Quinta-Gamelin Community Center

Community Partner:
Town of Bristol, Rhode Island

Academic Partners:
School of Architecture, Art and Historic Preservation
School of Engineering, Computing and Construction Management

Spring 2013

The Roger Williams University Community Partnerships Center

The Roger Williams University (RWU) Community Partnerships Center (CPC) provides project-based assistance to non-profit organizations, government agencies and low- and moderate-income communities in Rhode Island and Southeastern Massachusetts. Our mission is to undertake and complete projects that will benefit the local community while providing RWU students with experience in real-world projects that deepen their academic experiences.

CPC projects draw upon the skills and experience of students and faculty from RWU programs in areas such as:

- American Studies
- Architecture and Urban Design
- Business
- Community Development
- Education
- Engineering and Construction Management
- Environmental Science and Sustainability
- Finance
- Graphic Design
- Historic Preservation
- History
- Justice Studies
- Law
- Marketing and Communications
- Political Science
- Psychology
- Public Administration
- Public Relations
- Sustainable Studies
- Visual Arts and Digital Media
- Writing Studies

Community partnerships broaden and deepen the academic experiences of RWU students by allowing them to work on real-world projects, through curriculum-based and service-learning opportunities collaborating with non-profit and community leaders as they seek to achieve their missions. The services provided by the CPC would normally not be available to these organizations due to their cost and/or diverse needs.

CPC Project Disclaimer: The reader shall understand the following in regards to this project report:

1. The Project is being undertaken in the public interest.

2. The deliverables generated hereunder are intended to provide conceptual information only to assist design and planning and such are not intended, nor should they be used, for construction or other project implementation. Furthermore, professional and/or other services may be needed to ultimately implement the desired goals of the public in ownership of the project served.

3. The parties understand, agree and acknowledge that the deliverables being provided hereunder are being performed by students who are not licensed and/or otherwise certified as professionals. Neither RWU nor the CPC makes any warranties or guarantees expressed or implied, regarding the deliverables provided pursuant to this Agreement and the quality thereof, and Sponsor should not rely on the assistance as constituting professional advice. RWU, the CPC, the faculty mentor, and the students involved are not covered by professional liability insurance.

4. Neither RWU, the CPC, the faculty mentor, nor the students involved assume responsibility or liability for the deliverables provided hereunder or for any subsequent use by sponsor or other party and Sponsor agrees to indemnify and hold harmless RWU, the Center, the Faculty Mentor, and the Center's student against any and all claims arising out of Sponsor's utilization, sale, or transfer of deliverables provided under this Agreement.

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http://cpc.rwu.edu

Introduction

In the 1990s, the YMCA in the town of Bristol closed, leaving local residents without a wellness center to attend. In 2006, the Department of Defense closed the Quinta-Gamelin Army Reserve building in Colt State Park in Bristol. In 2013, the Department of Defense officially turned the facility over to the town of Bristol Parks and Recreation Department with the understanding that it will always be used as a community center and sponsored by a federal agency — the National Park Service.

In the spring of 2013, students from the School of Architecture, Art and Historic Preservation enrolled in ARCH 488 - Computer Applications for Professional Practice, taught by Professor Gary Graham. Graham used the Quinta-Gamelin Community Center as a model to explore new Professional Practice methods, specifically the *Integrated Project Delivery (IPD)* and the meaning and methods of *Building Information Modeling (BIM)* as it pertains to design and decision-making in today's contemporary architecture practice.

Students also worked collaboratively with other Roger Williams University students enrolled in Professor Gokhan Celik's Construction Management 260 course to perform cost estimation for the new Quinta-Gamelin Community Center.

The course simulated an integrated design process in which individual stakeholders lent their particular expertise and bias to the design process. Following the methods of Integrated Project Delivery and using Building Information Modeling, students developed a feasible project for the renovation of the Quinta-Gamelin Army Reserve Center into a new community center for the town of Bristol, Rhode Island.

What follows in this book is a compilation of work from the student teams.

Community center site plan proposed by Team 2.

May 2013: ARCH 488 | Professor Gary Graham | CM 260 | Professor B. Gokhan Celik
Team 1: Caileigh Bailey-Ricci | Joseph Cardella | Nicholas Musilli | Thib Alqahtani | Rebecca Rokicki | David Vales
Team 2: Jason Waisnor | Matt Eckel | Ron Lucia | Ben Lane
Team 3: Amged Mourad | Waleed Altrukuni | Xiqiao Liu | Charles Woods
Team 4: Patrick Flattery | Antonia Papadopoulos | Kenneth Post | Patricia Reccoppa
Team 5: Lauren Bombara | Ruddy Lopez | Steven Pulver
Team 6: Lisa Fasciglione | Tim Pranaitis | James Kohnke | Christian Hollendonner
Team 7: Shawn Johnson | Pedro Hernandez | Nathaniel Schutez | John Gaughan
Team 8: Oliver Ames | Colby Karambelas | Jaret Moskal | Matthew Silva
Team 9: Anthony Cassciotta | Michael Laurencelle | Brandon Dasilva

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Team 1

Design Option 1

In our first design strategy, we explored the option of putting most of the new program into the existing building. This design was an exercise to understand how much of the existing building could be utilized for its new requirements.

This strategy only allowed us to fit a fraction of the required program in the site. Understanding that the program would require approximately double the amount of space, we proposed a renovated option to the town of Bristol. This option would bring the existing building up to date as well as provide the best equipment for the facility.

The proposed plan has administration spaces in the south rooms, providing them with natural sunlight during most of the day. The majority of the public community and social spaces occupy much of the area in the existing building, with utilities and additional fitness spaces occupying any remaining space.

1

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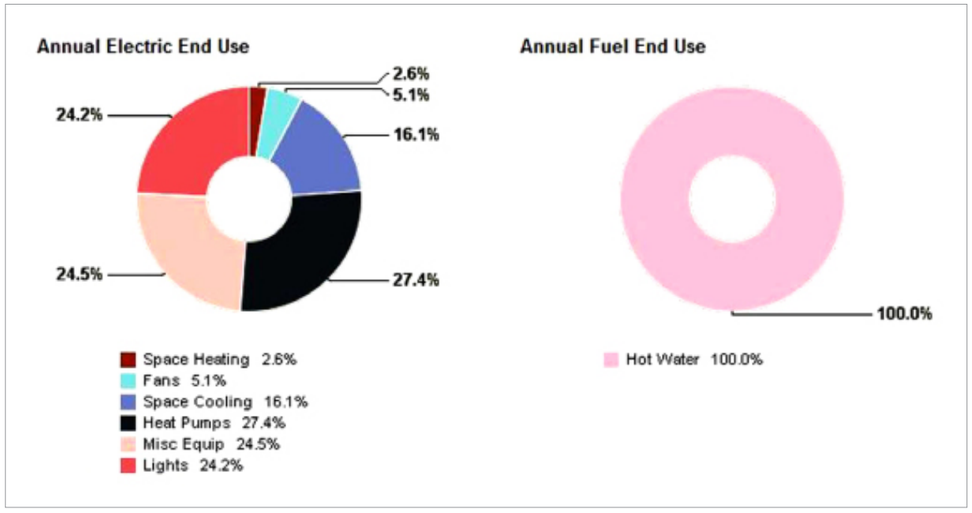


1. Proposed floor plan for Design Option 1.

2. Energy analysis for Design Option 1 using an 11.5 EER Packaged Terminal Heat Pump.

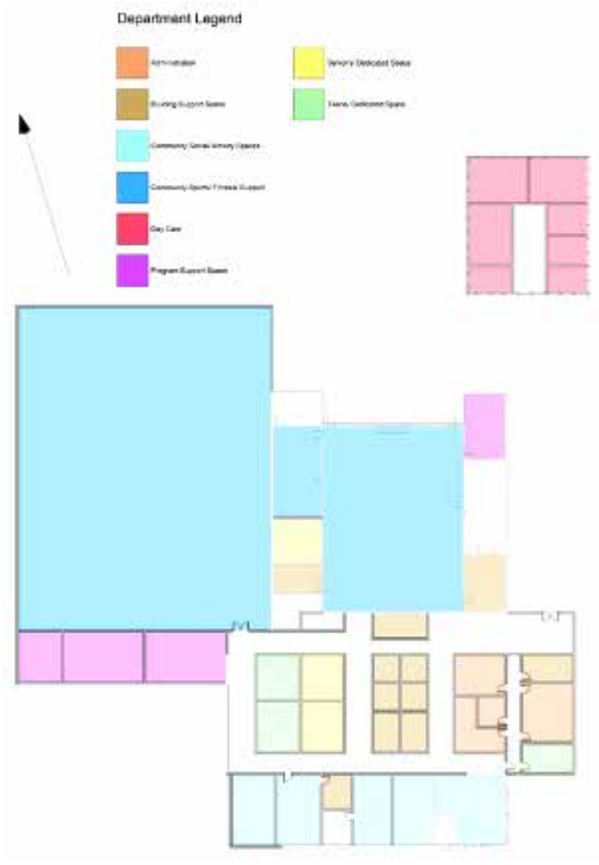
Team 1

Design Option 2

In our second design strategy, we expanded the existing building slightly to accommodate space for the proposed pools and additional programming.

The interior of the original building below the gymnasium has been cleared and reorganized to better suit the desired building program. The eastern wall was bumped out to provide an area for administration spaces. We kept all fitness spaces in the northern half of the building, allowing the core of the building to have space available for seniors and administration support. The southern rooms of the building were designed to create community social spaces.

1



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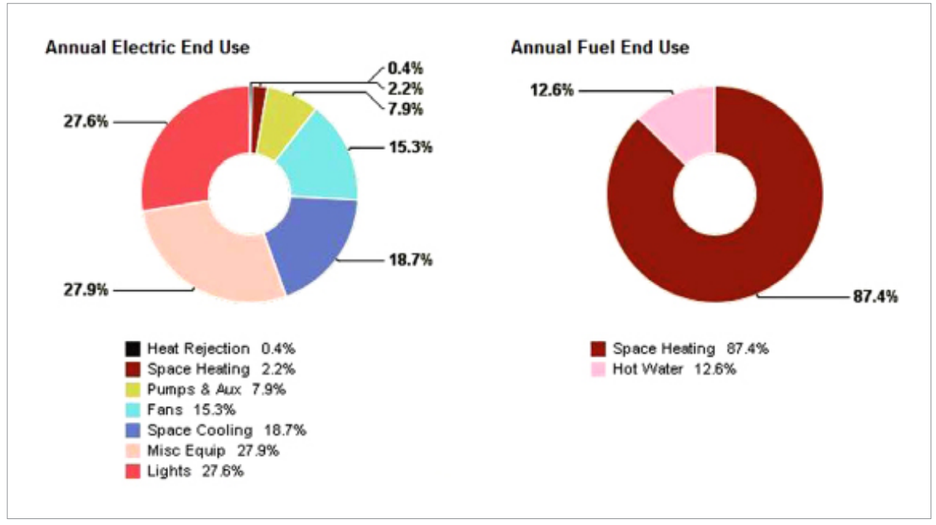


1. Proposed floor plan for Design Option 2.

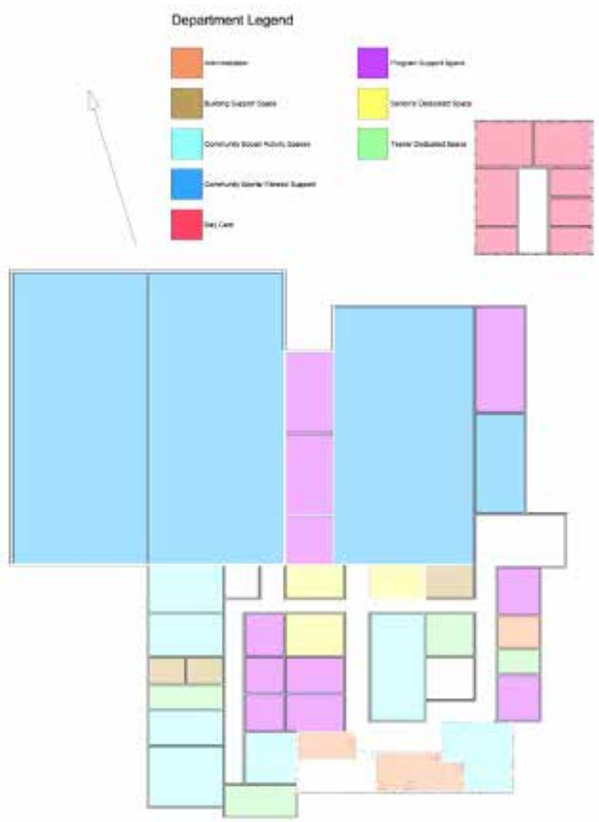
2. Energy analysis for Design Option 2 using a 4 pipe fan coil system.

Team 1

Design Option 3

In our third design strategy, we explored a more radical change to the building — allowing the proposed program uses to fit inside the existing space. This layout would place all programming dealing with fitness at the southern half of the building and leave the remaining space open for public programming and administration.

1



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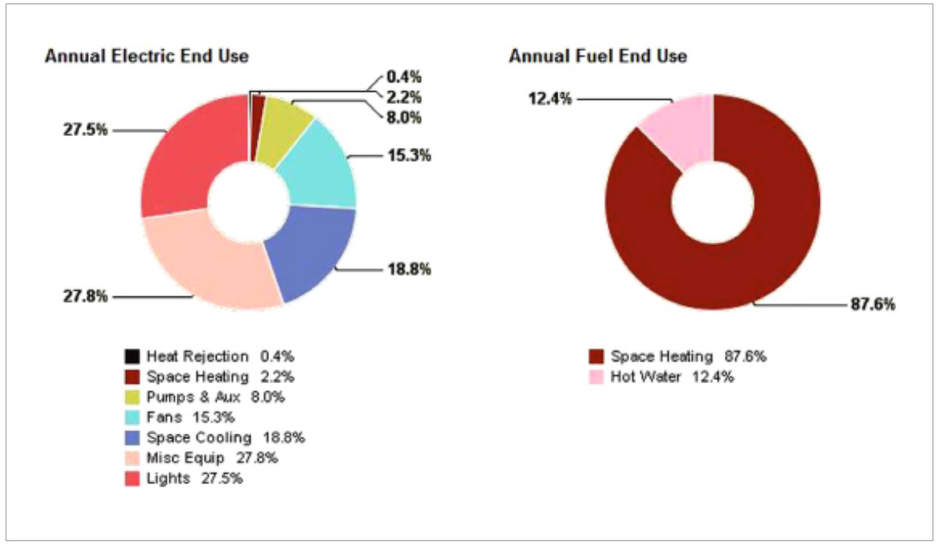


1. Proposed floor plan for Design Option 3.

2. Energy analysis for Design Option 3 using a 2 pipe fan coil system.

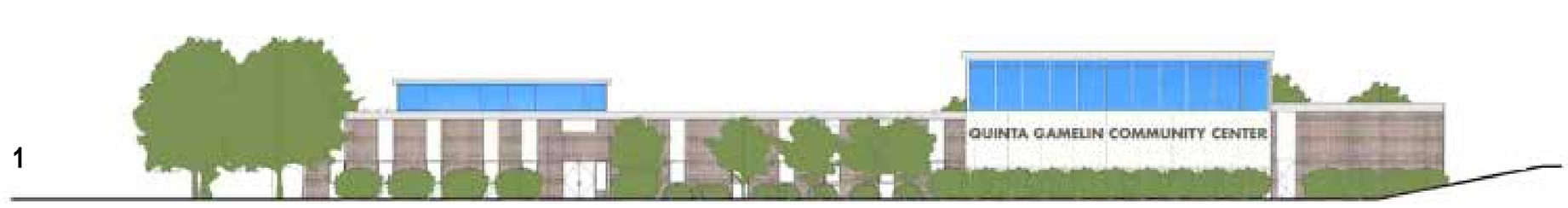
Team 1
Final Design

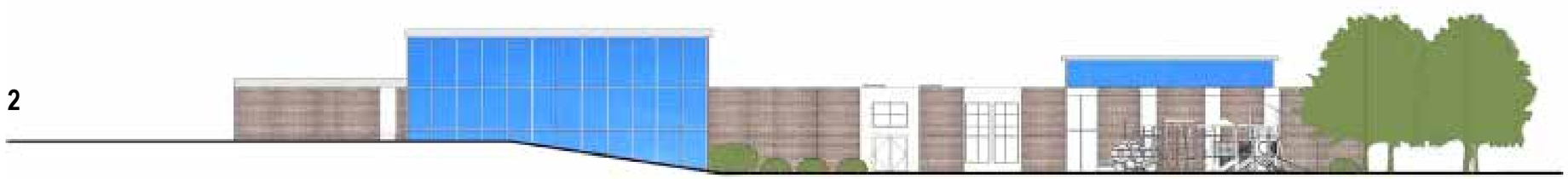
Exterior southeast perspective.


1. Office
2. Reception
3. Health Counseling
4. Music Room
5. Mechanical Room
6. Program Office / Sign up desk
7. Conference Room (12)
8. Program Director's Office
9. Dividable Space
10. Game Room
11. Server Room
12. Computer Room
13. Storage
14. Women's Bathroom
15. Men's Bathroom
16. Handicap Bathroom
17. Mech. Room
18. Senior Lounge
19. Storage
20. Activity Room/ Multipurpose Room
21. Gym
22. Daycare
23. Classroom
24. Art Room w/ Kiln
25. Art Room (Dry)
26. Adult Lounge / Pool Viewing Room
27. Lap Pool
28. Therapy Pool
29. Kitchen
30. Fitness Room
31. Yoga Room
32. Locker Rooms

Floor plan

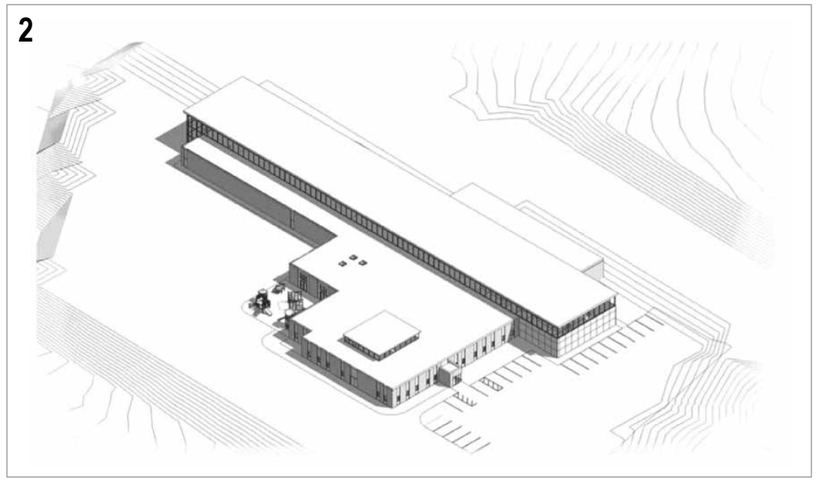
Elevations:
Purple areas represent
Phase 1 of the project,
and pink areas represent
Phase 2.





1. East elevation

2. West elevation



1. Gymnasium.

2. Aerial perspective of comunity center.

2. Recreation and therapy pool.

Team 1
Cost Analysis

PHASE 1 [INCLUDES GYMNASIUM + DAYCARE]

BUILDING TYPE: COMMUNITY CENTER
LOCATION: BRISTOL, RI
STORIES: 1 [14.4']
FLOOR AREA: [S.F.] 26,346
LABOR TYPE: STD
BASEMENT INCLUDED: NO
DATA RELEASE YEAR: 2013 QUARTER 1
COST PER SF: 91.49
BUILDING COST [EXISTING AND ADDITION] [EXCLUDING POOLS] **$2,491,841**
CONTRACTOR FEES [GC, OVERHEAD, PROFIT] 25.0% **$622,960**
ARCHITECT FEES 9.0% **$224,265**

PHASE 2 [INCLUDES POOLS AND LOCKER ROOMS]

STORIES: 2 [25.6']
FLOOR AREA: [S.F.] 15,429
LABOR TYPE: STD
BASEMENT INCLUDED: NO
COST PER SF: 91.49
BUILDING COST [ADDITION] [INCLUDING POOLS] **$1,411,599**
CONTRACTOR FEES [GC, OVERHEAD, PROFIT] 25.0% **$352,899**
ARCHITECT FEES 9.0% **$127,043**

TOTAL COSTS: **$3,903,440**
TOTAL CONTRACTOR FEES: **$975,859**
TOTAL ARCHITECT FEES: **$351,308**

FINISHED TOTALS: **$5,230,607**

Team 2
Design Options

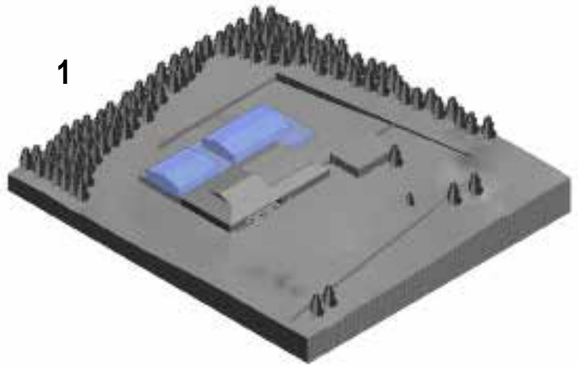
Design Option 1

- Conserves most of the existing building.
- Related massing.
- Leaves room for an open courtyard space.

Design Option 2

- Large service area.
- Allows full size pools.
- More expensive and expansive scheme.

1



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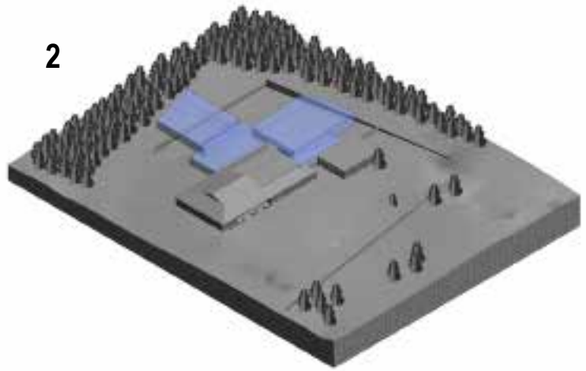
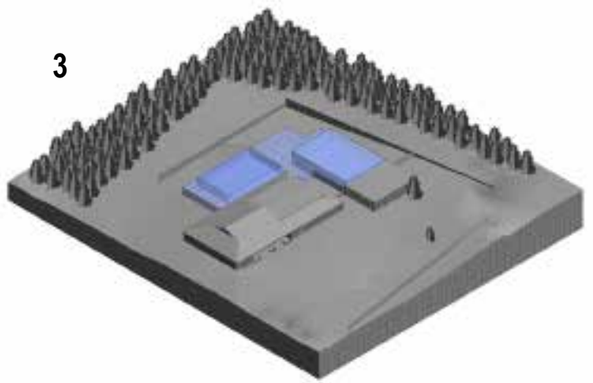
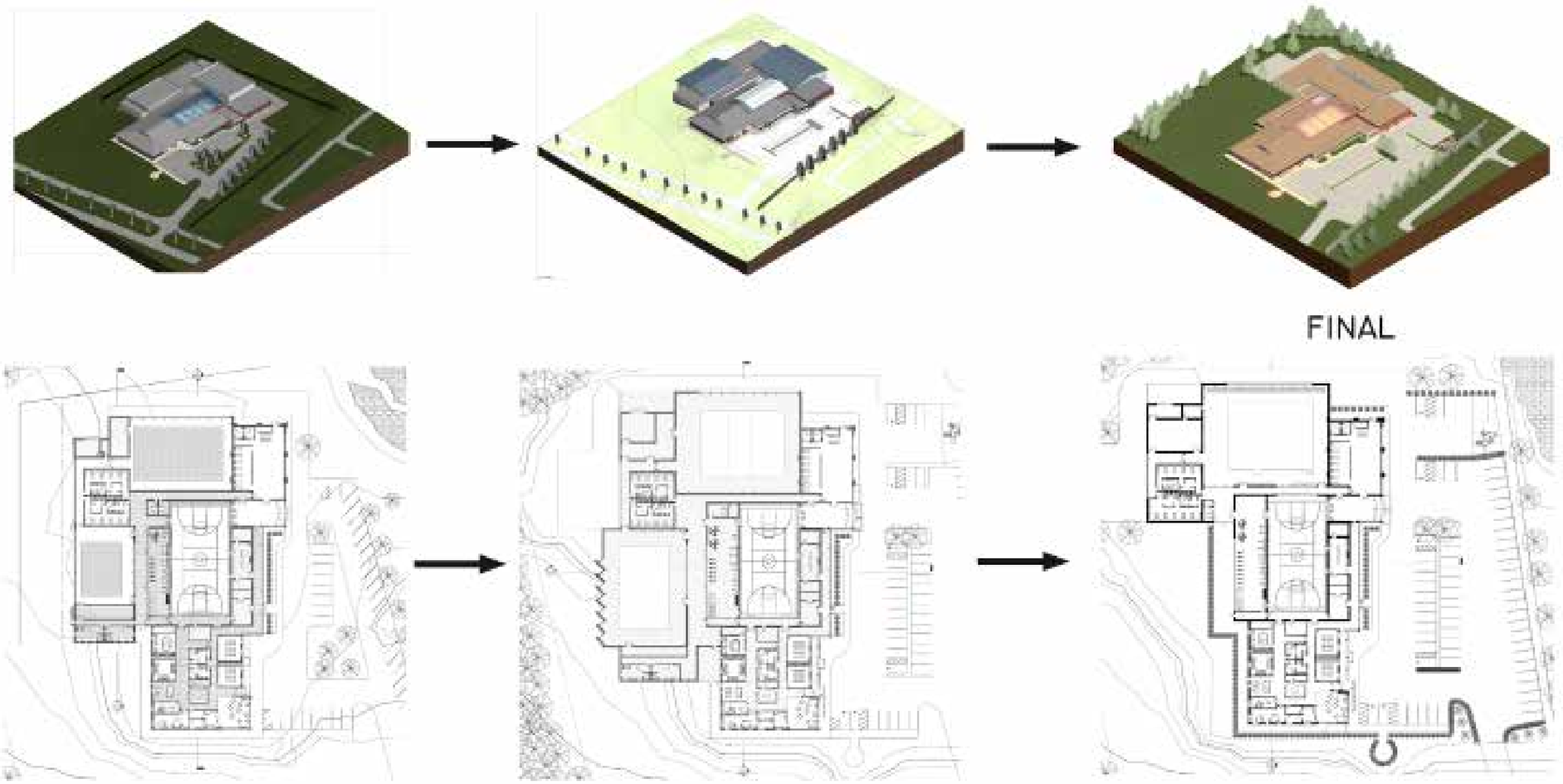


Design Option 3 (Preferred Scheme)

- Connects to new daycare center.
- Expanded gymnasium.
- Most compact.

3



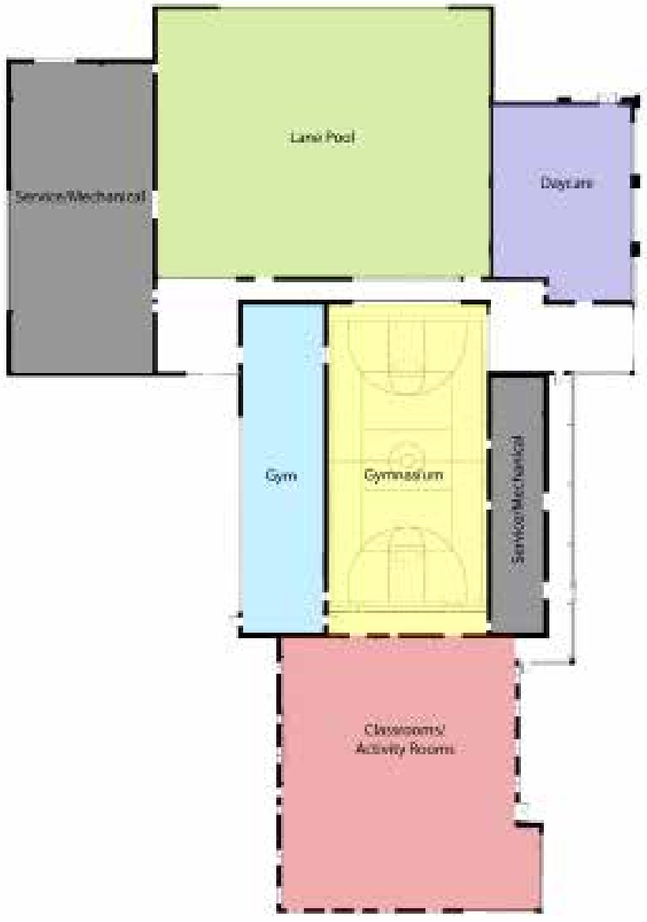


Evolution of the project into its final design.

Team 2
Final Design

Proposed front entrance to community center.

1



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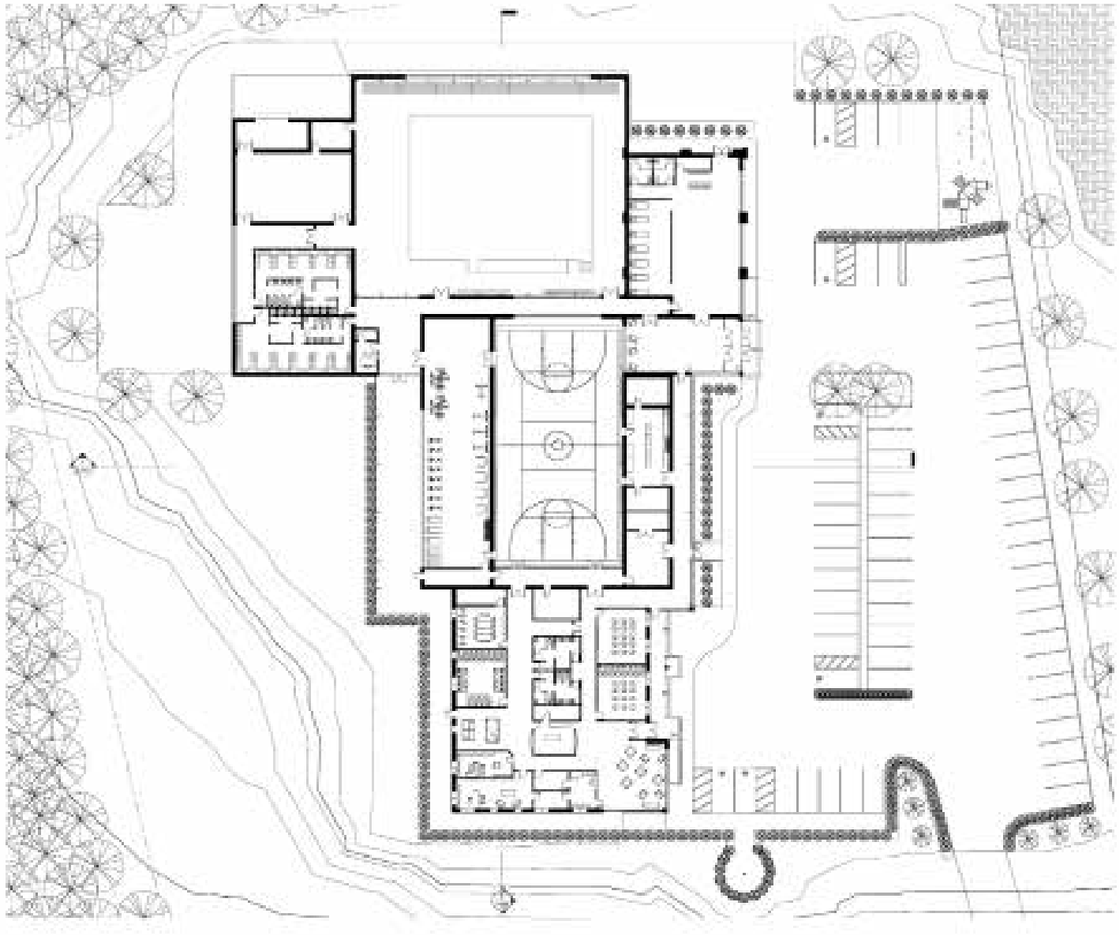
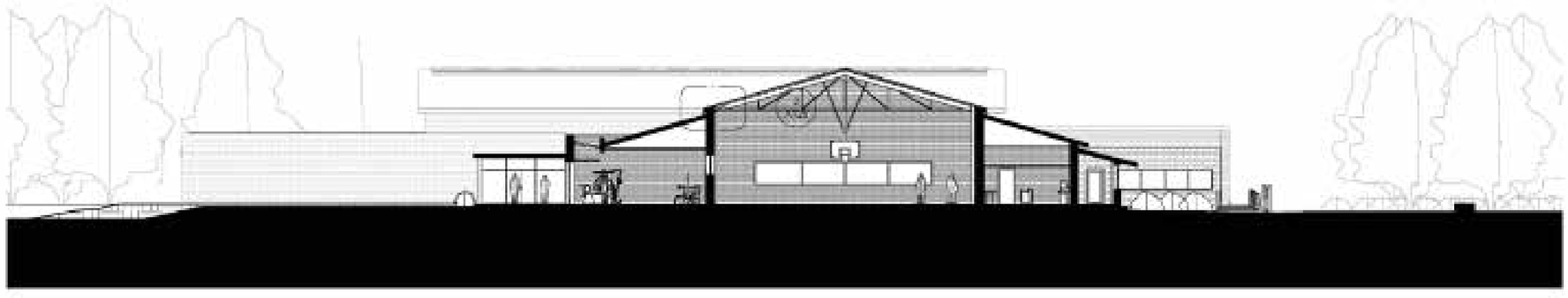


1. Program diagram

2. Ground floor plan

1



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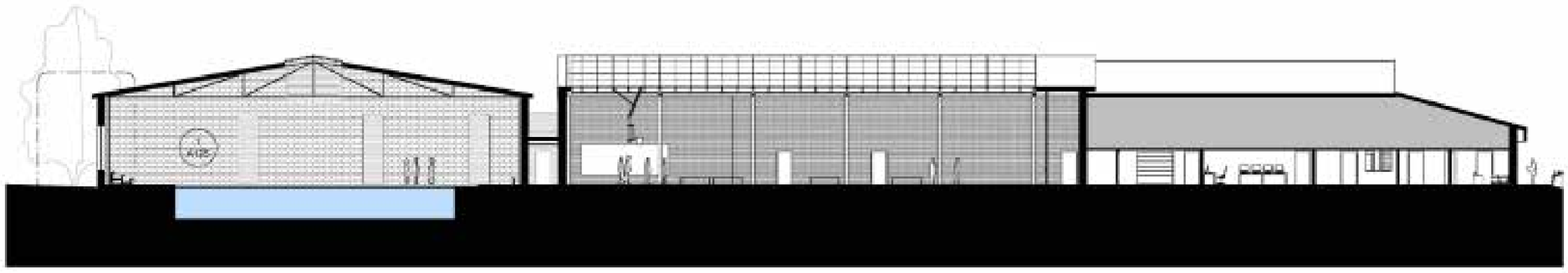
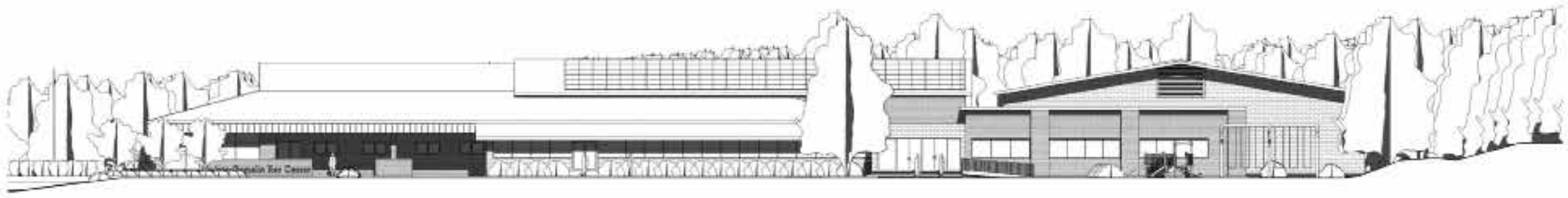


1. Section through gymnasium and exercise room.

2. Section through gymnasium and lane pool.

1



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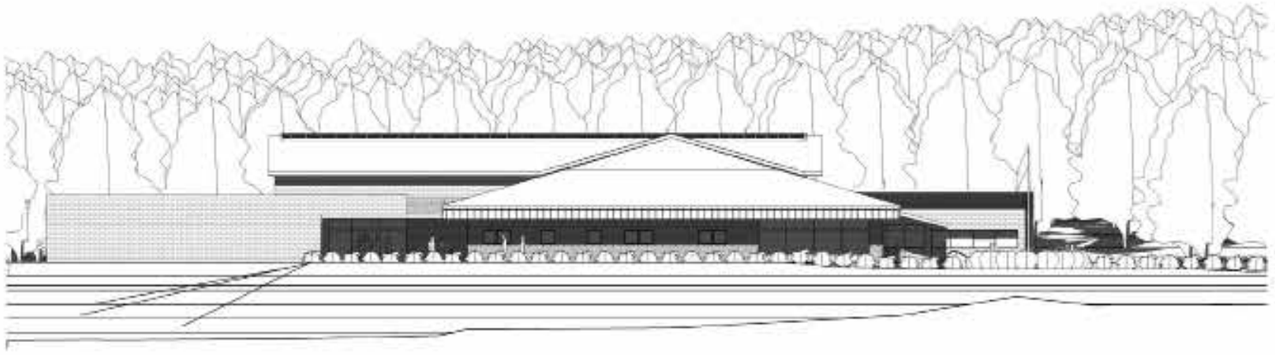


1. East elevation

2. South elevation

1. Lane pool

2. Gymnasium

3. Playground view

Team 3

Project Narrative

The Quinta-Gamelin Community Center project will be developed on a 5.3-acre property in Bristol, Rhode Island. It will include a community youth center, summer fun camp, pre-school and mom's club space, senior citizen's lounge, fitness center, swimming pools, administrative space and garage. The center will fulfill the needs of Bristol adults and youth as an educational gathering place, while creating a community zone with the surrounding recreational park and waterfront.

SHUMARD OAK

SERVICEBERRY TREE

DOGWOOD TREE

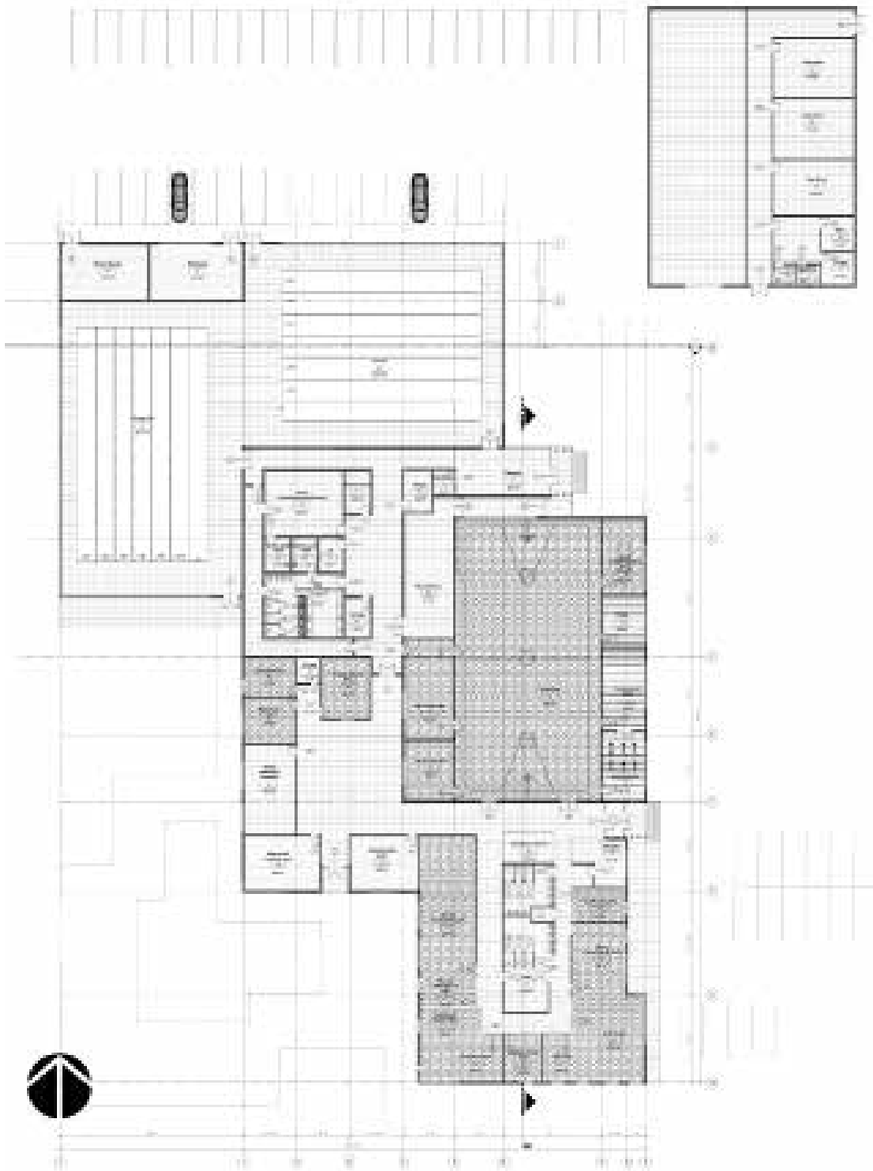
STONE PAVERS

SEXANGULAR SEDUM

Site development plan

Team 3
Final Design

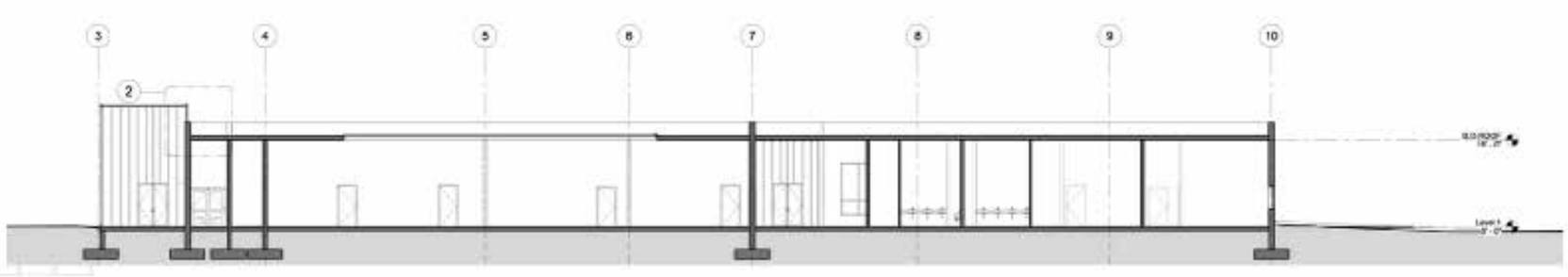
View from Asylum Road.



Floor plan exhibiting three phases of development.

1

2

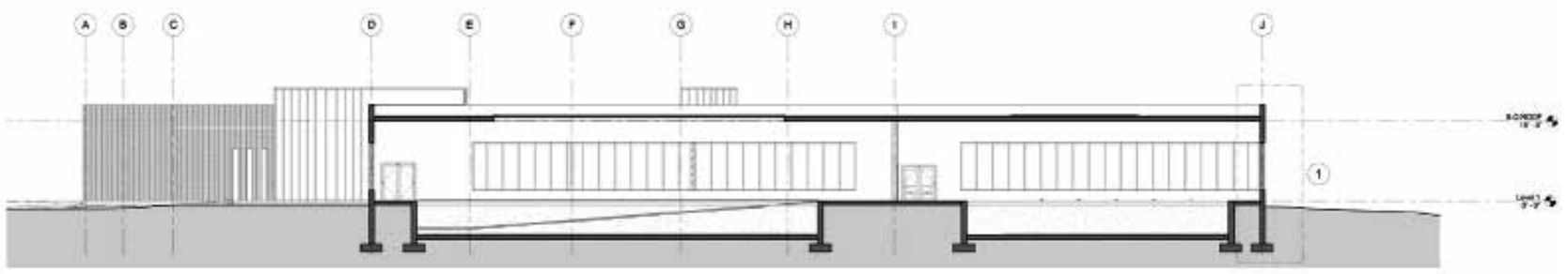


1. Front elevation

2. Section A

1

2



1. Rear elevation

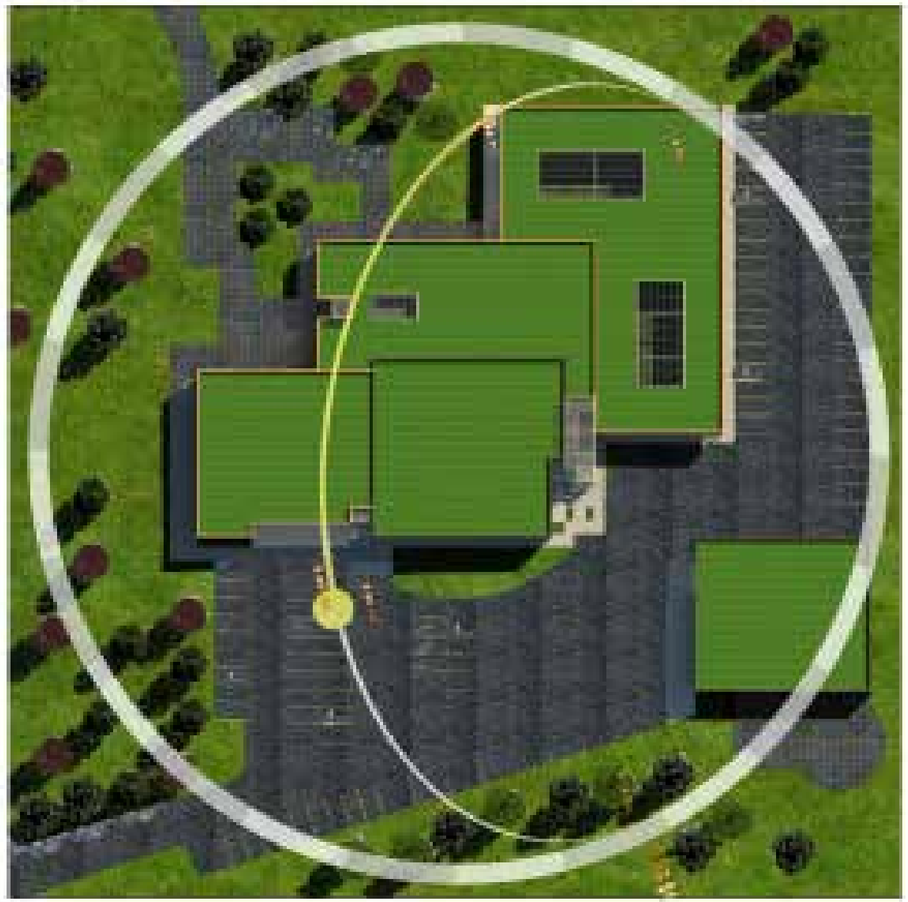
2. Section B

1. Gymnasium

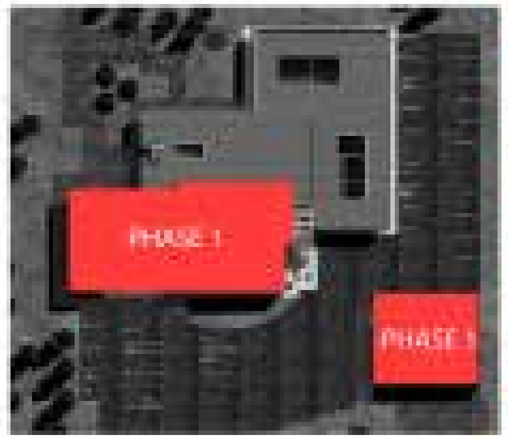
2. Pool

3. Front entrance

1 Base Run		2 Design Alternative	
Energy, Carbon and Cost Summary		**Estimated Energy & Cost Summary**	
Annual Energy Cost	$82,766	Annual Energy Cost	$52,341
Lifecycle Cost	$1,127,278	Lifecycle Cost	$712,876
Annual CO_2 Emissions		**Annual CO_2 Emissions**	
Electric	383.0 tons	Electric	354.0 tons
Onsite Fuel	117.4 tons	Onsite Fuel	8.4 tons
Large SUV Equivalent	49.5 SUVs / Year	Large SUV Equivalent	32.6 SUVs / Year
Annual Energy		**Annual Energy**	
Energy Use Intensity (EUI)	48 kBtu / ft² / year	Energy Use Intensity (EUI)	48 kBtu / ft² / year
Electric	425,908 kWh	Electric	368,934 kWh
Fuel	20,237 Therms	Fuel	1,103 Therms
Annual Peak Demand	167.4 kW	Annual Peak Demand	317.6 kW
Lifecycle Energy		**Lifecycle Energy**	
Electric	12,777,237 kW	Electric	11,068,032 kW
Fuel	607,086 Therms	Fuel	33,093 Therms
Metal frame roof with high insulation		**Super high insulated green roof**	
Brick on metal stud (walls)		**Insulated concrete wall 12" thick**	
Lighting Efficiency: LPD 25%		**Lighting Efficiency: LPD 10%**	
Fan Coil 4 pipes system		**Occupancy/ Day lighting Sensors and Controls** **Premium Efficiency 17 SEER 19.6 HSPF Air Source Heat pump > 5.5 ton**	

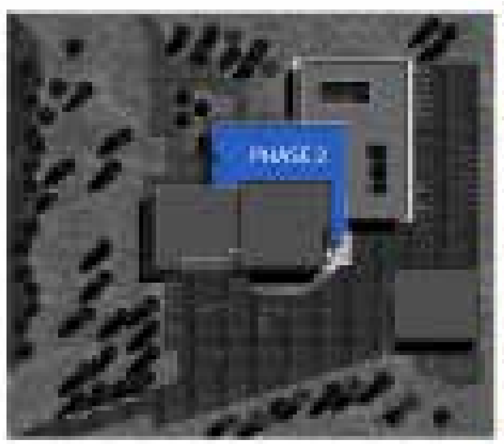


Final performance analysis of energy costs.



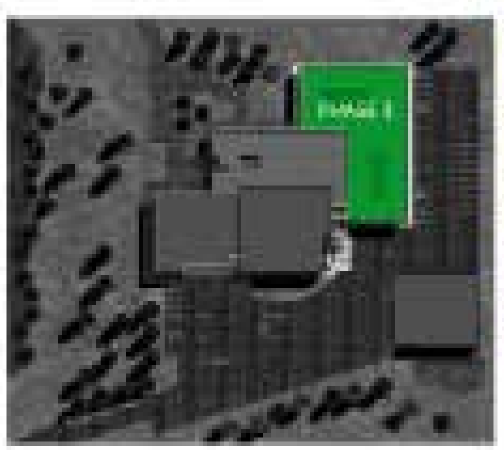
Task Name	Duration	Start	Finish	Cost
Site Work	14 days	Tue 5/13/14	Fri 5/30/14	$95,480.6[illegible]
Shell	42 days	Mon 6/2/14	Tue 7/29/14	$496,017.40
Interiors	26 days	Wed 7/30/14	Wed 9/3/14	$221,300.7[illegible]
Services	9 days	Wed 7/30/14	Mon 8/11/14	$43,273.01
Mechanical Systems	5 days	Wed 7/30/14	Fri 8/8/14	$244,000.00
PHASE 1 COMPLETION	**82 days**	**Tue 5/13/14**	**Wed 9/3/14**	**$1,148,673.92**

Architect fee 6%	$68,920.44
CM Fee 2%	$22,973.48
Final cost (fee's included)	$1,240,567.83



Task Name	Duration	Start	Finish	Cost
Building Siteworks	18 days	Thu 9/4/14	Mon 9/29/14	$64,000.00
Shell	62 days	Tue 9/30/14	Wed 12/24/14	$456,138.44
Interior	12 days	Mon 12/29/14	Tue 1/13/15	$141,869.7[illegible]
Services	2 days	Thu 12/25/14	Fri 12/26/14	$35,800.56
Mechanical & electrical systems	8 days	Mon 12/29/14	Wed 1/7/15	$348,050.48
PHASE 2 Completion	**94 days**	**Thu 9/4/14**	**Tue 1/13/15**	**$1,160,168.24**

Architect fee 6%	$69,610.08
CM Fee 2%	$23,203.36
Final cost (fee's included)	$1,252,981.70



Task Name	Duration	Start	Finish	Cost
Building Siteworks	[illegible] days	Wed 1/21/15	Tue [illegible]	$1,002,[illegible]
Shell	56 days	Wed [illegible]	Wed [illegible]	[illegible]
Interior	10 days	Thu 6/4/15	Wed 6/17/15	$188,000.00
Mechanical and electrical Systems	7 days	Thu 6/4/15	Mon 6/8/15	[illegible]
Phase 3 Complete	**106 days**	**Wed 1/21/15**	**Wed 6/17/15**	**$2,864,[illegible]**

Architect fee 6%	$171,855.33
CM Fee 2%	$57,285.04
Final cost (fee's included)	$3,093,392.11

PHASE 1,2,3 (W/ FEES)	**$4,333,960.17**

Cost analysis of each phase of the project.

Team 4

Phase 1: Existing Building and Landscape

- Demolish existing designated walls, flooring and second floor.
- Demolish back lot.
- Create basketball court in southwest corner.
- New floor and walls in existing basketball court.
- New locker rooms and restrooms.
- Connect to bike path.
- Clean up southwest brush and trees.

Phase 2: Main Thruway and Daycare

- Demolish existing designated walls and flooring.
- Create space for primary passage.
- New walls and floor.
- New interior partitions.
- Demolish interior of garage.
- Addition to existing garage shell to create daycare.

Phase 3: Adult Wing

- Demolish existing designated walls.
- New walls and floor in adult wing.

Phase 4: Outdoor Pool

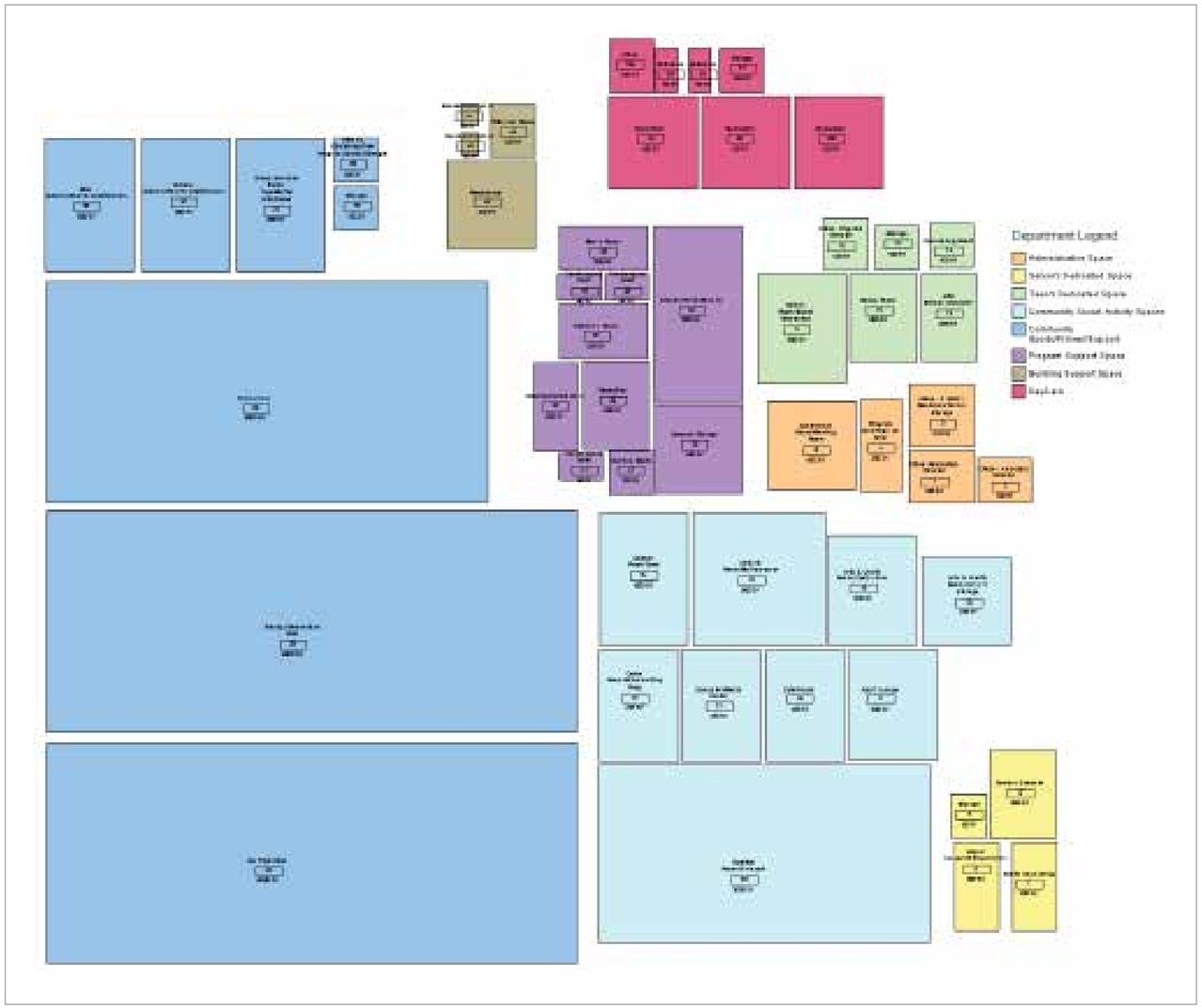
- Excavate land for new pool.
- Pour new pool.

Team 4
Final Design

Quinta Gamelin model

Elevations

Section drawings


Department Legend

		% of Total	Cost Per S.F.	Cost
A Substructure		5.82%	29.20	105000
A1010	Standard Foundations		4.99	18000
	Strip footing, concrete, reinforced, load 5.1 KLF, soil bearing capacity 3			
A1030	Slab on Grade		5.69	20500
	Slab on grade, 4" thick, non industrial, reinforced			
A2010	Basement Excavation		0	0
	Excavate and fill, 10,000 SF, 4' deep, sand gravel, or common earth, on			
A2020	Basement Walls		0	0
	Foundation wall, CIP, 4' wall height, direct chute, .093 CY/LF, 4.8 PLF, 8"			
	Foundation wall, CIP, 4' wall height, direct chute, .148 CY/LF, 7.2 PLF, 12"			
B Shell		6.70%	34.11	123000
B1020	Roof Construction		7.07	25500
	Roof, steel joists, 1.5" 22 ga metal deck, on bearing walls, 45' bay, 33.5"			
B2010	Exterior Walls		15.95	57500
	Concrete block (CMU) wall, split rib, 8 ribs, hollow, regular weight,			
B2020	Exterior Windows		4.71	17000
	Windows, aluminum, sliding, standard glass, 8' x 4'			
B2030	Exterior Doors		1.11	4000
	Door, aluminum & glass, without transom, narrow stile, double door,			
	Door, steel 18 gauge, hollow metal, 1 door with frame, no label, 3'-0" x 7'			
B3010	Roof Coverings		5.27	19000
	Roofing, asphalt flood coat, gravel, base sheet, 3 plies 15# asphalt felt,			
	Insulation, rigid, roof deck, composite with 2" EPS, 1" perlite			
	Roof edges, aluminum, duranodic, .050" thick, 6" face			
	Gutters, box, aluminum, .027" thick, 5", enameled finish			
	Downspout, aluminum, rectangular, 2" x 3", embossed mill finish, .020"			
	Gravel stop, aluminum, extruded, 4", mill finish, .050" thick			
C Interiors		7.45%	37.44	135000
C1010	Partitions		6.93	25000
	8" concrete block partition			
	Metal partition, 5/8" fire rated gypsum board face, 1/4" sound deadening			
C1020	Interior Doors		5.55	20000
	Door, single leaf, kd steel frame, hollow metal, commercial quality, flush,			
C1030	Fittings		1.66	6000
	Toilet partitions, cubicles, ceiling hung, stainless steel			
	Directory boards, outdoor, black plastic, 36" x 24"			
	Bulletin board, cork sheets, no frame, 1/4" thick			
	Chalkboards, wall hung, aluminum, wood frame & chalktrough			
	Mail boxes, horizontal, front loaded, aluminum, 10" x 12" x 15" deep			
C3010	Wall Finishes		4.71	17000
	2 coats paint on masonry with block filler			
	Painting, interior on plaster and drywall, walls & ceilings, roller work,			
C3020	Floor Finishes		6.93	25000
	Carpet, tufted, nylon, roll goods, 12' wide, 26 oz			
	Carpet, padding, add to above, minimum			
	Vinyl, composition tile, maximum			
C3030	Ceiling Finishes		8.03	29000
	Acoustic ceilings, 3/4" mineral fiber, 12" x 12" tile, concealed 2" bar &			

		% of Total	Cost Per S.F.	Cost
D Services		7.23%	36.33	131000
D2010	Plumbing Fixtures		3.88	14000
	Water closet, vitreous china, tank type, 2 piece close coupled			
	Urinal, vitreous china, stall type			
	Lavatory w/trim, vanity top, PE on CI, 18" round			
	Kitchen sink w/trim, countertop, PE on CI, 32" x 21" double bowl			
	Service sink w/trim, PE on CI, wall hung w/rim guard, 22" x 18"			
	Water cooler, electric, floor mounted, dual height, 14.3 GPH			
D2020	Domestic Water Distribution		6.38	23000
	Electric water heater, commercial, 100° F rise, 250 gal, 180 KW 738 GPH			
D2040	Rain Water Drainage		0.55	2000
	Roof drain, CI, soil,single hub, 3" diam, 10' high			
	Roof drain, CI, soil,single hub, 4" diam, 10' high			
D3050	Terminal & Package Units		10.93	39500
	Rooftop, single zone, air conditioner, schools and colleges, 10,000 SF,			
D4010	Sprinklers		3.74	13500
	Wet pipe sprinkler systems, steel, light hazard, 1 floor, 10,000 SF			
D5010	Electrical Service/Distribution		3.19	11500
	Service installation, includes breakers, metering, 20' conduit & wire, 3			
	Feeder installation 600 V, including RGS conduit and XHHW wire, 200 A			
	Switchgear installation, incl switchboard, panels & circuit breaker,			
D5020	Lighting and Branch Wiring		5.96	21500
	Receptacles incl plate, box, conduit, wire, 2.5 per 1000 SF, .3 watts per SF			
	Miscellaneous power, 1.2 watts			
	Central air conditioning power, 3 watts			
	Fluorescent fixtures recess mounted in ceiling, 0.8 watt per SF, 20 FC, 5			
D5030	Communications and Security		1.53	5500
	Communication and alarm systems, fire detection, addressable, 25			
	Fire alarm command center, addressable without voice, excl. wire &			
D5090	Other Electrical Systems		0.14	500
	Generator sets, w/battery, charger, muffler and transfer switch,			
E Equipment & Furnishings		72.38%	363.7	1311500
E1010	Commercial Equipment		0.97	3500
	Kitchen equipment, frozen food, chest type, 12 FT long			
E1090	Other Equipment		362.73	1308000
	13000.00 Swimming pool, municipal, gunite with plaster finish, incl. high			
F Special Construction		0%	0	0
X	X			X
G Building Sitework		1.07%	0	0
Concrete CIP Ratio			4.28	15459.8 (Sqft of 8,285)
SubTotal		100%	$502.50	$1,812,000.00
Contractor Fees (General Conditions,Overhead,Profit)		25.0 %%	$125.62	$453,000.00
Architectural Fees		8.0 %%	$56.57	$204,000.00
User Fees		0.0 %%	$0.00	$0.00
Total Building Cost			684.69	2469455.8
Plus Demolition/ Renovation***			$ 165.00	$889,020.00 (Sqft of 5,388)
Total Building + Demo/ Renovation Cost			$684.69	$3,326,479.80

Estimate Name:	Community Center
	Community Center with Concrete Block [illegible]
Building Type:	Block / Bearing Walls
Location:	[illegible]
Story Count:	1
Story Height (L.F.):	13.5
Floor Area (S.F.):	3606
Labor Type:	STD
Basement Included:	No
Data Release:	Year 2012 Quarter 1
Cost Per Square Foot:	$668.69
Building Cost:	$2,469,000.00

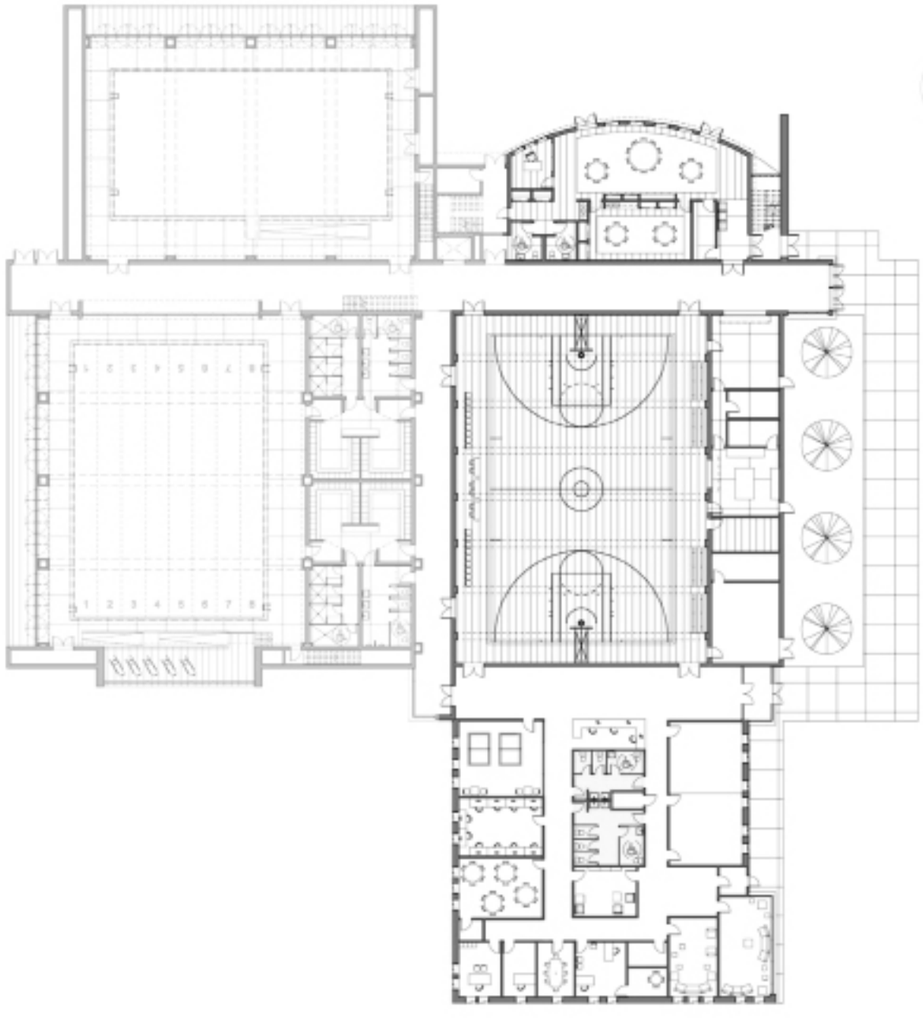
Cost analysis of the project.

Team 5

Final Design

Phase 1: Rehabilitation, Demolition and Reconstruction

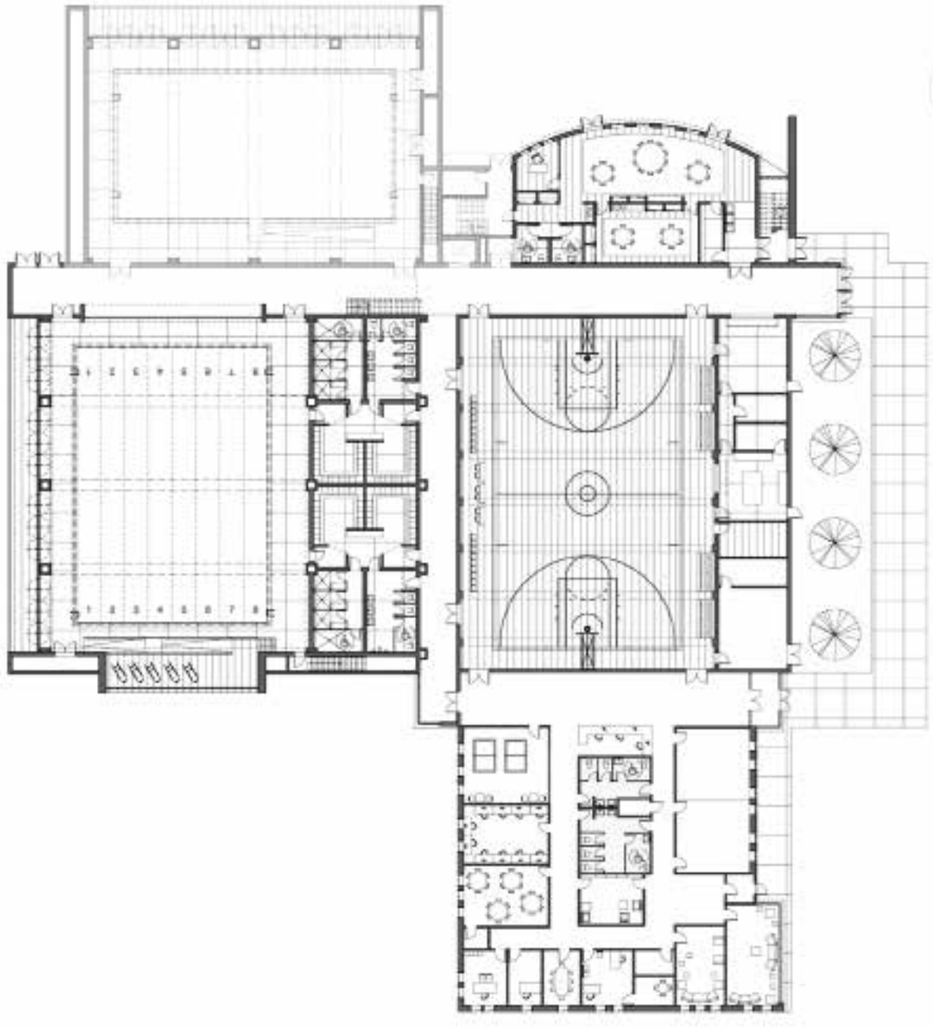
1. Rehabilitate exisiting building and structure
    - Offices
    - Community social spaces, teen spaces, service space
2. Demolish and reconstruct
    - New gymnasium and structure
    - Snack bar and kitchen
    - Daycare
    - Running track



Floor plan (dark areas represent Phase 1).

Phase 2: Construction of Lap Pool

- Lap pool and seating
- Major circulation corridors
- Fitness rooms



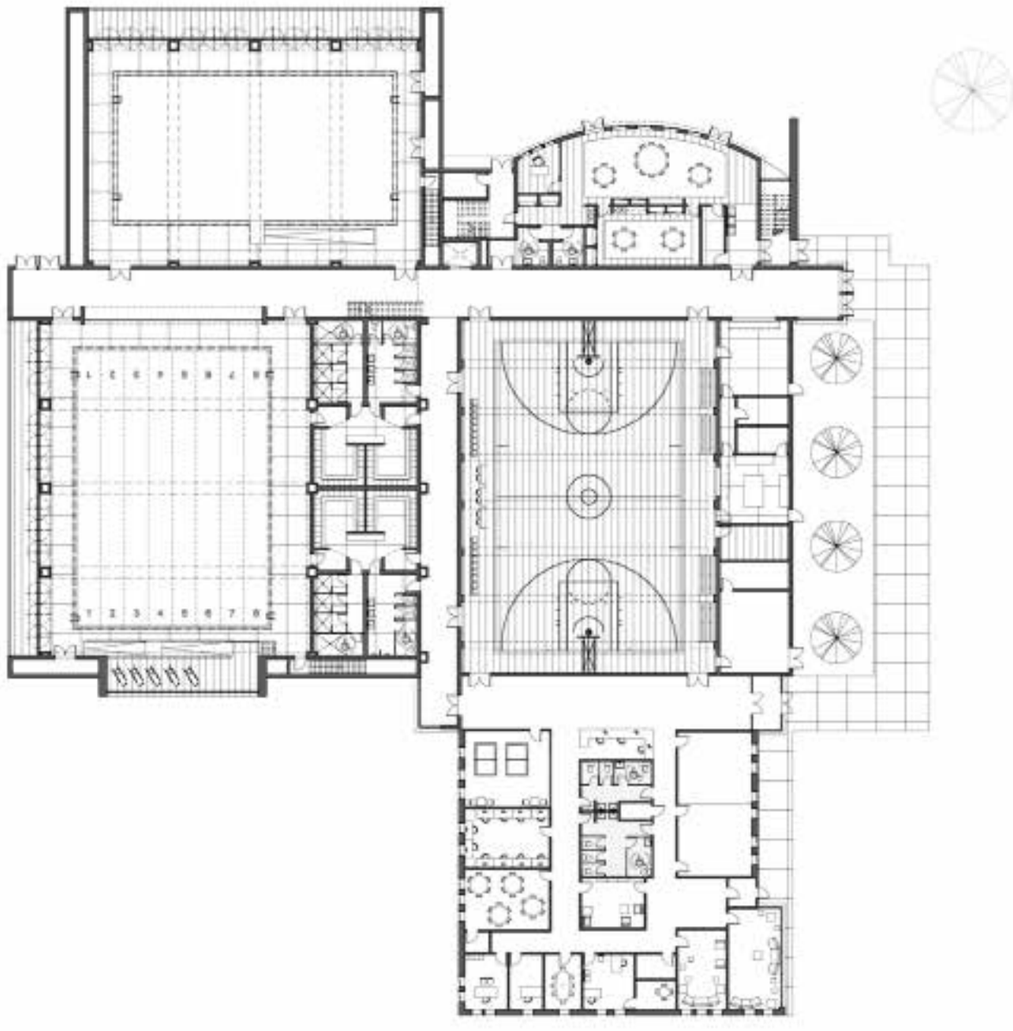
Floor plan (dark areas represent Phases 1 and 2).

Phase 3: Construction

- Therapy pool
- Emergency egress from second floor

Phase 4: *Pending

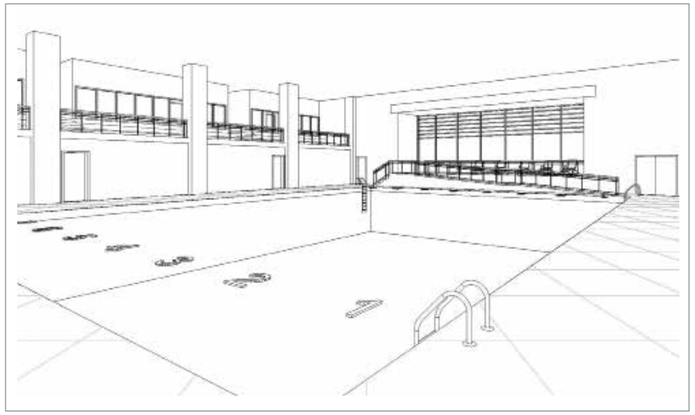
- Roof garden over existing building
- Landscape for main entry



Floor plan showing Phases 1 through 3 completed.

1

2

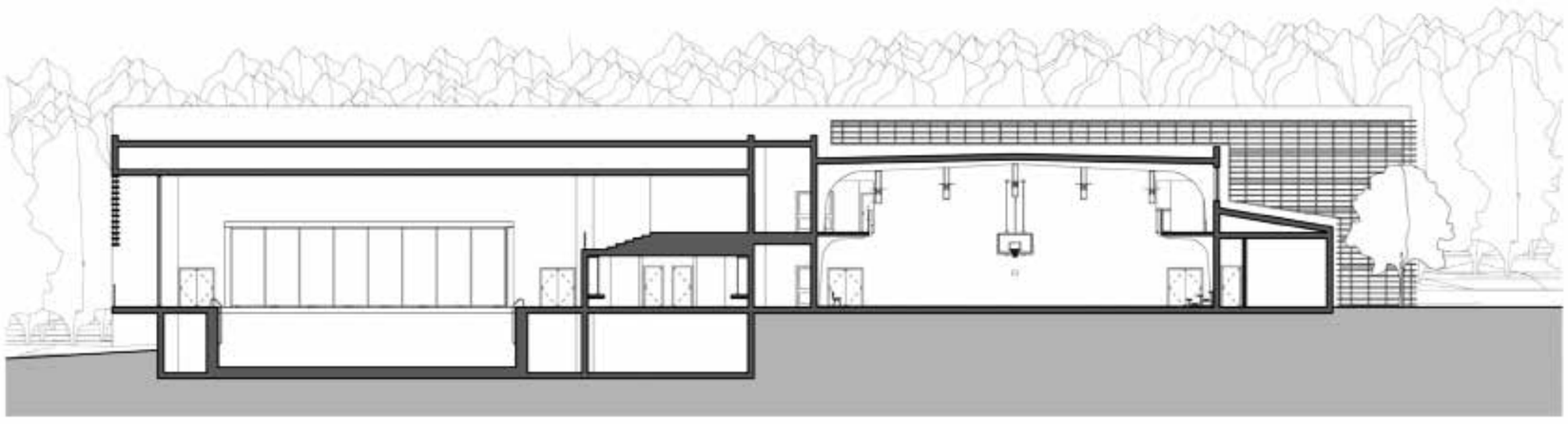


3

1. Gymnasium and running track
2. Lap pool
3. Entry perspective

1

2



1. Section through swimming pools.

2. Section through gymnasium.

Team 6

Goals and Metrics

Sustainability

Keep maximum amount of the existing building throughout the design process. This will significantly cut costs by recycling existing walls.

Include all wanted program at actual size

Begin with all programming included at regulation size. $2.5 million proposal will include maximum amount of program still at regular size. Change the gymnasium size to meet regulation guidelines.

Take advantage of natural light

Maximize the use of glass to increase the amount of natural light in the building. Use natural life to decrease energy costs and unite the building with the park.

Analysis of Project Viability

Camp registration

By having indoor space to keep camps open on rainy days, there will be an increase in the number of families participating in the program, resulting in increased revenue.

Field and facility use

The new facility will add meeting space for many of community organizations and sport leagues as well as people interested in renting the gymnasium and meeting rooms. Last year our community center gymnasium was given out 192 times on an average of two hours each, our meeting room was given out 68 times. Similar towns rent these facilities at approximately $15.00 an hour.

Booth fees

The revenue generated by the Booth will slightly increase as the popularity of the complex increases.

Membership fees

This new Recreation Center will include a membership fee which we project to be $75.00 a year for individuals and $150.00 a year for families.

Personnel

The new facility will require one additional full time maintenance worker as well as 2 or 3 additional part time workers depending on hours of operation.

Utilities

After consulting with our Town Treasurer and comparing it with a similar building such as the Bristol Police Station, we are confident that by vacating the Bristol Community Center on Thames Street we will be transferring utility cost to a building which is significantly more energy efficient.

Town of Bristol
Proposed Community Center

Program Requirements - All Elements

Administrative Space			
Office Recreation Director	1	180	180
Office - Assistant Director	1	120	120
Office - 2 Staff + Machines/Forms Storage	1	210	210
Program Office/Sign Up Desk (2 Volunteers)	1	200	200
Conference Room/Meeting Room (12)	1	400	400
Subtotal Recreation Department			**1110**
Senior's/Dedicated Space			
Senior Lounge/Sitting/Library (10)	1	200	200
Health Counseling	1	200	200
Seniors Exercise (Age Appropriate Equip)	1	300	300
Storage	1	80	80
Subtotal Senior Center/Dedicated Space			**780**
Teens/Dedicated Space			
Office, Program Director	1	120	120
Games Room/Social Recreation	1	500	500
Music Room	1	300	300
After School/Computer	1	250	250
Counseling/Quiet	1	100	100
Storage	1	100	100
Subtotal Teen Center Dedicated Space			**1370**
Community Social/Activity Spaces			
Café/Snack	1	450	450
Adult Lounge	1	500	500
Activity Room/Multipurpose	1	900	900
Arts & Crafts Room (wet) W/Kiln	1	500	500
Arts & Crafts Room (dry) w/Storage	1	400	400
Computer/Media Center	1	450	450
Game Room/Billiards/Ping Pong	1	450	450
Function Room/Dividable (2) (200)	0	3000	0
Outdoor Porch/Deck	0	600	0
Subtotal Social/Activity Space			**3650**
Community Sports/Fitness/Support			
Gymnasium	1	5000	5000
Fitness: Stretching/Free Weights/Cardio/Strength	1	100	100
Group Exercise Studio: Yoga/Martial Arts/Dance	1	600	600
Lap Pool/Deck	1	6000	6000
Therapy/Recreation Pool	1	6000	6000
Male Lockers/Showers/Bathrooms	1	600	600
Female Lockers/Showers/Bathrooms	1	600	600
Storage	1	100	100
Subtotal/Community Sports/Fitness/Support			**19600**
Program Support Space			
Reception (2)	1	300	300
Kitchen/Pantry/M.O.W.	1	800	800
Vending/Concessions	1	200	200
General Storage	1	400	400
Women's Room (5 fixtures)	1	250	250
Men's Room (4 fixtures)	1	200	200
Handicapped Toilet	3	60	180
Coats & Boots	1	100	100
Subtotal Support			**2430**
Building Support Space			
Housekeeping/J.C.	2	20	40
IT/Server Room	1	120	120
Mechanical	1	400	400
Parking (120)	0		0
Subtotal Support			**560**
Day Care			
Class Room	3	420	1260
Office	1	120	120
Bathroom	2	50	100
Storage	1	100	100
Subtotal Support			**1580**
Total Net			**30480**
Total Gross @ 1.3			**39624**
Total Gross Square Feet			39624
Total Project Costs @ $200 psf			$7,924,800

Program for proposed community center.

Team 6

Cost Estimate

Town of Bristol
Proposed Community Center
Conceptualization Cost Estimate

M.170 Community Center (Means SF) **Quality: Good, One Story Construction**	**SF**		**39624**	Carried over from Program Calculation Per Design: From Table
Base Cost			$145.65	Interpolated from Reference Source (Means)
Elevator Adjustment	0			$45,000 per floor (ie: 90,000/y-sf = x/sf)
Perimeter Adjustment		$1.00	$146.65	
Height Adjustment (per foot above ref.)	2	$1.55	$149.75	
Basement Adjustment		$31.35	$0.00	From Table (31.35/sf - Depends on Footprint)
Premium Material Consideration		$12.50	$12.50	Determine with Design Team
Adjusted Base Costs			**$162.25**	
Current Cost Multiplier (Inflation Factor)		1.03	$167.12	Mid-Point of Construction/@Projected Inflation Rate
Local Conditions Multiplier (Providence)		1.07	$178.82	
Adjusted Square Foot Costs			**$178.82**	
Estimated Construction Costs			$7,085,563.68	
Site Development Costs($2000/parking space)	120	2000	$260,000.00	Confirm with Civil Engineering Consultants
Equipment/Furnishings			$0.00	From Owner
Total Hard Costs			**$7,345,563.68**	**$185.38**
Base Design Fees (Interpolate from Fee Chart)		6.0%	$440,733.82	Agreed to by Integrated Team
Misc. Project Costs/Printing & Reimbursables)		2.0%	$146,911.27	
Contingency		15%	$1,101,834.55	15% @ Conceptualization Stage
Project Costs/Base			**$9,035,043.33**	**$228.02**
Bonus Design Fees (Achieving Goals)		4.0%	$361,401.73	Agreed to by Integrated Team
Project Costs/Bonused			**$9,396,445.06**	

Draft
Revised: 2/20/13

MASTER PLAN
PROJECT COST:
$9,560,750.00

GROSS SQ. FT: 41,960

REVISED PROJECT COST:
$2,088,730.73 +
FURNITURE, FINISHES, AND SITEWORK

AVAILABLE:
$2,500,000.00

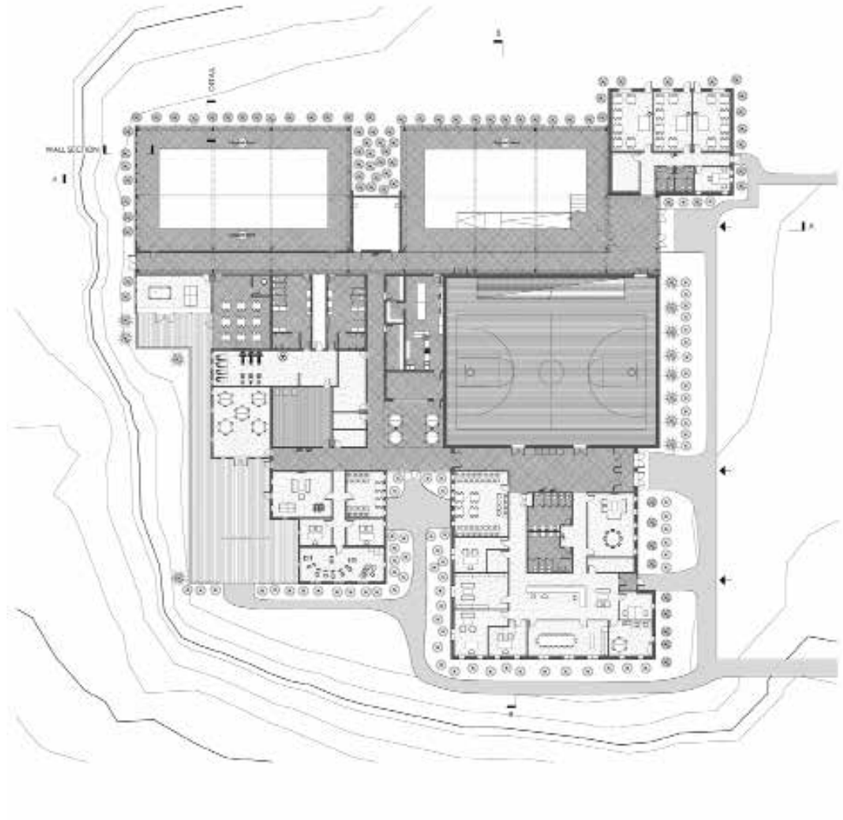
GROSS SQ. FT: 28,376

Team 6

Final Design

Exterior and front entrance

1



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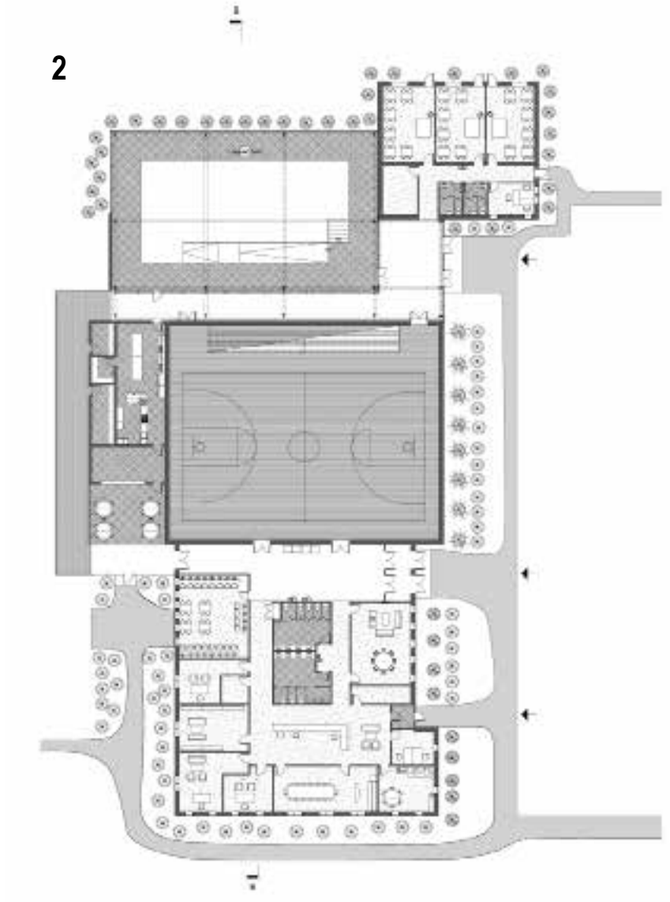
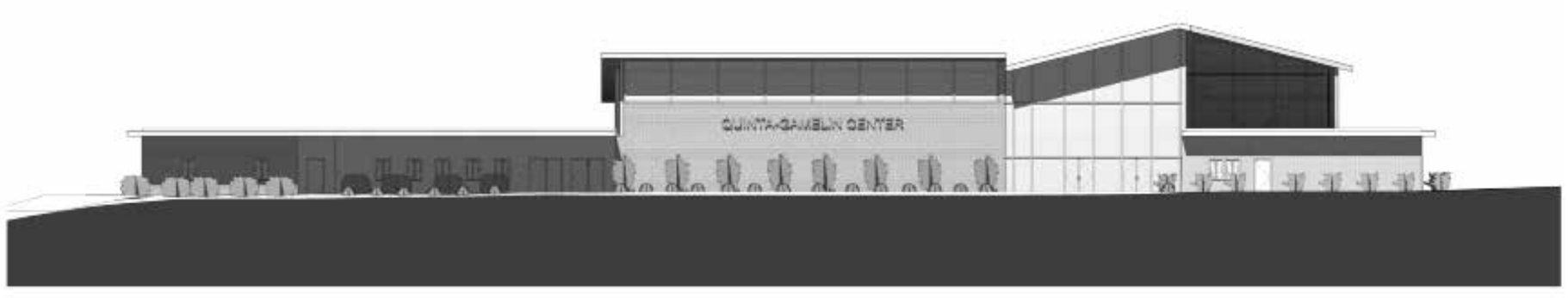


1. Master plan

2. $2.5 million revised plan



1

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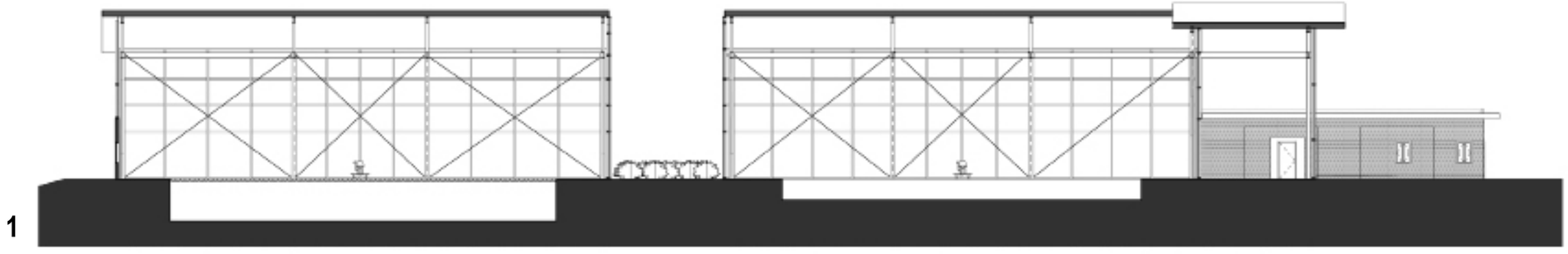
1. East elevation

2. South elevation



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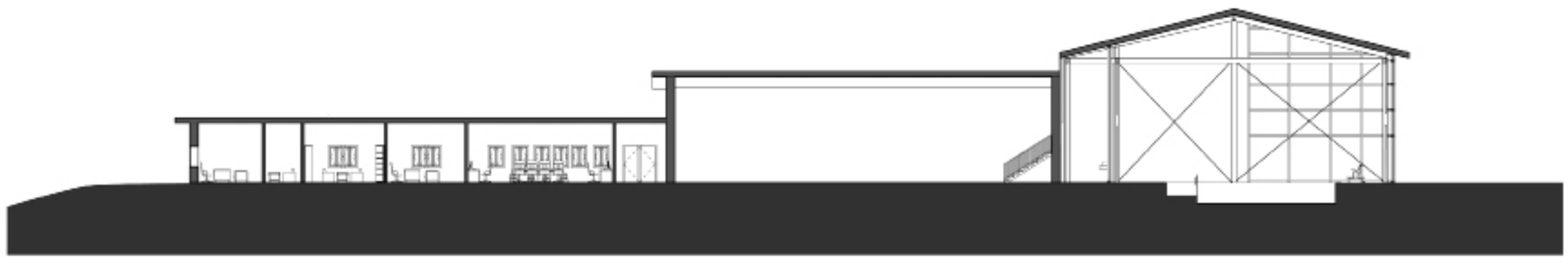
1. Section A



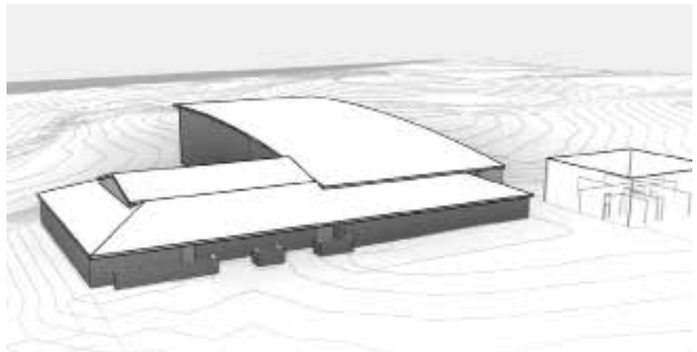
2

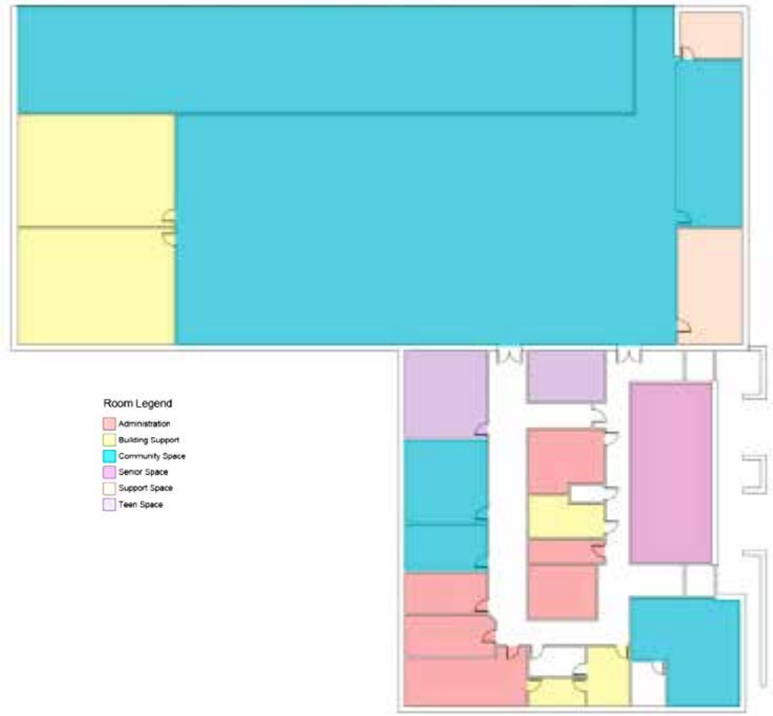
2. Section B

Team 7

Design Option 1

This scheme utilizes the pool and the gym as a major programmatic element, and the design is built around these two pieces. This design maintains much of the required program by building upward and utilizing a second floor instead of keeping everything in a single story. Thus, the gym and the pool become focal points for the project.



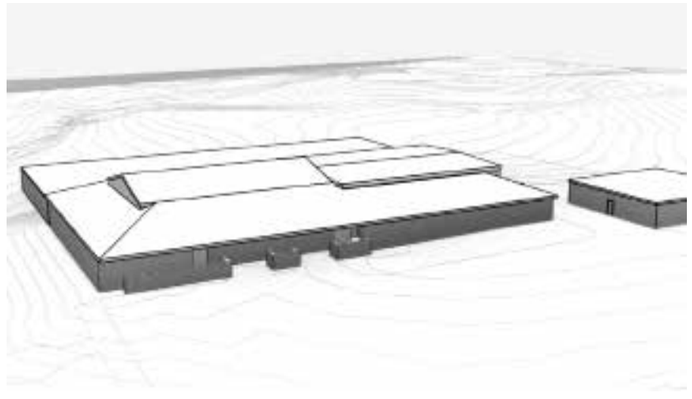


Proposed 3D rendering and floor plan for Design Option 1.

Team 7

Design Option 2

This scheme uses much of the existing building by gutting the building and then re-programming it. The design requires demolishing a vast amount of interior walls while maintaining the exterior skin of the building. It uses all of the programmatic elements required by the client.

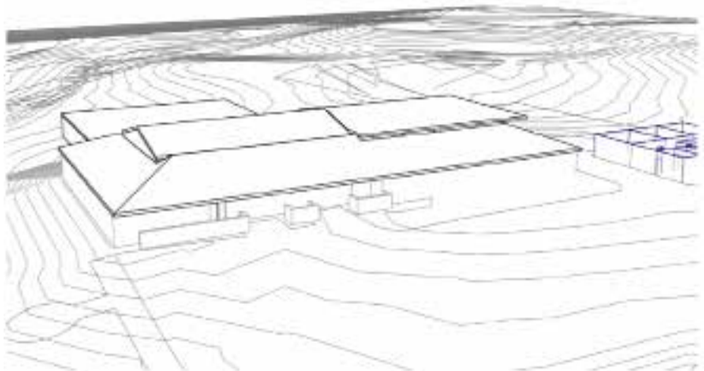


Proposed 3D rendering and floor plan for Design Option 2.

Team 7

Design Option 3

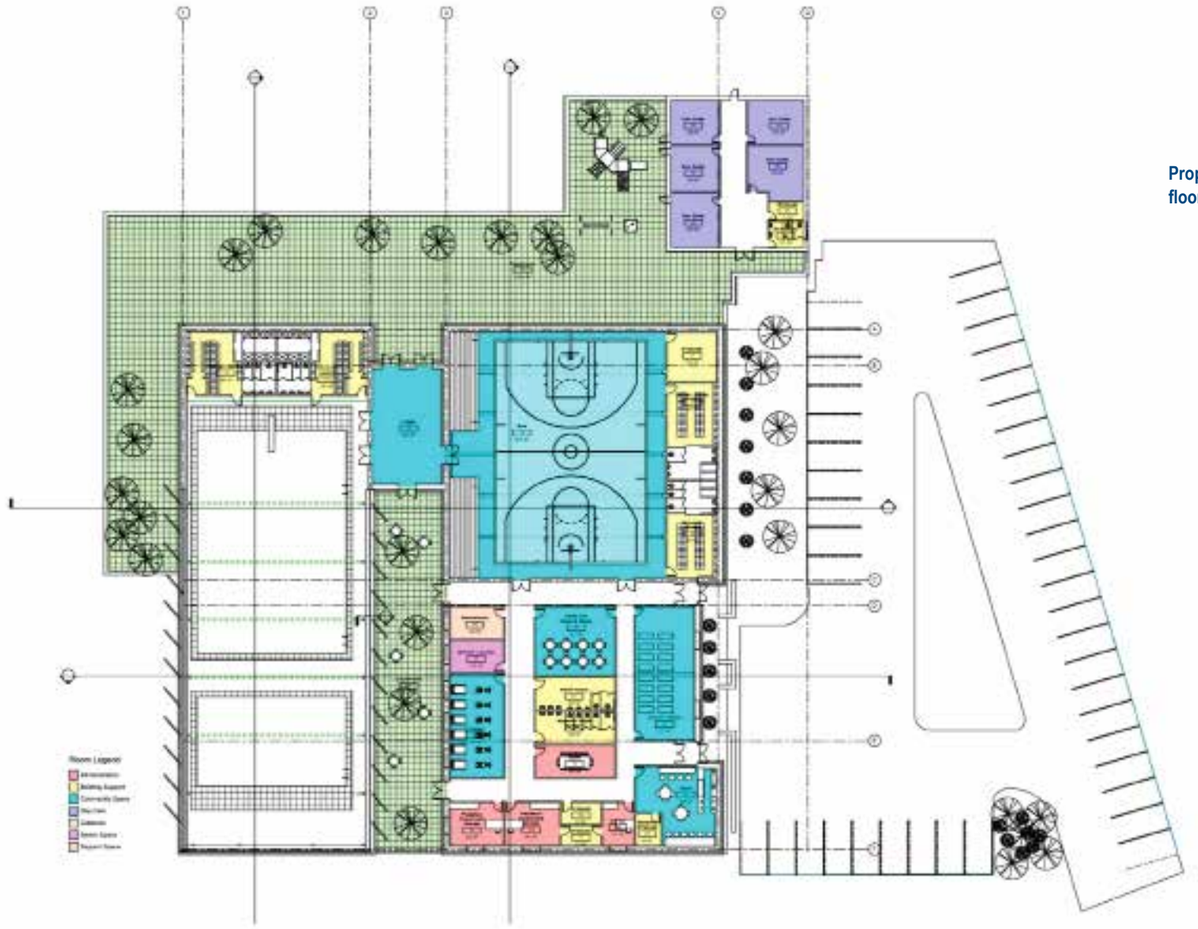
This scheme builds out to the western portion of the site with a program geared towards youth. Some of the existing building will be re-used as a gym. This design does not include the idea of having a future pool.



Proposed 3D rendering and floor plan for Design Option 3.

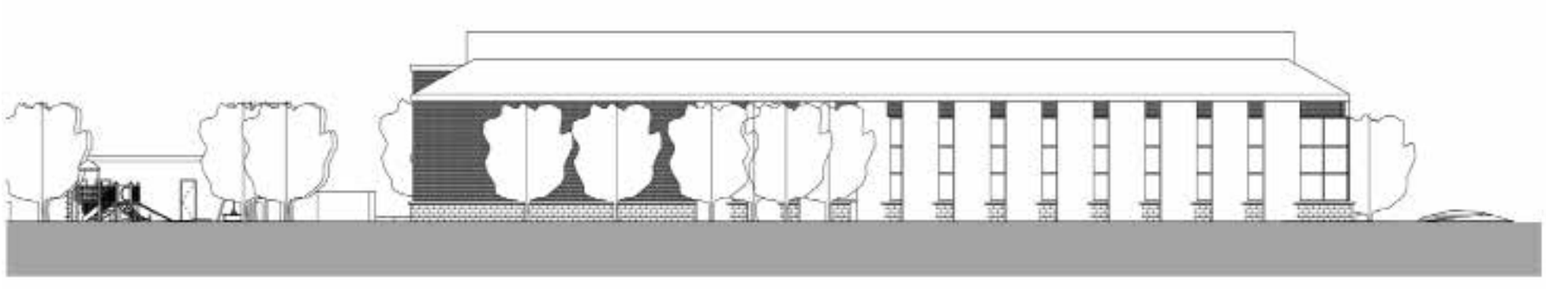
Team 7

Final Design



Proposed 3D rendering and floor plan of final design.

1



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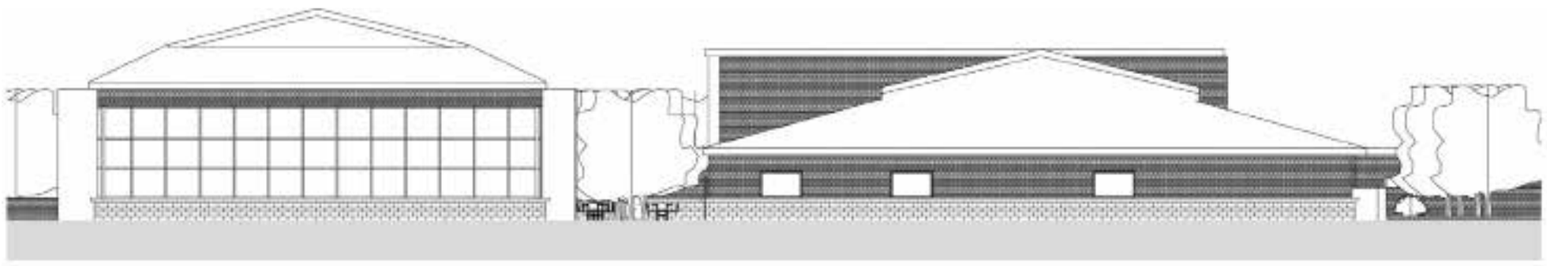
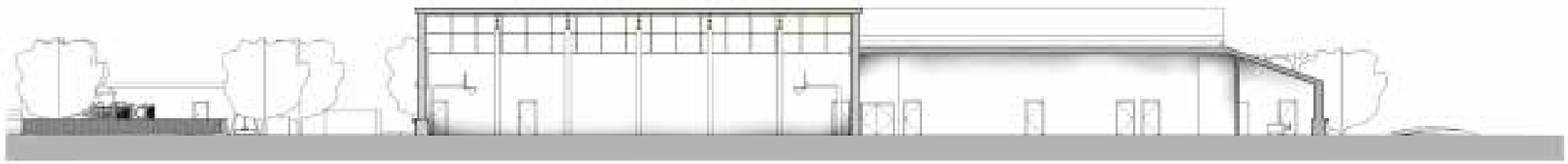


1. Building elevation of the basketball court.

2. Building elevation depicting new structure for the pool complex.

1



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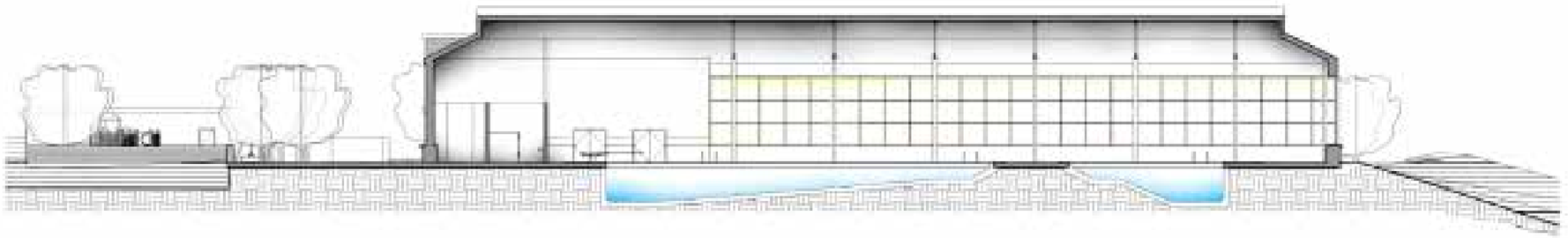

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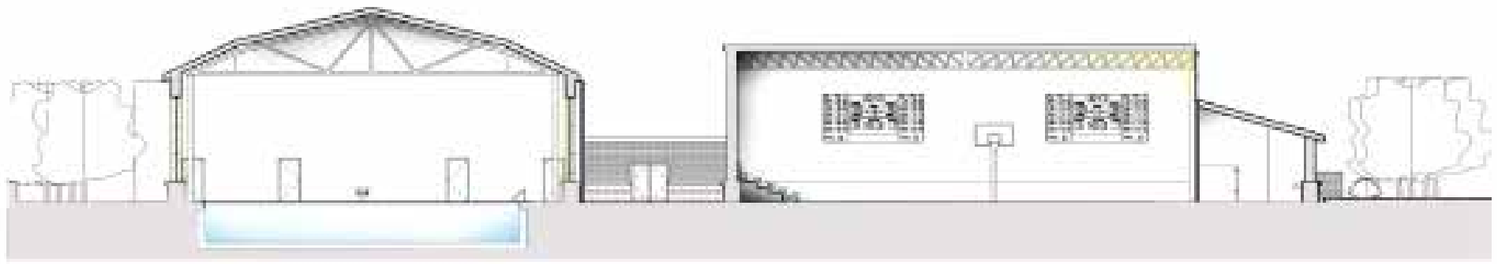


Building sections illustrate (1) a proposed new roof over the basketball court and (2) the pool complex in Phase 2 of the project.

Team 7

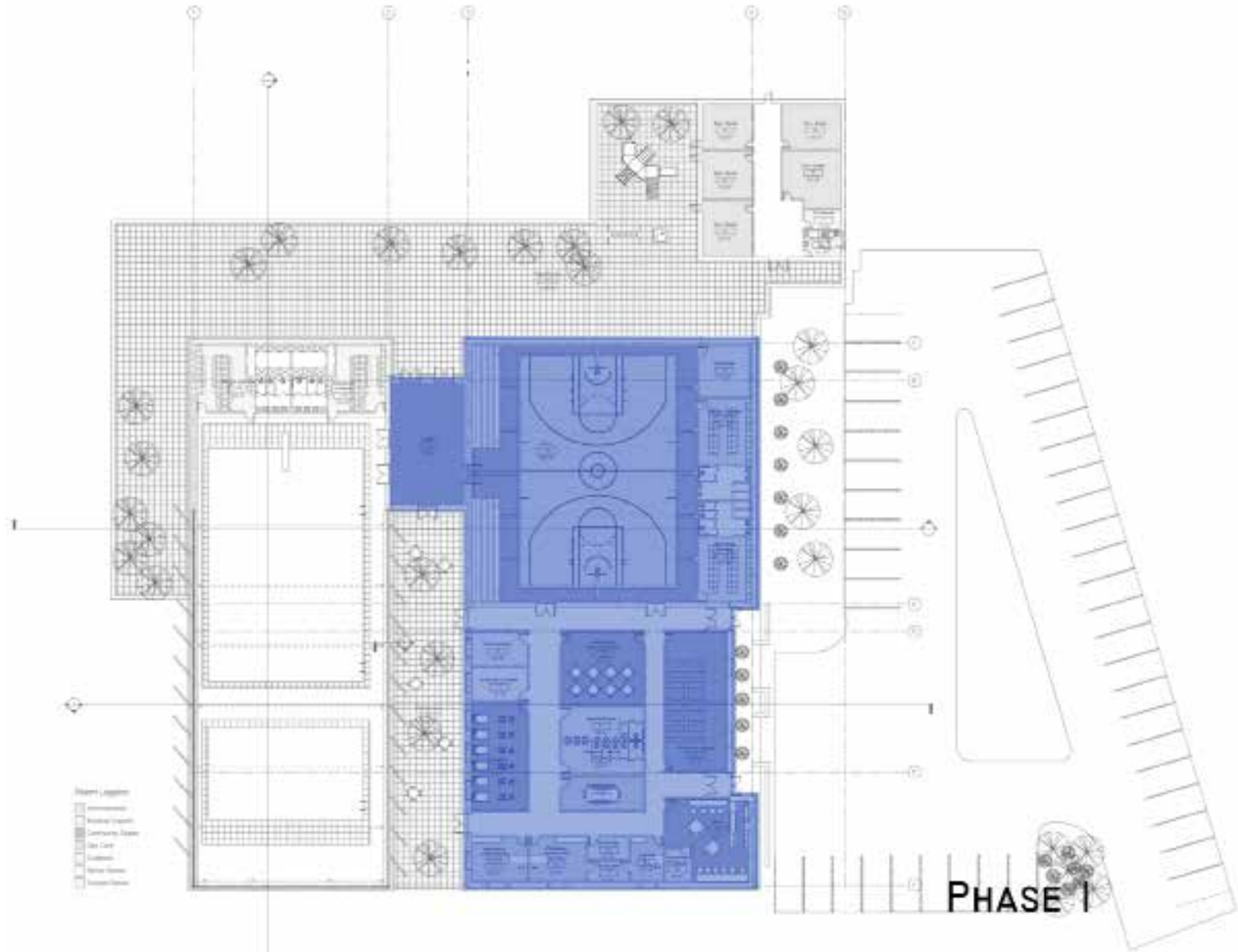
Cost Analysis

Phase 1

- Renovate existing building.
- Demolish interior partitions while maintaining existing exterior façade.
- Addition of basketball court inside the footprint of the existing building.
- Addition of central lobby space.
- Lifting roof and addition of new steel structure to support the building and achieve maximum playing height.

Estimated Cost:

$1,582,284.00	Phase 1, New Construction +
$80,000.0	Phase 1, Demolition
$1,662,284.00	
x .40	Mechanical
$2,327,197.00	+
2%	Base Design Fees
$2,373,740	+
15%	Contingency
$2,729,801.00	

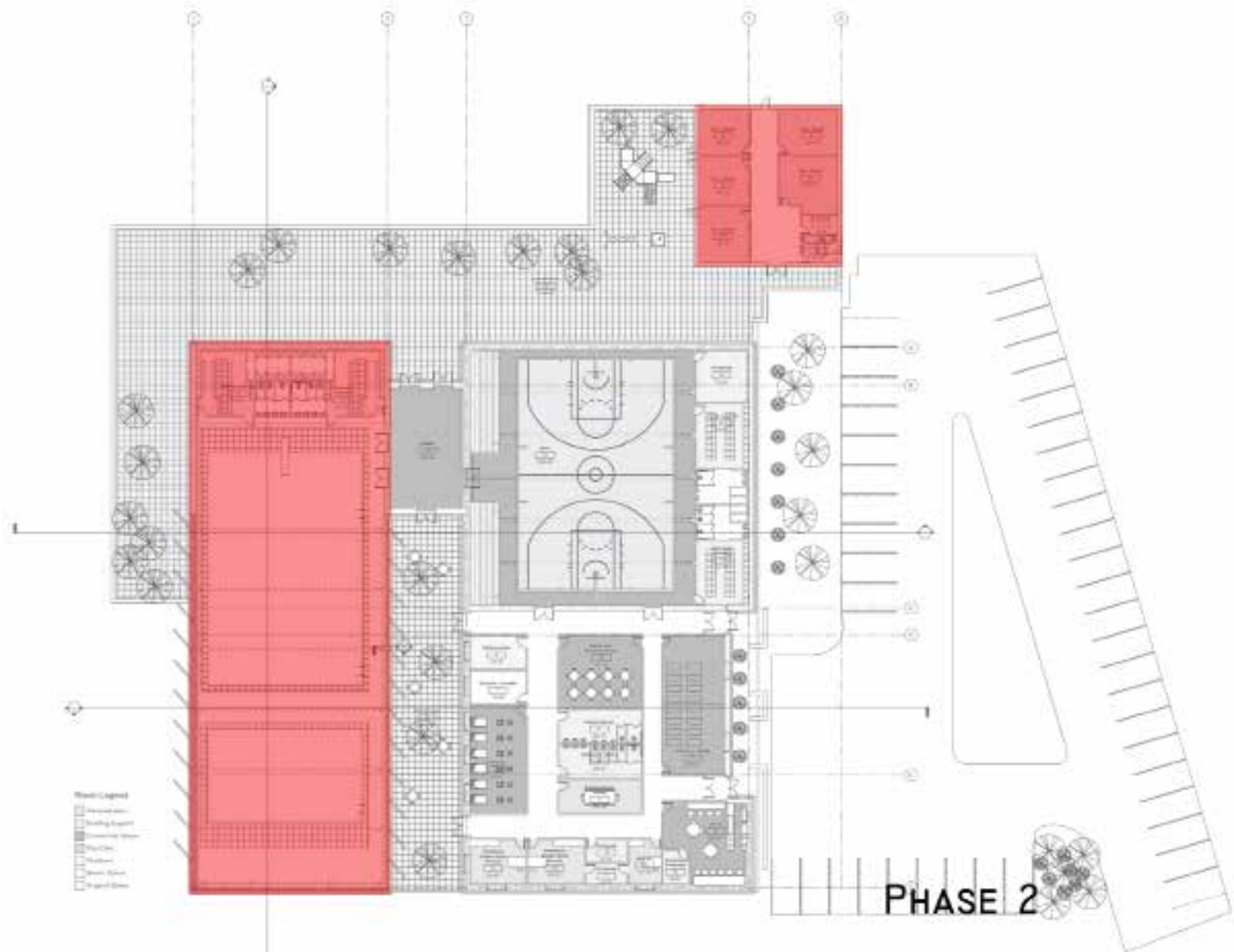


Phase 2

- Expand existing building.
- Add space for a daycare.
- Addition of pool complex.
- Installation of new mechanical systems throughout complex.

Estimated Cost:

$1,765,600.0	Phase 2, New Construction +
$0.0	Phase 2, Demolition
$1,765,600.0	
x .40	Mechanical
$2,471,840.00	+
2%	Base Design Fees
$2,521,276	+
15%	Contingency
$2,899,467	



Phase 3

- Addition of courtyard and connecting paths to unite new and existing construction.
- Could be combined with Phase 2.

Estimated Cost:

$350,000.00	Phase 3, New Construction +
$0.00	Phase 3, Demolition
$350,000.00	+
2%	Base Design Fees
$357,000.00	+
15%	Contingency
$410,550.00	

Team 8

Final Design

Goals

Promised Program Elements

The focus of this goal to provide the client and owner with their "must have" elements. Although, seemingly impossible in the current footprint, a full size gymnasium, heated therapy pool, and an, at minimum, 6 lane lap pool is to be included at some phase to this project to be able to fulfill this goal.

Environmental Sensitivity

The following three topics relate to the client's wishes for an environmentally sustainable complex. These three conditions must be fulfilled to accomplish this goal, but by no means limits other green building features.

Phase 1 of project.

Energy Efficiency

When analyzing the complex and energy usage through different means such as Green Building Studio or Autodesk Revit's energy analysis feature, it becomes apparent how much energy is used to run this 12/7 facility off of the city grid. With the introduction of renewable energy resources, the complex is to achieve a 50% setback of energy costs, thus resulting in the complex itself creating 50% of its energy usage needs based upon such studies.

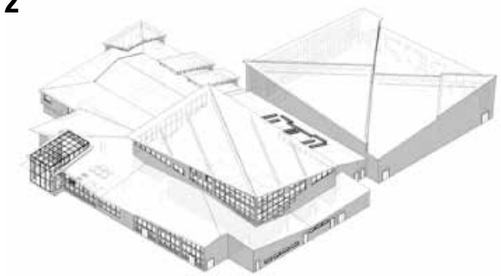
Renewable Energy Supply

As previously mentioned, a type of renewable energy resource will be required to fulfill this goal. This includes, but is not limited to, photovoltaic panels, rainwater distribution, composting toilets, triple glazed glass, greenhouse heat storage, etc. LEED Rating At a minimum, the complex must reach a Silver status when compared against the LEED scorecard.

Phase 2 of project.

1

2



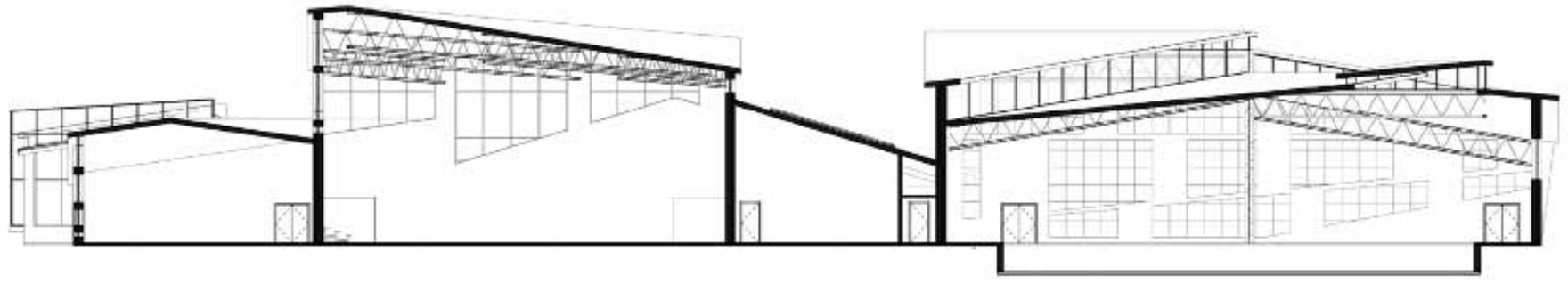
3

1. Pool

2. 3D rendering

3. Floor plan showing Phase 3 of the project, which includes the pool.

1

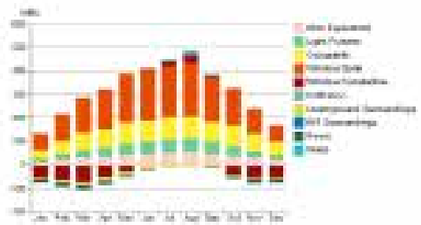


2

Phase 3 elevation and section drawings.

	Base	Alternative 1	Alternative 2	Alternative 3
Carbon Emissions (tons)				
Annually	483.30	383.00	386.80	483.00
Monthly	40.28	31.92	32.23	40.25
Daily	0.132	0.105	0.106	0.132
Hourly	0.000	0.000	0.000	0.000
Electricity Use (MWh)				
Annually	848485.00	669858.00	668384.00	829184.00
Monthly	70707.08	55821.50	55698.66	69098.66
Daily	93.62	76.37	76.20	97.99
Hourly	9.48	7.17	7.30	8.08
Fuel Use (Therm)				
Annually	19482.00	8472.00	8557.00	7194.00
Monthly	1623.50	706.00	713.42	99.50
Daily	4.47	1.93	1.95	0.27
Hourly	0.18	0.08	0.08	0.01
Electricity Costs				
Annually	$40,340.00	$42,303.00	$42,756.00	$54,025.00
Monthly	$3,362.17	$3,341.67	$3,396.33	$4,502.08
Daily	$10.71	$9.70	$9.75	$12.48
Hourly	$0.43	$0.40	$0.41	$0.52
Energy Costs				
Annually	$72,990.00	$54,421.00	$54,628.00	$56,859.00
Monthly	$6,185.50	$4,535.08	$4,569.92	$4,652.42
Daily	$20.69	$12.42	$12.53	$12.65
Hourly	$0.70	$0.53	$0.53	$0.54
Fuel Costs				
Annually	$17,053.00	$13,421.00	$13,693.00	$1,080.00
Monthly	$1,154.10	$960.42	$1,002.58	$140.50
Daily	$0.17	$1.73	$1.75	$0.19
Hourly	$0.16	$0.13	$0.13	$0.02

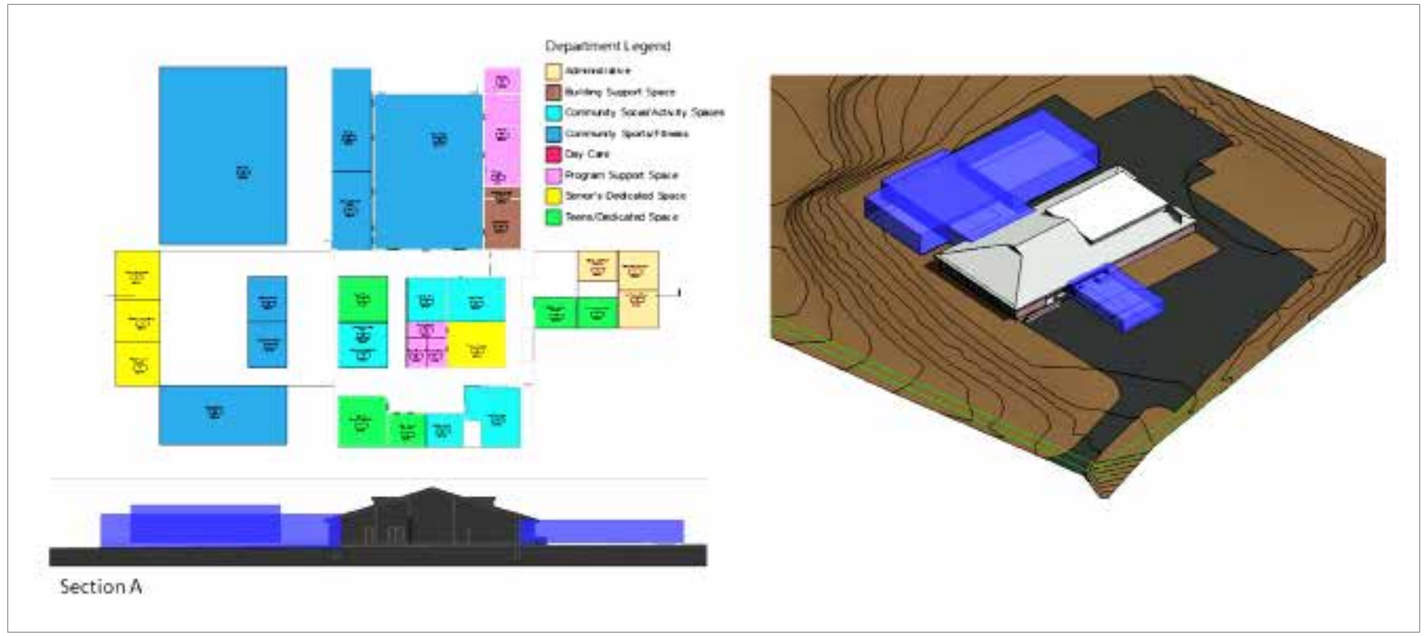
	Base	Alt 1	Alt 2	Alt 3
$73,110.00 EWall Glazing Amt -25		1		
$73,660.00 EWall Glazing Amt -10			1	3
$74,047.00 EWall Glazing Amt +10				
$74,337.00 EWall Glazing Amt +25				
$73,781.00 WWall Glazing Amt -25		1	1	
$73,934.00 WWall Glazing Amt -10				3
$74,049.00 WWall Glazing Amt +10				
$74,027.00 WWall Glazing Amt +25				
$73,854.00 SWall Glazing Amt -25		1		
$73,925.00 SWall Glazing Amt -10			1	3
$74,009.00 SWall Glazing Amt +10				
$74,111.00 SWall Glazing Amt +25				
$73,697.00 NWall Glazing Amt -25		1		
$73,859.00 NWall Glazing Amt -10			1	3
$74,129.00 NWall Glazing Amt +10				
$74,268.00 NWall Glazing Amt +25				
$74,060.00 NWall Const Mtl High Insul		1	1	3
$74,727.00 NWall Const Wood High Insul				
$75,826.00 NWall Const Wood no Insul				
$79,781.00 NWall Const Mtl no Insul				
$71,091.00 Lighting Both Sensors		1	1	3
$72,210.00 Lighting Oc Sensors				
$72,706.00 Lighting Day Sensors				
$73,202.00 Roof Wood High Insul		1	1	3
$73,202.00 Roof Wood High Insul				
$100,227.00 Roof Wood no Insul				
$100,227.00 Roof Wood no Insul				
$58,847.00 HVAC 14SEER		1	1	
$60,100.00 HVAC 16 SEER HSPF				3
$60,408.00 HVAC 12SEER				
$67,082.00 HVAC 4 Pipe Fan Coil				
$67,382.00 HVAC 2 Pipe Fan Coil				
	$34,133.13	$34,133.13	$34,053.13	$34,080.13



Title	AnnualElecCost	AnnualFuelCost	AnnualElecDemand	AnnualElecUse	AnnualFuelUse	ELI	Total Costs
ARCHIVE_ElecCost2_weightFloating_001.xml	$40,340.13	$17,053.00	3226.79	848,485.00	19482.00	126.17	$57,393.13
Alternative 1	$42,303.00	$13,421.00	3010.00	669,858.00	8472.00	99.00	$55,724.00
Alternative 2	$42,756.14	$13,693.00	3023.58	668,384.00	8557.00	99.00	$56,449.14
Alternative 3	$54,025.13	$1,080.00	3121.48	829,184.00	7194.00	97.00	$55,105.13

Team 9

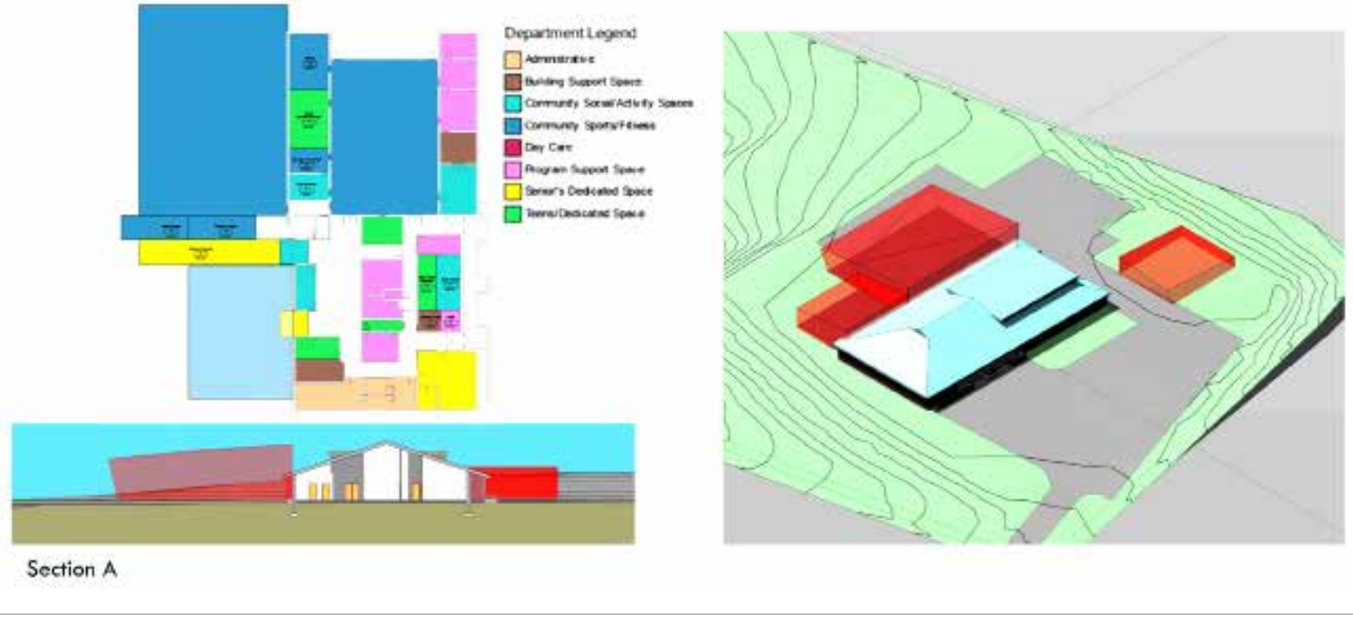
Design Option 1



Floor plan, section and 3D rendering of Design Option 1.

Team 9

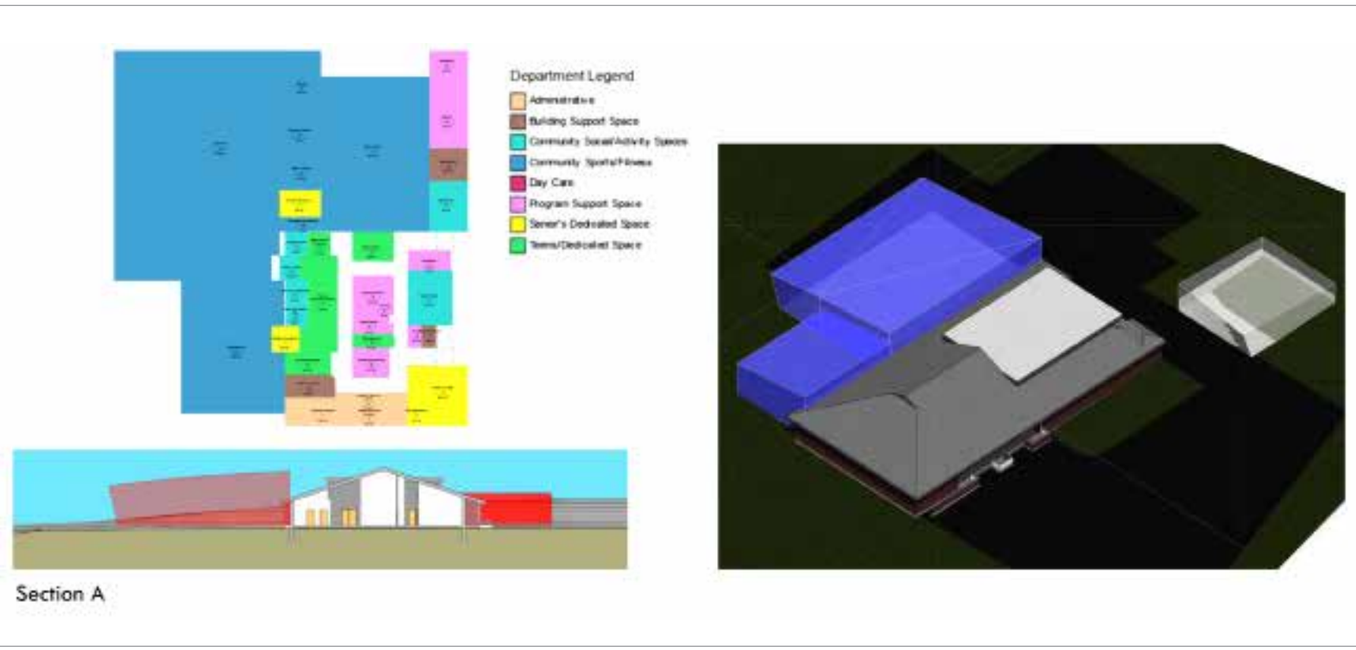
Design Option 2



Floor plan, section and 3D rendering of Design Option 2.

Team 9

Design Option 3



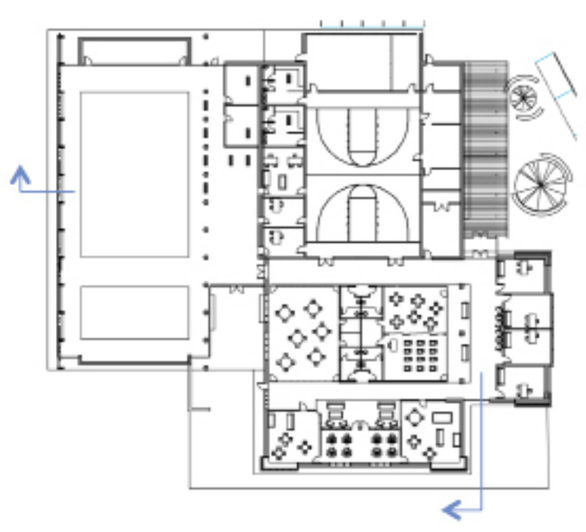
Floor plan, section and 3D rendering of Design Option 3.

Team 9
Final Design

1

2

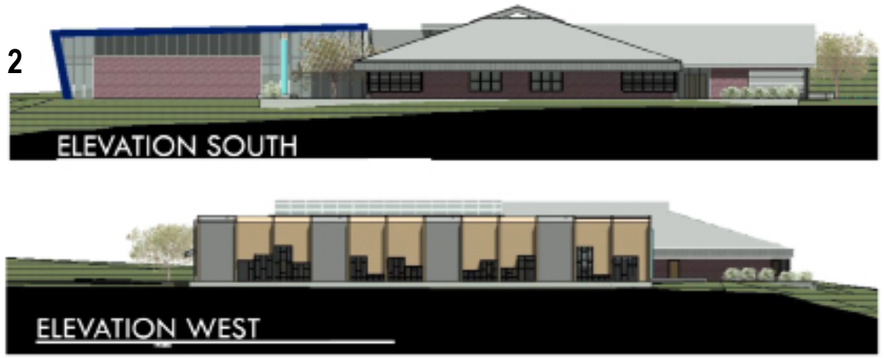
3



1. Entry

2. Front entrance to community center.

3. Floor plan



1. Pool

2. South and west elevations

3. Grounds and covered path outside the building.

Team 9

Square Footage Takeoff

Initial Program

Administration Areas			
	Directors Office	1	150 150 (computer desk, conference table)
	Support Rooms	2	100 200 office space for staff
	Reception	1	150 150 entry desk and information center
subtotal			**500**
Social Activity Spaces			
	Health Food Cafe	1	400 400 pool table, community center, beverages counter
	Meeting Room	1	150 150
	Computer Room	1	200 200
	Conference Room	1	200 200 desk, chairs
subtotal			**950**
Service Spaces			
	Mens Bathrooms	1	100 100
	Womens Bathroom	1	100 100 to be remodeled from existing to make larger
	Mens Lockers	1	200 200 (connected to gymnasium)
	Womens Lockers	1	200 200 (connected to gymnasium)
	Storage	2	50 100
	Kitchen Storage	1	50 50
	Golf Cart Storage	1	400 400
subtotal			**1150**
Physical Fitness and Wellness			
	Aerobics, yoga	1	800 800
	Weight Room	1	4000 4000 To contains treadmills, weights, bikes etc. for fitness
	Gymnasium	1	4000 4000 Existing mezzanine to be removed
	Lap Pool	1	4000
	Therapeutic Pool	1	9000
subtotal			**17800**
Daycare			
	Storage	1	150 150 Student supplies, chairs, lighting, projection equipment
	classroom	3	400 1200 desks, carpets, bookshelf
	kids bathroom	2	100 100 small scale bathroom for children
	Play Room	1	400 400 play space, bean bag chairs, donated toys
subtotal			**1950**
Total NSF			**33350**

Summary of Space Requirements	
Total Net Square Footage	23350
Total Gross Square Feet @ 1.4 x Net	31290

Final Program

Administrative

NET SQ. FOOTAGE		24,157 SF
TOTAL GROSS SQ. FT. @ 1.3		24,617 SF


ATHLETICS
OFFICES
TEENS/ARTS/GAMES
DAYCARE
ADULTS/SENIORS
SERVICE SPACE
EXISTING
PHASE 1
NEW CONST.
ST.
ATHLETICS
COMMUNITY CENTER

Program

Team 9

Cost Analysis

Initial Cost to Owner	$1,500,000
Anonymous Gift	$1,000,000
Cost Target	**$2,500,000**
Designer/Architect Fees (-8%)	$200,000
Construction Management Fees (-5%)	$ 125,000
Bonus Pool (-2%0	$ 50,000
Cost Target (materials and hard costs)	**$2,125,000**
Rec Center Total Cost	
Two Additions	
MEP	
Interior/Exterior Finishes	
Subtotal:	**$750,00**
Pool	
Pool Addition	
Amenities/Pumps and Filtration systems	
MEP	
Interior/Exterior Finishes	
Subtotal:	**$1,400,000**
Bonus Allocation Removal	$25,000
Grand Total:	**$2,150,000**
Cost to Client + Anonymous Gift	**$2,450,000**

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