Ruby's Culture Campus Facilities Design Report

ENGT 402

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Introduction

Janice Burdine Thacker is a former high school art teacher and counselor who believes in uniting the community through engagement and art. She is a Founder of and Board Director for Art that Touches Your Heart Foundation (ATTYHF), a nonprofit organization that "supports young African-American artists in the Wichita Area." This organization has held cultural events in the Rhatigan Student Center, pictured in figure 1, showcasing and highlighting African American art and artifacts, with descriptions of their cultural significance. The goal of this organization is to "bring African American Culture to a culture desert." However, Janice and the Board of Directors for ATTYHF, needed their own space, dedicated to young African American artists and their art and culture- not to simply rent out the lobby of a campus building. And also referred to as "Ruby's Art District." The original goals and planning sheet can be seen in Figure 2.

Figure 1: Janice Burdine Thacker and Mohammed Sharif, two Art That Touches Your Heart Board Members (left); An art show that the ATTYH board put together in the Rhatigan Student Center (right).

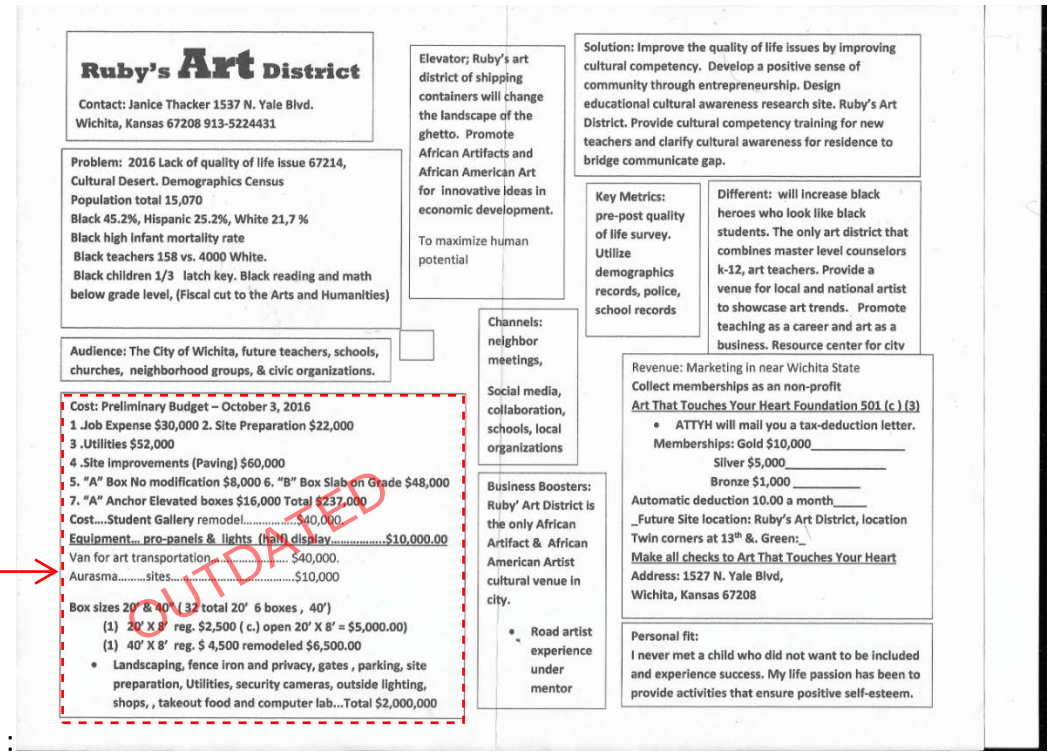

Figure 2: Ruby's Art District Initial Problem and Solution Statement.

The team met Sheila, another member on the Board, at one of our on-site meetings. She is a retired drama teacher who hopes to create a walk-in library in one of the shipping containers. She dreams of students coming in to read and spend time invested in learning rather than being bored at home, as so many young kids are nowadays.

The team was presented with many different dreams, provided sketches, mini prototypes, and an original design plan. Figure 3 (right) shows one concept with shipping containers in a diagonal line, with the facade toward those heading east on 13th street, likely coming from I-135 highway.

Ruby's Culture Center Campus
Anticipated Project Budget
February 1, 2022

Description	area	units	$/unit	$
Parking lots and Pavement	8600	sf	$15	$129,000
8' x 40' x 9' modules (single stack)	2	each	$40,000	$80,000
8' x 40' x 9' modules (double stack)	4	each	$75,000	$300,000
8' x 20' x 9' modules (single stack)	3	each	$25,000	$75,000
Landscaping	7500	sf	$10	$75,000
Remodel House to Museum	900	sf	$85	$76,500
Outdoor amenities, planters, etc.	1	allowance	$15,000	$15,000
Campus Signage & Arch	1	allowance	$35,000	$35,000
Paving Alley	1800	sf	$15	$27,000
Utilities and Site Improvements				$81,250
				$893,750
Contingency	$893,750		15.0%	$134,063
Soft cost (A&E fees, permits, geotech)				$100,000
Total Project Budget				**$1,127,813**

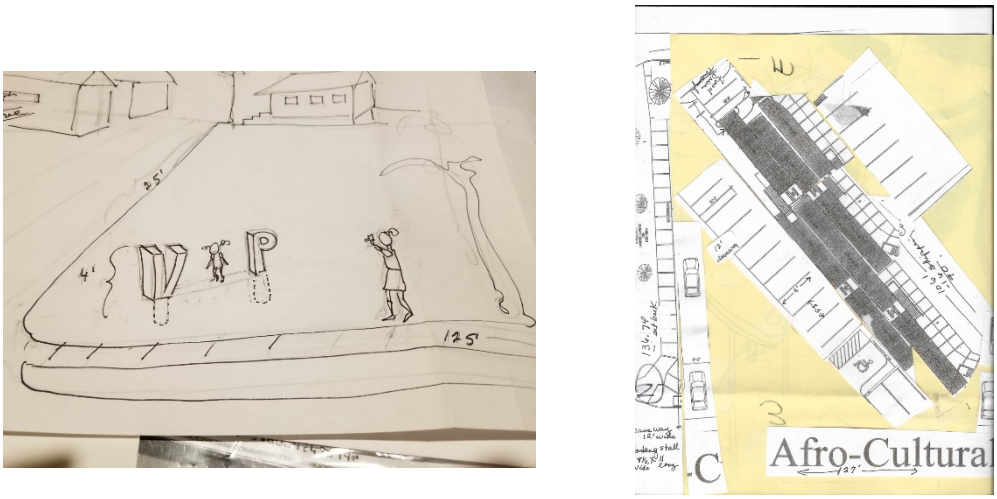

Figure 3: Original design drawings by Janice Thacker.

Figure 5 shows a culture campus with an ovular layout, with the house on the second lot included in the design. Parking is in front of the containers, and there are many more containers depicted than were actually present on site.

Figure 4: Initial C3D drawing of Ruby's Culture Campus layout.

Needs Statement Process

Original Needs Statements & Decision Matrix

1. Needs statements were put together by the design team in collaboration with Janice Thacker to try to meet the needs of the community partner. A decision matrix was applied to the needs statements and it was determined that the highest score was for needs statement number 3: "Our client needs a safe and engineer certified design for her Art Park that will be sustainable in power source (solar) and longevity." Although this needs statement had the highest score, the team determined that we would work to address all four of the need's statements in our design.

Needs Statement #1:Our client needs a place to engage the community and showcase both local and traveling art in a safe, fun, and creative way.
Needs Statement #2:Our Client needs a place for customer parking and public restrooms when they visit the shipping container art park.
Needs Statement #3: Our Client needs a safe and engineer-certified design for her Art Park that will be sustainable in power source (solar) and longevity.
Needs Statement #4:Our Client needs a design to heat and cool the storage containers in the art park so that they can be used year-round.

Needs Statement	Criterion	Weighting Factor (1-5) 1	Score (1-5)	Weighted Score
#1	Knowledge / Skillset needed for Project	4	2	8
	Interest in Project	3	4	12
	Ability to gather Data needed for project	3	4	12
	Ability to complete project in Senior Design	2	4	8
Total for Needs Statement #1				40

	Knowledge / Skillset needed for Project	3	3	9
	Interest in Project	3	3	9
	Ability to gather Data needed for project	4	4	16
#2	Ability to complete project in Senior Design	2	4	8
Total for Needs Statement #2				42
	Knowledge / Skillset needed for Project	4	3	12
	Interest in Project	4	4	16
	Ability to gather Data needed for project	3	4	12
#3	Ability to complete project in Senior Design	2	4	8
Total for Needs Statement #3				48
	Knowledge / Skillset needed for Project	3	3	9
	Interest in Project	3	4	12
#3	Ability to gather Data	4	4	16

	needed for project			
	Ability to complete project in Senior Design	2	4	8
Total for Needs Statement #3				45

Once the teams were split into design side and facilities side, the facilities team narrowed its focus down to the renewable energy and sustainability aspects of the project along with the energy and heat load aspects.

The final needs statement became to create a design in such a way that nonprofit organizations will utilize our renewable designs to reduce energy costs and foster interest in sustainability practices in the community.

Financial Analysis

Capital Requirements

Building Ruby's Culture Campus will be capital intensive upfront due to the building investment cost of roughly $30,000 according to the WSU engineering students involved. The specs of said building can be found within their documents.

For the business plan at this stage of the project, we have calculated the capital requirements for Phases I and II. Our projected Phase III will require a business plan and forecast update. The solar, green garden, and other initiatives implemented by the WSU Engineering team will keep monthly operating expenses minimal.

Ruby's Culture Campus will need to keep an advertising budget big enough for basic printing, digital design, and community event costs. The grass roots origin capitalizes on advertising's most powerful tool: word-of-mouth.

Overall, we deem RCC favorable enough to move forward and continue progressing at the current stage.

Barriers to Entry

It is the community ties and operational personal that provide a significant enough barrier that copycat business are highly unlikely to occur.

Business Model Description

Customer Segments

Activities at Ruby's Culture Campus will be geared towards encouraging elementary students interested in art, engaging middle school students in making art, cultivating a sense of entrepreneurship within high school students.

Adults is used at a placeholder for both the parents and caregivers of the minors who will be engaged with this space as well as those who are involved with the activities in the library.

By targeting children in each phase of primary schooling, targeting their parents or caretakers, and creating an accessible reading space Ruby's Culture Campus will essentially create a reason for an estimated 70% of the population to engage. Our customer validation interviews provided the insight as to how to target the caretakers. Other segments are currently unvalidated.

Channels

The most obvious channel that Ruby's Culture Campus will interact with its target market is the brick-and-mortar structure. The target markets will largely be reached by social media, word-of-mouth referrals, and publicity generated from this unique business endeavor.

Overall function design

The design needs to meet the energy demands of the shipping containers by using renewable energy sources. These energy sources should provide enough electricity to power the heating and cooling demands as well as lighting and power options for things such as computers and routers as needed to meet the needs of the culture campus. This was calculated to be approximately 4 kW average capacity per container. The design should be as sustainable as possible by reducing energy and water consumption so that the overall energy costs can be kept to a minimum. Heating and cooling loads are shown in the HVAC section of this report.

The design should contribute to a clean and safe space for community members to gather and for local kids to learn about making and selling artwork. Part of this will include adequate lighting as well as a clean open space with good curb appeal. Finally, the design should help to address some of the possible food insecurities in the area.

Considered Design Concepts & Decision Matrix

Some of the design concepts that were discussed for this project included a kitchen facility built into one of the shipping containers, rooftop gardens, rooftop solar, carport solar, high efficiency appliances and fixtures, passive solar, biofuel generators, and recycling. Due to

the nature of this project and cost implications, not all these concepts could be included in the final design.

To narrow the scope of the project, the team implemented decision matrices and House of Quality charts to assess each design aspect based on initial and long-term costs, importance to the customer, sustainability, and other factors.

The idea of building a kitchen into a shipping container, while an interesting idea, would add a large amount of cost to the layout and design of the shipping container portion of the culture campus. This portion of the design could be better incorporated into the existing house structure as it has the necessary plumbing and gas connections already set up. This also removes the need for a generator to power the appliances and the operating cost can be reduced by using natural gas instead of biofuels or diesel.

House of Quality

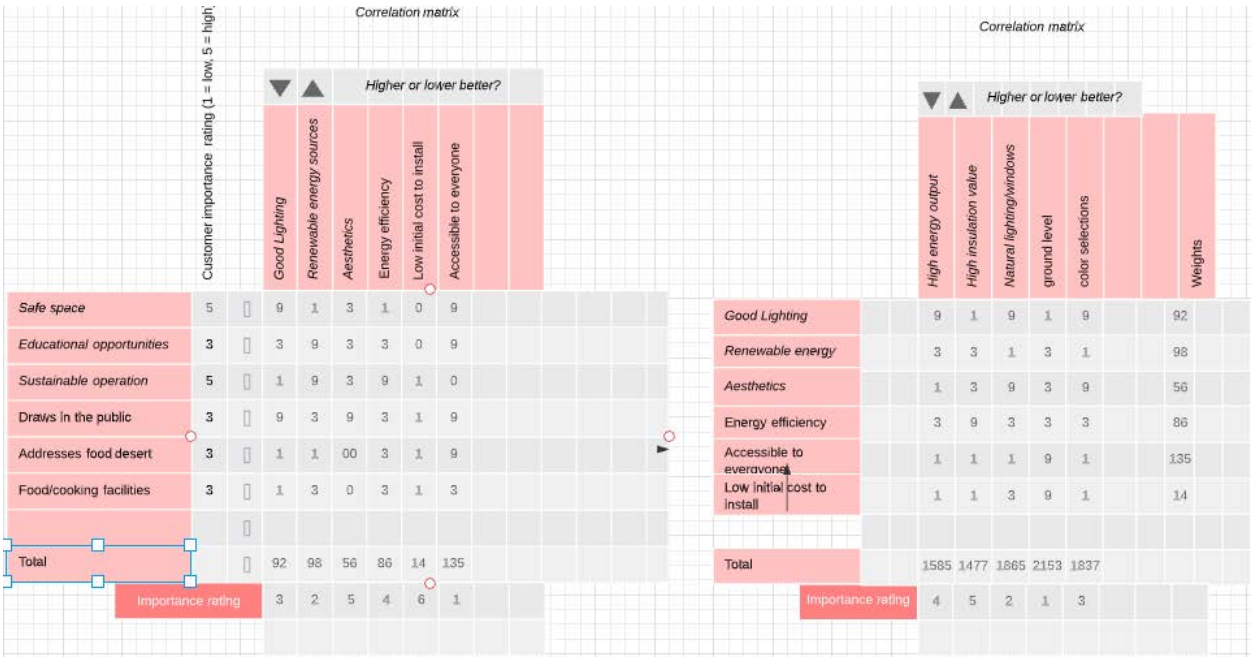

Figure 5: House of Quality

Multi-disciplinary Collaborations Influencing designs

Throughout the design process, the team collaborated with industry experts with multiple areas of expertise. King Solar was recommended in several different interviews, so they were contacted to advise the team on details of the solar design process. Their expertise was influential in the final design of the solar array layouts. Kent Rowe from the Wichita Green Group also gave advice and provided a possible source of low-cost solar panels for the project.

Additionally, several engineering professors from Wichita State University were consulted on the design.

When considering the community kitchen / biofuel generator aspect of the design, experts from Metro Appliances and More, Sunflower Supply, Healy Biodiesel, and Sunflower Integrated Bioenergy were consulted. Through discussions with these companies, it was determined that the idea of using biodiesel generators to power a kitchen area in a shipping container would not be economically viable for this project.

Other individuals consulted as resources for the project included Terry Johnson from Project Teacher, Naquela Pack from the WSU office of Community Engagement, Maggie Ballard from the Paxton's Blessing Boxes foundation, Wichita Green Group, and ICT Community Fridge Project.

Standards & Regulations

Next, the design was assessed to ensure that it met all applicable codes and regulations pertaining to installation of solar photovoltaic systems and inverters, fire safety, ventilation, mechanical, and building codes. The following codes were considered in the design for this project.

UL 1703 as well as NEC articles 690 and 705 regulate safety standards for installation of photovoltaic modules and panels.

UL 1741 regulates the installation of inverters on solar photovoltaic installations.

Section 605.11 of the international fire code gives specifications for fire safety on rooftop solar installations.

ICC section 401.2 ventilation methods

ICC section 402 natural ventilation / section 403 mechanical ventilation

International building code section 1203.1 regulates interior temperatures of habitable spaces

Final Design

Green Energy

One of the requirements set out by the customer was to utilize renewable energy sources to power the heating and cooling needs of the shipping containers. For this reason, solar panel arrays were selected as the primary source of energy. The energy requirements were initially calculated for the shipping containers that were already on the site consisting of 3 large containers (40 ft length) and 2 small containers (20 ft length). King Solar was contacted to advise the team on the project. King Solar is a local solar company that helps install high quality solar panels throughout South and Central Kansas

The experts at King Solar advised the team to use 10 solar panels on the large shipping containers and 5 solar panels on the small shipping containers, providing the space with a total of 50 panels. Each panel can generate up to 400W of electricity, so there would be a total generating capacity of 23,400kWh per year. As seen in figure [Calculator], these solar panels would create a savings of approximately $2,000 a year in electricity costs.

PVWatts Calculator was used to calculate the total energy produced and total annual savings. This installation can help the project to have the environmental benefit of solar and the robust reliability of the utility grid.

Solar energy can be unpredictable on cloudy days, so the array will be connected into the utility grid. A grid tie system can be seen in figure 6 where electricity is first generated by one or several solar modules (also known as photovoltaic or PV solar panels). The panels have a shutoff switch, known as a disconnect, so they can be disconnected from the main grid if the panels need maintenance or repair. Next, the solar inverter turns the direct current (DC) from the panels into alternating current (AC) for the household. From the inverter, power moves to the breaker box and is distributed to the necessary power outlets. A power meter at the end of the line will measure the amount of electricity that is either needed from or being sold back to the utility company. The dual system of solar and grid connection will ensure consistent power, independent of available sunlight. The generated electricity can also be sold back to the grid, potentially creating a passive stream of revenue for the Culture Campus. This process is depicted in figure 7 to provide better visual context.

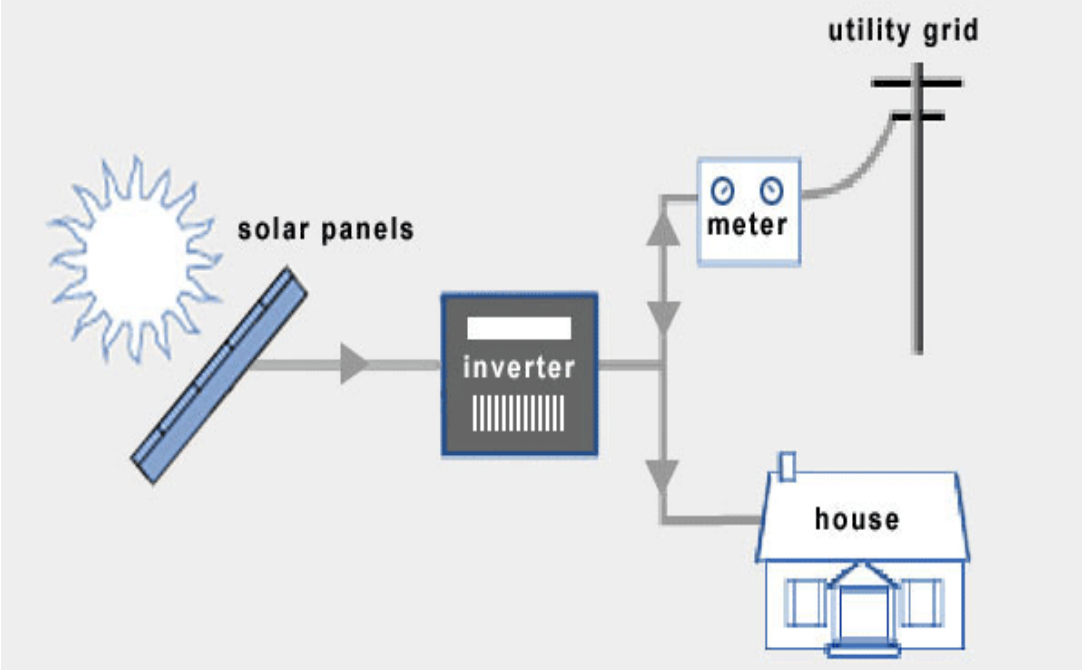

Figure 6: Solar Array Diagram

Figure 7: Solar Power System Graphic.

Passive Solar

Passive solar techniques allow buildings to absorb heat energy from the sun during the colder winter months while blocking that heat during the summer. By including a trombe wall on the south side of the containers, the solar energy can be stored and used to maintain the temperature within the structure. The trombe wall would consist of an 8-inch-thick masonry wall on the south side of the containers with a layer of glass across the front of the masonry. As the sun's light hits the glass, it is directed onto the dark colored wall and the heat is then

absorbed and stored within the wall to be slowly released into the structure. An overhang on the roof prevents sunlight from reaching the wall during the warmer months of the year. This method will increase the overall efficiency of the buildings without adding any extra monthly utility costs for the organization. A 65-inch overhang at an angle of 60 degrees relative to the trombe wall will provide shade for the half of the year from April through September while allowing radiation from the sun to reach the wall during the winter months.

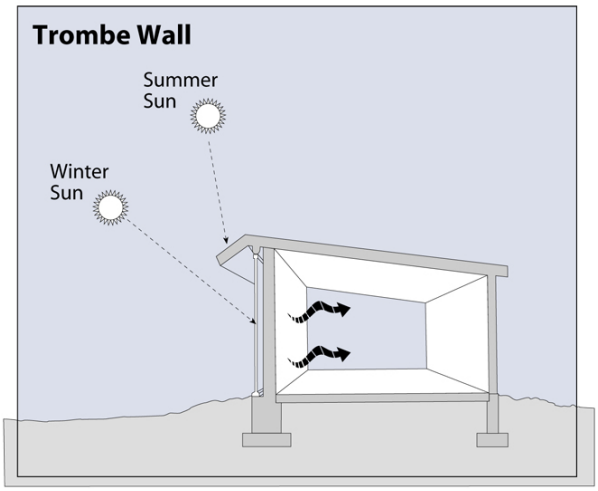

Figure 8: Trombe wall diagram

Image: Energy.gov

Rainwater Collection

A rainwater collection system will be in place on each of the shipping containers consisting of gutters running the length of the shipping container which are then connected to a downspout pipe and run to a 100-gallon rain barrel on either end of the containers. This water can then be utilized for watering the community garden areas on the site utilizing drip irrigation systems. Excess / overflow water from the barrels will be redirected to a stormwater drain. This method of rainwater collection will allow for the collection of up to 200 gallons of water per 40-foot shipping container for every time that it rains at least one inch. These barrels can be decorated or painted to fit the design of the campus.

HVAC

Based on the International Code Council (ICC) Energy Conservation Code, “Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location

where the equipment is installed." The federal minimum energy efficiency rating is set at 13 SEER so our design must utilize equipment that meets or exceeds that SEER rating.

The International Code Council mechanical code section 401.2 states that every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section R402.4.1.2 of the *International Energy Conservation Code*, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 (upcodes.com). This will help to ensure proper air quality to keep the building safe and comfortable for occupants. This can be achieved either through natural ventilation (section 402) or through mechanical ventilation if sufficient natural ventilation is not available within the structure. Our design will measure available ventilation area within the shipping containers and make recommendations to achieve the necessary air flow within the buildings.

According to the International Building Code, section 1203.1, "interior spaces intended for human occupancy shall be provided with active or passive space heating systems capable of maintaining an indoor temperature of not less than 68 degrees F at a point 3 feet above the floor on a design heating day." Utilizing online heat load calculators, it was determined that by using an insulation rating of R-11, a one ton mini-split heat pump would achieve the desired heating and cooling needs for one 40-foot by 8-foot shipping container. The following heat load calculator was used from loadcalc.net.

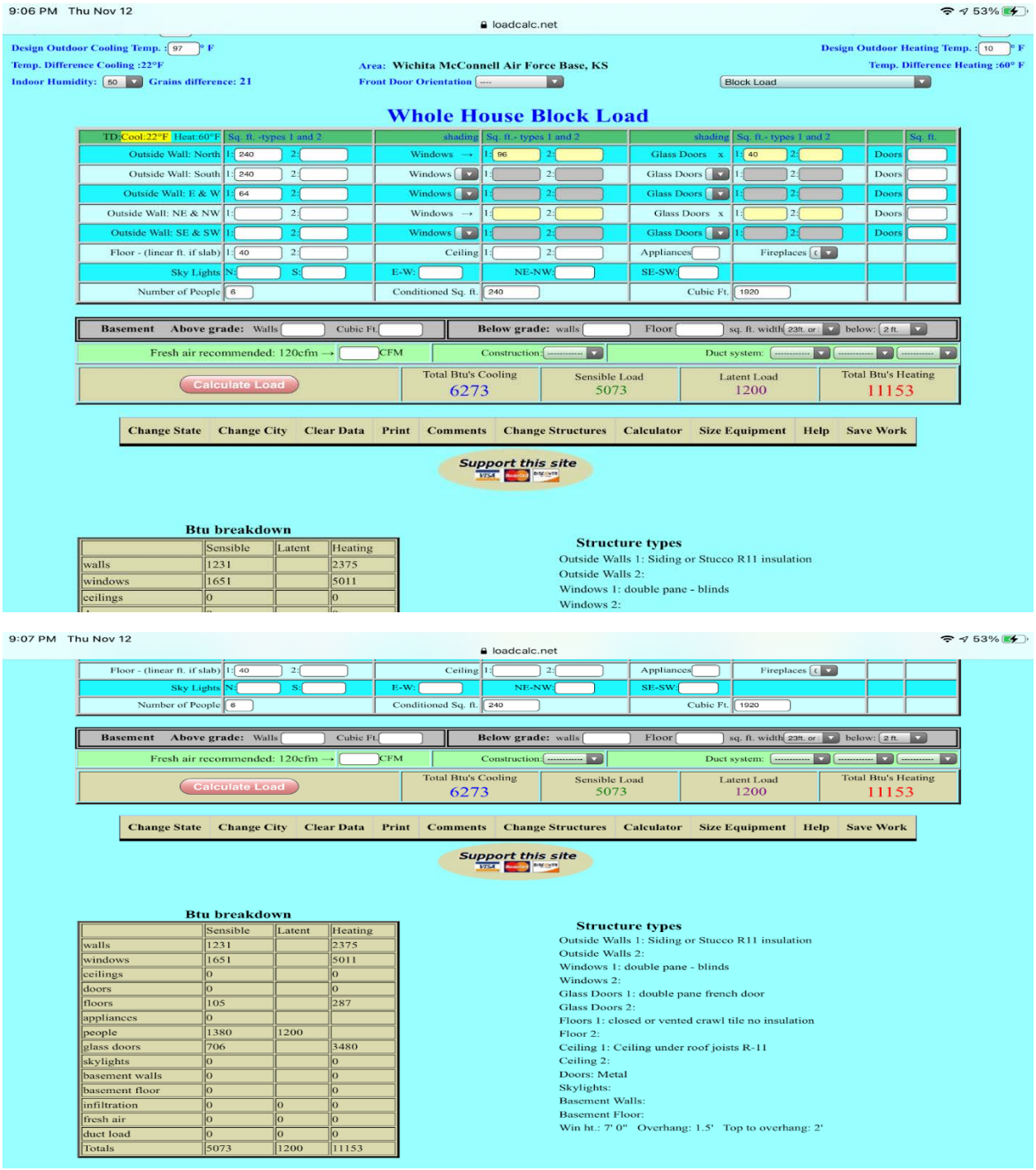

Image:Loadcalc.net

MPB012S4S-1P, Mini-Split Heat Pump Outdoor Unit, Single Zone, 1 Ton, 12,000 Btuh, R-410A

Cat # : 15U43 | Model/Part # : MPB012S4S-1P

Sign in to view pricing

Standard Shipping

For availability, please enter your zip/postal code or sign in

Ship to (change)

Pick Up in Store

For availability, please enter your zip/postal code or sign in

Within 60.0 miles of: Select default store

See Availability

1 Add to Cart

Image: Lennox

A one-ton mini split heat pump will be used for the heating and air in the shipping containers. After discussion with a representative from Lennox, it was determined that this unit would be sufficient to meet the needs for one large 40’ shipping container. This unit is rated as 208/230 volts with a maximum overcurrent amperage of 15 amps and a running amperage of 6.8 amps. This energy usage will be met with a grid tied solar array to provide sufficient electricity for startup and running amperage of the system. These units are efficiency rated at 19 SEER which is well above the required 13 SEER rating required by the federal minimum efficiency rating. At 19 SEER, these units are extremely energy efficient and will provide sufficient heating and cooling capacity at a minimum cost.

To achieve an insulation rating of R-11, we are recommending double layer foam panel insulation. This can be easily installed on the walls and ceilings of the shipping containers without sacrificing a large amount of usable space on the interior of the container. These panels can easily be cut and fit to meet the dimensions of the individual containers.

Lighting

Sufficient lighting will be an important part of the overall design to provide a safe and inviting atmosphere for community members as they visit the culture campus. This will also be an integral part of our facilities efficiency design. By utilizing high efficiency LED fixtures throughout the campus, energy usage on lighting can be cut by almost 90% as compared to traditional incandescent and metal halide fixtures. Occupancy sensors will be installed inside the buildings so as to only turn the lighting on when the space is in use. LED wall pack lighting on the buildings and streetlights in the parking lot will provide lighting at night to help ensure a safe environment for the community.

Garden & Fridge

A community garden of five raised beds will be installed to grow food for the surrounding community and create an opportunity for engagement. There will be a partnership with the WSU Green Group to volunteer their time building, filling, planting, and maintaining

the beds as part of their community service requirements. There will also be a partnership with the volunteers of ICT Community Fridge to have a fridge stocked full of free food on the campus. This should be available to the neighboring community as well, and volunteers will maintain food storage through community donations, clean the fridge, and ensure safety of the use of the fridge.

Prototyping & Testing Plan

Throughout the design process, testing and prototyping was integral to the success of the design. The first prototype was made using a scaled down model of the lot and the shipping containers. The containers were scaled down in a 1:48 ratio so that a 40 foot by 8-foot shipping container scales down to 10 inches by 2 inches, and the scale models were built out of ¼ inch plywood (figure 9). One of the features that the Art That Touches Your Heart foundation would like to include in the culture campus is a small community library so a scale model of a container as a library was also built. Next, the team made a scale representation of the existing house that Janice wants to incorporate in the design as well as a parking lot in the front for the public and a parking lot in the back for the artists. Finally, scale models of the solar arrays were built. One design called for solar panels on top of the shipping containers and another design looked at the possibility of using a solar carport.

The initial prototype was tied in with the design side of the project but also included aspects from the facilities/renewable energy side. The main point of this initial prototype was to test possible layouts of the containers on the property and to assess which layouts would work best. This prototype also demonstrated where some of the shading issues would come into play with the solar panels on the containers themselves. This also demonstrated some of the difficulties in fitting all the containers into the designated space.

CAD and CATIA software were used to design the layout of the solar panels and other aspects of the design as well as to assess solar shading on the containers themselves (figure 10). Some of the design aspects that were designed with CATIA software included the trombe wall overhang and rain barrels (figure 10). This software was also used to assess the length and angle of the overhang so that it shaded the wall during the summertime.

The team also built a partial model of a container out of metal to get an idea of how the heat would transfer on an actual metal building. The heat transfer was then assessed with no insulation, foam core insulation similar to what is called for in the design, and with insulation and the overhang. These heat transfer trends were then charted in figure 12.

Figure 9: Prototype designs.

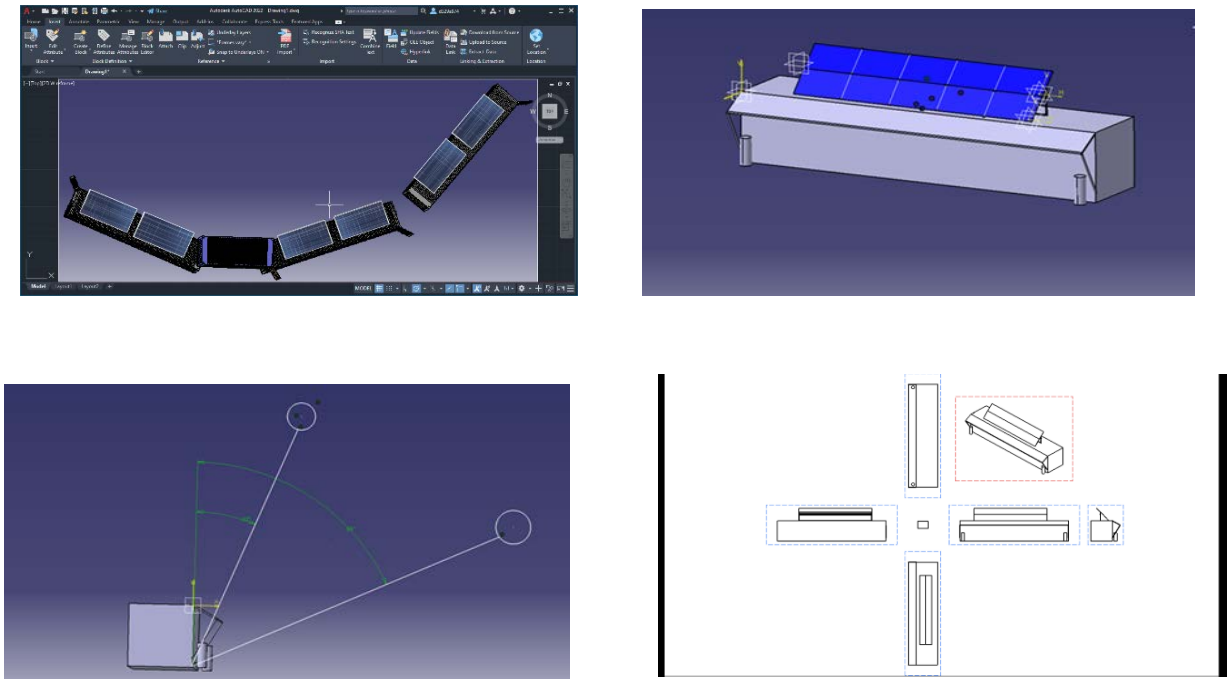

Figure 10: Catia drawings of shipping container layout with solar panels.

Figure 11: Heat transfer readings of shipping container material.

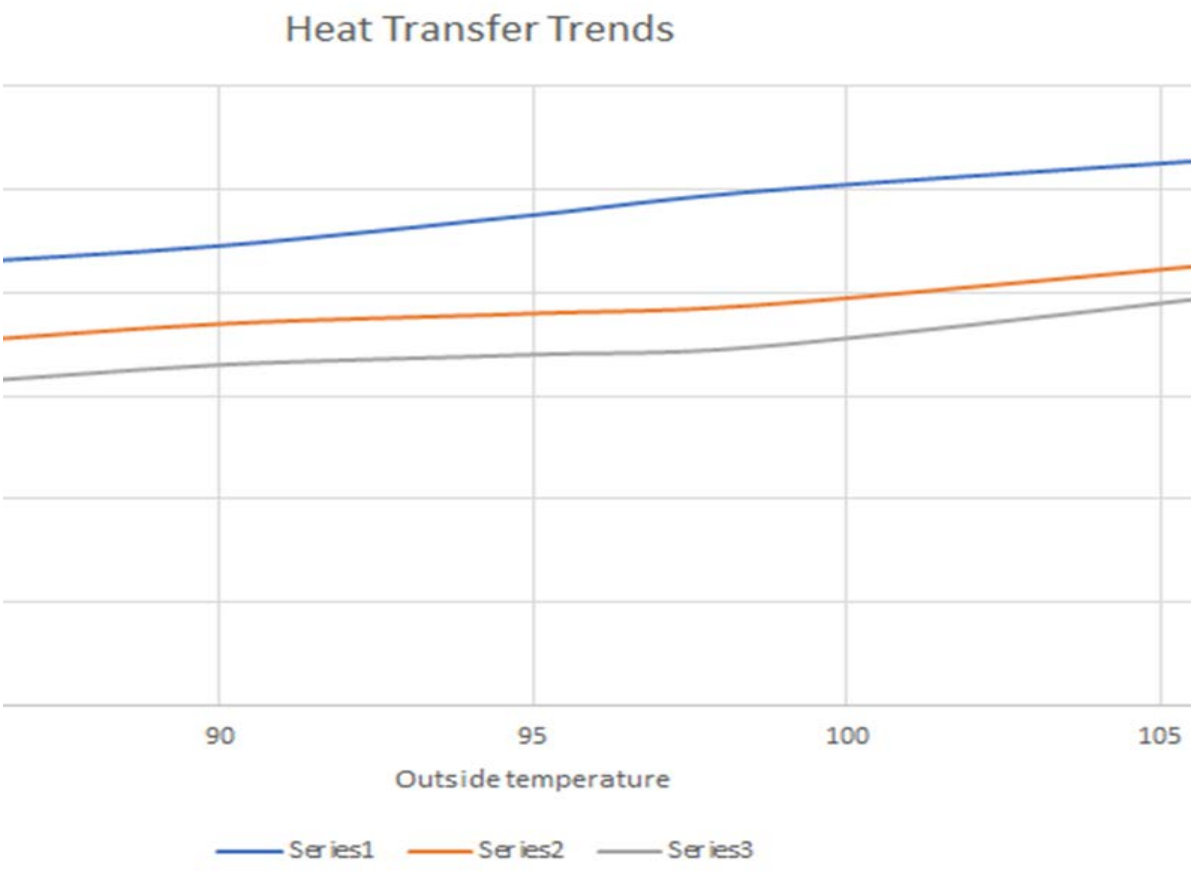

Figure 12: Heat transfer chart.

Customer Acceptance testing

The design was presented throughout the semester by members of both the design team and the facilities team to members of the ATTYH board of directors. Input from those meetings was incorporated into the design process to fit the design to meet the needs of the customers. A final design will be presented to the board at the end of the semester so that they can make decisions moving forward with the project as to whether they will be using the design aspects presented. At the request of Janice, the team also created a CATIA representation of a VIP sign that they are planning to install nearby so that it could be presented to the city (figure 13).

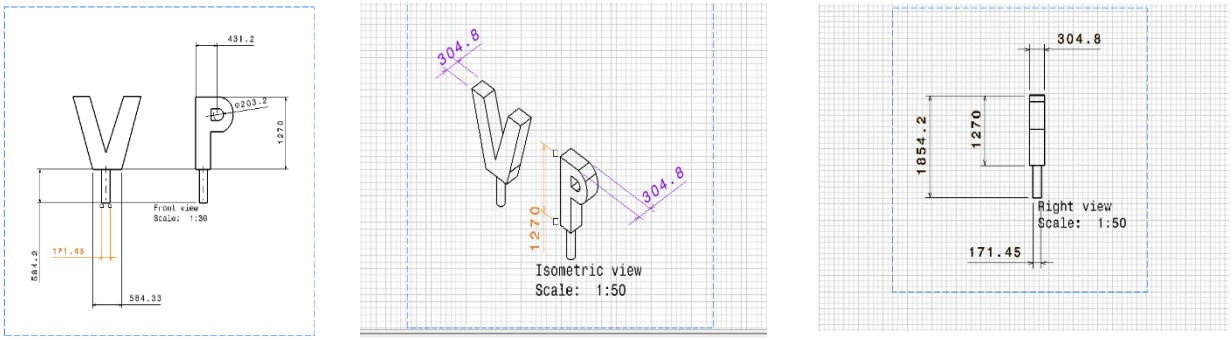

Figure 13: Catia drawings of Janice's VP letters.

Team Strategic Goals or Mission and Objectives

- From your personal goals, create a strategic goal for your team

- To assess the energy needs of Ruby's Culture campus and design a system to meet those needs utilizing renewable and sustainable resources.

- Begin with a one or two sentence statement of what the team is supposed to do

- We plan to work well together in order to complete the tasks necessary in a timely manner.

- What are you trying to accomplish in general terms?

- To maximize efficacy, build team working skills, and collaborate around a shared vision.

The specific goals and or outcomes that you are hoping to achieve over the life of the team. These include but are not limited to

- We hope to be able to complete the project before the deadline.
- We are going to complete the project to the best of our ability

- ∉ We will produce CATIA drawings for engineers to use in their analysis of the electrical and HVAC systems and for Janice to use to network her ideas.
- ∉ Janice will have the storage containers in the layout she envisions.
- ∉ The community surrounding the space will engage and feel engaged with the shipping container space.

- Members should also identify barriers that may hinder goal attainment (e.g., work commitments, not understanding the work required, failing to adhere to ground rules etc.).
- ∉ Lack of commitment from fellow team members
- ∉ Lack of relevant experience in construction/codes
- ∉ Work or family commitments
- ∉ Lack of communication between team members
- ∉ Class load overshadowing the project
- ∉ Losing sight of the Main Goal
- ∉ Understanding how to best help the client (communication)

Team Member Skill Inventory

· Team members can identify for the others what they think they bring to the team in terms of the task and maintenance roles they can fulfill.

· You can also identify any skills or knowledge areas they would like to work on during the team process and to solicit the help of others.

	Member 1	Member 2	Member 3	Member 4
Name	Jordan Hang Yu Choong	David Hemken	Gage Campbell	Madi Laughlin
TPR	Contributor	Contributor	Contributor	Collaborator/ communicator
E/I	I	I	I	E
N/S	S	S	S	N
F/T	N	F	F	F
J/P	J	J	P	J

Contact Info	Jordan97109@hotmail.com (678)-3088880	Davidhemken79@gmail.com (316) 295-7050	Gagecampy@gmail.com 316-249-6540	madilaughlin@gmail.com mllaughlin@shockers.wichita.edu 316-644-3467
Strengths	Supportive Reliable Patient Imaginative Observant Enthusiastic Loyal Hard Working Good Practical Skills	Dedicated Loyal Task oriented Experience with trades (plumbing/HVAC etc.)	Progressive Creative Loyal Supporter Hard working	Love Perspective Appreciation of Beauty & Excellence Leadership Fairness
Limiting factors	I work 30+ hour a week, so sometimes might not have time for meeting.	Time constraints	I work 40+ hour weeks during the day and take all classes at night and all-day Friday, work load is incredible.	Time! Common theme. Emotional availability for work, balancing other classwork (heavy class load).
Roles	Resource Person	Research	Utilities	Leader Communicator, meeting planner

Role Identification

What are the different roles that members of the team will take on to support its success? These can be permanently assigned or rotate. :

- Leader/Facilitator *(Collaborator - Madi)*
- Research (Contributor – David)

Resource person/Technical support *(Contributor- Jordan)*

Resources and utility distribution (Contributor – Gage)

Ground Rules

The basic values and operating principles and procedures that will govern your life as a team. :

- Assignments (who needs to what by when)

- Assigning responsibilities
  - Responsibilities need assigned by end of meetings
- Setting deadlines
  - Deadlines are discussed in meetings.
- Meeting deadlines
  - Deadlines to be met by date specified by the group.
- Quality of work
  - Quality of work should reflect a sufficient amount of time and preparation for the task.

· Meetings

o Attendance Expectations

– 100% attendance expected

o Schedules/times

– Monday's at 1PM

o Locations

– Online Zoom meeting or at Site

o Coming Prepared

– Each person should have progress made on their chosen task

o Protocol

– Presentations first
– then ask/answer questions (what do we not know? What would help us do our work?)
– Choose new work/continue in work

o Agendas (template is provided on Blackboard)

o Notifications

– Will mostly be done through GroupMe

o Record keeping (template is provided on Blackboard)

– Any files that will be exchanged will go through Google Drive and Microsoft Teams

· Attitude

- Team members will strive to keep a positive attitude about the project and respect the thoughts and opinions of other team members throughout the meetings and discussions

- Team members will express concerns in a considerate and honest manner to other team members when they arise.

  - Contacting

- The main methods of contact will be through GroupMe for messaging throughout the week and Zoom or in-person meetings once a week. Email and phone conversations are also acceptable methods of contact.
- Group members will be respectful of each other's schedules and understand that everyone may not be able to respond right away.
- Group members will communicate when they cannot contribute or provide a time when they will communicate.

  - What will serve as acceptable excuses

- Acceptable excuses would include any medical, work, or family emergencies. If at all possible, the other group members should be informed if an emergency arose that would prevent a member from completing their duties or miss a meeting.

  - Penalties

- Due to the uncertain times, each group member should get two "freebies" with an acceptable excuse. The third time, the offending member will have to meet with the rest of the group to discuss what they are doing to remedy the situation and if it happens again, the group will have the option to go to the class instructor to request the member be removed from the group.

  - How will you control the master copy of the report

- Master copy of the report will be stored on a shared drive that will allow access to all group members. Final submission of the report will be done by the group leader.

  - How will decisions be made within the group?

- Decisions within the group should be made by popular opinion. A group vote should be taken for any large scale or problematic decisions. The community partner should be consulted on decisions that will affect the product delivered to them. In case the group is not able to come to a definitive consensus, the final decision will go to the group leader.

Conflict Resolution Mechanisms

  - What are potential sources of conflict and how will you deal with them?

- Potential sources of conflict might include differences of opinion on the direction that the team should take on a task, miscommunication or lack of communication, and failure to complete tasks in a timely manner.
- These conflicts should be addressed within the group as part of the weekly group meetings. If the issue cannot be resolved within the group, then the group leader should take the issue to the instructor. If the issue is directly relating to the group leader, then the other team members can take the issue to the instructor.

Performance criteria

To check our progress as a team we will establish a shared language to describe what tasks are finished, which are in progress, and which have not been started. Having a shared language will ensure we all can discuss our work in a way that we all understand, and makes work done clear. We have agreed upon this criterion as a team. We will each monitor our own work and help one another create clear "next steps" when a person is stuck in their work.

	Week End		Week End	Week End	Week End	Week End	Week End
	4/9/2021		4/16	4/23	4/30	5/6	5/13
Task	Who	Done	Done	Done	Done	Done	Done
Board Meeting with Art That Touches Your Heard board members	Madi	y	y	y	y		
Interviews / presentation	ll	y	y				
Report outline	Madi		y				
financials	Gage		y				
Decision matrices/HOQ	ll		y				
Design parameters	all		y				
relevant codes	David		y				
Prototype				y			

Energy calculations	Jordan					y						
CAD/CATIA	David					y						
Prototype build	David					y						
Presentation	All					y						
Final project presentation												
Outline	All									y		
Financials	Gage									y		
Solar	Jordan									y		
Energy/HVAC	David									y		
Garden/ Community fridge, Liaison between Janice, and team.	Madi									y		
Standards and codes	All									y		
Final project presentation												

Previous meetings/work:

Task	Who
NABC/team meeting zoom	All
Story Board	Gage/ David
Video Script/team meeting zoom	Gage/ David

Video Recording/Edit/team meeting at site	David /Jordan
First Interviews	All
Second Interviews	All
Third Interviews	All

Additional meeting minutes conducted by Madi Laughlin with the Art That Touches Your Heart Board are in the facilities folder on teams.

Future Work

Moving forward, the next steps for the ATTYH board should be to work with architects and engineers to finalize the design for the culture campus and work to get final approval to move forward with construction of the project. Several of the team members plan to keep in contact with members of the board to assist in any way that they can with the development of the project. Additionally, a list was compiled of contacts within the Wichita community with access to resources that will help to move the project forward and support it in the future.

Appendix

Interview link: https://teams.microsoft.com/l/file/F963217A-7E42-4743-867D-C758BDEFEF18?tenantId=e05b6b3f-1980-4b24-8637-580771f44dee&fileType=docx&objectUrl=https%3A%2F%2Fwichitaedu.sharepoint.com%2Fsites%2FENGT402-Spring2021-RubysCC-Facilities%2FShared%20Documents%2FRubys%20CC%20-%20Facilities%2FFacilities%20Team%20Folder%2FFacilities%20Interview%20Log.docx&baseUrl=https%3A%2F%2Fwichitaedu.sharepoint.com%2Fsites%2FENGT402-Spring2021-RubysCC-Facilities&serviceName=teams&threadId=19:7b7559d9869c47bbba8b72a5632ec658@thread.tacv2&groupId=7028baad-4344-47c1-a158-d002e1d5af43

Meeting minutes:

Ruby's Culture Campus Meeting 04-09-2021

Attended:

Agenda

Introductions

WSU Team, Dr. Brooking

ATTYH Board Members

Updates

Design

Updated focus on students

Community partners

Facilities

Green energy connections

Garden layout

Community partners

ATTYH

Moving Forward/New Needs

Action Items

Questions

Closing Remarks

Ruby's Culture Campus Meeting 04-15-2021

Attended:

ATTYH: David Williams, Ford Carr, Janice Thacker (End)

WSU: Madi Laughlin, Gary Brooking, Bailie Foster

NEXT MEETING THURSDAY, 4/22/2021, 6:30PM

4 ACTION ITEMS:

2. ACTION: (David) Include awning in the updated Site drawings.
3. ACTION: Include need for liability/waivers in final report/business model.
4. ACTION: Madi will finish VP drawings by next Thursday 4/22.
5. ACTION: Contact Non-Profit-Go for future grant opportunities; include in the final report.

Agenda

6. Introductions
    i. David: Hopes & Dreams for Art Park?
        1. There are many artists in the area without the space to showcase their art.
        2. Put up an art wall for people to come paint; refresh it once a month/week and start all over again! (Monthly social media feature?)

a) WILL NEED AN AWNING TO COVER ART WALL

ACTION: (David) Include awning in the updated Site drawings.

7. He does custom painted flowerpots with his daughter (Makes them look like the person!) and rebuild/upcycle patio furniture.
8. Big passion for upcycling

a) Would he want to teach a class?

(1) Maybe!

9. BAILIE: Design concept of featuring art in an industrial space; having a creation space with TOOLS, and NAILS, and a place to store donated items? (Must avoid making it a dump site)
    i. Will require liability waivers to ensure safety of users & RCC.

ACTION: Include need for liability/waivers in final report/business model.

10. MADI: Working on getting a CATIA file going

ACTION: Madi will finish this by next Thursday 4/22.

11. Ford Carr: Works out of state, when in KS, frequently assists Janice in various activities- handyman
    i. Area could be instrumental in the community. There is a lot of talent in that area. The youth could tap into their artistic potential.
    ii. Daughter: is an artist, has submitted drawings to art competitions. Plays violin & sings; trying to find herself; needs a space to express herself & grow/develop as a young person & as an artist.
    iii. GIFTED IN GRANT PROPOSAL WRITING

a) Need to communicate with student group to ensure continuity of work, not overlap

b) RCC is receiving two grants because of Ford's efforts!!!!

12. DAVID: Janice involved with **Non-Profit-Go**, has worked with her before.

ACTION: Contact Non-Profit-Go for future grant opportunities; include in the final report.

13. JANICE: How is the business model coming? And updated drawings?
    i. Bailie: Business model will be finished by (hopefully) next week
    ii. Madi: Working on the drawings; will check in with David.
    iii. Spoke to Craig Watson in KC about Architect stuff

a) Architect is the director of how moving containers will go. Need updated drawings (WITH 10 ADDITION SHIPPING CONTAINERS)

b) Janice wants the second story in the design.

c) Currently coordinating getting Student artwork in Harlem Fine Arts Show (New York virtual show) (Holy Savior church, pairing with Oklahoma Black Museum) Work will be up until July 1st.

14. Questions
    i. Meet every Thursday?
        1. Yes, every Thursday at 6:30PM
15. Closing Remarks

Sources

- https://www.planning.org/pas/reports/report214.htm
- https://library.municode.com/ks/wichita/codes/code_of_ordinances?nodeId=TIT11TR_CH11.52PA_S11.52.020UNPAXC
- https://www.researchgate.net/publication/319403965_Thermal_Performance_Assessment_of_Shipping_Container_Architecture_in_Hot_and_Humid_Climates/link/59fcd0dcaca272347a22b965/download
- https://www.osti.gov/biblio/10192078-thermal-analysis-horizontal-shipping-container-normal-conditions-transport-solar-insolation
- https://www.justanswer.com/hvac/8oveu-heat-load-calculation-shipping-container-hi-i-m.html
- http://containertech.com/wp-content/uploads/2017/11/Safe-Use-Compliance-of-Containers1.pdf
- https://loadcalc.net/load.php
- https://engstandards.lanl.gov/esm/mechanical/Ch6-D30-R5.pdf
- https://codes.iccsafe.org/content/IBC2018/chapter-12-interior-environment#IBC2018_Ch12_Sec1203
- https://www.iccsafe.org/advocacy/international-energy-conservation-code-resource-page/
- https://www.alpinehomeair.com/viewproduct.cfm?productID=453077955&linkfrom=frogle&Keyword=453077955&msclkid=5807b3d44cde1478f1edec6f60be5263&utm_source=bing&utm_medium=cpc&utm_campaign=BLUERIDGE%20PLA%20NEW&utm_term=4577747945380321&utm_content=Blueridge%20Products
- https://www.lowes.com/pd/SilveRboard-SilveRboard-Graphite-Wall-Insulation-Kit-11-Sheets-1-1-8-in-x-2-ft-x-4-ft-88-sq-Ft/1002916592?cm_mmc=shp-_-c-_-prd-_-bdm-_-bing-_-pla-_-102-_-1002916592-_-0&kpid&placeholder=null&gclid=55c4075164331e0bc43a58ea5423132c&gclsrc=3p.ds&&ds_a_cid=119207829&msclkid=55c4075164331e0bc43a58ea5423132c

Janice Provided Materials:

- https://homesolarus.com/Google?utm_source=GA&utm_campaign=1711480244&utm_term=332827097013&utm_source=GA&utm_campaign=1711480244&utm_term=332827097013&gclid=EAIaIQobChMI8OupvLCx7QIVBNvACh2N7Q2oEAAYAyAAEgJbyPD_BwE

Architects contacted:

- http://envelopead.com/
- https://www.facebook.com/honomobo/?fref=ts
- https://www.pb-architects.com/work/grillagh-water

- https://www.digitaltrends.com/home/best-shipping-container-homes/
- https://arcgency.com/wfh-house

https://matthewcarbone.com/contact/1