

Existing Conditions Study Report

RICHLAND, WA

JULY 20<sup>TH</sup>, 2023







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# **Executive Summary**

### 1.1 Overview

Through the Washington State Department of Enterprise Services (DES) Energy Savings Performance Contracting (ESPC) program, McKinstry has completed an extensive study and investigation of energy upgrades for the Port of Benton. For this initial investigation, the focus was put on the Existing Conditions of the 2579 Stevens facility to ensure that there were no major issues that would prevent work from occurring on this site. The following items have been assessed in this phase of work, and supporting documentation included in this report:

- Civil Site Conditions Memorandum
  - Existing site conditions
  - Concept-level potential site improvements
- Structural Building Memorandum
  - Existing site conditions
  - Concept-level potential structural improvements
  - Tier 1 ASCE 41 Seismic Evaluation and Retrofit of Existing Buildings Screening
- Schematic Design Level Floorplan
  - IBC, WSEC and ADA Code Review (incorporated into the proposed layouts)
- IES VE Model and elevated energy baseline for existing building





Existing Conditions Study Civil Site Investigation

RICHLAND, WA

JULY 20<sup>TH</sup>, 2023

## CIVIL SITE INVESTIGATION SUMMARY



Date:	April 6, 2023
To:	Lance Funke, McKinstry
From:	Thaddeus Egging, PE; Isabella Graziani, EIT
Subject:	Port of Benton Civil Site Review

### PROJECT OVERVIEW:

This report documents KPFF's civil site investigation findings for the Port of Benton warehouse project located at 2579 Stevens Drive, Richland, WA 99354.

This site is approximately 99 Acres located on section 27 township 10 range 28 (Property ID: 309923). The site is bounded by Stevens Drive to the east, an existing railroad track to the west, and existing parcels to the north and south.

The site is partially developed and contains an existing structure, a warehouse, 2 train tracks that enter through the northwest end of the structure and 1 that exits the southwest end of the structure. The lot is fully paved with a bus lot to the east.

### ZONING AND PERMITTING:

The site is currently zoned by the City of Richland as I-M (Medium Industrial). Automobile wrecking, junkyards, and heavy manufacturing land use are prohibited within this zoning district. All other development types are allowed and subject to the general requirements and performance standards required in the I-M zoning district and/or special use permit provisions. The maximum building height allowable is 55 feet. For additional information refer to City of Richland Code Chapter 23.26.

### Landscaping:

Perimeter landscaping is **required** for all new industrial facilities and developments. The landscaping is required to be adjacent to all public right of way and a minimum of 10 feet in width. There is a park located to the southwest of the project, although not adjacent it may be required to install a sight screening fence. For additional information refer to City of Richland Code Section 23.26.060.

#### Permitting:

Permitting for the project will be done through the City of Richland. This includes the Building, Demolition, and Grading permits. If a landscaping sprinkler system is to be included in project development an additional Landscape sprinkler system permit is required.

Prior to application submittal a free pre-application meeting with public works is required. All permit applications are done through a paperless system. Plan review Fees must be submitted with the application(s) and is required by the city to issue a permit.

#### Critical areas:

Two **Critical** areas are located to the northeast and south of the project site. Both are described by the City of Richland as Aquifer Recharge **critical** areas. There are an additional three wetlands located to the southwest of the project. None of these critical areas are directly adjacent to the project site.

### WATER:

City of Richland Public Works – Water Utility Contact: Pam Everham Phone: 509-942-7790 Email: <u>Peverham@ci.richland.wa.us</u>

### General Information:

The project site is within the City of Richland and is eligible to be served by the City of Richland water system. See Appendix A for a map showing existing water main locations.

### Existing Main(s):

The existing main that connects to the project site is a 12" PVC that runs-east west and connects to a 24" steel main along Stevens Drive. Two 10" asbestos concrete mains run east-west creating a water loop surrounding the existing structure. A 12" PVC connects to the south and continues past the site to convey to southern properties.

Four domestic connection water meters are located along the existing main. Five hydrants and four lateral fire lines connect to the existing water main.

Note that PVC is not a typical water main material but is allowed. City of Richland GIS notes these mains as being PVC. If connection to or extension of the existing mains is proposed, further site investigation (via pothole) is recommended.

### Main Additions:

Additional water and/or fire service connections are allowed with permit. Additional meters, mains, hydrants, etc. must be shown on building application plans for public works and building departments to review and approve. No additional permits are required.

### WASTEWATER SEWER:

City of Richland Public Works – Wastewater/ Stormwater Contact: Jason Reathaford Phone: 509-942-7742 Email: Jreathaford@ci.richland.wa.us

#### **General Information**:

An 8" pipe of unknown material runs north-south on the east side of the existing structure and connects to a 10" City of Richland main on the southeast corner of the project site. See Appendix B for a map showing existing wastewater main locations.

#### Main Additions:

Additional sewer service connections are allowed with permit. Similar to water, above, additional services must be shown on building application plans for public works and building departments to review and approve. No additional permits are required.

### STORMWATER:

City of Richland Public Works – Wastewater/ Stormwater Contact: Jason Reathaford Phone: 509-942-7742 Email: <u>Jreathaford@ci.richland.wa.us</u>

### **General Information:**

A 12" PVC main runs north-south on the east site of the project site. The main connects to an 18" corrugated metal pipe (CMP) main that runs east-west on the south side of the project site. An additional 12" PVC main runs north-south at the south side of the project site below the existing structure.

KPFF reviewed satellite imagery, GIS information from the City of Richland and Benton County, and corresponded with Pam Everham, City of Richland Public Works. This information all showed that none of the on-site stormwater system is connected to an off-site stormwater system. Based on this information, in appears the on-stie stormwater system connects to an infiltration facility. Additional research and information will be needed to confirm stormwater infiltration and conveyance. See Appendix C for a map showing existing stormwater main locations.

### **General Requirements:**

All stormwater construction must adhere to the City of Richland Standard Design Guidelines and Construction Details, and Storm Water Management Manual for Eastern Washington (SWMMEW). Additional stormwater site plans and construction stormwater pollution prevention plans are required.

## **APPENDICIES:**

- A- Existing Water Utilities
- B- Existing Wastewater Utilities
- C- Existing Stormwater Utilities

## **APPENDIX A: WATER UTILITIES**



## **APPENDIX B: WASTEWATER UTILITIES**



## **APPENDIX C: STORMWATER UTILITIES**





Existing Conditions Study Structural Evaluation Report

RICHLAND, WA



# STRUCTURAL EVALUATION REPORT



421 W Riverside Avenue, Suite 902 Spokane, WA 99201 509.289.2300

> Prepared by: Ryan Ballard, PE, SE

KPFF Project No. 2200208

April 4, 2023

### SUMMARY

This structural evaluation report documents our structural observations of the existing building structure of the Stevens Drive Rail Operations Building owned by the Port of Benton (Port) (see Figure 1), highlights potential structural deficiencies of the facility, identifies building code provisions which would trigger structural upgrades, and offers structural recommendations for the planned building improvements being pursued though Energy Saving Performance Contracting (ESPC). At this preliminary stage of the project (baseline evaluation), structural evaluation is limited to the direct observations made on a February 14<sup>th</sup> site visit and a review of relevant building codes. Structural drawings of the existing facility were not available for review.

While it is unknown which building improvements will be implemented as part of the final development, KPFF understands the following improvements to be of high priority. Please refer to supplemental reports by Architects West (Architectural design), KPFF Consulting (Civil design), and McKinsrty (Electrical and Mechanical design) for more information.

- Upgrade building envelope and mechanical systems to improve operational efficiency of the overall facility
- Conduct a tenant improvement of interior spaces, including, but not limited to, updating the building restrooms, adding more robust access controls, and rearranging interior partitions to better serve current and future building tenants.
- Implement select upgrades to address ongoing facility maintenance concerns, deficiencies, and other miscellaneous items as appropriate.



Figure 1: Steven Drive Rail Operations Building (2579 Stevens Road, Richland WA 99354)

### **BUILDING STRUCTURAL SYSTEM DESCRIPTION**

Structural drawings for the existing facility are unavailable; however, there is one architectural plan sheet produced on November 8, 2001 showing interior space layout and rough building dimensions. The building is comprised of (3) independent variable height single-story flat-roof structures of similar construction (see Figure 2 below).

The structure of building zones 1 and 2 are of similar construction and are exposed to view from the interior spaces. The roof structure consists of dimensional timber decking supported by timber purlins spanning over long-span steel joists and columns. The lateral system consists of single story and multi-tiered steel braced frames. The buildings are clad with concrete wall panels spanning horizontally between the perimeter steel columns. Other features include interior nonbearing masonry walls typically installed tight to the primary structure above, partial height cantilevered masonry partitions, overhead crane in building 1, and several interior steel mezzanine structures connected to the primary building framing. Buildings 1 and 2 are separated by an expansion joint. Figures 3-7 document existing conditions.

Zone 3 is a shorter office building with concealed structure. The structure is presumed to consist of wood roof framing and steel post and beam construction.



Figure 2: Structural Key Plan



Figure 3: Typical Underside of Roof



Figure 4: Braced Frame at Exterior Concrete Wall



Figure 6: Masonry Wall Installed Tight to Structural Roof Framing



Figure 7: Exterior View of Building

### **BUILDING CODE REVIEW AND CONDITION ASSESSMENT**

Evaluation of the existing structure in support of the planned modifications will be performed in accordance with the International Existing Building Code (IEBC), 2021 edition. Sections relevant to potential building upgrades are referenced below along with a brief description on their applicability to the proposed upgrades.

• IEBC 2021 Chapter 6 – Classification of Work

This section details what modifications to the building trigger mandatory upgrades to various building systems. Building additions, alterations to the building exceeding 50% of the area, and change of use are potential triggers that lead to more involved structural analysis and/or upgrade. For this project we are expecting an alteration level 2, which requires compliance with Chapters 7 and 8. Level 2 alterations include the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment and shall apply where the work area is equal to or less than 50 percent of the building area.

• IEBC 2021 Section 706.2 and 805.2 – Addition or replacement of roofing or equipment:

This section allows the addition of new lightweight equipment (i.e., fan coils), and/or mechanical/electrical distribution systems that add less than 5% loading (including snow drift effects) without structural modification. If increase in loading is due entirely to the addition of a second layer of roofing an increase of 3 pounds per square foot is allowed. Structures supporting heavier equipment that exceed the five percent weight threshold are covered under IBC 2021 and ASCE 7-16.

• IEBC 2021 Section 805.3 – Existing structural elements resisting lateral loads.

Alterations adding less than 10% lateral loading under this provision do not require structural modification. Alterations causing a lateral load increase above the ten percent threshold are covered under IBC 2021.

KPFF also conducted a tier 1 screening in accordance with the "Seismic Evaluation and Retrofit of Existing Buildings," 2017 Edition (ASCE 41-17) for tier 1 screening of existing buildings. Screening checklists are shown in appendix. The following items are noted:

 The building appears to have a complete lateral load path and is in fair condition, but has several noted deficiencies as noted in the tier 1 screening report and as summarized as follows:

- The exterior concrete walls and non-bearing interior masonry walls likely participate in the building response to gravity and lateral loadings, which may have a detrimental effect on building performance in a high snow event or seismic event, respectively.
- Several deficiencies at braced frame locations including insufficient anchorage of braced frame columns to the foundation, noncompact braced frame members

including diagonal braces, non-concentric connections, and connections incapable of developing the capacity of the braces.

- Wood roof diaphragm is un-blocked and does not consist of diagonally sheathing or wood structural panels.
- The building is located in a high seismic region and could be subject to stringent seismic design requirements if a substantial alteration were triggered.
- The lack of existing building structural drawings limits the scope of the tier 1 screening. A more comprehensive structural evaluation would require detailed onsite measurements to document the existing structural configuration, member sizes and connections.

### RECOMMENDATIONS

Based on the building structural observations, code review, condition assessment, and follow up discussions between relevant parties KPFF offers the following recommendations as the team advances development of the project. Recommendations are limited to zones 1 and 2 as shown in Figure 2 unless noted otherwise. It is KPFF's understanding that the Port of Benton would like to avoid structural upgrades in order to preserve funding for higher priority items unless there are glaring deficiencies or if they are required by code.

- The existing structure is in fair condition and appears to contain a complete load path for development of both vertical gravity forces and lateral wind or seismic forces that could act on the building. However, several noted deficiencies indicate that the building is unlikely to meet modern day code provisions for new construction. In order to avoid triggering costly upgrades or analysis of the existing structural system, KPFF recommends applying the following limitations to the overall development.
  - a. Limit the net-increase in exterior wall assembly weights to 3 pounds per square foot (psf) or less. The height of any new exterior wall height be limited as to not create a parapet above the existing roof surface.
  - b. Limit the net increase of the roof assembly weight to 3 psf. If the existing roof has previously been re-roofed either strip off existing roof layers prior to applying the new roof assembly or further limit the weight of new roofing material to 1.5 psf.
  - c. Maintain current usage of space and limit extent of building alterations and space reconfiguration to less than 50% of the building area.
  - d. Avoid any alterations to primary building framing and lateral system including steel joists, columns and braced frames.
- 2) KPFF recommends that any new mechanical units that are added to the structure be supported interior to the structure either from the existing joist framing of standalone equipment supports. Placing equipment on the roof while feasible would likely require local roof retrofits which may be difficult to execute due to presence of fire sprinkler lines and other utilities close to the underside of the roof.
- 3) KPFF recommends further evaluation of non-bearing masonry wall to primary roof structure interfaces and recommend modification to these systems where found to be detrimental to life safety of building occupants.

### FUTURE STRUCTURAL WORK

During the next phase of the project, KPFF will perform structural analysis and design sufficient to allow McKinstry to develop a guaranteed maximum price for the proposed development as a precondition of securing grant funding. Final design of any structural components would occur in a third phase after grant approval.

Scope of work will be based on recommendations from the baseline evaluation efforts of relevant design partners and future discussions with the Port. Provided the structural recommendations above are met, KPFF expects to participate in the following structural design activities during the guaranteed maximum pricing phase.

- Conduct site visit to gather additional as-built information in the vicinity of planned improvements.
- Recommend testing of existing building structural components to confirm material strengths and configuration as required for planned improvements.
- Evaluate proposed roof and wall assemblies for compliance with weight limitations described in the recommendations section.
- Provide schematic structural support plans for various equipment support conditions around the facility.
- Provide typical details and limitations for alterations related to the existing non-bearing masonry walls (i.e. new door openings).



Existing Conditions Study Space Planning

RICHLAND, WA

JULY 20<sup>TH</sup>, 2023



## CORRIDOR



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Existing Conditions Study IES VE Benchmark Model

RICHLAND, WA

## **Project and Climate**

## Port of Benton - 2579 Stevens

### - Model Data -

Project file	Port of Benton - 2579 Stevens.mit
Source HVAC file	-
HVAC file snapshot	-
Model floor area	93,474.3 ft <sup>2</sup>
Building conditioned floor area	93,474.3 ft <sup>2</sup>
Building conditioned volume	2,689,042.2 ft <sup>3</sup>
Number of conditioned rooms	90
Load analysis methodology	ASHRAE Heat Balance Method
Calculated	2023/07/19 17:10
Version No.	2022.1.2.0

#### Location Data

Location	Tri-Cities Airport, Washington
Latitude	46.27 N
Longitude	119.12 W
Altitude	406.8 ft
Time Zone	8.0 hours behind GMT

#### Design Weather Data ASHRAE design weather database Source Monthly percentile: For heating loads design weather 99.60 % For cooling loads design weather 0.40 % Barometric pressure 29.4918 inHg Air density 0.0749 lb/ft3 Air specific heat 0.2434 Btu/lb·°F Density-specific heat product 0.0591 Btu/ft<sup>3</sup>.°F Summer ground reflectance 0.2 Winter ground reflectance 0.2 Carbon dioxide (ambient) 400.00 ppm

Cooling Calculation Data —		
Results file	2579 Stevens Room Loads.clg	
Calculated	2023/07/19 17:09	
Profile Month	May - Sep	
Max outdoor temp. dry bulb	105.8 °F	
Max outdoor temp. wet bulb	72.9 °F	
Heating Calculation Data —		
Describe file		
Results file	2579 Stevens Room Loads.htg	
Calculated	2579 Stevens Room Loads.htg 2023/07/19 17:09	
Calculated Profile Month	2579 Stevens Room Loads.htg 2023/07/19 17:09 Jan	
Calculated Profile Month Outdoor winter design temp	2579 Stevens Room Loads.htg 2023/07/19 17:09 Jan 10.2 °F	
Calculated Profile Month Outdoor winter design temp	2579 Stevens Room Loads.htg 2023/07/19 17:09 Jan 10.2 °F	

Cooling loads:	kBtu/h	Btu/h-ft <sup>2</sup>	
Coincident peak space load	1,312.17	14.04	
Heating loads:			
Coincident peak space load	1,140.40	12.20	
			_





Existing Conditions Study Roof Conditions Assessment

RICHLAND, WA



### **GENERAL INFORMATION:**

ROOF AREA:	Areas 1-9
SQUARE FOOTAGE:	95,665 sq.ft.
DATE INSTALLED:	Varies

### **ROOF COMPOSITION AREAS 1-5, 7-8:**

MEMBRANE: COVERBOARD: INSULATION: DECK: TPO <sup>1</sup>/4"-<sup>1</sup>/2" Densdeck (Varies) 3.5" Polyisocyanurate, 6" Styrofoam (Area 1 only) Wood

### **ROOF COMPOSITION AREA 6:**

MEMBRANE: COVERBOARD: INSULATION: MEMBRANE: DECK: Spray on Polyurethane Foam None 2" SPUF 4 Ply BUR with Aggregate surface (1<sup>st</sup> Roof) Wood



JBarnes@tremcoinc.com • www.tremcoroofing.com



<b>DEFICIENCIES NOTED:</b>		Failed Details at penetrations, caulking
	-	Thermal bridging of fasteners
	-	Checkering of membrane waterproofing
	-	Ponding water
	-	Failing seams of membrane
	-	Active Leaks and existing repair areas
	-	Active water infiltration throughout Single Ply
		and SPUF Roofs

- Wet Insulation (1,950 sq.ft.)

**INSPECTOR COMMENTS:** Due to the visual and diagnostic analysis I am providing Port of Benton with a variety of options depending on the roof area and configuration.

I have categorized Area 4, 6, & 7 as a replacement or overlays due to drainage, ponding issues, wet insulation and overall conditions. Areas 1, 8 & 9 fall into a restoration category due to the membrane wear, wet insulation and deficient waterproofing details. Areas 2-3 & 5 are all in fair to good condition and can be scoped for a maintain category which can provide new waterproofing details to be applied in specific areas to ensure the roof stays watertight and in good condition.

All areas of wet insulation must be removed and replaced in a like-kind profile before restoration can take place. All replacement and restoration scopes are listed below and asbestos testing must take place before the removal of any job site materials. The following process includes; all specifications and drawings, on-site management, pre-bid, pre-construction and progress meetings, final inspection, project closeout book with QA Warranty and built-in inspection.

## Replacement Options Areas 4, 6 & 7 (30,394 sq.ft.):

<u>TREMPLY KEE, TPO or TPA Membrane-Fully Adhered</u>: Provide a site-specific safety plan prior to the start of construction. Remove the existing systems down to the structural wood deck with the exception of leaving AREA Gravel surface BUR. Sweep and broom off all loose gravel for a consistent surface and dispose of all material legally. Mechanically attach a  $\frac{1}{4}$ "-  $\frac{1}{2}$ ", Tapered Polyisocyanurate Insulation system to promote drainage. Mechanically attach the entire insulation package with plates and screws to the structural wood deck with 1-1/2" of penetration through the structural deck by using Tremco's mechanically fastened



pattern. Install a  $\frac{1}{2}$ " primed densdeck cover board in low-rise foam over the insulation package with a <sup>1</sup>/<sub>2</sub>" bead pattern of 12" O.C.-field, 9" O.C-perimeters. and 6" O.C.-corners. Fully adhere a TREMPLY FB 60-MIL field sheet in TREMPLY FB Bonding Adhesive across the entire roofing system at 90 sq.ft. per gallon to the substrate. Install a TREMPLY Non-FB on all curbs and walls in TREMPLY KEE Bonding Adhesive at a rate of 50 sq.ft. per gallon to substrate and back of the sheet. Tack off all base flashings using a termination bar and provide new, metal counter flashing. On all parapets, take the membrane up and over the wall and cleat off on the back side. Heat weld all seams. Raise all curbs and perimeter edges as needed with treated wood nailers. Provide all new perimeter edge metal and standing seam metal coping caps over the existing parapet walls per SMACNA and Tremco details. Provide all new 6" box gutters and downspouts in the specified areas to catch water from the tapered system. Provide a 2-year contractor warranty. Provide a 20-year Tremco QA Warranty with inspection and maintenance on years 2, 5, 10, 15 & 20. NOTE: This system can also be installed by mechanically attaching which would eliminate the adhesive material and additional labor to install.

### Restoration Options Areas 1, 8 & 9 (38,556 sq.ft.):

Geogard Restoration System (Good-): Set up a site-specific safety plan prior to the start of construction. Remove all wet insulation and replace in a like-kind profile based off the diagnostic scan result. For all saturated insulation--Make a horseshoe cut on the down slope side of the membrane and fold back during the removal of wet insulation and replace in a like-kind profile. Re-attach the membrane and strip in with peel and stick tape prior to restoring the roofing system. **NOTE:** An acceptable repair for intermittent wet areas that just have signs of condensation can be to install breather vents at the membrane level. Make all necessary repairs to all loose areas of the membrane by cutting and strapping the system with fasteners and peel and stick. Clean the existing membrane with a hotsy pressure washer to remove all dirt and debris to an acceptable state and blow off any remaining debris. Apply Geogard Base Coat over all seams, penetrations and drains with polyester reinforcement until fully saturated at 2 gallons per 100 sq.ft. Apply Geogard Base Coat over the entire roof at 2 gallons per 100 sq. ft. Allow to dry. Apply Geogard Top Coat over Base Coat at 1<sup>1</sup>/<sub>2</sub> gallons per 100 sq. ft. **NOTE:** If the top coat is not applied over the base coat within 72-hours, the base coat must be re-primed. Provide a 12-year Tremco QA Warranty with inspection and maintenance on years



2, 5 & 10. This system can be restored indefinitely for the lifecycle of the building.

AlphaGuard- Non-Reinforced System (Better): This is a Fluid Applied, BIO**based Urethane System with Zero Odor.** Set up a site-specific safety plan prior to the start of construction. Remove all wet insulation and replace in a like-kind profile based off the diagnostic scan result. For all saturated insulation--Make a horse-shoe cut on the down slope side of the membrane and fold back during the removal of wet insulation and replace in a like-kind profile. Re-attach the membrane and strip in with peel and stick tape prior to restoring the roofing system. **NOTE:** An acceptable repair for intermittent wet areas that just have signs of condensation can be to install breather vents at the membrane level. Make all necessary repairs to all loose areas of the membrane by cutting and strapping the system with fasteners and peel and stick. Clean the existing membrane with a hotsy pressure washer to remove all dirt and debris to an acceptable state. Allow to dry and blow off any remaining debris before applying the primer application. Apply AG Bio WB Primer at a rate of 1 gallon per 250 sq.ft. and allow to cure. Primer must be re-applied if the base coat application is not applied within 24 hours. Apply AlphaGuard BIO Base Coat with catalyst after mixing for 2-4 minutes in the bucket over the entire roof at 3 gallons per 100 sq. ft. Embed PermaFab reinforcing fabric at all seams, drains and penetrations. Back roll until full saturation. Apply AlphaGuard BIO Top Coat after mixing catalyst for 2-4 minutes over Base Coat at 2 gallons per 100 sq. ft. Allow to cure. **NOTE:** If the AG Bio Top Coat is not applied over the base coat within 72-Hours, the base coat ure than must be re-primed with Geogard Primer at a rate of 1 gallon per 250 sq.ft. Provide a 20-year Tremco QA Warranty with inspection and maintenance on years 2, 5, 10 & 15. Add 300' of non-skid walkway application as an option. **NOTE:** At the end of the warranty term, the system can be cleaned and primed with another application of Top Coat for an extended warranty.

<u>ALPHAGUARD BIO Urethane Fully-Reinforced System (Best)</u>: Set up a sitespecific safety plan prior to the start of construction. Remove all wet insulation and replace in a like-kind profile based off the diagnostic scan result. For all saturated insulation--Make a horse-shoe cut on the down slope side of the membrane and fold back during the removal of wet insulation and replace in a likekind profile. Re-attach the membrane and strip in with peel and stick tape prior to restoring the roofing system. **NOTE:** An acceptable repair for intermittent wet areas that just have signs on condensation can be to install breather vents at the



membrane level. Cut and splice all loose membrane on parapets and vertical to allow a smooth surface to restore. Clean the membrane with the RoofTec cleaning system or a hotsy pressure washer. Allow to dry and blow off any remaining debris. Prime the existing system with AlphaGuard WB Primer at a rate of 1 gallon per 250 sq.ft. Install AlphaGuard BIO base coat on the entire roofing system at 3 gallons per 100 sq.ft. Embed Permafab Polyester reinforcing fabric throughout the entire roofing field, penetrations and drains. Back roll for full saturation and allow to cure. Install AlphaGuard BIO Top Coat over entire roofing system at a rate of 2 gallons per 100 sq.ft. Allow to cure. Install non-skid granular walkways for 300 linear feet in specified areas of the roof. All existing metal details will stay in place. Provide new caulking details as need. Install 250' linear feet of non-skid walkways. Provide a 20-year Tremco QA Warranty with maintenance and inspections on years 2, 5, 10, 15 & 20. **NOTE:** At the end of the warranty period, this system can be cleaned, primed and have a re-application of top-coat applied to extend the warranty for the life-cycle of the building.

<u>Maintain Option Areas 2-3 & 5 (26,717 sq.ft.)</u> Detail all drains and penetrations with AG Bio Base Coat and reinforcing and allow to cure. Apply AG Bio Top Coat over all base coat repair areas and allow to cure. Assess all seams and apply product as needed. Apply all new sealants at metal details, coping, termination bars and pipe boots as needed. Provide a 5-Year material warranty.

## **BUDGET ESTIMATE:**

Area 4, 6 & 7 Roofing Replacement/Overlay:	\$ TBD
Area 1, 8 & 9 Roofing Restoration:	\$ TBD
Area 2, 3 & 5 Maintain or Restoration:	\$ TBD

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