Campus Masterplan
Western Federal Lands Highway Division
FOVA-XX3-WFL Facility Space Management and Improvements

VANCOUVER NATIONAL HISTORIC RESERVE (VNHR), WASHINGTON

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Hennebery Eddy Architects

Table of Contents

Executive Summary 1

1. Introduction

1.1 | Project Overview 5
1.2 | Goals & Objectives 9

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2. Campus Masterplan Facility Recommendations

2.1 | Recommendations Overview 15

2.2 | Site 17
Circulation 19
Parking 21
Utilities 25
Landscape 29

2.3 | Main Building 47
Code Compliance 49
Architectural 53
Programming / Space Planning 59
Structural 67
Systems | Mechanical 69
Systems | Electrical 73
Systems | Plumbing 81
Systems | Fire Protection 83

REMOVED

REMOVED

REMOVED

5. Existing Conditions

5.1 | Site 147
5.2 | Main Building 149

REMOVED

5.4 | Hazardous Materials 181

6. Appendix

REMOVED

B | Programming Validation Data & Adjacency Diagram 231
C | Hazardous Materials Report 235
D | Code Deficiencies - Main Building & Site 299

REMOVED

I | Architectural Plans - Existing 349

NOTE: REFERENCES TO MULE BARN BUILDING HAVE BEEN REMOVED AS MULE BARN SCOPE HAS BEEN REMOVED FROM THIS PROJECT SOLICITATION.

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Executive Summary

West entrance canopy

This Campus Masterplan and Construction Masterplan document provides Western Federal Lands Highway Division (WFLHD) a comprehensive framework for future facility planning at the agency's Main Office building, ~~Mule Barn~~, and property site. The Campus Masterplan report includes descriptions and condition assessments of each building component, system, and utility with associated recommendations for correction of deferred maintenance and code deficiency items. Essential to the facility planning objectives, programming interviews and coordination meetings were conducted with building department leads resulting in revised space planning layouts throughout the Main Office building. Corrective recommendations in concert with new space planning layouts are presented in the report text and Appendix A – Detailed Facility Conceptual Drawings to provide a comprehensive body of background information and discipline-specific plan drawing guidance for future project design teams.

CONSTRUCTION PHASING

Construction Phasing plans are included in the report in Chapter 3 to provide a high-level overview of a range of project design and construction delivery approaches and their anticipated timelines. The phasing plans include three possible construction delivery methods:

SECTION REMOVED

- **Single Phase Approach/Design-Build Delivery** – Recognizing the inherent disruption and inefficiencies associated with a multiphase approach, a single major renovation project is proposed to shorten the overall construction duration and disruption to facility operations. The use of a Design-Build contracting delivery anticipates the need for an integrated design-construction team to further investigate and coordinate project scope during the design phase. This method is recommended if funding is allocated for the entire renovation project and design-build delivery will result in a more competitive bid environment.

1

Introduction

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1.1 | Project Overview

West parking lot

PROJECT SCOPE AND PURPOSE

Western Federal Lands Highway Division (WFLHD), an office within the Federal Highway Administration/ U.S. Department of Transportation, has engaged Hennebery Eddy Architects (HEA) and their consultant team through a regional Indefinite Delivery/Indefinite Quantity (IDIQ) contract administered by the National Park Service (NPS) to provide a Campus and Construction Masterplan for the WFLHD Main Office building ~~and adjacent Mule Barn building~~ and site located in Vancouver, Washington. The Masterplan will provide WFLHD leadership a comprehensive framework for future facility planning supported by building component and systems deferred maintenance recommendations, space planning layouts, conceptual-level facility improvement drawings, recommendations for construction phasing, and backup cost estimate data. Facility improvement recommendations are predicated on a phased eight (8) year implementation timeline taking into consideration logical, sequential, and complementary scopes of work. HEA and team conducted a review of existing background documentation for the buildings and site, including past reports, planning studies, programming studies, drawings, cultural resource documents, and historical documents, in concert with performing non-destructive, visual investigations of the WFLHD buildings and site. Fundamental to the review of existing facility conditions, HEA and team evaluated buildings and site for code compliance and identified code deficiencies with recommendations for corrective action. Additionally, HEA performed review and validation of previous space programming assumptions as part of the overall facilities space planning effort. Programming validation included detailed interviews with WFLHD divisions staff to determine space needs and workflow adjacencies along with development of conceptual-level program layouts.

PROJECT LOCATION AND BACKGROUND

The WFLHD campus site resides at 510 East 5th Street, Vancouver, Washington within the Vancouver National Historic Reserve (VNHR). The VNHR includes a range of buildings, cultural landscapes, archeological sites, circulation patterns, and vegetation scattered across approximately 366 acres and characterized by land use and settlement patterns developed over a period dating from 500 BC to the mid-1960s.[1] The WFLHD campus is located at the far western edge

1. National Register of Historic Place, Vancouver National Historic Reserve District, U.S Department of the Interior, National Park Service, 2006, Section 8, P.53.

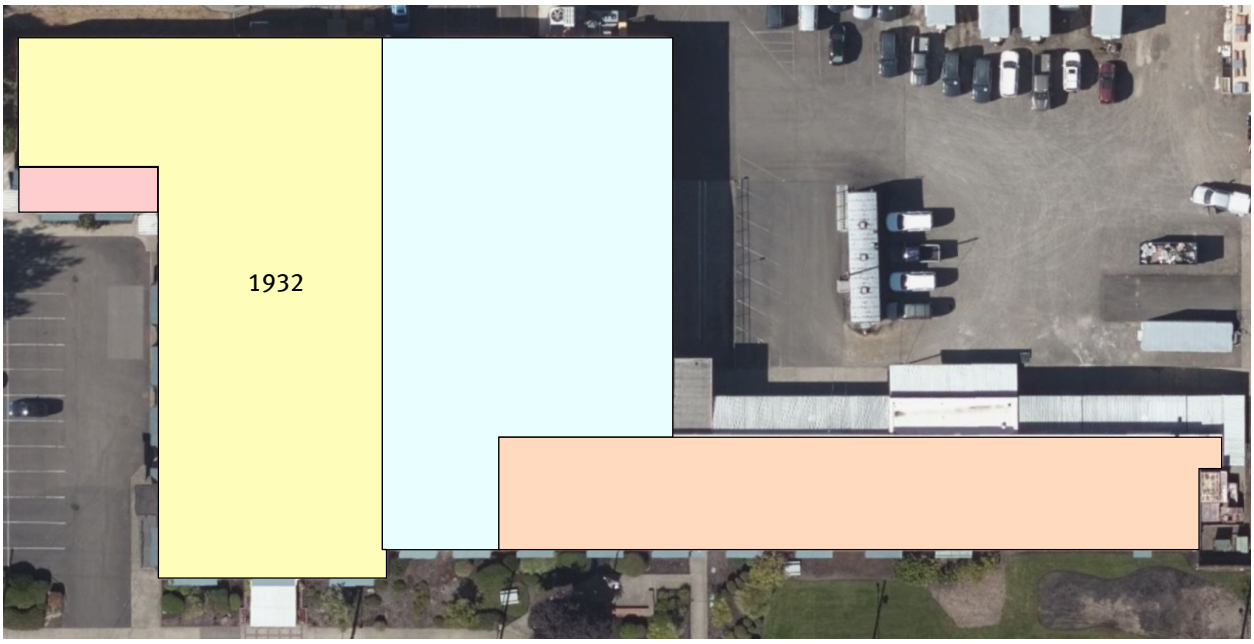
of the VNHR, adjacent to the east side of Interstate Highway 5 and northwest of the historic fort. The site is fenced on its northern and eastern property lines and bounded to the south and west by rights of way owned by the City of Vancouver. Vehicular access to the campus is limited with entry points at the northwest corner, via Anderson Street, and southwest corner, via East 5th Street while parking is available in parking lots on the west and north sides of the building as well as on the public right-of-way along East 5th Street.

While the WFLHD campus is fully embedded within the boundaries of the VNHR, its agency mission, function, and daily operations are mostly independent of the VNHR managing entities - NPS, State of Washington, and City of Vancouver – and is considered an "adjacent property" to the VNHR[2]. The WFLHD buildings and site provide no services for visitors at the reserve and the buildings are not open to the public. The two buildings on the WFLHD site possess different histories and, as a result, require different facility planning strategies based on intended use. Constructed for the Bureau of Public Roads, predecessor to the Federal Highway Administration, as an "equipment depot,"[3] the Main Office building consists of three primary building wings, constructed in 1932, 1952, and 1977 with an annex building connected on the west side of the 1932 wing. Originally, the building had two additional building wings on the west side housing vehicle repair garages for the extensive vehicle fleet maintained by the Bureau. With the gradual expansion of Interstate Highway 5 over time, these wings were removed, and the 1952 and 1977 wings added resulting in the building footprint that exists today. The Main Office building is the primary building used on the site housing division workgroups, testing laboratory, facilities offices, storage, and warehouse program while also being the larger of the two buildings. The Mule Barn building, located at the far eastern end of the campus, was constructed in 1910 by the U.S. Army to house the considerable number of horses and mules, approximately 138, supporting the infantry and is listed as a contributing resource to the Vancouver National Historic Reserve District. Mostly unchanged on the exterior over the course of its history, the building's interior has been modified at different periods to accommodate a range of uses, including laboratory, offices, meeting rooms, workstations, restrooms, and both open rack and lockable storage. There are multiple exterior entries into the Mule Barn consisting of passage doors on the north, south, east, and west along with a single coiling door accommodating forklifts located on the west elevation. A fenced and gated parking lot occupies a wedge-shaped area on the east elevation.

RELATED PREVIOUS STUDIES

WFLHD and NPS-DSC provided the HEA team with a range of background documents for use in understanding past studies, compliance, assessments, planning and facility recommendations. The following table includes documents reviewed by the HEA team in preparation for the development of the campus masterplan, construction phasing masterplan, and facility conceptual drawings.

2. National Register of Historic Place, Federal Highway Administration, Western Federal Lands Highway Division Facilities, U.S Department of the Interior, National Park Service, 2008, Section 7, P.2.
3. WFLHD, "Take a Tour of the WFLHD Building – Building Construction,"



Building construction timeline

Figure 1.1.1 Related Previous Studies

Date	Document Title	Description
2022	WA WFL Main Bldg Renv 22(1) - WFL Renovation Design and RFP Development, Seismic Assessment Report; (Robert Peccia & Associates)	Tier 1 Seismic Evaluation (Main Building)
2021	Basis of Design Report – WA WFL Main Renv 21(2): WFL Renovations – Lab Relocation, Exterior Stairs, and Capital Improvements (Hennebery Eddy Architects)	Schematic Design Report and Drawings for relocation of the laboratory from the Mule Barn to the Main Building
2021	Limited Asbestos Building Material Survey & Limited Lead Based Paint Sampling Report (Advantage Environmental, Inc.)	Hazardous Material Survey (Main Building)
2020	Limited Pre-Renovation Flooring Survey Report (RCP Environmental)	Hazardous Material Survey (Main Building)
2019	Federal Highway Administration – Program of Requirements & Conceptual Cost Estimate (LSW Architects)	Programming/Space Planning/Cost Estimate
2019	Memorandum of Understanding (NPS-FOVA/WFLHD)	Cultural Resources Management Agreement
2018	Property Condition Report – Capital Planning (AEI Consultants)	Condition Assessment/Cost Estimating
2018	Energy Audit Report (AEI Consultants)	Energy Use Audit, Mechanical Equipment Inventory, Recommendations (Main Bldg)

Figure 1.1.1 Related Previous Studies (con't)

Date	Document Title	Description
2018	Seismic Risk Assessment (AEI Consultants)	Level 1 Seismic Risk Assessment (Main Bldg)
2015	Commissioning Report (NorthWest Engineering Service, Inc.)	Commissioning Report/Energy Use Report and Recommendations (Main Building)
2008	National Register of Historic Places Registration Form (NPS)	Determination of Eligibility (Main Building)
2006	National Register of Historic Places Registration Form for the Vancouver National Historic Reserve (VNHR); (NPS)	NR Nomination for VNHR
1989	U.S. Department of Transporation Federal Highway Administration – FHWA Artillery Stable Masonry and Structural Repair	Construction Drawings for Structural Repairs (Mule Barn)
1977	Federal Highway Administration Projects Office – Addition/Remodel	Construction Drawings (1977 Addition)
1939	Historic American Building Survey (HABS); Infantry Stables	HABS Drawings of Mule Barn

1.2 | Goals & Objectives

Mule Barn street-facing south facade

Based on consultation with Western Federal Lands Highway Division, the project team identified the following goals to direct facility masterplan efforts:

- **Improvement of the office and lab environment** The existing facility lacks modern office amenities and organization for promoting an efficient and healthy workplace. WFLHD desires a building containing Class A office space with an appropriate diversity of spaces that support staff interaction while promoting organizational excellence. The laboratory space upgrades desired include improvement of space organization, collaboration, and process flow.
- REMOVED
- **Code compliance of building elements and systems** – Due to the complex construction history of the building, many building elements, systems, and spaces do not meet current building code requirements and require modification to establish a safe, accessible, and durable facility.
- **Upgrades to building elements and systems** to correct outstanding deferred maintenance and provide for long-term building/site performance and durability.

The following objectives are intended to provide WFLHD guidance within the masterplan for understanding existing conditions and facility deficiencies while providing comprehensive recommendations for corrective action and strategic facility planning:

- Identify existing facility condition deficiencies and provide specific recommendations for repair and/or replacement of building elements and systems.
- Provide projected timeframes for repair and/or replacement of building elements and systems.
- Provide estimates of probable cost for the repair and/or replacement of building elements and systems.
- Develop and provide documentation (space planning diagrams, drawings, specifications, cost estimates, phasing diagrams) for the renovation and rehabilitation of existing facilities to guide future project planning and budgeting.
- Identify governing parameters for modification of existing facilities including considerations for safety, sustainability, historic resource protection, building use(s), operational efficiency and security, constructability, and cost.

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Campus Masterplan Facility Recommendations

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2.1 | Recommendations Overview

Existing main building second floor workstations

Masterplan recommendations for the WFLHD site, including the Main Building, ~~Mule Barn~~, and overall site, are a combination of corrective actions intended to directly address the condition deficiencies identified by the Hennebery Eddy Architects team and comprehensive strategies for long-term facility improvement. WFLHD leadership has indicated the desire to continue operations at this site while recognizing that much of the existing building and utility infrastructure ranges from forty-six to over one-hundred and fourteen years old requiring substantial investment and facility disruption to both maintain and upgrade building and utility systems. As such, masterplan recommendations are presented both as standalone, discipline-specific actions - many of which can be undertaken by facility staff in normal maintenance activities - and comprehensive actions - major project undertakings requiring interdisciplinary design, engineering, and coordination in preparation for construction contract solicitation. As a complement to the narrative approach to recommendations presented in this chapter, Appendix G provides a worksheet-based approach to systems recommendations, including projections for anticipated remaining lifespan, cyclical maintenance, and anticipated replacement costs.

While corrective action recommendations can generally be addressed individually from a maintenance standpoint, certain deferred maintenance and long-term facility planning projects will require a comprehensive approach for best construction value and minimization of disruptions to ongoing operations. Additional information detailing these comprehensive scopes of work has been provided in this masterplan in coordination with the presentation of detailed facility conceptual drawings and an overall construction phasing plan.

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2.2 | Site

Aerial view of WFLHD site from southeast (Source: Bing Maps)

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Circulation

ACCESS TO SITE

The site has several means of vehicular and pedestrian access and circulation.

The main pedestrian entry to the office building, including the assumed accessible entry, is located on the southwest side of the building on E 5th Street. Pedestrian circulation continues east to a series of doors and walkways on E 5th Street. The pedestrian access to the Mule Barn is along the south side of the Mule Barn. Pedestrian access to the materials storage yard is served by a locked pedestrian gate north of the office building.

The State of Washington has released preliminary images and designs for the new Columbia River Crossing (CRC) bridge, which indicate there may be impacts to the NW corner of the site. Refer to Figure 2.2.1 for the most recent CRC images. The proposed bridge improvements could reduce parking counts and remove the NW corner access to the loading dock. Further monitoring and coordination may be required to determine the final site access impacts.

Refer to Figure 2.2.2 – Existing Conditions Plan for the existing site access points.

Vehicular access to the office building and Mule Barn is served by E 5th Street and Anderson Street. A parking lot for passenger vehicles for the main office building is located west of the building and is unlocked. A parking lot for the Mule Barn is located east of the Mule Barn and is secured by means of a locked gate. Large vehicles access the materials storage yard and loading dock north of Anderson St. The large vehicles must pass through a locked vehicular gate.

Main Building south facade from the southeast, on E 5th St.

Main Building southwest main entry from southwest

Main Building west parking lot entrance

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SITE ACCESSIBILITY

The currently accessible entrance is located at the southwest corner of the main office building. It is unknown if the existing sidewalk meets ADA standards. Additional accessibility in regard to parking is discussed in Section 2.2.3.

LARGE TRUCK TURNING

The site has an existing loading dock located north of the main office building. The loading dock yard also houses materials storage and includes informal vehicle parking. The largest vehicle that uses the loading dock is a WB-67 with a 53-foot-long trailer. Large vehicles enter the site from Anderson Street and turn around within the materials storage yard prior to backing into the loading dock. Staff have indicated that the existing layout can be challenging for novice drivers.

The materials storage yard also houses the recycling and refuse bins. Refuse trucks also enter the site from Anderson Street and front-loading vehicles must turn around within the yard in order to unload the bins.

The Mule Barn does not have an existing loading dock. Pallet jacks or other means are used to move bulk materials to and from the Mule Barn.

There is a potential for the existing loading dock to be repurposed as an outdoor courtyard for employee use. In this case, the unloading and loading area would be relocated near the existing roll-up doors at the Mule Barn, located along the western building edge. Forklifts would be utilized to unload and load trucks in lieu of a dedicated loading dock. Vehicular concrete paving shall be placed at the loading area and extended along the west edge of the Mule Barn where heavy traffic may be present to move materials. No oil water separator would be required; however, stormwater management would be required for new pavement sections. Part or all of the existing loading dock would be filled in and could be used for additional staff parking or as an amenity space for employees. Refer to Figure 2.2.3 for the potential Mule Barn loading area and turning movement.

Main entrance sidewalk curb cut and accessible parking stalls

Loading dock from the north

Parking

CODE COMPLIANCE

Required Parking Counts

Per Chapter 20.945 of the City of Vancouver (CoV) municipal code, one (1) parking spot is required for every 400 SF of general office space and one (1) parking spot is required for every 2,000 SF of warehouse/storage space. The total square footage of the main office building is 58,870 SF. The total Mule Barn building area is 17,703 SF. Under the assumption that the main office building is general office space, a minimum of 148 parking stalls are required per CoV municipal code. Under the assumption that the Mule Barn is to be used for storage, a minimum of nine (9) parking stalls are required per CoV municipal code. The campus combined requires a minimum of 157 parking stalls. However, the programming layout accounts for 278 desks, all of which may not be in use at once and more spaces are required for the desks than is required by code.

ADA parking stall counts are determined in accordance with tables from the Architectural Barriers Act (ABA) Accessibility Standards. The minimum number of accessible spaces required is determined by the number of parking spaces provided in a parking lot or facility. Refer to Figure 2.2.1¬ for the minimum number of accessible parking spaces. The required number of accessible spaces is calculated separately for each parking facility. Design exceptions may be required if ADA stalls are consolidated into one parking facility.

Accessible parking stalls at main entry

Parking lot and street parking at southwest

West parking lot, view from northwest roof

Figure 2.2.1: Minimum Number of Accessible Parking Spaces (ABA Accessibility Standards F208.2)

Parking Facility Total	Minimum Number of Accessible Spaces		
	Standard	Van	Total (Standard + Van)
1-25	0	1	1
26-50	1	1	2
51-75	2	1	3
76-100	3	1	4
101-150	4	1	5
151-200	5	1	6
201-300	5	2	7
301-400	6	2	8

ONSITE PARKING

Existing on-site parking consists of a paved surface lot with 41 standard parking stalls west of the office building and approximately 22 standard parking stalls in a gravel parking lot east of the Mule Barn. There are no on-site ADA parking stalls. Refer to Figure 2.2.2 – Existing Condition Plan for the location of the existing parking lots.

Parking lot east of Mule Barn, view from north

No changes are proposed to the west parking lot, except for the addition of ADA parking stalls. Refer to the "Accessibility" section below for more information.

It is recommended to pave and reconfigure the gravel parking lot east of the Mule Barn to maximize onsite parking counts. The existing driveway on E 5th Street shall remain the same and a second driveway constructed on Fort Vancouver to improve circulation by creating a one-way drive aisle through the parking lot, which would enable angled parking. Refer to Figure 2.1.3 – Proposed Site Plan for the proposed second driveway and a potential parking layout. Paving the Mule Barn parking lot would trigger stormwater management requirements. Refer to Section 2.2 – Utilities for more information regarding stormwater requirements.

Angled street parking on E 5th St.

Vehicles currently park informally in the material storage yard between the main building and the Mule Barn. The storage yard could be "formalized" and additional parking stalls created west in the modified loading dock, north by the trailers and in the middle of the storage yard. A maximum of 37 stalls could be added by reconfiguring the storage yard. When large trucks enter the storage yard, cars may be required to temporarily move to accommodate the turning movements. It is recommended to pave the storage yard for the new parking stalls and construct a concrete pad where trucks load and unload. Refer to Figure 2.2.3 for the extent of pavement and potential parking stall locations.

Sidewalk at edge of west parking lot - no curb cuts at entry

Informal parking in storage yard

Accessibility

To bring the main building parking lot into compliance, ADA parking stalls are required. Per ABA standards, two (2) ADA parking stalls are required per 26-50 parking spaces. Two (2) standard parking stalls shall be converted to ADA stalls, with accompanying striping and signage provided in accordance with ADA standards and one (1) existing parking stall shall be striped as an ADA unloading zone. An accessible route is required from the ADA parking stalls to the main building. This includes a crosswalk across the parking lot. There are no curb ramps on the sidewalk west of the main building; an ADA ramp will be cut into the existing sidewalk for ADA access. The remainder of the sidewalk will need to be assessed to confirm that slopes are within ADA tolerances. Refer to Figure 2.2.3 – Proposed Site Plan for the extent of asphalt and concrete paving and proposed striping.

ADA parking stalls will be required with any modifications to the Mule Barn parking lot. Depending on how many parking stalls will be feasible with the new configuration, it is anticipated that two (2) ADA stalls will be required.

An ADA-compliant sidewalk will be required for the accessible Mule Barn entrance.

Informal parking is provided in the material storage yard, which is primarily used for WFL vehicles. If parking in the material storage yard is "formalized" and parking stalls are defined, accessible parking stalls will be required and it is anticipated that two (2) ADA parking stalls will be required.

Proposed Parking Counts

Refer to Table 2.2.2 below for a summary of the existing and proposed onsite parking counts:

Table 2.2.2: Onsite Parking Count

Type	Existing Parking Count	Proposed Parking Count
Standard	63	105
ADA	0	6

OFFSITE PARKING

Off-site parking consists of striped street parking along E 5th Street. There are approximately 88 standard parking stalls and five (5) ADA parking stalls on E 5th Street. On E 5th Street, there is a combination of parallel parking stalls, angled parking stalls and head-in (90-degree) parking stalls.

There is additional street parking east of the site along E 5th Street and north of the site along Anderson Street. Parking counts along these streets are unable to be quantified as it is unclear how much of the street parking is utilized by WFL staff or other surrounding buildings. Parking counts from these street sections are excluded from the offsite parking count.

Two new surface parking lots have been constructed to the east of the site on NPS property. It is unclear if these are used by WFL staff. Parking counts from these parking lots are excluded from the off-site parking count.

Accessibility

Four (4) ADA parking stalls are required for 76-100 parking spaces. The existing ADA parking count south of the site on E 5th Street meets ADA requirements, however, the existing ADA stalls do not all have an accessible route to the existing building as there are no curb ramps at the front of each ADA access aisle. To bring the ADA parking stalls into compliance, approximately 1,350 SF of asphalt pavement replacement may be required to achieve ADA-compliant grades, and 700 SF of concrete sidewalk would need to be replaced at the front of the ADA parking stalls for new curb ramps. Refer to Figure 2.2.3 – Proposed Site Plan for the extent of asphalt and concrete paving and proposed striping.

Parking Configuration

Re-striping the existing parking stalls on E 5th Street could maximize the total number of available parking stalls by eliminating or reducing the parallel and 90-degree parking stalls. As this street is owned and maintained by the CoV, coordination with and buyoff from the City would be required for any revised parking configurations.

REMOVED

Utilities

ELECTRICAL UTILITY UPGRADE

There are currently (3) incoming electrical services serving the facility, provided by Clark Public Utilities District. All are served by dedicated pad-mounted transformers. A 208V/3PH service feeds the two-story portion of the Main Building, with its transformer located just to the north of the building. A second 208V/3PH service feeds the east (lab) wing of the Main Building, as well as the Mule Barn. That transformer is located to the east of the east wing. Adjacent to that transformer is the third utility transformer – this one provides for a small 480V/3PH service that is dedicated to several HVAC loads – serving both the lab and the Mule Barn.

Refer to Figure 2.2.4 – Proposed Utility Plan for all proposed site utilities.

As is, electrical capacity to the site based on current usage is more than sufficient. However, there is a desire to upgrade the Main Building's service to 480V to allow for future flexibility (both for internal loads, as well as to accommodate potential photovoltaic production , etc.). In coordination with Clark Public Utilities, the incoming service at the two-story portion of the Main Building could be revised to a 480V service – likely utilizing the same location for the utility transformer unless a better option is determined based on other site improvements. This service could be sized to also feed the remaining facility and eliminate the need for the second 208V service at the east end of the site – and potentially the smaller 480V service as well.

STORMWATER

Code Compliance

The site has several jurisdictional requirements when it comes to stormwater management. On-site improvements will be required to meet Section 438 of EISA, which requires stormwater management when ground disturbance exceeds 5,000 SF. It is assumed that ground disturbance includes new paving and removal of existing paving down to the base course and does not include utility trenching.

Per Section 438, all rainfall events less than or equal to the 95th percentile rainfall event shall be retained onsite to the maximum extent technically feasible. This includes infiltration, evapotranspiration, or rainwater harvesting.

Off-site improvements will be required to meet the 2017 CoV Surface Water Management Manual and the DOE 2019 Stormwater Management Manual for Western Washington (SWMMWW). Stormwater management requirements are triggered when projects result in 5,000 SF or more of new plus replaced hard surface area. It is assumed that the new, replaced hard surface includes new paving and removal of existing paving down to the base course and does not include utility trenching.

Stormwater access manhole

Per the 2019 SWMMWW, stormwater management BMPS are required to treat the water quality design flow rate or water quality design storm volume. This equates to 91% of the entire runoff volume from a continuous simulation model or the 6-month, 24-hour storm from a single event hydrograph. For flow control, stormwater discharges shall match developed discharge durations to pre-developed durations for 50% of the 2-year peak flow up to the full 50-year peak flow using a continuous simulation model.

Web Soil Survey shows the site consists of Lauren gravelly loam, falling within hydrologic soil group B. Refer to Figure 2.2.4 for the soil map. Group B soils have a moderate infiltration rate, and infiltration of stormwater likely will be feasible. Geotechnical investigations are recommended to determine onsite and offsite stormwater infiltration feasibility.

Infrastructure and Management Facilities

For both on-site and off-site improvements, it is assumed that 300 CF of stormwater management including but not limited to above-ground bioretention basins or below-grade piping is required for every 10,000 SF of new or replaced impervious area. Refer to Figure 2.2.6 for a typical bioretention basin detail.

WATER

Availability

A 16-inch public water main runs in E 5th Street and Fort Vancouver Way. An older 6-inch water main runs in E 5th Street. A 2004 fire flow test of a hydrant north of the project site (Fort Vancouver Way and Hathaway) resulted in the calculated flow of 2,091 gpm at 70 psi residual pressure and 5,503 gpm at 20 psi residual pressure. Full results are seen in Figure 2.2.7. Refer to the plumbing and fire protection sections for additional information regarding fire flow requirements for the building systems. Asbuilts show the building has a 2-inch domestic water connection southwest of the building that connects to the 16-inch water main in E 5th Street.

Connection Sizing for Fire Protection Sprinkler System

REMOVED

A new connection to the public 16-inch main will require an engineering permit from the City of Vancouver. The City of Vancouver has recommended arranging a pre-application meeting, even if work may or may not need to be permitted with the City, to understand existing capacities and availability of public utilities surrounding the site.

Additional Backflow

The existing domestic water service has a meter and irrigation meter deduct system, but no backflow assembly. A separate backflow assembly for the domestic water service is recommended. The below-grade backflow assembly vault can be located in the existing parking lot after the water meter.

Secondary Water Connection

The main building has only one domestic water connection. The staff has indicated that when the water needs to be shut off, the entire building is impacted. The building has no redundancy. To remediate this impact, an additional water connection

can be provided to the main building to isolate the lab space. After the backflow assembly, the 2-inch water line could branch off into two building feeds to serve the office space and the lab space separately. Gate valves would be placed on each branch to allow for isolation. Refer to the plumbing sections for additional recommendations regarding a secondary water supply.

SEWER

Capacity

As-builts show two sanitary connections from the existing building that connect to a public sewer main in E 5th St. The proposed programming creates more plumbing fixtures than the existing programming. If the existing lateral capacity is exceeded, upsizing or additional sewer connections may be required. Refer to the plumbing sections for more information regarding existing sanitary capacity.

Loading Dock

The existing loading dock drainage connects to an existing storm sewer catch basin. If any upgrades to the loading dock are implemented and the loading dock remains, the loading dock will need an oil water separator and a connection to the existing sanitary system. The loading dock may be filled in and raised to the surrounding grade to accommodate outdoor employee amenity space. Vehicle loading would utilize a forklift in lieu of a formal loading dock. The unloading space would not require an oil water separator, however, stormwater from new impervious surfaces would be required to be treated and detained.

Drainage grate at loading dock east retaining wall

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Landscape

If site improvements exceed the thresholds outlined in Section 2.2 – Utilities, and stormwater management facilities are required, site landscaping will also be required for all above-grade, vegetated stormwater facilities. The basis of design for the stormwater facilities is the 2019 SWMMWW bioretention basins. Refer to section V-5 BMP T7.30 of the SWMMWW for landscape requirements in the bioretention basins. A typical bioretention basin can be seen in Figure 2.2.5.

Landscaped area at south of Main Building

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FIGURE 2.2.1: COLUMBIA RIVER CROSSING

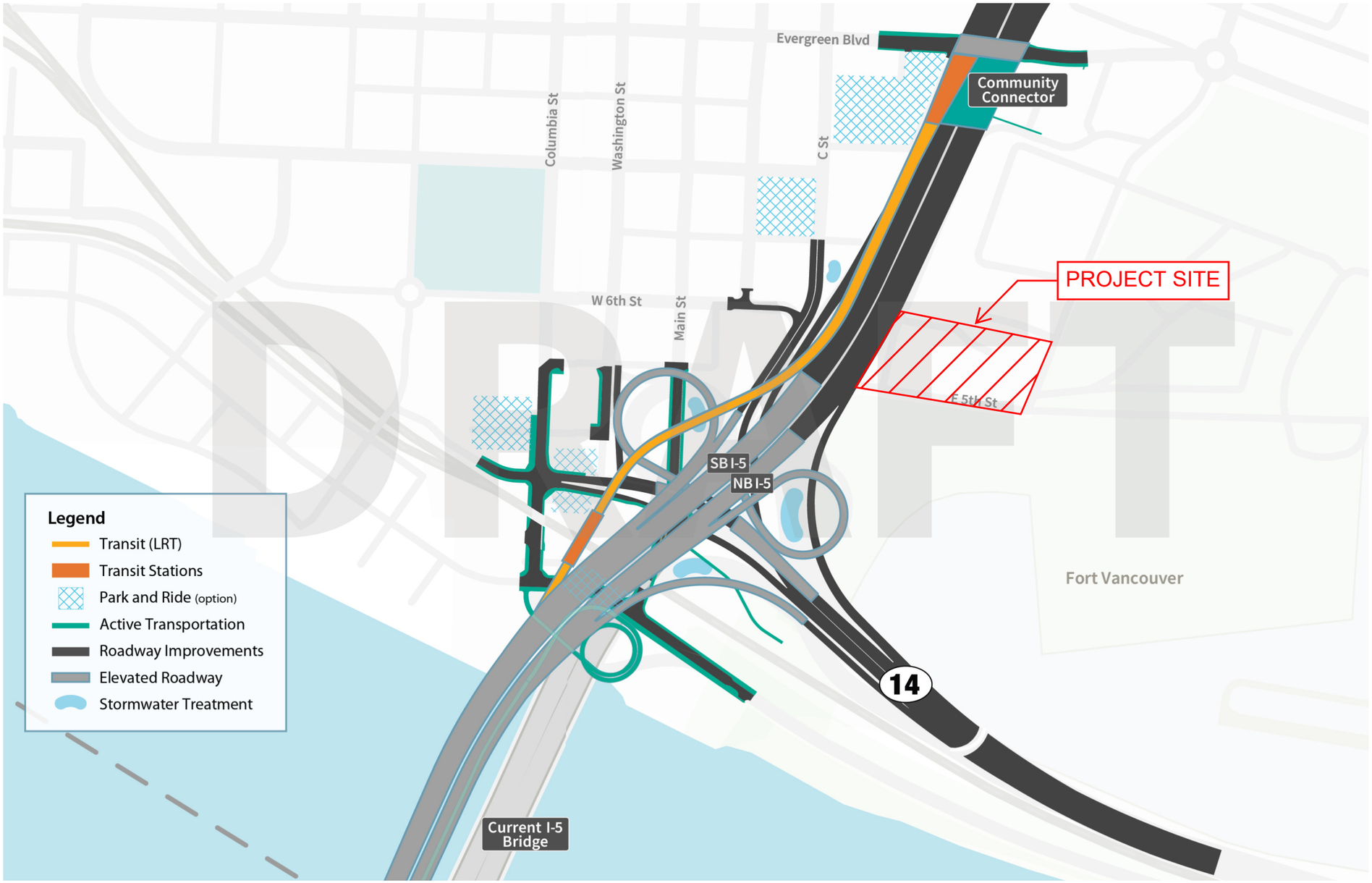

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FIGURE 2.2.2: EXISTING CONDITIONS PLAN

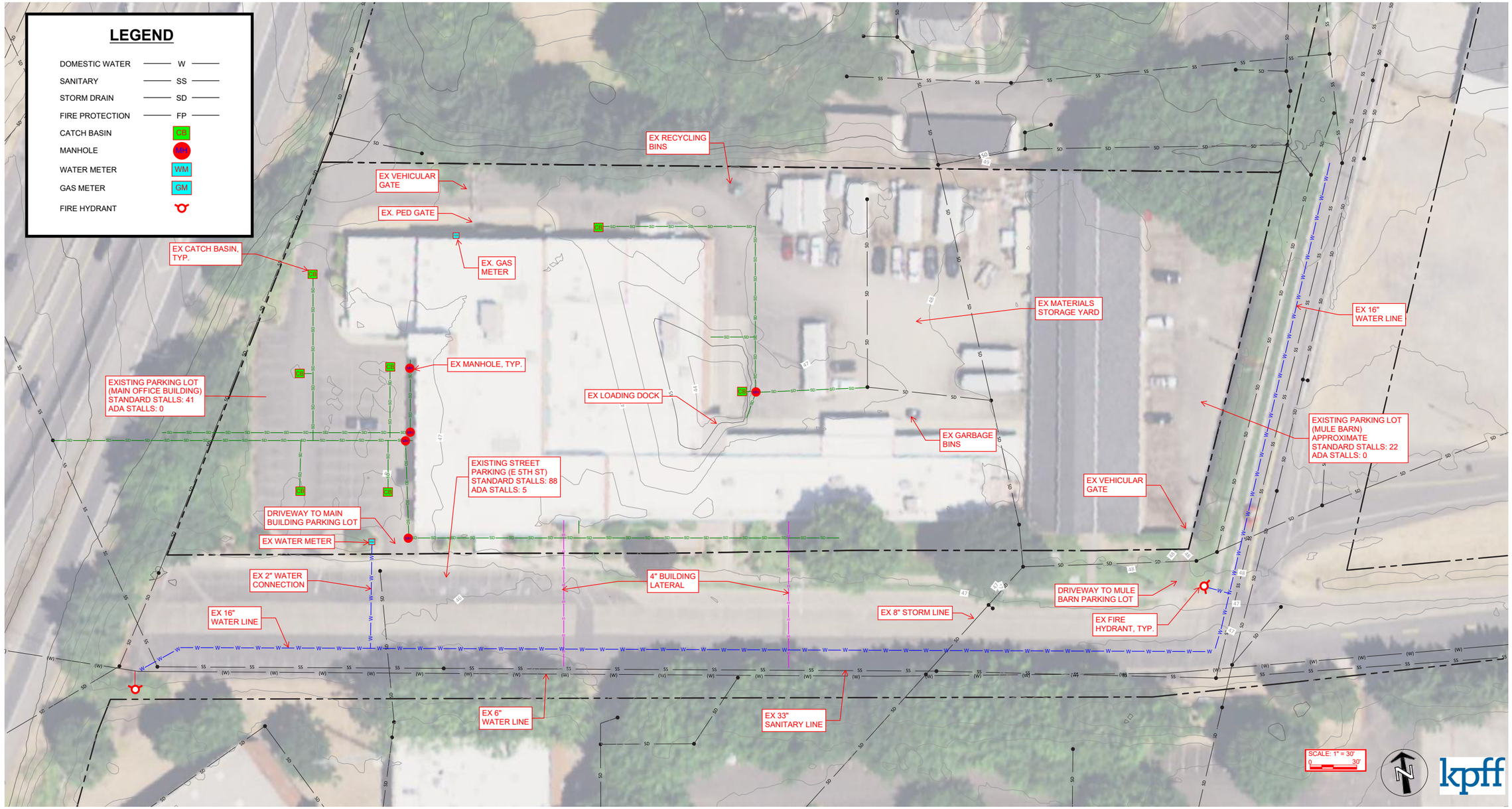

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FIGURE 2.2.3: PROPOSED SITE PLAN

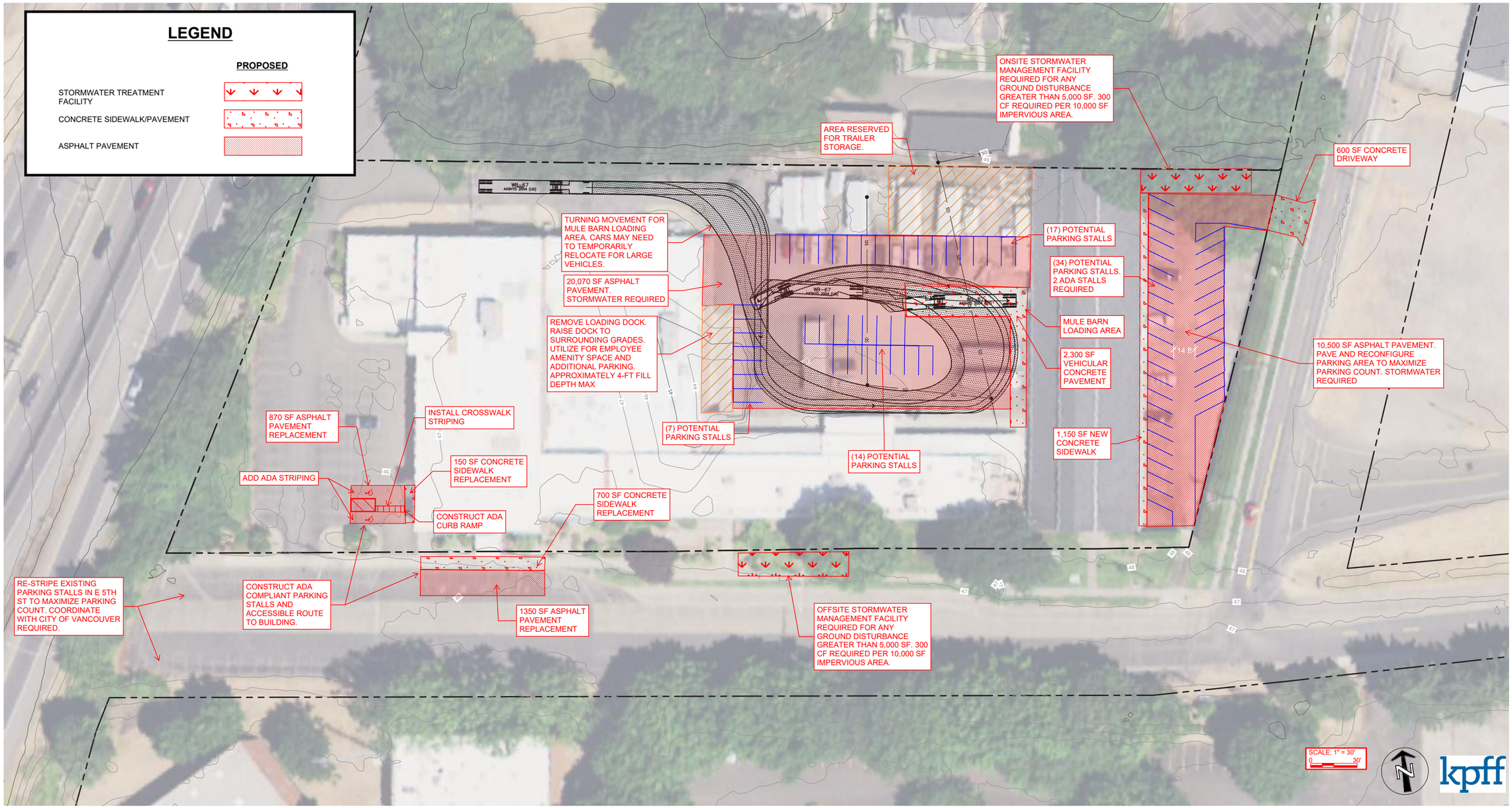

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FIGURE 2.2.4: PROPOSED UTILITY PLAN

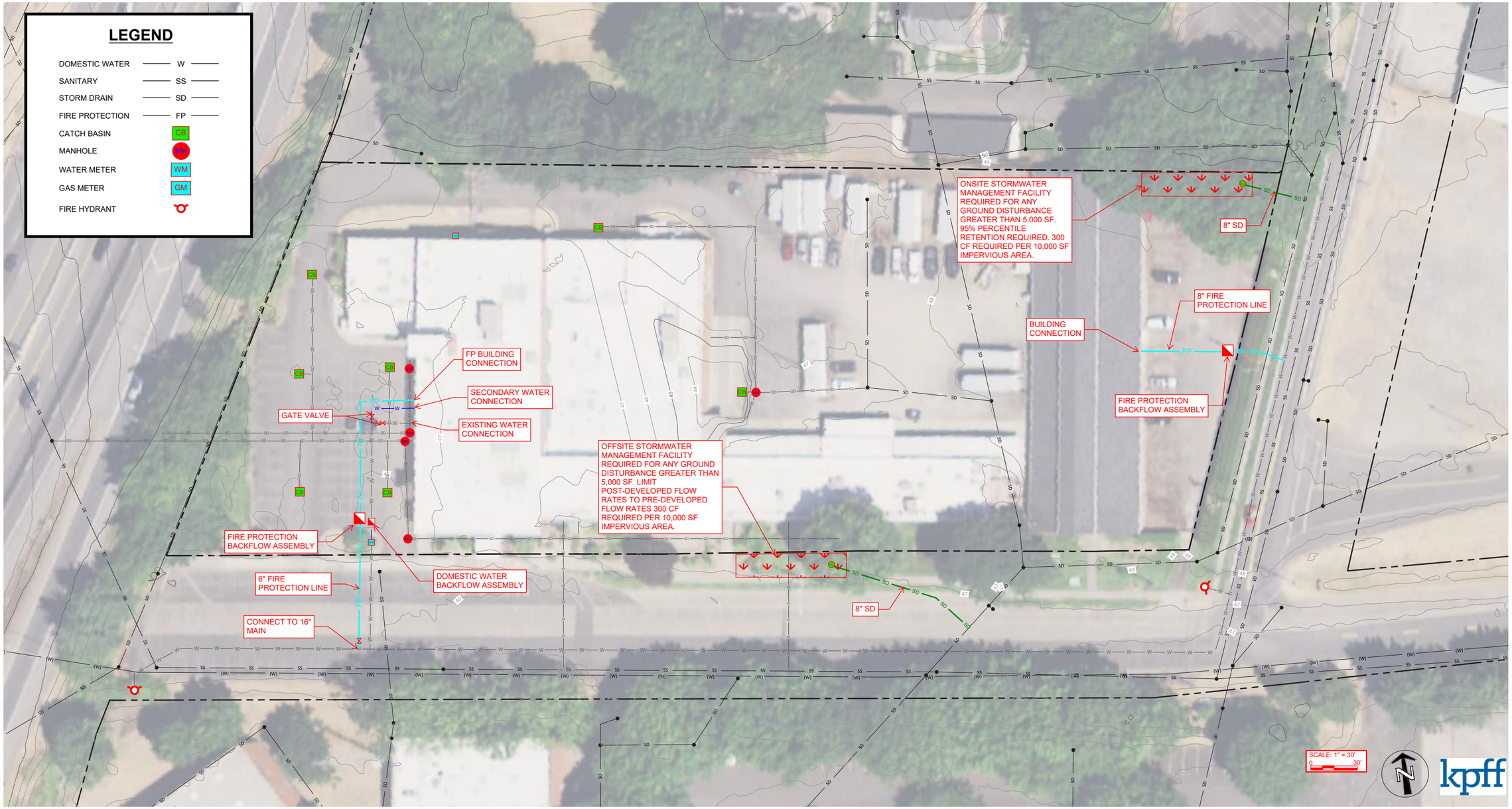

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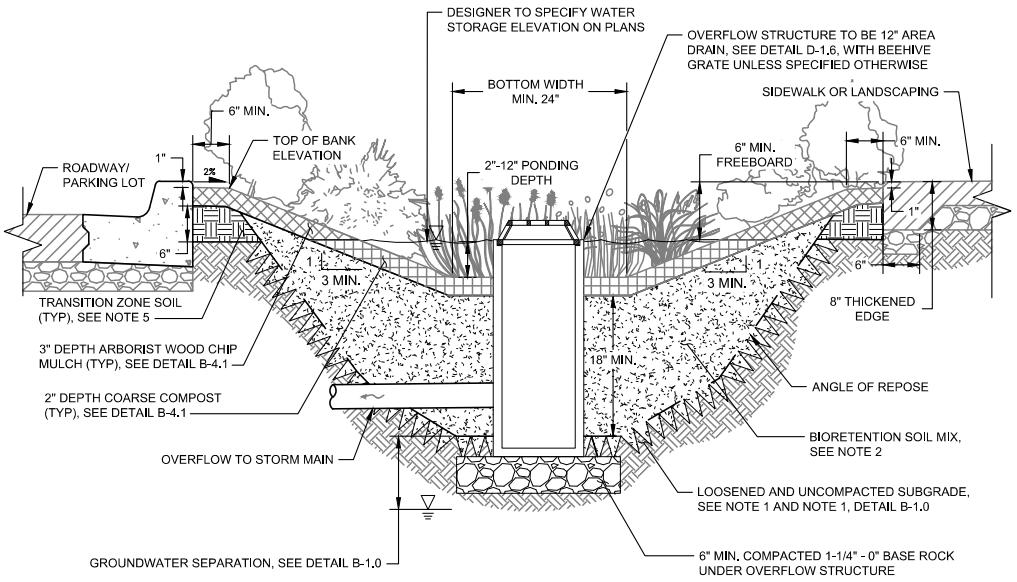
FIGURE 2.2.5: BIORETENTION BASIN SECTION



NOTES:

1. FRACTURE AND LOOSEN SUBGRADE (PERPENDICULAR TO THE SLOPE) TO A DEPTH OF 6 INCHES MINIMUM IMMEDIATELY PRIOR TO PLACEMENT OF BIORETENTION SOIL MIX AND UNDERDRAIN AGGREGATE.
2. 18" MIN. BIORETENTION SOIL MIX ON BOTTOM AND SIDES TO TOP OF PONDING AREA. SEE NOTE 2, DETAIL B-1.0. DO NOT USE FILTER FABRIC BETWEEN SUBGRADE AND THE BIORETENTION MIX.
3. MAXIMUM LONGITUDINAL SLOPE (ALONG DIRECTION OF FLOW) OF BIORETENTION SWALES SHALL BE 6% WITHOUT ADDING CHECK DAMS.
4. WHERE SIDEWALK OR PAVEMENT ABUTS BIORETENTION, INSTALL PAVEMENT FIRST AND PROVIDE THICKENED EDGE (8" MIN.) TO PREVENT UNDERMINING.
5. TRANSITION ZONE SOIL SHALL BE BIORETENTION SOIL MIX OR COMPOST-AMENDED SOIL, COMPACTED TO 90% MAX. STANDARD PROCTOR DENSITY (ASTM D698).

N.T.S

	BIORETENTION WITH SIDE SLOPES, NO UNDERDRAIN					STANDARD PLAN NO.
VANCOUVER WASHINGTON	CITY OF VANCOUVER DEPARTMENT OF PUBLIC WORKS SURFACE WATER MANAGEMENT	REV. NO.	DATE	BY	APPROVED	B-3.1
		0	1-1-2019		AMG	

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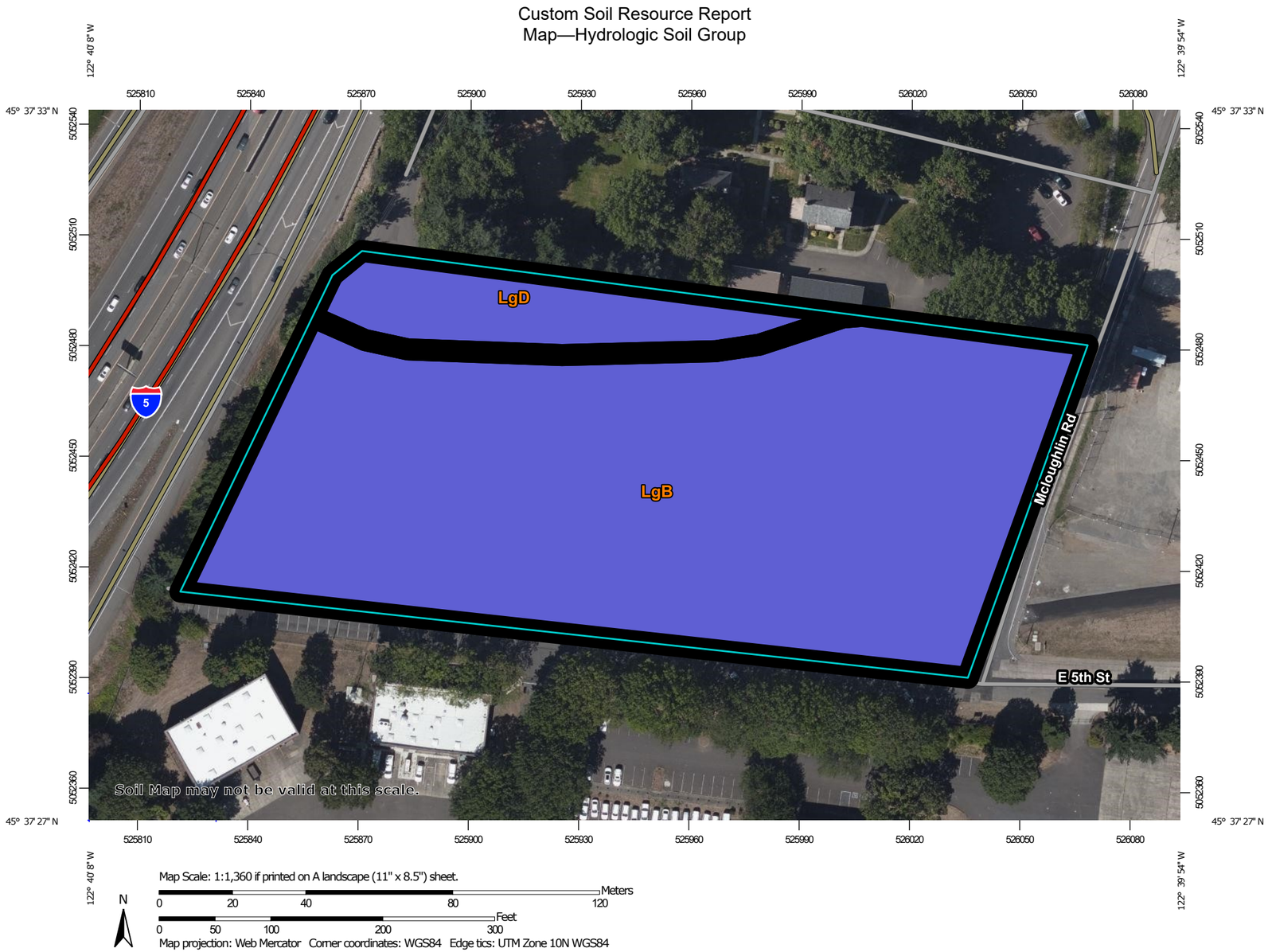
FIGURE 2.2.6: HYDROLOGIC SOIL GROUP MAP



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clark County, Washington
Survey Area Data: Version 20, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 1, 2019—Sep 12, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

FIGURE 2.2.6: HYDROLOGIC SOIL GROUP (con't)

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LgB	Lauren gravelly loam, 0 to 8 percent slopes	B	4.3	87.4%
LgD	Lauren gravelly loam, 8 to 20 percent slopes	B	0.6	12.6%
Totals for Area of Interest			**5.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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FIGURE 2.2.7: FIRE HYDRANT FLOW CALCULATION

Fire Hydrant Flow Calculation

City of Vancouver/Engineering

ENG#

Testor

Flow Date = 12/28/2004

Time of Flow = 2:30

Sheet # 804

Input Data

Source: NFPA 291, PGE

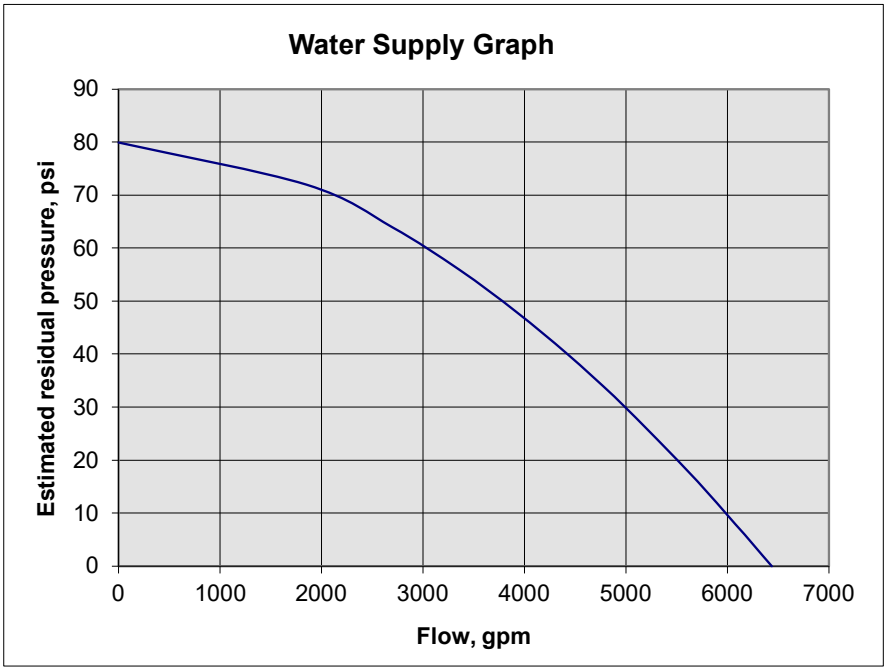
Location of hydrant flowed	Fort Vancouver Way & Hathaway	
Loc. of hydr./hose bib where resid. pr. meas.	Fort Vancouver Way 100' S of Hathaway	
Elevation of flowed hydrant, ft. MSL		optional
Number of 4" ports flowed	1	
Number of 2.5" ports flowed		
Pitot tube reading, psi	30	
Static pressure, psi	80	
Residual Pressure, psi	70	
Pressure Zone		optional
Diffuser used?	yes	none, or size of diffuser; note if non-std. diffuser used
Flow coefficient	0.8	Suggest using 0.8 if a diffuser w. built-in pitot used Suggest using 0.9 if diffuser not used

Results

Calculated flow from hydrant at time of test **2091 gpm @ 70 psi residual pressure**

Estimated maximum flow from the system, with 20 psi residual pressure **5503 gpm @ 20 psi residual pressure**

Flow, gpm	Est. residual pressure, psi
6435	0
6079	8
5704	16
5307	24
4882	32
4424	40
3922	48
3357	56
2696	64
1854	72
0	80



Comments: Vancouver Barracks

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2.3 | Main Building

Main building entry at south

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Code Compliance

Code compliance deficiencies for the Main Building include fire and life safety, seismic, accessibility, plumbing and electrical, and miscellaneous site elements. A complete listing of identified code deficiencies for the Main Building is included in Appendix D with associated Class C Construction Cost Estimates for the recommended corrective actions. Fundamentally, the building's area exceeds the allowable area for a building of Type III-B construction with a Business occupancy per the 2021 International Building Code. Additionally, the building does not have an automatic sprinkler system which, in tandem with the extended egress travel distances inherent to a large building area with limited exterior exits, creates a potentially hazardous situation for building occupants during a fire event. The other critical code deficiency is the lack of a code compliant building lateral force resisting system which places occupants at risk from collapsing unreinforced masonry walls during an earthquake event. Based on the anticipated magnitude of work recommended in the masterplan, a major building project would be classified by the 2021 International Existing Building Code as a Level 3 Alteration whereby the work area exceeds 50 percent of the building area. Level 3 Alterations require the installation of an automatic sprinkler system, and fire alarm and detection system. Voluntary seismic upgrades include bracing and anchorage of masonry construction.

FIRE / LIFE SAFETY

As part of an overall strategy to improve fire and life safety throughout the building, it is recommended to provide a code compliant automatic sprinkler system in tandem with establishing wide, clearly identified emergency egress routes. Additional recommendations for improving structural and non-structural building elements are included in the Structural section of the Recommendations chapter.

Automatic Sprinkler System

The installation of an automatic sprinkler system in the building is the most effective solution for correcting multiple code deficiencies, including exit access travel distances that exceed the 200 feet limit and existing building area that exceeds code-allowable limits for Type III-A non-sprinklered building. Space planning recommendations included within the masterplan can be designed to avoid exit access travel distance deficiencies and reduce common path of egress distances but the addition of a sprinkler system reduces or eliminates the need to install costly and obstructive fire walls at the building interior and provides for greater occupant travel durations during a fire event.

Emergency Egress

Along with the identified exit access travel distance deficiencies, there are several additional emergency egress issues requiring corrective action:

- Installation of illuminated exit signage in building areas where the path to an exit is not clearly marked.
- Modify or remove doors that swing out into the path of egress and block more than the code-required maximum of 50 percent of the exit path.

Long exit access travel distance

- Increase the size of landings at the top and bottom of stairs to provide adequate clearance for maneuvering and changes in direction.
- Install panic hardware on doors serving the large conference room and consider panic hardware on all exterior doors to facilitate exiting during a fire or life-safety event.

Skylights

- Provide safety glazing and perimeter fall protection at all existing and proposed skylights.

ACCESSIBILITY

Though there are no egregious accessibility compliance deficiencies in the building, many minor code and ABAAS accessibility compliance issues are present. Removal of these barriers would significantly increase the overall accessibility of the building for both disabled and non-disabled occupants and provide for a more equitable workplace.

Restrooms

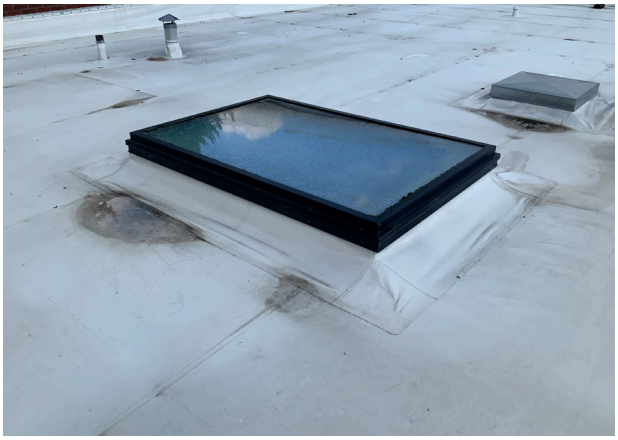
- Add accessibility recommendations based on identified deficiencies

Entries and Floor Surfaces

The main entry reception counter is the first point of contact for an employee or visitor entering the building. The current reception counter is mounted at 40 inches above finished floor. A lower-height counter surface and accompanying reception window would allow a code-defined front or side approach for people in wheelchairs, shorter people, and those with other disabilities.

- Modify the reception counter to provide a 34 inches height above finished floor and 36 inches of counter length.
- Provide a clear floor area at the reception counter measuring 30 inches wide by 48 inches long.

Ramp with no landing at exit door



Skylight without fall protection

Reception counter in main entry vestibule

Several ramps on the ground floor allow floor level changes where needed but exceed the required maximum slope and/or depth of landing space at the top and bottom for safety. The reconfiguration of adjacent walls and doors may be enough to bring these characteristics into code compliance, but larger demolition may be required in some cases.

Ramp with no landing at exit door

Stairs

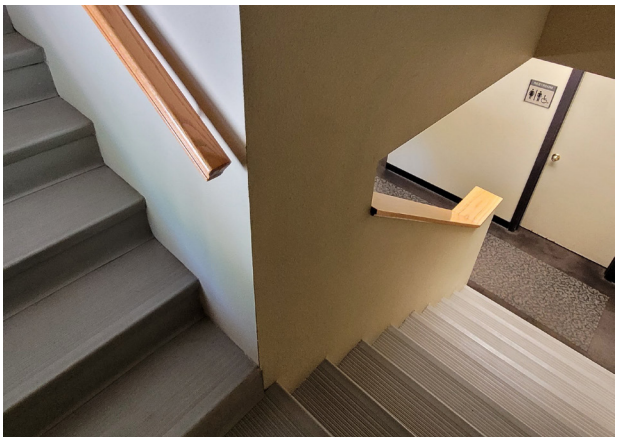
The primary stair-related code compliance issues include handrails, head height, and riser height consistency. At the primary stair located on the first floor, the existing handrails are lower than the required minimum height of 34-38 inches, do not provide required horizontal extensions at the top and bottom landings, have a cross section shape that is larger than the required dimensions for graspability, and are installed in a way that limits the horizontal clearance for passage to a dimension lower than the required minimum.

- Install code-compliant handrails including 12 inch extensions at top and bottom landings and cross section shape and dimension meeting ABAAS accessibility standards.
- Remove the center handrail to provide a minimum clear stair width of 44 inches between handrails.
- Modify stair risers to provide a maximum 3/8 inch difference between all riser heights.

Main stair - non-compliant handrails

Less impactful to occupants but still important are the handrail issues at stairs leading to upper-level storage areas. Each of these stairways are either missing a handrail on one side, do not have required top and bottom extensions, or both.

- Install code-compliant handrails at all building stairs meeting ABAAS accessibility standards and the 2021 International Building Code.



Stairs to upper storage area - missing handrails

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Architectural

Architectural elements of the building include the exterior envelope (roof assembly, wall assemblies, windows and doors), exterior appurtenances attached to the building, exterior built elements, and interior built elements (walls, floors, ceilings, finishes, doors, windows, casework).

Abandoned epentrations in roof over 1977-era building addition

Roof

Replace roof assembly and related items:

A full roof replacement is recommended to increase longevity, thermal performance, resistance to leakage, and visual presence, while minimizing maintenance and improving employee safety.

- **Replace roof assembly above deck:** Remove existing damaged roof assembly (membrane, vapor barrier, insulation, coverboard) down to metal deck and replace with recommended fully-adhered thermoplastic membrane roof assembly (membrane, vapor barrier, insulation, coverboard). Add recommended parapet detailing to remedy leakage issues and provide better exterior visual appearance.
- **Replace roof drains with new primary and overflow roof drains:** Replace all existing roof drains with a combined primary and overflow roof drain product in current drain locations. Reconnect to existing interior drainage piping.
- **Close and patch over scupper parapet penetrations:** Remove all scupper parapet penetrations and patch holes to match existing exterior wall finish. Prep inside face of parapets to receive new roof membrane termination detail.
- **Remove abandoned curbs, penetrations, steel dunnage, and access hatches:** Remove abandoned roof elements and patch penetrations. The removal of abandoned curbs, pipe penetrations, steel dunnage, and access hatches will minimize potential for roof air and water leaks.
- **Replace roof and access hatch ladders:** Replace fixed roof ladders with new fixed roof ladders meeting OSHA requirements. In (2) locations where ladder height is over 7 feet, replace fixed

Roof drain and parapet wall scupper opening

Abandoned steel dunnage on roof

ladders with caged fixed ladders for added fall protection. Cage ladders are only required by OSHA for ladders over 24 feet in height, but voluntary installation of cage ladders can offer fall protection where desired. Replace existing access hatch ships ladders with OSHA-compliant ships ladders that include guardrails.

- **Install fall protection and warning strips over all accessible roofs:** Install non-penetrating tie-off anchor points at roof locations frequently accessed for maintenance. Install warning strips on roof surface at 6 feet from all roof edges with fall potentia. Install non-penetrating guardrails at skylights for additional fall protection.
- **Replace functional access hatches:** Replace (2) functional roof access hatches in-kind with new access hatches that include integrated fall protection. Install on existing hatch roof curbs.

Roof ladder

Roof acces hatch on east wing

Exterior Walls

Repair and repoint existing exterior brick façade:

Brick face is in fair condition but requires targeted repair of damaged masonry units and repointing of damaged or missing mortar at brick joints.

- **Remove damaged brick masonry units:** Remove damaged or partial brick units where applicable, including locations of former wall appurtenances. Clear any obstructions inside or around the removed brick from residual wall appurtenance components in preparation for replacement of similar brick masonry units.
- **Replace masonry units and repoint brick joints:** Replace removed brick masonry units with similar and repoint all damaged or missing mortar at brick masonry unit and terracotta coping joints. Repair or replace damaged concrete and terracotta sills to match the appearance of similar intact sills.

Damaged brick and mortar at exterior walls

Exterior Windows and Doors

New high performance window assemblies at exterior:

High performance engineered window units weatherproofed with the surrounding concrete and masonry walls are recommended to replace existing and damaged window assemblies to mitigate air leakage.

- **Remove existing windows/frames/subframes:** Remove the entire lower and upper-level window assemblies, including the glazing, sashes, frames, and subframes.
- **Install new high-performance windows:** Install new high-performance windows with insulated glass that meet performance criteria for both structural wind load and wind-driven rain conditions in the service environment.
- **Minimum Recommendation:** Remove and replace damaged window assembly components and glazing where applicable. Reseal all frames at brick masonry openings. Refinish exterior window assemblies. Ideally, perform all window assembly repairs in coordination with seismic upgrades.

Repair and refinish doors:

Doors are in fair condition, but some require new hardware and accessories like locks, weather stripping, and card readers.

- **Remove malfunctioning or damaged door hardware and accessories:** Remove any dented, malfunctioning, or otherwise damaged hardware, and uninstall and remove malfunctioning accessories that cannot be repaired.
- **Install new door hardware and accessories:** install new door hardware and accessories where applicable. Refinish doors and door frames to match existing assemblies.

Weathered window at upper level

Window sill at north facade

Exterior door with security device

Exterior Louvers, Vents, and Wall Appurtenances

Repair west stair vestibule:

- **Remove and replace damaged panels and glazing:** Remove damaged panels from the existing canopy frame. Repair and reseal frame and install new opaque and glazed panels. Refinish the vestibule to match existing window and door conditions.

Non-functioning wall appurtenances:

- **Investigate and remove exposed, non-functioning wall appurtenances:** Numerous residual exterior wall appurtenances decrease the thermal performance of exterior walls and present a location for ingress of wind-driven rain and condensation. Investigation and removal of unnecessary wall appurtenances is recommended for long-term envelope performance.

West exterior stair with vestibule at top

Exterior wall appurtenances

Interiors

Repair deteriorated interior architectural elements:

After space planning reorganization has been implemented, repair any remaining interior architectural elements such as doors, floors, and ceilings.

- **Repair worn carpet and resilient flooring as needed:** Repair carpet and resilient flooring in-kind as needed after building renovation to restore original floor surfaces to prior condition.
- **Repair floors where cracks or irregularities occur:** Repair cracks and irregularities as they occur sporadically in floors throughout the building. Resurface floor finish to match existing.
- **Repair or repaint damaged or scuffed interior doors:** Interior doors require minor repair and repainting to restore them to their original condition.
- **Replace acoustical ceiling tiles and/or ceiling grids:** Replace damaged, stained, or color-mismatched acoustical ceiling tiles where they occur. Replace damaged or bent metal ceiling tile grids to restore original orthogonal ceiling grid alignment.

Stained and mismatched acoustical ceiling tiles

Elevator

The single elevator in the building is fully functional and accessible. No treatment recommendations are advised.

Loading Dock

Clean loading dock concrete surfaces and replace unsafe components:

Cleaned surfaces and additional safety measures are recommended to increase ease of use and safety of the loading dock, driveway, and surrounding areas.

- **Clean loading dock vertical and horizontal surfaces:** Clean the soiling and moss growth at the driveway retaining wall, loading dock concrete slab, and loading dock stairs. Modify downspout drainage for better path to drain.
- **Replace loading dock guardrail and cable guards:** Replace current guardrail at loading dock retaining wall with new OSHA-approved guardrail. Replace cable guards on loading dock with OSHA-approved guardrail and/or removable guardrail or gate to retain functionality and increase safety for visitors and employees.
- **Replace dock leveler:** Relace existing spring-loaded manual dock leveler with hydraulic dock leveler to increase ease of operation as well as operational and maintenance safety.

Loading dock view to north

Loading dock cable guards and guardrail

Dock leveler and concrete soiling

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Programming / Space Planning

Programming and Space Planning recommendations are based on interviews with WFLHD staff and department leads, review and validation of previous programming data, development of departmental adjacencies requirements, and feedback from WFLHD leadership. Initially, three programming layouts were presented for consideration emphasizing different departmental placements and adjacencies. Alternative 2 was selected as the preferred alternative for future space planning development. See figures 2.3.1 and 2.3.2 for proposed programming plans included at the end of the Programming/Space Planning section. Alternatives 1 and 3 are included in Appendix F for reference.

PROGRAMMING AND ADJACENCIES

Implement coordinated adjacencies:

Implementing requested adjacencies will streamline the work process throughout the organization. Not all departments can be located together, but can be in close proximity, both laterally and via the elevator and stair.

- Cluster interdepartmental staff: Staff within departments should be located together, along with department leads.
- Open the main entry: This will provide better daylight and lighting, accommodate additional space for visitors to comfortably wait, and provide the opportunity to display relevant historical artifacts.

Increase and vary meeting rooms between departments:

Increasing available meeting room space is an established need for WFLHD staff and will increase staff functionality by reducing space and time conflicts resulting from limited meeting spaces.

- Provide meeting rooms that vary in size and use: Design larger rooms to be subdividable where appropriate. Spread medium, small, and private/ focus rooms should be across the Main Building between departments for smaller meetings and phone calls/private conversations.
- Update systems to support meeting room use: Update the scheduling system for meeting spaces to accommodate change in room usage. Provide flexible furniture and furniture systems that promote different room usage (training, conference, auditorium, etc.)

DAYLIGHTING, LIGHTING, AND ACOUSTICS

Locate offices and adjust workstation dimensions to respond to available light:

Daylighting from exterior windows along exterior walls is vital to reduce the reliance on overhead light fixtures and increase the available natural light to staff within the building.

- Locate private offices away from exterior walls: Locating private offices away from window walls maximize available daylight to penetrate an open office layout. Offices should be consistent in size and conform to GSA standards. Glazing will transmit light and give a sense of openness, and grit or film can be applied for privacy. More focus/private rooms and small meeting rooms are recommended to accommodate relatively smaller private offices.
- Standardize workstation dimensions: Workstations will conform to GSA standards and should be organized in an open office arrangement. Panel heights should be low enough to let daylight penetrate deeper into the space, but high enough to allow individual workstations to feel a sense of privacy. This will allow for both increased light distribution and increased air flow.

- Install skylights: Where applicable, provide skylights to bring more natural light into the upper floor spaces farthest from exterior windows.

Update lighting and acoustic systems:

- Update lighting fixtures: Provide new direct/indirect LED fixtures throughout work areas and provide task specific LED as necessary to give the best light distribution and efficiency.
- Install light sensors: Incorporation of daylighting sensors will increase energy savings.
- Propagate white noise and manage mechanical distribution: Continue to utilize white noise but extend to all open office and circulation areas. Re-work mechanical ducting to eliminate sound transmission. Provide acoustic batting in walls, as well as above ceiling to help eliminate sound transmission through walls.

CIRCULATION AND SUPPORT SPACES

Increase visual and physical pathways:

Reprogramming will accommodate necessary visual and physical pathways between departments, support spaces, and exits to provide a more welcoming and navigable environment.

- Eliminate dead-end corridors: Connecting the north and south end corridors at the ground level creates a loop circulation, providing access to all areas of the Main Building's first floor.
- Open the stairwell: Stairs need to be modified to meet accessibility. An open entry stairwell will better visually connect the first and second floors, increase transmittance of natural light to the center of the building, and create a welcoming entry space for visitors and staff alike.
- Remove walls to open offices: Open office environments allow more fluid circulation between departments. It is recommended to only enclose areas required by function.

Workstation and overhead fluorescent lighting

Long corridor

Wall dividing large office space area

Update support spaces:

Support spaces are in need of modernization to accommodate increased accessibility for staff and visitors as well as increase the quality of spaces for shared amenities.

- Upgrade restrooms and wellness rooms: Restrooms should accommodate all staff equally. Toilet stalls and lavatories must meet code and accommodate the anticipated staff and meeting room occupancies on each floor. A mothers' room/wellness room is a recommended addition for staff health and wellbeing.
- Relocate the breakroom to an exterior wall: Locating breakroom on an exterior wall provides an indoor/outdoor connection as space permits in the courtyard. The more inviting location may then be used for staff functions and catering for an adjacent large conference room as needed.
- Provide small staff utility throughout: Locate small coffee counters and print/copy rooms throughout the Main Building to increase productivity. Adding (1 to 2) collaboration lounges may serve as breakout areas near meeting rooms and for staff.

Support space - cafeteria

Support space - restroom

FURNITURE AND STORAGE

Update furniture and furniture systems:

Existing furniture does not meet the needs of staff within the building and updating will increase versatility and comfort across all departments.

- Select for versatile furniture systems: Furniture components should be a 'kit of parts', all the same size while allowing a selection of components best suited to each department, as each has a unique function. Select furniture that is ergonomic and accessible, like tables with sit-stand height adjustment.
- Respond to dynamic lab needs: Create a new laboratory within its existing parameter, providing more mobile furniture components for a flexible environment. The lab has many functions,

Existing furniture

including training, which cannot be done in its current layout. Casework, plumbing, and built-in equipment should be intentionally located in permanent areas to allow for the remainder of the space open and reconfigurable.

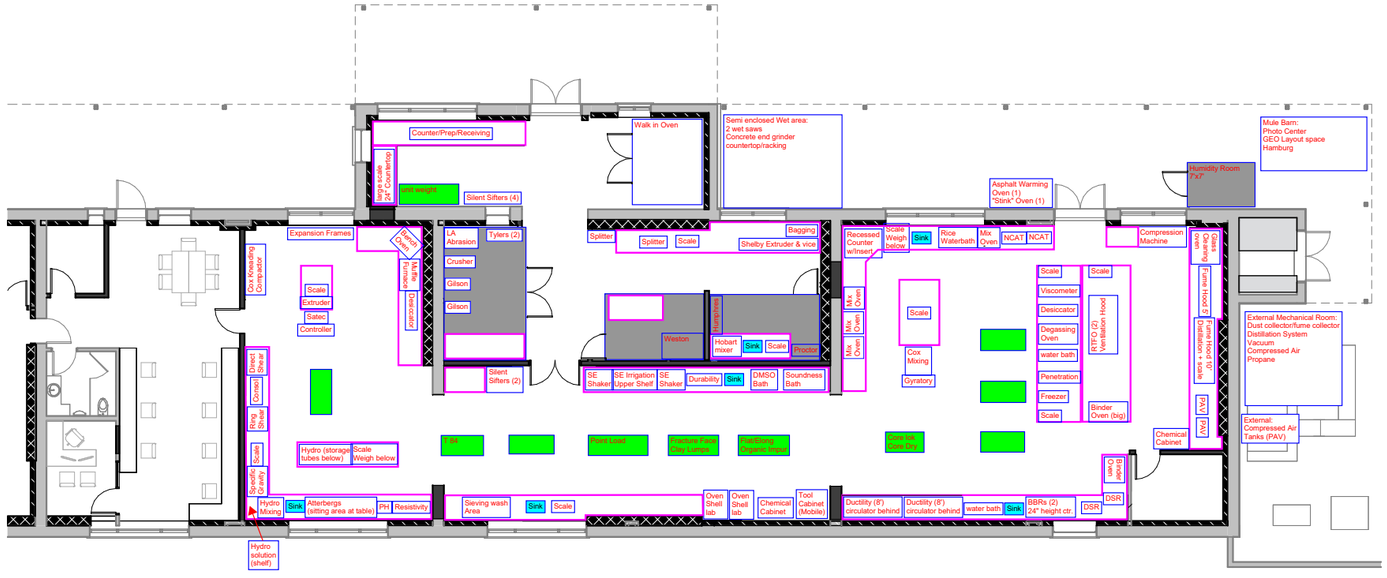
Redistribute storage space:

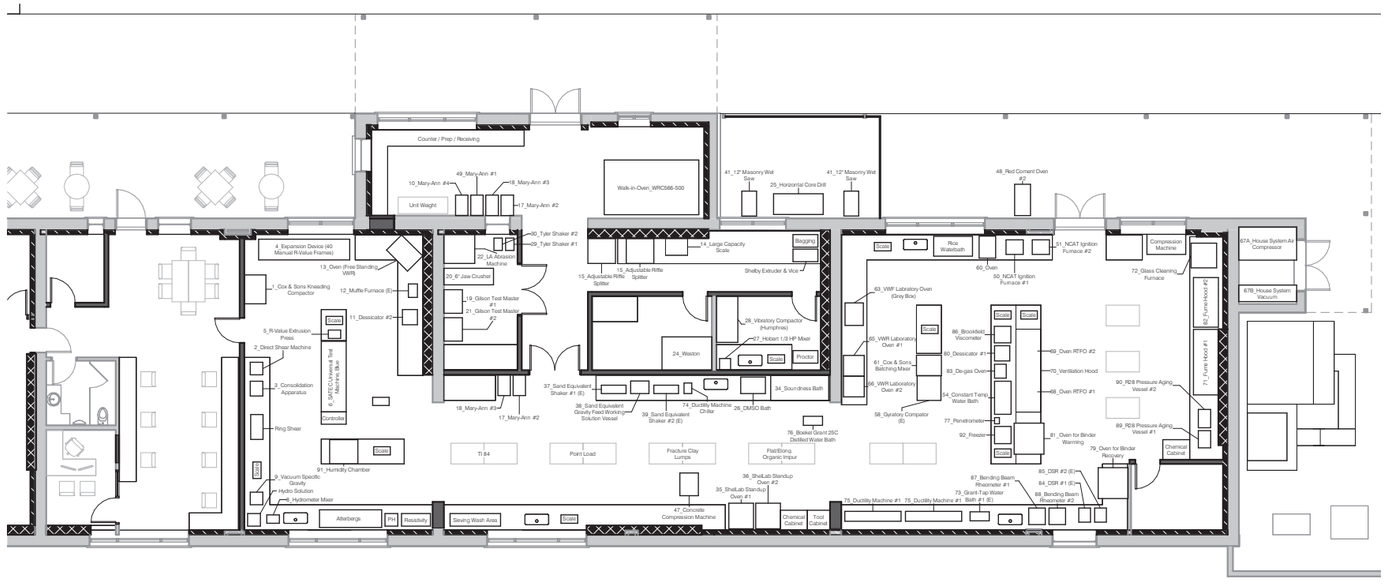
Several departments will benefit from reallocation of infrequently accessed storage from otherwise occupiable space in the Main Building.

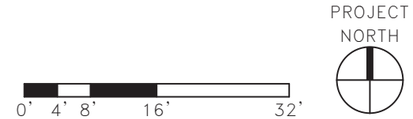
- Move storage to the Mule Barn: Move warehouse, and all group storage, including Lab, Facilities, Tech Services, and Vancouver storage, into the Mule Barn to consolidate efforts. All storage areas should be made accessible, specifically that which are near general staff spaces.
- Anticipate reduced physical storage needs: Provide a much-reduced file room for on-site hard copy storage, as most filing has been converted to a digital filing system.

Upper level storage space

LAB PLANS: WFLHD-PROVIDED & PROPOSED







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Structural

Based on the review of EO 13717 (see Part 5 Structural) a mandatory seismic upgrade of the existing building is not required. Any improvements and/or seismic mitigation measures can be implemented as desired by Western Federal Lands (WFL). As such, the seismic upgrade being proposed in the Main Building project is voluntary in nature, and an effort to achieve better "life-safety" performance. The basic improvements for that upgrade include:

- Added reinforced concrete shear walls and footings.
- Added structural steel collectors.
- Added metal roof deck to replace existing archaic roof deck (1930's).
- Strengthened existing metal roof deck (1970's).
- Strengthened existing unreinforced masonry (URM) walls with metal stud backup walls.
- Strengthened roof-to-wall anchorages with steel straps and anchors.

Reference the structural seismic upgrade drawings in the RFP for that project for cost-estimating purposes.

Unreinforced masonry wall on south facade

Example of existing steel joist structure

PERFORMANCE OBJECTIVE

Due to the voluntary nature of the seismic upgrade, the performance is established by WFL based on their goals for the project. As such, the building shall be seismically upgraded, using the industry accepted ASCE Standard 41-17, Seismic Evaluation and Retrofit of Existing Buildings. To achieve the desired life safety performance (Risk Category II equivalent), the targeted seismic performance levels shall conform to the Basic Performance Objective for Existing Buildings (BPOE):

- Life Safety structural performance at the BSE-1E seismic hazard level.
- Collapse Prevention structural performance at the BSE-2E seismic hazard level.
- Life Safety nonstructural performance at the BSE-1E seismic hazard level.
- Hazards Reduced nonstructural performance at the BSE-2E seismic hazard level.

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Due to the differences in mechanical system in the west main building and the east lab, the east and west wings have been addressed separately.

WEST WING

The Main Building water-source heat pump (WSHP) and condenser water loop system installed in 2010 is well suited for the building, can maintain current energy efficiency standards with minimal improvements and is in good operating condition. The existing WHSPs and distribution systems will remain where replacement of equipment is not required to be reconfigured with the programming changes. The condenser water loop plant including boilers, cooling tower and pumps will remain. Additional performance upgrade measures to improve energy efficiency, thermal comfort and indoor air quality have been incorporated into the master planning recommendations.

System Upgrade Recommendations:

WSHP and condenser water loop system

1. The condenser water loop plant including cooling tower, boilers and pumps will remain.
2. Remove the non-functioning existing air-to-water heat pump for condenser water heating and associated exhaust fan EF-4. The associated heating water storage tank will remain and may be repurposed for other applications.
3. (PEM 8 – refer to the performance enhancement measure section): Add a second cooling tower to provide additional cooling capacity for efficiency and to expand capacity to server the east lab area. The new cooling tower will be located near the existing cooling tower where the existing air-to-water heat pump was located.
4. Existing WSHPs to remain where new programming allows adequate thermal zoning for comfort control. Replace existing WSHPs with new where required for higher density thermal zoning and to meet new programming. WSHPs will be utilized with capacities down to 1/2 tons to provide required thermal comfort control. An estimated (25) new water source heat pumps ranging from ½ ton to 5 ton capacity will be required based on new programming and thermal zoning.
5. Main condenser water loop piping will remain. Main piping will be extended to feed the lab area and new branch run-outs will be extended to new WSHPs.
6. AHU-1 options:
    - Option 1: Existing AHU-1 remains.
    - Option 2: (PEM 2 – refer to the performance enhancement measure section): Replace existing AHU-1 with an energy recovery ventilator (ERV) with air-to-air energy recovery and an air-to-water heat pump for neutral air delivery.
7. The new ERV will provide building ventilation and general relief.
8. Existing AHU-2 to remain and will be used as it currently is for providing additional air-side economization.
9. General building relief fan EF-3A will be demolished (replaced by ERV exhaust) and EF-3B will be replaced with new.
10. Existing water-source heat pump Data Aire computer room unit to remain.
11. Main ductwork extending form AHU-1 and AHU-2 to WSHP will be remain except where reconfiguration is required to extend to new WSHPs.
12. Low pressure supply and return ductwork connected to the WSHPs will be replaced with new.
13. Existing BAS Schneider Electric Control system will remain. New equipment will be tied into the existing controls system. New sequences of operations will be implemented for the new equipment and existing sequences optimized for the existing systems. The installing controls

contractor will assess and correct issues with the energy management system.

14. New dedicated DX split systems with 2 ton cooling capacity will be provided to serve new MDF and IDF rooms. The condensing units will be located on the roof and the connecting indoor fan coil unit will be wall mounted.
15. Mail room for exhaust contaminate required by GSA P100 standard (referencing USMS standards): The mail room will be located to provide a complete wall enclosure to isolate the mail opening area from adjacent spaces. A dedicated exhaust will maintain 100% exhaust with a negative space pressure relative to adjacent spaces with no air recirculation.

EAST WING LAB AREA

System Upgrade Recommendations

1. Existing lab exhaust will remain.
2. Demolish existing RTUs installed in 2012 serving the technical office area.
3. Demolish existing RTU-12 with reported ongoing issues.
4. The existing condenser loop will be extended to serve a new packaged water-source heat pump rooftop unit replacing RTU-12 and to new indoor WSHPs serving the technical office area replacing RTUs installed in 2012.
5. The remaining existing RTUs will remain.

PHASING

The HVAC systems for the east wing lab area are independent of the main WSHP condenser loop system. Therefore, the east lab wing renovation may be phased separately from the west wing. If the condenser water loop is to be extended to the lab area, the west wing renovation would need to occur before or at the same time as the lab west wing renovation.

Because there is extensive rooftop mechanical equipment located on the west wing roof, the renovation of the west wing should occur at the same time as the west wing roof replacement to avoid the cost of reinstalling existing rooftop equipment that will be later removed. If the roof is replaced before the interior and mechanical renovations, the existing rooftop equipment would need to be reinstalled to keep the building in operation, then later demolished when the interior and mechanical renovation occurs to be replaced with new rooftop equipment needed to serve the new space programming.

PERFORMANCE ENHANCEMENT MEASURES

An exhaust review of the previous building assessments reports was conducted. Of the three reports, The Retro-CX & C19 Audit Final Report conducted in 2022 identified mechanical system performance enhancement measures (PEM) that are worthy of consideration. Six of the eight measures are recommended for incorporating into the master plan.

PEM-1 HVAC System Filter Upgrades:

Upgrading from MERV 8 filters to MERV 13 filters will reduce air borne particulate matter (PPM2.5) and improve COVID mitigation. MERV 13 filters will cause higher system pressure loss with higher fan energy and higher filter replacement costs. MERV 8 filters could be replaced with MERV 13 at any time provided that the new equipment is be designed to accommodate them.

PEM-3 Variable Refrigerant Volume (VRF) + Air-to-Air Energy Recovery:

Providing air-to-air energy recovery will have two benefits. It will have significant energy savings by preheating cold outside air and will reduce the heating and cooling demand on the condenser loop plant allowing it to expand its service to additional lab areas.

Figure 2.3.4 Performance Enhancement Measures

PEM		Description	Recommendation
1	HVAC System Filter Upgrades	Upgrade WSHPs and RTUs with MERV 13 filters for enhanced filtration	Recommended*
2	Expanded Economizer and EMS Settings	Revise controls sequence to enhance air-side economizer operation, implement demand control ventilation and reduce optimal start time	Recommended
3	Variable Refrigerant Volume (VRF) + Air-to-Air Energy Recovery	Replace WSHPs with water source VRF and replace dedicated outside air AHU with an energy recovery unit	VRF not recommended, ERV recommended*
4	Geo-Exchange Well Field	Replace boilers with geo-exchange system for condenser water heat source	Not recommended*
5	VRF + ERV for LAB Area	Replace water-source heat pump with water-source VRF, replace dedicated outdoor AHU with energy recovery unit	Not recommended*
6	Differential Pressure Reset	Static pressure reset flow control for pumps	Recommended
7	Cooling Tower Freeze Protection	Add auxiliary condenser water pump for freeze protection	Recommended
8	Replace Air-Cooled Condensing Unit with 2nd Cooling Tower	Add second cooling tower for increased WSHP cooling efficiency by lower condenser water temperature.	Recommended*

(*) Recommendation discussion provided below.

The intention from the Retro-CX & C19 report for replacing the existing water-source heat pump (WSHP) fan coils with a water-source VRF system is to enhance occupant thermal control by providing a higher density of smaller capacity indoor units that can be controlled from a thermostat. The existing water-source heat pumps were limited to 2-6 tons and thus was constrained to serving large thermal zones limiting occupant control. However, WSHPs by other manufacturers are available down to ½ tons which is the same lower capacity limit of the indoor units for the VRF system. Therefore, the WSHPs can achieve the same occupant control by utilizing smaller capacity units. The VRF system also has several disadvantages:

- If the VRF water source condensing units are located on the roof, the majority of the existing condenser piping would need to be replaced to extend up to the roof.
- VRF systems have a much higher refrigerant charge with limited refrigerants with low global warming potential.
- There will be loss of equipment uniformity with both WSHP and VRF equipment connected to the same condenser loop.

Figure 2.3.3: Variable Speed ECM, 5-Speed ECM Motor

Variable Speed ECM, 5 Speed ECM motor | *AHRI/ASHRAE/ISO 13256-1, English (IP) Units*

Model	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
			Cooling EWT 86°F		Heating EWT 68°F		Cooling EWT 59°F		Heating EWT 50°F		Cooling EWT 77°F		Heating EWT 32°F	
	gpm	cfm	Capacity Btuh	EER Btu-h/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
006	2.0	250	7,150	14.0	8,500	4.4	8,600	22.0	7,100	4.0	7,600	16.0	5,500	3.2
009	3.0	350	8,300	13.4	11,500	4.8	10,300	22.0	9,600	4.1	9,100	15.0	7,600	3.4
012	3.0	400	10,300	13.0	14,500	4.5	12,800	20.0	11,900	4.0	11,300	15.0	10,200	3.5
015	4.0	500	13,800	13.2	16,100	4.6	16,000				14,200	15.7	11,000	3.3
018	5.0	600	17,300	14.2	19,000	4.5	19,800				18,000	16.2	12,600	3.3
024	6.0	800	22,900	13.6	26,000	4.7	27,000	20.8	22,600	4.2	24,500	15.6	17,000	3.5
030	8.0	900	28,400	14.7	34,000	4.7	33,500	22.5	28,000	4.2	30,000	17.0	21,000	3.5
036	9.0	1150	34,500	14.5	43,800	4.9	40,000	23.0	35,600	4.4	36,000	17.0	26,000	3.5
041	11.0	1300	39,000	13.9	48,500	4.7	45,000	21.0	38,500	4.1	41,000	16.0	28,500	3.4
042	11.0	1400	39,200	14.2	51,000	4.9	47,000	22.0	41,400	4.5	42,000	16.6	30,500	3.5
048	12.0	1600	47,200	14.0	59,000	4.8	57,000	21.0	48,000	4.2	49,500	16.0	36,500	3.5
060	15.0	1900	57,000	14.0	66,000	4.6	67,000	22.0	55,000	4.2	58,000	16.0	43,000	3.5
070	18.0	2100	66,000	14.6	80,000	4.7	75,000	22.0	64,000	4.2	68,000	16.6	49,000	3.5

Capacity down to 1/2 ton (6 MBH)

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature. Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
All ratings based upon 208V operation. 8/9/18

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Water Furnace WSHP with nominal capacity lower limit of ½ ton (6 MBH). Refer to more manufacturer information in the appendix.

PEM-5 VRF + ERV for LAB Area:

The lab exhaust must be exhausted directly to the ambient by dedicated lab exhaust fans and cannot be exhausted by the energy recovery ventilator (ERV). Total lab exhaust will require most of the ventilation air as make-up air; therefore, the ERV will have little to no available exhaust to recovery energy from.

PEM-8 Replace Air-Cooled Condensing Unit with 2nd Cooling Tower:

In addition to increasing the cooling efficiency of the WSHP system, it will provide an opportunity to increase the cooling capacity of the condenser loop to serve additional lab area.

ENERGY SAVINGS SUMMARY

An energy model was developed to determine the energy savings associated with the roof replacement project FOVA - XX2 and the replacement of existing dedicated outdoor air AHU-1 with and energy recovery unit (ERV) as recommended in PEM 3.

Measure PEM 3 resulted in a reduction of 1,250 therms of natural gas consumption for heating with an associated $1,100/year energy cost savings.

Existing Baseline	Roof Replacement	ERV (PEM 3)	Combined
EUI Summary (kBtu/sf/yr)			
56.1	46.6	50.7	41.2
Annual Building Energy Savings			
N/A	16.9%	9.6%	26.5%

Given the age of the existing distribution equipment, plans for the building renovation should incorporate the replacement of most of the existing electrical system.

ELECTRICAL DISTRIBUTION

West Wing

A new main switchboard will be provided and located in a new electrical room – preferably on an exterior wall near the existing utility transformer. Interest was expressed by WFL to upgrade the incoming service to be 480V (currently 208V). This would better accommodate large mechanical loads, allow for more efficient circuiting of lighting, and be more receptive to the addition of a large photovoltaic array at the roof.

Upgrading to a 480Y/277V will require a larger electrical room footprint, as space will need to be provided to account for at least one large (250-300KVA) step-down transformer, or multiple smaller step-down transformers. Initial estimate for the new room size would be 10'-0" by 16'-0". A new switchboard would be provided, with the bus upsized to meet the potential requirements of NEC 705.12 (photovoltaic array input). The step-down transformers would then feed I-Line style distribution board(s) that would subsequently feed branch panelboards located throughout the building to allow for efficient branch circuiting and to avoid voltage drop.

The new 480V service would be sized not only to accommodate the West Wing loads, but also to sub-feed the east wing and the Mule Barn. Additional sizing consideration will be given to accommodate Executive Order 14057 – the future conversion of the building systems to be fully electric. At this time, this service would be estimated to be 1600A (taking into account sub-feeding the east wing).

To allow for a phased remodel of the west wing, the new service would be installed at the outset of the project. Existing branch panelboards serving areas to be remodeled in future phases would be temporarily re-fed from the new 208V distribution board.

Energy demand metering will be provided as required by current energy code to monitor the following systems:

- Total electrical energy
- HVAC systems
- Interior lighting
- Receptacle / general purpose circuits

Peak demand on the existing Service #1 over the past 7 years, as measured by Clark Public Utilities, was 456-amps, in October of 2019.

As potential phasing is developed, consideration will need to be given to the back-feeding of existing panelboards. The replacement of the incoming service and main distribution equipment would be included in the initial phase.

East Wing

A new main switchboard will be provided and located in a new electrical room – preferably on an exterior wall near the existing utility transformer. This service would remain at 208V, as the current plan would include maintaining most of the existing HVAC rooftop units. The other option would be to have this second utility service eliminated, and distribution at the east wing fed from the newly provided 480V service at the west wing. Doing so would eliminate the need for multiple utility services and meters. The existing electrical demand of the building could be met by a single service. In this case, a 480V I-Line sub-distribution board would be added in a new east

wing electrical room, along with at least one large (250kVA) step-down transformer to feed a 208V I-Line sub-distribution board. These sub-distribution boards would then respectively feed new branch panelboards.

Energy demand metering will be provided as required by current energy code to monitor the following systems:

- Total electrical energy
- HVAC systems
- Interior lighting
- Receptacle / general purpose circuits

Peak demand on the existing Service #2 over the past 10 years was 405-amps, in December of 2013.

New branch panelboards would be provided, independent of the new switchboard.

EMERGENCY DISTRIBUTION

The provision of a generator is not anticipated at the facility. If that were to change, additional space in the main electrical room would need to be accounted for to accommodate at least a standby power automatic transfer switch.

In lieu of not having a generator, a central lighting inverter will be provided at each end of the building. This will allow for the luminaires installed along the paths of egress to be connected to life safety power in order to provide code required illumination, without needing to provide individual battery packs. This will provide a maintenance savings, preventing the need for individual battery testing and replacement.

PHOTOVOLTAIC ARRAY

At this time, the provision of a photovoltaic array is not anticipated at the facility. That said, the flat, unobstructed roof of the west wing building would allow for the installation of a titled, south facing array. This roof was assessed for such an installation, taking into account needed space, clearances from existing and future mechanical equipment and physical shading. Using solar modeling software, it was determined that an array sized at 169kW, with an annual production of 200 MWh could be installed. Refer to the appendix for potential photovoltaic array layouts, production estimates, and shading report.

An array of that magnitude would be able to provide an 18% energy offset of the current building's usage.

LIGHTING DESIGN

- The lighting systems will be an integrated part of the architectural design, physically and conceptually. There are several important lighting concepts that will apply to the entire project and provide the basis for the lighting design approach in each area. Multiple layers of light will be integrated in each space where possible to enhance visuals and the architecture. The design will reinforce the function and improve the form of each space while providing visual continuity between areas.
- All luminaires will use LED lamping. Interior LED sources will target a color correlated temperature (CCT) of 3500k and will have color-rendering index (CRI) of 80 or greater.
- LED exit signs will be used at all exits and on egress path, as required by code.
- Illumination levels of each interior space type will be based on the recommended illumination levels as defined by the IESNA Lighting Library and as referenced in ANSI/IES RP-10-20 Lighting Common Applications:

Figure 2.3.5 Lighting Requirements by Space Type

Space Type	Average Illumination Level (footcandles – FC)	Lighting Power Density (Watts/SF)
Reception / Lobby	30FC at desk 30FC waiting area	0.84 w/sf
Conference Rooms	30FC meetings <10FC AV presentations 20FC general	0.97 w/sf
Offices (Open and Private)	15FC computer 30FC handwriting 50FC reading	Private - 0.74 w/sf Open – 0.61 w/sf
Staff Lounge	30FC reading/work area 20FC leisure reading 10FC socializing 10FC dining 30FC food prep	0.59 w/sf
Labs	50FC general 75FC work surface	1.33 w/sf
Building Support	20FC general	0.43 w/sf
Corridors	10FC general	0.41 w/sf
Restroom	10FC at plumbing fixtures 5FC general 20FC at vanities	0.63 w/sf

Reception and Lobby

- General purpose lighting will be provided by recessed troffer LEDs, these luminaires will provide a consistent uniform illumination to the space. Decorative suspended luminaires will demarcate any check-in or reception spaces and will provide accent lighting. Strategically placed adjustable luminaires will highlight any artwork or bulletin information location on the walls or any sculptures in the area.

Conference Room

- Luminaires will provide multiple layers of light for flexible use of the space depending on the presentation medium or discussion. Suspended decorative luminaires will be located over the main table and will be coordinated with any projection system. Recessed LED downlights will fill the surrounding area, these will provide general purpose illumination. Adjustable recessed LED downlights will be located to provide highlighting for any artwork or writable vertical surface.

Open and Private Office

- Recessed or suspended luminaires will provide general illumination in a uniform distribution. Reduction of glare will be a priority with these luminaires as well as providing a diffused soft light. Illumination levels will target a variety of

different user tasks as well as providing accent lighting to any art or focal architectural features.

Staff Lounge

- Recessed or surface mounted decorative luminaires will highlight any task surfaces as well as provide a comfortable environment to allow staff members to utilize the space effectively. Suspended luminaires located over any permanent seating areas will provide additional accent lighting. Under-cabinet luminaires may be installed to increase illumination levels for any food preparation surface.

Labs

- Suspended linear luminaires with direct and indirect illumination will provide diffused illumination with a focus on reducing glare. Luminaires will be coordinated with other MEP and architectural systems to provide an optimal layout. Luminaires will have dimming capabilities should the users determine that less light is necessary for a period of time. Luminaires will be located above working surfaces to not block illumination when users are working. Vertical illumination will be addressed with high performing optics from the general luminaires.

Building Support

- Suspended or surface mounted linear luminaires will provide diffused lighting throughout the spaces. Luminaires will be located to avoid any other building systems also located in the space as well as avoiding any storage units and other miscellaneous tall items.

Corridors

- Corridors will have recessed LED 2x2 troffers space uniformly to provide clear consistent illumination along the walking surfaces. Pathways will be well illuminated to meet a variety of needs from the users transitioning through the space. Adjustable luminaires will be located in key areas where artwork or bulletins are to provide highlighting.

Restrooms

- Restrooms to have recessed perimeter luminaire mounted over the plumbing fixtures, these luminaires will provide diffused illumination to the necessary tasks. Wall mounted luminaires mounted over the vanities will provide diffused and high-quality illumination to human features. Vanity luminaires will target high color rendering to enhance colors.

Exterior Lighting

- Exterior lighting shall utilize LED sources. Luminaires shall use optical systems and sources that comply with local lighting ordinances.
- Building entries and pathways immediately adjacent to the building to have illumination provided by wall mounted or canopy mounted luminaires spaced evenly to provided uniform and consistent illumination to and from the parking lot and nearby buildings.
- The parking lot illumination will consist of pole mounted luminaires in key locations to provide illumination that creates a safe and secure environment for all users during nighttime hours.
- Luminaires located along pathways and in or around any built structures will provide a safe and secure environment for all user groups. Pathways separated from the building will have pedestrian-oriented pole mounted luminaires.
- Luminaires will be low glare and have specific characteristics to keep illumination only where the design needs it and to prevent light spill.
- Exterior LED sources will target a color correlated temperature (CCT) of 3000k and will have color-rendering index (CRI) of 80 or greater.

Lighting System Controls

The lighting control system will consist of a combination of both wired and wireless controls to allow for easy programming of fixtures to a particular wall control, occupancy sensor controls, and daylight harvesting. The building will remain lighted during occupied hours, either electrically or via daylight measures. Ties between lighting control, and between occupancy sensors, daylighting sensors and the emergency lighting circuits, will be utilized to minimize lighting remaining on within the building 24 hours a day. Emergency lighting relays (UL 924 listing) will be used where needed to ensure emergency lighting remains off in unoccupied areas and areas where daylighting alone can provide over 1.0 foot-candle.

The following table is the suggested sequence of operation for the various areas in the building:

Figure 2.3.2 Sequence of Operation - Building Areas

Room Name / Location	Proposed Design for Lighting Controls	Sequence of Operation	Digital Controls?
Restrooms	Local ceiling occupancy sensor and wall switch.	Normal and emergency lighting switched auto-on/auto-off by sensor; sensors time out after 12 to 15 minutes.	Yes
Storage	Local ceiling occupancy sensor and wall switch.	Set in manual-on/auto-off mode with 5-minute time out ‹or› use timer switch set to 15 minutes.	Yes
Corridors/ Atrium (normal lighting)	Local occupancy sensor and daylighting control of normal lighting.	Normal lighting switched auto-on/auto-off by sensor; wall switch overrides lighting off. Daylighting sensors to dim and switch off lighting in daylighting zones, including emergency lighting using emergency lighting relays	Yes (via lighting control panel, or LCP)
Corridors/ Atrium (egress lighting)	Egress lighting turns off by daylighting sensor where in daylighting zone.	During power outage, emergency lighting fails to ON position, and is on when building occupied.	Yes (via LCP)
Exterior Lighting / Parking Lot Lighting	On/off control by lighting control panel. Where LED can be used (especially parking lot lighting), provide high/low control for energy savings.	Normal and emergency power based on egress paths. Control direct by lighting control panelboard. On at night, all-off past curfew hours for dark campus.	Yes (via LCP)
Mechanical / electrical rooms and spaces	Local wall switch	No automatic control to avoid turning lights out while technician is working on live equipment	No

Figure 2.3.2 Sequence of Operation - Building Areas (con't)

Room Name / Location	Proposed Design for Lighting Controls	Sequence of Operation	Digital Controls?
Offices	Local occupancy sensor and daylighting control of normal lighting.	Normal lighting switched manual-on/auto-off by ceiling occupancy sensors; wall control with ON/OFF/RAISE/LOWER functions. Digital room controller. Daylighting sensors to dim and switch off lighting in daylighting zones where applicable.	Yes
Conference Rooms	Local occupancy sensor and daylighting control of normal lighting.	Normal lighting switched manual-on/auto-off by ceiling occupancy sensors; wall control with ON/OFF/AV MODE/RAISE/LOWER functions. Digital room controller. Daylighting sensors to dim and switch off lighting in daylighting zones where applicable. Where applicable, provide emergency lighting relays so emergency lighting is forced on to full brightness when utility power is lost.	Yes
Meeting Room	Multi-scene controller with room occupancy sensors.	Normal lighting switched manual-on/auto-off by ceiling occupancy sensors; wall control with up to six scene functions, including RAISE/LOWER. Digital room controller. Provide emergency lighting relays so emergency lighting is forced on to full brightness when utility power is lost.	Yes
Laboratory Spaces	Local ceiling occupancy sensor and wall switch.	Normal lighting switched manual-on/auto-off by ceiling occupancy sensors; wall control with RAISE/LOWER dimming. Digital room controller. Provide emergency lighting relays so emergency lighting is forced on to full brightness when utility power is lost.	Yes

Egress Lighting

The emergency system for each building, consisting of emergency egress lighting and exit signs, will be fed via a centralized lighting inverter to provide a minimum of 1 foot candle along the path of egress.

Washington Energy Code Compliance

The Washington energy code section C406 requires additional energy efficiency packages based on the building space type. In order to comply with the energy code, spaces require a specific number of credits based on their respective type. The project's lighting design may be required to perform better than the baseline design listed above. The available lighting metrics are as follows:

C406.2.3 Reduced lighting power. Interior lighting within the whole project shall achieve credits by complying with Section C406.2.3.1 or C406.2.3.2. In Group R-1 and Group R-2 occupancies, dwelling and sleeping units shall comply with Section C406.2.3.3 and all other areas shall comply with section C406.2.3.1 or C406.2.3.2. Credits apply to the whole Group R-1 or Group R-2 area.

> C406.2.3.1 Reduced lighting power option 1. The total connected interior lighting power calculated in accordance with Section C405.4.1 shall be 90 percent or less of the lighting power values specified in Table C405.4.2(1) times the floor area for the building types, or 90 percent or less of the total interior lighting power allowance calculated in accordance with Section C405.4.2.

> C406.2.3.2 Reduced lighting power option 2. The total connected interior lighting power calculated in accordance with Section C405.4.1 shall be 80 percent or less of the lighting power values specified in Table C405.4.2(1) times the floor area of the building types, or 80 percent or less of the total interior lighting power allowance calculated in accordance with Section C405.4.2.

C406.2.4 Lighting controls. For buildings with non-transient dwelling units and sleeping units, energy credits shall be achieved by installation of systems that comply with the requirements of Section C406.2.4.1. All other buildings shall achieve energy credits by complying with Section C406.2.4.2. For buildings with mixed occupancies, credits shall be prorated based on floor area.

> C406.2.4.2 Enhanced digital lighting controls. Measure credits shall be achieved where no less than 50 percent of the gross floor area within the project has luminaires and lighting controls that include high end trim in compliance with Section C405.2.8.3 and either luminaire-level lighting controls in compliance with Section C405.2.8.1 or networked lighting controls in accordance with Section C405.2.8.2. Where general lighting in more than 50 percent of the gross floor area complies, the base credits from Table C406.2 shall be prorated as follows: [Floor area with high end trim, %] x [Base energy credits for C406.2.4.2] / 50%.

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WEST WING

System Upgrade Recommendations:

1. Develop and implement a plan to replace the domestic water piping system(s) in this area to improve general water quality and ensure safe drinking water.
2. Provide condensate neutralization devices on the discharge piping from each boiler prior to discharge to the sewer/floor sink. This is a fairly inexpensive modification and will help protect the existing sanitary waste piping.
3. Develop and implement a plan to replace the 5 waterless urinals in the facility with standard "pint flush" urinals. As it is also expected that the previously installed water piping (serving urinals installed before the waterless version) is still in the wall behind these fixtures this change is expected to be of limited cost and likely quickly paid back in maintenance costs.
4. Install thermal expansion tanks at each water heater to ensure code compliance.
5. Install an ASSE 1017 compliant master mixing valve (MMV) at each water heater and adjust the outflow temperature to control potential scalding issues as well as mitigating bacterial propagation in the water supply.

EAST WING LAB AREA

System Upgrade Recommendations:

1. Depending on any critical need for lab water qualities, develop a plan with targeted implementation to replace the lab area water piping system(s). Even if this water supply quality is not critical to lab area programming, the piping system itself is nearing the end of its viable lifespan.
2. Review lab area programming and activities for the requirement(s) of emergency use fixtures (eye/face wash devices as well as Emergency drench showers). Where needed install code compliant fixtures.

   The recognized standard for this is the American National ANSI Z358.1-2014 standard. Important elements of ANSI Z358.1 include: Emergency showers and eyewash station(s) must be within 10 seconds reach from where an accident occurs. That is considered to be approximately 55 feet. The emergency safety equipment must also be installed on the same level as a potential hazard. The path to the emergency shower and eyewash station(s) must be kept unobstructed. Door operation to reach the fixture is not acceptable.

   Another requirement of ANSI Z358.1 is the delivery of "tepid water" for a minimum of 15 minutes. Tepid water is defined by ANSI as "in the range of 60 F to 100 F". To accomplish this a mixing valve meeting ASSE 1071 must be installed to deliver the appropriate water temperature for the specified duration of time. Also, the associated hot water supply will need to be provided to the mixing valve(s) and the water heater adequate to provide said hot water requirements.

   If emergency fixtures are not required based on the building uses, remove non-compliant devices.
3. Install backflow prevention device(s) as needed to isolate the lab areas and equipment from the general potable use water system.

BUILDING GENERAL REQUIREMENTS

These items apply to the project's general needs:

System Upgrade Recommendations:

1. Install secondary roof drain system.
2. Install Premises Isolation Valve (PIV) on the main water supply to the project building(s).

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FIRE PROTECTION

Water-Based Fire Suppression

A wet pipe fire sprinkler system is recommended for the enhanced life safety and building protection it would offer. Additionally, it would provide increased flexibility during any remodeling efforts by permitting increased allowable area limitations, exits travel distances, dead end corridor lengths, and other tradeoffs permitted by the building code when a fire sprinkler system is installed.

The wet pipe system will be installed in all heated areas. A dry system will be provided for the exterior canopy where combustible materials are currently being stored.

A new fire riser room with exterior access will be provided to accommodate a new 6” diameter fire sprinkler service. From the riser room the fire sprinkler system will extend to provide protection the remainder of the building. The backflow preventer will be located in an exterior vault (reference Civil).

The sprinkler system’s maximum hazard is expected to be Ordinary Hazard Group II, as defined by NFPA 13. Pallets should be stacked no more than 4 ft in height to avoid impact to the fire sprinkler design.

Exterior canopy with combustible items underneath - from west

Exterior canopy with combustible items underneath - from east

ELECTRONIC SAFETY AND SECURITY

Detection and Alarm

It is recommended in any areas of remodel or change in occupancy that the existing fire alarm system be modified as needed to provide fire alarm strobe coverage in public/common use areas per NFPA 72 and the ABA.

It is also recommended strobes be provided in common use/public spaces, per the ABA and NFPA 72, where they are not currently provided.

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5

Existing Conditions

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5.1 | Site

Caption

CIRCULATION

The site is bounded by Martin Court to the north, Fort Vancouver Way to the east, E 5th Street to the south, I-5 to the west and Anderston Street to the northwest. The main parking lot is accessed off E 5th Street. Large trucks access the loading dock by means of a locked gate north of the existing building with vehicular access from Anderson Street. The gravel parking lot east of the Mule Barn is accessed by a driveway near the intersection of E 5th Street and Fort Vancouver Way.

PARKING

On-site parking consists of a paved surface lot with 41 standard parking stalls west of the office building and approximately 22 standard parking stalls in a gravel parking lot east of the Mule Barn. There are no on-site ADA parking stalls.

Off-site parking consists of street parking along E 5th Street. There are approximately 88 standard parking stalls and five (5) ADA parking stalls on E 5th Street. There is additional street parking along Fort Vancouver Way, which is not included in the overall parking count. There is a combination of parallel parking stalls, angled parking stalls and 90-degree parking stalls on E 5th Street.

UTILITIES

The site is served by public utilities in E 5th Street and Fort Vancouver Way, including a 16-inch water main, a 33-inch sanitary sewer main and an 8-inch storm main.

On-site stormwater is collected by a series of catch basins in the parking lot and load dock and directed to a public storm sewer in E 5th Street and a sewer manhole in I-5. As-builts show two sanitary laterals connecting to the public main in E 5th Street. A 2-inch water line connects to the 16-inch water main in E 5th Street. The water line is connected to a water meter and an irrigation deduct meter.

Refer to Figure 2.1.1.1 for the Existing Conditions Plan.

LANDSCAPE

There are no existing vegetated stormwater facilities. Site landscaping is comprised of lawns, planting beds and street trees.

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5.2 | Main Building

Caption

CODE COMPLIANCE

The Main Building is a 58,870 square feet, non-sprinklered, Type III-B construction with a Business (B) occupancy. The building is shorter than the code-allowed height of 55 feet and below the 3 stories above grade, but significantly exceeds its allowable building area of 28,500 square feet. Total allowable occupant load based on a Business occupancy is calculated to be 394 occupants. At least 1 egress path exceeds the maximum allowable 200 foot exit access travel distance for a non-sprinklered building. Some exit paths are not clearly marked with visible exit signs. Some restroom fixtures, toilet partitions, toilet accessory mounting heights, and clearances do not meet ABAAS accessibility requirements. Certain paths throughout the building exceed the maximum ramp slopes, ramp landing depths, door hardware, and/or door clear floor area dimensions.

ARCHITECTURAL

Roof

The roof area is composed of several flat roofs of varying heights, associated with their respective building wings constructed between 1932 and 1977, separated by low parapets. At the west side of the upper roof is an abandoned elevator tower which is the tallest portion of the building. The roof assembly consists of metal decking with cover board, insulation, a vapor retarder, and a mechanically-fastened thermoplastic membrane that wraps over the top of the terracotta parapet coping. Parapet heights are typically low, ranging in height from 6 inches to 24 inches, with roof surfaces minimally sloped to drain. Three fixed ladders provide access between the different roof levels and metal ship's ladder provides access to the elevator tower floor. Mechanical equipment and exhaust/intake vents are mounted on raised curbs or steel dunnage but many curbs and steel dunnage exist at locations where previous mechanical equipment was located but is now abandoned and capped. Roof drains are typically located at parapet walls, consisting of cast iron dome assemblies without overflow capability, and connect to drainage piping located at building interiors. Some roof drains have accompanying scupper cutouts in parapet walls to provide some overflow capacity.

Four corrugated metal deck roof canopies, supported on open web steel joist structure and painted steel columns, extend across the north elevation of the east wing and partially around the east side of the west wing to provide weather cover and shading at the loading dock and exterior storage areas. The corrugated metal canopies have downspouts that

drain directly to the asphalt paving. There is a unique canopy at the south elevation of the 1932 building providing cover for the main entry doors. The canopy is constructed with sloped metal decking supported at the building wall and four brick columns which have been integrated into brick landscape beds.

A single 4 foot by 6 foot skylight is curb-mounted on the 1977 addition roof providing overhead daylight for an internal, windowless space at the first floor. The skylight has transparent glazing set in an aluminum frame, but lacks fall protection and may not be safety glazing. Three 30 inch by 36 inch hinged metal access hatches are provided on the roof but only the hatch located at the east side of the east wing of the building is used by facility staff. The other two access hatches are located in the far northwest and southeast areas of the 1932 roof and do not appear operational or regularly used.

Condition Assessment

- The thermoplastic roof membrane appears in fair condition without visual tears or substantial deterioration but the architect/engineer team was informed by facility staff that leaks have occurred in the building. Facility staff were not able to provide an installation date for the roof but discussions indicated an age exceeding 20 years.
- Roof drains are frequently clogged with resultant ponding and debris collection at some drain locations.
- Through-wall roof scuppers drain down exterior walls, staining and saturating brick masonry, and are neither consistently placed near primary roof drains or at a height that allows them to provide overflow capacity.
- Areas of the roof appear spongy under normal walking conditions, likely a result of water infiltration and insulation/sheathing deterioration below the membrane.
- Abandoned steel dunnage is significantly rusted and provides a potential leakage point at penetrations. Abandoned and capped curbs are potential water penetration points as well as significant areas of air leakage and heat loss (based on thermographic imaging data).
- Metal at roof ladders and the ship's ladder are significantly rusted and do need meet OSHA safety requirements.
- Skylight installation does not prevent accidental falls and the existing glazing may not be safety glazing.
- All access hatches have minor scrapes and paint chipping.
- Single functional access hatch is in working condition but is heavy, doesn't unlatch/latch easily, and does not provide OSHA-required guard rails at the roof level. The interior ship's ladder leading to the access hatch does not provide handrails.

Exterior Walls

Brick masonry is the predominant wall material extending vertically from the base of walls up to the roof coping at all building elevations. The exterior wall assembly consists of both vertical scratch finish brick masonry veneer with flush mortar joints and a concrete masonry unit (CMU) structural backup wall. The masonry veneer is composed of standard bricks in common bond pattern accented with soldiered rows and stacked column brick patterns at openings as well as decorative detailing. Terra cotta masonry and concrete shapes are used at the 1932 building window sills and at roof copings on the 1932 building and 1977 addition. Metal awnings provide shade over south, west, and east facing windows and doors.

Condition Assessment

- Discoloration from water intrusion and atmospheric soiling is visible at terracotta coping joints and brick at top of wall locations.

- Discoloration from efflorescence is visible below the parapets along the north elevation of the 1952 addition.
- Significant moss buildup is present at coping joints, east and north-facing mortar joints on the 1932 building, roof flashing termination bar joints, and window sills. Moss buildup prevents water from draining away from brick and openings leading to water intrusion within the wall assembly.
- Mortar is actively spalling out of brick joints at many locations. Cracks are evident in brick units near equipment penetrations. Thermographic analysis indicates an otherwise effective thermal barrier at most brick masonry walls where cracks are not evident for the wall type.
- Weep holes are present at base of walls but do not include screening or mortar around wicks for preventing clogging.

Exterior Windows and Doors

The 1977 remodel reused salvaged windows from demolished portions of the 1932 building. Metal sashes were replaced with similar components on the first and second floor at several locations.[1] The exterior windows typically consist of insulated glazing units held in the metal sashes and frames from the original 1932 construction. Frames are fastened to a steel angle attached to the CMU and located inboard of the brick veneer and exterior sill. See drawings from the 1977 Building Remodel for typical detailing. Variations from the typical steel sash windows include (2) south-facing window assemblies at the post-1977 addition composed of extruded aluminum profile frames and (1) first floor north-facing window in the Main Building with a metal sill painted to match the sash and metal frame.

The building's exterior envelope includes seventeen exterior doors. Single leaf hollow metal doors painted with enamel are the predominant door type. Eight are located on the first floor, two at the second-floor landings of the exterior stairs, and one fully glazed, single leaf hollow metal door is centered in storefront at the main south entrance. Additionally, there are three double leaf hollow metal doors located along the north and east elevations of the 1952 addition, and three metal overhead coiling doors at the north and east elevations of the 1977 addition.

Condition Assessment

- Window assemblies from the 1932 building do not provide an adequate barrier against wind-driven rain or heat transfer. Moisture buildup is visible inside glazing of several windows. Thermographic imaging indicates thermal bridging at the window frames and lintel. The vertical mullions and metal frames have insufficient thickness to prevent heat transfer to the interior.[2]
- Windows located at the roof level show extensive deterioration, including significant metal oxidation, deterioration of sealant around sashes and frames, and considerable moss buildup at the sills.
- Windows located under canopies along the north elevation are in good condition relative to the rest of the exterior windows.
- Sills – concrete, terracotta, and metal – show extensive deterioration from erosion, damage, and atmospheric soiling.
- Thermographic imaging indicates that doors are typically well-insulated but there is evidence of air leakage at the frames.[3]
- Metal doors – Paint deterioration and atmospheric soiling is visible on both the interior and exterior surfaces of the metal doors.

1. Mace, Delvin. June 1976. Architects Associative, Vancouver, WA. Sheet 28 "Window Schedule/Metal Window Elevations."
2. Branchpattern. August 2022. "Federal Highway Administration Retro-Cx & C19 Audit Final Report." *Better Built Environments.* 158-239.
3. Branchpattern. 158-239.

Exterior Louvers, Vents, and Wall Appurtenances

There are numerous existing wall appurtenances and remnants of former wall appurtenances on walls at each elevation. Teal-painted, louvered metal awnings provide shade to 30 windows along south (19) and west (11) elevations, and two teal-painted seamed metal canopies provide shade to west- and south-facing doors. (2) suspended corrugated metal canopies secured by HSS square metal braces fasten to the exterior wall over doors along the west elevations of the 1977 remodel. Along the north and west elevations, (2) steel framed exterior stairs provide second floor access at north and west elevations. Storefront partitions partially enclose the second-floor landing of the west-facing exterior stair.

An exterior louver with a terracotta sill located at the west elevation of the elevator tower above the second-floor parapets, and a small vent embedded in a soldiered row of bricks between the first and second floor of the west elevation. Pipes, vents, and controls branching from an external mechanical system fasten to an adjacent north elevation wall. Evidence of former equipment and systems can be seen in holes, partial removal of brick, and rough cuts of electrical wire extending away from the building through mortar joints.

Condition Assessment

- **Demolition of the elevator tower** above the second floor is anticipated to include the associated exterior louver.
- **The small vent** at the west elevation shows degradation from oxidation and atmospheric soiling.
- **Louvers are in fair condition** – some are dented or warped from their original shape but otherwise functional.
- **Seamed metal and louvered awnings** show signs of paint degradation and atmospheric soiling.
- **Mortar** is actively spalling out of brick joints at many locations.
- **Penetrations remaining from former equipment** mounted to the exterior walls create possible thermal bridges between exterior and interior environments.

Interiors

Ground floors are concrete slab-on-grade construction, with various finish materials. The second floor is concrete over metal deck supported by open web steel joists. Carpet tile of differing colors and patterns is the primary floor finish throughout, while sealed concrete floors exist in warehouse, janitorial, and storage spaces. Restroom floor finishes consist of resilient floor tiles and ceramic floor tiles. Resilient floor tiles are also located in the lunch room, IT area, server room, lab spaces, and some shipping/receiving office areas. Restroom furnishings consist of HPDE toilet partitions with metal fasteners, supports, and grab bars.

Interior fixed partitions are primarily gypsum board over light gauge metal studs, extending to the underside of ceiling, above ceiling and braced to structure above, or fully extended to structure above depending on location. Some interior fixed partitions are plaster over gypsum board on either metal studs or concrete masonry units.

One interior aluminum storefront wall with door divides the ground floor northwest wing of the 1932 building portion from the rest of the building. Interior single-glazed fixed windows occur at some meeting rooms and offices that look out into hallways.

A pair of full-height collapsible room divider partitions on ceiling tracks divide the large conference room on the first floor when needed.

Interior doors consist of various types and materials, primarily swinging hollow metal door panels with metal frames and full-lite, half-lite, or narrow lite glazed doors in some locations. Sliding doors accessing offices in the northwest wing of the 1932 portion of the building are fully glazed with translucent glazing and metal top and bottom stiles. A sliding door occurs at the second floor wiring room, and some folding doors occur at hallway storage closets. Interior door hardware consists of both lever-type door handles and round doorknobs, with locking function. Panic hardware only occurs on one interior door near the loading dock.

Suspended ceilings throughout the building are 2'x2' or 2'x4' acoustical ceiling tile with inset overhead lighting, and vents. Ceiling heights vary by space, but are generally between 8' and 10' above finished floor. Ceiling-mounted devices include sound masking white noise devices, security cameras, wireless internet routers, smoke alarms, exit signs, and convex safety mirrors for hallway occupant visibility.

Large storage consists of several types across the building. Wall-mounted shelving occurs in storage rooms, wiring rooms, and the large conference room closet. The Central Files room on the first floor has the largest concentration of storage outside of the warehouse, including tall flat-file shelving, rolling heavy duty floor-track-mounted shelving, as well as a large amount of vertical shelving for rolled-up large-format paper archives. The warehouse and related storage rooms contain tall metal rack shelving throughout.

Condition Assessment

- Carpet is slightly worn but in otherwise good condition
- Concrete floors are generally in good condition, except for some storage closets where the surface has degraded
- Resilient flooring is in good condition
- Interior doors are functional but exhibit varying levels of wear and tear
- Some acoustical ceiling tiles are visibly off-color or damaged

Elevator

A single-piston hydraulic elevator serves both the first and second floors of the building. It has a machine room that contains the control panel, hydraulic sump, and motor. The elevator was installed in 2014, the manufacturer is Armstrong Elevator Company, and its listed capacity is 2500lbs. The elevator tower structure above the main roof is no longer in use. The cab is lined with textured metal vertical surfaces and laminate flooring.

Condition Assessment

- Elevator is fully functional and accessible, including necessary safety features

Loading Dock

A roughly 24' wide x 66' long sloped and paved loading dock driveway exists directly adjacent to the east side of the building facing the courtyard, running north-south, with a concrete loading dock and an inset spring-loaded manual steel dock leveler at the south end. A small set of stairs next to the dock leveler traverses from the bottom of the sloped pit to the upper ground-level loading dock surface. The long side of the sloped driveway on the east side has a fixed metal pipe guardrail while the south side has removable fall protection cables suspended between steel posts and columns with clips. The concrete

retaining wall that makes up the east side of the sloped driveway has several drainage outlets and a vertically oriented fixed metal grate at ground level.

Condition Assessment

- Loading dock driveway paving is in good condition
- Spring-loaded manual dock leveler is functional but somewhat difficult to operate and somewhat dangerous to service.
- Loading dock concrete has significant soiling and moss growth in some areas. Downspout from overhead canopy drains directly onto the edge of the loading dock and into the sloped driveway
- Guardrail construction and fall protection cables may not meet OSHA and/or building code
- Loading dock driveway retaining wall has significant soiling and moss growth

PROGRAMMING/SPACE PLANNING

Programming and Adjacencies

The building supports approximately 270 WFLHD staff across departments including Administration, Finance, Human Resource, Acquisitions, Business Operations, PPE & GIS, Construction, Tech Services, Design & Safety, Project Management, Engineering, Division Directors, and IT generally organized in the two-story west volume and adjacent additions. The east wing of the building serves as a laboratory. Staff are located throughout the building, not grouped by department. The (3) meeting spaces and (1) break area are centralized within the building.

Condition Assessment

- **Department Adjacencies** - Staff are located across the building, not necessarily with their department. Staff/functions needing adjacencies to another department or function aren't necessarily accommodated.
- **The main entry** does not accommodate visitors, as they wait for staff to meet and accompany them.
- **The lab** does not allow for flexibility and is outdated in terms of accessibility and Geotech lab function. The current layout impedes workflow.

Daylighting, Lighting, and Acoustics

The building configuration is a result of a patchwork of several additions and renovations, and staff have adapted to the complications of the resulting layout. The typical arrangement per department consists of shared and individual workstations, private offices, and sporadic storage within walled off divisions of the building. While workstation dimensions vary, many have partitions as high as 7 feet in spaces with 8 foot ceilings. Private offices are typically arranged at the edges of the building adjacent to windows where the predominate natural light enters the building. Acoustic quality varies inconsistently, and there are white noise systems installed in ceiling panels in some department zones.

Condition Assessment

- **Lighting/Daylight** is inconsistent throughout the working environment. Natural light does not reach the centralized work areas due to high partitions and private offices located along the exterior walls. The existing fixtures do not provide adequate light levels for staff and are downlight only.
- **Partition panel heights** block natural light from entering workstations.
- **Private offices and meeting rooms** do not have adequate lighting distribution for the rooms in general or the tasks associated.
- **Support spaces are dimly lit.** Most staff do not have access to the natural light provided by exterior glazing. Many rooms in the building have few to no windows.

- **Acoustics** - White noise is evident in some spaces, while non-existent in others. Mechanical ducts encourage sound transmission between offices and meeting spaces. Technology for audio/visual is outdated in meeting rooms.

Circulation and Support Spaces

Floor-to-ceiling walls divide the building into large work zones. The resulting space for circulation takes the form of long, narrow corridors down the length of each volume. There are currently three designated meeting spaces, (1) centrally located large meeting space that can be partitioned into up to three smaller meeting rooms with occupancies of 40, 41, and 50, and (2) smaller conference rooms at the second level with occupancies of 24 and 8. The break room is directly adjacent to the large meeting space and serves up to 70 people. There are (5) total restrooms: three on the lower level – a men's with two stalls and two urinals, a women's with three stalls, and an individual room with a stall and shower – and two restrooms on the second level – a men's with two stalls and two urinals and a women's with two stalls.

Condition Assessment

- **Meeting Rooms** are limited in quantity and create overlaps in scheduling, as the largest spaces are subdivided to create smaller meeting spaces but are not scheduled separately. Most small meetings take place in private offices, where additional tables exist. The anticipated increase to 275 staff will exacerbate the problem.
- **Breakroom and Collaboration Spaces** – There are no spaces in the building for collaboration or break out except for the breakroom. When it is used as a meeting space, there are no other spaces to accommodate this function.
- **Support Spaces** like restrooms and mothers' rooms are lacking in quantity or are non-existent. The number of stalls and lavatories do not currently meet code.
- **Circulation/Corridors** on the north and south ends do not connect in any location other than at the west end of the building, creating dead-ends, difficult access to and from departments, and egress that does not meet code requirements.
- **Departments** are typically located within enclosed rooms, preventing circulation between them. The interior stairs do not meet accessibility requirements.

Furniture and Storage

Furniture and furniture systems are inconsistent in terms of type and location. Current workstation panels are excessively tall, while components are not ergonomic and do not accommodate various staff needs. Worksurfaces are not well lit and are not adjustable.

Storage is sporadically located throughout the building. While much of the physical format paperwork is being converted to digital formats, many workstations and cabinets in shared spaces currently store boxes full of archived paper storage. (3) unofficial mezzanine-level storage spaces have been constructed to accommodate increasing miscellaneous storage needs.

Condition Assessment

- **Furniture** is not consistent. Seating is typically not ergonomic.
- **Workstation furniture components** do not accommodate specific needs relative to worksurface height, leading to an inefficient work environment.
- **Storage** is sporadic in terms of location and type. Some areas are not accessible.
- **Office storage** has moved to digital storage, and file system and cabinets are no longer required.
- **Shipping and Receiving –** Due to forklift limitations, current circulation requires more space in storage areas.

STRUCTURAL

Existing Structural Systems

The Main Building consists of several components that were constructed in different stages. The original portion of the building is primarily rectangular in plan and is two stories tall. There is a small extension to the southeast corner that creates an "L" shape. We understand that this portion of the building was originally built in the 1930s. The structural system consists of steel columns supporting steel wide flange girders and steel bar joists. It appears that a concrete slab spans between the steel joists at the second floor, and a light gage metal roof deck spans between the steel joists at the roof. It is assumed that the foundations are conventional concrete spread footings. The exterior walls are clad with a brick veneer.

Three single-story additions occurred to the original building. One addition is rectangular in plan and is located to the east of the original building, at the re-entrant corner of the original "L" shape. The next addition is a long, thin rectangular bar off of the east side of the "L" that runs along East 5th Street. The third addition is a small square shaped building located at the northwest corner of the original building. These three additions appear to be framed with CMU bearing walls, steel open web roof trusses, and a metal roof deck. It is assumed that the foundations consist of conventional concrete spread and strip footings. The exterior walls are clad with a brick veneer.

It is highly likely that the original building did not have a dedicated lateral force resisting system to resist earthquakes. Furthermore, the later additions to the building would not be sufficient to brace the original building, and due to recent advances and developments in seismic design, they would not be compliant with modern code requirements. This is not unusual or unexpected for buildings of this vintage.

Some minor cracking in the brick veneer at the northeast corner of the building was observed. This cracking was minor in nature and did not appear to propagate into the stem wall below the veneer nor into the structural CMU wall behind the veneer. Therefore, we do not believe this cracking is a structural concern and it may be repaired as part of a general exterior maintenance program.

Seismic Evaluation and Retrofit Requirements

Executive Order (EO) 13717: Establishing a Federal Earthquake Risk Management Standard, requires each agency that owns or leases an existing federal building to adopt the *ICSSC Recommended Practice 10 (RP 10-22) Standards* as a minimum level acceptable for managing earthquake risks associated with that building. As such, the *Standards* provide the minimum requirements for a seismic evaluation of federally owned buildings (mandatory process) and provides guidance for when an evaluation should be prioritized by an agency (screening process). Those two processes, as well as a previous voluntary evaluation, are discussed below in how they relate to this project:

- Mandatory Process: The mandatory process describes building programming actions or conditions that trigger a mandatory seismic evaluation of the existing building.
    - Item d of the mandatory process may trigger an evaluation and should be reviewed further. Specifically, the building would trigger a mandatory evaluation "where the project construction cost is more than 30 percent of the pre-construction replacement cost of the building (not including tenant supplied operational service equipment and fit-outs or seismic mitigation efforts)." A cost comparison should be performed to

determine if this item is triggered by the anticipated work for this project.

  - Item i of the mandatory process triggers an evaluation if the building is designated by the agency to pose an Unacceptable Risk Exposure (URE) to the agency.

- Screening Process: The screening process describes a process which the agency can use to prioritize seismic evaluations of buildings to identify potentially unacceptable risks.

  - Item 1c of the screening process flags this building due to its location within Seismic Design Category D and was constructed well before the benchmark year for its building type. As such, RP 10 states that "any building not satisfying the screening process should be prioritized for a seismic evaluation."

- Seismic Evaluation: A previous seismic evaluation of the building was performed (RPA, April 5, 2019). The voluntary evaluation found several seismic deficiencies throughout the building; however, due to the voluntary nature of the evaluation, mandatory retrofit was not required.

SYSTEMS | MECHANICAL

Expected service life for HVAC equipment source: ASHRAE Handbook – HVAC Applications 2019, Comparison of Service Life Estimates, chapter 38 and ASHRAE: Service Life and Maintenance Cost Database 1237-TRP.

The Main Building's HVAC system was installed in 2010 and is a condenser loop water source heat pump (WSHP) system. Anticipated service life for most of the equipment range from 20 to 25 years with remaining expected service life of 7-12 years as of 2023.

Condensing boiler

Air-to-water heat pump

The condenser loop that serves the zone level WSHPs is supplemented by two condensing boilers for heating. In cooling mode heat is rejected through a closed-circuit cooling tower. Additionally, a non-functioning air-to-water heat pump coupled with an exhaust air fan was intended to be utilized for adding heating and rejecting heat to and from the condenser loop during shoulder seasons before resorting to the boilers or cooling tower.

For the condenser loop, there is a primary-secondary pumping arrangement. The primary boiler pumps, cooling tower pump, and the unused air-to-water heat pump circulator pump operate at constant volume. However, the secondary main condenser water pumps utilize variable flow.

Ventilation is achieved through a roof-mounted air handling unit (AHU-1), which is ducted to the return side of all the zone level WSHPs. During economizer mode, additional outside air supply is provided by a second roof-mounted air handling unit (AHU-2), connected to the same outside air ductwork as the ventilation AHU. Relief air is ducted from each heat pump is ducted to two large relief fans on the roof.

The water source heat pumps are located above the ceiling in their respective zones and are ducted to supply diffusers and return grilles. Each WSHP return duct includes connections for outside air and relief air, enabling ventilation and economizer mode, with dampers modulating based on the mode.

In the lab area of the building, gas rooftop units with DX cooling provide heating, cooling, and ventilation. To provide additional cooling for the lab areas, A variable refrigerant flow (VRF) system with connected to split system cassette-style fan coils were added. Lab exhaust is facilitated by several roof-mounted exhaust fans.

Dust collector is at end-of-life. Replace with new dust collector matching existing capacity (8,000 cfm, 50 HP) with recirculation to HEPA supply filters. Unit to be suitable for concrete/aggregate dust duty. HEPA filter housing can remain and should be connected to new dust collector. This represents a large replacement cost, and as such could be replaced out of phase of main building upgrade.

Air-to-water heat pump storage tank

Cooling tower

Existing dust collector at east end of lab wing

Heating Water Boilers

Boilers are in the central mechanical room and serve to provide heating to the condenser water loop.

(B-1 and B-2), Natural gas condensing boilers, installed 2010, Manufacturer: Weil-McLain Ultra, Capacity: 750 MBH each, 93% efficiency, 25 years expected service life.

Condition Assessment

- Both boilers are in good condition.
- 2023 remaining expected service life: 12 years.
- Code deficiency: The boilers combustion condensate is currently discharging directly to the adjacent floor sink. Combustion condensate is basically distilled water, but it is very acidic. It contains concentrations of nitric, sulfuric, and hydrochloric acids and will have a pH value in the range of 3.8 to 4.5. Such levels are damaging to piping systems and the public wastewater system. This is in contradiction to requirements of the plumbing code. IPC 302.1 & 302.2. Condensate neutralization devices should be provided on the discharge piping from each boiler prior to discharge to the sewer/floor sink.

Cooling tower scaling

Condenser loop pumps

Air-to-Water Heat Pump (AWHP) - Heat Recovery System

The system was intended to recover energy from excess building relief air that is discharged by an exhaust fan to the AWHP located outside the building. A thermal storage tank is utilized to store preheated water from the AWHP to be injected into the condenser water loop by a dedicated pump.

(AWHP-1) Air-to-water heat pump, installed 2010, Used for recovering building exhaust heat for condenser water loop heating.

(EF-4) Inline exhaust fan, serves water source heat pump, installed 2010, Manufacturer: Cook 150DB, 2 MHP, 3,600 cfm, 25 year expected service life.

(P-3), Air-to-water HP pump, Manufacturer: Paco, Inline, 1 MHP.

(1) Storage Tank, Manufacturer: AO Smith TJV-250, 250 gallons, installed 2010

Condition Assessment

- Equipment condition: Fair
- The total system is not functional and was not able perform as intended since installation and start-up.

Cooling Tower

The cooling tower is located near the mechanical room on the north side of the building and rejects heat from the condenser loop when in cooling mode.

(1) Closed circuit cooling tower (CT), year installed: 2010, Manufacturer: BAC, axial fans with VFDs, 280 GPM, capacity (unknown), 22 years expected service life.

Air Handling Unit 1 (AHU-1)

Air Handling Unit 2 (AHU-2)

Water source heat pump

Condition Assessment

- Condition: Fair
- Remaining expected service life: 9 years.
- Some corrosion/scaling build up has occurred in the cooling tower. No reported capacity issues.

HVAC Hydronic Distribution Systems

All pumps are associated with the condensing water loop. Dedicated pumps for the boilers and cooling tower are constant volume. The main condenser loop that extends throughout the building to the WSHPS is served by to variable flow base mounted pumps with VFDs that modulate flow to maintain a constant differential static setpoint.

(P-1 and P-2), Base mounted condenser water pumps with VFDs, installed 2010, manufacture: Paco, 10 MHP each, 190 GPM each, expected service life: ›22 years

(P-3) AWHP pump – see section on AWHP systems

(P-4 and P-5), In-line constant volume boiler pumps, installed 2010, manufacturer Paco, 1 MHP each, 75 GPM each, expected service life: ›22 years

(P-6), In-line constant volume cooling tower pump, installed 2010, manufacturer Paco, 2 MHP, 280 GPM. expected service life: › 22 years

Condenser water loop piping: Schedule 40 steel, uninsulated, installed in 2010

Condition Assessment

- Equipment condition: Good

Water source heat pump

VRF condensing unit

Cooling tower

Rooftop AHU-1 and AHU-2

AHU-1 is equipped with a heating water coils and provides building ventilation. AHU-2 provides additional outside air for economization.

(AHU-1) Rooftop air handling unit, installed in 2010, Manufacturer: Carrier 39MW30C011VG211XCS, heating water coil, supply fan with VFD, 20 MHP, design airflow: 13,1380 CFM, balanced airflow: 16, 516 CFM. Expected service life ›20 years.

(AHU-2) Rooftop air handling unit, installed in 2010, Manufacturer: Carrier 39MW61C011VG311XCS, supply fan with VFD,50 MHP, design airflow: 33,000 CFM, balanced airflow: 19,167 CFM. Expected service life ›20 years.

Condition Assessment

- Conditions: Good/Fair
- Rust at exterior base rail.
- Any air handling units utilized as a DOAS (dedicated outside air system) is required by the 2018 Washington State Energy Code, C403.3.5.1 to be provided with air-to-air energy recovery with a minimum efficiency of 60%. AHU-1 is utilized as a DOAS and to meet the current energy code would be provided with energy recovery.

Decentralized Heating and Cooling - Water Source Heat Pumps (AWHP)

All water source heat pumps are horizontal configuration. located indoors and a by the same manufacturer type.

(39) Water source heat pumps. Installed 2010, Manufacturer: Carrier 50PTH, two stage scroll compressor, Refrigerant: R410a, capacity: 2-6 tons, MERV 8 filters, ›24 years expected service life.

Rooftop unit with curb adapter

Rooftop unit with curb adapter

Condition Assessment

- Condition: Good
- Secondary drain pan provided.
- No leaks or moister detected at drain pan.
- Filters installed.
- Sufficiently braced from roof beam structure.
- All units are accessible for maintenance although access maintenance with locations above ceiling is difficult.

Decentralized Heating and Cooling

(1) Split system heat pump, Manufacturer: LG, estimated capacity 3 tons.

(1) Computer room AC units, installed 2010, Manufacturer: Data Aire Series DX, water source, floor mounted, Backup air transfer fan to breakroom, ›24 years expected service life.

(1) Variable refrigerant flow (VRF) outdoor unit connected to multiple indoor recessed units at the lab for supplemental cooling, Manufacturer: LG ARUM096DTES, Capacity: 96 MBH, installed 2022, expected service life: ›20 years.

Condition Assessment

- Conditions: Good

Packaged Rooftop Units (RTU) – Lab Area

Packaged rooftop units serve the lab spaces and provide heating, cooling, ventilation air and lab exhaust make-up air. RTUs replaced previous units and used curb adapters to match differences in unit footprints and configuration with the previous.

(6) Packaged rooftop units, DX cooling, gas heating, airside economizer power exhaust. Manufacturer: Carrier 48LC, anticipated service life 17-20 years

Condition Assessment

- RTU, 5 tons, installed 2013, condition: Good
- RTU, 5.5 tons, installed 2015, condition: Good
- RTU, 3 tons, installed 2015, condition: Good
- RTU, 10 tons, installed 2015 (RTU-12)
- RTU-12 cabinet housing and physical condition is good but there have been multiple component issues. Replacement recommended.
- RTU, 2.5 tons, installed 2012, condition: Fair
- RTU, 5 tons, installed 2012, condition: Fair

Older lab exhaust fan

Main electrical room switchboard

Exhaust Fans

(EF-1, EF-2, EF-3), serves lab, utility lab exhausts fans, Greenheck USF, 1/4 HP, Installed 2020, 25 year anticipated service life.

(1) Utility lab exhaust fan (serves lab) – Estimate date of Install: 2005 - 2010, Note: No name plate data or equipment documentation.

(EF-1) General exhaust down blast rooftop fan, installed 2010, Manufacturer: Cook 150 ACRU, 1/3 MHP, 25 year expected service life.

(EF-2) Serves shop, Installed 2010, manufacturer: Unknown, 150 cfm.

(EF-3A) General relief, installed 2010, manufacturer: Cook 402 HLC 402HL C-B,5 MHP, Balanced to 11,554 CFM

(EF-3B) General relief, installed 2010, manufacturer: Cook 402 HLC 402HL C-B,5 MHP, Balanced to 12,163 CFM

(EF-6) Serves electrical room, installed 2010, manufacturer: Unknown, 1/2 MHP, 380 CFM, 25 year expected service life.

Main electrical room panels

Condition Assessment

- EF-1, EF-2, EF-3, lab exhaust fans, condition: Good
- EF-1 general exhaust fan, condition: Good
- EF-2 shop exhaust fan, condition: Fair. All ventilation for the shop area is via transfer are driven by EF-1. The area is under ventilated especially where chemical storage cabinets are located.
- EF-3A and EF-3B, Condition: Fair. Ongoing wheel alignment issues since installation. Replacement recommended.

Warehouse panels

Controls

In 2010, a Schneider Electric direct digital controls Building Automation System (BAS) was installed as part of a major mechanical upgrade. The installing controls contractor is Robert Lloyd Sheet Metal. The majority of the HVAC equipment is either directly controlled or monitored by the BAS.

Condition Assessment

- The building energy management system is currently receiving input from the meters.

Main electrical room layout

However, most of the aggregate data totalization appears to be in error and cannot be used.

SYSTEMS | ELECTRICAL

The Main Building is currently provided power via a total of (3) incoming electrical services. Clark Public Utilities is the service provider. All (3) services are sourced from padmount medium voltage transformers located on the project site.

Electrical distribution equipment typically has a rated lifespan of 30-50 years. For the purposes of this report, 40 years is used as a baseline for equipment that is protected and well maintained (as an industry accepted target).

Main Distribution Equipment – Service #1

The west two-story portion of the building is powered from a service rated for 2400-amps at 208Y/120V, 3-Phase, 4-Wire. This service is fed via a pad mounted 300kVA transformer located exterior to the north of the two-story portion of the building. The service terminates at a 2400-amp switchboard in the NW main electrical room – a Power-Style Switchboard manufactured by Square D installed in 1978. This switchboard has three sections – the 2400-amp main section with (2) service disconnects, one 1200-amp section with (4) service disconnects, and one 600-amp sub-distribution section.

The main switchboard feeds a 1200-amp Square D manufactured I-Line sub-distribution panel (Existing Distribution Panel – 'EDP') in the main electrical room. This in turn feeds four branch panelboards and the elevator. This I-Line panel (and the branch panels associated with it) were installed prior to 1978 and backfed from the new switchboard.

Lab wing switchboard

Lab wing sub-sections

The main switchboard also directly feeds a number of branch panelboards. These are located both within the main electrical room, and spread along both floors of the two-story structure, primarily located in closets and/or hallways.

A 3-cabinet uninterruptable power supply, manufactured by APC, is also located within the main electrical room. This UPS feeds a 100-amp load center. Both of these appear to have been installed within the last 10-15 years.

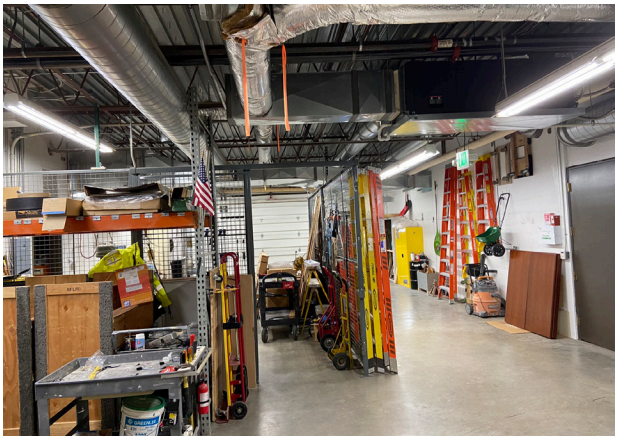
See one-line diagram for additional information.

The main electrical room has a single, interior entrance. Per the National Electrical Code (110.26 C 2), a room housing equipment rated at 1200-amp or more requires either an exit at each end of the room, or double working clearance in front of the equipment. Neither requirement is met by the current installation, so any replacement of this equipment would also require modification of the existing room or relocation to a new electrical room.

Condition Assessment

- The majority of the distribution equipment has reached or exceeded its manufacturer recommended life span.
- No obvious signs of physical deterioration were observed.
- Assuming breakers and switches are tested at regular intervals, no known deficiencies exist.

480V service



Lighting in warehouse

ELU bugeye

Main Distribution Equipment – Service #2

The east lab wing portion of the building is powered from a service rated for 1600-amps at 208Y/120V, 3-Phase, 4-Wire service. This service is fed via a pad mounted 225kVA transformer located just east of the lab wing, adjacent to the associated electrical room. The service terminates in a 1600-amp switchboard in the SE electrical room – manufactured by Cutler-Hammer.

This switchboard in turn feeds (7) sub-sections, each with an integral branch panelboard (A3, B3, C, C3, D3, E3, F3). Panel 'C3' then feeds three branch panelboards located with the lab wing (H3, I3, G3). All of this equipment appears to have been installed either in 1978 or before, meaning it has met or exceeded its expected lifespan.

The switchboard also feeds to the electrical distribution equipment within the Mule Barn (Panel J3). See one-line diagram for additional information.

Like the main electrical room for Service #1, the lab wing's electrical room also has a single, interior entrance. Per the National Electrical Code (110.26 C 2), a room housing equipment rated at 1200-amp or more requires either an exit at each end of the room, or double working clearance in front of the equipment. Neither requirement is met by the current installation, so any replacement of this equipment would also require modification of the existing room or relocation to a new electrical room.

Condition Assessment

- The majority of the distribution equipment has reached or exceeded its manufacturer recommended life span.
- No obvious signs of physical deterioration were observed.
- Assuming breakers and switches are tested at regular intervals, no known deficiencies exist.

Main Distribution Equipment – Service #3

The third incoming electrical service was recently replaced (in the Spring of 2023) at the exterior of the east end of the lab wing. This is a 200-amp, 480Y/277V, 3-Phase, 4-Wire service, fed from a pad mounted 75kVA transformer located next to the transformer for Service #2. This directly feeds a switched disconnect and a NEMA-3R rated 200-amp panelboard mounted on the exterior face of the lab wing.

This service is dedicated to feeding the dust collector system and a new HVAC split system in the lab area, as well as two heat pumps at the exterior of the Mule Barn.

Condition Assessment

- This equipment was installed in the past year and is in excellent condition.

Lighting

Lighting throughout the facility is provided by fluorescent-lamped luminaires. Most offices, common areas, and corridors utilize 2'x4' baffled, lensed, or parabolic troffers. In order to provide user comfort or in an attempt to reduce energy usage, a number of these were observed to have had one of the two-three lamps removed. LED replacement lamps had also been provided in some luminaires in order to improve energy efficiency.

Warehouse and storage areas are provided with open-lamp fluorescent strip luminaires.

The building does not have a backup power source, so all egress lighting is provided via integral battery packs in individual luminaires, or through the use of emergency lighting units (bug eyes) or combination emergency lighting units / exit signs.

Condition Assessment

- Existing luminaires are functional but do not meet current energy code standards.

Lighting Controls

Individual office spaces had been upgraded to having wall mounted sensor switch control of lighting. The majority of the building, however, does not currently have automatic lighting control and is controlled either by local switches, or in the case of the corridor lighting, master switches.

Condition Assessment

- The existing lighting controls in the facility do not meet current energy codes.
- In addition, the absence of automatic daylighting harvesting and individual dimming controls do not allow for individual user comfort.

SYSTEMS | PLUMBING

Due to the differences in operations between the west Main Building and the east lab, the east and west wings have been addressed separately along with items addressing the entire building.

West Wing

1. A substantial amount of the visible water piping installed is still galvanized piping and likely remains from the original installation. The condition of this piping is likely deteriorated. Deteriorated galvanized piping is likely challenging the water flow rates & water quality in the building including lead concentrations. Also, in various areas of the building the water piping has been replace/re-piped (specifically at the main toilet rooms). An item of concern is that portions of the copper piping installed (from various era's) likely contains 50/50 lead solder. Which also can compromise the water quality.

2. The boilers combustion condensate is currently discharging directly to the adjacent floor sink. Combustion condensate is basically distilled water, but it is very acidic due to the combustion products that accompany it. It contains concentrations of nitric, sulfuric, and hydrochloric acids and will have a pH value in the range of 3.8 to 4.5.
   Such levels are damaging to piping systems and the public wastewater system.
   This installation is in conflict with requirements of the governing plumbing code.

3. Waterless urinals have been installed it the toilet rooms.
   Though water saving should always be a facility goal, the water savings value of these fixtures is limited as compared to modern 1 "pint flush" urinals. Also, the maintenance of these products can be substantial. The cost of the trap cartridges should also be considered.
   Finally, a major negative of waterless urinals is the constant buildup of uratic salts. These salts crystallize to form build up in the downstream

waste line(s) and are especially difficult to clear from the lines.

4. Water heaters installed without thermal expansion tanks.
   Each water heater should be protected with a properly sized thermal expansion tank as required by code. This requirement is to protect the plumbing water supply system from damage which can occur due to the expansion of water in the system as the water is heated.

5. Water heaters are installed without the use of a master mixing valve (MMVs). Master mixing valves allow concise water temperature control leaving the water heater for distribution to the plumbing fixtures. The use of MMVs, also allow the water heater tank to be at a higher temperature controlling bacterial growth (such as legionella) and this also allows for greater hot water standby capacity than if the tank is set to a lower temperature.

East Wing Lab Area

The programming at this time is that the lab remains in its current location.

1. Similar to the West wing, a substantial amount of the visible water piping installed is still galvanized piping and likely remains from the original or early installations. The condition of this piping is likely deteriorated. Deteriorated galvanized piping is likely challenging the water flow rates & water quality in the building including lead concentrations.
   Since this area is basically for lab purposes and human consumption is not specifically intended, the critical nature of the water piping replacement is not as high of a priority except as it might affect the integrity of lab testing.

2. The Installed emergency shower in this area does not meet "Barrier Free / ADA" requirements. Also, the fixture is supplied directly with cold water supply. There is no tempering valve installed and as such the device does not meet ANSI/ISEA Z358.1 "Tepid" water requirements (60°F - 100°F).

3. No backflow preventers appear to be installed to isolate the water supply for the Lab areas or connected lab equipment from the rest of the building uses.

Building General Requirements

These items apply to the project's general needs.

1. Roof drains have been installed generally to provide drainage from each roof area. However no secondary roof drain system has been installed (there is one through wall parapet scupper opening above "Survey Rm." area.

2. The building does not appear to currently be provided with a Premises Isolation Valve (PIV) for backflow prevention.

FIRE PROTECTION

Water-Based Fire Suppression

The building does not have an automatic fire sprinkler system. Hazardous shelf storage, as defined by the International Fire Code, was observed in the warehouse area. Pallet stacks were observed on the exterior of the building under the canopy which create a relatively severe fire hazard.

A hydrant flow test from 2004 was provided by the city. Although, the test is old, it does indicate a fairly robust water supply.

- Date of test: 12/28/2004
- Static Pressure: 80 PSI
- Residual Pressure: 70 PSI
- Flow at Residual Pressure: 2091 GPM
- Flow at 20 PSI: 5503 GPM

ELECTRONIC SAFETY AND SECURITY

Detection and Alarm

The building has an addressable fire alarm system that appears to be in good condition.

The fire panel is system is a model FPA-1000, manufactured by BOSCH and is located in a small electrical closet. See FA Image 1

Manual pull stations are provided at the exits and a fire alarm annunciator is located at the main entrance. See FA Image 2.

Smoke detection is located in some limited spaces including conference rooms, electrical and IT rooms, and some additional support spaces. See FA Image 3.

Notification appliances are located throughout the building to provide audible and visual alarm.

Strobes were observed in some common and public use spaces; however, it the locations and spacing are not compliant with NFPA 72 and the ABA requirements throughout the building.

5.4 | Hazardous Materials

Miscellaneous lab equipment

Several hazardous materials investigations have been conducted for the Main Building indicating a variety of hazardous materials located both widespread and at select areas. No reports have been provided for hazardous material sampling at the Mule Barn. Available investigation reports covering hazardous materials at the Main Building include:

- Pre-Renovation Asbestos Survey report, RCP Environmental, September 2023
- Limited Asbestos Building Material Survey & Limited Lead Based Paint Sampling Report, Advantage Environmental Inc., January 2021
- Limited Pre-Renovation Flooring Survey Report, RCP Environmental, August 2020
- PBS Environmental, 2009

The earlier reports from 2020 and 2021 were limited in scope area based on anticipated construction work in particular areas of the building. The 2020 report focused on flooring material in the northwest area of the 1932 building's second floor and the 2021 report investigated the laboratory area on the first floor. The 2023 report was conducted in anticipation of a roof replacement and seismic upgrade project but was more comprehensive in scope covering areas of roofing, metal roof decking, insulation, and interior walls/floors/ceilings. See Appendix C for the complete 2023 survey report.

ASBESTOS

Asbestos-containing material (ACM) was located in flooring tile and mastic at both the 1932 building second floor and at the laboratory during the 2020 and 2021 reports. Prior to construction activities, asbestos was locally removed at these areas affected but was not undertaken at adjoining areas or was not completely removed. Asbestos was identified in the 2023 hazardous materials survey in joint compound at select room locations and widespread within the built-up roofing assembly at the 1932 building roof area. It is anticipated that joint compound in other areas of the building not included in the testing area may contain asbestos and require additional testing prior to construction activities.

Recommendations

While different areas of the building have been tested and abated for hazardous materials in anticipation of near term construction projects, a comprehensive survey and mapping of hazardous materials prior to undertaking a large-scale renovation project is necessary. Some areas of the building have been abated but documentation of these removal efforts is

incomplete. Recommendations include:

- Conduct comprehensive asbestos sampling throughout the building at each room to evaluate presence of ACM joint compound, floor tile, and tile mastic.
- Remove all pipe insulation indicated as ACM.
- Remove and abate identified ACM ceiling, wall, and flooring materials in their entirety across floor levels rather than piecemeal efforts which create confusion.

LEAD-BASED PAINT

Lead-based paint material (LBP) was identified in the 2021 report associated with painted metal at the exterior stairways. These stairs were renovated in a 2021 project, but no documentation has been provided indicating the removal/abatement of LBP. The 2023 report indicated the widespread presence of LBP in the metal roof decking paint coating at all roof areas.

Recommendations

- Conduct comprehensive lead-based paint sampling throughout the building to identify presence of LBP on building materials.
- Remove LBP in entirety at exterior/interior materials easily accessed. Comply with all Federal, State, and local regulations for lead safe renovation work.
- Remove metal roof decking identified to contain LBP in concert with structural upgrades requiring removal/repair of metal decking.
- As alternative to replacement of metal roof decking at areas not requiring replacement, provide encapsulation of LBP after repair of decking is complete.

PCB AND MERCURY

Fluorescent light tubes and ballasts may contain PCB and mercury. No reports have identified specific locations where PCB and mercury are present but all fluorescent tube and ballasts are suspected of containing these materials.

Recommendations

- Replace fluorescent light fixtures and ballasts systematically throughout the facility with new, LED-type fixtures.

6

Appendix

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B | Programming Validation Data & Adjacency Diagram

This section shown for reference of previous study only. DB team to validate all existing and proposed conditions and requirements during project design.

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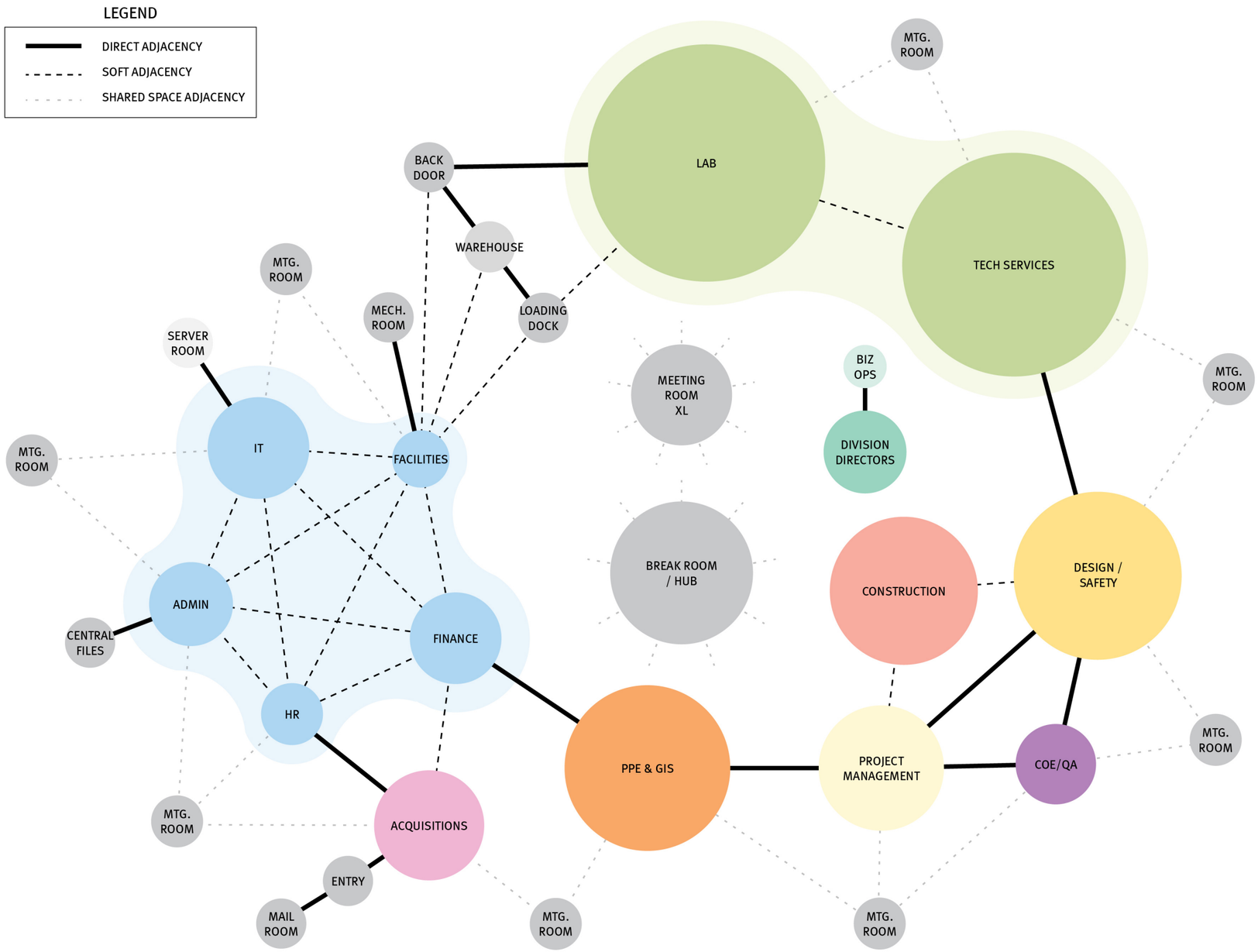
Programming Validation Data

Department	Description	Qty	Square Ft	Total SF	Admin	Facilities	Finance	HR	IT	Business OPS	PPE & GIS	COE/QA (Engineering)	Acquisitions	Construction	Proj Mgmt	Design/Safety	Tech Svc	Division Directors	Lab	Warehouse	Reception/Entry	Server Room	Central Files	Meeting Rooms	Mechanical	Loading Dock/Receiving	Back Door	Collab/Lounge
					Adjacencies																							
Admin	Private Office - Admin/Business	2	120	240		•	•	•	•														•					
	Workstation - Admin/Business	7	64	448																								
Facilities	Private Office - Facilities	0			•		•	•	•											X					•	X	X	
	Workstation - Facilities	5	64	320																								
	Storage (Shop and Cage)		1,200	1,200																								
Finance	Private Office - Finance	1	120	120	•	•		•	•		X		X															
	Workstation - Finance	11	64	704																								
	Storage	1	70	70																								
HR	Private Office - HR	1	120	120	•	•	•		•															•				
	Workstation - HR	4	64	256																								
	Storage (LeaAAD)		100	100																								
IT	Private Office - IT	1	120	120	•	•	•	•														•						
	Workstation - IT	13	64	832																								
	Service Desk - IT	1	64	64																								
	Server Room		300	300																								
	Equipment set-up/ work room		400	400																								
	Storage		300	300																								
	UPS Closet		100	100																								
Warehouse	Private Office - Warehouse	0			•	•	•	•	•											•					•	•	
	Workstation - Warehouse	4	64	256																								
Business OPS	Private Office	1	120	120														•						•				
	Workstation	1	64	64																								
	Storage		70	70																								
PPE & GIS	Private Office	7	120	840		•									•									•				
	Workstation	29	64	1,856																								
	Workstation - grad program	1	64	64																								
	Storage		70	70																								
COE/QA	Private Office	2	120	240											•	•												
	Workstation	5	64	320																								
	Workstation - grad program	1	64	64																								
	Hotel Stations	2	36	72																								
Acquisitions	Private Office	1	120	120			•														•							
	Private Office	2	120	240																								
	Workstation	9	64	576																								
	Hotel Stations	7	36	252																								
	Collaboration and assembly		200	200																								
	Storage		120	120																								
Construction	Private Office	11	120	1,320																								X
	Workstation	13	64	832																								
	Workstation - grad program	1	64	64																								
	Storage		200	200																								
Proj Mgmt	Private Office	1	120	120												•								•				
	Private Office	3	120	360																								
	Workstation	16	64	1,024																								
	Hotel Stations	1	36	36																								
	Workstation - grad program	1	64	64																								
Design & Safety	Private Office	6	120	720																			•	•				
	Workstation	32	64	2,048																								
	Workstation - grad program	1	64	64																								
	Storage		100	100																								
Tech Svc	Private Office	13	120	1,560																								
	Workstation	49	64	3,136																								
	Workstation - grad program	1	64	64																								
	Hotel Stations	6	36	216																								
	Storage		1,500	1,500																								
Lab	Lab		5,300	5,300																				X				
	Back Door Receiving		500	500																								
Division Directors	Private Office	1	180	180																							•	
	Private Office	3	120	360																								
	Workstation	2	64	128																								
	Hotel Stations	1	36	36																								
	Storage		100	100																								
	Executive Conference Room	1	200	200																								
	Executive Waiting	1	120	120																								
Support Spaces	Meeting Room - small	12	120	1,440																								
	Meeting Room - medium	8	200	1,600																								
	Meeting Room - large	8	450	3,600																								
	Meeting Room - X large	2	1,000	2,000																								
	Focus Room	10	70	700																								
	Collaboration space	2	400	800																								
	Toilet Rooms	3	800	2,400																								
	Toilet Rooms - single user	2	80	160																								
	Central Files	1	300	300																								
	Warehouse	1	1,200	1,200																								
	Loading Dock/Receiving	1	500	500																								
	Break Room / HUB	1	1,800	1,800																								
	Lactation / Wellness	2	120	240																								
	Copy/Print Room	4	140	560																								
	Mailroom	1	200	200																							•	
	Reception/Entry	1	500	500																								
	Janitor Closet	3	70	210																								
	Coffee Bar	4	70	280																								
	Upstairs Kitchenette	1	144	144																								
Building	Intercom	1	78	78																								
	Boiler/Mechanical Room	1	270	270																								
	Electrical Room		880	880																								
	Elevator		70	70																								
	Stairs		500	500																								
	Subtotal			52,022																								
	Circulation @35%			17,950																								
	Total SF			69,972																								

Seat Count:

Private Offices	56
Workstations	201
Grad Program Workstations	6
Hotel Workstations	17

Adjacency Diagram



C | Hazardous Materials Report

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Pre-Renovation Asbestos Survey Report

Western Federal Lands Highway Division
610 East 5th Street
Vancouver, Washington
Rev. 1
October 13, 2023

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RCP Project #23-036 WA

Table of Contents

Executive Summary Page 1

Introduction Page 2

Site Description and Scope of Work Page 2

Methodology Page 2

Findings Page 4

Summary of Analytical Results Page 4

Regulatory Information Page 5

Recommendations Page 6

Limitations Page 6

Appendix A. Survey Results Summary Tables

Appendix B. Laboratory Reports and Chain of Custody Documentation

Appendix C. Sample location Drawings

Appendix D. Certification of RCP Personnel

Executive Summary

On Wednesday, Thursday, and Friday, July 19, 20, 21, 2023, RCP Environmental (RCP) performed a physical inspection of the occupied office and shop building located at 610 East 5th Street in Vancouver, Washington. The purpose of this inspection was to locate, identify, and quantify asbestos containing building materials in and on the building prior to renovation activities.

On Tuesday, August 29 and Friday, September 29, 2023, RCP returned to the site to collect lead paint samples from the underside of the metal roof deck.

Asbestos Survey
During the inspection, RCP Environmental collected 69 samples of suspect asbestos-containing materials (ACM).

Asbestos was detected in nine of the 69 samples collected during this survey. Listed below is a summary of asbestos-containing materials (ACM) identified during this survey.

MATERIAL	APPROXIMATE QUANTITY
4"Pipe Insulation	216 Linear Feet
Tan 12'x12' Floor Tile and Mastic	80 Square Feet
Joint Compound on Gypsum Wallboard	1,010 Square Feet
Gray Built-Up Roofing Layers	17, 237 Square Feet

Lead-based Paint Survey
Three paint samples were collected during this survey. Lead was reported in all three of the samples collected from this building. Two samples contained greater than 0.5% lead, the United States Environmental Protection Agency (EPA) definition of lead-based paint.

Other Regulated Materials Requiring Special Handling
Light fixtures with potential PCB-containing fluorescent light ballasts (FLB) and mercury-containing fluorescent light tubes were observed throughout the building. The ballasts should be inspected for "NO PCB" labelling. Unless such labels are found, all fluorescent light fixture ballasts should be presumed to contain PCBs.

Notify any renovation or demolition contractors of the presence and location of asbestos, lead paint, and PCBs in

Introduction

RCP Environmental was retained by Henneberry Eddy Architects, Inc. to provide pre-renovation hazardous building materials survey services. The property subject to this investigation consists of a two-story above ground combination office and shop building The purpose of this inspection was to locate, identify, and quantify hazardous building materials prior to renovation activities that could disturb these materials

Site Description and Scope of Work

Office / Shop Building

The building subject to this investigation is a two-story above ground combination office and shop structure with a footprint of approximately 43,000 square feet. The second floor adds approximately 18,800 square feet. Construction appears to be a combination of red brick and CMU block walls on a concrete slab foundation. Original construction was circa 1932 with additions in 1952 and 1977. The roof is flat built-up layers over a corrugated metal deck.

This building is currently occupied. It is owned and operated by Western Federal Lands Highway Division. The building is under consideration for extensive seismic upgrades. This will affect the roof and many interior surfaces and finishes. There have been several partial and limited asbestos surveys in the past. This survey is intended to review and augment the gathered information from those past surveys. Samples were targeted where seismic upgrade work will disturb building materials for which no previous survey information is available.

Interior finishes are a mix of laid-in acoustic ceiling tiles glued-on ceiling tiles, Concrete Masonry Units (CMU) block and painted gypsum wallboard and plaster wall systems. Flooring materials include bare concrete, carpet, sheet vinyl, floor tile and associated mastic. The building was occupied and appeared to be in good condition at the time of this survey.

Scope of Work

The scope of work included the following tasks: (1) an asbestos survey, (2) a lead paint survey, and (3) an inventory of additional materials requiring special handling prior to renovation or demolition of the structure such as PCB-containing light ballasts, mercury vapor lamps and other universal waste items.

The physical inspection and asbestos sampling were performed by AHERA-Accredited Inspectors Dave Routtu (Asbestos Building Inspector Certificate Number IMR-23-5871A) and Hayden James (Asbestos Building Inspector Certificate Number IRO-23-0131C) of RCP Environmental on Wednesday, Thursday, and Friday, July 19, 20, 21, 2023.

The lead paint sampling and PCB inspection was performed by Washington Department of Commerce licensed Lead Risk Assessor David Routtu (License Number 7237) on Tuesday, August 29, 2023, and Friday, September 29, 2023.

This report provides the results of the survey, sampling, and assessments.

Methodology

Asbestos Survey

Suspect materials identified during the onsite survey were grouped and classified as homogeneous materials based on their appearance, usage, and age of the building. Representative samples of each homogeneous

material were sampled in accordance with the federal Asbestos Hazard Emergency Response Act (AHERA) protocols. Materials determined by the inspector to be non-suspect, such as wood, metal, glass, and fiberglass insulation, were not sampled. Additional suspect building materials may be present in areas that were inaccessible, unsafe to inspect, or obscured from view during the inspection process.

Samples were collected in such a manner as to minimize release of the material into the surroundings. Material type, sample number, sample location and other pertinent information were recorded at the time of sampling. Each sample was placed in a sample container, labeled with a unique sample number, and submitted under Chain-of-Custody documentation to QuanTem Laboratories for analysis. QuanTem is a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. Samples were analyzed in accordance with United States Environmental Protection Agency (USEPA) Method 600/R-93-116, using Polarized Light Microscopy ("PLM") with dispersion staining and using visual area estimation to determine percent asbestos content. This method allows for the identification of the primary types of asbestos used in building materials. The lower limit of detection for this method is one percent. Samples containing less than one percent asbestos by PLM with visual area estimation are reported as "Trace".

Lead-Based Paint Survey

The lead paint survey consisted of a visual inspection and sampling of predominant painted surfaces throughout the building. The purpose of the inspection was to provide information regarding lead in paint as it pertains to employee exposure and demolition debris disposal.

Representative samples of the predominant painted surfaces were collected for laboratory analysis. Additional suspect painted surfaces may be present in areas that were inaccessible, unsafe to inspect, or obscured from view during the sampling process.

Samples were collected in such a manner as to minimize release of the material into the surroundings. Paint color, sample number, sample location and other pertinent information were recorded at the time of sampling. Each sample was placed in a sample container labeled with a unique sample number, sealed, and submitted under chain of custody documentation to NVL Laboratories, a National Lead Lab Accreditation Program (NLLAP) accredited laboratory, for analysis. Samples were analyzed in accordance with EPA Method 3050B/7420 (atomic absorption), to determine percent by weight content of lead.

The EPA defines paint containing 0.5% by weight as lead-based paint. OSHA considers materials containing any detectable lead to be lead-containing.

Visual Inspection for Additional Materials Requiring Special Handling

PCB Light Ballasts

Any building built before 1979 is likely to have PCB-containing Fluorescent Light Ballasts (FLBs) if it has not undergone a complete lighting retrofit. In some cases, PCB-containing FLBs that were manufactured before the1979 ban were stored and later used in some fluorescent light fixtures installed or repaired after 1979. Thus, some buildings constructed after 1979 that have not undergone a complete lighting retrofit could have PCB-containing FLBs.

Fluorescent Tubes/Mercury Vapor Lamps

The amount of Mercury in a fluorescent lamp ranges between 3.5 to 15 milligrams, depending on the type of fluorescent lamp, the manufacturer, and when the fluorescent lamp was manufactured. Although lighting

manufacturers have greatly reduced the amount of mercury used in lighting over the past 20 years, they are not yet able to eliminate the need for mercury.

Findings

Asbestos
Asbestos was detected in nine of the 69 samples of suspect building materials collected during this survey. Listed below is a summary of suspect asbestos-containing materials (ACM) observed and sampled during this survey

Asbestos was identified in the following materials:

- 4" Pipe Insulation
- Tan 12'x12" Floor Tile and Associated Black Mastic
- Joint Compound on Gypsum Wallboard
- Gray Built-Up Roofing Layers

No asbestos was detected in the following materials:

- Gray Structural Fireproofing
- White Laid-In Ceiling Tile
- Gray Brick Mortar
- Carpet Mastic
- Cove Base and Associated Mastic
- White Wall Plaster and Texture
- Glued-On Ceiling Tile and Associated Mastic
- Gray Duct Sealant
- CMU Block Mortar
- White Plaster Over Brick Walls
- White Ceiling Texture
- Gray Plaster
- *Pink 12'x12' Floor Tile and Mastic

*Asbestos was detected (4% chrysotile) in "yellow black mastic" associated with pink 12x12 floor tile in Room 171 during the 2022 Advantage Environmental survey.

Lead Paint
Lead was reported in all three samples of suspect paint coating sampled during this inspection. Two samples contained more than 0.5% lead by weight.

Universal Waste and Materials Requiring Special Handling

Light Fixtures Containing Fluorescent Light Tubes / Mercury Vapor Lamps PCB Light Ballasts
Fluorescent light fixtures are present in almost every office and work area throughout this building.

Summary of Analytical Results

Descriptions, locations, and laboratory analytical results are summarized in the tables provided in Appendix A. Laboratory analysis reports are in Appendix B.

Regulatory Information

Asbestos Regulatory Issues

The United States Environmental Protection Agency (USEPA), Washington State Department of Labor and Industries (L&I, and Southwest Washington Clean Air Agency (SWCAA) define asbestos-containing materials (ACM) as that which contains greater than 1% asbestos by weight.

Washington Department of Labor and Industries (L&I) final Construction Standard WAC 296-62-07701 applies to all construction activities. The Construction Standard covers (but is not limited to) activities involving asbestos: demolition, removal, alteration, repair, maintenance, installation, clean-up, transportation, disposal and storage. The Standard has a definition for both "asbestos" and "asbestos-containing materials". The definition of asbestos does not have a one percent cut off, therefore, asbestos that is present in percentages less than one percent continues to be covered by the Standard.

WAC 296-62-07701 Scope and application. (1) WAC 296-62-07701 through 296-62-07753 applies to all occupational exposures to asbestos in all industries covered by chapter 49.17 RCW, Washington Industrial Safety and Health Act and chapter 49.26 RCW, Health and safety—Asbestos.

It is important to note that Washington State rules apply to occupation exposures to asbestos, not just ACM. So, building materials containing less than 1% asbestos are covered by the standard.

Lead-Based Paint Regulatory Issues

There are several applicable definitions of lead in paint. The consumer product safety commission limit (for consumer products) is 0.009 percent or 90 ppm or greater. The Department of Housing and Urban Development (HUD) defines lead-based paint as that which contains 0.5 percent or 5,000 ppm. Under OSHA, any amount of lead triggers requirements in the OSHA Lead in Construction Standard, 29CFR1926.62.

Washington Department of Labor and Industries (L&I)

WAC 296-155-176, Lead, applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by WAC 296-62-07521 (1)(b) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

(1) Demolition or salvage of structures where lead or materials containing lead are present.

Washington State Department of Ecology (DOE)

Demolition contractors and property owners are required to comply with Washington State Department of Ecology regulations WAC 173-303 regarding disposal of demolition debris and hazardous waste.

Lead-based paint debris from renovation, remodeling and abatement of residences generally is excluded as household waste. This can include paint chips and dust, doors, painted woodwork and window frames. Older buildings intended for demolition need to be tested for lead concentration to determine if they exceed dangerous waste thresholds. If so, the structure or it's lead-bearing components must be managed as dangerous waste.

Samples need to be taken for lab analysis to determine if construction debris is dangerous waste. For any buildings slated for demolition, a determination must be made if the debris resulting from the destroyed building is

considered dangerous waste. Lead-based paint on older buildings is the primary reason a building or its components may become dangerous waste.

Universal Waste
Handling and disposal of PCB-containing FLBs are detailed in WAC 173-303.

Recommendations

Asbestos
ACM identified in this pre-renovation / pre-demolition survey must be removed by a Washington L&I licensed full scale asbestos abatement contractor utilizing L&I certified asbestos workers under the direct supervision of an L&I certified asbestos supervisor prior to any renovation or demolition activities that could disturb the materials.

If additional suspect ACM is subsequently discovered during renovation or demolition activities, either stop work and have the suspect material tested, or presume it is asbestos and have it removed by a licensed asbestos abatement contractor.

Lead Paint
Impact of painted surfaces with detectable concentrations of lead requires construction activities to be performed according to Washington Labor and Industries regulations for Lead in Construction (WAC 296-62155). Workers impacting LCP should be provided the proper personal protective equipment and use proper work methods to limit occupational and environmental exposure to lead until an initial exposure assessment has been conducted.

Universal Waste
Inspect all fluorescent light fixtures prior to removal and replacement. Look for "NO PCB" labels on the light ballast. If the ballast does not display a NO PCB label, presume it contains PCBs and handle appropriately.

Remove and properly recycle mercury-containing light tubes prior to demolition activities that would disturb or damage the lamps.

Limitations

The information contained in this report is based on information provided by the client and observations and test results provided by RCP Environmental. These observations are time dependent, are subject to changing site conditions, and revisions to Federal, state, and local regulations. RCP warrants that these findings have been promulgated after being prepared in accordance with generally accepted practices in the asbestos testing and abatement industry. No other warranties are implied or expressed.

Please do not hesitate to contact our office at 360-787-3682 with any questions or comments. Thank you for the opportunity to partner with Henneberry Eddy, Inc. on this project.

Respectfully,
RCP Environmental

Dave Routtu
Senior Project Manager

Appendix A

Survey Results Tables

First Floor

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
101	White Sheetrock & Joint Compound	Northwest Annex North Wall	ND		
102	White Sheetrock & Joint Compound	Northwest Annex West Office	ND		
103	White Cove Base & Mastic	Northwest Annex West Office	ND		
104	White Layed in Ceiling Tile	Northwest Annex West Office	ND		
105	White Sheetrock & Joint Compound	Phase 1932 North Wall	ND		
106	Gray Structural Fire Proofing	Phase 1932	ND		
107	White Layed in Ceiling Tile	Phase 1932	ND		
108	Gold Carpet Mastic	White Sheetrock & Joint Compound	ND		
109	White Cove Base & Mastic	Phase 1932 North Wall	ND		
110	Gray Brick Mortar	Phase 1932 Hall Closet	ND		
111	White Sheetrock & Joint Compound	Phase 1932 Room 117	ND		
112	Gold Carpet Mastic	Phase 1932 Room 117	ND		
113	White Sheetrock & Joint Compound	Phase 1932 Northeast Room	ND		
114	Gold Carpet Mastic	Phase 1932 Northeast Room	ND		
115	**4" TSI**	**Phase 1932 Northeast Room Above Ceiling**	**5% Amosite 12 % Crocidolite**	**Good / F**	**216 LF**
116	White Sheetrock & Joint Compound	Room 122	ND		
117	Gray Brick Mortar	Room 122	ND		
118	White Wall Plaster & Texture	Room 122	ND		
119	White Glued in Ceiling Tile	Room 122	ND		
120	White Layed in Ceiling Tile	Room 122	ND		
121	Gray Cove Base & Mastic	Room 122	ND		
122	**Tan 12 X 12 Floor Tile & Mastic**	**Room 122**	**4% Chrysotile Floor Tile 8% Chrysotile Mastic**	**Good / NF**	**80 Sq. Ft.**
123	White Sheetrock & **Joint Compound**	**Room 140**	ND Sheetrock **2% Chrysotile Joint compound**	**Good / F**	**400 Sq. Ft.**
124	White Cove Base & Mastic	Room 140	ND		
125	Yellow Carpet Mastic	Room 140	ND		
126	Gray Brick Mortar	Room 104	ND		

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
127	White Sheetrock & **Joint Compound**	**Room 103**	ND Sheetrock **2% Chrysotile** **Joint compound**	**Good / F**	**560 Sq. Ft.**
128	Yellow Carpet Mastic	Room 103	ND		
129	Cove Base, Brown Mastic & **White Joint Compound**	**Room 103**	ND Cove Base ND Mastic **2% Chrysotile** **Joint Compound**	**Good / F**	**Same as 127**
130	Gray Duct sealant	Room 104	ND		
131	White Sheetrock & Joint compound	Room 105	ND		
132	Brown Cove Base & Mastic	Room 105	ND		
133	White Layed in Ceiling Tile	Room 105			
134	Green Carpet mastic	Room 105	ND		
135	Gray Wall Plaster & Texture	Room 148	ND		
136	Brown Cove Base & Mastic	Room 148	ND		
137	Green Carpet mastic	Room 148	ND		
138	White Sheetrock & Joint compound	Room 158	ND		
139	Gray Carpet Mastic	Room 158	ND		
140	White Sheetrock & Joint compound	Room 161	ND		
141	Concrete Masonry Unit Mortar	Room 162	ND		
142	Pink Floor Tile & Mastic	Room 162	ND		
143	White Plaster over Brick Wall	Room 164	ND		
144	White Sheetrock & Joint compound	Room 167	ND		

ND = No Asbestos Detected F = Friable NF = Nonfriable SF = Square Feet LF = Linear Feet

Second Floor

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
201	White Plaster	Room 239	ND		
202	Gray Brick Mortar	Room 239	ND		
203	White Plaster	Room 236	ND		
204	Gray Brick Mortar	Room 236	ND		
205	Green Carpet Mastic	Room 227	ND		
206	White Ceiling Texture	Room 233	ND		
207	Gray Plaster	Room 233	ND		
208	Gray Plaster	Room 202	ND		
209	White Sheetrock & Joint Compound	Room 222 Closet	ND		
210	Tan Cove Base & Mastic	Room 204	ND		
211	White Plaster Exterior Layer	Room 204	ND		
212	White Plaster Under Layer	Room 204	ND		
213	Gray Brick Mortar	Room 204	ND		

ND = No Asbestos Detected F = Friable NF = Nonfriable SF = Square Feet LF = Linear Feet

West Mezzanine

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
WM01	Gray CMU Block Mortar	West Perimeter Wall	ND		

ND = No Asbestos Detected F = Friable NF = Nonfriable SF = Square Feet LF = Linear Feet

East Mezzanine

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
EM01	White Duct Joint Tape	East Mezzanine Attic Space	ND		
EM02	White Duct Joint Tape	East Mezzanine Room	ND		
EM03	Brown Glue Dot	Plywood Dividing Wall	ND		
EM04	Brown Glue Dot	Plywood Dividing Wall	ND		
EM05	Gray CMU Block Mortar	South Wall	ND		

ND = No Asbestos Detected F = Friable NF = Nonfriable SF = Square Feet LF = Linear Feet

Roof

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT AND TYPE	CONDITION / FRIABILITY	APPROXIMATE QUANTITY
R01	Black, Brown & **Gray Roofing**	**Roof Area A**	ND Black Roofing ND Brown Roofing **3% Chrysotile Gray Roofing**	**Good / NF**	**2,807 Sq. Ft.**
R02	Black, Brown & **Gray Roofing**	**Roof Area B North**	ND Black Roofing ND Brown Roofing **3% Chrysotile Gray Roofing**	**Good / NF**	**14,230 Sq. Ft.**
R03	Black, Brown & **Gray Roofing**	**Roof Area B Middle**	ND Black Roofing ND Brown Roofing **3% Chrysotile Gray Roofing**	**Good / /NF**	**Same as R02**
R04	Black, Brown & **Gray Roofing**	**Roof Area B South**	ND Black Roofing ND Brown Roofing **3% Chrysotile Gray Roofing**	**Good / NF**	**Same as R02**
R05	Black, Gray, Yellow Built Up Roofing	Roof Area C	ND		
R06	Black, Gray, Yellow Built Up Roofing	Roof Area E	ND		
R07	Black, Yellow Built Up Roofing	Roof Area D North	ND		
R08	Black, Gray, Yellow Built Up Roofing	Roof Area D Middle	ND		
R09	Black, , Yellow Built Up Roofing	Roof Area D South	ND		
R10	Gray Black Tan Built Up Roofing	Roof Area F	ND		
R11	Gray Black Yellow Built Up Roofing	Roof Area F	ND		
R12	Gray Black Yellow Built Up Roofing	Roof Area F	ND		

ND = No Asbestos Detected F = Friable NF = Nonfriable SF = Square Feet LF = Linear Feet

Lead Paint

West Mezzanine

SAMPLE NUMBER	COLOR	BUILDING COMPONENT	SUBSTRATE	SAMPLE LOCATION	LEAD CONTENT %
Pb-01 WM	Gray	Roof Deck	Metal	1932 West Mezzanine Ceiling	0.80
Pb-02	Gray	Roof Deck	Metal	1952 East Lab Mezzanine	0.073
Pb-03	Gray	Roof Deck	Metal	1932 Area B, 2nd Floor Ceiling	1.2

<RL = Below the Analytical Reporting Limit

Appendix B

Laboratory Reports and Chain of Custody Documentation

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	101	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
002	102	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
003	103	Layered	Tan Mastic	Asbestos Not Present	NA	Glue CaCO3
003a		Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
004	104	Homogeneous	White/Brown Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
005	105	Layered	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
005a		Layered	White Sheetrock	Asbestos Not Present	Glass Fiber 5	Gypsum

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

QuanTEM is a NVLAP accredited Testing PLM laboratory (Lab Code: 101959-0). This report relates only to the specific items tested.
NVLAP accreditation applies only to analysis performed utilizing EPA—40 CFR Appendix E to Subpart E of Part 763 and EPA/600/R-93/116 methods.
This report may not be used to claim product endorsement by NVLAP or any agency of the US Government.
This report may not be reproduced except in full, without the written approval of the laboratory.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
006	106	Homogeneous	Gray Fireproofing	Asbestos Not Present	Cellulose 30	Gypsum
007	107	Homogeneous	White/Brown Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
008	108	Homogeneous	Gold Mastic	Asbestos Not Present	NA	Glue
009	109	Layered	Black Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
009a		Layered	Tan Mastic	Asbestos Not Present	NA	Glue CaCO3
010	110	Homogeneous	White Mortar	Asbestos Not Present	NA	Gypsum Sand

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
011	111	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
012	112	Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
012a		Layered	Green Mastic	Asbestos Not Present	NA	Glue
013	113	Homogeneous	White Sheetrock	Asbestos Not Present	Glass Fiber 5	Gypsum Paint
014	114	Homogeneous	Gold Mastic	Asbestos Not Present	NA	Glue CaCO3
015	115	Homogeneous	White Insulation	Asbestos Present Amosite 5 Crocidolite 12	NA	Gypsum
016	116	Homogeneous	White Joint Compound	Asbestos Not Present	NA	Gypsum CaCO3 Paint

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
017	117	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Gypsum Sand
018	118	Homogeneous	Gray Plaster	Asbestos Not Present	Cellulose <1	Gypsum Sand Paint
019	119	Layered	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite
019a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
020	120	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
021	121	Layered	Gray Cove Base	Asbestos Not Present	NA	Vinyl CaCO3

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QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
021a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
022	122	Layered	Tan Floor Tile	Asbestos Present Chrysotile 4	NA	Vinyl CaCO3
022a		Layered	Black Mastic	Asbestos Present Chrysotile 8	NA	Tar
023	123	Homogeneous	White Joint Compound	Asbestos Not Present	NA	CaCO3 Gypsum Paint
024	124	Layered	White Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
024a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
025	125	Homogeneous	Brown Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
026	126	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Gypsum Sand
027	127	Homogeneous	White Joint Compound	Asbestos Present Chrysotile 2	NA	CaCO3 Paint
028	128	Homogeneous	Yellow Mastic	Asbestos Not Present	NA	Glue
029	129	Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
029a		Layered	White Joint Compound	Asbestos Present Chrysotile 2	NA	CaCO3 Paint
030	130	Homogeneous	Gray Sealant	Asbestos Not Present	NA	CaCO3 Binder

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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NVLAP accreditation applies only to analysis performed utilizing EPA—40 CFR Appendix E to Subpart E of Part 763 and EPA/600/R-93/116 methods.
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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
031	131	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose 10 Glass Fiber 2	Gypsum Paint
032	132	Homogeneous	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
033	133	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
034	134	Homogeneous	Green Mastic	Asbestos Not Present	NA	Glue
035	135	Homogeneous	White Plaster	Asbestos Not Present	NA	Gypsum Sand
036	136	Layered	Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
036a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132
Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
037	137	Homogeneous	Green Mastic	Asbestos Not Present	NA	Glue
038	138	Homogeneous	White Joint Compound	Asbestos Not Present	NA	Gypsum Sand Paint
039	139	Homogeneous	Green Mastic	Asbestos Not Present	NA	Glue
040	140	Layered	White Joint Compound	Asbestos Not Present	NA	CaCO3 Paint
040a		Layered	White Sheetrock	Asbestos Not Present	Cellulose 10 Glass Fiber 2	Gypsum
041	141	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Gypsum Sand Paint

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QuanTEM Lab No. 360641
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Date Received: 07/24/2023
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Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
042	142	Layered	White Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
042a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
043	143	Homogeneous	White Plaster	Asbestos Not Present	NA	Gypsum Sand Paint
044	144	Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
044a		Layered	Tan Joint Compound	Asbestos Not Present	NA	CaCO3
045	201	Homogeneous	White Mortar	Asbestos Not Present	NA	Gypsum Sand Paint
046	202	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Gypsum Sand

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Polarized Light Microscopy Asbestos Analysis Report

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Date Received: 07/24/2023
Received By: Baylie Longstreth
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Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
047	203	Homogeneous	White Plaster	Asbestos Not Present	NA	Gypsum Sand Paint
048	204	Homogeneous	Gray Mortar	Asbestos Not Present	NA	Gypsum Sand Paint
049	205	Homogeneous	Green Mastic	Asbestos Not Present	NA	Glue
050	206	Homogeneous	White Ceiling Texture	Asbestos Not Present	NA	Gypsum Sand Paint
051	207	Layered	White Skim Coat	Asbestos Not Present	NA	CaCO3 Sand Paint
051a		Layered	Gray Plaster	Asbestos Not Present	NA	Gypsum Sand

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Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
052	208	Layered	White Skim Coat	Asbestos Not Present	NA	CaCO3 Sand Paint
052a		Layered	Gray Plaster	Asbestos Not Present	NA	Gypsum Sand
053	209	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose 10	Gypsum Paint
054	210	Homogeneous	Tan Cove Base Mastic	Asbestos Not Present	NA	Glue
055	211	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose 5 Glass Fiber 2	Gypsum
056	212	Homogeneous	White Plaster	Asbestos Not Present	NA	Gypsum Perlite

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 360641
Account Number: C132

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Date Received: 07/24/2023
Received By: Baylie Longstreth
Date Analyzed: 07/26/2023
Analyzed By: Jack Mankin
Methodology: EPA/600/R-93/116

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
057	213	Homogeneous	Gray Mortar	Asbestos Not Present	NA	CaCO3 Sand
058	R01	Layered	Gray Roofing	Asbestos Not Present	Cellulose 20 Glass Fiber 10	Tar Sand
058a		Layered	Black Roofing	Asbestos Not Present	Cellulose 30	Tar
058b		Layered	Gray Roofing	Asbestos Present Chrysotile 3	NA	Tar Paint
058c		Layered	Black Roofing	Asbestos Not Present	Cellulose 20 Glass Fiber 10	Tar
058d		Layered	Brown Roofing	Asbestos Not Present	Cellulose 90	Tar
058e		Layered	Brown Roofing	Asbestos Not Present	Cellulose 100	

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Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
059	R02	Layered	Gray Roofing	Asbestos Present Chrysotile 3	NA	Tar Paint
059a		Layered	Black Roofing	Asbestos Not Present	Glass Fiber 30	Tar
059b		Layered	Black Roofing	Asbestos Not Present	Cellulose 20	Tar
059c		Layered	Brown Roofing	Asbestos Not Present	Cellulose 100	
060	R03	Layered	Gray Roofing	Asbestos Present Chrysotile 3	NA	Tar Paint
060a		Layered	Black Roofing	Asbestos Not Present	Glass Fiber 20	Tar

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Date Analyzed: 07/26/2023
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Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
060b		Layered	Black Roofing	Asbestos Not Present	Glass Fiber 30	Tar
060c		Layered	Black Roofing	Asbestos Not Present	Cellulose 10	Tar
060d		Layered	Brown Roofing	Asbestos Not Present	Cellulose 100	
061	R04	Layered	Gray Roofing	Asbestos Present Chrysotile 3	NA	Tar Paint
061a		Layered	Black Roofing	Asbestos Not Present	Glass Fiber 20	Tar
061b		Layered	Black Roofing	Asbestos Not Present	Cellulose 10	Tar
061c		Layered	Brown Roofing	Asbestos Not Present	Cellulose 100	

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Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
062	R05	Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
062a		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
062b		Layered	Black Roofing	Asbestos Not Present	Cellulose	20	Tar
062c		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	
063	R06	Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	10	Tar Sand
063a		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar

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13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
063b		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	
064	R07	Layered	Black Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
064a		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
064b		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	
065	R08	Layered	Gray Roofing	Asbestos Not Present	Cellulose Glass Fiber	10 10	Tar Sand
065a		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
065b		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	

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Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
066	R09	Layered	Black Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
066a		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
066b		Layered	Black Roofing	Asbestos Not Present	Cellulose	20	Tar
066c		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	
067	R10	Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
067a		Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand

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Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
067b		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
067c		Layered	Tan Roofing	Asbestos Not Present	Glass Fiber	100	
068	R11	Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
068a		Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
068b		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
068c		Layered	Black Roofing	Asbestos Not Present	Cellulose	20	Tar
068d		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	

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Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS-WFL Highway Facilities Bldg
Project Location: 610 East 5th Avenue, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
069	R12	Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
069a		Layered	Gray Roofing	Asbestos Not Present	Glass Fiber	20	Tar Sand
069b		Layered	Black Roofing	Asbestos Not Present	Cellulose	10	Tar
069c		Layered	Yellow Roofing	Asbestos Not Present	Glass Fiber	100	

Jack Mankin, Laboratory Analyst

7/27/2023
Date of Report

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ASBESTOS CHAIN OF CUSTODY

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(800) 822-1650 • (405) 755-7272 • Fax: (405) 755-2058

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For Lab Use Only
Lab No. 3L0641
(Accept) Reject

Contact Information			
Company: RCP Environmental		Phone: (360) 787-3682	
Contact: Dave Routtu		Cell Phone:	
Account #: C-132		E-mail: dave.routtu@rcpenvironmental.com	
SAMPLED BY:	Name: Hayden James	Date: July 19, 20, 21	

Project Information	
Project Name:	NPS-WFL HIghway Facilities Bldg
Project Location:	610 East 5th Avenue, Vancouver, WA
Project ID:	23-036 WA
P.O. Number:	

Report Results (☑ one box)
- ☐ QuanTEM Website
- ☑ Email dave.routtu@rcpenvironmental.com
- ☐ Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
J Routtu	7-21-23	FedEx	M. Ford	7/24/23 @ 10:15

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	PLM	TEM	TEM	TURNAROUND TIME
☑ Bulk Analysis (EPA 600/R-93/116)	☐ Vermiculite Attic Insulation (EPA 600/R-04/004)	☐ Air- AHERA	☐ Bulk- Presence / Absence EPA600/R-93/116	☐ Rush
☐ 400 Point Count	☐ Other	☐ Air- NIOSH 7402	☐ Bulk- Quantitative [weight%]- Chatfield	☐ Same Day
☐ 1000 Point Count	PCM	☐ Air- ISO 10312	☐ Dust- Presence / Absence	☐ 24 - Hour
☐ Gravimetric Preparation	☐ NIOSH 7400	☐ Drinking Water- EPA 100.2	☐ Dust- Quantitative [fibers/sq.cm]- ASTM D5755	☑ 3 - Day
☐ Particle ID		☐ Waste Water- EPA 600/4-83-043	☐ Other	☐ 5 - Day

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	101	☐	White	Sheetrock & Joint Compound		Northwest Annex North Wall
2	102	☐	White	Sheetrock & Joint Compound		Northwest Annex West Office
3	103	☐	White	Cove Base & Mastic		Northwest Annex West Office
4	104	☐	White	Layed in Ceiling Tile		Northwest Annex West Office
5	105	☐	White	Sheetrock & Joint Compound		Phase 1932 North Wall
6	106	☐	Gray	Structural Fire Proofing		Phase 1932
7	107	☐	White	Layed in Ceiling Tile		Phase 1932
8	108	☐	Gold	Carpet Mastic		Phase 1932
9	109	☐	White	Cove Base & Mastic		Phase 1932 North Wall
10	110	☐	Gray	Brick Mortar		Phase 1932 Hall Closet

SATURDAY FEDEX SAMPLE DELIVERY - CALL TO SCHEDULE • Use this address for Saturday Delivery only: 4220 N. Santa Fe Ave., Oklahoma City, OK 73105-8517 • Mark Package "Hold for Saturday Pickup"
Please Note - UPS and USPS are NOT available for Saturday Delivery

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For Lab Use Only
Lab No. 360641
Accept Reject

Project Information

Company: RCP Environmental | Project Name: NPS-WFL HIghway Facilities Bldg | Project Location: 610 East 5th Avenue, Vancouver, WA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
11	111	☐	White	Sheetrock & Joint Compound		Phase 1932 Room 117
12	112	☐	Gold	Carpet Mastic		Phase 1932 Room 117
13	113	☐	White	Sheetrock & Joint Compound		Phase 1932 Northeast Room
14	114	☐	Gold	Carpet Mastic		Phase 1932 Northeast Room
15	115	☐	White	4" TSI		Phase 1932 Northeast Room
16	116	☐	White	Sheetrock & Joint Compound		Room 122
17	117	☐	Gray	Brick Mortar		Room 122
18	118	☐	White	Wall Plaster &Texture		Room 122
19	119	☐	White	Glued in Ceiling Tile		Room 122
20	120	☐	White	Layed in Ceiling Tile		Room 122
21	121	☐	Gray	Cove Base & Mastic		Room 122
22	122	☐	Tan	12 x12 Floor Tile & Mastic		Room 122
23	123	☐	White	Sheetrock & Joint Compound		Room 140
24	124	☐	White	Cove Base & Mastic		Room 140
25	125	☐	Yellow	Carpet Mastic		Room 140
26	126	☐	Gray	Brick Mortar		Room 104
27	127	☐	White	Sheetrock & Joint Compound		Room 103
28	128	☐	Yellow	Carpet Mastic		Room 103
29	129	☐	Brown	Cove Base & Mastic		Room 103
30	130	☐	Gray	Duct Sealant		Room 104

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Lab No. 360641
Accept Reject

Project Information

Company: RCP Environmental | Project Name: NPS-WFL HIghway Facilities Bldg | Project Location: 610 East 5th Avenue, Vancouver, WA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
31	131	☐	White	Sheetrock & Joint Compound		Room 105
32	132	☐	Brown	Cove Base & Mastic		Room 105
33	133	☐	White	Layed in Ceiling Tile		Room 105
34	134	☐	Green	Carpet Mastic		Room 105
35	135	☐	Gray	Wall Plaster & Texture		Room 148
36	136	☐	Brown	Cove Base & Mastic		Room 148
37	137	☐	Green	Carpet Mastic		Room 148
38	138	☐	White	Sheetrock & Joint Compound		Room 158
39	139	☐	Gray	Carpet Mastic		Room 158
40	140	☐	White	Sheetrock & Joint Compound		Room 161
41	141	☐	Gray	Concrete Masonary Unit Mortar		Room 162
42	142	☐	Pink	Floor Tile & Mastic		Room 162
43	143	☐	White	Plaster Over Brick Wall		Room 164
44	144	☐	White	Sheetrock & Joint Compound		Room 167
45	201	☐	White	Plaster		Room 239
46	202	☐	Gray	Brick Mortar		Room 239
47	203	☐	White	Plaster		Room 236
48	204	☐	Gray	Brick Mortar		Room 236
49	205	☐	Green	Carpet Mastic		Room 227
50	206	☐	White	Ceiling Texture		Room 233

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 360641
Accept Reject

Project Information

Company: RCP Environmental | Project Name: NPS-WFL HIghway Facilities Bldg | Project Location: 610 East 5th Avenue, Vancouver, WA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
51	207	☐	Gray	Plaster		Room 233
52	208	☐	Gray	Plaster		Room 202
53	209	☐	White	Sheet Rock & Joint compound		Room 222 Closet
54	210	☐	Tan	Cove Base & Mastic		Room 204
55	211	☐	White	Plaster Exterior Layer		Room 204
56	212	☐	White	Plaster Under layer		Room 204
57	213	☐	Gray	Brick Mortar		Room 204
58	R01	☐	Black	Built up Roofing		Roof Area A
59	R02	☐	Black	Built up Roofing 4.5"		Roof Area B North
60	R03	☐	Black	Built up Roofing 4"		Roof Area B Middle
61	R04	☐	Black	Built up Roofing 3.5"		Roof Area B South
62	R05	☐	Black	Built up Roofing 3.5"		Roof Area C
63	R06	☐	Black	Built up Roofing 3"		Roof Area E
64	R07	☐	Black	Built up Roofing 4"		Roof Area D North
65	R08	☐	Black	Built up Roofing 3.7"		Roof Area D Middle
66	R09	☐	Black	Built up Roofing 3.5"		Roof Area D South
67	R10	☐	Black	Built up Roofing 2"		Roof Area F
68	R11	☐	Black	Built up Roofing 2"		Roof Area F
69	R12	☐	Black	Built up Roofing 2"		Roof Area F
70		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 362003
Account Number: C132

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Date Received: 08/31/2023
Received By: Courtney Holman
Date Analyzed: 09/01/2023
Analyzed By: Cassie Sanborn
Methodology: EPA/600/R-93/116

Project: NPS WFL Highway Facilities Bldg
Project Location: 610 East 5th Street, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	WM 01	Homogeneous	Gray Mortar	Asbestos Not Present	NA	CaCO3 Sand Paint
002	EM 01	Homogeneous	White Duct Tape	Asbestos Not Present	Cellulose 30	CaCO3 Binder
003	EM 02	Homogeneous	White Duct Tape	Asbestos Not Present	Cellulose 30	CaCO3 Binder
004	EM 03	Layered	Beige Tile	Asbestos Not Present	Cellulose 10 Glass Fiber 80	Paint
004a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
005	EM 04	Layered	Beige Tile	Asbestos Not Present	Cellulose 10 Glass Fiber 80	Paint
005a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

QuanTEM is a NVLAP accredited Testing PLM laboratory (Lab Code: 101959-0). This report relates only to the specific items tested.
NVLAP accreditation applies only to analysis performed utilizing EPA—40 CFR Appendix E to Subpart E of Part 763 and EPA/600/R-93/116 methods.
This report may not be used to claim product endorsement by NVLAP or any agency of the US Government.
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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 362003
Account Number: C132
Date Received: 08/31/2023
Received By: Courtney Holman
Date Analyzed: 09/01/2023
Analyzed By: Cassie Sanborn
Methodology: EPA/600/R-93/116

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Project: NPS WFL Highway Facilities Bldg
Project Location: 610 East 5th Street, Vancouver, WA
Project Number: 23-036 WA

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
006	EM 05	Homogeneous	Gray Mortar	Asbestos Not Present	NA	CaCO3 Sand

Cassie Sanborn, Laboratory Analyst

9/1/2023
Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

QuanTEM is a NVLAP accredited Testing PLM laboratory (Lab Code: 101959-0). This report relates only to the specific items tested.
NVLAP accreditation applies only to analysis performed utilizing EPA—40 CFR Appendix E to Subpart E of Part 763 and EPA/600/R-93/116 methods.
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For Lab Use Only
Lab No. 362003
Accept Reject

Contact Information			
Company: RCP Environmental		Phone: (360) 787-3682	
Contact: Dave Routtu		Cell Phone:	
Account #: C-132		E-mail: dave.routtu@rcpenvironmental.com	
SAMPLED BY:	Name:	Date: 8-29-2023	

Project Information	
Project Name:	NPS WFL Highway Facilities Bldg
Project Location:	610 East 5th Street, Vancouver, WA
Project ID:	23-036 WA
P.O. Number:	

Report Results (☑ one box)
- ☐ QuanTEM Website
- ☑ Email dave.routtu@rcpenvironmental.com
- ☐ Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
D Routtu	8-30-23	Fed Ex	Courtney M. Hall	8/31/23 @ 9:15

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	PLM	TEM	TEM	TURNAROUND TIME
☐ Bulk Analysis (EPA 600/R-93/116)	☐ Vermiculite Attic Insulation (EPA 600/R-04/004)	☐ Air- AHERA	☐ Bulk- Presence / Absence EPA600/R-93/116	☐ Rush
☐ 400 Point Count	☐ Other	☐ Air- NIOSH 7402	☐ Bulk- Quantitative [weight%]- Chatfield	☐ Same Day
☐ 1000 Point Count	PCM	☐ Air- ISO 10312	☐ Dust- Presence / Absence	☒ 24 - Hour
☐ Gravimetric Preparation	☐ NIOSH 7400	☐ Drinking Water- EPA 100.2	☐ Dust- Quantitative [fibers/sq.cm]- ASTM D5755	☐ 3 - Day
☐ Particle ID		☐ Waste Water- EPA 600/4-83-043	☐ Other	☐ 5 - Day

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	WM 01	☐	Gray	CMU Mortar		West Perimeter Wall
2	EM 01	☐	White	Duct Joint Tape		East Mezzanine Attic
3	EM 02	☐	White	Duct Joint Tape		East Mezzanine
4	EM 03	☐	Brown	Glue Dot		East Mezzanine Wall
5	EM 04	☐	Brown	Glue Dot		East Mezzanine Wall
6	EM 05	☐	Gray	CMU Block Mortar		East Mezzanine South Wall
7		☐				
8		☐				
9		☐				
10		☐				

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Environmental Chemistry Analysis Report

QuanTEM Set ID: 361988
Date Received: 08/31/23
Received By: Jake Martin
Date Sampled:
Time Sampled:
Analyst: CR
Date of Report: 09/01/23

AIHA LAP, LLC: 101352

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Acct. No.: C132

Project: WFL HD Seismic Upgrade
Location: 610 E 5th Street, Vancouver, WA
Project No.: 23-036 WA

QuanTEM ID	Client ID	Matrix	Parameter	Results	Reporting Limits	Units	Date/Time Analyzed	Method
001	Pb 01 WM	Paint	Lead	0.80	0.0083	%	08/31/23 12:02	P EPA 7000B (1)

Authorized Signature: Cherry Rossen

Cherry Rossen, Technical Manager

Note: Sample results have not been corrected for blank values.

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Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Wipe materials must meet ASTM E1792 criteria. Method detection limits and resultant reporting limits may not be valid for non-ASTM E1792 wipe material.

EPA Method 7000B (1) = EPA 600/R-93/200 Preparation Modified. EPA 7000B Analysis Modified

EPA Method 7082 (2) = EPA 600/R-93/200 Preparation Modified. EPA 7082 Analysis Modified

Supplemental Report
QAQC Results

QA ID: 20882 **Date:** 8/31/2023 **Lab Number:** 361988
Test: Lead **Matrix:** Paint **Approved By:** Cherry Rossen
Date Approved: 8/31/2023

Notes:

Blank Data:

Type of Blank	Blank Value
FCB	0
ICB	0
Matrix Blank	0
Matrix Blank	0

Standards Data:

Standard	Low Limit	Obtained	High Limit
CCV	2.2	2.7	2.8
FCV	2.2	2.6	2.8
RLVS	0.05	0.12	0.15
ICV	0.9	1.1	1.1

Duplicate Data:

Sample Number	Result	Duplicate	% RPD
361957-007	0.721	0.709	1.6
361812-020	0.143	0.144	0.5

Recovery Data:

Sample Number	Result	Spike Level	Result + Spike	% Recovery	Dup. Result + Spike	% Dup. Recovery	% Spike RPD
LCS-P1	0.000	2.010	2.017	100.3	1.911	95.0	5.4
LCS-P2	0.000	2.010	1.852	92.1	2.067	102.9	11.0
361812-020	0.143	2.000	2.263	106.0			
361957-007	0.721	2.000	2.615	94.7			

Cherry Rossen

Authorized Signature:_____

Cherry Rossen, Technical Manager

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Lab No.	361988
	(Accept) Reject

Contact Information			
Company:	RCP Environmental	Phone:	(360) 787-3682
Contact:	Dave Routtu	Cell Phone:	
Account #:	C-132	E-mail:	dave.routtu@rcpenvironmental.com
SAMPLED BY: Name:	Dave Routtu	Date:	8-29-2023

Project Information	
Project Name:	WFL HD Seismic Upgrade
Project Location:	610 E 5th Street, Vancouver, WA
Project ID:	23-036 WA
P.O. Number:	

Report Results (☑ one box)	
	QuanTEM Website
✔	Email dave.routtu@rcpenvironmental.com
	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
D Boulk	8-30-2023	FedEx	Jake Master	8/31/23 9:40

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

No.	Sample ID (10 Characters Max)	Sample Description	Volume (Liters)	Volume Area (Length x Width)	Sample Matrix (see matrix code box)	Analysis			Units (☑ ONE box only)					
						Pb			PPM	Wt %	mg / l	µg /ft²	µg / m³	mg / cm²
1	Pb 01 WM	Gray Metal Roof Deck Coating			B	✔				✔				
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Sample Matrix Codes	
A	Soil
B	Paint Chips
C	Surface / Dust Wipes
D	Bulk Miscellaneous
E	Air Cassette

TURNAROUND TIME	
	Same Day
✔	24 - Hour
	3 - Day
	5 - Day

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Environmental Chemistry Analysis Report

QuanTEM Set ID: 362819
Date Received: 10/02/23
Received By: Cherry Rossen
Date Sampled:
Time Sampled:
Analyst: CR
Date of Report: 10/02/23

AIHA LAP, LLC: 101352

Client: RCP Environmental, LLC
13828 NW 10th Ct, Unit B
Vancouver, WA 98685

Acct. No.: C132

Project: WFL HD Seismic Upgrade
Location: 610 E 5th Street, Vancouver, WA
Project No.: 23-036 WA

QuanTEM ID	Client ID	Matrix	Parameter	Results	Reporting Limits	Units	Date/Time Analyzed	Method
001	Pb-02	Paint	Lead	0.073	0.05	%	10/02/23 13:07	P EPA 7000B (1)
002	Pb 03	Paint	Lead	1.2	0.013	%	10/02/23 13:07	P EPA 7000B (1)

Authorized Signature: Cherry Rossen

Cherry Rossen, Technical Manager

Note: Sample results have not been corrected for blank values.

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Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

Wipe materials must meet ASTM E1792 criteria. Method detection limits and resultant reporting limits may not be valid for non-ASTM E1792 wipe material.

EPA Method 7000B (1) = EPA 600/R-93/200 Preparation Modified. EPA 7000B Analysis Modified

EPA Method 7082 (2) = EPA 600/R-93/200 Preparation Modified. EPA 7082 Analysis Modified

Supplemental Report
QAQC Results

QA ID: **20947**
Test: Lead
Date: 10/2/2023
Matrix: Paint
Lab Number: 362819
Approved By: Cherry Rossen
Date Approved: 10/2/2023

Notes:

Blank Data:

Type of Blank	Blank Value
FCB	0
ICB	0
Matrix Blank	0

Standards Data:

Standard	Low Limit	Obtained	High Limit
FCV	2.2	2.6	2.8
RLVS	0.05	0.07	0.15
ICV	0.9	1.1	1.1

Duplicate Data:

Recovery Data:

Sample Number	Result	Spike Level	Result + Spike	% Recovery	Dup. Result + Spike	% Dup. Recovery	% Spike RPD
LCS-P1	0.000	2.010	2.128	105.9	2.126	105.8	0.1

Authorized Signature: Cherry Rossen

Cherry Rossen, Technical Manager

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Contact Information		Project Information	
Company: RCP Environmental	Phone: (360) 787-3682	Project Name: WFL HD Seismic Upgrade	
Contact: Dave Routtu	Cell Phone:	Project Location: 610 E 5th Street, Vancouver, WA	
Account #: C-132	E-mail: dave.routtu@rcpenvironmental.com	Project ID: 23-036 WA	
SAMPLED BY: Name: Dave Routtu	Date: 9-28-2023	P.O. Number:	

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY
D Routtu	9-29-23	FedEx	

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

No.	Sample ID (10 Characters Max)	Sample Description	Volume (Liters)	Volume Area (Length x Width)	Sample Matrix (see matrix code box)	Analysis			Units (☑ ONE b			
						Pb			PPM	Wt %	mg / l	µg /ft²
1	Pb-02	1952 Lab Mezzanine Ceiling Deck			B	✔				✔		
2	Pb 03	1932 Area B 2nd Floor Ceiling			B	✔				✔		
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

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Appendix C

Sample Location Drawings

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SYMBOL KEY

- ●000 — ASBESTOS SAMPLE: ASBESTOS DETECTED
- ○000 — ASBESTOS SAMPLE: NO ASBESTOS DETECTED
- ASBESTOS-CONTAINING 12 x 12 FLOOR TILE AND MASTIC
- ASBESTOS-CONTAINING 4" PIPE INSULATION

2023 ASBESTOS SAMPLES (RCP)

○101	WHITE SHEETROCK & JOINT COMPOUND	○112	GOLD CARPET MASTIC
○102	WHITE SHEETROCK & JOINT COMPOUND	○113	WHITE SHEETROCK & JOINT COMPOUND
○103	WHITE COVE BASE & MASTIC	○114	GOLD CARPET MASTIC
○104	WHITE LAYED IN CEILING TILE	●115	4" TSI
○105	WHITE SHEETROCK & JOINT COMPOUND	○116	WHITE SHEETROCK & JOINT COMPOUND
○106	GRAY STRUCTURAL FIRE PROOFING	○117	GRAY BRICK MORTAR
○107	WHITE LAYED IN CEILING TILE	○118	WHITE WALL PLASTER & TEXTURE
○108	GOLD CARPET MASTIC	○119	WHITE GLUED IN CEILING TILE
○109	WHITE COVE BASE & MASTIC	○120	WHITE LAYED IN CEILING TILE
○110	GRAY BRICK MORTAR	○121	GRAY COVE BASE & MASTIC
○111	WHITE SHEETROCK & JOINT COMPOUND	●122	TAN 12 X 12 FLOOR TILE & MASTIC

2009 ASBESTOS SAMPLES (OTHERS)

○1-4A	TSI
○1-5A	TSI
○1-6A	TSI
○1-7A	INSULATION
○1-8A	JOINT COMPOUND
○1-9A	TSI
○1-10A	CEILING TILE
○1-11A	CEILING TILE
○1-13A	CEILING TILE
○1-14A	PLASTER
○1-15A	CEILING TILE
●1-16A	TSI (PIPE LAGGING)
●1-17A	TSI FITTING
○1-18A	TSI FITTING
●1-19A	TSI PIPE INSULATION
○1-20A	TSI HARD FITTING
○1-21A	CEILING TILE
○1-22A	PLASTER
●1-23A	TSI
○1-24A	CEILING TILE
●1-25A	TSI
○1-26A	TEXTURE
○1-27A	WALLBOAD
●1-28A	TSI
○1-29A	PLASTER
○1-31A	PLASTER, LATHBOAD DUST
●1-32A	TSI
○1-33A	TSI CEMENT
●1-34A	BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

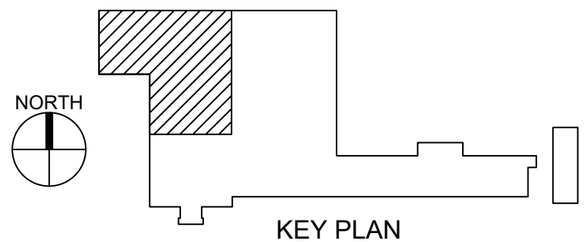
○001	LAY-IN CEILING TILE
○002	HARD FITTINGS/PIPE INSULATION
○003	MORTAR
○004	GYPSUM WALLBOARD/JOINT COMPD.
○005	COVEBASE/MASTIC
○006	VINYL FLOOR TILE/MASTIC
○007	LAY-IN CEILING TILE
●008	AIR CELL PIPE INSULATION
○009	MORTAR
○010	MATERIAL DEBRIS
○011	LAY-IN CEILING TILE
●012	MATERIAL DEBRIS
●013	AIR CELL PIPE INSULATION
●014	SHEET FLOOR COVERING
○015	MASTIC
○016	GYPSUM AND PLASTER
○017	MATERIAL DEBRIS
○018	GYPSUM WALLBOARD/JOINT COMPD.
○026	SPRAYED FIBROUS FIREPROOFING
○027	HARD FITTINGS/PIPE INSULATION
○028	HARD FITTINGS/PIPE INSULATION
○029	HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A	CREAM TEXTURE, WHITE TEXTURE
○1B	CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C	WHITE TEXTURE, WHITE WALLBOARD
○1D	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A	TAN MASTIC
○2B	TAN MASTIC
○2C	TAN MASTIC
○3	BLACK COUNTERTOP
○4A	TAN COVE BASE, YELLOW MASTIC
○4B	TAN COVE BASE, YELLOW MASTIC
○5	GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6	12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7	TAN HOOD
○8	12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A	2' X 4' WHITE CEILING PANEL
○9B	2' X 4' WHITE CEILING PANEL
○9C	2' X 4' WHITE CEILING PANEL
○10A	BLACK COVE BASE, WHITE MASTIC
○10B	BLACK COVE BASE, WHITE MASTIC
○11A	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12	YELLOW INSULATION
○13A	2' X 4' WHITE CEILING PANEL
○13B	2' X 4' WHITE CEILING PANEL
○13C	2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14	OFF-WHITE DUCT TAPE
○15	WHITE DUCT TAPE
○16A	BROWN MASTIC
○16B	BROWN MASTIC
○17	GRAY MASTIC
○18	WHITE MASTIC
○19	BLACK MASTIC
○20	WHITE MEMBRANE



RCP ENVIRONMENTAL
6001 NE 7th AVENUE, SUITE B-208 VANCOUVER, WA 98665 https://rcpenvironmental.com

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - NW CORNER

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM1
SHEET 1 of 9

SYMBOL KEY

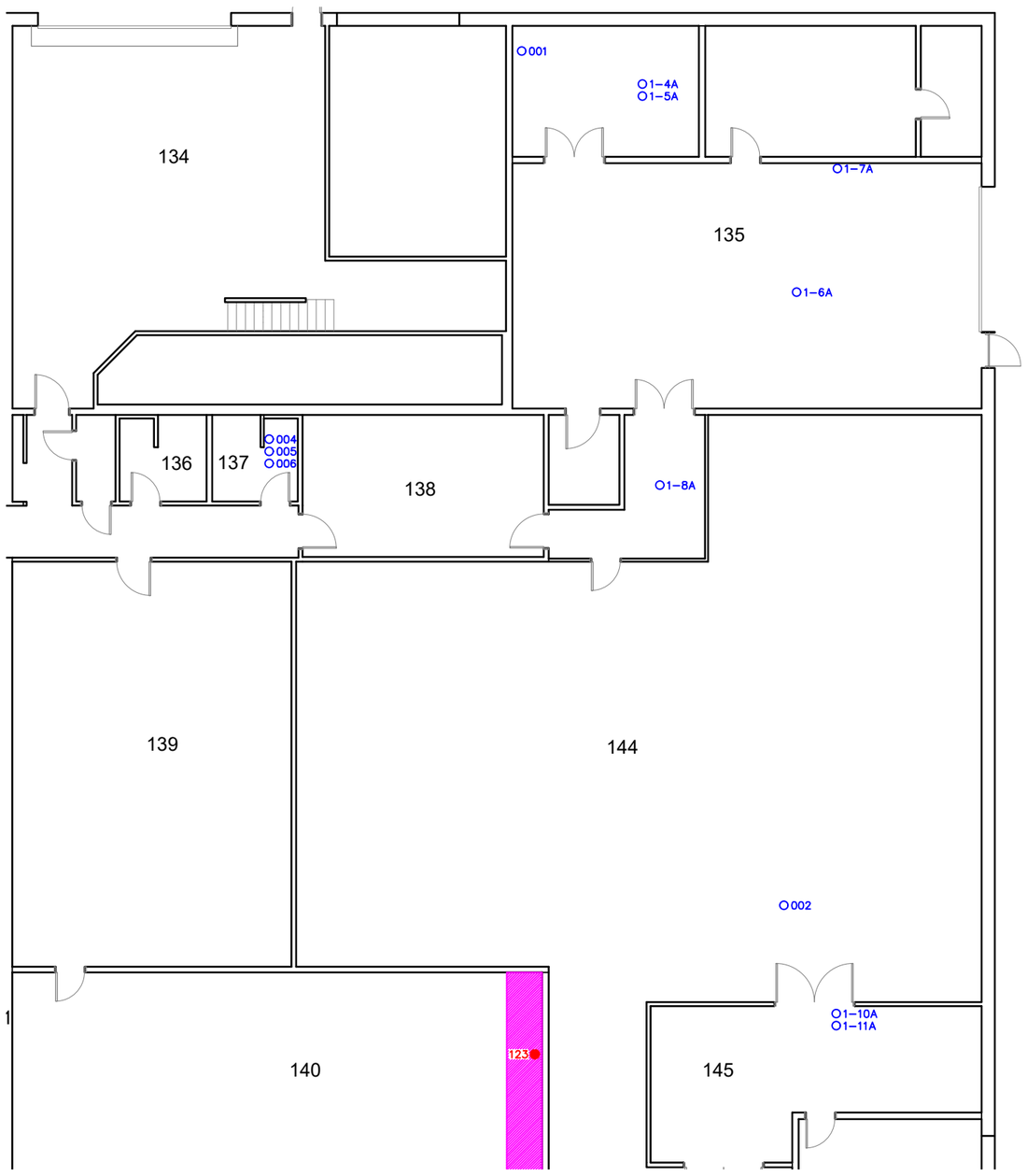
●000 ASBESTOS SAMPLE: ASBESTOS DETECTED

○000 ASBESTOS SAMPLE: NO ASBESTOS DETECTED

ASBESTOS-CONTAINING JOINT COMPOUND ON GYPSUM WALLBOARD

2023 ASBESTOS SAMPLES (RCP)

●123 WHITE SHEETROCK & JOINT COMPOUND



2009 ASBESTOS SAMPLES (OTHERS)

○1–4A TSI
○1–5A TSI
○1–6A TSI
○1–7A INSULATION
○1–8A JOINT COMPOUND
○1–9A TSI
○1–10A CEILING TILE
○1–11A CEILING TILE
○1–13A CEILING TILE
○1–14A PLASTER
○1–15A CEILING TILE
●1–16A TSI (PIPE LAGGING)
●1–17A TSI FITTING
○1–18A TSI FITTING
●1–19A TSI PIPE INSULATION
○1–20A TSI HARD FITTING
○1–21A CEILING TILE
○1–22A PLASTER
●1–23A TSI
○1–24A CEILING TILE
●1–25A TSI
○1–26A TEXTURE
○1–27A WALLBOAD
●1–28A TSI
○1–29A PLASTER
○1–31A PLASTER, LATHBOAD DUST
●1–32A TSI
○1–33A TSI CEMENT
●1–34A BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

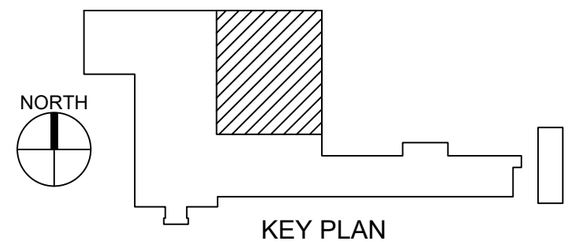
○001 LAY–IN CEILING TILE
○002 HARD FITTINGS/PIPE INSULATION
○003 MORTAR
○004 GYPSUM WALLBOARD/JOINT COMPD.
○005 COVEBASE/MASTIC
○006 VINYL FLOOR TILE/MASTIC
○007 LAY–IN CEILING TILE
●008 AIR CELL PIPE INSULATION
○009 MORTAR
○010 MATERIAL DEBRIS
○011 LAY–IN CEILING TILE
●012 MATERIAL DEBRIS
●013 AIR CELL PIPE INSULATION
●014 SHEET FLOOR COVERING
○015 MASTIC
○016 GYPSUM AND PLASTER
○017 MATERIAL DEBRIS
○018 GYPSUM WALLBOARD/JOINT COMPD.
○026 SPRAYED FIBROUS FIREPROOFING
○027 HARD FITTINGS/PIPE INSULATION
○028 HARD FITTINGS/PIPE INSULATION
○029 HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A CREAM TEXTURE, WHITE TEXTURE
○1B CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C WHITE TEXTURE, WHITE WALLBOARD
○1D WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A TAN MASTIC
○2B TAN MASTIC
○2C TAN MASTIC
○3 BLACK COUNTERTOP
○4A TAN COVE BASE, YELLOW MASTIC
○4B TAN COVE BASE, YELLOW MASTIC
○5 GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6 12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7 TAN HOOD
○8 12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A 2' X 4' WHITE CEILING PANEL
○9B 2' X 4' WHITE CEILING PANEL
○9C 2' X 4' WHITE CEILING PANEL
○10A BLACK COVE BASE, WHITE MASTIC
○10B BLACK COVE BASE, WHITE MASTIC
○11A 12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B 12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12 YELLOW INSULATION
○13A 2' X 4' WHITE CEILING PANEL
○13B 2' X 4' WHITE CEILING PANEL
○13C 2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14 OFF–WHITE DUCT TAPE
○15 WHITE DUCT TAPE
○16A BROWN MASTIC
○16B BROWN MASTIC
○17 GRAY MASTIC
○18 WHITE MASTIC
○19 BLACK MASTIC
○20 WHITE MEMBRANE



RCP ENVIRONMENTAL
6901 NE 7th AVENUE, SUITE B-208 VANCOUVER, WA 98665 https://rcpenvironmental.com

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - NE CORNER

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

project number: 22-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM2
SHEET 2 of 9

SYMBOL KEY

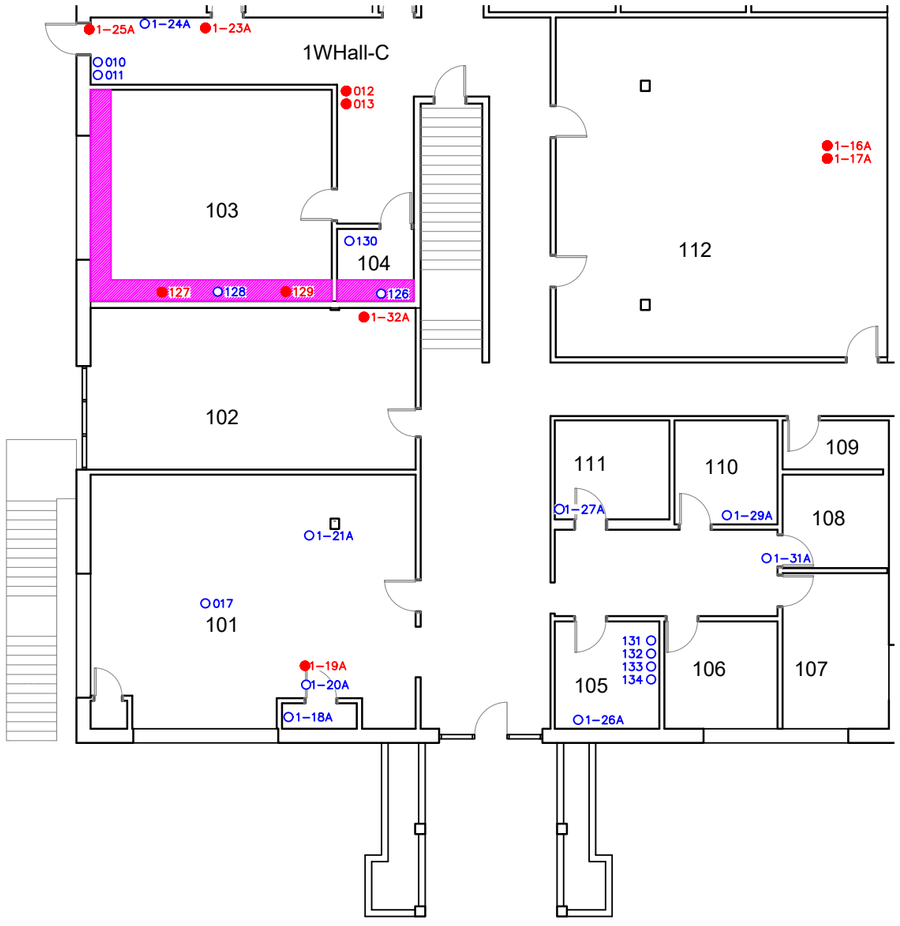
●000 ASBESTOS SAMPLE: ASBESTOS DETECTED

○000 ASBESTOS SAMPLE: NO ASBESTOS DETECTED

ASBESTOS-CONTAINING JOINT COMPOUND ON GYPSUM WALLBOARD

2023 ASBESTOS SAMPLES (RCP)

○126 GRAY BRICK MORTAR
●127 WHITE SHEETROCK & JOINT COMPOUND
○128 YELLOW CARPET MASTIC
●129 COVE BASE, BROWN MASTIC & WHITE JOINT COMPOUND
○130 GRAY DUCT SEALANT
○131 WHITE SHEETROCK & JOINT COMPOUND
○132 BROWN COVE BASE & MASTIC
○133 WHITE LAYED IN CEILING TILE
○134 GREEN CARPET MASTIC



2009 ASBESTOS SAMPLES (OTHERS)

○1-4A TSI
○1-5A TSI
○1-6A TSI
○1-7A INSULATION
○1-8A JOINT COMPOUND
○1-9A TSI
○1-10A CEILING TILE
○1-11A CEILING TILE
○1-13A CEILING TILE
○1-14A PLASTER
○1-15A CEILING TILE
●1-16A TSI (PIPE LAGGING)
●1-17A TSI FITTING
○1-18A TSI FITTING
●1-19A TSI PIPE INSULATION
○1-20A TSI HARD FITTING
○1-21A CEILING TILE
○1-22A PLASTER
●1-23A TSI
○1-24A CEILING TILE
●1-25A TSI
○1-26A TEXTURE
○1-27A WALLBOAD
●1-28A TSI
○1-29A PLASTER
○1-31A PLASTER, LATHBOAD DUST
●1-32A TSI
○1-33A TSI CEMENT
●1-34A BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

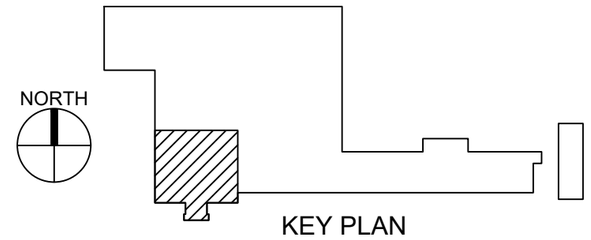
○001 LAY-IN CEILING TILE
○002 HARD FITTINGS/PIPE INSULATION
○003 MORTAR
○004 GYPSUM WALLBOARD/JOINT COMPD.
○005 COVEBASE/MASTIC
○006 VINYL FLOOR TILE/MASTIC
○007 LAY-IN CEILING TILE
●008 AIR CELL PIPE INSULATION
○009 MORTAR
○010 MATERIAL DEBRIS
○011 LAY-IN CEILING TILE
●012 MATERIAL DEBRIS
●013 AIR CELL PIPE INSULATION
●014 SHEET FLOOR COVERING
○015 MASTIC
○016 GYPSUM AND PLASTER
○017 MATERIAL DEBRIS
○018 GYPSUM WALLBOARD/JOINT COMPD.
○026 SPRAYED FIBROUS FIREPROOFING
○027 HARD FITTINGS/PIPE INSULATION
○028 HARD FITTINGS/PIPE INSULATION
○029 HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A CREAM TEXTURE, WHITE TEXTURE
○1B CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C WHITE TEXTURE, WHITE WALLBOARD
○1D WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A TAN MASTIC
○2B TAN MASTIC
○2C TAN MASTIC
○3 BLACK COUNTERTOP
○4A TAN COVE BASE, YELLOW MASTIC
○4B TAN COVE BASE, YELLOW MASTIC
○5 GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6 12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7 TAN HOOD
○8 12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A 2' X 4' WHITE CEILING PANEL
○9B 2' X 4' WHITE CEILING PANEL
○9C 2' X 4' WHITE CEILING PANEL
○10A BLACK COVE BASE, WHITE MASTIC
○10B BLACK COVE BASE, WHITE MASTIC
○11A 12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B 12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12 YELLOW INSULATION
○13A 2' X 4' WHITE CEILING PANEL
○13B 2' X 4' WHITE CEILING PANEL
○13C 2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14 OFF-WHITE DUCT TAPE
○15 WHITE DUCT TAPE
○16A BROWN MASTIC
○16B BROWN MASTIC
○17 GRAY MASTIC
○18 WHITE MASTIC
○19 BLACK MASTIC
○20 WHITE MEMBRANE



KEY PLAN

RCP ENVIRONMENTAL
6901 NE 7th AVENUE, SUITE B-208 VANCOUVER, WA 98665 https://rcpenvironmental.com

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - SW CORNER

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

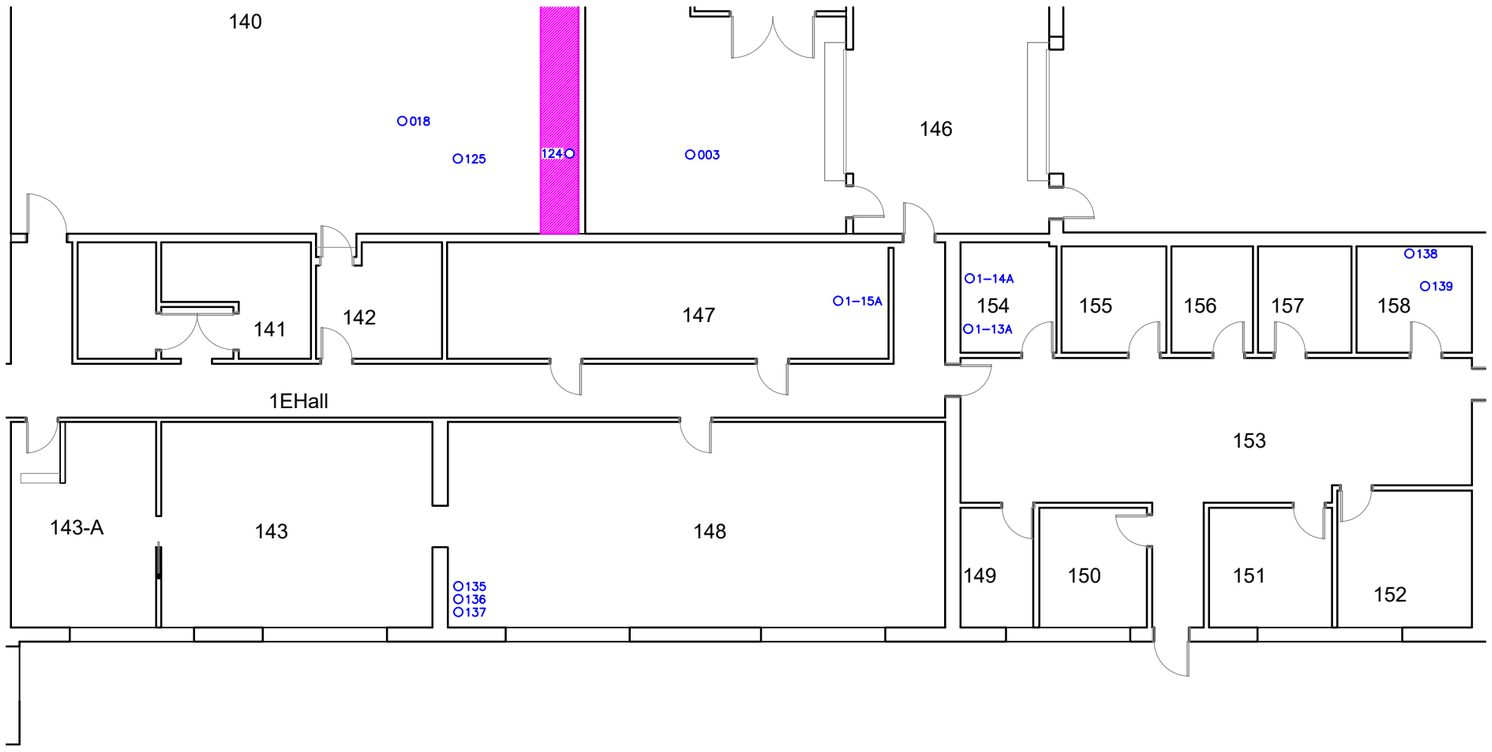
HM3

SYMBOL KEY

- ●000 ASBESTOS SAMPLE: ASBESTOS DETECTED
- ○000 ASBESTOS SAMPLE: NO ASBESTOS DETECTED
- ASBESTOS-CONTAINING JOINT COMPOUND ON GYPSUM WALLBOARD

2023 ASBESTOS SAMPLES (RCP)

○124	WHITE COVE BASE & MASTIC
○125	YELLOW CARPET MASTIC
○135	GRAY WALL PLASTER & TEXTURE
○136	BROWN COVE BASE & MASTIC
○137	GREEN CARPET MASTIC
○138	WHITE SHEETROCK & JOINT COMPOUND
○139	GRAY CARPET MASTIC



2009 ASBESTOS SAMPLES (OTHERS)

○1-4A	TSI
○1-5A	TSI
○1-6A	TSI
○1-7A	INSULATION
○1-8A	JOINT COMPOUND
○1-9A	TSI
○1-10A	CEILING TILE
○1-11A	CEILING TILE
○1-13A	CEILING TILE
○1-14A	PLASTER
○1-15A	CEILING TILE
●1-16A	TSI (PIPE LAGGING)
●1-17A	TSI FITTING
○1-18A	TSI FITTING
●1-19A	TSI PIPE INSULATION
○1-20A	TSI HARD FITTING
○1-21A	CEILING TILE
○1-22A	PLASTER
●1-23A	TSI
○1-24A	CEILING TILE
●1-25A	TSI
○1-26A	TEXTURE
○1-27A	WALLBOAD
●1-28A	TSI
○1-29A	PLASTER
○1-31A	PLASTER, LATHBOAD DUST
●1-32A	TSI
○1-33A	TSI CEMENT
●1-34A	BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

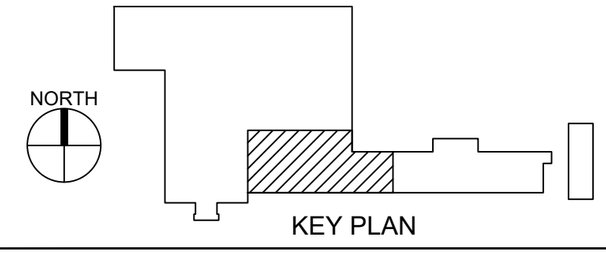
○001	LAY-IN CEILING TILE
○002	HARD FITTINGS/PIPE INSULATION
○003	MORTAR
○004	GYPSUM WALLBOARD/JOINT COMPD.
○005	COVEBASE/MASTIC
○006	VINYL FLOOR TILE/MASTIC
○007	LAY-IN CEILING TILE
●008	AIR CELL PIPE INSULATION
○009	MORTAR
○010	MATERIAL DEBRIS
○011	LAY-IN CEILING TILE
●012	MATERIAL DEBRIS
●013	AIR CELL PIPE INSULATION
●014	SHEET FLOOR COVERING
○015	MASTIC
○016	GYPSUM AND PLASTER
○017	MATERIAL DEBRIS
○018	GYPSUM WALLBOARD/JOINT COMPD.
○026	SPRAYED FIBROUS FIREPROOFING
○027	HARD FITTINGS/PIPE INSULATION
○028	HARD FITTINGS/PIPE INSULATION
○029	HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A	CREAM TEXTURE, WHITE TEXTURE
○1B	CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C	WHITE TEXTURE, WHITE WALLBOARD
○1D	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A	TAN MASTIC
○2B	TAN MASTIC
○2C	TAN MASTIC
○3	BLACK COUNTERTOP
○4A	TAN COVE BASE, YELLOW MASTIC
○4B	TAN COVE BASE, YELLOW MASTIC
○5	GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6	12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7	TAN HOOD
○8	12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A	2' X 4' WHITE CEILING PANEL
○9B	2' X 4' WHITE CEILING PANEL
○9C	2' X 4' WHITE CEILING PANEL
○10A	BLACK COVE BASE, WHITE MASTIC
○10B	BLACK COVE BASE, WHITE MASTIC
○11A	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12	YELLOW INSULATION
○13A	2' X 4' WHITE CEILING PANEL
○13B	2' X 4' WHITE CEILING PANEL
○13C	2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14	OFF-WHITE DUCT TAPE
○15	WHITE DUCT TAPE
○16A	BROWN MASTIC
○16B	BROWN MASTIC
○17	GRAY MASTIC
○18	WHITE MASTIC
○19	BLACK MASTIC
○20	WHITE MEMBRANE



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WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - SOUTH CENTER

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM4
SHEET 4 of 9

SYMBOL KEY

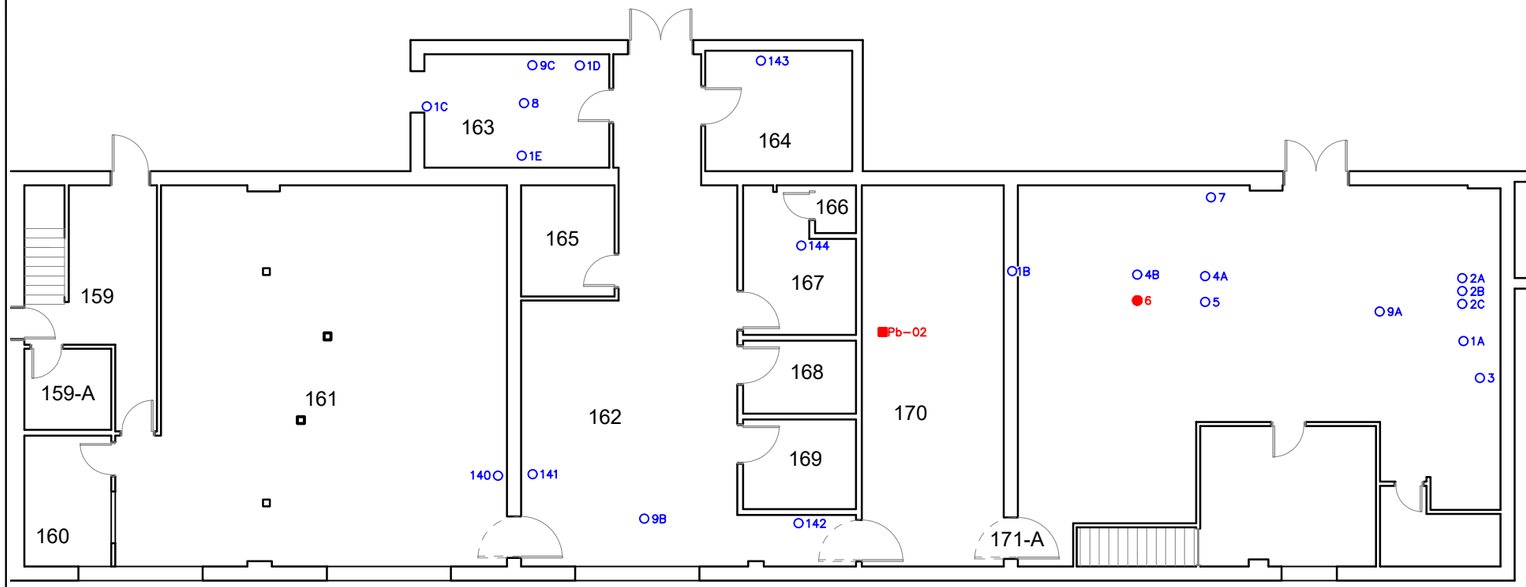
- ●000 — ASBESTOS SAMPLE: ASBESTOS DETECTED
- ○000 — ASBESTOS SAMPLE: NO ASBESTOS DETECTED
- ■PB-00 — LEAD SAMPLE: LEAD DETECTED
- □PB-00 — LEAD SAMPLE: NO LEAD DETECTED

2023 ASBESTOS SAMPLES (RCP)

○140	WHITE SHEETROCK & JOINT COMPOUND
○141	CONCRETE MASONRY UNIT MORTAR
○142	PINK FLOOR TILE & MASTIC
○143	WHITE PLASTER OVER BRICK WALL
○144	WHITE SHEETROCK & JOINT COMPOUND

2023 LEAD PAINT SAMPLES (RCP)

■Pb-01 WM	GRAY PAINT ON METAL ROOF DECK
■Pb-02	GRAY PAINT ON METAL ROOF DECK
■Pb-03	GRAY PAINT ON METAL ROOF DECK



2009 ASBESTOS SAMPLES (OTHERS)

○1-4A	TSI
○1-5A	TSI
○1-6A	TSI
○1-7A	INSULATION
○1-8A	JOINT COMPOUND
○1-9A	TSI
○1-10A	CEILING TILE
○1-11A	CEILING TILE
○1-13A	CEILING TILE
○1-14A	PLASTER
○1-15A	CEILING TILE
●1-16A	TSI (PIPE LAGGING)
●1-17A	TSI FITTING
○1-18A	TSI FITTING
●1-19A	TSI PIPE INSULATION
○1-20A	TSI HARD FITTING
○1-21A	CEILING TILE
○1-22A	PLASTER
●1-23A	TSI
○1-24A	CEILING TILE
●1-25A	TSI
○1-26A	TEXTURE
○1-27A	WALLBOAD
●1-28A	TSI
○1-29A	PLASTER
○1-31A	PLASTER, LATHBOAD DUST
●1-32A	TSI
○1-33A	TSI CEMENT
●1-34A	BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

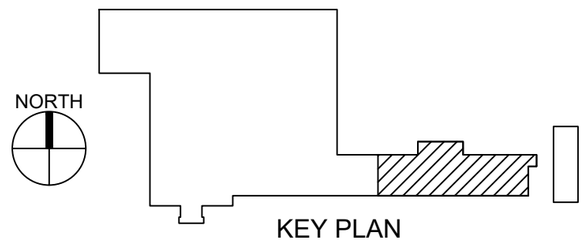
○001	LAY-IN CEILING TILE
○002	HARD FITTINGS/PIPE INSULATION
○003	MORTAR
○004	GYPSUM WALLBOARD/JOINT COMPD.
○005	COVEBASE/MASTIC
○006	VINYL FLOOR TILE/MASTIC
○007	LAY-IN CEILING TILE
●008	AIR CELL PIPE INSULATION
○009	MORTAR
○010	MATERIAL DEBRIS
○011	LAY-IN CEILING TILE
●012	MATERIAL DEBRIS
●013	AIR CELL PIPE INSULATION
●014	SHEET FLOOR COVERING
○015	MASTIC
○016	GYPSUM AND PLASTER
○017	MATERIAL DEBRIS
○018	GYPSUM WALLBOARD/JOINT COMPD.
○026	SPRAYED FIBROUS FIREPROOFING
○027	HARD FITTINGS/PIPE INSULATION
○028	HARD FITTINGS/PIPE INSULATION
○029	HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A	CREAM TEXTURE, WHITE TEXTURE
○1B	CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C	WHITE TEXTURE, WHITE WALLBOARD
○1D	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A	TAN MASTIC
○2B	TAN MASTIC
○2C	TAN MASTIC
○3	BLACK COUNTERTOP
○4A	TAN COVE BASE, YELLOW MASTIC
○4B	TAN COVE BASE, YELLOW MASTIC
○5	GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6	12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7	TAN HOOD
○8	12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A	2' X 4' WHITE CEILING PANEL
○9B	2' X 4' WHITE CEILING PANEL
○9C	2' X 4' WHITE CEILING PANEL
○10A	BLACK COVE BASE, WHITE MASTIC
○10B	BLACK COVE BASE, WHITE MASTIC
○11A	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12	YELLOW INSULATION
○13A	2' X 4' WHITE CEILING PANEL
○13B	2' X 4' WHITE CEILING PANEL
○13C	2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14	OFF-WHITE DUCT TAPE
○15	WHITE DUCT TAPE
○16A	BROWN MASTIC
○16B	BROWN MASTIC
○17	GRAY MASTIC
○18	WHITE MASTIC
○19	BLACK MASTIC
○20	WHITE MEMBRANE



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WESTERN FEDERAL LANDS HIGHWAY DIVISION
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HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - SE CORNER

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

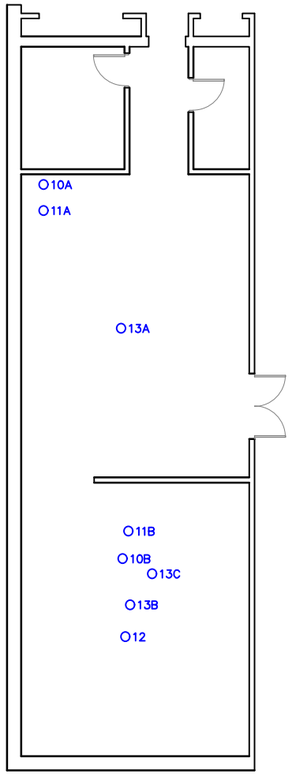
project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM5
SHEET 5 of 9

SYMBOL KEY

●000 ASBESTOS SAMPLE: ASBESTOS DETECTED

○000 ASBESTOS SAMPLE: NO ASBESTOS DETECTED



2009 ASBESTOS SAMPLES (OTHERS)

○1-4A	TSI
○1-5A	TSI
○1-6A	TSI
○1-7A	INSULATION
○1-8A	JOINT COMPOUND
○1-9A	TSI
○1-10A	CEILING TILE
○1-11A	CEILING TILE
○1-13A	CEILING TILE
○1-14A	PLASTER
○1-15A	CEILING TILE
●1-16A	TSI (PIPE LAGGING)
●1-17A	TSI FITTING
○1-18A	TSI FITTING
●1-19A	TSI PIPE INSULATION
○1-20A	TSI HARD FITTING
○1-21A	CEILING TILE
○1-22A	PLASTER
●1-23A	TSI
○1-24A	CEILING TILE
●1-25A	TSI
○1-26A	TEXTURE
○1-27A	WALLBOAD
●1-28A	TSI
○1-29A	PLASTER
○1-31A	PLASTER, LATHBOAD DUST
●1-32A	TSI
○1-33A	TSI CEMENT
●1-34A	BOILER GASKET CASING

2009 ASBESTOS SAMPLES (PBS)

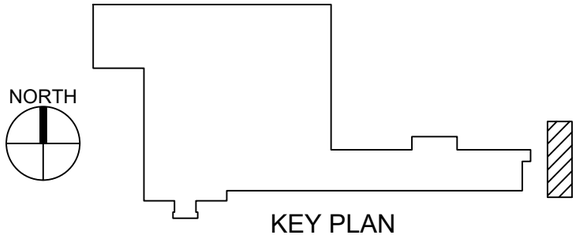
○001	LAY-IN CEILING TILE
○002	HARD FITTINGS/PIPE INSULATION
○003	MORTAR
○004	GYPSUM WALLBOARD/JOINT COMPD.
○005	COVEBASE/MASTIC
○006	VINYL FLOOR TILE/MASTIC
○007	LAY-IN CEILING TILE
●008	AIR CELL PIPE INSULATION
○009	MORTAR
○010	MATERIAL DEBRIS
○011	LAY-IN CEILING TILE
●012	MATERIAL DEBRIS
●013	AIR CELL PIPE INSULATION
●014	SHEET FLOOR COVERING
○015	MASTIC
○016	GYPSUM AND PLASTER
○017	MATERIAL DEBRIS
○018	GYPSUM WALLBOARD/JOINT COMPD.
○026	SPRAYED FIBROUS FIREPROOFING
○027	HARD FITTINGS/PIPE INSULATION
○028	HARD FITTINGS/PIPE INSULATION
○029	HARD FITTINGS/PIPE INSULATION

2022 ASBESTOS SAMPLES (ADVANTAGE)

○1A	CREAM TEXTURE, WHITE TEXTURE
○1B	CREAM TEXTURE, WHITE TEXTURE, WHITE WALLBOARD
○1C	WHITE TEXTURE, WHITE WALLBOARD
○1D	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○1E	WHITE TEXTURE, WHITE JOINT COMPOUND, GRAY WALLBOARD
○2A	TAN MASTIC
○2B	TAN MASTIC
○2C	TAN MASTIC
○3	BLACK COUNTERTOP
○4A	TAN COVE BASE, YELLOW MASTIC
○4B	TAN COVE BASE, YELLOW MASTIC
○5	GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
●6	12" PINK FLOOR TILE, YELLOW/BLACK MASTIC
○7	TAN HOOD
○8	12" MAUVE FLOOR TILE, YELLOW MASTIC
○9A	2' X 4' WHITE CEILING PANEL
○9B	2' X 4' WHITE CEILING PANEL
○9C	2' X 4' WHITE CEILING PANEL
○10A	BLACK COVE BASE, WHITE MASTIC
○10B	BLACK COVE BASE, WHITE MASTIC
○11A	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○11B	12" GRAY FLOOR TILE, YELLOW MASTIC, GRAY LEVELING COMPOUND
○12	YELLOW INSULATION
○13A	2' X 4' WHITE CEILING PANEL
○13B	2' X 4' WHITE CEILING PANEL
○13C	2' X 4' WHITE CEILING PANEL

UNLOCATED 2022 ASBESTOS SAMPLES (ADVANTAGE)

○14	OFF-WHITE DUCT TAPE
○15	WHITE DUCT TAPE
○16A	BROWN MASTIC
○16B	BROWN MASTIC
○17	GRAY MASTIC
○18	WHITE MASTIC
○19	BLACK MASTIC
○20	WHITE MEMBRANE



KEY PLAN

RCP ENVIRONMENTAL
6901 NE 7th AVENUE, SUITE B-208 VANCOUVER, WA 98665 https://rcpenvironmental.com

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN
FIRST FLOOR - MULE HOUSE

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM6
SHEET 6 of 9

SYMBOL KEY

●000	ASBESTOS SAMPLE: ASBESTOS DETECTED
○000	ASBESTOS SAMPLE: NO ASBESTOS DETECTED
■Pb-00	LEAD SAMPLE: LEAD DETECTED
□Pb-00	LEAD SAMPLE: NO LEAD DETECTED

2023 ASBESTOS SAMPLES (RCP)

○201	WHITE PLASTER
○202	GRAY BRICK MORTAR
○203	WHITE PLASTER
○204	GRAY BRICK MORTAR
○205	GREEN CARPET MASTIC
○206	WHITE CEILING TEXTURE
○207	GRAY PLASTER
○WM01	GRAY CMU BLOCK MORTAR

2023 LEAD PAINT SAMPLES (RCP)

■Pb-01 WM	GRAY PAINT ON METAL ROOF DECK
■Pb-02	GRAY PAINT ON METAL ROOF DECK
■Pb-03	GRAY PAINT ON METAL ROOF DECK

2009 ASBESTOS SAMPLES (OTHERS)

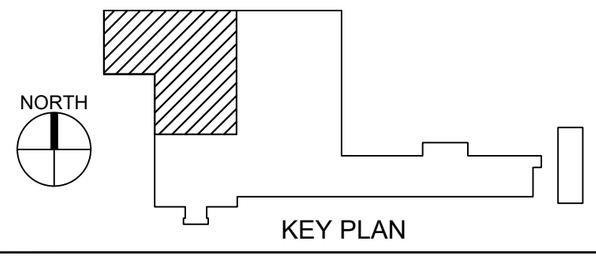
○2-1A	CEILING
○2-3A	PLASTER
○2-4A	PLASTER
○2-5A	CEILING TILE
○2-6A	CEILING TILE
○2-7A	CEILING ADHESIVE
●2-8A	CEILING TEXURE
○2-9A	SHEETROCK
○2-10A	PLASTER
●2-11A	FLOOR TILE
●2-11B	FLOOR TILE MASTIC
○2-12A	CEILING

2009 ASBESTOS SAMPLES (PBS)

○019	GLUED-ON CEILING TILES
○020	LAY-IN CEILING TILE
○021	WALL AND CEILING PLASTER
○022	WALL AND CEILING PLASTER
●023	VINYL FLOOR TILE/MASTIC
○024	WALL AND CEILING PLASTER
●025	GLUED-ON CEILING TILES
○130	CAULK (ROOF AREA)
○031	HARD FITTINGS/PIPE INSULATION (ROOF AREA)
○032	THERMAL INSULATION (ROOF AREA)
○033	MORTAR (ROOF AREA)
○034	MASTIC (ROOF AREA)
○035	MASTIC (ROOF AREA)

2020 ASBESTOS SAMPLES (RCP)

●039	TAN 9X9 FLOOR TILE AND BLACK MASTIC
●040	TAN 9X9 FLOOR TILE AND BLACK MASTIC
●041	TAN 9X9 FLOOR TILE AND BLACK MASTIC
●042	TAN 9X9 FLOOR TILE AND BLACK MASTIC
●043	TAN 9X9 FLOOR TILE AND BLACK MASTIC
●044	GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●045	GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●046	GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●047	GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●048	TAN 9X9 FLOOR TILE AND BLACK MASTIC



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WESTERN FEDERAL LANDS
HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS
SURVEY SAMPLE PLAN
SECOND FLOOR - NORTH

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

project number: 23-086 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM7
SHEET 7 of 9

SYMBOL KEY

●000 ASBESTOS SAMPLE: ASBESTOS DETECTED

○000 ASBESTOS SAMPLE: NO ASBESTOS DETECTED

2023 ASBESTOS SAMPLES (RCP)

○208 GRAY PLASTER
○209 WHITE SHEETROCK & JOINT COMPOUND
○210 TAN COVE BASE & MASTIC
○211 WHITE PLASTER EXTERIOR LAYER
○212 WHITE PLASTER UNDER LAYER
○213 GRAY BRICK MORTAR

2009 ASBESTOS SAMPLES (OTHERS)

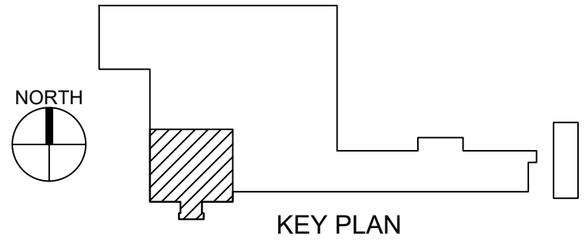
○2-1A CEILING
○2-3A PLASTER
○2-4A PLASTER
○2-5A CEILING TILE
○2-6A CEILING TILE
○2-7A CEILING ADHESIVE
●2-8A CEILING TEXURE
○2-9A SHEETROCK
○2-10A PLASTER
●2-11A FLOOR TILE
●2-11B FLOOR TILE MASTIC
○2-12A CEILING

2009 ASBESTOS SAMPLES (PBS)

○019 GLUED-ON CEILING TILES
○020 LAY-IN CEILING TILE
○021 WALL AND CEILING PLASTER
○022 WALL AND CEILING PLASTER
●023 VINYL FLOOR TILE/MASTIC
○024 WALL AND CEILING PLASTER
●025 GLUED-ON CEILING TILES
○130 CAULK (ROOF AREA)
○031 HARD FITTINGS/PIPE INSULATION (ROOF AREA)
○032 THERMAL INSULATION (ROOF AREA)
○033 MORTAR (ROOF AREA)
○034 MASTIC (ROOF AREA)
○035 MASTIC (ROOF AREA)

2020 ASBESTOS SAMPLES (RCP)

●039 TAN 9X9 FLOOR TILE AND BLACK MASTIC
●040 TAN 9X9 FLOOR TILE AND BLACK MASTIC
●041 TAN 9X9 FLOOR TILE AND BLACK MASTIC
●042 TAN 9X9 FLOOR TILE AND BLACK MASTIC
●043 TAN 9X9 FLOOR TILE AND BLACK MASTIC
●044 GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●045 GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●046 GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●047 GRAY 12X12 FLOOR TILE AND BLACK MASTIC
●048 TAN 9X9 FLOOR TILE AND BLACK MASTIC



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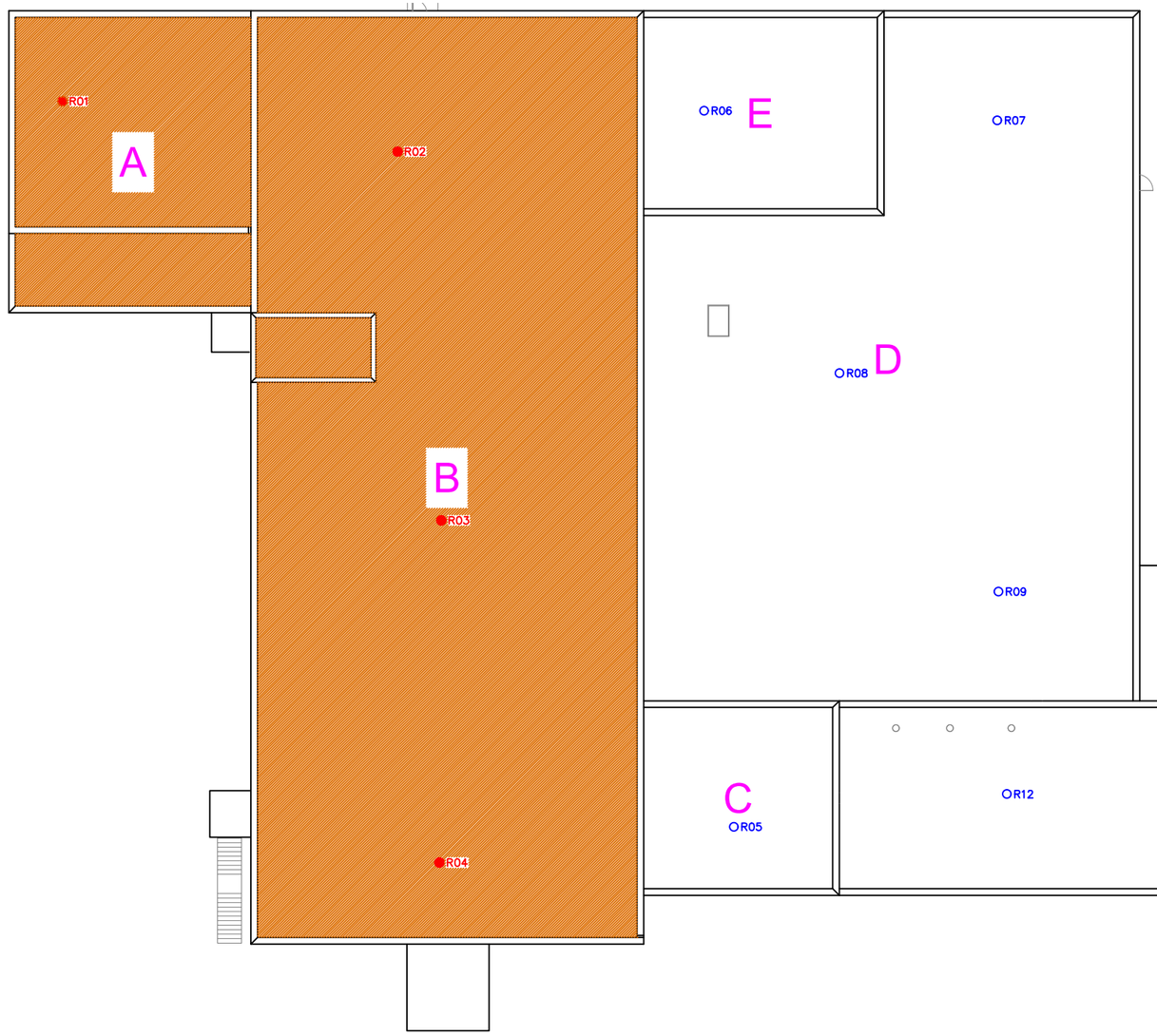
WESTERN FEDERAL LANDS
HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS
SURVEY SAMPLE PLAN
SECOND FLOOR - SOUTH

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

project number: 20-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM8
SHEET 8 of 9



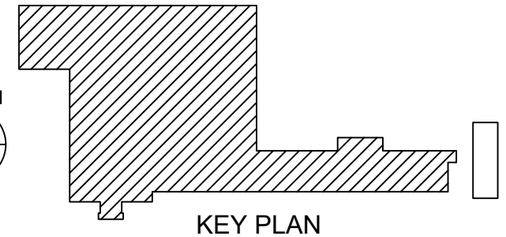
SYMBOL KEY

- ●000 — ASBESTOS SAMPLE: ASBESTOS DETECTED
- ○000 — ASBESTOS SAMPLE: NO ASBESTOS DETECTED
- A — ROOF AREA REFERENCE DESIGNATIONS
- ASBESTOS-CONTAINING BUILT-UP ROOFING MATERIAL

2023 ASBESTOS SAMPLES (RCP)

●R01	BLACK, BROWN & GRAY ROOFING
●R02	BLACK, BROWN & GRAY ROOFING
●R03	BLACK, BROWN & GRAY ROOFING
●R04	BLACK, BROWN & GRAY ROOFING
○R05	BLACK, GRAY, YELLOW BUILT UP ROOFING
○R06	BLACK, GRAY, YELLOW BUILT UP ROOFING
○R07	BLACK, YELLOW BUILT UP ROOFING
○R08	BLACK, GRAY, YELLOW BUILT UP ROOFING
○R09	BLACK, YELLOW BUILT UP ROOFING
○R10	GRAY BLACK TAN BUILT UP ROOFING
○R11	GRAY BLACK YELLOW BUILT UP ROOFING
○R12	GRAY BLACK YELLOW BUILT UP ROOFING

NORTH



KEY PLAN

RCP ENVIRONMENTAL
6901 NE 7th AVENUE, SUITE B-208 VANCOUVER, WA 98665 https://rcpenvironmental.com

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST 5TH STREET
VANCOUVER, WA 98661

HAZARDOUS MATERIALS SURVEY SAMPLE PLAN

ROOF PLAN

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

project number: 23-036 WA
date: OCTOBER 2023
revised:
checked by: DJR
drawn by: MB

HM9
SHEET 9 of 9

Appendix D

Certification of RCP Personnel

THIS IS TO CERTIFY THAT

HAYDEN JAMES

HAS SUCCESSFULLY COMPLETED THE TRAINING COURSE

for

ONLINE AHERA ASBESTOS INSPECTOR REFRESHER

In accordance with TSCA Title II, Part 763, Subpart E, Appendix C of 40 CFR

Course Date: 05/04/2023

Course Location: Online

Certificate: IRO-23-0131C

CCB #SRA0615 4-Hr Training

4-Hour Online AHERA Inspector Refresher Training; AHERA is the Asbestos Hazard Emergency Response Act enacting Title II of Toxic Substance Control Act (TSCA)

Expiration Date: 05/04/2024

For verification of the authenticity of this certificate contact:
PBS Engineering and Environmental Inc.
4412 S Corbett Avenue
Portland, OR 97239
503.248.1939

Andy Fridley, Instructor

THIS IS TO CERTIFY THAT

DAVE J ROUTTU

HAS SUCCESSFULLY COMPLETED THE TRAINING COURSE

for

ASBESTOS INSPECTOR / MANAGEMENT PLANNER REFRESHER

In accordance with TSCA Title II, Part 763, Subpart E, Appendix C of 40 CFR

Course Date: 04/06/2023

Course Location: Online,

Certificate: IMR-23-5871A

CCB #SRA0615 4-Hr Training

AHERA is the Asbestos Hazard Emergency Response Act enacting Title II of Toxic Substance Control Act (TSCA)

Expiration Date: 04/06/2024

For verification of the authenticity of this certificate contact:
PBS Engineering and Environmental Inc.
4412 S Corbett Avenue
Portland, OR 97239
503.248.1939

Andy Fridley, Instructor

Lead-Based Paint Program

David Routtu
Risk Assessor

Cert #7237
Expires 7/1/2024

Department of Commerce

D | Code Deficiencies - Main Building & Site

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Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Architectural)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	D4010 Fire Suppression	Interior: Level 1 large conference room	Egress path exceeds allowed exit access distance (200')	Exit access distance is beyond the 200' allowed in buildings without sprinkler systems.	2021 IBC - 1017.2	Add an automatic sprinkler system to increase minimum required exit access distance to 250' (*recommended*), or Add an additional exit door to create an exit access distance less than 200' (*not recommended*)	$ 382,655
2	1	D4010 Fire Suppression	Throughout building	Total building area exceeds allowable building area	Non-sprinklered B-Occupancy buildings of Construction Types I, II, III, and V do not allow a building area equal to the existing building area, even with an allowed frontage factor of 0.5. Construction Type IV is not applicable to this building.	2021 IBC - TABLE 506.2	Install an automatic sprinkler system throughout the building to increase the allowable building area (*recommended*), or Add fire separation walls from slab to roof in certain area to split building into smaller, code-allowable areas (*not recommended*)	See Above
3	1	D4030 Fire Protection Specialties	Interior: Level 1, Materials Lab 161	Exit route not clear	When exit is not clearly visible, exit signs must be provided to indicate direction of egress travel.	2021 IBC - 1013.1	Add (1) exit sign at easternsmost materials lab space over door to adjacent lab space to the east.	$ 350
4	1	D4030 Fire Protection Specialties	Interior: Level 2, Outside corner office 201	Exit route not clear	When exit is not clearly visible, exit signs must be provided to indicate direction of egress travel.	2021 IBC - 1013.1	Add (1) exit sign at west end of southernmost hallway to provide visibility from east end of hallway.	$ 350
5	1	D4030 Fire Protection Specialties	Interior: Level 1, Warehouse north door	Exit route not clear	When exit is not clearly visible, exit signs must be provided to indicate direction of egress travel.	2021 IBC - 1013.1	Add (1) exit sign at door on north side of warehouse adjacent to locked wire gate.	$ 350
6	2	C1090.40 Toilet, Bath, and Laundry Accessories	Interior: Common restrooms	Non-accessible restroom fixture and accessories mounting heights	Restroom fixtures and accessories do not meet ABAAS requirements.	2017 ICC 117.1 - 603-604	Revise fixtures and accessory mounting heights in all required accessible restrooms. (7) restrooms, containing a total of (12) water closets, (11) lavatories, (5) urinals, and (2) showers. Cost assumes new fixtures and relocated accessories.	$ 69,990
7	2	C1090.40 Toilet, Bath, and Laundry Accessories	Interior: Level 1 Restroom 159-A	Non-accessible restroom floor space turning radius, stall size, door clearances	Accessible restrooms require 5' diameter turning clearance, at least 56"x60" stall dimensions, and appropriate front or side approach door clearances.	2017 ICC 117.1 - 603-604	Remove stall partitions and reconfigure (1) sink counter to provide required door and clear floor space clearances.	$ 500
8	1	C1020 Interior Windows	Interior: Main entry	Non-accessible reception window	See code section for specific dimensions required at service counters. Counter height and knee clearance are specified.	2017 ICC 117.1 - 904	Revise reception window to provide accessible front/side approach counter	$ 795
9	2	B1010 Floor Construction	Interior: Level 1 Hallway to Receiving area	Non-accessible ramp - no landing, slope too steep	Landing must be 5' deep, slope must not exceed 1:12	2021 IBC 1012.6.1-2	Reconfigure walls & door at landing to provide 60" minimum landing depth and 1:12 maximum ramp slope.	$ 4,483
10	2	B1010 Floor Construction	Interior: Level 1 Room 159 to back lot	Non-accessible ramp - no landing space, slope and cross-slope too steep	Landing must be 5' deep, slope must not exceed 1:12, cross slope must not exceed 1:48	2017 ICC 117.1 - 405	Reconfigure walls & door at landing to provide 60" minimum landing depth and 1:12 maximum ramp slope.	$ 5,908
11	3	C1090 Interior Specialties	Interior: Level 1 Room 159 stairs to 2nd floor	No handrail on one side of stair	Stairs need handrails on both sides.	2017 ICC 117.1 - 505.2	Add ~17' handrail to missing side of stair. Cost assumes wall-mounted.	$ 1,275
12	3	B1080 Stairs	Interior: Level 1 Room 159 stairs to 2nd floor	Not enough clear head height (6' - 4 1/2"); Head height does not meet minimum required 80"	Head height of 6' - 8" minimum is required.	2021 IBC - 1011.3	Reconfigure stairs to meet minimum head clearance of 80" at all locations	$ 15,710

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Architectural)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
13	3	C1030 Interior Doors	Interior: Level 1 Room 159 stairs to 2nd floor	Door at bottom of stairs blocks egress path	Door swing cannot block more than 50% of egress path width.		Door must maintain its swing in direction of egress path, cannot flip swing direction. Must reconfigure stair.	See Above
14	2	C1090 Interior Specialties	Interior: Main Stair	Handrails do not meet graspability requirements (too wide)	Handrails have a required range of circular cross-section diameter dimensions or non-circular cross-section perimeter dimensions, as well as other dimensional requirements.	2021 IBC - 1014.3	Replace ~27' handrails to meet accessibility grasping requirements.	$ 2,430
15	2	C1090 Interior Specialties	Interior: Main Stair	Handrails do not have required top or bottom extensions	Where handrails are not continuous between flights/ramps, handrails must extend horizontally for a minimum of 12" beyond the top riser, and continue to slope for the depth of one tread beyond the bottom riser.	2021 IBC - 1014.6	Replace ~27' handrails to meet accessibility extension requirements.	$ 2,430
16	3	C1090 Interior Specialties	Interior: Level 1 NW stair to storage loft	Handrails do not have required 12" top or bottom extensions	Where handrails are not continuous between flights/ramps, handrails must extend horizontally for a minimum of 12" beyond the top riser, and continue to slope for the depth of one tread beyond the bottom riser.	2021 IBC - 1014.6	Replace ~27' handrails to meet accessibility extension requirements.	$ 2,430
17	2	C1090 Interior Specialties	Interior: Main Stair	Handrails are not at required height above floor	Top of handrail must be 34"-38" above finished floor surface or stair tread nosings.	2021 IBC - 1014.2	Replace handrails or remove and reinstall handrail to meet accessibility height requirements.	$ 2,430
18	2	B1080 Stairs	Interior: Main Stair	First stair riser is taller than other risers by 1/2"	Stair treads and risers shall be of uniform shape and size. Tolerance between largest and smallest riser cannot exceed 3/8"	2021 IBC - 1011.5.4	Modify floor at landing to slope up to meet desired riser height, within code required slope allowed.	$ 481
19	3	B1080 Stairs	Interior: Level 1 NW stair to storage loft	Not enough landing depth at bottom of stair	Landings are required at the top and bottom of each stair. Landing depth as measured in the direction of travel must be 48" or equal to the width of the stairway, whichever is less.	2021 IBC - 1011.6	Reconfigure stair runs to allow for required landing depths. Current condition does not allow enough landing depth.	$ 12,410
20	2	C1090.40 Toilet, Bath, and Laundry Accessories	Interior: Level 1 restrooms 136 & 137	Accessibility - Showers do not have required folding seat	A folding seat must be provided on the end wall of a standard accessible roll-in shower compartment.	2017 ICC 117.1 - 608.2.2.3	Provide folding seats at all (2) accessible showers.	$ 600
21	2	C1090.40 Toilet, Bath, and Laundry Accessories	Interior: Level 1 restrooms 136 & 137	Accessibility - Threshold at shower edges are higher than allowed	Threshold between restroom floor and standard accessible roll-in shower compartment is higher than allowed 1/2".	2017 ICC 117.1 - 608.6	Modify existing threshold to meet accessible height requirements.	$ 250
22	1	B3060 Horizontal Openings	Roof	Skylight not protected from falls	Skylight on roof is currently unprotected from falls. Skylight is over 6' from surface below, requiring personal fall arrest system, cover, or guardrail system around it.	OSHA 1926.501(b)(4)(i)	Replace skylight with new skylight including integral fall protection cover and safety glazing.	$ 24,480
23	2	B3060 Horizontal Openings	Roof	Unknown if skylight contains safety glazing	If skylight does not contain safety glazing as specified by code, need to install correct glazing type.	2021 IBC - 2405	Replace skylight with new skylight including integral fall protection cover and safety glazing.	See Above

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Architectural)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
24	2	C1090.40 Toilet, Bath, and Laundry Accessories	All common restrooms	Not enough accessible water closets	10 gendered water closets (toilets/urinals) (5 male + 5 female) or 9 all-gender water closets (toilets) toilets are required. 1 toilet compartment and 1 urinal (if present) in each restroom must be accessible.	2021 IBC - TABLE 2902.1, 2021 IBC -1110.2	Existing water closet count meets code. Ensure (1) stall and/or urinal per toilet room meet ABA standards for accessible water closets and toilet compartments.	$ 8,760
25	2	C1090.40 Toilet, Bath, and Laundry Accessories	All common restrooms	Not enough accessible lavatories	8 gendered lavatories (4 male + 4 female) or 6 all-gender lavatories are required. 1 lavatories in each restroom must be accessible.	2021 IBC - TABLE 2902.1, 2021 IBC -1110.2	Add 1 men's lavatory to meet code fixture count requirements. Redesign at least (1) lavatory in each of (7) toilet rooms to meet ABA standards for accessible lavatories.	$ 15,015
26	2	C1090.40 Toilet, Bath, and Laundry Accessories	All common restrooms	Not enough accessible toilet room elements	Each common toilet room must be accessible, and each toilet room must have at least 1 accessible type of fixture including stall, urinal, sink, mirror, soap dispenser, etc.	2021 IBC -1110.2 ABAAS 601	Redesign toilet rooms to meet ABA standards, including but not limited to: turning clearance, door approach clearances, stall clearances, fixture mounting heights, counter heights, shower compartments, and controls.	See Above
27	2	C1030 Interior Doors	Interior: Level 1 Break room and Large conference room	No panic hardware on doors serving 50+ occupant spaces	Panic hardware is required on swinging doors serving room/space with occupant load of 50 or more. This applies to break room and large conference room on first floor.	2021 IBC - 1010.2.9	Replace door hardware on the (6) doors that serve the break room and large conference room on the first floor with panic hardware.	$ 9,150
28	1	C1030 Interior Doors	Interior: Level 1 Break room and Large conference room	Doors serving 50+ occupant space swing against path of egress	Side-hinged sinwing doors must swing in the direction of egress travel when serving a room with occupant load of 50 or more. Break room and large conference room exceed an occupant load of 50 based on the function of the spaces.	2021 IBC - 1010.1.2.1 2021 IBC - TABLE 1004.5	Flip the swing of (6) existing doors to break room and large conference room so they swing in the direction of egress travel (outwards from room), as well as any new doors if added to these spaces.	$ 5,400

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Structural)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	B10 Superstructure	Main Building Structure	Seismic deficiencies (see Seismic Assessment Report by RPA, dated Apr. 5, 2022)	The existing building structure does not meet current building standards for life safety.	Executive Order 13717	EO 13717 does not appear to trigger mandatory upgrades. Rather, the EO states that "the building shall be added to the agency's mitigation programming inventory." As such, the timing of seismic upgrades would be determined by the agency. If the agency's goal is to provide for life safety consistent with current building standards, a full seismic upgrade is recommended.	$ 2,029,082

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Mechanical)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	D3060 Ventilation	1st floor - Mailroom	Mailroom does not provide isolation or negative space pressure with HVAC systems and could present a bio hazard containment security concern.	Mailroom is open to adjacent space without dedicated HVAC system with capability to maintain negative pressure and provide isolation from building. P100 referencing USMS requires dedicated HVAC system with isolated intake and exhaust that can maintain negative pressure with respect to adjacent spaces. These requirements are from the GSA P100 standard that references courthouse USMS standards for courthouses. The primary purpose of these requirements applies to mail sorting and opening containment and not for mail packaging. These requirements have been recently incorporated into the GSA 911 federal building in Portland, OR that is not a courthouse building.	2022 P100 section 8.3, USMS PUB 64	Review mailroom sorting security concerns. To enhance protection, follow P100 guidelines. Provide space isolation with walls to bottom of structure, dedicated HVAC system capable of maintaining negative pressure, isolation, and emergency shut-off.	$ 24,000
2	3	D30 HVAC	Roof	Air-to-air energy recovery not provided on AHU-1 used for 100% ventilation air	Any air handling units utilized as a DOAS (dedicated outside air system) required by the energy code to be provided with air-to-air energy recovery with a minimum efficiency of 60%. AHU-1 is utilized as a DOAS and per current energy code should be provided with energy recovery.	2018 Washington State Energy Code, C403.3.5.1	AHU-1 was installed in 2010 and has approximately 10 years of useful service life. The anticipated building and mechanical code upgrades would not require this unit to be replaced necessitating current code compliance. However, the current system is ideally configured to allow for an efficient upgrade to an AHU with air-to-air energy recovery. This energy efficiency upgrade measure was also recommended in previous energy studies. It would provide significant energy savings and should take priority as an energy efficiency measure for implementation.	$ 120,800
3	2	D3060 Ventilation	1st floor -Storage room associated with 134	Insufficient exhaust and ventilation air	Main storage should be provided with ventilation air, storage room housing chemical and flammable storage exhaust rate should be increased and chemical storage assessed for venting chemical storage cabinets.	2021 IMC 403.1.1	Increase exhaust fan rate to increase air transfer and ventilation in general storage and chemical/paint storage rooms. Provide direct vent to chemical storage cabinets.	$ 7,480

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Electrical)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	D5020 Electrical Service and Distribution	Business Support Services Office	Electrical Panel without required working clearance.	Electrical Panel 'X' was installed within the 'fire box' closet that was built into the Business Support Services Office. The panel is not directly across from the door opening and only has a 2'-0" front clearance. Electrical code requires a minimum of 3'-0".	NFPA 70 / NEC 110.26	This panel should be relocated. Shifting the panel to be opposite of the door opening of the fire box would allow for the appropriate working clearance.	$ 3,500
2	2	D5040 Lighting	General	Lack of occupant sensing lighting controls.	Occupancy sensor control is provided in individual offices, but manual switch control is present in most spaces. The IEC requires occupant sensor controls to be installed in all training rooms, conference room, lounges, break rooms, open office areas, restrooms, storage rooms, and corridors.	IECC C405.2.1	As lighting is replaced / upgraded with improvement project(s), associated lighting controls should be provided to meet current energy code standards.	$ 520,000
3	2	D5040 Lighting	General	Existing lighting exceeds current interior lighting power allowances.	Existing lighting in the facility is provided almost exclusively by fluorescent luminaires. Current energy code standards limit the amount of wattage per square foot that is allowed for lighting within facilities.	IECC C405.3.2	As spaces are remodeled, existing lighting should be upgraded/replaced with LED luminaires.	$ 104,000

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Plumbing)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	D2030 Building Support Plumbing Systems	Roof	Insufficient, or no secondary roof drainage.	Roof drains are installed, however no overflow roof drains system exists.	IPC 1108.1	Roof drains have been installed generally to provide drainage from each roof area. However no secondary roof drain system has been installed (there is one through wall parapet scupper opening above "Survey Rm." area). Install secondary roof drain system at (17) existing drain locations.	$ 25,262
2	1	D2010 Domestic Water Distribution	Labs	Installed emergency shower does not meet "Barrier Free / ABA" requirements.	Non-barrier-free compliance. Also, the fixture is supplied directly with cold water supply. There is no tempering valve installed and as such the device does not meet ANSI/ISEA Z358.1 "tepid" water requirements (60°F - 100°F).	ANSI/ISEA Z358.1	Install (1) barrier-free emergency shower with tempering valve to meet "tepid" water requirements.	$ 4,250
3	1	D2010 Domestic Water Distribution	Labs	Emergency eyewashes	If emergency showers are required, then it would be expected that emergency eyewashes would also be needed.	OSHA & ANSI/ISEA Z358.1	If emergency fixtures are not required based on the building uses, remove non-compliant (non barrier free) fixtures/equipment. If operations in lab areas require such fixtures: 1. Install barrier free emergency shower(s). 2. Install compliant eyewashes. 3. Install "tepid" water mixing valves accordingly. Also, emergency fixtures must be installed in each area where persons may be exposed to a hazard. ANSI standard provides that emergency equipment be installed within 10 seconds walking time from the location of a hazard (approximately 55 feet) (Appendix B5). The equipment must be installed on the same level as the hazard (i.e. accessing the equipment should not require going up or down stairs or ramps). The path of travel from the hazard to the equipment should be free of obstructions and as straight as possible. Since a door is considered an obstruction, no door may be between the hazard and the emergency equipment. Install (1) emergency eyewash with tempering valve to meet "tepid" water requirements.	$ 2,300
4	1	D2060 Process Support Plumbing Systems	Labs	The boilers combustion condensate is currently discharging directly to the adjacent floor sink.	The boilers combustion condensate is currently discharging directly to the adjacent floor sink. Combustion condensate is basically distilled water, but it is very acidic. It contains concentrations of nitric, sulfuric, and hydrochloric acids and will have a pH value in the range of 3.8 to 4.5. Such levels are damaging to piping systems and the public wastewater system. This is in contradiction to requirements of the plumbing code.	IPC 302.1 & 302.2	Provide condensate neutralization devices on the discharge piping from each of (2) boilers prior to discharge to the sewer/floor sink.	$ 1,462

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Plumbing)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
5	1	D2060 Process Support Plumbing Systems	Labs	No backflow preventers are installed.	No backflow preventers appear to be installed to isolate the Lab areas or connected lab equipment from the rest of the building uses.	IPC 608	Install (2) backflow prevention devices as needed to islolate the Lab areas and equipment from the general potable use water system.	$ 4,700
6	2	D2010 Domestic Water Distribution	General	Water supply piping	A substantial amount of the visible water piping installed is still galvanized piping. The condition of this piping is likely deteriorated. Deteriorated galvanized piping is likely challenging the water flow rates & quality in the building including lead concentrations. Also of concern, portions of the copper piping installed (from various era's) likely contains 50/50 lead solder.	NA, facility condition assessment.	Develop and implement a plan to replace the domestic water piping system(s) throughout the facility and implement the replacement plan as soon as viable.	$ 397,373
7	3	D2020 Sanitary Drainage	Toilet rooms	Waterless Urinals	Waterless urinals have been installed it the toilet rooms. Though water saving should always be a facility goal, the water savings value of these fixtures is limited as compared to modern 1 pint flush urinals. Also, the maintenance of these products can be substantial. The cost of the trap cartridges is also notable. Finally, a major negative of waterless urinals is the constant buildup of uratic salts. These salts crystallize to form build ups in the downstream waste line(s) and are especially difficult to clear from the lines.	NA, facility condition assessment. Maintenance consideration.	Develop and implement a plan to replace the (5) waterless urinals in the facility with standard "pint flush" urinals. It is also expected that the previously installed water piping (serving urninals installed before the waterless version) is still in the wall behind these fixtures.	$ 5,700
8	1	D2030 Building Support Plumbing Systems	Water heaters	Water heaters installed without thermal expansion tanks.	Each water heater should be protected with a properly sized thermal expasion tank as required by code.	IPC 504.4 / 607.3	Install (4) thermal expansion tanks.	$ 4,800

Code Deficiencies - FOVA-XX3-WFL: Main Building & Site (Civil)

No.	Priority	Uniformat Classification	Location	Deficiency	Description	Code Section	Corrective Recommendation	Class C Estimate - Net Cost
1	1	G2020 Parking Lots	Exterior	ABA Parking	ABA parking stalls do not have accessible pathways to the building. Confirmation needed if ABA stalls meeting slope requirements.	ABAAS 502.2	Regrade and/or configure ABA parking stalls to meet all ABA requirements including slopes and widths to create designated accessible path from the stalls to the building. Includes the following improvements: -700 sf concrete sidewalk -1350 sf asphalt paving -5 wheel stops -Updated signage	$ 23,840
2	3	G3030 Storm Drainage Utilities	Exterior	Stormwater management	New and replaced pollution generating surfaces greater than 5,000 SF require stormwater treatment and quantity control.	CoV 2017 Surface Water Management 4-5 and 4-6 2019 DOE SWMMWW Volume 1-3.4	Construct stormwater treatment/detention facility in SE corner of site to manage stormwater runoff from pollution generating surfaces. -It is anticipated that 300 cf of bioretention storm facility is required per 10,000 sf of impervious area. (Expected bioretention storm facility capacity = ~600 cf)	$ 67,550
3	3	G3030 Storm Drainage Utilities	Exterior	Loading dock drainage	The loading dock is not hydraulically isolated. Any changes to the loading dock will require drainage to be brought into compliance	CoV 2017 Surface Water Management 4-6.04	If changes occur within the loading dock, install oil water separator in loading dock and connect to sanitary sewer.	$ 9,000
4	2	G2020 Parking Lots	Exterior	Site parking	Existing site has parking limitations. General office buildings require 1 parking stall for every 400 SF of building. Industrial research and development requires 1 parking stall for every 600 SF of building. The main building (general office) requires 147 parking spots. The mule barn (R&D) requires 28 parking spots. The parking lot and surface parking along 5th street provides approximately 115 parking spots. The gravel lot east of the mule barn provides approximately 22 parking stalls	CoV 20.945	Reconfigure parking stalls along 5th street to maximize total parking stalls. Pave and stripe new parking stalls in courtyard area. Expected improvements: (42) new standard stall striping, (6) new ADA stall striping, 22,900 sf new paving	$ 276,211
4	1	G3010 Water Utilities	Exterior	Site fire flow	Fire flow testing required to confirm available flow. Nearby 2004 fire flow test indicates 2091 gpm at 70 psi.	2021 IFC B105	Obtain fire flow test to confirm available flow.	$ 500
5	1	G3010 Water Utilities	Exterior	Backflow protection	No backflow prevention observed onsite.	2021 IPC 608	(2) Backflow prevention assemblies required for potable water system.	$ 15,000

G | Facility Maintenance Matrix

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
B - SHELL								
B10 - SUPERSTRUCTURE						**$ 1,789,521**	**$ 4,866,156**	
B1010 Floor Structure	Existing Level 2 elevated concrete slab spanning between steel joists, WF beams, and WF girders.	Good condition for vintage.	None	16,000 sq ft	‹ 10 years	$ 1,220,756	$ 3,319,540	Assumed Shear Wall improvements
B1020 Roof Structure	At 1970's construction, contemporary metal roof deck. At pre-1970's construction, archaic standing seam metal roof deck.	Contemporary metal roof deck in good condition. Archaic standing seam metal roof deck in fair condition.	See seismic upgrade narratives and concept drawings (strengthen contemporary metal roof deck, remove/replace archaic standing seam metal roof deck).	16,000 sqft (contemporary roof deck); 26,000 sqft (archaic standing seam roof deck)	‹ 10 years	$ 555,736	$ 1,511,184	
B1080 Stairs	Exterior metal stairs	Exterior stairs good condition, some soiling;	Clean exterior stairs; Repaint on regular cycle	800 sqft	5 years (repainting)	$ 5,200	$ 14,140	
B1080 Stairs	Interior stairs (wood and metal construction), handrails, and guardrails	Interior stairs in good functional condition but some non code-compliance issues including unequal risers, non-accessible handrail profile; Stairs to mezzanines missing handrails at both sides of stair and east mezzanine stair does not meet minimum head clearance	Replace handrail at main entry stair with compliant handrail section; Add continuous handrails to both sides of all stairs	87 linear ft	Immediate repairs	$ 7,830	$ 21,292	Includes both construction and finish work. HEA to write description and conditions/recommendations
B20 - EXTERIOR VERTICAL ENCLOSURES						**$ 1,460,850**	**$ 3,972,416**	
B2010 Exterior Walls	Brick veneer, terracotta coping	Soiling, select unit damage, cracks, loose and missing mortar; No insulation	Clean and repoint all brick areas and terracotta coping; Replace damaged brick and terracotta units; Install mineral wool batt insulation to depth of stud cavity (approximately 5.5") and vapor retarder at interior face	20,900 sqft	› 50 years	$ 863,940	$ 2,349,269	Cyclical maintenance of brick and terracotta includes cleaning of surfaces to remove moss/biological growth/environmental soiling and repointing of deteriorated mortar joints; Assumed cleaning cycle is every 1 year and repointing every 10 years/as needed
B2020 Exterior Windows	Aluminum storefront glazing with insulated glass units; Steel fixed and operating sash with single pane and insulated glass units; Aluminum frame and operating sash with insulated glass units	Soiling, corrosion, damaged frames and sashes, air leakage, poor or missing seals/sealant, conductive frame/sash, moisture infiltration, faded/spalling paint, corroded flashing, damaged terracotta sills	Remove all paint on exterior surfaces of steel frame and sash (Assume presence of lead-based paint) and repaint with high-performance paint system; Remove and replace all sealant between window frames and adjoining materials;	65 windows 4,160 sqft	10 - 30 years	$ 596,910	$ 1,623,148	Repair of existing windows and regular maintenance will significantly extend life of existing units. Restoration of steel sash units to include removal of rust corrosion and failed sealant. Cyclical maintenance to include cleaning, sealant replacement at frame joints with adjacent materials, and repainting on 5 year cycle
B2050 Exterior Doors & Grilles	Hollow metal entry doors, steel overhead coiling doors, metal HVAC louvers and grilles, glazing security lites in doors, door hardware	Soiling, paint deterioration, damaged/missing weatherstripping, damaged and inoperable door hardware	Repair or remove and replace malfunctioning and damaged door hardware and accessories; Replace damaged door frames and panels; Reseal frames at joints with adjoining materials	8 doors and 3 overhead doors 1,050 sqft	10 - 20 years			
B2080 Exterior Wall Appurtenances	Exterior stairs, railings, awnings, exterior fabrications	Soiling and deterioration at exterior stair vestibule. Exposed abandoned, damaged wall-mounted devices	Remove abandoned wall-mounted devices; Repair and clean surrounding wall assembly; Clean and repaint awnings	32 awnings 1,575 sqft	10-20 years	$ 26,950	$ 73,284	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
B30 - EXTERIOR HORIZONTAL ENCLOSURES						**$ 1,320,622**	**$ 3,591,101**	
B3010 Roofing	Roof assembly (membrane, cover board, insulation, vapor retarder/air barrier), painted sheet metal flashing, roof drains, through-wall scuppers, surface-mounted downspouts)	Fair condition. Clogged roof drains, scupper overflow causes soiling and deteriorated brick/mortar at discharge locations; Water leakage at deteriorated flashing; Sealant at membrane termination bar deteriorated	Replace roof assembly, roof drains, and access hatches; Close scupper penetrations at parapets and add new roof drains	44,200 sqft	‹ 10 years	$ 1,207,072	$ 3,282,331	
B3020 Roof Appurtenances	Ladders, curbs, fall protection equipment	Abandoned and deteriorating steel dunnage and curbs. Non OSHA-compliant and rusted ladders. Non-compliant fall protection	Remove abandoned curbs, penetrations, and steel dunnage; Replace existing access ladders; Install non-penetrating fall protection equipment	270 lf steel dunnage 3 ladders 8 fall protection devices	‹ 10 years	$ 97,600	$ 265,399	
B3060 Horizontal Openings	Skylights, roof hatches	Non-compliant skylights and roof hatches. Guardrails required at access hatch openings and around skylight openings; Roof hatch ships ladder needs fall protection tie-off grab guardrail	Remove abandoned access hatches; Replace existing operational access hatches with units providing code-compliant safety features	12 proposed skylights 2 access hatches	‹ 10 years	$ 15,950	$ 43,372	
B3080 Overhead Exterior Enclosures	Exterior canopies, north shade structures adjacent to tech and lab departments	Good condition, atmospheric soiling	Clean exterior canopies and replace miscellaneous damaged metal components	9 canopies 3,300 sqft	20 - 30 years	$ 42,075	$ 114,412	
C - INTERIORS								
C10 INTERIOR CONSTRUCTION						**$ 3,281,905**	**$ 8,924,320**	
C1010.10 Interior Fixed Partitions	Concrete masonry units, non-structural light gauge metal framing, gypsum board, plaster	Good condition. Replacement/reconfiguration based on space planning requirements	Demolish existing fixed, glazed, and operable partitions and interior windows where applicable. Replace with new partitions and interior windows	44,200 sqft	5-15 years	$ 1,159,620	$ 3,153,297	
C1010.20 Interior Glazed Partitions	Interior storefronts							
C1010.50 Interior Operable Partitions	Large meeting room dividers							
C1020 Interior Windows	Fixed windows, operating windows, relites, metal and wood frame types, wood trim					$ 565,000	$ 1,536,376	
C1030 Interior Doors	Swinging doors, sliding doors, folding doors, coiling doors, counter doors; flush, security lite glazing, louvered; hollow metal, wood; lever, knob, panic bar type operating hardware	Good condition, some paint wear and scuffing	Repair damaged interior doors; Repaint and refinish worn and tarnished door assemblies; Replace door hardware on doors that serve the break room and large conference room on the first floor with panic bar hardware	Quantity to be determined by WFL - Provide unit cost per door for repairing/repainting		$ 467,310	$ 1,270,733	
C1070 Suspended Ceilings	ACT, gypsum board, plaster	Evident soiling and degradation in some ceiling tiles due to water infiltration	Replace damaged acoustical ceiling tiles and repair damaged ceiling grids	Quantity to be determined by WFL - Provide cost per sf for replacing/repairing	5-10 years	$ 528,110	$ 1,436,063	
C1090 Interior Specialties	Display boards, display cases, signage	Good condition				$ 450,000	$ 1,223,663	
C1090.40 Toilet, Bath, & Laundry Accessories	Toilet partitions, grab bars, mirrors, accessories	Toilet rooms do not meet ABAAS standards; Not accessible	Renovate toilet rooms to meet ABAAS standards, including clear floor areas, stall clear floor areas, fixture mounting heights, grab bars heights and configuration, counter heights, shower compartments, and shower controls	Totals: 7 restrooms 863 sf total 12 water closets 11 lavatories 5 urnials 2 showers	Immediate	$ 69,990	$ 190,320	
C1090.70 Storage Specialties	Lockers, postal, large rackes and shelving, archive storage	Non code-compliant stairs to mezzanine storage areas; Insufficient storage to meet present and future needs	Remove mezzanine storage areas as part of overall space planning renovation	~1675 sf		$ 41,875	$ 113,869	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
C20 INTERIOR FINISHES						**$ 462,826**	**$ 1,258,538**	
C2010 Wall Finishes	Wall coverings, ceramic tile, wood paneling, paint	Fair-Good. Minor wear and tear finishes damage	Repaint wall surfaces; Replace tile finishes at renovated restrooms; Refinish wood wall surfaces	Total interior wall surface area: ~116,500sf Assume 5% needs repainting/replacing/refinishing = 5,825 sf	5-10 years	$ 90,000	$ 244,733	
C2030 Flooring	Carpet, ceramic tile, resilient flooring, concrete, composition tile	Carpet is slightly worn but in good condition. Slightly degraded concrete. Resilient flooring in generally good condition.	Repair worn carpet and resilient flooring; Repair floors at cracks and irregularities	Total carpet, resilient flooring, and tile floor surface area: ~49,800sf Assume 5% needs repairing = 2,490 sf	5 years (carpet) 10 years (resilient flooring)	$ 357,116	$ 971,086	
C2040 Stair Finishes	Rubber and wood treads, risers, landings	Existing mezzanine stairs do not meet code	Reframe main stairs to correct riser irregularities; Remove mezzanine stairs	Riser irregularities = 2 risers Mezzanine stair = 68sf, 16 risers	0-1 years (Code compliance)	$ 15,710	$ 42,719	
C2050 Ceiling Finishes	ACT, plaster, gypsum board, paint	Good			2-10 years	See Above		
D - SERVICES							$ -	
D10 - CONVEYING						**$ 126,000**	**$ 342,626**	
D1010.10 Elevators	Single-piston hydraulic, 2500lb capacity, machine room with control panel, hydraulic sump, and motor, 2 levels	Good	Perform cyclical maintenance	1	10-20 years	$ 126,000	$ 342,626	
D20 - PLUMBING						**$ 86,010**	**$ 233,883**	
D2020 Domestic Water Distribution	A substantial amount of the visible water piping installed is still galvanized piping. Also of concern is that portions of the copper piping installed (from various eras) likely contains 50/50 lead solder.	The condition of this piping is likely deteriorated and is likely challenging the water flow rates & water quality.	Replace existing water piping that is galvanized or contains lead solder.	Quanitity of piping needing replacement is unknown. Provide unit cost per linear ft of piping replacement	Currently compromised	$ 22,068	$ 60,009	
Waste D2030 Sanitary Drainage	Boiler combustion condensate is currently discharging directly to the adjacent floor sink. Combustion condensate is basically distilled water, but it is very acidic due to the combustion products that accompany it. It contains concentrations of nitric, sulfuric, and hydrochloric acids and will have a pH value in the range of 3.8 to 4.5. Such levels are damaging to piping systems and the public wastewater system.	Operational condition is causing corrosion of metals.	This installation is in conflict with requirements of the governing plumbing code. Install acid neutralization kits on condensate discharge prior to draining to sanitary sewer.	2 locations	Causing unknown downstream piping deterioration	$ 1,056	$ 2,872	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building								
Uniformat Classification	**Description**	**Condition**	**Corrective Recommendation from Masterplan Report**	**Quantity/Area**	**Remaining Service Life**	**Direct Cost**	**Cost Estimate**	**Notes**
D2010 Plumbing Fixtures	Waterless urinals were previously installed in the toilet rooms.	Though water saving should always be a facility goal, the water savings value of these fixtures is limited as compared to modern 1 pint flush urinals. Also, the maintenance of these products can be substantial. The cost of the trap cartridges should also be considered. Additionally, a major negative of waterless urinals is the constant buildup of uratic salts. These salts crystallize to form build up in the downstream waste line(s) and are especially difficult to clear.	Replace the waterless urinals in the facility with standard "pint flush" urinals meeting code compliance. It is expected that the previously installed water piping (serving urinals installed before the waterless version) is still in the wall behind these fixtures. Recommended change is expected to be of limited cost associated with fixture replacement but will require wall demo and rebuild to access concealed piping.	5 fixtures	15 years	$ 5,700	$ 15,500	
D202003 Domestic Water Equipment	Water heaters installed without thermal expansion tanks.	Each water heater should be protected with a properly sized thermal expansion tank as required by code. This requirement is to protect the plumbing water supply system from damage which can occur due to the expansion of water in the system as the water is heated.	Install properly sized thermal expansion tanks at each water heater.	3 expansion tanks	Immediate - Code Compliance	$ 4,056	$ 11,029	
	Water heaters are installed without the use of a master mixing valve (MMV).	Master mixing valves allow concise water temperature control leaving the water heater for distribution to the plumbing fixtures. The use of MMVs also allow the water heater tank to be set at a higher temperature to control bacterial growth (such as legionella) and this also allows for greater hot water standby capacity than if the tank is set to a lower temperature.	Install properly sized (ASSE 1017 compliant) thermostatic mixing valve at each water heater.	3 valves	Immediate	$ 7,110	$ 19,334	
D201090 Emergency Fixtures	East Wing/Lab: The Installed emergency shower in this area does not meet "Barrier Free / ABAAS" requirements.	The fixture is supplied directly with cold water supply. There is no tempering valve installed and as such the device does not meet ANSI/ISEA Z358.1 "Tepid" water requirements (60°F - 100°F).	Provide new ABAAS-compliant emergency shower(s) and the associated ASSE 1071 mixing valves where activities require such protection. Assume 2 stations.	2 showers	Immediate - Code Compliance	$ 12,426	$ 33,789	
D2020 Domestic Water Distribution	East Wing/Lab: No backflow preventers. appear to be installed to isolate the water supply for the Lab areas or connected lab equipment from the rest of the building uses.	No backflow preventers appear to be installed to isolate the water supply for the Lab areas or connected lab equipment from the rest of the building uses.	Install code compliant backflow preventers	2 backflow preventers	Immediate - Code Compliance	$ 8,168	$ 22,211	
D2040 Rain Water Drainage	Roof overflow drainage	Roof drains have been installed generally to provide drainage from each roof area. However no secondary roof drain system has been installed	Install secondary roof drain system or overflow scuppers through parapet wall(s).	10 drains	< 10 years	$ 22,926	$ 62,341	
D2020 Domestic Water Distribution	Premises Isolation Valve (PIV)	The building does not appear to currently be provided with a Premises Isolation Valve (PIV) for backflow prevention.	Provide on-site (PIV) in vault/enclosure at property line of water service.	1 PIV	Immediate - Code Compliance	$ 2,500	$ 6,798	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
D30 - HVAC						**$ 1,366,309**	**$ 3,715,335**	
D3020 Heating Systems							$ -	
D3020.10 Heat Generation	(2) Natural gas condensing boilers, installed 2010, Manufacturer: Weil-Mclain Ultra,Capacity: 750 MBH each, 93% efficiency, 25 years expected service life	Condition: Good Equipment to remain	Boiler to remain - provide acid neutralization for combustion condensate.	1	› 15 years	$ 528	$ 1,436	
D3020.10 Heat Generation	(1) Air source heat pump water heater, Installed 2010, Used for recovering building exhuast heat for condenser water loop heating.	Condition: Poor / Has not operated since installation. Equipment to be removed or abondoned in place.	Demolish/Remove	1	Not in operation	$ 740	$ 2,012	
D3020.20 Thermal Heat Storage	(1) Storage Tank, Manufacturer: AO Smith TJV-250, 250 gallons.	Condition: Good Equipment to remain	None / Remain	1	› 20 years	$ -	$ -	
D3030 Cooling Systems								
D3030.10 Central Cooling	(1) Closed circuit cooling tower, year installed: 2010, Manufacture: BAC, 280 GPM, VFD, Capacity?, Operating temperature?, 22 years expected service life	Condition: Fair / Some Scaling Equipment to remain	None / Remain	1	› 9 years	$ -	$ -	
D3030.10 Central Cooling	(1) Closed circuit cooling tower (CT), Year installed: 2010, Manufacturer: BAC, axial fans with VFDs, 280 GPM, capacity (unknown), 22 years expected service life.	Condition: Fair Equipment to remain	Install new (additional) closed circuit cooling tower - match capacity of existing cooling tower - 280 gpm.	1	9 years	$ -	$ -	
D3030.70 Decentralized Cooling	(1) Split system heat pump, Manufacturer: LG, ~ 3 tons	Condition: Fair Equipment to remain	None / Remain	1	10 years	$ -	$ -	
D3030.70 Decentralized Cooling	(1) Computer room AC units, Intalled 2010, Manufacturer:Data Aire Series DX, water source, floor mounted, Backup air transfer fan to breakroom, ›24 years anticipated service life.	Condition: Good	None / Remain	1	› 11 years	$ -	$ -	
D3030.70 Decentralized Cooling	(39) Water source heat pumps. Installed 2010, Manufacturer: Carrier 50PTH, two stage scroll compressor, Refrigerant: R410a, Capicity: 2-6 tons, 15-20 years anticipated service life.	Condition: Good Equipment to remain is zoning permits	(22) Existing WSHPs to remain (27) Existing WSHPs removed and salvaged (24) New existing WSHPs capacity range from 1/2 - 3 tons. Install new DDC controls, condenser water connections.	~ 50,000 sf of area served	› 9 years	$ 154,748	$ 420,800	
D3030.70 Decentralized Cooling	(1) Varaible refrigerant flow (VRF) outdoor unit connected to mulitple indoor recessed units at the lab for supplemental cooling. Manufacturer: LG ARUM096DTES, Capacity: 96 MBH, Installed 2022, anticipated service life: 18 years	Condition: Good	None / Remain	1	› 15 years	$ -	$ -	
D3050 Facility HVAC Distribution System	Condenser water piping (water source HP loop), Schedule 40 steel	Condition: Good	Main piping to remain. New piping branches extending to new water source heat pump. Approximately 35% new piping.	~ 50,000 sf of area served	› 20 years	$ 78,173	$ 212,571	
	(P-1 and P-2), Base mounted condenser water pumps with VFDs, installed 2010, manufacture: Paco, 10 MHP each, 190 GPM each, expected service life: ›22 years	Condition: Good	None / Remain	2	› 9 years	$ -	$ -	
	(P-3), Air-to-water HP pump, Manufacturer: Paco, Inline, 1 MHP	Condition: Good	None / Abandon	1	› 9 years	$ -	$ -	
	P-4, Cooling tower pump	Condition: Good	P-4 to remain. Provide new pump for new cooling tower.	1	› 9 years	$ 5,960	$ 16,207	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
	(P-4 and P-5), In-line constant volume boiler pumps, installed 2010, manufacturer Paco, 1 MHP each, 75 GPM each, expected service life: >22 years	Condition: Good	None - Abandon in place or demolish.	2	> 9 years	$ -	$ -	
D3050.50 HVAC Air Distribution	(AHU-1) Rooftop air handling unit, installed in 2010, Manufacturer: Carrier 39MW30C011VG211XCS, heating water coil, supply fan with VFD, 20 MHP, design airflow: 13,1380 CFM, balanced airflow: 16, 516 CFM. Expected service life >20 years.	Condition: Good	Replace with new energy recovery ventilator with energy wheel, supply fan, exhaust, and water source heat pump for neutral air delivery. 14,000 supply and exhaust.	1	> 7 years	$ 185,900	$ 505,509	
Oudoor Air Handling Units	(AHU-2) Rooftop air handling unit, installed in 2010, Manufacturer: Carrier 39MW61C011VG311XCS, supply fan with VFD,50 MHP, design airflow: 33,000 CFM, balanced airflow: 19,167 CFM. Expected service life >20 years.	Condition: Good	None / Remain	1	> 7 years	$ -	$ -	
Oudoor Air Handling Units	(6) Packaged rooftop units, DX cooling, gas heating, airside economizer power exhaust. Manufacturer: Carrier 48LC, anticipated service life 15 years 5.5 tons, installed 2013 5.5 tons, installed 2015 3 tons, installed 2015 10 tons, installed 2015 (RTU 12) 2.5 tons, installed 2012 5 tons, installed 2012	Condition: Good, except RTU 12 with reported compressor issues.	Replace 2.5 and 5 ton units installed in 2012 and RTU-12 (10 tones) with WSHP connected to condenser loop. All other units to remain.	6	5-8 years	$ 39,620	$ 107,737	
Packaged Rooftop Air Handling Unit	EF-1, EF-2, EF-3 (serves lab), utility lab exhaust fans, Greenheck USF, 1/4 HP, Intalled 2020, 25 year anticipated service life.	Condition: Good	None / Remain	3	> 22 years	$ -	$ -	
HVAC fans	Utility lab exhuast fan - Installed 2012-2014, 25 year anticipated service life. Note: No name plate data	Condition: poor, rust on outer fan wheel housing.	Replace with new - match existing capacity	1	0 years	$ 42,056	$ 114,361	
HVAC fans	EF-1, General exhaust downblast rooftop fan, Installed 2010, Manfacturer: Cook 150 ACRU, 1/3 MHP, 25 year anticipated service life.	Condition: Good	None / Remain	1	> 12 years	$ -	$ -	
HVAC fans	EF-2, Serves shop, Installed 2010, Manfacturer: Unkown, 150 cfm.	Condition: Fair	None / Remain	1	> 12 years	$ -	$ -	
HVAC fans	EF-3A, General relief, Installed 2010, Manfacturer: Cook 402 HLC 402HL C-B,5 MHP, Balanced to 11,554 cfm	Condition: Poor Replace equipment due to ongoing balancing issues	Demolish - Function of fan replaced by new ERV - note AHU-1 replacement with new.	1	0 years	$ 42,056	$ 114,361	
HVAC fans	EF-3B, General relief, Installed 2010, Manfacturer: Cook 402 HLC 402HL C-B,5 MHP, Balanced to 12,163 cfm	Condition: Poor Replace equipment due to ongoing balancing issues	Replace with new to match existing capacity	1	0 years	$ 42,056	$ 114,361	
HVAC fans	EF-4,Serves water source heat pump, Installed 2010, Manfacturer: Cook 150DB, 2 MHP, 3,600 cfm, 25 year anticipated service life.	Condition: Good	None - Abandon in place or demolish	1	> 12 years	$ -	$ -	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
HVAC fans	EF-6, Serves electrical room, Installed 2010, Manfacturer: Unknown, 1/2 MHP, 380 cfm, 25 year anticipated service life.	Condition: Good	None / Remain	1	› 12 years	$ -	$ -	
Ductwork	Supply/Return/Exhaust duct work	Condition: Good	Majority of main ductwork extending to AHU-1 and AHU-2 to remain. 80% of Low pressure supply and return ductwork connected to the WSHPs and RTUs will be replaced with new to match new programming.	52000 sf	› 20 years	$ 673,109	$ 1,830,353	
Grilles and Registers	Supply/Return/Exhaust Grilles	Condition: Good	Replace with new to match new ceiling	52000 sf	› 20 years	$ 43,752	$ 118,972	
D3060 Ventilation							$ -	
Dust Collector	(1) Field assembled dust collector system located outside - age TBD ~ 30 years	Condition: Poor Replace with new recirculating type	Demolish existing duct collector that is at end-of-life. Replace with new dust collector matching existing capacity with recirculation to HEPA supply filters. Unit to be suitable for concrete/aggregate dust duty. HEPA filter housing to remain and will be reconnected to new dust collector. Duct collector capacity: 8,000 cfm, 50 HP, recirculation type.	1	0 years	$ 36,050	$ 98,029	
Building Automation System	In 2010, a Schneider Electric direct digital controls Building Automation System (BAS) was installed as part of a major mechanical upgrade. The installing controls contractor is Robert Lloyd Sheet Metal. The majority of the HVAC equipment is either directly controlled or monitored by the BAS.	Condition: Good	Existing BAS Schneider Electric Control system will remain. New equipment will be tied into the existing controls system. New sequences of operations will be implemented for the new equipment and existing sequences optimized for the existing systems. The installing controls contractor will assess and correct issues with the energy management system.	Entire Building	Ongoing maintanence and upgrades required	$ 21,560	$ 58,627	
D40 - FIRE PROTECTION						**$ 382,655**	**$ 1,040,535**	
D4010.10 Water Based Fire Suppression	Fire Sprinkler System	No existing system.	Install a wet pipe fire sprinkler system throughout the building. Install a dry pipe fire sprinkler system at the exterior canopy where combustible materials are currently being stored.	Entire Building - 52,000 sf	NA	$ 382,655	$ 1,040,535	
D50 - ELECTRICAL						**$ 1,974,490**	**$ 5,369,132**	
D5010.10	Packaged Generator	None existing.	No new power generation equipment is anticipated as part of the scope of work	0	NA	$ -	$ -	
D5010.20	Battery Equipment	Good.	Existing, free-standing UPS is in good condition and will remain but will be relocated to new room.	1	5-10	$ 2,538	$ 6,901	
D5010.30	Photovoltaic Collectors	None existing.	No new photovoltaic systems are anticipated as part of the scope of work.	0	NA	$ -	$ -	
D5020.10	MV Transformers	Good.	The facility is currently served by (3) medium voltage, utility-owned transformers. The anticipated scope of work would consolidate these to (1) medium voltage transformer, that would also be utility-owned.	3	NA	$ 261,981	$ 712,392	
D5020.30	Main 208V Distribution Equipment in West (Office) Wing	The existing distribution switchboard and distribution panelboard have met or exceeded their expected life.	This equipment will be replaced both due to the age of the equipment, but also to upgrade the available voltage at the facility to 480V from 208V. A new 480V switchboard will be provided, as will a 208V sub-distribution switchboard.	2	0	$ 223,263	$ 607,108	
	Branch Panelboards in West (Office) Wing	Condition: Varies. Some branch panelboards have met their expected life, while several have more recently been installed and can be re-fed from the new sub-distribution switchboard.	Older panelboards will be replaced as part of the scope of work, and new 480V panelboards provided with the switch to 480V power. Anticipate (2) new 480V panelboards and (6) 208V panelboards.	8	Varies	$ 58,509	$ 159,101	
	Main 208V Distribution Equipment in Lab Wing	The existing distribution switchboard and integral panelboards have met or exceeded their expected life.	The switchboard will be replaced with a new 480V I-Line subdistribution board, new 208V I-Line sub-distribution switchboard, and (3) new 208V panelboards.	1	0	$ 206,199	$ 560,707	
	Electrical Wiring System	Good.	No deficiencies were noted in the existing wiring systems. However, the scope of work will lead to much of the existing wiring being replaced to accomodate floor plan revisions.	Entire Building - 52,000 sf	NA	$ 624,000	$ 1,696,812	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building								
Uniformat Classification	**Description**	**Condition**	**Corrective Recommendation from Masterplan Report**	**Quantity/Area**	**Remaining Service Life**	**Direct Cost**	**Cost Estimate**	**Notes**
D5020.70	Facility Grounding	Good.	With the relocation of the main electrical room, a new grounding system will be provided. Grounding conductors from there will be extended to all new sub-distribution equipment and to devices.	Entire Building - 52,000 sf	NA	Included Above		
D5030.10	Branch Wiring System	Good.	Scope of work will lead to the majority of branch wiring within the building to be replaced. In the Lab Wing, pending significant changes to equipment locations, some branch wiring could remain and be reterminated in new distribution equipment / branch panelboards. Assume use of MC cabling to be allowed for connection to devices (but not for homeruns - maximum length of MC cabling not to extend beyond 50').	Entire Building - 52,000 sf	NA	Included Above		
D5030.50	Wiring Devices	Good.	Scope of work lead to the majority of wiring devices being replaced. As noted above, devices in the Lab Wing may remain in place pending changes to equipment.	Entire Building - 52,000 sf	NA	Included Above		
D5030.90	General Purpose Components	Good.	Scope of work will require new supplementary components through much of the building.	Entire Building - 52,000 sf	NA	Included Above		
D5040	Lighting	Fair.	All luminaires within the building are fluorescent, and while functional, are ineffecient. Scope of work will include the provision of LED luminaires throughout the building.	Entire Building - 52,000 sf	NA	$ 520,000	$ 1,414,010	
D5040.10	Lighting Control	Fair.	Limited lighting controls in the building are to be replaced as part of the scope of work. A new digital, networked lighting control system will be provided throughout the building.	Entire Building - 52,000 sf	NA	$ 78,000	$ 212,102	
D5040.20	Branch Wiring for Lighting	Good.	With the architectural revisions to the building, most locations will change, and with the change to 480V power, lighting circuits will be sourced from new 480V, lighting-dedicated branch panelboard(s).	Entire Building - 52,000 sf	NA	Included Above		
D60 - COMMUNICATIONS						**$ 15,000**	**$ 40,789**	
D6010.10	Data Communications Network Equipment	Good.	It is anticipated that existing equipment will continue to be used, but will be relocated to the new MDF / IDF locations. Horizontal cabling throughout the building will be replaced.	2 rooms	NA	$ 15,000	$ 40,789	
D70 - ELECTRONIC SAFETY & SECURITY						**$ -**	**$ -**	
D7050.10 Fire Detection and Alarm	Fire Alarm System Modifications	Existing, good condition.	Provide strobes in public/common use spaces (estimated 30 appliances). Provide monitoring of new dry and wet pipe sprinkler system (estimated 10 input modules).	Entire Building - 52,000 sf	› 10 years		$ -	
E - FURNISHINGS							$ -	
E10 - EQUIPMENT						**$ 31,125**	**$ 84,637**	
E1010.50 Loading Dock Equipment	Spring-loaded manual dock leveler	Functional, but difficult to operate and somewhat dangerous to service.	Replace existing spring-loaded manual dock leveler with hydraulic dock leveler to increase ease of operation as well as operational and maintenance safety.	1	NA	$ 31,125	$ 84,637	
E1040 Institutional Equipment							$ -	
E20 - FURNISHINGS							$ -	Separate procurement process
F - SPECIAL CONSTRUCTION							$ -	
F20 - FACILITY REMEDIATION							$ -	

Facility Maintenance Matrix - FOVA-XX3-WFL - Main Building

Uniformat Classification	Description	Condition	Corrective Recommendation from Masterplan Report	Quantity/Area	Remaining Service Life	Direct Cost	Cost Estimate	Notes
G - SITEWORK							$ -	
G10 - SITE PREPARATION						**$ 193,213**	**$ 525,394**	
G1020 Site Elements Demolition	Hardscape, landscape		Remove existing hardscape and landscape as required for recommended site improvements.	3,400 sf	NA	$ 95,425	$ 259,484	
G1030 Site Element Relocations	Site utilities, water/storm, temporary barricades, flagging, protection of existing		Relocate or remove existing utilities as required for recommended site improvements. Protect all other existing utilities and site elements during construction.			$ 30,000	$ 81,578	
G1070 Site Earthwork	excavation and fill, erosion and sediment control, soil and rock stabilization		Fill existing loading dock as required for outdoor staff amenity area. Excavate existing site as required for proposed stormwater facilities, proposed surface parking lots, and ADA parking stalls. Provide erosion and sediment control for all exposed soils and any utility installation.	2,000 sf	NA	$ 67,788	$ 184,333	
G20 - SITE IMPROVEMENTS	Paving, curbs, landscape improvements					**$ 311,119**	**$ 846,009**	
G2020 - Parking Lots	On-site parking: Paved surface lot, 41 standard stalls + ~22 standard parking stalls in lot east of Mule Barn. 0 on-site ADA parking stalls. Off-site parking: Street parking along E 5th Street. ~88 standard parking stalls + 5 ADA parking stalls.	No onsite ADA parking stalls. Offsite ADA parking stalls are out of compliance.	Add ABAAS parking stalls onsite. Reconfigure ABAAS parking offsite. Replace existing asphalt and concrete sidewalk as required for ABAAS parking improvements onsite and offsite. Restripe existing offsite parking to increase offsite parking counts.	Added onsite parking: 42 standard stalls + 6 ADA stalls Existing offsite parking to be restriped: 88 standard stalls + 5 ADA stalls	NA	$ 311,119	$ 846,009	
G2030 - Site Development		Existing material storage yard is mostly gravel. There are no existing stormwater facilities.	Reconfigure materials storage yard to allow for staff amenity area and adequate turning space for loading dock west of Mule Barn. Pave materials storage yard. Install stormwater facility for all proposed impervious improvements.	Paving: 22,900 sf	NA	Included Above		
G30 - LIQUID & GAS SITE UTILITIES	Domestic and stormwater, backflow prevention, overflow					**$ 100,856**	**$ 274,253**	
G3010 - Water Utilities		The domestic water service does not have backflow prevention. The Main Building is not sprinklered.	Install backflow on existing domestic water service. Install new 6" fire service with separate backflow.	(See D20 - Plumbing)	NA	$ 56,480	$ 153,583	
G3020 - Sanitary Sewerage Utilities			Install new sanitary piping or upsize existing laterals as required for additional building fixtures.			$ -	$ -	
G3030 - Storm Drainage Utilities			Install new storm drain piping as required for proposed stormwater facilities.	Storm drain pipe to serve ~600 cubic ft of stormwater management	NA	$ 44,376	$ 120,669	
G40 - ELECTRICAL SITE IMPROVEMENTS								

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I | Architectural Plans - Existing

This section shown for reference only. DB team to validate all existing and proposed conditions and requirements during project design.

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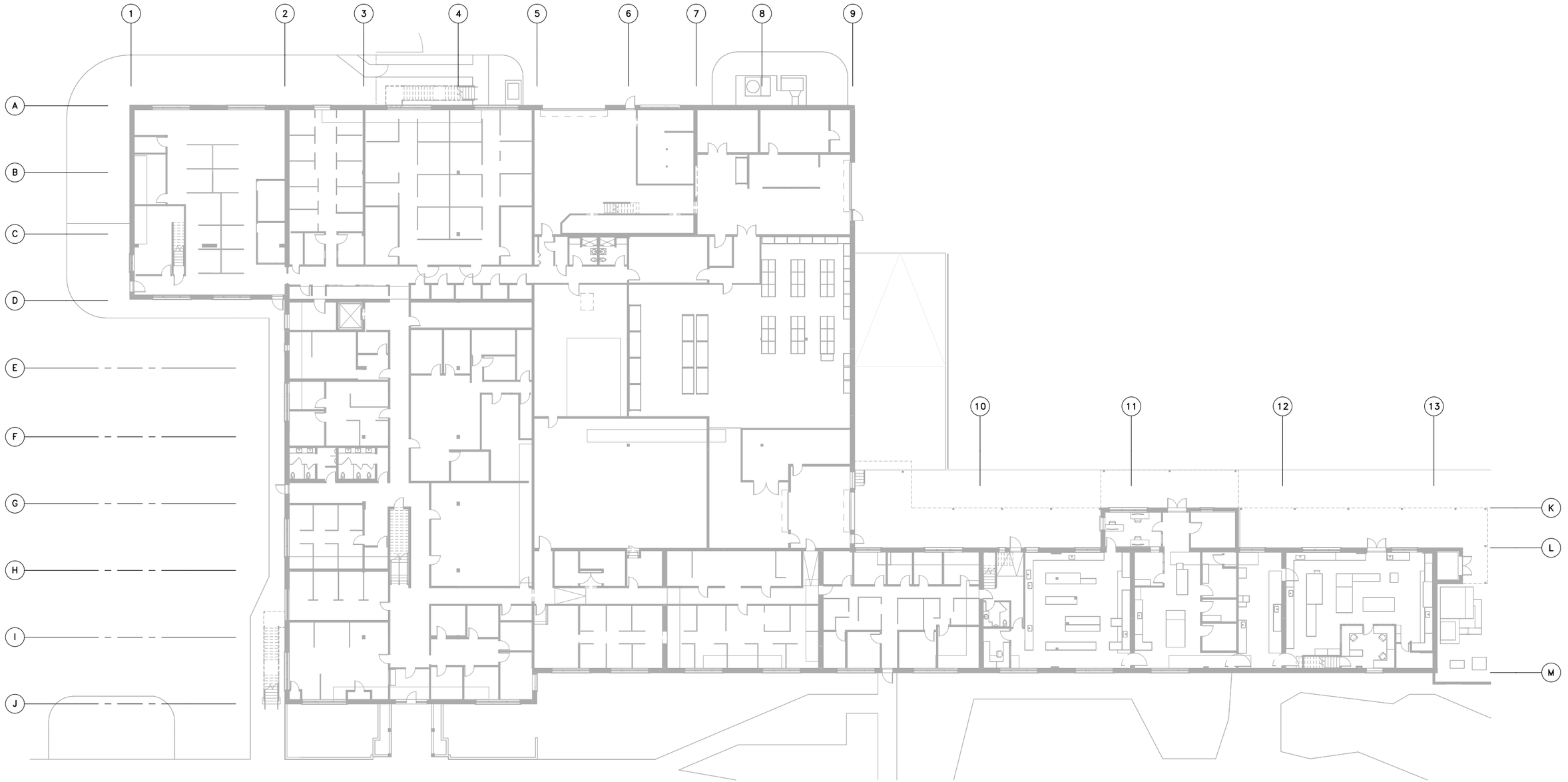

1 EXISTING FLOOR PLAN – LEVEL 1

PROJECT NORTH

0' 4' 8' 16' 32'

SCHEMATIC DESIGN

DESIGNED: Designer DRAWN: Author TECH REVIEW: Checker DATE: 1/19/2024	SUB SHEET NO. MP101	TITLE OF SHEET EXISTING FIRST FLOOR PLAN – MAIN BUILDING FORT VANCOUVER NATIONAL HISTORIC SITE WESTERN FEDERAL LANDS HIGHWAY DIVISION	DRAWING NO. N/A PMIS NO. FOVA–XX3–WFL SHEET 1 OF 1

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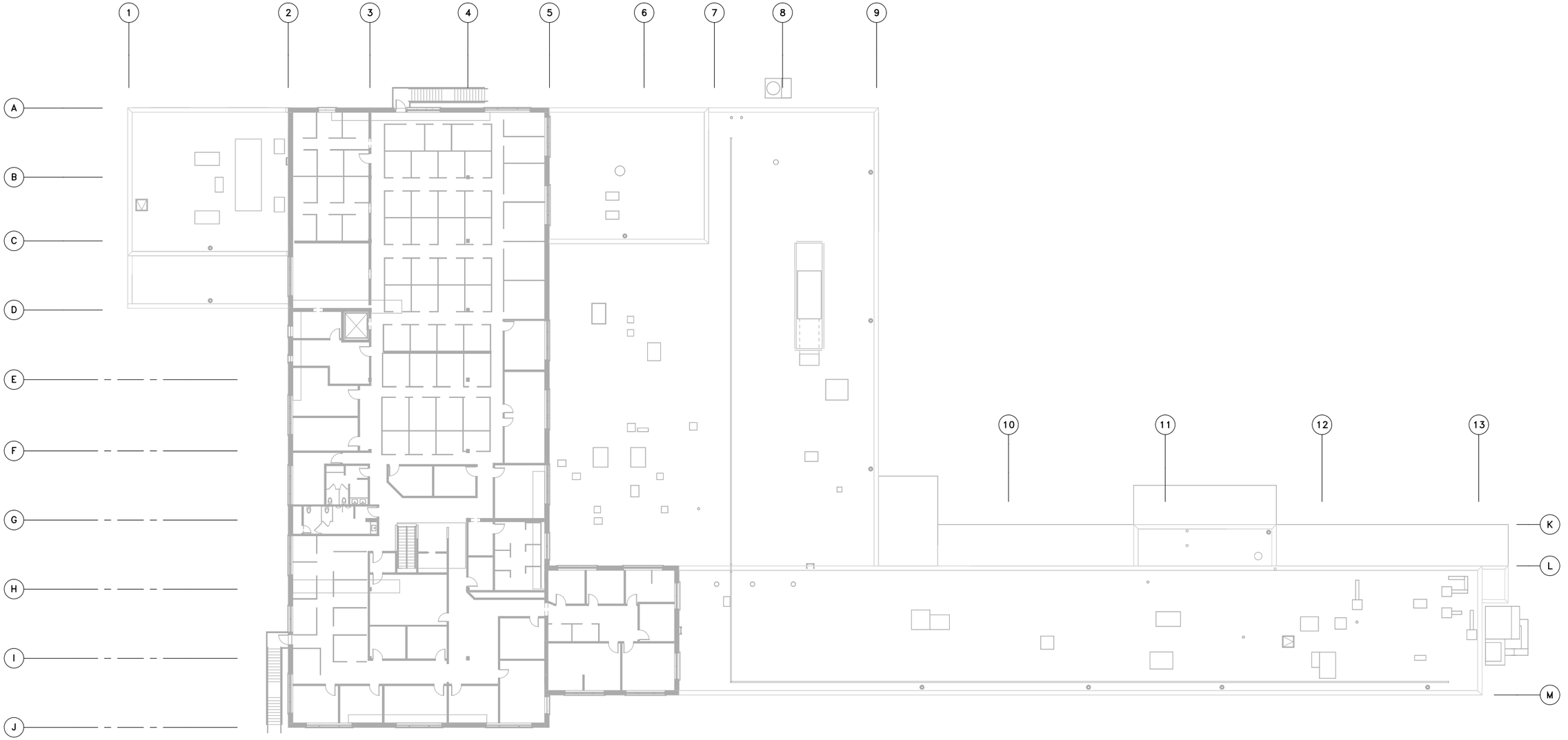


1 EXISTING FLOOR PLAN – LEVEL 2

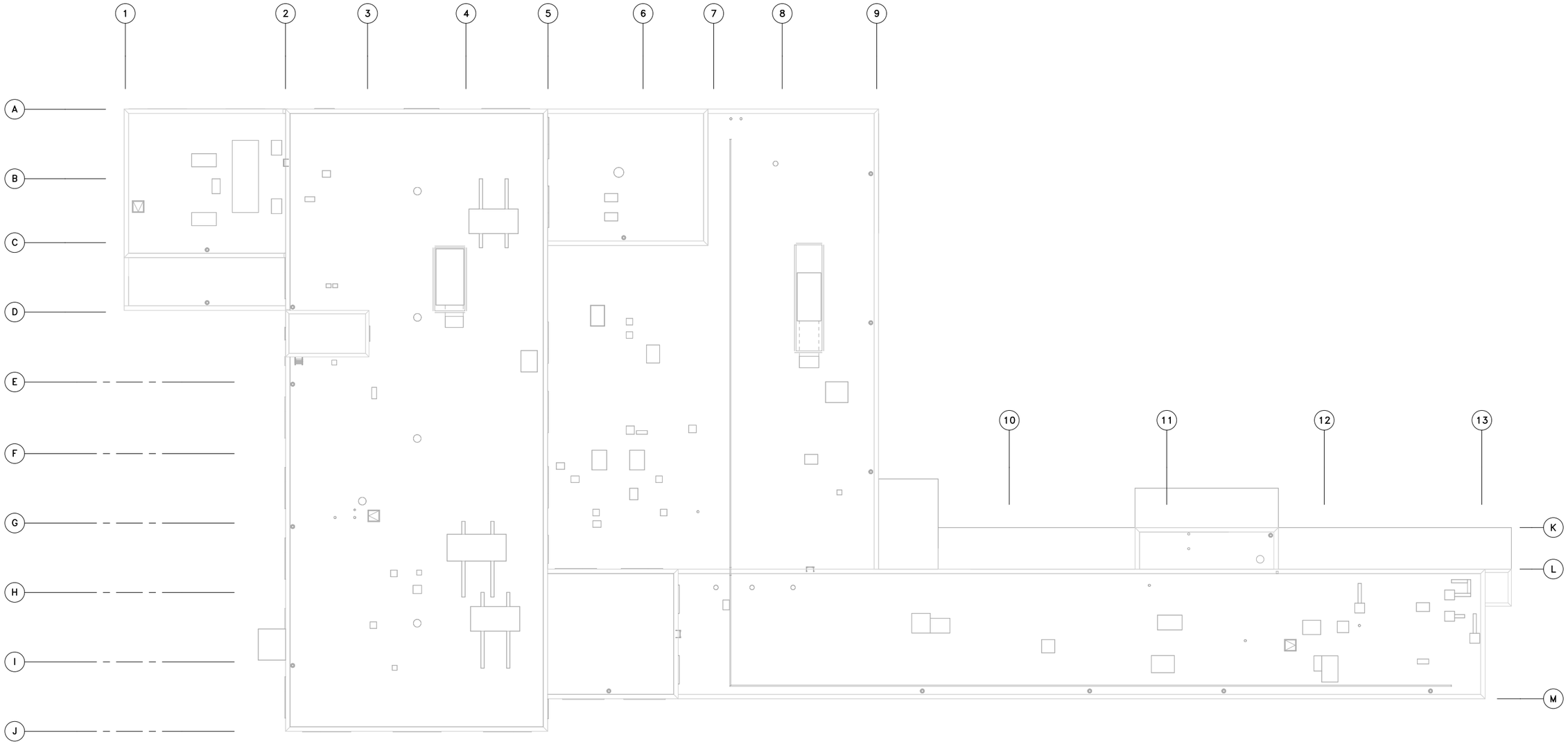
PROJECT NORTH

0' 4' 8' 16' 32'

SCHEMATIC DESIGN

DESIGNED: Designer	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAWN: Author	MP102	EXISTING SECOND FLOOR PLAN – MAIN BUILDING	N/A
TECH REVIEW: Checker		FORT VANCOUVER NATIONAL HISTORIC SITE WESTERN FEDERAL LANDS HIGHWAY DIVISION	PMIS NO. FOVA–XX3–WFL
DATE: 1/19/2024			SHEET 1 OF 1

Autodesk Docs://22_082T – NPS FOVA MP and Seismic/22082T_NPS FOVA MP and Seismic – XX3.rvt



1 EXISTING ROOF PLAN

PROJECT NORTH

0' 4' 8' 16' 32'

SCHEMATIC DESIGN

DESIGNED: Designer DRAWN: Author TECH REVIEW: Checker DATE: 1/19/2024	SUB SHEET NO. MP103	TITLE OF SHEET EXISTING ROOF PLAN – MAIN BUILDING FORT VANCOUVER NATIONAL HISTORIC SITE WESTERN FEDERAL LANDS HIGHWAY DIVISION	DRAWING NO. N/A PMIS NO. FOVA–XX3–WFL SHEET 1 OF 1

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