

Citywide Facility Condition Assessment

Report of

Facility Condition Assessment

For City of Novato Downtown Recreation Center 950 Seventh Street, Novato, CA



March 4, 2013

Provided By:

Faithful+Gould, Inc.

Provided For:

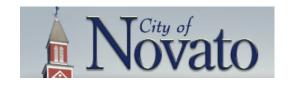


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SECTION 1 - EXECUTIVE SUMMARY

INTRODUCTION

In accordance with the agreement held between City of Novato, dated January 18, 2013 and Faithful+Gould Inc, this completed report provides a comprehensive Facility Condition Assessment of the Downtown Recreation Center located at 950 Seventh Street, Novato, CA (The Facility).

This report provides a summary of the facility information known to us at the time of the study, the scope of work performed, an equipment inventory, evaluation of the visually apparent condition of the Property and an expenditure forecast of expenditures anticipated over the next 20 years. The expenditure forecast does not account for typical planned maintenance items such as changing filters to fan coil units and only considers deficiencies above a \$500 aggregated value.

Our cost rates to produce life cycle and replacement cost estimates are based on our knowledge of the local regional market rates. Our line item costs assume that the work will be undertaken by either in-house or by direct sub-contract labor. Identified recommended works that are required during the twenty-year study period have been included with an allowance of 25% for professional fees and general contractor overhead/profit and management costs (where applicable).

Chart EX-1 provides a summary of the anticipated primary expenditures over the 20 year study period. Further details of these expenditures are included within each respective report section and within the 20 year expenditure forecast, in Appendix A.

The report also calculates the Facility Condition Index (FCI) of the building based upon the calculated FCI. Further discussion of the Facility Condition Index is detailed in the sections below.

This report was completed in general accordance with the ASTM E2018-08 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

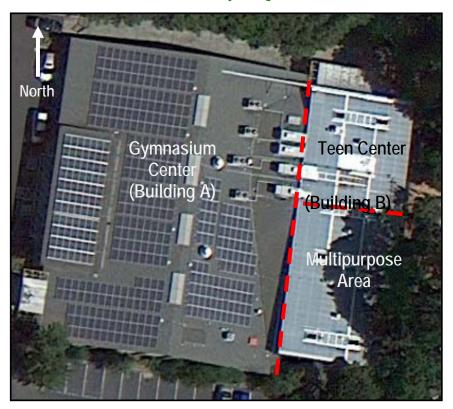
PROJECT DETAILS

On January 23, 2013 Mr. Andrew McClintock of Faithful+Gould visited the facility to observe and document the condition of the building and the site components. During our site visit, Faithful+Gould was assisted by Nick R. Reposa, Custodial Supervisor for the City of Novato.

Overview of the Building and Site



Overview of the Facility Configuration



BUILDING SUMMARY

Table EX-1 Facility Details

BUILDING NAME:	Downtown Red	creation Center	LAT/LONG:	38°.06′30″N / -122°.34′39″W			
ADDRESS:	950 Seventh Street, Novato, CA		OCCUPANCY STATUS:				
7.BBRLOO!	94945		OCCUPIED 🖂 VACA	ANT 🗌			
HISTORIC DISTRICT:	YES 🗌	NO 🖂	HISTORIC BUILDING:	YES 🗌		NO 🖂	
GROSS SQUARE FOOTAGE OF BUILDING:	24,516		GROSS SQUARE FOOTAGE OF LAND:	49,600 (estimated) Whole Facility			
CURRENT REPLACEMENT VALUE:	\$8,425,610 (Taken from the City PEPIP-CA Property Schedule)		YEAR OF CONSTRUCTION: Pre-1980's				
BUILDING USE:	Community Us	se	NUMBER OF STORIES:	NUMBER OF STORIES: 2 (inc mezzanine			

BUILDING DESCRIPTION

Downtown Recreation Center is located at 950 Seventh Street and was originally built in the Pre-1980's and converted to the current use in 1996. The building contains a gymnasium area, related offices, restrooms and passenger elevator which provides ADA access to a viewing mezzanine level of building A and a teen center, meeting rooms and offices, and a large open recreational area at the rear of building B.

The facility contains two different constructions, building A has a glulam girder and beam roof construction supported by perimeter reinforced concrete columns and central steel posts, and is encapsulated with reinforced concrete tilt-up wall panels. Building B has a structural steel rigid frame construction encapsulated with preformed metal wall panels. The roof coverings consist of asphalt shingle at the steep-sloped sections and tar and gravel BUR coverings at the low-sloped areas of building A; building B contains preformed metal roof panels. Both sections of the facility contained cast-in-place reinforced slab-on-grade concrete floor slabs at the first floor level; in addition building A also contains a mezzanine viewing area which is of a wood constructed upper floor level. Curtain walling systems consisted of aluminum single pane units present at the main elevation and aluminum storefront systems incorporating entrance doors present at both entrances to each section of the facility. Doors consisted of a swing operated glazed entrance doors, roll-up over head door and a hollow metal personnel door.

The interior finishes of the building contained a vinyl, wood panel and carpet







floor coverings, painted walls and ceilings, ceramic floor and walls and suspended ceiling grid systems.

The HVAC for the building is provided through four rooftop air handler units and five split-systems consisting of four outdoor air-cooled condensing units with indoor air handling units, as well as one outdoor heat pump and interior furnace. Hot water is provided by one domestic water heater, which has a capacity of 20 Gallons.

The Main Distribution Panel is an Cutler Hammer unit that is rated at 208Y/120 volts at 1,000 amps. The interior lighting is provided by surface mounted and hung 2' x 4' strip fluorescent fixtures with T8 32 watt bulbs and electronic ballasts.

The building contains wet-pipe sprinkler, fire alarm and intruder security alarm systems. There is no generator at the building.





BUILDING EXPENDITURE SUMMARY

The building expenditure summary section provides an executive overview of the findings from the assessments. Chart EX-1 provides a summary of anticipated expenditures over the study period. In addition, we have scheduled key findings highlighting key items of interest and their anticipated failure year. Further details of these expenditures are included within each respective report section and within the expenditure forecast, in Appendix A of this report. The results illustrate a total anticipated expenditure over the study period of circa \$1,417,384.

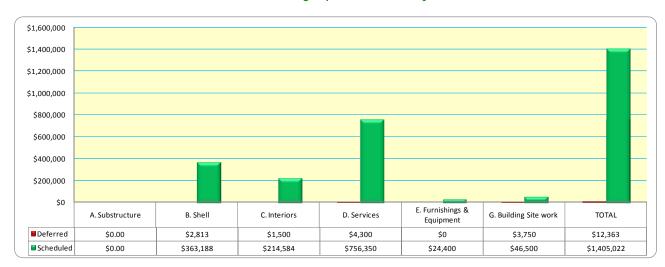


Chart EX-1 Building Expenditure Summary 1, 2, 3 & 4

KEY FINDINGS

- ┰ B Shell: Replace roof coverings at a combined estimated cost of \$337,275 in year 2014
- ╁ D Services: Renovate restrooms at a combined estimated cost of \$80,000 in year 2020
- ╬ D Services: Replace split-systems at a combined estimated cost of \$117,780 in year 2024
- + D Services: Replace air handler units at a combined estimated cost of \$136,500 in year 2020
- ╬ D Services: Replace rooftop solar modules at an estimated cost of \$163,500 in year 2031
- ╬ D Services: Replace sprinkler heads at an estimated cost of \$25,742 in year 2022
- D Services: Replace telephone, fire alarm, security and data systems at a combined estimated cost of \$156,880 in year 2022

All costs presented in present day values
 Costs represent total anticipated values over the 20 year study period

³ An allowance of 25% has been included for professional fees and general contractor overhead/profit and management costs ⁴ ADA Compliance was not examined as part of this project. The costs do not factor in bringing the recommended expenditures into compliance with current ADA rules.

Chart EX-2 illustrates a summary of yearly anticipated expenditures over the cost study period for the building. A detailed breakdown of anticipated expenditures is contained within Appendix A of this report.

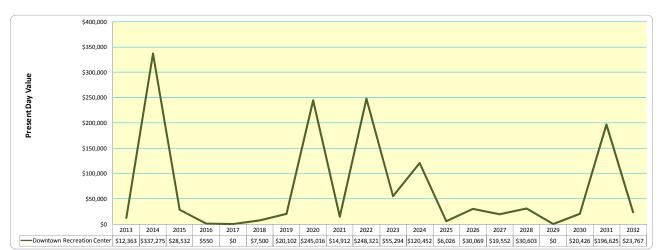
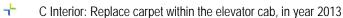


Chart EX-2 Expenditure Forecast 1, 2, 3 & 4

This chart highlights significant expenditure for Downtown Recreation Center within years 2014, 2020, 2022 and 2031 primarily due to systems which are expected to reach their Estimated Useful Life (EUL) and therefore due for replacement. The line represents the total expenditure for each year, and is a useful tool to indicate the magnitude of the impeding issues the building will face.

RECOMMENDED WORKS UNDER \$500

We have scheduled below recommended works that have not been included in the expenditure forecast or combined with other similar works that either fall below the threshold of \$500 or are recommended as industry best practice, represent efficiencies in maintenance, operations or energy.



All costs presented in present day values
 Costs represent total anticipated values over the 20 year study period

³ An allowance of 25% has been included for professional

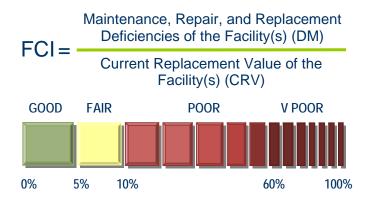
fees and general contractor overhead/profit and management costs

⁴ ADA Compliance was not examined as part of this project. The costs do not factor in bringing the recommended expenditures into compliance with current ADA rules.

INTERPRETING RESULTS

In this report we have calculated the Facility Condition Index (FCI) for the facility; illustrating the likely condition of the systems and equipment should the required funding not be expended over the cost study period. The FCI is used in Facilities Management to provide a benchmark to compare the relative condition of a group of facilities. The FCI is primarily used to support asset management initiatives of federal, state, and local government facilities organizations.

The FCI is the ratio of accumulated Deferred Maintenance (DM) (total sum of required and recommended works) to the Current Replacement Value (CRV) for a constructed asset calculated by dividing DM by CRV. The range is from zero for a newly constructed asset, to one for a constructed asset with a DM value equal to its CRV. Acceptable ranges vary by "Asset Type", but as a general guideline the FCI scoring system is as follows:



The FCI is a relative indicator of condition, and should be tracked over time to maximize its benefit. It is advantageous to define condition ratings based on ranges of the FCI. There are a set of ratings: good (under 0.05 (under 5%)), fair (0.5 to 0.10 (5% to 10%)), and poor (over 0.10 (over 10%)) based on evaluating data from various clients at the time of the publication. Table EX-2 will help interpret the results:

Table EX-2 FCI Scoring System

Condition	Definition	Score	Percentage Value
GOOD	In a new or well maintained condition, with no visual evidence of wear, soiling or other deficiencies	0.00 to 0.05	0% to 5%
FAIR	Subject to wear, and soiling but is still in a serviceable and functioning condition	0.05 to 0.10	5% to 10%
POOR	Subjected to hard or long-term wear. Nearing the end of its useful or serviceable life.	Greater than 0.10	Greater than 10%
V-POOR	Subjected to hard or long-term wear. Has reached the end of its useful or serviceable life. Renewal now necessary	Greater than 0.60	Greater than 60%

If the FCI rating is 60% or greater then replacement of the asset/building should be considered instead of renewal.

Table EX-3 provides a calculation of the FCI for the building illustrating both the current condition of the building and the likely condition of the building should the required funding not be expended over the study period. The results of the study indicate that currently the building contains a GOOD facility condition index rating, therefore suggesting that the building is well maintained.

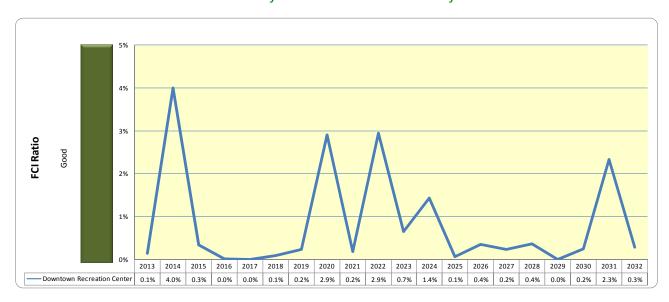
Table EX-3 Facility Condition Index

Building Name	FCI	Gross Square Foot (GSF)	CRV per GSF	Current Replacement Value (CRV)	Deferred Maintenance Value (DM) 1, 2, 3 & 4	FCI Ratio	Property Condition Rating
Downtown Recreation Center	Current FCI Ratio	24,516	\$344	\$8,425,610	\$12,363	0.1%	GOOD
Downtown Recreation Center	Year 20 FCI Ratio	24,516	\$344	\$8,425,610	\$1,417,384	16.8%	POOR

All costs presented in present day values

Chart EX-3 indicates the affects of the FCI ratio per year, assuming the required funds and expenditures ARE made to address the identified works each year. As explained, the building is in GOOD condition rating (below 5%) at the start of the study period and on a year by year basis stays in the GOOD condition rating throughout the study period.

Chart EX-3 Year by Year Effects of FCI over the Study Period



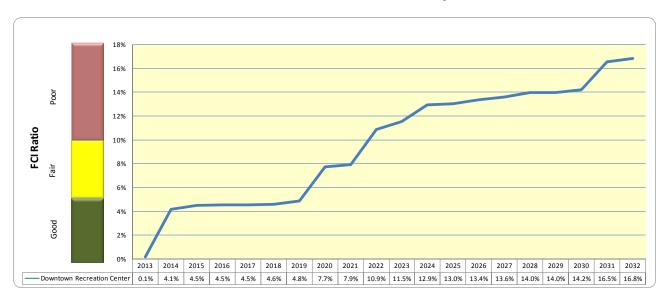
² Costs represent total anticipated values over the 20 year study period ³ An allowance of 25% has been included for professional

fees and general contractor overhead/profit and management costs

⁴ ADA Compliance was not examined as part of this project. The costs do not factor in bringing the recommended expenditures into compliance with current ADA rules.

Chart EX-4 indicates the cumulative effects of the FCI ratio over the study period assuming the required funds and expenditures are <u>NOT</u> provided to address the identified works and deferred maintenance each year. The results of the study indicate at this current time the building is well maintained, with a facility condition index rating within the GOOD condition; however this rating will fall into the FAIR condition rating in 2020, and then in 2022 it falls further into the POOR condition rating.

Chart EX-4 Cumulative Effects of FCI over the Study Period



PRIORITIZATION OF WORK

Faithful+Gould has prioritized the identified work in order to assist with analyzing the deficiencies found during the assessments. The following Priorities are shown below:

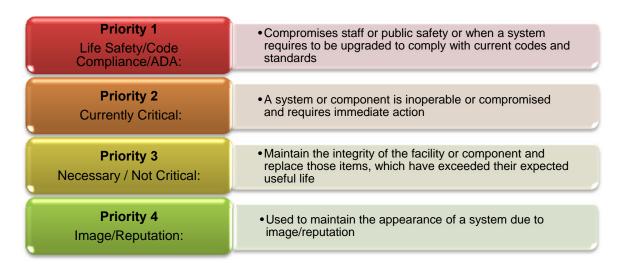


Chart EX-5 illustrates the breakdown of expenditure according the priority coding providing an opportunity to strategically plan and effectively direct funding to the highest priority.

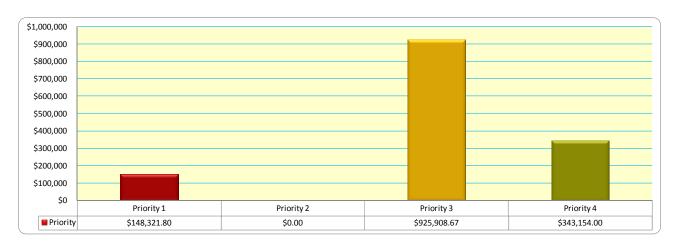


Chart EX-5 Cumulative Prioritization of Work

Priority 3 appears to require the most amount of expenditure in this study. This category illustrates that the work which needs to be undertaken is associated with necessary works to maintain the integrity of the building and replace equipment that has exceeded their EUL.

Chart EX-6 Year by Year Cumulative Prioritization of Work

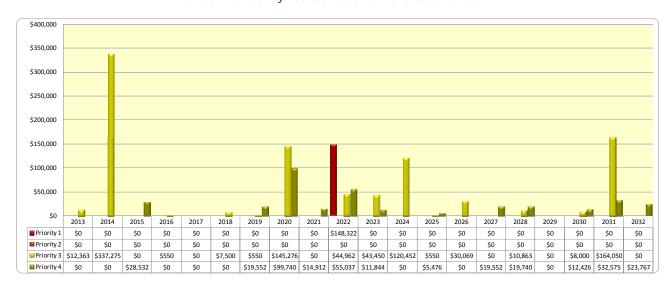


Chart EX-6 illustrates that there is one main expenditure year for Priority 3 coding, at the start of the study period.

PLAN TYPES

Faithful+Gould has prioritized the identified work according to the Plan Type or deficiency categories in order to assist with analyzing the deficiencies found during the assessments. The following Plan Types are shown below:

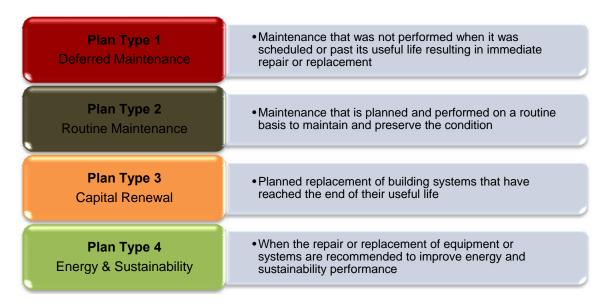


Chart EX-7 illustrates the breakdown of expenditure according to the Plan Type or deficiency categories providing an opportunity to strategically plan and effectively direct funding.

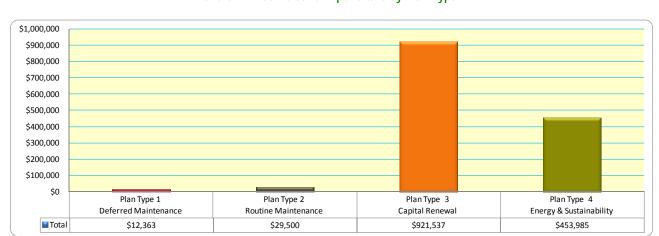


Chart EX-7 Cumulative Expenditure by Plan Type

Plan Type 3 – Capital Renewal appears to require the majority of the expenditure in this study.

Chart EX-8 illustrates the breakdown of expenditure per each year within the 20 year study period according to the Plan Type or deficiency categories.

\$400,000 \$350,000 \$300,000 \$250.000 \$200,000 \$150,000 \$100,000 \$50,000 \$0 2018 2017 2013 2014 2015 2016 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 Plan Type 1 Deferred Maintenance \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 Plan Type 2 \$0 \$0 \$550 \$0 \$7,500 \$550 \$0 \$0 \$0 \$3,750 \$0 \$550 \$0 \$0 \$8,050 \$0 \$8,000 \$550 \$0 Routine Maintenance ■ Plan Type 3 \$0 \$19,552 \$19,552 \$32,575 \$23,767 \$337,275 \$28,532 \$0 \$0 \$0 \$103,080 \$14,912 \$248,321 \$50,844 \$2,672 \$5,476 \$0 \$22,553 \$0 \$12,426 Capital Renewal Plan Type 4
Energy & Sustainability \$0

Chart EX-8 Yearly Expenditure by Plan Type

Chart EX-8 illustrates that there are two main expenditure years for Priority 3 coding, at the start and mid-term in the study period.

SECTION 2 - A SUBSTRUCTURE

A10 FOUNDATIONS

DESCRIPTION

The description of the respective structural systems for the building is based upon our review of available drawings, and our observation of exposed portions of the building structure. The drawings reviewed can be found in Appendix D.

A1010 STANDARD FOUNDATIONS

A1011 Wall Foundations

The exterior wall constructions are generally supported by reinforced concrete spread footings. The compressive strength of the concrete is unknown.

We understand that anew tumble pit (6'-0" deep) and elevator shaft (4'-6" deep) were incorporated within the floor construction of building A in circa 1996. They both consist of a reinforced concrete pit with 8" thick walls and 16" thick floor. The reviewed drawings detail that in both instances the concrete wall and floors are protected via a waterproofing membrane at the exterior side were it meets the compacted fill. For added protection we understand that there is a 2" sand base below each of the floor constructions.

A1012 Column Foundations and Pile Caps

The building has steel interior supporting posts at building A and perimeter steel columns at building B; we assume they both rest on reinforced concrete column foundations.

A1030 SLABS-ON-GRADE

A1031 Standard Slab on Grade

The first floor level within each of the buildings consisted of cast-in-place concrete slab-on-grade, reinforced with welded wire fabric. We assume that the floor slab was placed over a vapor barrier and compacted gravel fill, with the thickness of the slab being approximately 5" laid over a 2" sand bed 10 mil. Vapor barrier and 4" compacted crushed rock. The compressive strength of the concrete is unknown.

CONDITION

A1010 STANDARD FOUNDATIONS

A1011 Wall Foundations

The footings as well as the tumble and elevator pits are not visible due to their location below the exterior wall construction. However there is no deterioration to the wall constructions that they are supporting, therefore we assume them to be in good condition and free from defects.

A1012 Column Foundations and Pile Caps

The column foundations are assumed to be in good condition, as there are no signs of failure throughout the structure which they support or the surrounding concrete floor slab. We do not anticipate any expenditure during the study period.

A1030 SLABS-ON-GRADE

A1031 Standard Slab on Grade

The slab-on-grade was observed to be in good condition throughout the building. While the majority of the slab was not visible, there were no signs of undue settling or major cracks noted.

PROJECTED EXPENDITURES

No projected expenditures are identified for A Substructure within the study period.

SECTION 3 - B SHELL

B10 SUPERSTRUCTURE

DESCRIPTION

The description of the respective structural systems for the building is based upon our review of available drawings, and our observation of exposed portions of the building structure. The drawings reviewed can be found in Appendix D.

B1010 FLOOR CONSTRUCTION

B1012 Upper Floor Construction

Building A contained a mezzanine floor which consisted of 2" x 4" wood joists spanning north-south at 16" centers, which are supported by wood joists (size and spacing unknown) spanning east-west. The reviewed drawings detail that this floor structure is supported on a number of 4" x 6" wood posts straight off the concrete floor slab. A plywood floor deck completes the floor deck at mezzanine level.

B1020 ROOF CONSTRUCTION

B1021 Flat Roof Construction

The low-sloped roof sections at the west side of building A and also between Building A and B are assumed to consist of $\frac{1}{2}$ " plywood supported by 4" x 8" wood joists spanning east-west. The roof coverings can be viewed in the roof covering section of this report.

The rigid frame at building B are sized with approximately 2'-0" thick steel at the upper section which support metal "I" section steel joists that are 5" deep spanning north-south (reference Photographs 4 and 5 in Appendix B). These joists support the metal roof deck/covering.

B1022 Pitched Roof Construction

The steep-sloped roof sections of building A consist of glued laminated members (glulam girders and beams). Glulam girders are sized at 2'-0" x 7" and are supported by steel posts, spanning east-west. These girders in turn support smaller 1"-7" x 7" glulam beams which are spanning north-south at 14'-6" and are supported at their ends by reinforced cast-in-place concrete columns (reference Photographs 1 through 3 in Appendix B). The plywood roof deck is further supported by 4" x 8" wood purlins. The roof covering can be viewed in the roof covering section of this report.

B1030 STRUCTURAL FRAME

B1032 Concrete Frame Structure

As explained building A has reinforced cast-in-place concrete columns sized at 1'-2" x 1'-2" at the perimeter, which appear to support the glulam beams that span north-south (reference Photograph 1 in Appendix B).

B1033 Steel Frame Structure

In addition to the concrete columns, building A also contains 7" diameter posts supporting the glulam girders that span east-west (reference Photograph 2 in Appendix B).

Building B contains a rigid structural steel frame spanning east-west, supporting the wall and roof constructions (reference Photograph 4 in Appendix B). The rigid frame consists of two columns and a beam/girder that are rigidly connected at their joints.

CONDITION

B1010 FLOOR CONSTRUCTION

B1012 Upper Floor Construction

The mezzanine floor construction appeared to be in good condition. There were no visible signs of failure noted. We do not anticipate any expenditure during the cost study period.

B1020 ROOF CONSTRUCTION

B1021 Flat Roof Construction

The low-sloped roof constructions appeared to be in good condition. There were no visible signs of failure noted. We do not anticipate any expenditure during the cost study period.

B1022 Pitched Roof Construction

The steep-sloped roof constructions appeared to be in good condition. There were no visible signs of failure noted. We do not anticipate any expenditure during the cost study period.

B1030 STRUCTURAL FRAME

B1032 Concrete Frame Structure

The concrete columns appeared to be in good condition. We do not anticipate the replacement of such structural elements during the cost study period.

B1033 Steel Frame Structure

The steel rigid frame structure appeared to be in good condition. We do not anticipate the replacement of such structural elements during the cost study period.

B20 EXTERIOR ENCLOSURES

DESCRIPTION

The description of the respective exterior enclosure for the building is based upon our review of available drawings, and our observation of exposed portions of the building structure. The drawings reviewed can be found in Appendix D.

B2010 EXTERIOR WALLS

B2011 Exterior Wall Construction

The facades are a combination of precast concrete tilt-up panels and preformed metal wall panels. The tilt-up concrete panels are approximately 7 1/2" thick and reinforced with rigid steel bars, with either a painted finished, 12" x 12" ceramic wall tiles or pebble/small rock finish at building A (reference Photographs 6 through 8 in Appendix B). The concrete tilt-up panels are situated between the concrete square supporting columns.

Building B contained preformed metal wall panels which we understand contains blown insulation between the outer and inner wall surfaces (reference Photographs 9 and 10 in Appendix B).

At high level we noted wooden soffits and fascias which are part of the underside of the overhanging roof structures at sections of building A (reference Photograph 8 in Appendix B).

B2020 EXTERIOR WINDOWS

B2022 Curtain Walls

At the west elevation we noted maroon colored/finished aluminum framing curtain walling systems with single-pane tempered glazing (reference Photograph 11 in Appendix B). Sealant was present at the junction of the aluminum framing and where it meets the concrete columns.

B2023 Storefront

The entrances at both the gymnastics center and teen center also consists of the maroon colored/finished aluminum framing storefront type systems incorporating outward swinging double entrance doors with tinted, single-pane tempered glazing (reference Photograph 13 in Appendix B). A further single door and snack bar hatch both with aluminum framing was present at the north elevation. Sealant was present at the junction of the aluminum framing and where it meets the concrete tilt-up panels.

B2030 EXTERIOR DOORS

B2031 Glazed Doors & Entrances

The storefront entrances both contained single and double aluminum framing glazed aluminum doors (reference Photograph 13 in Appendix B). The doors contained pull handles at the exterior and emergency push bars at the interior and door closing devices.

B2034 Overhead Doors

The building contained a steel roll-up overhead motorized door at the south elevation which provides access to the multipurpose section of building B (reference Photograph 14 in Appendix B). The door coils around an overhead drum and contains steel slatted sections which are guided by a track either side.

B2039 Other Doors & Entrances

The building contained a single hollow metal door and frame at the south elevation perimeter. Door hardware consisted of an emergency push bar at the interior.



B2010 EXTERIOR WALLS

B2011 Exterior Wall Construction

The exterior wall constructions appeared to be in good condition with no signs of deterioration, water ingress or general failure noted. We are not aware when the concrete tilt-up panels, soffits and fascia surfaces were last painted, therefore based on their current observed conditions and the typical EUL of eight-years, repainting of the painted surfaces are recommended towards mid-term in the study period and then every eight-years after to maintain the exterior appearance of the building. The ceramic tile detailing surrounding the entrances appeared to be in good condition and based on a typical EUL of thirty-years and their observed condition we do not anticipate a requirement for their replacement. However to maintain their appearance we recommend that they are re-grouted every fifteen-years to maintain appearances, however we recommend this is done at the same time as the exterior wall repainting works so that each of the elevations looks uniform and consistent in condition.

The metal wall panels at building B appeared to be in fair to good condition. We are unaware of any moisture ingress issues at these elevations (as there is at roof level) and we observed no instances of failure or major damage. We anticipate that this system will last beyond the study period without replacement necessary. We recommend that a review of each of the screw fasteners is undertaken to confirm that each of them has the correct rubber washers which prevent moisture ingress through the screw hole.

B2020 EXTERIOR WINDOWS

B2022 Curtain Walls

The exterior curtain wall systems appeared to be in good condition, no major deficiencies were observed. Based on a typical EUL of fifty-years replacement is not anticipated during the study period. However the perimeter sealant has dried out and shrunken (reference Photograph 12 in Appendix B), this is typically a result of exposure to moisture, heat and ultraviolet radiation, the sealant has lost its movement capabilities due to loss of plasticizers. The deformed sealant at some point, if not already done so will allow air and water to enter the building; no signs of moisture penetration at the interior was observed at the time of the assessment. Sealant such as this has a typical EUL of fifteen-years therefore we anticipate it will require replacement with a suitable polyurethane sealant early in the study period and again towards the end of the study period to maintain water integrity and prevent any water penetration.

B2023 Storefront

The exterior storefront systems appeared to be in good condition, no major deficiencies were observed. Based on a typical EUL of fifty-years replacement is not anticipated during the study period. We do not anticipate a requirement for their replacement as they do not require any actions during the study period. However the perimeter sealant has started to deteriorate in the same way as the sealant at the curtain walling systems. We recommend that all of the sealant is replaced at the same occasion, and therefore we have included the cost of this work with the cost of the curtain walling sealant replacement.

B2030 EXTERIOR DOORS

B2031 Glazed Doors & Entrances

The aluminum glazed entrance doors appeared to be in good condition. We do not anticipate a requirement for their replacement at this time, however we recommend that the doors are regularly maintained and serviced. Although there is a typical EUL of thirty-years replacement is not anticipated as they are part of the storefront systems and they would be replaced as a complete system. We only anticipate regular maintenance relating to door operation.

B2034 Overhead Doors

The overhead door appeared to be in fair to good condition. We do not anticipate a requirement for its replacement at this time; however we recommend that the door is regularly maintained and serviced. Based on a typical EUL of thirty-years replacement is recommended based on industry standards later in the study period. At the time the door is scheduled to be replaced we recommend it is re-assessed for replacement suitability.

B2039 Other Doors & Entrances

The metal door appeared to be in fair to good condition with no observed issues noted. There is no anticipated requirement for replacement of the door during the study period. The operation of the swing door was satisfactory and operated without any difficulty. Repainting along with the exterior elevation repainting works will be necessary. Based on a typical EUL of

thirty-years replacement is recommended based on industry standards later in the study period. At the time the door is schedule to be replaced, we recommend it is re-assessed for replacement suitability.



B30 ROOFING

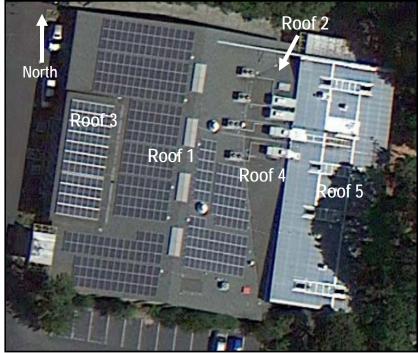
DESCRIPTION

B3010 ROOF COVERINGS

B3011 Roof Finishes

The facility contained two steep-sloped roof areas and three low-sloped roof areas; these roof areas are shown on the following aerial plan:

Overview of Roof Locations & Configurations



The steep-sloped roof areas 1 and 2 contained an asphalt shingle roof covering (reference Photograph 15 in Appendix B). The low-sloped roof areas 3 and 4 each contained a tar and gravel Built-up Roof (BUR) system (reference Photographs 16, 17 and 19 in Appendix B) and roof level 5 contained a preformed metal panel roof covering (reference Photograph 20 in Appendix B). The metal roof is installed on structural steel purlins with screws which secure the panels to the purlins, but also stitch the panels together at the side and end laps.

A parapet up stand is present at the north side of the building B above the teen entrance. The tar and gravel covering at roof level 3 contains a gravel stop which extends above the gravel surface at the perimeter. This consists of the continuation of the concrete tilt-up exterior wall construction with preformed metal cladding at the inner side of the parapet

surface and metal capping and counter flashing. The transition between the low and steep-sloped roof (roof level 1 and 4) and equipment up stands at the air handler units contains mineral cap sheet coverings.

Storm water drainage consists of perimeter gutters and downspouts at the west side of building A, as well as at the south end of roof level 4. There appears to be no other form of collect at the building; therefore the storm water at the metal roof system (roof level 5) discharges over the edge of the roof level to the ground level immediately below, at the east elevation.

B3020 ROOF OPENINGS

B3021 Glazed Roof Openings

The building contained rectangle skylights at the steep-sloped roof level which consisted of a metal frame with ridge type detailing and also at the low-sloped roof level which fitted the profile of the metal roof covering (reference Photograph 22 in Appendix B). The skylights provided natural daylight to the interior spaces below.

B3022 Roof Hatches

Roof access was gained through a metal roof access hatch at the steep-sloped roof level. A vertical metal ladder provided access at this location, which is located at the interior attic, room 205.

CONDITION

B3010 ROOF COVERINGS

B3011 Roof Finishes

Faithful+Gould walked the entire field of the roofs and observed the condition of the coverings, seams, parapet membrane and flashing, roof gutters and rooftop mechanical equipment.

The roof coverings appeared to be in poor to fair condition overall. We understand that the asphalt shingles, as well as the tar and gravel coverings were installed in 1999 and we assume that the metal roofing system is original (or more than thirty-years old). The normal estimated useful life expectancy of these types of roofing systems is forty-years for the asphalt shingle, twenty-years for the tar and gravel BUR covering and thirty-years for the metal roofing system. The BUR systems typically shows signs of deterioration accelerating after approximately fifteen-years, which in this instance is apparent, as they are approaching fifteen-years of age. It was also reported that there are issues regarding moisture ingress at the footings of the solar modules, through the steep-sloped asphalt shingle roof covering; these issues are ongoing and have to this time have not been fully resolved. In addition we noted sections of previous repairs (reference Photograph 19 in Appendix B), which suggests that the roof covering it nearing the end of its RUL.

We also observed that the mineral cap sheet at the base of the equipment up stands and also the transition between the steep and low-sloped roof levels is showing deteriorated with the presence of alligatoring (surface separation) and splitting (fatigue and shrinkage) of the surface, which is caused by loss of volatiles in the asphalt coating and tears in the covering at points of resistance (reference Photographs 17 and 18 in Appendix B).

We understand that the metal roof is still susceptible to moisture ingress even though we believe it has undergone sealant repairs along the overlapping seams and at the screw fasteners. We understand that there is insufficient overlapping of the metal panels (reference Photographs 20 and 21 in Appendix B). Overlapping of the panels allows water to flow from one panel to the next without being able to penetrate the area under the roof panel. As a first line of defense against water damage, it is important that the metal roofing overlap is done correctly at the original installation, with appropriate sealant between each overlap to act as a water barrier. Furthermore metal roof coverings more than ten-years old can experience failure via a number of issues; the end and side laps of the metal panels where the original butyl tape or caulk seals can age and fail, metal buildings expand and contract as temperature changes, which can often result in enlarged fastener holes and damage to fastener seals which allows water into the building.

We assume that the rubber washer which is part of the screw fasteners has deteriorated; this acts as a barrier to prevent water from penetrating the roof through the screw holes and further more the screw holes, as explained have enlarged. Repair works consisting of the application of sealants at each of these areas has not fixed/repaired the issue suitably.

Based on the reported issues, observed conditions, age and RUL of each of the roof coverings we anticipate a requirement for each of the roof covering replacements in the near-term to maintain the integrity of the building structure and finishes.

To properly repair an aging or leaking metal roof, the panels in question should be removed and replaced. All fasteners and flashing should be checked and replaced as necessary. This can be a costly and time-consuming project that can interrupt business. Often, it's more economical to replace the roof. Sometimes it makes sense to retrofit with single-ply membranes, BUR (built-up roofing), coating systems or new metal roof panels. We have provided below a few options for replacement:

- Metal-roof replacement. This involves removing the old metal roof and replacing it with a new metal one. This is the
 most expensive option and is generally only done in cases where it is not feasible or desirable to recover the existing
 metal roof. The advantage is that the building owner can start fresh with a new roof. Disadvantages include price,
 disruption to building users, and the chance that the roof will eventually suffer the same problems as the original.
- <u>Metal-roof recover</u>. Installing a new metal roofing system over an existing one is an option if the building is strong enough to withstand the added weight. While a metal-roof recover offers the same durability and other advantages of the original metal roof, it is also subject to the same problems that made the original roof fail, and can be costly.
- Coatings or liquid-applied systems. The most common coatings or liquid-applied systems are elastomeric. They are typically applied after the roof has been cleaned, damaged panels replaced, and a primer used on rusted areas. Flashing and exposed fasteners are also sealed, and flashing compounds and reinforcing fabrics are applied at laps. The coating is then applied repeatedly until the desired thickness is achieved. This option can be cost-effective and good at addressing corrosion. Most coatings are white, resulting in energy savings. Disadvantages are that the coating doesn't "give" much with the expansion and contraction of the metal roof, subjecting it to cracks at joints and seal areas. This may require reapplications of the coating and flashing. In addition, it is not uncommon to recoat a roof every five years of service life, which can be expensive. Performance is also sensitive to surface preparation and weather conditions at the time of application.
- Polyurethane-foam recover. With this option, sprayed polyurethane foam is applied directly to the existing metal roof
 in a manner similar to the way a coating is applied. After replacing damaged panels and treating surface corrosion,

the foam is spray-applied, usually in several passes to achieve a thickness of at least 1 in. Then a special surface coating is applied to protect the foam from ultraviolet damage. Advantages of this option are that it adds R-value to the roof, and does not require reinforcing fabric at the laps and fasteners. Disadvantages are that foam does not accommodate thermal expansion and contraction well, and offers questionable weatherability.

• <u>Single-Ply Recover</u>. This solution involves installing a single-ply membrane, such as a hot-air weldable TPO (thermoplastic polyolefin) over the existing metal roof. Before this system can be installed, damaged metal panels are replaced. Strips of insulation are installed between the ribs or flutes of the existing metal roof surface. A second layer of insulation is then installed over the entire roof to provide a uniform and flat substrate. The insulation adds to the R-value of the roof and provides a solid substrate for the single-ply system. The hot-air weldable membrane is then mechanically fastened or fully adhered directly over the insulation, and the seams are fused together using hot-air. A mechanically fastened system is secured to the structural purlins with fasteners. There are several advantages to the single-ply option. First, membranes are available in white or light colors, which lowers cooling costs. TPO membrane is flexible, allowing it to accommodate the movement that is intrinsic in metal roofing as well as any plane changes in the roof. Also, the cost of additional insulation is already built into the total cost of the roof installation, which is usually comparable to the cost of applying coatings. In addition, some single-ply systems installed over metal roofs come with a 20-year warranty. By contrast, roof coatings typically offer a 5- to 10-year maximum warranty period. Lastly, single-ply systems are generally not as sensitive to weather conditions as coatings during the installation process.

We have included for full replacement of the metal roof covering at this time, however consideration should be taken by the City and discussions with a qualified roofing contractor regarding one of the suggested options above to ascertain if they can be more cost effective and efficient for this particular building and its use.

The roof levels appear to drain well with adequate slope at all areas to allow water to run to the gutter and roof perimeters. The gutter also appears to be free from debris and adequately sized.

Replacement of the BUR covering will also include for the removal and reinstallation of the solar array modules. We have included an estimated contingency sum for works associated with this; however we recommend that the City obtains accurate costs from the original installers.

B3020 ROOF OPENINGS

B3021 Glazed Roof Openings

The skylights appeared to be in fair to good condition, we understand the skylights over building A were installed in 2006; the other skylight over building B are unknown, however assumed less than five-years old. Based on a typical EUL of thirty-years replacement is not anticipated for the skylights.

B3022 Roof Hatches

The roof hatch appeared to be in fair to good condition. The mechanism of the roof hatch appeared to operate satisfactorily without any issues, furthermore there were no signs of water ingress and no such issues were reported to us at the time of the assessment. Based on a typical EUL of thirty-years replacement is not anticipated during the cost study period.

PROJECTED EXPENDITURES

Identified recommended works that are required during the twenty-year study period are detailed below. We have included a 25% allowance for professional fees and general contractor overhead/profit and management costs (where applicable).

Element No.	Building Element	Recommendation	Qty	Unit	Rate	Cost	Year	Priority Code
B2011	Exterior Wall Construction	Repaint exterior wall surfaces and soffits	5,000	SF	\$1.88	\$9,400	2019	4
B2011	Exterior Wall Construction	Repaint exterior wall surfaces and soffits	5,000	SF	\$1.88	\$9,400	2027	4
B2011	Exterior Wall Construction	Replace sealant at the curtain walling and storefront systems	250	LF	\$11.25	\$2,813	2013	3
B2011	Exterior Wall Construction	Replace sealant at the curtain walling and storefront systems	250	LF	\$11.25	\$2,813	2028	3
B2034	Overhead Doors	Replace overhead door	1	EACH	\$2,800	\$2,800	2022	3
B2039	Other Doors & Entrances	Replace single hollow metal door	1	EACH	\$1,500	\$1,500	2022	3
B3011	Roof Finishes	Replace asphalt shingle roof covering	13,500	SF	\$6.25	\$84,375	2014	3
B3011	Roof Finishes	Replace tar and gravel roof covering	4,200	SF	\$12	\$50,400	2014	3
B3011	Roof Finishes	Solar panel removal and reinstall at time of roof covering replacements	1	LS	\$10,000	\$10,000*	2014	3
B3011	Roof Finishes	Replace metal panel roof covering	7,000	SF	\$27.50	\$192,500	2014	3
Total Anticipated Expenditure for B Shell				\$366,000				

^{*} Assumed/contingency lump sum cost, we recommend this expenditure is obtained from the original installers for removal and reinstate

SECTION 4 - C INTERIORS

C10 INTERIOR CONSTRUCTION

DESCRIPTION

C1010 PARTITIONS

C1011 Fixed Partitions

The building contained wood stud gypsum board partitions throughout, with a painted finish (reference Photograph 29 in Appendix B).

C1020 INTERIOR DOORS

C1021 Interior Doors

The building generally contained single flush wood doors which are housed within wood frames. The doors all appeared to be one directional swing operation.

C1023 Interior Door Hardware

The doors contained aluminum hardware consisting of lever door handles and door closers.

C1030 FITTINGS SPECIALTIES

C1031 Fabricated Toilet Partitions

A number of the restrooms contained plastic laminate floor and wall mounted fixed partition cubicles (reference Photograph 36 in Appendix B).

CONDITION

C1010 PARTITIONS

C1011 Fixed Partitions

The interior fixed partitions all appeared to be in fair to good condition. There were no deficiencies found in relation to the wall structures. The fixed partitions are suitable for the current use.

C1020 INTERIOR DOORS

C1021 Interior Doors

The interior doors appeared to be in fair to good condition with no deficiencies noted. We do not anticipate any expenditure in relation to the interior doors during the cost study period.

C1023 Interior Door Hardware

The hardware at each of the doors appeared satisfactory with no issues of deterioration or failure noted generally throughout the building. The operation of the door handles, locks and hinged swing were noted to be in fair to good condition. We do not anticipate any expenditure during the study period.

C1030 FITTINGS SPECIALTIES

C1031 Fabricated Toilet Partitions

The fabricated cubicles appeared to be in fair to good condition. We understand that they are original to 1996. There was no evidence of deteriorated panels or doors which will need immediate replacement, however the restrooms in their entirety although functional, will start to appear dated over time. We recommend that the restrooms are renovated mid-term in the study period, to maintain the continuity of the finishes throughout the building. The cost for the replacement of these fabricated cubicle partitions have been included in a total replacement cost per restroom and is shown in the plumbing section of this report.



C20 STAIRS

DESCRIPTION

C2010 STAIR CONSTRUCTION

City of Novato

C2011 Regular Stairs

Within the building there are two quarter-turn staircases, both leading to the mezzanine level which the public can use (reference Photograph 23 in Appendix B). The staircases are of a wood construction with closed risers. The staircases have wooden handrails mounted both sides and the treads and risers are covered with vinyl sheet.

CONDITION

C2010 STAIR CONSTRUCTION

C2011 Regular Stairs

The staircases appeared to be in a good condition with no issues reported or identified. We do not anticipate any actions in association with the staircases during the study period.

C30 INTERIOR FINISHES

DESCRIPTION

C3010 WALL FINISHES

C3012 Wall Finishes to Interior Walls

Interior walls throughout each section of the building generally contained a painted gypsum wall board surface. The restrooms at both sections of the building both contained ceramic 2" x 2" wall tiles in select locations from floor to ceiling height. In addition the restrooms within building A also contained a 5'-0" high PVC wainscot behind the urinals (reference Photographs 24 through 25, 27 and 35 in Appendix B).

C3020 FLOOR FINISHES

C3024 Flooring

The building contained a combination of floor coverings which consisted of vinyl sheet and tile within the teen center and the staircases to the mezzanine level, stained wood plank flooring within the multipurpose area, quarry floor tiles sized 12" x 12" within the corridor and lobby and ceramic floor tiles sized 1" x 1" within the restrooms (reference Photographs 26 through 28 in Appendix B).

C3025 Carpeting

We noted sheet carpet within the main, gym and teen offices as well as the mezzanine level and elevator cab (reference Photographs 25, 29 and 30 in Appendix B).

C3030 CEILING FINISHES

C3031 Ceiling Finishes

There were painted gypsum board ceilings throughout the restroom areas, main office and teen offices. Within the gymnasium, teen center and multipurpose areas there is no ceiling present, the roof structures are exposed with insulation between.

C3032 Suspended Ceilings

The building had suspended ceiling systems present within the gym offices, consisting of 2' x 4' white enameled exposed grid system, supported with wires from the underside of the roof construction above. The ceiling system incorporated lighting and air-handling components.

CONDITION

C3010 WALL FINISHES

C3012 Wall Finishes to Interior Walls

Interior wall finishes appeared to be in fair to good condition generally throughout the building. We understand that the painted walls are repainted on an as needed basis. The teen center along with the associated offices and multipurpose area was reportedly repainted in 2012 and the gym offices at the time they were created in 2011. The remainder which consists of the gymnasium and restrooms are understood to have been repainted in 1996. The main office opposite the entrance appeared to be in fair condition and assumed repainted in recent years. The areas that are part of the 1996 finishes have exceeded their EUL of eight-years and are recommended for repainting near-term in the study period. The other areas which are in a healthier condition and are only a few years into their EUL are scheduled for replacement midterm. Generally we have made recommendations to repaint the interior walls on a cyclical basis every eight-years to maintain the appearance of the interior of the building, however these are not all at the same occasion and are staggered based on the year the work was last done.

The ceramic wall tiles and grout had no major issues observed except for a dull appearance towards the base of the walls and therefore to improve this we recommend that the tiles are re-grouted on an as needed basis to maintain their appearance; this is suggested at the time when the floor tile is re-grouted. The wainscot panels appeared to be in good condition with no issues noted.

We recommend that the restrooms are renovated in the study period as we understand that they are original to 1996 and have started to appear dated. The restrooms will be twenty-two years old therefore we have include for replacement of the ceramic wall tiles and also the wainscot within a combined full restroom renovation prior to mid-term (we have extended the RUL as their current condition allows this). Based on a typical EUL of twenty-years for a major renovation of restrooms at facilities of this type, their expenditure has been included in a total replacement cost and is shown in the plumbing section of this report.

C3020 FLOOR FINISHES

C3024 Flooring

The vinyl sheet and tile flooring appeared to be in good condition, having been recently installed at the two locations in 2012. Vinyl flooring has a typical EUL of eighteen-years and therefore based on the RUL and observed conditions the vinyl sheet and tile will require replacement later in the study period.

The ceramic floor tiles appeared to be in fair condition. There were no deficiencies identified which require immediate action, although we do recommend that the tiles within the restrooms are re-grouted at the same time that the walls are repainted, at the start of the study period to maintain their appearance. In the long-term we have included for renovation of the restrooms and therefore this will include for replacement ceramic floor tiles. The cost for the replacement of these items has been included in a total replacement cost per restroom and is shown in the plumbing section of this report.

The wood plank flooring has a typical EUL of forty-years depending on how it's treated. We recommend that the wood floor is refinished every ten-years to maintain its appearance.

C3025 Carpeting

The sheet carpet floor coverings appeared to be in fair to good condition. We understand that the carpet within the teen center offices/meeting rooms was installed in 2012 and the gym offices in 2011. The age of the sheet carpet flooring within the main office and mezzanine level are unknown and assumed to be approximately five-years old. No issues of wear or deterioration were observed at any of these locations. Therefore based on a typical EUL of ten-years and the likely traffic they will receive we recommend that they are replaced at varying intervals depending on location and age throughout the study period to maintain the interior appearance of the building.

The carpet sheet within the elevator cab appeared to have been cut short at the door way. We recommend that this piece of carpet is replaced in the near-term to maintain the appearance of the building. The cost of this replacement is anticipated to fall below the threshold level and therefore has not been included.

C3030 CEILING FINISHES

C3031 Ceiling Finishes

The painted gypsum ceilings appeared to be in fair to good condition. Painted surfaces usually have a typical EUL of eight-years; therefore we recommend that they are repainted at the same time as the wall surfaces. The sheeting to the underside of the suspended insulation within the multipurpose area has been torn and damaged, due to activities undertaken in that space (reference Photograph 5 in Appendix B). We have included for repair/replacement actions associated with this near-term in the study period and then a sum again mid-term for repeated damage.

C3032 Suspended Ceilings

The suspended ceiling systems appeared to be in good condition. The typical EUL of ceiling systems such as this is twenty-years therefore we recommend that the system is replaced towards the end of the study period. We suggest at that time a review is undertaken to ascertain if there is a need for full replacement or just the replacement of the ceiling tiles. We have included for full replacement.



Identified recommended works that are required during the twenty-year study period are detailed below. We have included a 25% allowance for professional fees and general contractor overhead/profit and management costs (where applicable).

Element No.	Building Element	Recommendation	Qty	Unit	Rate	Cost	Year	Priority Code
C3012	Wall Finishes to Interior Walls	Repaint interior wall surfaces within the main gymnasium area and restrooms	7,600	SF	\$1.88	\$14,288	2015	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall and ceiling surfaces within the main and gym offices	5,400	SF	\$1.88	\$10,152	2019	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall surfaces within the teen center, teen offices and the multipurpose room	10,500	SF	\$1.88	\$19,740	2020	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall surfaces within the main gymnasium area only	6,300	SF	\$1.88	\$11,844	2023	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall and ceiling surfaces within the main and gym offices	5,400	SF	\$1.88	\$10,152	2027	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall surfaces within the teen center, teen offices and the multipurpose room	10,500	SF	\$1.88	\$19,740	2028	4
C3012	Wall Finishes to Interior Walls	Repaint interior wall surfaces within the main gymnasium area and restrooms	7,600	SF	\$1.88	\$14,288	2031	4
C3024	Flooring	Replace vinyl tile at the teen center	2,500	SF	\$3.75	\$9,375	2030	4
C3024	Flooring	Replace vinyl sheet at the staircases	27	SY	\$113	\$3,051	2030	4
C3024	Flooring	Regrout ceramic floor tiles as well as isolated ceramic wall tile areas within restrooms	750	SF	\$11.69	\$8,767	2015	4
C3024	Flooring	Refinish wood plank floor	3,000	SF	\$5.76	\$17,280	2022	4
C3024	Flooring	Refinish wood plank floor	3,000	SF	\$5.76	\$17,280	2032	4
C3025	Carpeting	Replace carpet floor covering (main office & mezzanine)	65	SY	\$84.25	\$5,476	2015	4

C3025	Carpeting	Replace carpet floor covering (gym office)	177	SY	\$84.25	\$14,912	2021	4
C3025	Carpeting	Replace carpet floor covering (teen office/meeting)	77	SY	\$84.25	\$6,487	2022	4
C3025	Carpeting	Replace carpet floor covering (main office & mezzanine)	65	SY	\$84.25	\$5,476	2025	4
C3025	Carpeting	Replace carpet floor covering (gym office)	177	SY	\$84.25	\$14,912	2031	4
C3025	Carpeting	Replace carpet floor covering (teen office/meeting)	77	SY	\$84.25	\$6,487	2032	4
C3031	Ceiling Finishes	Replace torn and damaged insulation within the multipurpose area	1	LS	\$1,500	\$1,500	2013	3
C3031	Ceiling Finishes	Replace torn and damaged insulation within the multipurpose area	1	LS	\$1,500	\$1,500	2023	3
C3032	Suspended Ceilings	Replace the suspended ceiling in the gym offices	540	SF	\$6.25	\$3,375	2031	4
		Total Anticipated Exp	enditure f	or C Interi	ors	\$216,084		



SECTION 5 - D SERVICES

D10 CONVEYING SYSTEMS

DESCRIPTION

D1010 ELEVATORS AND LIFTS

D1011 Passenger Elevators

The building contained one hydraulic-drive passenger elevator which serves the building from first to mezzanine level. The passenger elevator is manufactured by US Elevator and has a capacity of 2,100 lbs or 14 persons (reference Photograph 31 in Appendix B).

Machine Room Equipment

The passenger elevator machine room contained the hydraulic fluid tank, pump and valve equipment serving the hydraulic ram to the elevator car together with its individual control equipment (reference Photograph 33 in Appendix B).

Cabs

The elevator cab consists of front entry pre-finished steel elevator doors and surrounds with a combination of stainless steel and laminate sheet panel interior walls. A car-operating panel is provided within the cab (reference Photograph 32 in Appendix B).

Table D10-1 provides a summary of the Elevator:

Table D10-1 Summary of the Elevator

Equipment Type	Manufacturer	Model No.	Serial No.	No. of Landings	Speed (FPM)	Capacity (Pounds)	Year Install
Hydraulic	US Elevator /					2,100 lbs	
Passenger	Thyssenkrupp	TC2000	Unknown	2	Unknown	or	Unknown
Elevator	Elevator					14 Persons	

Unknown = Access limited or equipment had no name plates present.

CONDITION

D1010 ELEVATORS AND LIFTS

D1011 Passenger Elevators

The hydraulic elevator cab and equipment both appeared to be in good condition and regular maintained by ThyssenKrupp. The typical EUL of elevators is based on the equipment and particularly the controller which is the brains of the system and directs the elevator motor. The controller has an EUL of twenty-five years at which point an upgrade is necessary. We do not anticipate a requirement for the replacement/modernization of the elevator cab or equipment during

March 4, 2013

the study period. We only recommend that the sheet carpet floor covering is replaced during the study period, as explained in the finishes section of this report.

The five-year load test was last undertaken in 06-16-2004 and the yearly elevator permit expired on 02-01-2012. Both load test and permit are past due based on the information available at the facility.

Performance measurements were not taken to evaluate system performance to industry standards as published by the National Elevator Industry Inc. (N.E.I.I.). General system performance was observed such as door operation, acceleration and stopping. Where observed, performance appeared adequate.

D20 PLUMBING

DESCRIPTION

D2010 PLUMBING FIXTURES

D2011 Water Closets

The building contains floor mounted vitreous china water closets which contain their own tanks (reference Photograph 34 in Appendix B).

D2012 Urinals

The building contained vitreous china wall hung urinals with manual flush valves, within the men's restrooms (reference Photograph 35 in Appendix B).

D2013 Lavatories

The building contains vanity vitreous china lavatories (reference Photograph 36 in Appendix B). The lavatories generally consisted of swan neck non-metering faucets with lever type handles. Water is supplied via copper pipe and assumed drained through cast iron pipe work and fittings.

D2014 Sinks

We noted single and double stainless steel sinks; the single sinks within the staff break area and the mezzanine activity room, and the double within the teen center (reference Photograph 37 in Appendix B). The sinks contained a combination of single and double lever handle non-metering faucet. The stainless steel sinks are self rimming and mounted within counters that consisted of a plastic laminated faced counter tops.

The janitor's room contains a floor mounted vitreous china sink.

D2018 Drinking Fountains and Coolers

The building contained duel height wall mounted stainless steel drinking fountains which are located opposite the two sets of main restrooms. The water fountains are wall mounted with front-mounted push-button valves (reference Photograph 38 in Appendix B).

D2020 DOMESTIC WATER DISTRIBUTION

D2021 Cold Water Service

Cold water piping throughout the building consisted of copper. We believe the cold water service for the facility is supplied directly from the street pressure. Taps are made to the water line downstream of the meter and routed to plumbing fixtures and equipment via copper pipe work.



Domestic hot water was generated via one electric water heater located within the fire alarm panel room (reference Photograph 39 in Appendix B).

Table D20-1 provides a summary of the water heater:

Table D20-1 Summary of the Domestic Water Heating Equipment

Location	Manufacturer	Model #	Serial #	Fuel/ Rating	Capacity	≈ Year of Installation
Fire Alarm Panel Room	State Electric	SB6206IFEASMEX	K99110620	Electric	20 Gallon	Unknown

Unknown = Access limited or equipment had no name plates present.

D2030 SANITARY WASTE

D2031 Waste Piping

Waste piping was not directly inspected, however based on typical construction methods available at the time of construction, the piping is suspected to be cast iron pipe with newer PVC added at a later time.

CONDITION

D2010 PLUMBING FIXTURES

D2011 Water Closets

The water closets appeared to be in fair to good condition. The water closets flushed properly and did not have any cracks in the china, however they are assumed to be from 1996 and with a typical EUL of thirty-five-years, we recommend that they are replaced as part of a restroom renovation prior to mid-term in the study period, which at that time they will be twenty-four years old and it will be more appropriate to replace them than reuse them in a newly renovated restroom. The cost for their replacement has been included in a total replacement cost per restroom. As part of this replacement, consideration could be taken to replace the water closets with more water efficient systems.

D2012 Urinals

The urinal's and flush valves appeared to be in fair to good condition. The urinals flushed properly and did not have any cracks in the china. We also recommend that they are replaced as explained for the water closets with waterless units.

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D2013 Lavatories

The lavatories and faucets appeared to be in fair to good condition. The sinks drained properly and did not have any cracks in the china. We also recommend that they are replaced as explained for the water closets with more efficient faucets.

D2014 Sinks

The stainless steel counter top sinks and janitors floor mounted sinks appeared to be in good condition. Based on typical EUL of thirty-years for the janitors sink we anticipate that it will last beyond the study period without replacement necessary. The stainless steel sinks have a typical EUL of twenty-years therefore we have included for their replacement later in the study period at the same time as the counter and fixed cabinet replacements.

D2018 Drinking Fountains and Coolers

The drinking fountains appeared to be in good condition. These types of duel mounted units have a typical EUL of twenty-years; therefore we anticipate that there will be a requirement for their replacement mid-term in the cost study period.

D2020 DOMESTIC WATER DISTRIBUTION

D2021 Cold Water Service

The domestic water system appeared to be in fair to good condition. No major problems were observed that could be attributed to age and deferred maintenance.

D2022 Hot Water Service

The domestic water heater appeared to be in fair to good condition; it was observed to be functional and operating correctly. We do not know when this water heater was installed, however it appears to be less than five-years of age. Water heaters generally have a typical EUL of fifteen-years therefore the water heater will require replacement to maintain efficiency after mid-term in the study period.

The hot water distribution pipes appeared to be in fair to good condition. We do not anticipate any expenditure within the cost study period.

D2030 SANITARY WASTE

D2031 Waste Piping

No visually apparent problems with the sanitary waste piping were observed.

D30 HVAC

DESCRIPTION

D3010 FUEL ENERGY SUPPLY SYSTEMS

D3012 Gas Supply System

There is natural gas service to the building. The pressure reducing station and gas meter are located at the north side of the building (reference Photograph 40 in Appendix B). Gas service is routed to the rooftop equipment.

D3030 COOLING GENERATING SYSTEMS

D3032 Direct Expansion Systems

Building A is typically heated and cooled via four commercial split-systems, consisting of roof level outdoor air-cooled condensing units with indoor air-handling units that have direct expansion coils (reference Photograph 41 in Appendix B). These systems are manufactured by Carrier.

There is a further separate spilt-system which is manufactured by Trane from their XE1200 range of outdoor heat pumps. We assume from the review of the drawings that this unit is the unit referred to as CU-1 (reference Photograph 42 in Appendix B) and there is an indoor furnace which is referenced F-1.

D3040 HEAT HVAC DISTRIBUTION SYSTEMS

D3041 Air Distribution Systems

The building utilizes four rooftop heating and ventilation air handler units (HV-1, HV-2, HV-3 & HV-4) that are manufactured by Trane and are assumed to be original to the building and therefore more than twenty-years old (reference Photographs 43 and 44 in Appendix B).

The ductwork is square and tube sheet metal, except for flexible duct connections to ceiling diffusers in suspended and solid ceiling areas (reference Photographs 3, 4 and 53 in Appendix B).

D3042 Exhaust Ventilation Systems

The building contained centrifugal exhaust fans at roof level which are designed to remove air from interior spaces within each section of the building (reference Photograph 45 in Appendix B).

Table D30-1 provides a summary of the HVAC equipment:



Location	Equipment Type	Manufacturer	Model No.	Serial No.	Capacity /	Fuel Type	Year
Roof Level (Serves Gymnastics Center)	Split-System Outdoor Air-Cooled Condensing Unit	Carrier	38AKS024 510	0202F30394	20 Tons	Electric	Assumed 2002
Gymnastics Center	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown	As above	Electric	Assumed 2002
Roof Level (Serves Gymnastics Center)	Split-System Outdoor Air-Cooled Condensing Unit	Carrier	38AKS024 510	0202F30370	20 Tons	Electric	Assumed 2002
Gymnastics Center	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown	As above	Electric	Assumed 2002
Roof Level (Serves Gymnastics Center)	Split-System Outdoor Air-Cooled Condensing Unit	Carrier	38AKS014 510	0502F34067	12.5 Tons	Electric	Assumed 2002
Gymnastics Center	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown	As above	Electric	Assumed 2002
Roof Level (Serves Gymnastics Center)	Split-System Outdoor Air-Cooled Condensing Unit	Carrier	38AKS014 510	0502F34066	12.5 Tons	Electric	Assumed 2002
Gymnastics Center	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown	As above	Electric	Assumed 2002
Roof Level	Split-System Heat Pump Complete	Trane (XE1200)	TTP042C30 0A1	P243W302F	Assumed 3 Tons	Electric / Natural	Assumed 2002

	System (CU-1)					Gas	
Roof Level (Serves Teen Center/Multi- Purpose)	Air Handler Unit (HV-1)	Trane	GAA70GDE ON2CQ105 H1	C99F10482 M	7,000 CFM / 560,000 BTU/HR	Electric / Natural Gas	Unknown
Roof Level (Serves Teen Center/Multi- Purpose)	Air Handler Unit (HV-2)	Trane	GAA70GDE ON2CQ105 H1	C99F10483 M	7,000 CFM / 560,000 BTU/HR	Electric / Natural Gas	Unknown
Roof Level (Serves Teen Center/Multi- Purpose)	Air Handler Unit (HV-3)	Trane	GRAA30GD KEONZBN1 05H1	C99F10470 M	3,500 CFM / 240,000 BTU/HR	Electric / Natural Gas	Unknown
Roof Level (Serves Teen Center/Multi- Purpose)	Air Handler Unit (HV-4)	Trane	GRAA35GD KEONZBP1 05H1	C99F10451 M	3,500 CFM / 280,000 BTU/HR	Electric / Natural Gas	Unknown
Roof Level (Serves Elevator Room)	Ceiling Exhaust Fan (E-1)	Unknown	Unknown	Unknown	265 CFM	Electric	Unknown
Unknown*	Ceiling Exhaust Fan (E-2)	Unknown	Unknown	Unknown	220 CFM	Electric	Unknown
Roof Level (Serves Staff Toilet Restroom)	Ceiling Exhaust Fan (E-3)	Unknown	Unknown	Unknown	100 CFM	Electric	Unknown
Unknown*	Ceiling Exhaust Fan (E-4)	Unknown	Unknown	Unknown	775 CFM	Electric	Unknown
Roof Level (Serves Gymnastics Center)	Exhaust Fan (E-5)	Penn	DX36B	Unknown	7,000 CFM	Electric	Unknown
Roof Level (Serves Gymnastics Center)	Exhaust Fan (E-6)	Penn	DX36B	Unknown	7,000 CFM	Electric	Unknown

Roof Level (Serves Teen Center/Multi- Purpose)	Exhaust Fan (E-7)	Penn	DX24B	Unknown	3,500 CFM	Electric	Unknown
Roof Level (Serves Teen Center/Multi- Purpose)	Exhaust Fan (E-8)	Penn	Unknown	Unknown	4,000 CFM	Electric	Unknown
Roof Level	Exhaust Fan (E-9)	Penn	DX06B	Unknown	195 CFM	Electric	Unknown
Roof Level	Exhaust Fan	Penn	DX11B	Unknown	Assumed 1,000 CFM	Electric	Unknown

Unknown = Access limited or equipment had no name plates present.

Assumed = Based on size of unit and area it serves / or possible year installed.

D3060 HVAC INSTRUMENTATION AND CONTROLS

D3069 Other Controls & Instruments

The buildings HVAC system is controlled by individual wall mounted digital thermostats located in the areas the units serve.

CONDITION

D3010 FUEL ENERGY SUPPLY SYSTEMS

D3012 Gas Supply System

No visually apparent problems with the gas distribution piping were observed at the building. No issues have been reported regarding performance; therefore we believe the supply will be serviceable, through the end of the study period.

D3030 COOLING GENERATING SYSTEMS

D3032 Direct Expansion Systems

The Carrier split-systems overall appeared to be in fair to good condition; the indoor units could not be commented on as they were inaccessible. Based on their observed condition and the typical EUL of twenty-years for this type of system we have anticipated replacement just after mid-term in the study period, as we believe they were manufactured in 2002 and installed shortly after, therefore they are just over ten-years old and half-way through their EUL.

^{*} Information taken from reviewed drawings

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The Trane heat pump and indoor furnace split-system is considered to be in fair condition. Based on observed conditions only, as we are unaware when the system was installed, we anticipate replacement prior to mid-term to maintain efficient operation.

D3040 HEAT HVAC DISTRIBUTION SYSTEMS

D3041 Air Distribution Systems

The Trane AHU's at roof level appeared to be in poor to fair condition. The typical EUL of an AHU of this kind is twenty-years, and although they are past their EUL there were no reported or observed issues regarding operation. We understand that the equipment is regularly maintained by Airco Commercial Services Inc., an external contractor. Although these units are original, the RUL has been extended and replacement is recommended prior to mid-term in the study period as they will all be beyond their useful life and prone to breakdown and eventually parts will become difficult to obtain and obsolete. In addition replacement will also improve overall efficiency.

Repair works have also been included late-term in the study period to the AHU's (units that have been replaced earlier in the study period). This should be undertaken every ten-years to maintain correct operation of the units. This includes repair of the controls and replacement of the blower motor.

Only a small proportion of the ducting in the building was reviewed but that portion was noted to be in fair to good condition with no deficiencies. We recommend that the duct work is cleaned every five-years starting at the start of the study period, as it was unclear when they were last cleaned.

D3042 Exhaust Ventilation Systems

The exhaust fans were observed to be in fair to good condition generally, with no reported or observed operating issues. Exhaust fans of this type have a EUL of fifteen-years, therefore based on the current observed condition and the future usage, we recommend replacement of the fans and components are undertaken after mid-term in the study period.

D3060 HVAC INSTRUMENTATION AND CONTROLS

D3069 Other Controls & Instruments

The thermostat controls appear to be in fair condition, they appear to match the age of the HVAC equipment they serve. We recommend that they are replaced along with the units. Until that time we do not anticipate any related issues.

D40 FIRE PROTECTION

DESCRIPTION

D4010 SPRINKLERS

D4011 Sprinkler Water Supply

The building is protected with an automatic wet-pipe fire suppression system utilizing standard pendent and upright commercial sprinkler heads fixed to fire-line pipes which are supported via the upper structure (reference Photograph 47 in Appendix B). The system is monitored by water flow and tamper switches connected to the fire alarm system. The sprinkler main enters the building at the north-east side, at the exterior (reference Photograph 46 in Appendix B). The water main incoming is a 6" line at the point of service. The stickers posted on the system riser indicate the last Fire Marshal's five-year inspection was completed in August 2011.

D4030 FIRE PROTECTION SPECIALTIES

D4031 Fire Extinguishers

Multipurpose portable wall mounted handheld fire extinguishers were provided throughout the building (reference Photograph 48 in Appendix B).

CONDITION

D4010 SPRINKLERS

D4011 Sprinkler Water Supply

The sprinkler system was observed to be in good condition and all inspections up to date. No visible corrosion or leaks were observed however the sprinkler heads have a typical EUL of twenty-years and with time the fire sprinkler heads can decrease in functionality and therefore lessen the efficiency of the entire sprinkler system. We anticipate that there will be a requirement for their replacement mid-term during the study period. The five-yearly test will be due in 2016.

D4030 FIRE PROTECTION SPECIALTIES

D4031 Fire Extinguishers

Fire extinguishers appeared to be in good condition. We understand they are maintained on a yearly basis. The fire extinguishers were last tested in May of 2012. We do not anticipate a requirement to replace any fire extinguishers during the study period, as we expect that they will be replaced on an as-needed basis.



D50 ELECTRICAL

DESCRIPTION

The following information was obtained through our visual observations of the building systems. The electrical systems include the service entrance equipment, panel boards, safety switches, lighting fixtures, and security systems.

D5010 ELECTRICAL SERVICE & DISTRIBUTION

D5012 Low Tension Service & Dist.

Electrical power is supplied by the local utility provider to a dedicated, utility owned pad mounted transformer located at the south side of the building. The Main Distribution Panel (MDP) is manufactured by Cutler Hammer and is rated at 208Y/120 volts at 1,000-amps and is located within an exterior enclosure at the south-east side of the building. Branch panels are located throughout the building and are rated at varying amps (reference Photographs 49 and 50 in Appendix B).

The building also contained a photovoltaic (PV) array consisting of roof mounted multipurpose modules and grid-connected PV inverter control units manufactured by Sharp and Fronius respectively. The system uses Fronius IG Plus control units which are located at the east elevation, next to the MDP (reference Photographs 51 and 52 in Appendix B). The PV panels convert the suns energy to electricity through the use of light-sensitive, solid state semi-conductor cells.

D5020 LIGHTING & BRANCH WIRING

D5021 Branch Wiring Devices

The branch wiring devices at the building included switches, receptacles and other devices that would be generally associated with this type of building. Branch wiring was observed to typically be distributed in Electric Metallic Tubing (EMT) and flexible metal conduit.

D5022 Lighting Equipment

The interior lighting within the building is provided by recessed and surface mounted 2' x 4', 1' x 4', and 4' strip fluorescent fixtures (reference Photograph 53 in Appendix B). The fluorescent fixtures all contained F32 T8 32W lamps and electronic ballasts. All of the in-room lighting is controlled via local switching in the respective rooms and the large areas by a bank of light switches.

D5030 COMMUNICATIONS & SECURITY

D5033 Telephone Systems

A telephone system is mounted on a plywood board within the fire alarm panel room and provides voice lines to the telephone switch panel and is patched to the structured voice cabling to the various telephone voice plates throughout the building (reference Photograph 54 in Appendix B).

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D5037 Fire Alarm Systems

The building is protected by a digital automatic fire detection alarm system. The main Fire Alarm Control Panel (FACP) is located within the fire alarm panel room, in building A, and is manufactured by Silent Knight by Honeywell (reference Photographs 55 and 56 in Appendix B). An annunciation panel is located in the lobby. Addressable devices are located throughout the building such as smoke detectors, pull stations and fire bell. The system is monitored by Bay Cities Fire Protection, tel: 707-579-8694.

D5038 Security and Detection Systems

The building contains an intruder alarm system, which consists of a programmable security alarm panel and motion sensors (reference Photograph 56 in Appendix B). The alarm panel is located within the lobby and the motion sensors are located throughout the building. We understand that the security system is also monitored 24/7 by Quality Systems Company, tel: 925-586-4112.

D5039 Local Area Network

A data system is present within the within the fire alarm panel room containing a wall mounted rack with voice and data patch panels, routers, switches, modems and structured data cabling to the various data plates located throughout the building

D5090 OTHER ELECTRICAL SYSTEMS

D5092 Emergency Light & Power Systems

Emergency exit signs are provided at exit routes from the building with battery backup.

CONDITION

D5012 Low Tension Service & Dist.

The electrical equipment items appeared to be in good condition and although we are unaware of when it was installed it appeared to be no more than five to ten-years of age. There was no indication of damage from short circuit or overload conditions. We were not provided preventative maintenance records for the main electrical equipment, and therefore we do recommend further evaluation of the equipment via an infrared electrical inspection which will highlight if high temperatures, excessive electrical resistance, failing components, ground faults and short circuiting issues exist.

We recommend budgeting for a cyclical allowance above and beyond normal annual electrical maintenance expenditures for cleaning the interiors of all enclosures, and infrared scans of connections, fuses, and breakers in switches, and panel boards beginning at the start of the study period and repeated no more than every three-years thereafter. Any items identified as abnormal during the infrared scans should be corrected at that time.

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Electrical panel boards generally have a EUL of thirty-years and based on the age of the panel boards present and their observed conditions we anticipate that there will be no requirement for replacement during the study period.

The solar array system also appeared to be in good condition with no operational issues reported. Based on a typical EUL of twenty to twenty-five years replacement of the rooftop modules is anticipated later in the study period. Warning signs are present at the main electrical disconnect with red background and white letters indicating that the building is supplied with an alternative power source; to comply with Fire Ordinance Code 605.11.2.

When using PV systems it is important not to shade the modules and regular cleaning to remove dust accumulation. Dust accumulation can cause power reduction of up to 10%.

D5020 LIGHTING & BRANCH WIRING

D5021 Branch Wiring Devices

The general receptacles and wiring appeared to be in good condition. We do not anticipate a requirement for their replacement during the cost study period.

D5022 Lighting Equipment

The interior lighting was observed in good condition and all fixtures were operating properly with no broken lenses or deteriorated housings. We understand that all of the light fixtures were upgraded two-years ago and therefore apart from re-lamping and replacement of fixtures on an individual basis, no actions are anticipated during the study period.

D5030 COMMUNICATIONS & SECURITY

D5033 Telephone Systems

The existing telephone system equipment was observed to be in good condition. The typical EUL of these systems is fifteen-years, therefore based on changing and innovating technology we have included for replacement after mid-term in the study period. There are no reported operating issues at this time which will require immediate action.

D5037 Fire Alarm Systems

The fire alarm system appeared to be in good condition. We are unaware of any operating issues with the system and we assume it receives regular testing. Fire alarm systems have a typical EUL of fifteen-years therefore we have included for full system replacement after mid-term in the study period.

D5038 Security and Detection Systems

The intruder alarm system appeared to be in good condition. We are unaware of any operating issues with the systems; however this type of system has a typical EUL of ten-years, therefore we have included for its replacement prior to midterm in the study period.



D5039 Local Area Network

The existing LAN system equipment was observed to be in good condition. The typical EUL of these systems is fifteenyears, therefore based on changing and innovating technology we have included for replacement after mid-term in the study period. There are no reported operating issues at this time which will require immediate action.

D5090 OTHER ELECTRICAL SYSTEMS

D5092 Emergency Light & Power Systems

Emergency exit signs appeared to be in good condition. We do not anticipate their replacement during the cost study period, apart from replacement of the signs on an individual basis, no actions are recommended during the study period.

PROJECTED EXPENDITURES

Identified recommended works that are required during the twenty-year study period are detailed below. We have included a 25% allowance for professional fees and general contractor overhead/profit and management costs (where applicable).

Element No.	Building Element	Recommendation	Qty	Unit	Rate	Cost	Year	Priority Code
D20	Plumbing	Renovation of the restrooms	4	EACH	\$20,000	\$80,000	2020	4
D2014	Sinks	Replace single stainless steel counter sinks and faucets	2	EACH	\$1,600	\$3,200	2022	4
D2014	Sinks	Replace double stainless steel counter sinks and faucets	1	EACH	\$2,170	\$2,170	2022	4
D2018	Drinking Fountains	Replace drinking fountains	2	EACH	\$3,181	\$6,362	2022	3
D2022	Hot Water Service	Replace water heater	20	GAL	\$35	\$700	2023	3
D3032	Direct Expansion Systems	Replace combined Carrier split-system	20	TONS	\$1,812	\$36,240	2024	3
D3032	Direct Expansion Systems	Replace combined Carrier split-system	20	TONS	\$1,812	\$36,240	2024	3
D3032	Direct Expansion Systems	Replace combined Carrier split-system	12.5	TONS	\$1,812	\$22,650	2024	3
D3032	Direct Expansion Systems	Replace combined Carrier split-system	12.5	TONS	\$1,812	\$22,650	2024	3
D3032	Direct Expansion Systems	Replace combined Trane split-system	3	TONS	\$1,812	\$5,436	2020	3



D3041	Air Distribution Systems	Replace Trane air handler unit HV-1	7,000	CFM	\$6.50	\$45,500	2020	3
D3041	Air Distribution Systems	Replace Trane air handler unit HV-2	7,000	CFM	\$6.50	\$45,500	2020	3
D3041	Air Distribution Systems	Replace Trane air handler unit HV-3	3,500	CFM	\$6.50	\$22,750	2020	3
D3041	Air Distribution Systems	Replace Trane air handler unit HV-4	3,500	CFM	\$6.50	\$22,750	2020	3
D3041	Air Distribution Systems	Overhaul air handler unit HV-1*	1	LS	\$2,000	\$2,000	2030	3
D3041	Air Distribution Systems	Overhaul air handler unit HV-2*	1	LS	\$2,000	\$2,000	2030	3
D3041	Air Distribution Systems	Overhaul air handler unit HV-3*	1	LS	\$2,000	\$2,000	2030	3
D3041	Air Distribution Systems	Overhaul air handler unit HV-4*	1	LS	\$2,000	\$2,000	2030	3
D3041	Air Distribution Systems	Clean ductwork	15,000	SF	\$0.25	\$3,750	2013	3
D3041	Air Distribution Systems	Clean ductwork	15,000	SF	\$0.25	\$3,750	2018	3
D3041	Air Distribution Systems	Clean ductwork	15,000	SF	\$0.25	\$3,750	2023	3
D3041	Air Distribution Systems	Clean ductwork	15,000	SF	\$0.25	\$3,750	2028	3
D3042	Exhaust Ventilation Systems	Replace ceiling exhaust fans (10 no.)	24,055	CFM	\$1.25	\$30,069	2026	3
D4011	Sprinkler Water Supply	Replace sprinkler heads	24,516	SF	\$1.05	\$25,742	2022	1
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2013	3
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2016	3
D5012	Low	Preventative	1	LS	\$750	\$750	2019	3

	Tension Service & Dist	Maintenance of Electrical Equipment						
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2022	3
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2025	3
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2028	3
D5012	Low Tension Service & Dist	Preventative Maintenance of Electrical Equipment	1	LS	\$750	\$750	2031	3
D5021	Low Tension Service & Dist.	Replace safety switches at roof level to AHU's and Trane split-system	5	EACH	\$668	\$3,340	2020	3
D5021	Low Tension Service & Dist.	Replace safety switches at roof level to air-cooled condensers	4	EACH	\$688	\$2,672	2024	3
D5021	Low Tension Service & Dist.	Replace rooftop solar modules	436	EACH	\$375	\$163,500	2031	3
D5033	Telephone System	Replace telephone system	10,000	SF	\$1.00	\$1,000	2022	3
D5037	Fire Alarm System	Replace fire alarm system	24,516	SF	\$5.00	\$122,580	2022	1
D5038	Security and Detection System	Replace security system	24,516	SF	\$0.62	\$15,200	2022	3
D5039	Local Area Network	Replace LAN system	10,000	SF	\$1.81	\$18,100	2022	3
		Total Anticipated E	Expenditure	for D Ser	vices	\$760,650		

^{*} Overhaul recommended to the units that have also been recommended for replacement earlier in the study period.

^{**} Areas used represent an estimated area where the system would be installed, as large areas of the building are open for activities, and assumed not to include service.

SECTION 6 - E EQUIPMENT & FURNISHINGS

E20 FURNISHINGS

DESCRIPTION

E2010 FIXED FURNISHINGS

E2012 Fixed Casework

The building contained wood constructed fixed floor and wall mounted casework within the staff area break room/kitchen, within the Teen center and also within the recently renovated office areas at the north side of building A (reference Photographs 25, 37 and 57 in Appendix B). The wood cabinets generally consisted of hardwood frames and plywood panels with wooden door panels. The worktop consisted of a plywood counter. The vanity tops within the restrooms also consisted of plywood counters.

We noted a wooden reception counter at the main reception within the main lobby entrance.

CONDITION

E2010 FIXED FURNISHINGS

E2012 Fixed Casework

The fixed cabinets, counters and vanity counter tops and reception counter appeared to be in fair to good condition and functional. Fixed casework usually has a typical EUL of twenty-years; therefore replacement is anticipated later in the study period for the teen center and the staff break/kitchen area. We anticipate due to the potential low use of the cabinets within the recently constructed offices that these cabinets and counters will last beyond the study period. The vanity counter tops within the restrooms have been included for replacement with the overall restroom replacement cost.



Identified recommended works that are required during the twenty-year study period are detailed below. We have included a 25% allowance for professional fees and general contractor overhead/profit and management costs (where applicable).

Element No.	Building Element	Recommendation	Qty	Unit	Rate	Cost	Year	Priority Code
E2012	Fixed Casework	Replace break room floor cabinets (inc countertops)	24	LF	\$600	\$14,400	2022	4
E2012	Fixed Casework	Replace wall mounted cabinets	8	LF	\$250	\$2,000	2022	4
E2012	Fixed Casework	Replace/modernize reception desk	1	LS	\$8,000	\$8,000	2022	4
		Total Anticipated Expendit	ure for E E	quipment & I	urnishings	\$24,400		

SECTION 7 - G BUILDING SITEWORK

G20 SITE IMPROVEMENTS

DESCRIPTION

G2020 PARKING LOTS

G2021 Bases and Sub-Bases

The building has a parking lot at the west side of the building that is accessed from 7th street. The parking lot has an asphalt surface with white line striping denoting areas of parking stalls (reference Photographs 58 and 59 in Appendix B). We were not provided with the original specification details of the paving and therefore cannot comment on the specific asphalt mix type, classification or its suitability for its existing use. Table G20-1 provides a summary of the site systems.

Table G20-1 Schedule of Site Systems

System Type	System Surface	Location	Measurement	No. of Parking Spaces	No. of ADA Parking Spaces
Parking Lot	Asphalt	West Parking Lot	2,500 SY	51	2

G2030 PEDESTRIAN PAVING

G2031 Paving & Surfacing

The building contained precast concrete pavers along the north and west elevations. We assume the paving is supported via a flexible base of sand setting bed and compacted sub grade.

G2040 SITE DEVELOPMENT

G2041 Fences & Gates

The facility contained a metal rail and post fence at the north side of the playing field and at the north-west side entrance. The fence construction contained swing gates at each of these sections (reference Photograph 8 in Appendix B). A chain link fence and gate is present along the east side of the property line and secures the electrical MDP enclosure, utility transformer and the solar control and disconnect switches.

G2047 Playing Fields

The facility contains a synthetic turf playing field at the north side of the building, opposite the entrance to the teen center.

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Both the gymnastics and teen center entrances both contained a unistrut metal canopy structure in a 4'-0" x 4'-0"modules which are supported by four 2'-0" diameter concrete columns (reference Photograph 6 in Appendix B).

G2050 LANDSCAPING

G2056 Planters

Landscaping consisted of mainly mature trees along the east side of the synthetic playing field and also at the south side of the building A.

CONDITION

G2020 PARKING LOTS

G2021 Bases and Sub-Bases

The asphalt paved areas throughout the site appeared to be in good condition; there were no major signs of surface deterioration such as alligator cracking. All areas of the asphalt should undergo asphaltic-based seal coat and the reapplication of surface markings starting in the near-term and then every five-years to extend the life of the pavements. Furthermore we have also recommended a full asphalt mill overlay and associated restriping, as the typical EUL of this work is twenty-years. However we recommend that the asphalt is re-assessed at the time prior to replacement to ascertain is the work will be necessary.

G2030 PEDESTRIAN PAVING

G2031 Paving & Surfacing

The precast concrete pavers appeared to be in fair to good condition and will not require replacement during the cost study period.

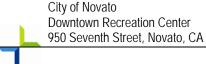
G2040 SITE DEVELOPMENT

G2041 Fences & Gates

The perimeter fences and swinging gates appeared to be in fair to good condition with no issues observed and no reported instances of disrepair. We do not anticipate a requirement for their replacement during the study period. However we do recommend the refinishing of the metal rail and post fence along with the gates mid-term in the study period.

G2047 Playing Fields

The precast concrete pavers appeared to be in fair to good condition and will not require replacement during the cost study period.



G2049 Miscellaneous Structures

The canopy structure appeared to be in good condition and will not require replacement during the cost study period.

G2050 LANDSCAPING

G2056 Planters

The mature trees appeared to be in fair condition and are anticipated to only require routine maintenance on an as-needed basis as part of routine maintenance and funded as an operational expense.

G40 SITE ELECTRICAL UTILITIES

City of Novato

DESCRIPTION

G4020 SITE LIGHTING

G4021 Fixtures & Transformers

Exterior lighting at the buildings consisted of a combination of surface mounted wall packs with aluminum housing (reference Photograph 8 in Appendix B) and also pole mounted sodium fixtures which are located throughout the parking lot

CONDITION

G4020 SITE LIGHTING

G4021 Fixtures & Transformers

The exterior light fixtures appeared to be in good condition, with no yellowing lenses or visible deterioration. We do not anticipate their replacement during the cost study period, apart from replacement of the fixtures on an individual basis, no actions are recommended during the study period.

PROJECTED EXPENDITURES

Identified recommended works that are required during the twenty-year study period are detailed below. We have included a 25% allowance for professional fees and general contractor overhead/profit and management costs (where applicable).

Element No.	Building Element	Recommendation	Qty	Unit	Rate	Cost	Year	Priority Code
G2021	Bases and Sub-Bases	Undertake seal coating including re-striping at the parking lot	2,500	SY	\$1.50	\$3,750	2013	3
G2021	Bases and Sub-Bases	Undertake seal coating including re-striping at the parking lot*	2,500	SY	\$1.50	\$3,750	2018	3
G2021	Bases and Sub-Bases	Asphalt mill and overlay to include restriping	2,500	SY	\$15.00	\$37,500	2023	3
G2021	Bases and Sub-Bases	Undertake seal coating including re-striping at the parking lot	2,500	SY	\$1.50	\$3,750	2028	3
G2041	Fences & Gates	Refinish the fence and gate surfaces	1	LS	\$1,500	\$1,500	2022	4
		Total Anticipated Expendi	ture for G	Building S	Sitework	\$50,250		

^{*} No seal coating works included for year 2023 as an asphalt mill and overlay has been included.

Appendix A
Twenty-Year **Expenditure Forecast** 2013 - 2032



Downtown Recreation Center 950 Seventh Street Novato, CA



Element No.	Component Description	Estimated Useful Life or Replacement Cycle	Remaining Usefu Life (Yrs)	l Quantity	Unit of Measurement	Unit Cost	Plan Type	Priority	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Total	Combined Total
		(Yrs)				\$			1 Deferred	2 Scheduled	3 Scheduled	4 Scheduled S	5 Scheduled	6 Scheduled	7 Scheduled	8 Scheduled	9 Scheduled	10 Scheduled	11 Scheduled	12 Scheduled	13 Scheduled	14 Scheduled	15 Scheduled	16 Scheduled	17 Scheduled	18 Scheduled	19 Scheduled	20 Scheduled	Deferred	Scheduled	
A. SUBSTRU	CTURE											\$0																			
B. SHELL				5 000 00	05	44.00	A. SUBSTRUCTURE	SUB-TOTALS	\$0																				\$0		\$0
B2011	Repaint exterior wall surfaces and soffits	8	6	5,000.00	SF	\$1.88	Capital Renewal	4		\$0	\$0	\$0	\$0	\$0	\$9,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,400	\$0	\$0	\$0	\$0	\$0	\$0	\$18,800	\$18,800
B2021	Replace sealant at the curtain walling and storefront systems	15	0	250.00	LF	\$11.25	Deferred Maintenance	3	\$2,813	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,813	\$0	\$2,813
B2021	Replace sealant at the curtain walling and storefront systems	15	15	250.00	LF	\$11.25	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,813	\$0	\$0	\$0	\$0	\$0	\$2,813	\$2,813
B2034	Replace overhead door	30	9	1.00	EACH	\$2,800.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,800	\$2,800
B2039	Replace single hollow metal door	30	9	1.00	EACH	\$1,500.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$1,500
B3011	Replace asphalt shingle roof covering	40	1	13,500.00	SF	\$6.25	Capital Renewal	3	\$0	\$84,375	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$84,375	\$84,375
B3011	Replace tar and gravel roof covering	20	1	4,200.00	SF	\$12.00	Capital Renewal	3	\$0	\$50,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,400	\$50,400
B3013	Solar panel removal and reinstall at time of roof covering replacements	N/A	1	1.00	EACH	\$10,000.00	Capital Renewal	3	\$0	\$10,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000	\$10,000
B3011	Replace metal panel roof covering	30	1	7,000.00	SF	\$27.50	Capital Renewal	3 . SUB-TOTALS	\$0 \$2,813	\$192,500 \$337,275	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$9,400	\$0 \$0	\$0 \$0	\$0 \$4,300	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$9,400	\$0 \$2,813	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$2,813	\$192,500 \$363,188	\$192,500 \$366,000
C. INTERIOR	Repaint interior wall surfaces within the main																														
C3012	gymnasium area and restrooms	8	2	7,600.00	SF	\$1.88	Capital Renewal	4	\$0	\$0	\$14,288	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,288	\$0	\$0	\$28,576	\$28,576
C3012	Repaint interior wall and ceiling surfaces within the main and gym offices	8	6	5,400.00	SF	\$1.88	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$10,152	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,152	\$0	\$0	\$0	\$0	\$0	\$0	\$20,304	\$20,304
C3012	Repaint interior wall surfaces within the teen center, teen offices and the multipurpose room	8	7	10,500.00	SF	\$1.88	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$19,740	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$19,740	\$0	\$0	\$0	\$0	\$0	\$39,480	\$39,480
C3012	Repaint interior wall surfaces within the main gymnasium area only	8	10	6,300.00	SF	\$1.88	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,844	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,844	\$11,844
C3024	Replace vinyl tile at the teen center	18	17	2,500.00	SF	\$3.75	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,375	\$0	\$0	\$0	\$9,375	\$9,375
C3024	Replace vinyl sheet at the staircases	18	10	27.00	SY	\$113.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,051	\$0	\$0	\$0	\$3,051	\$3,051
C3024	Regrout ceramic floor tiles as well as isolated ceramic wall tile areas within restrooms	10	2	750.00	SF	\$11.69	Capital Renewal	4	\$0	\$0	\$8,768	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,768	\$8,768
C3024	Refinish wood plank floor	10	2	3,000.00	SF	\$5.76	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,280	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,280	\$0	\$34,560	\$34,560
C3025	Replace carpet floor covering (main office &	10	3	65.00	SY	\$84.25	Capital Renewal	4	\$0	\$0	\$5,476	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,476	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,953	\$10,953
C3025	mezzanine) Replace carpet floor covering (gym office)	10	8	177.00	SY	\$84.25	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,912	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,912	\$0	\$0	\$29,825	\$29,825
C3025	Replace carpet floor covering (teen	10	9	77.00	SY	\$84.25	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,487	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,487	\$0	\$12,975	\$12,975
C3031	Replace torn and damaged insulation within the multipurpose area	N/A	0	1.00	LS	\$1,500.00	Deferred Maintenance	3	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$0	\$1,500
C3031	Replace torn and damaged insulation within the multipurpose area	N/A	10	1.00	LS	\$1,500.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$1,500
C3032	Replace suspended ceiling system in the gym offices	20	18	540.00	SF	\$6.25	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,375	\$0	\$0	\$3,375	\$3,375
D SERVICES		20	7	4.00	54011	too ooo oo			\$1,500	\$0	\$28,532	\$0	\$0	\$0	\$10,152	\$19,740	\$14,912			\$0	\$5,476	\$0		\$19,740	\$0	\$12,426	\$32,575	\$23,767	\$1,500	\$214,584	\$216,084
D2014	Renovation of the restrooms Replace single stainless steel counter sinks	20	9	2.00	EACH	\$20,000.00 \$1,600.00	Capital Renewal Capital Renewal	4	\$0 \$0	\$0 \$0	\$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$80,000	\$0 \$0	\$3,200	\$0 \$0	\$0	\$0 \$0	\$0 \$0	\$0	\$80,000 \$3,200	\$80,000 \$3,200						
D2014	and faucets Replace double stainless steel counter sink	20	9	1.00	EACH	\$2,170.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,170	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,170	\$2,170
D2018	and faucets Replace drinking fountains	20	9	2.00	EACH	\$3,181.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,362	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,362	\$6,362
D2022	Replace water heater	15	10	20.00	GAL	\$35.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$700	\$700
D3032	Replace combined Carrier split-system	20	11	20.00	TONS	\$1,812.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,240	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,240	\$36,240
D3032	Replace combined Carrier split-system	20	11	20.00	TONS	\$1,812.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,240	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,240	\$36,240
D3032	Replace combined Carrier split-system	20	11	12.50	TONS	\$1,812.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,650	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,650	\$22,650
D3032	Replace combined Carrier split-system	20	11	12.50	TONS	\$1,812.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,650	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,650	\$22,650
D3032	Replace combined Trane split-system	20	7	3.00	TONS	\$1,812.00	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,436	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,436	\$5,436
D3041	Replace Trane air handler unit HV-1	20	7	7,000.00	CFM		Energy & Sustainability		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$45,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$45,500	\$45,500
D3041	Replace Trane air handler unit HV-2	20	7	7,000.00	CFM		Energy & Sustainability		\$0 \$0	\$0	\$0 \$0	\$0	\$0	\$0	\$0	\$45,500	\$0	\$0	\$0 \$0	\$0	\$0	\$0	\$0	\$0 \$0	\$0	\$0 \$0	\$0	\$0	\$0 \$0	\$45,500	\$45,500
D3041	Replace Trane air handler unit HV-3 Replace Trane air handler unit HV-4	20	7	3,500.00	CFM		Energy & Sustainability Energy & Sustainability		\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$22,750 \$22,750	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$22,750 \$22,750	\$22,750 \$22,750
D3041	Overhaul air handler unit HV-1	10	17	1.00	LS	\$2,000.00	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$2,000	\$2,000
D3041	Overhaul air handler unit HV-2	10	17	1.00	LS	\$2,000.00	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$2,000	\$2,000
D3041	Overhaul air handler unit HV-3	10	17	1.00	LS	\$2,000.00	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$2,000	\$2,000
D3041	Overhaul air handler unit HV-4	10	17	1.00	LS	\$2,000.00	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$2,000	\$2,000
D3041	Clean ductwork	5	0	15,000.00	SF	\$0.25	Deferred Maintenance	3	\$3,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,750	\$0	\$3,750
D3041	Clean ductwork	5	5	15,000.00	SF	\$0.25	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$0	\$11,250	\$11,250
D3042	Replace rooftop exhaust fans (10 no.)	15	12	24,055.00	CFM	\$1.25	Energy & Sustainability	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$30,069	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$30,069	\$30,069
D4011	Replace sprinkler heads	20	9	24,516.00	SF	\$1.05	Capital Renewal	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,742	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,742	\$25,742
D5012	Preventative Maintenance of Electrical Equipment	3	0	1.00	EACH	\$550.00	Deferred Maintenance	3	\$550	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$550	\$0	\$550
D5012	Preventative Maintenance of Electrical Equipment Replace safety switches at roof level to AHU's	3	3	1.00	EACH	\$550.00	Routine Maintenance	3	\$0	\$0	\$0	\$550	\$0	\$0	\$550	\$0	\$0	\$0	\$0	\$0	\$550	\$0	\$0	\$550	\$0	\$0	\$550	\$0	\$0	\$2,750	\$2,750
D5021	and the Trane split-system Replace safety switches at roof level to AHU's	30	7	5.00	EACH	\$668.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,340	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,340	\$3,340
D5021	cooled condensers	30	11	4.00	EACH	\$668.00	Capital Renewal	3	\$0 \$0	\$0	\$0 \$0	\$0	\$0	\$0 \$0	\$0	\$0 \$0	\$0	\$0	\$0 \$0	\$2,672	\$0	\$0	\$0	\$0 \$0	\$0	\$0	\$163 500	\$0	\$0 \$0	\$2,672	\$2,672
D5021	Replace rooftop solar modules	20-25	18	436.00	EACH	\$375.00	Energy & Sustainability	3	ąυ	\$0	φU	\$0	\$0	φU	\$0	ψU	\$0	\$0	ψU	\$0	\$0	\$0	\$0	\$U	\$0	\$0	\$163,500	\$0	ψU	\$163,500	\$163,500

20 YEAR EXPENDITURE FORECAST

Downtown Recreation Center 950 Seventh Street Novato, CA



Element I	lo. Component Description	Estimated Useful Life or Replacement Cycle (Yrs)	Remaining Useful Life (Yrs)	Quantity	Unit of Measurement	Unit Cost	Plan Type	Priority	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Total	Combined Total
						\$			1 Deferred	2 Scheduled	3 Scheduled	4 Scheduled	5 Scheduled	6 Scheduled	7 Scheduled	8 Scheduled	9 Scheduled	10 Scheduled	11 Scheduled	12 Scheduled	13 Scheduled	14 Scheduled	15 Scheduled	16 Scheduled	17 Scheduled	18 Scheduled	19 Scheduled	20 Scheduled	Deferred	Scheduled	
D5033	Replace telephone system	15	9	1,000.00	SF	\$1.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,000	\$1,000
D5037	Replace fire alarm system	15	9	24,516.00	SF	\$5.00	Capital Renewal	1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$122,580	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$122,580	\$122,580
D5038	Replace security system	10	9	24,516.00	SF	\$0.62	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,200	\$15,200
D5039	Replace LAN system	15	9	10,000.00	SF	\$1.81	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$18,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$18,100	\$18,100
E EQUUE	MENT & EURNISHING	<u> </u>					D. SERVICE	S SUB-TOTALS	\$4,300	\$0	\$0	\$550	\$0	\$3,750	\$550	\$225,276	\$0	\$194,354	\$4,450	\$120,452	\$550	\$30,069	\$0	\$4,300	\$0	\$8,000	\$164,050	\$0	\$4,300	\$756,350	\$760,650
E2012	Replace break room and teen center cabinets (inc countertops)	20	9	24.00	LF	\$600.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,400	\$14,400
E2012	Replace wall mounted cabinets	20	9	8.00	LF	\$250.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,000	\$2,000
E2012	Replace/modernize reception desk	20	9	1.00	LS	\$8,000.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,000	\$8,000
E CDEOU	L CONSTRUCTION AND DEMOLITION					E. EQUIF	MENT & FURNISHIN	G SUB-TOTALS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,400	\$24,400
F. SPECIA	E CONSTRUCTION AND DEMOLITION																													\$0	
G RIIII D	NG SITEWORK				F. SPECIAL	CONSTRUCT	ON AND DEMOLITIO	N SUB-TOTALS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
G2021	Undertake seal coating including re-striping at the parking lot	5	0	2,500.00	SY	\$1.50	Deferred Maintenance	3	\$3,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,750	\$0	\$3,750
G2021	Undertake seal coating including re-striping at the parking lot (None in year 2023)	5	5	2,500.00	SY	\$1.50	Routine Maintenance	3	\$0	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$0	\$7,500	\$7,500
G2021	Asphalt mill and overlay to include re-striping	20	10	2,500.00	SY	\$15.00	Capital Renewal	3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,500	\$37,500
G2041	Refinish the fence and gate surfaces	10	9	1.00	LS	\$1,500.00	Capital Renewal	4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500	\$1,500
				1		G.	BUILDING SITEWOR	K SUB-TOTALS	\$3,750	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$1,500	\$37,500	\$0	\$0	\$0	\$0	\$3,750	\$0	\$0	\$0	\$0	\$3,750	\$46,500	\$50,250
Z GENER	AI																													\$0	
					1	1	Z. GENERA	L SUB-TOTALS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		\$0
							Expenditure Totals per	r Year	\$12,363	\$337,275	\$28,532	\$550	\$0	\$7,500	\$20,102	\$245,016	\$14,912	\$248,321	\$55,294	\$120,452	\$6,026	\$30,069	\$19,552	\$30,603	\$0	\$20,426	\$196,625	\$23,767	\$12,363	\$1,405,022	\$1,417,384
							Total Cost (Inflated @	4% per Yr.)	\$12,363	\$350,766	\$30,860	\$619	\$0	\$9,125	\$25,435	\$322,424	\$20,408	\$353,438	\$81,849	\$185,430	\$9,648	\$50,067	\$33,858	\$55,113	\$0	\$39,788	\$398,327	\$50,074	\$12,363	\$2,017,229	\$2,029,592
																													<u> </u>		

Appendix B Photographs





View of the concrete columns supporting the glulam beams.



Photograph No. 2

View of the supporting steel posts and the glulam girder.



Photograph No. 3

View of the glulam beams supported by the two girders for the roof construction within building A.



View of the steel rigid frame structure in building B.



Photograph No. 5

View of the roof construction and the insulation enclosure.



Photograph No. 6

View of the main elevation and the entrance canopy structure.



View of the pebble/small rock finish at the tiltup concrete panels.



Photograph No. 8

View of the concrete columns and inserted concrete tilt-up panels, as well as the roof overhang, wall mounted exterior wall pack light fixtures and the rail and post fence and gate.



Photograph No. 9

View of the preformed metal wall panels.



View of the preformed metal wall panels.



Photograph No. 11

View of the curtain walling system.



Photograph No. 12

View of the shrunken sealant between the curtain walling frame and the concrete column.



View of the main entrance storefront entrance system. Also the ceramic wall ties.



Photograph No. 14

View of the roll-up over head door.

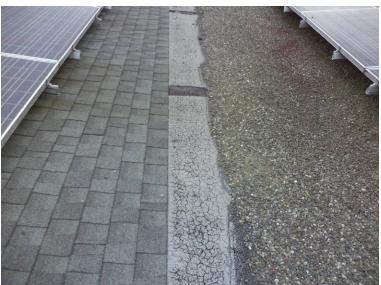


Photograph No. 15

View of the asphalt roof covering system at the steep-sloped roof.

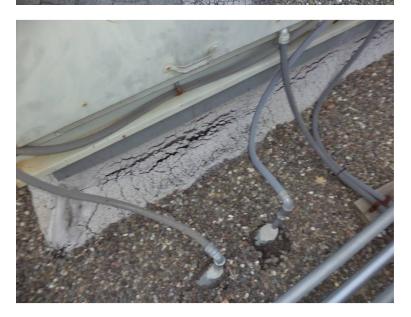


View of the tar and gravel roof covering.



Photograph No. 17

View of the deteriorated and cracked mineral cap sheetat the transition.



Photograph No. 18

View of the deterioration at the equipment upstands.

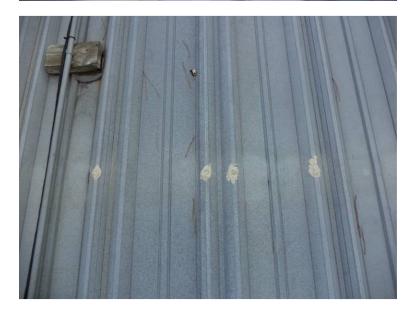


View of an already repaired section.



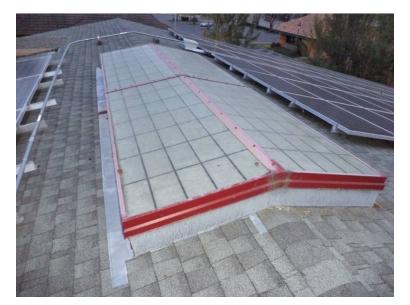
Photograph No. 20

View of the metal roof panel. Also shows the repairs undertaken at the main seam.

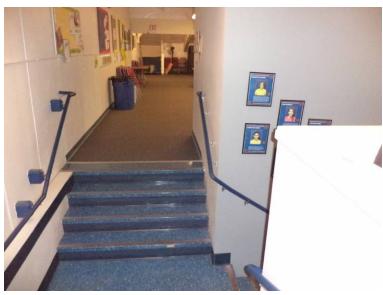


Photograph No. 21

View of the repairs undertaken at the screw fastners.



View of the skylights at the steep-sloped roof.



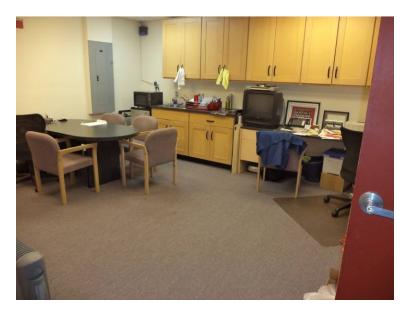
Photograph No. 23

View of one of the staircases to the mezzanine level.



Photograph No. 24

View of the painted walls within the gymnasium area.



View of the finishes within the recently created gym offices.



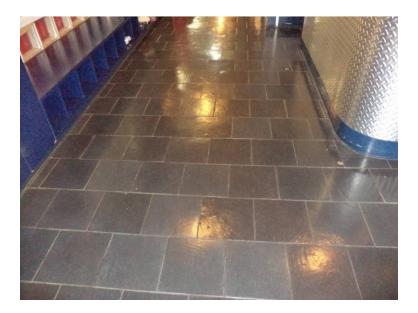
Photograph No. 26

View of the finishes within the teen center.



Photograph No. 27

View of ceramic floor and wall tiles within the restrooms in building B.



View of the floor tiles within the lobby and main corridor areas.



Photograph No. 29

View of finished within the main office.



Photograph No. 30

View of the finsihes at mezzanine level.



View of the elevator cab door and call button.



Photograph No. 32

View of the elevator cab.



Photograph No. 33

View of the elevator equipment.



View of one of the floor mounted water closet.



Photograph No. 35

View of one of the urinals and wainscot.



Photograph No. 36

View of the lavatiories and vanity coutertop.



Photograph No. 37

View of one of the stainless steel sinks.



Photograph No. 38

View of one of the drinking fountains.



Photograph No. 39

View of the water heater.



View of the gas service.



Photograph No. 41

View of one of the air-cooled condenser units.



Photograph No. 42

View of the heat pump unit.



View of one of the air handler units.



Photograph No. 44

View of one of the smalled air handler units.



Photograph No. 45

View of one of the exhaust fans.



Photograph No. 46

View of the fire riser.



Photograph No. 47

View of one of the upright sprinkler head.



Photograph No. 48

View of the fire extinguisher tag.



View of the MDP enclosure.



Photograph No. 50

View of the MDP and meter.



Photograph No. 51

View of the solar control units.



View of the rooftop solar panels/modules.



Photograph No. 53

View of the ductwork and also the light fixtures.



Photograph No. 54

View of the telephone and data systems.



View of the fire alarm panel,



Photograph No. 56

View of the security panel and fire alarm pull station.



Photograph No. 57

View of the teen center countertops and sink.



Photograph No. 58

View of the asphalt paking lot.



Photograph No. 59

Further view of the asphalt parking lot.

Appendix C Asset Inventory



												Speed	No. of	Year Manufactu
Location	Facility	Location of Asset	Life Cycle Code	Туре	Equipment Type	Manufacturer	Model No.	Serial No.	Tag	Fuel Type	Capacity / Rating	(FPM)	Landings	re
Downtown Recreation Center	Downtown Recreation Center	Elevator Equipment Room	D1011	Passenger Elevators	Hydraulic Passenger Elevator	US Elevator / Thyssenkrupp Elevator	TC2000	Unknown		N/A	2,100 lbs or 14 Persons	Unknown	2	Unknown
Downtown Recreation Center	Downtown Recreation Center	Fire Alarm Panel Room	D2022	Hot Water Service	Water Heater	State Electric	SB6206IFEASMEX	K99110620		Electric	20 Gallons			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3032	Cooling Generating Systems	Split-System Outdoor Air- Cooled Condensing Unit	Carrier	38AKS024-510	0202F30394		Electric	20 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Gymnastics Center	D3032	Cooling Generating Systems	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown		Electric	20 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3032	Cooling Generating Systems	Split-System Outdoor Air- Cooled Condensing Unit	Carrier	38AKS024-510	0202F30370		Electric	20 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Gymnastics Center	D3032	Cooling Generating Systems	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown		Electric	20 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3032	Cooling Generating Systems	Split-System Outdoor Air- Cooled Condensing Unit	Carrier	38AKS014-510	0502F34067		Electric	12.5 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Gymnastics Center	D3032	Cooling Generating Systems	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown		Electric	12.5 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3032	Cooling Generating Systems	Split-System Outdoor Air- Cooled Condensing Unit	Carrier	38AKS014-510	0502F34066		Electric	12.5 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Gymnastics Center	D3032	Cooling Generating Systems	Split-System Indoor Air Handling Unit	Carrier	Unknown	Unknown		Electric	12.5 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Roof Level	D3032	Cooling Generating Systems	Split-System Heat Pump Complete System	Trane (XE1200)	TTP042C300A1	P243W302F	CU-1	Electric / Natural Gas	Assumed 3 Tons			Assumed 2002
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi Purpose)	·D3041	Air Distribution Systems	Air Handler Unit	Trane	GAA70GDEON2CQ105H1	C99F10482M	HV-1	Electric / Natural Gas	7,000 CFM / 560,000 BTU / HR			Unknown

Location	Facility	Location of Asset	Life Cycle Code	Туре	Equipment Type	Manufacturer	Model No.	Serial No.	Tag	Fuel Type	Capacity / Rating	Speed (FPM)	No. of Landings	Year Manufactu re
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi- Purpose)	D3041	Air Distribution Systems	Air Handler Unit	Trane	GAA70GDEON2CQ105H1	C99F10483M	HV-2	Electric / Natural Gas	7,000 CFM / 560,000 BTU / HR			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi- Purpose)	D3041	Air Distribution Systems	Air Handler Unit	Trane	GRAA30GDKEONZBN105H	C99F10470M	HV-3	Electric / Natural Gas	3,500 CFM / 240,000 BTU / HR			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi- Purpose)	D3041	Air Distribution Systems	Air Handler Unit	Trane	GRAA35GDKEONZBP105H	C99F10451M	HV-4	Electric / Natural Gas	3,500 CFM / 280,000 BTU / HR			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Elevator Room)	D3042	Exhaust Ventilation Systems	Ceiling Exhaust Fan	Unknown	Unknown	Unknown	E-1	Electric	265 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Unknown	D3042	Exhaust Ventilation Systems	Ceiling Exhaust Fan	Unknown	Unknown	Unknown	E-2	Electric	225 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Staff Restroom)	D3042	Exhaust Ventilation Systems	Ceiling Exhaust Fan	Unknown	Unknown	Unknown	E-3	Electric	100 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Unknown	D3042	Exhaust Ventilation Systems	Ceiling Exhaust Fan	Unknown	Unknown	Unknown	E-4	Electric	775 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	DX36B	Unknown	E-5	Electric	7,000 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Gymnastics Center)	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	DX36B	Unknown	E-6	Electric	7,000 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi- Purpose)	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	DX24B	Unknown	E-7	Electric	3,500 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level (Serves Teen Center / Multi- Purpose)	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	Unknown	Unknown	E-8	Electric	4,000 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	DX06B	Unknown	E-9	Electric	195 CFM			Unknown
Downtown Recreation Center	Downtown Recreation Center	Roof Level	D3042	Exhaust Ventilation Systems	Exhaust Fan	Penn	DX11B	Unknown		Electric	Assumed 1,000 CFM			Unknown

Appendix D

Document Review and Warranty Information





DOCUMENT REVIEW & WARRANTY INFORMATION

In addition to the completion of our visual evaluation, Faithful+Gould interviewed the various representatives from the City of Novato (were possible), and reviewed the following documentation:

1996 Construction Drawings for the Teen Center and Gymnastics Center Project:

Architectural Drawings A1.0 through A-10.0, dated December 1999 by Kelly Associates Architects

Structural Drawings S1.0, S1.1, S2.0, S2.1, S3.0, S4.0 & S4.1, dated December 1999 by Zucco Fasent Associates

Mechanical Drawings M1 & M2, dated December 1999 by Lefler Associates

Plumbing Drawings P-1 & P2, dated December 1999 by Lefler Associates

Electrical Drawings E1.0 & E2.0, dated December 1999 by Hensen/Slaughter Inc.

Appendix EGlossary of Terms





Acronyms & Glossary of Terms

CMU Concrete Masonry Unit

BUR **Built-Up Roof**

EIFS Exterior Insulation and Finish System EPDM Ethylene Propylene Diene Monomer

Solid Core Doors SC НМ Hollow Metal Doors

МН Man Holes

ABC Aggregate Base Course **EMT** Electrical Metallic Conduit

EUL Estimated Useful Life RUL Recommended Useful Life

End of Life EOL

Facility Condition Index FCI **CRV** Current Replacement Value **Deferred Maintenance** DM

Square Foot SF Square Yards SY

PSF Pounds-Per-Square-Foot PSI Pounds-Per-Square-Inch

NFPA National Fire Protection Association

FACP Fire Alarm Control Panel NAC Notification Appliance Circuit

FCC Fire Command Center

HVAC Heating Ventilating and Air conditioning

Variable Air Volume VAV AHU Main Air Handling Units

HP Horse Power

Fuel Supply System **FSS MDP** Main Distribution Panel

Service Entrance Switchboard's SES

NEMA National Electrical Manufactures Association

HID Intensity Discharge **EMT Electrical Metallic Tubing**

kilovolt-ampere KVA RO Reverse Osmosis

BTU/HR British Thermal Units per Hour

kW

FPM Feet per Minute (Elevator Speed)

Amperage Amp



Acronyms & Glossary of Terms

BTU – British Thermal Unit; the energy required to raise the temperature of one pound of water by one degree.

Building Envelope - The enclosure of the building that protects the building's interior from the outside elements, namely the exterior walls, roof and soffit areas.

Building Systems – Interacting or independent components or assemblies, which from single integrated units, that comprise a building and its site work, such as, pavement and flatwork, structural frame, roofing, exterior walls, plumbing, HVAC, electrical, etc.

Caulking – Soft, putty-like material used to fill joints, seams, and cracks.

Codes - See building codes.

Component – A fully functional portion of a building system, piece of equipment, or building element.

Deferred Maintenance – Physical deficiencies that cannot be remedied with routine maintenance, normal operating maintenance, etc., excluding de minimis conditions that generally do not present a material physical deficiency to the subject property.

Expected Useful Life (EUL) – The average amount of time in years that an item, component or system is estimated to function when installed new and assuming routine maintenance is practiced.

Facility – All or any portion of buildings, structures, site improvements, complexes, equipment, roads, walks, passageways, parking lots, or other real or personal property located on site.

Flashing – A thin, impervious sheet of material placed in construction to prevent water penetration or to direct the flow of water. Flashing is used especially at roof hips and valleys, roof penetrations, joints between a roof and a vertical wall, and in masonry walls to direct the flow of water and moisture.

Remaining Useful Life (RUL) – A subjective estimate based upon observations, or average estimates of similar items, components, or systems, or a combination thereof, of a number of remaining years that an item, component, or system is established to be able to function in accordance with its intended purpose before warranting replacement. Such period of time is affected by the initial quality of an item, component, or system, the quality of the initial installation, the quality and amount of preventative maintenance exercised, climatic conditions, extent of use, etc.

Thermal Resistance (R) – A unit used to measure a material's resistance to heat transfer. The formula for thermal resistance is: R = Thickness(in inches)/K

Structural Frame – The components or building systems that support the building's nonvariable forces or weights (dead loads) and variable forces or weights (live loads).

Warranty – Legally enforceable assurance of quality or performance of a product or work, or of the duration of satisfactory performance. Warranty guarantee and guaranty are substantially identical in meaning; nevertheless, confusion frequently arises from supposed distinctions attributed to guarantee (or guaranty) being exclusively indicative of duration of satisfactory performance or of a legally enforceable assurance furnished by a manufacturer or other third party. The uniform commercial code provisions on sales (effective in all states except Louisiana) use warranty but recognize the continuation of the use of guarantee and guaranty.