SONOMA COUNTY LIBRARY

APPENDIX 3
ARCHITECTURE FACILITIES ASSESSMENT

submitted by
MKTHINK

October 2016

Sonoma County Library
Appendix 3:
Architecture Facilities Assessment

2016

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A. Scope and Executive Summary

The Sonoma County Library System commissioned MKThink to perform an assessment of their regional branch library facilities as part of a larger comprehensive report. This building assessment offers a professional review of existing accessibility compliance, egress systems, HVAC systems, and basic building envelope condition across numerous leased and owned facilities. The purpose of this report is to identify key building elements and features that are more than nominally sub-standard and may present a risk to health and safety. It is outside the scope of this report to define or evaluate the magnitude of risk of any particular item, only to identify those that may present themselves as such. The opinions expressed in this report are based on conversations with the Library's Facilities Mechanic II, Dave Tichava, conversations with branch library staff, a cursory review of existing available drawings, and observations from an on-site survey conducted on May 25-26, 2016 by MKThink and Interface Engineering.

The Sonoma County Library system dates back nearly 160 years to Petaluma's Odd Fellows Library and has seen modifications and additions due to growth, gift, and natural disaster. Currently the Library system leases the majority of its facility space from the city or municipality in which it is located. It is generally understood that the Library system is responsible for the interior environment, fixtures, and finishes, It is our understanding that the building shell, site accessibility, and mechanical systems are to be maintained by the city/municipality or building owner. The Library system is concerned that certain deferred maintenance to the physical structures and non-compliant site-wide accessibility items may expose or endanger their users and staff to matters of health and safety. Some facilities have received upgrades, but despite these upgrades, a number of existing sub-standard conditions involving egress and accessibility deficiencies and building envelope systems remain throughout the system. The HVAC assessment (found in Section D) includes recommendations for attainable improvements to achieve energy savings. Additionally, certain buildings possess sub-optimal curb appeal that may affect Library image and user/staff safety. The most significant issues include:

- HVAC systems in use are near or beyond useful service life.
- Non-compliant and sub-standard egress features at emergency exits compromising the safe passage of occupants
- Non-compliant accessibility features placing the Library system at risk of litigation
- Site accessibility, way finding, and building façade treatments resulting in sub-optimal neighborhood pride, neglect, and vandalism
- Water intrusion at exterior fenestrations damaging interior finishes creating a risk for environmental health
- Water intrusion at roofs damaging interior finishes and creating potential structural degradation

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- Water intrusion in areas housing the building ventilation system that convey air to building occupants

Several of the above conditions require substantial repair or replacement at considerable costs, if even practical given structural and other physical constraints. Consideration should be given to the costs to serve the community and staff while maintaining and repairing the buildings in concert with the city/municipalities. These are considered latent costs, examples of which include:

- Cost of on-going maintenance of systems nearing the end of their useful life-cycle
- Cost of replacing major building elements that have exceeded their useful life
- Investment required to improve the curb appeal of the facilities and their ability to attract the community, dedicated staff/volunteers, and donors compared to other community resources
- Cost to improve the functional limitations of the facilities with regard to accessibility

These observations are not exhaustive because our work is limited to readily visible conditions at representative locations and does not include any destructive or invasive tests to view conditions concealed by construction. Because of these limitations, some deficiencies may have gone undetected. The following areas are outside the scope of this report, and availability of these reports has not been confirmed. If available, those reports cover the following subject matters:

- Fire Alarm and Fire Protections systems
- Data/Information Technology systems
- Security systems
- Hazardous building materials

An historic assessment of each property is outside the scope of this project, but any plans that would involve significant exterior modifications or building replacement should take into consideration whether the building will be subject to historic review within the respective municipality. Typically, structures over 50 years old are subject to some level of review.

The detailed reports for Mechanical, Electrical, and Plumbing systems can be found in the Section D and the appendices of the Engineering report.

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B. Facilities Summary:

1. *Sonoma County Central Library:*
   Report Date: 6/7/2016

   a. Site Summary

   The Central branch of the Sonoma County Library system is a leased facility located at 211 E Street, Santa Rosa, CA 95404. The current structure was built in 1966 as a replacement to the 1904 library building that was located on E Street between 3rd and 4th Streets. With its double-height reading room, a staff mezzanine, and a full basement, this building serves the county-wide library system with 61,800 sf on three levels. The main stacks, reading room, multi-media areas, children's area, Forum Room, book distribution, and staff work spaces make up the facility. The building features are dated but well maintained. Accessibility upgrades have been addressed for the staff entry, public restrooms, and minimally toward public egress. However, staff restrooms and staff work spaces are in need of accessibility upgrades, repairs, and repurposing within the 50 year old structure.

   b. Code & Egress

   The library affords code-compliant public building access, public restrooms, drinking fountains, meeting space, and reference facilities to the general public. Though three (3) exit doors serve the building in addition to the main doors along E Street; only one (1) egress door is code compliant. The non-compliant doors present a steep concrete sill transition to the exterior grade, equivalent to a small step down. Staff accommodations are generally non-compliant and present issues with both accessibility code and egress. Staff restrooms in the basement, on the main level, and on the mezzanine are non-compliant. Staff break areas are non-compliant. Some staff work areas are not compliant with regard to circulation widths.

   c. Accessibility

   Parking – Only one (1) accessible parking space is available to staff on site, and this space is shared with the Annex building. Striping is blue and in need of repainting. One (1) public handicap parking space is posted along E Street at the corner of 3rd St, but no accessible parking spaces are provided on site. Some patrons park in the staff spot at the rear of the building. Additional street parking spaces are available along 4th Street near E Street. The public parking lot on 3rd Street also offers accessible parking spaces.

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Elevator(s) – One elevator serves the building. The controls appear compliant; however the cab size was not confirmed as compliant.
Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic hardware. Electronic operators are also installed on each pair of egress doors to the E Street exit. Three (3) exit doors serve the extents of the building in addition to these main doors. These doors are equipped with panic hardware; however, the doors' sill condition is a steep concrete transition to the exterior grade. Exit signage did not appear illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Ramps & Stairs – A sloping walkway serves the main entrance to the building. The slope was not confirmed as compliant. A few seams between paving sections have expanded to ~1/2", and are in need of sealant. One compliant ramp serves the exterior loading dock and staff entrance at the rear of the building. It is of newer construction and has proper curb and guardrails. No ramps are present on the interior of the building. Two stairways serve the interior of the building. Each stairway is utilized for staff circulation, and they are not available to the general public. Neither stair has proper railing extensions, the nosings do not provide adequate visual warning, nor do guardrails have proper spacing. The main stairway has open risers, and appears to be of wooden construction.

Drinking fountain(s) – Several drinking fountains are located throughout the building, but only the public drinking fountain near the reception has been upgraded to comply with current accessibility code. Numerous drinking fountains do not meet the height, knee space, and operation compliance. These should be replaced with new dual hi-low, code compliant drinking fountains.

d. Building Envelope

The library building is of brick construction with both full-height and clerestory aluminum storefront-type glazing. Interior columns support the roof over the double-height reference and reading areas. Wooden screens shade the clerestory windows within the reference and reading areas. A stone wall surrounds a courtyard along E Street. This stone wall was built from components of the 1904 library building formerly on site.

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The door and window seals and thresholds appear to be in good condition.

See Section C, Building Photo Appendix, Page 32 for site photos.

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2. *Central Library Annex*
   Report Date: 6/7/2016

   a. Site Summary

   The Central Annex of the Sonoma County Library system is owned by the County Library and is located at 725 3rd Street, Santa Rosa, CA 95404. The current structure was built in 1966 as a single-story building of approximately 5,387 sf. The Annex serves as an adult literacy room for one-on-one personal development and also houses some historical documents and files.

   b. Code & Egress

   The Annex affords a ramped entry from the staff parking area, but this ramp does not appear compliant in slope, handrail extensions, and maneuvering clearance. No detectable warning area is located at the base of the ramp. An electronic push-button opener is available for entry and exiting. Two (2) concrete stairways access the building. The handrails do not appear compliant, stair nosings do not provide contrasting warning strips, and access is not provided with a curb cut to the raised concrete walkway. An additional egress door exits onto a concrete landing with stairs to the 3rd Street sidewalk. One more egress door exits onto a concrete landing with stairs toward the rear of the building. The toe kick on the rear egress door appears non-compliant in height. This stairway and connected walkway have no curb cut access. The restrooms are not compliant. The staff break area is non-compliant.

   c. Accessibility

   Parking – Only one (1) accessible parking space is available to staff on site, and this is shared with the Central Library. No accessible parking spaces are provided for public use on site, though some patrons do park in the staff spot at the rear of the building. Accessible parking spaces are available along 4th Street near E Street, and in the public parking lot on 3rd Street.

   Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. Exit signage did not appear illuminated above all egress doors.

   Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

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Ramps & Stairs – A ramp serves the main entrance to the building. The slope was not confirmed as compliant. No ramps are within the interior of the building.

Drinking fountain(s) – The drinking fountain appears to meet hi-low compliance, but it is located within a circulation zone and not pocketed.

d. Building Envelope

The Annex building is build of concrete masonry block construction with areas of flat roof and sloped standing seam metal roofing.

See Section C, Building Photo Appendix, Page 34 for site photos.

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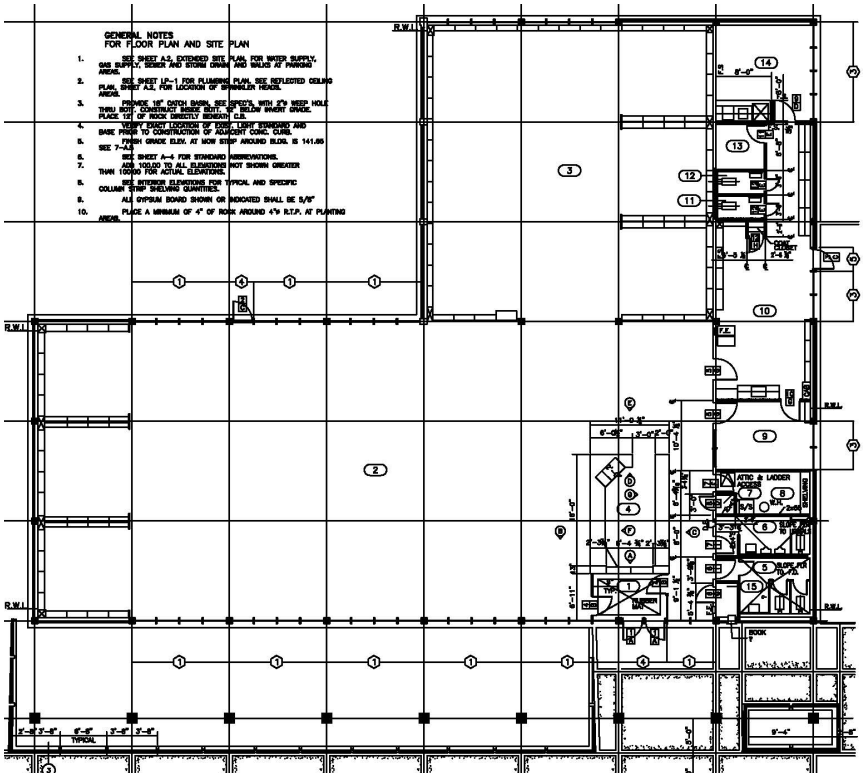
3. *Northwest Regional*
   Report Date: 6/7/2016

   a. Site Summary

   The Northwest Regional branch of the Sonoma County Library system is a leased facility located at 150 Coddingtown Center, Santa Rosa, CA 95401. The current structure was built in 1967 as a single-story building of approximately 7,224 sf. The current building was built to accommodate the growing Santa Rosa population where mostly prune orchards once grew. The site is located to nearby numerous senior living facilities and the neighborhood Coddingtown Center mall.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

   b. Code & Egress

   The Northwest branch affords level access from the public sidewalk and curb cut access from the parking area on two sides of the building. The main doors have electronic push-button access controls; however, the metal threshold is appears non-compliant. The building maintenance staff mentioned that batteries require frequent changes to maintain the electronic push-button door actuators. The restroom facilities for the

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general public appear code compliant at the water closets and lavatories. Staff restroom and break areas are not code compliant.

c. Accessibility

Parking – Three (3) accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. The sloping ramp from the parking area to the raised concrete walkway was not equipped with raised detectable warnings. Striping is blue and white. Striping could use repainting.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold may be out of compliance. A second egress door is non-compliant and opens to a landscaped area without a continuous exit path. Exit signage did not appear illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, but they are not pocketed out of the circulation zone.

d. Building Envelope

The Northwest branch is a single-story veneer-brick structure. Three (3) façades are infilled with an aluminum storefront glazing system between painted columns.

See Section C, Building Photo Appendix, Page 36 for site photos.

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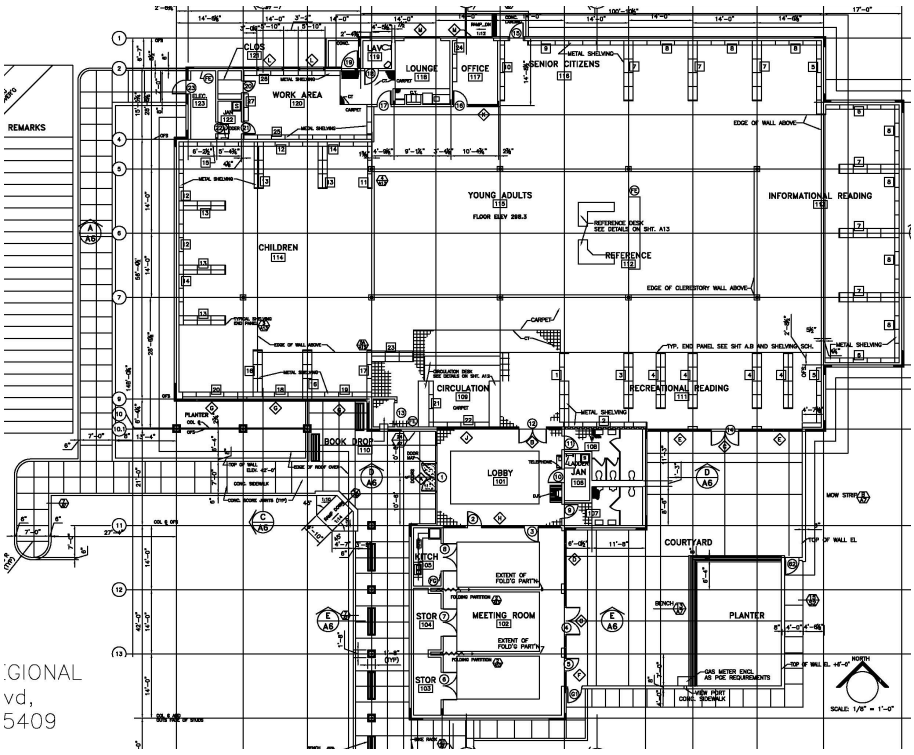
4. *Rincon Valley Regional*
Report Date: 6/7/2016

a. Site Summary

The Rincon Valley Regional branch of the Sonoma County Library system is a leased facility located at 6959 Montecito Blvd, Santa Rosa, CA 95409. The current structure was built in 1994 as a single-story building of approximately 15,000 sf. It affords a community meeting room and outdoor reading patio.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Rincon Valley branch is accessed by a sloping walkway from the public sidewalk and curb cut access from the parking area. The main doors have electronic-eye access control, and the threshold appears compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appears compliant. Staff break areas appeared compliant. The door exiting from the staff area does not have panic hardware.

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c. Accessibility

Parking – Three (3) accessible parking spaces are available to the public and staff on-site with compliant curb cut. One (1) of the spaces appeared to have van accessible clearance. Striping is white. Striping could use repainting. The sloping ramp from the parking area to the raised concrete walkway was not equipped with raised detectable warnings, and the slope was not confirmed as compliant.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. Two (2) additional egress doors open onto a concrete patio area. A continuous path of travel through the patio is provided to the public way. Exit signage appeared to be illuminated above all egress doors, including exterior signage on the patio.

Door hardware – Throughout the facility the doors are equipped with lever set hardware. Closer forces and strike-side clearances appeared compliant.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, and it was pocketed.

d. Building Envelope

The Rincon Valley branch is a single-story structure with veneer-brick exterior walls and a comp shingle roof. Window system is an aluminum system of storefront style, punched openings, and a clerestory. Minimal weathering of the wood fascia was apparent.

See Section C, Building Photo Appendix, Page 37 for site photos.

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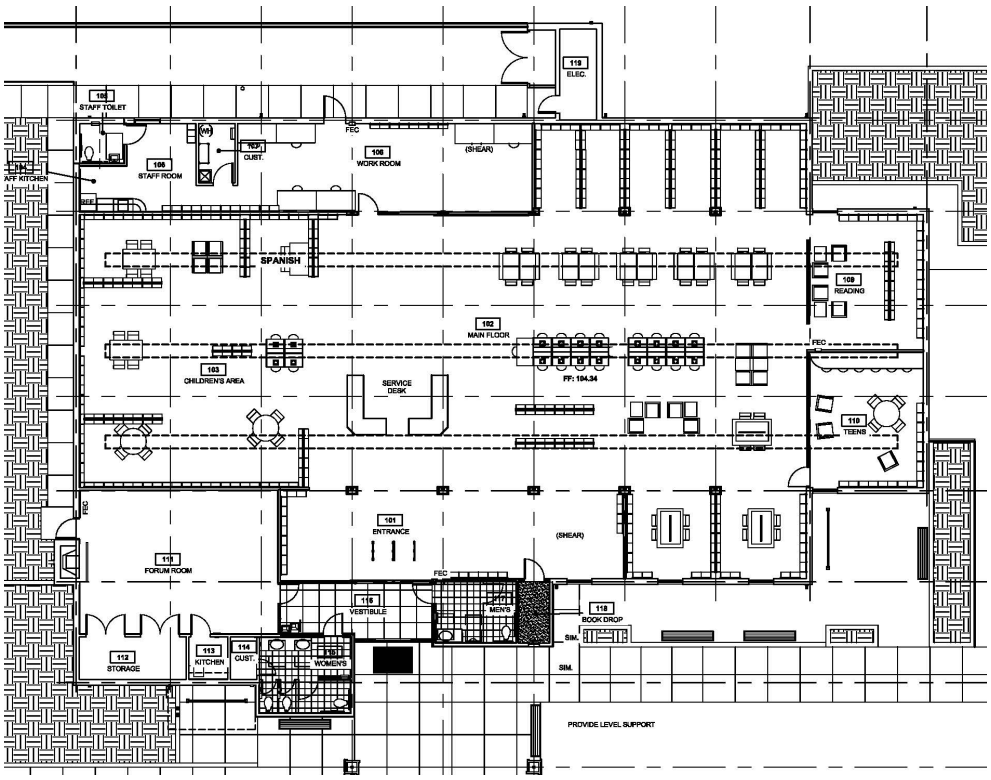
5. *Sonoma Valley Regional*
Report Date: 6/7/2016

a. Site Summary

The Sonoma Valley Regional branch of the Sonoma County Library system is a leased facility located at 755 W. Napa St, Sonoma, CA 95476. The current structure was built in 1977 as a single-story building of approximately 10,000 sf. The library was fully remodeled to its current condition in 2011.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Sonoma Valley branch is accessed by both a sloping walkway from the parking lot and a level walkway from the public sidewalk along Napa Street. Curb cut access from an accessible drop-off area is provided along the parking access/drive aisle. The main doors have electronic-eye control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant; however, staff furnishings limit access to the restroom. Staff break areas appear compliant.

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c. Accessibility

Parking – Two (2) accessible parking spaces are available to the public and staff on-site with compliant curb cut access. Each of the spaces is van accessible. Striping is blue and white. Striping was in good condition. Sloping walkway/ramp access is provided to the main entrance of the building. Raised detectable warnings are provided.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. Egress door thresholds are compliant with a continuous exterior path of travel. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility the doors are equipped with lever set hardware. Closer forces and strike-side clearances appeared compliant.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, and it is pocketed with a stainless steel tubes.

d. Building Envelope

The Sonoma Valley branch is a single-story veneer-brick and veneer-stone clad structure with portions of flat roof and metal standing seam roof. Windows and glazing are aluminum storefront system. Some weathering and discoloration of upper fascia pieces is visible on the main entrance canopy.

See Section C, Building Photo Appendix, Page 38 for site photos.

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6. *Petaluma Regional*
Report Date: 6/7/2016

a. Site Summary

The Petaluma Regional branch of the Sonoma County Library system is a leased facility located at 100 Fairgrounds Drive, Petaluma, CA 94952. The current structure was built in 1974 as a single-story building of approximately 25,000 sf. A partial upper level/mezzanine adds less than 2000 sf.

b. Code & Egress

The Petaluma branch is accessed by a sloping walkway from the public sidewalk with curb cut access from an accessible parking area along the parking access/drive aisle. The main doors have electronic-eye access control, and the threshold is compliant. The restroom facilities for the general public appear compliant at the water closets and lavatories. The staff restroom did not appear compliant. Staff break areas did not appear compliant. Exiting from the staff work area leads to an area of chain-link construction fence. This exit does not have panic bar hardware nor is curb cut access provided from a raised concrete walkway. A staff member is responsible for unlocking the chain-link construction fence and opening the gate daily while staff is present.

c. Accessibility

Parking – Three (3) accessible parking spaces are available to the public and staff on-site. Curb cut access to the public sidewalk and main entrance of the building may be non-compliant. Raised detectable warnings are not present, and gaps between sections of pavement appeared to be greater than 1/2" and in need of sealant. Striping is blue and white. Striping could use repainting.

Elevator – No elevator is provided despite the upper mezzanine being open to the public. Library staff noted that they will allow general public to access the upstairs collection, or they will retrieve the materials for them. One instance was noted where a library patron in a wheelchair requested a High School year book and would not allow assistance. This individual apparently climbed up the stairs, rejecting staff assistance. No other information was provided by library staff.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. Secondary egress doors open to a landscaped area without a continuous exit path. Exit signage did not appear illuminated above all egress doors.

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Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, and it was pocketed.

d. Building Envelope

The Petaluma Regional branch is a brick-veneered structure with wood trims and copper metal roofing. The windows are wooden and the glass appears frameless. No glazing sealant is between the clerestory panes around the perimeter of the building, and water droplettes are blown in during strong to extreme storms. The building has undergone numerous improvements, and the structure appeared in good condition. A recent roof leak was said to have been addressed by maintenance staff, but interior evidence of the former leak is still visible.

See Section C, Building Photo Appendix, Page 39 for site photos.

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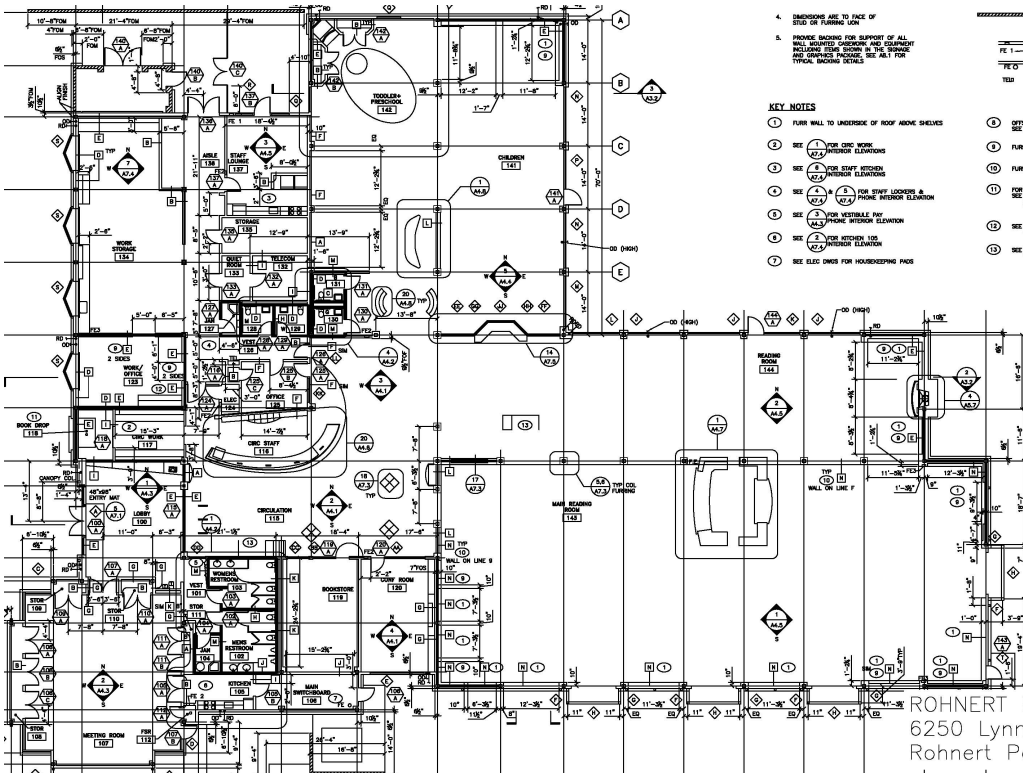
7. *Rohnert Park-Cotati Regional*
   Report Date: 6/7/2016

   a. Site Summary

   The Rohnert Park-Cotati Regional branch of the Sonoma County Library system is a leased facility located at 6250 Lynne Conde Way, Rohnert Park, CA 94928. The current structure was built in 2002 as a single-story building of approximately 23,807 sf.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

   b. Code & Egress

   The Rohnert Park-Cotati branch is accessed by both a sloping walkway from the parking lot and a level walkway from the public sidewalk with curb cut access from an accessible drop-off area along the parking access/drive aisle. The main doors have electronic-eye control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant; however, staff furnishing limit access to the restroom. Staff break areas appeared compliant.

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c. Accessibility

Parking – Seven (7) accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. Striping is blue. Striping is in good condition. All accessible parking is located either across the driveway/ access aisle from the main entrance to the building. An accessible drop-off area is provided directly in front of the building; however, it is not marked as a parking area. The general public was seen using this area to park and enter the library.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. A second egress door opens to a landscaped area without a continuous exit path. Additional egress doors exit to a concrete walkway/patio area. This walkway is within a grove of trees, and the walkway could be swept clear of organic material. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility the doors are equipped with lever set hardware. Closer forces and strike-side clearances appeared compliant.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, and it was pocketed.

d. Building Envelope

The Rohnert Park-Cotati branch is a stucco-clad structure with areas of flat roofing and sloped shingles. Windows are an aluminum storefront system and aluminum frames in punched openings. The building has skylights along the main reading room ridgeline, and the structure appeared in good condition. A recent roof leak from the flat top of a bay window was said to have been addressed by maintenance staff, but interior evidence of the former leak is still visible.

See Section C, Building Photo Appendix, Page 41 for site photos.

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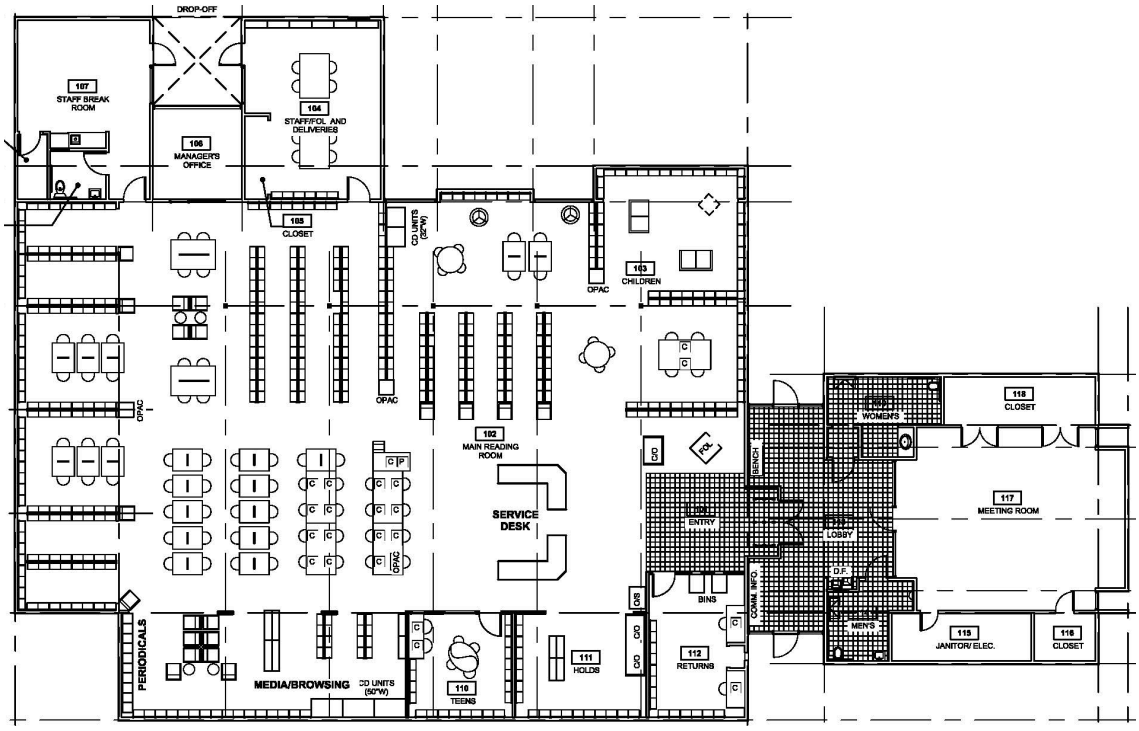
8. *Sebastopol Regional*
Report Date: 6/7/2016

a. Site Summary

The Sebastopol Regional branch of the Sonoma County Library system is a leased facility located at 7140 Bodega Avenue, Sebastopol, CA 95472. The current structure was built in 1975 as a single-story building of approximately 10,000 sf. Structural and functional renovations were done to the facility starting in 2011. The library provides a meeting room, and it serves as a single-point-of-public-service. This building replaced a structure heavily damaged in the 1969 earthquake, and this site has always been used for civic or educational purposes.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

A combination of ramps, terraces, and stairs make up the main access to the building from either Bodega Ave or the parking lot. The parking area and street frontage contribute to a complex entry sequence for the staff and general public where the accessible route includes the public sidewalk along N. High St. The accessible walkway is less-than-obvious due to raised landscaping and plantings. Staff often allow handicap entrance to the building from a level patio near the parking lot. The main

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doors have electronic push-button controls, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appears compliant, and staff break areas appear compliant.

c. Accessibility

Parking – Two (2) accessible parking spaces are available to the public and staff in a public parking lot adjacent to the library site. The parking lot is sloped, and it appears to be non-compliant. The lot is shared with the City Hall building. Striping appeared to be blue. Striping could use repainting.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. A second egress door opens to a level patio through a staff work area. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, but it was not pocketed.

d. Building Envelope

The Sebastopol branch is a brick-veneered structure with flat membrane roofing. The windows are an aluminum storefront system. The building has undergone some improvements for accessibility.

See Section C, Building Photo Appendix, Page 42 for site photos.

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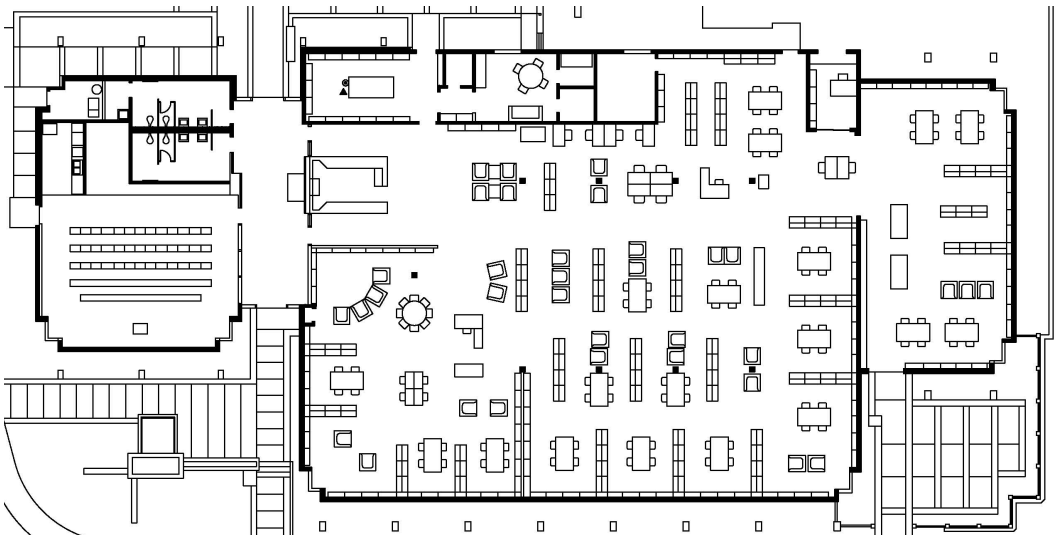
9. *Healdsburg Regional*
Report Date: 6/7/2016

a. Site Summary

The Healdsburg Regional branch of the Sonoma County Library system is a leased facility located at 139 Piper Street, Healdsburg, CA 95448. The current structure was built in 1986 as a single-story building of approximately 11,700 sf. In addition to the typical public services, this branch houses the Sonoma County Wine Library.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Healdsburg branch has level access from both the parking lot and from the public sidewalk with curb cut access. The main doors have electronic push-button control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant. Staff break areas appeared compliant.

c. Accessibility

Parking – Two (2) accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. Striping is blue. Striping was in good condition.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. A second egress door opens to an exterior

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exit path of travel. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, but it was not pocketed.

d. Building Envelope

The Healdsburg branch is a brick-veneered structure with sloped metal roofing. The windows are an aluminum storefront system. The building has a timber-framed trellis along the perimeter. The wood beams are starting to show signs of weathering. Vines appear to need frequent trimming and maintenance. Wooden trims and fascia were sun-weathered and warping along the perimeter of the roof.

See Section C, Building Photo Appendix, Page 43 for site photos.

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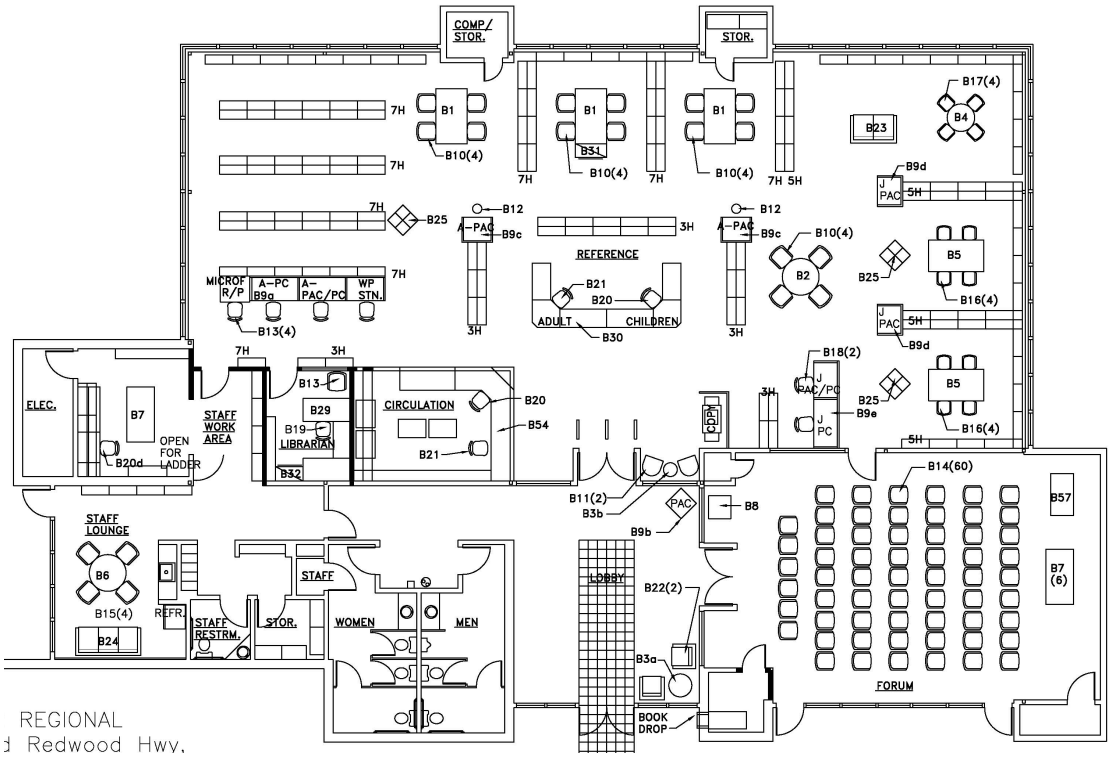
10. *Windsor Regional*
Report Date: 6/7/2016

a. Site Summary

The Windsor Regional branch of the Sonoma County Library system is a leased facility located at 9291 Old Redwood Highway, Windsor, CA 95492. The current structure was built in 1990 as a single-story building of approximately 7,600 sf to house the Town of Windsor offices. The building was renovated in 1996 to accommodate today's full-service branch library located near the Town Green.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Windsor branch has a sloped walkway access from the parking lot and the public sidewalk. The main doors have electronic-eye control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant. Staff break areas appeared compliant. An egress door is located in the staff break area, and it is connected to a continuous exterior path of travel to the public sidewalk.

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c. Accessibility

Parking – Three (3) accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. Striping is blue and white. Striping was in good condition.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. Additional egress doors are connected to a continuous exterior path of travel to the public sidewalk. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appeared compliant for height and controls, but it was not pocketed.

d. Building Envelope

The Windsor branch is a stucco-clad structure with flat membrane roofing. The windows are aluminum storefront system. The building has skylights in the lobby. Two areas exhibited water intrusion near skylights or hatches. Leaks did not appear to be ongoing.

See Section C, Building Photo Appendix, Page 44 for site photos.

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11. *Occidental*
Report Date: 6/7/2016

a. Site Summary

The Occidental branch of the Sonoma County Library system is a leased facility located at 73 Main Street, Occidental, CA 95465. The wood-framed structure is noted to have been built in 1979 as a multi-story structure that today houses mixed sub-tenants. The library space is approximately 650 sf.

b. Code & Egress

A wooden boardwalk connects the asphalt parking area to the library entrance. The doorway thresholds are non-compliant. Restroom access is outside of the library space and available to other building sub-tenants as well. The restroom is not compliant.

c. Accessibility

Parking – One (1) accessible parking space is designated to the public and staff on-site near the rear of the parking area. The parking area slopes up to meet the wooden boardwalk, and there is no striped path dedicated to access the accessible parking space. Striping is white. Striping was in good condition.

Egress Door(s) – The main access to the library space was locked upon our arrival. Visible in section of the egress hardware was not possible.

Door hardware – From what could be observed on the exterior of the building, the facility doors are not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – A drinking fountain was not visible from outside.

d. Building Envelope

The Occidental branch is a wood frame building with painted horizontal siding.

See Section C, Building Photo Appendix, Page 45 for exterior site photos.

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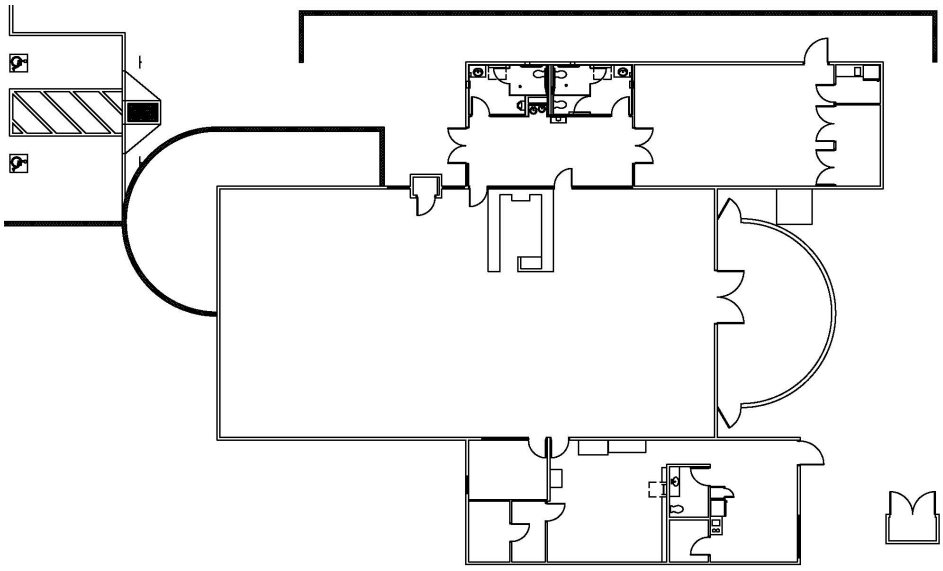
12. *Guerneville Regional*
Report Date: 6/7/2016

a. Site Summary

The Guerneville Regional branch of the Sonoma County Library system is a leased facility located at 14107 Armstrong Woods Rd, Guerneville, CA 95446. The current structure was built in 1979 as a single-story building of approximately 6,237 sf.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Guerneville branch has level access from both the parking lot and from the public sidewalk with curb cut access. The main doors have electronic push-button control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant. Staff break areas appeared compliant.

c. Accessibility

Parking – Two (2) van accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. Striping is blue. Striping was in good condition.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant. A second egress door opens to a landscaped

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area without a continuous exit path. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain appears compliant.

d. Building Envelope

The Guerneville branch is a framed structure with painted horizontal siding. The roof is sloped with comp shingles. The windows appear to be an aluminum storefront system and aluminum punched openings. No skylights are installed in the roof. Areas of peeling paint and degrading siding are present along the bottom of some walls near planting beds and landscaping.

See Section C, Building Photo Appendix, Page 46 for site photos.

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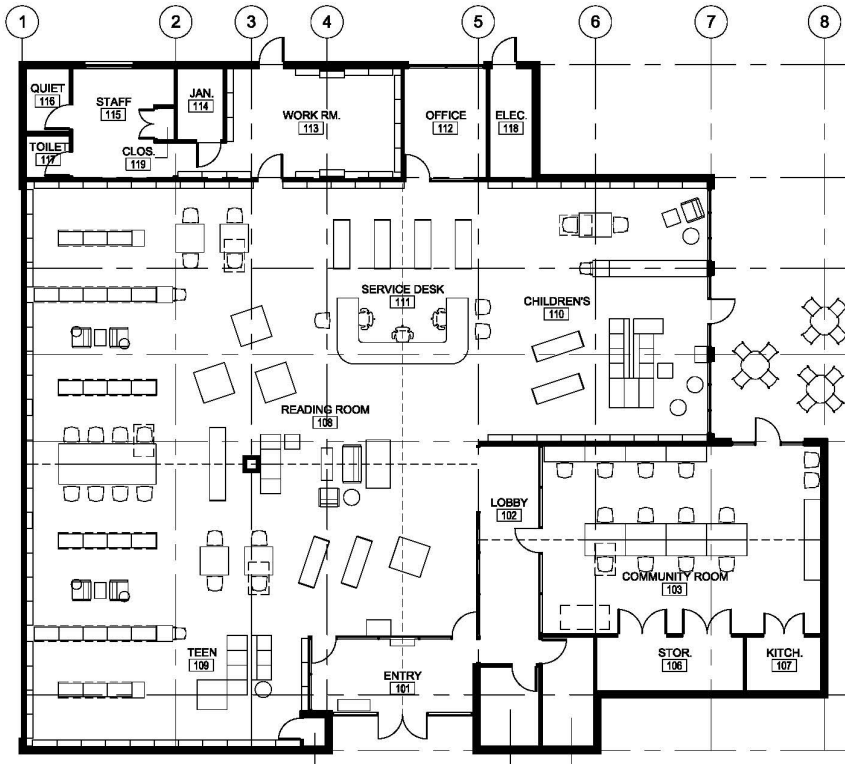
13. *Cloverdale Regional*
Report Date: 6/7/2016

a. Site Summary

The Cloverdale Regional branch of the Sonoma County Library system is located at 401 N. Cloverdale Blvd, Cloverdale, CA 95425. The current structure was built in 1977 as a single-story building of approximately 7,200 sf.



(Floor Plan provided by Sonoma Co. Library, N.T.S.)

b. Code & Egress

The Cloverdale branch is accessed by a level walkway from the parking lot and the public sidewalk with a drop-off area along the parking access/drive aisle. No accessible curb cut is provided at the drop-off area. The main doors have electronic-eye control, and the threshold is compliant. The restroom facilities for the general public appear code compliant at the water closets and lavatories. The staff restroom appeared compliant. Staff break areas appeared compliant.

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c. Accessibility

Parking – Two (2) accessible parking spaces are available to the public and staff on-site with compliant curb cut access to the main entrance of the building. Striping is blue and white. Striping could use repainting.

Egress Door(s) – The building has multiple egress doors for exiting. Egress doors are equipped with panic bar hardware. The main egress door threshold is compliant though furniture is crowding the exit door. A second egress door opens to a concrete patio area without a continuous exit path. The gate from this patio area was chained and locked. No egress hardware is provided on the patio gate. Exit signage appeared to be illuminated above all egress doors.

Door hardware – Throughout the facility there are doors not equipped with lever set hardware (most commonly they have door knobs), improper closer forces, and strike-side clearance issues. Correcting these conditions is recommended.

Drinking fountain(s) – The drinking fountain is non-compliant.

d. Building Envelope

The Cloverdale branch is a brick-veneer structure with areas of painted horizontal siding and comp shingle roofing. The windows are aluminum storefront system and aluminum windows in punched openings. Water damage to the underside of the eaves was noticeable, and in one area a clog was causing active leaking through the gutter and fascia board. Numerous soffit areas have been water-damaged from debris build-up and gutter blockage.

See Section C, Building Photo Appendix, Page 47 for site photos.

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C. Building Photo Appendix:

1. *Sonoma County Central Library: (Photos taken 5/25-26/2016)*

(Photo 01) Main Library Entrance – E Street @ 3rd Street: One public, curb-side handicap parking space. Image Courtesy of Google

(Photo 02) Sloped Walkway @ Main Entrance

(Photo 03) Concrete pavement separation

(Photo 04) Main Exit/Egress Door @ Lobby

(Photo 05) Non-compliant Staff Restroom

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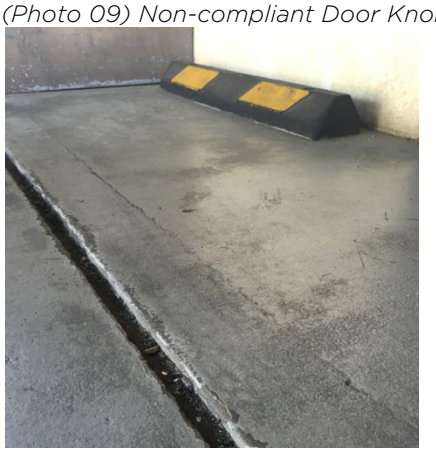
(Photo 06) Non-compliant Egress Stair

(Photo 07) Non-compliant Door Threshold

(Photo 08) Non-compliant Drinking Fountain

(Photo 09) Non-compliant Door Knob & DF

(Photo 10) Non-compliant handrail extensions & visual contrasting warnings



(Photo 11) Concrete gap @ Staff Entrance

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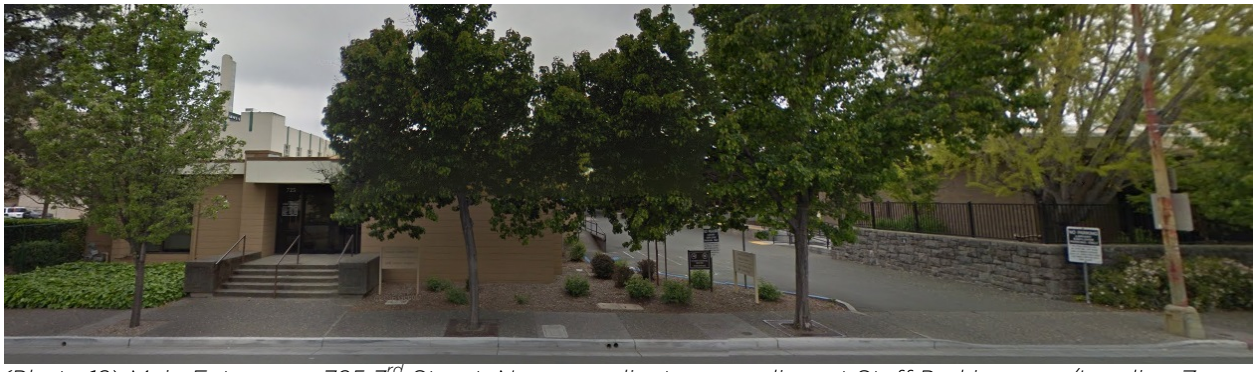
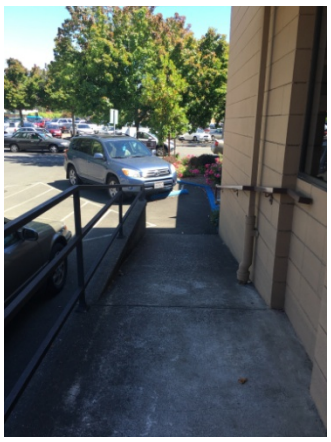
2. *Central Library Annex: (Photos taken 5/25-26/2016)*



(Photo 12) Main Entrance – 725 3rd Street: Non-compliant ramp adjacent Staff Parking area/Loading Zone Image Courtesy of Google

(Photo 13) Accessible parking for staff Image Courtesy of Google



(Photo 14) Non-compliant ramp to accessible parking for staff

(Photo 15) Non-compliant ramp to Annex

(Photo 16) Non-compliant stair to Annex

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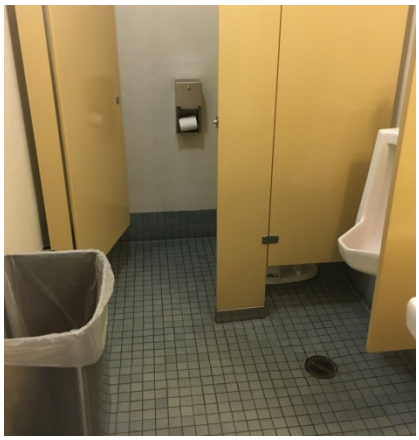
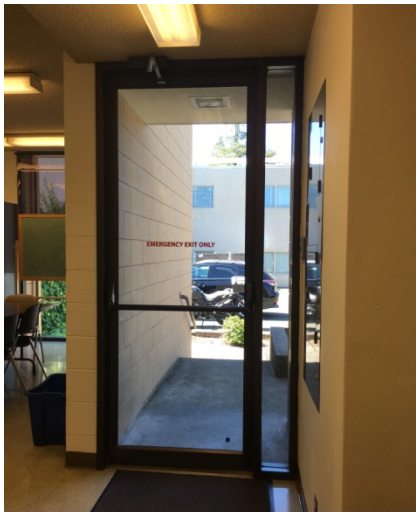
(Photo 17) Non-compliant high-low drinking fountain



(Photo 18) Non-compliant men's restroom

(Photo 19) Non-compliant vanity



(Photo 20) Egress door w/o illuminated exit signage

(Photo 21) Egress door

(Photo 22) Threshold requiring maintenance

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3. *Northwest Regional: (Photos taken 5/25/2016)*

(Photo 23) Main Entrance – Adjacent to Coddington Mall Parking Lot
Image Courtesy Microsoft

(Photo 24) Modified threshold

(Photo 25) Non-compliant pocketing along circ.

(Photo 26) Non-comp. restroom

(Photo 27) Non-compliant exit

(Photo 28) Non-compliant exit

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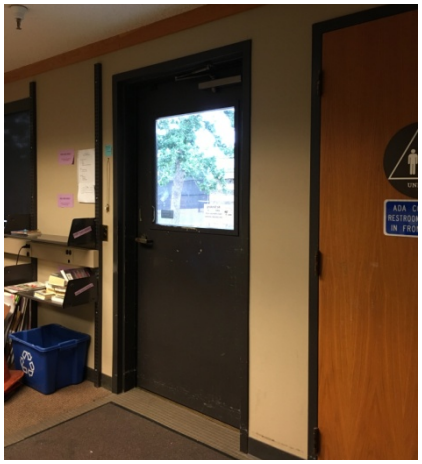
4. *Rincon Valley Regional: (Photos taken 5/25/2016)*

(Photo 29) Main entrance & Drop-off – 6959 Montecito Boulevard. Image Courtesy of Google

(Photo 30)

(Photo 31) Non-compliant path of travel



(Photo 32) Non-compliant egress door

(Photo 33) Non-compliant staff restroom

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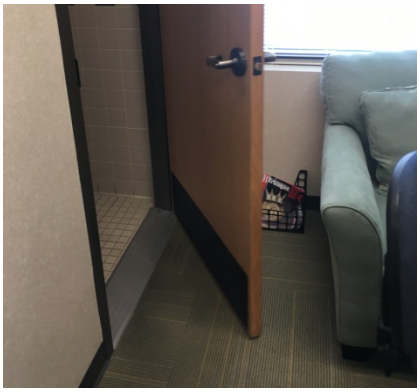
5. *Sonoma Valley Regional: (Photos taken 5/25/2016)*

(Photo 34) Main Entrance – 755 W. Napa Street
Image Courtesy of Google

(Photo 35)

(Photo 36)

(Photo 37)



(Photo 38)

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6. *Petaluma Regional: (Photos taken 5/25/2016)*

(Photo 39) Main entrance – Drop-off aisle & public transit stop @ 100 Fairgrounds Drive
Image Courtesy of Google

(Photo 40)

(Photo 41) Non-compliant accessible path

(Photo 42) Non-compliant ramp & threshold

(Photo 43) Gated, chain-link construction fence

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(Photo 44) Non-compliant path of egress

(Photo 45) Non-compliant public stair

(Photo 46) Non-compliant egress door

(Photo 47) Non-compliant door hardware

(Photo 48) Non-compliant staff break area

(Photo 49) Graffiti on building

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7. *Rohnert Park-Cotati Regional: (Photos taken 5/25/2016)*

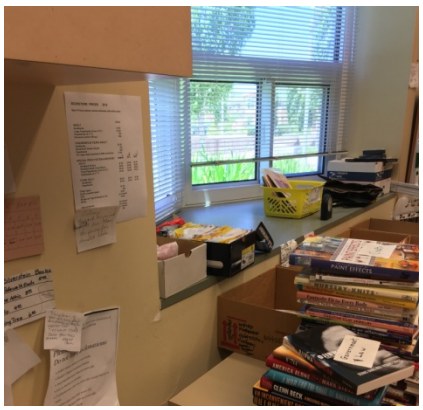
(Photo 50) Façade along Rohnert Park Expressway
Image Courtesy of Google

(Photo 51) Damaged threshold

(Photo 52) Distant accessible parking spaces

(Photo 53)

(Photo 54)



(Photo 55) Water damage to wall

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8. *Sebastopol Regional: (Photos taken 5/26/2016)*

(Photo 56) Main Entrance – 7140 Bodega Avenue
Image Courtesy of Google

(Photo 57)

(Photo 58)

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(Photo 59) Non-compliant toe kick @ egress door

(Photo 60) Weathering & water damage

9. *Healdsburg Regional: (Photos taken 5/26/2016)*

(Photo 61) Main Entrance – 139 Piper Street
Image Courtesy of Google

(Photo 62) Non-compliant path of travel

(Photo 63) Non-compliant drinking fountain

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(Photo 64) Non-compliant staff restroom

(Photo 65) Non-compliant path of travel

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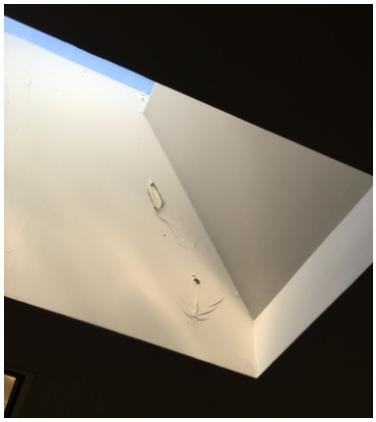
10. *Windsor Regional: (Photos taken 5/26/2016)*

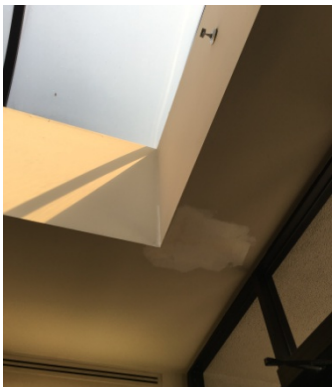
(Photo 66) 9291 Old Redwood Highway
Image Courtesy of Google

(Photo 67) Non-compliant drinking fountain

(Photo 68) Non-compliant path of travel



(Photo 69) Ceiling water damage



(Photo 70) Ceiling water damage

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11. *Occidental: (Photos taken 5/26/2016)*

(Photo 71) Main Entrance (@ rear) – 73 Main Street
Image Courtesy of Google

(Photo 72)

(Photo 73) Non-compliant path of travel

(Photo 74) Non-compliant threshold

(Photo 75) Non-compliant restroom

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12. *Guerneville Regional: (Photos taken 5/26/2016)*

(Photo 76) Main Entrance – 14107 Armstrong Woods Road
Image Courtesy of Google

(Photo 77) Peeling paint @ base of wall

(Photo 78) Non-compliant path of travel

(Photo 79) Non-compliant staff break area

(Photo 80) Non-compliant staff restroom

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13. *Cloverdale Regional: (Photos taken 5/26/2016)*

(Photo 81) Main Entrance – 401 N. Cloverdale Blvd.
Image Courtesy of Google

(Photo 82) Non-compliant path of travel

(Photo 83) Water damage to soffit

(Photo 84) Water damage to fascia boards

(Photo 85) Damaged perimeter fencing

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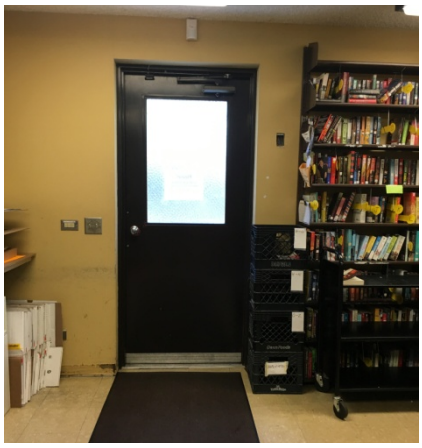
(Photo 86) Non-compliant drinking fountain



(Photo 87) Non-compliant egress door

(Photo 88) Non-compliant staff break area

(Photo 89) Non-compliant staff restroom

(Photo 90) Water damage to ceiling

(Photo 91) Non-compliant path of travel

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Mechanical Facility Assessment

Sonoma County Libraries - Facility Assessment
2016-0291

Prepared for:
MKThink

Prepared by:
Jesse Agosta, PE

June 3, 2016

INTERFACE ENGINEERING

Table of Contents

Executive Summary

Interface Engineering performed a surface investigation of the Mechanical systems at 13 different libraries in Sonoma County on May 25th and 26th, 2016. The intent of the project is to determine the remaining useful life of the HVAC systems and make recommendations for system upgrades to achieve sustainable measures which are cost effective to implement. The following libraries are included in the assessment:

1. Northwest – Santa Rosa
2. Central – Santa Rosa
3. History & Genealogy Annex – Santa Rosa
4. Rincon Valley – Santa Rosa
5. Sonoma Valley Regional
6. Petaluma Regional
7. Rohnert Park-Cotati Regional
8. Sebastopol Regional
9. Occidental
10. Guerneville Regional
11. Windsor Regional
12. Healdsburg Regional
13. Cloverdale Regional

Most locations are using mechanical equipment well past their useful service life, and as a result are running much less efficiently than new equipment would. The easiest way to achieve energy savings is to replace the units with new to take advantage of functioning economizers and the free cooling they provide. The next step to reducing energy usage would be to implement a central controls system that allows the systems to optimize schedules, building warm-up routines, reduce airflow and reset supply air temperatures based on the loads of the space.

Reference Appendix A for a full accounting of all mechanical equipment, Appendix B for Mechanical Service Life Estimates, and Appendix C for photos.

Northwest Regional

Existing Conditions

The Northwest Regional branch library in Santa Rosa was built in 1967. A mechanical renovation was completed in 1997 which replaced the original equipment in kind. The building is served by (3) single-zone packaged AC units located on the eastern roof. AC-1 and AC-2 serve the main library area while AC-3 serves the back of house areas including the staff lounge and storage. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Heating is provided via a natural gas furnace. Due to the age of the units, it is unlikely that the economizers are functioning properly. The units appear to be in decent working condition and there are no reported operational issues. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Controls for the building are local to each thermostat. The controls allow for basic scheduling and override but cannot alert Facility staff to malfunctions, remotely override equipment, or indicate thermal comfort issues.

Recommendations

All three packaged units are beyond their recommended service life and it is recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Central

Existing Conditions

The Northwest Regional branch library in Santa Rosa was built in 1966. Two mechanical renovations were completed in 1996 which replaced the original boilers, chiller, cooling tower and associated pumps.

Heating Hot Water System:

There are two non-condensing boilers with an output capacity of 506 MBH each. The heating hot water system is piped as a primary only system with constant volume flow. The boilers appear to be in poor condition and are within 3 years of the end of their useful service life.

Chilled Water System:

The chiller has180 tons of cooling capacity and is tied into a cooling tower with 210 tons of cooling capacity. Both the chilled and condenser loops are set up as primary only, constant volume flow. The existing chiller utilizes refrigerant R-22, which is not compliant with Title 24 and is no longer produced. The chiller appears to be in decent condition but at the end of its useful service life. The boiler room is not compliant with the California Mechanical Code requirements of a refrigeration machinery room.

Air Handlers:

The building is served by (4) built-up air handlers located in the basement. The built up air handlers include sound traps, return fans, exhaust and outside air dampers, filter bank, cooling coil, supply fan and heating coil. All components appear to be original to the building. The return and supply fans are constant volume. Due to the age of the units, it is unlikely that the economizers are functioning in the most efficient manner. The units appear to be in decent working condition and there are no reported operational issues. However, the fans are well past their useful service life.

Controls System:

Controls for the building are a mix of digital and pneumatic. Each thermostat controls a single air handler and variations in temperature gradient across large portions of the library causes most areas to be uncomfortable. The controls allow for Facility staff to monitor primary equipment operation but not space temperatures.

Recommendations

Heating Hot Water System:

It is recommended that the heating hot water system be replaced with condensing boilers and a constant primary/variable secondary piping arrangement. This solution will increase the combustion efficiency of the boilers to over 90% and will allow the water temperature and flow to be reset based on building load saving significant energy. If the heating plant is replaced with condensing boilers, the heating coils throughout the building must be replaced to operate at different temperatures.

Chilled Water System:

The existing chiller and cooling tower are at the end of their useful service life. It is recommended that the chilled water system be replaced with a constant primary/variable secondary piping arrangement on the chilled water side and that the chiller, cooling tower and pumps be replaced. A new chiller will be significantly more energy efficient due to increased operational efficiencies. Further energy reduction will be achieved through temperature and flow reset on the chilled water and condensing water side. A water-side economizer will be installed to turn off the chiller when the outside air temperatures are low enough. Any work within the boiler room will trigger the space to be brought up to California Mechanical and Building code compliance. The changes required include a new purge exhaust fan and the addition of an emergency shut-off switch outside of the boiler room.

Air Handlers:

The supply and return fans within the air handler are recommended to be replaced with a fan array with a VFD to control airflow. The fan array provides acoustical savings due to the quieter fans, as well as energy savings due to the ability of the system to turn down airflow to meet the load.

Air Distribution:

In order to address the controls issues, it is recommended that additional zones be added to the system. This can be achieved by adding distributed heating coils and modulating dampers for each zone.

Controls System:

It is recommended that a new Automated Logic Controls system be installed to implement all energy efficiency measures and integrate this building into a new central controls system.

History and Genealogy Annex

Existing Conditions

The History and Genealogy Annex in Santa Rosa was built in 1966. A mechanical renovation was completed in the late 90s which replaced the original equipment in kind. The building is served by a boiler, air cooled condensing unit and a multi-zone air handler. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Due to the age of the unit, it is unlikely that the economizers are functioning properly. The boiler, air handler and condensing unit appear to be in decent working condition and there are no reported operational issues. However, all equipment is at or past it's useful service life. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Controls for the building are local to each thermostat. The controls allow for basic scheduling and override but cannot alert Facility staff to malfunctions, remotely override equipment, or indicate thermal comfort issues.

Recommendations

All equipment is beyond the recommended service life and it is recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Rincon Valley Regional

Existing Conditions

The Rincon Valley Regional in Santa Rosa was built in 1994. All mechanical equipment is original. The building is served by (5) single-zone packaged AC units located on the roof. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Heating is provided via a natural gas furnace at each unit. Due to the age of the units, it is unlikely that the economizers are functioning properly. The units appear to be in poor working condition, although there are no reported operational issues. The units are 22 years old and beyond their useful service life. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Recommendations

All five packaged units are beyond their recommended service life and it is recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Sonoma Valley Regional

Existing Conditions

The Sonoma Valley Regional in Santa Rosa was built in 1977. All mechanical equipment is was replaced in a retrofit in 2012. The building is served by (4) single-zone packaged AC units located on the roof. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-410A. Heating is provided via a natural gas furnace at each unit. Due to the age of the units, it is likely that the economizers are functioning properly. The units appear to be in excellent working condition, and there are no reported operational issues. The units are 4 years old have 16 years of useful service life remaining. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Recommendations

All four packaged units are within their recommended service life no modifications to the equipment is required.

It is recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Petaluma Regional

Existing Conditions

The Petaluma Regional in Petaluma was built in 1974. A mechanical renovation occurred in 1995 which replaced all of the rooftop AC equipment. Another renovation occurred in 2003 which added a furnace and condensing unit into a new extension of the library. This equipment is in good working order. The remaining portion of the building is served by (6) single-zone packaged AC units located on the roof. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Heating is provided via a natural gas furnace at each unit. Due to the age of the units, it is unlikely that the economizers are functioning properly. The units appear to be in mediocre working condition, although there are no reported operational issues. The units are 21 years old and beyond their useful service life. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Recommendations

All six packaged units are beyond their recommended service life and it is recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Rohnert Park Civic Center Library

Existing Conditions

The Rohnert Park Library in Rohnert Park was built in 2002 and is the most modern of the buildings surveyed. All mechanical equipment is original. The building is served by a boiler, and two packaged AC units located on the roof. One of the packaged AC units is multi-zone and serves the main library and the second AC unit is single zone furnace unit and serves a Meeting Room. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. The multi-zone AC unit (AC-1) distributes air to 24 terminal units with reheat at each zone. Due to the age of the unit, it is unlikely that the economizers are functioning properly. The boiler, air handler and condensing unit appear to be in decent working condition and there are no reported operational issues. However, all equipment is at or past it's useful service life. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Controls for the building are through a main building energy management system that is now obsolete. The controls for the boiler frequently lose contact with the main control board causing the boiler to turn off. When this occurs, there is no heating for the building and requires Facility personal to come to the site to fix the problem. Due to the frequency of the boiler failure, staff have resorted to electric heaters in the office area to maintain a comfortable temperature. The controls for the cooling performs slightly better but still fails, causing the entire AC unit to turn off. Often, it is hours before the library staff realizes this issue and calls Facility staff to fix the issue.

Recommendations

All equipment is beyond the recommended service life and it is recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is recommended that the heating hot water system be replaced with a condensing boiler and a constant primary/variable secondary piping arrangement. This solution will increase the combustion efficiency of the boilers to over 90% and will allow the water temperature and flow to be reset based on building load saving significant energy. If the heating plant is replaced with condensing boilers, the heating coils throughout the building must be replaced to operate at different temperatures.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system and address the existing controls issues.

Sebastopol Regional

Existing Conditions

The Sebastopol Regional in Sebastopol was built in 1975. A mechanical renovation occurred in 2011 which replaced several exhaust fans but left the existing equipment in place. Another renovation occurred in 2006 which added replaced all of the existing rooftop equipment. The building is served by (3) single-zone packaged AC units located on the roof. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Heating is provided via a natural gas furnace at each unit. Due to the age of the units, it is unlikely that the economizers are functioning properly. The units appear to be in mediocre working condition, although there are no reported operational issues. The units are 10 years old with 5 years remaining in their useful service life. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Recommendations

All three packaged units are within their recommended service life, however, and it is still recommended that they be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Occidental

Existing Conditions

The Occidental library in Occidental was built in 1979. The entire library is only two rooms. There is no permanent mechanical equipment installed in this space. The only heating source is through an electric heater.

Recommendations

It is recommended that a new packaged thru the wall heat pump unit (PTHP) be installed below a window to provide heating and cooling to the library.

Due to the small size of the space, a central controls system is not recommended.

Guerneville Regional

Existing Conditions

The Guerneville Regional in Guerneville was built in 1979. A mechanical renovation occurred in 1995 which replaced the existing mechanical equipment. The building is served by a single-zone packaged AC unit and a split DX system. AC-1 is located on the roof and serves the main library and the split system serves a separate meeting room. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Heating is provided via a natural gas furnace at AC-1. Due to the age of the unit, it is unlikely that the economizer is functioning properly. The units appear to be in mediocre working condition, although there are no reported operational issues. The units are approximately 20 years old and are at the end of their useful service life. The main library is able to meet set-point but the meeting room and the back of house areas struggle to maintain temperature.

Recommendations

All equipment has reached the end of the recommended service life, and is recommended to be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Windsor Regional

Existing Conditions

The Windsor Regional library in Windsor was built in 1990. All mechanical equipment was replaced in a retrofit in 2014. The building is served by (4) single-zone packaged AC units located on the roof. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-410A. Heating is provided via a natural gas furnace at each unit. Due to the age of the units, it is likely that the economizers are functioning properly. The units appear to be in excellent working condition, and there are no reported operational issues. The units are 2 years old

have 18 years of useful service life remaining. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Recommendations

All four packaged units are within their recommended service life no modifications to the equipment is required.

It is recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Healdsburg Regional

Existing Conditions

The Healdsburg Regional in Healdsburg was built in 1986. A mechanical renovation was completed in 2009 which added a new mechanical system to serve a meeting room. A second renovation occurred within the past 6 years which replaced the multi-zone air handler, duct mounted furnace and condensing unit. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-410A. R-410A is compliant with Title 24. The minimum outside air damper is currently set to closed, indicating that the system is not providing any ventilation air and also not responding to controls requiring a minimum outside air position on the damper. The air handler and condensing unit appear to be in decent working condition and there are no reported operational issues. All equipment has approximately 15 years of useful service life remaining. It was reported that there are no issues meeting the temperature set point in heating or cooling throughout the building.

Controls for the building are local to each thermostat. The controls allow for basic scheduling and override but cannot alert Facility staff to malfunctions, remotely override equipment, or indicate thermal comfort issues.

Recommendations

All equipment is within the recommended service life and it is not recommended that they be replaced. It is recommended that the minimum outside air position be maintained at all times as the building is not meeting code minimum ventilation.

It is recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Cloverdale Regional

Existing Conditions

The Cloverdale Regional in Cloverdale was built in 1977. A mechanical renovation occurred in 2003 which replaced some of the existing mechanical equipment. The building is served by (4) single-zone packaged AC units and a furnace. AC-1 through AC-4 and the furnace are located on the roof and serves the library. Cooling is provided via direct expansion (DX) with compressors that utilize refrigerant R-22. R-22 is currently not compliant with Title 24 and is no longer being produced. Due to the age of the equipment, it is unlikely that the economizer is functioning properly. The units appear to be in mediocre working condition. The units are approximately 13-20+ years old and are either at or very near the end of their useful service life. The main library is able to meet set-point.

There have been several leaks through the roof that caused damage to the ceiling below. Currently, there is one ongoing leak. The leak comes from AC-1 (located in the middle of the equipment on the roof). Water is deposited into the ductwork after the coil where it builds up and then drops into the ceiling space where it escapes the ductwork. Standing water within ductwork represents a significant threat of Legionnaires disease. The disease breeds in the standing water and becomes airborne due to the airflow over the water. The disease is then delivered to the library where it can be breathed in by the occupants. People at the most risk of being seriously infected are the very young and the elderly. This demographic is the most common in a library so the public health risk is elevated. It is likely that the cause for this issue is an improperly installed p-trap on the condensate line. Due to the

lack of available height, the p-trap cannot for an airtight seal and operate as intended. This causes air to flow through the p-trap back into the unit and prevents water from flowing down the condensate line. As there is nowhere else for the condensate to go, it flows into the ductwork.

Recommendations

All equipment has reached the end of the recommended service life, and is recommended to be replaced in kind. The new units will be provided with local economizer controls which reduces energy usage by using outside air for free cooling when it is available. Additionally, the new units use refrigerant R410A, which complies with Title 24 requirements.

Due to the public safety hazards represented by the standing water, it is a high priority to test the airstream for any legionnaires disease. To fix the issue with the standing water, the p-trap on the condensate line needs to be redone to comply with code. This will prevent the water from building up in the unit and then discharging into the ductwork.

It is also recommended that a new Automated Logic Controls system be installed to integrate this building into a new central controls system.

Appendix A

Existing Equipment Description

Northwest Regional			
Tag/Location	Equipment Type	Make/Model #	Age
AC-1; Roof	AC unit with Furnace	Trane YCH091D3L0BE	19
AC-2; Roof	AC unit with Furnace	Trane YCH091D3L0BE	19
AC-3; Roof	AC unit with Furnace	Trane YCX030F1L0BA	20
Sonoma County			
Tag/Location	Equipment Type	Make/Model #	
Fan Rm 4/Boiler Rm; B-1	Boiler	RITE 63W	20
Fan Rm 4/Boiler Rm; B-2	Boiler	RITE 63W	20
Fan Rm 4/Boiler Rm; CH-1	Chiller	York YSCACAS1-CFBO	20
Fan Rm 1; SA-1	Fan	Amer. Std 330DIDW-THD	51
Fan Rm 2; SA-2	Fan	Amer. Std 330DIDW-THD	51
Fan Rm 3; SA-3A	Fan	Amer. Std 330DIDW-THD	51
Fan Rm 3; SA-3B	Fan	Amer. Std 330DIDW-THD	51
Fan Rm 4/Boiler Rm; SA-4	Fan	Amer. Std 330DIDW-THD	51
Exterior Enclosure/CT-1	Cooling Tower	EVAPCO – AT-8-76B	20
History & Genealogy Annex			
Tag/Location	Equipment Type	Make/Model #	
CU-1/Roof	Condensing Unit	Carrier/28AKS028-500	~15
B-1/Mechanical Room	Boiler	Parker Boiler/T490	~15
Rincon Valley Regional			

Tag/Location	Equipment Type	Make/Model #	
Roof; AC-1	Heating/Cooling Unit	Carrier 48TJD014---501QE	22
Roof; AC-2	Heating/Cooling Unit	Carrier 48TJD014---501QE	22
Roof; AC-3	Heating/Cooling Unit	Carrier 48TJE004---501QE	22
Roof; AC-4	Heating/Cooling Unit	Carrier 48TJD012---501QE	22
Roof; AC-5	Heating/Cooling Unit	Carrier 48TJD012---501QE	22
Sonoma Valley			
Tag/Location	Equipment Type	Make/Model #	
Roof; AC-1	Heating/Cooling Unit	Carrier 48HCLA04C2M5A0A5F0	4
Roof; AC-2	Heating/Cooling Unit	Carrier 48HCDD17C2M5A0A5F0	4
Roof; AC-3	Heating/Cooling Unit	Carrier 48HCLA05C2M5A0A5F0	4
Roof; AC-4	Heating/Cooling Unit	Carrier 48HCLA05C2M5A0A5F0	4
119 ELECTRICAL; FC-1	Evap Unit	Mitsubishi MSY-GE24NA	4
Roof	CU-1	Mitsubishi MSY-GE24NA	4
Petaluma			
Tag/Location	Equipment Type	Make/Model #	
Outdoor Closet	Furnace	CAUA-250	12
Roof; AC-1	Heating/Cooling Unit	Carrier 48AWD040-E-511EJ	21
Roof; AC-2	Heating/Cooling Unit	Carrier 48HJD017G--591AA	21
Roof; AC-3	Heating/Cooling Unit	Carrier 48HJD017G--591AA	21
Roof; AC-4	Heating/Cooling Unit	Carrier 48HJD017G--591AA	21
Roof; AC-5	Heating/Cooling Unit	Carrier 48HJD008G--541NB	21
Roof; AC-6	Heating/Cooling Unit	Carrier 48HJD006G--541NB	21
Rohnert Park			
Tag	Equipment Type	Make/Model #	
Roof; AC-1	Heating/Cooling Unit	Trane SXHGC9040V76CDAD9001A0CE0GKL0NRT0000#	15

Roof; AC-2	Heating/Cooling Unit	Trane YCD151C4LAAA	14
Roof; B-1	Boiler	LAARS 120127	15
Roof; FC-1	FC-1	Mitsubishi PUZ-A24NHA6	1
Roof; CU-1	CU-1	Mitsubishi PU24EK	1
Sebastopol			
Tag	Equipment Type	Make/Model #	
Roof; AC-1	Heating/Cooling Unit	Trane YCH151C3L0BB	10
Roof; AC-2	Heating/Cooling Unit	Trane YCH151C3L0BB	10
Roof; AC-3	Heating/Cooling Unit	Trane YCZ060F3M0BD	10
Occidental			
Tag	Equipment Type	Make/Model #	
Electric heater	--	--	
Guerneville			
Tag	Equipment Type	Make/Model #	
Outside, Ground Floor; HP-1	Heat Pump	Carrier 38YCC036340	20
Roof;HP-3	Heat Pump	Carrier 50HJQ016---521CD	20
Work Room; FC-1	Fan Coil	Carrier 40F5160	20
Windsor			
Tag	Equipment Type	Make/Model #	
Roof; AC-1	AC Unit with Furnace	Trane YHC102F3ELA07	2
Roof; AC-2	AC Unit with Furnace	Trane YHC102F3ELA22QQ07	2
Roof; AC-3	AC Unit with Furnace	Trane YHC072F3ELA0800C0C0	2
Roof; AC-4	AC Unit with Furnace	Trane YHC092F3ELA0800C0C1	2
Healdsburg			
Tag	Equipment Type	Make/Model #	

Ground Floor, Outside Access Closet; AC-1	Air Handler	AirFan ASED-CVF-175-SI	5-6
AC-2	Natural Gas Furnace	Carrier weathermaker SX 28RD060-911	7
Ground Floor, Outside;CU-1	Split System Condensing Unit	Trane RAUJC40EEC03A0DF00020	5-6
Ground Floor, Outside; CU-2	Condensing Unit	Banner 24ABS360A500	7
Cloverdale			
Tag	Equipment Type	Make/Model #	
Roof	Cooling Tower	Pace A-18AF	~13
Roof; AC-1	Heating/Cooling Unit	Bryant 574DPWA48090NA	~13
Roof; AC-2	Heating/Cooling Unit	LENNOX RD8-65-4	~13
Roof; AC-3	Heating/Cooling Unit	Trane YSC090A3ELA18	13
Roof; AC-4	Heating/Cooling Unit	ICP GPCM48H080F	~13

Appendix B

Mechanical Equipment Service Life Estimates – ASHRAE Applications 2015

Table 4 Comparison of Service Life Estimates

Equipment Item	Median Service Life, Years: Abramson et al. (2005)	Median Service Life, Years: Akalin (1978)
Air Conditioners		
Window unit	N/A*	10
Residential single or split package	N/A*	15
Commercial through-the-wall	N/A*	15
Water-cooled package	>24	15
Heat pumps		
Residential air-to-air	N/A*	15[b]
Commercial air-to-air	N/A*	15
Commercial water-to-air	>24	19
Roof-top air conditioners		
Single-zone	N/A*	15
Multizone	N/A*	15
Boilers, Hot-Water (Steam)		
Steel water-tube	>22	24 (30)
Steel fire-tube		25 (25)
Cast iron	N/A*	35 (30)
Electric	N/A*	15
Burners	N/A*	21
Furnaces		
Gas- or oil-fired	N/A*	18
Unit heaters		
Gas or electric	N/A*	13
Hot-water or steam	N/A*	20
Radiant heaters		
Electric	N/A*	10
Hot-water or steam	N/A*	25
Air Terminals		
Diffusers, grilles, and registers	N/A*	27
Induction and fan-coil units	N/A*	20
VAV and double-duct boxes	N/A*	20
Air washers	N/A*	17
Ductwork	N/A*	30
Dampers	N/A*	20
Fans	N/A*	
Centrifugal	N/A*	25
Axial	N/A*	20
Propeller	N/A*	15
Ventilating roof-mounted	N/A*	20
Coils		
DX, water, or steam	N/A*	20
Electric	N/A*	15
Heat Exchangers		
Shell-and-tube	N/A*	24
Reciprocating compressors	N/A*	20
Packaged Chillers		
Reciprocating	N/A*	20
Centrifugal	>25	23
Absorption	N/A*	23
Cooling Towers		
Galvanized metal	>22	20
Wood	N/A*	20
Ceramic	N/A*	34
Condensers		
Air-cooled	N/A	20
Evaporative	N/A*	20
Insulation		
Molded	N/A*	20
Blanket	N/A*	24
Pumps		
Base-mounted	N/A*	20
Pipe-mounted	N/A*	10
Sump and well	N/A*	10
Condensate	N/A*	15
Reciprocating engines	N/A*	20
Steam turbines	N/A*	30
Electric motors	N/A*	18
Motor starters	N/A*	17
Electric transformers	N/A*	30
Controls		
Pneumatic	N/A*	20
Electric	N/A*	16
Electronic	N/A*	15
Valve actuators		
Hydraulic	N/A*	15
Pneumatic	N/A*	20
Self-contained		10

*N/A: Not enough data yet in Abramson et al. (2005). Note that data from Akalin (1978) for these categories may be outdated and not statistically relevant. Use these data with caution until enough updated data are accumulated in Abramson et al.

Appendix C

Photos

Northwest Regional Library

Image 1: AC-1

Image 2: AC-2

Image 3: AC-3

The City of Santa Rosa, Sonoma County Library

Image 4: B-1, B-2

Image 5: SA-1

Rincon Valley Regional Library

Image 6: AC-1

Image 7: AC-2

Image 8: AC-3

Image 9: AC-4

Image 10: AC-5

Sonoma Valley Library

Image 11: AC-1

Image 12: AC-2, AC-3, AC-4

Image 13: CU-1

Image 14: FC-1

Image 15: FURNACE

Petaluma Regional Library

Image 16: ROOFTOP EQUIPMENT

Image 17:ROOFTOP EQUIPMENT

Image 18: ROOFTOP EQUIPMENT

Image 19: ROOFTOP EQUIPMENT

Image 20: ROOFTOP EQUIPMENT

Rohnert Park –Cotati

Image 21: AC-2

Image 22: CU-1

Image 23: B-1

Image 24: AC-1

Sebastopol Regional Library

Image 25: ROOFTOP EQUIPMENT

Guerneville Regional Library

Image 26: HP-1

Image 27: HP-3

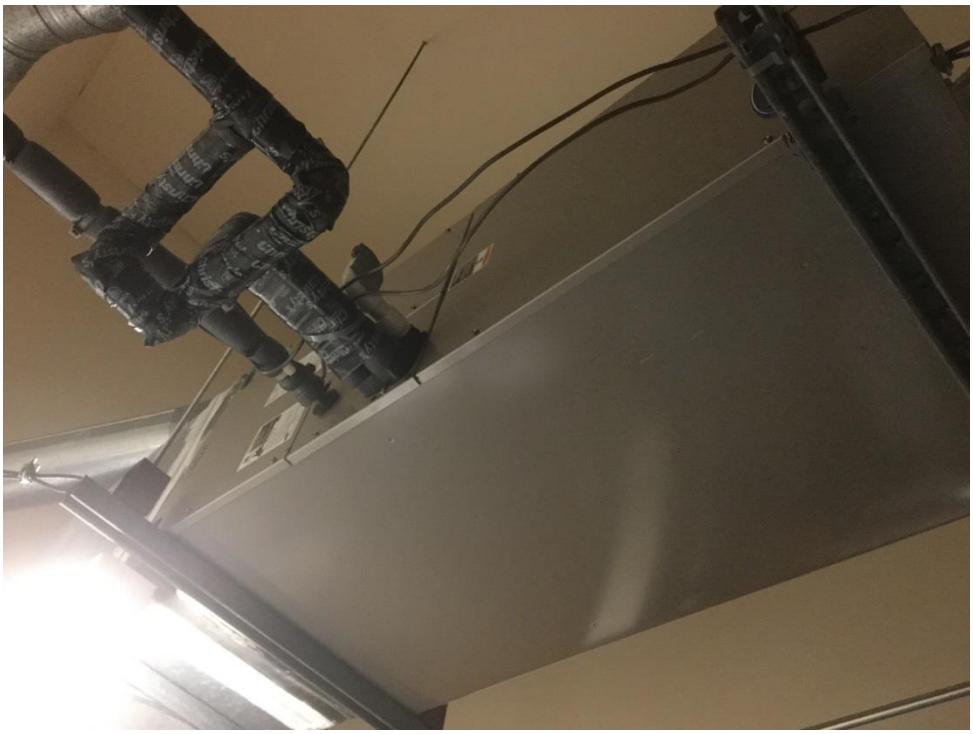

Image 28: FC-1

Windsor Library

Image 29: AC-4

Image 30: AC-3

Image 31: AC-2

Image 32: AC-1

Healdsburg Regional Library

Image 33: AC-2

Image 34: CU-2

Image 35: CU-1

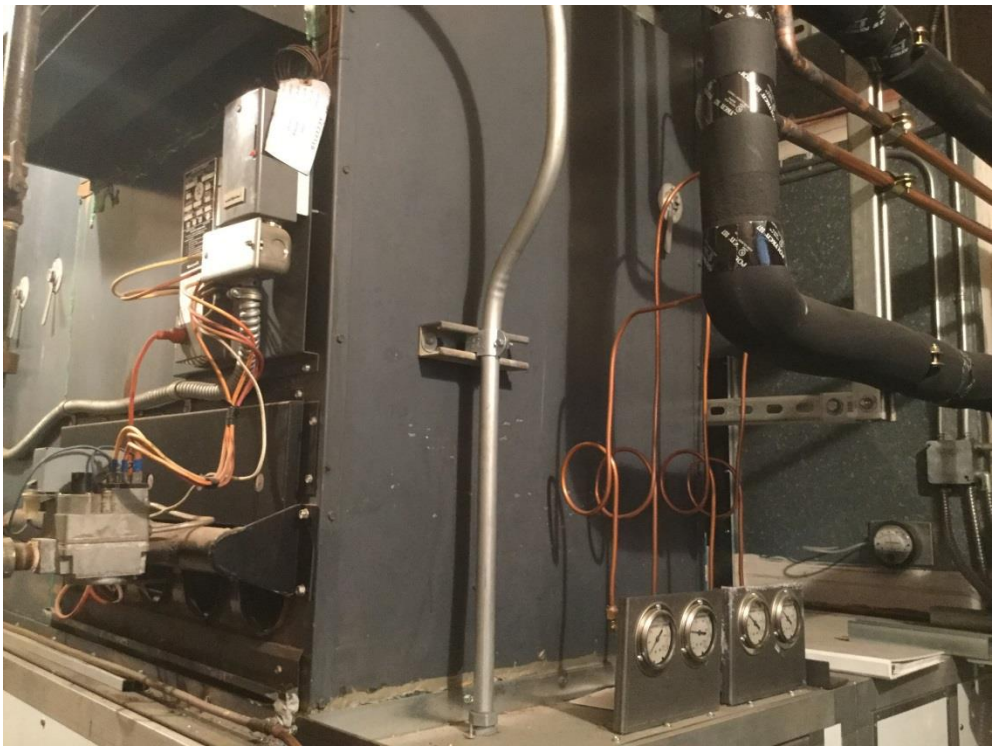

Image 36: AC-1

Cloverdale Library

Image 37: ROOFTOP EQUIPMENT

Image 38: AC-1

Image 39: AC-4

Image 40: ROOFTOP EQUIPMENT