Figure 1. Created by Lotoia Simpson

Tipton Executive Airpark
LARC 641 1st Year Graduate Studio
Spring 2017
Under supervision of Dennis R. Nola, PLA, ASLA

Acknowledgements

Anne Arundel County Executive Office
County Executive Steve Schuh

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Executive Summary
Tipton Executive Airpark

Figure 2. Clip of image created by Keren Zhang

Expansion and improvements to the Tipton General Aviation Airport, Fort Meade, MD, are a priority of the Anne Arundel County leadership. Plans include lengthening the runway to at least 4200 feet, adding new hangers for aircraft storage, and building a spacious, modern terminal to enhance the services and activity of the airport. An office and retail complex set in an open, verdant, park-like setting is included in the design on the adjacent 10 acres north of the airport. These two parcels of land, one owned by Anne Arundel County and the other by the U.S. Department of Defense, encompass the property between the airport and Route 198.

This project has been developed by the students of the Masters' of Landscape Architecture program of the University of Maryland under the guidance of the faculty and in collaboration with the Partnership for Action Learning in Sustainability (PALS) program working with Anne Arundel County for the 2016-17 school year.

The design team completed a careful analysis of the current use and constraints of the site.

- Research and comparison was done investigating other, busier general aviation airports locally and around the country. Some of the goals gleaned from this analysis are attracting businesses that would benefit from airport proximity, providing a longer runway for larger aircraft, providing a unique food desintation, and increasing hanger space.
- Constraints created by a major power line easement that runs through the center of the property, as well as flood plains and wetlands to the west, are reflected in the design.
- Opportunities exist to transfer and expand civilian and dependent services from Fort Meade and the National Security Agency, located just north of the property. These include the National Cryptologic Museum, the Fort Meade Library, public education, and after-school activities.
- Creating a pathway to connect to the North Tract Wildlife Viewing Area, Patuxent Research Refuge just to the south of the airport was discouraged due to U.S. Fish and Wildlife Service regulations and visitor registration requirements.

Figure 3. Clip of image created by Sebastian Velez-Lopez

The design for the Tipton Executive Airpark includes:
1. Easy and visible access from MD Route 198.
2. An iconic museum building
3. Office buildings for airport related services and the general business community with adequate parking
4. A wide, tree lined walkway that establishes an inviting green connection between the clusters of office/retail buildings, the museum, and the new terminal
5. A series of interconnected plazas in addition to the grand museum entrance plaza to be used for retail, cafes, events, farmer's markets and concerts
6. Storm water bio-retention meadow garden with an observation deck and boardwalks, built to retain and infiltrate contaminated storm water run-off and protect Chesapeake Bay tributaries
7. Multi-purpose sports field and green space to be used in the evenings and weekends by the local community
8. New terminal with ground floor airport functions, a second floor of office space and a third floor lined with floor to ceiling windows, designed for events with a view of the runway.
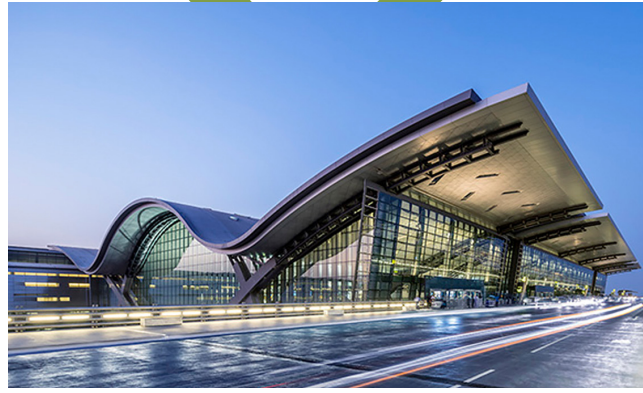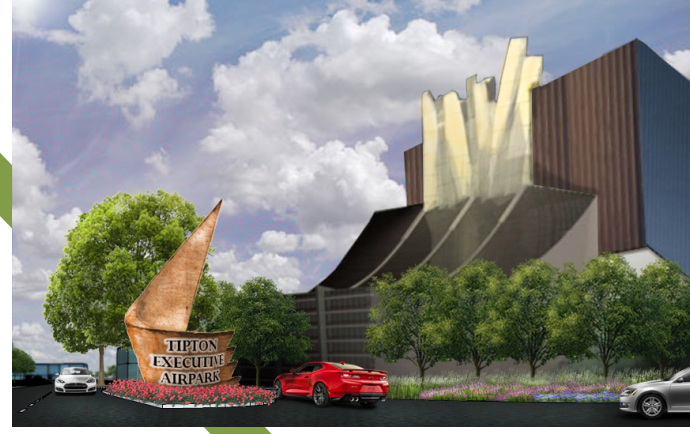
SITE ANALYSIS

Site Analysis

Our initial site analysis phase, and subsequent on-site visits and follow-up research, analyzed the following elements as related to the design process:

- Existing airport facilities, land use, and real-time environmental and physical characteristics
- Airport/local area history and relevant economic planning
- Soil conditions
- Hydrology
- On-site constraints (e.g. a BGE transmission lines easement, a capped landfill on the southeast quadrant of the design site, watershed and floodplain boundaries, several parcels owned by Fort Meade/US Department of Defense, etc.)
- The parameters and economic nature of FAA General Aviation (GA) designated airports and the role of Tipton Airport and its regional "competitors" roles in this market.

The Regional Context **(Figure 4),** Surrounding Land Use **(Figure 5)**, and Site Circulation **(Figure 6)** maps show the site's relationship to the Baltimore – Washington DC – Annapolis metropolitan areas as well as the surrounding freeways and arterial roads. Nearby access to the Odenton MARC light rail station, and the transportation alternatives already in place to serve the military-industrial-commercial demands of Fort Meade and its 120+ Tenant units and organizations give the Tipton Airport site a unique competitive advantage in its regional location and accessibility. The presence of the extensive Little Patuxent Wildlife Refuge protected area to the south contributes to the unique setting of Tipton as a business and commercial hub in an otherwise growth-constrained area.

Regional Context Map

Figure 4. Map taken from Google Maps. Created by Sebastian Velez-Lopez

Surrounding Land Use Map

Figure 5. Map taken from Google Maps. Created by Sebastian Velez-Lopez

Site Circulation Map

Figure 6. Map taken from Google Maps. Created by Sebastian Velez-Lopez

Runway Expansion Analysis Map

Figure 7. Map taken from Google Maps. Created by Katie Ferguson

Site Analysis and History

The Runway Expansion Analysis map **(Figure 7)** highlights one of the several advantages the Tipton Airport holds over its potential regional competitors as a General Aviation-centered county economic growth engine. The runway expansion to 4200 ft. currently being negotiated will remove a major GA airport drawback regarding the runway needs of larger corporate or personal jets/turbo prop planes as compared to its competitors; additionally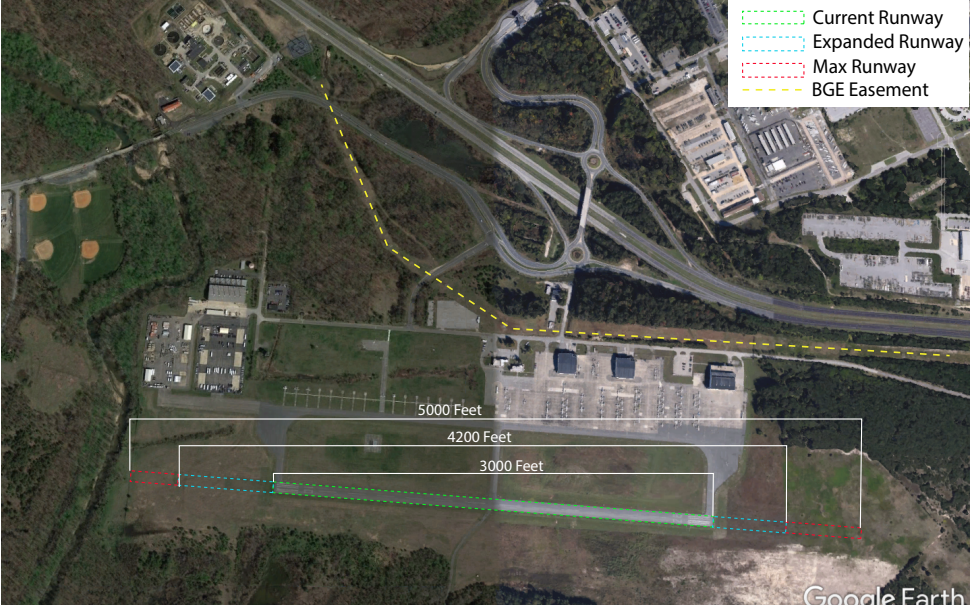, its unique opportunity for further runway expansion to a GA Airport higher-end capability of 5000 ft. is worth exploring. The FAA-permitted construction of 22 T-hangers at Tipton Airport will help mitigate one of the shortfalls it now suffers in all-weather ground-support as well as the need to negotiate de-icing and runway snow-removal operations. The large number of transient and permanently based aircraft and tie-downs, and the three large existing hangars, are strong assets in support of future development.

The Soil analysis map **(Figure 8)** indicates which soils are found on the proposed site (indicated in a red dashed line) as well as the location of an on-site landfill (purple). This map also highlights the land use constraint imposed by the BGE transmission line easement (yellow-dashed line) that bisects the site. The soil type on the development site is predominately DvC and UoB , defined as follows:

DvC - Downer-Hammonton complex, 5-10% slopes, well drained, low runoff class, hydrologic soil group A, good for rain gardens and infiltration.

UoB - Udorthents loam, 0-5% slopes, well drained, low runoff class, hydrologic soil group C, not good for rain gardens and infiltration.

The Hydrology Analysis map **(Figure 9)** shows the relevant watershed and water-flow considerations. The site has a slight westerly grade directing on-site water to the nearby watershed and floodplain area outside the site plan boundaries. The outflow is part of the Little Patuxent River sub-watershed, passing through the Patuxent River 6-digit watershed on its way to the Chesapeake.

Tipton Airport, named after Colonel William Tipton, a WWI pilot who returned to active duty in 1941 and was killed in an accident in 1945, is a 366-acre General Aviation Airport sitting between Fort Meade and the National Security Agency to the north and the Patuxent National Wildlife Refuge to the south. Before moving to the current site in 1960, the military airport was located in the center of Fort Meade. This old airfield was crossed by roads that needed to be closed to traffic by barriers that were raised and lowered as needed by the sometimes inattentive control tower. The operations of the airport were switched to civilian control in 1995, temporarily suspended for hazardous waste management and removal of "unexploded ordnance", and then reopened in 1999 under the operation of the Tipton Airport Authority.

Over the years Tipton Airport has been primarily a hobbyist airport, home to the Fort Meade Flying Club, with a checkered history of a handful of aircraft lost to accidents with some fatalities. Flying lessons and aircraft rentals were a major focus of the club.

According to a fascinating article published in The Smithsonian Magazine, *Air and Space* by Christopher Freeze, April 2017, a young man named Robert Preston came to Tipton on February 17, 1974 at 2 AM and stole a "Huey" helicopter despite having "washed out" of helicopter training. He flew the helicopter to Washington, D.C., traveling between the Lincoln Memorial and The Capital and then went to the White House. After an "aerial game of cat and mouse", Preston was shot down while landing on the South Lawn. He suffered a few minor wounds and was sentenced to six months in jail. The pilots in pursuit expressed admiration for his flying skills. The helicopter is now on display in Pennsylvania with barely noticeable metal patchwork over the old bullet holes.

Soil Map

Figure 8. Map taken from USDA Web Soil Survey. Created by Sebastian Velez-Lopez

Hydrology Map
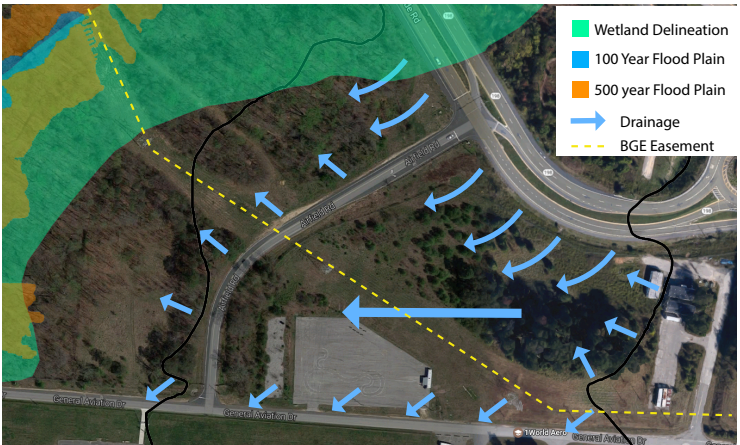
Figure 9. Map taken from Google Maps. Created by Sebastian Velez-Lopez
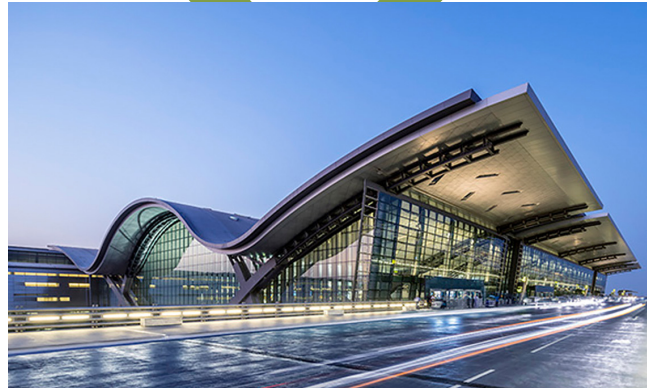
DESIGN

Concept Design Process

Initial Concepts

Orthogonal

Curvilinear

Preliminary Site Plan

Team A

Team B
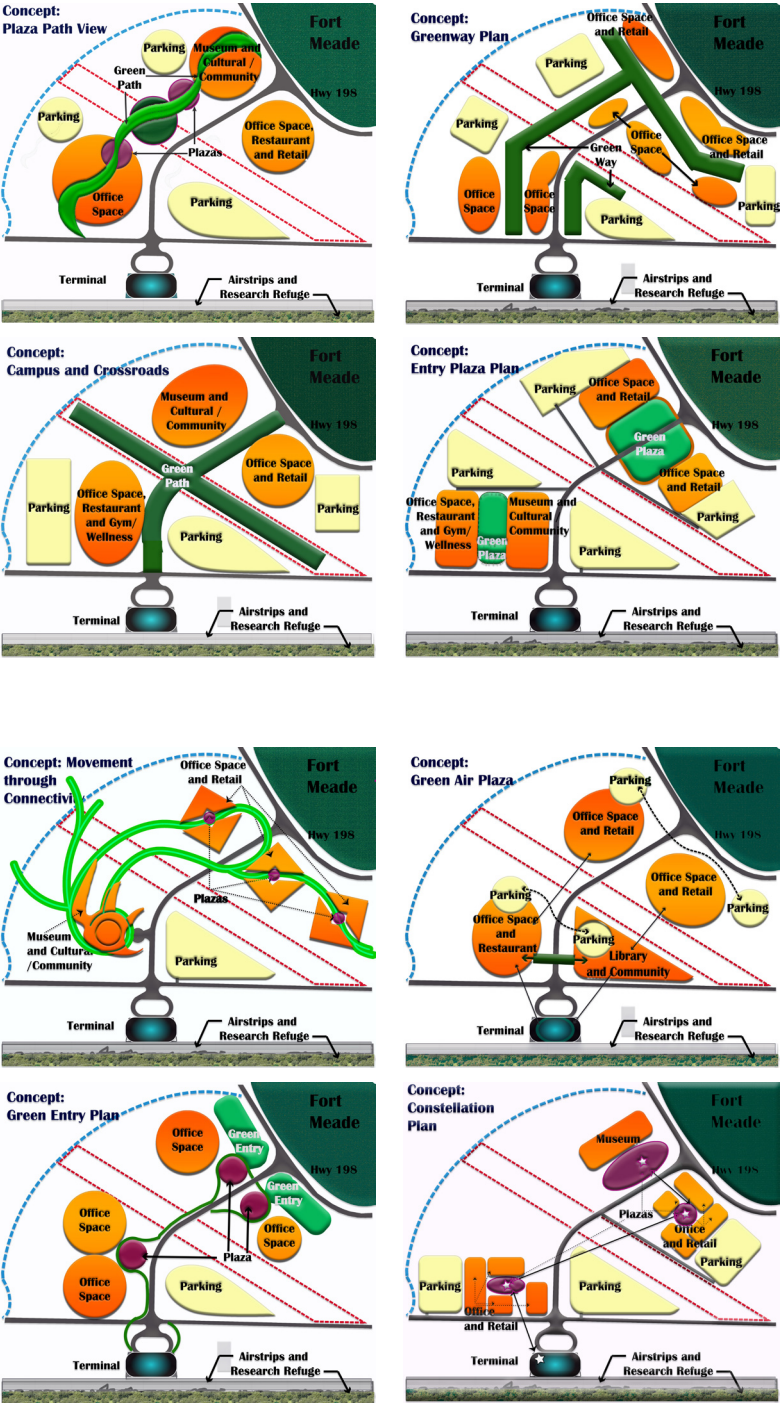
Figure 10. Initial concept diagrams. Created by Matt Rausch and Carey Evans

Figure 11. Concept diagrams. Created by Carey Evans, Katie Ferguson, Pam Parker, Afrouz Rahmati, Matt Rausch, Lotoia Simpson, Sebastian Velez-Lopez, Keren Zhang

Figure 12. Preliminary site plan. Created by Carey Evans

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Design Description

The design of the Tipton Executive Airpark focuses on the goal of creating a space of beauty that brings new economic vitality to Tipton Airport and Anne Arundel County. The objectives that are addressed in the design in order to meet this goal are:

-Introduce expanded services in the new terminal at Tipton Airport.
-Build office space that accommodates NSA and Fort Meade service providers, special- use industries benefitting from proximity to an airfield, and the general business community.
-Provide functional and interpretive storm water management techniques and spaces that demonstrate Anne Arundel County's commitment to responsible stewardship.

The Tipton Executive Airpark provides a unique opportunity to embrace Anne Arundel County's citizens, the executive flight industry, local businesses, and the varied demands of Fort Meade. The site plan includes a museum, library, community services building, multipurpose recreational field, restaurant, gym, and class A office buildings with commercial and retail spaces.

The site is divided into four quadrants situated along the airport entrance road adjacent to MD 198. The entrance road directs vehicular circulation to the new airport terminal, and serves as the primary axis for the campus design. The campus is anchored by a wide pedestrian promenade flanked by greenways planted with native tree and plant species that provide year-round aesthetic interest. The 3,000-foot-long promenade courses through the heart of each quadrant and allows the user to experience a wide variety of settings and activities.

The airport terminal has been reimagined as an architectural masterpiece that speaks to flight. The terminal houses all airport logistical operations, a café, a variety of meeting rooms, a pilot's lounge, shower facilities, and an expansive top-floor rental space that features impressive views of the air traffic and runway and the neighboring picturesque Patuxent Wildlife Refuge.

One of the cornerstones of the Airpark design is proposing an expansion of the current runway from 3,000 ft to 4,200 ft to 5,000 ft in length. To establish Tipton Executive Airpark as one of the premier executive airports in the region, the design solution incorporates services and amenities that cater specifically to executive clientele efficiency and convenience. It will also serve as a relief site for non-commercial flights into Baltimore Washington International Airport.

Inspiration Images

Figure 13. Terminal
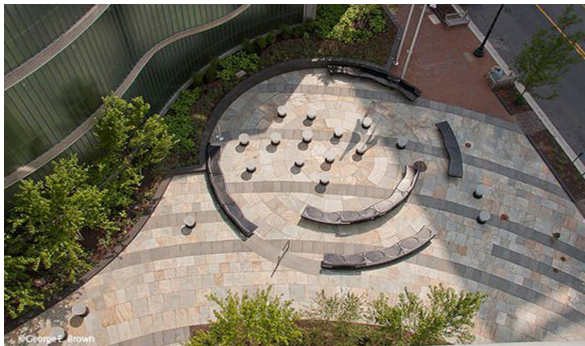
Figure 14. Plaza

Figure 15. Promenade

Figure 16. Bio-infiltration Meadow

Figure 17. Viewing Platform

Fold Out

University of Maryland College Park Department of Plant Science and Landscape Architecture | LARC 641 MLA First Year Studio SP 2017| Professor: Dennis R. Nola, PLA, ASLA | Editor: Katie Fer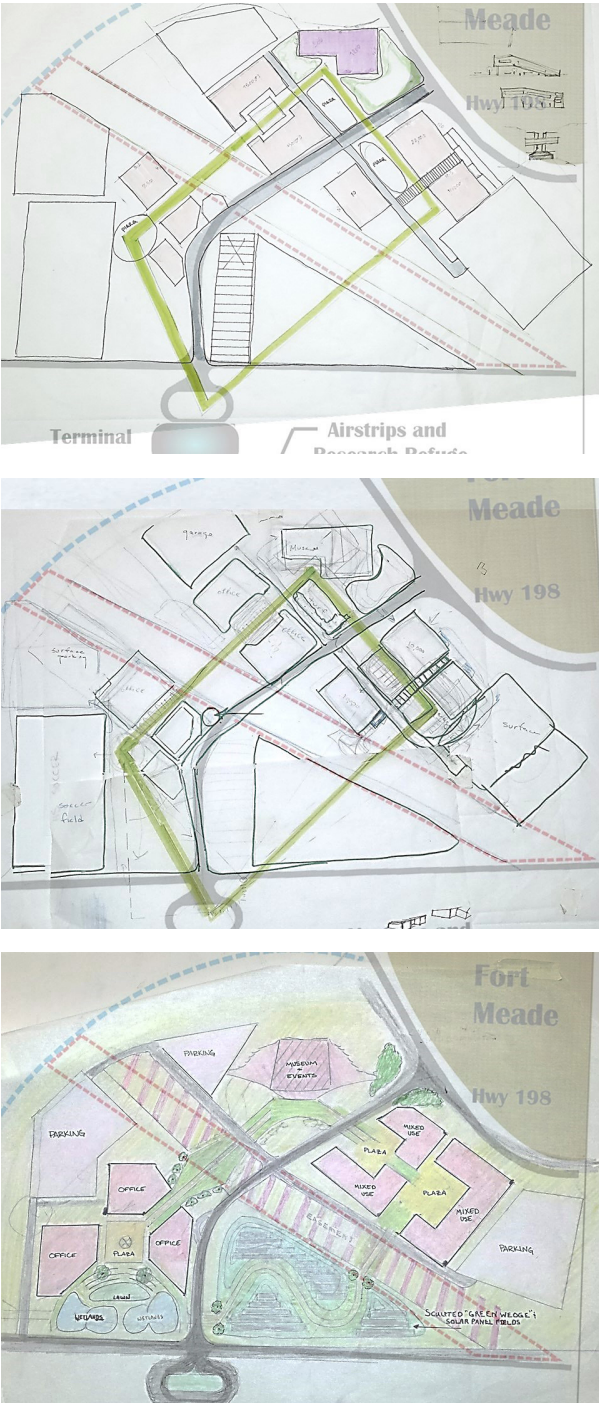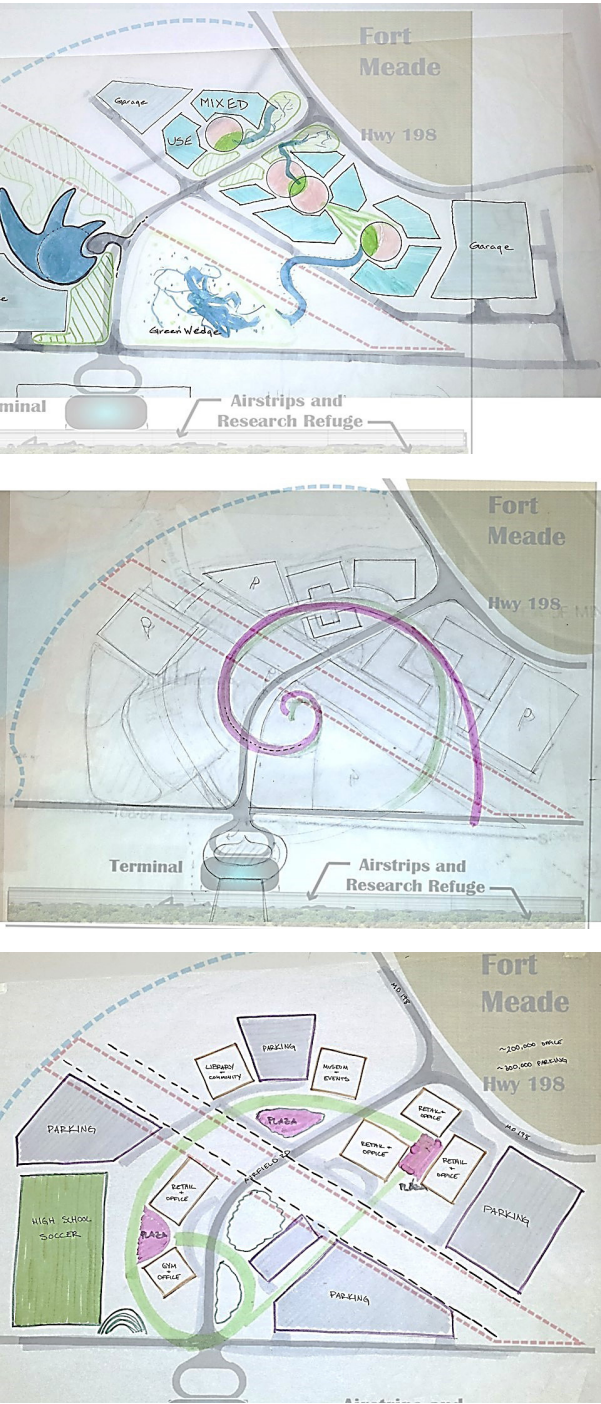guson | Design Team: Carey Evans, Katie Ferguson, Pam Parker, Afrouz Rahmati, Matt Rausch, Lotoia Simpson, Sebastian Velez-Lopez, Keren Zhang   19
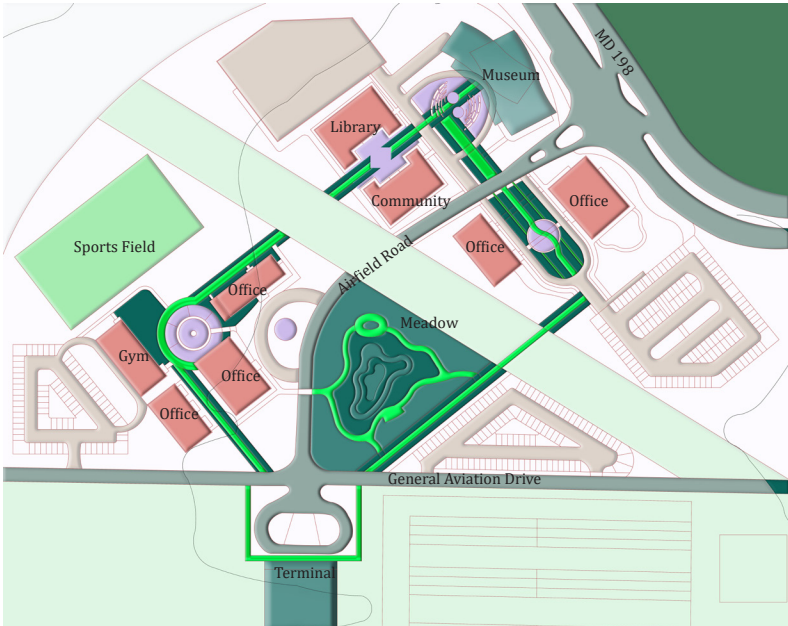
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Site Plan

MUSEUM

MUSEUM PLAZA (SEE ENLARGEMENT)

PARKING GARAGE

LIBRARY & COMMUNITY CENTER

RETAIL, CAFE & OFFICE

SPORTS FIELD

RETAIL PLAZA (SEE ENLARGEMENT)

RETAIL, CAFE & OFFICE

RETAIL & OFFICE

SUNKEN PLAZA (SEE ENLARGEMENT)

GYM

OFFICE

BIO-INFILTRATION MEADOW

RETAIL & OFFICE

TERMINAL ENTRANCE (SEE ENLARGEMENT)

FUTURE T-HANGARS

TERMINAL

Scale: 1" = 60'-0"

N   0' 30' 60'   120'

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Enlargements

Museum Plaza

FOUNTAINS

INTERACTIVE WATER SCRIMS

SCULPTURAL TERRAZZO BENCHES

FLIGHT SCULPTURE

PERMEABLE PAVING

RAIN GARDENS

INTERACTIVE SCULPTURE FOUNTAIN

Figure 19. Plaza enlargement. Created by Carey Evans

Sunken Plaza

CAFE

FLOWERBED

OUTDOOR SEATING
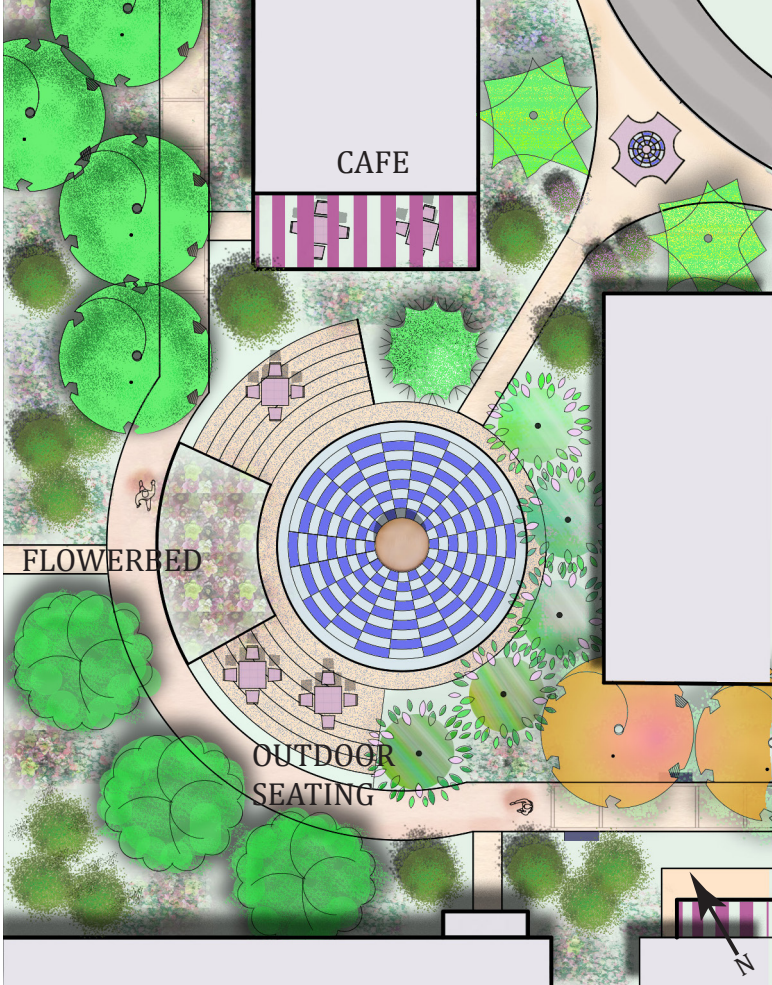
Figure 20. Plaza enlargement. Created by Pam Parker

Note: All enlargements are to the same scale.

Scale: 1" = 20'-0"

0'   10'   20'   40'

Retail Plaza

FLOWERBED

GAZEBO

CHERRY TREES

FLOWERBED   PLAZA
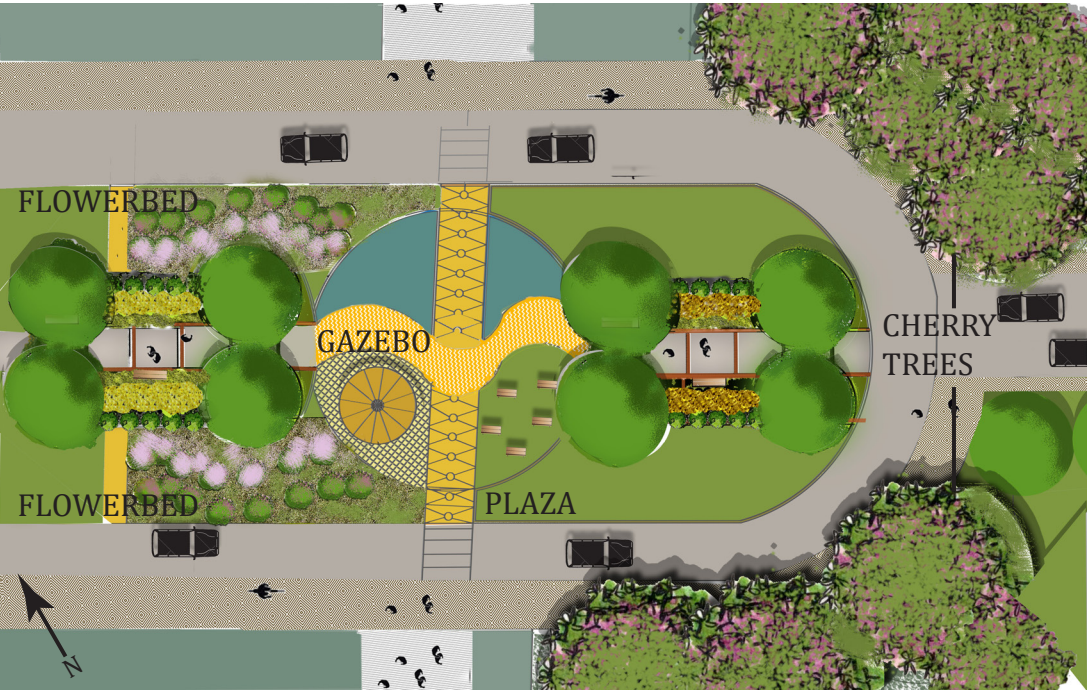
Figure 21. Plaza enlargement. Created by Afrouz Rahmati

Terminal Entrance

FLIGHT SCULPTURE

RAIN GARDEN
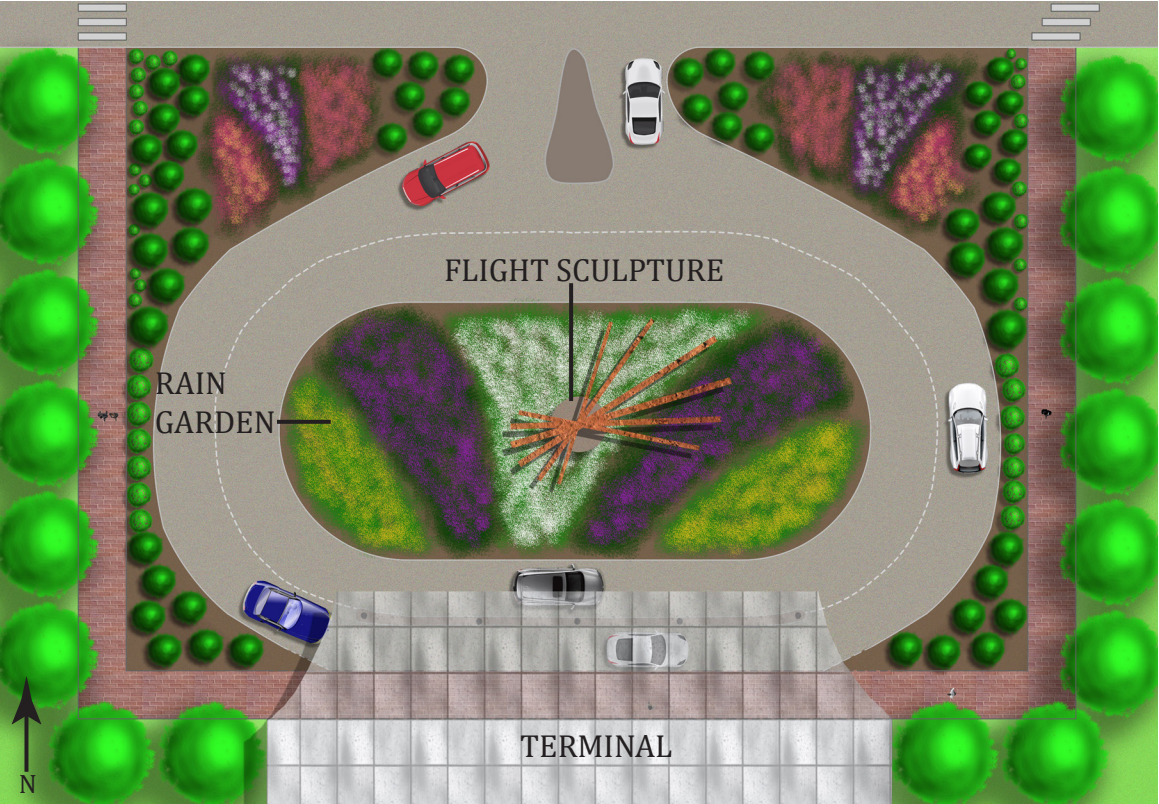
TERMINAL

Figure 22. Terminal entrance enlargement. Created by Katie Ferguson

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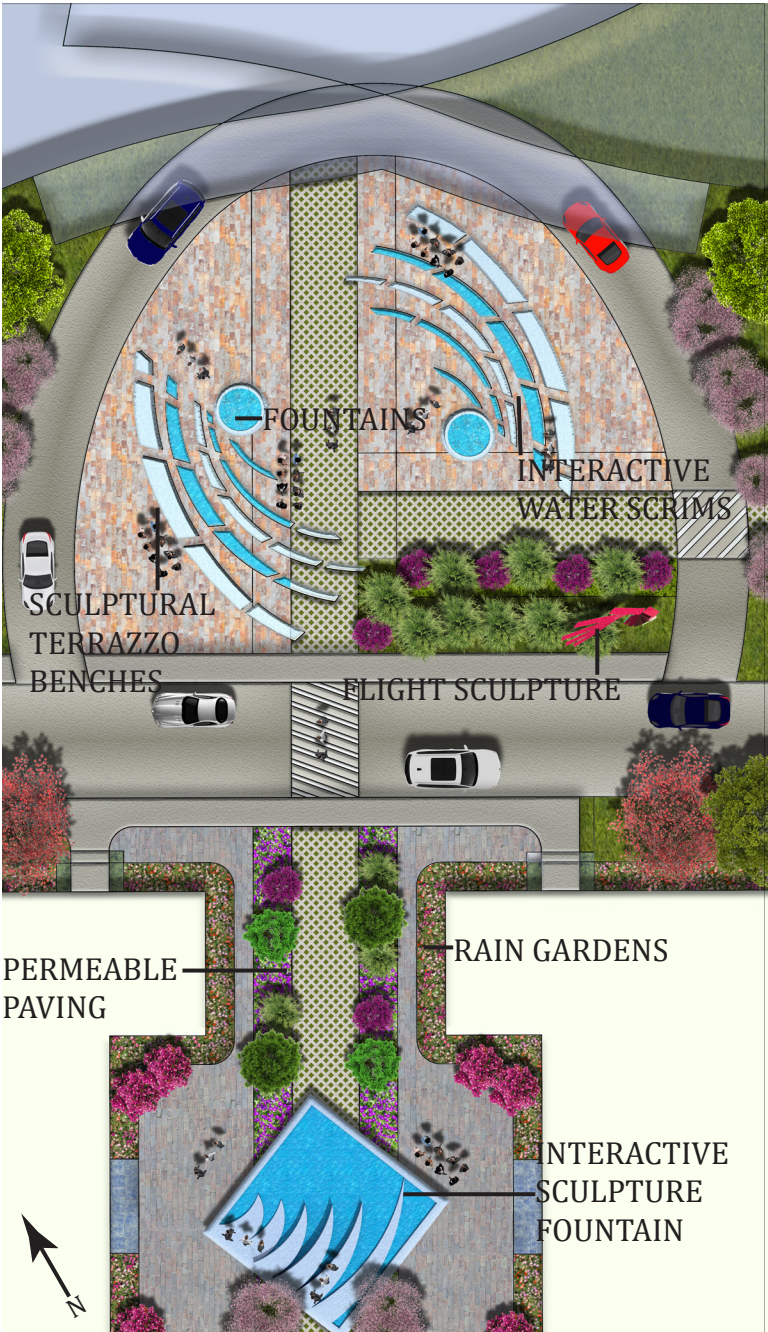
Perspectives

As drivers approach Airfield Drive on MD 198, they are greeted by a metallic bronze sculptural sign announcing "Tipton Executive Airpark" **(Figure 23)**. The sculptural element recalls the swooping structure of the new National Cryptological Museum, which provides a striking backdrop. A variety of trees and perennials enhance the welcoming atmosphere and are a reflection of the environmental design within.

The drop-off drive for the southwest office and retail complex is marked by a colorful marble fountain and surrounded by a large variety of perennial plantings **(Figure 24)**. The fountain sits on the axis of the entrance drive creating a focal point. The one-way drop off drive is twenty-four feet wide and includes a pull over lane. A ten-foot wide sidewalk allows space for people to circulate while others are being dropped off or picked up, and a walkway between the center of the two buildings provides access to the south-east plaza.

Figure 24. The entry drive to the office and retail buildings in the southeast quadrant of the site, viewed from Airfield Drive. Created by Sebastian Velez-Lopez

Figure 23. View of entrance to Tipton Executive Airpark from MD 198. Created by Sebastian Velez-Lopez

Figure 25. View from inside the third-floor rentable space in the new Tipton Airport terminal building. Created by Lotoia Simpson

The view from the third floor of the Tipton Executive Airpark's terminal overlooks the planes, hangers, and runway **(Figure 25, previous page)**. Its background is complimented by a distant view of the Patuxent Wildlife Refuge. This indoor, rentable gathering space is a vibrant setting for use by the airport, its associated businesses, and the local community.

The bio-infiltration meadow in the southeast quadrant of the site features boardwalk pathways, interpretive signs, platforms, and seating for leisure and educational uses **(Figure 26)**. The native flowers, shrubs, and trees in this meadow filter stormwater runoff from the parking lots, roads, and buildings and allow it to infiltrate into the ground.

Figure 26. The bio-infiltration meadow, viewed from General Aviation Drive, with pathways to the seating area with for leisure and interpretive experiences for visitors. Created by Keren Zhang

The Tipton Executive Airpark's northwest quadrant boasts an iconic structure that commands attention in all directions **(Figure 27)**. This structure will house the National Cryptologic Museum, relocated from the NSA campus to maximize public access and celebrate the site's position in the international capital of cyber security. The museum's main plaza features a pattern reminiscent of flight of interactive fountains, sculptural stone benches, and terrazzo pavers. The pedestrian promenade connects the museum plaza to an adjacent smaller plaza framed by a library and a building that houses a variety of community resources, meeting spaces, and after-school programs. This plaza includes an interactive water feature that mirrors the museum façade.

Figure 27. The new National Cryptologic Museum, viewed from the plaza between the library and community buildings, with the interactive fountain feature in the foreground. Created by Carey Evans

Performance Metrics

Numerous environmental, recreational, and commercial benefits are realized with the redesign of Tipton Airport. The design solution allows for interventions which support infiltration and natural systems. The site includes 327,850 ft² of infiltration and storm water management and 206,994 ft² of natural systems preservation that also incorporates educational opportunities. The addition of a meadow, green roofs, permeable pavers, turf grass, and trees work in concert with the county and state's green conservation plans. The three green roofs and permeable plaza pavers account for 170,444 ft² of green infrastructure. This redesign supports Anne Arundel County's sustainable development goals. The campus has a multi-purpose sports field designed for recreational use by children from the surrounding community. In addition, the site includes a library and a community building with a total of 21,300 ft². The proposed design creates 90,000 ft² of office space and 70,000 ft² of community use space, which includes an iconic museum near the main entrance of the street.

The proposed site plan for Tipton Executive Airpark provides many features that offer the employees and the community an assortment of spaces. Tipton Executive Airpark allows individuals to navigate through green streets, pedestrian and bike pathways, a bio-infiltration meadow, plaza spaces at a variety of scales, and includes sufficient parking. 3011 linear ft of tree-lined pathways form the major circulation route throughout the four quadrants of the site. 206,994 ft² of gathering spaces accommodate the users. Entertainment and educational features such as the sports field, museum, and the interpretive rain garden, occupy 128,550 ft² of the entire site. The gathering and entertainment spaces assist and encourage social dynamics throughout the site. The total permeable paving on the redesigned site is 142,344 ft². These spaces will help slow and catch stormwater runoff through infiltration.

The proposed redesign for Tipton Executive Airpark includes planting 617 new trees; of these 40% are shade trees, and 60% will be ornamental trees. This increases canopy cover, allows water to be filtered, decreases air pollution, increases carbon sequestration, produces oxygen, and provides shade for offices, gathering areas, and parking lots. The landscape becomes more attractive and productive with the increased number of trees on site.

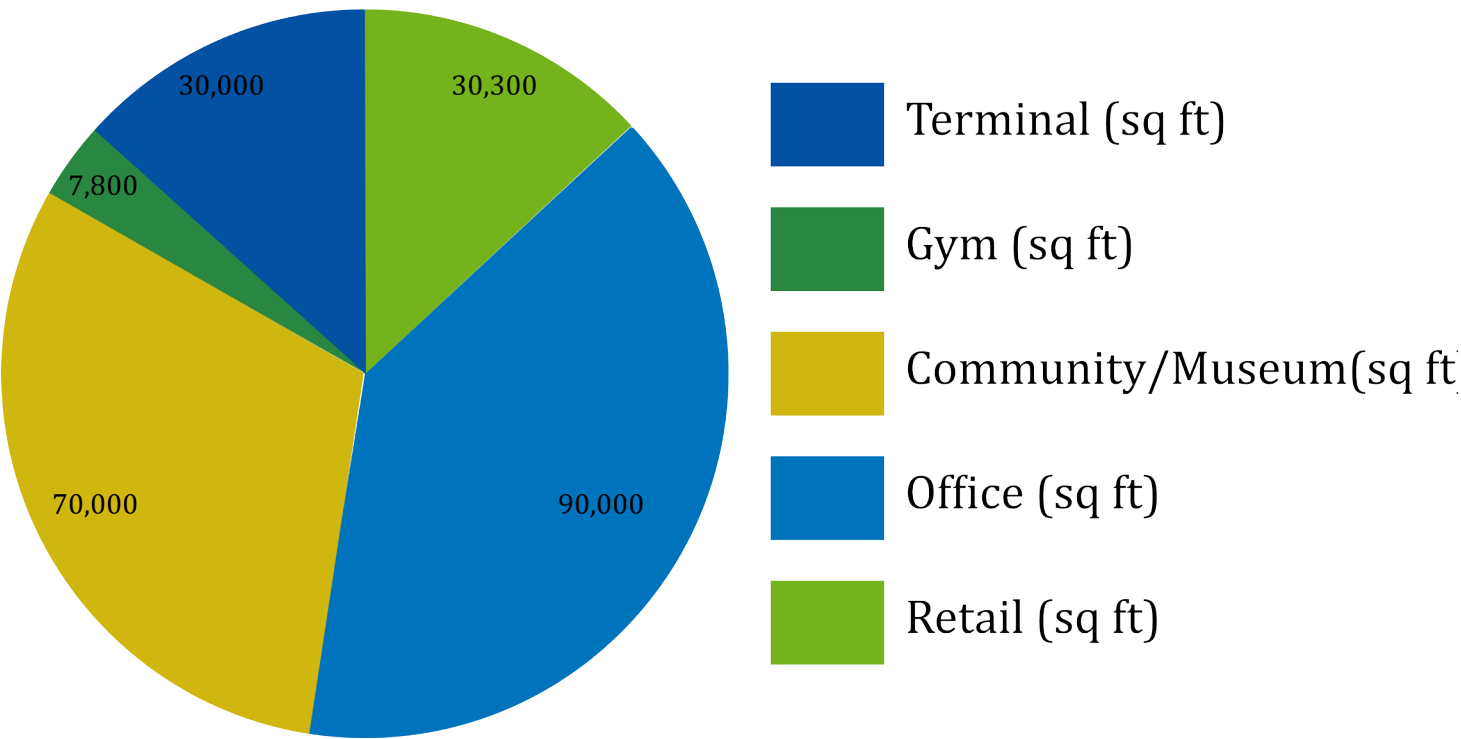## Building Space Proportions

Figure 28. Building space proportion pie chart. Created by Katie Ferguson

Overall, the proposed design solution will transform Tipton Executive Airpark into a more functional and inviting, educational, and environmental space that serves both the business as well as nearby residential communities along with the airport employees and their families. The infiltration and stormwater management features are aligned with the goals of Anne Arundel County and the State of Maryland in regards to new green development. The proposed features on this site are designed to benefit the public in a more attractive and environmentally beneficial manor.

Outdoor Space Additions

By the Numbers

- 3011 linear ft of pathways connecting all areas
- 617 new trees planted
- 28,400 ft^2 of green roof

Sports Field Area

49,500 ft^2

Natural Systems Education Area

64,650 ft^2

Permeable Plaza Area

142,344 ft^2

Infiltration Area added

327,850 ft^2

Figure 29. Outdoor space additions graphic. Created by Katie Ferguson

Citations

Figure 1. Created by Lotoia Simpson

Figure 2. Clip of image created by Keren Zhang

Figure 3. Clip of image created by Sebastian Velez-Lopez

Figure 4. Google Maps. Created by Sebastian Velez-Lopez

Figure 5. Google Maps. Created by Sebastian Velez-Lopez

Figure 6. Google Maps. Created by Sebastian Velez-Lopez

Figure 7. Google Maps. Created by Katie Ferguson

Figure 8. USDA Web Soil Survey. Created by Sebastian Velez-Lopez

Figure 9. Google Maps. Created by Sebastian Velez-Lopez

Figure 10. Created by Matt Rausch and Carey Evans

Figure 11. Created by Carey Evans, Katie Ferguson, Pam Parker, Afrouz Rahmati,
Matt Rausch, Lotoia Simpson, Sebastian Velez-Lopez, Keren Zhang

Figure 12. Created by Carey Evans

Figure 13. Hamad International Airport, Doha, Qatar: http://www.timgriffith.
com/data/photos/1040_1hia_ndia_hok_03.jpg

Figure 14. https://s-media-cache-ak0.pinimg.com/originals/d2/2f/67/d22f
6778010420d743a8a83719eb7f7d.jpg

Figure 15. https://www.iranhotelonline.com/fa/district/89/%D8%AE%DB%8C
%D8%A7%D8%A8%D8%A7%D9%86-%DA%86%D9%87%D8%A7%D8%
B1%D8%A8%D8%A7%D8%BA

Figure 16. https://s-media-cache-ak0.pinimg.com/736x/d0/bf/d9/d0bfd9944e
2411f88a16673d0e8b75d5.jpg

Figure 17. Woodberry Wetlands, UK: http://www.woodberrywetlands.org.uk/

Figure 18. Created by Keren Zhang

Figure 19. Created by Carey Evans

Figure 20. Created by Pam Parker

Figure 21. Created by Afrouz Rahmati

Figure 22. Created by Katie Ferguson

Figure 23. Created by Sebastian Velez-Lopez

Figure 24. Created by Sebastian Velez-Lopez

Figure 25. Created by Lotoia Simpson

Figure 26. Created by Keren Zhang

Figure 27. Created by Carey Evans

Figure 28. Created by Katie Ferguson

Figure 29. Created by Katie Ferguson

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