

Feasibility Study to Replace Cordilleras Mental Health Center

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San Mateo County
Department of Public Works and Health System
Behavioral Health and Recovery Services

HGA Architects and Engineers



Feasibility Study to Replace Cordilleras Mental Health Center – San Mateo County

Project Team

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Department of Public Works and Health System
Behavioral Health and Recovery Services

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Mechanical, Electrical
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Hazardous Materials Consultant: SCA Environmental, Inc.

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Part 1

Executive Summary

Part 1 – Executive Summary

Introduction

The San Mateo County Public Works Department and the San Mateo County Health System, Behavioral Health and Recovery Services (BHRS) commissioned this Study with the support of the Board of Supervisors to determine the feasibility, including estimated costs, of replacing the existing Cordilleras Mental Health Center, a sixty-two year old San Mateo County-owned 117-bed psychiatric facility, with facilities that meet modern standards of care for seriously mentally ill consumers. The goal of the project would be to transform Cordilleras, one of the County’s most important resources in the continuum of care for its most vulnerable mentally ill residents, into a center for consumer wellness, rehabilitation and recovery that leverages every aspect of the built and natural environment, the best practices for treatment, and the expertise of providers, family members, consumers and community.

Cordilleras Mental Health Center is located on unincorporated County land at 200 Edmonds Road near Redwood City, CA. The Center houses two separate treatment programs operated by Telecare Corporation for adults with chronic mental illness: a licensed locked 68-bed Mental Health Rehabilitation Center (MHRC) and a licensed 49-bed Adult Residential Facility (ARF). Cordilleras serves San Mateo County residents, 18 and older, with long histories of mental illness and multiple episodes of acute psychiatric hospitalization. Most consumers are admitted to the Cordilleras locked MHRC beds from San Mateo Medical Center’s psychiatric inpatient unit or another locked facility outside San Mateo County. The MHRC is the highest, most intensive level of care for people with mental illness other than psychiatric inpatient services and state hospitals. All of the residents of the MHRC are conserved, dependent adults, who meet legal criteria for grave disability, and the vast majority have been admitted to the program involuntarily. Without access to the Cordilleras MHRC, most would remain in psychiatric inpatient services, state hospitals, or out-of- county MHRCs. Consumers are admitted to the MHRC with the goal of achieving sufficient recovery from the symptoms of their mental illness, so they can regain independence and return to living independently in the community. The relative proximity of Cordilleras to consumers’ families and friends in San Mateo County increases the possibility of re-establishing relationships and support that help consumers ultimately graduate to living independently. In fact, family member advocates who were concerned about their loved ones residing in programs far away played an important role in the dedication of Cordilleras to mental health treatment in 1978. The length of time residents remain in the program varies considerably, with some remaining in the program for more than a year and others leaving within 6 months. Mental health and substance abuse treatment are provided on-site as well as routine primary care. More urgent acute medical and psychiatric needs are addressed through return to the San Mateo Medical Center.

The unlocked ARF is permanent housing in which consumers may stay for many years, although most do not. The majority of ARF residents have “stepped down” from more intensive levels of care including the MHRC and other facilities outside of San Mateo County. The average length of stay for those discharged is five months. Consumers are free to come and go, and frequently use the bus that stops right out in front of the building. Most of the consumers of the ARF receive their mental health treatment at an outpatient behavioral health clinic located in Redwood City but may receive health care and other services in other places.

The two programs are currently housed in a 1952 vintage building, which was designed as a hospital for tuberculosis patients. The building is deteriorating, is maintained at considerable annual expense, and has deferred maintenance and upgrade needs. More importantly, the large institutional structure does not support current treatment practices and support services that are effective in promoting recovery for people who have serious mental illnesses such as schizophrenia. The prevailing best practice for treating persons whose serious mental illness/co-occurring disorder requires a secure locked level of care is in smaller homelike settings, rather than large institutions. This Study thus evaluates the feasibility, including estimated costs, of eliminating the existing Cordilleras Center and building smaller more home-like facilities on the nearly 20 acre site that will support a new approach to mental health treatment.

Summary of Findings

There is a strong case for treating people with mental illness in smaller scale, more homelike settings rather than large institutions like Cordilleras. Most large institutions were designed decades ago for maximum supervision and control of a large number of consumers by a minimum number of staff. They were not designed for the purposes of promoting recovery and rehabilitation of consumers. Over the last twenty years revolutionary improvements in treatment and medications now make it possible for people, who in a previous era would have been confined to a state hospital for life, to return to the community and live successfully. For this transition to occur successfully, however, consumers must have the opportunity to develop and practice the skills they will need, before they leave the hospital. State of the art environments for psychiatric recovery and rehabilitation are now designed to more closely resemble the homes in which consumers will live upon leaving the treatment facilities and returning to the community.

Smaller residences reduce social isolation and create a more natural environment for social skills training to reduce problems with adjustment as consumers move through successive levels of care and finally achieve independent or supported living in the community. Smaller residences can be designed to have less noise, stimulation, and mixing of consumers than do larger facilities, thus reducing stress and aggression that can lead to violent behaviors. Telecare's experience is that residents of sixteen-bed programs experience almost no episodes of violence, whereas Cordilleras experienced 48 episodes in FY 13-14. The large size and layout of Cordilleras contributes to difficulty in maintaining safety and tailoring programming to the diverse needs of consumers. Treatment may be more tailored to address the different needs of individual consumers in smaller residences versus larger facilities containing congregate groups. For example, frail, older adults have medical complexity that must be addressed whereas young adults need to be physically active. Suicidal patients require close monitoring. Patients who are likely to be aggressive should not be mixed with patients who are vulnerable to becoming victims. The optimal facility scale and design would address both requirements for security, monitoring and safety and requirements for residents to practice skills of everyday life and become more autonomous.

Research conducted by Telecare and others suggests that there is a correlation between larger program size and longer lengths of stay. As the number of beds in a program grows, the less efficient the program becomes. In a study performed by Tulloch (et al) in 2011, larger size hospitals were associated with longer lengths of stay. Telecare's experience is that the length of stay in larger facilities is more than twice the length of stay in their 16-bed programs.

There is a strong correlation between consumer's perception of their environment and positive clinical outcomes. In a 2008 study, researchers determined that when a facility was perceived as a safe place, positive therapeutic relationships resulted between consumers and staff contributing to positive clinical outcomes.

Consumer satisfaction is a highly desired outcome. Research has demonstrated a relationship between larger sized programs and lower levels of consumer satisfaction. Consumer satisfaction is positively influenced by the development of positive therapeutic relationships between clinicians and consumers and the program's respect for consumer rights and privileges. The research as well as experience, clearly demonstrate the benefits of smaller scale mental health rehabilitation facilities, and support the program and design model proposed in the Feasibility Study.

After initial review of the available space and input from stakeholders, the Study focused on the feasibility of building six facilities, comprising five 16-bed MHRCs (80 total beds) each 10,500 gross-square-feet, and one 37-bed ARF/Campus Center at 35,100 gross-square-feet, for a total of 117 beds and 87,600 gross-square-feet of new construction. The estimated cost of this project is \$85,364,021. The cost includes an estimate to expand the ARF by one floor, with 18 beds and 9,500 gross-square-feet, at a cost of \$2,628,515, plus \$972,540 for terraced floors/massing, for a total of \$3,601,058. These beds would bolster the dwindling number of ARF beds available in San Mateo County for publicly insured clients. With a total of 135 beds on the campus, this would provide greater capacity for MHRC consumers to step down to independent living gradually, and increase their opportunities for success. For purposes of comparison, the Study also evaluated the existing building and the feasibility and estimated costs of renovating it to meet current standards (\$55,568,861).

In addition to estimating the costs of demolishing and replacing Cordilleras with new facilities, the Study estimates the costs to operate the new programs and services. BHRS currently spends \$8.7M per year for services provided at Cordilleras for 117 consumers, and \$1.1M for 18 additional consumers who would be able to live in the new facilities (in the model that incorporates the expanded ARF beds). None of their treatment services are currently federally reimbursable because of federal law that excludes psychiatric facilities over 16 beds from Medicaid reimbursement. Treatment facilities that are smaller than Cordilleras, housing 16 or fewer individuals, and that meet various other requirements, are eligible for federal reimbursement of 50% of treatment costs under existing laws and regulations. This Study incorporates a review of those requirements and includes a model for operating costs and reimbursement that would be available for services provided by the new programs under current laws and regulations. This shows that due to increased staffing and more intensive programming the total annual expense of operating smaller treatment programs including the expanded ARF would be \$17.3M which is greater than the current operating expense of \$9.8 M. However, reimbursement and revenue would offset the added cost, leaving the Health System with the same net cost for expanded, more modern and more effective facilities. Successful transitions of these consumers back to community living in turn creates opportunities for other consumers to move in to the programs who would otherwise be waiting at higher and more costly levels of care (\$1800/per day for inpatient or \$617 for state hospital). Analyzing the financial benefits of such improved flow of consumers among levels of care was not within the scope of the Study but is recognized as promising.

This Study proposes a phased approach to the project development, to allow the majority of Cordilleras and Canyon Oaks residents to remain on site during the early phase construction. The Study outlines a plan and schedule that requires up to 36 MHRC consumers to be temporarily relocated for 16 months, from September 2018 to January 2020, in either the currently vacant ground floor of San Mateo Medical Center or in other MHRC facilities. The additional funds needed to cover the cost of this temporary relocation are estimated at \$4.6 million.

Transition planning for the temporary relocation and final occupancy of the project is an important aspect of the total costs. The challenges, assumptions, and placement scenarios associated with each of these moves must be addressed through specific planning in the next phase of the project that will result in projections for the FY 15-16 budget cycle.

Other challenges for the project that can be overcome include potential mitigation of environmental impact concerns, such as tree replacement and protection of plant and animal species, and other issues that may emerge through the environmental impact report process.

Conclusions and Recommendations

For the past 62 years, the Cordilleras building has supported essential services for residents of San Mateo with serious mental illness. Significant advances in treatment and system design have occurred over the past 20 years that are not supported by this existing facility – now at the end of its useful life. This Study assessed the existing facility and identified \$55 million in infrastructure repairs and renovation that would be required for continued long term use of the facility. Instead of investing in this inadequate and aging structure, this Study recommends that Cordilleras be replaced with new state-of-the-art facilities, 5 MHRCs each of 10,500 gross-square-feet and 1 ARF/Campus Center building of 35,100 gross-square-feet that will support providers, families, consumers and others to provide transformative care for people with mental illness.

The total cost of building the replacement facilities is estimated at \$85,364,021. This cost includes \$2,628,515 to add a floor containing 18 additional ARF beds, plus \$972,540 for terraced floor/massing, for a total of \$3,601,058. This is the Health System's recommendation.

The total cost of the project including temporary relocation of clients (\$4.6 million) will thus be \$89,964,021.

The operating costs for the new programs and services will increase substantially (\$6.2M), but these increased costs will be offset by additional revenue and savings available with the new model that are not possible today. The net costs to the Health System and BHRS will be the same for expanded, more modern, and more effective facilities. *See Summary of Part 8 – Financial Analysis below.*

The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and permits would be issued in early 2017. Construction would continue until the end of 2019. The new facility will be ready for occupancy by consumers in early 2020.

Report

The following report, summarized below, contains the Feasibility Study findings. Supportive Appendices are also included.

Summary of Part 2 – Vision Statements and Goals

Crafting the vision for the replacement of the Cordilleras Mental Health Center set the foundation for all work included in this Feasibility Study. It was important that the Vision be defined early in the study process by a wide range of individuals including providers, family members, consumers and others with a vested interest in creating an optimal recovery environment for consumers. The Vision Statements will guide the decision making process and the development of the design throughout the life of the project. The crafting of the Vision Statements also took into consideration a desire to align with the County’s overall vision for future development, as defined in the publication *Shared Vision 2025*. The County’s vision is represented with the italicized phrases in the following Vision Statements:

Focus on Wellness – *to be healthy*

The new Cordilleras campus will offer programs and services that are dedicated to the whole health and wellness of its consumers. The environment will support and reflect a productive individualized wellness path for all consumers.

Promote Respect - *to be livable*

The programs and services offered will provide a strong foundation of assuring dignity and respect for its consumers and staff. The programs and services will emphasize consumer’s choice, in a safe environment that inspires pride, motivates the spirit, accommodates diversity in culture and beliefs, instills optimism for personal growth and improves quality of life.

Build Community – *to be collaborative*

The programs and services offered at the new campus will build strong communities – amongst their own consumers, families, staff, and visitors, and add value to the surrounding community. The campus will become an integral part of its social surroundings, with its programs and services valued as innovative assets and its residents respected as citizens.

Heal through Nature – *to be environmentally conscious*

The programs and services offered at the new campus will capitalize on the beautiful serene natural setting to complement the process of wellness, rehabilitation and recovery. The new facilities will incorporate progressive sustainable design strategies, efficient building systems, and natural materials to the benefit of healthy people, place, and planet.

Strive for Recovery - *to flourish*

The new programs and services will help consumers realize their full potential, achieving their goals for recovery, and return to living independently in the community. We will develop a world-class model of care that sets a new standard for excellence, by drawing from current best practices and anticipating future advances in behavioral health care.

Measures for Success for the New Cordilleras Project

In keeping with the spirit and intent of the project Vision Statement, and consistent with evidence based design best practices in behavioral health, the success of the new programs and services will be measured by improved outcomes including:

- Reduced length of stay at the MHRCs
- Reduced rates of readmissions to the MHRCs
- Reduced admissions to Psychiatric Emergency Services for the Cordilleras population
- Reduced resident to resident and resident to staff altercation
- Increased consumer/family satisfaction
- Increased staff satisfaction
- Reduced waiting time for the transfer from the San Mateo Medical Center psychiatric inpatient services to the MHRCs which will improve access and patient flow through the healthcare delivery system.

The project staff will develop baseline data to support a pre/post analysis of the effect of the new programs and services.

Summary of Part 3 – Site Assessment and Recommendations

The site of the Cordilleras Mental Health Center is located at 200 Edmonds Road on unincorporated land in San Mateo County, near Redwood City. In addition to the existing Cordilleras Mental Health Center building, the site is shared by the County Fire Station 18 and the Canyon Oaks Youth Center, a level-14 intensive residential treatment program for adolescents. Both of these buildings were built approximately 15 years ago, and are still in operation. The 19.4 acre parcel is bound by Edgewood Road to the southeast, and by the Pulgas Ridge Open Space Preserve on the other three sides. Edmonds Road is the only way in and out of the site.

The site has a canyon in the center, running east to west, with steeply sloped sides to both the north and south. The overall elevation change of the site is more than 140'. The seasonally active Cordilleras Creek runs along the bottom of the canyon. It enters from the western side of the site, and then is undergrounded in a culvert concrete pipe. Much of the site is heavily wooded, with a few gravel access roads and trails traversing the site and providing access to a water tank on the northern hilltop.

Geotechnical Investigation

Geologists and geotechnical engineers from Arup and Lettis Consultants International conducted a preliminary study to facilitate a feasibility-level evaluation of geological and geotechnical conditions in the vicinity of the project. The geo-hazards evaluation considered the effects on the proposed construction due to: faulting, seismicity, slope stability, rock fall, flooding, debris flow, and naturally occurring asbestos. This initial geotechnical and engineering geological evaluation considers the site demolition, large design-level ground motions (earthquakes), and the feasibility of the proposed areas of site cut and fill.

From the perspective of this feasibility-level study the potential geo-hazards identified can all be mitigated by engineering design. The site will experience high seismic shaking during an earthquake, but execution of well-prepared construction specifications can minimize the effects of ground shaking on the proposed improvements. Cut slope areas of potential instability should be investigated as part of final design but were not anticipated to be unmanageable from a design perspective. The geotechnical and engineering geological Feasibility Report (*Appendix E*) presents the foundation concepts and retaining wall concepts for the site. The proposed site reconstruction does warrant further study during a design-level geotechnical and engineering geological investigation and analysis.

See Appendix E for the complete Geology and Geotechnical Report

Biological Constraints

TRA Environmental Sciences conducted a Biological Constraints Analysis for the project. We addressed potential impacts to special-status plant and animal species, and regulatory and mitigation requirements that could affect decisions regarding the feasibility of the project. The special-status species in the region include federal and state listed species, as well as state species of special concern. The project site contains waters of the State of California and United States, namely Cordilleras Creek and its adjacent riparian zone, but does not contain wetlands.

The project will impact the San Francisco dusky-footed woodrat, a California species of special concern, and will require mitigation to address those impacts. In the case of this species, the mitigation can be provided on the project site. The project may impact San Francisco collinsia, a rare plant that occurs on the property. Follow up surveys to document the location of these species are recommended.

The project has a very low potential to impact special status species, California red-legged frog, San Francisco garter snake, and western pond turtle, which are known to occur on the other side of I-280 from the project. These species are not expected to occur on the project site, but best management practices are recommended to avoid impacts. Without state and federal authorization (a lengthy process), the discovery of these species during construction would halt the project until state and federal wildlife agencies are consulted and concur with how to move forward.

The project will impact the riparian zone of Cordilleras Creek, but will not directly impact the creek bed, bank or channel. In order to comply with zoning the project will need to be designed to avoid significant impacts to the creek and riparian zone by having a setback from the top of the creek bank, by protecting creek water quality from storm water runoff (eg, minimizing hardscape and other measures), and by incorporating riparian plant species in the landscaping.

The project may need to remove trees that are protected by local zoning regulations, and should have a tree removal and replacement plan to address the removal of trees with a diameter at breast height of 17 inches or more (circumference 55 inches) for local regulations and 4 inches or more for California Department of Fish and Wildlife recommendations. It may be necessary to work with the Mid-peninsula Regional Open Space District regarding the possibility of planting trees in the adjacent Pulgas Ridge Open Space Reserve to meet the replacement requirements.

See Appendix F for the complete Biological Constraint Analysis

Cultural Resources

Basin Research Associates conducted a Cultural Resources Review. The intent of this Review is to provide a constraint analysis of archaeological and historic properties within the project area which may be listed, determined, or potentially eligible for inclusion on the California Register of Historical Resources (CRHR) and that could be affected by the proposed project.

Basin's Cultural Resources Review included:

- Records Search by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC)
- Limited Literature Review
- Native American Consultation to determine if historic properties are located in or adjacent to the proposed project
- Preliminary Built Environment Review of the facility by an Architectural Historian

No archaeological field review was conducted since the property is developed with buildings and/or introduced landscaping.

An initial 1998 review of records and literature on file at BASIN, completed for an adjacent project, was negative. An updated prehistoric and historic site record and literature search was commissioned for this constraints analysis. The findings concluded that:

- No prehistoric, Hispanic or American era historic archaeological sites have been recorded in, adjacent to, or within 0.25 miles of the project.
- None of the known late 19th and/or early 20th century "Indian Mounds" have been reported or mapped in or adjacent to the project.
- No known ethnographic, traditional, or contemporary Native American resources have been identified in or adjacent to the project.
- No known historic era trails, roads, or dwellings or structures dating to the 19th or early 20th century were located in or adjacent the project.
- No historic resources listed on the *Historic Properties Directory* or other lists/inventories of historic resources are located in or adjacent to the project or area adjacent.

The Native American Heritage Commission was contacted for a review of the Sacred Lands Files and results were negative.

A consulting architectural historian, Ward Hill, completed a preliminary built environment review of the facility. He concluded that the former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1950. The hospital's architects were Douglas Dacre Stone and Louis B. Malloy. The architectural team designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs. An architectural historian should be retained to formally evaluate the building including the development of a suitable context.

The Cultural Resources Review suggests a very low sensitivity for prehistoric and/or historic era archaeological resources within the project. It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears necessary.

See Appendix G for the Cultural Resources Constraint Analysis

Site Utilities

- **Existing Water System**

Potable water service to the site is provided by the San Francisco Public Utility Commission. Domestic and fire water for the site is provided from a tank with a storage capacity of 150,000 gallons. Water from public main is pumped up to the tank and the pump station is located at the southeast corner of the site. Recent fire hydrant flows tests show that the system does not currently meet current California Fire Code requirements for pressure.

- **Proposed Water System**

There are two options being considered for the new water system: a Base Case and a more Sustainable Alternate.

- **Base Case – Maintain the Existing Water Tank for Domestic and Fire Water**

For this option, the existing storage tank and pump station will continue to be used for both fire and domestic water. The feed line to the tank will be replaced and the existing discharge lines from the tank down the slope to the site will be replaced. New domestic and fire water mains will be installed around the site to serve the buildings and fire hydrants. New fire hydrants will be installed that conform to current San Mateo County standards. To increase the pressure and available flow in the site fire system, a booster pump(s) will be installed above ground, within a small enclosure. The booster pumps will also have backup power supply from the emergency generator.

- **Sustainable Design Alternate – Use the Existing Tank for Greywater and Fire Water**

For this option, the tank would be used to store runoff collected from building roofs and reused for non-potable uses, irrigation water and fire water. Runoff from the building roofs would first be filtered and then be piped and collected in an underground tank. The water would be treated by a chlorine chemical system and filtered by a pressure filtration system. The treated water would then be pumped up to the existing tank on the hill. From the tank, three discharge lines (one each for non-potable, irrigation and fire water) would deliver water via gravity to the site. Each building would have a separate plumbing system for non-potable water that would likely serve toilet flushing within the building. As with Option 1, a booster pump(s) would be installed on the fire water discharge line from the tank to increase the pressure. The existing pump station would be removed.

For the domestic water system, a new service line would be connected to the existing line in Edmonds Road. A booster pump(s) would be installed to increase the pressure in the domestic system.

- **Existing Storm Drain System**

The main storm drain collection system on the site is Cordilleras Creek. The creek flows southeasterly through the site and eventually parallels Edmonds Road. A concrete headwall directs the creek in to a 30-inch diameter underground concrete pipe that flows along the west side of the Existing building. The County has reported some known issues with the inlets being blocked by debris and preventing flow from the creeks and tributaries from entering the pipes. This has caused some flooding at the site. However, the flooding is not likely caused by lack of capacity in the pipes.

- **Proposed Storm Drain System**

The new storm drain system will consist of a network of pipes and catch basins to collect surface runoff and convey it to one of the existing, large diameter pipes. The existing pipes will need to be relocated to avoid the new building footprints.

San Mateo County standards require that runoff from new and replaced impervious surfaces must be treated prior to entering the storm drain system. Runoff from the new building roofs and access roads will be directed to storm water treatment areas. There will be several storm water treatment areas located throughout the site at low points, and other natural areas to collect runoff.

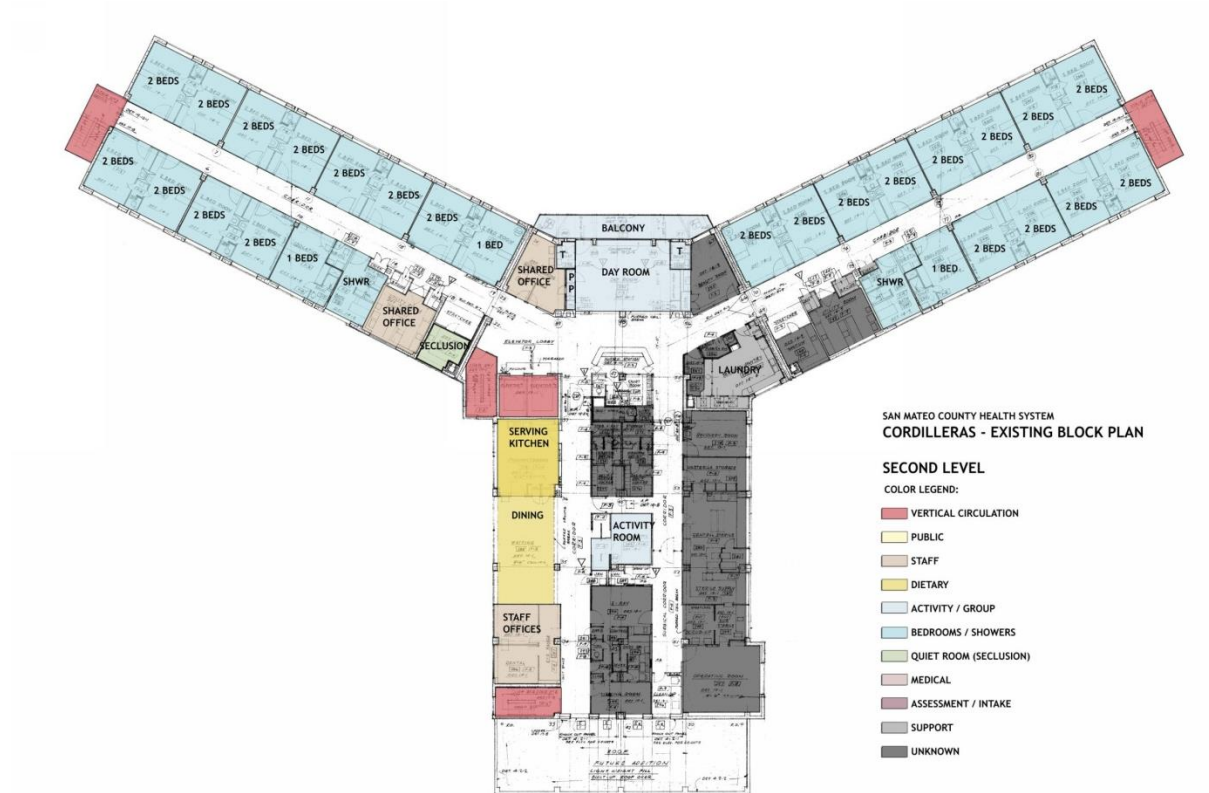
Summary of Part 4 – Existing Building Assessment and Recommendations

Opened in 1952, the Cordilleras Mental Health Center originally served as the San Mateo Tuberculosis Hospital. With the reduction of tuberculosis cases in the following decades, the hospital closed and sat unused for several years before being repurposed in 1978 for its current use for treatment of people with mental illness. At 62 years old, it has served out its intended useful life and is currently being maintained in serviceable condition at a significant cost. The current yearly cost to maintain the facility is \$473,000, and an additional \$3.9 million in upgrades is being deferred. The building is not well-suited for the current best practice in behavioral health and rehabilitative care. It is also in much need of building systems upgrades and repairs.

As part of our evaluation, we have provided recommendations for renovations and upgrades that would be required if a decision was made to reuse the existing building as a residential mental health rehabilitation facility. These recommendations are not listed here in detail, but can be found in *Part 4 - Existing Building Assessment and Recommendations*, and in *Appendix H: Existing Systems Report*. We have estimated the cost of reuse of the existing building at more than \$55 million. This estimate is documented on the last page of the cost estimate contained in section 8.1 *Capital Costs*.

In the descriptions below, we summarize the primary problems and deficiencies of the existing building identified during our evaluation.

Existing Building Functionality



The “Y-Shaped” plan of the existing building was designed for an acute care hospital function (for treatment of people who had tuberculosis) that allows a large capacity of people within an efficient floor plate. Levels 2 and 3 are the patient bedroom floors and relatively the same. Today there exists a different consumer population with different needs that has had to adapt to the acute care planning model. There is a double loaded corridor of semi-private bedrooms with shared toilet rooms and community showers down the hall. Each wing is considerably long with little to no visibility between wings and no daylight other than the window in the stair door at the end of the corridor.

The overall functionality of the current building is not ideal as it was not designed for the current MHRC and ARF functions. The two levels of care require different levels of security and it is not optimal for them to co-exist in the same building and share one designed entry point. The front door identity for the ARF has been lost and delegated to the exit stair way. The ARF’s level of non-secure residential housing is different than the high secure treatment facility of the MHRC and both need a different planning and design response. The Cordilleras building does not meet the optimal residential and treatment needs and best practices of both the MHRC and the ARF programs.

Building Structure

The building is a three story cast-in-place concrete structure with a basement. The condition of the exposed concrete structure appeared to be in good shape on a recent site visit. Remedial work and a

thorough analysis would be required to address the seismic performance of the existing structure. One item that was preliminarily identified as having insufficient capacity is the discontinuous concrete exterior wall below the second level. Per current practice and code requirements, there are structural calculation penalties for such irregularities. In the patient room wings, there are added corridor walls to address the discontinuity noted above. It appears that these walls are under-designed. Effectively they carry all the lateral load in the longitudinal direction between the First and Second Levels. There appears to be insufficient capacity to transfer these loads. Collectors along the corridor would be required as part of the transfer of loads. There is not sufficient capacity in the beams along the same grid as the added corridor walls to transfer these loads.

Building Systems

Interface Engineering performed an assessment and examination of the existing mechanical, electrical, plumbing, and fire/life safety systems. The assessment and examination was performed with the intent of determining the existing systems' conditions, operations, reliability and capacity. Investigations included a site visit and an examination of existing as-built drawings of the facility.

- **Heating Plant System**

The heating plant consists of two natural gas-fired steam generating boilers located in the basement level of this main building. The boiler flue appeared to be in good condition with no evidence of corrosion. The flue extends through the exterior wall and connects to a stucco enclosed stack on the east side of the building. Some cracking of the plaster was noted in the exterior finish. The boiler nameplate data indicates the boilers were manufactured in 2003. Although the boilers appear to be in good working condition with routine maintenance, they do not meet the current regional air quality requirements. The boiler service life is approximately 25 years with another 15 years of operation available. This type of system requires a greater amount of maintenance and can encounter premature equipment failures and poor steam system efficiency.

The piping, blow-off and flash tanks, including some of the valves in the Mechanical Room are original to the 1949 construction. The estimated piping service life is approximately 30 years from the time of installation, so these components have served more than double their expected life. The steam and condensate return piping system is original to the 1949 building construction and has exceeded its useful service life.

- **Fans and Supply/Exhaust Air Distribution Systems**

The Basement Level Mechanical Room contains the buildings 100% outside air and supply fan system. The four individual supply air fans and duct distribution serving the First, Second, Third Floors and Kitchen areas are original to the 1949 construction. The fan motors and belts have been refurbished. The supply fans and associated casework have exceeded their life expectancy.

The supply air distribution system serves the individual floor corridors with no air discharged directly into the patient rooms. Outside ventilation air to the individual patient rooms was intended to be through the operable windows, however due to safety reasons, a number of these windows have been secured. The rooms are not ventilated and do not meet current code compliance.

The heating air handling system consists of a 100% outside air arrangement with a single outside air louver connected to a plenum. The record drawings do not indicate that an outside or individual fan damper has been installed. This is a code violation that should be remedied. The air is relieved through a number of exhaust fans located on the roof in a Mechanical Room. The fans are original to the 1949 building construction; however the motors and belts have been replaced. The fans and associated casework and duct system has exceeded their life expectancy. The air distribution for both supply and exhaust systems located throughout the building is original and has passed its life expectancy. The kitchen exhaust fan and duct system serving the hood does not meet current code requirements and should be replaced.

- **Sanitary Waste and Vent System**

The majority of the sanitary waste is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what is visible on the Ground Floor and Boiler Room. The sanitary waste lines for the building appear worn-out and outdated; the pipes and fittings are hub spigot type with lead joints. The existing sump pump in the Boiler Room appears to be worn-out and outdated. It has a broken cover and its associated piping needs to be replaced.

- **Storm and Overflow Drainage System**

The majority of the storm water piping is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what was visible in the Ground Floor and the Boiler Room. Rainwater lines for the building appear to be original with a hub spigot type fitting with lead joints. When it rains, underground water rises up and enters into the trenches of the Boiler Room. Building maintenance staff places a single sump pump to lift and discharge the water to the main sewer. Sometimes single pump is not able to accommodate all of the water, and so they place a second pump to get rid of all underground water. The sump pump discharge piping in the trench is rusty and needs to be replaced.

- **Plumbing Fixtures**

Most of the plumbing fixtures in the building have exceeded their service life and do not meet current low flow standards and ADA requirements.

- **Kitchen**

Grease interceptor located in the Boiler Room appears to be worn-out and outdated. The equipment has probably reached the end of its effectiveness and needs to be replaced.

- **Fire Protection Systems**

The building is partially fire-sprinklered with only the Basement Level currently sprinklered at this time. The current code requires this type of building occupancy to be fully sprinklered. Although the installed fire sprinkler system is grandfathered in, a renovation or change of occupancy will trigger a complete building Fire Sprinkler System upgrade in compliance with the latest codes.

- **Electrical Distribution Systems**

Utility power for the building is derived from a PG&E pad-mount transformer located in an indoor dry vault in the basement level. The building is served by Main Switchboard located in

the Main Electrical room adjacent to the PG&E's vault. The majority of the electrical equipment, including the Main Switchboard, is original equipment installed in 1949. The equipment is outdated and past the manufacturer's 25 year recommended life span. The manufacturer is no longer in business and parts are obsolete and will be difficult to obtain. Existing antiquated equipment is difficult and costly to maintain, replacement parts and service may not be readily available. Furthermore, the installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and is no longer compliant with the Utility Company standards and regulations.

- **Emergency Distribution System**

There is an existing diesel driven indoor emergency generator with a 60 gallon sub-base fuel tank serving the building. The installed location of the equipment is not in compliance with the current code requirements for essential/emergency systems. Also, the generator is located in the basement level that is at risk for flooding during a heavy rainfall. Critical equipment like a generator should not be located in area that may cause it to fail during an emergency situation.

- **Lighting System**

Lighting luminaires being utilized in the center uses a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are outdated and not energy efficient. Both lighting and associated controls are outdated and no longer comply with the latest requirements of Title 24.

Hazardous Materials

As part of the existing building assessment, SCA Environmental conducted an investigation for hazardous materials, which would require abatement if the building were to be renovated or demolished.

- **Asbestos Hazards**

Certain existing building components or materials are known or presumed to contain asbestos. Note that as the survey was non-destructive, various materials were assumed asbestos containing and not sampled. Furthermore, as the building is still in use, we did not perform destructive sampling to inspect wall cavities, above ceilings, etc. As destructive testing was excluded from the scope of work, the following items were to be assumed asbestos-containing during the survey: vapor barriers under concrete slab/restrooms, fire doors, ceramic tiles, etc. We have listed these materials as assumed asbestos-containing items in Appendix I. Asbestos-containing material was found and confirmed through testing in some elements on the property, including duct insulation, floor tiles, caulking, and asphalt.

- **Lead Hazards**

Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known or suspected to contain lead. Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the on-set of demolition activities.

We collected a number of bulk samples for analysis to determine the lead content of these materials. Lead was detected in these paint samples and floor tiles. Lead sheeting is also known

to be present in the existing Offices Area on the 2nd Floor of the building. This area was formerly used as X-ray clinics and dental areas, and visual evidence of lining within the walls and doors was noted during the inspection. We recommend that destructive sampling be performed prior to renovation or demolition of the building to determine the presence and lead content of this material.

- **PCB & Mercury-Containing Items**

We quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations. We found quantities of both PCB ballasts and fluorescent tubes in various locations. Various mercury-containing fluorescent tubes were identified throughout the building. Recycling vendors for reclaiming the mercury vapor are commonly available.

Demolition

Upon review of the assessments discussed in the preceding sections, as well as the cost estimated to upgrade the existing building (Section 8.1) and the missed opportunity for federal reimbursement (Section 5.4), this Feasibility Study recommends the demolition of the existing building at an estimated cost of \$3 million and the development of a strategy to provide the required program on this site.

Summary of Part 5 – Regulatory Assumptions and Reviews

The contracted providers who operate the programs located on the new Cordilleras site will have the responsibility for appropriately licensing and maintaining licensure for each program.

The State licensing authority for the Mental Health Rehabilitation Centers is the Mental Health Licensing and Certification section of the California Department of Health Care Services (DHCS). The State licensing authority for Adult Residential Facilities and Social Rehabilitation Programs for people with mental illness is the California Department of Social Services, Community Care Licensing Division (CCL).

The California Department of Health Care Services has an agreement with the federal Centers for Medicare and Medicaid Services (CMS) that establishes various services for mental health care that are eligible for Medi-Cal reimbursement when provided to Medi-Cal beneficiaries who meet clinical criteria. Certification of a program offering adult residential treatment by the State is required as described above.

Mental Health Rehabilitation Centers with no more than 16 beds may be certified to provide adult residential treatment under regulations contained in Title 9, Division 1, Chapter 11, Subchapter 4, Article 3, 1840.332 *Adult Residential Treatment Service Contact and Site Requirements*. This provision has been used rarely in California because most facilities are large institutions. Certification alone does not make a program eligible to receive Medi-Cal reimbursement but it is one necessary component.

The current configuration of services provided at Cordilleras does not offer federal Medi-Cal reimbursement because it exceeds 17 beds and meets criteria for the federal Institutes for Mental Disease (IMD) exclusion. The replacement facilities meet the following criteria, which will be necessary in order to avoid IMD status:

- The licensed capacity of each of the treatment program will not exceed 16 beds.
- The facilities will each be separately licensed and will each be able to meet conditions of participation.
- Each treatment program will be physically free-standing, organizationally distinct, contracted by the County to be operated by different vendors with different chief executives and different chief medical officers.
- The programs will be operated out of different addresses on the 20 acre site.

The 2013 California Building Code (CBC) and the 2012 Zoning Code: Planning and Building Department of County of San Mateo were used for the code analysis in Part 5.

Building Occupancy and Construction Type for basis of this Feasibility Study are as follows:

	Occupancy	Construction Type
Mental Health Rehabilitation Center (MHRC)	I-3, Condition 2 (Institutional)	Type V-A (wood frame)
Adult Residential Facility (ARF)	R-2.1 (Residential)	Type V-A (wood frame)
Campus Center	B (Business)	Type V-A (wood frame)

The Cordilleras site is zoned as RM (Resource Management District) by San Mateo County.

As this is a County project on County property, it will not require a formal Planning permit review process. The California Environmental Quality Act (CEQA) requires that we identify the significant environmental impacts of the project and develop strategies to avoid or mitigate those impacts. As the project does not propose new or added uses on the site, it is believed that a Negative Declaration of the environmental impacts may be achievable, and therefore a full Environmental Impact Report and hearing process would not be required.

Due to the proposed development alongside Cordilleras Creek, Federal, State and County Environmental Reviews are anticipated as required. Reviews and potential approvals may be required by the US and California offices of Fish and Wildlife Services, and County departments such as Planning, Building, Fire Marshall, Sheriff and the Historic Resources Advisory Board.

Summary of Part 6 – Program

The site and building programs developed by the project team accommodate the needs and vision of project stake-holders including requirements related to operations, consumer levels-of-care, licensing, and the environment. Listed below are the general program requirements discussed and used as the basis of feasibility:

- Five MHRC buildings each housing 16 residents in approximately 10,500 gross square feet (GSF) each
- One ARF/Campus Center building at approximately 35,000 GSF with the Campus Center components on the ground level and the 37 Suites residents split among 2 floors above. Each of the 2 ARF floors will be approximately 9,500 GSF over an approximate 15,000 GSF Campus Center.
- Provisions for supplemental ARF placements provided as an additional floor on the Campus Center (18 beds).
- Secured Recreation Yard
- Separate front doors and addresses for each MHRC, Campus Center and ARF.
- Parking for 85 cars (20 more than currently available)
- In order to maximize reimbursement potential, optimize treatment opportunities and create a more comfortable and safe residential living environment the Mental Health Rehabilitation Center (MHRC) and the Adult Residential Facility (ARF) as known as “The Suites” is proposed to exist in separate structures on the site. This plan proposes to modify the existing 117 bed capacity as follows:

Licensed Bed Capacity	Existing	Proposed
MHRC	68	80
ARF	49	37
Supplemental ARF	0	18
Total	117	135

The proposed increase in **Mental Health Rehabilitation Center (MHRC)** beds will assist in expanding placement capacity for treatment beds within the County. This will allow the county to reduce the number of consumers that will need to be treated in MHRCs outside of the County by 12 and help with the flow of consumers among levels of care. This includes facilitating discharges for people ready but unable to leave San Mateo Medical Center (SMMC) inpatient psychiatry units due to the lack of available MHRC beds or because that most providers reject them. Currently the high administrative day and unreimbursed day rate for SMMC inpatient psychiatry is partially the result of consumers waiting for MHRC beds. If consumers were able to be timely discharged, SMMC beds costing \$1800 a day would be available for acute Medi-Cal patients whose services would be reimbursed by Medi-Cal.

Although one option addressed by the Study is to reduce the number of ARF beds by 12 in order to add 12 MHRC beds, there is a need for more ARF beds for consumers ready to leave the more intensive MHRC level of care. The Health System BHRS and Aging and Adult Services report that ARF beds are increasingly difficult to find in the community for consumers stepping down from MHRCs. The lack of availability results in consumers remaining at more intensive and costly levels of care and prevents placements of other consumers who need beds at those higher levels of care. For estimating purposes, we have included a separate cost to add an additional 18-bed ARF floor onto the building (see Part 8 – Financial Analysis).

- Proposed Bed Mix
 - MHRC: 75% private bedrooms and 25% semi-private bedrooms
 - ARF: 25% private bedrooms and 75% semi-private bedrooms

The **Campus Center** will be the hub of the campus for the consumers and staff and a location for the San Mateo community to attend activities, events and to be involved with the consumers living in their community.

Visitors will be able to visit with their family members in visitation lounges and common areas. They may also visit on the grounds or in visitor areas located on the part of the campus where their family members are residing.

There will be a number of staff offices located in the Campus Center for staff to complement office space designated in MHRC's and the ARF. Office and assessment space is also included for basic medical services.

An industrial kitchen will serve multiple purposes. It will produce meals for consumers living in the residential floors above the Campus Center and will be a place where meals can be prepared for large events taking place on the campus. This kitchen will also serve as a life skills training area and for gourmet cooking classes for consumers. The kitchen will also be tied in with the organic gardening program on campus as the next step in putting to use the crops harvested.

The central data system and electrical systems for the campus will be housed in and routed through this building. It will have a County staff person assigned to monitor these systems such as IT/telecommunications and also include space for county facilities and maintenance services.

There will be a large auditorium/ gymnasium that will be available for group fitness classes, group rehab therapies, indoor sports, movies, theatre productions, special Cordilleras Campus events, community events and other social gatherings.

Conference space and activity rooms will be available for regular scheduled use by Cordilleras and other organizations. The Campus Center events and activities that involve the extended San Mateo community will help to decrease stigma and increase the understanding of the challenges of living with mental illness.

There will be other programs and services present in the Campus Center. Some of these programs will be: a yoga/dance studio; a secondhand store; an art studio and gift shop.

Refer to Part 6 and Appendix D for additional information.

Summary of Part 7 – Conceptual Design Recommendation



Site Plan

The MHRC buildings are set in a radial line along the southern side of the site. Accessible courtyards are located between each of the MHRC buildings. Also along this southern edge, a large retaining wall will hold back the hillside and create buildable area to accommodate a service and fire access road. The access road is considered an extension of Edmonds Road, with the five new MHRC buildings addressing onto it. This access road terminates at the western corner of the site, with a turn-around bulb to accommodate fire trucks. Access to the existing Canyon Oaks Youth Center and the Fire Station must be maintained at all times during construction.

The MHRC buildings are all accessible by the consumers and staff coming from the main recreation yard which sits between the Campus Center and the MHRC’s. The yard will be fenced in for security, but several large gates will be required to allow for fire truck access through.

At the northern side of the site, another access road follows the slope of the site upwards and terminates in another turn-around for use by fire trucks. This turn-around creates an opportunity for a separate identity and front door entry for the ARF building on the second floor. The main front door to the Campus Center at the ground level will occur off of the access road, and will be configured with a drop-off and parking for 40 cars.

The exposed area of the Cordilleras Creek, in the western portion of the site, will be maintained in its current location and general condition. The north bank of the Creek can be reached from the

In order to determine the capacity of the site for the replacement of Cordilleras, the project team developed basic building configurations with the help of county, staff, consumer and community stakeholders through a series of three integration events also known as “3P event”. The team dove in deep enough to understand the basic size, configuration and functional relationships of a typical MHRC and a typical ARF floor plate.

For the MHRC, the consensus of the group proposes a four-wing plan connected on one end to a centralized staff and support core. Each wing holds four consumers; two wings have all privates and the other two wings have a mix of semi-private and privates. The four-wing “cross” responds to the programmatic and functional criteria of Flexibility, Safety, Security, and access to nature/daylight.

The Adult Residential Facility (ARF) has a reduced level of care need. Consumers are able to come and go as they choose and the focus is supportive residential living rather than treatment. Therefore the bedrooms, dining, group activity, and living rooms are more central rather than the care team areas. The ARF is preferred to be connected to the Campus Center building to conveniently share and utilize the campus amenities proposed in that program. The planning for the ARF evolved into a linear scheme to with bedrooms on the ends separated by a central activity/ dining core with entry points.

Architecture and Building Systems

As described in Part 6, the MHRC buildings are proposed to be built with a cost-effective Type V wood frame construction as the basis of design. The buildings will be designed for a lifespan of at least 50 years, and if properly maintained, will last much longer. The Type V construction allows for an exterior cladding material like hard wood siding. A durable natural wood expression will be compatible with the natural wooded surroundings of the site, and add to the project’s Vision of healing through nature. The windows are proposed to be high performance glazing, but will not be operable for reasons of security.

The buildings are conceived as having flat roofs (shallow slopes to drain) with a parapet for protection and to hide the rooftop equipment, fans and vents. An architectural expression for the building roof form will be created by a steel trellis that both provides shading to the courtyards and supports the photovoltaic (PV) panels.

At the MHRC buildings, pre-fabricated bedroom/bathroom modules may be an option. Built in a shop and transported to the site, these repetitive modules could potentially save construction time and cost, allowing the residents to move back more quickly.

For the ARF/Campus Center, as the first level of the building backs into and retains a hillside, this Study proposes an all concrete structure. The lateral system at the lowest level will be concrete shear walls. The upper levels could include concrete shear walls or could be composed of special concrete moment resisting frames. The foundation is assumed to be conventional spread footings and grade beams.

The mechanical design involves all mechanical HVAC systems and controls serving individual buildings. The system includes air-cooled variable refrigerant volume system (VRV/VRF) units

including air-cooled condensers and indoor fan coil units. Motorized louvers/windows and exhaust fan will provide ventilation to the common areas in the individual buildings. In addition fan coil systems will be provided. Each residence room will be designed with dedicated HVAC system and control. Control of temperature in individual resident rooms will not be directly available to resident; however central administration control of temperature in individual resident rooms will be verified during design. Building automation system is BACNET over Ethernet, with web access and pager alarming.

The plumbing design involves all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction. The following systems are proposed: sanitary sewer and vent system; storm drainage system; domestic cold and recycled water system; domestic hot water system; drain systems; and natural gas system for main central service kitchen only. The project will be LEED certified and water conserving fixtures will be selected accordingly.

The electrical design involves all power, lighting, lighting controls, fire alarm, and testing of all electrical equipment. One new main power utility service for the entire complex will be installed at the ARF/Campus Center building, the power distribution will feed both ARF building and each MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility. Light fixtures to be specified will utilize fluorescent, LED, and HID lamps. Lighting controls will be provided. Fire alarm will be designed with full coverage area detection. Telecommunication system will be provided to support new service, backbone and horizontal distribution throughout the facility.

Sustainability

In 2013, California revised its Building Standards Code for energy efficiency, Title 24. The revisions put in place a mandate for all residential buildings to be designed and built to achieve Zero Net Energy (ZNE) performance standards by 2020, and non-residential buildings by 2030. To build a ZNE building, the amount of energy provided by on-site renewable energy sources must be equal or greater to the amount of energy used by the building over the course of a year.

To meet the challenges of San Mateo County's Sustainable Guidelines, California's revised Title 24 energy codes, and Cordilleras' vision to heal through nature, the Feasibility Study proposes the ZNE standard as a basis-of-design. By pursuing a ZNE strategy, the project will also meet many of the requirements necessary to achieve a rating in the Leadership in Energy & Environmental Design program (LEED).

A strong sustainable design approach, combined with the site's serene natural setting, provides an opportunity to create a prime example of an environmentally sensitive residential campus. Some of the sustainable design strategies proposed throughout this Study include:

- Rain water catchment and treatment to conserve water and reduce impacts to the County storm water system
- Rooftop photovoltaic arrays and fuel cell systems for on-site energy production

- High-efficiency heating and cooling systems, such as Variable Refrigerant Flow (VRF)
- The use of extensive day-lighting and natural ventilation to take advantage of the site's built-in conditioning systems

Consumer Relocation Planning

The Feasibility Study assessed the need to relocate the Cordilleras and Canyon Oaks residents during the period of construction. To the extent relocation will be necessary, this Study outlines recommended solutions. Before identifying these recommended solutions for consumer relocation, the project team considered the cost and availability of relocation options including; the feasibility of phasing construction at the site in order to minimize relocations; and the extent to which disturbances at the site would detract from consumer quality of life or could be mitigated.

Challenges to relocation of ARF consumers

We explored the following options for relocation of the 49 consumers residing at the Adult Residential Facility portion of Cordilleras:

- Availability of rooms in existing Adult Residential Facilities (ARF's)
- ARF's that would need to be developed and licensed from current housing stock
- ARF's that would need to be built

San Mateo County has very limited ARF bed availability that has worsened due to increasing cost of housing and dwindling supply of provider operators. There are already consumers waiting for ARF openings in order to be able to move to a less restrictive level of care. The research described in more detail in this section of the Study, led to the conclusion that our best plan would be to design phasing of construction in such a way as to avoid relocation of the majority of ARF consumers. In addition, this information supported the option of adding to the number of ARF beds planned for the project.

Challenges to relocation of MHRC consumers

We explored the following options for relocation of the 68 consumers residing in the locked MHRC portion of Cordilleras:

- Repurposing the now vacant ground floor of San Mateo Medical Center
- Rental of another vacant building or portion of a building in the Bay Area that could be converted to a temporary MHRC
- Available beds in other MHRCs operated by Telecare and other organizations

We could not find a solution for relocation of the entire group of consumers that would be available on the timeline required for this project. We have concluded that the most viable solution appears to be a combination of contracting for MHRC beds in other facilities outside of San Mateo County as well as possibly using part of the ground floor at San Mateo Medical Center.

Cost of Relocation

The estimated costs for the alternate temporary relocation strategies are \$6,432,220, which can be funded partially by \$1,865, 211 that will be available from current sources for placements, leaving \$4,567,009 needed for one-time costs.

Challenges to relocation of Canyon Oaks consumers

The third group of 12 adolescents, located at Canyon Oaks residential treatment program, was considered for temporary relocation to another existing vacant building or program. We determined there were no appropriate solutions inside or outside San Mateo County. We also explored what the impact would be of leaving Canyon Oaks occupied during demolition and construction and whether there are strategies for mitigating potential problems

The project team consulted with local providers and providers around the United States with whom we visited to see what their experience was with similar challenges during construction of new facilities. We learned that many organizations have successfully managed consumer services while construction is underway.

Consideration of Alternate County Owned Sites

The project team also performed due diligence in assessing potential alternate County owned sites for the replacement project. The project team conferred with the County's Real Property division and obtained a list of all available County parcels. Each of these sites was evaluated for adequacy of size for the programs, zoning, appropriate location in a therapeutic environment, central access to medical and other essential services that are frequently required by MHRC consumers, and compatibility with the surrounding neighborhood. None of the available County owned parcels met all of the program criteria as well as the existing site on Edmonds Road. Therefore, the project team focused on developing a phased replacement program on the existing site.

Recommended Solution for Consumer Transition

The Cordilleras project staff, representatives from HGA architects and engineers and Telecare leaderships thoroughly assessed the feasibility of allowing consumers to remain in place on campus during the phased construction of new facilities. The results of the assessment showed that it was possible to allow most consumers to remain on site during the construction phases. There is a 16 month period that up to 36 MHRC consumers will need to be temporarily relocated to allow for the demolition of the existing building, and the construction of the last MHRC facilities.

A feasible project phasing plan would be:

Phase 1 Earthwork and Construction

During the initial phases all Cordilleras consumers in the MHRC, ARF and Canyon Oaks will remain in place.

First Consumer Move

At the conclusion of Phase 1 the new ARF and two 16-bed MHRCs would be completed. All ARF consumers and 32 MHRC consumers will move into these new facilities. The remaining 36 MHRC consumers will temporarily relocate to other appropriate MHRC's outside of San Mateo County and possibly the ground floor of San Mateo Medical Center.

Demolition of Existing Cordilleras Building, Phase 2 Earthwork and Construction

After all consumers vacate Cordilleras, the existing building will be demolished and the final three MHRC buildings will be constructed.

Final Consumer Move

Upon completion of the final 3 MHRCs, the MHRC consumers relocated to the other settings will return to the new facilities.

Summary of Part 8 – Financial Analysis

The financial analysis for this Feasibility Study includes an estimate of the capital costs to replace the existing Cordilleras Center with a campus of new buildings, as well as an estimate for the annual operating costs for the proposed replacement project. In addition, for comparison purposes we have estimated the cost to renovate and upgrade the existing Center.

As previously described in the *Summary of Findings* above:

- Estimated base cost of replacement project is \$85.3 M
- Estimated cost of renovation and upgrade of existing structure is \$55.6 M

- Current annual operating expense for existing facility is \$9.8 M
- Current annual revenue for existing facility is \$1.8 M
- Current annual net operating costs for existing facility is \$8 M

- Estimated annual operating expense of replacement project is \$17.3 M
- Estimated annual revenue and savings for replacement project is \$9.8 M
- Estimated annual net operating cost of replacement project is \$7.5 M

See Appendix L for the complete Financial Analysis Reports

Summary of Part 9 – Schedule

The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately with a brief Bridging effort to develop a schematic design and begin the environmental review process. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build contractor and team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and run concurrently with the required environmental review and permitting process. Permits would be issued in early 2017. Construction would continue until the end of 2019. The new facility will be ready for occupancy by consumers in early 2020. This schedule will be adjusted as the project scope continues to be refined.

Part 2

Vision Statement and Goals

Part 2 – Vision Statement and Goals

Introduction

Crafting the vision for the replacement of the Cordilleras Mental Health Center set the foundation for all work included in this feasibility study. It was important that the Vision be defined early in the study process by a wide range of individuals including providers, family members, consumers and others with a vested interest in creating an optimal recovery environment for consumers. The Vision Statements will guide the decision making process and the development of the design throughout the life of the project.

HGA guided a Visioning process at a half-day event in February 2014. Participants included past and present residents and staff of Cordilleras, mental health specialists, administrators and staff of other local mental health facilities, resident family members, and county leaders. HGA explained the need and benefits of having a vision statement and provided the group with background information to help the participants start to think about what they really wanted Cordilleras to become and how they were playing an important role in guiding its future.

The session started with brief self-introductions of all participants in the room and explanation of the events to come that day and in the future by HGA. The core team, consisting of HGA and mental health experts from the county, gave the group an overview of the history of mental health and Cordilleras, discussed best practices in mental health, and the project schedule. From there, the group was given the opportunity to jot down examples of headlines they would like to see in a prominent newspaper or national magazine celebrating a newly-opened Cordilleras Center. Participants worked independently and were encouraged to be selfish about their headline by thinking about what they wanted for Cordilleras from their own perspective. The headlines were then gathered by HGA and sorted into main themes. After this, the participants were broken into groups lead by HGA and the County and the headline themes were distributed among the groups for brainstorming of preliminary Vision Statements. These themes helped to identify goals of Cordilleras Center, which helped to form the driving factors, or Vision, of the center. At the conclusion of this break-out session, the participants were once more brought together to share and build on each other's findings.

At the conclusion of the Visioning Session, HGA and the county had the bones of a clear vision born from possibilities that the stakeholders saw for the future of Cordilleras Center. In thinking of the future of Cordilleras, and the residents of San Mateo County in which it supports, it was natural to align the vision of Cordilleras with the vision that the county had for itself. San Mateo County's Shared Vision 2025. The Shared Vision 2025 calls for a community that is health, livable, collaborative, environmentally conscious and prosperous. Those qualities were also identified by the Vision Session participants as being part of the fundamental values of Cordilleras. The core team took the values brainstormed at the Visioning Session and merged them with those of the County in their Shared Vision 2025 report. The two were further distilled it to become the Vision Statement and Goal of the new Cordilleras Center.

See Appendix A for the Vision Session artifacts

Cordilleras Center Vision Statements

Focus on Wellness – *to be healthy*

The new Cordilleras campus will offer programs and services that are dedicated to the whole health and wellness of its consumers. The environment will support and reflect a productive individualized wellness path for all consumers.

Promote Respect - *to be livable*

The programs and services offered will provide a strong foundation of assuring dignity and respect for its consumers and staff. The programs and services will emphasize consumer's choice, in a safe environment that inspires pride, motivates the spirit, accommodates diversity in culture and beliefs, instills optimism for personal growth and improves quality of life.

Build Community – *to be collaborative*

The programs and services offered at the new campus will build strong communities – amongst their own consumers, families, staff, and visitors, and add value to the surrounding community. The campus will become an integral part of its social surroundings, with its programs and services valued as innovative assets and its residents respected as citizens.

Heal through Nature – *to be environmentally conscious*

The programs and services offered at the new campus will capitalize on the beautiful serene natural setting to complement the process of wellness, rehabilitation and recovery. The new facilities will incorporate progressive sustainable design strategies, efficient building systems, and natural materials to the benefit of healthy people, place, and planet.

Strive for Recovery - *to flourish*

The new programs and services will help consumers realize their full potential, achieving their goals for recovery, and return to living independently in the community. We will develop a world-class model of care that sets a new standard for excellence, by drawing from current best practices and anticipating future advances in behavioral health care.

Cordilleras Center Goals

Focus on Wellness – *to be healthy*

Goals:

- Plan for consumer-centered treatment with a greater focus on whole health
- Provide specific care for variety of populations
- Create a more inclusive and supportive environment
- Integrate flexible spaces

Promote Respect - *to be livable*

Goals:

- Promote consumer empowerment through access to the natural environment and a design that is attractive and comfortable
- Foster pride in the facilities
- Provide a strong aesthetically pleasing design that sets a tone of respect
- Develop a clear separation and transition between public and private spaces

Build Community – *to be collaborative*

Goals:

- Build community on all levels, from consumer to County, by providing spaces and services to bring consumers, families, and the neighboring community together
- Seamlessly integrate the campus into the local community
- Create an inviting environment for all
- Become a learning center for consumers

Heal through Nature – *to be environmentally conscious*

Goals:

- Design environmentally sustainable facilities that touch lightly on the earth
- Integrate nature into public and private spaces and health and wellness activities
- Develop the campus as a therapeutic milieu

Strive for Recovery - *to flourish*

Goals:

- Be innovative
- Create an effective and accessible environment
- Facilitate each consumer's success to function at highest possible level and integrate back into community

Measures for Success for the New Cordilleras Project

In keeping with the spirit and intent of the project Vision Statement, and consistent with evidence based design best practices in behavioral health, the success of the new programs and services will be measured by improved outcomes including:

- Reduced length of stay at the MHRCs
- Reduced rates of readmissions to the MHRCs
- Reduced admissions to Psychiatric Emergency Services for the Cordilleras population
- Reduced resident to resident and resident to staff altercation
- Increased consumer/family satisfaction
- Increased staff satisfaction
- Reduced waiting time for the transfer from the San Mateo Medical Center psychiatric inpatient services to the MHRCs which will improve access and patient flow through the healthcare delivery system.

The project staff will develop baseline data to support a pre/post analysis of the effect of the new programs and services.

Part 3

Site Assessment and Recommendations

Part 3 – Site Assessments and Recommendations

Introduction

The site of the Cordilleras Mental Health Center is located at 200 Edmonds Road on unincorporated land in San Mateo County, near Redwood City. In addition to the existing Cordilleras Mental Health Center building, the site is shared by the County Fire Station 18 and the Canyon Oaks Youth Center, a residential treatment program for adolescents. Both of these buildings were built approximately 15 years ago, and are still in operation. The 19.4 acre parcel is bound by Edgewood Road to the southeast, and by the Pulgas Ridge Open Space Preserve on the other three sides. Interstate 280 is one half mile to the southwest. Edmonds Road is the only way in and out of the site. The site is shaped like a top hat, with one side of the brim elongated to the southwest paralleling Edgewood Road. This portion of the site is narrow, steeply-sloped, and inaccessible by roads and was therefore not considered for proposed development. The remainder of the site is approximately 10-1/2 acres. The site has a canyon in the center, running east to west, with steeply sloped sides to both the north and south with an average slope of about 1.5:1. The overall elevation change in this portion of the site is more than 140' – extending from about 280' above sea level at the canyon floor, to 420' at the hilltops. The seasonally active Cordilleras Creek runs along the bottom of the canyon. It enters from the western side of the site, runs for about 500', and then is undergrounded in a culvert concrete pipe. This culvert splits at a 'Y' and runs north and south, with the creek day-lighting again just past the Canyon Oaks Youth Center to the south and just beyond the site property line to the north. A second culvert system, less active than the main creek, carries water from a north tributary underground along the northern edge of the site. Much of the site is heavily wooded, with a few gravel access roads and trails traversing the site and providing access to a water tank on the northern hilltop.

In the sections that follow, the primary site features are discussed in greater detail.

3.1 Geotechnical Investigation

Geologists and geotechnical engineers from Arup and Lettis Consultants International conducted a preliminary study to facilitate a feasibility-level evaluation of geological and geotechnical conditions in the vicinity of the project. This preliminary engineering geologic study of the site included a geologic desktop study of existing information, site reconnaissance, preliminary geotechnical evaluation, and development of preliminary design recommendations.

The geohazards evaluation considered the effects on the proposed construction due to: faulting, seismicity, slope stability, rock fall, flooding, debris flow, and naturally occurring asbestos. This initial geotechnical and engineering geological evaluation considers the site demolition, large design-level ground motions (earthquakes), and the feasibility of the proposed areas of site cut and fill.

From the perspective of this feasibility-level study the potential geohazards identified can all be mitigated by engineering design, and the proposed site improvements are feasible. The site will experience high seismic shaking during an earthquake, but execution of well-prepared construction specifications can minimize the effects of ground shaking on the proposed improvements. Identified areas of slope instability are not immediately proximate to the proposed development. Cut slope

areas of potential instability should be investigated as part of final design but were not anticipated to be unmanageable from a design perspective.

The geotechnical and engineering geological feasibility report (Appendix E) presents in detail the foundation concepts and retaining wall concepts for the site. For the ARF/Campus Center building, the final foundation design will depend on the depth to bedrock from the ground floor elevation. Shallow spread footings bearing in bedrock can be used to support vertical loads when bedrock is shallow. Where bedrock is deeper below the final ground floor elevation, vertical loads can be supported by drilled piers or longer footing elements bearing in bedrock. Lateral building loads can be resisted by a combination of friction (building weight) and passive resistance (footings or shear keys) constructed where the bedrock is shallow. Longer pier elements will have low capacity to resist lateral loads.

The five, one-story MHRC structures are anticipated to be lightly loaded and supported on continuous, perimeter, shallow footings bearing in engineered fill constructed as part of site contouring. Generally, footings will bear 24 inches below lowest adjacent soil grade and be a minimum 18 inches wide. Interior slabs-on-grade will require reinforcement for crack control but be generally non-structural. For adequate performance of these foundations, differential fill thickness for each pad should be limited to 5 feet.

The proposed site grading requires several retaining structures, some varying between 0 and 10 feet in retained height, and one wall with retained height on the order of 50 feet. Soldier-pile-and-lagging cantilever retaining walls are expected for retained heights less than 10 feet and a tieback retaining structure is expected for the cut slopes higher than 10 feet. All retaining structures should be back-drained to reduce potential for hydrostatic pressure buildup.

Rock fall and flooding geohazards can be managed during detailed design. Management measures include a rock fall net at the top of the cut slope to prevent colluvial material falling onto the buildings below, and adequate sizing and protection of the culvert entrances for flood protection. Natural occurring asbestos, if encountered, can be dealt with during construction by implementation of best management practices including dust control.

The proposed reconstruction does warrant further study during a design-level geotechnical and engineering geological investigation and analysis. The conclusions and recommendations developed from the investigation and analysis will rely on having on-site geologic or geotechnical engineering presence during construction, particularly for demolition of the existing subgrade structures and valley slope cut operations. For the placement and compaction of the proposed site fills, full-time inspection and testing of the earthwork compaction should be anticipated.

See Appendix E for the complete Geology and Geotechnical Report

3.2 Biological Constraints

TRA Environmental Sciences conducted a Biological Constraints Analysis for the project. We addressed potential impacts to special-status plant and animal species, and regulatory and mitigation requirements that could affect decisions regarding the feasibility of the project. The special-status species in the region include federal and state listed species, as well as state species of special concern. The project site contains waters of the state and United States, namely Cordilleras Creek and its adjacent riparian zone, but does not contain freshwater emergent wetlands.

Cordilleras Creek has a well-defined channel that currently flows intermittently. Based on observations of both vegetation and woodrat houses in the creek channel, the Creek has possibly not had high flows for several years.

The project will impact the San Francisco dusky-footed woodrat, a California species of special concern, and will require mitigation to address those impacts. In the case of this species, the mitigation can be provided on the project site. The project may impact San Francisco collinsia, a rare plant that occurs on the property. Follow up surveys to document the location of these species are recommended.

The project has a very low potential to impact special status species, California red-legged frog, San Francisco garter snake, and western pond turtle, which are known to occur on the other side of I-280 from the project. These species are not expected to occur on the project site, but best management practices are recommended to avoid impacts. Without state and federal authorization (a lengthy process), the discovery of these species during construction would halt the project until state and federal wildlife agencies are consulted and concur with how to move forward.

The project will impact the riparian zone of Cordilleras Creek, but will not directly impact the creek bed, bank or channel. In order to comply with zoning the project will need to be designed to avoid significant impacts to the creek and riparian zone by having a setback from the top of the creek bank, by protecting creek water quality from stormwater runoff (eg, minimizing hardscape and other measures), and by incorporating riparian plant species in the landscaping. Restoration actions, such as removing invasive non-native plant species from the property or enhancing creek vegetation in previously disturbed areas, could also offset the impacts of development in the riparian zone to avoid violating the zoning code.

The project may need to remove trees that are protected by local zoning regulations, and should have a tree removal and replacement plan to address the removal of trees with a diameter at breast height of 17 inches or more (circumference 55 inches) for local regulations and 4 inches or more for California Department of Fish and Wildlife recommendations. The agencies will require that several new trees be planted for each tree that is removed, and this may require finding offsite locations within the watershed for tree planting. It will also require a 5-10 year monitoring period and replacement of dead trees if necessary. It may be necessary to work with the Midpeninsula Regional Open Space District regarding the possibility of planting trees in the adjacent Pulgas Ridge Open Space Reserve to meet the replacement ratios which range from 1:1 for removal of non-native trees to 6:1 for removal of oak trees greater than 4 inches in diameter.

It is anticipated that the project will require the following permits/authorizations:

- Lake and Streambed Alteration Agreement for effects on Cordilleras Creek and its tributaries;
- U.S. Army Corps of Engineers permit under Section 404 of the Clean Water Act for replacement of culverts and if any fill is proposed in Cordilleras Creek;
- California Regional Water Quality Control Board Water Quality Certification under Section 401 of the federal Clean Water Act, for replacement of culverts and if any fill is proposed in Cordilleras Creek.

See Appendix F for the complete Biological Constraint Analysis

3.3 Cultural Resources

In order to evaluate potential constraints to the project due to the presence of cultural resources on the Cordilleras site, the County engaged Basin Research Associates to conduct a Cultural Resources Review. The intent of this Cultural Resources Review is to provide a constraint analysis of archaeological and historic properties within the project area which may be listed, determined, or potentially eligible for inclusion on the California Register of Historical Resources (CRHR) and that could be affected by the proposed project. Lead agencies must evaluate any listed or potential cultural resources in accordance with the criteria of the CRHR. The CRHR is a listing of properties that are to be protected from substantial adverse change, and it includes properties that are listed, or have been formally determined to be eligible for listing in the National Register of Historic Places, State Historical Landmarks, and eligible Points of Historical Interest. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

- 1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or cultural heritage of California or the United States
- 2) It is associated with lives of persons important in our past
- 3) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values
- 4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California, or the nation.

Basin's Cultural Resources Review included:

- Records Search by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC)
- Limited Literature Review
- Native American Consultation to determine if historic properties are located in or adjacent to the proposed project
- Preliminary Built Environment Review of the facility by an Architectural Historian

No archaeological field review was conducted since the property is developed with buildings and/or introduced landscaping.

Records Search and Literature Review

An initial 1998 review of records and literature on file at BASIN, completed for an adjacent project, was negative.

An updated prehistoric and historic site record and literature search was commissioned for this constraints analysis. In addition, reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associate was also consulted. Several specialized listings and their updates on the *Historic Properties Directory for San Mateo County* were also reviewed including updates of the National Register of Historic Places, California Landmarks, and Points of Interest; *California History Plan*; *California Inventory of Historic Resources*; *Five Views: An Ethnic Sites Survey for California*; *Historic Properties Directory*; *Historic Civil Engineering Landmarks of San Francisco and Northern California*; list of *Historic Civil Engineering Landmarks*; *Archaeological Determinations of Eligibility*; and, other local inventories and lists. Archival research by Mr. Hill included reviewing original building plans and other documents on file with San Mateo County Public Works; consulting the online archives of the *San Francisco Chronicle* and *The San Mateo Times*; and reviewing the *Pacific Coast Architecture Database* online for biographical background on architects Douglas Stone and Louis Mulloy.

Findings:

- No prehistoric, Hispanic or American era historic archaeological sites have been recorded in, adjacent to, or within 0.25 miles of the project.
- None of the known late 19th and/or early 20th century "Indian Mounds" have been reported or mapped in or adjacent to the project.
- No known ethnographic, traditional, or contemporary Native American resources have been identified in or adjacent to the project.
- No known historic era trails, roads, or dwellings or structures dating to the 19th or early 20th century were located in or adjacent the project.
- No historic resources listed on the *Historic Properties Directory* or other lists/inventories of historic resources are located in or adjacent to the project or area adjacent.

Native American Consultation

The Native American Heritage Commission was contacted for a review of the Sacred Lands Files and results were negative.

Built Environment Review

Mr. Ward Hill, a consulting architectural historian meeting the Standards of the Secretary of the Interior, completed a preliminary built environment review of the facility. He conducted a field survey of the Cordilleras Mental Health Center on May 22, 2014.

The former San Mateo County Tuberculosis Hospital retains historic integrity from its original construction in 1950. The hospital's contractor was Palo Alto builder, Howard J. White, and the

architects were Douglas Dacre Stone and Louis B. Malloy. The architectural team of Stone and Mulloy designed many major hospitals in the Bay Area in the Post World War II years and were known for their hospital designs.

Conclusions and Recommendations

This review suggests a very low sensitivity for prehistoric and/or historic era archaeological resources within the project. It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried archaeological resources appears necessary. However, if any significant prehistoric or historic cultural resources or cultural materials are exposed or discovered during site preparation or subsurface construction activities, operations should stop within 50 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations. Treatment of any Native American burials exposed during construction should be in accordance with the State of California Public Resources Code in consultation with the Native American Heritage Commission.

An architectural historian should be retained to formally evaluate the building including the development of a suitable context. The historic context would provide the necessary background to evaluate the architectural team and building with respect to CRHR criteria 1, 2 and 3. A revised and enhanced DPR 523 form should be completed.

See Appendix G for the complete Cultural Resources Constraint Analysis

3.4 Site Utilities

Water Systems

Existing Water System

Potable water service to the site is provided by the San Francisco Public Utility Commission via a 6-inch public water main in Edmonds Road. At this time, the static pressure and available flow of the offsite water system is not known. However, domestic and fire water for the site is provided from a tank with a storage capacity of 150,000 gallons. The assumption is that the water from SFPUC does not have adequate pressure for the needs of the site. Water from the 6-inch public main is pumped up to the tank with a base elevation of approximately 414'. The pump station is located at the southeast corner of the site at an elevation of 285'. A 4-inch line from the tank provides domestic water to the buildings. A separate 6-inch line from the tank provides fire water to a dedicated fire system and fire hydrants. The upper one-third of the tank provides storage for domestic water. The lower two-thirds of the tank is a reserve for fire water. Recent fire hydrant flows tests show that the system can provide 1,000 gpm with a residual pressure of 20 psi. This flow rate does not meet current California Fire Code requirements of 1,500 gpm.

Proposed Water System

There are two options being considered for the new water system.

Base Case – Maintain the Existing Tank for Domestic and Fire Water

For this option, the existing 150,000 gallon storage tank and pump station will continue to be used for both fire and domestic water. The 4-inch feed line to the tank will be replaced. The existing 6-inch and 4-inch discharge lines from the tank down the slope to the site will be replaced with a new 8-inch pipe for the fire line and a 4-inch pipe for the domestic line. New domestic and fire water mains will be installed around the site to serve the buildings and fire hydrants. New fire hydrants will be installed that conform to current San Mateo County standards. Each new building will have a dedicated domestic water service with a meter and reduced pressure backflow preventer. Each building will also have a fire service with a reduced pressure detector assembly and fire department connection.

To increase the pressure and available flow in the site fire system, a booster pump(s) will be installed on the new 8-inch discharge line from the tank. The electric pump will be sized so the system can provide 1,500 gpm with a minimum residual pressure of 20 psi. The pumps will be installed above ground, within a small enclosure. The booster pumps will also have backup power supply from the emergency generator.

Sustainable Design Alternate – Use the Existing Tank for Greywater and Fire Water

For this option, the 150,000 gallon tank would be used to store runoff collected from building roofs and reused for non-potable uses, irrigation water and fire water. Runoff from the building roofs would first be filtered in each building to remove large debris and solids. It would then be piped and collected in an underground tank. The water would be treated by a chlorine chemical injection system to ensure a minimum CT of 450 mg-min/L and filtered by a pressure filtration system at a rate that does not exceed 5 GPM/ft² to reduce turbidity to less than a daily average of 2 NTU. The treated water would then be pumped up to the large tank. From the tank, three discharge lines (one each for non-potable, irrigation and fire water) would deliver water via gravity to the site. Each building would have a separate plumbing system for non-potable water that would likely serve toilet flushing within the building. As with Option 1, a booster pump(s) would be installed on the fire water discharge line from the tank to increase the pressure. The existing pump station would be removed.

For the domestic water system, a new 4-inch service line would be connected to the existing 6-inch water line in Edmonds Road. A booster pump(s) would be installed on the 4-inch line to increase the pressure in the domestic system. The 4-inch line would be routed through the site and provide domestic water to each building.

Impact of Phasing

For either option, while the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, it may be required to temporarily relocate the existing water system to maintain domestic water and fire water service to the existing buildings while the proposed improvements are constructed. The temporary water relocation would occur near the east fire access road at the existing pump station. Approximately 200' of the 4" domestic water line and 200' of the 6" fire water line would need to be rerouted to allow construction of the east fire access road and walls.

Natural Gas Systems

Gas service will enter the site with a main gas meter, a regulator, and an earthquake valve located outside of the Campus Center/ARF building. The individual MHRC buildings will not require gas supply. The design goal of achieving Zero Net Energy is better met with electrical power generation and electrical equipment, like stoves and hot water heaters.

Electrical Systems

The main electrical service for the entire campus will be fed via a new PG&E pad mounted transformer located at the site in the vicinity of the ARF building. One main PG&E kWh meter will be installed for the campus. The main switchboard will be installed at the ARF building main electrical room. The ARF-DP distribution board will be installed in the ARF building main electrical room. This will serve the ARF building and site electrical loads. Step-down transformers will be installed in the ARF building to provide 120/208V, 3 phase power for the branch circuit panelboards. The five MHRC-DP distribution panels will be installed in the five MHRC buildings' electrical rooms.

3.5 Storm Drain and Sanitary Sewer System

Storm Drain System

Existing Storm Drain System

The main storm drain collection system on the site is Cordilleras Creek. The creek flows southeasterly through the site and eventually parallels Edmonds Road. From elevation 310' to about 300', the creek is daylighted with a well-defined bed and bank. A concrete headwall, with a trash rack, directs the creek in to a 30-inch diameter concrete pipe that flows along the west side of the mental health care building. A small tributary creek flows west to east near the Canyon Oaks facility. Another concrete headwall collects the tributary in to a 30-inch diameter concrete pipe. Both 30-inch pipes combine at a manhole where a 42-inch pipe exits and flows easterly where it discharges at a concrete spillway into the creek at the south east corner of the site at elevation 275'. Another smaller tributary from the northeast is intercepted along the existing access road and conveyed by a pipe to the spillway. Runoff from the site and building roofs is collected and conveyed to the large diameter storm drain pipes that run throughout the site.

The County has reported some known issues with the headwalls and trash racks being blocked by debris and preventing flow from the creeks and tributaries from entering the pipes. This has caused some flooding at the site. However, the flooding is not likely caused by lack of capacity in the pipes.

Proposed Storm Drain System

The new storm drain system will consist of a network of 8 to 42 inch diameter pipes, catch basins manholes, and trash racks to collect surface runoff and convey it to one of the existing, large diameter pipes. The existing 30-inch and 42-inch diameter pipes will need to be relocated around the new building footprints which will create a system with fewer bends than the existing system. The straightened alignment will allow the transport of more debris through the system. However, routine maintenance is required to ensure the storm drain system will perform as intended.

The existing headwalls and spillway at the Canyon Oaks Center (south tributary) will not be modified. The eastern tributary will be intercepted at the northern end of the fire access road and equipped with a trash rack and overflow riser. The trash rack of the main tributary of Cordilleras Creek will be modified and equipped with an overflow riser pipe.

San Mateo County standards require that runoff from new and replaced impervious surfaces must be treated prior to entering the storm drain system. Runoff from the new building roofs and access roads will be directed to storm water treatment areas. There will be several storm water treatment areas located throughout the site at low points, and other natural areas to collect runoff.

Typically, the surface area of the storm water treatment areas is 4% of the area draining to it. The treatment areas will consist of an 18-inch layer of highly permeable soil over 12-inches of drainrock with a perforated subdrain pipe. Each treatment area will have an overflow drain to handle the large storm events. The overflow drains will connect the site storm drain system.

San Mateo County drainage design standards require the existing peak runoff rate for a 10-year storm event not exceed the pre-construction rate. Typically a new development project would increase the area of impervious surfaces which would increase the rate of runoff. To control the rate of runoff from the site to pre-construction conditions, a detention system might be required. A detention system typically consists of large, oversized pipes to store runoff. On the downstream side of the pipes, a weir structure with a small opening in the bottom is sized to control the discharge rate from the pipes. The diameter of the opening is calculated so the discharge rate does not exceed the pre-construction rate. For larger storm events, runoff will collect in the large pipes and eventually overtop the weir.

Impact of Phasing

While the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, approximately 150' of 15" storm drain line and one manhole will be installed to connect the storm drain system for the west fire access road to the storm drain system for the south tributary.

Sanitary Sewer System

Existing Sanitary Sewer System

A 6-inch sewer line in Edmonds Road provides sanitary sewer service to the site. The 6-inch sewer line flows easterly in Edmonds Roads and connects to a manhole that is part of the Scenic Heights County Sanitation District which is owned and maintained by San Mateo County. Onsite a network of 6-inch and 4-inch sewer lines convey sewage to the main sewer line in Edmonds Road.

Proposed Sanitary Sewer System

The existing 6-inch sewer line on the south side of the site (that currently serves the Canyon Oaks building and fire station) will be used to provide sanitary sewer service to the new buildings. A new 6-inch sewer line will be installed in the west fire access road to serve the five MHRC buildings. Each building will have a 4-inch sewer lateral. Another 6-inch sewer line will be installed in the east fire access road to serve the support building. The new 6-inch sewer lines will connect to a manhole on the existing 6-inch sewer line at the southeast corner of the site.

Impact of Phasing

While the two western most MHRC buildings are being constructed and the existing Cordilleras Mental Health Center is in service, approximately 220' of temporary 6" sewer line and one temporary manhole will be installed between the existing Cordilleras Mental Health Center and the San Mateo County Fire Station. The temporary sanitary sewer features will be removed in subsequent phases.

See Appendix K for the Site Utilities Diagram

Part 4

Existing Building Assessment and Recommendations

Part 4 - Existing Building Assessment and Recommendations

Introduction

Opened in 1952, the Cordilleras Mental Health Center originally served as the San Mateo Tuberculosis Hospital. With the discovery of new anti-biotic drugs in the 1950's, and the consequent reduction of tuberculosis cases in the following decades, the hospital closed and sat unused for several years before being repurposed in 1978 for its current use. Designed in a generic modern style common for the times, the building is a three-story concrete structure with a full basement. At 62 years old, it has served out its intended useful life and is currently being maintained in serviceable condition at a significant cost. As you can see in our financial analysis Section 8.2, the current yearly cost to maintain the facility is \$473,000, and an additional \$3.9 in upgrades is being deferred. As mentioned previously, the building is not well-suited for the current best practice in behavioral health and rehabilitative care. And as you will read in the following narratives, it is also in much need of building systems upgrades and repairs.

Being that this is a feasibility study, our evaluation of the existing building is intended to give a broad overview of the conditions impacting the use, re-use, and replacement of the existing building and its site. Our evaluations have been largely based on site visit observations and historic document review. We have also provided a rough-order-of-magnitude cost estimate for the various options and recommendations discussed here (see Section 8.1).

4.1 Building Structure

The existing Cordilleras Center building is documented on drawings prepared by Douglas Dacre Stone and Lou B. Mulloy Architects, dated November 1, 1949. The structural drawings were prepared by W. Adrian, L. Graham & W. Hayes Associated Structural Engineers. Site observations were also made on March 12, 2014 by HGA.

The building is a three story cast-in-place concrete structure with a basement. From observations made on the recent site visit, the condition of the exposed concrete structure appeared to be in good shape, with no significant cracks due to movement, thermal expansion/contraction, or corrosion. Observed cracks are hair-line in nature. As observed, the building matches the geometry represented in the construction documents. There is no apparent remodel that has changed the structural system. As discussed with the facility maintenance individual at the site visit, in his opinion there were not any structural concerns that he was aware of.

The building material properties noted on the drawings are:

- Concrete equals 2500 psi at 28 days for all elements
- The reinforcing steel is noted to be Intermediate Grade with an allowable working stress of 20,000 psi. This is equivalent to 40,000 psi yield strength.
- Footings are based on a dead load allowable capacity of 7300 psf and a combined dead plus live load allowable capacity of 10,000 psf.
- Pile foundations are based on a dead load capacity of 40 tons, and a combined dead plus live load capacity of 50 tons.

The buildings structural frame is a concrete structure, with a basement level and three elevated decks above grade, and locally a penthouse structure. The plan shape of the building is a “Y”. Above the grade level slab the building is separated into three distinct structures with expansion joints. The width of the expansion joint is 8-inches. The Roof and Floor systems are composed typically of 5-1/2” wide pan joist by 13-inch deep at the roof and 11-inches deep at the floors. Joist depths do range in depth, with the deepest sections equal to 17-inches, and widths do increase to 7-1/2”. The pan joist spacing is typically around 3-feet. When the joist spacing is greater, the joist depth and width are modified accordingly. The slab thickness over the pan joist is 2-1/2” at the roof and 3” at the floors. The pan joist typically span to concrete beams supported by concrete columns that increase in size from the top-down. The lateral system is composed of concrete shear wall elements. The structure is typically supported by piles with pile caps.

Gravity System

- The elevated floor beams and girders appear to be efficiently designed to code minimum loads. The live loads used for the check were 20 psf for the roof and 50 psf for the floor. It is not apparent that there is any reserve capacity.
- The columns below the First Floor, ground level, elevated deck exceed the minimum load criteria of the elevated decks and would be capable of supporting larger loads.
- The pile foundation capacity for the typical conditions exceeds the minimum load criteria of the elevated decks and would be capable of supporting larger loads.

Lateral System

- Remedial work and a thorough analysis would be required to address the seismic performance of the existing structure. The items that are preliminarily identified as irregularities or having insufficient capacities are:
 - In the patient room wings the exterior concrete wall in the longitudinal direction are discontinuous below the Second Level. Per current practice and code requirements there are numerical penalties for such irregularities.
 - In the patient room wings in the direction of the longitudinal walls, there are added corridor walls to address the discontinuity noted above. The top of these walls start at the Second Level. It appears that these walls are under-designed. Effectively they carry all the lateral load in the longitudinal direction between the First and Second Levels. Also for the resulting high shear loads, there should be two curtains of wall reinforcement, not the single layer as detailed on the provided drawings, per the current code requirements.
 - For the seismic loads noted, these loads would be transferred through the 3” concrete slab with relatively light welded wire fabric. There appears to be insufficient capacity to transfer these loads.
 - Collectors along the corridor would be required as part of the transfer of loads. There is not sufficient capacity in the beams along the same grid as the added corridor walls to transfer these loads.

- Basement Walls:
 - It appears that the Equivalent Lateral Pressure used for the design of the basement wall out-of-plane design is roughly 35 pcf. This is relatively low. There is no distress noted for the existing condition. The concern would be to not add any new adjacent super-imposed loads next to the basement walls at the grade level.
 - There appears to be sufficient in-plane lateral capacity at the basement walls.

Recommendation for Building Reuse

In our effort to explore a range of approaches to the replacement and improvement of the Cordilleras Center, we evaluated the existing structure for its potential to be reused as a generic adult mental health residential facility.

Regarding the building structure, seismic improvements to existing buildings that do not have a change in use typically are considered voluntary and have more latitude in what is acceptable for improvements. For existing buildings which have a change of use, specifically occupancy use, the level of improvements need to be justified to meet current code requirements or be based on an acceptable standard. The acceptable standard that is typically used is ASCE-41, “Seismic Rehabilitation of Existing Buildings”. We would recommend that ASCE 41 be used to evaluate the existing building for any considered upgrade.

As part of the analyses, two levels of seismic events are considered, one that is equivalent to a design level force used per current codes, and a second seismic event that is considered the maximum considered earthquake. Associated with these two levels of seismic events are different performance objectives, Immediate Occupancy, Life Safety and Collapse Prevention. The Immediate Occupancy performance objective is normally associated with essential facilities. We would recommend a Life Safety performance objective for the design level force, and Collapse Prevention for the maximum considered earthquake.

In the Building Evaluation Section the most significant item to be address is the offset lateral walls in the longitudinal direction that is created by the discontinuous exterior walls immediately above ground level. The most direct way of resolving this condition is to add a continuous longitudinal wall between the ground level and the second level, which would be detailed to have window openings. The long continuous wall would keep the overturning forces low, and resolve any slab collector issues at these locations. For the existing added longitudinal walls that start at the second level we would anticipate some remedial work to create collector lines. The next challenge would be to numerically justify that no added piles are required, specifically for the transverse walls. We believe that the capacity is close to the demand and a more detailed analysis and criteria from a geotechnical engineer may be enough to justify the existing condition.

In summary we would estimate the following minimum corrective work:

- New longitudinal walls between the Second and Ground Levels at each of the three wings, that will require extensive epoxy doweling.
- Added shotcrete walls to the interior longitudinal walls with a single layer of reinforcement that start at the second level
- Added Collector reinforcement and added concrete cover with epoxied hair-pens for the beams in-line with the interior longitudinal walls noted above.
- Conservatively assume six new 12-inch thick by 18-foot long full building height transverse walls to reduce diaphragm loads and reduce loads to existing transverse walls.
- Increase these assumptions by 50 percent to account for unknown costs.

Normally a lot of the costs for remedial seismic work are associated with replaced architectural finishes, roofing patching or replacement and impacts to existing utilities. These costs should be considered separately, but we are also anticipating any re-use would involve the total replacement of these elements.

4.2 Building Systems

Interface Engineering performed an assessment and examination of the existing mechanical, electrical, plumbing, and fire/life safety systems (MEP/FLS) serving the Cordilleras Mental Health Center. The assessment and examination was performed with the intent of determining the existing MEP/FLS systems' conditions, operations, reliability and capacity. Investigations include a site visit and an examination of existing as-built drawings of the facility. The sections below describe both the existing conditions of the various systems and the recommendations for future work if a decision was made to renovate and reuse the existing building.

For more detail, see *Appendix H: Building Systems Reports*.

Mechanical Systems

Heating Plant System

The heating plant consists of two natural gas-fired steam generating boilers located in the basement level of this main building. The boiler flue appeared to be in good condition with no evidence of corrosion. The flue extends through the exterior wall and connects to a stucco enclosed stack on the east side of the building. Some cracking of the plaster was noted in the exterior finish. Each boiler has the capacity to maintain the heating requirements for the entire building during peak heating demand. The secondary boiler is activated to ensure the primary boiler is not operating at full capacity for any great length of time. The boiler nameplate data indicates the boilers were manufactured in 2003. Although the boilers appear to be in good working condition with routine maintenance, they do not meet the current regional air quality requirements. The boiler service life is approximately 25 years with another 15 years of operation available. This type of system requires a greater amount of maintenance and can encounter premature equipment failures and poor steam system efficiency.

The piping, blow-off and flash tanks, including some of the valves in the Mechanical Room are original to the 1949 construction. The estimated piping service life is approximately 30 years from the time of installation, so these components have served more than double their expected life.

The steam and condensate return piping system is original to the 1949 building construction and has exceeded its useful service life.

According to the facilities staff, except for the piping, the individual patient room radiators, associated steam traps and room controls have been replaced within the last 5 years.

Recommendation for Building Reuse

The existing hydronic steam and condensate return piping, and associated appurtenances within the Boiler Room are original and should be replaced with new piping, insulation and piping supports, valves and tanks. The Boiler Plant is in good working condition but does not meet current air quality requirements. Although it's grandfathered in, any renovation or expansion that will result in alteration to the Boiler Plant will require upgrades that meet current codes. This includes adding code-mandated outdoor ventilation.

The existing hydronic steam piping and condensate return piping routed within the building and connecting to the individual room heating coils is original and should be replaced. The coils, steam traps and controls have been recently replaced and shall remain. The vacuum and feed-water pumps, valves, controls and all associated shall be replaced.

Fans and Supply/Exhaust Air Distribution Systems

The Basement Level Mechanical Room contains the buildings 100% outside air and supply fan system. The four individual supply air fans and duct distribution serving the First, Second, Third Floors and Kitchen areas are original to the 1949 construction. The fan motors and belts have been refurbished. The supply fans and associated casework have exceeded their life expectancy.

The supply air distribution system serves the individual floor corridors with no air discharged directly into the patient rooms. Outside ventilation air to the individual patient rooms was intended to be through the operable windows, however due to safety reasons, a number of these window have been secured. The rooms are not ventilated and do not meet code compliance.

The heating air handling system consists of a 100% outside air arrangement with a single outside air louver connected to a plenum. The record drawings do not indicate that an outside or individual fan damper has been installed. This is a code violation that should be remedied. The air is relieved through a number of exhaust fans located on the roof in a Mechanical Room. The fans are original to the 1949 building construction; however the motors and belts have been replaced. The fans and associated casework and duct system has exceeded their life expectancy. The air distribution for both supply and exhaust systems located throughout the building is original and has passed its life expectancy.

The kitchen exhaust fan and duct system serving the hood does not meet current code requirements and should be replaced.

The Lobby and Third Floor Pharmacy areas have dedicated roof mounted packaged heat pump units with duct distribution system routed on the roof level. These units have been installed within the last 5 to 10 years and have a life expectancy of 15 years. The Pharmacy unit appeared to have insufficient supply airflow capacity and an inline booster fan was incorporated into the system to compensate for airflow required in this area.

Recommendation for Building Reuse

The supply and exhaust fans and casework are original and should be replaced with new units of equal performance capacity. These components have exceeded their service life. All associated control components should be replaced with new.

The existing resident rooms do not have the necessary ventilation required per code. A method of providing the code-required outside air must be provided. HVAC options to consider would include either a dedicated outside air fan with a distribution system and heating coil, or exterior/interior wall louvers at each resident room.

The entire air distribution system including supply and exhaust ductwork and associated appurtenances have exceeded their useful service life and should be replaced with new. This includes all new duct insulation and support systems to meet current code requirements.

Plumbing Systems

Sanitary Waste and Vent System

The majority of the sanitary waste is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what is visible on the Ground Floor and Boiler Room. The sanitary waste lines for the building appear worn-out and outdated; the pipes and fittings are hub spigot type with lead joints. The existing sump pump in the Boiler Room appears to be worn-out and outdated. It has a broken cover and its associated piping needs to be replaced.

Recommendation for Building Reuse

All corroded piping should be replaced with new piping. All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings. Existing sump-pump in the Boiler Room should be cleaned. Replace the sump-pump discharge pipes and fittings with new piping and fittings. Also replace the sump-pit cover.

Domestic Cold Water System

6" City incoming water main splits into two 2-1/2" domestic water lines at the Pump House. The two domestic water lines are connected to two water transfer pumps and are pumped to a single 4" common header in order to supply water to the existing steel tank located on nearby hill. The domestic cold water supply to the building is fed by gravity from the existing steel tank. The piping from the tank to the building is underground and therefore its condition could not be determined. It is assumed the piping has reached its useful service life and should be replaced.

Recommendation for Building Reuse

The existing water transfer pumps located in the pump house need to be fixed along with their bases. Flexible connections should be installed in the suction and the discharge of the pumps. All corroded cold water supply piping should be replaced with new piping.

Domestic Water Heating System

The majority of the domestic hot water distribution system is in the ceiling or concealed and was not visible for the site observation. The hot water is supplied by the existing gas water heater which appears to be in good condition. Hot water (140 degree F) to the kitchen dishwasher is also supplied by an existing gas water heater which appears to be in fair condition.

Recommendation for Building Reuse

All corroded hot water supply piping should be replaced with new piping.

Storm and Overflow Drainage System

The majority of the storm water piping is above the ceiling or concealed and not visible for the site observation. The only piping visible is limited to what was visible in the Ground Floor and the Boiler Room. Rainwater lines for the building appear to be original with a hub spigot type fitting with lead joints. When it rains, underground water rises up and enters into the trenches of the Boiler Room. Building maintenance staff places a single sump pump to lift and discharge the water to the main sewer. Sometimes single pump is not able to accommodate all of the water, and so they place a second pump to get rid of all underground water. The sump pump discharge piping in the trench is rusty and needs to be replaced.

The roof drains located on the roof appear to be undersized. There is a scupper system in place to accommodate overflow.

Recommendation for Building Reuse

All corroded piping should be replaced with new piping. All hub spigot-type pipes should be replaced with hub-less piping joined together with couplings. A new sump-pit with duplex pumps should be installed for underground water, discharging to the storm-water system. Roof drains need to be installed as per the square footage requirements of the CPC for 2-inch rainfall. Overflow drains should be installed for the roof.

Plumbing Fixtures

Most of the plumbing fixtures in the building have exceeded their service life and do not meet current low flow standards and ADA requirements. The Janitor sinks located in a few places look in fair condition.

Recommendation for Building Reuse

Plumbing fixtures need to be replaced to meet the current low-flow standards and meet ADA requirements.

Kitchen

Most of the kitchen equipment is in good condition. Grease interceptor located in the Boiler Room appears to be worn-out and outdated. The equipment has probably reached the end of its effectiveness and needs to be replaced.

Recommendation for Building Reuse

The existing grease interceptor located in the Boiler Room needs to be replaced with a new grease interceptor.

Natural Gas

The majority of the natural gas piping is above the ceiling or concealed and not visible for the site observation. The only piping visible was limited to what was visible in the existing Boiler Room at ground floor. There are two gas meters and regulators for the building. One gas regulator/meter is for the kitchen. The second regulator/meter is for the mechanical equipment.

Recommendation for Building Reuse

All corroded piping should be replaced with new piping.

Fuel Oil System

The main fuel oil storage tank installed in 1988, with a capacity of 2000 gallons, is located outside underground. Oil pumped from main tank to the day tank installed at the ceiling of the Boiler Room which directly supplies oil to the generator.

Fire Protection Systems

The building is partially sprinklered with only the Basement Level currently sprinklered at this time. The current code requires this type of building occupancy to be fully sprinklered. Although the installed fire sprinkler system is grandfathered in, a renovation or change of occupancy will trigger a complete building Fire Sprinkler System upgrade in compliance with the latest codes.

Electrical Distribution Systems

Normal Distribution System

Utility power for the building is derived from a PG&E pad-mount transformer located in an indoor dry vault in the basement level. The building is served by Main Switchboard located in the Main Electrical room adjacent to the PG&E's vault. The Main Switchboard supplies various distribution and branch-circuit panel boards located strategically in various electrical rooms in the building. The majority of the electrical equipment, including the Main Switchboard, is original equipment installed in 1949. The equipment is outdated and past the manufacturer's 25 year recommended life span. The manufacturer is no longer in business and parts are obsolete and will be difficult to obtain. Existing antiquated equipment is difficult and costly to maintain, replacement parts and service may not be readily available. Furthermore, the installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and is no longer compliant with the Utility Company standards and regulations.

Recommendation for Building Reuse

Due to the age of the existing distribution equipment, the majority of the original distribution equipment will require replacement. Replacement of the distribution equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components. The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders will provide long term reliability. The grounding system should be tested to confirm integrity and ensure reliability. The grounded resistance should be tested to ensure compliance with the requirements of the California Electrical Code. The replacement of the Main Switchboard will require coordination with the Utility Company having jurisdiction. The installation of the utility transformer in an indoor dry vault in the basement does not have the accessibility required by the Utility Company and no longer compliant with the Utility Company standards and regulations. A new exterior pad-mounted utility transformer might be required. Allowance should be provided for the replacement of the existing utility transformer including new primary and secondary feeders. Wiring devices that has reached the end of useful life due to age and deterioration needs replacement. Due to age and use, receptacle outlet contact loses tension to securely hold inserted plugs and wiring termination loosen. Majority of wiring devices are mounted 12 inches above finished floor which is no longer compliant with ADA. These devices should be replaced and mounted 15 inches above finished floor per ADA requirements. This holds true for any light switches mounted at 52 inches above finished floor. These switches should be replaced or relocated to 48 inches above finished floor.

Emergency Distribution System

There is an existing diesel driven indoor emergency generator with a 60 gallon sub-base fuel tank serving the building. It has a 225A supply to an emergency panel board via an automatic transfer switch. The system currently serves life safety and other various loads but is not designed to support the entire electrical loads for the Center. The emergency system distribution equipment is within the manufacturer's recommended lifespan. The installed location of the equipment is not in compliance with the current code requirements for essential/emergency systems. Also, the generator is located in the basement level that is at risk for flooding during a heavy rainfall. Critical equipment like a generator should not be located in area that may cause it to fail during an emergency situation.

Recommendation for Building Reuse

Due to the age of the existing emergency panel board and automatic transfer switch, the emergency distribution equipment will require replacement as part of the conversion. Replacement of the emergency equipment will provide long term benefits, such as equipment reliability, and cost savings from repairs, maintenance, and utilizing outdated components. The majority of feeders and branch-circuit feeders (conduit and wires) are also assumed to be an original installation. Replacement of these feeders and branch-circuit feeders will provide long term reliability. Critical equipment like a generator should not be located in area that is prone to flooding and may cause it to fail during an emergency situation. The generator should be relocated to a new location at the ground level. It is recommended that a separate electrical room dedicated for essential/emergency system be provided.

Lighting System

Lighting luminaires being utilized in the center uses a mixture of both fluorescent and incandescent lamps. Majority of the luminaires are outdated and not energy efficient. Both lighting and associated controls are outdated and no longer comply with the latest requirements of Title 24.

Recommendation for Building Reuse

There are some luminaires that are already utilizing T-8 lamps and can be reused in order to minimize cost. Luminaires that are not energy efficient should be replaced with luminaires with more energy efficient lamp and ballast; or with LED luminaires. Discolored lenses for luminaires to remain should be replaced. Majority of the lighting controls are outdated and no longer complies with the latest requirements of California Title 24. Replace lighting controls with newer technology that will meet the requirements of California Energy Efficiency Standards. If architectural remodeling of the interior is necessary to accommodate the new architectural layout, new luminaires and controls should be provided as required suit the new architectural layout.

Fire Alarm System

The existing fire alarm system is by Siemens. The main fire alarm control panel is located in the Second Floor and is fairly new, approximately 5 years old. The existing fire alarm system currently provides smoke detection and audio/visual coverage.

Recommendation for Building Reuse

Fire alarm system for a residential care facility is less restrictive than for a psychiatric care facility. The conversion will require a change from a private-mode notification to a public-mode notification. No other changes for fire alarm detection and controls are expected.

4.3 Hazardous Materials

As part of the existing building assessment, SCA Environmental conducted an investigation for hazardous materials, which would require abatement if the building were to be renovated or demolished. The investigation included the following efforts:

- An inspection and survey of all areas of the Cordilleras Center, including the nearby Pump House and Water Tower.
- Sampling and non-destructive testing for lead-containing coatings, polychlorinated biphenyls, and asbestos-containing materials (ACM).
- Assessment to quantify possible polychlorinated biphenyl (PCB) lighting ballasts and mercury-containing fluorescent lighting fixtures.
- Visual identification of possible PCB-containing transformers.

Asbestos Hazards

Certain existing building components or materials are known or presumed to contain asbestos. Asbestos-containing material (ACM) is defined by EPA regulations as those substances containing greater than 1% asbestos. Friable ACM with greater than 1% asbestos must be abated prior to demolition or renovation, and is required to be disposed of as asbestos waste.

Note that as the survey was non-destructive, various materials were assumed asbestos containing and not sampled. Furthermore, as the building is still in use, we did not perform destructive sampling to inspect wall cavities, above ceilings, etc. As destructive testing was excluded from the scope of work, the following items were to be assumed asbestos-containing during the survey: vapor barriers under concrete slab/restrooms, fire doors, ceramic tiles, etc. We have listed these materials as assumed asbestos-containing items in Appendix I. Asbestos-containing material was found and confirmed through testing in some elements on the property, including duct insulation, floor tiles, caulking, and asphalt.

Lead Hazards

Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known or suspected to contain lead. Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the on-set of demolition activities.

We collected a number of bulk samples for analysis to determine the lead content of these materials. Materials included lead paints and coatings and 9"x9" vinyl floor tiles. Lead was detected in these paint samples and floor tiles. Lead sheeting is also known to be present in the existing Offices Area on the 2nd Floor of the building. This area was formerly used as X-ray clinics and dental areas, and visual evidence of lining within the walls and doors was noted during the inspection. As the survey was non-destructive in nature, removal of wall sections to access the sheeting was not performed. We recommend that destructive sampling be performed prior to renovation or demolition of the building to determine the presence and lead content of this material.

PCB & Mercury-Containing Items

We collected representative samples of caulks and putties to determine PCB content. No PCBs were identified in any caulks or putties. We also quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations. We found quantities of both PCB ballasts and fluorescent tubes in various locations. To reduce liability concerns, many building owners opt to have PCB ballasts incinerated, with a record of destruction generated. A slightly less expensive approach involves recycling of the components (and incineration of the small amount of PCBs separately). However, this method may pose liability concerns for building owners. Various mercury-containing fluorescent tubes were identified throughout the building. Recycling vendors for reclaiming the mercury vapor are commonly available.

We also noted three (3) transformers at the property. These transformers are owned by PG&E. As the units were functioning at the time of the investigation, sampling of transformer fluids to determine PCB content was not performed. No visual evidence of staining was noted during the investigation. As the units are owned by PG&E, disposal of the PCB-containing fluids, if present, would be the responsibility of PG&E.

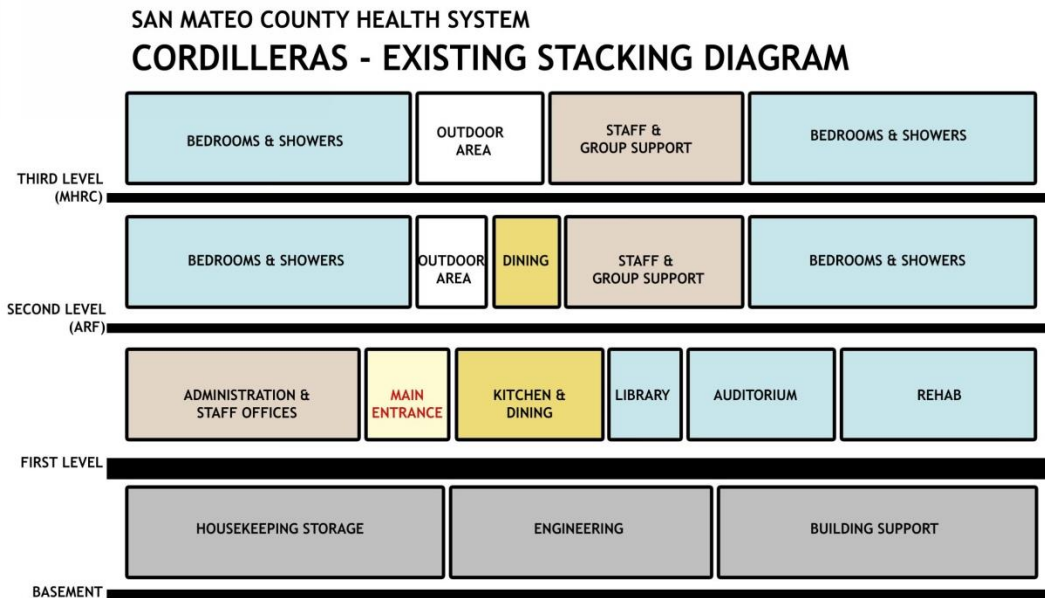
See Appendix I: Hazardous Materials Investigation for the full report

4.4 Function

Existing Building Functionality

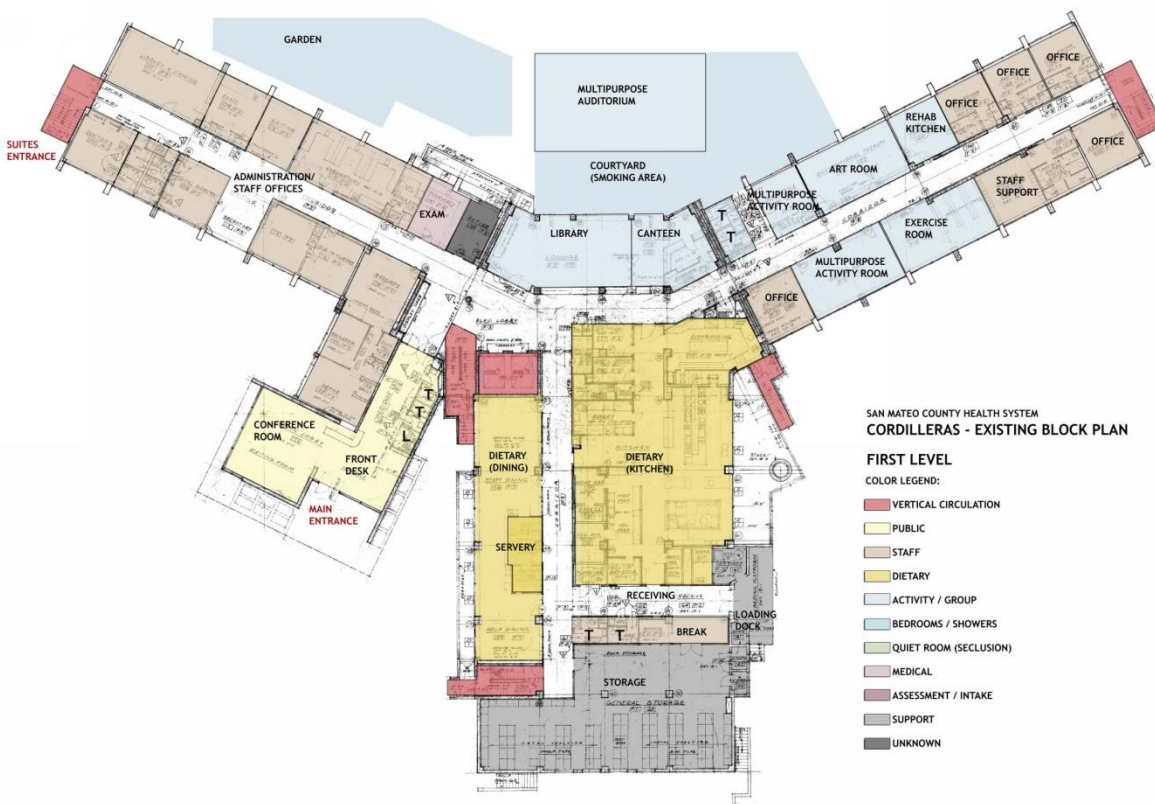
Building Stacking

Originally a tuberculosis hospital, the existing 3-story Cordilleras building has been repurposed with a 68-bed licensed secured (locked-down) Mental Health Rehabilitation Center (MHRC) located on Level 3 and a 49-bed Adult Residential Facility (ARF), “The Suites” located on Level 2. Support services such as loading dock, dietary, rehab therapy services and administration comprises Level 1. Engineering/ Facilities, Housekeeping and building support functions are located in the basement. The stacking diagram below illustrates the basic organization of the building as it currently stands. Inefficiencies and inconveniences exist; one example is the split of MHRC programmatic space on two levels with The Suites in between. Group rehab, staff office and activity space is located on level one while the bedrooms and other spaces are located on Level 3. This organization leads to increased need for policies and procedures surrounding staff scheduling, safety and security.

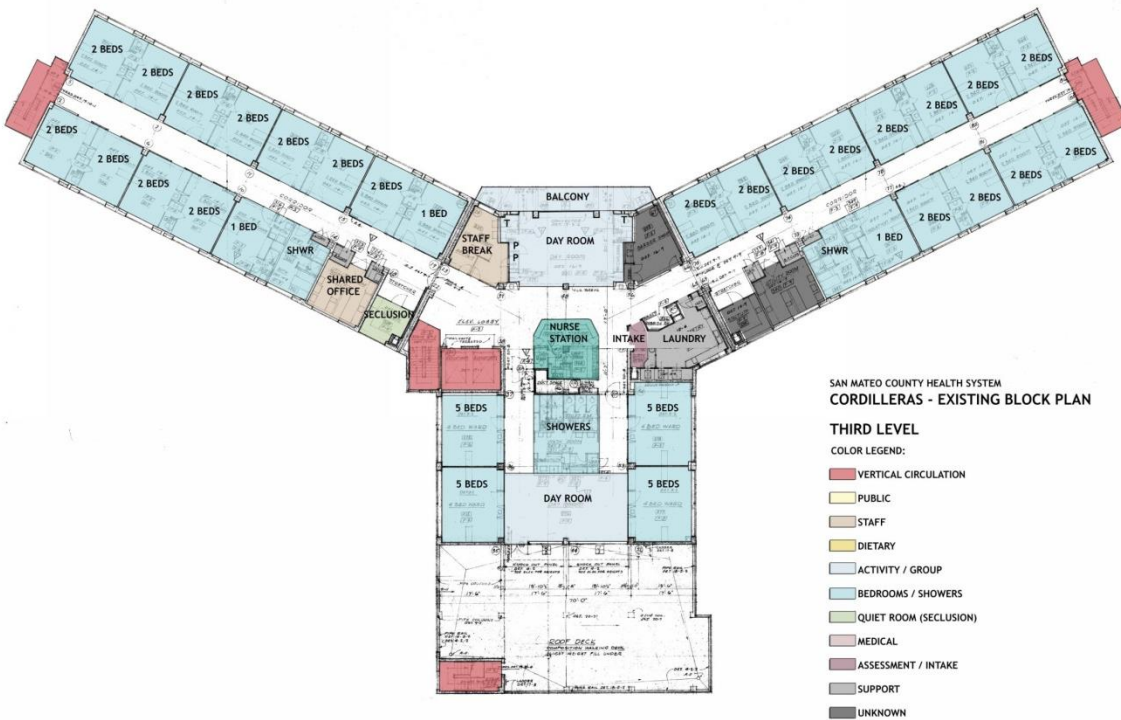
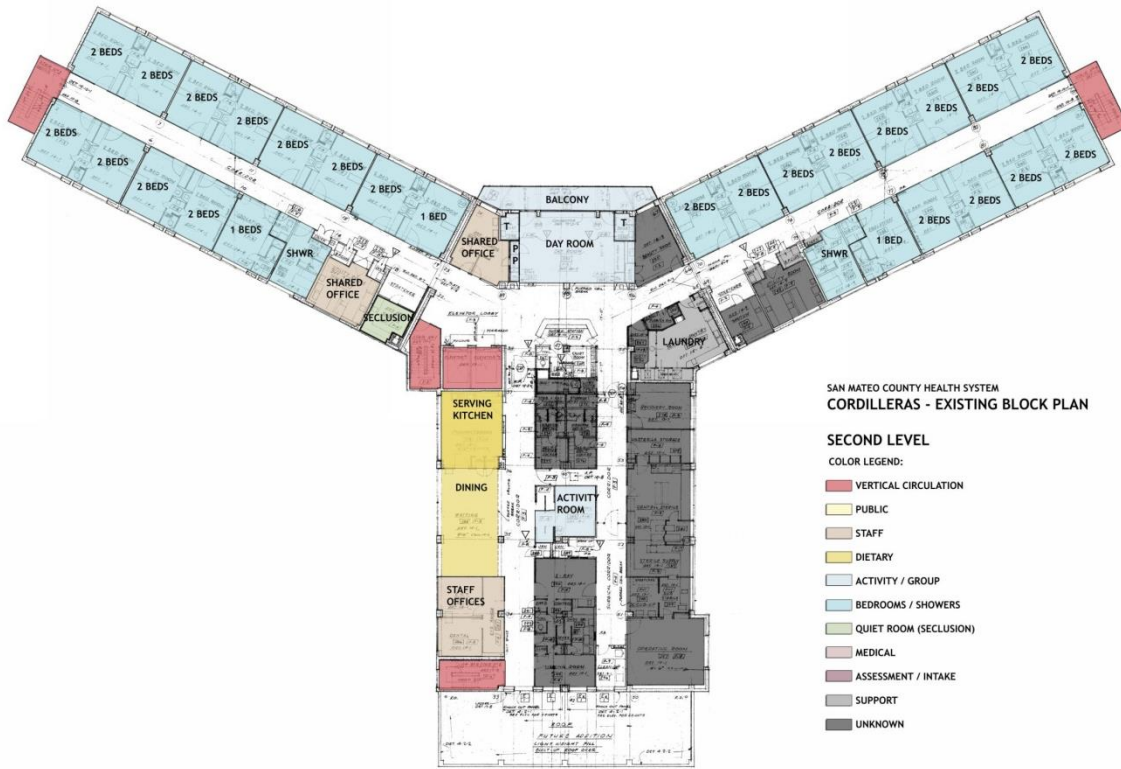


Building Block plans

The “Y-Shaped” plan was designed for an acute care hospital function that allows a large capacity within an efficient floor plate. Levels 2 and 3 are the patient bedroom floors and relatively the same. Today there exists a different consumer population with different needs that has adapted to the acute care planning model. There is a double loaded corridor of semi-private bedrooms with shared toilet rooms and community showers down the hall. Each wing is considerably long with little to no visibility between wings and no daylight other than the window in the stair door at the end of the corridor. The third leg of the Y-Shaped has quad bedroom in the MHRC and some support rooms. Staff support, group activity rooms and other consumer support spaces are centrally located near the core of the floor. Safe and secure outdoor roof tops and balconies are also available.



Part 4: Existing Building Assessment and Recommendations



Although the facility available at the time served the need, the overall functionality of the current building is not ideal as it was not designed for the current functions. The two levels of security coexisting in the same building utilizing one designed entry point is not optimal. The front door identity for the ARF is lost and has been delegated to the exit stair way. The ARF's level of non-secure residential housing is different than the high secure treatment facility of the MHRC and both need a different planning and design response.

The feasibility design team conducted on-site tours and interviews with directors, managers, therapists, clinicians, physicians, administrators, and facilities. This is also known as “Gemba Walks” in Lean design. Facility and programmatic opportunities for improvement and constraints that were captured include:

<p style="text-align: center;">Dietary</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Eliminate lines / waiting @ meal time • Community scale decentralized dining • Explore models of serving restaurant style versus Cafeteria (or family style) • Views to nature • Daylight • Serving clients in homelike atmosphere • Set menu and balanced meals • Increase food from garden • Client engagement • Relaxing Music <p>Constraints</p> <ul style="list-style-type: none"> • Dining / Kitchen / store room connectivity • Need large assembly room for big events • Equipment storage space and walk-in refrigerator + freezer space • Overloaded sewer flow • 3rd floor residents come down to suites - staff bring food up to servery • More opportunity for clients to help clean up etc. @ suites 	<p style="text-align: center;">Housekeeping</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Consider assistance program • Future proximity cards / hotel keying for security <p>Constraints</p> <ul style="list-style-type: none"> • Bigger Closets , space to have local inventory for daily access • Floor sinks in housekeeping closets • Centralized locked closets • Capacity issue @ laundry rooms • Keeping client property secure (laundry room and rooms) • Maintenance of locks (breaks easily) • Larger room for storage 	<p style="text-align: center;">Nursing</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Wireless for clients • Multiple Med Rooms (PODS) • Toilet/shower for each room • Single Rooms = better bed placement • Few sized for doubles as flexibility; some patients prefer roommates • Water control from Nurse station for specific client population • Self Care / ADL / "Spa" Rooms <p>Constraints</p> <ul style="list-style-type: none"> • Lines for medications • Only one med room for 65 clients • No automated med dispenser • Larger exam/treatment rooms • Wireless access 	<p style="text-align: center;">Rehab (MHRC)</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Closer proximity (visual) to Rehab & group areas • POD Organization • Smaller activities @ each POD • Bigger central group rooms • Add occupational therapies • Add spiritual programs/ Chapel/ Meditation • Team sport facilities outside • Trails without intermittent gates • More structured + free time outside • Gymnasium • Canteen/ Retail function/ Gift Shop/ Salon • Music Rooms (piano lessons) • Library/ Computer room • Unsupervised outdoor recreation • Money Management / Access to ATM <p>Constraints</p> <ul style="list-style-type: none"> • Currently Rehab is disconnected from bedrooms, dayroom, and clients • No place for indoor team sports • Nature walks now require supervision • Commingle license issues between MHR &
<p style="text-align: center;">Training</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Large Training Room (70) • Flexible set up • Multi Purpose • AV Technology • Assistant Staff • Small conference room on floor • E-learning for standard training 'reliant learning' • Education kiosks with space for discussions • Room flexibility (Moveable walls) • Natural Light <p>Constraints</p> <ul style="list-style-type: none"> • Δ 24/7 Staff (3 shifts), difficult to schedule • Not enough storage space • Lack of Wi-Fi and technology • Non-dedicated space • Inadequate lighting and sound 	<p style="text-align: center;">Social Work</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Electronic Charting • Private offices for meeting clients - safety concern. Dual egress • Family meeting space • Sallyport at entry vestibule • Pods or grouping of bedrooms that can acknowledge and celebrate progress • Goal is to get to discharge • Delayed egress option • Step down pods for discharge readiness <p>Constraints</p> <ul style="list-style-type: none"> • Connection to outside world and personal connections <ul style="list-style-type: none"> Δ Wireless and internet Δ Access to client phones • Coordinate discharge, currently shared office <ul style="list-style-type: none"> Δ Shared office (3) • Client conversation noise <ul style="list-style-type: none"> Δ Availability of conference room space • Proximity to patients, access to staff (reduce anxiety) • More staff amenities, Kitchen, Break Toilets/shower 	<p style="text-align: center;">The Suites</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Proper front door • Private showers • Variety of group rooms • Meditation room • Have a separately licensed Mental Health treatment option program that can also be home to a clubhouse model <p>Constraints</p> <ul style="list-style-type: none"> • Cable and Internet access • Transportation to community • Easy access to outdoors 	<p style="text-align: center;">Medical</p> <p>Big Ideas</p> <ul style="list-style-type: none"> • Daylight to exam rooms • More private bedrooms for better infection control • Telemedicine capabilities • PHF between inpatient and acute and MHRC • Help with placements • Enhanced residency program • Security <p>Constraints</p> <ul style="list-style-type: none"> • Exam room too small • Consider dual access exam/treatment • Computer access • Wireless access • Software system integration (County & Health System) • Primary care integration with "The Suites" (ARF)

The Cordilleras building no longer meets the optimal residential and treatment needs and best practices of both the MHRC and the ARF programs.

4.5 Demolition

Upon review of the assessments discussed in the preceding sections, as well as the cost estimated to upgrade the existing building (Section 8.1) and the missed opportunity for federal reimbursement (Section 5.4), this Feasibility Study recommends the demolition of the existing building and the development of a strategy to provide the required program on this site.

The demolition of the building is considered a ways and means decision to be made in consultation with a specialist demolition contractor. We would anticipate that the reinforcing steel within the cast concrete structure would be recycled, and the concrete itself could potentially be used on site for road beds or fill. The recyclability of the concrete may be impacted by the findings of a detailed hazardous material investigation to occur in a later phase.

To construct a new building over the area of the demolition, it will be necessary to remove the top portion of the existing basement retaining walls a minimum of 5-feet below the final site grade. For the basement floor slabs it will be necessary to puncture and rip the slab in pieces no larger than 2-feet in maximum dimension. This material can be left at the basement level, but must be incorporated into a maximum 1-foot soil lift that can be re-compacted. The backfill of the basement shall consist of non-expansive material. Within the upper 5-feet the soil shall be compacted to 95% relative compaction with material no larger than 4-inches in lifts not greater than 8-inches. The balance of the fill shall be compacted to 90% relative compaction with material no larger than 8-inches in lifts not greater than 12-inches.

It will be important to establish a threshold for sound levels that the contractor must adhere to during demolition. Sound levels can be mitigated, not only by the type of method selected, but with the use of sound barriers as well, for example:

- Starting demolition on the opposite side of the building from the occupied MHRC's and ARF allows the existing building being demolished to act as its own "noise barrier" during the majority of the demolition activity.
- Temporary sound barriers can be installed adjacent to the new buildings. Large timber walls draped with sound blankets can reduce noise significantly.

Part 5

Regulatory Assumptions and Reviews

Part 5 – Regulatory Assumptions and Reviews:

Introduction

The replacement of Cordilleras offers many improvement opportunities for care, rehabilitation, treatment as well as reimbursements. Multiple licensing agencies, building and planning reviews and complex reimbursement strategies are investigated and described below.

5.1 State Licensing

The contracted providers who operate the programs located on the new Cordilleras site will have the responsibility for appropriately licensing and maintaining licensure for each program. The licensure categories that will be used are for Mental Health Rehabilitation Centers (MHRCs) and Adult Residential Facilities (ARF). These are the existing licensure categories in use at Cordilleras. There is a possibility that one or more programs would be licensed as Social Rehabilitation for transitional residential treatment in the future.

The State licensing authority for the Mental Health Rehabilitation Centers is the Mental Health Licensing and Certification section of the California Department of Health Care Services (DHCS). This office also has related monitoring and oversight responsibilities for MHRCs. The requirements for MHRC licensure are authorized by Welfare and Institutions Code 5768 and contained in Title 9, Division 1—Department of Mental Health, Chapter 3.5 Mental Health Rehabilitation Center regulations that became effective in 1995 as a result of SB 2017 (1994) that originally provided for this level of care in California. More information about the licensure requirements is contained at the following website: <http://www.dhcs.ca.gov/services/MH/Documents/95-05.pdf>. After construction, the process for licensure involves completion of an initial application and an initial site survey. After completion of the site survey, the State completes their process and provides licensure.

The State licensing authority for Adult Residential Facilities and Social Rehabilitation Programs for people with mental illness is the California Department of Social Services, Community Care Licensing Division (CCL). This office also has related monitoring and oversight responsibilities. The requirements for Adult Residential Facility and Social Rehabilitation Program licensure are authorized by Health and Safety Code 1530 and Welfare and Institutions Code 1501 and 1502 and contained in Title 22, Division 6. More information about these licensure requirements is contained on the following websites: <http://www.cdss.ca.gov/cdssweb/entres/forms/English/LIC281.PDF>, <http://www.dss.cahwnet.gov/ord/entres/getinfo/pdf/srfman.PDF>, <http://www.dss.cahwnet.gov/ord/entres/getinfo/pdf/arfman.pdf>

The mental health program aspects of Mental Health Rehabilitation Centers and Social Rehabilitation Programs are also certified by the Department of Health Care Services to provide adult residential treatment services and reviewed annually. Licensure of Social Rehabilitation Programs by Community Care Licensing is conditioned on certification. (The Adult Residential Facility (ARF) does not provide mental health services and thus does not require certification.)

The requirements for this certification are authorized by Welfare and Institutions Code Sections 5670, 5670.5 and 5671. The regulations pertaining to the certification are contained in Title 9, Division 1, Chapter 3, Article 3.5, 531 et seq. The certification is necessary for claiming for

reimbursement to the extent possible under the Medi-Cal program. The process includes an on-site review of operations, clinical practice standards, policies and procedures and treatment modalities. Once the fire clearance, head of service and initial provider request have been submitted and approved, which takes a few weeks, the State sets a date for the on-site review of operations. This may take 4 months to occur, but services can be provided during this time. Once the State visits and certifies the program, they will make the effective date of certification the date the initial provider request was approved.

Mental Health Rehabilitation Centers with no more than 16 beds may be certified to provide adult residential treatment under regulations contained in Title 9, Division 1, Chapter 11, Subchapter 4, Article 3, 1840.332 *Adult Residential Treatment Service Contact and Site Requirements*. This provision has been used rarely in California because most facilities are large institutions. Certification alone does not make a program eligible to receive Medi-Cal reimbursement but it is one necessary component.

5.2 Building Codes

To analyze the building code requirements for the potential replacement of the Cordilleras Center, it is critical to first identify the assumptions used by the design team. Findings from the 3P events, Gemba Walks with the staff, State Licensing Requirements, and reimbursement and funding criteria identified by Behavioral Health Recovery Services (BHRS), all helped the team to identify clear programmatic needs of the replacement center and the site. The program needs, including bed counts, safety measures, support spaces, and licensing helped determine the area of the proposed buildings and their relationships to one another, which in turn defines the Occupancy Type of each building. Establishing the Occupancy Type of a building under the California Building Code is the first step in identifying other code requirements.

For detailed information regarding the program for the Cordilleras Center replacement project, see *Part 6: Program*.

The *2013 California Building Code (CBC)* and the *2012 Zoning Code: Planning and Building Department of County of San Mateo* were used for the code analysis in this section.

The list of assumptions the design team used to drive their code analysis is as follows:

- The Cordilleras site is zoned as RM (Resource Management District) by San Mateo County
- All 117 licensed beds currently on site will be retained on site. Additional beds may be added in the future. Program findings in the following section of this report dictate that the bed mix count (ARF vs. MHRC) can change.
- Five free-standing 16-bed MHRC buildings are included in this Feasibility Study
- The ARF/Suites beds will be located in a separate building on site, above the ground-level Campus Center

Building Occupancies - Basis of Feasibility Study

	Occupancy	Construction Type
Mental Health Rehabilitation Center (MHRC)	I-3, Condition 2	Type V-A
Adult Residential Facility (ARF)	R-2.1	Type V-A
Campus Center	B	Type V-A

Mental Health Rehabilitation Center (MHRC) Code Findings and Reasoning

The program calls for five, single-story, 16-bed MHRC buildings of roughly 10,500 square feet each. This Feasibility Study assumes the ability to have exterior exits of the MHRC buildings locked at all times. Therefore, the residents cannot leave by their own will and will need assistance. The MHRC buildings, which have a locked egress operational model, will be classified as I-3 (Institutional), Condition 2 Occupancy, per the 2013 CBC. Though having 16-residents in a single building can also be permitted as an R Occupancy (Residential), the CBC stipulates that “restraint within a building (by binding an individual and/or by locked exit egress) is not allowed in any R classification.” The CBC further states that “restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use.” Because of this, the locked MHRC buildings are required to be Group I-3 Occupancy. Under the I-3 Occupancy, a “condition” must also be identified to help further establish the type of restraint being practiced in the building. I-3 Condition 2 is the basis of design for the MHRCs. The CBC lists I-3, Condition 2 as including “buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one of more other smoke compartments. Egress to the exterior is impeded by locked exists.” In other words, the occupants have free movement within the building, but are unable to exit the building due to locked exits.

A building with an I-3, Condition 2 occupancy type is held to strict construction standards as they relate to combustibility and fire egress safety due to the locked egress exits. Type I-A or I-B construction is required for I-3 buildings per the CBC. Type I-A or I-B construction is fire resistant construction, such as fireproofed steel and concrete. It can be heavy and expensive to build, especially for a series of separate, smaller buildings. There is an exception in the building code applying to I-3 Occupancy and the construction type. Construction Type II-A, III-A, or V-A is permitted in a single-level building if the floor area does not exceed 5,200 square feet between fire walls of 2-hour fire-resistive construction with 1-hour or 1.5-hour rated openings. We recommend using this exception in the code for the MHRC buildings to construct Type V-A, wood frame, buildings for cost effectiveness and the anticipated reduction in construction duration. The MHRC buildings are already planned to be single story for programmatic reasons, so that requirement is satisfied. In addition, each MRHC building interior would be designed to create smoke compartment zones of less than 5,200 square feet. These zones can be designed in such a way, with hold-open doors, that occupants will not be impacted by the 2-hour rated separation. Using this exception in the code will allow for a more cost-effective and timely construction process while maintaining the safety and security of the occupants.

**Adult Residential Facility (ARF) and Campus Center
Code Findings and Reasoning**

From the exercises in program exploration conducted with the County, Cordilleras staff, residents, and family members, and other experts, it was concluded that a Campus Center “support” building be provided as part of the Cordilleras Center replacement plan. From exercises conducted with the same participants, it was also concluded that the Adult Residential Facility (ARF or “The Suites”) would be best served in a single building, with all ARF residents living together with easy access to support services. These findings, in conjunction with site restraints and opportunities, lead the team to decide to combine the Support building and the ARF into a single building with the support program on the bottom level and the ARF occupying 2 additional levels above the support. Please see *Part 6: Program* of this report for additional information regarding this decision.

From a code perspective, the support area and the ARFs are classified as different occupancy types, but they can be combined into the same building.

The Campus Center portion of the building is classified as a B Occupancy (Business) per the CBC. Type V-A or Type V-B Construction is permitted by code for B Occupancies. The programmatic requirements for the support portion of this building are approximately 17,000 square feet on one level. We recommend the use of Type V-A construction as it allows up to 18,000 square feet per level in a B Occupancy, versus Type V-B, which only allows for 9,000 square feet per level.

The upper two-levels of this proposed 3-story support/ARF building will contain 37 ARF beds currently licensed on the site. The ARFs are classified as an R-2.1 Occupancy (Residential Occupancy) per the CBC. It is important to point out that no restraint (by binding of an individual and/or by locked egress doors) of occupants is permitted in an R Occupancy or B Occupancy building. Type V-A (or stricter) construction is permitted in an R-2.1 Occupancy with a maximum of 16,500 square feet of area per floor. This meets the programmatic requirements for the ARF. We recommend Type V-A construction since it can be uniformly used in this building for both the B Occupancy of the support floor at the ground level and the R-2.1 Occupancy of the ARF floors. Because this will be a licensed Residential Care Facility, the CBC also requires that individual floors of R-2.1 Occupancy with more than 6,000 square feet per floor be broken into smoke compartments of no more than 6,000 square feet in size. This is similar in concept to the MHRC requirement of 5,200 square foot compartments. Since a maximum of 16,500 square feet is permitted per floor, then each ARF floor could contain a maximum of 3 compartments or zones of no more than 6,000 square feet each. Again, this requirement can be integrated into the design so that it is not noticeable by the building occupants.

The entire ARF / Campus Center building will be a single building of Type V-A construction throughout, designed not to exceed the code-listed maximum square footages per floor based on occupancy type listed above. One additional CBC requirement worth noting for Type V-A construction is the height limitations. Type V-A construction can accommodate a maximum of 3-stories at a height of no greater than 50 feet for B and R Occupancies. The support/ARF building as proposed in this Feasibility Study meets this requirement.

County RM Zoning, Site Access, Parking Requirements

In addition to the CBC, we will also need to follow local codes pertaining to parking, fire access, building height, and property line set-backs. Items that would influence decisions in this feasibility study were investigated. A more in-depth study will be needed during the design phase. Below is a list of local requirements considered in this Feasibility Study.

- Max Height in RM is 3 Stories/36 feet, except as allowed by use permit provisions. The building design proposed in this Feasibility Study can be accommodated to fit this parameter. A use permit provision is an option if needed.
- Setbacks: Front: 50 feet, Side: 20 feet, Rear: 20 ft. This may be reduced if provisions of Section 6319C are satisfied. We do not anticipate set-backs to be a concern due to topography of this site.
- Parking: Min. 1 spot per 5 beds based on licensed number of beds. This is roughly 24 spots. Cordilleras reported they currently have 65 spaces and request 20 additional spaces.
- Fire access must be provided w/in 150 ft of all portions of the facility.
- Emergency access road minimum is 26 ft wide. Parking is not permitted along access roads less than 26' wide. Parking permitted on one side if 26-32' wide or on both sides if greater than 36' wide.
- Min. 96' diameter turn-around for emergency vehicles.
- Surface of finish is dependent on slope of access. 15% or less grade is permitted. 15%-20% grade is permitted only for a distance of 150'. Slope greater than 20% is not permitted for emergency access. This will need to be more thoroughly studied as the site is developed further.

5.3 Agency Reviews

Federal Reviews

As this project will likely propose alterations – however slight – to the Cordilleras Creek inlet or culvert, it is anticipated that it will require a review and approval by the US Fish and Wildlife Service.

State Reviews

Due to the presence of a creek, forested areas, and wildlife habitat on the site, the California Department of Fish and Wildlife will also need to review and approve any proposed project. A Stream Bed Alteration Agreement will need to be granted from DFW for any work associated with modifications to Cordilleras Creek. For further a description and evaluation of the environmental conditions associated with the site, see Part 3, Sections 3.1 - 3.5 of this Feasibility Study.

Office of Statewide Health Planning and Development (OSHPD) review is not required or anticipated as this is not considered intermediate care and will not fall under their jurisdiction.

County Reviews

DPW and the architect, HGA, met with Lisa Aozasa of the County Planning Department to discuss required reviews and approvals for the project. As this is a County project on County property, it will not require a formal Planning permit review process.

The California Environmental Quality Act (CEQA) requires that we identify the significant environmental impacts of the project and develop strategies to avoid or mitigate those impacts. The compliance with CEQA Guidelines will occur as a part of the environmental review, conducted through coordination with the County. As the project does not propose new or added uses on the site, it is believed that a Negative Declaration of the environmental impacts may be achievable, and therefore a full Environmental Impact Report and hearing process would not be required.

The Planning Department has agreed to interface with the County Historic Resources Advisory Board to confirm that the existing building is not deemed significant from the standpoint of historical value.

A Building Permit will be required from the County.

Review and approvals with the County Fire Marshall and the Sheriff's office is anticipated. Discussions with these agencies have begun.

5.4 Federal Reimbursement Opportunities

The California Department of Health Care Services has an agreement with the federal Centers for Medicare and Medicaid Servicer (CMS) that establish various services for mental health care that are eligible for Medi-Cal reimbursement when provided to Medi-Cal beneficiaries who meet clinical criteria. Certification of a program offering adult residential treatment by the State is required as described above.

The current configuration of services provided at Cordilleras does not offer federal Medi-Cal reimbursement because it exceeds 16 beds and meets criteria for the federal Institutes for Mental Disease (IMD) exclusion. BHRS currently spends more than \$8 million per year for MHRC and ARF services provided at Cordilleras, including medical care and mental health services, none of which is currently federally reimbursable as a result of the federal IMD exclusion.

The replacement of Cordilleras with a campus comprised of smaller, 16 bed facilities would allow for up to 50% federal reimbursement of certain costs associated with the locked Mental Health Rehabilitation Center units on the campus, as well as provide for more effective programs for seriously mentally ill residents so that they can successfully transition back to community living. This opportunity would require compliance with a number of other federal criteria to avoid the IMD exclusion. The proposal is to seek certification by the State of the MHRC programs as adult residential treatment providers as allowed under regulation. The methodology for determining the reimbursement rate for Federal Financial Participation under the Medi-Cal program involves establishing an interim daily rate with the State based on projected actual costs. The initial reimbursement would be based on this interim rate times the units of service for eligible Medi-Cal beneficiaries that are submitted electronically by BHRS through the State's Short Doyle Medi-Cal claiming process. Excluded from reimbursement are all costs associated with room and board such

as food, household supplies, furnishings, utilities, telephone, and television. Ultimately there is a retrospective settlement based on a cost report that limits reimbursement to 50% of the audited eligible costs.

The Adult Residential Facility housing units on the campus are not eligible for federal reimbursement under any circumstances. However the consumers served in these units receive outpatient, medication, and other physical health services provided by other providers that would be reimbursable. The current IMD status of Cordilleras has resulted in the exclusion from federal reimbursement all of the medical and mental health services provided to all residents even when they are off-campus at other clinics. The proposed model for replacement of Cordilleras would no longer result in exclusion from federal reimbursement of all of these services.

The Financial Analysis section of this report is based on these assumptions about reimbursement.

Part 6

Program

Part 6 – Program

Introduction

Both the Mental Health Rehabilitation Center and Adult Residential Facility levels-of-care serve a diverse group of consumers, whose demographics (age, gender, culture, language), diagnoses and treatment needs vary widely. It can be challenging to house so many diverse consumers in the existing Cordilleras, a large facility where the recreation and dining spaces bring everyone together. The design of the replacement facilities will provide for improved ability to group patients more compatibly to promote healthy interactions. This may include smaller more separate buildings versus a large facility, availability of single occupancy rooms, flexible space that may be repartitioned to change groupings including common areas indoors and outside. All residents will have serious mental illness but there are specific sub populations that present with varied needs that may warrant specific design considerations. These include:

- Mentally ill people and frail older adults with the added complexity of comorbid medical conditions;
- People with histories of criminal justice involvement and potential risk of negative behaviors such as violence;
- People likely to leave against medical advice (AWOL);
- People who struggle with active addictions or in recovery from addictions;
- Young adults with relatively recent onset of mental illness;
- People with histories of trauma/abuse/victimization;
- People whose diagnoses may suggest specific risks that would impact design. Examples: people with psychogenic polydipsia presenting excessive, self-destructive thirst;
- People at high risk for self-destructive behaviors or suicide;
- People with developmental delays or cognitive impairments;
- People with borderline personality disorder/antisocial behaviors.

The overall project program consists of spatial and functional criteria for the design of the replacement of Cordilleras into multiple facilities on the same site. Programmatic requirements were developed with feedback from stakeholders during our three part integration event and reviewed by project team. The site, building and functional program are preliminary documents that are the basis of design for this feasibility report.

6.1 Site Program

The site program developed by the project team accommodates the needs and ideas of project stakeholders including requirements related to site access, planning code, licensing, and the environment. Listed below is the site program requirements discussed and used as the basis of feasibility.

- Footprint for five MHRC buildings each housing 16 consumers in approximately 10,500 gross square feet (GSF)
- Footprint for one ARF/Campus Center at approximately 35,000 GSF with the Campus Center components on the ground level and the 37 Suites residents split among 2 floors above. Each of the 2 ARF floors will be approximately 9,500 GSF. Plus provisions for supplemental ARF placements provided as an additional floor on the Campus Center (18 beds).
- Secured Recreation Yard of approximately 10,000 SF for use of all staff, residents, and their guests, and includes, but not limited to, the following:
 - Basketball court
 - Community therapeutic vegetable and flower garden of approximately 1,500 SF
 - Walking paths with sitting area and gazebos
 - Clear definition between private and public space
 - Emergency gathering area
- Bus stop with shelter
- Parking and access including
 - Parking for 85 cars (20 more than currently available) including 1 van-accessible space, and 4 additional accessible spaces to accommodate staff and guests
 - Fire truck access route of no less than 26 feet wide to allow fire access within 150 feet of all buildings on site
 - Loading dock and maneuvering area to accommodate 2 semi-trailer truck docks
 - Passenger drop-off and loading areas at Campus Center and “The Suites” front door.
- Emergency areas including
 - Emergency generators
 - Emergency supply storage shed
 - Emergency storage tanks for water and generator fuel
- Trash area with 3 dumpsters for trash, recycling, and compost
- Areas for potential alternative energy installations

6.2 Space Program

The baseline space program for Cordilleras is based on the replacement of 117 licensed consumer beds. In order to maximize reimbursement potential, optimize treatment opportunities and create a more comfortable and safe residential living environment the Mental Health Rehabilitation Center (MHRC) and the Adult Residential Facility (ARF) as known as “The Suites” is proposed to exist in separate structures on the site. This plan proposes to modify the existing 117 bed capacity as follows:

Licensed Bed Capacity	Existing	Proposed
MHRC	68	80
ARF	49	37
Supplemental ARF	0	18
Total	117	135

The proposed increase in **Mental Health Rehabilitation Center (MHRC)** beds will assist in expanding placement capacity for treatment beds within the County. This will allow the county to reduce the number of consumers that will need to be treated in MHRCs outside of the County by 12 and help with the flow of consumers among levels of care. This includes facilitating discharges for people ready but unable to leave San Mateo Medical Center (SMMC) inpatient psychiatry units due to the lack of available MHRC beds or because that most providers reject them. Currently the high administrative day and unreimbursed day rate for SMMC inpatient psychiatry is partially the result of consumers waiting for MHRC beds. If consumers were able to be timely discharged, SMMC beds costing \$1800 a day would be available for acute Medi-Cal patients whose services would be reimbursed by Medi-Cal.

The reimbursement criteria (described in Section 5.4) limit facilities to 16-bed households. That is the main criteria for the exact size of the proposed MHRC's. In addition, smaller more residential like structures also help support the County's Vision of wellness, dignity, respect, livability, community and healing. See Part 2 for Vision Statement.

There is consensus to provide a mix of 75% private bedrooms and 25% semi-private bedrooms for the MHRC. This allows flexible accommodations for various consumer personalities, gender-matching, and medical and treatment needs. Five approximate 10,500 gross square feet (GSF) 16-bed MHRC's are planned on the site.

An **Adult Residential Facility (ARF)** at approximately 19,000 gsf, or if expanded 28,500 gsf, is also planned on site. The ARF, similar in the residential component, is quite different from the MHRCs. The ARF is licensed differently under the State Department of Social Services and serves a population that can live independently. The focus of the "The Suites" is a place where residents can transition to and live in a place offering a supportive independent living residence for consumers who are ready to begin living on their own. Although most residents transition into the community to other residential programs, some stay for a very long time making it their home. The transition back into the community is important and requires support. Most of the residential programs in the community consist of consumer placements with semi-private rooms. In order to help prepare residents for that reality, a bedroom mix of 75% semi-private rooms and 25% private rooms are programmed for The Suites. This also helps economically meet the need for more residential beds capacity on and off site.

Although one option addressed by the study is to reduce the number of ARF beds by 12 in order to add 12 MHRC beds, there is a need for more ARF beds for consumers ready to leave the more intensive MHRC level of care. The Health System BHRS and Aging and Adult Services report that ARF beds are increasingly difficult to find in the community for consumers stepping down from MHRCs. The lack of availability results in consumers remaining at more intensive and costly levels

of care and prevents placements of other consumers who need beds at those higher levels of care. For estimating purposes, we have included a separate cost to add an additional 18-bed ARF floor onto the building (see Part 8 – Financial Analysis).

The collaborative and community building vision of the County's Behavioral Health Recovery Services (BHRS) spurred the idea of a **Campus Center** which acts the central hub and can act as the front door to the campus. Services and functions in the Campus Center include opportunities for a centralized food preparation kitchen, primary care services, individual and group therapy, group activity space such as gymnasium, art, fitness center, spa services and other retail services yet to be determined. Other support services are intended to be located here that serve both programs and the site such as Administrative offices, Training, Conference center, central loading dock, central utility plant, engineering, housekeeping and maintenance shop.

The Campus Center will be the hub of the campus for the consumers and staff and a location for the San Mateo community to attend activities, events and to be involved with the consumers living in their community. The center will serve multiple uses for the campus as noted in the following paragraphs.

Visitors will be able to visit with their family members in visitation lounges and common areas. They may also visit at picnic tables located on the grounds or in visitor areas located on the part of the campus where their family members are residing.

There will be a number of staff offices located in the Campus Center for staff to complement office space designated in MHRC's and the ARF. One of the offices will be for the BHRS Adult Resource Management Department who work closely with the services for and the flow of consumers throughout the San Mateo County Behavioral Health Services System. Office and assessment space is also included for basic medical services.

An industrial kitchen will serve multiple purposes. It will produce meals for consumers living in the residential floors above the Campus Center and will be a place where meals can be prepared for large events taking place on the campus. This kitchen will also serve as a life skills training area and for gourmet cooking classes for consumers. The kitchen will also be tied in with the organic gardening program on campus as the next step in putting to use the crops harvested.

The central data system and electrical systems for the campus will be housed in and routed through this building. It will have a County staff person assigned to monitor these systems such as IT/telecommunications and also include space for county facilities and maintenance services.

There will be a large auditorium that will be available for group fitness classes, group rehab therapies, indoor sports, movies, theatre productions, special Cordilleras campus events, community events and other social gatherings. The auditorium will be shared by all campus programs and be available for use by community organizations.

Conference space and activity rooms will be available for regular scheduled use by Cordilleras and other organizations/programs located in the greater community. The types of programs include: Heart and Soul, NAMI, Supported Education, Supported Employment, Twelve Step Meetings, and staff/consumer training, to name a few.

The Campus Center events and activities that involve the extended San Mateo community will help to decrease stigma and increase the understanding of the challenges of living with mental illness.

There will be other programs and services present in the Campus Center. Some of these programs will be: a yoga/dance studio; a secondhand store; an art studio and gift shop.

See Appendix D for the detailed space program used as a basis of the feasibility report.

6.3 Functional Relationships

The relationships of space with the building and of the buildings on site strive to meet a variety of needs and perspectives including consumers, consumer's families/ friends, staff, facilities, county and the community.

The following relationships should continue to be considered through site and building design:

Site:

- Maintain building separation between MHRC structures and between MHRC structures and ARF structure(s).
- Due to the secured locked down requirement of the MHRC, situate MHRC's on site close to each other to optimize the use of recreation land and secured perimeter strategies such as fencing and building walls.
- Create a centralized open area of land for therapies and activities such as gardening, group sports, exercise, walking paths and contemplative sitting areas that can be used and securely divided amongst the MHRC and ARF consumers.
- Place the MHRC's along a vehicle pathway for visitor access, fire truck access as well as supply deliveries.
- Arrange MHRC's in a way that can utilize the walls of the building as a secure courtyard between buildings.
- Avoid relocation, redirection or further undergrounding of the existing creek by arranging structures outside the creek easement.
- Create a physical connection between the ARF and the Campus Center whether side by side or stacked on top. Stacking program on top of each other generating a multi-story building allows more efficient use of the site with less disruption. The ARF and Campus Center building connection provides efficient staff support to the ARF and convenient access to the Campus Center by ARF residents. Combining these two programs also may provide further efficiencies related to food preparation, dining, therapy and group activity spaces.
- Direct vehicle and pedestrian access to a separate and distinct front door for each MHRC, the Campus Center and The Suites (ARF).
- Decentralized on-grade self-parking dispersed between MHRC's, the Campus Center /ARF, Fire Station and Canyon Oaks structures.
- Orient structures on site to maximize potential photovoltaic solar cell placements that may be located on top of or the side of these structures.
- Place structures on the site to minimize hillside cut, retaining walls, and minimize vehicle and pedestrian slope paths where possible.

Building:

- Allow for consumer and staff choice in the building spaces. A choice between semi-private and private rooms offers less conflict. Choice in activity, dining or social interaction space offers some control of one's environment and how to spend time; alone or with others, inside or outside or in an activity or not.
- Zone the building between "on-stage" and "off-stage". Primary ("Front" door) and secondary entries, centralize staff workroom, dining room, and activity rooms are considered "on-stage" while bedrooms and living rooms would be considered "off-stage". Visitors and staff should not have to walk "through" or past consumer bedrooms for daily activities.
- Centralize social areas ("on-stage") and decentralize quiet/ private areas ("off-stage").
- Create zones that break down the long double loaded narrow dimly lit corridors. Open corridors with access to natural views and daylight are preferred.
- Locate similar type functions closer together to allow for multiple functionality of space.
- For safety reasons and collaboration reasons, a centralized staff zone is preferred.
- Clear uninterrupted line of sight between the staff zones and consumer bedrooms, activity rooms, dining, and entry points is critical for safety.
- Locate support rooms close to the staff zone for easy access and deliveries from outside.
- Locate kitchen/ dining close to an entry for deliveries and waste removal.
- Consider dining and multi-purpose room adjacency for flexibility. Moveable partitions may be used to sub-divide the multi-purpose room and/or between dining and the multi-purpose room for larger group activities.
- Locate group activity and dining spaces with outdoor access opportunities.
- Create smaller "living room" spaces that allow medium sized semi-intimate areas closer to bedrooms.
- Locate toilet room adjacent to each other for efficient use of plumbing.
- Standardize MHRC buildings to allow flexibility in consumer placement. This offers opportunities for improved consumer placement which can lead to a faster recovery, creating potential vacancies for others in the acute care system.
- Standardize rooms such as bedrooms and toilet rooms into single units or multiple room units that allows the flexibility of consumer placement or off-site mass production opportunities.

Part 7

Conceptual Design Recommendations

Part 7 - Conceptual Design Recommendations

Introduction

The design of the replacement facilities for Cordilleras Mental Health Center should support the types of treatment, social, health and wellness, spiritual/mindfulness, vocational/employment experiences and activities residents may employ in order to achieve their goals for recovery including recovery from the symptoms of acute mental illness. The facilities' design should enhance residents' experience practicing the skills, making choices, and feeling the accomplishment and empowerment that will be critical for their successful re-integration into community living situations after they are discharged. The site has many positive attributes that should be leveraged for the residents' recovery experience including peace and quiet, gardens and access to healthy food and activities, light, air, and space.

The design of the replacement facilities should support the work flow of all of the staff involved in the new campus including those involved with treatment and other activities with residents, and the flow of residents from point of admission to discharge.

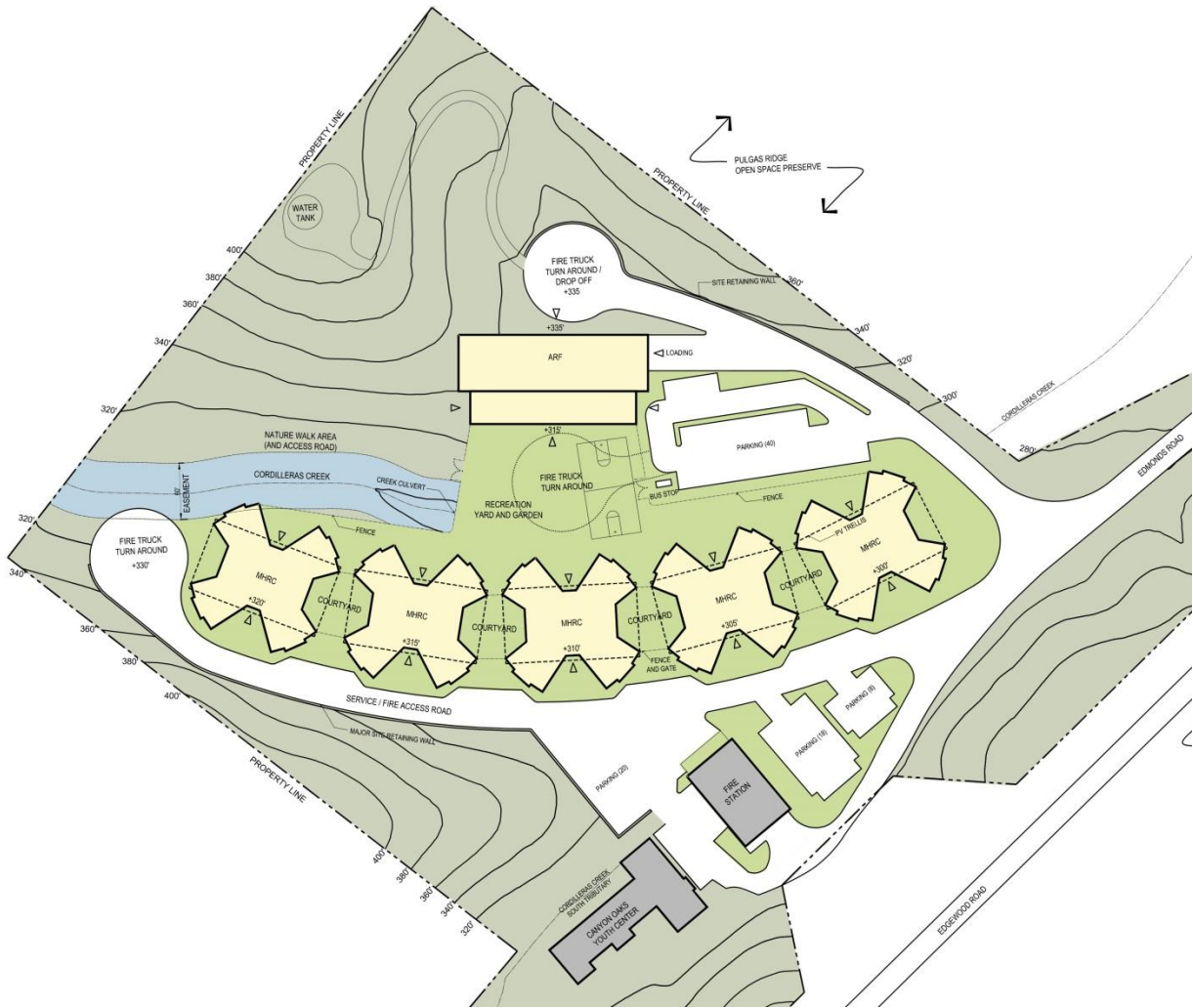
The new campus should also be designed to welcome visitors and incorporate space for the many different interactions that occur between visitors and residents. Visitors may include family and friends, providers and staff from other programs who may be involved in treatment, discharge planning, recreation, social or health and wellness activities.

As previously discussed as part of the Existing Building Assessment, the recommendation of this Feasibility Study is to demolish the existing 1950's era building and develop a new campus comprised of specialized programs in separate buildings on this site. This strategy provides the best opportunity to improve the care provided to the residents, to receive the highest levels of financial reimbursement, and to take better advantage of the natural setting of the site.

To explore the feasibility of placing new buildings on the site, the County and the architectural team orchestrated a multi-day series of collaborative workshops, with participation from several dozen stakeholders. The goal of the workshops was to develop both an optimal site plan and building block diagrams for the Feasibility Study (*see Appendix B: 3P Events Artifacts*).

The sections that follow contain our Conceptual Design Recommendations for a new Cordilleras Mental Health Center.

7.1 Site Plan



Drawing from the Vision Statements and Goals developed during the Visioning Session, we identified several key criteria by which to evaluate the site plan studies generated during the collaborative workshops. These criteria included:

- **Campus Organization**
 - Clarity to the pattern of buildings on site
 - Opportunity for strong and welcoming arrival sequences
 - Hierarchy of outdoor spaces
- **Convenient Access**
 - Proximity of the Campus Center to the MHRC's
 - Access to the building entries from parking areas
 - Fire access routes

- Integrate nature
 - Preserve and provide access to natural areas
 - Retain views to nature from bedrooms
 - Minimize impact to Cordilleras Creek
- Flexibility
 - Maintain ability to convert the ARF's to MHRC's in the future
 - Maximize federal reimbursement with the size and number of MHRC's

As previously discussed in Part 6, the proposed program comprises five single-story Mental Health Rehabilitation Center (MHRC) buildings of approximately 10,500 square feet each. In addition, a three-story Adult Residential Facility (ARF) contains a Campus Center of 15,000 square feet on the first floor, and two floors of residents above at 9,500 square-feet each.

The MHRC buildings are set in a radial line along the southern side of the site. Courtyards of 3000 square feet, located between the MHRC buildings, are secured with fences and are accessible from the dining areas inside. Also along this southern edge, a large retaining wall will hold back the hillside and create buildable area to accommodate a 26' wide service and fire access road. This retaining wall briefly reaches a height of 50' along its run. The concrete wall is proposed to have a natural appearance, created through a combination of patterned formwork and planting on its surface – such as vines or ivy. The access road is considered an extension of Edmonds Road, with the five new MHRC buildings addressing onto it. The MHRC buildings have entry doors facing Edmonds Road, but they will generally be used only by staff and maintenance. This access road terminates at the western corner of the site, with a 96' diameter turn-around bulb to accommodate fire trucks. Several smaller parking lots are accessed from this extension of Edmonds Road, providing 46 parking spaces. To limit storm water run-off, the access road and parking lots are proposed to be built of pervious concrete. Access to the Canyon Oaks Youth Center and the Fire Station must be maintained at all times during construction.

The MHRC buildings are all accessible by the residents and staff coming from the main recreation yard which sits between the Campus Center and the MHRC's. The recreation yard contains a basketball court and community garden. The yard will be fenced in for security, but several large gates will be required to allow for fire truck access through. Turf block will be used in large areas of the recreation yard to reduce run-off.

At the northern side of the site, another 26' wide access road follows the slope of the site upwards and terminates in another turn-around for use by fire trucks. This turn-around is proposed to occur at the same elevation as the first floor of the ARF, thereby creating an opportunity for a separate identity and front door entry for the ARF building. The ARF/Campus Center building is proposed to be set into the hillside, with retaining walls forming the northern and western sides of the ground level Campus Center. The main front door to the Campus Center at the ground level will occur off of the access road, and will be configured with a drop-off and parking for 40 cars. A bus stop and sidewalk are also provided for the ARF residents on this side of the site.

The exposed area of the Cordilleras Creek, in the western portion of the site, will be maintained in its current location and general condition. The north bank of the Creek currently contains several large trees and an access road/walking path. This area, which can be reached from the

ARF/Campus Center building, is proposed to serve as an accessible nature area for the staff, residents, and their families.

7.2 Block Diagrams - Building

In order to determine the capacity of the site for the replacement of Cordilleras, the project team developed basic building configurations with the help of county, staff, consumer, and community stakeholders through a series of three integration events also known as “3P event”. See appendix B for more detail on the event. Through these events, the team developed an understanding of the basic size, configuration and functional relationships of a typical MHRC and a typical ARF floor plate.

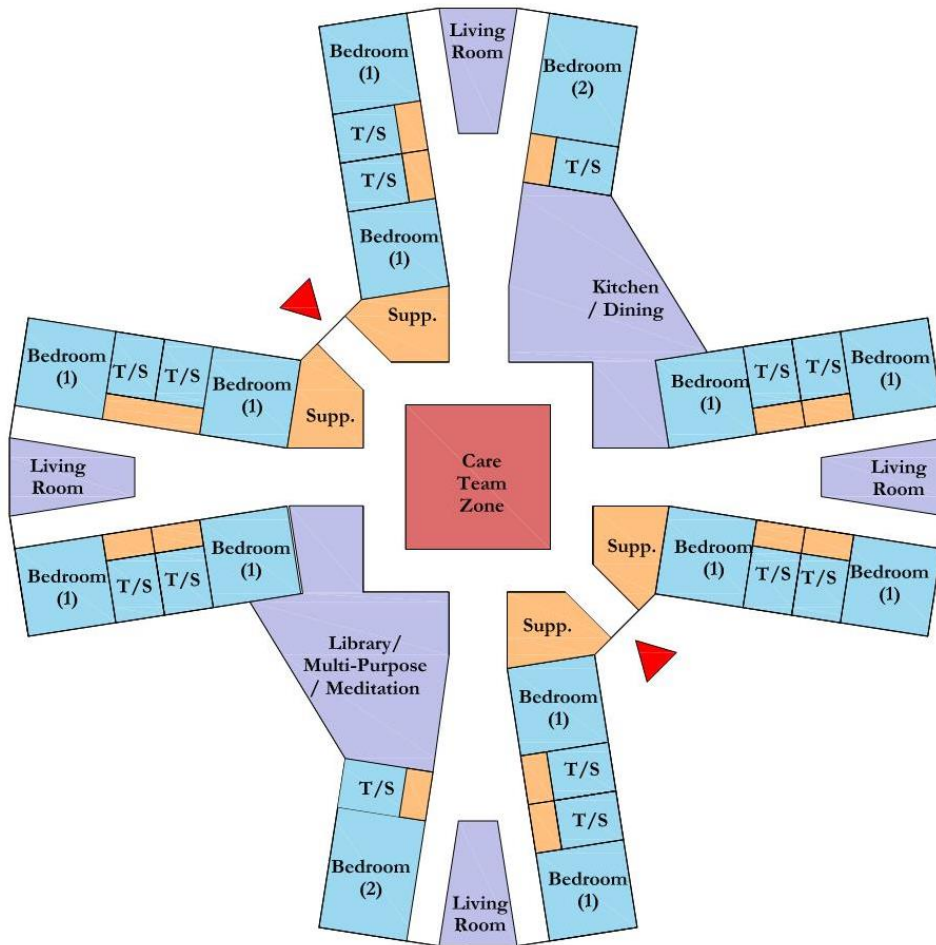
For the MHRC, the consensus of the group proposes a four-wing plan connect on one end to a centralized staff and support core. Each wing holds four consumers; two wings have all privates and the other two wings have a mix of semi-private and privates. The four-wing “cross” responds to the programmatic and functional criteria set by the stakeholders.

- Flexibility through standardization of basic design elements, safety features and lean work flow practices is important. Each household will be programmed to meet the needs of the specific consumer population served, allowing for placement flexibility and grouping like consumer population types. Consumer type groupings could consist of:
 - Young Adults (Often with Co-Occurring Substance Abuse Disorders)
 - Trauma Survivors
 - Older Adult/ Medically Fragile
 - Severely Mentally Ill (Primarily with Schizophrenia and Schizoaffective Disorders)
 - Short Term Stabilization and Reentry to Community

In addition, each bedroom module is standardized.

- Safety and Security is a priority. The central care team station has visibility and proximity to all wings, to each entry point, to support and to group areas like dining and multi-purpose room. Locked or Delayed Egress electronic hardware can be applied to respective household requiring more or less level of containment. Also, side by side toilets create bedroom configurations that visibility of the entire room from the corridor door.
- Having just four consumers in each of these wings will also help to reduce the noise levels as part of the effort to improve security/safety in the MHRCs.
- A mix of private (75%) and semi-private (25%) bedrooms with en-suite toilets and showers help meet the higher level of care needed for MHRC consumers. More single rooms in separate podded wings help with increased level of consumer matching, placement and isolation for medical and rehabilitation purposes.
- Access to nature and daylight is critical to the project’s vision of wellness and healing through nature. With side by side toilets, each bedroom has an opportunity for large windows. Opportunities at the end of each bedroom wing exist for large amount of exterior glazing for views and daylight. Single story structures allow skylights or clerestory windows to be incorporated. There are opportunities for multiple doors at the end of each wing and through dining and multi-purpose room for controlled access to the outdoors.

Mental Health Rehabilitation Center (MHRC) Conceptual Block Diagram



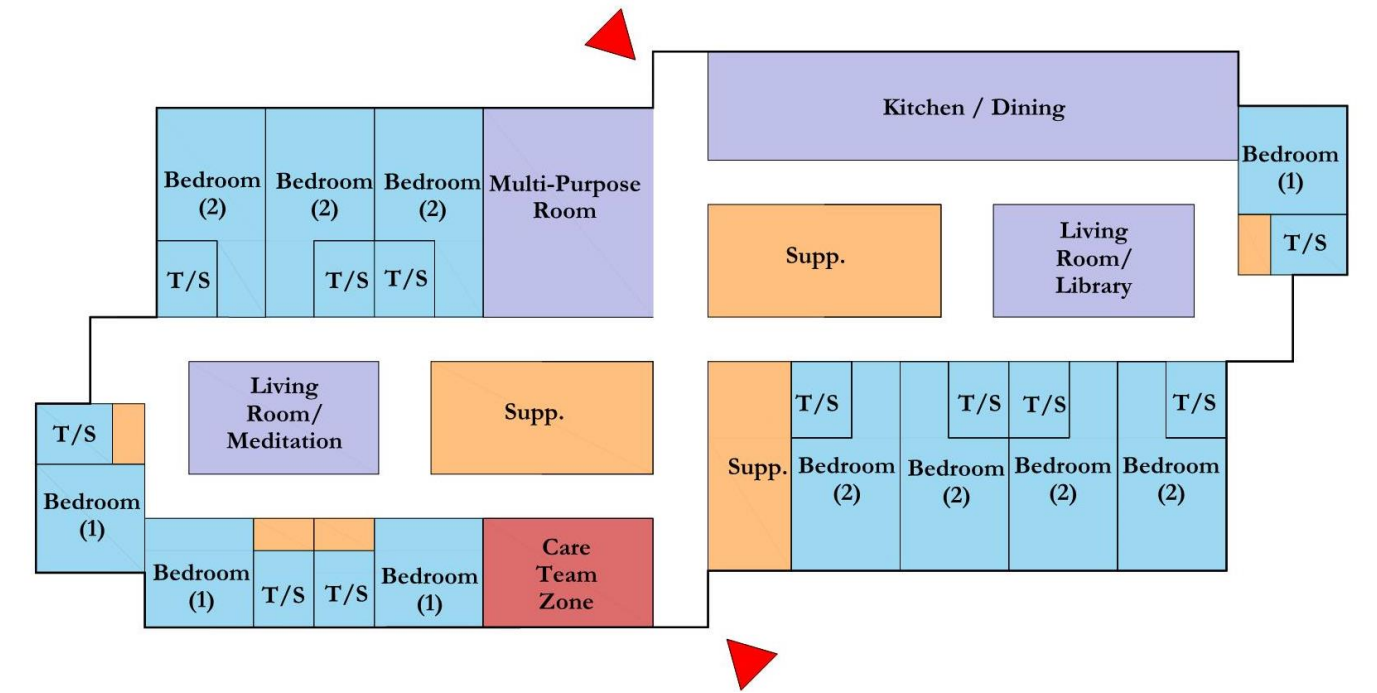
The Adult Residential Facility (ARF)/ The Suites has a reduced level of care need. It is the place consumers can “graduate” to after receiving treatment in the MHRC. For some, it may be considered a place to work towards in one’s treatment process. Consumers are able to come and go as they choose and the focus is supportive residential living rather than treatment. Therefore the bedrooms, dining, group activity, and living rooms are more central rather than the care team areas.

Although safety and security is always a concern, safety and security is not at an increased level as in the MHRC’s. The building planning configuration responds differently than the MHRC’s as the purpose is housing and support rather than intensive clinical care. The ARF is preferred to be connected to the community building to conveniently share and utilize the campus amenities propose in that program. Residential living with supportive social resources is a driver of the Community Building / ARF integration.

The planning for the ARF evolved into a linear scheme with bedrooms on the ends separated by a central activity/ dining core with entry points. Though not shown vertical circulation (2 stairs and 2 elevators) will be incorporated during design of the 3 story building.

The same level of standardization as the MHRC's is not required yet a similarly planned floor will be of benefit. The planning diagram of the Community Building / ARF below is a basic concept of one floor of the ARF.

Adult Residential Facility/ "The Suites" Typical Floor Conceptual Block Diagram



7.3 Architecture and Building Systems

Mental Health Rehabilitation Center (MHRC)

Structure

Based on our code research, the single-story MHRC buildings should be built of construction Type V-A or II-A. Type V allows for combustible construction, typically of wood framing. Type II requires the building's structure to be non-combustible, which includes concrete, masonry and steel. The "A" prefix associated with the construction types requires the buildings structure to have a one-hour fire rating. Structural systems were proposed for both a Type II and V building type. Preliminary cost estimates indicate that a Type V structure to be the most cost effective, which will be the basis of design for the MHRC's. The buildings will be designed for a lifespan of at least 50 years, and if properly maintained, will last much longer.

For documentation purposes the Type II structure proposed had tapered insulation over a flat 3-1/2" thick regular weight concrete fill over a 3" metal deck supported by composite beams. The underside of the deck would not require fire-proofing, but the beams would. The supporting columns were proposed to be steel tube columns either with fire-proofing or gypsum board wraps. The lateral system would be relatively narrow concentric braced frames. A suspended or metal ceiling joist gypsum board ceiling is added to conceal the MEP and fire-sprinkler distribution

systems. The underside of the gypsum board ceiling to the top of the concrete filled deck is estimated at a minimum to be 4-feet for an overall dimension. For comparison purposes the equivalent wood framed roof/ceiling assembly would be roughly 18-inches deep. The foundation system will be localized spread footings at the columns, grade beams at the braced frames, and a downturned slab edge to provide a moisture barrier.

The Type V-A basis of design is proposed to be an I-joist assembly with 1/2" plywood on top and two layers of 1/2" gypsum panels on the bottom. Over the patient areas it is proposed to use tapered I-joist to help facilitate the roof drainage, and sloped framing within the common areas. For insulation R-30 batt insulation between the joists with resilient channels will be used. Within the patient rooms it is intended to use the bottom of the gypsum panels as the finished ceiling. For one-hour fire design considerations the I-joist assembly is restrictive, which does not have an allowance for mechanical service penetrations at the membrane, the two-layers of gypsum panels. The mechanical system proposed uses small units that occur at each of the patient rooms with nominal distribution requirements. Within the bathroom and along the wall it is proposed to use dropped soffits to conceal the mechanical system. To help conceal the mechanical unit it is proposed to create a recessed space within the depth of the joist framing to allow for more depth at the unit. The fire-sprinkler and electrical services can be distributed through the I-joist, and penetrate the membrane as allowed by CBC Section 714.4.1.2. For the fire-sprinkler heads at the ceiling it is proposed to use a recessed head with a metal cover plate and metal escutcheon. The vertical support of the I-joist will typically be 2x6 stud bearing walls, and the lateral system will be composed of plywood sheathed shear walls. The foundation will be continuous strip footings. For feasibility cost estimating purposes, we can assume 18" wide x 24" deep extension below adjacent exterior grade. The ground level is proposed to be a 5" thick concrete slab-on-grade reinforced with #4 bars at 24-inches on center over a 15 mil vapor barrier over 6" of free draining rock.

For the wood stud walls, it is necessary to be 8-inches above exposed earth and wood finishes shall not be less than 6-inches above exposed earth or 2-inches from concrete surfaces. For plaster finishes the weep screed should be 4-inches above exposed earth and 2-inches above concrete surfaces. Since walkways must be accessible at exists with a 1/2" maximum step, concrete curbs around a portion of the exterior wall should be considered in the cost estimates.

Due to the elevation changes between adjacent buildings, typically 5' of difference between finish floor heights, our cost estimates have accounted for exposed vertical footing faces of up to 18" on the uphill pad side and keystone retaining walls at and around the courtyards between buildings.

Exterior Architecture

The Type V construction allows for combustible materials to be used for the exterior cladding. For the purposes of this Feasibility Study, we propose a material like Ipe wood siding. Nicknamed "iron wood", Ipe is an incredibly strong hardwood with a long life expectancy and little required maintenance. It can be sourced as a sustainable material, with FSC (Forest Stewardship Council) certification. This natural wood exterior expression will be compatible with the forested surroundings of the site, and add to the project's Vision of healing through nature. The windows are proposed as aluminum-clad wood frames, with high performance glazing – including insulated laminated glass (for security) with a low E-coating to limit heat gain. The windows will not be operable for reasons of security.

The buildings are conceived as having flat roofs (shallow slopes to drain) with a parapet for protection and to hide the rooftop equipment, fans and vents. Roof drains and overflow drains will be positioned near the exterior walls. An architectural expression for the building roof form will be created by a steel trellis that both provides shading to the courtyards and supports the photovoltaic (PV) panels.

Photovoltaic Panel Support Trellis

The plan area of this steel trellis frame is roughly 65-feet by 130-feet. The supporting columns could be integral with the wood framing and strapped into the roof diaphragm. For cost estimating purposes we've assumed transverse PV supporting steel tube beams that are hollow structural section (HSS) 8x6x 5/16" that do not span more than 27-feet. For the perimeter beams and supporting girders that do not span more than 37-feet, we've assumed a HSS 16x8x 3/8" tube section, and for the columns a minimum 16 columns that are HSS 8x8x 5/8" and do not extend more than 8-feet above the MHRC roof. Additional costs shall include spread footings and an increase for wood strapping and hold-downs.

Pre-fabricated Units

At the MHRC buildings, pre-fabricated modules may be an option for the bedrooms and bathrooms, with the common spaces in-filled with storefront windows or curtainwall on site. Built in a shop and transported to the site, these repetitive modules could potentially save construction time and cost, allowing the residents to move back more quickly. Each module could consist of two bedrooms and two bathrooms, at an overall size of roughly 13' x 40'. With five MHRC buildings, with 16 bedrooms and bathrooms each – or 8 modules each, the 40 identical modules could create an economy of scale. Since the pre-fabricated modules will need to be transportable, the floor will need to be constructed with the walls and roof. The site foundation and walkways will need to be adjusted accordingly to accommodate this raised floor. A raised floor would help to create a more comfortable interior environment, as the occupants are not walking on a surface material over a cold concrete slab, but rather on a raised potentially insulated floor. The PV Panel Support Trellis may not be easily incorporated into the prefabricated framing, and an alternate PV support solution may be required.

Adult Residential Facility (ARF) / Campus Center

Structure

The ARF/Campus Center building will be a combination of a concrete structure at the lowest ground level and a wood frame structure at the upper residential levels (similar to the MHRC's).

Since the first level backs into a hillside, and there is a need for an area separation between the occupancies between the first level and upper levels, we proposed an all concrete structure. However, as was previously discussed in Part 5 regarding building codes, this residential type building is only required to meet a Type V-level construction (wood frame) and we therefore propose that it be classified as such.

Regarding the concrete structure, generally post-tensioned slabs are used locally to create flat slab profiles that are thinner than conventionally reinforced concrete slabs. The challenge with conventional reinforced slabs is the increased slab weight for gravity and lateral design considerations, and the much larger immediate and long-term deflections due to creep, as well as the

reduced effective sections due to concrete cracking. Post-tensioned slabs in comparison are practically deflection free. The concern associated with post-tensioned slabs is the addition of penetrations at a later date and the installation of post-installed anchors that may hit and damage the post-tensioned cables. For a residential use that is pre-planned, the concerns associated with post-installed anchors and penetrations should not be an issue. The post-tensioned slab thickness for preliminary assumptions, supporting two levels of wood framed construction above, is 11 inches thick. To address punching shear concerns due to gravity loads, penetrations close to columns, and lateral drift, we propose to use drop caps. If desired, the location of post-tensioned cables can be marked by stapling short 1/2" chamfer strips to the form, which leaves a permanent impression. This can assist with the location of cables for post-installed anchors.

The lateral system at the lowest level of the ARF will be concrete shear walls. The upper levels, constructed with wood framing, would have plywood shear walls with hold-downs as required.

We propose that the minimum slab-on-grade thickness at the ARF be 7" since it will be needed to resist basement wall loads. With open sided basement wall conditions, the sliding force can become quite large. It will be necessary to grab all the frictional weight of the building to resist sliding, which will be transferred by the slab-on-grade. The foundation is assumed to be conventional spread footings and grade beams that are supported by underlying rock. At the south side, the spread footing may be deeper, and so should be accounted for in the cost estimate. At the southeast corner, assume that shallow piers may be required, anticipating that the rock layer may follow the contours of the existing grade.

Exterior Architecture

In order to create a cohesive campus-like environment, the exterior architecture of the ARF/Campus Center building will be similar or compatible with that of the MHRC buildings with regard to forms and materials.

Building Systems

(See Appendix H: Building Systems reports for detail on proposed systems, including design and equipment selection criteria)

Heating, Ventilating and Air Conditioning Systems

We are proposing a highly efficient mechanical system design, ideally suited to the program, scale, and setting of the new treatment programs. The mechanical design involves all mechanical HVAC systems and controls serving individual buildings. The system includes air-cooled variable refrigerant volume system (VRV/VRF) units including air-cooled condensers and indoor fan coil units.

Motorized louvers/windows and exhaust fan will provide natural ventilation to the common areas in the individual buildings. In addition fan coil systems will be provided. Each residence room will be designed with dedicated HVAC system and control. Outside air ventilation (OSA) for the residence rooms shall be delivered by an energy recovery unit (ERV) dedicated to OSA only and fed directly to all fan coil units serving residence rooms. One ERV will be used for each building. Control of temperature in individual resident rooms will not be directly available to resident; however central administration control of temperature in individual resident rooms will be verified during design. The kitchen area in each building pod will be served by a 100% OSA make-up air unit with water

coil. The water coil will be used for tempering the OSA during both winter and summer. The water coming to the make-up air unit shall come from the VRF system via a hydronic heat exchanger.

Building automation system is BACNET over Ethernet, with web access and pager alarming.

The domestic hot water needs shall be served by a hydronic heat exchanger with booster compressor. The hydronic heat exchanger shall be directly tied to the VRF system and provide 140 degree water for domestic hot water use.

Alternate Concept

A second mechanical option was considered that includes a VRF System for comfort Cooling/Heating with a hot water heat pump chiller for hot water generation. A Variable Refrigerant Flow (VRF) System will serve both corridor common areas as well as the residence rooms. These will be provided by a VRF System with Heat Recovery for simultaneous heating and cooling in all zones. OSA ventilation for the residence rooms shall be delivered by an ERV dedicated to OSA only and fed directly to all fan coil units serving patient rooms. One ERV will be used for each building. In addition to the VRF system, a natural ventilation system will be used for the common areas as a method of providing non compressorized cooling. This will be the first stage of cooling with the VRF supplementing as needed. The Kitchen area in each building pod will be served by a 100% OSA Make up air unit with water coil. The water coil will be used for tempering the OSA during both winter and summer. The water coming to the MUA shall come from the VRF system via a hydronic heat exchanger.

The domestic hot water needs for the entire campus shall be served by a heat pump chiller. The chiller will deliver 140 degree water. Provide a hot water piping system from heat pump chiller for all buildings that require domestic hot water.

Plumbing / Fire Protection Systems

The plumbing design involves all domestic cold and recycled water, domestic hot water, storm, sanitary sewer, and vent systems. The scope of work also includes the testing of all plumbing equipment and systems associated with the new construction.

Sanitary Sewer

A gravity sanitary sewer and vent system will be provided for all new buildings. A sanitary sewer service will be shown up to 5 feet outside each building with a clean-out. Any floor drains or floor sinks that will receive intermittent waste will be provided with automatic trap primers. Access panels will be provided for the trap primers. Piping service below grade will be cast iron

Storm Drainage System

The building will be provided with a storm drainage system. Storm drain piping will be drained by gravity through a storm drain main to terminate 5 feet from the building with a clean-out. The secondary (overflow) drainage piping will also be drained by gravity and will be terminated from the building's exterior with a downspout nozzle at 12-inches above grade.

Domestic Cold and Recycled Water System

Domestic water piping will be copper type K (for underground installations) and type L (for above ground installations) hard drawn copper. A secondary zone backflow preventer will be provided for areas that can cause low or high hazard backflow at domestic water main.

Domestic Hot Water System

All buildings will have their own electric water heaters. Domestic hot water supply and return lines will be tied to the water heater. The domestic hot water system will provide 120 degree F water to all lavatories, showers and kitchen sinks with scald protection. The domestic hot water system will provide 140 degree F water to the dishwashers and the triple sinks. A circulating pump will be provided to the hot water return line and will be connected to the electric water heater.

Drain Systems

The condensate drain system will drain all clean water drainage from any mechanical cooling equipment. All equipment requiring condensate removal will be equipped with a secondary drain pan and visible overflow piping. The primary condensate will be tied into the sanitary sewer system as an indirect waste with an air gap fitting. Condensate is required to be insulated as specified.

Natural Gas System

Gas service will enter the site with a main gas meter, a regulator, and an earthquake valve. Gas will be supplied only to the main central kitchen equipment.

Plumbing Fixtures and Equipment

Plumbing fixture selection will be based first and foremost for the safety and security of the occupants, and will include features like anti-ligature handles or infrared sensors. The project will be LEED certified and water conserving low-flow fixtures will be selected to satisfy sustainable design goals.

Sustainable Design Options

Sustainable and Zero Net Energy design strategies are also being considered for this project. Design considerations for the plumbing include rainwater treatment system, gray water system, and solar thermal domestic water heating system.

Rainwater Treatment System

Rain water runoff will be collected from the roof of each building and then piped through a filter located on the ground floor of each building. Rain water from each building will be connected to the external storm water main which will discharge rain water to the under-ground rain water collection tank with the option of by-passing to the city storm water main. The water is treated by a chlorine chemical injection system and filtered by a pressure filtration system. At the end of conveyance, storage, filtering, and treatment, the recycled water will be stored in the recycled water break tank and pumped to the 150,000 gallon existing steel tank located on the hill. The recycled water will be used for irrigation and flushing water closets and urinals. Recycled water may be used for the external fire hydrants and the fire protection system of the building subject to the Fire Marshal's approval.

Gray Water System

Gray water will be collected from the lavatories and showers of each building and connected to the external gray water system which will discharge gray water into an underground storage tank. A gray water treatment system shall be installed and will provide recycled water which will be pumped to the 150,000 gallon steel tank located on the hill.

Solar Thermal Domestic Water Heating System

A Solar Thermal Domestic Water Heating System will be installed for each building and will generate hot water for the building.

Electrical/Lighting/Fire Alarm Systems

The Electrical design involves all power, lighting, lighting controls, fire alarm, and testing of all electrical equipment. One new main power utility service for the entire complex will be installed at the ARF building, the power distribution will feed both ARF building and each MHRC building. An emergency standby diesel engine generator unit will be installed near the ARF building to provide 12 hours back-up power for 80 percent electrical load of the entire facility. Light fixtures to be specified will utilize fluorescent, LED, and HID lamps. Lighting controls will be provided. Fire alarm will be designed with full coverage area detection. Telephone and data system conduit rough-ins will be designed for service and distribution.

Normal Distribution

The main electrical service for the entire facility will be fed via a new PG&E pad mounted transformer located at the site in the vicinity of the ARF building. One main PG&E kWh meter will be installed for the entire facility. The main switchboard MSB will be installed at the ARF building main electrical room to serve the entire facility. The ARF-DP distribution board will be installed in the ARF building main electrical room. This will serve the ARF building and site electrical loads. Step-down transformers will be installed in the ARF building to provide 120/208V, 3 phase power for the branch circuit panelboards.

The five MHRC-DP distribution panels will be installed in the five MHRC buildings electrical room. Step-down transformers will be installed in the MHRC buildings to provide 120/208V, 3 phase power for the branch circuit panelboards. Where receptacles are provided within occupant rooms, they will be tamper-resistant, hospital-grade, and provided with GFCI protection. Cover plates will be made of polycarbonate materials and secured with tamper-resistant screws. A dedicated circuit will be required for each occupant room and bath to allow remote shut-off if necessary for occupant's safety.

Emergency Distribution

An emergency standby diesel-engine generator with sound attenuated weatherproof outdoor type enclosure will be installed outside the ARF building to provide back-up power for the entire facility. The generator capacity will support 80 percent electrical loads of both ARF building and the five MHRC buildings. The diesel fuel tank capacity will provide emergency back-up power for 12 hours at generator full load capacity. The main emergency distribution board EDB will be installed in the ARF building main electrical room.

Lighting Systems

A complete lighting system for all indoor, outdoor and building mounted illumination will be installed. The indoor lighting system will consist primarily of energy-efficient fluorescent and LED sources. Incandescent lighting will not be used. In general, fluorescent lamps will be high output 'Super T8' lamps with energy efficient electronic ballast. The outdoor lighting system will consist of HID and LED sources. Luminaires will use optical systems and sources that are in compliance with local lighting ordinances.

In general, indoor lighting controls will consist of a combination of low voltage relay based lighting control panels and local occupancy sensors. Outdoor lighting controls will consist of a low voltage relay based lighting control panel with astronomical time clock function.

Fire Alarm System

An automatic, addressable, fire alarm system will be supplied to meet the requirements of the adopted editions of the California Building Code, California Fire Code, and NFPA 72. The fire alarm system will require system alarm, supervisory and trouble signal monitoring, and alarm notification for the building. Any power supplies will have batteries to provide a secondary power source in case of primary power loss to the control panel or any remote power supply. The system will be manufactured by Simplex or Siemens and will be connected to the existing Simplex or Siemens campus network, via the local or wide area network infrastructure. Activation of system smoke detectors or manual pull stations will initiate alarm signals on the fire alarm control panel (FACP) and fire alarm annunciator (FAA), and activate the audible and visual notification appliances throughout the building. Manual pull stations will be supplied at building exits. Automatic smoke detection will be supplied throughout, in lieu of duct mounted smoke detectors at fire/smoke dampers and air handling units. Heat detectors will be supplied where the environment is not suitable for smoke detectors. Audible and/or visual alarm devices will be supplied throughout the building.

Telecommunication System

Telecommunication rooms will be located on each level of the ARF. The Level 1 room will be the main point of entry (MPOE) for telephone and data services. Each MHRC will have a telecommunications room (TR) to provide a connection point to the facility backbone and support horizontal distribution in each building. A cable runway system will be provided in each telecommunications room to serve as backbone raceway infrastructure. The MPOE will be served via new conduits to the property and will be coordinated with the consumer and service provider's requirements. Conduits will run from each MHRC building back to the ARF for connection to facility telecommunication services. Wire-basket cable tray system will be located in the main corridors to serve as the raceway infrastructure. A comprehensive backbone cabling system consisting of multi-strand fiber optic and multi-pair copper and coax cabling will be provided originating in the MPOE room to support each TR throughout the facility. Voice and data network cabling will be provided. Wireless access point locations will be coordinated and designed per consumer requirements.

Photovoltaic System

As a sustainable design solution for achieving a Zero Net Energy (ZNE) solution, a 496 kW photovoltaic (PV) system is proposed for the project. This includes installation of PV systems on the roofs of the ARF and five MHRC buildings. The normal panel board in the ARF and each

MHRC building will include a circuit breaker for PV system connection, and the bus rating of the normal panelboard will be in accordance with the electrical code requirement for PV systems.

The PV system will consist of standard efficiency modules (approximately 16-17% efficiency) mounted to the roof using a permanently attached racking system. The PV arrays will be located to avoid shade from roof mounted equipment, trees, etc. The PV modules will be equipped with optimizers to limit the effects of shade, and compatible utility grid-interactive inverters will be located in an easily accessible but secure location. Additional interconnection equipment will be provided as required by PG&E as a condition of interconnection. The PV system will be interconnected via PG&E's Net Energy Metering program.

Detailed solar exposure studies and energy modeling will need to be conducted in order to validate the viability of the PV system on the buildings in this site. The PV system size was estimated by calculating the annual energy usage by assigning an energy use intensity (EUI) to each building occupancy type. The estimated simple payback period is 16 years, and the PV system cost is \$1.7 million. Accounting for fuel escalation of 3.0%, this number reduces to approximately 12 years. Web-enabled monitoring system will graphically display the energy output of the PV system for educational purposes.

A 20 kW fuel cell may be needed in addition to the photovoltaic system to achieve ZNE Basis of Design due to the presence of high energy use intensity cooking and process loads as allowed by the National Renewable Energy Laboratory (NREL) definition of ZNE.

7.4 Sustainability

In 2001, the County of San Mateo Board of Supervisors adopted a Sustainable Building Policy that requires all new buildings over 5000 square feet to be built to the highest practicable LEED rating, and to be certified through the U.S. Green Building Council (USGBC).

In 2004, the County published the San Mateo Countywide Sustainable Buildings Guidelines and Checklist to help guide new construction projects towards building green.

In 2013, California revised its Building Standards Code for energy efficiency, Title 24. The revisions, which take effect on July 1, 2014, put in place a mandate for all residential buildings to be designed and built to achieve Zero Net Energy (ZNE) performance standards by 2020 (non-residential by 2030). To build a ZNE building, the amount of energy provided by on-site renewable energy sources must be equal or greater to the amount of energy used by the building over the course of a year.

To meet the challenges of these guideline and laws, and to realize Cordilleras' vision to **heal through nature – to be environmentally conscious**, the Feasibility Study proposes the ZNE standard as a basis-of-design. We developed a feasibility framework that achieves ZNE, but does so in a way that does not render the Feasibility Study useless if that status cannot be achieved during the actual design phase. So for instance, while a large photovoltaic panel array may be proposed to achieve ZNE, if it cannot be accommodated for the actual project, our Feasibility Study also identifies how the base systems would need to be upsized or augmented to accommodate the additional energy demand

By pursuing a ZNE strategy, the project will also meet many of the requirements necessary to achieve a rating in the Leadership in Energy & Environmental Design program (LEED), which is a requirement of the County Sustainable Guidelines.

Cordilleras has a sensitive population of residents who will benefit from a healthy built environment. A strong sustainable design approach, combined with the site's serene natural setting, provides an opportunity to create a truly exemplary residential campus. Some of the sustainable design strategies proposed throughout this Study include:

- Rain water catchment and treatment to conserve water and reduce impacts to the County storm water system
- Rooftop photovoltaic arrays and fuel cell systems for on-site energy production
- High-efficiency heating and cooling systems, such as Variable Refrigerant Flow (VRF)
- The use of extensive day-lighting and natural ventilation to take advantage of the site's built-in conditioning systems

7.5 Consumer Relocation Planning

The purpose of this section is to address whether it will be necessary to relocate the Cordilleras and nearby Canyon Oaks residents during the period of demolition and construction of the new programs. To the extent relocation will be necessary, this section outlines recommended solutions.

All decisions regarding relocation will be guided by consumers' quality of life and safety. A sub-committee will be formed to plan for the transitions of any consumers from one location to another as necessitated for the project. Every effort will also be made to consider continuity of care and reducing the number of transitions necessary for consumers as well as staff.

There are three distinct populations of consumers whose needs must be considered during the construction project. One group of 68 consumers lives in the locked MHRC portion of Cordilleras on the 3rd floor. A second group of 49 consumers lives in the unlocked, or residential, portion of Cordilleras known of as "The Suites," located on the second floor of Cordilleras. A third group of 12 consumers live in Canyon Oaks which is a nearby residential treatment program for adolescents.

Before identifying recommended solutions for consumer relocation, the project team considered the cost and availability of relocation options; the feasibility of phasing construction at the site in order to minimize relocations; and the extent to which the following disturbances at the site would detract from consumer quality of life or could be mitigated:

- Dust/dirt particles in the air
- Noise from the construction/demolition
- Safety issues related to having heavy equipment and sharp objects accessible to consumers.
- Adequate space to build next to the existing structures

In order to best understand the needs of each of the consumer groups, we met with the clinical and administrative experts who are currently working with them.

Challenges to relocation of ARF consumers

We explored the following options for relocation of the 49 consumers residing at the Adult Residential Facility portion of Cordilleras:

- Availability of rooms in existing Adult Residential Facilities (ARF's)
- ARF's that would need to be developed and licensed from current housing stock
- ARF's that would need to be built

San Mateo County has very limited ARF bed availability that has worsened due to increasing cost of housing and dwindling supply of provider operators. There are already consumers waiting for ARF openings in order to be able to move to a less restrictive level of care. In order to better understand the options for relocating consumers, we surveyed surrounding counties to learn their what they are paying for this level of care; surveyed ARF operators in San Mateo County to learn their vacancy rates, what they are charging, and who they are serving; and talked to many operators about the barriers to serving more people.

Through our surveys we learned the following:

- We are paying half of the rates that Santa Clara and San Francisco Counties pay. We have likely lost capacity to those counties as a result. Maintenance of our current inventory let alone expansion will likely require increasing to rates that are more competitive with neighboring counties.
- The overwhelming majority of licensed ARF providers in San Mateo County work with the Regional Center for developmentally disabled consumers, which also pays significantly more than we pay.
- The vacancy rates are almost non-existent thus there is not a supply of underutilized licensed ARF beds in San Mateo County.
- While there are organizations that would be interested in developing large new ARFs in San Mateo County that could house 15 – 40 consumers, it is challenging and costly to locate vacant buildings in tolerant neighborhoods and refurbish them.

This information led us to conclude that our best plan would be to design phasing of construction in such a way as to avoid relocation of the majority of ARF consumers. In addition, this information supported the option of adding to the number of ARF beds planned for the project.

Challenges to relocation of MHRC consumers

We explored the following options for relocation of the 68 consumers residing in the locked MHRC portion of Cordilleras:

- Repurposing the now vacant ground floor of San Mateo Medical Center
- Rental of another vacant building or portion of a building in the Bay Area that could be converted to a temporary MHRC
- Available beds in other MHRCs operated by Telecare and other organizations

We could not find a reliable solution for relocation of the entire group of 68 consumers that would be available on the timeline required for this project. The most reliable solution appears to be contracting for MHRC beds in other facilities outside of San Mateo County, and possibly using a portion or all of the ground floor at San Mateo Medical Center. The use of the ground floor at San Mateo Medical Center is under exploration with the licensing agencies that have oversight of the services that would be impacted. This option would reduce the need to identify MHRC beds in other facilities. Vacant MHRC beds are not plentiful and we already struggle to place consumers out of San Mateo Medical Center. However the San Mateo Medical Center option may not come to fruition. Thus we have concluded that our best plan would be to design phasing of construction in such a way as to avoid relocation of as many MHRC consumers as possible, completing two MHRC's with capacity for 32 people and to plan for attrition and sufficient time and resources needed to move the remaining 36 consumers to other facilities while the remaining facilities are constructed.

Challenges to relocation of Canyon Oaks consumers

The third group of 12 adolescents, located at Canyon Oaks residential treatment program, was considered for temporary relocation to another existing vacant building or program. Canyon Oaks is located on the other side of the fire station from Cordilleras. We determined there were no appropriate solutions inside or outside San Mateo County. We also explored what the impact would be of leaving Canyon Oaks occupied during demolition and construction and whether there are strategies for mitigating potential problems

The project team consulted with local providers and providers around the United States with whom we visited to see what their experience was with similar challenges during construction of new facilities. We learned that many organizations have successfully managed consumer services while construction is underway:

- Construction and demolition next to structures where consumers are currently living was not viewed as untenable for consumers either by the clinical staff working with the consumers or by the consumers themselves.
- Consumers often took interest in the construction/demolition.
- Construction/demolition work was more concern to staff than consumers, although continuous communication was effective in mitigating concerns.
- Project staff holding regular meetings with staff and consumers to keep them briefed and getting their feedback was beneficial in other projects.
- Mitigating procedures and techniques to decrease noise and dust were useful. These include keeping the construction area watered down and the use of sound walls.

- Specially designed fencing, established safety protocols, and the use of security personnel were techniques used to manage the safety of the consumers near construction sites.

Consideration of Alternate County Owned Sites

The project team also performed due diligence in assessing potential alternate County owned sites for the replacement project with the idea that some of the buildings could be completed without temporary relocation of consumers. The project team conferred with the County's Real Property division and obtained a list of all available County parcels. Each of these sites was evaluated for adequacy of size for the programs, zoning, appropriate location in a therapeutic environment, central access to medical and other essential services that are frequently required by MHRC consumers, and compatibility with the surrounding neighborhood.

None of the available County owned parcels met all of the program criteria as well as the existing site on Edmonds Road. Therefore, the project team focused on developing a phased replacement program on the existing site.

Recommended Solution for Consumer Transition

The Cordilleras project staff, representatives from HGA architects and engineers and Telecare leaderships thoroughly assessed the feasibility of allowing consumers to remain in place on campus during the phased construction of new facilities. The results of the assessment showed that it was possible to allow most consumers to remain on site during the demolition, earthwork, and construction phases.

Though the Feasibility Study proposes a phasing plan with most consumers remaining onsite for the duration of the project, there is a 16 month period that up to 36 MHRC consumers will need to be temporarily relocated to allow for the demolition of the existing building, and the construction of the final three MHRC facilities. A feasible project phasing plan would be as follows:

Phase 1A (Earthwork and Utilities) and 1B (Construction)

Phase 1A is scheduled April 1 through October 1, 2017 and Phase 1B is scheduled from October 1, 2017 to September 1, 2018. During these initial phases all Cordilleras consumers in the MHRC, ARF and Canyon Oaks will remain in place.

First Consumer Move

At the conclusion of Phases 1A and 1B on September 1, 2018 the new ARF and two 16-bed MHRCs could be completed. At this time all ARF consumers and 32 MHRC consumers will move into these new facilities. The remaining 36 MHRC consumers will temporarily relocate to other MHRC's and remain in these locations for 16 months until January 1, 2020, when the new facilities are completed. See the *Cost of Relocation* below.

Demolition of Existing Cordilleras Building, Phase 2A (Earthwork and Utilities) and 2B (Construction)

After all consumers vacate Cordilleras on September 1, 2018, the General Contractor will proceed with demolishing that building, performing earth work and utility installation (Phase 2A) and

constructing the final 3 MHRC buildings (Phase 2B) which are scheduled for completion January 1, 2020.

Final Consumer Move

Upon completion of the final 3 MHRCs on January 1, 2020, the MHRC consumers in the other settings will return to the new facilities.

Cost of Relocation

The estimated costs for the alternate temporary relocation strategies are contained in the following tables. The project team will continue refining the detailed costs of each option and present the results to leadership for action and inclusion in the planning for the FY 18-19 and 19-20 budget cycles.

Summary of Estimated Costs for Consumer Relocation

<u>Item</u>	<u>Estimated Cost</u>
<u>Per diem for MHRC placements @\$275, 36 consumers, up to 20 months</u>	<u>\$6,022,500</u>
<u>Transportation /moves</u>	<u>\$51,720</u>
<u>Placement specialists to identify and arrange placements 12 months</u>	<u>\$358,800</u>
<u>Total</u>	<u>\$6,433,020</u>
<u>Offset by existing sources for placements</u>	<u>\$1,865,211</u>
<u>Net required for placements</u>	<u>\$4,567,809</u>

(Note: All costs expressed in 2014 dollar values and will be escalated as required)

7.6 Phased Construction

The Feasibility Study included input from a California licensed general contractor - located outside of the Bay Area. The contractor addressed the feasibility of phasing the project, and other construction-related concerns. The contractor proposed the following conceptual strategy for phased construction (*see the proposed preliminary phasing diagrams at the conclusion of this Part 7*):

Phase 1 – Sequence 1

- Clear and grub the site moving from the South to the North in order to start the South retaining wall first. From that point on, construct the South and North retaining walls at the same time. This will lend itself well to the incremental approach necessary to build these walls as the equipment will move back and forth between the two areas as they work down in elevation
- Completion of building pad for first two MHRC structures.
- Construction Access to the site during this Phase will utilize the existing North service road and wrap around the existing dirt road to the West to access the South retaining wall area.

Phase 1 – Sequence 2

- Building construction of first two MHRC's begins with foundations and underground utilities in the building pad.
- North retaining wall and rough grade of the adjacent road completed (prior to South retaining wall being complete).
- Begin the underground utility installation on the North road, starting on the West side and moving clockwise.
- Pave the North road as soon as the utility work is complete.
- Construction Access would be moved to the South road for this phase of the project to allow the utility and paving on the North road.

Phase 1 – Sequence 3

- MHRC building construction continues.
- As soon as the North road is complete, construction site access can be moved back to the North
- Underground utility installation will continue around the site in a clockwise fashion all the way to the new MHRC buildings.
- Ingress and Egress to the existing buildings can be managed during this installation with coordination and trench plating.
- Final patching of the existing road and paving of the South road can be completed after the fire loop is tested.

Phase 1 – Sequence 4

- MHRC building construction continues.
- ARF building pad begins and the building is constructed and completed.
- The ARF will cut off construction access to the MHRC area, so Construction Access will shift back down to the South road for this work.

This process will produce the building pads quickly and allow the construction of the new buildings to begin as soon as possible. It also creates a stagger in the work flow allowing crews to move from one building to the other. The focus on the underground utilities brings the fire protection system on-line so the fire department can grant the project “staff and stock” of the buildings.

Phase 2 – Sequence 1

- Demolition of existing building.
- Installation of the underground utilities and new creek diversions.
- Construction of remaining MHRC building pads and South road continuation through the old hospital footprint.
- Completion of underground utility trench along this new portion of the South road.
- Construction Access can be handled immediately at the main entrance to the campus and utilizing the North road.

Phase 2 – Sequence 2

- Construction of remaining three MHRC buildings along South road.
- Construction access focused immediately at the main entrance to the campus.

Site Access

According to the contractor, the phasing diagrams as shown will allow for the adequate construction access to the project site. It will be important to maintain access to the Canyon Oaks Center and the Fire Station on the site during construction. The access to the existing buildings can be maintained utilizing fairly routine construction practices. There will be some traffic on the road in front of these buildings, but only during the period of constructing the North retaining wall and access road. The other impact will be the installation of the underground utilities in front of these buildings. The contractor will be required to maintain access to the existing buildings during this work.

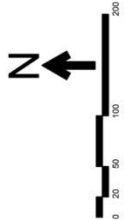
Site Safety

Based on the layout of the site, it appears that it will be manageable to isolate the construction area with fencing and keep people from casually entering the project site. If there is a concern that consumers may attempt to enter the site, it would be worthwhile engaging a private security company to patrol the fenced area off hours and observe the entrance gates during operations. It is the General Contractor's responsibility to maintain a safe project site.

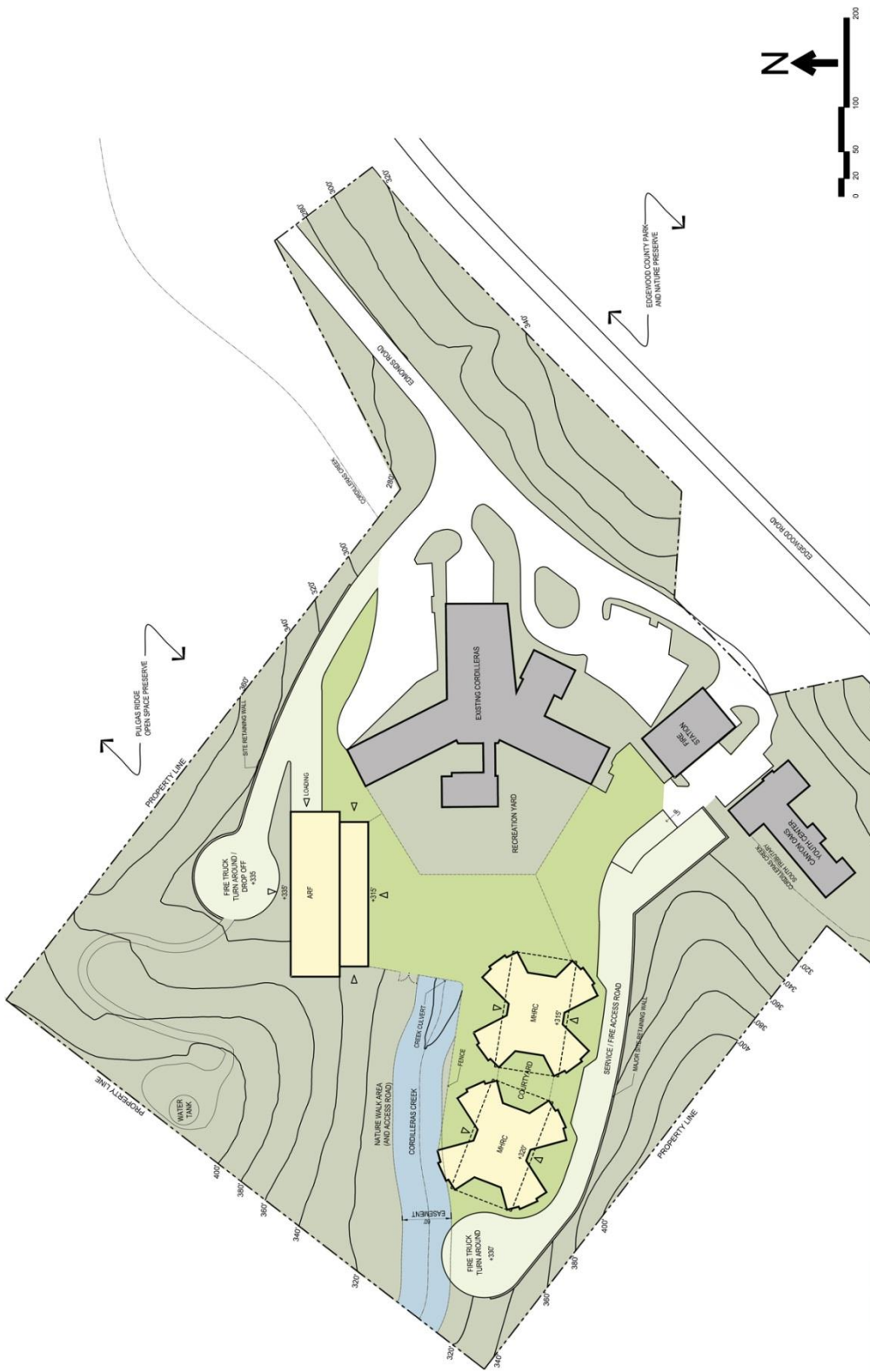
The strategy and successful execution of this phasing plan requires the following program elements:

- A superb communication plan between the project team and all consumers and staff on the new campus. Regular project briefings will occur for all constituents to include an overview of the project schedule and key milestone dates, the safety and security program, and discussion of the logistics and impacts of the project.
- The continuous provision of security fences where needed to separate the construction area from the consumer/staff areas to assure safety and security for all.
- The provision of "sound walls" which buffer noise where needed during the most intense periods of construction and demolition.
- The project team will require the General Contractor to continuously provide dust control by water spray or other measures during all phases of the project that may create airborne dust and dirt. This requirement will be monitored and enforced by the project team.

The project team will continue to improve and refine this plan during the design phase of the project to assure a safe, secure and comfortable environment of care for all consumers and staff throughout the duration of the project.



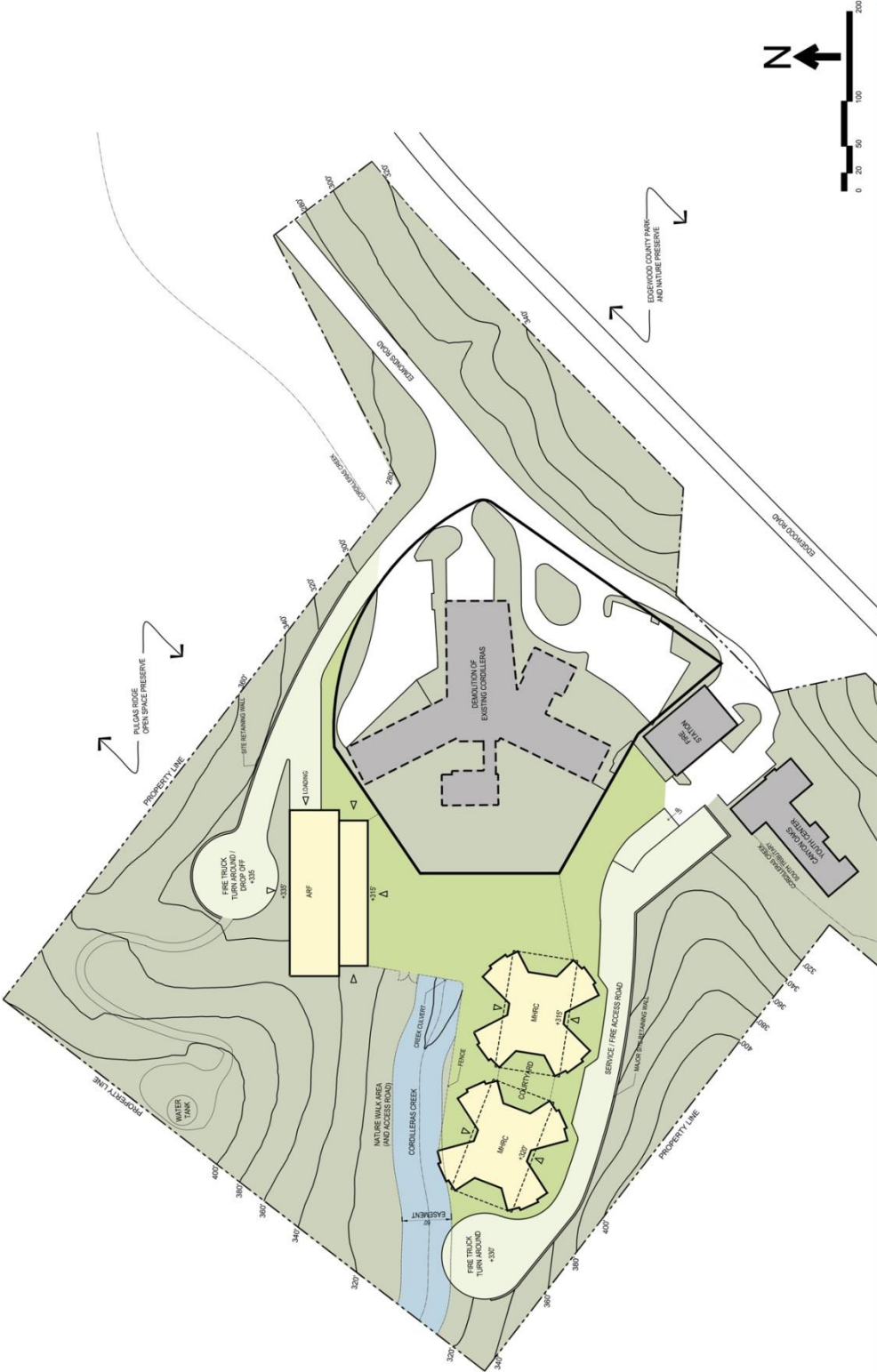

 San Mateo County Behavioral Health Services
 HGA Architects and Engineers
Feasibility Study to Replace Cordilleras Mental Health Center
SITE PLAN Phase 1A April 2017 - September 2017




 San Mateo County Behavioral Health Services
 HGA Architects and Engineers

Feasibility Study to Replace
SITE PLAN Phase 1B
 Cordilleras Mental Health Center

October 2017 - August 2018




 San Mateo County Behavioral Health Services
 HGA Architects and Engineers
SITE PLAN Demolition September 2018 - December 2018
 Feasibility Study to Replace Cordilleras Mental Health Center

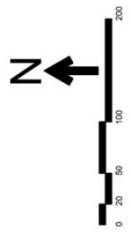


San Mateo County Behavioral Health Services
 HGA Architects and Engineers

SITE PLAN Phase 2A January 2019 - April 2019

Feasibility Study to Replace
 Cordilleras Mental Health Center






 San Mateo County
 Behavioral Health Services
 HGA Architects and Engineers
**Feasibility Study to Replace
 Cordilleras Mental Health Center**
SITE PLAN Phase 2B
 May 2019 - December 2019

Part 8

Financial Analysis

Part 8 – Financial Analysis

Introduction

The financial analysis for this feasibility study includes an estimate of the capital costs to replace the existing Cordilleras Center with a campus of new buildings, as well as an estimate for the annual operating costs for the proposed replacement project. In addition, for comparison purposes we have estimated the cost to renovate and upgrade the existing Center.

8.1 – Capital Costs

Please see the Predesign (Feasibility) Construction Cost Model on the following pages. The model includes a cost estimate for a replacement campus of new buildings, as well as an estimate for the reuse of the existing building.

San Mateo County - Cordilleras Center
 Pre-design Construction Cost Model - NEW BUILDINGS (Design-Build Delivery)

Design-Build Delivery



COST MODELING SUMMARY	MHRC		ARF and Support Bldg		Site Development	
	10,452 GSF	\$/sf	35,114 GSF	\$/sf	6.13 acres	\$/acre
Building Core & Shell	\$1,125,963	\$108	\$4,311,497	\$123	\$0	
Interior Architectural Fit-out	\$656,704	\$63	\$2,179,229	\$62	\$0	
Furnishings/Equipment & Special Constructions	\$200,000	\$19	\$627,500	\$18	\$0	
Mechanical	\$571,828	\$55	\$1,967,894	\$56	\$0	
Electrical ^d	\$694,052	\$66	\$1,490,087	\$42	\$0	
Site Development Costs	\$0		\$0		\$8,873,817	
Temporary Site Controls, Grading & Utilities for Phased Construction	\$0		\$0		\$500,000	
DB Team General Requirements	\$422,311	\$40	\$1,374,907	\$39	\$1,218,596	
DB Team Construction Fee/Bond/Insurances	\$21,156	\$20	\$687,453	\$20	\$609,298	
DB Team Design Fee	\$162,427	\$16	\$528,810	\$15	\$468,691	
Phasing Premium for Occupied Site ^a	\$64,971	\$6	\$211,524	\$6	\$187,476	
Design Contingency	\$410,941	\$39	\$1,337,890	\$38	\$1,185,788	
Construction Contingency	\$205,471	\$20	\$668,945	\$19	\$592,894	
MHRC Building SubTotal (1 Bldg) ^b	\$4,725,824					
Building & Site Construction Cost	\$23,629,119	\$452	\$15,385,737	\$438	\$13,636,560	\$2,223,643
Feasibility Study			\$300,000			
AE & Consultant Bridging Document Development Fees		3.50%	\$1,752,207			
Owner's Design Representative		1.00%	\$500,631			
Environmental Consultant		0.35%	\$175,221			
HazMat Administration/Plan/Monitoring			\$234,035			
Geotech & Special Testing/Inspections/Monitoring			\$147,017			
Site Surveying / AEs Map			\$468,069			
Building Permits & Review Fees			\$536,138			
Owner's Builders Risk Insurance			\$300,631			
DPW Project Management			\$536,138			
DPW Construction Management (Reduced from D-B-B Delivery)		1.00%	\$351,052			
Health Services Project Staff			\$4,680,692			
LEED Administration & Fees			\$1,639,242			
Furniture, Fixtures, and Equipment			\$468,069			
(incl. procurement & installation costs)			\$536,138			
Technology/AV Equipment			\$300,631			
(incl. procurement & installation costs)			\$536,138			
Moving & Storage			\$351,052			
(Owner retained furniture to off site storage during constr. Move in to new facility)			\$4,680,692			
Printing & Advertising/Reimbursables			\$1,639,242			
Legal Costs			\$468,069			
Project Soft Costs (costs per original project budget, not incl. Phasing)	25%		\$13,409,194			
Over-all Project Contingency	10.00%		\$6,806,061			
Escalation to Contr. Mid-point (Q2 2018) ^c	13.77%		\$9,096,296			
Potential Additional Scope Items (not included above)						
1. Add 4th Floor to ARF (Core/Shell & Fit-out)					\$274,500	
2. Terraced ARF Floors Building Messing					\$486,270	
			9576 sqft			
			2 floors			
TOTAL PROJECT COSTS						\$85,364,021

(these costs include all mark-ups and escalation as listed above)

9576 sqft
2 floors

9576 sqft
2 floors

NOTES:
^a Per preliminary phasing plan diagrams.
^b The total cost for construction of one single MHRC building would incrementally increase as the number of MHRC buildings included in the project scope decreases.
^c Annualized escalation rate of 3.50%.
^d Substantial rebates & incentives would likely be available for PV and Fuel Cell installations, but are not included in this pricing assessment.

San Mateo County Cordilleras - MHRC

Pre-design Construction Cost Model



Total Building GSF		10,452 sqft	1-Story on Grade (5 bldgs)	UNIT \$	TOTAL COST
Item Description	Comments & Clarifications	QUANTITY			
BUILDING CORE & SHELL					
BUILDING PAD PREP & FTG EXCAVATION	Typical, soils correction included w/ sitework	10,452 sqft	\$26.130		\$26,130
GRADE BEAM FOOTING FOUNDATIONS	On imported fill, included w/ sitework	1,400 lnft	\$85.00		\$119,000
SLAB ON GRADE	Typical, 5" w/ reinf. sand, VB	10,452 sqft	\$7.50		\$78,390
CONCRETE CURBS @ EXTERIOR WALL	Typical	620 lnft	\$25.00		\$15,500
EXTERIOR WOOD STUD BEARING WALLS	2x6 w/ bracing, high parapet/screen wall, 15 ht	9,300 sqft	\$6.00		\$55,800
INTERIOR WOOD STUD BEARING WALLS	2x6 w/ bracing, 9' ht	7,020 sqft	\$5.50		\$38,610
MISC. SHEAR WALL SHEETING, STRAPPING, BRACING	Allowance	1 lsum	\$15,000.00		\$15,000
TJI JOIST ROOF FRAMING	Roof framing, incl. plywood deck	10,452 sqft	\$6.50		\$67,938
GYP CEILING SHEETING ON TJ'S	2 layers for fire rating	10,452 sqft	\$3.25		\$33,969
LAM WOOD BEAMS	Special framing locations	864 lnft	\$15.00		\$12,960
WOOD PLATFORM FOR MECH UNITS	Structured over roof	600 sqft	\$15.00		\$9,000
STEEL SUPPORT CANOPY FOR PV	Independent footings, steel structure over roof	1 lsum	\$150,000.00		\$150,000
EXTERIOR ENCLOSURE - CARPENTRY/METALS/SEALANTS/ETC.	Allowance	9,300 sqft	\$2.50		\$23,250
ENCLOSURE WALL CONSTRUCTION	Ext gyp sheathing/plywood, air barrier, insulation	7,690 sqft	\$5.00		\$38,450
IPE WOOD SIDING	Incl. finish	7,690 sqft	\$18.00		\$138,420
STUCCO FINISH ON BACK OF PARAPET	Typical	2,480 sqft	\$10.00		\$24,800
ALUMINUM STOREFRONT	Typical, 9' ht	900 sqft	\$75.00		\$67,500
PUNCHED OPENING WINDOWS, 5'x5'	Alum clad, operable w/ security	20 each	\$2,200.00		\$44,000
ALUMINUM & GLASS ENTRY DOORS	3x7, typical w/ security	10 each	\$2,750.00		\$27,500
EXTERIOR MATERIAL ACCENTS/TRIM	Allowance	1 lsum	\$15,000.00		\$15,000
MISC. EXTERIOR ELEMENTS	Building lighting, skylights, signage, etc.	1 lsum	\$15,000.00		\$15,000
MEMBRANE/BUILT-UP ROOFING SYSTEM COMPLETE	Typical application	10,452 sqft	\$10.50		\$109,746
					\$0
					\$1,125,963
					\$107.73 /sf total
INTERIOR ARCHITECTURAL FIT-OUT					
INTERIOR METAL STUD PARTITION WALLS	2 side, 1 layer gyp, acoustical insulation, 9' ht	8,100 sqft	\$8.50		\$68,850
GYP SHEETING ON WOOD STUD WALLS	Taped & sanded	19,620 sqft	\$2.50		\$49,050
METAL STUD DROP SOFFITS	Accommodation for MEP	2,000 sqft	\$15.00		\$30,000
INTERIOR DOORS	HM frame, wood door, security hardware	42 each	\$1,500.00		\$63,000
INTERIOR GLAZING	Borrowed lite frame & glass	864 sqft	\$45.00		\$38,880
CUSTOM CASEWORK	Reception desk, armoire	72 lnft	\$350.00		\$25,200
TYPICAL STORAGE CASEWORK	Base, upper, shelving, c-top	176 lnft	\$165.00		\$29,040
FINISHES :					
RECEPTION/WAITING	Upgraded finishes - cpt, vwc, accents	563 sqft	\$40.00		\$22,512
PUBLIC RESTROOM	Upgraded finishes - full ht tile, specialties	168 sqft	\$70.00		\$11,760
BEDROOM - PRIVATE	Durable finishes, security fixturing	2,352 sqft	\$30.00		\$70,560
BEDROOM - SEMI-PRIVATE	Durable finishes, security fixturing	616 sqft	\$30.00		\$18,480
PRIVATE BATHROOM	Durable finishes, security fixturing	1,372 sqft	\$50.00		\$68,600
MEDITATION / LIBRARY	Upgraded finishes - cpt, vwc, accents	574 sqft	\$40.00		\$22,960
CARE TEAM STATION / WORKROOM / MEDS	Durable finishes	644 sqft	\$25.00		\$16,100
ACTIVITY / DINING	Durable finishes	1,400 sqft	\$25.00		\$35,000
LIVING ROOM	Upgraded finishes - cpt, vwc, accents	672 sqft	\$40.00		\$26,880

San Mateo County Cordilleras - MHRC

Predesign Construction Cost Model



Total Building GSF		QUANTITY	1-Story on Grade (5 bldgs)	UNIT \$	TOTAL COST
		10,452 sqft			
KITCHEN / FOOD PREP / SERVERY	Food safe finishes, not incl. equipment	588 sqft		\$50.00	\$29,400
OFFICE / CONFERENCE	Typical finishes	504 sqft		\$20.00	\$10,080
STAFF LOCKER ROOM / BREAK	Typical finishes	364 sqft		\$20.00	\$7,280
STAFF RESTROOM	Typical finishes	168 sqft		\$50.00	\$8,400
STORAGE/WORK/MEP ROOMS	Basic finishes, durable	467 sqft		\$10.00	\$4,672
		10,452			\$656,704
					\$62.83 /sf total
FURNISHINGS/EQUIPMENT & SPECIAL CONSTRUCTIONS					
FIRE DOOR & FIRE RATED PARTITION CONSTRUCTION	Fire separations within building	200 Inft		\$250.00	\$50,000
SECURITY EQUIPMENT UPGRADES	Allowance	12 room		\$7,500.00	\$90,000
KITCHEN EQUIPMENT	Small commercial	1 Isum		\$60,000.00	\$60,000
					\$200,000
					\$19.14 /sf total
MECHANICAL					
FIRE PROTECTION SYSTEM	Typical, concealed heads	10,452 sqft		\$4.00	\$41,808
DOM/FIRE WATER EQUIPMENT	Pumps, meters, HW heater, etc.	1 Isum		\$20,000.00	\$20,000
PLUMBING SYSTEMS - TYPICAL	Typical, per fixture	14 loc		\$3,000.00	\$42,000
PLUMBING SYSTEMS - SECURITY	Security, per fixture	36 loc		\$4,000.00	\$144,000
ROOF DRAINAGE SYSTEM	Internally piped drainage, tied to storm system	1 Isum		\$7,500.00	\$7,500
VARIABLE REFRIGERANT SYSTEM	Condensers (+/-5) and fan units (+/-20)	30 tons		\$2,200.00	\$66,000
HVAC PIPING DISTRIBUTION & CONNECTIONS	VRF connections	10,452 sqft		\$3.50	\$36,582
DUCT DISTRIBUTION & TERMINALS	From fan coil units	10,452 sqft		\$6.50	\$67,938
HEAT PUMPS	100% OA, roof mounted, minimal ducting	5 each		\$6,500.00	\$32,500
EXHAUST FANS	Kitchen and general exhaust, minimal ducting	7,500 cfm		\$3.50	\$26,250
NATURAL VENTILATION FANS	At operable windows	8 each		\$1,500.00	\$12,000
HVAC CONTROLS	BAS to central location	65 pnts		\$850.00	\$55,250
SPECIAL MECHANICAL EQUIP & SYSTEMS	Allowance	1 Isum		\$20,000.00	\$20,000
					\$571,828
					\$54.71 /sf of bidg
ELECTRICAL					
ELECTRICAL SERVICE CONNECTION	Feeder & transformer, 300A	1 Isum		\$15,000.00	\$15,000
ELECTRICAL SERVICE EQUIPMENT	Distribution and sub-panels, incl. 480v for mech equip	1 Isum		\$15,000.00	\$15,000
PV POWER PRODUCTION EQUIPMENT	Panels, inverter, etc.	82,250 watts		\$4.50	\$370,125
FUEL CELL POWER PRODUCTION EQUIPMENT	Allocated cost allowance	3.33 kw		\$8,500.00	\$28,305
POWER DISTRIBUTION & DEVICES - TYPICAL	Typical application, security	10,452 sqft		\$5.00	\$52,260
MECHANICAL & EQUIPMENT CONNECTIONS	Incl. kitchen, some 480v	40 loc		\$500.00	\$20,000
LIGHTING SYSTEMS	High level lighting, LED, controls, security	10,452 sqft		\$8.50	\$88,842
FIRE ALARM SYSTEM	Typical application	10,452 sqft		\$3.00	\$31,356
TELECOM SYSTEMS	Pathways, cabling, devices, equipment, wireless system	10,452 sqft		\$3.00	\$31,356
SECURITY SYSTEMS	Pathways, cabling, devices, equipment	10,452 sqft		\$4.00	\$41,808
					\$0
					\$694,052
					\$66.40 /sf of bidg

San Mateo County Cordilleras - ARF & Support

Pre-design Construction Cost Model



Item Description	Community / Support ARF		QUANTITY	UNIT \$	TOTAL COST
	1st flr	2nd & 3rd flr			
BUILDING CORE & SHELL					
BUILDING PAD PREP & FTG EXCAVATION			35,114 sqft	\$2.50	\$87,785
SPREAD FOOTING FOUNDATIONS			35,114 sqft	\$15.00	\$526,710
DEEP/ROCK FOOTINGS			1 lsum	\$75,000.00	\$75,000
CONCRETE RETAINING WALLS @ LOWER LEVEL			15,963 sqft	\$10.00	\$159,630
CONCRETE SHEAR WALLS @ LOWER LEVEL			4,800 sqft	\$50.00	\$240,000
CONCRETE COLUMNS @ LOWER LEVEL			2,320 sqft	\$42.00	\$97,440
CONCRETE POST-TENSIONED FLOOR SLAB @ LOWER LEVEL			380 lft	\$200.00	\$76,000
MISC. STRUCTURAL OPENINGS			15,963 sqft	\$28.00	\$446,964
CONCRETE CURBS @ EXTERIOR WALL			1 lsum	\$35,000.00	\$35,000
EXTERIOR WOOD STUD BEARING WALLS			680 lft	\$25.00	\$17,000
INTERIOR WOOD STUD BEARING WALLS			20,600 sqft	\$6.00	\$123,600
MISC. SHEAR WALL SHEETING, STRAPPING, BRACING			18,500 sqft	\$5.50	\$101,750
TJI JOIST FRAMING			1 lsum	\$50,000.00	\$50,000
GYP CEILING SHEETING ON TJIS			19,151 sqft	\$7.50	\$143,633
LAM WOOD BEAMS			19,151 sqft	\$3.25	\$62,241
WOOD PLATFORM FOR MECH UNITS			2,400 lft	\$15.00	\$36,000
STEEL SUPPORT CANOPY FOR PV			1,500 sqft	\$15.00	\$22,500
EXTERIOR ENCLOSURE - CARPENTRY/METALS/SEALANTS/ETC.			1 lsum	\$150,000.00	\$150,000
ENCLOSURE WALL CONSTRUCTION - PODIUM			30,100 sqft	\$2.50	\$75,250
ENCLOSURE WALL CONSTRUCTION - ARF			9,500 sqft	\$2.50	\$23,750
IPE WOOD SIDING			15,400 sqft	\$5.00	\$77,000
STUCCO FINISH ON BACK OF PARAPET			22,900 sqft	\$18.00	\$412,200
ALUMINUM STOREFRONT			2,200 sqft	\$10.00	\$22,000
PUNCHED OPENING WINDOWS, 5'x5'			4,000 sqft	\$75.00	\$300,000
MISC. EXTERIOR ELEMENTS			48 each	\$2,200.00	\$105,600
ENTRY LOCATIONS			1 lsum	\$50,000.00	\$50,000
VERTICAL CIRCULATION			1 lsum	\$50,000.00	\$50,000
MEMBRANE/BUILT-UP ROOFING SYSTEM COMPLETE			4 loc	\$35,000.00	\$140,000
CANOPY/SOFFIT CONSTRUCTION			9 flr	\$35,000.00	\$315,000
			15,963 sqft	\$15.00	\$239,445
			1 lsum	\$50,000.00	\$50,000
					\$0
					\$4,311,457
					\$122.79 /sf total
INTERIOR ARCHITECTURAL FIT-OUT					
INTERIOR SPACE FIT-OUT			552 sqft	\$80.00	\$44,128
RECEPTION/WAITING			672 sqft	\$120.00	\$80,640
STAFF/PUBLIC RESTROOM			168 sqft	\$150.00	\$25,200
SPA/TUB ROOM			1,764 sqft	\$60.00	\$105,840
BEDROOM - PRIVATE					

Community / Support ARF
Total Building GSF

Comments & Clarifications

Typical, soils correction included w/ sitework
On imported fill, included w/ sitework
Allowance for special conditions
Typical, 7" w/ reinf. sand, VB
Hill side on first floor, WP and drainage
Allowance
Typical
11" thickness
Shafts & penetrations, etc.
AFR floors
2x6 w/ bracing, high parapet/screen wall, 15' ht
2x6 w/ bracing, 9' ht
Allowance
Floor & roof framing, incl. plywood deck
2 layers for fire rating
Special framing locations
Structured over roof
Independent footings, steel structure over roof
Allowance
Met stud backup, gyp, MB, insul
Ext gyp sheathing/plywood, air barrier, insulation
Incl. finish
Typical
Typical, 9' ht
Alum clad, operable w/ security
Allowance
Building lighting, skylights, signage, etc.
Alum entry systems w/ security
1 elevator, 2 stairs
Typical application
Allowance - metal panel or plaster

Partitions, doors, finishes, casework, specialties, etc.
Upgraded finishes, custom casework
Upgraded finishes
Durable finishes, specialties
Built-in furnishings, durable finishes, security

San Mateo County Cordilleras - ARF & Support

Pre-design Construction Cost Model



Item Description	Comments & Clarifications	Community / Support ARF		TOTAL COST
		15,963 sqft	1st flr	
		49,151 sqft	2nd & 3rd flr	
		35,114 sqft		UNIT \$
		QUANTITY	UNIT \$	TOTAL COST
BEDROOM - SEMI-PRIVATE	Built-in furnishings, durable finishes, security	4,312 sqft	\$60.00	\$258,720
PRIVATE BATHROOM	Built-in furnishings, durable finishes, security	2,254 sqft	\$110.00	\$247,940
MEDITATION / LIBRARY	Interior glazing, upgraded finishes, casework	448 sqft	\$80.00	\$35,840
CARE / EXAM / THERAPY / MEDS	Upgraded finishes, casework	1,036 sqft	\$75.00	\$77,700
SHARED ACTIVITY	Durable finishes	5,187 sqft	\$55.00	\$285,285
LIVING ROOM	Upgraded finishes, furnishings	672 sqft	\$80.00	\$53,760
KITCHEN / FOOD PREP / SERVERY	Food safe finishes, not incl. equipment	3,178 sqft	\$100.00	\$317,800
OFFICE / CONFERENCE	Typical finishes	4,172 sqft	\$50.00	\$208,600
STAFF LOCKER ROOM / BREAK	Typical finishes	392 sqft	\$65.00	\$25,480
STORAGE/WORK/MEP ROOMS	Basic finishes, durable	10,307 sqft	\$40.00	\$412,296
		35,114		\$2,179,229
				\$62.06 /sf total
FURNISHINGS/EQUIPMENT & SPECIAL CONSTRUCTIONS				
FIRE DOOR & FIRE RATED PARTITION CONSTRUCTION	Fire separations within building	1 Isum	\$100,000.00	\$100,000
SECURITY / DOOR HARDWARE EQUIPMENT	Allowance	37 room	\$7,500.00	\$277,500
KITCHEN EQUIPMENT	Small commercial	1 Isum	\$250,000.00	\$250,000
				\$0
				\$627,500
				\$17.87 /sf total
MECHANICAL				
FIRE PROTECTION SYSTEM	Typical, concealed heads	35,114 sqft	\$4.00	\$140,456
DOM/FIRE WATER EQUIPMENT	Pumps, meters, HW heater, etc.	1 Isum	\$65,000.00	\$65,000
PLUMBING SYSTEMS - TYPICAL	Typical, per fixture	26 loc	\$3,000.00	\$78,000
PLUMBING SYSTEMS - SECURITY	Security, per fixture	84 loc	\$4,000.00	\$336,000
ROOF DRAINAGE SYSTEM	Internally piped drainage, tied to storm system	1 Isum	\$35,000.00	\$35,000
VARIABLE REFRIGERANT SYSTEM	Condensers and fan units	90 tons	\$2,200.00	\$198,000
HVAC PIPING DISTRIBUTION & CONNECTIONS	VFR connections	35,114 sqft	\$5.00	\$175,570
DUCT DISTRIBUTION & TERMINALS	From fan coil units	35,114 sqft	\$12.00	\$421,368
HEAT PUMPS	100% OA, roof mounted, minimal ducting	10 each	\$10,000.00	\$100,000
EXHAUST FANS	Kitchen and general exhaust, minimal ducting	20,000 cfm	\$3.50	\$70,000
NATURAL VENTILATION FANS	At operable windows	24 each	\$1,500.00	\$36,000
HVAC CONTROLS	BAS to central location	250 pnts	\$850.00	\$212,500
SPECIAL MECHANICAL EQUIP & SYSTEMS	Allowance	1 Isum	\$100,000.00	\$100,000
				\$0
				\$1,967,894
				\$56.04 /sf of bldg

San Mateo County Cordilleras - ARF & Support

Predesign Construction Cost Model



Item Description	Community / Support ARF		QUANTITY	UNIT \$	TOTAL COST
	1st fir	2nd & 3rd fir			
	15,963 sqft	19,151 sqft			
Total Building GSF	35,114 sqft				
Comments & Clarifications					
ELECTRICAL					
ELECTRICAL SERVICE CONNECTION			1 Isum	\$50,000.00	\$50,000
ELECTRICAL SERVICE EQUIPMENT			1 Isum	\$85,000.00	\$85,000
PV POWER PRODUCTION EQUIPMENT			84,750 watts	\$4.50	\$381,375
FUEL CELL POWER PRODUCTION EQUIPMENT			3.33 kw	\$8,500.00	\$28,305
POWER DISTRIBUTION & DEVICES - TYPICAL			35,114 sqft	\$6.00	\$210,684
MECHANICAL & EQUIPMENT CONNECTIONS			100 loc	\$500.00	\$50,000
LIGHTING SYSTEMS			35,114 sqft	\$9.50	\$333,583
FIRE ALARM SYSTEM			35,114 sqft	\$3.00	\$105,342
TELECOM SYSTEMS			35,114 sqft	\$3.00	\$105,342
SECURITY SYSTEMS			35,114 sqft	\$4.00	\$140,456
				\$0	
				\$1,490,087	
					\$42.44 /sf of bldg

San Mateo County Cordilleras - Sitework

Pre-design Construction Cost Model



Item Description		Total Site Area		Comments & Clarifications		267,133	sqft (+/-6 acres)	UNIT \$	TOTAL COST
SITWORK						QUANTITY			
HAZARDOUS MATERIALS ABATEMENT	Existing Cordilleras building					90,000	sqft	\$21.67	\$1,950,000
BUILDING DEMOLITION	Existing Cordilleras building					90,000	sqft	\$10.00	\$900,000
EXCAVATION & FILL @ DEMO	Removal of basement & fill					15,000	cuyd	\$12.00	\$180,000
MISC DEMOLITION/REMOVALS	Fence, lighting, furnishings, signage, etc.					1	Isum	\$50,000.00	\$50,000
HABITAT RESTORATION	Allowance					1	Isum	\$100,000.00	\$100,000
TREE PRESERVATION	Allowance					1	Isum	\$100,000.00	\$100,000
SITE CLEARING/DEMO/GRUB	Demo paving, clear site					6.13	acres	\$3,500.00	\$21,464
SITE CONTROLS	Temp fence, E&S, temp drainage, etc.					6.13	acres	\$6,500.00	\$39,861
MAJOR SITE RETENTION WALL	Soil nail, incl. excavation, multiple lifts					20,000	sqft	\$40.00	\$800,000
MINOR SITE RETENTION WALL	Soil nail, incl. excavation, single lift					8,000	sqft	\$35.00	\$280,000
RETAINING WALL FINISH	Assumes finish applied to soil nail					28,000	sqft	\$15.00	\$420,000
MASS EXCAVATION	Cut and redistribute on site					60,000	cuyd	\$6.50	\$390,000
R&F SITE GRADING	Allowance					6.13	acres	\$7,500.00	\$45,994
IMPORTED FILL @ BUILDING FOUNDATIONS	Assumes 5' of fill					12,000	cuyd	\$20.00	\$240,000
EXISTING UTILITY REMOVAL	Allowance					1	Isum	\$50,000.00	\$50,000
DOMESTIC WATER PIPING	Distribution from existing water tower and mains					1,000	lft	\$85.00	\$85,000
FIRE WATER PIPING	Distribution from existing water tower and mains					1,000	lft	\$85.00	\$85,000
FIRE HYDRANTS	New/relocated					6	each	\$5,000.00	\$30,000
FIRE & DOMESTIC WATER BOOSTER PUMPS	New pumps at existing pump station					2	each	\$35,000.00	\$70,000
SANITARY SEWER PIPING & MANHOLES	6", 4", Connect to existing main					1,400	lft	\$85.00	\$119,000
EXISTING STORM PIPE RELOCATION	30" & 42" creek diversion pipes, reloc to avoid bldgs					600	lft	\$150.00	\$90,000
STORM SEWER PIPING & STRUCTURES	8"-18" piping and structures					2,000	lft	\$85.00	\$170,000
STORM WATER INFILTRATION AREAS	Special fill areas for treatment, 4% of impervious					6,416	sqft	\$12.00	\$76,997
STORMWATER HARVESTING & REUSE SYSTEM	FP, Irrigation & Sewage Conveyance uses					1	Isum	\$300,000.00	\$300,000
MAIN ELECTRICAL SERVICE & GEAR	2500A MSB in ARF bldg					1	Isum	\$100,000.00	\$100,000
EMERGENCY GENERATOR	Generator and associated equipment, fuel tank					1,200	kw	\$450.00	\$540,000
ELECTRICAL SITE DISTRIBUTION	MHRC building and site					850	lft	\$150.00	\$127,500
TELECOM SITE DISTRIBUTION	Service connections, MRHC/ARF building connections					850	lft	\$100.00	\$85,000
ROAD CONSTRUCTION	Paving & base, curbs, drainage, etc.					65,000	sqft	\$5.00	\$325,000
PARKING AREA CONSTRUCTION	Paving & base, curbs, drainage, etc.					15,000	sqft	\$4.00	\$60,000
PEDESTRIAN SURFACING	Sidewalks, patios, etc.					9,000	sqft	\$10.00	\$90,000
SITE SECURITY FENCING	Picket style, 6'-8" ht					1,000	lft	\$85.00	\$85,000
SITE LIGHTING	Allowance, vehicular and pedestrian					1	Isum	\$80,000.00	\$80,000
MHRC COURTYARDS	Surfacing, landscaping, furnishings					12,800	sqft	\$10.00	\$128,000
LANDSCAPE RETAINING WALLS	Minor retaining, keystone block					350	lft	\$150.00	\$52,500
RECREATIONAL AREAS	Allowance, sport court, garden, shelters					1	Isum	\$100,000.00	\$100,000
WALKING PATH AREAS	Path, gazebos, etc.					1	Isum	\$100,000.00	\$100,000
LANDSCAPED AREAS	Green space, sod, planting					85,000	sqft	\$3.50	\$297,500
RESTORATION AREAS	Landscape repair, seeding					45,000	sqft	\$0.50	\$22,500
IRRIGATION SYSTEM	All landscaped areas					85,000	sqft	\$1.50	\$127,500
									\$8,873,817



San Mateo County - Cordilleras Center
Pre-design Construction Cost Model - EXISTING BUILDING REUSE

	quantity	unit \$	Reuse of Existing Cordilleras Center
			90,000 GSF
Hazardous Materials Abatement	90,000 sqft	\$21.67	\$1,950,000
Interior & Exterior Selective Building Demolition	90,000 sqft	\$8.00	\$720,000
Structural Upgrades and Modifications	90,000 sqft	\$25.00	\$2,250,000
Exterior Enclosure Improvements	56,000 sqft	\$50.00	\$2,800,000
Re-Roofing	30,000 sqft	\$20.00	\$600,000
Interior Architectural Fitout	90,000 sqft	\$65.00	\$5,850,000
Furnishings/Equipment & Special Constructions	90,000 sqft	\$20.00	\$1,800,000
Mechanical System Replacement	90,000 sqft	\$50.00	\$4,500,000
Electrical System Replacement	90,000 sqft	\$25.00	\$2,250,000
Site Re-Development Costs	allowance		\$2,000,000
Contractors General Conditions/OH&P	15.00%		\$3,708,000
Design Contingency	10.00%		\$2,842,800
Construction Contingency	5.00%		\$1,421,400
Building & Site Construction Cost			\$32,692,200
Pre-Construction/Development Costs	2.00%		\$653,844
Permits, Inspections, Testing, Hazmat Admin	2.50%		\$817,305
Professional Service Fees	8.00%		\$2,615,376
IT Technology Equipment	3.00%		\$980,766
Furniture, Fixtures, and Equipment	10.00%		\$3,269,220
LEED / Commissioning	2.50%		\$817,305
Owner Management Costs, Moving, Storage	4.00%		\$1,307,688
Project Soft Costs	32%		\$10,461,504
Over-all Project Contingency (Renovation)	15.00%		\$6,473,056
Escalation to Contr. Mid-point (Q1 2018) ***	13.77%		\$5,942,102
TOTAL PROJECT COSTS			\$55,568,861

8.2 – Operating Costs

The future operating costs for replacing Cordilleras were modeled by Dale Jarvis & Associates for Behavioral Health and Recovery Services as part of the Study and are included in Appendix L. The operating costs were modeled based on assumptions about the number, size, occupancy rate, licensure and required staffing for each facility. Costs were modeled based on information about current expenditures by Behavioral Health and Recovery Services for similar services in the broader market as well as information provided by Telecare. In addition, revenues were projected based on current Medi-Cal reimbursement rules for Specialty Mental Health. The analysis evaluated potential reimbursement that is now unavailable for treatment provided to residents of Cordilleras, even when they are in the unlocked section and travel off-site for services in the community.

	High Intensity	Moderate Intensity	Adult Residential	117 Bed Total	Total with Added ARF
Number of Facilities	4	1	1	6	6
Beds per Facility	16	16	37	N/A	N/A
Total Beds	64	16	37	117	135
Total Days	23,360	5,840	13,505	42,705	49,275
Occupancy Rate	95%	95%	95%	95%	95%
Occupied Days	22,192	5,548	12,830	40,570	46,811
Total Staffing FTEs	105.20	18.95	21.00	145.15	155.37
Staff FTE per Bed	1.64	1.18	0.57	1.24	1.15
Total Expenses	\$11,671,094	\$2,355,531	\$2,168,670	\$16,195,295	\$17,250,324
Less On-Campus Revenue	-\$5,200,837	-\$1,062,072	-\$477,219	-\$6,740,128	-\$6,972,288
Less Off-Campus Revenue	-\$1,300,271	-\$262,428	-\$44,245	-\$1,606,944	-\$1,606,944
Savings from Avoiding Purchase of Other Beds				-\$601,265	-\$1,147,396
New Project Net BHRS Costs				\$7,246,959	\$7,523,696
Current Net BHRS Costs				\$7,505,208	\$8,051,339
Decrease in Costs				-\$258,249	-\$527,643
New Project Net BHRS Cost per Day				\$178.63	\$160.72
Current Net Cost per Day				\$185.00	\$198.46
Decrease in Cost per Day				-\$6.37	-\$37.73

While the total expenses for the services provided are projected to increase in the proposed model from \$9.8 million to \$17.3 million as a result of more intensive staffing and programming in the new facilities tailored to the residents, the projected net costs to BHRS would be less as a result of revenue to offset the costs. The projected total net costs to BHRS (\$7.5 million) are \$0.5 million lower than the current net costs (\$8 million). Similarly, the cost per day decreases from \$198.46 to \$160.72. The addition of another floor containing 18 beds to the Adult Residential Facility adds \$0.7 million to the total operating costs, but is more than offset by a reduction in other beds that would not have to be purchased privately and an increase in Medi-Cal reimbursement.

See Appendix L for the complete Financial Analysis Reports

Part 9

Schedule

Part 9 – Schedule

Introduction

The new Cordilleras project can be completed in approximately 5 years. If the Board of Supervisors approves proceeding with the project, the design process could begin immediately with a brief Bridging effort to develop a schematic design and begin the CEQA environmental review process. The proposed schedule reflects a Design-Build project delivery method, with the selection of the Design-Build contractor and team occurring in early April 2015. The design and documentation process would continue through summer of 2016, and run concurrently with the required environmental review and a sequenced permitting process. The issuance of permits is estimated to occur in early 2017. As discussed in Part 7, under *Consumer Relocation Planning*, the Feasibility Study proposes a phased approach to the project, to allow for the occupation of the existing Cordilleras building as long as possible - to minimize the need to temporarily relocate the Cordilleras residents.

The project divides into two main phases, each with two sub phases, and with the demolition of the existing Cordilleras building occurring between the two main phases.

- Phase 1A – April to October 2017
 - Earthwork and Site Utilities for the western portion of the site
- Phase 1B – October 2017 to September 2018
 - Construction of two MHRC buildings and the ARF/Campus Center
- Demolition – September 2018 to December 2018
 - Demolish the Existing Building and Site
- Phase 2A – December 2018 to April 2019
 - Earthwork and Site Utilities for the eastern portion of the site
- Phase 2B – April 2019 to January 2020
 - Construction of three MHRC buildings and associated site work

The project schedule durations are based on history of similar projects, agency review discussions, and projections for desired date of opening. The project schedule will continue to be refined, with more detail added, when the project moves forward into a design phase.

Some points of note on the schedule:

- In order to begin the agency review process, a schematic design of approximately 30% complete, will be required for submittal. We are showing this as a separate Bridging effort on the schedule.
- We are showing a 24 month parallel review period for all of the various agencies. This was determined through a conversation with a representative of the California Department of Fish and Wildlife – being the agency with the longest anticipated review period.
- This schedule assumes that a certain amount of financial risk has been accepted for the production of design and construction documents during the agency review period. This allows building permits to be obtained proximate to the completion of agency reviews.

See the Overall Project Schedule on the following page.

