

# ROANOKE COUNTY PUBLIC SCHOOLS WAREHOUSE

## **ARCHITECTURAL**

The warehouse structure is a fairly new, pre-engineered metal building. The facility is in good condition, requiring basic maintenance and monitoring. The exterior panels of the building have been damaged by mowing activities. Staff indicated that the mowing is performed under contract and that the companies have been warned about the damage. If this continues, the mowing company should be held liable for any material failures that may occur.

Existing downspouts are piped onto grade. These HDPE corrugated pipes are placed in areas that would inhibit mowing activities. These could be piped underground in any future facility work.

### **Exterior Finishes**

Exterior Cladding:

Exterior walls are pre-finished metal building panels. Finish is in good condition. The lower ends of the panels have been bent by mowing activities, but no failures were observed. Finish and metal condition should be monitored in these areas.

Roof:

The roof system is a single sloped, pre-finished metal building system. Translucent skylights were in good condition, but should be monitored for any signs of degradation or leaking. No leaks were observed.

Windows:

Windows were standard aluminum framed systems as supplied by the pre-engineered metal building supplier. These have insulated glazing and were in good condition.

Exterior Doors:

Hollow metal personnel doors were in good condition, but finishes were chalking and fading. Repaint these doors as required. Overhead doors were observed to be in good condition. Bollards have been installed to prevent damage to tracks.

### **Interior Finishes, Fixtures & Equipment**

(See assessment tabulations for interior finish conditions).

Storage areas have exposed structure and vinyl insulation facings. The office areas have gypsum wall board partitions, vinyl composition tile floors and suspended acoustical tile ceilings. Wood doors in hollow metal frames were used throughout the maintenance area. These materials are all in good condition with minimal damage. Regular maintenance is recommended.

The break room is outfitted with wood casework with plastic laminate countertops. There is no accessible work station.

Concrete slab cracking was observed, but these are typical, minor cracks and present no issues for the facility.

### **Accessibility**

The building complies with accessibility standards in most cases. Accessible work stations can be installed at the breakroom.

### **Safety and Security**

The building is equipped with cameras and locking mechanism. The large freezer is locked by a separate key and is in a reasonably secure location. No students are present at the facility.

*End of RCPS Warehouse Architectural Narrative*

## **PLUMBING/FIRE PROTECTION**

### **Plumbing Fixtures:**

Water Closets: Water closets observed were floor mounted vitreous china with manual type flush valves. The water closets are from 2006 and seemed to be in good working condition. The flush valves are expected to have a useful life of 12 years and the water closets are expected to have a useful life of 30 years.

Lavatories: Lavatories observed were wall mounted vitreous china with manual type faucets. The lavatories are from 2006 and seemed to be in good working condition. The lavatories are expected to have a useful life of 30 years.

### **Water Heaters:**

Domestic water heating is done by an electric water heater located above the ceiling which was installed in 2006. The domestic water heaters are expected to have a useful life of 15 years.

### **Piping:**

Water: Copper with fiberglass insulation

Sanitary Piping: Cast iron and PVC

Gas Piping: Black steel

### **Domestic Water Entrance:**

The building is served by a 1-1/2" cold water line that is assumed to be from a municipal system. There is a backflow preventer which was installed in 2006. The backflow preventer is expected to have a useful life of 30 years.

### **Fire Protection:**

The building is not sprinkled.

### **Recommendations:**

None.

*End of RCPS Warehouse Plumbing/Fire Protection Narrative*

## **MECHANICAL (HVAC)**

### **Heating:**

The office portion of the warehouse is heated by a heat pump. The heat pump is 10 years old and has a useful life expectancy of 18 years. The warehouse is heated by gas-fired unit heaters. The heaters are 10 years old and have a useful life expectancy of 13 years.

### **Ventilation:**

Ventilation is provided to the warehouse by exhaust fans. The exhaust fans are 10 years old and have a useful life expectancy of 25 years.

### **Air Conditioning:**

The office portion of the warehouse is cooled by a heat pump. The heat pump is 10 years old and has a useful life expectancy of 18 years

### **Piping:**

There is black steel gas piping which is 10 years old and has a useful life expectancy of 30-40 years.

### **Controls:**

There are no centralized building automation controls.

### **Recommendations:**

None.

*End of RCPS Warehouse Mechanical Narrative*

## **ELECTRICAL**

### **Main Gear:**

Main Panelboard: The main panelboard is a appears to be a 400 amp, 3 phase, 4 wire, 208Y/120 volt Cutler Hammer, service entrance rated switchboard. The existing switchboard is original to the building from 2006 and has space and spares available. The existing panel was not accessible because of storage that was blocking access.

Recommendation: Remove existing storage in working clearance of the panelboard to maintain accessibility.

### **Transformers:**

Transformers: No transformers installed.

### **Panelboards:**

Distribution and Branch Circuit Panelboards: The other panelboards were Cutler Hammer and installed in the original construction. These appear to be in good condition and do not require maintenance.

Recommendation: Maintain accessibility.

### **Cabling:**

Cabling: Much of the building wiring is original. All wiring is in conduit and in good condition.

Recommendation: No recommendations.

### **Light Fixtures:**

Light Fixtures: The light fixtures consist of primarily 2x4 flat lens fixtures with T8 lamps, and 1x8 fixtures with T8 lamps. The T8 lamps are current technology, and meet the current needs of the warehouse. Various emergency wall pack light fixtures are also utilized. Lamps are likely changed as lamps burn out; however, many of the ballasts and optics have likely not been changed and have exceeded their useful life.

Recommendation: Replace lamps and ballasts as needed. Newer LED lights are becoming very popular for warehouses because they can be controlled with occupancy sensors and add additional energy savings. Replacements with LED lights when it is time for a complete fixture replacement are recommended.

### **Lighting Controls:**

Lighting Controls: Lighting controls throughout the building consist of toggle switches controlling fixtures within an area.

Recommendation: Add automatic lighting controls to the warehouse area for additional energy savings.

### **Public Address System:**

Public Address System: The public address system is currently a Rauland headend system with speakers located throughout.

Recommendation: Retain existing PA system and maintain the system by replacing speakers.

### **Security System:**

Security System: There was limited security installed on the warehouse. Many of the garage doors remained opened and this is probably common. The main office area did have access control and electric locks; however, access to the whole building was not limited.

Recommendation: The question of necessity of a security and limited access system is up to the Owner's discretion. No recommendations.

### **Camera System:**

Camera System: A building wide IP based camera system is installed. It is current technology that meets the current needs.

Recommendation: In renovations and additions, provide additional cameras and digital video recorders as required for additional areas with desired coverage. To enhance security, additional cameras could be added to provide a deterrence or capture someone who was not authorized on the property.

### **Data System:**

Data System: The Data system consists of newer Category 6 and 5e cable. The building is equipped with wireless internet through Cisco access points throughout. The IT equipment was located near the main electrical panelboard.

Recommendation: The IT equipment was not in a conditioned space. Depending on the temperature within the warehouse, it may be beneficial to relocate the IT equipment to a self-cooled cabinet to maintain better dust and temperature control.

**Fire Alarm System:**

Fire Alarm System: None installed.

**Generator:**

Generator: None installed

**Site Lighting:**

Site Lighting: The site lighting consists of building mounted lights for parking areas.

Recommendation: Replace lamps and ballasts while fixtures are operating. When fixtures need replaced, look at LED options to provide instant on and better energy performance.

**Phone System:**

Phone System: The phone system consists of a new Cisco IP phone system. Each classroom has a phone connected through the PA system. The system is operational.

Recommendation: It is possible to retain and expand the existing phone system through additions and renovations.

*End of RCPS Warehouse Electrical Narrative*

## **CIVIL**

### **Traffic Circulation**

Parking: 12 striped parking spaces are provided with 1 designated ADA space. Day to day parking is adequate for faculty / staff / visitors.

Service: There is adequate maneuvering area for deliveries and service vehicles.

Fire Access: Fire apparatus have adequate access around the building.

Adjacent Roadways: Adjacent roadway is a minor 2 lane road with light traffic. Sight distance is good in both directions.

### **ADA Accessibility**

Parking: There is 1 space designated as ADA parking. It is not designated as van accessible, but the aisle is large enough to accommodate van accessibility.

Signage: No signage is provided.

Recommendation: Provide ADA compliant signage with van accessible and fine designation.

Access to all areas: There is ADA access to all areas on site.

### **Parking Areas, Driveways, and Sidewalks**

Asphalt Pavement: Mostly good except for the area in front of the dumpster is rutted and cracked.

Recommendation: Replace rutted section of asphalt. Consider concrete dumpster pad area.

Concrete Pavement: Good condition.

Concrete Walks: Good condition.

Stairs, Ramps, and Railings: Metal stairs and handrails at loading dock beginning to rust.

Recommendation: Monitor metal stair and handrail and replace when rust causes structural issues.

Concrete Curb and Gutter: Good condition.



Guardrail, Parking Bumpers, and Miscellaneous: Pipe gate at entrance is beginning to rust.

Recommendation: Sand, prime, and paint pipe gate.

Fire Lane: There is no designated fire lane present.

### **Utilities**

Fire Lines and Hydrants: Poor fire hydrant coverage with no spacing. The closest fire hydrant is located in parking lot of adjacent property. No paved fire lane around building, but fire truck access is present. No fire department connection or post indicator valve.

Recommendation: Consider planning for adding a hydrant for fire protection coverage.

Domestic Water System: Unclear from as-builts and field investigation as to where water enters the property and the building. Staff indicated no issues with water pressure or discoloration. Assuming fair condition based on age.

Sewer System: Warehouse elevation is below the sewer trunk line so a small grinder pump station pumps waste towards the detention pond. The pump station is malfunctioning and leaked during the field investigation.

Recommendation: Maintain and repair pump station.

Natural Gas System: Gas meter is located around the side of the metal building and in a non traffic area. The meter is in fair condition, but functional and shows signs of deterioration and rust.

Recommendation: Contact gas company to inspect condition of meter.

Electric: Electric service is provided via overhead poles through to the property to the hill above the warehouse. Service is taken underground to the building. Transformers are mounted on the service pole and the meter is mounted on the building.

Site Lighting: No site lighting at the warehouse. Building mounted lights illuminate entrances.

Recommendation: Provide site lighting for safety and security.

### **Grading and Drainage**

Storm Water System: Roof drains and downspouts daylight around the building and have caused major erosion. Drop inlets with dome grates collect site runoff and convey

to detention basin to the east shared with Administration building and adjacent properties.

Recommendation: Install underground piping to collect roof runoff at downspouts and direct it to adjacent storm structures.

Detention / Retention Ponds: Detention pond is in fair shape, but too overgrown to determine proper outlet protection or signs of erosion. The detention pond has not seen any maintenance.

Recommendation: Provide general maintenance to outlet structures, berm and detention pond.

Slopes, Ponding, and other Drainage Issues: Major erosion on slope at northwest building corner due to concentrated runoff and major erosion due to downspout discharge.

Recommendation: Install underground piping to collect roof runoff at downspouts and direct it to adjacent storm structures. Provide rip rap at eroded swale in hillside to dissipate energy from concentrated runoff.

### **Site Features**

Vegetative Landscaping: No trees or shrubs at building. Other vegetation is natural.

Lawns: Turf areas in good condition. Significant areas of erosion on backside of building noted. Specifically, at downspouts and a natural drainage channel from the upper maintenance building associated with the RCPS motor pool. Laydown area for supplies very weedy.

Recommendation: Repair and reseed bare areas. Provide erosion control mat to protect seed in likely erodible areas.. Clear overgrowth and weeds from laydown area. Consider converting this area to VDOT 57 aggregate stone for ease of maintenance.

Signage: ADA signage is not provided at designated parking.

Recommendation: Provide code compliant ADA signage.

*End of RCPS Warehouse Civil Narrative*

<b>Project Name: RCPS Facilities Assessment</b>		<b>Comm. #: 1637</b>
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<b>Subject: RCPS Warehouse</b>	<b>Total Pages:</b>
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<b>Copies To:</b>	<b>Report Prepared By: AHW</b>

**General:**

Pre-Engineered Metal Building. Concrete slab. No liner panels in warehouse area. Admin area is built out using GWB partitions. Building is in good condition. Mowing activities have bent a lot of the wall panels at points less than 1' above grade. Staff informed us that the mowing is contracted. Rein in the contractor, there is no excuse for this damage. Staff noted no building issues. 1" insulated glazing in Aluminum windows. Typical PEMB window system.

**Exterior:**

Damaged wall panels from mowing activities. Paint gas service entrance piping. Existing downspouts splash on grade. No splash blocks present. Some have corrugated HDPE piping leading to a small swale. At the bases of the no piped downspouts, some holes have formed. Roof could not be accessed. Viewed from above, roof appears to be in good condition. Cloth awning has lost some color. Seams may be separating on top. Continue to monitor condition. Bollards have rusted in places. Repaint as required. HM doors have chalking paint on exterior. Repaint as required.

**Bays:**

Concrete floor has minor cracking. No other damage. Large refrigeration unit stored in building. Was locked. Exterior of it is in good condition.

**Office Build-out:**

GWB Walls in good condition. VCT in good condition. HM Frames with wood doors in good condition. SATC in good condition. One small water stain in second office.

**Break room:**

Stained wood Casework in good condition. PLAM Counter top in good condition. Concrete floor has small cracks but is in good condition. SATC in good condition. GWB in good Condition.

**RCPS Warehouse Architectural Condition Assessment**  
Reference Building Owners and Managers Association International (BOMA)  
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
<b>Architectural</b>					
Pre-Engineered Metal Building System	4	25	10	15	
Interior doors	5	20	10	10	
Exterior doors	4	50	10	40	
Door hardware	5	7	10	0	
Vinyl floor tile	5	12	10	2	
Exposed concrete floors	5	50	10	40	
Exterior windows	5	30	10	20	
Suspended acoustical tile ceilings (lay-in)	4	25	10	15	
Interior wall finishes (paint)	4	5	10	0	
Casework	4 N/A		10	10	
Window treatments	5 N/A		10	5	
Toilet accessories	5 N/A		10	5	
<b>Condition Categories</b>					
<b>1 Immediate replacement required, life safety concern</b>					
<b>2 System has reached it's useful life</b>					
<b>3 Major repair or modifications required, useful life remaining</b>					
<b>4 Minor repair required</b>					
<b>5 General maintenance required</b>					

**RCPS Warehouse Mechanical Plumbing Condition Assessment**  
Reference Building Owners and Managers Association International (BOMA)  
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
<b>Mechanical</b>					
Boiler	N/A				
Chiller or Cooling tower	N/A				
Mechanical piping (gas)	5	30-40 years	10 years	20-30 years	
Refrigerant piping	5	30 years	10 years	20 years	
Duct	5	30 years	10 years	20 years	
Outdoor air units	N/A				
Terminal units (Unit Heaters)	5	13 years	10 years	3 years	
Package units	N/A				
Controls	N/A				
Exhaust fans	5	25 years	10 years	15 years	
Dust collection	N/A				
Science fume hoods	N/A				
Dust collection system (shop)	N/A				
Kitchen hood	N/A				
<b>Plumbing</b>					
Plumbing fixtures and controls	5	30 years	10 years	20 years	
Floor drains	5	30 years	10 years	20 years	
Water heaters	5	15 years	10 years	5 years	
Pumps	5	15 years	10 years	5 years	
Potable water piping & valves	5	30 years	10 years	20 years	
Sprinkler system	N/A				
Back-flow preventer	5	30 years	10 years	20 years	
Service line & meter (size appropriate)	5	30 years	10 years	20 years	
Wall and yard hydrants	N/A				
Eye wash stations	N/A				
Emergency showers	N/A				
<b>Condition Categories</b>					
<b>1 Immediate replacement required, life safety concern</b>					
<b>2 System has reached it's useful life</b>					
<b>3 Major repair or modifications required, useful life remaining</b>					
<b>4 Minor repair required</b>					
<b>5 General maintenance required</b>					

**RCPS Warehouse Electrical Condition Assessment**  
Reference Building Owners and Managers Association International (BOMA)  
Preventative Maintenance Guidebook

System/Components	Average Useful Life	Current Age	Expected Life Remaining	Condition Category	Notes
<b>Electrical</b>					
Main switch gear	40	10	30	5	
Panelboards	30	10	20	5	
Cabling	40	10	30	5	
Conduit/raceway	40	10	30	5	
Light fixtures	20	10	10	5	
Lighting controls	30	10	20	5	
Public address system - Headend	30	10	20	5	
Public address system - Devices	30	10	20	5	
Security system	10	5	5	5	
Camera system	10	5	5	5	
Data system	15	5	10	5	
Site lighting	20	10	10	2	
Classroom media systems (TV, projector, etc.)	10	5	5	5	
Phone system	10	5	5	5	
<b>Condition Categories</b>					
<b>1 Immediate replacement required, life safety concern</b>					
<b>2 System has reached it's useful life</b>					
<b>3 Major repair or modifications required, useful life remaining</b>					
<b>4 Minor repair required</b>					
<b>5 General maintenance required</b>					

**RCPS Warehouse Civil Condition Assessment**  
Reference Building Owners and Managers Association International (BOMA)  
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
<b>Civil</b>					
Asphalt pavement	4	15 years	Unknown	10 years	
Asphalt walks	N/A	N/A	N/A	N/A	
Concrete pavement	5	30 years	Unknown	25 years	
Concrete walks	5	30 years	Unknown	25 years	
Stairs	4	15 years	Unknown	10 years	
Ramps	N/A	N/A	N/A	N/A	
Railings	4	15 years	Unknown	10 years	
Concrete curb and gutter	5	30 years	Unknown	25 years	
Concrete / Brick Pavers	N/A	N/A	N/A	N/A	
Guardrail, Parking Bumpers, Misc.	4	Varies	Unknown	10 years	
Fire lane	N/A	N/A	N/A	N/A	
Fire lines and hydrants	3	40 years	Unknown	0-5 years	
Domestic Water system	4	40 years	Unknown	5-10 years	
Sewer system	3	40 years	Unknown	0-5 years	
Natural Gas system	4	40 years	Unknown	5-10 years	
Electrical System	5	25 years	Unknown	15-20 years	
Exterior Lighting	3	25 years	Unknown	0 years	
Storm water system	4	40 years	Unknown	15-20 years	
Detention / Retention ponds	4	Life	Unknown	15-20 years	
Stormwater Management BMP's	N/A	N/A	N/A	N/A	
Surface drainage and grading	3	N/A	N/A	N/A	
Vegetative landsaping	5	Life	Unknown	Varies	
Lawns	4	Life	Unknown	Life	
Fencing and gates	N/A	N/A	N/A	N/A	
Signage	4	10 years	Unknown	10 years	
Flagpoles	N/A	N/A	N/A	N/A	
Site furnishings	N/A	N/A	N/A	N/A	
Awnings / Canopies	N/A	N/A	N/A	N/A	
Site retaining walls	N/A	N/A	N/A	N/A	
Accessory structures	N/A	N/A	N/A	N/A	
<b>Condition Categories</b>					
<b>1 Immediate replacement required, life safety concern</b>					
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