CONSTRUCTION QUALITY ASSURANCE

EVERETT RIVERFRONT BUILDING A

JULY 9, 2024

RIVERFRONT COMMERCIAL INVESTMENTS, LLC

CONSTRUCTION QUALITY ASSURANCE

FOR

EVERETT RIVERFRONT BUILDING A

Prepared By:

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EVERETT RIVERFRONT BUILDING A
CONSTRUCTION QUALITY ASSURANCE REPORT

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1.0 CQA Report for Everett Riverfront Development, Riverfront Building A

RIVERFRONT COMMERCIAL INVESTMENT LLC
11624 SE 5TH Street, Suite 210, Bellevue, Washington 98005
Tel. 425.559.2300

January 18, 2024

Mr. Randy Loveless, PE
Senior Engineer; Everett Public Works Department
CITY OF EVERETT
3200 Cedar Street
Everett, WA 98201

Re: CQA Implementation Report for Everett Riverfront Development, Building A

Dear Randy,

This report documents the Construction Quality Assurance (CQA) activities conducted for the above referenced project per the requirements of the Everett Landfill/Tire Fire Site Consent Decree (CD). The CD requires that protective measures be implemented for any new development on the landfill site to ensure protection of human health and the environment from exposure to contaminants or landfill gas (LFG) present in the site subsurface.

The purpose of the Riverfront Building A CQA Report is to ensure that the construction of the mixed-use project was performed in general conformance with the requirements and intent of the accepted CQA Plan, Drawings and Specifications. During construction of the project, Riverfront Phase 1, LLC, retained and managed a multi-discipline team who completed and performed the required observations, tests, and documentation of the observed quality of materials and work in accordance with an approved CQA Plan (Section's 2.0 – 10).

This CQA Report documents the completion of construction activities for Building A per the approved design and subsequent approved updates through Requests for Information (RFI's). This report provides verification of compliance with all CD requirements in accordance with the approved CQA Plan. This report is comprised of individual CQA documentation from the Riverfront Phase 1 consultant engineers, who were each responsible for specific components of the design and CQA as listed below. In addition, submittals, RFIs, and as-built plans documenting the completed project are appended to this report. The consultant engineers' reports address the following topics.

- Section 2.0 – HWA Geosciences Inc.: Geotechnical and structural pile components, and placement and testing of low permeability soil barrier and bentonite sand barrier elements.
- Section 3.0 – Herrera Environmental Consultants, Inc.: Composite and geomembrane elements, LFG system, and methane monitoring and ventilation system elements.
- Section 4.0 – Follett Engineering: Electrical and instrumentation and control systems.

Sincerely,

DocuSigned by:
Renay Luzama
323309D9312747C...

Renay Luzama

Sincerely,

DocuSigned by:
Eric Evans
7B78D69F851B465...

Eric C. Evans

2.0 HWA Compliance with CQA Report – Geotechnical Engineer

HWA GeoSciences Inc.
DBE/MWBE

January 17, 2024
HWA Project No. 2015-061-21

Riverfront Commercial Investment, LLC.
11624 SE 5th Street Suite 210
Everett, WA 98201

Subject: **CQA REPORT FOR**
RIVERFRONT DEVELOPMENT PHASE I BUILDING A

This letter documents the Construction Quality Assurance (CQA) activities conducted for the above referenced project per the requirements of the Everett Landfill Consent Decree as observed by HWA GeoSciences Inc. (HWA), from June 2021 through July 2023.

Description

Riverfront Commercial Investment, The Phase I Building A site area included grade supported utilities below the proposed building, piles for support of the new building and a concrete apron around the building.

Construction of the Phase I Building A site required implementing environmental controls in compliance with the Everett Landfill Consent Decree. Environmental controls have included expansion of the site's landfill gas (LFG) system, utility installation, management and proper disposal of encountered refuse materials, and installation of a low permeability cover system.

Cleanup actions were required for any new development, improvements, and environmental controls on this site in accordance with the site's Consent Decree. Designs for cleanup actions required by the Consent Decree must be approved by the Washington State Department of Ecology (Ecology). This approval is obtained through review of and approval of an Engineering Design Report (EDR) and Plans and Specifications of the required facilities.

During construction, Riverfront Commercial Investment, LLC was responsible for providing Construction Quality Assurance (CQA) activities. The CQA activities consisted of an independent review, observation, and testing to confirm that the Contractor's work was completed in general conformance with the Plans, Specifications, and the CQA Plan. A CQA Plan was included in the EDR that identifies specific CQA activities to be performed and the required documentation of those activities, which are to be compiled in a CQA Report.

Construction Activities

The work requiring environmental monitoring and documentation for this CQA report included installation of utilities, LFG system installation, and installation of low permeability landfill gas barrier. Within the Riverfront Development Phase I Building A area, the sewer, water, storm, and electrical lines have been installed in addition to new sections of the site landfill gas system. Areas within the landfill refuse area utilize at least one type of low permeability barrier. Below the buildings this consists of low permeability pile supported concrete, or geomembrane systems designed and inspected by Herrera Environmental Consultants, Inc (Herrera). Transitions to areas immediately outside of the buildings may also consist of layers of at least three continuous feet of bentonite sand backfill (BSB) and/or low permeability soil barrier (LPSB) or a layer of HDPE geosynthetic plastic.

Construction components that are covered by this CQA report are described below:

Low Permeability Soil Barrier (LPSB) – LPSB inhibits migration of LFG upward and enhances the capability of the active LFG collection system. In addition to providing LFG control, the LPSB provides a hydraulic barrier, reducing infiltration and the generation of leachate. LPSB was used around the perimeter of the building near the surface of the site to provide a suitable gas barrier for the transition from the building and perimeter apron to the grade supported site around its perimeter. LPSB is any soil exhibiting a measurable in-place permeability rate of less than 10^{-5} cm/sec. See the documentation in Appendix B, LPSB Laboratory Testing Data, and Appendix C, Daily Field Reports.

Bentonite Sand Backfill (BSB) – Similar to LPSB, BSB inhibits migration of LFG upward and enhances the capability of the active LFG collection system. BSB is an engineered material consisting of a combination of sand, bentonite powder and water. BSB has the added benefit of being easier to shape and compact while exhibiting an in-place permeability rate of less than 10^{-5} cm/sec. BSB was mostly used around pipes and penetrations into manholes and vaults and was used to limit gas migration through the landfill cap. BSB was used to supplement low permeability cover requirements where pipes were noted to have less than three feet of LPSB material above them. BSB was also used in combination with LPSB in other areas to maintain the minimum of 3 feet of low permeable soil materials. See the documentation in Appendix B, BSB Laboratory Testing Data, and Appendix C, Daily Field Reports

Other Imported Soil Materials – HWA performed conformance testing of materials brought to the site from outside sources. Imported materials consisted of gravel drainage materials and dredge sand utilized as backfill outside of areas where LPSB and BSB were required, and for use as a component in the production of BSB. Imported soils came from WSDOT approved sources that provided initial testing data. Laboratory testing was also conducted on samples collected in the field. These materials were evaluated for conformance with the CQA plan, project plans and specifications. Observation and testing on these materials did not pertain to the LFG barrier and as such lab data and field reports that only pertain to them are not included in this CQA summary report.

Refuse Disposal – HWA observed excavation within the refuse materials on the site. HWA documented when these materials were encountered, noted that that they received daily cover and when and how they were disposed of in predetermined refuse disposal areas. As the buildings do not contain refuse disposal areas, reports for this disposal are provided in the Phase I and II site work CQA summary report; however, information on refuse encountered and excavated within the building is documented in this CQA summary letter in the attached daily field reports in Appendix C.

Geotextile Installation – HWA has observed placement of geotextile fabrics where required by the project CQA plan, site plans and specifications. See the documentation in Appendix B, Daily Field Reports.

Landfill Gas (LFG) System – The LFG system installation has been noted by HWA but is not part of our monitoring scope. HWA observed soil backfill placement, but confirmation of conformance with the CQA plan, site plans and specifications was the responsibility of Herrera.

HDPE Geomembrane Installation – HDPE geomembrane was placed in locations where Pile supported low permeability concrete, LPSB or BSB were not utilized as the LFG barrier. Confirmation of conformance with the CQA plan, site plans and specifications was the responsibility of Herrera.

Low Permeability Concrete – Low permeability concrete was used as a barrier on the pile supported apron around the perimeter of the building. The low permeability concrete was used to allow for the transition from building LFG barriers to the LFG barriers within the grade supported areas outside of the building perimeter apron.

Pile Installation – Driven grout piles were installed as part of the building foundation system. Steel casings with a steel boot on the end were driven at each proposed pile location and through the refuse and into the peat and fine-grained alluvial soils that comprise the aquitard below the refuse. Then a hollow mandrel was inserted into each casing, which was used to break off the boot and allow for the installation of driven grout portions of the piles that were embedded into the dense soils below the landfill. Piles were installed in accordance with HWA's geotechnical recommendations and in accordance with requirements of the consent decree. Pile observations were documented in our field report which is included in Appendix C.

CQA Observation

CQA observation was provided by HWA on behalf of Riverfront Commercial Investment, LLC to monitor the installation of the various environmental controls utilized at the site. HWA was present during activities which required our CQA oversight. HWA provided evaluation of geotechnical material and conducted field testing for comparison with laboratory analyses.

CQA Testing

CQA laboratory and field testing of materials has been conducted for LPSB, BSB, and low permeability concrete. Testing was conducted by HWA and the results of laboratory and field tests of these materials are summarized below.

Low Permeability Soil Barrier (LPSB)

Prior to performing work on the Riverfront Development, HWA obtained samples of existing cap soils on the site and conducted laboratory analyses to recommend material gradation specifications, and determine the appropriate moisture content and density relationship of the material placed during construction that would result in an in-place permeability of less than 1.0×10^{-5} cm/sec. Based on several rounds of testing of onsite soils with variable fines contents, HWA determined that, provided the existing soil materials contained at least 15% fines (defined as percent passing the No. 200 sieve by weight) and were compacted to at least 95% of Modified Proctor (ASTM D1557), they exhibit an in-place permeability rate of less than 1.0×10^{-5} cm/sec. LPSB was utilized around the perimeter of the building and within utility trenches near the transition from the perimeter of the proposed building apron to the grade supported areas outside of the building.

Additionally, laboratory testing was conducted on LPSB samples taken throughout the course of the project in accordance with the CQA Plan. See the documentation on LPSB acceptance testing in Appendix B and test results of field compaction testing in HWA field reports in Appendix C. Note that LPSB testing conducted around the perimeter of the building was conducted as part of the Phase I site work and reports were issued under that phase of work; however, the relevant reports related to the LPSB flipping around the perimeter of the building are included in Appendix C and a map showing the areas where low permeable soils placement occurred on site is available in Appendix D.

Bentonite Sand Backfill (BSB)

Prior to BSB placement, field tests and laboratory analyses were conducted on samples of the BSB material mixture with 5, 7 and 10 percent bentonite per dry unit weight of sand. The BSB was mixed onsite by the Contractor under observation from HWA. The moisture content and density of the samples were then measured in the lab. Permeability testing (per ASTM D5084) was used to determine the acceptable zone of moisture content and density needed to achieve the required permeability. Placement of BSB was then monitored by measuring in-place moisture content and density with a nuclear gauge to ensure the in-place moisture/density properties were within the acceptable range, and thus consistent with the laboratory findings to meet the required permeability. CQA test results for laboratory analyses are contained in Appendix B and field measured densities are recorded in HWA's field reports in Appendix C.

Low Permeability Concrete.

Prior to the start of construction HWA performed testing on the proposed mix design for the building concrete perimeter apron. Based on the results the proposed mix design was found to have a permeability significantly less than 1.0×10^{-5} cm/sec and is sufficient to meet the project requirements for low permeability concrete. When this concrete was used, HWA reviewed the test results from the concrete testing, conducted by others to note that it was consistent with the

mix designs that were analyzed and found to meet the requirements of low permeability concrete. CQA test results for laboratory analyses are contained in Appendix B.

HWA Comments

Some of the grout quantities reported for certain piles where high (over 30% greater than theoretical volume) based on reported counts; however, grout levels within the pile did not drop significantly after pile completion and no other signs of significant grout losses were noted. Piles with grout counts in excess of 30% were P-A173 and P-A80.

Grout volumes are based on stroke count from the concrete pump being used. High grout readings could be a result of not properly resetting the stroke counter prior to pumping or clogs in the line that temporarily block flow through the grout hose. Also, grout sometimes overtops the piles and thus is represented in the stroke counts used to calculate the grout volume but would not be in the actual pile. Additionally, every pile will have a slightly different shape resulting from the variation in density and thickness of materials encountered below, while our theoretical volumes are based on the assumption that piles are perfectly cylindrical. Because the upper sections of piles though refuse are cased, HWA believes that the pile shape through this section are more cylindrical, and that grout loss (increased take) did not occur in the section of the pile through the refuse materials.

As all piles are grouted, voids created by the pile driving activity below the refuse would be filled with grout. As such HWA does not have additional concern about the creation of preferential pathways between the landfill leachate and underlying groundwater, resultant from driven pile installation.

Although HWA does not perform the concrete testing on the site, two reports, completed by Krazan and Associates Inc. (Krazan), documenting placement and field testing of the low permeability concrete are now included in Appendix C. HWA was provided concrete cylinders from the concrete pour on September 24, 2021, to conduct hydraulic conductivity testing on low permeability concrete which easily met the permeability requirements. The field tests for slump, air entrainment and temperature were all within typical test parameters for this type of concrete and are similar enough to the field test result of the other concrete pours to confirm that the permeability results from our laboratory testing is indicative of the concrete throughout the concrete aprons. As such based on our laboratory testing and the field-testing data, provided by Krazan, it appears that the concrete delivered on site was placed in accordance with the project plans and specifications and meets the requirements for use as low permeability concrete.

Documentation of CQA Activities

Documentation of the CQA activities is presented below.

- *Construction Quality Assurance (CQA) Declaration:* A declaration stating that the construction activities were performed in conformance with the Plans and Specifications is included in Appendix A.

- *CQA Testing and Construction Observation:* Daily construction reports related to required CQA activities covering the CQA testing, observation, and other activities are provided in the following Appendixes:
    - Appendix B: Laboratory Analyses by HWA on LPSB, BSB, and low permeability concrete.
    - Appendix C: Field reports summarizing site observations by HWA during pile installation, LFG system installation, LPSB, and BSB placement, including compaction testing and low permeability material depth verifications.
    - Appendix D: Everett Riverfront Low Permeability Soil Barrier Log Map.

Conclusion

The Everett Landfill Consent Decree requires that protective measures and cleanup actions be implemented for any new development on the landfill site. As part of the process, this CQA report documents these procedures for the construction of this project. The construction activities have included installation of piles and utilities such as storm, sewer, water, and electrical in addition to additions to the site's LFG system. HWA has monitored these activities and noted pile installation, along with LPSB, BSB and low permeability concrete materials used as landfill gas barrier, noting proper installation in accordance with the project CQA plan, site plans and specifications. Documentation of the CQA activities is included in the appendices of this letter report.

If you have any question pertaining to this CQA letter report, please feel free to contact the undersigned at 425-774-0106.

Sincerely,
HWA GeoSciences Inc.,

Michael S. Place, P.E.
Senior Geotechnical Engineer

Attachments:

Appendix A: CQA Declaration
Appendix B: Laboratory Analyses by HWA
Appendix C: HWA Field reports
Appendix D: Everett Riverfront Low Permeability Soil Barrier Log Map.

Appendix A:

CONSTRUCTION QUALITY ASSURANCE (CQA) DECLARATION

HWA GeoSciences Inc.
DBE/MWBE

January 17, 2024
HWA Project No. 2015-061-21

Riverfront Commercial Investment, LLC
11624 SE 5th Street, Suite 210
Bellevue, Washington 98201

SUBJECT: CONSTRUCITON QUALITY ASSURANCE (CQA) DECLARATION
RIVERFRONT DEVELOPMENT PHASE I BUILDING A
EVERETT, WASHINGTON

As requested, HWA GeoSciences Inc. (HWA) has been retained to perform laboratory testing, field testing, and construction observation services to confirm compliance with the construction Quality Assurance (CQA) plan, the Consent Decree, and the project plans and specifications. Based on our observations and testing performed on the site and summarized in our CQA Report for Riverfront Development Phase I Building A, the construction activities were performed in conformance with the CQA Plan, the Consent Decree, and the project plans and specifications.

Should you have any questions after reviewing this letter, please feel free to contact us at your convenience.

HWA GEOSCIENCES INC.

Michael S. Place, P.E.
Senior Geotechnical Engineer

3.0 Herrera Compliance with CQA Report - Environmental Engineer

Everett Riverfront Construction Quality Assurance Final Report

Building A Environmental Controls System

Prepared for
Riverfront Commercial Investment, LLC

Prepared by
Herrera Environmental Consultants, Inc.

HERRERA
Science + Planning + Design

Everett Riverfront Construction Quality Assurance Final Report

Building A Environmental Controls System

Prepared for
Riverfront Commercial Investment, LLC
11624 Southeast Fifth Street, Suite 210
Bellevue, Washington 98005

Prepared by
Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121
Telephone: 206-441-9080

January 22, 2024

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Project Description

The Everett Riverfront project is located on the City of Everett Landfill/Tire Fire Site in Everett, Washington, located west of downtown Everett business district. The project limits stretch the area of Building A which is approximately 420 feet by 70 feet, or 29,400 square-feet. The southeast corner of Building A is located about an eighth of a mile north of the 41st Street roundabout and about 30 feet west of Riverfront Boulevard.

This report covers Construction Quality Assurance (CQA) observations on the environmental controls associated with Building A that were installed throughout the entire period of construction from August 2021 through June 2023 when the last component was installed and documented. The work during the construction period consisted of inspection of the installation of the landfill gas (LFG) management system including the LFG collector pipe trenches, laterals, and vents; the four header to collector connections; and the elevator pits and the above slab composite liner barrier systems. In the final quarter of inspection, the north Building A lateral connection to subheader B was made and the control valve was installed. The Final Construction Quality Assurance (CQA) Declaration Letter for the Building A environmental controls systems is included in Appendix A.

All project construction and design elements were required to comply with environmental controls set forth in the Everett Landfill/Tire Fire Consent Decree (March 2001) and were approved by the Washington State Department of Ecology. Activities for construction that are not subject to the CQA requirements per the Consent Decree are not included in this CQA report or those reports being prepared by other consultants.

Environmental Control Systems CQA Observation

CQA observation was provided by Riverfront Commercial Investment LLC (RCI) and its consultants HWA Geosciences (HWA), Perteet Inc. (Perteet), Follett Engineering (Follett), and Herrera Environmental Consultants (Herrera). Additionally, City of Everett (COE) construction inspectors and outside Consultants made routine site visits throughout the duration of construction.

Herrera provided CQA observation of LFG collection, conveyance and barrier system installation for Building A. CQA observation was provided through site visits, preparation of daily field inspection reports based on field observations and component testing, and site photos. Herrera verified the LFG system products used on site with approved material submittals and any associated Requests for Information (RFI). Contractor qualifications, manufacturers' quality control data, subgrade acceptance, and verification of materials with project drawings and specifications were also included in Herrera's CQA process.

Herrera's construction observation of the Building A environmental controls system began in August 2021 and finished in June 2023. Herrera's staffing for CQA was as follows:

- CQA Observer – Michael Spillane and Camryn Steiner
- Construction Submittal Review Lead – Ondrej Sklenar and Camryn Steiner

- Requests for Information Lead (RFIs) - Tyson Wright

Herrera's CQA observation deliverables were field inspection reports documenting construction activities and include photographs of products identifying installation of facilities. The inspection reports include highlighted screenshots of plan sheets that show the area of work. Table 1 provides a summary of all Building A environmental controls construction work and lists what was installed, when it was installed, and what field report the installation is documented in. Herrera's field inspection reports can be found in Appendix B.

Table 1. Summary of Work Performed and Observed for the Building A Environmental Controls System

Date	Construction Activity	Documented in Field Report
Quarter 1 – June 1 through August 30, 2021		
8/12/2021	Composite liner system installation in elevator pit	FR 001 08122021 Riverfront Bldg A LFG HEC
8/13/2021	Composite liner system installation in elevator pit	FR 002 08132021 Riverfront Bldg A LFG HEC
8/19/2021	Composite liner system installation in elevator pit	FR 003 08192021 Riverfront Bldg A LFG HEC
8/25/2021	Composite liner system installation in elevator pit	FR 004 08192021 Riverfront Bldg A LFG HEC
Quarter 2 – September 1 through November 30, 2021		
9/2/2021	LFG collection pipe trenching installation	FR 005 09022021 Riverfront Bldg A LFG HEC
9/7/2021	LFG collection pipe trenching installation	FR 006 09072021 Riverfront Bldg A LFG HEC
9/16/2021	LFG collection pipe trenching installation	FR 007 09162021 Riverfront Bldg A LFG HEC
9/24/2021	LFG collection pipe trenching installation	FR 008 09242021 Riverfront Bldg A LFG HEC
9/27/2021	LFG collection pipe trenching installation	FR 009 09272021 Riverfront Bldg A LFG HEC
10/28/2021	PGRC installation	FR 010 10282021 Riverfront Bldg A LFG HEC
Quarter 3 – December 1, 2021 through February 28, 2022		
1/18/2022	LFG collection pipe trenching installation	FR 011 01182022 Riverfront Bldg A LFG HEC
1/26/2022	Composite liner system installation in elevator pit LFG collection pipe trenching installation	FR 012 01262022 Riverfront Bldg A LFG HEC
1/27/2022	Composite liner system installation in elevator pit	FR 013 01272022 Riverfront Bldg A LFG HEC
2/1/2022	LFG collection pipe trenching installation	FR 014 02012022 Riverfront Bldg A LFG HEC
2/23/2022	LFG collection pipe trenching installation	FR 015 02232022 Riverfront Bldg A LFG HEC
Quarter 4 – March 1 through May 31, 2022		
3/23/2022	Header to collector lateral connection	FR 016 03232022 Riverfront Bldg A LFG HEC
3/24/2022	Header to collector lateral connection	FR 017 03242022 Riverfront Bldg A LFG HEC

Table 1 (continued). Summary of Work Performed and Observed for the Building A Environmental Controls System		
Date	**Construction Activity**	**Documented in Field Report**
Quarter 5 – June 1 through August 31, 2022		
8/23/2022	Composite liner system installation	FR 018 08232022 Riverfront Bldg A LFG HEC
8/24/2022	Composite liner system installation	FR 019 08242022 Riverfront Bldg A LFG HEC
8/29/2022	Composite liner system installation	FR 020 08292022 Riverfront Bldg A LFG HEC
8/31/2022	Composite liner system installation	FR 021 08312022 Riverfront Bldg A LFG HEC
Quarter 6 – September 1 through November 30, 2022		
9/6/2022	Composite liner system installation	FR 022 09062022 Riverfront Bldg A LFG HEC
Quarter 7 – December 1, 2022 through February 28, 2023		
12/21/2022	Composite liner system installation	FR 023 12212022 Riverfront Bldg A LFG HEC
12/22/2022	Composite liner system installation	FR 024 12222022 Riverfront Bldg A LFG HEC
Quarter 8 – March 1 through End of Construction		
3/1/2023	Composite liner system installation	FR 025 03012023 Riverfront Bldg A LFG HEC
6/28/2023	Header to collector lateral connection	FR 026 03232022 Riverfront Bldg A LFG HEC
6/29/2023	Header to collector lateral connection	FR 027 03232022 Riverfront Bldg A LFG HEC

LFG Collection and Conveyance System

Herrera provided CQA observation of the LFG collection and conveyance system underneath Building A that connects to the sitewide conveyance system. This included monitoring the installation of the collection pipe trenches, laterals, vents, and the four header to collector connections. Herrera inspected the LFG collection and lateral pipe joining and lateral pipe performance pressure testing as well as the quality of surrounding trench and subgrade for pipe placement. The system components that were observed and installed on top of the collection piping included the gravel blanket, 6oz non-woven geotextile, concrete topping slab, and 3 inch PVC pipes through the grade beams.

The below slab LFG collection and conveyance system components including the collection pipe trenches, laterals, vents, gravel blanket, 6oz non-woven geotextile, concrete topping slab, and 3 inch PVC pipes through the grade beams were installed during Quarters 2 and 3. Three of the four header to collector connections were installed in Quarter 4 and the last Building A header to collector connection was installed during Quarter 8. The LFG collection and conveyance system components were installed by KLB Construction.

Composite Liner System

Herrera provided CQA observation of the Building A LFG barrier system which involved monitoring the installation of each component of the composite liner system to the elevator pits and to the surface of the concrete structural slab. The composite liner system components are products manufactured by EPRO and were installed by MTN Inc.

Elevator Pit

Herrera monitored the composite liner system application to the Building A elevator pits. The composite liner system was installed in and around the elevator pits during Quarters 1 and 3.

For the interior walls of the elevator pit, the composite liner system includes reinforcement detailing of E. Poly material sandwiched between 30-mil E. Roll around wall edges and slab penetrations; Geo-Seal Base material connected to the bottom and side walls of the interior elevator pit; 80 mil Geo-Seal Core material covering the Geo-Seal Base; and Geo-Seal Bond B installed as a protection layer on top of the core material application. Smoke testing was performed on the interior elevator pit composite liner system to confirm there were no defects or leaks. Additionally, the mil (one thousandth of an inch) thickness of the Geo-Seal Core material was confirmed by collecting one coupon per elevator from the bottom of the pit lining system at the smoke test penetration. For each coupon cut from the liner system as part of Building A CQA, the Installer handed Herrera the coupon square, and the thickness was measured right away to ensure it was thick enough to account for the thinning of the core material during its drying process. If Herrera deemed the coupon too thin so that the 80-mil thickness requirement would not be met after the material was done curing, Herrera had the Installer go over the area represented by the coupon with additional core material spray. The final recorded thickness was measured of the core material only with the base layer peeled away and was measured at least a day after coupon collection to ensure adequate time for the material curing process. The Installer patched up the area where the destructive sample was collected with base and core material according to design requirements.

For the exterior walls of the elevator pit, the composite liner system includes reinforcement detailing of E. Poly material sandwiched between 30-mil E. Roll around wall edges; 80 mil Geo-Seal Core material covering the entire outer surface of the concrete grade beams; and Geo-Seal Bond B installed as a protection layer on top of the core material application. A termination bar was installed across the top of the liner to secure the Bond B material to the Core material and the grade beam. Smoke testing was not applicable for the liner installed on the outer walls of the elevator pits because the main liner component, Geo-Seal Core, was sprayed directly onto the concrete surface, avoiding the creation of any seams and access below the liner. Due to the core material being sprayed directly onto the grade beam and being unable to remove a sample from the surface, the Installer draped a section of the Geo-Seal Base material over each wall according to the frequency direction given by Herrera and applied the core material to the film as they progressed through the installation over the entire surface. The Installer cut a square coupon from the draped section and handed Herrera the coupon square to be measured. The thickness was measured right away to ensure it was thick enough to account for the thinning of the core material during its drying process. If Herrera deemed the coupon too thin so that the 80-mil thickness

requirement would not be met after the material was done curing, Herrera had the Installer go over the area represented by the coupon with additional core material spray. The final recorded thickness was measured of the core material only with the base layer peeled away and was measured at least a day after coupon collection to ensure adequate time for the material curing process. Installer patched up the area where the destructive sample was collected with core material according to design requirements.

Vacuum testing was not required for the Building A LFG barrier because no geomembrane materials were installed or welded. Performing the mil thickness check on both the inner and outer elevator pit surfaces, and the smoke test for the inner surface was sufficient for the elevator pits composite liner CQA.

Above Slab Building System

Herrera monitored the composite liner system application to the Building A concrete structural slab. The above slab composite liner system was installed during Quarters 5, 6, 7, and 8.

The composite liner system includes reinforcement detailing of E. Poly material sandwiched between 30-mil E. Roll around wall edges and slab penetrations; Geo-Seal Core material covering the entire surface of the concrete structural slab; and Geo-Seal Film 11 installed as a protection layer on top of the core material application. Herrera measured the mil thickness of the Geo-Seal Core material application to the concrete structural slab approximately every 1,000 square-feet to ensure the 30-mil thickness requirement for the above slab system was met. The Installer placed a small sample square of the 11-mil film on the ground according to the frequency direction given by Herrera and applied the core material to the film as they progressed through the installation over the entire surface similar to the technique implemented for the outer elevator pit walls. If Herrera deemed the coupon too thin so that the 30-mil thickness requirement would not be met after the material was done curing, Herrera had the Installer go over the approximately 1,000 square-feet area represented by the coupon with additional core material spray. The final recorded thickness was measured of the core material only, with the film 11 layer peeled away. The relevant inspection reports (see Table 1) of Appendix B include highlighted screenshots of plan sheets that show the area of work and where coupons were collected and include tables that report the measured thicknesses of the core material coupons.

Smoke testing was not applicable for the liner installed on the concrete structural slab because Geo-Seal Core was sprayed directly onto the concrete slab, avoiding the creation of any seams and access below the liner. Smoke testing is required when there is access below the Geo-Seal product and vacuum testing is required when geomembrane materials are welded and anomalies in the welds are observed. To form a continuous protection layer on top of the core material, segments of the film 11 material were overlapped and sprayed with core material to join the materials. No visual anomalies in liner and at film seams were observed. Performing the mil thickness check on core material application to the surface of the concrete structural slab was sufficient for the composite liner CQA due to the continuous coating of core material application and lack of visual anomalies at film seams.

Preconstruction Activities

Prior to installation of the composite liner system on top of the concrete structural slab, Herrera performed reviews of material submittals, Installer's qualifications, and addressed redesigns required of RFIs.

The material submittals provided by the Contractor were reviewed by Herrera engineers for conformance with the approved project plans, project specifications, and RFIs. Following Herrera's review and approval of these materials, COE and Floyd Snider (representing the City to ensure compliance with the Consent Decree), would review and approve, or reject material submittals. If rejected, materials submittals would then be revised and resubmitted until approval had been received by all reviewers.

Changes during construction to the LFG conveyance system were prepared by RCI as an RFI on behalf of the Contractor. RFIs were reviewed and redesigned by Herrera in collaboration with the Consultant team. RFIs are subsequently approved by COE, Floyd Snider, and RCI.

Environmental Control Systems Installation - CQA Testing

Installation and testing of the environmental controls system was photo documented and described within Herrera's field inspection reports (Appendix B).

LFG Collection and Conveyance System

Prior to installation, Herrera observed the high-density polyethylene (HDPE) pipe butt and electro-fusion joining methods. Herrera observed the pipe connections and pressure tests on the joined header pipes before installation. Reports from the fusion joining methods were collected by RCI and reviewed by Herrera and are included in Appendix C. Not all welds were created with the welding machine that is able to log fusions.

Pipe invert elevations and grades were verified by the LFG collection pipe installation Contractor (KLB Construction) and RCI. HWA observed backfilling of pipe trenches and performed compaction testing as required. Immediately prior to pipe placement in the trenches, Herrera and RCI inspected the constructed trench to confirm it was suitably prepared per the Specifications.

The summary of Contractor performed compliance testing as required by COE and the Consent Decree for the solid conveyance piping is below:

- Solid HDPE Pipe Test – HDPE pipe was pneumatically air pressure tested in accordance with ASTM F1417 and as specified in Specification Section 33 35 10.

Installed pipe was surveyed by ASPI. As-built survey information from ASPI was provided to the Consultants to prepare final as-built plans, with the inclusion of any additional changes from RFIs. As-built survey of the LFG system was provided by RCI and Herrera updated drawings as part of the project's Record Drawings. RCI's CQA Report provides the project's Record Drawings. The Building A LFG collection and conveyance pipes were installed and connected to the site LFG system in accordance with design, specification, and CQA requirements.

Composite Liner System

Prior to installation, Herrera observed the individual liner components and the mockup that was performed to replicate the anticipated field conditions and demonstrate proper application techniques and standard of workmanship. Immediately prior to liner deployment, Herrera, RCI and MTN, Inc. (composite liner installation subcontractor) inspected the subgrade surface to confirm it was suitably prepared per the Specifications.

The summary of compliance testing performed as required by COE and the Consent Decree for the composite liner system is below:

- Smoke testing – A smoke test was conducted on all under slab areas upon installation of the base sheet, the sealing of all penetrations, and application of polymer modified asphalt in accordance with specifications that were included with the drawings. Smoke testing was only applicable to and performed on the interior elevator pit liner system. Smoke testing was performed by MTN, Inc and was observed by Herrera.
- Mil thickness testing – A mil reading caliper was used to measure the thickness of Geo-Seal core material coupon samples throughout the installation process to ensure the necessary thickness was met. Thickness verification was in accordance with drawings and specifications that were included with the drawings. Material coupon samples were collected by MTN, Inc. and measured by Herrera.

The composite liner system installation for Building A was completed in accordance with design, specification, and CQA requirements. Composite liner system installation for Building A was documented and tracked with field reports, photos, coupon thickness tables, and marked up drawings of where and when the system was installed on the Building's structural slab footprint.

HDPE Pipe Certification

The fusion weld operator certificate for the pipe fusion welder was collected by RCI and confirmed via submittal by Herrera. RCI also collected the data logger information from each HDPE pipe fusion weld and reports were reviewed by Herrera. Some of the lateral pipe connections were welded via hand welding machine. The hand welding machine does not have the data logger attachment to record welding reports, so the weld temperature was written on the pipe at the weld. Photos were taken to document the connections that were welded via hand welding machine and are included in the relevant field inspection reports. See Appendix C for the pipe fusion reports.

HDPE pipe is PE 4710 and conforms to all applicable AWWA, ASTM, CSA, API, FM, and NSF standards. HDPE pipe and fitting material and installation submittals conformed to the requirements of Specification Section 33 35 10. Refer to approved pipe material submittals for manufacturer certifications, and detailed properties of the HDPE pipe.

Composite Liner System Certification

The Geo-Seal material certificates for the LFG barrier system installed on top of the concrete structural slab were collected by RCI and confirmed via the submittal process by Herrera.

Composite liner material submittals conformed to the requirements of the specifications provided with the drawings. See Field Inspection Reports in Appendix B for composite liner system installation reports.

Changes Made During Course of Construction

Notable RFIs resulting in design changes or clarification related to CQA Consent Decree requirements during Building A environmental controls installation work are described in Table 2 below.

Table 2. RFI Design Changes

RFI #	Subject	Description
Quarter 1 – June 1 through August 30, 2021		
004	Gas Membrane Liner – Material Specification Change – PVC to Geo-Seal	Original drawings LFG 1A1.S, LFG 1A1.N, LFG 1A2, LFG 1A3 had the gas membrane barrier material placed under the 3" topping slab on Level One as PVC. RFI#4 changed this material from PVC to a composite liner system (GeoSeal).
041	Additional details of the composite liner system under elevator pit	Additional details added for how composite liner system was to be added under and around the exterior of the elevator pit.
056	Additional details of the composite liner system throughout the building	Additional drawing LFG1A4 added details for how composite liner system was to be added at different scenarios throughout the building.
Quarter 2 – September 1 through November 30, 2021		
084	LFG Drawing Sheet LFG 1A1.N – Incorrectly Labeled Grid Lines GL 14 to 23	LFG drawing sheet LFG1A1.N had grid lines mislabeled and not matching with Architectural Plan grid lines. RFI#84 revised the grid lines on the drawing sheet to match.
099	Updated CQA Plan – Confirmation	Following the Building B : RFI #103, Building A's CQA Plan was also updated. RFI#99 updated Section 8 of the Building A CQA Plan to include the Gas Membrane Liner – Material Change approved as noted in the Response to RFI#58.

Table 2 (continued). RFI Design Changes		
RFI #	**Subject**	**Description**
Quarter 3 – December 1, 2021 through February 28, 2022		
139	Methane Air Flow Monitoring in HVAC Equipment	RFI #139 clarified the HVAC equipment that needs air flow monitoring and the specific component used for the monitoring.
141	LFG Riser Pipe – Cast in Grade Beam – SOUTH	RFI #141 addressed the issue of the LFG riser pipe being cast into the concrete grade beam with no sleeve. LFG1A2 was revised to provide added pipe sleeve detail for the riser cast in grade beam.
147	CQA Plan – UPDATE – Section 9 Composite Liner System – Manufacturer Testing Documentation	RFI #147 provides updates to drawing LFG1A3 and Sections 9.1 Liner Manufacturing and 9.2 Liner Conformance Testing of the Building CQA Plan to align with the liner manufacturer's testing documentation and submittals.
Quarter 4 – March 1 through May 31, 2022		
155	LFG – Building A Riser vent – Slip Joint Detail Revision	RFI #155 revises the LFG slip joint design at the exterior of Building A due to the vertical portion of the vent being in conflict with the curb wall and siding in the original design.
160	Revision of Fan Units to meet CD requirements of Increased Air Flow	RFI #160 provides a new matrix outlining the equipment change to meet CD increased air flow requirements. RFI #160 establishes that the criteria will be satisfied with fans that are two speed. Low speed will be normal continuous air change per hour, and when gas is detected at 1000 ppm or greater, the gas control system the signal the associated area fan to increase speed to the high speed setpoint that is a minimum of 1 air change per hour greater than the low speed.
162	Final Fan Schedule	RFI #162 provides a revised mechanical schedule and electrical drawings following RFI #160 for Revision of Fan Units to Meet CD Requirements for Increased Air Flow.
Quarter 5 – June 1 through August 31, 2022		
Quarter 6 – September 1 through November 30, 2022		
Quarter 7 – December 1, 2022 through February 28, 2023		
Quarter 8 – March 1 through May 31, 2023		

Notable material submittals are described in Table 3 below.

Table 3. Submittals.

Submittal #	Material	Description
Quarter 1 – June 1 through August 30, 2021		
396	Gas Barrier – Geo Seal Composite Barrier System at Level 1	This submittal provided Geo Seal installation drawings and specifications used throughout the LFG system.
397	Gas Barrier – Elevator Pits – Composite Gas and Waterproofing System	This submittal provided Geo Seal installation drawings and specifications used for the Elevator Pits.
398	Gas Barrier – Authorized Applicator Letter – Geo-Seal	This submittal provided the confirmation that MTN, Inc. had completed the necessary requirements to obtain status of Certified Applicator of EPRO Services, Inc.'s Geo-Seal System for the Riverfront Commercial Everett Building.
400	LFG – HDPE Pipes	This submittal provided HDPE pipe data sheet and resin properties.
402	LFG – HDPE – Elbows, Tees, Fittings	This submittal provided drawings and sizes for HDPE elbows, tees, and fittings.
404	LFG – System Low Pressure Air Test Procedure	This submittal provided low pressure air test procedure and the equipment product catalog.
407	Geotextile – 6 oz Non-Woven Fabric	This submittal provided 6 oz Non-Woven Fabric Geotextile specifications.
Quarter 2 – September 1 through November 30, 2021		
501	Composite Barrier System – Termination Bar	This submittal provided the termination bar installation drawings and specifications.
Quarter 3 – December 1, 2021 through February 28, 2022		
Quarter 4 – March 1 through May 31, 2022		
522	Gas Barrier – Manufacture Source QC Testing Certificates	This submittal provides the manufacturer conformance documents for the Building composite liner system. Conformance documents include a certified applicator letter in addition to manufacturer material certificates of conformance and QC tests.
Quarter 5 – June 1 through August 31, 2022		
565	Gas Barrier – Alternate Film11 Patch	This submittal provides the product information and approval letter from EPRO for the EPRO PreTak PSA Tape, an application that can be used as an alternate method to path the Film11 protection sheeting.
Quarter 6 – September 1 through November 30, 2022		
677	Revision 1: Live Work: HVAC – Fan Schedule (MF #2) – Product Data	This submittal provides the product and performance data for the Building A Live Work Unit LFG fans and vents.

Table 3 (continued). Submittals.		
Submittal #	**Material**	**Description**
Quarter 7 – December 1, 2022 through February 28, 2023		
678	Revision 2: Live Work: HVAC – Heat Recovery Units (ERV#s 8 & A) – Product Data	This submittal provides the revised product and performance data for the Building A Live Work Heat Recovery Units per correspondence with Glumac dated 2023-01-24.
Quarter 8 – March 1 through May 31, 2023		

MTN INC.
ENVIRONMENTAL SERVICES

WORK GUARANTEE/WARRANTY

OWNER: Riverfront Phase 1, LLC

PROJECT: Riverfront-Residential Building A

LOCATION: 3910 Riverfront Blvd, Everett, Washington 98203

Contractor: Shelter Holdings

MTN INC Certifies that all labor furnished and work performed by them are in accordance with the Subcontract, Plans, Specifications and authorized alterations and additions thereto; and that should any defect develop during the Guarantee period as hereinafter defined due to improper workmanship or arrangement, the same, together with any other work affected in correcting such defect shall, upon written notice, be made good by MTN INC without expense to the Owner and/or General Contractor.

The aforesaid Guarantee shall cover all work under the Subcontract, whether or not any portion or trade has been assigned or sublet, for a period of 1 Year.

Date of Substantial Completion: **03/01/24**

Scope of Work: Vapor Mitigation System, Elevator pit Waterproofing

SUBCONTRACTOR: MTN INC

By: 

Title: Project Coordinator

Date: 01/30/23

3395 Carder Court Suite C200
Highlands Ranch, CO 80129

P. 303-768-7310

GEO-SEAL MATERIAL 10-YEAR WARRANTY

Limited Warranty: EPRO Services, Inc. (EPRO) warrants that its materials (*Geo-Seal Film 11, Geo-Seal Core, & Geo-Seal Film 5*) conform to EPRO's published specifications and are free from defects. The duration of this warranty is 10 year(s) commencing on the date material installation is substantially completed. In order for this warranty to apply, all of the following conditions must be met: (i) the warranted project must be registered and accepted by EPRO in writing, prior to application of any EPRO material; (ii) all material must be installed by an EPRO Geo-Seal Authorized Applicator (GAA) per EPRO installation guidelines; (iii) EPRO-supplied Waterstop must be installed in all areas applicable per EPRO installation guidelines; (iv) all fees and costs relating to this Warranty must have been received by EPRO; and (v) the Claims Procedure and Time Limitations set forth below must have been strictly followed.

If the purchaser discovers within this period a failure of this material to conform to this warranty, EPRO must be promptly notified in writing within 30 days at P. O. Box 347, Derby, KS 67037. As the exclusive remedy for any breach of this Warranty, EPRO will refund the price of material only, or replace the defective material, at its election.

What is Not Covered: EPRO does not warrant any material that (a) is not applied in accordance with manufacturer's directions for application (b) is damaged, either before or after application. **NO OTHER WARRANTIES ARE MADE REGARDING THIS PRODUCT, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Limitation on Remedies: In no event shall EPRO be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict tort, or any other legal theory. Such damages include, but are not limited to, loss of profits, delay, loss of use, claims of third parties, or damage to property.

Manner and Time Limit for Enforcing Disputed Warranty: Any controversy or claim arising out of or relating to this Warranty, or the breach thereof, shall be settled by an arbitration administered by the American Arbitration Association in the regional office nearest Wichita, Kansas, in accordance with its Construction Industry Arbitration Rules. Any arbitration or any other action for breach of warranty must be commenced within 1 year following notification of defect.

No Other Warranties: Unless this warranty is modified in a writing signed by both parties, the above-stated warranty is the complete and exclusive agreement between the parties.

	OWNER	APPLICATOR
NAME	Shelter Holdings LLC Everett Riverfront Bldg 1-A	MTN, Inc.
ADDRESS	3910 Riverfront Blvd Everett, WA	3395 Carder Court, Suite C200 Highlands Ranch, CO 80129

This warranty is not valid unless signed and registered by EPRO Services, Inc. PJ Poch

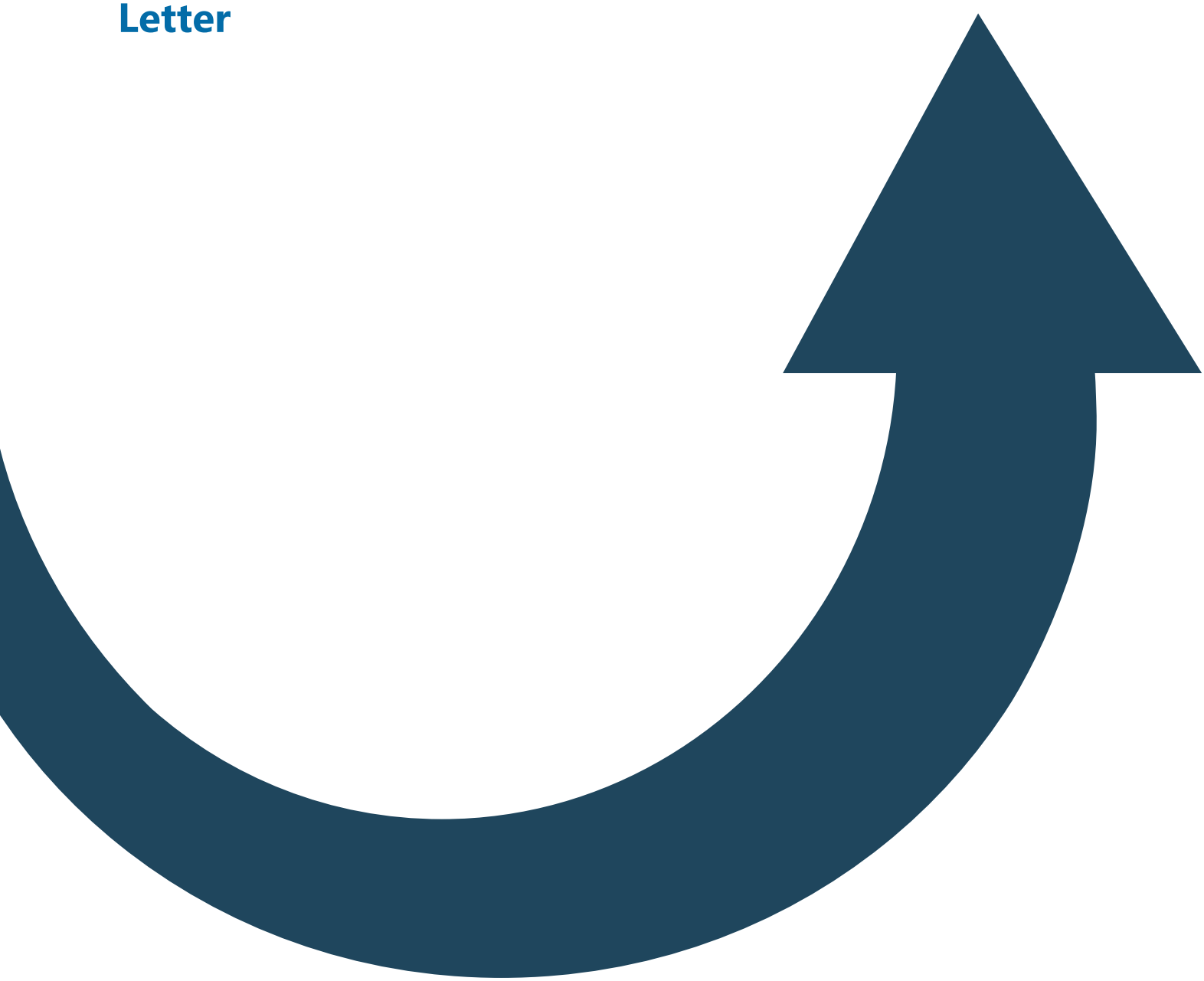
WARRANTY NO: C-WA-01103

WARRANTY START DATE: 2/14/2024

Form Rev 8-1-19

APPENDIX A

Construction Quality Assurance (CQA) Declaration Letter



HERRERA
Science + Planning + Design

February 16, 2024

Riverfront Commercial Investment, LLC
11624 Southeast 5th Street Suite 210
Bellevue, Washington 98005

Subject: Construction Quality Assurance (CQA) Declaration for Riverfront Building A in Everett, Washington

Dear Mr. Evans:

Introduction

This letter discusses the approval of the Riverfront Building A landfill gas management system following the final testing and commissioning of the gas detection, ventilation, and alarming system. All other components for the Building A landfill gas management system were inspected, tested, and approved as discussed in the Construction Quality Assurance (CQA) Report and individual field reports. Requirements for gas detection, ventilation, and alarming for the Building was established by the Consent Decree, specifically the Compliance Monitoring and Contingency Plan (CMCP) attached to the Cleanup Action Plan. The CMCP discusses the following requirements for buildings constructed on the landfill:

- Continuous sensor system in all ground floor spaces;
- Automatic activation of increased interior ventilation via the installed HVAC system and notification of appropriate operations and maintenance personnel if the methane concentration reaches 1,000 ppm;
- Actuation of evacuation and fire department notification alarms if methane concentration reaches 10,000 ppm;
- Activation of trouble light or audible tone and automatic switch to battery power in case of a power failure.

52 MSA PrimaX® IR Infrared (IR) Gas Monitors (gas detectors) connected to the controls for 12 fans were installed throughout the non-Live/Work ground floor spaces of Building A and were inspected and tested over the course of 2 days. The tested gas detectors and fans in the non-Live/Work ground floor spaces include those installed in the stairwells and elevator shafts.

As designed, Building A will be equipped with 3 Chemgard™ Infrared Gas Monitors that provide 3 gas sample points to the subfloor, main floor, and mezzanine levels of each of the 6 Live/Work

units. The Chemgard™ Infrared Gas Monitors were not delivered or installed in time for initial system testing due to supply chain issues, so PrimaX® IR gas detectors were temporarily installed in each Live/Work unit. For this temporary solution, the Building A Methane Gas Control Panel (MGCP-A) was reprogrammed to associate the fan controls with the reading from the one PrimaX® IR detector in each unit. 1 PrimaX® IR gas detector connected to the controls for 2 fans were installed in each Live/Work unit of Building A and were inspected and tested over the course of 2 days. This is a suitable level of protection for safe occupancy for the remainder of the building until the Chemgard™ systems are installed and commissioned in accordance with Amendment 3 of the Consent Decree. The methane detection and ventilation system of the Live/Work units will be tested again once the Chemgard™ equipment is delivered, installed, and programmed. Residential occupancy for the Live/Work units will not be granted until this occurs.

Enclosed are the field reports for the inspection and testing of the MSA PrimaX® IR Infrared Gas Monitors and their connected ventilation fans and alarm systems installed throughout the Level 1 spaces of Building A. The field reports provide the details and photos of each gas detector, ventilation fan, and alarm system validation. The field reports also include a snapshot of project drawings that show a map with the locations of the gas detectors, ventilation fans, and alarms. The parties on site during all or part of testing included Shelter Holdings, LLC; QCC; Follett Engineering; Floyd | Snider; Washington State Department of Ecology; City of Everett; and Herrera.

Commissioning Test Procedure

In order to verify the gas detection, ventilation fan activation, and alarm systems were in proper working order, several tests and checks were performed:

- Non-Live/Work Units
    - Continuous Monitoring and Alarm System
        - Low Level Detection and Alarm Testing
        - High Level Detection and Alarm Testing
    - Ventilation Monitoring and Alarm System
        - Non-Stairwell Ventilation Activation Testing
        - Stairwell Fire Fans Activation Testing
        - Fan Shutdown Alarm Testing
- Live/Work Units
    - Continuous Monitoring and Alarm System
        - Low Level Detection and Alarm Testing

        - High Level Detection and Alarm Testing
    - Ventilation Monitoring and Alarm System
- Emergency and Standby Power System
    - Standby Power System Activation Testing
    - Emergency Notification Testing

Results of testing are included in Table 1 at the end of this letter. All system components passed.

Non-Live/Work Units

The majority of the Level 1 spaces in Building A are made up of commercial, utility, and building amenity spaces.

Continuous Monitoring and Alarm System

Building A is equipped with 52 PrimaX® IR gas detectors that were tested for accurate gas detection reading and alarm notification at the MGCP-A. QCC calibrated the detectors and programmed the connection to the MGCP-A prior to system validation testing on February 14 and 15. The testing procedure for the continuous monitoring and alarm system was the same for each detector.

Low Level Detection and Alarm Testing:

QCC applied 25,000 parts per million (ppm) (50% lower explosive limit (LEL)) methane gas to the detector while QCC and Herrera verified the Low Alarm notification was activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas low level alarm as the detector reading climbed and passed the low level setpoint of 1,000 ppm (2.0% LEL). The gas level on the MGCP-A panel returned to zero ppm after test gas was removed.

High Level Detection and Alarm Testing:

QCC applied 25,000 ppm (50% LEL) methane gas to the detector while QCC and Herrera verified the High Alarm notification was activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas high level alarm as the detector reading climbed and passed the high level setpoint of 10,000 ppm (20% LEL). The gas level on the MGCP-A panel returned to zero ppm after test gas was removed.

The Building A non-Live/Work continuous gas detectors and alarm system from the MGCP-A are confirmed to be installed, calibrated, commissioned, and operating per design.

Ventilation Monitoring and Alarm System

Building A is equipped with 12 ventilation fans that were tested for accurate air change activation at the low level setpoint of 1,000 ppm and proper notification when the fan shuts down. Fans capable of performing air changes at the minimum and increased airflows were installed by the mechanical contractor prior to system validation testing on February 14 and 15. The stairwell fan speed was pre-programmed to run per the Fire Alarm Control Panel (FACP) ventilation requirements. See drawing EFA6 (also included in field report attachments) for the designed and increased airflows and air changes per hour for each fan. The attached Building A fan Airtest report details the actual tested airflow capabilities of each fan and the results confirm that all fans meet the required minimum continuous and increased airflow.

Non-Stairwell Ventilation Activation Testing:

As designed, non-stairwell fans ran continuously at the minimum low speed air change per hour (see snapshot of drawing EFA6 attached to the field reports for exact minimum air change) when no test gas was applied. The non-stairwell fans bump up an additional minimum of 1.0 ACH with a detection of 1,000 ppm at associated detectors. QCC applied 25,000 ppm methane gas to the non-stairwell detectors on February 14 and 15 and confirmed that each associated fan ramped up to the high speed when the reading reached the low-level of 1,000 ppm. Activation was verified by hearing the fan increase in volume.

QCC and Herrera verified that fans were labeled as Running on the MGCP-A screen.

Stairwell Fire Fans Activation Testing:

The stairwells are not considered occupied spaces and therefore do not have an HVAC system capable of providing continuous air flow at one air change per hour like the typical Level 1 non-stairwell fans. As designed, stairwell fans remained off with the dampers closed in normal conditions. On February 15, QCC applied 25,000 ppm methane gas to the ceiling-mounted detectors and confirmed that each stair fan activated when the reading reached the low-level of 1,000 ppm. For the duct-mounted detectors, QCC applied 25,000 ppm methane gas to the detector test ports positioned outside of the fan ducts and confirmed activation of the fan when the reading reached the low-level of 1,000 ppm. The stairwell pressurization fan activation mitigates further intrusion of any methane from entering the stairwell or the fan ducting, and the barometric damper allows for exhausting of any methane that could accumulate at the ceiling. The fan deactivated when the 25,000 ppm methane gas was removed and the reading at the MGCP-A returned to below 1,000 ppm.

Fan Shutdown Alarm Testing:

All Building A Level 1 fans were manually shutoff during the testing to confirm that the fan status switched to Fail on the MGCP-A screen and that a visual "No Fan Air Flow" alarm triggered. Herrera received a phone call from the autodialer describing each fan failure alarm. The Building A activated fan ventilation and alarm system of the Live/Work units from the Subfloor Ventilation Fan Control Panel and the MGCP-A are confirmed to be installed, commissioned, and operating per design.

Live/Work Units

The southwest area of Level 1 in Building A is made up of Live/Work units where building occupants can live on the first floor of the building.

Continuous Monitoring and Alarm System

As designed, Building A will be equipped with 3 Chemgard™ Infrared Gas Monitors that provide 3 gas sample points to the subfloor, main floor, and mezzanine level of each of the 6 Live/Work units. Per RFI #326, due to supply chain issues with the Chemgard™ panels that contain the methane detectors for the Live/Work units, the same PrimaX® IR detectors installed throughout the rest of the Level 1 spaces of Building A were installed on the ceiling of each Live/Work unit as a temporary measure in order to test and approve the methane detection and ventilation function of the Live/Work units. QCC calibrated the detectors and programmed the connection to the MGCP-A prior to system validation testing on February 14 and 15. The temporary PrimaX® IR detectors in each of the Live/Work units were connected and programmed to the associated ERV and subfloor fans for the unit. Once the Chemgard™ methane detectors are installed, there will be three sample ports per Live/Work unit. The methane detection and ventilation system of the Live/Work units will be tested again once the Chemgard™ equipment is delivered, installed, and programmed.

For this temporary solution, the MGCP-A was reprogrammed to associate the controls for both fans with the reading from the one PrimaX® IR detector in each unit. When test gas was exposed to the PrimaX® IR detector within a unit, the methane concentration readings and alarms for all three Live/Work programmed detector signals (subfloor, main floor, and mezzanine) were activated the same on the MGCP-A. The ERV and subfloor fans activated accordingly as well. The testing procedure for the continuous monitoring and alarm system was the same for each gas sample point.

Low Level Detection and Alarm Testing:

QCC applied 25,000 ppm (50% LEL) methane gas to the detector while QCC and Herrera verified the Low Alarm notifications were activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas low level alarms as the detector readings climbed and passed the low level setpoint of 1,000 ppm (2% LEL). The gas level on the MGCP-A panel returned to zero ppm after test gas was removed.

High Level Detection and Alarm Testing:

QCC applied 25,000 ppm (50% LEL) methane gas to the detector while QCC and Herrera verified the High Alarm notifications were activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas high level alarms as the detector readings climbed and passed the high level setpoint of 10,000 ppm (20% LEL). The gas level on the MGCP-A panel returned to zero ppm after test gas was removed.

For all detectors but one, validation testing was performed in Test mode which was set at the MGCP-A. On Test mode, the sound alarm does not go off, only the visual alarm was activated on the MGCP-A screen. For the one detector, the MGCP-A was switched to Auto and the fire alarm activated in the building at the High Alarm Level of 10,000 ppm. For the test, the FACP notification to the fire department was intentionally disconnected to not alert the fire department.

The temporary Building A Live/Work continuous gas detectors and alarm system from the MGCP-A are confirmed to be installed, calibrated, commissioned, and operating. Instead of monitoring the subfloor, main floor, and mezzanine spaces independently via the Chemgard™ system, the Live/Work units are temporarily being monitored with one PrimaX® detector on the ceiling of the mezzanine space. This is a suitable level of protection for safe occupancy for the remainder of the building until the Chemgard™ Infrared Gas Monitors are installed and the as-designed methane detection and ventilation system of the Live/Work units can be tested and commissioned.

Ventilation Monitoring and Alarm System

Each Building A Live/Work unit is equipped with 1 ERV fan and 1 subfloor ventilation fan that were tested for accurate air change activation at the low level setpoint of 1,000 ppm and proper notification when the fan shuts down. Fans capable of performing air changes at the minimum and increased airflows were installed by the mechanical contractor prior to system validation testing on February 14 and 15. See drawings EFWL7 and EFWL9 (also included in field report attachments) for the designed and increased airflows and air changes per hour for the subfloor and ERV fans, respectively. The attached Building A fan Airtest report details the actual tested airflow capabilities of each fan and the results confirm that all fans meet the required minimum continuous and increased airflow.

As designed, the Live/Work ERV fans ran continuously at the minimum low speed air change per hour (see snapshot of drawings EFWL7 and EFWL9 attached to the field reports for exact minimum air change) when no test gas was applied. The Live/Work subfloor fans are normally off and get activated to provide a minimum 4 ACH when methane gas at the low level of 1,000 ppm is detected at any of the gas sample points. The dampers are normally closed and open upon low level detection of 1,000 ppm methane. QCC applied test gas to the temporarily installed PrimaX® gas detector in each unit and the system ventilation response was checked when the detected concentration exceeded the low-level threshold of 1,000 ppm.

Emergency and Standby Power System

Building A is equipped with a standby power system that turns on in case of power outages.

Standby Power System Activation Testing

Utility power was manually disconnected from Building A to test and verify the Emergency and Standby Power System turned on and provided backup power to the gas detectors, ventilation fans, MGCP-A, and the Subfloor Ventilation Fan Control Panel. MGCP-A was confirmed to be on with correct methane gas level reads. The 113HL Corridor detector received test gas of 25,000 ppm for alarm spot checking during the testing on February 15 (see attached field report) while the backup power was on.

Emergency Notification Testing

QCC and Herrera confirmed alarm for emergency generator, fire pump, and both emergency and standby automatic transfer switch (ATS) triggered correctly at the MGCP-A screen. Herrera received phone calls from the autodialer describing the alarms.

Conclusion

Herrera has completed the commissioning documentation for the construction and startup of the Riverfront Building A indoor methane monitoring, ventilation, and alarm system, with the exception of residential occupancy of the Live/Work units. Once the Chemgard™ equipment is installed, Herrera will return and perform testing and commissioning of the permanent detection system within the Live/Work units. The testing of the temporary PrimaX® detector installed in each Live/Work space and verification of the correct control of the associated permanent subfloor and ERV fans confirm the methane detection, ventilation, and alarm system within Live/Work units are currently functional and provide an adequate level of protection that meets the intent of safe occupancy for the remainder of the building. The Live/Work units are currently operating under a temporary solution that is confirmed to provide adequate methane monitoring and response until the permanent monitoring systems are installed and tested. Herrera declares, in its professional engineering judgment and opinion, that the Riverfront Building A landfill gas management, detection, ventilation, and alarming systems are complete and functional. Riverfront Building A, with the exception of residential occupancy of the Live/Work units, can receive occupancy at this time.

Sincerely,

Herrera Environmental Consultants, Inc.

Tyson Wright, P.E.

Senior Engineer

Enclosure:

Cc: FR 028 02142024 Riverfront Building A LFG HEC

FR 029 02152024 Riverfront Building A LFG HEC

Fan Air Balance Report

Table 1. Results of Gas Detection, Ventilation, and Alarming Validation Testing for Building A

				1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
STR1C	Stair # 1 - top of stairwell	SPF-1	2/15/2024	Pass	Pass	Pass	Pass	Pass
STR1D	Stari # 1 - Duct mounted (roof)	SPF-1	2/15/2024	Pass	Pass	Pass	Pass	Pass
101-1	COMMERCIAL FLEX 101	ERV-4	2/14/2025	Pass	Pass	Pass	Pass	Pass
101AHL	Live work - cooridor	ERV-8	2/15/2024	Pass	Pass	Pass	Pass	Pass
101-2	COMMERCIAL FLEX 101	ERV-4	2/14/2025	Pass	Pass	Pass	Pass	Pass
101BHL	Live work - cooridor	ERV-8	2/15/2024	Pass	Pass	Pass	Pass	Pass
101-3	COMMERCIAL FLEX 101	ERV-3	2/14/2025	Pass	Pass	Pass	Pass	Pass
101CHL	Live work - cooridor	ERV-8	2/15/2024	Pass	Pass	Pass	Pass	Pass
101-4	COMMERCIAL FLEX 101	ERV-3	2/14/2025	Pass	Pass	Pass	Pass	Pass
104	RESTROOM 104	ERV-8	2/14/2025	Pass	Pass	Pass	Pass	Pass
105	RESTROOM 105	ERV-8	2/14/2025	Pass	Pass	Pass	Pass	Pass
102	BIKE ROOM 102	ERV-8	2/15/2024	Pass	Pass	Pass	Pass	Pass
103A	PARCEL ROOM 103A	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
103	PARCEL ROOM 103	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
106-1	LOBBY 106	ERV-8	2/14/2025	Pass	Pass	Pass	Pass	Pass
123	VESTIBULE 123 (East)	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
122	VESTIBULE 122 (west)	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
106-2	LOBBY 106	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
124	CONCIERGE 124	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
106-3	LOBBY 106	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
STR2C	Stair # 2 - top of stairwell	SPF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass
STR2D	Stair # 2 - duct mounted (roof)	SPF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass
ELEV	ELEVATOR (top of hoistway)	N/A	2/15/2024	Pass	Pass	Pass	Pass	Pass
107	MOVE-IN ROOM 107	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
108	ELEVATOR MACHINE ROOM 108	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass

				1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
108HL	CORRIDOR	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
110-1	LOUNGE 110	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
110-2	LOUNGE 110	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
109	JANITOR 109	ERV-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
111	TRASH 111	EF-7	2/14/2025	Pass	Pass	Pass	Pass	Pass
113	USS - TRANSFORMER 113	SF-4	2/14/2025	Pass	Pass	Pass	Pass	Pass
113HL	CORRIDOR	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
115	MPOE 115	SF-3	2/14/2025	Pass	Pass	Pass	Pass	Pass
121-1	COMMERCIAL FLEX 121	ERV-2	2/14/2025	Pass	Pass	Pass	Pass	Pass
114	ELECTRICAL 114	SF-3	2/14/2025	Pass	Pass	Pass	Pass	Pass
114A	ELECTRICAL BACKUP 114A	SF-3	2/14/2025	Pass	Pass	Pass	Pass	Pass
116	GENERATOR 116	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
116HL	CORRIDOR	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
121-2	COMMERCIAL FLEX 121	ERV-2	2/14/2025	Pass	Pass	Pass	Pass	Pass
117	FIRE ALARM/RISER ROOM 117	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
118	WATER SERVICE 118	EF-5	2/14/2025	Pass	Pass	Pass	Pass	Pass
119	MAINTENANCE 119	EF-6	2/14/2025	Pass	Pass	Pass	Pass	Pass
120	DOG WASH 120	SF-1	2/14/2025	Pass	Pass	Pass	Pass	Pass
121-3	COMMERCIAL FLEX 121	ERV-1	2/14/2025	Pass	Pass	Pass	Pass	Pass
120HL	CORRIDOR	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
STR3C	STAIR #3 - TOP OF STAILLWELL	SPF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass
STR3D	STAIR #3 - DUCT MOUNTED (ROOF)	SPF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass
119B	MAINTENANCE 119B	EF-6	2/14/2025	Pass	Pass	Pass	Pass	Pass
100	CORRIDOR	N/A	2/14/2025	Pass	Pass	Pass	Pass	Pass
121-4	COMMERCIAL FLEX 121	ERV-1	2/14/2025	Pass	Pass	Pass	Pass	Pass

				1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
121-5	COMMERCIAL FLEX 121	ERV-1	2/14/2025	Pass	Pass	Pass	Pass	Pass
121-6	COMMERCIAL FLEX 121	ERV-1	2/14/2025	Pass	Pass	Pass	Pass	Pass

Notes:
Pass Test passed
HMI Human Machine Interface

Table 2. Results of Ventilation Fan Testing for Building A

MG Ventilation Fan Checklist				1,000 PPM (2% LEL) Test		FAN FAIL TEST	
No.	Location	Corresponding Fan(s)	Test Date	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
1	WATER SERVICE 118	EF-5	2/15/2024	Pass	Pass	Pass	Pass
2	MAINTENANCE 119	EF-6	2/15/2024	Pass	Pass	Pass	Pass
3	ROOF	EF-7	2/15/2024	Pass	Pass	Pass	Pass
4	COMMERCIAL FLEX	ERV-1	2/15/2024	Pass	Pass	Pass	Pass
5	COMMERCIAL FLEX	ERV-2	2/15/2024	Pass	Pass	Pass	Pass
6	COMMERCIAL FLEX	ERV-3	2/15/2024	Pass	Pass	Pass	Pass
7	COMMERCIAL FLEX	ERV-4	2/15/2024	Pass	Pass	Pass	Pass
8	COMMERCIAL FLEX	ERV-5	2/15/2024	Pass	Pass	Pass	Pass
9	BIKE ROOM 102	ERV-8	2/15/2024	Pass	Pass	Pass	Pass
10	DOG WASH	SF-1	2/15/2024	Pass	Pass	Pass	Pass
11	ELECTRICAL 114	SF-3	2/15/2024	Pass	Pass	Pass	Pass
12	TRASH 111	SF-4	2/15/2024	Pass	Pass	Pass	Pass

Notes:
Pass Test passed
HMI Human Machine Interface

Table 3. Results of Stairwell Fan Testing for Building A

MG Stairwell Fan Checklist				1,000 PPM (2% LEL) Test		FAN FAIL TEST	
Tag No.	Location	Corresponding Fan(s)	HMI Alarm	HMI Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
13	STAIRWELL 1	SPF-1	2/15/2024	Pass	Pass	Pass	Pass
14	STAIRWELL 2	SPF-1	2/15/2024	Pass	Pass	Pass	Pass
15	STAIRWELL 3	SPF-3	2/15/2024	Pass	Pass	Pass	Pass

Notes:
Pass Test passed
HMI Human Machine Interface

Table 4. Results of Live/Work Ventilation Fan Testing for Building A

MG Live/Work Ventilation Fan Checklist			1,000 PPM (2% LEL) Test		
Tag No.	Location	Test Date	SBMF Fan Running	ERV to HI Speed	LVR Open
ERV1	UNIT #1 (151)	2/14/2024	Not Applicable	Pass	Not Applicable
SBMF1	UNIT #1 (151)	2/14/2024	Pass	Not Applicable	Not Applicable
LVR1	UNIT #1 (151)	2/14/2024	Not Applicable	Not Applicable	Pass
ERV2	UNIT #2 (153)	2/15/2024	Not Applicable	Pass	Not Applicable
SBMF2	UNIT #2 (153)	2/15/2024	Pass	Not Applicable	Not Applicable
LVR2	UNIT #2 (153)	2/15/2024	Not Applicable	Not Applicable	Pass
ERV3	UNIT #3 (155)	2/15/2024	Not Applicable	Pass	Not Applicable
SBMF3	UNIT #3 (155)	2/15/2024	Pass	Not Applicable	Not Applicable
LVR3	UNIT #3 (155)	2/15/2024	Not Applicable	Not Applicable	Pass
ERV4	UNIT #4 (157)	2/15/2024	Not Applicable	Pass	Not Applicable
SBMF4	UNIT #4 (157)	2/15/2024	Pass	Not Applicable	Not Applicable
LVR4	UNIT #4 (157)	2/15/2024	Not Applicable	Not Applicable	Pass
ERV5	UNIT #5 (159)	2/15/2024	Not Applicable	Pass	Not Applicable
SBMF5	UNIT #5 (159)	2/15/2024	Pass	Not Applicable	Not Applicable
LVR5	UNIT #5 (159)	2/15/2024	Not Applicable	Not Applicable	Pass
ERV6	UNIT #6 (161)	2/15/2024	Not Applicable	Pass	Not Applicable
SBMF6	UNIT #6 (161)	2/15/2024	Pass	Not Applicable	Not Applicable
LVR6	UNIT #6 (161)	2/15/2024	Not Applicable	Not Applicable	Pass

Notes:
Pass Test passed
Test not applicable.

Table 5. Results of Gas Detection, Ventilation, and Alarming Validation Testing for Live/Work Units in Building A

				1,000 PPM (2% LEL) Test					10,000 (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarms	Autodialer Alarm	ERV to HI Speed	Subfloor Fan Running	Damper Open	HMI Alarms	Autodialer Alarm
151-1M	Unit 151 (MEZZ) - Chemgard 1, Channel 3	Livework - ERV-1 SBMF-1	2/14/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1L	Unit 151 (main floor) - Chemgard 1, Channel 2	Livework - ERV-1 SBMF-1	2/14/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1S	Unit 151 (Subfloor) - Chemgard 1, Channel 1	Livework - SBMF-1	2/14/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
153-2M	Unit 153 (Mezz) - Chemgard 2, Channel 2	Livework - ERV-2 SBMF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2L	Unit 153 (main floor) Chemgard 2, Channel 1	Livework - ERV-2 SBMF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2S	Unit 153 (Subflood) Chemgard 1, Channel 4	Live work - SBMF-2	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
155-3M	Unit 155 (Mezz) - Chemgard 2, Channel 5	Livework - ERV-3 SBMF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3L	Unit 155 (main floor) Chemgard 2, Channel 4	Livework - ERV-3 SBMF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3S	Unit 155 (Subfloor) - Chemgard 2, Channel 3	Live work - SBMF-3	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
157-4M	Unit 157 (Mezz) – Chemgard 2, Channel 8	Livework - ERV-4 SBMF-4	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass

				1,000 PPM (2% LEL) Test					10,000 (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarms	Autodialer Alarm	ERV to HI Speed	Subfloor Fan Running	Damper Open	HMI Alarms	Autodialer Alarm
157-4L	Unit 157 (main floor) - Chemgard 2, Channel 7	Livework - ERV-4 SBMF-4	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
157-4S	Unit 157 (Subfloor) - Chemgard 2, Channel 6	Live work - SBMF-4	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
159-5M	Unit 159 (Mezz) - Chemgard 3, Channel 3	Livework - ERV-5 SBMF-5	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5L	Unit 159 (main floor) - Chemgard 3, Channel 2	Livework - ERV-5 SBMF-5	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5S	Unit 159 (Subfloor) - Chemgard 3, Channel 1	Live work - SBMF-5	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
161-6M	Unit 161 (Mezz) - Chemgard 3, Channel 6	Livework - ERV-6 SBMF-6	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6L	Unit 161 (main floor) - Chemgard 3, Channel 5	Livework - ERV-6 SBMF-6	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6S	Unit 161 (Subfloor) - Chemgard 3, Channel 4	Live work - SBMF-6	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass

Notes:

Pass	Test passed
	Test not applicable.
HMI	Human Machine Interface

Herrera Field Inspection Report

Herrera Project No.: 15-06075-006	**Report No.:** 028

Permit No.: B2003-013

Date: 2/14/2024

Time: 8:00 am to 4:00 pm

Everett Riverfront – Building A	**Location: Everett, Washington**	**Weather:** Sunny and low 40s
Client: Shelter Holdings, LLC	**Client Rep.** Dave Fiala	**Project Eng.:** Tyson Wright, PE
Contractor: QCC	**Contractor Rep:** Christina Hsu	**HEC Rep.:** Camryn Steiner

Herrera Environmental Consultants is providing 3rd party inspection of the landfill gas barrier and collection and conveyance system for Building B. Inspection Reports will be provided to both Shelter and the City of Everett Building Official documenting CQA requirements and installation of the system per the design.

Activity:

- Arrived on-site for methane detection, ventilation, and alarm system testing and commissioning of Building A. Met with Christina and Alex from QCC; and Dave Fiala. Vince Follett joined from around 10am-12:30pm.
- Randy with the City, Jeff with Floyd | Snider, Michael with Herrera, and Sunny with Ecology observed commissioning from about 10:45 to 11:15am.
- Building A overview screen showed 124 Concierge detector reading about 1,500 ppm after QCC had already calibrated the detector on an earlier day. Brought surface emissions monitor (SEM 5000) into room and around detector to confirm methane read. SEM 5000 showed 4 ppm so QCC recalibrated detector and detector read properly on Overview screen for the rest of the day.
- Discovered that there was much less test gas we used for Building B commissioning leftover for Building A and there wasn't going to be enough 1,250 ppm and 12,500 ppm methane gas for the Building A methane detection system commissioning.
- Found ample amount of 25,000 ppm detector recalibration gas so used that for the low-level and high-level detection test.
- For low level detection test with 25,000 ppm methane gas, Christina changed the settings so the alarm would go off with a delay of 1 seconds. Alex exposed each detector to 25,000 ppm gas for just a second before removing the gas which was enough to trigger the low-level alarm set point of 1,000 ppm. Methane Gas Low Level Warning level still needs to be programmed.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper low-level alarm visual alert was activated on the control panel screen as the gas value climbed and reached 1,000 ppm in reading during the validation test.

- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of low-level alarm once the low-level alarm set point of 1,000 ppm was reached.
- Alex confirmed low level fan activation for detectors that are hooked up to HVAC system when he was in close enough proximity to hear the fan. When not close enough, Camryn or Vince confirmed fan ramped up to high speed via volume increase of fan while Christina watched Building A control panel screen to confirm reading and low-level alarm visual alert.
- Either Alex, Vince or Camryn confirmed fan returned to normal operation via volume decrease of fan once the methane read returned to below the low-level of 1,000 ppm and eventually back to zero.
- Alex exposed detector to methane test gas again for the high-level alarm test. Christina disabled the low-level alarm temporarily to focus on the high-level alarm confirmation.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper alarm High Level alarm was activated on the control panel screen as the gas value climbed and reached 10,000 ppm in reading during the validation test. Methane Gas High Level Warning level still needs to be programmed.
- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of high-level alarm once the high-level alarm set point of 10,000 ppm was reached.
- The methane detection and ventilation system of Live/Work unit 151 was tested the same as the Level 1 spaces. Per RFI #326, due to supply chain issues with the Chemgard panels that contain the methane detectors for the Live/Work units, the same PrimaX® IR detectors installed throughout the rest of the Level 1 spaces of Building A and B were installed on the ceiling of each Live/Work unit as a temporary measure in order to test and approve the methane detection and ventilation function of the Live/Work units (see Figure 2 and Photo 2). The temporary PrimaX® IR detectors in each of the Live/Work units were connected and programmed to the associated ERV and subfloor fans for the unit. Once the Chemgard methane detectors are installed, there will be three sample ports per Live/Work unit. For this temporary solution, the three sample signals were connected to the one temporary PrimaX® IR detector so when 25,000 ppm gas was exposed to the detector, the methane concentrations and alarms for all three sample signals were activated at the control panel (see Photo 6). The ERV and subfloor fans activated accordingly as well. The methane detection and ventilation system of the Live/Work units will be tested again once the Chemgard equipment is delivered, installed, and programmed.
- Alex removed methane test gas.
- Confirmed the gas reading returned to zero at the control panel.
- All detectors, fans, and alarms tested on the day are functioning per CQA and Consent Decree requirements. See Table 1 at the end of report for summary.
- Photos were taken throughout inspection and testing.

Photo 1. Installed and calibrated permanent PrimaX® IR detector in Building A Level 1 space.

Photo 2. Installed and calibrated temporary PrimaX® IR detector in Building A Live/Work Unit.

Photo 3. Alex with QCC applying 114 Electrical Room detector with test gas.

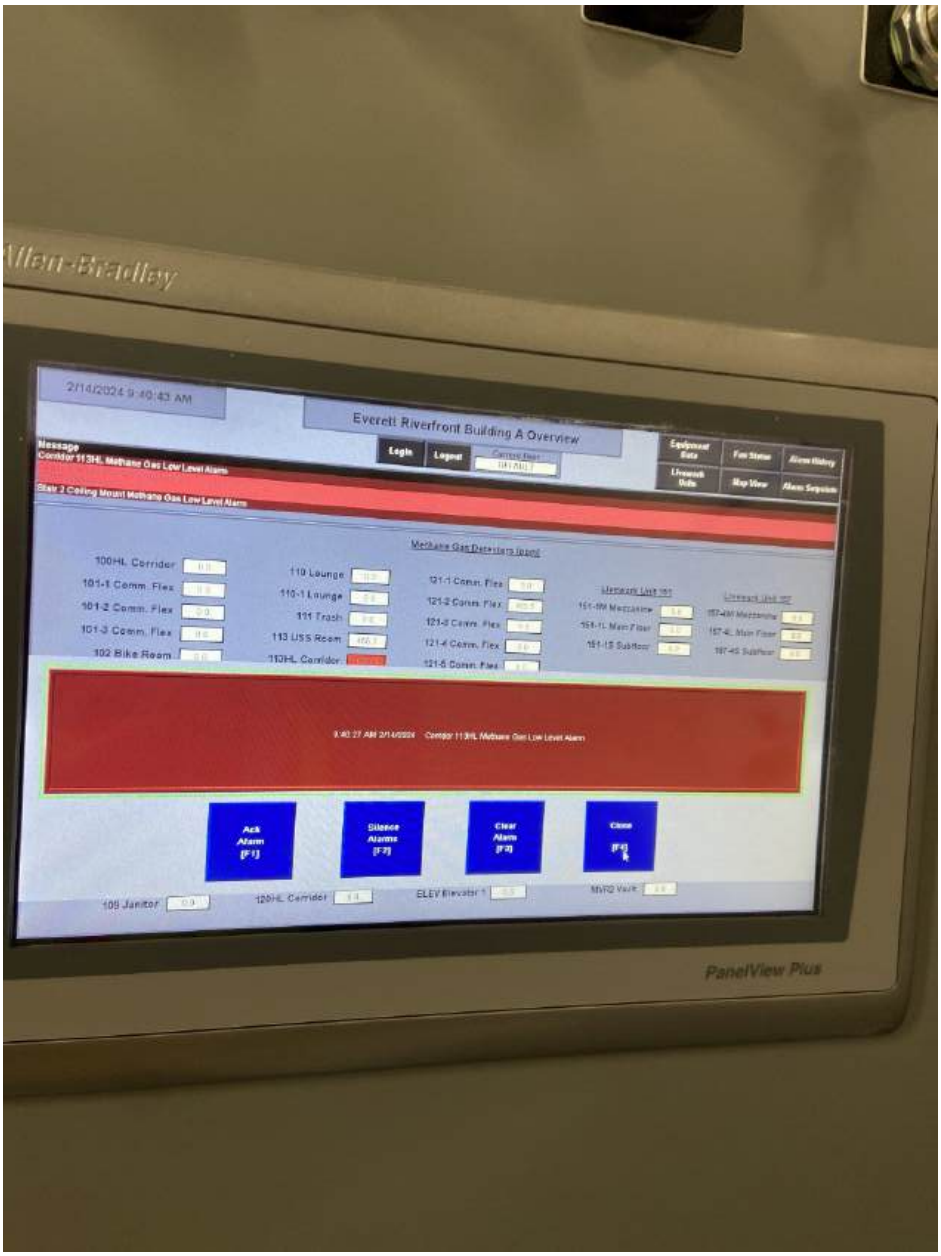


Photo 4. Building A Control Panel Overview screen with Methane Gas Low Level Alarm alert for Corridor 113HL detector.

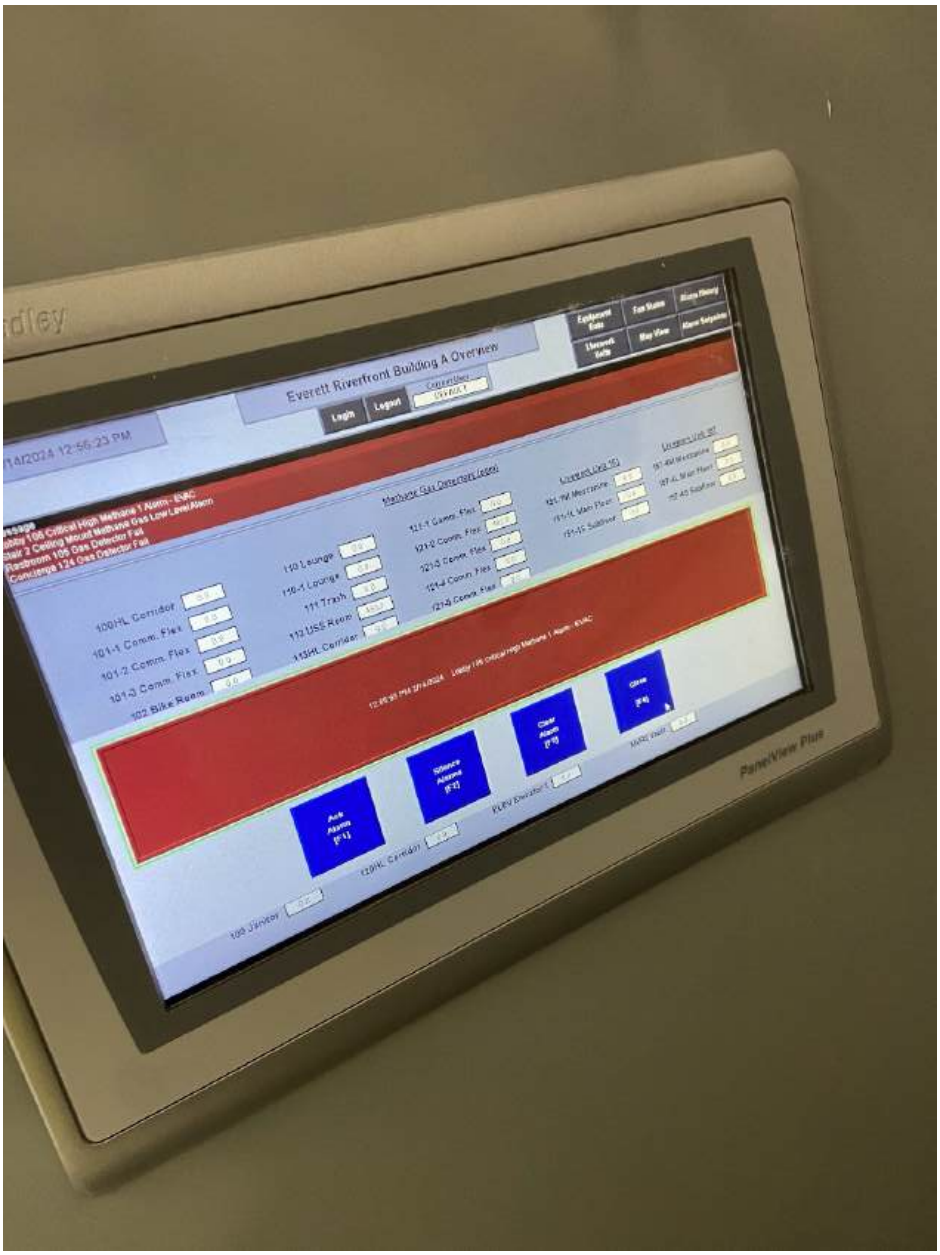


Photo 5. Building A Control Panel Overview screen with Critical High Methane Alarm alert for Lobby 106 detector.

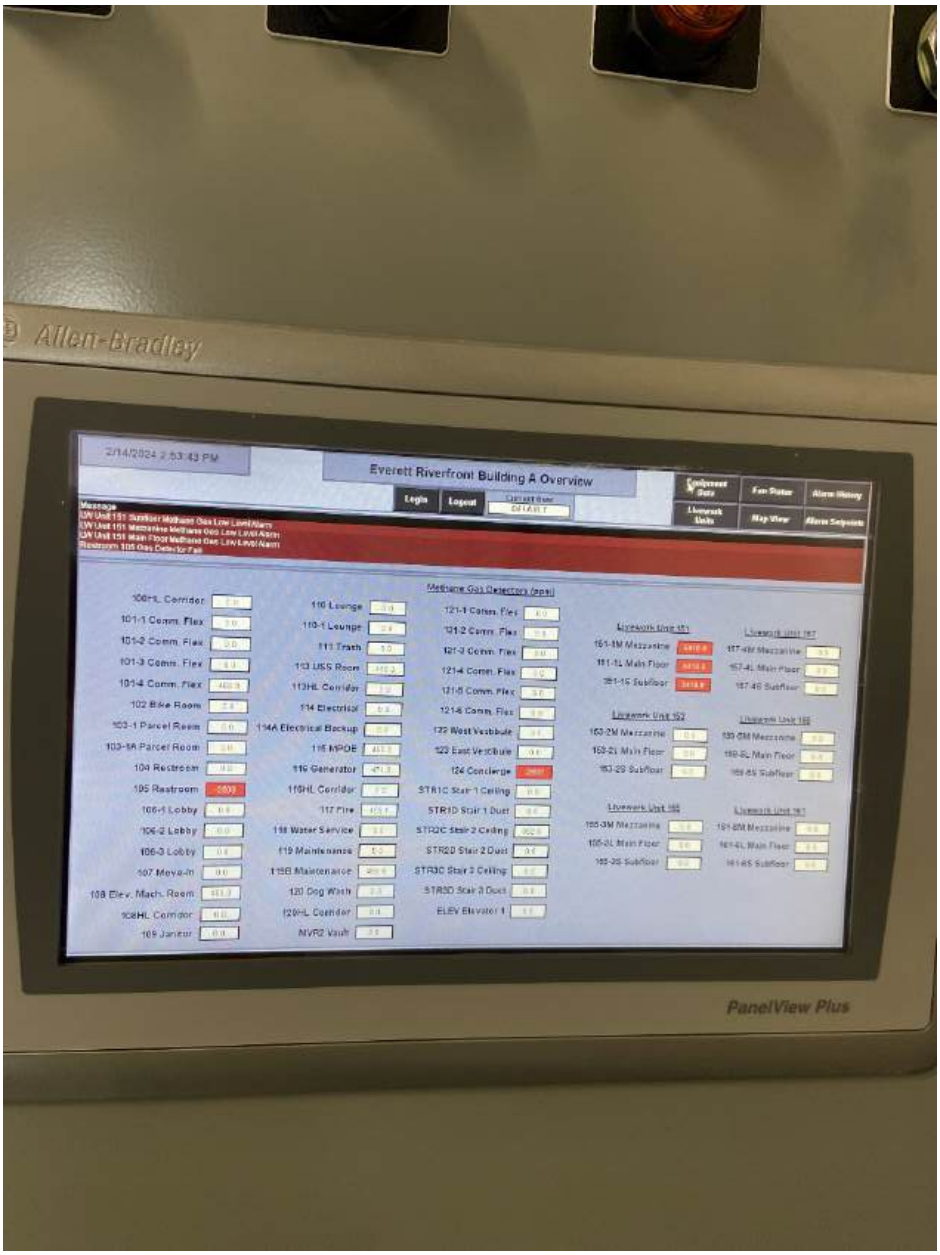


Photo 6. Live/Work Unit 151 Mezzanine, Main Floor, and Subfloor detectors displaying same methane ppm read when temporarily installed PrimaX® IR detector was being exposed to gas during test.

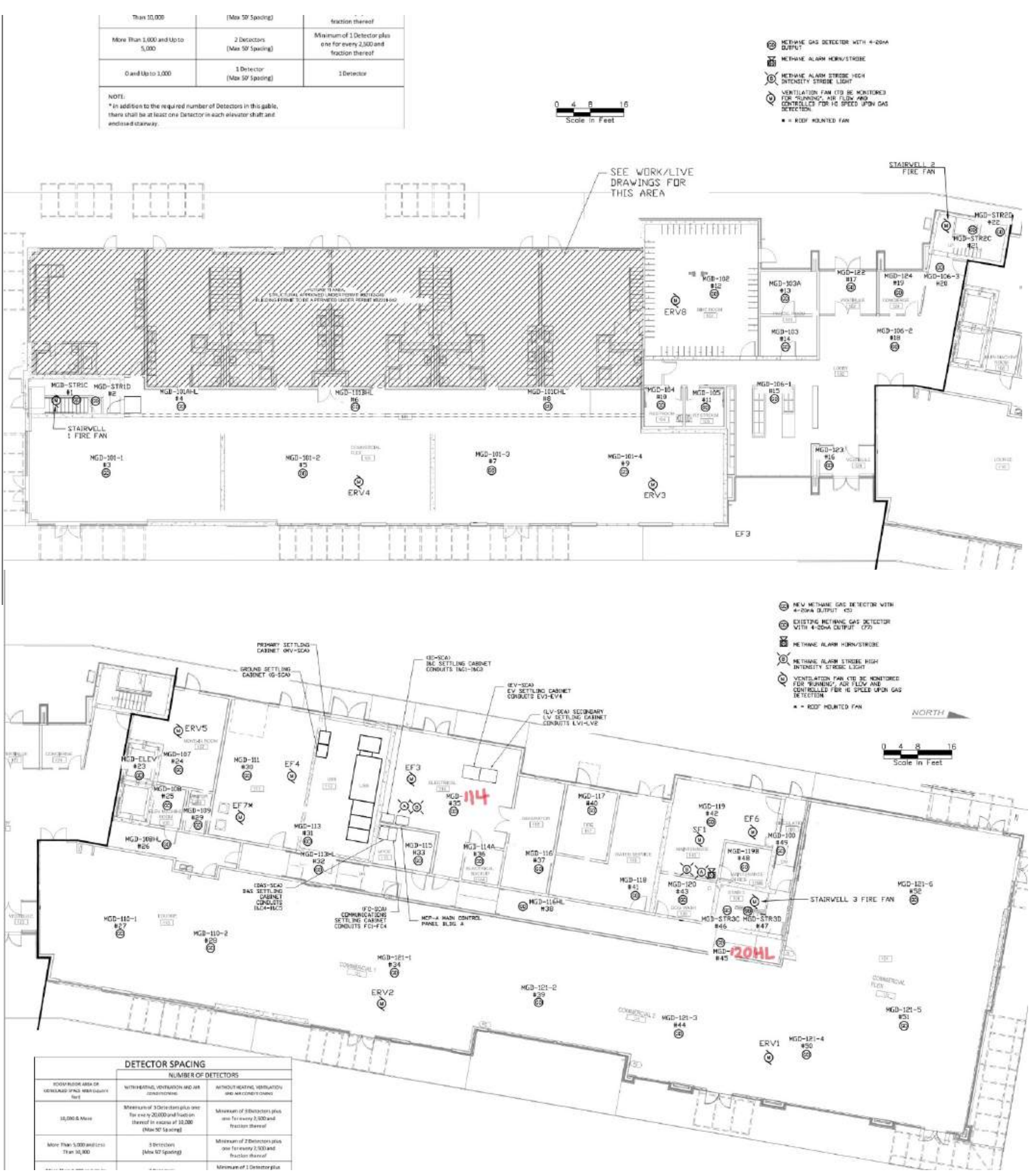


Figure 1. Location of detectors, ventilation fans, and alarms through non-Live/Work unit Level 1 spaces.

CONDUIT & WIRE (C&W) SCHEDULE

TAG #	CONDUIT SIZE	CONDUIT TYPE	WIRE DESCRIPTION	FROM	TO	NOTES
SL	1"	PVC	1/4" POLY TUBE	MULTIDETECTOR GAS PANEL	SAMPLING POINT IN WORK/LIVE UNIT	SAMPLE TUBE
M	1/2"	EMT	3#14	SUBFLOOR FAN CONTROL PANEL	SUBFLOOR DAMPER MOTOR	ERV FAN "RUNNING" MONITORING
ZS	1/2"	EMT	3#14	SUBFLOOR FAN CONTROL PANEL	SUBFLOOR DAMPER POSITION SWITCH	ERV FAN "RUNNING" MONITORING
GD	3/4"	EMT	#16 TST & 2#14 *	IR GAS DETECTOR	MCP-A (IN ELEC RM.)	4-20ma SIGNAL %LEL TO MCP-A

* NOTE: GD CONDUCTORS MAY BE COMBINED IN RACEWAYS TO THE MCP. INSTALL PER THE NEC FOR RACEWAY SIZING BASED ON THE WIRE COUNT IN THE RACEWAY

SYMBOLS

- SUBFLOOR METHANE GAS SAMPLING POINT TO MULTIPORT GAS DETECTOR GMSA CHEMGARD AND ACCESS PORT IN THE FLOOR. ACTIVATES SUB FLOOR VENTILATION BLOWER AT 1,000 PPM (20% LEL) AND EVACUATION ALARM AT 10,000 PPM (40% LEL).
- LIVING SPACE METHANE GAS SAMPLING POINT TO MULTIPORT GAS DETECTOR GMSA CHEMGARD. ACTIVATES SUBFLOOR VENTILATOR/BLOWER AND INCREASES AIR FLOW OF ERV AT 1,000 PPM AND EVACUATION ALARM AT 10,000 PPM.
- SINGLE POINT METHANE GAS DETECTOR GMSA PRIMAR 3RD WITH 4-20-mA OUTPUT. MOUNTED NEAR THE CEILING. PROVIDE MAINTENANCE ALARM AT 1000 PPM (20% LEL) AND EVACUATION ALARM AT 10,000 PPM (20% LEL).
- ERV FAN CONTINUOUS OPERATION, 24/7 MONITORED FOR "RUNNING" STATUS AND AIR FLOW. ACTIVATE MAINTENANCE ALARM IF NOT RUNNING. ACTIVATE INCREASED VENTILATION WHEN 1000 PPM IS DETECTED BY EITHER DETECTOR IN THE LIVING SPACE.
- SUBFLOOR VENTILATION FAN CTO BE ACTIVATED WHEN THE SUBFLOOR OR EITHER OF THE LIVING SPACE SAMPLE POINTS EXCEED 1000PPM (20% LEL) AND MONITORED FOR "RUNNING" AND AIR FLOW.
- SUBFLOOR INTAKE DAMPER MOTOR - SPRING OPEN (FAIL SAFE)
- DAMPER OPEN POSITION SWITCH - FURNISHED AS A COMPONENT OF THE INTAKE DAMPER PACKAGE (SEE MECHANICAL DRAWINGS FOR DETAILS)

NOTES

SUB-FLOOR GAS DETECTORS

1. PROVIDE ONE SUB-FLOOR SAMPLE TUBE IN EACH UNIT.
2. PROVIDE SAMPLE TUBE TO THE SUBFLOOR SPACE IN EACH WORK/LIVE UNIT IN LOCATION SHOWN.
3. MOUNT THE SAMPLE TUBE NEAR THE TOP OF THE SUBFLOOR SPACE.
4. PROVIDE GSA RECOMMENDED FILTER ON THE END OF THE SAMPLE TUBE

IN ROOM GAS DETECTORS

1. PROVIDE ONE SAMPLE TUBE MONITORING LOCATIONS IN THE LIVING SPACE OF EACH W/L UNIT. ONE IN THE MAIN FLOOR AREA BATHROOM AND ONE IN THE MEZZANINE LEVEL.
2. MOUNT THE GAS DETECTOR TUBES INSIDE A VENTILATED ENCLOSURE ON THE WALL OR CEILING WITHIN 6" OF THE CEILING IN THE LOCATIONS SHOWN.

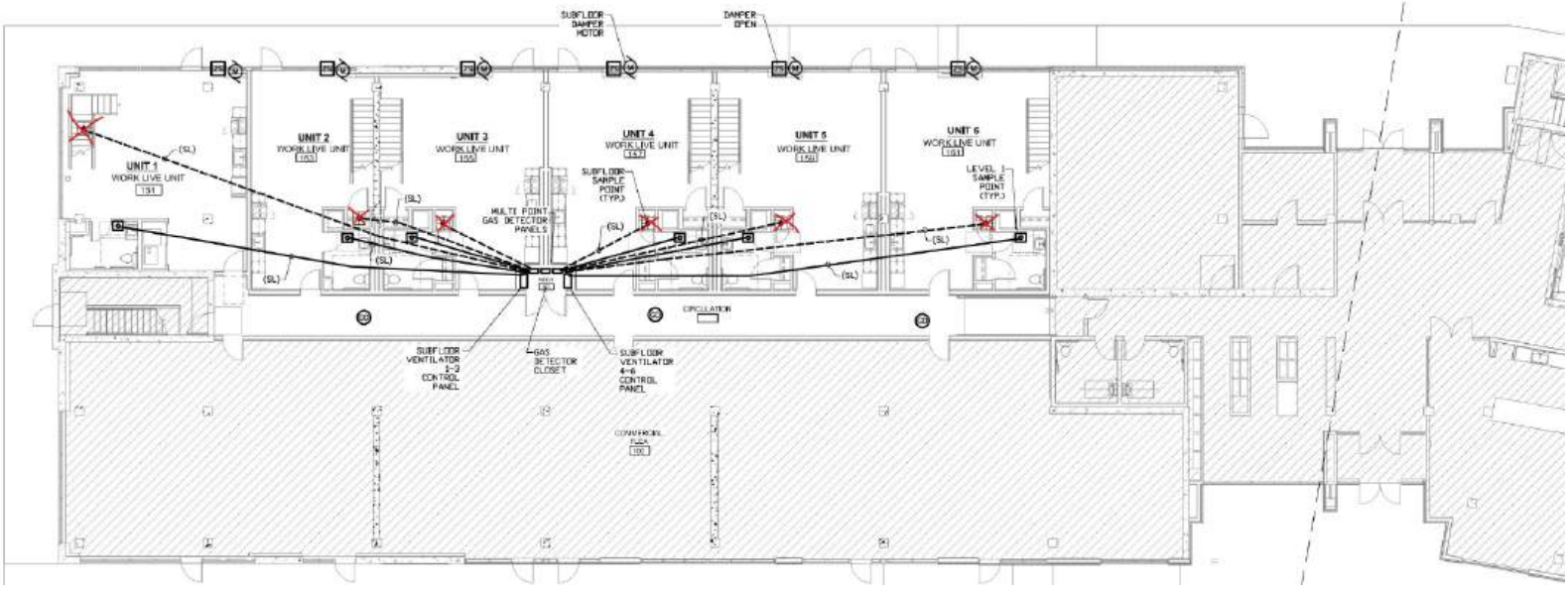


Figure 2. Live/Work Detection and Ventilation Plan with red markups representing temporary situation.

EVERETT BUILDING A
GROUND FLOOR VENTILATION SUMMARY FAN TABLE

								REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	LOCATION	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
CORE & SHELL													
1	EF	5	WATER SERVICE 118	WATER SERVICE 118	530	14.6	7,738	1	129	160	1.2	2.2	289
2	EF	6	MAINTENANCE 119B	MAINTENANCE 119	99	14.6	1,445	1	24	160	6.6	7.6	184
3	EF	7	TRASH 111	ROOF	682	16.2	11,048	1	184	1075	5.8	6.8	1,259
4	SF	1	MAINTENANCE 119B	DOG WASH 120	128	14.6	1,869	1	31	50	1.6	2.6	81
5	SF	3	ELECTRICAL 114	ELECTRICAL 114	950	15.3	14,535	1	242	4000	16.5	17.5	4,242
6	SF	4	TRANSFORMER 113	TRASH 111	509	15.85	8,068	1	134	8000	59.5	60.5	8,134
7	ERV	1	COMERCIAL FLEX	COMERCIAL FLEX	4,271	13.75	58,732	1	979	2000	2.0	3.0	2,979
8	ERV	3	COMERCIAL FLEX	COMERCIAL FLEX	2,542	16.5	41,935	1	699	1500	2.1	3.1	2,199
9	ERV	4	COMERCIAL FLEX	COMERCIAL FLEX	2,542	16.5	41,935	1	699	1500	2.1	3.1	2,199
10	ERV	2	COMERCIAL FLEX	COMERCIAL FLEX	2062	13.75	28,353	1	473	750	1.6	2.6	1,223
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12	ERV	8	CORRIDOR	BIKE ROOM 102	834	8.5	7,089	1	118	120	1.0	2.0	238
			BIKE ROOM	BIKE ROOM 102	747	16.5	12,326	1	205	220	1.1	2.1	435
TENANT / AMENITY SPACES													
13	ERV	7	AMENITY SPACE 60M	ROOF	503	8.6	4,326	1	72	420	5.8	6.8	492

NOTES:
1. METHANE HAZARD MITIGATION SYSTEM: A MECHANICAL VENTILATION SYSTEM WILL BE PROVIDED AS A SECONDARY CAPTURE SYSTEM FOR METHANE BUILDUP ON THE LOWEST "OCCUPIED" FLOOR OF THE BUILDING (FIRST). THIS SYSTEM ADHERES TO THE "LOS ANGELES STANDARD GUIDELINES FOR METHANE DETECTION" OPTION #2 TO PROVIDE CONTINUOUS VENTILATION SIZED AT A RATE OF ONE (1) AIR CHANGE PER HOUR. NOTE THAT THIS EXHAUST SYSTEM IS ONLY PROVIDED IN AREAS THAT ARE CONSIDERED "OCCUPIED" PER CODE (OMITS AREAS SUCH AS ELEVATOR CABS, FIRE RISER ROOM, MPOE/IDF, ETC.); ACTIVE EXHAUST WILL ALSO BE PROVIDED IN SPACES WITH COMBUSTION EQUIPMENT THAT POSE A RISK OF FLAMMABILITY (WATER HEATER ROOM, MAINTENANCE, ETC.)
2. FAN SERVING CORE & SHELL SPACES TO PROVIDE SUPPLY (TO POSITIVELY PRESSURIZE) TO SPACES AT A MINIMUM OF 1 AIR CHANGE PER HOUR (ACH) AND OPERATE CONTINUOUSLY.

Figure 3. Required, designed, and increased airflow for each non-Live/Work unit fan.

EVERETT BUILDING A
WORK LIVE SUMMARY ERV SCHEDULE

							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
20	ERV	1	WORK LIVE UNIT 151	800	16.5	13,200	0.25	55	400	1.8	2.8	620
21	ERV	2	WORK LIVE UNIT 153	580	16.5	9,570	0.25	40	400	2.5	3.5	560
22	ERV	3	WORK LIVE UNIT 155	750	16.5	12,375	0.25	52	400	1.9	2.9	606
23	ERV	4	WORK LIVE UNIT 157	767	16.5	12,656	0.25	53	400	1.9	2.9	611
24	ERV	5	WORK LIVE UNIT 159	787	16.5	12,986	0.25	54	400	1.8	2.8	616
25	ERV	6	WORK LIVE UNIT 161	780	16.5	12,870	0.25	54	400	1.9	2.9	615

EVERETT BUILDING A
WORK LIVE SUMMARY SUBFLOOR FAN TABLE

							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
14	MF	1	WORK LIVE UNIT 151	800	0.75	600	4	40	100	10.0	-	-
15	MF	2	WORK LIVE UNIT 153	580	0.75	435	4	29	100	13.8	-	-
16	MF	3	WORK LIVE UNIT 155	750	0.75	563	4	38	100	10.7	-	-
17	MF	4	WORK LIVE UNIT 157	767	0.75	575	4	38	100	10.4	-	-
18	MF	5	WORK LIVE UNIT 159	787	0.75	590	4	39	100	10.2	-	-
19	MF	6	WORK LIVE UNIT 161	780	0.75	585	4	39	100	10.3	-	-

Figure 4. Required, designed, and increased airflow for each Live/Work unit fan.

Table 1. Results of Gas Detection, Ventilation, and Alarming Validation Testing

			1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
101-1	COMMERCIAL FLEX 101	ERV-4	Pass	Pass	Pass	Pass	Pass
101AHL	Live work - cooridor	ERV-8	Pass	Pass	Pass	Pass	Pass
101-2	COMMERCIAL FLEX 101	ERV-4	Pass	Pass	Pass	Pass	Pass
101-3	COMMERCIAL FLEX 101	ERV-3	Pass	Pass	Pass	Pass	Pass
101-4	COMMERCIAL FLEX 101	ERV-3	Pass	Pass	Pass	Pass	Pass
104	RESTROOM 104	ERV-8	Pass	Pass	Pass	Pass	Pass
105	RESTROOM 105	ERV-8	Pass	Pass	Pass	Pass	Pass
103A	PARCEL ROOM 103A	N/A	Pass	Pass		Pass	Pass
103	PARCEL ROOM 103	N/A	Pass	Pass		Pass	Pass
106-1	LOBBY 106	ERV-8	Pass	Pass	Pass	Pass	Pass
123	VESTIBULE 123 (East)	N/A	Pass	Pass		Pass	Pass
122	VESTIBULE 122 (west)	N/A	Pass	Pass		Pass	Pass
106-2	LOBBY 106	ERV-5	Pass	Pass	Pass	Pass	Pass
124	CONCIERGE 124	ERV-5	Pass	Pass	Pass	Pass	Pass
106-3	LOBBY 106	ERV-5	Pass	Pass	Pass	Pass	Pass
107	MOVE-IN ROOM 107	ERV-5	Pass	Pass	Pass	Pass	Pass
108	ELEVATOR MACHINE ROOM 108	N/A	Pass	Pass		Pass	Pass
108HL	CORRIDOR	ERV-5	Pass	Pass	Pass	Pass	Pass
110-1	LOUNGE 110	ERV-5	Pass	Pass	Pass	Pass	Pass
110-2	LOUNGE 110	ERV-5	Pass	Pass	Pass	Pass	Pass
109	JANITOR 109	ERV-5	Pass	Pass	Pass	Pass	Pass
111	TRASH 111	EF-7	Pass	Pass	Pass	Pass	Pass
113	USS - TRANSFORMER 113	SF-4	Pass	Pass	Pass	Pass	Pass
113HL	CORRIDOR	N/A	Pass	Pass		Pass	Pass
115	MPOE 115	SF-3	Pass	Pass	Pass	Pass	Pass

			1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
121-1	COMMERCIAL FLEX 121	ERV-2	Pass	Pass	Pass	Pass	Pass
114	ELECTRICAL 114	SF-3	Pass	Pass	Pass	Pass	Pass
114A	ELECTRICAL BACKUP 114A	SF-3	Pass	Pass	Pass	Pass	Pass
116	GENERATOR 116	N/A	Pass	Pass		Pass	Pass
116HL	CORRIDOR	N/A	Pass	Pass		Pass	Pass
121-2	COMMERCIAL FLEX 121	ERV-2	Pass	Pass	Pass	Pass	Pass
117	FIRE ALARM/RISER ROOM 117	N/A	Pass	Pass		Pass	Pass
118	WATER SERVICE 118	EF-5	Pass	Pass	Pass	Pass	Pass
119	MAINTENANCE 119	EF-6	Pass	Pass	Pass	Pass	Pass
120	DOG WASH 120	SF-1	Pass	Pass	Pass	Pass	Pass
121-3	COMMERCIAL FLEX 121	ERV-1	Pass	Pass	Pass	Pass	Pass
120HL	CORRIDOR	N/A	Pass	Pass		Pass	Pass
119B	MAINTENANCE 119B	EF-6	Pass	Pass	Pass	Pass	Pass
100	CORRIDOR	N/A	Pass	Pass		Pass	Pass
121-4	COMMERCIAL FLEX 121	ERV-1	Pass	Pass	Pass	Pass	Pass
121-5	COMMERCIAL FLEX 121	ERV-1	Pass	Pass	Pass	Pass	Pass
121-6	COMMERCIAL FLEX 121	ERV-1	Pass	Pass	Pass	Pass	Pass

Notes:

Pass	Test passed
	Test not applicable.
HMI	Human Machine Interface

Actions:

- Will return tomorrow, 2/15 to continue validation testing of Building A gas detection, ventilation, and alarm systems.
- Will return to complete validation testing once permanent Chemgard™ detection systems are installed in the Live/Work units.

Signatures: Camryn Steiner, EIT

Herrera Field Inspection Report

Herrera Project No.: 15-06075-006	**Report No.:** 029

Permit No.: B2003-013

Date: 2/15/2024

Time: 8:00 am to 2:00 pm

Everett Riverfront – Building A	**Location: Everett, Washington**	**Weather:** Rainy and low 40s
Client: Shelter Holdings, LLC	**Client Rep.** Dave Fiala	**Project Eng.:** Tyson Wright, PE
Contractor: QCC	**Contractor Rep:** Christina Hsu	**HEC Rep.:** Camryn Steiner

Herrera Environmental Consultants is providing 3rd party inspection of the landfill gas barrier and collection and conveyance system for Building B. Inspection Reports will be provided to both Shelter and the City of Everett Building Official documenting CQA requirements and installation of the system per the design.

Activity:

- Arrived on-site. Met with Christina and Alex from QCC; and Dave Fiala. Jeff and Adia with Floyd | Snider observed commissioning from around 9:45 to 10:30am.
- Continued testing and commissioning of methane detection, ventilation, and alarm system of Building A. Continued use of 25,000 ppm detector gas for the low-level and high-level detection test.
- For low level detection test with 25,000 ppm methane gas, Christina changed the settings so the alarm would go off with a delay of 1 seconds. Alex exposed each detector to 25,000 ppm gas for just a second before removing the gas which was enough to trigger the low-level alarm set point of 1,000 ppm. Methane Gas Low Level Warning level still needs to be programmed.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper low-level alarm visual alert was activated on the control panel screen as the gas value climbed and reached 1,000 ppm in reading during the validation test.
- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of low-level alarm once the low-level alarm set point of 1,000 ppm was reached.
- Alex confirmed low level fan activation for detectors that are hooked up to HVAC system when he was in close enough proximity to hear the fan. When not close enough, Camryn or Dave confirmed fan ramped up to high speed via volume increase of fan while Christina watched Building A control panel screen to confirm reading and low-level alarm visual alert.
- While testing 102 Bike Room detector, found issue with ERV-8 kicking into high-speed mode at the low-level detection level. Had the HVAC contractor, Emerald Aire, check it out. Contractor had accidently left fan in continuous high-speed mode. Tested 102 Bike Room detector again and fan kicked on accordingly.

- Either Alex, Dave or Camryn confirmed fan returned to normal operation via volume decrease of fan once the methane read returned to below the low-level of 1,000 ppm and eventually back to zero.
- Alex exposed detector to methane test gas again for the high-level alarm test. Christina disabled the low-level alarm temporarily to focus on the high-level alarm confirmation.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper alarm High Level alarm was activated on the control panel screen as the gas value climbed and reached 10,000 ppm in reading during the validation test. Methane Gas High Level Warning level still needs to be programmed.
- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of high-level alarm once the high-level alarm set point of 10,000 ppm was reached.
- The methane detection and ventilation system of Live/Work unit 151 was tested and it was tested the same as the Level 1 spaces. Per RFI #326, due to supply chain issues with the Chemgard panels that contain the methane detectors for the Live/Work units, the same PrimaX® IR detectors installed throughout the rest of the Level 1 spaces of Building A and B were installed on the ceiling of each Live/Work unit as a temporary measure in order to test and approve the methane detection and ventilation function of the Live/Work units. The temporary PrimaX® IR detectors in each of the Live/Work units were connected and programmed to the associated ERV and subfloor fans for the unit. Once the Chemgard methane detectors are installed, there will be three sample ports per Live/Work unit. For this temporary solution, the three sample signals were connected to the one temporary PrimaX® IR detector so when 25,000 ppm gas was exposed to the detector, the methane concentrations and alarms for all three sample signals were activated at the control panel. The ERV and subfloor fans activated accordingly as well. The methane detection and ventilation system of the Live/Work units will be tested again once the Chemgard equipment is delivered, installed, and programmed.
- For one detector, the Live/Work Unit 153, confirmed fire alarm in building went off at the High Methane Alarm – EVAC level of 10,000 ppm when control panel was in Auto Mode. Fire Alarm Panel notification to fire department was intentionally turned off for test to not alert fire department. RJ with Fire Protection, Inc. was onsite during the fire alarm inspection. For all other detectors, validation testing was performed in Test Mode so the sound alarm did not go off.
- Alex removed methane test gas.
- Confirmed the gas reading returned to zero at the control panel.
- Express Electric manually shut off regular power to building to confirm backup generator kicked on and correct alarm signals were activated on the Building A control panel screen and autodial calls went out. Found issue with the cell phone line getting disconnected when the power shut off and there being a several minute delay before it was back online and able to call out. Express installed UPS backup system to help reboot faster. Turned power back on to start test over. Generator kicked on properly and autodialer sent out call successfully right when alarm signal showed up on screen. Building systems were returned to regular power.
- While generator was on, Alex exposed 113HL Corridor detector to 25,000 ppm methane gas and ran low and high level tests. Confirmed detector registered gas exposure correctly and activated correct alarms while on backup power.

- Alex went around and manually shut off each fan. Confirmed fan fail signal registered on Building A control panel and correct autodial call went out. Alex returned fans to normal operation.
- All detectors, fans, and alarms tested on the day are functioning per CQA and Consent Decree requirements. See Table 1 at the end of report for summary.
- Photos were taken throughout inspection and testing.

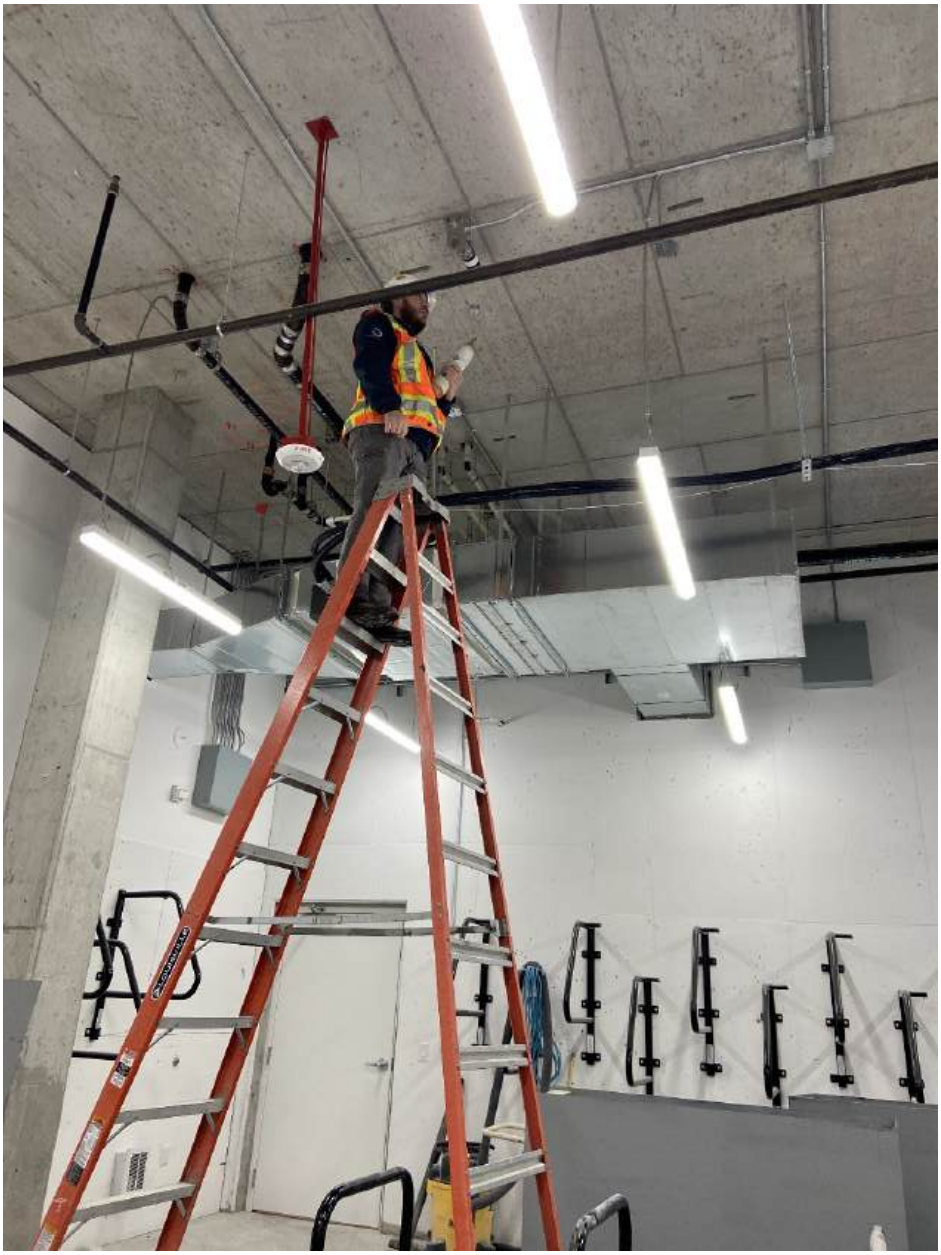

Photo 1. Alex with QCC applying 102 Bike Room detector with test gas.

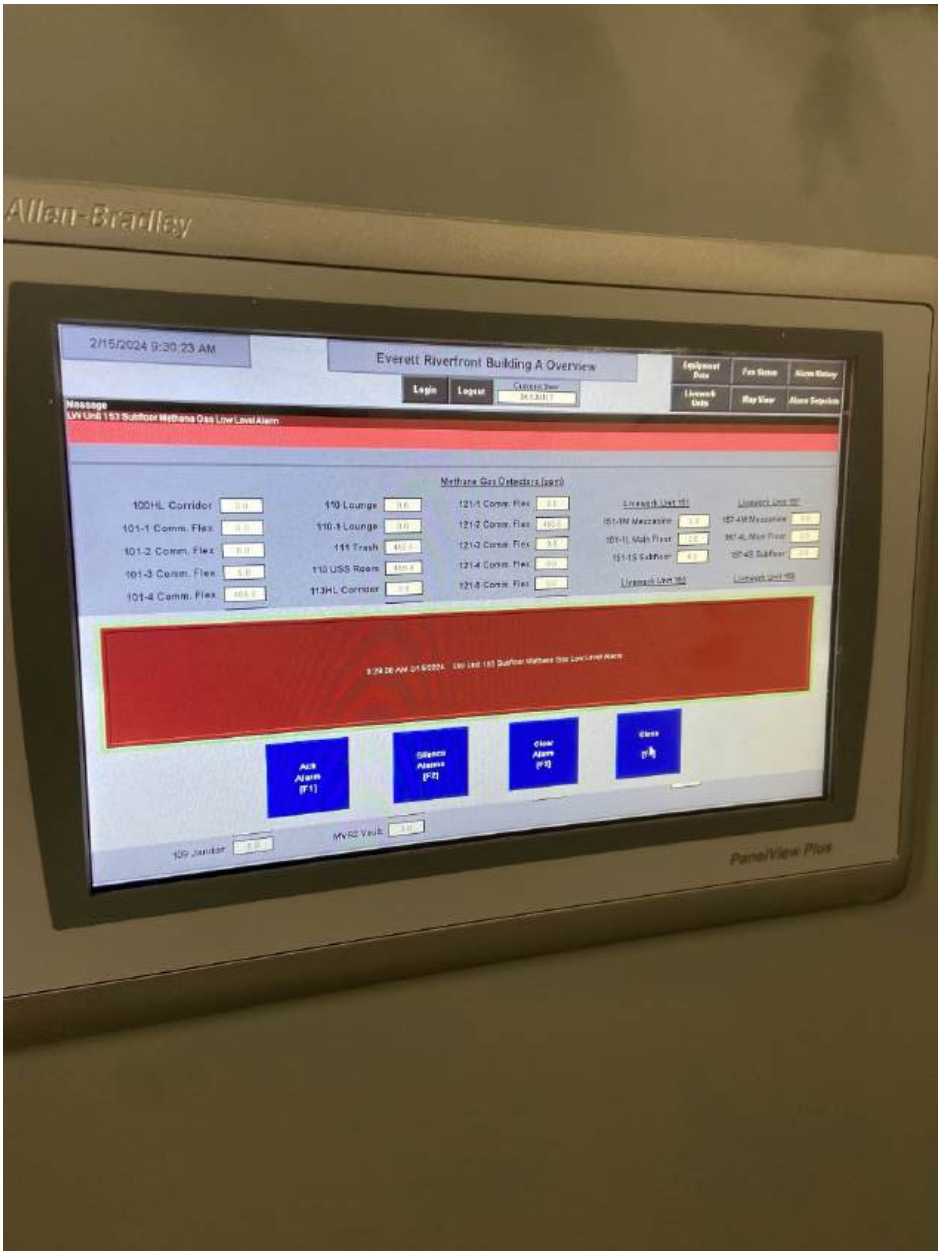

Photo 2. Building A Control Panel Overview screen with Methane Gas Low Level Alarm alert for Live/Work Unit 153 detector.

Photo 3. Building A Control Panel Overview screen with Critical High Methane Alarm alert for Live/Work Unit 157 detector.

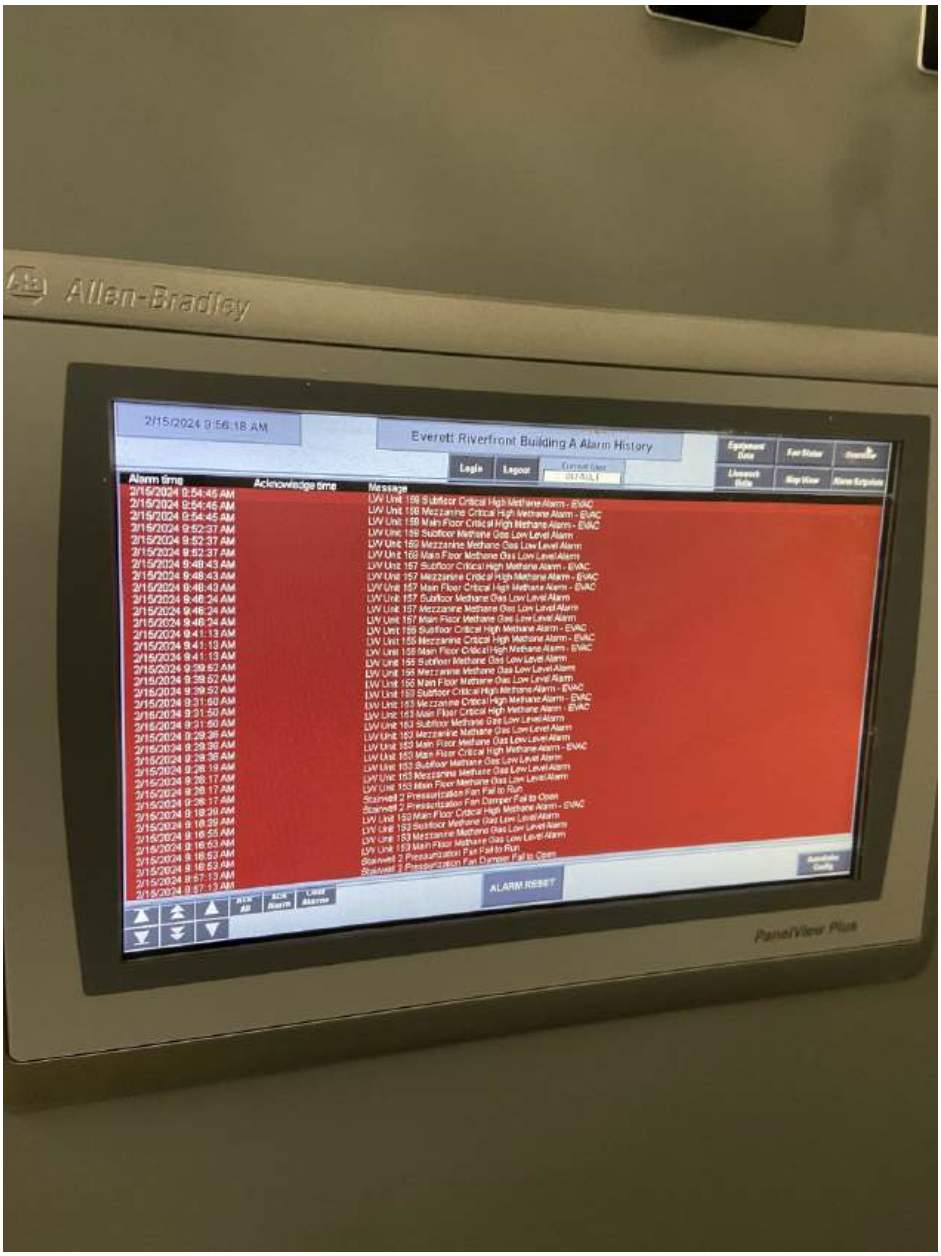

Photo 4. Building A Alarm History screen showing that each of the Subfloor, Main Floor, and Mezzanine detector signals activated when temporary PrimaX® IR detector was tested.

Photo 5. Building High Level Methane Detection Alarm at Fire Panel in Fire Panel Control Room during high-level testing.

Photo 6. Alex with QCC applying Stair 3 Duct fan detector with test gas.

Photo 7. Emergency Generator Running alarm signal on screen after Building power was shut off for testing.

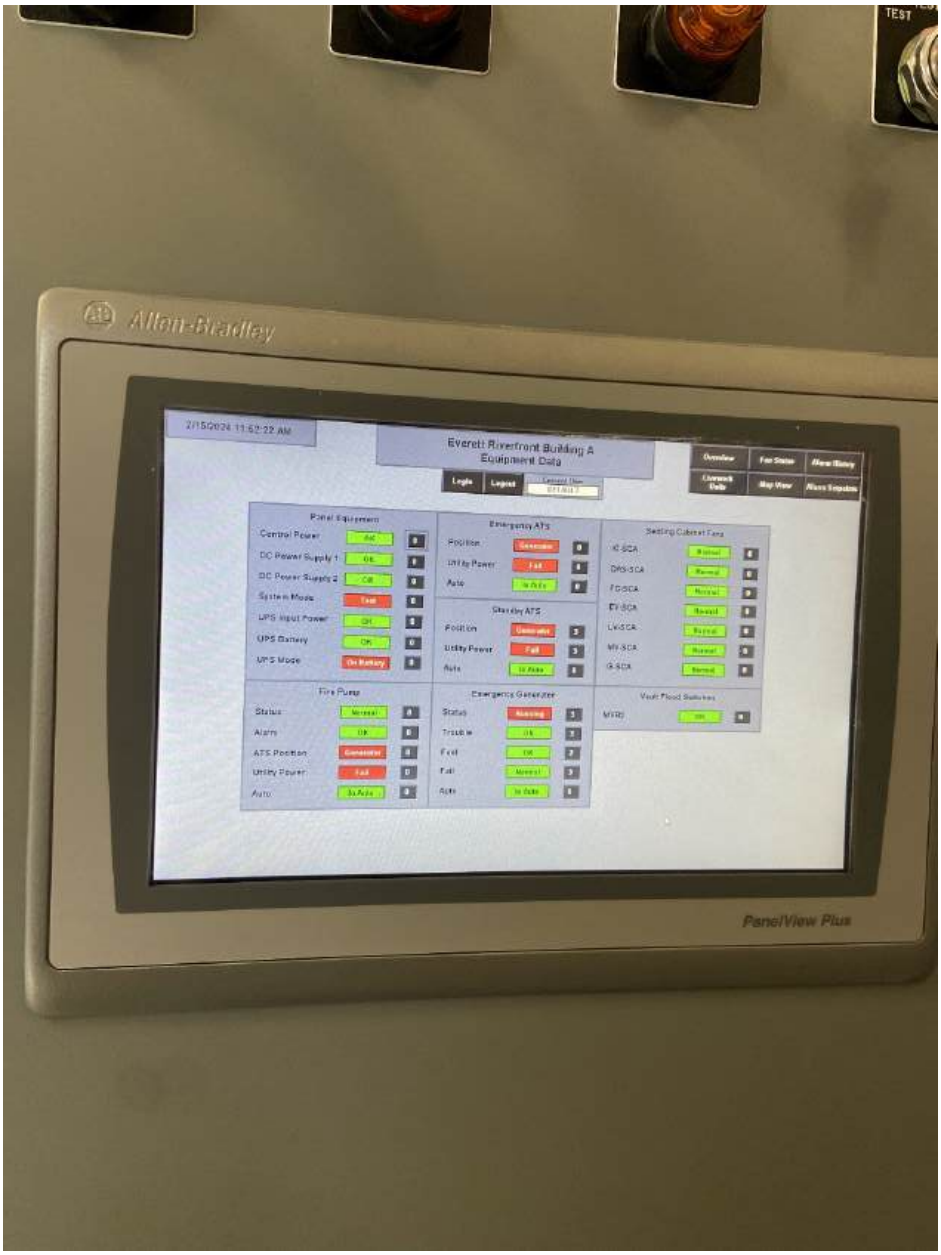

Photo 8. Building A Equipment Data screen when building power was shut off and emergency generator kicked on.

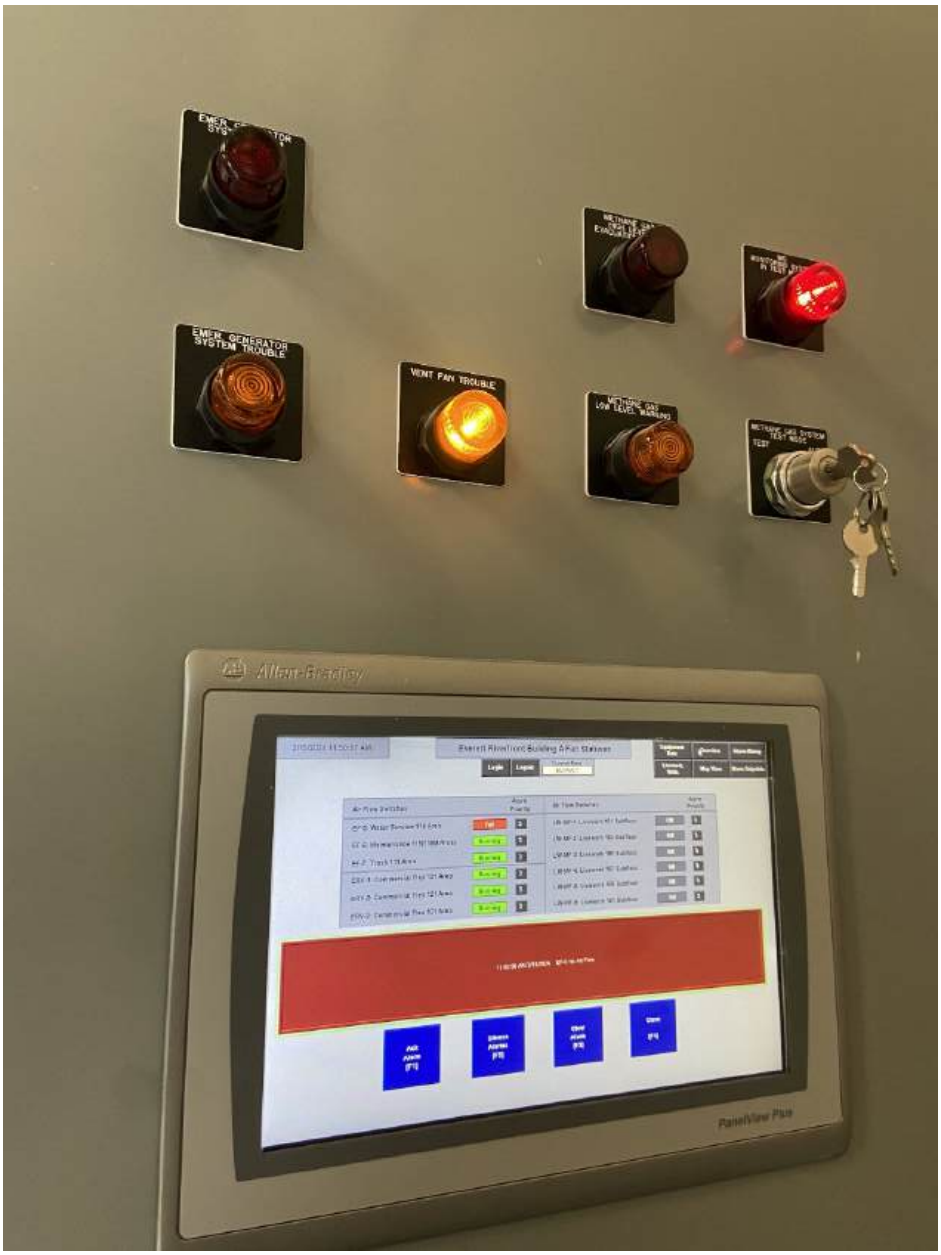

Photo 9. EF-5 No Air Flow alarm signal on screen and vent fan trouble light on after Alex with QCC shut off fan for testing.

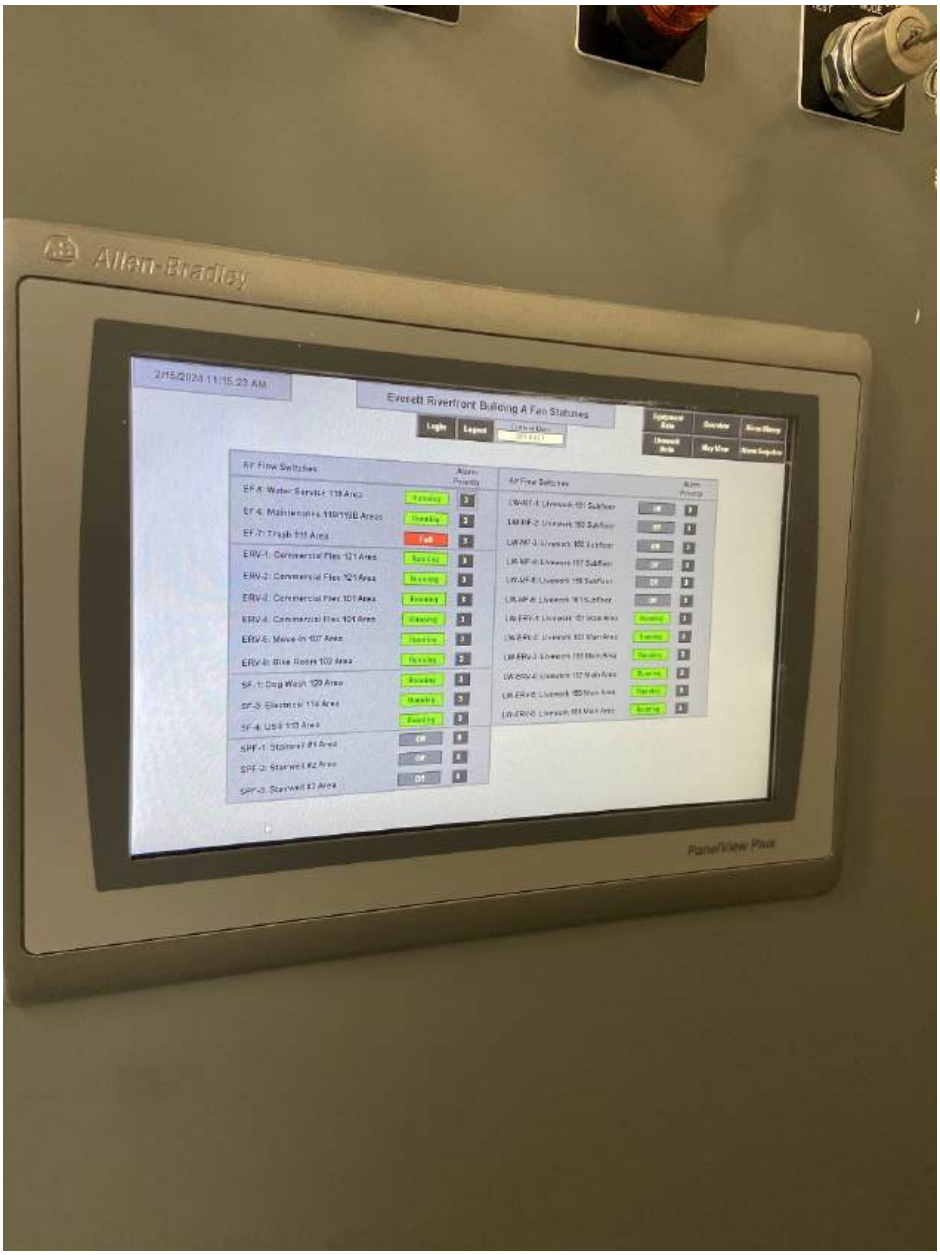

Photo 10. EF-7 showing Fail on Building A Fan Status screen after Alex with QCC shut off fan for testing.

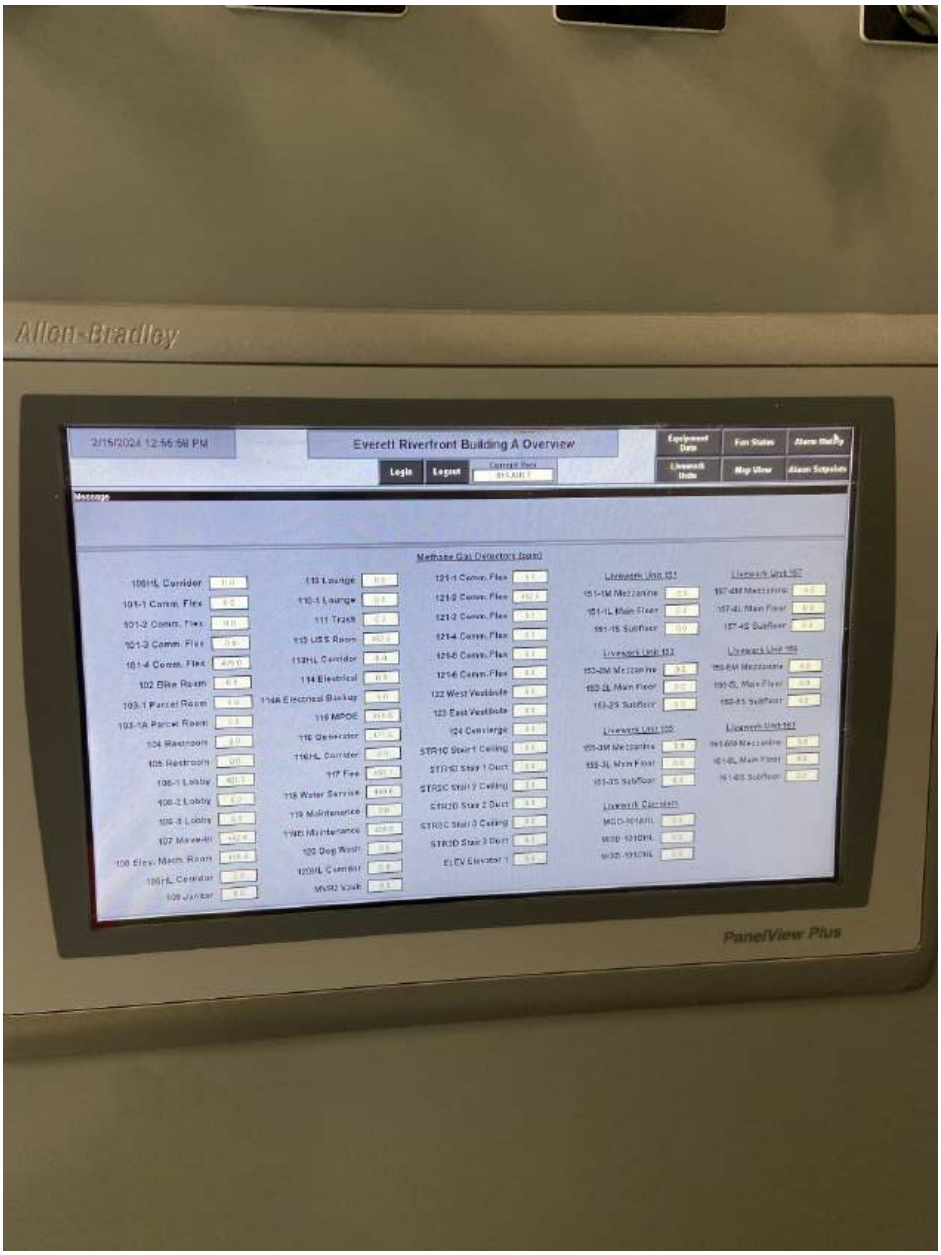

Photo 11. Building A Overview screen at end of testing showing all detectors operating and reading properly (not all show as 0 ppm because of the accuracy range of the detector).

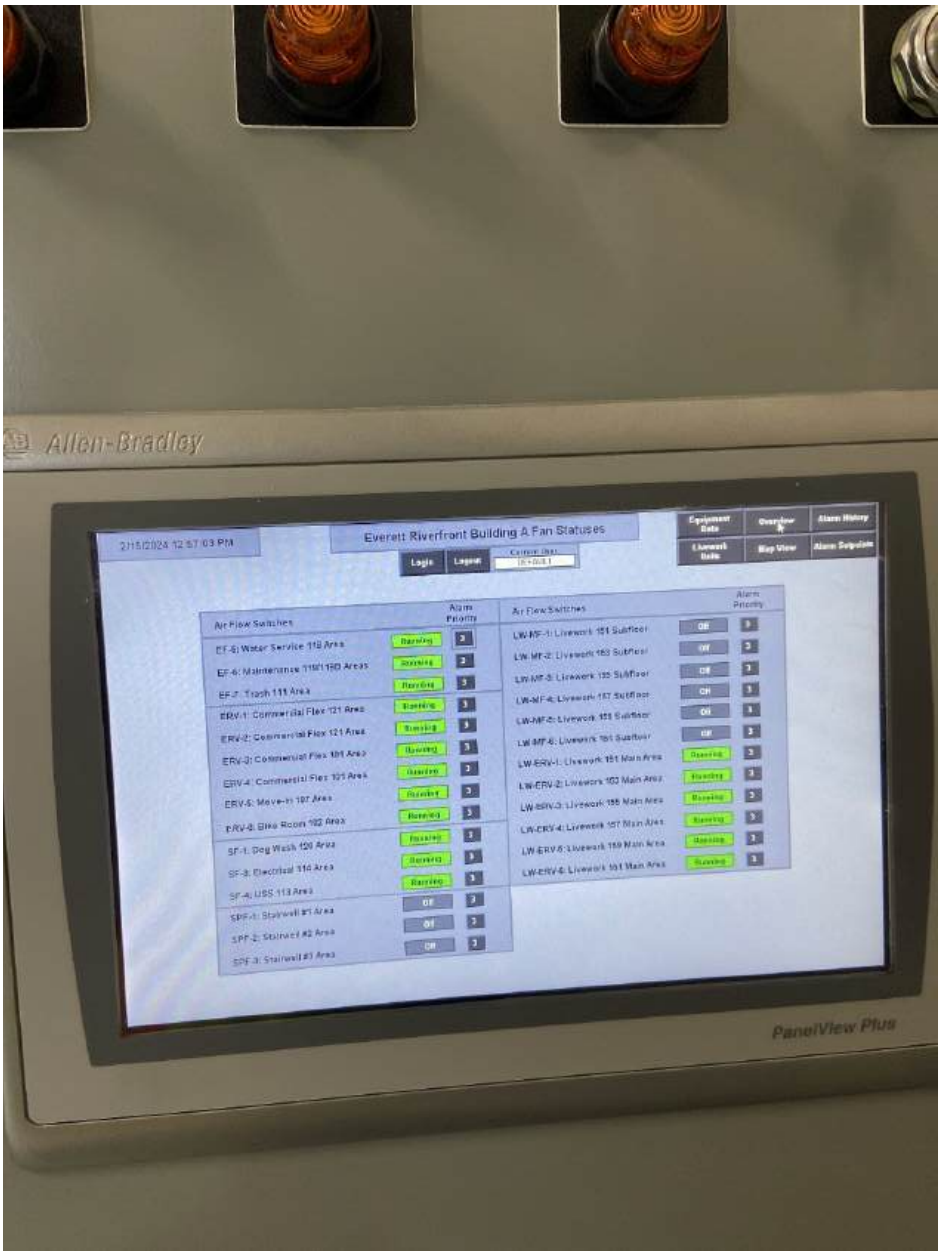

Photo 12. Building A Fan Status screen at end of testing showing all fans operating properly.

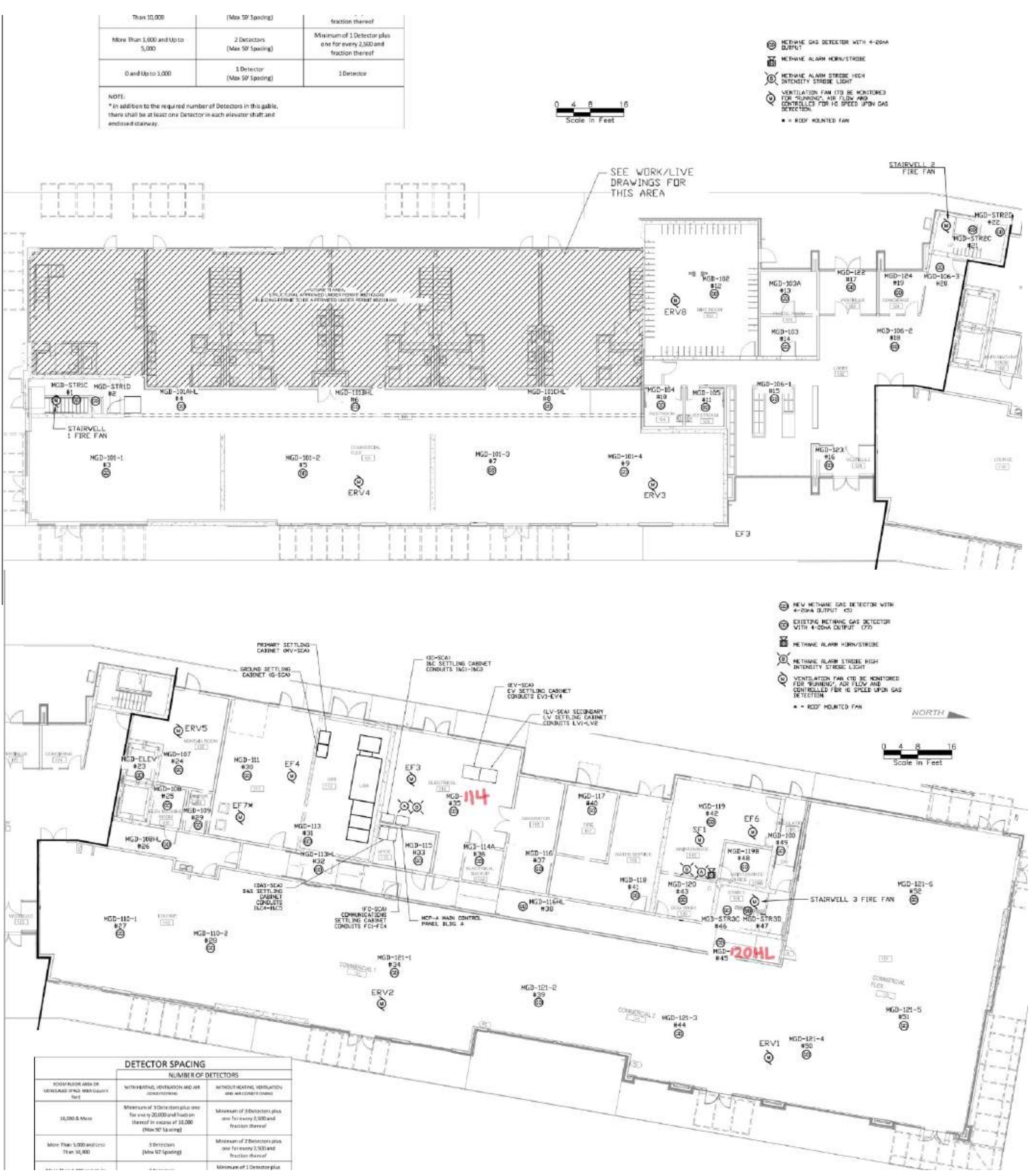

Figure 1. Location of detectors, ventilation fans, and alarms through non-Live/Work unit Level 1 spaces.

CONDUIT & WIRE (C&W) SCHEDULE

TAG #	CONDUIT SIZE	CONDUIT TYPE	WIRE DESCRIPTION	FROM	TO	NOTES
SL	1"	PVC	1/4" POLY TUBE	MULTIDETECTOR GAS PANEL	SAMPLING POINT IN WORK/LIVE UNIT	SAMPLE TUBE
M	1/2"	EMT	3#14	SUBFLOOR FAN CONTROL PANEL	SUBFLOOR DAMPER MOTOR	ERV FAN "RUNNING" MONITORING
ZS	1/2"	EMT	3#14	SUBFLOOR FAN CONTROL PANEL	SUBFLOOR DAMPER POSITION SWITCH	ERV FAN "RUNNING" MONITORING
GD	3/4"	EMT	#16 TST & 2#14 *	IR GAS DETECTOR	MCP-A (IN ELEC RM.)	4-20ma SIGNAL %LEL TO MCP-A

* NOTE: GD CONDUCTORS MAY BE COMBINED IN RACEWAYS TO THE MCP. INSTALL PER THE NEC FOR RACEWAY SIZING BASED ON THE WIRE COUNT IN THE RACEWAY

SYMBOLS

- SUBFLOOR METHANE GAS SAMPLING POINT TO MULTIPORT GAS DETECTOR GMSA CHEMGARD AND ACCESS PORT IN THE FLOOR. ACTIVATES SUB FLOOR VENTILATION BLOWER AT 1,000 PPM (20% LEL) AND EVACUATION ALARM AT 10,000 PPM (40% LEL).
- LIVING SPACE METHANE GAS SAMPLING POINT TO MULTIPORT GAS DETECTOR GMSA CHEMGARD. ACTIVATES SUBFLOOR VENTILATOR/BLOWER AND INCREASES AIR FLOW OF ERV AT 1,000 PPM AND EVACUATION ALARM AT 10,000 PPM.
- SINGLE POINT METHANE GAS DETECTOR GMSA PRIMAR 3RD WITH 4-20-mA OUTPUT. MOUNTED NEAR THE CEILING. PROVIDE MAINTENANCE ALARM AT 1000 PPM (20% LEL) AND EVACUATION ALARM AT 10,000 PPM (20% LEL).
- ERV FAN CONTINUOUS OPERATION, 24/7 MONITORED FOR "RUNNING" STATUS AND AIR FLOW. ACTIVATE MAINTENANCE ALARM IF NOT RUNNING. ACTIVATE INCREASED VENTILATION WHEN 1000 PPM IS DETECTED BY EITHER DETECTOR IN THE LIVING SPACE.
- SUBFLOOR VENTILATION FAN CTO BE ACTIVATED WHEN THE SUBFLOOR OR EITHER OF THE LIVING SPACE SAMPLE POINTS EXCEED 1000PPM (20% LEL) AND MONITORED FOR "RUNNING" AND AIR FLOW.
- SUBFLOOR INTAKE DAMPER MOTOR - SPRING OPEN (FAIL SAFE)
- DAMPER OPEN POSITION SWITCH - FURNISHED AS A COMPONENT OF THE INTAKE DAMPER PACKAGE (SEE MECHANICAL DRAWINGS FOR DETAILS)

NOTES

SUB-FLOOR GAS DETECTORS

1. PROVIDE ONE SUB-FLOOR SAMPLE TUBE IN EACH UNIT.
2. PROVIDE SAMPLE TUBE TO THE SUBFLOOR SPACE IN EACH WORK/LIVE UNIT IN LOCATION SHOWN.
3. MOUNT THE SAMPLE TUBE NEAR THE TOP OF THE SUBFLOOR SPACE.
4. PROVIDE GSA RECOMMENDED FILTER ON THE END OF THE SAMPLE TUBE

IN ROOM GAS DETECTORS

1. PROVIDE ONE SAMPLE TUBE MONITORING LOCATIONS IN THE LIVING SPACE OF EACH W/L UNIT. ONE IN THE MAIN FLOOR AREA BATHROOM AND ONE IN THE MEZZANINE LEVEL.
2. MOUNT THE GAS DETECTOR TUBES INSIDE A VENTILATED ENCLOSURE ON THE WALL OR CEILING WITHIN 6" OF THE CEILING IN THE LOCATIONS SHOWN.

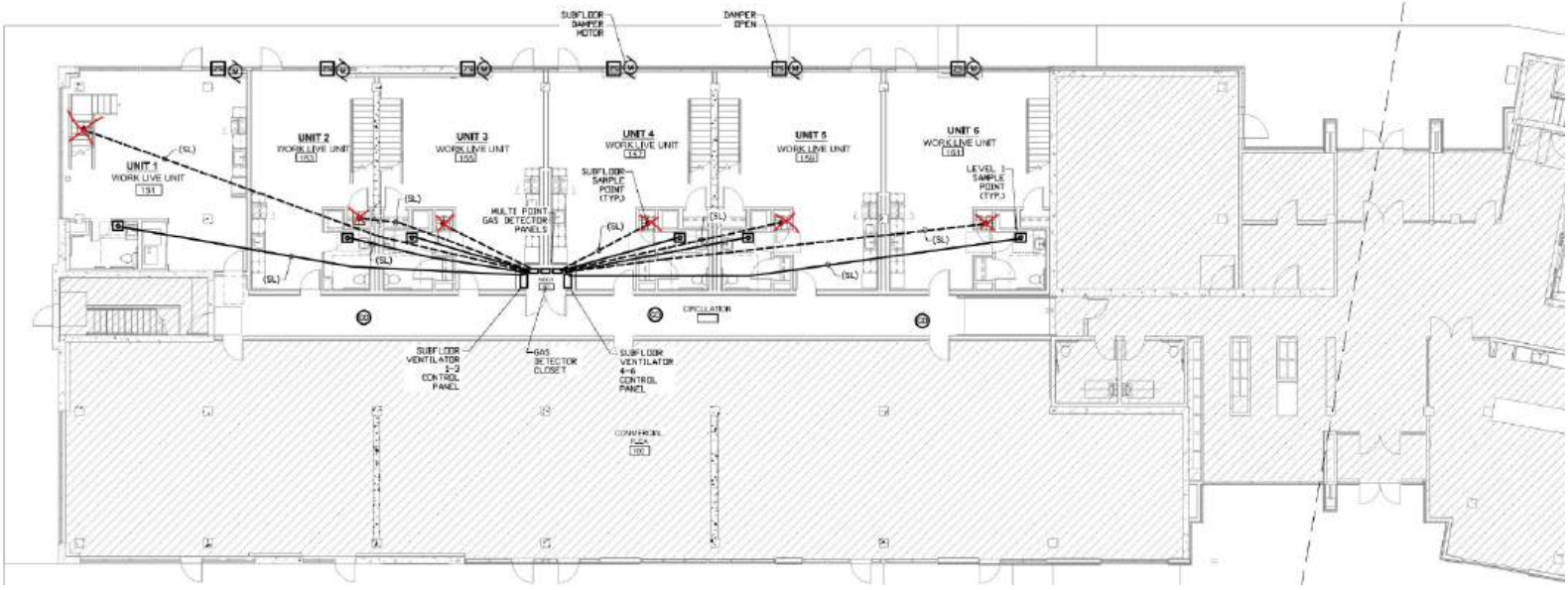

Figure 2. Live/Work Detection and Ventilation Plan with red markups representing temporary situation.

EVERETT BUILDING A
GROUND FLOOR VENTILATION SUMMARY FAN TABLE

								REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	LOCATION	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
CORE & SHELL													
1	EF	5	WATER SERVICE 118	WATER SERVICE 118	530	14.6	7,738	1	129	160	1.2	2.2	289
2	EF	6	MAINTENANCE 119B	MAINTENANCE 119	99	14.6	1,445	1	24	160	6.6	7.6	184
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NOTES:

1. METHANE HAZARD MITIGATION SYSTEM: A MECHANICAL VENTILATION SYSTEM WILL BE PROVIDED AS A SECONDARY CAPTURE SYSTEM FOR METHANE BUILDUP ON THE LOWEST "OCCUPIED" FLOOR OF THE BUILDING (FIRST). THIS SYSTEM ADHERES TO THE "LOS ANGELES STANDARD GUIDELINES FOR METHANE DETECTION" OPTION #2 TO PROVIDE CONTINUOUS VENTILATION SIZED AT A RATE OF ONE (1) AIR CHANGE PER HOUR. NOTE THAT THIS EXHAUST SYSTEM IS ONLY PROVIDED IN AREAS THAT ARE CONSIDERED "OCCUPIED" PER CODE (OMITS AREAS SUCH AS ELEVATOR CABS, FIRE RISER ROOM, MPOE/IDF, ETC.); ACTIVE EXHAUST WILL ALSO BE PROVIDED IN SPACES WITH COMBUSTION EQUIPMENT THAT POSE A RISK OF FLAMMABILITY (WATER HEATER ROOM, MAINTENANCE, ETC.)
2. FAN SERVING CORE & SHELL SPACES TO PROVIDE SUPPLY (TO POSITIVELY PRESSURIZE) TO SPACES AT A MINIMUM OF 1 AIR CHANGE PER HOUR (ACH) AND OPERATE CONTINUOUSLY.

Figure 3. Required, designed, and increased airflow for each non-Live/Work unit fan.

EVERETT BUILDING A
WORK LIVE SUMMARY ERV SCHEDULE

							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
20	ERV	1	WORK LIVE UNIT 151	800	16.5	13,200	0.25	55	400	1.8	2.8	620
21	ERV	2	WORK LIVE UNIT 153	580	16.5	9,570	0.25	40	400	2.5	3.5	560
22	ERV	3	WORK LIVE UNIT 155	750	16.5	12,375	0.25	52	400	1.9	2.9	606
23	ERV	4	WORK LIVE UNIT 157	767	16.5	12,656	0.25	53	400	1.9	2.9	611
24	ERV	5	WORK LIVE UNIT 159	787	16.5	12,986	0.25	54	400	1.8	2.8	616
25	ERV	6	WORK LIVE UNIT 161	780	16.5	12,870	0.25	54	400	1.9	2.9	615

EVERETT BUILDING A
WORK LIVE SUMMARY SUBFLOOR FAN TABLE

							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
14	MF	1	WORK LIVE UNIT 151	800	0.75	600	4	40	100	10.0	-	-
15	MF	2	WORK LIVE UNIT 153	580	0.75	435	4	29	100	13.8	-	-
16	MF	3	WORK LIVE UNIT 155	750	0.75	563	4	38	100	10.7	-	-
17	MF	4	WORK LIVE UNIT 157	767	0.75	575	4	38	100	10.4	-	-
18	MF	5	WORK LIVE UNIT 159	787	0.75	590	4	39	100	10.2	-	-
19	MF	6	WORK LIVE UNIT 161	780	0.75	585	4	39	100	10.3	-	-

Figure 4. Required, designed, and increased airflow for each Live/Work unit fan.

Table 1. Results of Gas Detection, Ventilation, and Alarming Validation Testing

			1,000 PPM (2% LEL) Test			10,000 PPM (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	HMI Alarm	Autodialer Alarm	Fan to High Speed	HMI Alarm	Autodialer Alarm
STR1C	Stair # 1 - top of stairwell	SPF-1	Pass	Pass	Pass	Pass	Pass
STR1D	Stair # 1 - Duct mounted (roof)	SPF-1	Pass	Pass	Pass	Pass	Pass
101AHL	Live work - corridor	ERV-8	Pass	Pass	Pass	Pass	Pass
101BHL	Live work - corridor	ERV-8	Pass	Pass	Pass	Pass	Pass
101CHL	Live work - corridor	ERV-8	Pass	Pass	Pass	Pass	Pass
STR2C	Stair # 2 - top of stairwell	SPF-2	Pass	Pass	Pass	Pass	Pass
STR2D	Stair # 2 - duct mounted (roof)	SPF-2	Pass	Pass	Pass	Pass	Pass
ELEV	ELEVATOR (top of hoist way)	N/A	Pass	Pass		Pass	Pass
STR3C	STAIR #3 - TOP OF STAILLWELL	SPF-3	Pass	Pass	Pass	Pass	Pass
STR3D	STAIR #3 - DUCT MOUNTED (ROOF)	SPF-3	Pass	Pass	Pass	Pass	Pass
102	BIKE ROOM 102	ERV-8	Pass	Pass	Pass	Pass	Pass

Notes:

Pass	Test passed
	Test not applicable.
HMI	Human Machine Interface

Actions:

- Will return once permanent Chemgard™ units are installed in the Live/Work units to complete validation testing of Building A gas detection, ventilation, and alarm systems.

Signatures: Camryn Steiner, EIT

Preliminary TAB Report

PROJECT:	Everett Riverfront Bldg. A (Final)	**DATE:**	2/15/2024
LOCATION:	Everett, WA	**CONTACT:**	Adam Hoskins
PROJECT #:	240001	**AUTHOR:**	Adam Hoskins

FIRM: **Airtest Co. LLC**
6405 218th St SW, Suite 301
Mountlake Terrace , WA 98043

PHONE: 425-313-0172
FAX: 425-313-5735

PROJECT: Everett Riverfront Bldg. A (Final)
3910 RIVERFRONT BLVD
Everett, WA 98203

DATE: 2/15/2024
PROJECT #: 240001
CONTACT: Hoskins, Adam

NOTES:

Table Of Contents

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

Table Of Contents

Table Of Contents

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: EF-05
AREA: 118 Water Service

Tested By: Brandon Hyslip
Date: 1/16/2024

Unit Data	
Unit Location	118 Water Service
Unit Serves	General Exhaust
Unit Manufacturer	Greenheck
Model Number	SQ-97-VG-5-X
Serial Number	19979011
Fan Type / Class	BI / I

Electrical Test Data	
Final Operating Hz	60 Hz
Motor Volts 1	119 Volts
Motor Amps 1	1.3 Amps
Corrected FLA	6.4 Amps
Calculated BHP	0.1 BHP

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	1/2 HP
Motor RPM	2500 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	6.6 Amps

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	160 CFM	160 CFM

Log:

EF-05	1/16/2024	Brandon Hyslip	2.8v normal mode 5.0v max mode @ 290 CFM

EF-05 Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	118 Water Service	Exhaust Opening	10 x 10	160	290	160	100
	Totals:	-	-	**160**	**290**	**160**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: EF-06
AREA: 119 Maintenance

Tested By: Allen Wessel
Date: 2/7/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	119 Maintenance
Unit Manufacturer	Greenheck
Model Number	SQ-97-VG-X
Serial Number	20390964
Fan Type / Class	BI / I

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	1/2 HP
Motor RPM	2500 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	6.6 Amps

Test Data	
SP In Actual	-0.05 in. wc
SP Out Actual	0.04 in. wc
External SP Actual	0.09 in. wc

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Electrical Test Data	
Final Operating Hz	60 Hz
Motor Volts 1	119 Volts
Motor Amps 1	1.4 Amps
Corrected FLA	6.4 Amps
Calculated BHP	0.1 BHP

Air Test Data	Design	Actual
Total Fan CFM	160 CFM	160 CFM

Log:				
	EF-06	2/7/2024	Allen Wessel	3.2v normal mode 3.7v max mode @ 190 CFM

EF-06 Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	119 Maintenance	EG	8 x 8	160	125	160	100
	Totals:	-	-	**160**	**125**	**160**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: EF-07
AREA: 111 Trash

Tested By: Allen Wessel
Date: 2/7/2024

Unit Data	
Unit Location	Roof
Unit Serves	111 Trash
Unit Manufacturer	Greenheck
Model Number	CUE-120-VG
Serial Number	21378827
Fan Type / Class	BI / I

Electrical Test Data	
Final Operating Hz	60 Hz
Motor Volts 1	119 Volts
Motor Amps 1	3.2 Amps
Corrected FLA	6.2 Amps
Calculated BHP	0.3 BHP

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	1/2 HP
Motor RPM	300-1750 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	6.4 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	700 CFM	705 CFM

Log:

EF-07	2/7/2024	Allen Wessel	7.2v normal mode 10v max mode @ 960 CFM

EF-07 Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	111 Trash	EG	10 x 10	700	960	705	101
	Totals:	-	-	**700**	**960**	**705**	**101**

SYSTEM/UNIT: MF-A-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc
SP Out Actual	0.2 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	77 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

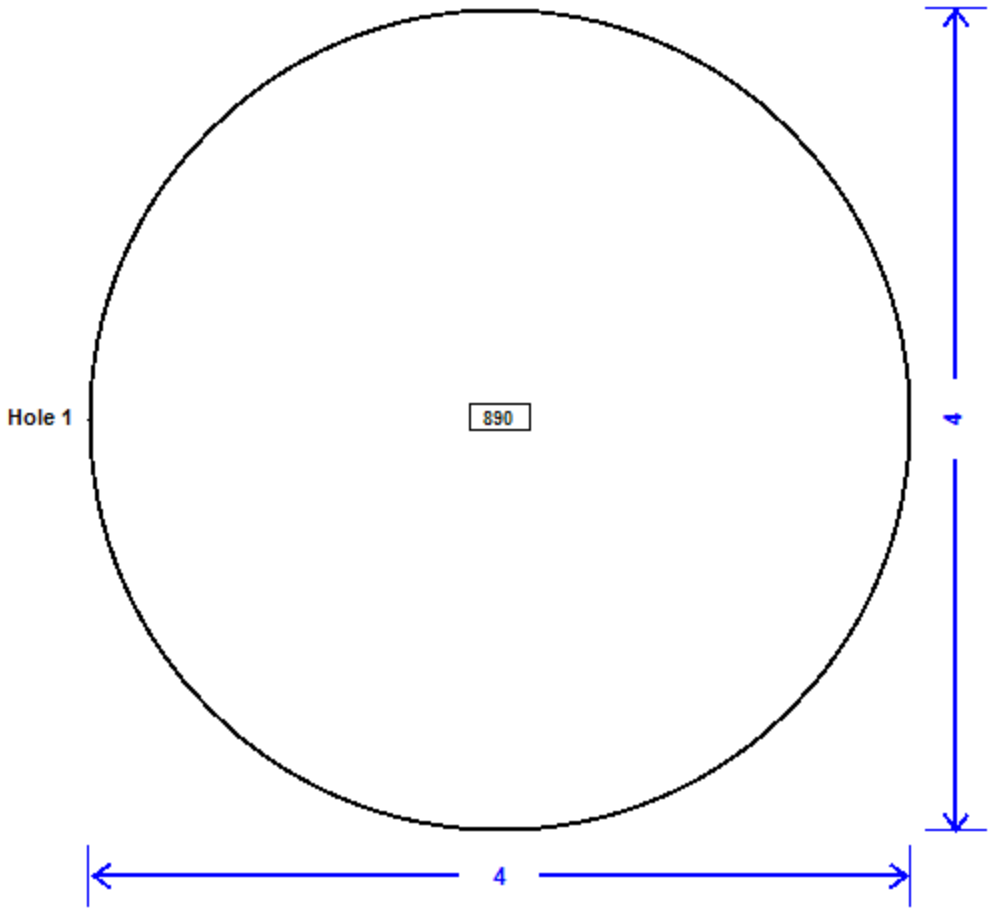
SYSTEM/UNIT: MF-A-01/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	4 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	890 FPM
Average Velocity	890 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	77 CFM
Static Pressure	0.20 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: MF-A-02
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc
SP In Actual	-0.22 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	85 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

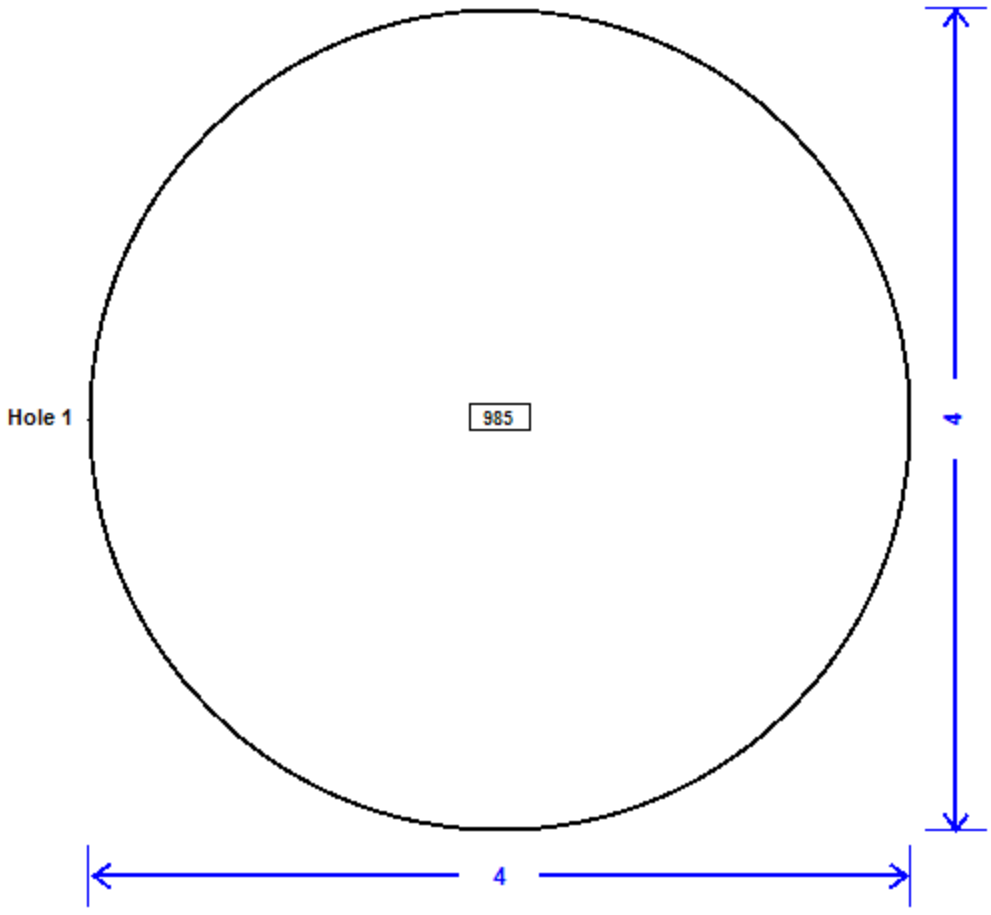
SYSTEM/UNIT: MF-A-02/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Inlet Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	4 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	985 FPM
Average Velocity	985 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	86 CFM
Static Pressure	-0.22 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: MF-A-03
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc
SP Out Actual	0.12 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	65 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

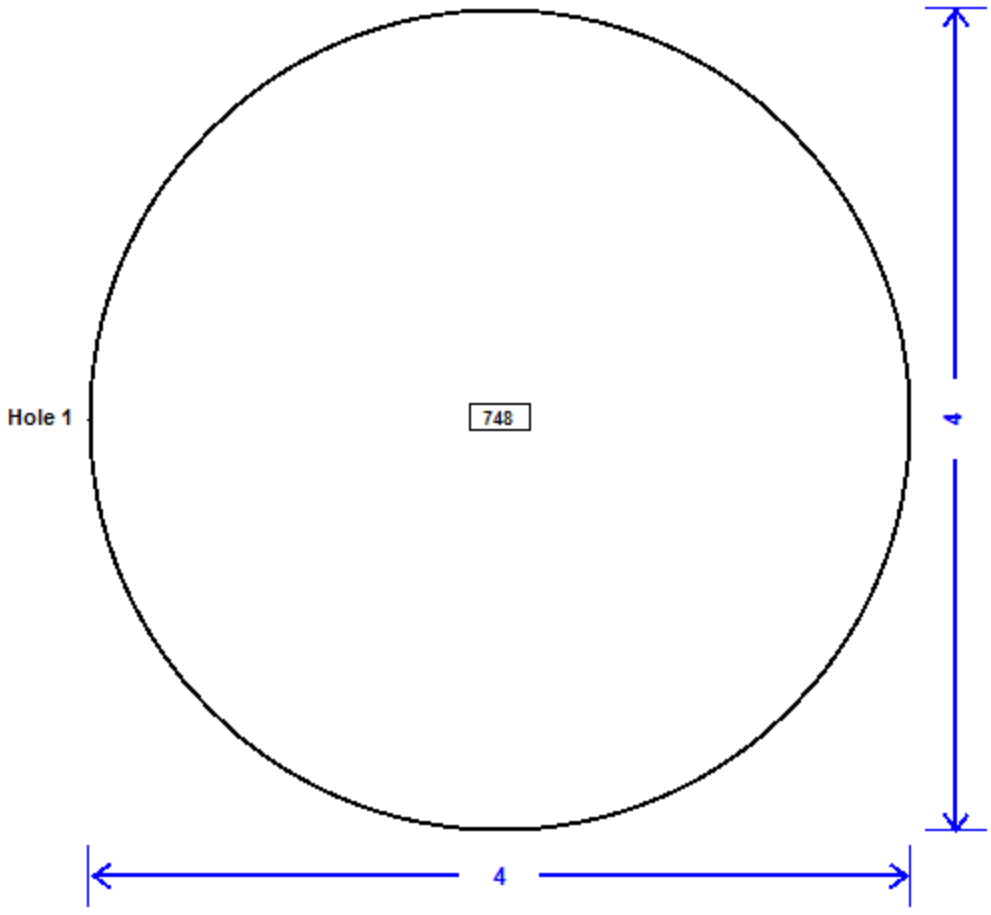
SYSTEM/UNIT: MF-A-03/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	4 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	748 FPM
Average Velocity	748 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	65 CFM
Static Pressure	0.12 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: MF-A-04
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc
SP Out Actual	0.12 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	65 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

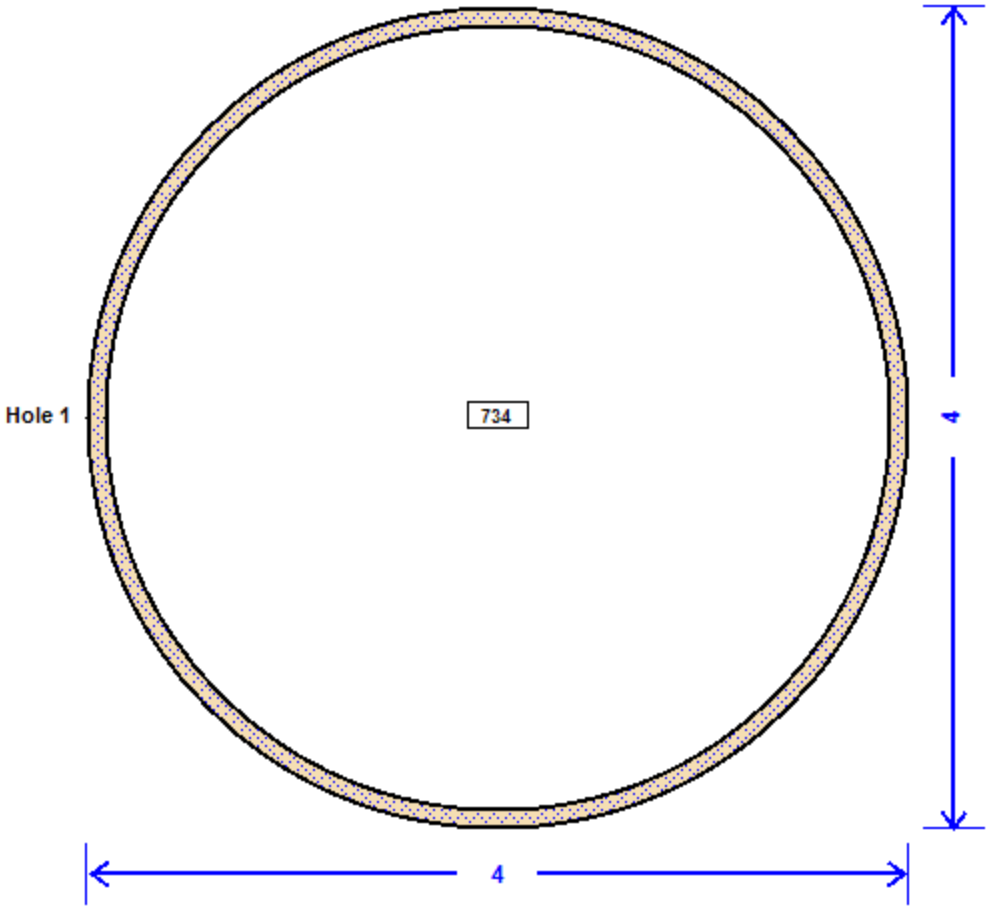
SYSTEM/UNIT: MF-A-04/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Inner Width	1 in.
Duct Diameter	4 in.
Insulation Thickness	0 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	734 FPM
Average Velocity	734 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	64 CFM
Static Pressure	0.14 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: MF-A-05
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	55 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

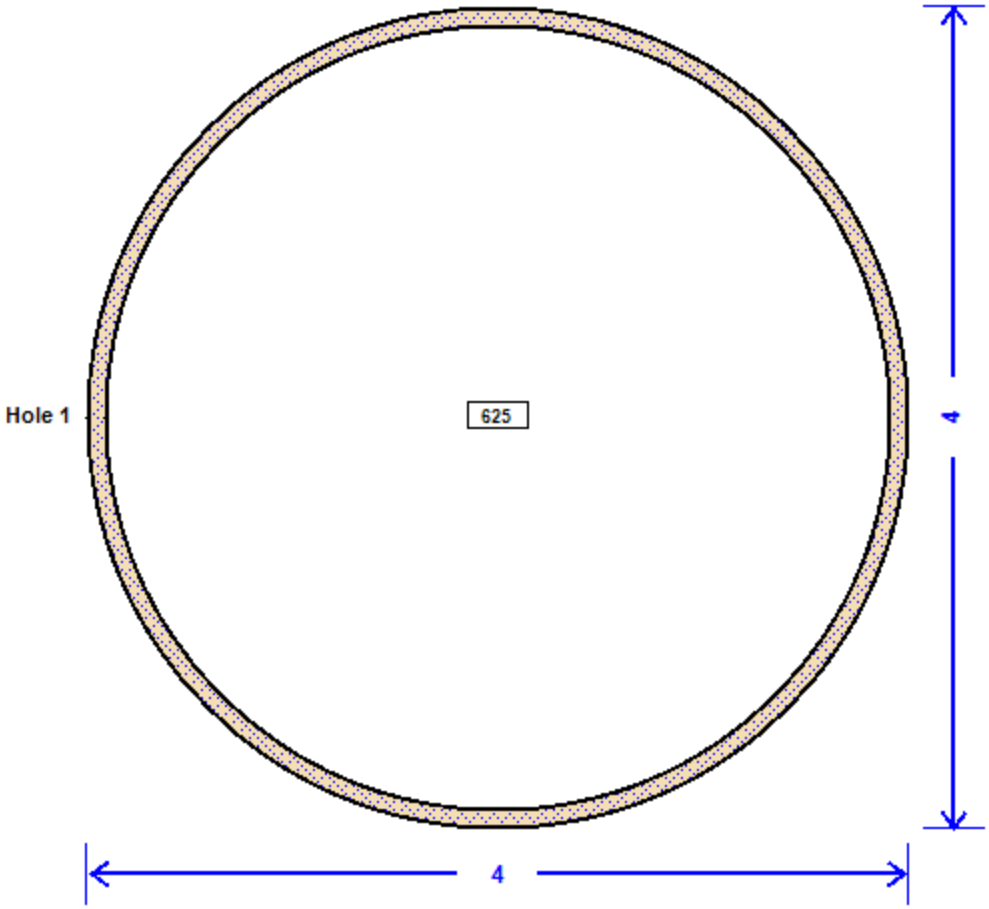
SYSTEM/UNIT: MF-A-05/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Inlet Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Inner Width	1 in.
Duct Diameter	4 in.
Insulation Thickness	0 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	625 FPM
Average Velocity	625 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	54 CFM
Static Pressure	0.12 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: MF-A-06
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Work Live
Unit Manufacturer	Plastec Ventilation
Model Number	P15XS4P033
Serial Number	2023121842
Fan Type / Class	BI / I

Test Data	
External SP Design	0.25 in. wc
SP Out Actual	0.14 in. wc

Electrical Test Data	
Final Operating Hz	60 Hz

Motor Data	
Motor Manufacturer	Orange1
Motor HP	0.3 HP
Motor RPM	1760 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	4.6 Amps
Motor Service Factor	1.0

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	100 CFM	65 CFM

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

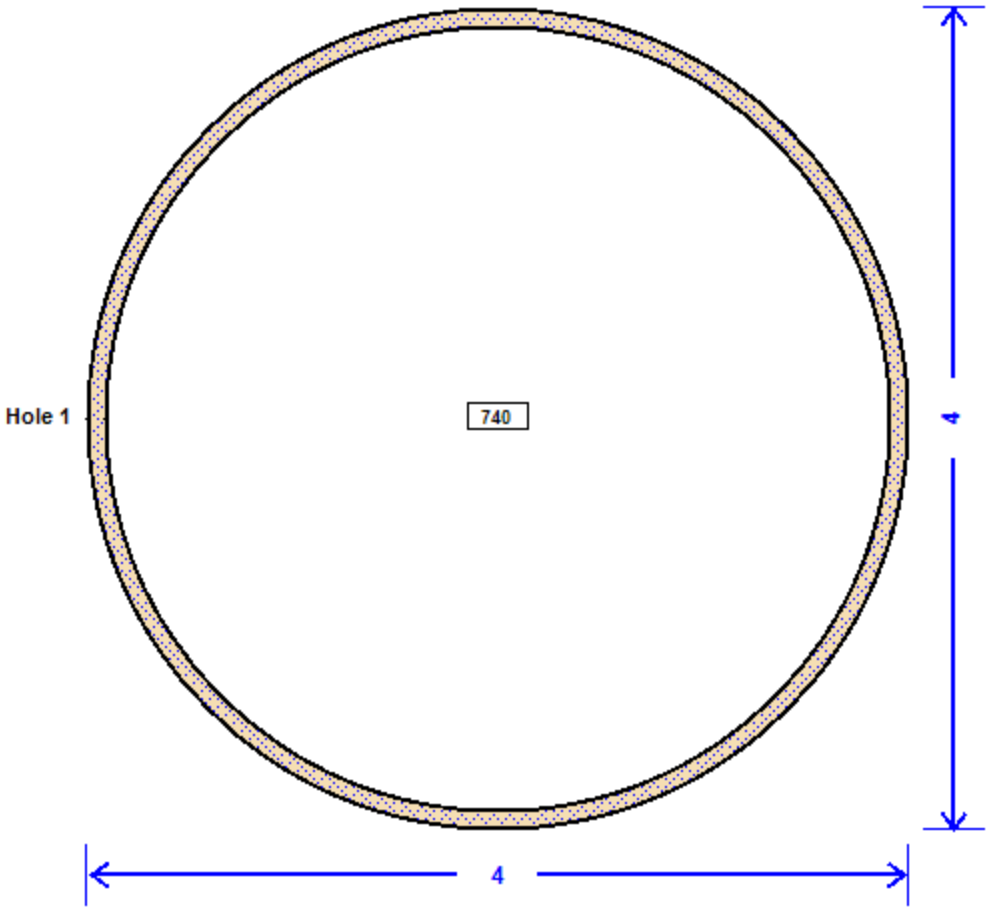
SYSTEM/UNIT: MF-A-06/Duct-01
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Inner Width	1 in.
Duct Diameter	4 in.
Insulation Thickness	0 in.
Duct Area	0.087 sq. ft.
# of Rows (T-B)	1
Readings Per Row (L-R)	1
Total Readings	1

Final Data	
Sum of Readings	740 FPM
Average Velocity	740 FPM
Design Total Flow (CFM)	100 CFM
Actual Total Flow (CFM)	64 CFM
Static Pressure	0.14 in. wg.

Traverse Data Points



Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SF-1
AREA: 120 Dog Wash

Tested By: Brandon Hyslip
Date: 1/16/2024

Unit Data	
Unit Location	Ceiling
Unit Serves	Dog Wash
Unit Manufacturer	Greenheck
Model Number	SQ-70-VG-X
Serial Number	21376470
Fan Type / Class	BI / I

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	1/10 HP
Motor RPM	1800 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	1.38 Amps

Test Data	
SP In Actual	-0.01 in. wc
SP Out Actual	0.01 in. wc
External SP Actual	0.02 in. wc

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Electrical Test Data	
Final Operating Hz	60 Hz
Motor Volts 1	121 Volts
Motor Amps 1	0.3 Amps
Corrected FLA	1.3 Amps
Calculated BHP	0.0 BHP

Air Test Data	Design	Actual
Total Fan CFM	50 CFM	55 CFM

Log:

SF-1	1/16/2024	Brandon Hyslip	2.2v normal mode 4.4v max mode @ 80 CFM

SF-1 Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	120 Dog Wash	SWG	8 x 8	50	80	50	100
	Totals:	-	-	**50**	**80**	**50**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SF-3
AREA: 114 Electrical

Tested By: Allen Wessel
Date: 2/7/2024

Unit Data	
Unit Location	Electrical Room
Unit Serves	Electrical Room
Unit Manufacturer	Greenheck
Model Number	SQ-18-VG-X
Serial Number	21412124
Fan Type / Class	BI / I

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	2 HP
Motor RPM	1800 RPM
Motor Rated Volts	460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor Service Factor	1.15

Test Data	
SP In Actual	-0.24 in. wc
SP Out Actual	0.03 in. wc
External SP Actual	0.27 in. wc

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Electrical Test Data	
Final Operating Hz	60 Hz
Motor Volts 1	487 Volts
Motor Volts 2	487 Volts
Motor Volts 3	488 Volts
Motor Amps 1	0.7 Amps
Motor Amps 2	0.7 Amps
Motor Amps 3	0.8 Amps

Air Test Data	Design	Actual
Total Fan CFM	4000 CFM	4135 CFM
Total GRD CFM	4150 CFM	4135 CFM

Log:

SF-3	2/7/2024	Allen Wessel	6.8v normal mode 7.2v max mode @ 4315 CFM

SF-3 Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	114 Electrical	SWD	28 x 28	3850	3895	3835	100
Outlet-02	115 MPOE	SWD	8 x 8	150	130	145	97
Outlet-03	114A Electrical Backup	SWD	8 x 8	150	125	155	103
	Totals:	-	-	**4150**	**4150**	**4135**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SF-4
AREA: 113 Transformer

Tested By: Allen Wessel
Date: 2/7/2024

Unit Data	
Unit Location	111 Trash
Unit Serves	113 Transformer
Unit Manufacturer	Greenheck
Model Number	SQ-22-VG-X
Serial Number	21411278
Fan Type / Class	BI / I

Test Data	
Fan RPM Actual	982 RPM

Electrical Test Data	
Final Operating Hz	33 Hz
Motor Volts 1	139 Volts
Motor Volts 2	139 Volts
Motor Volts 3	140 Volts
Motor Amps 1	4 Amps
Motor Amps 2	4 Amps
Motor Amps 3	4 Amps
Corrected FLA	21.8 Amps
Calculated BHP	0.9 BHP

Motor Data	
Motor Manufacturer	Baldor
Motor HP	5 HP
Motor RPM	1765 RPM
Motor Rated Volts	460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	6.6 Amps
Motor Service Factor	1.15

Sheave Data	Motor	Fan
Drive Type	Direct Drive	Direct Drive

Air Test Data	Design	Actual
Total Fan CFM	8000 CFM	8080 CFM

Log:

SF-4	2/7/2024	Allen Wessel	33 HZ normal mode 35 HZ max mode @ 8515 CFM

SF-4 Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	113 Transformer	SWD	40 x 40	8000	10130	8080	101
	Totals:	-	-	**8000**	**10130**	**8080**	**101**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SPF-01
AREA: Stair 1

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Unit Location	Roof
Unit Serves	Stairwell Pressurization
Unit Manufacturer	Greenheck
Model Number	TBI-FS-3L24
Fan Type / Class	Axial / I

Electrical Test Data	
Final Operating Hz	34 Hz
Motor Volts 1	230 Volts
Motor Volts 2	230 Volts
Motor Volts 3	230 Volts
Motor Amps 1	1.22 Amps
Motor Amps 2	1.22 Amps
Motor Amps 3	1.22 Amps
Corrected FLA	0.0 Amps
Calculated BHP	∞ BHP

Motor Data	
Motor Manufacturer	Baldor
Motor HP	1.5 HP
Motor RPM	1760 RPM
Motor Frame	145T
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	4.4/2.2 Amps
Motor Service Factor	1.15

Sheave Data	Motor	Fan
Drive Type	Belt	Belt
Number of Belts	2	
Belt Size	AX52	

Air Test Data	Design	Actual
Total Fan CFM	3150 CFM	3145 CFM

Log:

SPF-01	2/8/2024	Allen Wessel	34 HZ Smoke Alarm Mode 19 HZ Methane Mode @ 1570 CFM

SPF-01 Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Stair 3	SWD	24 x 24	3150	3145	3145	100
	Totals:	**-**	**-**	**3150**	**3145**	**3145**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SPF-02
AREA: Stair 2

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Unit Location	Roof
Unit Serves	Stairwell Pressurization
Unit Manufacturer	Greenheck
Model Number	TBI-FS-3L24
Fan Type / Class	Axial / I

Electrical Test Data	
Final Operating Hz	34 Hz
Motor Volts 1	283 Volts
Motor Volts 2	283 Volts
Motor Volts 3	282 Volts
Motor Amps 1	1.21 Amps
Motor Amps 2	1.21 Amps
Motor Amps 3	1.22 Amps
Corrected FLA	0.0 Amps
Calculated BHP	∞ BHP

Motor Data	
Motor Manufacturer	Baldor
Motor HP	1.5 HP
Motor RPM	1760 RPM
Motor Frame	145T
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	4.4/2.2 Amps
Motor Service Factor	1.15

Sheave Data	Motor	Fan
Drive Type	Belt	Belt
Number of Belts	2	
Belt Size	AX52	

Air Test Data	Design	Actual
Total Fan CFM	2400 CFM	2395 CFM

Log:

SPF-02	2/8/2024	Allen Wessel	34 HZ Smoke Alarm Mode 22 HZ Methane Mode @ 1250 CFM

SPF-02 Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Stair 2	SWD	24 x 24	2400	2395	2395	100
	Totals:	**-**	**-**	**2400**	**2395**	**2395**	**100**

Fan Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: SPF-03
AREA: Stair 3

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Unit Location	Roof
Unit Serves	Stairwell Pressurization
Unit Manufacturer	Greenheck
Model Number	TBI-FS-3L24
Serial Number	21395743
Fan Type / Class	Axial / I

Electrical Test Data	
Final Operating Hz	67 Hz
Motor Volts 1	474 Volts
Motor Volts 2	474 Volts
Motor Volts 3	475 Volts
Motor Amps 1	2.19 Amps
Motor Amps 2	2.19 Amps
Motor Amps 3	2.2 Amps
Corrected FLA	0.0 Amps
Calculated BHP	∞ BHP

Motor Data	
Motor Manufacturer	Baldor
Motor HP	1.5 HP
Motor RPM	1760 RPM
Motor Frame	145T
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	4.4/2.2 Amps
Motor Service Factor	1.15

Sheave Data	Motor	Fan
Drive Type	Belt	Belt
Number of Belts	2	
Belt Size	AX52	

Air Test Data	Design	Actual
Total Fan CFM	5000 CFM	5080 CFM

Log:

SPF-03	2/8/2024	Allen Wessel	67HZ Smoke Alarm Mode 34HZ Methane Mode @ 2555 CFM

SPF-03 Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Stair 3	SWD	24 x 24	5000	5080	5080	102
	Totals:	**-**	**-**	**5000**	**5080**	**5080**	**102**

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-1 (Statics)
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	PE30i
Unit Serial Number	2302001
Unit Type	Air to Air
ERV-1 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-1 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-1 (Statics)/Exhaust Fan	
Final Operating Hz	92 / 57 %
Motor Volts 1	211 Volts
Motor Volts 2	211 Volts
Motor Volts 3	210 Volts
Motor Amps 1	2.5 Amps
Motor Amps 2	2.6 Amps
Motor Amps 3	2.6 Amps
ERV-1 (Statics)/Supply Fan	
Final Operating Hz	80 / 54 %
Motor Volts 1	210 Volts
Motor Volts 2	211 Volts
Motor Volts 3	210 Volts
Motor Amps 1	2.3 Amps
Motor Amps 2	2.3 Amps
Motor Amps 3	2.4 Amps

Motor Data	
ERV-1 (Statics)/Exhaust Fan	
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor Service Factor	1.15
ERV-1 (Statics)/Supply Fan	
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor Service Factor	1.15

Sheave Data		
ERV-1 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive
ERV-1 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive

Air Test Data		
	Design	**Actual**
Supply Air CFM	2979/2000 CFM	2974/2198 CFM
Exhaust Air CFM	2979/2000 CFM	2785/1995 CFM

Filter Data	
ERV-1 (Statics)/EF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches
ERV-1 (Statics)/SF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

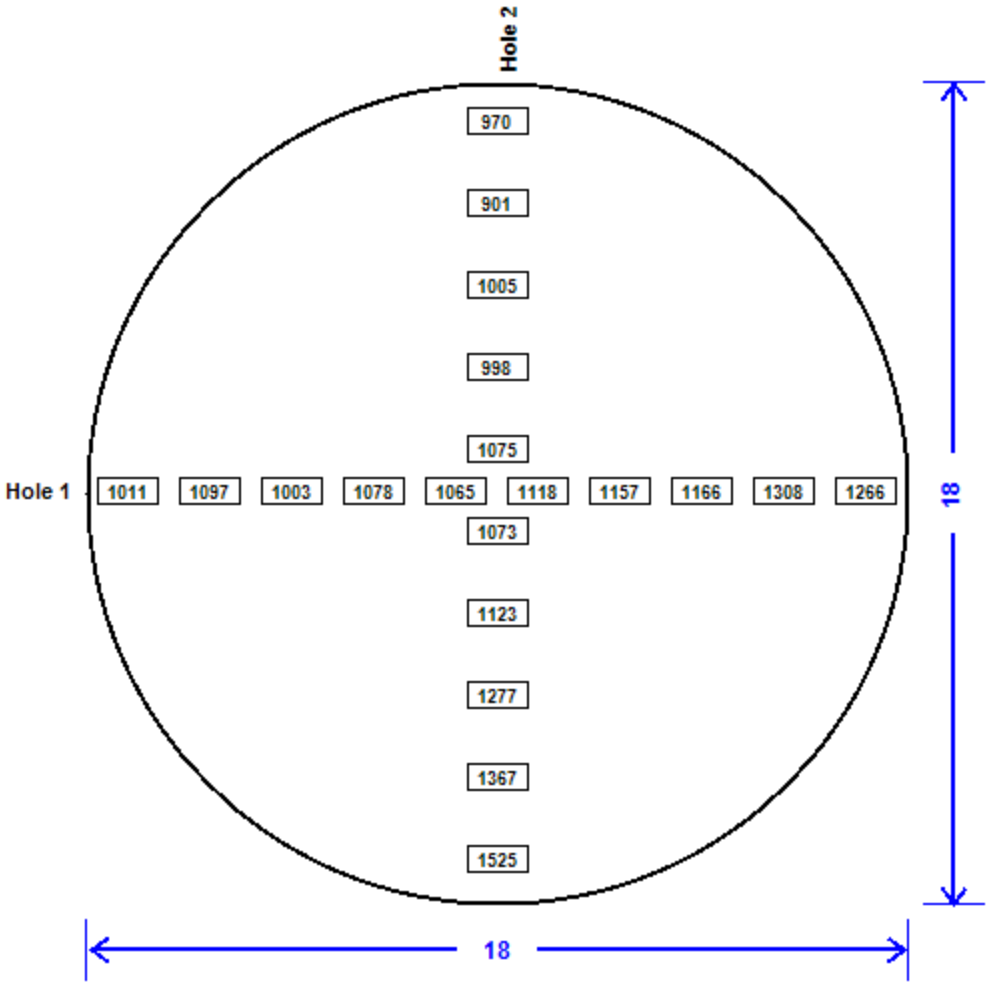
SYSTEM/UNIT: ERV-1 (Statics)/Exhaust Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Exhaust Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	22583 FPM
Average Velocity	1129 FPM
Design Total Flow (CFM)	2000 CFM
Actual Total Flow (CFM)	1995 CFM
Static Pressure	0.25 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

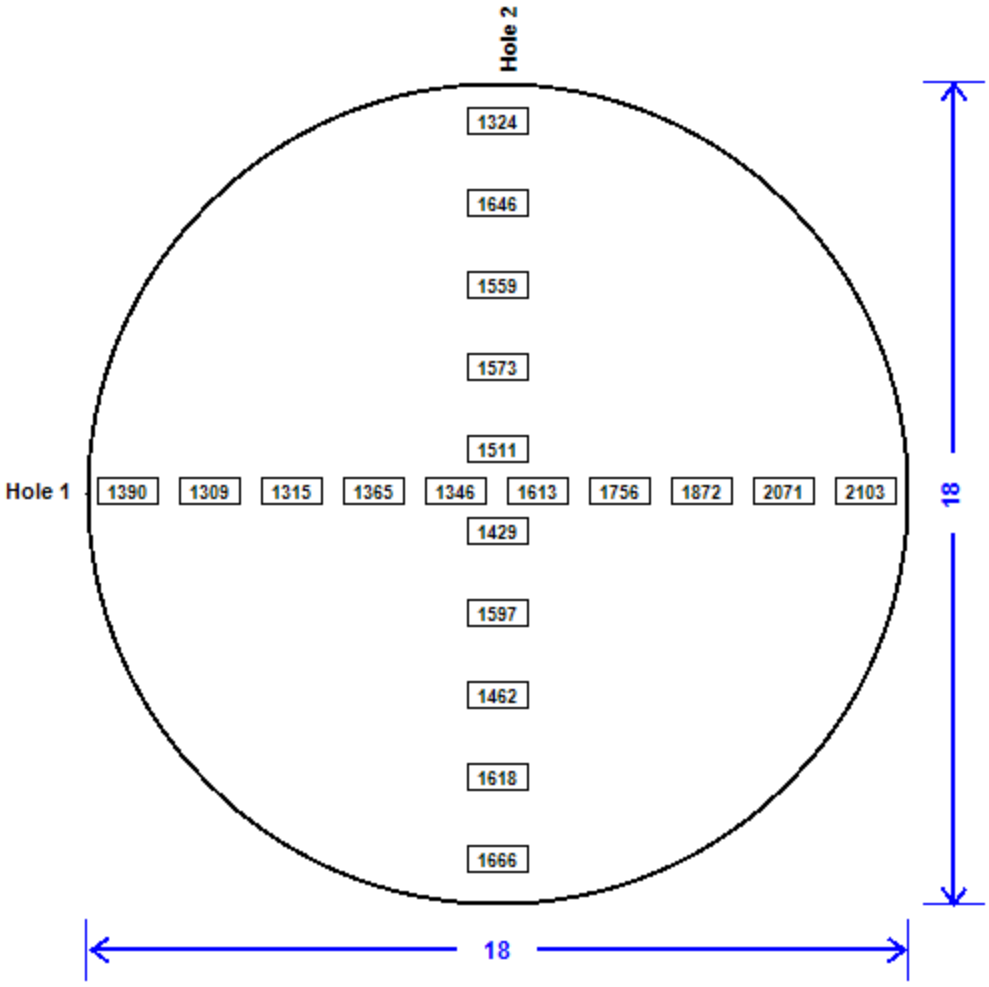
SYSTEM/UNIT: ERV-1 (Statics)/Exhaust Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	31525 FPM
Average Velocity	1576 FPM
Design Total Flow (CFM)	2979 CFM
Actual Total Flow (CFM)	2785 CFM
Static Pressure	0.51 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

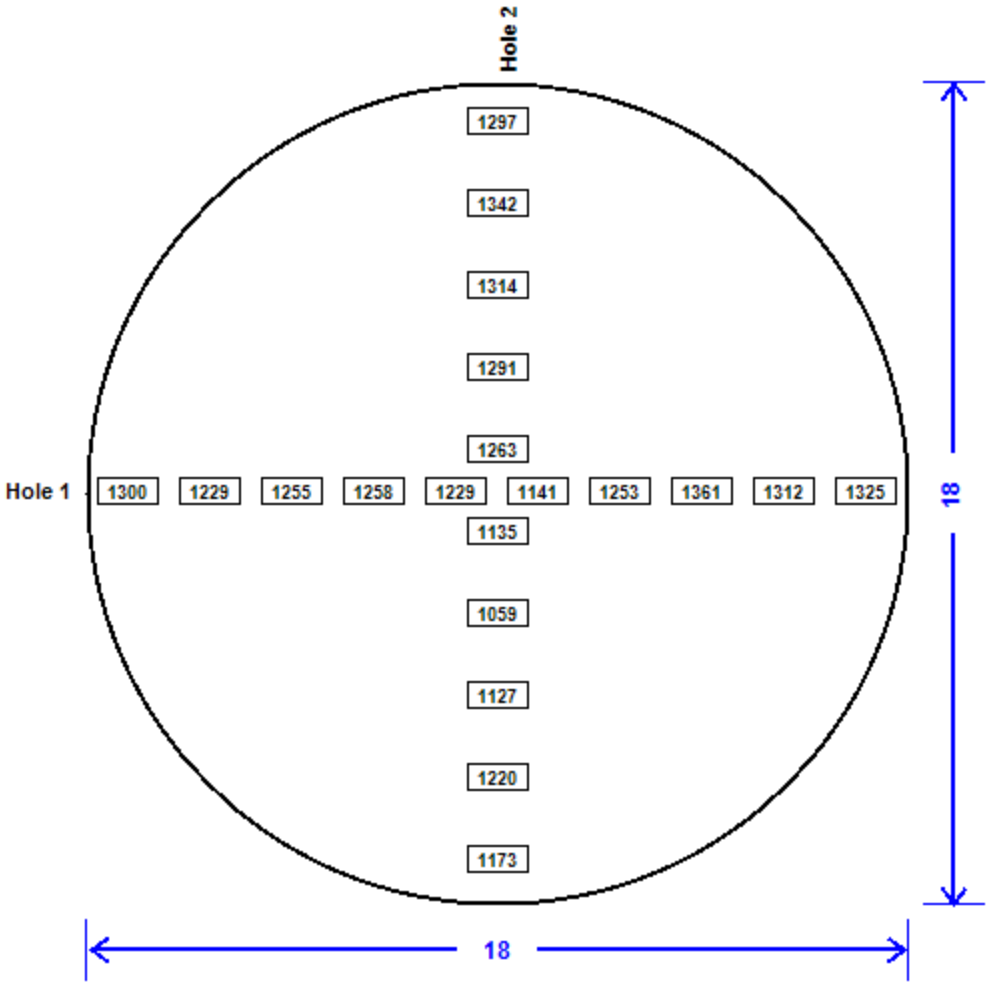
SYSTEM/UNIT: ERV-1 (Statics)/OSA Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24884 FPM
Average Velocity	1244 FPM
Design Total Flow (CFM)	2000 CFM
Actual Total Flow (CFM)	2198 CFM
Static Pressure	0.05 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

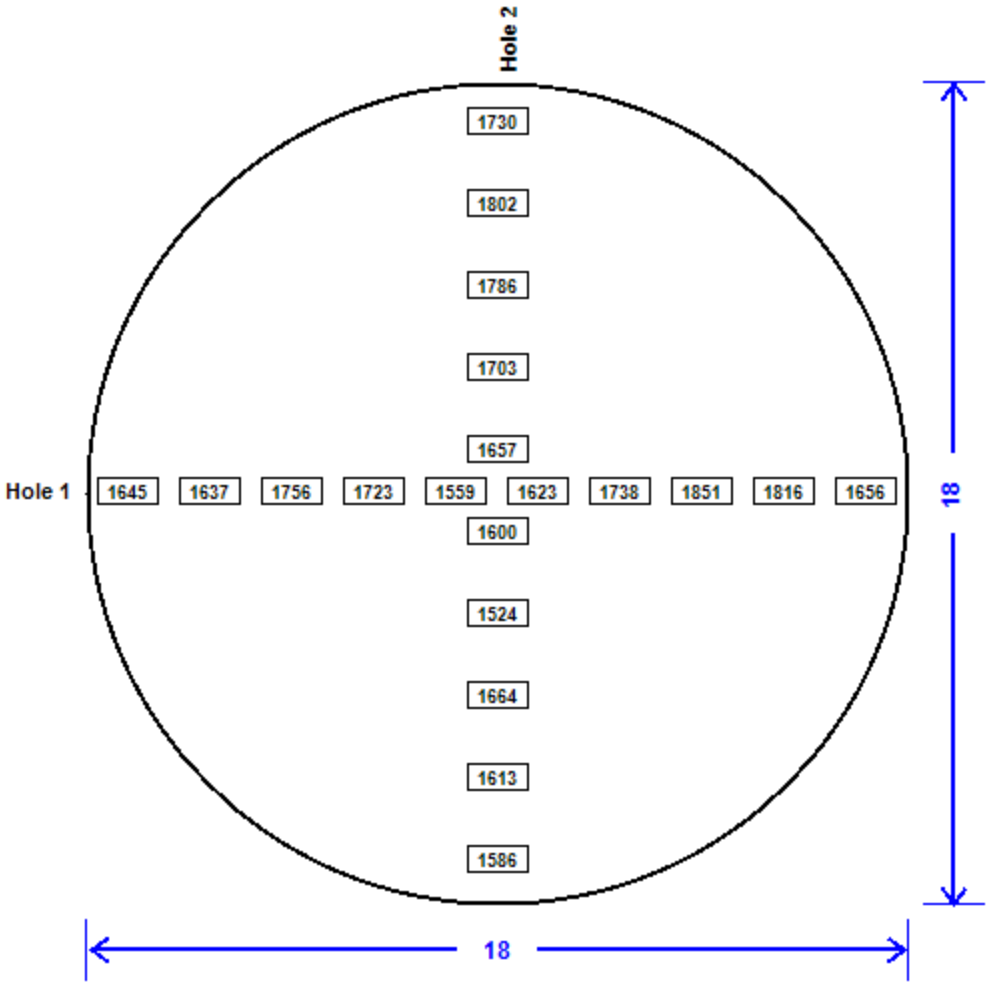
SYSTEM/UNIT: ERV-1 (Statics)/OSA Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	33669 FPM
Average Velocity	1683 FPM
Design Total Flow (CFM)	2979 CFM
Actual Total Flow (CFM)	2974 CFM
Static Pressure	0.09 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-2 (Statics)
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	PE20i
Unit Serial Number	2207001
Unit Type	Air to Air
ERV-2 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-2 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-2 (Statics)/Exhaust Fan	
Final Operating Hz	49 / 32 Hz
Motor Volts 1	242 Volts
Motor Volts 2	241 Volts
Motor Volts 3	241 Volts
Motor Amps 1	3.3 Amps
Motor Amps 2	3.2 Amps
Motor Amps 3	3.4 Amps
Corrected FLA	0.0 FLA
Calculated BHP	∞ BHP
ERV-2 (Statics)/Supply Fan	
Final Operating Hz	47 / 33 Hz
Motor Volts 1	242 Volts
Motor Volts 2	242 Volts
Motor Volts 3	241 Volts
Motor Amps 1	3.3 Amps
Motor Amps 2	3.2 Amps
Motor Amps 3	3.2 Amps
Corrected FLA	0.0 FLA
Calculated BHP	∞ BHP

Motor Data	
ERV-2 (Statics)/Exhaust Fan	
Motor Manufacturer	Teco
Motor HP	2 HP
Motor RPM	1740 RPM
Motor Frame	145T
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	5.48/2.74 Amps
Motor Service Factor	1.15
ERV-2 (Statics)/Supply Fan	
Motor Manufacturer	Teco
Motor HP	2 HP
Motor RPM	1740 RPM
Motor Frame	145T
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor FL Amps	5.48/2.74 Amps
Motor Service Factor	1.15

Sheave Data		
ERV-2 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Belt	Belt
Model	1VP44	BK52
Bore Size	7/8 in.	3/4 in.
Number of Belts	1	
Belt Size	B38	
Center Line	13 in.	
ERV-2 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Belt	Belt
Model	1VP44	BK52
Bore Size	7/8 in.	3/4 in.
Number of Belts	1	
Belt Size	B38	
Center Line	13 in.	

Air Test Data	Design	Actual
Supply Air CFM	1223/750 CFM	1276/775 CFM
Exhaust Air CFM	1223/750 CFM	1246/730 CFM

Filter Data	
ERV-2 (Statics)/EF Filter	
Filter Manufacturer	Tri
Filter Type	Pleated
MERV Rating	11
Filter Quantity	2
Filter Size	16x20x2 Inches
ERV-2 (Statics)/SF Filter	

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-2 (Statics)
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Filter Data	
ERV-2 (Statics)/SF Filter	
Filter Manufacturer	Tri
Filter Type	Pleated
MERV Rating	11
Filter Quantity	2
Filter Size	16x20x2 Inches

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

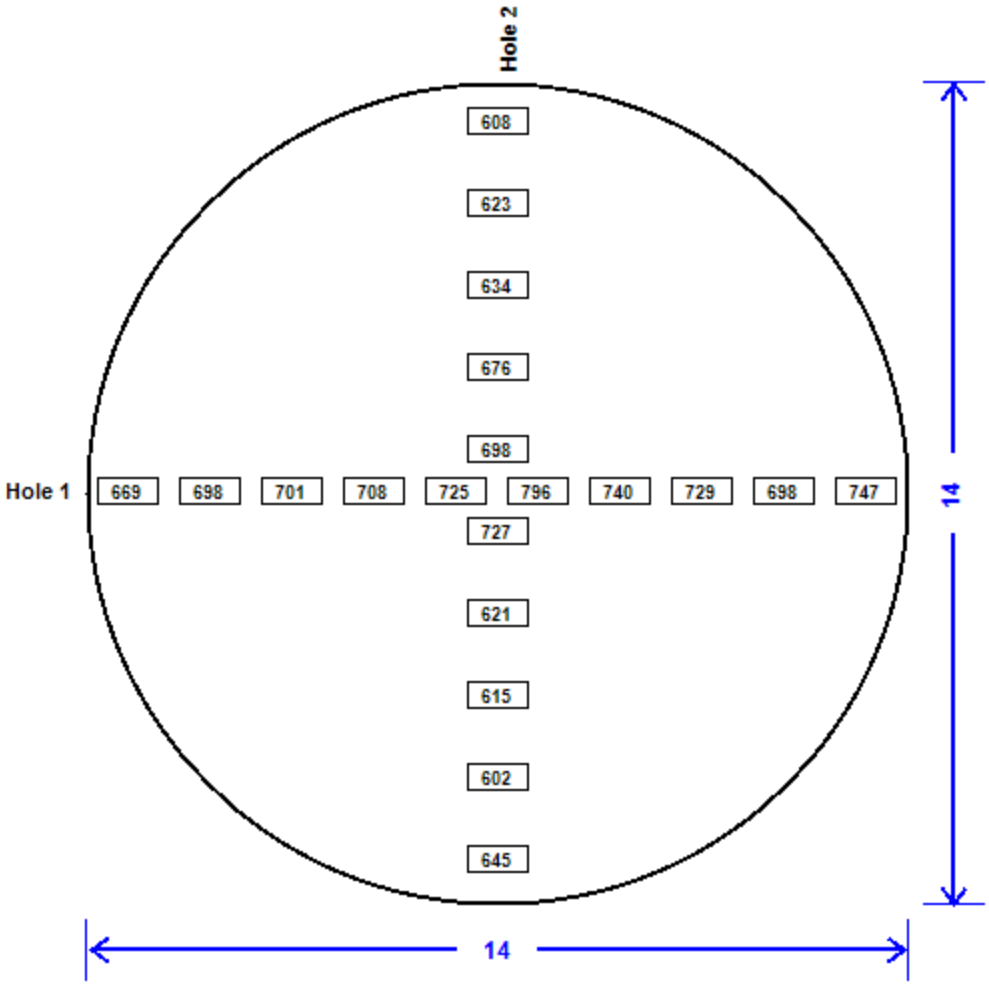
SYSTEM/UNIT: ERV-2 (Statics)/Exhaust Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	13660 FPM
Average Velocity	683 FPM
Design Total Flow (CFM)	750 CFM
Actual Total Flow (CFM)	730 CFM
Static Pressure	0.06 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

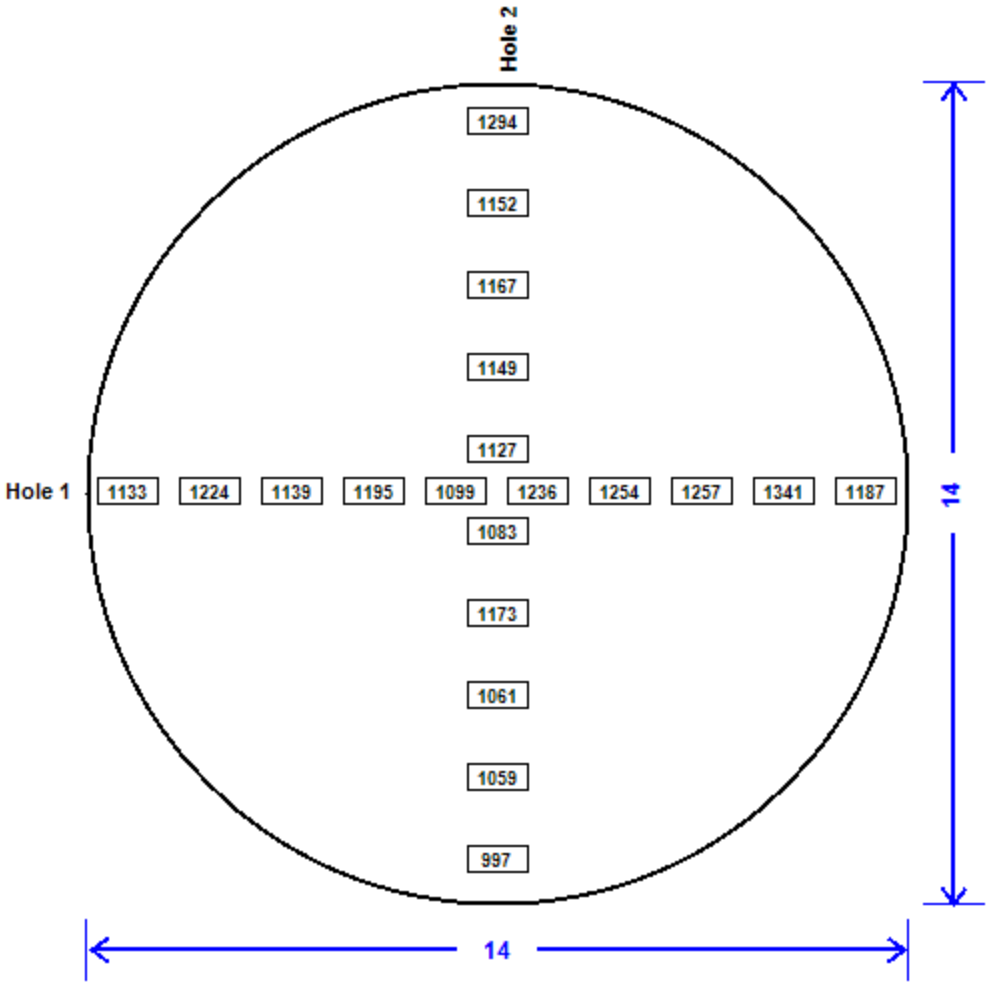
SYSTEM/UNIT: ERV-2 (Statics)/Exhaust Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23327 FPM
Average Velocity	1166 FPM
Design Total Flow (CFM)	1223 CFM
Actual Total Flow (CFM)	1246 CFM
Static Pressure	0.16 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

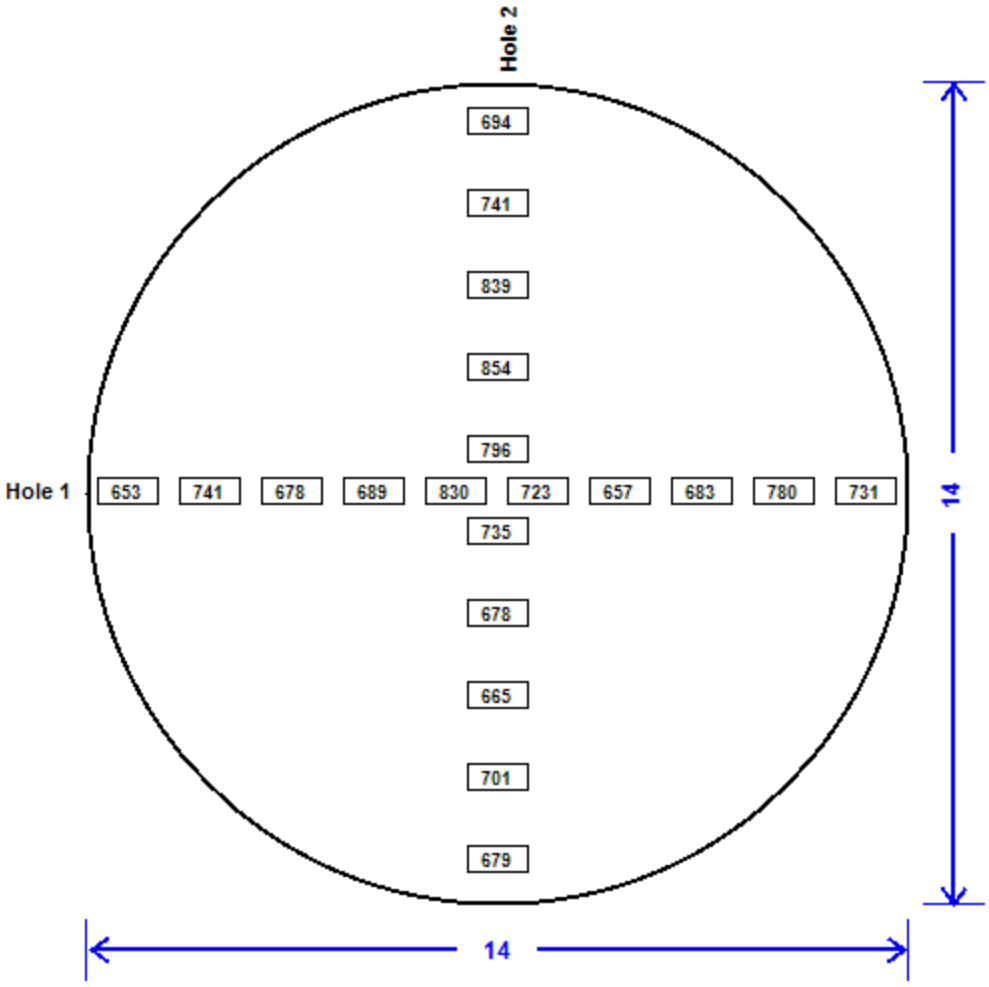
SYSTEM/UNIT: ERV-2 (Statics)/OSA Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	14547 FPM
Average Velocity	727 FPM
Design Total Flow (CFM)	750 CFM
Actual Total Flow (CFM)	777 CFM
Static Pressure	0.01 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

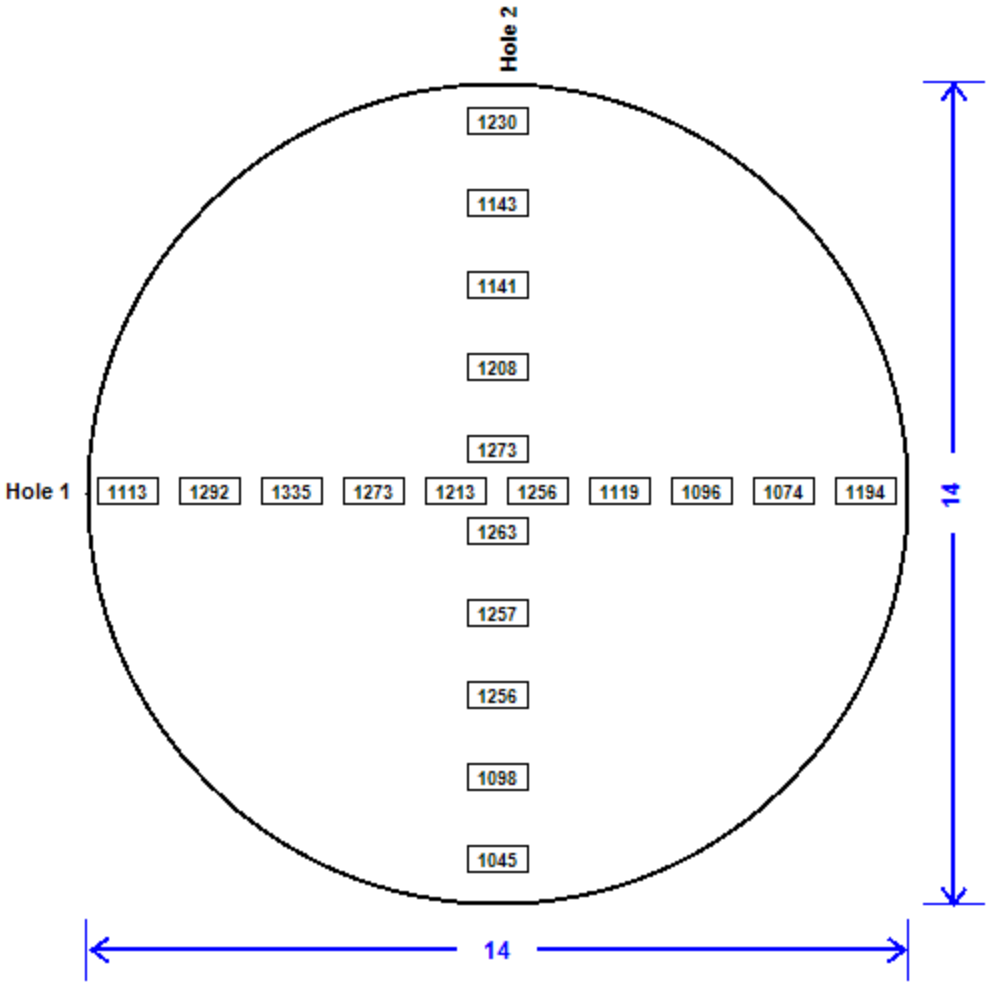
SYSTEM/UNIT: ERV-2 (Statics)/OSA Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/6/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23879 FPM
Average Velocity	1194 FPM
Design Total Flow (CFM)	1223 CFM
Actual Total Flow (CFM)	1276 CFM
Static Pressure	0.02 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-3 (Statics)
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	PE30i
Unit Serial Number	2302002
Unit Type	Air to Air
ERV-3 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-3 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-3 (Statics)/Exhaust Fan	
Final Operating Hz	55 / 37 %
Motor Volts 1	211 Volts
Motor Volts 2	210 Volts
Motor Volts 3	210 Volts
Motor Amps 1	1.3 Amps
Motor Amps 2	1.1 Amps
Motor Amps 3	1.2 Amps
ERV-3 (Statics)/Supply Fan	
Final Operating Hz	58 / 36 %
Motor Volts 1	210 Volts
Motor Volts 2	210 Volts
Motor Volts 3	211 Volts
Motor Amps 1	1.4 Amps
Motor Amps 2	1.5 Amps
Motor Amps 3	1.5 Amps

Motor Data	
ERV-3 (Statics)/Exhaust Fan	
Motor Manufacturer	Genteq
Motor HP	4.8 HP
Motor Rated Volts	208 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor Service Factor	1.15
ERV-3 (Statics)/Supply Fan	
Motor Manufacturer	Genteq
Motor HP	4.8 HP
Motor Rated Volts	208 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor Service Factor	1.15

Sheave Data		
ERV-3 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive
ERV-3 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive

Air Test Data		
	Design	**Actual**
Supply Air CFM	1500/2199 CFM	1500/2135 CFM
Exhaust Air CFM	1500/2199 CFM	1590/2130 CFM

Filter Data	
ERV-3 (Statics)/EF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches
ERV-3 (Statics)/SF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

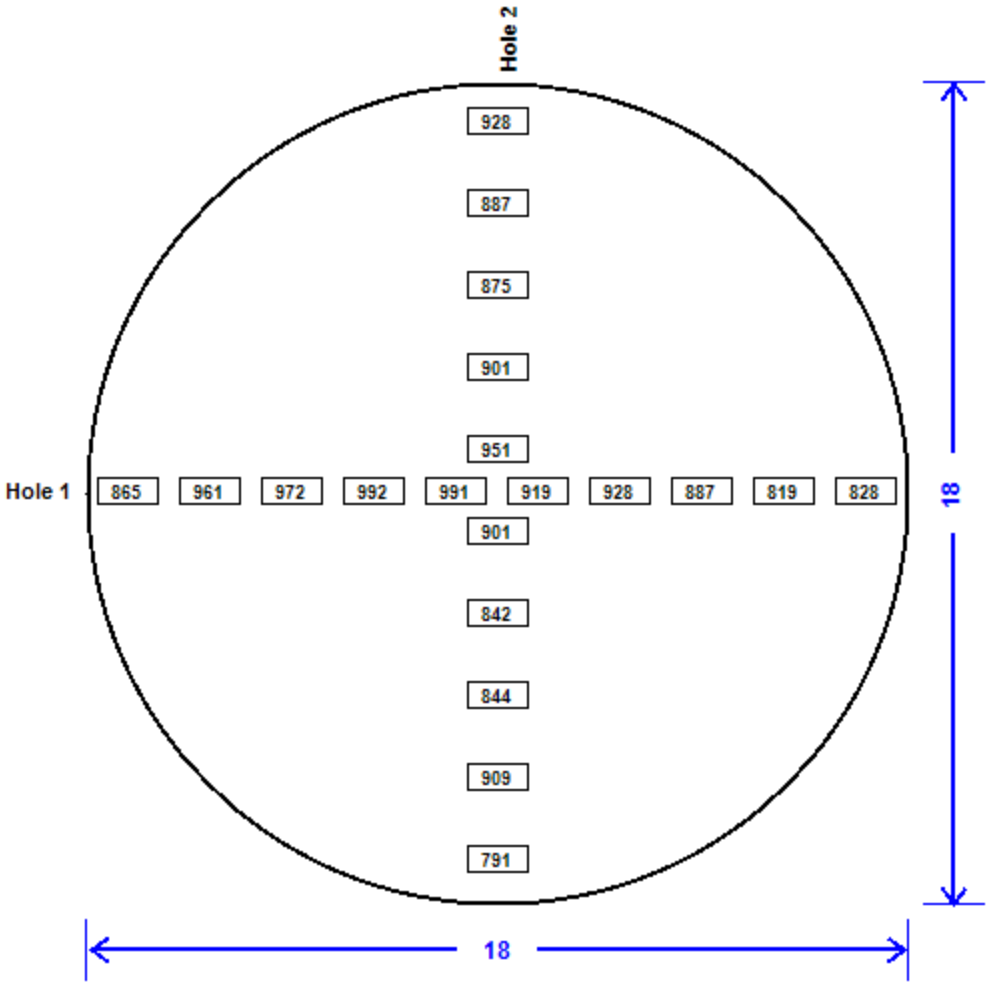
SYSTEM/UNIT: ERV-3 (Statics)/Exhaust Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	17991 FPM
Average Velocity	900 FPM
Design Total Flow (CFM)	1500 CFM
Actual Total Flow (CFM)	1590 CFM
Static Pressure	0.10 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

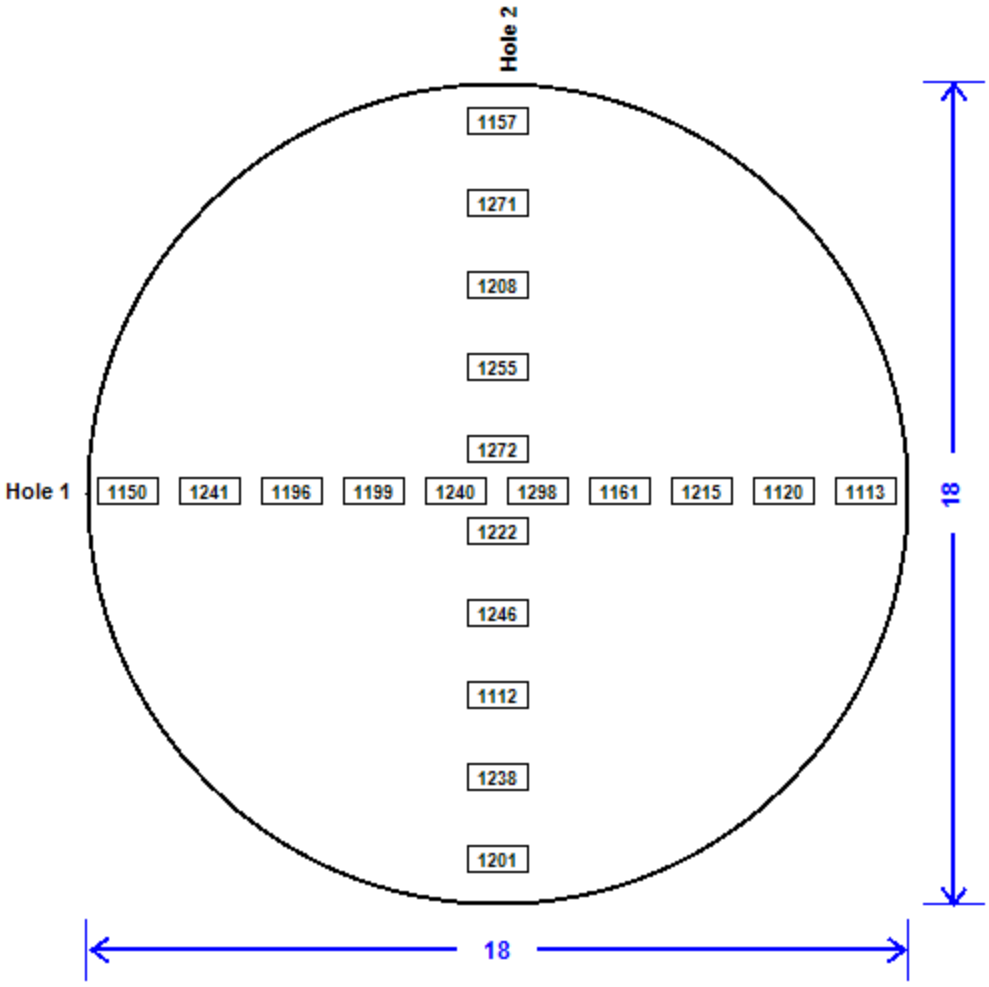
SYSTEM/UNIT: ERV-3 (Statics)/Exhaust Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24115 FPM
Average Velocity	1206 FPM
Design Total Flow (CFM)	2199 CFM
Actual Total Flow (CFM)	2131 CFM
Static Pressure	0.16 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

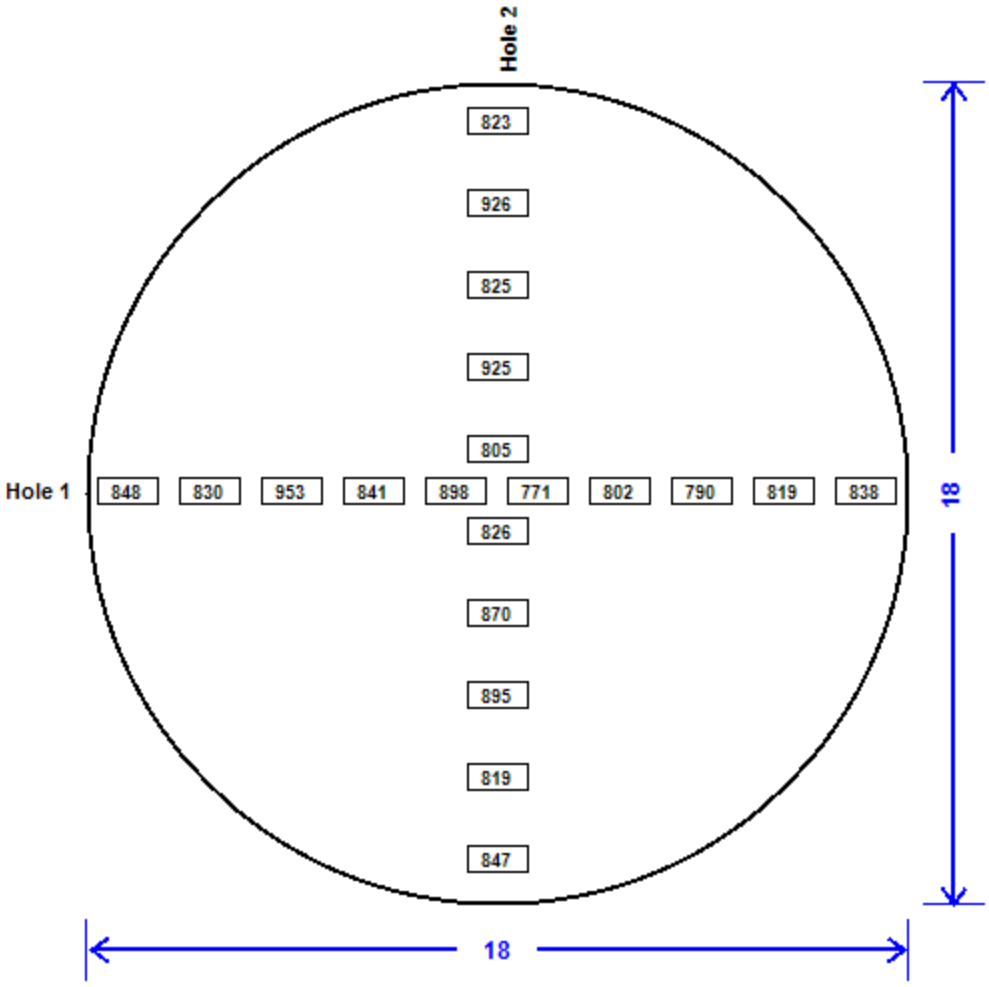
SYSTEM/UNIT: ERV-3 (Statics)/OSA Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	16951 FPM
Average Velocity	848 FPM
Design Total Flow (CFM)	1500 CFM
Actual Total Flow (CFM)	1498 CFM
Static Pressure	0.02 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

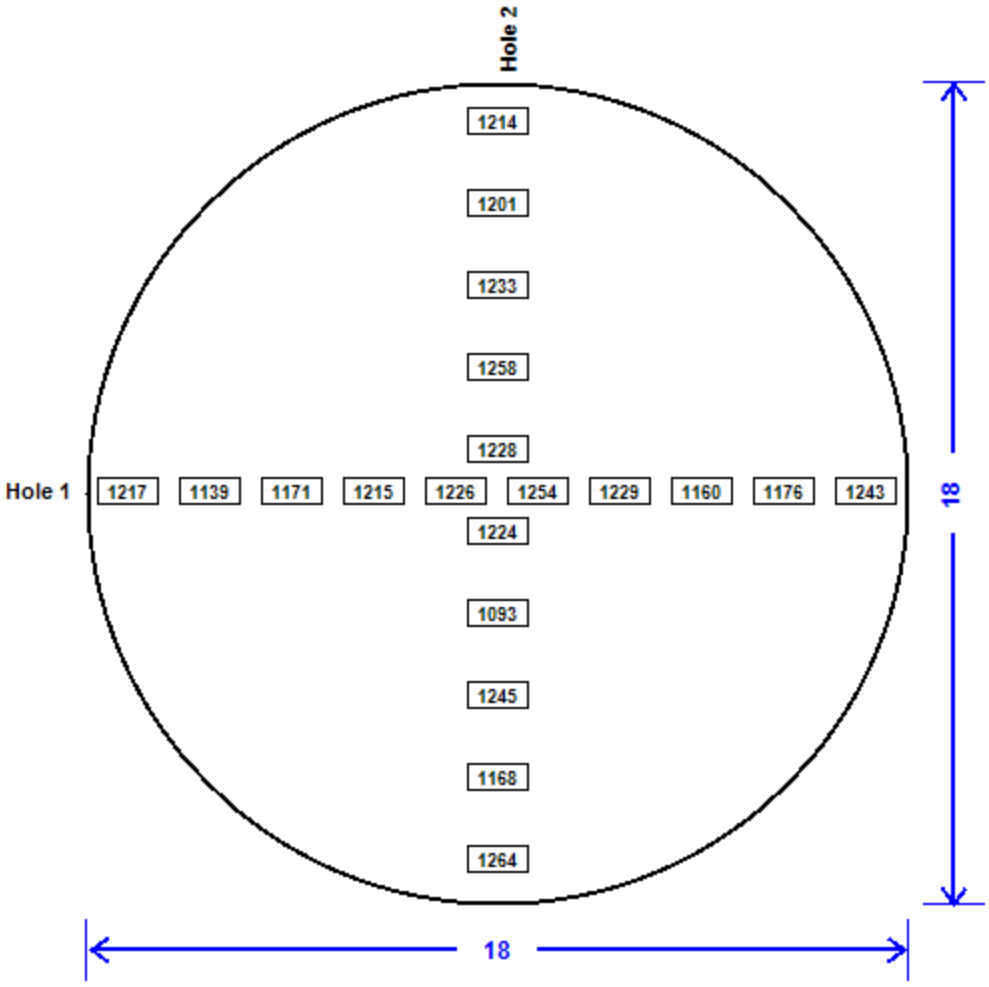
SYSTEM/UNIT: ERV-3 (Statics)/OSA Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/8/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24158 FPM
Average Velocity	1208 FPM
Design Total Flow (CFM)	2199 CFM
Actual Total Flow (CFM)	2135 CFM
Static Pressure	0.05 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-4 (Statics)
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	PE30i
Unit Serial Number	2302003
Unit Type	Air to Air
ERV-4 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-4 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-4 (Statics)/Exhaust Fan	
Final Operating Hz	60 / 40 %
Motor Volts 1	211 Volts
Motor Volts 2	210 Volts
Motor Volts 3	210 Volts
Motor Amps 1	1.3 Amps
Motor Amps 2	1.3 Amps
Motor Amps 3	1.2 Amps
ERV-4 (Statics)/Supply Fan	
Final Operating Hz	58 / 42 %
Motor Volts 1	210 Volts
Motor Volts 2	210 Volts
Motor Volts 3	211 Volts
Motor Amps 1	1.4 Amps
Motor Amps 2	1.5 Amps
Motor Amps 3	1.5 Amps

Motor Data	
ERV-4 (Statics)/Exhaust Fan	
Motor Manufacturer	Genteq
Motor HP	4.8 HP
Motor Rated Volts	208 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor Service Factor	1.15
ERV-4 (Statics)/Supply Fan	
Motor Manufacturer	Genteq
Motor HP	4.8 HP
Motor Rated Volts	208 Volts
Motor Phase	3
Motor Hertz	60 Hz
Motor Service Factor	1.15

Sheave Data		
ERV-4 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive
ERV-4 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive

Air Test Data		
	Design	**Actual**
Supply Air CFM	1500/2199 CFM	1595/2090 CFM
Exhaust Air CFM	1500/2199 CFM	1630/2215 CFM

Filter Data	
ERV-4 (Statics)/EF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches
ERV-4 (Statics)/SF Filter	
Filter Manufacturer	Tridimhardy
Filter Type	Pleated
MERV Rating	8
Filter Quantity	3
Filter Size	16x20x2 Inches

Log:

ERV-4 (Statics)	1/16/2024	Brandon Hyslip	Speed set points were set with no ductwork attached. Supply 30% Return 20%

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

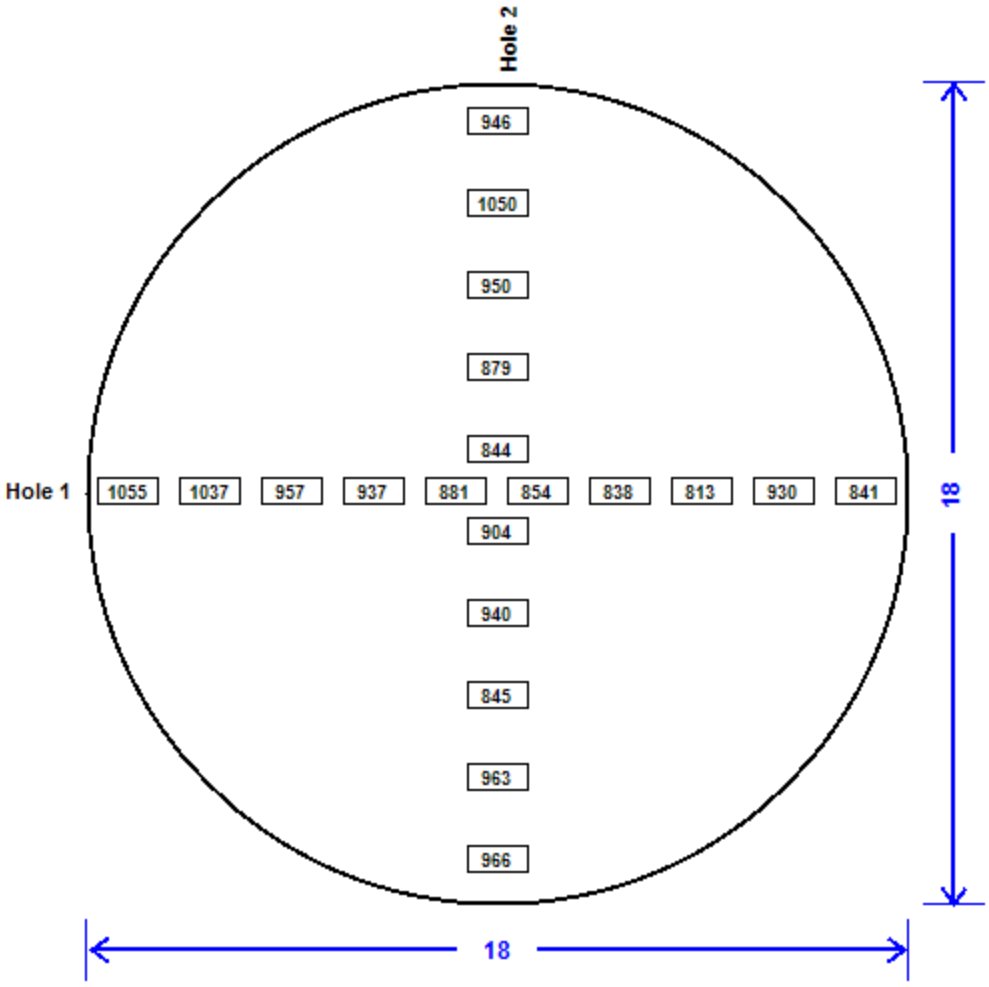
SYSTEM/UNIT: ERV-4 (Statics)/Exhaust Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhaust Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	18430 FPM
Average Velocity	922 FPM
Design Total Flow (CFM)	1500 CFM
Actual Total Flow (CFM)	1629 CFM
Static Pressure	0.12 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

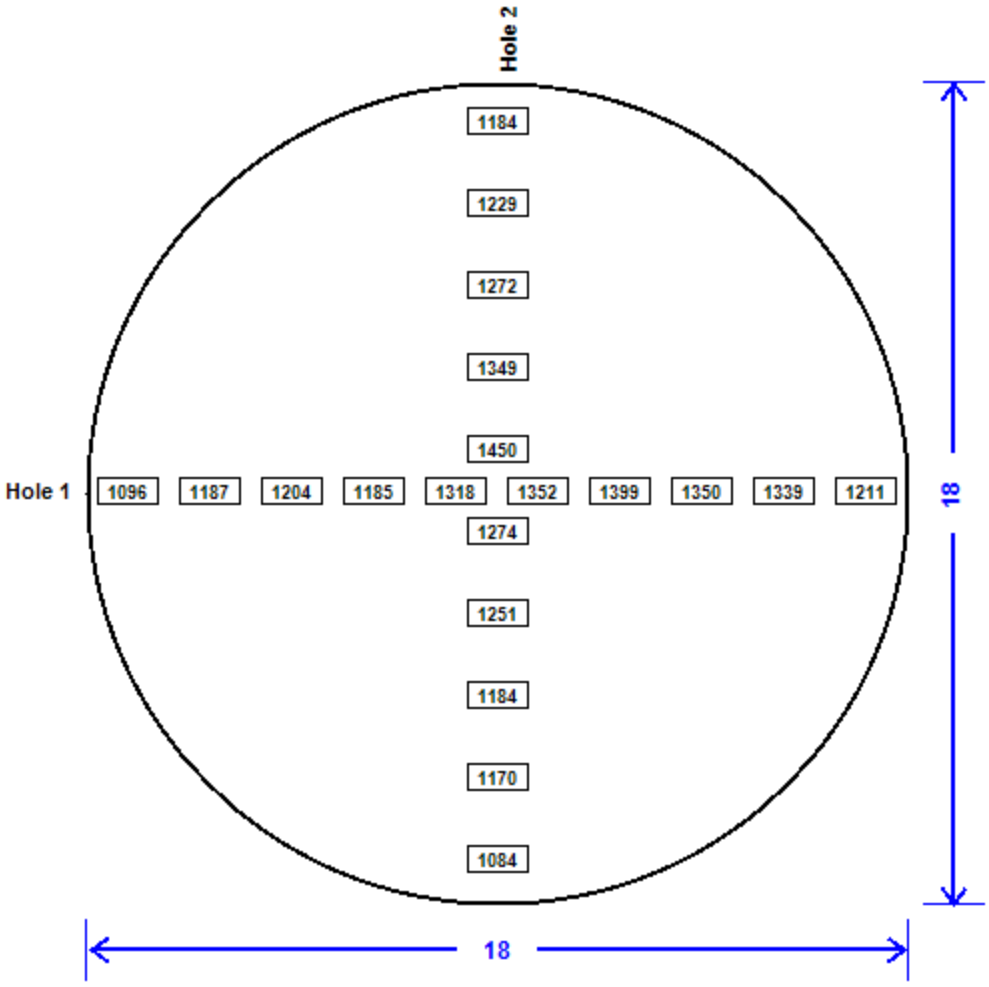
SYSTEM/UNIT: ERV-4 (Statics)/Exhaust Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	25088 FPM
Average Velocity	1254 FPM
Design Total Flow (CFM)	2199 CFM
Actual Total Flow (CFM)	2216 CFM
Static Pressure	0.21 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

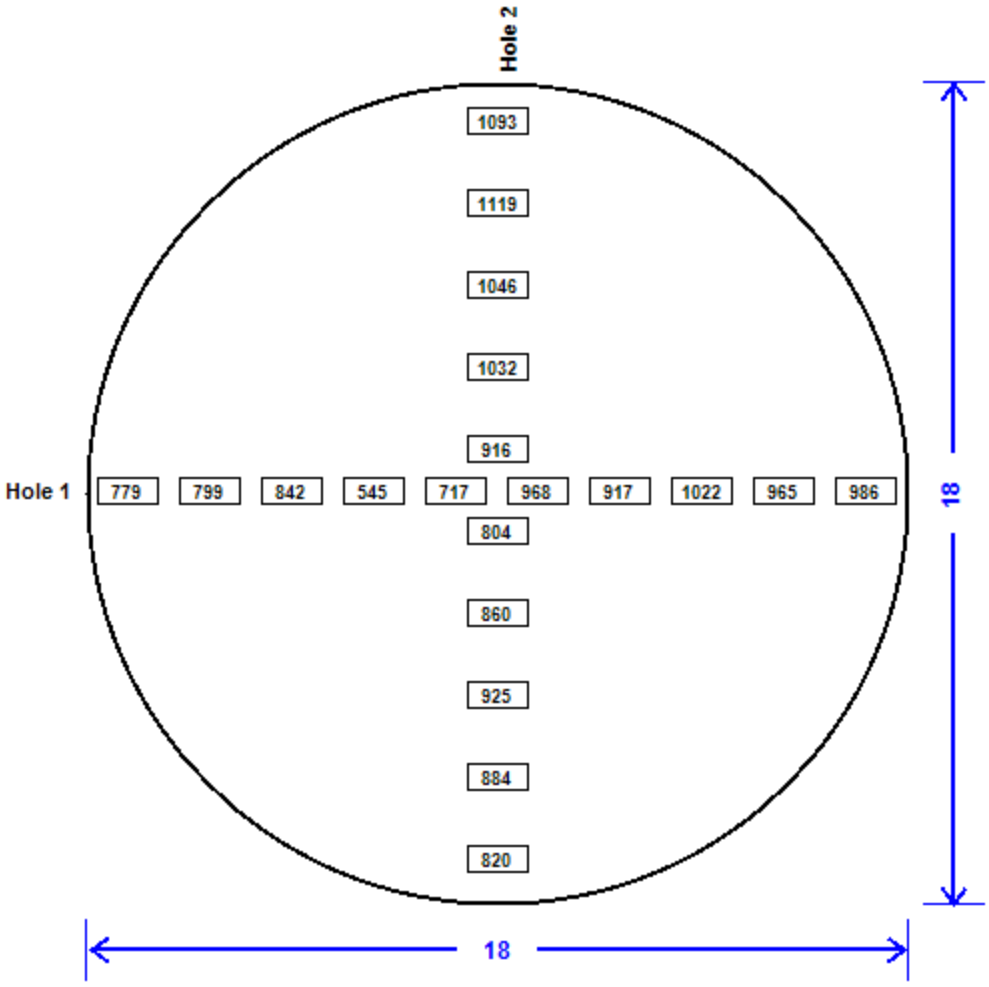
SYSTEM/UNIT: ERV-4 (Statics)/OSA Continuous
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	18039 FPM
Average Velocity	902 FPM
Design Total Flow (CFM)	1500 CFM
Actual Total Flow (CFM)	1594 CFM
Static Pressure	0.03 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

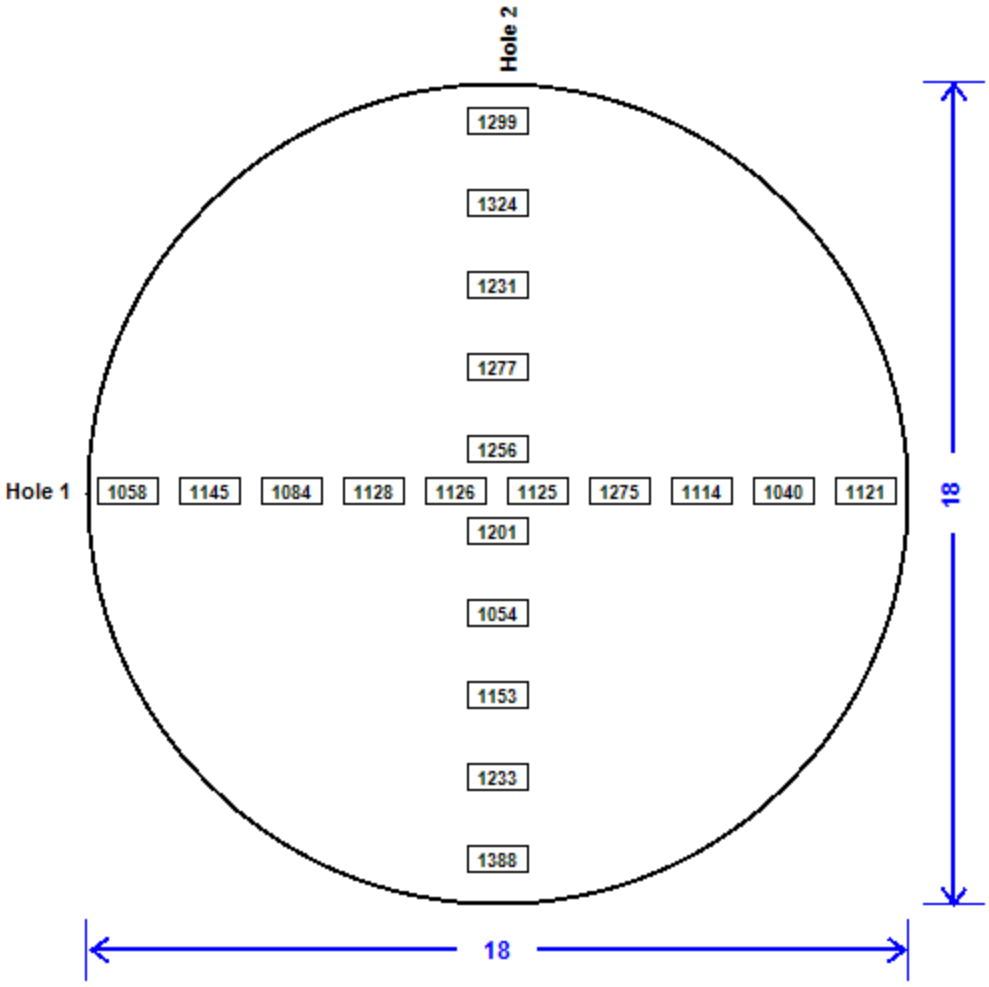
SYSTEM/UNIT: ERV-4 (Statics)/OSA Max
AREA: Commercial Flex

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	18 in.
Duct Area	1.767 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23632 FPM
Average Velocity	1182 FPM
Design Total Flow (CFM)	2199 CFM
Actual Total Flow (CFM)	2089 CFM
Static Pressure	0.05 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-5 (Statics)
AREA: 107 Move-In

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E1800L
Unit Serial Number	N23020003
Unit Type	Air to Air
ERV-5 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-5 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-5 (Statics)/Exhaust Fan	
Motor Volts 1	208 Volts
Motor Amps 1	1.5 Amps
Corrected FLA	2.2 FLA
Calculated BHP	76.5 BHP
ERV-5 (Statics)/Supply Fan	
Motor Volts 1	208 Volts
Motor Amps 1	1.1 Amps
Corrected FLA	2.2 FLA
Calculated BHP	250.0 BHP

Motor Data	
ERV-5 (Statics)/Exhaust Fan	
Motor Manufacturer	EBMPAPST
Motor HP	500 Watts
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	2.2 Amps
Motor Service Factor	1.15
ERV-5 (Statics)/Supply Fan	
Motor Manufacturer	EBMPAPST
Motor HP	500 Watts
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	2.2 Amps
Motor Service Factor	1.15

Sheave Data		
ERV-5 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive
ERV-5 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive

Test Pressures	
SF Fan SP In	-0.53 in. wc
SF Fan SP Out	0.27 in. wc
EF Pre-Filter SP Out	0.07 in. wc
EF Fan SP In	-0.09 in. wc

Air Test Data	Design	Actual
Outside Air CFM	920/1451 CFM	955/1355 CFM
Supply Air CFM	975 CFM	955 CFM
Exhaust Air CFM	975/1451 CFM	945/1350 CFM

Filter Data	
ERV-5 (Statics)/EF Filter	
Filter Manufacturer	Aldes
Filter Type	Washable
Filter Quantity	3
Filter Size	16x16x1 Inches
ERV-5 (Statics)/SF Filter	
Filter Manufacturer	Aldes
Filter Type	Washable
Filter Quantity	3
Filter Size	16x16x1 Inches

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

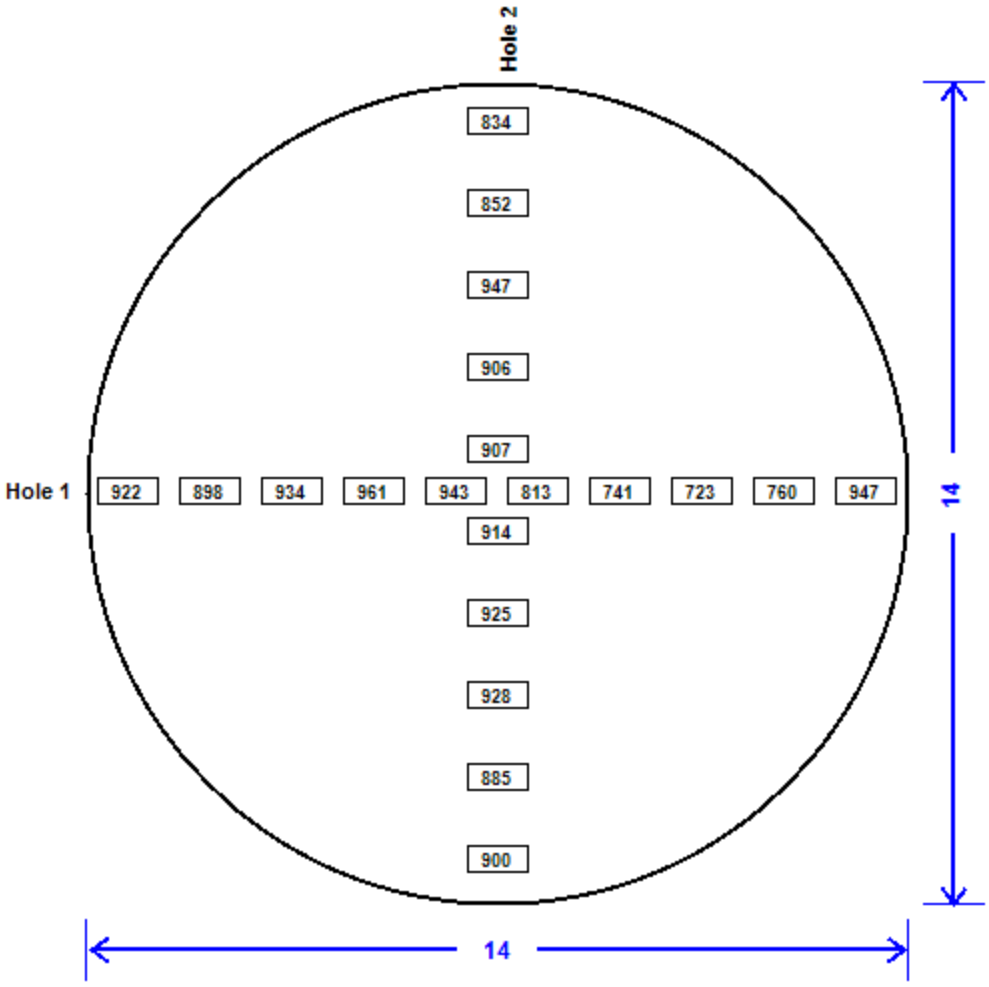
SYSTEM/UNIT: ERV-5 (Statics)/Exhaust Continuous

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	17640 FPM
Average Velocity	882 FPM
Design Total Flow (CFM)	975 CFM
Actual Total Flow (CFM)	943 CFM
Static Pressure	0.30 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

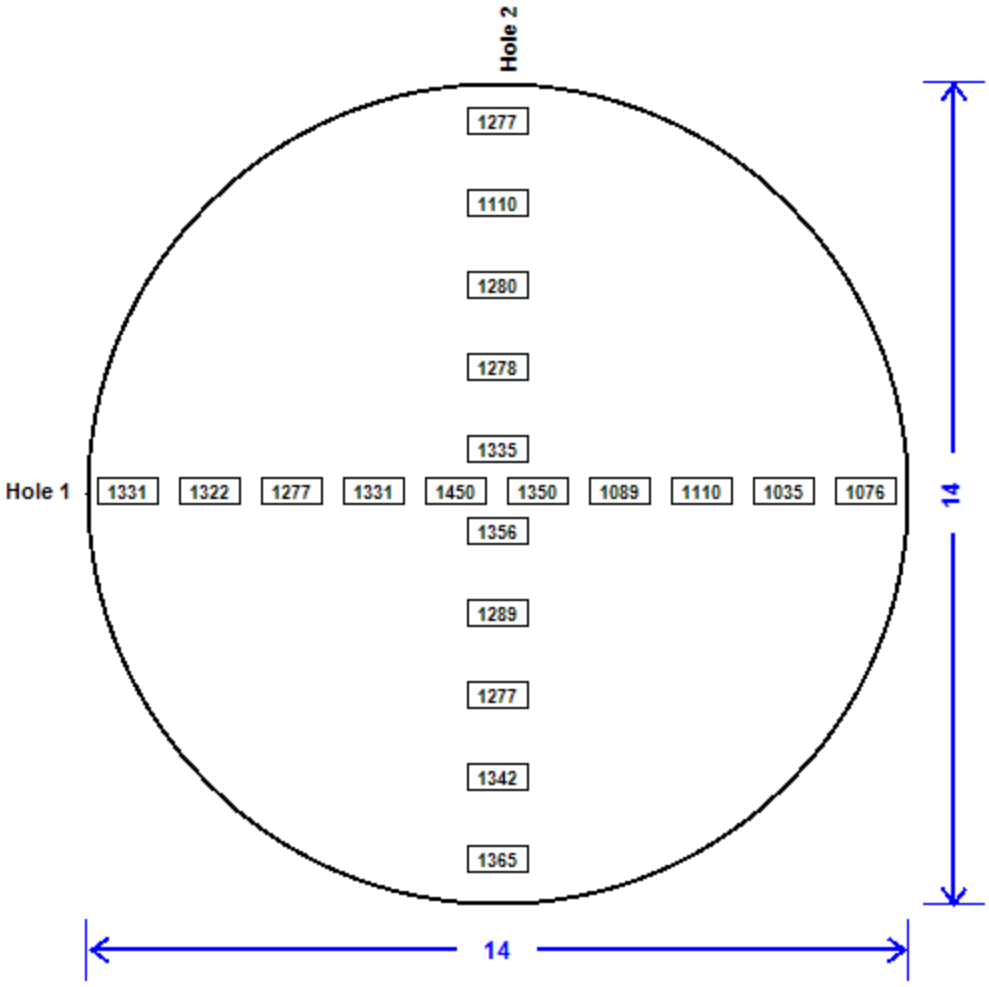
SYSTEM/UNIT: ERV-5 (Statics)/Exhaust Max
AREA: 107 Move-In

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	25280 FPM
Average Velocity	1264 FPM
Design Total Flow (CFM)	1451 CFM
Actual Total Flow (CFM)	1351 CFM
Static Pressure	0.59 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

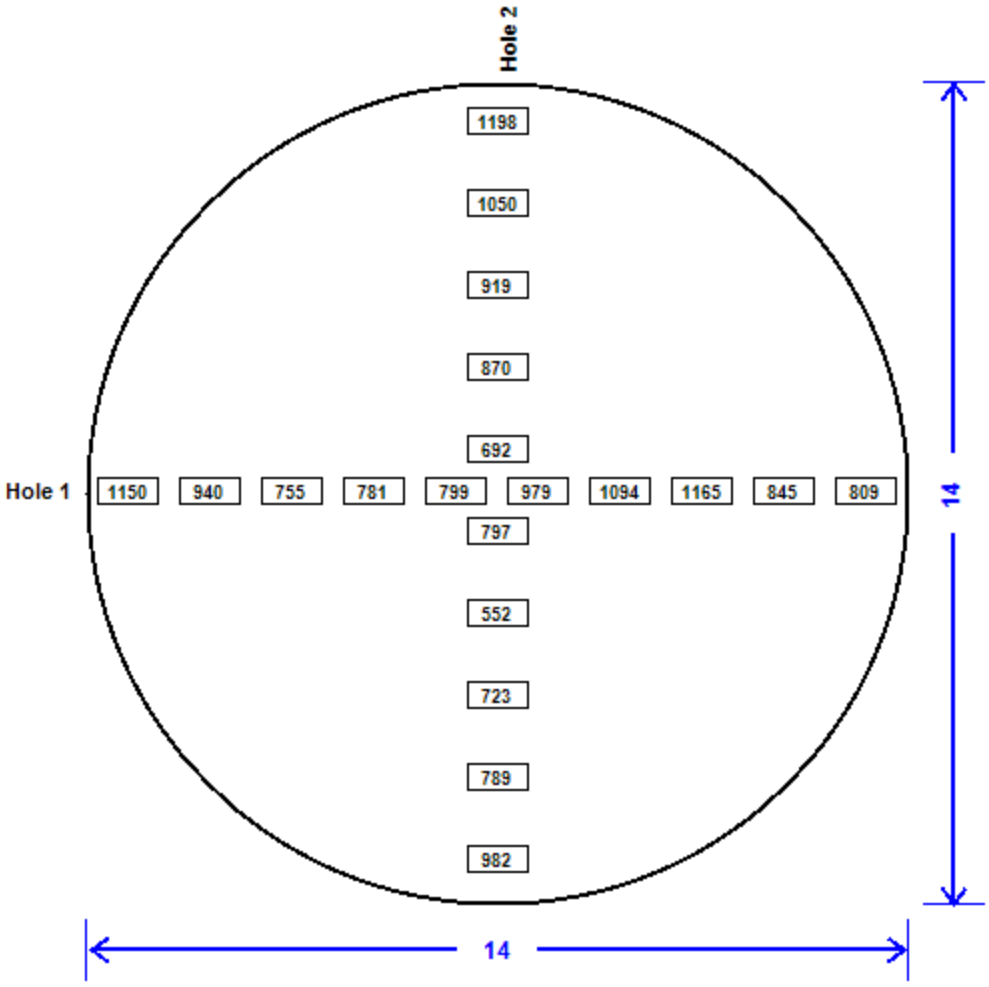
SYSTEM/UNIT: ERV-5 (Statics)/OSA Continuous
AREA: 107 Move-In

Tested By: Allen Wessel
Date: 2/7/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	17889 FPM
Average Velocity	894 FPM
Design Total Flow (CFM)	920 CFM
Actual Total Flow (CFM)	956 CFM
Static Pressure	0.24 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

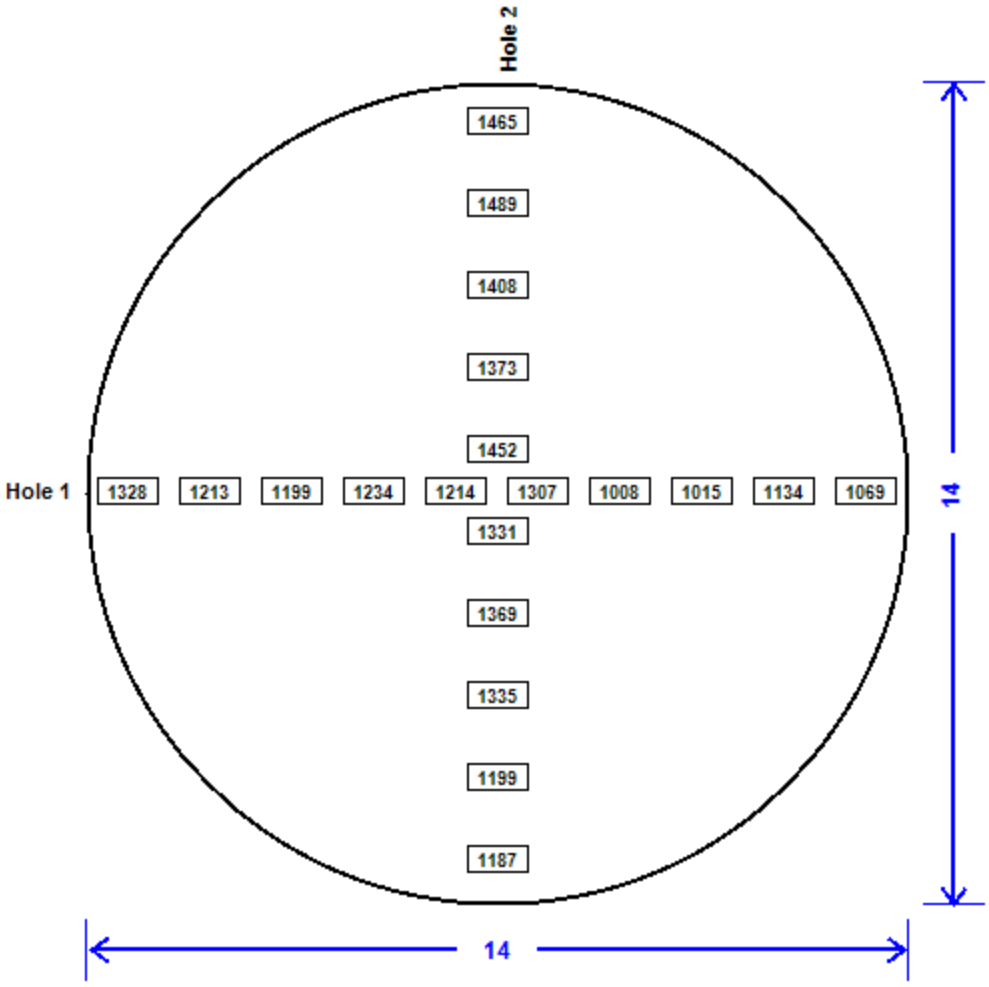
SYSTEM/UNIT: ERV-5 (Statics)/OSA Max
AREA: 107 Move-In

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	14 in.
Duct Area	1.069 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	25329 FPM
Average Velocity	1266 FPM
Design Total Flow (CFM)	1451 CFM
Actual Total Flow (CFM)	1353 CFM
Static Pressure	0.45 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-5 (Statics) Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	107 Move-In	SWD	6 x 6	30			
Outlet-02	FCU-09	Round	8 RD	245			
Outlet-03	FCU-08	Round	8 RD	415			
Outlet-04	FCU-07	Round	8 RD	230			
	Totals:	-	-	**920**	**0**	**0**	**0**

ERV-5 (Statics) Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	124 Elevator Lobby	EG	12 x 10	255			
Inlet-02	110 Lounge	EG	8 x 8	415			
Inlet-03	109 Janitor	EG	6 x 6	60			
Inlet-04	110 Lounge	EG	8 x 8	245			
	Totals:	-	-	**975**	**0**	**0**	**0**

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-8 (Statics)
AREA: 102 Bike Room

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E1800L-Fi-EC-N
Unit Serial Number	E1800L-Fi-N23020003
Unit Type	Air to Air
ERV-8 (Statics)/Exhaust Fan	
Fan Type / Class	BI
ERV-8 (Statics)/Supply Fan	
Fan Type / Class	BI

Electrical Test Data	
ERV-8 (Statics)/Exhaust Fan	
Motor Volts 1	208 Volts
Motor Amps 1	1.1 Amps
Corrected FLA	2.2 FLA
Calculated BHP	250.0 BHP
ERV-8 (Statics)/Supply Fan	
Motor Volts 1	208 Volts
Motor Amps 1	1.1 Amps
Corrected FLA	2.2 FLA
Calculated BHP	250.0 BHP

Motor Data	
ERV-8 (Statics)/Exhaust Fan	
Motor Manufacturer	EBMPAPST
Motor HP	500 Watts
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	2.2 Amps
Motor Service Factor	1.15
ERV-8 (Statics)/Supply Fan	
Motor Manufacturer	EBMPAPST
Motor HP	500 Watts
Motor Rated Volts	208 Volts
Motor Phase	1
Motor Hertz	60 Hz
Motor FL Amps	2.2 Amps
Motor Service Factor	1.15

Sheave Data		
ERV-8 (Statics)/Exhaust Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive
ERV-8 (Statics)/Supply Fan	**Motor**	**Fan**
Drive Type	Direct Drive	Direct Drive

Air Test Data		
	Design	**Actual**
Outside Air CFM	350/673 CFM	325/480 CFM
Supply Air CFM	330/673 CFM	325/480 CFM
Exhaust Air CFM	315/673 CFM	300/450 CFM

Filter Data	
ERV-8 (Statics)/EF Filter	
Filter Manufacturer	Aldes
Filter Type	Washable
Filter Quantity	3
Filter Size	16x16x1 Inches
ERV-8 (Statics)/SF Filter	
Filter Manufacturer	Aldes
Filter Type	Washable
Filter Quantity	3
Filter Size	16x16x1 Inches

Log:

ERV-8 (Statics)	1/16/2024	Brandon Hyslip	Scheduled supply and exhaust are flipped.

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

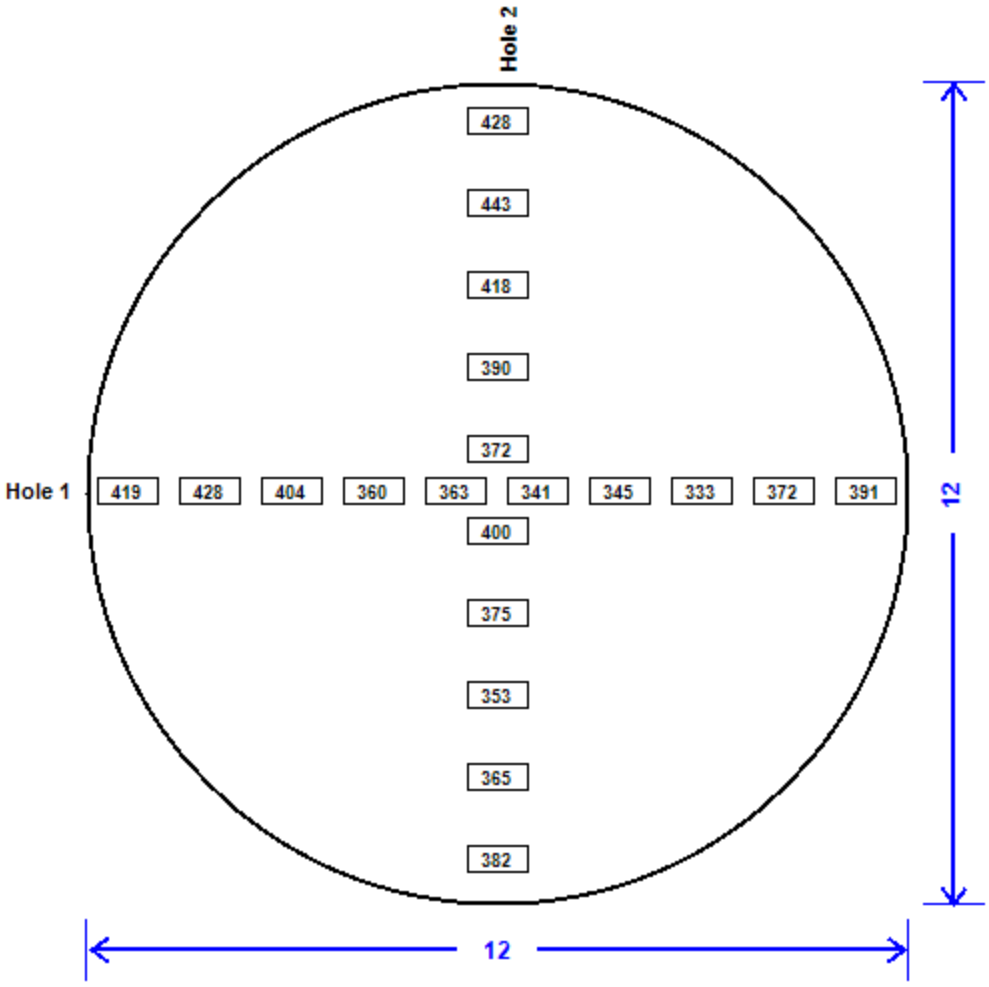
SYSTEM/UNIT: ERV-8 (Statics)/Exhaust Continuous
AREA: 102 Bike Room

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	12 in.
Duct Area	0.785 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	7682 FPM
Average Velocity	384 FPM
Design Total Flow (CFM)	315 CFM
Actual Total Flow (CFM)	301 CFM
Static Pressure	0.05 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

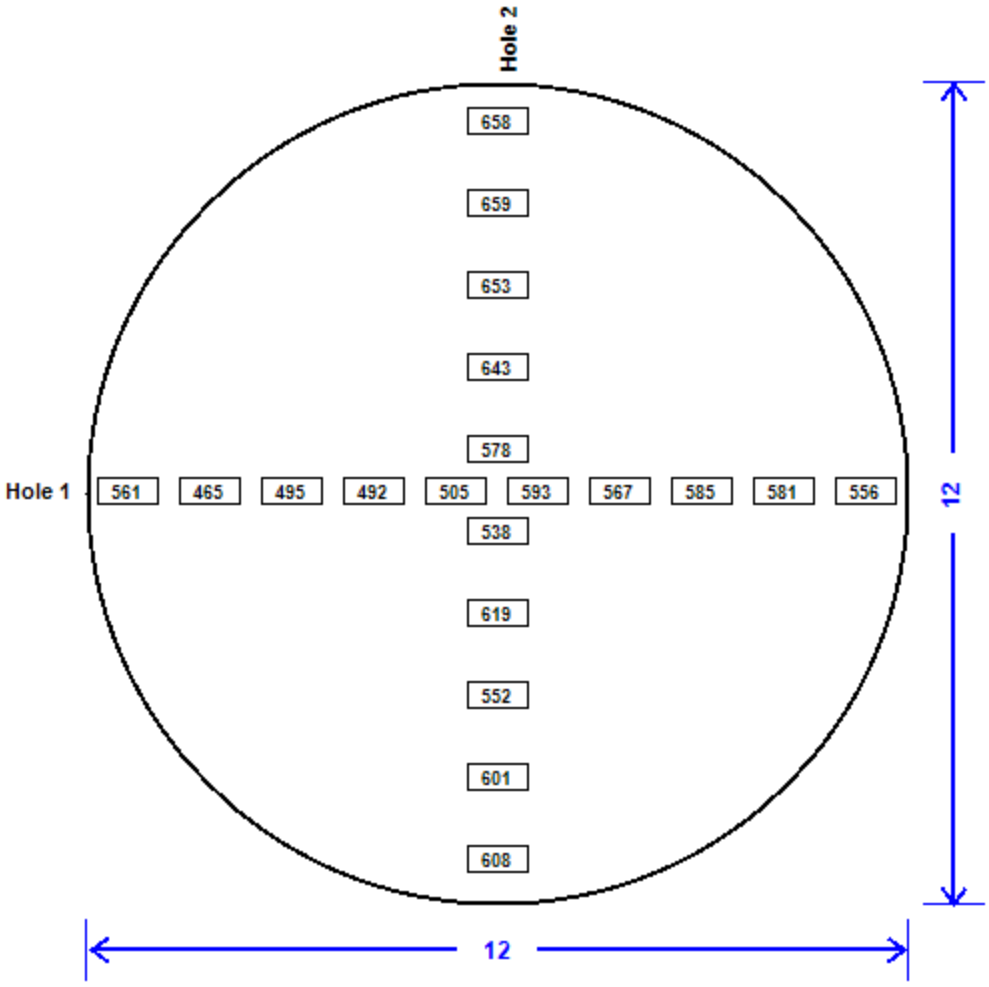
SYSTEM/UNIT: ERV-8 (Statics)/Exhaust Max
AREA: 102 Bike Room

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Exhuast Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	12 in.
Duct Area	0.785 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	11509 FPM
Average Velocity	575 FPM
Design Total Flow (CFM)	673 CFM
Actual Total Flow (CFM)	451 CFM
Static Pressure	0.21 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

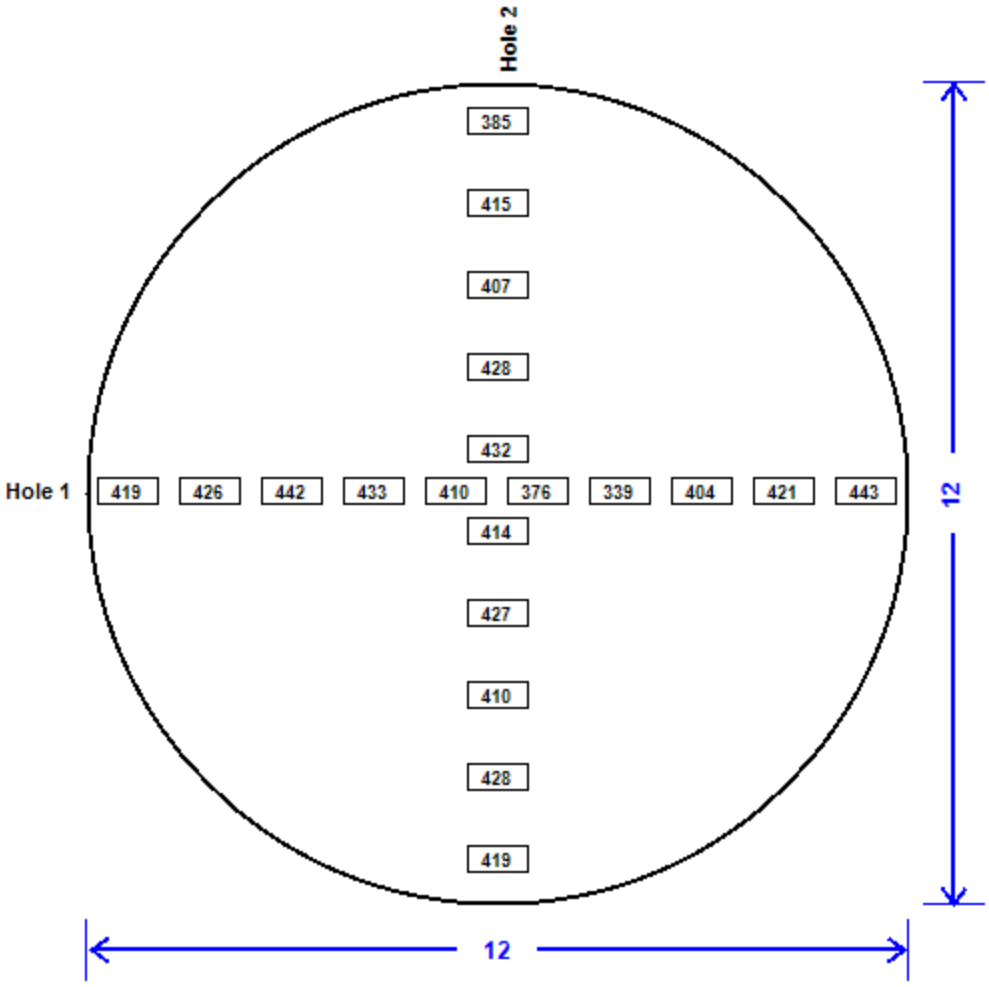
SYSTEM/UNIT: ERV-8 (Statics)/OSA Continuous
AREA: 102 Bike Room

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	12 in.
Duct Area	0.785 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	8278 FPM
Average Velocity	414 FPM
Design Total Flow (CFM)	330 CFM
Actual Total Flow (CFM)	325 CFM
Static Pressure	0.03 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

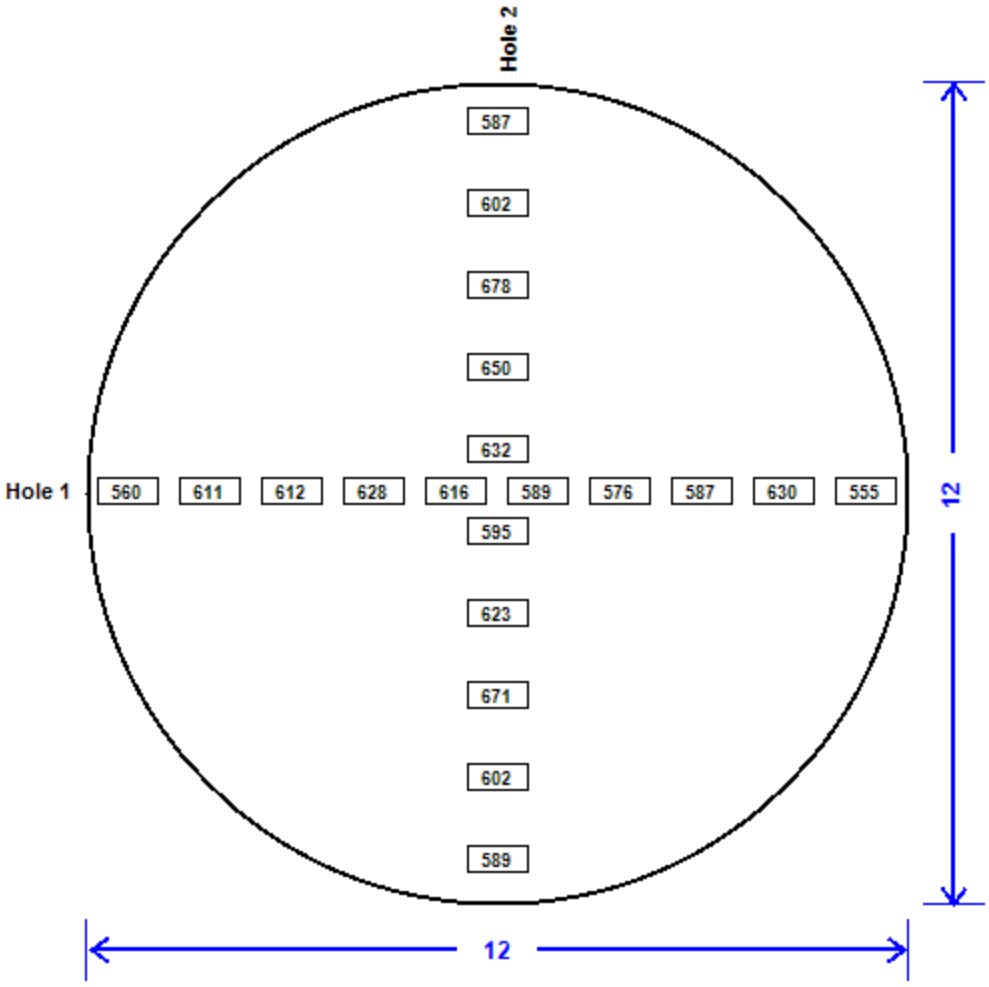
SYSTEM/UNIT: ERV-8 (Statics)/OSA Max
AREA: 102 Bike Room

Tested By: Allen Wessel
Date: 2/12/2024

Unit Data	
Traverse Location	Supply Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	12 in.
Duct Area	0.785 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	12193 FPM
Average Velocity	610 FPM
Design Total Flow (CFM)	673 CFM
Actual Total Flow (CFM)	479 CFM
Static Pressure	0.08 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-8 (Statics) Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	102 Bike Room	SWD	10 x 10	230	210	215	93
Outlet-02	Corridor	CD	8 RD	120	105	110	92
	Totals:	**-**	**-**	**350**	**315**	**325**	**93**

ERV-8 (Statics) Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	102 Bike Room	EG	10 x 10	215	200	210	98
Inlet-02	104 Restroom	EG	8 x 8	50	45	45	90
Inlet-03	105 Restroom	EG	8 x 8	50	45	45	90
	Totals:	**-**	**-**	**315**	**290**	**300**	**95**

SYSTEM/UNIT: ERV-A-1 (Final)
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N2308000
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/620 CFM	405/635 CFM
Exhaust Air CFM	400/620 CFM	395/630 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

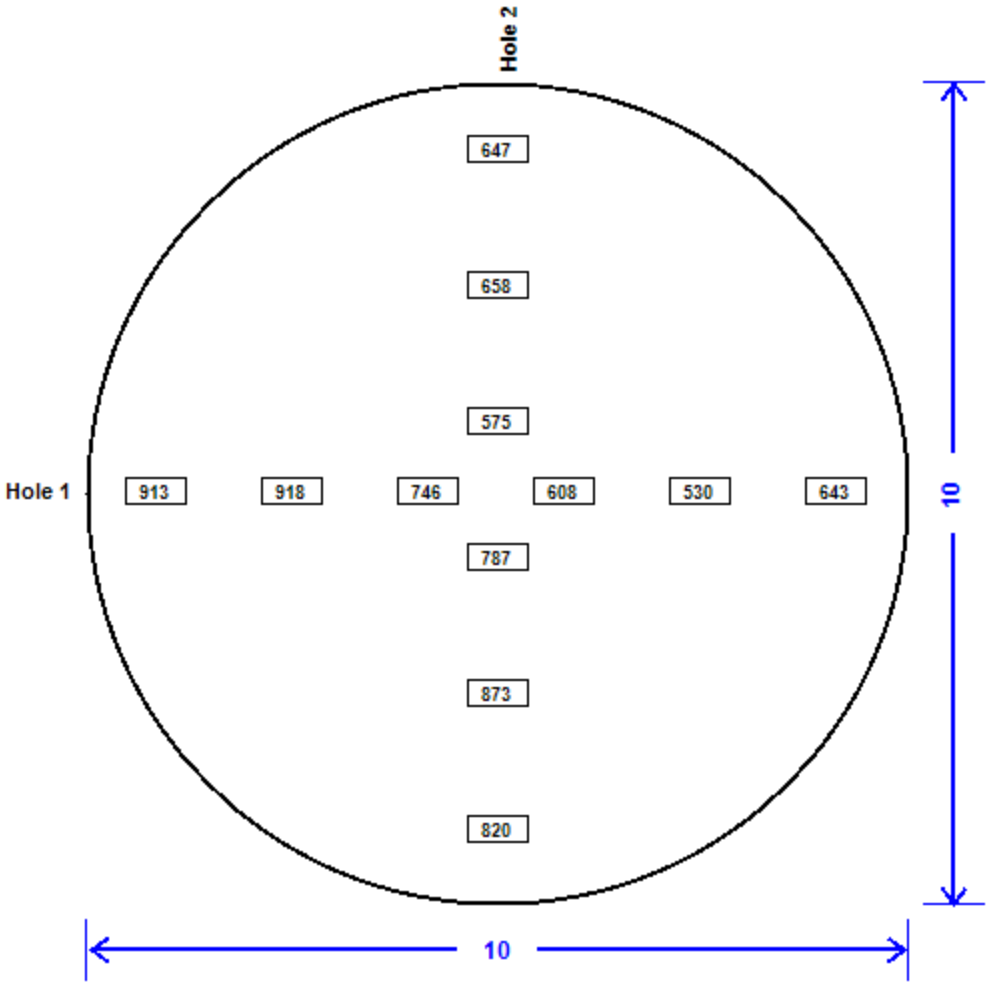
SYSTEM/UNIT: ERV-A-1 (Final)/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8718 FPM
Design Velocity	734 FPM
Average Velocity	727 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	396 CFM
Static Pressure	0.02 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

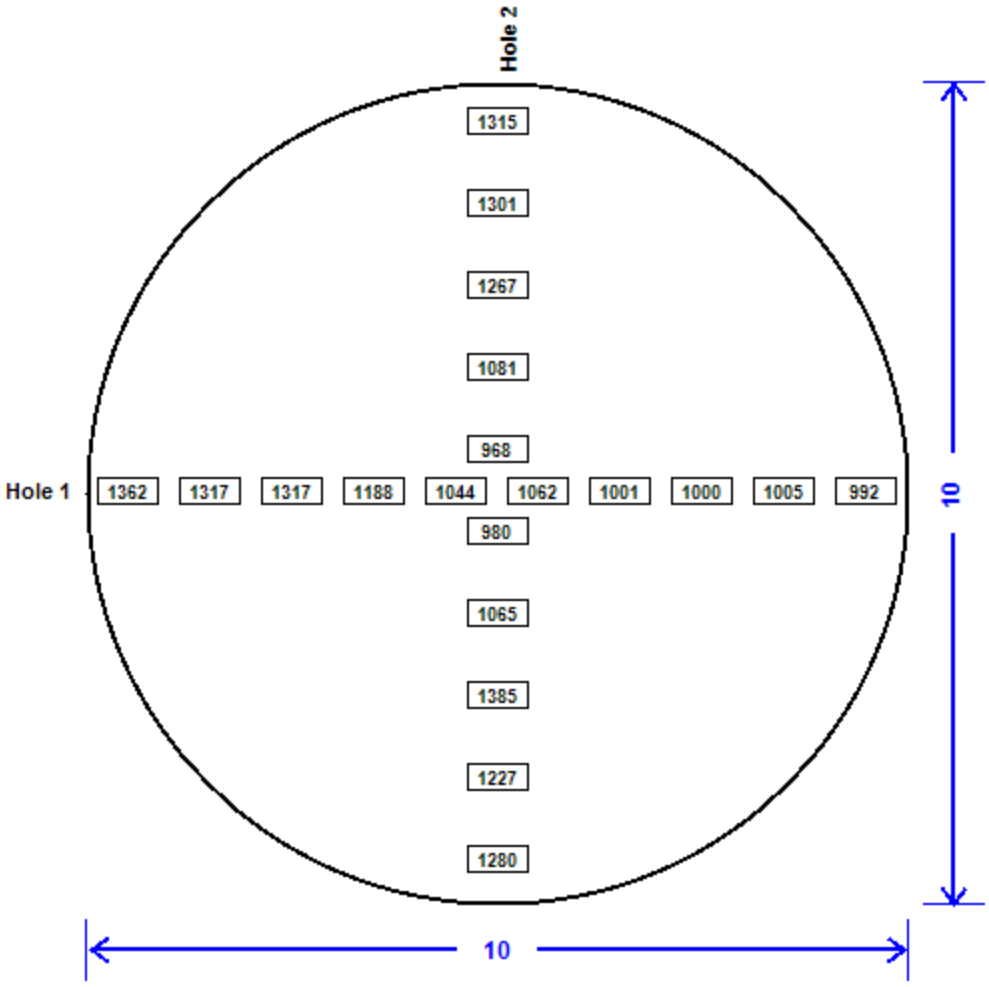
SYSTEM/UNIT: ERV-A-1 (Final)/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	627.30
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23157 FPM
Average Velocity	1158 FPM
Design Total Flow (CFM)	620 CFM
Actual Total Flow (CFM)	631 CFM
Static Pressure	0.07 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

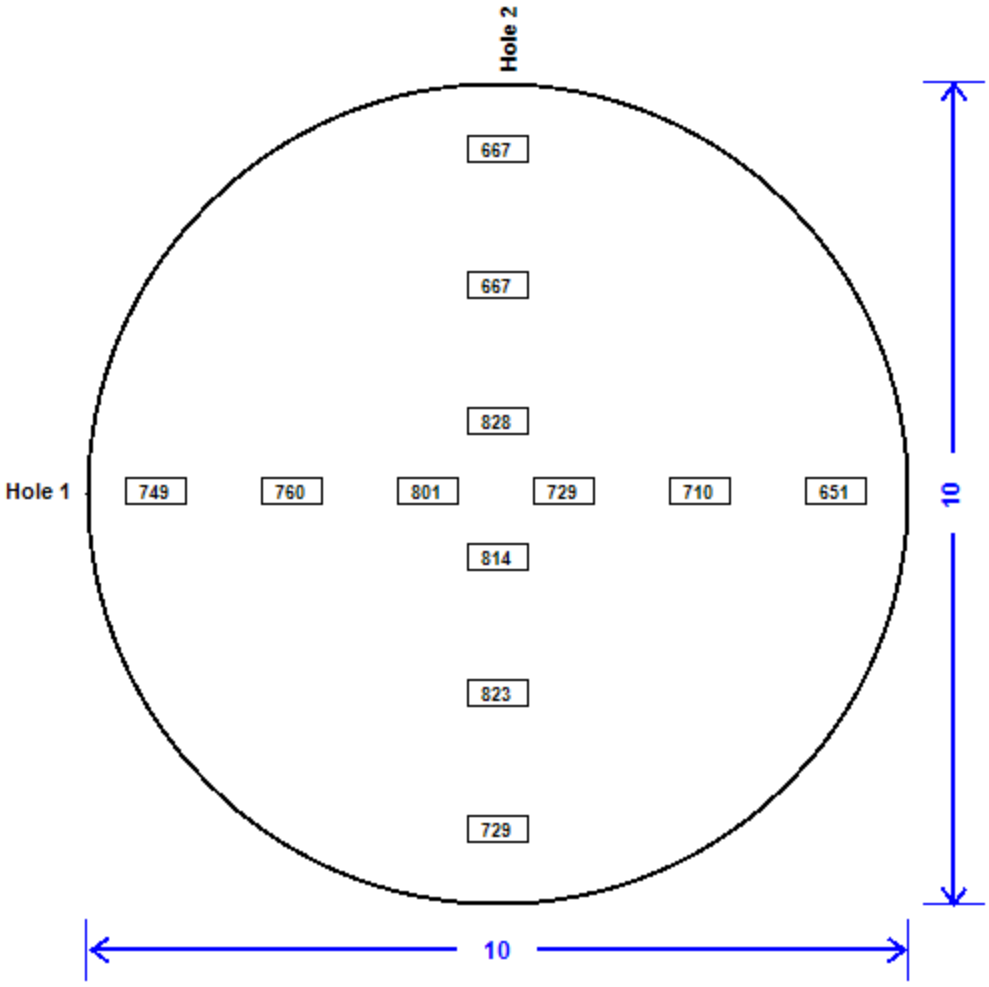
SYSTEM/UNIT: ERV-A-1 (Final)/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8928 FPM
Design Velocity	734 FPM
Average Velocity	744 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	405 CFM
Static Pressure	-0.11 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

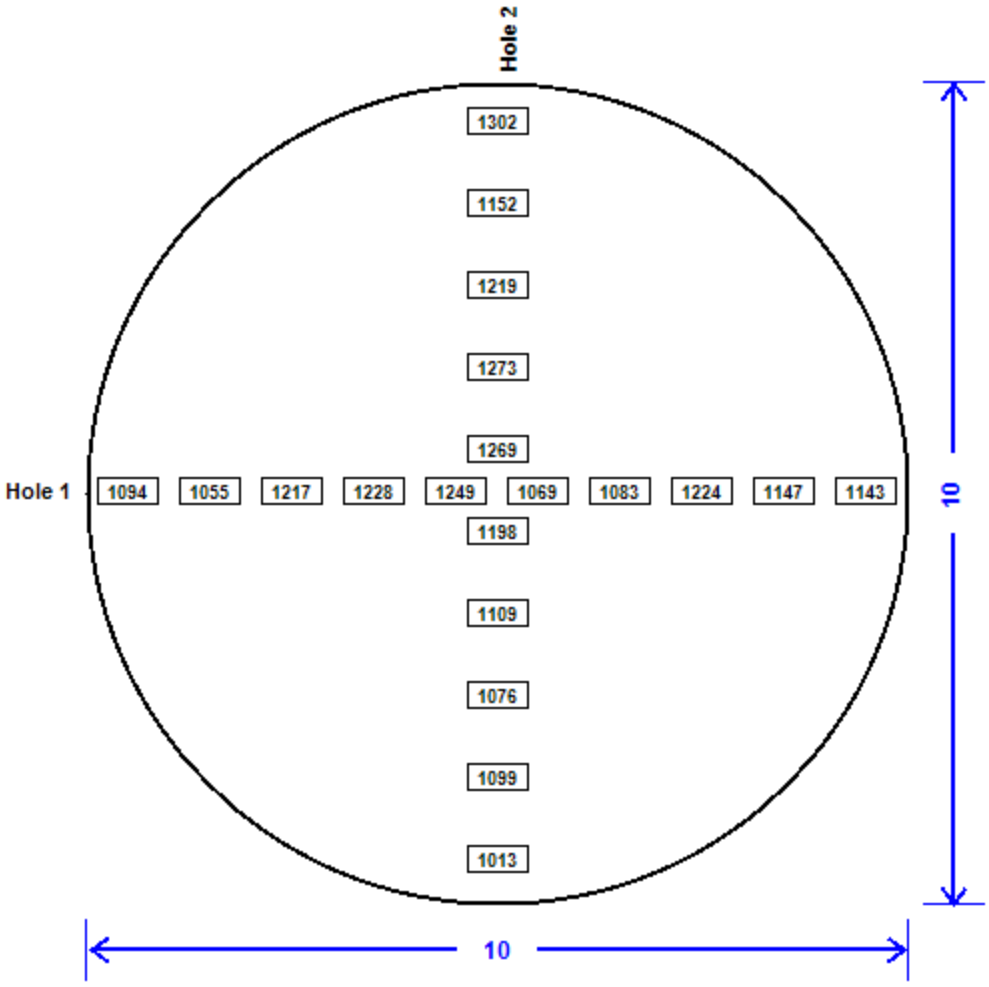
SYSTEM/UNIT: ERV-A-1 (Final)/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23219 FPM
Average Velocity	1161 FPM
Design Total Flow (CFM)	620 CFM
Actual Total Flow (CFM)	633 CFM
Static Pressure	0.29 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-A-1 (Final) Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Work Live	SWD	8 x 8	200	200	200	100
Outlet-02	Work Live	SWD	8 x 8	200	185	205	103
	Totals:	-	-	**400**	**385**	**405**	**101**

ERV-A-1 (Final) Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	Work Live	EG	10 x 8	150	160	255	170
Inlet-02	Work Live	EG	6 x 6	75	65	70	93
Inlet-03	Work Live	EG	6 x 6	75	50	70	93
	Totals:	-	-	**300**	**275**	**395**	**132**

SYSTEM/UNIT: ERV-A-2 (Final)
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N23080006
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/560 CFM	405/600 CFM
Exhaust Air CFM	400/560 CFM	425/605 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

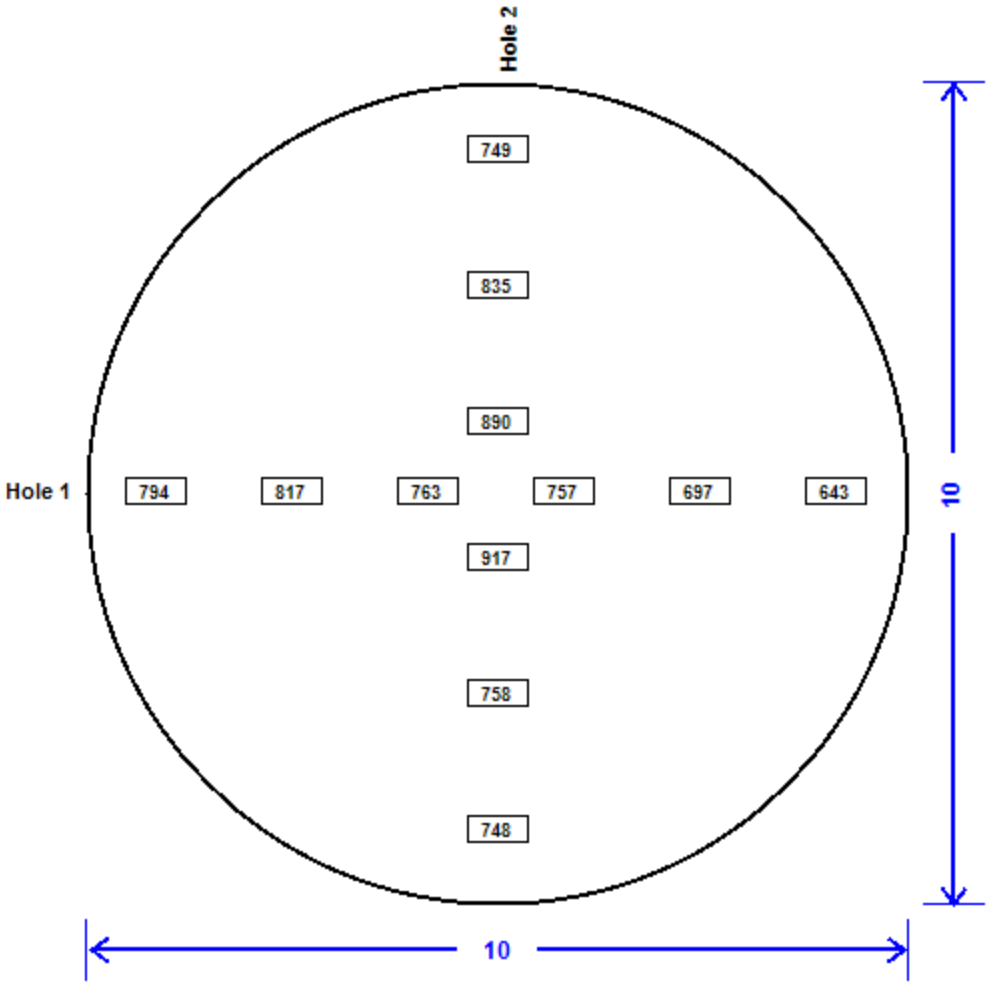
SYSTEM/UNIT: ERV-A-2 (Final)/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	9368 FPM
Design Velocity	734 FPM
Average Velocity	781 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	426 CFM
Static Pressure	0.02 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

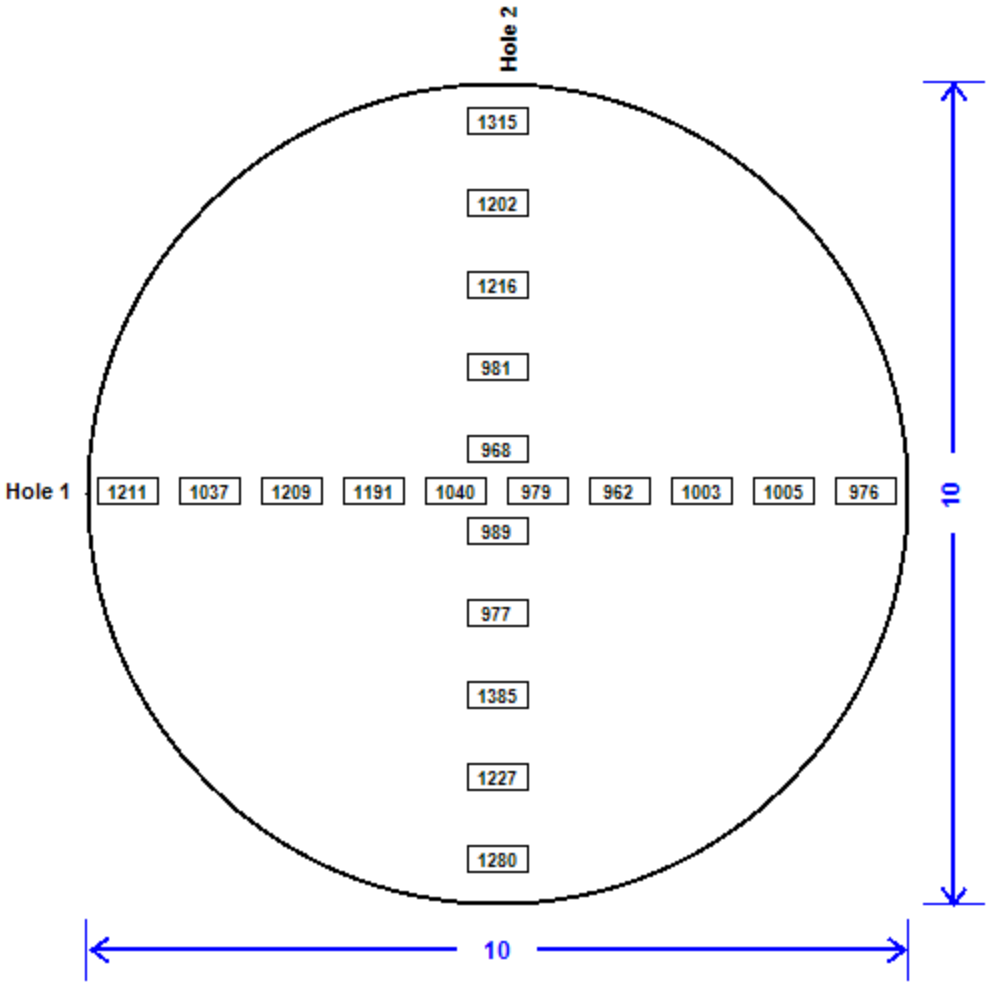
SYSTEM/UNIT: ERV-A-2 (Final)/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	22153 FPM
Average Velocity	1108 FPM
Design Total Flow (CFM)	560 CFM
Actual Total Flow (CFM)	604 CFM
Static Pressure	0.06 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

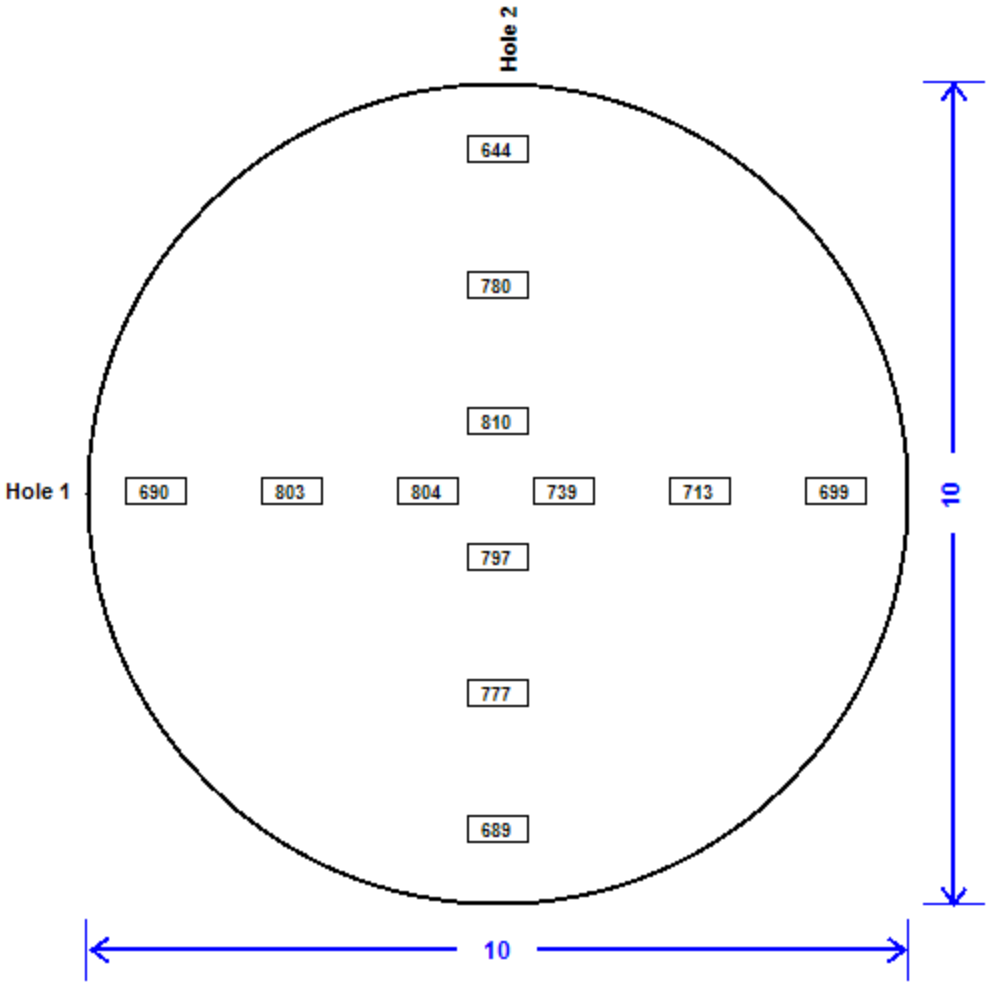
SYSTEM/UNIT: ERV-A-2 (Final)/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8945 FPM
Design Velocity	734 FPM
Average Velocity	745 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	406 CFM
Static Pressure	-0.12 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

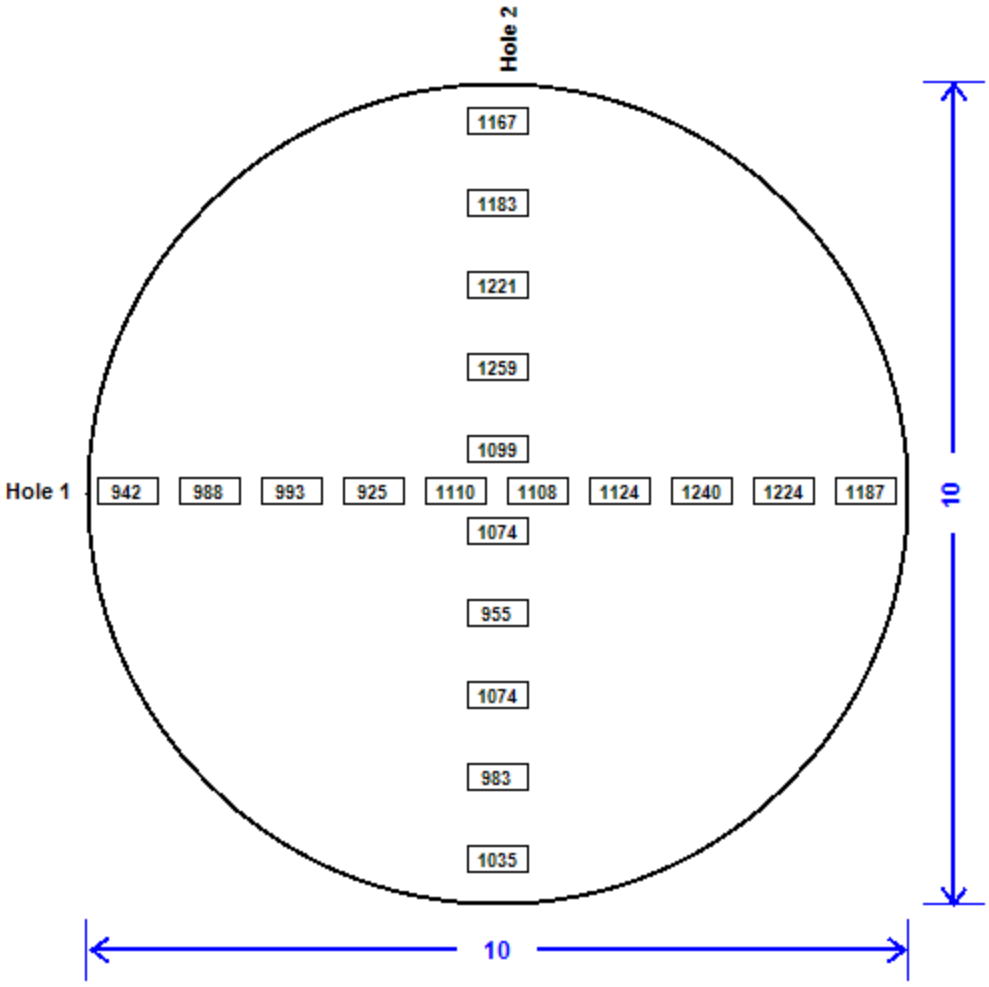
SYSTEM/UNIT: ERV-A-2 (Final)/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/14/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	21891 FPM
Average Velocity	1095 FPM
Design Total Flow (CFM)	560 CFM
Actual Total Flow (CFM)	597 CFM
Static Pressure	0.18 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-A-3 final
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N23080007
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/606 CFM	400/600 CFM
Exhaust Air CFM	400/606 CFM	425/635 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

SYSTEM/UNIT: ERV-A-3 final/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

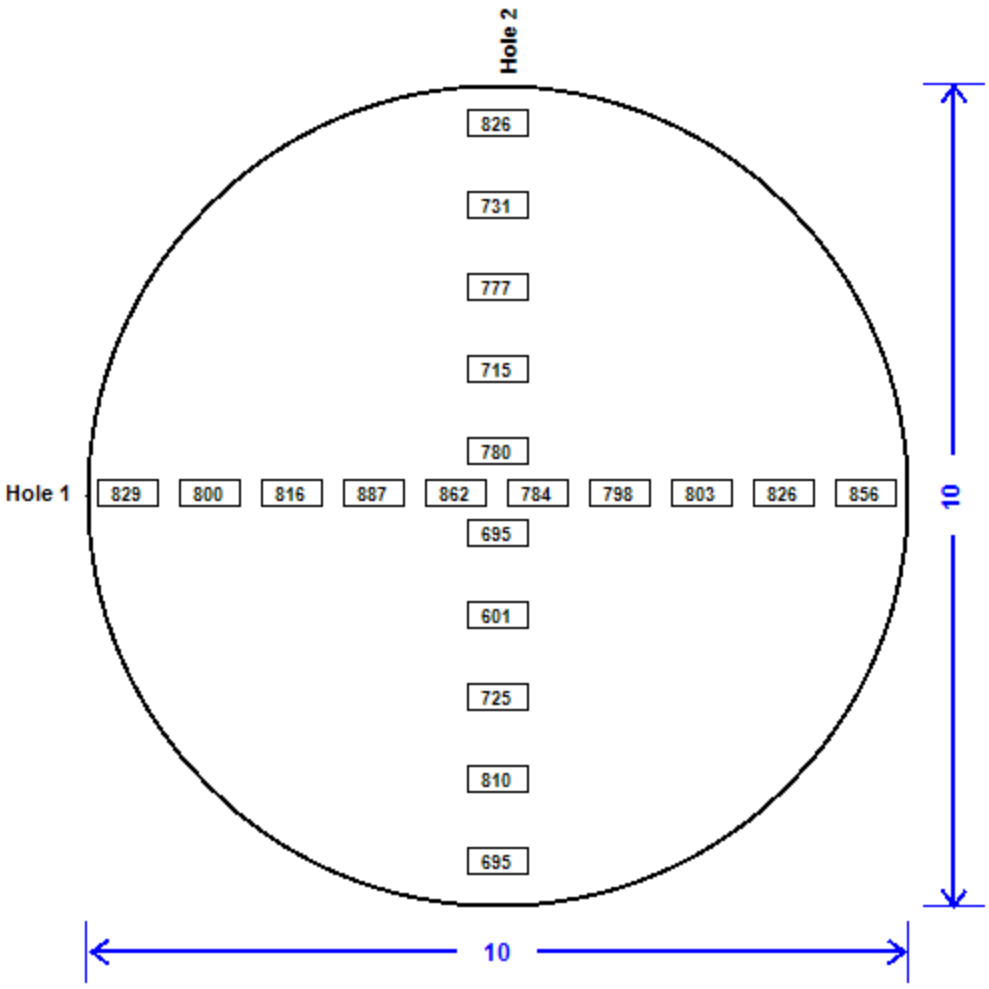
Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	15616 FPM
Design Velocity	734 FPM
Average Velocity	781 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	426 CFM
Static Pressure	0.04 in. wg.

Log:

ERV-A-3 final/Exhaust Continuous	1/19/2024	Brandon Hyslip

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

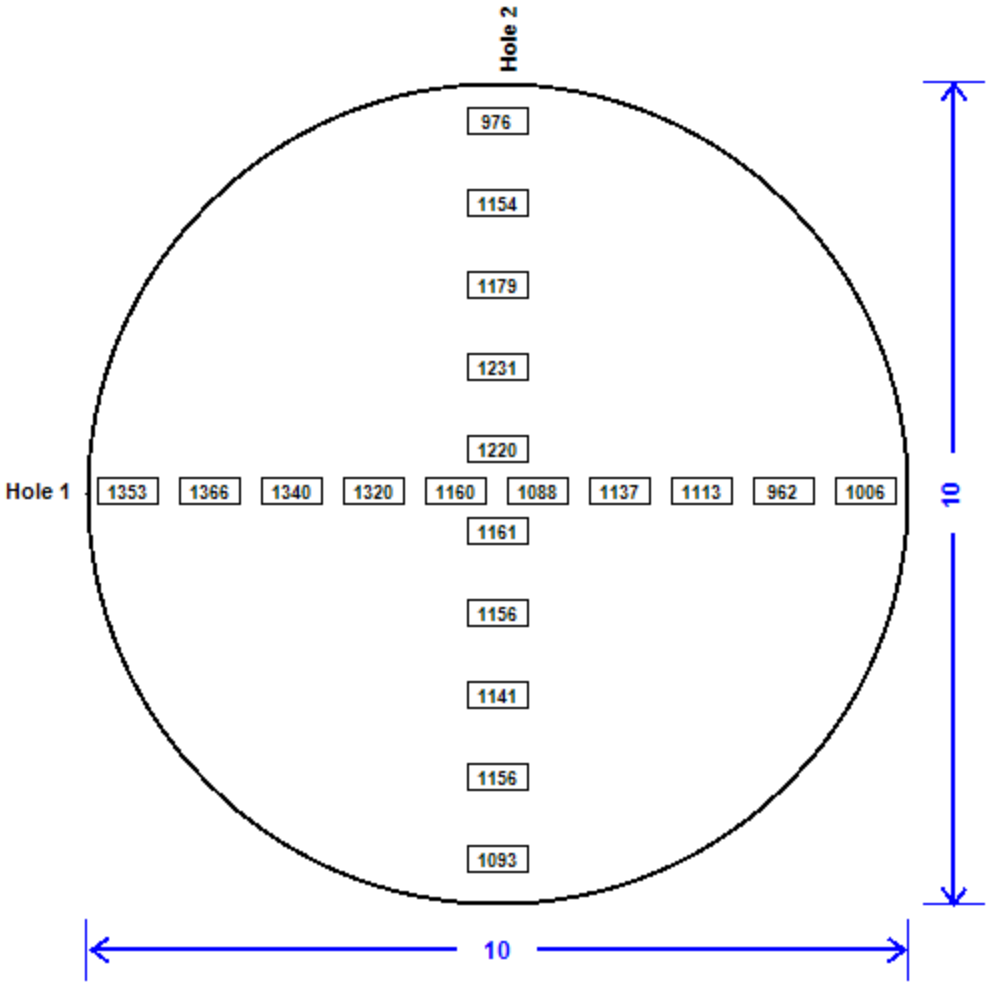
SYSTEM/UNIT: ERV-A-3 final/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23312 FPM
Average Velocity	1166 FPM
Design Total Flow (CFM)	606 CFM
Actual Total Flow (CFM)	635 CFM
Static Pressure	0.09 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

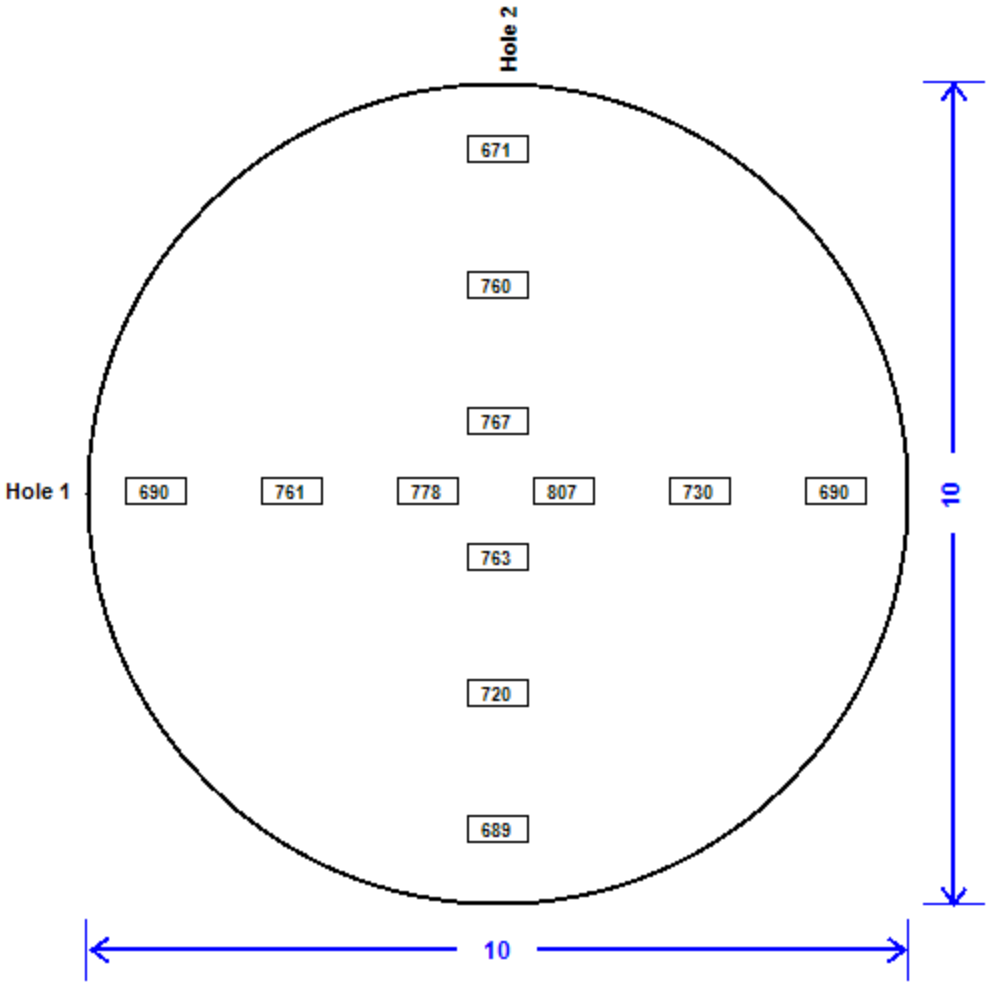
SYSTEM/UNIT: ERV-A-3 final/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8826 FPM
Design Velocity	734 FPM
Average Velocity	736 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	401 CFM
Static Pressure	-0.10 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

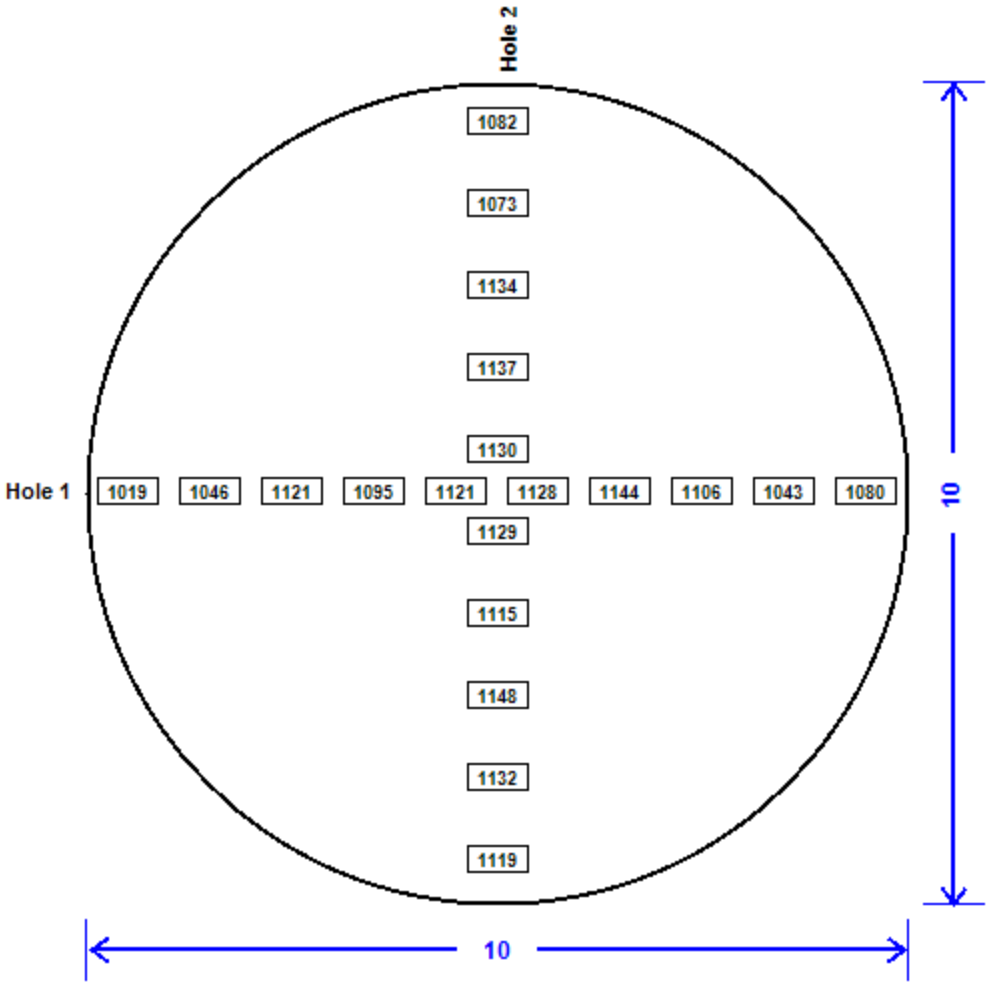
SYSTEM/UNIT: ERV-A-3 final/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	22102 FPM
Average Velocity	1105 FPM
Design Total Flow (CFM)	606 CFM
Actual Total Flow (CFM)	602 CFM
Static Pressure	0.52 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-A-3 final Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Work Live	SWD	8 x 8	200	200	210	105
Outlet-02	Work Live	SWD	8 x 8	200	210	190	95
	Totals:	-	-	**400**	**410**	**400**	**100**

ERV-A-3 final Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	Work Live	EG	10 x 8	150	270	285	190
Inlet-02	Work Live	EG	6 x 6	75	60	70	93
Inlet-03	Work Live	EG	6 x 6	75	55	70	93
	Totals:	-	-	**300**	**385**	**425**	**142**

SYSTEM/UNIT: ERV-A-4 final
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N23080004
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/611 CFM	390/660 CFM
Exhaust Air CFM	400/611 CFM	420/660 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

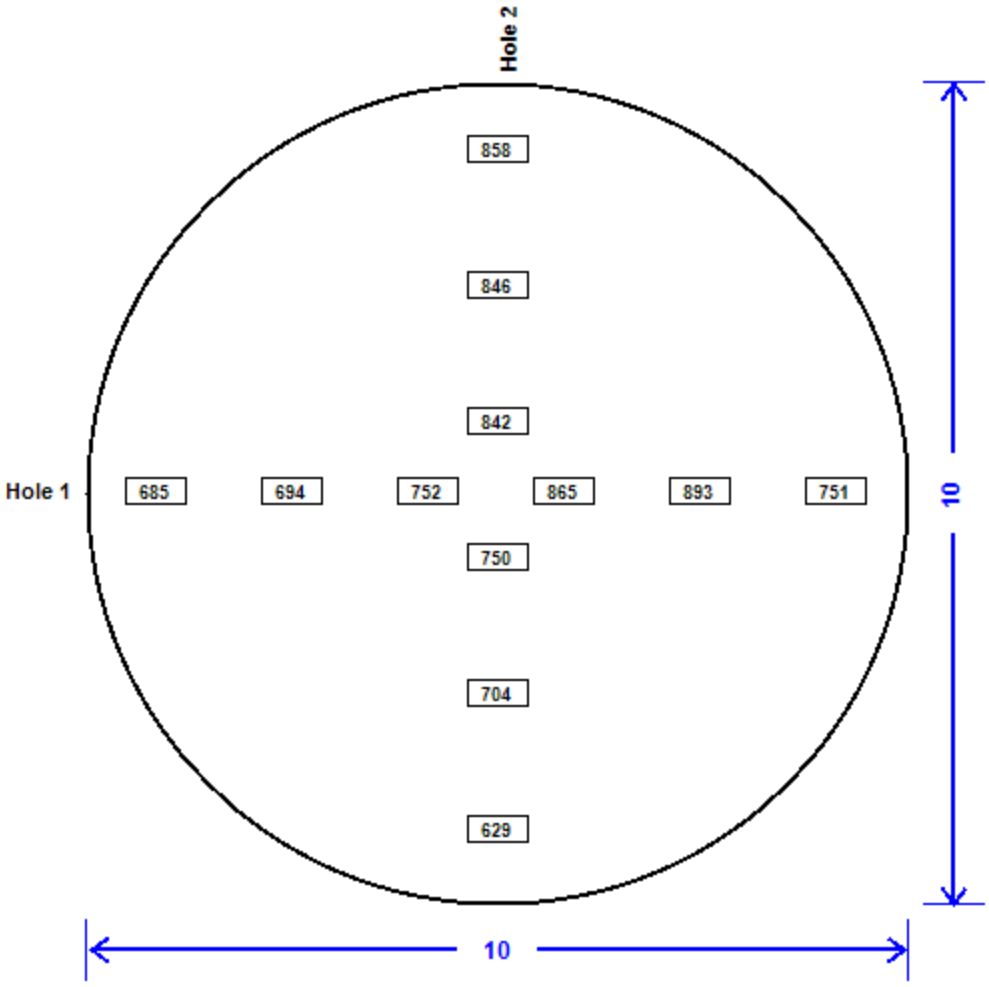
SYSTEM/UNIT: ERV-A-4 final/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	9269 FPM
Design Velocity	734 FPM
Average Velocity	772 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	421 CFM
Static Pressure	0.01 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

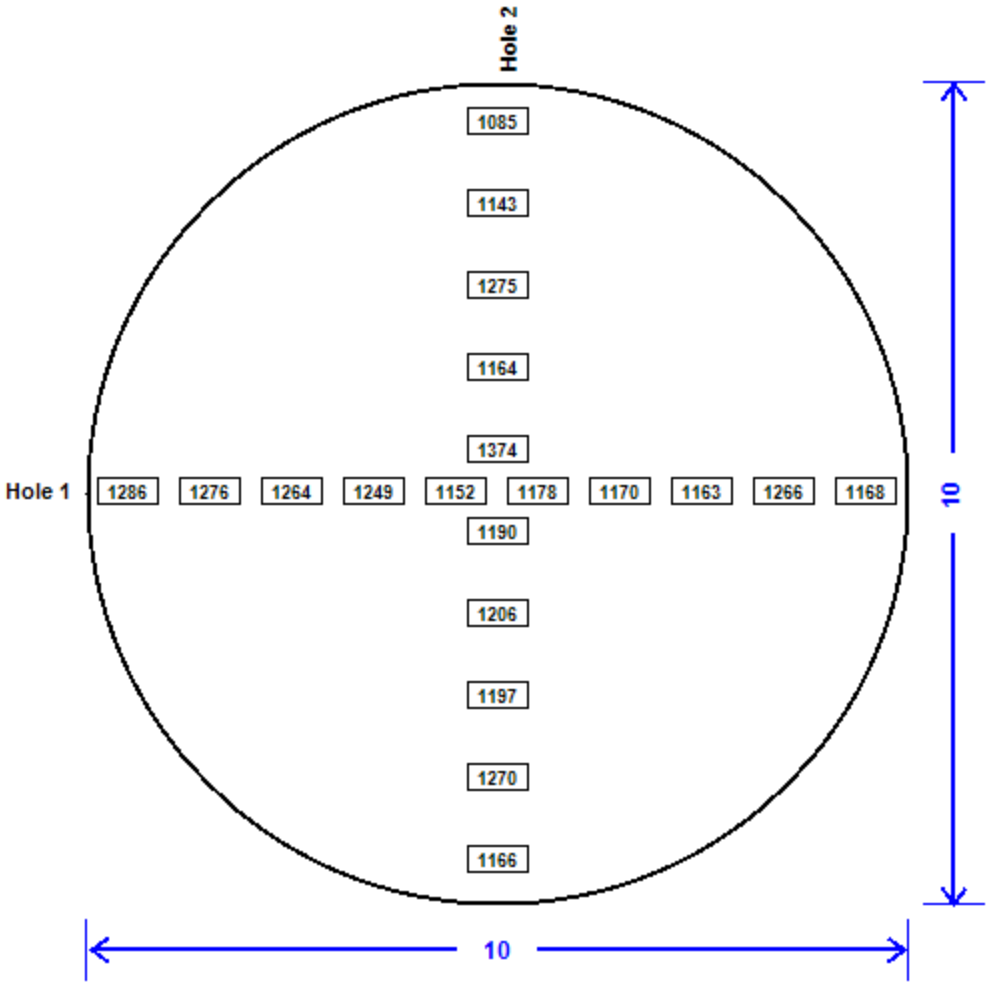
SYSTEM/UNIT: ERV-A-4 final/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24242 FPM
Average Velocity	1212 FPM
Design Total Flow (CFM)	611 CFM
Actual Total Flow (CFM)	661 CFM
Static Pressure	0.08 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

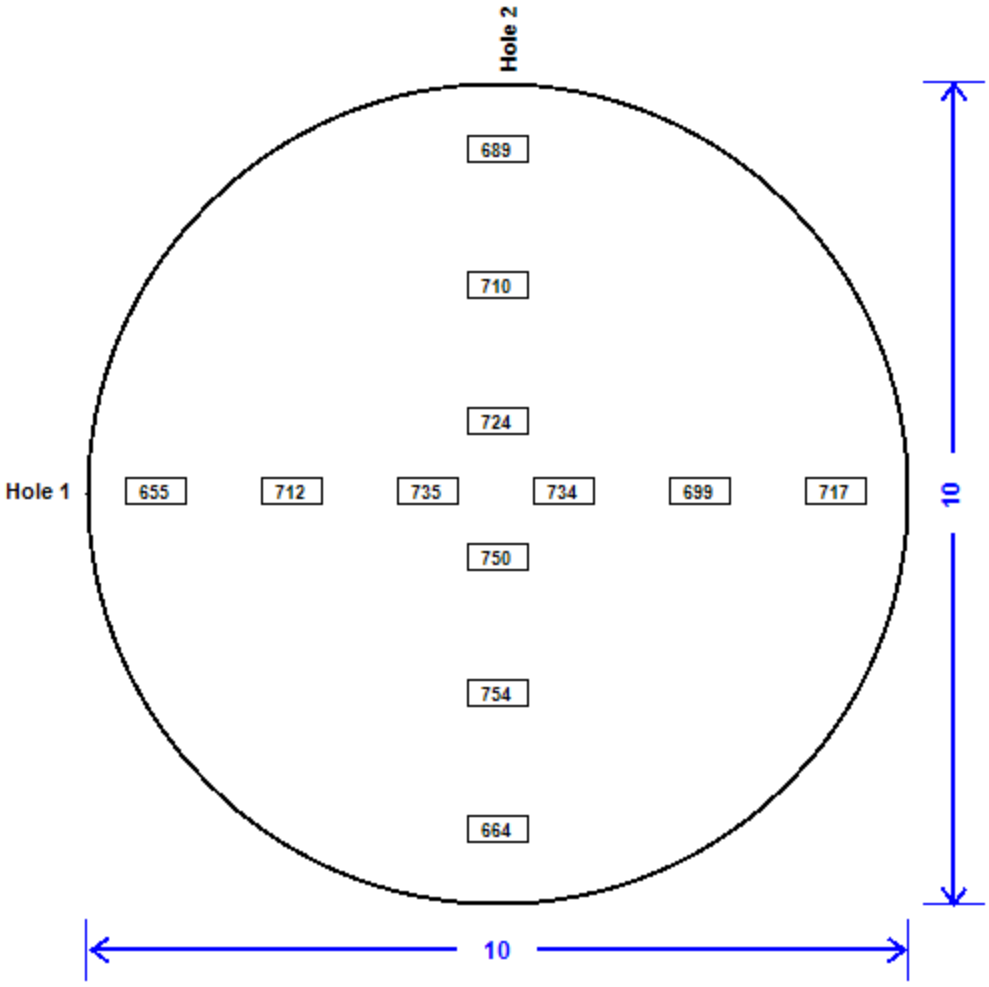
SYSTEM/UNIT: ERV-A-4 final/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8543 FPM
Design Velocity	734 FPM
Average Velocity	712 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	388 CFM
Static Pressure	-0.26 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

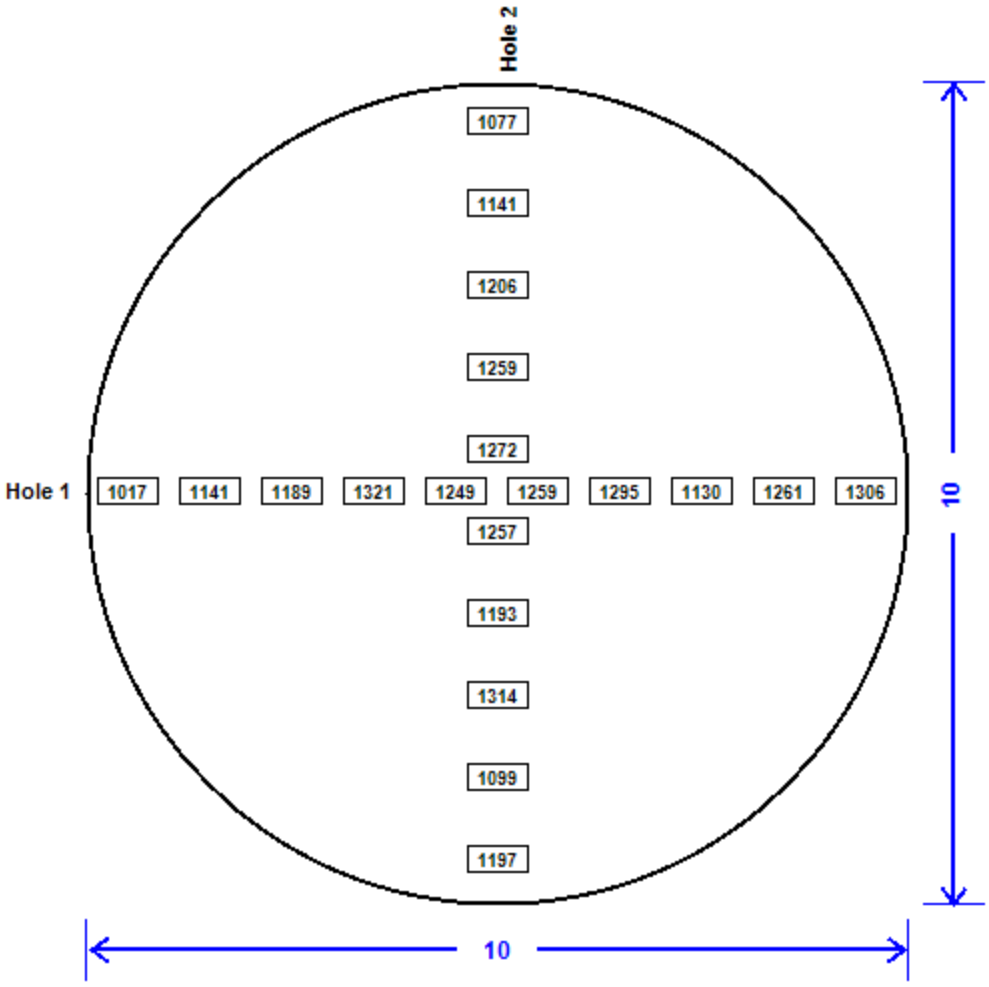
SYSTEM/UNIT: ERV-A-4 final/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24183 FPM
Average Velocity	1209 FPM
Design Total Flow (CFM)	611 CFM
Actual Total Flow (CFM)	659 CFM
Static Pressure	0.25 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-A-4 final Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Work Live	SWD	8 x 8	200			
Outlet-02	Work Live	SWD	8 x 8	200			
	Totals:	-	-	**400**	**0**	**0**	**0**

ERV-A-4 final Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	Work Live	EG	10 x 8	150	355	275	183
Inlet-02	Work Live	EG	6 x 6	75	50	70	93
Inlet-03	Work Live	EG	6 x 6	75	60	75	100
	Totals:	-	-	**300**	**465**	**420**	**140**

SYSTEM/UNIT: ERV-A-5 final
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N2308000
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/616 CFM	415/640 CFM
Exhaust Air CFM	400/616 CFM	385/665 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

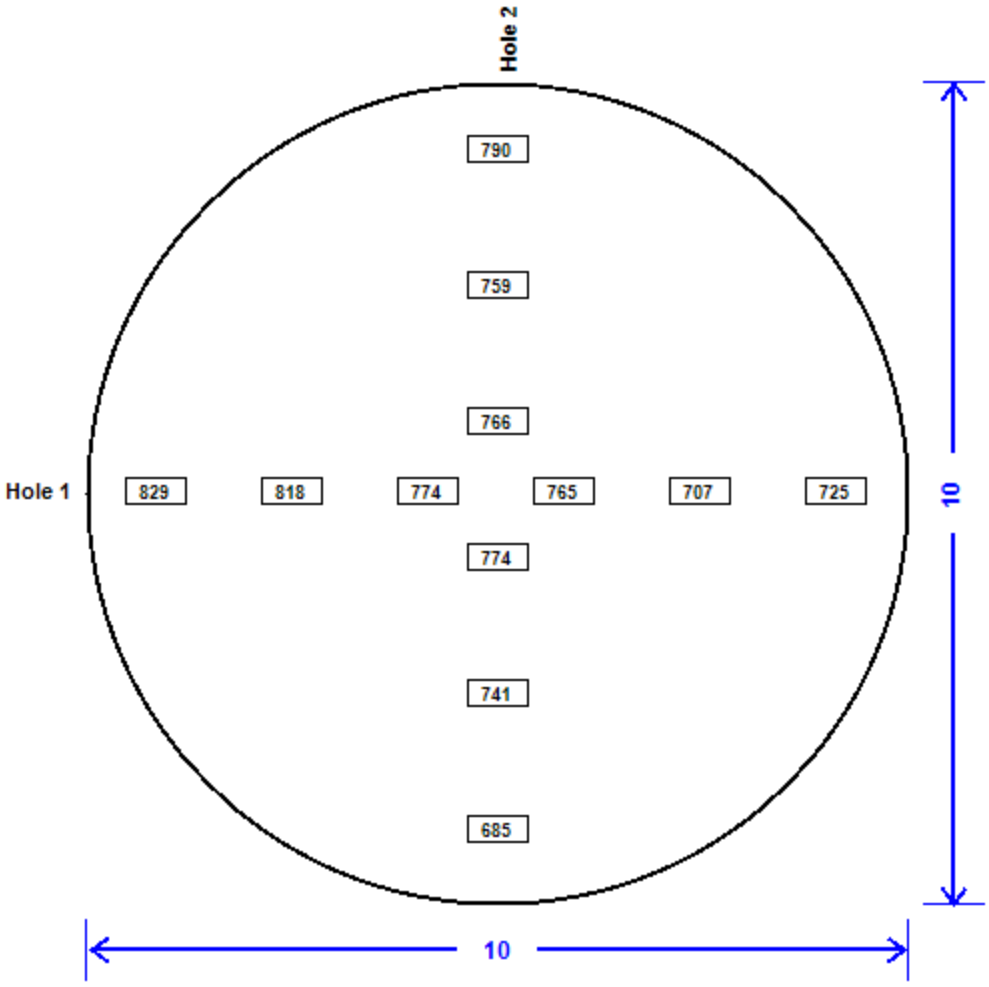
SYSTEM/UNIT: ERV-A-5 final/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	9133 FPM
Design Velocity	734 FPM
Average Velocity	761 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	415 CFM
Static Pressure	0.01 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

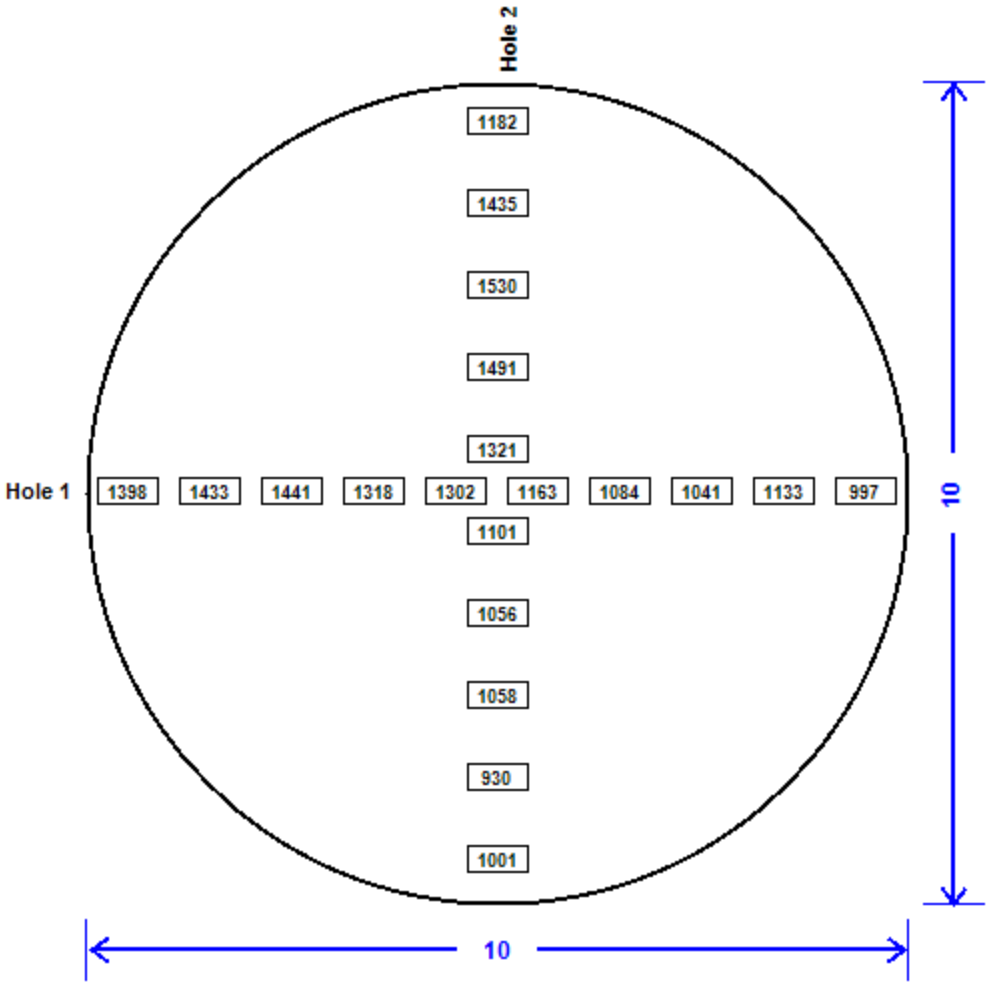
SYSTEM/UNIT: ERV-A-5 final/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	24415 FPM
Average Velocity	1221 FPM
Design Total Flow (CFM)	616 CFM
Actual Total Flow (CFM)	665 CFM
Static Pressure	0.06 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

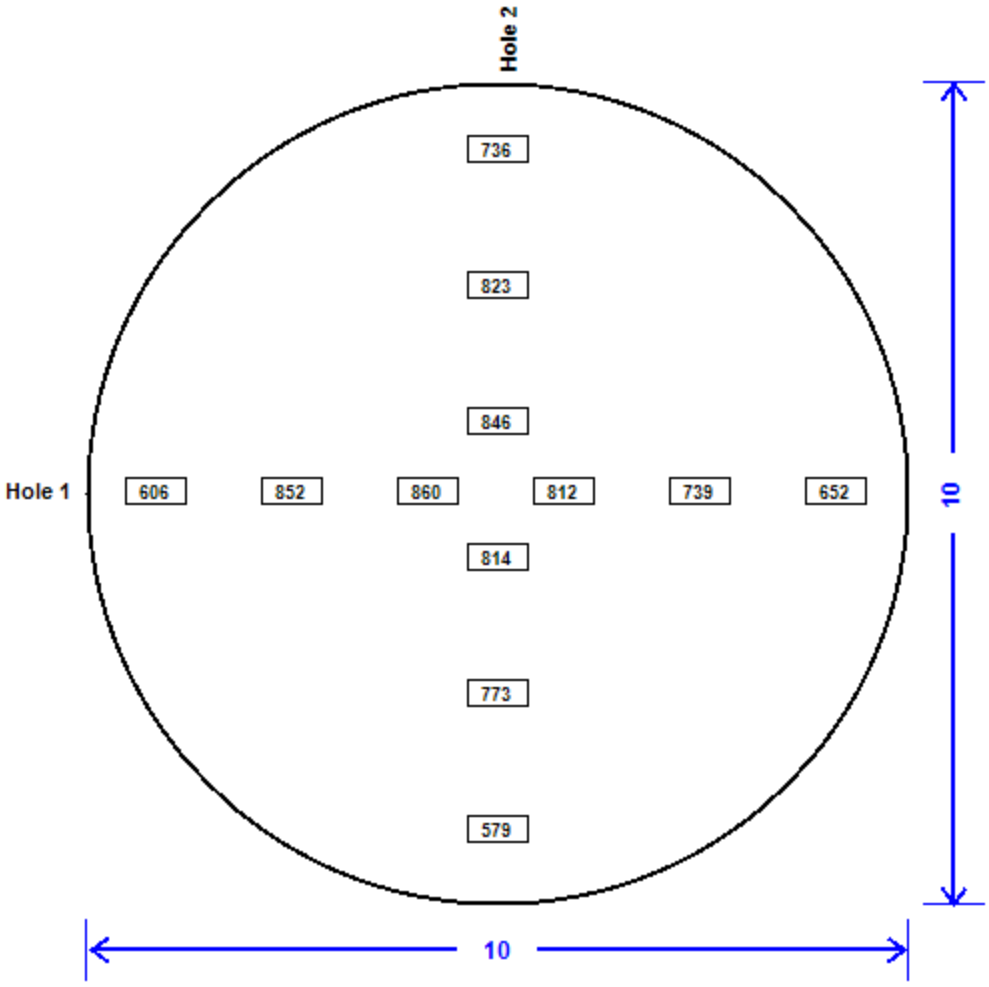
SYSTEM/UNIT: ERV-A-5 final/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	9092 FPM
Design Velocity	734 FPM
Average Velocity	758 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	413 CFM
Static Pressure	-0.13 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

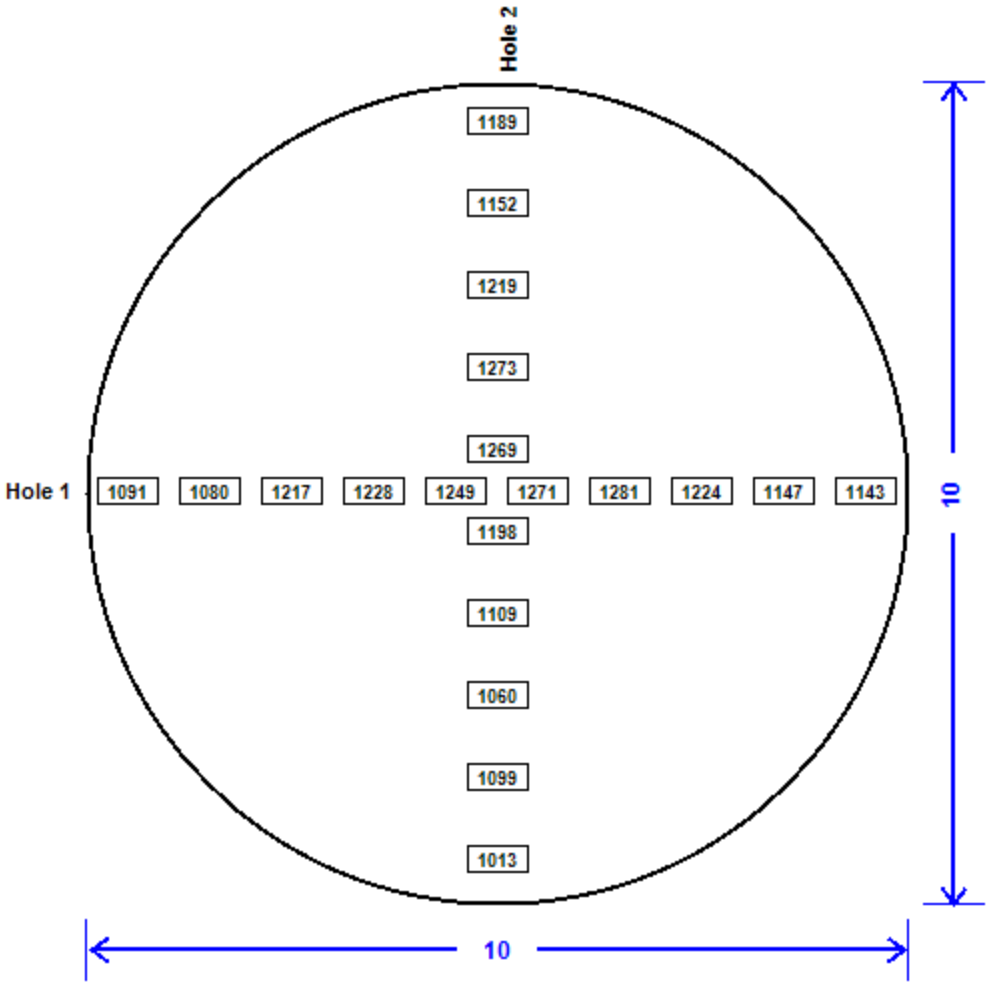
SYSTEM/UNIT: ERV-A-5 final/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23512 FPM
Average Velocity	1176 FPM
Design Total Flow (CFM)	616 CFM
Actual Total Flow (CFM)	641 CFM
Static Pressure	0.29 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-A-5 final Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Work Live	SWD	8 x 8	200	210	210	105
Outlet-02	Work Live	SWD	8 x 8	200	210	205	103
	Totals:	-	-	**400**	**420**	**415**	**104**

ERV-A-5 final Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	Work Live	EG	10 x 8	150	240	240	160
Inlet-02	Work Live	EG		75	70	70	93
Inlet-03	Work Live	EG		75	70	75	100
	Totals:	-	-	**300**	**380**	**385**	**128**

SYSTEM/UNIT: ERV-A-6 final
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Unit Manufacturer	Aldes
Unit Model Number	E-1100L
Unit Serial Number	N23080005
Unit Type	Air to Air

Air Test Data	Design	Actual
Supply Air CFM	400/615 CFM	405/625 CFM
Exhaust Air CFM	400/615 CFM	410/625 CFM

Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

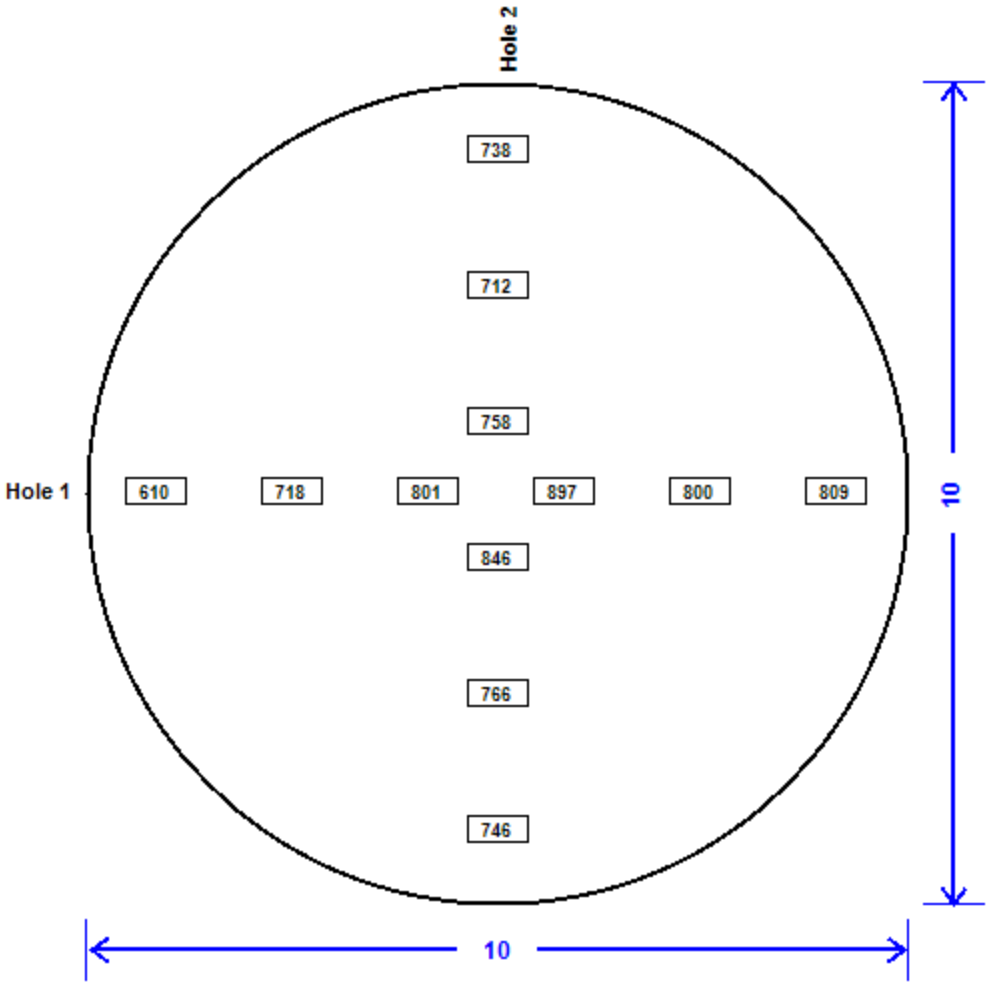
SYSTEM/UNIT: ERV-A-6 final/Exhaust Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	9201 FPM
Design Velocity	734 FPM
Average Velocity	767 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	418 CFM
Static Pressure	0.03 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

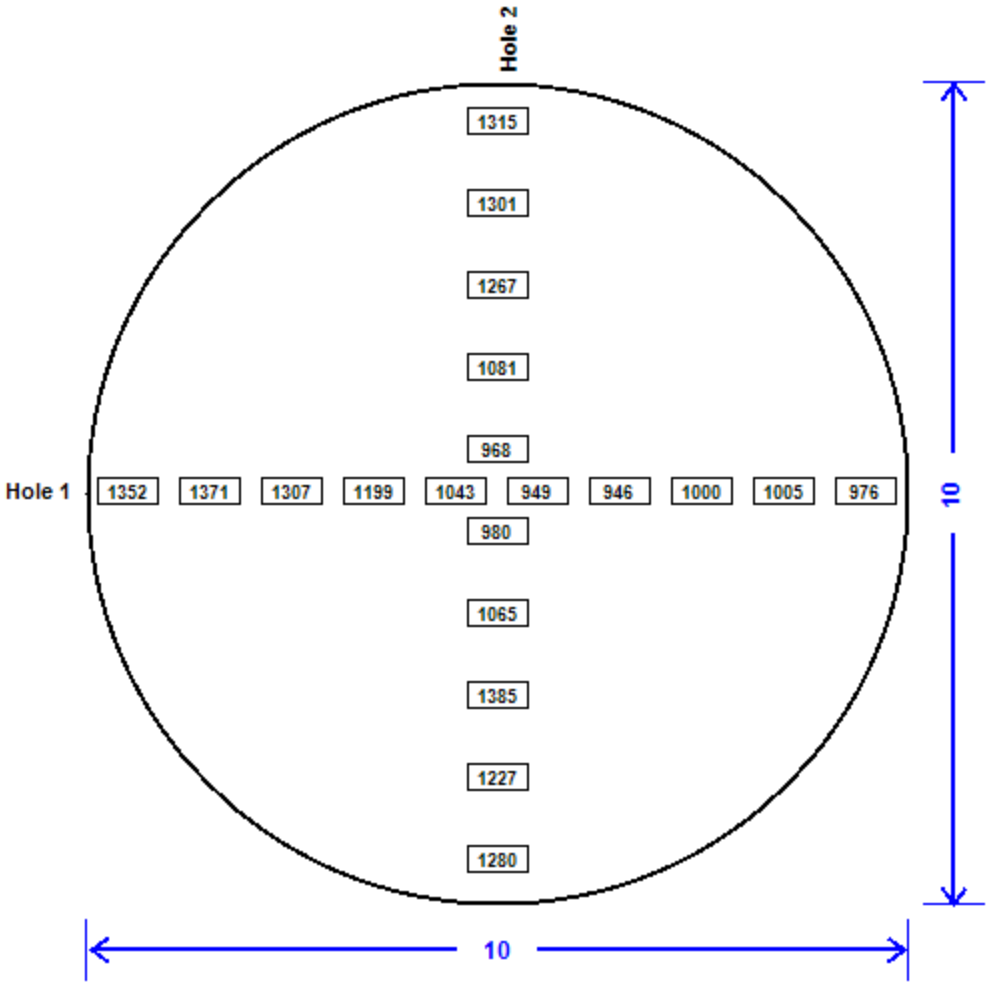
SYSTEM/UNIT: ERV-A-6 final/Exhaust Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	Discharge Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	23017 FPM
Average Velocity	1151 FPM
Design Total Flow (CFM)	615 CFM
Actual Total Flow (CFM)	627 CFM
Static Pressure	0.07 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

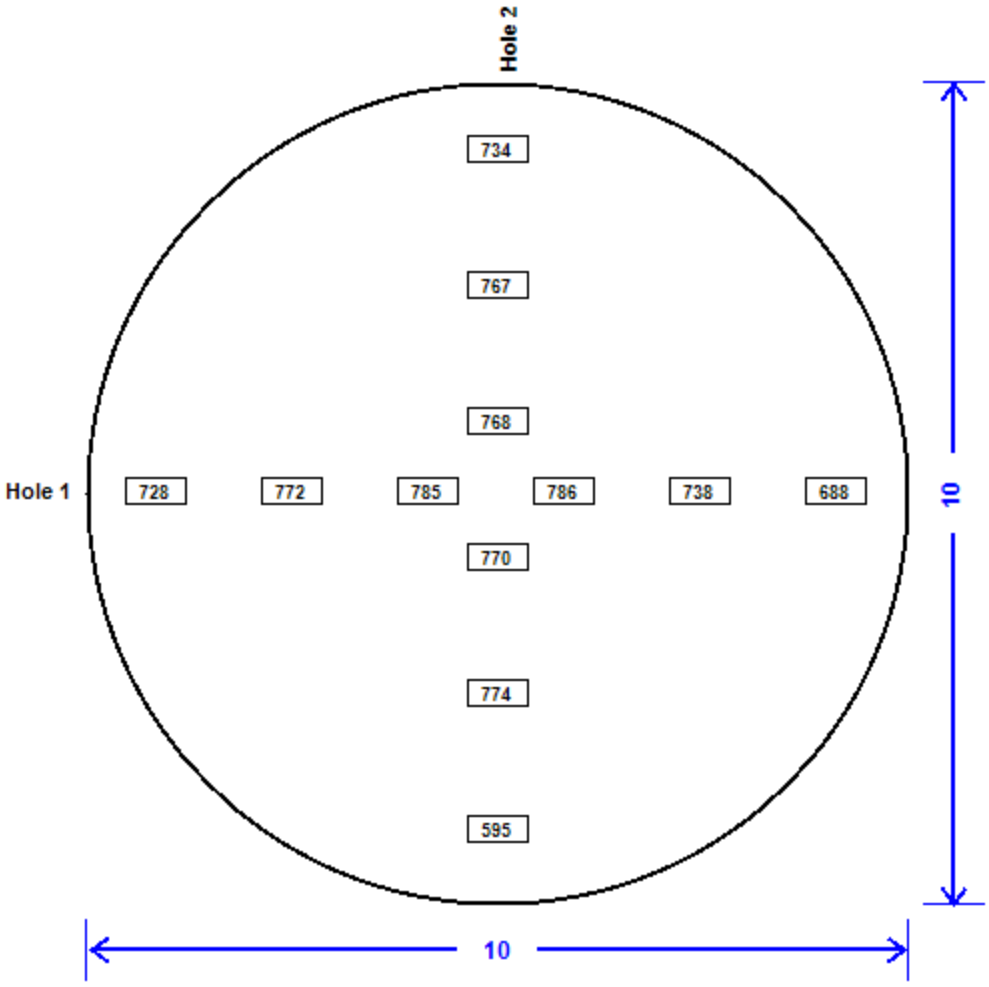
SYSTEM/UNIT: ERV-A-6 final/OSA Continuous
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Pitot-Tube
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	6
Total Readings	12

Final Data	
Sum of Readings	8905 FPM
Design Velocity	734 FPM
Average Velocity	742 FPM
Design Total Flow (CFM)	400 CFM
Actual Total Flow (CFM)	404 CFM
Static Pressure	-0.11 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

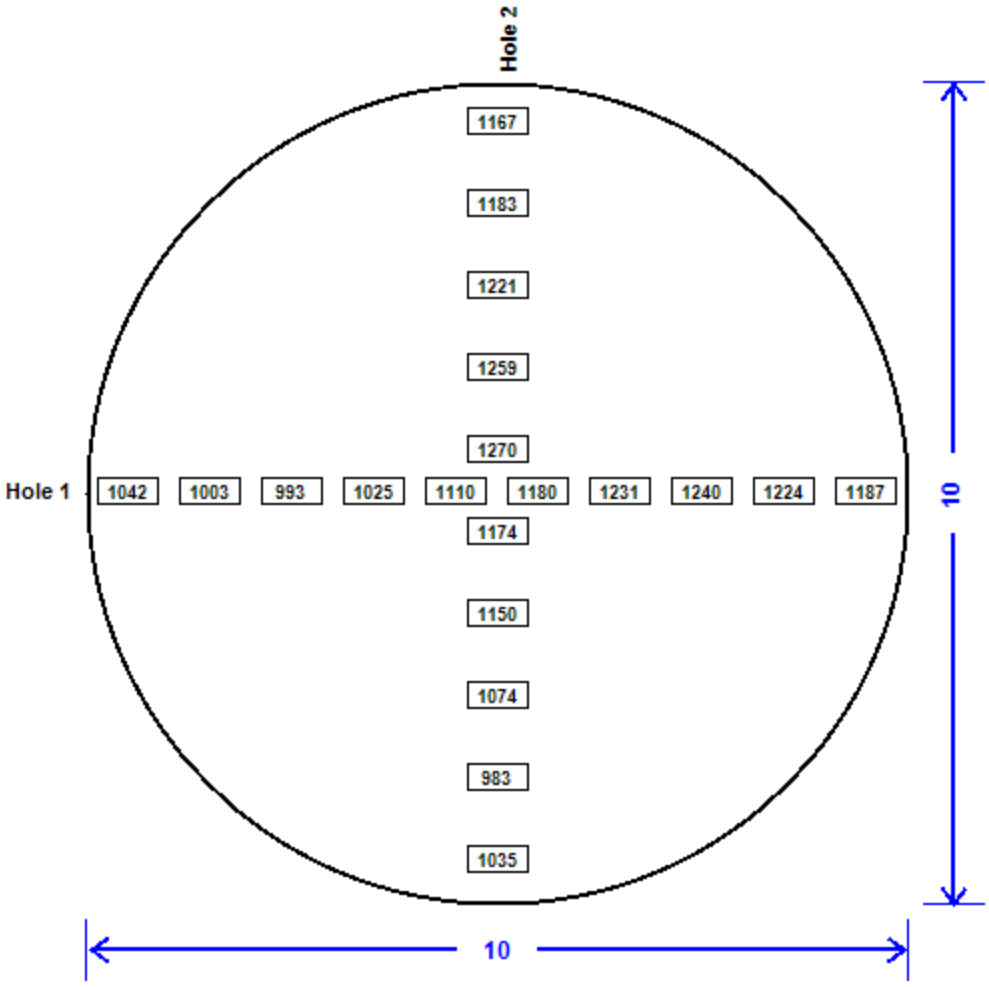
SYSTEM/UNIT: ERV-A-6 final/OSA Max
AREA: Work Live

Tested By: Allen Wessel
Date: 2/13/2024

Unit Data	
Traverse Location	OSA Duct
Type of Traverse	Round
Test Instrument Used	Airfoil
Duct Diameter	10 in.
Duct Area	0.545 sq. ft.
# of Rows (T-B)	2
Readings Per Row (L-R)	10
Total Readings	20

Final Data	
Sum of Readings	22751 FPM
Average Velocity	1138 FPM
Design Total Flow (CFM)	615 CFM
Actual Total Flow (CFM)	620 CFM
Static Pressure	0.22 in. wg.

Traverse Data Points



Energy Recovery Unit

PROJECT: Everett Riverfront Bldg. A (Final)
LOCATION: Everett, WA
PROJECT #: 240001

DATE: 2/15/2024
CONTACT: Adam Hoskins
AUTHOR: Adam Hoskins

ERV-A-6 final Supply Outlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Outlet-01	Work Live	SWD	8 x 8	200	200	200	100
Outlet-02	Work Live	SWD	8 x 8	200	215	205	103
	Totals:	**-**	**-**	**400**	**415**	**405**	**101**

ERV-A-6 final Exhaust Inlet Summary

System/Unit	Area Served	Outlet Type	Size LxW / D	Design CFM	Prelim Reading	Final Reading	% Final
Inlet-01	Work Live	EG	10 x 8	150	365	265	177
Inlet-02	Work Live	EG	6 x 6	75	60	75	100
Inlet-03	Work Live	EG	6 x 6	75	55	70	93
	Totals:	**-**	**-**	**300**	**480**	**410**	**137**

March 20, 2024

Riverfront Commercial Investment, LLC
11624 Southeast 5th Street Suite 210
Bellevue, Washington 98005

Subject: Construction Quality Assurance (CQA) Declaration for Riverfront Building A Live/Work Units in Everett, Washington

Dear Mr. Evans:

Introduction

This letter discusses the approval of the Riverfront Building A landfill gas management system following the final testing and commissioning of the gas detection, ventilation, and alarming system of the Live/Work units. This letter supplements the previous Construction Quality Assurance (CQA) Declaration for Riverfront Building A in Everett, Washington dated February 16, 2024. Since commissioning was last performed for the rest of Building A, the permanent Chemgard™ Infrared Gas Monitors for the Live/Work units were delivered, installed, programmed, and tested. All other components for the Building A landfill gas management system were inspected, tested, and approved as discussed in the Construction Quality Assurance (CQA) Report and individual field reports. Requirements for gas detection, ventilation, and alarming for the Building was established by the Consent Decree, specifically the Compliance Monitoring and Contingency Plan (CMCP) attached to the Cleanup Action Plan. Section 6.2.1 of the Cleanup Action Plan (Consent Decree, Exhibit C) and Section 3.5.1. of the CMCP (Attachment 2 to the Cleanup Action Plan) discusses the following requirements for buildings constructed on the landfill:

- Continuous sensor system in all ground floor spaces;
- Automatic activation of increased interior ventilation via the installed HVAC system and notification of appropriate operations and maintenance personnel if the methane concentration reaches 1,000 ppm;
- Actuation of evacuation and fire department notification alarms if methane concentration reaches 10,000 ppm;
- Activation of trouble light or audible tone and automatic switch to battery power in case of a power failure.

An Amendment was made to the Consent Decree to allow for the construction of street level residential units and to clarify how the units would be constructed consistent with the Consent

Decree. Amendment 3 to the Consent Decree discusses the following requirements for these Live/Work Units:

- Living spaces must be separated from the slab-on-grade by unoccupied and isolated monitoring/ventilation spaces.
- Methane monitoring devices, meeting the requirements of Section 6.2.1 of the Cleanup Action Plan and Section 3.5.1 of the CMCP, must be installed in the first floor, loft, and unoccupied monitoring/ventilation space beneath the first floor of each unit.
- Methane monitoring devices must activate a low level (1,000 ppm) response that activates exhaust fans and notifies maintenance personnel, and a high level (10,000 ppm) alarm that will trigger evacuation notification.
- Methane monitoring devices must be located externally to the units and accessible for operation and inspection at all times.
- Residents of the units must provide access for both routine monitoring and emergencies.

Commissioning Test Procedure

Building A Live/Work units are equipped with 3 total Chemgard™ Infrared Gas Monitors that provide gas sample points to the subfloor, level 1, and mezzanine levels of each Live/Work unit. There are 18 total gas sampling points across the 6 Live/Work units. The Live/Work gas detectors connect to controls for an ERV fan, a subfloor fan, and a damper installed within each unit. Enclosed is the March 13, 2024 field report for the inspection and testing of the MSA Chemgard™ Gas Monitors and their controlled ventilation fans, dampers, and alarm systems installed for the Live/Work units of Building A. The field report provides the details and photos of each gas detector, ventilation fan, and alarm system validation. The field reports also include a snapshot of project drawings that show a map with the locations of the gas detectors, ventilation fans, and alarms. QCC calibrated the detectors and programmed the connection to the MGCP-A prior to system validation testing on March 13. The parties on site during all or part of testing included Shelter Holdings, LLC; Quality Controls Corporation (QCC); Floyd | Snider; City of Everett; and Herrera Environmental Consultants (Herrera).

In order to verify the gas detection, ventilation fan activation, and alarm systems for the Live/Work units were in proper working order, several tests and checks were performed:

- Low Level Detection and Alarm Testing
- High Level Detection and Alarm Testing
- Ventilation System

The testing procedure for the continuous monitoring and alarm system was the same for each gas sample point. Results of testing are included in Table 1 at the end of this letter. All system components passed.

Low Level Detection and Alarm Testing:

QCC applied 25,000 ppm (50% LEL) methane test gas to each sample point while QCC and Herrera verified the Low Alarm notification was activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas low level alarms as the detector readings climbed and passed the low level setpoint of 1,000 ppm (2% LEL). The Chemgard™ units cycle between channels/locations for monitoring every 30 seconds. If the unit detects a concentration greater than or equal to 300 ppm (the product of the threshold, 30%, and the Caution Alarm value, 1,000 ppm) on a sample line during those 30 seconds, the monitor dwells for an additional 70 seconds to confirm concentration. QCC personnel communicated the timing and current channel so the sample point that the Chemgard™ was currently monitoring from could be tested properly.

The gas level on the MGCP-A panel returned to zero ppm after the test gas was removed.

High Level Detection and Alarm Testing:

QCC applied 25,000 ppm (50% LEL) methane test gas to each sample point while QCC and Herrera verified the High Alarm notification was activated on the MGCP-A screen and that a phone call was received from the autodialer describing the methane gas high level alarms as the detector readings climbed and passed the high level setpoint of 10,000 ppm (20% LEL). The gas level on the MGCP-A panel returned to zero ppm after test gas was removed.

The Building A Live/Work continuous gas detectors and alarm system from the MGCP-A are confirmed to be installed, calibrated, commissioned, and operating.

Ventilation System

Each Building A Live/Work unit is equipped with 1 ERV fan and 1 subfloor ventilation fan that were tested for accurate air change activation at the low level setpoint of 1,000 ppm. Fans capable of performing air changes at the minimum and increased airflows were installed by the mechanical contractor prior to system validation testing on March 13, 2024. See drawings EFWL7 and EFWL9 (also included in field report attachments) for the designed and increased airflows and air changes per hour for the subfloor and ERV fans, respectively. The Building A fan Airtest report attached to the February 16, 2024, Building A CQA Declaration Letter details the actual tested airflow capabilities of each fan and the results confirm that all fans meet the required minimum continuous and increased airflow.

As designed, the Live/Work ERV fans ran continuously at the minimum low speed air change per hour (see snapshot of drawings EFWL7 and EFWL9 attached to the field reports for exact minimum air change) when no test gas was applied. The Live/Work subfloor fans are normally off and get activated to provide a minimum 4 ACH when methane gas at the low level of 1,000 ppm is

detected at any of the gas sample points. The dampers are normally closed and open upon low level detection of 1,000 ppm methane. QCC applied methane test gas to each of the subfloor, main level, and mezzanine gas sample points and the system ventilation response was checked when the detected methane concentration exceeded the low-level threshold of 1,000 ppm. Activation of the subfloor fan was verified by hearing the fan increase in volume, seeing the fan label switch from off to on at the MGCP-A in the electrical room, and seeing the Fan Running light turn on at the Subfloor Vent Fan Control Panel located in the gas detector closet. Activation of the ERV fan was verified by hearing the fan increase in volume. Opening of the damper was verified by visual inspection within the Live/Work unit, seeing the damper label switch from closed to open on the MGCP-A in the electrical room, and seeing the Damper Open light turn on at the Subfloor Vent Fan Control Panel located in the gas detector closet.

Conclusion

Herrera has completed the commissioning documentation for the construction and startup of the indoor methane monitoring, ventilation, and alarm system for the Riverfront Building A Live/Work units. With the testing and commissioning of the Live/Work units, Herrera declares, in its professional engineering judgment and opinion, that the entire Riverfront Building A landfill gas management, detection, ventilation, and alarming systems are complete and functional in accordance with Amendment 3 of the Consent Decree. The Riverfront Building A Live/Work units can join the rest of Building A and receive residential occupancy at this time.

Sincerely,

Herrera Environmental Consultants, Inc.

Tyson Wright, P.E.

Senior Engineer

Enclosure:

Cc: FR 030 03132024 Riverfront Building A LFG HEC

Table 1. Results of Live/Work Ventilation Fan Testing for Building A

MG Live/Work Ventilation Fan Checklist			1,000 PPM (2% LEL) Test		
Tag No.	Location	Test Date	SBMF Fan Running	ERV to HI Speed	LVR Open
ERV1	UNIT #1 (151)	3/13/2024		Pass	
SBMF1	UNIT #1 (151)	3/13/2024	Pass		
LVR1	UNIT #1 (151)	3/13/2024			Pass
ERV2	UNIT #2 (153)	3/13/2024		Pass	
SBMF2	UNIT #2 (153)	3/13/2024	Pass		
LVR2	UNIT #2 (153)	3/13/2024			Pass
ERV3	UNIT #3 (155)	3/13/2024		Pass	
SBMF3	UNIT #3 (155)	3/13/2024	Pass		
LVR3	UNIT #3 (155)	3/13/2024			Pass
ERV4	UNIT #4 (157)	3/13/2024		Pass	
SBMF4	UNIT #4 (157)	3/13/2024	Pass		
LVR4	UNIT #4 (157)	3/13/2024			Pass
ERV5	UNIT #5 (159)	3/13/2024		Pass	
SBMF5	UNIT #5 (159)	3/13/2024	Pass		
LVR5	UNIT #5 (159)	3/13/2024			Pass
ERV6	UNIT #6 (161)	3/13/2024		Pass	
SBMF6	UNIT #6 (161)	3/13/2024	Pass		
LVR6	UNIT #6 (161)	3/13/2024			Pass

Table 2. Results of Gas Detection, Ventilation, and Alarming Validation Testing for Live/Work Units in Building A

				1,000 PPM (2% LEL) Test					10,000 (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarms	Autodialer Alarm	ERV to HI Speed	Subfloor Fan Running	Damper Open	HMI Alarms	Autodialer Alarm
151-1M	Unit 151 (MEZZ) - Chemgard 1, Channel 3	Livework - ERV-1 SBMF-1	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1L	Unit 151 (main floor) - Chemgard 1, Channel 2	Livework - ERV-1 SBMF-1	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1S	Unit 151 (Subfloor) - Chemgard 1, Channel 1	Livework - SBMF-1	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
153-2M	Unit 153 (Mezz) - Chemgard 2, Channel 2	Livework - ERV-2 SBMF-2	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2L	Unit 153 (main floor) Chemgard 2, Channel 1	Livework - ERV-2 SBMF-2	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2S	Unit 153 (Subflood) Chemgard 1, Channel 4	Live work - SBMF-2	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
155-3M	Unit 155 (Mezz) - Chemgard 2, Channel 5	Livework - ERV-3 SBMF-3	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3L	Unit 155 (main floor) Chemgard 2, Channel 4	Livework - ERV-3 SBMF-3	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3S	Unit 155 (Subfloor) - Chemgard 2, Channel 3	Live work - SBMF-3	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
157-4M	Unit 157 (Mezz) – Chemgard 2, Channel 8	Livework - ERV-4 SBMF-4	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
157-4L	Unit 157 (main floor) - Chemgard 2, Channel 7	Livework - ERV-4 SBMF-4	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
157-4S	Unit 157 (Subfloor) - Chemgard 2, Channel 6	Live work - SBMF-4	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
159-5M	Unit 159 (Mezz) - Chemgard 3, Channel 3	Livework - ERV-5 SBMF-5	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5L	Unit 159 (main floor) - Chemgard 3, Channel 2	Livework - ERV-5 SBMF-5	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5S	Unit 159 (Subfloor) - Chemgard 3, Channel 1	Live work - SBMF-5	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
161-6M	Unit 161 (Mezz) - Chemgard 3, Channel 6	Livework - ERV-6 SBMF-6	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6L	Unit 161 (main floor) - Chemgard 3, Channel 5	Livework - ERV-6 SBMF-6	3/13/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6S	Unit 161 (Subfloor) - Chemgard 3, Channel 4	Live work - SBMF-6	3/13/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass

Herrera Field Inspection Report

Herrera Project No.: 15-06075-006	**Report No.:** 030

Permit No.: B2003-013

Date: 3/13/2024

Time: 8:00 am to 3:15 pm

Everett Riverfront – Building A	**Location: Everett, Washington**	**Weather:** Sunny and high 40s
Client: Shelter Holdings, LLC	**Client Rep.** Dave Fiala	**Project Eng.:** Tyson Wright, PE
Contractor: QCC	**Contractor Rep:** Christina Hsu	**HEC Rep.:** Camryn Steiner

Herrera Environmental Consultants is providing 3rd party inspection of the landfill gas barrier and collection and conveyance system for Building A. Inspection Reports will be provided to both Shelter and the City of Everett Building Official documenting CQA requirements and installation of the system per the design.

Activity:

- Arrived on-site. Met with Alex and Patrick from QCC; and Dave Fiala. Randy from the City and Jeff from Floyd | Snider observed commissioning from around 9:00 to 10:30am.
- Performed testing and commissioning of methane detection, ventilation, and alarm system of the Building A Live Work units via the Chemgard™ Gas Monitors. PrimaX® IR detectors were previously installed on the ceiling of each Live/Work unit as a temporary measure in order to test and approve the methane detection and ventilation function of Building A as a whole (as documented in 2/14/2023 and 2/15/2023 field reports). The permanent Chemgard units were delivered, installed, and programmed since then and were tested on the day.
- Every Chemgard sample point in every Live/Work unit was tested with 25,000 ppm methane gas (2.5% methane, 25% LEL). Because the Chemgard units cycle between channels/locations for monitoring every 30 seconds, Patrick communicated the timing and current channel to Alex (Patrick could see current channel from his computer) so Alex could test the sample point the Chemgard was currently monitoring from. If the unit detected a concentration greater than or equal to 300 ppm (the product of the threshold, 30%, and the Caution Alarm value, 1,000 ppm) during those 30 seconds, the monitor dwelled on that sample line for an additional 70 seconds to confirm concentration.
- For low level detection test with 25,000 ppm methane gas, Patrick changed the settings so the alarm would go off with a delay of 1 seconds. Alex exposed each detector to 25,000 ppm gas to trigger the low-level alarm set point of 1,000 ppm. The Methane Gas Low Level Warning level still needs to be programmed.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper low-level alarm visual alert was activated on the control panel screen as the gas value climbed and reached 1,000 ppm in reading during the validation test. Noticed the sample point labels for 155

Mezzanine and 157 Mezzanine were swapped on the control panel so Alex switched the tubing on the Chemgard unit to match correctly.

- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of low-level alarm once the low-level alarm set point of 1,000 ppm was reached.
- Alex confirmed subfloor fan activation and damper opening at the low level methane detection level for the subfloor, main floor, and mezzanine sample points; and the ERV fan activation and damper opening at the low level methane detection level for the main level and mezzanine detectors. Discovered a couple issues that were fixed on the day:
    - The subfloor fans were not programmed to activate upon low-level methane detection at the main level and mezzanine sample points, only the subfloor sample point. QCC made the fix right after discovery so low-level methane detection at any of the sample points activated the subfloor fan as designed.
    - Alex confirmed the damper opening at low-level methane detection while in the Live/Work unit but Camryn and Patrick realized the damper signal was not showing as open at the control panels in the gas detector closet and the electrical room. At the end of testing/commissioning, Patrick and Alex fixed issue and confirmed damper on/off signal by having Alex manually switch damper between on/off in the gas detector closet and observing the signal change at the panel in the electrical room. Additionally, the Unit 151 subfloor fan was tested again with gas to confirm the damper opened and the signal registered properly at the control panels.
- Alex exposed detector to 25,000 ppm methane gas again for the high-level alarm test.
- Watched the gas value climb in reading at the Building A control panel. Verified the proper high-level alarm was activated on the control panel screen as the gas value climbed and reached 10,000 ppm in reading during the validation test.
- Confirmed autodialer called the number that was programmed into the system (Camryn's phone number) with description of high-level alarm once the high-level alarm set point of 10,000 ppm was reached.
- Confirmed the gas reading returned to zero at the control panel after Alex removed test gas.
- Alex confirmed fan(s) and damper returned to normal operation once the methane read returned to below the low-level of 1,000 ppm and eventually back to zero while in the Live Work unit. Patrick and Camryn confirmed fan(s) returned to normal operation via signal at the panel.
- All detectors, fans, and alarms tested on the day are functioning per CQA and Consent Decree requirements. See Table 1 at the end of report for summary.
- Photos were taken throughout inspection and testing.

Photo 1. Subfloor vent fan control panels installed in gas detector closet.

Photo 2. Chemgard Infrared Gas Monitors installed in gas detector closet.

Photo 3. Alex with QCC applying Live/Work 151 Mezzanine sample point with test gas.

Photo 4. Mezzanine gas sample point.

Photo 5. Main level gas sample point.

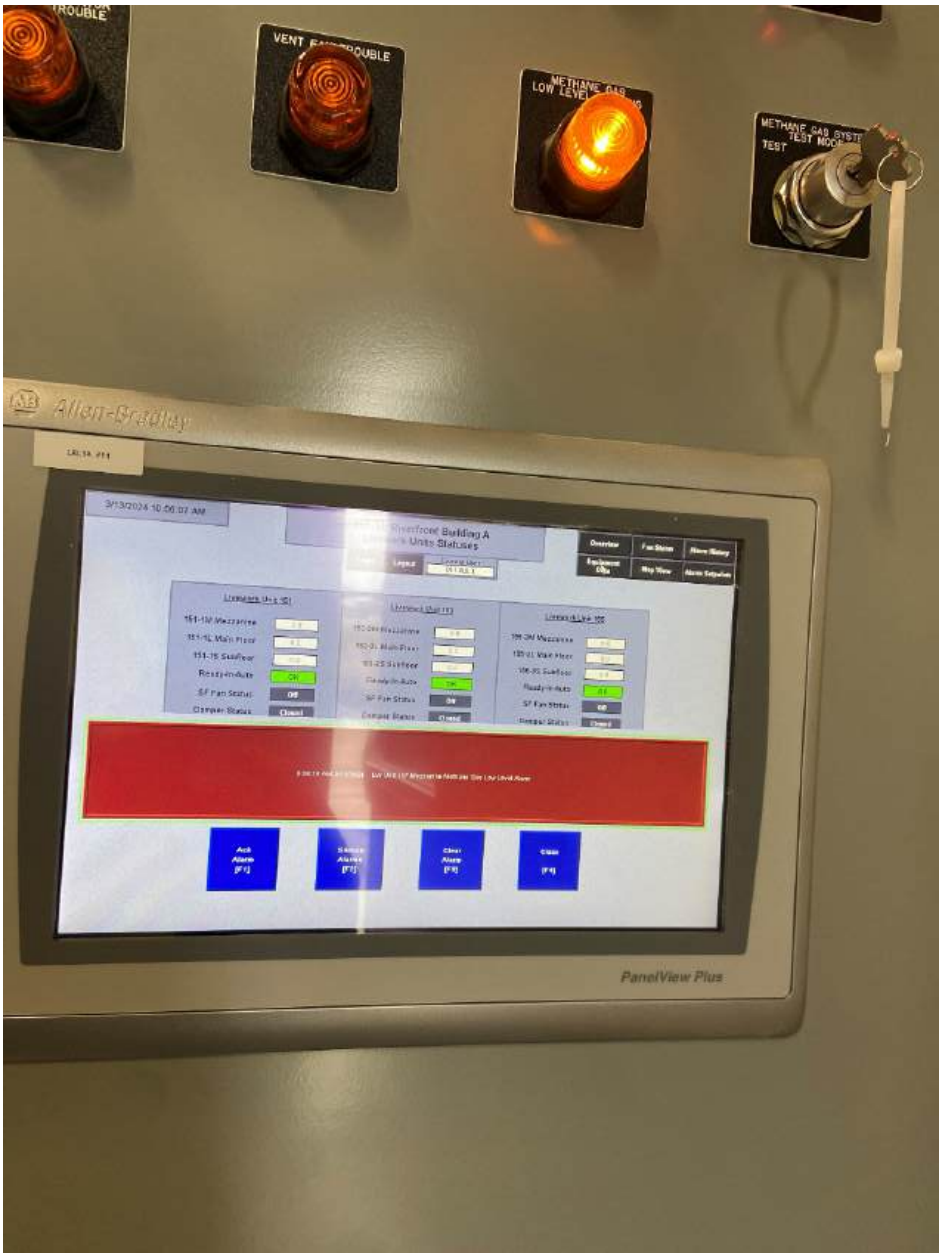


Photo 6. Building A Control Panel Overview screen with Methane Gas Low Level Alarm alert and light for Live/Work Unit 157 Mezzanine sample point.

Photo 7. Building A Control Panel Overview screen with Critical High Methane Alarm alert and light for Live/Work Unit 159 Mezzanine sample point.

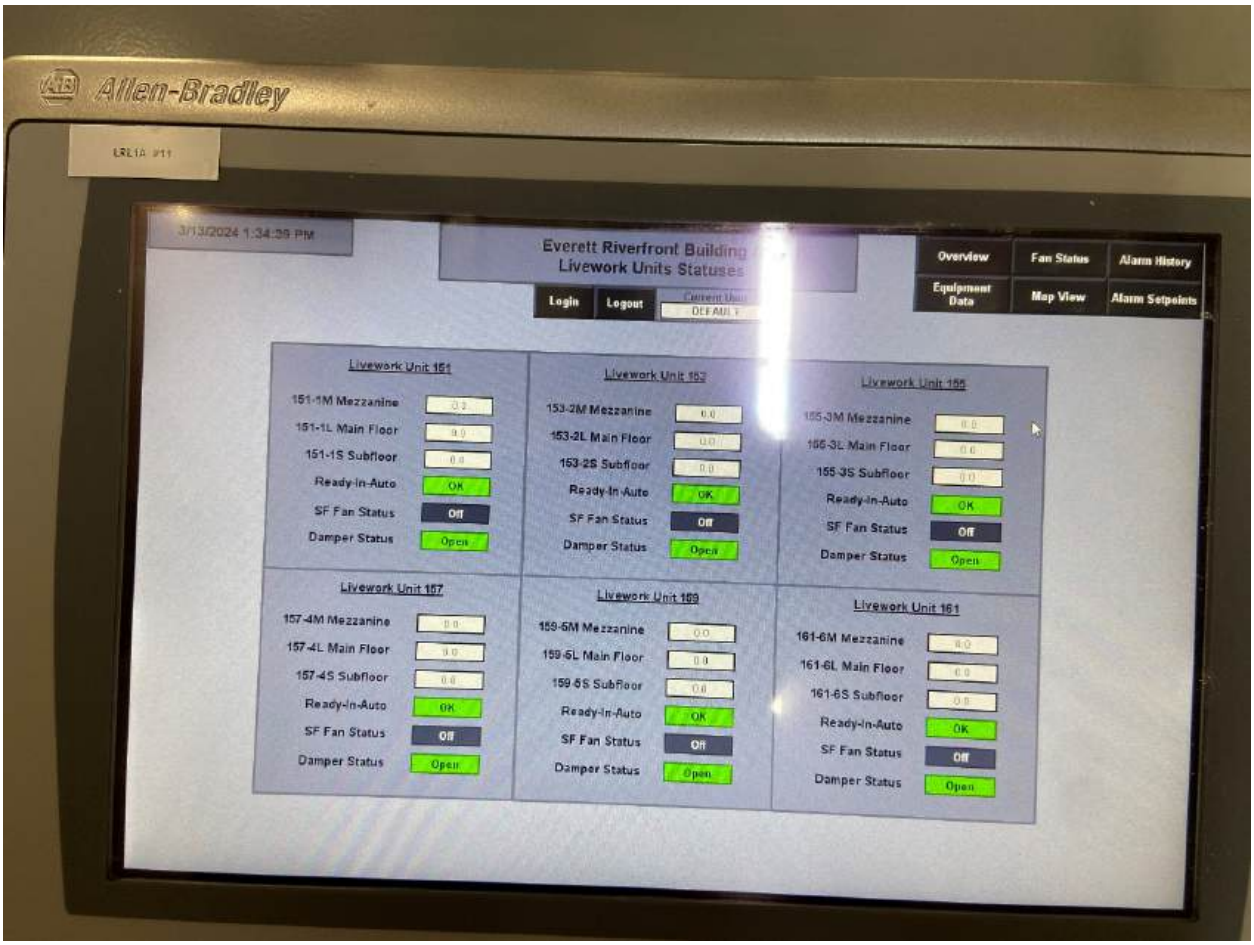


Photo 8. Damper status showing Open on Live/Work Status screen after Alex with QCC manually opened all dampers for testing.

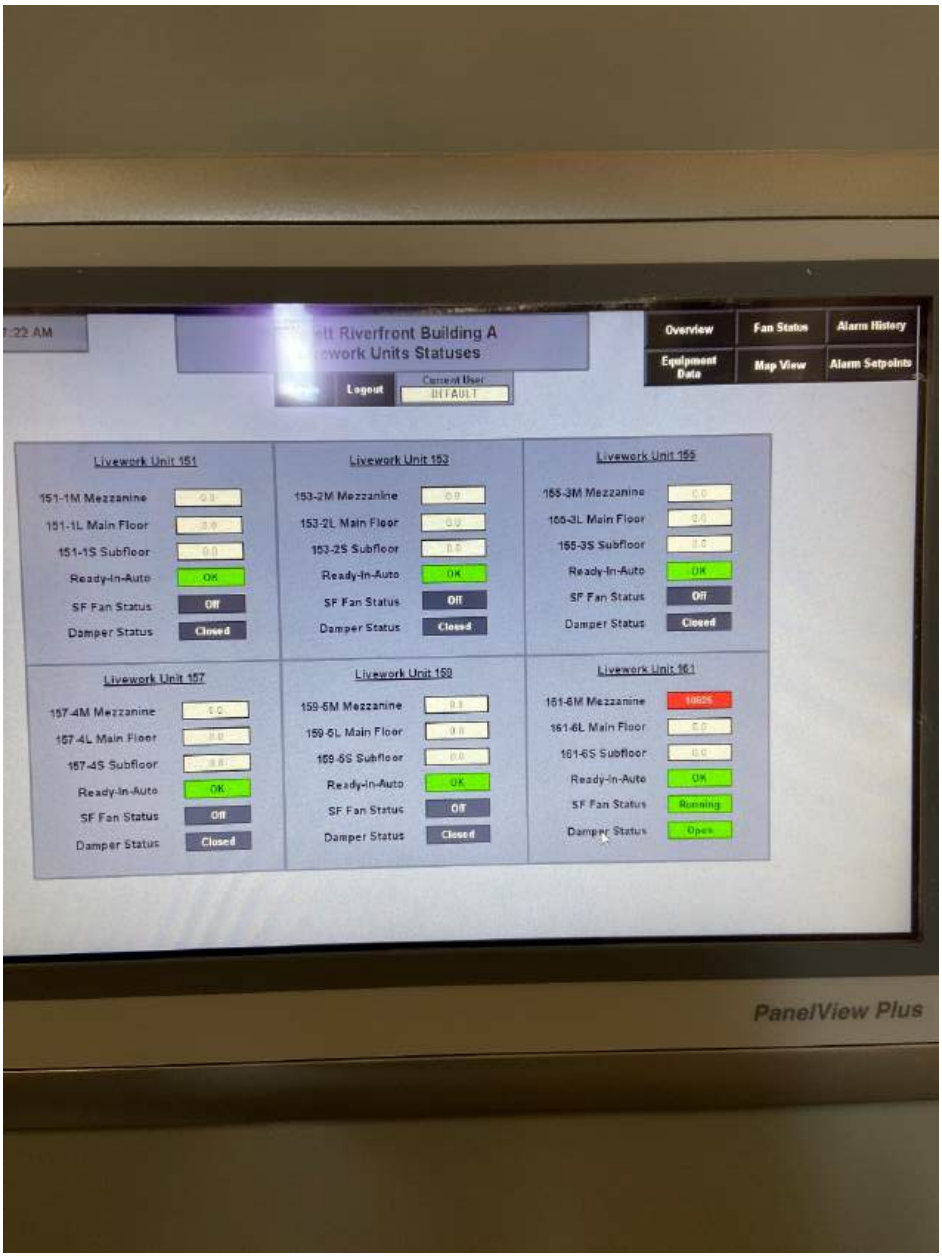


Photo 9. Live/Work Status screen properly showing subfloor fan as running and damper open after fixing the damper signal problem and retesting the Live/Work 161 Mezzanine sample point.

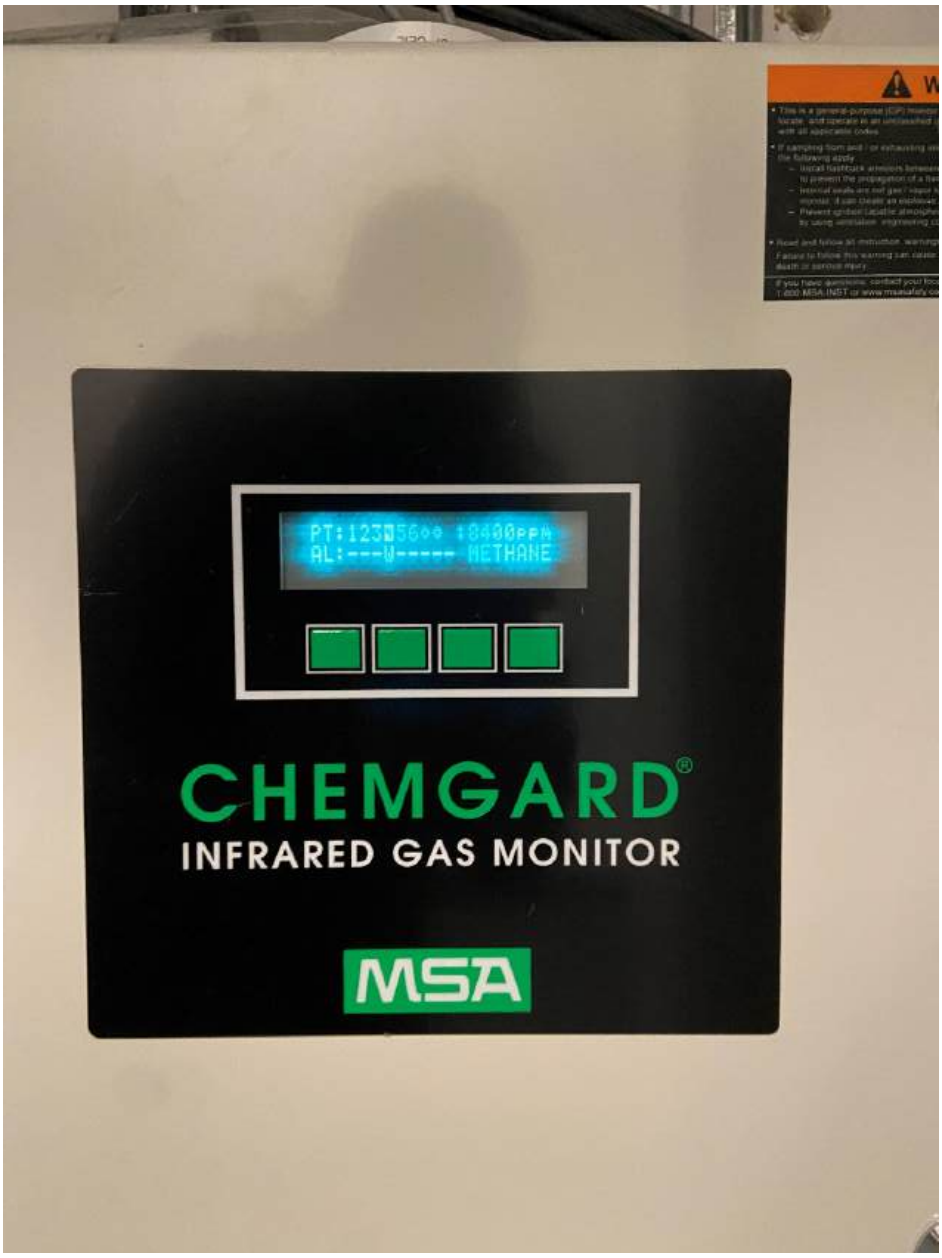


Photo 10. Channel 4 of Chemgard 3 (Live/Work Unit 161 Subfloor) installed in gas detector closet showing 8,400 ppm methane read during high-level alarm test.

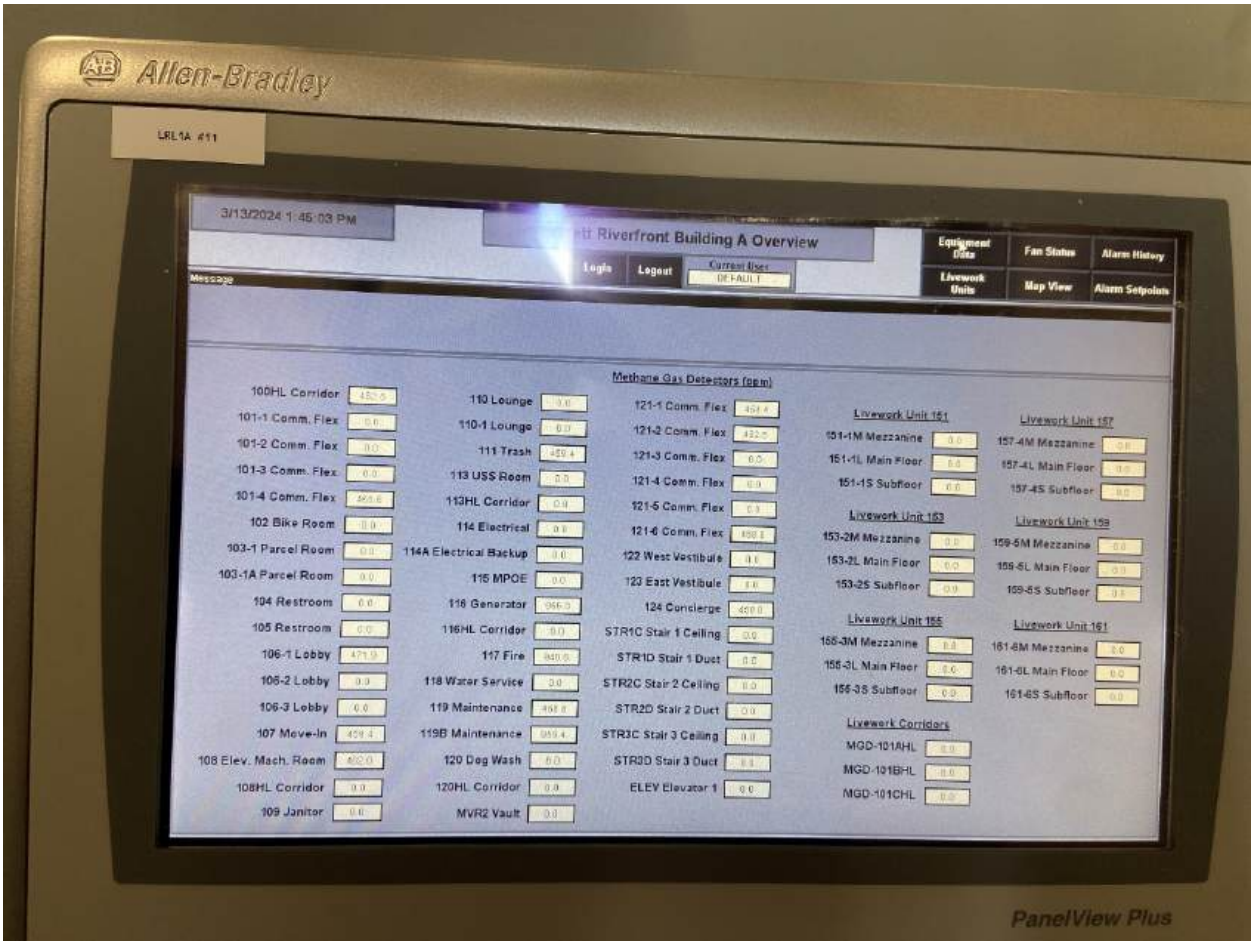


Photo 11. Building A Overview screen at end of testing showing all detectors operating and reading properly (not all show as 0 ppm because of the accuracy range of the PrimaX IR detectors).

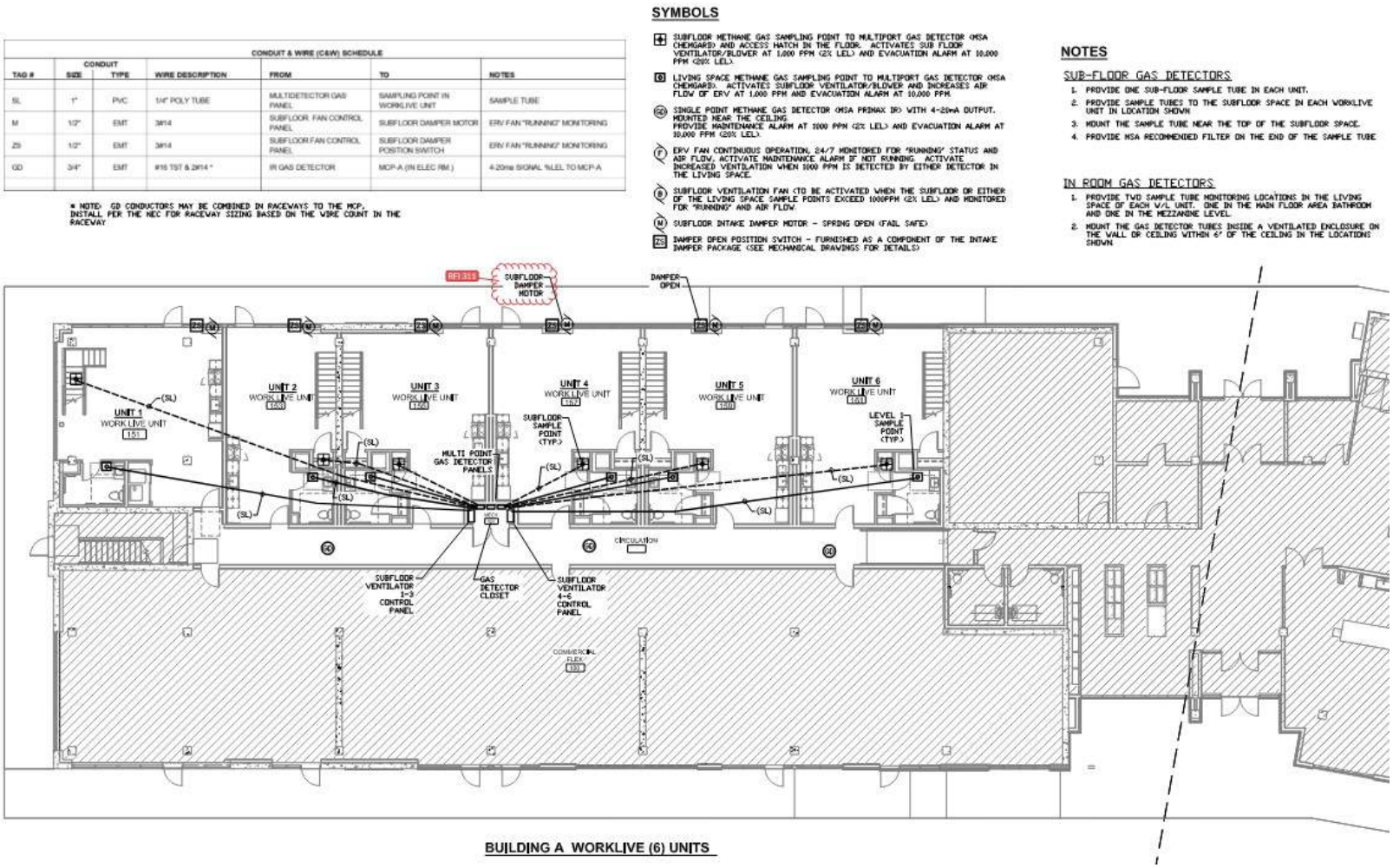


Figure 1. Live/Work Detection and Ventilation Plan.

EVERETT BUILDING A WORK LIVE SUMMARY ERV SCHEDULE												
							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
20	ERV	1	WORK LIVE UNIT 151	800	16.5	13,200	0.25	55	400	1.8	2.8	620
21	ERV	2	WORK LIVE UNIT 153	580	16.5	9,570	0.25	40	400	2.5	3.5	560
22	ERV	3	WORK LIVE UNIT 155	750	16.5	12,375	0.25	52	400	1.9	2.9	606
23	ERV	4	WORK LIVE UNIT 157	767	16.5	12,656	0.25	53	400	1.9	2.9	611
24	ERV	5	WORK LIVE UNIT 159	787	16.5	12,986	0.25	54	400	1.8	2.8	616
25	ERV	6	WORK LIVE UNIT 161	780	16.5	12,870	0.25	54	400	1.9	2.9	615

EVERETT BUILDING A WORK LIVE SUMMARY SUBFLOOR FAN TABLE												
							REQUIRED AIRFLOW		DESIGN AIRFLOW		INCREASED AIRFLOW	
NUMBER	TAG	#	AREA SERVED	AREA (SQ FT)	HEIGHT (FT)	VOLUME (C FT)	REQUIRED CONTINUOUS ACH	REQUIRED AIRFLOW (CFM)	DESIGN AIRFLOW (CFM)	DESIGN CONTINUOUS ACH	ACH	AIRFLOW (CFM)
LIVE WORK												
14	MF	1	WORK LIVE UNIT 151	800	0.75	600	4	40	100	10.0	-	-
15	MF	2	WORK LIVE UNIT 153	580	0.75	435	4	29	100	13.8	-	-
16	MF	3	WORK LIVE UNIT 155	750	0.75	563	4	38	100	10.7	-	-
17	MF	4	WORK LIVE UNIT 157	767	0.75	575	4	38	100	10.4	-	-
18	MF	5	WORK LIVE UNIT 159	787	0.75	590	4	39	100	10.2	-	-
19	MF	6	WORK LIVE UNIT 161	780	0.75	585	4	39	100	10.3	-	-

Figure 2. Required, designed, and increased airflow for each Live/Work unit fan.

Table 1. Results of Gas Detection, Ventilation, and Alarming Validation Testing

				1,000 PPM (2% LEL) Test					10,000 (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarms	Autodialer Alarm	ERV to HI Speed	Subfloor Fan Running	Damper Open	HMI Alarms	Autodialer Alarm
151-1M	Unit 151 (MEZZ) - Chemgard 1, Channel 3	Livework - ERV-1 SBMF-1	2/14/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1L	Unit 151 (main floor) - Chemgard 1, Channel 2	Livework - ERV-1 SBMF-1	2/14/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
151-1S	Unit 151 (Subfloor) - Chemgard 1, Channel 1	Livework - SBMF-1	2/14/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
153-2M	Unit 153 (Mezz) - Chemgard 2, Channel 2	Livework - ERV-2 SBMF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2L	Unit 153 (main floor) Chemgard 2, Channel 1	Livework - ERV-2 SBMF-2	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
153-2S	Unit 153 (Subflood) Chemgard 1, Channel 4	Live work - SBMF-2	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
155-3M	Unit 155 (Mezz) - Chemgard 2, Channel 5	Livework - ERV-3 SBMF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3L	Unit 155 (main floor) Chemgard 2, Channel 4	Livework - ERV-3 SBMF-3	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
155-3S	Unit 155 (Subfloor) - Chemgard 2, Channel 3	Live work - SBMF-3	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
157-4M	Unit 157 (Mezz) – Chemgard 2, Channel 8	Livework - ERV-4 SBMF-4	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
157-4L	Unit 157 (main floor) - Chemgard 2, Channel 7	Livework - ERV-4 SBMF-4	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass

				1,000 PPM (2% LEL) Test					10,000 (20% LEL) Test	
Tag No.	Location	Corresponding Fan(s)	Test Date	HMI Alarms	Autodialer Alarm	ERV to HI Speed	Subfloor Fan Running	Damper Open	HMI Alarms	Autodialer Alarm
157-4S	Unit 157 (Subfloor) - Chemgard 2, Channel 6	Live work - SBMF-4	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
159-5M	Unit 159 (Mezz) - Chemgard 3, Channel 3	Livework - ERV-5 SBMF-5	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5L	Unit 159 (main floor) - Chemgard 3, Channel 2	Livework - ERV-5 SBMF-5	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
159-5S	Unit 159 (Subfloor) - Chemgard 3, Channel 1	Live work - SBMF-5	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass
161-6M	Unit 161 (Mezz) - Chemgard 3, Channel 6	Livework - ERV-6 SBMF-6	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6L	Unit 161 (main floor) - Chemgard 3, Channel 5	Livework - ERV-6 SBMF-6	2/15/2024	Pass	Pass	Pass	Pass	Pass	Pass	Pass
161-6S	Unit 161 (Subfloor) - Chemgard 3, Channel 4	Live work - SBMF-6	2/15/2024	Pass	Pass	Not Applicable	Pass	Pass	Pass	Pass

Notes:

Pass	Test passed
	Test not applicable.
OIT	Human Machine

Actions:

- None. Validation testing of Building A gas detection, ventilation, and alarm systems is now complete.

Signatures: Camryn Steiner, EIT

4.0 Follett Compliance with CQA Report – Electrical Engineer

Everett Riverfront Construction Quality Assurance Final Report

Building A Electrical Distribution System

Prepared for
Riverfront Commercial Investment, LLC

Prepared by
Follett Engineering
Herrera Environmental Consultants, Inc.

FOLLETT ENGINEERING, PLLC
ELECTRICAL ENGINEERING & CONSULTING

Everett Riverfront Construction Quality Assurance Final Report

Building A Electrical Distribution System

Prepared for
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11624 Southeast Fifth Street, Suite 210
Bellevue, Washington 98005

Prepared by
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1037 NE 65th St #316
Seattle WA 98115

and

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Seattle, Washington 98121
Telephone: 206-441-9080

January 25, 2024

Contents

Appendices

Tables

Project Description

The Everett Riverfront project is located on the City of Everett Landfill/Tire Fire Site in Everett, Washington, located west of downtown Everett business district. The Building A project limits stretch the area of Building A which is approximately 29,400 square-feet. The southeast corner of Building A is located about an eighth of a mile north of the 41st Street roundabout and about 30 feet west of Riverfront Boulevard.

This report covers Construction Quality Assurance (CQA) observations and inspections on the electrical distribution system associated with Building A (PW1912-048) that were installed throughout the entire period of construction from October 2021 to January 2024. The work during this period consisted of inspecting the installation of the settling cabinet and main control panel components including the polyvinyl chloride coated galvanized rigid conduit (PGRC), high-density polyethylene (HDPE) sleeves, EC coupler assembly, and seal offs. Additionally, installation of the Building A methane detectors, ventilation system components, and alarms were inspected. The CQA Declaration Letter for the Building A electrical distribution system is included in Appendix A.

All project construction and design elements were required to comply with environmental controls set forth in the Everett Landfill/Tire Fire Consent Decree (March 2001) and were approved by the Washington State Department of Ecology. Activities for construction that were not subject to the CQA requirements per the Consent Decree are not included in this CQA report or those reports being prepared by other Consultants.

Design Background

The Riverfront Development in Everett, Washington is a commercial and residential development situated on a closed landfill. The location creates two major design considerations for Building A electrical systems: presence of flammable gas and potential for differential settlement.

Although the landfill has been closed since 1975, methane is still produced from the decomposing waste which creates the existence of below grade hazardous gas in locations where electrical infrastructure is needed for Building A. Defined by interpretation of application of NFPA 497 and NFPA 820, this underground area of the development site is a hazardous, Class 1, Division 2 (C1/D2) environment. In addition to below grade hazardous gas, the landfill creates potential for migration of hazardous gas above grade within Building A. As such, methane detectors are required throughout the interior of Building A to ensure methane levels remain well below the lower explosive limit. The methane detectors connect to ventilation systems and alarms in case of a methane level exceedance.

In addition to the methane issue, decomposing waste beneath the development area creates the potential for up to 30 inches of differential settlement of the development and its infrastructure which can alter or damage the installed electrical distribution system components. To address this, Building A is pile supported and as such, the building will not settle. The ground underneath the building could settle

up to 30 inches. Because of this, the raceways and wire entering through the floor of the building are designed to accommodate the 30 inches of potential differential settlement between the ground and the building floor. This is accomplished with a slip coupling for the conduit entrances and a settling cabinet to house the 30 inches of extra cable that will gradually drop down through the floor.

Building A was built to be a non-hazardous area with a physical separation of the floor and a liner installed in the building subfloor. The main HDPE conduits that route through the Phase 1 Site area couple to PGRC raceways to enter Building A. PGRC is rated for installation in C1/D2 areas and 0-15 kilovolt (kV) cables. PGRC is strong but not flexible so an HDPE conduit sleeve is utilized as a sleeve for the PGRC conduit to fall through. HDPE isn't rated for C1/D2. HDPE has the ability to flex so is considered to be the best option to deal with differential settlement potential. In accordance with code, the raceway has seal off fittings installed at each end to account for the different material and environmental rating types.

Electrical Systems CQA Observation

CQA observation was provided by Riverfront Commercial Investment LLC (RCI) and its Consultants HWA Geosciences (HWA), Perteet Inc. (Perteet), Follett Engineering (Follett), and Herrera Environmental Consultants (Herrera). Additionally, City of Everett (COE) construction inspectors and outside Consultants made routine site visits throughout the duration of construction.

Follett provided CQA observation of electrical and communication distribution system installation for Building A. CQA observation was provided through site visits and preparation of field inspection reports based on field observations and site photos. Follett verified the electrical system products used on-site with approved material submittals and any associated Requests for Information (RFI). Contractor qualifications, manufacturers' quality control data, and verification of materials with project drawings and specifications were also included in Follett CQA process.

Follett's construction observation of the Building A electrical and communication distribution system began in October 2021 and finished in January 2024. Follett Engineering staffing for CQA was as follows:

- CQA Observer – Vince Follett and Camryn Steiner (Herrera)
- Construction Submittal Review & RFI Lead – Vince Follett

Follett's CQA observation deliverables were field inspection reports documenting construction activities and include photographs of products identifying installation of facilities. The inspection reports include screenshots of plan sheets that show the area of work. Table 1 provides a summary of all Building A electrical distribution system construction work and lists what was installed, when it was installed, and what field report the installation is documented in. Follet's field inspection reports can be found in Appendix B.

Table 1. Summary of Work Performed and Inspected for the Building A Electrical Distribution System.		
Date	**Construction Activity**	**Documented in Field Report**
10/27/2021	PGRC underground cover inspection	A1 10-27-21
11/4/2021	PGRC above ground / EC Couplers	A2 11-4-21
1/17/2024	Settling cabinets and gas detection system	A3 1-17-24

Preconstruction Activities

Prior to installation of electrical and communication distribution system components, Follett performed reviews of material submittals and addressed redesigns required of RFIs.

The material submittals provided by the Contractor were reviewed by Follett for conformance with the approved project plans, project specifications, and RFIs. Following Follett's review and approval of these materials, COE and Floyd Snider (representing the City to ensure compliance with the Consent Decree), would review and approve, or reject material submittals. If rejected, material submittals would then be revised and resubmitted until approval had been received by all reviewers.

Changes during construction to the LFG collection system were prepared by RCI as an RFI on behalf of the Contractor. RFIs were reviewed and redesigned by Follett in collaboration with the Consultant team. RFIs are subsequently approved by COE, Floyd Snider, and RCI.

Electrical System Distribution Installation and Observation

Installation of the electrical and communication distribution system for Building A was photo documented and described within Follet's field inspection reports (Appendix B).

Medium Voltage (MV) Power

Follett provided CQA observation of the primary power and raceway system (2-4 inch conduits) to the termination at the primary settling cabinet (MV-SCA) within the electrical room of Building A. MV power observation for Building A includes PGRC conduit, HDPE sleeves, EC coupler, seal offs, and cabinets.

Low Voltage (LV) Power

Follett provided CQA observation and inspection for secondary power distribution (5-4 inch conduits) to the termination at the secondary settling cabinet (LV-SCA) within the electrical room of Building A. LV power observation for Building A includes PGRC conduit, HDPE sleeves, EC couplers, seal offs, and cabinet.

Electric Vehicle (EV) Power

Follett provided CQA observation and inspection for secondary power distribution (4-4 inch conduits) to the termination at the secondary settling cabinet (EV-SCA) within the electrical room of Building A. EV power observation for Building A includes PGRC conduit, HDPE sleeves, EC couplers, seal offs, and cabinet.

Franchise Communication (FC) Distribution

Follett provided observation and inspection for FC distribution (4-3 inch conduits) to the termination at the communications settling cabinet (FC-SCA) within the MPOE room of Building A. FC distribution observation for Building A includes PGRC conduit, HDPE sleeves, EC couplers, seal offs, and cabinets.

Integrated Circuit (IC) Distribution

Follett provided observation and inspection for IC distribution (2-3 inch conduits) to the termination at the MCP settling cabinet (IC-SCA) within the electrical room of Building A. IC distribution observation for Building A includes PGRC conduit, HDPE sleeves, EC couplers, seal offs, and cabinets.

DAS Distribution

Follett provided observation and inspection for DAS distribution (2-3 inch conduits) to the termination at the DAS settling cabinet (DAS-SCA) within the MPOE room of Building A. DAS observation for Building A includes PGRC conduit, HDPE sleeves, EC couplers, seal offs, and cabinets.

LFG Monitoring System

Follett provided observation and inspection of the Main (Gas) Control Panel (MCP-A) within the electrical room of Building A that controls all methane detectors throughout the building and within MV vaults in the raceway system.

Methane Detectors, Alarms, and Activated Ventilation Systems

Follett provided observation and inspection of the methane detectors, ventilation system equipment, and alarms. Building A is equipped with gas monitors that detect combustible hydrocarbon gas and send response to ventilation systems and building alarms upon detection of certain levels of methane. Regular building ground floor spaces are continuously monitored with MSA PrimaX® IR Infrared Gas Monitors (PrimaX® Gas Monitors). Live Work Units are continuously monitored with MSA Chemgard™ Infrared Gas Monitor (Chemgard™ Gas Monitors).

Ground Floor Space

Above the foundation slab, Building A is continuously monitored with PrimaX® Gas Monitors that send signals for action at a low and high level of the methane concentrations, in accordance with the Consent Decree. Each PrimaX® Gas Monitor has a single input, or sample point, and is mounted near the ceiling.

The low-level response is triggered at 1,000 parts per million by volume (ppmV), or 2 percent of the lower explosive limit (LEL), and the high-level response is triggered at 10,000 ppmV, or 20 percent of the LEL. Sensors are placed throughout enclosed structures and connect to central panels that activate the heating, ventilation, and air conditioning (HVAC) system at the low detection level and activate local alarms at the high detection level. For Building A, the 1,000 ppmV low level detection notifies personnel and increases ventilation through the intake and exhaust fans. Building A's first floor non-stairwell and elevator shaft (see following sections) HVAC system is setup with continuous air flow fans at one air change per hour (ACH) that bump up an additional minimum of 1.0 ACH with a detection of 1,000 ppmV. The 10,000 ppmV high level detection activates the evacuation alarm.

All ground floor ventilation fans, methane detectors, and alarms are on 24-hour backup power.

Live Work Units

Above the foundation slab in the Live Work Units, Building A is continuously monitored with Chemgard™ Gas Monitors that send signals for action at a low and high level methane concentration, in accordance with the Consent Decree. Each Live Work Unit has three sample points: one in the subfloor, one in the main floor area bathroom, and one in the mezzanine level. The sample points connect via monitoring tubes to a Chemgard™ Monitor panel located in the gas monitoring control closet. The low-level response is triggered at 1,000 ppmV, or 2 percent of the lower explosive limit (LEL), and the high-level response is triggered at 10,000 ppmV, or 20 percent of the LEL. For Building A, the 1,000 ppmV low level detection notifies personnel and increases ventilation through the intake and exhaust fans. Each Live Work unit is equipped with an energy recovery ventilator (ERV) fan that runs continuously, and a subfloor ventilation fan that activates when the subfloor or either of the living space sample points exceed 1,000 ppmV. The 10,000 ppmV high level detection activates the buidling evacuation alarm.

All Live Work ventilation fans, methane detectors, and alarms are on 24-hour backup power.

Stairwell

The stairwells are not considered occupied spaces and therefore do not have an HVAC system capable of providing continuous air flow at one air change per hour. The stairwells have a pressurization fan for smoke and fire that would be activated by the building evacuation alarm. The pressurization fan is located on the roof and pulls unconditioned air from the outside and pushes it through a duct into the top of the stairwell such that smoke is not allowed to enter the stairwell, for safe evacuation. A barometric damper, also known as a Back Draft Damper (BDD), is also located at the top of the stairwell, and allows for adequate pressurization of the stairwell and evacuation of exhaust air. The barometric damper regulates just enough positive pressure within the stairwell to keep smoke from entering by accounting for the ambient barometric pressure outside, also known as static pressure (SP), and pressure resulting from the pressurization fan on the inside. The barometric damper also keeps the pressure in the stairwell low enough for the closed doors in the stairwell to remain operable.

The stairwells are equipped with a PrimaX® Gas Monitor located at the top of the stairwell on the ceiling or within 1 foot of it. The sensor is placed at the top of the stairwell instead of the ground floor as is

typical for all other ground floor spaces. This sensor is placed on the ceiling no closer than 4-feet from the duct inlet of the stairwell pressurization fan.

A second PrimaX® Gas Monitor is installed on the side of the pressurization fan ducting, outdoors, and can be maintained from the roof.

To be certain that methane is unable to accumulate at the top of the stairwell, the sensors and stairwell pressurization fans are connected to the Methane Control Panel. A signal is sent to the stairwell pressurization fan to activate at the low-level methane detection of 1,000 ppmV. The stairwell pressurization fan activation mitigates further intrusion of any methane from entering the stairwell or the fan ducting, and the barometric damper allows for exhausting of any methane that could accumulate at the ceiling. The low-level signal also gets sent to maintenance personnel for investigation and mitigation of the source. If high level methane (10,000 ppmV) is detected by any of the sensors, the Methane Control Panel will also send a signal to the fire alarm panel for evacuation.

Elevator Shafts

The elevator shafts are also not considered occupied spaces and therefore do not have an HVAC system capable of providing continuous air flow at one air change per hour. The elevators are called to the ground floor upon activation of the evacuation alarm and remain inoperable with the doors open until turned back on by the fire department.

Like the stairwells, the elevator shafts require methane detection at the top of the elevator shaft. Equipment not associated with the elevators is typically not allowed to be installed in the elevator shafts so to minimize the amount of equipment and need for maintenance within the elevator shaft, the PrimaX® sensor is placed on the ceiling of the elevator shaft while the transmitter is located outside of the elevator shaft. In all other applications within the Building A, the sensor and transmitter are directly connected. Two 1-inch conduits penetrate the elevator shaft overrun space. One conduit contains the sensor cable (between sensor and transmitter) and the other conduit contains a calibration tube for remote maintenance (between sensor and outside of elevator shaft).

The overrun spaces are not vented to the exterior and no fans provide airflow; however, the movement of the elevator cars up and down in the shaft provide airflow and will displace any accumulation of methane. If accumulation were to occur, the sensor will send notification to maintenance personnel for investigation and mitigation at the low-level detection (1,000 ppmV). If high level methane (10,000 ppmV) is detected by any of the sensors, the Methane Control Panel will also send a signal to the fire alarm panel for evacuation.

Changes Made During Course of Construction

Notable RFIs resulting in design changes or clarification related to CQA Consent Decree requirements during Building A electrical and communication distribution system installation work are described in Table 2.

Table 2. RFI Design Changes.

RFI #	Subject	Description
105	Electrical - Follett Drawing update - Setting Cabinet Location & Alternate Design Revision	RFI#105 is to track changes made in the Follett Engineering drawings based off coordination with Express Electrical and the alternate entrance designs developed in the Sitework drawings.
124	Electrical – Follett Engineering – EV layout revision – EFA12	RFI #124 is to track revisions made to Follett Engineering drawing sheet EFA12.
139	Methane Air Flow Monitoring in HVAC Equipment	RFI#139 provides components to monitor air flow in HVAC equipment.
160	Revision of Fan Units to meet CD requirements of Increased Air Flow	RFI#160 provides new matrix outlining equipment change to meet CD Increased Air Flow Requirements.
162	Final Fan Schedule	RFI#162 provides updated drawings with revised mechanical schedule.
311	Live Work: - Methane system – Alternate MF Fan (Subfloor exhaust)	RFI#311 provides an alternate fan that will used in place of the Greenheck MF Fans submitted in Submittal #677.1.
315	Live Work: Methane System Fresh Air Intake Damper Requirements	RFI #315 confirms the NEMA 7 enclosure is not required on (6) intake dampers at Live Works.

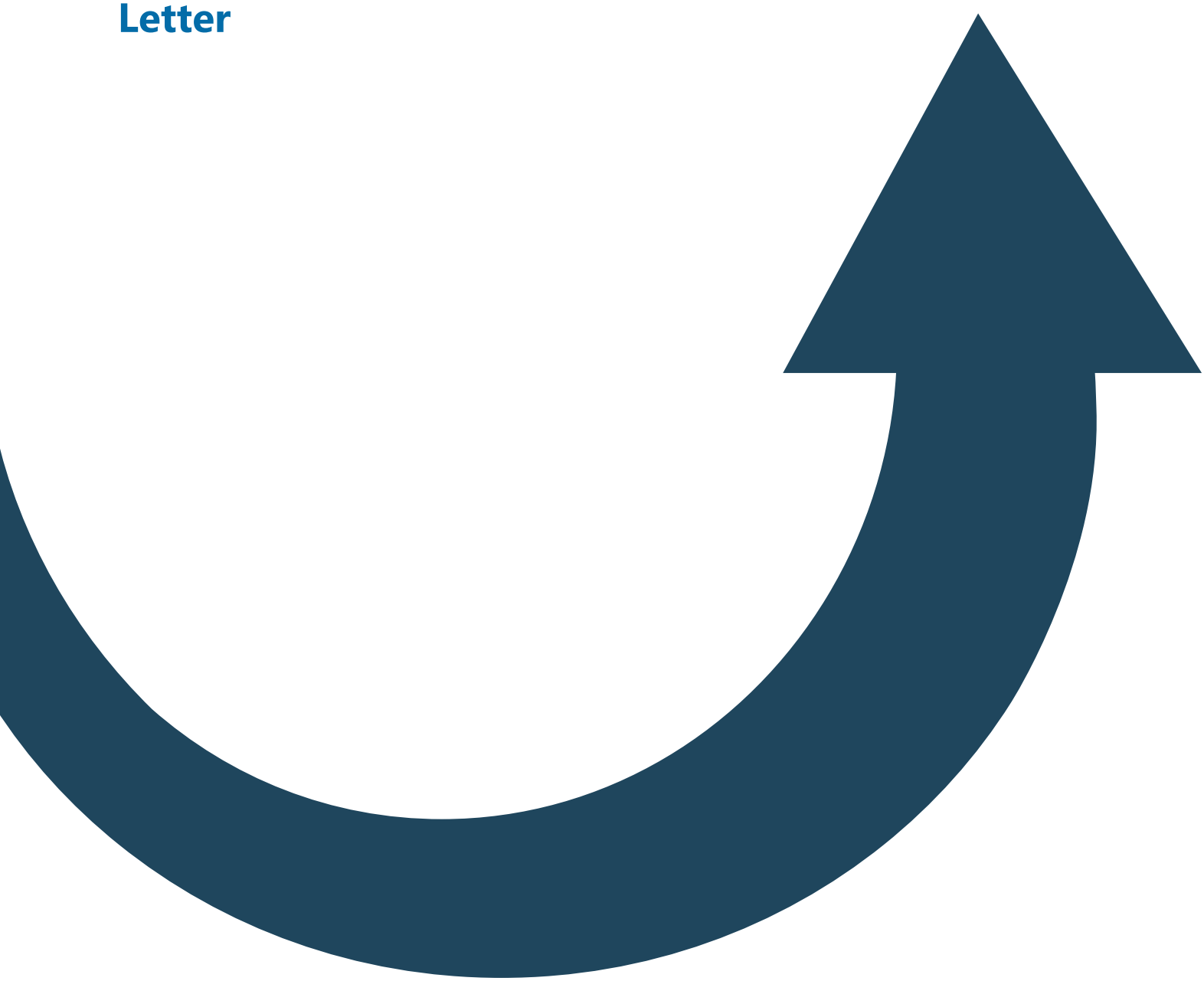
Notable material submittals are described in Table 3.

Table 3. Submittals.

Submittal #	Material	Description
297	Electrical – Gears Package	Submittal #297 provides technical documents for medium volt switches, power transformers, switchboards, panelboards, surge protection devices, dry type transformers, molded case circuit breakers, loadcenters & circuit breakers.
342	Electrical – Generator and Transfer Switches	Submittal #342 provides drawings and data sheets for generator and transfer switches.
382	DAS – Engineer Design and Data	Submittal #382 provides design and data sheets for DAS system.
394	Methane Detection – Shop Drawings	Submittal #394 provides shop drawings for the Building A methane detection system.
395	Methane Detection - Hardware - (gas detectors, panels, MCP-A)	Submittal #395 provides hardware technical data and shop drawings for gas detectors and MCP-A panel.
566	Methane Detection – PLC Control Panel (hardware only)	Submittal #566 provides hardware technical data for PLC control panel.
677	Live Work: HVAC – Fan Schedule (MF #A) – Product Data	Submittal #677 provides HVAC fan product data sheets.
691	Live Work: Electrical – Methane Gas – Detection System Control Panels – Shop Drawings	Submittal #691 provides panel layout and control wiring diagrams for subfloor vent fans.
746	HVAC – Stair Fan VFDs & Wire Diagram	Submittal #746 provides VFD diagram and technical specifications.

APPENDIX A

Construction Quality Assurance (CQA) Declaration Letter



FOLLETT ENGINEERING, PLLC

ELECTRICAL ENGINEERING & CONSULTING

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Mobile 425-765-6304 ELECTRICAL ENGINEERING & CONSULTING 1037 NE 65th St. #316
Vince@FollettEngineering.com Seattle, WA 98115

Riverfront Commercial Investment, LLC
11624 Southeast 5th Street Suite 210
Bellevue, Washington 98005

February 16, 2024

Subject: Construction Quality Assurance (CQA) Declaration for Riverfront Development Building A in Everett, Washington

Follett Engineering, PLLC (Follett), with support from Herrera Environmental Consultants (Herrera), performed construction observation services to confirm compliance with the Construction Quality Assurance (CQA) Plan, the Consent Decree, and the project plans and specifications. Based on the design of the system and the observations on site as summarized in the Building A Electrical Distribution System CQA Report, Follett declares, in its professional engineering judgment and opinion, that the Building A electrical distribution system, with the exception of the Live/Work units, was constructed in conformance with the project plans and Consent Decree, and that the materials used in construction were in conformance with the construction specifications. Per RFI #326, due to supply chain issues with the Chemgard™ panels that contain the methane detectors for the Live/Work units, the same PrimaX® IR detectors installed throughout the rest of the Level 1 spaces of Building A were installed on the ceiling of each Live/Work unit as a temporary measure in order to test and approve the methane detection and ventilation function of the Live/Work units. The temporary PrimaX® IR detectors in each of the Live/Work units were connected and programmed to the associated ERV and subfloor fans for the unit. The Live/Work units are currently operating under a temporary solution that is confirmed to provide adequate methane monitoring, ventilation, and alarm response until the permanent systems are installed and tested. The methane detection and ventilation system of the Live/Work units will be tested again once the permanent Chemgard™ equipment is delivered, installed, and programmed. Herrera reports FR 028 02142024 Riverfront Building A LFG HEC, and FR 029 02152024 Riverfront Building A LFG HEC, describe and document the testing procedure with details and photos. Riverfront Building A, with exception of the Live/Work units, can receive occupancy at this time.

Sincerely,

Follett Engineering, PLLC.

Vincent Follett

Vince Follett, P.E.
Electrical Engineer

QUALITY CONTROLS CORPORATION

February 16, 2024

Everett Riverfront Building A
Instrumentation and Controls
QCC Project No. P2112

Subject: Building A Methane Control Panel System Validation Testing

Reference Documents:

- "Bldg A Fan-Detector TEST Plan-Checklist.xls" ("the Spreadsheet") for the complete list of methane gas detectors included in validation testing.
- "MGCP-A Field Test Set – Scanned" for proof of internal I/O testing at the Methane Gas Control Panel (MGCP-A). Highlighted field wires indicate correct functionality tested and any field changes were redlined on the scanned drawing set.

The following actions were taken as part of the commissioning process at Everett Riverfront Building A for System Validation Testing per Electrical Systems CQA Plan Section 9.0.

Methane Gas Monitoring and Alarm System

Low Level Alarm Testing: Calibration gas (50% LEL) was used for testing. A short exposure time gave readings in 2,000 – 5,000 ppm that was used to trigger the low level alarm (set at 1,000 ppm). Methane readings were verified at the MGCP-A within an acceptable range of accuracy. Testers verified a Low Level Methane Alarm correctly triggered on the screen at the MGCP-A when the 1,000 ppm (2% LEL) threshold was surpassed and confirmed a phone call was received from the autodialer describing the alarm. Testers also verified the correct ventilation fan turned on when a low level methane alarm was triggered by the associated gas detector.

High Level Alarm Testing: Calibration gas (50% LEL) was used for testing. A longer exposure time gave readings in 10,000 – 15,000 ppm that was used to trigger the high level alarm (set at 10,000 ppm). Methane readings were verified at the MGCP-A within an acceptable range of accuracy. Testers verified a High Level Methane Alarm correctly triggered on the screen at the MGCP-A when the 10,000 ppm (20% LEL) threshold was surpassed and confirmed a phone call was received from the autodialer describing the alarm. The control panel was put into Test Mode to avoid triggering an evacuation alarm through the Fire Alarm Control Panel (FACP) each time a high level methane alarm was tested. The control panel was removed from Test Mode for one gas detector to receive high level methane readings to verify the evacuation process correctly triggered through the FACP.

Additional alarm setpoints called the Low Level Warning and High Level Warning are available and adjustable on the screen as well. These warnings are intended for informational purposes, as a notification to the operator that methane levels are climbing even when a Low Level or High Level Alarm has not yet been reached. These warnings were noted to function properly during testing (appearing in OIT alarm history and popups) but were not included in the final commissioning spreadsheet as they are only intended for monitoring purposes.

Autodialer

The autodialer is located inside the MGCP-A and each alarm call was verified during testing. Different test phone numbers were programmed and each were able to acknowledge the alarm over the phone as designed. Upon acknowledgment, the tester manually pressed the Disarm/Rearm button on the autodialer to bypass the internal alarm delay timer (default set as 1 hour to prevent multiple calls for the same alarm) so testing could be done on sequential gas detectors.

Ventilation Monitoring and Alarm System

Verified that under no alarm conditions, each gas detector's associated fan listed in the spreadsheet ran continuously at low speed (minimum 1 air exchange per hour). Upon a low methane alarm condition on a detector, testers audibly verified that the associated fan increased to high speed (air exchange varies per fan, see project plans). For fans in a loud environment, testers verified fan speed via VFD voltage displayed on each fan's controller screen. The voltage readings increased to preset speeds for high speed on a methane alarm, individually determined by Airtest for each fan during balancing. Verified each associated fan returned to low speed/continuous operation when methane alarm cleared, either audibly or by VFD voltage readings on the controller display.

Each fan was manually shut off and testers confirmed that a "no fan air flow" alarm triggered at the MGCP-A. Confirmed a phone call was received from the autodialer describing a fan failure alarm.

Stairwell Ventilation Control

Under normal conditions, the stairwell fans shall remain off and dampers closed. Upon a low methane gas alarm, the MGCP-A shall call the relevant stairwell fan to run at a preset low speed, bypassing the FACP. Upon a high methane gas alarm, the MGCP-A shall send a high methane level alarm to the FACP and the FACP will trigger a full building evacuation similar to any gas detector that senses a high methane level.

For low methane alarm testing, testers verified the associated stairwell fan turned on when a low methane alarm was simulated at the relevant gas detector (ceiling and duct mount) from the MGCP-A. The MGCP-A shall also send an open damper command to the associated stairwell damper to ensure proper airflow whenever the fan is called to run at low or high speed. This open damper command is sent through the FACP along with a "stairwell low level alarm" so the FACP is aware an evacuation is not required.

The MGCP-A receives fan running and damper open feedback from the FACP. Testers confirmed this feedback triggered correctly upon a simulated high methane alarm and run command issued to the stairwell fan. If a methane alarm (low or high) is detected and the corresponding stairwell fan is called to run, the MGCP-A will alarm if no fan running or no damper feedback is received within an adjustable time.

Emergency and Standby Power Systems

Utility power was manually disconnected from Building A for testing to verify the Emergency and Standby Power systems sufficiently provided backup power. Testers confirmed the MGCP-A screen still correctly read methane gas levels detector MGD-113HL received test gas to verify functionality while on generator power.

Confirmed alarms for emergency generator, fire pump, and both emergency and standby ATS (automatic transfer switch) triggered correctly at the MGCP-A screen and phone calls were received from the autodialer describing the alarms.

Raceways and Settling Cabinets

Completed a visual inspection of IC-SCA, DAS-SCA, FC-SCA, EV-SCA, LV-SCA, MB-SCA, G-SCA settling cabinets, reference electrical engineers CQA final report for documentation.

Fire Alarm Control Panel Interface Testing

Upon a high methane level alarm, the MGCP-A will send a dry contact signal to the FACP to call the relevant stairwell fan to run on a preset high speed. FPI confirmed the FACP received the signal and would trigger a building evacuation when the system is in normal operation. The FACP returns a confirmation signal back to the MGCP-A PLC to confirm the system is performing an evacuation. This signal was verified to function correctly. The MGCP-A will alarm if it requests an evacuation through the FACP and the feedback signal is not received after an adjustable delay.

The MGCP-A also receives stairwell fan damper positions and running feedbacks through the FACP. These signals were confirmed when the stairwell pressurization fans were called to run on both high and low speeds.

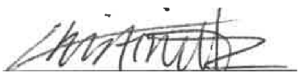
Live-Work Units

For temporary monitoring: one gas detector was installed in each Live-Work (LW) unit on the ceiling of the mezzanine. This detector will be used to trigger both the ERV and subfloor fans in each corresponding unit upon methane detection. On a low level methane alarm, the ERV (which is normally running at a constant low speed) shall be called to run at high speed and the subfloor fan (which is normally off) shall be called to run to evacuate any gas beneath the floor. On a high methane level alarm, the MGCP-A shall send a high methane level alarm to the FACP which will trigger an evacuation.

Once the permanent Chemgard units are returned and installed for the LW units, each unit shall have 3 areas individually monitored: mezzanine, main area, and subfloor. A low methane alarm in either the mezzanine or main area will call the ERV to run at high speed and a low methane alarm in the subfloor area will call the subfloor fan to run. A high level methane alarm in any area in any unit shall trigger an evacuation through the FACP.

Please feel free to contact me with any questions regarding this report.

Sincerely,



Christina Hsu, P.E.
Project Engineer

BUILDING A

GAS DETECTOR - checkoff

							1,000 PPM TEST			10,000 PPM TEST		
Detector #	ADDR	TAGNAME	Tag#	Description of Location	ASSOCIATED FAN/ERV	CALIBRATION/DATE	HMI ALARMS	AUTODIAL ALARM	FAN TO HI SPEED	HMI ALARMS	AUTODIAL ALARM	FIRE PANEL ALARM
1		MGD-	STR1C	Stair # 1 - top of stairwell	SPF-1	2/15	✓	✓	✓	✓	✓	
2		MGD-	STR1D	Stari # 1 - Duct mounted (roof)	SPF-1	2/15	✓	✓	✓	✓	✓	
3		MGD-	101-1	COMMERCIAL FLEX 101	ERV-4	2/14/24	✓	✓	✓	✓	✓	
4		MGD-	101AHL	Live work - cooridor	ERV-8	2/15	✓	✓	✓	✓	✓	
5		MGD-	101-2	COMMERCIAL FLEX 101	ERV-4	2/14	✓	✓	✓	✓	✓	
6		MGD-	101BHL	Live work - cooridor	ERV-8	2/15	✓	✓	✓	✓	✓	
7		MGD-	101-3	COMMERCIAL FLEX 101	ERV-3	2/14	✓	✓	✓	✓	✓	
8		MGD-	101CHL	Live work - cooridor	ERV-8	2/15	✓	✓	✓	✓	✓	
9		MGD-	101-4	COMMERCIAL FLEX 101	ERV-3	2/14	✓	✓	✓	✓	✓	
10		MGD-	104	RESTROOM 104	ERV-8	2/14	✓	✓	✓	✓	✓	
11		MGD-	105	RESTROOM 105	ERV-8	2/14	✓	✓	✓	✓	✓	
12		MGD-	102	BIKE ROOM 102	ERV-8	2/15	✓	✓	✓	✓	✓	
13		MGD-	103A	PARCEL ROOM 103A	N/A	2/14	✓	✓	N/A	✓	✓	
14		MGD-	103	PARCEL ROOM 103	N/A		✓	✓	N/A	✓	✓	
15		MGD-	106-1	LOBBY 106	ERV-8		✓	✓		✓	✓	
16		MGD-	123	VESTIBULE 123 (East)	N/A		✓	✓	N/A	✓	✓	
17		MGD-	122	VESTIBULE 122 (west)	N/A		✓	✓	N/A	✓	✓	
18		MGD-	106-2	LOBBY 106	ERV-5		✓	✓	✓	✓	✓	
19		MGD-	124	CONCIERGE 124	ERV-5		✓	✓	✓	✓	✓	
20		MGD-	106-3	LOBBY 106	ERV-5		✓	✓	✓	✓	✓	
21		MGD-	STR2C	Stair # 2 - top of stairwell	SPF-2	2/15	✓	✓	✓	✓	✓	
22		MGD-	STR2D	Stair # 2 - duct mounted (roof)	SPF-2		✓	✓	✓	✓	✓	
23		MGD-	ELEV	ELEVATOR (top of hoistway)	N/A		✓	✓	N/A	✓	✓	
24		MGD-	107	MOVE-IN ROOM 107	ERV-5	2/14	✓	✓	✓	✓	✓	
25		MGD-	108	ELEVATOR MACHINE ROOM 108	N/A		✓	✓	N/A	✓	✓	
26		MGD-	108HL	CORRIDOR	ERV-5		✓	✓	✓	✓	✓	
27		MGD-	110A	LOUNGE 110	ERV-5		✓	✓	✓	✓	✓	
28		MGD-	110-1	LOUNGE 110	ERV-5		✓	✓	✓	✓	✓	
29		MGD-	109	JANITOR 109	ERV-5		✓	✓	✓	✓	✓	
30		MGD-	111	TRASH 111	EF-7		✓	✓	✓	✓	✓	
31		MGD-	113	USS - TRANSFORMER 113	SF-4		✓	✓	✓	✓	✓	
32		MGD-	113HL	CORRIDOR	N/A		✓	✓	N/A	✓	✓	
33		MGD-	115	MPOE 115	SF-3		✓	✓	✓	✓	✓	
34		MGD-	121-1	COMMERCIAL FLEX 121	ERV-2		✓	✓	✓	✓	✓	
35		MGD-	114	ELECTRICAL 114	SF-3		✓	✓	✓	✓	✓	
36		MGD-	114A	ELECTRICAL BACKUP 114A	SF-3		✓	✓	✓	✓	✓	
37		MGD-	116	GENERATOR 116	N/A		✓	✓	N/A	✓	✓	
38		MGD-	116HL	CORRIDOR	N/A		✓	✓	N/A	✓	✓	
39		MGD-	121-2	COMMERCIAL FLEX 121	ERV-2		✓	✓	✓	✓	✓	
40		MGD-	117	FIRE ALARM/RISER ROOM 117	N/A		✓	✓	N/A	✓	✓	
41		MGD-	118	WATER SERVICE 118	EF-5		✓	✓	✓	✓	✓	
42		MGD-	119	MAINTENANCE 119	EF-6		✓	✓	✓	✓	✓	
43		MGD-	120	DOG WASH 120	SF-1		✓	✓	✓	✓	✓	
44		MGD-	121-3	COMMERCIAL FLEX 121	ERV-1		✓	✓	✓	✓	✓	
45		MGD-	120HL	CORRIDOR	N/A		✓	✓	N/A	✓	✓	
46		MGD-	STR3C	STAIR #3 - TOP OF STAILLWELL	SPF-3	2/15	✓	✓	✓	✓	✓	
47		MGD-	STR3D	STAIR #3 - DUCT MOUNTED (ROOF)	SPF-3	2/15	✓	✓	✓	✓	✓	
48		MGD-	119B	MAINTENANCE 119B	EF-6	2/14	✓	✓	✓	✓	✓	
49		MGD-	100	CORRIDOR	N/A		✓	✓	N/A	✓	✓	
50		MGD-	121-4	COMMERCIAL FLEX 121	ERV-1		✓	✓	✓	✓	✓	
51		MGD-	121-5	COMMERCIAL FLEX 121	ERV-1		✓	✓	✓	✓	✓	
52		MGD-	121-6	COMMERCIAL FLEX 121	ERV-1		✓	✓	✓	✓	✓	
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												

can't hear fan

* Tested Fire panel alarm w/ LW units

✓ - settling cabinet fan statuses on OIT
- FACP : low SPF call overrides high speed?
✓ - LW corridor alarms & overview & units

BUILDING A

MG Ventilation Fan Checklist

					1,000 PPM TEST		FAN FAIL		
Number	ADDR	TAGNAME	Description of Location	CALIBRATION/DATE	FAN RUNNING	FAN TO HI SPEED	HMI ALARMS	AUTODIAL ALARM	
1		EF-5	WATER SERVICE 118	2/14	✓	✓	✓	✓	
2		EF-6	MAINTENANCE 119	↓	✓	✓	✓	✓	
3		EF-7	ROOF		✓	✓	✓	✓	
4		ERV-1	COMERCIAL FLEX		✓	✓	✓	✓	
5		ERV-2	COMERCIAL FLEX		✓	✓	✓	✓	
6		ERV-3	COMERCIAL FLEX		✓	✓	✓	✓	
7		ERV-4	COMERCIAL FLEX		✓	✓	✓	✓	
8		ERV-5	COMERCIAL FLEX		✓	✓	✓	✓	
9		ERV-8	BIKE ROOM 102		✓	✓	✓	✓	
10		SF-1	DOG WASH		✓	✓	✓	✓	
11		SF-3	ELECTRICAL 114		✓	✓	✓	✓	
12		SF-4	TRASH 111		✓	✓	✓	✓	

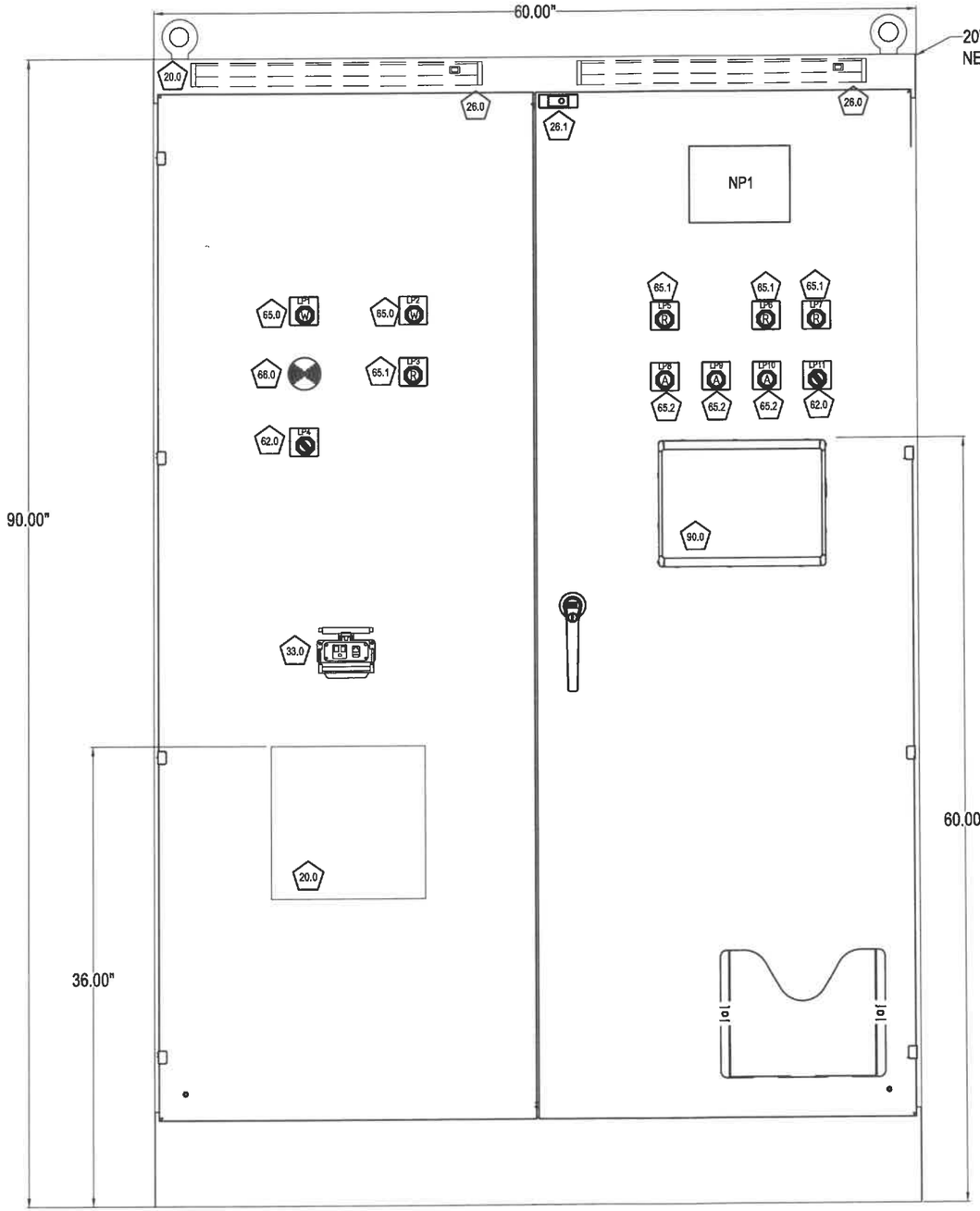
Stairwell Fans

					1,000 PPM TEST		5,000 PPM TEST		
Number	ADDR	TAGNAME	Description of Location	CALIBRATION/DATE	FAN OFF	FAN TO LOW SPEED	FAN TO MID SPEED	HMI ALARMS	AUTODIAL ALARM
13		SPF-1	STAIRWELL 1	2/15	✓	✓	N/A	N/A	N/A
14		SPF-2	STAIRWELL 2	↓	✓	✓	N/A	N/A	N/A
15		SPF-3	STAIRWELL 3		✓	✓	N/A	N/A	N/A

MG Work/Live Ventilation Fan Checklist

					1,000 PPM TEST			FAN/LVR FAIL	
Number	ADDR	TAGNAME	Description of Location	CALIBRATION/DATE	SBMF FAN RUNNING	ERV TO HI SPEED	LVR OPEN	HMI ALARMS	AUTODIAL ALARM
1		ERV1	UNIT #1 (151)	2/14		✓			
2		SBMF1	UNIT #1 (151)	2/14	✓				
3		LVR1	UNIT #1 (151)	2/14			✓		
4		ERV2	UNIT #2 (152)	2/15		✓			
5		SBMF2	UNIT #2 (152)	↓	✓				
6		LVR2	UNIT #2 (152)				✓		
7		ERV3	UNIT #1 (151)			✓			
8		SBMF3	UNIT #1 (151)		✓				
9		LVR3	UNIT #1 (151)				✓		
10		ERV4	UNIT #2 (152)			✓			
11		SBMF4	UNIT #2 (152)		✓				
12		LVR4	UNIT #2 (152)				✓		
13		ERV5	UNIT #1 (151)			✓			
14		SBMF5	UNIT #1 (151)		✓				
15		LVR5	UNIT #1 (151)				✓		
16		ERV6	UNIT #2 (152)			✓			
17		SBMF6	UNIT #2 (152)		✓				
18		LVR6	UNIT #2 (152)	↓			✓		

not ready 2/15



NP	DESCRIPTION
NP1	MAIN (GAS) CONTROL PANEL (MGCP-A) BUILDING A ENGINEER: HERRERA ELECTRICAL ENGINEER: FOLLETT ENGINEERING SYSTEM PROGRAMMER: QUALITY CONTROLS CORP. ELECT. CONTRACTOR: EXPRESS ELECTRIC PANEL SHOP: QUALITY CONTROLS CORP.
LP	DESCRIPTION
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LP2	UPS POWER ON
LP3	COMMON ALARM
LP4	ALARM HORN ON / OFF
LP5	EMER. GENERATOR SYSTEM ALARM
LP6	METHANE GAS HIGH LEVEL EVACUATION ALARM
LP7	MG MONITORING SYSTEM IN TEST MODE
LP8	EMER. GENERATOR SYSTEM TROUBLE
LP9	VENT FAN TROUBLE
LP10	METHANE GAS LOW LEVEL WARNING
LP11	METHANE GAS SYSTEM TEST MODE TEST / AUTO

LABELS: ①②③⑪

ENVIRONMENTAL TYPE 12, USE TYPE 12 CONDUIT HUBS & FITTINGS TO MAINTAIN RATING.

REV.	DESCRIPTION	BY	DATE
D	FIELD AS-BUILTS	C. HSU	2/13/24
C	STAIRWELL FAN CONTROLS UPDATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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APPD. BY: J. YAO	CUSTOMER: RIVERFRONT COMM. INVT. LLC
DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

EVERETT RIVERFRONT BUILDING A

MGCP-A Methane Gas Monitor PLC Control Panel

Panel Layout Diagram

QCC PROJECT NO.	P2112
DWG. NO.	P-00

FOLLETT ENGINEERING, PLLC

Mobile 425-765-6304 ELECTRICAL ENGINEERING & CONSULTING 1037 NE 65th St. #316
Vince@FollettEngineering.com Seattle, WA 98115

Riverfront Commercial Investment, LLC March 19, 2024
11624 Southeast 5th Street Suite 210
Bellevue, Washington 98005

Subject: Construction Quality Assurance (CQA) Declaration for Riverfront Development Building A Live/Work Units in Everett, Washington

Follett Engineering, PLLC (Follett), with support from Herrera Environmental Consultants (Herrera), performed construction observation services of the Live/Work units for Riverfront Building A to confirm compliance with the Construction Quality Assurance (CQA) Plan, the Consent Decree, and the project plans and specifications. This letter supplements the previous Construction Quality Assurance (CQA) Declaration for Riverfront Building A in Everett, Washington dated February 16, 2024. Since commissioning was last performed for the rest of the building, the permanent Chemgard™ Infrared Gas Monitors for the Live/Work units were delivered, installed, programmed, and tested. The entire Riverfront Building A landfill gas management, detection, ventilation, and alarming systems are complete and functional following testing and commissioning of the Live/Work units as documented in Herrera report FR 030 03132024 Riverfront Building A LFG HEC. Based on the design of the system and the observations on site as summarized in the Building A Electrical Distribution System CQA Report, Follett declares, in its professional engineering judgment and opinion, that the Building A electrical distribution system, was constructed in conformance with the project plans and Consent Decree, and that the materials used in construction were in conformance with the construction specifications. The Riverfront Live/Work units can join the rest of Building A and receive occupancy at this time.

Sincerely,

Vincent Follett

Follett Engineering, PLLC.
Vince Follett, P.E.
Electrical Engineer

QUALITY CONTROLS CORPORATION

March 18, 2024

Everett Riverfront Building A
Instrumentation and Controls
QCC Project No. P2112

Subject: Building A Live Work Units Methane Detection System Validation Testing

Reference Documents:

- "Bldg A Fan-Detector TEST Plan-Checklist.xls" ("the Spreadsheet") for the complete list of methane gas detectors included in validation testing.

The following actions were taken as part of the commissioning process at Everett Riverfront Building A for System Validation Testing per Electrical Systems CQA Plan Section 9.0.

Live-Work Units

Each Live-Work (LW) unit shall have 3 areas individually monitored: mezzanine, main floor, and subfloor. Each area in each unit has a sample tube that connects back to one of three Chemgard units for high resolution methane monitoring. Each Chemgard unit can house up to 8 sample tubes and periodically cycles through each sample and send an updated reading to the Methane Gas Control Panel (MGCP-A). There are a total of 18 sample tubes: 3 monitored areas per 6 LW units.

There are two fans in each LW unit: the ERV (which serves the main floors) and the subfloor fan (which ventilates the area beneath the main floor in the units. The ERV constantly runs at a low speed to meet the required air exchange per hour per Level 1 requirements, where the subfloor fan will only run on alarm to evacuate any present methane.

A low methane alarm in any of the subfloor, main floor, or mezzanine sampling points will trigger both the ERV and subfloor fan to run in the associated unit. A high level methane alarm in any area in any unit shall trigger the associated fan and an evacuation through the Fire Alarm Control Panel (FACP).

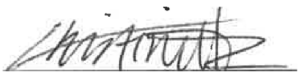
Low Level Alarm Testing: Calibration gas (50% LEL) was used for testing. A short exposure time gave readings between 2,000 – 5,000 ppm that was used to trigger the low level alarm (set at 1,000 ppm). Methane readings were verified at the MGCP-A within an acceptable range of accuracy. Testers verified a low level methane alarm correctly triggered on the screen at the MGCP-A when the alarm threshold was passed and confirmed a phone call was received from the autodialer describing the alarm. Testers

also verified the associated ventilation fan responded accordingly: ERV from low to high speed, subfloor fan from off to on upon alarm.

High Level Alarm Testing: Calibration gas (50% LEL) was used for testing. A longer exposure time gave readings in the 10,000 – 15,000 ppm range that was used to trigger the high level alarm (set at 10,000 ppm). Methane readings were verified at the MGCP-A within an acceptable range of accuracy. Testers verified a high level methane alarm correctly triggered on the screen at the MGCP-A when the alarm threshold was passed and confirmed a phone call was received from the autodialer describing the alarm. The control panel was put into Test Mode to avoid triggering a full scale evacuation alarm through the FACP but the software logic was verified that an evacuation alarm would be sent when the panel is removed from Test Mode.

Please feel free to contact me with any questions regarding this report.

Sincerely,



Christina Hsu, P.E.
Project Engineer

DRAWING NAME	DRAWING DESCRIPTION	DRAWING TYPE
P-00 *	MGCP-A METHANE GAS MONITOR PLC CONTROL PANEL	PANEL LAYOUT DIAGRAM
P-01	MGCP-A METHANE GAS MONITOR PLC CONTROL PANEL	INTERIOR PANEL LAYOUT DIAGRAM
N-00	MGCP-A METHANE GAS MONITOR PLC CONTROL PANEL	NETWORK DIAGRAM
C-00	MGCP-A METHANE GAS MONITOR PLC CONTROL PANEL	POWER DISTRIBUTION DIAGRAM
C-01	MGCP-A DISCRETE INPUTS RACK 1 SLOT 1	CONTROL WIRING DIAGRAM
C-02	MGCP-A DISCRETE INPUTS RACK 1 SLOT 2	CONTROL WIRING DIAGRAM
C-03	MGCP-A DISCRETE OUTPUTS RACK 1 SLOT 3	CONTROL WIRING DIAGRAM
C-04	MGCP-A DISCRETE OUTPUTS RACK 1 SLOT 4	CONTROL WIRING DIAGRAM
C-05	MGCP-A ANALOG INPUTS RACK 1 SLOT 5	CONTROL WIRING DIAGRAM
C-06	MGCP-A ANALOG INPUTS RACK 1SLOT 6	CONTROL WIRING DIAGRAM
C-07	MGCP-A ANALOG INPUTS RACK 1 SLOT 7	CONTROL WIRING DIAGRAM
C-08	MGCP-A ANALOG INPUTS RACK 1 SLOT 8	CONTROL WIRING DIAGRAM
C-09	MGCP-A ANALOG INPUTS RACK 1 SLOT 9	CONTROL WIRING DIAGRAM
C-10	MGCP-A DISCRETE INPUTS RACK 1 SLOT 10	CONTROL WIRING DIAGRAM
C-11	MGCP-A DISCRETE INPUTS RACK 2 SLOT 11	CONTROL WIRING DIAGRAM
C-12	MGCP-A DISCRETE INPUTS RACK 2 SLOT 12	CONTROL WIRING DIAGRAM
C-13	MGCP-A ANALOG INPUTS RACK 2 SLOT 13	CONTROL WIRING DIAGRAM
C-14	MGCP-A ALARM WIRING	CONTROL WIRING DIAGRAM
P-20	IC-SCA I&C SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-21	DAS-SCA DAS SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-22	FC-SCA COMMUNICATIONS SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-23	EV-SCA EV SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-24	LV-SCA LV SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-25	MV-SCA PRIMARY SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-26	G-SCA GROUNDING SETTLING CABINET	PANEL LAYOUT DIAGRAM
P-30	SUBFLOOR VENT FAN 1-3 CONTROL PANEL	PANEL LAYOUT DIAGRAM
C-30	SUBFLOOR VENT FAN 1-3 CONTROL PANEL	CONTROL WIRING DIAGRAM
C-31	SUBFLOOR VENT FAN 1-3 CONTROL PANEL	CONTROL WIRING DIAGRAM
P-40	SUBFLOOR VENT FAN 4-6 CONTROL PANEL	PANEL LAYOUT DIAGRAM
C-40	SUBFLOOR VENT FAN 4-6 CONTROL PANEL	CONTROL WIRING DIAGRAM
C-41	SUBFLOOR VENT FAN 4-6 CONTROL PANEL	CONTROL WIRING DIAGRAM

WIRING SPECIFICATIONS

(MAIN SUPPLY SOURCE)

VAC POWER	STRANDED COPPER, MTW, BLACK W/ PHASES COLORED
VAC CONTROL	STRANDED COPPER, MTW, RED
VAC NEUTRAL	STRANDED COPPER, MTW, WHITE
GROUND	STRANDED COPPER, MTW, GREEN
VDC CONTROL	STRANDED COPPER, MTW, BLUE
VDC COMMON	STRANDED COPPER, MTW, WHITE W/ BLUE STRIPE
VDC ANALOG	TWISTED SHIELDED PAIR, BLACK AND CLEAR

(EXTERNAL SUPPLY SOURCE, ENERGIZED WITH MAIN DISCONNECT OFF)

FOREIGN CONTROL	STRANDED COPPER, MTW, YELLOW
FOREIGN GROUNDED NEG.	STRANDED COPPER, MTW, WHITE W/ YELLOW STRIPE

WIRE SIZED AT MINIMUM PER UL508A, TABLES 28.1 AND 38.1
FIELD WIRING SHALL BE COPPER WIRE WITH MINIMUM 60 DEG. C INSULATION RATING UNDER 100 AMPS, 75 DEG. C INSULATION RATING 100 AMPS OR MORE
TORQUE SCREWS AT FIELD WIRING AND FUSED TERMINAL BLOCKS TO 7 LB. IN., TORQUE SCREWS AT CIRCUIT BREAKERS TO 21 LB. IN., OR TORQUE AS INDICATED ON LABEL NEAR TERMINALS.

CONTROL PANEL LABELS

THE FOLLOWING LABELS WILL BE PLACED WITHIN THE CONTROL PANEL IF LISTED IN THE CONTROL PANEL LAYOUT (P) DRAWING

1. QCC NAMEPLATE (FRONT DOOR)
2. MAIN POWER NAMEPLATE (INTERIOR)
3. FIELD WIRING SPECIFICATION (INTERIOR)
4. NON-UL COMPONENT (NEAR NON-UL ITEM)
5. MULTIPLE POWER SOURCES (FRONT DOOR)
6. INSTANTANEOUS TRIP CIRCUIT BREAKER (2 LABELS NEAR DEVICE)
7. HIGH FAULT SCCR BRANCH CIRCUIT TRIP (NEAR CB)
8. INTRINSICALLY SAFE FIELD WIRING (NEAR I.S. FIELD TERMINALS)
9. INTERFACE TO HAZARDOUS LOCATIONS (2 LABELS ON FRONT DOOR)
10. 208, 240, OR 480 VAC LABEL (FRONT DOOR)
11. UPS POWER (FRONT DOOR)
12. NON-UL LOW VOLTAGE COMPONENT, EXTERNALLY POWERED (NEAR FUSE)
13. SUITABLE FOR USE AS SERVICE EQUIPMENT (NEAR MAIN POWER NAMEPLATE)

LEGEND

- (60) BILL OF MATERIALS ITEM NO.
- - — — - WIRING BY OTHERS
- ▲ EQUIPMENT BY OTHERS
- (1) MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION PROVIDED IN THE FIELD BY OTHERS
- (2) INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C. CABLE LENGTH SHALL NOT EXCEED 1,000 FT.

QCC Field Test Set

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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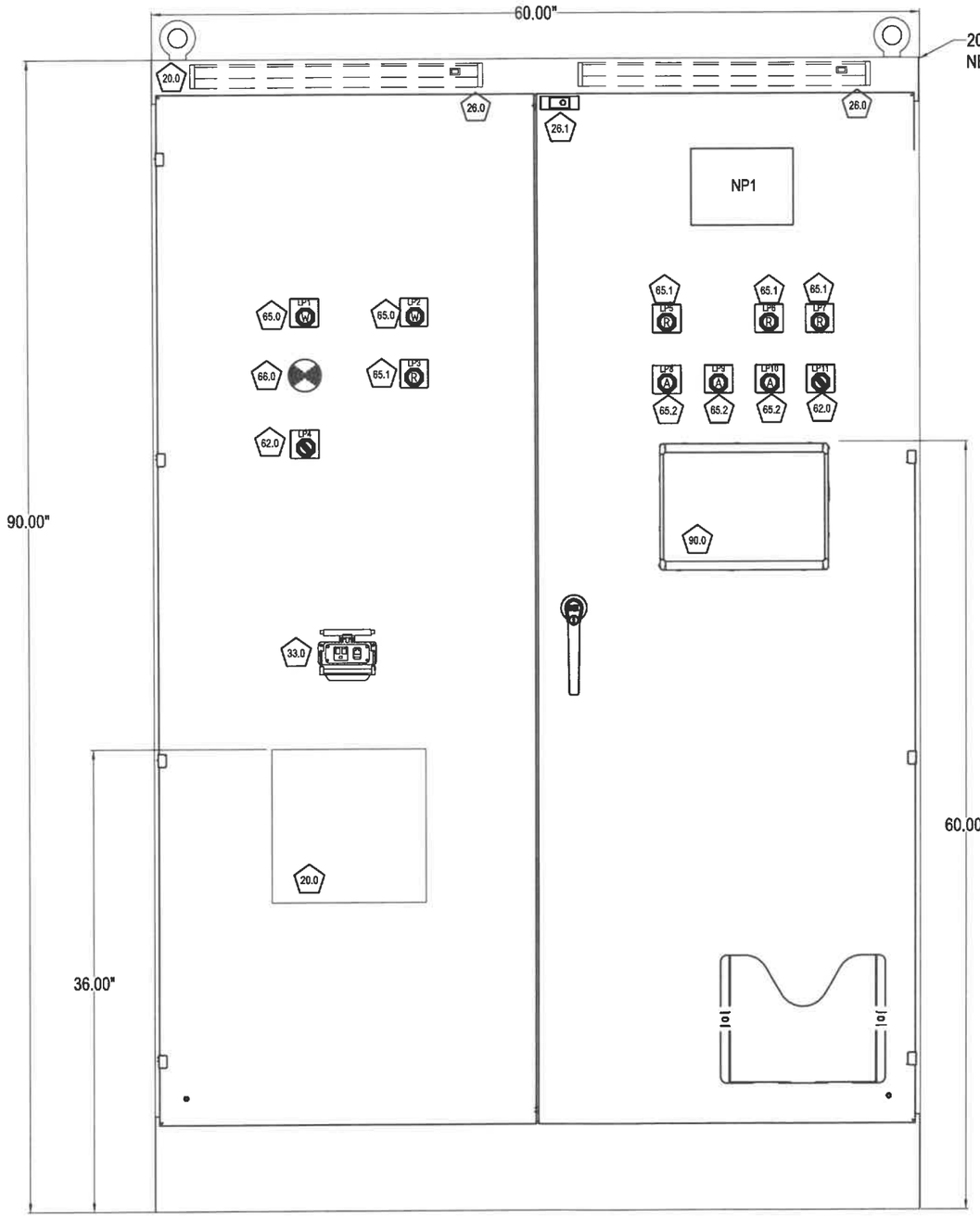
DRAWN BY: C. HSU	END USER: RIVERFRONT COMM. INVT. LLC
APPD. BY: J. YAO	CUSTOMER: RIVERFRONT COMM. INVT. LLC
DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

EVERETT RIVERFRONT BUILDING A

Drawings List

QCC PROJECT NO. P2112

DWG. NO. D-00



NP	DESCRIPTION
NP1	MAIN (GAS) CONTROL PANEL (MGCP-A) BUILDING A ENGINEER: HERRERA ELECTRICAL ENGINEER: FOLLETT ENGINEERING SYSTEM PROGRAMMER: QUALITY CONTROLS CORP. ELECT. CONTRACTOR: EXPRESS ELECTRIC PANEL SHOP: QUALITY CONTROLS CORP.
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LP11	METHANE GAS SYSTEM TEST MODE TEST / AUTO

LABELS: ①②③⑪

ENVIRONMENTAL TYPE 12, USE TYPE 12 CONDUIT HUBS & FITTINGS TO MAINTAIN RATING.

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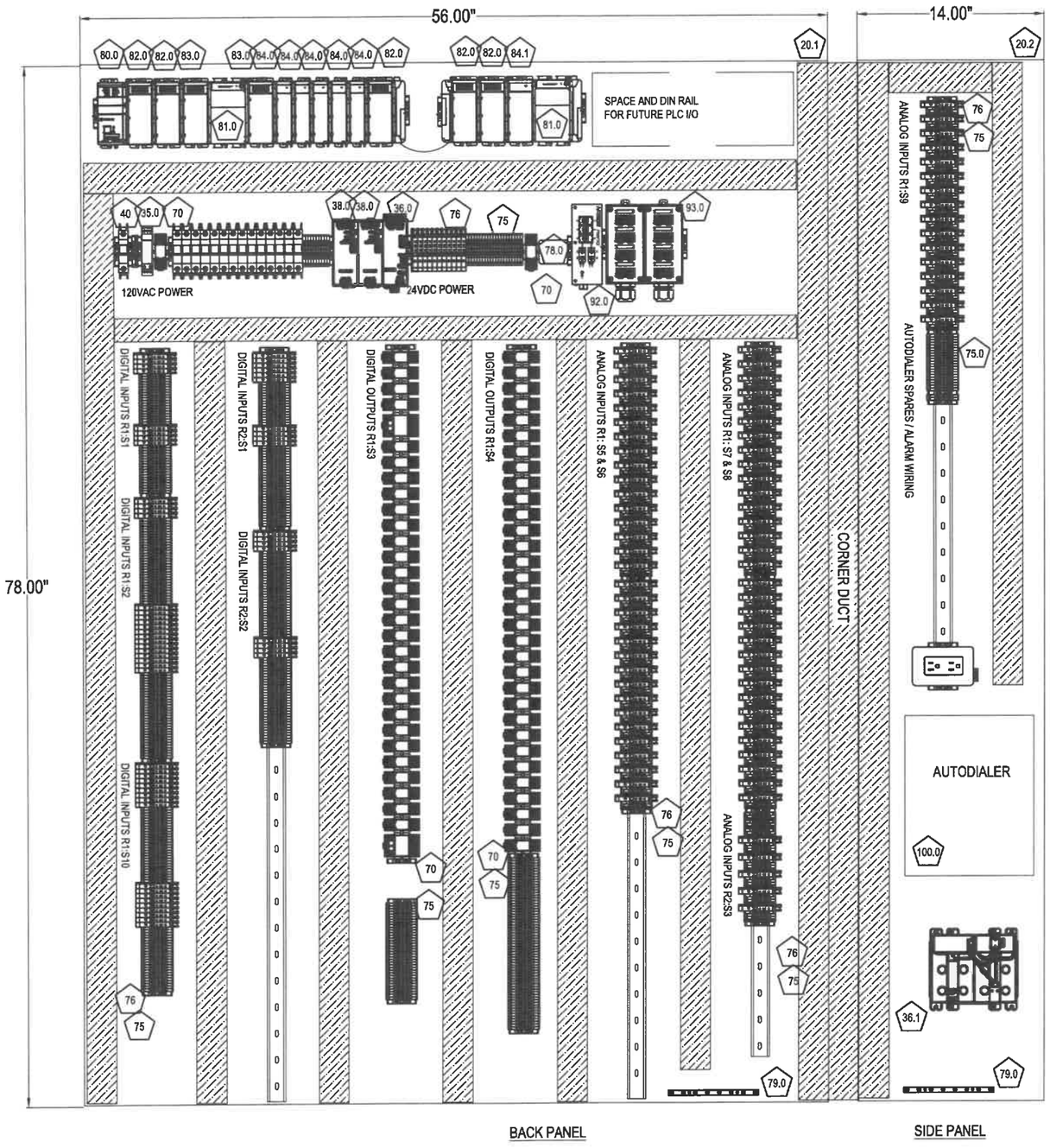
EVERETT RIVERFRONT BUILDING A

MGCP-A Methane Gas Monitor PLC Control Panel

Panel Layout Diagram

QCC PROJECT NO. P2112

DWG. NO. P-00



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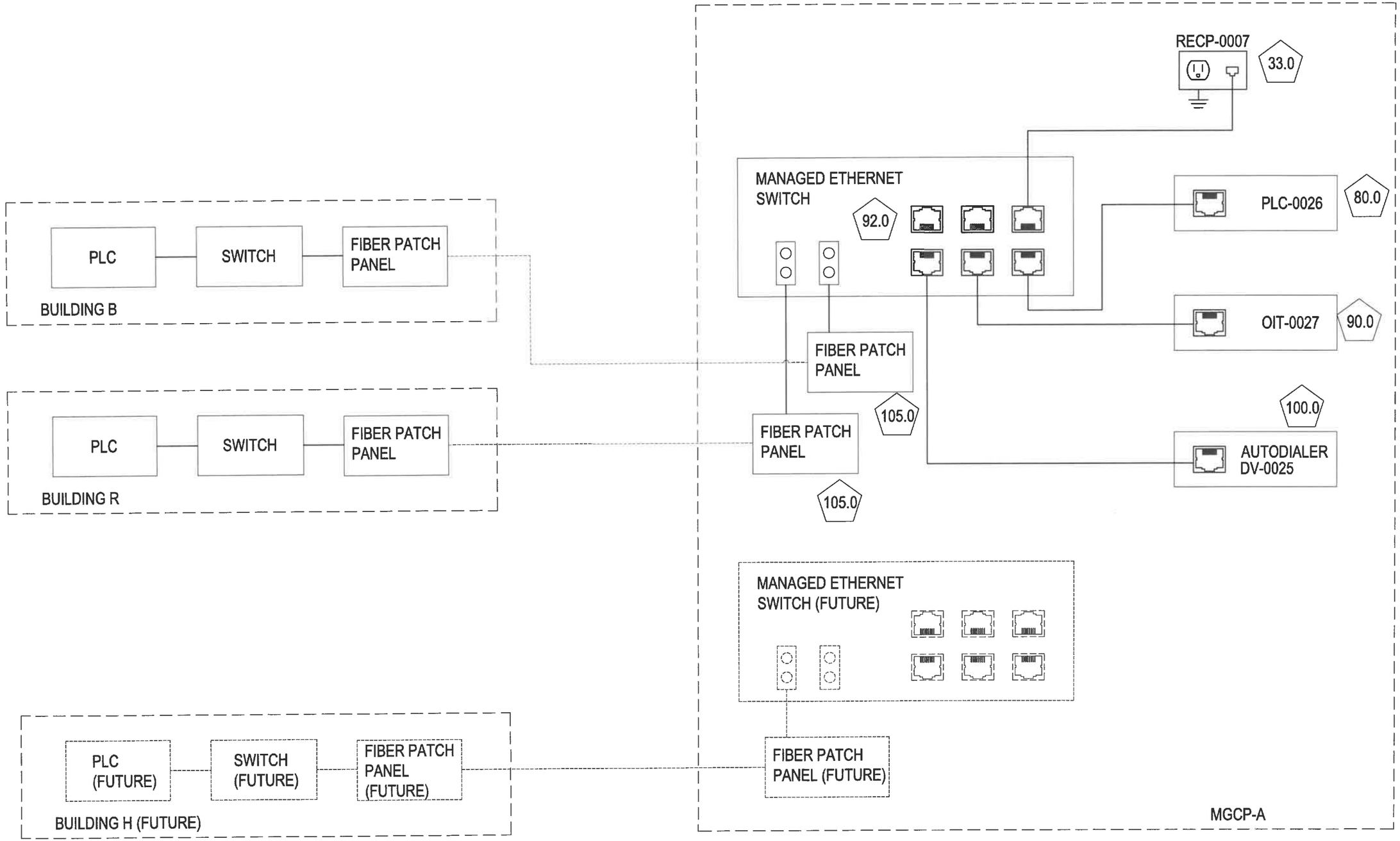
EVERETT RIVERFRONT BUILDING A

MGCP-A Methane Gas Monitor PLC Control Panel

Interior Panel Layout Diagram

QCC PROJECT NO. P2112

DWG. NO. P-01



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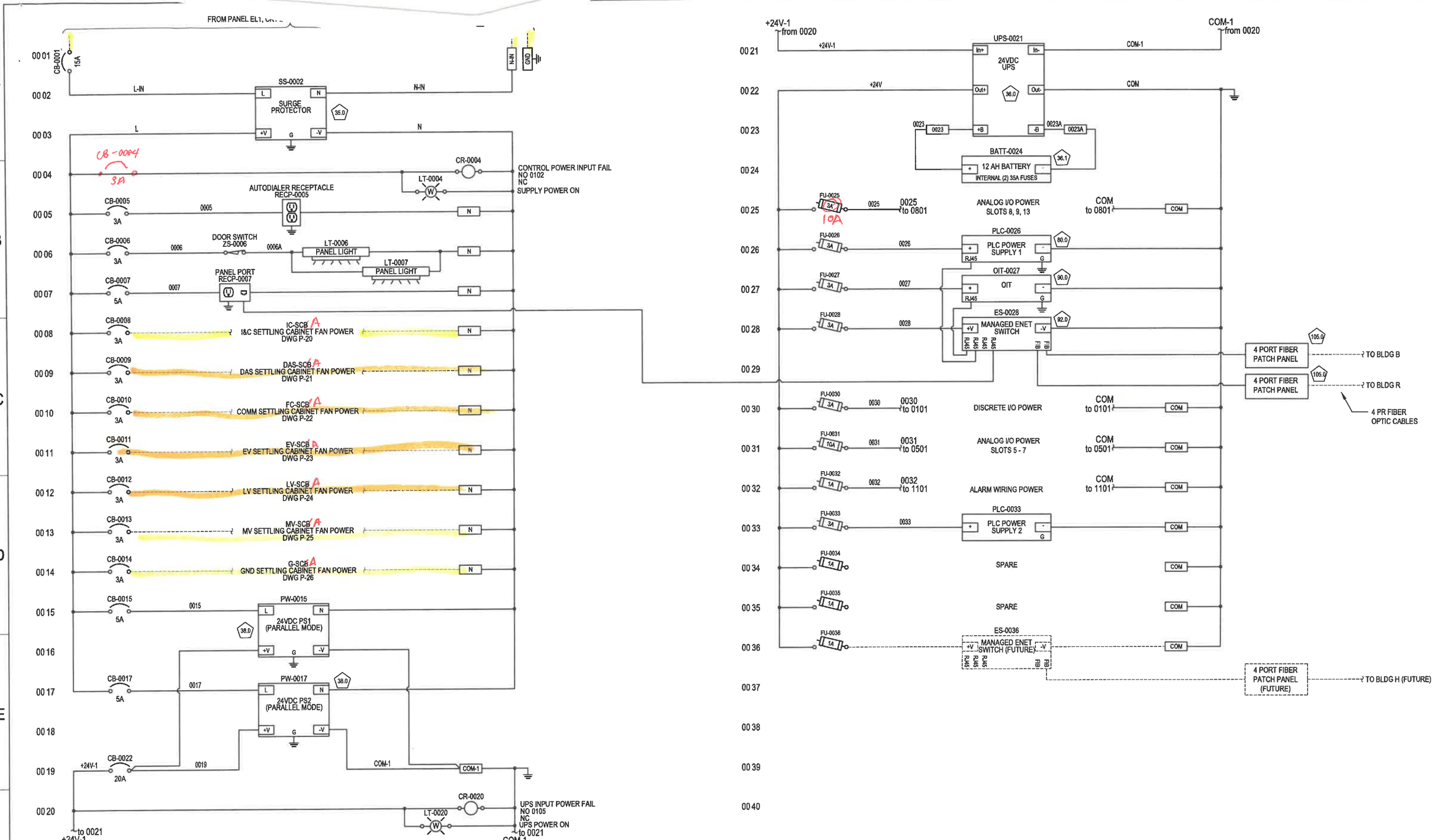
EVERETT RIVERFRONT BUILDING A

MGCP-A Methane Gas Monitor PLC Control Panel

Network Diagram

QCC PROJECT NO. P2112

DWG. NO. N-00



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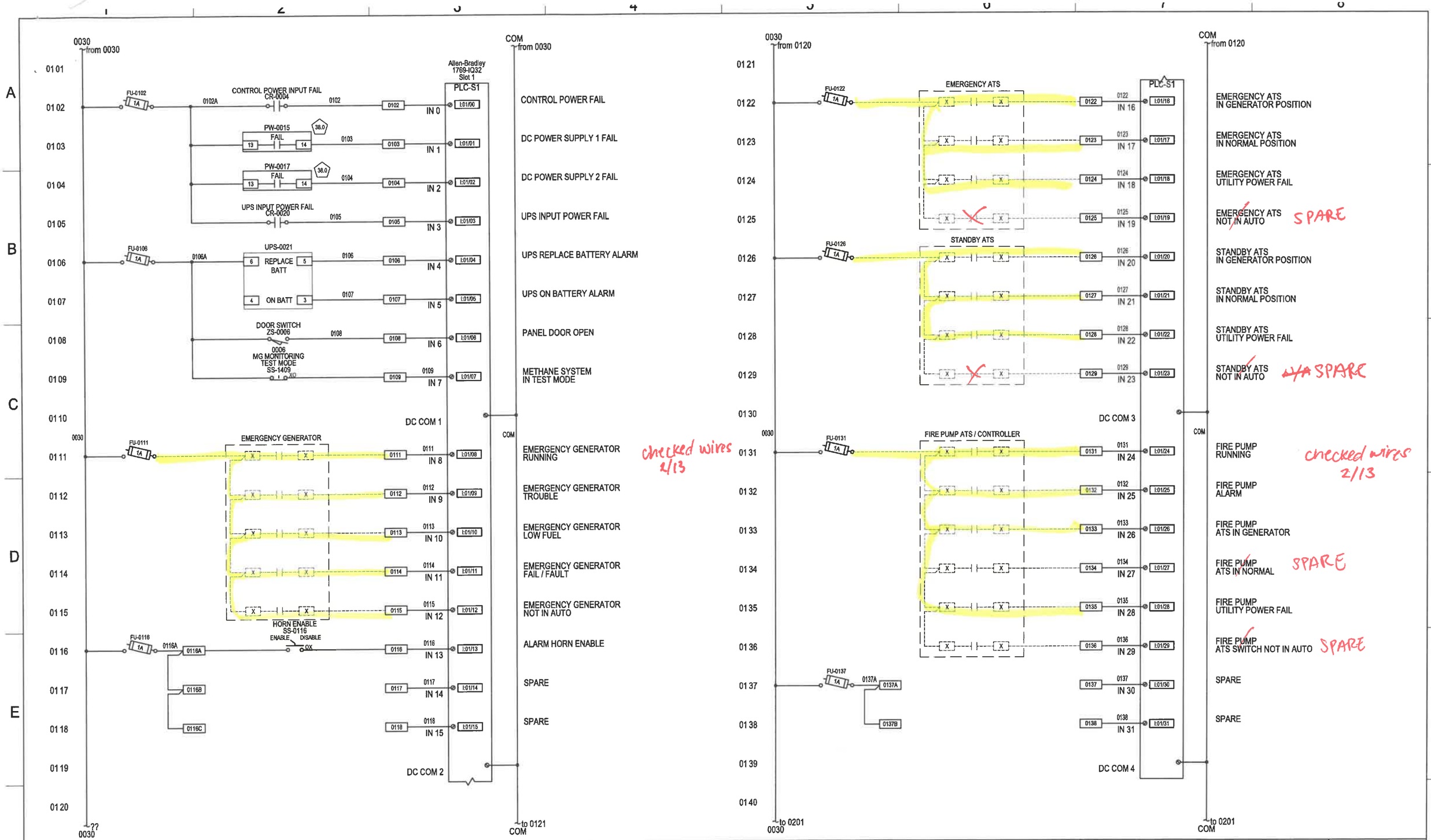
EVERETT RIVERFRONT BUILDING A

MGCP-A Methane Gas Monitor PLC Control Panel

Power Distribution Diagram

QCC PROJECT NO. P2112

DWG. NO. C-00



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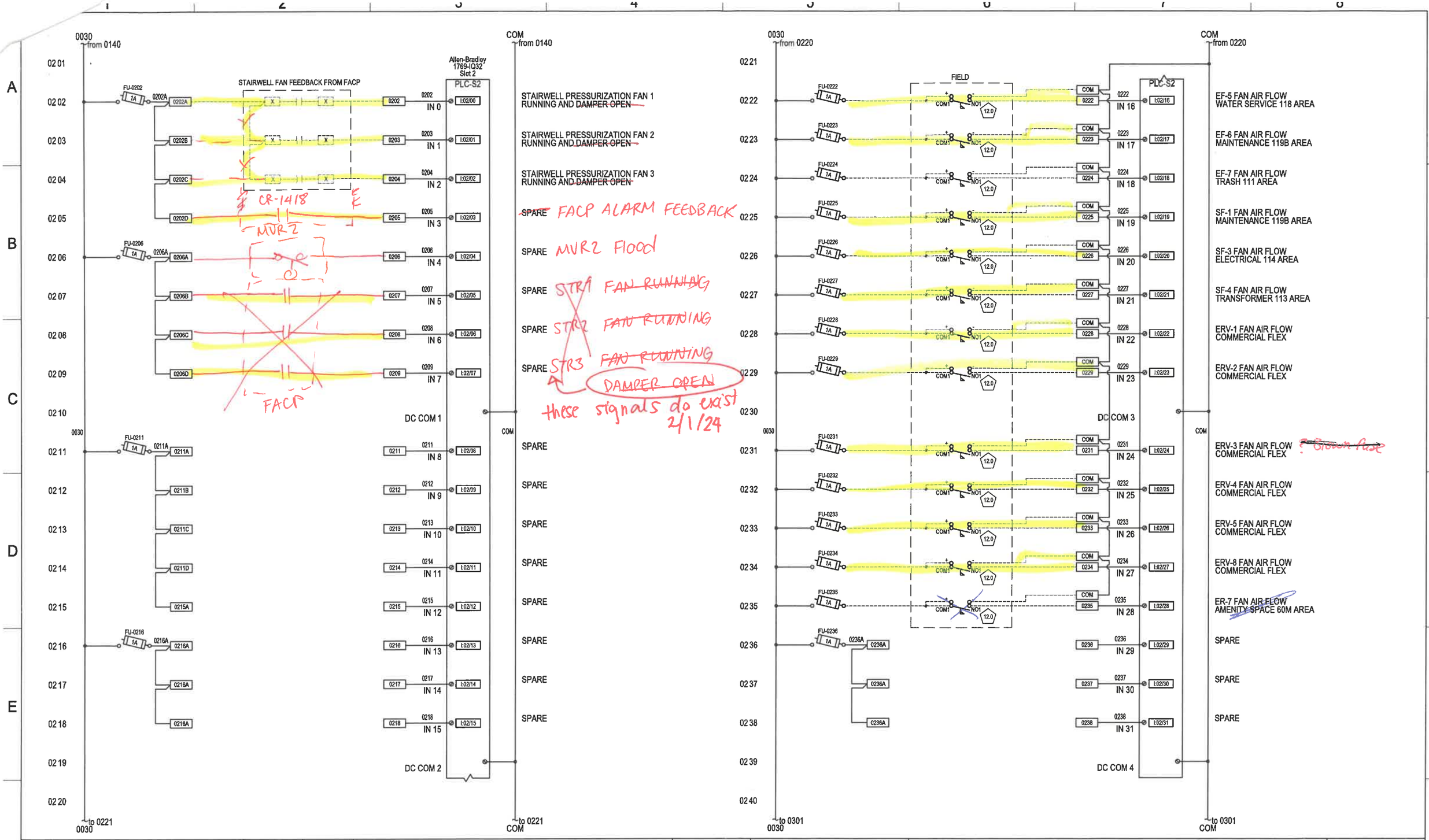
EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Inputs Rack 1 Slot 1

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-01



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DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

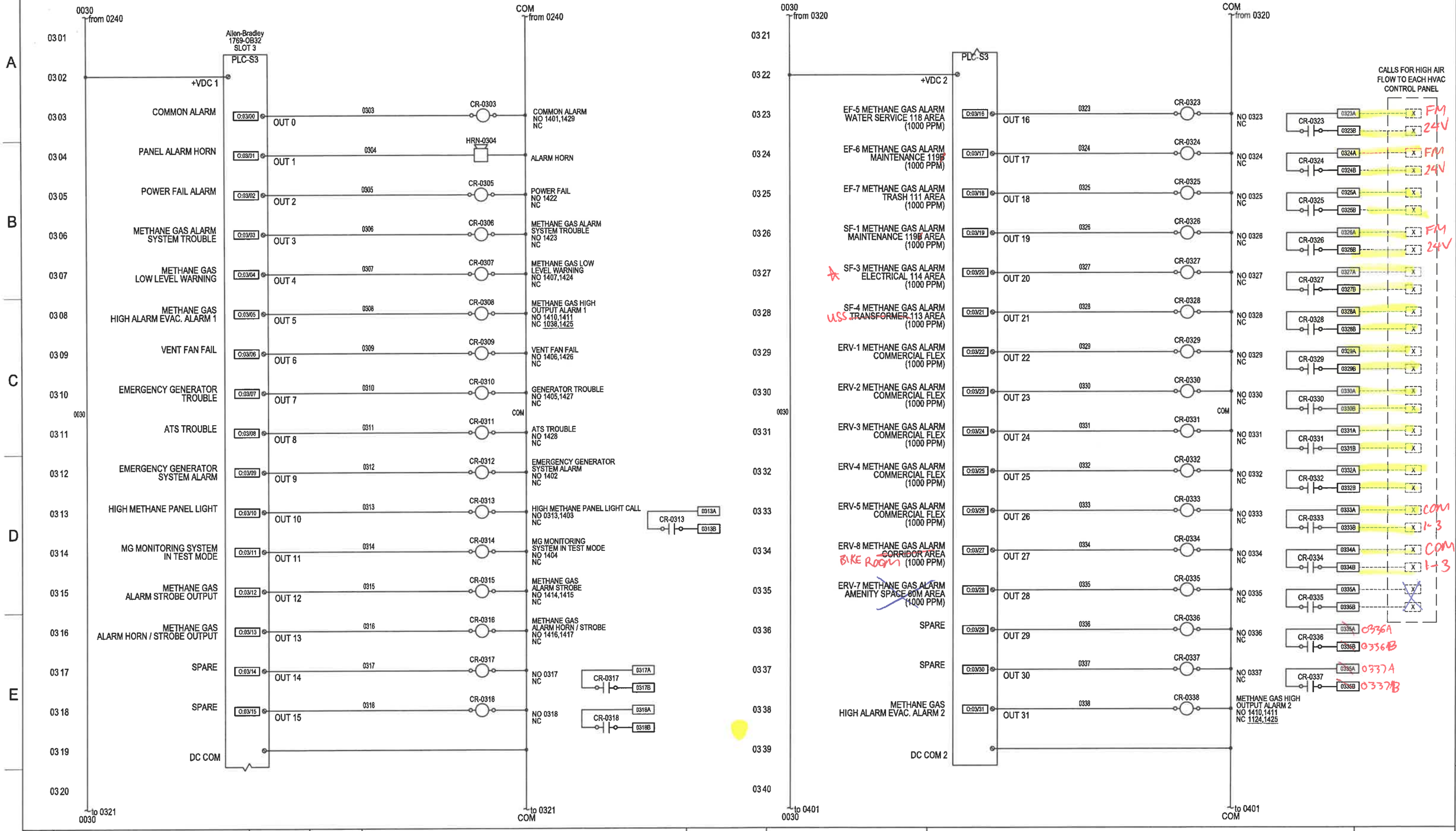
EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Inputs Rack 1 Slot 2

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-02



REV.	DESCRIPTION	BY	DATE
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EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Outputs Rack 1 Slot 3

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-03

0030 from 0340

Allen-Bradley 1769-OB32 RACK 1 SLOT 4 PLC-S4

+VDC 1

04 01					
04 02					
04 03	LW-ERV-1 METHANE GAS ALARM LIVEWORK UNIT 151 (1000 PPM)	O:04/00	OUT 0	0403	CR-0403
04 04	LW-ERV-2 METHANE GAS ALARM LIVEWORK UNIT 153 (1000 PPM)	O:04/01	OUT 1	0404	CR-0404
04 05	LW-ERV-3 METHANE GAS ALARM LIVEWORK UNIT 155 (1000 PPM)	O:04/02	OUT 2	0405	CR-0405
04 06	LW-ERV-4 METHANE GAS ALARM LIVEWORK UNIT 157 (1000 PPM)	O:04/03	OUT 3	0406	CR-0406
04 07	LW-ERV-5 METHANE GAS ALARM LIVEWORK UNIT 159 (1000 PPM)	O:04/04	OUT 4	0407	CR-0407
04 08	LW-ERV-6 METHANE GAS ALARM LIVEWORK UNIT 161 (1000 PPM)	O:04/05	OUT 5	0408	CR-0408
04 09	MF-1 SUBFLOOR VENT FAN 1 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/06	OUT 6	0409	CR-0409
04 10	MF-1 SUBFLOOR VENT FAN 1 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/07	OUT 7	0410	CR-0410
04 11	MF-2 SUBFLOOR VENT FAN 2 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/08	OUT 8	0411	CR-0411
04 12	MF-2 SUBFLOOR VENT FAN 2 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/09	OUT 9	0412	CR-0412
04 13	MF-3 SUBFLOOR VENT FAN 3 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/10	OUT 10	0413	CR-0413
04 14	MF-3 SUBFLOOR VENT FAN 3 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/11	OUT 11	0414	CR-0414
04 15	MF-4 SUBFLOOR VENT FAN 4 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/12	OUT 12	0415	CR-0415
04 16	MF-4 SUBFLOOR VENT FAN 4 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/13	OUT 13	0416	CR-0416
04 17	MF-5 SUBFLOOR VENT FAN 5 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/14	OUT 14	0417	CR-0417
04 18	MF-5 SUBFLOOR VENT FAN 5 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/15	OUT 15	0418	CR-0418
04 19	DC COM				
04 20					

COM from 0340

CR-0403	NO 0403 NC	
CR-0404	NO 0404 NC	
CR-0405	NO 0405 NC	
CR-0406	NO 0406 NC	
CR-0407	NO 0407 NC	
CR-0408	NO 0408 NC	
CR-0409	NO NC 0409	
CR-0410	NO 0410 NC	
COM		
CR-0411	NO NC 0411	
CR-0412	NO 0412 NC	
CR-0413	NO NC 0413	
CR-0414	NO 0414 NC	
CR-0415	NO NC 0415	
CR-0416	NO 0416 NC	
CR-0417	NO NC 0417	
CR-0418	NO 0418 NC	

to 0421 0030

to 0421 COM

CALLS FOR HIGH AIR FLOW TO EACH HVAC CONTROL PANEL

CR-0403	0403A	X	1
	0403B	X	5
CR-0404	0404A	X	1
	0404B	X	5
CR-0405	0405A	X	1
	0405B	X	5
CR-0406	0406A	X	1
	0406B	X	5
CR-0407	0407A	X	1
	0407B	X	5
CR-0408	0408A	X	1
	0408B	X	5
CR-0409 NO	0409A	3014	
	0409B	3014A	
CR-0410	0410A		
	0410B	3015	
CR-0411 NO	0411A	3034	
	0411B	3034A	
CR-0412	0412A		
	0412B	3035	
CR-0413 NO	0413A	3114	
	0413B	3114A	
CR-0414	0414A		
	0414B	3115	
CR-0415 NO	0415A	4014	
	0415B	4014A	
CR-0416	0416A		
	0416B	4015	
CR-0417 NO	0417A	4034	
	0417B	4034A	
CR-0418	0418A		
	0418B	4035	

SUBFLOOR VENT FAN CONTROL PANELS DWGS C-30, C-31, C-40

0030 from 0420

PLC-S4

+VDC 2

04 21					
04 22					
04 23	MF-6 SUBFLOOR VENT FAN 6 METHANE GAS LOW LEVEL ALARM CALL FAN	O:04/16	OUT 16	0423	CR-0423
04 24	MF-6 SUBFLOOR VENT FAN 6 METHANE GAS LOW LEVEL ALARM OPEN DAMPER	O:04/17	OUT 17	0424	CR-0424
04 25	SPF-1 STAIRWELL FAN 1 LOW SPEED CALL	O:04/18	OUT 18	0425	CR-0425
04 26	SPF-1 STAIRWELL FAN 1 MEDIUM SPEED CALL	O:04/19	OUT 19	0426	CR-0426
04 27	SPF-2 STAIRWELL FAN 2 LOW SPEED CALL	O:04/20	OUT 20	0427	CR-0427
04 28	SPF-2 STAIRWELL FAN 2 MEDIUM SPEED CALL	O:04/21	OUT 21	0428	CR-0428
04 29	SPF-3 STAIRWELL FAN 3 LOW SPEED CALL	O:04/22	OUT 22	0429	CR-0429
04 30	SPF-3 STAIRWELL FAN 3 MEDIUM SPEED CALL	O:04/23	OUT 23	0430	CR-0430
04 31	STAIRWELL FAN 1 DAMPER OPEN CALL	O:04/24	OUT 24	0431	CR-0431
04 32	STAIRWELL FAN 2 DAMPER OPEN CALL	O:04/25	OUT 25	0432	CR-0432
04 33	STAIRWELL FAN 3 DAMPER OPEN CALL	O:04/26	OUT 26	0433	CR-0433
04 34	SPARE	O:04/27	OUT 27	0434	CR-0434
04 35	SPARE	O:04/28	OUT 28	0435	CR-0435
04 36	SPARE	O:04/29	OUT 29	0436	CR-0436
04 37	SPARE	O:04/30	OUT 30	0437	CR-0437
04 38	SPARE	O:04/31	OUT 31	0438	CR-0438
04 39	DC COM 2				
04 40					

COM from 0420

CR-0423	NO NC 0423	
CR-0424	NO 0424 NC	
CR-0425	NO 0425 NC	
CR-0426	NO 0426 NC	
CR-0427	NO 0427 NC	
CR-0428	NO 0428 NC	
CR-0429	NO 0429 NC	
CR-0430	NO 0430 NC	
COM		
CR-0431	NO 0431 NC	
CR-0432	NO 0432 NC	
CR-0433	NO 0433 NC	
CR-0434	NO 0434 NC	
CR-0435	NO 0435 NC	
CR-0436	NO 0436 NC	
CR-0437	NO 0437 NC	
CR-0438	NO 0438 NC	

to 1001 0030

to 1001 COM

SUBFLOOR VENT FAN CONTROL PANELS DWG C-41

CR-0423 NO	0423A	4114	
	0423B	4114A	
CR-0424 NO	0424A		
	0424B	4115	
CR-0425	0425A		X
	0425B		X
CR-0426	0426A		
	0426B		X
CR-0427	0427A		X
	0427B		X
CR-0428	0428A		
	0428B		X
CR-0429	0429A		X
	0429B		X
CR-0430	0430A		
	0430B		X
CR-0431	0431A		X
	0431B		X
CR-0432	0432A		X
	0432B		X
CR-0433	0433A		X
	0433B		X
CR-0434	0434A		
	0434B		
CR-0435	0435A		
	0435B		
CR-0436	0436A		
	0436B		
CR-0437	0437A		
	0437B		
CR-0438	0438A		
	0438B		

STAIRWELL PRESSURIZATION FANS VFDS

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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APPD. BY: J. YAO	CUSTOMER: RIVERFRONT COMM. INVT. LLC
DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

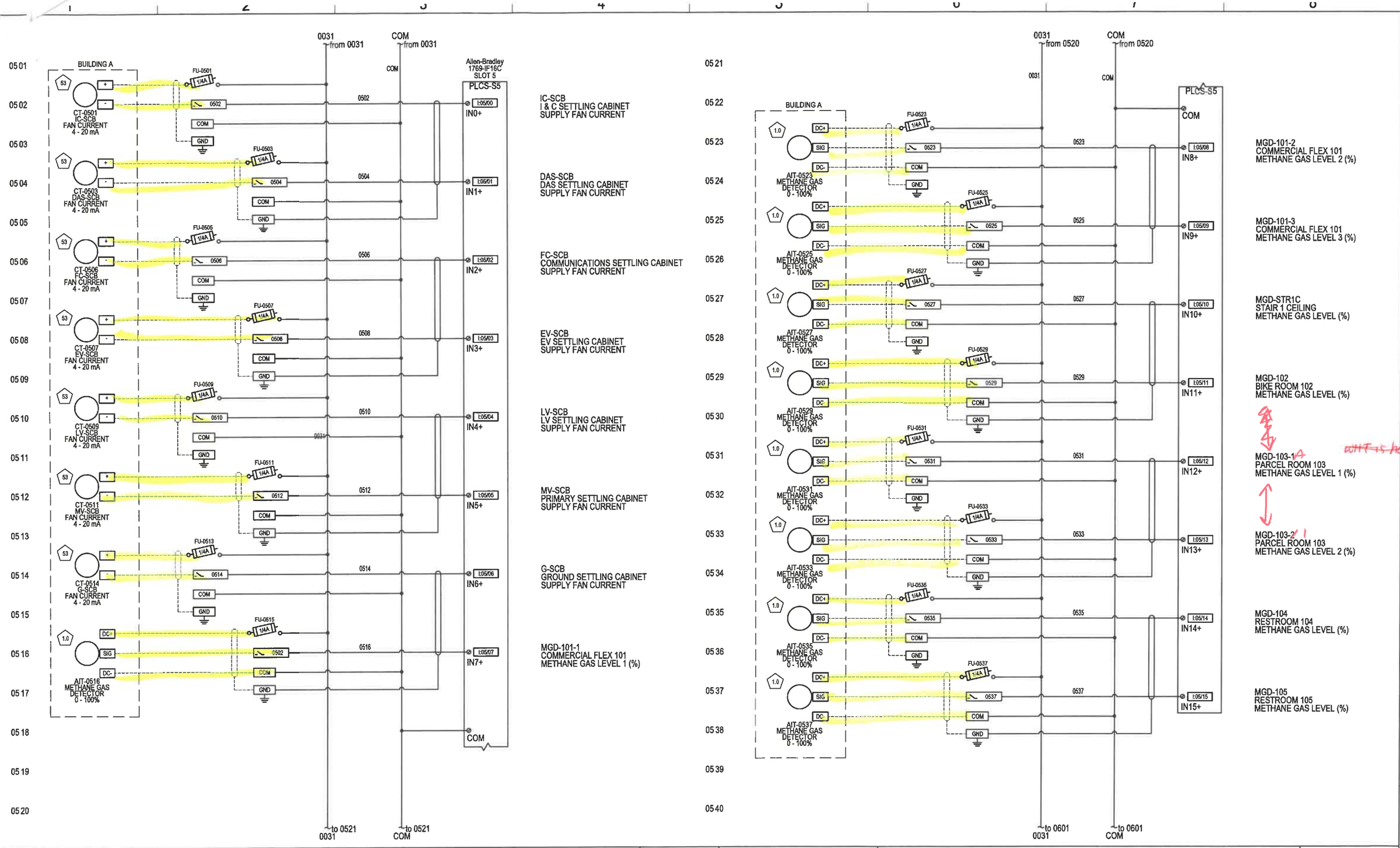
EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Outputs Rack 1 Slot 4

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-04



REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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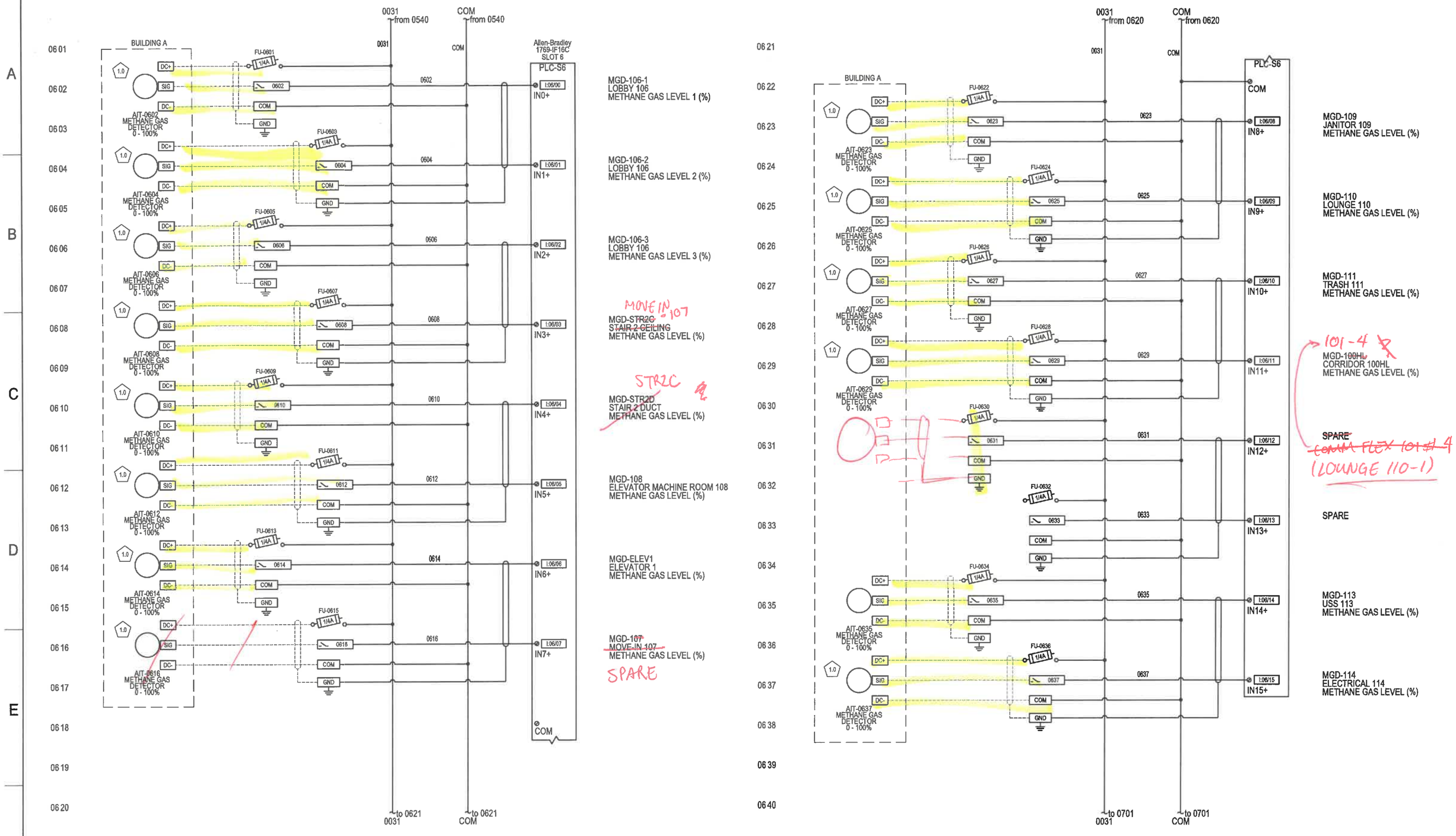
EVERETT RIVERFRONT BUILDING A

MGCP-A Analog Inputs Rack 1 Slot 5

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-05



REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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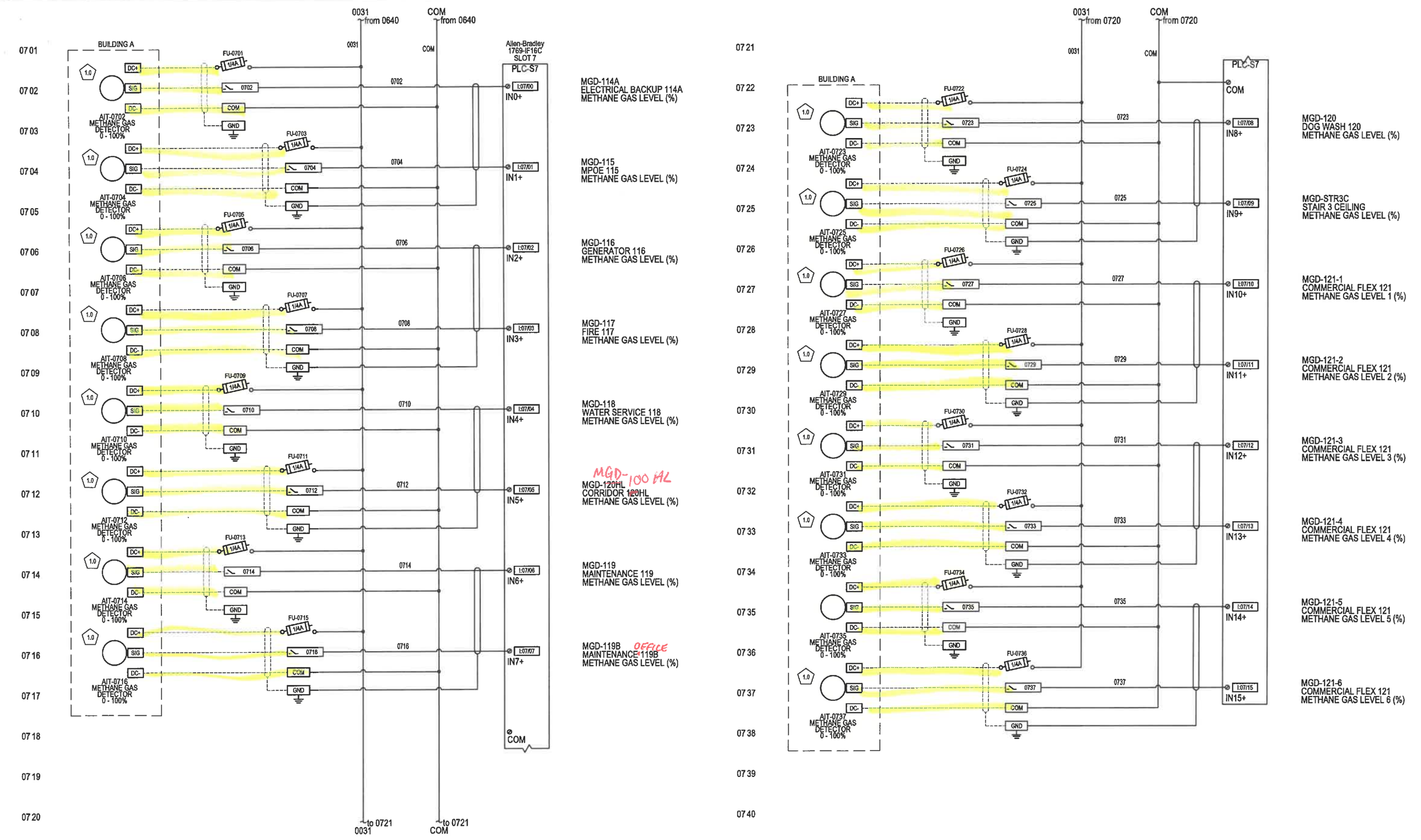
EVERETT RIVERFRONT BUILDING A

MGCP-A Analog Inputs Rack 1Slot 6

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-06



REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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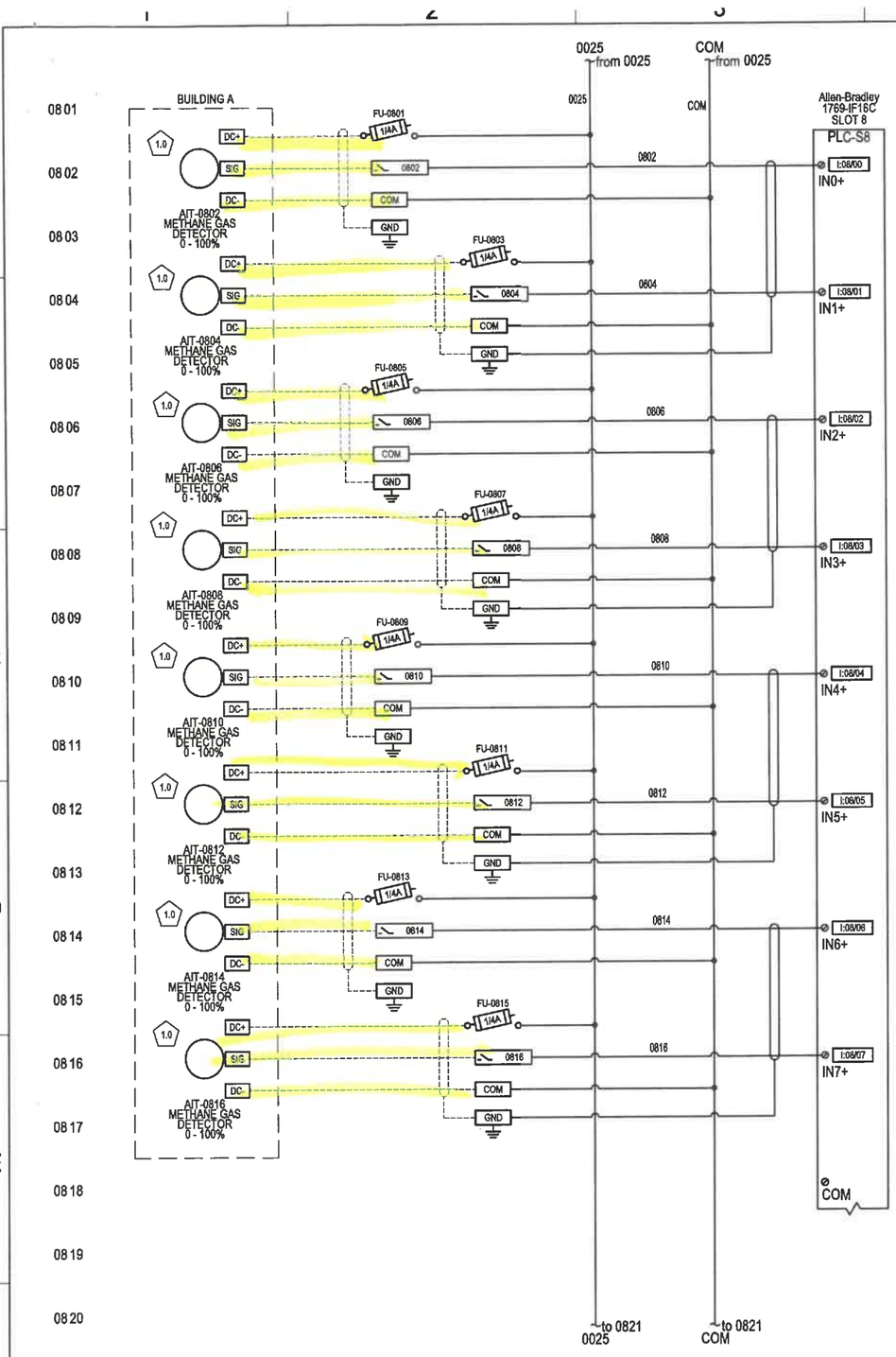
EVERETT RIVERFRONT BUILDING A

MGCP-A Analog Inputs Rack 1 Slot 7

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-07



MGD-~~STR3D~~ 108HL
~~STAIR 3 DUCT~~
METHANE GAS LEVEL (%)

MGD-~~101AHL~~ 113HL
LIVE WORK CORRIDOR 101

MGD-~~101BHL~~ 116HL
LIVE WORK CORRIDOR 101

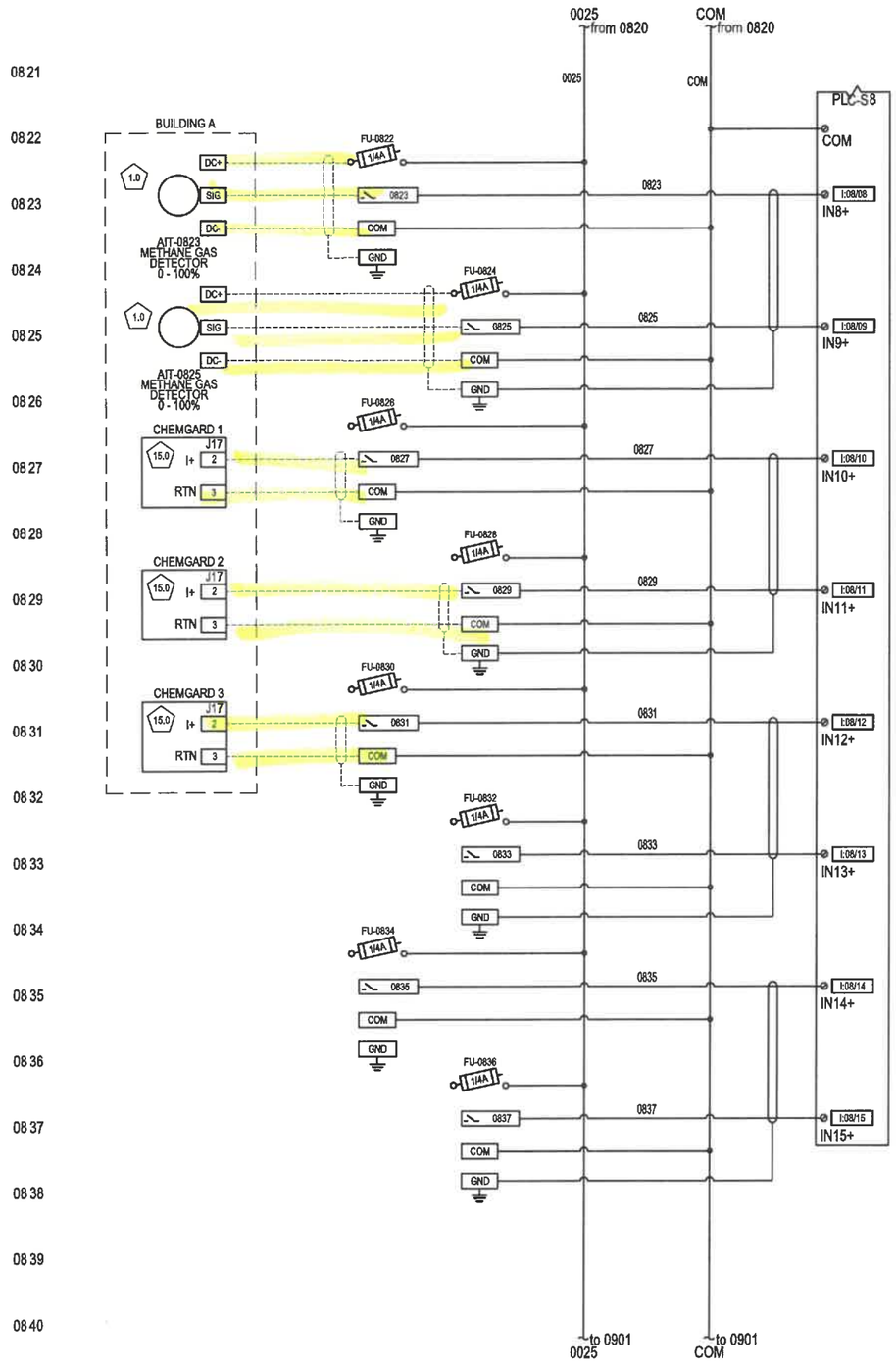
MGD-~~101CHL~~ 120HL
LIVE WORK CORRIDOR 101

MGD-122
WEST VESTIBULE 122
METHANE GAS LEVEL (%)

MGD-123
EAST VESTIBULE 123
METHANE GAS LEVEL (%)

MGD-124
CONCIERGE 124
METHANE GAS LEVEL (%)

MGD-~~108HL~~ 101AHL
CORRIDOR ~~108HL~~
METHANE GAS LEVEL (%)
LW HALL



LIVE WORK HALL

MGD-~~113HL~~ 101BHL
CORRIDOR ~~113HL~~
METHANE GAS LEVEL (%)

LW HALL

MGD-~~116HL~~ 101CHL
CORRIDOR ~~116HL~~
METHANE GAS LEVEL (%)

CHEMGARD 1
4 - 20 MA OUTPUT

CHEMGARD 2
4 - 20 MA OUTPUT

CHEMGARD 3
4 - 20 MA OUTPUT

installed & tested 3/13/24

~~SPARE~~
STR1D

SPARE
STR2D

~~SPARE~~
STR3D

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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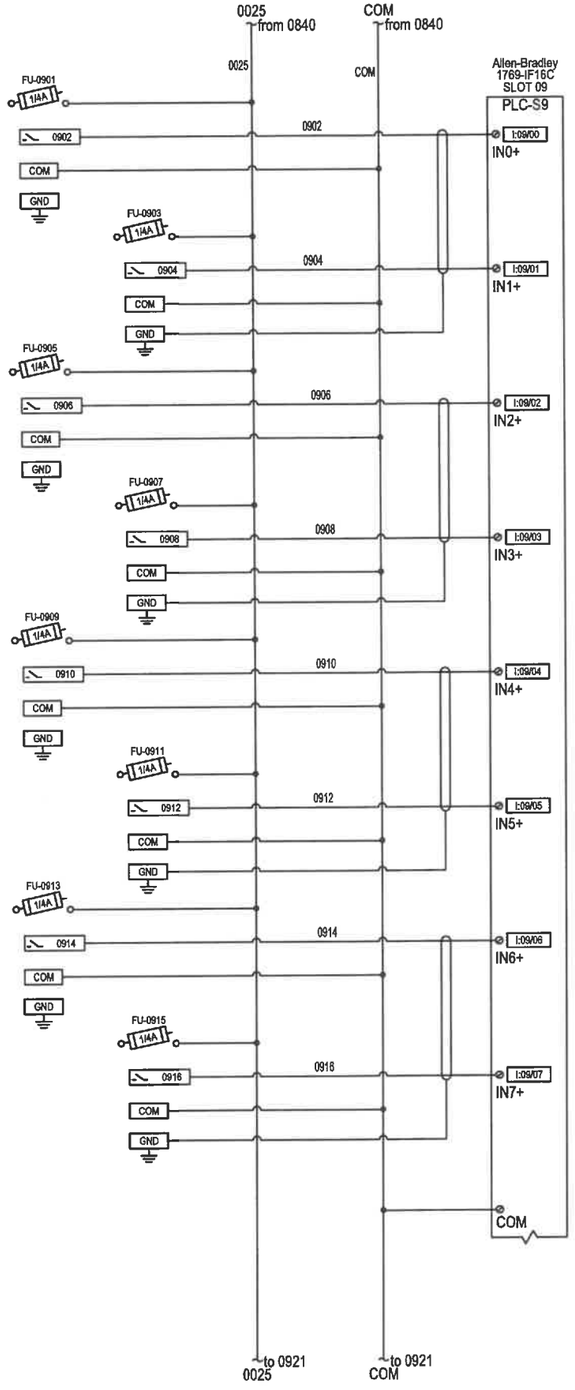
EVERETT RIVERFRONT BUILDING A

MGCP-A Analog Inputs Rack 1 Slot 8

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-08



09 01 09 02 09 03 09 04 09 05 09 06 09 07 09 08 09 09 09 10 09 11 09 12 09 13 09 14 09 15 09 16 09 17 09 18 09 19 09 20

SPARE
MVR2 GD

SPARE
LW unit 1 temp GD

SPARE
LW unit 2

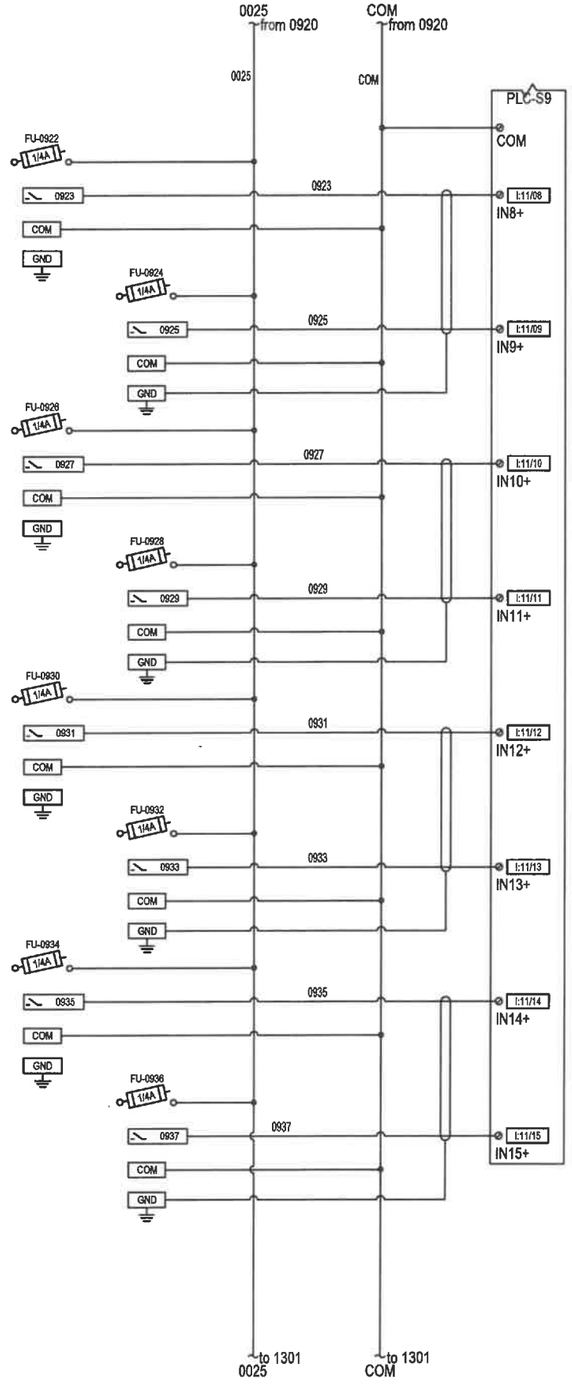
SPARE
LW

SPARE

SPARE

SPARE

09 21 09 22 09 23 09 24 09 25 09 26 09 27 09 28 09 29 09 30 09 31 09 32 09 33 09 34 09 35 09 36 09 37 09 38 09 39 09 40



SPARE

SPARE

SPARE LW unit 1 GD

SPARE LW unit 2

SPARE LW unit 3

SPARE LW unit 4 GD

SPARE LW unit 5

SPARE LW unit 6 Temp GD

removed 3/13

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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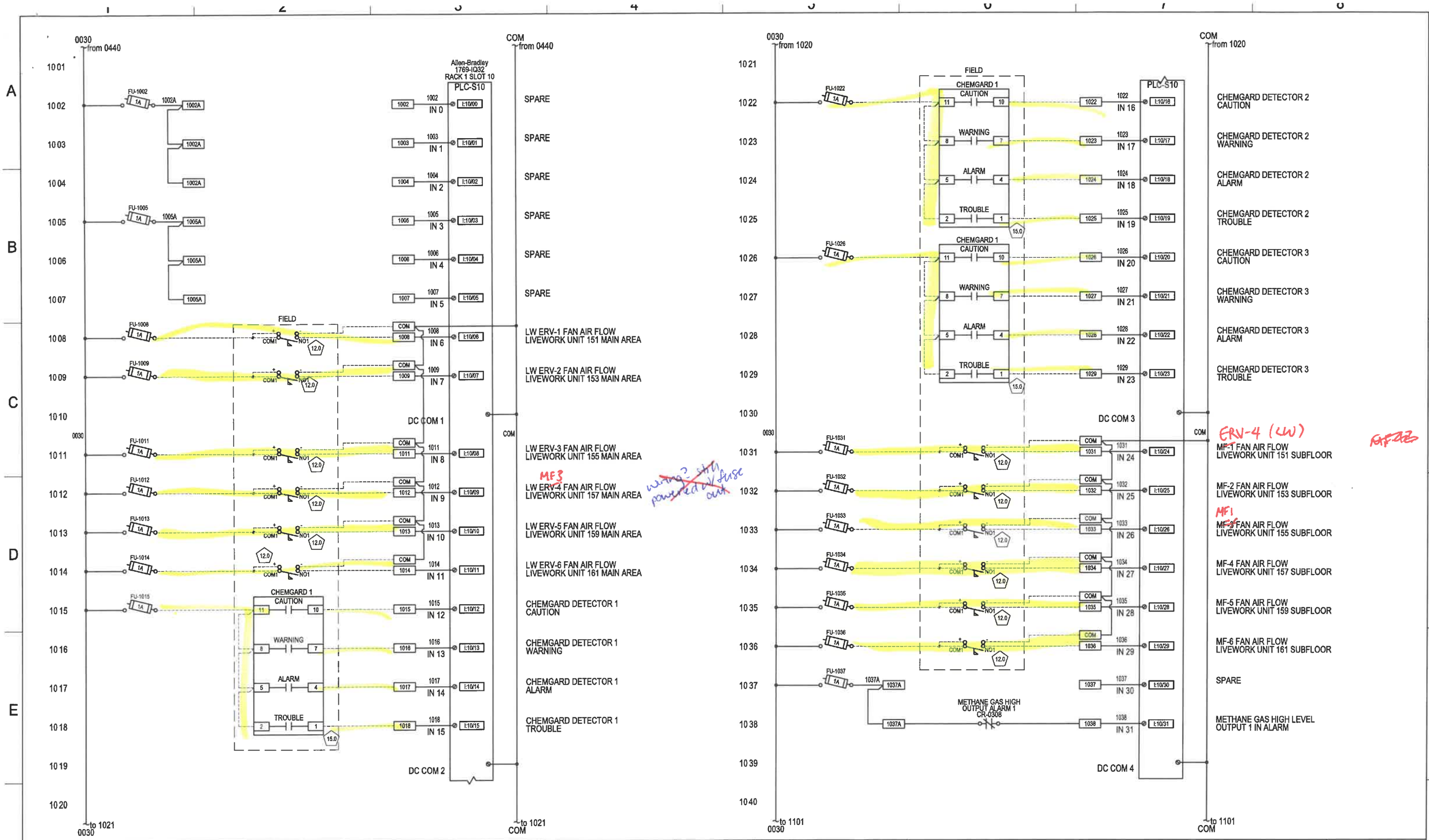
EVERETT RIVERFRONT BUILDING A

MGCP-A Analog Inputs Rack 1 Slot 9

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-09



REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Inputs Rack 1 Slot 10

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-10

0030 from 1040

SUBFLOOR VENT FANS 1-3 CONTROL PANEL
DWG C-30, C-31

Allen-Bradley
1769-IQ32
RACK 2 SLOT 11
PLC-S11

1101					
1102	FU-1102 1A	3012	3013	1102 IN 0	I:01/00
1103			3011	1103 IN 1	I:01/01
1104			3009	1104 IN 2	I:01/02
1105	FU-1105 1A	3032	3033	1105 IN 3	I:01/03
1106			3031	1106 IN 4	I:01/04
1107			3029	1107 IN 5	I:01/05
1108	FU-1108 1A	3112	3113	1108 IN 6	I:01/06
1109			3111	1109 IN 7	I:01/07
1110				DC COM 1	
0030 1111			3109	1111 IN 8	I:01/08
1112	FU-1112 1A	4012	4013	1112 IN 9	I:01/09
1113			4011	1113 IN 10	I:01/10
1114			4009	1114 IN 11	I:01/11
1115	FU-1115 1A	4032	4033	1115 IN 12	I:01/12
1116			4031	1116 IN 13	I:01/13
1117			4029	1117 IN 14	I:01/14
1118	FU-1118 1A	4112	4113	1118 IN 15	I:01/15
1119				DC COM 2	
1120					

SUBFLOOR VENT FANS 4-6 CONTROL PANEL
DWG C-40, C-41

to 1121
0030

COM from 1040

COM

MF-14 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 1 WORK LIVE UNIT 151	I:01/00
MF-14 VENT FAN RUNNING SUBFLOOR VENT FAN 1 WORK LIVE UNIT 151	I:01/01
MF-14 DAMPER OPEN SUBFLOOR VENT FAN 1 WORK LIVE UNIT 151	I:01/02
MF-15 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 2 WORK LIVE UNIT 153	I:01/03
MF-15 VENT FAN RUNNING SUBFLOOR VENT FAN 2 WORK LIVE UNIT 153	I:01/04
MF-15 DAMPER OPEN SUBFLOOR VENT FAN 2 WORK LIVE UNIT 153	I:01/05
MF-16 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 3 WORK LIVE UNIT 155	I:01/06
MF-16 VENT FAN RUNNING SUBFLOOR VENT FAN 3 WORK LIVE UNIT 155	I:01/07
MF-16 DAMPER OPEN SUBFLOOR VENT FAN 3 WORK LIVE UNIT 155	I:01/08
MF-17 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 4 WORK LIVE UNIT 157	I:01/09
MF-17 VENT FAN RUNNING SUBFLOOR VENT FAN 4 WORK LIVE UNIT 157	I:01/10
~~MF-17 DAMPER OPEN~~ - Bad PLC input ~~SUBFLOOR VENT FAN 4~~ ~~WORK LIVE UNIT 157~~	I:01/11
MF-18 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 5 WORK LIVE UNIT 159	I:01/12
MF-18 VENT FAN RUNNING SUBFLOOR VENT FAN 5 WORK LIVE UNIT 159	I:01/13
MF-18 DAMPER OPEN SUBFLOOR VENT FAN 5 WORK LIVE UNIT 159	I:01/14
MF-19 ~~POWER FAIL / NOT IN AUTO~~ RIA SUBFLOOR VENT FAN 6 WORK LIVE UNIT 161	I:01/15

0030 from 1120

SUBFLOOR VENT FANS 4-6 CONTROL PANEL
DWG C-41

PLC-S11

1121					
1122		4111	1122	1122 IN 16	I:01/16
1123		4109	1123	1123 IN 17	I:01/17
1124	FU-1124 1A	1124A	1124	1124 IN 18	I:01/18
1125		1124A	4009 1114	1125 IN 19	I:01/19
1126	FU-1126 1A	1126A	1126	1126 IN 20	I:01/20
1127		1126A	1127	1127 IN 21	I:01/21
1128		1126A	1128	1128 IN 22	I:01/22
1129		1126A	1129	1129 IN 23	I:01/23
1130				DC COM 3	
0030 1131	FU-1131 1A	1131A	1131	1131 IN 24	I:01/24
1132		1131A	1132	1132 IN 25	I:01/25
1133		1131A	1133	1133 IN 26	I:01/26
1134		1131A	1134	1134 IN 27	I:01/27
1135	FU-1135 1A	1135A	1135	1135 IN 28	I:01/28
1136		1135A	1136	1136 IN 29	I:01/29
1137		1135A	1137	1137 IN 30	I:01/30
1138		1135A	1138	1138 IN 31	I:01/31
1139				DC COM 4	
1140					

METHANE GAS HIGH
OUTPUT ALARM 2
CR-0338

to 1201
0030

COM from 1120

COM

MF-19 VENT FAN RUNNING SUBFLOOR VENT FAN 6 WORK LIVE UNIT 161	I:01/16
MF-19 DAMPER OPEN SUBFLOOR VENT FAN 6 WORK LIVE UNIT 161	I:01/17
METHANE GAS HIGH LEVEL OUTPUT 2 IN ALARM	I:01/18
SPARE MF17 Damper Open Subfloor Vent Fan 4 Livework unit 157	I:01/19
SPARE	I:01/20
SPARE	I:01/21
SPARE	I:01/22
SPARE	I:01/23
SPARE	I:01/24
SPARE	I:01/25
SPARE	I:01/26
SPARE	I:01/27
SPARE	I:01/28
SPARE	I:01/29
SPARE	I:01/30
SPARE	I:01/31

to 1201
COM

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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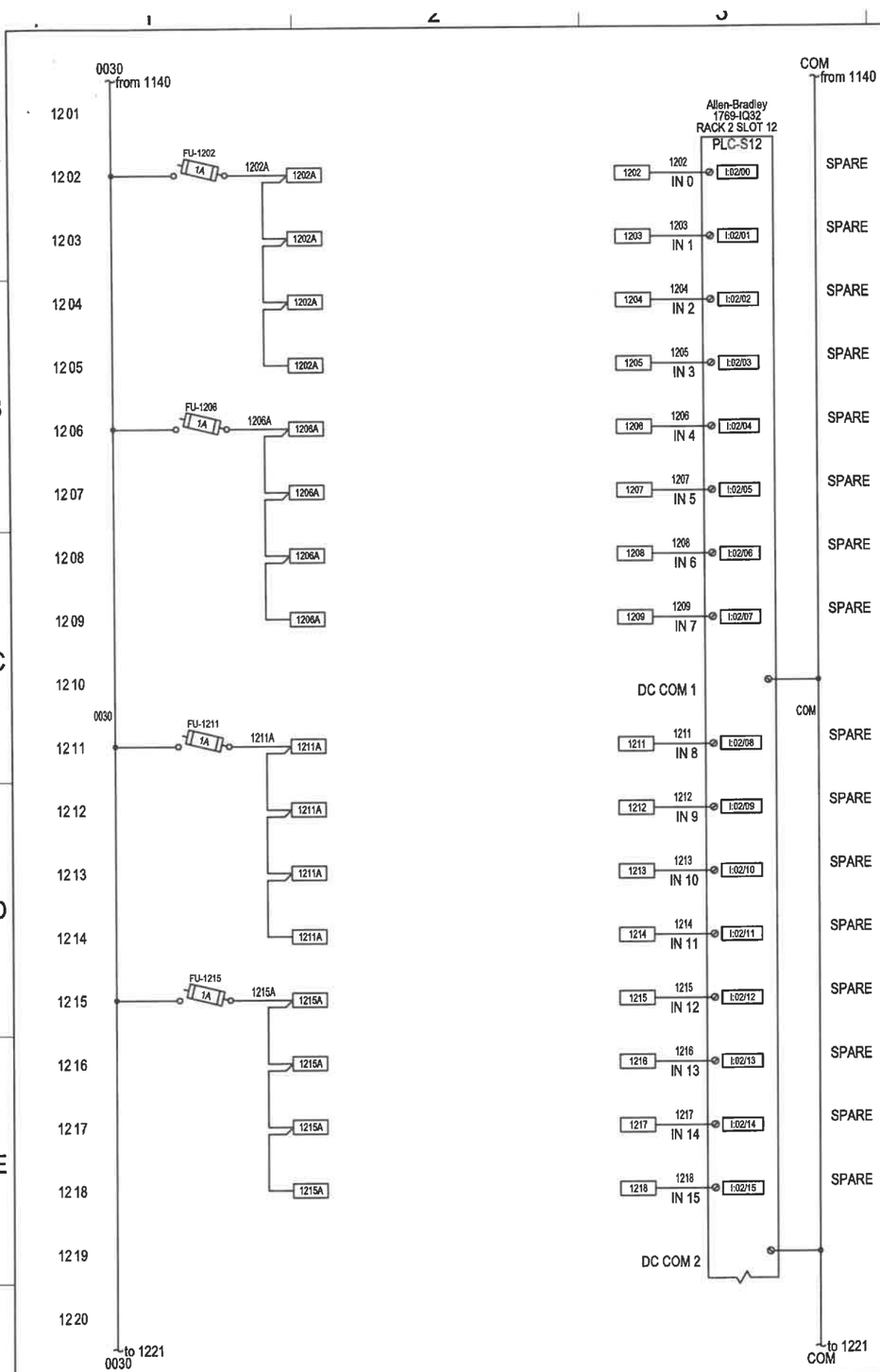
EVERETT RIVERFRONT BUILDING A

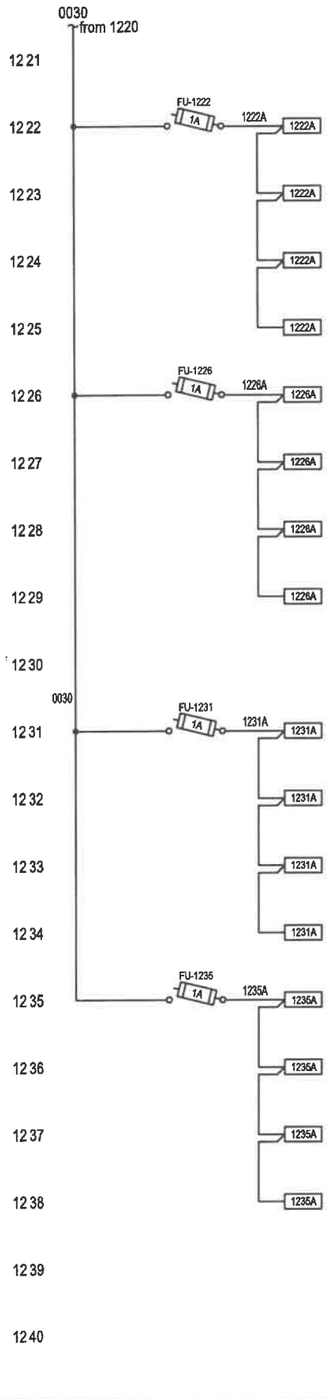
MGCP-A Discrete Inputs Rack 2 Slot 11

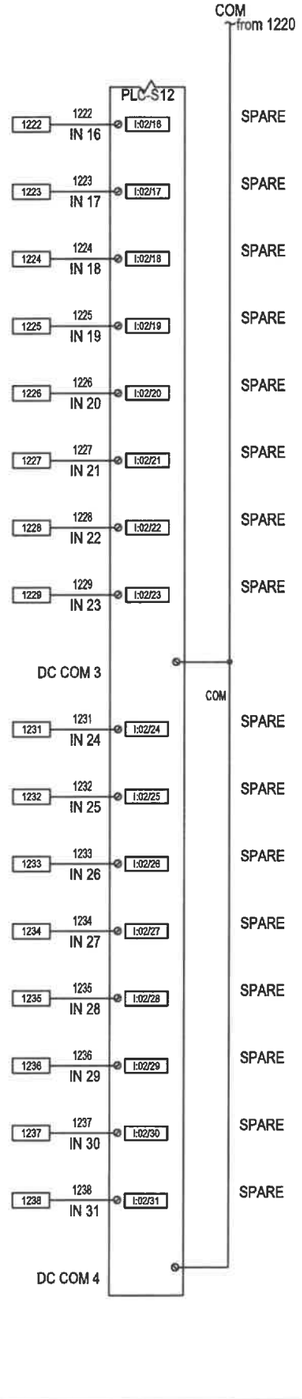
Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-11







REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

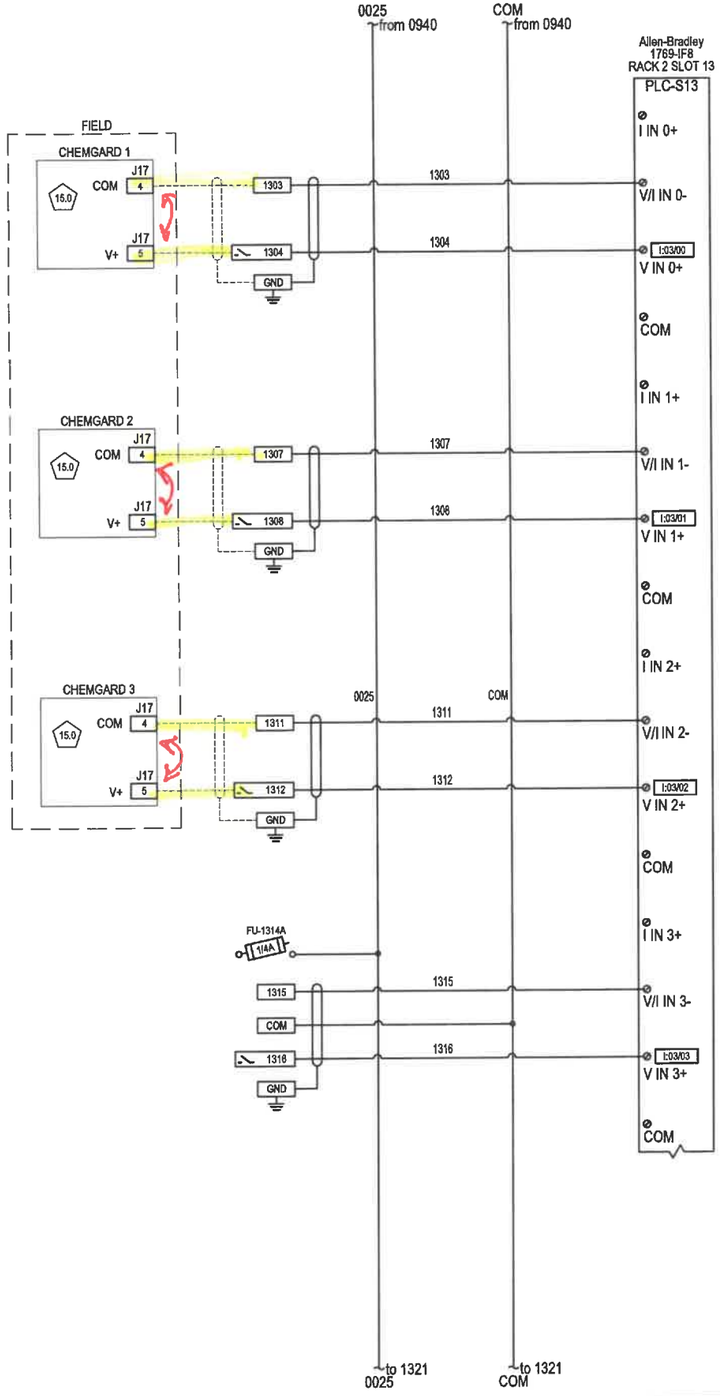
EVERETT RIVERFRONT BUILDING A

MGCP-A Discrete Inputs Rack 2 Slot 12

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-12

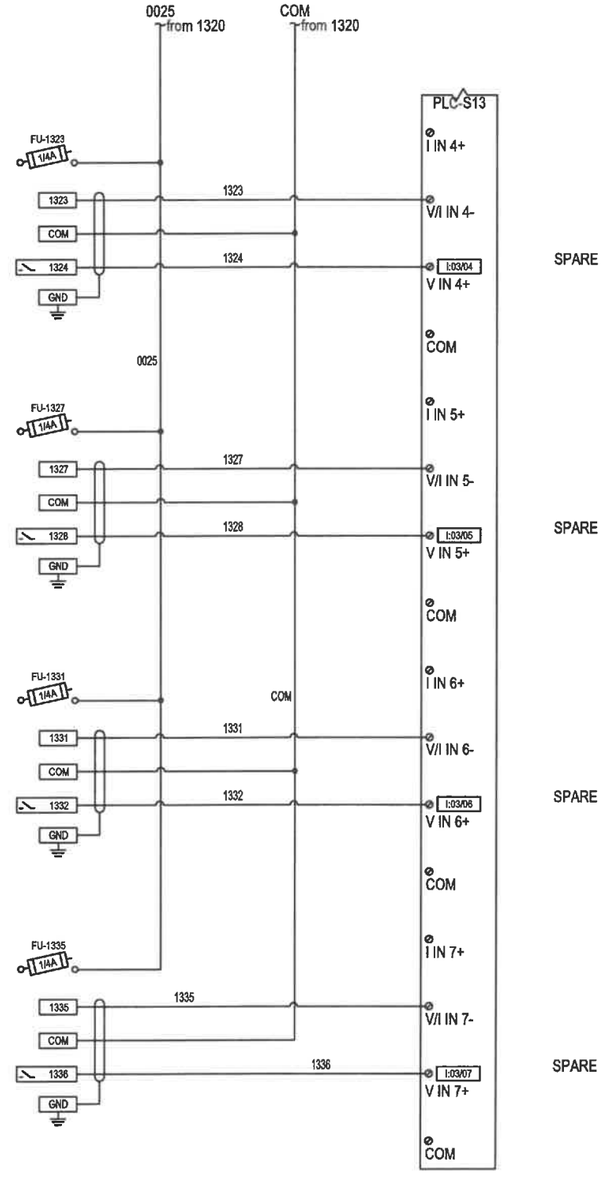


CHEMGARD DETECTOR 1
SIGNAL INDICATION
0 - 10 V

CHEMGARD DETECTOR 2
SIGNAL INDICATOR
0 - 10 V

CHEMGARD DETECTOR 3
SIGNAL INDICATOR
0 - 10 V

SPARE



SPARE

SPARE

SPARE

SPARE

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

Quality Controls Corporation
5015 208th St. SW, Suite 1-B
Lynnwood, WA 98036
(425) 778-8280
www.Quality-Controls.com

DRAWN BY: C. HSU	END USER: RIVERFRONT COMM. INVT. LLC
APPD. BY: J. YAO	CUSTOMER: RIVERFRONT COMM. INVT. LLC
DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

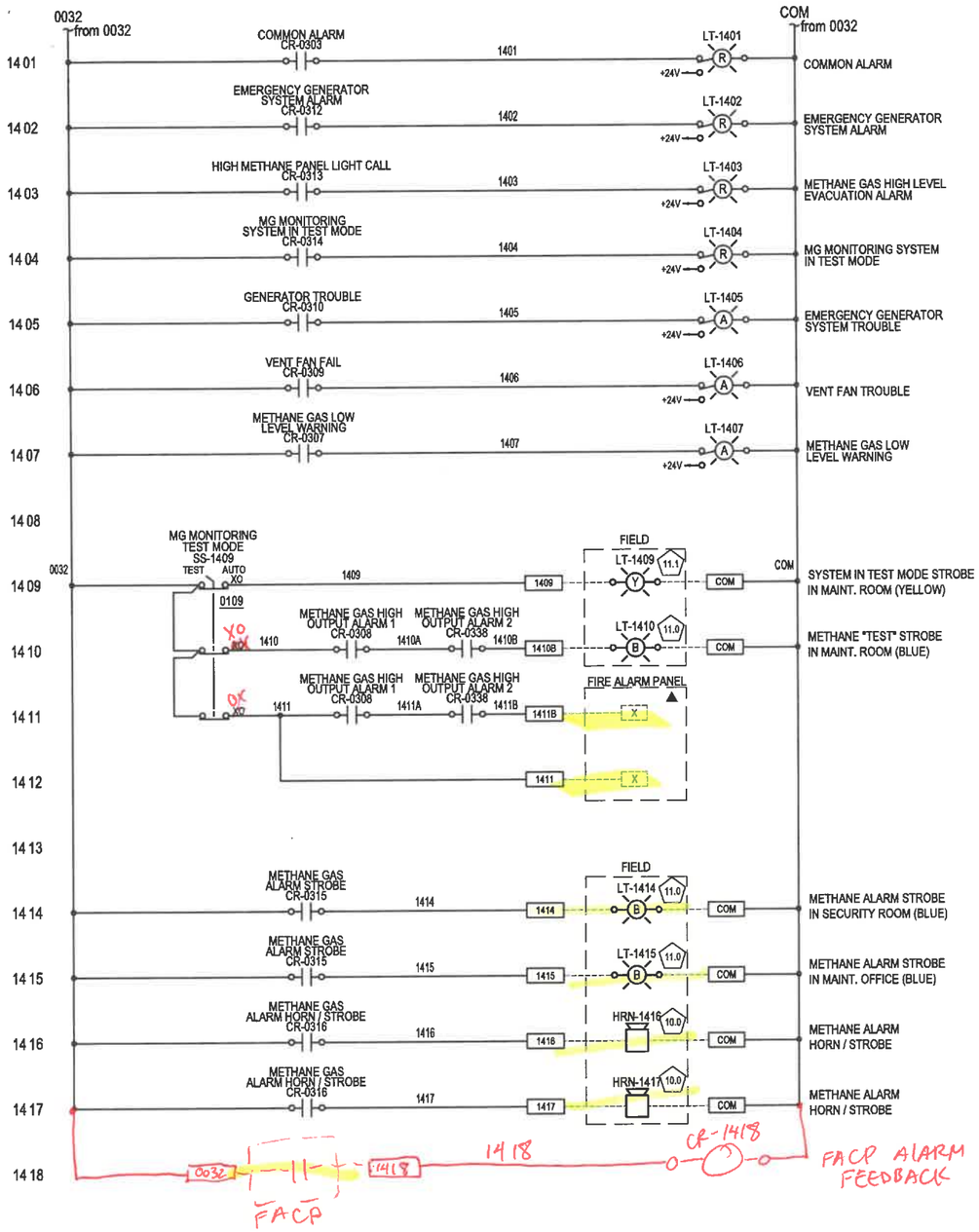
EVERETT RIVERFRONT BUILDING A

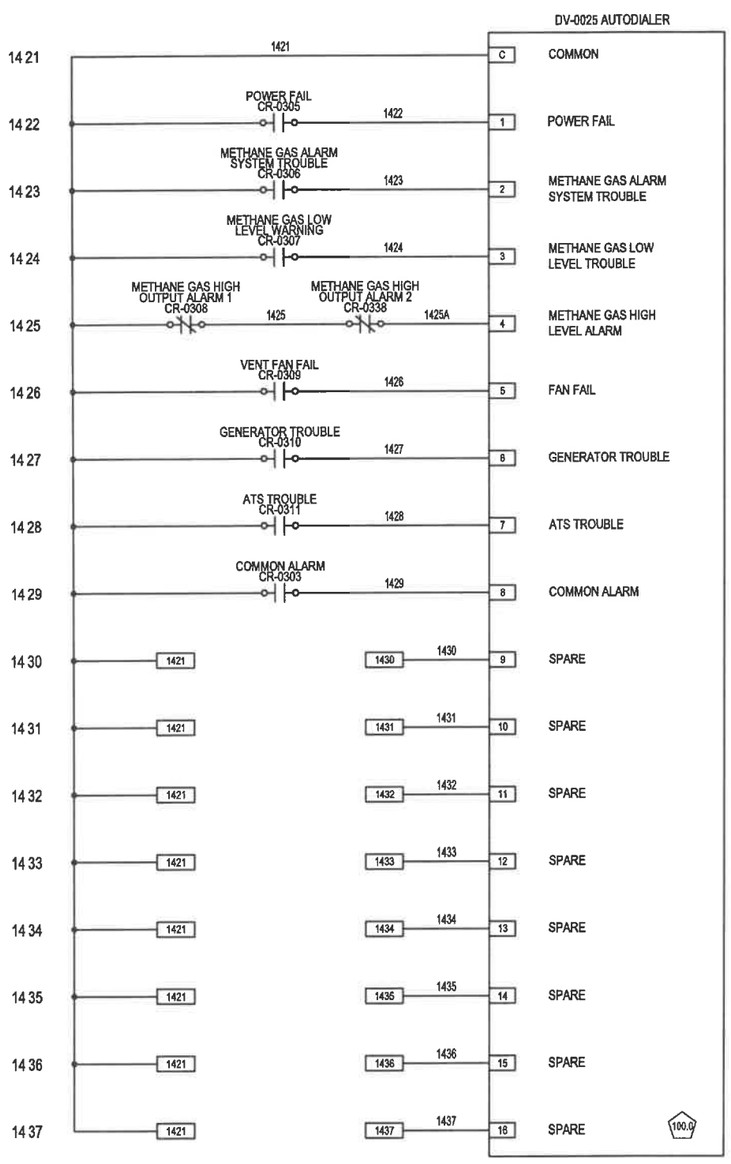
MGCP-A Analog Inputs Rack 2 Slot 13

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-13





Enet alarms

Ch 5 - MG Detector Fail

Ch 6 - MG High level evac alarm

Ch 7 - MG High level warning

Ch 8 - MG Low level alarm

Ch 9 - MG Low level warning

Ch 10 - ~~Spare~~ Cabinet Fan fail

Ch 11 - Standby ATS alarm

~~Ch 12 - Emer. Gen. Alarm~~

Ch. 13 - Fire Pump alarm

Ch. 14 - Building Fan Fail alarm

Ch. 15 - Emer. Gen. Alarm

Ch. 16 - Control Panel Alarm

REV.	DESCRIPTION	BY	DATE
C	STAIRWELL FAN CONTROLS UDPATES	C. HSU	11/16/23
B	SHOP AS-BUILTS	C. HSU	11/3/23
A	SUBFLOOR VENT FAN PANELS UPDATE	C. HSU	10/24/23

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APPD. BY: J. YAO	CUSTOMER: RIVERFRONT COMM. INVT. LLC
DATE: 9/1/22	CONSULTANT: FOLLETT ENGINEERING, PLLC

EVERETT RIVERFRONT BUILDING A

MGCP-A Alarm Wiring

Control Wiring Diagram

QCC PROJECT NO. P2112

DWG. NO. C-14

MSA Safety Sales, LLC
3880 Meadowbrook Road
Murrysville, PA 15668

Certificate of Calibration

Date: 3/27/2024

Certificate No: 300718911

PO Number: P2112-33

MSA Number: 403046574

QUALITY CONTROLS CORP
5015 208TH ST S W

LYNNWOOD | WA | 98036-7649

Attn:

Instrument: CHEMGARD **Part No:** A-3800

Serial No: B23-402674334-21-001

The above listed instrument was calibrated at the MSA factory by factory-trained personnel, using NIST traceable equipment in accordance with our ISO 9001:2015 certified quality system. Regular calibration in accordance with the instruction manual is required.

Calibration performed by:

Doug Frederick
MSA Technician

Calibration Date: 2/13/2024

MSA Safety Sales, LLC
3880 Meadowbrook Road
Murrysville, PA 15668

Certificate of Calibration

Date: 3/27/2024

Certificate No: 300718913

PO Number: P2112-33

MSA Number: 403046786

QUALITY CONTROLS CORP
5015 208TH ST S W
LYNNWOOD | WA | 98036-7649
Attn:

Instrument: CHEMGARD **Part No:** A-3800

Serial No: B23-402674334-11-002

The above listed instrument was calibrated at the MSA factory by factory-trained personnel, using NIST traceable equipment in accordance with our ISO 9001:2015 certified quality system. Regular calibration in accordance with the instruction manual is required.

Calibration performed by:

Doug Frederick
MSA Technician

Calibration Date: 2/14/2024

MSA Safety Sales, LLC
3880 Meadowbrook Road
Murrysville, PA 15668

Certificate of Calibration

Date: 3/27/2024

Certificate No: 300718912

PO Number: P2112-33

MSA Number: 403046783

QUALITY CONTROLS CORP
5015 208TH ST S W
LYNNWOOD | WA | 98036-7649
Attn:

Instrument: CHEMGARD **Part No:** A-3800

Serial No: B23-402674334-11-001

The above listed instrument was calibrated at the MSA factory by factory-trained personnel, using NIST traceable equipment in accordance with our ISO 9001:2015 certified quality system. Regular calibration in accordance with the instruction manual is required.

Calibration performed by:

Doug Frederick
MSA Technician

Calibration Date: 2/14/2024