

Town of Newbury Library

0 Lunt Street
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Capital Needs Assessment & Replacement Reserve Analysis

Exterior Envelope & Mechanical Systems

Prepared for:

Town of Newbury

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I. Introduction

The Town of Newbury Library was built in 2000. It is a single story slab on grade building. In general, the exterior of the building is well maintained and appears to be aging well. There are some specific areas of the building's exterior which require more immediate attention and these are discussed in the body of this report.

II. Executive Summary

This Capital Needs Assessment (CNA) has been undertaken on behalf of the Town of Newbury in order to determine the property's current and prospective physical circumstances with regards to the building's exterior envelope. This Capital Needs Assessment focuses on the capital activities that can reasonably ensure the building exterior and mechanical systems are viable and remain in good condition over a twenty-year period.

III. Methodology

The information contained in this analysis was based on a physical site inspection, an interview with the head of the Town's facility department. The site inspection consisted of a visual inspection of all exterior elements of the building and mechanical systems to assess their current conditions and to determine the extent of repairs needed in order to extend the lifespan of the building to limit cost of repairs in the future. Photographs were also taken and included in this report for reference. No destructive testing was used for the preparation of this report.

IV. Narrative

a. Roofs

Existing Conditions – Asphalt

Architectural asphalt shingles cover a majority of the roof and include a ridge vent and exposed copper valley and copper drip edge flashings. The typical life span of an architectural asphalt shingle roof is 30 years. There were numerous examples in which the shingles were cracked and in some cases portions of shingles were missing. All cracked and missing shingles should be replaced immediately. The flashings appear to be in good condition.

Capital Needs

The amount of cracked or missing shingles is appropriate for a 19-year old architectural asphalt shingle roof. The report shows costs to repair the roof in year 1. The full replacement of the asphalt shingled roof is shown in year 10, at the end of the roof's lifespan.



Existing Conditions – EPDM

Fully adhered white EPDM roofing covers the roof above the clerestory and it appears to be in good condition.

Capital Needs

Based on industry standards, a properly installed EPDM roof should last somewhere between 12 and 20 years. Based on the condition of this roof, it is reasonable to expect that it will last 20 years. The cost of a newly applied roof is shown in year 6 of the report.

Existing Conditions – Standing Seam Metal

Painted steel standing seam metal roofing covers the main entrance of the library from the parking area as well as the book and audio visual return kiosk on the side of the

building. The roofing has areas in which the finish was damaged and the steel roofing is rusting. These areas are minor and to date all of the corrosion appears to be superficial. However, if allowed to continue the corrosion will spread and will shorten the lifespan of this roofing.

Capital Needs

Based on the observed conditions of the standing seam metal roofing, all damaged areas of standing seam metal should be ground down to bare metal, cleaned, primed and painted in year 2. This roofing should be monitored on an annual basis.



Existing Conditions – Other

There have been a few roof leaks over the lifespan of the building. While these were all suitably repaired at the time of occurrence, two columns at roof valleys and several ceiling tiles show signs of water damage. Additionally, paint is peeling at several arch-shaped beams at the clerestory.

Capital Needs

Repainting of the water-damaged steel and replacement of ceiling tiles at the interior is shown in year 2.

**b. Exterior walls****i. Siding****Existing Conditions-Vertical Cementitious Siding**

The vertical cementitious siding is located at three locations. The siding appears to be in good condition and should last the lifetime of the building with proper maintenance. Cementitious siding throughout is degrading at the ground level, and needs approximately 12% replacement.

Capital Needs

Repair of cementitious siding is shown in year 1. Repair of all siding should occur before the full exterior repainting shown in year 3.



Existing Conditions-Horizontal Cementitious Siding

Horizontal Cementitious siding is located around the perimeter of the building, from the top of the foundation wall to the bottom of the water table trim. As above, the siding is degraded at ground level, and needs repair and replacement at approximately 12%. Several locations around the building need trim repair, as well as sealing around wall penetrations. In locations where siding is within 4" of the slab or finish grade, the repair should include raising the lower edge to manufacturer's recommendation.

Capital Needs

Repair of the cementitious trim and siding is shown in year 1, prior to full exterior repainting in year 3.

Existing Conditions- Cedar Shingle Siding

Cedar shingles cover the majority of the library and appear to have a colored stain finish. They are observed to be in good condition , with the finish showing signs of sun and damage.

Capital Needs

Surface preparation and repair of the cedar shingle siding is shown in year 1, prior to full exterior painting in year 3. Regular repair of the cedar shingles is shown every five years.

Existing Conditions- Vertical Metal Siding

The existing book/audio visual return kiosk, which also houses a fire department connection, is clad in copper siding. This enclosure has several dents and holes in

the metal siding, likely from snow plowing. Otherwise the cladding is in good condition and does not require any work at this time.

Capital Needs

Repair of the metal siding is shown in year 2. The projected lifecycle of the copper siding is 40+ years and would not need replacing during the course of this CNA.



ii. Doors

Existing Conditions-Exterior Doors

The main entrance, secondary handicapped entrance, and maintenance storage entrance, all have aluminum and glass storefront-style entry systems. They are original to the building and are in good condition. No operational problems with the doors were observed or reported at the time of the inspection, so no work is needed at this time. The door sweeps are aging and are no longer functional.

Capital Needs

Future, in-kind, replacement of the entry doors systems is shown in year 18, after 30 years of service. New sweeps at all exterior doors are shown in year 2. Any interim repair and maintenance needs should be addressed from the operating account.



iii. Windows

Existing Conditions-Clerestory Windows

An atrium space is created along the axes of the building with clerestory windows. The windows are fixed, double glazed, wood with aluminum exterior cladding and most appear to be in satisfactory condition. Within the first five years of the building, flashing was repaired due to leaking, and the solution has been sufficient. The lifespan of these windows is projected to be 30 years and they are original to the building. New caulking and sealant of all windows is shown in year 4.

Capital Needs

Future replacement of the aluminum clad windows is shown in year 14, after their expected useful life of 30 years.



Existing Conditions-First floor Windows

The first floor windows are all fixed and operable, double glazed, wood with aluminum exterior cladding and appear to be in satisfactory condition. Several locations have damaged seals, gaskets, or screens. The lifespan of these windows is projected to be 30 years and they are original to the building.

Capital Needs

Future replacement of the aluminum clad windows is shown in year 17, after their expected useful life of 30 years. New caulking and sealant of all windows is shown in year 4.

**iv. Exterior Building Lighting****Existing Conditions-Exterior Lighting**

The existing exterior lighting currently consists of a lamppost in front of the library, sconces located at various locations along the outside perimeter of the building, and emergency flood lighting inside the front canopy. No operational problems relating to the lights were reported or observed at the time of the site inspection.

Capital Needs

Future replacement of the exterior lighting fixtures is shown in year 11, after their expected useful life of 30 years. Routine maintenance such as lamp replacement should be addressed from the operating account.

v. Gutters & Downspouts

Existing Conditions-Gutters & Downspouts

Most of the water draining from the roof of the library drains directly onto a pea-stone areaway that runs along the perimeter of the building. In a few locations, copper gutters and downspouts are present, mainly at entries to the building, and are original to the building. They appear to be in good condition and no work is required at this time. Very few locations have the downspout loosened from the clips or other superficial damage. In addition to these locations, the entire building at the gutters, soffits, and interior corners, needs cleaning of wind-blown debris, mildew and insect traces.

Capital Needs

The projected lifecycle of the new copper gutters and downspouts is 70+ years and would not need replacing during the course of this CNA. Minor repair of the downspouts is shown in year 1.



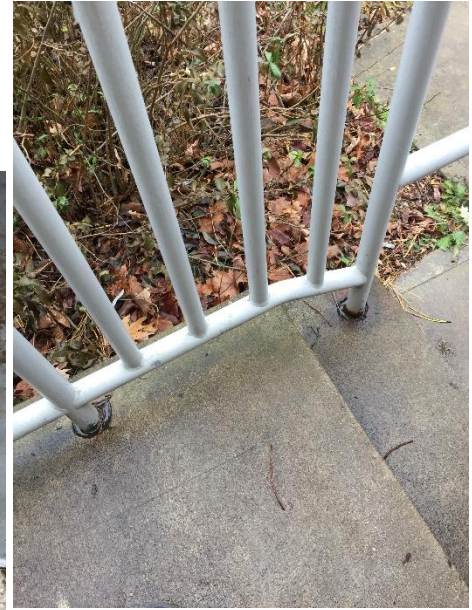
vi. Other

Existing Conditions – Steel Framing @ Entry

The framing at the front, covered entry is painted tube steel. The steel is in good condition and is expected to have a lifespan of over 100 years. Humidity and proximity to the ocean has caused the paint on the steel to peel and rust in some locations. Additionally, the grout at the column bases is degraded and missing, allowing water to pool and damage the column. Similar damage can be seen at the rear entry, where a handrail meets a concrete step.

Capital Needs

The cost of sanding and priming & painting of the steel beams and columns is included in year 1. Also included is regrouting the column and rail bases. Subsequent sanding and repainting will be included in years 10 & 20.

Existing Conditions – Caulking & Sealant

Some areas of the horizontal cementitious siding and the wood trim have gaps that may allow for water infiltration. There are also locations at the clerestory windows where gaps have formed and separated at the existing sealant. It appears that even with previous repairs, separation has occurred between materials.

Capital Needs

The cost of removing and replacing failed sealant of approximately 50+ linear feet is included in year 1. Subsequent maintenance of the caulking and sealant will be included in years 10, & 20 of the worksheet.



Existing Conditions – Grading at building perimeter

Much of the siding base, whatever the material, is degraded at the ground level. Areas of heavy damage are near downspouts, or where roof valleys exist with no gutters and downspouts. While repair of the damaged materials is shown elsewhere, the entire perimeter needs to be cleaned of built-up debris, grade lowered in some areas, and pea stone placed at problem areas to aide in drainage.

Capital Needs

The cost of clearing debris, regrading problem areas, and installing 4 yards of pea stone is included in year 1. Routine maintenance and cleaning of the building perimeter should be part of the operations budget.

**c. Foundation****Existing Conditions – E.I.F.S**

The exterior of the concrete foundation wall of the library is covered with E.I.F.S. (exterior insulation finish system) and has varying exposures, some locations have 8" from grade to the wood siding and others have over 12". Select areas show damage at corners, some cracking, including at the book drop off area.

Capital Needs

The cost of repairing the E.I.F.S. is included in year 1. The cost of repainting the EIFS is included in the full building repainting in year 3. Regular maintenance is included in

years 12 & 20. This maintenance cycle would include cleaning, caulking, and painting to extend the life of the finish. If properly cared for, E.I.F.S. should last more than 50 years.



V. FIRE PROTECTION SYSTEMS

Existing Conditions (See Figures 1 - 7)

The existing library building has been provided with existing automatic fire sprinkler systems throughout. The existing systems for the entire building appear to be pre-action type, wet type systems have not been provided.

An existing 6" fire service main enters into the sprinkler room. The 6" fire service main reduces to a 4" diameter pipe and a double check valve backflow preventer with shut off valves have been installed. An existing pre-action system valve with associated trim and controls has been provided on the discharge side of the backflow preventer. A pre-action system control panel is mounted on the sprinkler room wall. A fire department connection with an electric alarm bell have been located on the exterior of the building outside of the sprinkler room. The pre-action system is controlled via a system of electronic detectors that have been installed throughout the building. The existing piping system appears to be all galvanized pipe, much of the existing piping that is exposed in the occupied areas has been painted. Sprinkler heads throughout the building are a mixture of semi-recessed pendent, sidewall and upright types. Sprinkler heads in that are attached to concealed piping systems above finished ceilings are predominantly semi-recessed pendent type with some sidewall sprinkler heads located in the entrance vestibule. Sprinkler heads that are attached to piping systems that are exposed to view are upright type.

Capital Needs

All sprinkler systems that could be visually inspected appear to be in very good condition. There were no observed defects, leaks or signs of deterioration. At this time there is nothing needed to be done.

The existing pre-action system valve, trim, controls and panel will need to be replaced in 10 – 15 years.

VI. PLUMBING SYSTEMS

Existing Conditions (See Figures 1 - 6)

Domestic water for the plumbing systems has been provided via an existing water service main that appears to be 1" diameter. An existing water meter has been provided in the sprinkler room. An existing reduced pressure backflow preventer has been located in the boiler room on the make-up water supply to the HVAC boiler. The domestic water service serves the various plumbing fixtures throughout the building. The existing piping appears to be copper tubing with solder fittings. The existing water piping systems appear to be insulated. Hot water is provided via electric water heaters that are located for groups of toilet rooms. The plumbing fixtures throughout the building are in very good condition and appear to be water conservation type. At the time of inspection it was reported to BLW that most of the bathrooms have been recently renovated with the remaining being planned for renovation.

Natural gas has been provided to the building via an existing gas service and meter. Gas appears to be serving the HVAC boiler only.

There are no roof drain systems for the building. All storm water from the roof is captured via external gutters and downspouts that spill to grade.

Capital Needs

All plumbing systems that could be visually inspected appear to be in very good condition. There were no observed defects, leaks or signs of deterioration with one exception noted below. At this time there is nothing needed to be done.

Exception: The existing reduced pressure backflow preventer located on the make-up water to the HVAC boiler is showing signs of corrosion. This device should be tested to verify proper function. This device should be replaced within the next 3 years.

VII. MECHANICAL SYSTEMS

Existing Conditions

The existing heating, ventilating and air conditioning systems consist of a central hot water plant, air handling units, air cooled condensing units, radiant floor heating, hot water heaters and general exhaust fans. These systems provide heating, air conditioning and ventilation for the entire building. The building is provided with a Honeywell Spyder Energy Management System.

The central hot water plant is comprised a gas fired hot water boiler (Buderus model GE315/8 rated for 577 MBH net output and hot water circulating pumps, P-1 and P-2 (1.5hp each), that provide heating hot water to the hot water distribution piping system that serve the air handling units, radiant floor heating system and heating terminal units. The hot water heating piping system is provided with an air separator, expansion tank and protected water piping in the mechanical space. The boiler is vented vertically through the building and terminates above the roof level with a vent cap; the boiler room is provided with combustion air provisions in accordance with applicable codes.

The entire building is provided with a radiant floor heating system; the heating hot water is provided from the heating hot water distribution system to three sets of manifolds in various parts of the building, each zone off the manifold is controlled by a wall mounted temperature sensor. The supplemental heating terminal equipment in each zone was incorrectly connected to the radiant floor heating piping; since the radiant floor heating system operates at much lower temperatures than the heating terminal equipment, the heating capacity is significantly reduced and has resulted in many areas that do not heat properly.

The air handling units provide heating, ventilating and air conditioning to the building through a supply air duct distribution system, return air duct distribution system, air outlets, remote air cooled condensing unit, interconnecting insulated refrigerant piping, interconnecting insulated hot water distribution piping system and automatic temperature controls. Each unit is provided with a wall louver outdoor air intake for building ventilation.

- AHU-1: AHU-1 is a Carrier 39LC25KA indoor unit provided with hot water heating coil, refrigerant cooling coil and variable speed drive. The unit is located in an upper level mechanical room and serves the main part of the library and offices. The unit is interconnected by insulated refrigerant piping to an outdoor air cooled condensing unit, Carrier 38AKS024, pad mounted at grade.
- AHU-2: AHU-2 is a Carrier 39LC10KA provided with hot water heating coil, refrigerant cooling coil and variable speed drive. The unit is located in an upper level mechanical room and serves the main part of the library and offices. The unit is interconnected by insulated refrigerant piping to an outdoor air cooled condensing unit, Carrier 38AKS012, pad mounted at grade.
- AHU-3: AHU-3 is a Carrier 39LC10KA provided with hot water heating coil, refrigerant cooling coil and variable speed drive. The unit is located in an upper level mechanical room and serves the main part of the library and offices. The unit is interconnected by insulated refrigerant piping to an outdoor air cooled condensing unit, Carrier 38AKS012, pad mounted at grade.
- AHU-4: AHU-4 is a Carrier air handling provided with hot water heating coil, refrigerant cooling coil and variable speed drive. The unit is located in an upper level mechanical room and serves the main part of the library and offices. The unit is interconnected by insulated refrigerant piping to an outdoor air cooled condensing unit, Carrier 38CKC018, pad mounted at grade.

The restroom, janitor's closets and other required locations are exhausted through sidewall exhaust louver. The elevator machine rooms have been vented to the hoistways but have not been provided with space temperature control provisions.

Capital Needs

The boiler room equipment including the boilers, pumps, water specialties and controls has an estimated life expectancy of 25 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 5 to 10 years.

The air handling equipment including the has an estimated life expectancy of 25 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 5 to 10 years.

The air cooled condensing units have an estimated life expectancy of 20 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 0 to 5 years.

The heating terminal equipment has an estimated life expectancy of 25 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 0 to 5 years. When the equipment is replaced, the piping should be modified to be interconnected to the hot water distribution piping (not the radiant floor piping) to provide proper heating to the building.

The building exhaust system has an estimated life expectancy of 25 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 5 to 10 years.

The automatic temperature controls has an estimated life expectancy of 25 years; the equipment appears to be in good operating condition but should be planned for replacement in the next 0 to 5 years.

VIII. ELECTRICAL SYSTEMS

Existing Conditions – Service (See Figures 1-5)

The existing service originates from a National Grid utility pole (1-4" conduit) to a 150 KVA, 13.8 KV primary /208 volt 3-phase pad mounted utility-owned transformer. (Figures 1, 2) The services has one meter, located on the building exterior. (Figure 3) The incoming service is fed underground via (4) 3" conduits and terminates in a 600 amp, 208 volt, 3-phase enclosed circuit breaker. The enclosed circuit breaker was manufactured by Siemens, is from the original construction (2000) and appears to be in good working condition.

Utility bills indicate the building's largest demand is 63.2 KVA, which equates to 175.5 amps at 208 volts 3-phase. This indicates there is a spare capacity of 381 amps, for future expansion or additional loads. Both the service equipment and the utility company transformer can handle a future expansion and/or added loads.

Capital Needs

The main 600 amp breaker has a remaining 15 years of expected lifespan. The breaker should be cleaned, tested, re-torqued to manufacturer's recommendations and infra-red tested.

Existing Conditions - Service Equipment (See Figures 6-9)

The service equipment for the library is located in the building's mezzanine main electric room. The switchgear is fed from the building's main enclosed 600 amp breaker, with 2 sets of (4-350 KCMIL, 1#1G-4"C) and terminates in a 600 amp 208 volt, 3-phase 4-wire Siemens Type S4 panelboard. The switchboard's nameplate indicates it was manufactured on 05/11/2000. The panelboard contains (7) 3-pole breakers which feed other panelboards and large HVAC equipment. The panelboard has capacity for added loads and available spaces for additional breakers. The panelboard appears to be in good working condition.

Capital Needs

The service switchgear has a remaining 15 years of expected lifespan. The switchgear should be cleaned, tested, re-torqued to manufacturer's recommendations and infra-red tested.

Existing Service - Lighting Fixtures (See Figures 10-20)

The building's interior is illuminated by the following fixture types:

- a. Mechanical spaces/electrical rooms – fluorescent T8 industrials with protective wire cages.
- b. Stairwells – fluorescent wall-mounted acrylic-lensed sconces.
- c. Library offices – wall mounted indirect linear fluorescent fixtures.
- d. Library breakroom – aircraft-suspended indirect decorative fluorescent round fixtures.
- e. Bathrooms – fluorescent wall-mounted acrylic sconces.
- f. Library Main Desk Areas – wall-mounted gooseneck decorative fixture with "jelly-jar" type lens.
- g. Main Library Areas – linear fluorescent beam-mounted indirect fixtures.

It was noted that the majority of the fixtures have been retrofitted with comparable LED efficient

lamps. The fixtures appear to be from the original construction, hence approximately 20 years old. All fixtures appear to be in good working condition.

Capital Needs

Normally, it would be recommended to begin replacing 20 year old fixtures with new energy-efficient fixtures. However, since the fixtures have been retrofitted with LED lamps, they should be usable for an expected 10 more years. The fixtures that have not been retrofitted with new LED lamps, should be within the next 1-2 years. The light levels in the bathrooms appear to be inadequate and should be replaced with higher lumen fixtures.

Existing Conditions - Lighting Controls

The building's lighting controls consists of (2) Zenith lighting contactors. These contactors control the exterior site lighting as well as the library main lighting. Individual offices and bathrooms contain occupancy wall-mounted sensors. The controls appear to be in good working condition and have an additional 5-7 years of useful life.

Capital Needs

Replace occupancy sensors within the next 3-5 years prior to failure. The town should consider adding day-light sensors for control of fixtures directly below the sky-lights, for added energy savings.

Existing Conditions - Exterior Lighting (See Figures 21-24)

The building's site is illuminated utilizing approximately 10' high pole-mounted fixtures, front entry, floodlights and fluorescent wall packs at all exit doors. The fixtures appear to be in a good working order; however, these fixtures were not illuminated at the time of the visit. The fixtures will be approaching their expected lifespan in 3 to 5 years.

Capital Needs

The fixtures should be replaced in the next 3 to 5 years. The wall packs should be replaced with new fixtures that contain LED lamps/modules and have an emergency component to them. This emergency component is necessary to meet the International Building Code (IBC Section 1006) for Emergency Illumination for Egresses.

Existing Conditions - Fire Alarm System (See Figures 25-32)

The building contains the original fire alarm system. The system consists of an addressable Simplex 4100 Voice Evacuation Panel, located in the main lobby; manual pull stations at all exit doors; speaker/strobe coverage throughout the building; strobe-only devices in the bathrooms; beam smoke detectors covering the high vaulted ceilings, smoke detectors in all rooms; heat detectors in electrical, mechanical and fire protection rooms, a Napco Digital Communicator, recessed Masterbox on building exterior; monitor modules for sprinkler system tamper and flow switches; Knox Box (key box) for fire department entry. The system has proper fire alarm coverage of the entire building. All smoke detectors are considered to pre-action system. The detectors are activated prior to any sprinkler devices setting off. The sprinkler system is a dry-system. The fire alarm system is original to the building construction and appears to be in good working condition.

The system has reached its expected life expectancy. Fire Alarm devices tend to require replacement at 10-12 years and control panels at 20 years.

Capital Needs

The entire fire alarm system (including FACP, devices and wiring) should be replaced within the next 2-3 years. The existing Digital Communicator, recessed Masterbox and Knox Box could be retained. The new devices would replace the existing devices (one for one), as the existing devices and locations are adequate and meet present building and fire alarm codes.

Existing Conditions - Emergency Lighting (See Figure 13)

The building's emergency lighting coverage consists of wall-mounted self-contained lighting battery units. The quantity of fixtures appear to provide the necessary egress lighting required throughout the facility. When physically tested, all emergency fixtures were working properly. The units appeared to be from the original construction.

Capital Needs

The emergency batteries within the lighting units have most likely been replaced already. The town should continue to test the fixtures on an annual basis and replace the batteries on an as-needed basis.

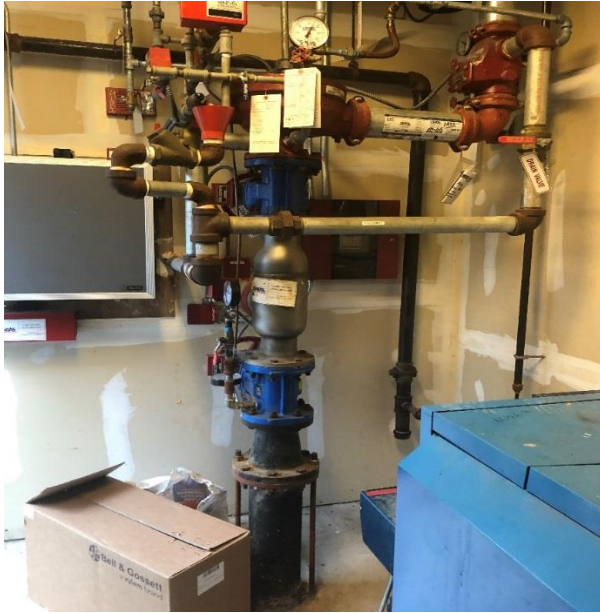
FIRE PROTECTION (Figures 1 - 7)

Figure 1: Fire service main and pre-action system valve within the sprinkler room



Figure 2: Fire department connection outside of the sprinkler room

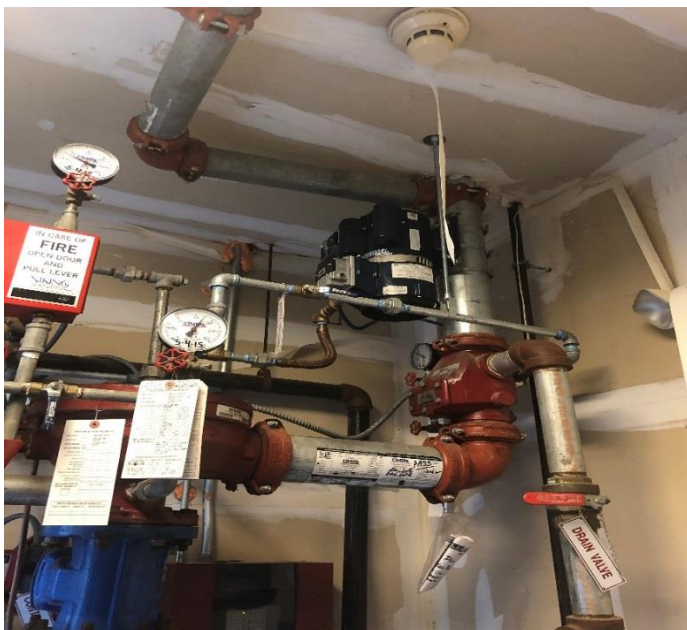


Figure 3: Pre-Action Valve and Controls within the sprinkler room



Figure 4: Typical galvanized piping



Figure 5: Typical upright sprinkler head



Figure 6: Typical semi-recessed sprinkler head



Figure 7: Typical exposed and painted sprinkler piping

PLUMBING (Figures 1 - 6)

Figure 1: Domestic water meter within the sprinkler room



Figure 2: Reduced pressure backflow preventer for the HVAC boiler make-up water



Figure 3: Typical exterior roof gutter and downspout



Figure 4: Typical water closet



Figure 5: Typical Lavatory



Figure 6: Typical Drinking Fountain

ELECTRICAL (Figures 1-32)

Figure 1: 13.8 KV Primary Feeder



Figure 2: 150 KVA, 13.8 KV/208V 3-Phase NGRID Transformer



Figure 3: Library Electric Meter



Figure 4: 600 Amp, 208 Volt Main Switchboard - Mezzanine



Figure 5: 600 Amp, 208 Volt 3-Pole Service Entrance Disconnect

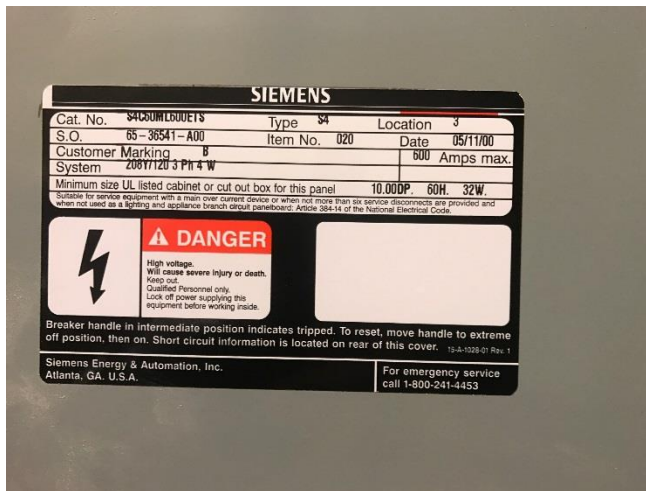


Figure 6: Main Service Switchboard Nameplate



Figure 7: Typical 120/208V 3-Phase, 4-Wire Panelboards



Figure 8: Main Switchboard – Panel Feeder Breakers



Figure 9: Typical Lighting & Power Panelboards



Figure 10: T-8 Fluorescent Industrial Fixture-Sprinkler Room



Figure 11: Lighting Controls

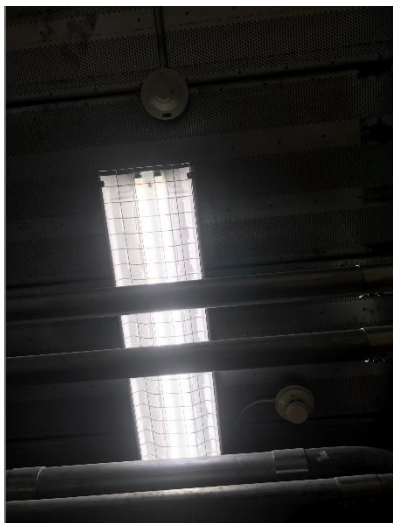


Figure 12: T-8 Fluorescent Industrial Fixture – Main Electric Room

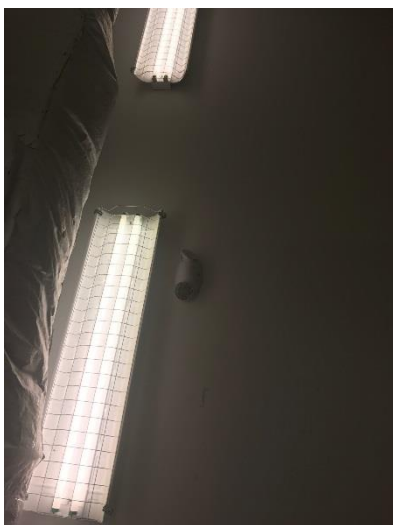


Figure 13: Typical Fluorescent Fixture and Emergency Light



Figure 14: Typical Fluorescent Wall Sconce



Figure 15: LED-Retrofitted Wall Mounted Indirect Fixture



Figure 16: Breakroom Fixture

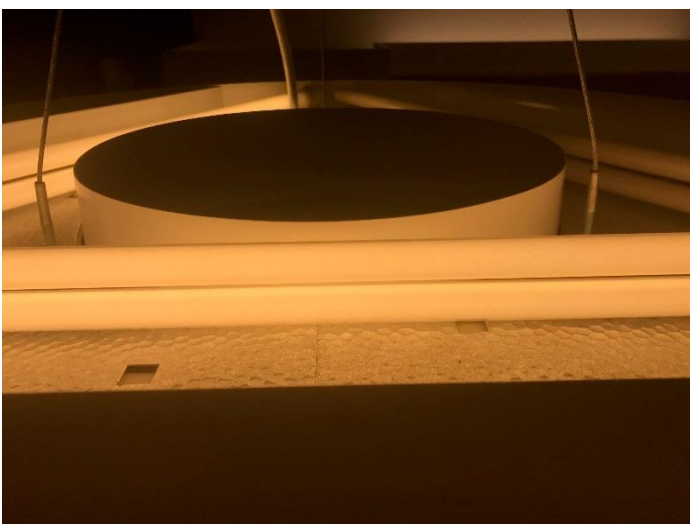


Figure 17: Inside of Breakroom Fixture



Figure 18: Bathroom Light Fixture



Figure 19: Conference Room Fixtures



Figure 20: Main Desk Light Fixture



Figure 21: Front Entrance Floodlight



Figure 22: Typical Site Pole Light



Figure 23: Typical Pole-Base



Figure 24: Exterior Wall-Mounted Sconce



Figure 25: Typical Fire Alarm Manual Pull Station



Figure 26: Main Service Entrance Sprinkler Room Fire Alarm Devices

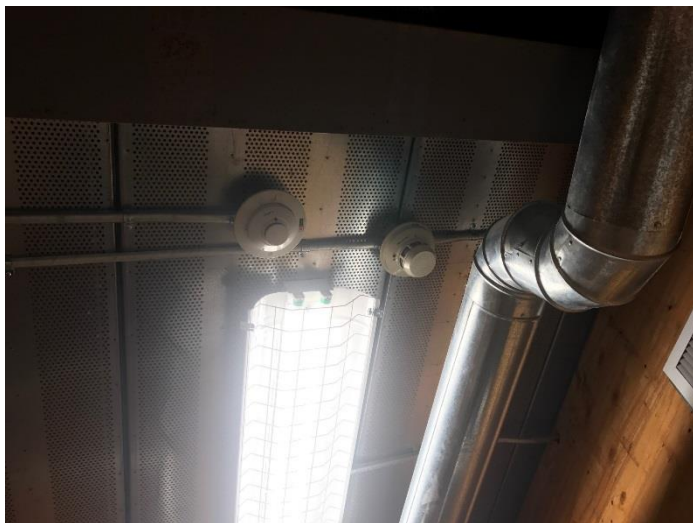


Figure 27: Typical Fluorescent Fixtures, Smoke and Heat Detector



Figure 28: Typical Manual Pull Station & Speaker/Strobe



Figure 29: Main Pull Station and Speaker/Strobe



Figure 30: Simplex 4100 Voice Evacuation FACP



Figure 31: Beam Smoke Detector



Figure 32: Masterbox and Knoxbox

IX. Capital Needs Worksheet
Town of Newbury Library
20 Year Replacement Reserve Analysis

		Current Age	Useful Life (Expected)	Immediate Critical	Near Term Repair & Replacement					Long Term Repair & Replacement					Remaining Repair Replacement and Major Maintenance Needs									
REPLACEMENT RESERVE				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Line Number				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
1	Reserve Balance			\$ -	\$ (47,450)	\$ (65,851)	\$ (193,689)	\$ (257,612)	\$ (946,418)	\$ (978,299)	\$ (978,299)	\$ (978,299)	\$ (978,299)	\$ (1,075,963)	\$ (1,077,979)	\$ (1,081,440)	\$ (1,081,440)	\$ (1,242,975)	\$ (1,330,706)	\$ (1,333,043)	\$ (1,551,282)	\$ (1,575,082)	\$ (1,638,842)	
2	Annual Replacement Reserve Contribution (not adjusted for inflation, no interest applied)			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
				100.00%	103.00%	106.09%	109.27%	112.55%	115.93%	119.41%	122.99%	126.68%	130.48%	134.39%	138.42%	142.58%	146.85%	151.26%	155.80%	160.47%	165.28%	170.24%	175.35%	
	Annual Replacement Reserve Contribution (adjusted for inflation, no interest applied)			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
3	Interest on Reserve Balance 0.25%			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
4	Up Front Capital			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
5	Subtotal (Sum of lines 1-4)			\$ -	\$ (47,450)	\$ (65,851)	\$ (193,689)	\$ (257,612)	\$ (946,418)	\$ (978,299)	\$ (978,299)	\$ (978,299)	\$ (978,299)	\$ (1,075,963)	\$ (1,077,979)	\$ (1,081,440)	\$ (1,081,440)	\$ (1,242,975)	\$ (1,330,706)	\$ (1,333,043)	\$ (1,551,282)	\$ (1,575,082)	\$ (1,638,842)	
6	Estimated Capital Expenditures (\$ from below)			47,450	18,401	127,838	63,923	688,806	31,881	-	-	-	97,664	2,016	3,461	-	161,535	87,731	2,337	218,239	23,800	63,760	10,346	
7	Adjusted End of Year Reserve Balance (sum of lines 5 + 6)			(47,450)	(65,851)	(193,689)	(257,612)	(946,418)	(978,299)	(978,299)	(978,299)	(978,299)	(1,075,963)	(1,077,979)	(1,081,440)	(1,081,440)	(1,242,975)	(1,330,706)	(1,333,043)	(1,551,282)	(1,575,082)	(1,638,842)	(1,649,187)	

CAPITAL NEEDS WORKSHEET

	Remarks				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	20 Year Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
					Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Building Envelope																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Roofs	Asphalt roof	19	30	\$	14,300	\$	-	\$	-	\$	-	\$	-	\$	-	\$	35,650	\$	-	\$	-	\$	-	\$	-	\$	49,950																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	EPDM Roof	19	20	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	26,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Standing Seam Metal Roof	19	40	\$	-	\$	3,200	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	3,200																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Repair water damage	19	40	\$	-	\$	2,600	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	2,600																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Exterior Walls	Cementitious Siding	19	50+	\$	8,400	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	8,400																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Cedar Shingles	19	50+	\$	1,500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	7,500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Paint entire exterior	19	10	\$	-	\$	-	\$	22,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	37,453	\$	-	\$	59,453																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Metal Siding	19	40+	\$	-	\$	1,400	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	1,400																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Doors	19	30	\$	-	\$	665	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	14,400	\$	-	\$	15,065																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Windows	19	30	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Gutters & Downspouts	19	50+	\$	1,200	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	1,200																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Painting at Tube Steel	19	12	\$	1,400	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	1,900	\$	-	\$	5,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Caulking & Sealant - Trim	19	10	\$	2,500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	2,500	\$	-	\$	7,500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Caulking & Sealant - Windows	19	10	\$	-	\$	-	\$	-	\$	56,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	56,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Flashing	19	50+	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Perimter base cleanup	19	50+	\$	2,400	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Interiors	New Access Panels at Entry, paint existing	19	20+	\$	500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Infill holes at GWB Ceiling at Vestibule	19	20	\$	250	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	250																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Replace Carpet Tile	19	20+	\$	2,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	2,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Repair GWB at Window returns	19	25	\$	500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	500																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Exterior	Repair/replace concrete at entry slab	19	20	\$	5,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	5,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Resurface and restripe parking lot	19	20	\$	-	\$	-	\$	36,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	36,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Mechanical / Electrical	F.P. - Preaction System	10	20	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	20,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Backflow Preventer	5	7	\$	4,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	4,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Boiler Room Equipment	19	25	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	200,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Air Handling Equipment	19	25	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	180,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Air Cooled Condensing Units	19	20	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	60,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Heating Terminal Equipment	19	25	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	80,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Exhaust System	19	25	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	8,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Automatic Temperature Controls	19	25	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	84,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Main 600 amp breaker	19	35	\$	1,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	9,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Service Switchgear	19	35	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	50,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Retrofit light fixtures with LED	19	21	\$	-	\$	-	\$	10,000	\$	10,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	20,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Replace Occupancy Sensors	19	25	\$	-	\$	-	\$	2,500	\$	2,500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	5,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Exterior Lighting	19	30	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	15,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	FACP & Wiring	19	22	\$	-	\$	-	\$	50,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	50,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Foundation	E.I.F.S. Finish	19	50+	\$	2,500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	5,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Total (Un-inflated)					\$	47,450	\$	17,865	\$	120,500	\$	58,500	\$	612,000	\$	27,500	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	1,325,918																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Annual Inflation Rate 3%						100.00%		103.00%		106.09%		109.27%		112.55%		115.93%		119.41%		122.99%		126.68%		130.48%		134.39%		138.42%		142.58%		146.85%		151.26%		155.80%		160.47%		165.28%		170.24%		175.35%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Total Inflated					\$	47,450	\$	18,401	\$	127,838	\$	63,923	\$	688,806	\$	31,881	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	97,664	\$	2,016	\$	3,461	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$