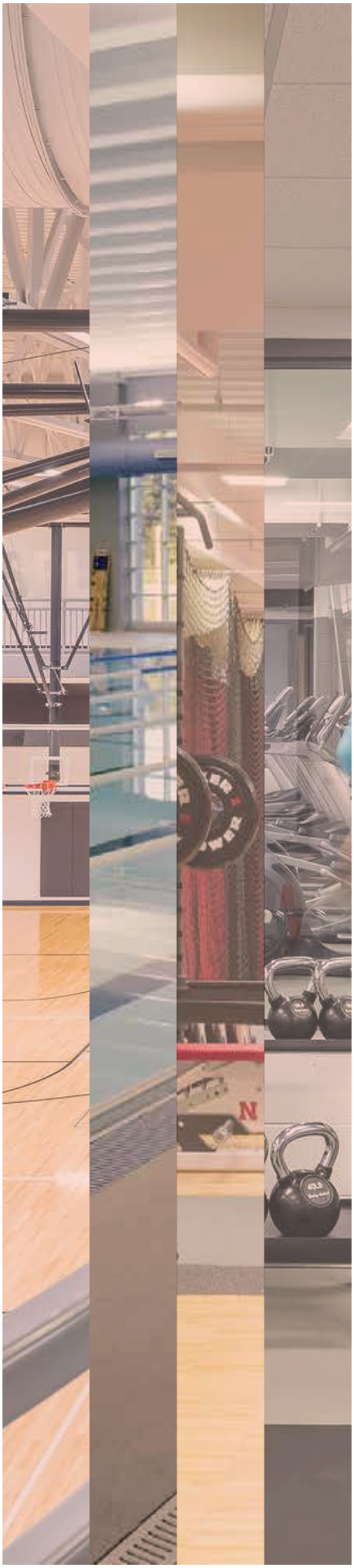


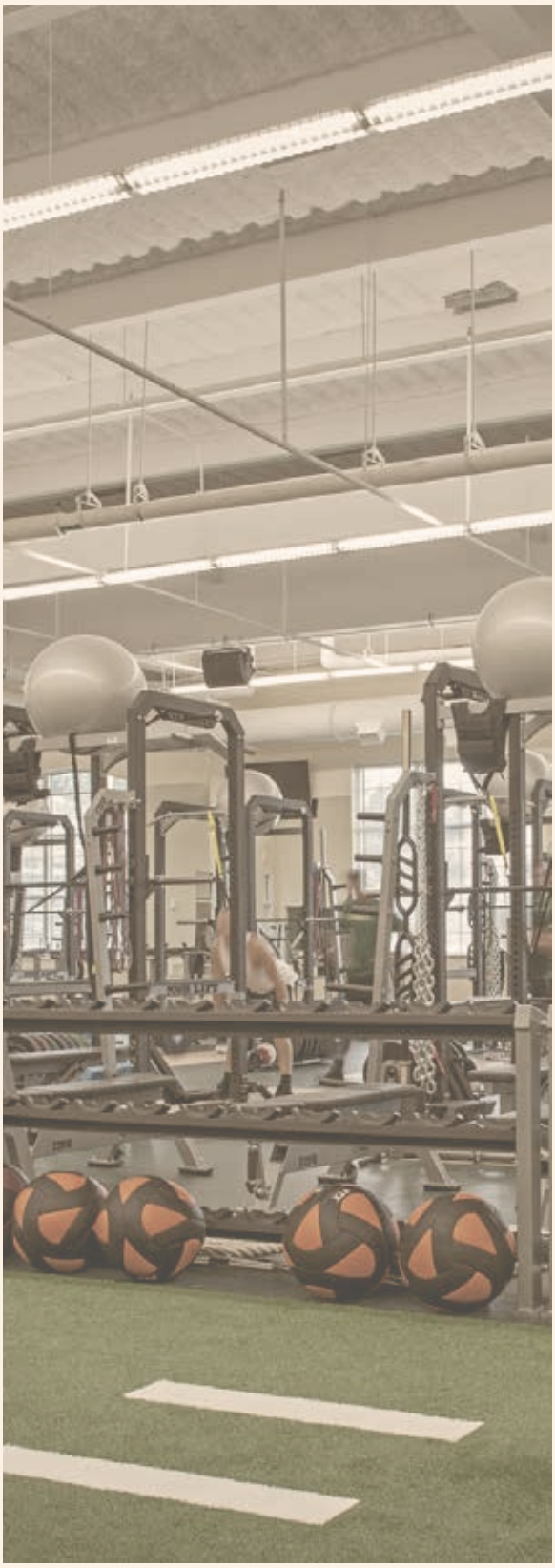
Campus Wellness & Activities Center

GREEN HILL SCHOOL
DSHS PROJECT NUMBER #**2018-415**

RECREATION BUILDING
PREDESIGN REPORT | September 10, 2018

GHS
Established 1929

DLR Group



CONSULTANT TEAM

DLR Group

planning, design, architecture, mechanical engineering, electrical engineering, structural engineering, sustainability

KPFF Consulting Engineers

civil engineering

Roen Associates

cost estimating

Aquatic Design Group

pool planning

TABLE OF CONTENTS


Baby-Solid
Baby-Solid

- PART I -

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Summarize the problem, opportunity, or program requirements; alternatives considered; preferred alternative; and why it was chosen. Include basic project cost information.

INTRODUCTION

Green Hill School (GHS) is a secure facility that houses and serves incarcerated male youth from across the state of Washington. Originally constructed in the early 1900's, the campus has undergone several additions in response to a growing and changing population. Tremendous population growth is further anticipated with the passage of Senate Bill 6160 which extends the length of youth confinement to age 25. Because of the school's past successes and unique ability to manage and mitigate behavioral issues, GHS is oftentimes a first choice in youth rehabilitation. GHS offers a variety of educational and vocational programs, including health care services to youth living on campus. Behavioral health services, including cognitive and dialectical therapies, have proven effective in teaching the youth to develop key strategies for future success and reintroduction into the community. These programs and services are essential, the youth are also given the opportunity to exert their energy and participate in exercise that allows them to develop life long wellness skills.

Constructed in the 1960's, the recreation building has reached the end of its physical life, and no longer meets the needs of the school. Its location in a flood plain requires constant flood-mitigation, and security concerns prevent large numbers of youth from utilizing the facility at any given time.

In response to security concerns, the building can only be used by one group of youth at one time, limiting the feasibility to provide all youth enough balanced exercise throughout the day. Both the American Correctional Association (ACA) and the Performance-based Standards (PbS) have established national best practices for the care and treatment of juveniles. Achieving these standards has proven challenging, in that many of the spaces have been re-purposed, and therefore do not function efficiently or flexibly. There is insufficient power, heating, cooling, and inadequate daylight to meet program needs. Each individual space has its own deficiencies that limit the activities of each space. Technical surveillance is also very difficult with the current floor plan configuration, creating several blind spots where an individual may be harmed. The school is in strict compliance with the Prison Rape Elimination Act (PREA), and strives to protect its youth as much as possible, but this could be more easily accomplished with clear lines of sight throughout the campus. PREA concerns are at the utmost importance to GHS and the current recreation building exacerbates that concern further.

In summary, the purpose of this study is to understand the needs of GHS staff and youth, and to explore various options to create a safe and secure environment for quality recreational activities.

> *"A new building for me would mean more possibilities and more time to do what I like doing."*
>
> *Youth from Green Hill School*

PRIORITIES

Key design concepts being investigated for this include:

- Program for 80 youth divided into groups in order to participate in recreational activities simultaneously
- Provide greater opportunities for recreation in the daily schedule
- Opportunities to create life-long wellness
- Develop self-efficacy among youth
- Improve interior environment including normative features, daylighting, thermal comfort, and good indoor air quality
- Increase building efficiency to improve life-safety, accessibility, and create a safe environment for youth and staff
- Provide decompression space for staff
- Meet PREA, ACA, and PbS standards

ALTERNATIVES

Options for the recreation building include:

- No action. Building remains as-is.
- Extensive renovation of the existing building.
- Construct new building and adjacent recreation fields, including demolition of existing building.

PREFERRED ALTERNATIVE

The preferred alternative is to construct a new campus wellness and recreation building which will include a pool, gymnasium, multipurpose room and stage, covered exterior sports area, softball field, soccer, and football field, staff work areas, and minor staff amenity spaces, each with a focus on diverse recreational opportunities that will encourage greater youth participation while maintaining compliance with safety and supervision standards.

Staff from both DSHS and GHS participated with the design team in a visioning and goals exercise to examine the best course of action to offer the youth quality recreational opportunities. The youth participated in a similar visioning session, talking the sports activities they are interested in which would encourage excitement and participation. It was determined that a new building would best suit the needs of the campus, allowing for new activities to be developed and more youth to participate in recreation at one time. A new building would also allow for some minor staff amenities that will be used for decompression from stressful situations that often arise working at this youth campus.

After reviewing several site options, each with its own merit, the DSHS and GHS staffs selected the football field site near the Gate House building primarily because of several key logistical considerations. First and foremost, the selected location will provide convenient and secure access for construction activities as well as future visitor circulation.

The project scope incorporates several cost-saving, logistical considerations, including efficient building systems which support an expedited construction schedule. The selected site location also facilitates contractor access directly from outside the secure perimeter, separating the construction activities from the protected campus environment and thereby reducing the requirement for extensive security clearances for contractor personnel.

Juvenile Rehabilitation (JR, formerly known as JRA) serves Washington State's highest-risk youth. Youth may be committed to JR custody by any county juvenile court or superior court. The juvenile courts follow prescribed sentencing guidelines to determine which youth will be committed to JR. These youth typically have committed many lower-level offenses or may have committed a serious crime. The superior courts follow prescribed sentencing guidelines, and minors when sentenced under age 18 will serve their adult sentence in JR up to age 25.

COST OVERVIEW

The Maximum Allowable Construction Cost (MACC) of the preferred alternative to build a new building is **$21,957,897.** By comparison, the MACC for the renovation of the existing building is **$19,776,384.** It is clear that renovating the existing building would not provide a complete solution but rather, be a costly, temporary measure. A complex renovation of this building with its significant maintenance issues is risky, especially with unknown conditions that would be revealed during construction.

Program modifications, security, and life safety improvements are a top priority, and cannot be disregarded. These elements would be more difficult to incorporate into a renovated building.

One particular MACC methodology includes costs directly associated with using a delivery method of GC/CM to design and construct the building in lieu of a traditional design/bid/build delivery method. The Revised Code of Washington (RCW) Title 39.10.340, makes the GC/CM construction method uniquely applicable based on the following measures:

- Implementation of the project involves complex scheduling and coordination with existing on site security measures.
- The project involves construction at an occupied facility which must continue to operate during construction.
- The involvement of the general contractor/ construction manager during the design stage is critical to the success of the project.

The GC/CM method has been selected in order to align with the current construction market. Contractors with the skills and experience to work on complex campuses and systems have moved away from the traditional method because of the added risks and unforeseen existing conditions. Contractors still relying on the traditional methods use techniques during construction to build upon their low bid quantifications. This limits the ability to work collaboratively with the owner and design team during construction. In essence, the owner, architect, engineers and contractor collectively become "The Design Team". GHS staff have previously experienced negative impacts from the traditional design/bid/build construction methods, and will greatly benefit from the collaborative communication and streamlined construction processes which is more likely to lead to a successful project for all parties.

The GC/CM process does have initial up front costs reflected in the cost estimate summaries. For the preferred option, the MACC (with GC/CM fees) is **$24,378,091**.

EXECUTIVE ORDER 18-01

This project is designed to achieve Net Zero Carbon Emissions in response to Executive Order 18-01. Through efficient design practices in building and envelope design, high efficiency building systems including HVAC, geothermal field, lighting, and infrastructure for renewable energy. The building has the potential to be the first building on the GHS campus to reach net zero, and set up to be one of the first buildings designed and constructed under this order. The order requires newly constructed state-owned buildings to be designed to be "zero" energy or "zero" energy capable to the greatest extent possible. This report details how the design team will strive for net zero emissions for both alternatives.

The cost of strategies to achieve net zero have been itemized from the MACC to identify costs associated specifically with Executive Order 18-01, specifically including the photovoltaic arrays and geothermal fields. These strategies will add an additional $3,846,186, but this "first cost" will provide benefits to the facility and campus throughout the life span of the building. As a government correctional facility, it must be designed to be a 30-50 year building. Therefore, paybacks over the long life span will continue to provide efficiency to the State. Furthermore, as the campus continues to develop over time, systems will become more sophisticated, more affordable, and more consistent with other State facilities.

- PART II -

PROBLEM STATEMENT

THE PROBLEM

Identify the problem, opportunity or program requirement that the project addresses and how it will be accomplished.

PROBLEM STATEMENT

The recreation building on GHS's campus was designed in the 1960s and served the population at that time, which is understood to have been a very different type of population. As other buildings have been renovated and replaced, the recreation building remains the oldest building on campus. While the facility itself has been maintained as much as possible, the building no longer serves the current population to its fullest capacity and isn't as safe as it once was due to sight lines, building materials, and deterioration of the building.

The existing building was assessed on July 19, 2018, by the architectural and engineering team to understand the constraints and deferred maintenance required to renovate the building. The existing building has significant failures throughout that would require full replacement. Those failures include (but are not limited to) the following:

- Building exterior envelope
- Plumbing fixtures
- PREA Concerns
- Fire and life safety systems (smoke and fire)
- Emergency egress
- ADA accessibility
- Exterior and interior glazing
- Equipment replacement for areas damaged by humidity and moisture from the pool
- Flexibility and separation of groups of youth to allow multiple groups to occupy the building concurrently.

The preferred alternative, a new building, will allow the staff at GHS to optimize their ability to provide recreation opportunities to the youth, potentially allowing for more than the one required hour of large muscle exercise. A new building will also allow for youth to expand their choices of forms of exercise. Due to the limited amount of space at the current facility, the options are limited to the types of spaces that are provided. A new building will allow for the youth to become more familiar with a variety of exercise options they'll encounter upon their return to society, creating more life-long positive health choices.

Safety is a significant concern for staff. The preferred option a new building would enhance safety and reduce PREA concerns by mitigating blind spots and optimizing the ability to use new technology in aiding the security team. Safety and security is one of the highest priorities for staff, and the current building only exacerbates these concerns. Adhering to standards prescribed by PREA, ACA, and PbS are of the utmost importance.

Refer to the Mission and Goals section in this document regarding the Visioning exercises in which staff and youth participated. The staff and youth demonstrated how wellness is necessary for effective treatment. Providing youth opportunities to engage in self-care allows them to see both physical improvements and meet treatment targets. The results of this exercise helped the project team understand the achievable user aspirations that this project can help achieve and how the facility can support the mission and goals of the program.

JUVENILE REHABILITATION:

Juvenile Rehabilitation (JR) uses a residential treatment model that focuses on engaging youth in a supportive therapeutic relationship and motivating them to replace problem behaviors with pro-social behaviors to meet their needs and pursue their goals.

The mission of JR is to help youth gain skills in mindfulness, emotional regulation, distress tolerance, interpersonal effectiveness, social, moral reasoning, and anger management as well as “soft skills” to obtain employment. Providing resources, such as opportunities for wellness, for these skills allows youth to decrease impulsiveness, increase awareness of thoughts and feelings, and understand the function of their emotions and manage difficult ones. These skills also help in the management of stress and the development of pro-social behaviors.

For youth placed in secure care or transitioning to the community, to increase chances of success, treatment should include psychosocial interventions and an after-care plan with services to help the juvenile transfer and maintain learned skills.[1]

WASHINGTON STATE INSTITUTE FOR PUBLIC POLICY:

The Washington State Institute for Public Policy is a nonpartisan public research group that examines applied policy research for the state legislature. GHS utilizes various treatment models identified by this group as a long-term benefit to both youth and taxpayers. By employing evidence-based research, GHS uses treatment models that have been proven to have a significant impact, as demonstrated by the institutes' cost benefit analysis tool.

http://www.wsipp.wa.gov/BenefitCost

ECOLOGICAL SYSTEMS THEORY:

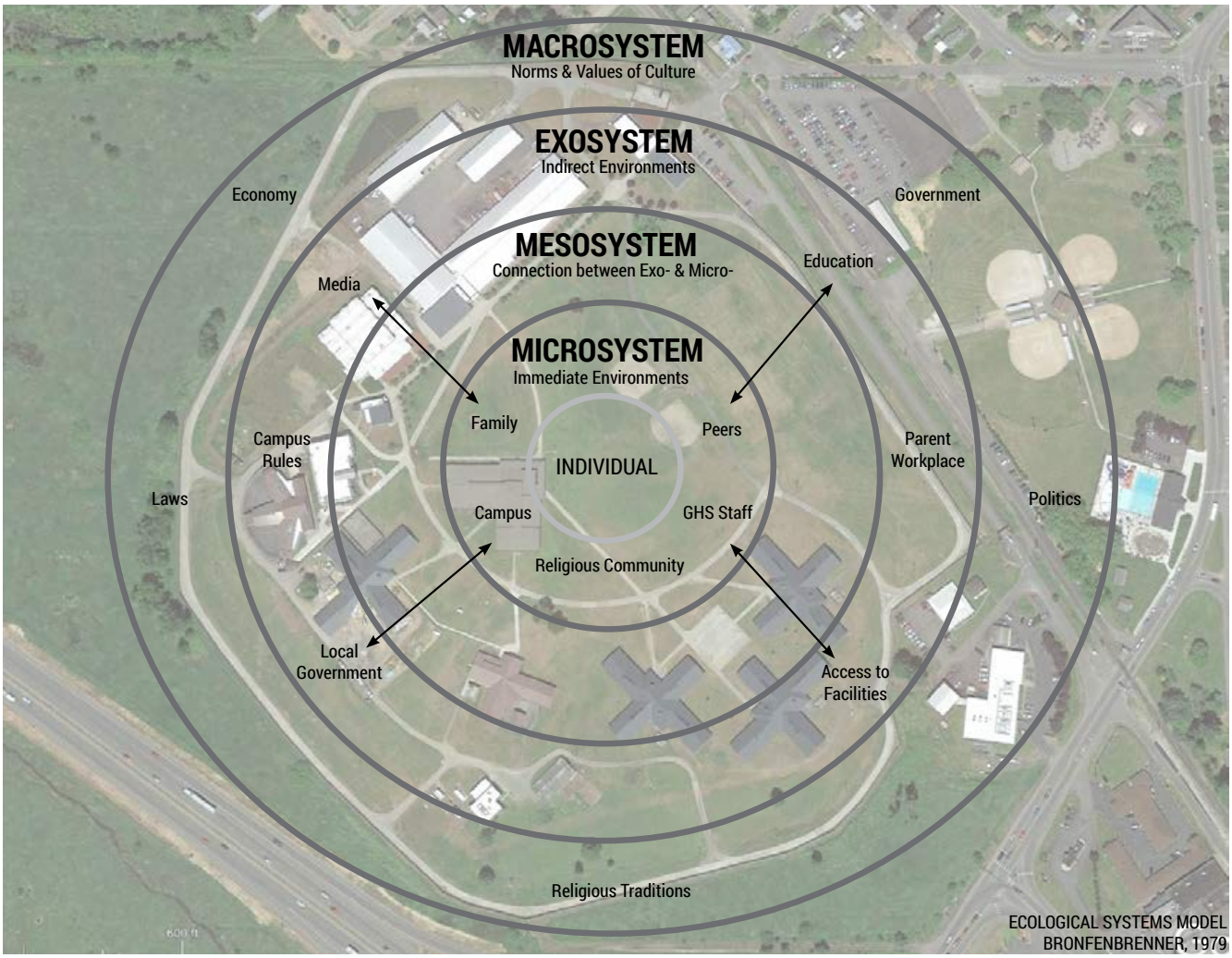
Ecological Systems Theory [2] proposes that each person exists in a variety of networks, that begin at the individual level and stretch outward toward friends, family, school, and society. American psychologist Urie Bronfenbrenner, theorized that development is a process that interacts within and across these developed networks.

As youth enter the criminal justice system and find themselves housed in a secure care facility, that facility becomes their ecological system. The facility provides all items to meet the needs of the youth and continues their development that began prior to entry. GHS is an example of an ecological system; it not only meets the youth's needs but it extends farther and provides ideologies and culture as well. It is important to meet the needs across all networks to ensure that proper development takes place.

The ecological systems model is made up of four systems: the micro-, meso-, exo-, and macrosystems. These make up the interrelated settings that an individual exists within, having varying levels of control and access at each system.

The programming, staff, interactions, facilities, and opportunities and how these systems in place interact with a youth's development represents GHS's ecological system. Current neuroscience and psychology research [3] have identified that brain development continues well beyond the teen years and through the early twenties. This is an important factor to consider, as the youth residing at GHS are going to continue to get older with the passage of Washington State Senate bill 6160, which extended juvenile court jurisdiction over serious cases to age twenty-five.

The microsystem typically refers to the most immediate groups/institutions that affect a youth's development such as family, peers, friends, and religion. Within the context of GHS, this could



ECOLOGICAL SYSTEMS MODEL
BRONFENBRENNER, 1979

be viewed similarly with family, peers, staff, and religious opportunities provided. GHS provides family events and activities that are crucial to development of the microsystem while being in a secure care facility. Youths interact most with their microsystem, through such activities as connecting with the staff and their peers, and this system typically plays the largest role in the youths' development.

The mesosystem refers to the interactions between the microsystems and the exosystem and the role that it plays in development. An example of this is the interactions between one's family and teachers or family and peers and how those interactions affect one's outcomes. If a youth's parent dislikes their friends, will they stop hanging out with those friends or go against their parents? Due to the role that GHS plays for the youth residing within the facility, the interactions that staff and teachers have are crucial to the development of the youth. These interactions can have the most impact on a youth's ability to participate in activities, as staff serve the guiding role that parents or guardians would typically play.

The exosystem is the link between the social setting that youth experience that they don't have an active role in and the microsystem, such as how a youth's experience at home is influenced by their parent's experience at work. Within the setting of the GHS campus, the exosystem is exhibited in the process we are going through currently to build a new wellness and recreation center. Youth experience is continued to be influenced by outside forces that they have little to no control over.

The macrosystem describes the culture that a youth lives in and it constructs, such as level of industrialization, socioeconomic status, schooling, and parental work status. A youth's macrosystem may change over time. Each youth within GHS has had a macrosystem that has changed. Prior to being housed at GHS, these youth were immersed in a culture that most likely is immensely different from what they are experiencing currently while at GHS. Although their cultures and common identities are expressed and seen within peer groups, they differ from what they experience on the outside. The culture, although different from adult detention, is a form of institutionalization. The addition of the new wellness and recreation center offers a choice for the youth that they don't have typically in the corrections environment. The development of the recreation building will allow the youth to choose certain positive things, such as types of exercise, which will continue to reinforce positive behaviors.

Each system contains roles, norms and rules that shape psychological development. It is important to make sure the networks needed for proper development are provided.

SOCIAL COGNITIVE THEORY:

Social cognitive theory[4] is the concept, developed by Albert Bandura, that when people observe behaviors and the consequences of that behavior, they can recollect the events, and use it as a guide for replicated behavior.

Social cognitive theory is on display every day, like when we watch someone attempt to swipe their credit card and realize they're using chip reader or when we see someone use a machine at the gym. The behavior is seen, and deliberated on whether we could achieve something similar or have a different outcome. Each behavior that is witnessed can change a person's way of thinking. When learning a certain behavior, people must understand what the potential outcome could be if they repeat the behavior. One wouldn't expect the exact same result, but something similar; this expectancy is heavily influenced by the environment the person grows up in. Human development can be regarded from a lifespan perspective[5], that different influences vary in their ability to affect a person's development on their stage in life. Social and economic changes are typical throughout life but can have considerable effect one's development. For youth that have been removed from their previous circumstance that may have included economic conflict, poor home life, and lack of opportunity, their development has been shaped by this course of events that has led them to residing at GHS.

While their development and behaviors have been impacted by these events, a youth's cognitive ability to process their surroundings and change their behavior is heavily influenced by the consequences

and lasting effects of their choices. A person's capacity to think through their actions is a fundamental component of social cognitive theory in replicating behaviors. Even though poor behaviors can be learned, positive behaviors can as well. While people have the ability to dwell on their shortcomings with negative thoughts, through opportunities of self-efficacy these negative thoughts can be reduced.

In addition to demonstrating positive actions, GHS also reinforces positive connections with family by the opportunities for activities and events that occur. The campus allows for family participation that helps establish positive relationships that may have been strained prior to the youth being housed at GHS. By providing this example the campus fosters positive relationships that benefit youth and reestablish familial connections that are crucial to success inside and out.

The theory is witnessed often on GHS campus. Every day on the GHS campus, youth are being provided opportunities to learn new behaviors or replicate positive behaviors. By providing a new wellness building, the opportunities for positive behaviors can increase.

ACHIEVEMENT GOAL THEORY:

Achievement goal theory[6] builds upon social cognitive theory in the field of sports psychology when examining participation and enjoyment. Enjoyment is the greatest factor in whether one will continue to participate in sports. Achievement goal theory incorporates two primary goals, performance and mastery. Performance goals examine proving one's ability, while mastery goals examine developing and mastering a skill. Mastery goals are often associated with higher levels of enjoyment. When someone is able to develop a skill and perceive that they have mastered that skill they develop confidence. Furthering their ability to enjoy the experience more than before. Achievement goal theory also uses the foundation of self-efficacy.

SELF-EFFICACY:

Self-efficacy, another developmental theory created by Bandura, is the belief in one's ability to complete a task. High levels of self-efficacy are associated with confidence that is more likely to translate in completing more difficult tasks as one masters more simple tasks. People who have low self-efficacy tend to be less confident and do not take on complex tasks for fear of failure. The belief in one's self is a powerful concept. Self-efficacy can be developed in youths by offering the following:

- **Social modeling** provides an identifiable model that shows the processes that accomplish a behavior.
- **Improving physical and emotional states** refers to ensuring a person is rested and relaxed prior to attempting a new behavior. The less relaxed, the less patient, the more likely they won't attain the goal behavior.
- **Verbal persuasion** is providing encouragement for a person to complete a task or achieve a certain behavior. [7]

Opportunity for recreation reinforce the ways that high levels of self-efficacy can be developed. Social modeling can be identified by the variety of ways that exercise can be achieved. The recreation building provides opportunity, and the staff provides positive reinforcement and affirmation. Recreation provides opportunity for improving one's physical and emotional states.

Being able to complete simple tasks, such as successfully finishing a workout can translate into trying exercises that one may not have done before. Failure is less likely to have a negative impact on perception of self because they know that they have had success in the past. Providing the youth residing at GHS opportunities for achievement, even something as simple as finishing a workout, can make all the difference. Constructing a new building that allows for opportunities of achievement and choice reinforces the belief that there is value in these activities, and the youth themselves.

ENDNOTES:

[1] Underwood, L., Washington, A. (2016) Mental Illness and Juvenile Offenders. International Journal of Environmental Research and Public Health, 13(228).

[2] Duerden,M., Witt, P. (2010) An Ecological Systems Theory Perspective on Youth Programming. Journal of Park and Recreation Administration, 108-120.

[3] Johnson, S. B., Blum, R. W., & Giedd, J. N. (2009). Adolescent Maturity and the Brain: The Promise and Pitfalls of Neuroscience Research in Adolescent Health Policy. The Journal of Adolescent Health : Official Publication of the Society for Adolescent Medicine, 45(3), 216–221. http://doi.org/10.1016/j.jadohealth.2009.05.016

[4] Bandura, A., Social foundations of thought and action : a social cognitive theory. 1986, Englewood Cliffs, N.J.: Prentice-Hall.

[5] Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), Annals of child development. Vol.6. Six theories of child development (pp. 1-60). Greenwich, CT: JAI Press.

[6] Gardner, L. A., Vella, S. A., & Magee, C. A. (2017). Continued Participation in Youth Sports: The Role of Achievement Motivation. Journal Of Applied Sport Psychology, 29(1), 17-31.

[7] McAlister AL, Perry CL, Parcel GS (2008). "How Individuals, Environments, and Health Behaviors Interact: Social Cognitive Theory". Health Behavior and Health Education: Theory, Research, and Practice (4th ed.). San Francisco, CA: John Wiley & Sons, Inc. pp. 169–188.

> "Wellness is vital to a productive and happy life. Having a facility that enables staff to teach and guide youth to wellness is essential towards effective treatment. When you see a youth engage themselves in self-care, you see not only their physical improvement but also improvements in their designated treatment targets."

Kelly Wilson
GHS Recreation Manager

REQUIREMENTS

Identify and explain the statutory or other requirements that drive the project's operational programs and how these affect the need for space, location or physical accommodations. Include anticipated population projections (growth or decline) and assumptions.

REQUIREMENTS THAT DRIVE THE PROGRAM:

There are a number of standards, guidelines and requirements to which the project will adhere. These include:

Prison Rape Elimination Act (PREA) - PREA standards will be better adhered to with cameras and overall sight lines. The building layout and technology are tools that greatly heighten staff's ability to follow PREA policies. In compliance with Section 115.322 of PREA Standards, the Rehabilitation Administration (RA) has developed policies to ensure referrals of sexual abuse and sexual harassment allegations are investigated. Established in 2015 under the leadership of Policy Committee Chair Dr. Don Mead (EGCC Superintendent), those policies include:

1. Policy 5.90 (49) Applying The PREA Juvenile Standards in Juvenile Rehabilitation (JR) - Zero tolerance policy for any form of sexual abuse or sexual harassment of youth in the care of JR.
2. Policy 5.91 (34) Reporting Abuse or Neglect of JR Youth - Policy governing the reporting of incidents of alleged abuse or neglect of JR youth.

RA has also published a Criminal Investigations Agency Responsibilities list of procedures for conducting PREA Investigations.

GHS has worked with PREA philosophies and regulations thoroughly, and all physical conditions will be adhered to in the design of the new facility. Extensive renovations to the existing facility are required to bring the building up to PREA standards, most specifically in the pool locker, shower, and changing area which is completely non-compliant.

Americans with Disabilities Act (ADA) - ADA accessibility for all spaces is critical, not only for youth but for treatment staff and volunteers who are not required to be "able bodied." Similar to PREA standards, the existing facility has many areas that are not ADA compliant, especially in the pool shower areas, and will require significant renovation to provide access.

American Correctional Association (ACA) - ACA standards are a national set of guidelines that provide a minimum standard for operations and physical building components. These standards are not required by law but are the basis of design for the vast majority of facilities in the United States.

Performance Based Standards (PbS) - PbS is a set of standards rooted in data-driven research that holds juvenile justice facilities to the highest standards for operations, programs, and services. This standard includes the minimum of 1 hour of large muscle exercise per day.

POPULATION PROJECTIONS:

While the overall population of youth in correctional confinement in the state has declined, the passage of Senate Bill 6160 will extend youth detention to their 25th birthday in the state of Washington. The population is projected to grow. For example, by 2022 the Washington Caseload Forecast Council projects an additional 48-52 additional youth added to JR's caseload. While not all of these youth will be housed at Green Hill, it is reasonable to expect a large percentage will. The new facility will be built to accommodate the growth in population, but more significantly adapt to the more intensive needs of older, larger, and stronger youth that will reside at GHS.

MISSION AND GOALS

Explain the connection between the agency's mission, goals and objectives; statutory requirements; and the problem, opportunity, or program requirements.

The mission, goals and objectives of Juvenile Rehabilitation (JR) is to provide youth with the tools and guidance to become productive members of the community and to reduce criminalistic behaviors.

This skill-set includes:

- **Mindfulness Skills** for decreasing impulsiveness and rigid thinking, and for increasing awareness of thoughts and feelings.
- **Emotion Regulation Skills** for understanding the function of emotions and for managing difficult emotions.
- **Distress Tolerance Skills** for managing stress and accepting life's sometimes painful realities.
- **Interpersonal Effectiveness Skills & Social Skills** for pro-social assertiveness, managing conflict, and building healthy relationships.
- **Moral Reasoning Skills** for making mature decisions when faced with difficult dilemmas.
- **Anger Management Skills** for managing anger without engaging in aggressive behavior.
- **Critical "soft skills"** necessary for obtaining and maintaining employment.

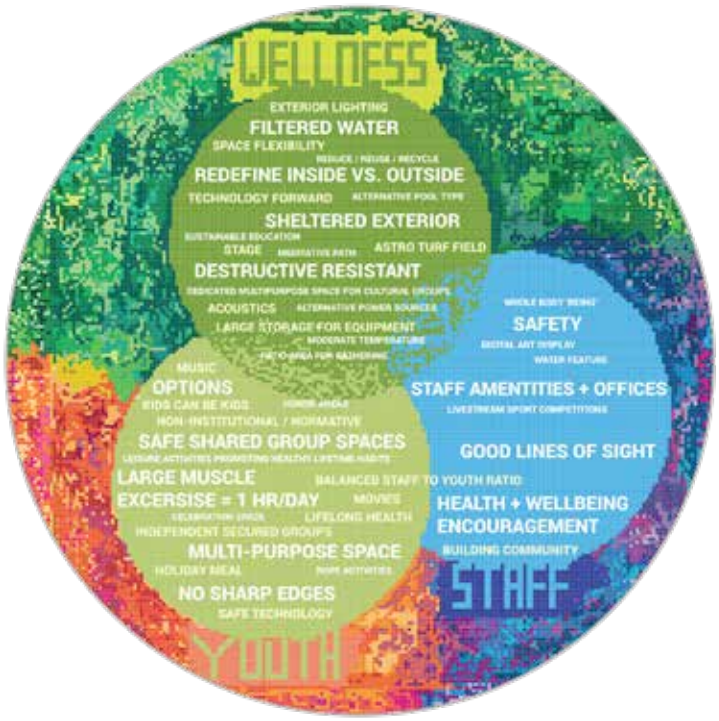
The goals of JR can be further enhanced by the construction of a new recreation building. The activities that the youth can participate in help facilitate opportunities where the skills above can be put into action.

Specific project goals were developed to help guide the project team (DSHS staff, GHS staff, the design team) throughout the duration of this project. As a group, the team created a list of project goals and prioritized them. A graphic was created for the project as a reminder of the HOW to ensure the project makes a successful building for the youth.

These goals are used to measure all decisions against each other to make sure the project is staying true to the intent. If a decision is made that contradicts a goal, the discussion turns to why the goal was created and if it needs to be modified in order to guide the project to it's best outcome.

The following images show the development of the project goals as well as the goals graphic for the project.

DEVELOPMENT OF THE PROJECT GOALS



PROJECT GOALS GRAPHIC

VISIONING

In addition to the goals exercise with the project team, a visioning session as previously mentioned was conducted with staff and youth (separately) to provide insight into the personal design aesthetics, significant drivers, or passion for this project.

In the exercise, there were approximately 500 individual photographs of ideas, buildings, forms, colors, etc. laid throughout the room. Each person was asked to select five unique images that resonated with them in relation to the project. They posted the five images on the wall and were asked to share with the group why they selected their images.

The resulting conversation provided insight by both administrative and users to discuss how this future building could best work for the youth and staff. Staff identified that flexible spaces that allow youth variety and choice were most important for this new building.

The following pages show the youth visioning session and the staff session is included in the appendix.

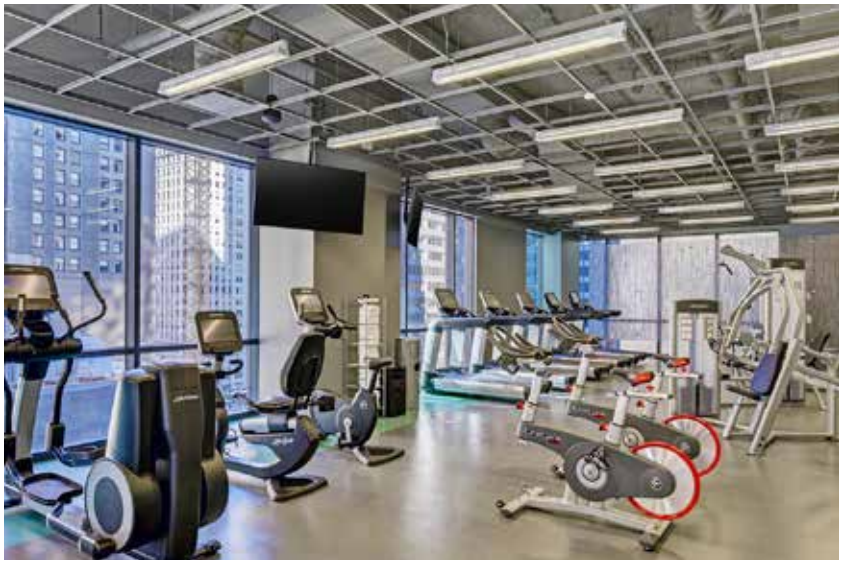
GHS STAFF PARTICIPATING IN VISIONING PROCESS

Student N.

- Connection to nature reminders of home
- Maximize views on campus or integrate graphics of nature in new building
- The rock climbing wall is epic and provides a full body workout that is different from the typical
- Like the tough mudder style obstacle course

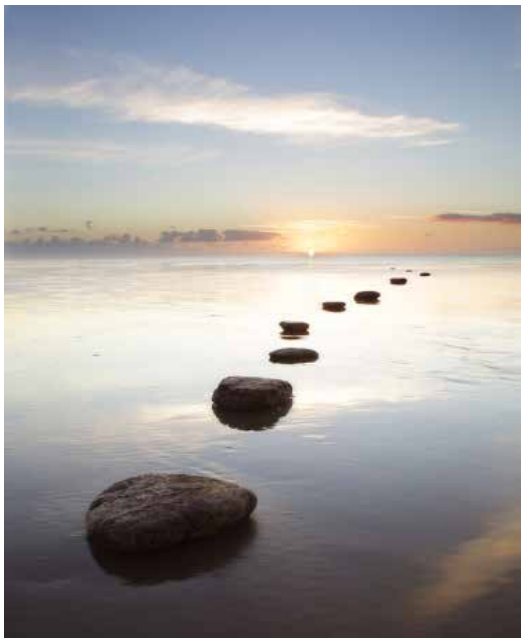
Student G.

- Providing a driving simulator, for life after GHS
- The punching bag would allow youth a space to work out aggression
- Likes team sports
- Provide weights equipment with safety features that let youth workout without need for spotter
- Provide alternative fitness and workout areas, like battle ropes



Student N.

- Would enjoy a skate-park, alternate activities to a gym
- Liked the creek and bridge, looks beautiful
- Provide a Zen/relaxation space
- Driving range, allowing youth opportunities for things they've never done before
- Ropes course



Student J

- Liked the ropes course/ obstacle course
- Running track, cross country style
- Likes the feeling of being in nature.

Student M.

- Provide a religious/spiritual space
- A space for youth to dance, youth love to dance
- Likes team sports
- A separate field to allow for youth to play more than one sport outside at a time
- Place for youth to play and listen to music
- Running track for competitive events

WHAT IS NEEDED

Describe in general terms what is needed to solve the problem.

The ideal solution for the youth and staff at GHS would be to utilize concepts that are recognized as being able to mitigate a correctional environment and enhance the spaces compared to the current building that will improve safety and well-being of both staff and youth.

- Allow youth to maximize opportunities for exercise each day
- Provide a variety of choices in exercises that enhance experience
- Lead youth to find activities that lead to lifelong wellness
- Create spaces that are similar to recreation centers that youth may see once released to help with integration back into society
- Provide youth with opportunities to succeed at different activities, translating to higher levels of self-efficacy
- Provide adequate spaces for recreation and school staff to be able to complete their work
- Provide a space for staff to be able to decompress from their stressful jobs
- Provide storage for equipment to ensure it is stored properly and allows for staff to safely remove

The following additional observations have been made regarding existing specific program spaces:

GYMNASIUM

In order to meet the programmatic needs, the gym needs to be updated to meet the needs of the current population, providing space and opportunity for choices. The current set up of the gymnasium allows for minimal sized groups of youth to play basketball because there is only one full court option, creating opportunity for only 10 youth to participate. While the gym has been kept up to the best of the campus's ability, it doesn't allow opportunity for choice of activities. If youth are playing basketball, the other youth have no other choices within the space.

AUDITORIUM

The auditorium serves one function. The fixed seating and sloped floor hinders any other types of activities. The multi-purpose space planned to replace this room will be flexible and accommodate a variety of activities. The flexibility of this space is crucial to be able to provide different programs, cultural events, religious and spiritual events, in addition to be available for visitors. The multi-purpose space most positively effects the 2004 master plan goals.

WEIGHT ROOM

The weight room, originally constructed as a visitor's center, has undergone several iterations of space types before becoming a weight room. It is tightly packed with weight equipment and cardio machines, leaves no room for any other types of exercise. Power requirements are inadequate, requiring the separation of equipment alternating on separate circuits. The simultaneous use of cardio machines often times trips requiring maintenance staff to quickly resolve the matter. The weight room is required to better suit the equipment and needs of the youth while being able to incorporate a space for non-weight lifting exercises such as stretching, flexibility, and body strengthening routines. While the youth prefer to do weights most frequently, they feel the most hindered by the lack of choice and opportunity to try other exercises.

POOL

Previously a space well-lit with daylight, the windows at the indoor pool have been covered, and the mechanical system is loud. Both aspects make for a very dreary and uninviting space, such that youth are disinterested in swimming activities.

STAFF AREAS

The current staff spaces are located where youth have direct access. While at times this may be beneficial, the youth invariable distract the staff from their work. The staff have no opportunity to remove themselves from the youth areas to decompress from stressful events or situation.

ADDITIONAL SPACES

Currently, the campus is without an out-door, covered recreation area which poses a problem, in that the City of Chehalis receives an average annual rainfall of 48 to 50 inches. The resulting washed-out fields preclude their use for an extended period of time.

A covered turf is a viable solution that would allow the use of the outdoor recreation fields throughout the year.

EXTERIOR FIELDS

The softball and soccer/football fields are in close proximity to one another and, due to security concerns, cannot be used at the same time.

STORAGE

Storage has been an ongoing issue, and with its second floor location, it is difficult to move large, heavy recreational equipment between floors. Storage of equipment needed to meet program requirements is best located indoors on the main level. However, outdoor storage is also necessary for softball, soccer, football and other outdoor activities that are provided by GHS.

HISTORY

Include any relevant history of the project, including previous predesigns that did not go forward to design or construction.

In 2004, a Juvenile Rehabilitation Master Plan was developed by RNL, identifying for each JR campus what needed to happen to best meet the needs of the populations. The master plan delineated a recommendation to renovate current recreation/ gymnasium building to better suit the needs of the campus. However, this recommendation did not come to fruition and the needs of renovation have continued for over a decade; leaving renovation no longer as a viable option. Additionally, the improvements identified included providing a new Cultural and Spiritual Center, a Family Focus Center, with a visitation and family counseling area.

- PART III -

ALTERNATIVES

ALTERNATIVES

This predesign report investigated two alternatives in addition to the no action option.

Please include a high-level summary table with your analysis.

ALTERNATIVES	ADVANTAGES	DISADVANTAGES
NO ACTION	• No cost to state	• No benefit to youth • Does not meet programmatic needs of facility • Unable to provide more than one hour of recreation to youth • Existing building remains in the flood plain • Continue to be unsafe due to retrofitting of spaces • Continues ongoing deferred maintenance
ALTERNATIVE 1 RENOVATION OF EXISTING	• Reuse of existing structure • Will not interrupt fields during construction	• Will not increase the number of youth able to participate at one time • Requires significant mechanical, structural, and deferred maintenance upgrades to building • Replacement of building materials that are failing • Youth will not be able to use during construction • Cost to the State
ALTERNATIVE 2 NEW CONSTRUCTION	• Meets programmatic needs of facility • More youth can exercise at one time • Allow for opportunity for new activities to be incorporated • Model for net zero Carbon Emission building for the State to follow as precedent • Youth can still use the current building during construction	• Both fields will need to be redeveloped to fit on the site • Cost to the State • Minimal access to fields during construction

NO ACTION ALTERNATIVE

Describe all alternatives that were considered, including the preferred alternative. Alternatives may include co-location, renovation, leased space, purchase, new construction, or other options explored. Include:

i. A no action alternative. Describe the programmatic outcome of not addressing the problem or opportunity.

Providing no action for this project is a detriment to both the physical and mental health of the youth. The recreation building is used every day to exercise and remove energy from the boys for proper sleep and circadian rhythms. The more the youth have the advantage of wellness activities, the more stable their mental state can remain. Supervision of circulation areas has required additional staff to manage non-activity areas. The building layout is compressed and does not feasibly allow multiple groups of youth to facilitate utilize it simultaneously. This limits the recreation time to the minimum requirements.

The existing building is within the flood plain, which has caused flooding and damage to the building multiple times. The prevalence of flooding is an ongoing concern and maintenance issue on the site. All other buildings originally constructed in the flood plain have been demolished and reconstructed at higher elevations to mitigate exposure. This is the final remaining building in the flood plain elevation.

The activity spaces have accommodated modern equipment and technologies, but are inefficient and in some locations unsafe. The weight room has been positioned at the south facade of the building in a space not originally programmed or ventilated as a weight room. The sun exposure creates high interior temperature swings that either overheats the youth or restricts them from using the room. The pool is functional, but with no access to daylight or access to the exterior. In addition, the pool area is very loud with mechanical and lighting noise making it difficult to hear in the space. The ventilation and systems provided for the pool are not adequate, causing frequent chlorine odors.

ii. The advantages and disadvantages of each alternative. Please include a high-level summary table with your analysis.

The only advantage of the no action alternative is that it is at no capital cost.

iii. Cost estimates for each alternative.

None.

iv. Schedule estimates for each alternative. Estimate the start, midpoint and completion dates.

None.

ALTERNATIVE 1 - RENOVATION

Describe all alternatives that were considered, including the preferred alternative. Alternatives may include co-location, renovation, leased space, purchase, new construction, or other options explored. Include:

i. A no action alternative. Describe the programmatic outcome of not addressing the problem or opportunity.

N/A

ii. A renovation alternative.

The second alternative is a renovation of the existing building. The existing building is deficient for the programmatic needs of the facility. Spaces would need to be renovated to meet the current needs or have an addition to meet the requirements. Renovations of this extent would require the building to meet current codes including energy and fire/ life safety. The use of mezzanine storage space at the Gym and Stage areas would be reviewed for compliance. Exterior building envelope components would be reviewed, and would be required to include full insulation, structural renovation for seismic and building failure, roof and insulation replacement, and new code compliant windows at all locations.

The value of reusing existing material and infrastructure is both a potential cost savings (design and existing conditions dependent) as well as an overall embodied energy savings for sustainability. The existing materials that may be reused limit the quantity of virgin materials brought to the site, including the transportation of material and packaging waste associated. However, during the assessment of the existing building, failures were noted in the exterior envelope and structure which require significant replacement.

The existing building is a concrete masonry unit structured building with a brick masonry addition on the front entrance. The exterior envelope has failed in many locations with evident cracking along the grout joints and through the block modules. The masonry addition exterior wall has deteriorated at joints to a point where light can be seen through the blocks. Significant areas of efflorescence has been observed on the grout, which is indicative of water intrusion into the brick cavities. The rooms adjacent to the exterior have been noted to not be able to maintain consistent and habitable temperatures in the summer, and especially the winter. The offices have clear cracking and spalling at the face of the block. The brick along the window wall has significant cracking from the ceiling to the floor of the bricks, especially perpendicular to walls.

The heating of the offices is by wall radiant heaters. These heaters, positioned under the windows, cannot maintain the temperatures because of failure to the exterior walls.

The windows along the new addition have failed in their seals and created foggy vision glazing in the polycarbonate. This translucent haze inhibits views to the outside for security. The polycarbonate material is especially prone to graffiti, tagging, and abrasive scratches, and therefore have all become obscured. The windows are all single pane polycarbonate in metal, uninsulated, un-thermally broken frames.

Door locking and controls is operated with manual standard commercial, or in some instances residential, grade locks. Due to the constraints of securing and observing the youth in the building when they arrive, all rooms must be locked at all times. If an staff member needs to retrieve any item from another space, the doors must be manually locked and unlocked as they pass through. The exterior egress doors are also locked to ensure the youth do not wander out of the building. During an event where the youth and staff would be required to evacuate the building, the doors are required to be manually unlocked by a staff member.

The equipment in the Auditorium space is viable for standard presentations, but has not been modernized to perform current technological events such as display a powerpoint presentation. The screen is a large roll down project screen on the stage facing the audience. The floor of the auditorium is sloped for the visibility of seats in the back. All seats are fixed to the floor. This limits the use and flexibility of the space for the variety of activities provided by the facility. The lighting on the stage is in working order, but is an advanced lighting apparatus to what should be provided for this room.

Bathrooms shall be renovated to meet ADA requirements. Many toilet rooms include floor depressed urinal fixtures that if relocated will require

floor modifications at slab depressions. All sinks and fixtures have water damage and staining and are not conducive to current ADA reach and configurations. Partitions, where provided, have been damaged by graffiti or abuse.

There is one ADA accessible youth toilet room in the building, which was a multiple fixture toilet room where partitions and some fixtures were removed to allow space for ADA clearances. The locker and shower area at the pool does not meet the PREA requirements for privacy and accessibility. The shower is a gang shower with a 6-head shower pole. The threshold to get into the shower area is a 3 inch high curb. The ceiling of the shower area has significant water damage at the edge connection to the tile wall. The tile grout has become damaged, which is typical in facilities with this extent of use.

Interior materials throughout the facility are in adequate condition. Walls are typically painted CMU or exposed brick, which require repair as noted below. Flooring throughout is in resilient or wood flooring based on the locations. The weight room floor is vinyl composite tiles covered with rubber interlocked movable tiles which are in adequate condition. The gymnasium flooring is maple hard wood flooring with painted striping. The striping patterns has been damaged through ongoing maintenance of the floor and should be restriped. The wood flooring requires ongoing minimal humidity and temperature control. Two holes, approximately 3 inches in diameter, have been drilled in the floor to provide direct venting to the underside of the floor due to the moisture of the wetland and high water table. Resilient flooring throughout the facility is in adequate condition. The mechanical mezzanines and storage areas raised in the building (approximately five locations) have wood floor construction and wood railings. These floors are stable, but require maintenance to ensure they are durable and not susceptible to the moisture of the pool environment and water conditions of the building.

Power availability for charging of equipment such as telephones, radios, etc. is not sufficient, so most outlets have been overloaded with surge protectors.

All areas associated near the pool area have humidity issues which have caused extensive rust and/or corrosion. All equipment and ductwork in the pool utility room has rust damage. Plumbing equipment in the locker rooms has corrosion on pipe connections and transitions in materials. Metal access panels and even light switch cover plates that are exposed metal have corroded.

The ceiling in the pool area is tongue and groove wood slat structure. Areas connecting to the wall have evidence of water damage along the edge of the exposed decking. The boards should be examined to ensure the structural integrity of the decking is not compromised. Exposed decking shall be sealed to ensure water damage is controlled.

Areas where structure is connected at walls, in particular at the central corridor and within the gym have evidence of water damage and noted to have leaking during rain events. Marking along the wall at structural connections is visible on the wall.

During the site investigation, it was found to have an ant situation where the ants were walking from the floor up to the ceiling along the wall to the staff offices. The staff noted this was a constant seasonal issue, and the ants have grown in frequency over time.

The building has one smoke detector adjacent to the fire control panel. This detector is closed behind a locked door and away from most people. The exit doors to the exterior are located within the storm “moat” and do not have a paved egress path to allow safe and controlled egress to an assembly location.

The existing fields and field house are in poor condition. The outfield of the ball field has a drain cover that is depressed, causing a tripping hazard for players as they field balls. The ground is uneven in spots. The storage shed is worn with extreme damage at the roof eave. The shed is approximately 60SF and houses basic equipment for maintaining the fields. The OSB sheathing at the roof deck has deteriorated and exposed the wall to roof joint, allowing water leakage. The interior has been clad with plywood sheathing to maintain the enclosure and limit bugs, but frequent hornet nests have built in the framing.

The the existing building has been assessed by the design team to evaluate what components would be salvageable. All other systems will require full replacement. The power for the Recreation building is currently distributed via a 400A Siemens distribution panelboard that is fed off the existing campus medium voltage loop by a transformer adjacent to the building. The panelboard was installed in 2007 and is in good condition. The distribution system within the building consists of several Siemens panelboards installed throughout the building. The panelboards are not centrally located in a single electrical room, instead they are scattered throughout the building in various spaces. Like the distribution board, all of the panelboards appear to have been replaced in 2007.

Existing interior lighting consists of primarily fluorescent fixtures, both surface mount and flush mount. All lighting control currently consists of manual on/off switches in rooms, and no rooms have any sort of automatic shutoff via occupancy sensors nor any daylight dimming. Larger spaces such as corridors appear to be controlled via a PCI Lighting Control panel in a storage/electrical room. In the event of a substantial remodel, the lighting will likely not meet the latest Washington State Energy Code (WSEC) requirements. Additional lighting control in the form of daylight photocells and occupancy/vacancy sensors will need to be installed to meet the latest code requirements. New LED light fixtures in all locations will be required in order to meet the current lighting power density requirements.

Exterior building mounted lighting currently consist of surface mounted high pressure sodium fixtures. The existing means of control appears to be the PCI Lighting Control Panel, but it could not be confirmed that this is what controlled the exterior lights. If the event of a substantial remodel, like the interior lighting, exterior fixtures would need to be replaced in order to meet the latest WSEC power density requirements.

Communications equipment in the building appears to consist of a single incoming Ethernet connection in one of the staff offices. Almost none of the spaces in the building have any sort of network connectivity, wired or wireless. If connectivity is to be expanded to more rooms and programming such as office space, new head end equipment will need to be provided in order to build a full network backbone for the entire building.

The building currently has a Notifier NFS-320 series fire alarm control panel located in a storage/electrical room of the building. While this panel meets code requirements for fully addressable devices, it does not appear to be serving all rooms in the building. A renovation will require bringing the building up to occupancy requirements, which will include expanding notification and detection coverage to all group areas of the building.

Existing buildings have a higher energy consumption due to a less efficient building envelope, lighting and mechanical systems. These spaces also have a potential for less visual comfort, thermal comfort and indoor air quality. Existing buildings can however offer reduced carbon emissions from an embodied energy stand point, due to reduced construction materials. The balance between operational and embodied energy can be determined if required. The key aspect for the decision should be to ensure that the program and use requirements that impact user experience are met. To meet the net zero goals for an existing building however, a substantial alteration or modernization will be required to enhance performance of envelope, lighting and mechanical system.

The mechanical system consists of campus steam entering the building, piped through a steam converter, converting steam to hydronic heat and distributed to heating equipment. Hydronic radiators throughout the building, floor mounted unit ventilators in the weight room and a ceiling mounted unit heater in the locker room provide heat to the building. Limited and minimal cooling is limited to the Auditorium and Gymnasium only via chilled water generated by the campus chiller, pumped to newer AHU's installed in 2010. The cooling in the Gymnasium and Auditorium is undersized for the building load and only in place for humidity control of the Gymnasium flooring. Residential grade window air conditioners were installed in the Weight Room and are completely independent to the space. Code required ventilation air is non-existent throughout most of the building creating very "stuffy", uncomfortable conditions. The HVAC for the Pool and Locker Room is outdated, undersized

and does not include ventilation. HVAC DDC controls are in place campus wide however, the control of the Recreation building in extremely limited. Wall mounted thermostats and hydronic control valves appear to be inoperable throughout the building, creating very unfavorable conditions throughout the winter months. Except for the new Air Handling Units, all the mechanical equipment within the building is well beyond it's useful life and unrepairable.

The plumbing system consists mostly of galvanized piping with a mix of copper installed for repairs. Hot water is generated via hot water heater fueled by the central steam and distributed throughout the building. The plumbing fixtures are original to the building, in very poor condition and not security grade. Water pressure at drinking fountains is minimal and urinals are inoperable. Below grade sanitary system is in acceptable condition however, the smell of sewer gas is apparent due to insufficient trap seals. All plumbing fixtures and hot water generating equipment is well beyond it useful life and unrepairable.

The building does not include a Fire Protection system.

RENOVATION REQUIREMENTS

Due to the extent of renovations required programmatically within the building, the renovation of the building will be required to meet current energy codes. This includes, but is not limited to, fixing and enhancing the U-value of the exterior masonry walls, insulating the CMU walls, new roof insulation, and new U-value at exterior windows.

Regardless of meeting current energy codes, the exterior envelope requires significant maintenance to provide a water tight enclosure and habitable interior spaces. The exterior envelope will require full renovation to properly seal the grout connections and provide a building envelope that meets current energy codes. The grout joints will require full re-tooling and grouting where grout has deteriorated. The locations of cracking through the brick will require structural review for seismic and structural capabilities. To create a durable and water tight envelope, the renovation will require full sealing of the exterior face of the block and masonry with exterior continuous rigid insulation to meet the required R-Value, full water barrier enclosure and rainscreen panel system over a manufactured clip system. This system will be consistent over all elevations of the building.

Exterior windows will need to be replaced in their entirety with double pane, thermally broken storefront windows. The glazing shall be tempered glazing, not security windows to match the specification for the new building. The ribbon windows along the front facade will need to be replaced to carry any structural loads required for the expanse. Windows in the weight room shall be operable to match the required configuration for natural ventilation.

Interior windows at the weight room in at least two locations have broken and been replaced with wood panels to mitigate ongoing damage. These windows shall be replaced.

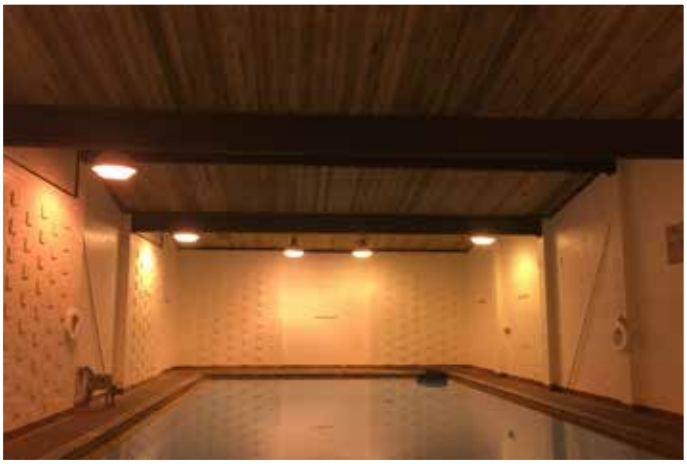
Interior doors have tagging and graffiti in the paint finish. All existing doors are required to be primed and painted with durable epoxy paint suitable for hollow metal finishes. Door locks and controls shall be replaced to provide monitored egress (potentially delayed emergency egress) for fire and life safety. Door locks shall be replaced with durable locking mechanisms. Double doors shall be refitted to have double door access with a removable door style to maintain security and lockability.

The building shall be provided with a new fire sprinkler system to meet current codes. The path ways as egress doors shall be provided to have a safe path to the assembly refuge areas on site.

Bathrooms shall be renovated to meet ADA requirements. Flooring at toilet rooms is typically vinyl composite tiles, and shall be removed and replaced with non-slip epoxy floor systems. Walls at toilets and wet wall areas shall be covered with a seamless resilient coating system. Fiberglass reinforced panel systems are not recommended because once damaged can create sharp objects that can be used as a weapon in the detention environment. Partitions in toilet rooms shall be replaced with solid core phenolic panels, full piano hinge connections at doors, and gravity hinge closers. Areas shall be revised to meet ADA requirements in the locations required for staff and youth access.

The pool locker room shall be renovated to meet PREA requirements for privacy and security of the youth. Changing alcoves shall be provided in the locker room area to provide six (6) changing spaces. Lockers for 30 youth shall be provided in the space. The concrete benches shall be reconfigured to allow clear visibility and operation throughout the space. The shower room shall be demolished in its entirety to provide for six (6) shower / changing alcoves with individual showers. The rooms shall use the area provided in the existing shower and adjacent cleaning area that is currently unused.

The existing gypsum ceiling will be removed in its entirety. All ceramic tile on CMU and concrete floor slab shall be removed in its entirety. New cement board sheathing shall be provided on ceiling framing. All ceiling, floor, and walls shall be prepared and coated with epoxy finish system similar to Prime Coat 5130 for seamless shower enclosure. All separation walls between units will be 6” CMU walls up to 6’-0” with solid core phenolic shower partition doors at each alcove. One shower at a minimum will be ADA accessible with an accessible shower seat. Associated shower units and accessories shall be provided including but not limited to soap dish, grab rails, towel hooks, mirrors, etc.



ii. The advantages and disadvantages of each alternative. Please include a high-level summary table with your analysis.

Both of the action alternatives provide the similar program solutions. The key differences among the alternatives are the location on site and the cost.

Advantages

- Reuse existing structures.
- Does not disrupt the fields or current sight lines on campus

Disadvantages

- The entire building needs to be renovated
- Does not meet programmatic needs identified by GHS staff
- Higher energy consumption
- Building is still in the flood plain and has flooded in the past
- Mechanical systems need to be replaced
- Interior Spaces need to be renovated
- Building will be unusable during construction, leaving youth with minimal opportunities for large muscle exercises as required by ACA

iii. Cost estimates for each alternative.

The estimated construction cost in 2018 dollars for the Renovation Alternative is **$19,776,384** including cost for net zero infrastructure. Including GC/CM premiums, this alternative is **$22,854,776**.

iv. Schedule estimates for each alternative. Estimate the start, midpoint and completion dates.

Design and Bidding Phases:

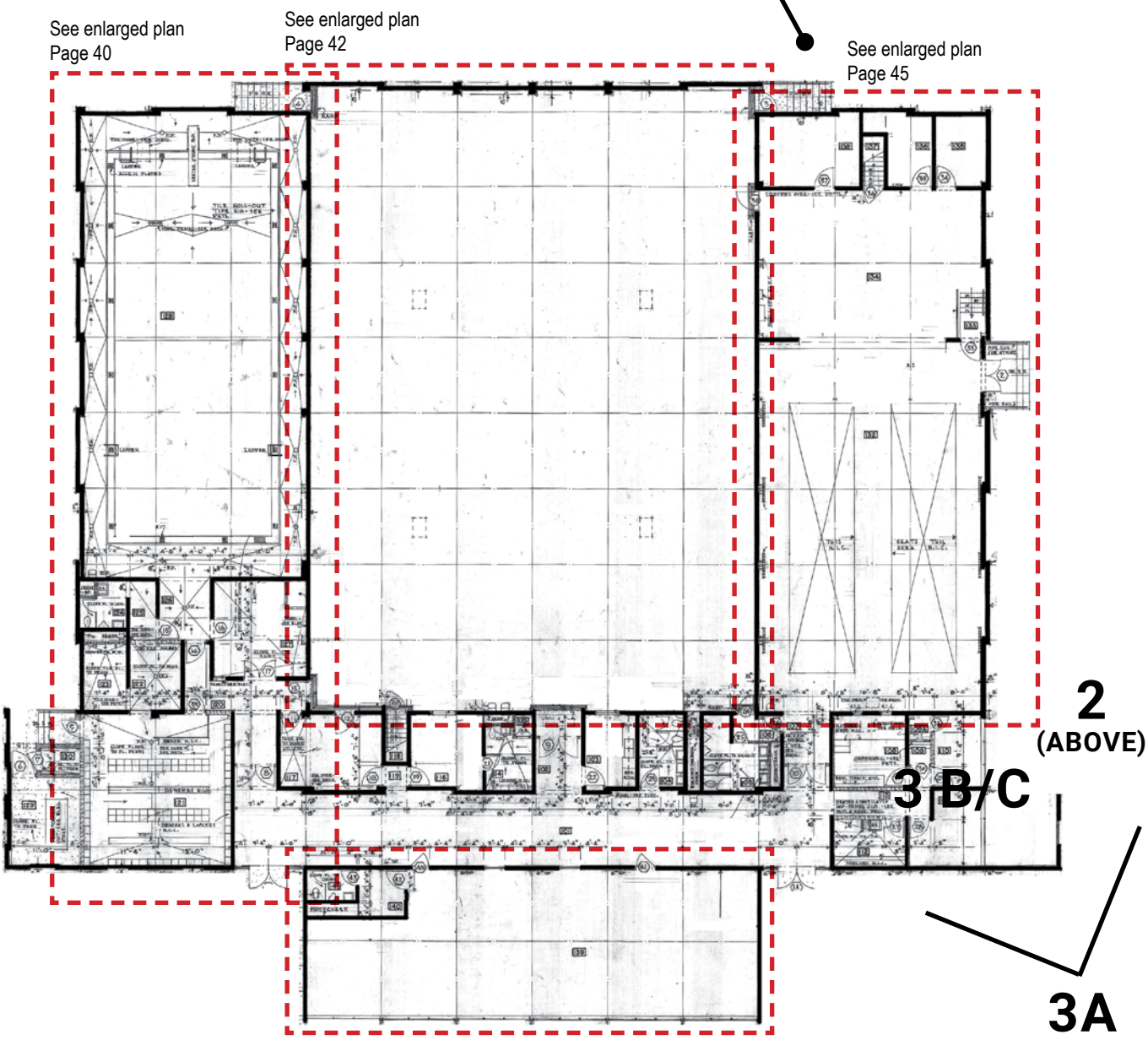
Design: February 2019

Construction Start Date: February 2020

Construction Midpoint Date: September 2020

Construction Completion Date: July 2021

Emergency egress from the large spaces is through the back field of the building. This area is a depressed "moat" that commonly floods from the wetlands. A large dike is provided to limit water overflow from the wetland. Egress doors exit directly onto the grassed yards, and the steps are grown over with plantings. The stairs at the egress doors will be required to become ADA accessible.



FIRST FLOOR PLAN - EXISTING BUILDING
SCALE: NOT TO SCALE

The exterior has evidence of water leakage along facade.

Interior painted metal doors have been scratched and damaged for tagging. All doors require refinishing with durable epoxy finish that will limit the ability to scratch or damage.

There is one smoke detector in the facility at the new anunciator panel within the storage closet. The building will require a full fire sprinkler and smoke system upgrade.

Power and data outlets are overloaded throughout the facility, most predominately in the weight room, because the building has not been upgraded to meet current power requirements and amount of items to be charged regularly.

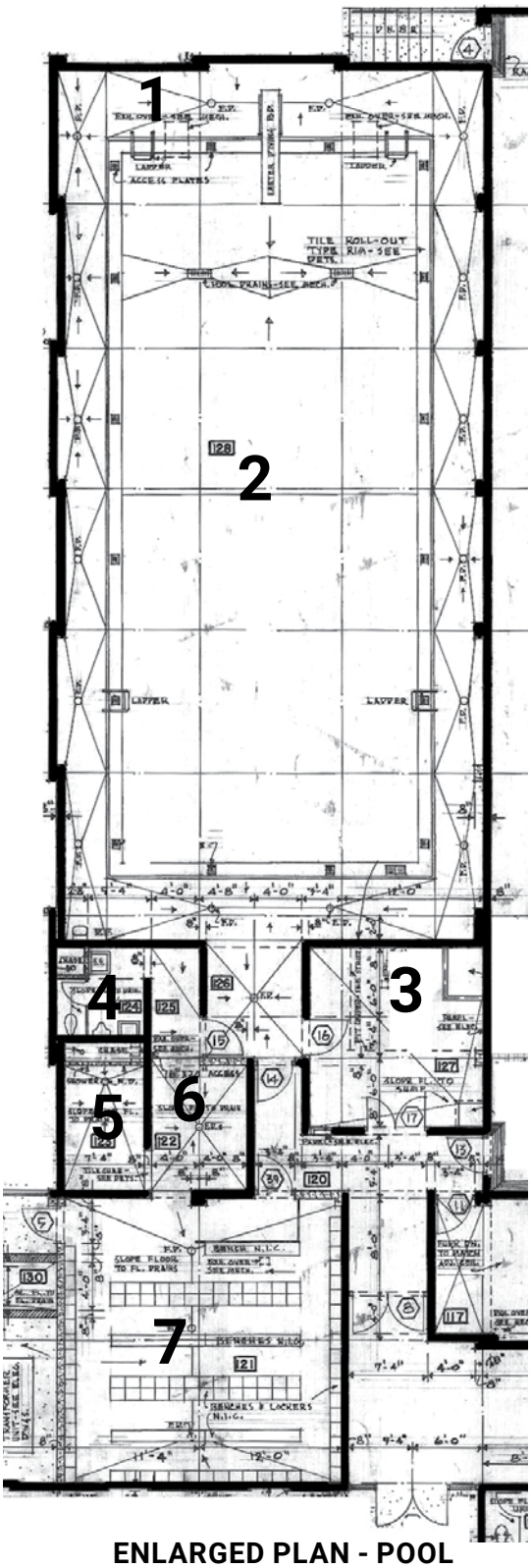
The exterior facade at the staff offices is in complete failure. The brickwork and CMU has cracking through all blocks, especially at connections to structure or perpendicular walls. The exterior wall has efflorescence along the grout lines indicating significant water intrusion into the wall system. The building cannot maintain a regular temperature or humidity levels, especially in the summer and winter when temperatures are more extreme. The entire exterior envelope will be required to be renovated to meet current energy codes.

Roof decking has water damage at edge of room from humidity and/or roof leaking

Typical image of the pool area. The pool area has no natural daylight. The space has a strong chlorine smell.

Equipment in the pool filter room is deteriorating from the humidity in the air.

Plumbing fixtures throughout the building are typically in poor working condition and have significant rust and staining. The rooms are typically not ADA accessible.



ENLARGED PLAN - POOL
SCALE: NOT TO SCALE


5A


5B


5C

The shower and locker area needs to be renovated to meet current requirements for PREA. The shower column does not provide privacy for youth. The threshold at the shower area is not ADA accessible.

The ceiling substrates have water damage and need to be replaced in their entirety.

Humidity in the locker room and pool areas have caused rust damage on all metal surfaces including but not limited access panels and light switch covers.


6

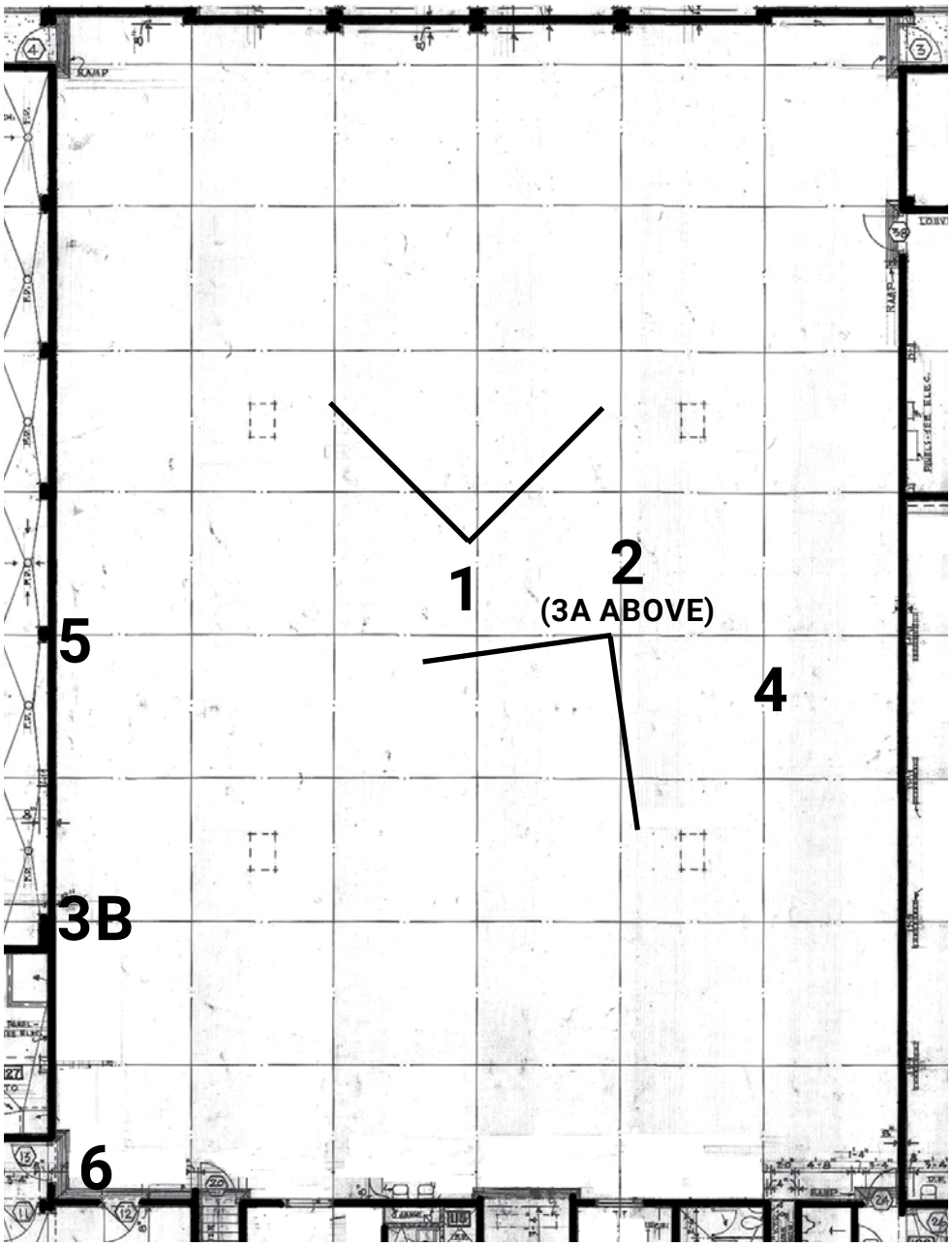
The area adjacent to the shower area with the heater and hose bib will require renovation to provide changing areas and shower cubicles to meet PREA and ADA accessibility.


7A


7B

Photograph of the locker room. Changing areas will be required for youth privacy to meet PREA recommendations. Partition walls are hollow core, and have been damaged.


7C



ENLARGED PLAN - GYM
SCALE: NOT TO SCALE

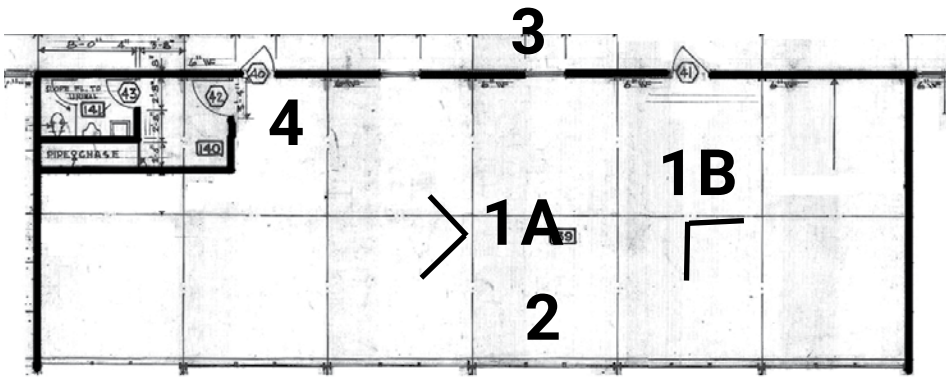
The Gymnasium has maple wood floor, striped for sports. There are 6 basketball hoops for cross court and main court games. One group of youth can use the gym at the same time.

The ceiling is wood decking with clerestory lighting on the perimeter for natural lighting.

Two holes have been drilled into the floor to provide ventilation to the under floor cavities.

Water leaking at the structural connection to the wall have left evidence of the leaks on the interior of the building, typical throughout the Gym and the main corridor.

Typical throughout the facility, door locks and jambs will be required to be replaced to secure staff access areas and provide appropriate secured life safety egress.



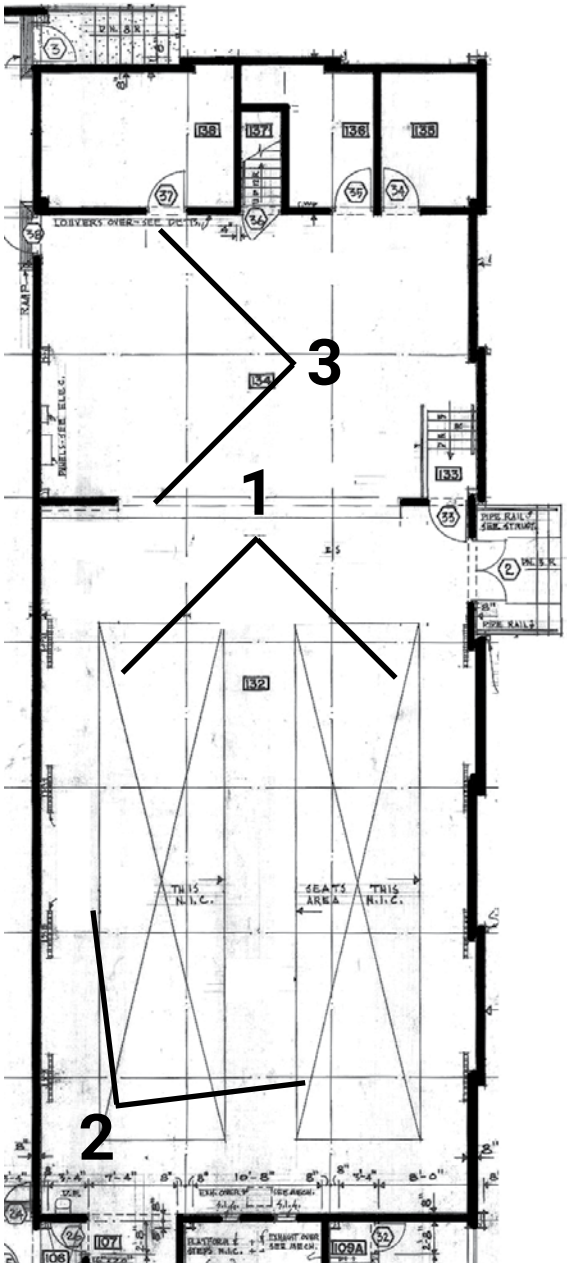
ENLARGED PLAN - WEIGHT ROOM
SCALE: NOT TO SCALE

Cooling at the weight room is regulated with this fan. Temperatures in the room typically are too hot and limit availability to the youth to ensure they do not overheat.

Weight room - Typical equipment and layout.

Windows are polycarbonate glazing which has clouded by graffiti and failure of the glass type. Therefore, there is no clear view to the exterior. These windows shall be removed and replaced with thermally broken metal windows with clear double pane glazing (minimum).

Interior windows that have broken have been replaced with plywood boards. These boards shall be removed and repaired.



ENLARGED PLAN - AUDITORIUM
SCALE: NOT TO SCALE

Views of the Auditorum. Seating will be removed and replaced with flexible furniture. Sloped floor will be reviewed to determine if it can be replaced to allow the room to be multi-functional.

Stage equipment will be renovated to meet the needs for the type of events held in the space.

Access to the Auditorium will be replaced with a double door with removable stile to allow secure locking when not in use. Current double door is not secured.

ALTERNATIVE 2 - NEW CONSTRUCTION

Describe all alternatives that were considered, including the preferred alternative. Alternatives may include co-location, renovation, leased space, purchase, new construction, or other options explored. Include:

i. A no action alternative. Describe the programmatic outcome of not addressing the problem or opportunity.

N/A

ii. The advantages and disadvantages of each alternative. Please include a high-level summary table with your analysis.

The third and preferred alternative is a new building to meet the use and functions of the youth at the facility. The new building is programmed to have a gymnasium, pool, stage and multipurpose room, outdoor covered turf sport area, and associated support and staff space. These areas are itemized in the building program. The program was developed through interviews with the stakeholders, staff, and the youth to determine the appropriate wellness activities that would engage and challenge the youth.

To promote the opportunity for more exercise to balance the youth's physical needs, a building with multiple entrances is proposed. This feature would allow two or more groups to be scheduled to come to the recreation building at the same time without directly crossing paths, a necessity in management of the classifications on campus. By facilitating more than one group at a time, youth would be offered potentially two or more hours of physical activity a day to work different muscle groups and provide diversity. Many of the youth focus their limited time on weight lifting and basketball and sacrifice the other activities available.

The proposed location for the new building is located on the east edge of campus to optimize existing security circulation and sight lines on campus, and therefore requires new fields. The development of the fields ensures it is constructed of safe and operationally efficient design and materials to limit injuries from uneven surfacing. The desire for field turf material was reviewed to limit the disruption of use throughout the year caused by poor, wet soil conditions, but considered not feasible for budget constraints.

The site location optimizes construction phasing and sequencing and limit cost associated with working within a secure boundary. The contractor will include a new temporary secure fence line with obscuring material to redefine the secure boundary of the campus. All access to the construction site for the building will be from the existing parking lot. For most of the construction schedule, contractors will not have access to the campus, thus limiting costs associated with security clearances, limited sub-contractors available to enter campus, and security tool controls. The main fields will be phased to be completed in their entirety in the new locations prior to construction of the building to the school will have access to fields continuously.

<u>Advantages</u>

- Minimal disruption during construction.
- Meet the programmatic needs of population
- Promote a healthy variety choices
- Improve security
- New location is out of flood plain
- Safe
- Meets requirements from ACA, PREA, and PbS

<u>Disadvantages</u>

- No reuse of existing structures.
- Cost to the state

iii. Cost estimates for each alternative.

The estimated construction cost in 2018 dollars for the Preferred Alternative is **$21,957,897** including the net zero strategies to meet Executive Order 18-01. Including GC/CM premiums, this alternative is **$24,378,091**.

iv. Schedule estimates for each alternative. Estimate the start, midpoint and completion dates.

Design and Bidding Phases:

Design: February 2019

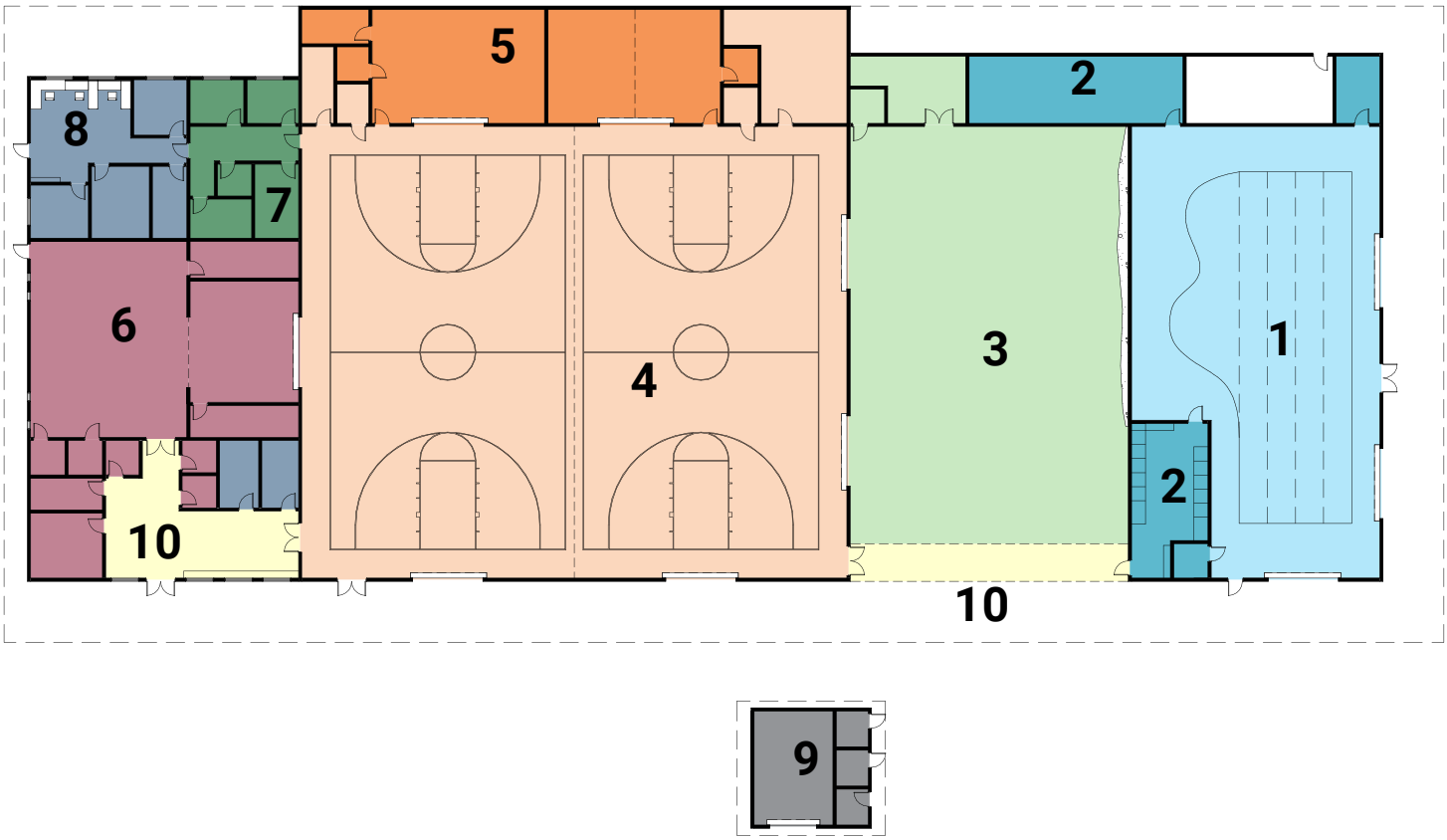
Construction Start Date: February 2020

Construction Midpoint Date: August 2020

Construction Completion Date: March 2021

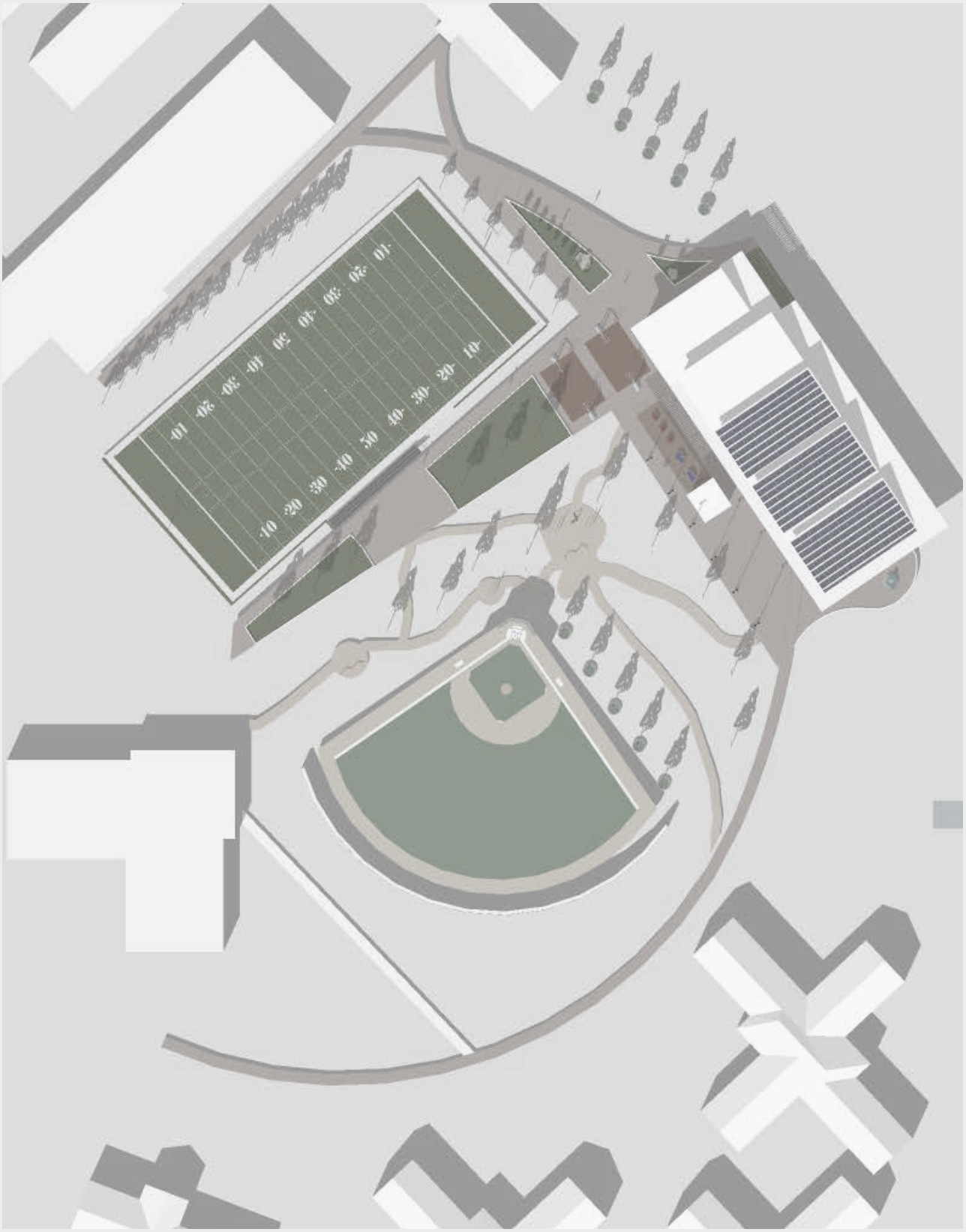
Demolition of Existing Building: TBD

ALTERNATIVE 2 - NEW CONSTRUCTION



KEY

1 Pool	2 Pool Support	3 Covered Sports Area	4 Gym	5 Weights + Cardio
6 Multi-Purpose	7 Staff Wellness	8 Staff	9 Field Support	10 Circulation



- PART IV -

PREFERRED ALTERNATIVE

PREFERRED ALTERNATIVE DESCRIPTION - ALTERNATIVE 2

NATURE OF SPACES

Campus Wellness & Activities Center:

Each space in the building is used directly for programmed exercise or activities for the youth. Limited staff area for supervision and support is provided. Circulation spaces have been reduced to minimize movements of youth and maximizing staff supervision sight lines.

ACTIVITIES AREA

- Gymnasium - day lit, normative
- Cardio room - clear lines of sight from gym
- Free stretch/yoga - clear lines of sight from gym
- Weights room - day lit, safe
- Multi-purpose room & stage - flexible
- Pool
- Locker room - privacy, PREA
- Covered sports area - clear lines of sight
- Mud room - provides space for youth to safely secure their belonging
- Youth restrooms - normative, safe
- Storage
- Field storage

STAFF AREAS

- Resource hub
- Supervisor office
- PE educator office
- Staff restroom
- Decompression room - gives staff ability to regroup after stressful situations
- Meditation room
- Relaxation room
- Locker room and restroom
- Garden space

The gymnasium has one regulation size basketball court and two non-regulation cross courts to optimize use. The courts can be used for additional gym sports such as volleyball, badminton, etc. The hoops are retractable to the ceiling similar to a standard high school gym for protection and safety during alternative programming. One gym has connection to a weight lifting space for standard equipment. The second gym has a cardio fitness and yoga room to provide alternative physical strength training. The balance of heavy muscle lifting and cardiovascular fitness is necessary for complete body health.

The pool has four lap swimming lanes and some area for less structured activity. Adjacent to the pool is the youth locker and shower area that will adhere to programmatic goals and PREA standards.

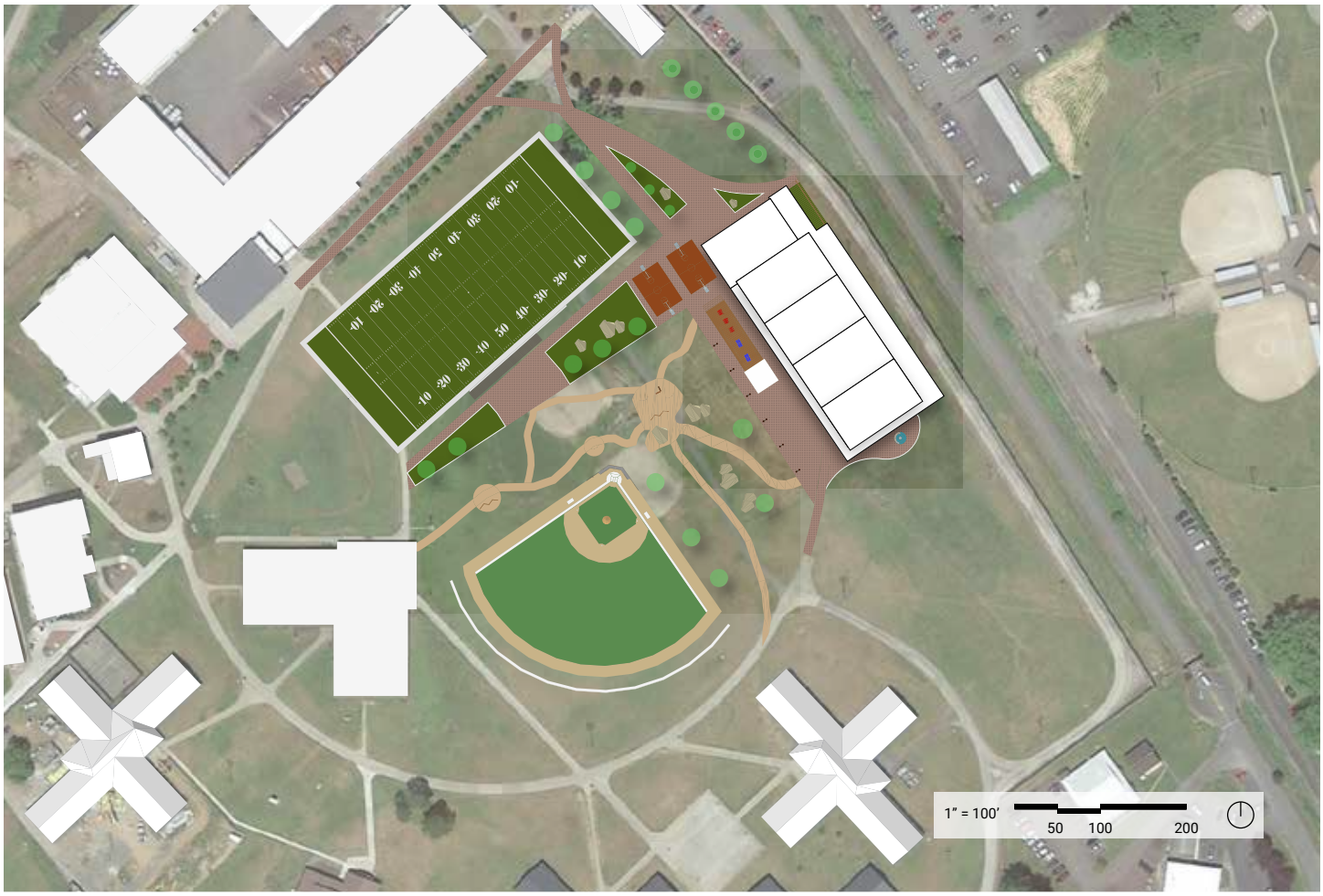
The multipurpose room and stage are positioned to allow small and large group presentations for all the youth at one time with different seating arrangements.

The outdoor covered sports area will be used for low impact running and sports during inclement weather, very common to the Chehalis area. The length is set for short sprints with enough length to reach cardio impact. One wall of the turf area will have a bouldering wall for building strength and confidence.

The administrative areas provide minimally adequate office space for the full-time recreational staff, the public school Physical Education Teacher, and support staff. A separate Staff Wellness area is provided with amenities for their personal health such as decompression spaces, lactation, lockers, and use of the exercise equipment in the building when youth are not present. The Staff Wellness area is provided for all staff on campus.

The building is 32,615 GSF. Typical space requirements have been provided in the space program. The building plan indicates the actual room areas which typically vary from the program due to geometrical layouts once the rooms were placed adjacently in the building plan. One reason the building configuration proposed was selected is because it is considered the most cost effective solution for the programmatic needs. The building is one story. The Gym, Pool, and Covered Sports Area are high volume spaces scaled to meet high school sports baseline dimensions. The Multi-purpose Room has a tall volume, but scaled to meet the needs of the space. The stage is a basic raised platform with minimal lighting and sound amplification capabilities. Projection screens are incorporated in the doors to close off the stage from spaces being used by other groups. The Stage

AERIAL OF PREFERRED ALTERNATIVE



is positioned to allow viewing from both sides depending on the size of the audience. The Multi-purpose Room has a small telescoping bleacher section for small groups of less than 50 that can be clearly observed by staff.

Each half of the gymnasium is attached to a smaller workout space for either weights or cardio/yoga exercises. These spaces will be open to the youth group in each gym. A retractable dividing wall separates the two gyms for simultaneous use for daily activities and open for large events.

The pool is a standard four lane lap pool. There is area on the north side of the pool for less structured activities for youth that do not swim laps. The area is curved with areas for sitting in the water, an ADA access ramp, and associated area for low impact activities. As associated locker room is provided for showers, drying areas, and changing rooms. These spaces are arranged into small personal spaces for PREA guidelines and personal comfort of the youth.

Staff spaces are provided for the full-time staff and supporting staff from the Chehalis School District. The Staff Wellness Center is open to all campus staff. It is included in this building to provide appropriate space for decompression and access to the exercise facilities when youth are not at the recreation center. Currently, there is no staff wellness amenity on site.

The building is open for the youth groups from 8AM – 8PM in a regular schedule. The facility is open to staff 24 hours a day.

OCCUPANCY NUMBERS

It is anticipated that up to 80 youth will occupy the building during typical hours of occupation.

Youth will come to the facility with their housing staff and recreation specialist will support the activities planned for that session. No new staff are required for this building replacement project to engage with the youth.

The advancements of building systems and technologies will change the facility operations, and will likely require additional maintenance staff with ongoing training for the new systems. The net zero Facility has a photovoltaic array which will require a licensed electrician on the facilities team. It is likely that as more facilities become net zero and use PV arrays, this employee will be able to maintain more than one facility at a time. Currently, the GHS team has identified that they do not have adequate staffing to operate a new facility with these code required systems, and at least one new staff may be required.

BASIC CONFIGURATION

Recreation Building – Single Story – 32,615 GSF

- Single story, with varying volume spaces
- Linear in orientation
- Each youth space can be accessed from the exterior

Outdoor Hardscape

- Creates separation between fields while providing shade and activity space
- Space between Building A and the new building can be used as extended visiting space.

SPACE NEEDS ASSESSMENT

There are no state-sanctioned space guidelines for this building type. The project team is referencing American Correctional Standards for space requirements. Additionally, space needs have also been identified by the GHS staff for program and function.

RENDERING VIEWS NORTHEAST

RENDERING VIEWS SOUTHWEST

> The current recreation facility at Green Hill School no longer meets the needs of our resident population. Best practices require more time for activities than our facilities allow. The new building would be built to allow twice the amount of residents to recreate each hour. Forecast for our population have it increasing, along with new legislation allowing the state to keep young adults until the age of 25.
>
> These new plans have been carefully designed by all of the stake holders to achieve maximum efficiency. This efficiency includes all areas of concern to state tax-payers: Cost, environmental impact (net zero) and a safe/secure, therapeutic environment.
>
> Chad Raish, Assistant Recreation Manager

RENDERING VIEWS EAST

RENDERING VIEWS EAST

SITE ANALYSIS

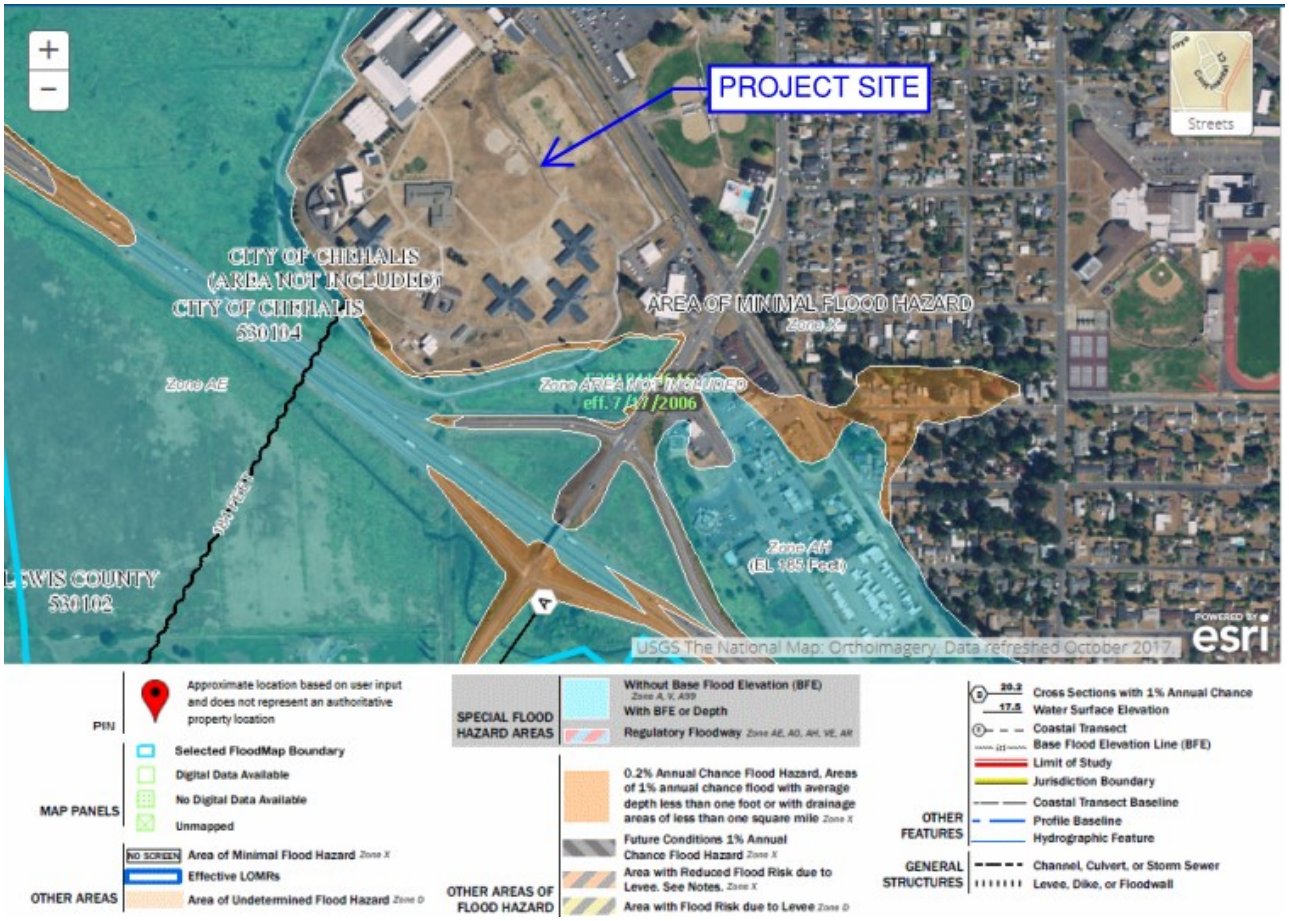
SITE STUDIES

A site survey was commissioned and performed by KPFF engineers. Project site area is approximately 330,000 square feet (7.6 acres) and is bounded by SW 11th Street (a secured access road) to the northwest, a security fence and SW Pacific Avenue to the northeast, and existing campus buildings to the southwest and southeast

The existing project site contains two baseball backstops, a small equipment shed, and a soccer field. Land cover on the site is almost entirely grass, with an asphalt path bisecting the site and a pedestrian pathway running around its perimeter. A draft survey shows sanitary sewer, storm drainage, water, and power utilities adjacent to the project site that serve the rest of the campus.

The building site is fairly level with a slight slope down from the parking lot to the northeast across the building site. The fields remain fairly flat. The most elevation change is along the southwest site where buildings have been elevated in later construction. From this area, the site drops between six and nine feet over the 600-foot length of the site. Approximately four feet of the total drop occurs on the southern edge of the site. The majority of the site slopes gradually at about 2%.

Much of the area surrounding GHS campus lies in the 100-year flood plain, however, GHS was constructed on five to six feet of fill to elevate it out of this flood plain. The below map from the Federal Emergency Management Agency (FEMA) shows the project site in relation to the flood plain.



Map of Areas of High Flood Risk (Blue) from FEMA

OVERALL

Location

The building is located at the Green Hill School in Chehalis, WA. The address of the campus is 375 SW 11th Street, located adjacent to I-5 on exit 76. The building is located in the Northeast quadrant of the campus within the existing secured perimeter of the campus.

Building footprint and its relationship to adjacent facilities and site features

See drawings.

Storm water requirements

Chehalis currently uses the 2014 Stormwater Management Manual for Western Washington (SWMMWW), which will determine minimum stormwater requirements for the project. These requirements are outlined below.

Flow and Control Conveyance

All stormwater at the Green Hill School is currently routed to the western edge of the campus, and into a wetland between the campus and I-5. The City of Chehalis has indicated that the rate of discharge from the school should not increase because of the proposed development, and therefore detention will be required to match the peak discharge rate for the existing site conditions. Preliminary detention sizing shows that approximately 2,000 cubic feet of detention will be required if the athletic fields are grass, and 5,500 cubic feet if the fields are artificial turf. For simplicity, the total detention volume will be provided for runoff collected from the proposed building, rather than detaining runoff from all hard surfaces. The attached site plan shows 5,500 cubic feet of detention vault, but detention pipes or a pond could be used as well.

Lawn areas of the site will be drained via a typical area drain and pipe conveyance system. Heavy rain events may result in the proposed athletic fields becoming saturated, given their lack of grade, so a field drainage system is recommended. This system would consist of perforated underdrains spaced throughout the fields that collect runoff and convey it to a manifold that connects to the rest of the drainage system. This underdrain system would be required if the fields are artificial turf. The rough layout of the preferred underdrain system (not yet designed) is shown on the attached site plan. Detention will not be provided for stormwater collected from these pervious surfaces.

All stormwater collected and detained on-site will ultimately be conveyed to the existing 12-inch storm pipe that runs along the northwest edge of the project site. This pipe runs west through the GHS campus and eventually discharges into the wetland. The image below shows project site and the storm line connection to the wetland receiving discharge.

Water Quality

Water quality treatment requirements are triggered by exceeding 5,000 square feet of pollution generating hard surface (PGHS), or ¾ of an acre (32,670 square feet) of pollution generating pervious surface (PGPS). The access road connecting the proposed building to SW 11th Street will be subject to vehicular traffic, and therefore will require treatment for runoff produced. Natural and artificial turf sports fields qualify as PGPS, so the current site plan will also require treatment for runoff produced by the proposed athletic fields.

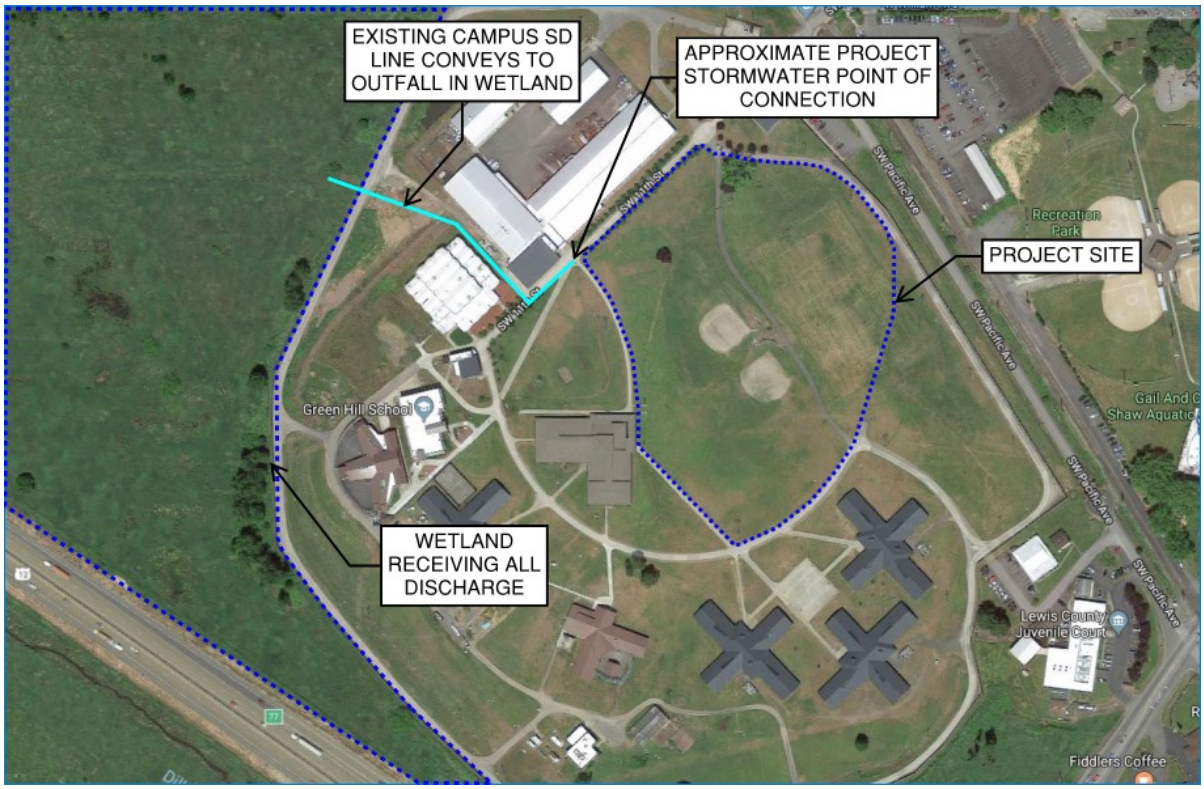
Runoff produced by these pollution generating surfaces will ultimately be routed to bioretention planters for treatment. Based on a conceptual site plan, it is estimated that the project will create approximately 120,000 square feet of pollution generating surface. Bioretention has been preliminarily sized to treat runoff from these surfaces and is shown in proposed planting areas in the attached civil site plan.

Sanitary Sewer

The project sanitary sewer will connect to the 12-inch sewer line in SW 11th St. The sewer line is deep enough to connect via gravity, so sewer pumps will not be required. See the attached site plan for location of sanitary sewer connection.

Water

Based on a draft survey, an 8-inch water line runs around the perimeter of the site. This line will provide both a 3-inch domestic water service and a 6-inch fire service to the proposed building. It is assumed that this water line has capacity to serve the



Google Maps Image of Green Hill School Campus

proposed development, but further investigation is required to confirm adequate size and pressure. Fire hydrant flow and pressure tests are recommended in order to confirm the capacity of this water line.

Additional fire hydrants are necessary to meet fire code requirements for the proposed building. These hydrants are shown on the attached site plan.

Gas

There is no recorded gas line in the vicinity of the project site. A draft survey shows a gas line on the southwest edge of the school's campus. A significant extension (1,000-feet) would be required to bring gas service from this line to the proposed building. To be a Net zero building, gas is limited to ensure the building can offset the power usage with on site renewables.

Grading and Earthwork

We anticipate that the top 12 inches of grass and pavement will need to be removed and replaced with fill during site preparation. Site finish grade for the football field will be approximately 187 feet, finish grade at the building will be approximately 189 feet, and site finish grade at the baseball field will be approximately 190 feet. A slope will be required south of the baseball field to match existing grade at the existing concrete walkway, but retaining walls should not be necessary.

Ownership of site and acquisition

The campus is currently owned by the State of Washington and operated by the Department of Social Health Services

Easements and Setbacks

The building is required to have fire separation from existing buildings due to the construction and occupancy types. The new building will be A-3 Occupancy and Type II construction. The existing Building A is A-3 / B Occupancy and Type IA construction. The new construction will be greater than thirty (30) feet from Building A to ensure fire separation is acceptable without extraneous measures.

The existing fire loop road will be maintained in the site design for circulation.

Building setbacks from streets and public right of ways are consistent with the existing campus construction.

Neighborhood

The existing campus is located in a commercial area adjacent to a residential neighborhood. The campus is access from a private drive with limited road traffic. This road will be used for construction access. Construction access from I-5 will provide construction access without trucks driving through residential or private roads.

Utility extension or relocation

Refer to civil drawing appendix H.

Environmental Impacts

Further investigation will be conducted in later phases.

Green space and natural amenities that need preserving

There are no green space/natural amenities to be preserved because the original site has already been developed into its current state.

Site mitigation

The site was filled so the campus would be higher than the flood plain elevation; therefore, contamination would be unlikely, especially in the fill.

Wetlands and shorelines

Buffer and Setback in place. Wetlands will need to be mitigated during the project.

Shoreline jurisdiction

The project site is separated from the adjacent wetlands with a levy and is not within 200-feet of any creek or river or lake so there should not be any shoreline jurisdiction issues

State Environmental Policy Act, National Environmental Policy Act, or environmental impact statement

At a minimum, a SEPA checklist would be required – to be completed during design.

Other regulatory requirements

- Storm Water Pollution Prevention Plan (SWPPP)
- Notice of Intent (NOI) Application for Construction Stormwater General Permit for National Pollution Discharge Elimination System satisfaction

Parking and access

The use of the campus is not changing due to construction of this replacement recreation building. No additional staff are coming to the recreation building. Parking requirements and access is not being modified by this construction. No additional parking is being added. Existing parking will be provided to contractors for lay-down area during construction, but will be returned to the facility upon completion.

Across the street within view of the new building is an existing public park and splash pad. The change of use or occupancy of the campus is not changing with the new building, but views will be closer to the perimeter fence. The construction of the new building will limit view glazing on the east side of the building facing the park to limit views of youth within the building.

Impact on surroundings due to construction

Construction of the preferred alternative, new construction, will provide the optimal construction ability due to the proximity to the perimeter fence. The fence can be temporarily rerouted around the construction area to allow non-secured access to contractors. This alleviates the requirement of badging and screening all sub-contractors on the site. The cost premium associated with secured campus construction will be returned value to the construction of the building. The maintenance of security personnel and on site facilities management will be significantly reduced.

Construction of the soccer/football field will be phased to be first because the new construction is currently located over the existing field. This will allow the school to use the new field during construction of the new building.

The contractor will be able to use the existing parking area as lay-down area, directly accessing to the non-secured construction site.

LONG-TERM PLANS

Identify whether the proposed project is consistent with applicable long-tern plans.

2004 MASTER PLAN

2004 Master Plan - Preferred alternative does align with the programmatic aspirations of the 2004 Master Plan. The project does not hinder future goals.

LAWS & REGULATIONS

i) High Performance/LEED Silver (including Net Zero)

High performance design is necessary to meet the standards of Washington state Executive Order 18-01, for new facility construction of state-owned buildings to be net zero carbon emissions or net zero capable. Our analysis for the best ways to manage this have been included in the appendix.

LEED information to follow building commissioning section, the checklist has been included in the appendix.

ii) Greenhouse Gas Emissions

Project will not increase greenhouse gas emissions.

iii) Archaeological and cultural resources

See DAHP letter in appendix.

iv) American with Disabilities Act

All areas of the building will comply with Americans with Disabilities Act (ADA) to ensure all youth are able to access the programs as available. Access to the building will be on grade. Any access impediments will provide ramping for site grading.

The pool will have a ramped entrance to the low-activity end of the pool to ensure everyone can enter the pool equitably. The locker rooms will have ADA sized showers and changing rooms.

All toilets in the facility are gender neutral single occupant ADA compliant rooms.

v) Information required by Chapter 36.70A RCW, as required by RCW 43.88.0301(1)

Per RCW 36.070A.070 Section 3, this facility is an existing capital facility owned by a public entity, the State of Washington. Rebuilding the recreation building on the campus of GHS reduces the need to expand the campus onto additional land outside the secure boundary. Services to this building will be confirmed to meet the existing allowable capacity on site. Being a net zero building, the demand on the utility will be designed with efficient construction strategies to mitigate the need for new electricity connections. As a net zero building, no new natural gas lines will be required.

Lewis County has established the Lewis County Interim Critical Areas Ordinance pursuant to RCW 36.70A.060, and detailed in Lewis County Code (LCC) Section 17.35.010. Development permits will be acquired in respect to LCC Section 17.35.460. During design, all requirements for public notice of construction will be provided according to RCW 36.70A.035

The proposed site for the new construction is not within a wetland as identified by Lewis County GIS Mapping. The existing building is partially within the buffer and wetland area. Following the new construction, the existing recreation building will be demolished, and the existing site within the site perimeter will be cleared, allowing for the flood plain and native planting to be undisturbed.

The new construction is completely inside the perimeter of the existing campus, preserving site and property outside of the facility's boundary for other purposes. Being an essential facility (in terms of site selection) the process of acquiring new property for incarceration is complex and in many cases incorrectly considered a nuisance by neighboring communities. Using land managed by Green Hill School alleviates the concern to acquire land and expand.

This development replaces, not changes, the use of the facility. Therefore, there is no net gain of jobs or industry in any of the proposed options. Rebuilding on campus does successfully limit any need for transportation of youth off campus.

The options for no-action and renovation do not fully capitalize on the ability for the building to be a better steward to the environment. The existing building has aged, inefficient construction that can be optimized, but not fixed. The new construction will provide an energy efficient, net zero carbon emission building to set the standard for all new construction on campus.

The existing facility is historical being founded in 1889, however the recreation building is the oldest building on campus and is not historically relevant. We do not observe any benefit to maintain the existing structure.

The existing building is in a critical area (floodplain) and should be removed to enhance the natural state of the land. Moving the building to the east campus boundary is outside of the critical area. Costs for demolition of the existing building is included in this report, however demolition will not be completed by the same contractor identified. The building cannot be removed until the new building is fully operational. Additionally, it is more cost efficient to contract directly with a demolition contractor in lieu of maintaining the existing general contractor contract through move in and commissioning.

vi) Other codes that will be followed?

The current set of codes and regulations as required by Authorities Having Jurisdiction (AHJs).

FURTHER STUDY AREAS

Preliminary plans have been provided to determine adjacency of spaces and baseline construction costs. Modifications in circulation to optimize use and security of the youth are required as schematic design progresses. Modifications in access to the support spaces such as the weight / cardio / yoga spaces, locker rooms and associated support spaces.

This further study with the stakeholders is essential to ensure the circulation is optimized for full operation and security of the building. The risk associated is mild. The building as designed is operational, but will limit schedules and use of the separated recreation areas. All modifications are feasible within the proposed budget if addressed during design.

The risk of not refining this circulation and adjacencies during design may require modifications post construction by facilities or additional contractors, which will not be fiscally responsible. Depending on modifications required, construction costs could range from $50,000 to $2 million. Therefore, all plan layouts will be addressed in early schematic design when design is reinstated.

Further study of building materials will be in line with the design process. Structural systems of concrete tilt up bearing wall construction has the opportunity for varieties of materials and finishes to provide a building visually scalable to the campus, a typical requirement of authorities having jurisdiction to limit large “blank” facades. The costs proposed for exterior materials will provide a target value constraint for future modifications.

SIGNIFICANT COMPONENTS

The criteria associated with Executive Order 18-10 for Net Zero Carbon Emissions will require equipment and systems that exceed Washington State Energy Codes. The system proposed includes energy strategies that will achieve a net zero power for the building. The strategy will be designed as a baseline for any future constructions or renovations to existing buildings to reach net zero carbon emissions as well. Included as appendix d, high performance design analysis, detailing the pathway needed to meet this executive order.

The building will meet ADA criteria, but the use of a ramp into the pool is a unique measure to provide access. Additional strategies such as a movable lift were considered to be a physical nuisance to the facility because of the potential ligature points and desirability to be used by youth as a diving platform. The value of safety and security outweighed the higher first cost in determination of a ramp system.

PREA guidelines are very important to secure facilities, and will be implemented in all aspects due to the age and mental condition of the youth at the facility. Young gentlemen at the age of 16-21, and future growth to 25, is a vulnerable age for young men, and privacy in a building where privacy is limited is important for changing and shower rooms. Pool lighting strategies are designed to limit visibility of underwater conditions from above to security requirements.

BUILDING COMMISSIONING

Describe planned building commissioning to ensure systems function as designed.

We understand that the project that we are to deliver is required to be LEED Silver by the State. Building commissioning should include both enhanced systems commissioning and envelope commissioning to enhance performance as well as the path to meet net zero. All systems need to be commissioned to ensure they are performing as designed, required to reduce energy consumption as well as provide the desired indoor environmental quality.

Envelope commissioning is recommended to ensure optimum envelope performance and the reduce heat loss due to infiltration or building leakage. Building leakage test is required to meet energy code and will help the team ensure heat loss will be minimized through the building envelope, per design requirements.

The team will also investigate opportunities for monitoring based commissioning to ensure that the net zero energy goal is met. This process puts in place the tools required to monitor the performance after occupancy and provide recommendations to tweak controls etc to optimize performance.

Design, operate and train are key components to ensure success of net zero Buildings. The team will ensure that operations and maintenance, training including building automation systems is incorporated into the design and commissioning process.

LEED CHECKLIST

Pathway to LEED Silver

Following checklist highlights the preliminary estimates for the credits that will be met and credits that will be options that will be evaluated to meet the LEED silver certification requirement. Fifty (50) points are required to achieve LEED Silver. A goal of 55 yes points is set to ensure LEED Silver equivalency is met. Credits that reduce energy consumption and share the requirements for net zero goal are prioritized to maximize benefit of dollars spent. This project will prioritize energy consumption reduction and generation to meet net zero goal. This project will focus on meeting the net zero goal along with LEED silver certification.

The team will use the LEED certification process to enhance the design, performance and user experience. The process will be used to inform design and documentation will be divided into two portions including 'design credits' and 'construction credits'.

- All prerequisites must be met
- All credits marked 'No' will not be met.
- All credits marked 'Yes', will be met and features required to meet these will be required by design
- All credits market as 'May be Yes?' will be options that are evaluated and costs for these will be used to determine potential to be included. Minimum required to meet LEED silver will be moved to 'Yes' as design is fine-tuned.
- All credits market as 'May be No?' will be options that may be evaluated as extra credits if additional cost is not anticipated.
- The Energy Performance and Renewable credits will take priority over other credits, to meet net zero project goal

LEED Checklist included as Appendix C.

Summary of LEED Checklist
(Incl. Yes or Maybe Yes credits)

- Integrative Process (1 Yes)

Location and Transportation
- Sensitive Land Protection (1 Maybe)
- Reduced Parking Footprint (1 Maybe)

Sustainable Sites
- Site Assessment (1 Maybe)
- Open Space (1 Maybe)
- Light Pollution Reduction (1 Maybe)

Water Efficiency
- Indoor Water Use Reduction (2 Yes | 2 Maybe)

Energy and Atmosphere
- Enhanced Commissioning (4 Yes | 2 Maybe)
- Optimized Energy Performance (14 Yes | 4 Maybe)
- Advanced Energy Metering (1 Yes)
- Renewable Energy Production (3 Yes)
- Enhanced Refrigerant Management (1 Yes)

Materials and Resources
- Building Life-Cycle Impact Reduction (5 Maybe)

Indoor Environmental Quality
- Enhanced Indoor Air Quality Strategies (2 Maybe Yes)
- Construction Indoor Air Quality Mgmt Plan (1 Maybe Yes)
- Thermal Comfort (1 Maybe)
- Interior Lighting (2 Maybe)
- Daylight (1 Yes | 2 Maybe)
- Quality Views (1 Maybe)

Innovation
- Innovation (1 Maybe)
- LEED Accredited Professional (1 Yes)

Regional Priority
- Renewable Energy Production (1 Yes)
- Indoor Water Use Reduction (1 Maybe)

Possible Yes/Maybe Yes Credits: 58

Refer to Appendix C for full list of credits.

MECHANICAL SYSTEMS

HVAC SYSTEM

The proposed HVAC systems are comprised of heating, cooling (system option 2 only) and ventilating systems. All systems proposed will de-couple ventilation with conditioning as per WA Energy Code. Cooling capabilities will be such that the ASHRAE 99.6% Cooling Dry Bulb temperature of 79 F will be used and conditioned to meet a 75°F/78°F internal setpoint (system option 2 only). Areas such as Main Distribution Frame (MDF) rooms will be provided with stand-alone heating/cooling systems to maintain appropriate space conditions year-round. A few exhaust systems are anticipated in the project including: Toilet Rooms, Janitors' closets, Locker Room, Event Kitchen, General Storage, Laundry Room and Pool Utility. The facility will be provided with a full Building Management System (BMS).

OPTION 1 (PASSIVE)

System shall be provided with Dedicated Outside Air System (DOAS), with air-to-air heat recovery, for ventilation to meet current WA State Energy Code for office buildings. VAV boxes shall be provided with the DOAS system to provide demand control ventilation based on CO2 within the space. Perimeter zones will be provided with "trickle vents" at windows for natural ventilation.

Heating will be provided by a central air-water heat pump and distributed via heating water circulation pumps. A pair of electric boilers will be provided as back up heating when the air to water heat pump is in defrost mode. Heating water will be distributed to 2-pipe Passive Chilled Beams, radiant heated floors and DOAS/RTU heating coils. Heating coils will be sized for 65F setpoint in the Gymnasiums and Pool and 70F throughout the remainder of the building. Miscellaneous unoccupied areas will be provided with electric unit heaters.

OPTION 2 (ACTIVE, INCL. COOLING)

System shall be provided with Dedicated Outside Air System (DOAS) heat pumps, with air-to-air heat recovery, for ventilation to meet current WA State Energy Code for office buildings. VAV boxes shall be provided with the DOAS system to provide demand control ventilation based on CO2 within the space. The water coils in the DOAS and rooftop units heat pumps will be served the geothermal ground loop.

Space heating and cooling will be provided by indoor water source heat pumps. Building distribution pumps will pump "ground water" throughout the building to indoor heat pump coils. A pair of electric boilers will be provided as back up heating during design day conditions. The Gymnasiums and Pool will be served by a dedicated recirculating RTU heat pump sized to maintain 65F heating and 78F cooling setpoints. Miscellaneous unoccupied areas will be provided with electric unit heaters.

OPTION 3 (ACTIVE)

System shall be provided with Dedicated Outside Air System (DOAS), with air-to-air heat recovery, for ventilation to meet current WA State Energy Code for office buildings. VAV boxes shall be provided with the DOAS system to provide demand control ventilation based on CO2 within the space.

Heating will be provided by a central air-water heat pump and distributed via heating water circulation pumps. A pair of electric boilers will be provided as back up heating when the air to water heat pump is in defrost mode. Heating water will be distributed to 2-pipe Active Chilled Beams, DOAS/RTU heating coils. Heating coils will be sized for 65F setpoint in the Gymnasiums and Pool and 70F throughout the remainder of the building. Miscellaneous unoccupied areas will be provided with electric unit heaters.

PLUMBING

Domestic hot water will be generated by multiple high efficiency domestic water heaters with integral storage tanks. Water will be heated and stored at 140° and be tempered to 120° with a thermal mixing valve before being distributed to the rest of the building. A recirculating pump will be utilized to maintain water temperatures in the piping.

In support of reducing potable water use, the proposed design will include recent advances in plumbing fixture technology. The following are proposed: All lavatories will have aerators which limit flow to 0.5 gpm. All water closets will have manual dual flush flushometers which allows the user to select between 1.28 gallons per flush or 1.6 gallons per flush. All urinals will be ultra-low flow requiring only 0.125 GPM of water per flush and will utilize manual flush valves.

In support of reducing potable water use and reducing the stress on site drainage, a rain water harvesting system will be installed to store and provide rain water to supplement domestic water for urinal and water closets. The rain water system will have a domestic water connection for flushing when rain water storage is low.

FIRE PROTECTION

The building will be provided with an automatic sprinkler fire protection system. Areas subject to freezing will be provided with dry-type sprinkler heads or dry-pipe distribution system. All other areas will be served by a wet-pipe distribution system. Performance based design specifications will be issued as part of Contract Documents, with final design provided by the installing contractor. All aspects of the fire protections system will be in accordance with NFPA 13 and will comply with the requirements of local and State Fire Marshals. It is assumed there is enough fire flow and pressure at the outside city connection and hence fire pumps will not be needed.

ELECTRICAL SYSTEMS

POWER DISTRIBUTION

The new recreation center will be fed from a 400A, 480Y/277V service. The service will be designed to accommodate the electrical loads for lighting, general purpose receptacles, mechanical loads and special equipment for the pool. A main electrical room will contain all of the primary distribution equipment. 208Y/120V transformers and branch circuit panelboards will be located in the main electrical room and in smaller electrical closets throughout the building to provide service closer to the loads.

Since the entire campus loop is served by a standby generator, a centralized lighting inverter will be provided to handle all legally required egress lighting loads. Data and security equipment will utilize local UPS backups to provide additional failsafe means and ensure that there is no downtime during the brief generator startup in the event of a power outage.

The main distribution switchgear will have a surge protective device (SPD) installed to protect all loads within the building. Surge strips in individual offices will not be necessary for protecting electronic equipment from power spikes. This will be mitigated at the main distribution switchgear in the main electrical room. The main switchgear will have a power quality meter as well.

All interior electrical conductors will be stranded copper, #12 minimum, (#14 for control) Type THHN/THWN-600V. Exterior conductors where the ambient temperature will be below 32 degrees F will be type XHHW.

Ground conductor shall be provided in all feeders, branch and lighting circuits' raceways.

SOLAR

The approximate available square footage of the current rooftop design for solar usage is approximately 23,750 square feet. Accounting for a potential loss of space due to mechanical equipment, shading, and other roof obstructions, this results in approximate space available for 1250 solar modules. Assuming that the modules are 350W, the total DC size of the array is 437.5kW.

Arrays will be installed flush mount across each of the sloped roof areas, with the flat perimeter roof of the building reserved for pathways and mechanical equipment. Each rooftop array will be provided with rapid shutdown boxes within 1'-0" of the array. 60kW inverters will be mounted along the north facing walls of the rooftops to maximize the shading on the equipment. AC feeds from the inverters will route across the rooftop to a single AC combiner panelboard located roughly above the main electrical room. A single combined AC feeder will then route down through the building to the main electrical room for a line side tap of the main switchgear.

POWER

Receptacles will be placed throughout the facility specifically to accommodate the functions and services within the building, GFCI protection will be provided as required by code. Dedicated power for A/V racks will be provided. Copiers, fax machines, document production areas, etc. will have receptacles placed above counters, below counters and throughout the space.

Per the state code, a portion of receptacles in office spaces and spaces of similar occupancy will be placed on occupancy sensors to ensure that certain loads, like task lights and computer monitors, are shut off when the room becomes vacant.

The mechanical schemes are all heavily electric in nature, many being heat pump based, or similar technology. Power will be provided to all required mechanical equipment.

LIGHTING

Interior lighting will be primarily 3500K LED fixtures with 0-10V dimmable drivers. Lighting levels will vary and will be based on the recommendations of Illuminating Engineering Society. Lighting power densities and controls will comply with the Washington State Energy Code. Lighting the building to Well Building Standard will be considered. To meet this standard, a product with BIOS light engines will likely be used.

All private offices and conference rooms will utilize direct-indirect recessed LED troffers working in conjunction with photocells and occupancy sensors. Upon occupancy, the lights will automatically come on to 50%. If the user requires more light, they can boost the output to 100%. When at 100%, the lights will provide an average of 30 fc.

Corridors, stairs, and transition areas will be designed to an average of 10 fc.

The gymnasiums will be designed to an average of 50 fc utilizing low bay fixtures with individual fixture based controls. This will allow for extremely granular dimming to maximize energy savings and take full advantage of natural daylight in the spaces.

The pool will be designed to an average of 30 fc utilizing direct and indirect fixtures. Care will be taken to avoid placing any fixture in a location that is directly over water in order to avoid maintenance complications. Controls will consist of occupancy sensors with photocells.

Exterior lighting and site lighting will be 3000K LED and will be controlled by a central relay panel.

Spaces with daylight access, will utilize continuous dimming drivers and photocells to automatically dim fixtures. This will ensure that distraction is not caused by lights turning on and off. All spaces will be controlled by occupancy sensors, however sensors in public spaces will be disabled during working hours to prevent false switching. After hours, all sensors will function. In spaces with variable occupancy, the occupancy sensor will also control mechanical units.

FIRE ALARM

All fire alarm devices will be of the intelligent, addressable type. This means every single fire alarm pull station, strobe, horn, detector, etc., has a unique identity within the fire alarm system. When a device is activated (manually or automatically), the fire alarm control panel knows specifically which device(s) is/are in alarm condition and where they are located. The annunciator panel located at the building's main entrance will then indicate to the fire department precisely where the event is happening.

SECURITY ELECTRONICS

COMMUNICATIONS AND DATA SYSTEMS

The Communications and Data System will be installed by the Facility's IT/Telecom department. The EC will provide necessary raceways, backboards, and j-boxes to support the Facility's requirements. The exact requirements will be coordinated with the design team and the Facility's IT/Telecom department during the design process.

TELECOMMUNICATIONS OUTLET REQUIREMENTS

Exact requirements are not yet known, but the following represents current assumptions.

ROOM TYPE OR AREA OUTLET REQUIREMENTS

Enclosed office

- Two (2) standard outlets on fixed walls, one switched with occupancy

Copy/work room

- One (1) standard outlet for printer/copier
- Two (2) standard outlets at counter height for other equipment

Conference rooms

- Two (2) standard outlets on fixed walls
- One (1) TV outlet

Gymnasiums and Pool

- Two (2) ceiling outlets for wireless access points

TELECOMMUNICATIONS PATHWAYS AND SPACES

Telecommunication Pathways are used to convey horizontal cable from the work area outlet to the serving Telecom Room (TR). Pathways may be comprised of conduits, cable raceways or cable trays. Telecommunication outlets located in areas with accessible ceilings shall be double-gang boxes with single-gang mud-ring and minimum 1" conduit to accessible ceiling. Outlets located in areas without accessible ceilings or where there is a desire to protect the cable from damage shall have minimum 1" conduit from the box to the nearest accessible ceiling or to the TR. Cable pathways consisting of cable raceways like basket tray, J-hooks or cable slings shall be used to support horizontal cables routing through accessible ceiling areas. Conduit sleeves shall be provided where cables must penetrate rated walls and floors. Conduits shall be provided where cables must cross non-accessible ceiling areas. Conduits shall also be provided for all copper and fiber backbone cable connecting the ER to the TR. Conduits and conduit sleeves shall be provided by the EC. Cable raceways in accessible ceilings shall be provided by the SCC.

The requirements of the telecommunication spaces are not known at this time.

Cabling for other low-voltage systems such as audiovisual (AV) and Building Automation/Energy Management System (BAS) is typically provided and installed by the integrators installing these systems. Where these systems require network connections, the SCS is expected to provide this cable.

Network connections for these systems will be treated the same as a data network outlet and cabled back to the TR serving the building or area. It is expected the integrator installing the audiovisual or BAS will provide any network hardware for their systems and coordinate with IT staff for any required connectivity to the Internet.

SECURITY SYSTEMS

The Security System shall consist of access control and intrusion detection. The Facility shall provide all necessary network equipment and racks according to the system requirements and current Facility standards. All security system components shall be connected to the UPS.

ELECTRONIC ACCESS CONTROL SYSTEM

The EACS will primarily be used to control ingress of personnel and visitors. The system shall have a single administrator and database in order to provide continuity among all staff. Door hardware shall be coordinated between the Security Contractor and General Contractor to ensure the system fulfills code requirements and provides the necessary functionality. All doors shall utilize a combination card reader/keypad, to grant access based on a card read, PIN entry or card + PIN. The system shall be programmable to allow these credentials to be used according to date, time and user group. Access control panels will be located in the TR and then connected to the Security Network for communication between panels and the EACS server. A badging station shall be provided for the issuing of permanent and temporary credentials and assign users to appropriate groups

INTRUSION DETECTION SYSTEM

The Intrusion Detection will be an added component of the EACS. The system shall consist of Door Position Switches (DPS) on each perimeter door, including any roof hatches and all access controlled doors. The system be primarily monitored locally but may, optionally, be monitored from other locations either on site or remote.

IT SYSTEMS

Identify planned IT systems that affect the building plans.

The project team will coordinate with the Office of the Chief Information Officer during schematic design. There may be some technology innovations incorporated into the project (to meet programmatic needs) that are not currently in use at GHS.

FUTURE PHASES

Describe any future phases, plans or other facilities that will affect this project.

The scope of work for the Recreation Building is included in this scope of work with no future phases. All programs are replacement to the existing buildings and required for balanced health and fitness for the youth. The Staff Wellness area is currently not available on campus, and lack of decompression space causes unneeded stress to the staff.

The location on site is located to accommodate potential growth of the existing Building A Visitation. The associated exterior hardscape area at the north end staff entrance and Multi-purpose room are the program spaces most conducive to be adjacent to expansion of Building A. Beyond site orientation, no specific planning elements or construction is included in this proposal for the future expansion of Building A.

PROJECT MANAGEMENT & DELIVERY METHOD ALTERNATIVES

Identify the proposed project delivery method.

PROPOSED PROJECT DELIVERY METHOD

The proposed delivery method for this building is traditional design-bid-build construction. The process will follow the criteria set in RCW 39 Public Contracts and Indebtedness.

The team has also evaluated the benefits of a GC/CM team for this project. Due to the site security constraints, this project adds complexity that the early planning and staging of a GC/CM would benefit the project.

The project is viable for GC/CM criteria per RCW 39.10.340 because of the following measures:

- Implementation of the project involves complex scheduling and coordination with existing on site security measures.
- The project involves construction at an occupied facility which must continue to operate during construction.
- The involvement of the general contractor / construction manager during the design stage is critical to the success of the project.

The need for a fully functional building is high, and the sooner the building can be built the better. Mini-MACC packages for site work (fields), early grading and concrete structure will expedite the process. Constructing on this site has proven complicated for contractors that do not commonly build on active secure campuses. Ensuring the contractor may be selected based on merit and experience in lieu of directly on cost through the GC/CM vetting process will identify contractors that can operate under the strict guidelines of the facility, regardless if the site construction area can be unsecured. Additional costs through markups and preconstruction services are included in the estimates.

Describe how the project will be managed within the agency.

MANAGEMENT WITHIN THE AGENCY

PROJECT ROLES AND RESPONSIBILITIES

The Department of Social and Health Services (DSHS) Office of Capital Programs (OCP) project managers coordinate all phases of project development between the Juvenile Rehabilitation Administration (RA), Green hill school and the consultant team members.

IN-HOUSE STAFFING REQUIREMENTS

The Department of Social and Health Services (DSHS) Office of Capital Programs (OCP) has already assigned a FTE CPC3 project manager (PM) to coordinate predesign, design and construction phases of the project. This project manager has the professional ability to oversee all aspects of the project's phases mentioned above: Penny Koal, Registered Architect.

CONSULTANT SERVICES, DES RESOURCES, AND ADDITIONAL STAFF SUPPORTING THE PROJECT

DSHS contracts with a team of consultants to develop the project from Predesign through Construction and Post Occupancy. The PM assigned to the project is supported by resources across several departments and administrations:

- DSHS Office of Capital Programs PM is supported by the Assistant Director of Capital Facilities Management and other operational support staff as needed.
- Department of Enterprise Services (DES) assigns to each of the DSHS PMs contract specialists for executing of the projects agreements for services and contracts for construction as required.
- JRA assigns a liaison to provide support and guidance to the OCP PM, the agency and the consultant team.

The assigned support staff:

Robert Hubenthal, Assistant Director of Capital Facilities Management
Aaron Young, Assistant Program Manager, Engineering & Architectural Services
Trent Phillips, JRA Program Administrator
Tariq Ohab, DES Contract Specialist 3

VALUE ENGINEERING & CONSTRUCTIBILITY REVIEW GC/CM PROCESS

Working with a General Contractor/Construction Manager (GC/CM) allows regular reviews of the project scope to ensure the project is within budget constraints and achieving the overall project goals. These reviews will include budget reconciliation at the end of Schematic Design, end of Design Development, and 50% Construction Documents. During this reconciliation, the contractor and a third party estimator provide detailed cost estimates. This will identify where scope has changed from the anticipated budget or where current conditions may not be in-line with previous design decisions. The GC/CM, design team and owner will collaboratively participate in a value engineering exercise before concluding each design phase. The design scope will be reconciled to meet the project intent and budget. Scope identified above the available budget will be documented and the project team will provide alternate design solutions that meet the program requirements. A reconciliation report will be produced at the end of each design phase to memorialize decisions. Concurrent constructibility reviews at each design phase will ensure the detailing and construction strategies are feasible and being detailed as required for the contractor to provide confident bids and build to the owner's expectations.

Should the GC/CM and third party estimator not come to a successful resolution, there are procedures in place to facilitate a outcome beneficial to all parties. Examples of these procedures are facilitating a budget focused charrette where quantities and levels of finishes are clearly defined, ensure design decisions align with project goals and value based, and utilized the target value design approach.

By incorporating the contractor in the design process, the GC/CM firm is assigned responsibility for constructibility in their contracts and carry risk for omissions as they participate in design throughout the project. This minimizes cost of change orders during construction when the impacts can be compounded with design coordination of other sub-contractors.

DESIGN AND CONSTRUCTION RISK MANAGEMENT

As with any delivery method, there are risks and challenges associated. The following are typical issues that may arise in this project:

- AHJ Coordination
- Availability of Subcontractors
- Political Climate
- Timely decisions not being made
- Out of phase design changes
- Working on a secure campus
- Unforeseen conditions

In order to mitigate risks, a formalized design and construction process must be adhered to. Such processes include measures to foresee and manage challenges and risks.

- Initiate regular dialogue with AHJ beyond pre-application
- Selecting a well established GC/CM with a network of subcontractors
- Establish a stake holder group, in conjunction with an appropriate design schedule to facilitate decision making
- Isolate the project site to mitigate interference with day-to-day operations

AUTHORITIES HAVING JURISDICTION (AHJ)

The City of Chehalis planning department is the primary Authority Having Jurisdiction over this project. Permitting conversations with the City of Chehalis has been originated to confirm the requirements of building on the existing campus. Building permitting requirements are standard and in line with previous permitting constraints used on recent projects. Stormwater requirements, the largest cost and design risk, has been discussed with the City, and the design team is confirming the strategies that may be required to meet the city's design standards. Involvement with the Department of Ecology may be required. Department of Health review is not required for this project. The City planning department will also coordinate mechanical, fire, and other regulatory requirements. Electrical L&I will review the project for electrical design.

SCHEDULE

A nine-month design schedule, followed by three months for permitting, bidding, and contract procurement, and a 14-month construction schedule are anticipated for the project. Schedule breakdown is as follows:

Design and Bidding Phases:

February 2019 through January 2020

Construction Start Date: February 2020

Construction Midpoint Date: August 2020

Construction Completion Date: March 2021

The preferred alternative, construction of a new building, has a 25-month design and construction schedule. Upon funding approval, schematic design will begin. The predesign process has allowed a headstart into the schematic design phase, giving us the opportunity to shorten the schematic design phase to 32 days. During the schematic design phase, the process for selecting a GC/CM will begin, this process will occur concurrently with the development of the schematic design report. This will ensure that the value of bringing a GC/CM on board is utilized throughout the entire design process. The deliverable for this phase will be a schematic design report.

Design development phase will begin mid to late March and continue for 90 days. During this phase, there will be an AHJ pre-intake, owner review, and a cost estimate and reconciliation with the GC/CM. The deliverable for this phase will include a drawing set and outline specifications set.

Construction documents phase will begin late July and will continue for 110 days. This phase will include a cost estimate and reconciliation with the GC/CM at 50% completion. The MACC will be negotiated and confirmed with the GCCM between 50% and 90% construction documents. Additionally, this phase will have building permit intake and review, owner review, and a LEED design submittal.

The GCCM manages the bidding phase. We anticipate that notice to proceed will be given in late January. Construction will take approximately 260 days. January bidding provides contractors opportunity complete preplanning submittals and materials ordering in order to break ground in early springtime as the weather changes. Closeout for the building will begin late February 2021 with occupancy in late March 2021. During the closeout period owner training, LEED submission, record drawings submission, operations and maintenance manuals submission, and Net Zero commissioning will occur.

- PART V -

BUDGET ANALYSIS

COST ESTIMATE

i. Major assumptions used in preparing the cost estimate.

Cost estimates have been provided for two alternatives (renovation and new construction). Each cost estimate is itemized to allow calculations of escalation based on the final construction schedule.

Design, Bid, Build delivery method was initially assumed, however, the team has reviewed the benefits of implementing a GC/CM team for this project based on the complexity of the site security conditions.

The project is viable for GC/CM criteria per RCW 39.10.340 because of the following measures:

- Implementation of the project involves complex scheduling and coordination with existing on site security measures.
- The project involves construction at an occupied facility which must continue to operate during construction.
- The involvement of the general contractor/ construction manager during the design stage is critical to the success of the project.

The cost estimates provided reflect the GC/CM costs.

Assumes a Q1 of 2020 start and a 14-month schedule. Escalation was determined using the turner construction cost index.

All buildings are priced to be net zero carbon emission qualification.

ii. Summary table of Uniformat II Level 2 cost estimates.

ALTERNATIVE 1 - RENOVATION, INCLUDING NET ZERO & GC/CM

ESTIMATED COSTS SUMMARY

Phase	Description	QTY	UOM	$ / UOM	Cost
1	GHS - Recreation Building Renovation (NET ZERO)	21,820	BGSF	$609.78	$13,305,392
2	Sitework	286,000	SGA	$18.47	$5,280,992
3	General Conditions & Support Services	14	MO	$85,000	$1,190,000
Total Estimated Construction Cost (Today's Dollars)					**$19,776,384**
5	Premium for Reduction in Competitive Subcontractor Bidding & Self Performed Work	10.00%	on	$19,776,384	$1,977,638
6	Additional Cost for GCCM General Conditions and Support Services over Hard Bid Cost	2.00%	on	$21,754,022	$435,080
7	GCCM Risk Contingency	3.00%	on	$22,189,103	$665,673
Total Estimated Construction Cost (Today's Dollars) - GCCM					**$22,854,776**
8	Escalation	-	-	$0	$0
Total Estimated Construction Cost - Escalated					**See C-100 Form**

ADD ALTERNATES

None

COMMENTS:

Assumes a Q1, 2020 start and a 14 month schedule

No Site Frontage Improvements are included or anticipated

Hazardous Material Abatement is EXCLUDED. An allowance for this work is carried by owner in the C-100 Form.

GCCM pricing assumes General Conditions and Support Services will be competitively bid during the selection process

Estimate does not include sales tax or construction contingency.

This page is intentionally left blank.

ALTERNATIVE 2 - NEW CONSTRUCTION, INCLUDING NET ZERO & GC/CM

ESTIMATED COSTS SUMMARY

Phase	Description	QTY	UOM	$ / UOM	Cost
1	GHS - Recreation Building (NET ZERO)	33,450	BGSF	$477.32	$15,966,257
2	Sitework (includes storage building)	342,700	SGA	$13.19	$4,521,471
3	Demolition of Existing Rec Building	1	LS	$280,169	$280,169
4	General Conditions & Support Services	14	MO	$85,000	$1,190,000
Total Estimated Construction Cost (Today's Dollars) - DESIGN BID BUILD					**$21,957,897**
5	Premium for Reduction in Competitive Subcontractor Bidding & Self Performed Work	6.00%	on	$20,767,897	$1,246,074
6	Additional Cost for GCCM General Conditions and Support Services over Hard Bid Cost	2.00%	on	$23,203,970	$464,079
7	GCCM Risk Contingency	3.00%	on	$23,668,050	$710,041
Total Estimated Construction Cost (Today's Dollars) - GCCM					**$24,378,091**
8	Escalation	-	-	$0	$0
Total Estimated Construction Cost - Escalated					**See C-100 Form**

ALTERNATES (Escalated Design, Bid, Build Pricing)

Synthetic Turf Football Field in lieu of Grass	**$346,041**
Synthetic Turf Baseball Field in lieu of Grass	**$247,460**

COMMENTS:

Assumes a Q1, 2020 start and a 14 month schedule

No Site Frontage Improvements are included or anticipated

Hazardous Material Abatement is EXCLUDED. An allowance for this work is carried by owner in the C-100 Form.

A temporary perimeter security fence will be installed allowing the contractor unlimited access to the site

GCCM pricing assumes General Conditions and Support Services will be competitively bid during the selection process

Estimate does not include sales tax or construction contingency.

iii. The C-100 for GC/CM in Excel

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Agency	Department of Social and Health Services
Project Name	GHS Recreation Building Replacement - NET ZERO (GCCM Deliv. Method)
OFM Project Number	300003237

Contact Information	
Name	Penny Koal
Phone Number	360.902.8156
Email	penny.koal@dshs.wa.gov

Statistics			
Gross Square Feet	33,450	MACC per Square Foot	$632
Usable Square Feet	28,433	Escalated MACC per Square Foot	$678
Space Efficiency	85.0%	A/E Fee Class	B
Construction Type	Recreational building	A/E Fee Percentage	7.13%
Remodel	No	Projected Life of Asset (Years)	30
Additional Project Details			
Alternative Public Works Project	Yes	Art Requirement Applies	Yes
Inflation Rate	3.12%	Higher Ed Institution	No
Sales Tax Rate %	8.60%	Location Used for Tax Rate	Chehalis
Contingency Rate	5%		
Base Month	June-18		
Project Administered By	Agency		

Schedule			
Predesign Start	August-18	Predesign End	September-18
Design Start	January-19	Design End	January-20
Construction Start	April-20	Construction End	June-21
Construction Duration	14 Months		

Green cells must be filled in by user

Project Cost Estimate			
Total Project	**$33,468,562**	Total Project Escalated	**$35,835,016**
		Rounded Escalated Total	**$35,835,000**

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Agency	Department of Social and Health Services
Project Name	GHS Recreation Building Replacement - NET ZERO (GCCM Deliv. Method)
OFM Project Number	300003237

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	**$0**	**Acquisition Subtotal Escalated**	**$0**

Consultant Services			
Predesign Services	$195,000		
A/E Basic Design Services	$1,092,162		
Extra Services	$804,000		
Other Services	$620,681		
Design Services Contingency	$135,592		
Consultant Services Subtotal	**$2,847,435**	**Consultant Services Subtotal Escalated**	**$2,973,649**

Construction			
GC/CM Risk Contingency	$710,041		
GC/CM or D/B Costs	$3,344,245		
Construction Contingencies	$1,057,131	Construction Contingencies Escalated	$1,138,743
Maximum Allowable Construction Cost (MACC)	$21,142,630	Maximum Allowable Construction Cost (MACC) Escalated	$22,681,381
Sales Tax	$2,257,848	Sales Tax Escalated	$2,424,117
Construction Subtotal	**$28,511,895**	**Construction Subtotal Escalated**	**$30,611,519**

Equipment			
Equipment	$450,000		
Sales Tax	$38,700		
Non-Taxable Items	$0		
Equipment Subtotal	**$488,700**	**Equipment Subtotal Escalated**	**$526,428**

Artwork			
Artwork Subtotal	**$113,407**	**Artwork Subtotal Escalated**	**$113,407**

Agency Project Administration			
Agency Project Administration Subtotal	$805,925		
DES Additional Services Subtotal	$0		
Other Project Admin Costs	$0		
Project Administration Subtotal	**$805,925**	**Project Administation Subtotal Escalated**	**$868,143**

Other Costs			
Other Costs Subtotal	**$701,200**	**Other Costs Subtotal Escalated**	**$741,870**

Project Cost Estimate			
Total Project	**$33,468,562**	Total Project Escalated	**$35,835,016**
		Rounded Escalated Total	**$35,835,000**

PROPOSED FUNDING

i. Identify the fund sources and expected receipt of the funds.

The funds are expected to be sourced from the State building construction account with construction funding appropriated July 2019. Partial funding through June 2019 was appropriated in the 2017-2019 biennium to start design in January 2019.

ii. If alternatively financed, provide the projected debt service and fund source. Include the assumptions used for calculating finance terms and interest rates.

Alternative financing is not being pursued.

FURNITURE, FIXTURES, AND EQUIPMENT

Clarify whether furniture, fixtures, and equipment are included in the project budget. If not included, explain.

FF&E is included in the total project cost.

FACILITY OPERATIONS AND MAINTENANCE REQUIREMENTS

Define the anticipated impact of the proposed project on the operating budget for the agency or institution. Include maintenance and operating assumptions.

The development of the net zero building will require special training of maintenance staff to ensure the equipment necessary for the new building to be maintained most effectively. Due to the special equipment additional maintenance staff may be necessary. The existing building eventually will be demolished and the new building will be the only one requiring maintenance. The new building will require a pool cover that will need to be managed by the facility to reduce energy usage by the equipment.

The new building will be more efficient and reduce the burden of the current building's maintenance needs.

Show five biennia of capital and operating costs from the time of occupancy, including an estimate of building repairs, replacement and maintenance.

The following charts show the historical costs of the existing building and the assumed future costs of the preferred alternative.

CURRENT BUILDING COSTS:

	Program Staff	Capital Costs*	Building Operations**	CMO Staffing	Total
07-09	no change	$ 718,177	$ 670,758	no change	$ 1,388,935
09-11	no change	$ 486,115	$ 759,378	no change	$ 1,245,493
11-13	no change	$ 40,000	$ 856,860	no change	$ 896,860
13-15	no change	$ 347,225	$ 971,546	no change	$ 1,318,771
15-17	no change	$ 15,000	$ 1,097,700	no change	$ 1,112,700
				Total	$ 5,962,758

Notes:
*Capital Funded Minor Work Preservation (Actual Costs):

2007	Lighting	$	18,960
2007	VTC Floor +Elec	$	619,817
2007	Telecom	$	60,000
2008	Misc	$	19,400
2010	HVAC	$	486,115
2010	Study	$	40,000
2014	Plumbing	$	315,225
2014	Gym Floor	$	32,000
2016	High Bay Lighting	$	15,000

**Includes CMO maintenance workorder costs
**Includes operation energy, janitorial, utilities, grounds, pest control,

FUTURE BUILDING COSTS:

	Program Staff*	Building Operations**	CMO Staffing***	Total
19-21	no change	no change	no change	Occupy July 2021
21-23	no change	$ 648,386	$ 162,000	$ 810,386
23-25	no change	$ 713,225	$ 178,200	$ 891,425
25-27	no change	$ 784,547	$ 196,020	$ 980,567
27-29	no change	$ 863,002	$ 215,622	$ 1,078,624
			Total	$ 3,761,002

Notes:
* Program staffing is not anticipated to change
**Includes operation energy, janitorial, utilities, grounds, pest control, security, maintenance repair, and management
*** 1 FTE $60,000+35 Benefits


POWER LIFT

- PART VI -

APPENDICES

APPENDIX A: LIFE CYCLE MODEL

Ownership Option 1 Information Sheet

*	***Requires a user input***	*Green Cell*	*= Value can be entered by user.*	*Yellow Cell*	*= Calculated value.*

*	**Project Description**	Using a GCCM delivery method. Construct a new (NET ZERO) 33,450 gsf recreation & aquatics building. Also includes new grass playfields with other misc. outdoor recreation improvements.
*	**Construction or Purchase/Remodel**	Construction
*	**Project Location**	Chehalis — Market Area = Southwest Counties

	Statistics	
*	Gross Sq Ft	33,450
*	Usable Sq Ft	
	Space Efficiency	
	Estimated Acres Needed	2.00
	MACC Cost per Sq Ft	$753.27
	Estimated Total Project Costs per Sq Ft	$1,054.58
	Escalated MACC Cost per Sq Ft	$823.26
	Escalated Total Project Costs per Sq Ft	$1,152.57

*	**Move In Date**	7/1/2021

Interim Lease Information	**Start Date**
Lease Start Date	
Length of Lease (in months)	
Square Feet (holdover/temp lease)	
Lease Rate- Full Serviced ($/SF/Year)	
One Time Costs (if double move)	

	Construction Cost Estimates (See Capital Budget System For Detail)			
		Known Costs	Estimated Costs	Cost to Use
	Acquisition Costs Total	$ 0	$ 500,000	$ 0
A & E	**Consultant Services**			
	A & E Fee Percentage (if services not specified)		6.78% Std	6.78%
	Pre-Schematic Design services	$ 195,000		
	Construction Documents	$ 1,089,102		
	Extra Services	$ 863,000		
	Other Services	$ 489,306		
	Design Services Contingency	$ 131,820		
	Consultant Services Total	$ 2,768,228	$ 1,702,624	$ 2,768,228
MACC	**Construction Contracts**			
	Site Work	$ 4,867,757		
	Related Project Costs	$ 4,143,053		
	Facility Construction	$ 16,186,106		
	MACC SubTotal	$ 25,196,916	$ 10,035,000	$ 25,196,916
	Construction Contingency (5% default)	$ 1,052,693	$ 1,259,846	$ 1,052,693
	Non Taxable Items			$ -
	Sales Tax	$ 2,257,466		$ 2,257,466
	Construction Additional Items Total	$ 3,310,159	$ 1,259,846	$ 3,310,159
	Equipment			
	Equipment	$ 450,000		
	Non Taxable Items			
	Sales Tax	$ 38,700		
	Equipment Total	$ 488,700		$ 488,700
	Art Work Total	$ 112,127	$ 125,985	$ 112,127
	Other Costs			
	Hazardous Material Removal, Permits, Advertisement	$ 691,200		
	Harcheological Mitigation, ELCCA, LEED Registration			
	Other Costs Total	$ 691,200		$ 691,200
	Project Management Total	$ 802,772		$ 802,772
	Grand Total Project Cost	**$ 33,370,102**	**$ 13,623,454**	**$ 33,370,102**

Construction One Time Project Costs			
One Time Costs	Estimate	Calculated	
Moving Vendor and Supplies		$ -	*$205 / Person in FY09*
Other (not covered in construction)			
Total	$ -	$ -	

	Ongoing Building Costs				
Added Services	New Building Operating Costs	Known Cost /GSF/ 2021	Estimated Cost /GSF/ 2021	Total Cost / Year	Cost / Month
☑	Energy (Electricity. Natural Gas)	$ -	$ 1.18	$ 39,555	$ 3,296
☑	Janitorial Services	$ -	$ 1.41	$ 47,147	$ 3,929
☑	Utilities (Water, Sewer, & Garbage)	$ -	$ 0.41	$ 13,585	$ 1,132
☑	Grounds	$ -	$ 0.14	$ 4,795	$ 400
☑	Pest Control	$ -	$ 0.05	$ 1,598	$ 133
☐	Security	$ -	$0.00	$ -	$ -
☑	Maintenance and Repair	$ -	$ 6.03	$ 201,773	$ 16,814
☑	Management	$ -	$ 0.72	$ 23,973	$ 1,998
☐	Road Clearance	$ -	$0.00	$ -	$ -
☐	Telecom	$ -	$0.00	$ -	$ -
	Additional Parking	$ -	$ -	$ -	$ -
	Other	$ -	$ -	$ -	$ -
	Total Operating Costs	**$ -**	**$ 9.94**	**$ 332,425**	**$ 27,702**

Ownership Option 2 Information Sheet

*	***Requires a user input***	*Green Cell*	*= Value can be entered by user.*	*Yellow Cell*	*= Calculated value.*

*	**Project Description**	Using a GCCM delivery method. Renovate the existing 21,820 gsf recreation & aquatics building with all new NET ZERO mechanical and electrical systems. Also includes new grass play fields with other misc. improvements.
*	**Construction or Purchase/Remodel**	Construction
*	**Project Location**	Chehalis — Market Area = Southwest Counties

	Statistics	
*	Gross Sq Ft	21,820
*	Usable Sq Ft	
	Space Efficiency	
	Estimated Acres Needed	2.00
	MACC Cost per Sq Ft	$1,177.96
	Estimated Total Project Costs per Sq Ft	$1,649.15
	Escalated MACC Cost per Sq Ft	$1,287.42
	Escalated Total Project Costs per Sq Ft	$1,802.38

*	**Move In Date**	7/1/2021

Interim Lease Information	**Start Date**
Lease Start Date	
Length of Lease (in months)	
Square Feet (holdover/temp lease)	
Lease Rate- Full Serviced ($/SF/Year)	
One Time Costs (if double move)	

	Construction Cost Estimates (See Capital Budget System For Detail)			
		Known Costs	Estimated Costs	Cost to Use
	Acquisition Costs Total	$ 0	$ 500,000	$ 0
A & E	**Consultant Services**			
	A & E Fee Percentage (if services not specified)		6.76% Std	6.76%
	Pre-Schematic Design services	$ 195,000		
	Construction Documents	$ 1,593,658		
	Extra Services	$ 863,000		
	Other Services	$ 715,991		
	Design Services Contingency	$ 168,382		
	Consultant Services Total	$ 3,536,031	$ 1,736,832	$ 3,536,031
MACC	**Construction Contracts**			
	Site Work	$ 7,649,393		
	Related Project Costs	$ 3,924,298		
	Facility Construction	$ 14,129,472		
	MACC SubTotal	$ 25,703,163	$ 6,546,000	$ 25,703,163
	Construction Contingency (5% default)	$ 1,088,943	$ 1,088,943	$ 1,088,943
	Non Taxable Items			$ -
	Sales Tax	$ 2,304,121		$ 2,304,121
	Construction Additional Items Total	$ 3,393,064	$ 3,393,064	$ 3,393,064
	Equipment			
	Equipment	$ 450,000		
	Non Taxable Items			
	Sales Tax	$ 38,700		
	Equipment Total	$ 488,700		$ 488,700
	Art Work Total	$ 115,765	$ 128,516	$ 115,765
	Other Costs			
	Hazardous Material Removal, Permits, Advertisement	$ 691,200		
	Harcheological Mitigation, ELCCA, LEED Registration			
	Other Costs Total	$ 691,200		$ 691,200
	Project Management Total	$ 839,946		$ 839,946
	Grand Total Project Cost		**$ -**	**$ 34,767,869**

Construction One Time Project Costs			
One Time Costs	Estimate	Calculated	
Moving Vendor and Supplies		$ -	*$205 / Person in FY09*
Other (not covered in construction)			
Total	$ -	$ -	

Added Services	Ongoing Building Costs New Building Operating Costs	Known Cost /GSF/ 2021	Estimated Cost /GSF/ 2021	Total Cost / Year	Cost / Month
☑	**Energy (Electricity. Natural Gas)**	$ -	$ 1.18	$ 25,803	$ 2,150
☑	**Janitorial Services**	$ -	$ 1.41	$ 30,755	$ 2,563
☑	**Utilities (Water, Sewer, & Garbage)**	$ -	$ 0.41	$ 8,862	$ 738
☑	**Grounds**	$ -	$ 0.14	$ 3,128	$ 261
☑	**Pest Control**	$ -	$ 0.05	$ 1,043	$ 87
☑	**Security**	$ -	$ 0.12	$ 2,606	$ 217
☑	**Maintenance and Repair**	$ -	$ 6.03	$ 131,620	$ 10,968
☑	**Management**	$ -	$ 0.72	$ 15,638	$ 1,303
☐	**Road Clearance**	$ -	$0.00	$ -	$ -
☐	**Telecom**	$ -	$0.00	$ -	$ -
	Additional Parking	$ -	$ -	$ -	$ -
	Other	$ -	$ -	$ -	$ -
	Total Operating Costs	**$ -**	**$ 10.06**	**$ 219,453**	**$ 18,288**

APPENDIX B: DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION LETTER

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

July 3, 2018

Ms. Penny Koal
Capital Facilities Management
DSHS/OCP
PO Box 45848
Olympia, Washington 98504

Re: Green Hill School New Recreation Building Project
Log No.: 2018-04-02440-DSHS

Dear Ms. Koal:

Thank you for contacting our Department pursuant to Executive Order 05-05. We have reviewed the information you provided for the proposed Green Hill School New Recreation Building Project in Chehalis, Lewis County, Washington.

We concur with the determination of no cultural resource impacts.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under EX05-05.

In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with Executive Order 05-05. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified.

Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

State of Washington • **Department of Archaeology & Historic Preservation**
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Agency	Department of Social and Health Services
Project Name	GHS Recreation Building Replacement - NET ZERO (GCCM Deliv. Method)
OFM Project Number	300003237

Contact Information	
Name	Penny Koal
Phone Number	360.902.8156
Email	penny.koal@dshs.wa.gov

Statistics			
Gross Square Feet	33,450	MACC per Square Foot	$632
Usable Square Feet	28,433	Escalated MACC per Square Foot	$678
Space Efficiency	85.0%	A/E Fee Class	B
Construction Type	Recreational building	A/E Fee Percentage	7.13%
Remodel	No	Projected Life of Asset (Years)	30
Additional Project Details			
Alternative Public Works Project	Yes	Art Requirement Applies	Yes
Inflation Rate	3.12%	Higher Ed Institution	No
Sales Tax Rate %	8.60%	Location Used for Tax Rate	Chehalis
Contingency Rate	5%		
Base Month	June-18		
Project Administered By	Agency		

Schedule			
Predesign Start	August-18	Predesign End	September-18
Design Start	January-19	Design End	January-20
Construction Start	April-20	Construction End	June-21
Construction Duration	14 Months		

Green cells must be filled in by user

Project Cost Estimate			
Total Project	**$33,468,562**	Total Project Escalated	**$35,835,016**
		Rounded Escalated Total	**$35,835,000**

STATE OF WASHINGTON		
AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Department of Social and Health Services	
Project Name	GHS Recreation Building Replacement - NET ZERO (GCCM Deliv. Method)	
OFM Project Number	300003237	

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	**$0**	**Acquisition Subtotal Escalated**	**$0**

Consultant Services			
Predesign Services	$195,000		
A/E Basic Design Services	$1,092,162		
Extra Services	$804,000		
Other Services	$620,681		
Design Services Contingency	$135,592		
Consultant Services Subtotal	**$2,847,435**	**Consultant Services Subtotal Escalated**	**$2,973,649**

Construction			
GC/CM Risk Contingency	$710,041		
GC/CM or D/B Costs	$3,344,245		
Construction Contingencies	$1,057,131	Construction Contingencies Escalated	$1,138,743
Maximum Allowable Construction Cost (MACC)	$21,142,630	Maximum Allowable Construction Cost (MACC) Escalated	$22,681,381
Sales Tax	$2,257,848	Sales Tax Escalated	$2,424,117
Construction Subtotal	**$28,511,895**	**Construction Subtotal Escalated**	**$30,611,519**

Equipment			
Equipment	$450,000		
Sales Tax	$38,700		
Non-Taxable Items	$0		
Equipment Subtotal	**$488,700**	**Equipment Subtotal Escalated**	**$526,428**

Artwork			
Artwork Subtotal	**$113,407**	**Artwork Subtotal Escalated**	**$113,407**

Agency Project Administration			
Agency Project Administration Subtotal	$805,925		
DES Additional Services Subtotal	$0		
Other Project Admin Costs	$0		
Project Administration Subtotal	**$805,925**	**Project Administation Subtotal Escalated**	**$868,143**

Other Costs			
Other Costs Subtotal	**$701,200**	**Other Costs Subtotal Escalated**	**$741,870**

Project Cost Estimate			
Total Project	**$33,468,562**	Total Project Escalated	**$35,835,016**
		Rounded Escalated Total	**$35,835,000**

Cost Estimate Details

Acquisition Costs					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Purchase/Lease					
Appraisal and Closing					
Right of Way					
Demolition					
Pre-Site Development					
Other					
Insert Row Here					
ACQUISITION TOTAL	**$0**		**NA**	**$0**	

Green cells must be filled in by user

Cost Estimate Details

Consultant Services					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
1) Pre-Schematic Design Services					
Programming/Site Analysis					
Environmental Analysis					
Predesign Study	$195,000				
Other					
Insert Row Here					
Sub TOTAL	**$195,000**		**1.0182**	**$198,549**	Escalated to Design Start
2) Construction Documents					
A/E Basic Design Services	$1,092,162				69% of A/E Basic Services
Other					
Insert Row Here					
Sub TOTAL	**$1,092,162**		**1.0339**	**$1,129,186**	Escalated to Mid-Design
3) Extra Services					
Civil Design (Above Basic Svcs)	$100,000				
Geotechnical Investigation	$28,000				
Commissioning	$16,000				
Site Survey	$0				
Testing	$0				
LEED Services	$60,000				
Voice/Data Consultant	$30,000				
Value Engineering	$0				
Constructability Review	$0				
Environmental Mitigation (EIS)	$0				
Landscape Consultant	$60,000				
Acoustic Consultant	$30,000				
LCCA + ELCCA Consultant	$20,000				
Net Zero	$60,000				
GCCM Coordination	$40,000				
Pool Consultant	$200,000				
Field & Turf Consultant	$40,000				
Record Drawings	$35,000				
Detailed Cost Estimator	$50,000				
Environmental Graphics / Signage	$20,000				
SEPA	$15,000				
Insert Row Here					
Sub TOTAL	**$804,000**		**1.0339**	**$831,256**	Escalated to Mid-Design
4) Other Services					
Bid/Construction/Closeout	$490,681				31% of A/E Basic Services
HVAC Balancing					
Staffing					
Special Inspection (testing)	$50,000				
Third Party Comissioning Agent	$80,000				See additional notes
Insert Row Here					
Sub TOTAL	**$620,681**		**1.0772**	**$668,598**	Escalated to Mid-Const.

5) Design Services Contingency				
Design Services Contingency	$135,592			
Other				
Insert Row Here				
Sub TOTAL	**$135,592**	**1.0772**	**$146,060**	Escalated to Mid-Const.
CONSULTANT SERVICES TOTAL	**$2,847,435**		**$2,973,649**	

Green cells must be filled in by user

Cost Estimate Details

Construction Contracts				
Item	**Base Amount**	**Escalation Factor**	**Escalated Cost**	**Notes**
1) Site Work				
G10 - Site Preparation	$1,233,125			
G20 - Site Improvements	$2,125,464			
G30 - Site Mechanical Utilities	$969,703			
G40 - Site Electrical Utilities	$150,923			
G60 - Other Site Construction	$0			
Demolition of Existing Rec Building	$277,550			See additional notes
Market Escalation	$110,992			Sourced from Turner Constructin Cost Index
Insert Row Here				
Sub TOTAL	**$4,867,757**	**1.0580**	**$5,150,087**	
2) Related Project Costs				
Offsite Improvements				
City Utilities Relocation				
Parking Mitigation				
Stormwater Retention/Detention				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0580**	**$0**	
3) Facility Construction				
A10 - Foundations	$809,448			
A20 - Basement Construction	$74,684			
B10 - Superstructure	$2,349,101			
B20 - Exterior Closure	$860,963			
B30 - Roofing	$1,186,109			
C10 - Interior Construction	$534,213			
C20 - Stairs	$9,143			
C30 - Interior Finishes	$720,504			
D10 - Conveying	$0			
D20 - Plumbing Systems	$621,199			
D30 - HVAC Systems	$3,969,544			
D40 - Fire Protection Systems	$203,878			
D50 - Electrical Systems	$3,093,456			
F10 - Special Construction	$1,123,004			
F20 - Selective Demolition				
General Conditions				
Equipment - CFCI	$190,895			
Casework	$70,899			
Additional Market Escalation	$457,833			Sourced from Turner Construction Cost Index. See Additional Notes
Insert Row Here				
Sub TOTAL	**$16,274,873**	**1.0772**	**$17,531,294**	
4) Maximum Allowable Construction Cost				
MACC Sub TOTAL	**$21,142,630**		**$22,681,381**	

5) GCCM Risk Contingency				
GCCM Risk Contingency	$710,041			
Other				
Insert Row Here				
Sub TOTAL	**$710,041**	**1.0772**	**$764,857**	
6) GCCM or Design Build Costs				
GCCM Fee	$1,440,166			
Bid General Conditions	$1,654,079			
GCCM Preconstruction Services	$250,000			
Other				
Insert Row Here				
Sub TOTAL	**$3,344,245**	**1.0772**	**$3,602,421**	
7) Construction Contingency				
Allowance for Change Orders	$1,057,131			
Other				
Insert Row Here				
Sub TOTAL	**$1,057,131**	**1.0772**	**$1,138,743**	
8) Non-Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0772**	**$0**	
Sales Tax				
Sub TOTAL	**$2,257,848**		**$2,424,117**	
CONSTRUCTION CONTRACTS TOTAL	**$28,511,895**		**$30,611,519**	

Green cells must be filled in by user

Cost Estimate Details

Equipment					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
E10 - Equipment	$300,000				
E20 - Furnishings	$150,000				
F10 - Special Construction					
Other					
Insert Row Here					
Sub TOTAL	**$450,000**		**1.0772**	**$484,740**	
1) Non Taxable Items					
Other					
Insert Row Here					
Sub TOTAL	**$0**		**1.0772**	**$0**	
Sales Tax					
Sub TOTAL	**$38,700**			**$41,688**	
EQUIPMENT TOTAL	**$488,700**			**$526,428**	

Green cells must be filled in by user

Artwork					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Project Artwork	$113,407				0.5% of Escalated MACC for new construction
Higher Ed Artwork	$0				0.5% of Escalated MACC for new and renewal construction
Other					
Insert Row Here					
ARTWORK TOTAL	**$113,407**		**NA**	**$113,407**	

Green cells must be filled in by user

Cost Estimate Details

Project Management					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Agency Project Management	$805,925				
Additional Services					
Other					
Insert Row Here					
PROJECT MANAGEMENT TOTAL	**$805,925**		**1.0772**	**$868,143**	

Green cells must be filled in by user

Other Costs					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Mitigation Costs					
Hazardous Material Remediation/Removal	$425,000				
Historic and Archeological Mitigation	$125,000				
General Building Permit, Plan Check, AHJ Fees	$140,000				
Advertising	$1,200				
DES ELCCA Fees	$5,000				
LEED Registration	$5,000				
Insert Row Here					
OTHER COSTS TOTAL	**$701,200**		**1.0580**	**$741,870**	

Green cells must be filled in by user

C-100(2018)
Additional Notes

Tab A. Acquisition
Insert Row Here

Tab B. Consultant Services
Value engineering & Constructabilty review included in GCCM costs. No formal VE or Construtability with third party required.
Voice/Data includes security, access control, fire, and audio/visual design
Insert Row Here

Tab C. Construction Contracts
Additonal Market Conditions referenced from Turner Construction Index for 2018 escalation (+2.33%)- Added escalation takes into account the OFM spreadsheet calculated escalation to mid-point of construction. Includes tariff impacts.
Existing building demolition occurs **AFTER** construction is complete. This line escalates to beg of construction.
Third party commissioning agent includes LEED enhanced and building envelope commissioning.
Insert Row Here

Tab D. Equipment
Insert Row Here

Tab E. Artwork
Insert Row Here

Tab F. Project Management
Insert Row Here

Tab G. Other Costs
HazMat remediation prior to demolition occurs **AFTER** new building is constructed and occupied. This line only escalates to beg of construction.
Insert Row Here

ROEN ASSOCIATES

Construction Cost Summary

Owner: **Green Hill School**

Project: **GHS - Recreation Building (NET ZERO)** **August 28, 2018**

ESTIMATED COSTS SUMMARY

Phase	Description	QTY	UOM	$ / UOM	Cost
1	GHS - Recreation Building (NET ZERO)	33,450	BGSF	$477.32	$15,966,257
2	Sitework (includes storage building)	342,700	SGA	$13.19	$4,521,471
3	Demolition of Existing Rec Building	1	LS	$280,169	$280,169
4	General Conditions & Support Services	14	MO	$85,000	$1,190,000
Total Estimated Construction Cost (Today's Dollars) - DESIGN BID BUILD					**$21,957,897**
5	Premium for Reduction in Competitive Subcontractor Bidding & Self Performed Work	6.00%	on	$20,767,897	$1,246,074
6	Additional Cost for GCCM General Conditions and Support Services over Hard Bid Cost	2.00%	on	$23,203,970	$464,079
7	GCCM Risk Contingency	3.00%	on	$23,668,050	$710,041
Total Estimated Construction Cost (Today's Dollars) - GCCM					**$24,378,091**
8	Escalation	-	-	$0	$0
Total Estimated Construction Cost - Escalated					**See C-100 Form**

ALTERNATES (Escalated Design, Bid, Build Pricing)

Synthetic Turf Football Field in lieu of Grass	**$346,041**
Synthetic Turf Baseball Field in lieu of Grass	**$247,460**

COMMENTS:

Assumes a Q1, 2020 start and a 14 month schedule

No Site Frontage Improvements are included or anticipated

Hazardous Material Abatement is EXCLUDED. An allowance for this work is carried by owner in the C-100 Form.

A temporary perimeter security fence will be installed allowing the contractor unlimited access to the site

GCCM pricing assumes General Conditions and Support Services will be competitively bid during the selection process

Estimate does not include sales tax or construction contingency.

Roen Associates
500 Union Street, Suite 927
Seattle, WA 98101

Green Hill School
Recreation Building (NET ZERO)
Predesign Estimate

ROEN ASSOCIATES

Project Owner:	**Green Hill School**	Architect:	DLR Group
Project Name:	**GHS - Recreation Building (NET ZERO)**	Project Duration:	14 MO
Project Location:	Chehalis, WA 98532	Building GSF:	33,450
Project Start Date:	Q2, 2019	Site GSF:	342,700
Estimate Date:	August 28, 2018		

ESTIMATE SUMMARY					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
A10	Foundations	33,450	BGSF	$19.85	$664,026
A20	Basement Construction	33,450	BGSF	$1.83	$61,267
B10	Superstructure	33,450	BGSF	$57.61	$1,927,072
B20	Exterior Enclosure	33,450	BGSF	$21.11	$706,286
B30	Roofing	33,450	BGSF	$29.09	$973,018
C10	Interior Construction	33,450	BGSF	$13.10	$438,239
C20	Stairs	33,450	BGSF	$0.22	$7,500
C30	Interior Finishes	33,450	BGSF	$17.67	$591,062
D10	Conveying Systems	33,450	BGSF	$0.00	$0
D20	Plumbing	33,450	BGSF	$15.23	$509,597
D30	HVAC	33,450	BGSF	$97.35	$3,256,394
D40	Fire Protection	33,450	BGSF	$5.00	$167,250
D50	Electrical	33,450	BGSF	$75.87	$2,537,700
E10	Equipment	33,450	BGSF	$4.68	$156,600
E20	Casework & Furnishings	33,450	BGSF	$1.74	$58,162
F10	Special Construction	33,450	BGSF	$27.54	$921,250
F20	Selective Demolition	33,450	BGSF	$0.00	$0
	Building Construction Subtotal				**$12,975,422**
	Design Contingency			15.00%	$1,946,313
	Subtotal				$14,921,735
	Contractor Mark Up (Overhead, Profit, Insurance, Bonds, B&O Tax)			7.00%	$1,044,521
	Subtotal				$15,966,257
	Escalation to Mid-Point - See Summary				$0
	BUILDING GRAND TOTAL	33,450	BGSF	$477.32	**$15,966,257**

Estimate excludes soft costs such as design fees, permits, testing / inspections, construction change order contingencies, loose fixtures / furnishings and sales tax.

No.	DETAILED ESTIMATE Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
A10	**FOUNDATIONS**				
	Foundation Earthwork				
	Footing Excavation and Backfill - Included w/ Footings Allowance			$ -	$0
	Footing Drains w/ Gravel	1,226	lf	$ 18.00	$22,068
	Foundations				
	Footings Allowance (inc reinforcing)	33,450	gsf	$ 12.00	$401,400
	Slab-on-Grade				
	5" Slab on Grade (inc reinforcing, base course and vapor barrier)	24,745	sf	$ 8.00	$197,960
	Outdoor Entry Walkway	475	sf	$ 6.00	$2,850
	2" Rat Slab, Non-Reinforced @ Synthetic Turf	5,280	sf	$ 4.25	$22,440
	Misc. Concrete				
	Housekeeping Pads	500	sf	$ 15.00	$7,500
	Perimeter Insulation / Waterproofing				
	2" Rigid Polystyrene	4,904	sf	$ 2.00	$9,808
	SUBTOTAL FOUNDATIONS	**33,450**	**BGSF**	**$19.85**	**$664,026**
A20	**BASEMENT CONSTRUCTION**				
	Basement Excavation				
	Exc. and Backfill - assumes native soils w/ excess fill spread onsite	356	cy	$ 12.00	$4,267
	Basement Walls				
	Pool Utility Pit Below Grade CIP Walls	1,000	sf	$ 45.00	$45,000
	Waterproofing				
	Bentonite Assembly w/ Rigid Insulation & Drain Board	1,000	sf	$ 12.00	$12,000
	SUBTOTAL BASEMENT CONSTRUCTION	**33,450**	**BGSF**	**$1.83**	**$61,267**
B10	**SUPERSTRUCTURE**				
	Structural Concrete				
	Site Cast Tilt Up Panels				
	Insulated Sandwich Panels	15,258	sf	$ 35.00	$534,030
	See Ext. Enclosure for Form Liner & Graphic Concrete Pattern Premiums				
	9" Tilt Up Panels, Uninsulated (interior bearing walls)	2,150	sf	$ 25.00	$53,750
	Structural CMU and Masonry				
	6" CMU	7,490	sf	$ 24.00	$179,760
	Misc.				
	Furnish Rebar (install included with unit rate above).	7,490	sf	$ 0.90	$6,741
	Structural Steel				
	Vertical Structure				
	Steel Support Framing @ Clerestory Glazing	2,897	sf	$ 25.00	$72,425
	Horizontal Structure				
	Girders and Bar Joists, 8 psf	353,420	lbs	$ 2.25	$795,194

No.	DETAILED ESTIMATE Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
	Metal Decking				
	Perforated Cellular Acoustical Metal Deck @ Multi-Purpose, Gyms and Pool	18,186	sf	$ 7.00	$127,302
	Roof Decking (includes overhang canopy areas)	25,991	sf	$ 3.50	$90,970
	Misc Steel				
	Misc. Metals - Allowance	33,450	gsf	$ 2.00	$66,900
	Fireproofing				
	Firestopping - See Interior Partitions				
	SUBTOTAL SUPERSTRUCTURE	**33,450**	**BGSF**	**$57.61**	**$1,927,072**
B20	**EXTERIOR ENCLOSURE**				
	Exterior Wall Construction				
	Loadbearing CMU or Concrete Walls - Incl w/Superstructure				$0
	Exterior Wall Finish				
	Concrete Panel Finish Premiums				
	Form Liner	9,743	sf	$ 5.00	$48,715
	Graphic Concrete Pattern (premium for panels to be plant cast and shipped to site) - Deleted from Estimate per Design Team.			$ -	$0
	Accent Cladding Allowance	5,515	sf	$ 30.00	$165,450
	Fence Enclosure @ Synthetic Turf Area	840	sf	$ 20.00	$16,800
	Exterior Soffits (includes framing)				
	Finish to Soffits - Paint on Exposed Structure Only	9,846	sf	$ 3.00	$29,537
	Exterior Windows				
	Storefront, Std Clear Anodized w/ Flashing	421	sf	$ 80.00	$33,680
	Clerestory, Std Clear Anodized w/ Flashing	2,897	sf	$ 80.00	$231,760
	Punched Windows, Std Clear Anodized w/ Flashing	116	sf	$ 65.00	$7,540
	Exterior Doors				
	Storefront Entry Doors, HW, per leaf	5	ea	$ 5,500.00	$27,500
	Push Button ADA Auto Operators	1	ea	$ 4,000.00	$4,000
	Commercial Grade HM Dr, HM Frame, HW, per leaf	11	ea	$ 2,000.00	$22,000
	Glazed Overhead Doors (insulated), Motorized	7	ea	$ 8,000.00	$56,000
	Exterior Paint & Sealants				
	Water Repellants	9,743	sf	$ 1.15	$11,204
	Paint to HM Doors and Frames	11	ea	$ 175.00	$1,925
	Caulking and Joint Sealants (includes tilt panel joint caulking)	33,450	gsf	$ 1.50	$50,175
	Building Graphics				
	EXCLUDED				$0
	SUBTOTAL EXTERIOR ENCLOSURE	**33,450**	**BGSF**	**$21.11**	**$706,286**

No.	DETAILED ESTIMATE Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
B30	**ROOFING**				
	Roof Coverings				
	Membrane Roofing System w/ Rigid Insulation	44,177	sf	$ 18.00	$795,194
	Flashing and Sheet Metal				
	Flashings				
	Metal Fascia	1,709	lf	$ 20.00	$34,180
	Misc. Roof Flashing & Blocking	10%	on	$795,194	$79,519
	Skylights				
	None			$ -	$0
	Roof Accessories				
	Misc. Allowance - Walk Pads, Ladders, Roof Hatch, Etc…	1	ls	$ 15,000.00	$15,000
	Fall Protection Anchors	66	ea	$ 750.00	$49,125
	SUBTOTAL ROOFING	**33,450**	**BGSF**	**$29.09**	**$973,018**
C10	**INTERIOR CONSTRUCTION**				
	Partitions				
	GWB Partition (GWB - Finish 2 Sides, mtl studs, sound batts)	6,188	sf	$ 12.00	$74,256
	Misc. Carpentry - Allowance	33,450	gsf	$ 1.00	$33,450
	CMU Walls - See Superstructure Above			$ -	$0
	Interior Glazing				
	HM Relights w/ 1/4" tempered glazing - Allowance	500	sf	$ 35.00	$17,500
	Mirrors @ Weight Room, Yoga & Cardio	600	sf	$ 18.00	$10,800
	Interior Doors, Frames, Hardware				
	HM / SCW Dr, HM Frame, HW, Complete - per leaf	39	ea	$ 1,800.00	$70,200
	Premium for Fiberglass @ ool door				
	Glazed Overhead Doors (non-insulated), Motorized	3	ea	$ 6,500.00	$19,500
	Interior Railings				
	Sloping Stair Rails and Grabs - Included w/ Stairs Below				
	Fittings / Specialties				
	Toilet Accessories - Per Restroom	12	ea	$ 3,500.00	$42,000
	Janitorial Accessories	1	ls	$ 1,500.00	$1,500
	Visual Display Specialties				
	Marker & Tack Boards - Allowance	1	ls	$ 5,000.00	$5,000
	Signage (Code and Wayfinding)	33,450	gsf	$ 0.75	$25,088
	Operable Partitions				
	Gym Operable Partition	1,746	sf	70.00	$122,220
	Misc. Specialties Allowance (FECs, Corner Guards, etc...)	33,450	gsf	$ 0.50	$16,725
	SUBTOTAL INTERIOR CONSTRUCTION	**33,450**	**BGSF**	**$13.10**	**$438,239**

No.	DETAILED ESTIMATE Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
C20	**STAIRS**				
	Stair Construction (inc. concrete, finishes & guard / hand rails)				
	Pre-Engineered Metal Stair - Pool Utility Pit	1	ea	$ 7,500.00	$7,500
	SUBTOTAL STAIRS	**33,450**	**BGSF**	**$0.22**	**$7,500**
C30	**INTERIOR FINISHES**				
	Wall Finishes				
	Paint to Walls, Doors, Frames and Misc.	33,450	gsf	$ 3.00	$100,350
	Prime Coat	3,010	sf	$ 18.00	$54,180
	Restroom Wall Tile, 10'	210	sf	$ 18.00	$3,780
	Acoustical Wall Panels - Allowance	1,200	sf	$ 30.00	$36,000
	Bases				
	Rubber Base	2,093	lf	$ 2.00	$4,186
	Ceramic Tile	388	lf	$ 18.00	$6,984
	Vented Wood Base	425	lf	$ 14.00	$5,950
	Floor Finishes				
	Carpet / Sheet Goods	5,228	sf	$ 7.50	$39,210
	Tile (Staff Restrooms)	566	sf	$ 15.00	$8,490
	Prime Coat	702	sf	$ 13.00	$9,126
	Wood Gym Floors	11,202	sf	$ 16.50	$184,833
	Rubber Athletic Flooring - Weight Room, Cardio / Yoga	1,791	sf	$ 12.00	$21,492
	Sealed Concrete	2,722	sf	$ 2.00	$5,444
	Synthetic Turf w/ base courses & misc. concrete curbs	5,280	sf	$ 12.00	$63,360
	Floor Prep / Moisture Vapor Reducer	18,221	sf	$ 1.00	$18,221
	Ceiling Finishes				
	Acoustic Metal Deck - Included w/ Superstructure above			$ -	$0
	ACT Ceiling	3,835	sf	$ 6.50	$24,928
	GWB Ceiling, Painted	566	sf	$ 8.00	$4,528
	Exposed, No Paint			$ -	$0
	SUBTOTAL INTERIOR FINISHES	**33,450**	**BGSF**	**$17.67**	**$591,062**
D10	**CONVEYING SYSTEMS**				
	Elevators & Lifts				
	None				$0
	SUBTOTAL CONVEYING SYSTEMS	**33,450**	**BGSF**	**$0.00**	**$0**

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
D20	**PLUMBING**				
	Plumbing				
	System Complete	33,450	gsf	$ 15.23	$509,597
	SUBTOTAL PLUMBING	**33,450**	**BGSF**	**$15.23**	**$509,597**
D30	**HVAC**				
	HVAC				
	Geothermal System Complete (includes hydronics)	33,450	gsf	$ 88.26	$2,952,394
	Pool Dehumidification System	1	ls	$ 304,000	$304,000
	SUBTOTAL HVAC	**33,450**	**BGSF**	**$97.35**	**$3,256,394**
D40	**FIRE PROTECTION**				
	Fire Protection				
	Sprinkler System per Program Requirements	33,450	gsf	$ 5.00	$167,250
	SUBTOTAL FIRE PROTECTION	**33,450**	**BGSF**	**$5.00**	**$167,250**
D50	**ELECTRICAL**				
	Electrical				
	Electrical, Telecom., CCTV, FA System, Complete	33,450	gsf	$ 22.05	$737,700
	Photovoltaic System			$ -	$0
	23,750 sf system providing 437.5kW	1	ls	$1,750,000	$1,750,000
	AV Equipment - Speaker system Allowance	1	ls	$ 50,000.00	$50,000
	SUBTOTAL ELECTRICAL	**33,450**	**BGSF**	**$75.87**	**$2,537,700**
E10	**EQUIPMENT**				
	Storage Equipment				
	Lockers	25	ea	$ 1,200.00	$30,000
	Commercial Equipment				
	Food Service / Kitchen Equipment - None			$ -	$0
	Residential Equipment				
	Office Kitchenette Appliances	1	ls	$ 1,500.00	$1,500
	Event Kitchen Appliances	1	ls	$ 6,000.00	$6,000
	Washer / Dryer	1	ls	$ 4,000.00	$4,000
	Athletic Equipment				
	Basket Ball Goals, Ceiling Suspended, Fold up w/ Accessories	6	ea	$ 10,500.00	$63,000
	Volleyball standards	1	ls	$ 5,000.00	$5,000
	Score Boards - None			$ -	$0
	Wall Pads	640	sf	$ 15.00	$9,600
	Seating Systems				

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
	Telescopic Bleachers - Multi-Purpose Room	50	seats	$ 250.00	$12,500

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
	Stage Equipment				
	Stage Equipment - Allowance	1	ls	$ 25,000.00	$25,000
	SUBTOTAL EQUIPMENT	**33,450**	**BGSF**	**$4.68**	**$156,600**
E20	**CASEWORK & FURNISHINGS**				
	Fixed Casework				
	Manufactured P-Lam Casework				
	Mud Room	1	ls	$ 10,000.00	$10,000
	Laundry Room	1	ls	$ 5,000.00	$5,000
	Multi-Purpose Room	1	ls	$ 15,000.00	$15,000
	Resource Hub	1	ls	$ 5,000.00	$5,000
	Event Kitchen	1	ls	$ 15,000.00	$15,000
	Window Treatment				
	Mini Blinds - Punched Windows	116	sf	$ 7.00	$812
	Automated Shades @ Multi-Purpose Clerestory	294	sf	$ 25.00	$7,350
	Moveable Furnishings				
	EXCLUDED			$ -	$0
	SUBTOTAL FURNISHINGS	**33,450**	**BGSF**	**$1.74**	**$58,162**
F10	**SPECIAL CONSTRUCTION**				
	Special Facilities				
	Swimming Pool (includes, Site Prep, Utilities, Pool w/ Mech & Chem Systems	1	ls	$ 790,000	$790,000
	Pool Deck	2,250	sf	$ 25.00	$56,250
	Deck Equipment	1	ls	$ 45,000.00	$45,000
	Pool Cover and Storage Reel (manual)	1	ls	$ 30,000.00	$30,000
	SUBTOTAL SPECIAL CONSTRUCTION	**33,450**	**BGSF**	**$27.54**	**$921,250**
F20	**SELECTIVE BUILDING DEMOLITION**				
	Hazardous Components Abatement				
	None			$ -	$0
	SUBTOTAL SELECTIVE BUILDING DEMOLITION	**33,450**	**BGSF**	**$0.00**	**$0**
Z10	**GENERAL REQUIREMENTS**				
	General Conditions				
	See Summary			$ -	$0
	SUBTOTAL GENERAL REQUIREMENTS	**33,450**	**BGSF**	**$0.00**	**$0**

ESTIMATE SUMMARY					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
G10	Site Preparation	342,700	gsf	$2.83	$969,438
G20	Site Improvements	342,700	gsf	$4.88	$1,670,963
G30	Site Civil / Mech Utilities	342,700	gsf	$2.22	$762,345
G40	Site Electrical Utilities	342,700	gsf	$0.35	$118,650
G50	Other Site Construction	342,700	gsf	$0.00	$0
	Sitework Subtotal				**$3,521,395**
	Design Contingency			20.00%	$704,279
	Subtotal				$4,225,674
	Contractor Mark Up (Overhead, Profit, Insurance, Bonds, B&O Tax)			7.00%	$295,797
	Subtotal				$4,521,471
	Escalation to Mid-Point - See Summary				$0
	SITE GRAND TOTAL	342,700	BGSF	$13.19	**$4,521,471**

Estimate excludes soft costs such as design fees, permits, testing / inspections, construction change order contingencies, loose fixtures / furnishings and sales tax.

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
G10	**SITE PREPARATON**				
	Mobilization	1	ls	15,000.00	$15,000
	Site Demolition & Relocation				
	Misc Demolition	342,700	sga	0.15	$51,405
	Demo Misc Utilities	2,000	lf	12.00	$24,000
	Remove Sod for Building Addition and Storm/Sewer Work	12,250	sf	0.25	$3,063
	Misc Sawcut	1,000	lf	4.00	$4,000
	Clear & Grub	342,700	sf	0.15	$51,405
	Site Earthwork				
	TESC and Tree Protection	342,700	sf	0.45	$154,215
	Excavation				
	Native Cut / Fill - Allowance	15,000	cy	8.00	$120,000
	Import/Export Allowance (1' strip to export)	15,000	cy	25.00	$375,000
	Grading	342,700	sf	0.50	$171,350
	Hazardous Waste Remediation				
	(see fuel tank allowance above)			-	$0
	SUBTOTAL SITE PREPARATON	**342,700**	**SGA**	**$2.83**	**$969,438**
G20	**SITE IMPROVEMENTS**				
	Site Paving / Concrete Work (Base Courses Included)				
	Hardscape	50,500	sf	7.00	$353,500
	Hardscape - Exercise pads	13,500	sf	8.50	$114,750
	Curbs	2,500	lf	18.00	$45,000
	Misc Signage/Striping Allowance	1	ls	25,000.00	$25,000
	Site Development				
	Chain Link Fencing w/ Slats, commercial grade	420	lf	32.00	$13,440
	Chain Link Gates, commercial grade	2	ea	3,500.00	$7,000
	Misc. Site Furnishings	1	ls	25,000.00	$25,000
	Storage Building				
	Foundations & SOG	665	sf	22.50	$14,963
	CMU Walls	1,420	sf	26.00	$36,920
	Roof Structure & Metal Deck	665	sf	20.00	$13,300
	Membrane Roofing (no insulation)	665	sf	14.00	$9,310
	Paint	665	gsf	3.00	$1,995
	Doors	3	ea	2,000.00	$6,000
	Overhead Door	1	ea	6,500.00	$6,500
	Toilet Accessories	3	ea	2,500.00	$7,500
	Plumbing & Mechanical	1	ls	37,400.00	$37,400
	Electrical (included w/ Site Electrical below)			-	$0
	Trellis	2,300	sf	35.00	$80,500

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
	Football Field				
	Misc drainage - see Storm Drainage below			-	$0
	Perimeter curb	600	lf	12.00	$7,200
	Irrigated Grass w/ Topsoil	64,000	sf	4.00	$256,000
	Goal Posts	2	ea	8,000.00	$16,000
	Bleachers (w/pad & footing) Allowance	1,200	sf	65.00	$78,000
	Baseball Field				
	Misc drainage - see Storm Drainage below			-	$0
	Perimeter curb	835	lf	16.00	$13,360
	Perimeter fence	835	lf	35.00	$29,225
	Backstop	1	ea	25,000.00	$25,000
	Misc furnishings	1	ea	2,000.00	$2,000
	Benches/dugout allowance	2	ea	12,500.00	$25,000
	Irrigated Grass w/ Topsoil	45,500	sf	4.00	$182,000
	Basketball Courts (surfacing incl above)				
	Goal Standards (removable)	4	ea	3,800.00	$15,200
	Striping	2	ea	1,200.00	$2,400
	Exercise Stations (surfacing included above)				$0
	Equipment Allowance	5	ea	2,500.00	$12,500
	Picnic Tables	5	ea	1,800.00	$9,000
	Water Feature Allowance	1	ea	50,000.00	$50,000
	Landscaping				
	Plantings and Irrigation - Allowance (sports field grass & irrigation included above)	1	ls	150,000.00	$150,000
	SUBTOTAL SITE IMPROVEMENTS	**342,700**	**SGA**	**$4.88**	**$1,670,963**

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
G30	**SITE CIVIL / MECHANICAL UTILITIES**				
	Water Service				
	Fire Water, 6" Ductile Iron	170	lf	$ 52.00	$8,840
	Domestic Water, 3" PE	50	lf	$ 26.00	$1,300
	Hydrant Assembly	2	ea	$ 3,800.00	$7,600
	FDC on dry line	1	ea	$ 1,800.00	$1,800
	PIV	1	ea	$ 1,200.00	$1,200
	Tie-in at Existing	4	ea	$ 3,000.00	$12,000
	Sanitary Sewer Systems				
	Side Sewer, 6" PVC	300	lf	$ 48.00	$14,400
	Clean Out	2	ea	$ 1,500.00	$3,000
	Tie-in at Existing	1	ea	$ 3,500.00	$3,500
	Storm Sewer Systems				
	Drain Line	1,435	lf	$ 45.00	$64,575
	Clean Out	24	ea	$ 450.00	$10,800
	Sports Field Drainage Systems	109,100	sf	$ 1.50	$163,650
	48" Storm Drain Manhole	3	ea	$ 4,000.00	$12,000
	Catch Basin	10	ea	$ 2,200.00	$22,000
	Detention Vault	5,500	cf	$ 25.00	$137,500
	4'x4' MWS Linear Modular Wetland (assumed)	1	ea	$ 22,000.00	$22,000
	Bioretention Swales (includes exc, media & misc piping)	18,015	sf	$ 12.00	$216,180
	Other Civil / Mechanical Utilities				
	Extend Existing Gas line (trench/B'fill/resurfacing)	1,000	lf	60.00	$60,000
	SUBTOTAL SITE CIVIL / MECHANICAL UTILITIES	**342,700**	**SGA**	**$2.22**	**$762,345**
G40	**SITE ELECTRICAL UTILITIES**				
	Electrical and Telecom Utilities				
	Power, Telecomm (See separate estimate)	1	ls	$ 31,000.00	$31,000
	Relocate Conduit	906	lf	$ 25.00	$22,650
	Exterior Lighting				
	Site Lighting (See separate estimate)	1	ls	$ 65,000.00	$65,000
	SUBTOTAL SITE ELECTRICAL UTILITIES	**342,700**	**SGA**	**$0.35**	**$118,650**

DETAILED ESTIMATE					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
G50	**OTHER SITE CONSTRUCTION**				
	Service Tunnels				
	None				$0
	SUBTOTAL OTHER SITE CONSTRUCTION	**342,700**	**SGA**	**$0.00**	**$0**
Z10	**GENERAL REQUIREMENTS**				
	General Conditions				
	See Summary				
	SUBTOTAL GENERAL REQUIREMENTS	**342,700**	**SGA**	**$0.00**	**$0**

ALTERNATE ESTIMATES SUMMARY					
No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
1	Synthetic Turf Football Field in lieu of Grass	1	ls		$346,041
2	Synthetic Turf Baseball Field in lieu of Grass	1	ls		$247,460

Estimate excludes soft costs such as design fees, permits, testing / inspections, construction change order contingencies, loose fixtures / furnishings and sales tax.

PROJECT COST ALTERNATES					
Alt No.	Description	Quantity	Unit of Measure	Unit Cost	Total Estimated Cost
2	**Synthetic Turf Football Field in lieu of Grass**				
	Sitework				$0
	Football Field				
	DEDUCT: Irrigated Grass w/ Topsoil	(64,000)	sf	4.00	($256,000)
	ADD: Rock	2,200	ton	30.00	$66,000
	ADD: Synthetic Turf	64,000	sf	7.00	$448,000
	SUBTOTAL				**$258,000**
	Contingency			15.00%	$38,700
	Markups (Insurance, Bond, OH & P, B&O Tax)			7.00%	$20,769
	Escalation to Midpoint (Q4, 2020 @ 4% / Year)			9.00%	$28,572
	TOTAL ESTIMATED CONSTRUCTION COSTS				**$346,041**
3	**Synthetic Turf Baseball Field in lieu of Grass**				
	Sitework				$0
	Baseball Field				
	DEDUCT: Irrigated Grass w/ Topsoil	(45,500)	sf	4.00	($182,000)
	ADD: Rock	1,600	ton	30.00	$48,000
	ADD: Synthetic Turf	45,500	sf	7.00	$318,500
	SUBTOTAL				**$184,500**
	Contingency			15.00%	$27,675
	Markups (Insurance, Bond, OH & P, B&O Tax)			7.00%	$14,852
	Escalation to Midpoint (Q4, 2020 @ 4% / Year)			9.00%	$20,432
	TOTAL ESTIMATED CONSTRUCTION COSTS				**$247,460**
3	**Demolition of Existing Rec Building**				
	Building Demolition				
	Tear Down and Removal of Existing Rec Building	21,820	gsf	$ 10.00	$218,200
	Hazardous Material Abatement				
	EXCLUDED - Allowance Carried by Owner in C-100 Form			-	$0
	SUBTOTAL				**$218,200**
	Contingency			20.00%	$43,640
	Markups (Insurance, Bond, OH & P, B&O Tax)			7.00%	$18,329
	Escalation to Midpoint (Q4, 2020 @ 4% / Year)			0.00%	$0
	TOTAL ESTIMATED CONSTRUCTION COSTS				**$280,169**

APPENDIX E: LEED CHECKLIST

LEED v4 for BD+C: New Construction and Major Renovation
Project Checklist
Project Name: Green Hill School
Date: 07/11/2018

Y	? Y	? N	N			
1				Credit	Integrative Process	1
	2	5	25	**Location and Transportation**		**32**
			16	Credit 1	LEED for Neighborhood Development Location	16
	1			Credit 2	Sensitive Land Protection	1
			2	Credit 3	High Priority Site	2
		5		Credit 4	Surrounding Density and Diverse Uses	5
			5	Credit 5	Access to Quality Transit	5
			1	Credit 6	Bicycle Facilities	1
	1			Credit 7	Reduced Parking Footprint	1
			1	Credit 8	Green Vehicles	1
	3	3	4	**Sustainable Sites**		**10**
Y				Prereq	Construction Activity Pollution Prevention	Required
	1			Credit 1	Site Assessment	1
			2	Credit 2	Site Development - Protect or Restore Habitat	2
	1			Credit 3	Open Space	1
		3		Credit 4	Rainwater Management	3
			2	Credit 5	Heat Island Reduction	2
	1			Credit 6	Light Pollution Reduction	1
2	2	5	2	**Water Efficiency**		**11**
Y				Prereq	Outdoor Water Use Reduction	Required
Y				Prereq	Indoor Water Use Reduction	Required
Y				Prereq	Building-Level Water Metering	Required
		2		Credit 1	Outdoor Water Use Reduction	2
2	2	2		Credit 2	Indoor Water Use Reduction	6
			2	Credit 3	Cooling Tower Water Use	2
		1		Credit 4	Water Metering	1
23	6	4		**Energy and Atmosphere**		**33**
Y				Prereq	Fundamental Commissioning and Verification	Required
Y				Prereq	Minimum Energy Performance	Required
Y				Prereq	Building-Level Energy Metering	Required
Y				Prereq	Fundamental Refrigerant Management	Required
4	2			Credit 1	Enhanced Commissioning	6
14	4			Credit 2	Optimize Energy Performance	18
1				Credit 3	Advanced Energy Metering	1
		2		Credit 4	Demand Response	2
3				Credit 5	Renewable Energy Production	3

LEED v4 for BD+C: New Construction and Major Renovation
Project Checklist
Project Name: Green Hill School
Date: 07/11/2018

Y	? Y	? N	N			
1				Credit 6	Enhanced Refrigerant Management	1
		2		Credit 7	Green Power and Carbon Offsets	2

	5	8		**Materials and Resources**		**13**
Y				Prereq	Storage and Collection of Recyclables	Required
Y				Prereq	Construction and Demolition Waste Management Planning	Required
	5			Credit 1	Building Life-Cycle Impact Reduction	5
		2		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
		2		Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
		2		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
		2		Credit 5	Construction and Demolition Waste Management	2

1	9	6		**Indoor Environmental Quality**		**16**
Y				Prereq	Minimum Indoor Air Quality Performance	Required
Y				Prereq	Environmental Tobacco Smoke Control	Required
	2			Credit 1	Enhanced Indoor Air Quality Strategies	2
		3		Credit 2	Low-Emitting Materials	3
	1			Credit 3	Construction Indoor Air Quality Management Plan	1
		2		Credit 4	Indoor Air Quality Assessment	2
	1			Credit 5	Thermal Comfort	1
	2			Credit 6	Interior Lighting	2
1	2			Credit 7	Daylight	3
	1			Credit 8	Quality Views	1
		1		Credit 9	Acoustic Performance	1

1	1	4	0	**Innovation**		**6**
	1	4		Credit 1.1	Innovation	5
				Credit 1.2	EP	
				Credit 1.3	EP	
				Credit 1.4	ID	
				Credit 1.5	ID	
1				Credit 2	LEED Accredited Professional	1

1	1	2		**Regional Priority**		**4**
1				Credit 1.1	Renewable Energy Production	1
		1		Credit 1.2	Building Product Disclosure and Optimization - Environmental Product Declarations	1
		1		Credit 1.3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	1
	1			Credit 1.4	Indoor Water Use Reduction	1

29	29	37	31	**TOTALS**	Possible Points:	**126**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

DLR Group

Architecture
Engineering
Planning
Interiors

Green Hill Recreational Center Net Zero Design Narrative

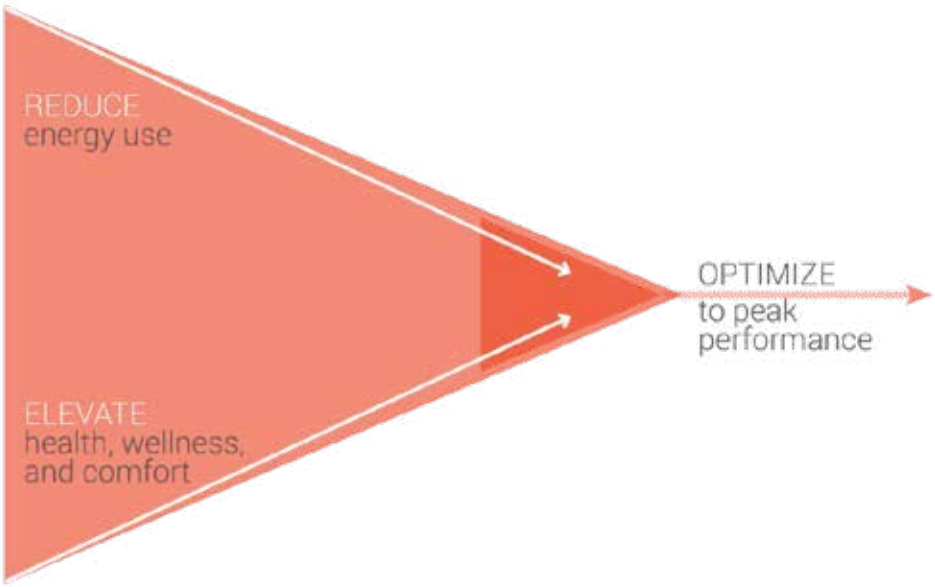
Chehalis, Washington

DLR Group Project No. 73-18130-00

24rd July 2018

Net Zero Design

The Green Hill Recreation center will be designed to be a Net Zero Energy Building. The narrative discusses the Passive Design Strategies for Low Energy Building, High performing systems for reduced energy consumption and solar panels for Energy production. The Mechanical and Electrical narratives include the options and systems required to meet these goals. Options and alternates are currently under study to optimize and fine-tune the design requirements to enhance performance at least possible first costs.

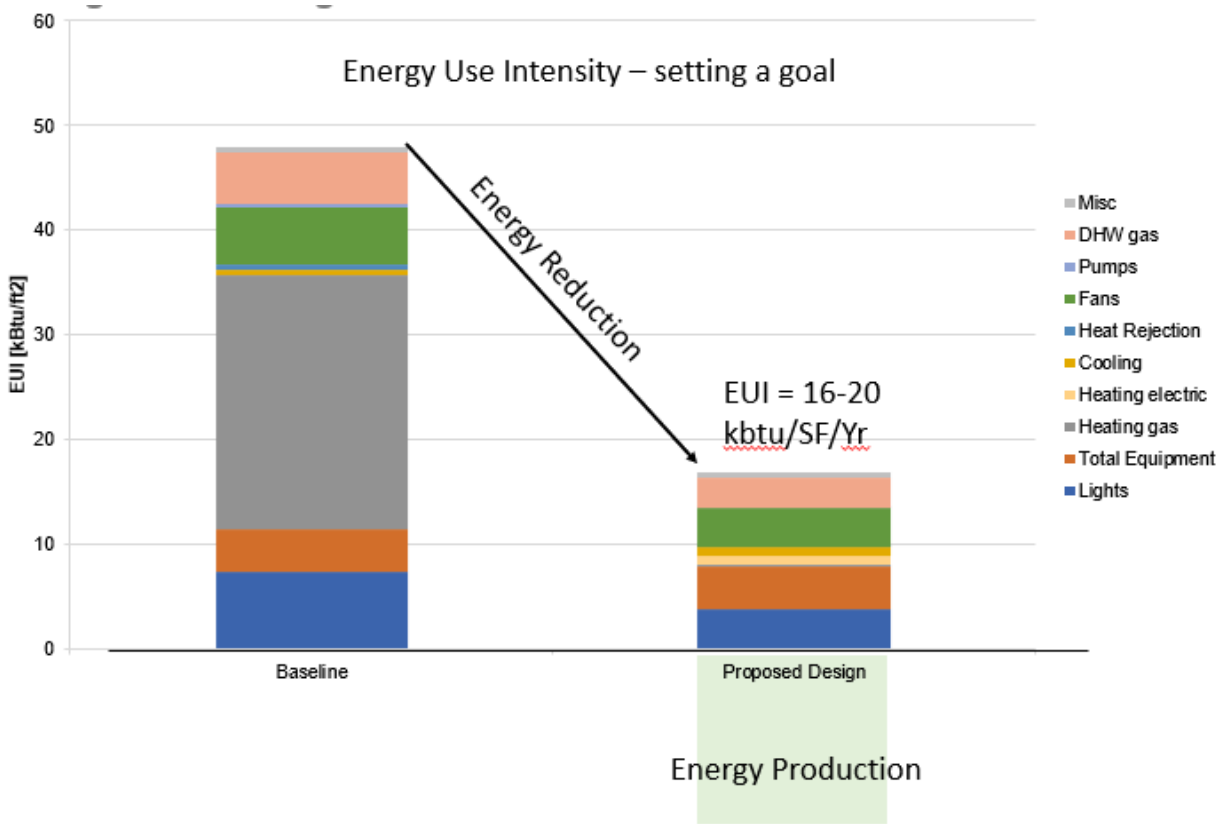


The Net Zero Design will incorporate systems and methodologies that enhance the indoor environment to elevate the health and wellness of the uses, eg. Improved daylighting in space

The following definition is used to define "A **zero-energy building**, also known as a **zero net energy** (**ZNE**) building, **net-zero energy building** (**NZEB**), or **net zero building**, is a building with zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site"

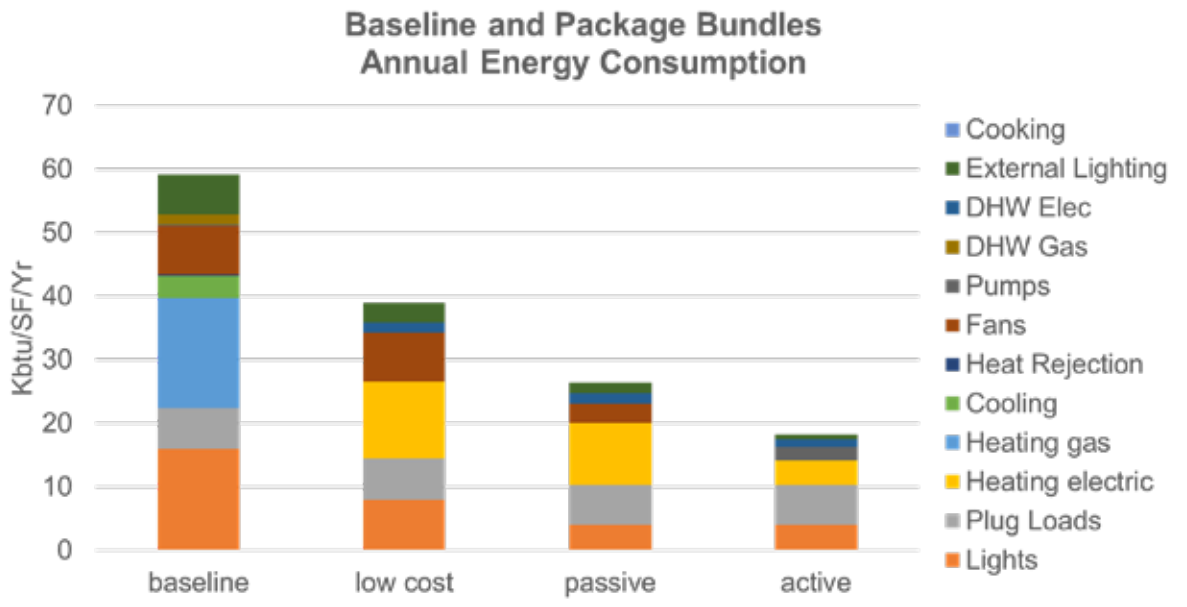
Setting a ZNE Target

A net zero energy target is set early on to determine a) the solar feasibility and capacity available on site, roof of building, b) the minimum energy consumption possible for the building, using the different available passive and active strategies. Based on some preliminary studies a energy budget of ~ 20 kbtu/SF/Yr EUI was set (without pool energy / generation, additional for pool heating/process loads). This is based on the building type, anticipated operation schedule, strategies discussed below and solar capacity available on site.



Path to Net Zero

A preliminary path to net zero was developed to identify strategies and package bundles that would be evaluated as way to get to the goal. This preliminary path does not include an estimate for the pool heating and process loads.



First bundle 'low cost' includes design enhancements which come at a low added first cost. These include high efficient LED lighting and controls, External shading to reduce the cooling and glare potential, Natural cooling using operable windows, and heat pump heating system and domestic hot water.

Low Cost

- High Efficient Lighting
- External Shading
- Natural Cooling
- Air source heat pump heating
- Heat pump DHWH

Second bundle 'passive strategies' includes design enhancements which include high efficient passive design features including a high-performance building envelope, 100 daylit spaces, natural cooling in all spaces and natural ventilation in admin/office space.

Passive Strategies

- High performing envelope
- 100 Daylighting
- Natural Cooling
- Natural Ventilation in offices

Third bundle 'active strategies' includes design enhancements which include high efficient active systems including air side heat recovery, free heating using ground source , energy management controls and metering

Active Strategies

- Heat recovery
- Free heat opportunity
- Ground Source
- Energy management controls
- Operations

A combination of all of these bundles will be required to our goal of net zero energy consumption. More detail will regard to the passive and active strategies is include below and detailed analysis to determine recommendation are included in the appendix.

Passive Design Strategies for Low Energy Building

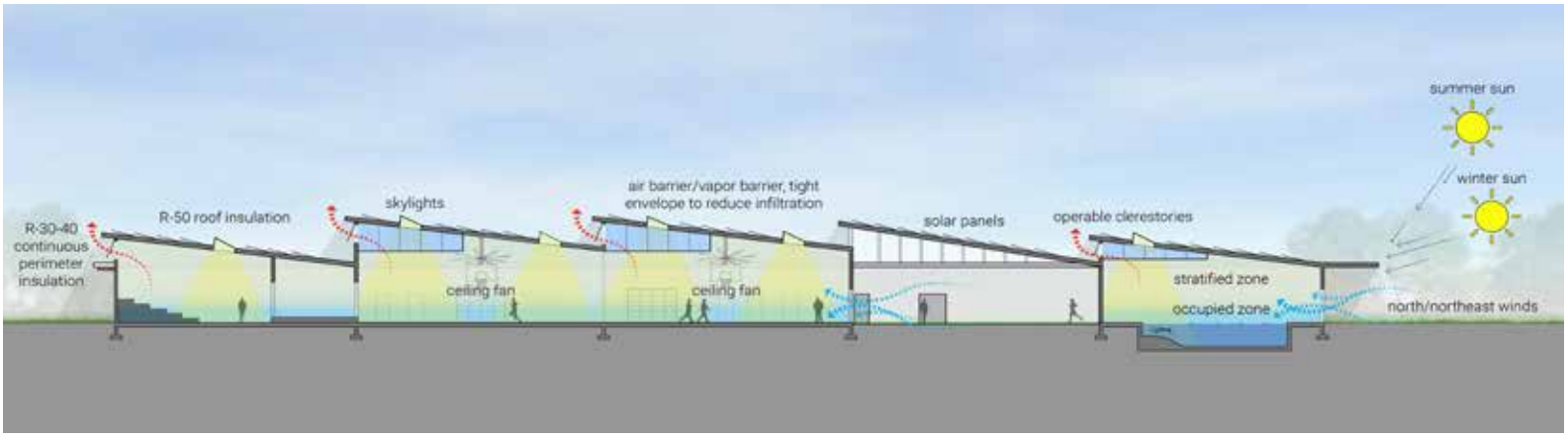


Image above shows the strategies integrated into the building form.

Building Envelope

Building Heights

Following building heights are desired for optimal daylighting and to allow for clerestories so that skylights can be minimized so as to maximize the roof available for solar panels. All clerestories are estimated to be 4’ to 5’ high. Exposed ceilings are anticipated to maximize ceiling height in spaces.

- Pool Height – 15’
- Gym Height – 20’

External Shading

- 3’ wide horizontal shading for South, East and West facing clerestories.

Skylights

- 4 to 8 skylights (4’ x 4’) for each Gym and Pool area

Insulation

- R-30 – 40 Wall insulation, continuous rigid insulation between thermal mass (concrete sandwich panel), 4”-6” insulation in cavity of sandwich panel.
- R-50 Roof insulation, continuous rigid insulation above roof
- Continuous insulation, no thermal bridging.
- Air barrier/ vapor barrier, tight envelope to reduce infiltration (< 0.25 cfm/sq ft).
- Option – For radiant heated slabs, consider R-10 under-slab insulation

Glazing

- Insulated Double glazing unit, low-e windows and non-conductive frames, u of assembly <0.30 (solar ban 70xl)
- Option- Triple glazed, low-e windows and non-conductive frames, u of assembly <0.20.

Natural Cooling, Ventilation and Daylighting Strategies

Pool

- Pool area to behave like outdoor space in summer months, provide 18’ wide three garage doors (one on west side and two on south façade).
- 4’ high North and South Clerestory for daylighting.
- 50 - 80 - Clerestory to be operable with actuators for controls based on outside air and indoor air temperature.
- Big Ass Ceiling fans (power foil).

North Gym

- 18’ wide two garage doors (West façade).
- 4’ high North, East and West Clerestory for daylighting.
- 50 - 80 - Clerestory to be operable with actuators for controls based on outside air and indoor air temperature.
- Big Ass Ceiling fans (power foil).

South Gym

- 18’ wide four garage doors (Two on east and two on south façade).
- 4’ high North, East and West Clerestory for daylighting.
- Clerestory to be operable with actuators for controls based on outside air and indoor air temperature.
- Big Ass Ceiling fans (power foil).

Multipurpose

- 4’ high North, East and West Clerestory for daylighting.
- Clerestory to be operable with actuators for controls based on outside air and indoor air temperature.
- Big Ass Ceiling fans.

Admin

- Each occupied space to have at least one operable window, 4 -8 of floor area.
- Desk fans for admin.
- Trickle vents (with baseboard heating).

Workout spaces

- Each occupied space to have at least one operable window, 4 -8 of floor area.
- Fitness equipment to include personal fans.

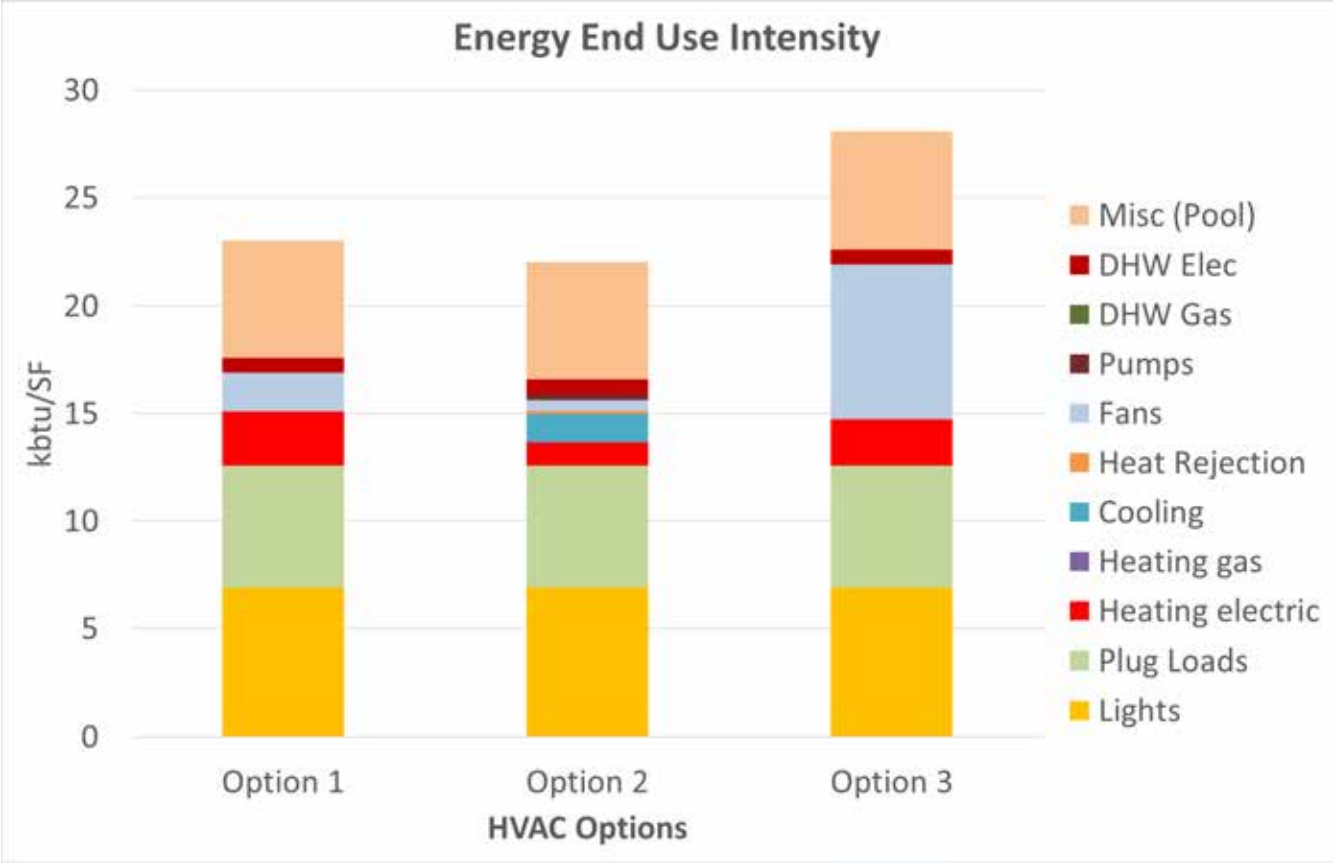
Pool

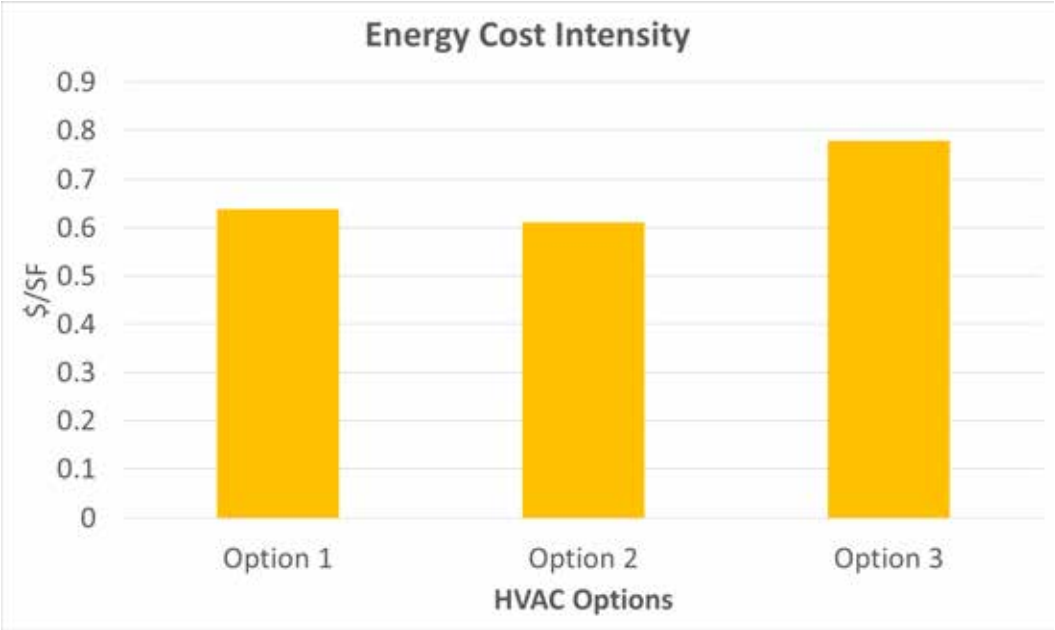
Pool space will be design to behave like an outdoor space in summer months but for winter months (seasonal switchover, no automated controls), the space to be heated with pool water will be heated. Following options will be studied for the pool based on discussion with the pool consultant. Rough pool energy use is estimated as a process load but will be studied in more detail in the next stage of design.

- Design for Lower water temperature than typical pool.
- Pool cover system recommended for reduce energy loss
- Option - Solar hot water heating will be studied as an option for heating the pool
- Option - Minimized dehumidification through heat recovery wheel will be studied

HVAC

Three options have been included in the mechanical narrative with the intent to meet the net zero goal. All three options include a high efficiency electric heating system (heat pump) to meet the desire to be net zero. Option 1 and 2 use a central heat pump to generate hot water that serves the hot water loop. Option 3 uses distributed geothermal heat pumps with geothermal wells to provide heating. Option 1 provides heating through a radiant source in the space and option 3 uses air to heat the space. Option 2 uses cycling geothermal to heat the space, Preliminary results for the three options with regards to energy consumption and utility costs is shown below. These results are preliminary and will be used to estimate pros and cons to feed into the Energy life cycle analysis.


Energy End Use Intensity
30
25
20
15
10
5
0
kbtu/SF
Option 1
Option 2
Option 3
HVAC Options
Misc (Pool)
DHW Elec
DHW Gas
Pumps
Fans
Heat Rejection
Cooling
Heating gas
Heating electric
Plug Loads
Lights


Energy Cost Intensity
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
$/SF
Option 1
Option 2
Option 3
HVAC Options

Sub-Metering

Sub-metered data to be provided for energy use end use break down for tracking where energy is being consumed. The end use categories anticipated are shown below –

- Lighting
- DOAS units
- Heating and Cooling (if applicable) units
- DHW units

Controls

- All heating and cooling units to be cycling
- Operable (automated) clerestory windows with actuators
- Vacancy controls for lighting and daylight dimming
- All heating and cooling units to be cycling
- Operable (automated) clerestory windows with actuators
- Vacancy controls for lighting and daylight dimming

Renewable

- Renewable will include solar panels to generate electricity, capacity to be based on roof sq ft balanced with need for skylights
- Net metering for solar panel and design to be discussed with utility to meet net zero facility goal
- If solar water heating is recommended per pool discussion, the roof area will need to be balanced for solar panels and solar hot water heating.

Life Cycle Model

A life cycle analysis for envelope, daylighting, natural ventilation and cooling strategies' and mechanical and envelope options is under way to compare the life cycle cost for these options. The life cycle model will assume a 50-year life of building and include estimated first costs, maintenance costs, utility costs and replacements costs. This process can help make value-based decisions, spending first cost dollars on equipment that has reduced maintenance and replacement costs as well as reduced energy consumption or utility costs.

The specific studies currently under way for the life cycle costing include –

1) HVAC systems options especially geothermal system comparison to the solar panel capacity the geothermal system can offset. Preliminary analysis shows that geothermal costs are roughly 5 times higher than solar panels for the same amount of Kwh saved.
   Energy savings from Geothermal system ~ 40,000 Kwh,
   Added first cost – $1,200,000
   First costs for solar panels, that would generate 40,000 Kwh, ~ 40 KW ~ $225,000
   Thus, a central air source heat pump with a back-up electric boiler and additional solar panels could potentially provide a better pay back or life cycle cost depending on the life of the equipment.

2) Pool energy conserving strategies are under study and need to be evaluated, solar hot water heating vs solar panels or geothermal for pool heating

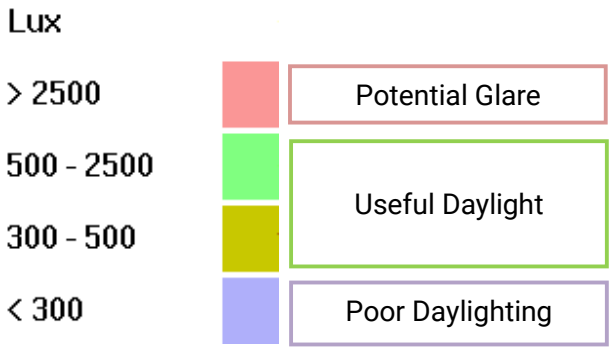
3) Life cycle cost for Building insulation, including walls and roof to reduce the need for heating, will be compared with cost for solar to find the lowest life cycle cost.

High-Performance Design Analysis

Daylight Analysis

This analysis helps determine the optimum window and skylight area required to meet the ~ 100% daylit goal.

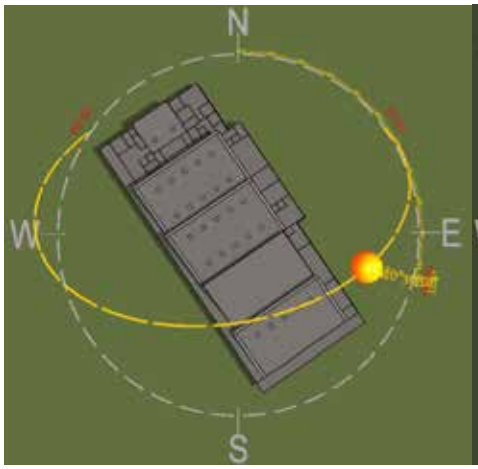
Initial daylighting studies were carried out for Pool, Gym and the multi-purpose room. These simulations are done for the entire year represented through Useful Daylight Index. Following is the legend used to calculate and represent the percentage of day-lit area.



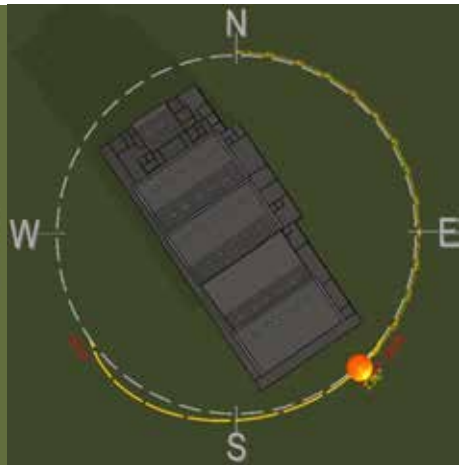
Below is a view of the model created in IESVE with proposed shading and window locations.

Building Orientation and Solar Shading on Site

June – 9 am

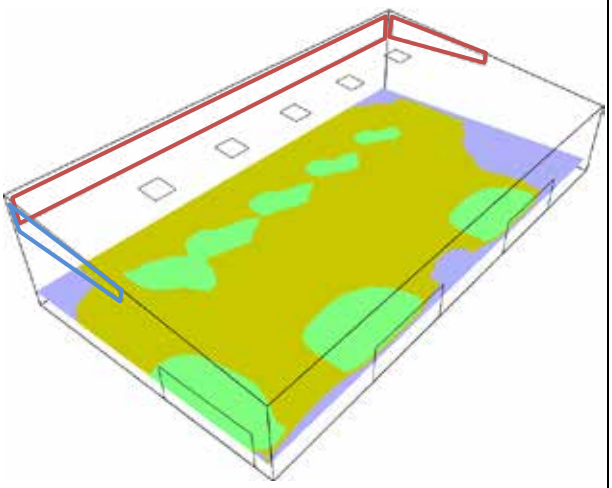


December – 9 am



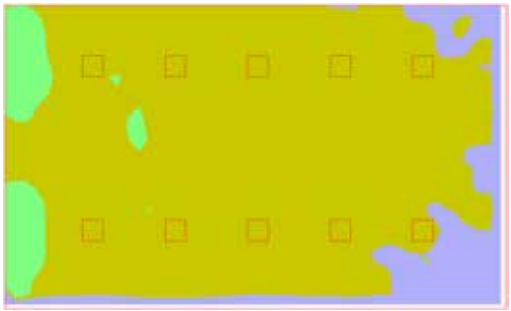
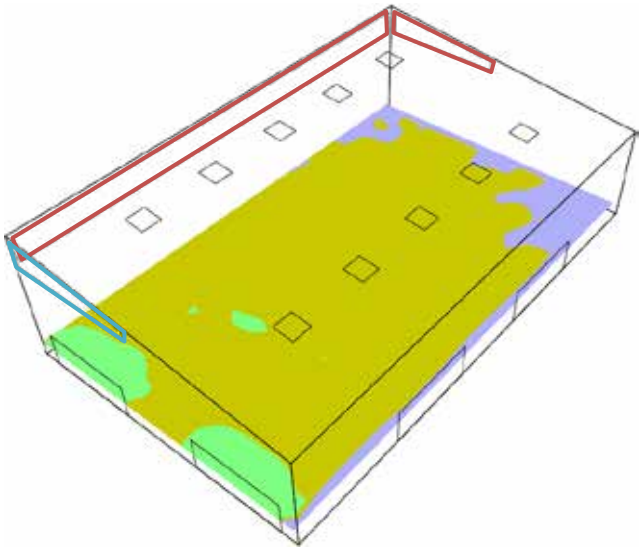
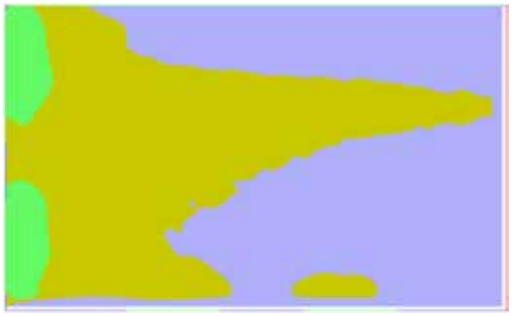
Recommendations for Pool

Five skylights (4ft x 4ft) are required in addition to the existing glazed garage doors, North, East and West clerestories for the Pool to be naturally day-lit.

Pool	
Proposed Design – 91% Daylit	**Proposed Design - Specifications**
	
Existing Design – 57% Daylit (VT= 60% and 30%)	North Clerestory: VT = 60 East West Clerestory: VT = 30% Five Skylights (4'x4'): VT = 40% Three Garage Doors: VT = 60
	

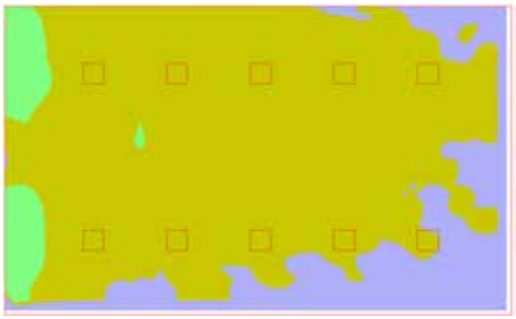
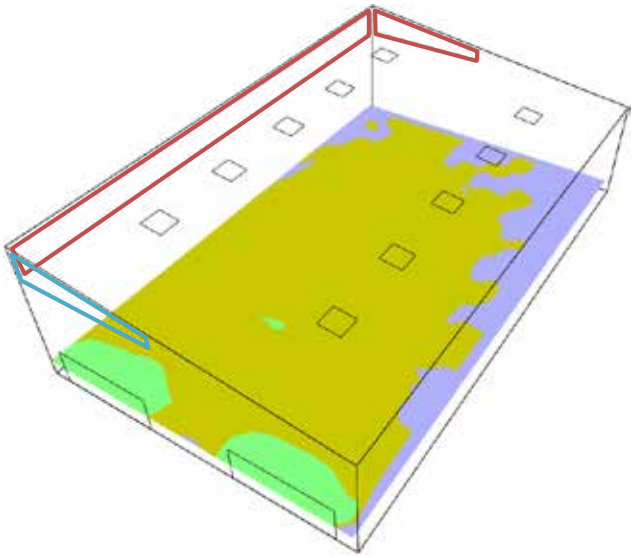
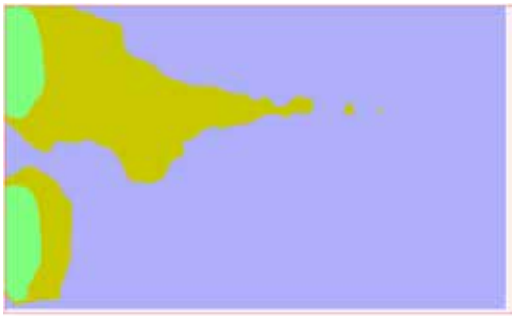
Recommendations for South Gym

Ten skylights (4ft x 4ft) are required in addition to the existing glazed garage doors, North, East and West clerestories for the South Gym to be naturally day-lit.

Gym - South	
Proposed Design (10 Skylights) – 93% Daylit	**Proposed Design - Specifications**
	 North Clerestory (5' high): VT = 60% East & West Clerestory (5' high): VT = 30% Ten Skylights (4'x4'): VT = 40% Three Garage Doors: VT = 60
Proposed Design (5 Skylights) – 62 Daylit	
	
Existing Design – 52% Daylit (VT= 60% & 30%)	
	

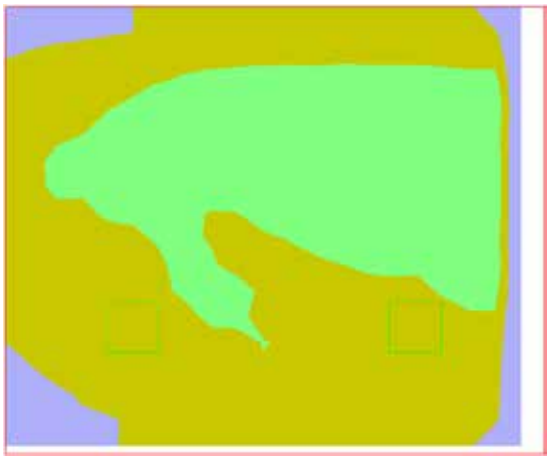
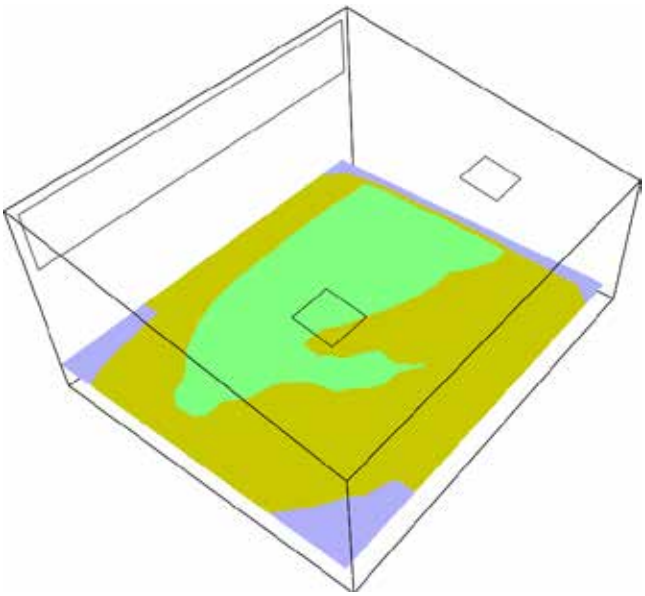
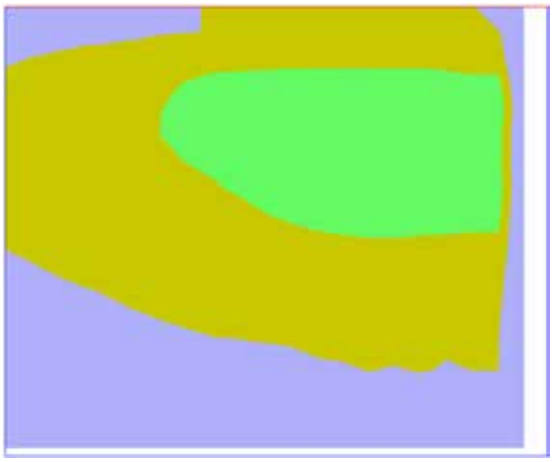
Recommendations for North Gym

Ten skylights (4ft x 4ft) are required in addition to the existing glazed garage doors, North, East and West clerestories for the North Gym to be naturally day-lit.

Gym - North	
Proposed Design (10 Skylights) – 86% Daylit	**Proposed Design - Specifications**
	 **North Clerestory (5' high): VT = 60%** **East & West Clerestory (5' high): VT = 30%** Ten Skylights (4'x4'): VT = 40% Two Garage Doors: VT = 60
Proposed Design (5 Skylights) – 54 Daylit	
	
Existing Design – 24% Daylit (VT= 60% & 30%)	
	

Recommendations for Multi-Purpose Room

Two skylights (4ft x 4ft) are required in addition to the existing North clerestory for the Multi-purpose room to be naturally day-lit.

Multi-Purpose Room	
Proposed Design – 94% Daylit	**Proposed Design - Specifications**
	 North Clerestory (6' high): VT = 60% Two Skylights (4'x4'): VT = 40%
Existing Design – 72% Daylit (VT= 60%)	
	

Natural Ventilation

Air flow simulations were studied with operable external openings to determine if ASHRAE 62.1 requirements are met. As per the standard, following are the cfm values for Pool and Gym:

SPACE	ASHRAE 62.1 Ventilation Requirements			
Pool	0.48 cfm/sqft x 5109 sqft = 2452 cfm			
	Typical Occupancy (cfm) - 30 People		Peak Occupancy (cfm) - 125 People	
South Gym	20cfm/person x 15 people + 0.18 cfm/sqft x 5707 sqft =	1327.26	20cfm/person x 62.5 people + 0.18 cfm/sqft x 5707 sqft =	2277.26
North Gym	20cfm/person x 15 people + 0.18 cfm/sqft x 5707 sqft =	1327.26	20cfm/person x 62.5 people + 0.18 cfm/sqft x 5707 sqft =	2277.26

Pool requires 2452 cfm, gym requires 1327 cfm on a typical day and 2277 cfm during peak occupancy. Based on these values, simulations were carried out in IES VE to study the air flow within the Pool and Gym during occupancy hours (8am to 8pm).

Assumptions:

- Windows are open when Indoor Air temperature is greater than 72°F and outside air temperature is greater than 55°F.
- East and West Clerestories are fixed with 3' wide horizontal overhang.
- North Clerestories are operable with a 30° opening angle, 50 openable area and 3' wide horizontal overhang.
- Garage Doors are operable with 50 openable area and a 12' wide horizontal overhang.
- The building is assumed to have heating with a set point of 65°F.
- Walls are modeled to be sandwiched concrete panels with 2" continuous insulation.

Results:

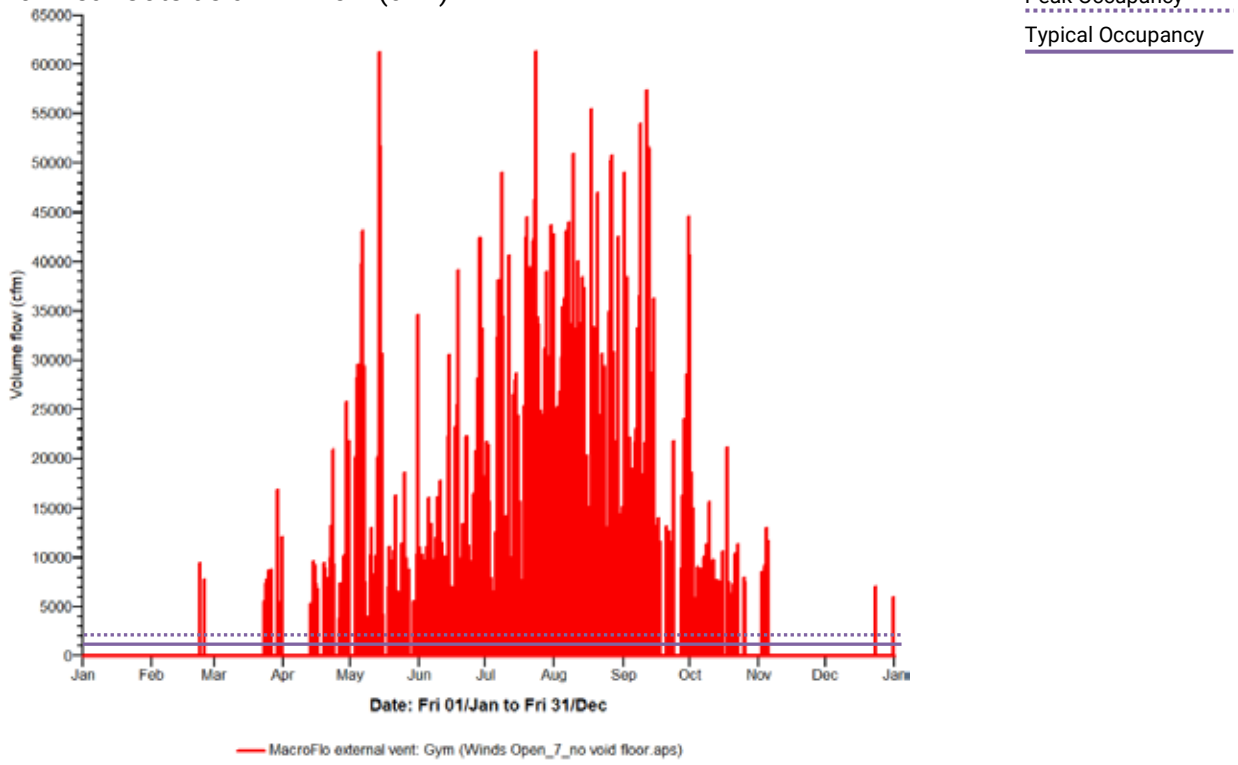
- As per the window control option, there is no natural ventilation during winter months.
- Ventilation requirements are met for about half of the year from mid-April to October end.
- For these six months the ventilation requirement is met from 8 am to 8 pm and is about 5 times higher.

Recommendations:
Minimum Ventilation requirements to be attained by opening the external openings based on the BAS controls. However, during the winter months', mechanical ventilation will be required to meet the requirements.

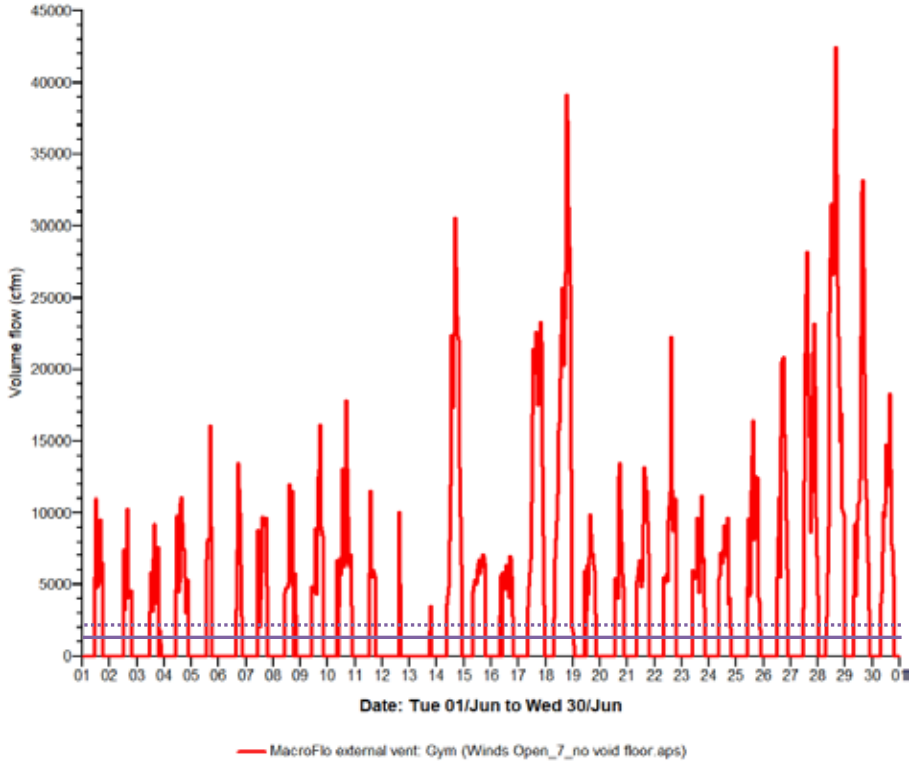
For rest of the occupied spaces, windows to be designed as per WSEC 2015.*The minimum openable area to the outdoors shall be 4% of the floor area being ventilated. Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining rooms shall be unobstructed and shall have an area not less than 8 of the floor area of the interior room or space, but not less than 25sqft. The minimum openable area to the outdoors shall be based on the total floor area being ventilated.*

South Gym

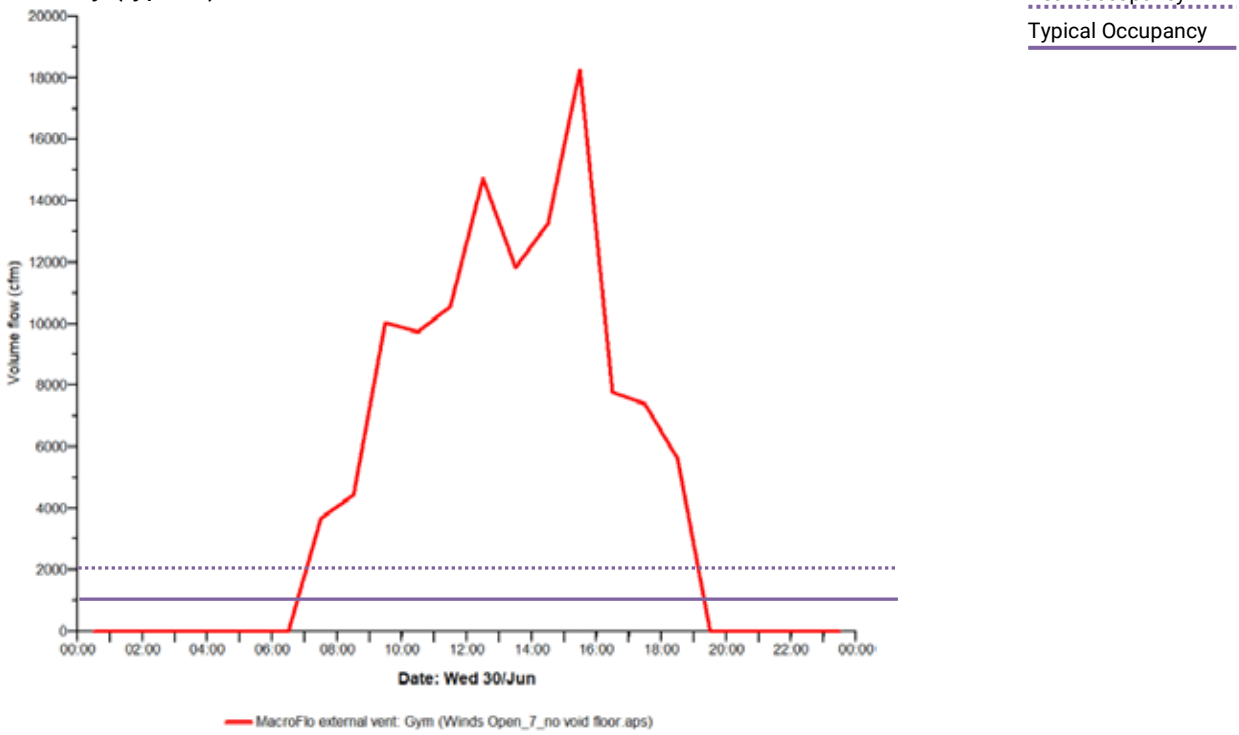
Full Year Outside-air Air flow (cfm)



Full Month (typical) Outside-air Air flow

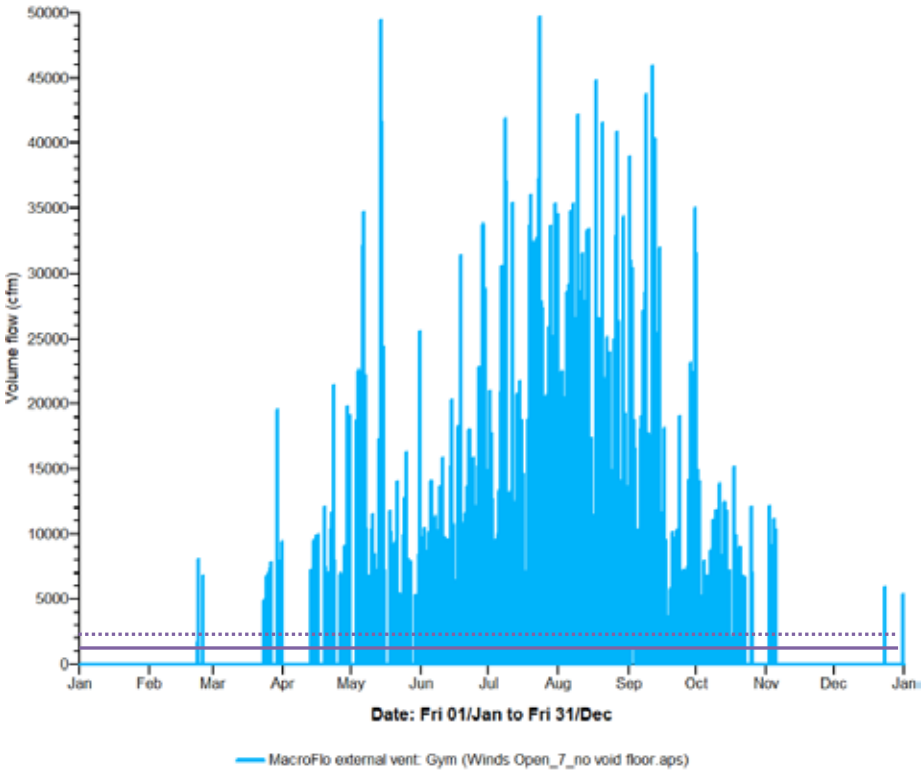


Full day (typical) Outside-air Air flow

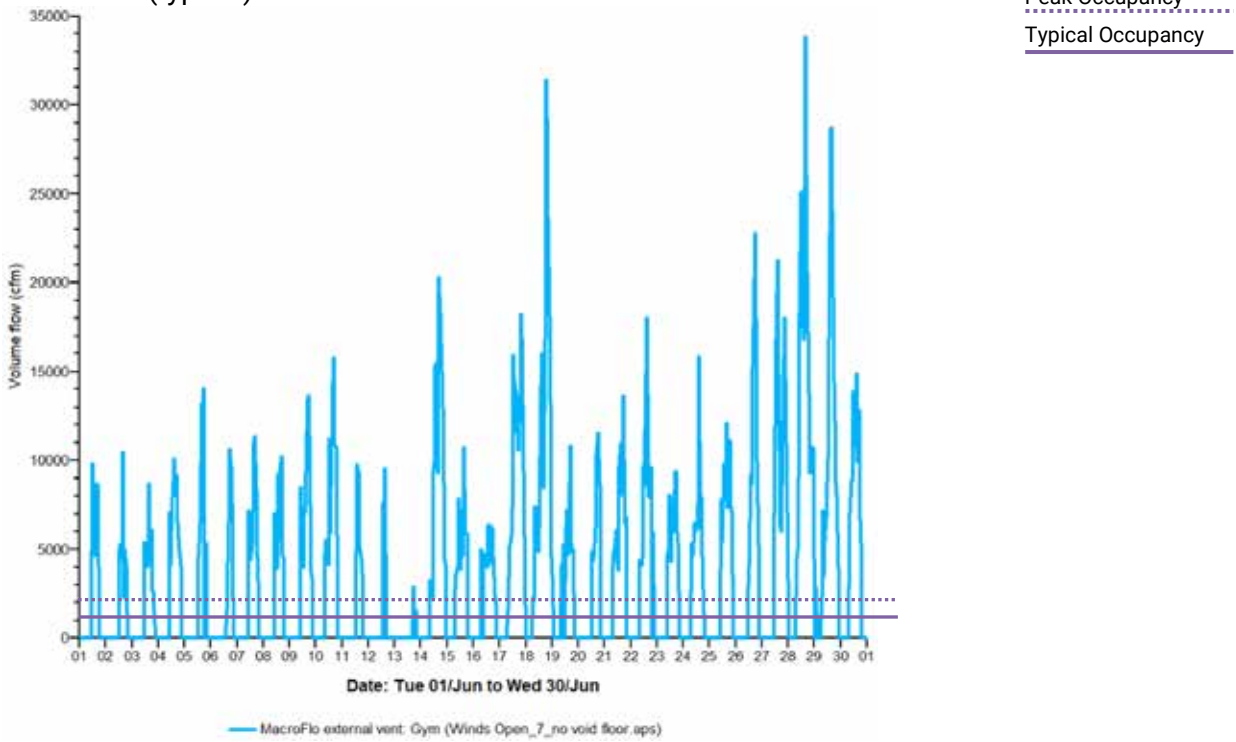


North Gym

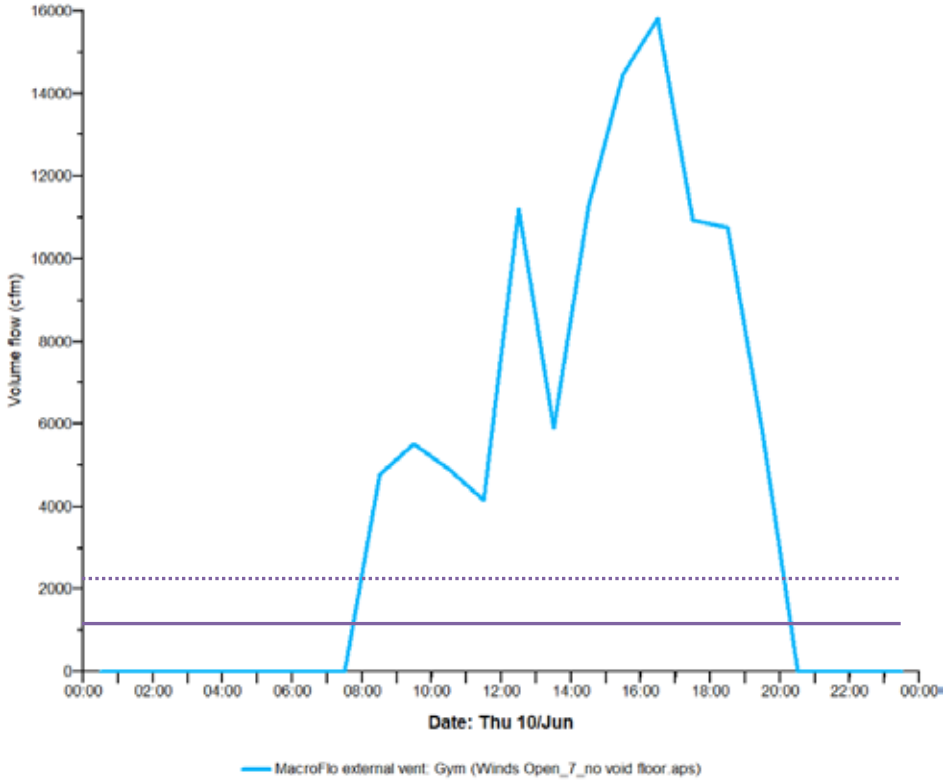
Full Year Outside-air Air flow (cfm)



Full Month (typical) Outside-air Air flow



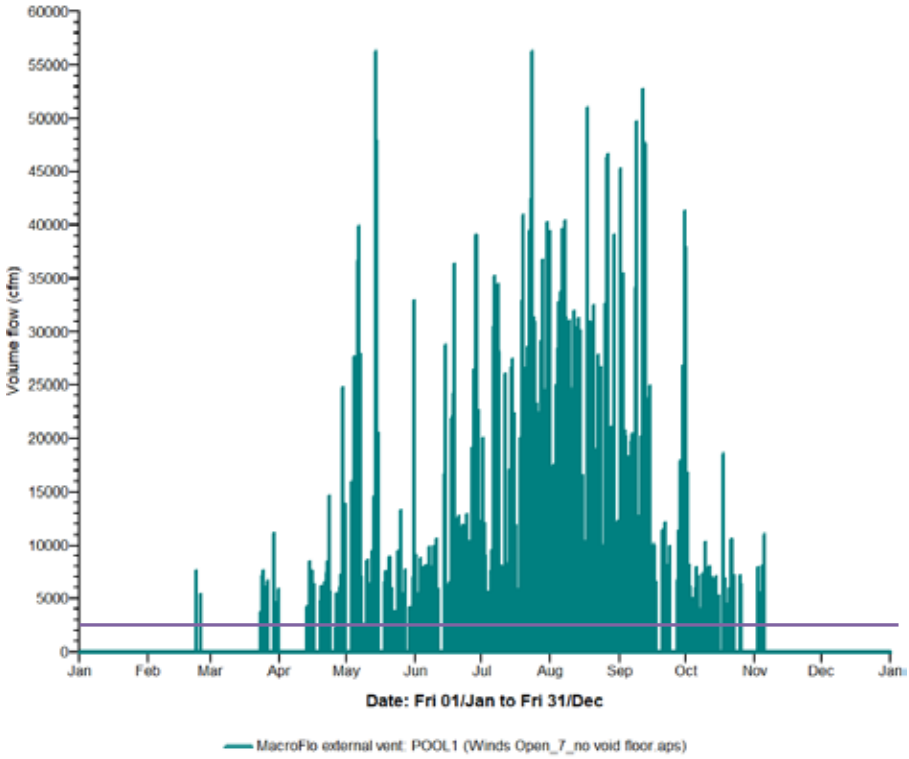
Full day (typical) Outside-air Air flow



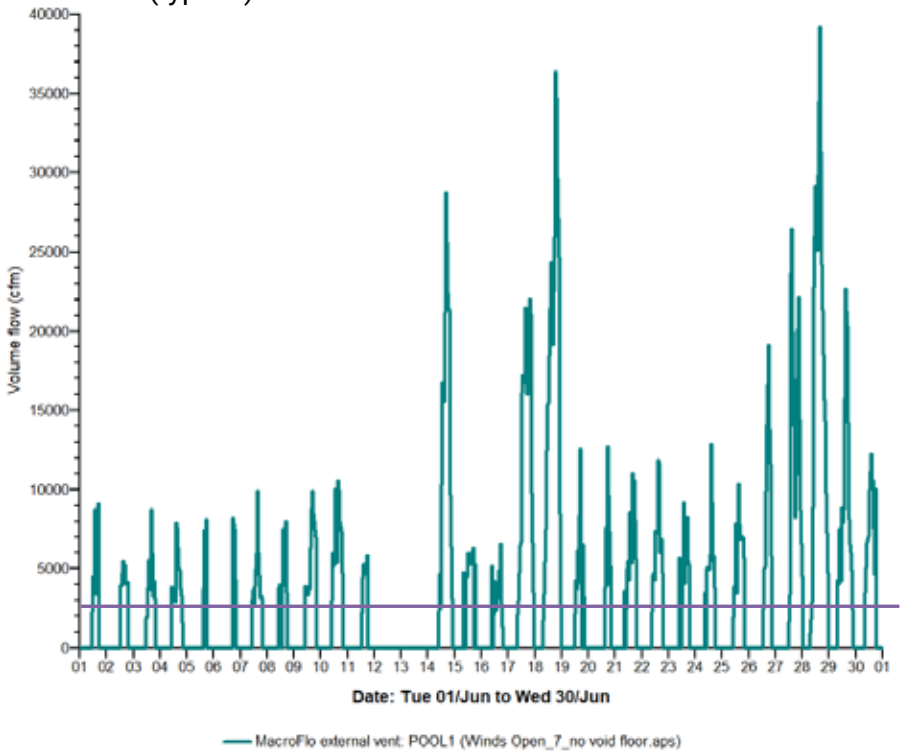
Pool

Typical Occupancy

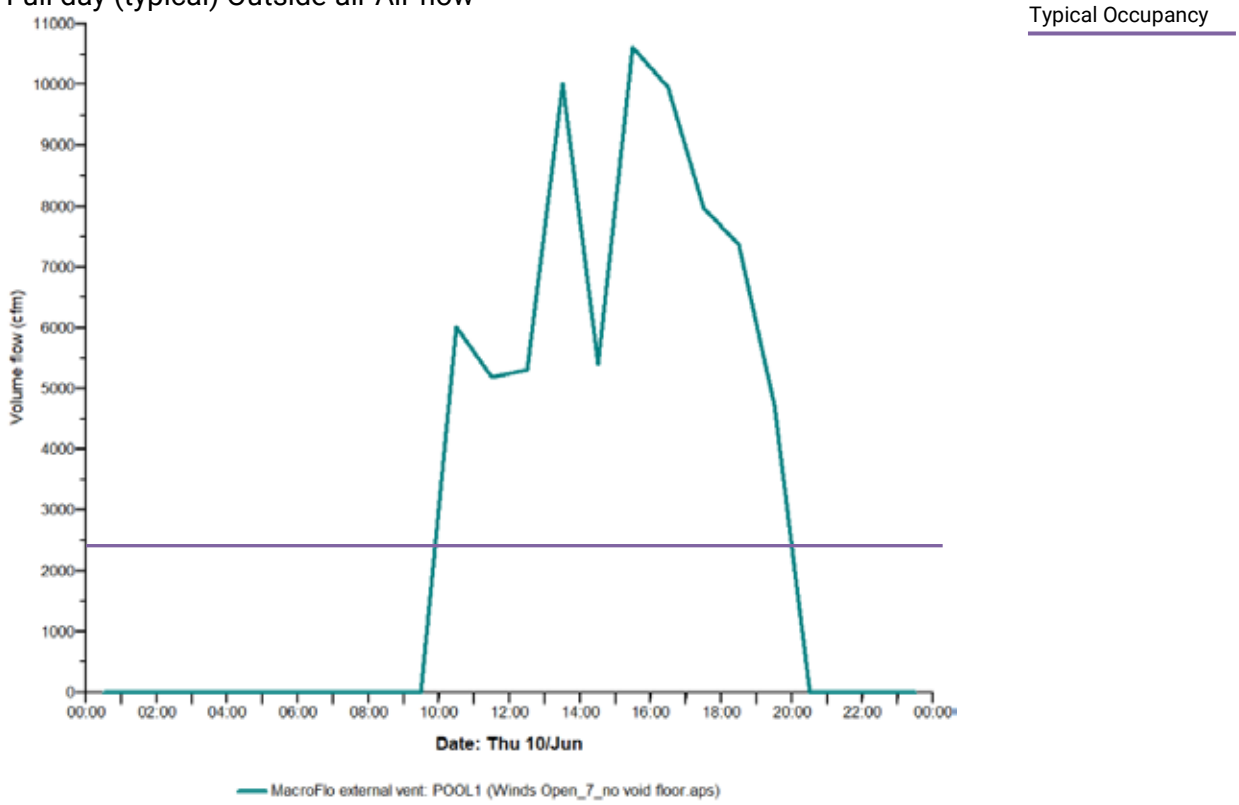
Full Year Outside-air Air flow (cfm)



Full Month (typical) Outside-air Air flow



Full day (typical) Outside-air Air flow



Natural Cooling

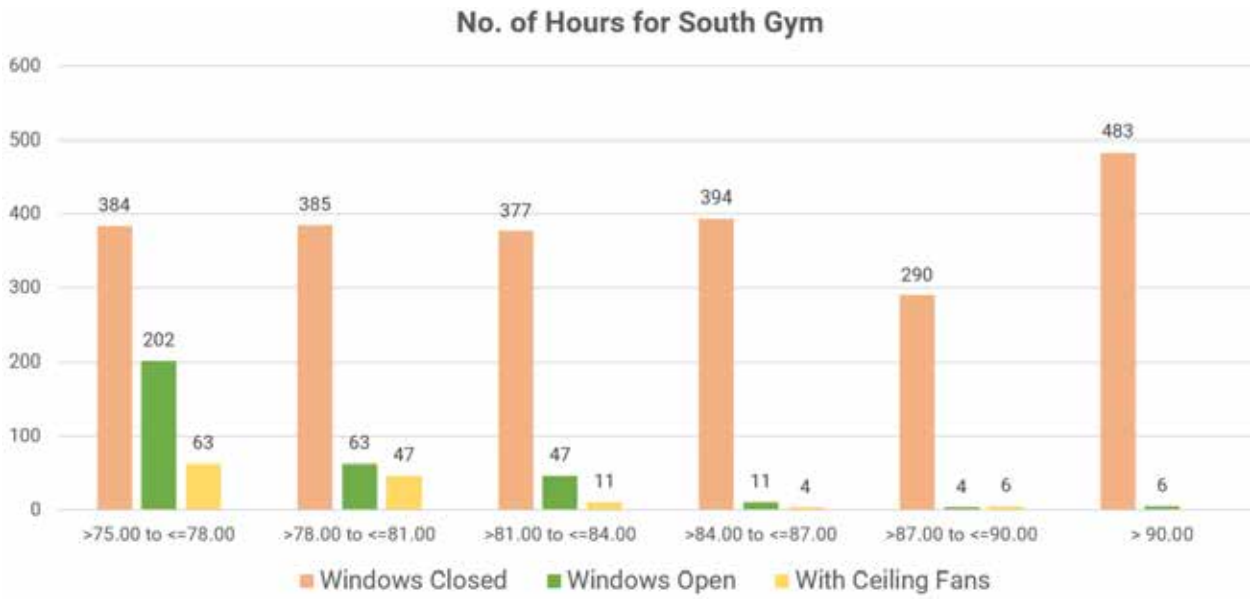
Thermal analysis was carried out to study the impact of operable windows on thermal comfort for natural cooling. Assumptions were kept the same as Natural Ventilation studies for the simulation model. Hours above comfort (>78°F) were simulated for Gym for the following conditions (entire year):

- All external openings closed (this is for reference only) If windows are closed the space will not meet the thermal comfort requirements for cooling.
- 50% of North Clerestories and Garage doors open
- Addition of ceiling fans in addition to operable windows

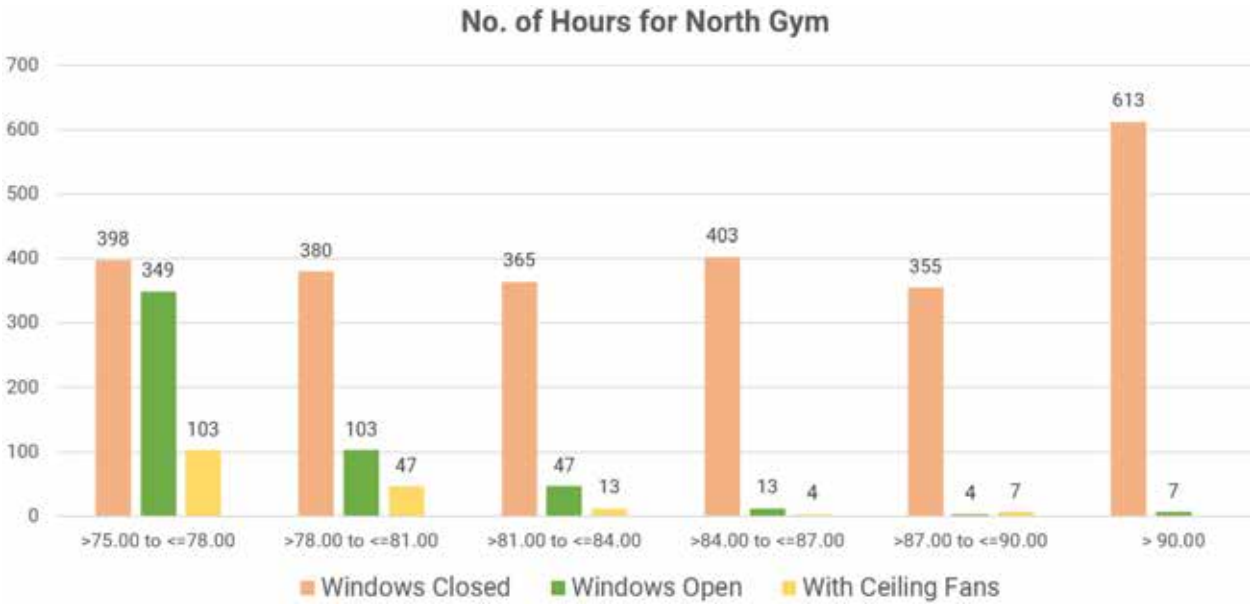
Results:

Thermal analysis show that with the use of cross-ventilation and stack effect created due to movement of air from low garage doors to high clerestory windows, both South and North Gym are estimated to be thermally comfortable for up to 98% of the time between 8 am to 8 pm seven days a week with **70 hours above 78°F in, distributed through a period of one year**. Graphs below show the breakdown of the number of hours for each temperature range.

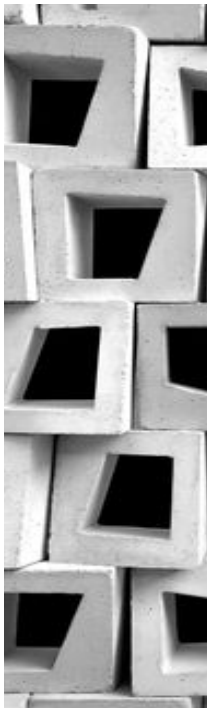
Graph below shows the number of hours above (>78ºF) thermal comfort levels for the South Gym.



Graph below shows the number of hours above (>78ºF)or above thermal comfort range .

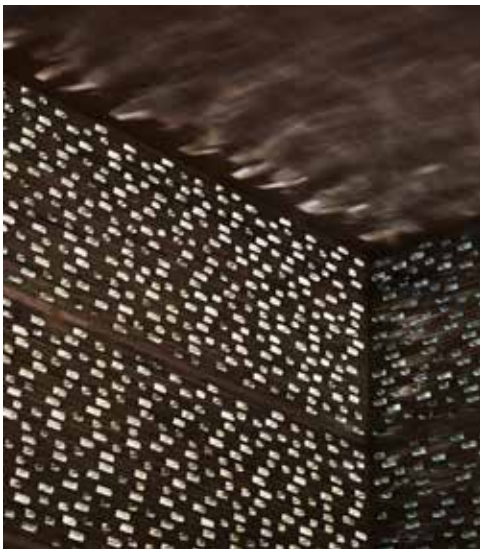


APPENDIX G: STAFF VISIONING



- connection to nature
- feeling of natural light
- open spaces for clear lines of sight
- incorporate interesting textures and materials for things to look at
- cultural activities are important
- ninja warrior course - challenging body weight resistance exercises
- outdoor spaces that are quiet and peaceful
- use shades, scrims that change the nature of natural light into the space

- auditorium is important, should be multipurpose with natural light but can control light for other functions
- natural light can have calming effect
- feels recreational instead of institutional
- spaces for staff to decompress
- staff hub area
- cultural activities are important
- indoor outdoor connections



- provide staff wellness
- provide students with choices
- opportunities for non-traditional physical activities
- relaxation spaces for staff
- multiple gyms with flexible use
- retractable seating in multipurpose room
- rock wall for variety in choice
- like the garage doors to let spaces expand into other spaces
- considered a more finished look to the building opposed to open structure
- quiet and peaceful
- garden beds that promote sustainability and cultural events
- decompress spaces, bean bags look comfortable

- provide alternative to therapy programs
- an overlook space would be beneficial
- provide all season spaces/outdoor surfacing areas
- provide wood floor at gym
- public art space for youth to show art
- pool is open & airy - views, skylights, interesting shape
- emphasize different water activities swimming, aerobics, etc.

- Open and breezy
- sense of openness that fits with the landscape/use images
- provide cardio and weight room for 20-30 youth at a time
- weight room should be a "cool" space
- bring outside inside using plants and materials
- provide cool outdoor spaces; umbrellas, plants, tables, water
- utilize circulation space with interesting feature, like rock climbing wall

SECTION C

APPENDICES

Appendix 1: Predesign checklist and outline

A predesign should include the content detailed here. OFM will approve limited scope predesigns on a case-by-case basis.

- **Executive summary**
- **Problem statement, opportunity or program requirement**
  - ☒ Identify the problem, opportunity or program requirement that the project addresses and how it will be accomplished.
  - ☒ Identify and explain the statutory or other requirements that drive the project's operational programs and how these affect the need for space, location or physical accommodations. Include anticipated caseload projections (growth or decline) and assumptions, if applicable.
  - ☒ Explain the connection between the agency's mission, goals and objectives; statutory requirements; and the problem, opportunity or program requirements.
  - ☒ Describe in general terms what is needed to solve the problem.
  - ☒ Include any relevant history of the project, including previous predesigns or budget funding requests that did not go forward to design or construction.
- **Analysis of alternatives (including the preferred alternative)**
  - ☒ Describe all alternatives that were considered, including the preferred alternative. Include:
    - ☒ A no action alternative.
    - ☒ Advantages and disadvantages of each alternative. Please include a high-level summary table with your analysis that compares the alternatives, including the anticipated cost for each alternative.
    - ☒ Cost estimates for each alternative:
      - ☒ Provide enough information so decision makers have a general understanding of the costs.
      - ☒ Complete OFM's Life Cycle Cost Model (RCW 39.35B.050).
    - ☒ Schedule estimates for each alternative. Estimate the start, midpoint and completion dates.
- **Detailed analysis of preferred alternative**
  - ☒ Nature of space – how much of the proposed space will be used for what purpose (i.e., office, lab, conference, classroom, etc.)
  - ☒ Occupancy numbers.
  - ☒ Basic configuration of the building, including square footage and the number of floors.
  - ☒ Space needs assessment. Identify the guidelines used.
  - ☒ Site analysis:
    - ☒ Identify site studies that are completed or under way.
    - ☒ Location.

SECTION C

APPENDICES

Appendix 1: Predesign checklist and outline

A predesign should include the content detailed here. OFM will approve limited scope predesigns on a case-by-case basis.

- **Executive summary**
- **Problem statement, opportunity or program requirement**
  - ☒ Identify the problem, opportunity or program requirement that the project addresses and how it will be accomplished.
  - ☒ Identify and explain the statutory or other requirements that drive the project's operational programs and how these affect the need for space, location or physical accommodations. Include anticipated caseload projections (growth or decline) and assumptions, if applicable.
  - ☒ Explain the connection between the agency's mission, goals and objectives; statutory requirements; and the problem, opportunity or program requirements.
  - ☒ Describe in general terms what is needed to solve the problem.
  - ☒ Include any relevant history of the project, including previous predesigns or budget funding requests that did not go forward to design or construction.
- **Analysis of alternatives (including the preferred alternative)**
  - ☒ Describe all alternatives that were considered, including the preferred alternative. Include:
    - ☒ A no action alternative.
    - ☒ Advantages and disadvantages of each alternative. Please include a high-level summary table with your analysis that compares the alternatives, including the anticipated cost for each alternative.
    - ☒ Cost estimates for each alternative:
      - ☒ Provide enough information so decision makers have a general understanding of the costs.
      - ☒ Complete OFM's Life Cycle Cost Model (RCW 39.35B.050).
    - ☒ Schedule estimates for each alternative. Estimate the start, midpoint and completion dates.
- **Detailed analysis of preferred alternative**
  - ☒ Nature of space – how much of the proposed space will be used for what purpose (i.e., office, lab, conference, classroom, etc.)
  - ☒ Occupancy numbers.
  - ☒ Basic configuration of the building, including square footage and the number of floors.
  - ☒ Space needs assessment. Identify the guidelines used.
  - ☒ Site analysis:
    - ☒ Identify site studies that are completed or under way.
    - ☒ Location.

- ☒ Describe factors that may delay the project schedule.
- ☒ Describe the permitting or local government ordinances or neighborhood issues (such as location or parking compatibility) that could affect the schedule.
- ☒ Identify when the local jurisdiction will be contacted and whether community stakeholder meetings are a part of the process.

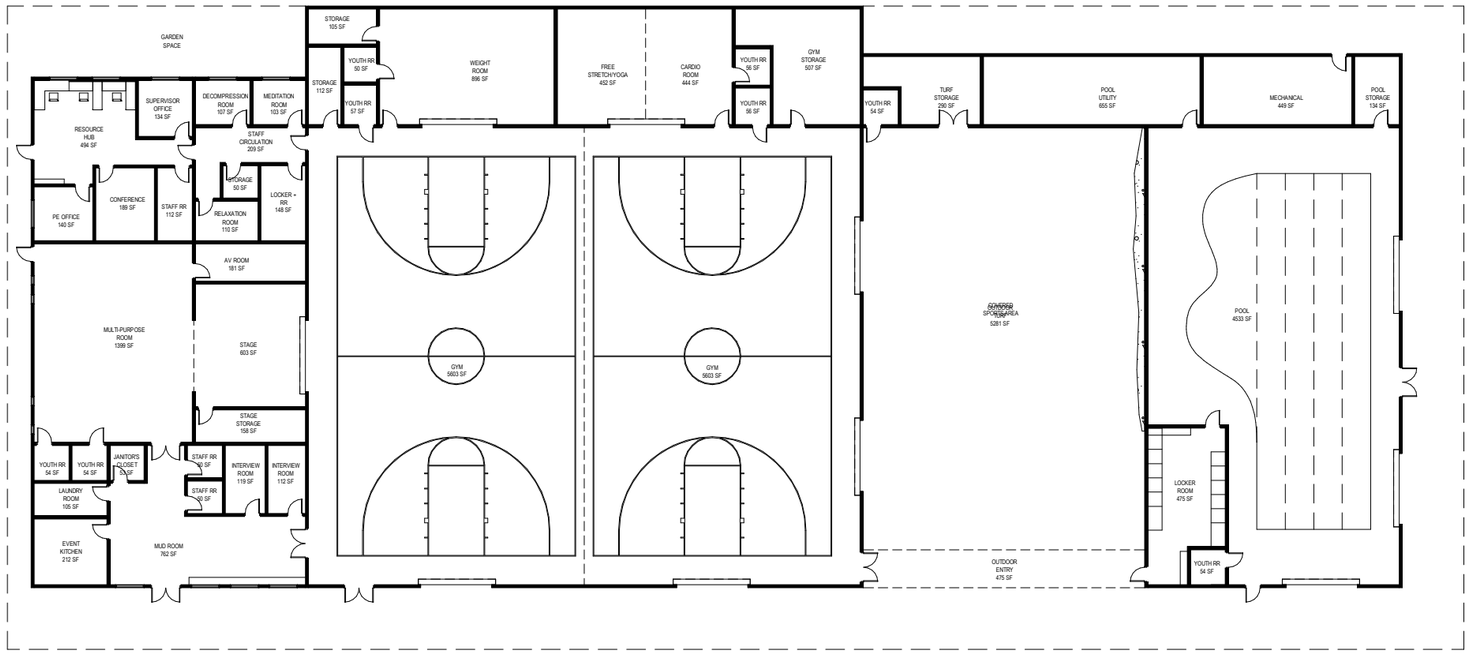
❖ **Project budget analysis for the preferred alternative**

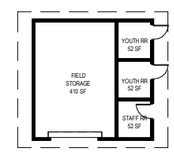
- ☒ Cost estimate.
  - ☒ Major assumptions used in preparing the cost estimate.
  - ☒ Summary table of Uniformat Level II cost estimates.
  - ☒ The C-100.
- ☒ Proposed funding.
  - ☒ Identify the fund sources and expected receipt of the funds.
  - ☒ If alternatively financed, such as through a COP, provide the projected debt service and fund source. Include the assumptions used for calculating finance terms and interest rates.
- ☒ Facility operations and maintenance requirements.
  - ☒ Define the anticipated impact of the proposed project on the operating budget for the agency or institution. Include maintenance and operating assumptions (including FTEs).
  - ☒ Show five biennia of capital and operating costs from the time of occupancy, including an estimate of building repair, replacement and maintenance.
- ☒ Clarify whether furniture, fixtures and equipment are included in the project budget. If not included, explain why.

❖ **Predesign appendices**

- ☒ Completed Life Cycle Cost Model.
- ☒ A letter from DAHP.

APPENDIX I: PREFERRED ALTERNATIVE FLOOR PLAN





N

Building Plan

SCALE: 1/32" = 1'-0"

Project Status

BUILDING PLAN
GREEN HILL SCHOOL RECREATION BUILDING

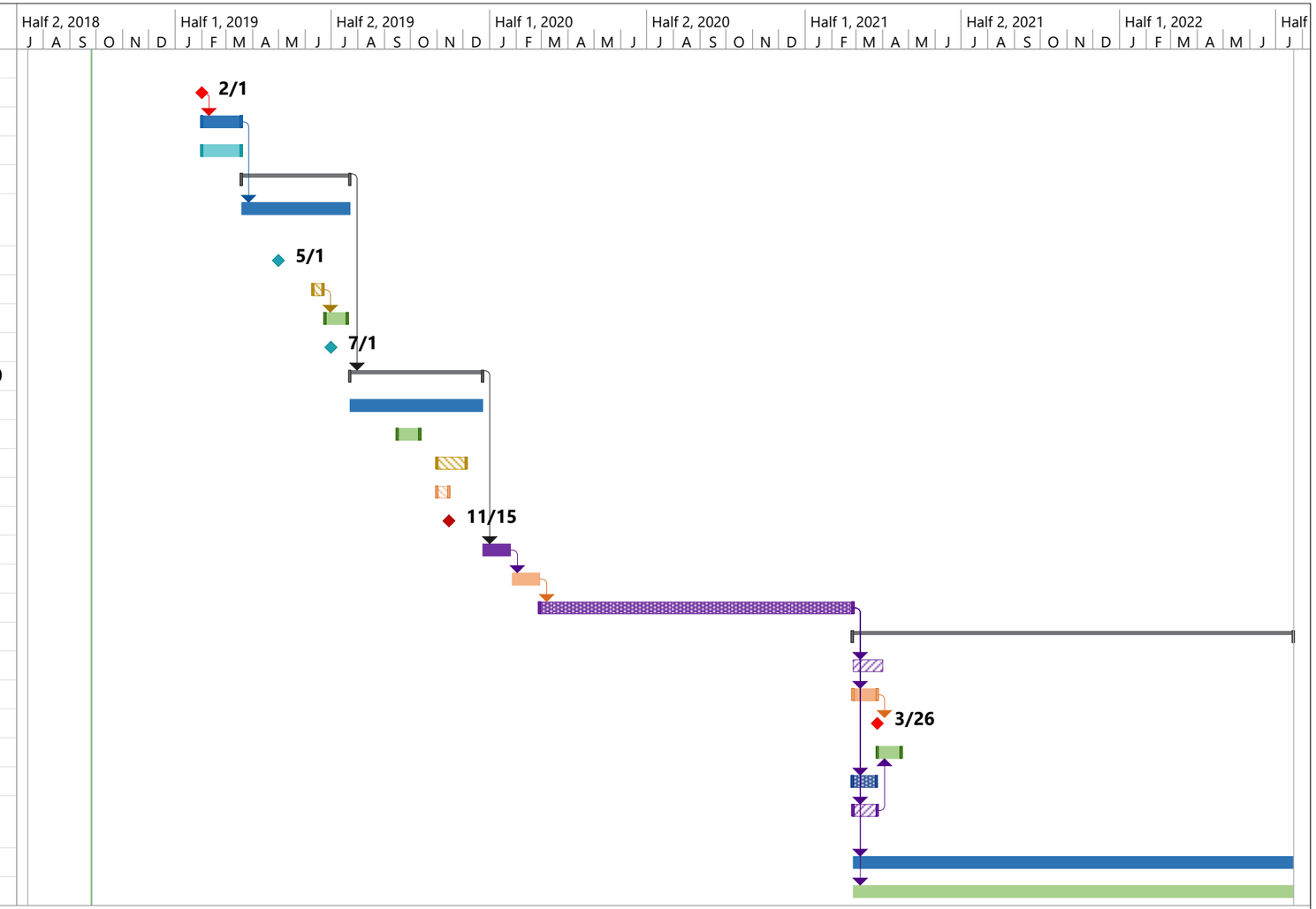
1
Project Number
Issue Date

DLR Group
THIS IS A DEFAULT - Select State -Default

P:\73-18130-00\+Design\Arc\Pre Design\180705_Building Plans\180705_GHS Building Plan_Bar Scheme.rvt
7/13/2018 8:11:38 AM

APPENDIX J: PREFERRED ALTERNATIVE DETAILED SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
1					
2		Funding Approval	0 days	Fri 2/1/19	Fri 2/1/19
3		Schematic Design	32 days	Fri 2/1/19	Mon 3/18/19
4		GC/CM Selection	32 days	Fri 2/1/19	Mon 3/18/19
5		**Design Development**	**90 days**	**Tue 3/19/19**	**Mon 7/22/19**
6		Drawings & Outline Specification	90 days	Tue 3/19/19	Mon 7/22/19
7		AHJ Pre-Intake	0 days	Wed 5/1/19	Wed 5/1/19
8		Owner Review	10 days	Mon 6/10/19	Fri 6/21/19
9		Cost Estimate & Reconciliation	20 days	Mon 6/24/19	Fri 7/19/19
10		Public Approval	0 days	Mon 7/1/19	Mon 7/1/19
11		**Construction Documents**	**110 days**	**Tue 7/23/19**	**Mon 12/23/19**
12		Drawings & Specifications	110 days	Tue 7/23/19	Mon 12/23/19
13		Cost Estimate & Reconciliation	20 days	Mon 9/16/19	Fri 10/11/19
14		Building Permit Intake & Review	24 days	Fri 11/1/19	Wed 12/4/19
15		Owner Review	10 days	Fri 11/1/19	Thu 11/14/19
16		LEED Design Submittal	0 days	Fri 11/15/19	Fri 11/15/19
17		Bidding	24 days	Tue 12/24/19	Fri 1/24/20
18		Notice to Proceed	24 days	Mon 1/27/20	Thu 2/27/20
19		Construction	260 days	Fri 2/28/20	Thu 2/25/21
20		**Closeout**	**366 days**	**Thu 2/25/21**	**Thu 7/21/22**
21		Closeout	24 days	Fri 2/26/21	Wed 3/31/21
22		Owner Move-in & Training	20 days	Fri 2/26/21	Thu 3/25/21
23		Youth Use Approved	0 days	Fri 3/26/21	Fri 3/26/21
24		LEED Construction Submittal	20 days	Fri 3/26/21	Thu 4/22/21
25		Record Drawings	20 days	Thu 2/25/21	Wed 3/24/21
26		Operations & Maintenance Manuals	20 days	Fri 2/26/21	Thu 3/25/21
27		Post Occupancy	365 days	Fri 2/26/21	Thu 7/21/22
28		Net Zero Cx	365 days	Fri 2/26/21	Thu 7/21/22



Project: 4L-Project Schedule.mp
Date: Wed 9/26/18

Task	Inactive Milestone	Start-only	Path Predecessor Summary Task
Split	Inactive Summary	Finish-only	Path Predecessor Normal Task
Milestone	Manual Task	External Tasks	Progress
Summary	Duration-only	External Milestone	Manual Progress
Project Summary	Manual Summary Rollup	Deadline	
Inactive Task	Manual Summary	Path Predecessor Milestone Task	

APPENDIX K: CIVIL SKETCH