	**Root Cause**	

Description

M1.01 HRU Schedule: It's unlikely, based on HRU Defrost Control Sequence, that the leaving exhaust air temperature during winter operation will ever be below 32 F. Has this been considered during equipment selection? Will the potentially lower supply air temperatures seen at the heat pumps be acceptable?

Location	<Top level>
Location Detail	

Comments for ID 000022

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:49 AM	Per email on 3/15/21 from Logan (MSI) - The potential for lower supply air temp has been taken into account for equipment selection.

Final Walla Walla High School Commissioning Issue Log ID 000023

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:22 PM	**Root Cause**	

Description

M1.01 Specification 23 09 23 (DDC): Section 2.4 requires a demand limiting sequence be provided; please ensure a sequence of operation is provided prior to bid as this sequence has the potential to drive controls cost up significantly.

Location	<Top level>
Location Detail	

Comments for ID 000023

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:51 AM	Per email on 3/15/21 from Logan (MSI) -Demand limiting software by controls contractor. Any coordination required between MSI and controls contractor will occur as needed.

Final Walla Walla High School Commissioning Issue Log ID 000024

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:33 PM	**Root Cause**	

Description

M1.01 HRU Schedule: The specification (23 09 23) requires that airflow measuring stations be Ebtron Gold Series. Please consider coordinating this with the HRU schedule, Controls detail, and spec section 23 72 19 to ensure we get the high quality Ebtron product, and not simplistic pressure transducers.

Location	<Top level>
Location Detail	

Comments for ID 000024

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:52 AM	Demand limiting software by controls contractor. Any coordination required between MSI and controls contractor will occur as needed. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:37 PM	**Root Cause**	

Description

M1.01 HRU Schedule: Please consider eliminating the HRU return air duct smoke detectors as per WAC 51-52-0606 which references IMC 606.2.1 (Exception #2), unless this is a specific requirement of the District.

Location	<Top level>
Location Detail	

Comments for ID 000025

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:56 AM	Exception requires area smoke detectors to communicate with DDC. Smoke detectors are by Div 26. Information has been relayed to electrical engineer and smoke detectors will be removed if allowed.-MSI

Final Walla Walla High School Commissioning Issue Log ID 000026

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 3:52 PM	**Root Cause**	

Description

M1.01 HRU Schedule: Has any consideration been given to providing these units with supplemental heat? When heat pumps are in deadband, and the HRUs are in defrost mode, we could potentially deliver air significantly cooler than desired. Heatpumps are also notorious for experiencing issues with low mixed air temperatures.

Location	<Top level>
Location Detail	

Comments for ID 000026

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:56 AM	The potential for lower DOAS supply air temp has been taken into account for equipment selection.-MSI

Final Walla Walla High School Commissioning Issue Log ID 000027

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:04 PM	**Root Cause**	

Description

M1.01 AHU Schedule: Please reference Cx comment 000024 regarding airflow measuring stations. Also, there's no indication on M6.03 that airflow measuring is to be provided on these units.

Location	<Top level>
Location Detail	

Comments for ID 000027

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 8:57 AM	Units are submitted with Paragon airflow measuring stations to meet specifications. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:09 PM	**Root Cause**	

Description

M6.03 Detail 2: Please confirm that these units don't have to meet WSEC C403.2.11.5 for variable fan speed. If this code applies, please consider modifying the sequence and also providing accurate OSA airflow monitoring to allow for simple damper control.

Location	<Top level>
Location Detail	

Comments for ID 000028

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 8:58 AM

Fan speed reduction controls has been added via DDC submittal process.-MSI

Final Walla Walla High School Commissioning Issue Log ID 000029

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:20 PM	**Root Cause**	

Description

M1.01 Air Outlet Schedule: Please consider modifying keynote 5 to include a statement that would have the modular core adjusted to avoid throwing directly towards any exhaust or return grilles within 4 feet of the diffuser.

Location	<Top level>
Location Detail	

Comments for ID 000029

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 9:00 AM	Will consider. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:28 PM	**Root Cause**	

Description

M1.02 Heat Pump Schedule: Please consider adding a note to indicate that units over 2000 CFM require the return air duct smoke detector (currently only noted in controls diagram and might get overlooked).

Location	<Top level>
Location Detail	

Comments for ID 000030

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:04 AM

Smoke detector by Div. 26. Requirement noted in controls. -MSI Engineers.

Final Walla Walla High School Commissioning Issue Log ID 000031

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:33 PM	**Root Cause**	

Description

M1.04 Pump Schedule: Please confirm final flow has been calculated for these pumps; the connected load for buildings 2, 5, and 6 seems to be quite a bit higher than what the pumps are scheduled to deliver.

Location	<Top level>
Location Detail	

Comments for ID 000031

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:05 AM

Flow includes diversity. Pumps are on VFDs for speed/flow adjustments.-MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:39 PM	**Root Cause**	

Description

1-MD7.00: It does not appear that keynote 3 has been applied on this sheet.

Location	<Top level>
Location Detail	

Comments for ID 000032

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:07 AM

Addressed prior to bid documents. -MSI

Final Walla Walla High School Commissioning Issue Log ID 000033

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:42 PM	**Root Cause**	

Description

1-M2.01: Will Boiler B1-1 be identified in the mechanical schedule?

Location	<Top level>
Location Detail	

Comments for ID 000033

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:09 AM

Addressed prior to bid documents. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:43 PM	**Root Cause**	

Description

1-M2.01: Will the VAV boxes be identified in the mechanical schedule?

Location	<Top level>
Location Detail	

Comments for ID 000034

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:09 AM

Addressed in bid documents addendum 3. -MSI

Final Walla Walla High School Commissioning Issue Log ID 000035

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:46 PM	**Root Cause**	

Description

1-M2.01: Are there exhaust provisions for the restrooms in Area 1 of Building 1 that aren't shown?

Location	<Top level>
Location Detail	

Comments for ID 000035

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:10 AM

Fan is to remain. Grilles are to be balanced. Addressed in bid documents. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:51 PM	**Root Cause**	

Description

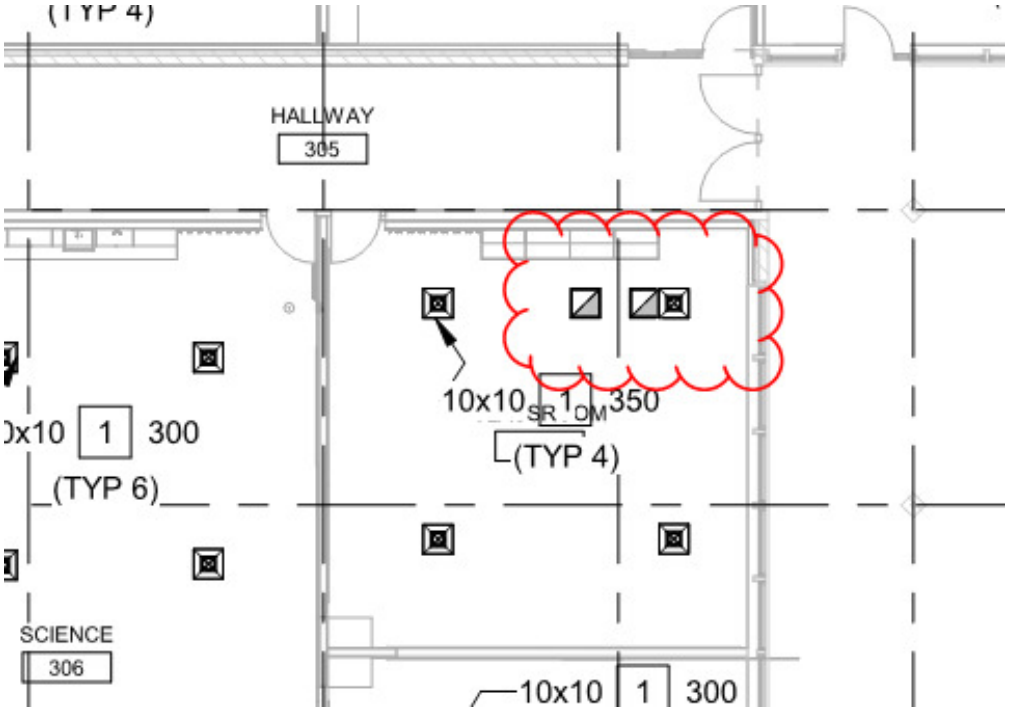
2-M2.00: A number of locations in this building place supply diffusers in close proximity to exhaust/return grilles. Is there any opportunity at this point to position these further away from each other to avoid short circuiting the supply air? (See attachment for example)

Location	<Top level>
Location Detail	

Comments for ID 000036

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 9:10 AM	Supply diffusers are provided with proper velocity of good air mixing. Core can be adjusted if needed.-MSI

Attached Images for ID 000036



2020-06-03 16:50:36

Final Walla Walla High School Commissioning Issue Log ID 000037

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 4:54 PM	**Root Cause**	

Description

2-M2.00: Keynotes missing from this sheet.

Location	<Top level>
Location Detail	

Comments for ID 000037

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:11 AM

No keynotes on this sheet.-MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:01 PM	**Root Cause**	

Description

2-M3.04: Please consider identifying the condensate drain line routing on the project hydronic sheets for clarity.

Location	<Top level>
Location Detail	

Comments for ID 000038

Cody Murdock (codym@mckinstry.com)
11 Mar 2021 8:52 AM

Piping has been completed.

Final Walla Walla High School Commissioning Issue Log ID 000039

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:03 PM	**Root Cause**	

Description

Keyplan missing from a number of the Building 3 sheets.

Location	<Top level>
Location Detail	

Comments for ID 000039

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:11 AM

Keyplan shows in all building 3 plan view sheet. -MSI

Final Walla Walla High School Commissioning Issue Log ID 000040

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:06 PM	**Root Cause**	

Description

3-M2.07: Suspect EF 3-2 is shown backwards on floor plan. Please reverse direction for clarity.

Location	<Top level>
Location Detail	

Comments for ID 000040

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:14 AM

Acknowledged. Fan will be inspected for proper install.-MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:13 PM	**Root Cause**	

Description

3-M3.07: Vestibule 709 has the thermostat for BB 3-2 located directly above the heater. This typically causes short cycling of the unit; please consider placing it on the wall opposite the heater if possible.

Location	<Top level>
Location Detail	

Comments for ID 000041

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:14 AM

Considered.-MSI

Final Walla Walla High School Commissioning Issue Log ID 000042

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:15 PM	**Root Cause**	

Description

4-M2.09 Detail 1: Please confirm that the room # 906 (I.T. Server) doesn't have any additional cooling load requirements that might require a split system AC unit.

Location	<Top level>
Location Detail	

Comments for ID 000042

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:15 AM

Served by an existing unit. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:19 PM	**Root Cause**	

Description

5-M2.12: A number of locations in this building place supply diffusers in close proximity to exhaust/return grilles. Is there any opportunity at this point to position these further away from each other to avoid short circuiting the supply air? (See attachment for example)

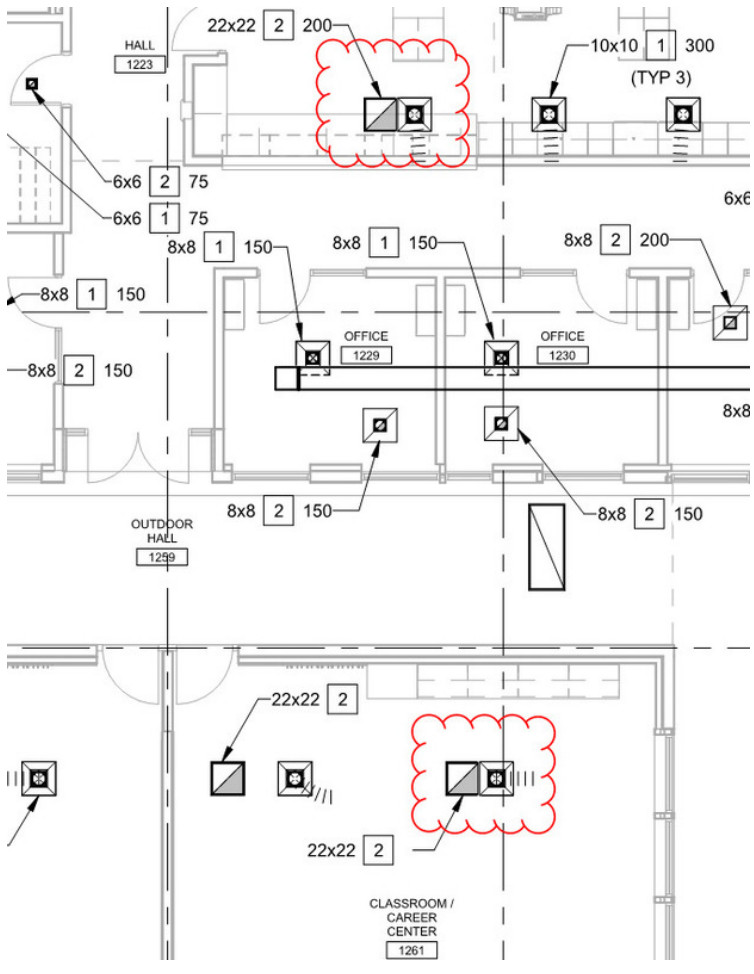
Location	<Top level>
Location Detail	

Comments for ID 000043

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:15 AM

Supply diffusers are provided with proper velocity of good air mixing. Core can be adjusted if needed.-MSI

Attached Images for ID 000043



2020-06-03 17:19:24

Final Walla Walla High School Commissioning Issue Log ID 000044

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:23 PM	**Root Cause**	

Description

5-M3.12: A number of the office spaces on this sheet are grouped and served by a common heat pump, but only one thermostat has been provided (shown to also have CO2 monitoring). Please consult with the owner to determine if additional thermostats are desired in the offices currently without that would allow for averaging or worst-case temperature control programming. Suggest avoiding DCV in this situation unless CO2 is monitored in all associated spaces.

Location	<Top level>
Location Detail	

Comments for ID 000044

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 9:19 AM	Zones are zoned for spaces that see similar exposures. CO2 monitoring provided in conference rooms and other larger spaces. -MSI

Final Walla Walla High School Commissioning Issue Log ID 000045

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:25 PM	**Root Cause**	

Description

5-M2.14: Is there any need for tempered air in "Janitor 1421"?

Location	<Top level>
Location Detail	

Comments for ID 000045

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:21 AM

Heater included in bid docs. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:40 PM	**Root Cause**	

Description

M6.02 Detail 2: For units without CO2 sensors, will two separate ventilation damper positions need to be programmed (and established by TAB) to accommodate the different fan speeds?

Location	<Top level>
Location Detail	

Comments for ID 000046

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:21 AM

VAV box shall be set to provide scheduled CFM no matter HP speed.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:49 PM	**Root Cause**	

Description

3-M3.07: AHU-3-2 thermostat is currently shown on the exterior freezer wall. Is there any concern that this may cause inaccurate temperature readings? Could the thermostat be located across Hall 720 on the wall by the stairs?

Location	<Top level>
Location Detail	

Comments for ID 000047

Cody Murdock (codym@mckinstry.com) 16 Mar 2021 9:22 AM	Freezer wall construction includes adequate insulation. However, thermostat location can be adjusted if wall construction does not include adequate insulation.

Final Walla Walla High School Commissioning Issue Log ID 000048

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Jun 2020 5:49 PM	**Root Cause**	

Description

Keyplan missing from a number of the Building 5 sheets.

Location	<Top level>
Location Detail	

Comments for ID 000048

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:22 AM

Key plans are included on plan view sheet. -MSI

Company	MSI Engineers, Inc	**Status**	Closed
Type	Campus Design Review Comment	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	05 Jun 2020 7:49 AM	**Root Cause**	

Description

M1.01 Ductless Split Schedule: Please coordinate with electrical regarding the requirement for stranded wire between the indoor and outdoor Ductless Split System AC Units.

Location	<Top level>
Location Detail	

Comments for ID 000049

Cody Murdock (codym@mckinstry.com)
16 Mar 2021 9:23 AM

Noted-MSI

Final Walla Walla High School Commissioning Issue Log ID 000129

Company	MSI Engineers, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Feb 2022 9:14 AM	**Root Cause**	

Description

Kitchen (Dishwasher) Exhaust Fan On/Off EF 3-1 - DO. Detail calls for a switch but unit starts fan with internal controls. issue has been sent back to design team.

Location	<Top level>
Location Detail	

Comments for ID 000129

Cody Murdock (codym@mckinstry.com)
28 Feb 2022 11:57 AM

Per email from engineer fan enabling locally from the dishwasher is ok.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Feb 2022 10:26 AM	**Root Cause**	

Description

Activate the kitchen exhaust fans, verify the CO2 is ignored and the OSA damper modulates to provide the additional outside air equal to the scheduled CFM of the kitchen exhaust. - need clarification on if building should still maintain positive pressure.

Location	<Top level>
Location Detail	

Comments for ID 000130

Cody Murdock (codym@mckinstry.com) 30 Mar 2022 10:13 AM	SoO has been modified per email from MSI
Cody Murdock (codym@mckinstry.com) 14 Mar 2022 1:40 PM	Per email from Logan (MSI) The issue is the exhaust fan on AHU 3-1 attempts to track down but can not turn down low enough. The only thought I had about shutting the exhaust fan off in this scenario was you would lose any heat recovery capacity. This may be negated by bringing in more OSA to allow the exhaust fan to run because you would have to temper even more air. If the AHU EF can't turn low enough, I recommend we turn the EF off when both kitchen exhaust fans are running. I would rather not bring in extra OSA and the associated energy cost if we don't have to.

Company	MSI Engineers, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Dec 2022 7:17 AM	**Root Cause**	

Description

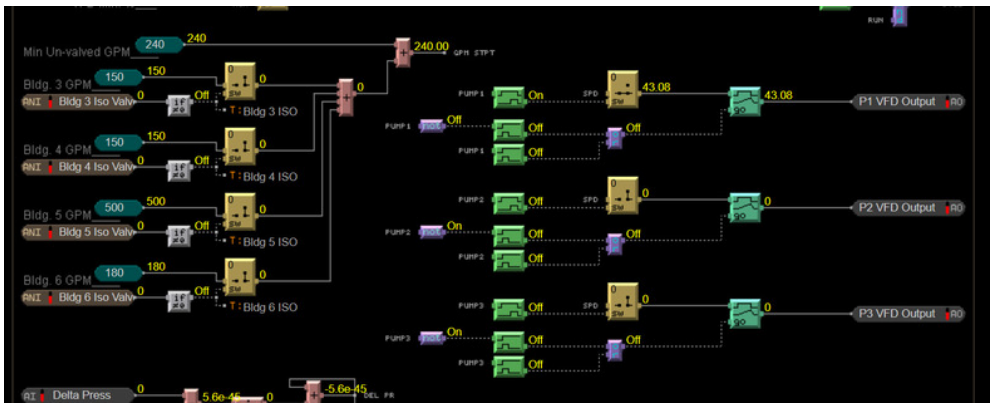
Heat Pump Loop Control for Building3,4,5,6,8 is not set up correctly. Pumps are running in hand at 80% (all three). All building have a control valve (other than bld 8) and balance valves on each of the buildings. The individual building loops open their respective control valves when the loop temp in the building is above 95F or below 55F. The DP should be set at building 8 per drawing M5.06.

Location	<Top level>
Location Detail	

Comments for ID 000153

Cody Murdock (codym@mckinstry.com) 28 Feb 2023 7:20 AM	Logic has been updated to increase hp loop flow based on individual building isolation valves. See attached pictures of graphics and logic.
Cody Murdock (codym@mckinstry.com) 25 Jan 2023 8:14 AM	Proposal submitted for approval on additional cost to modify programming.
Cody Murdock (codym@mckinstry.com) 05 Jan 2023 10:20 AM	Per email from Logan (MSI) It is our opinion that the DP Sensor is not picking up a reading due to its location within Building 8; There is simply not enough pipe distance between the two sensors to detect a change in pressure. Ideally, these sensor would be located much farther away from each other, but with the direct buried piping, this is not practicable. In order to balance out the campus flow and maintain the intended energy saving variable flow conditions, we suggest the attached adjustments in controls. To sum up the adjustments, the controls will work as follows: As each building has demand for heating/cooling water flow, that demand will be reported to the DDC System. As buildings continue to call for heating/cooling, the campus circulation pumps will increase flow to match the summation of each building flow requirements. In a decreased call of heating/cooling, the campus circulation pumps will turn down to meet the flow requirements of each building.

Attached Images for ID 000153



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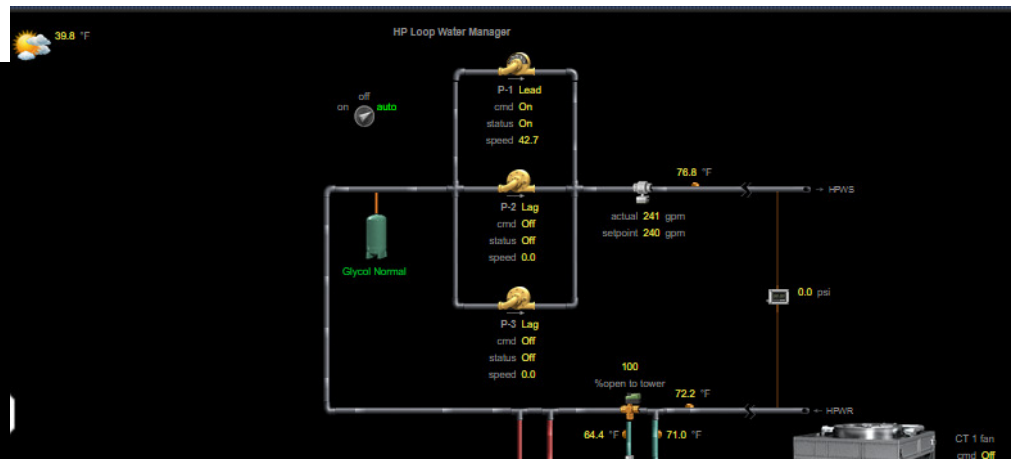
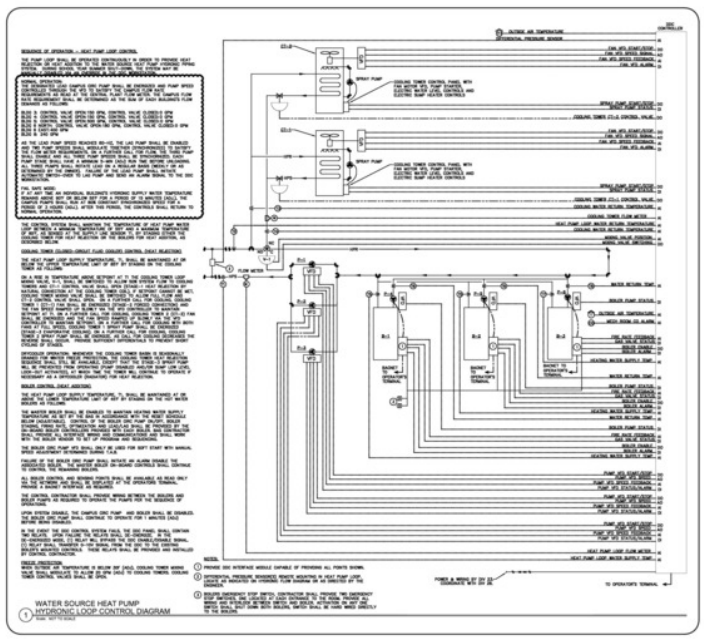
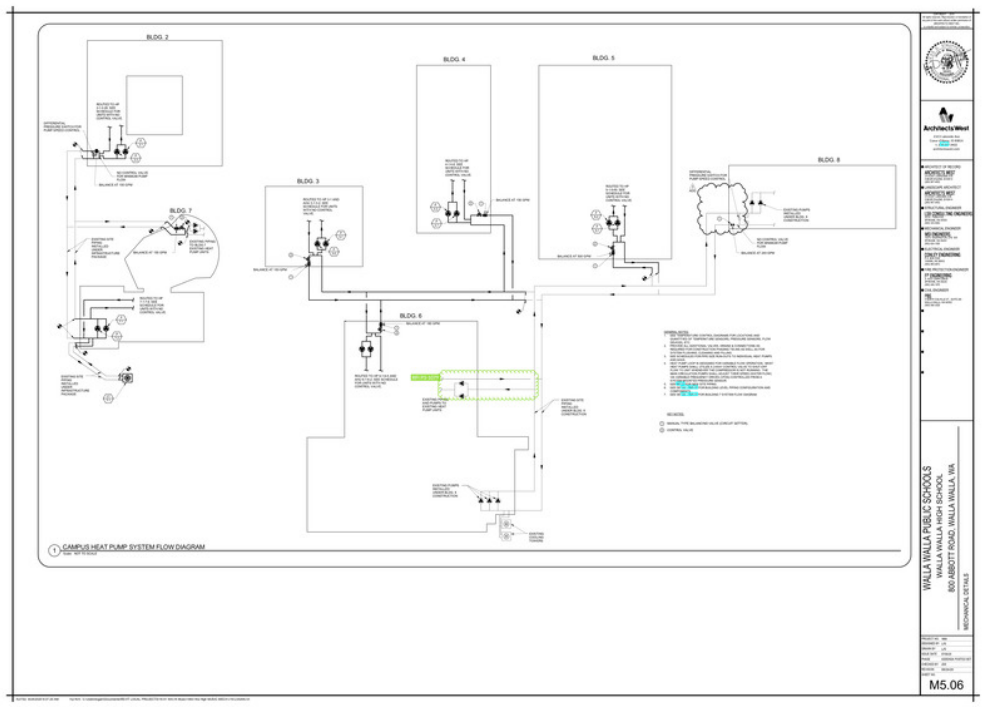


2023-02-28 07:19:44



Campus_Circulation_Pump_Control_Adjustments.pdf



M5.06__MECHANICAL_DETAILS_Rev.AddendaPostedSet_markup.pdf

Final Walla Walla High School Commissioning Issue Log ID 000073

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Sep 2020 9:49 AM	**Root Cause**	

Description

The cooling towers don’t appear to be programmed to stage as indicated in the controls sequence of operations. Sequence calls for natural convection, followed by initial fan, followed by fan ramping, followed by spray pump. All staged between the two cooling towers. Please confirm that the engineer has approved this modification to the sequence.

Location	<Top level>
Location Detail	

Comments for ID 000073

Cody Murdock (codym@mckinstry.com)
14 Sep 2022 1:01 PM

Cooling tower programming has been modified and verified during FPT

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:25 PM	**Root Cause**	

Description

Heat Exchanger Bypass - DO Main damper to heat exchanger is not set correctly. Limited movement.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Comments for ID 000087

Cody Murdock (codym@mckinstry.com)
14 Sep 2021 10:23 AM

Damper actuator has been realigned to allow damper to open 100%.

Final Walla Walla High School Commissioning Issue Log ID 000089

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:33 PM	**Root Cause**	

Description

Heat Exchanger Bypass - DO main damper next to bypass is not installed correctly. Only opens to ~50%. Needs to be adjusted on shaft.

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Comments for ID 000089

Cody Murdock (codym@mckinstry.com)
14 Sep 2021 10:24 AM

Damper actuator has been realigned to allow damper to open 100%.

Final Walla Walla High School Commissioning Issue Log ID 000092

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:51 PM	**Root Cause**	

Description

Heat Exchanger Bypass - DO main damper to heat exchanger not set up correctly on the shaft. Does not open fully when sent to 100%

Location	Walla Walla High School > Building 2 > Mezzanine > 404
Location Detail	

Equipment Name	HRU-2-1
Equipment Barcode	

Comments for ID 000092

Cody Murdock (codym@mckinstry.com)
14 Sep 2021 10:33 AM

Damper actuator has been realigned to allow damper to open 100%.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Aug 2021 10:13 AM	**Root Cause**	

Description

Verify heating setpoint is set to 68F as per SOO for HRU 2-2 & 2-1

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Equipment Name	HRU-2-2
Equipment Barcode	

Comments for ID 000095

Cody Murdock (codym@mckinstry.com)
11 Nov 2021 12:57 PM

Confirmed programming is set to target 55F air for heating and 68F for cooling.

Final Walla Walla High School Commissioning Issue Log ID 000096

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	04 Aug 2021 10:26 AM	**Root Cause**	

Description

Verify DSP is set to 0.75" W.G. (or as set by TAB) unable to verify during FPT

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Equipment Name	HRU-2-2
Equipment Barcode	

Comments for ID 000096

Cody Murdock (codym@mckinstry.com) 10 Sep 2021 11:22 AM	Set to 0.5" by TAB.

Final Walla Walla High School Commissioning Issue Log ID 000097

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Sep 2021 9:26 AM	**Root Cause**	

Description

HP 2-2 does not have a working TSAT. Temperature is locked at 80 degrees to provide cooling to the space.

Location	<Top level>
Location Detail	

Comments for ID 000097

Cody Murdock (codym@mckinstry.com) 27 Sep 2021 1:40 PM	Stat has been installed and appears to be giving an accurate signal.
Cody Murdock (codym@mckinstry.com) 10 Sep 2021 9:02 AM	Per Steve (SPHC) stat wire is causing the issue. Electricians to investigate and resolve issue.

Final Walla Walla High School Commissioning Issue Log ID 000098

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	30 Aug 2021 1:16 PM	**Root Cause**	

Description

Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%. Steve to verify programming

Location	Walla Walla High School > Building 2 > Mezzanine > 404
Location Detail	

Equipment Name	HRU-2-1
Equipment Barcode	

Comments for ID 000098

Cody Murdock (codym@mckinstry.com) 20 Jan 2022 10:15 AM	Verified in programming
Eduardo Alvarado (ealvarado@teminc.com) 09 Jan 2022 8:34 PM	On behalf of SPHC, this issue is fixed and ready for review.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Sep 2021 10:23 AM	**Root Cause**	

Description

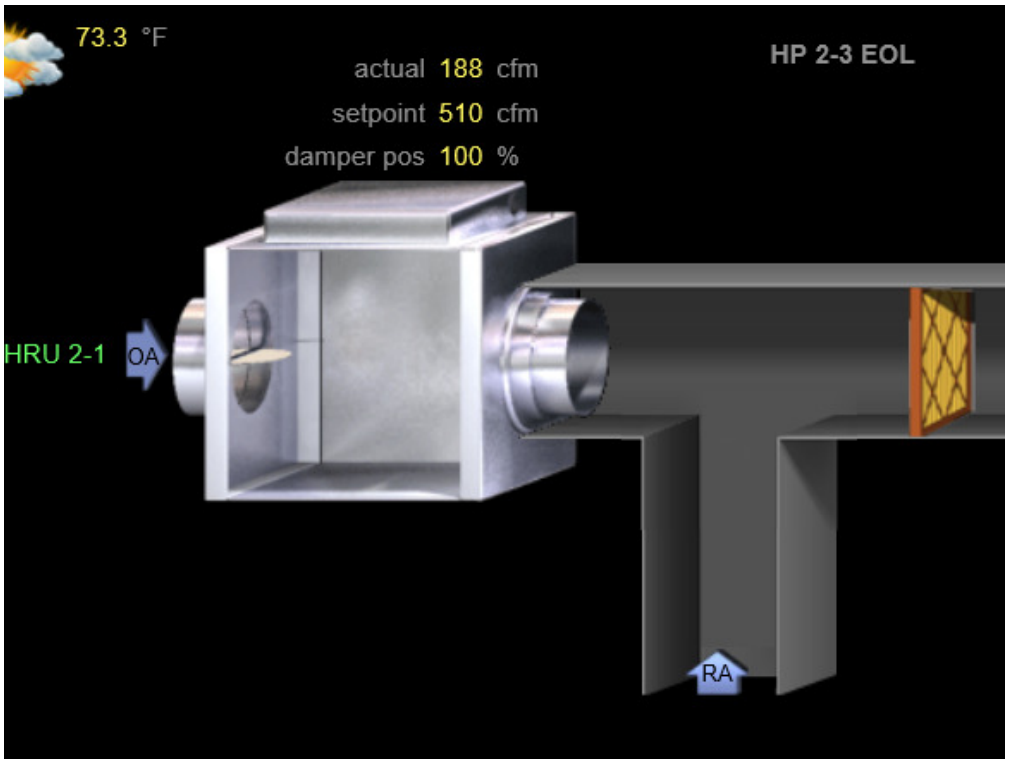
HP 2-3 ventilation air does not meet setpoint when CO2 exceeds limit. See attached picture.

Location	<Top level>
Location Detail	

Comments for ID 000099

Cody Murdock (codym@mckinstry.com) 09 Sep 2021 12:06 PM	Found the damper position on the I/O property page was locked at 50%. Released this point and setpoint was made.

Attached Images for ID 000099



2021-09-09 10:22:26

Final Walla Walla High School Commissioning Issue Log ID 000100

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Sep 2021 10:31 AM	**Root Cause**	

Description

HP 2-3 Min OSA per schedule is 100 CFM. Current min in BAS is 350 CFM. Will verify with TAB report.

Location	<Top level>
Location Detail	

Comments for ID 000100

Cody Murdock (codym@mckinstry.com) 01 Dec 2021 9:42 AM	Programming verified.
Cody Murdock (codym@mckinstry.com) 11 Nov 2021 1:31 PM	Confirmed min is set up for 100 cfm per TAB report.

Final Walla Walla High School Commissioning Issue Log ID 000101

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	10 Sep 2021 11:27 AM	**Root Cause**	

Description

HRU 2-1: It does not appear the SA flow monitoring station has been calibrated. The current flow shown at the HRU is ~2500 cfm. Total flow as calculated by adding the actual flow from each box is 5950 CFM.

Location	<Top level>
Location Detail	

Comments for ID 000101

Cody Murdock (codym@mckinstry.com) 01 Dec 2021 9:42 AM	Airflow monitoring has been calibrated.
Cody Murdock (codym@mckinstry.com) 11 Nov 2021 1:31 PM	Supply airflow has been calibrated and verified via the TAB report.

Final Walla Walla High School Commissioning Issue Log ID 000102

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	10 Sep 2021 11:29 AM	**Root Cause**	

Description

HP 2-27 graphics are not complete.

Location	<Top level>
Location Detail	

Comments for ID 000102

Cody Murdock (codym@mckinstry.com)
10 Nov 2021 6:50 AM

Graphics are complete.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	08 Nov 2021 12:01 PM	**Root Cause**	

Description

HP 2-28 OA shows damper at 0% while showing a flow of 1000 CFM. Set point is 775 CFM.

Location	<Top level>
Location Detail	

Comments for ID 000107

Cody Murdock (codym@mckinstry.com) 11 Jan 2022 6:26 AM	Flow has been re-established.
Eduardo Alvarado (ealvarado@teminc.com) 09 Jan 2022 8:36 PM	On behalf of SPHC, this issue is fixed and ready for review.

Final Walla Walla High School Commissioning Issue Log ID 000110

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Oct 2021 11:31 AM	**Root Cause**	

Description

EUH-4-1 does not appear to be functioning when commanded on from BAS.

Location	<Top level>
Location Detail	

Comments for ID 000110

Cody Murdock (codym@mckinstry.com) 22 Nov 2021 10:55 AM	Unit heater is functioning.

Final Walla Walla High School Commissioning Issue Log ID 000118

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Dec 2021 11:32 AM	**Root Cause**	

Description

AHU 3-1 heat wheel bypass dampers controls not wired at start up. Jumpers to get started. Steve looking into how the are to be controlled.

Location	<Top level>
Location Detail	

Comments for ID 000118

Cody Murdock (codym@mckinstry.com) 01 Feb 2022 12:05 PM	The bypass dampers are not used in operation. The wheel will disable between 70-75F.
Eduardo Alvarado (ealvarado@teminc.com) 09 Jan 2022 8:38 PM	On behalf of SPHC, this issue is still under review.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:37 AM	**Root Cause**	

Description

Building 4 EF 4-4 shows failed on the BAS but it is on a switch in the restroom. Please update the graphics to match the device that is installed in the field.

Location	<Top level>
Location Detail	

Comments for ID 000125

Cody Murdock (codym@mckinstry.com) 01 Feb 2022 12:07 PM	This fan is controlled off a wall switch.
Eduardo Alvarado (ealvarado@teminc.com) 09 Jan 2022 8:37 PM	On behalf of SPHC, this issue is fixed and ready for review.

Final Walla Walla High School Commissioning Issue Log ID 000131

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Feb 2022 11:48 AM	**Root Cause**	

Description

Upon an even further call for heating, verify the electric heater is enabled. Unit provided with electric heat sequence does not call for electric heat.

Location	<Top level>
Location Detail	

Comments for ID 000131

Cody Murdock (codym@mckinstry.com) 29 Dec 2022 10:39 AM	Verified programming is correct
Cody Murdock (codym@mckinstry.com) 03 Feb 2022 9:36 AM	Per email from Logan (MSI) Auxiliary heat was called out in submittal review for controls to include programming for this unit.

Final Walla Walla High School Commissioning Issue Log ID 000138

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Apr 2022 9:54 AM	**Root Cause**	

Description

Set the outside air temperature to between 55 & 75F, verify the HR core face and bypass dampers are set to bypass HR core. Current OSA temp of 50.1F unit in full bypass

Location	Walla Walla High School > Building 7 > Mezzanine > 2301
Location Detail	

Equipment Name	HRU-7-1
Equipment Barcode	

Comments for ID 000138

Cody Murdock (codym@mckinstry.com)
15 Jul 2022 11:04 AM

Confirmed on programming face and bypass damper is functioning properly.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 May 2022 9:15 AM	**Root Cause**	

Description

AHU 3-2 graphics do not show electric heat as specified in the SoO

Location	<Top level>
Location Detail	

Comments for ID 000139

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 10:30 AM

Graphics are updated to include electric heat.

Final Walla Walla High School Commissioning Issue Log ID 000140

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	27 Jun 2022 11:44 AM	**Root Cause**	

Description

Bld 4 DHW recirc pump appears to be running in hand. Verify this is set to run off occupied/unoccupied schedule via BAS.

Location	<Top level>
Location Detail	

Comments for ID 000140

Cody Murdock (codym@mckinstry.com)
15 Jul 2022 12:02 PM

Pump has been returned to auto.

Final Walla Walla High School Commissioning Issue Log ID 000143

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Not Used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	15 Jul 2022 12:04 PM	**Root Cause**	

Description

BB 7-2
5/3/22 - No Comms
Verify onsite 7/19/22

Location	<Top level>
Location Detail	

Comments for ID 000143

Cody Murdock (codym@mckinstry.com)
28 Sep 2022 12:31 PM

Comms are re-established.

Final Walla Walla High School Commissioning Issue Log ID 000146

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Not used	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Sep 2022 10:18 AM	**Root Cause**	

Description

Heat Pump 18 and 19 have the thermostats backwards. Room served by HP 18 is 60F and 19 is 77F.

Location	<Top level>
Location Detail	

Comments for ID 000146

Cody Murdock (codym@mckinstry.com)
14 Sep 2022 12:52 PM

Per BAS thermostats appear to be connected to the correct rooms.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	12 Aug 2022 10:32 AM	**Root Cause**	

Description

HP-26 & HP -28 appear to be wired to the opposite thermostats.

Location	<Top level>
Location Detail	

Comments for ID 000147

Cody Murdock (codym@mckinstry.com)
14 Sep 2022 12:58 PM

Thermostats appear to be wired to the correct rooms.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Sep 2022 1:18 PM	**Root Cause**	

Description

Thermostats for HP-1 -7 are not currently installed.

Location	<Top level>
Location Detail	

Comments for ID 000148

Cody Murdock (codym@mckinstry.com)
14 Sep 2022 12:42 PM

Thermostats have been installed, addressing will be verified in the field.

Final Walla Walla High School Commissioning Issue Log ID 000149

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Sep 2022 2:06 PM	**Root Cause**	

Description

HP 5-12 tstat does not appear to installed. Cabinets are current flush with wall where this should be mounted.

Location	<Top level>
Location Detail	

Comments for ID 000149

Cody Murdock (codym@mckinstry.com) 14 Sep 2022 12:41 PM	This thermostat has been installed and will be verified in the field to confirm addressing.

Final Walla Walla High School Commissioning Issue Log ID 000150

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Sep 2022 2:08 PM	**Root Cause**	

Description

Outside air on logic page is showing 178 degrees. This will lock out all heating functions and any economizer functions.

Location	<Top level>
Location Detail	

Comments for ID 000150

Cody Murdock (codym@mckinstry.com) 14 Dec 2022 8:38 AM	OSA Temp is reading correctly.
Cody Murdock (codym@mckinstry.com) 14 Sep 2022 12:55 PM	Per trend on OSA temp it is fixed at 62.
Cody Murdock (codym@mckinstry.com) 14 Sep 2022 12:54 PM	Logic page OSA is showing 62F and main graphics page is showing 75F. Need to confirm this number is accurate.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	01 Sep 2022 3:15 PM	**Root Cause**	

Description

HP 5-40 supply fan appears to be failed. TEM to be onsite 9/2 suspect a loose wire.

Location	<Top level>
Location Detail	

Comments for ID 000151

Cody Murdock (codym@mckinstry.com)
14 Sep 2022 12:41 PM

Fan has been repaired. Suspect a loose wire. Per BAS is running as programmed.

Final Walla Walla High School Commissioning Issue Log ID 000152

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	29 Nov 2022 1:56 PM	**Root Cause**	

Description

HRU 5-1 face and bypass dampers appear to be switched. When graphics showed bypass at 0% the supply air temperature was 39F and exhaust air was 69F.

Location	<Top level>
Location Detail	

Comments for ID 000152

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:51 AM

Verified in field. Unit is controlling to DA temperature

Final Walla Walla High School Commissioning Issue Log ID 000154

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 8:21 AM	**Root Cause**	

Description

HRU 4-1 Mixed air temperature sensor reading 0.0F on BAS.

Location	<Top level>
Location Detail	

Comments for ID 000154

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:50 AM

These points are not installed or required per SoO to be removed from graphics.

Final Walla Walla High School Commissioning Issue Log ID 000155

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 8:31 AM	**Root Cause**	

Description

Heat Pump Loop Iso Valves for buildings 3,4,5,6 and 7 do not appear to be controlling to the temperature ranges as described on M6.03 Detail 3 (<55F and >95F)

Location	<Top level>
Location Detail	

Comments for ID 000155

Cody Murdock (codym@mckinstry.com) 04 Jan 2023 11:54 AM	Isolation valves have temperature range has been modified in programming to >55F and <95F.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 8:37 AM	**Root Cause**	

Description

HRU 5-1 mixed air temperature is reading -60.3F. Sensor may be unplugged?

Location	<Top level>
Location Detail	

Comments for ID 000156

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:50 AM

These points are not installed or required per SoO to be removed from graphics.

Final Walla Walla High School Commissioning Issue Log ID 000158

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 8:49 AM	**Root Cause**	

Description

HP 5-14 CO2 is showing 72 ppm (normal OSA is around 400 ppm) and OSA flow is showing 824 cfm with a setpoint of 180 cfm. Damper is showing 0%.

Location	<Top level>
Location Detail	

Final Walla Walla High School Commissioning Issue Log ID 000159

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 9:01 AM	**Root Cause**	

Description

HP 5-41 OSA flow showing 0 cfm with damper at 100%.

Location	<Top level>
Location Detail	

Comments for ID 000159

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:49 AM

Repaired in field. Verified onsite.

Final Walla Walla High School Commissioning Issue Log ID 000161

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	28 Dec 2022 12:48 PM	**Root Cause**	

Description

Building 6 heat pump loop flow meter was damaged. Sent back to the manufacturer for repair.

Location	<Top level>
Location Detail	

Comments for ID 000161

Cody Murdock (codym@mckinstry.com) 24 Jan 2023 3:36 PM	HP Loop flow meter has been re-installed and is operational.

Company	Standard Plumbing and Heating Controls	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	28 Dec 2022 1:37 PM	**Root Cause**	

Description

RTU 6-1 graphics not complete.

Location	<Top level>
Location Detail	

Comments for ID 000162

Cody Murdock (codym@mckinstry.com)
24 Jan 2023 3:33 PM

Graphics are complete.

Final Walla Walla High School Commissioning Issue Log ID 000145

Company	Test Comm, LLC	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Jul 2022 10:57 AM	**Root Cause**	

Description

Bld 7 loop pumps are both running at 95% but only putting out 590 gpm and a dp of 3”. TAB contractor said he set it to 12”. Found the circuit setter for the ground loop was wide open.

Location	<Top level>
Location Detail	

Comments for ID 000145

Cody Murdock (codym@mckinstry.com) 07 Sep 2022 8:09 AM	Circuit Setter in Building 2 has been set by balancer, pumps running in auto with one pump maintaining DP setpoint (running at ~75%)

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:02 AM	**Root Cause**	

Description

Bld 2 B-122 light in the middle row furthest from the door does not appear to be following programmed scenes or shutting off.

Location	Walla Walla High School
Location Detail	

Comments for ID 000121

Cody Murdock (codym@mckinstry.com)
15 Dec 2022 11:17 AM

Lighting has been corrected.

Final Walla Walla High School Commissioning Issue Log ID 000122

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:15 AM	**Root Cause**	

Description

Building 7 room M-104 the two south most lights do not appear to be dimming when commanded. Do these use daylight harvesting?

Location	<Top level>
Location Detail	

Comments for ID 000122

Cody Murdock (codym@mckinstry.com)
15 Dec 2022 11:16 AM

Lighting has been corrected.

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:30 AM	**Root Cause**	

Description

Building 4 North end in low ceiling, 2nd row from the south, 3rd and 4th lights do not shut off when commanded.

Location	<Top level>
Location Detail	

Comments for ID 000123

Cody Murdock (codym@mckinstry.com)
15 Dec 2022 11:16 AM

Lighting has been corrected.

Final Walla Walla High School Commissioning Issue Log ID 000124

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:36 AM	**Root Cause**	

Description

Building 4 Room L-212 in the scenes for the lighting it appear the 100% is actually programmed to be 50% and 50% is programmed for 100%.

Location	<Top level>
Location Detail	

Comments for ID 000124

Cody Murdock (codym@mckinstry.com)
15 Dec 2022 11:17 AM

Lighting has been corrected.

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 11:41 AM	**Root Cause**	

Description

Building 4 Room L-103 the two lights directly in front of the door do not function per the switch and remain on.

Location	<Top level>
Location Detail	

Comments for ID 000126

Cody Murdock (codym@mckinstry.com)
15 Dec 2022 11:16 AM

Lighting has been corrected.

Company	Titan Electrical, LLC (WA)	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	25 Jan 2023 12:39 PM	**Root Cause**	

Description

Electrical metering for buildings 2-4-5-7 is not complete on the BAS.

Location	<Top level>
Location Detail	

Comments for ID 000164

Chase Schmidt (chasesc@mckinstry.com) 16 May 2023 8:38 AM	All meters are now connected to the BAS and are reporting usage data. Issue will be closed
Cody Murdock (codym@mckinstry.com) 06 Apr 2023 1:04 PM	Per Kody Lane (Jackson) - Electrical Metering o We ran into issues at both MDS-A and MDS-C MDS-A the nexus shark is not setup currently to live on the DDC/communicate with bacnet. • Working on getting pricing for making this work with the DDC. MDS-C • The cable run is too long and is not allowing great connection, so we are getting pricing to provide fiber and media converters at both ends to boost this signal.

Final Walla Walla High School Commissioning Issue Log ID 000020

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	28 May 2020 8:31 AM	**Root Cause**	

Description

Verify required isolation for HRU.

Location	<Top level>
Location Detail	

Comments for ID 000020

Cody Murdock (codym@mckinstry.com)
12 Jun 2020 7:19 AM

Per email from Reyna (Jackson Contractors), MSI has approved the installation without isolation pads.

Attached Images for ID 000020

2020-05-28 08:28:08 Vibration isolation on AHU

Final Walla Walla High School Commissioning Issue Log ID 000052

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Jul 2020 10:54 AM	**Root Cause**	

Description

EF-1 ductwork is interfering with HP-1 ductwork. Please adjust strapping to ensure vibration issues don’t arise.

Location	<Top level>
Location Detail	

Comments for ID 000052

Garrett Husky (garretth@mckinstry.com) 27 Oct 2020 10:38 AM	Verified.
Eduardo Alvarado (ealvarado@teminc.com) 13 Aug 2020 4:46 PM	08/13/20: Hangar Straps adjusted to ensure vibration issues don;t arise. -EA

Attached Images for ID 000052

2020-07-21 10:55:22

Final Walla Walla High School Commissioning Issue Log ID 000053

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Jul 2020 11:31 AM	**Root Cause**	

Description

Ductwork is currently unprotected from dirt and construction debris.

Location	<Top level>
Location Detail	

Comments for ID 000053

Garrett Husky (garretth@mckinstry.com) 27 Oct 2020 10:38 AM	Resolved.
Eduardo Alvarado (ealvarado@teminc.com) 13 Aug 2020 4:49 PM	08/13/20: Any open duct has been cleaned and covered. -EA

Attached Images for ID 000053

2020-07-21 11:32:11

Final Walla Walla High School Commissioning Issue Log ID 000063

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 10:32 AM	**Root Cause**	

Description

HRU does not appear to have been provided with the required air flow monitoring stations.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	HRU-1
Equipment Barcode	

Comments for ID 000063

Cody Murdock (codym@mckinstry.com) 24 Mar 2021 7:02 AM	AMS are installed and operating correctly.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:15 AM	McK will back check on next site visit.

Final Walla Walla High School Commissioning Issue Log ID 000065

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 2:06 PM	**Root Cause**	

Description

Maintenance access inhibited by hanging supports. Please ensure access panel can easily be removed.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	EF-1
Equipment Barcode	

Comments for ID 000065

Cody Murdock (codym@mckinstry.com) 23 Mar 2021 9:55 AM	Supports have been moved to allow maintenance access.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:23 AM	McK will back check on next site visit.

Attached Images for ID 000065

2021-03-23 09:55:19

2020-08-03 14:07:27

Final Walla Walla High School Commissioning Issue Log ID 000066

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 2:37 PM	**Root Cause**	

Description

Please provide a buffer/insulator between the sheet metal of the HRU and the condenser water piping.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	HRU-1
Equipment Barcode	

Comments for ID 000066

Cody Murdock (codym@mckinstry.com) 23 Mar 2021 9:52 AM	Rubber buffer has been added between piping and HRU.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:18 AM	McK will back check on next site visit.

Attached Images for ID 000066

2021-03-23 09:52:10

2020-08-03 14:38:59

Final Walla Walla High School Commissioning Issue Log ID 000067

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 2:39 PM	**Root Cause**	

Description

Please provide a buffer/insulator between the sheet metal of the HRU and the condenser water piping. (New Science)

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	HRU-2
Equipment Barcode	

Comments for ID 000067

Cody Murdock (codym@mckinstry.com) 23 Mar 2021 9:53 AM	Rubber has been added between the piping and HRU.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:14 AM	McK will back check on next site visit.

Attached Images for ID 000067

2021-03-23 09:53:21

2020-08-03 14:40:04

Final Walla Walla High School Commissioning Issue Log ID 000068

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 3:11 PM	**Root Cause**	

Description

Unit has not been provided with a BACnet card.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	HRU-1
Equipment Barcode	

Comments for ID 000068

Cody Murdock (codym@mckinstry.com) 24 Mar 2021 6:59 AM	HRU has been started and is functional on the BAS.
Eduardo Alvarado (ealvarado@teminc.com) 13 Aug 2020 4:42 PM	8/13/20: BACnet Card will be supplied and installed by factory tech prior to start-up. -EA

Final Walla Walla High School Commissioning Issue Log ID 000069

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	03 Aug 2020 3:12 PM	**Root Cause**	

Description

Unit has not been provided with a BACnet card.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Equipment Name	HRU-2
Equipment Barcode	

Comments for ID 000069

Cody Murdock (codym@mckinstry.com) 24 Mar 2021 7:00 AM	HRU has been started up and is functional on the BAS.
Eduardo Alvarado (ealvarado@teminc.com) 13 Aug 2020 4:44 PM	8/13/20: BACnet Card will be supplied and installed by factory tech prior to start-up. -EA

Final Walla Walla High School Commissioning Issue Log ID 000072

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	21 Aug 2020 8:29 AM	**Root Cause**	

Description

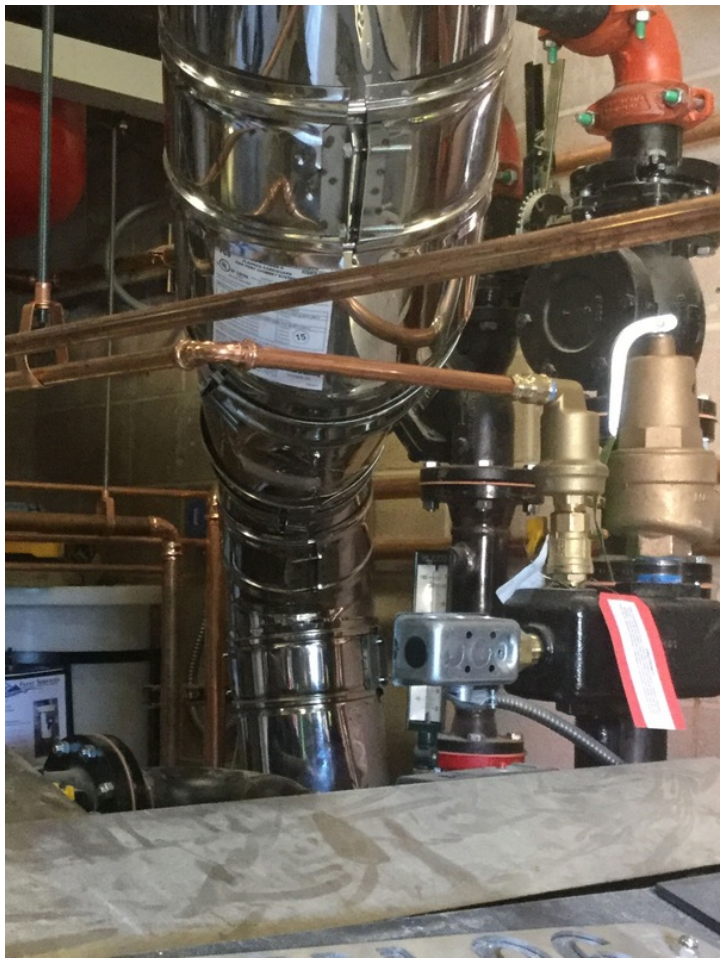
Unable to access supply line strainer due to location of boiler vent.

Location	Walla Walla High School > Gymnasium > Mechanical Room
Location Detail	
Equipment Name	B-1
Equipment Barcode	

Comments for ID 000072

Eduardo Alvarado (ealvarado@teminc.com) 21 Dec 2021 9:06 AM	This issue was discussed in the field between JCG, McKinstry, Cutting Edge, and TEM and it was determined that there isn't another area to relocate the boiler vent without obstructing other pipes and equipment.
Cody Murdock (codym@mckinstry.com) 11 Mar 2021 7:18 AM	McK will back check on next site visit.

Attached Images for ID 000072



2020-08-21 08:30:53

Final Walla Walla High School Commissioning Issue Log ID 000074

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Garrett Husky (garretth@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Feb 2021 9:32 AM	**Root Cause**	

Description

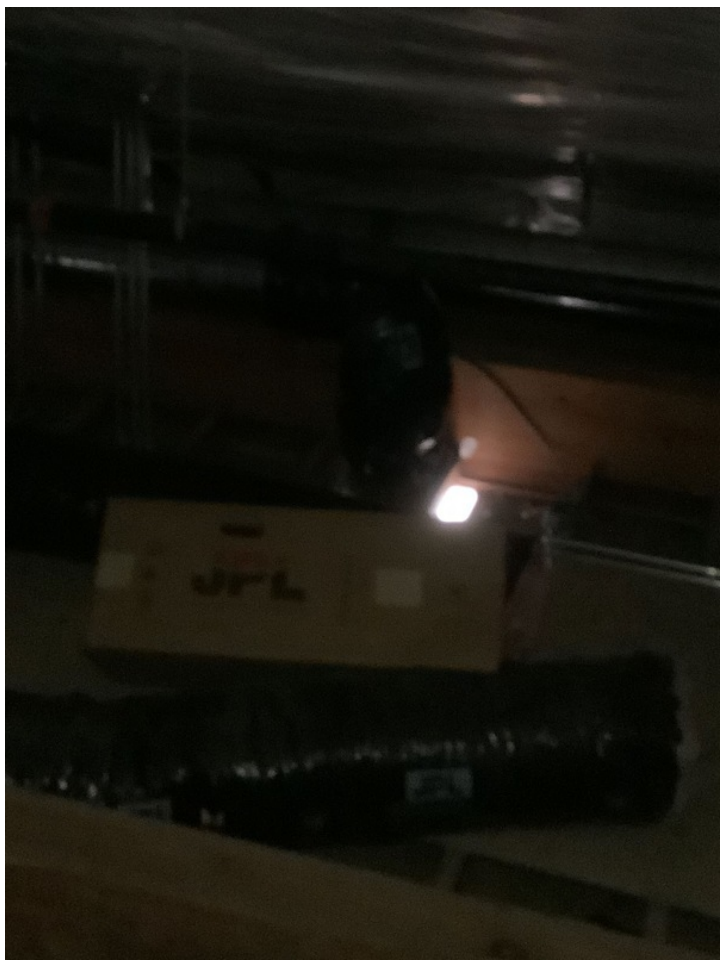
Building 2, Heat pump HP-2-21 flex duct is severely restricted. Recommend reworking duct to avoid conflict with flex.

Location	<Top level>
Location Detail	

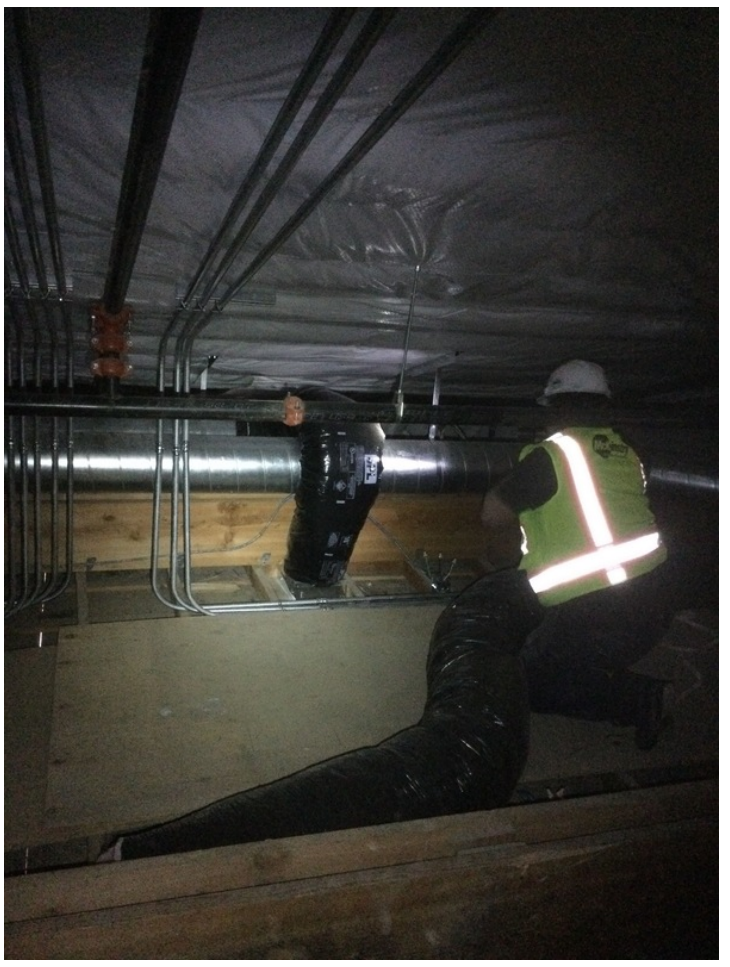
Comments for ID 000074

Cody Murdock (codym@mckinstry.com) 19 Feb 2021 10:12 AM	Flex duct has been redone to be in an acceptable position.
Garrett Husky (garretth@mckinstry.com) 02 Feb 2021 10:22 AM	Spoke with Ricky (TEM) who indicated he would rework these ducts to resolve the issue ASAP. Will back check next visit.

Attached Images for ID 000074



2021-02-19 10:11:52



2021-02-02 09:32:41

Final Walla Walla High School Commissioning Issue Log ID 000076

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Feb 2021 10:25 AM	**Root Cause**	

Description

Confirm 20” return duct to HRU 2-1 should be round. Currently 16 x 24” rect duct after transitioning from 16” round. See drawing 2-M2.04

Location	<Top level>
Location Detail	

Comments for ID 000076

Cody Murdock (codym@mckinstry.com)
11 Mar 2021 7:13 AM

Confirmed on updated prints on ProCore during site visit 2/26.

Attached Images for ID 000076

2021-02-19 10:35:22

2021-02-19 10:35:16

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	23 Mar 2021 10:16 AM	**Root Cause**	

Description

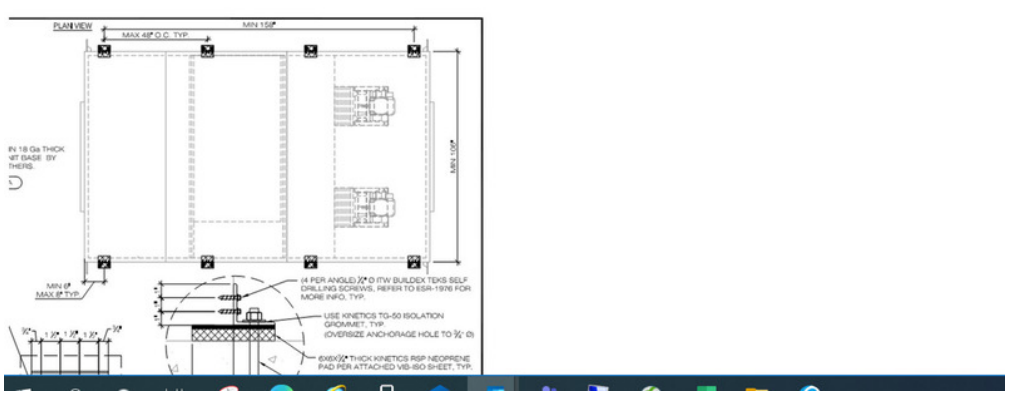
Ensure sufficient vibration isolation is used on HRU 2-1 and HR 2-2. Currently have single neoprene pads on corner. Verify with engineer on amount needed.

Location	Walla Walla High School > Building 2 > Mezzanine
Location Detail	

Comments for ID 000077

Cody Murdock (codym@mckinstry.com) 15 Apr 2021 10:19 AM	Isolation has been installed per drawing requirements. Per email from TEM.
Cody Murdock (codym@mckinstry.com) 26 Mar 2021 10:53 AM	Vibration isolation has been installed per submittal. See attachment for detail.

Attached Images for ID 000077



2021-03-26 10:52:12

2021-03-23 10:20:42

Final Walla Walla High School Commissioning Issue Log ID 000082

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	08 Jul 2021 10:01 AM	**Root Cause**	

Description

HP 7-2 has slid off the vibration isolation causing the hard duct to contact over the flex.

Location	<Top level>
Location Detail	

Comments for ID 000082

Cody Murdock (codym@mckinstry.com)
14 Sep 2021 9:41 AM

Heat pump has been re aligned.

Attached Images for ID 000082

2021-09-14 09:41:56

2021-07-08 10:03:42

2021-07-08 10:03:34

2021-07-08 10:03:09

Final Walla Walla High School Commissioning Issue Log ID 000084

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:09 PM	**Root Cause**	

Description

Outside Air Flow (CFM) - AI not supplied with unit.

Location	Walla Walla High School > New Science Building > Level 2
Location Detail	

Comments for ID 000084

Cody Murdock (codym@mckinstry.com)
10 Sep 2021 8:55 AM

Airflow monitoring stations have been installed and reading on BAS.

Final Walla Walla High School Commissioning Issue Log ID 000088

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:32 PM	**Root Cause**	

Description

Outside Air Flow (CFM) - AI Parts did not ship with the unit. Parts on order.

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Comments for ID 000088

Cody Murdock (codym@mckinstry.com)
10 Sep 2021 8:58 AM

AFM station has been installed and if reading on the BAS.

Final Walla Walla High School Commissioning Issue Log ID 000091

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:35 PM	**Root Cause**	

Description

Exhaust Air Flow (cfm) - AI parts did not ship with the unit. Parts on order.

Location	Walla Walla High School > Building 2 > Mezzanine > 603
Location Detail	

Final Walla Walla High School Commissioning Issue Log ID 000093

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:55 PM	**Root Cause**	

Description

Exhaust Air Flow (cfm) - Parts did not ship with the unit. Parts are on order.

Location	Walla Walla High School > Building 2 > Mezzanine > 404
Location Detail	
Equipment Name	HRU-2-1
Equipment Barcode	

Comments for ID 000093

Cody Murdock (codym@mckinstry.com)
10 Sep 2021 8:58 AM

AFM station installed and reading on BAS.

Final Walla Walla High School Commissioning Issue Log ID 000094

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Aug 2021 12:56 PM	**Root Cause**	

Description

Outside Air Flow (CFM) - Parts did not ship with unit. Parts on order.

Location	Walla Walla High School > Building 2 > Mezzanine > 404
Location Detail	

Equipment Name	HRU-2-1
Equipment Barcode	

Comments for ID 000094

Cody Murdock (codym@mckinstry.com)
10 Sep 2021 9:00 AM

AFM has been installed and reading on BAS.

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Oct 2021 9:40 AM	**Root Cause**	

Description

AHU-3-1 & AHU -3-2 it does not appear the vibration isolation has been installed per manufacture spec. Only 8 squares installed on 3-1 and 6 on 3-2.

Location	<Top level>
Location Detail	

Comments for ID 000105

Cody Murdock (codym@mckinstry.com) 01 Dec 2021 9:41 AM	Additional isolation pads have been installed.
Cody Murdock (codym@mckinstry.com) 06 Oct 2021 10:14 AM	Spoke to Ricky (TEM) he will install more isolation pads.

Attached Images for ID 000105

2021-10-06 09:42:38

Final Walla Walla High School Commissioning Issue Log ID 000108

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	09 Nov 2021 11:41 AM	**Root Cause**	

Description

HP 4-5 does not appear to be heating when commanded in heat mode. Both compressors are enabled on the programming. TEM looking into the issue.

Location	<Top level>
Location Detail	

Comments for ID 000108

Cody Murdock (codym@mckinstry.com) 09 Nov 2021 11:42 AM	Found a wire had come loose to prove water flow to the compressors. Wire was re installed and unit is running.

Final Walla Walla High School Commissioning Issue Log ID 000109

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Oct 2021 11:30 AM	**Root Cause**	

Description

Missing grills from supply and return of HP 4-5 in upper mezzanine

Location	<Top level>
Location Detail	

Attached Images for ID 000109

2022-04-19 09:15:18

2021-12-21 08:04:43

2021-10-19 11:30:59

Final Walla Walla High School Commissioning Issue Log ID 000111

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	18 Nov 2021 10:35 AM	**Root Cause**	

Description

Bld 3 duct in NW corner of common area has been damaged. See pictures.

Location	<Top level>
Location Detail	

Comments for ID 000111

Cody Murdock (codym@mckinstry.com)
01 Dec 2021 9:52 AM

Duct has been repaired.

Attached Images for ID 000111

2021-12-01 09:51:43

2021-11-18 10:36:04

Final Walla Walla High School Commissioning Issue Log ID 000112

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	18 Nov 2021 10:45 AM	**Root Cause**	

Description

AHU 3-1 Access door handle on SW door has been damaged.

Location	<Top level>
Location Detail	

Comments for ID 000112

Cody Murdock (codym@mckinstry.com) 20 Jan 2022 10:24 AM	New handle has been installed. Small dent behind the handle. Door seals and functions correctly
Eduardo Alvarado (ealvarado@teminc.com) 21 Dec 2021 8:50 AM	TEM had a spare handle in hand so its been repaired. The access door has a small dent that can't be fully repaired; is a new access door required?
Eduardo Alvarado (ealvarado@teminc.com) 21 Dec 2021 8:00 AM	New handle and touch up paint ordered -EA

Attached Images for ID 000112

2021-12-21 08:44:39

2021-11-18 10:46:23

2021-11-18 10:46:06

Final Walla Walla High School Commissioning Issue Log ID 000113

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	18 Nov 2021 10:48 AM	**Root Cause**	

Description

Supply fan access door kill switch is not wired. Others appear to have been wired when delivered

Location	<Top level>
Location Detail	

Comments for ID 000113

Cody Murdock (codym@mckinstry.com)
06 Dec 2021 8:35 AM

Switch has been wired. Function will be tested during FPT.

Attached Images for ID 000113

2021-11-18 10:50:53

Final Walla Walla High School Commissioning Issue Log ID 000119

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	06 Dec 2021 11:38 AM	**Root Cause**	

Description

AHU 3-1 OSA damper blades are hitting the adjoining duct.

Location	<Top level>
Location Detail	

Comments for ID 000119

Cody Murdock (codym@mckinstry.com) 20 Jan 2022 10:21 AM	Confirmed in field.
Eduardo Alvarado (ealvarado@teminc.com) 21 Dec 2021 8:23 AM	Duct realigned and damper is functioning properly. -EA
Cody Murdock (codym@mckinstry.com) 06 Dec 2021 11:39 AM	Ricky (TEM) is going to realign the duct.

Final Walla Walla High School Commissioning Issue Log ID 000120

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Dec 2021 10:33 AM	**Root Cause**	

Description

Bld 2 Room B-109 Fume hood does not appear to be functioning.

Location	<Top level>
Location Detail	

Comments for ID 000120

Cody Murdock (codym@mckinstry.com) 27 Jun 2022 11:03 AM	Fume hood function verified onsite, unit works as intended.
Cody Murdock (codym@mckinstry.com) 22 Jun 2022 10:14 AM	Confirmed fume hood is operating as intended.
Eduardo Alvarado (ealvarado@teminc.com) 21 Dec 2021 8:22 AM	After further inspection TEM believes this may be an electrical issue. -EA

Final Walla Walla High School Commissioning Issue Log ID 000128

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	20 Jan 2022 10:55 AM	**Root Cause**	

Description

Room B113 is dropping zone temp on the Tstat causing the up to over heat the space.

Location	<Top level>
Location Detail	

Comments for ID 000128

Cody Murdock (codym@mckinstry.com)
02 Feb 2022 8:53 AM

Steve (SPHC) removed the Tstat and found a draft coming in from behind the wall. He will add insulation behind the thermostat on his next site visit.

Attached Images for ID 000128

2022-01-20 10:56:39

Final Walla Walla High School Commissioning Issue Log ID 000134

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Mar 2022 6:43 AM	**Root Cause**	

Description

HP Filter access doors are to be hinged per specification. Currently they are removable access doors.

Location	<Top level>
Location Detail	

Comments for ID 000134

Cody Murdock (codym@mckinstry.com)
27 Jun 2022 10:59 AM

Hinged filter access has been modified and approved by district.

Final Walla Walla High School Commissioning Issue Log ID 000135

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	02 Mar 2022 8:19 AM	**Root Cause**	

Description

HPs are required to have a local disconnect for each unit. Currently not installed.

Location	<Top level>
Location Detail	

Comments for ID 000135

Cody Murdock (codym@mckinstry.com) 25 Jan 2023 8:58 AM	Local disconnects have been added (see attached pics).
Cody Murdock (codym@mckinstry.com) 04 Jan 2023 11:56 AM	Spoke with Craig (TEM) he is looking into the issue.
Cody Murdock (codym@mckinstry.com) 27 Jun 2022 11:00 AM	Smaller units come with a local disconnect. Bld 7 units are larger and did not come with local disconnects. To be installed.

Attached Images for ID 000135

2023-01-25 08:59:34

2023-01-25 08:59:34

Final Walla Walla High School Commissioning Issue Log ID 000137

Company	Total Energy Management, Inc	**Status**	Closed
Type	Field - Observation	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	19 Apr 2022 9:36 AM	**Root Cause**	

Description

HRU 7-1 return air filter does not appear to be reading correctly.

Location	<Top level>
Location Detail	

Comments for ID 000137

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:23 AM

Found lines disconnected once reconnected filter status read correctly.

Attached Images for ID 000137

2022-04-19 09:36:57

2022-04-19 09:36:47

Final Walla Walla High School Commissioning Issue Log ID 000141

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	22 Jun 2022 8:26 AM	**Root Cause**	

Description

Ventilation air duct above return for HP 5-11 has a large gap in joint.

Location	<Top level>
Location Detail	

Comments for ID 000141

Cody Murdock (codym@mckinstry.com) 19 Jul 2022 9:16 AM	Duct has been sealed.
Cody Murdock (codym@mckinstry.com) 22 Jun 2022 8:49 AM	Per Ricky (TEM) thes duct are et to be sealed. Will back check once complete.

Attached Images for ID 000141

2022-07-19 09:17:02

2022-06-22 08:27:54

Final Walla Walla High School Commissioning Issue Log ID 000142

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	22 Jun 2022 8:33 AM	**Root Cause**	

Description

HP 5-29 flex connection on return duct is interfering with the duct on the unit.

Location	<Top level>
Location Detail	

Comments for ID 000142

Cody Murdock (codym@mckinstry.com) 28 Dec 2022 12:15 PM	Completed.
Cody Murdock (codym@mckinstry.com) 22 Jun 2022 8:50 AM	Addition support leg to be added on the downstream side of e duct. Will back check when complete.

Attached Images for ID 000142

2022-06-22 08:34:49

Final Walla Walla High School Commissioning Issue Log ID 000157

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 8:48 AM	**Root Cause**	

Description

OSA Flow on HP 5-12 is reading 0 cfm with the damper at 100%

Location	<Top level>
Location Detail	

Comments for ID 000157

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:49 AM

Reading correctly.

Final Walla Walla High School Commissioning Issue Log ID 000160

Company	Total Energy Management, Inc	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	14 Dec 2022 9:15 AM	**Root Cause**	

Description

HRU 5-2 exhaust fan is showing failed on BAS.

Location	<Top level>
Location Detail	

Comments for ID 000160

Cody Murdock (codym@mckinstry.com)
29 Dec 2022 11:48 AM

Verified in field. Found vfd in off returned to auto.

Final Walla Walla High School Commissioning Issue Log ID 000062

Company	Z-Obsolete9	**Status**	Closed
Type	Commissioning Issue	**Due Date**	
Author	Cody Murdock (codym@mckinstry.com)	**Author's Company**	McKinstry E&TS
Date Created	31 Jul 2020 11:20 AM	**Root Cause**	

Description

Pre-start notebook shows traps have been primed but it does not appear they have been primed yet. Please confirm before equipment start up.

Location	<Top level>
Location Detail	

Comments for ID 000062

Garrett Husky (garretth@mckinstry.com)
27 Oct 2020 10:31 AM

Resolved. Traps are primed.

Section 4

Details

ID	000055	**Company**	<not set>
Name	AHU 3-1 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Feb 2022 9:07 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Kitchen (2)Exhaust Fan Status/Alarm - DI	Pass	0
	Comments		
	EF 3-4		
	Kitchen (2) Exhaust Fan On/Off - DO	Pass	0
	Kitchen (1)Exhaust Fan Status/Alarm - DI	Pass	0
	Comments		
	EF 3-5 dishwasher		
	Kitchen (1) Exhaust Fan On/Off - DO	Pass	1
	Comments		
	fan is enabled when unit is enabled.		
	Exhaust Air Damper - DO	Pass	0
	Comments		
	EF damper is tied to exhaust fan nable internally.		
	Exhaust Air Flow (cfm) - AI	verified.	0
	EF Speed Control - AO	Verified	0
	EF Start/Stop - DO	Pass	0
	EF VFD Fault Alarm - DI	Pass	0
	EA Temp AI	Verified	0
	Comments		
	Verified 38F and OSA is 37.6F		

Item #	Item Text	Response	# Issues
	Wheel Speed - AO	Verified 25% and 100%	0
	RA Temp - AI	Verified	0
	Room Stat - AI	Verified	0
	CO2 Sensor - AI	Verified	0
	Return Damper - AO	Verified	0
	Comments		
	moved from 100% open to 0%.		
	HP Reversing Valve - DO	Pass	0
	Compressor Staging - DO	Pass	0
	Digital Scroll Compressor Control - AO	N/A	0
	Supply Air Temperature - AI	Verified	0
	Supply Fan Speed Control - AO	Verified	0
	SF Start/Stop - DO	Pass	0
	SF VFD Alarm/Fault - DI	Pass	0
	Electric Heat on/off - DO	Pass	0
	SCR Heating Control - AO	Verified	0
	Comments		
	Electric hest control		
	Tempered Air Temp - AI	Verified	0
	Outside Air Temp - AI	Verified	0
	Outdoor Air Flow (CFM) - AI	Verified	0
	Comments		
	Digital read out.		
	Outdoor air damper - DO	Pass	0

Details

ID	000053	**Company**	<not set>
Name	AHU 3-2 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Feb 2022 10:34 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Exhaust Air Damper - DO	Pass	0
	EF Speed Control - AO	Verified	0
	EF Start/Stop - DO	Pass	0
	Comments		
	supply and exhaust are tied together		
	EF VFD Fault Alarm - DI	Pass	0
	RA Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Room Stat - AI	Verified	0
	Comments		
	Verified with temp gun		
	CO2 Sensor - AI	Verified	0
	Return Damper - AO	Verified	0
	Comments		
	Supply Damper		
	HP Reversing Valve - DO	Pass	0
	Compressor Staging - DO	Pass	0
	Digital Scroll Compressor Control - AO	Verified	0
	Comments		
	Verified during functional testing.		

Item #	Item Text	Response	# Issues
	Supply Air Temperature - AI	Verified	0
	Comments		
	Verified with temp gun		
	Supply Fan Speed Control - AO	Verified	0
	SF Start/Stop - DO	Pass	0
	Comments		
	supply and exhaust are tied together		
	SF VFD Alarm/Fault - DI	Pass	0
	Tempered Air Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Outside Air Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Outdoor Air Flow (CFM) - AI	Verified	0
	Outdoor air damper - DO	Pass	0

Details

ID	000095	**Company**	<not set>
Name	Bld 2 EF PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 12:20 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Fan Start/Stop - DO	Pass	0
	Fan Status/Power - AI	Verified	0
	Damper Open/Close - DO	Pass	0
Individual Units			
	EF-1	Pass	0

Comments

EF 2-2

Details

ID	000002	**Company**	<not set>
Name	Bld 2 - Electric Heater Control PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	19 Aug 2020 10:43 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Space Temperature - AI	Verified	0
	Electric Element - DO	Pass	0
Point to Point Checkout			
	UH-1	Pass	0
	UH-2	Pass	0

Details

ID	000025	**Company**	<not set>
Name	HP PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	Walla Walla High School > Building 2 > Mezzanine > 602
Created On	02 Aug 2021 1:44 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Ventilation Air Damper Control - AO	Verified	0
	OSA CFM Reading - AI	Verified	0
	Discharge Air Temperature - AI	Verified	0
	Space CO2 - AI	Verified	0
	Space Temperature - AI	Verified	0
	Fan Start/Stop - DO	Pass	0
	Status/Alarm - DI	Pass	0
	Reversing Valve - DO	Pass	0
	1st Stage Compressor - DO	Pass	0
	2nd Stage Compressor - DO	Pass	0
	Exhaust Air Damper Control - AI	NA	0
Individual Units			

Details

ID	000030	**Company**	<not set>
Name	HRU-1 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	Walla Walla High School > Building 2 > Mezzanine > 404
Created On	02 Aug 2021 12:31 PM	**Equipment Name**	HRU-2-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	1
	OSA Dirty Filter Alarm - DI	Pass	0
	Outside Air Temp - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	1
	RA Temp - AI	Verified	0
	Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Room Stat - AI	NA	0

Comments

no stats tied to unit. Stats are tied indicidual HPs.

Supply VFD Speed Control - AO	Verified	0
Supply VFD Start/Stop - DO	Pass	0
Supply VFD Fault Alarm - DI	Pass	0
SCR Heating Control - AO	NA	0
Tempered Air Temp - AI	Verified	0
Supply Air Dirty Filter Alarm - DI	Pass	0
Exhaust Air VFD Fault Alarm - DI	Pass	0
Exhaust Air VFD Start/Stop - DO	Pass	0
Exhaust Air VFD Speed Control - AO	Verified	0
Exhaust Air Flow (cfm) - AI	Verified	1
Exhaust Temp - AI	Verified	0
Exhaust Air Damper - DO	Pass	0

Details

ID	000053	**Company**	<not set>
Name	AHU 3-2 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Feb 2022 10:34 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Exhaust Air Damper - DO	Pass	0
	EF Speed Control - AO	Verified	0
	EF Start/Stop - DO	Pass	0
	Comments		
	supply and exhaust are tied together		
	EF VFD Fault Alarm - DI	Pass	0
	RA Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Room Stat - AI	Verified	0
	Comments		
	Verified with temp gun		
	CO2 Sensor - AI	Verified	0
	Return Damper - AO	Verified	0
	Comments		
	Supply Damper		
	HP Reversing Valve - DO	Pass	0
	Compressor Staging - DO	Pass	0
	Digital Scroll Compressor Control - AO	Verified	0
	Comments		
	Verified during functional testing.		

Item #	Item Text	Response	# Issues
	Supply Air Temperature - AI	Verified	0
	Comments		
	Verified with temp gun		
	Supply Fan Speed Control - AO	Verified	0
	SF Start/Stop - DO	Pass	0
	Comments		
	supply and exhaust are tied together		
	SF VFD Alarm/Fault - DI	Pass	0
	Tempered Air Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Outside Air Temp - AI	Verified	0
	Comments		
	Verified with temp gun		
	Outdoor Air Flow (CFM) - AI	Verified	0
	Outdoor air damper - DO	Pass	0

Details

ID	000049	**Company**	<not set>
Name	Building 4 HP PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	19 Oct 2021 10:33 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Ventilation Air Damper Control - AO	Verified	0
	OSA CFM Reading - AI	verified	0
	Discharge Air Temperature - AI	Verified	0
	Space CO2 - AI	Verified	0
	Space Temperature - AI	Verified	0
	Fan Start/Stop - DO	Pass	0
	Status/Alarm - DI	Pass	0
	Reversing Valve - DO	Pass	0
	1st Stage Compressor - DO	Pass	0
	2nd Stage Compressor - DO	Pass	0
	Exhaust Air Damper Control - AI	N/A	0
	Purge Vent Switch - DI	Pass	0

Comments

Where applicable.

Individual Units

Details

ID	000030	**Company**	<not set>
Name	HRU-1 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	Walla Walla High School > Building 2 > Mezzanine > 404
Created On	02 Aug 2021 12:31 PM	**Equipment Name**	HRU-2-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	1
	OSA Dirty Filter Alarm - DI	Pass	0
	Outside Air Temp - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	1
	RA Temp - AI	Verified	0
	Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Room Stat - AI	NA	0

Comments

no stats tied to unit. Stats are tied indicidual HPs.

Supply VFD Speed Control - AO	Verified	0
Supply VFD Start/Stop - DO	Pass	0
Supply VFD Fault Alarm - DI	Pass	0
SCR Heating Control - AO	NA	0
Tempered Air Temp - AI	Verified	0
Supply Air Dirty Filter Alarm - DI	Pass	0
Exhaust Air VFD Fault Alarm - DI	Pass	0
Exhaust Air VFD Start/Stop - DO	Pass	0
Exhaust Air VFD Speed Control - AO	Verified	0
Exhaust Air Flow (cfm) - AI	Verified	1
Exhaust Temp - AI	Verified	0
Exhaust Air Damper - DO	Pass	0

Details

ID	000074	**Company**	<not set>
Name	Bldg 5 HP PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	15 Jul 2022 1:01 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Ventilation Air Damper Control - AO	verified	0
	OSA CFM Reading - AI	verified.	0
	Discharge Air Temperature - AI	verified	0
	Space CO2 - AI	Verified	0
	Space Temperature - AI	Verified	0
	Fan Start/Stop - DO	Pass	0
	Status/Alarm - DI	Pass	0
	Reversing Valve - DO	Pass	0
	1st Stage Compressor - DO	Pass	0
	2nd Stage Compressor - DO	Pass	0
	Exhaust Air Damper Control - AI	N/A	0
Individual Units			
	HP 5-1	Pass	0
	HP 5-2	Pass	0
	HP 5-3	Pass	0
	HP 5-4	Pass	0
	HP 5-8	Pass	0

Comments

HRU not complete will verify OSA flow during FPT

	HP 5-10	Pass	0

Comments

HRU not complete will verify OSA flow during FPT

Item #	Item Text	Response	# Issues
	HP 5-16	Pass	0
	HP 5-18	Pass	0
	HP 5-20	Pass	0
	HP 5-21	Pass	0
	HP 5-24	Pass	0
	Comments		
	20% PTP on hp		
	HP 5-26	Pass	0
	HP 5-32	Pass	0
	HP 5-36	Pass	0
	HP 5-37	Pass	0
	HP 5-39	Pass	0
	HP 5-45	Pass	0
	HP 5-46	Pass	0
	HP 5-47	Pass	0
	HP 5-49	Pass	0

Details

ID	000096	**Company**	<not set>
Name	Building 5 HRU PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 12:39 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	0
	OSA Dirty Filter Alarm - DI	Pass	0
	Outside Air Temp - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	0
	RA Temp - AI	Verified	0
	Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Room Stat - AI	Verified	0
	Supply VFD Speed Control - AO	Verified	0
	Supply VFD Start/Stop - DO	Pass	0
	Supply VFD Fault Alarm - DI	Pass	0
	Electric Heat on/off - DO	Pass	0
	SCR Heating Control - AO	Verified	0
	Tempered Air Temp - AI	Verified	0
	Supply Air Dirty Filter Alarm - DI	Pass	0
	Exhaust Air VFD Fault Alarm - DI	Pass	0
	Exhaust Air VFD Start/Stop - DO	Pass	0
	Exhaust Air VFD Speed Control - AO	Verified	0
	Exhaust Air Flow (cfm) - AI	Verified	0
	Exhaust Temp - AI	Verified	0
	Exhaust Air Damper - DO	Pass	0

Details

ID	000109	**Company**	<not set>
Name	Bld 6 AHU PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 2:52 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	RA TEMP - AI	Verified	0
	START/STOP - DO	Pass	0
	SPEED CONTROL - AO	Verified	0
	VFD FAULT ALARM - DI	Pass	0
	EXHAUST AIR DAMPER - DO	Pass	0
	RETURN DAMPER - AO	Verified	0
	ROOM STAT - AI	Verified	0
	CO2 SENSOR - AI	Verified	0
	HP REVERSING VALVE - DO	Pass	0
	COMPRESSOR STAGING - AO	Verified	0
	DIGITAL SCROLL COMPRESSOR CONTROL - AI	NA	0
	OUTSIDE AIR TEMP - AI	Verified	0
	SUPPLY AIR TEMPERATURE - AI	Verified	0
	START/STOP - DO	Pass	0
	SPEED CONTROL - AO	Verified	0
	VFD FAULT ALARM - DI	Pass	0
	OUTDOOR AIR FLOW (CFM) - AI	Verified	0
	OUTDOOR AIR DAMPER - DO	Pass	0
	TEMPERED AIR TEMP - AI	Verified	0
Point to Point Checkout			
	SPEED CONTROL - AO	NA	0
	RETURN DAMPER - AO	NA	0
	ROOM STAT - AI	NA	0
	CO2 SENSOR - AI	NA	0

Item #	Item Text	Response	# Issues
	COMPRESSOR STAGING - AO	NA	0
	DIGITAL SCROLL COMPRESSOR CONTROL - AI	NA	0
	OUTSIDE AIR TEMP - AI	NA	0
	SUPPLY AIR TEMPERATURE - AI	NA	0
	SPEED CONTROL - AO	NA	0
	OUTDOOR AIR FLOW (CFM) - AI	NA	0
	TEMPERED AIR TEMP - AI	NA	0

Details

ID	000108	**Company**	<not set>
Name	Bld 6 HP PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 2:36 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Ventilation Air Damper Control - AO	Verified	0
	OSA CFM Reading - AI	Verified	0
	Discharge Air Temperature - AI	Verified	0
	Space CO2 - AI	Verified	0
	Space Temperature - AI	Verified	0
	Fan Start/Stop - DO	Pass	0
	Status/Alarm - DI	Pass	0
	Reversing Valve - DO	Pass	0
	1st Stage Compressor - DO	Pass	0
	2nd Stage Compressor - DO	Pass	0

Point to Point Checkout

Details

ID	000082	**Company**	<not set>
Name	Bldg 7 Electric Heater Control PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 11:38 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Space Temperature - AI	Verified	0
	Electric Element - DO	Pass	0
Point to Point Checkout			
	BB 7-1	Pass	0
	BB 7-2	Pass	0
	UH 7-1	Pass	0

Details

ID	000081	**Company**	<not set>
Name	HRU 7-1 PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 10:56 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Outdoor Air Damper - DO	Pass	0
	Outside Air Flow (CFM) - AI	Verified	0
	OSA Dirty Filter Alarm - DI	Pass	0
	Outside Air Temp - AI	Verified	0
	Heat Exchanger Bypass - DO	Pass	0
	RA Temp - AI	Verified	0
	Duct Static Pressure - AI	Verified	0
	Supply Air Temperature - AI	Verified	0
	Room Stat - AI	Verified	0
	Supply VFD Speed Control - AO	Verified	0
	Supply VFD Start/Stop - DO	Pass	0
	Supply VFD Fault Alarm - DI	Pass	0
	SCR Heating Control - AO	N/A no compressors	0
	Tempered Air Temp - AI	Verified	0
	Supply Air Dirty Filter Alarm - DI	Pass	0
	Exhaust Air VFD Fault Alarm - DI	Pass	0
	Exhaust Air VFD Start/Stop - DO	Pass	0
	Exhaust Air VFD Speed Control - AO	Verified	0
	Exhaust Air Flow (cfm) - AI	Verified	0
	Exhaust Temp - AI	Verified	0
	Exhaust Air Damper - DO	Pass	0

Section 5

Details

ID	000054	**Company**	<not set>
Name	AHU 3-1 FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Feb 2022 9:48 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	General:		
	The heat pump unit shall provide heating, cooling and ventilation to the space served with constant volume airflow.		
	Occupied Mode:		
	The supply shall operate continuously. The exhaust fan shall track OSA damper position with a negative offset to maintain a slightly positive building pressure. Offset to be determined during balance.		
	The CO2 sensor shall modulate the outside air damper between 25% and 100% of OSA CFM scheduled on drawing to maintain a maximum CO2 level of 1000 PM (or as set). During economizer cooling operation the CO2 sensor will be disabled and the OSA dmaper shall be capable of modulating fully open.		
	Upon activation of kitchen hood exhaust fans from fan switch on kitchen hoods, the CO2 sensor shall be overriden and the OSA damper shall modulate to provide equal quantity of OSA as Kitchen exhaust air (if less than kitchen hood exhaust quantities). The air handing unit exhaust fan shall track to provide a CFM equal to the difference in OSA CFM and the summed kitchen exhaust CFM.		
	Heat Recovery Operation:		
	During the occupied mode the heat recovery wheel shall operate to temper the incoming outside air temperature as follows:		
	Outside air temp between 70 and 75F - The HR wheel VFD shall stop in order to avoid recovering exhaust air heat and the unit shall provide neutral "economizer" air.		
	Outside air temp below 70F - The HR wheel shall modulate its speed through the VFD to recover exhaust air energy (heat) so as to pre-heat and temper the incoming outside air. The supply air temperature setpoint shall be 70 F.		
	Outside air temp above 75F - The HR wheel shall modulate its speed through the VFD in order to recover exhaust air energy (cooling) so as to pre-cool and temper the incoming outside air. The supply temperature setpoint shall be 75F.		
	Economizer Cooling:		
	Upon a call for cooling from the space when outside air temperature is below the return air temperature the outside air and relief air dampers shall modulate open while the return air damper modulate closed. On a further call for cooling, the lead heat pump compressor shall be enerized and capacity modulated via the integral variable speed compressor controlls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall cycle/modulate as required to maintain setpoint at room temperature sensor. The reverse shall occor on a decrease in cooling command.		
	Cooling Mode:		
	Upon a call for cooling from the space when the outside air temperature is above the return air temperature the relief, return and outside air dampers shall modulate to min OSA position as controlled by the CO2 sensor. The reversing valve position shall modulate to cooling mode. The lead heat pump compressor shall be energized and capacity modulated via the internal variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required.		

Item #	Item Text	Response	# Issues
	Heating Mode:		
	On a call for heat from the space the relief, return and outside air dampers shall modulate to minimum OSA position as determined by the CO2 sensor. The reversing valve positioned shall be in heating mode. The lead heat pump compressor shall be energized and capacity modulated via the internal variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand can not be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the heater SCR controller.		
	The Mixed Air Temperature shall override the CO2 sensor to maintain a minimum mixed air temperature of 40F.		
	If the mixed air temperature falls below 35F a low temperature alarm shall be indicated at the centeral monitoring location and the dampers shall modulate to full recirc mode until the alarm is cleared.		
	Heat Pump Compressor and Electric Heater Safties, interlocks and capacity controls shall be integral with the heat pump package and shall be interfaced as required with the BAS system field controlls as required.		
	Unoccupied Cycle:		
	The unit shall be off and the outside air damper fully closed. Upon a call to maintain setback room temperature setpoints, the unit shall temporarily cycle on, with the outside air ventilation dampers remaining closed. Once the room temperature is satisfied, the unit shall cycle off.		
	A pushbutton at the sensor shall allow the system to override the unoccupied cycle and place the heat pump in the occupied mode for a pre-set time period of 2 hours (or as set).		
	Optimum Start-Stop:		
	Heating: The control system shall sense space temperature and outside air temperature to optimize fan start time so that proper space temperature is reached at the start of scheduled occupied mode. Outside air damper shall fully close and return air damper shall fully open during warm-up period. Upon start of occupied mode, outside air damper and return air damper shall modulate per the sequence of controls listed above.		
	Cooling: The control system shall sensor space temperature and outside air temperature to optimize fan start time so the proper space temperature is reached at the start of scheduled occupied mode. Outside air damper shall modulate open for economizer cooling and the return damper shall modulate closed during pre-cool period, when outside air temperature is locer than space temperature and space temperature is warmer than occupied setpoint of T1. Upon start of occupied mode, outside air damper and return air damper shall modulate per the sequence of controls listed above.		
	Safties:		
	Smoke Detector: Upon detection of smoke, the return air duct mounted smoke detector shall signal an alarm to the building fire alarm control panel which, shall in turn, send a signal to shut-down the roof-top unit fans in order to prevent the spread of smoke.		
	Water Flow Switch: The heat pump module shall be provided with and intergral flow switch which shall prevent compressor operation unless adequate water flow is detected.		
	Test Procedure:		
	Setpoints:		
1	Exhaust and supply fans are offset to provide a positive building pressure. **Comments** exhaust cfm is -1000 cfm in normal conditions.	Pass	0
2	Verify heat wheel enabled below 70F and above 75F. **Comments** 68-75F	Pass	0

Item #	Item Text	Response	# Issues
3	Verify minimum MAT is set to 40F.	Pass	0
4	Verify heating SAT setpoint is 70F	Pass	0
	Comments MAT not SAT		
5	Verify cooling SAT setpoint is 75F.	Pass	0
	Comments MAT not SAT		
6	Verify OSA damper is set to provide 25% - 100% of scheduled OSA.	Pass	0
Occupied Cycle:			
7	Place the building in occupied mode with no call for CO2, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open to provide min scheduled OSA.	Pass	0
	Comments min OSA set to 1500 cfm		
8	Verify supply fan and exhaust fan run at constant speed with and offset to make the building slightly positive.	Pass	0
9	Activate the kitchen exhaust fans, verify the CO2 is ignored and the OSA damper modulates to provide the additional outside air equal to the scheduled CFM of the kitchen exhaust.	Pass	1
	Comments EF 3-4 has a scheduled cfm of 4270. AHU 3-1 OSA setpoint changed to 4270 causing the exhaust setpoint to be negative. 3/24/22 Per instruction from design team, AHU 3-1 exhaust fan shuts off when kitchen exhaust fan is enabled.		
10	Shut off the kitchen exhaust fans, verify as supply fan modulates that the exhaust fan maintains its offet to maintain building pressure.	Pass	0
11	Manipulate the mixed air temperature to be 39F, verify the CO2 is overriden and OSA damper modulates to maintain the MAT to 40F.	Pass	0
12	Manipulate the supply air temperature to be 34F, verify an additional alarm is indicated and the unit dampers go into full recirc mode until the alarm is cleared.	Pass	0
Demand Control Ventilation (CO2):			
13	With the unit in occupied mode, generate a call for CO2 ventilation, verify the OSA damper modulates to 100% of scheduled OSA.	Pass	0

Item #	Item Text	Response	# Issues
14	Release the call for ventilation, verify the OSA damper modulates to min scheduled OSA.	Pass	0
Heat Recovery Operation:			
15	Set the outside air temperature to between 70 & 75F, verify the HR wheel is stopped and bypass dampers are open.	Pass	0
	Comments		
	Above 75F for cooling and below 68F for heating.		
16	Set the outside air temperature to below 70F, verify the heat wheel is enabled and modulates to maintain supply air temperature.	Pass	0
17	Set the outside air temperature to above 75F, verify the heat wheel is enabled and modulates to maintain supply air temperature.	Pass	0
Heating Mode:			
18	Generature a call for heating, manipulate the supply air temperature to below 70F, verify the reversing valve modulates to the heating mode.	Pass	0
19	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
20	Upon a further call for heating, verify additional compressors are enabled and modulated via intergral controls.	Pass	0
21	Upon an even further call for heating, verify the electric heater is enabled.	Pass	0
	Comments		
	Enabled after compressor is at 95%.		
Cooling Mode:			
22	Generate a call for cooling when OSA is above the mixed air temperature, manipulate the supply air temperature to be above 75F, verify the reversing valve modulates to the cooling mode.	Pass	0
23	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
24	Upon a further call for cooling, verify additional compressors are enabled and modulated via intergral controls.	Pass	0
Economizer Mode:			
25	Generate a call for cooling when OSA is below the mixed air temperature, manipulate the supply air temperature to be above 75F, verify the relief air and outside air dampers modulates open and the return air damper modulates closed.	Pass	0
26	Generate a further call for cooling when economizer is available verify the lead heat pump compressor is energized and capacity is modulated	Pass	0

via internal controls.

Item #	Item Text	Response	# Issues
27	Release the call for cooling while economizer still available, verify compressers are deenergized first then the OSA damper returns to min scheduled airflow.	Pass	0
Unoccupied Mode:			
28	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
29	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
30	Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.	Pass	0
31	Return unit to unoccipied mode, push the override pushbutton, verify the unit is enabled in occupied mode for 2 hours or as set.	Pass	0
Optimum Start-Stop:			
32	Verify through trends that Optimum start-stop is programmed and working correctly.	Pass	0
Safties:			
33	Generate a smoke alarm detection, verify an alarm is sent to the building fire alarm and unit is disabled.	Pass	0

Details

ID	000052	**Company**	<not set>
Name	AHU 3-2 FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Feb 2022 11:42 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	General:		
	The heat pump unit shall provide heating, cooling and ventilation to the space served with constant volume airflow.		
	Occupied Mode:		
	The supply and return fans shall operate continuously.		
	Economizer Cooling:		
	Upon a call for cooling from the space when outside air temperature is below the return air temperature the outside air and relief air dampers shall modulate open while the return air damper modulate closed. On a further call for cooling, the lead heat pump compressor shall be enerized and capacity modulated via the integral variable speed compressor controlls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall cycle/modulate as required to maintain setpoint at room temperature sensor. The reverse shall occor on a decrease in cooling command.		
	Cooling Mode:		
	Upon a call for cooling from the space when the outside air temperature is above the return air temperature the relief, return and outside air dampers shall modulate to min OSA position as controlled by the CO2 sensor. The reversing valve position shall modulate to cooling mode. The lead heat pump compressor shall be energized and capacity modulated via the internal variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required.		
	Heating Mode:		
	On a call for heat from the space the relief, return and outside air dampers shall modulate to minimum OSA position as determined by the CO2 sensor. The reversing valve positioned shall be in heating mode. The lead heat pump compressor shall be energized and capacity modulated via the internal variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand can not be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the heater SCR controller.		
	The Mixed Air Temperature shall override the CO2 sensor to maintain a minimum mixed air temperature of 40F.		
	If the mixed air temperature falls below 35F a low temperature alarm shall be indicated at the centeral monitoring location and the dampers shall modulate to full recirc mode until the alarm is cleared.		
	Heat Pump Compressor and Electric Heater Safties, interlocks and capacity controls shall be integral with the heat pump package and shall be interfaced as required with the BAS system field controlls as required.		
	Unoccupied Cycle:		
	The unit shall be off and the outside air damper fully closed. Upon a call to maintain setback room temperature setpoints, the unit shall temporarily cycle on, with the outside air ventilation dampers remaining closed. Once the room temperature is satisfied, the unit shall cycle off.		

Item #	Item Text	Response	# Issues
	A pushbutton at the sensor shall allow the system to override the unoccupied cycle and place the heat pump in the occupied mode for a pre-set time period of 2 hours (or as set).		
	Optimum Start-Stop:		
	Heating: The control system shall sense space temperature and outside air temperature to optimize fan start time so that proper space temperature is reached at the start of scheduled occupied mode. Outside air damper shall fully close and return air damper shall fully open during warm-up period. Upon start of occupied mode, outside air damper and return air damper shall modulate per the sequence of controls listed above.		
	Cooling: The control system shall sensor space temperature and outside air temperature to optimize fan start time so the proper space temperature is reached at the start of scheduled occupied mode. Outside air damper shall modulate open for economizer cooling and the return damper shall modulate closed during pre-cool period, when outside air temperature is locer than space temperature and space temperature is warmer than occupied setpoint of T1. Upon start of occupied mode, outside air damper and return air damper shall modulate per the sequence of controls listed above.		
	Safties:		
	Smoke Detector: Upon detection of smoke, the return air duct mounted smoke detector shall signal an alarm to the building fire alarm control panel which, shall in turn, send a signal to shut-down the roof-top unit fans in order to prevent the spread of smoke.		
	Water Flow Switch: The heat pump module shall be provided with and intergral flow switch which shall prevent compressor operation unless adequate water flow is detected.		
	Test Procedure:		
	Setpoints:		
1	Exhaust and supply fans areset to run continuously at constant volume.	Pass	0
3	Verify minimum MAT is set to 40F.	Pass	0
4	Verify heating SAT setpoint is 70F	Pass	0
5	Verify cooling SAT setpoint is 75F.	Pass	0
	Occupied Cycle:		
6	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open to provide min scheduled OSA.	Pass	0
7	Verify supply fan and exhaust fan run at constant speed .	Pass	0
8	Manipulate the mixed air temperature to be 39F, verify the CO2 is overriden and OSA damper modulates to maintain the MAT to 40F.	Pass	0
9	Manipulate the supply air temperature to be 34F, verify an additional alarm is indicated and the unit dampers go into full recirc mode until the alarm is cleared.	Pass	0
	Heating Mode:		
10	Generature a call for heating, manipulate the supply air temperature to below 70F, verify the reversing valve modulates to the heating mode.	Pass	0
11	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
12	Upon a further call for heating, verify additional compressors are enabled and modulated via intergral controls.	Pass	0

Comments
only 1 vfd for the compressor.

Item #	Item Text	Response	# Issues
13	Upon an even further call for heating, verify the electric heater is enabled.	Pass	1

Comments
Verified 12/28

Cooling Mode:

14	Generate a call for cooling when OSA is above the mixed air temperature, manipulate the supply air temperature to be above 75F, verify the reversing valve modulates to the cooling mode.	Pass	0
15	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
16	Upon a further call for cooling, verify additional compressors are enabled and modulated via intergral controls.	Pass	0

Economizer Mode:

17	Generate a call for cooling when OSA is below the mixed air temperature, manipulate the supply air temperature to be above 75F, verify the relief air and outside air dampers modulates open and the return air damper modulates closed.	Pass	0
18	Generate a further call for cooling when economizer is available verify the lead heat pump compressor is energized and capacity is modulated via internal controls.	Pass	0
19	Release the call for cooling while economizer still available, verify compressers are deenergized first then the OSA damper returns to min scheduled airflow.	Pass	0

Unoccupied Mode:

20	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
21	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
22	Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.	Pass	0
23	Return unit to unoccipied mode, push the override pushbutton, verify the unit is enabled in occupied mode for 2 hours or as set.	Pass	0

Optimum Start-Stop:

24	Verify through trends that Optimum start-stop is programmed and working correctly.	Pass	0

Safties:

Item #	Item Text	Response	# Issues
25	Generate a smoke alarm detection, verify an alarm is sent to the building fire alarm and unit is disabled.	Pass	0

204108-001 WWPS WA-HI NCCx — Bld 1 EF FPT

Details

ID	000103	**Company**	<not set>
Name	Bld 1 EF FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	09 Jan 2023 1:47 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Cycle:		
	The fan shall be on and the damper open.		
	Unoccupied Cycle:		
	The fan shall be off and the damper closed.		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
	Place the building in occupied mode, verify the fan is energized and the damper is open.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode, verify the fan is de-energized and the damper is closed.	Pass	0
	Individual Units:		
	(e) EF-8	Pass	0
	(e) EF-9	Pass	0
	(e) EF-10	Pass	0

Details

ID	000093	**Company**	<not set>
Name	Bld 1 HW System FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 11:33 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The heating water loop shall be enabled when outside air temperature is below 55F, or as set, and there is a request from any VAV box or hydronic unit heater.		
	After the loop pump has proven flow for 1-min the boiler shall be enabled to maintain heating water supply temperature as set by the BAS in accordance with the reset schedule below (adj). Control of the boiler circ pump on/off, boiler staging, firing rate shall be provided by the on-board boiler controllers provided with the boiler.		
	Reset Schedule:		
	Less than 30F OSA = 140F heating water supply setpoint		
	30F-45F OSA = Proportional reset from 140F to 120F		
	More than 45F OSA = 120F		
	The Boiler circ pump shall be enabled by the boiler control system.		
	Test Procedure:		
	Setpoints:		
	Heating water reset set to <30F = 140F	Pass	0
	Heating water reset set to 30F-45F = Proportional between 140-120F	Pass	0
	Heating water reset set to >45F = 140F	Pass	0
	Supply Temperature Mode:		
	Override the OSA to below 30F, verify the heating water setpoint is set to 140F.	Pass	0
	Override the OSA to below 45F, verify the heating water setpoint is set to 120F.	Pass	0
	Heating Cycle:		
	Ensure the OSA temperature is below 55F, verify the boiler enables the system pump and the boiler recirc pump.	Pass	0

Comments

Current boiler setup has removed the VFD (Per Design team), Boiler	516

controls the system pump, at time of functional test the boiler would run to setpoint then shut off the system pump thus no longer circulating heating water through the building. Through boiler programming and instruction from the design team, the system pump shutoff has had a 40 min delay to keep the system pump running for 40 mins after the boiler is disabled.

Details

ID	000092	**Company**	<not set>
Name	Bld 1 RH FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 10:49 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Mode:		
	The radiant heater shall cycle to maintain space temperature of 65F (adj)		
	Unoccupied Mode:		
	The radiant heater shall cycle to maintain space temperature of 55F (adj)		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Mode:		
	Place the building in occupied mode and manipulate the space temperature to below 65F, verify the radiant heater is energized.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode and manipulate the space temperature to below 60F, verify the radiant heater is energized.	Pass	0
	Individual Units:		
	RH E-1	Pass	0
	RH E-2	Pass	0

Details

ID	000094	**Company**	<not set>
Name	Bld 2 EF FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 12:19 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Cycle:		
	The fan shall be on and the damper open.		
	Unoccupied Cycle:		
	The fan shall be off and the damper closed.		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
	Place the building in occupied mode, verify the fan is energized and the damper is open.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode, verify the fan is de-energized and the damper is closed.	Pass	0
	Individual Units:		
	EF 2-2	Pass	0

Details

ID	000046	**Company**	<not set>
Name	Bld 2 EUH FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	08 Nov 2021 12:54 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 65F (adj)		
	Unoccupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 55F (adj)		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Mode:		
	Place the building in occupied mode and manipulate the space temperature to below 65F, verify the electric coil is energized.	Pass	0
	Comments Occupied Setpoint between 70-75F		
	Unoccupied Cycle:		
	Place the building in unoccupied mode and manipulate the space temperature to below 60F, verify the electric coil is energized.	Pass	0
	Comments Set to 65F		
	Individual Units:		

Item #	Item Text	Response	# Issues
	EUH 2-1	Pass	0
	EUH 2-2	Pass	0
	Comments		
	Initially was not running, found an internal disconnect was shut off.		
	EUH 2-3	Pass	0
	Comments		
	Initially was not running, found an internal disconnect was shut off.		

Details

ID	000045	**Company**	<not set>
Name	Building 2 Heat Pump FPT	**Priority**	Medium
Description		**Status**	Open
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	08 Nov 2021 11:07 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	The supply fan shall be enabled and speed controlled as follows by mfr onboard controller. During heating and cooling mode, fan shall operate at high speed. When room temp is in the deadband, the supply fan speed shall adjust to low speed. Outside air valve shall continue noremal sequence.		
	On a call for cooling or heating, open the 2-position water loop control valve and after a 2-min delay, energize the compressors and reversing valve. The 2-speed compressor shall cycle between 1st and 2nd stages as required to maintain setpoint at room temperature sensor. The reversing valve shall be indexed between heating and cooling mode as required. When no cooling or heating is required, the compressors shall cycle off, 2-position water loop control valve shall modulate per manufactures onboard controls.		
	Ventilation & Relief Damper Control:		
	Units with CO2 sensors - The ventilation air damper shall be interlocked with the CO2 sensor serving the same space. The CO2 sensor shall modulate the ventilation air damper between minimum and code CFM scheduled on the drawings between a CO2 level of 400 ppm and 1000 ppm (or as set). When CO2 level is greater than 10% over design limit (1100 ppm or as set), an alarm shall be initiated at the operator terminal. Outside air damper shall close during unoccupied mode.		
	Units w/o CO2 sensors- dampers shall open to code OSA position, as scheduled on the drawings, during occupied times and close during unoccupied times.		
	Exhaust Damper Control - Damper shall modulate to track ventilation air damper, as the ventilation air damper opens, the exhaust air damper shall open to match the same CFM. During unoccupied times, the relief damper shall be closed.		
	Purge Ventilation Mode - When push button is activated by the instructor, the ventilation OSA damper serving the space shall open to maximum outside air (as schedule) to provide fresh air dilution ventilation to the space. Exhaust air damper shall open to match the same CFM as ventilation OSA damper. Purge mode shall last for a period of one hour (adj) or until the button is re-pressed.		
	Upon Activation of EF-2, the CO2 sensor shall be overridden and AV-3 shall modulate to code CFM. EAV-3 shall provide a CFM equal to the difference in airflow from AV-2 and EF-2.		
	Upon activation of EF-3, the CO2 sensor shall be overridden and AV-5 shall modulate to code CFM. EAV-5 shall provide a CFM equal to the difference in airflow from the AV-5 and EF-3.		
	Unoccupied Mode:		
	Heat Pump fan shall be off until room temperature drops below the reduced setback room temperature (85 Cooling, 55 heating), at which time the heat pump shall cycle on temporarily as described above to maintain the reduced setback room temperature. OSA valve shall remain closed.		
	A push button at the room sensor shall allow the system to overirde the unoccupied cycle and place the heat pump, OSA valve and relief damper in occupied mode for 2 hours (adj). When 3 or more (adj) heat pumps have been placed in override, the HRU responsible for proving OSA to heat pump in override mode shall be energized. All other heat pumps shall remain in the unoccupied mode unless their override button is pushed.		

Item #	Item Text	Response	# Issues
	Morning Warm-up:		
	The control system shall analyze the space temperatures and the outside air temperture trends to determine if morning warm-up/optimum start is required. Morning warm-up shall be initiated to ensure that the space temp is brought up to temperature at the start of the occupied period. During morning warm-up the outside air ventilation dampers shall remain closed to save energy and the system shall operate in the unoccupied heating mode as described above. At the start of the programmed occupied period, the system shall operate in the normal occupied mode as described above.		
	Shelter-in-Place:		
	When the shelter in place mode is initiated at the DDC system, ventilation damper DM-1 shall close and the heat pump shall operate in full recirculation mode until shelter in place mode is disabled.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
2	Verify BAS monitors pump status.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
4	Verify the supply fan is enabled via the internal controls and modulates speed to meet temperature setpoint.	Pass	0
5	Place the space temperature in dead band, verify the supply fan modulates down to min speed.	Pass	0
6	Generate a call for cooling, verify the 2-stage valve is in the cooling position after 2 min delay and the compressors stage on to meet setpoint.	Pass	0
7	Remove the call for cooling, verify the compressors stage off.	Pass	0
8	Generate a call for heating, verify the 2-stage valve is in heating position after a 2 min delay and the compressors stage on to meet space setpoint.	Pass	0
	Unoccupied Cycle:		
9	Place the building in unoccupied mode, verify the hot water recirculation pump and supply fan are de-energized.	Pass	0
10	Manipulate the space temperature below unocc setpoint, verify the heat pump cycles on to maintain space setpoint.	Pass	0
11	Return space setpoint to unocc setpoint. Verify the unit returns to unoccupied mode.	Pass	0
12	With the unit in unoccupied mode, push the override button, verify the heat pump is in occupied mode for 2 hours (or as set).	Pass	0
13	With the unit in unoccupied mode, push the override button on 3 units that are served by the same HRU, ensure the HRU is enabled.	Pass	0

Item #	Item Text	Response	# Issues
CO2 and Ventilation Control:			
14	Ensure the space CO2 is at 400 ppm, verify the ventilation air damper is at min scheduled OSA.	Pass	0
15	Manipulate the space CO2 to be 1100 ppm, verify the ventilation air damper modulates to maximum outside air as set by TAB.	Pass	0
16	Verify an alarm is generated for high CO2 on operators station.	Pass	0
Exhaust Air Damper Control:			
17	Verify exhaust air damper is modulating to follow the ventilation air damper. When the Ventilation air damper opens the exhaust air damper opens to match CFM.	Pass	0
Units without CO2 Control:			
18	Place unit in occupied, verify min scheduled OSA is being maintained.	Pass	0
19	Place unit in unoccupied, verify the OSA damper is closed.	Pass	0
Purge ventilation Mode:			
20	Push the purge ventilation button, verify the ventilation air opens to max scheduled CFM and lasts for 1 hour (or as set)	Pass	0
21	Activate EF-2, verify the CO2 sensor is overridden and AV-3 modulates to code CFM.	Pass	0
22	Verify EAV-3 provides CFM equal to the difference in airflow from AV-3 and EF-2.	Pass	0
23	Activate EF-3, verify the CO2 sensor is overridden and AV-5 modulates to code CFM.	Pass	0
24	Verify EAV-5 provides CFM equal to the difference in airflow from AV-5 and EF-3.	Pass	0
Shelter-in-Place:			

Comments

This point will be verified at the completion of the campus project.

Alarms:			
26	Verify there is an alarm on the operators station for a pump failure.	Pass	0
Individual Units :			
27	HP 2-1	Pass	0

Comments

w/CO2

28	HP 2-2	Pass	0

	Comments		
	w/CO2		
Item #	**Item Text**	**Response**	**# Issues**
29	HP 2-3	Pass	0
	Comments		
	w/CO2		
30	HP 2-4	Pass	0
	Comments		
	w/CO2		
31	HP 2-5	Pass	0
	Comments		
	w/CO2		
32	HP 2-6	Pass	0
	Comments		
	w/CO2		
33	HP 2-7	Pass	0
	Comments		
	w/CO2		
34	HP 2-8	Pass	0
	Comments		
	w/CO2		
35	HP 2-9	Pass	0
	Comments		
	w/CO2		
36	HP 2-10	Pass	0
	Comments		
	w/CO2		

Item #	Item Text	Response	# Issues
37	HP 2-11	Pass	0
	Comments		
	w/CO2		
38	HP 2-12	Pass	0
	Comments		
	w/CO2		
39	HP 2-13	Pass	0
	Comments		
	w/CO2		
40	HP 2-14	Pass	0
	Comments		
	w/CO2		
41	HP 2-15	Pass	0
	Comments		
	w/CO2		
42	HP 2-16	Pass	0
	Comments		
	w/CO2		
43	HP 2-17	Pass	0
	Comments		
	w/CO2		
44	HP 2-18	Pass	0
	Comments		
	w/CO2		
45	HP 2-19	Pass	0
	Comments		
	w/CO2		

Item #	Item Text	Response	# Issues
46	HP 2-20	Pass	0
	Comments		
	w/CO2		
47	HP 2-21	Pass	0
	Comments		
	w/CO2		
48	HP 2-22	Pass	0
	Comments		
	w/CO2		
49	HP 2-23	Pass	0
	Comments		
	w/CO2		
50	HP 2-24	Pass	0
	Comments		
	w/CO2		
51	HP 2-25	Pass	0
	Comments		
	w/CO2		
52	HP 2-26	Pass	0
	Comments		
	w/CO2		
53	HP 2-27	Pass	0
	Comments		
	w/CO2 w/Room purge switch - not functioning correctly on graphics, confirm in field. Confirmed in Field		
54	HP 2-28	Pass	1

Comments

OA Damper is commanded closed to 0% and showing 1000 CFM.
1/21/22 -OA damper is functioning correctly.

Details

ID	000021	**Company**	<not set>
Name	HRU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	Walla Walla High School > Building 2 > Mezzanine > 603
Created On	04 Aug 2021 10:05 AM	**Equipment Name**	HRU-2-2
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	Supply and exhaust fan shall run continously and the outside air intake and exhaust air dampers shall be open.		
	Supply fan speed shall modulate to maintain duct static pressure as measured 2/3 the distance down the length of the supply duct, coordinate exact location with balancer and engineer. Initial static pressure setpoint shall be 0.75" W.G. or as set during balancing. Setpoint shall reset down incrementally if all ventilation air valves are satisfied. Exhaust fan speed shall modulate to track the supply air flow CFM with an adjustable differential offset (less air flow than supply to provide positive building pressurization).		
	If the supply air temperature falls below 40F a low temperature alarm shall be indicated at the central monitoring location.		
	If the supply air temperature falls below 30F, an additional alarm shall be indicated and the fans shall be de-energized followed by the outside air and exhaust air dampers closing.		
	Heat Recovery Operation:		
	During the occupied mode the heat recovery core shall operate to temper the incoming outside air temperature as follows:		
	Outside air temp between 55 and 70F - The HR core face and bypass dampers shall re-position to bypass the outside air around the HR core in order to avoid recovering exhaust air heat and the unit shall provide neutral "economizer" air.		
	Outside air temp below 55F - The HR core face & bypass dampers shall modulate to direct outside air through the HR core in order to recover exhaust air energy (heat) so as to pre-heat and temper the incoming outside air. The supply air temperature setpoint shall be 55 Deg F.		
	Outside air temp above 75F - The HR core face & bypass dampers shall reposition to direct outside air through the HR core in order to recover exhaust air energy (cooling) so as to pre-cool and temper the incoming outside air.		
	Heating Mode:		
	Whenever the HR core discharge temperature fall below 68F (adj) the reversing valve positioned shall switch to heating mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand cannot be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the SCR controller.		
	Cooling Mode:		
	Whenever the HR core discharge temperature goes above 75F (adj), the reversing valve shall be in cooling mode and lead heat pump compressor shall be energized and capacity		

modulated via the intergral variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall cycle/modulate as required to maintain setpoint.

Item #	Item Text	Response	# Issues
	Defrost Control:		
	Whenever the HR core exhaust discharge air temperature falls below 32F frosting may occur on the humid, exhaust air part of the HR core surfaces, due to the transfer of cold energy from the incoming outside air stream. To prevent frost build up, the HR wheel core outside air face & bypass dampers shall modulate to bypass a portion of the outside air around the core, reducing heat transfer affect, in order to limit the exhaust air discharge air temperature to no lower than 32F.		
	Pre-cooling Mode:		
	See heat pump sequence for pre-cooling operation. Discharge air temperature from DOAS (HRU) shall be limited to no less than 50F (adj).		
	Unoccupied Cycle:		
	Both the supply and exhaust air fans shall be off and the outside air and exhaust air shut-of dampers closed. DOAS unit shall return to occupied mode when there is a call for ventilation, via CO2 sensor, from 3 (adj) heat pumps placed in the unoccupied override mode. WHen this occurs all outside air valves shall open to 25% to provide stable operation for fans.		
	The system shall be temporarily reactived and run in the occupied mode until such time as the ventilation requirement is satisfied or several room heat pumps override timers have expired, at which point the system will return to the unoccupied mode.		
	Shelter in Place Mode:		
	When the shelter in place switch is tripped, the DOAS supply and exhaust fans shall be disabled and outside and exhaust air dampers closed.		
	Test Procedure:		
	Setpoints:		
1	Verify DSP is set to 0.75" W.G. (or as set by TAB)	Pass	1
2	Verify heating setpoint is set to 68F	Pass	1
	Comments Currently set to 55		
3	Verify cooling setpoint is set to 75F.	Pass	0
	Occupied Cycle:		
4	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open.	Pass	0
5	Verify supply fan modulates to maintain DSP of 0.75" or as set per tab.	Pass	0
6	Ensure all air valves are satisfied, verify the DSP setpoint resets down incrementally.	Pass	0
7	Verify as supply fan modulates that the exhaust fan maintains its offet to maintain building pressure.	Pass	0
8	Manipulate the supply air temperature to be 39F, verify an alarm is indicated at the central monitoring location.	Pass	0
9	manipulate the supply air temperature to be 29F, verify an additional alarm is indicated and the fans are de-energized followed by the OSA	Pass	0

and exhaust air dampers closing.

Item #	Item Text	Response	# Issues
Heat Recovery Operation:			
10	Set the outside air temperature to between 55 & 75F, verify the HR core face and bypass dampers are set to bypass HR core.	Pass	0
11	Set the outside air temperature to below 55F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
12	Set the outside air temperature to above 75F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
Heating Mode:			
Cooling Mode:			
Defrost Mode:			
20	Manipulate the exhaust air temperature to 31F, verify the outside air face & bypass dampers modulate open to bypass a portion of the outside are around the core.	Pass	0
Unoccupied Mode:			
21	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
22	Verify Outside Air and Exhaust air dampers are closed.	Pass	0

Comments

100% OSA

24	Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%.	Pass	0
Shelter in Place Mode:			
25	Enable the shelter in place mode, verify the supply and exhaust fans are disabled and outside air and exhaust air dampers are closed.	Pass	0

Comments

Will confirm when switch is installed in principals office.

Details

ID	000080	**Company**	<not set>
Name	Building 2 Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 10:39 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Room 301	Pass	0
4	Room 302	Pass	0
5	Room 303	Pass	0
6	Room 304	Pass	0
7	Room 306	Pass	0
8	Room 307	Pass	0
9	Room 308	Pass	0
10	Room 309	Pass	0
11	Room 310	Pass	0
12	Room 311	Pass	0
13	Room 317	Pass	0
14	Room 318	Pass	0
15	Room 319	Pass	0
16	Room 320	Pass	0
17	Room 322	Pass	0

Item #	Item Text	Response	# Issues
18	Room 323	Pass	0
19	Room 324	Pass	0
20	Room 325	Pass	0
21	Room 503	Pass	0
22	Room 505	Pass	0
23	Room 506	Pass	0
24	Room 509	Pass	0
25	Room 510	Pass	0
26	Room 511	Pass	0
27	Room 517	Pass	0
28	Room 518	Pass	0
29	Room 519	Pass	0
30	Room 520	Pass	0

204108-001 WWPS WA-HI NCCx — Bld 3 EF FPT

Details

ID	000062	**Company**	<not set>
Name	BLD 3 EF FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2022 1:16 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Cycle:		
	The fan shall be on and the damper open.		
	Unoccupied Cycle:		
	The fan shall be off and the damper closed.		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
	Place the building in occupied mode, verify the fan is energized and the damper is open.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode, verify the fan is de-energized and the damper is closed.	Pass	0
	Individual Units:		
	EF 3-1	Pass	0
	EF 3-3	Pass	0
	EF 3-4	Pass	0

Comments

Kitchen hood confirmed at local switch.

Item #	Item Text	Response	# Issues
	EF 3-5	Pass	0

Comments

Dish washer hood is enabled when dish washer is running. Confirmed this is acceptable with Engineer.

Details

ID	000056	**Company**	<not set>
Name	Bld 3 Electric Heater Control FPT	**Priority**	Medium
Description		**Status**	Open
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Feb 2022 12:38 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	The EMCS shall intialize the occupied and unoccupied schedule.		
	Occupied Mode:		
	The electric heating coil shall modulate to maintain a space temperature of 65F (adj)		
	Unoccupied Mode:		
	The electric heating coil shall modulate to maintain a space setback temperature of 55F (adj)		
	Test Procedure		
	Setpoints:		
	Verified space temperature setpoints are 65F occupied and 55F unoccupied.	Pass	0
	Comments		
	Current setpoint is 70F (adj)		
	Occupied Mode:		
	With the system in occupied mode, manipulate the space to 64F, verify the heating coil is enabled.	Pass	0
	Return the space temperature to 65F, verify the heating coil is disabled.	Pass	0
	Unoccupied Mode:		
	Place the sytem in unoccupied mode, manipulate the space temperature to 54F, verify the heating coil is enabled.	Pass	0
	Return the space temperature to 55F, verify the heating coil is disabled.	Pass	0
	Individual Units:		
	BB 3-1	Pass	0
	BB 3-2	Pass	0

Details

ID	000065	**Company**	<not set>
Name	Building 3 Heat Pump FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2022 1:40 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	The supply fan shall be enabled and speed controlled as follows by mfr onboard controller. During heating and cooling mode, fan shall operate at high speed. When room temp is in the deadband, the supply fan speed shall adjust to low speed. Outside air valve shall continue noremal sequence.		
	On a call for cooling or heating, open the 2-position water loop control valve and after a 2-min delay, energize the compressors and reversing valve. The 2-speed compressor shall cycle between 1st and 2nd stages as required to maintain setpoint at room temperature sensor. The reversing valve shall be indexed between heating and cooling mode as required. When no cooling or heating is required, the compressors shall cycle off, 2-position water loop control valve shall modulate per manufactures onboard controls.		
	Ventilation & Relief Damper Control:		
	Units with CO2 sensors - The ventilation air damper shall be interlocked with the CO2 sensor serving the same space. The CO2 sensor shall modulate the ventilation air damper between minimum and code CFM scheduled on the drawings between a CO2 level of 400 ppm and 1000 ppm (or as set). When CO2 level is greater than 10% over design limit (1100 ppm or as set), an alarm shall be initiated at the operator terminal. Outside air damper shall close during unoccupied mode.		
	Units w/o CO2 sensors- dampers shall open to code OSA position, as scheduled on the drawings, during occupied times and close during unoccupied times.		
	Exhaust Damper Control - Damper shall modulate to track ventilation air damper, as the ventilation air damper opens, the exhaust air damper shall open to match the same CFM. During unoccupied times, the relief damper shall be closed.		
	Purge Ventilation Mode - When push button is activated by the instructor, the ventilation OSA damper serving the space shall open to maximum outside air (as schedule) to provide fresh air dilution ventilation to the space. Exhaust air damper shall open to match the same CFM as ventilation OSA damper. Purge mode shall last for a period of one hour (adj) or until the button is re-pressed.		
	Upon Activation of EF-2, the CO2 sensor shall be overridden and AV-3 shall modulate to code CFM. EAV-3 shall provide a CFM equal to the difference in airflow from AV-2 and EF-2.		
	Upon activation of EF-3, the CO2 sensor shall be overridden and AV-5 shall modulate to code CFM. EAV-5 shall provide a CFM equal to the difference in airflow from the AV-5 and EF-3.		
	Unoccupied Mode:		
	Heat Pump fan shall be off until room temperature drops below the reduced setback room temperature (85 Cooling, 55 heating), at which time the heat pump shall cycle on temporarily as described above to maintain the reduced setback room temperature. OSA valve shall remain closed.		
	A push button at the room sensor shall allow the system to overirde the unoccupied cycle and place the heat pump, OSA valve and relief damper in occupied mode for 2 hours (adj). When 3 or more (adj) heat pumps have been placed in override, the HRU responsible for proving OSA to heat pump in override mode shall be energized. All other heat pumps shall remain in the unoccupied mode unless their override button is pushed.		

Item #	Item Text	Response	# Issues
	Morning Warm-up:		
	The control system shall analyze the space temperatures and the outside air temperture trends to determine if morning warm-up/optimum start is required. Morning warm-up shall be initiated to ensure that the space temp is brought up to temperature at the start of the occupied period. During morning warm-up the outside air ventilation dampers shall remain closed to save energy and the system shall operate in the unoccupied heating mode as described above. At the start of the programmed occupied period, the system shall operate in the normal occupied mode as described above.		
	Shelter-in-Place:		
	When the shelter in place mode is initiated at the DDC system, ventilation damper DM-1 shall close and the heat pump shall operate in full recirculation mode until shelter in place mode is disabled.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
2	Verify BAS monitors pump status.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
4	Verify the supply fan is enabled via the internal controls and modulates speed to meet temperature setpoint.	Pass	0
5	Place the space temperature in dead band, verify the supply fan modulates down to min speed.	Pass	0
6	Generate a call for cooling, verify the 2-stage valve is in the cooling position after 2 min delay and the compressors stage on to meet setpoint.	Pass	0
7	Remove the call for cooling, verify the compressors stage off.	Pass	0
8	Generate a call for heating, verify the 2-stage valve is in heating position after a 2 min delay and the compressors stage on to meet space setpoint.	Pass	0
	Unoccupied Cycle:		
9	Place the building in unoccupied mode, verify the hot water recirculation pump and supply fan are de-energized.	Pass	0
10	Manipulate the space temperature below unocc setpoint, verify the heat pump cycles on to maintain space setpoint.	Pass	0
11	Return space setpoint to unocc setpoint. Verify the unit returns to unoccupied mode.	Pass	0
12	With the unit in unoccupied mode, push the override button, verify the heat pump is in occupied mode for 2 hours (or as set).	Pass	0
13	With the unit in unoccupied mode, push the override button on 3 units that are served by the same HRU, ensure the HRU is enabled.	Pass	0

Item #	Item Text	Response	# Issues
CO2 and Ventilation Control:			
	Comments No CO2		
	Comments No CO2		
	Comments No CO2		
Exhaust Air Damper Control:			
	Comments No exhaust damper- uses exhaust from AHU		
Units without CO2 Control:			
18	Place unit in occupied, verify min scheduled OSA is being maintained.	Pass	0
Purge ventilation Mode:			
Shelter-in-Place:			
25	Ensure Shelter-in-place has been programmed into BAS.	Pass	0
Alarms:			
26	Verify there is an alarm on the operators station for a pump failure.	Pass	0
Individual Units :			
27	HP 3-1	Pass	0

Details

ID	000099	**Company**	<not set>
Name	Bld 3 Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 1:05 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Room 701	Pass	0
4	Room 702	Pass	0
5	Room 703	Pass	0
6	Room 704	Pass	0
7	Room 705	Pass	0
8	Room 706	Pass	0
9	Room 707	Pass	0
10	Room 708	Pass	0
11	Room 709	Pass	0
12	Room 710	Pass	0
13	Room 711	Pass	0
14	Room 712	Pass	0
15	Room 713	Pass	0
16	Room 714	Pass	0
17	Room 715	Pass	0

Item #	Item Text	Response	# Issues
18	Room 716	Pass	0
19	Room 717	Pass	0
20	Room 718	Pass	0
21	Room 719	Pass	0
22	Room 720	Pass	0
23	Room 721	Pass	0
24	Room 722	Pass	0
25	Room 723	Pass	0
26	Room 724	Pass	0

204108-001 WWPS WA-HI NCCx — BLD 4 EF - FPT

Walla Walla High School

Details

ID	000051	**Company**	<not set>
Name	Bld 4 EF FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	21 Jan 2022 11:15 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Cycle:		
	The fan shall be on and the damper open.		
	Unoccupied Cycle:		
	The fan shall be off and the damper closed.		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
	Place the building in occupied mode, verify the fan is energized and the damper is open.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode, verify the fan is de-energized and the damper is closed.	Pass	0
	Individual Units:		
	EF 4-1	Pass	0
	EF 4-2	Pass	0
	EF 4-3	Pass	0
	EF 4-4	Pass	0
	EF 4-5	Pass	0

Details

ID	000050	**Company**	<not set>
Name	Building 4 Heat Pump FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	09 Dec 2021 11:11 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	The supply fan shall be enabled and speed controlled as follows by mfr onboard controller. During heating and cooling mode, fan shall operate at high speed. When room temp is in the deadband, the supply fan speed shall adjust to low speed. Outside air valve shall continue noremal sequence.		
	On a call for cooling or heating, open the 2-position water loop control valve and after a 2-min delay, energize the compressors and reversing valve. The 2-speed compressor shall cycle between 1st and 2nd stages as required to maintain setpoint at room temperature sensor. The reversing valve shall be indexed between heating and cooling mode as required. When no cooling or heating is required, the compressors shall cycle off, 2-position water loop control valve shall modulate per manufactures onboard controls.		
	Ventilation & Relief Damper Control:		
	Units with CO2 sensors - The ventilation air damper shall be interlocked with the CO2 sensor serving the same space. The CO2 sensor shall modulate the ventilation air damper between minimum and code CFM scheduled on the drawings between a CO2 level of 400 ppm and 1000 ppm (or as set). When CO2 level is greater than 10% over design limit (1100 ppm or as set), an alarm shall be initiated at the operator terminal. Outside air damper shall close during unoccupied mode.		
	Units w/o CO2 sensors- dampers shall open to code OSA position, as scheduled on the drawings, during occupied times and close during unoccupied times.		
	Exhaust Damper Control - Damper shall modulate to track ventilation air damper, as the ventilation air damper opens, the exhaust air damper shall open to match the same CFM. During unoccupied times, the relief damper shall be closed.		
	Purge Ventilation Mode - When push button is activated by the instructor, the ventilation OSA damper serving the space shall open to maximum outside air (as schedule) to provide fresh air dilution ventilation to the space. Exhaust air damper shall open to match the same CFM as ventilation OSA damper. Purge mode shall last for a period of one hour (adj) or until the button is re-pressed.		
	Upon Activation of EF-2, the CO2 sensor shall be overridden and AV-3 shall modulate to code CFM. EAV-3 shall provide a CFM equal to the difference in airflow from AV-2 and EF-2.		
	Upon activation of EF-3, the CO2 sensor shall be overridden and AV-5 shall modulate to code CFM. EAV-5 shall provide a CFM equal to the difference in airflow from the AV-5 and EF-3.		
	Unoccupied Mode:		
	Heat Pump fan shall be off until room temperature drops below the reduced setback room temperature (85 Cooling, 55 heating), at which time the heat pump shall cycle on temporarily as described above to maintain the reduced setback room temperature. OSA valve shall remain closed.		
	A push button at the room sensor shall allow the system to overirde the unoccupied cycle and place the heat pump, OSA valve and relief damper in occupied mode for 2 hours (adj). When 3 or more (adj) heat pumps have been placed in override, the HRU responsible for proving OSA to heat pump in override mode shall be energized. All other heat pumps shall remain in the unoccupied mode unless their override button is pushed.		

Item #	Item Text	Response	# Issues
	Morning Warm-up:		
	The control system shall analyze the space temperatures and the outside air temperture trends to determine if morning warm-up/optimum start is required. Morning warm-up shall be initiated to ensure that the space temp is brought up to temperature at the start of the occupied period. During morning warm-up the outside air ventilation dampers shall remain closed to save energy and the system shall operate in the unoccupied heating mode as described above. At the start of the programmed occupied period, the system shall operate in the normal occupied mode as described above.		
	Shelter-in-Place:		
	When the shelter in place mode is initiated at the DDC system, ventilation damper DM-1 shall close and the heat pump shall operate in full recirculation mode until shelter in place mode is disabled.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
2	Verify BAS monitors pump status.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
4	Verify the supply fan is enabled via the internal controls and modulates speed to meet temperature setpoint.	Pass	0
5	Place the space temperature in dead band, verify the supply fan modulates down to min speed.	Pass	0
6	Generate a call for cooling, verify the 2-stage valve is in the cooling position after 2 min delay and the compressors stage on to meet setpoint.	Pass	0
7	Remove the call for cooling, verify the compressors stage off.	Pass	0
8	Generate a call for heating, verify the 2-stage valve is in heating position after a 2 min delay and the compressors stage on to meet space setpoint.	Pass	0
	Unoccupied Cycle:		
9	Place the building in unoccupied mode, verify the hot water recirculation pump and supply fan are de-energized.	Pass	0
10	Manipulate the space temperature below unocc setpoint, verify the heat pump cycles on to maintain space setpoint.	Pass	0
11	Return space setpoint to unocc setpoint. Verify the unit returns to unoccupied mode.	Pass	0
12	With the unit in unoccupied mode, push the override button, verify the heat pump is in occupied mode for 2 hours (or as set).	Pass	0
13	With the unit in unoccupied mode, push the override button on 3 units that are served by the same HRU, ensure the HRU is enabled.	Pass	0

Item #	Item Text	Response	# Issues
CO2 and Ventilation Control:			
14	Ensure the space CO2 is at 400 ppm, verify the ventilation air damper is at min scheduled OSA.	Pass	0
15	Manipulate the space CO2 to be 1100 ppm, verify the ventilation air damper modulates to maximum outside air as set by TAB.	Pass	0
16	Verify an alarm is generated for high CO2 on operators station.	Pass	0
Exhaust Air Damper Control:			
17	Verify exhaust air damper is modulating to follow the ventilation air damper. When the Ventilation air damper opens the exhaust air damper opens to match CFM.	Pass	0
Units without CO2 Control:			
18	Place unit in occupied, verify min scheduled OSA is being maintained.	Pass	0
19	Place unit in unoccupied, verify the OSA damper is closed.	Pass	0
Purge ventilation Mode:			
20	Push the purge ventilation button, verify the ventilation air opens to max scheduled CFM and lasts for 1 hour (or as set)	Pass	0
21	Activate EF-2, verify the CO2 sensor is overridden and AV-3 modulates to code CFM.	Pass	0
22	Verify EAV-3 provides CFM equal to the difference in airflow from AV-3 and EF-2.	Pass	0
23	Activate EF-3, verify the CO2 sensor is overridden and AV-5 modulates to code CFM.	Pass	0
24	Verify EAV-5 provides CFM equal to the difference in airflow from AV-5 and EF-3.	Pass	0
Shelter-in-Place:			

Comments

This function will be verified when campus is completed.

Alarms:			
26	Verify there is an alarm on the operators station for a pump failure.	Pass	0
Individual Units :			
27	HP 4-1	Pass	0
28	HP 4-2	Pass	0
29	HP 4-3	Pass	0
30	HP 4-4	Pass	0
31	HP 4-5	Pass	0

Item #	Item Text	Response	# Issues
32	HP 4-6	Pass	0
33	HP 4-7	Pass	0
34	HP 4-8	Pass	0

Details

ID	000100	**Company**	<not set>
Name	Bld 4 Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 1:11 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Room 901	Pass	0
4	Room 902	Pass	0
5	Room 903	Pass	0
6	Room 904	Pass	0
7	Room 905	Pass	0
8	Room 906	Pass	0
9	Room 907	Pass	0
10	Room 908	Pass	0
11	Room 1001	Pass	0
12	Room 1002	Pass	0
13	Room 1003	Pass	0
14	Room 1004	Pass	0
15	Room 1005	Pass	0
16	Room 1006	Pass	0
17	Room 1006A	Pass	0

Item #	Item Text	Response	# Issues
18	Room 1007	Pass	0
19	Room 1008	Pass	0
20	Room 1009	Pass	0

Details

ID	000085	**Company**	<not set>
Name	MAU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 12:39 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	General:		
	The make-up air unit and hood exhaust fan are to provide exhaust for the type 1 hood. The system is designed for fully automatic operation with an automatic "kitch demand controlled ventilation system" (See division 11) consisting of a central controller. individual hood controllers and sensors, all in order to control variable volume hood exhaust and make-up air in response to cooking activities levels.		
	Exhaust fan operation:		
	Upon detection of cooking activity under the hood, the hood ontroller will signal to the central controller to directly enable the hood exhaust and control its speed via 0-10V or 4-20 mA signal to the VFD motor (not through the BAS)		
	Make-up air operation:		
	Upon enabling the hood exhaust fan, the central controller shall signal to the BAS to enable the make-up air unit and to modulate its fan speed in order provide an equal amount of make-up air. The MAU shall modulate the heat pump heating, electric heating, and DX cooling to provide tempered air (65-75F, ADJ)		
	Cooling:		
	Upon the call for cooling from the supply air thermostat, the reversing valve shall modualte to cooling mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional cooling deman shall start additional compressors requird.		
	Heating:		
	On a call for heat from the supply air thermostat, the reversing valve position shall be in heatin gmode. The lead heat pump compressor shall be energized and capacity modulated via the intergal variable speed compressor capaciy controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand can not be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxilary electric heater. Electric heater capacity shall be modulated as required by the heater scr controller.		
	Test Procedure:		
	Setpoints:		
1	Verify discharge air temperature setpoint is 65-75F Adj.	Pass	0
	Exhaust Fan Operation:		
4	Turn on oven, once temperature rises at the hood, verify the fan is enabled and controls via internal controls.	Pass	0

Item #	Item Text	Response	# Issues
5	Once exhaust fan has been enabled, verify the MAU supply fan is enabeld and fan modulated to provide equal amount of supply air as exhausted air.	Pass	0
6	Override space temperature above setpoint while MAU unit is enabled the supply air temperature is reset down to 65F.	Pass	0
7	Override space temperature below setpoint while MAU is enabled the supply air temperature is reset up to 75F.	Pass	0
Cooling:			
10	While the OSA temperature is above lockout temperature, override the space temperature above setpoint, verify the supply air temperature setpoint is reset down to 65F.	Pass	0
Heating:			
13	While the OSA temperature is below the lockout temperature for heating, override the zone temperature to below setpoint, verify the SA tempature setpoint resets to 75F.	Pass	0

Details

ID	000060	**Company**	<not set>
Name	Bld 4 EUH FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2022 1:08 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 65F (adj)		
	Unoccupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 55F (adj)		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Mode:		
	Place the building in occupied mode and manipulate the space temperature to below 65F, verify the electric coil is energized.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode and manipulate the space temperature to below 60F, verify the electric coil is energized.	Pass	0
	Individual Units:		
	EUH 4-1	Pass	0

Details

ID	000077	**Company**	<not set>
Name	Building 5 Heat Pump FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	01 Sep 2022 1:15 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	The supply fan shall be enabled and speed controlled as follows by mfr onboard controller. During heating and cooling mode, fan shall operate at high speed. When room temp is in the deadband, the supply fan speed shall adjust to low speed. Outside air valve shall continue noremal sequence.		
	On a call for cooling or heating, open the 2-position water loop control valve and after a 2-min delay, energize the compressors and reversing valve. The 2-speed compressor shall cycle between 1st and 2nd stages as required to maintain setpoint at room temperature sensor. The reversing valve shall be indexed between heating and cooling mode as required. When no cooling or heating is required, the compressors shall cycle off, 2-position water loop control valve shall modulate per manufactures onboard controls.		
	Ventilation & Relief Damper Control:		
	Units with CO2 sensors - The ventilation air damper shall be interlocked with the CO2 sensor serving the same space. The CO2 sensor shall modulate the ventilation air damper between minimum and code CFM scheduled on the drawings between a CO2 level of 400 ppm and 1000 ppm (or as set). When CO2 level is greater than 10% over design limit (1100 ppm or as set), an alarm shall be initiated at the operator terminal. Outside air damper shall close during unoccupied mode.		
	Units w/o CO2 sensors- dampers shall open to code OSA position, as scheduled on the drawings, during occupied times and close during unoccupied times.		
	Exhaust Damper Control - Damper shall modulate to track ventilation air damper, as the ventilation air damper opens, the exhaust air damper shall open to match the same CFM. During unoccupied times, the relief damper shall be closed.		
	Purge Ventilation Mode - When push button is activated by the instructor, the ventilation OSA damper serving the space shall open to maximum outside air (as schedule) to provide fresh air dilution ventilation to the space. Exhaust air damper shall open to match the same CFM as ventilation OSA damper. Purge mode shall last for a period of one hour (adj) or until the button is re-pressed.		
	Upon Activation of EF-2, the CO2 sensor shall be overridden and AV-3 shall modulate to code CFM. EAV-3 shall provide a CFM equal to the difference in airflow from AV-2 and EF-2.		
	Upon activation of EF-3, the CO2 sensor shall be overridden and AV-5 shall modulate to code CFM. EAV-5 shall provide a CFM equal to the difference in airflow from the AV-5 and EF-3.		
	Unoccupied Mode:		
	Heat Pump fan shall be off until room temperature drops below the reduced setback room temperature (85 Cooling, 55 heating), at which time the heat pump shall cycle on temporarily as described above to maintain the reduced setback room temperature. OSA valve shall remain closed.		
	A push button at the room sensor shall allow the system to overirde the unoccupied cycle and place the heat pump, OSA valve and relief damper in occupied mode for 2 hours (adj). When 3 or more (adj) heat pumps have been placed in override, the HRU responsible for proving OSA to heat pump in override mode shall be energized. All other heat pumps shall remain in the unoccupied mode unless their override button is pushed.		

Item #	Item Text	Response	# Issues
	Morning Warm-up:		
	The control system shall analyze the space temperatures and the outside air temperture trends to determine if morning warm-up/optimum start is required. Morning warm-up shall be initiated to ensure that the space temp is brought up to temperature at the start of the occupied period. During morning warm-up the outside air ventilation dampers shall remain closed to save energy and the system shall operate in the unoccupied heating mode as described above. At the start of the programmed occupied period, the system shall operate in the normal occupied mode as described above.		
	Shelter-in-Place:		
	When the shelter in place mode is initiated at the DDC system, ventilation damper DM-1 shall close and the heat pump shall operate in full recirculation mode until shelter in place mode is disabled.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements. **Comments** currently set up 6 AM - 5 PM monday-friday	Pass	0
2	Verify BAS monitors pump status.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
4	Verify the supply fan is enabled via the internal controls and modulates speed to meet temperature setpoint.	Pass	0
5	Place the space temperature in dead band, verify the supply fan modulates down to min speed.	Pass	0
6	Generate a call for cooling, verify the 2-stage valve is in the cooling position after 2 min delay and the compressors stage on to meet setpoint.	Pass	0
7	Remove the call for cooling, verify the compressors stage off.	Pass	0
8	Generate a call for heating, verify the 2-stage valve is in heating position after a 2 min delay and the compressors stage on to meet space setpoint.	Pass	0
	Unoccupied Cycle:		
9	Place the building in unoccupied mode, verify the hot water recirculation pump and supply fan are de-energized.	Pass	0
10	Manipulate the space temperature below unocc setpoint, verify the heat pump cycles on to maintain space setpoint.	Pass	0
11	Return space setpoint to unocc setpoint. Verify the unit returns to unoccupied mode.	Pass	0
12	With the unit in unoccupied mode, push the override button, verify the	Pass	0

heat pump is in occupied mode for 2 hours (or as set).

Item #	Item Text	Response	# Issues
13	With the unit in unoccupied mode, push the override button on 3 units that are served by the same HRU, ensure the HRU is enabled.	Pass	0
	CO2 and Ventilation Control:		
14	Ensure the space CO2 is at 400 ppm, verify the ventilation air damper is at min scheduled OSA.	Pass	0
15	Manipulate the space CO2 to be 1100 ppm, verify the ventilation air damper modulates to maximum outside air as set by TAB.	Pass	0
16	Verify an alarm is generated for high CO2 on operators station.	Pass	0
	Exhaust Air Damper Control:		
17	Verify exhaust air damper is modulating to follow the ventilation air damper. When the Ventilation air damper opens the exhaust air damper opens to match CFM.	Pass	0
	Units without CO2 Control:		
18	Place unit in occupied, verify min scheduled OSA is being maintained.	Pass	0
19	Place unit in unoccupied, verify the OSA damper is closed.	Pass	0
	Purge ventilation Mode:		
	Shelter-in-Place:		
25	Ensure Shelter-in-place has been programmed into BAS.	Pass	0
	Alarms:		
26	Verify there is an alarm on the operators station for a pump failure.	Pass	0
	Individual Units :		
27	HP 5-1	Pass	0
28	HP 5-2	Pass	0
29	HP 5-3	Pass	0
30	HP 5-4	Pass	0
31	HP 5-5	Pass	0
32	HP 5-6	Pass	0
33	HP 5-7	Pass	0

Comments

Tstat locked from adjusting 12/27 - steve was able to reboot.

34	HP 5-8	Pass	0
35	HP 5-9	Pass	0
36	HP 5-10	Pass	0

Item #	Item Text	Response	# Issues
37	HP 5-11	Pass	0
38	HP 5-12	Pass	1
39	HP 5-13	Pass	0
40	HP 5-14	Pass	0
41	HP 5-15	Pass	0
42	HP 5-16	Pass	0
43	HP 5-17	Pass	0
44	HP 5-18	Pass	0
45	HP 5-19	Pass	0
46	HP 5-20	Pass	0
47	HP 5-21	Pass	0
48	HP 5-22	Pass	0
49	HP 5-23	Pass	0
50	HP 5-24	Pass	0
51	HP 5-25	Pass	0
52	HP 5-26	Pass	0
53	HP 5-27	Pass	0
54	HP 5-28	Pass	0
55	HP 5-29	Pass	0
56	HP 5-30	Pass	0
57	HP 5-31	Pass	0

Comments

Stage 1 cooling did not seem to make a difference in supply air temp.
Stage 2 was enabled and temperature dropped.

58	HP 5-32	Pass	0
59	HP 5-33	Pass	0

Comments

9/1 no tstat

60	HP 5-34	Pass	0

Comments

9/1 no tstat

Item #	Item Text	Response	# Issues
61	HP 5-35	Pass	0
62	HP 5-36	Pass	0
63	HP 5-37	Pass	0
64	HP 5-38	Pass	0
65	HP 5-39	Pass	0
66	HP 5-40	Pass	0
67	HP 5-41	Pass	0
	Comments		
	No CO2 9/1 no tstat		
68	HP 5-42	Pass	0
	Comments		
	No CO		
69	HP 5-43	Pass	0
70	HP 5-44	Pass	0
71	HP 5-45	Pass	0
72	HP 5-46	Pass	0
73	HP 5-47	Pass	0
74	HP 5-48	Pass	0
75	HP 5-49	Pass	0

Details

ID	000089	**Company**	<not set>
Name	Bldg 5 HRU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Dec 2022 11:35 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	Supply and exhaust fan shall run continously and the outside air intake and exhaust air dampers shall be open.		
	Supply fan speed shall modulate to maintain duct static pressure as measured 2/3 the distance down the length of the supply duct, coordinate exact location with balancer and engineer. Initial static pressure setpoint shall be 0.75" W.G. or as set during balancing. Setpoint shall reset down incrementally if all ventilation air valves are satisfied. Exhaust fan speed shall modulate to track the supply air flow CFM with an adjustable differential offset (less air flow than supply to provide positive building pressurization).		
	If the supply air temperature falls below 40F a low temperature alarm shall be indicated at the central monitoring location.		
	If the supply air temperature falls below 30F, an additional alarm shall be indicated and the fans shall be de-energized followed by the outside air and exhaust air dampers closing.		
	Heat Recovery Operation:		
	During the occupied mode the heat recovery core shall operate to temper the incoming outside air temperature as follows:		
	Outside air temp between 55 and 70F - The HR core face and bypass dampers shall re-position to bypass the outside air around the HR core in order to avoid recovering exhaust air heat and the unit shall provide neutral "economizer" air.		
	Outside air temp below 55F - The HR core face & bypass dampers shall modulate to direct outside air through the HR core in order to recover exhaust air energy (heat) so as to pre-heat and temper the incoming outside air. The supply air temperature setpoint shall be 55 Deg F.		
	Outside air temp above 75F - The HR core face & bypass dampers shall reposition to direct outside air through the HR core in order to recover exhaust air energy (cooling) so as to pre-cool and temper the incoming outside air.		
	Heating Mode:		
	Whenever the HR core discharge temperature fall below 68F (adj) the reversing valve positioned shall switch to heating mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand cannot be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the SCR controller.		
	Cooling Mode:		
	Whenever the HR core discharge temperature goes above 75F (adj), the reversing valve shall be in cooling mode and lead heat pump compressor shall be energized and capacity modulated via the intergral variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall		

cycle/modulate as required to maintain setpoint.

Item #	Item Text	Response	# Issues
	Defrost Control:		
	Whenever the HR core exhaust discharge air temperature falls below 32F frosting may occur on the humid, exhaust air part of the HR core surfaces, due to the transfer of cold energy from the incoming outside air stream. To prevent frost build up, the HR wheel core outside air face & bypass dampers shall modulate to bypass a portion of the outside air around the core, reducing heat transfer affect, in order to limit the exhaust air discharge air temperature to no lower than 32F.		
	Pre-cooling Mode:		
	See heat pump sequence for pre-cooling operation. Discharge air temperature from DOAS (HRU) shall be limited to no less than 50F (adj).		
	Unoccupied Cycle:		
	Both the supply and exhaust air fans shall be off and the outside air and exhaust air shut-of dampers closed. DOAS unit shall return to occupied mode when there is a call for ventilation, via CO2 sensor, from 3 (adj) heat pumps placed in the unoccupied override mode. WHen this occurs all outside air valves shall open to 25% to provide stable operation for fans.		
	The system shall be temporarily reactived and run in the occupied mode until such time as the ventilation requirement is satisfied or several room heat pumps override timers have expired, at which point the system will return to the unoccupied mode.		
	Shelter in Place Mode:		
	When the shelter in place switch is tripped, the DOAS supply and exhaust fans shall be disabled and outside and exhaust air dampers closed.		
	Test Procedure:		
	Setpoints:		
1	Verify DSP is set to 0.75" W.G. (or as set by TAB)	Pass	0
	Comments 5-1 set to 1.00” 5-2 set to .5” 5-3 set to 1.00”		
2	Verify heating setpoint is set to 68F	Pass	0
	Comments supply air setpoint 55		
3	Verify cooling setpoint is set to 75F.	Pass	0
	Occupied Cycle:		
4	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open.	Pass	0
5	Verify supply fan modulates to maintain DSP of 0.75" or as set per tab.	Pass	0
6	Ensure all air valves are satisfied, verify the DSP setpoint resets down incrementally.	Pass	0
7	Verify as supply fan modulates that the exhaust fan maintains its offet to maintain building pressure.	Pass	0

Item #	Item Text	Response	# Issues
8	Manipulate the supply air temperature to be 39F, verify an alarm is indicated at the central monitoring location.	Pass	0
9	manipulate the supply air temperature to be 29F, verify an additional alarm is indicated and the fans are de-energized followed by the OSA and exhaust air dampers closing.	Pass	0
Heat Recovery Operation:			
10	Set the outside air temperature to between 55 & 75F, verify the HR core face and bypass dampers are set to bypass HR core.	Pass	0
11	Set the outside air temperature to below 55F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
12	Set the outside air temperature to above 75F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
Heating Mode:			
Cooling Mode:			
Defrost Mode:			
20	Manipulate the exhaust air temperature to 31F, verify the outside air face & bypass dampers modulate open to bypass a portion of the outside are around the core.	Pass	0
Unoccupied Mode:			
21	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
22	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
24	Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%.	Pass	0
Shelter in Place Mode:			
25	Enable the shelter in place mode, verify the supply and exhaust fans are disabled and outside air and exhaust air dampers are closed.	Pass	0
Individual Units:			
26	HRU 5-1	Pass	0
27	HRU 5-2	Pass	0
28	HRU 5-3	Pass	0

Details

ID	000101	**Company**	<not set>
Name	Bld 5 Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 1:20 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Room 1201	Pass	0
4	Room 1202	Pass	0
5	Room 1203	Pass	0
6	Room 1204	Pass	0
7	Room 1205	Pass	0
8	Room 1206	Pass	0
9	Room 1207	Pass	0
10	Room 1208	Pass	0
11	Room 1209	Pass	0
12	Room 1210	Pass	0
13	Room 1211	Pass	0
14	Room 1212	Pass	0
15	Room 1213	Pass	0
16	Room 1214	Pass	0
17	Room 1215	Pass	0

Item #	Item Text	Response	# Issues
18	Room 1216	Pass	0
19	Room 1217	Pass	0
20	Room 1218	Pass	0
21	Room 1219	Pass	0
22	Room 1220	Pass	0
23	Room 1221	Pass	0
24	Room 1222	Pass	0
25	Room 1223	Pass	0
26	Room 1224	Pass	0
27	Room 1225	Pass	0
28	Room 1226	Pass	0
29	Room 1227	Pass	0
30	Room 1228	Pass	0
31	Room 1229	Pass	0
32	Room 1230	Pass	0
33	Room 1231	Pass	0
34	Room 1232	Pass	0
35	Room 1233	Pass	0
36	Room 1234	Pass	0
37	Room 1235	Pass	0
38	Room 1236	Pass	0
39	Room 1237	Pass	0
40	Room 1238	Pass	0
41	Room 1239	Pass	0
42	Room 1240	Pass	0
43	Room 1241	Pass	0
44	Room 1242	Pass	0
45	Room 1243	Pass	0
46	Room 1244	Pass	0
47	Room 1245	Pass	0
48	Room 1246	Pass	0
49	Room 1247	Pass	0
50	Room 1248	Pass	0
51	Room 1249	Pass	0

Item #	Item Text	Response	# Issues
52	Room 1250	Pass	0
53	Room 1251	Pass	0
54	Room 1252	Pass	0
55	Room 1253	Pass	0
56	Room 1254	Pass	0
57	Room 1255	Pass	0
58	Room 1256	Pass	0
59	Room 1257	Pass	0
60	Room 1258	Pass	0
61	Room 1260	Pass	0
62	Room 1261	Pass	0
63	Room 1262	Pass	0
64	Room 1263	Pass	0
65	Room 1264	Pass	0
66	Room 1265	Pass	0
67	Room 1401	Pass	0
68	Room 1402	Pass	0
69	Room 1403	Pass	0
70	Room 1404	Pass	0
71	Room 1405	Pass	0
72	Room 1406	Pass	0
73	Room 1407	Pass	0
74	Room 1408	Pass	0
75	Room 1409	Pass	0
76	Room 1410	Pass	0
77	Room 1411	Pass	0
78	Room 1412	Pass	0
79	Room 1413	Pass	0
80	Room 1414	Pass	0
81	Room 1415	Pass	0
82	Room 1416	Pass	0
83	Room 1417	Pass	0
84	Room 1418	Pass	0
85	Room 1419	Pass	0

Item #	Item Text	Response	# Issues
86	Room 1420	Pass	0
87	Room 1421	Pass	0
88	Room 1422	Pass	0
89	Room 1423	Pass	0
90	Room 1424	Pass	0
91	Room 1425	Pass	0
92	Room 1426	Pass	0
93	Room 1427	Pass	0
94	Room 1428	Pass	0
95	Room 1429	Pass	0
96	Room 1430	Pass	0
97	Room 1431	Pass	0
98	Room 1432	Pass	0
99	Room 1433	Pass	0
100	Room 1434	Pass	0
101	Room 1435	Pass	0
102	Room 1436	Pass	0
103	Room 1437	Pass	0
104	Room 1438	Pass	0
105	Room 1439	Pass	0
106	Room 1440	Pass	0
107	Room 1441	Pass	0
108	Room 1442	Pass	0
109	Room 1443	Pass	0

Details

ID	000104	**Company**	<not set>
Name	Bld 6 AHU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 10:21 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	General:		
	THE HEAT PUMP UNIT SHALL PROVIDE HEATING, COOLING AND VENTILATION TO THE SPACE SERVED WITH CONSTANT VOLUME AIR FLOW.		
	Occupied Mode:		
	THE SUPPLY AND RETURN FAN SHALL OPERATE CONTINUOUSLY.		
	THE CO2 SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPER BETWEEN 25% AND 100% OF THE MINIMUM OUTSIDE AIR CFM SCHEDULED ON DRAWINGS TO MAINTAIN A MAXIMUM CO2 LEVEL OF 1000 PPM (OR AS SET). THE RETURN AIR DAMPER AND EXHAUST AIR DAMPER SHALL MODULATE PROPORTIONALLY. DURING ECONOMIZER COOLING OPERATION THE CO2 SENSOR WILL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL BE CAPABLE OF MODULATING FULLY OPEN		
	ECONOMIZER COOLING:		
	UPON A CALL FOR COOLING FROM THE SPACE WHEN OUTSIDE AIR TEMPERATURE IS BELOW THE RETURN AIR TEMPERATURE THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE OPEN WHILE THE RETURN AIR DAMPER MODULATES CLOSED. ON A FURTHER CALL FOR COOLING, THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS.		
	ADDITIONAL COOLING DEMAND SHALL START ADDITIONAL COMPRESSORS AS REQUIRED. THE HEAT PUMP COMPRESSOR SHALL CYCLE/MODULATE AS REQUIRED TO MAINTAIN SETPOINT AT ROOM TEMPERATURE SENSOR. THE REVERSE SHALL OCCUR ON A DECREASE IN COOLING DEMAND.		
	COOLING:		
	UPON A CALL FOR COOLING FROM THE SPACE WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE THE RETURN AIR TEMPERATURE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS CONTROLLED BY THE CO2 SENSOR. THE REVERSING VALVE POSITION SHALL MODULATE TO COOLING MODE. THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS. ADDITIONAL COOLING DEMAND SHALL START ADDITIONAL COMPRESSORS AS REQUIRED.		
	HEATING:		
	ON A CALL FOR HEAT FROM THE SPACE THE RELIEF, RETURN AND OUTSIDE AIR DAMPERS SHALL MODULATE TO MINIMUM OSA POSITION AS DETERMINED BY THE CO2 SENSOR. THE REVERSING VALVE POSITIONED SHALL BE IN		
	HEATING MODE. THE LEAD HEAT PUMP COMPRESSOR SHALL BE ENERGIZED AND CAPACITY MODULATED VIA THE INTEGRAL VARIABLE SPEED COMPRESSOR CAPACITY CONTROLS. ADDITIONAL HEATING DEMAND SHALL START AND CYCLE ADDITIONAL COMPRESSORS AS REQUIRED.		
	THE MIXED AIR TEMPERATURE SHALL OVERRIDE THE CO2 SENSOR TO MAINTAIN A MINIMUM MIXED AIR TEMPERATURE OF 40°F.		
	IF THE MIXED AIR TEMPERATURE FALLS BELOW 35°F A LOW TEMPERATURE ALARM SHALL BE INDICATED AT THE CENTRAL MONITORING LOCATION AND THE DAMPERS SHALL MODULATE TO FULL RECIRC MODE UNTIL THE ALARM IS CLEARED.		

Item #	Item Text	Response	# Issues
	HEAT PUMP COMPRESSOR AND ELECTRIC HEATER SAFETIES, INTERLOCKS AND CAPACITY CONTROLS SHALL BE INTEGRAL WITH THE HEAT PUMP PACKAGE AND SHALL BE INTERFACED AS REQUIRED WITH THE BAS SYSTEM FIELD CONTROLLERS AS REQUIRED.		
	UNOCCUPIED MODE:		
	THE UNIT SHALL BE OFF AND THE OUTSIDE AIR DAMPER FULLY CLOSED. UPON A CALL TO MAINTAIN SETBACK ROOM TEMPERATURE SETPOINTS, THE UNIT SHALL TEMPORARILY CYCLE ON, WITH THE OUTSIDE AIR VENTILATION DAMPERS REMAINING CLOSED. ONCE THE ROOM TEMPERATURE IS SATISFIED, THE UNIT SHALL CYCLE OFF.		
	A PUSHBUTTON AT THE SENSOR SHALL ALLOW THE SYSTEM TO OVERRIDE THE UNOCCUPIED CYCLE AND PLACE THE HEAT PUMP IN THE OCCUPIED MODE FOR A PRE-SET TIME PERIOD OF 2 HOURS (OR AS SET).		
	OPTIMUM STOP-START		
	HEATING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL FULLY CLOSE AND RETURN AIR DAMPER SHALL FULLY OPEN DURING WARM-UP PERIOD. UPON START OF OCCUPIED MODE, OUTSIDE AIR DAMPER AND RETURN AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF CONTROLS LISTED ABOVE.		
	COOLING: THE CONTROL SYSTEM SHALL SENSE SPACE TEMPERATURE AND OUTSIDE AIR TEMPERATURE TO OPTIMIZE FAN START TIME SO THAT PROPER SPACE TEMPERATURE IS REACHED AT START OF SCHEDULED OCCUPIED MODE. OUTSIDE AIR DAMPER SHALL MODULATE OPEN FOR ECONOMIZER COOLING AND THE RETURN AIR DAMPER SHALL MODULATE CLOSED DURING PRE-COOL PERIOD, WHEN OUTSIDE AIR TEMPERATURE IS LOWER THAN SPACE TEMPERATURE AND SPACE TEMPERATURE IS WARMER THAN OCCUPIED SETPOINT OF T1. UPON START OF OCCUPIED MODE, OUTSIDE AIR DAMPER AND RETURN AIR DAMPER SHALL MODULATE PER THE SEQUENCE OF OPERATIONS LISTED ABOVE.		
	SAFETIES:		
	SMOKE DETECTOR: UPON DETECTION OF SMOKE, THE RETURN AIR DUCT MOUNTED SMOKE DETECTOR SHALL SIGNAL AN ALARM TO THE BUILDING FIRE ALARM CONTROL PANEL WHICH, SHALL IN TURN, SEND A SIGNAL TO		
	SHUT-DOWN THE ROOF-TOP UNIT FANS IN ORDER TO PREVENT THE SPREAD OF SMOKE.		
	WATER FLOW SWITCH: THE HEAT PUMP MODULE SHALL BE PROVIDED WITH AN INTEGRAL FLOW SWITCH WHICH SHALL PREVENT COMPRESSOR OPERATION UNLESS ADEQUATE WATER FLOW IS DETECTED.		
	FUNCTIONAL PERFORMANCE TEST		
	Setpoints:		
1	Verify heating setpoint is set to 68F	Pass	0
2	Verify cooling setpoint is set to 75F.	Pass	0
3	Verify CO2 setpoint is set to 1000 ppm.	Pass	0
	Occupied Cycle:		
4	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open.	Pass	0
5	Verify supply fan modulates to provide constant volume.	Pass	0
8	Manipulate the supply air temperature to be 39F, verify an alarm is indicated at the central monitoring location.	Pass	0
9	manipulate the supply air temperature to be 29F, verify an additional alarm is indicated and the fans are de-energized followed by the OSA and exhaust air dampers closing.	Pass	0

Item #	Item Text	Response	# Issues
Economizer Cooling:			
10	Set the outside air temperature to below space temperature and ensure economizer cooling is enabled as the first stage of cooling.	Pass	0
11	Set the outside air temperature to be above space temperature, verify OSA damper modulates to provide scheduled airflow and economizer cooling is locked out.	Pass	0
Heating Mode:			
13	Manipulate the space temperature to below 68F, verify the reversing valve modulates to the heating mode.	Pass	0
14	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
15	Upon a further call for heating, verify additional compressors are enabled and modulated via intergral controls.	Pass	0
Cooling Mode:			
17	Manipulate the space temperature to be above 75F, verify the reversing valve modulates to the cooling mode.	Pass	0
18	Verify the lead heat pump compressors is energized and modulates via intergral controls.	Pass	0
19	Upon a further call for cooling, verify additional compressors are enabled and modulated via intergral controls.	Pass	0
Unoccupied Mode:			
21	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
22	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
23	Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.	Pass	0
24	Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%.	Pass	0
Shelter in Place Mode:			
25	Enable the shelter in place mode, verify the supply and exhaust fans are disabled and outside air and exhaust air dampers are closed.	Pass	0
Individual Units:			
	AHU 6-1	Pass	0
	AHU 6-2	Pass	0

Details

ID	000107	**Company**	<not set>
Name	Bld 6 EF FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 10:46 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Cycle:		
	The fan shall be on and the damper open.		
	Unoccupied Cycle:		
	The fan shall be off and the damper closed.		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
	Place the building in occupied mode, verify the fan is energized and the damper is open.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode, verify the fan is de-energized and the damper is closed.	Pass	0
	Individual Units:		
	EF 6-1	Pass	0
	EF 6-2	Pass	0
	EF E 6-1	Pass	0
	EF E 6-2	Pass	0
	EF E 6-3	Pass	0

Details

ID	000106	**Company**	<not set>
Name	Building 6 Heat Pump FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 10:28 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues

FUNCTIONAL PERFORMANCE TEST

Sequence of Operation

The EMCS shall initiate the unoccupied and occupied cycles for the system.

Occupied Mode:

The supply fan shall be enabled and speed controlled as follows by mfr onboard controller. During heating and cooling mode, fan shall operate at high speed. When room temp is in the deadband, the supply fan speed shall adjust to low speed. Outside air valve shall continue noremal sequence.

On a call for cooling or heating, open the 2-position water loop control valve and after a 2-min delay, energize the compressors and reversing valve. The 2-speed compressor shall cycle between 1st and 2nd stages as required to maintain setpoint at room temperature sensor. The reversing valve shall be indexed between heating and cooling mode as required. When no cooling or heating is required, the compressors shall cycle off, 2-position water loop control valve shall modulate per manufactures onboard controls.

Ventilation & Relief Damper Control:

Units with CO2 sensors - The ventilation air damper shall be interlocked with the CO2 sensor serving the same space. The CO2 sensor shall modulate the ventilation air damper between minimum and code CFM scheduled on the drawings between a CO2 level of 400 ppm and 1000 ppm (or as set). When CO2 level is greater than 10% over design limit (1100 ppm or as set), an alarm shall be initiated at the operator terminal. Outside air damper shall close during unoccupied mode.

Units w/o CO2 sensors- dampers shall open to code OSA position, as scheduled on the drawings, during occupied times and close during unoccupied times.

Exhaust Damper Control - Damper shall modulate to track ventilation air damper, as the ventilation air damper opens, the exhaust air damper shall open to match the same CFM. During unoccupied times, the relief damper shall be closed.

Purge Ventilation Mode - When push button is activated by the instructor, the ventilation OSA damper serving the space shall open to maximum outside air (as schedule) to provide fresh air dilution ventilation to the space. Exhaust air damper shall open to match the same CFM as ventilation OSA damper. Purge mode shall last for a period of one hour (adj) or until the button is re-pressed.

Upon Activation of EF-2, the CO2 sensor shall be overridden and AV-3 shall modulate to code CFM. EAV-3 shall provide a CFM equal to the difference in airflow from AV-2 and EF-2.

Upon activation of EF-3, the CO2 sensor shall be overridden and AV-5 shall modulate to code CFM. EAV-5 shall provide a CFM equal to the difference in airflow from the AV-5 and EF-3.

Unoccupied Mode:

Heat Pump fan shall be off until room temperature drops below the reduced setback room temperature (85 Cooling, 55 heating), at which time the heat pump shall cycle on temporarily as described above to maintain the reduced setback room temperature. OSA valve shall remain closed.

A push button at the room sensor shall allow the system to overirde the unoccupied cycle and place the heat pump, OSA valve and relief damper in occupied mode for 2 hours (adj). When 3 or more (adj) heat pumps have been placed in override, the HRU responsible for proving OSA to heat pump in override mode shall be energized. All other heat pumps shall remain in the unoccupied mode unless their override button is pushed.

Item #	Item Text	Response	# Issues
	Morning Warm-up:		
	The control system shall analyze the space temperatures and the outside air temperture trends to determine if morning warm-up/optimum start is required. Morning warm-up shall be initiated to ensure that the space temp is brought up to temperature at the start of the occupied period. During morning warm-up the outside air ventilation dampers shall remain closed to save energy and the system shall operate in the unoccupied heating mode as described above. At the start of the programmed occupied period, the system shall operate in the normal occupied mode as described above.		
	Shelter-in-Place:		
	When the shelter in place mode is initiated at the DDC system, ventilation damper DM-1 shall close and the heat pump shall operate in full recirculation mode until shelter in place mode is disabled.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
2	Verify BAS monitors pump status.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
4	Verify the supply fan is enabled via the internal controls and modulates speed to meet temperature setpoint.	Pass	0
5	Place the space temperature in dead band, verify the supply fan modulates down to min speed.	Pass	0
6	Generate a call for cooling, verify the 2-stage valve is in the cooling position after 2 min delay and the compressors stage on to meet setpoint.	Pass	0
7	Remove the call for cooling, verify the compressors stage off.	Pass	0
8	Generate a call for heating, verify the 2-stage valve is in heating position after a 2 min delay and the compressors stage on to meet space setpoint.	Pass	0
	Unoccupied Cycle:		
9	Place the building in unoccupied mode, verify the hot water recirculation pump and supply fan are de-energized.	Pass	0
10	Manipulate the space temperature below unocc setpoint, verify the heat pump cycles on to maintain space setpoint.	Pass	0
11	Return space setpoint to unocc setpoint. Verify the unit returns to unoccupied mode.	Pass	0
12	With the unit in unoccupied mode, push the override button, verify the heat pump is in occupied mode for 2 hours (or as set).	Pass	0
13	With the unit in unoccupied mode, push the override button on 3 units that are served by the same HRU, ensure the HRU is enabled.	Pass	0

Item #	Item Text	Response	# Issues
CO2 and Ventilation Control:			
14	Ensure the space CO2 is at 400 ppm, verify the ventilation air damper is at min scheduled OSA.	Pass	0
15	Manipulate the space CO2 to be 1100 ppm, verify the ventilation air damper modulates to maximum outside air as set by TAB.	Pass	0
16	Verify an alarm is generated for high CO2 on operators station.	Pass	0
Units without CO2 Control:			
18	Place unit in occupied, verify min scheduled OSA is being maintained.	Pass	0
19	Place unit in unoccupied, verify the OSA damper is closed.	Pass	0
Shelter-in-Place:			
25	Ensure Shelter-in-place has been programmed into BAS.	Pass	0
Alarms:			
26	Verify there is an alarm on the operators station for a pump failure.	Pass	0
Individual Units :			
27	HP 6-1	Pass	0
28	HP 6-2	Pass	0
29	HP 6-3	Pass	0
30	HP 6-4	Pass	0
31	HP 6-5	Pass	0

Comments

This unit is existing and does not appear to be functioning on the BAS.

33	HP E 6-2	Pass	0
34	HP E 6-3	Pass	0
35	HP E 6-4	Pass	0
36	HP E 6-5	Pass	0
37	HP E 6-6	Pass	0

Comments

This unit is existing and does not appear to be functioning on the BAS.

39	HP E 6-8	Pass	0
40	HP E 6-9	Pass	0

Details

ID	000105	**Company**	<not set>
Name	Bld 6 UH FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	28 Feb 2023 10:26 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initialize the unoccupied and occupied cycle for the system.		
	Occupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 65F (adj)		
	Unoccupied Mode:		
	The electric heating coil shall cycle to maintain space temperature of 55F (adj)		
	Test Procedure:		
	Setpoints:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Mode:		
	Place the building in occupied mode and manipulate the space temperature to below 65F, verify the electric coil is energized.	Pass	0
	Unoccupied Cycle:		
	Place the building in unoccupied mode and manipulate the space temperature to below 60F, verify the electric coil is energized.	Pass	0
	Individual Units:		
	CUH 6-1	Pass	0
	CUH 6-2	Pass	0
	CUH 6-3	Pass	0
	CUH 6-4	Pass	0
	EUH 6-1	Pass	0

Details

ID	000083	**Company**	<not set>
Name	Bld 7 Electric Heater Control FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 11:42 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	The EMCS shall intialize the occupied and unoccupied schedule.		
	Occupied Mode:		
	The electric heating coil shall modulate to maintain a space temperature of 65F (adj)		
	Unoccupied Mode:		
	The electric heating coil shall modulate to maintain a space setback temperature of 55F (adj)		
	Test Procedure		
	Setpoints:		
	Verified space temperature setpoints are 65F occupied and 55F unoccupied.	Pass	0
	Occupied Mode:		
	With the system in occupied mode, manipulate the space to 64F, verify the heating coil is enabled.	Pass	0
	Return the space temperature to 65F, verify the heating coil is disabled.	Pass	0
	Unoccupied Mode:		
	Place the sytem in unoccupied mode, manipulate the space temperature to 54F, verify the heating coil is enabled.	Pass	0
	Return the space temperature to 55F, verify the heating coil is disabled.	Pass	0
	Individual Units:		
	BB 7-1	Pass	0
	BB 7-2	Pass	0
	EUH 7-1	Pass	0

Details

ID	000073	**Company**	<not set>
Name	Bldg 7 HP PTP	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 May 2022 10:30 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
Point to Point Checkout			
	Ventilation Air Damper Control - AO	Verified	0
	OSA CFM Reading - AI	Verified	0
	Discharge Air Temperature - AI	Verified	0
	Space CO2 - AI	Verified	0
	Space Temperature - AI	Verified	0
	Fan Start/Stop - DO	Pass	0
	Status/Alarm - DI	Pass	0
	Reversing Valve - DO	Pass	0
	1st Stage Compressor - DO	Pass	0
	2nd Stage Compressor - DO	Pass	0
	Exhaust Air Damper Control - AI	Verified	0
	Purge Vent Switch - DI	Pass	0
	Pilot Light - DO	Pass	0
Individual Units			
	HP 7-1	Pass	0
	HP 7-2	Pass	0
	HP 7-3	Pass	0
	HP 7-4	Pass	0
	HP 7-5	Pass	0
	HP 7-6	Pass	0
	EHP 7-1	Pass	0

Details

ID	000102	**Company**	<not set>
Name	Bld 7 Lighting FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	03 Jan 2023 1:32 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	Lighting controls are to be programmed with detailed scenes for classrooms and occupancy sensors to detect when the space is vacant to power off lights.		
	Test Procedure:		
	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
1	Ensure installed switches are programmed to switch scenes and dimmining functions work as scheduled.	Pass	0
2	Verify all light fixtures react as designed.	Pass	0
	Locations:		
3	Room 2201	Pass	0
4	Room 2202	Pass	0
5	Room 2203	Pass	0
6	Room 2204	Pass	0
7	Room 2205	Pass	0
8	Room 2206	Pass	0
9	Room 2207	Pass	0
10	Room 2208	Pass	0
11	Room 2209	Pass	0
12	Room 2210	Pass	0
13	Room 2211	Pass	0
14	Room 2212	Pass	0
15	Room 2213	Pass	0
16	Room 2214	Pass	0
17	Room 2215	Pass	0

Item #	Item Text	Response	# Issues
18	Room 2216	Pass	0
19	Room 2217	Pass	0
20	Room 2218	Pass	0
21	Room 2219	Pass	0
22	Room 2220	Pass	0
23	Room 2221	Pass	0
24	Room 2222	Pass	0
25	Room 2225	Pass	0
26	Room 2227	Pass	0
27	Room 2228	Pass	0
28	Room 2229	Pass	0
29	Room 2230	Pass	0
30	Room 2231	Pass	0

Details

ID	000078	**Company**	<not set>
Name	DHW FPT	**Priority**	Medium
Description	All Buildings DWH FPT	**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 10:06 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	During occupied periods the hot water recirulation pump, RCP-1, shall run continously.		
	System shall monitor pump status.		
	Provide alarm annunciation to the operators terminal for pump failure.		
	During unoccupied periods, RCP-1, shall be off.		
	Test Procedure:		
	Setpoints:		
1	Ensure the occupied and unoccupied schedule has be been set per owner's requirements.	Pass	0
	Occupied Cycle:		
3	Place the building in occupied mode, verify the hot water recirculation pump is running continuously.	Pass	0
	Unoccupied Cycle:		
4	Place the building in unoccupied mode, verify the hot water recirculation pump is de-energized.	Pass	0
	Alarms:		
5	Verify there is an alarm on the operators station for a pump failure.	Pass	0
	Individual Units:		
6	DHW 2-1	Pass	0
	Comments		
	DHW 1-1 Also confirmed 12/28.		
7	DHW 3-1	Pass	0

Item #	Item Text	Response	# Issues
8	DHW 4-1	Pass	0
9	DHW 5-1	Pass	0
	Comments Reading 110F setpoint 120F will verify during FPT.		
10	DHW 6-1	Pass	0
11	DHW 7-1	Pass	0

Details

ID	000076	**Company**	<not set>
Name	HP Loop Building 2-7 FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	19 Jul 2022 9:30 AM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues

FUNCTIONAL PERFORMANCE TEST

Sequence of Operation

The pump loop shall be operated continously in order to provide heat rejection or heat addition to the water source heat pump hydronic piping system during school year summer shut-down. The system may be manually disabled via an override in the DDC workstation.

The designated lead building circ pump shall be be energized and pump speed controlled through the VFD to satisfy the remote differential pressure sensor setpoint. Initially set at 10 PSIG but adjusted as required during TAB, as the lead pump speed reaches 60 -HZ, the lag pump shall be enabled and two pump speeds and two pump speeds shall modulate together (synchronized) to satisfy the DP sepoint. One pump shall always serve as a backup. Each pump stage shall have a minimum 5-min (adj) run time before unloading. Pumps shall rotate lead on a regular basis (weekly or as determined by the owner). Failure of the lead pump shall initate automatic switch-over to lag pump and send an alarm signal to the DDC workstation.

The control system shall maintain the temperature of heat pump water loop between a minimum temperature of 55 deg F and a maximum temperature of 85 deg F, as sensed at the supply une sensor T1, by staging either the cooling tower for heat rejection or the boilers for heat addition as described below:

Cooling Tower (Closed Circuit Fluid Cooler) (Heat Rejection):

The heat pump loop supply temperature, T1, shall be maintained at or below the upper temperature limit of 85 deg F by staging the cooling tower as follows:

On a rise in temperature above setpoint at T1 the cooling tower loop mixing valve , V-1, shall be switched to allow full system flow to cooling towers and CT-1 control valve shall open (stage-1 heat rejection by natural convection at the cooling tower coil). If sepoint cannot be met, CT-2 control valve shall open. On a further call for cooling, cooling tower 1 (CT-1) fan shall be energized (stage -2 forced convection) and the fan speed shall be ramped up slowly via the VFD controller to maintain setpoint at T1. On a further call for cooling, cooling tower-2 (CT-2) fan shall be energized and the fan speed ramped up slowly via the VFD controller to maintain setpoint. On a further call for cooling with both fans at full speed, CT-1 spray pump shall be energized (stage-3 evaporative cooling). On a further call for cooling, CT-2 spray pump shall be energized. As the call for cooling decreases the reverse shall occur. Provide sufficient differentials to prevent short cycling of stages.

Drycooler operations: Whenever the cooling tower basin is seasonally drained for winter freeze protection, the cooling tower heat rejection sequence shall still be available , except stage-3 spray pump will be prevented from operating (pump disabled) and/or sump low level lock-out activated), at which time the tower will continue to operate if necessary as a dry cooler for heat rejection.

BOILER CONTROL (HEAT ADDITION):

The heat pump loop supply temperature, T1, shall be maintained at or above the lower temperature limit of 45 deg F by staging on the hot water boilers as follows:

The master boiler shall be enabled to maintain heating water supply temperature as set by the BAS in accordance with the reset schedule below (adj). Control of the boiler circ pump on/off, boiler staging, firing rate, optimization and lead/lag shall be provided by the on-board controllers provided with each boiler. BAS contractor shall provide all interface wiring and communications and shall work with the boiler vender to set up program and sequencing.

The boiler circ pump VFD shall only be used for soft start with manual speed adjustment determined during TAB.

Item #	Item Text	Response	# Issues
	Failure of the boiler circ pump shall initiate an alarm, disable the associated boiler, the master boiler on-board controls shall continue to control the remaining boilers.		
	All boiler control and sensing setpoints shall be available as read only via the network and shall be displayed at the operators terminal. Provide a bacnet interface as required.		
	The control contractos shall provide wiring between the boilers wiring between the boilers and boiler pumps as required to operate the pumps per the sequence of operations. Upon system disable, the campus circ pump and boiler shall be disabled. The boiler circ pump shall continue to operate for 1 minute (adj) before being disabled.		
	In the event the DDC control system fails, the DDC panel shall contain two relays, upon failure the relays shall de-energize. In the de-energized mode, (1) relay will bypass the DDC enable/disable signal. (1) relay shall transfer 0-10V signal from the DDC to the exisiting boilers mounted controls. These relays shall be provided and install by the controls contractor.		
	Freeze Protection:		
	When the outside air temperature is below 30F (adj) cooling tower mixing valve shall modulate to allow 20 gpm (adj) to cooling towers. Cooling tower control valves shall be open.		
	Test Procedure:		
	Setpoints:		
1	Ensure the loop differential pressure setpoint is set to 10 PSIG (adj).	Pass	0
	Comments currently set at 1.5 tab to verify		
2	Ensure the loop pumps have a min run time of 5 minutes (adj)	Pass	0
3	Verify loop temperate setpoints are min 45 deg F and 85 deg F	Pass	0
	Heat Pump Loop Control:		
4	Verify the pump loop operates continuously unless disabled via an override in the DDC workstation.	Pass	0
5	Verify pumps are set up in lead/lag and alternate lead pumps per set schedule (adj).	Pass	0
	Comments lead/lag switches pumps every tuesday		
6	Manipulate the dp to below setpoint, verify lead pump ramps up via vfd to meet setpoint.	Pass	0
7	Upon further call for pressure, verify the lead pump ramps to 60-hz and the lag pump is enabled and pumps modulate speeds together (syncronized).	Pass	0
	Comments Pumps are running at 100% and only have a dp of 1.7 psi		
8	Manipulate the DP to meet setpoint, verify the lag pump stages down and runs for min 5 min (adj) before unloading.	Pass	0
	Cooling Tower (Closed Circuit Fluid Cooler) (Heat Rejection):		

Item #	Item Text	Response	# Issues
9	Manipulate the loop temperature to be above setpoint of 85 deg F. Verify the cooling tower loop mixing valve modulates open to allow full system flow to CT-1 stage 1 cooling. **Comments** single cooling tower in west loop	Pass	0
11	Upon a further call for cooling verify CT-1 fans are energized and slowly ramp up to meet loop temperature setpoint. **Comments** single cooling tower in west loop	Pass	0
13	Upon a further call for cooling with both fans at full speed, verify CT-1 spray pump is energized to meet loop temperature setpoint.	Pass	0
15	Remove the call for cooling, verify the system modulates in reverse order.	Pass	0
Dry Cooler Operation:			
16	Verify through programming that when the CT's are drained for winter freeze protection that stage 1 and stage 2 cooling are available for heat rejection. (Spray pump disabled and sump low level lock-oout activate).	Pass	0
BOILER CONTROL (HEAT ADDITION):			
17	Manipulate the loop temperature to be below low limit of 45F, verify the master boiler and circ pump is enabled.	Pass	0
18	Upon a further call for heating verify the boilers ramp up using internal controls.	Pass	0
19	Remove the call for heating and verify the boilers ramp down using interal controls	Pass	0
Freeze Protection:			
20	Manipulate the OSA temperature to below 30F, verify the cooling tower mixing valve modulates open to allow 20 gpm (adj) to the cooling towers and cooling tower control valves are open.	Pass	0

Details

ID	000084	**Company**	<not set>
Name	HRU 4-1 FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 12:07 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues

FUNCTIONAL PERFORMANCE TEST

Sequence of Operation

The EMCS shall initiate the unoccupied and occupied cycles for the system.

Occupied Mode:

Supply and exhaust fan shall run continously and the outside air intake and exhaust air dampers shall be open.

Supply fan speed shall modulate to maintain duct static pressure as measured 2/3 the distance down the length of the supply duct, coordinate exact location with balancer and engineer. Initial static pressure setpoint shall be 0.75" W.G. or as set during balancing. Setpoint shall reset down incrementally if all ventilation air valves are satisfied. Exhaust fan speed shall modulate to track the supply air flow CFM with an adjustable differential offset (less air flow than supply to provide positive building pressurization).

If the supply air temperature falls below 40F a low temperature alarm shall be indicated at the central monitoring location.

If the supply air temperature falls below 30F, an additional alarm shall be indicated and the fans shall be de-energized followed by the outside air and exhaust air dampers closing.

Heat Recovery Operation:

During the occupied mode the heat recovery core shall operate to temper the incoming outside air temperature as follows:

Outside air temp between 55 and 70F - The HR core face and bypass dampers shall re-position to bypass the outside air around the HR core in order to avoid recovering exhaust air heat and the unit shall provide neutral "economizer" air.

Outside air temp below 55F - The HR core face & bypass dampers shall modulate to direct outside air through the HR core in order to recover exhaust air energy (heat) so as to pre-heat and temper the incoming outside air. The supply air temperature setpoint shall be 55 Deg F.

Outside air temp above 75F - The HR core face & bypass dampers shall reposition to direct outside air through the HR core in order to recover exhaust air energy (cooling) so as to pre-cool and temper the incoming outside air.

Heating Mode:

Whenever the HR core discharge temperature fall below 68F (adj) the reversing valve positioned shall switch to heating mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand cannot be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the SCR controller.

Cooling Mode:

Whenever the HR core discharge temperature goes above 75F (adj), the reversing valve shall be in cooling mode and lead heat pump compressor shall be energized and capacity modulated via the intergral variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall

cycle/modulate as required to maintain setpoint.

Item #	Item Text	Response	# Issues
	Defrost Control:		
	Whenever the HR core exhaust discharge air temperature falls below 32F frosting may occur on the humid, exhaust air part of the HR core surfaces, due to the transfer of cold energy from the incoming outside air stream. To prevent frost build up, the HR wheel core outside air face & bypass dampers shall modulate to bypass a portion of the outside air around the core, reducing heat transfer affect, in order to limit the exhaust air discharge air temperature to no lower than 32F.		
	Pre-cooling Mode:		
	See heat pump sequence for pre-cooling operation. Discharge air temperature from DOAS (HRU) shall be limited to no less than 50F (adj).		
	Unoccupied Cycle:		
	Both the supply and exhaust air fans shall be off and the outside air and exhaust air shut-of dampers closed. DOAS unit shall return to occupied mode when there is a call for ventilation, via CO2 sensor, from 3 (adj) heat pumps placed in the unoccupied override mode. WHen this occurs all outside air valves shall open to 25% to provide stable operation for fans.		
	The system shall be temporarily reactived and run in the occupied mode until such time as the ventilation requirement is satisfied or several room heat pumps override timers have expired, at which point the system will return to the unoccupied mode.		
	Shelter in Place Mode:		
	When the shelter in place switch is tripped, the DOAS supply and exhaust fans shall be disabled and outside and exhaust air dampers closed.		
	Test Procedure:		
	Setpoints:		
1	Verify DSP is set to 0.75" W.G. (or as set by TAB)	Pass	0
2	Verify heating setpoint is set to 68F	Pass	0
3	Verify cooling setpoint is set to 75F.	Pass	0
	Occupied Cycle:		
4	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open.	Pass	0
5	Verify supply fan modulates to maintain DSP of 0.75" or as set per tab.	Pass	0
	Comments		
	Currently set to 1.00"		
6	Ensure all air valves are satisfied, verify the DSP setpoint resets down incrementally.	Pass	0
7	Verify as supply fan modulates that the exhaust fan maintains its offet to maintain building pressure.	Pass	0
8	Manipulate the supply air temperature to be 39F, verify an alarm is indicated at the central monitoring location.	Pass	0
9	manipulate the supply air temperature to be 29F, verify an additional alarm is indicated and the fans are de-energized followed by the OSA and exhaust air dampers closing.	Pass	0

Item #	Item Text	Response	# Issues
Heat Recovery Operation:			
10	Set the outside air temperature to between 55 & 75F, verify the HR core face and bypass dampers are set to bypass HR core.	Pass	0
11	Set the outside air temperature to below 55F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
12	Set the outside air temperature to above 75F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
Heating Mode:			

Comments
No Compressor

Cooling Mode:			
Defrost Mode:			
20	Manipulate the exhaust air temperature to 31F, verify the outside air face & bypass dampers modulate open to bypass a portion of the outside are around the core.	Pass	0
Unoccupied Mode:			
21	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
22	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
23	Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.	Pass	0
24	Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%.	Pass	0
Shelter in Place Mode:			
25	Enable the shelter in place mode, verify the supply and exhaust fans are disabled and outside air and exhaust air dampers are closed.	Pass	0

Details

ID	000068	**Company**	<not set>
Name	HRU FPT	**Priority**	Medium
Description	Building 7 HRU 7-1	**Status**	Closed
Author	codym@mckinstry.com	**Location**	Walla Walla High School > Building 7 > Mezzanine > 2301
Created On	19 Apr 2022 9:39 AM	**Equipment Name**	HRU-7-1
Tags		**Equipment Barcode**	

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	The EMCS shall initiate the unoccupied and occupied cycles for the system.		
	Occupied Mode:		
	Supply and exhaust fan shall run continously and the outside air intake and exhaust air dampers shall be open.		
	Supply fan speed shall modulate to maintain duct static pressure as measured 2/3 the distance down the length of the supply duct, coordinate exact location with balancer and engineer. Initial static pressure setpoint shall be 0.75" W.G. or as set during balancing. Setpoint shall reset down incrementally if all ventilation air valves are satisfied. Exhaust fan speed shall modulate to track the supply air flow CFM with an adjustable differential offset (less air flow than supply to provide positive building pressurization).		
	If the supply air temperature falls below 40F a low temperature alarm shall be indicated at the central monitoring location.		
	If the supply air temperature falls below 30F, an additional alarm shall be indicated and the fans shall be de-energized followed by the outside air and exhaust air dampers closing.		
	Heat Recovery Operation:		
	During the occupied mode the heat recovery core shall operate to temper the incoming outside air temperature as follows:		
	Outside air temp between 55 and 70F - The HR core face and bypass dampers shall re-position to bypass the outside air around the HR core in order to avoid recovering exhaust air heat and the unit shall provide neutral "economizer" air.		
	Outside air temp below 55F - The HR core face & bypass dampers shall modulate to direct outside air through the HR core in order to recover exhaust air energy (heat) so as to pre-heat and temper the incoming outside air. The supply air temperature setpoint shall be 55 Deg F.		
	Outside air temp above 75F - The HR core face & bypass dampers shall reposition to direct outside air through the HR core in order to recover exhaust air energy (cooling) so as to pre-cool and temper the incoming outside air.		
	Heating Mode:		
	Whenever the HR core discharge temperature fall below 68F (adj) the reversing valve positioned shall switch to heating mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand cannot be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxiliary electric heater. Electric heater capacity shall be modulated as required by the SCR controller.		
	Cooling Mode:		
	Whenever the HR core discharge temperature goes above 75F (adj), the reversing valve shall be in cooling mode and lead heat pump compressor shall be energized and capacity		

modulated via the intergral variable speed compressor capacity controls. Additional cooling demand shall start additional compressors as required. The heat pump compressor shall cycle/modulate as required to maintain setpoint.

Item #	Item Text	Response	# Issues
	Defrost Control:		
	Whenever the HR core exhaust discharge air temperature falls below 32F frosting may occur on the humid, exhaust air part of the HR core surfaces, due to the transfer of cold energy from the incoming outside air stream. To prevent frost build up, the HR wheel core outside air face & bypass dampers shall modulate to bypass a portion of the outside air around the core, reducing heat transfer affect, in order to limit the exhaust air discharge air temperature to no lower than 32F.		
	Pre-cooling Mode:		
	See heat pump sequence for pre-cooling operation. Discharge air temperature from DOAS (HRU) shall be limited to no less than 50F (adj).		
	Unoccupied Cycle:		
	Both the supply and exhaust air fans shall be off and the outside air and exhaust air shut-of dampers closed. DOAS unit shall return to occupied mode when there is a call for ventilation, via CO2 sensor, from 3 (adj) heat pumps placed in the unoccupied override mode. WHen this occurs all outside air valves shall open to 25% to provide stable operation for fans.		
	The system shall be temporarily reactived and run in the occupied mode until such time as the ventilation requirement is satisfied or several room heat pumps override timers have expired, at which point the system will return to the unoccupied mode.		
	Shelter in Place Mode:		
	When the shelter in place switch is tripped, the DOAS supply and exhaust fans shall be disabled and outside and exhaust air dampers closed.		
	Test Procedure:		
	Setpoints:		
1	Verify DSP is set to 0.75" W.G. (or as set by TAB)	Pass	0
	Comments		
	currently set to max of 0.45” min 0.38”		
2	Verify heating setpoint is set to 68F	Pass	0
	Comments		
	heating supply air setpoint set to 55		
3	Verify cooling setpoint is set to 75F.	Pass	0
	Occupied Cycle:		
4	Place the building in occupied mode, verify the supply and exhaust fans run continuously and outside air intake and exhaust air dampers are open.	Pass	0
5	Verify supply fan modulates to maintain DSP of 0.75" or as set per tab.	Pass	0
6	Ensure all air valves are satisfied, verify the DSP setpoint resets down incrementally.	Pass	0
	Comments		
	set to 0.38 min and 0.45 max		

Item #	Item Text	Response	# Issues
7	Verify as supply fan modulates that the exhaust fan maintains its offet to maintain building pressure.	Pass	0
8	Manipulate the supply air temperature to be 39F, verify an alarm is indicated at the central monitoring location.	Pass	0
9	manipulate the supply air temperature to be 29F, verify an additional alarm is indicated and the fans are de-energized followed by the OSA and exhaust air dampers closing.	Pass	0
Heat Recovery Operation:			
10	Set the outside air temperature to between 55 & 75F, verify the HR core face and bypass dampers are set to bypass HR core.	Pass	1
11	Set the outside air temperature to below 55F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
12	Set the outside air temperature to above 75F, verify the HR core and bypass dampers to direct air through the HR core.	Pass	0
Heating Mode:			

Comments

no compressors

Cooling Mode:			
Defrost Mode:			
20	Manipulate the exhaust air temperature to 31F, verify the outside air face & bypass dampers modulate open to bypass a portion of the outside are around the core.	Pass	0
Unoccupied Mode:			
21	Place unit in unoccupied mode, verify the supply and exhaust fans are de-energized.	Pass	0
22	Verify Outside Air and Exhaust air dampers are closed.	Pass	0
23	Generate a call for ventilation via CO2 sensor, verify the unit switches to occupied mode to provide ventilation.	Pass	1
24	Return unit to unoccipied mode, place 3 (adj) heat pumps in override mode, verify the unit is enabled in occupied mode and all air valves are open to 25%.	Pass	0
Shelter in Place Mode:			
25	Enable the shelter in place mode, verify the supply and exhaust fans are disabled and outside air and exhaust air dampers are closed.	Pass	0

Details

ID	000085	**Company**	<not set>
Name	MAU FPT	**Priority**	Medium
Description		**Status**	Closed
Author	codym@mckinstry.com	**Location**	<Top level>
Created On	25 Oct 2022 12:39 PM		
Tags			

Checklist Items

Item #	Item Text	Response	# Issues
	FUNCTIONAL PERFORMANCE TEST		
	Sequence of Operation		
	General:		
	The make-up air unit and hood exhaust fan are to provide exhaust for the type 1 hood. The system is designed for fully automatic operation with an automatic "kitch demand controlled ventilation system" (See division 11) consisting of a central controller. individual hood controllers and sensors, all in order to control variable volume hood exhaust and make-up air in response to cooking activities levels.		
	Exhaust fan operation:		
	Upon detection of cooking activity under the hood, the hood ontroller will signal to the central controller to directly enable the hood exhaust and control its speed via 0-10V or 4-20 mA signal to the VFD motor (not through the BAS)		
	Make-up air operation:		
	Upon enabling the hood exhaust fan, the central controller shall signal to the BAS to enable the make-up air unit and to modulate its fan speed in order provide an equal amount of make-up air. The MAU shall modulate the heat pump heating, electric heating, and DX cooling to provide tempered air (65-75F, ADJ)		
	Cooling:		
	Upon the call for cooling from the supply air thermostat, the reversing valve shall modualte to cooling mode. The lead heat pump compressor shall be energized and capacity modulated via the integral variable speed compressor capacity controls. Additional cooling deman shall start additional compressors requird.		
	Heating:		
	On a call for heat from the supply air thermostat, the reversing valve position shall be in heatin gmode. The lead heat pump compressor shall be energized and capacity modulated via the intergal variable speed compressor capaciy controls. Additional heating demand shall start and cycle additional compressors as required. If the heating demand can not be satisfied by the heat pump compressors, supplemental heating shall be provided by the auxilary electric heater. Electric heater capacity shall be modulated as required by the heater scr controller.		
	Test Procedure:		
	Setpoints:		
1	Verify discharge air temperature setpoint is 65-75F Adj.	Pass	0
	Exhaust Fan Operation:		
4	Turn on oven, once temperature rises at the hood, verify the fan is enabled and controls via internal controls.	Pass	0

Item #	Item Text	Response	# Issues
5	Once exhaust fan has been enabled, verify the MAU supply fan is enabeld and fan modulated to provide equal amount of supply air as exhausted air.	Pass	0
6	Override space temperature above setpoint while MAU unit is enabled the supply air temperature is reset down to 65F.	Pass	0
7	Override space temperature below setpoint while MAU is enabled the supply air temperature is reset up to 75F.	Pass	0
Cooling:			
10	While the OSA temperature is above lockout temperature, override the space temperature above setpoint, verify the supply air temperature setpoint is reset down to 65F.	Pass	0
Heating:			
13	While the OSA temperature is below the lockout temperature for heating, override the zone temperature to below setpoint, verify the SA tempature setpoint resets to 75F.	Pass	0

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

RESOLUTION #16-2023
October 24, 2023

FINAL ACCEPTANCE OF WALLA WALLA HIGH SCHOOL ADDITION AND MODERNIZATION PROJECT CONSTRUCTION COMPLETION

WHEREAS, the Walla Walla School District Board of Directors has received notification from Architects West Inc. that Walla Walla High School Addition and Modernization project is complete in accordance with contract specifications and documents; and

WHEREAS, the Superintendent and Board have walked through the project and concur.

THEREFORE, BE IT RESOLVED by the Walla Walla School District Board of Directors, that the work of the contractor, Jackson General Construction, is now complete.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

Derek Sarley, School Board President

ATTEST: Dr. Wade Smith, Superintendent and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023

WENAHA GROUP

Tri-Cities
100 N Morain St, Ste 201
Kennewick, WA 99336

WALLA WALLA PUBLIC SCHOOLS
DISTRICT OFFICE HVAC REPLACEMENT | PROCESS AND RECOMMENDATION

The advertisement for bids was published on September 28, 2023 and on October 5, 2023 in the Walla Walla Union Bulletin and the Daily Journal of Commerce.

On October 5th, 2023, at 1:00 PM a mandatory pre-bid conference was held at Walla Walla Public Schools Administrative Building.

Sealed bids were due on October 17, 2023, at 3:00 PM and were received from five Contractors for the WWPS District Office HVAC Replacement as follows:

- Columbia Allied Services, $494,540
- B.Watts Design Build, $799,999
- Apex Mechanical, $598,000
- Banlin Construction, $559,000
- S&K Mountain Construction, $613,700

After analysis and review of the bid amounts it was determined that Columbia Allied Services is the apparent low bidder.

As such the project team would like to recommend that Walla Walla Public Schools approve the award of the project and authorize the Superintendent to enter into contract with Columbia Allied Services.

BOARD OF DIRECTORS
Regular Study Meeting – 5:30 p.m.
October 3, 2023
WWPS Administration Building / 364 S. Park Street

PRESENT

BOARD OF DIRECTORS
Derek Sarley, President
Kathy Mulkerin, Vice President
Ruth Ladderud
Eric Rindal
Hailey Thrall, Student Board Representative

ADMINISTRATORS
Dr. Wade Smith, Superintendent
Chris Gardea, Assistant Superintendent

AUDIENCE

Including board members, administrators and guests, approximately 16 were in attendance.

I. CALL TO ORDER

The meeting was called to order in the administration building Anne Golden Boardroom at 5:30 p.m. by President Derek Sarley.

II. FLAG SALUTE

The flag salute and pledge of allegiance was led by Director Kathy Mulkerin.

III. ROLL CALL

All board members were present, except Director Terri Trick who was excused.

IV. APPROVAL OF AGENDA

Motion by Ruth Ladderud and seconded by Eric Rindal to approve the agenda as presented; the motion carried unanimously.

V. CONSENT AGENDA

President Sarley asked if there were any objections to the proposed eight item consent agenda consisting of the following items: 1) personnel report; 2) non-athletic extra & co-curricular contracts; 3) teachers assigned out of endorsement area; 4) October 3 accounts payable and September payroll; 5) excused absence for Director Terri Trick; 6) resolution 11-2023 to approve settlement in Juul litigation; 7) special meeting/executive session minutes of September 18, 2023; and 8) regular business meeting minutes of September 19, 2023. Approved, as there were no objections.

VI. STUDY ITEMS

Outdoor Athletic & Activity Facilities Survey Update: Dr. Smith reported on survey results and outreach efforts regarding the Outdoor Athletic and Activity Facilities Committee recommendations. The survey was conducted to seek community input on Comparable Plan or Comprehensive Plan options. The school board will finalize the Capital Levy resolution at the October 24 school board meeting, to place the measure on the February 13, 2024 ballot.

Washington State School Directors Association General Assembly Position Discussion: President Sarley facilitated discussion with board members on the board's WSSDA General Assembly position priorities.

VII. ADJOURNMENT

President Sarley declared the meeting adjourned at 6:33 p.m.

Minutes to be presented for board approval on October 24, 2023.

APPROVED:

Dr. Wade Smith, Superintendent and Secretary of the Board *- Susie Golden, Recorder*	Derek Sarley School Board President

September 11-15 at Camp Wooten

Why?

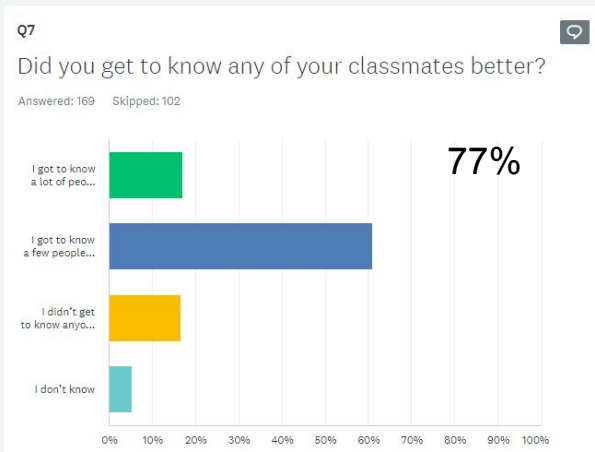
As a school district and community, we have been looking for ways to ease the transition to high school for our incoming freshmen. With generous support from the Walla Walla Schools Foundation, **Into the Blue,** we planned an overnight trip to Camp Wooten for all incoming freshmen.

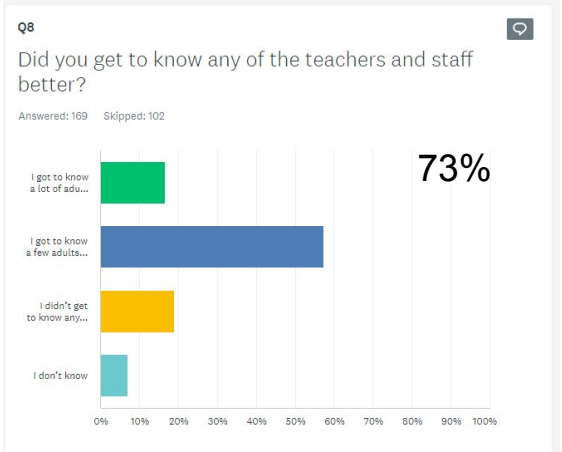
Each student had the opportunity to spend one night during the week of September 11-14 at Camp Wooten, which included time to connect with each other, with some upperclassmen and with various adults from Wa-Hi, as well as time to learn about school and community programs and efforts.

7 Learning Sessions: Archery, Hiking, Canoeing/Fishing, Pottery, Water Table/Service, JROTC Rope Bridge, Dancing

One Blue Devil ceremony: In the evening where we invited Freshman to join in the Blue Devil community by turning on their Blue Devil horns.

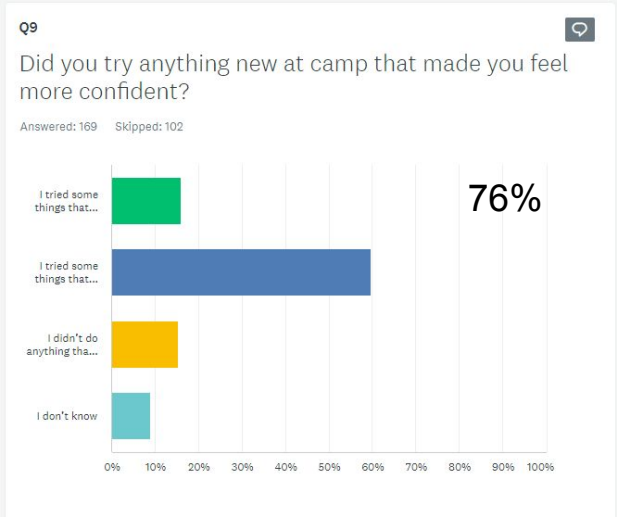
Impact

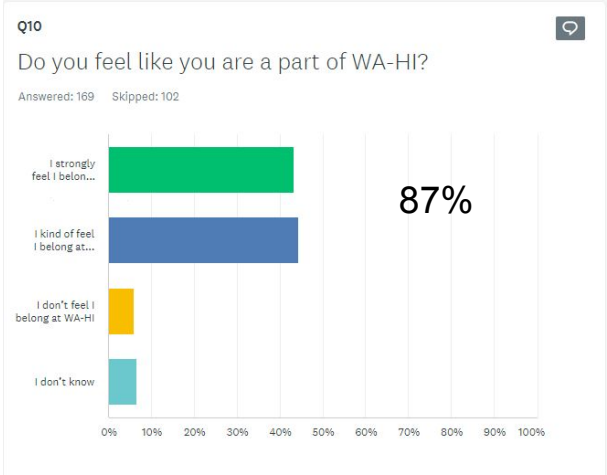




Q11 What was your favorite part of Into The Blue?

Impact


Q9
Did you try anything new at camp that made you feel more confident?
Answered: 169 Skipped: 102
I tried some things that...
I tried some things that...
I didn't do anything tha...
I don't know
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
76%


Q10
Do you feel like you are a part of WA-HI?
Answered: 169 Skipped: 102
I strongly feel I belon...
I kind of feel I belong at...
I don't feel I belong at WA-HI
I don't know
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
87%


598


INTO THE BLUE
INTO THE BLUE


599

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

~ CITIZENS' COMMENTS ~

We welcome your comments and questions during the time set aside in regular business meetings for citizens' comments. Attendees sign up to provide public comment using the sign-in form in the boardroom prior to the start of the Citizens' Comments period of the meeting.

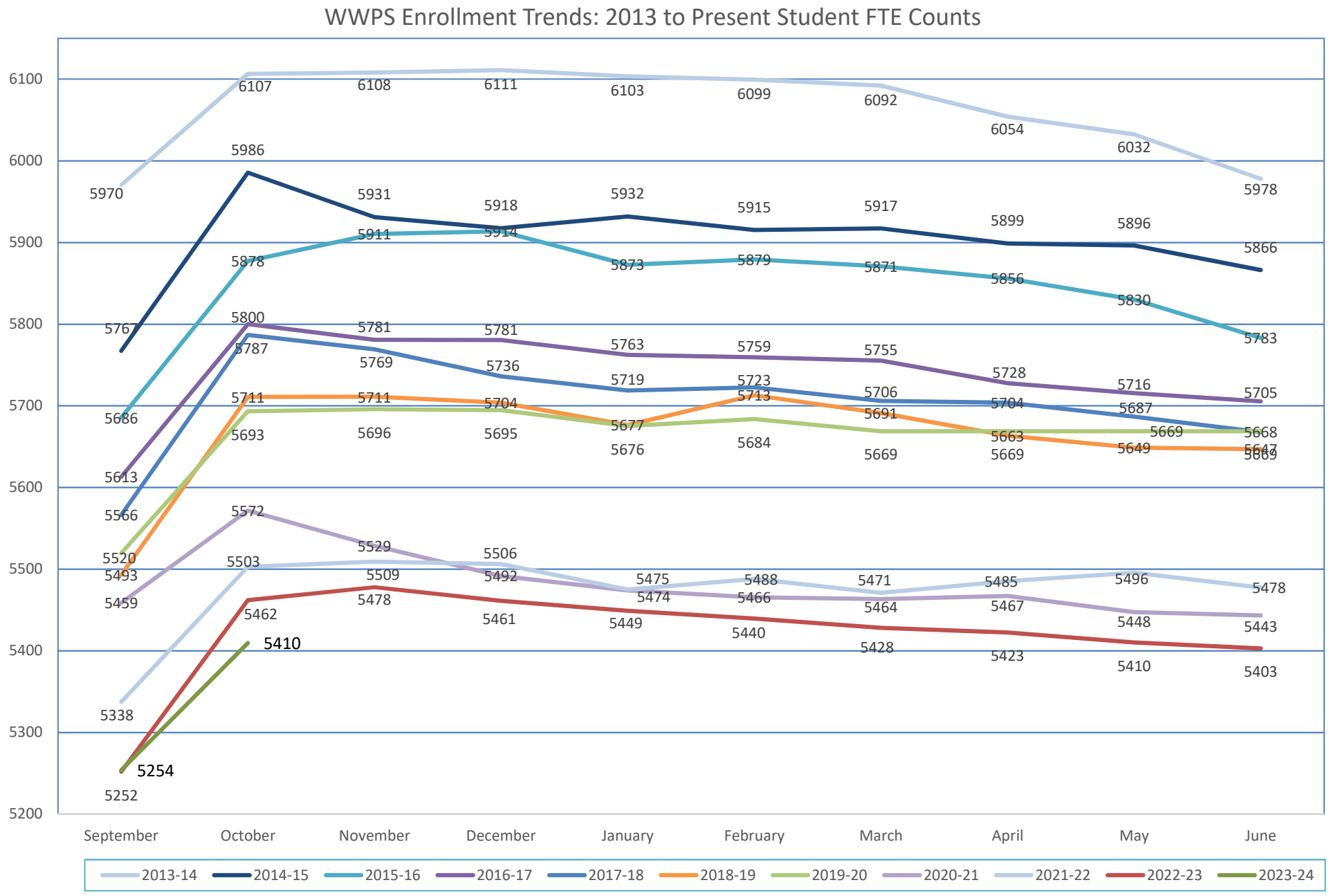
Citizens' Comment Script:
This is the time in the meeting we welcome citizens to come forward and offer public comment, ask questions, or provide recommendations for educational improvement. Per Board policy we typically refrain from providing responses following public comments, and will ensure follow up is made if requested and necessary.

We also ask that you adhere to the following guidelines:

- State your name.
- Keep your comments brief and to the point, with a **three-minute time limit**.
- Do not reflect adversely on the political or economic view, ethnic background, character, or motives of any individual.
- If you have a specific complaint about an individual employee, it must be addressed through the Superintendent's office and not in this setting.

At this time, please come forward if you wish to address the board.

01/03/2022


WWPS Enrollment Trends: 2013 to Present Student FTE Counts
6100
6000
5900
5800
5700
5600
5500
5400
5300
5200
September
October
November
December
January
February
March
April
May
June
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
2023-24
6107
6108
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5254
5252

Target Avg Class Size	24		25		27		27		28		28		
2023-2024	**Kindergarten**		**First**		**Second**		**Third**		**Fourth**		**Fifth**		**TOTALS**
Berney	Hubbard, K	18	Fisbeck, J	24	Kearbey, K	27	Baker, T	23	Bona, A	24	Holbrook, J	24	
	Brown, A	19	Morrison, S	24	Parodi, D	26	Gonzales, C	21	Diaz Madrigal, A	23	Clearman, D	25	
	Davenport, K	18					Davin, M	21	Hartelius, S	25	James, I	25	
Behavior Prg K-5	Merrill, L		Merrill, L	1	Merrill, L		Merrill, L	1	Merrill, L	1	Merrill, L	2	
SECTIONS	**16**	55		48		53		65		72		74	367
slots available	17		2		1		16		12		10	Ratio	23
Edison	Espinosa, M	21	Maycumber, Y	17	Hobbs, S	20	Aceves, J	22	Ledesma, M	25	Ochoa, F	23	
	Helm, E	21	Phillips, L	18	Parsons, S	19	Lopez, J	24	Reed, J	25	Solis, C	26	
	Matson, E	21	Moreno, J	19	Williams, N	21	Estrada, A	24	Schafer, J	26	Solis Martinez, V	26	
	Valencia, A	21	Berumen, B	18	Saldivar, C	21							
SECTIONS	**21**	84		72		81		70		76		75	458
slots available*	0		12		3		11		8		9	Ratio	22
Green Park	Bahena-Flores, R	24	Garanzuay, P	23	Salazar, I	22	Contreras, A	25	Esquivel, T	19	Maya, J	24	
	Lopez, M	24	Garcia, A	23	Chavez, R	21	Boeckman, R	27	Mora, G	18	Ambler, D	23	
	Lamanna, S	23	Collins, A	19	Shuler, A	22	Gregoire, L	26	Johnson, M	26	Lux, J	26	
	Katsel, E	22	Holgate, M	20	Real, D	21			Tobin, J	26			
Lifeskills Program	Angotti, E	1	Angotti, E		Angotti, E		Angotti, E		Angotti, E	2	Angotti, E	2	
	Goble, E		Goble, E		Goble, E	6	Goble, E		Goble, E		Goble, E		
SECTIONS	**22**	93		85		86		78		89		73	504
slots available	3		15		22		3		23		11	Ratio	23
Prospect Point	Ferraro, Amber	15	Hanson, K	20	Baldwin, W	18	McFetridge, M	18	Taylor, L	26	Mahan, L	27	
	Heinzman, A	14	James, L	19	Hudec, H	16	Jausoro, D	19	Watson, K	25	Parodi, D	27	
	Kaup Rose, S	15	Humphreys, S	19	Paul, M	17	Kuhlmann, K	20	Prull, V	23	Ambler, C	27	
	Wilson, B	14	Pederson, R	19	Babbit, H	19	Reese, N	20			Pegel, G	26	
SECTIONS	**23**	58		77		70		77		74		107	463
slots available*	38		23		38		31		10		5	Ratio	20
Sharpstein	Cantero, H	16	Russell, J	16	Griffith, R	26	Gillin, L	18	Shirley, C	21	Keyes, K	21	
	Wilson, H	16	Locati, R	19	Berg, L	26	Hutchinson, D	19	Mendoza, L	21	James, J	20	
	Pekar, K	16	Ruvalcaba, G	19			Villanueva, S	16	Woiblet, B	21	VanDonge, B	20	
Developmental Prog	Stimmel, M	3	Stimmel, M	5	Stimmel, M		Stimmel, M						
Autism Program	Osterhout, L	1	Osterhout, L	1	Osterhout, L	3	Osterhout, L	6	Osterhout, L		Osterhout, L	2	
SECTIONS	**17**	48		54		52		53		63		61	331
slots available	21		16		2		28		21		23	Ratio	19
WW Online/Homelink	Baker/Burt/Gentzler	5	Baker/Burt/Gentzler	5	Baker/Burt/Gentzler	4	Baker/Burt/Gentzler	11	Baker/Burt/Gentzler	5	Baker/Burt/Gentzler	10	
		5		5		4		11		5		10	40
slots available													
TOT SLOTS AVAIL	79		68		66		89		74		58		
GRADE LVL TOTAL		338		336		342		343		374		390	2123
GRADE LVL SECTNS	18		17		16		16		16		16		
AVERAGE LOADS		18.22		19.06		20.56		20.31		22.88		23.38	

TOTAL SC SPED	5	7	9	7	3	6	37
TOTAL ENROLLED	348	348	355	361	382	406	2200

Dual classes

MONTHLY REVENUE REPORT

MONTH	LOCAL TAXES	LOCAL NONTAX	STATE GEN PURP	FED GEN PURP	FED SPEC PURP	REV (SD)	REV (OTHER)	TOTAL PROJ.	TOTAL ACT.	VARIANCE	
SEP PROJECTED	$ 233,596	$ 49,582	$ 5,621,056	$ 5,777	$ 259,900	$ 32,845	$ -	$ 6,202,755		$ -	0.00%
SEP ACTUAL	$ 233,596	$ 49,582	$ 5,621,056	$ 5,777	$ 259,900	$ 32,845			$ 6,202,755	$ -	YTD
OCT PROJECTED	$ 3,470,341	$ 44,457	$ 5,356,255	$ 5,783	$ 887,573	$ 10,500	$ -	$ 9,774,909		$ 133,222	1.36%
OCT ACTUAL	$ 3,606,659	$ 57,322	$ 5,352,766	$ 5,874	$ 873,606	$ 11,904			$ 9,908,131	$ 133,222	YTD
NOV PROJECTED	$ 650,111	$ 97,090	$ 4,210,183	$ 5,783	$ 646,255	$ 4,695	$ -	$ 5,614,117		$ (499,810)	-8.90%
NOV ACTUAL	$ 562,055	$ 206,376	$ 3,662,287	$ 5,875	$ 665,462	$ 12,252			$ 5,114,307	$ (366,588)	YTD
DEC PROJECTED	$ 64,780	$ 36,660	$ 5,941,119	$ 5,783	$ 1,145,635	$ 9,978	$ -	$ 7,203,955		$ 1,234,898	17.14%
DEC ACTUAL	$ 45,036	$ 39,106	$ 6,740,070	$ 5,875	$ 1,593,310	$ 15,456			$ 8,438,853	$ 868,310	YTD
JAN PROJECTED	$ 27,762	$ 31,594	$ 5,934,562	$ 5,783	$ 960,651	$ 3,320	$ -	$ 6,963,672		$ 85,885	1.23%
JAN ACTUAL	$ 24,642	$ 60,910	$ 5,932,083	$ 5,530	$ 1,017,002	$ 9,389			$ 7,049,557	$ 954,195	YTD
FEB PROJECTED	$ 38,174	$ 21,440	$ 5,964,039	$ 5,783	$ 1,214,575	$ 6,084	$ -	$ 7,250,095		$ 444,353	6.13%
FEB ACTUAL	$ 189,031	$ 33,629	$ 6,186,939	$ 6,378	$ 1,265,665	$ 12,806			$ 7,694,448	$ 1,398,547	YTD
MAR PROJECTED	$ 1,272,458	$ 163,065	$ 5,957,289	$ 5,783	$ 1,023,851	$ 1,660	$ -	$ 8,424,106		$ 184,649	2.19%
MAR ACTUAL	$ 1,217,366	$ 120,495	$ 6,005,531	$ 6,378	$ 1,242,498	$ 16,487			$ 8,608,755	$ 1,583,197	YTD
APR PROJECTED	$ 4,802,332	$ 80,284	$ 7,461,850	$ 5,783	$ 1,417,957	$ 15,000	$ -	$ 13,783,206		$ (634,017)	-4.60%
APR ACTUAL	$ 4,389,182	$ (10,496)	$ 7,265,882	$ 7,348	$ 1,481,259	$ 16,015			$ 13,149,189	$ 949,180	YTD
MAY PROJECTED	$ 571,706	$ 34,528	$ 4,015,448	$ 5,783	$ 1,550,281	$ 15,000	$ -	$ 6,192,746		$ (545,614)	-8.81%
MAY ACTUAL	$ 880,321	$ 72,676	$ 4,135,446	$ 6,378	$ 541,485	$ 10,827			$ 5,647,132	$ 403,566	YTD
JUN PROJECTED	$ 57,170	$ 59,144	$ 4,207,057	$ 5,783	$ 1,233,489	$ 15,000	$ -	$ 5,577,643		$ 990,660	17.76%
JUN ACTUAL	$ 55,429	$ 99,974	$ 4,187,000	$ 6,378	$ 2,206,311	$ 13,211			$ 6,568,303	$ 1,394,225	YTD
JUL PROJECTED	$ 57,170	$ 103,812	$ 8,826,213	$ 5,783	$ 1,233,489	$ 15,000	$ -	$ 10,241,467		$ 389,155	3.80%
JUL ACTUAL	$ 41,232	$ 166,702	$ 9,131,837	$ 6,378	$ 1,278,912	$ 5,561			$ 10,630,622	$ 1,783,380	YTD
AUG PROJECTED	$ 68,600	$ 77,672	$ 6,956,363	$ 2,888	$ 1,195,443	$ 15,000	$ -	$ 8,315,966		$ 64,777	0.78%
AUG ACTUAL	$ 101,423	$ 69,957	$ 7,313,316	$ 3,137	$ 882,046	$ 10,863			$ 8,380,743	$ 1,848,157	YTD
Total Projected	**$ 11,314,200**	**$ 799,328**	**$ 70,451,434**	**$ 66,495**	**$ 12,769,099**	**$ 144,082**	**$ -**	**$ 95,544,637**			
Adopted Budget	**$ 11,434,125**	**$ 1,155,679**	**$ 69,719,404**	**$ 66,000**	**$ 12,640,139**	**$ 83,000**	**$ -**	**$ 95,098,347**			
Variance	**$ (119,925)**	**$ (356,351)**	**$ 732,030**	**$ 495**	**$ 128,960**	**$ 61,082**	**$ -**	**$ 446,290**			
TOTAL ACTUAL	$ 11,345,972	$ 966,232	$ 71,534,214	$ 71,303	$ 13,307,455	$ 167,617	$ -	$ 97,392,794	**FORECAST ACTUAL**	**$**	**97,392,794**
% collected to PRO	100.28%	120.88%	101.54%	107.23%	104.22%	116.33%	#DIV/0!	101.93%			

NOTES:

LEGEND	**Above or within 2.00% of projection**	**Between 2.01% & 5.00% below**	**Below 5.01% of projection**

MONTHLY EXPENDITURE REPORT

MONTH	PROJ. P/R	ACTUAL P/R	PROJ. A/P	ACTUAL A/P	TOTAL		VARIANCE	
SEPTEMBER PROJECTED	$ 6,126,524		$ 2,586,688		$ 8,713,212	MONTHLY	$ -	0.00%
SEPTEMBER ACTUAL		$ 6,126,524		$ 2,586,688	$ 8,713,212	YTD	$ -	0.00%
OCTOBER PROJECTED	$ 6,374,849		$ 1,146,405		$ 7,521,254	MONTHLY	$ 0	0.00%
OCTOBER ACTUAL		$ 6,377,085		$ 1,144,170	$ 7,521,254	YTD	$ 0	0.00%
NOVEMBER PROJECTED	$ 6,551,785		$ 1,645,525		$ 8,197,310	MONTHLY	$ 584,836	7.13%
NOVEMBER ACTUAL		$ 7,198,857		$ 1,583,289	$ 8,782,146	YTD	$ 584,836	2.39%
DECEMBER PROJECTED	$ 5,730,537		$ 863,071		$ 6,593,608	MONTHLY	$ 134,322	2.04%
DECEMBER ACTUAL		$ 6,321,727		$ 406,203	$ 6,727,930	YTD	$ 719,158	2.32%
JANUARY PROJECTED	$ 6,169,985		$ 1,116,453		$ 7,286,438	MONTHLY	$ 181,229	2.49%
JANUARY ACTUAL		$ 6,237,812		$ 1,229,855	$ 7,467,667	YTD	$ 900,387	2.35%
FEBRUARY PROJECTED	$ 6,028,640		$ 1,044,884		$ 7,073,524	MONTHLY	$ 904,066	12.78%
FEBRUARY ACTUAL		$ 6,414,691		$ 1,562,899	$ 7,977,590	YTD	$ 1,804,453	3.98%
MARCH PROJECTED	$ 6,389,930		$ 1,232,821		$ 7,622,751	MONTHLY	$ (40,615)	-0.53%
MARCH ACTUAL		$ 6,440,002		$ 1,142,134	$ 7,582,136	YTD	$ 1,763,838	3.33%
APRIL PROJECTED	$ 6,239,124		$ 1,325,251		$ 7,564,375	MONTHLY	$ (123,369)	-1.63%
APRIL ACTUAL		$ 6,196,678		$ 1,244,328	$ 7,441,006	YTD	$ 1,640,469	2.71%
MAY PROJECTED	$ 6,753,928		$ 1,415,632		$ 8,169,560	MONTHLY	$ (176,491)	-2.16%
MAY ACTUAL		$ 6,837,101		$ 1,155,968	$ 7,993,069	YTD	$ 1,463,978	2.13%
JUNE PROJECTED	$ 6,482,792		$ 1,546,142		$ 8,028,934	MONTHLY	$ (182,818)	-2.28%
JUNE ACTUAL		$ 6,465,586		$ 1,380,530	$ 7,846,116	YTD	$ 1,281,160	1.67%
JULY PROJECTED	$ 6,701,132		$ 1,433,370		$ 8,134,502	MONTHLY	$ (283,102)	-3.48%
JULY ACTUAL		$ 6,763,536		$ 1,087,864	$ 7,851,400	YTD	$ 998,058	1.18%
AUGUST PROJECTED	$ 6,407,891		$ 2,686,488		$ 9,094,379	MONTHLY	$ 281,019	3.09%
AUGUST ACTUAL		$ 6,892,551		$ 2,482,846	$ 9,375,398	YTD	$ 1,279,077	1.36%
TOTAL PROJECTED	$ 75,957,117		$ 18,042,730		$ 93,999,847			
ADOPTED BUDGET	$ 74,391,445		$ 19,076,772		$ 93,468,217			
VARIANCE	$ (1,565,672)		$ 1,034,042		$ (531,630)			
TOTAL ACTUAL		$ 78,272,150		$ 17,006,774	$ 95,278,924	**FORECAST ACT**	**$**	**95,278,924**
% spent to projected		103.05%		94.26%	101.36%			

Notes:

LEGEND	Below or within 2.00%	Between 2.01% & 5.00% above	Above 5.01% of projection

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MONTHLY ENDING FUND BALANCE REPORT

DATE		Revenue	Expenditure	Ending Fund Balance	Variance		EFB Monthly Projection for Year End
Beginning Fund Balance (Projected)				$ 6,879,949			
Beginning Fund Balance (Actual)				$ 8,754,173			
September	PROJECTED	$ 6,202,755	$ 8,713,212	$ 4,369,492			
	ACTUAL	$ 6,202,755	$ 8,713,212	$ 6,243,716	$ 1,874,224	42.89%	10.96%
October	PROJECTED	$ 9,774,909	$ 7,521,254	$ 6,623,147			
	ACTUAL	$ 9,908,131	$ 7,521,254	$ 8,630,592	$ 2,007,445	30.31%	11.10%
November	PROJECTED	$ 5,614,117	$ 8,197,310	$ 4,039,954			
	ACTUAL	$ 5,114,307	$ 8,782,146	$ 4,962,754	$ 922,800	22.84%	9.94%
December	PROJECTED	$ 7,203,955	$ 6,593,608	$ 4,650,301			
	ACTUAL	$ 8,438,853	$ 6,727,930	$ 6,673,677	$ 2,023,376	43.51%	11.12%
January	PROJECTED	$ 6,963,672	$ 7,286,438	$ 4,327,535			
	ACTUAL	$ 7,049,557	$ 7,467,667	$ 6,255,566	$ 1,928,031	44.55%	11.01%
February	PROJECTED	$ 7,250,095	$ 7,073,524	$ 4,504,106			
	ACTUAL	$ 7,694,448	$ 7,977,590	$ 5,972,424	$ 1,468,318	32.60%	12.17%
March	PROJECTED	$ 8,424,106	$ 7,622,751	$ 5,305,461			
	ACTUAL	$ 8,608,755	$ 7,582,136	$ 6,999,044	$ 1,693,583	31.92%	12.41%
April	PROJECTED	$ 13,783,206	$ 7,564,375	$ 11,524,292			
	ACTUAL	$ 13,149,189	$ 7,441,006	$ 12,707,227	$ 1,182,935	10.26%	11.87%
May	PROJECTED	$ 6,192,746	$ 8,169,560	$ 9,547,478			
	ACTUAL	$ 5,647,132	$ 7,993,069	$ 10,361,290	$ 813,812	8.52%	11.48%
June	PROJECTED	$ 5,577,643	$ 8,028,934	$ 7,096,187			
	ACTUAL	$ 6,568,303	$ 7,846,116	$ 9,083,476	$ 1,987,289	28.01%	12.72%
July	PROJECTED	$ 10,241,467	$ 8,134,502	$ 9,203,152			
	ACTUAL	$ 10,630,622	$ 7,851,400	$ 11,862,698	$ 2,659,546	29%	13.43%
August	PROJECTED	$ 8,315,966	$ 9,094,379	$ 8,424,739			
	ACTUAL	$ 8,380,743	$ 9,375,398	$ 10,868,043	$ 2,443,304	29.00%	13.20%
PRELIMINARY PROJECTED EFB		**$ 95,544,637**	**$ 93,999,847**	**$ 8,424,739**			8.89%
ACTUALS TO DATE		**$ 97,392,794**	**$ 95,278,924**				
FORECASTED ACTUALS*		**$97,392,794**	**$95,278,924**	**$10,068,043**	**YEAR END PROJECTION**		10.57%

Monthly Variance	**Above or within 2.00% of projection**	**Between 2.01% & 5.00% below projection**	**Below 5.01% of projection**
Yr End Projection	**Above 8.00%**	**Between 6.00% to 7.99%**	**Below 6.00%**

*Calculated using actuals through the current month and projected revenue and expenditures for future months. Includes August Maint Res Transfer of $800K

VISION 2030

606

SCHOOL BOARD INITIATIVE PRESENTATIONS

STRATEGIES 3 & 5

Goals & Strategies

MISSION

In partnership with families and community, Walla Walla Public Schools ensures a culture of equity and belonging, where every student achieves ambitious levels of learning through relevant and rigorous educational experiences.

Walla Walla Public Schools
Developing Washington's Most Sought-After Graduates

Goal 1: Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	▪ Collective Efficacy ▪ A Guaranteed and Viable Curriculum ▪ Proficient Elementary Readers

Goal 2: Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

Goal 3: Culture of Equity and Belonging

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS ensures an equitable educational experience where all students feel a sense of belonging and voice as they develop connections with peers and adults in a safe, supportive, inclusive and culturally responsive learning environment.	▪ A Culture of Belonging and Equity ▪ Implementing Inclusionary Practices ▪ Ensuring a Culture of Support and Collective Accountability

Goal 4: Partnership with Family and Community

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS leverages family, community and business partnerships in order to enhance student learning and their educational experience.	▪ Maximizing Family Engagement ▪ Assuring Community Involvement and Volunteerism

Initiative Planning Development and Approval Timeline

		Plan Review and Board Approval Timeline
Goal #1	Strategy #1 - Collective Efficacy: Ensure a productive climate of collaboration (PLC's) where all instructional staff analyze student data, are encouraged to take risks, learn from successes/failures and continue to refine professional practices in order to maximize student learning.	June 6
	Strategy #2 - Guaranteed and Viable Curriculum: Ensure district-wide Promise Standards are taught, assessed and met for every student.	August 15
	Strategy #3 - Proficient Elementary Readers: Successfully train staff and implement science of reading literacy strategies, interventions and supports to ensure students are fluent readers in their language of instruction by the end of 2nd grade.	October 24
Goal #2	Strategy #4 - Post Secondary Plans: Enhance, refine and promote PK-12 pathways and opportunities. Develop student advocacy and ownership towards their post-secondary plans and aspirations.	September 5
	Strategy #5 - Access to Rigorous Curriculum and Courses: Intentionally advocate and promote student access to rigorous and challenging courses by expanding opportunities to accelerate learning for all students. Increase integrated honors course offerings, where students access advanced levels of rigor while in a traditional setting. Increase access to and the number of college credit bearing classes and industry certifications available.	October 24
	Strategy #6 - Developing 21st Century Skills: Collaborate with industry and post-secondary partners to develop and implement a PK-12 set of 21st Century Skill Promise Standards. Expand student internship opportunities and exposure through increased partnerships with business and industry.	September 5
Goal #3	Strategy #7 - A Culture of Belonging and Equity: Continue to promote, prioritize and celebrate "We All Belong Here" strategies. Prioritize and promote the building of positive adult-student relationships and connection. Implement culturally responsive practices and curriculum.	August 15
	Strategy #8 - Implementing Inclusionary Practices: Facilitate training, support and implementation of inclusionary practices and Universal Design for Learning in order to increase access and opportunity for all students.	June 6
	Strategy #9 - Ensuring a Culture of Support and Collective Accountability: In order to ensure a safe and supportive learning environment, all staff will implement PBIS (Positive Behavioral Interventions and Support) strategies, trauma-informed practices and building-level behavior plans with fidelity.	September 19
Goal #4	Strategy #10 -Maximizing Family and Community Involvement: Implement systems and opportunities to maximize family engagement with schools and each other. Increase two-way outreach, support and access to maximize family inclusion in their child's learning and post-secondary plans. Promote family involvement in after school activities/extra-curricular experiences.	September 19
	Strategy #11 - Advance systems, outreach and opportunities in order to increase volunteerism and community inclusion across our schools. Implement training and coordination to maximize effectiveness and the experience for volunteers and the schools/classrooms they serve.	June 6

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- Proficient Elementary Readers
  - "Successfully train staff and implement science of reading literacy strategies, interventions and supports to ensure students are fluent readers in their language of instruction by the end of 2nd grade" (Vision 2030)

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- Committee Makeup
  - Shannon Hand, Michelle Carpenter, Jacqueline Fisbeck, Angie Pedroza, Melissa Carter, Araceli Garcia, Suzann Rose, Laura James, Staci Humphreys, Nicole Hyatt, Brent Cummings, Judith Allison, Barb Casey, Christy Krutulis, Julie Perron
- Committee Process
  - The team met multiple times in the spring of 2023 to work through a collaborative process to develop this plan. First, we imagined a future in our district with all K-2 students progressing towards fluency and then meeting fluency by the end of 2nd grade. Then we brainstormed the actions, personnel and resources that would help us reach that goal. Next we collaborated to identify what would need to happen to make the strategy statement come true. The team reacted to an initial draft of the Implementation Framework and Action Plan before we made revisions to create this proposed plan.

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- Vision 2030 Stretch Goal: What will a successful, full implementation of this strategy look like?
  - By 2030, all students are reading at or above grade level in their language of instruction by the end of 2nd grade as a result of systematic and explicit structured literacy instruction. Students feel safe and confident in reading, writing and speaking as they build knowledge about the world.

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- What specific actions will need to occur to achieve the Vision 2030 stretch goal?
  - Science of reading kickoff summit
  - LETRS training (volume 1 and 2) for teachers, administrators and Teaching and Learning staff
  - Develop sub-committee for Spanish literacy
  - Develop Literacy Framework for ELA and SLA
  - Core curriculum materials review, pilot for 2024-25 adoption (K-5: English/Spanish)
  - Instructional coaching for teachers and paras

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- What specific resources or supports are needed?
  - LETRS Volume 1 online modules
  - LETRS Volume 2 online modules
    - LETRS Training $138K (paid for through multiple grants and funding streams)
  - District Literacy Specialist TOSA (identified and assigned)
  - Curriculum Materials Adoption
    - Release Days ($27K) to review and pilot
    - Curriculum materials adoption ($700K)

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- How will growth/success be measured, tracked and reported?
  - LETRS course completion data
  - DIBELS (English) 2nd Grade Composite - Spring target 60% for 23-24 based on fall data. Increases to 95% by 2030.
  - Lectura (Spanish) 2nd Grade Composite - Spring target 59% for 23-24 based on fall data. Increases to 95% by 2030.
  - Annual data report to school board (every June) with LETRS, DIBELS and Lectura performance data.

Vision 2030: Strategic Planning Implementation Framework and Action Plan

Goal: Ambitious Learning for All	Achieved Through: Proficient Elementary Readers	Committee Lead: Casey
Strategy Statement: Successfully train staff and implement science of reading literacy strategies, interventions and supports to ensure students are fluent readers in their language of instruction by the end of 2nd grade		
Committee Membership: Shannon Hand, Michelle Carpenter, Jacqueline Fisbeck, Angie Pedroza, Melissa Carter, Araceli Garcia, Suzann Rose, Laura James, Staci Humphreys, Nicole Hyatt, Brent Cummings, Judith Allison, Barb Casey, Christy Krutulis, Julie Perron		
Brief Description of Committee Work and Process: The team met three times in the spring of 2023 to work through a collaborative process to develop this plan. First, we imagined a future in our district with all K-2 students progressing towards fluency and then meeting fluency by the end of 2nd grade. Then we brainstormed the actions, personnel and resources that it would help us reach that goal. Next we collaborated to identify what would need to happen to make the strategy statement come true. The team reacted to an initial draft of the Implementation Framework and Action Plan before we made revisions to create this proposed plan.		
Vision 2030 Stretch Goal: What will a successful, full implementation of this strategy look like in 2030? By 2030, all students are reading at or above grade level in their language of instruction by the end of 2nd grade as a result of systematic and explicit structured literacy instruction. Students feel safe and confident in reading, writing and speaking as they build knowledge about the world.		

	2023-24 School Year	2024-25 School Year	2025-26 School Year	2026-2030 School Years
What specific actions will need to occur to achieve the Vision 2030 Stretch Goal?	• Science of reading kickoff summit • Cohort 2 complete Volume 1 LETRS training • Cohort 1 complete Volume 2 LETRS • K-5 Admin and T&L staff completes LETRS admin training • Develop sub-committee for Spanish literacy • Develop Literacy Framework for ELA and SLA • Core curriculum materials review, pilot for 2024-25 adoption (K-5: English/Spanish) • Instructional coaching for teachers and paras	• Cohort 3 complete LETRS Volume 1 • Cohort 2 complete Volume 2 LETRS training • Curriculum materials implementation • Training for paras • Instructional coaching for teachers and paras	• Cohort 3 complete LETRS Volume 2 • New K-2 teachers LETRS trained • Instructional coaching for teachers and paras • Common Proficiency Map development and unit plans	• New K-2 teachers LETRS Trained • Instructional coaching for teachers and paras
Who are the key personnel, people who will help lead this work?		District Literacy Specialist (TOSA), Principals, District staff, LETRS facilitators (district staff)		
What specific resources or supports are needed to accomplish the actions?	LETRS Volume 1 online modules LETRS Volume 2 online modules Release Days Materials to review and pilot	LETRS Volume 1 online modules LETRS Volume 2 online modules Release Days Materials for implementation	LETRS Volume 2 online modules Release Days	LETRS online modules as needed for new teachers
How will growth/success be measured, tracked and reported?	**Measured/Tracked** LETRS course completion data DIBELS 2nd Grade Composite- Spring target 60% Lectura 2nd Grade Composite - Spring target 59% **Reported** Annual data report to school board	**Measured/Tracked** LETRS course completion data DIBELS 2nd Grade Composite - Spring target 67% Lectura 2nd Grade Composite - Spring target 62% **Reported** Annual data report to school board	**Measured/Tracked** LETRS course completion data DIBELS 2nd Grade Composite - Spring target 74% Lectura 2nd Grade Composite - Spring target 68% **Reported** Annual data report to school board	**Measured/Tracked** LETRS course completion data 2026-27 DIBELS 2nd Grade Composite - Spring target 84% Lectura 2nd Grade Composite - Spring target 74% 2027-28 DIBELS 2nd Grade Composite - Spring target 88% Lectura 2nd Grade Composite - Spring target 80% 2028-29 DIBELS 2nd Grade Composite - Spring target 92% Lectura 2nd Grade Composite - Spring target 88% 2029-30 DIBELS 2nd Grade Composite - Spring target 95% Lectura 2nd Grade Composite - Spring target 95% **Reported** Annual data report to school board
Estimated funding necessary	District Literacy Specialist - $100,000 LETRS training $138,000 Materials Pilot - $27,000 Curriculum materials adoption $700,000	District Literacy Specialist - $100,000 LETRS training $61,000 Curriculum Materials Training - $80,000	District Literacy Specialist - $100,000 LETRS training $18,000	Cont'd Annually

Goal 1

Ambitious Learning for All

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS prioritizes a districtwide culture where staff collaborate with their peers to ensure high quality instruction, analyze and respond to student learning needs, and maintain a collective sense of urgency around high achievement for all.	■ Collective Efficacy ■ A Guaranteed and Viable Curriculum ■ Proficient Elementary Readers

- Questions?

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- Access to Rigorous Curriculum and Courses
  - "Intentionally advocate and promote student access to rigorous and challenging courses by expanding opportunities to accelerate learning for all students. Increase integrated honors course offerings, where students access advanced levels of rigor while in a traditional setting. Increase access to and the number of college credit bearing classes and industry certifications available" (Vision 2030).

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- Committee Makeup
  - Angie Gardea, Annie Yetmez, Beth Milligan, Carina Stillman, Carrie LaRoy, Casey Monahan, Christy Krutulis, Clayton Hudiburg, David Maxwell, Ilana James, Jerry Maher, Karen Ruzicka, Kate Van Cleve, Kris Duncan, Miki Joshua, Scott Kasenga, Shannon Harvey, Tom Porter, Yazmin Bahena

- Committee Process
  - The committee met numerous times since last spring. The committee reviewed current opportunities to access rigorous course work, and then compared the district's performance to that of the state on several measures. The committee worked in whole group and small group settings to finalize the plan proposed.

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

Vision 2030 Stretch Goal: What will a successful, full implementation of this strategy look like?

- Our vision is a partnership between families and the educational community where every student has equitable access to advanced learning and college level courses, relevant personalized pathways, and supportive environments that foster curiosity, growth and success for all.

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- What specific actions will need to occur to achieve the Vision 2030 stretch goal?
  - Elementary
    - Explore best practices and models of inclusive academic acceleration in elementary schools and then provide professional learning on inclusive academic acceleration.
    - Share learnings about best practices and models with principals, staff, school board and community, with recommendations.
    - Support the implementation of best practices for inclusive academic acceleration.
    - Promote opportunities to extend learning with students and families.
  - Middle School
    - Define and provide training for embedded honors instruction and reporting practices.
    - Enhance communications of embedded honors with students and families.
    - Identify instructional resources and course structures to support rigorous experiences for students.
    - Promote opportunities to earn high school credit in middle school.
    - Communicate accelerated pathways options in mathematics.
  - High School
    - Promote awareness of career pathways.
    - Research core content electives offering college credit courses and increased rigor through student interest.
    - Promote college credit offerings to middle/high school staff, students and families.
    - Promote equity of access to rigorous coursework through registration process, social media and teacher invitations.
    - Expand CiHS and core elective course offerings and courses that offer industry certifications.

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- What are embedded honors courses?
  - Classes consisting of a heterogeneous mix of students who are instructed in grade-level content/material while also being provided the support to scaffold and challenge their individual learning experience with an honors designation.
    - Students earn an honors designation by completing specific, pre-identified assignments/tasks that extend their learning within the core instructional materials/subject matter.

- What are the benefits of an embedded honors approach?
  - Removes barriers so ALL students have access to an honors/accelerated experience
  - Supported by research that shows the positive impact of mixed-ability grouping for both advanced and non-advanced learners
  - A best-practice model in support of inclusionary practices (e.g. choice board assignments)
  - Helps eliminate “tracking” of students that often locks students in on a specific path that is difficult to overcome as they progress into high school
  - Fosters a culture of high academic achievement for all students
  - Increases the level of discussion and inquiry in class – the level of rigorous thinking for all
  - Allows students and families a safe and supportive way to take risks and try a more challenging learning experience without fear of possibly having to change classes/schedules/teachers
  - Provides far greater flexibility in the master schedule
  - Supports in-building and cross-district collaboration around core and honors coursework

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- What specific resources or supports are needed?
  - Personnel/Programs
    - District Office Staff, Certificated Teachers, Highly Capable Teachers, School Counselors, Career Information Center Secretary, CTE Advisory Committees, Communication Department
  - Resources
    - Release time and additional hours ($15,000 stipends and $20,000 green sheet)
    - Promotional materials
    - Curriculum materials
    - Consultation services ($50,000 consulting contract)

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	▪ Post-Secondary Planning ▪ Access to Rigorous Curriculum and Courses ▪ Developing 21st Century Skills

- How will growth/success be measured, tracked and reported?
  - Annually analyze enrollment including minority and historically underrepresented students in honors, AP, and college credit bearing courses (report annually to the board)
  - EES family survey analysis
    - My student is challenged with a rigorous course of study at this school
  - EES student survey analysis
    - Student placement in advanced classes is not influenced by race, gender or socio-economic levels

Vision 2030: Strategic Planning Implementation Framework and Action Plan

Goal: Relevant and Rigorous Experience	Achieved Through: Access to Rigorous Curriculum and Courses	Committee Lead: Chris Gardea
Strategy Statements: Intentionally advocate and promote student access to rigorous and challenging courses by expanding opportunities to accelerate learning for all students. Increase integrated honors course offerings, where students access advanced levels of rigor while in a traditional setting. Increase access to and the number of college credit bearing classes and industry certifications available.		
Committee Membership: Angie Gardea, Annie Yetmez, Beth Milligan, Carina Stillman, Carrie LaRoy, Casey Monahan, Christy Krutulis, Clayton Hudiburg, David Maxwell, Ilana James, Jerry Maher, Karen Ruzicka, Kate Van Cleve, Kris Duncan, Miki Joshua, Scott Kasenga, Shannon Harvey, Tom Porter, Yazmin Bahena		
Brief Description of Committee Work and Process: The committee met multiple times since last spring. The committee reviewed current opportunities to access rigorous course work, and then compared the district's performance to that of the state on several measures. The committee worked in a whole group and small groups to finalize the plan proposed.		
Vision 2030 Stretch Goal: What will a successful, full implementation of this strategy look like in 2030? In 2030, our vision is a partnership between families and the educational community where every student has equitable access to advanced learning and college level courses, relevant personalized pathways, and supportive environments that foster curiosity, growth and success for all.		

	2023-24 School Year	2024-25 School Year	2025-26 School Year	2026-29 School Year
What specific actions will need to occur to achieve the Vision 2030 Stretch Goal?	Elementary -Explore best practices and models of inclusive academic acceleration in elementary schools. -Share learnings about best practices and models with principals, staff, school board, and community with recommendations. Middle School -Define and provide training for embedded honors instruction and reporting practices. -Identify instructional resources and course structures to support rigorous experiences for students. -Promote opportunities to earn high school credit in middle school. -Communicate accelerated pathways options in mathematics. High School -Promote awareness of career pathways. -Promote college credit offerings to middle/high school staff, students and families. -Promote equity of access to rigorous coursework through registration process, social media, and teacher invitations.	Elementary –Provide professional learning on inclusive academic acceleration. -Support the implementation of best practices for inclusive academic acceleration. -Promote opportunities to extend learning with students and families. Middle School -Refine embedded honors instruction and reporting practices. -Enhance communications of embedded honors with students and families. -Leverage inclusionary practices to increase access to rigorous experiences in embedded honors. High School -Research core content electives offering college credit courses or increased rigor through student interest. -Research additional opportunities for industry certifications. -Promote equity of access to rigorous coursework through registration process, social media, and teacher invitations.	Elementary -Provide coaching and support to classroom teachers to implement academic acceleration. Middle School -Provide support to embedded honors teachers to offer rigorous experiences for students. -Ongoing refinement and promotion of embedded honors and high school credit bearing courses. High School - Adjust current course offerings based on student interests. -Expand CiHS and core elective course offerings. -Expand courses that offer industry certifications. -Promote equity of access to rigorous coursework through registration process, social media, teacher invitations.	Elementary -Ongoing coaching and support to classroom teachers to provide academic acceleration. Middle School -Ongoing support to embedded honors teachers to provide rigorous experiences. -Ongoing refinement and promotion of embedded honors and high school credit bearing courses. High School -Ongoing alignment and refinement of course offerings. -Promote equity of access to rigorous coursework through registration process, social media, teacher invitations.

Who are the key personnel, people who will help lead this work?	District Office Staff, Certificated Teachers, High Capable Teachers, School Counselors, Career Information Center Secretary, CTE Advisory Committees, Communication Department
What specific resources or supports are needed to accomplish the above-described actions?	Release time, additional hours, promotional materials, curriculum materials, consultation services
How will growth/success be measured, tracked and reported?	Annually analyze enrollment for minority and historically underrepresented students in honors, AP, and college credit bearing courses (report annually to the board) EES family survey analysis - My student is challenged with a rigorous course of study at this school EES student survey analysis -Student placement in advanced classes is not influenced by race, gender or socio-economic levels
Estimated funding necessary	$15,000 stipends, $20,000 green sheets, $20,000 materials, $50,000 consulting/coaching

Goal 2

Relevant and Rigorous Experience

OUTCOME STATEMENT:	ACHIEVED THROUGH:
WWPS commits to ensuring all students will receive a relevant and rigorous educational experience, where every senior graduates with 21st century-skills and a post-secondary plan to enroll, enlist or attain gainful employment after high school.	■ Post-Secondary Planning ■ Access to Rigorous Curriculum and Courses ■ Developing 21st Century Skills

- Questions?

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

REPLACEMENT OF EXPIRING
EDUCATIONAL PROGRAMS & OPERATIONS LEVY

RESOLUTION NO. 17-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $15,063,022 IN 2024 FOR COLLECTION IN 2025, $15,665,543 IN 2025 FOR COLLECTION IN 2026, $16,292,164 IN 2026 FOR COLLECTION IN 2027, AND $16,943,851 IN 2027 FOR COLLECTION IN 2028, SAID EXCESS TAXES TO PAY PART OF THE COSTS OF EDUCATIONAL PROGRAMS AND OPERATIONS SUPPORT OF THE DISTRICT; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

ADOPTED: OCTOBER 24, 2023

PREPARED BY:

PACIFICA LAW GROUP LLP
Seattle, Washington

RESOLUTION NO. 17-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $15,063,022 IN 2024 FOR COLLECTION IN 2025, $15,665,543 IN 2025 FOR COLLECTION IN 2026, $16,292,164 IN 2026 FOR COLLECTION IN 2027, AND $16,943,851 IN 2027 FOR COLLECTION IN 2028, SAID EXCESS TAXES TO PAY PART OF THE COSTS OF EDUCATIONAL PROGRAMS AND OPERATIONS SUPPORT OF THE DISTRICT; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, pursuant to RCW 84.52.053, the qualified electors of the District may by a simple majority vote to authorize enrichment levies of up to four years to support the District's educational programs and operations; and

WHEREAS, calendar year 2024 is the last collection year for the District's current enrichment levy, which provides funding for the District's educational programs and operations not funded by the State; and

WHEREAS, with the expiration of the District's current enrichment levy, funds available in the District's General Fund, including sub-funds thereof, during the school years of 2024–2025 through 2028–2029 will be insufficient to pay for necessary educational programs and operations and properly meet the educational and safety needs of the students attending District schools; and

WHEREAS, to provide adequately for the District's educational programs and operations, the Board of Directors of the District (the "Board") deems it necessary to levy taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, such levy to be made for four years commencing in 2024 for collection in the school years 2024–2025 through 2028–2029, inclusive, as authorized by Article VII, Section 2 of the State Constitution and RCW 84.52.053, with such excess taxes to be deposited into the District's General Fund, or a sub-fund thereof, and used to continue funding such educational programs and operations; and

WHEREAS, the Constitution and laws of the State require that the question of whether the District may levy such excess taxes be submitted to the qualified electors of the District for their approval or rejection; and

WHEREAS, the Board deems it necessary and advisable to place the proposition for such excess tax levies before the District's voters at an election to be held within the District on February 13, 2024 (the "Proposition");

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. The Board hereby finds and declares that the best interests of the District's students and other residents require submission to the District's voters, for their approval or rejection, the Proposition of whether the District shall levy excess property taxes upon all of the taxable property within the District to provide funding for continued educational programs and operations of the District including, but not limited to, honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff.

Upon approval by the voters of the Proposition substantially in the form set forth below, the District may (1) use the proceeds of said levies during the 2024–2025, 2025–2026, 2026–2027, 2027–2028 and 2028–2029 school years to provide educational programs, enhancements and operations funding for the District, and fund other eligible activities in accordance with the Basic Education Funding Act (Laws of 2017, 3d Spec. Sess., ch. 13), as amended and supplemented, and other applicable law.

Section 2. Upon approval by the voters of the Proposition, the District will levy the following taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, for deposit into the District's General Fund:

A. $15,063,022, said levy to be made in 2024 for collection in 2025;

B. $15,665,543, said levy to be made in 2025 for collection in 2026;

C. $16,292,164, said levy to be made in 2026 for collection in 2027; and

D. $16,943,851, said levy to be made in 2027 for collection in 2028.

The exact levy rate and the actual amounts collected shall be adjusted based upon (1) the actual assessed value of the property within the District at the time of the levy, and (2) the legal limit on the levy rate and levy amount applicable at the time of the levy. At this time, based upon information provided by the Walla Walla County Assessor's Office, the estimated levy rate for each of the four collection years is $2.50 per $1,000 of assessed valuation.

Section 3. The Board hereby requests that the Walla Walla County Auditor, as *ex officio* supervisor of elections in Walla Walla County, Washington (the "Auditor"), assume jurisdiction of, call, and conduct a special election to be held within the District on February 13, 2024, and submit to the qualified electors of the District the Proposition hereinafter set forth. The Auditor shall conduct the election by mail or as the Auditor otherwise requires.

The Board hereby authorizes and directs the Secretary of the Board (the "Secretary") to certify the Proposition to the Auditor in the following form:

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140

REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

The Board hereby directs the Secretary to deliver a certified copy of this resolution to the Auditor no later than December 15, 2023, and to perform such other duties as are necessary or required by law to submit the Proposition to voters.

Section 4. The Board hereby designates the following as the individuals to whom the Auditor shall provide notice of the exact language of the ballot title, as required by RCW 29A.36.080: (a) the Secretary and District Superintendent (Dr. Wade Smith), telephone: (509) 526-6714; email: wsmith@wwps.org, and (b) the District's Bond Counsel, Pacifica Law Group LLP (Faith Pettis), telephone: (206) 245-1700; email: faith.pettis@pacificalawgroup.com. The Board authorizes the Secretary to approve changes to the ballot title, if any, as the Auditor or the Walla Walla County Prosecuting Attorney deems necessary.

Section 5. The Board authorizes and directs the President of the Board, the Secretary, and the District's Director of Fiscal Services to take such actions and to execute such documents as in their judgment may be necessary or desirable to effectuate the provisions of this resolution, and to perform such other duties as are necessary or required by law to submit to the District's voters

at the aforesaid special election, for their approval or rejection, the Proposition of whether the District shall levy annual excess property taxes to pay costs of District educational programs and services. The Board hereby ratifies and confirms all actions of the District or its staff or officers taken prior to the effective date of this resolution and consistent with the objectives and terms of this resolution.

Section 6. In the event that any provision of this resolution shall be held to be invalid, such invalidity shall not affect or invalidate any other provision of this resolution, but shall be construed and enforced as if such invalid provision had not been contained herein; provided, however, that any provision which shall for any reason be held to be invalid shall be deemed to be in effect to the extent permitted by law.

Section 7. This resolution shall become effective immediately upon its adoption.

ADOPTED by the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, at a regular meeting thereof, held on the 24th day of October, 2023.

WALLA WALLA SCHOOL DISTRICT NO. 140,
Walla Walla County, Washington

_____
Derek Sarley, School Board President

ATTEST:

_____
Dr. Wade Smith
Secretary to the Board of Directors

CERTIFICATE

I, the undersigned, Secretary of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, (the "District") and keeper of the records of the Board of Directors (the "Board"), DO HEREBY CERTIFY:

1. That the attached resolution is a true and correct copy of Resolution No. 17-2023 of the Board (the "Resolution"), duly adopted at a regular meeting thereof held on the 24th day of October, 2023.

2. That said meeting was duly convened and held in all respects in accordance with law, and to the extent required by law, due and proper notice of such meeting was given; that a legal quorum was present throughout the meeting and a legally sufficient number of members of the Board voted in the proper manner for the adoption of the Resolution; that all other requirements and proceedings incident to the proper adoption of the Resolution have been duly fulfilled, carried out and otherwise observed; and that I am authorized to execute this certificate.

IN WITNESS WHEREOF, I have hereunto set my hand this 24th day of October, 2023.

_____

Dr. Wade Smith, Secretary to the Board of Directors

OFFICIAL BALLOT
WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON
February 13, 2024

INSTRUCTIONS TO VOTERS: To vote in favor of the following proposition, place a cross (X) in the square opposite the words "YES"; to vote against the following proposition, place a cross (X) in the square opposite the words "NO."

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140
REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

NOTICE

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

February 13, 2024

NOTICE IS HEREBY GIVEN that on February 13, 2024, a special election will be held by mail ballot in the above-named school district for the submission to the qualified electors of said school district of the following proposition:

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140
REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

Walla Walla County Auditor

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

RESOLUTION NO. 18-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $2,289,661 IN 2024 FOR COLLECTION IN 2025, $2,381,247 IN 2025 FOR COLLECTION IN 2026, $2,476,497 IN 2026 FOR COLLECTION IN 2027, $2,550,792 IN 2027 FOR COLLECTION IN 2028, $2,601,808 IN 2028 FOR COLLECTION IN 2029, AND $2,653,844 IN 2029 FOR COLLECTION IN 2030, SAID EXCESS TAXES TO SUPPORT OUTDOOR ATHLETIC AND ACTIVITY UPDATES TO MEET THE CURRENT NEEDS OF DISTRICT STUDENTS; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

ADOPTED: OCTOBER 24, 2023

PREPARED BY:

PACIFICA LAW GROUP LLP
Seattle, Washington

RESOLUTION NO. 18-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $2,289,661 IN 2024 FOR COLLECTION IN 2025, $2,381,247 IN 2025 FOR COLLECTION IN 2026, $2,476,497 IN 2026 FOR COLLECTION IN 2027, $2,550,792 IN 2027 FOR COLLECTION IN 2028, $2,601,808 IN 2028 FOR COLLECTION IN 2029, AND $2,653,844 IN 2029 FOR COLLECTION IN 2030, SAID EXCESS TAXES TO SUPPORT OUTDOOR ATHLETIC AND ACTIVITY UPDATES TO MEET THE CURRENT NEEDS OF DISTRICT STUDENTS; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, pursuant to RCW 84.52.053, the qualified electors of the District may by a simple majority vote to authorize capital projects levies to support updates like those identified by the Outdoor Athletic and Activity Facilities Committee; and

WHEREAS, the District's outdoor athletic and activity facilities require repair, modernization and updates to meet current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming (as further defined herein, the "Projects"); and

WHEREAS, funds available to the District are not sufficient to enable the District to implement such Projects; and

WHEREAS, to provide for the identified updates and improvements to outdoor athletic and activity spaces, the Board of Directors of the District (the "Board") deems it necessary to levy taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, such levy to be made for six years commencing in 2024 for collection in the school years 2024–2025 through 2030–2031, inclusive, as authorized by Article VII, Section 2 of the State Constitution and RCW 84.52.053, with such excess taxes to be deposited into the District's Capital Projects Fund, or a sub-fund thereof, and used to pay for a portion of the Projects; and

WHEREAS, the Constitution and laws of the State require that the question of whether the District may levy such excess taxes be submitted to the qualified electors of the District for their ratification or rejection; and

WHEREAS, the Board deems it necessary and advisable to place the proposition for such excess tax levies before the District's voters at an election to be held within the District on February 13, 2024 (the "Proposition");

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. The Board hereby finds and declares that the best interests of the District's students and other residents require the District to carry out the Projects as hereinafter provided, at the time or times and in the order deemed most necessary and advisable by the Board.

Section 2. Upon approval by the voters of the Proposition in substantially the form set forth below, the Projects the District will finance with proceeds from the excess property tax levies will include:

- Replacement of Walla Walla High School's 60-year-old tennis courts;
- Installation of an all-weather track at Pioneer Middle School for athlete, school and community use;
- Repair of the 43-year-old tennis courts (Chubb Courts) and resurfacing of the 20-year-old track at Garrison Middle School;
- Install high-quality artificial turf playing surfaces and field lighting (low spill/low glare) in order to maximize utilization, participation and post-season play at both the Klicker and Hayner Park fields at Wa-Hi
- Install outdoor lighting (low spill/low glare) in order to minimize instructional loss and maximize family participation for baseball and softball players
- Install elevated bleachers with ADA access at the Klicker Track and Field site for soccer, football, marching band and track and field spectators
- Provide adequate access to restrooms and changing rooms for high school athletes and concessions amenities for spectators
- Construction of a Junior Army Reserve Officers' Training Corp (JROTC) obstacle course at Walla Walla High School for use by students, first responders, and community members; and
- Construction of a safe throwing events area at the Walla Walla High School Klicker track facility.

The District shall make other capital project expenditures as the Board finds necessary, and may incur indebtedness for the foregoing purposes through the issuance of short-term obligations as authorized by Chapter 39.50 RCW.

The District shall acquire, construct, equip and make other capital improvements to the District's outdoor facilities, all as the Board finds necessary; provided that such funds may only be used to support the updates and improvements identified by the Outdoor Athletic and Activity Facilities Committee.

Incidental costs incurred in connection with carrying out and accomplishing the foregoing shall be deemed part of the Projects. Such costs shall include, but are not limited to: payments for fiscal and legal expenses; establishing and funding accounts; necessary and related engineering, architectural, planning, consulting, permitting, inspection and testing costs; site improvement and demolition costs; and costs for other similar activities or purposes, all as deemed necessary and advisable by the Board and permitted by law.

The Projects, or any portion or portions thereof, shall be acquired or made insofar as is practicable with available money and in such order of time as shall be deemed necessary and advisable by the Board. The Board shall determine the application of available money between the various parts of the Projects so as to accomplish, as near as may be, all of the Projects. The Board shall determine the exact order, extent and specifications for the Projects. The District's architects and engineers will prepare and file with the District plans and specifications more fully describing the Projects.

If the District shall determine that it has become impracticable to accomplish any of such Projects or portions thereof by reason of changed conditions or needs, incompatible development, costs substantially in excess of those estimated, or acquisition by a superior governmental authority, the District shall not be required to accomplish such improvement and may apply levy proceeds as set forth in this section. If any or all of the Projects have been completed, or their completion duly provided for, or their completion found to be impractical, the District may apply the levy proceeds or any portion thereof to other portions of the Projects, as the District in its discretion shall determine. Notwithstanding any provision of this resolution to the contrary, levy proceeds may only be used to support the construction, modernization or remodeling of outdoor athletic and activity facilities.

Section 3. The Board hereby finds and declares that the best interests of the District's students and other residents require submission to the District's voters, for their approval or rejection, the proposition of whether the District shall levy excess property taxes upon all of the taxable property within the District in order to provide funding for the Projects. Upon approval by the voters of the Proposition in substantially the form set forth below, the District will levy the following taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, for deposit in the District's Capital Projects Fund:

A. $2,289,661, said levy to be made in 2024 for collection in 2025;
B. $2,381,247, said levy to be made in 2025 for collection in 2026;
C. $2,476,497, said levy to be made in 2026 for collection in 2027;
D. $2,550,792, said levy to be made in 2027 for collection in 2028;
E. $2,601,808, said levy to be made in 2028 for collection in 2029; and
F. $2,653,844, said levy to be made in 2029 for collection in 2030.

The exact levy rate and the actual amounts collected shall be adjusted based upon the actual assessed value of the property within the District at the time of the levy. At this time, based upon information provided by the Walla Walla County Assessor's Office, the estimated levy rate for each of the six collection years is $0.38 per $1,000 of assessed valuation.

Section 4. The Board hereby requests that the Walla Walla County Auditor, as *ex officio* supervisor of elections in Walla Walla County, Washington (the "Auditor"), assume jurisdiction of, call, and conduct a special election to be held within the District on February 13, 2024, and submit to the qualified electors of the District the Proposition hereinafter set forth. The Auditor shall conduct the election by mail or as the Auditor otherwise requires.

The Board hereby authorizes and directs the Secretary of the Board (the "Secretary") to certify the Proposition to the Auditor in the following form:

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

The Board hereby directs the Secretary to deliver a certified copy of this resolution to the Auditor no later than December 15, 2023, and to perform such other duties as are necessary or required by law to submit the Proposition to voters.

Section 5. The Board hereby designates the following as the individuals to whom the Auditor shall provide notice of the exact language of the ballot title, as required by RCW 29A.36.080: (a) the Secretary and District Superintendent (Dr. Wade Smith), telephone: (509) 526-6714; email: wsmith@wwps.org, and (b) the District's Bond Counsel, Pacifica Law Group LLP (Faith Pettis), telephone: (206) 245-1700; email: faith.pettis@pacificalawgroup.com. The Board authorizes the Secretary to approve changes to the ballot title, if any, as the Auditor or the Walla Walla County Prosecuting Attorney deems necessary.

Section 6. The Board authorizes and directs the President of the Board, the Secretary, and the District's Director of Fiscal Services to take such actions and to execute such documents as in their judgment may be necessary or desirable to effectuate the provisions of this resolution, and to perform such other duties as are necessary or required by law to submit to the District's voters at the aforesaid special election, for their approval or rejection, the Proposition of whether the District shall levy annual excess property taxes to pay costs of the Projects. The Board hereby ratifies and confirms all actions of the District or its staff or officers taken prior to the effective date of this resolution and consistent with the objectives and terms of this resolution.

Section 7. In the event that any provision of this resolution shall be held to be invalid, such invalidity shall not affect or invalidate any other provision of this resolution, but shall be construed and enforced as if such invalid provision had not been contained herein; provided, however, that any provision which shall for any reason be held to be invalid shall be deemed to be in effect to the extent permitted by law.

Section 8. This resolution shall become effective immediately upon its adoption.

ADOPTED by the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, at a regular meeting thereof, held on the 24th day of October, 2023.

WALLA WALLA SCHOOL DISTRICT NO. 140,
Walla Walla County, Washington

_____
Derek Sarley, School Board President

ATTEST:

_____
Dr. Wade Smith
Secretary to the Board of Directors

CERTIFICATE

I, the undersigned, Secretary of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, (the "District") and keeper of the records of the Board of Directors (the "Board"), DO HEREBY CERTIFY:

1. That the attached resolution is a true and correct copy of Resolution No. 18-2023 of the Board (the "Resolution"), duly adopted at a regular meeting thereof held on the 24th day of October, 2023.

2. That said meeting was duly convened and held in all respects in accordance with law, and to the extent required by law, due and proper notice of such meeting was given; that a legal quorum was present throughout the meeting and a legally sufficient number of members of the Board voted in the proper manner for the adoption of the Resolution; that all other requirements and proceedings incident to the proper adoption of the Resolution have been duly fulfilled, carried out and otherwise observed; and that I am authorized to execute this certificate.

IN WITNESS WHEREOF, I have hereunto set my hand this 24th day of October, 2023.

_____

Dr. Wade Smith, Secretary to the Board of Directors

OFFICIAL BALLOT
WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON
February 13, 2024

INSTRUCTIONS TO VOTERS: To vote in favor of the following proposition, place a cross (X) in the square opposite the words "YES"; to vote against the following proposition, place a cross (X) in the square opposite the words "NO."

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

NOTICE

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

February 13, 2024

NOTICE IS HEREBY GIVEN that on February 13, 2024, a special election will be held by mail ballot in the above-named school district for the submission to the qualified electors of said school district of the following proposition:

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

Walla Walla County Auditor

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

RESOLUTION #19-2023
October 24, 2023

A RESOLUTION of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, expressing support for passage of the District's Proposition No. 1 (Replacement of Expiring Educational Programs & Operations Levy) and Proposition No. 2 (Capital Projects Levy to Update Outdoor Athletic and Activity Facilities), to be submitted to the District's voters at the February 13, 2024 election; and making related findings.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, calendar year 2024 is the last year of collection for the District's current four-year enrichment levy, which provides funding for the District's educational programs & operations (EP&O) not funded by the State; and

WHEREAS, every four years the Walla Walla community must renew the EP&O levy to continue ensuring essential programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff; and

WHEREAS, the Walla Walla community, for well over half a century, has continued to renew the EP&O levy to ensure a high quality, safe and robust education for the students attending District schools; and

WHEREAS, on October 24, 2023, the Board of Directors of the District (the "Board") adopted Resolution No. 17-2023, authorizing the submission of a ballot proposition ("Proposition No. 1) to the District's voters at the February 13, 2024 election, which, if approved by voters, would authorize the District to levy excess property taxes, replacing an expiring levy, to support educational programs and operations not funded by the State's statutory program of basic education; and

WHEREAS, the District's outdoor athletic and activity facilities require updates to meet current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming; and

WHEREAS, on October 24, 2023, the Board adopted Resolution No. 18-2023, authorizing the submission of a second ballot proposition to the District's voters at the February 13, 2024 election, which, if approved by voters, would authorize the District to levy excess property taxes to provide funding for improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming ("Proposition No. 2"); and

WHEREAS, RCW 42.17A.555 provides that members of an elected board, including a school district board, may take action at an open public meeting to express support for a ballot proposition as long as (1) any required notice of the meeting includes the title and number of the ballot proposition, and (2) members of the board and the public are afforded an approximately equal opportunity for the expression of an opposing view; and

WHEREAS, in accordance with RCW 42.17A.555, the Board desires to express its formal support for passage of Proposition No. 1 and Proposition No. 2;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. Findings. As set forth in Resolution No. 17-2023, the Board finds and reaffirms the best interests of the District's students and other residents require the District renew its expiring enrichment levy to provide funds necessary for educational programs and operations not funded by the State's statutory program of basic education, including honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff. In addition, as set forth in Resolution No. 18-2023, the Board finds and reaffirms the best interests of the District's students and other residents require the District carry out projects to update the District's outdoor athletic and activity facilities (as further described in said resolution) to provide adequately for current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming, and that a capital levy is necessary and advisable to provide the funds required for these improvements.

The Board further finds that it has satisfied the procedural requirements of RCW 42.17A.555 in passing this resolution; specifically, (1) on October 24, 2023, the Board held an open public meeting at which the Board discussed and voted upon this resolution; (2) the notice required for this meeting included the designation, "Proposition No. 1; Walla Walla School District No. 140; Replacement of Expiring Educational Programs & Operations Levy" and "Proposition No. 2; Walla Walla School District No. 140; Capital Projects Levy to Update Outdoor Athletic and Activity Facilities"; and (3) at the meeting, Board members and the public were afforded an equal opportunity to express an opposing view, and the Board heard all who wished to speak.

Section 2. Expression of Support. Based upon the findings set forth above, and pursuant to RCW 42.17A.555, the Board hereby expresses its support for passage of Proposition No. 1 and Proposition No. 2.

Section 3. Effective Date. This resolution shall become effective immediately upon its adoption.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

_____ ATTEST: _____

Derek Sarley, School Board President

Dr. Wade Smith, Superintendent
and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

REPLACEMENT OF EXPIRING
EDUCATIONAL PROGRAMS & OPERATIONS LEVY

RESOLUTION NO. 17-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $15,063,022 IN 2024 FOR COLLECTION IN 2025, $15,665,543 IN 2025 FOR COLLECTION IN 2026, $16,292,164 IN 2026 FOR COLLECTION IN 2027, AND $16,943,851 IN 2027 FOR COLLECTION IN 2028, SAID EXCESS TAXES TO PAY PART OF THE COSTS OF EDUCATIONAL PROGRAMS AND OPERATIONS SUPPORT OF THE DISTRICT; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

ADOPTED: OCTOBER 24, 2023

PREPARED BY:

PACIFICA LAW GROUP LLP
Seattle, Washington

RESOLUTION NO. 17-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $15,063,022 IN 2024 FOR COLLECTION IN 2025, $15,665,543 IN 2025 FOR COLLECTION IN 2026, $16,292,164 IN 2026 FOR COLLECTION IN 2027, AND $16,943,851 IN 2027 FOR COLLECTION IN 2028, SAID EXCESS TAXES TO PAY PART OF THE COSTS OF EDUCATIONAL PROGRAMS AND OPERATIONS SUPPORT OF THE DISTRICT; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, pursuant to RCW 84.52.053, the qualified electors of the District may by a simple majority vote to authorize enrichment levies of up to four years to support the District's educational programs and operations; and

WHEREAS, calendar year 2024 is the last collection year for the District's current enrichment levy, which provides funding for the District's educational programs and operations not funded by the State; and

WHEREAS, with the expiration of the District's current enrichment levy, funds available in the District's General Fund, including sub-funds thereof, during the school years of 2024–2025 through 2028–2029 will be insufficient to pay for necessary educational programs and operations and properly meet the educational and safety needs of the students attending District schools; and

WHEREAS, to provide adequately for the District's educational programs and operations, the Board of Directors of the District (the "Board") deems it necessary to levy taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, such levy to be made for four years commencing in 2024 for collection in the school years 2024–2025 through 2028–2029, inclusive, as authorized by Article VII, Section 2 of the State Constitution and RCW 84.52.053, with such excess taxes to be deposited into the District's General Fund, or a sub-fund thereof, and used to continue funding such educational programs and operations; and

WHEREAS, the Constitution and laws of the State require that the question of whether the District may levy such excess taxes be submitted to the qualified electors of the District for their approval or rejection; and

WHEREAS, the Board deems it necessary and advisable to place the proposition for such excess tax levies before the District's voters at an election to be held within the District on February 13, 2024 (the "Proposition");

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. The Board hereby finds and declares that the best interests of the District's students and other residents require submission to the District's voters, for their approval or rejection, the Proposition of whether the District shall levy excess property taxes upon all of the taxable property within the District to provide funding for continued educational programs and operations of the District including, but not limited to, honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff.

Upon approval by the voters of the Proposition substantially in the form set forth below, the District may (1) use the proceeds of said levies during the 2024–2025, 2025–2026, 2026–2027, 2027–2028 and 2028–2029 school years to provide educational programs, enhancements and operations funding for the District, and fund other eligible activities in accordance with the Basic Education Funding Act (Laws of 2017, 3d Spec. Sess., ch. 13), as amended and supplemented, and other applicable law.

Section 2. Upon approval by the voters of the Proposition, the District will levy the following taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, for deposit into the District's General Fund:

A. $15,063,022, said levy to be made in 2024 for collection in 2025;

B. $15,665,543, said levy to be made in 2025 for collection in 2026;

C. $16,292,164, said levy to be made in 2026 for collection in 2027; and

D. $16,943,851, said levy to be made in 2027 for collection in 2028.

The exact levy rate and the actual amounts collected shall be adjusted based upon (1) the actual assessed value of the property within the District at the time of the levy, and (2) the legal limit on the levy rate and levy amount applicable at the time of the levy. At this time, based upon information provided by the Walla Walla County Assessor's Office, the estimated levy rate for each of the four collection years is $2.50 per $1,000 of assessed valuation.

Section 3. The Board hereby requests that the Walla Walla County Auditor, as *ex officio* supervisor of elections in Walla Walla County, Washington (the "Auditor"), assume jurisdiction of, call, and conduct a special election to be held within the District on February 13, 2024, and submit to the qualified electors of the District the Proposition hereinafter set forth. The Auditor shall conduct the election by mail or as the Auditor otherwise requires.

The Board hereby authorizes and directs the Secretary of the Board (the "Secretary") to certify the Proposition to the Auditor in the following form:

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140

REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

The Board hereby directs the Secretary to deliver a certified copy of this resolution to the Auditor no later than December 15, 2023, and to perform such other duties as are necessary or required by law to submit the Proposition to voters.

Section 4. The Board hereby designates the following as the individuals to whom the Auditor shall provide notice of the exact language of the ballot title, as required by RCW 29A.36.080: (a) the Secretary and District Superintendent (Dr. Wade Smith), telephone: (509) 526-6714; email: wsmith@wwps.org, and (b) the District's Bond Counsel, Pacifica Law Group LLP (Faith Pettis), telephone: (206) 245-1700; email: faith.pettis@pacificalawgroup.com. The Board authorizes the Secretary to approve changes to the ballot title, if any, as the Auditor or the Walla Walla County Prosecuting Attorney deems necessary.

Section 5. The Board authorizes and directs the President of the Board, the Secretary, and the District's Director of Fiscal Services to take such actions and to execute such documents as in their judgment may be necessary or desirable to effectuate the provisions of this resolution, and to perform such other duties as are necessary or required by law to submit to the District's voters

at the aforesaid special election, for their approval or rejection, the Proposition of whether the District shall levy annual excess property taxes to pay costs of District educational programs and services. The Board hereby ratifies and confirms all actions of the District or its staff or officers taken prior to the effective date of this resolution and consistent with the objectives and terms of this resolution.

Section 6. In the event that any provision of this resolution shall be held to be invalid, such invalidity shall not affect or invalidate any other provision of this resolution, but shall be construed and enforced as if such invalid provision had not been contained herein; provided, however, that any provision which shall for any reason be held to be invalid shall be deemed to be in effect to the extent permitted by law.

Section 7. This resolution shall become effective immediately upon its adoption.

ADOPTED by the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, at a regular meeting thereof, held on the 24th day of October, 2023.

WALLA WALLA SCHOOL DISTRICT NO. 140,
Walla Walla County, Washington

_____
Derek Sarley, School Board President

ATTEST:

_____
Dr. Wade Smith
Secretary to the Board of Directors

CERTIFICATE

I, the undersigned, Secretary of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, (the "District") and keeper of the records of the Board of Directors (the "Board"), DO HEREBY CERTIFY:

1. That the attached resolution is a true and correct copy of Resolution No. 17-2023 of the Board (the "Resolution"), duly adopted at a regular meeting thereof held on the 24th day of October, 2023.

2. That said meeting was duly convened and held in all respects in accordance with law, and to the extent required by law, due and proper notice of such meeting was given; that a legal quorum was present throughout the meeting and a legally sufficient number of members of the Board voted in the proper manner for the adoption of the Resolution; that all other requirements and proceedings incident to the proper adoption of the Resolution have been duly fulfilled, carried out and otherwise observed; and that I am authorized to execute this certificate.

IN WITNESS WHEREOF, I have hereunto set my hand this 24th day of October, 2023.

_____

Dr. Wade Smith, Secretary to the Board of Directors

OFFICIAL BALLOT
WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON
February 13, 2024

INSTRUCTIONS TO VOTERS: To vote in favor of the following proposition, place a cross (X) in the square opposite the words "YES"; to vote against the following proposition, place a cross (X) in the square opposite the words "NO."

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140
REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

NOTICE

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

February 13, 2024

NOTICE IS HEREBY GIVEN that on February 13, 2024, a special election will be held by mail ballot in the above-named school district for the submission to the qualified electors of said school district of the following proposition:

PROPOSITION NO. 1

WALLA WALLA SCHOOL DISTRICT NO. 140
REPLACEMENT OF EXPIRING EDUCATIONAL PROGRAMS AND OPERATIONS LEVY

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 17-2023, concerning a proposition supporting educational programs not funded by the state. This proposition would authorize the District to levy the following excess taxes, replacing an expiring levy, upon all taxable property within the District, ensuring the continuation of programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff:

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$2.50	$15,063,022
2026	$2.50	$15,665,543
2027	$2.50	$16,292,164
2028	$2.50	$16,943,851

all as provided in Resolution No. 17-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

Walla Walla County Auditor

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

RESOLUTION NO. 18-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $2,289,661 IN 2024 FOR COLLECTION IN 2025, $2,381,247 IN 2025 FOR COLLECTION IN 2026, $2,476,497 IN 2026 FOR COLLECTION IN 2027, $2,550,792 IN 2027 FOR COLLECTION IN 2028, $2,601,808 IN 2028 FOR COLLECTION IN 2029, AND $2,653,844 IN 2029 FOR COLLECTION IN 2030, SAID EXCESS TAXES TO SUPPORT OUTDOOR ATHLETIC AND ACTIVITY UPDATES TO MEET THE CURRENT NEEDS OF DISTRICT STUDENTS; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

ADOPTED: OCTOBER 24, 2023

PREPARED BY:

PACIFICA LAW GROUP LLP
Seattle, Washington

RESOLUTION NO. 18-2023

A RESOLUTION OF THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, PROVIDING FOR THE SUBMISSION TO THE QUALIFIED ELECTORS OF THE DISTRICT AT A SPECIAL ELECTION TO BE HELD THEREIN ON FEBRUARY 13, 2024, OF THE PROPOSITION OF WHETHER EXCESS TAXES SHOULD BE LEVIED OF $2,289,661 IN 2024 FOR COLLECTION IN 2025, $2,381,247 IN 2025 FOR COLLECTION IN 2026, $2,476,497 IN 2026 FOR COLLECTION IN 2027, $2,550,792 IN 2027 FOR COLLECTION IN 2028, $2,601,808 IN 2028 FOR COLLECTION IN 2029, AND $2,653,844 IN 2029 FOR COLLECTION IN 2030, SAID EXCESS TAXES TO SUPPORT OUTDOOR ATHLETIC AND ACTIVITY UPDATES TO MEET THE CURRENT NEEDS OF DISTRICT STUDENTS; AND PROVIDING FOR OTHER MATTERS RELATING THERETO.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, pursuant to RCW 84.52.053, the qualified electors of the District may by a simple majority vote to authorize capital projects levies to support updates like those identified by the Outdoor Athletic and Activity Facilities Committee; and

WHEREAS, the District's outdoor athletic and activity facilities require repair, modernization and updates to meet current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming (as further defined herein, the "Projects"); and

WHEREAS, funds available to the District are not sufficient to enable the District to implement such Projects; and

WHEREAS, to provide for the identified updates and improvements to outdoor athletic and activity spaces, the Board of Directors of the District (the "Board") deems it necessary to levy taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, such levy to be made for six years commencing in 2024 for collection in the school years 2024–2025 through 2030–2031, inclusive, as authorized by Article VII, Section 2 of the State Constitution and RCW 84.52.053, with such excess taxes to be deposited into the District's Capital Projects Fund, or a sub-fund thereof, and used to pay for a portion of the Projects; and

WHEREAS, the Constitution and laws of the State require that the question of whether the District may levy such excess taxes be submitted to the qualified electors of the District for their ratification or rejection; and

WHEREAS, the Board deems it necessary and advisable to place the proposition for such excess tax levies before the District's voters at an election to be held within the District on February 13, 2024 (the "Proposition");

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. The Board hereby finds and declares that the best interests of the District's students and other residents require the District to carry out the Projects as hereinafter provided, at the time or times and in the order deemed most necessary and advisable by the Board.

Section 2. Upon approval by the voters of the Proposition in substantially the form set forth below, the Projects the District will finance with proceeds from the excess property tax levies will include:

- Replacement of Walla Walla High School's 60-year-old tennis courts;
- Installation of an all-weather track at Pioneer Middle School for athlete, school and community use;
- Repair of the 43-year-old tennis courts (Chubb Courts) and resurfacing of the 20-year-old track at Garrison Middle School;
- Install high-quality artificial turf playing surfaces and field lighting (low spill/low glare) in order to maximize utilization, participation and post-season play at both the Klicker and Hayner Park fields at Wa-Hi
- Install outdoor lighting (low spill/low glare) in order to minimize instructional loss and maximize family participation for baseball and softball players
- Install elevated bleachers with ADA access at the Klicker Track and Field site for soccer, football, marching band and track and field spectators
- Provide adequate access to restrooms and changing rooms for high school athletes and concessions amenities for spectators
- Construction of a Junior Army Reserve Officers' Training Corp (JROTC) obstacle course at Walla Walla High School for use by students, first responders, and community members; and
- Construction of a safe throwing events area at the Walla Walla High School Klicker track facility.

The District shall make other capital project expenditures as the Board finds necessary, and may incur indebtedness for the foregoing purposes through the issuance of short-term obligations as authorized by Chapter 39.50 RCW.

The District shall acquire, construct, equip and make other capital improvements to the District's outdoor facilities, all as the Board finds necessary; provided that such funds may only be used to support the updates and improvements identified by the Outdoor Athletic and Activity Facilities Committee.

Incidental costs incurred in connection with carrying out and accomplishing the foregoing shall be deemed part of the Projects. Such costs shall include, but are not limited to: payments for fiscal and legal expenses; establishing and funding accounts; necessary and related engineering, architectural, planning, consulting, permitting, inspection and testing costs; site improvement and demolition costs; and costs for other similar activities or purposes, all as deemed necessary and advisable by the Board and permitted by law.

The Projects, or any portion or portions thereof, shall be acquired or made insofar as is practicable with available money and in such order of time as shall be deemed necessary and advisable by the Board. The Board shall determine the application of available money between the various parts of the Projects so as to accomplish, as near as may be, all of the Projects. The Board shall determine the exact order, extent and specifications for the Projects. The District's architects and engineers will prepare and file with the District plans and specifications more fully describing the Projects.

If the District shall determine that it has become impracticable to accomplish any of such Projects or portions thereof by reason of changed conditions or needs, incompatible development, costs substantially in excess of those estimated, or acquisition by a superior governmental authority, the District shall not be required to accomplish such improvement and may apply levy proceeds as set forth in this section. If any or all of the Projects have been completed, or their completion duly provided for, or their completion found to be impractical, the District may apply the levy proceeds or any portion thereof to other portions of the Projects, as the District in its discretion shall determine. Notwithstanding any provision of this resolution to the contrary, levy proceeds may only be used to support the construction, modernization or remodeling of outdoor athletic and activity facilities.

Section 3. The Board hereby finds and declares that the best interests of the District's students and other residents require submission to the District's voters, for their approval or rejection, the proposition of whether the District shall levy excess property taxes upon all of the taxable property within the District in order to provide funding for the Projects. Upon approval by the voters of the Proposition in substantially the form set forth below, the District will levy the following taxes upon all of the taxable property within the District in excess of the maximum annual tax levy permitted by law to be levied within the District without a vote of the electors, for deposit in the District's Capital Projects Fund:

A. $2,289,661, said levy to be made in 2024 for collection in 2025;
B. $2,381,247, said levy to be made in 2025 for collection in 2026;
C. $2,476,497, said levy to be made in 2026 for collection in 2027;
D. $2,550,792, said levy to be made in 2027 for collection in 2028;
E. $2,601,808, said levy to be made in 2028 for collection in 2029; and
F. $2,653,844, said levy to be made in 2029 for collection in 2030.

The exact levy rate and the actual amounts collected shall be adjusted based upon the actual assessed value of the property within the District at the time of the levy. At this time, based upon information provided by the Walla Walla County Assessor's Office, the estimated levy rate for each of the six collection years is $0.38 per $1,000 of assessed valuation.

Section 4. The Board hereby requests that the Walla Walla County Auditor, as *ex officio* supervisor of elections in Walla Walla County, Washington (the "Auditor"), assume jurisdiction of, call, and conduct a special election to be held within the District on February 13, 2024, and submit to the qualified electors of the District the Proposition hereinafter set forth. The Auditor shall conduct the election by mail or as the Auditor otherwise requires.

The Board hereby authorizes and directs the Secretary of the Board (the "Secretary") to certify the Proposition to the Auditor in the following form:

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

The Board hereby directs the Secretary to deliver a certified copy of this resolution to the Auditor no later than December 15, 2023, and to perform such other duties as are necessary or required by law to submit the Proposition to voters.

Section 5. The Board hereby designates the following as the individuals to whom the Auditor shall provide notice of the exact language of the ballot title, as required by RCW 29A.36.080: (a) the Secretary and District Superintendent (Dr. Wade Smith), telephone: (509) 526-6714; email: wsmith@wwps.org, and (b) the District's Bond Counsel, Pacifica Law Group LLP (Faith Pettis), telephone: (206) 245-1700; email: faith.pettis@pacificalawgroup.com. The Board authorizes the Secretary to approve changes to the ballot title, if any, as the Auditor or the Walla Walla County Prosecuting Attorney deems necessary.

Section 6. The Board authorizes and directs the President of the Board, the Secretary, and the District's Director of Fiscal Services to take such actions and to execute such documents as in their judgment may be necessary or desirable to effectuate the provisions of this resolution, and to perform such other duties as are necessary or required by law to submit to the District's voters at the aforesaid special election, for their approval or rejection, the Proposition of whether the District shall levy annual excess property taxes to pay costs of the Projects. The Board hereby ratifies and confirms all actions of the District or its staff or officers taken prior to the effective date of this resolution and consistent with the objectives and terms of this resolution.

Section 7. In the event that any provision of this resolution shall be held to be invalid, such invalidity shall not affect or invalidate any other provision of this resolution, but shall be construed and enforced as if such invalid provision had not been contained herein; provided, however, that any provision which shall for any reason be held to be invalid shall be deemed to be in effect to the extent permitted by law.

Section 8. This resolution shall become effective immediately upon its adoption.

ADOPTED by the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, at a regular meeting thereof, held on the 24th day of October, 2023.

WALLA WALLA SCHOOL DISTRICT NO. 140,
Walla Walla County, Washington

_____
Derek Sarley, School Board President

ATTEST:

_____
Dr. Wade Smith
Secretary to the Board of Directors

CERTIFICATE

I, the undersigned, Secretary of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, (the "District") and keeper of the records of the Board of Directors (the "Board"), DO HEREBY CERTIFY:

1. That the attached resolution is a true and correct copy of Resolution No. 18-2023 of the Board (the "Resolution"), duly adopted at a regular meeting thereof held on the 24th day of October, 2023.

2. That said meeting was duly convened and held in all respects in accordance with law, and to the extent required by law, due and proper notice of such meeting was given; that a legal quorum was present throughout the meeting and a legally sufficient number of members of the Board voted in the proper manner for the adoption of the Resolution; that all other requirements and proceedings incident to the proper adoption of the Resolution have been duly fulfilled, carried out and otherwise observed; and that I am authorized to execute this certificate.

IN WITNESS WHEREOF, I have hereunto set my hand this 24th day of October, 2023.

_____

Dr. Wade Smith, Secretary to the Board of Directors

OFFICIAL BALLOT
WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON
February 13, 2024

INSTRUCTIONS TO VOTERS: To vote in favor of the following proposition, place a cross (X) in the square opposite the words "YES"; to vote against the following proposition, place a cross (X) in the square opposite the words "NO."

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

NOTICE

WALLA WALLA SCHOOL DISTRICT NO. 140
WALLA WALLA COUNTY, WASHINGTON

February 13, 2024

NOTICE IS HEREBY GIVEN that on February 13, 2024, a special election will be held by mail ballot in the above-named school district for the submission to the qualified electors of said school district of the following proposition:

PROPOSITION NO. 2

WALLA WALLA SCHOOL DISTRICT NO. 140

CAPITAL PROJECTS LEVY TO UPDATE OUTDOOR ATHLETIC AND ACTIVITY FACILITIES

The Board of Directors of Walla Walla School District No. 140 adopted Resolution No. 18-2023, concerning a proposition to update outdoor athletic and activity facilities. This proposition would authorize the District to levy the following excess taxes upon all taxable property within the District, in order to make improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming.

Collection Year	Approximate Levy Rate/$1000 Assessed Value	Levy Amount
2025	$0.38	$2,289,661
2026	$0.38	$2,381,247
2027	$0.38	$2,476,497
2028	$0.38	$2,550,792
2029	$0.38	$2,601,808
2030	$0.38	$2,653,844

all as provided in Resolution No. 18-2023. Should this proposition be approved?

YES..... ☐

NO..... ☐

Walla Walla County Auditor

Walla Walla Public Schools
364 S. Park Street • Walla Walla, WA 99362 • (509) 527-3000 • www.wwps.org

RESOLUTION #19-2023
October 24, 2023

A RESOLUTION of the Board of Directors of Walla Walla School District No. 140, Walla Walla County, Washington, expressing support for passage of the District's Proposition No. 1 (Replacement of Expiring Educational Programs & Operations Levy) and Proposition No. 2 (Capital Projects Levy to Update Outdoor Athletic and Activity Facilities), to be submitted to the District's voters at the February 13, 2024 election; and making related findings.

WHEREAS, Walla Walla School District No. 140, Walla Walla County, Washington (the "District"), is a first-class school district duly organized and existing under and by virtue of the Constitution and the laws of the State of Washington (the "State") now in effect; and

WHEREAS, calendar year 2024 is the last year of collection for the District's current four-year enrichment levy, which provides funding for the District's educational programs & operations (EP&O) not funded by the State; and

WHEREAS, every four years the Walla Walla community must renew the EP&O levy to continue ensuring essential programs such as honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff; and

WHEREAS, the Walla Walla community, for well over half a century, has continued to renew the EP&O levy to ensure a high quality, safe and robust education for the students attending District schools; and

WHEREAS, on October 24, 2023, the Board of Directors of the District (the "Board") adopted Resolution No. 17-2023, authorizing the submission of a ballot proposition ("Proposition No. 1) to the District's voters at the February 13, 2024 election, which, if approved by voters, would authorize the District to levy excess property taxes, replacing an expiring levy, to support educational programs and operations not funded by the State's statutory program of basic education; and

WHEREAS, the District's outdoor athletic and activity facilities require updates to meet current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming; and

WHEREAS, on October 24, 2023, the Board adopted Resolution No. 18-2023, authorizing the submission of a second ballot proposition to the District's voters at the February 13, 2024 election, which, if approved by voters, would authorize the District to levy excess property taxes to provide funding for improvements to outdoor facilities for students participating in athletics, activities, JROTC, physical education, marching band and other outdoor programming ("Proposition No. 2"); and

WHEREAS, RCW 42.17A.555 provides that members of an elected board, including a school district board, may take action at an open public meeting to express support for a ballot proposition as long as (1) any required notice of the meeting includes the title and number of the ballot proposition, and (2) members of the board and the public are afforded an approximately equal opportunity for the expression of an opposing view; and

WHEREAS, in accordance with RCW 42.17A.555, the Board desires to express its formal support for passage of Proposition No. 1 and Proposition No. 2;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WALLA WALLA SCHOOL DISTRICT NO. 140, WALLA WALLA COUNTY, WASHINGTON, as follows:

Section 1. Findings. As set forth in Resolution No. 17-2023, the Board finds and reaffirms the best interests of the District's students and other residents require the District renew its expiring enrichment levy to provide funds necessary for educational programs and operations not funded by the State's statutory program of basic education, including honors classes, music, art, drama, school safety, technology, nursing, athletic programming, financial literacy, driver education, counseling and support staff. In addition, as set forth in Resolution No. 18-2023, the Board finds and reaffirms the best interests of the District's students and other residents require the District carry out projects to update the District's outdoor athletic and activity facilities (as further described in said resolution) to provide adequately for current and future safety, instructional, activity and extra-curricular needs of District students, and to increase student participation and community access to outdoor athletic events, activities and programming, and that a capital levy is necessary and advisable to provide the funds required for these improvements.

The Board further finds that it has satisfied the procedural requirements of RCW 42.17A.555 in passing this resolution; specifically, (1) on October 24, 2023, the Board held an open public meeting at which the Board discussed and voted upon this resolution; (2) the notice required for this meeting included the designation, "Proposition No. 1; Walla Walla School District No. 140; Replacement of Expiring Educational Programs & Operations Levy" and "Proposition No. 2; Walla Walla School District No. 140; Capital Projects Levy to Update Outdoor Athletic and Activity Facilities"; and (3) at the meeting, Board members and the public were afforded an equal opportunity to express an opposing view, and the Board heard all who wished to speak.

Section 2. Expression of Support. Based upon the findings set forth above, and pursuant to RCW 42.17A.555, the Board hereby expresses its support for passage of Proposition No. 1 and Proposition No. 2.

Section 3. Effective Date. This resolution shall become effective immediately upon its adoption.

WALLA WALLA SCHOOL DISTRICT NO. 140
Walla Walla County, Washington

_____
Derek Sarley, School Board President

ATTEST: _____
Dr. Wade Smith, Superintendent
and Secretary of the Board

Adopted at a regular meeting of the Board of Directors October 24, 2023